

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

**AECOM, INC.**

**N6274223F0104 RH Fire Suppression System**

**60697810**

**SGS Job Number: FC5652**

**Sampling Date: 04/27/23**



### Report to:

**AECOM, Inc**  
**7595 Technology Way**  
**Denver, CO 80237**  
**katie.abbott@aecom.com; mark.kromis@aecom.com;**  
**watson.tanji@aecom.com; kristin.rutherford@aecom.com**  
**ATTN: Katie Abbott**

**Total number of pages in report: 563**



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

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.

# Table of Contents

-1-

<b>Section 1: Sample Summary</b> .....	<b>3</b>
<b>Section 2: Case Narrative/Conformance Summary</b> .....	<b>4</b>
<b>Section 3: Summary of Hits</b> .....	<b>5</b>
<b>Section 4: Sample Results</b> .....	<b>6</b>
<b>4.1:</b> FC5652-1: AF-RHMW02-WGN01LF-2304W4 .....	7
<b>4.2:</b> FC5652-2: AF-RHMW03-WGN01LF-2304W4 .....	10
<b>Section 5: Misc. Forms</b> .....	<b>13</b>
<b>5.1:</b> Chain of Custody .....	14
<b>5.2:</b> QC Evaluation: DOD QSM5.x Limits .....	17
<b>Section 6: MS Semi-volatiles - QC Data Summaries</b> .....	<b>18</b>
<b>6.1:</b> Method Blank Summary .....	19
<b>6.2:</b> Blank Spike Summary .....	25
<b>6.3:</b> Matrix Spike Summary .....	29
<b>6.4:</b> Duplicate Summary .....	31
<b>6.5:</b> Injection Standard Area Summaries .....	33
<b>6.6:</b> TDCA Retention Time Checks .....	41
<b>6.7:</b> Ion Ratio Summaries .....	43
<b>6.8:</b> Isotope Dilution Standard Recovery Summaries .....	44
<b>6.9:</b> Initial and Continuing Calibration Summaries .....	47
<b>6.10:</b> Run Sequence Reports .....	61
<b>Section 7: MS Semi-volatiles - Raw Data</b> .....	<b>63</b>
<b>7.1:</b> Samples .....	64
<b>7.2:</b> Method Blanks .....	92
<b>7.3:</b> Blank Spikes .....	125
<b>7.4:</b> Matrix Spikes .....	169
<b>7.5:</b> Duplicates .....	191
<b>7.6:</b> Retention Time Markers .....	203
<b>7.7:</b> Initial and Continuing Calibrations .....	229
<b>7.8:</b> Instrument Run Logs .....	517
<b>7.9:</b> Standard Prep Logs .....	519
<b>7.10:</b> Sample Prep Logs .....	563



## Sample Summary

AECOM, INC.

Job No: FC5652

N6274223F0104 RH Fire Suppression System  
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC5652-1	04/27/23	09:55	MYCW04/28/23	AQ	Ground Water	AF-RHMW02-WGN01LF-2304W4
FC5652-2	04/27/23	11:25	MYCW04/28/23	AQ	Ground Water	AF-RHMW03-WGN01LF-2304W4

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** AECOM, INC.

**Job No:** FC5652

**Site:** N6274223F0104 RH Fire Suppression System

**Report Date:** 5/5/2023 5:38:42 PM

On 04/28/2023, 2 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 4 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC5652 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:** OP96662

Sample(s) FC5685-3MS, FC5685-4DUP 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:** FC5652  
**Account:** AECOM, INC.  
**Project:** N6274223F0104 RH Fire Suppression System  
**Collected:** 04/27/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
FC5652-1	AF-RHMW02-WGN01LF-2304W4					
		0.56 J	3.8	1.9	ng/l	EPA DRAFT 1633
		0.59 J	3.8	0.94	ng/l	EPA DRAFT 1633
		5.5 J	19	7.5	ng/l	EPA DRAFT 1633
FC5652-2	AF-RHMW03-WGN01LF-2304W4					
		2.7 J	7.5	1.9	ng/l	EPA DRAFT 1633
		1.5 J	3.8	1.9	ng/l	EPA DRAFT 1633
		1.6 J	3.8	1.9	ng/l	EPA DRAFT 1633
		0.50 J	3.8	0.94	ng/l	EPA DRAFT 1633
		15.2 J	19	7.5	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-RHMW02-WGN01LF-2304W4		
Lab Sample ID:	FC5652-1	Date Sampled:	04/27/23
Matrix:	AQ - Ground Water	Date Received:	04/28/23
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	4Q43901.D	1	05/03/23 14:47	NG	05/01/23 11:00	OP96662	S4Q634
Run #2							

Run #	Initial Volume	Final Volume
Run #1	530 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

## PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.5	1.9	0.89	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
375-85-9	Perfluoroheptanoic acid	0.56	3.8	1.9	0.47	ng/l	J
335-67-1	Perfluorooctanoic acid	0.59	3.8	0.94	0.47	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.79	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	

## PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.7	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.8	1.9	0.66	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.8	1.9	0.51	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.54	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.60	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.7	3.8	1.1	ng/l	

## FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	5.5	19	7.5	3.3	ng/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.9	ng/l	

## PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.9 U	3.8	1.9	0.63	ng/l	
31506-32-8	MeFOSA	3.8 U	7.5	3.8	0.94	ng/l	
4151-50-2	EtFOSA	3.8 U	7.5	3.8	0.94	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

# Report of Analysis

Client Sample ID:	AF-RHMW02-WGN01LF-2304W4		
Lab Sample ID:	FC5652-1	Date Sampled:	04/27/23
Matrix:	AQ - Ground Water	Date Received:	04/28/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

**PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS**

2355-31-9	MeFOSAA	3.8 U	4.7	3.8	0.94	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.7	3.8	1.3	ng/l	

**PERFLUOROOCCTANE SULFONAMIDO ETHANOLS**

24448-09-7	MeFOSE	19 U	38	19	4.1	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.0	ng/l	

**PER and POLYFLUOROETHER CARBOXYLIC ACIDS**

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.94	ng/l	
919005-14-4	ADONA	3.8 U	7.5	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.5	1.9	0.94	ng/l	
863090-89-5	PFMBA	3.8 U	7.5	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.5	3.8	1.1	ng/l	

**PER and POLYFLUOROETHER SULFONIC ACIDS**

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	7.5	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.5	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.5	1.9	0.74	ng/l	

**FLUOROTELOMER CARBOXYLIC ACIDS**

356-02-5	3:3 Fluorotelomer carboxylate	9.4 U	19	9.4	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	94	19	8.2	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	94	19	7.4	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	68%		20-150%
	13C5-PFPeA	80%		20-150%
	13C5-PFHxA	102%		20-150%
	13C4-PFHpA	108%		20-150%
	13C8-PFOA	108%		20-150%
	13C9-PFNA	106%		20-150%
	13C6-PFDA	102%		20-150%
	13C7-PFUnDA	97%		20-150%
	13C2-PFDoDA	89%		20-150%
	13C2-PFTeDA	55%		20-150%
	13C3-PFBS	99%		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-RHMW02-WGN01LF-2304W4		
Lab Sample ID:	FC5652-1	Date Sampled:	04/27/23
Matrix:	AQ - Ground Water	Date Received:	04/28/23
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	96%		20-150%
	13C8-FOSA	56%		20-150%
	d3-MeFOSA	51%		20-150%
	d5-EtFOSA	53%		20-150%
	d3-MeFOSAA	97%		20-150%
	d5-EtFOSAA	99%		20-150%
	d7-MeFOSE	36%		20-150%
	d9-EtFOSE	41%		20-150%
	13C2-4:2FTS	124%		20-180%
	13C2-6:2FTS	100%		20-180%
	13C2-8:2FTS	91%		20-180%
	13C3-HFPO-DA	82%		20-150%

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

SGS North America Inc.

## Report of Analysis

Page 1 of 3

Client Sample ID:	AF-RHMW03-WGN01LF-2304W4		
Lab Sample ID:	FC5652-2	Date Sampled:	04/27/23
Matrix:	AQ - Ground Water	Date Received:	04/28/23
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	4Q43902.D	1	05/03/23 15:01	NG	05/01/23 11:00	OP96662	S4Q634
Run #2							

Run #	Initial Volume	Final Volume
Run #1	530 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
<b>PERFLUOROALKYL CARBOXYLIC ACIDS</b>							
375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	2.7	7.5	1.9	0.89	ng/l	J
307-24-4	Perfluorohexanoic acid	1.5	3.8	1.9	0.47	ng/l	J
375-85-9	Perfluoroheptanoic acid	1.6	3.8	1.9	0.47	ng/l	J
335-67-1	Perfluorooctanoic acid	0.50	3.8	0.94	0.47	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.79	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
<b>PERFLUOROALKYL SULFONIC ACIDS</b>							
375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.7	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.8	1.9	0.66	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.8	1.9	0.51	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.54	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.60	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.7	3.8	1.1	ng/l	
<b>FLUOROTELOMER SULFONIC ACIDS</b>							
757124-72-4	4:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	15.2	19	7.5	3.3	ng/l	J
39108-34-4	8:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.9	ng/l	
<b>PERFLUOROOCCTANE SULFONAMIDES</b>							
754-91-6	PFOSA	1.9 U	3.8	1.9	0.63	ng/l	
31506-32-8	MeFOSA	3.8 U	7.5	3.8	0.94	ng/l	
4151-50-2	EtFOSA	3.8 U	7.5	3.8	0.94	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

# Report of Analysis

Client Sample ID:	AF-RHMW03-WGN01LF-2304W4		
Lab Sample ID:	FC5652-2	Date Sampled:	04/27/23
Matrix:	AQ - Ground Water	Date Received:	04/28/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
---------	----------	--------	-----	-----	----	-------	---

**PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS**

2355-31-9	MeFOSAA	3.8 U	4.7	3.8	0.94	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.7	3.8	1.3	ng/l	

**PERFLUOROOCCTANE SULFONAMIDO ETHANOLS**

24448-09-7	MeFOSE	19 U	38	19	4.1	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.0	ng/l	

**PER and POLYFLUOROETHER CARBOXYLIC ACIDS**

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.94	ng/l	
919005-14-4	ADONA	3.8 U	7.5	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.5	1.9	0.94	ng/l	
863090-89-5	PFMBA	3.8 U	7.5	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.5	3.8	1.1	ng/l	

**PER and POLYFLUOROETHER SULFONIC ACIDS**

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.8 U	7.5	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.5	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.5	1.9	0.74	ng/l	

**FLUOROTELOMER CARBOXYLIC ACIDS**

356-02-5	3:3 Fluorotelomer carboxylate	9.4 U	19	9.4	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	94	19	8.2	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	94	19	7.4	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	81%		20-150%
	13C5-PFPeA	100%		20-150%
	13C5-PFHxA	105%		20-150%
	13C4-PFHpA	108%		20-150%
	13C8-PFOA	105%		20-150%
	13C9-PFNA	100%		20-150%
	13C6-PFDA	99%		20-150%
	13C7-PFUnDA	80%		20-150%
	13C2-PFDoDA	60%		20-150%
	13C2-PFTeDA	29%		20-150%
	13C3-PFBS	110%		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

<b>Client Sample ID:</b>	AF-RHMW03-WGN01LF-2304W4	
<b>Lab Sample ID:</b>	FC5652-2	<b>Date Sampled:</b> 04/27/23
<b>Matrix:</b>	AQ - Ground Water	<b>Date Received:</b> 04/28/23
<b>Method:</b>	EPA DRAFT 1633 EPA 1633 DRAFT	<b>Percent Solids:</b> n/a
<b>Project:</b>	N6274223F0104 RH Fire Suppression System	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	92%		20-150%
	13C8-FOSA	44%		20-150%
	d3-MeFOSA	36%		20-150%
	d5-EtFOSA	35%		20-150%
	d3-MeFOSAA	96%		20-150%
	d5-EtFOSAA	98%		20-150%
	d7-MeFOSE	26%		20-150%
	d9-EtFOSE	26%		20-150%
	13C2-4:2FTS	113%		20-180%
	13C2-6:2FTS	95%		20-180%
	13C2-8:2FTS	85%		20-180%
	13C3-HFPO-DA	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

**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

FC5652

COC #: 2304W4AFSG01  
PAGE 1 OF 1

SGS - ORLANDO JOB # :

Client / Reporting Information			Project Information						Analytical Information														Matrix Codes																																									
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System						<table border="1"> <tr> <th colspan="2">SGS Orlando Sample #</th> <th colspan="2">Field ID / Point of Collection</th> <th>DATE</th> <th>TIME</th> <th>SAMPLED BY</th> <th>MATRIX</th> <th>TOTAL # OF BOTTLES</th> <th>CHIEF</th> <th>PINE</th> <th>ALD</th> <th>ANDH</th> <th>PHOS</th> <th>PERSCA</th> <th>MN-CO-ZINC</th> <th>BI WATER</th> <th>MEDIH</th> <th>PFAS EPA Draft 1639</th> <th>LAB USE ONLY</th> </tr> <tr> <td>1</td> <td>AF-RHMMW02-WGN01LF-2304W4</td> <td>4/27/23</td> <td>0955</td> <td>17</td> <td>Y, UN</td> <td></td> <td>GW</td> <td>3</td> <td></td> <td></td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> </tr> </table>														SGS Orlando Sample #		Field ID / Point of Collection		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	CHIEF	PINE	ALD	ANDH	PHOS	PERSCA	MN-CO-ZINC	BI WATER	MEDIH	PFAS EPA Draft 1639	LAB USE ONLY	1	AF-RHMMW02-WGN01LF-2304W4	4/27/23	0955	17	Y, UN		GW	3			X								X	DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe	
SGS Orlando Sample #		Field ID / Point of Collection		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES															CHIEF	PINE	ALD	ANDH	PHOS	PERSCA	MN-CO-ZINC	BI WATER	MEDIH	PFAS EPA Draft 1639	LAB USE ONLY																															
1	AF-RHMMW02-WGN01LF-2304W4	4/27/23	0955	17	Y, UN		GW	3																	X								X																															
Address: 1001 Bishop St. ste 1600 City: Honolulu State: HI Zip: 96813 City Honolulu State Hawaii Project Contact: Katie Abbott Email: katie.abbott@aecom.com Project Manager: Watson Tanji Email: watson.tanji@aecom.com Project # 60697810 Phone #: 303-796-4624 / 808-954-4512 Fax #			Street City Honolulu State Hawaii Project # 60697810 Fax #																																																													
Sampler(s) Name(s) (Printed) Sampler 1: Matt Yu Sampler 2: Chris Hanak Client Purchase Order #																																																																
Turnaround Time ( Business days)			Data Deliverable Information						Comments / Remarks																																																							
10 Day (Business) 7 Day <b>5 Day</b> 3 Day RUSH 2 Day RUSH 1 Day RUSH Other			Approved By: / Date:						<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S														EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AVE 016-27479652																																									
Rush T/A Data Available VIA Email or Lablink			Sample Custody must be documented below each time samples change possession, including courier delivery.																																																													
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation				Relinquished By/Affiliation		Date Time:		Received By/Affiliation																																																				
1 Matt Yu / AECOM		4/27/23 1235		2 Brittany Tominez / AECOM				3 Brittany Tominez / AECOM		4/27/23 1930		4 United Care																																																				
5 United Care				6 M/C 04/28/23 165				7				8																																																				
Lab Use Only: Cooler Temperature (s) Celsius (corrected):																																																																

4.0 IR #1

FC5652: Chain of Custody

Page 1 of 3

5.1 5





**SGS North America Inc - Orlando**  
**Chain of Custody**

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

**FC5652**

COC #: 2304W4AFSG02

SGS - ORLANDO JOB #:

PAGE 1 OF 1

Client / Reporting Information			Project Information											Analytical Information	Matrix Codes				
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System												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: Mark Kim Sampler 2: Chris Domack																			
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION													PFAS EPA Draft 1683	LAB USE ONLY
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NOISE	HCl	NaOH	PCOS	PCSD4	MOH-ZNAC	DI WATER	WEDH				
1	AF-RHMW03-WGN01LF-2304W4	4/27/23	1:25	MY, CD	GW	3		X										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 LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S											EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWP 016-87479652					
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 Mark Kim / AECOM		Date Time: 4/27/23		Received By/Affiliation 2 Brittany Tsimmer / AECOM			Relinquished By/Affiliation 3 Brittany Tsimmer / AECOM		Date Time: 4/27/23		Received By/Affiliation 4 United Cargo								
Relinquished by/Affiliation 5 United Cargo		Date Time:		Received By/Affiliation 6 [Signature] / 04/28/23 1500			Relinquished By/Affiliation 7		Date Time:		Received By/Affiliation 8								
Lab Use Only: Cooler Temperature (s) Celsius (corrected):														http://www.sgs.com/en/terms-and-conditions					

PFAS\_COCS\_ALL.xls Rev 031318

FC5652: Chain of Custody

Page 2 of 3

5.1  
5



## SGS Sample Receipt Summary

Job Number: FC5652

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 4/28/2023 3:00:00 PM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-87479652

Therm ID: IR 1;

Therm CF: -0.1;

# of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (4.1);

Cooler Temps (Corrected) °C: Cooler 1: (4.0);

**Cooler Information**

Y or N

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

**Trip Blank Information**

Y or N N/A

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

**Sample Information**

Y or N N/A

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

**Misc. Information**

Number of Encores: 25-Gram \_\_\_\_\_ 5-Gram \_\_\_\_\_

Number of 5035 Field Kits: \_\_\_\_\_

Number of Lab Filtered Metals: \_\_\_\_\_

Test Strip Lot #s: pH 0-3 230320

pH 10-12 25BDH07

Other: (Specify) pH 1.0 - 12.0 222221

Residual Chlorine Test Strip Lot #: \_\_\_\_\_

Comments

SM001  
Rev. Date 05/24/17

Technician: SHAYLAP

Date: 4/28/2023 3:00:00 PM

Reviewer: CD

Date: 5/1/2023

FC5652: Chain of Custody

Page 3 of 3



# QC Evaluation: DOD QSM5.x Limits

**Job Number:** FC5652  
**Account:** AECOM, INC.  
**Project:** N6274223F0104 RH Fire Suppression System  
**Collected:** 04/27/23

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 FC5652

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: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q634-IBLK	4Q43892.D	1	05/03/23	NG	n/a	n/a	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

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

# Instrument Blank

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q634-IBLK	4Q43892.D	1	05/03/23	NG	n/a	n/a	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100% 20-150%
	13C5-PFPeA	102% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	97% 20-150%
	13C6-PFDA	104% 20-150%
	13C7-PFUnDA	106% 20-150%
	13C2-PFDoDA	104% 20-150%
	13C2-PFTeDA	96% 20-150%
	13C3-PFBS	104% 20-150%
	13C3-PFHxS	103% 20-150%
	13C8-PFOS	100% 20-150%
	13C8-FOSA	92% 20-150%
	d3-MeFOSA	91% 20-150%
	d5-EtFOSA	99% 20-150%
	d3-MeFOSAA	103% 20-150%
	d5-EtFOSAA	102% 20-150%
	d7-MeFOSE	80% 20-150%
	d9-EtFOSE	82% 20-150%
	13C2-4:2FTS	113% 20-180%
	13C2-6:2FTS	124% 20-180%
	13C2-8:2FTS	121% 20-180%
	13C3-HFPO-DA	102% 20-150%

## Method Blank Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-MB	4Q43900.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

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

# Method Blank Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-MB	4Q43900.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	110% 20-150%
	13C5-PFPeA	115% 20-150%
	13C5-PFHxA	113% 20-150%
	13C4-PFHpA	115% 20-150%
	13C8-PFOA	110% 20-150%
	13C9-PFNA	118% 20-150%
	13C6-PFDA	99% 20-150%
	13C7-PFUnDA	102% 20-150%
	13C2-PFDoDA	95% 20-150%
	13C2-PFTeDA	72% 20-150%
	13C3-PFBS	106% 20-150%
	13C3-PFHxS	103% 20-150%
	13C8-PFOS	110% 20-150%
	13C8-FOSA	44% 20-150%
	d3-MeFOSA	34% 20-150%
	d5-EtFOSA	38% 20-150%
	d3-MeFOSAA	105% 20-150%
	d5-EtFOSAA	103% 20-150%
	d7-MeFOSE	25% 20-150%
	d9-EtFOSE	28% 20-150%
	13C2-4:2FTS	121% 20-180%
	13C2-6:2FTS	115% 20-180%
	13C2-8:2FTS	125% 20-180%
	13C3-HFPO-DA	110% 20-150%

## Continuing Calibration Blank

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q634-ICCB	4Q43908.D	1	05/03/23	NG	n/a	n/a	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP96662-DUP

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

# Continuing Calibration Blank

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q634-ICCB	4Q43908.D	1	05/03/23	NG	n/a	n/a	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

OP96662-DUP

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

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	102% 20-150%
	13C5-PFHxA	98% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	103% 20-150%
	13C9-PFNA	103% 20-150%
	13C6-PFDA	94% 20-150%
	13C7-PFUnDA	100% 20-150%
	13C2-PFDoDA	99% 20-150%
	13C2-PFTeDA	87% 20-150%
	13C3-PFBS	98% 20-150%
	13C3-PFHxS	99% 20-150%
	13C8-PFOS	102% 20-150%
	13C8-FOSA	96% 20-150%
	d3-MeFOSA	100% 20-150%
	d5-EtFOSA	98% 20-150%
	d3-MeFOSAA	112% 20-150%
	d5-EtFOSAA	107% 20-150%
	d7-MeFOSE	84% 20-150%
	d9-EtFOSE	81% 20-150%
	13C2-4:2FTS	110% 20-180%
	13C2-6:2FTS	128% 20-180%
	13C2-8:2FTS	126% 20-180%
	13C3-HFPO-DA	94% 20-150%



**Blank Spike Summary**

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-LLBS	4Q43899.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0261	87	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0131	87	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0070	93	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0063	84	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0065	87	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0065	87	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0070	93	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0064	85	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0063	84	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0055	73	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0066	88	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0058	87	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0063	89	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0063	92	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0065	91	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0056	80	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0062	86	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0057	79	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0059	81	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0245	87	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0265	93	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0275	95	40-150
754-91-6	PFOSA	0.0075	0.0074	99	40-150
31506-32-8	MeFOSA	0.015	0.0130	87	40-150
4151-50-2	EtFOSA	0.015	0.0128	85	40-150
2355-31-9	MeFOSAA	0.0075	0.0058	77	40-150
2991-50-6	EtFOSAA	0.0075	0.0067	89	40-150
24448-09-7	MeFOSE	0.0375	0.0345	92	40-150
1691-99-2	EtFOSE	0.0375	0.0267	71	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0140	93	40-150
919005-14-4	ADONA	0.0142	0.0127	90	40-150
377-73-1	PFMPA	0.015	0.0135	90	40-150
863090-89-5	PFMBA	0.015	0.0132	88	40-150
151772-58-6	NFDHA	0.015	0.0144	96	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0120	86	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0118	83	40-150

\* = Outside of Control Limits.

# Blank Spike Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-LLBS	4Q43899.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0120	90	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0284	76	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.137	73	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.133	71	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	109%	20-150%
	13C5-PFPeA	114%	20-150%
	13C5-PFHxA	111%	20-150%
	13C4-PFHpA	115%	20-150%
	13C8-PFOA	108%	20-150%
	13C9-PFNA	107%	20-150%
	13C6-PFDA	109%	20-150%
	13C7-PFUnDA	110%	20-150%
	13C2-PFDoDA	102%	20-150%
	13C2-PFTeDA	83%	20-150%
	13C3-PFBS	108%	20-150%
	13C3-PFHxS	106%	20-150%
	13C8-PFOS	106%	20-150%
	13C8-FOSA	39%	20-150%
	d3-MeFOSA	34%	20-150%
	d5-EtFOSA	34%	20-150%
	d3-MeFOSAA	108%	20-150%
	d5-EtFOSAA	94%	20-150%
	d7-MeFOSE	22%	20-150%
	d9-EtFOSE	25%	20-150%
	13C2-4:2FTS	127%	20-180%
	13C2-6:2FTS	126%	20-180%
	13C2-8:2FTS	113%	20-180%
	13C3-HFPO-DA	111%	20-150%

\* = Outside of Control Limits.

**Blank Spike Summary**

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-BS	4Q43898.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0918	92	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0453	91	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0224	90	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0232	93	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0225	90	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0228	91	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0229	92	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0219	88	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0232	93	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0218	87	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0248	99	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0204	92	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0224	95	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0215	94	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0222	93	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0224	97	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0219	91	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0205	85	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0206	85	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0819	87	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0875	92	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0943	98	40-150
754-91-6	PFOSA	0.025	0.0250	100	40-150
31506-32-8	MeFOSA	0.05	0.0515	103	40-150
4151-50-2	EtFOSA	0.05	0.0454	91	40-150
2355-31-9	MeFOSAA	0.025	0.0245	98	40-150
2991-50-6	EtFOSAA	0.025	0.0216	86	40-150
24448-09-7	MeFOSE	0.125	0.113	90	40-150
1691-99-2	EtFOSE	0.125	0.101	81	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0485	97	40-150
919005-14-4	ADONA	0.0473	0.0463	98	40-150
377-73-1	PFMPA	0.05	0.0463	93	40-150
863090-89-5	PFMBA	0.05	0.0453	91	40-150
151772-58-6	NFDHA	0.05	0.0472	94	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0445	95	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0442	94	40-150

\* = Outside of Control Limits.

# Blank Spike Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-BS	4Q43898.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0410	92	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.0976	78	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.484	77	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.483	77	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	107%	20-150%
	13C5-PFPeA	111%	20-150%
	13C5-PFHxA	109%	20-150%
	13C4-PFHpA	108%	20-150%
	13C8-PFOA	110%	20-150%
	13C9-PFNA	107%	20-150%
	13C6-PFDA	110%	20-150%
	13C7-PFUnDA	112%	20-150%
	13C2-PFDoDA	101%	20-150%
	13C2-PFTeDA	84%	20-150%
	13C3-PFBS	114%	20-150%
	13C3-PFHxS	105%	20-150%
	13C8-PFOS	106%	20-150%
	13C8-FOSA	45%	20-150%
	d3-MeFOSA	32%	20-150%
	d5-EtFOSA	37%	20-150%
	d3-MeFOSAA	109%	20-150%
	d5-EtFOSAA	106%	20-150%
	d7-MeFOSE	27%	20-150%
	d9-EtFOSE	29%	20-150%
	13C2-4:2FTS	133%	20-180%
	13C2-6:2FTS	122%	20-180%
	13C2-8:2FTS	118%	20-180%
	13C3-HFPO-DA	104%	20-150%

\* = Outside of Control Limits.

## Matrix Spike Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-MS	4Q43906.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634
FC5685-3	4Q43905.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

CAS No.	Compound	FC5685-3		Spike ug/l	MS ug/l	MS %	Limits
		ug/l	Q				
375-22-4	Perfluorobutanoic acid	0.0025	J	0.0962	0.0944	96	40-150
2706-90-3	Perfluoropentanoic acid	0.0024	J	0.0481	0.0469	93	40-150
307-24-4	Perfluorohexanoic acid	0.0017	J	0.024	0.0237	92	40-150
375-85-9	Perfluoroheptanoic acid	0.00053	J	0.024	0.0226	92	40-150
335-67-1	Perfluorooctanoic acid	0.0036	U	0.024	0.0224	93	40-150
375-95-1	Perfluorononanoic acid	0.0036	U	0.024	0.0223	93	40-150
335-76-2	Perfluorodecanoic acid	0.0036	U	0.024	0.0242	101	40-150
2058-94-8	Perfluoroundecanoic acid	0.0036	U	0.024	0.0226	94	40-150
307-55-1	Perfluorododecanoic acid	0.0036	U	0.024	0.0229	95	40-150
72629-94-8	Perfluorotridecanoic acid	0.0036	U	0.024	0.0209	87	40-150
376-06-7	Perfluorotetradecanoic acid	0.0036	U	0.024	0.0241	100	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0036	U	0.0213	0.0201	94	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0045	U	0.0226	0.0215	95	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0036	U	0.022	0.0212	96	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0036	U	0.0229	0.0230	100	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0036	U	0.0223	0.0200	90	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0036	U	0.0231	0.0200	86	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0036	U	0.0232	0.0186	80	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0045	U	0.0233	0.0152	65	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.018	U	0.0901	0.0874	97	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0042	J	0.0913	0.0897	94	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.018	U	0.0923	0.0938	102	40-150
754-91-6	PFOSA	0.0036	U	0.024	0.0240	100	40-150
31506-32-8	MeFOSA	0.0071	U	0.0481	0.0468	97	40-150
4151-50-2	EtFOSA	0.0071	U	0.0481	0.0446	93	40-150
2355-31-9	MeFOSAA	0.0045	U	0.024	0.0245	102	40-150
2991-50-6	EtFOSAA	0.0045	U	0.024	0.0232	97	40-150
24448-09-7	MeFOSE	0.036	U	0.12	0.107	89	40-150
1691-99-2	EtFOSE	0.036	U	0.12	0.108	90	40-150
13252-13-6	HFPO-DA (GenX)	0.0036	U	0.0481	0.0472	98	40-150
919005-14-4	ADONA	0.0071	U	0.0454	0.0468	103	40-150
377-73-1	PFMPA	0.0071	U	0.0481	0.0436	91	40-150
863090-89-5	PFMBA	0.0071	U	0.0481	0.0449	93	40-150
151772-58-6	NFDHA	0.0071	U	0.0481	0.0453	94	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0071	U	0.045	0.0386	86	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0071	U	0.0454	0.0336	74	40-150

\* = Outside of Control Limits.

# Matrix Spike Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-MS	4Q43906.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634
FC5685-3	4Q43905.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

CAS No.	Compound	FC5685-3 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0071 U	0.0428	0.0408	95	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U	0.12	0.0847	70	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.089 U	0.601	0.479	80	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.089 U	0.601	0.498	83	40-150

CAS No.	ID Standard Recoveries	MS	FC5685-3	Limits
	13C4-PFBA	93%	95%	20-150%
	13C5-PFPeA	109%	110%	20-150%
	13C5-PFHxA	107%	109%	20-150%
	13C4-PFHpA	111%	110%	20-150%
	13C8-PFOA	106%	105%	20-150%
	13C9-PFNA	100%	100%	20-150%
	13C6-PFDA	85%	101%	20-150%
	13C7-PFUnDA	81%	100%	20-150%
	13C2-PFDoDA	70%	81%	20-150%
	13C2-PFTeDA	55%	63%	20-150%
	13C3-PFBS	99%	103%	20-150%
	13C3-PFHxS	97%	101%	20-150%
	13C8-PFOS	93%	101%	20-150%
	13C8-FOSA	53%	61%	20-150%
	d3-MeFOSA	41%	53%	20-150%
	d5-EtFOSA	46%	59%	20-150%
	d3-MeFOSAA	92%	107%	20-150%
	d5-EtFOSAA	88%	102%	20-150%
	d7-MeFOSE	30%	37%	20-150%
	d9-EtFOSE	31%	42%	20-150%
	13C2-4:2FTS	105%	122%	20-180%
	13C2-6:2FTS	114%	107%	20-180%
	13C2-8:2FTS	103%	124%	20-180%
	13C3-HFPO-DA	102%	103%	20-150%

\* = Outside of Control Limits.

## Duplicate Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-DUP	4Q43910.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634
FC5685-4	4Q43909.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634
FC5685-4 <sup>a</sup>	4Q43980.D	5	05/04/23	NG	05/01/23	OP96662	S4Q635

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

CAS No.	Compound	FC5685-4 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.070 U <sup>b</sup>	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0070 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0035 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0035 U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.0035 U	ND		nc	30
375-95-1	Perfluorononanoic acid	0.0035 U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0035 U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0035 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0035 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0035 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0035 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0035 U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0044 U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0035 U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0035 U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0035 U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0035 U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0035 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0044 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.018 U	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.018 U	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.018 U	ND		nc	30
754-91-6	PFOSA	0.0035 U	ND		nc	30
31506-32-8	MeFOSA	0.0070 U	ND		nc	30
4151-50-2	EtFOSA	0.0070 U	ND		nc	30
2355-31-9	MeFOSAA	0.022 U <sup>b</sup>	ND		nc	30
2991-50-6	EtFOSAA	0.022 U <sup>b</sup>	ND		nc	30
24448-09-7	MeFOSE	0.035 U	ND		nc	30
1691-99-2	EtFOSE	0.035 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.0035 U	ND		nc	30
919005-14-4	ADONA	0.0070 U	ND		nc	30
377-73-1	PFMPA	0.0070 U	ND		nc	30
863090-89-5	PFMBA	0.0070 U	ND		nc	30
151772-58-6	NFDHA	0.0070 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0070 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0070 U	ND		nc	30

\* = Outside of Control Limits.

# Duplicate Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP96662-DUP	4Q43910.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634
FC5685-4	4Q43909.D	1	05/03/23	NG	05/01/23	OP96662	S4Q634
FC5685-4 <sup>a</sup>	4Q43980.D	5	05/04/23	NG	05/01/23	OP96662	S4Q635

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC5652-1, FC5652-2

CAS No.	Compound	FC5685-4 ug/l	DUP Q	ug/l	Q	RPD	Limits
113507-82-7PFEESA		0.0070 U	ND			nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U	ND			nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.088 U	ND			nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.088 U	ND			nc	30

CAS No.	ID Standard Recoveries	DUP	FC5685-4	FC5685-4	Limits
	13C4-PFBA	10%* c	11%* c	12%* c	20-150%
	13C5-PFPeA	27%	30%	29%	20-150%
	13C5-PFHxA	53%	57%	58%	20-150%
	13C4-PFHpA	78%	87%	84%	20-150%
	13C8-PFOA	88%	96%	102%	20-150%
	13C9-PFNA	96%	101%	105%	20-150%
	13C6-PFDA	92%	107%	89%	20-150%
	13C7-PFUnDA	90%	98%	84%	20-150%
	13C2-PFDoDA	78%	86%	83%	20-150%
	13C2-PFTeDA	45%	56%	60%	20-150%
	13C3-PFBS	65%	69%	72%	20-150%
	13C3-PFHxS	86%	101%	106%	20-150%
	13C8-PFOS	97%	101%	77%	20-150%
	13C8-FOSA	67%	57%	39%	20-150%
	d3-MeFOSA	61%	53%	38%	20-150%
	d5-EtFOSA	59%	58%	39%	20-150%
	d3-MeFOSAA	156%* c	157%* c	100%	20-150%
	d5-EtFOSAA	165%* c	161%* c	120%	20-150%
	d7-MeFOSE	32%	29%	21%	20-150%
	d9-EtFOSE	32%	33%	22%	20-150%
	13C2-4:2FTS	61%	69%	48%	20-180%
	13C2-6:2FTS	75%	93%	108%	20-180%
	13C2-8:2FTS	94%	108%	119%	20-180%
	13C3-HFPO-DA	45%	48%	50%	20-150%

- (a) Dilution required (ID recovery standard failure).
- (b) Result is from Run #2.
- (c) Outside control limits.

\* = Outside of Control Limits.



# Injection Standard Area Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q634-ICC634	Injection Date:	05/03/23
Lab File ID:	4Q43887.D	Injection Time:	11:54
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 <sup>b</sup>	68618	2.93	45028	5.54	53770	7.12	24678	7.68	18492	8.18
Check Std <sup>c</sup>	72159	2.93	46191	5.54	54891	7.12	25730	7.68	19442	8.18
Upper Limit <sup>d</sup>	137236	3.33	90056	5.94	107540	7.52	49356	8.08	36984	8.58
Lower Limit <sup>e</sup>	20585	2.53	13508	5.14	16131	6.72	7403	7.28	5548	7.78

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF <sup>a</sup>
S4Q634-IBLK	68638	2.92	43462	5.54	51953	7.14	23976	7.68	16965	8.18	1
S4Q634-IBLK	68638	2.92	43462	5.54	51953	7.14	23976	7.68	16965	8.18	1
OP96662-BS	63592	2.92	39761	5.54	49026	7.14	22496	7.68	16179	8.19	1
OP96662-LLBS	62791	2.93	38170	5.54	47692	7.14	21705	7.68	16068	8.19	1
OP96662-MB	60854	2.92	36835	5.54	45689	7.14	20606	7.68	16352	8.19	1
FC5652-1	36997	2.92	41325	5.54	50289	7.14	23471	7.70	16687	8.19	1
FC5652-2	61324	2.92	41071	5.55	50637	7.15	24011	7.70	18228	8.19	1
ZZZZZZ	46308	2.92	39597	5.55	47465	7.15	21924	7.70	16831	8.19	1
ZZZZZZ	63076	2.93	38783	5.55	47382	7.15	22356	7.70	16671	8.19	1
FC5685-3	59191	2.93	37842	5.55	47011	7.15	22504	7.70	15883	8.19	1
OP96662-MS	60025	2.93	38505	5.55	47619	7.15	22068	7.70	17030	8.19	1

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

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

6.5.1  
6

# Injection Standard Area Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q634-ICC634	Injection Date:	05/03/23
Lab File ID:	4Q43887.D	Injection Time:	11:54
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal <sup>b</sup>	5105	7.23	11432	8.33
Check Std <sup>c</sup>	5353	7.23	11376	8.33
Upper Limit <sup>d</sup>	10210	7.63	22864	8.73
Lower Limit <sup>e</sup>	1532	6.83	3430	7.93

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF <sup>a</sup>
S4Q634-IBLK	4669	7.23	10995	8.33	1
S4Q634-IBLK	4669	7.23	10995	8.33	1
OP96662-BS	4435	7.24	10009	8.34	1
OP96662-LLBS	4500	7.24	10432	8.33	1
OP96662-MB	4413	7.24	9791	8.34	1
FC5652-1	4567	7.24	10189	8.34	1
FC5652-2	4605	7.24	10626	8.34	1
ZZZZZZ	4490	7.24	10032	8.34	1
ZZZZZZ	4571	7.24	10255	8.34	1
FC5685-3	4518	7.24	9640	8.34	1
OP96662-MS	4717	7.24	9786	8.34	1

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

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

6.5.1  
6

# Injection Standard Area Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q634-CC634	Injection Date:	05/03/23
Lab File ID:	4Q43897.D	Injection Time:	13:51
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 <sup>b</sup>	68618	2.93	45028	5.54	53770	7.12	24678	7.68	18492	8.18
Check Std <sup>c</sup>	70356	2.97	42989	5.55	53375	7.14	24269	7.68	17954	8.19
Upper Limit <sup>d</sup>	137236	3.37	90056	5.95	107540	7.54	49356	8.08	36984	8.59
Lower Limit <sup>e</sup>	20585	2.57	13508	5.15	16131	6.74	7403	7.28	5548	7.79

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF <sup>a</sup>
OP96662-BS	63592	2.92	39761	5.54	49026	7.14	22496	7.68	16179	8.19	1
OP96662-LLBS	62791	2.93	38170	5.54	47692	7.14	21705	7.68	16068	8.19	1
OP96662-MB	60854	2.92	36835	5.54	45689	7.14	20606	7.68	16352	8.19	1
FC5652-1	36997	2.92	41325	5.54	50289	7.14	23471	7.70	16687	8.19	1
FC5652-2	61324	2.92	41071	5.55	50637	7.15	24011	7.70	18228	8.19	1
ZZZZZZ	46308	2.92	39597	5.55	47465	7.15	21924	7.70	16831	8.19	1
ZZZZZZ	63076	2.93	38783	5.55	47382	7.15	22356	7.70	16671	8.19	1
FC5685-3	59191	2.93	37842	5.55	47011	7.15	22504	7.70	15883	8.19	1
OP96662-MS	60025	2.93	38505	5.55	47619	7.15	22068	7.70	17030	8.19	1
S4Q634-ICCB	68220	2.93	42903	5.55	52043	7.15	24469	7.70	18316	8.20	1
FC5685-4	62738	2.93	39940	5.55	50683	7.15	24399	7.70	18906	8.19	1
OP96662-DUP	62805	2.93	41275	5.56	49865	7.15	23687	7.70	18676	8.19	1
ZZZZZZ	63210	2.93	38401	5.56	48568	7.15	22858	7.70	16906	8.20	1
OP96659-BS <sup>f</sup>	69415	2.92	42549	5.55	51256	7.15	25129	7.70	18178	8.20	1
OP96659-LLBS	72049	2.93	44036	5.56	53800	7.15	25433	7.70	17679	8.20	1
OP96659-MB	65690	2.93	41335	5.56	49473	7.15	23693	7.70	17059	8.20	1
ZZZZZZ	65970	2.92	38570	5.56	51360	7.15	24860	7.70	16130	8.20	10
S4Q634-ICCB	69802	2.93	41760	5.56	53163	7.15	25492	7.71	17308	8.20	1
S4Q634-ICCB	69802	2.93	41760	5.56	53163	7.15	25492	7.71	17308	8.20	1
ZZZZZZ	69719	2.88	44571	5.55	55002	7.15	25212	7.70	18658	8.20	1
ZZZZZZ	67080	2.88	42468	5.55	52598	7.15	24355	7.70	17299	8.20	1
ZZZZZZ	68890	2.88	42985	5.55	53470	7.15	26176	7.70	17771	8.20	1
ZZZZZZ	70064	2.88	42747	5.55	54566	7.15	25143	7.70	19060	8.20	1
OP96657-BS	69758	2.93	43589	5.56	53853	7.15	24534	7.70	18072	8.20	1
OP96657-LLBS	69866	2.93	43830	5.55	53415	7.15	24844	7.70	18730	8.20	1
OP96657-MB	70038	2.93	42837	5.56	52614	7.15	25798	7.71	17922	8.20	1
ZZZZZZ	70781	2.93	44273	5.56	53953	7.15	26544	7.70	18904	8.20	1
S4Q634-ICCB	70819	2.94	43862	5.55	53676	7.14	25574	7.68	17825	8.19	1
S4Q634-ICCB	70819	2.94	43862	5.55	53676	7.14	25574	7.68	17825	8.19	1
FC5371-11	73108	2.95	45202	5.55	55145	7.14	25545	7.68	19563	8.19	1
OP96657-MS	69170	2.94	41715	5.55	52518	7.14	25501	7.68	18135	8.18	1
OP96657-MSD	68026	2.93	42582	5.55	52779	7.14	24745	7.68	17355	8.19	1
ZZZZZZ	69224	2.94	43668	5.55	53923	7.14	23631	7.68	17346	8.19	1

# Injection Standard Area Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q634-CC634	Injection Date:	05/03/23
Lab File ID:	4Q43897.D	Injection Time:	13:51
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

Lab Sample ID	IS 1 AREA	IS 1 RT	IS 2 AREA	IS 2 RT	IS 3 AREA	IS 3 RT	IS 4 AREA	IS 4 RT	IS 5 AREA	IS 5 RT	DF <sup>a</sup>
ZZZZZZ	73332	2.94	45159	5.55	56653	7.14	25761	7.68	18338	8.19	1
ZZZZZZ	72768	2.94	44782	5.55	57494	7.14	26146	7.68	18230	8.18	1
ZZZZZZ	66644	2.94	42708	5.55	51215	7.14	24447	7.68	16998	8.18	1
ZZZZZZ	69775	2.94	42011	5.55	52522	7.14	24543	7.68	17207	8.18	1
S4Q634-ICCB	71321	2.94	44437	5.55	53053	7.14	25067	7.68	17517	8.18	1
S4Q634-ICCB	71321	2.94	44437	5.55	53053	7.14	25067	7.68	17517	8.18	1
ZZZZZZ	71222	2.94	43173	5.55	54488	7.14	24859	7.68	17753	8.18	1
FC5371-20	71227	2.94	44141	5.55	54466	7.14	24785	7.68	17971	8.18	1
OP96657-MS2	72716	2.94	45110	5.55	53630	7.14	25457	7.68	19042	8.18	1
OP96657-MSD2	71497	2.94	44410	5.55	53738	7.14	25829	7.68	19311	8.18	1
ZZZZZZ	71814	2.93	44448	5.55	54751	7.14	26143	7.68	19076	8.18	1
S4Q634-ICCB	70122	2.94	42172	5.55	51403	7.14	24858	7.68	17490	8.19	1
S4Q634-ICCB	70122	2.94	42172	5.55	51403	7.14	24858	7.68	17490	8.19	1

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

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

6.5.2  
6

# Injection Standard Area Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q634-CC634	Injection Date:	05/03/23
Lab File ID:	4Q43897.D	Injection Time:	13:51
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal <sup>b</sup>	5105	7.23	11432	8.33
Check Std <sup>c</sup>	4850	7.24	10957	8.34
Upper Limit <sup>d</sup>	10210	7.64	22864	8.74
Lower Limit <sup>e</sup>	1532	6.84	3430	7.94

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF <sup>a</sup>
OP96662-BS	4435	7.24	10009	8.34	1
OP96662-LLBS	4500	7.24	10432	8.33	1
OP96662-MB	4413	7.24	9791	8.34	1
FC5652-1	4567	7.24	10189	8.34	1
FC5652-2	4605	7.24	10626	8.34	1
ZZZZZZ	4490	7.24	10032	8.34	1
ZZZZZZ	4571	7.24	10255	8.34	1
FC5685-3	4518	7.24	9640	8.34	1
OP96662-MS	4717	7.24	9786	8.34	1
S4Q634-ICCB	4895	7.24	10800	8.35	1
FC5685-4	4614	7.24	9655	8.34	1
OP96662-DUP	4802	7.24	8763	8.33	1
ZZZZZZ	4546	7.25	10095	8.35	1
OP96659-BS <sup>f</sup>	5056	7.24	11262	8.35	1
OP96659-LLBS	5315	7.24	11156	8.35	1
OP96659-MB	4609	7.24	10516	8.35	1
ZZZZZZ	5360	7.25	11310	8.35	10
S4Q634-ICCB	5029	7.25	11026	8.35	1
S4Q634-ICCB	5029	7.25	11026	8.35	1
ZZZZZZ	5179	7.24	11238	8.35	1
ZZZZZZ	4775	7.24	11202	8.35	1
ZZZZZZ	5301	7.24	11217	8.35	1
ZZZZZZ	5111	7.24	11195	8.35	1
OP96657-BS	4990	7.25	11727	8.35	1
OP96657-LLBS	5208	7.25	11207	8.35	1
OP96657-MB	4963	7.25	11241	8.35	1
ZZZZZZ	5048	7.25	10839	8.35	1
S4Q634-ICCB	4740	7.23	11940	8.33	1
S4Q634-ICCB	4740	7.23	11940	8.33	1
FC5371-11	5295	7.23	12010	8.34	1
OP96657-MS	4959	7.23	10846	8.33	1
OP96657-MSD	4814	7.23	10385	8.33	1
ZZZZZZ	4814	7.24	10455	8.34	1

6.5.2  
6

# Injection Standard Area Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q634-CC634	Injection Date:	05/03/23
Lab File ID:	4Q43897.D	Injection Time:	13:51
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF <sup>a</sup>
ZZZZZZ	5115	7.24	9891	8.34	1
ZZZZZZ	5071	7.23	11066	8.33	1
ZZZZZZ	5117	7.24	8529	8.33	1
ZZZZZZ	5103	7.23	10850	8.33	1
S4Q634-ICCB	4976	7.23	11559	8.33	1
S4Q634-ICCB	4976	7.23	11559	8.33	1
ZZZZZZ	5219	7.23	11279	8.33	1
FC5371-20	5111	7.23	11640	8.33	1
OP96657-MS2	5454	7.24	11813	8.33	1
OP96657-MSD2	5090	7.23	11686	8.33	1
ZZZZZZ	4938	7.23	11462	8.33	1
S4Q634-ICCB	4744	7.24	11515	8.34	1
S4Q634-ICCB	4744	7.24	11515	8.34	1

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

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

6.5.2  
6

# Injection Standard Area Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q634-CC634	Injection Date:	05/03/23
Lab File ID:	4Q43907.D	Injection Time:	16:11
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 <sup>b</sup>	68618	2.93	45028	5.54	53770	7.12	24678	7.68	18492	8.18
Check Std <sup>c</sup>	70689	2.93	43941	5.55	53561	7.15	24646	7.70	18855	8.20
Upper Limit <sup>d</sup>	137236	3.33	90056	5.95	107540	7.55	49356	8.10	36984	8.60
Lower Limit <sup>e</sup>	20585	2.53	13508	5.15	16131	6.75	7403	7.30	5548	7.80

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	DF <sup>a</sup>
S4Q634-ICCB	68220	2.93	42903	5.55	52043	7.15	24469	7.70	18316	8.20	1
FC5685-4	62738	2.93	39940	5.55	50683	7.15	24399	7.70	18906	8.19	1
OP96662-DUP	62805	2.93	41275	5.56	49865	7.15	23687	7.70	18676	8.19	1
ZZZZZZ	63210	2.93	38401	5.56	48568	7.15	22858	7.70	16906	8.20	1
OP96659-BS <sup>f</sup>	69415	2.92	42549	5.55	51256	7.15	25129	7.70	18178	8.20	1
OP96659-LLBS	72049	2.93	44036	5.56	53800	7.15	25433	7.70	17679	8.20	1
OP96659-MB	65690	2.93	41335	5.56	49473	7.15	23693	7.70	17059	8.20	1
ZZZZZZ	65970	2.92	38570	5.56	51360	7.15	24860	7.70	16130	8.20	10

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

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

6.5.3  
6

# Injection Standard Area Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S4Q634-CC634	Injection Date:	05/03/23
Lab File ID:	4Q43907.D	Injection Time:	16:11
Instrument ID:	GCMS4Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal <sup>b</sup>	5105	7.23	11432	8.33
Check Std <sup>c</sup>	4910	7.24	11516	8.34
Upper Limit <sup>d</sup>	10210	7.64	22864	8.74
Lower Limit <sup>e</sup>	1532	6.84	3430	7.94

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF <sup>a</sup>
S4Q634-ICCB	4895	7.24	10800	8.35	1
FC5685-4	4614	7.24	9655	8.34	1
OP96662-DUP	4802	7.24	8763	8.33	1
ZZZZZZ	4546	7.25	10095	8.35	1
OP96659-BS <sup>f</sup>	5056	7.24	11262	8.35	1
OP96659-LLBS	5315	7.24	11156	8.35	1
OP96659-MB	4609	7.24	10516	8.35	1
ZZZZZZ	5360	7.25	11310	8.35	10

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

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

6.5.3  
6



**TDCA Retention Time Check**

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q634-IC634	4Q43883.D	05/03/23	10:58	00:35	Mass Calibration Verification
S4Q634-IC634	4Q43884.D	05/03/23	11:12	00:49	Initial cal 1
S4Q634-IC634	4Q43885.D	05/03/23	11:26	01:03	Initial cal 2
S4Q634-IC634	4Q43886.D	05/03/23	11:40	01:17	Initial cal 3
S4Q634-ICC634	4Q43887.D	05/03/23	11:54	01:31	Initial cal 4
S4Q634-IC634	4Q43888.D	05/03/23	12:08	01:45	Initial cal 5
S4Q634-IC634	4Q43889.D	05/03/23	12:22	01:59	Initial cal 6
S4Q634-IC634	4Q43890.D	05/03/23	12:36	02:13	Initial cal 7
S4Q634-IC634	4Q43891.D	05/03/23	12:50	02:27	Initial cal 8
S4Q634-IBLK	4Q43892.D	05/03/23	13:04	02:41	Instrument Blank
S4Q634-IBLK	4Q43892.D	05/03/23	13:04	02:41	Instrument Blank
S4Q634-ICV634	4Q43894.D	05/03/23	13:20	02:57	Initial cal verification 20
S4Q634-ICV634	4Q43895.D	05/03/23	13:35	03:12	Initial cal verification 4
S4Q634-CC634	4Q43897.D	05/03/23	13:51	03:28	Continuing cal 1.0LL
OP96662-BS	4Q43898.D	05/03/23	14:05	03:42	Blank Spike
OP96662-LLBS	4Q43899.D	05/03/23	14:19	03:56	Blank Spike
OP96662-MB	4Q43900.D	05/03/23	14:33	04:10	Method Blank
FC5652-1	4Q43901.D	05/03/23	14:47	04:24	AF-RHMW02-WGN01LF-2304W4
FC5652-2	4Q43902.D	05/03/23	15:01	04:38	AF-RHMW03-WGN01LF-2304W4
ZZZZZZ	4Q43903.D	05/03/23	15:15	04:52	(unrelated sample)
ZZZZZZ	4Q43904.D	05/03/23	15:29	05:06	(unrelated sample)
FC5685-3	4Q43905.D	05/03/23	15:43	05:20	(used for QC only; not part of job FC5652)
OP96662-MS	4Q43906.D	05/03/23	15:57	05:34	Matrix Spike
S4Q634-CC634	4Q43907.D	05/03/23	16:11	05:48	Continuing cal 4
S4Q634-ICCB	4Q43908.D	05/03/23	16:25	06:02	Continuing Calibration Blank
FC5685-4	4Q43909.D	05/03/23	16:39	06:16	(used for QC only; not part of job FC5652)
OP96662-DUP	4Q43910.D	05/03/23	16:54	06:31	Duplicate
ZZZZZZ	4Q43911.D	05/03/23	17:08	06:45	(unrelated sample)
OP96659-BS	4Q43912.D	05/03/23	17:22	06:59	Blank Spike
OP96659-LLBS	4Q43913.D	05/03/23	17:36	07:13	Blank Spike
OP96659-MB	4Q43914.D	05/03/23	17:50	07:27	Method Blank
ZZZZZZ	4Q43916.D	05/03/23	18:18	07:55	(unrelated sample)
S4Q634-CC634	4Q43917.D	05/03/23	18:32	08:09	Continuing cal 4
S4Q634-ICCB	4Q43918.D	05/03/23	18:46	08:23	Continuing Calibration Blank

# TDCA Retention Time Check

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
S4Q634-ICCB	4Q43918.D	05/03/23	18:46	08:23	Continuing Calibration Blank
ZZZZZZ	4Q43919.D	05/03/23	19:00	08:37	(unrelated sample)
ZZZZZZ	4Q43920.D	05/03/23	19:14	08:51	(unrelated sample)
ZZZZZZ	4Q43921.D	05/03/23	19:28	09:05	(unrelated sample)
ZZZZZZ	4Q43922.D	05/03/23	19:42	09:19	(unrelated sample)
OP96657-BS	4Q43923.D	05/03/23	19:56	09:33	Blank Spike
OP96657-LLBS	4Q43924.D	05/03/23	20:10	09:47	Blank Spike
OP96657-MB	4Q43925.D	05/03/23	20:24	10:01	Method Blank
ZZZZZZ	4Q43926.D	05/03/23	20:38	10:15	(unrelated sample)
S4Q634-CC634	4Q43927.D	05/03/23	20:53	10:30	Continuing cal 4
S4Q634-ICCB	4Q43928.D	05/03/23	21:07	10:44	Continuing Calibration Blank
S4Q634-ICCB	4Q43928.D	05/03/23	21:07	10:44	Continuing Calibration Blank
FC5371-11	4Q43929.D	05/03/23	21:21	10:58	(used for QC only; not part of job FC5652)
OP96657-MS	4Q43930.D	05/03/23	21:35	11:12	Matrix Spike
OP96657-MSD	4Q43931.D	05/03/23	21:49	11:26	Matrix Spike Duplicate
ZZZZZZ	4Q43932.D	05/03/23	22:03	11:40	(unrelated sample)
ZZZZZZ	4Q43933.D	05/03/23	22:17	11:54	(unrelated sample)
ZZZZZZ	4Q43935.D	05/03/23	22:45	12:22	(unrelated sample)
ZZZZZZ	4Q43936.D	05/03/23	22:59	12:36	(unrelated sample)
ZZZZZZ	4Q43938.D	05/03/23	23:27	13:04	(unrelated sample)
S4Q634-CC634	4Q43939.D	05/03/23	23:41	13:18	Continuing cal 4
S4Q634-ICCB	4Q43940.D	05/03/23	23:55	13:32	Continuing Calibration Blank
S4Q634-ICCB	4Q43940.D	05/03/23	23:55	13:32	Continuing Calibration Blank
ZZZZZZ	4Q43941.D	05/04/23	00:09	13:46	(unrelated sample)
FC5371-20	4Q43942.D	05/04/23	00:23	14:00	(used for QC only; not part of job FC5652)
OP96657-MS2	4Q43943.D	05/04/23	00:37	14:14	Matrix Spike
OP96657-MSD2	4Q43944.D	05/04/23	00:51	14:28	Matrix Spike Duplicate
ZZZZZZ	4Q43945.D	05/04/23	01:05	14:42	(unrelated sample)
S4Q634-ECC634	4Q43946.D	05/04/23	01:19	14:56	Ending cal 4
S4Q634-ICCB	4Q43947.D	05/04/23	01:34	15:11	Continuing Calibration Blank
S4Q634-ICCB	4Q43947.D	05/04/23	01:34	15:11	Continuing Calibration Blank

6.6.1  
6

# Ion Ratio Summary

Job Number: FC5652  
Account: AECOMCOD AECOM, INC.  
Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q634 Method: EPA DRAFT 1633

Lab Sample ID	Lab File ID	Ion Ratios				
		PFPeA	PFHxA	PFHpA	PFOA	6:2FTS
S4Q634-ICC634	4Q43887.D	0	2.9	17.8	19.3	42.1
FC5652-1	4Q43901.D			16.7	18.5	45.2
FC5652-2	4Q43902.D	0	3.2	17.5	15	45.4

6.7.1

6

# Isotope Dilution Standard Recovery Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
------------------------	------------

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6	S7	S8
FC5652-1	4Q43901.D	68	80	102	108	108	106	102	97
FC5652-2	4Q43902.D	81	100	105	108	105	100	99	80
OP96662-BS	4Q43898.D	107	111	109	108	110	107	110	112
OP96662-DUP	4Q43910.D	10* <sup>a</sup>	27	53	78	88	96	92	90
OP96662-LLBS	4Q43899.D	109	114	111	115	108	107	109	110
OP96662-MB	4Q43900.D	110	115	113	115	110	118	99	102
OP96662-MS	4Q43906.D	93	109	107	111	106	100	85	81
S4Q634-IBLK	4Q43892.D	100	102	99	103	102	97	104	106
S4Q634-ICCB	4Q43908.D	101	102	98	99	103	103	94	100

<b>Isotope Dilution Standards</b>	<b>Recovery Limits</b>
-----------------------------------	------------------------

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%

(a) Outside control limits.

# Isotope Dilution Standard Recovery Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
------------------------	------------

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S9	S10	S11	S12	S13	S14	S15	S16
FC5652-1	4Q43901.D	89	55	99	99	96	56	51	53
FC5652-2	4Q43902.D	60	29	110	99	92	44	36	35
OP96662-BS	4Q43898.D	101	84	114	105	106	45	32	37
OP96662-DUP	4Q43910.D	78	45	65	86	97	67	61	59
OP96662-LLBS	4Q43899.D	102	83	108	106	106	39	34	34
OP96662-MB	4Q43900.D	95	72	106	103	110	44	34	38
OP96662-MS	4Q43906.D	70	55	99	97	93	53	41	46
S4Q634-IBLK	4Q43892.D	104	96	104	103	100	92	91	99
S4Q634-ICCB	4Q43908.D	99	87	98	99	102	96	100	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%

6.8.1

6

# Isotope Dilution Standard Recovery Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
------------------------	------------

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S17	S18	S19	S20	S21	S22	S23	S24
FC5652-1	4Q43901.D	97	99	36	41	124	100	91	82
FC5652-2	4Q43902.D	96	98	26	26	113	95	85	99
OP96662-BS	4Q43898.D	109	106	27	29	133	122	118	104
OP96662-DUP	4Q43910.D	156* a	165* a	32	32	61	75	94	45
OP96662-LLBS	4Q43899.D	108	94	22	25	127	126	113	111
OP96662-MB	4Q43900.D	105	103	25	28	121	115	125	110
OP96662-MS	4Q43906.D	92	88	30	31	105	114	103	102
S4Q634-IBLK	4Q43892.D	103	102	80	82	113	124	121	102
S4Q634-ICCB	4Q43908.D	112	107	84	81	110	128	126	94

<b>Isotope Dilution Standards</b>	<b>Recovery Limits</b>
-----------------------------------	------------------------

S17 = d3-MeFOSAA	20-150%
S18 = d5-EtFOSAA	20-150%
S19 = d7-MeFOSE	20-150%
S20 = d9-EtFOSE	20-150%
S21 = 13C2-4:2FTS	20-180%
S22 = 13C2-6:2FTS	20-180%
S23 = 13C2-8:2FTS	20-180%
S24 = 13C3-HFPO-DA	20-150%

(a) Outside control limits.

6.8.1  
6

# Initial Calibration Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Initial Calibration Report

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

# Initial Calibration Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Initial Calibration Report

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

Page 2 of 4

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



# Initial Calibration Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA											
T EtFOSA	Avg RF	0.8263	1.0054	1.0110	1.0788	0.9993	1.1318	1.1661	1.1600	1.0473	10.776
I M3-MeFOSA											
T MeFOSA	Avg RF	0.8291	0.8709	0.9209	0.9057	0.9259	1.0268	1.0333	1.0217	0.9418	8.196
I 13C4-PFOS											
S d3-MeFOSAA	Linear	0.5858	0.6032	0.6022	0.6539	0.6144	0.6079	0.6982	0.6828	0.6311	6.608
S 13C8-PFOS	Linear	0.8673	0.9865	0.8358	0.9730	0.9142	0.9282	1.0539	0.9710	0.9412	7.418
S d5-EFOSAA	Linear	0.4472	0.4981	0.4701	0.5664	0.5250	0.5192	0.5559	0.5754	0.5197	8.850
S 13C8-FOSA	Linear	1.4476	1.5207	1.4801	1.7116	1.7515	1.5014	1.5770	1.5524	1.5678	6.968
S d7-MeFOSE	Linear	0.6942	0.7871	0.8307	0.9697	0.9467	0.6923	0.6787	0.6234	0.7778	16.563
S d3-MeFOSA	Linear	0.9149	0.9977	0.9568	1.0593	0.9573	0.9404	0.9859	1.0311	0.9804	4.890
S d9-EFOSE	Linear	1.0482	1.1457	1.1884	1.3249	1.2785	0.9836	0.9499	0.8920	1.1014	14.328
S d5-EFOSA	Linear	1.0190	1.0393	1.0002	1.0300	1.0340	1.0444	1.0900	1.0808	1.0422	2.880
I 13C3-PFBA											
S 13C4-PFBA	Linear	0.9419	0.9424	0.9441	0.9489	0.9425	0.9416	0.9399	0.9258	0.9409	0.708
I 1802-PFHxS											
S 13C2-4:2FTS	Linear	0.1148	0.1010	0.1095	0.0977	0.1033	0.1072	0.0917	0.0877	0.1016	8.935
S 13C3-PFBS	Linear	2.4774	2.3246	2.6089	2.2592	2.3778	2.2863	2.3961	2.1298	2.3575	6.150
S 13C2-6:2FTS	Linear	0.2018	0.1846	0.1959	0.1742	0.1956	0.1866	0.1682	0.1585	0.1832	8.231
S 13C3-PFHxS	Linear	1.5780	1.5174	1.6873	1.4849	1.5504	1.5703	1.5824	1.4264	1.5496	4.979
S 13C2-8:2FTS	Linear	0.3000	0.2936	0.2924	0.2737	0.2876	0.2969	0.2645	0.2787	0.2859	4.357
I 13C4-PFOA											
S 13C8-PFOA	Linear	0.8048	0.8379	0.8309	0.8093	0.8265	0.8219	0.8063	0.8294	0.8209	1.528
I 13C2-PFDA											
S 13C6-PFDA	Linear	1.0744	1.0307	1.0830	1.0667	1.0646	1.0841	1.1362	1.0251	1.0706	3.228
S 13C7-PFUnDA	Linear	1.1430	1.0538	1.1673	1.1173	1.1842	1.1414	1.0804	1.0247	1.1140	5.044
S 13C2-PFDODA	Linear	1.1355	1.1282	1.2168	1.2688	1.2865	1.2138	1.2274	1.2123	1.2112	4.621
S 13C2-PFTEA	Linear	0.9810	0.9567	1.0416	1.0420	1.0806	0.9685	0.9062	0.9075	0.9855	6.520
I 13C5-PFNA											
S 13C9-PFNA	Linear	0.8245	0.8755	0.8324	0.8282	0.8204	0.8292	0.8848	0.9024	0.8497	3.812
I 13C2-PFHxA											
S 13C5-PPeA	Linear	0.7803	0.7635	0.7594	0.7761	0.7821	0.7803	0.7656	0.7531	0.7701	1.435
S 13C5-PFHxA	Linear	1.1387	1.0991	1.0961	1.0805	1.1224	1.1056	1.0817	1.0850	1.1011	1.874
S 13C3-HPOdA	Linear	0.1628	0.1588	0.1598	0.1632	0.1644	0.1655	0.1701	0.1711	0.1645	2.681
S 13C4-PFHpA	Linear	0.6701	0.6325	0.6289	0.6410	0.6353	0.6389	0.6604	0.6415	0.6436	2.218

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

# Initial Calibration Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Initial Calibration Report

Compounds with Curve fitting not using Avg Response Factor:

Compound	Curve Fit	Curve Fit Formula	%RSE
S 13C4-PBBA	Linear	y = 0.940892 * x	
S 13C5-PFPeA	Linear	y = 0.770055 * x	
S 13C2-4:2FTS	Linear	y = 0.101613 * x	
S 13C3-PFBS	Linear	y = 2.357511 * x	
S 13C5-PFHxA	Linear	y = 1.101142 * x	
S 13C3-HFPO-DA	Linear	y = 0.164465 * x	
S 13C4-PFHpA	Linear	y = 0.643569 * x	
S 13C2-6:2FTS	Linear	y = 0.183170 * x	
S 13C8-PFOA	Linear	y = 0.820904 * x	
S 13C3-PFHxS	Linear	y = 1.549646 * x	
S 13C9-PFNA	Linear	y = 0.849685 * x	
S 13C2-8:2FTS	Linear	y = 0.285923 * x	
S 13C6-PEDA	Linear	y = 1.070585 * x	
S d3-MeFOSAA	Linear	y = 0.631061 * x	
S 13C8-PFOS	Linear	y = 0.941239 * x	
S d5-EFOSAA	Linear	y = 0.519656 * x	
S 13C7-PFUInDA	Linear	y = 1.114017 * x	
S 13C2-PFDODA	Linear	y = 1.211165 * x	
S 13C8-FOSA	Linear	y = 1.567785 * x	
S 13C2-PFTeDA	Linear	y = 0.985520 * x	
S d7-MeFOSE	Linear	y = 0.7777842 * x	
S d3-MeFOSA	Linear	y = 0.980410 * x	
S d9-EFOSE	Linear	y = 1.101380 * x	
S d5-EFOSA	Linear	y = 1.042215 * x	

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

**Initial Calibration Verification**

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Continuing Calibration Report

Batch: D:\MassHunter\Data\050323\_1633\_S4Q634\s4q634.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43884.d  
 2:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43885.d  
 3:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43886.d  
 4:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43887.d  
 5:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43888.d  
 6:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43889.d  
 7:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43890.d  
 8:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43891.d

Data File: 4Q43894  
 Type : QC  
 Level : 20

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

# Initial Calibration Verification

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

CC Criteria: +/- 30%

**Initial Calibration Verification**

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

## Continuing Calibration Report

Batch: D:\MassHunter\Data\050323\_1633\_S4Q634\s4q634.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43884.d  
 2:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43885.d  
 3:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43886.d  
 4:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43887.d  
 5:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43888.d  
 6:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43889.d  
 7:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43890.d  
 8:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43891.d

Data File: 4Q43895  
 Type : QC  
 Level : 4

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

# Initial Calibration Verification

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

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

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

CC Criteria: +/- 30%

## Continuing Calibration Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-CC634  
 Lab FileID: 4Q43897.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\050323\_1633\_S4Q634\s4q634.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43884.d  
 2:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43885.d  
 3:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43886.d  
 4:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43887.d  
 5:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43888.d  
 6:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43889.d  
 7:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43890.d  
 8:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43891.d

Data File: 4Q43897  
 Type : QC  
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.992	19.8	119.8
13C2-6:2FTS	5.000	5.268	5.4	105.4
13C2-8:2FTS	5.000	5.562	11.2	111.2
13C2-PFDoDA	1.250	1.198	-4.2	95.8
13C2-PFTeDA	1.250	1.092	-12.6	87.4
13C3-PFBS	2.500	2.673	6.9	106.9
13C3-PFHxS	2.500	2.447	-2.1	97.9
13C4-PFBA	10.000	9.982	-0.2	99.8
13C4-PFHpA	2.500	2.558	2.3	102.3
13C5-PFHxA	2.500	2.484	-0.7	99.3
13C5-PFPeA	5.000	5.251	5.0	105.0
13C6-PFDA	1.250	1.281	2.5	102.5
13C7-PFUnDA	1.250	1.328	6.3	106.3
13C8-FOSA	2.500	2.362	-5.5	94.5
13C8-PFOA	2.500	2.542	1.7	101.7
13C8-PFOS	2.500	2.469	-1.2	98.8
13C9-PFNA	1.250	1.281	2.5	102.5
4:2FTS	0.750	0.718	-4.3	95.7
6:2FTS	0.760	0.715	-6.0	94.0
8:2FTS	0.768	0.832	8.4	108.4
d3-MeFOSAA	5.000	5.211	4.2	104.2
EtFOSAA	0.200	0.216	8.2	108.2
FOSA	0.200	0.201	0.3	100.3
MeFOSAA	0.200	0.190	-4.9	95.1
PFBA	0.800	0.751	-6.1	93.9
PFBS	0.177	0.162	-8.4	91.6
PFDA	0.200	0.220	9.9	109.9
PFDoDA	0.200	0.207	3.5	103.5
PFDS	0.193	0.178	-7.5	92.5
PFHpA	0.200	0.183	-8.7	91.3
PFHpS	0.191	0.207	8.1	108.1
PFHxA	0.200	0.200	0.2	100.2
PFHxS	0.183	0.204	11.4	111.4
PFNA	0.200	0.194	-3.0	97.0
PFNS	0.192	0.212	10.2	110.2
PFOA	0.200	0.152	-23.8	76.2
PFOS	0.186	0.201	8.2	108.2

# Continuing Calibration Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-CC634  
 Lab FileID: 4Q43897.D

PFPeA	0.400	0.360	-10.1	89.9
PFPeS	0.188	0.209	11.3	111.3
PFTeDA	0.200	0.203	1.6	101.6
PFTrDA	0.200	0.179	-10.7	89.3
PFUnDA	0.200	0.177	-11.4	88.6
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.378	0.374	-1.0	99.0
13C3-HFPO-DA	10.000	9.994	-0.1	99.9
9C1-PF3ONS	0.367	0.358	-2.5	97.5
ADONA	0.378	0.339	-10.4	89.6
HFPO-DA	0.400	0.431	7.8	107.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.924	-7.5	92.5
5:3FTCA	4.992	4.715	-5.5	94.5
7:3FTCA	4.992	4.649	-6.9	93.1
d3-MeFOSA	2.500	2.261	-9.6	90.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.397	-0.7	99.3
EtFOSE	1.000	0.871	-12.9	87.1
MeFOSA	0.400	0.380	-5.0	95.0
MeFOSE	1.000	0.955	-4.5	95.5
PFDoDS	0.194	0.172	-11.3	88.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.496	9.9	109.9
d7-MeFOSE	25.000	19.728	-21.1	78.9
d9-EtFOSE	25.000	20.030	-19.9	80.1
d5-EtFOSA	2.500	2.456	-1.8	98.2
NFDHA	0.400	0.360	-10.0	90.0
PFMBA	0.400	0.377	-5.6	94.4
PFMPA	0.400	0.381	-4.7	95.3
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.341	-4.2	95.8

CC Criteria: +/- 30%



**Continuing Calibration Summary**

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-CC634  
 Lab FileID: 4Q43907.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\050323\_1633\_S4Q634\s4q634.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43884.d  
 2:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43885.d  
 3:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43886.d  
 4:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43887.d  
 5:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43888.d  
 6:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43889.d  
 7:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43890.d  
 8:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43891.d

Data File: 4Q43907  
 Type : QC  
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.925	18.5	118.5
13C2-6:2FTS	5.000	5.733	14.7	114.7
13C2-8:2FTS	5.000	6.309	26.2	126.2
13C2-PFDoDA	1.250	1.255	0.4	100.4
13C2-PFTeDA	1.250	1.073	-14.2	85.8
13C3-PFBS	2.500	2.606	4.2	104.2
13C3-PFHxS	2.500	2.628	5.1	105.1
13C4-PFBA	10.000	9.909	-0.9	99.1
13C4-PFHpA	2.500	2.583	3.3	103.3
13C5-PFHxA	2.500	2.507	0.3	100.3
13C5-PFPeA	5.000	5.180	3.6	103.6
13C6-PFDA	1.250	1.207	-3.4	96.6
13C7-PFUnDA	1.250	1.244	-0.5	99.5
13C8-FOSA	2.500	2.284	-8.6	91.4
13C8-PFOA	2.500	2.527	1.1	101.1
13C8-PFOS	2.500	2.479	-0.8	99.2
13C9-PFNA	1.250	1.290	3.2	103.2
4:2FTS	9.375	9.213	-1.7	98.3
6:2FTS	9.500	10.369	9.1	109.1
8:2FTS	9.600	9.884	3.0	103.0
d3-MeFOSAA	5.000	5.626	12.5	112.5
EtFOSAA	2.500	2.455	-1.8	98.2
FOSA	2.500	2.523	0.9	100.9
MeFOSAA	2.500	2.367	-5.3	94.7
PFBA	10.000	9.819	-1.8	98.2
PFBS	2.218	2.098	-5.4	94.6
PFDA	2.500	2.566	2.6	102.6
PFDoDA	2.500	2.330	-6.8	93.2
PFDS	2.413	2.248	-6.8	93.2
PFHpA	2.500	2.475	-1.0	99.0
PFHpS	2.383	2.440	2.4	102.4
PFHxA	2.500	2.442	-2.3	97.7
PFHxS	2.285	2.137	-6.5	93.5
PFNA	2.500	2.260	-9.6	90.4
PFNS	2.405	2.225	-7.5	92.5
PFOA	2.500	2.336	-6.6	93.4
PFOS	2.320	2.278	-1.8	98.2

# Continuing Calibration Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-CC634  
 Lab FileID: 4Q43907.D

PFPeA	5.000	4.864	-2.7	97.3
PFPeS	2.353	2.155	-8.4	91.6
PFTeDA	2.500	2.550	2.0	102.0
PFTrDA	2.500	2.294	-8.3	91.7
PFUnDA	2.500	2.405	-3.8	96.2
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.991	5.6	105.6
13C3-HFPO-DA	10.000	9.505	-5.0	95.0
9C1-PF3ONS	4.675	4.938	5.6	105.6
ADONA	4.725	5.020	6.2	106.2
HFPO-DA	5.000	4.814	-3.7	96.3
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.585	-7.2	92.8
5:3FTCA	62.400	62.557	0.3	100.3
7:3FTCA	62.400	65.705	5.3	105.3
d3-MeFOSA	2.500	2.186	-12.6	87.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.872	-2.6	97.4
EtFOSE	12.500	11.749	-6.0	94.0
MeFOSA	5.000	5.382	7.6	107.6
MeFOSE	12.500	11.574	-7.4	92.6
PFDoDS	2.425	2.331	-3.9	96.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.467	9.3	109.3
d7-MeFOSE	25.000	19.511	-22.0	78.0
d9-EtFOSE	25.000	19.571	-21.7	78.3
d5-EtFOSA	2.500	2.444	-2.2	97.8
NFDHA	5.000	5.069	1.4	101.4
PFMBA	5.000	4.707	-5.9	94.1
PFMPA	5.000	4.803	-3.9	96.1
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.273	-4.0	96.0

CC Criteria: +/- 30%

**Continuing Calibration Summary**

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-CC634  
 Lab FileID: 4Q43917.D

## Continuing Calibration Report

Batch: D:\MassHunter\Data\050323\_1633\_S4Q634\s4q634.batch.bin

## Level ID: Calibration File

1:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43884.d  
 2:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43885.d  
 3:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43886.d  
 4:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43887.d  
 5:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43888.d  
 6:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43889.d  
 7:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43890.d  
 8:D:\MassHunter\Data\050323\_1633\_S4Q634\4Q43891.d

Data File: 4Q43917  
 Type : QC  
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.642	12.8	112.8
13C2-6:2FTS	5.000	6.665	# 33.3	133.3
13C2-8:2FTS	5.000	6.808	# 36.2	136.2
13C2-PFDoDA	1.250	1.350	8.0	108.0
13C2-PFTeDA	1.250	1.134	-9.3	90.7
13C3-PFBS	2.500	2.518	0.7	100.7
13C3-PFHxS	2.500	2.581	3.2	103.2
13C4-PFBA	10.000	10.237	2.4	102.4
13C4-PFHpA	2.500	2.522	0.9	100.9
13C5-PFHxA	2.500	2.570	2.8	102.8
13C5-PFPeA	5.000	5.058	1.2	101.2
13C6-PFDA	1.250	1.261	0.9	100.9
13C7-PFUnDA	1.250	1.326	6.1	106.1
13C8-FOSA	2.500	2.341	-6.4	93.6
13C8-PFOA	2.500	2.464	-1.4	98.6
13C8-PFOS	2.500	2.381	-4.8	95.2
13C9-PFNA	1.250	1.313	5.0	105.0
4:2FTS	9.375	10.271	9.6	109.6
6:2FTS	9.500	9.507	0.1	100.1
8:2FTS	9.600	10.100	5.2	105.2
d3-MeFOSAA	5.000	5.546	10.9	110.9
EtFOSAA	2.500	2.372	-5.1	94.9
FOSA	2.500	2.415	-3.4	96.6
MeFOSAA	2.500	2.446	-2.1	97.9
PFBA	10.000	9.716	-2.8	97.2
PFBS	2.218	2.171	-2.1	97.9
PFDA	2.500	2.549	2.0	102.0
PFDoDA	2.500	2.313	-7.5	92.5
PFDS	2.413	2.337	-3.2	96.8
PFHpA	2.500	2.484	-0.6	99.4
PFHpS	2.383	2.418	1.5	101.5
PFHxA	2.500	2.335	-6.6	93.4
PFHxS	2.285	2.307	1.0	101.0
PFNA	2.500	2.308	-7.7	92.3
PFNS	2.405	2.353	-2.1	97.9
PFOA	2.500	2.543	1.7	101.7
PFOS	2.320	2.357	1.6	101.6

# Continuing Calibration Summary

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Sample: S4Q634-CC634  
 Lab FileID: 4Q43917.D

PFPeA	5.000	5.033	0.7	100.7
PFPeS	2.353	2.318	-1.5	98.5
PFTeDA	2.500	2.546	1.8	101.8
PFTTrDA	2.500	2.282	-8.7	91.3
PFUnDA	2.500	2.611	4.4	104.4
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	5.042	6.7	106.7
13C3-HFPO-DA	10.000	9.348	-6.5	93.5
9C1-PF3ONS	4.675	5.161	10.4	110.4
ADONA	4.725	5.157	9.2	109.2
HFPO-DA	5.000	4.950	-1.0	99.0
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	12.044	-3.5	96.5
5:3FTCA	62.400	60.995	-2.3	97.7
7:3FTCA	62.400	62.834	0.7	100.7
d3-MeFOSA	2.500	2.144	-14.2	85.8
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	5.032	0.6	100.6
EtFOSE	12.500	12.265	-1.9	98.1
MeFOSA	5.000	5.410	8.2	108.2
MeFOSE	12.500	11.755	-6.0	94.0
PFDoDS	2.425	2.324	-4.2	95.8
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.567	11.3	111.3
d7-MeFOSE	25.000	20.039	-19.8	80.2
d9-EtFOSE	25.000	19.307	-22.8	77.2
d5-EtFOSA	2.500	2.326	-7.0	93.0
NFDHA	5.000	4.586	-8.3	91.7
PFMBA	5.000	4.862	-2.8	97.2
PFMPA	5.000	4.943	-1.1	98.9
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.256	-4.4	95.6

CC Criteria: +/- 30%

## Run Sequence Report

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q634	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q		
Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q634-RT	4Q43881.D	05/03/23 10:23	n/a	Retention Time Marker
S4Q634-RT	4Q43882.D	05/03/23 10:37	n/a	Retention Time Marker
S4Q634-IC634	4Q43883.D	05/03/23 10:58	n/a	Mass Calibration Verification
S4Q634-IC634	4Q43884.D	05/03/23 11:12	n/a	Initial cal 1
S4Q634-IC634	4Q43885.D	05/03/23 11:26	n/a	Initial cal 2
S4Q634-IC634	4Q43886.D	05/03/23 11:40	n/a	Initial cal 3
S4Q634-ICC634	4Q43887.D	05/03/23 11:54	n/a	Initial cal 4
S4Q634-IC634	4Q43888.D	05/03/23 12:08	n/a	Initial cal 5
S4Q634-IC634	4Q43889.D	05/03/23 12:22	n/a	Initial cal 6
S4Q634-IC634	4Q43890.D	05/03/23 12:36	n/a	Initial cal 7
S4Q634-IC634	4Q43891.D	05/03/23 12:50	n/a	Initial cal 8
S4Q634-IBLK	4Q43892.D	05/03/23 13:04	n/a	Instrument Blank
S4Q634-IBLK	4Q43892.D	05/03/23 13:04	n/a	Instrument Blank
S4Q634-ICV634	4Q43894.D	05/03/23 13:20	n/a	Initial cal verification 20
S4Q634-ICV634	4Q43895.D	05/03/23 13:35	n/a	Initial cal verification 4
S4Q634-CC634	4Q43897.D	05/03/23 13:51	n/a	Continuing cal 1.0LL
OP96662-BS	4Q43898.D	05/03/23 14:05	OP96662	Blank Spike
OP96662-LLBS	4Q43899.D	05/03/23 14:19	OP96662	Blank Spike
OP96662-MB	4Q43900.D	05/03/23 14:33	OP96662	Method Blank
FC5652-1	4Q43901.D	05/03/23 14:47	OP96662	AF-RHMW02-WGN01LF-2304W4
FC5652-2	4Q43902.D	05/03/23 15:01	OP96662	AF-RHMW03-WGN01LF-2304W4
ZZZZZZ	4Q43903.D	05/03/23 15:15	OP96662	(unrelated sample)
ZZZZZZ	4Q43904.D	05/03/23 15:29	OP96662	(unrelated sample)
FC5685-3	4Q43905.D	05/03/23 15:43	OP96662	(used for QC only; not part of job FC5652)
OP96662-MS	4Q43906.D	05/03/23 15:57	OP96662	Matrix Spike
S4Q634-CC634	4Q43907.D	05/03/23 16:11	n/a	Continuing cal 4
S4Q634-ICCB	4Q43908.D	05/03/23 16:25	n/a	Continuing Calibration Blank
FC5685-4	4Q43909.D	05/03/23 16:39	OP96662	(used for QC only; not part of job FC5652)
OP96662-DUP	4Q43910.D	05/03/23 16:54	OP96662	Duplicate
ZZZZZZ	4Q43911.D	05/03/23 17:08	OP96662	(unrelated sample)
OP96659-BS	4Q43912.D	05/03/23 17:22	OP96659	Blank Spike
OP96659-LLBS	4Q43913.D	05/03/23 17:36	OP96659	Blank Spike
OP96659-MB	4Q43914.D	05/03/23 17:50	OP96659	Method Blank
ZZZZZZ	4Q43916.D	05/03/23 18:18	OP96659	(unrelated sample)
S4Q634-CC634	4Q43917.D	05/03/23 18:32	n/a	Continuing cal 4
S4Q634-ICCB	4Q43918.D	05/03/23 18:46	n/a	Continuing Calibration Blank
S4Q634-ICCB	4Q43918.D	05/03/23 18:46	n/a	Continuing Calibration Blank
ZZZZZZ	4Q43919.D	05/03/23 19:00	OP96659	(unrelated sample)
ZZZZZZ	4Q43920.D	05/03/23 19:14	OP96659	(unrelated sample)
ZZZZZZ	4Q43921.D	05/03/23 19:28	OP96659	(unrelated sample)
ZZZZZZ	4Q43922.D	05/03/23 19:42	OP96659	(unrelated sample)
OP96657-BS	4Q43923.D	05/03/23 19:56	OP96657	Blank Spike
OP96657-LLBS	4Q43924.D	05/03/23 20:10	OP96657	Blank Spike
OP96657-MB	4Q43925.D	05/03/23 20:24	OP96657	Method Blank
ZZZZZZ	4Q43926.D	05/03/23 20:38	OP96657	(unrelated sample)
S4Q634-CC634	4Q43927.D	05/03/23 20:53	n/a	Continuing cal 4

# Run Sequence Report

Job Number: FC5652  
 Account: AECOMCOD AECOM, INC.  
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S4Q634	Method: EPA DRAFT 1633	Instrument ID: GCMS4Q
----------------	------------------------	-----------------------

Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S4Q634-ICCB	4Q43928.D	05/03/23 21:07	n/a	Continuing Calibration Blank
S4Q634-ICCB	4Q43928.D	05/03/23 21:07	n/a	Continuing Calibration Blank
FC5371-11	4Q43929.D	05/03/23 21:21	OP96657	(used for QC only; not part of job FC5652)
OP96657-MS	4Q43930.D	05/03/23 21:35	OP96657	Matrix Spike
OP96657-MSD	4Q43931.D	05/03/23 21:49	OP96657	Matrix Spike Duplicate
ZZZZZZ	4Q43932.D	05/03/23 22:03	OP96657	(unrelated sample)
ZZZZZZ	4Q43933.D	05/03/23 22:17	OP96657	(unrelated sample)
ZZZZZZ	4Q43935.D	05/03/23 22:45	OP96657	(unrelated sample)
ZZZZZZ	4Q43936.D	05/03/23 22:59	OP96657	(unrelated sample)
ZZZZZZ	4Q43938.D	05/03/23 23:27	OP96657	(unrelated sample)
S4Q634-CC634	4Q43939.D	05/03/23 23:41	n/a	Continuing cal 4
S4Q634-ICCB	4Q43940.D	05/03/23 23:55	n/a	Continuing Calibration Blank
S4Q634-ICCB	4Q43940.D	05/03/23 23:55	n/a	Continuing Calibration Blank
ZZZZZZ	4Q43941.D	05/04/23 00:09	OP96657	(unrelated sample)
FC5371-20	4Q43942.D	05/04/23 00:23	OP96657	(used for QC only; not part of job FC5652)
OP96657-MS2	4Q43943.D	05/04/23 00:37	OP96657	Matrix Spike
OP96657-MSD2	4Q43944.D	05/04/23 00:51	OP96657	Matrix Spike Duplicate
ZZZZZZ	4Q43945.D	05/04/23 01:05	OP96657	(unrelated sample)
S4Q634-ECC634	4Q43946.D	05/04/23 01:19	n/a	Ending cal 4
S4Q634-ICCB	4Q43947.D	05/04/23 01:34	n/a	Continuing Calibration Blank
S4Q634-ICCB	4Q43947.D	05/04/23 01:34	n/a	Continuing Calibration Blank

6.10.1

6

**MS Semi-volatiles**

---

**Raw Data**

---

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43901.d  
Operator : natashag  
Acq. Method : 1633full\_4Q.m  
Acq. Date-Time : 5/3/2023 2:47:29 PM  
Sample Name : fc5652-1  
Vial : P1-B8  
DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
Batch Name : s4q634.batch.bin  
Sample Information : OP96662,S4Q634,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.911	216.8 -> 171.9	47347	10.00 µg/L	-0.012
M5-PFPeA	4.362	268.3 -> 223.0	50619	5.00 µg/L	0.000
M5-PFHxA	5.535	318.0 -> 273.0	46491	2.50 µg/L	0.000
M4-PFHpA	6.467	367.1 -> 322.0	28828	2.50 µg/L	0.000
M8-PFOA	7.136	421.1 -> 376.0	44687	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	21058	1.25 µg/L	0.013
M6-PFDA	8.191	519.1 -> 474.1	18234	1.25 µg/L	0.013
M7-PFUnDA	8.660	570.0 -> 525.1	18030	1.25 µg/L	0.013
M2-PFDoDA	9.118	615.1 -> 570.0	18025	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	9124	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	8877	2.50 µg/L	0.012
M3-PFBS	5.439	302.1 -> 79.9	10690	2.50 µg/L	0.012
M3-PFHxS	7.242	402.1 -> 79.9	6998	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	9168	2.50 µg/L	0.012
M2-4:2FTS	5.222	329.1 -> 80.9	1148	5.00 µg/L	0.000
M2-6:2FTS	6.911	429.1 -> 80.9	1678	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	2386	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	12428	5.00 µg/L	0.012
M3-HFPO-DA	5.902	286.9 -> 168.9	22315	10.00 µg/L	0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	10446	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	28719	25.00 µg/L	0.012
M9-EtFOSE	11.256	639.2 -> 58.9	45448	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	5587	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	5073	2.50 µg/L	0.012
13C4-PFOS	8.342	502.8 -> 79.9	10189	2.50 µg/L	0.012
13C3-PFBA	2.916	216.0 -> 172.0	36997	5.00 µg/L	-0.013
18O2-PFHxS	7.241	403.0 -> 83.9	4567	2.50 µg/L	0.012
13C4-PFOA	7.136	417.1 -> 372.0	50289	2.50 µg/L	0.012
13C2-PFDA	8.191	515.1 -> 470.1	16687	1.25 µg/L	0.013
13C5-PFNA	7.697	468.0 -> 423.0	23471	1.25 µg/L	0.012
13C2-PFHxA	5.536	315.1 -> 270.0	41325	2.50 µg/L	0.000

**System Monitoring Compounds**

13C2-4:2FTS	5.222	329.1 -> 80.9	1148	6.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 123.7%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1678	5.02 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C2-8:2FTS	7.978	529.1 -> 80.9	2386	4.57 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 91.4%		
13C2-PFDoDA	9.118	615.1 -> 570.0	18025	1.11 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.2%		
13C2-PFTeDA	9.911	715.2 -> 670.0	9124	0.69 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 55.5%		
13C3-PFBS	5.439	302.1 -> 79.9	10690	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C3-PFHxS	7.242	402.1 -> 79.9	6998	2.47 µg/L	0.012

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	2.911	216.8 -> 171.9	47347	6.80	µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 68.0%		
13C4-PFHpA	6.467	367.1 -> 322.0	28828	2.71	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.4%		
13C5-PFHxA	5.535	318.0 -> 273.0	46491	2.55	µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%		
13C5-PFPeA	4.362	268.3 -> 223.0	50619	3.98	µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 79.5%		
13C6-PFDA	8.191	519.1 -> 474.1	18234	1.28	µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.1%		
13C7-PFUnDA	8.660	570.0 -> 525.1	18030	1.21	µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%		
13C8-FOSA	9.783	506.1 -> 77.8	8877	1.39	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 55.6%		
13C8-PFOA	7.136	421.1 -> 376.0	44687	2.71	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.2%		
13C8-PFOS	8.341	507.1 -> 79.9	9168	2.39	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.6%		
13C9-PFNA	7.684	472.1 -> 427.0	21058	1.32	µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.6%		
d3-MeFOSAA	8.249	573.2 -> 419.0	12428	4.83	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.6%		
13C3-HFPO-DA	5.902	286.9 -> 168.9	22315	8.21	µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 82.1%		
d3-MeFOSA	11.076	515.0 -> 219.0	5073	1.27	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 50.8%		
d5-EtFOSAA	8.458	589.2 -> 419.0	10446	4.93	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.6%		
d7-MeFOSE	10.959	623.2 -> 58.9	28719	9.06	µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 36.2%		
d9-EtFOSE	11.256	639.2 -> 58.9	45448	10.13	µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 40.5%		
d5-EtFOSA	11.360	531.1 -> 219.0	5587	1.32	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 52.6%		

Target Compounds

QValue

4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.		
6:2FTS	6.911	427.1 -> 407.0 427.1 -> 80.9	941 426	0.58	µg/L	95
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.		
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.		
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.		
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.		
PFBA	3.171	212.8 -> 168.9	0	µg/L	m	1
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.		
PFDA	-	512.9 -> 469.0 512.9 -> 219.0	-	N.D.		
PFDODA	9.106	613.1 -> 569.0 613.1 -> 319.0	0 0	µg/L	m	1
PFDS	-	599.0 -> 79.9	-	N.D.		

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.468	599.0 -> 98.8				
		363.1 -> 319.0	1074	0.06	µg/L	98
PFHpS	-	363.1 -> 169.0	180			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.538	449.0 -> 98.9				
		313.0 -> 269.0	0		µg/L m	1
PFHxS	-	313.0 -> 118.9	0			
		398.7 -> 79.9	-	N.D.		
PFNA	-	398.7 -> 98.9				
		463.0 -> 419.0	-	N.D.		
PFNS	-	463.0 -> 219.0				
		548.8 -> 79.9	-	N.D.		
PFOA	7.150	548.8 -> 98.9				
		413.0 -> 369.0	1623	0.06	µg/L m	98
PFOS	-	413.0 -> 169.0	301			
		498.9 -> 79.9	-	N.D.		
PFPeA	4.414	498.9 -> 98.8				
		263.0 -> 219.0	0		µg/L m	1
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	3.917	241.0 -> 177.0	0		µg/L m	1
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.644	630.0 -> 58.9	0		µg/L m	1
		511.9 -> 219.0	-	N.D.		
MeFOSA	-	511.9 -> 169.0				
		616.1 -> 58.9	-	N.D.		
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		
PFMPA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				
PFEESA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9	-	N.D.		

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

7.1.1  
7

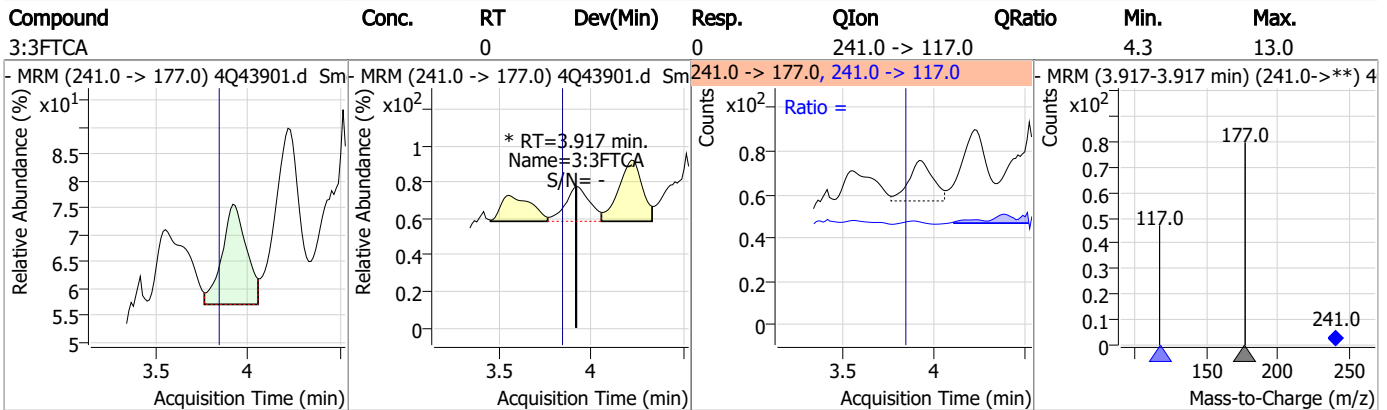
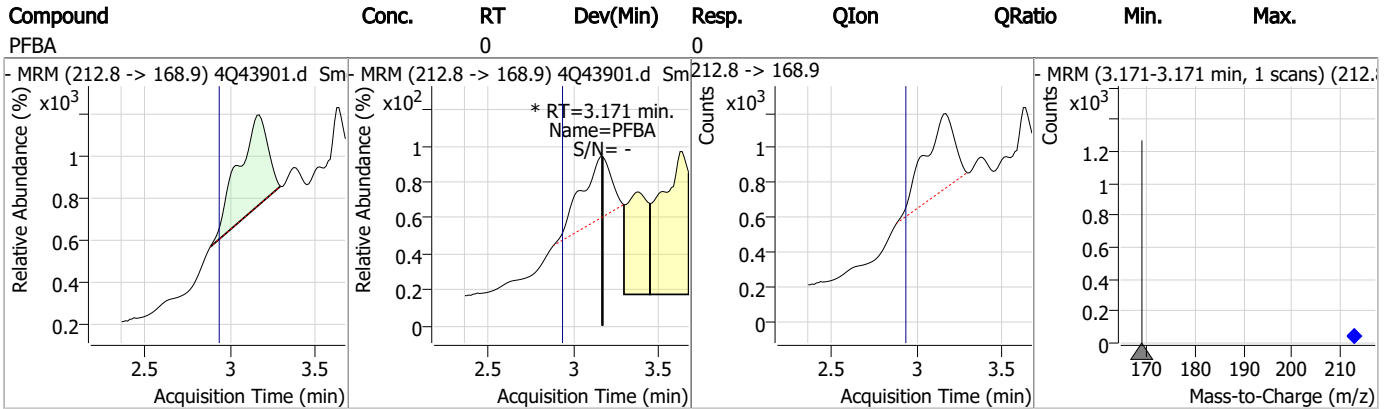
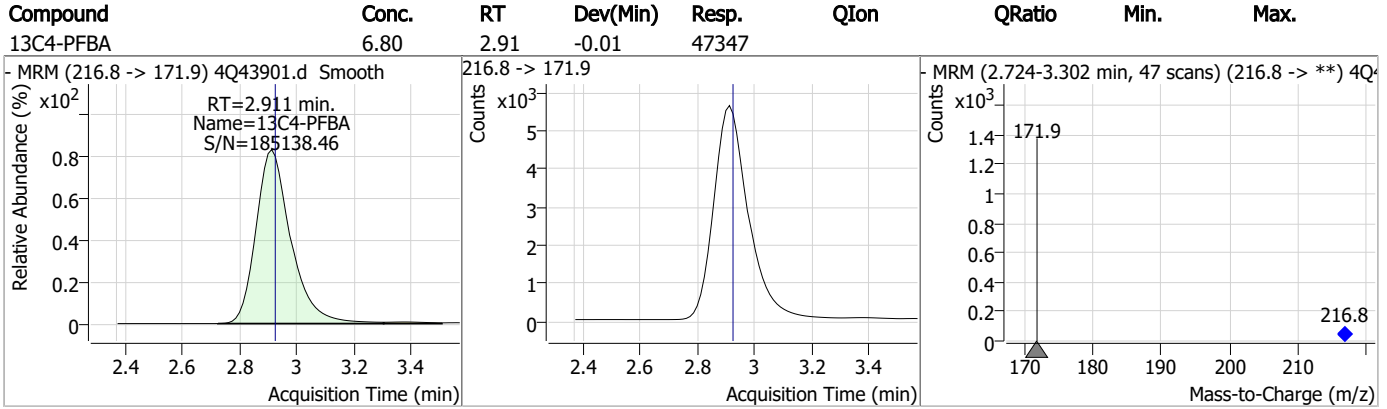
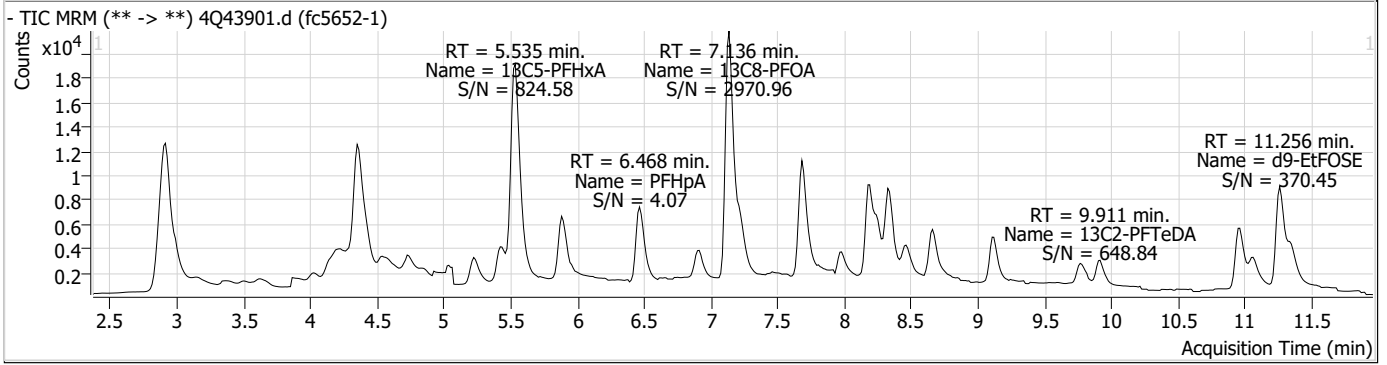
### Perfluorinated Compounds by LC/MS/MS

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

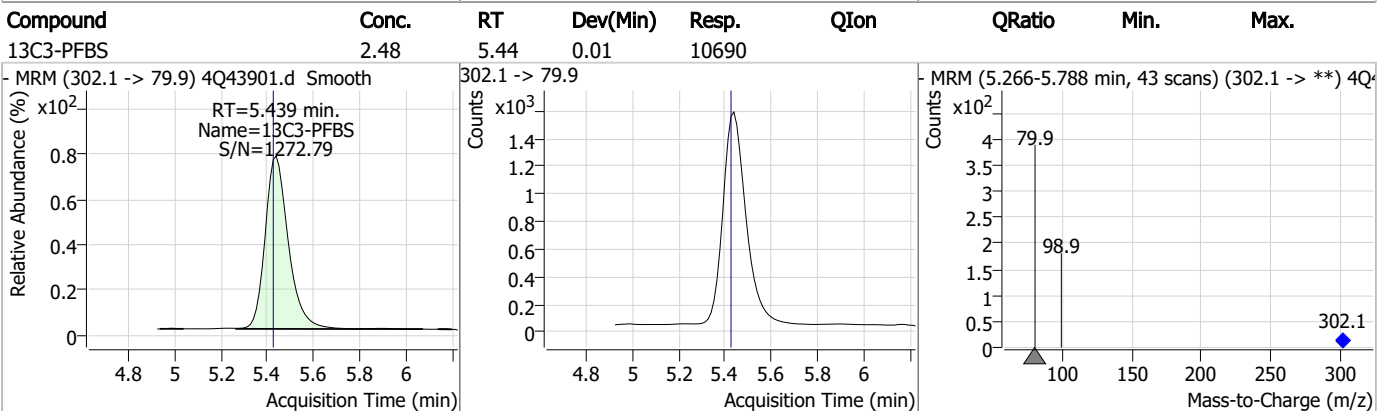
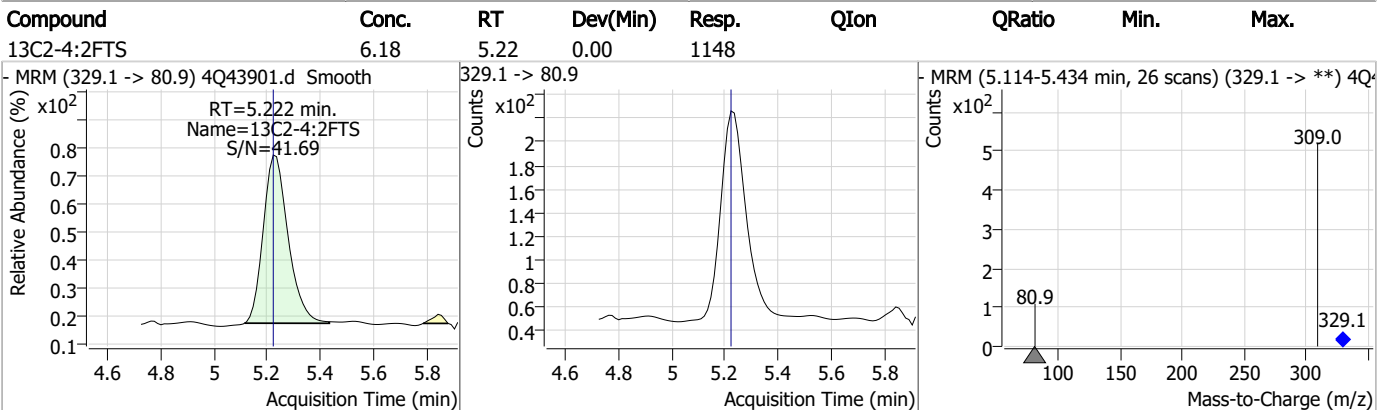
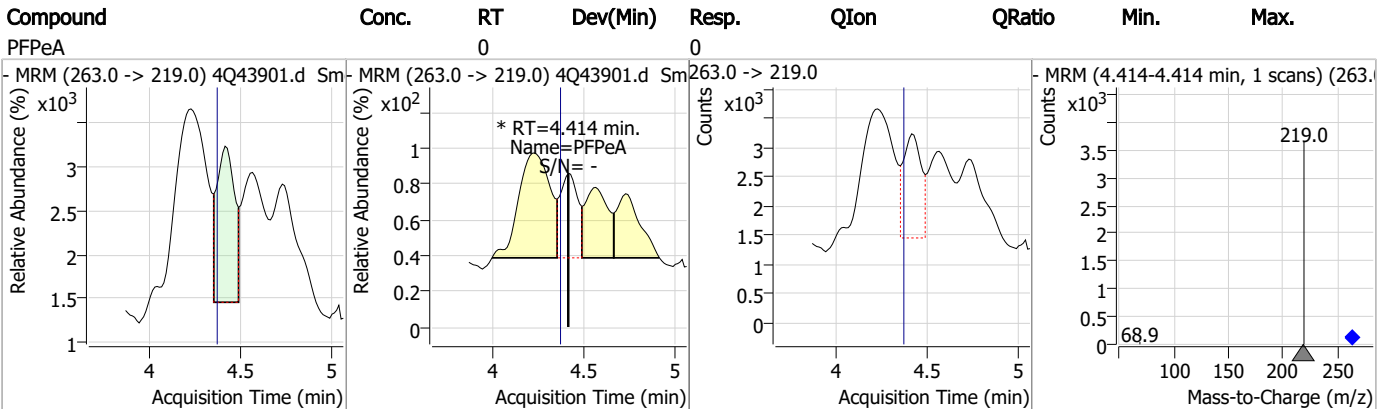
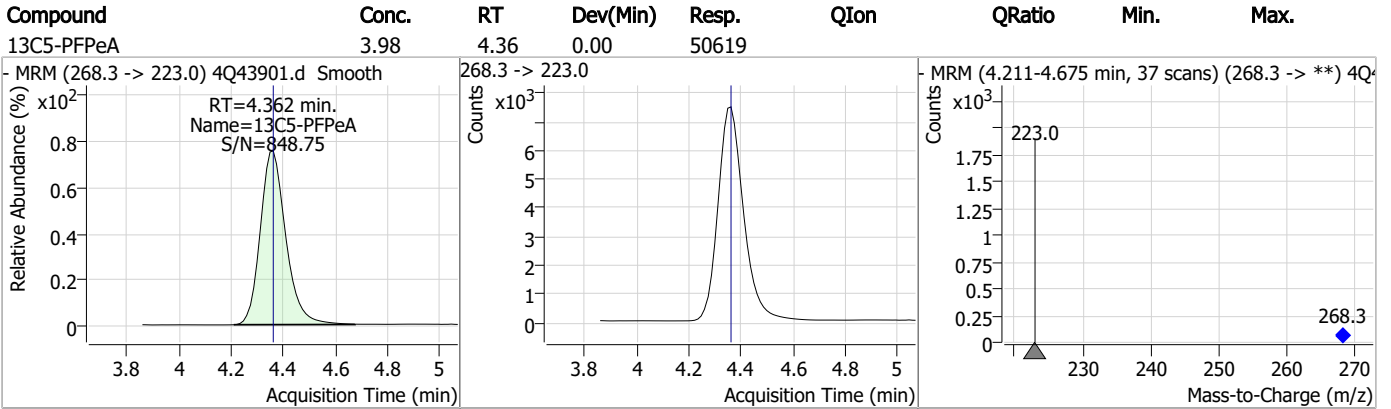
7.1.1  
7



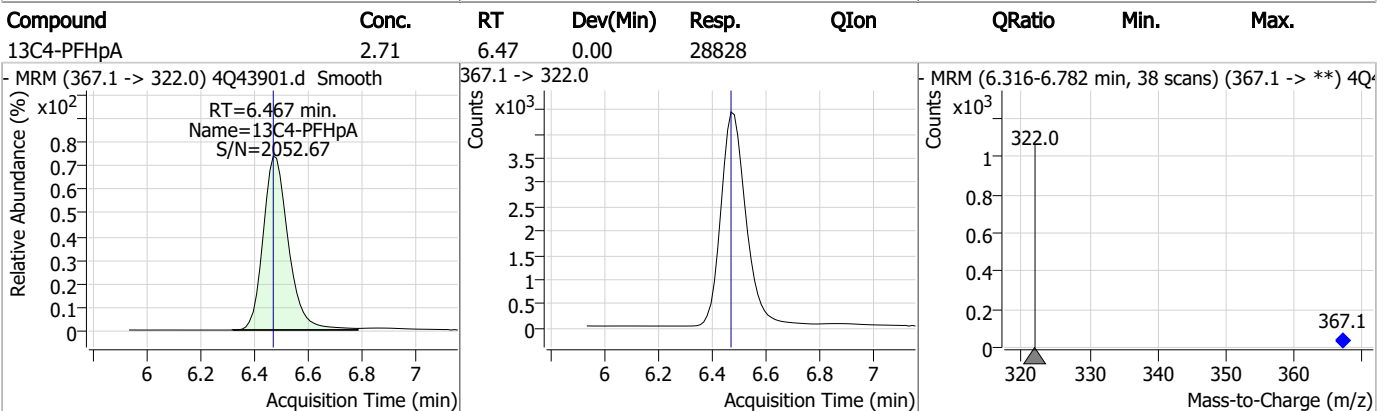
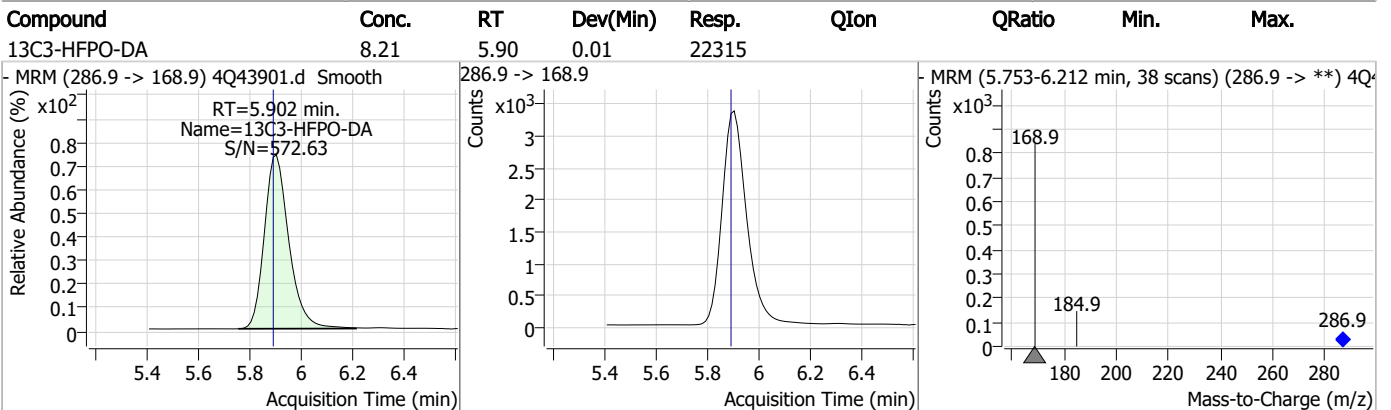
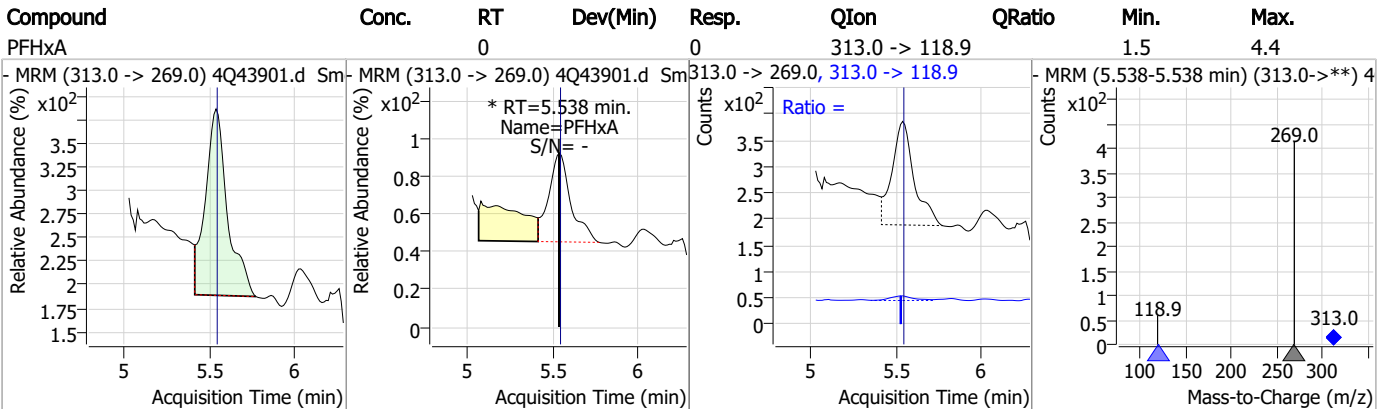
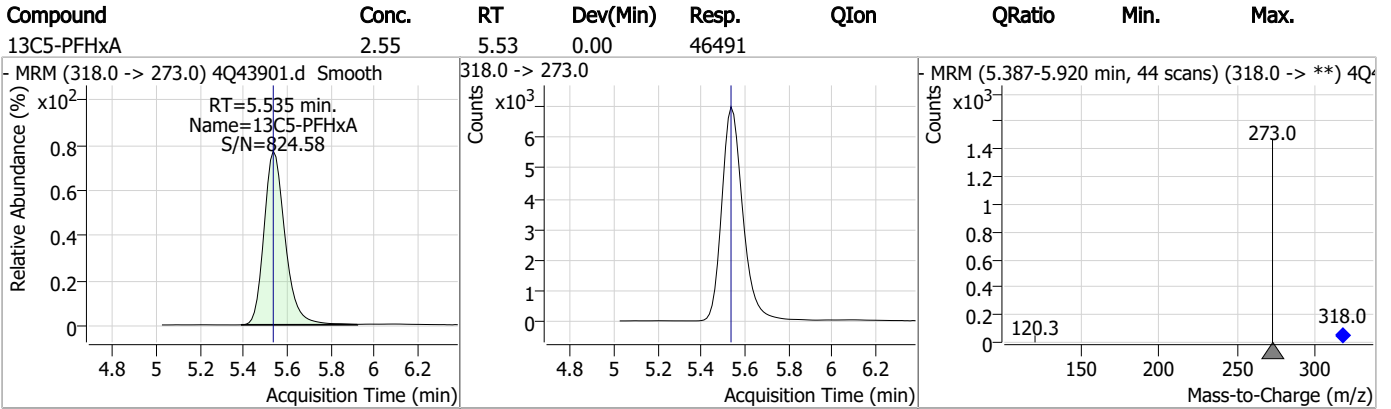
### Perfluorinated Compounds by LC/MS/MS



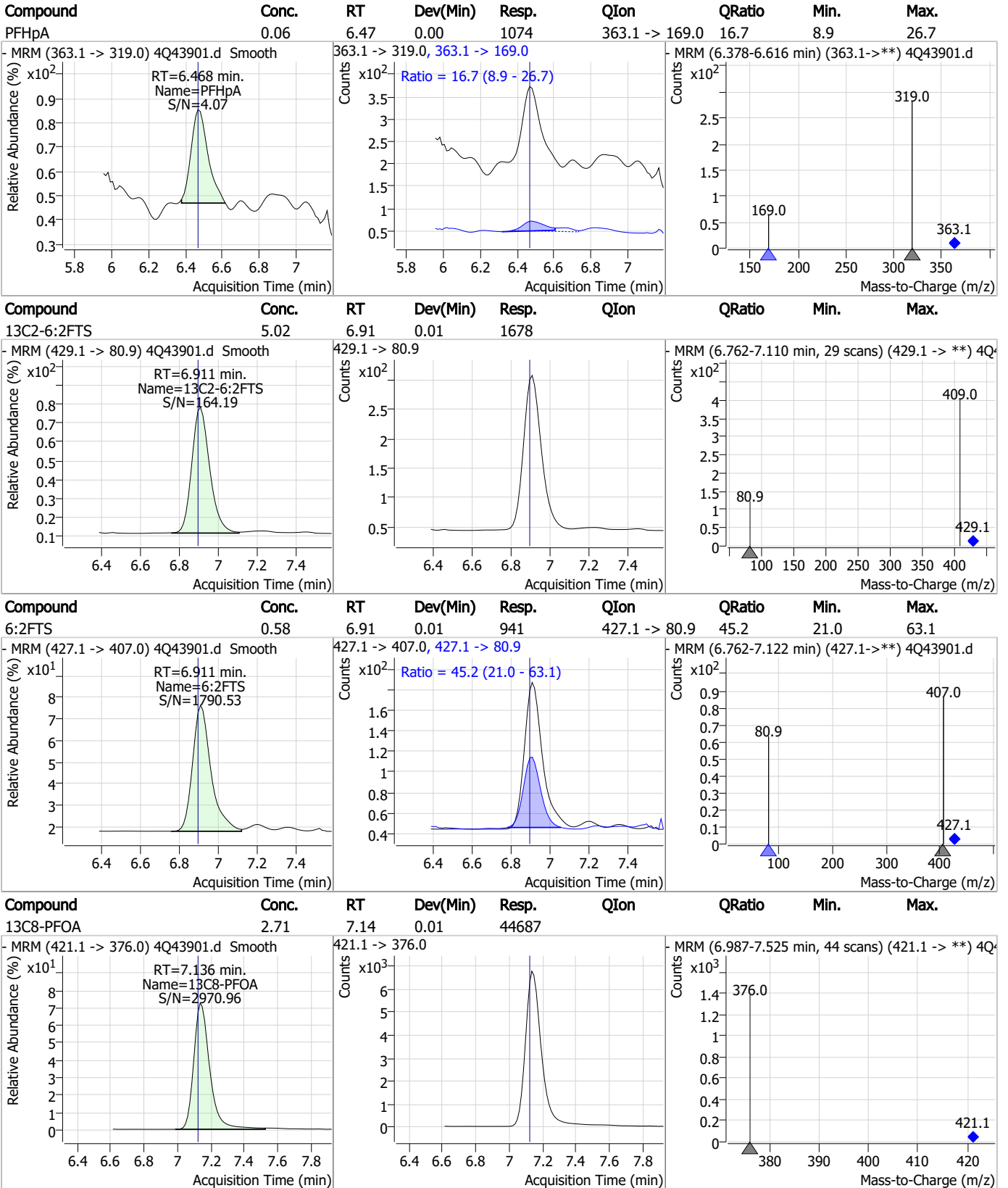
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

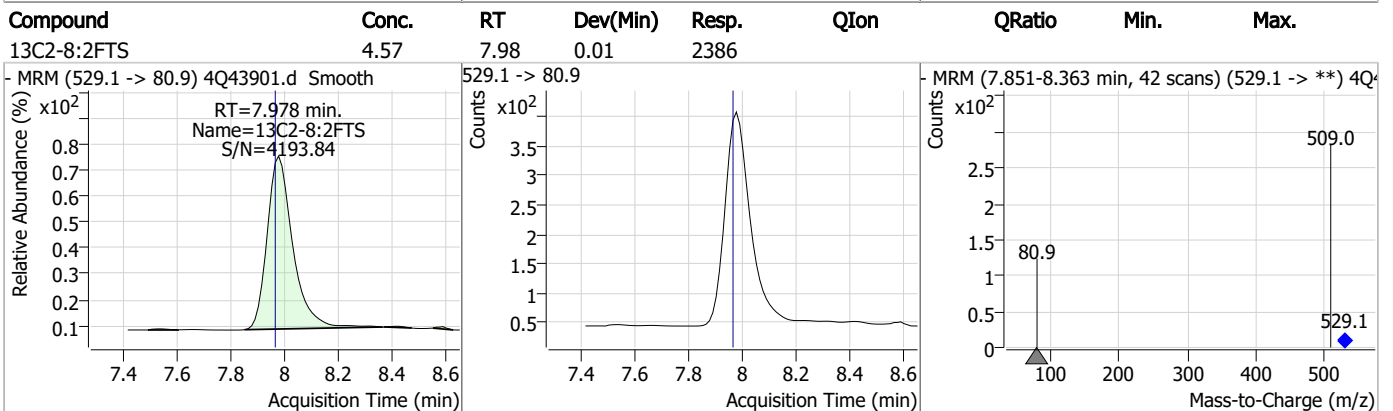
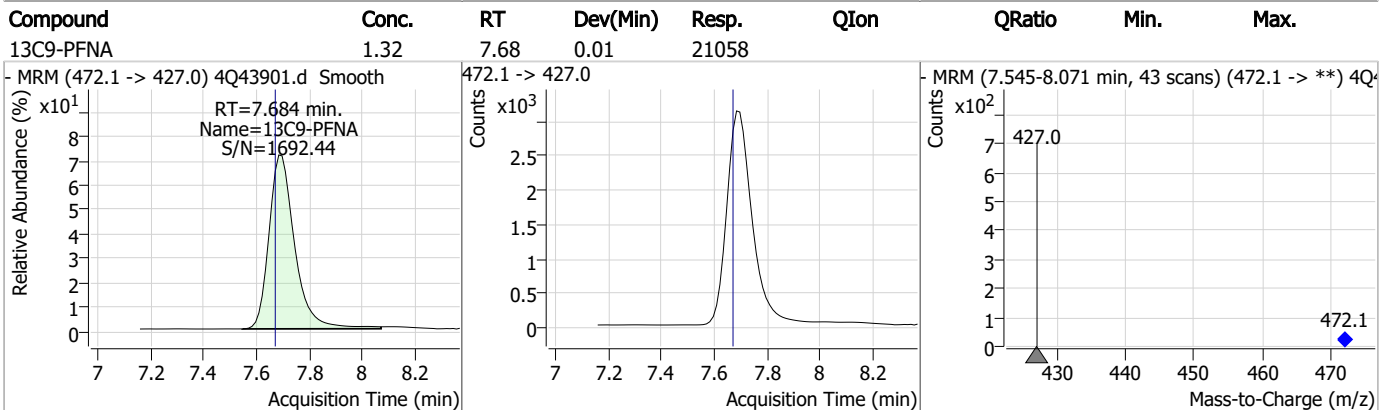
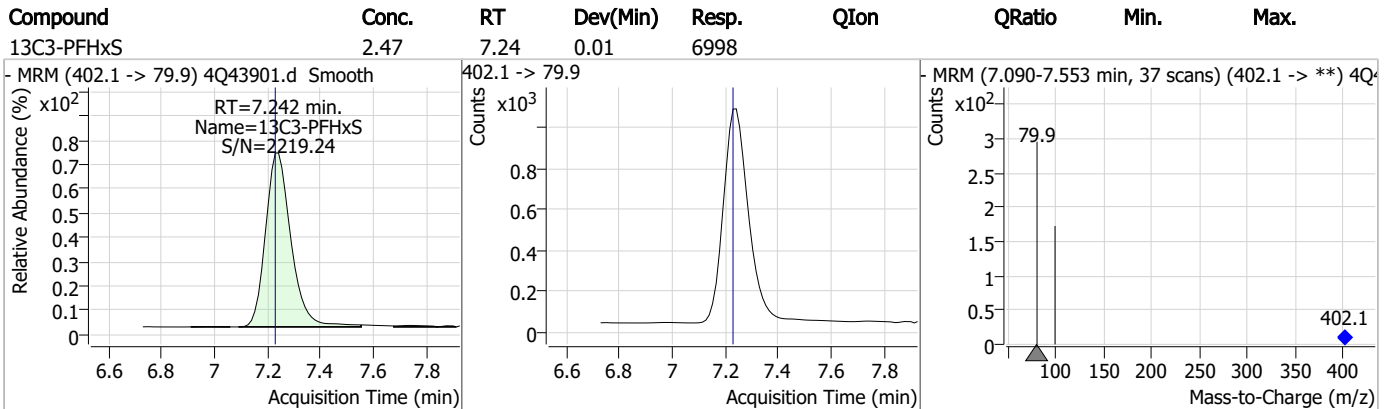
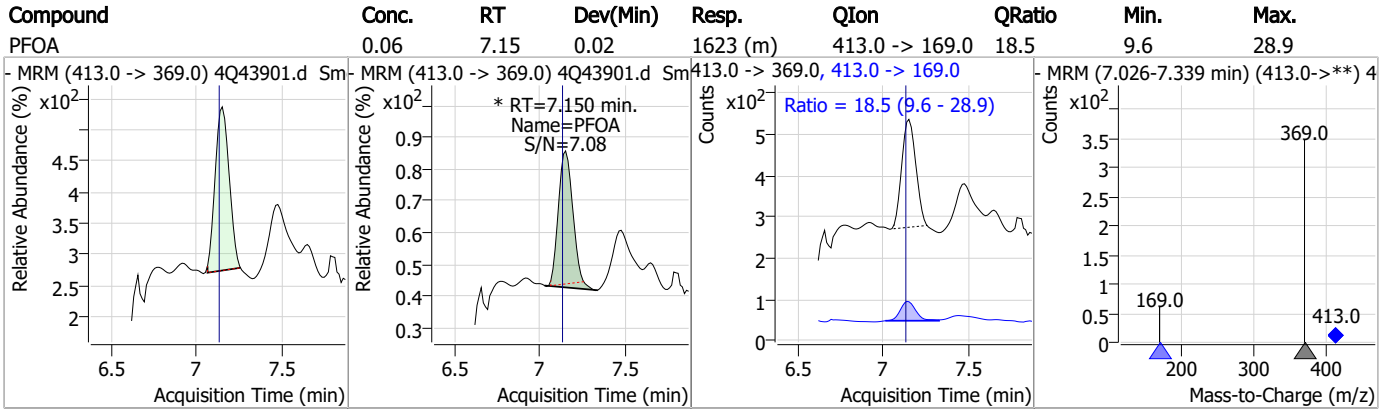


### Perfluorinated Compounds by LC/MS/MS



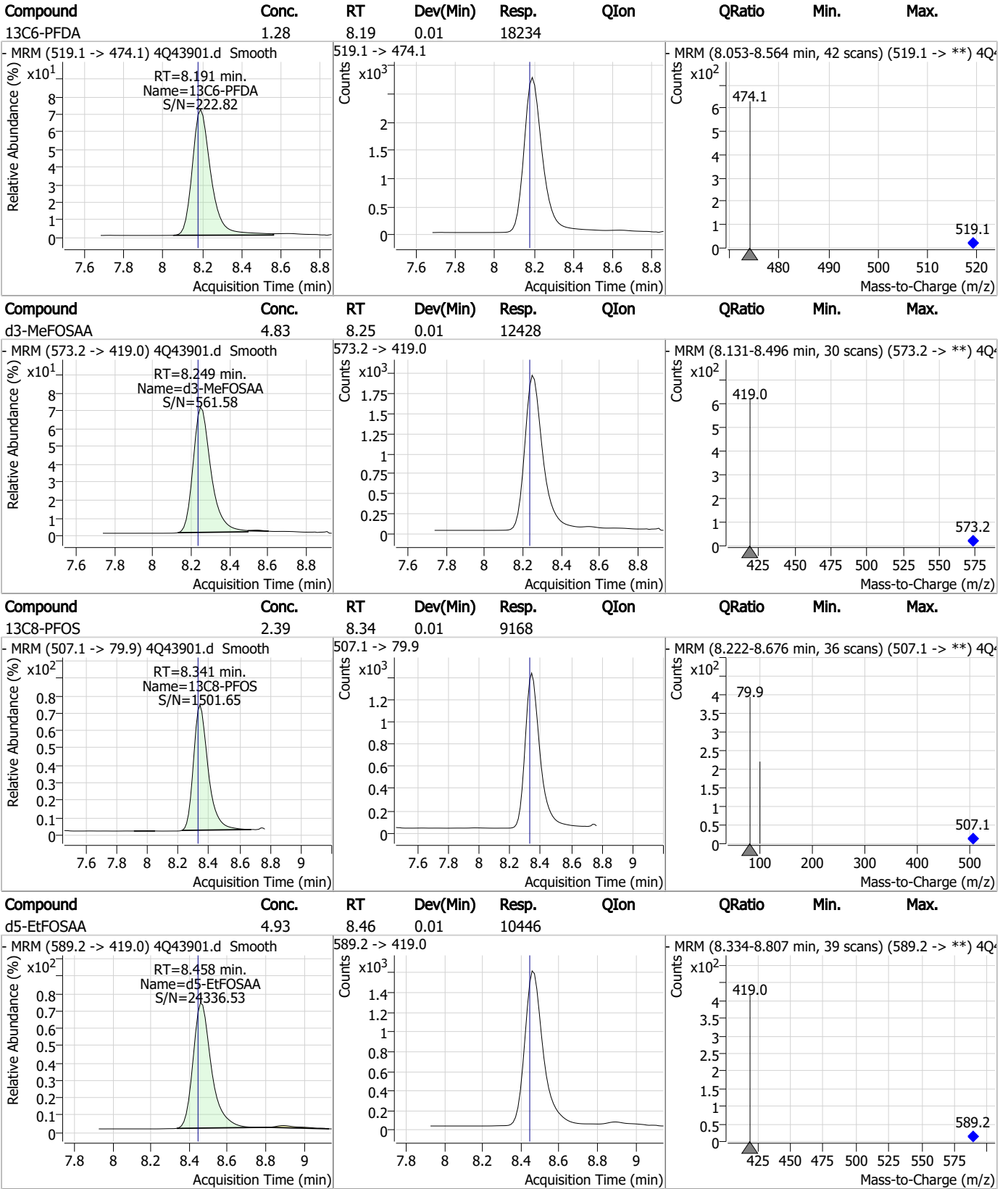
7.1.1  
7

### Perfluorinated Compounds by LC/MS/MS



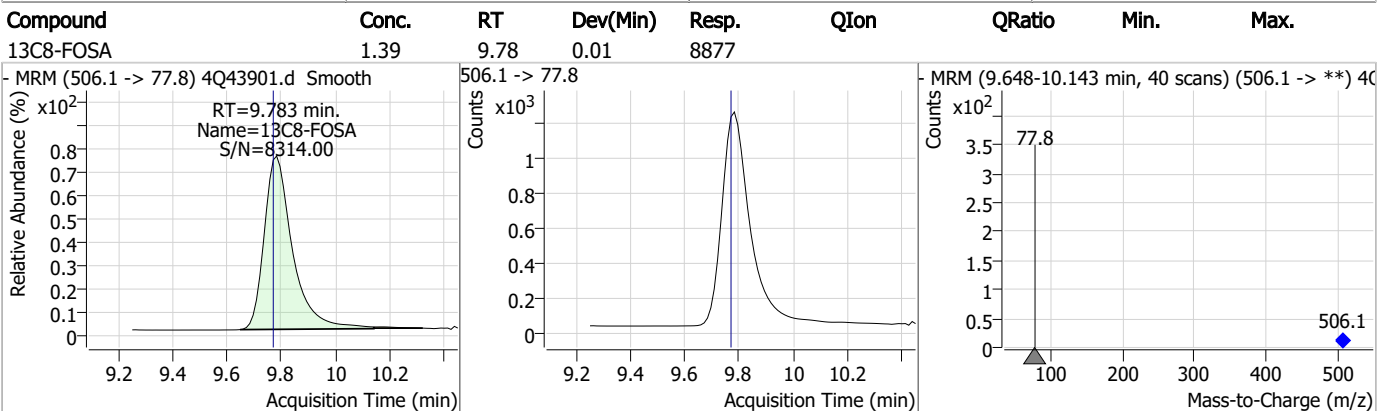
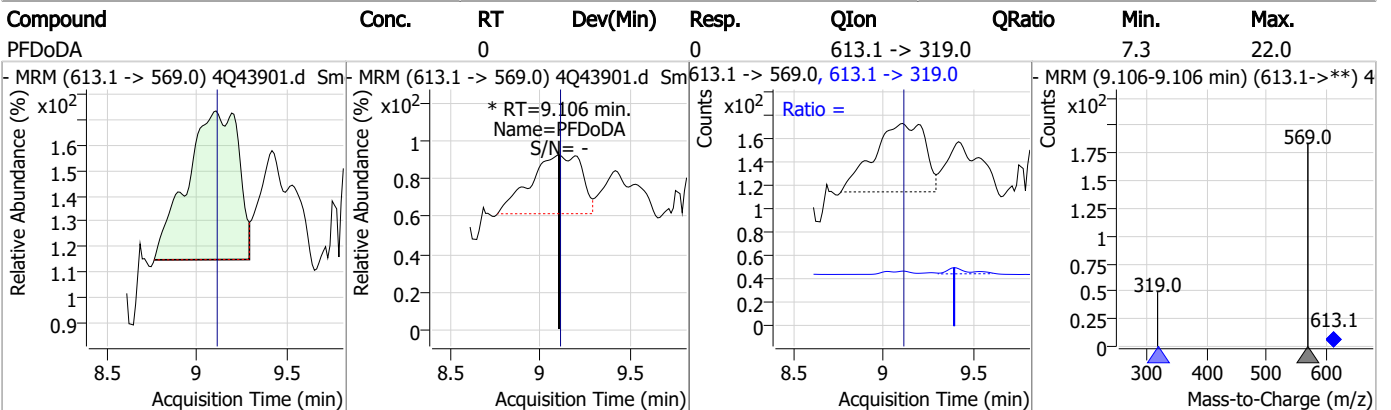
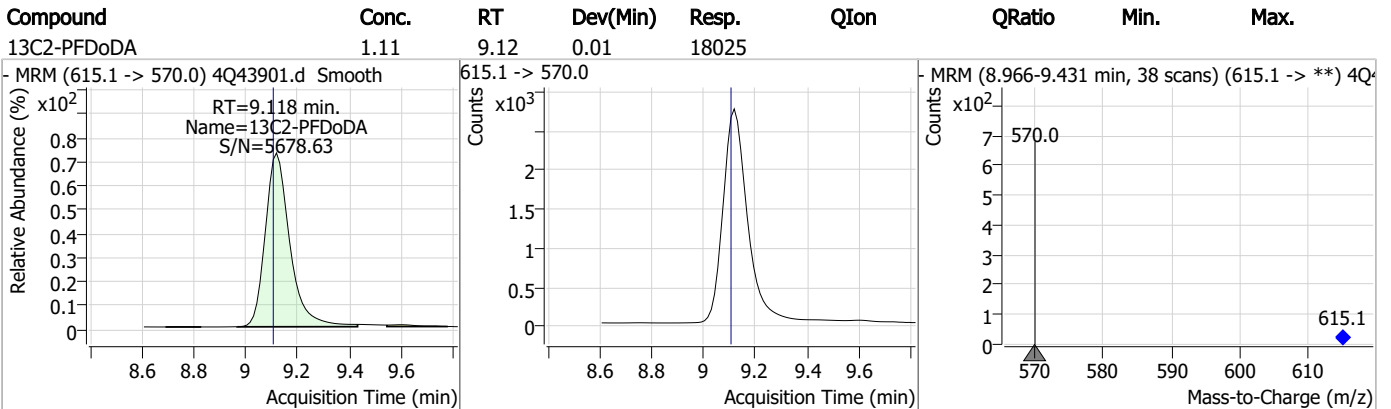
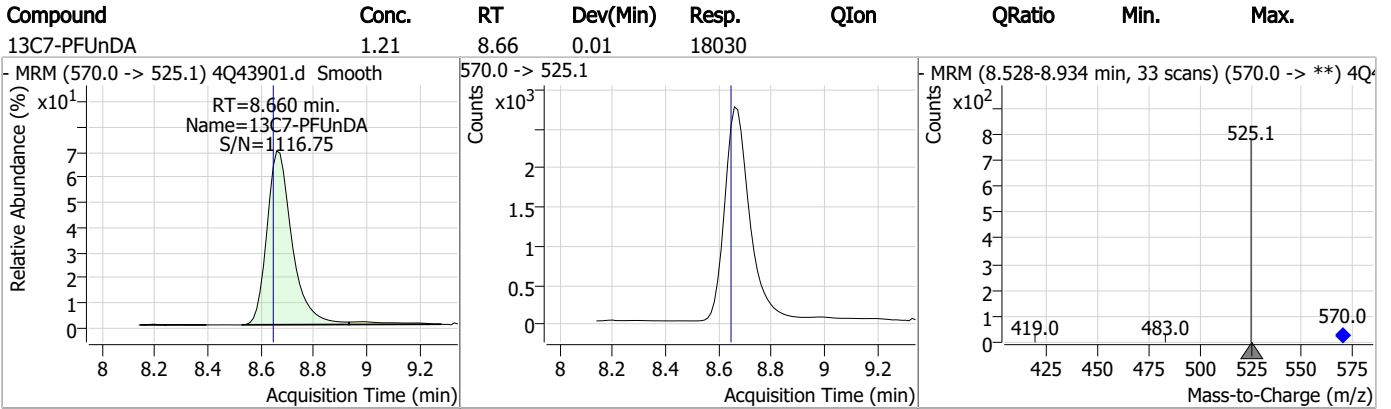


### Perfluorinated Compounds by LC/MS/MS

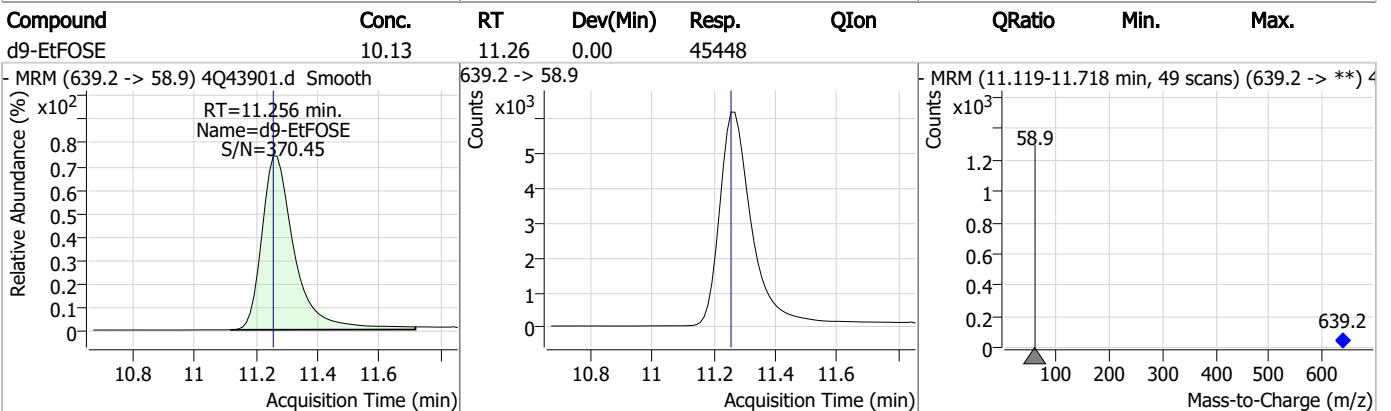
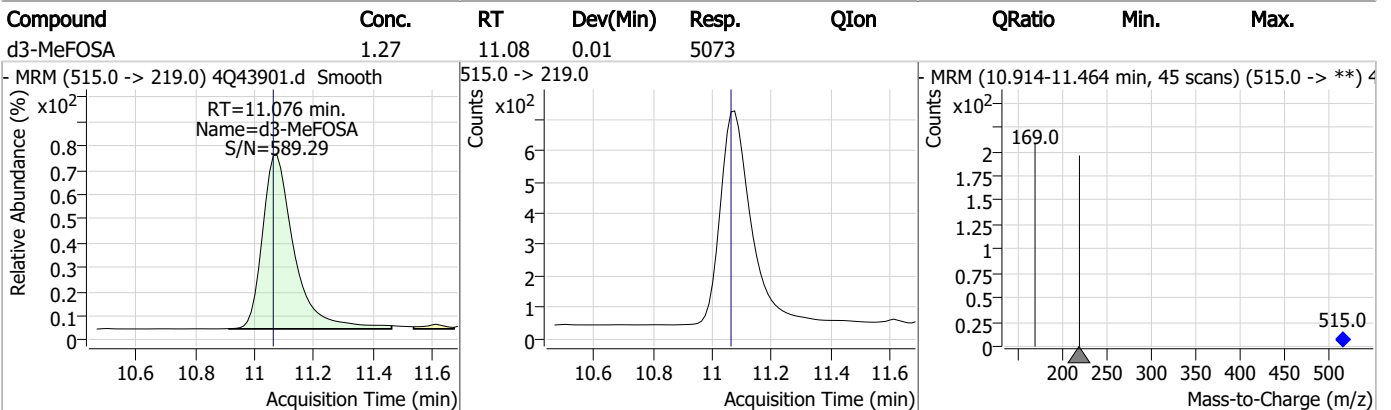
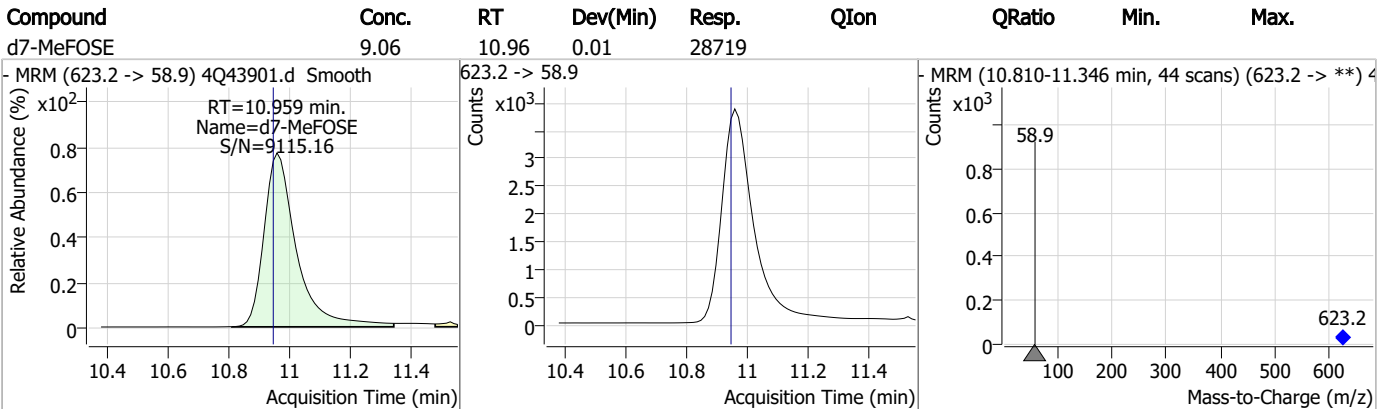
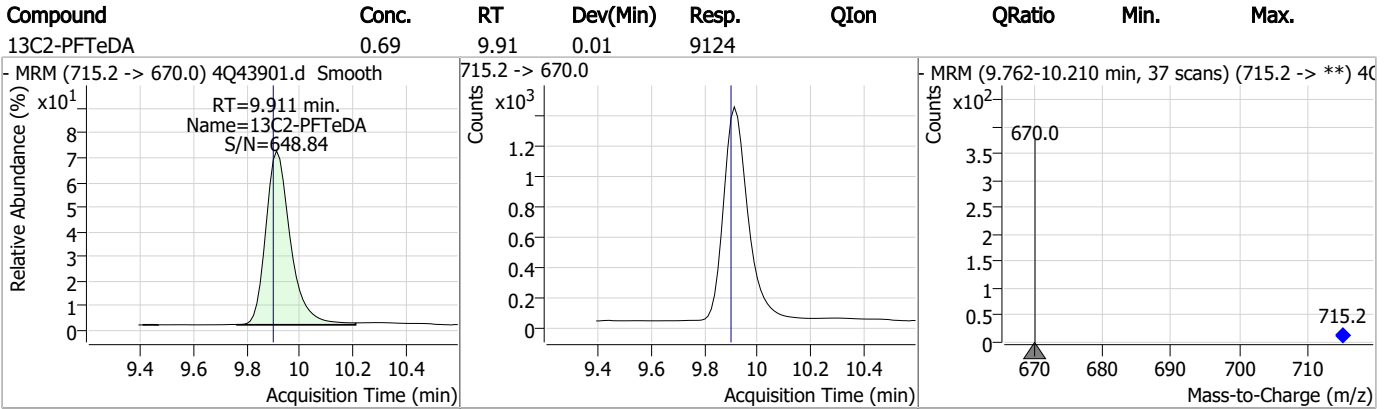


7.1.1  
7

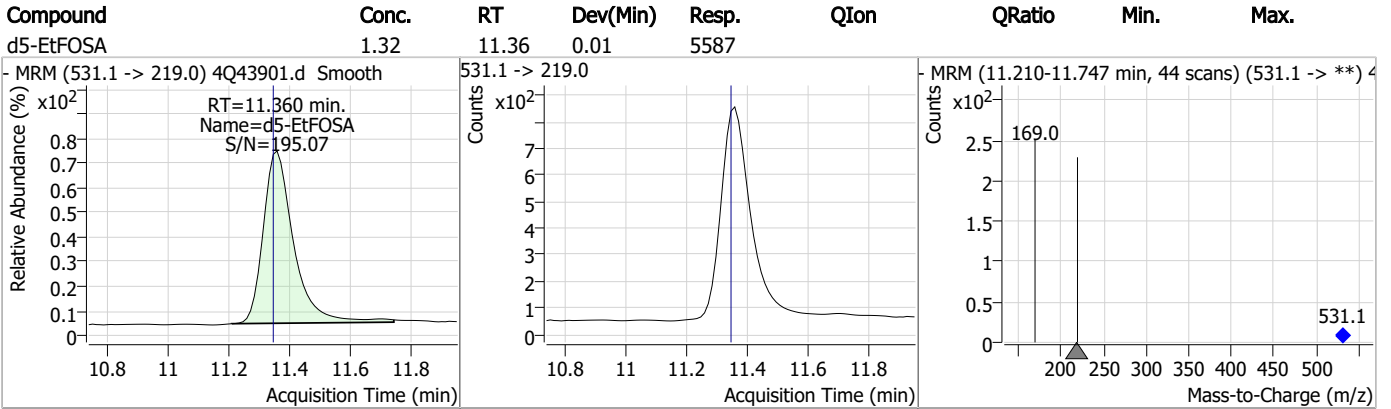
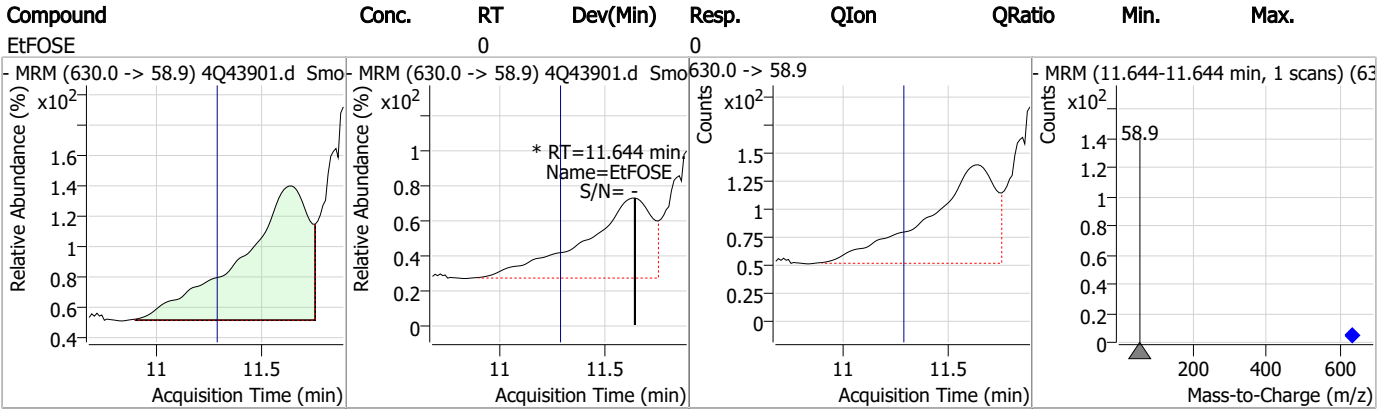
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



7.1.1

7

# Manual Integration Approval Summary

Sample Number: FC5652-1                      Method: EPA DRAFT 1633  
Lab FileID: 4Q43901.D                      Analyst approved: 05/04/23 14:18 Natasha Gumtie  
Injection Time: 05/03/23 14:47                      Supervisor approved: 05/04/23 17:48 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.15	Split peak

7.1.1.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43902.d  
Operator : natashag  
Acq. Method : 1633full\_4Q.m  
Acq. Date-Time : 5/3/2023 3:01:32 PM  
Sample Name : fc5652-2  
Vial : P1-B9  
DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
Batch Name : s4q634.batch.bin  
Sample Information : OP96662,S4Q634,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.924	216.8 -> 171.9	93161	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	63203	5.00 µg/L	0.012
M5-PFHxA	5.547	318.0 -> 273.0	47633	2.50 µg/L	0.012
M4-PFHpA	6.480	367.1 -> 322.0	28558	2.50 µg/L	0.012
M8-PFOA	7.148	421.1 -> 376.0	43676	2.50 µg/L	0.025
M9-PFNA	7.696	472.1 -> 427.0	20502	1.25 µg/L	0.026
M6-PFDA	8.191	519.1 -> 474.1	19408	1.25 µg/L	0.013
M7-PFUnDA	8.660	570.0 -> 525.1	16219	1.25 µg/L	0.013
M2-PFDoDA	9.118	615.1 -> 570.0	13258	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	5133	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	7360	2.50 µg/L	0.012
M3-PFBS	5.439	302.1 -> 79.9	11932	2.50 µg/L	0.012
M3-PFHxS	7.242	402.1 -> 79.9	7087	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	9222	2.50 µg/L	0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1054	5.00 µg/L	0.012
M2-6:2FTS	6.911	429.1 -> 80.9	1604	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	2248	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	12855	5.00 µg/L	0.012
M3-HFPO-DA	5.902	286.9 -> 168.9	26855	10.00 µg/L	0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	10790	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	21713	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	29892	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	3919	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	3725	2.50 µg/L	0.012
13C4-PFOS	8.342	502.8 -> 79.9	10626	2.50 µg/L	0.012
13C3-PFBA	2.916	216.0 -> 172.0	61324	5.00 µg/L	-0.012
18O2-PFHxS	7.241	403.0 -> 83.9	4605	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	50637	2.50 µg/L	0.025
13C2-PFDA	8.191	515.1 -> 470.1	18228	1.25 µg/L	0.013
13C5-PFNA	7.697	468.0 -> 423.0	24011	1.25 µg/L	0.012
13C2-PFHxA	5.548	315.1 -> 270.0	41071	2.50 µg/L	0.012

**System Monitoring Compounds**

13C2-4:2FTS	5.235	329.1 -> 80.9	1054	5.63 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.6%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1604	4.75 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C2-8:2FTS	7.978	529.1 -> 80.9	2248	4.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 85.4%		
13C2-PFDoDA	9.118	615.1 -> 570.0	13258	0.75 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 60.1%		
13C2-PFTeDA	9.911	715.2 -> 670.0	5133	0.36 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 28.6%		
13C3-PFBS	5.439	302.1 -> 79.9	11932	2.75 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.9%		
13C3-PFHxS	7.242	402.1 -> 79.9	7087	2.48 µg/L	0.012

7.12  
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%		
13C4-PFBA	2.924	216.8 -> 171.9	93161	8.07	µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 80.7%		
13C4-PFHpA	6.480	367.1 -> 322.0	28558	2.70	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.0%		
13C5-PFHxA	5.547	318.0 -> 273.0	47633	2.63	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.3%		
13C5-PFPeA	4.375	268.3 -> 223.0	63203	5.00	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%		
13C6-PFDA	8.191	519.1 -> 474.1	19408	1.24	µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.5%		
13C7-PFUnDA	8.660	570.0 -> 525.1	16219	1.00	µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 79.9%		
13C8-FOSA	9.783	506.1 -> 77.8	7360	1.10	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 44.2%		
13C8-PFOA	7.148	421.1 -> 376.0	43676	2.63	µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.1%		
13C8-PFOS	8.341	507.1 -> 79.9	9222	2.31	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%		
13C9-PFNA	7.696	472.1 -> 427.0	20502	1.26	µg/L	0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%		
d3-MeFOSAA	8.249	573.2 -> 419.0	12855	4.79	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.9%		
13C3-HFPO-DA	5.902	286.9 -> 168.9	26855	9.94	µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.4%		
d3-MeFOSA	11.076	515.0 -> 219.0	3725	0.89	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 35.8%		
d5-EtFOSAA	8.458	589.2 -> 419.0	10790	4.89	µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.7%		
d7-MeFOSE	10.959	623.2 -> 58.9	21713	6.57	µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 26.3%		
d9-EtFOSE	11.269	639.2 -> 58.9	29892	6.39	µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 25.5%		
d5-EtFOSA	11.360	531.1 -> 219.0	3919	0.88	µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 35.4%		

Target Compounds

Compound	RT	Transition	Response	Conc.	Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.		
		327.1 -> 80.9				
6:2FTS	6.911	427.1 -> 407.0	2495	1.61	µg/L	95
		427.1 -> 80.9	1132			
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	2.932	212.8 -> 168.9	351	0.14	µg/L	m 100
PFBS	5.280	298.7 -> 79.9	0		µg/L	m 1
		298.7 -> 98.8	0			
PFDA	-	512.9 -> 469.0	-	N.D.		
		512.9 -> 219.0				
PFDODA	-	613.1 -> 569.0	-	N.D.		
		613.1 -> 319.0				
PFDS	-	599.0 -> 79.9	-	N.D.		

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.480	599.0 -> 98.8				
		363.1 -> 319.0	3144	0.17	µg/L	99
PFHpS	-	363.1 -> 169.0	552			
		449.0 -> 79.9	-	N.D.		
PFHxA	5.550	449.0 -> 98.9				
		313.0 -> 269.0	2979	0.16	µg/L	m 99
PFHxS	-	313.0 -> 118.9	94			
		398.7 -> 79.9	-	N.D.		
PFNA	8.109	398.7 -> 98.9				
		463.0 -> 419.0	0		µg/L	m 1
PFNS	-	463.0 -> 219.0	0			
		548.8 -> 79.9	-	N.D.		
PFOA	7.150	548.8 -> 98.9				
		413.0 -> 369.0	1339	0.05	µg/L	m 90
PFOS	-	413.0 -> 169.0	200			
		498.9 -> 79.9	-	N.D.		
PFPeA	4.377	498.9 -> 98.8				
		263.0 -> 219.0	4364	0.29	µg/L	100
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.656	630.0 -> 58.9	0		µg/L	m 1
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.12  
7



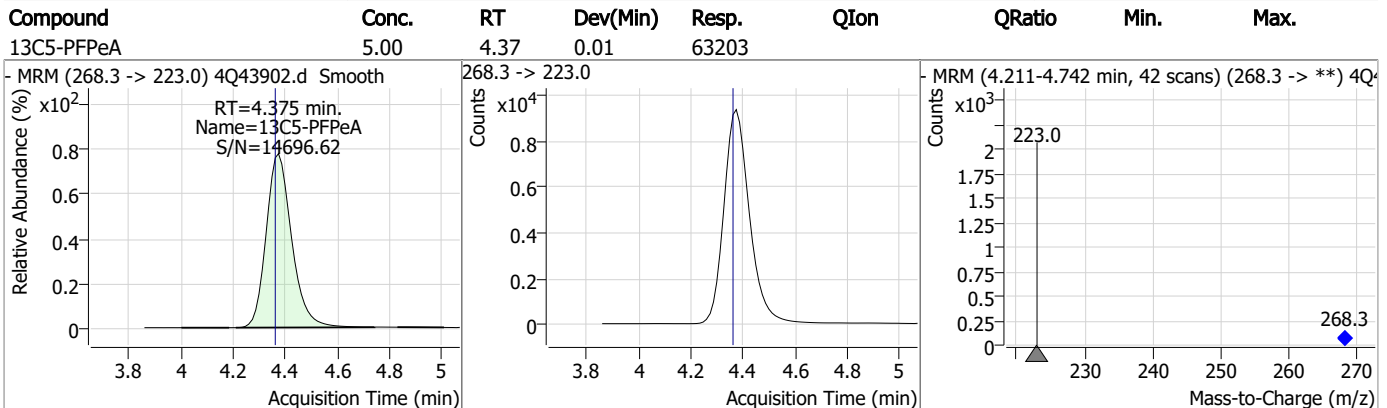
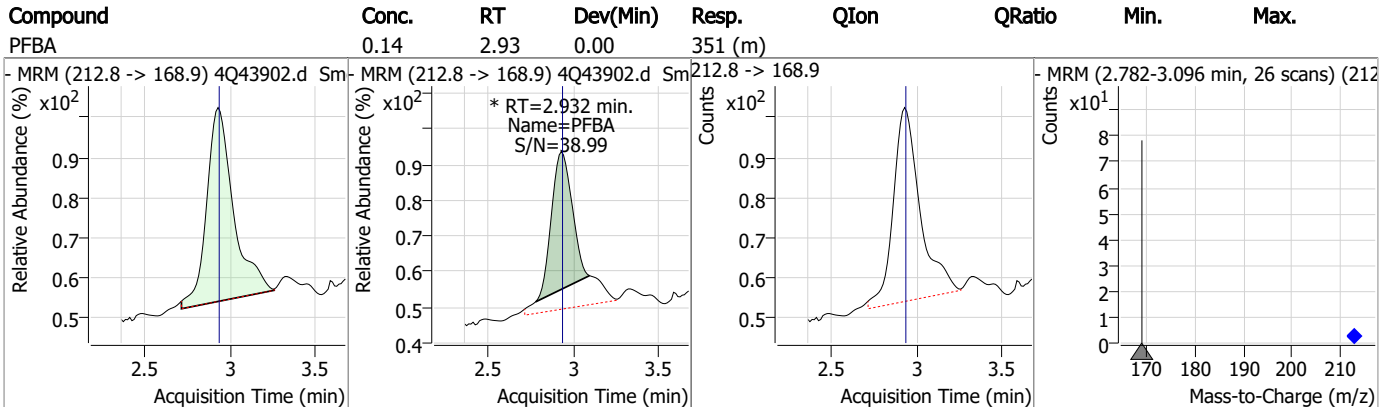
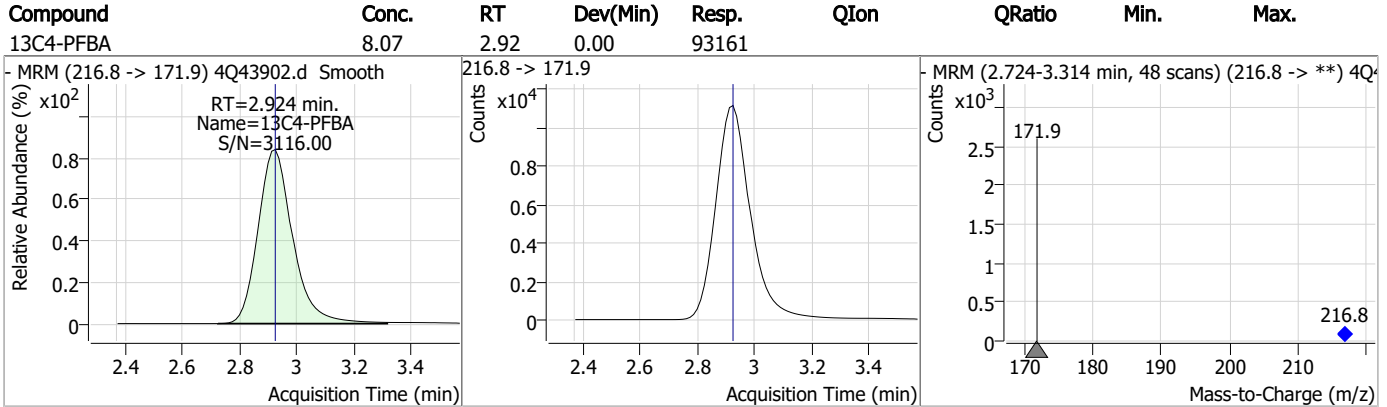
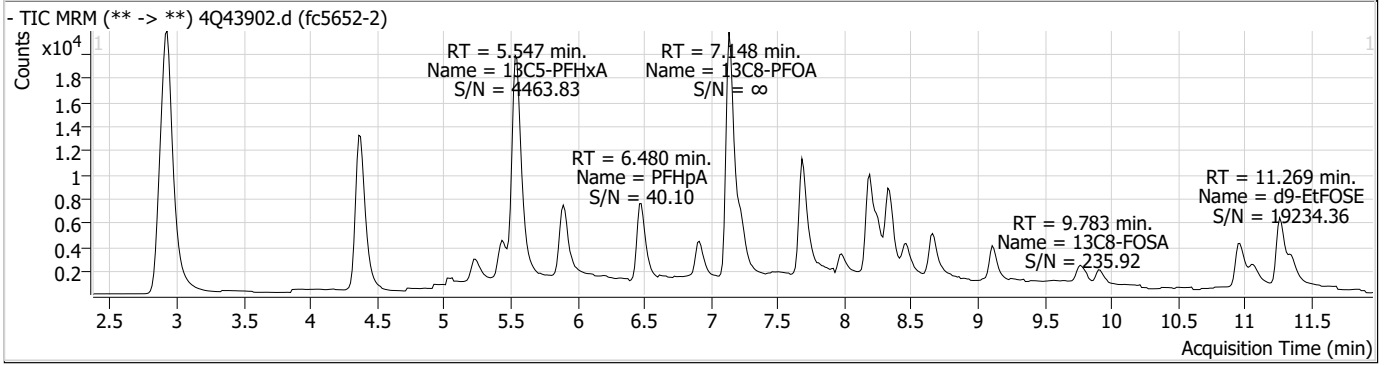


### Perfluorinated Compounds by LC/MS/MS

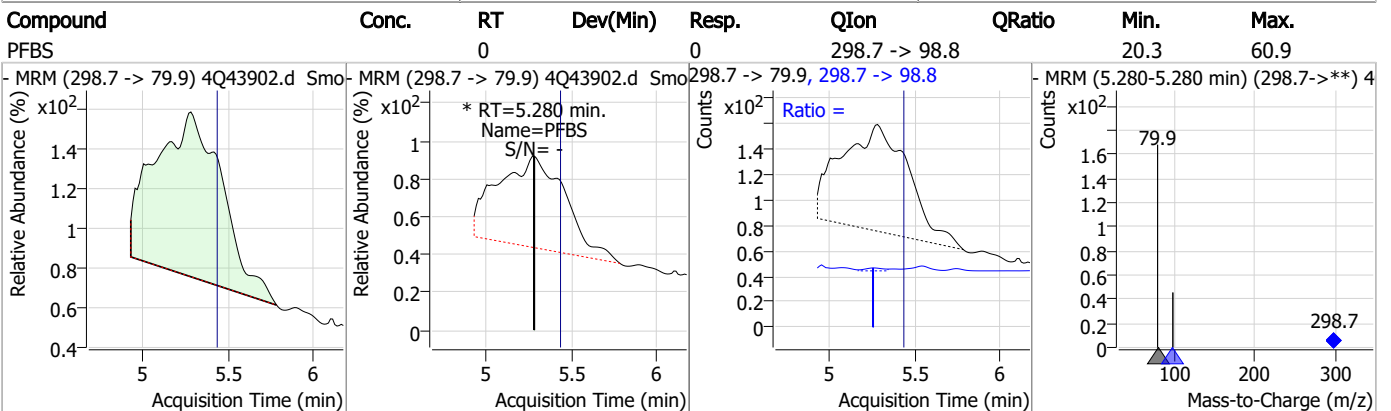
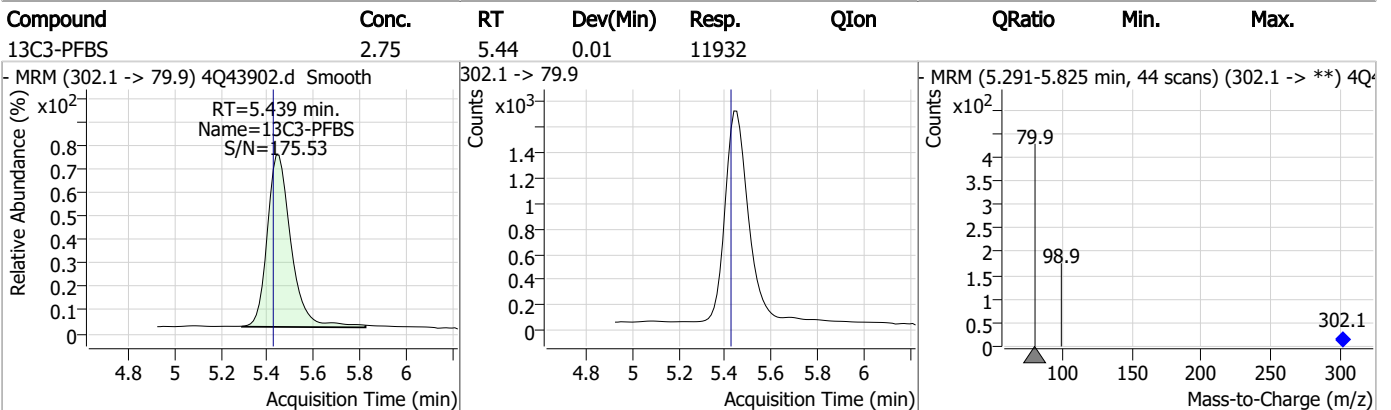
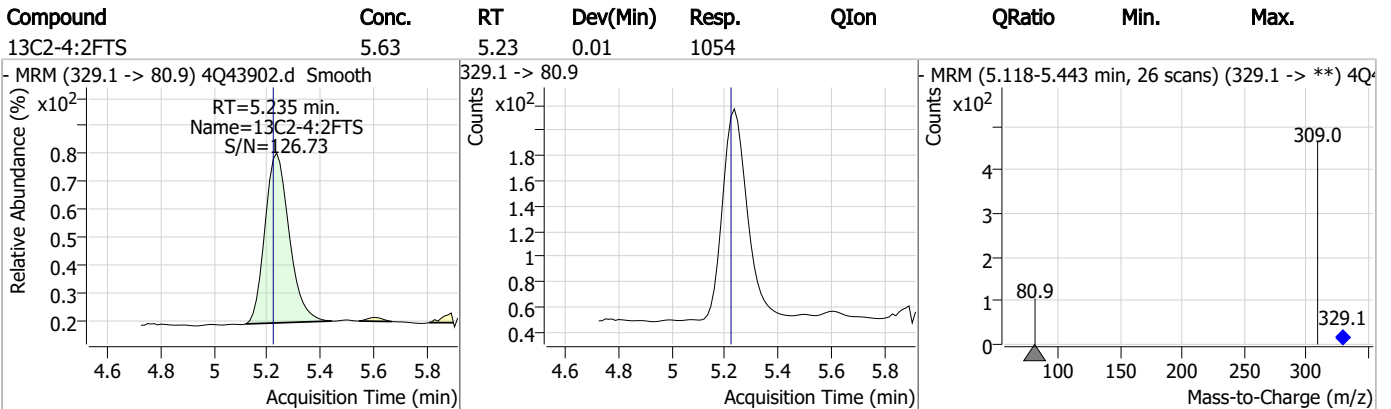
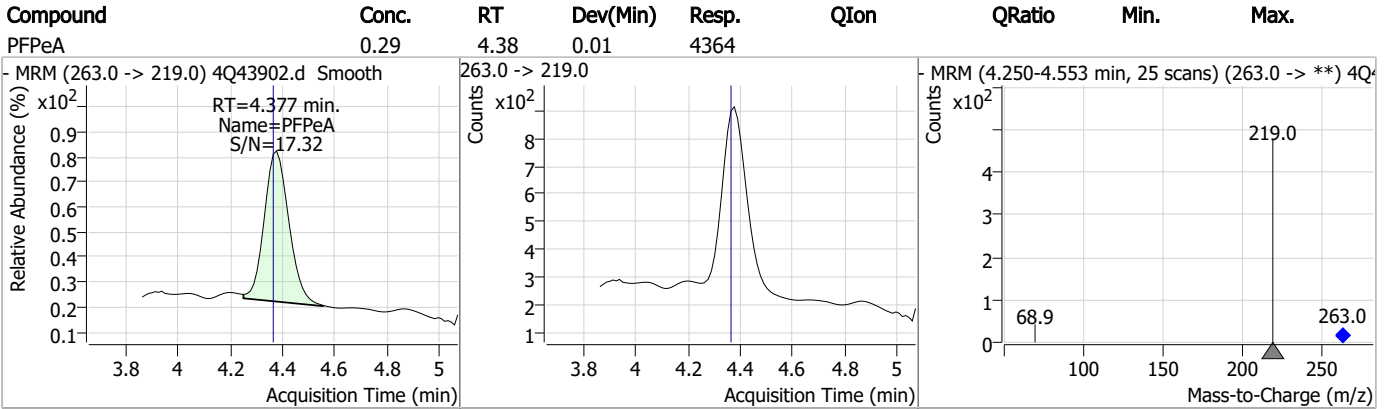
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
----------	----	------------	----------	-------------	----------

7.1.2  
7

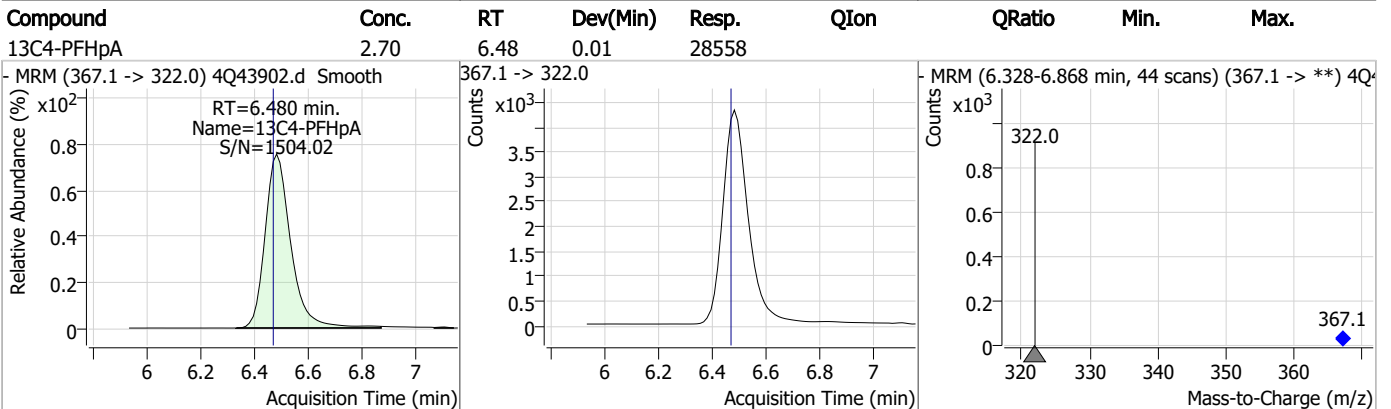
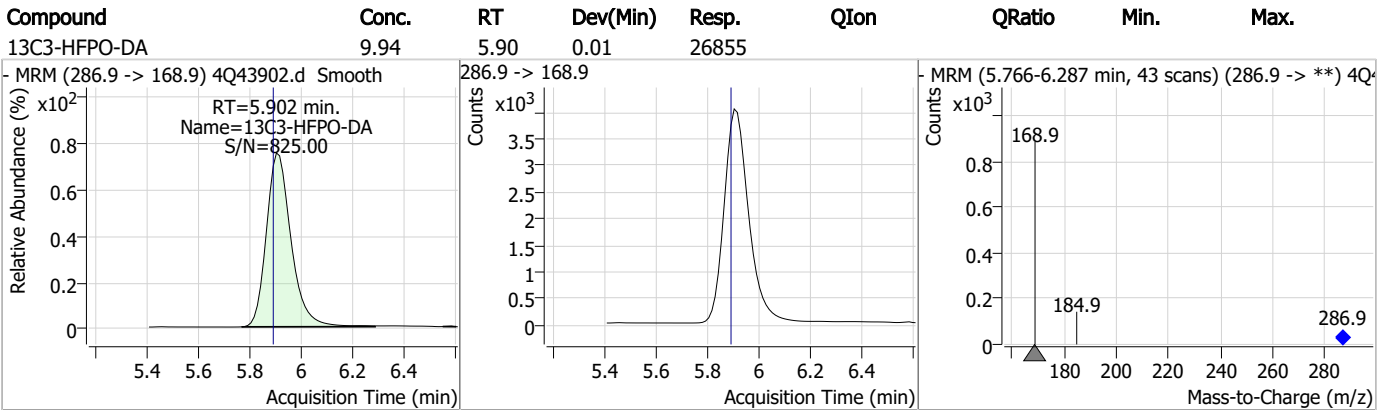
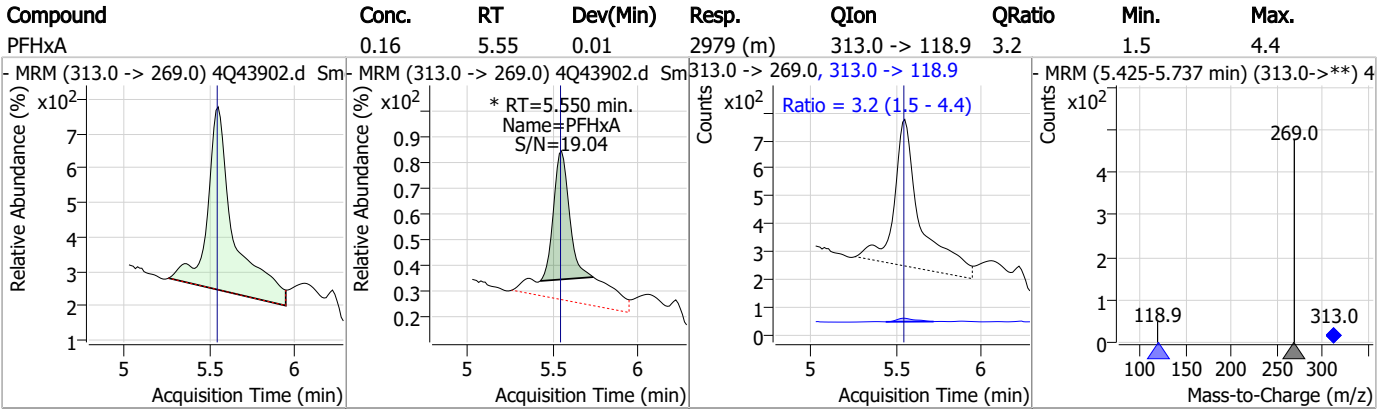
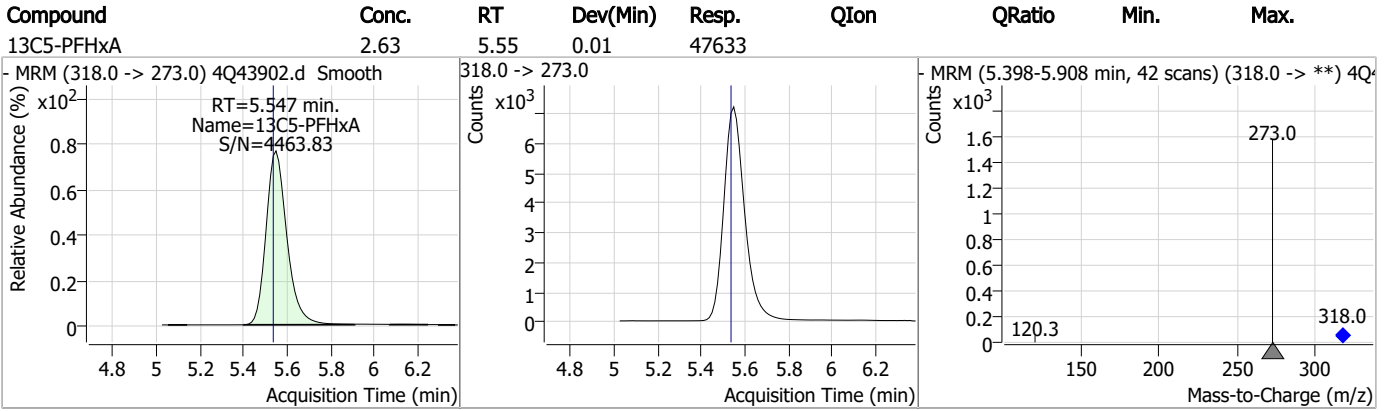
### Perfluorinated Compounds by LC/MS/MS



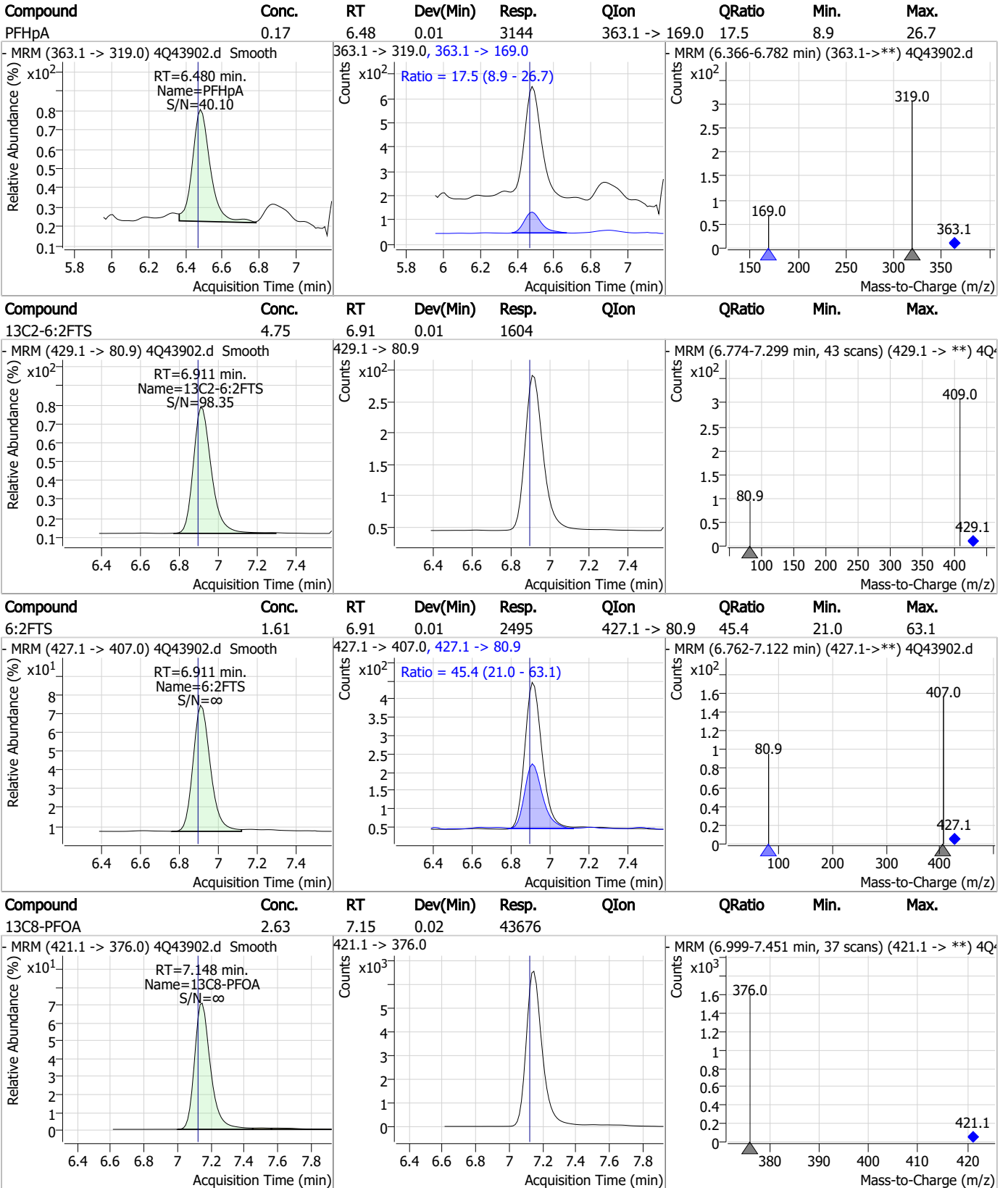
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

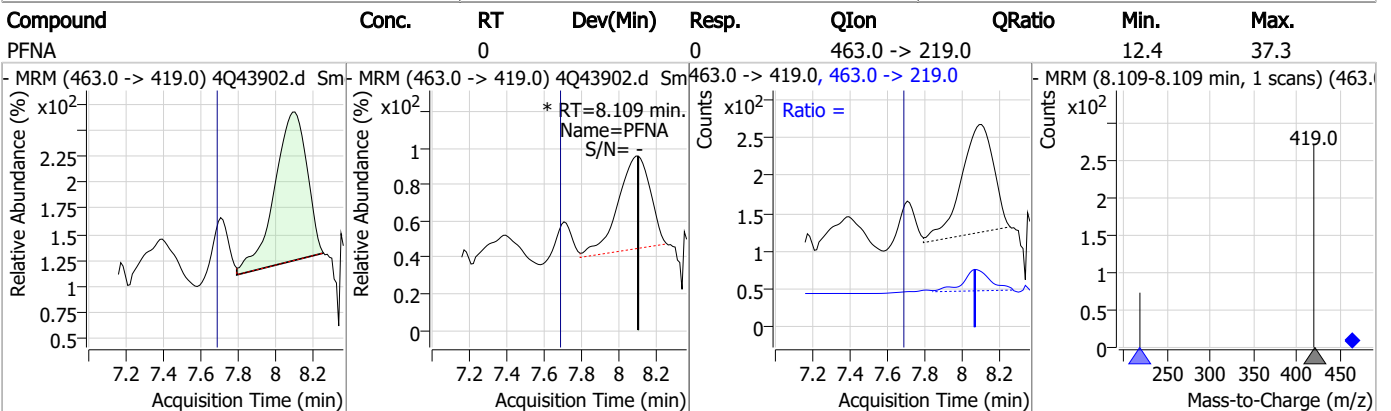
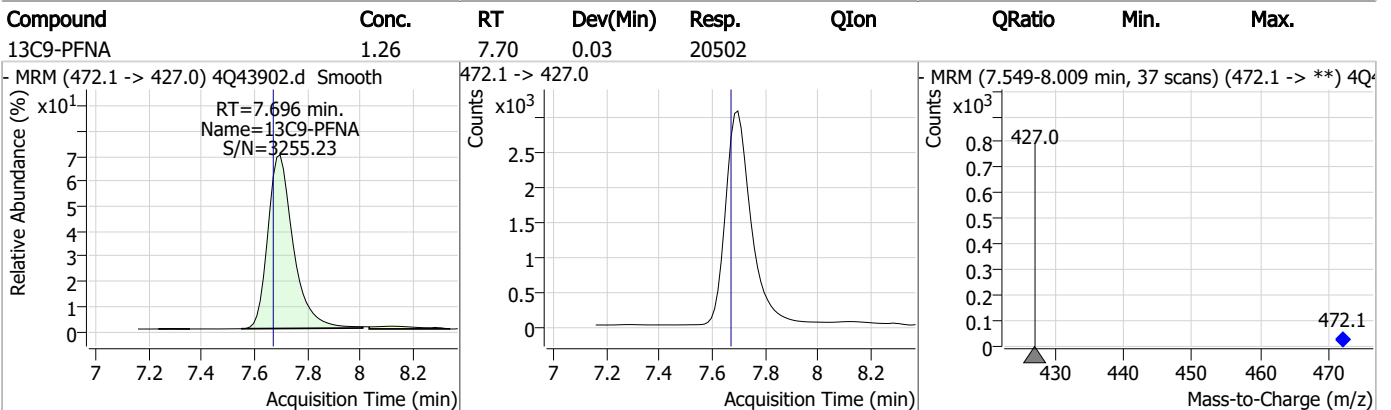
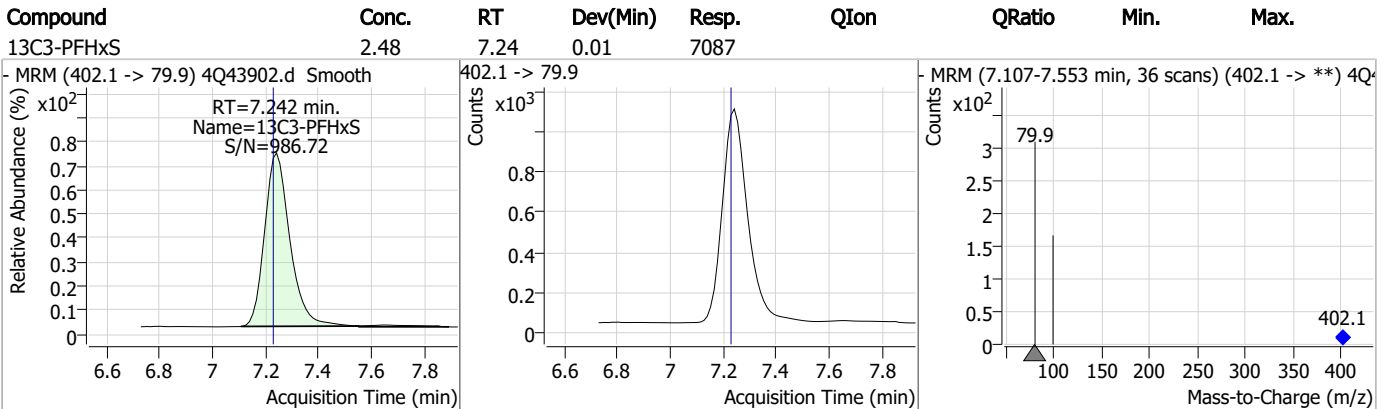
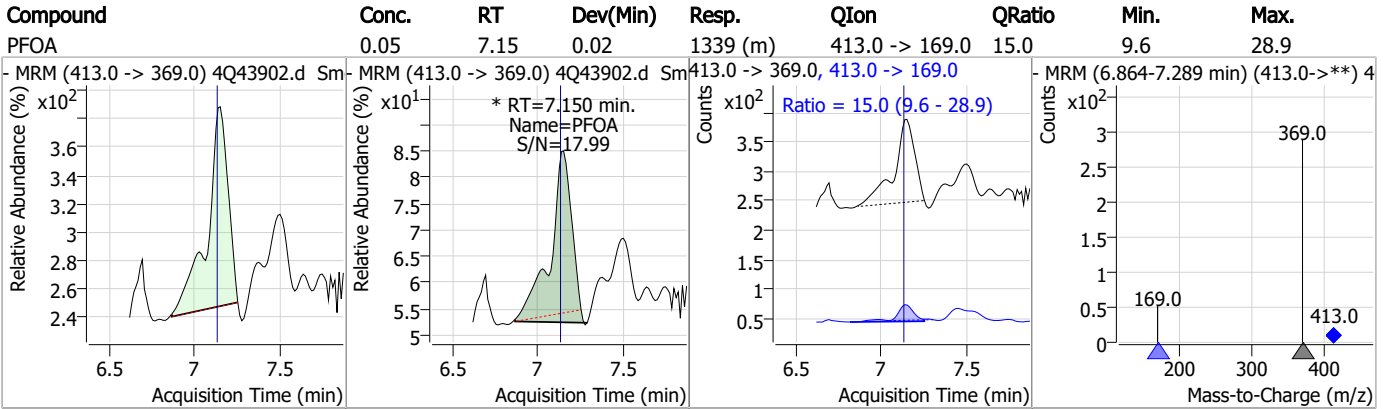


### Perfluorinated Compounds by LC/MS/MS

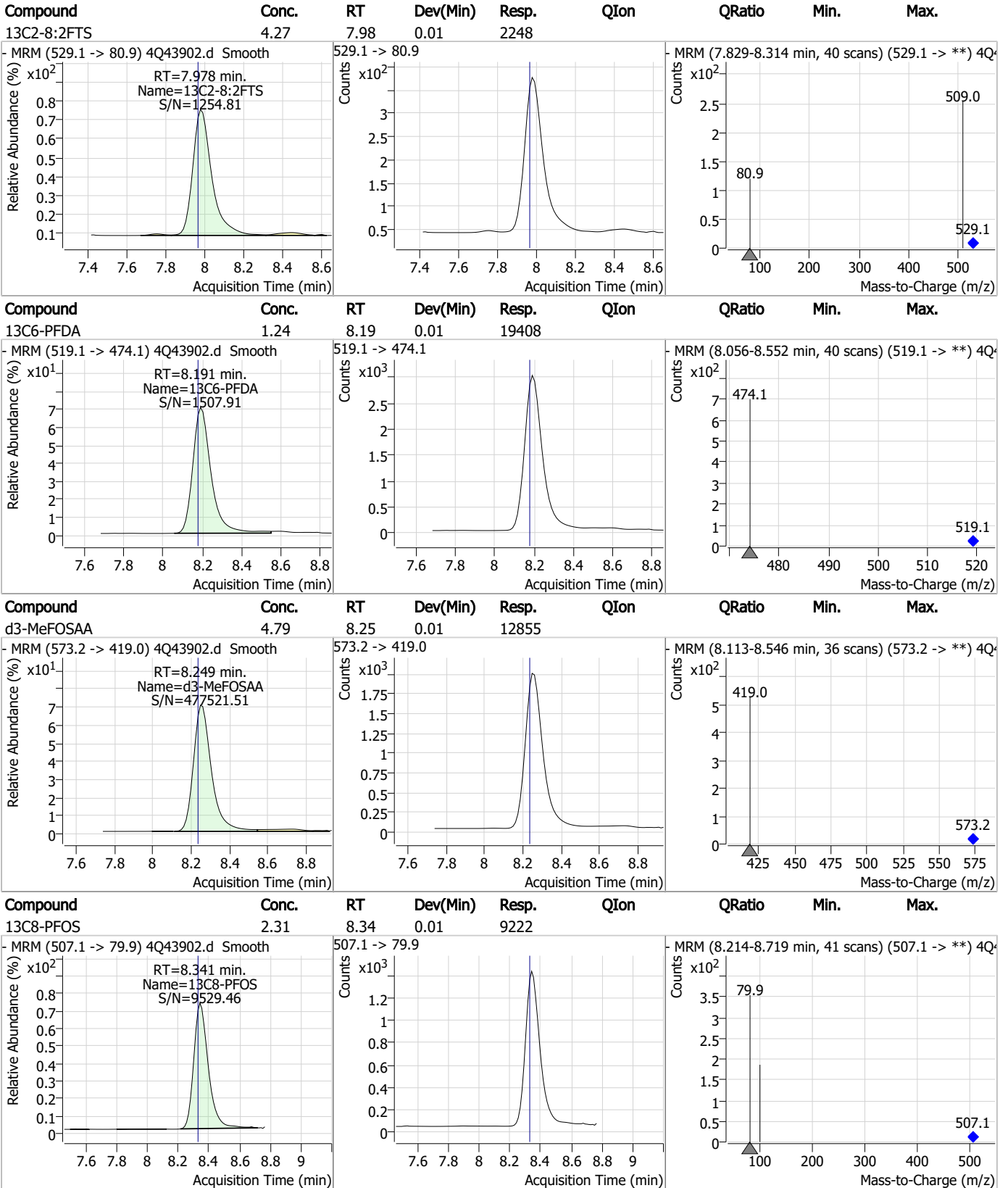


7.1.2  
7

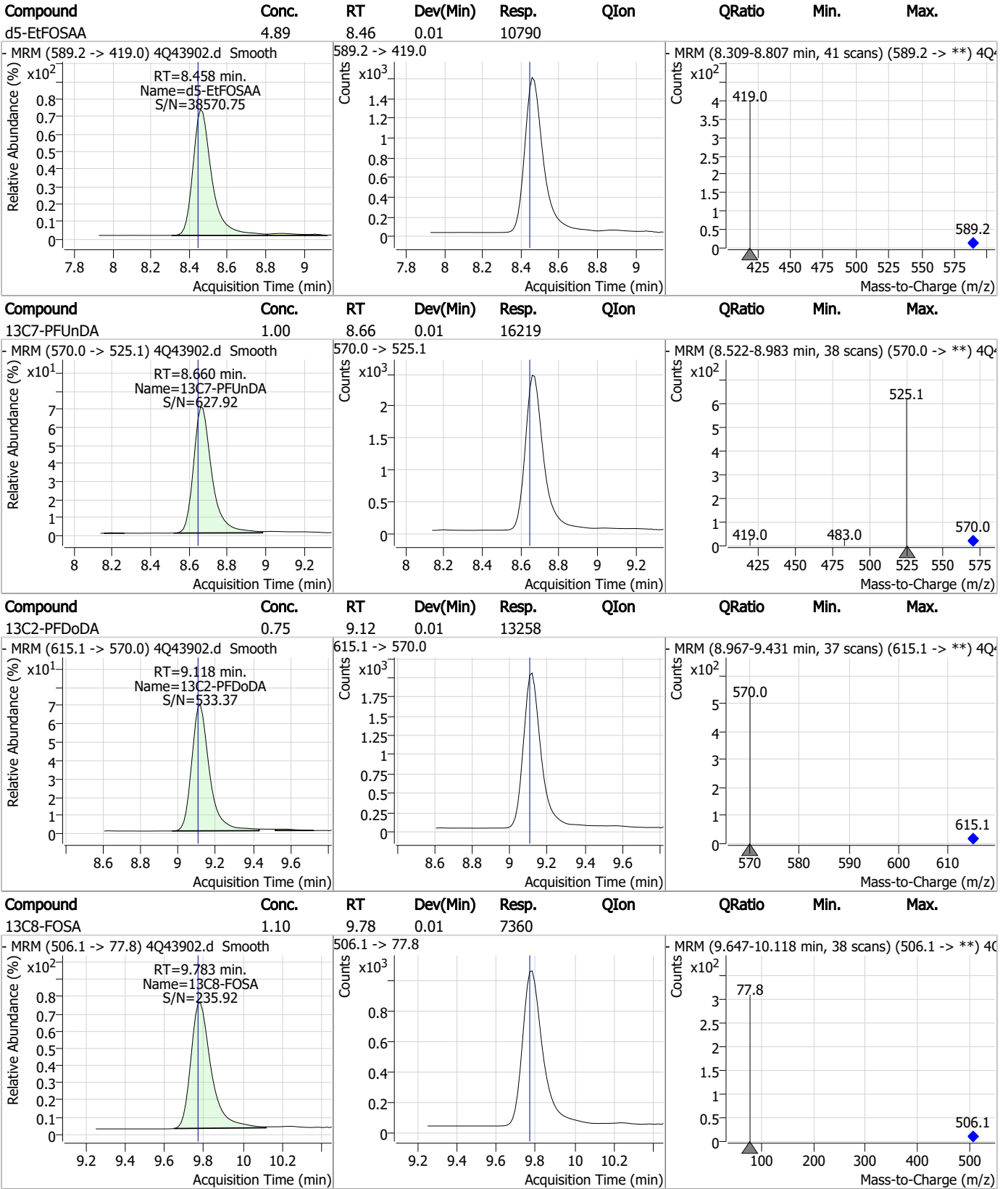
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

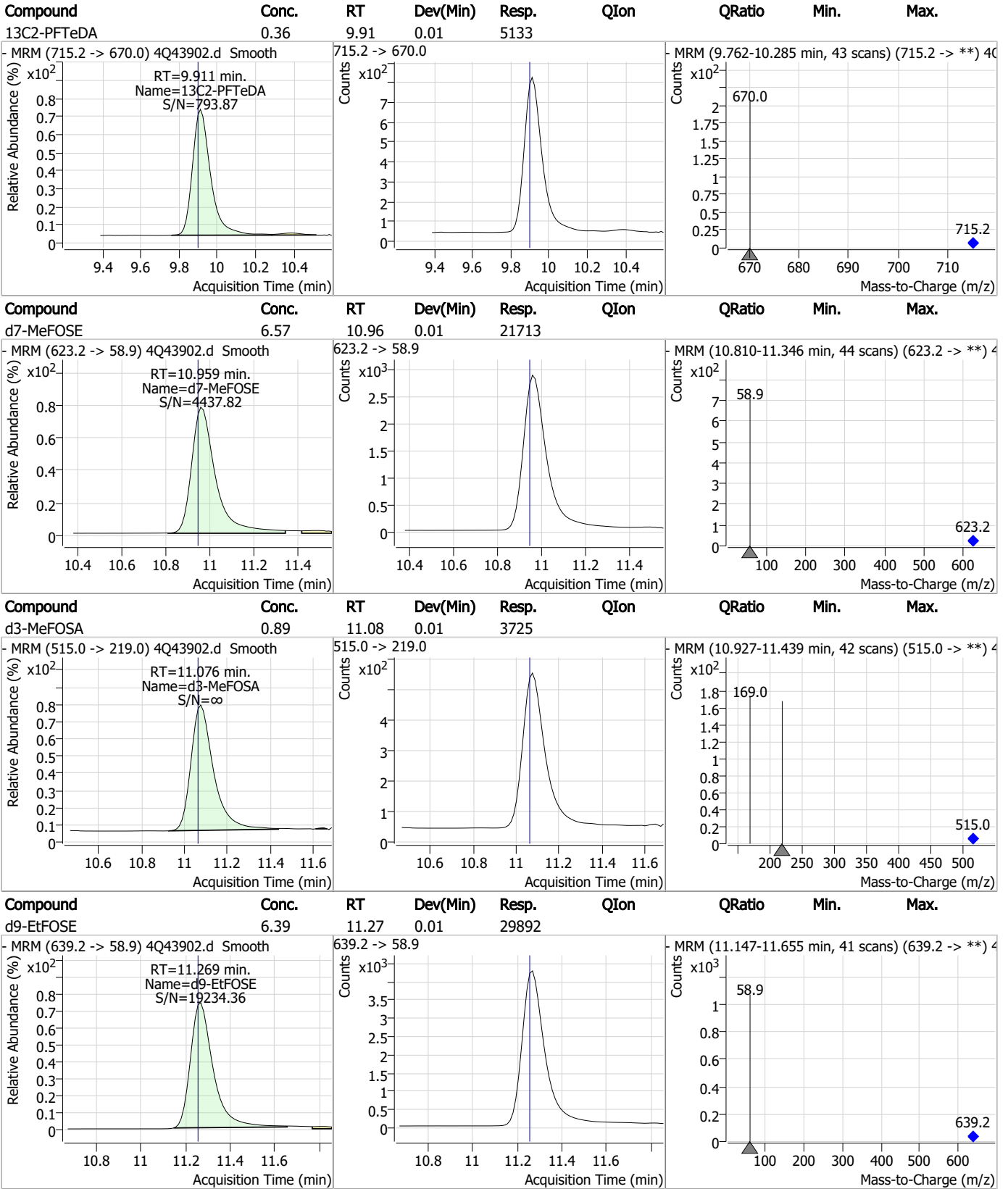


### Perfluorinated Compounds by LC/MS/MS



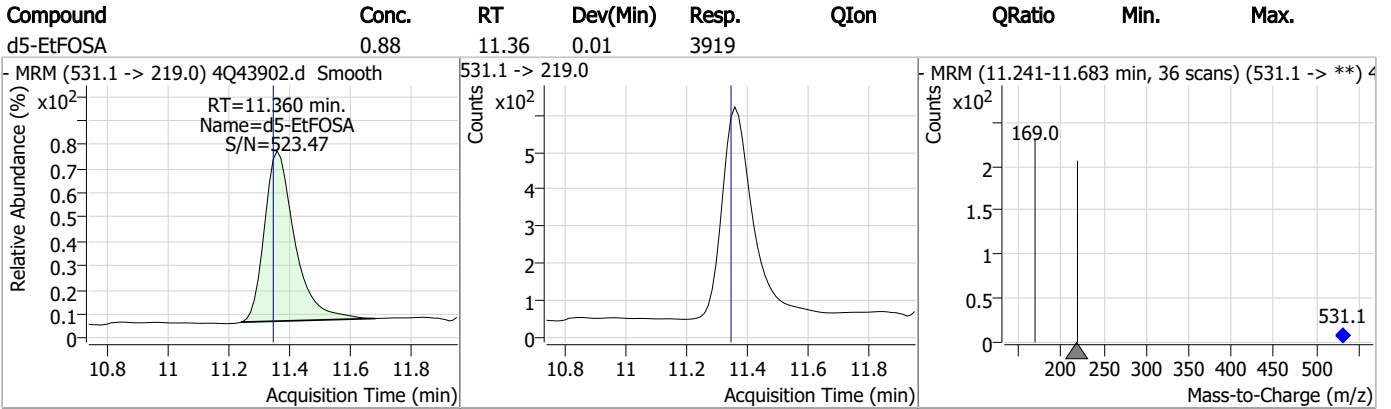
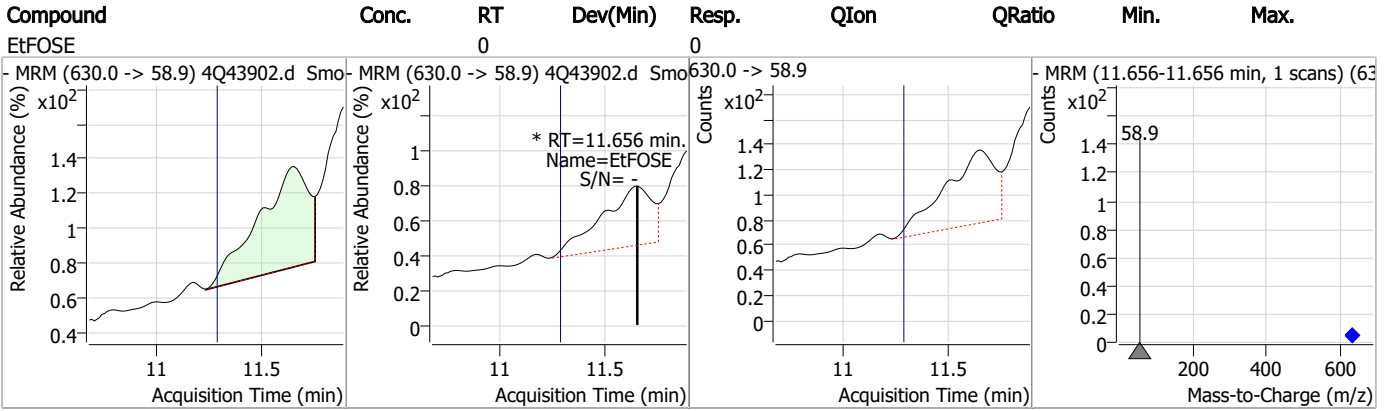


### Perfluorinated Compounds by LC/MS/MS



7.1.2  
7

### Perfluorinated Compounds by LC/MS/MS



7.1.2

7

# Manual Integration Approval Summary

Sample Number: FC5652-2                      Method: EPA DRAFT 1633  
Lab FileID: 4Q43902.D                      Analyst approved: 05/04/23 14:18 Natasha Gumtie  
Injection Time: 05/03/23 15:01              Supervisor approved: 05/04/23 17:48 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorobutanoic acid	375-22-4		2.93	Poor instrument integration
Perfluorohexanoic acid	307-24-4		5.55	Poor instrument integration
Perfluorooctanoic acid	335-67-1		7.15	Split peak

7.1.2.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43900.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 2:33:25 PM  
 Sample Name : op96662-mb  
 Vial : P1-B7  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96662,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.924	216.8 -> 171.9	125702	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	65413	5.00 µg/L	0.012
M5-PFHxA	5.535	318.0 -> 273.0	45810	2.50 µg/L	0.000
M4-PFHpA	6.480	367.1 -> 322.0	27248	2.50 µg/L	0.012
M8-PFOA	7.136	421.1 -> 376.0	41271	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	20612	1.25 µg/L	0.013
M6-PFDA	8.191	519.1 -> 474.1	17335	1.25 µg/L	0.013
M7-PFUnDA	8.660	570.0 -> 525.1	18561	1.25 µg/L	0.013
M2-PFDoDA	9.118	615.1 -> 570.0	18823	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	11633	1.25 µg/L	0.012
M8-FOSA	9.771	506.1 -> 77.8	6780	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	11005	2.50 µg/L	0.012
M3-PFHxS	7.242	402.1 -> 79.9	7024	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	10163	2.50 µg/L	0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1084	5.00 µg/L	0.012
M2-6:2FTS	6.911	429.1 -> 80.9	1855	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	3157	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	13021	5.00 µg/L	0.012
M3-HFPO-DA	5.902	286.9 -> 168.9	26630	10.00 µg/L	0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	10459	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	18923	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	30283	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	3842	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	3226	2.50 µg/L	0.012
13C4-PFOS	8.342	502.8 -> 79.9	9791	2.50 µg/L	0.012
13C3-PFBA	2.916	216.0 -> 172.0	60854	5.00 µg/L	-0.012
18O2-PFHxS	7.241	403.0 -> 83.9	4413	2.50 µg/L	0.012
13C4-PFOA	7.136	417.1 -> 372.0	45689	2.50 µg/L	0.012
13C2-PFDA	8.191	515.1 -> 470.1	16352	1.25 µg/L	0.013
13C5-PFNA	7.684	468.0 -> 423.0	20606	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	36835	2.50 µg/L	0.000
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.235	329.1 -> 80.9	1084	6.04 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.9%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1855	5.74 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.7%		
13C2-8:2FTS	7.978	529.1 -> 80.9	3157	6.26 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.1%		
13C2-PFDoDA	9.118	615.1 -> 570.0	18823	1.19 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.0%		
13C2-PFTeDA	9.911	715.2 -> 670.0	11633	0.90 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 72.2%		
13C3-PFBS	5.439	302.1 -> 79.9	11005	2.64 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.8%		
13C3-PFHxS	7.242	402.1 -> 79.9	7024	2.57 µg/L	0.012

7.2.1  
7



### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.7%	
13C4-PFBA	2.924	216.8 -> 171.9	125702	10.98 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.8%	
13C4-PFHpA	6.480	367.1 -> 322.0	27248	2.87 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 114.9%	
13C5-PFHxA	5.535	318.0 -> 273.0	45810	2.82 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.9%	
13C5-PFPeA	4.375	268.3 -> 223.0	65413	5.77 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 115.3%	
13C6-PFDA	8.191	519.1 -> 474.1	17335	1.24 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C7-PFUnDA	8.660	570.0 -> 525.1	18561	1.27 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C8-FOSA	9.771	506.1 -> 77.8	6780	1.10 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 44.2%	
13C8-PFOA	7.136	421.1 -> 376.0	41271	2.75 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.0%	
13C8-PFOS	8.341	507.1 -> 79.9	10163	2.76 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.3%	
13C9-PFNA	7.684	472.1 -> 427.0	20612	1.47 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 117.7%	
d3-MeFOSAA	8.249	573.2 -> 419.0	13021	5.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C3-HFPO-DA	5.902	286.9 -> 168.9	26630	10.99 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.9%	
d3-MeFOSA	11.076	515.0 -> 219.0	3226	0.84 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 33.6%	
d5-EtFOSAA	8.458	589.2 -> 419.0	10459	5.14 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
d7-MeFOSE	10.959	623.2 -> 58.9	18923	6.21 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 24.8%	
d9-EtFOSE	11.269	639.2 -> 58.9	30283	7.02 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 28.1%	
d5-EtFOSA	11.360	531.1 -> 219.0	3842	0.94 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 37.6%	

**Target Compounds**

**QValue**

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



7.2.1  
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	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	9.053	663.0 -> 619.0	0	µg/L	m	1
		663.0 -> 168.9	0			
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.631	630.0 -> 58.9	0	µg/L	m	1
		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

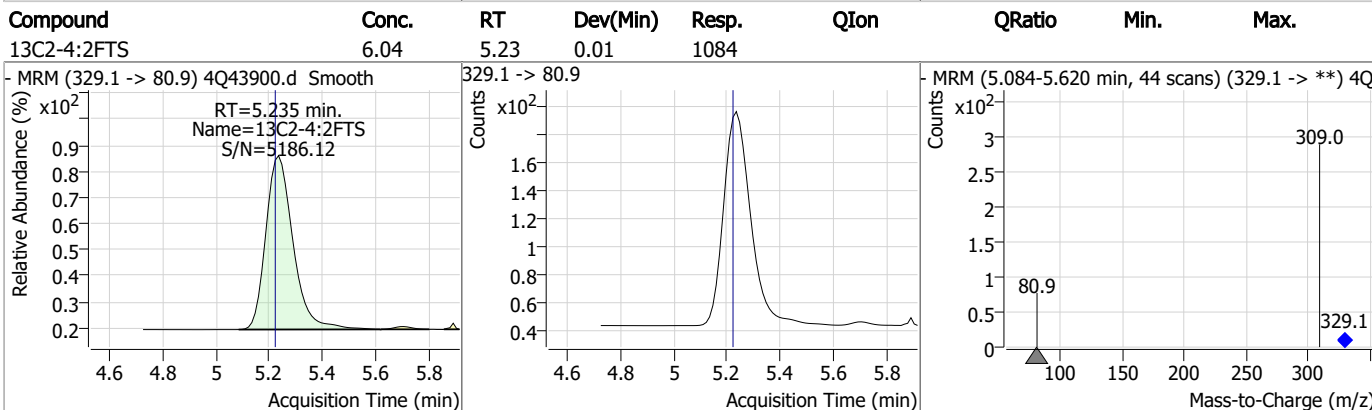
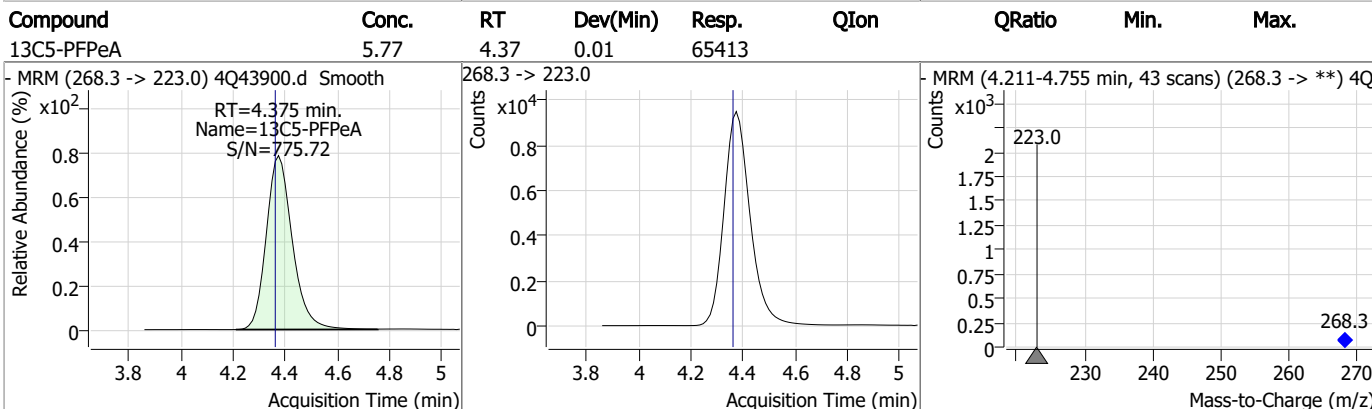
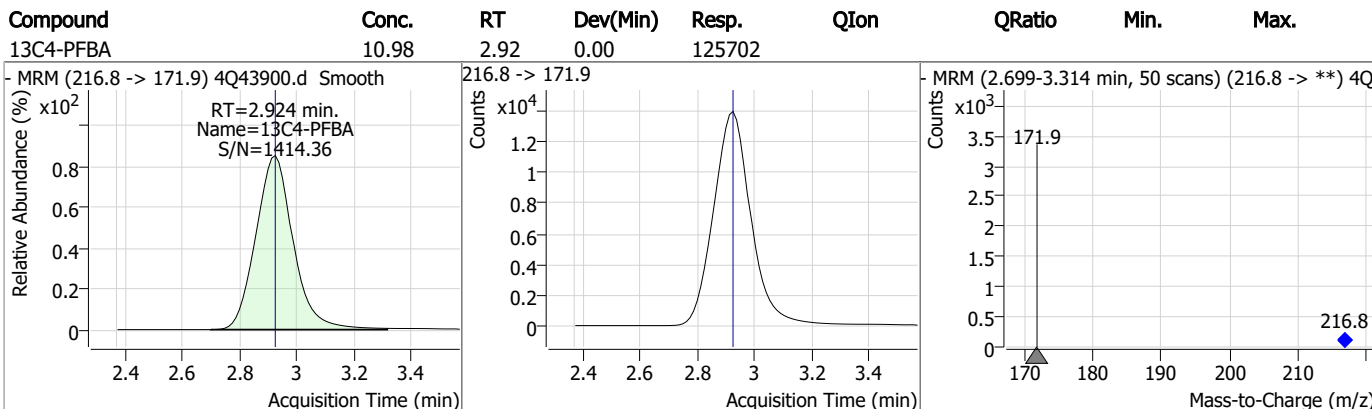
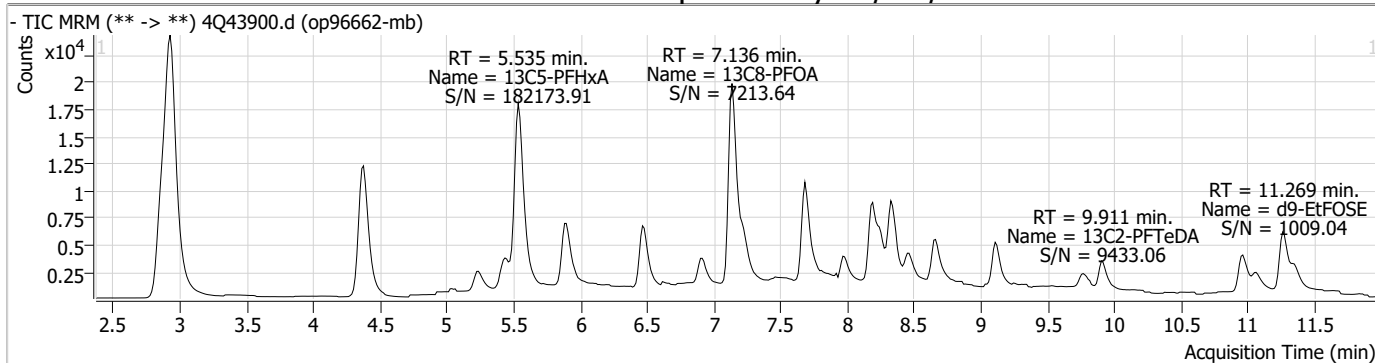
### Perfluorinated Compounds by LC/MS/MS

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

7.2.1

7

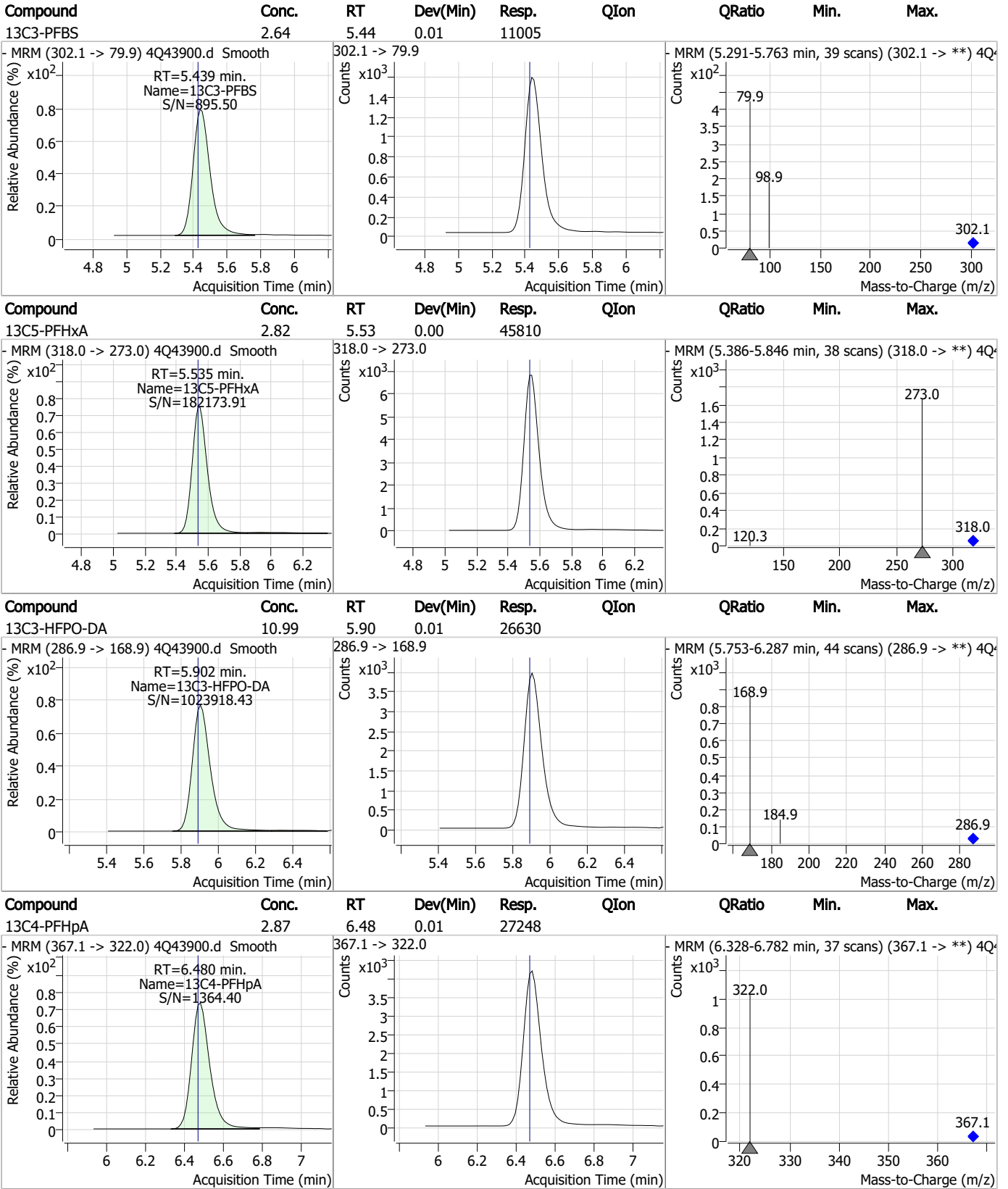
### Perfluorinated Compounds by LC/MS/MS



7.2.1  
7



### Perfluorinated Compounds by LC/MS/MS

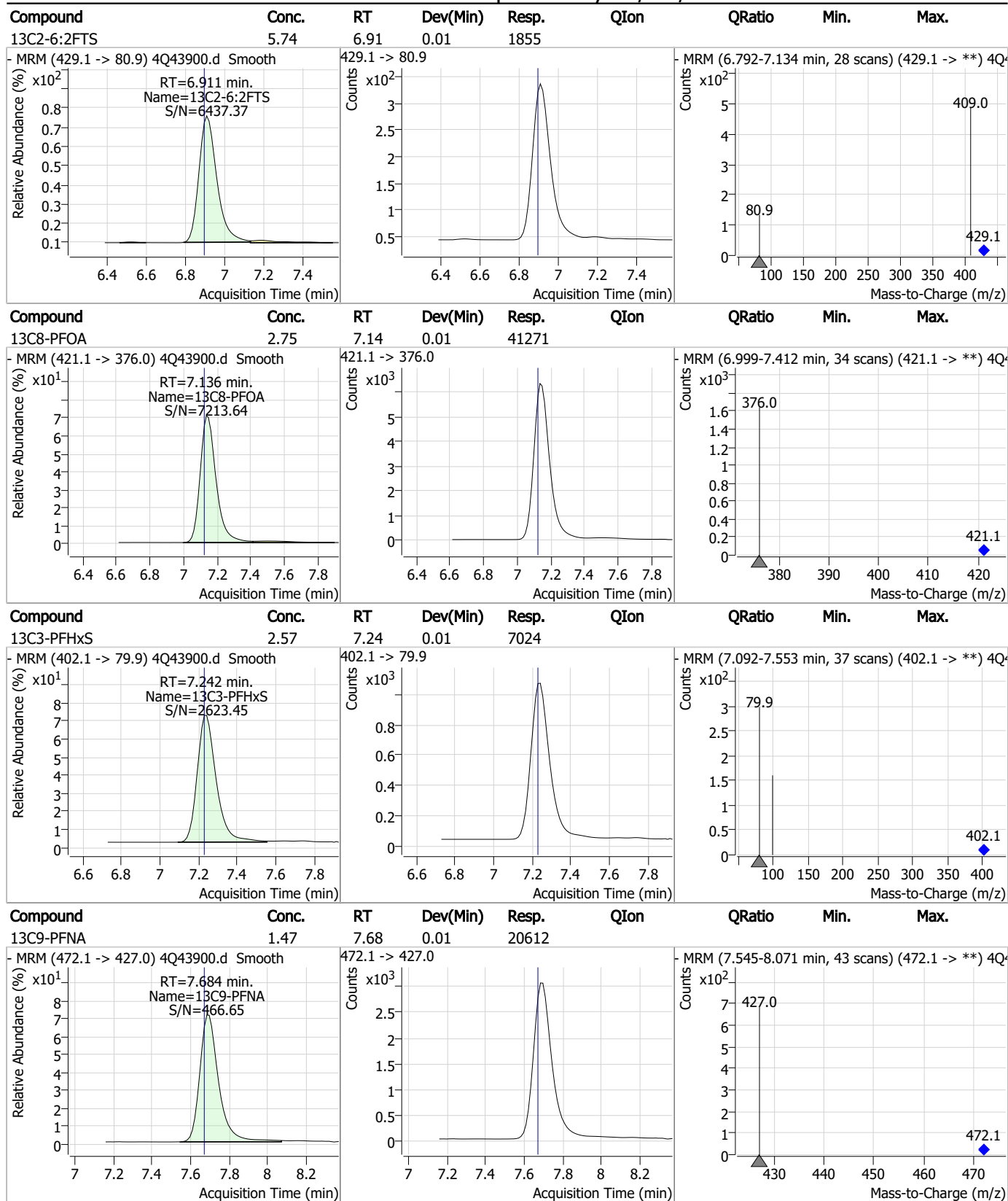


7.2.1

7



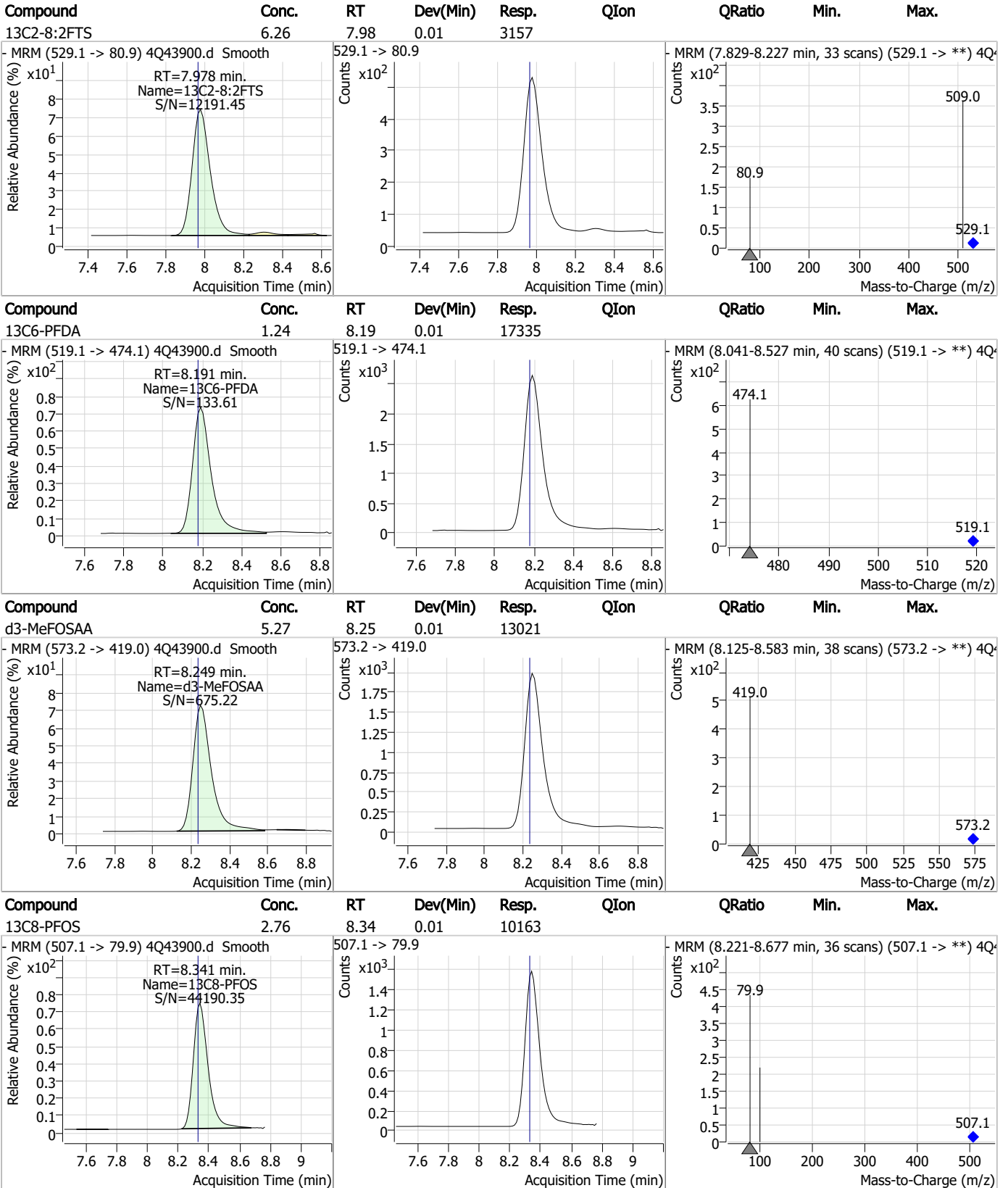
### Perfluorinated Compounds by LC/MS/MS



7.2.1  
7



### Perfluorinated Compounds by LC/MS/MS

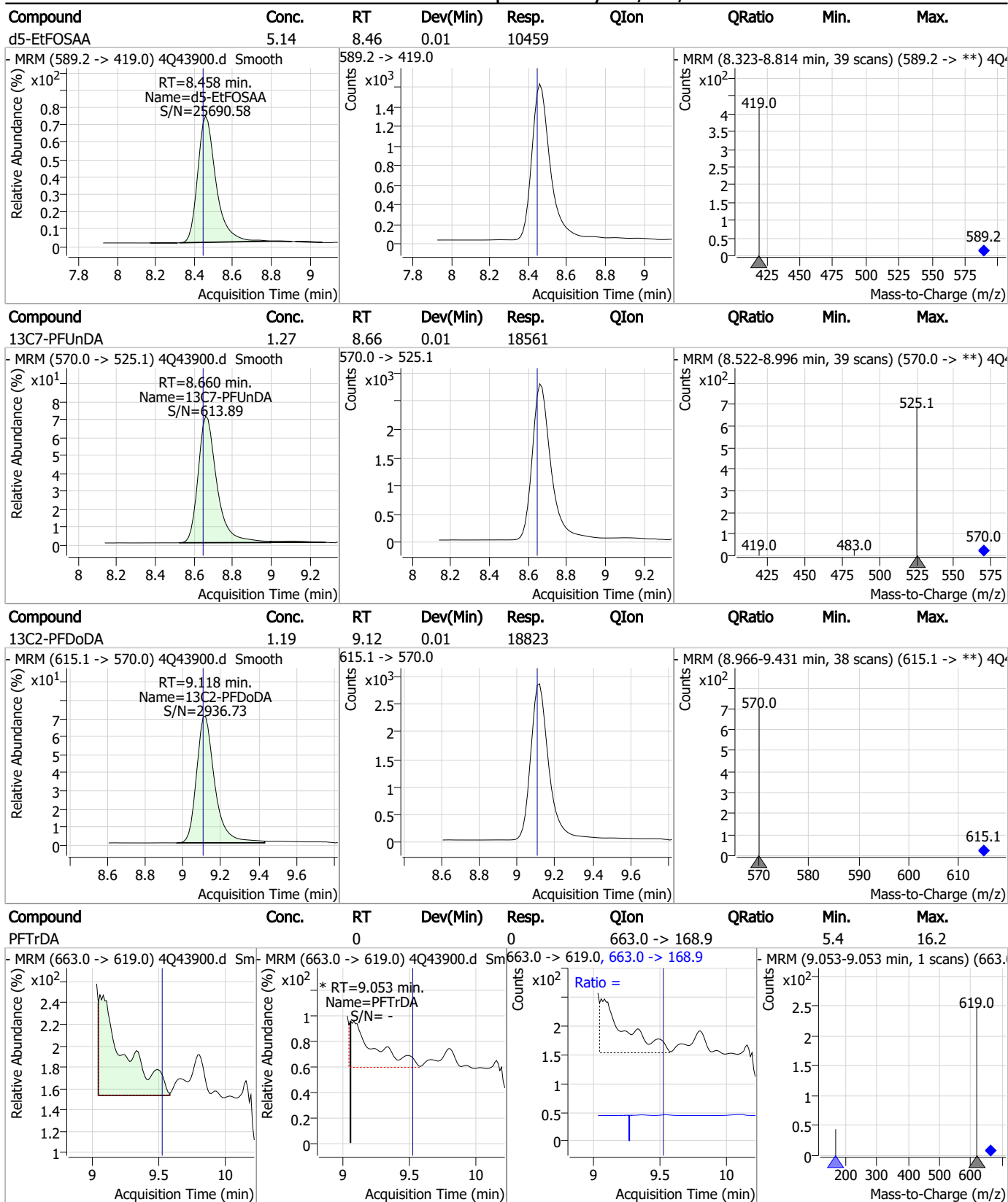


7.2.1

7

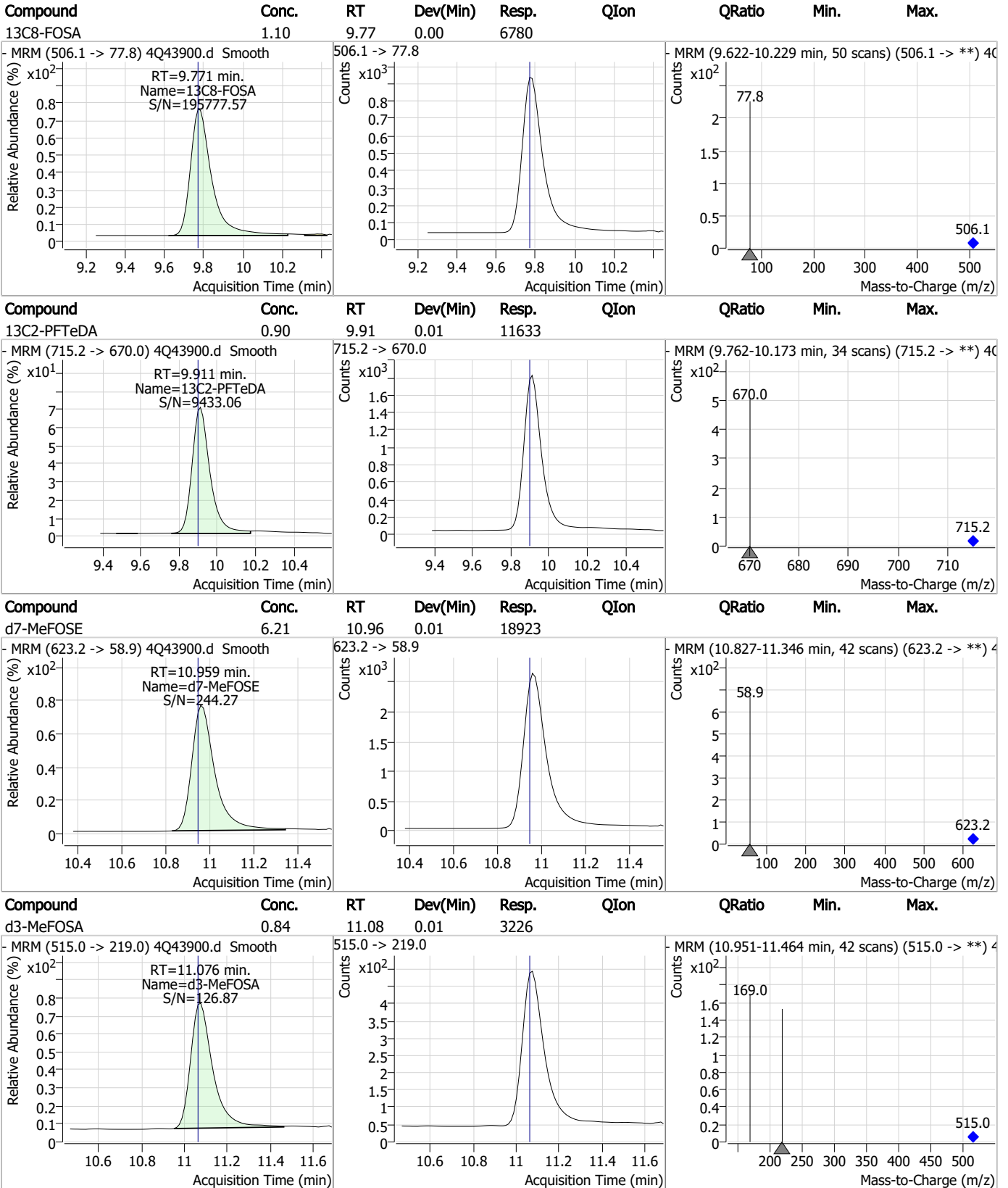


### Perfluorinated Compounds by LC/MS/MS



7.2.1  
7

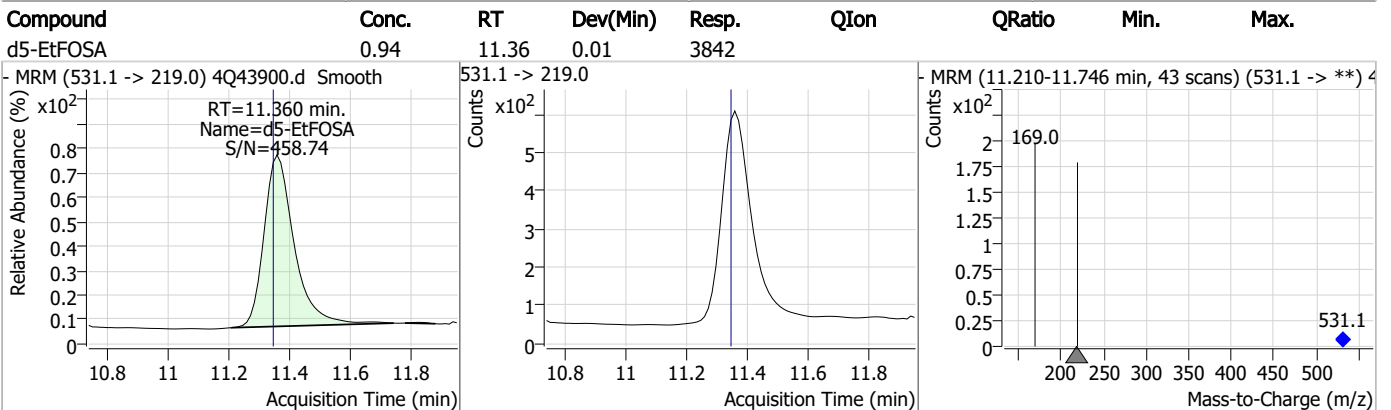
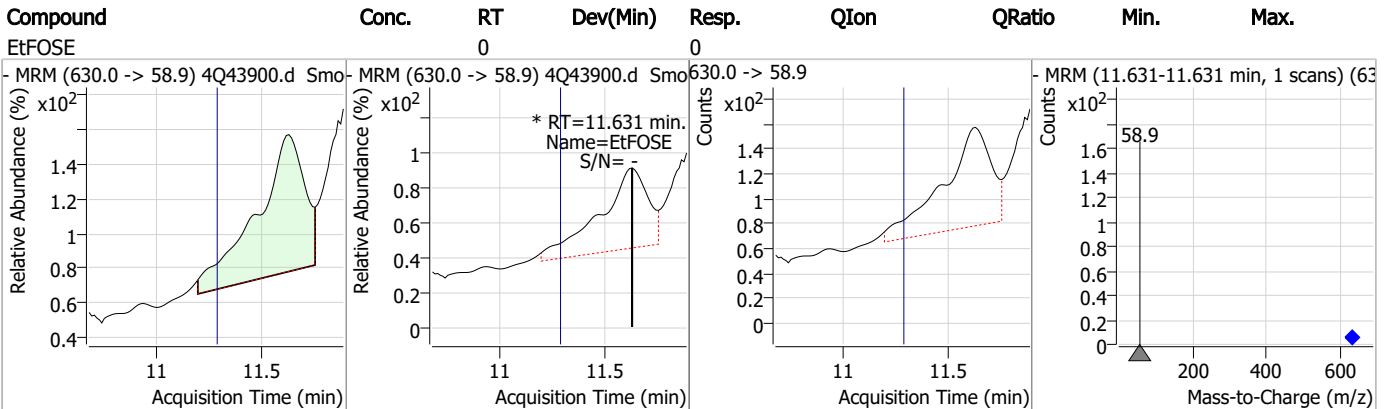
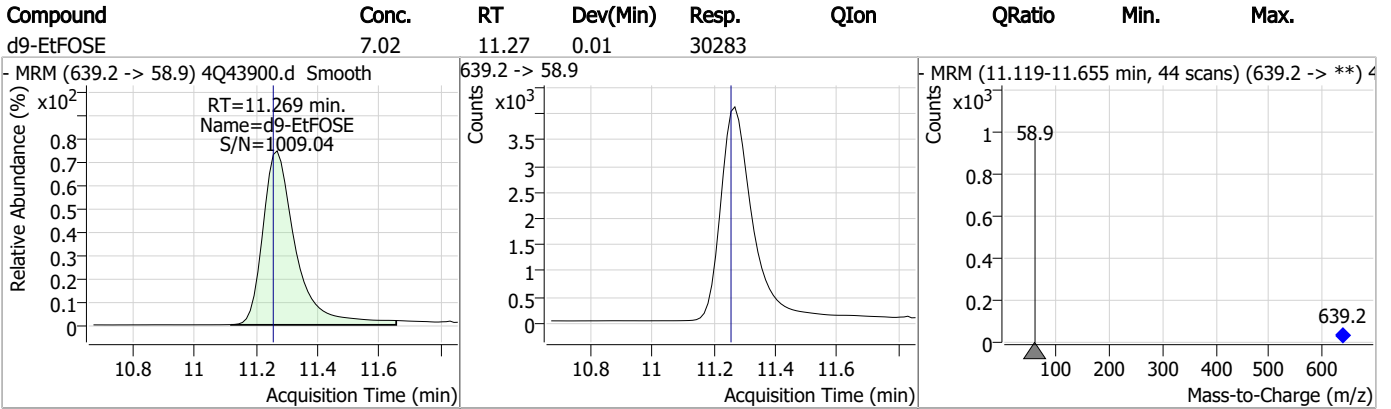
### Perfluorinated Compounds by LC/MS/MS



7.2.1

7

### Perfluorinated Compounds by LC/MS/MS



7.2.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43892.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 1:04:38 PM  
 Sample Name : iblk  
 Vial : P1-A1  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.911	216.8 -> 171.9	128907	10.00 µg/L	-0.012
M5-PFPeA	4.362	268.3 -> 223.0	68258	5.00 µg/L	0.000
M5-PFHxA	5.535	318.0 -> 273.0	47546	2.50 µg/L	0.000
M4-PFHpA	6.467	367.1 -> 322.0	28859	2.50 µg/L	0.000
M8-PFOA	7.136	421.1 -> 376.0	43517	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	19713	1.25 µg/L	0.013
M6-PFDA	8.178	519.1 -> 474.1	18908	1.25 µg/L	0.000
M7-PFUnDA	8.660	570.0 -> 525.1	20098	1.25 µg/L	0.013
M2-PFDoDA	9.106	615.1 -> 570.0	21299	1.25 µg/L	0.000
M2-PFTeDA	9.911	715.2 -> 670.0	16065	1.25 µg/L	0.012
M8-FOSA	9.771	506.1 -> 77.8	15895	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	11412	2.50 µg/L	0.012
M3-PFHxS	7.229	402.1 -> 79.9	7442	2.50 µg/L	0.000
M8-PFOS	8.329	507.1 -> 79.9	10398	2.50 µg/L	0.000
M2-4:2FTS	5.222	329.1 -> 80.9	1071	5.00 µg/L	0.000
M2-6:2FTS	6.898	429.1 -> 80.9	2128	5.00 µg/L	0.000
M2-8:2FTS	7.966	529.1 -> 80.9	3237	5.00 µg/L	0.000
M3-MeFOSAA	8.249	573.2 -> 419.0	14362	5.00 µg/L	0.012
M3-HFPO-DA	5.890	286.9 -> 168.9	29156	10.00 µg/L	0.000
M5-EtFOSAA	8.458	589.2 -> 419.0	11664	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	68436	25.00 µg/L	0.012
M9-EtFOSE	11.256	639.2 -> 58.9	98697	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	11355	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	9862	2.50 µg/L	0.000
13C4-PFOS	8.330	502.8 -> 79.9	10995	2.50 µg/L	0.000
13C3-PFBA	2.916	216.0 -> 172.0	68638	5.00 µg/L	-0.013
18O2-PFHxS	7.228	403.0 -> 83.9	4669	2.50 µg/L	0.000
13C4-PFOA	7.136	417.1 -> 372.0	51953	2.50 µg/L	0.012
13C2-PFDA	8.178	515.1 -> 470.1	16965	1.25 µg/L	0.000
13C5-PFNA	7.684	468.0 -> 423.0	23976	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	43462	2.50 µg/L	0.000
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.222	329.1 -> 80.9	1071	5.64 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.9%		
13C2-6:2FTS	6.898	429.1 -> 80.9	2128	6.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 124.4%		
13C2-8:2FTS	7.966	529.1 -> 80.9	3237	6.06 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.2%		
13C2-PFDoDA	9.106	615.1 -> 570.0	21299	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C2-PFTeDA	9.911	715.2 -> 670.0	16065	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C3-PFBS	5.439	302.1 -> 79.9	11412	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C3-PFHxS	7.229	402.1 -> 79.9	7442	2.57 µg/L	0.000

7.22  
7

### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C4-PFBA	2.911	216.8 -> 171.9	128907	9.98 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	6.467	367.1 -> 322.0	28859	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C5-PFHxA	5.535	318.0 -> 273.0	47546	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFPeA	4.362	268.3 -> 223.0	68258	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C6-PFDA	8.178	519.1 -> 474.1	18908	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C7-PFUnDA	8.660	570.0 -> 525.1	20098	1.33 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.3%	
13C8-FOSA	9.771	506.1 -> 77.8	15895	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.2%	
13C8-PFOA	7.136	421.1 -> 376.0	43517	2.55 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-PFOS	8.329	507.1 -> 79.9	10398	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C9-PFNA	7.684	472.1 -> 427.0	19713	1.21 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.8%	
d3-MeFOSAA	8.249	573.2 -> 419.0	14362	5.17 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	29156	10.20 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
d3-MeFOSA	11.064	515.0 -> 219.0	9862	2.29 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.5%	
d5-EtFOSAA	8.458	589.2 -> 419.0	11664	5.10 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.1%	
d7-MeFOSE	10.959	623.2 -> 58.9	68436	20.00 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.0%	
d9-EtFOSE	11.256	639.2 -> 58.9	98697	20.38 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.5%	
d5-EtFOSA	11.348	531.1 -> 219.0	11355	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	

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	8.459	584.2 -> 419.1	78	0.03 µg/L	# 38
		584.2 -> 526.0	6		
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9	-	N.D.	
		298.7 -> 98.8			
PFDA	-	512.9 -> 469.0	-	N.D.	
		512.9 -> 219.0			
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	-	599.0 -> 79.9	-	N.D.	



7.2.2  
7



### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	8.047	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	-	548.8 -> 98.9	-	N.D.		
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	11.282	630.0 -> 58.9	0	µg/L	m	1
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.2  
7

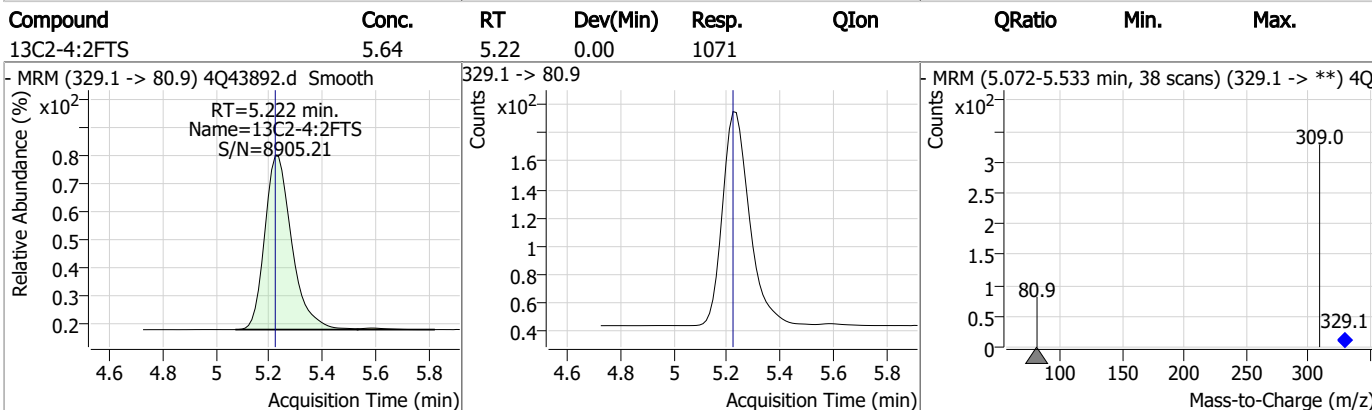
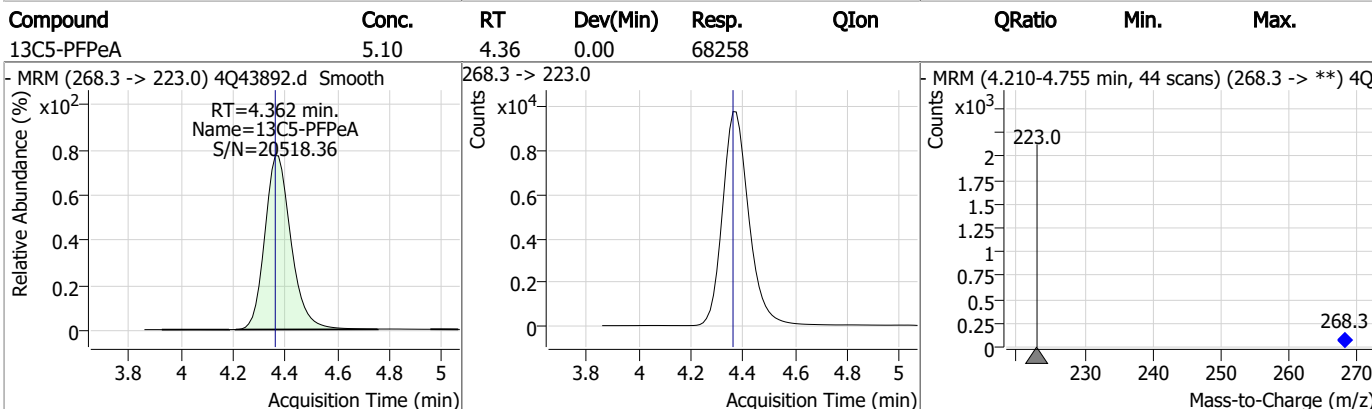
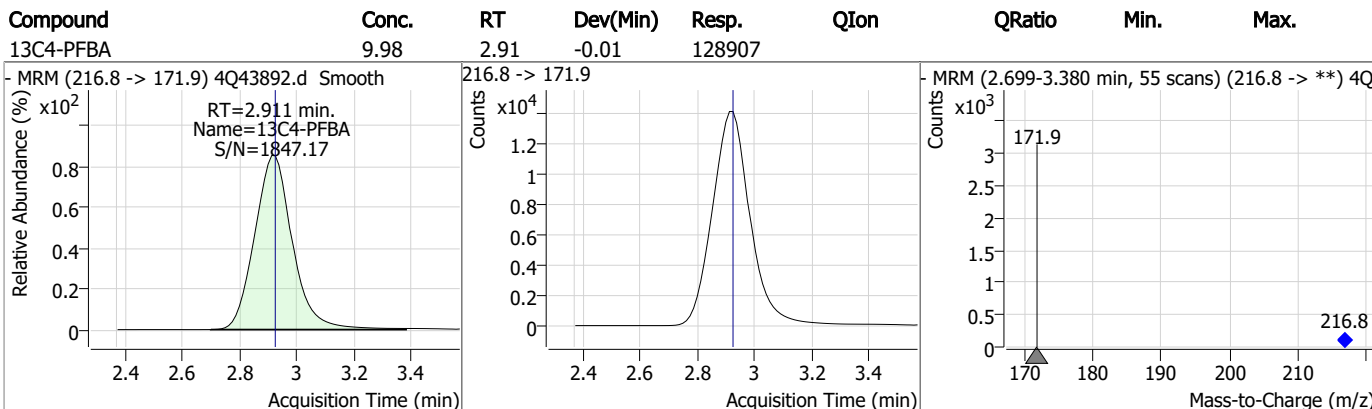
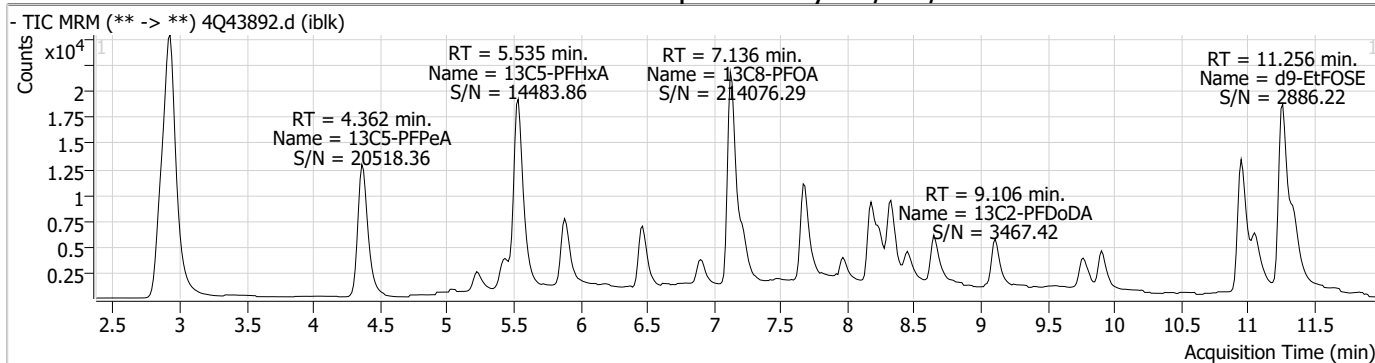
### Perfluorinated Compounds by LC/MS/MS

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

7.2.2

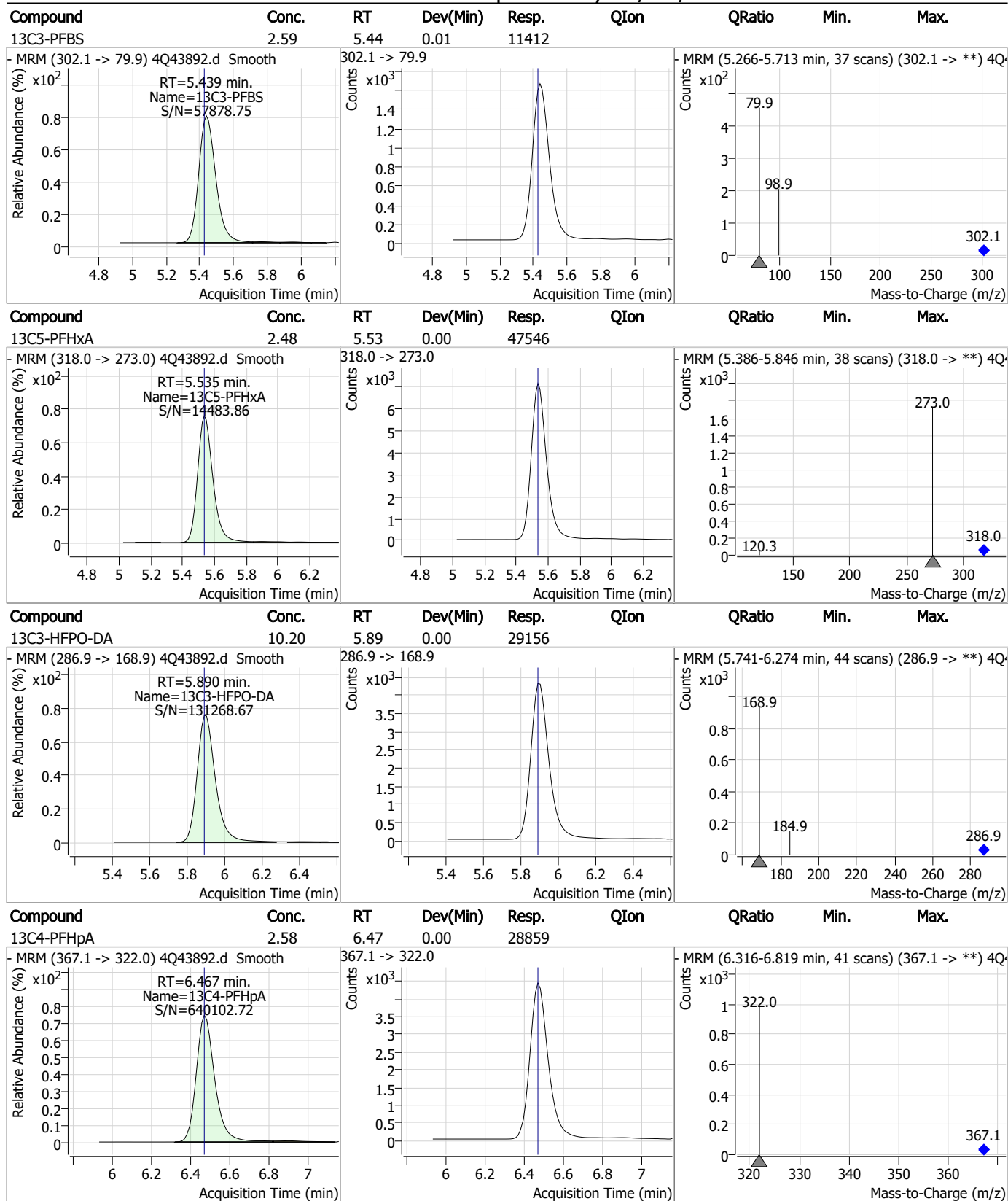
7

### Perfluorinated Compounds by LC/MS/MS



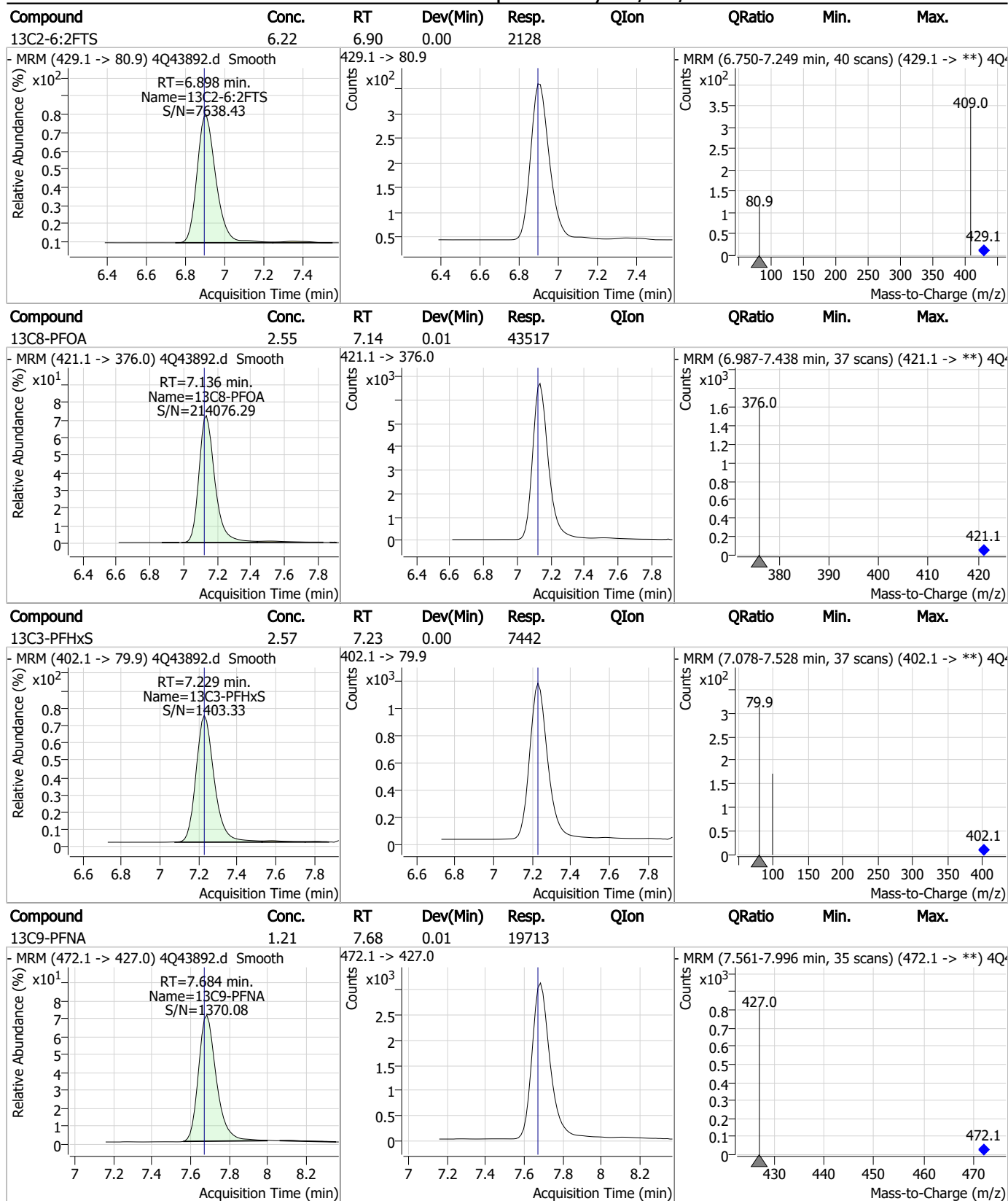
7.2.2  
7

### Perfluorinated Compounds by LC/MS/MS



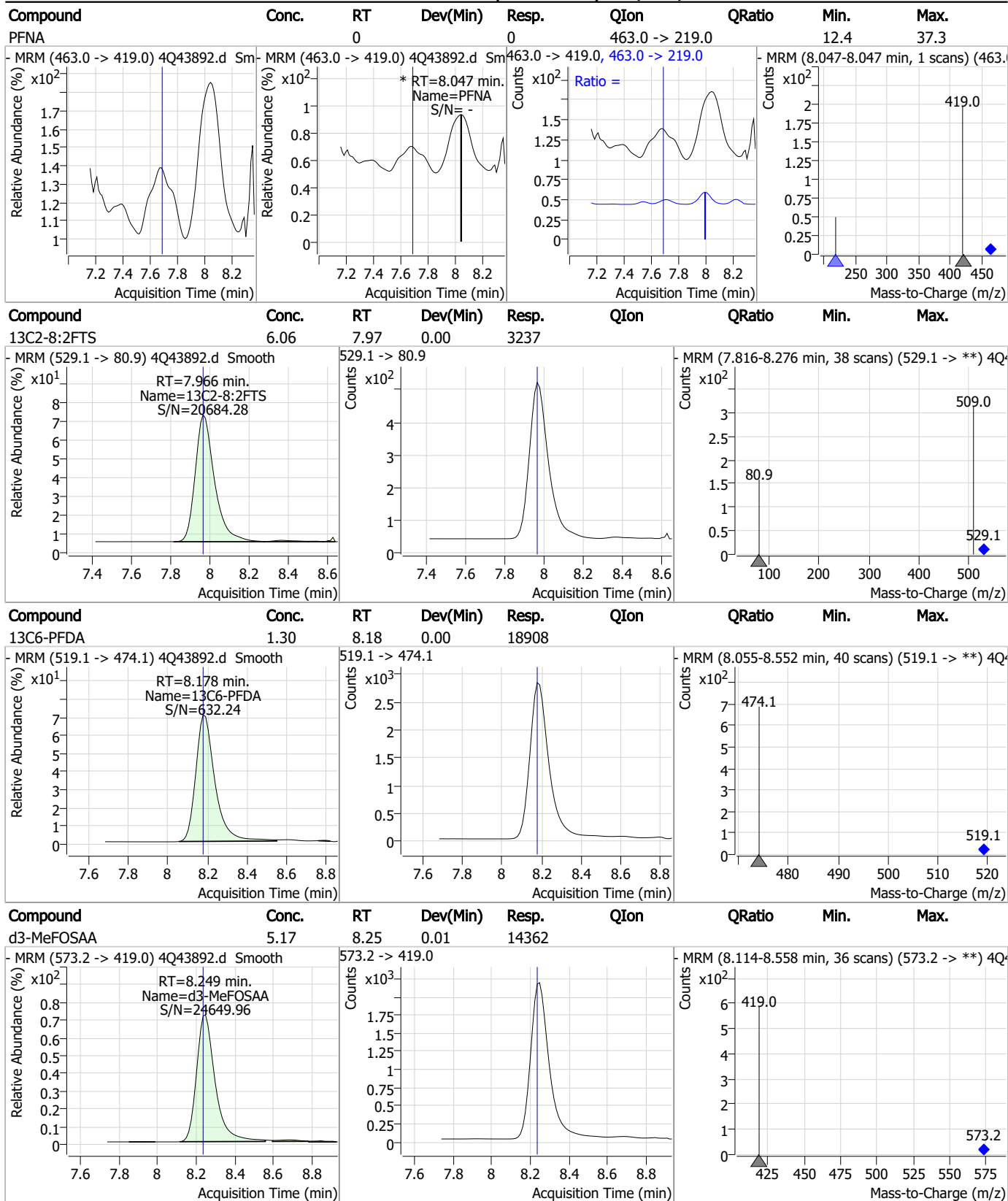
7.2.2  
7

### Perfluorinated Compounds by LC/MS/MS



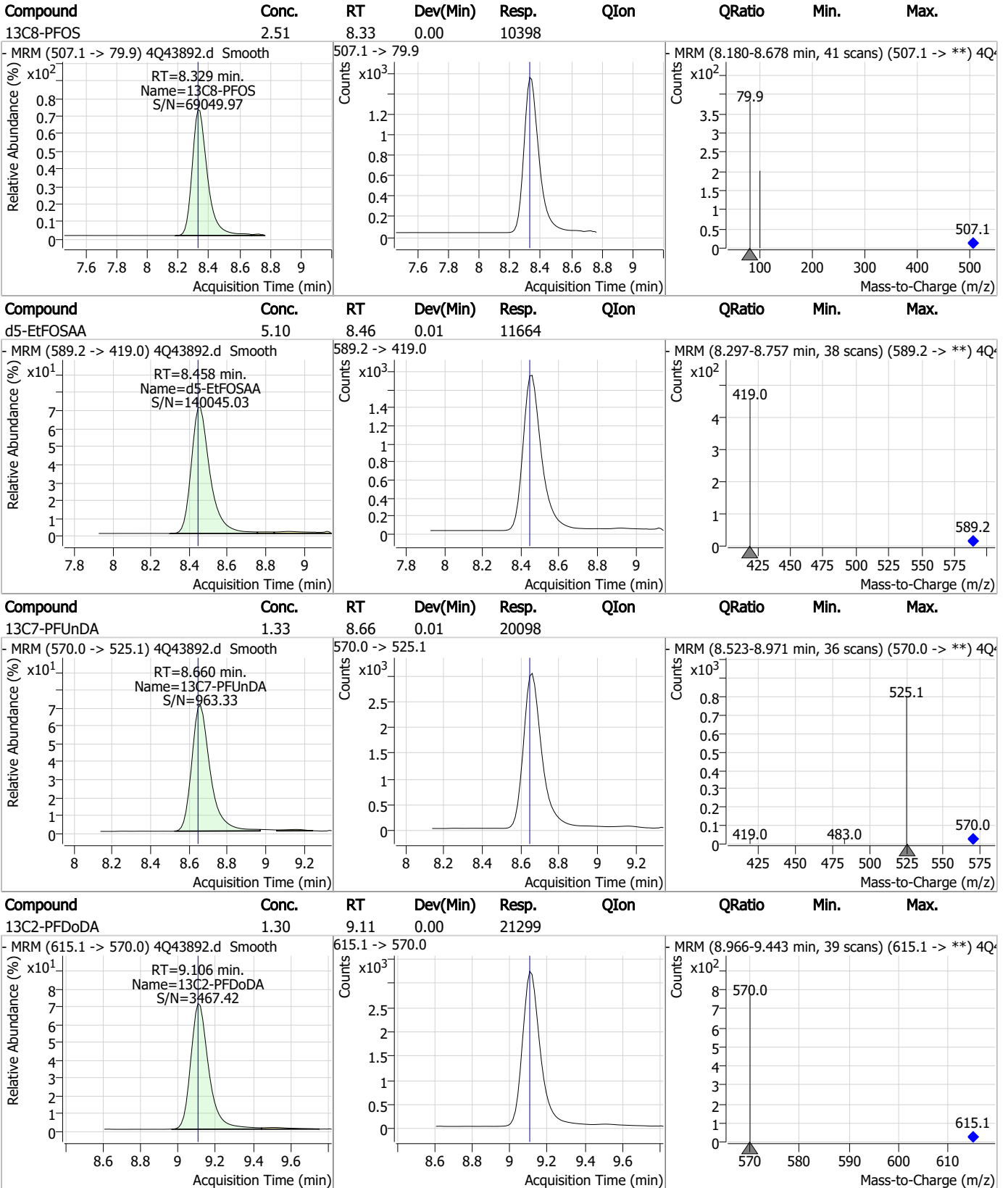
7.22  
7

### Perfluorinated Compounds by LC/MS/MS



7.2.2  
7

### Perfluorinated Compounds by LC/MS/MS

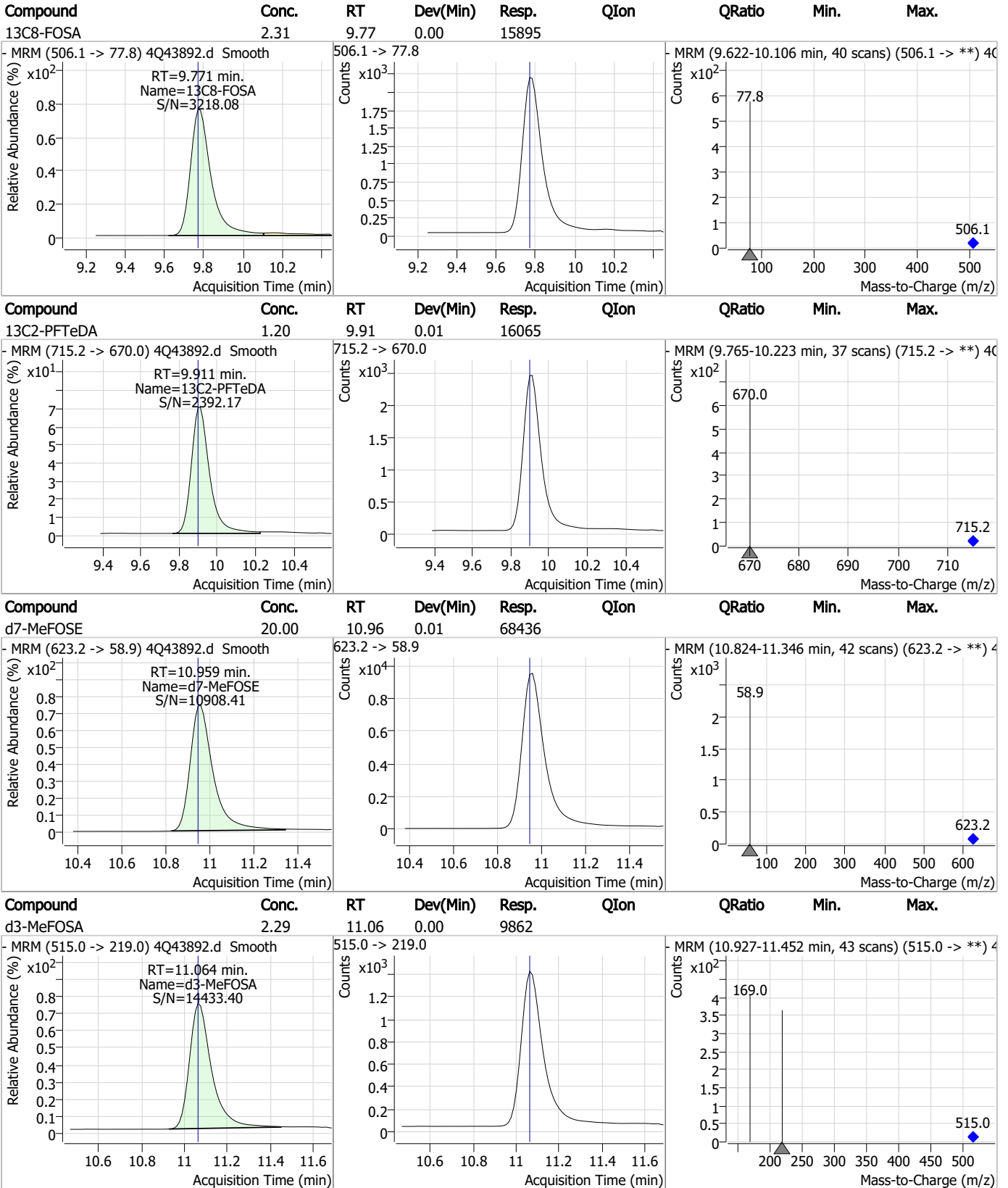


7.2.2

7



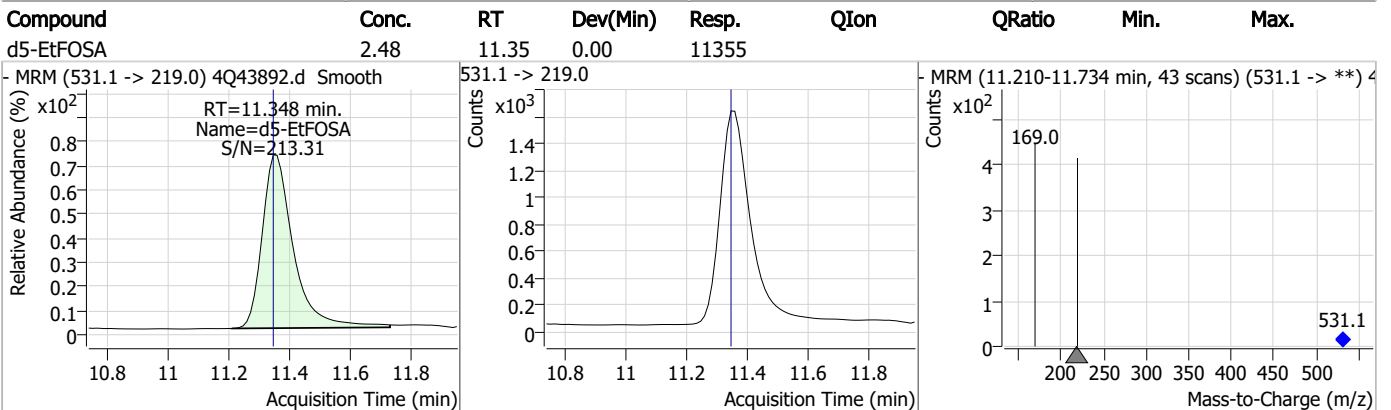
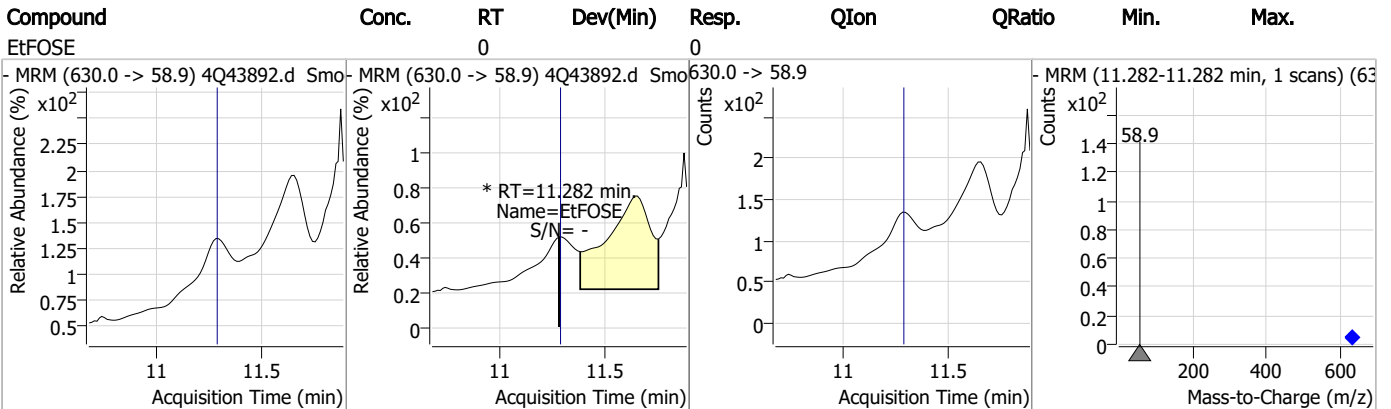
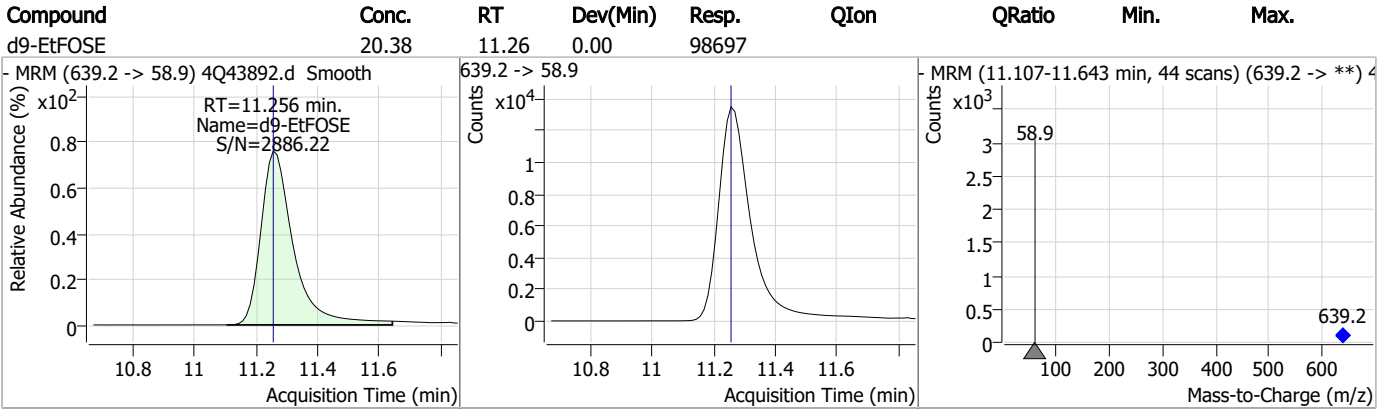
### Perfluorinated Compounds by LC/MS/MS



7.2.2  
7



### Perfluorinated Compounds by LC/MS/MS



7.2.2

7



## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43908.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 4:25:56 PM  
 Sample Name : iccb  
 Vial : P1-A1  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.924	216.8 -> 171.9	129500	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	67506	5.00 µg/L	0.012
M5-PFHxA	5.547	318.0 -> 273.0	46325	2.50 µg/L	0.012
M4-PFHpA	6.480	367.1 -> 322.0	27392	2.50 µg/L	0.012
M8-PFOA	7.148	421.1 -> 376.0	43975	2.50 µg/L	0.025
M9-PFNA	7.696	472.1 -> 427.0	21470	1.25 µg/L	0.026
M6-PFDA	8.203	519.1 -> 474.1	18429	1.25 µg/L	0.025
M7-PFUnDA	8.672	570.0 -> 525.1	20495	1.25 µg/L	0.025
M2-PFDoDA	9.130	615.1 -> 570.0	21974	1.25 µg/L	0.025
M2-PFTeDA	9.911	715.2 -> 670.0	15667	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	16300	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11320	2.50 µg/L	0.025
M3-PFHxS	7.242	402.1 -> 79.9	7486	2.50 µg/L	0.012
M8-PFOS	8.354	507.1 -> 79.9	10322	2.50 µg/L	0.025
M2-4:2FTS	5.235	329.1 -> 80.9	1094	5.00 µg/L	0.012
M2-6:2FTS	6.923	429.1 -> 80.9	2290	5.00 µg/L	0.025
M2-8:2FTS	7.990	529.1 -> 80.9	3524	5.00 µg/L	0.025
M3-MeFOSAA	8.261	573.2 -> 419.0	15252	5.00 µg/L	0.025
M3-HFPO-DA	5.914	286.9 -> 168.9	26504	10.00 µg/L	0.025
M5-EtFOSAA	8.470	589.2 -> 419.0	11966	5.00 µg/L	0.025
M7-MeFOSE	10.959	623.2 -> 58.9	70743	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	96776	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	11062	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	10632	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	10800	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	68220	5.00 µg/L	0.000
18O2-PFHxS	7.241	403.0 -> 83.9	4895	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	52043	2.50 µg/L	0.025
13C2-PFDA	8.204	515.1 -> 470.1	18316	1.25 µg/L	0.025
13C5-PFNA	7.697	468.0 -> 423.0	24469	1.25 µg/L	0.012
13C2-PFHxA	5.548	315.1 -> 270.0	42903	2.50 µg/L	0.012
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.235	329.1 -> 80.9	1094	5.50 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.0%		
13C2-6:2FTS	6.923	429.1 -> 80.9	2290	6.38 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.7%		
13C2-8:2FTS	7.990	529.1 -> 80.9	3524	6.30 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.9%		
13C2-PFDoDA	9.130	615.1 -> 570.0	21974	1.24 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-PFTeDA	9.911	715.2 -> 670.0	15667	1.08 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 86.8%		
13C3-PFBS	5.452	302.1 -> 79.9	11320	2.45 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C3-PFHxS	7.242	402.1 -> 79.9	7486	2.47 µg/L	0.012

7.2.3  
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.7%	
13C4-PFBA	2.924	216.8 -> 171.9	129500	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C4-PFHpA	6.480	367.1 -> 322.0	27392	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C5-PFHxA	5.547	318.0 -> 273.0	46325	2.45 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.1%	
13C5-PFPeA	4.375	268.3 -> 223.0	67506	5.11 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C6-PFDA	8.203	519.1 -> 474.1	18429	1.17 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.0%	
13C7-PFUnDA	8.672	570.0 -> 525.1	20495	1.26 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C8-FOSA	9.783	506.1 -> 77.8	16300	2.41 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C8-PFOA	7.148	421.1 -> 376.0	43975	2.57 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.9%	
13C8-PFOS	8.354	507.1 -> 79.9	10322	2.54 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C9-PFNA	7.696	472.1 -> 427.0	21470	1.29 µg/L	0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.3%	
d3-MeFOSAA	8.261	573.2 -> 419.0	15252	5.59 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.9%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	26504	9.39 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.9%	
d3-MeFOSA	11.076	515.0 -> 219.0	10632	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
d5-EtFOSAA	8.470	589.2 -> 419.0	11966	5.33 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
d7-MeFOSE	10.959	623.2 -> 58.9	70743	21.05 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 84.2%	
d9-EtFOSE	11.269	639.2 -> 58.9	96776	20.34 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.4%	
d5-EtFOSA	11.360	531.1 -> 219.0	11062	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	

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



7.2.3  
7

### Perfluorinated Compounds by LC/MS/MS

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

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

7.2.3  
7

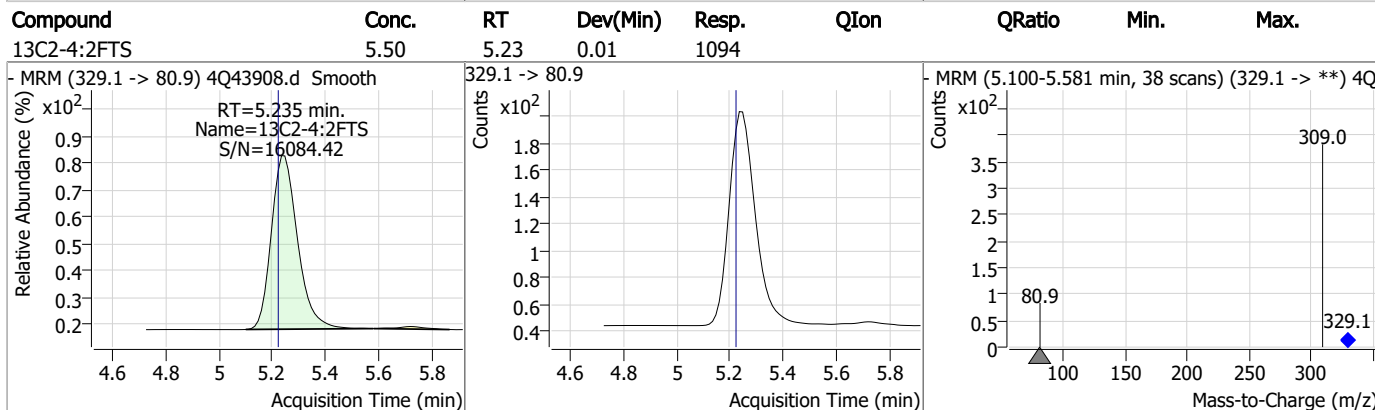
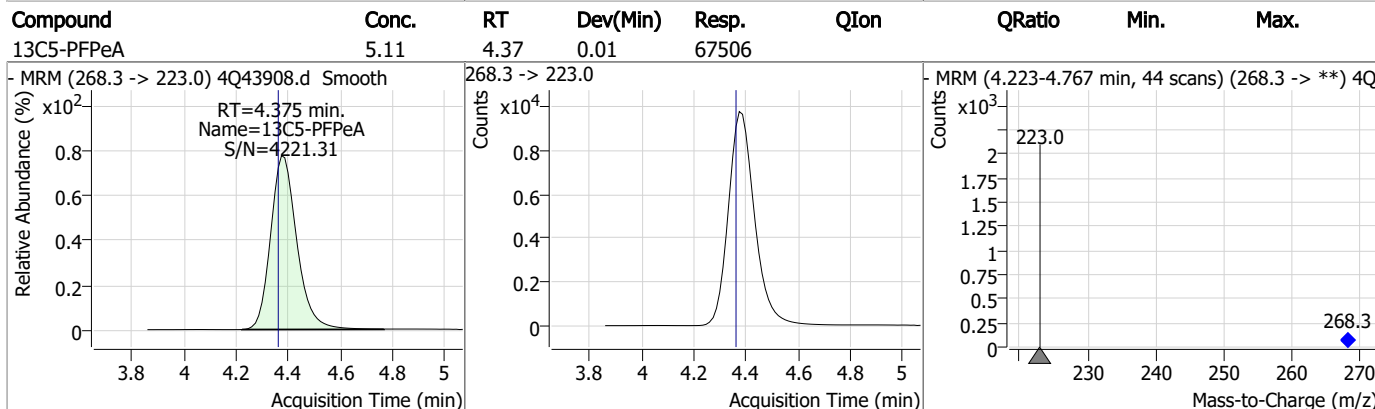
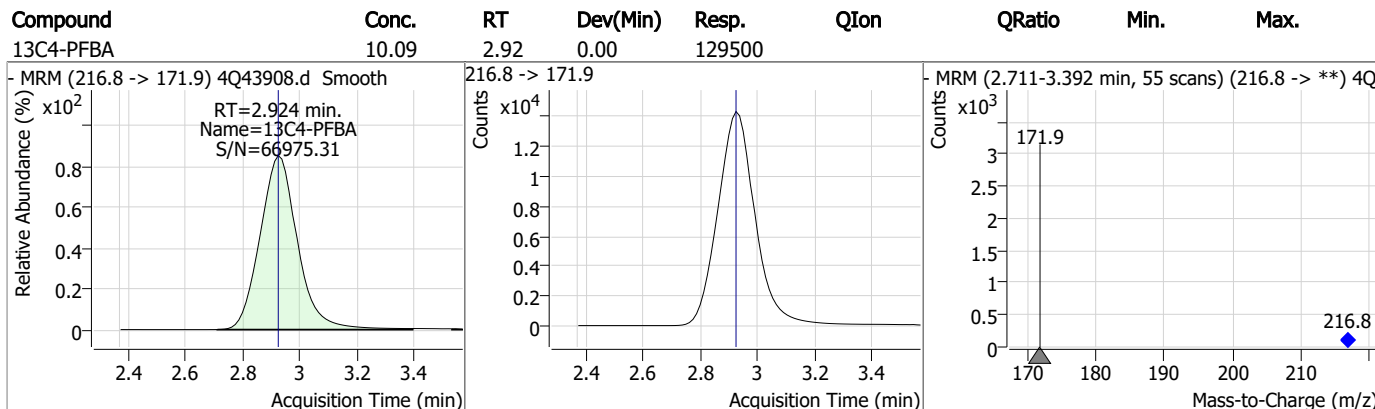
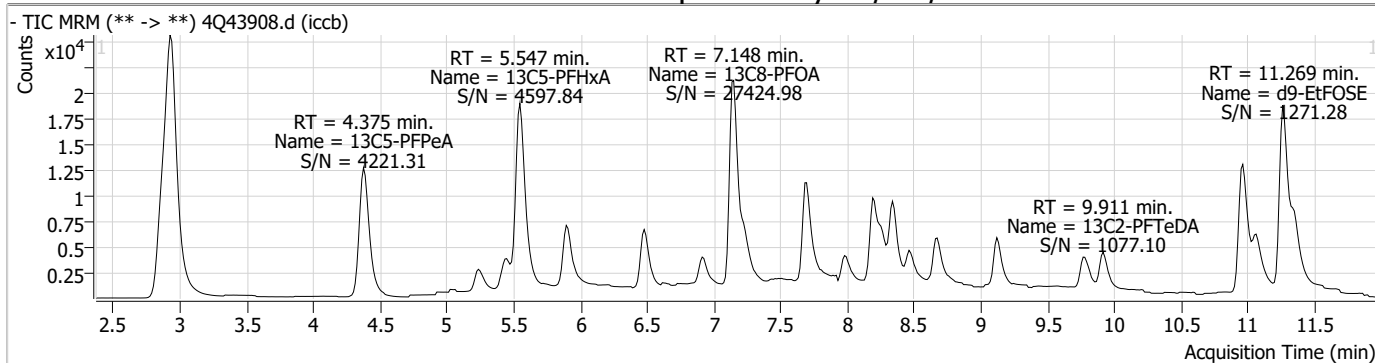
### Perfluorinated Compounds by LC/MS/MS

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

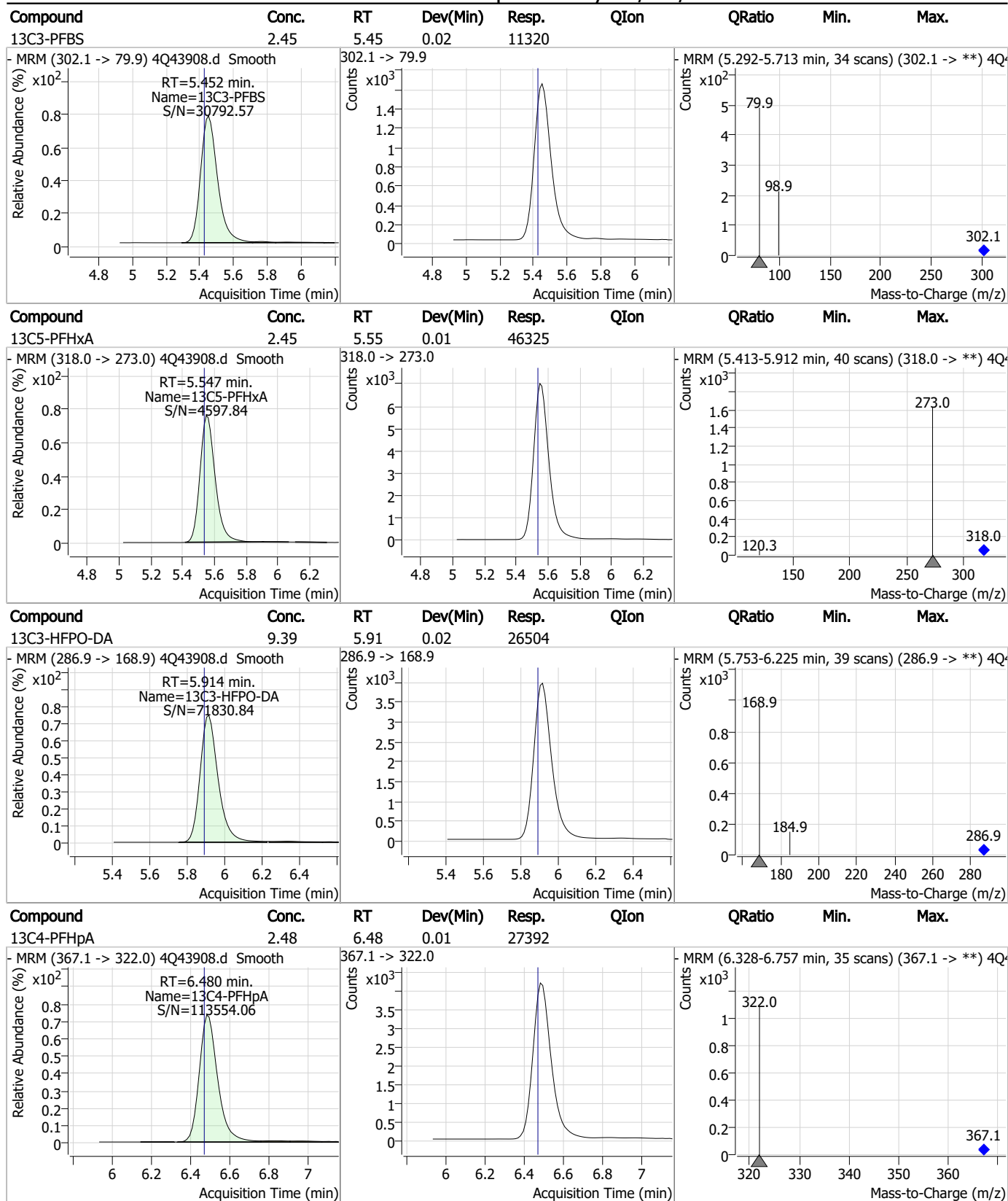
7.2.3

7

### Perfluorinated Compounds by LC/MS/MS

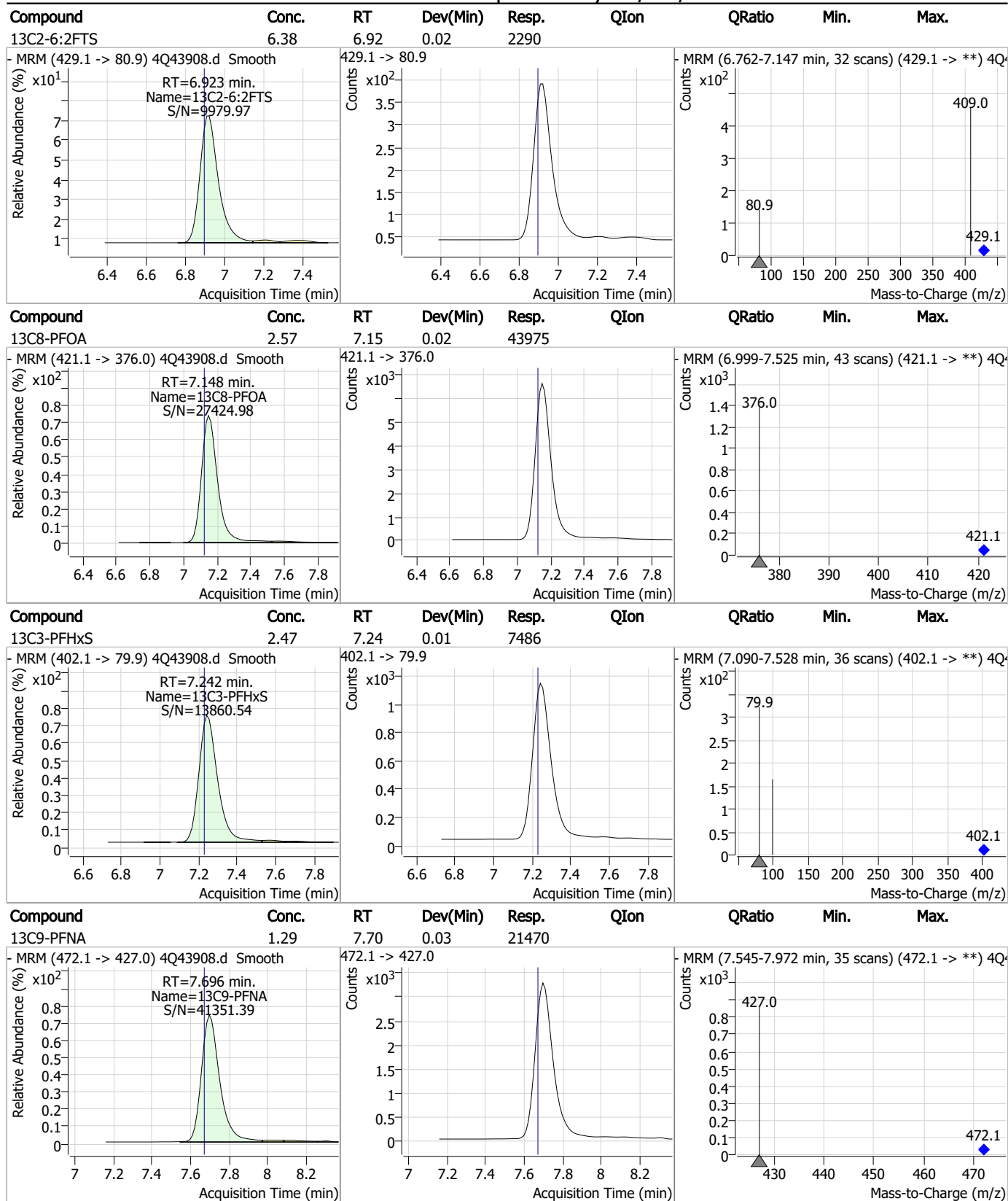


### Perfluorinated Compounds by LC/MS/MS



7.2.3  
7

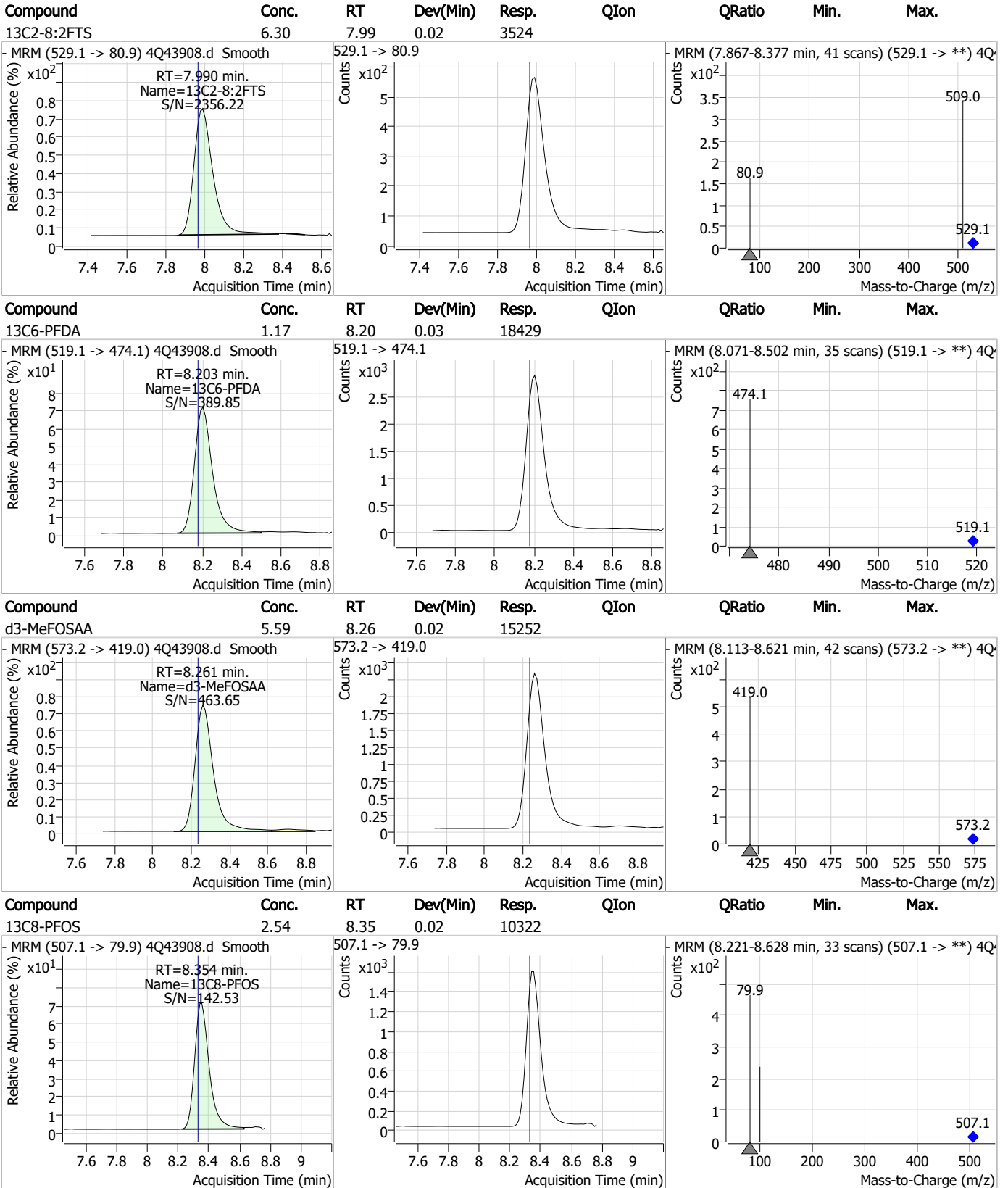
### Perfluorinated Compounds by LC/MS/MS



7.2.3  
7



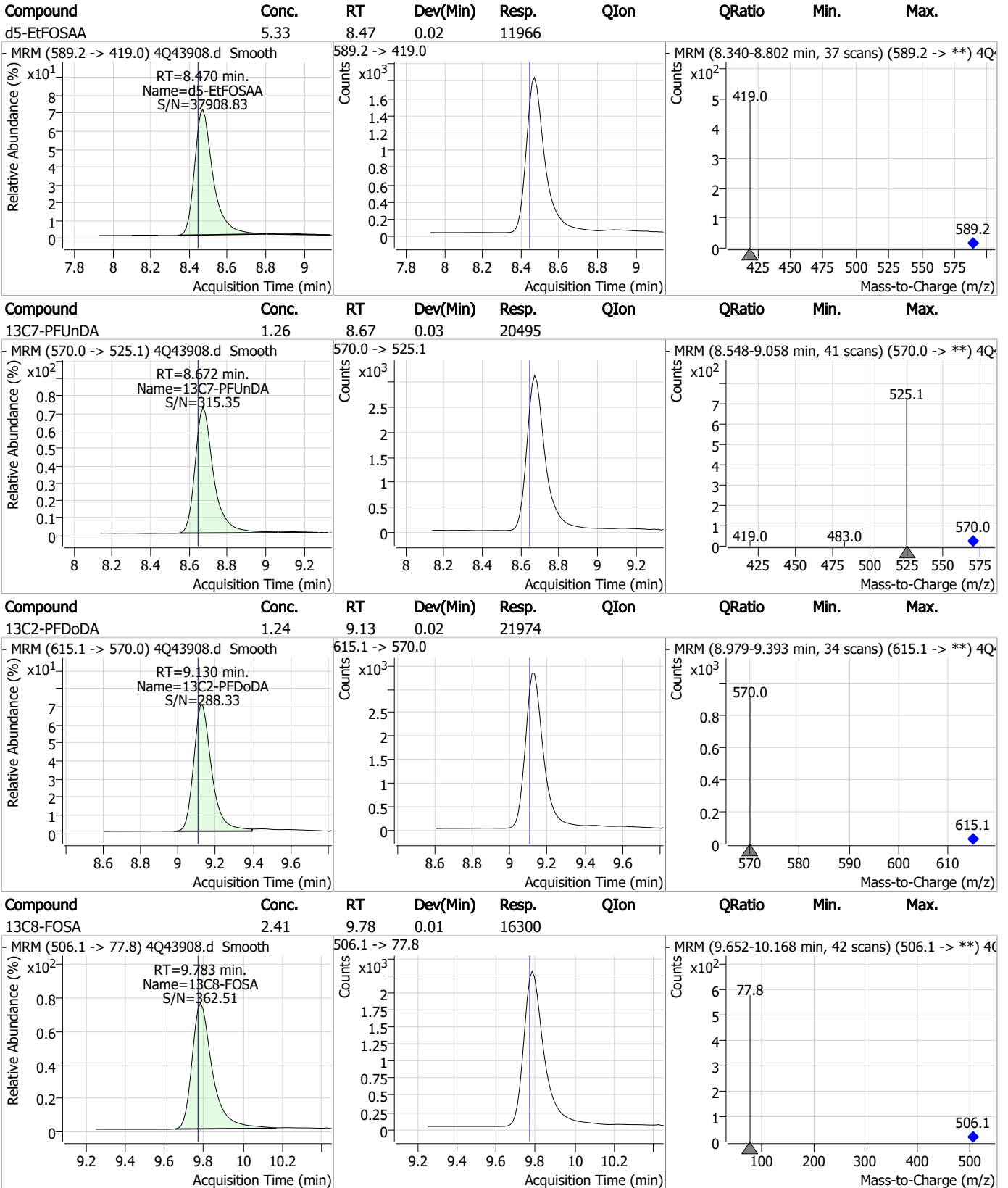
### Perfluorinated Compounds by LC/MS/MS



7.2.3

7

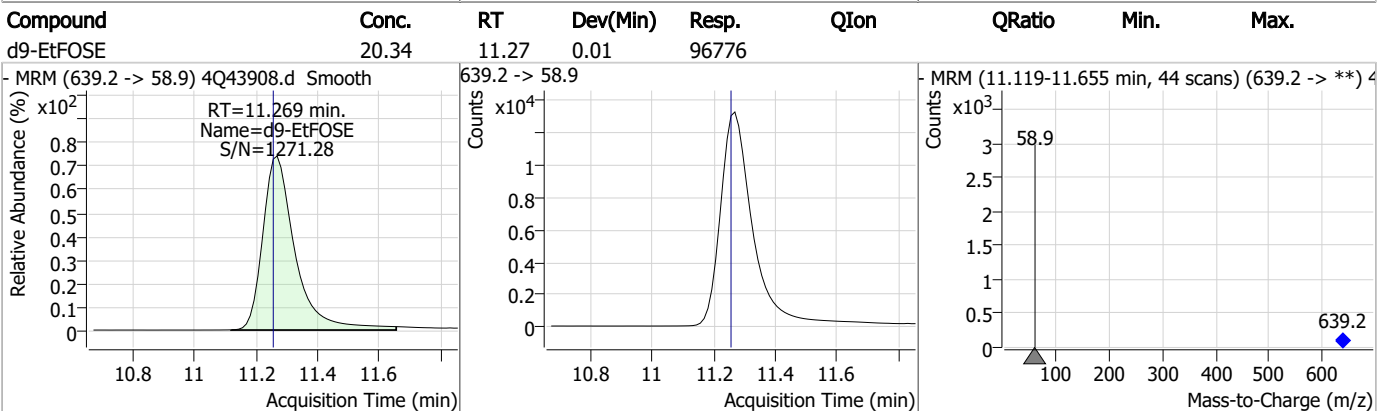
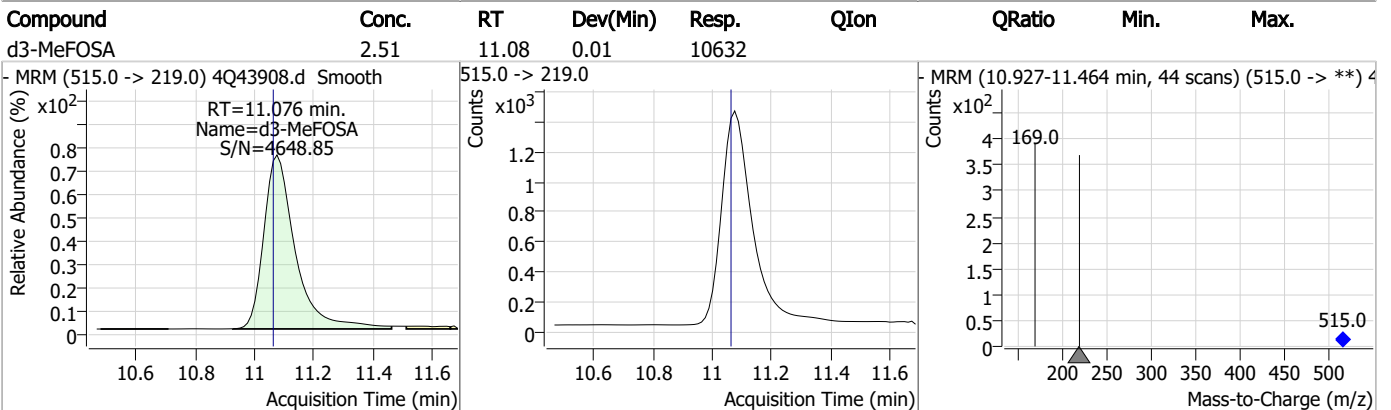
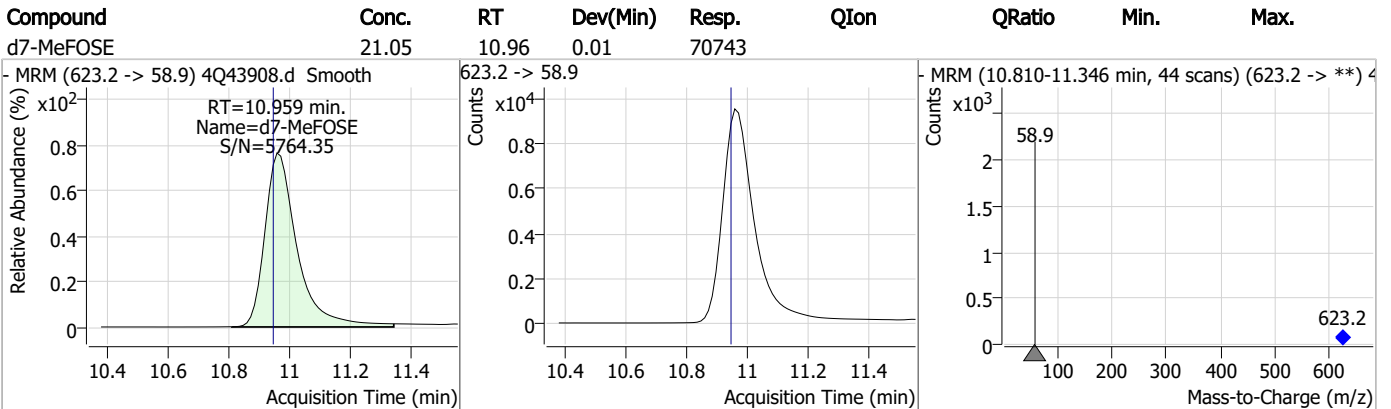
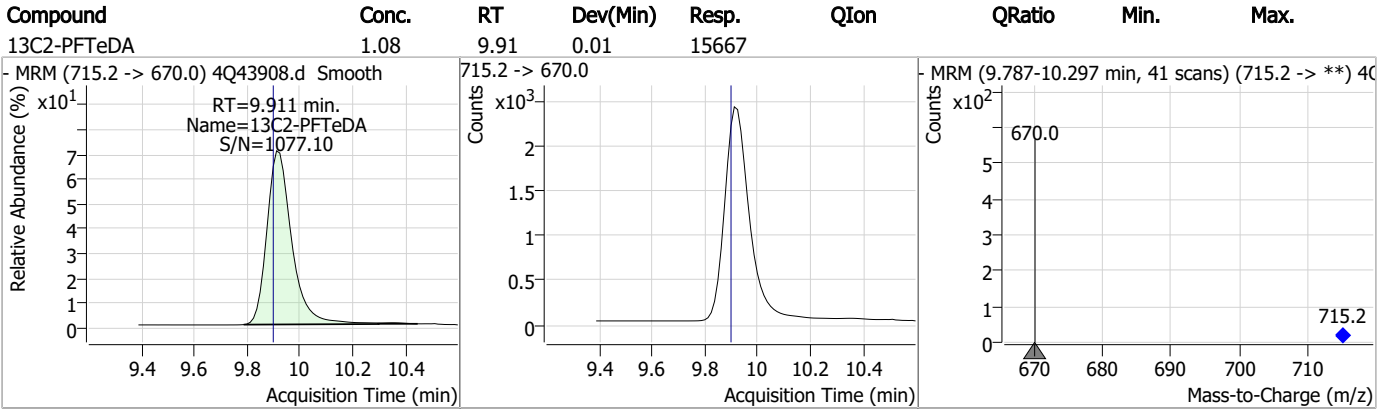
### Perfluorinated Compounds by LC/MS/MS



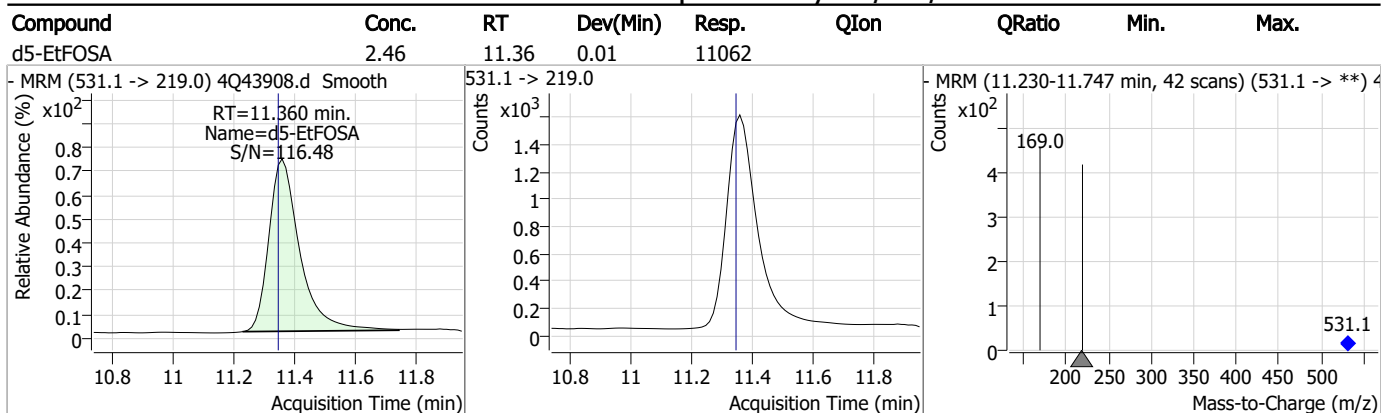
7.2.3

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 : 4Q43898.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 2:05:18 PM  
 Sample Name : op96662-bs  
 Vial : P1-B5  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96662,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.924	216.8 -> 171.9	127600	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	67876	5.00 µg/L	0.012
M5-PFHxA	5.535	318.0 -> 273.0	47561	2.50 µg/L	0.000
M4-PFHpA	6.479	367.1 -> 322.0	27659	2.50 µg/L	0.012
M8-PFOA	7.136	421.1 -> 376.0	44083	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	20375	1.25 µg/L	0.013
M6-PFDA	8.191	519.1 -> 474.1	19038	1.25 µg/L	0.013
M7-PFUnDA	8.660	570.0 -> 525.1	20121	1.25 µg/L	0.013
M2-PFDoDA	9.118	615.1 -> 570.0	19804	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	13422	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	7027	2.50 µg/L	0.012
M3-PFBS	5.439	302.1 -> 79.9	11911	2.50 µg/L	0.012
M3-PFHxS	7.242	402.1 -> 79.9	7184	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	9957	2.50 µg/L	0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1198	5.00 µg/L	0.012
M2-6:2FTS	6.911	429.1 -> 80.9	1978	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	2982	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	13822	5.00 µg/L	0.012
M3-HFPO-DA	5.902	286.9 -> 168.9	27182	10.00 µg/L	0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	10993	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	20671	25.00 µg/L	0.012
M9-EtFOSE	11.256	639.2 -> 58.9	31491	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	3837	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	3179	2.50 µg/L	0.012
13C4-PFOS	8.342	502.8 -> 79.9	10009	2.50 µg/L	0.012
13C3-PFBA	2.916	216.0 -> 172.0	63592	5.00 µg/L	-0.013
18O2-PFHxS	7.241	403.0 -> 83.9	4435	2.50 µg/L	0.012
13C4-PFOA	7.136	417.1 -> 372.0	49026	2.50 µg/L	0.012
13C2-PFDA	8.191	515.1 -> 470.1	16179	1.25 µg/L	0.013
13C5-PFNA	7.684	468.0 -> 423.0	22496	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	39761	2.50 µg/L	0.000
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.235	329.1 -> 80.9	1198	6.65 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 132.9%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1978	6.09 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 121.8%		
13C2-8:2FTS	7.978	529.1 -> 80.9	2982	5.88 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.6%		
13C2-PFDoDA	9.118	615.1 -> 570.0	19804	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C2-PFTeDA	9.911	715.2 -> 670.0	13422	1.05 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 84.2%		
13C3-PFBS	5.439	302.1 -> 79.9	11911	2.85 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C3-PFHxS	7.242	402.1 -> 79.9	7184	2.61 µg/L	0.012

7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.5%	
13C4-PFBA	2.924	216.8 -> 171.9	127600	10.66 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C4-PFHpA	6.479	367.1 -> 322.0	27659	2.70 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.1%	
13C5-PFHxA	5.535	318.0 -> 273.0	47561	2.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.6%	
13C5-PFPeA	4.375	268.3 -> 223.0	67876	5.54 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.8%	
13C6-PFDA	8.191	519.1 -> 474.1	19038	1.37 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.9%	
13C7-PFUnDA	8.660	570.0 -> 525.1	20121	1.40 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.6%	
13C8-FOSA	9.783	506.1 -> 77.8	7027	1.12 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 44.8%	
13C8-PFOA	7.136	421.1 -> 376.0	44083	2.74 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C8-PFOS	8.341	507.1 -> 79.9	9957	2.64 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C9-PFNA	7.684	472.1 -> 427.0	20375	1.33 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.6%	
d3-MeFOSAA	8.249	573.2 -> 419.0	13822	5.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.4%	
13C3-HFPO-DA	5.902	286.9 -> 168.9	27182	10.39 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
d3-MeFOSA	11.076	515.0 -> 219.0	3179	0.81 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 32.4%	
d5-EtFOSAA	8.458	589.2 -> 419.0	10993	5.28 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.7%	
d7-MeFOSE	10.959	623.2 -> 58.9	20671	6.64 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 26.5%	
d9-EtFOSE	11.256	639.2 -> 58.9	31491	7.14 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 28.6%	
d5-EtFOSA	11.360	531.1 -> 219.0	3837	0.92 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 36.8%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.236	327.1 -> 307.0	15790	8.19 µg/L	94
		327.1 -> 80.9	6795		
6:2FTS	6.911	427.1 -> 407.0	16712	8.75 µg/L	97
		427.1 -> 80.9	7363		
8:2FTS	7.978	527.1 -> 507.0	15674	9.43 µg/L	96
		527.1 -> 80.8	7028		
EtFOSAA	8.459	584.2 -> 419.1	4571	2.16 µg/L	m 100
		584.2 -> 526.0	2313		
FOSA	9.774	498.1 -> 77.9	7358	2.50 µg/L	98
		498.1 -> 478.0	282		
MeFOSAA	8.249	570.1 -> 419.0	5899	2.45 µg/L	m 94
		570.1 -> 483.0	1221		
PFBA	2.920	212.8 -> 168.9	31361	9.18 µg/L	100
PFBS	5.440	298.7 -> 79.9	9954	2.04 µg/L	95
		298.7 -> 98.8	3703		
PFDA	8.192	512.9 -> 469.0	33109	2.29 µg/L	98
		512.9 -> 219.0	6914		
PFDoDA	9.119	613.1 -> 569.0	36941	2.32 µg/L	99
		613.1 -> 319.0	5225		
PFDS	9.282	599.0 -> 79.9	5066	2.05 µg/L	90

7.3.1  
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.480	599.0 -> 98.8	2665	2.32	µg/L	98
		363.1 -> 319.0	40638			
PFHpS	7.823	363.1 -> 169.0	7517	2.22	µg/L	96
		449.0 -> 79.9	7970			
PFHxA	5.538	449.0 -> 98.9	4031	2.24	µg/L	99
		313.0 -> 269.0	41809			
PFHxS	7.230	313.0 -> 118.9	1404	2.15	µg/L	m
		398.7 -> 79.9	6321			
PFNA	7.685	398.7 -> 98.9	3292	2.28	µg/L	99
		463.0 -> 419.0	34496			
PFNS	8.823	463.0 -> 219.0	8374	2.19	µg/L	97
		548.8 -> 79.9	4767			
PFOA	7.137	548.8 -> 98.9	2384	2.25	µg/L	100
		413.0 -> 369.0	57243			
PFOS	8.343	413.0 -> 169.0	11042	2.24	µg/L	m
		498.9 -> 79.9	10912			
PFPeA	4.377	498.9 -> 98.8	5371	4.53	µg/L	100
		263.0 -> 219.0	73899			
PFPeS	6.507	349.1 -> 79.9	5656	2.24	µg/L	97
		349.1 -> 98.9	2513			
PFTeDA	9.912	713.1 -> 669.0	32631	2.48	µg/L	100
		713.1 -> 168.9	2835			
PFTrDA	9.529	663.0 -> 619.0	46371	2.18	µg/L	98
		663.0 -> 168.9	4703			
PFUnDA	8.660	563.1 -> 519.0	29951	2.19	µg/L	98
		563.1 -> 269.1	6135			
11CI-PF3OUdS	9.581	630.9 -> 450.9	43210	4.42	µg/L	96
		632.9 -> 452.9	13501			
9CI-PF3ONS	8.687	530.8 -> 351.0	55422	4.45	µg/L	100
		532.8 -> 353.0	16923			
ADONA	6.731	376.9 -> 250.9	126445	4.63	µg/L	97
		376.9 -> 84.8	34836			
HFPO-DA	5.903	284.9 -> 168.9	12606	4.85	µg/L	97
		284.9 -> 184.9	1580			
3:3FTCA	3.848	241.0 -> 177.0	7014	9.76	µg/L	99
		241.0 -> 117.0	639			
5:3FTCA	6.205	341.0 -> 237.1	122306	48.37	µg/L	100
		341.0 -> 217.0	83749			
7:3FTCA	7.661	441.0 -> 316.9	63500	48.33	µg/L	95
		441.0 -> 336.9	146890			
EtFOSA	11.362	526.0 -> 219.0	7293	4.54	µg/L	m
		526.0 -> 169.0	9967			
EtFOSE	11.282	630.0 -> 58.9	12345	10.13	µg/L	m
		511.9 -> 219.0	6167			
MeFOSA	11.078	511.9 -> 169.0	9334	5.15	µg/L	m
		616.1 -> 58.9	9596			
MeFOSE	10.985	699.1 -> 79.9	4537	11.30	µg/L	m
		699.1 -> 98.8	2656			
PFDoDS	10.052	295.0 -> 201.0	6279	2.06	µg/L	93
		295.0 -> 84.9	1624			
NFDHA	5.428	279.0 -> 85.1	41281	4.72	µg/L	97
		229.0 -> 84.9	39484			
PFMBA	4.778	314.8 -> 134.9	57889	4.63	µg/L	100
		314.8 -> 82.9	2082			
PFMPA	3.528			4.10	µg/L	100
PFEESA	5.971			4.10	µg/L	100

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

7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS

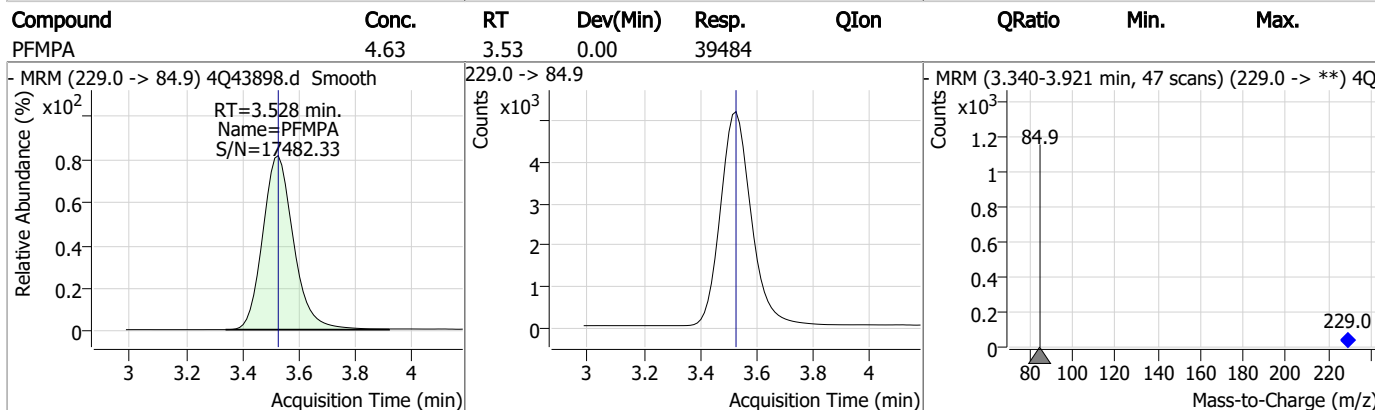
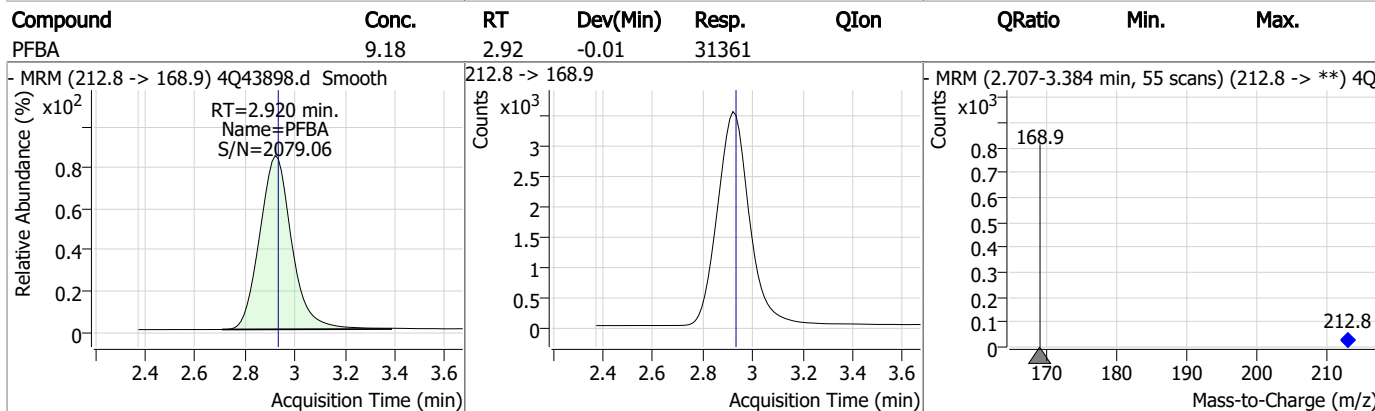
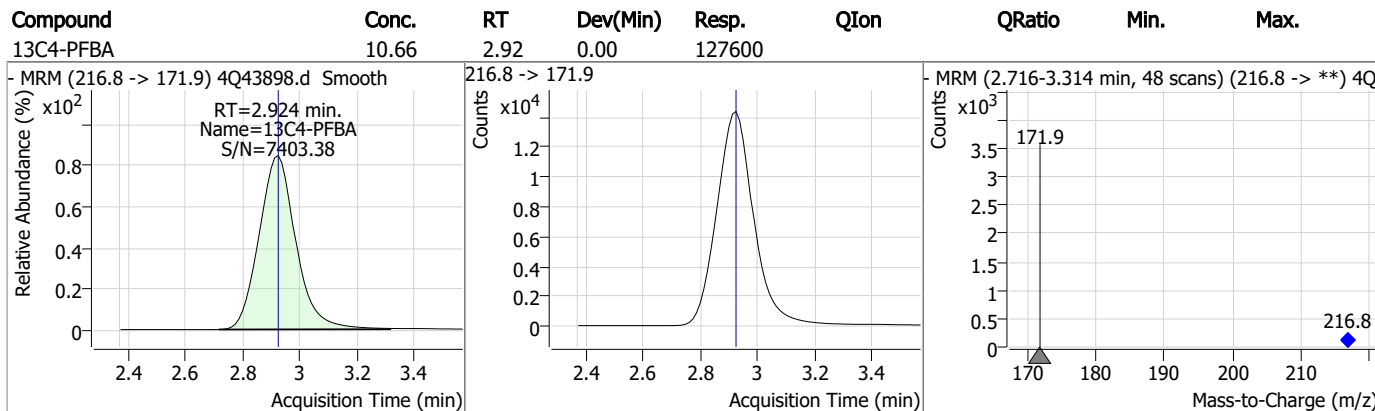
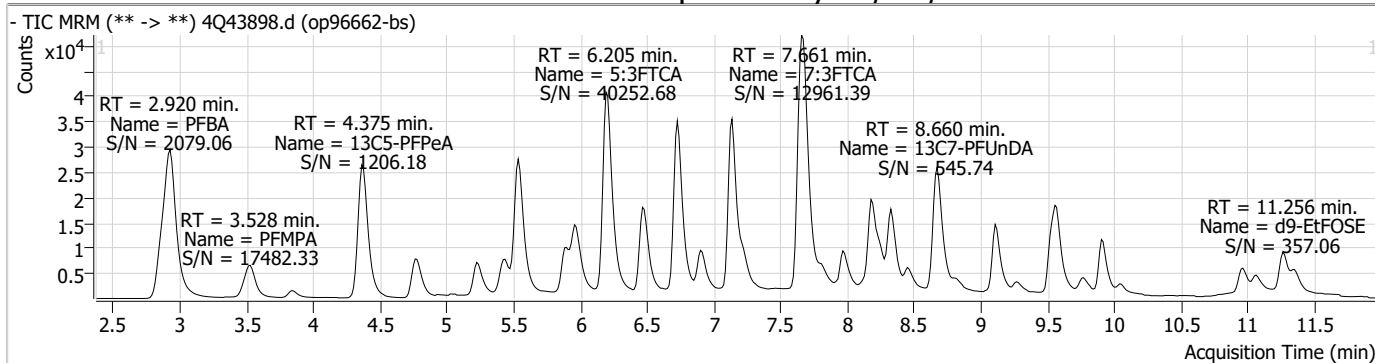
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
----------	----	------------	----------	-------------	----------

7.3.1

7

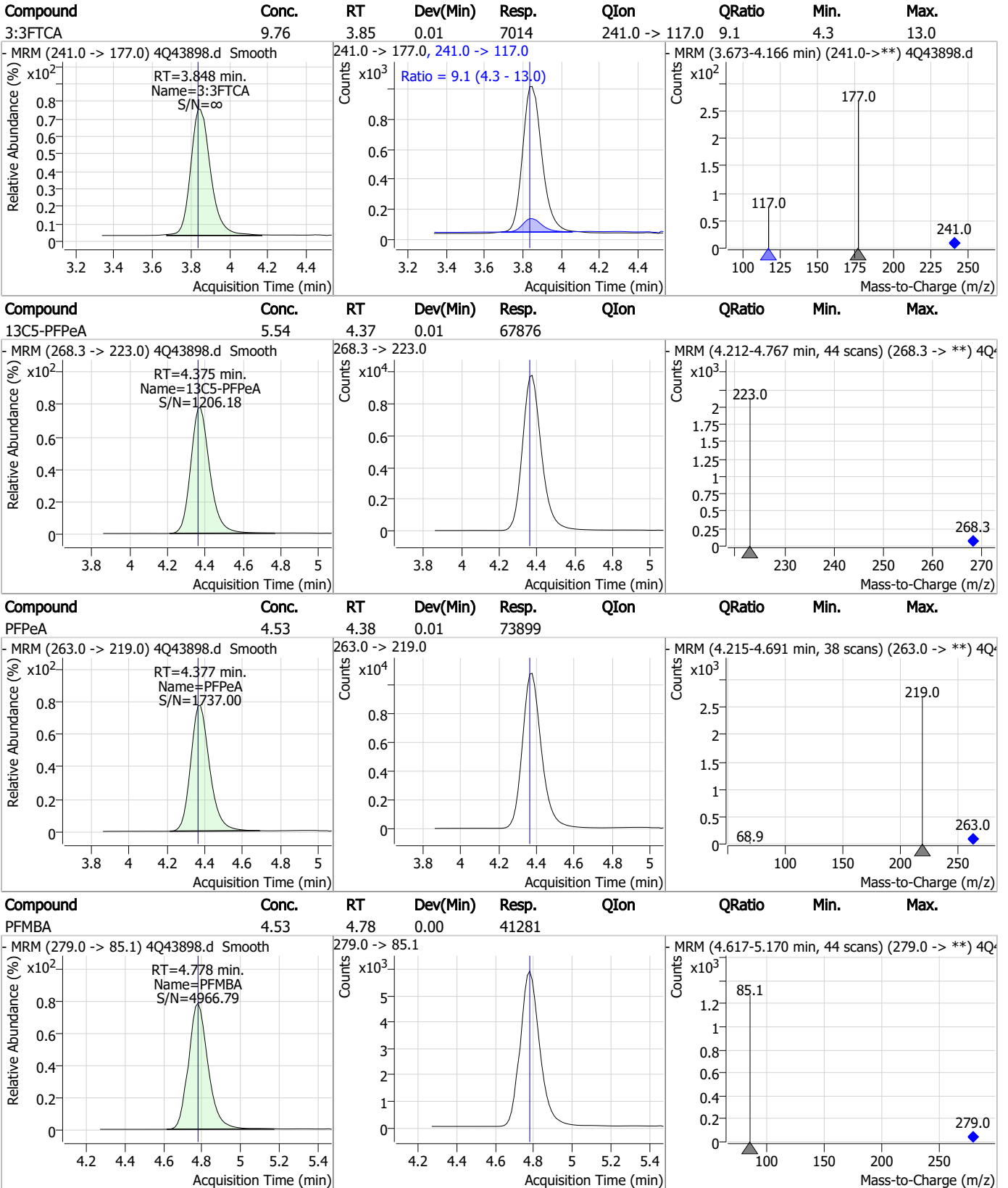


### Perfluorinated Compounds by LC/MS/MS



7.3.1  
7

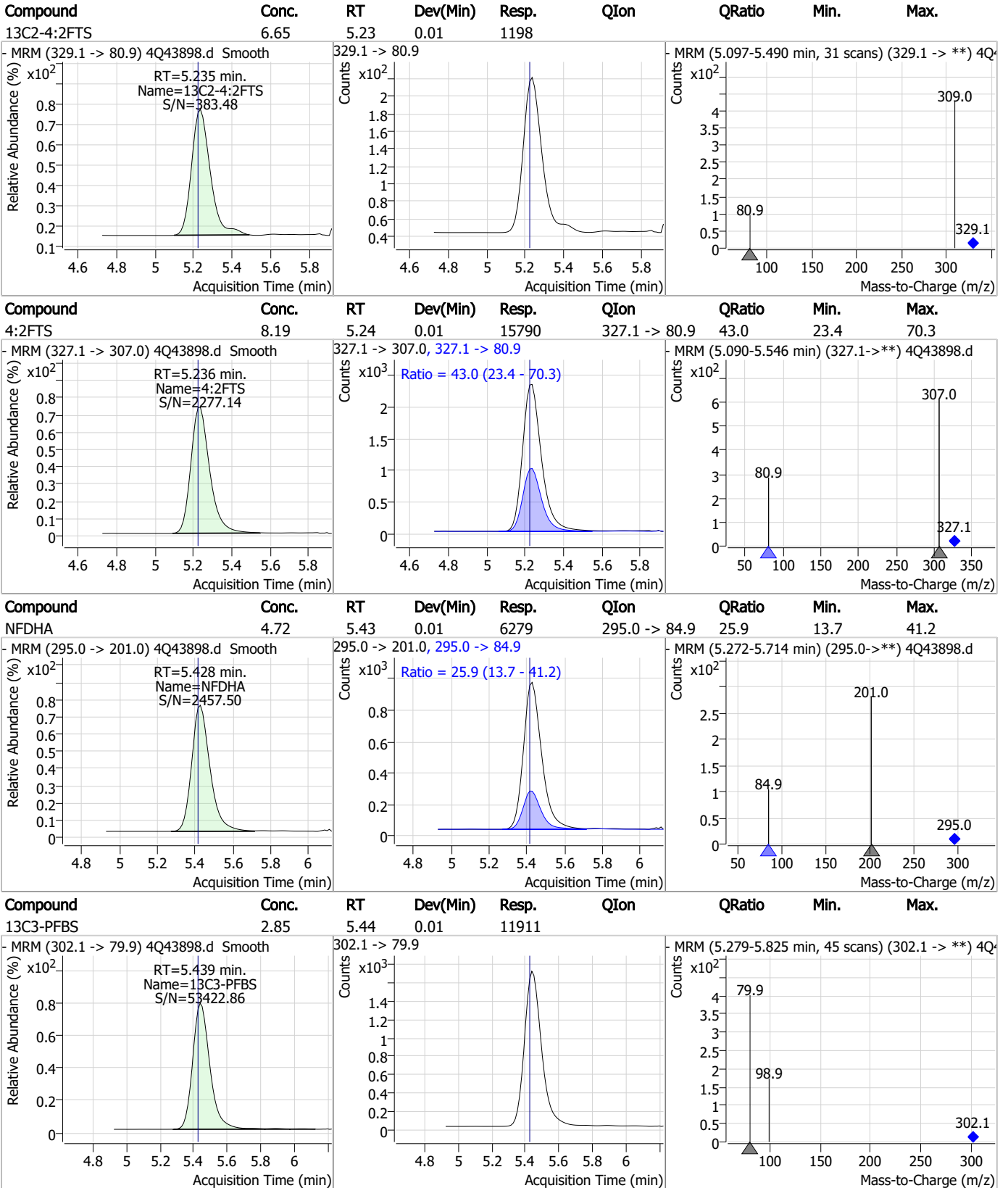
### Perfluorinated Compounds by LC/MS/MS



7.3.1

7

### Perfluorinated Compounds by LC/MS/MS



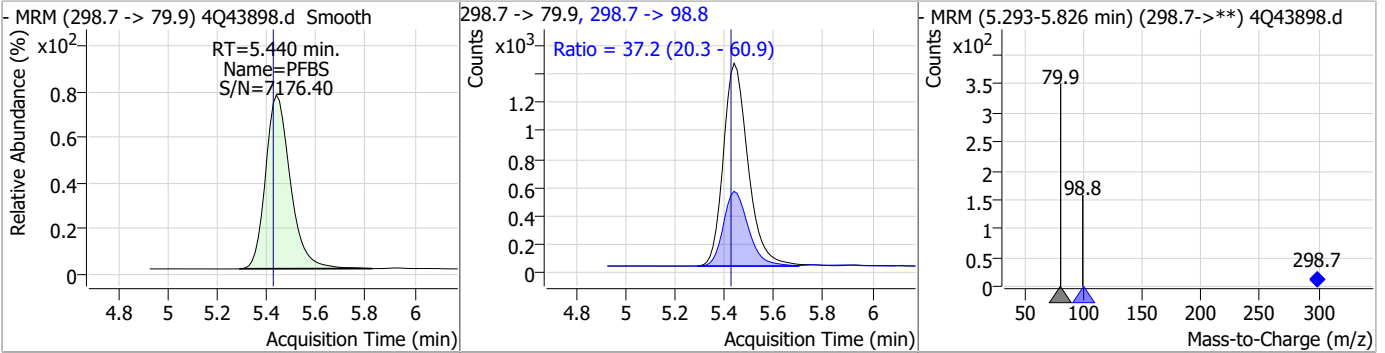
7.3.1

7

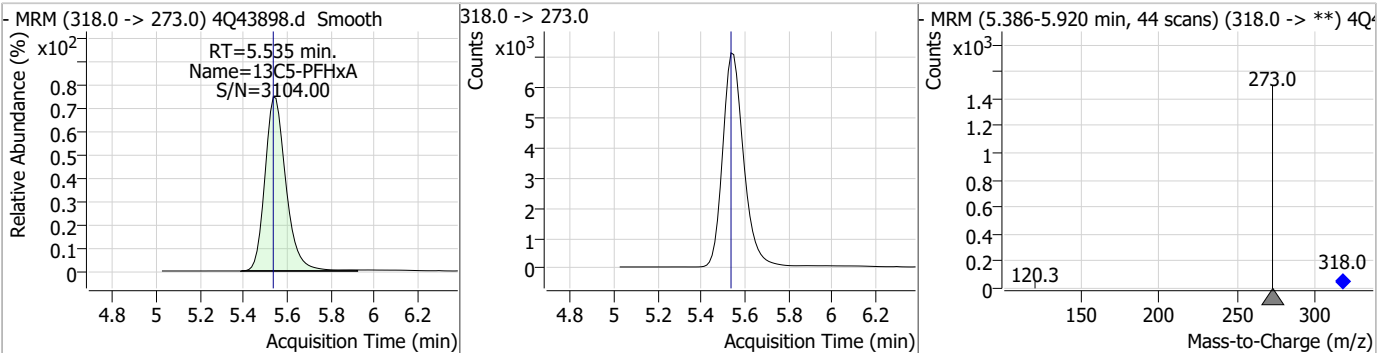


### Perfluorinated Compounds by LC/MS/MS

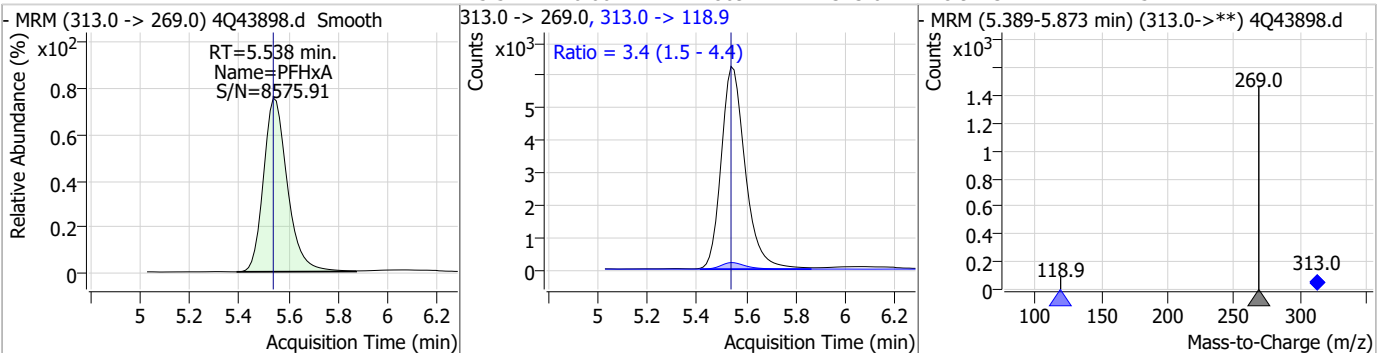
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.04	5.44	0.01	9954	298.7 -> 98.8	37.2	20.3	60.9



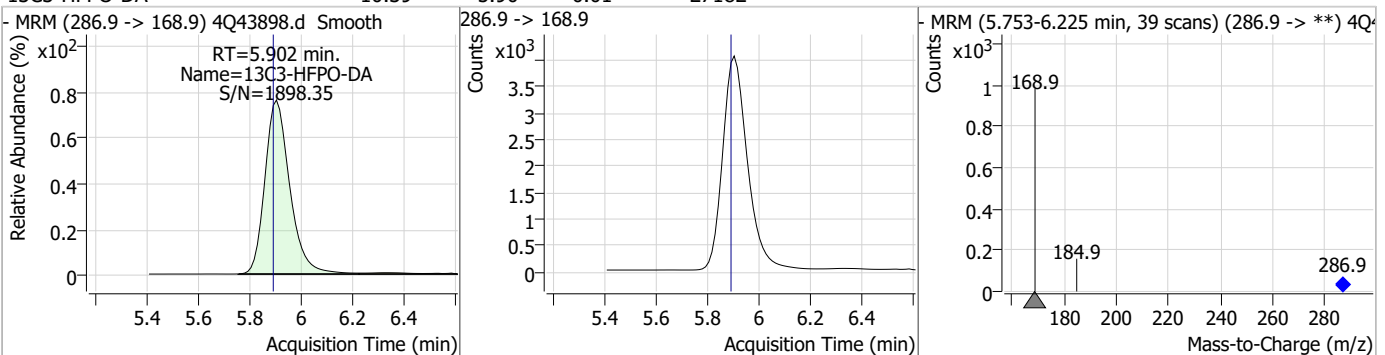
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.72	5.53	0.00	47561	318.0 -> 273.0			



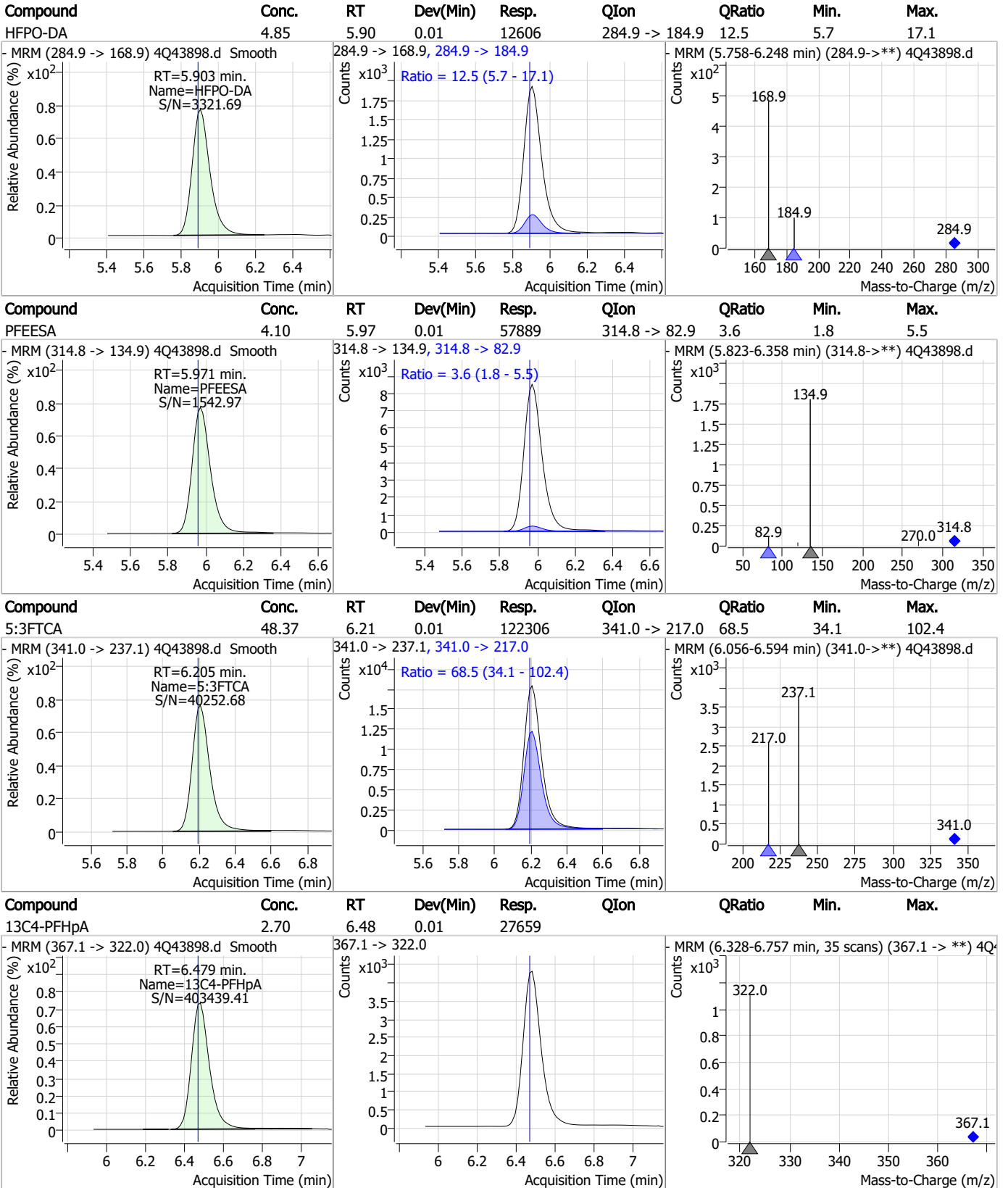
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.24	5.54	0.00	41809	313.0 -> 118.9	3.4	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.39	5.90	0.01	27182	286.9 -> 168.9			



### Perfluorinated Compounds by LC/MS/MS

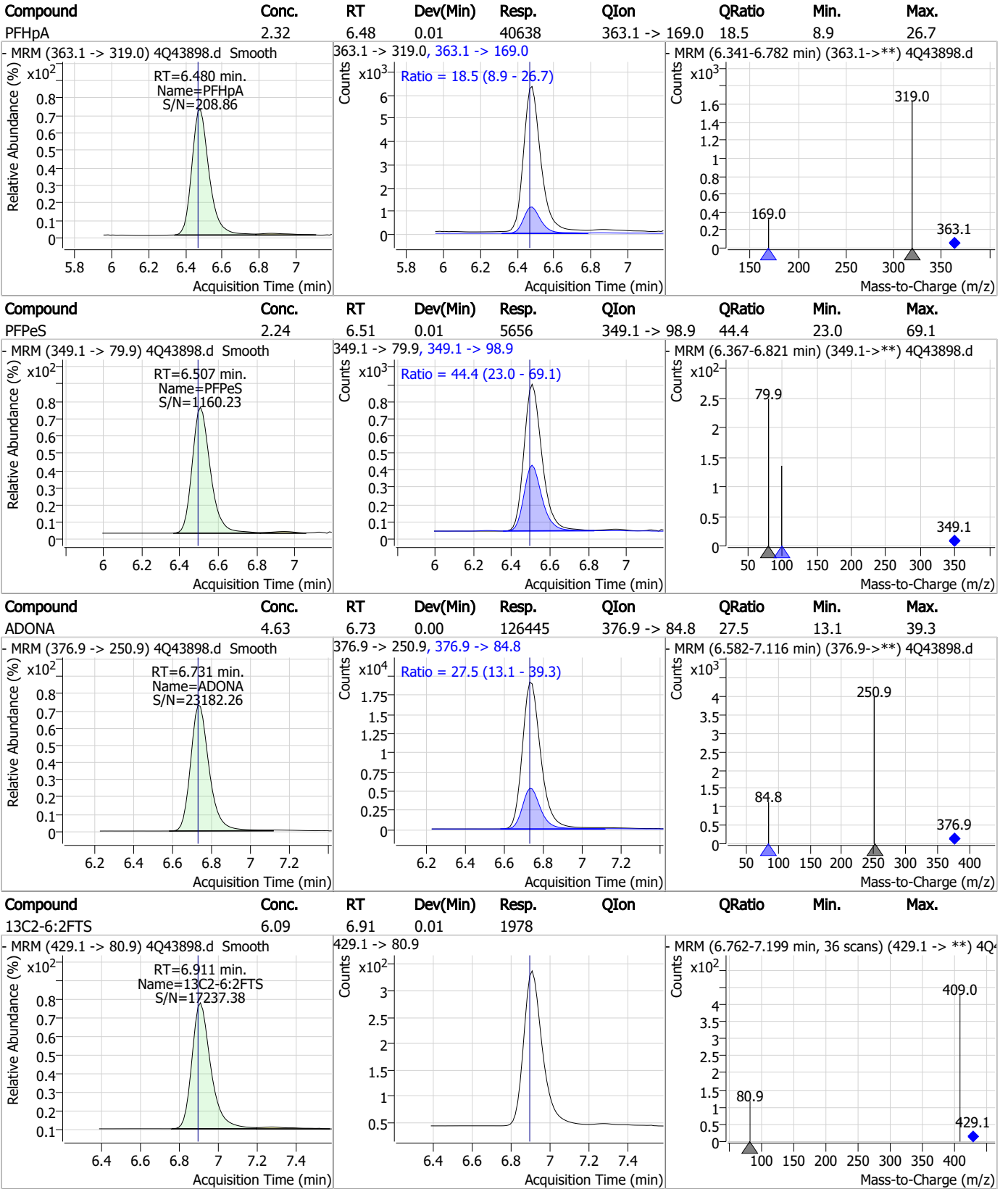


7.3.1

7



### Perfluorinated Compounds by LC/MS/MS

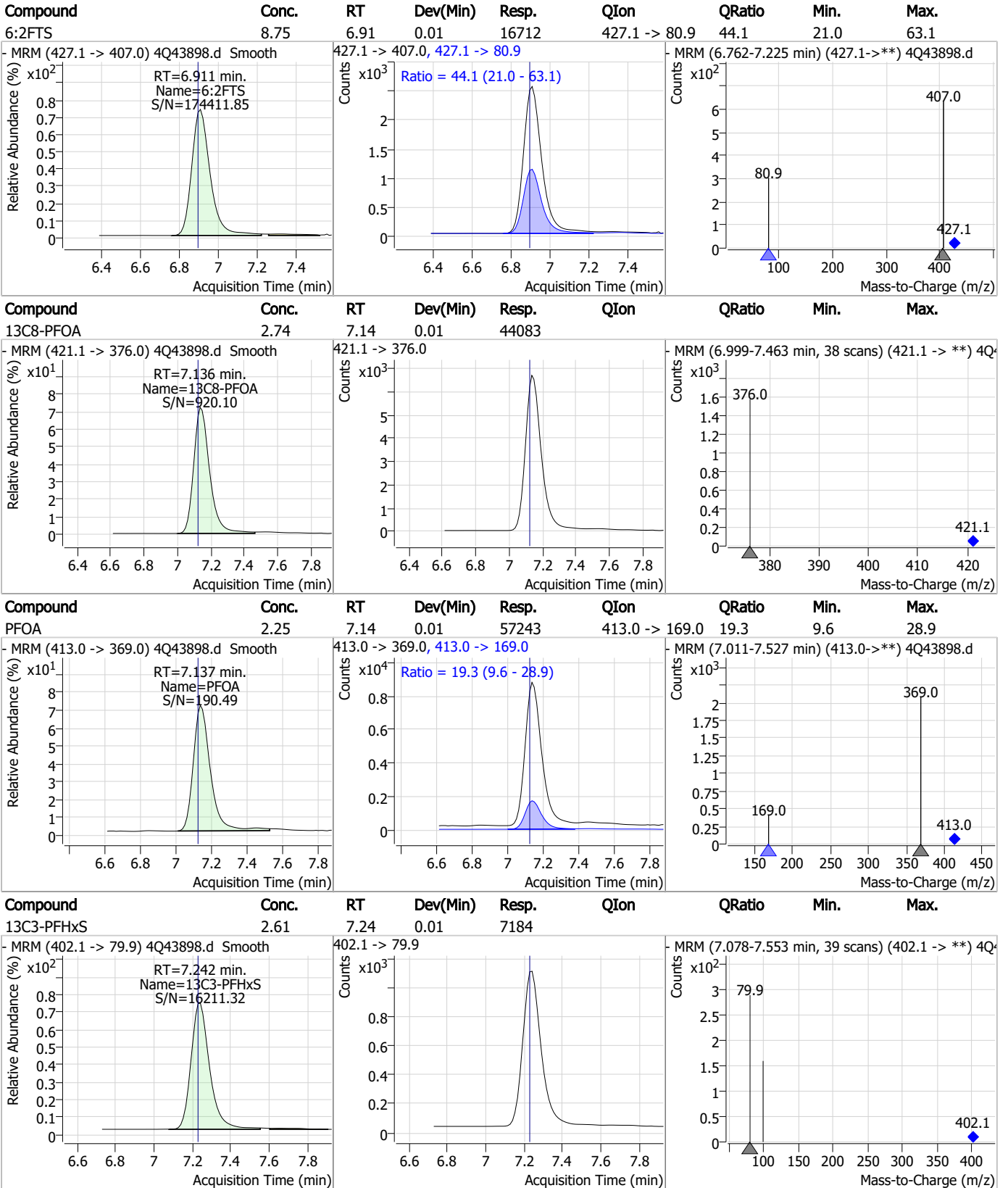


7.3.1

7



### Perfluorinated Compounds by LC/MS/MS

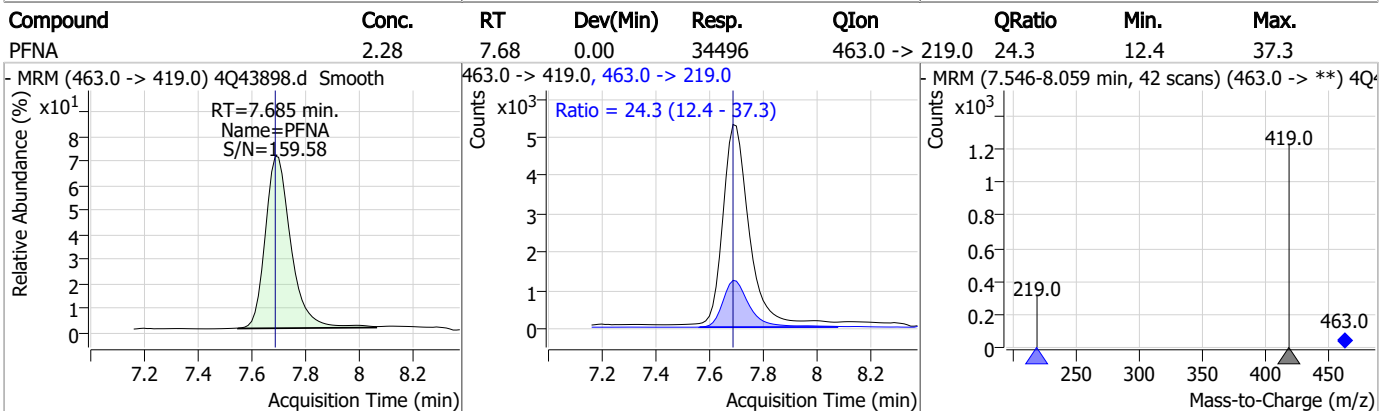
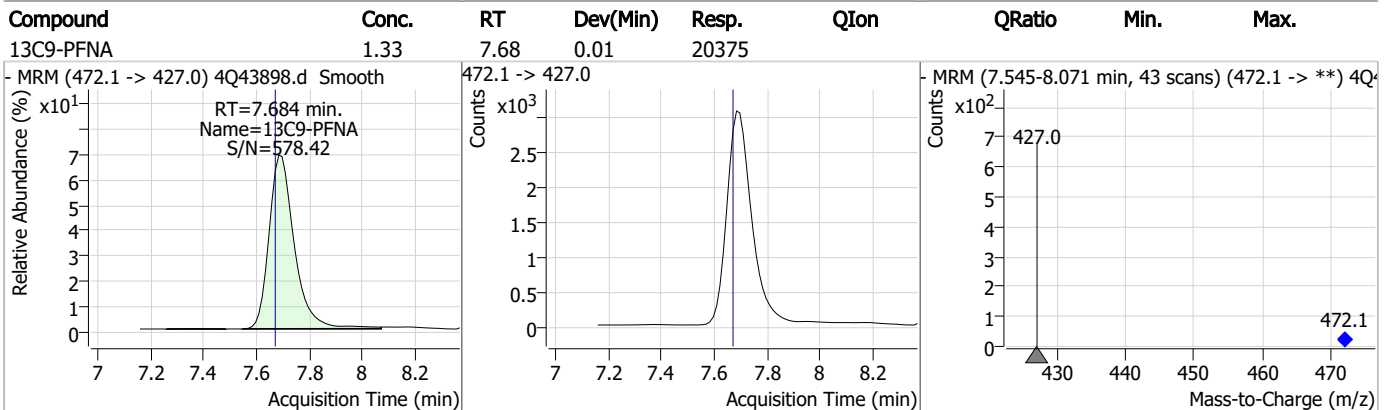
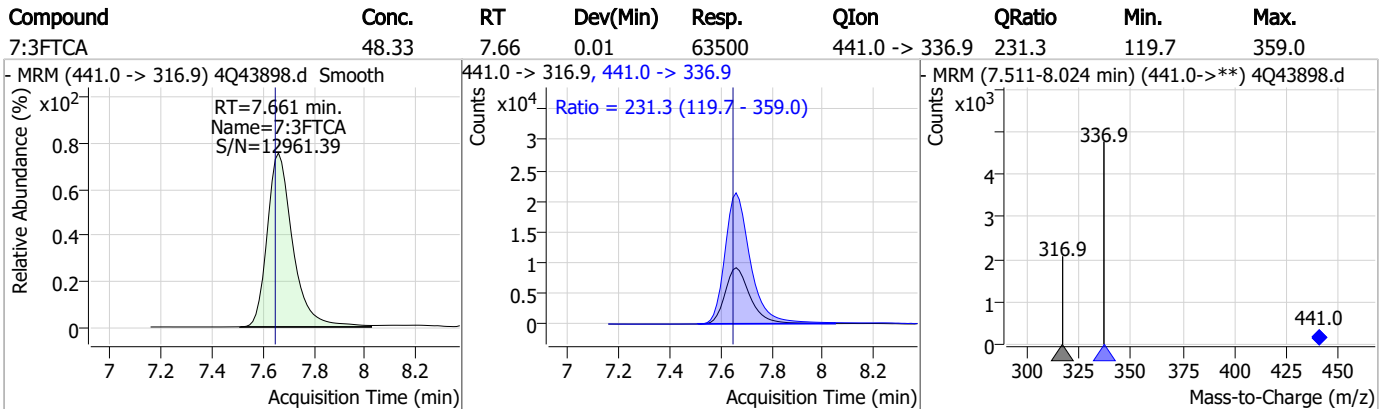
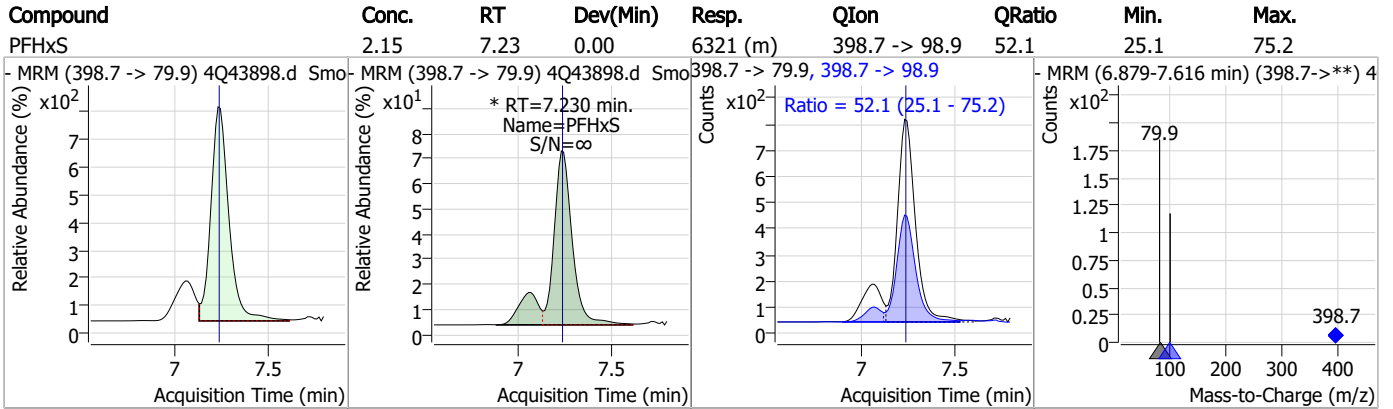


7.3.1

7



### Perfluorinated Compounds by LC/MS/MS

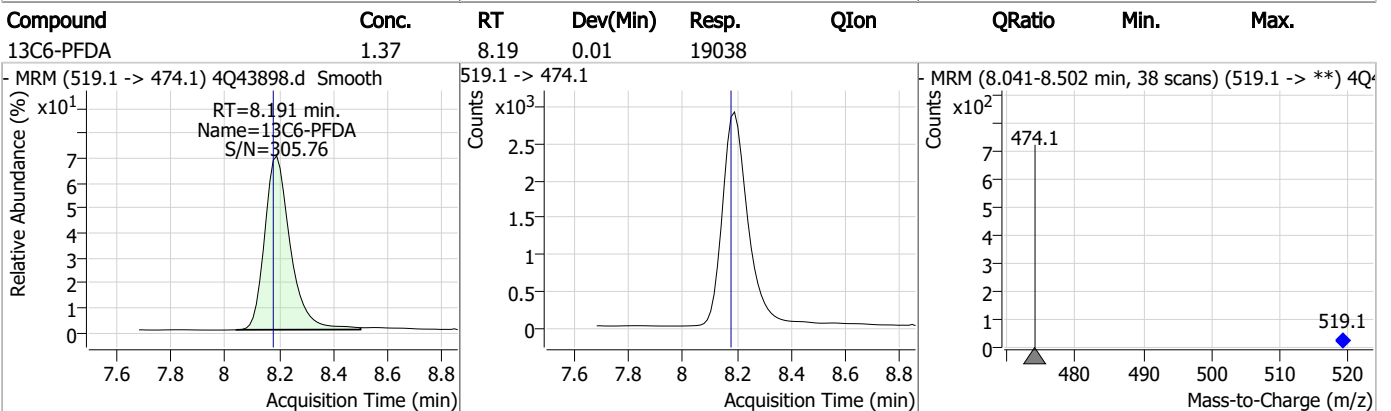
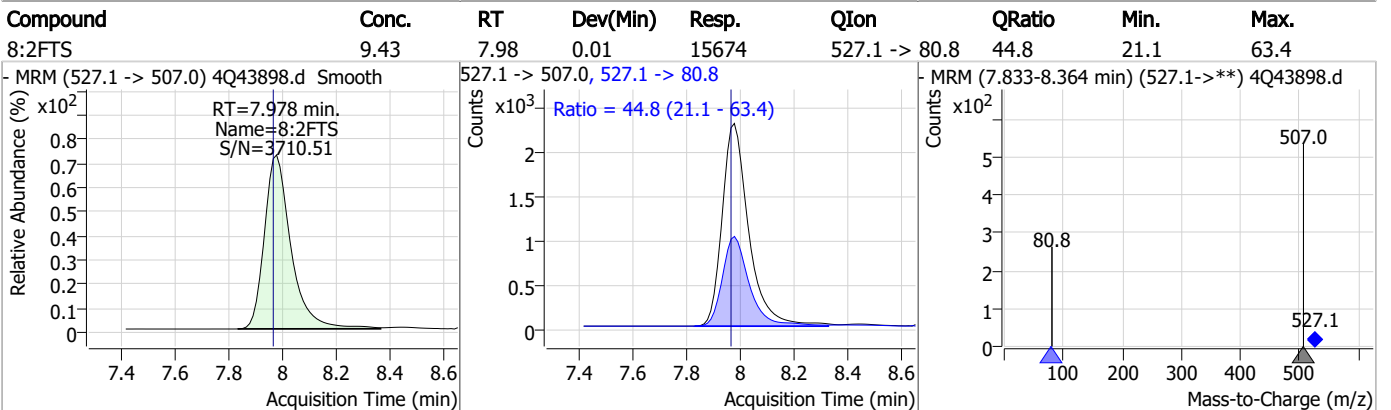
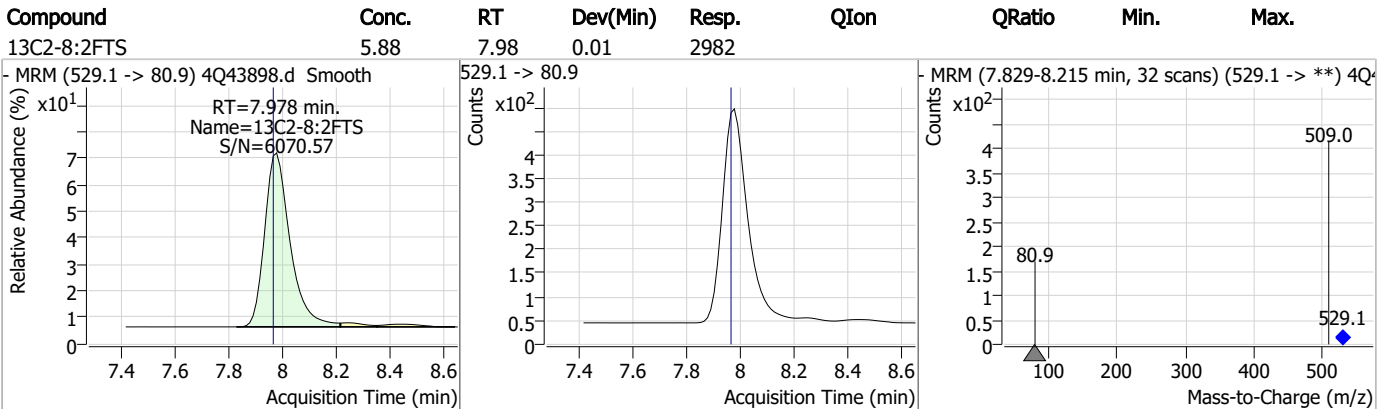
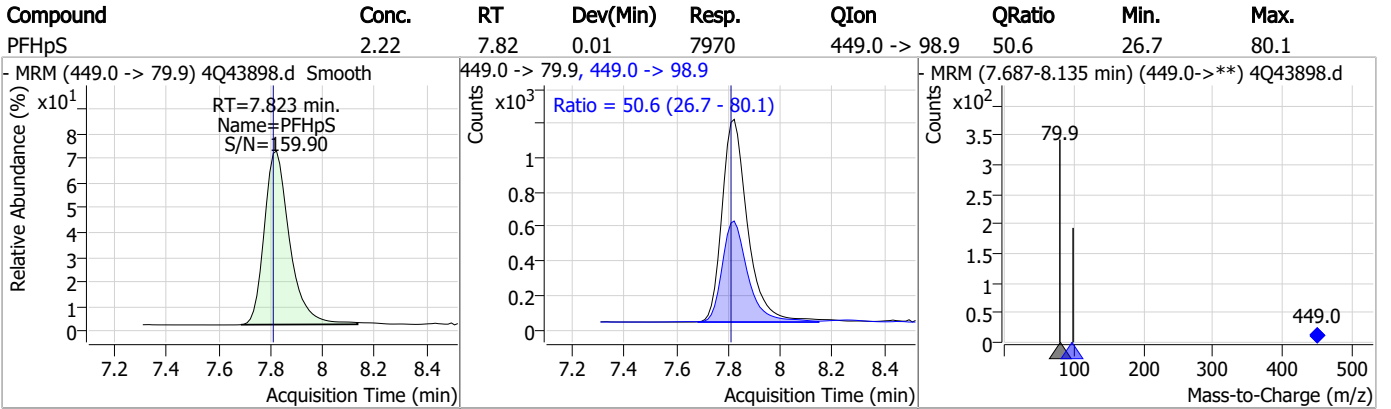


7.3.1

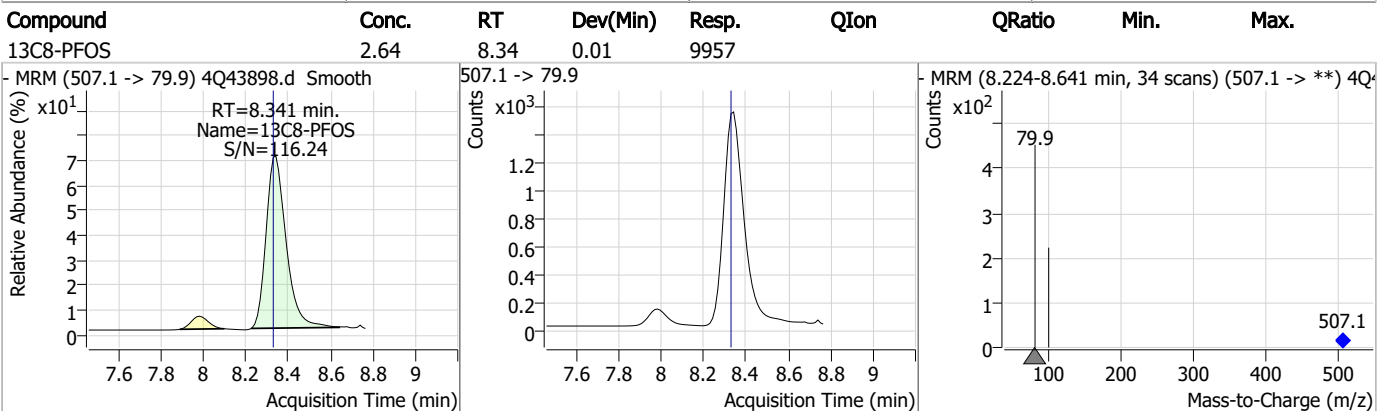
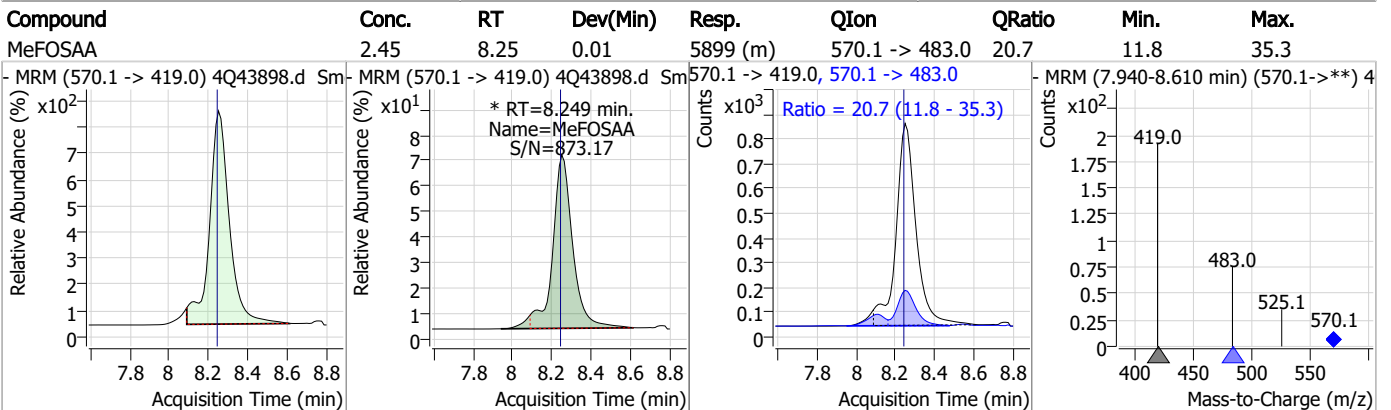
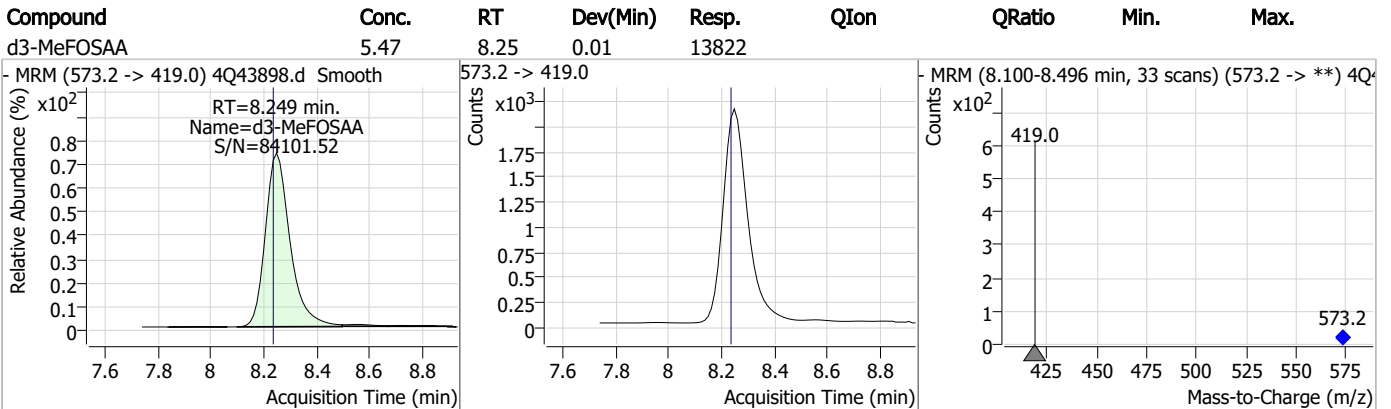
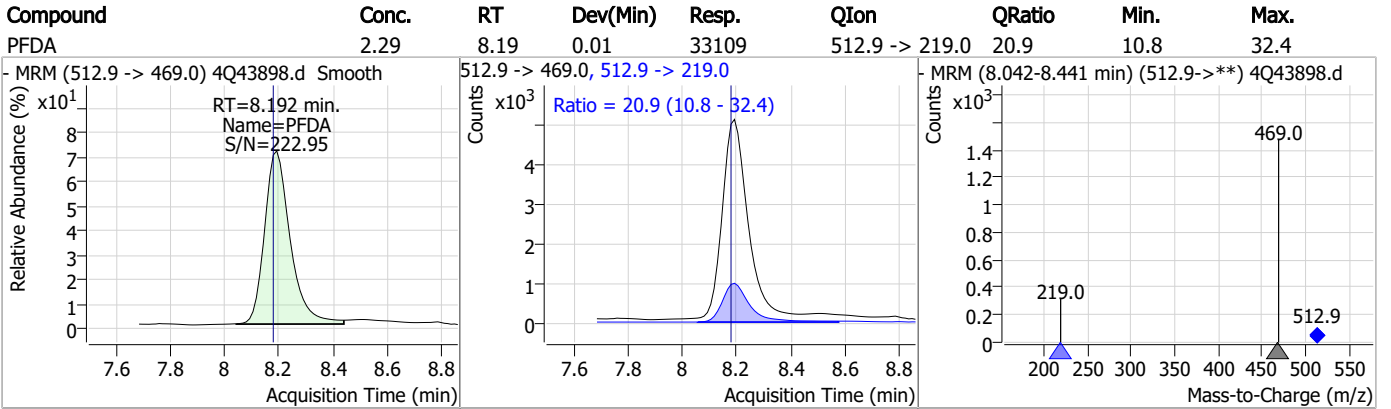
7



### Perfluorinated Compounds by LC/MS/MS



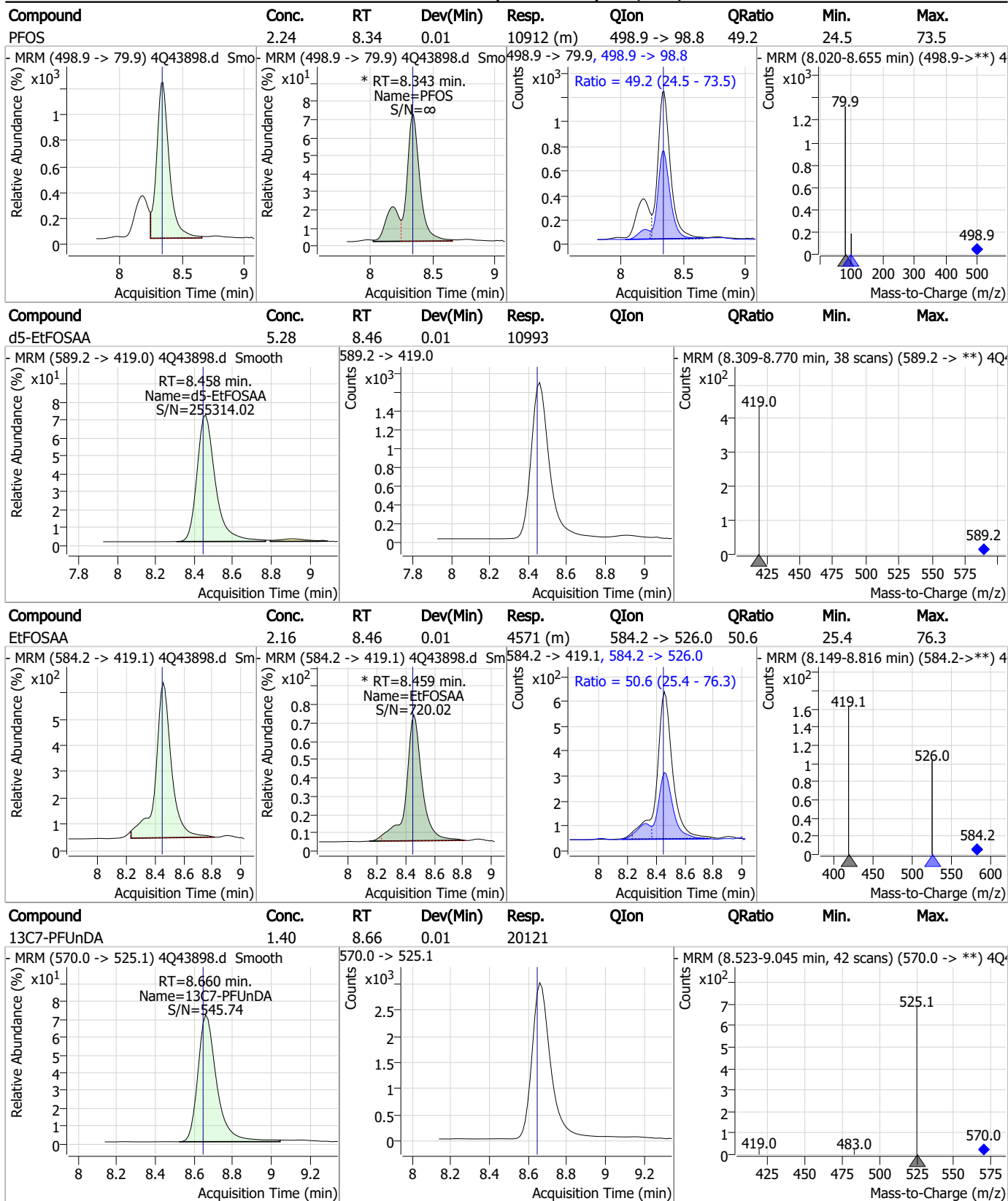
### Perfluorinated Compounds by LC/MS/MS



7.3.1

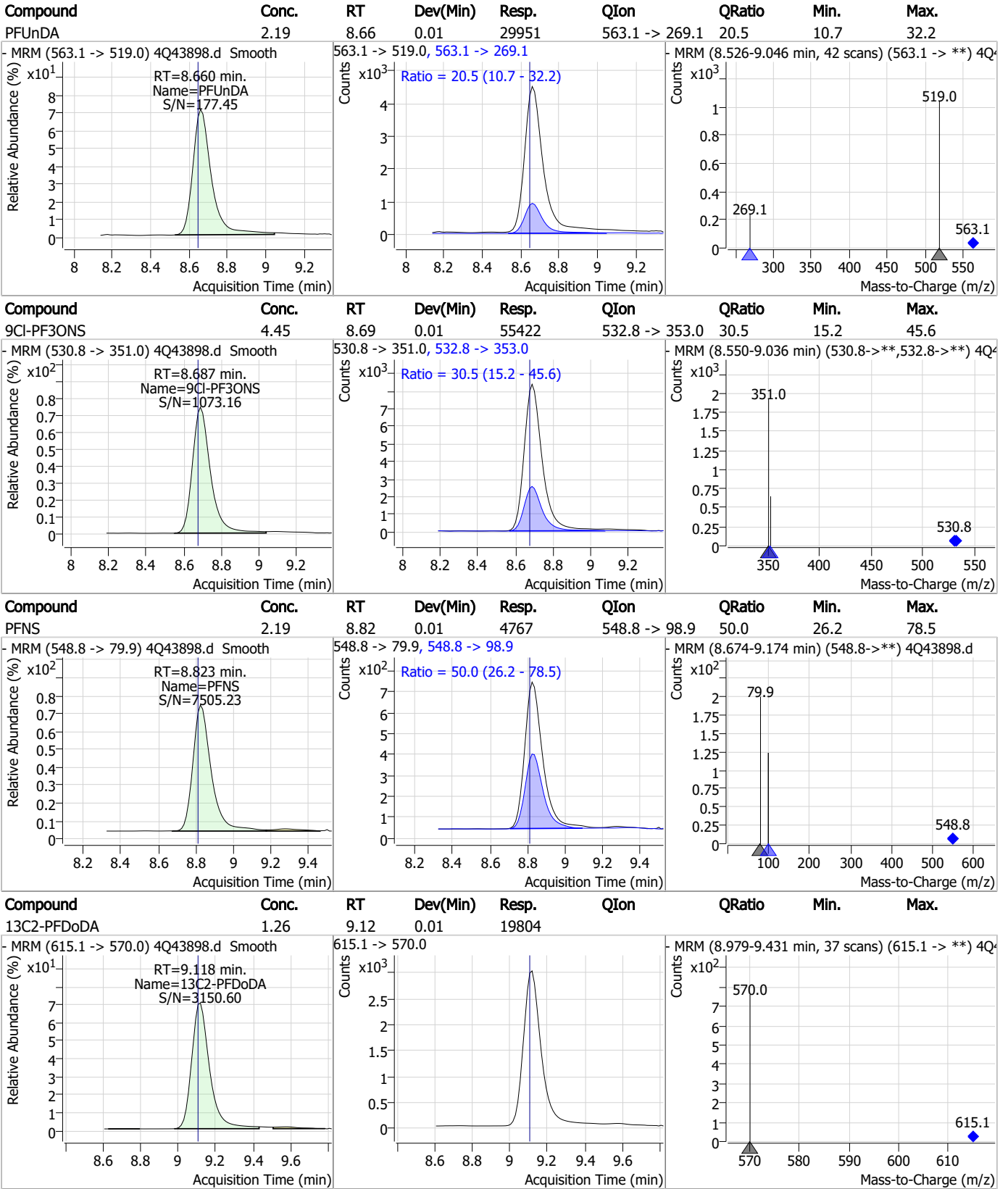
7

### Perfluorinated Compounds by LC/MS/MS



7.3.1  
7

### Perfluorinated Compounds by LC/MS/MS

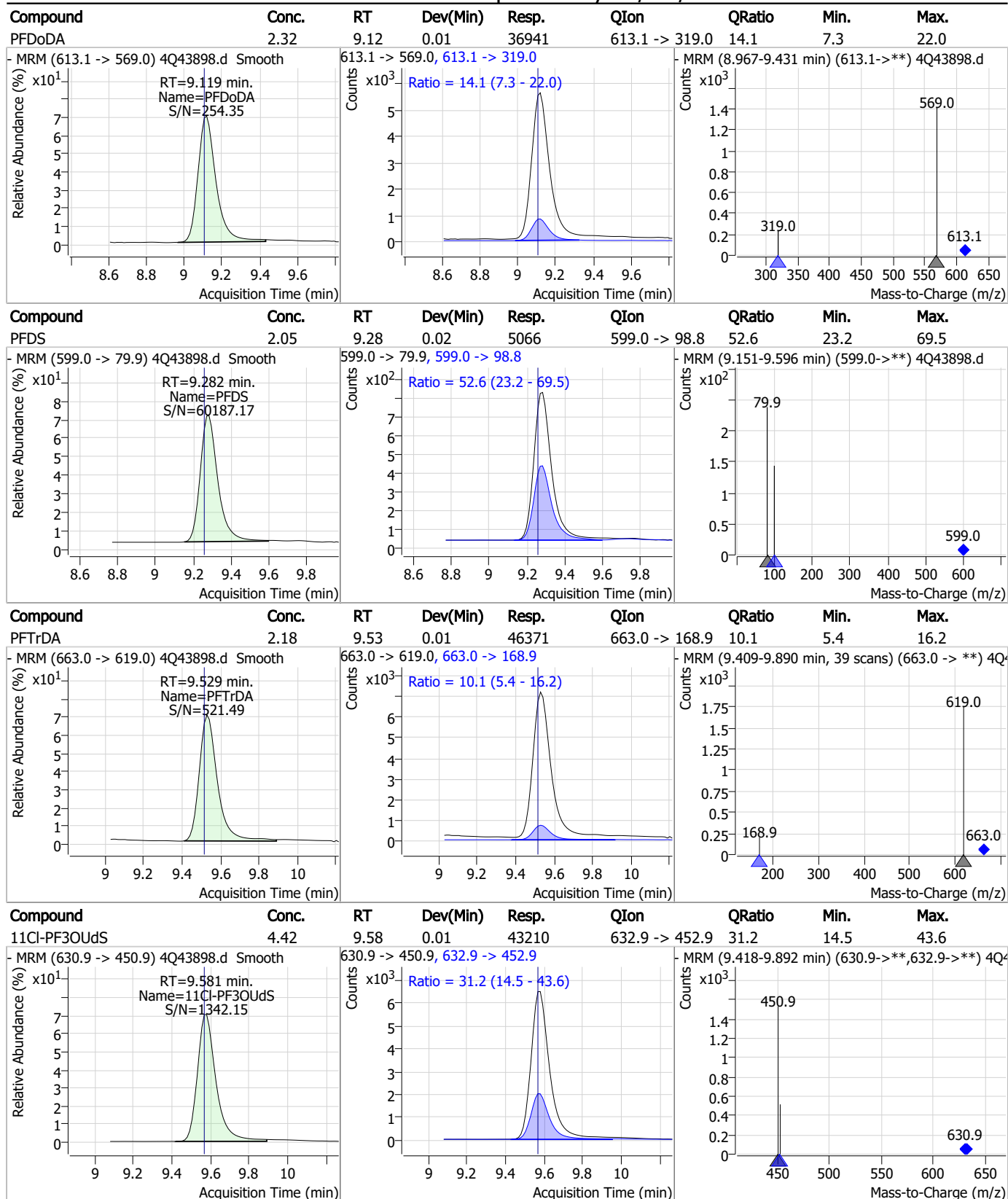


7.3.1

7

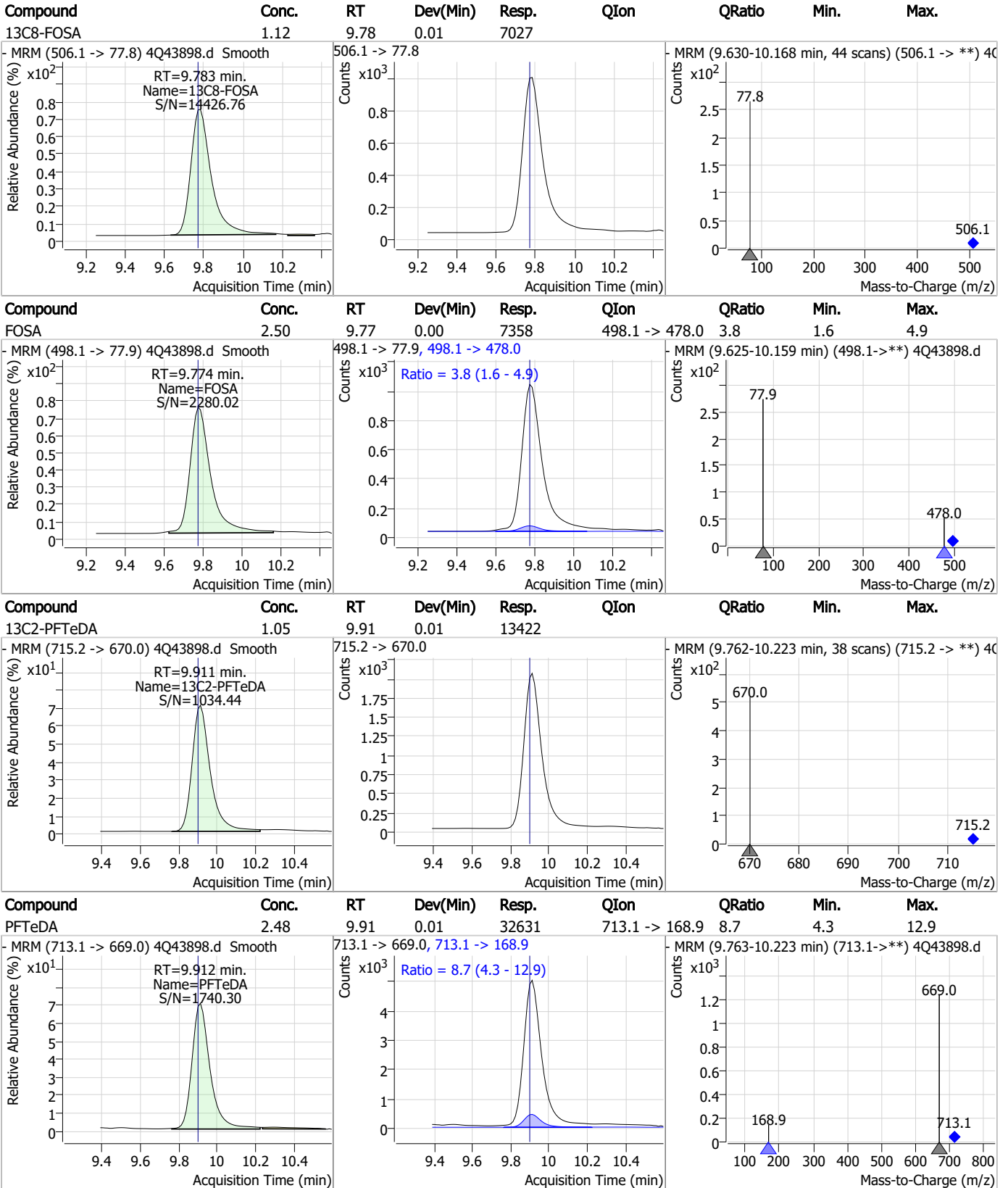


### Perfluorinated Compounds by LC/MS/MS



7.3.1  
7

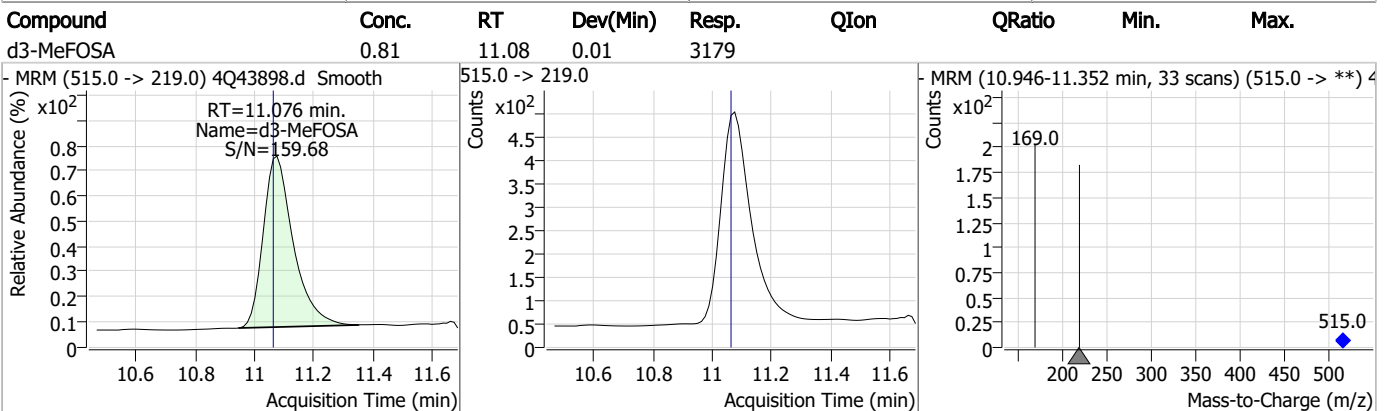
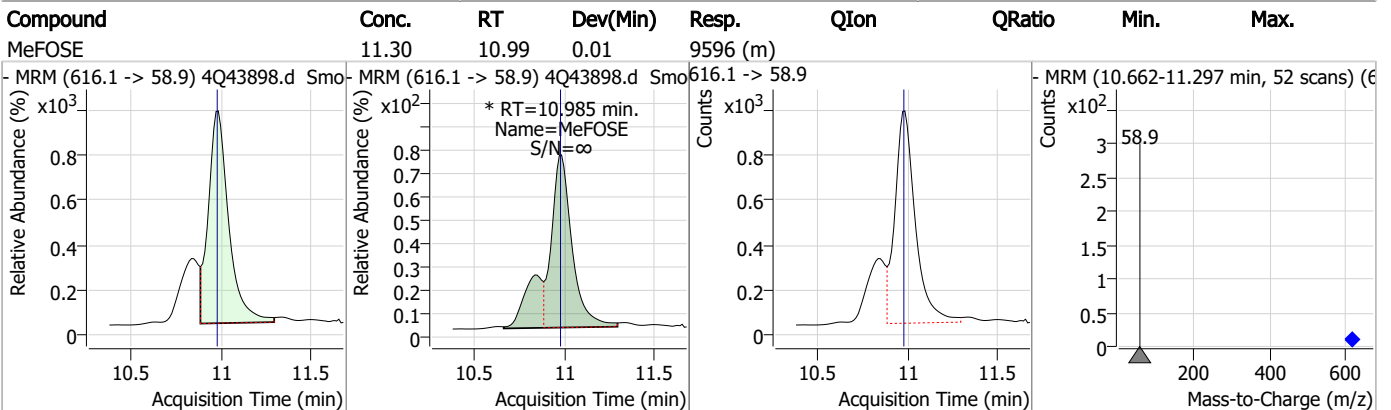
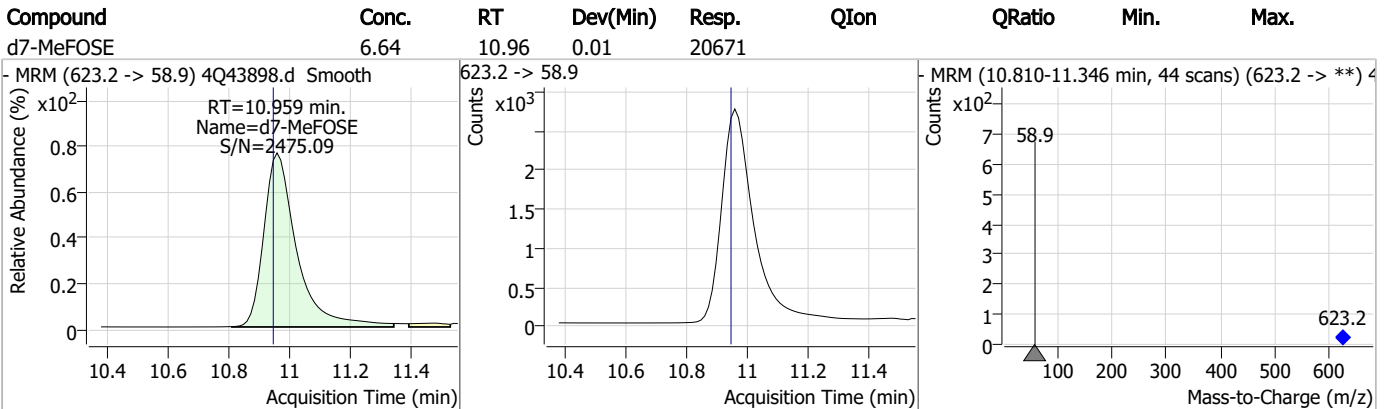
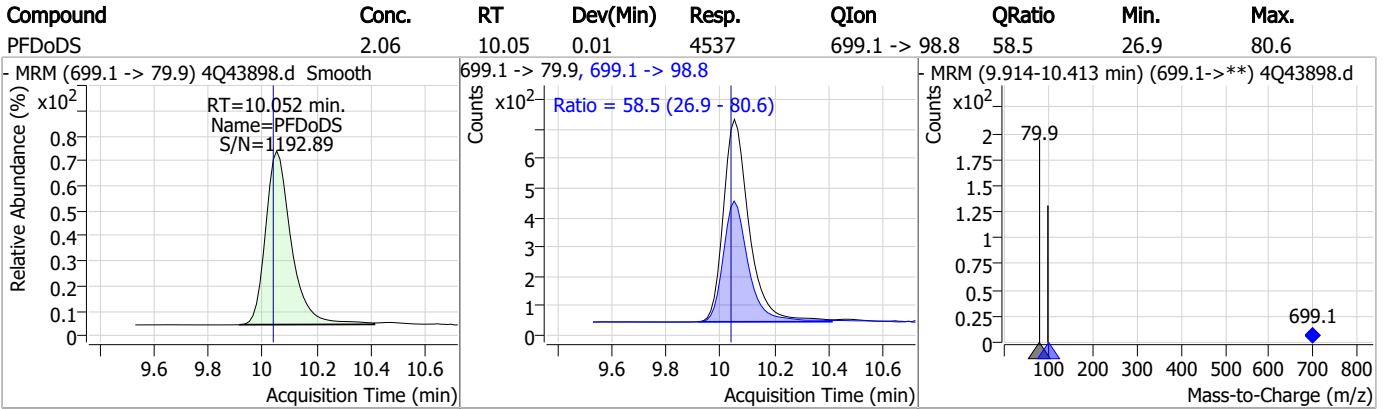
### Perfluorinated Compounds by LC/MS/MS



7.3.1

7

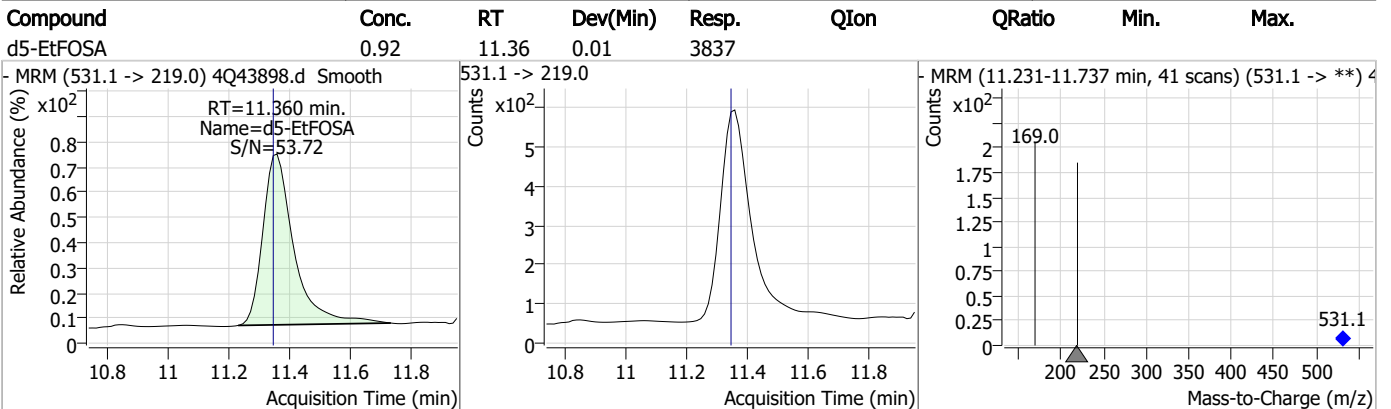
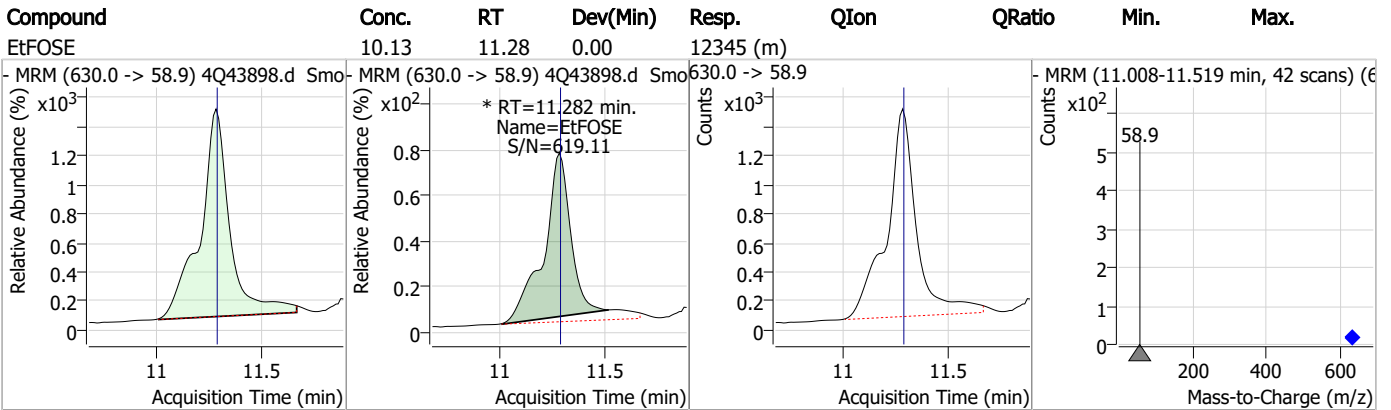
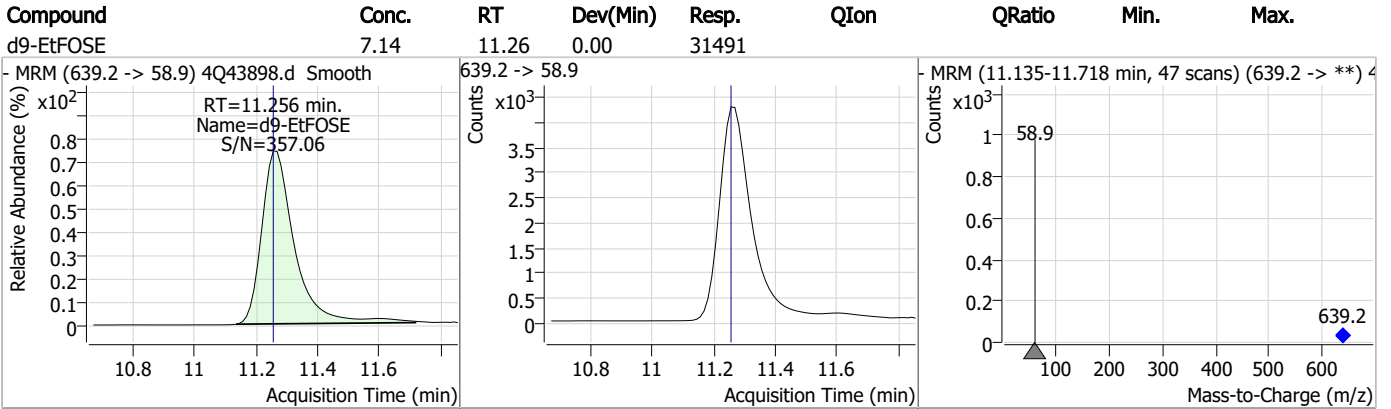
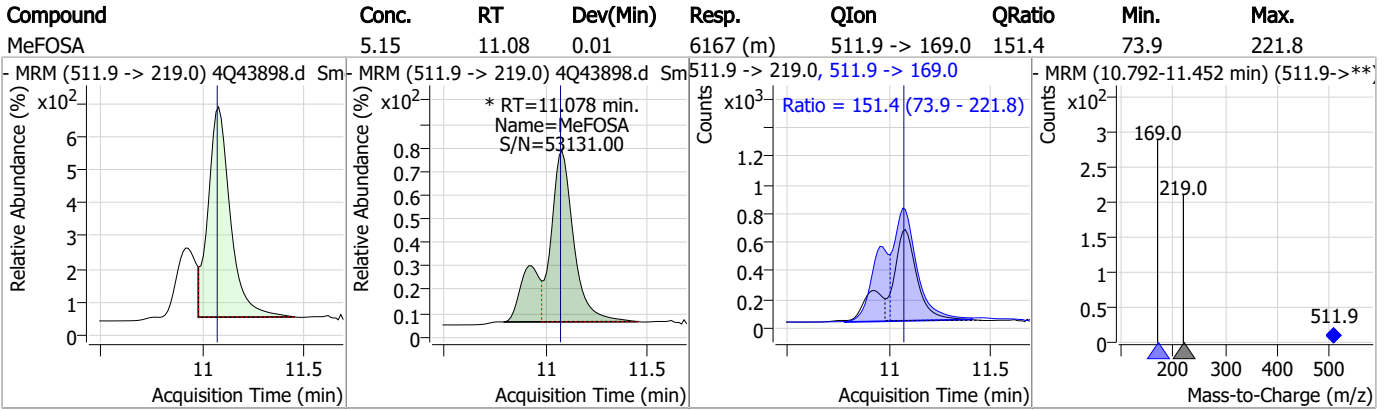
### Perfluorinated Compounds by LC/MS/MS



7.3.1

7

### Perfluorinated Compounds by LC/MS/MS



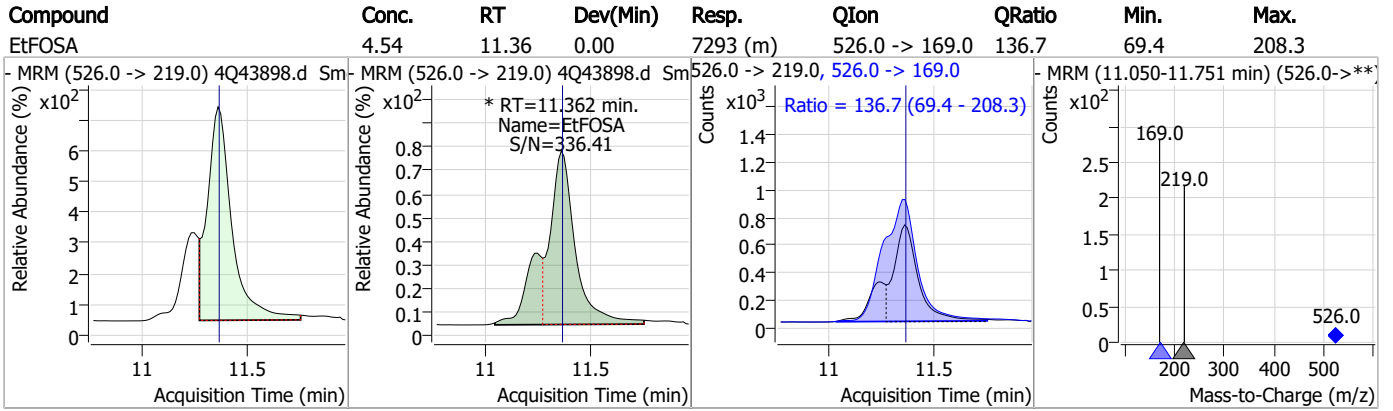
7.3.1

7





### Perfluorinated Compounds by LC/MS/MS



7.3.1

7

# Manual Integration Approval Summary

Sample Number: OP96662-BS                      Method: EPA DRAFT 1633  
Lab FileID: 4Q43898.D                      Analyst approved: 05/04/23 11:23 Natasha Gumtie  
Injection Time: 05/03/23 14:05                      Supervisor approved: 05/04/23 17:48 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSE	1691-99-2		11.28	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.3.1.1  
7

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43899.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 2:19:22 PM  
 Sample Name : op96662-llbs:3  
 Vial : P1-B6  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96662,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.924	216.8 -> 171.9	128467	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	66843	5.00 µg/L	0.012
M5-PFHxA	5.547	318.0 -> 273.0	46533	2.50 µg/L	0.012
M4-PFHpA	6.480	367.1 -> 322.0	28282	2.50 µg/L	0.012
M8-PFOA	7.136	421.1 -> 376.0	42281	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	19677	1.25 µg/L	0.013
M6-PFDA	8.191	519.1 -> 474.1	18788	1.25 µg/L	0.013
M7-PFUnDA	8.660	570.0 -> 525.1	19712	1.25 µg/L	0.013
M2-PFDoDA	9.118	615.1 -> 570.0	19786	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	13082	1.25 µg/L	0.012
M8-FOSA	9.771	506.1 -> 77.8	6314	2.50 µg/L	0.000
M3-PFBS	5.439	302.1 -> 79.9	11433	2.50 µg/L	0.012
M3-PFHxS	7.229	402.1 -> 79.9	7372	2.50 µg/L	0.000
M8-PFOS	8.329	507.1 -> 79.9	10453	2.50 µg/L	0.000
M2-4:2FTS	5.235	329.1 -> 80.9	1166	5.00 µg/L	0.012
M2-6:2FTS	6.911	429.1 -> 80.9	2072	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	2914	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	14220	5.00 µg/L	0.012
M3-HFPO-DA	5.902	286.9 -> 168.9	27876	10.00 µg/L	0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	10186	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	17767	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	29273	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	3676	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	3516	2.50 µg/L	0.012
13C4-PFOS	8.330	502.8 -> 79.9	10432	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	62791	5.00 µg/L	0.000
18O2-PFHxS	7.241	403.0 -> 83.9	4500	2.50 µg/L	0.012
13C4-PFOA	7.136	417.1 -> 372.0	47692	2.50 µg/L	0.012
13C2-PFDA	8.191	515.1 -> 470.1	16068	1.25 µg/L	0.013
13C5-PFNA	7.684	468.0 -> 423.0	21705	1.25 µg/L	0.000
13C2-PFHxA	5.536	315.1 -> 270.0	38170	2.50 µg/L	0.000
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.235	329.1 -> 80.9	1166	6.37 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 127.5%		
13C2-6:2FTS	6.911	429.1 -> 80.9	2072	6.28 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.7%		
13C2-8:2FTS	7.978	529.1 -> 80.9	2914	5.66 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.2%		
13C2-PFDoDA	9.118	615.1 -> 570.0	19786	1.27 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C2-PFTeDA	9.911	715.2 -> 670.0	13082	1.03 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 82.6%		
13C3-PFBS	5.439	302.1 -> 79.9	11433	2.69 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.8%		
13C3-PFHxS	7.229	402.1 -> 79.9	7372	2.64 µg/L	0.000

7.32  
7

### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C4-PFBA	2.924	216.8 -> 171.9	128467	10.87 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.7%	
13C4-PFHpA	6.480	367.1 -> 322.0	28282	2.88 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.1%	
13C5-PFHxA	5.547	318.0 -> 273.0	46533	2.77 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.7%	
13C5-PFPeA	4.375	268.3 -> 223.0	66843	5.69 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.7%	
13C6-PFDA	8.191	519.1 -> 474.1	18788	1.37 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.2%	
13C7-PFUnDA	8.660	570.0 -> 525.1	19712	1.38 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.1%	
13C8-FOSA	9.771	506.1 -> 77.8	6314	0.97 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 38.6%	
13C8-PFOA	7.136	421.1 -> 376.0	42281	2.70 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.0%	
13C8-PFOS	8.329	507.1 -> 79.9	10453	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.5%	
13C9-PFNA	7.684	472.1 -> 427.0	19677	1.33 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.7%	
d3-MeFOSAA	8.249	573.2 -> 419.0	14220	5.40 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.0%	
13C3-HFPO-DA	5.902	286.9 -> 168.9	27876	11.10 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 111.0%	
d3-MeFOSA	11.076	515.0 -> 219.0	3516	0.86 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 34.4%	
d5-EtFOSAA	8.458	589.2 -> 419.0	10186	4.70 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 93.9%	
d7-MeFOSE	10.959	623.2 -> 58.9	17767	5.47 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 21.9%	
d9-EtFOSE	11.269	639.2 -> 58.9	29273	6.37 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 25.5%	
d5-EtFOSA	11.360	531.1 -> 219.0	3676	0.85 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 33.8%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.236	327.1 -> 307.0	4585	2.45 µg/L	88
		327.1 -> 80.9	1773		
6:2FTS	6.911	427.1 -> 407.0	5302	2.65 µg/L	100
		427.1 -> 80.9	2229		
8:2FTS	7.978	527.1 -> 507.0	4471	2.75 µg/L	95
		527.1 -> 80.8	2025		
EtFOSAA	8.459	584.2 -> 419.1	1317	0.67 µg/L	m 90
		584.2 -> 526.0	576		
FOSA	9.774	498.1 -> 77.9	1953	0.74 µg/L	96
		498.1 -> 478.0	88		
MeFOSAA	8.249	570.1 -> 419.0	1449	0.58 µg/L	m 84
		570.1 -> 483.0	228		
PFBA	2.932	212.8 -> 168.9	8979	2.61 µg/L	100
PFBS	5.440	298.7 -> 79.9	2742	0.58 µg/L	93
		298.7 -> 98.8	985		
PFDA	8.192	512.9 -> 469.0	10038	0.70 µg/L	93
		512.9 -> 219.0	1828		
PFDoDA	9.106	613.1 -> 569.0	10009	0.63 µg/L	100
		613.1 -> 319.0	1454		
PFDS	9.282	599.0 -> 79.9	1475	0.57 µg/L	91

7.3.2  
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.480	599.0 -> 98.8	773	0.63	µg/L	93
		363.1 -> 319.0	11288			
PFHpS	7.823	363.1 -> 169.0	2355	0.65	µg/L	83
		449.0 -> 79.9	2459			
PFHxA	5.538	449.0 -> 98.9	1009	0.70	µg/L	99
		313.0 -> 269.0	12720			
PFHxS	7.230	313.0 -> 118.9	395	0.63	µg/L	m
		398.7 -> 79.9	1905			
PFNA	7.685	398.7 -> 98.9	1112	0.65	µg/L	96
		463.0 -> 419.0	9461			
PFNS	8.823	463.0 -> 219.0	2158	0.62	µg/L	93
		548.8 -> 79.9	1414			
PFOA	7.137	548.8 -> 98.9	668	0.65	µg/L	96
		413.0 -> 369.0	15912			
PFOS	8.343	413.0 -> 169.0	3353	0.56	µg/L	m
		498.9 -> 79.9	2847			
PFPeA	4.377	498.9 -> 98.8	1792	1.31	µg/L	100
		263.0 -> 219.0	21084			
PFPeS	6.507	349.1 -> 79.9	1623	0.63	µg/L	93
		349.1 -> 98.9	670			
PFTeDA	9.912	713.1 -> 669.0	8450	0.66	µg/L	99
		713.1 -> 168.9	763			
PFTrDA	9.529	663.0 -> 619.0	11709	0.55	µg/L	100
		663.0 -> 168.9	1270			
PFUnDA	8.660	563.1 -> 519.0	8582	0.64	µg/L	99
		563.1 -> 269.1	1872			
11CI-PF3OUdS	9.568	630.9 -> 450.9	11834	1.18	µg/L	97
		632.9 -> 452.9	3624			
9CI-PF3ONS	8.687	530.8 -> 351.0	15302	1.20	µg/L	95
		532.8 -> 353.0	5083			
ADONA	6.731	376.9 -> 250.9	35602	1.27	µg/L	99
		376.9 -> 84.8	9477			
HFPO-DA	5.903	284.9 -> 168.9	3718	1.40	µg/L	98
		284.9 -> 184.9	450			
3:3FTCA	3.848	241.0 -> 177.0	2007	2.84	µg/L	93
		241.0 -> 117.0	222			
5:3FTCA	6.205	341.0 -> 237.1	33814	13.67	µg/L	99
		341.0 -> 217.0	23292			
7:3FTCA	7.661	441.0 -> 316.9	17075	13.28	µg/L	97
		441.0 -> 336.9	41588			
EtFOSA	11.362	526.0 -> 219.0	1978	1.28	µg/L	m
		526.0 -> 169.0	2785			
EtFOSE	11.282	630.0 -> 58.9	3028	2.67	µg/L	m
		511.9 -> 219.0	1725			
MeFOSA	11.078	511.9 -> 169.0	2594	1.30	µg/L	m
		616.1 -> 58.9	2516			
MeFOSE	10.985	699.1 -> 79.9	1368	3.45	µg/L	m
		699.1 -> 98.8	760			
PFDoDS	10.052	295.0 -> 201.0	1868	0.59	µg/L	97
		295.0 -> 84.9	528			
NFDHA	5.428	279.0 -> 85.1	11874	1.44	µg/L	99
		229.0 -> 84.9	11361			
PFMBA	4.778	314.8 -> 134.9	16564	1.35	µg/L	100
		314.8 -> 82.9	555			
PFMPA	3.528			1.20	µg/L	99
PFEESA	5.971					

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

7.3.2  
7

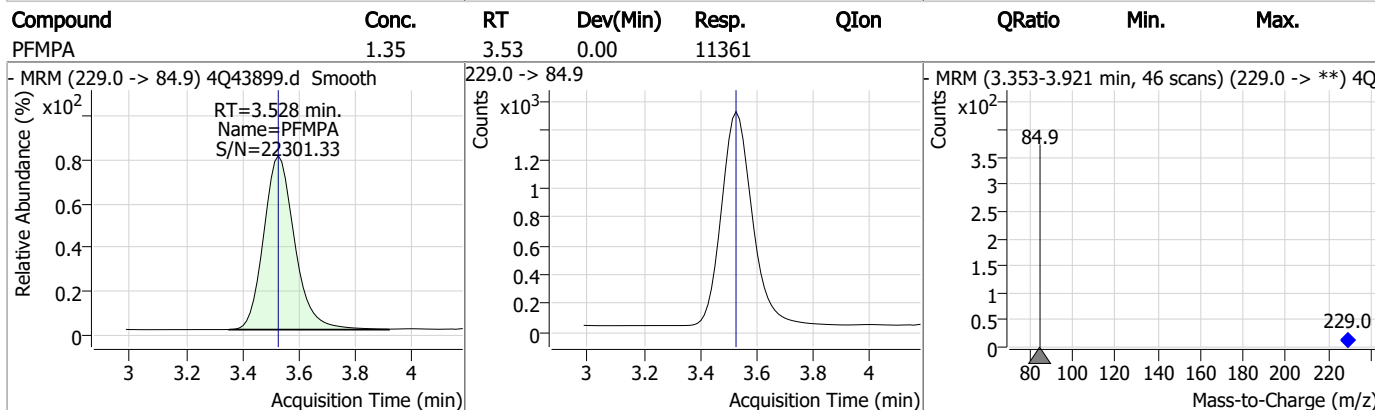
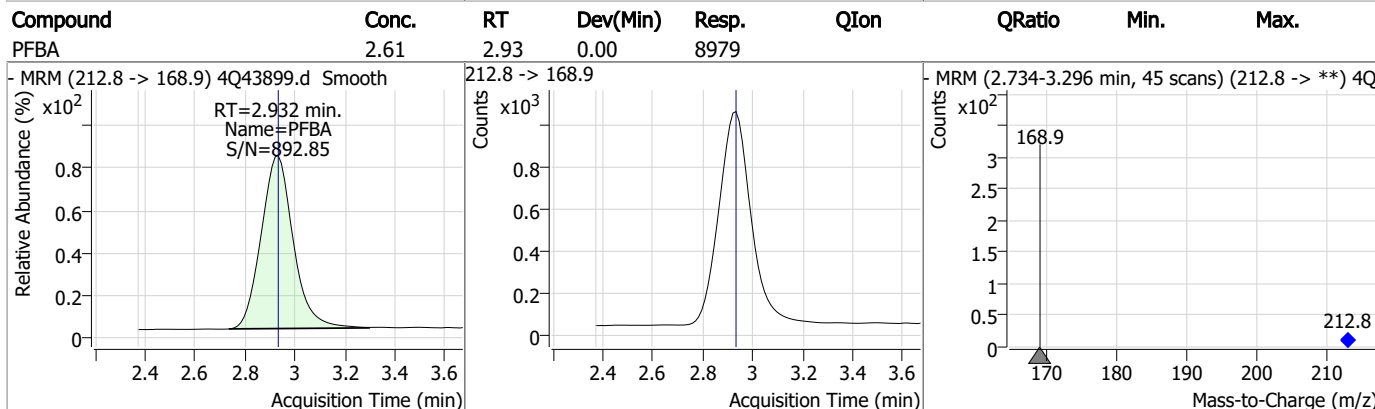
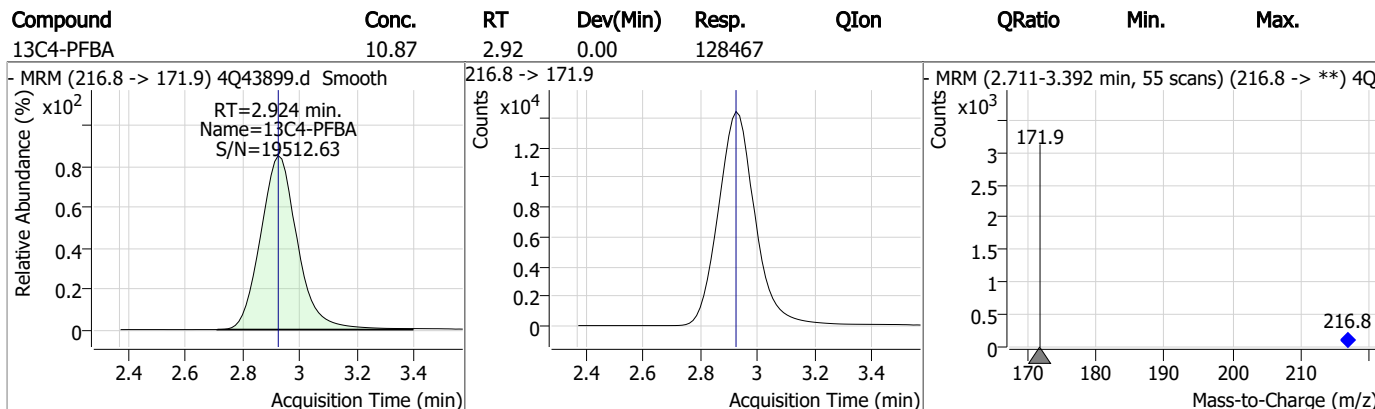
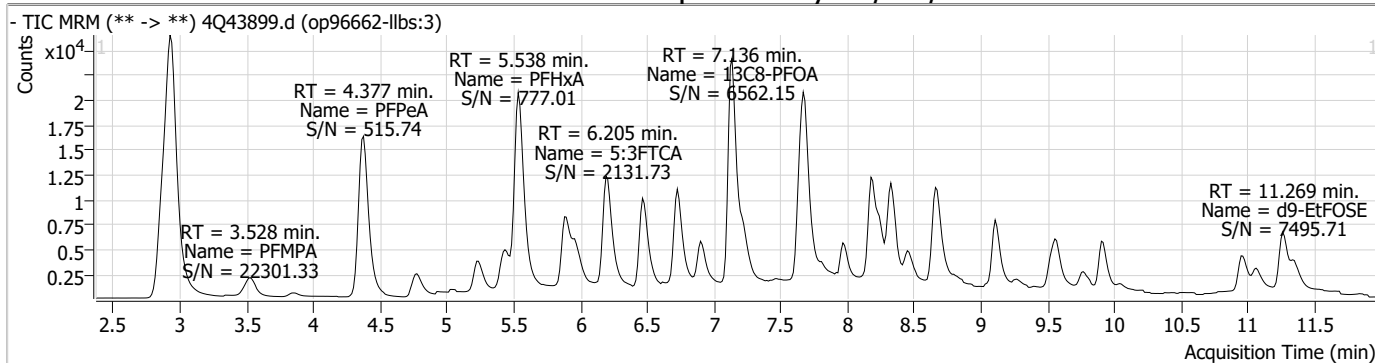
### Perfluorinated Compounds by LC/MS/MS

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

7.3.2

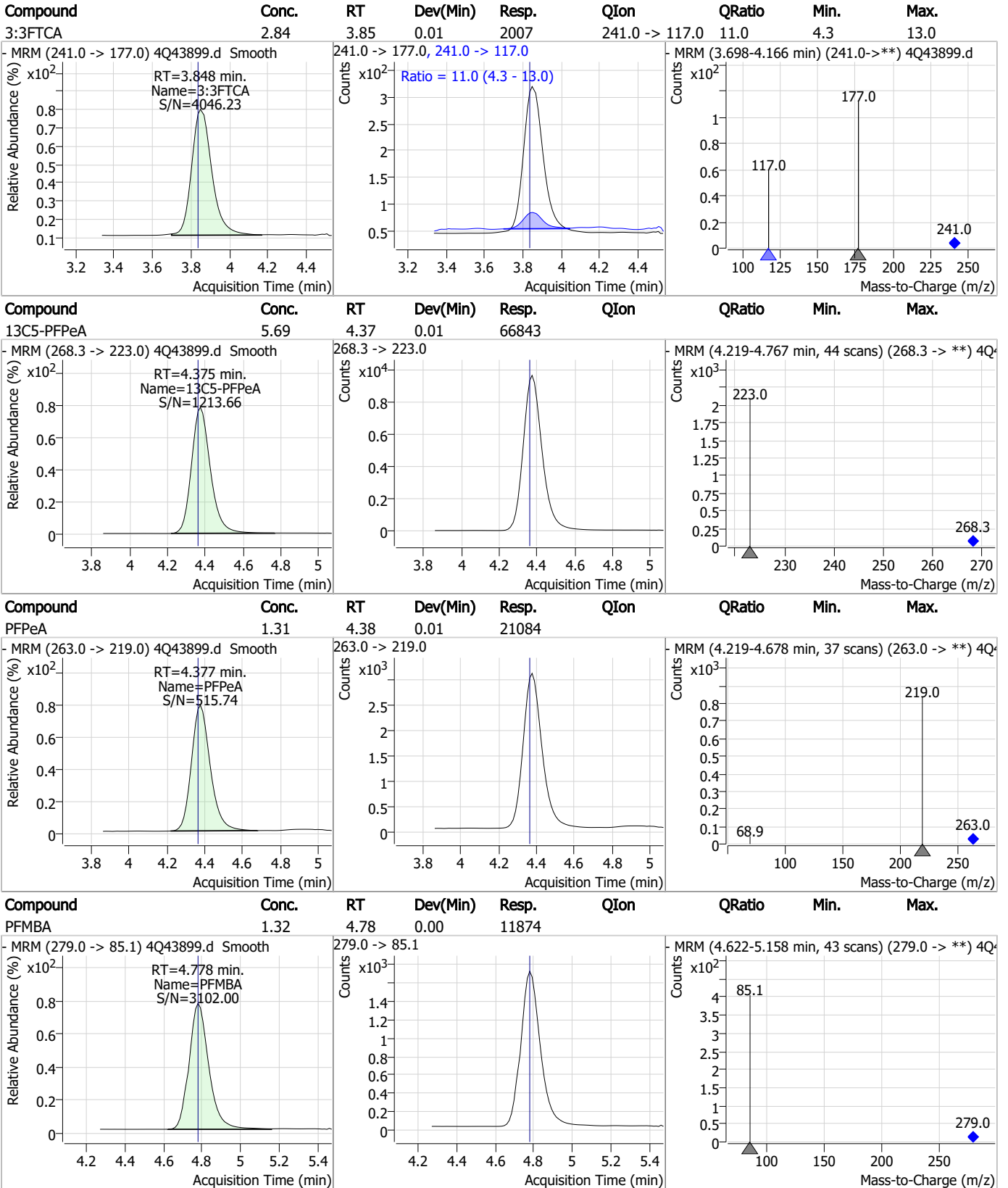
7

### Perfluorinated Compounds by LC/MS/MS



7.3.2  
7

### Perfluorinated Compounds by LC/MS/MS



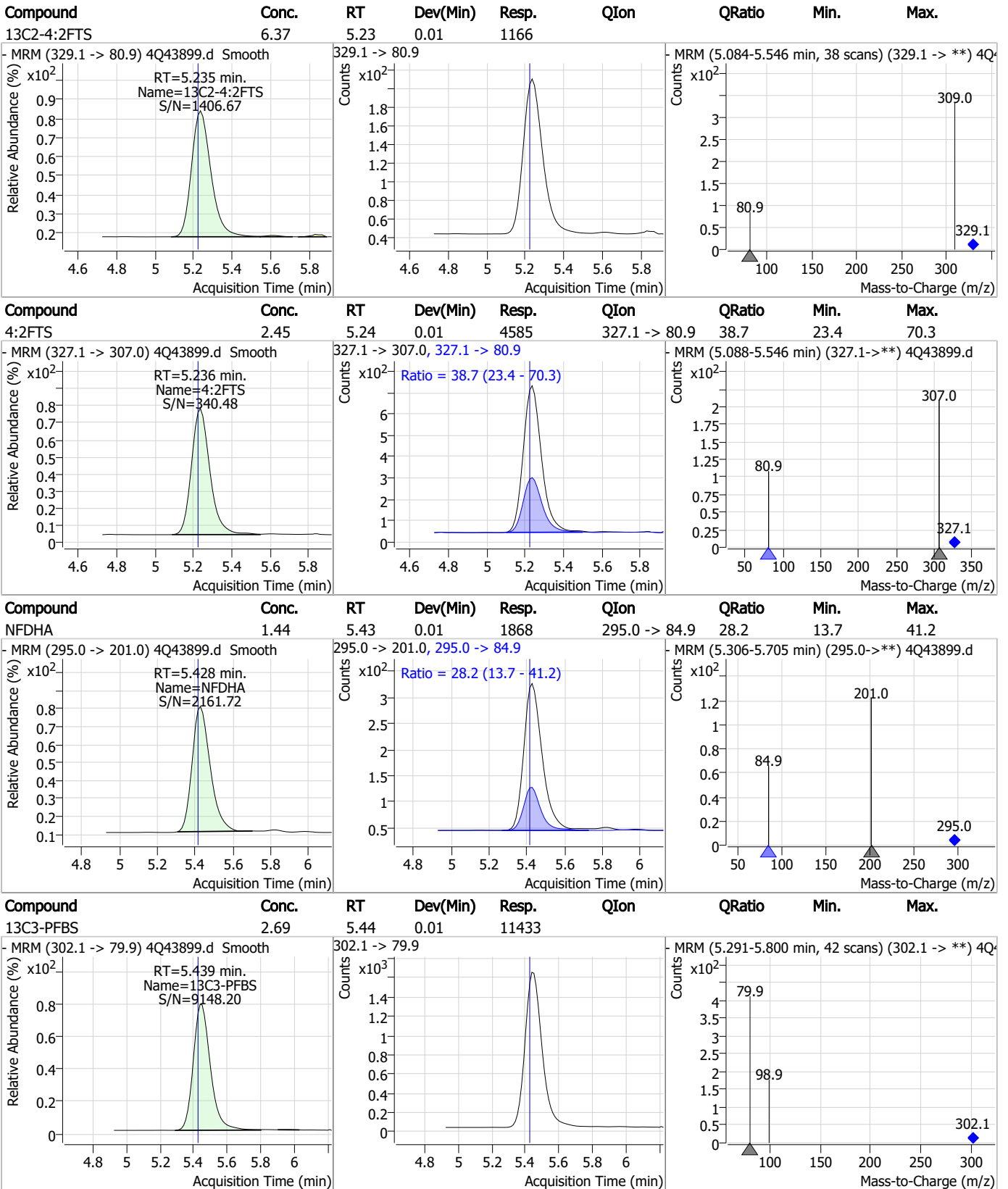
7.3.2

7





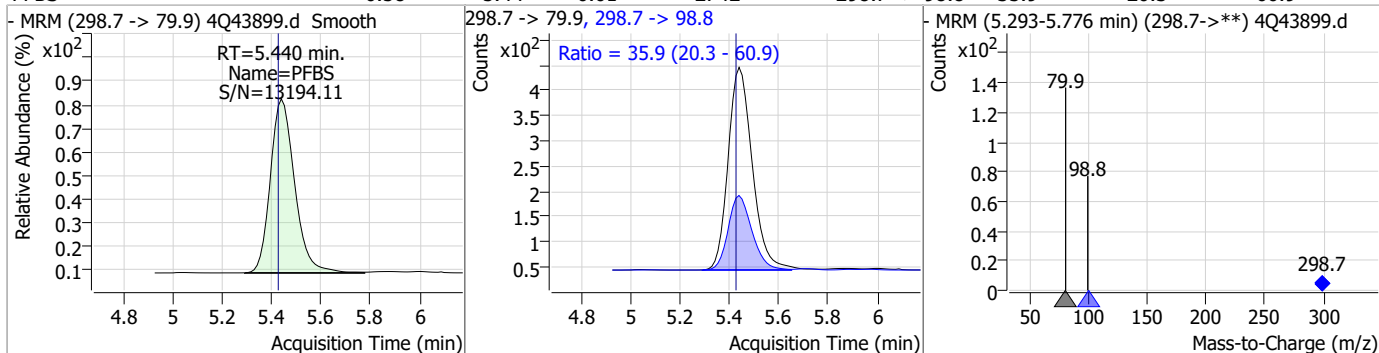
### Perfluorinated Compounds by LC/MS/MS



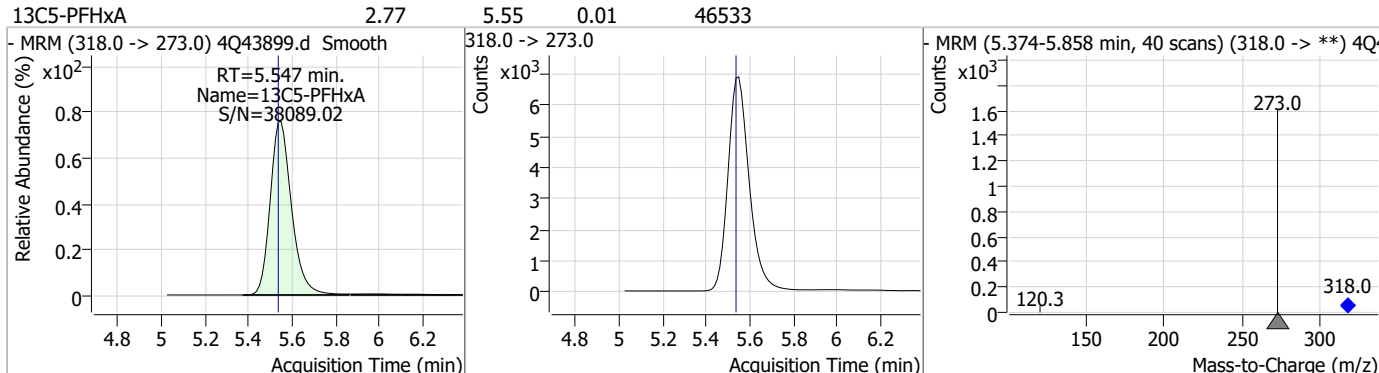
7.3.2 7

### Perfluorinated Compounds by LC/MS/MS

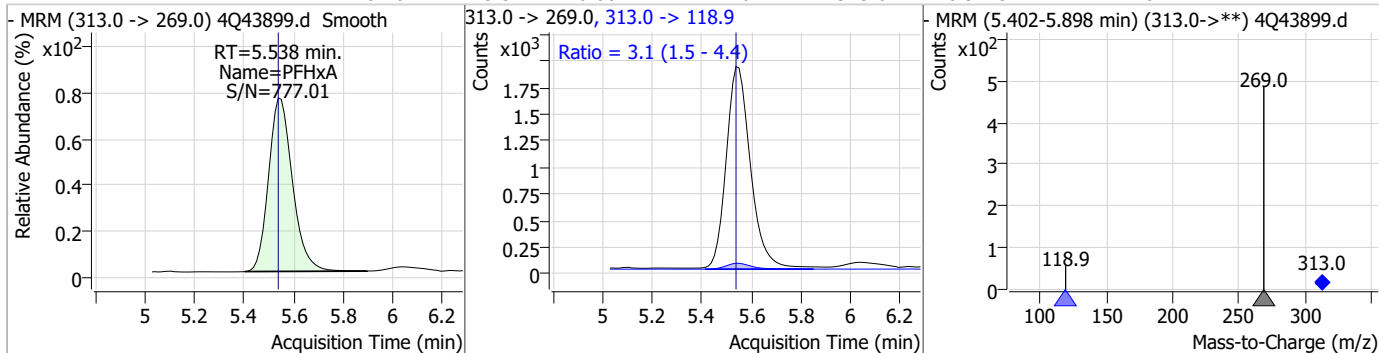
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.58	5.44	0.01	2742	298.7 -> 98.8	35.9	20.3	60.9



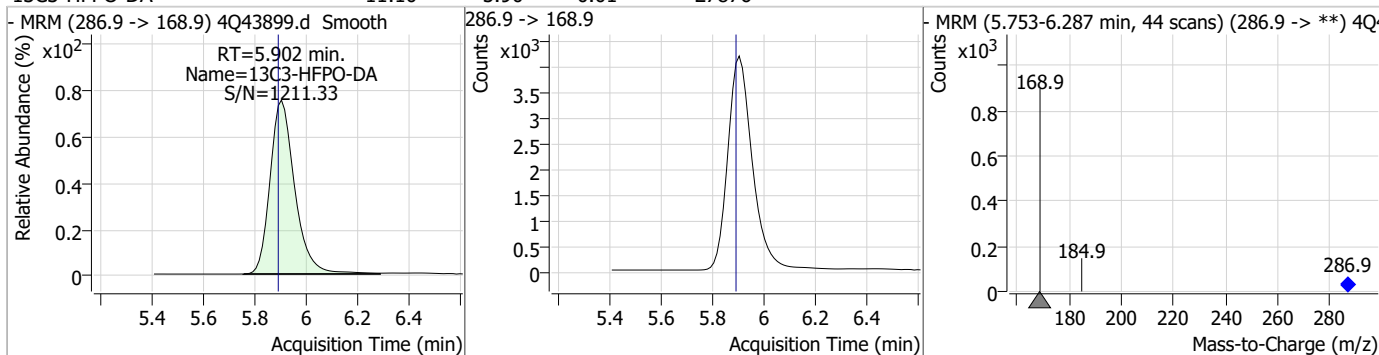
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.77	5.55	0.01	46533				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.70	5.54	0.00	12720	313.0 -> 118.9	3.1	1.5	4.4

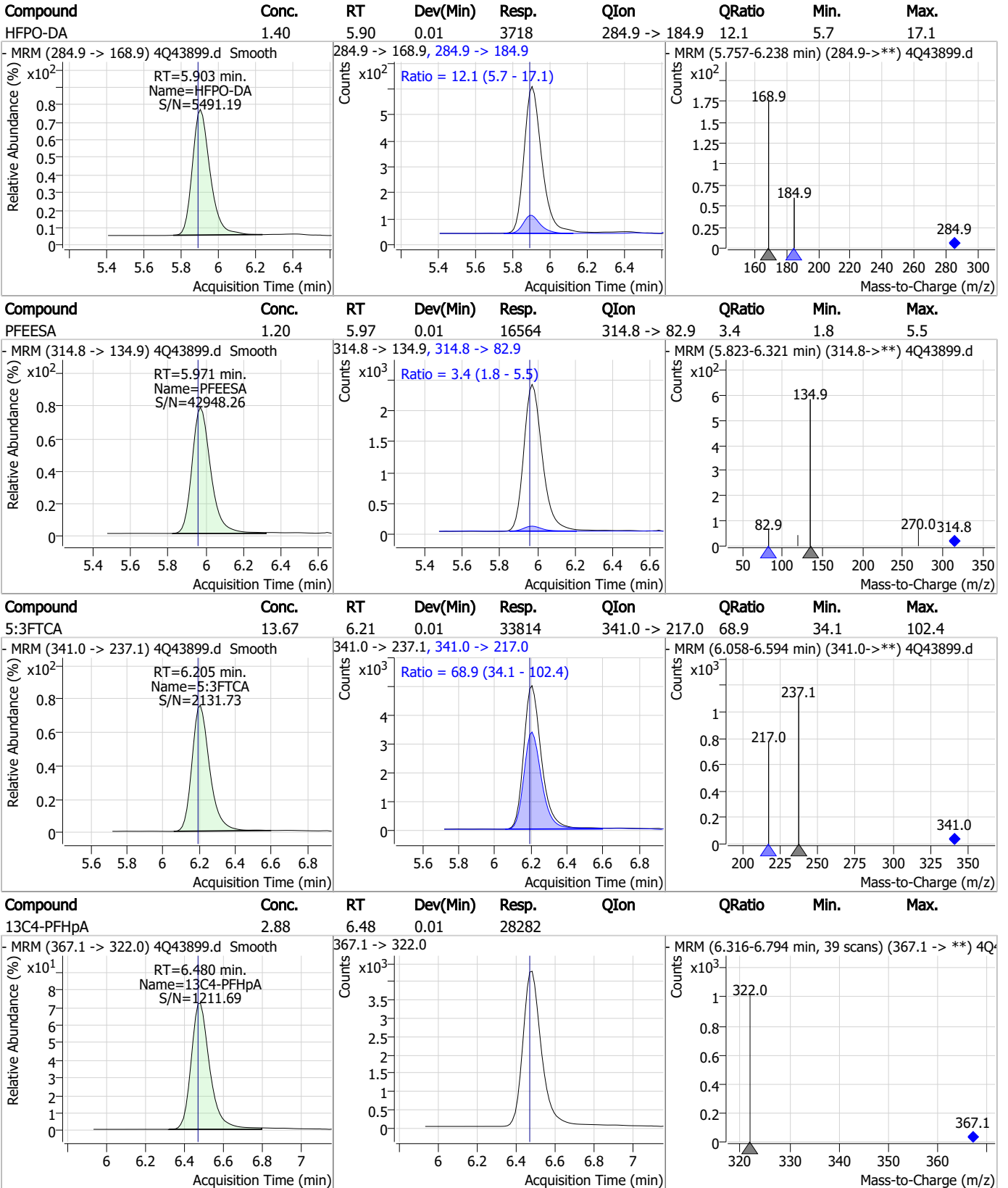


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	11.10	5.90	0.01	27876				



7.3.2  
7

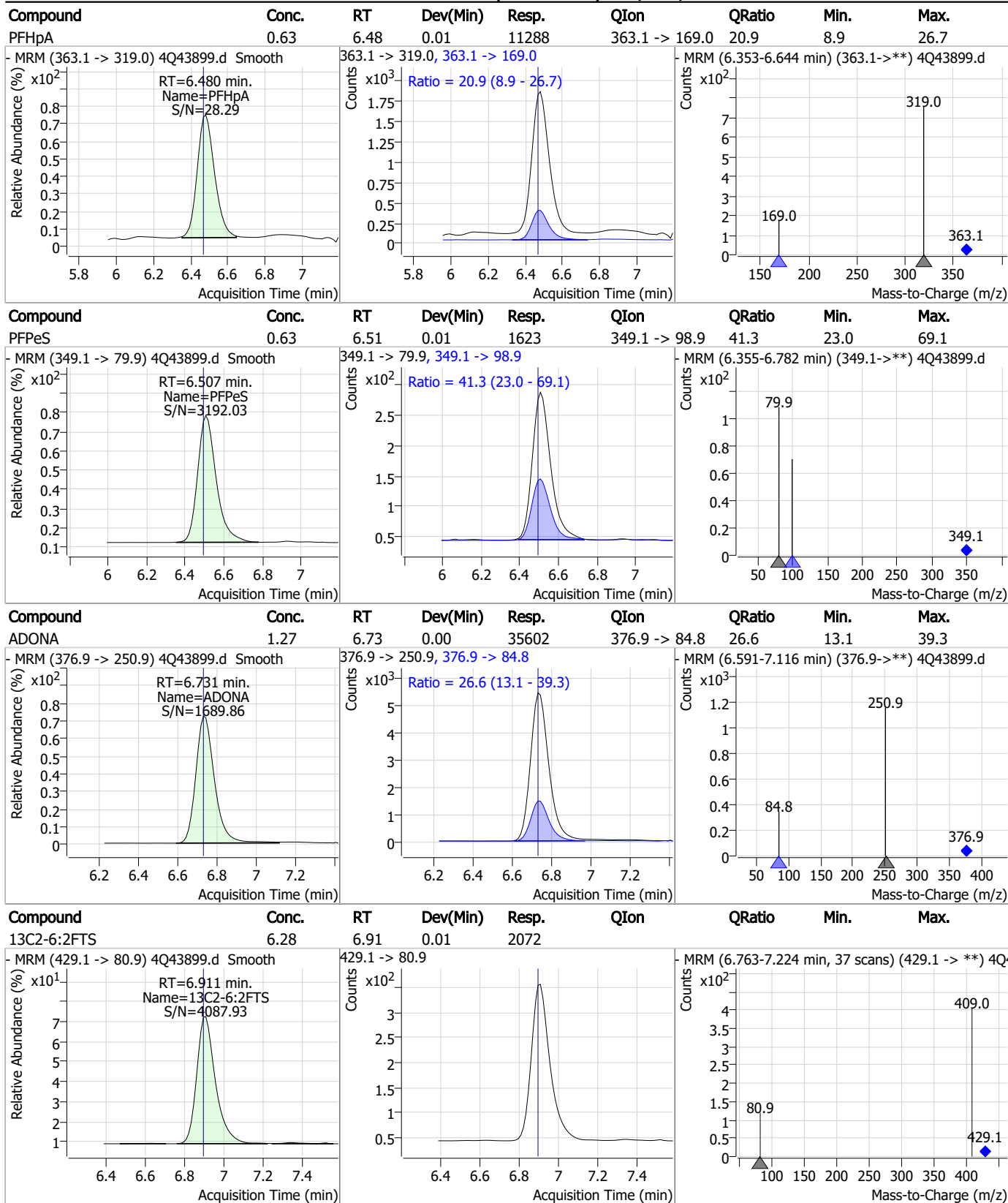
### Perfluorinated Compounds by LC/MS/MS



7.3.2

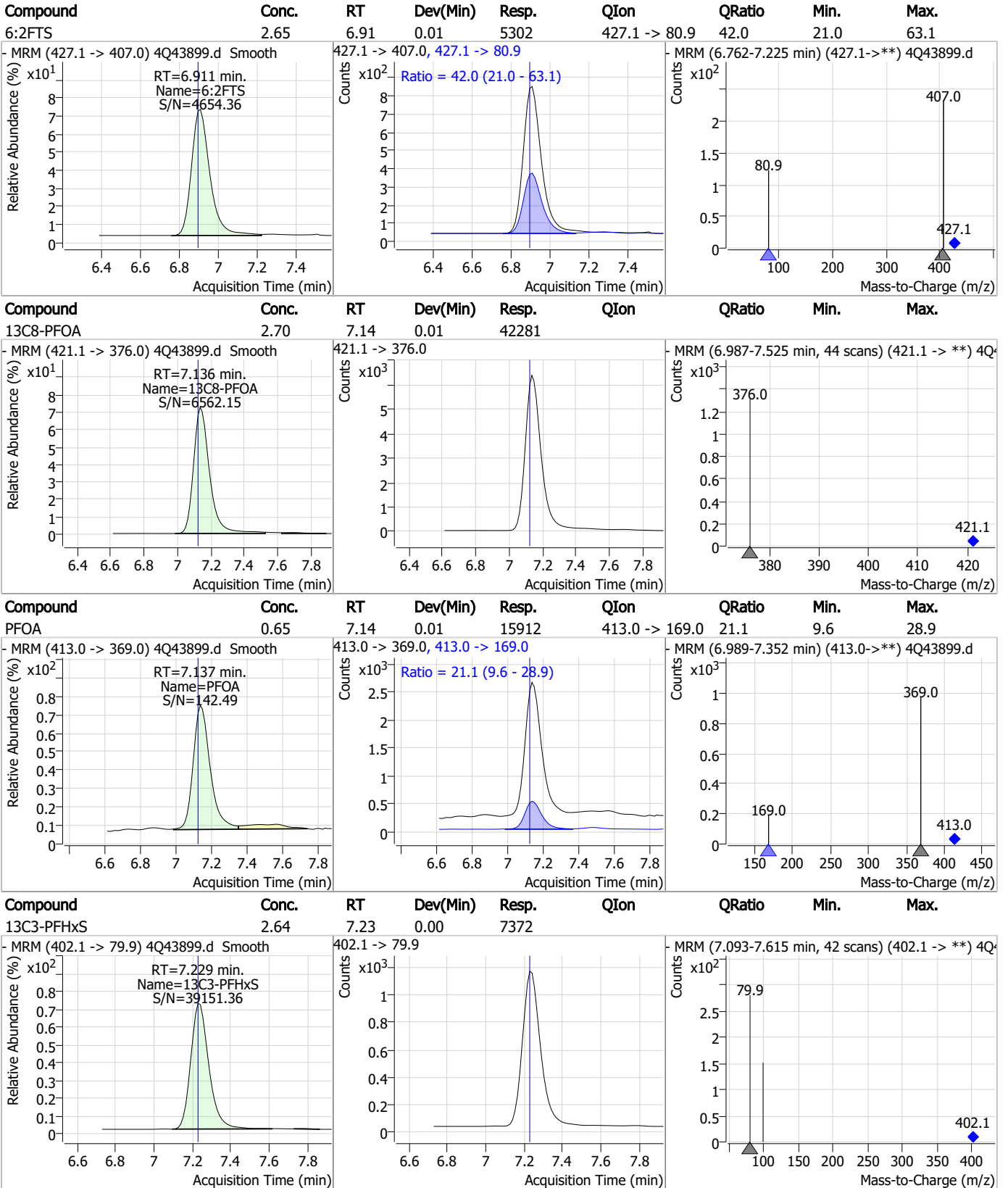
7

### Perfluorinated Compounds by LC/MS/MS



7.3.2  
7

### Perfluorinated Compounds by LC/MS/MS

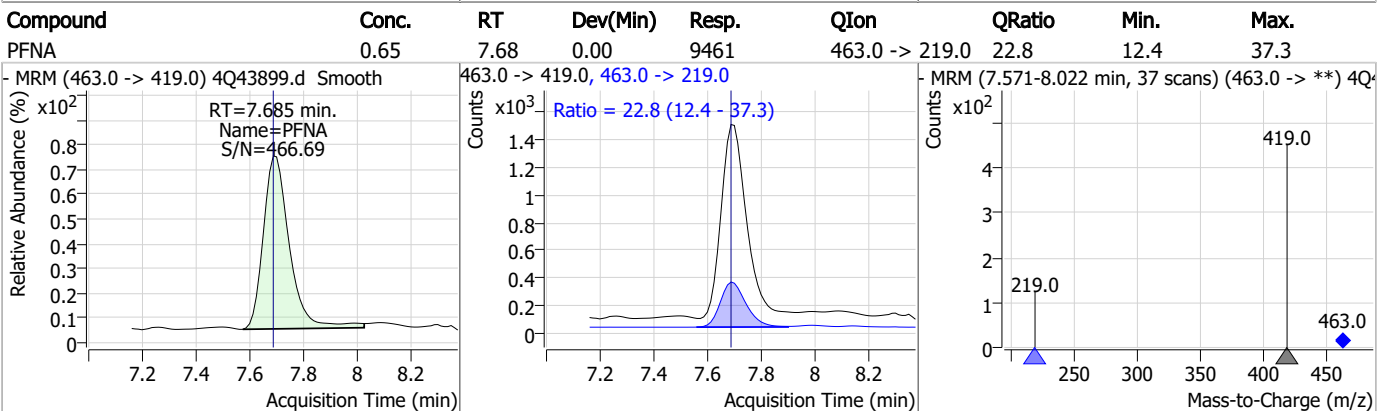
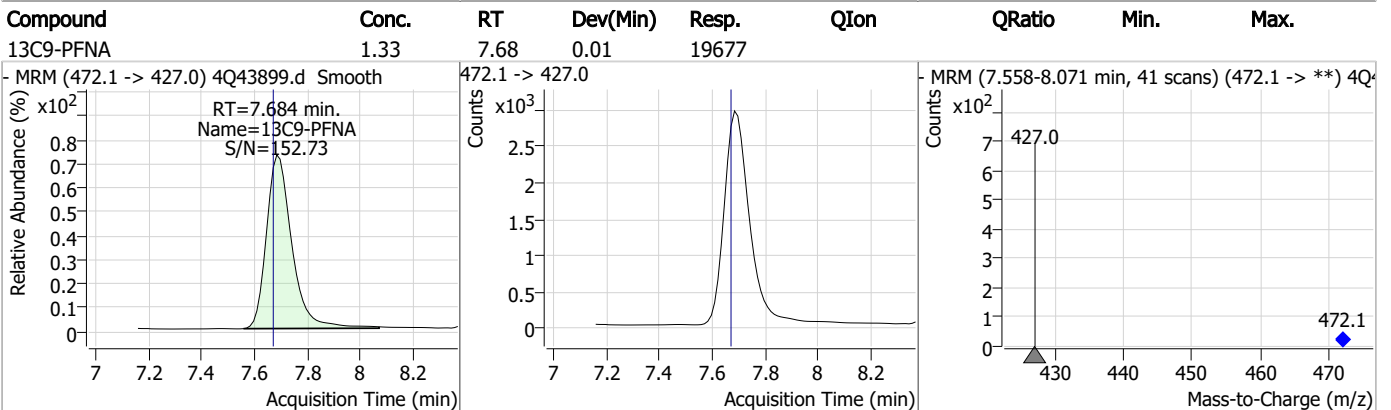
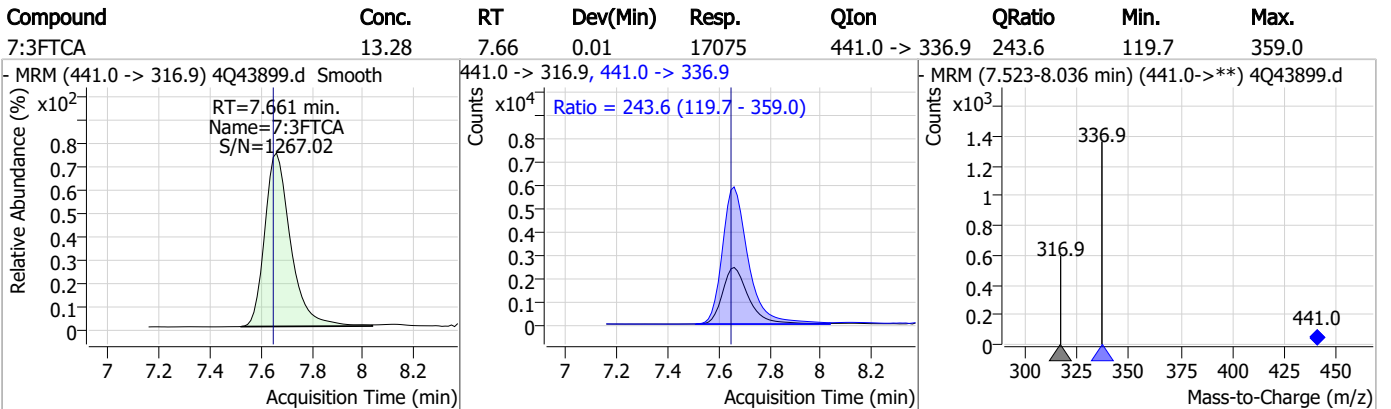
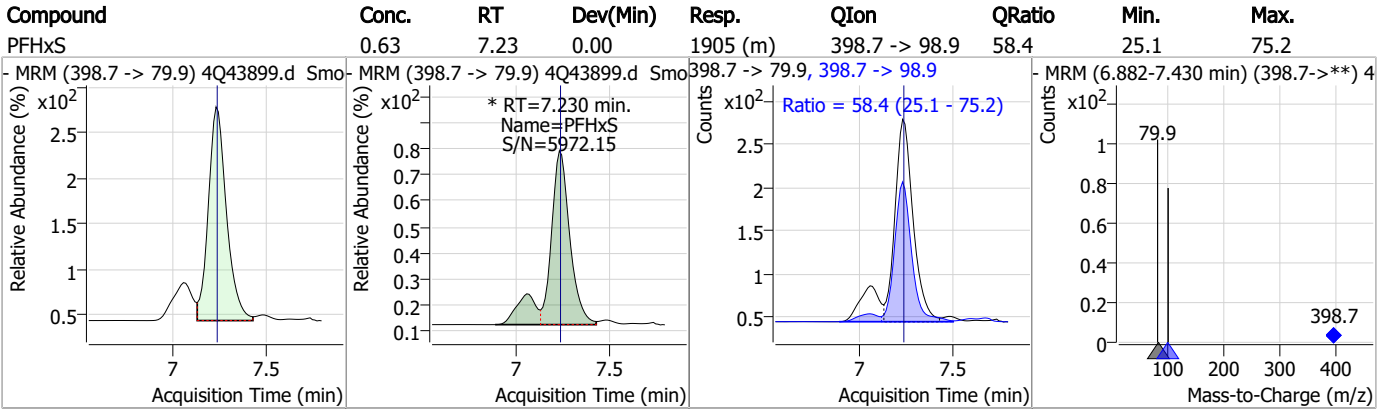


7.3.2

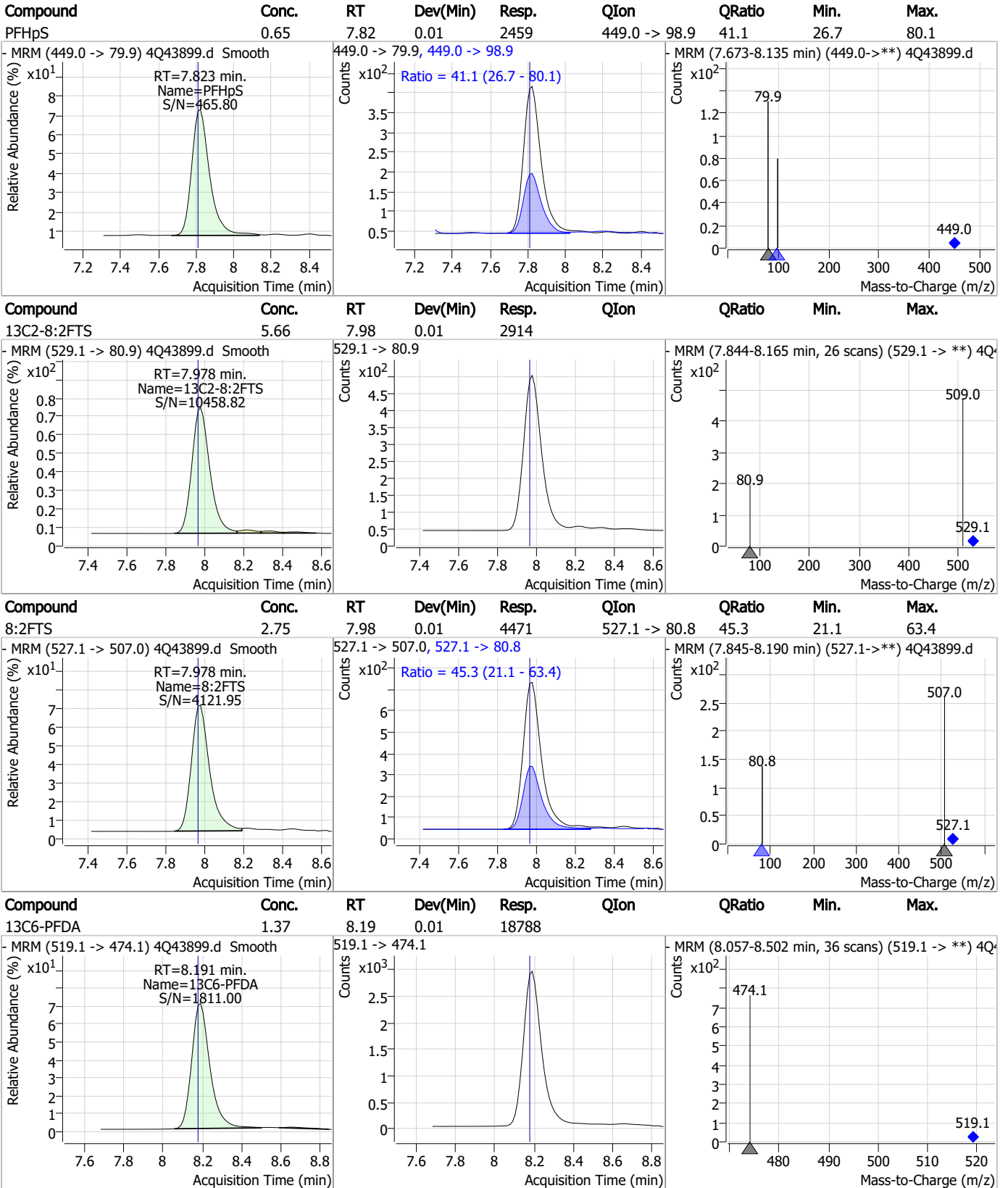
7



## Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

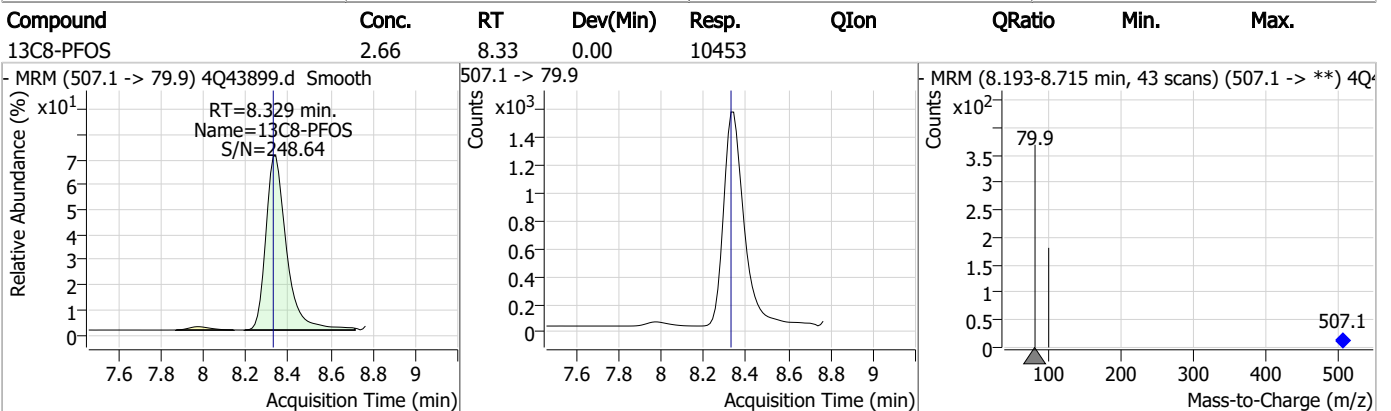
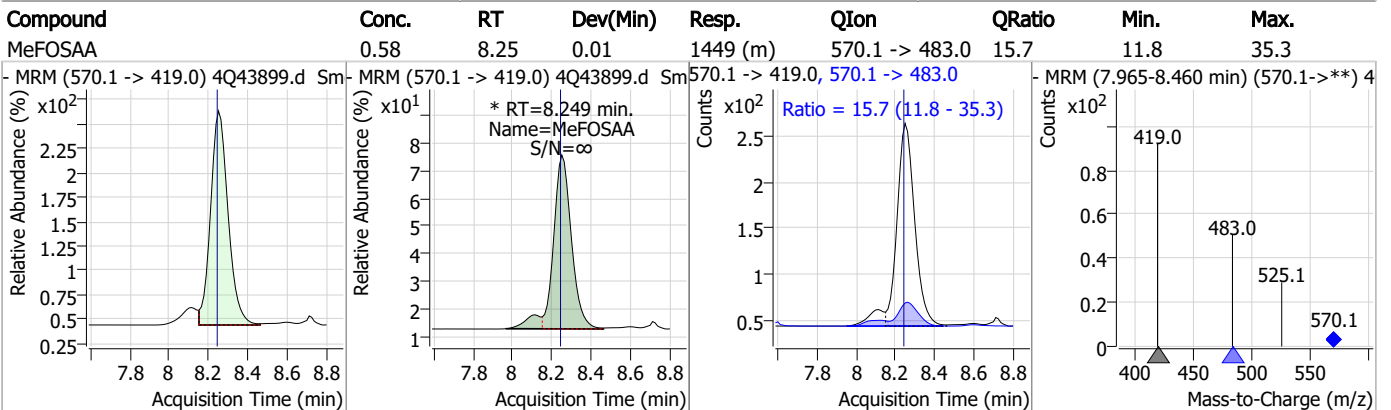
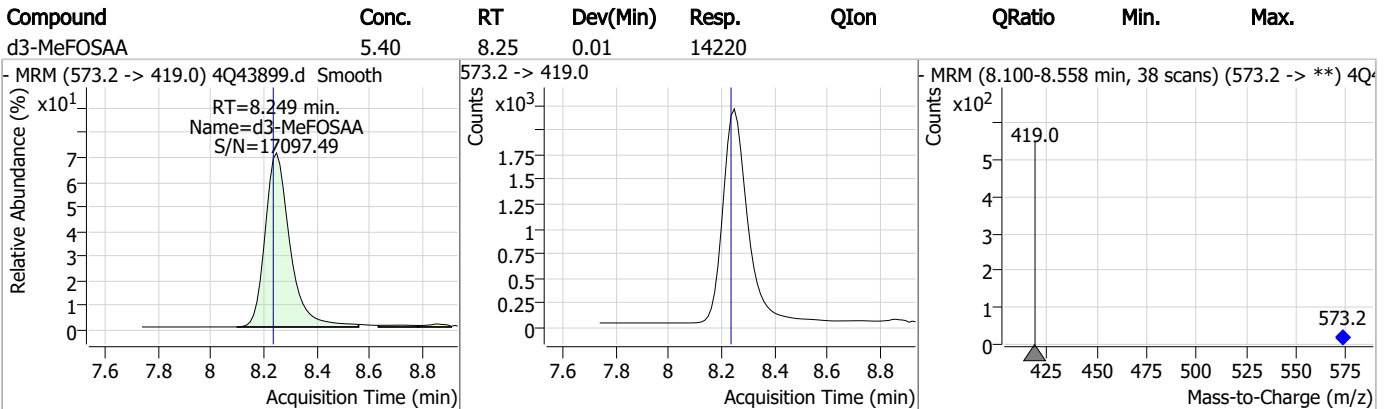
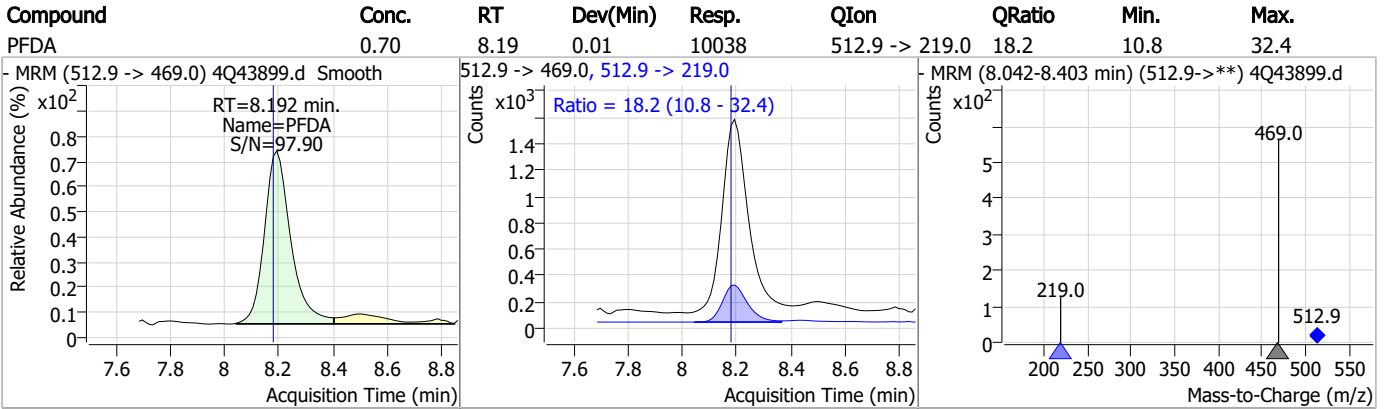


7.3.2

7

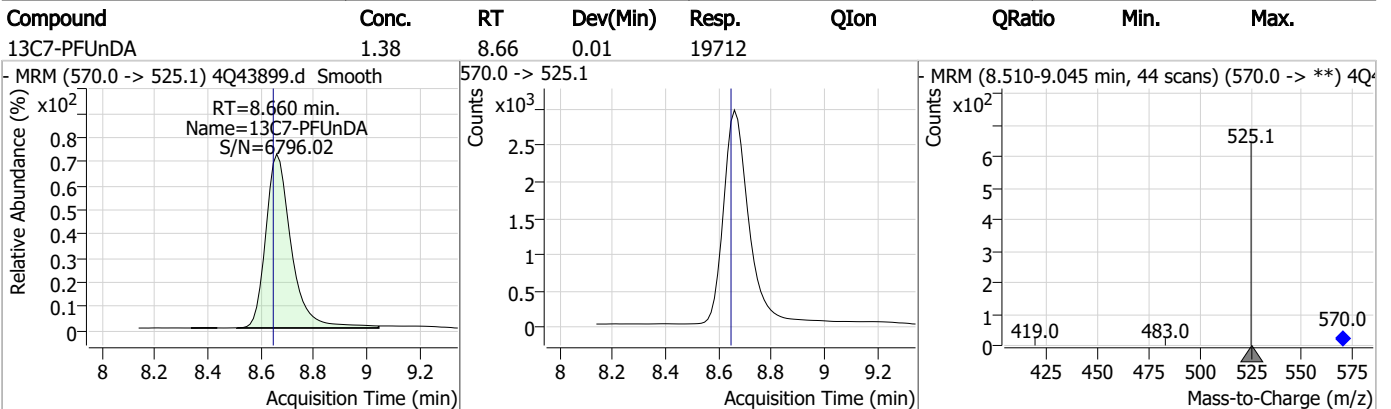
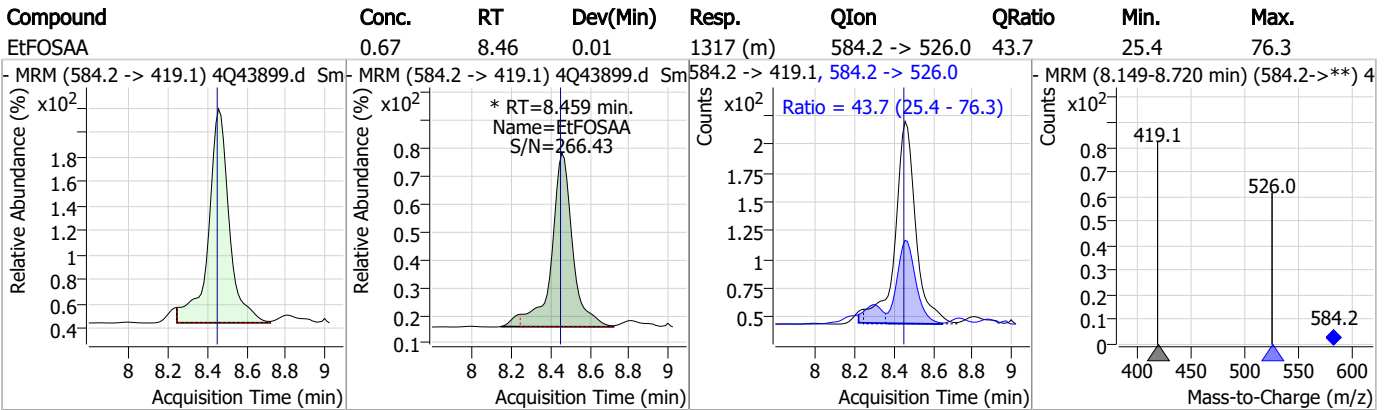
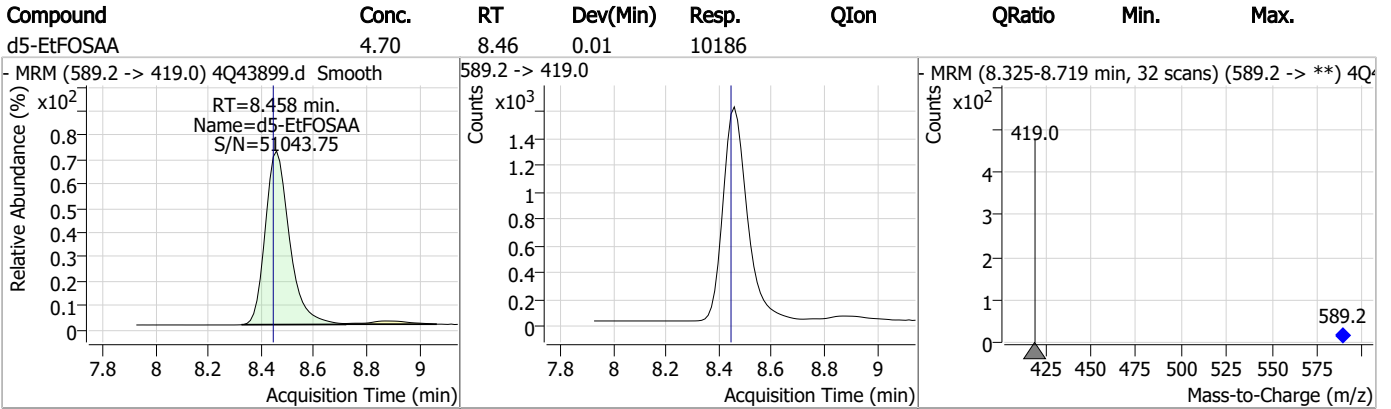
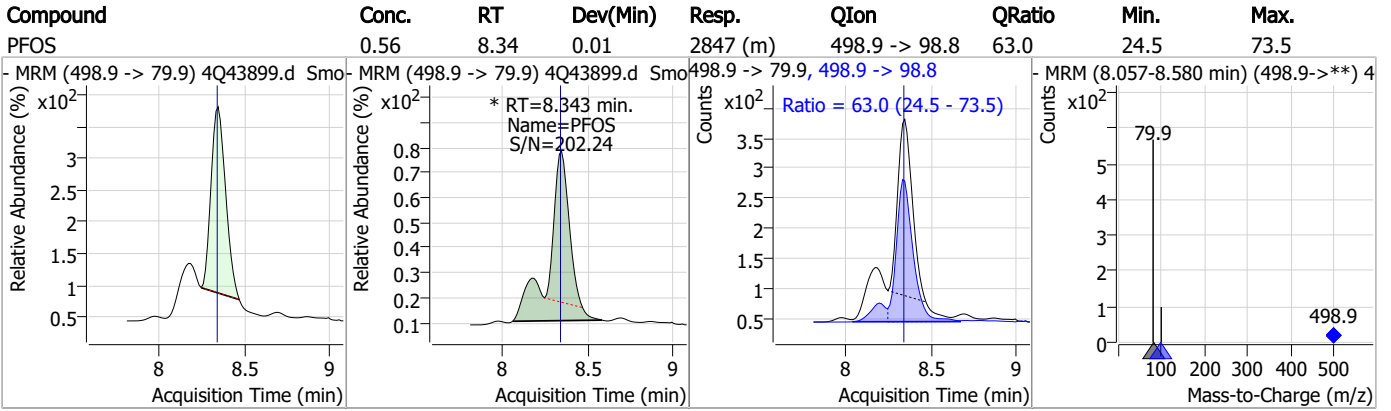


### Perfluorinated Compounds by LC/MS/MS

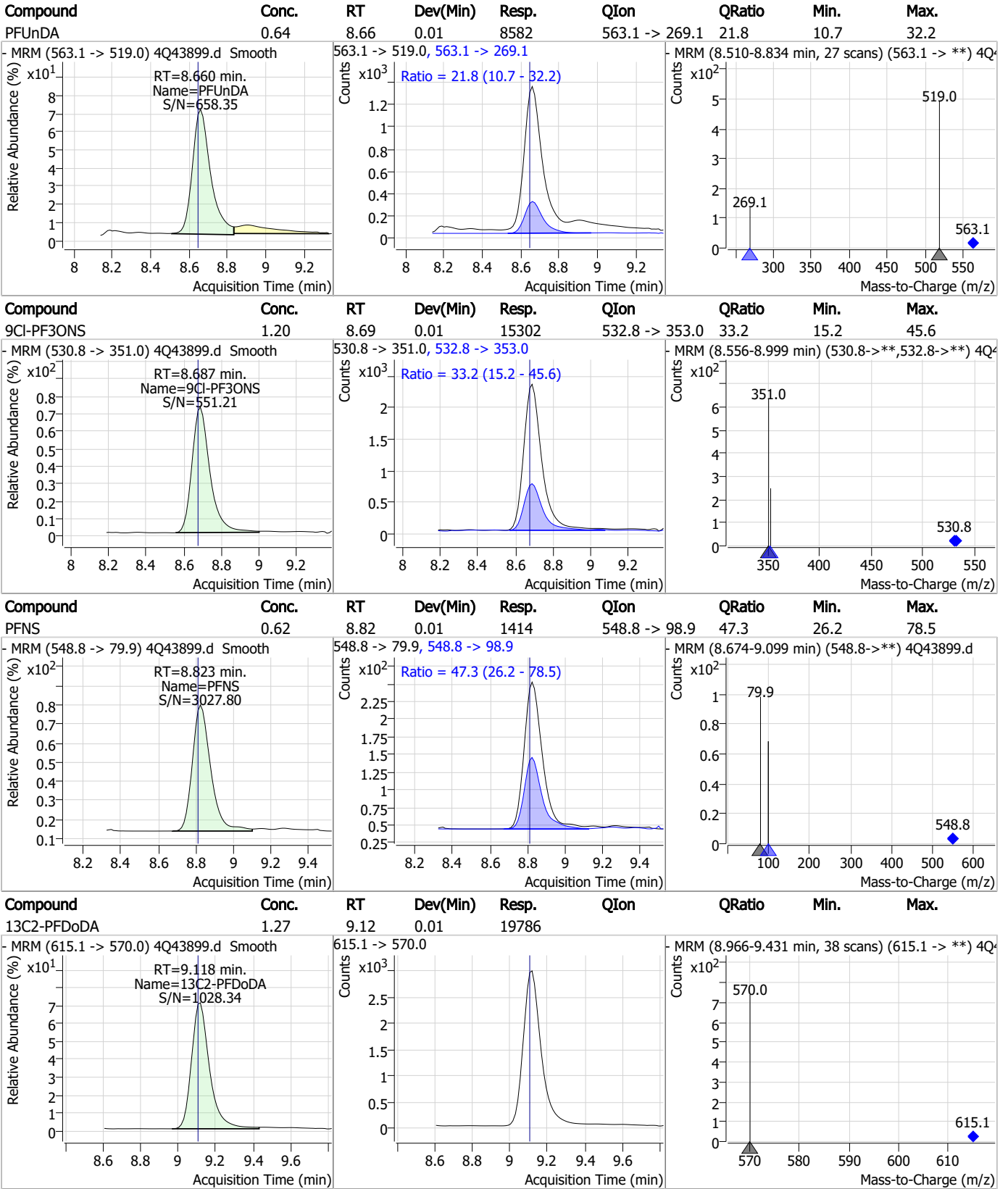




### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

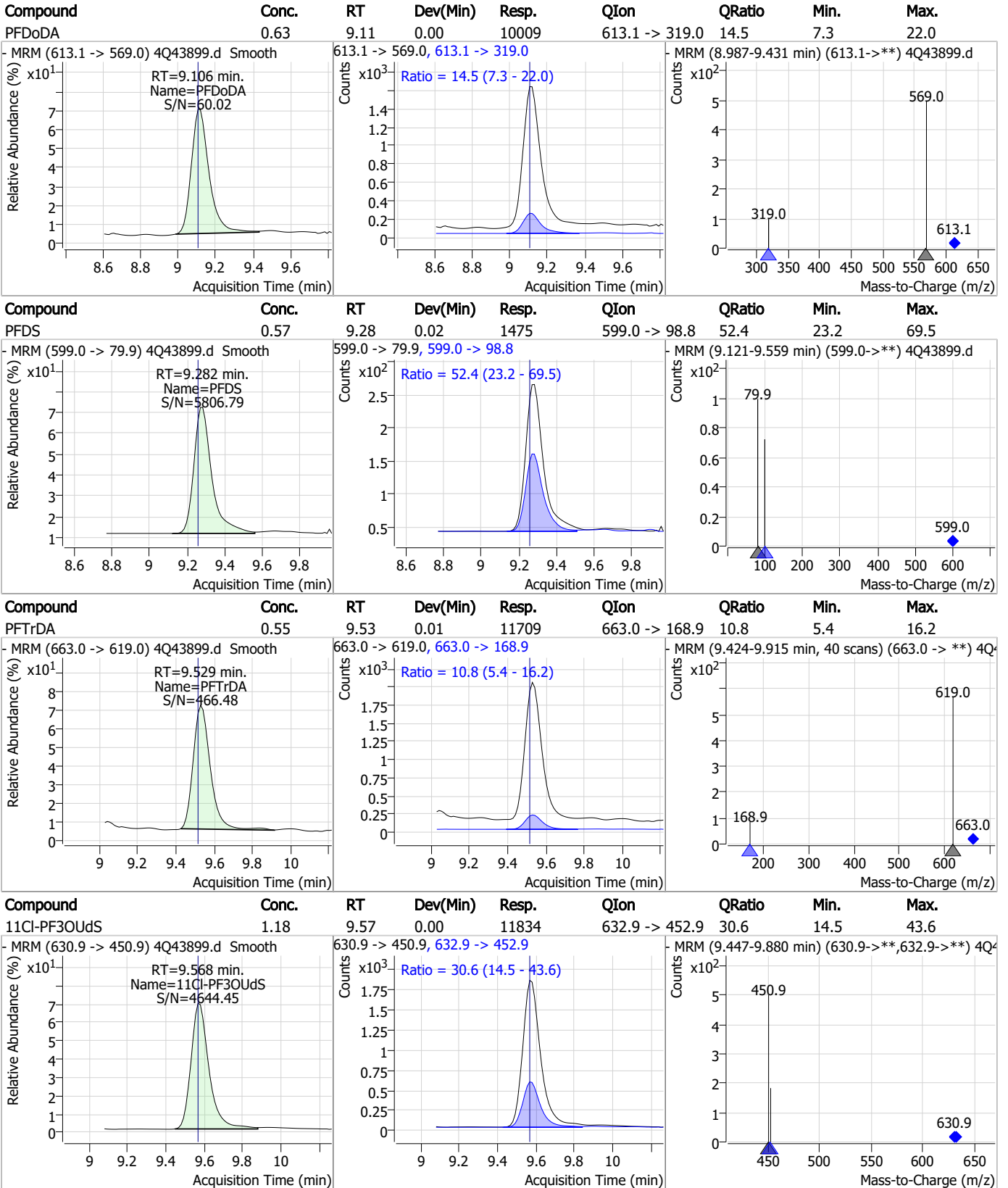


7.3.2

7

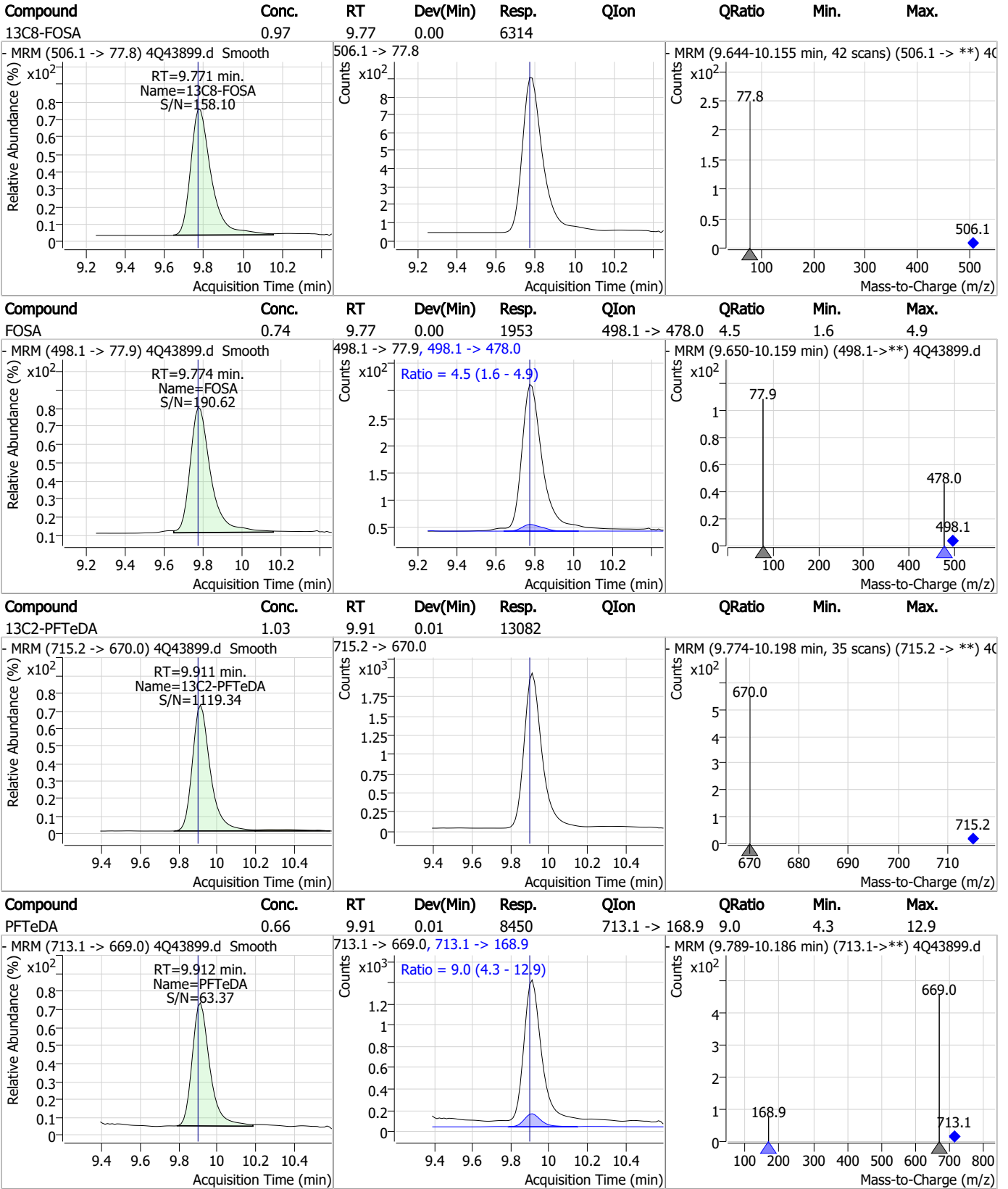


### Perfluorinated Compounds by LC/MS/MS



7.3.2 7

### Perfluorinated Compounds by LC/MS/MS

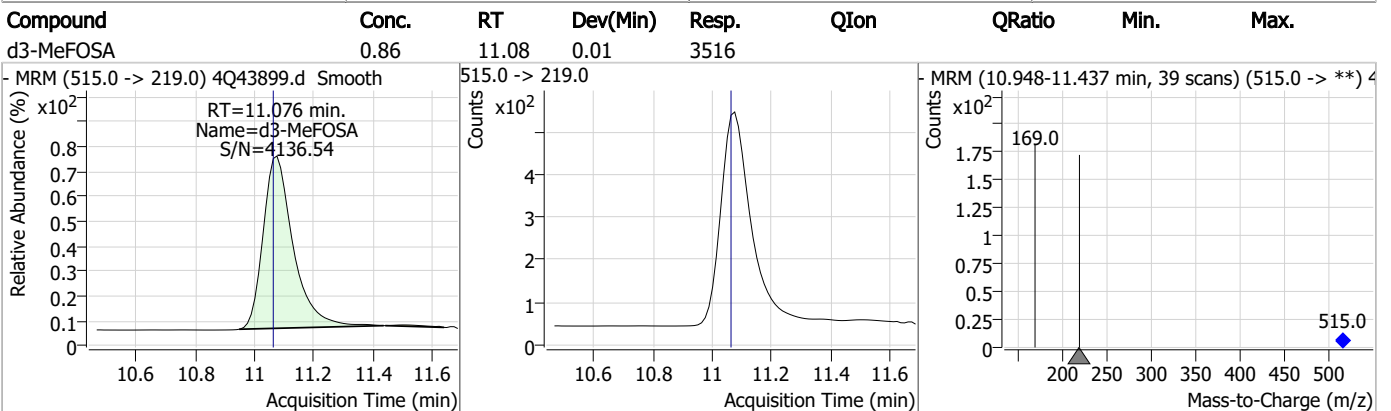
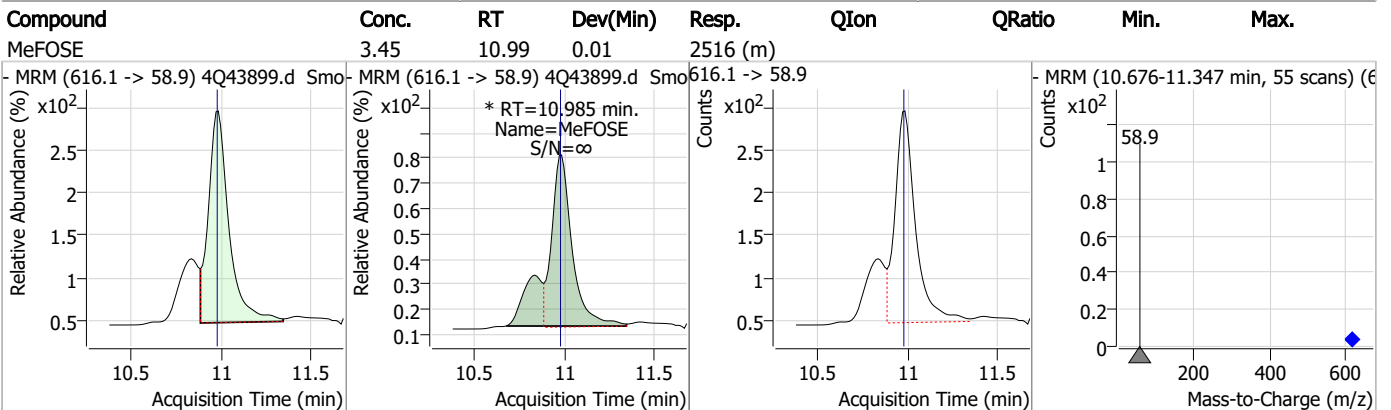
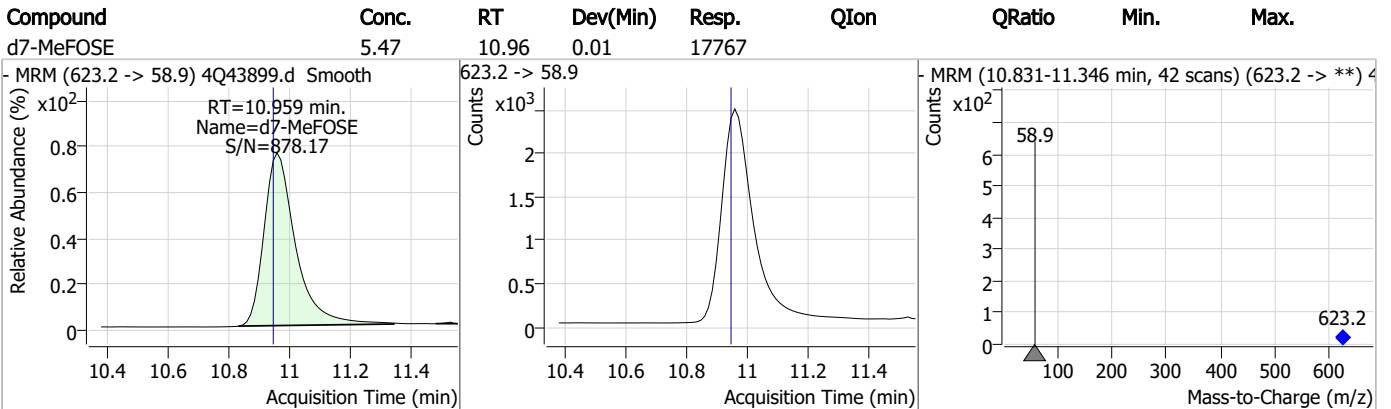
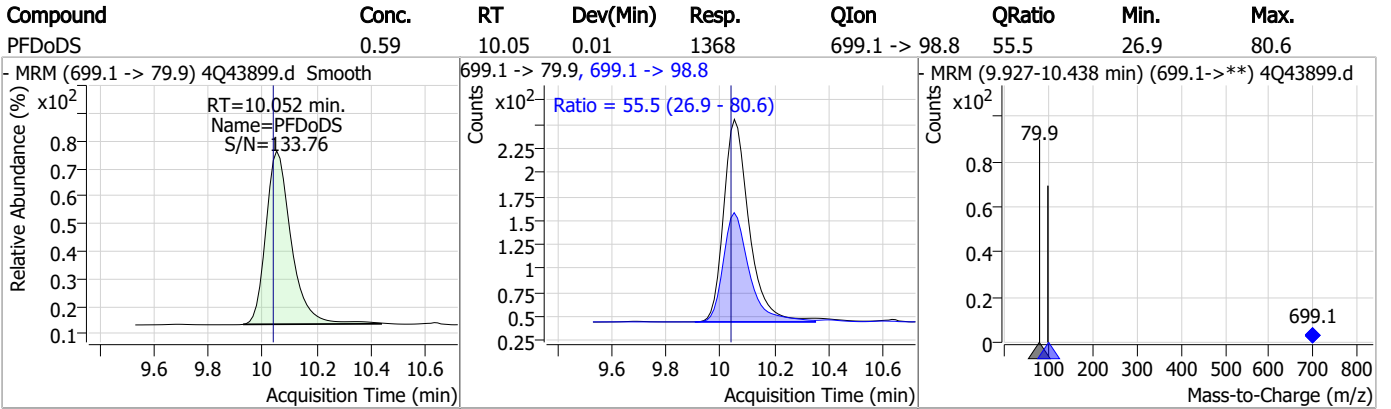


7.3.2

7

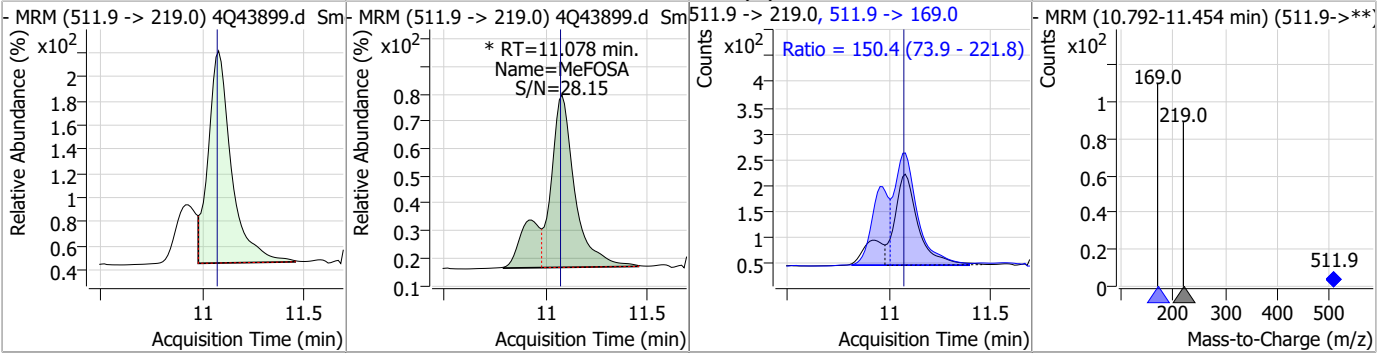


### Perfluorinated Compounds by LC/MS/MS

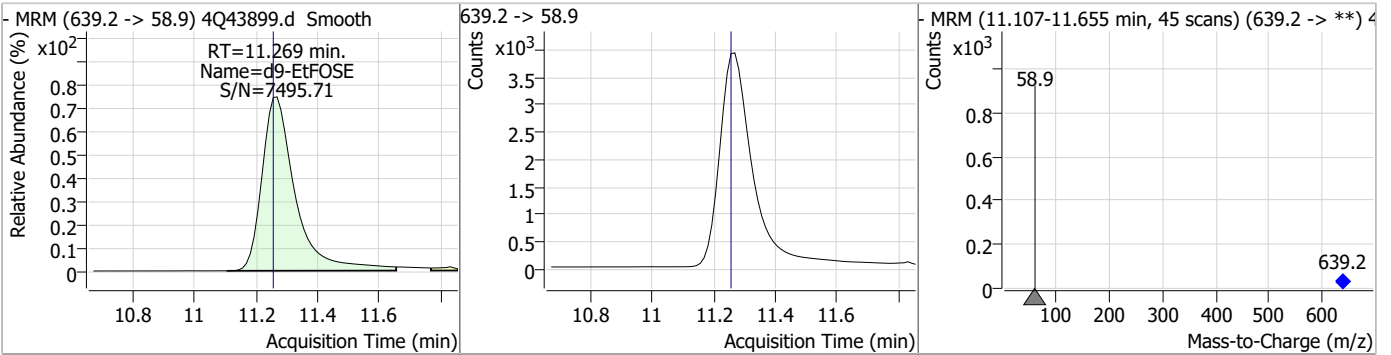


### Perfluorinated Compounds by LC/MS/MS

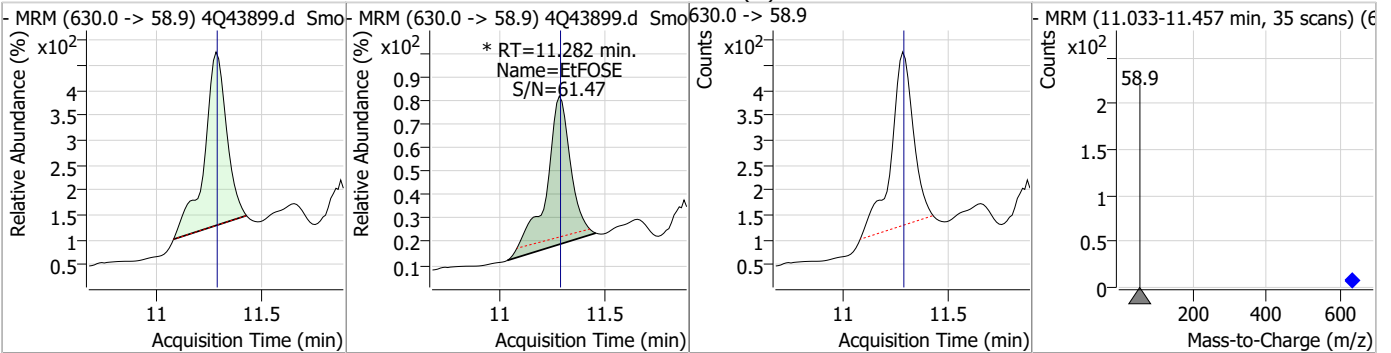
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	1.30	11.08	0.01	1725 (m)	511.9 -> 169.0	150.4	73.9	221.8



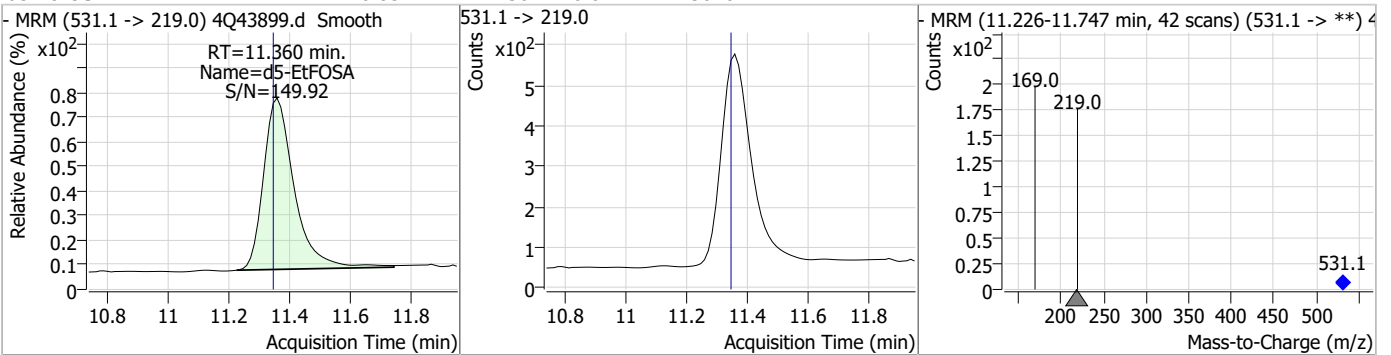
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	6.37	11.27	0.01	29273				



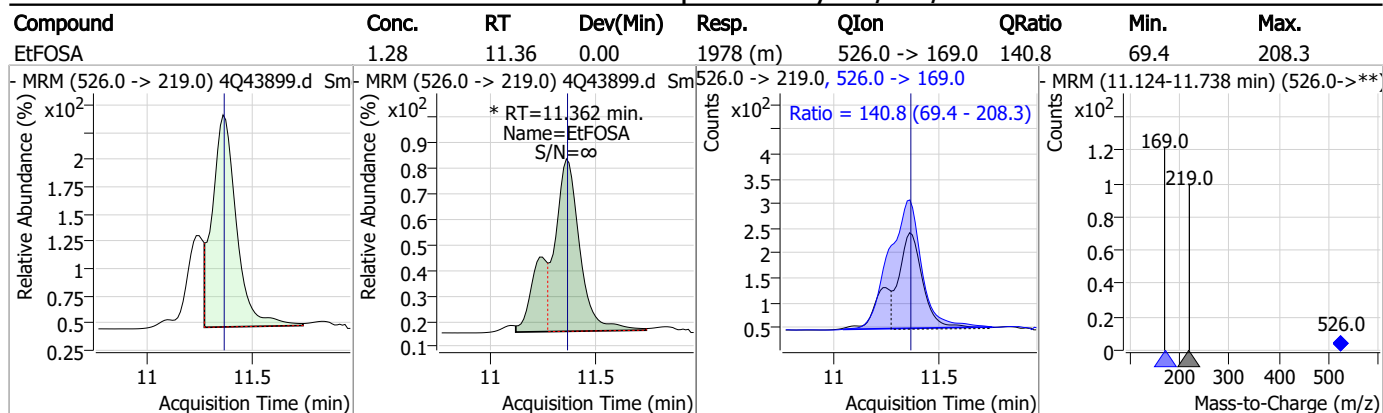
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	2.67	11.28	0.00	3028 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	0.85	11.36	0.01	3676				



### Perfluorinated Compounds by LC/MS/MS



7.3.2  
7

# Manual Integration Approval Summary

Sample Number: OP96662-LLBS      Method: EPA DRAFT 1633  
Lab FileID: 4Q43899.D      Analyst approved: 05/04/23 11:23 Natasha Gumtie  
Injection Time: 05/03/23 14:19      Supervisor approved: 05/04/23 17:48 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSE	1691-99-2		11.28	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.3.2.1  
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43906.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 3:57:47 PM  
 Sample Name : op96662-ms  
 Vial : P1-C4  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96662,S4Q634,520,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.924	216.8 -> 171.9	105107	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	64837	5.00 µg/L	0.012
M5-PFHxA	5.547	318.0 -> 273.0	45395	2.50 µg/L	0.012
M4-PFHpA	6.479	367.1 -> 322.0	27518	2.50 µg/L	0.012
M8-PFOA	7.148	421.1 -> 376.0	41261	2.50 µg/L	0.025
M9-PFNA	7.696	472.1 -> 427.0	18702	1.25 µg/L	0.026
M6-PFDA	8.191	519.1 -> 474.1	15490	1.25 µg/L	0.013
M7-PFUnDA	8.672	570.0 -> 525.1	15282	1.25 µg/L	0.025
M2-PFDoDA	9.118	615.1 -> 570.0	14437	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	9163	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	8102	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11019	2.50 µg/L	0.025
M3-PFHxS	7.242	402.1 -> 79.9	7072	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	8578	2.50 µg/L	0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1010	5.00 µg/L	0.012
M2-6:2FTS	6.923	429.1 -> 80.9	1975	5.00 µg/L	0.025
M2-8:2FTS	7.978	529.1 -> 80.9	2779	5.00 µg/L	0.012
M3-MeFOSAA	8.261	573.2 -> 419.0	11388	5.00 µg/L	0.025
M3-HFPO-DA	5.914	286.9 -> 168.9	25898	10.00 µg/L	0.025
M5-EtFOSAA	8.470	589.2 -> 419.0	8926	5.00 µg/L	0.025
M7-MeFOSE	10.959	623.2 -> 58.9	22556	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	33268	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	4692	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	3950	2.50 µg/L	0.012
13C4-PFOS	8.342	502.8 -> 79.9	9786	2.50 µg/L	0.012
13C3-PFBA	2.928	216.0 -> 172.0	60025	5.00 µg/L	0.000
18O2-PFHxS	7.241	403.0 -> 83.9	4717	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	47619	2.50 µg/L	0.025
13C2-PFDA	8.191	515.1 -> 470.1	17030	1.25 µg/L	0.013
13C5-PFNA	7.697	468.0 -> 423.0	22068	1.25 µg/L	0.012
13C2-PFHxA	5.548	315.1 -> 270.0	38505	2.50 µg/L	0.012
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.235	329.1 -> 80.9	1010	5.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C2-6:2FTS	6.923	429.1 -> 80.9	1975	5.71 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.3%		
13C2-8:2FTS	7.978	529.1 -> 80.9	2779	5.15 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C2-PFDoDA	9.118	615.1 -> 570.0	14437	0.87 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 70.0%		
13C2-PFTeDA	9.911	715.2 -> 670.0	9163	0.68 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 54.6%		
13C3-PFBS	5.452	302.1 -> 79.9	11019	2.48 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C3-PFHxS	7.242	402.1 -> 79.9	7072	2.42 µg/L	0.012

7.4.1  
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 = 96.8%	
13C4-PFBA	2.924	216.8 -> 171.9	105107	9.31 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.1%	
13C4-PFHpA	6.479	367.1 -> 322.0	27518	2.78 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.0%	
13C5-PFHxA	5.547	318.0 -> 273.0	45395	2.68 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C5-PFPeA	4.375	268.3 -> 223.0	64837	5.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.3%	
13C6-PFDA	8.191	519.1 -> 474.1	15490	1.06 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 85.0%	
13C7-PFUnDA	8.672	570.0 -> 525.1	15282	1.01 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 80.6%	
13C8-FOSA	9.783	506.1 -> 77.8	8102	1.32 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 52.8%	
13C8-PFOA	7.148	421.1 -> 376.0	41261	2.64 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C8-PFOS	8.341	507.1 -> 79.9	8578	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.1%	
13C9-PFNA	7.696	472.1 -> 427.0	18702	1.25 µg/L	0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.7%	
d3-MeFOSAA	8.261	573.2 -> 419.0	11388	4.61 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.2%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	25898	10.22 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.2%	
d3-MeFOSA	11.076	515.0 -> 219.0	3950	1.03 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 41.2%	
d5-EtFOSAA	8.470	589.2 -> 419.0	8926	4.39 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 87.8%	
d7-MeFOSE	10.959	623.2 -> 58.9	22556	7.41 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 29.6%	
d9-EtFOSE	11.269	639.2 -> 58.9	33268	7.72 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 30.9%	
d5-EtFOSA	11.360	531.1 -> 219.0	4692	1.15 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 46.0%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.236	327.1 -> 307.0	14766	9.09 µg/L	93
		327.1 -> 80.9	6257		
6:2FTS	6.911	427.1 -> 407.0	17802	9.33 µg/L	99
		427.1 -> 80.9	7382		
8:2FTS	7.978	527.1 -> 507.0	15108	9.75 µg/L	98
		527.1 -> 80.8	6165		
EtFOSAA	8.471	584.2 -> 419.1	4129	2.41 µg/L	m 91
		584.2 -> 526.0	2352		
FOSA	9.786	498.1 -> 77.9	8458	2.49 µg/L	99
		498.1 -> 478.0	256		
MeFOSAA	8.262	570.1 -> 419.0	5062	2.55 µg/L	99
		570.1 -> 483.0	1172		
PFBA	2.932	212.8 -> 168.9	27646	9.82 µg/L	100
PFBS	5.453	298.7 -> 79.9	9443	2.09 µg/L	95
		298.7 -> 98.8	3515		
PFDA	8.192	512.9 -> 469.0	29608	2.52 µg/L	98
		512.9 -> 219.0	6138		
PFDODA	9.119	613.1 -> 569.0	27565	2.38 µg/L	99
		613.1 -> 319.0	3929		
PFDS	9.282	599.0 -> 79.9	4119	1.94 µg/L	89

7.4.1  
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	2199			
PFHpA	6.480	363.1 -> 319.0	40827	2.35	µg/L	99
		363.1 -> 169.0	7070			
PFHpS	7.823	449.0 -> 79.9	7402	2.40	µg/L	98
		449.0 -> 98.9	4048			
PFHxA	5.550	313.0 -> 269.0	43759	2.46	µg/L	100
		313.0 -> 118.9	1257			
PFHxS	7.243	398.7 -> 79.9	6386	2.20	µg/L	m 97
		398.7 -> 98.9	3314			
PFNA	7.697	463.0 -> 419.0	32142	2.32	µg/L	99
		463.0 -> 219.0	8147			
PFNS	8.836	548.8 -> 79.9	3904	2.08	µg/L	98
		548.8 -> 98.9	1979			
PFOA	7.150	413.0 -> 369.0	55439	2.33	µg/L	98
		413.0 -> 169.0	11186			
PFOS	8.343	498.9 -> 79.9	8743	2.08	µg/L	m 93
		498.9 -> 98.8	4713			
PFPeA	4.377	263.0 -> 219.0	76087	4.88	µg/L	100
PFPeS	6.507	349.1 -> 79.9	5551	2.23	µg/L	95
		349.1 -> 98.9	2375			
PFTeDA	9.912	713.1 -> 669.0	22448	2.50	µg/L	100
		713.1 -> 168.9	1893			
PFTrDA	9.541	663.0 -> 619.0	33705	2.18	µg/L	98
		663.0 -> 168.9	3414			
PFUnDA	8.673	563.1 -> 519.0	24422	2.35	µg/L	99
		563.1 -> 269.1	5145			
11CI-PF3OUdS	9.581	630.9 -> 450.9	32576	3.50	µg/L	98
		632.9 -> 452.9	9912			
9CI-PF3ONS	8.700	530.8 -> 351.0	47627	4.02	µg/L	97
		532.8 -> 353.0	15236			
ADONA	6.743	376.9 -> 250.9	126864	4.87	µg/L	98
		376.9 -> 84.8	34215			
HFPO-DA	5.915	284.9 -> 168.9	12147	4.91	µg/L	95
		284.9 -> 184.9	1612			
3:3FTCA	3.848	241.0 -> 177.0	6049	8.81	µg/L	97
		241.0 -> 117.0	586			
5:3FTCA	6.205	341.0 -> 237.1	120327	49.86	µg/L	99
		341.0 -> 217.0	81448			
7:3FTCA	7.661	441.0 -> 316.9	64907	51.76	µg/L	100
		441.0 -> 336.9	154778			
EtFOSA	11.362	526.0 -> 219.0	9116	4.64	µg/L	m 98
		526.0 -> 169.0	12395			
EtFOSE	11.282	630.0 -> 58.9	14441	11.21	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	7243	4.87	µg/L	m 98
		511.9 -> 169.0	10931			
MeFOSE	10.985	616.1 -> 58.9	10351	11.17	µg/L	m 100
PFDoDS	10.052	699.1 -> 79.9	3006	1.59	µg/L	96
		699.1 -> 98.8	1697			
NFDHA	5.428	295.0 -> 201.0	5988	4.72	µg/L	95
		295.0 -> 84.9	1499			
PFMBA	4.791	279.0 -> 85.1	40685	4.67	µg/L	100
PFMPA	3.528	229.0 -> 84.9	37002	4.54	µg/L	100
PFEESA	5.984	314.8 -> 134.9	57147	4.24	µg/L	99
		314.8 -> 82.9	1899			

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

7.4.1  
7

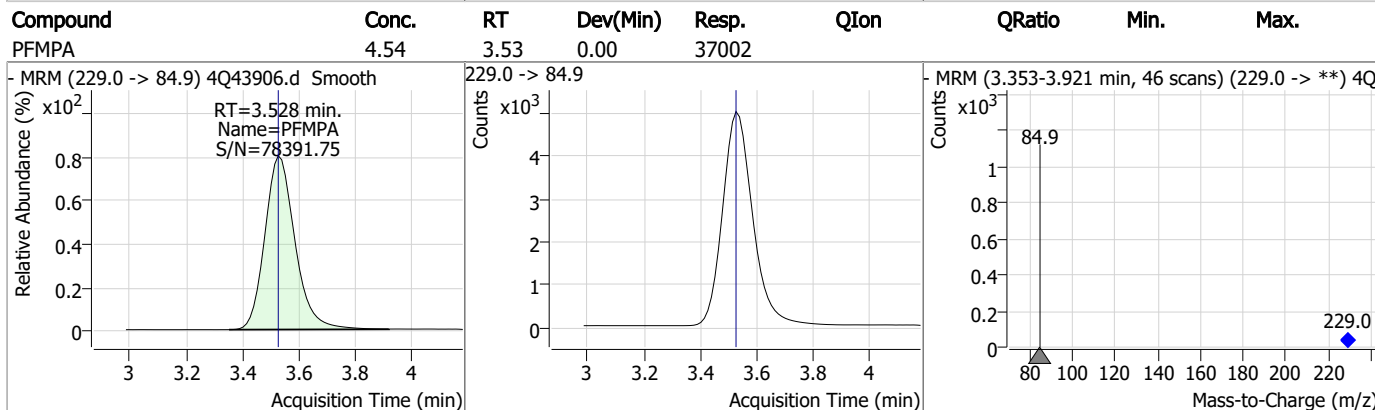
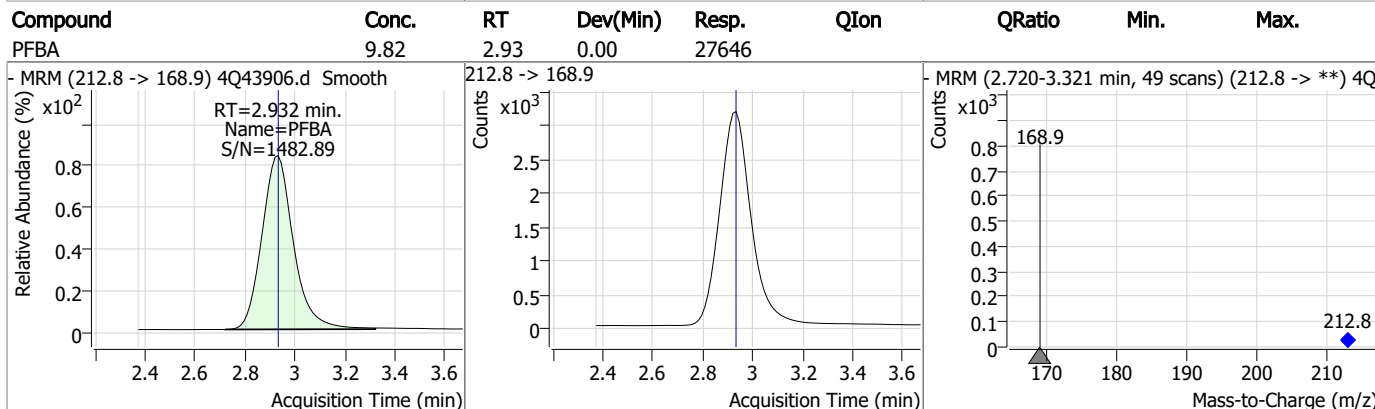
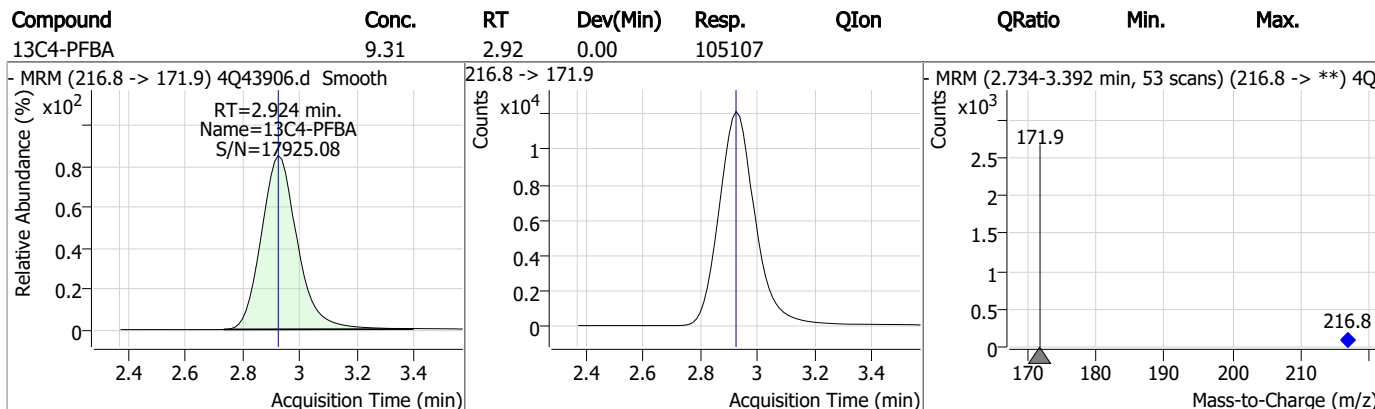
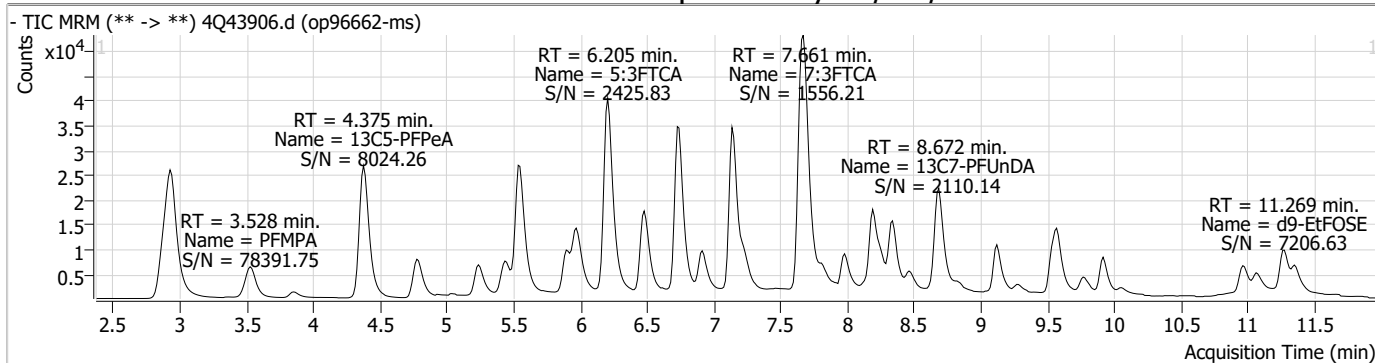
### Perfluorinated Compounds by LC/MS/MS

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

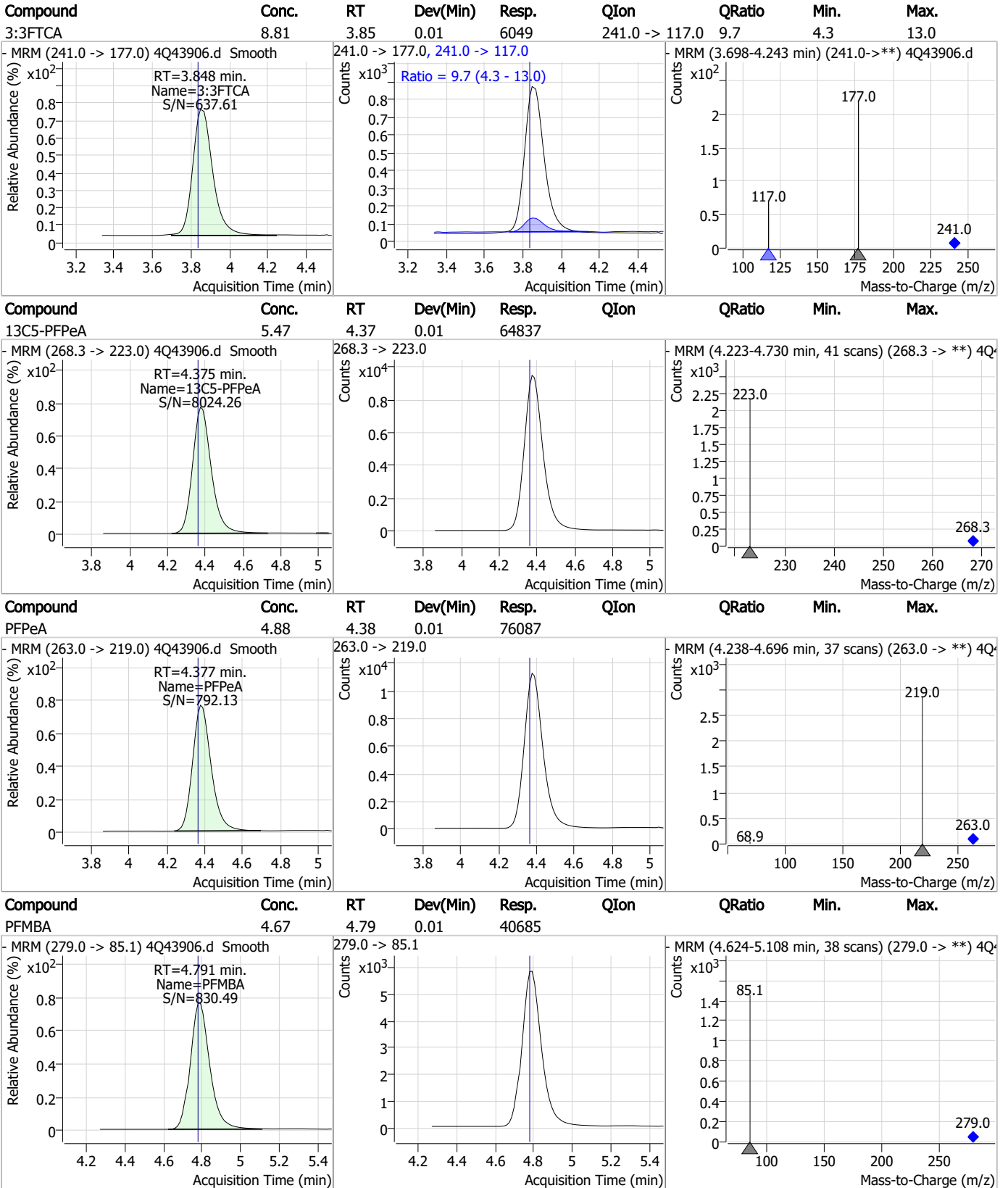
7.4.1

7

### Perfluorinated Compounds by LC/MS/MS



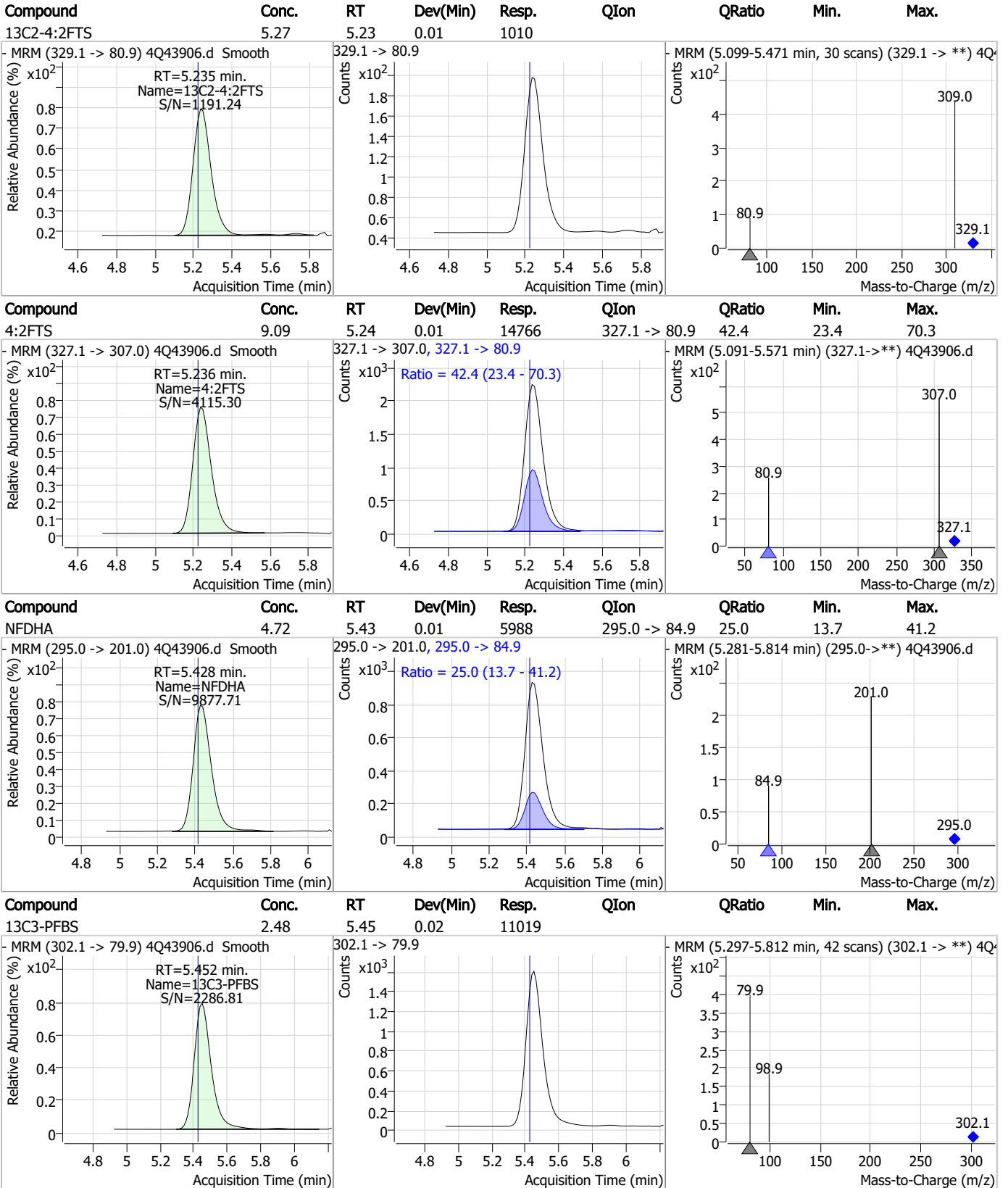
### Perfluorinated Compounds by LC/MS/MS



7.4.1

7

### Perfluorinated Compounds by LC/MS/MS



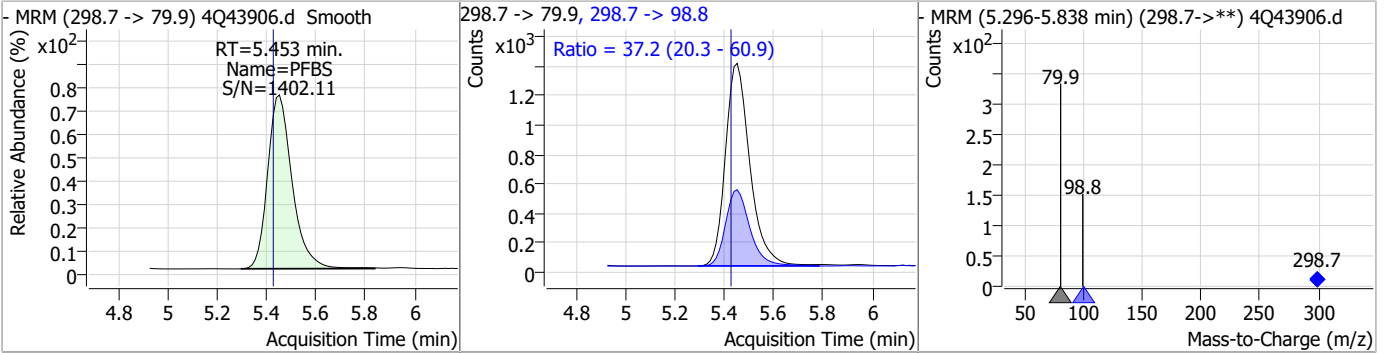
7.4.1

7

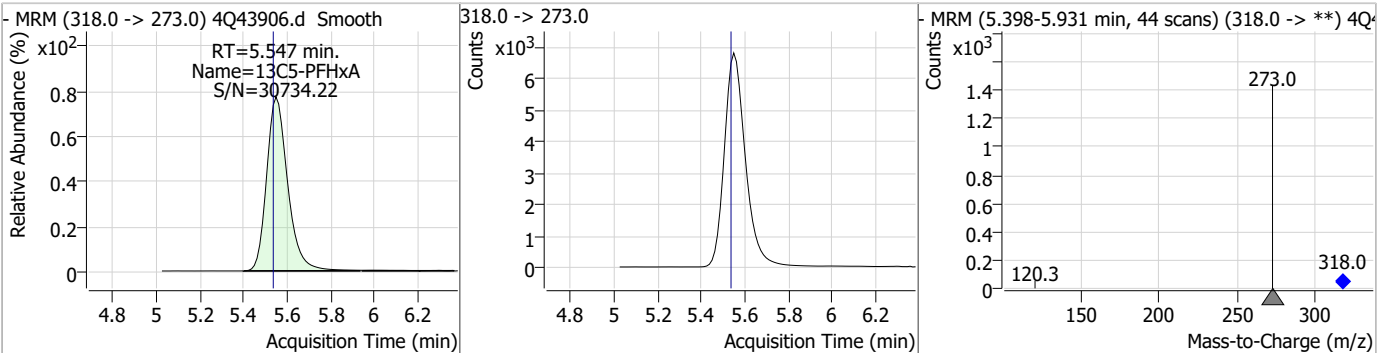


### Perfluorinated Compounds by LC/MS/MS

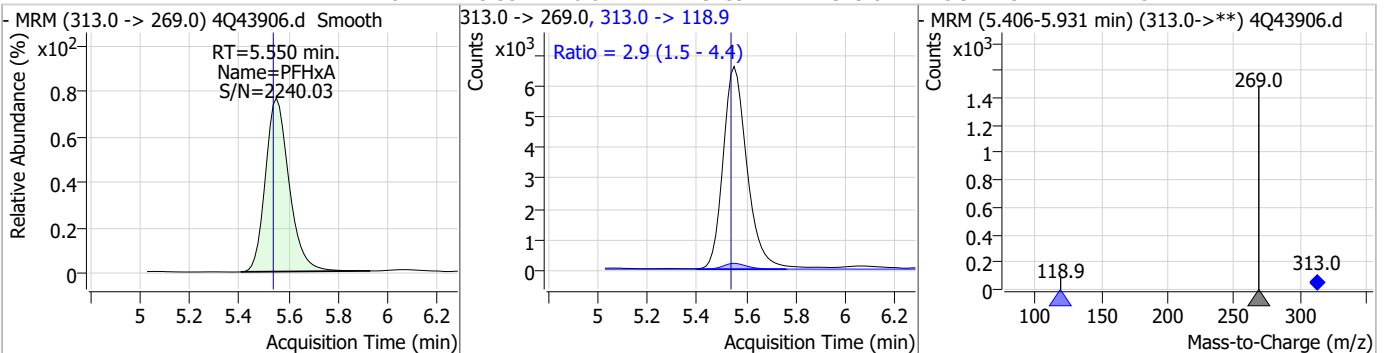
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.09	5.45	0.02	9443	298.7 -> 98.8	37.2	20.3	60.9



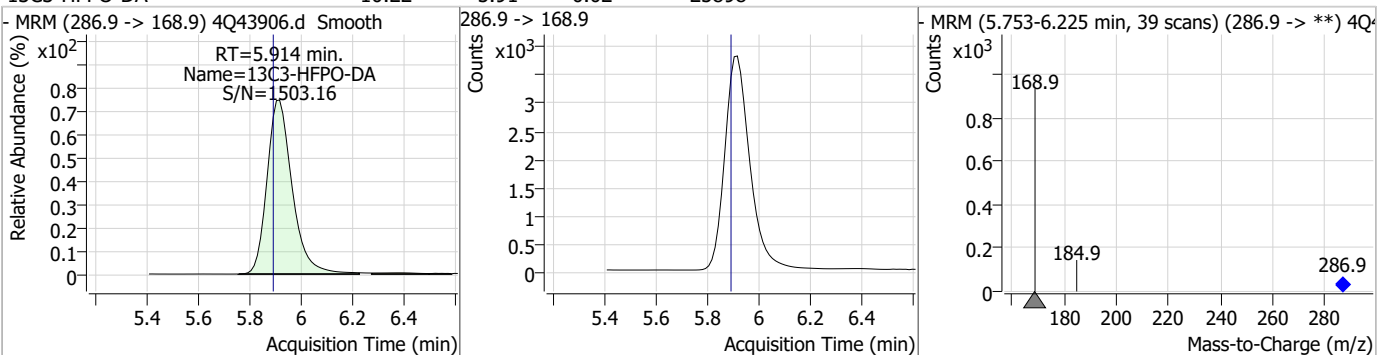
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.68	5.55	0.01	45395				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.46	5.55	0.01	43759	313.0 -> 118.9	2.9	1.5	4.4

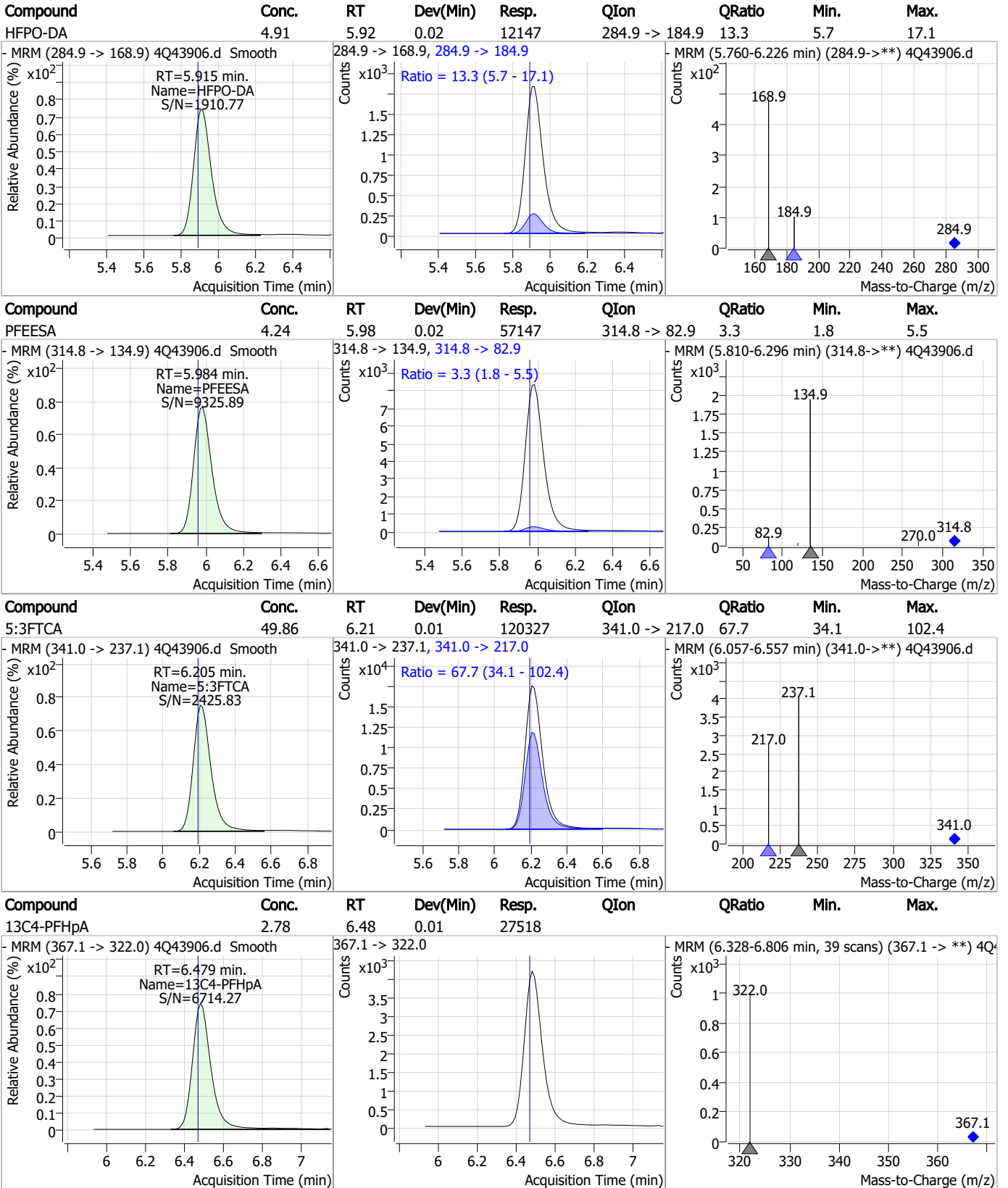


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.22	5.91	0.02	25898				





### Perfluorinated Compounds by LC/MS/MS

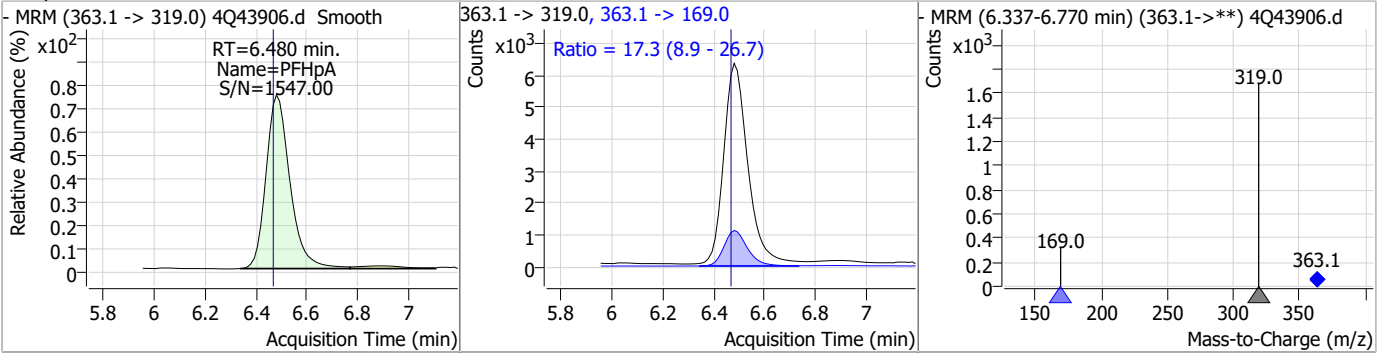


7.4.1

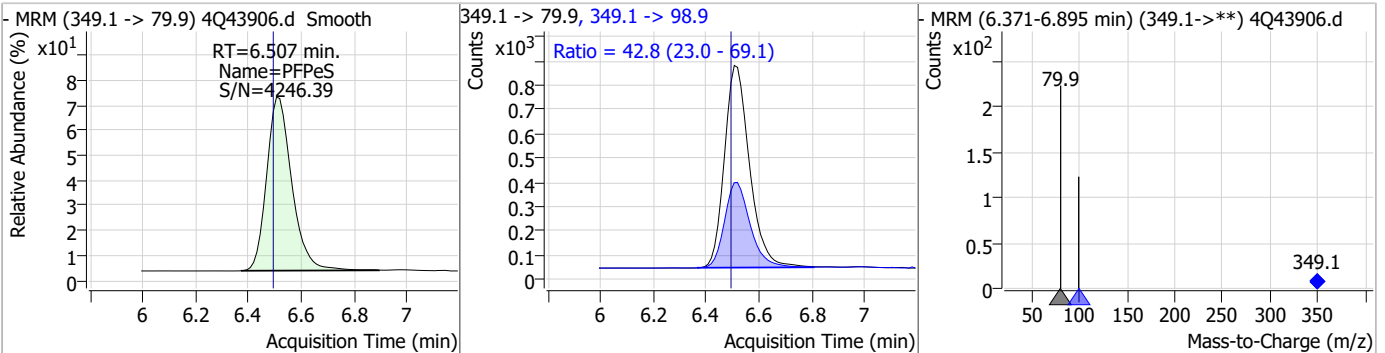
7

### Perfluorinated Compounds by LC/MS/MS

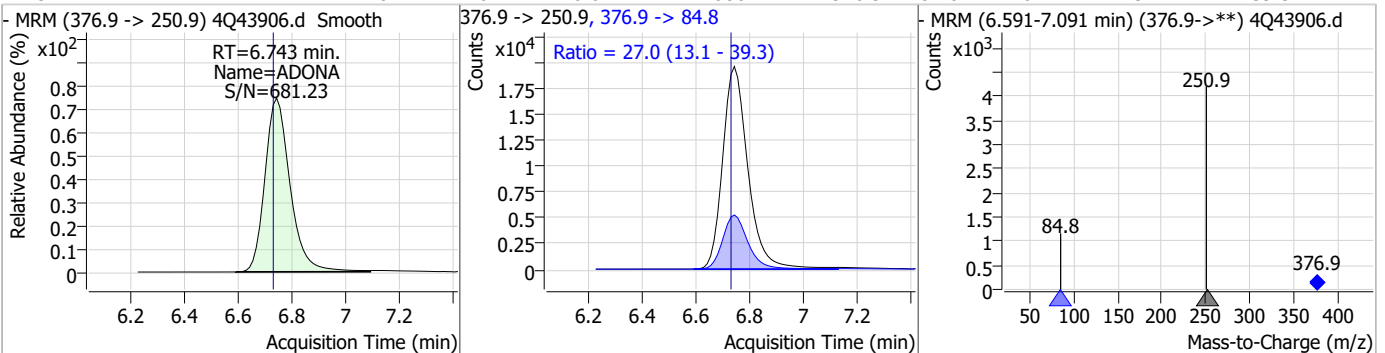
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	2.35	6.48	0.01	40827	363.1 -> 169.0	17.3	8.9	26.7



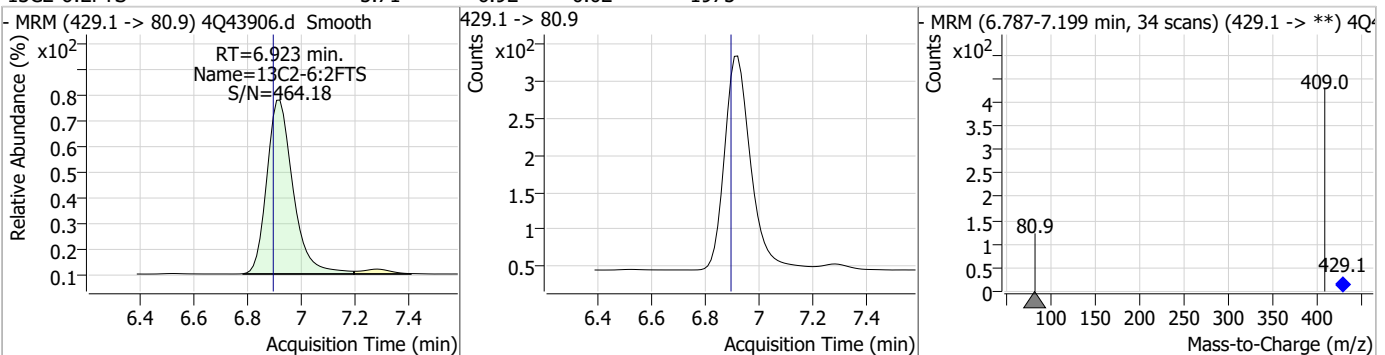
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	2.23	6.51	0.01	5551	349.1 -> 98.9	42.8	23.0	69.1



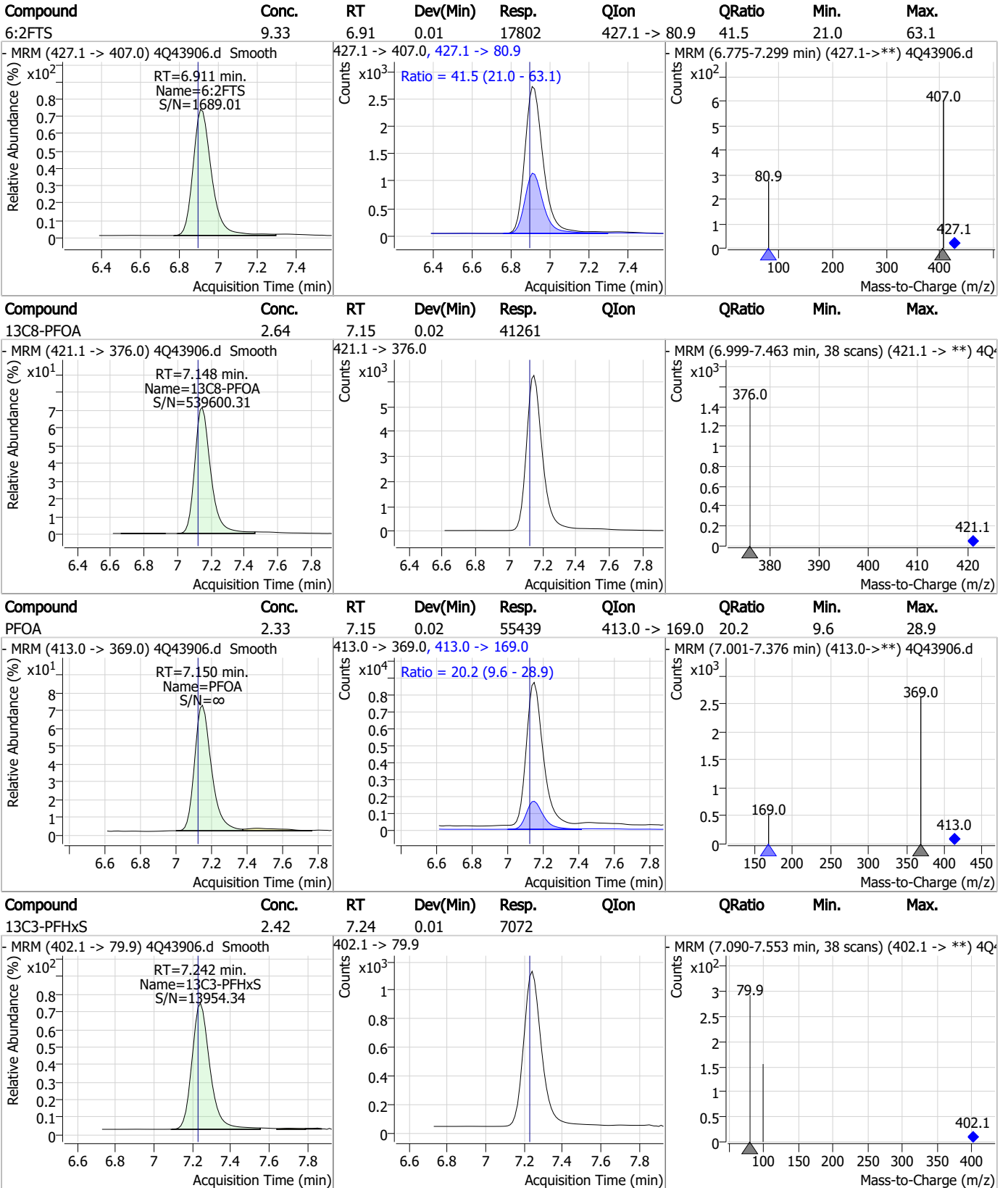
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
ADONA	4.87	6.74	0.01	126864	376.9 -> 84.8	27.0	13.1	39.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.71	6.92	0.02	1975	429.1 -> 80.9			



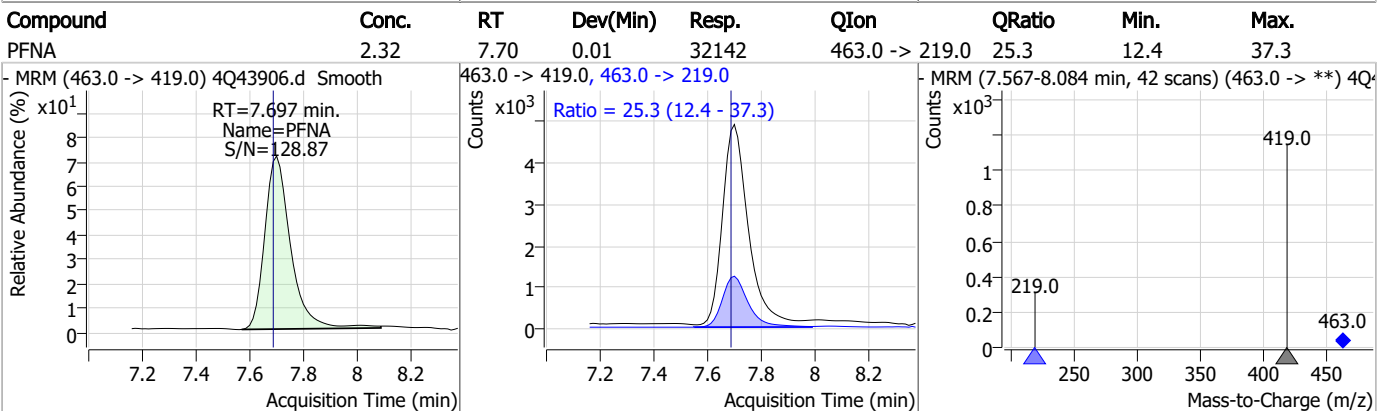
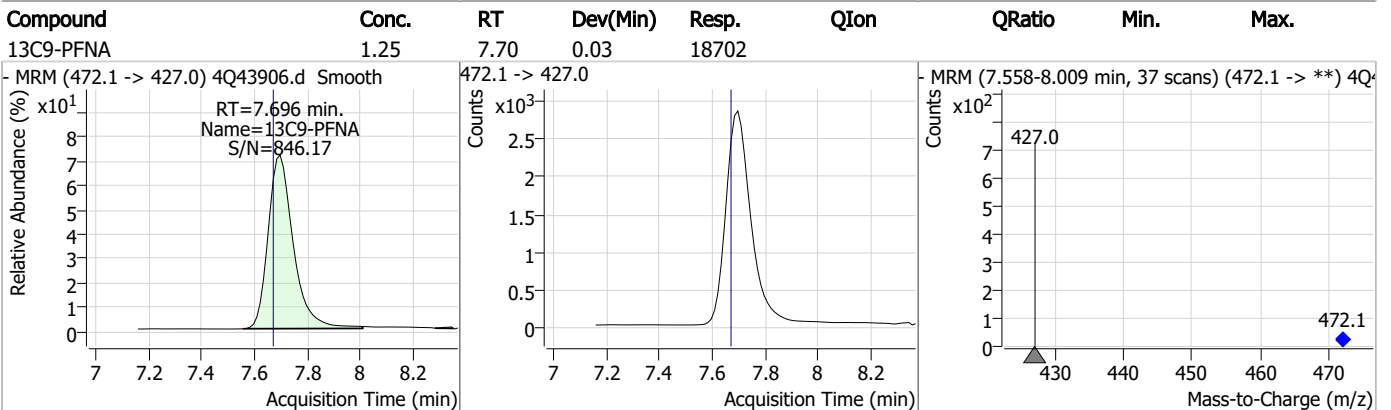
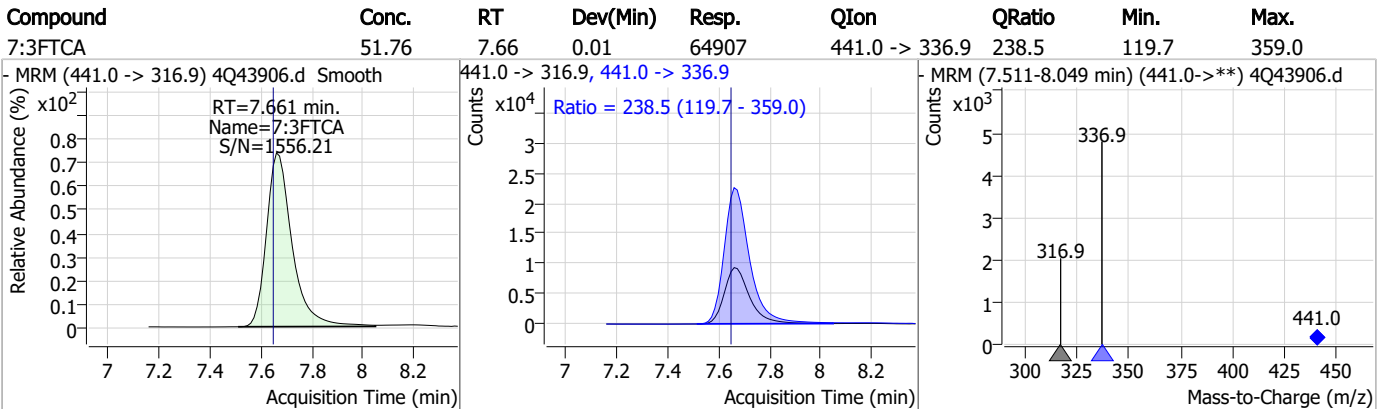
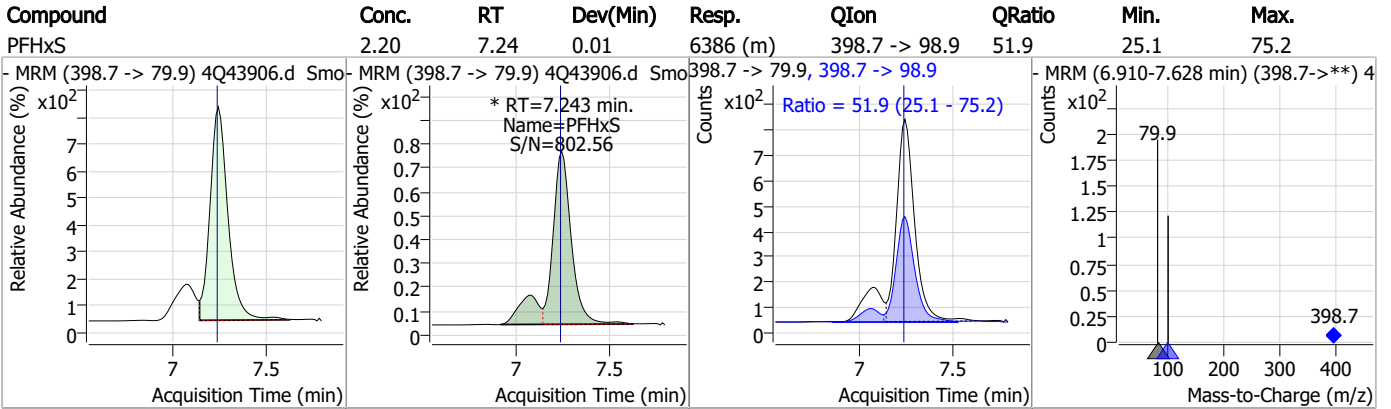
### Perfluorinated Compounds by LC/MS/MS



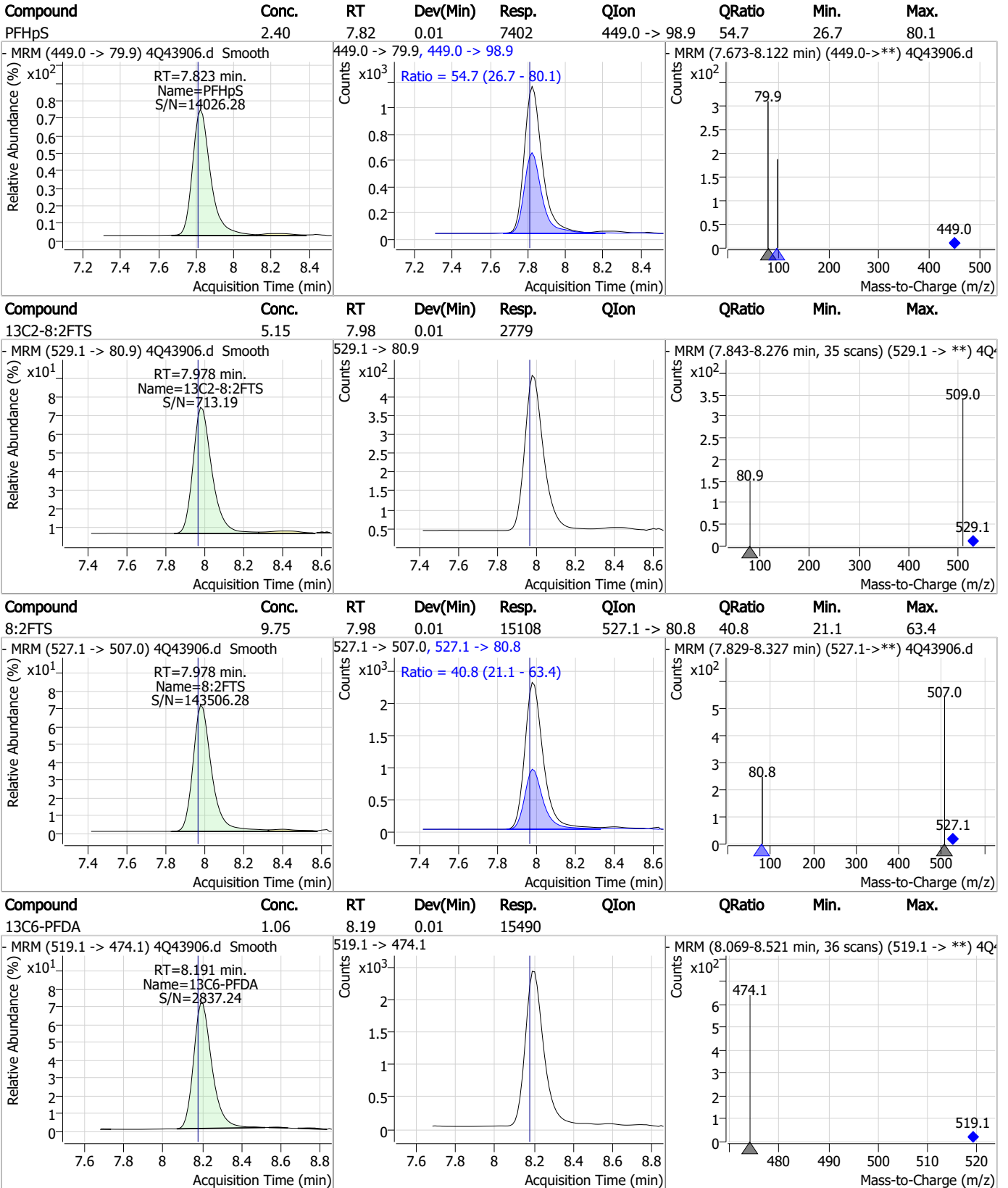
7.4.1

7

### Perfluorinated Compounds by LC/MS/MS



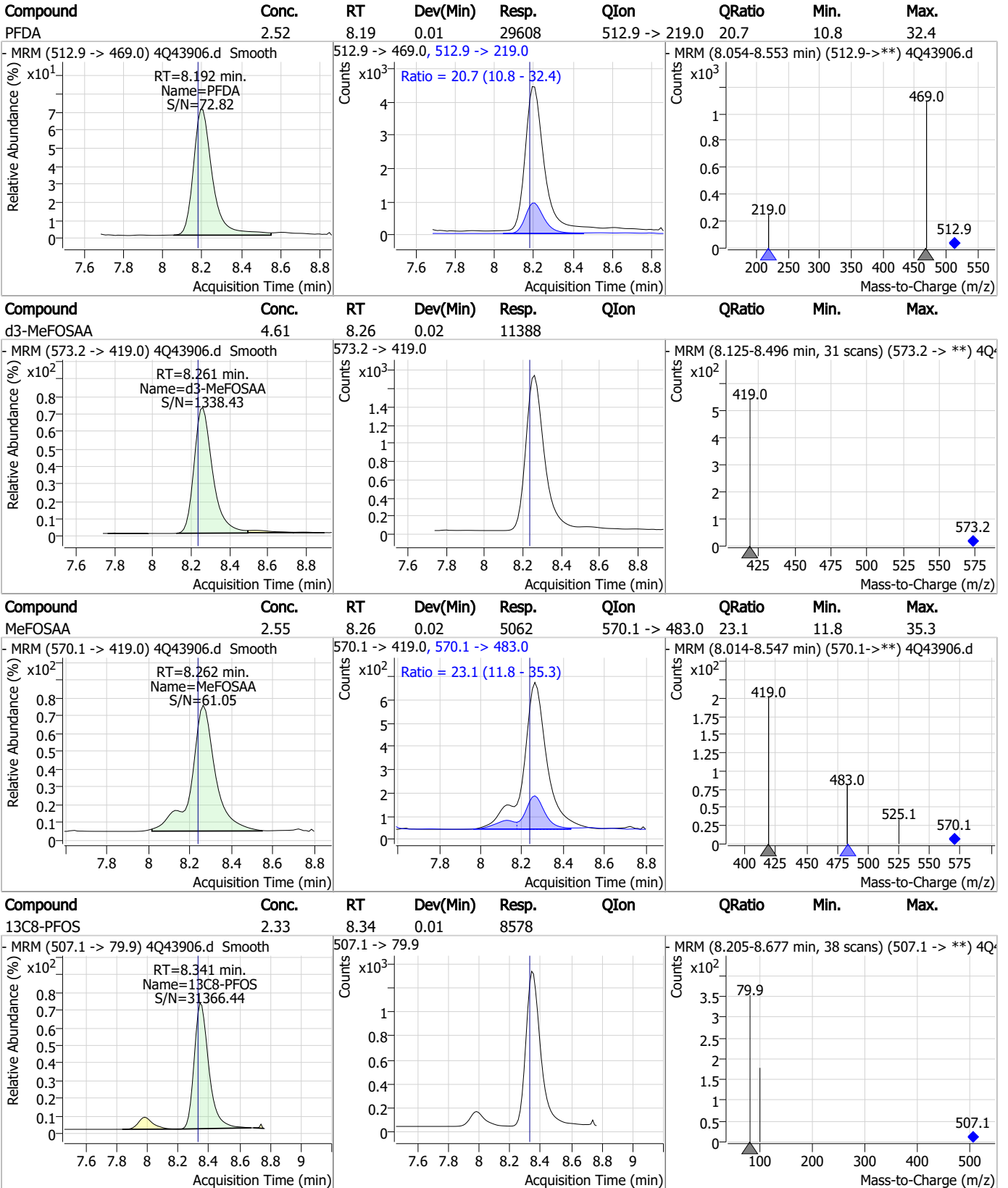
### Perfluorinated Compounds by LC/MS/MS



7.4.1

7

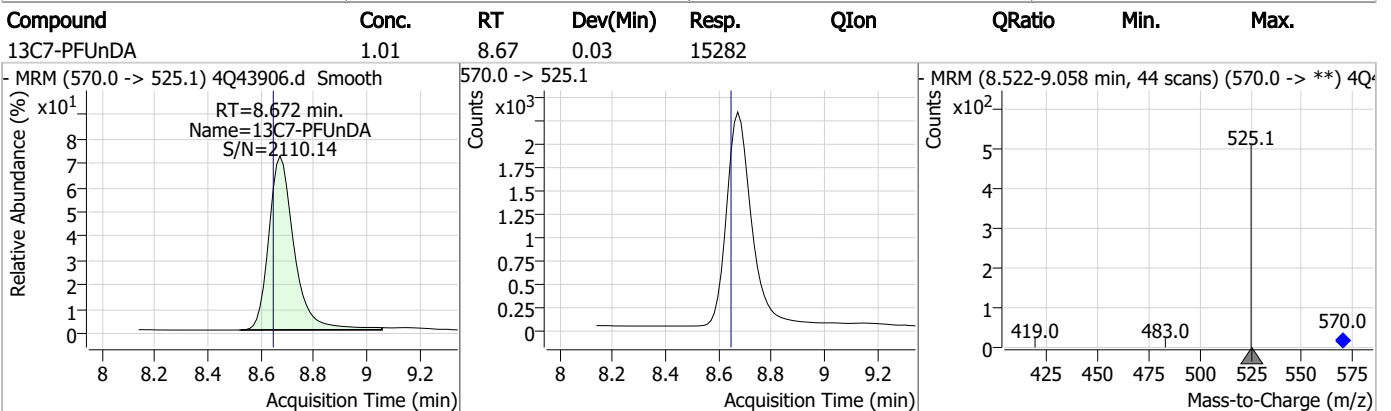
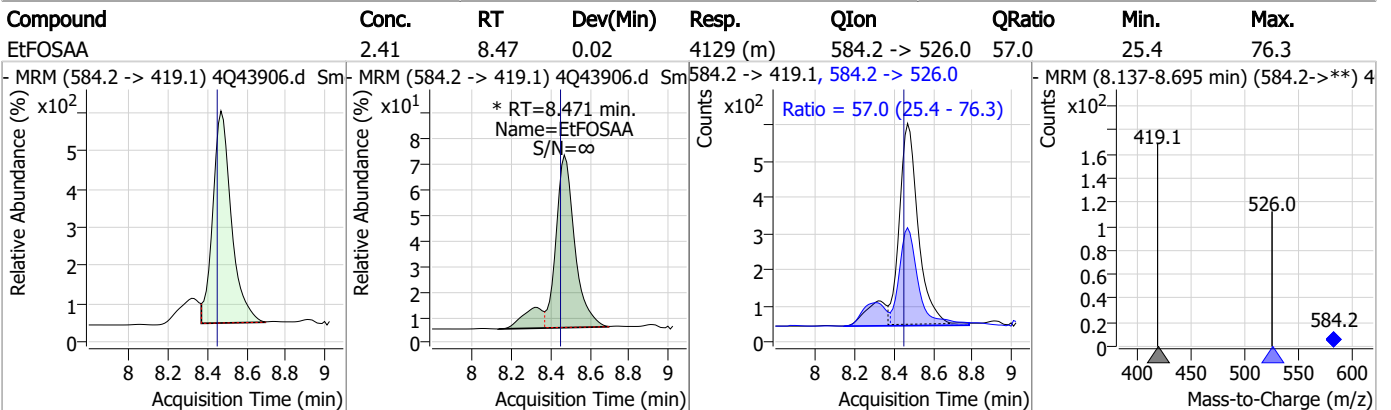
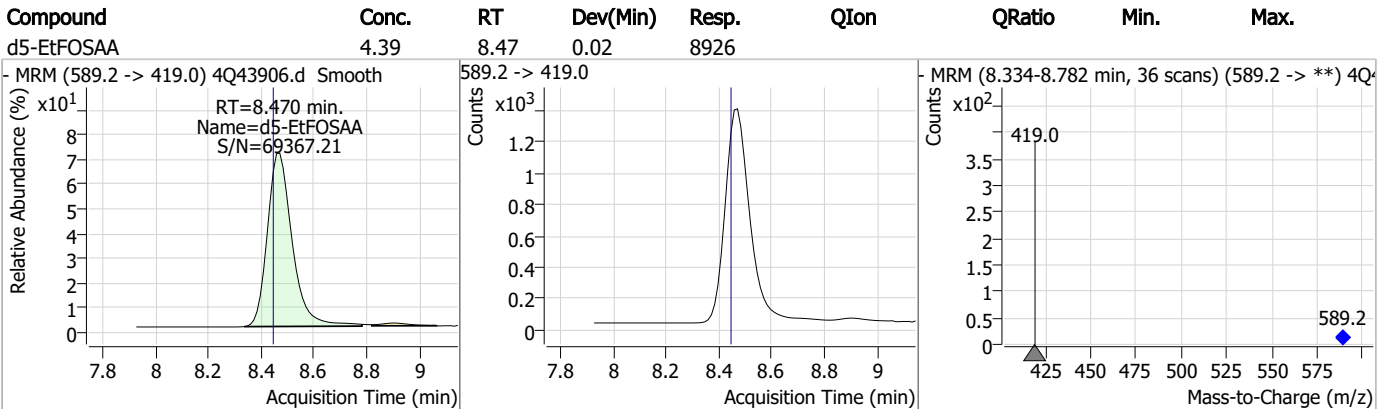
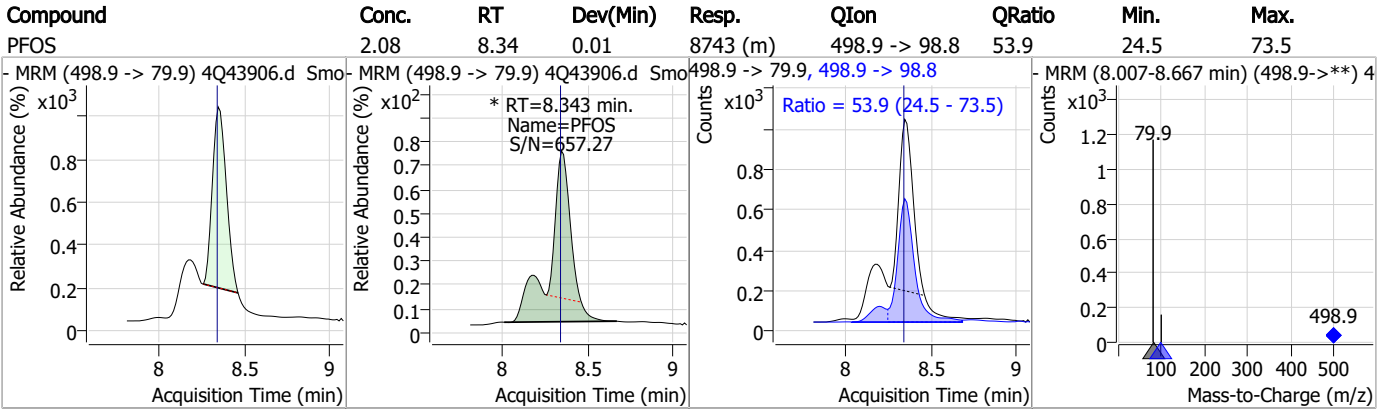
### Perfluorinated Compounds by LC/MS/MS



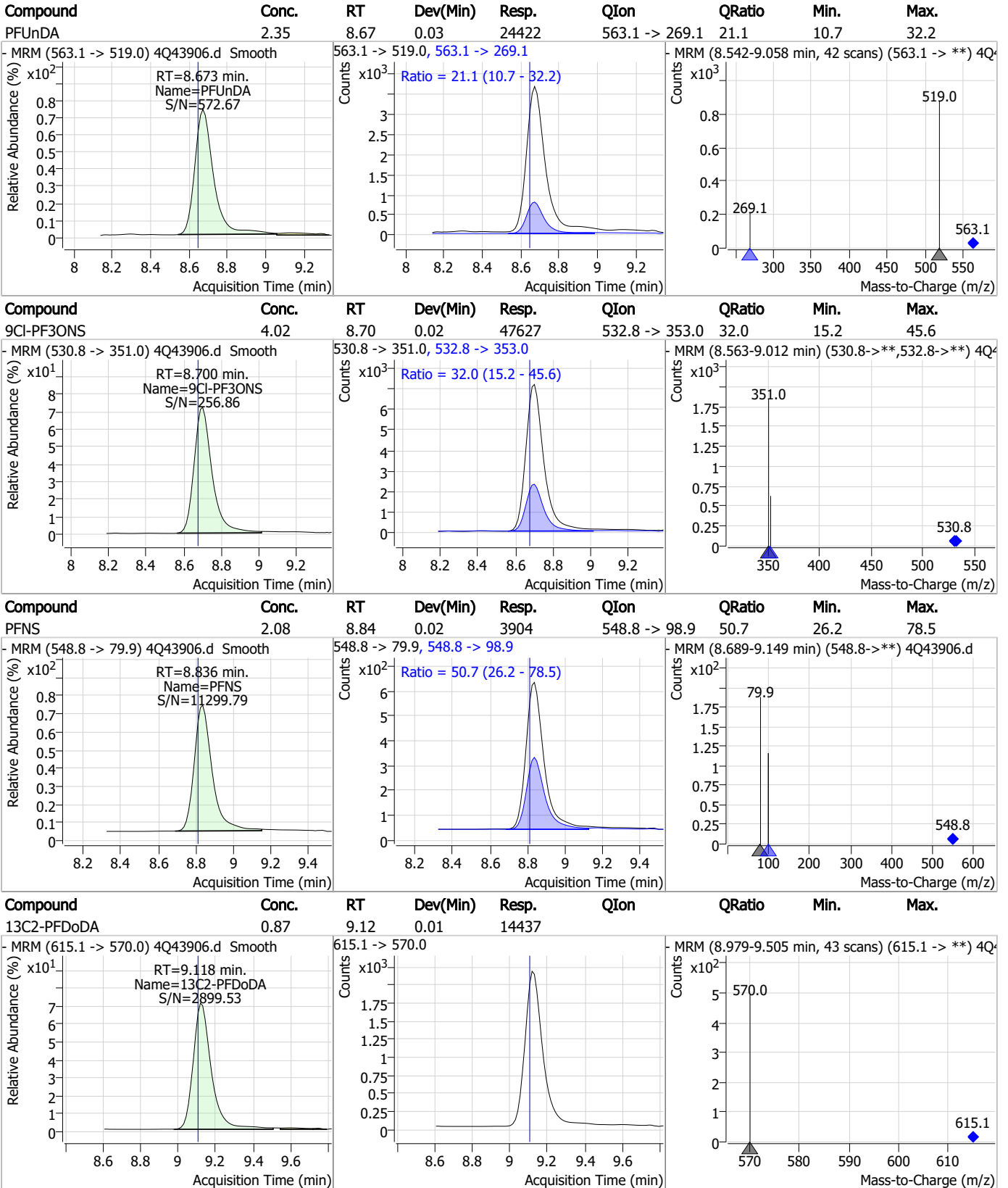
7.4.1

7

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

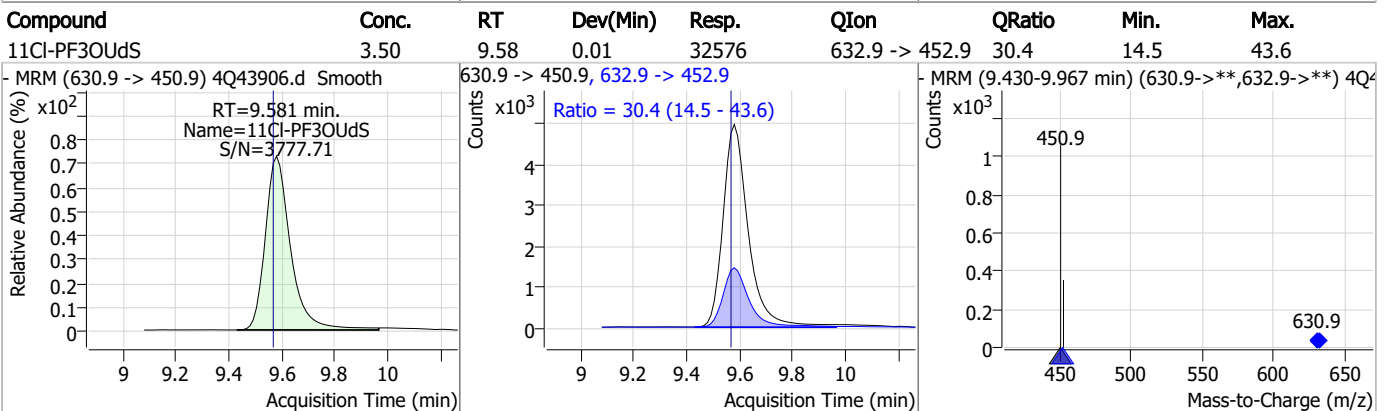
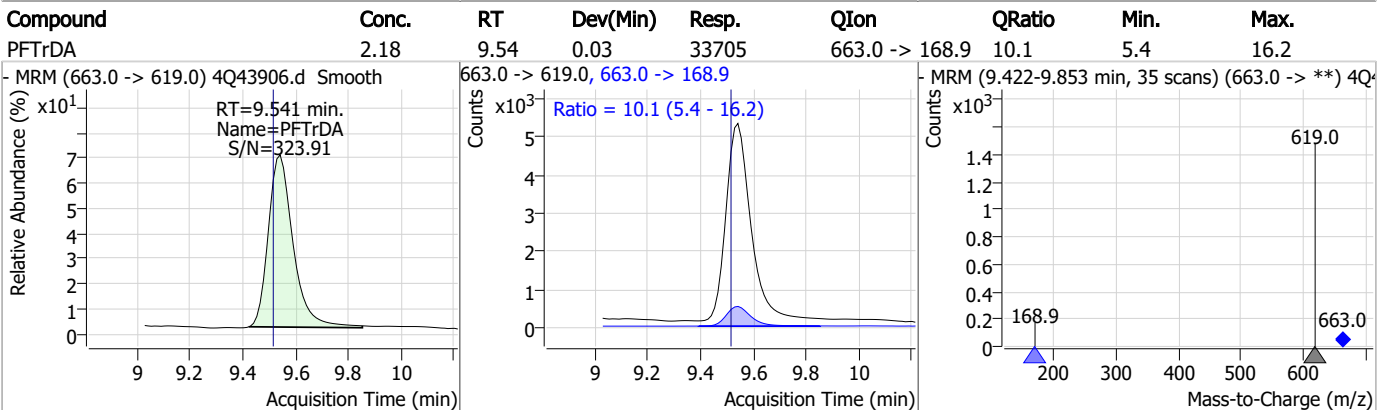
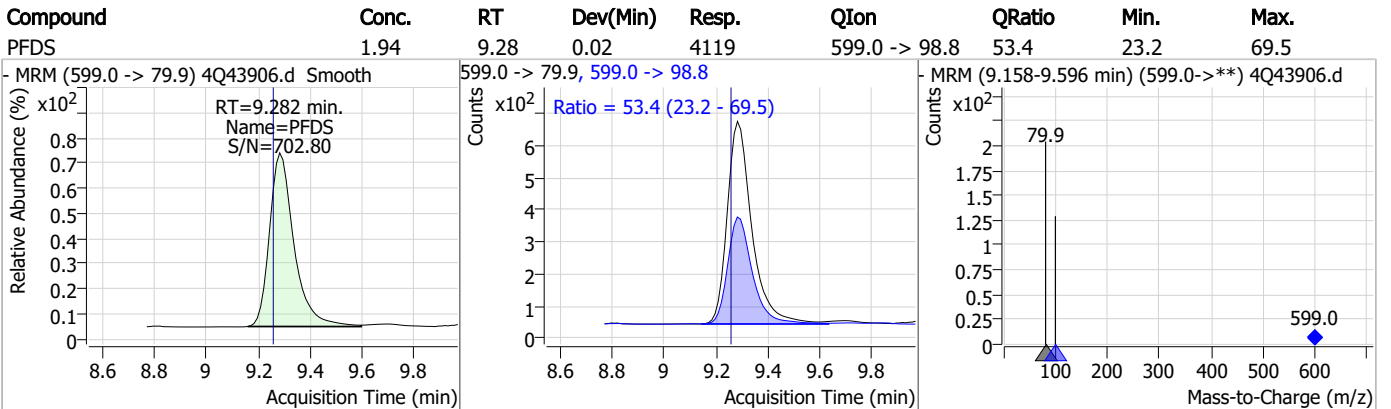
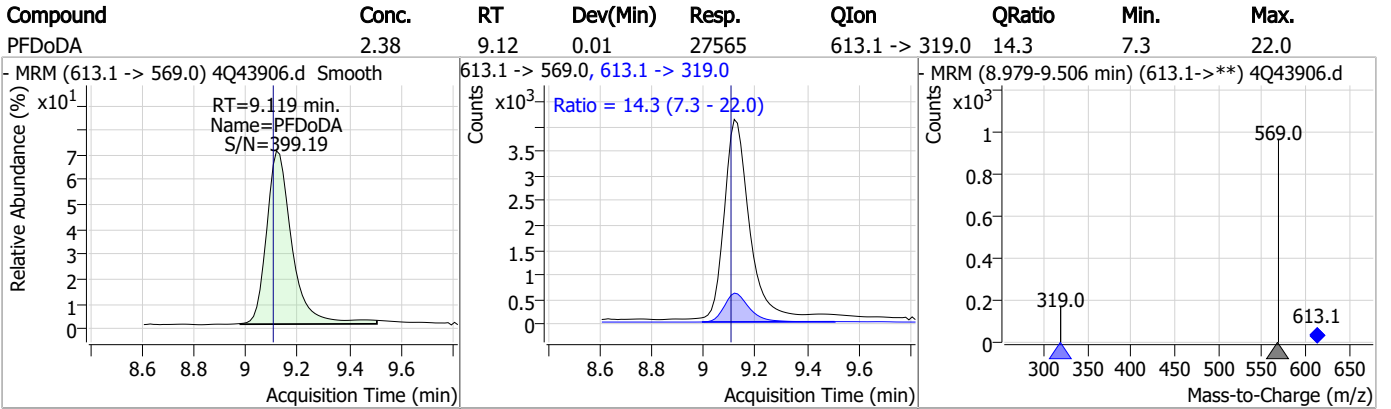


7.4.1

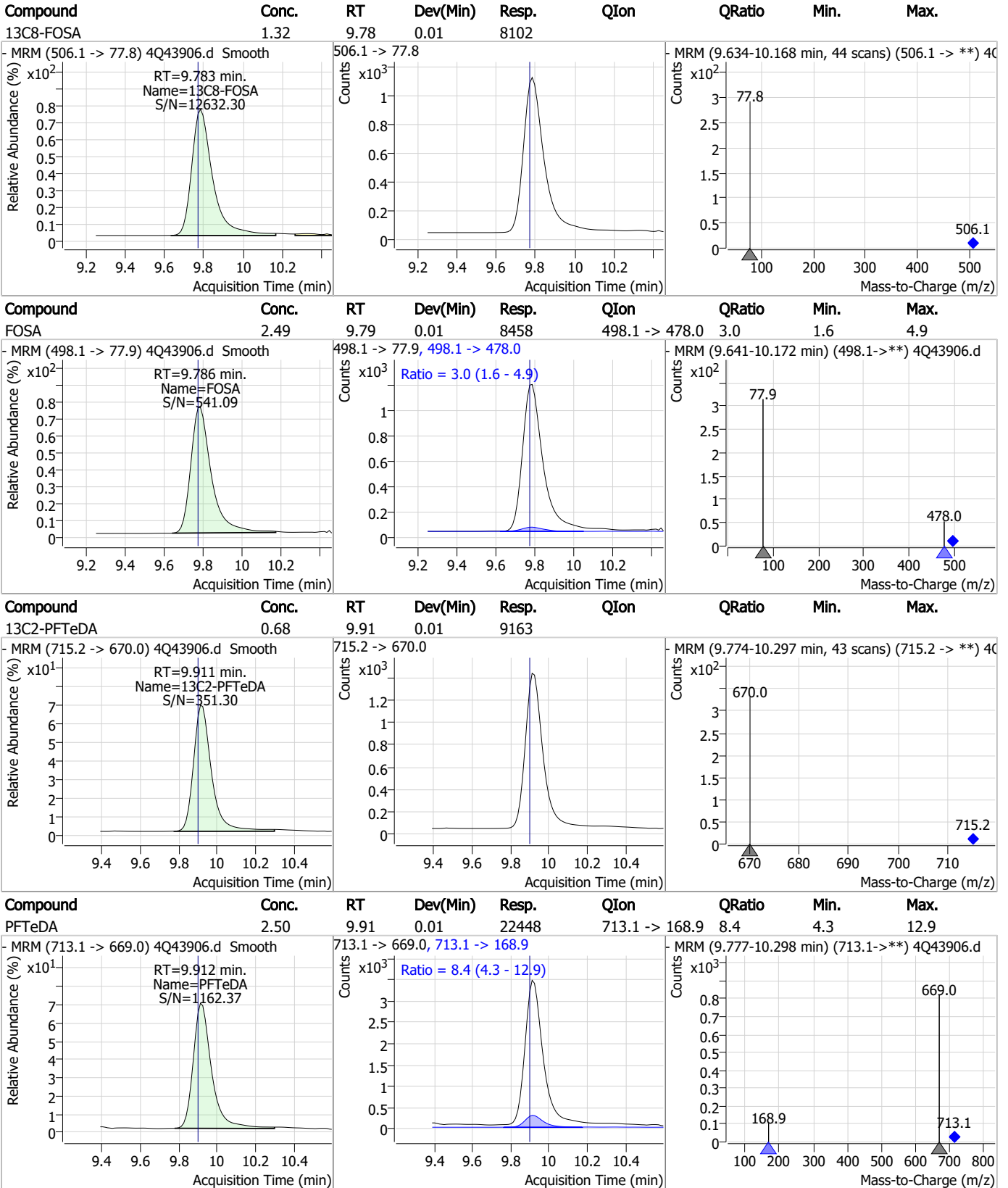
7



### Perfluorinated Compounds by LC/MS/MS



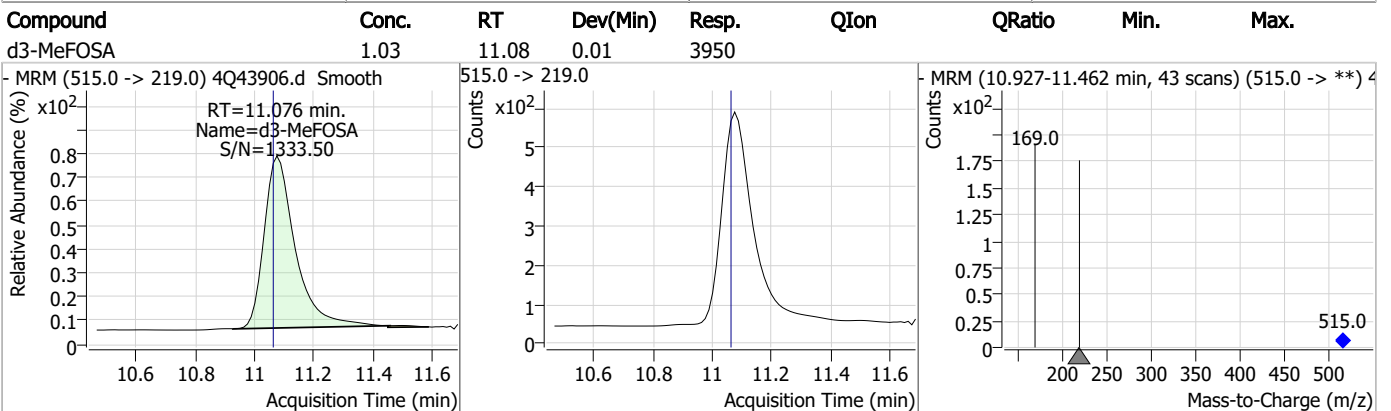
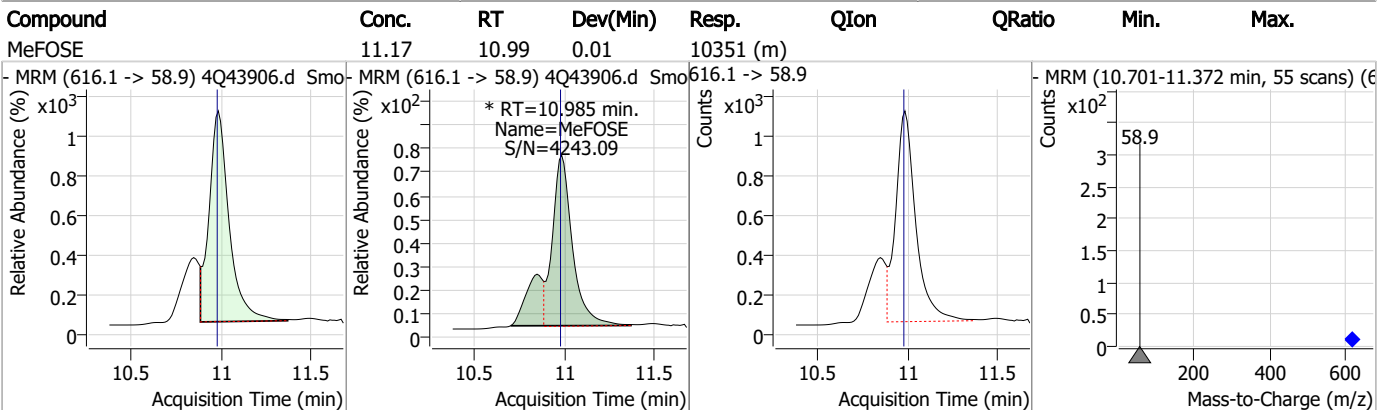
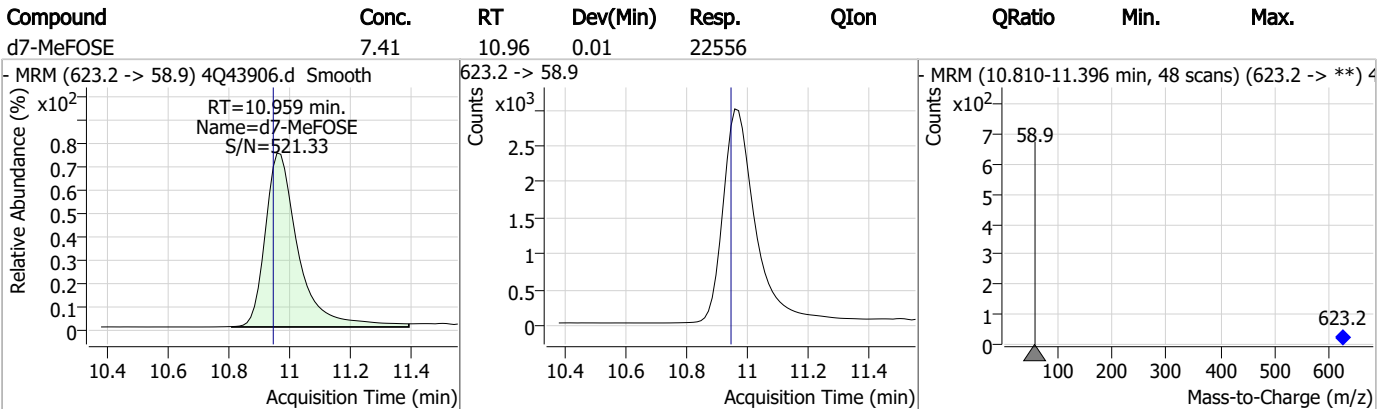
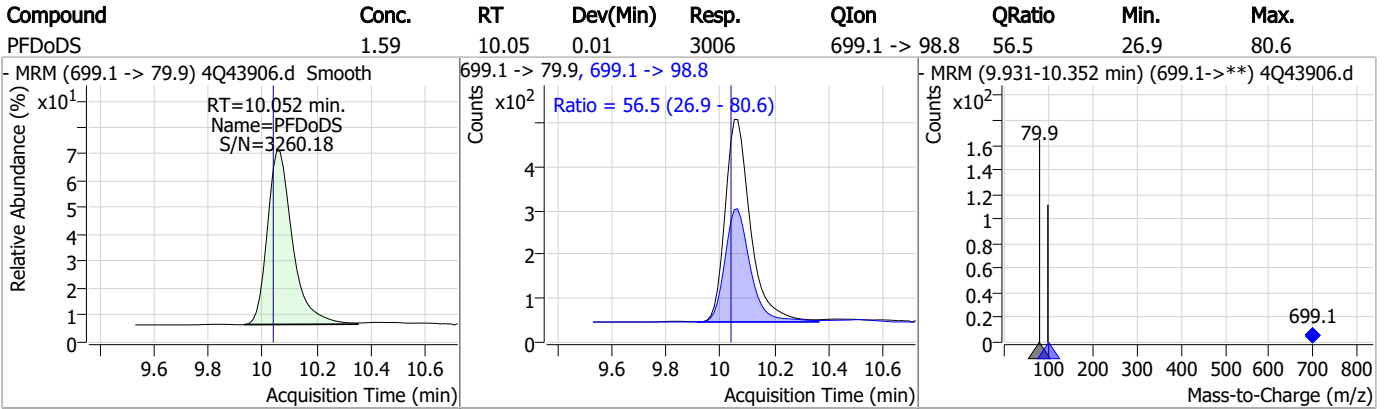
### Perfluorinated Compounds by LC/MS/MS



7.4.1

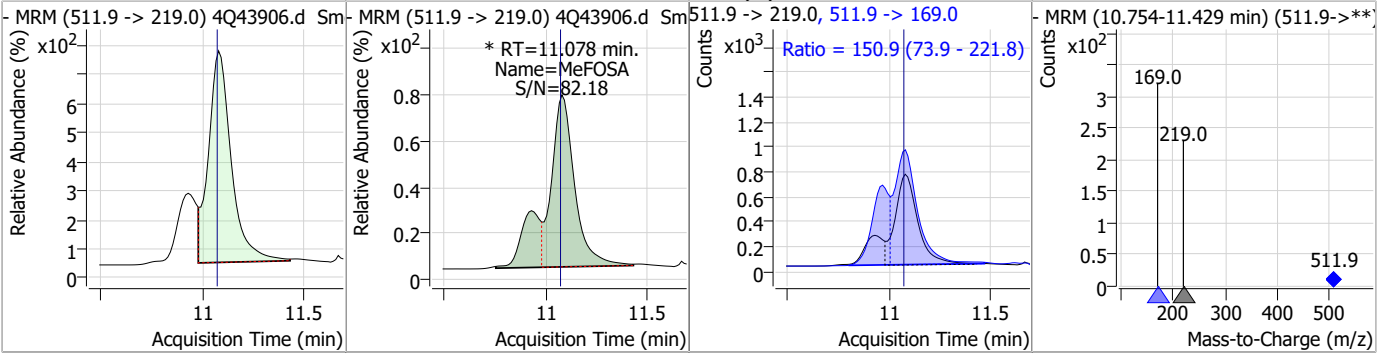
7

### Perfluorinated Compounds by LC/MS/MS

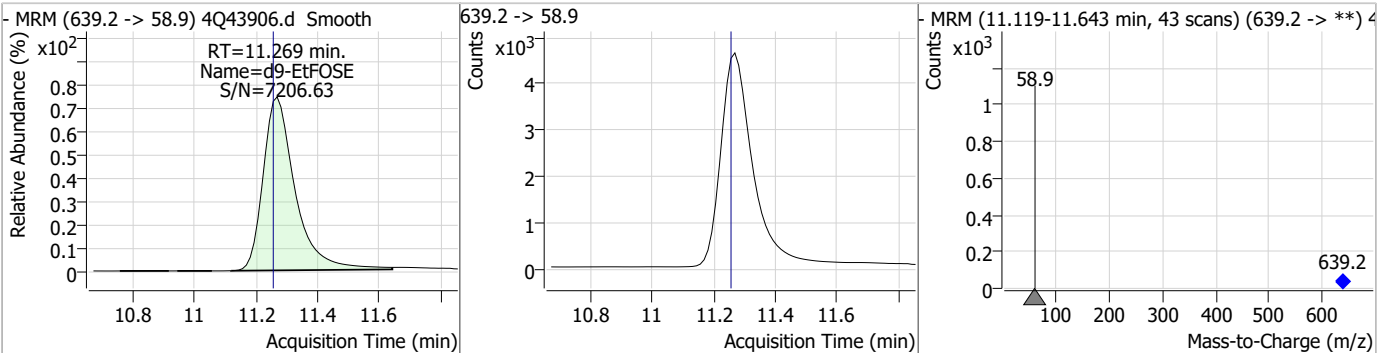


### Perfluorinated Compounds by LC/MS/MS

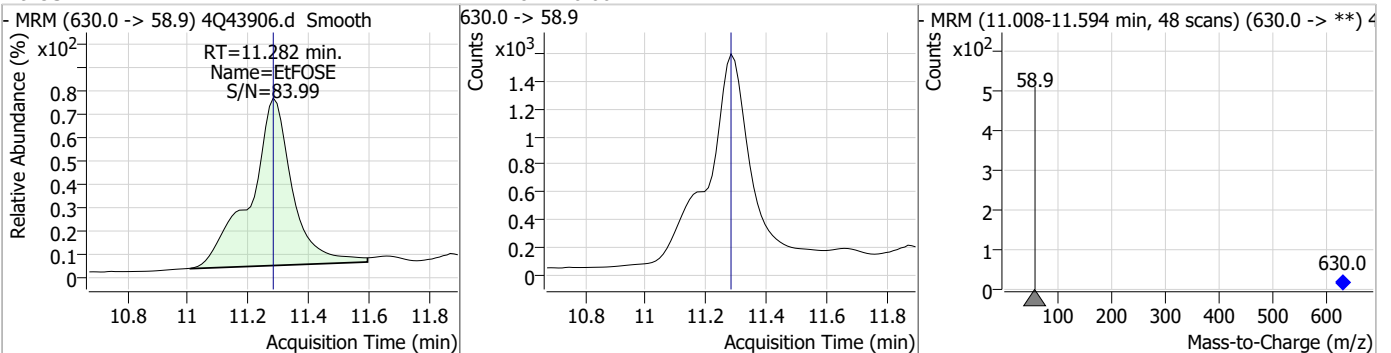
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.87	11.08	0.01	7243 (m)	511.9 -> 169.0	150.9	73.9	221.8



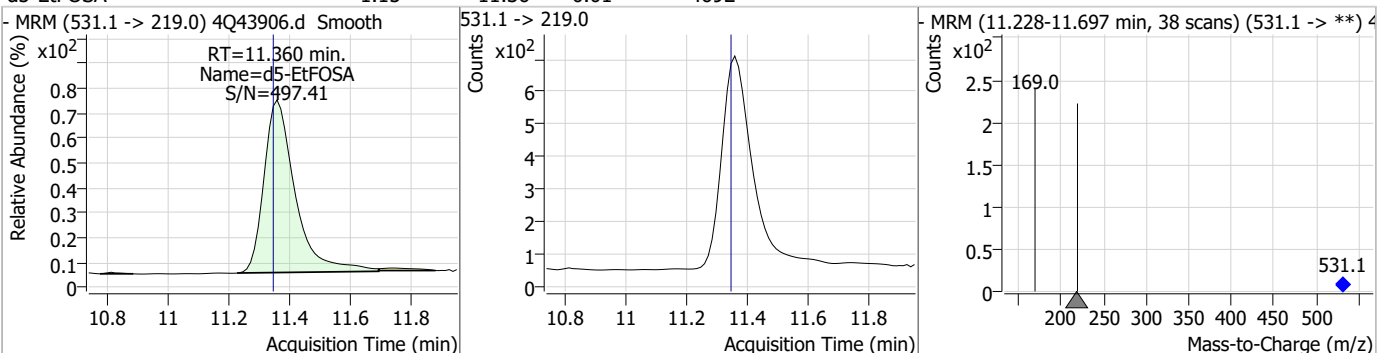
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	7.72	11.27	0.01	33268				



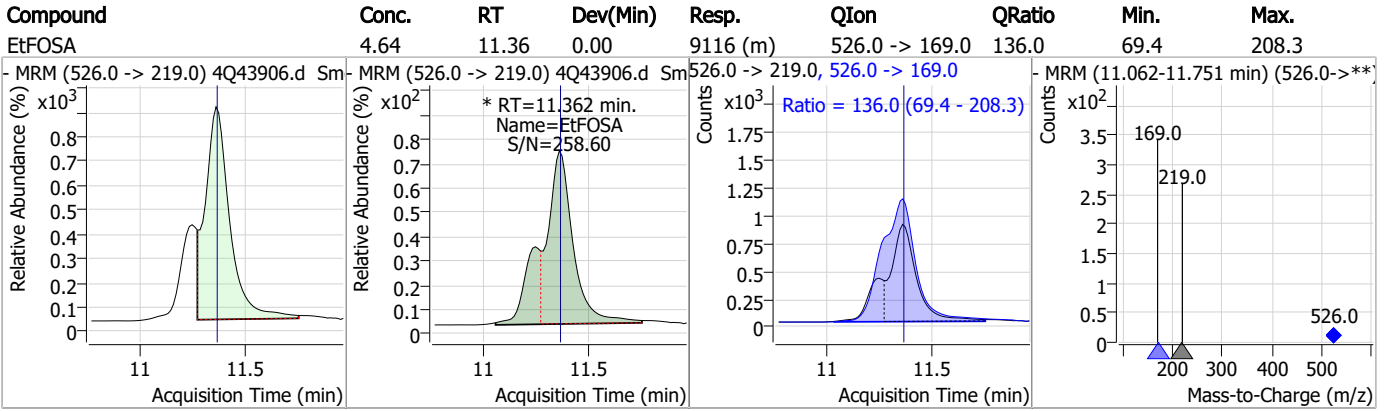
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.21	11.28	0.00	14441				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	1.15	11.36	0.01	4692				



### Perfluorinated Compounds by LC/MS/MS



7.4.1

7

# Manual Integration Approval Summary

Sample Number: OP96662-MS      Method: EPA DRAFT 1633  
Lab FileID: 4Q43906.D      Analyst approved: 05/04/23 14:18 Natasha Gumtie  
Injection Time: 05/03/23 15:57      Supervisor approved: 05/04/23 17:48 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.4.1.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43910.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 4:54:03 PM  
 Sample Name : op96662-dup  
 Vial : P1-C6  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96662,S4Q634,570,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.924	216.8 -> 171.9	12047	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	17286	5.00 µg/L	0.012
M5-PFHxA	5.547	318.0 -> 273.0	24270	2.50 µg/L	0.012
M4-PFHpA	6.480	367.1 -> 322.0	20699	2.50 µg/L	0.012
M8-PFOA	7.148	421.1 -> 376.0	36065	2.50 µg/L	0.025
M9-PFNA	7.696	472.1 -> 427.0	19277	1.25 µg/L	0.026
M6-PFDA	8.191	519.1 -> 474.1	18386	1.25 µg/L	0.013
M7-PFUnDA	8.672	570.0 -> 525.1	18662	1.25 µg/L	0.025
M2-PFDoDA	9.118	615.1 -> 570.0	17752	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	8284	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	9227	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	7382	2.50 µg/L	0.025
M3-PFHxS	7.242	402.1 -> 79.9	6398	2.50 µg/L	0.012
M8-PFOS	8.329	507.1 -> 79.9	7977	2.50 µg/L	0.000
M2-4:2FTS	5.247	329.1 -> 80.9	591	5.00 µg/L	0.025
M2-6:2FTS	6.911	429.1 -> 80.9	1323	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	2592	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	17277	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	12099	10.00 µg/L	0.025
M5-EtFOSAA	8.458	589.2 -> 419.0	14989	5.00 µg/L	0.012
M7-MeFOSE	10.972	623.2 -> 58.9	21795	25.00 µg/L	0.025
M9-EtFOSE	11.269	639.2 -> 58.9	31064	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	5346	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	5239	2.50 µg/L	0.012
13C4-PFOS	8.330	502.8 -> 79.9	8763	2.50 µg/L	0.000
13C3-PFBA	2.928	216.0 -> 172.0	62805	5.00 µg/L	0.000
18O2-PFHxS	7.241	403.0 -> 83.9	4802	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	49865	2.50 µg/L	0.025
13C2-PFDA	8.191	515.1 -> 470.1	18676	1.25 µg/L	0.013
13C5-PFNA	7.697	468.0 -> 423.0	23687	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	41275	2.50 µg/L	0.025
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.247	329.1 -> 80.9	591	3.03 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 60.6%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1323	3.76 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 75.2%		
13C2-8:2FTS	7.978	529.1 -> 80.9	2592	4.72 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.4%		
13C2-PFDoDA	9.118	615.1 -> 570.0	17752	0.98 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 78.5%		
13C2-PFTeDA	9.911	715.2 -> 670.0	8284	0.56 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 45.0%		
13C3-PFBS	5.452	302.1 -> 79.9	7382	1.63 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 65.2%		
13C3-PFHxS	7.242	402.1 -> 79.9	6398	2.15 µg/L	0.012

7.5.1  
7

### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.0%	
13C4-PFBA	2.924	216.8 -> 171.9	12047	1.02 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 10.2%	
13C4-PFHpA	6.480	367.1 -> 322.0	20699	1.95 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 77.9%	
13C5-PFHxA	5.547	318.0 -> 273.0	24270	1.34 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 53.4%	
13C5-PFPeA	4.375	268.3 -> 223.0	17286	1.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 27.2%	
13C6-PFDA	8.191	519.1 -> 474.1	18386	1.15 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C7-PFUnDA	8.672	570.0 -> 525.1	18662	1.12 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.7%	
13C8-FOSA	9.783	506.1 -> 77.8	9227	1.68 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 67.2%	
13C8-PFOA	7.148	421.1 -> 376.0	36065	2.20 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.1%	
13C8-PFOS	8.329	507.1 -> 79.9	7977	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C9-PFNA	7.696	472.1 -> 427.0	19277	1.20 µg/L	0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.8%	
d3-MeFOSAA	8.249	573.2 -> 419.0	17277	7.81 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 156.2%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	12099	4.46 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 44.6%	
d3-MeFOSA	11.076	515.0 -> 219.0	5239	1.52 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 61.0%	
d5-EtFOSAA	8.458	589.2 -> 419.0	14989	8.23 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 164.6%	
d7-MeFOSE	10.972	623.2 -> 58.9	21795	7.99 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 32.0%	
d9-EtFOSE	11.269	639.2 -> 58.9	31064	8.05 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 32.2%	
d5-EtFOSA	11.360	531.1 -> 219.0	5346	1.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 58.5%	

**Target Compounds**

**QValue**

4:2FTS	-	327.1 -> 307.0 327.1 -> 80.9	-	N.D.	
6:2FTS	-	427.1 -> 407.0 427.1 -> 80.9	-	N.D.	
8:2FTS	-	527.1 -> 507.0 527.1 -> 80.8	-	N.D.	
EtFOSAA	-	584.2 -> 419.1 584.2 -> 526.0	-	N.D.	
FOSA	-	498.1 -> 77.9 498.1 -> 478.0	-	N.D.	
MeFOSAA	-	570.1 -> 419.0 570.1 -> 483.0	-	N.D.	
PFBA	-	212.8 -> 168.9	-	N.D.	
PFBS	-	298.7 -> 79.9 298.7 -> 98.8	-	N.D.	
PFDA	-	512.9 -> 469.0 512.9 -> 219.0	-	N.D.	
PFDODA	-	613.1 -> 569.0 613.1 -> 319.0	-	N.D.	
PFDS	9.244	599.0 -> 79.9	0	µg/L m	1



7.5.1  
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8				
PFHpA	-	363.1 -> 319.0	-	N.D.		
		363.1 -> 169.0				
PFHpS	8.296	449.0 -> 79.9	0	µg/L	m	1
		449.0 -> 98.9	0			
PFHxA	-	313.0 -> 269.0	-	N.D.		
		313.0 -> 118.9				
PFHxS	-	398.7 -> 79.9	-	N.D.		
		398.7 -> 98.9				
PFNA	7.884	463.0 -> 419.0	0	µg/L	m	1
		463.0 -> 219.0	0			
PFNS	8.711	548.8 -> 79.9	0	µg/L	m	1
		548.8 -> 98.9	0			
PFOA	7.164	413.0 -> 369.0	0	µg/L	m	1
		413.0 -> 169.0	0			
PFOS	-	498.9 -> 79.9	-	N.D.		
		498.9 -> 98.8				
PFPeA	-	263.0 -> 219.0	-	N.D.		
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	9.865	663.0 -> 619.0	0	µg/L	m	1
		663.0 -> 168.9	0			
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.5.1  
7

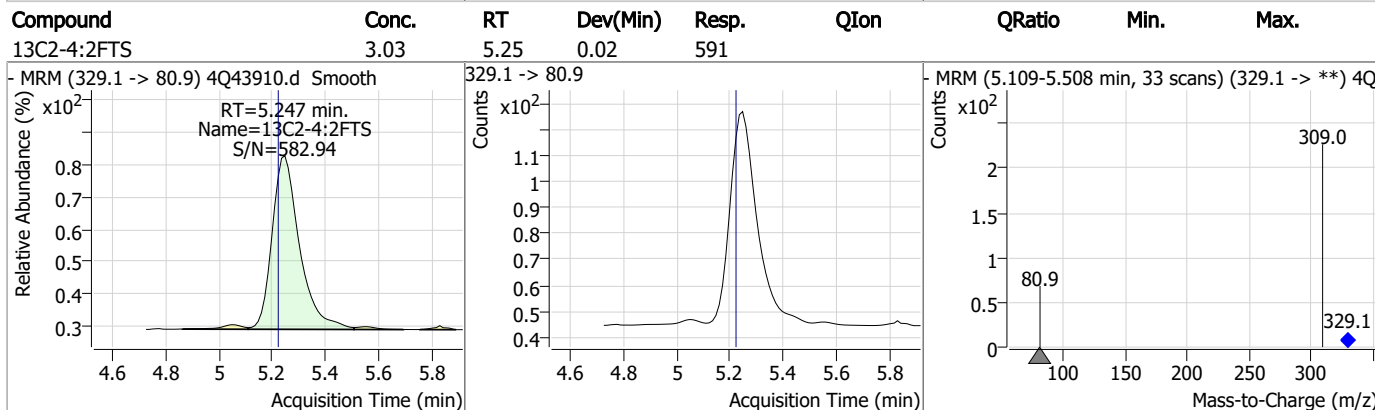
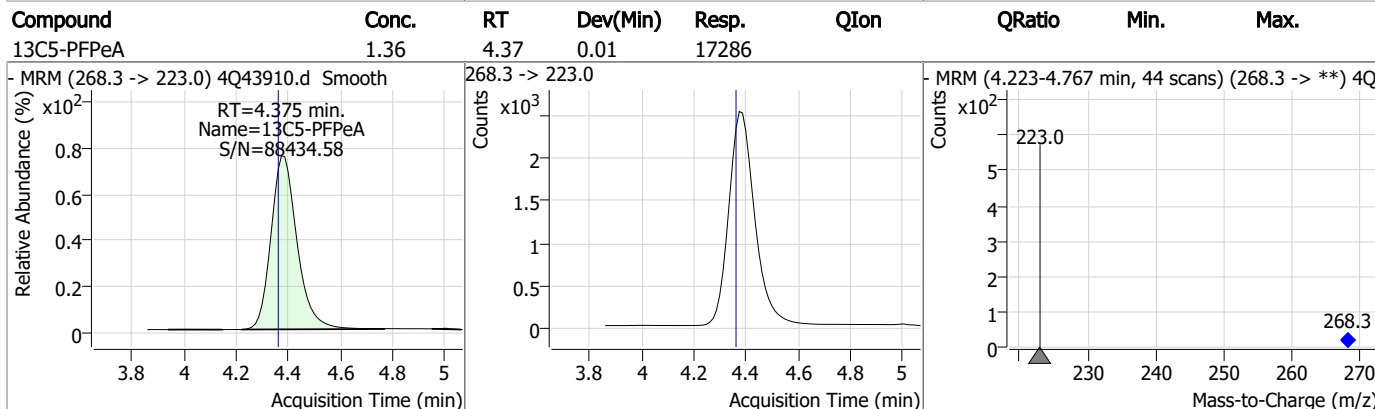
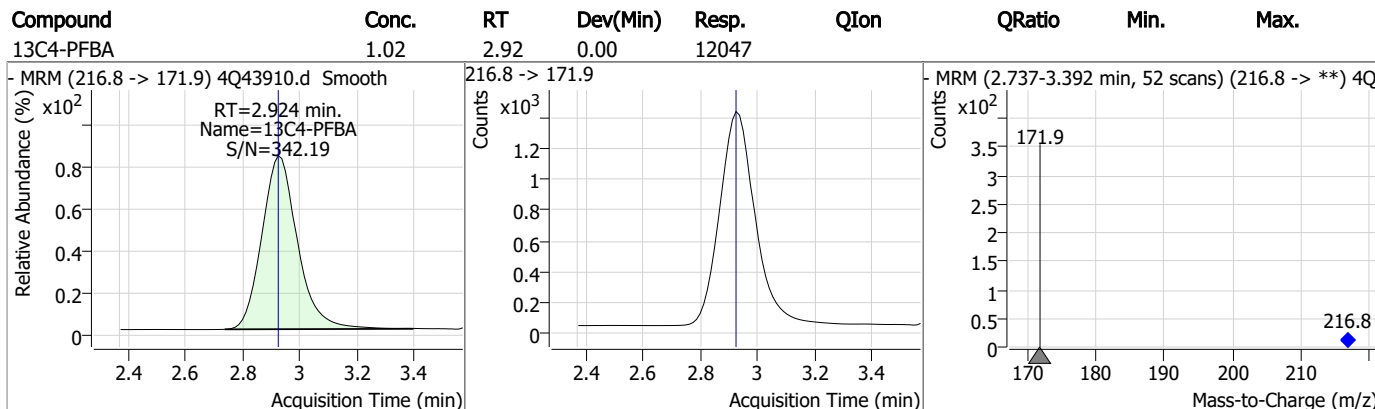
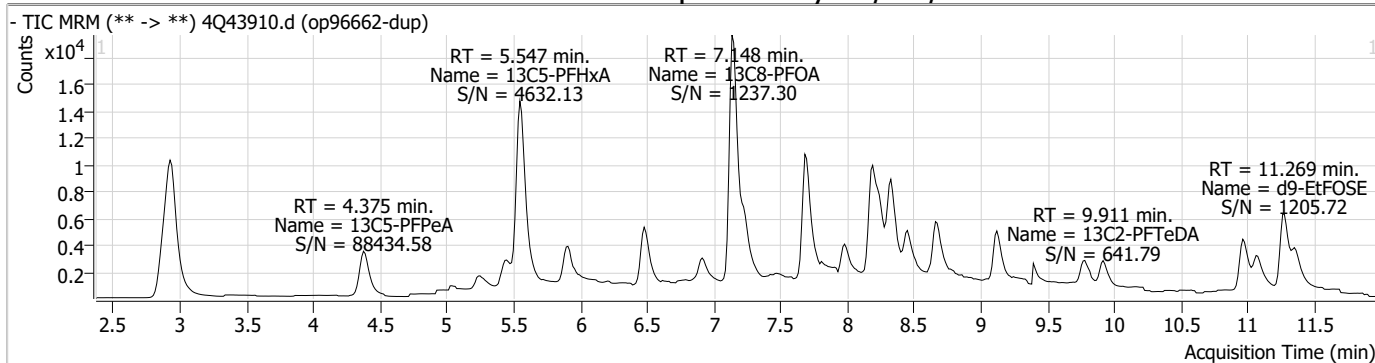
### Perfluorinated Compounds by LC/MS/MS

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

7.5.1

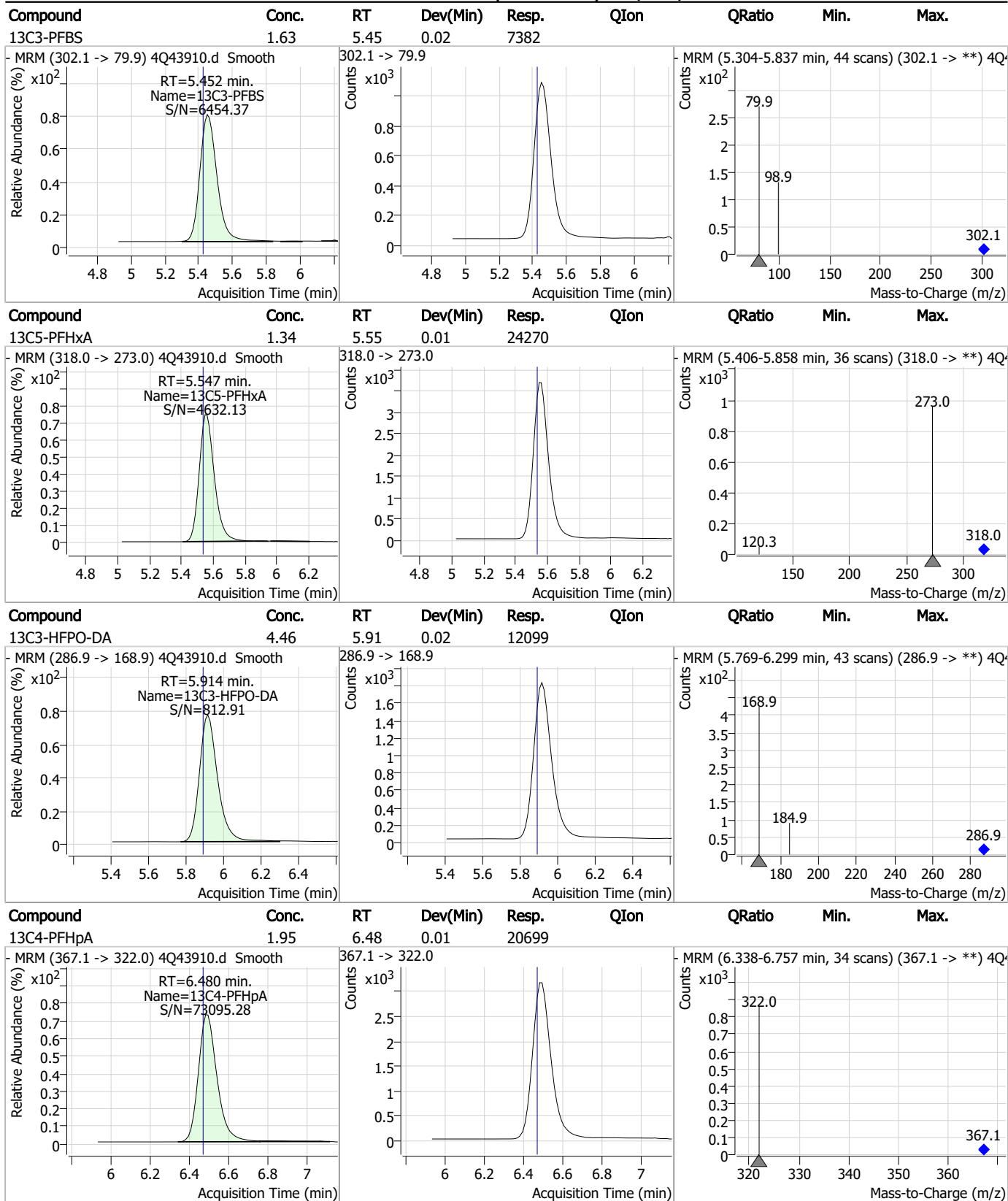
7

### Perfluorinated Compounds by LC/MS/MS



7.5.1  
7

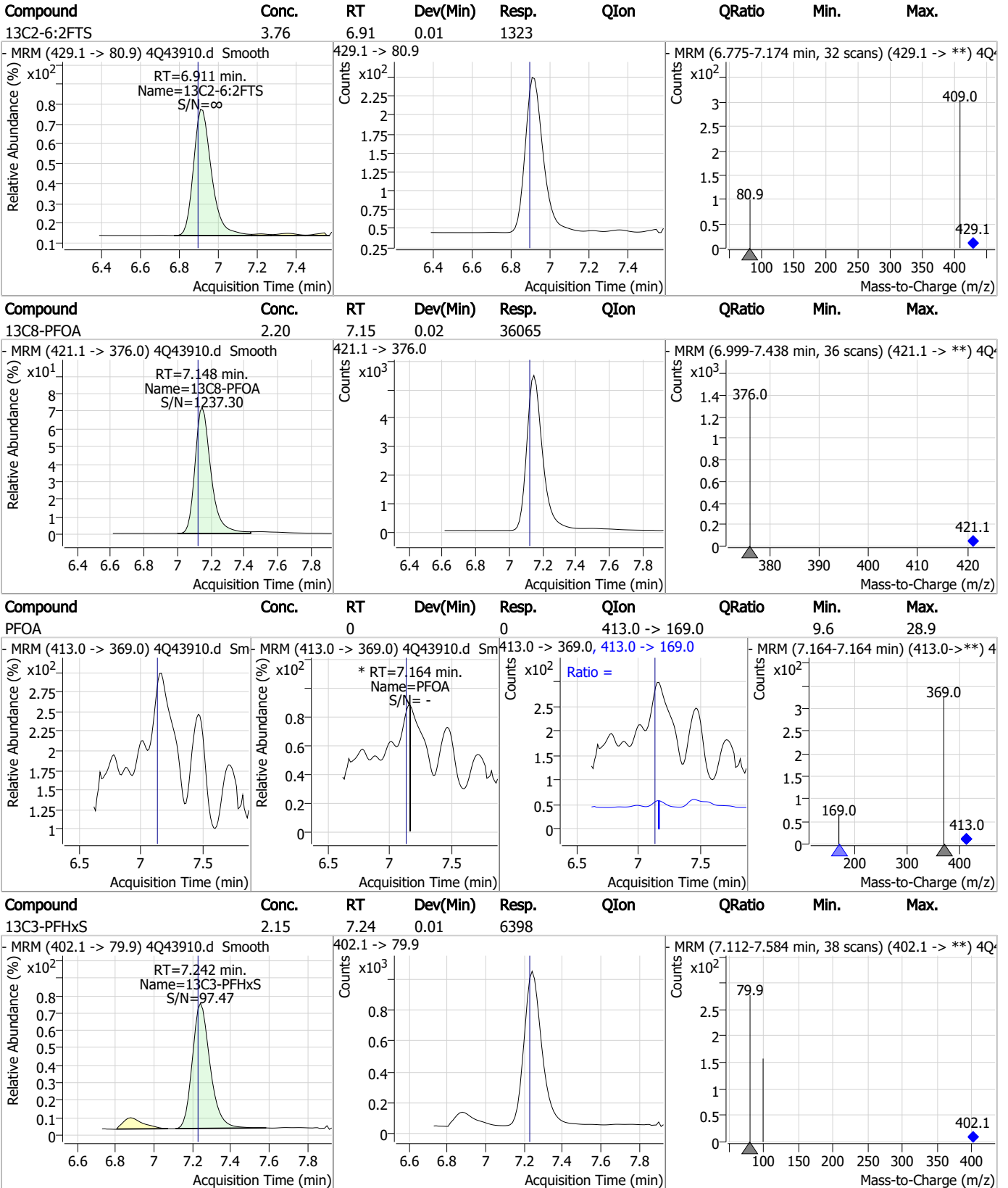
### Perfluorinated Compounds by LC/MS/MS



7.5.1

7

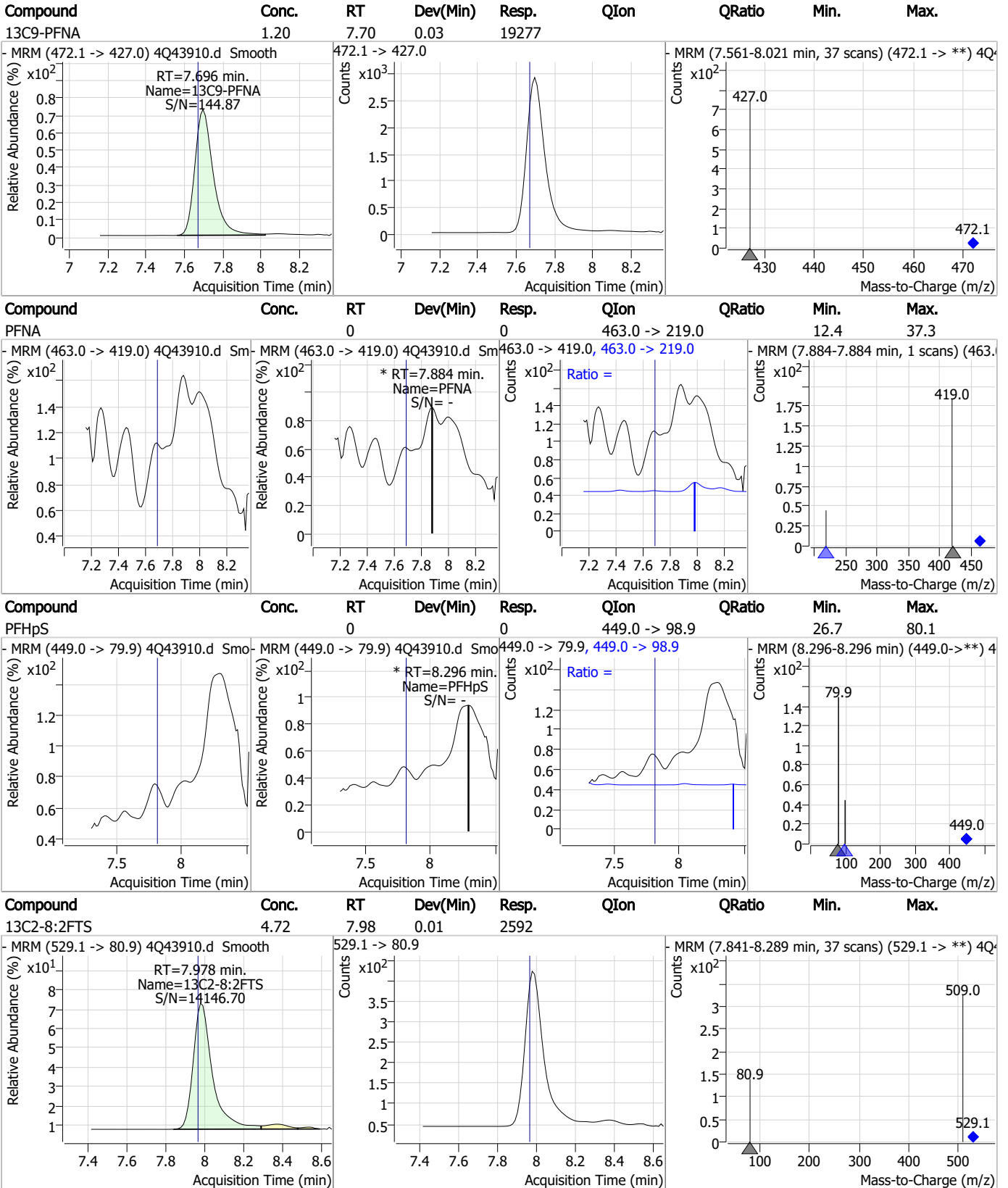
### Perfluorinated Compounds by LC/MS/MS



7.5.1

7

### Perfluorinated Compounds by LC/MS/MS



7.5.1

7

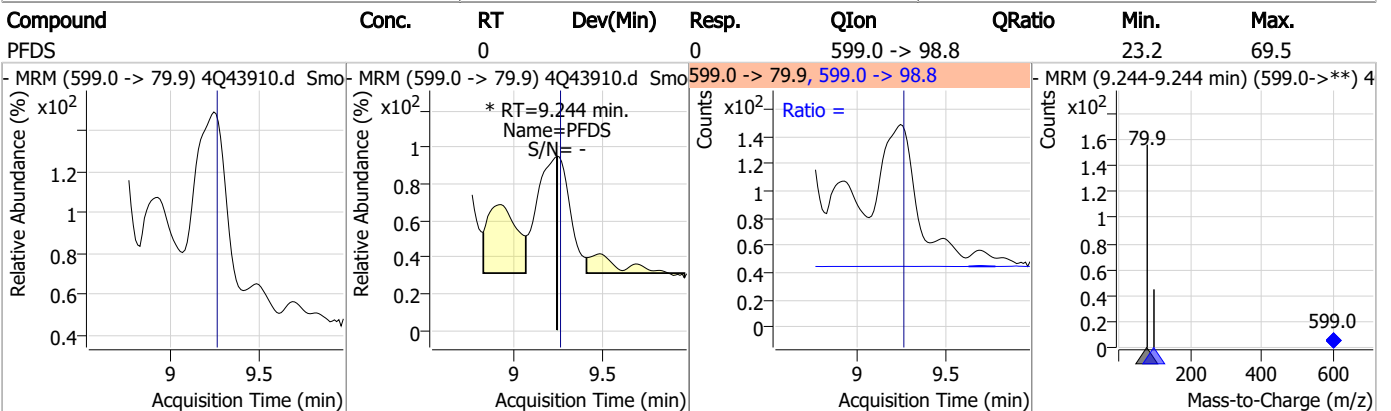
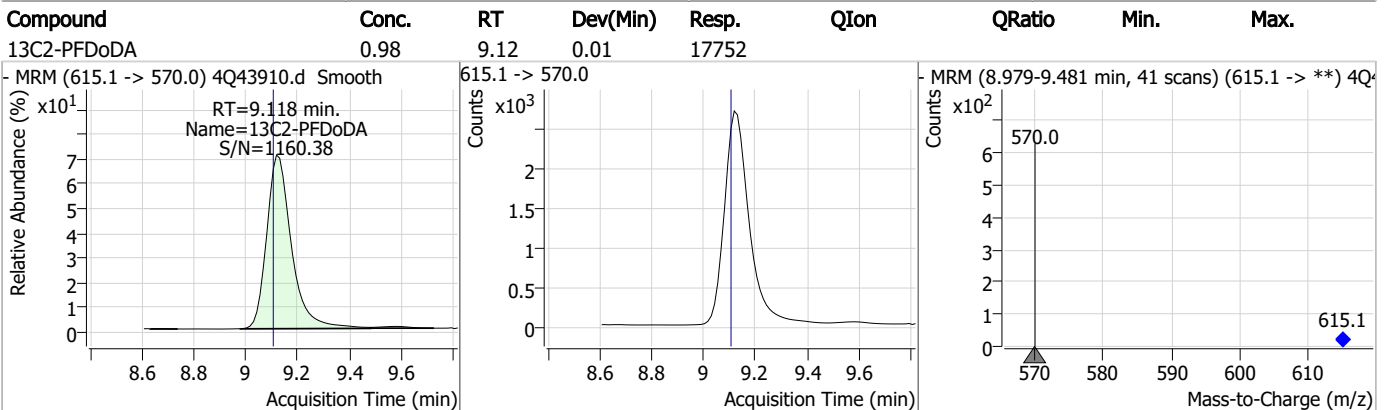
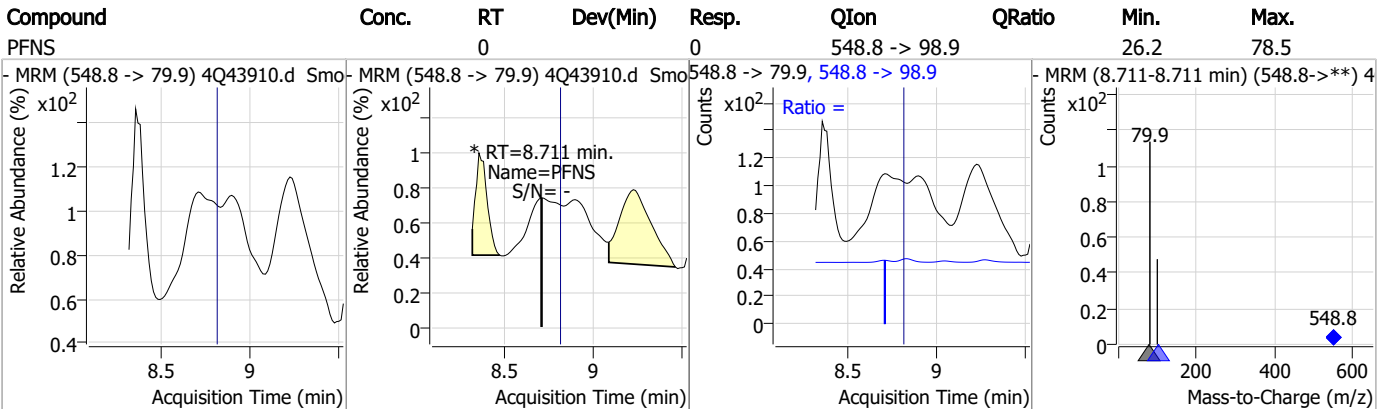
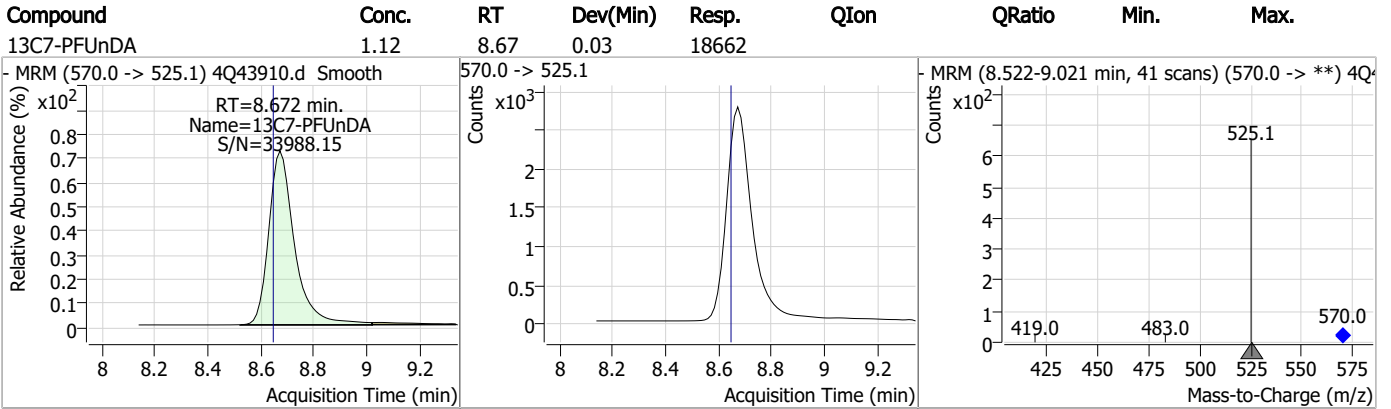


### Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	1.15	8.19	0.01	18386				
<p>MRM (519.1 -&gt; 474.1) 4Q43910.d Smooth                      RT=8.191 min.                      Name=13C6-PFDA                      S/N=1210.29</p>			<p>519.1 -&gt; 474.1</p>			<p>MRM (8.041-8.539 min, 41 scans) (519.1 -&gt; **) 4Q43910.d Smooth</p>		
d3-MeFOSAA	7.81	8.25	0.01	17277				
<p>MRM (573.2 -&gt; 419.0) 4Q43910.d Smooth                      RT=8.249 min.                      Name=d3-MeFOSAA                      S/N=1097.61</p>			<p>573.2 -&gt; 419.0</p>			<p>MRM (8.100-8.496 min, 33 scans) (573.2 -&gt; **) 4Q43910.d Smooth</p>		
13C8-PFOS	2.42	8.33	0.00	7977				
<p>MRM (507.1 -&gt; 79.9) 4Q43910.d Smooth                      RT=8.329 min.                      Name=13C8-PFOS                      S/N=1701.25</p>			<p>507.1 -&gt; 79.9</p>			<p>MRM (8.217-8.550 min, 27 scans) (507.1 -&gt; **) 4Q43910.d Smooth</p>		
d5-EtFOSAA	8.23	8.46	0.01	14989				
<p>MRM (589.2 -&gt; 419.0) 4Q43910.d Smooth                      RT=8.458 min.                      Name=d5-EtFOSAA                      S/N=145072.99</p>			<p>589.2 -&gt; 419.0</p>			<p>MRM (8.321-8.844 min, 43 scans) (589.2 -&gt; **) 4Q43910.d Smooth</p>		

7.5.1  
7

### Perfluorinated Compounds by LC/MS/MS



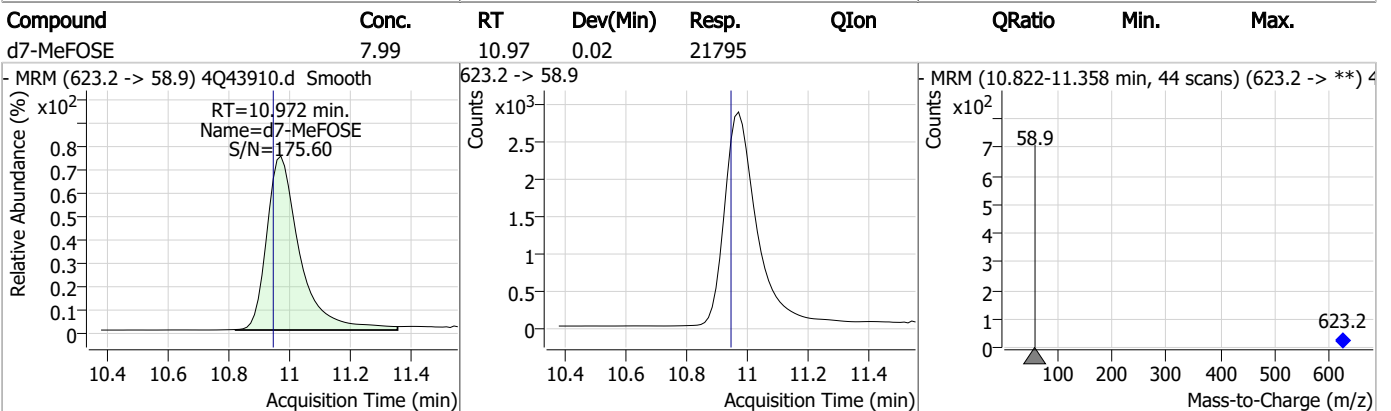
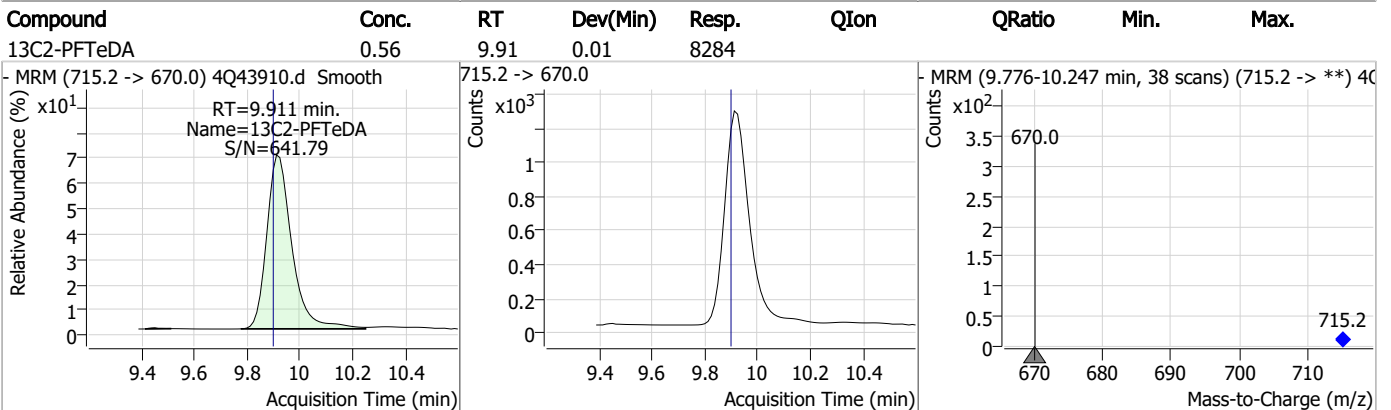
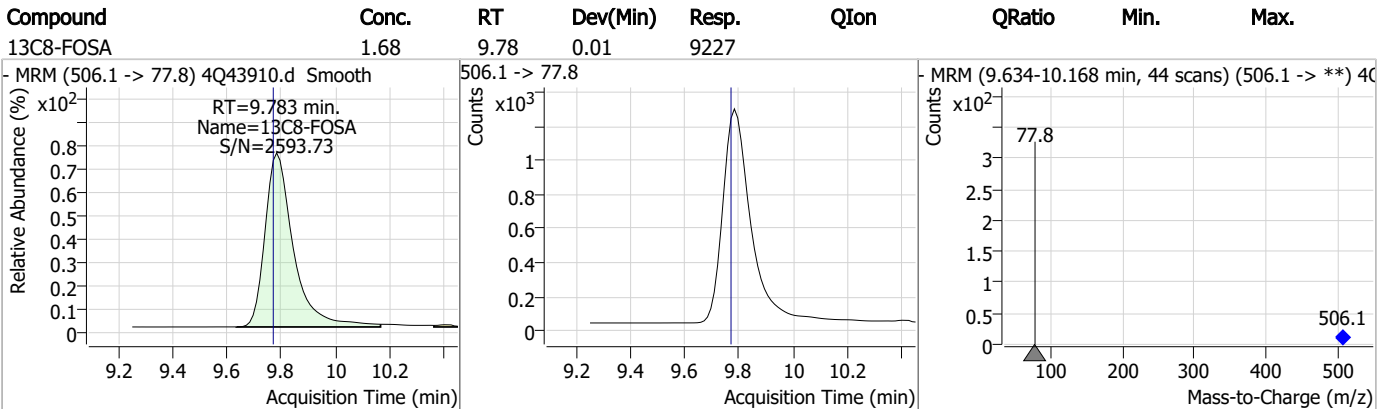
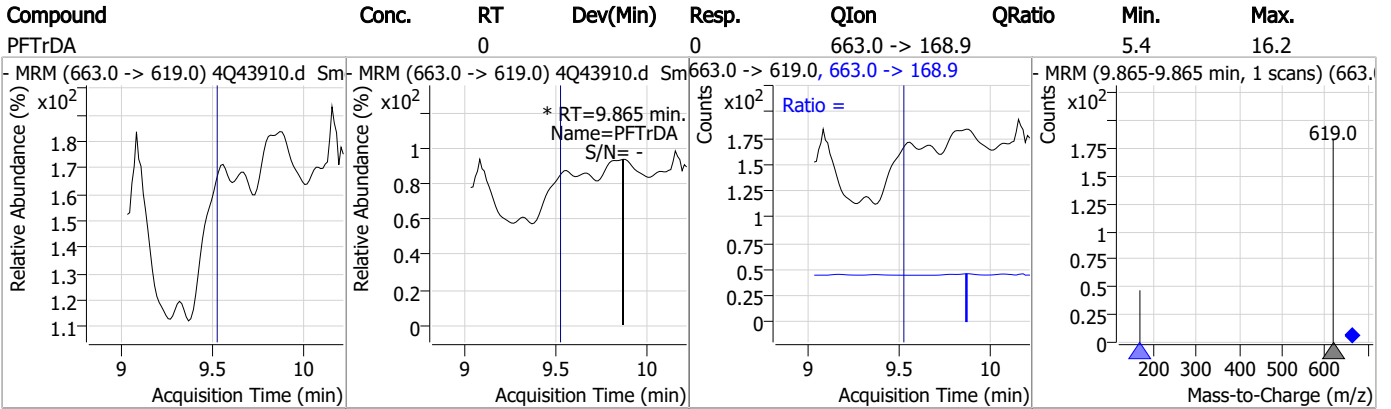
7.5.1

7





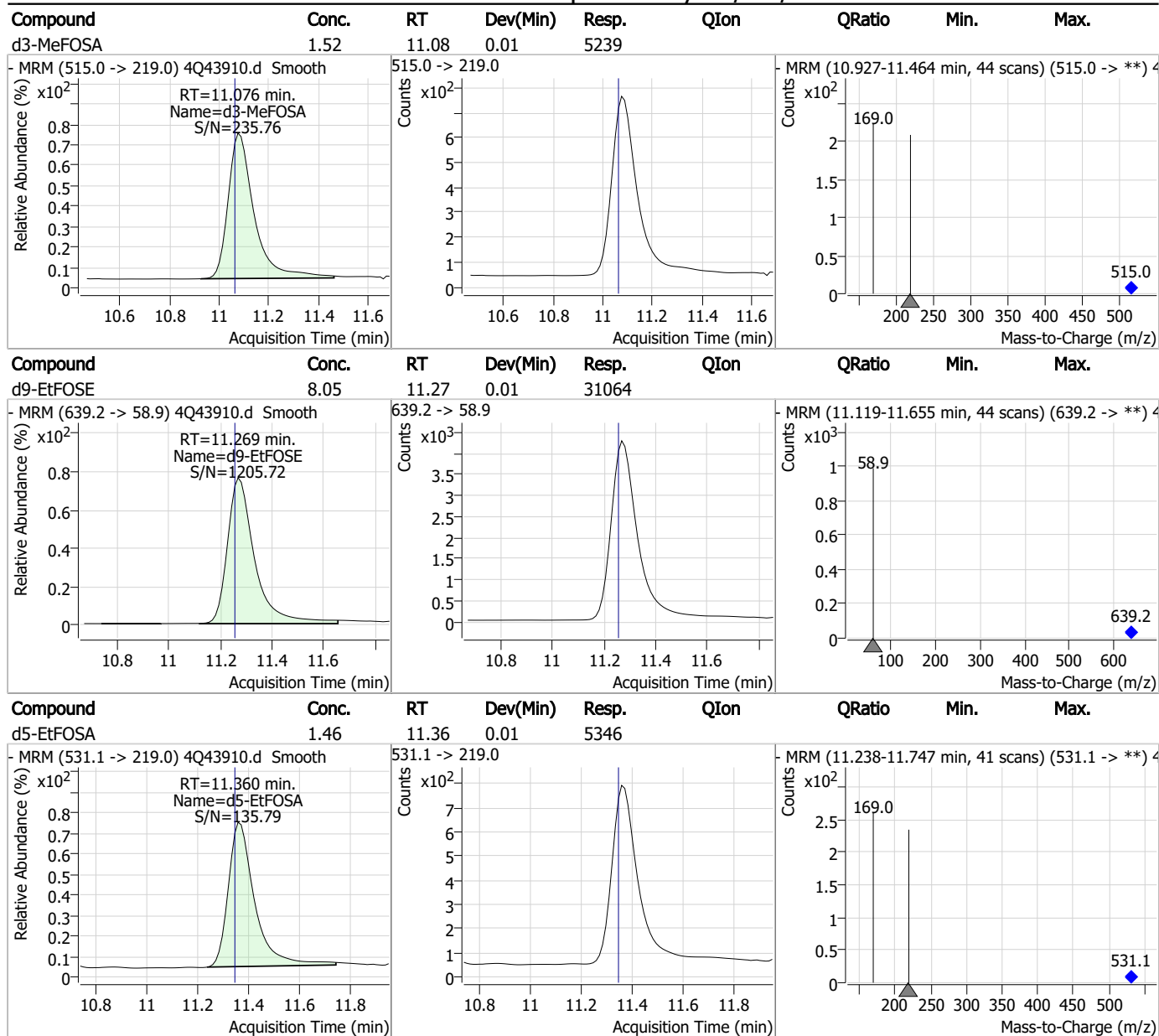
### Perfluorinated Compounds by LC/MS/MS



7.5.1

7

### Perfluorinated Compounds by LC/MS/MS



7.5.1  
7

Manual Integrations  
**APPROVED**  
 (compounds with "m" flag)  
 Norman Farmer  
 05/04/23 17:44

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43881.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 10:23:06 AM  
 Sample Name : RT TDCA  
 Vial : P1-B1  
 DA Method File : TDCA.quantmethod.xml  
 Batch Name : s4q634\_TDCA.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

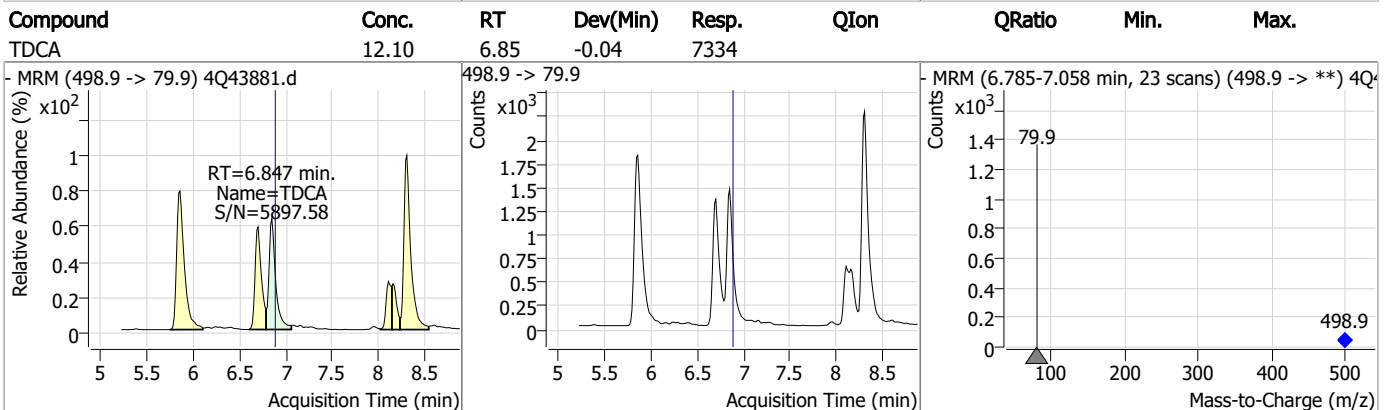
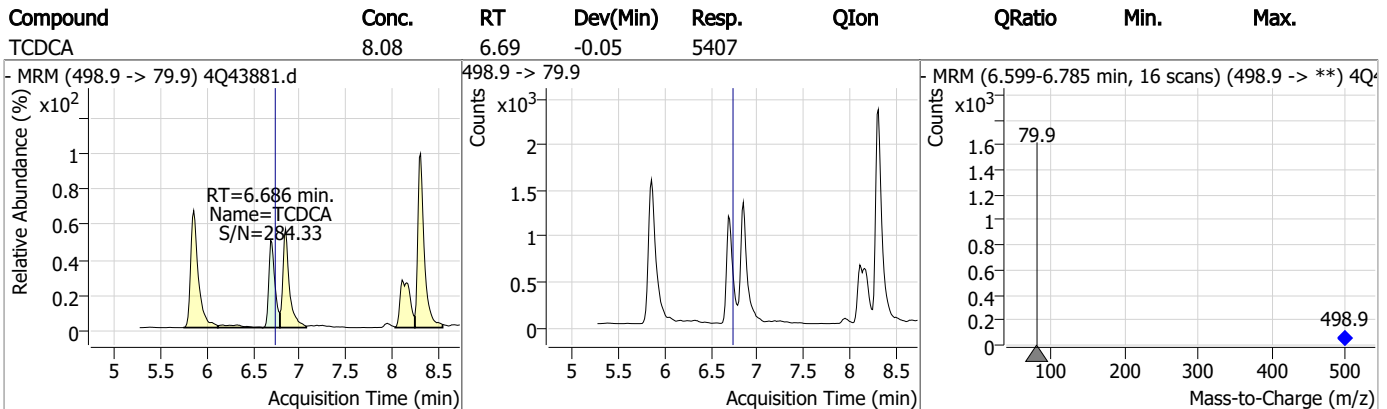
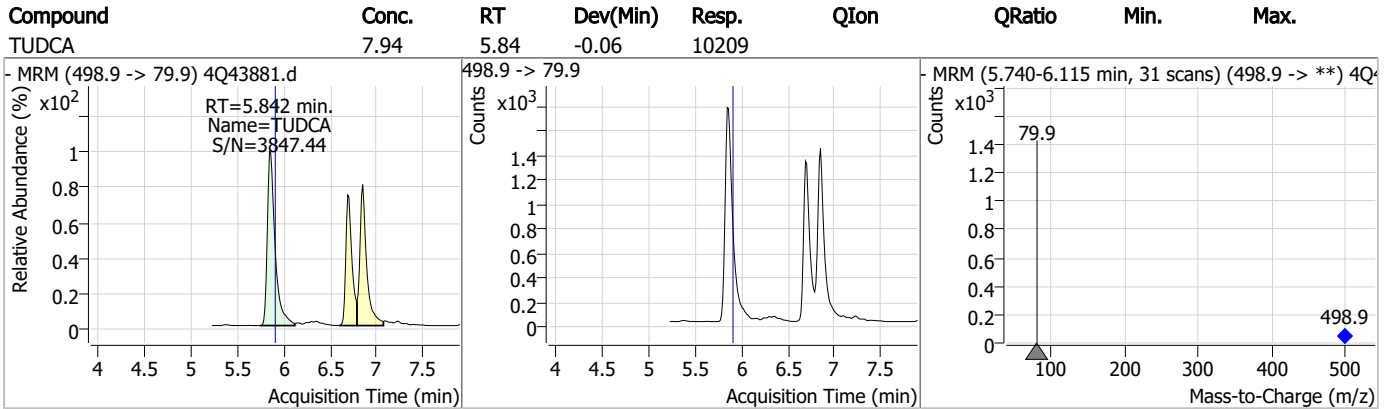
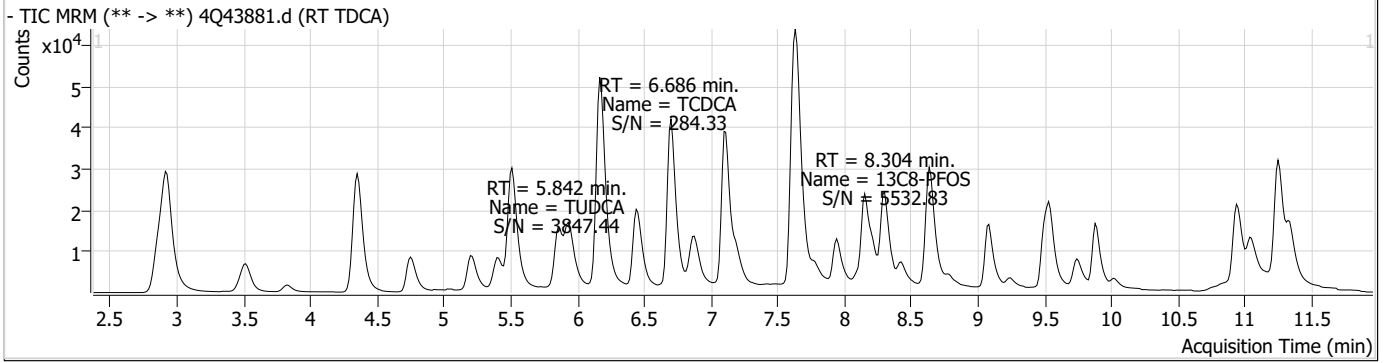
Compound	RT	Transition	Response	Conc. Units	Dev(Min)	QValue
<b>Internal Standards</b>						
M8-PFOS	8.304	507.1 -> 79.9	14500	2.50 µg/L	-0.062	
13C4-PFOS	8.305	502.8 -> 79.9	17051	2.50 µg/L	-0.062	
<b>System Monitoring Compounds</b>						
13C8-PFOS	8.304	507.1 -> 79.9	14500	2.16 µg/L	-0.062	
Spiked Amount: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

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

7.6.1  
7



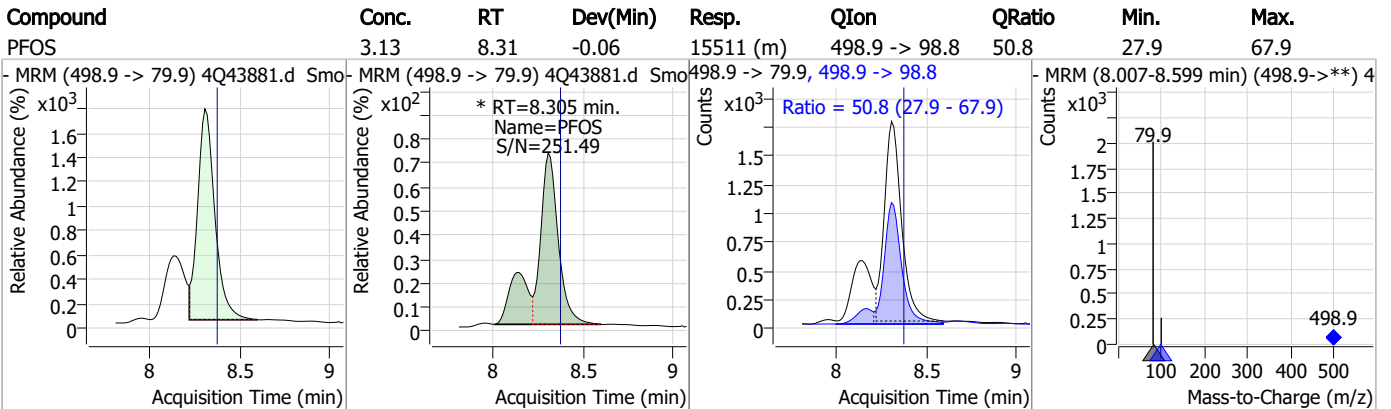
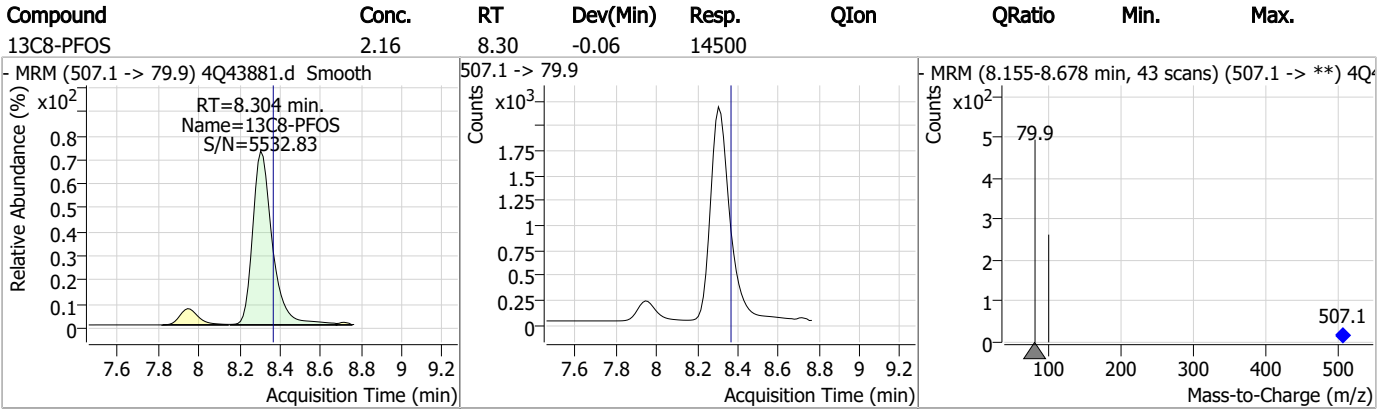
### Perfluorinated Compounds by LC/MS/MS



7.6.1

7

### Perfluorinated Compounds by LC/MS/MS



7.6.1

7



# Manual Integration Approval Summary

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

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

## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43882.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 10:37:09 AM  
 Sample Name : RT br/ln  
 Vial : P1-B2  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.911	216.8 -> 171.9	119654	10.00 µg/L	-0.012
M5-PFPeA	4.350	268.3 -> 223.0	67757	5.00 µg/L	-0.012
M5-PFHxA	5.510	318.0 -> 273.0	49354	2.50 µg/L	-0.025
M4-PFHpA	6.455	367.1 -> 322.0	29875	2.50 µg/L	-0.012
M8-PFOA	7.111	421.1 -> 376.0	43497	2.50 µg/L	-0.012
M9-PFNA	7.658	472.1 -> 427.0	20317	1.25 µg/L	-0.012
M6-PFDA	8.166	519.1 -> 474.1	20346	1.25 µg/L	-0.012
M7-PFUnDA	8.635	570.0 -> 525.1	21156	1.25 µg/L	-0.012
M2-PFDoDA	9.081	615.1 -> 570.0	22468	1.25 µg/L	-0.025
M2-PFTeDA	9.886	715.2 -> 670.0	18596	1.25 µg/L	-0.012
M8-FOSA	9.758	506.1 -> 77.8	16919	2.50 µg/L	-0.012
M3-PFBS	5.414	302.1 -> 79.9	11687	2.50 µg/L	-0.012
M3-PFHxS	7.217	402.1 -> 79.9	7599	2.50 µg/L	-0.012
M8-PFOS	8.316	507.1 -> 79.9	10335	2.50 µg/L	-0.013
M2-4:2FTS	5.209	329.1 -> 80.9	1135	5.00 µg/L	-0.014
M2-6:2FTS	6.886	429.1 -> 80.9	1876	5.00 µg/L	-0.012
M2-8:2FTS	7.953	529.1 -> 80.9	3057	5.00 µg/L	-0.012
M3-MeFOSAA	8.224	573.2 -> 419.0	15580	5.00 µg/L	-0.012
M3-HFPO-DA	5.877	286.9 -> 168.9	30253	10.00 µg/L	-0.012
M5-EtFOSAA	8.433	589.2 -> 419.0	12098	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	80643	25.00 µg/L	0.000
M9-EtFOSE	11.244	639.2 -> 58.9	119872	25.00 µg/L	-0.012
M5-EtFOSA	11.348	531.1 -> 219.0	11379	2.50 µg/L	0.000
M3-MeFOSA	11.051	515.0 -> 219.0	10964	2.50 µg/L	-0.012
13C4-PFOS	8.317	502.8 -> 79.9	10254	2.50 µg/L	-0.013
13C3-PFBA	2.916	216.0 -> 172.0	63918	5.00 µg/L	-0.013
18O2-PFHxS	7.216	403.0 -> 83.9	5128	2.50 µg/L	-0.012
13C4-PFOA	7.112	417.1 -> 372.0	52496	2.50 µg/L	-0.012
13C2-PFDA	8.166	515.1 -> 470.1	18252	1.25 µg/L	-0.012
13C5-PFNA	7.658	468.0 -> 423.0	24666	1.25 µg/L	-0.026
13C2-PFHxA	5.511	315.1 -> 270.0	43755	2.50 µg/L	-0.025
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.209	329.1 -> 80.9	1135	5.44 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.9%		
13C2-6:2FTS	6.886	429.1 -> 80.9	1876	4.99 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.9%		
13C2-8:2FTS	7.953	529.1 -> 80.9	3057	5.21 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C2-PFDoDA	9.081	615.1 -> 570.0	22468	1.27 µg/L	-0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-PFTeDA	9.886	715.2 -> 670.0	18596	1.29 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.4%		
13C3-PFBS	5.414	302.1 -> 79.9	11687	2.42 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.7%		
13C3-PFHxS	7.217	402.1 -> 79.9	7599	2.39 µg/L	-0.012

7.6.2  
7

## Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C4-PFBA	2.911	216.8 -> 171.9	119654	9.95 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C4-PFHpA	6.455	367.1 -> 322.0	29875	2.65 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C5-PFHxA	5.510	318.0 -> 273.0	49354	2.56 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C5-PFPeA	4.350	268.3 -> 223.0	67757	5.03 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C6-PFDA	8.166	519.1 -> 474.1	20346	1.30 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C7-PFUnDA	8.635	570.0 -> 525.1	21156	1.30 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C8-FOSA	9.758	506.1 -> 77.8	16919	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C8-PFOA	7.111	421.1 -> 376.0	43497	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C8-PFOS	8.316	507.1 -> 79.9	10335	2.68 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C9-PFNA	7.658	472.1 -> 427.0	20317	1.21 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.9%	
d3-MeFOSAA	8.224	573.2 -> 419.0	15580	6.02 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 120.4%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	30253	10.51 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.1%	
d3-MeFOSA	11.051	515.0 -> 219.0	10964	2.73 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.1%	
d5-EtFOSAA	8.433	589.2 -> 419.0	12098	5.68 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.5%	
d7-MeFOSE	10.947	623.2 -> 58.9	80643	25.28 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
d9-EtFOSE	11.244	639.2 -> 58.9	119872	26.54 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.1%	
d5-EtFOSA	11.348	531.1 -> 219.0	11379	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.5%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.210	327.1 -> 307.0	91008	49.85 µg/L	93
		327.1 -> 80.9	38405		
6:2FTS	6.886	427.1 -> 407.0	96692	53.36 µg/L	97
		427.1 -> 80.9	39102		
8:2FTS	7.954	527.1 -> 507.0	91390	53.63 µg/L	95
		527.1 -> 80.8	35708		
EtFOSAA	8.434	584.2 -> 419.1	29724	12.79 µg/L	m 97
		584.2 -> 526.0	14584		
FOSA	9.761	498.1 -> 77.9	215824	30.44 µg/L	m 99
		498.1 -> 478.0	6518		
MeFOSAA	8.225	570.1 -> 419.0	32953	12.14 µg/L	m 94
		570.1 -> 483.0	6799		
PFBA	2.907	212.8 -> 168.9	172708	53.90 µg/L	100
PFBS	5.415	298.7 -> 79.9	57018	11.89 µg/L	97
		298.7 -> 98.8	22261		
PFDA	8.166	512.9 -> 469.0	205207	13.29 µg/L	97
		512.9 -> 219.0	41256		
PFDoDA	9.094	613.1 -> 569.0	229603	12.74 µg/L	100
		613.1 -> 319.0	33205		
PFDS	9.244	599.0 -> 79.9	32797	12.81 µg/L	93



## Perfluorinated Compounds by LC/MS/MS

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

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

7.6.2  
7

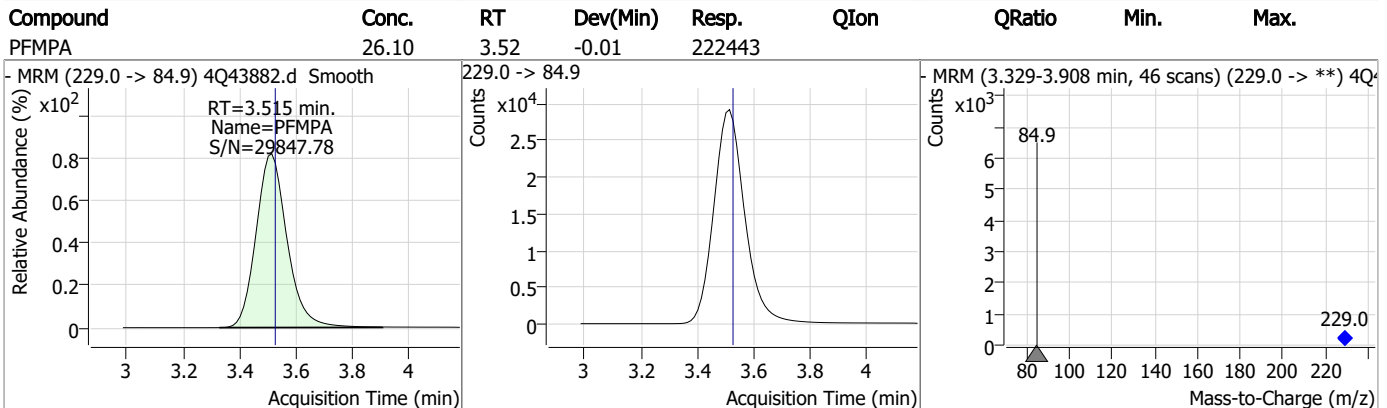
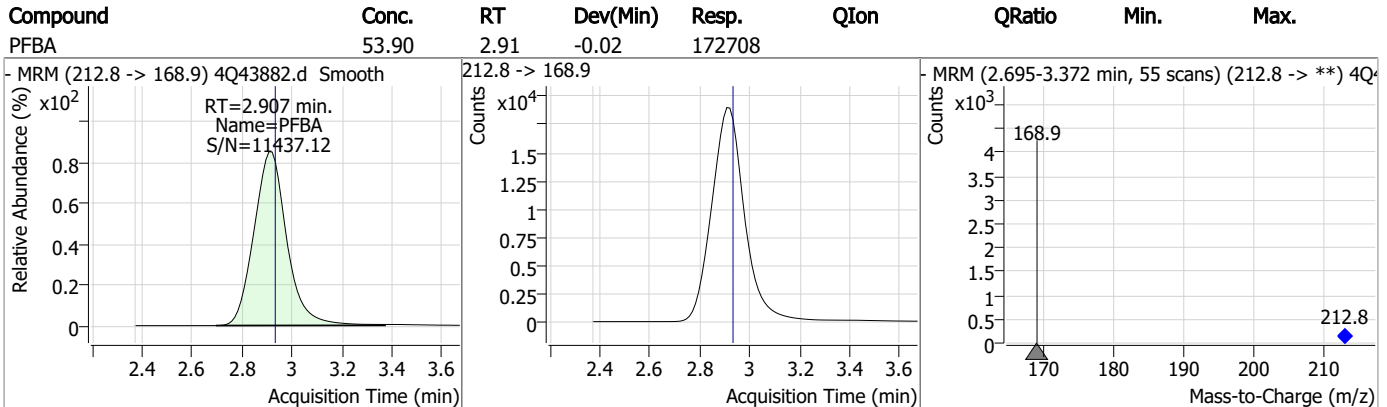
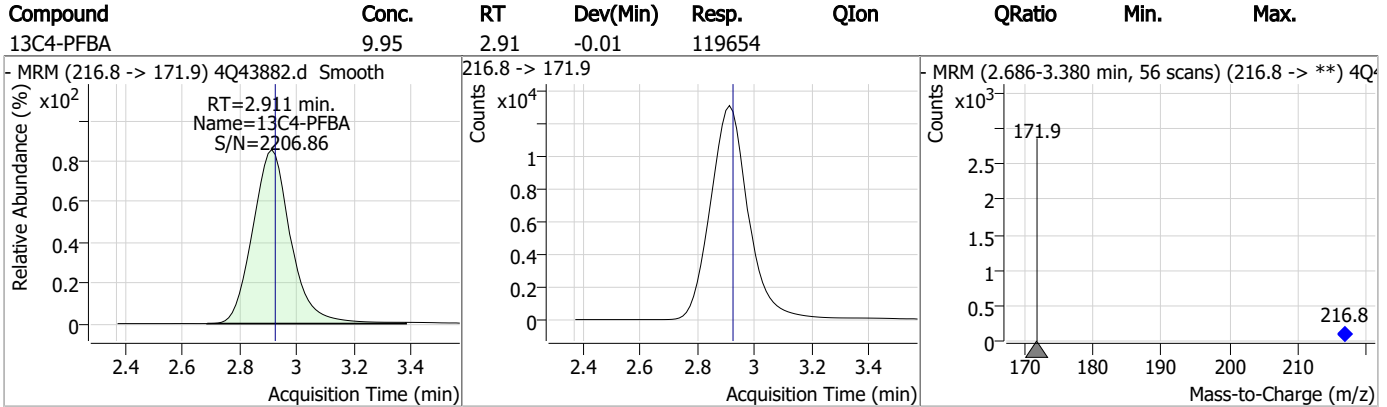
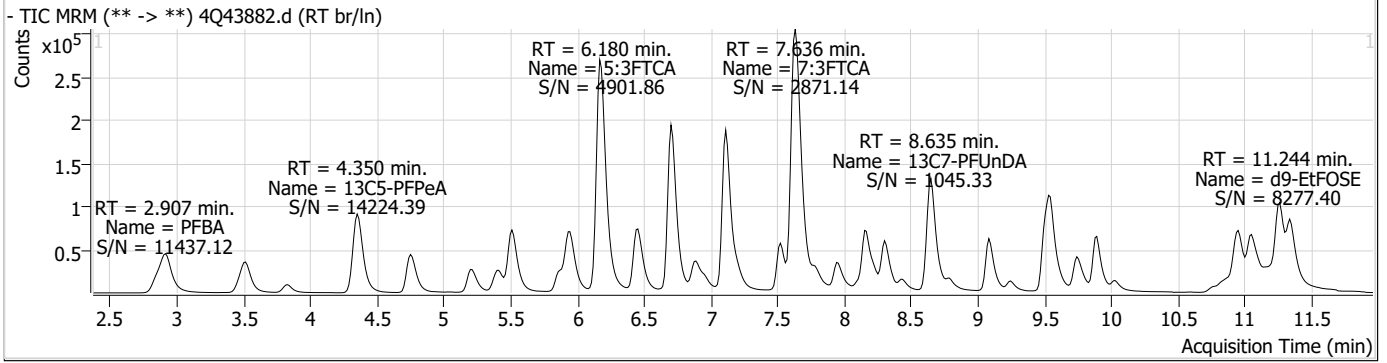
# Perfluorinated Compounds by LC/MS/MS

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

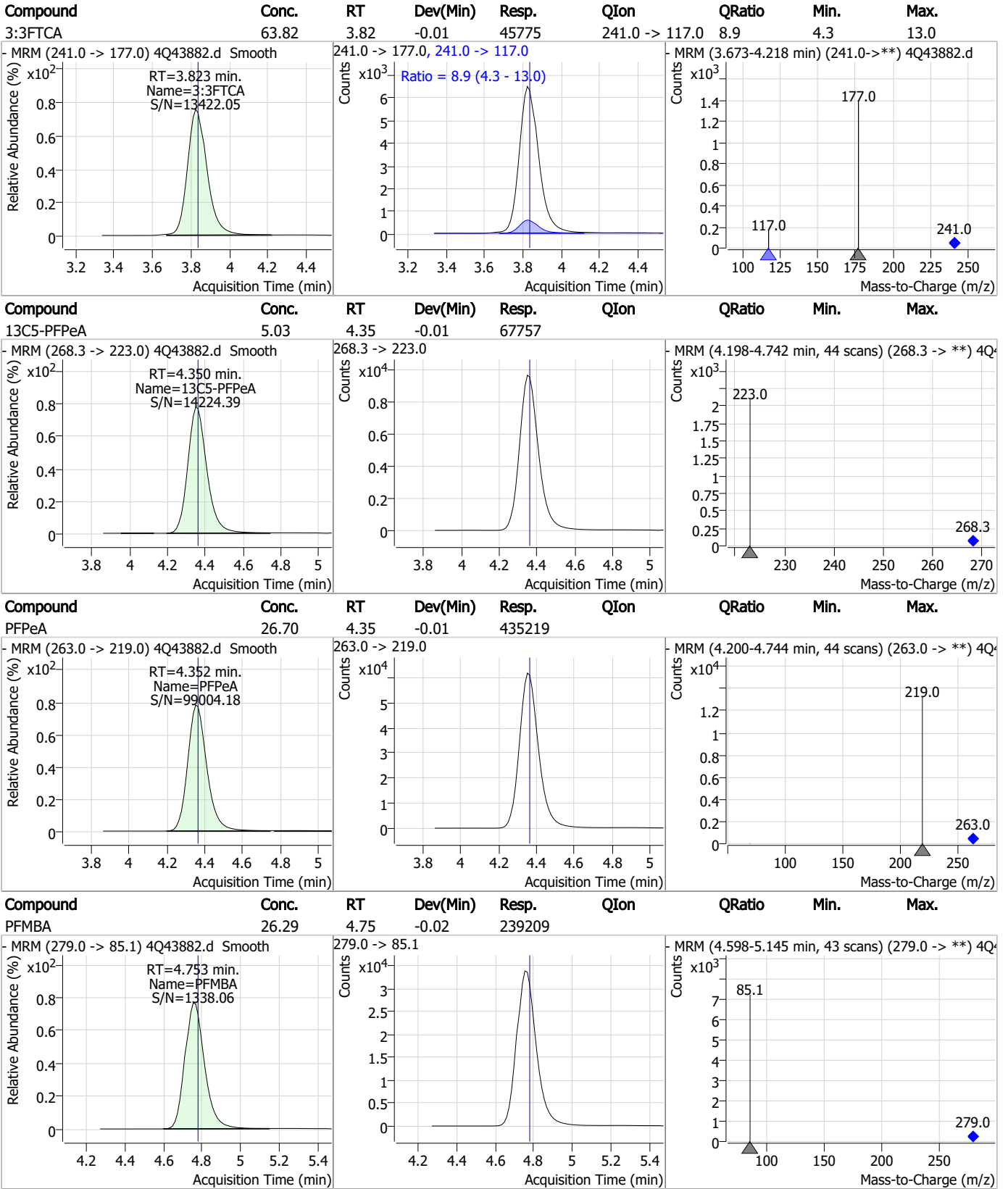
7.6.2

7

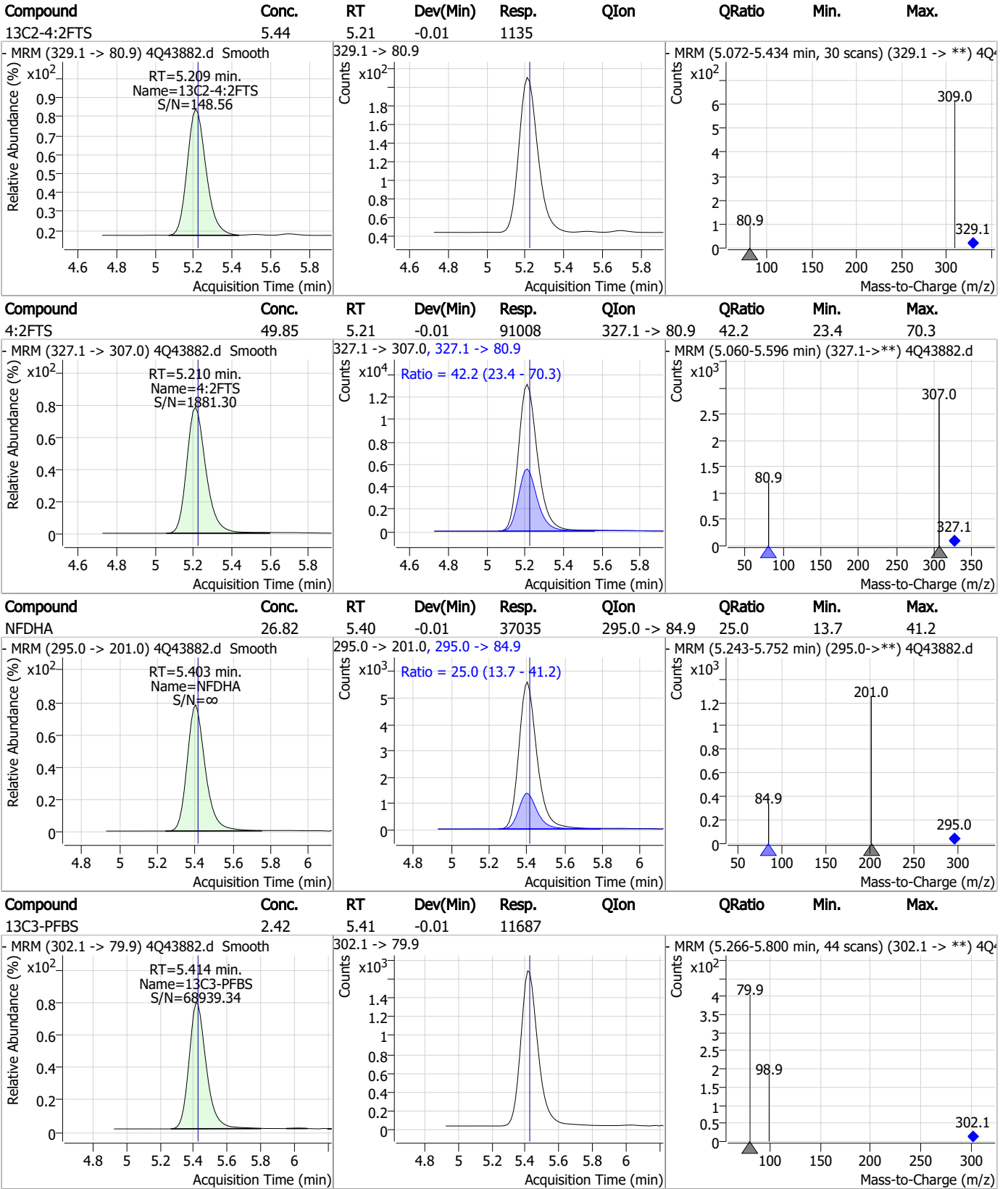
# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS

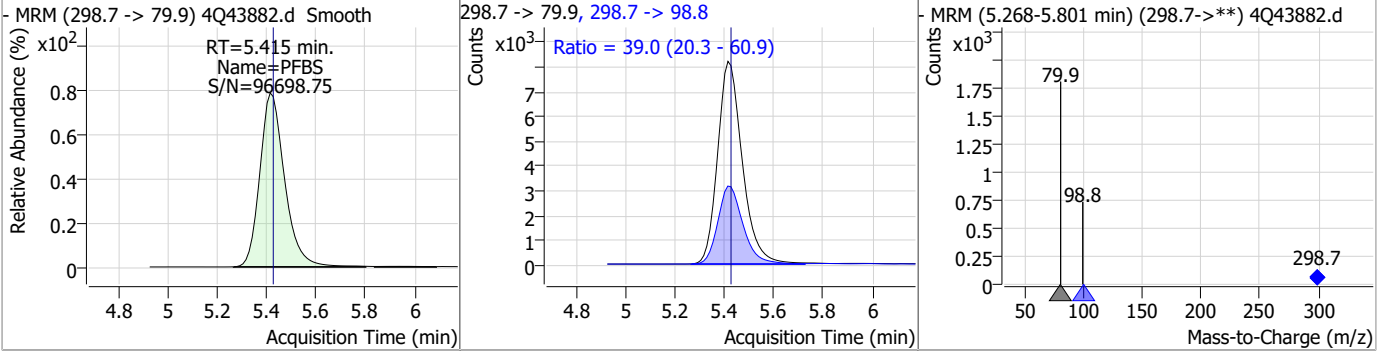


# Perfluorinated Compounds by LC/MS/MS

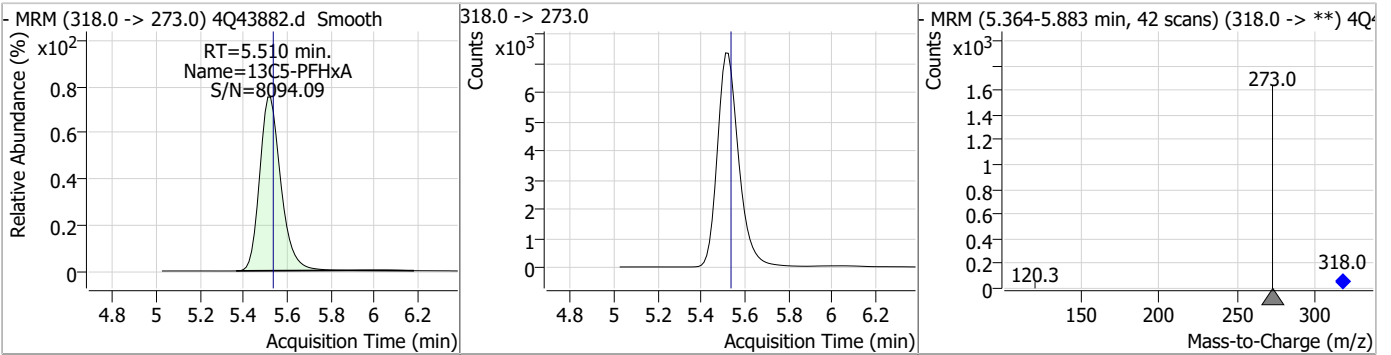


# Perfluorinated Compounds by LC/MS/MS

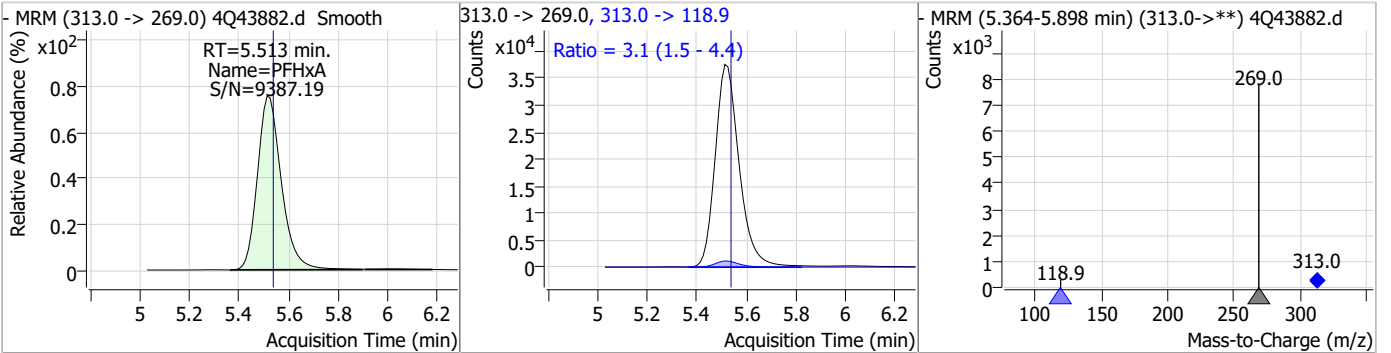
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	11.89	5.42	-0.01	57018	298.7 -> 98.8	39.0	20.3	60.9



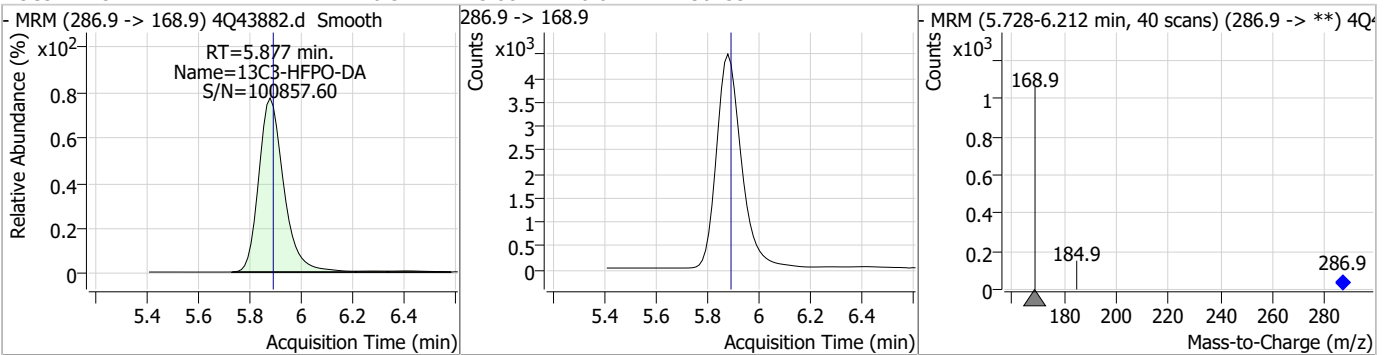
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.56	5.51	-0.02	49354				



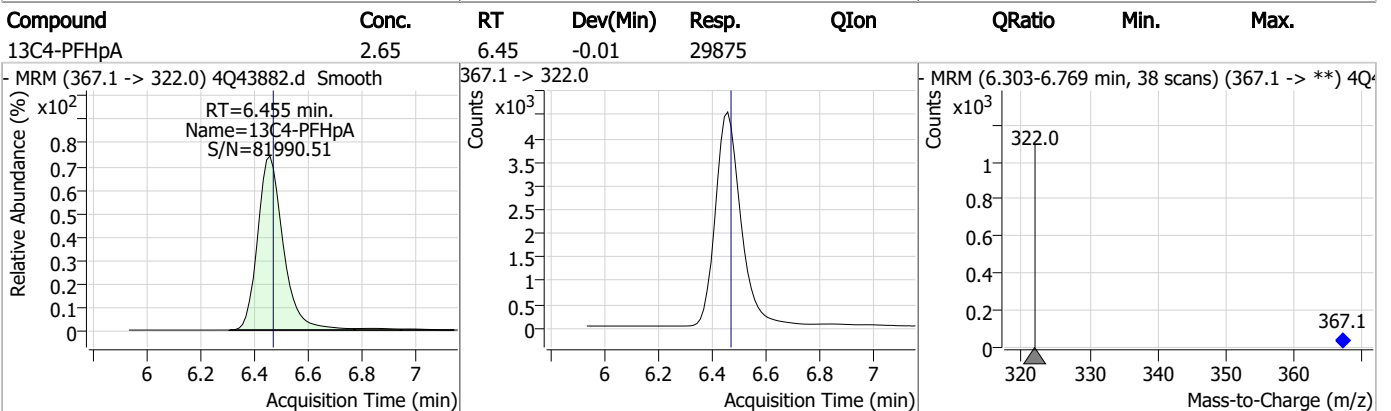
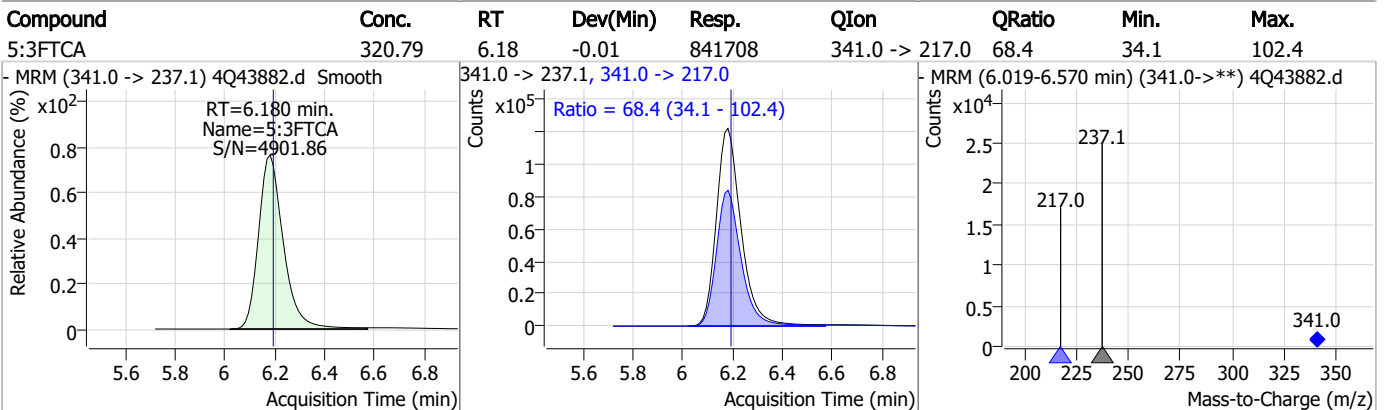
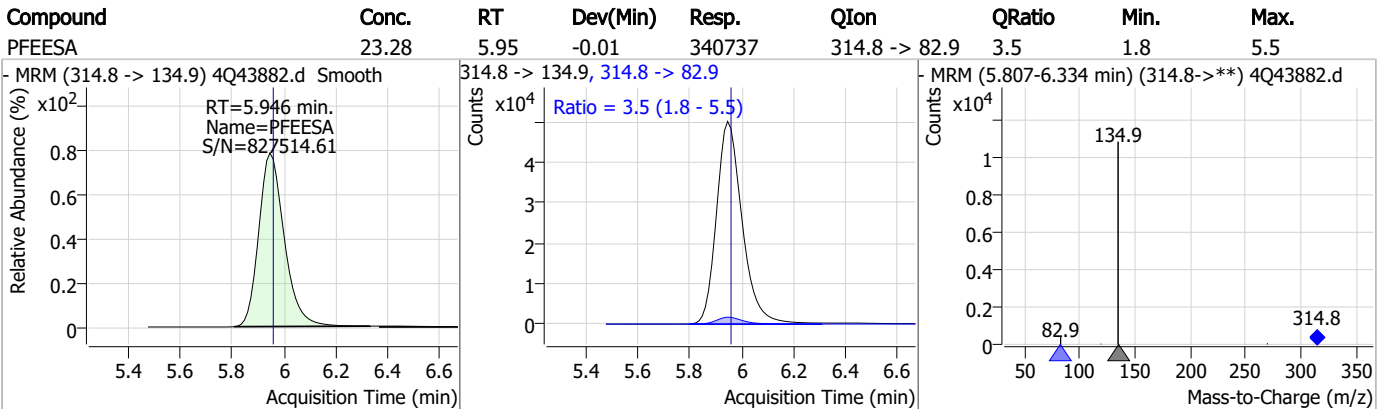
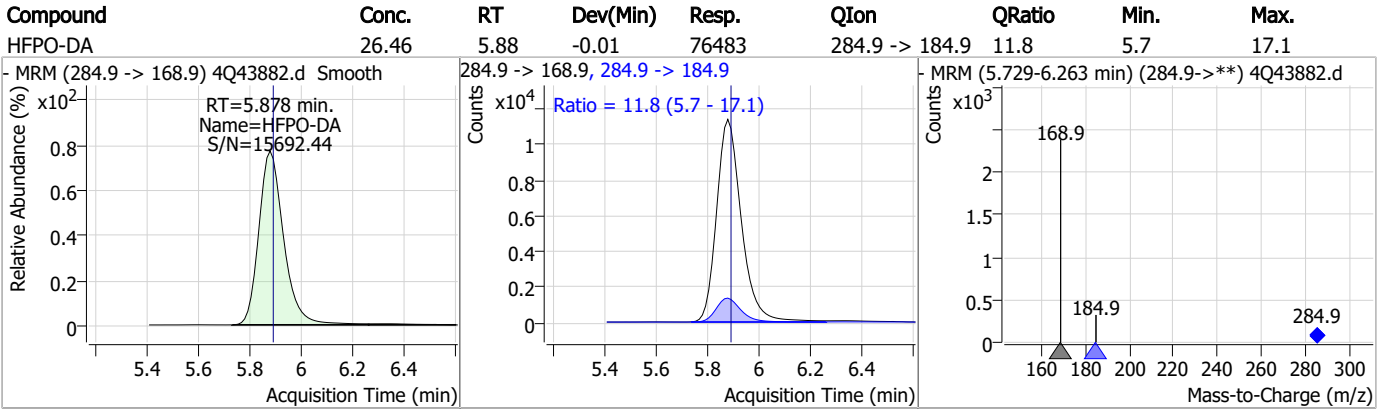
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	13.05	5.51	-0.02	252397	313.0 -> 118.9	3.1	1.5	4.4



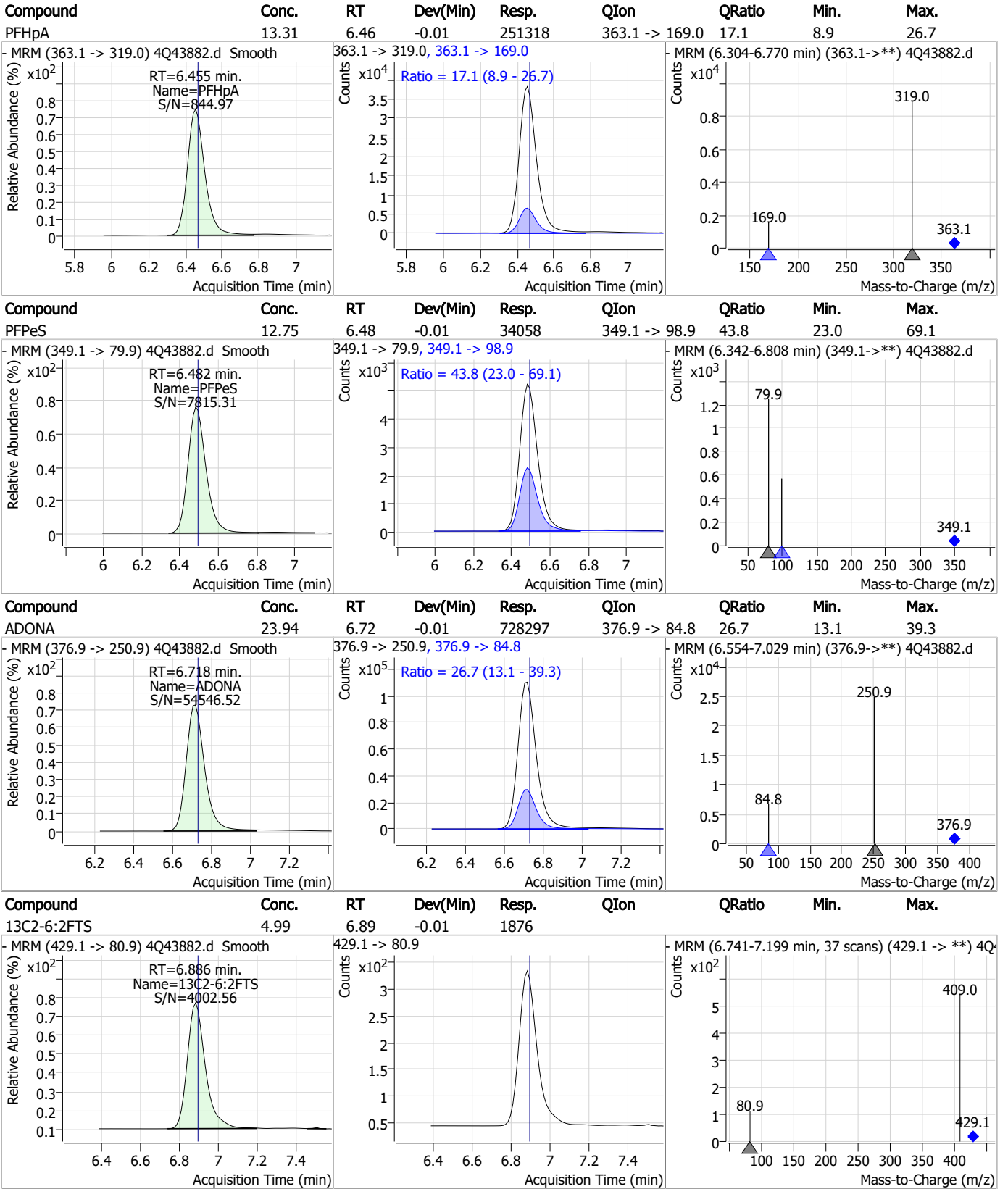
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.51	5.88	-0.01	30253				



# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS

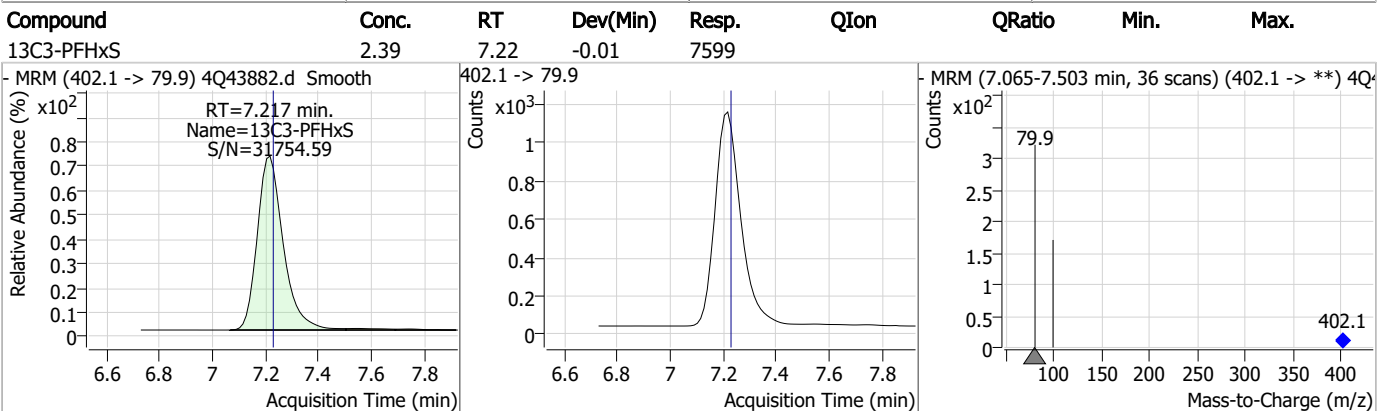
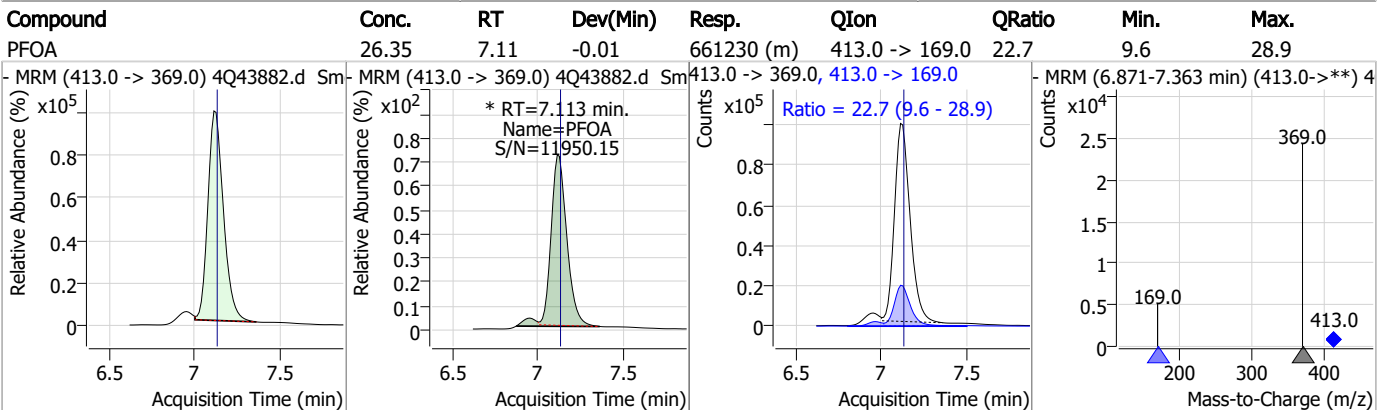
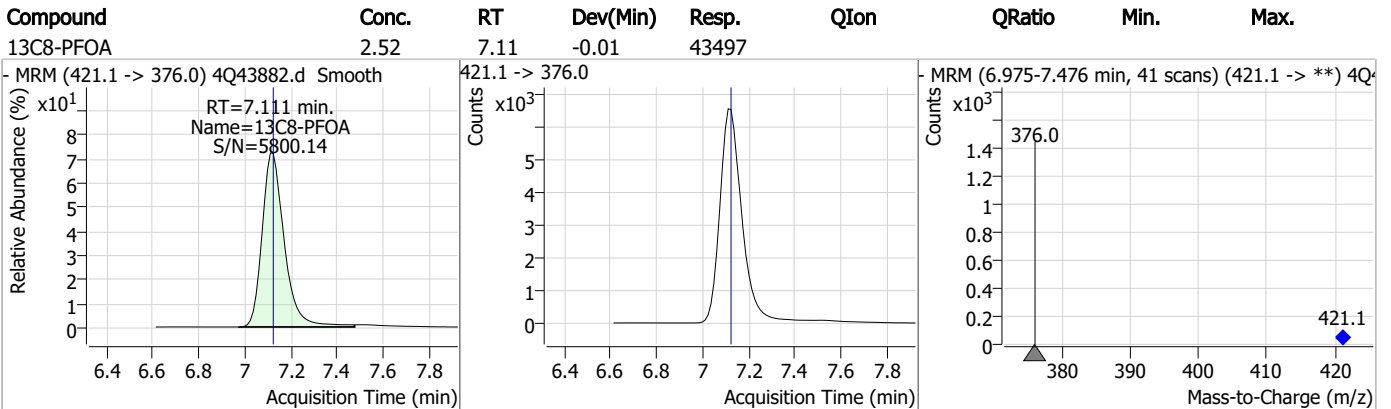
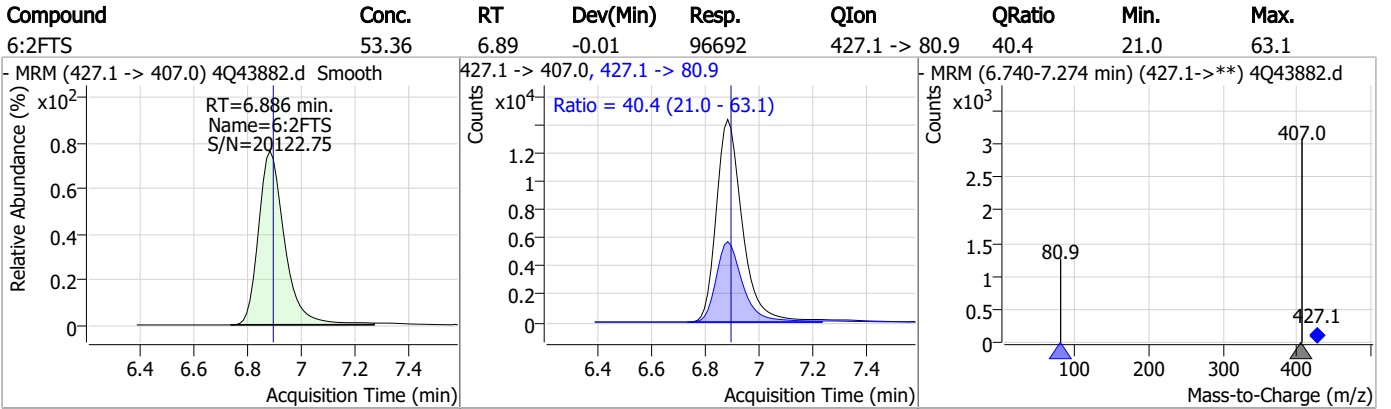


7.6.2  
7

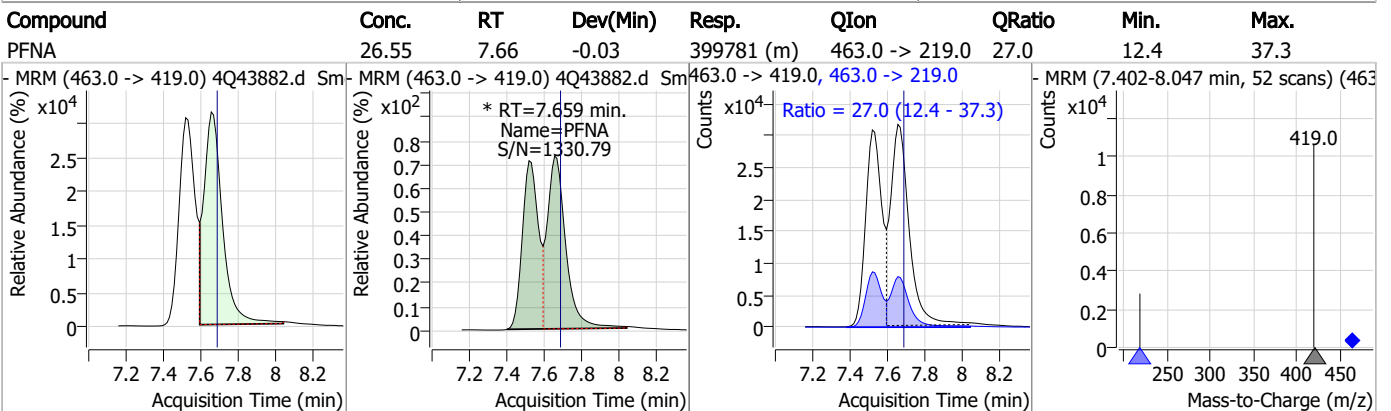
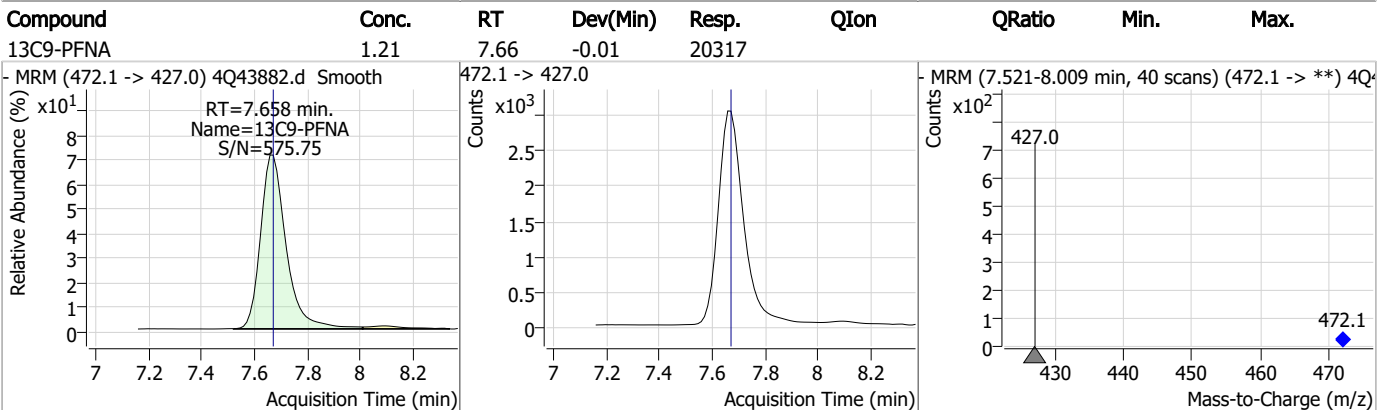
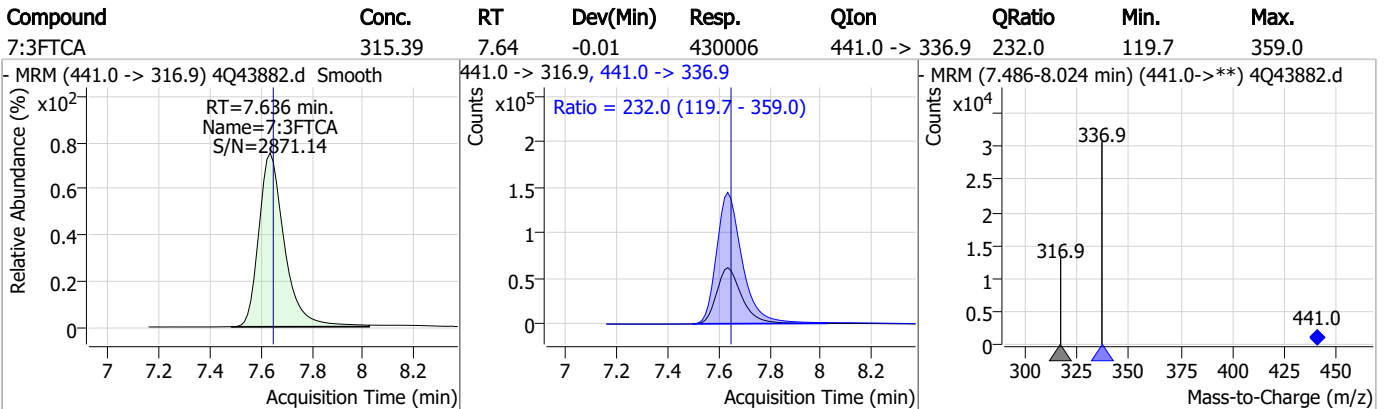
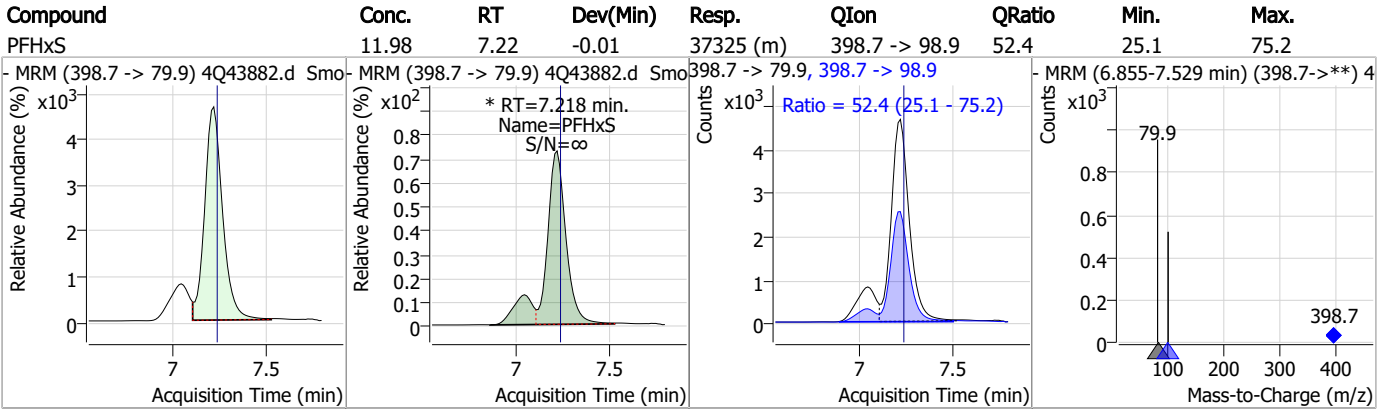




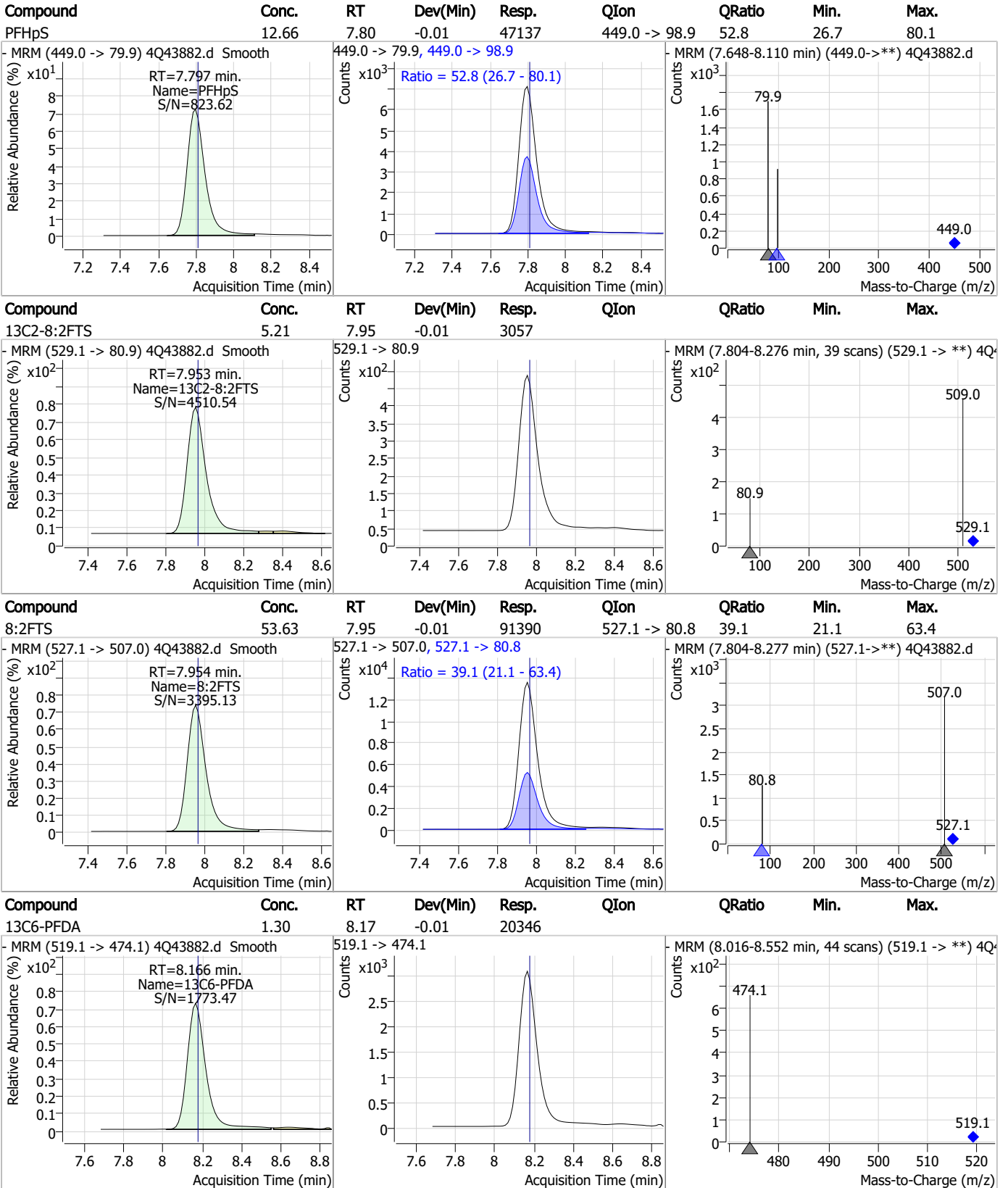
# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS



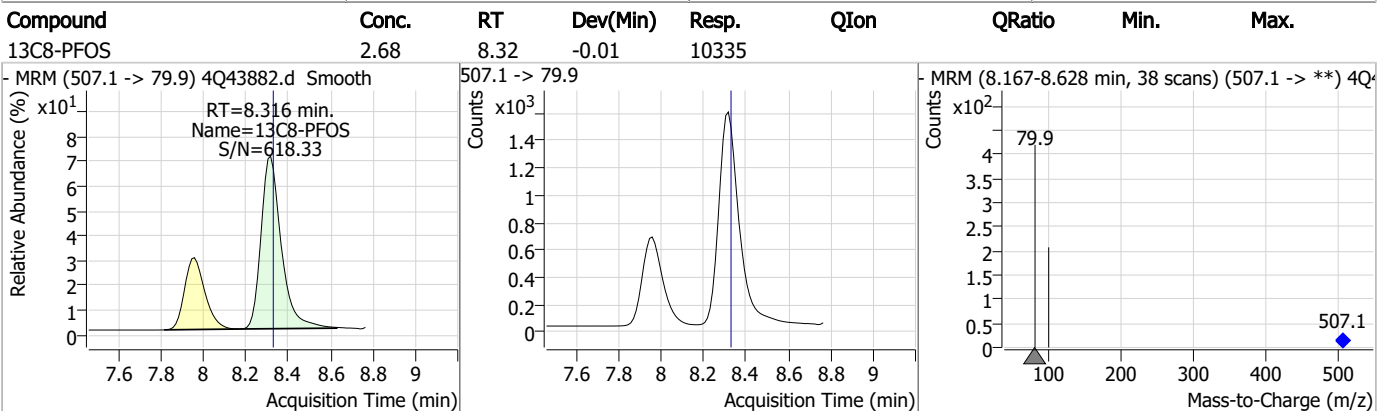
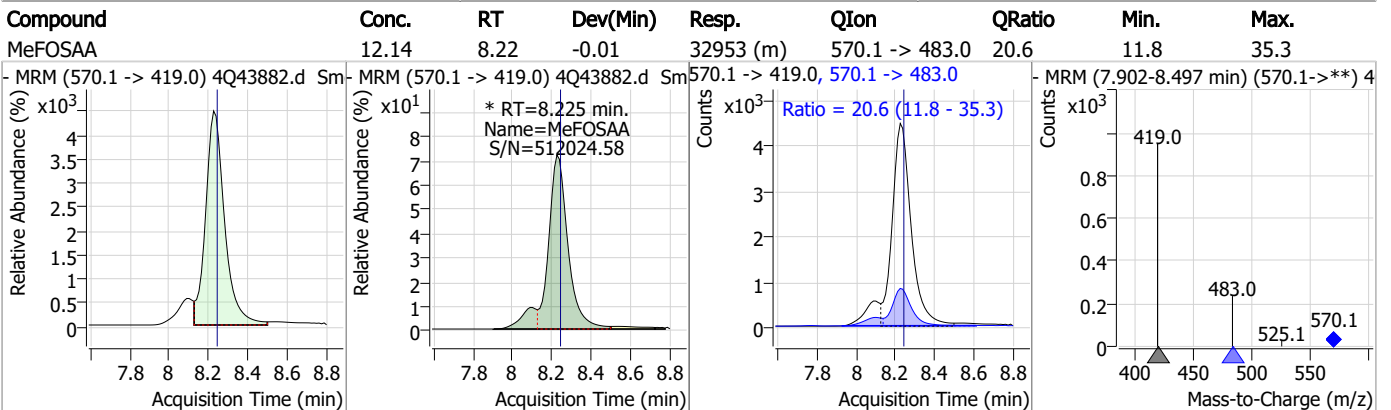
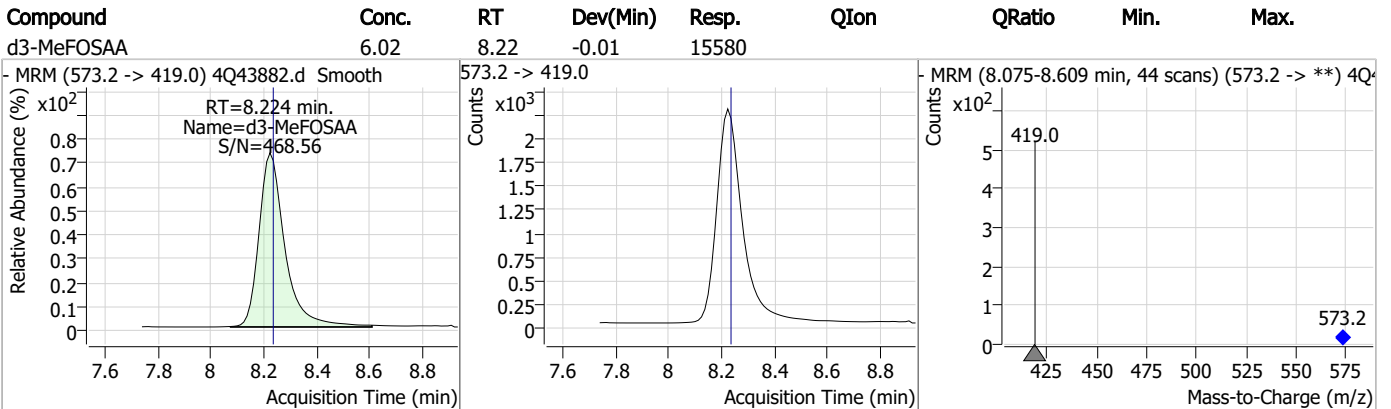
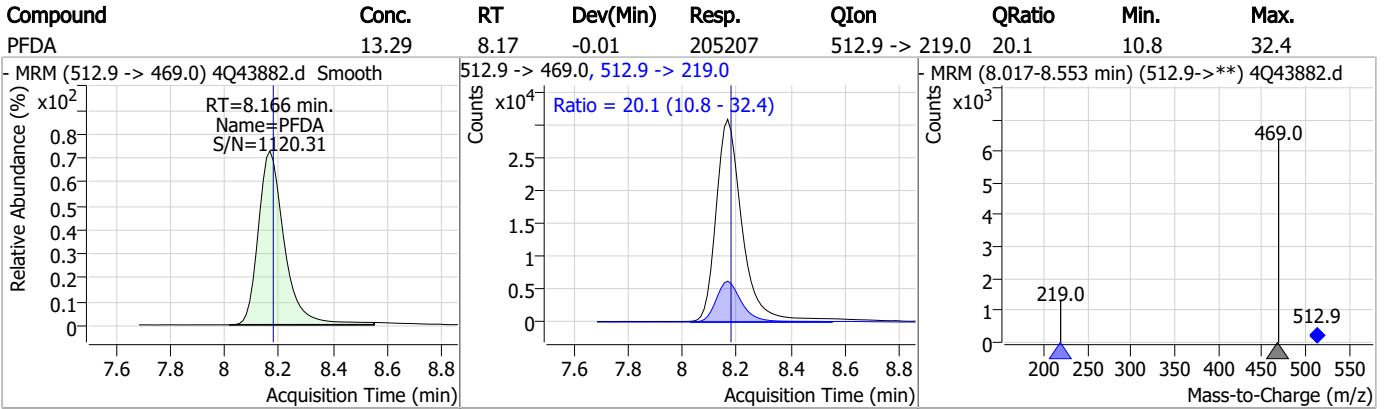
# Perfluorinated Compounds by LC/MS/MS



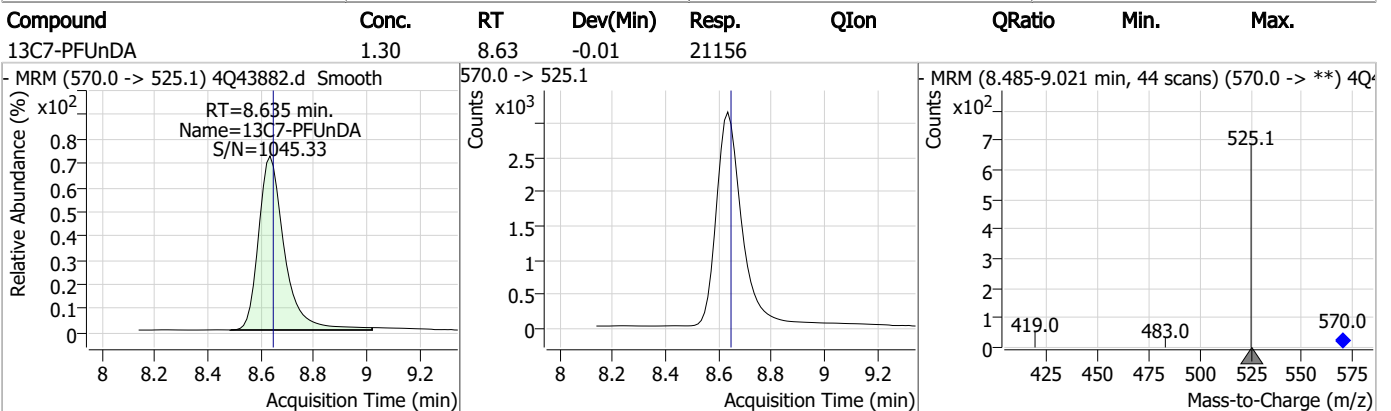
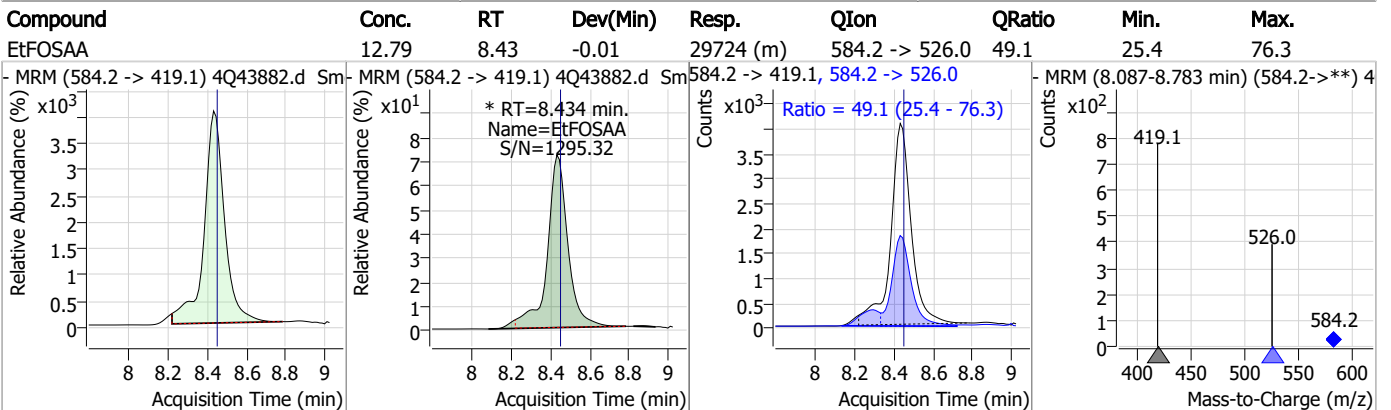
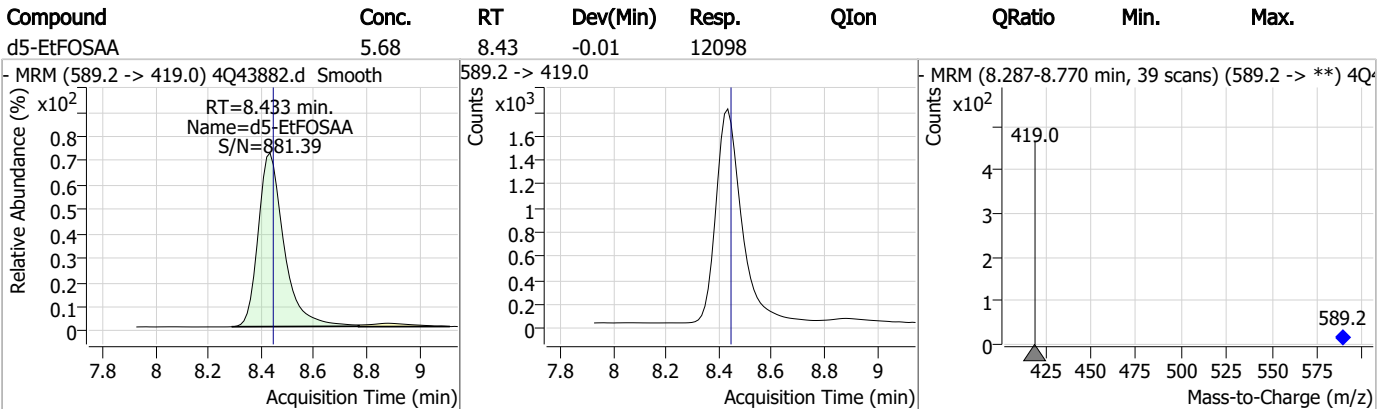
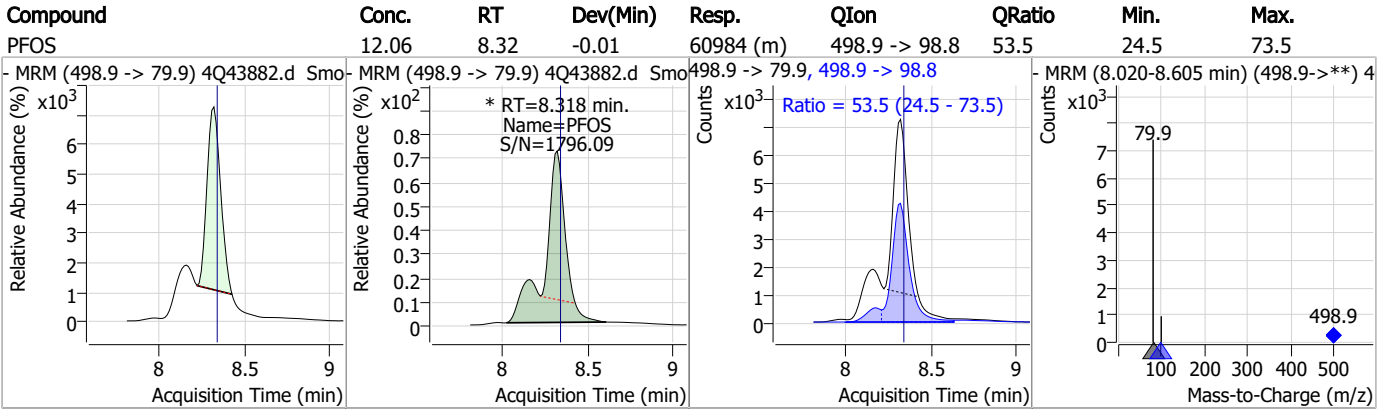
7.6.2

7

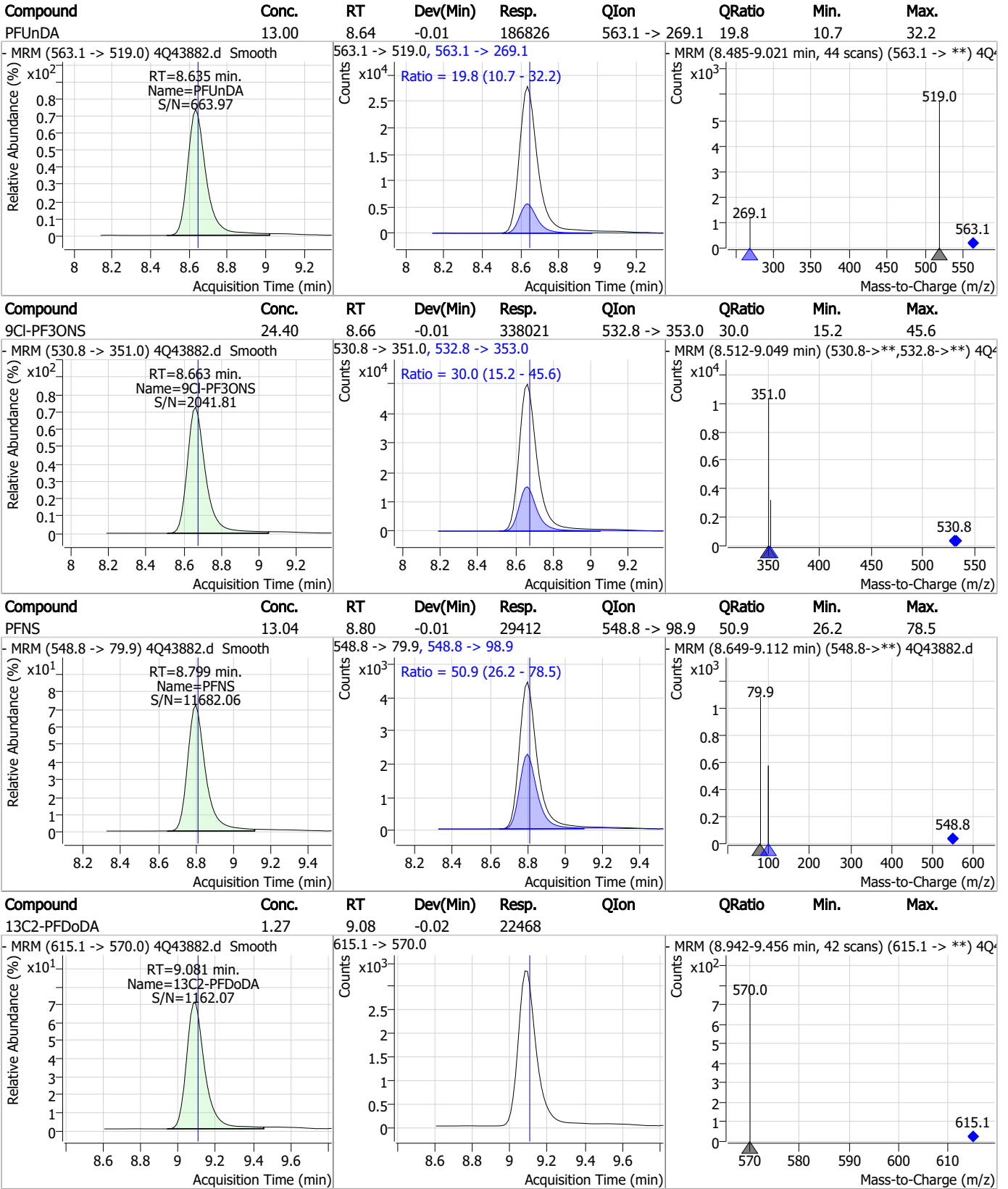
# Perfluorinated Compounds by LC/MS/MS



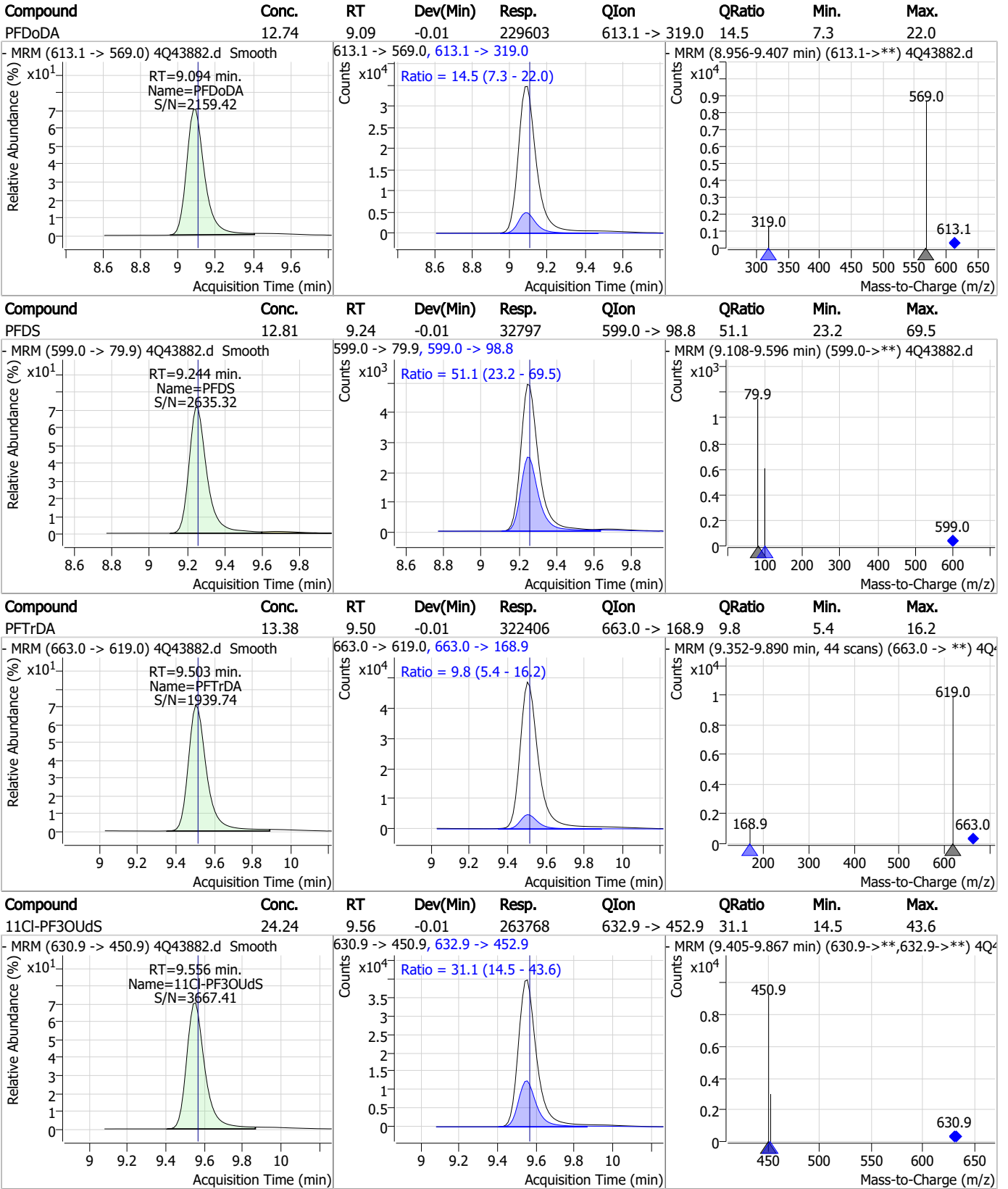
# Perfluorinated Compounds by LC/MS/MS



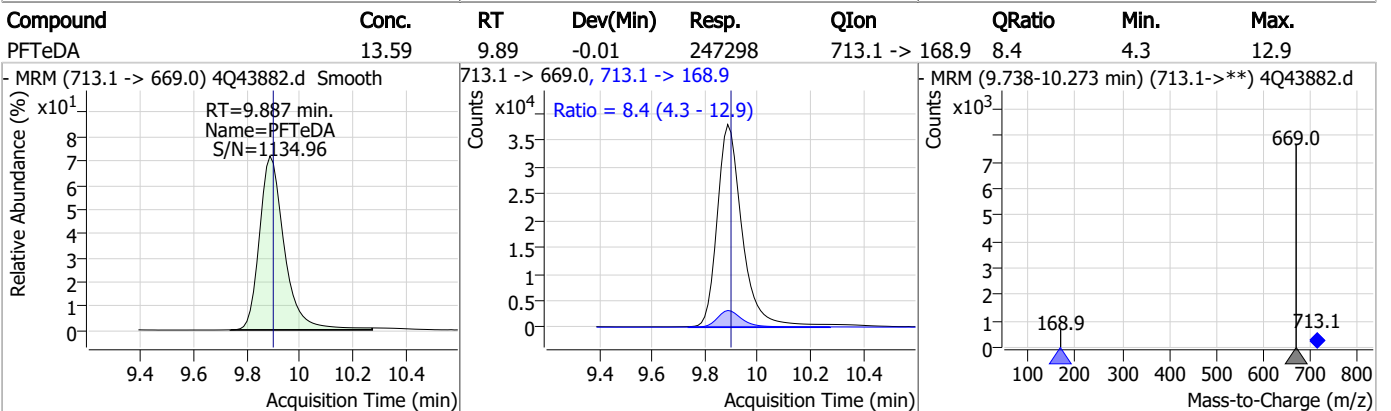
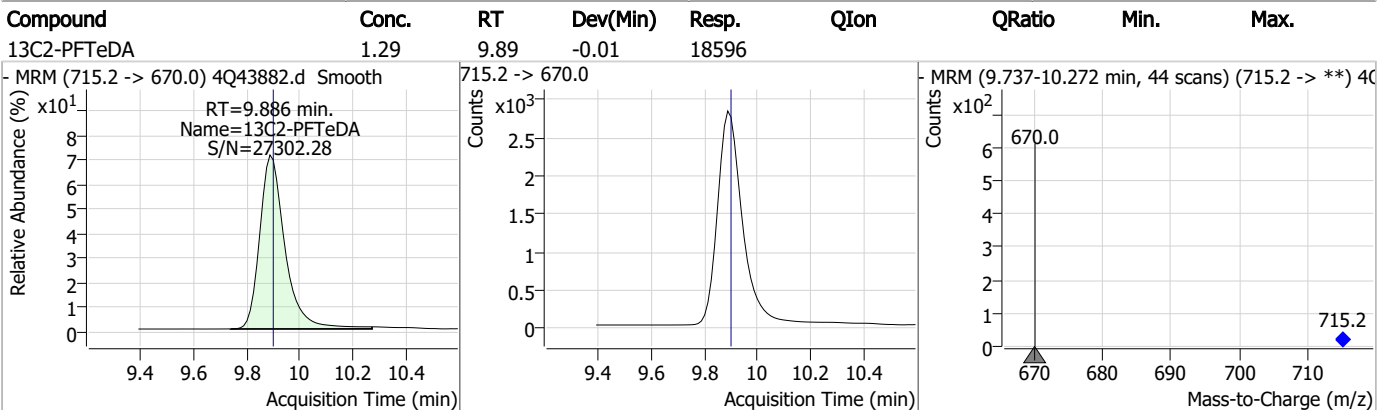
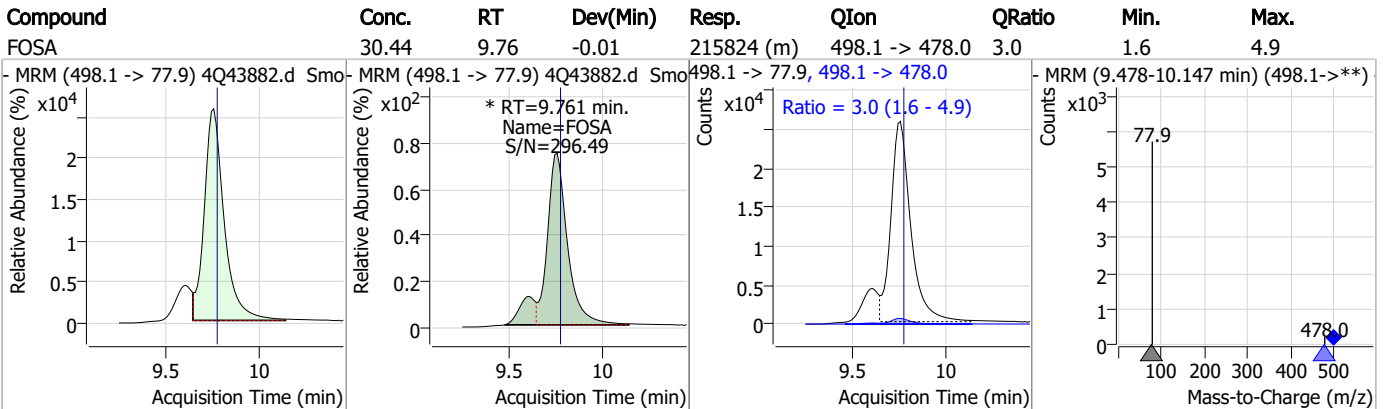
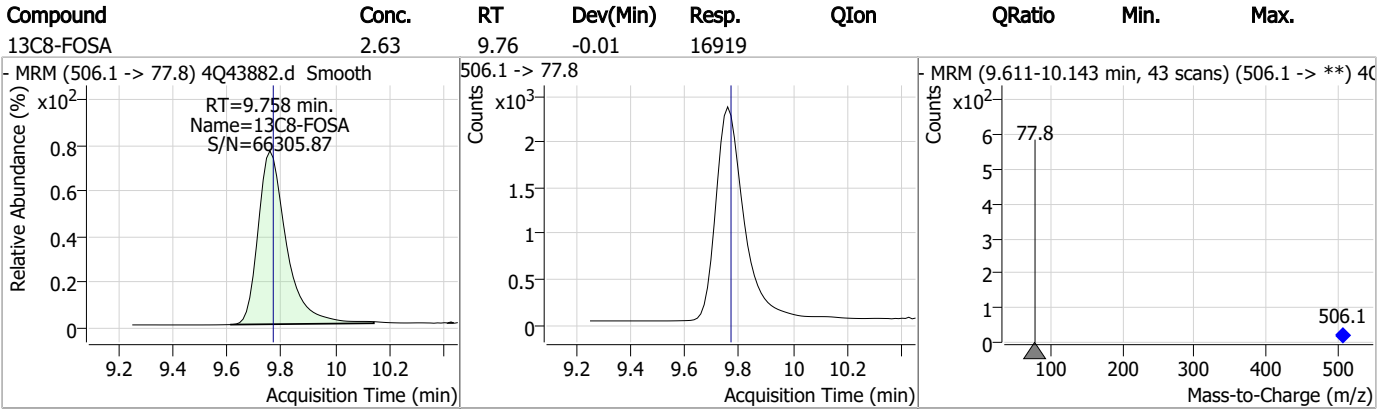
# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS



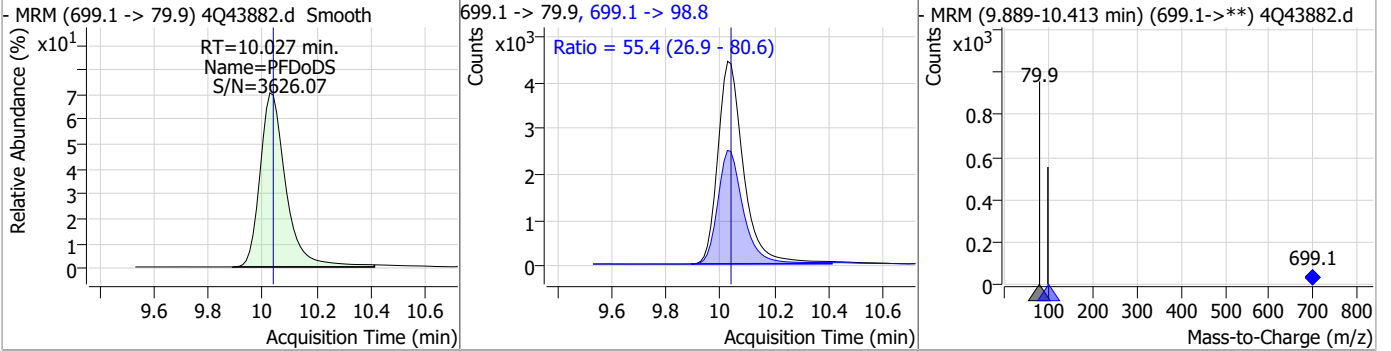
# Perfluorinated Compounds by LC/MS/MS



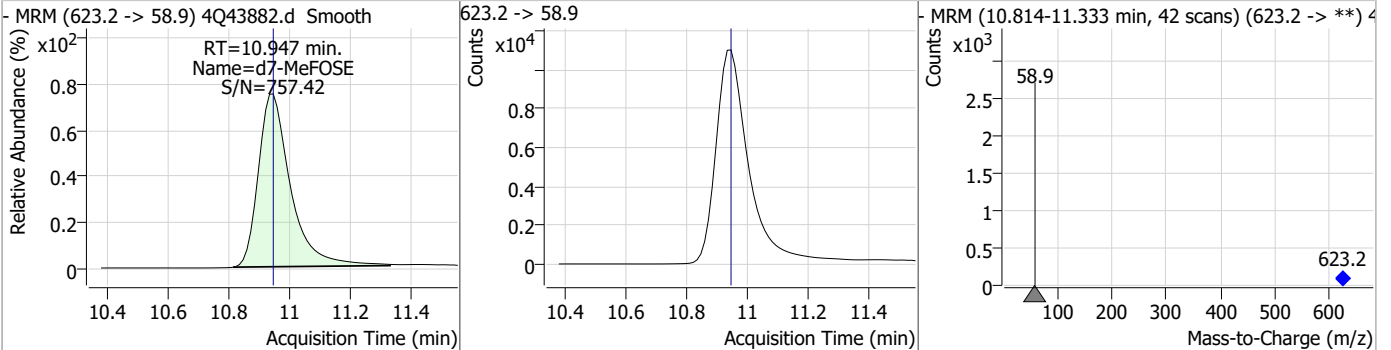


# Perfluorinated Compounds by LC/MS/MS

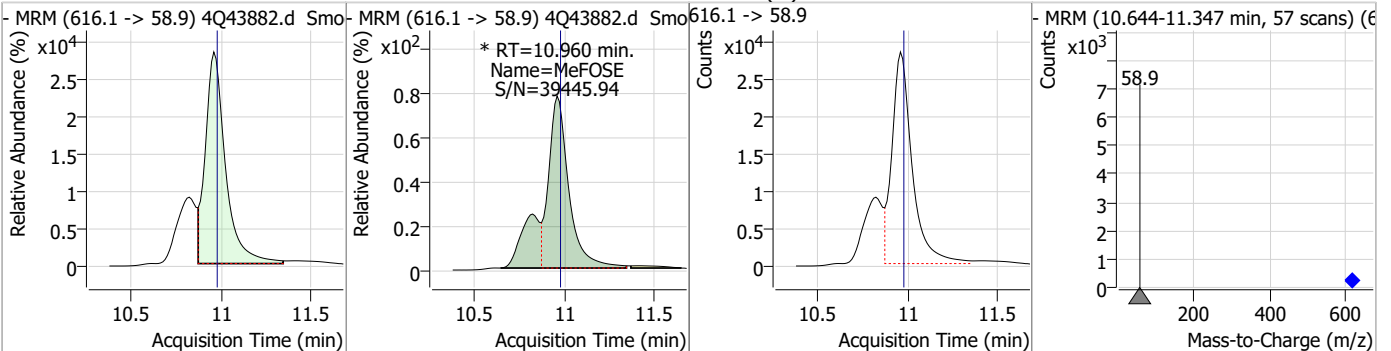
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	12.82	10.03	-0.01	29285	699.1 -> 98.8	55.4	26.9	80.6



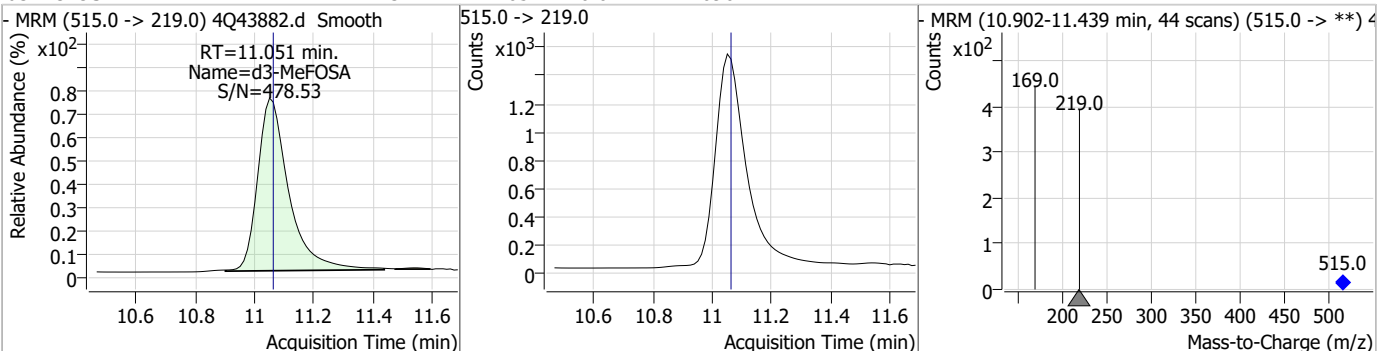
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.28	10.95	0.00	80643				



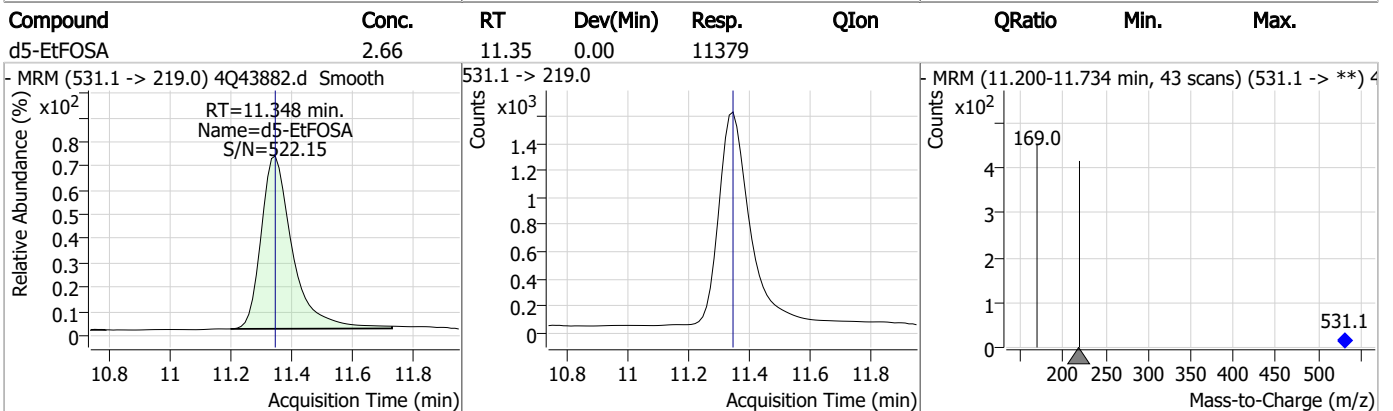
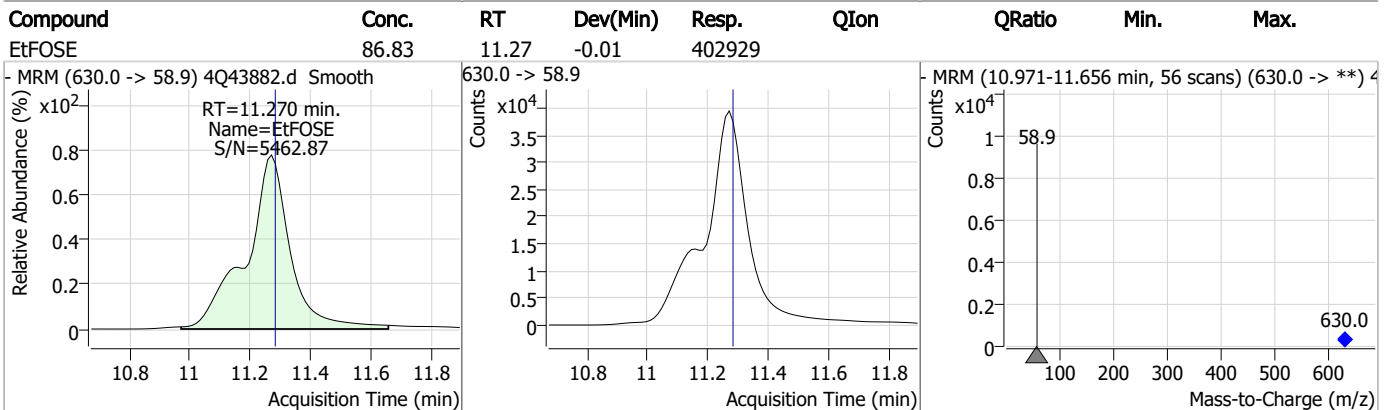
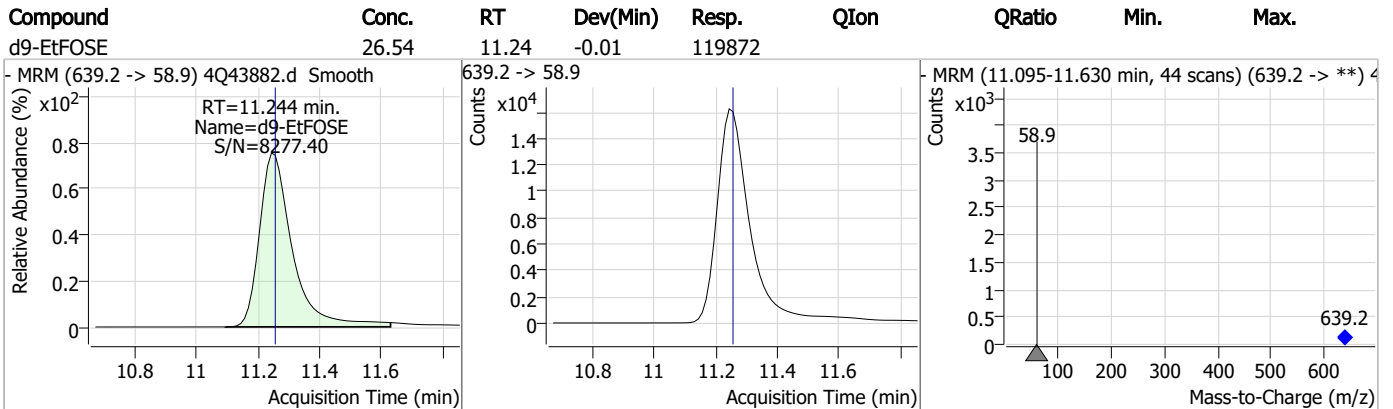
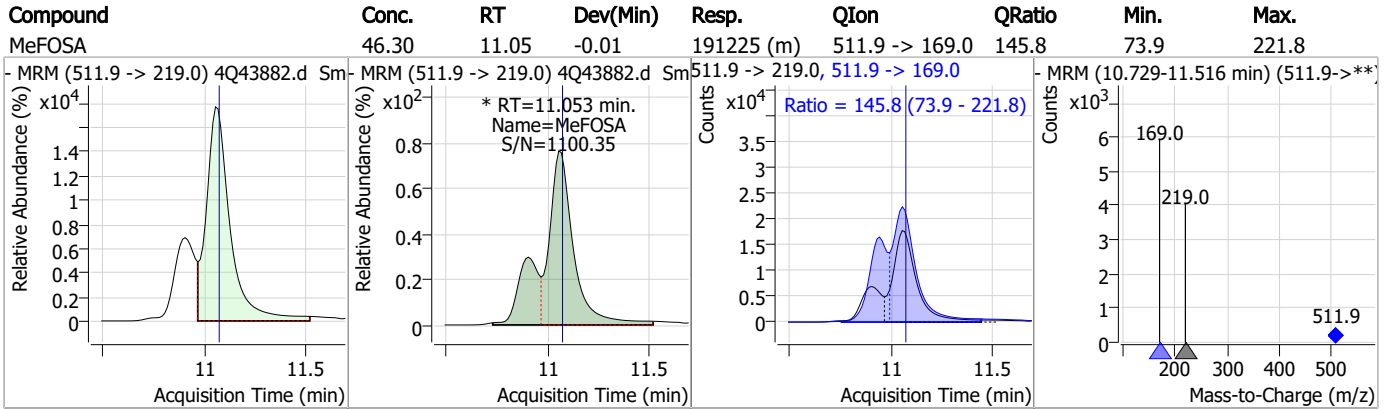
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	86.73	10.96	-0.01	287291 (m)				



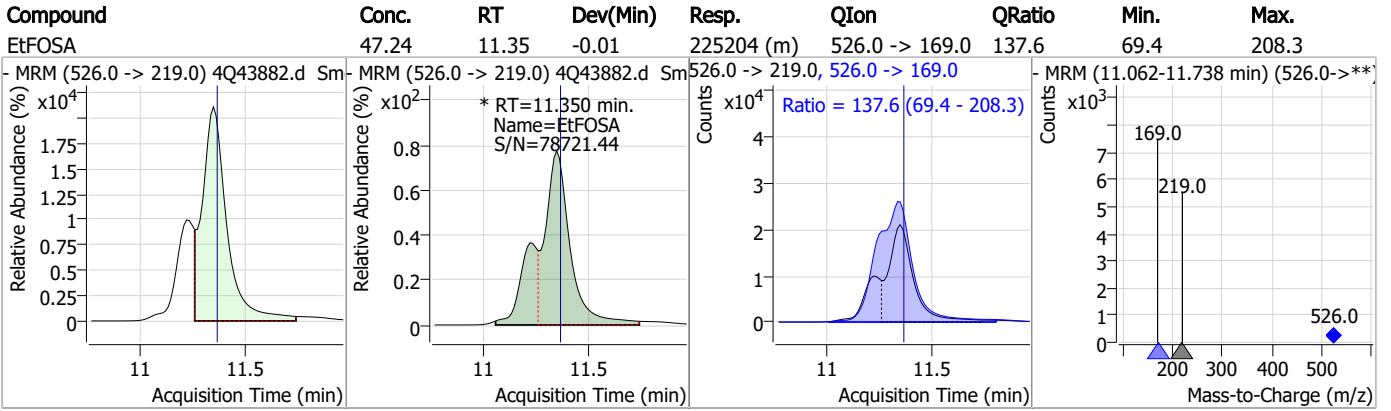
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.73	11.05	-0.01	10964				



# Perfluorinated Compounds by LC/MS/MS



# Perfluorinated Compounds by LC/MS/MS



7.6.2

7

# Manual Integration Approval Summary

Sample Number: S4Q634-RT                      Method: EPA DRAFT 1633  
Lab FileID: 4Q43882.D                      Analyst approved: 05/04/23 11:23 Natasha Gumtie  
Injection Time: 05/03/23 10:37                      Supervisor approved: 05/04/23 17:44 Norman Farmer

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

7.6.2.1  
7

## QQQ Check Tune Report

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

**Source Parameters**

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

### QQQ Check Tune Report



#### Negative Results

**Analyzer: MS1 Polarity: Negative Width: Unit**

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

**Analyzer: MS2 Polarity: Negative Width: Unit**

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.08	0.08	Pass	0.70	0.60	-0.10	Pass	43506
112.99	112.98	-0.01	Pass	0.70	0.71	0.01	Pass	146601
302.00	301.99	-0.01	Pass	0.70	0.66	-0.04	Pass	234306
601.98	601.92	-0.06	Pass	0.70	0.70	0.00	Pass	233181
1033.99	1033.85	-0.14	Pass	0.70	0.74	0.04	Pass	144228
1633.95	1633.70	-0.25	Adjust	0.70	0.78	0.08	Pass	201645
2233.91	2233.63	-0.28	Pass	0.70	0.79	0.09	Pass	82948

**Analyzer: MS1 Polarity: Negative Width: Wide**

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

**Analyzer: MS2 Polarity: Negative Width: Wide**

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

**Analyzer: MS1 Polarity: Negative Width: Widest**

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.91	-0.08	Pass	2.50	2.53	0.03	Pass	390598
302.00	302.01	0.01	Pass	2.50	2.70	0.20	Pass	510334
601.98	602.05	0.07	Pass	2.50	2.73	0.23	Pass	1033779
1033.99	1034.01	0.02	Pass	2.50	2.75	0.25	Pass	2141360
1633.95	1633.92	-0.03	Pass	2.50	2.63	0.13	Pass	6705580
2233.91	2233.79	-0.12	Pass	2.50	2.42	-0.08	Pass	4259918

**Analyzer: MS2 Polarity: Negative Width: Widest**

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.04	0.04	Pass	2.50	2.37	-0.13	Pass	76909
112.99	112.97	-0.02	Pass	2.50	2.50	0.00	Pass	286009
302.00	301.99	-0.01	Pass	2.50	2.68	0.18	Pass	456032
601.98	601.95	-0.03	Pass	2.50	2.79	0.29	Pass	609214
1033.99	1033.83	-0.16	Pass	2.50	2.85	0.35	Pass	451181
1633.95	1633.68	-0.27	Pass	2.50	2.72	0.22	Pass	1021433
2233.91	2233.59	-0.32	Pass	2.50	2.47	-0.03	Pass	789629

7.7.1  
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43884.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 11:12:11 AM  
 Sample Name : ic634-1  
 Vial : P1-A2  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

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

7.7.2  
7

## Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C4-PFBA	2.911	216.8 -> 171.9	133324	10.01 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.1%	
13C4-PFHpA	6.455	367.1 -> 322.0	30242	2.60 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C5-PFHxA	5.522	318.0 -> 273.0	51396	2.59 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.4%	
13C5-PFPeA	4.362	268.3 -> 223.0	70436	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C6-PFDA	8.166	519.1 -> 474.1	20136	1.25 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C7-PFUnDA	8.635	570.0 -> 525.1	21422	1.28 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C8-FOSA	9.758	506.1 -> 77.8	17575	2.31 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.3%	
13C8-PFOA	7.124	421.1 -> 376.0	42914	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C8-PFOS	8.316	507.1 -> 79.9	10530	2.30 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.1%	
13C9-PFNA	7.670	472.1 -> 427.0	20504	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
d3-MeFOSAA	8.224	573.2 -> 419.0	14225	4.64 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.8%	
13C3-HFPO-DA	5.877	286.9 -> 168.9	29384	9.90 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.0%	
d3-MeFOSA	11.064	515.0 -> 219.0	11108	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.3%	
d5-EtFOSAA	8.433	589.2 -> 419.0	10858	4.30 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 86.1%	
d7-MeFOSE	10.947	623.2 -> 58.9	84284	22.31 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 89.3%	
d9-EtFOSE	11.256	639.2 -> 58.9	127257	23.79 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
d5-EtFOSA	11.348	531.1 -> 219.0	12371	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.209	327.1 -> 307.0	1373	0.72 µg/L	99
		327.1 -> 80.9	654		
6:2FTS	6.886	427.1 -> 407.0	1456	0.72 µg/L	78
		427.1 -> 80.9	820		
8:2FTS	7.954	527.1 -> 507.0	1265	0.73 µg/L	99
		527.1 -> 80.8	529		
EtFOSAA	8.446	584.2 -> 419.1	415	0.20 µg/L	m 91
		584.2 -> 526.0	236		
FOSA	9.761	498.1 -> 77.9	1434	0.19 µg/L	99
		498.1 -> 478.0	51		
MeFOSAA	8.237	570.1 -> 419.0	578	0.23 µg/L	m 93
		570.1 -> 483.0	157		
PFBA	2.920	212.8 -> 168.9	2671	0.75 µg/L	100
PFBS	5.415	298.7 -> 79.9	887	0.17 µg/L	94
		298.7 -> 98.8	396		
PFDA	8.166	512.9 -> 469.0	2822	0.18 µg/L	96
		512.9 -> 219.0	561		
PFDODA	9.094	613.1 -> 569.0	3581	0.21 µg/L	m 93
		613.1 -> 319.0	631		
PFDS	9.257	599.0 -> 79.9	464	0.18 µg/L	93



## Perfluorinated Compounds by LC/MS/MS

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

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

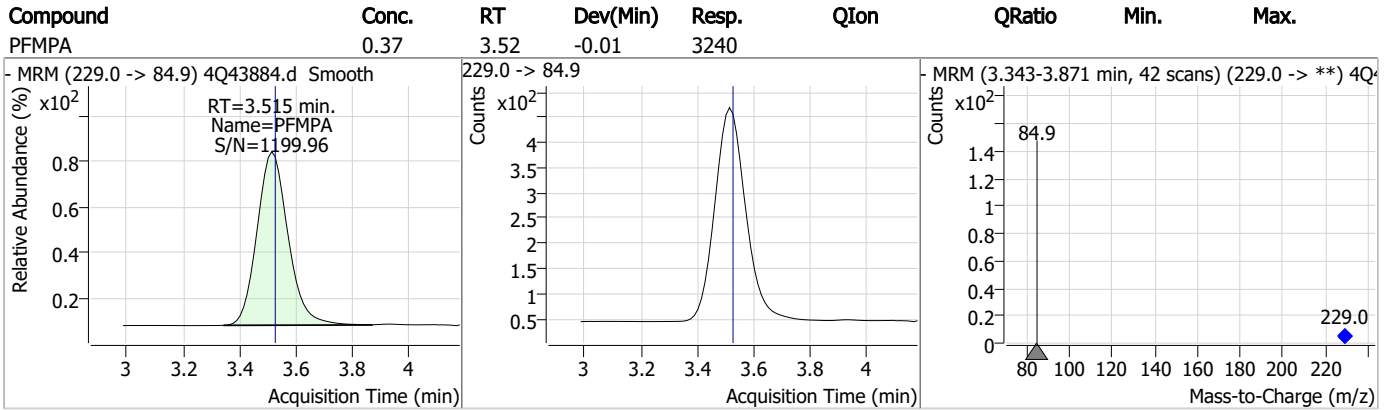
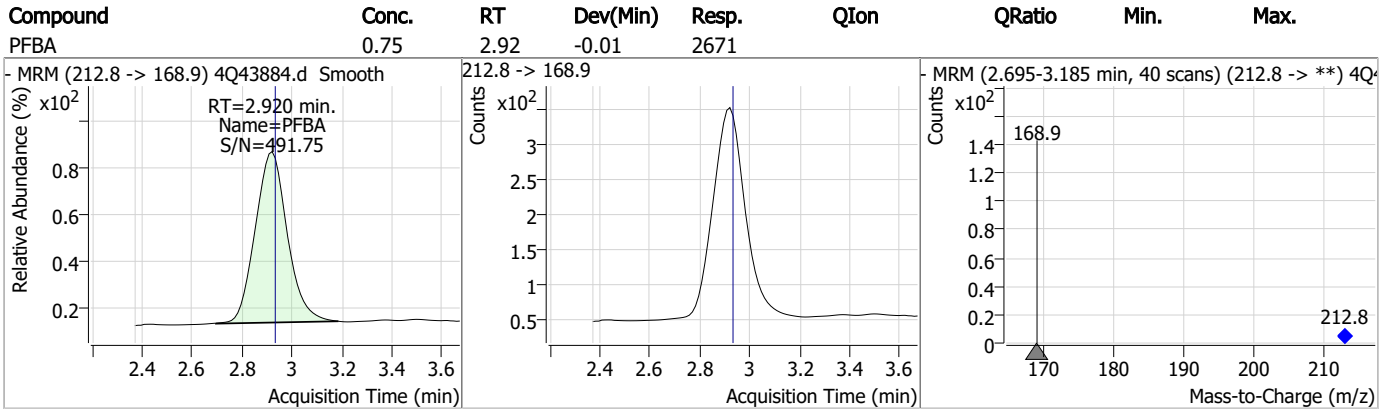
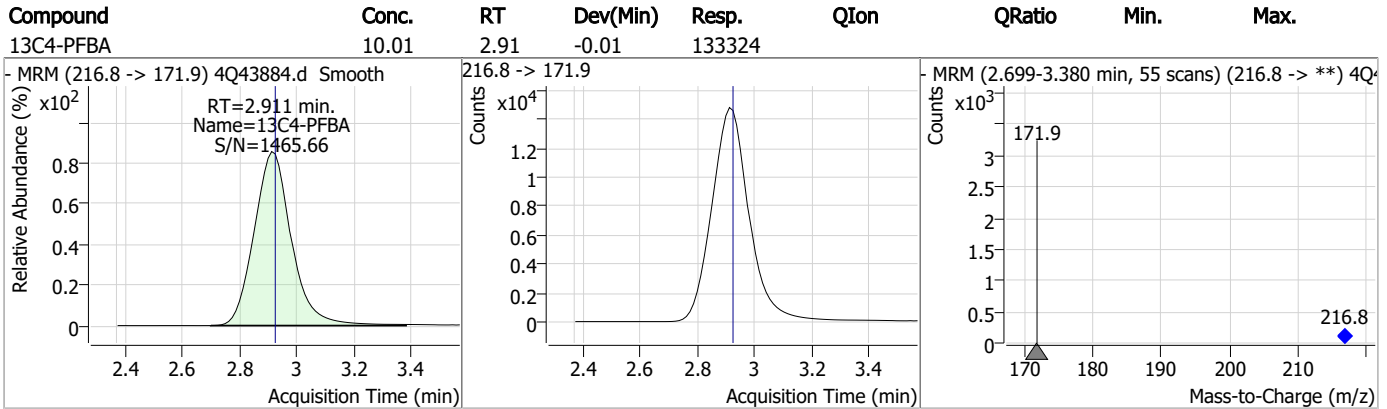
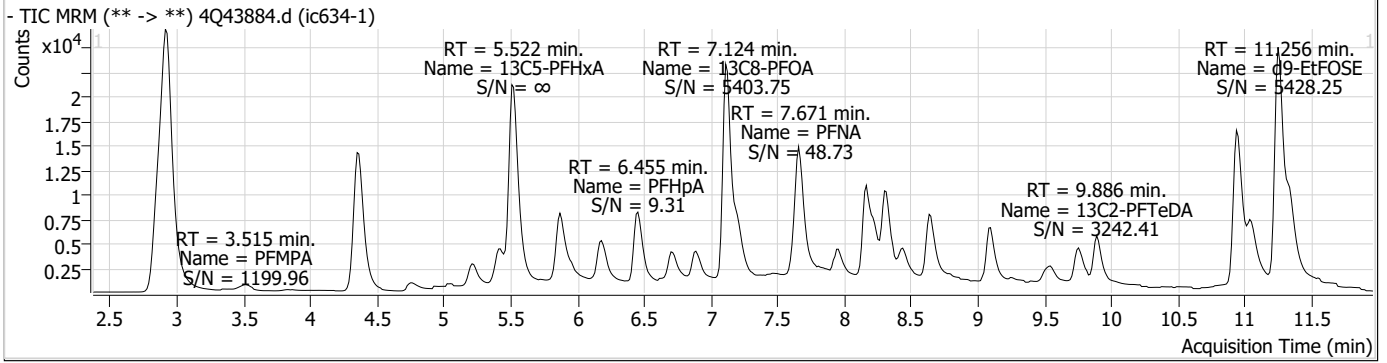
### Perfluorinated Compounds by LC/MS/MS

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

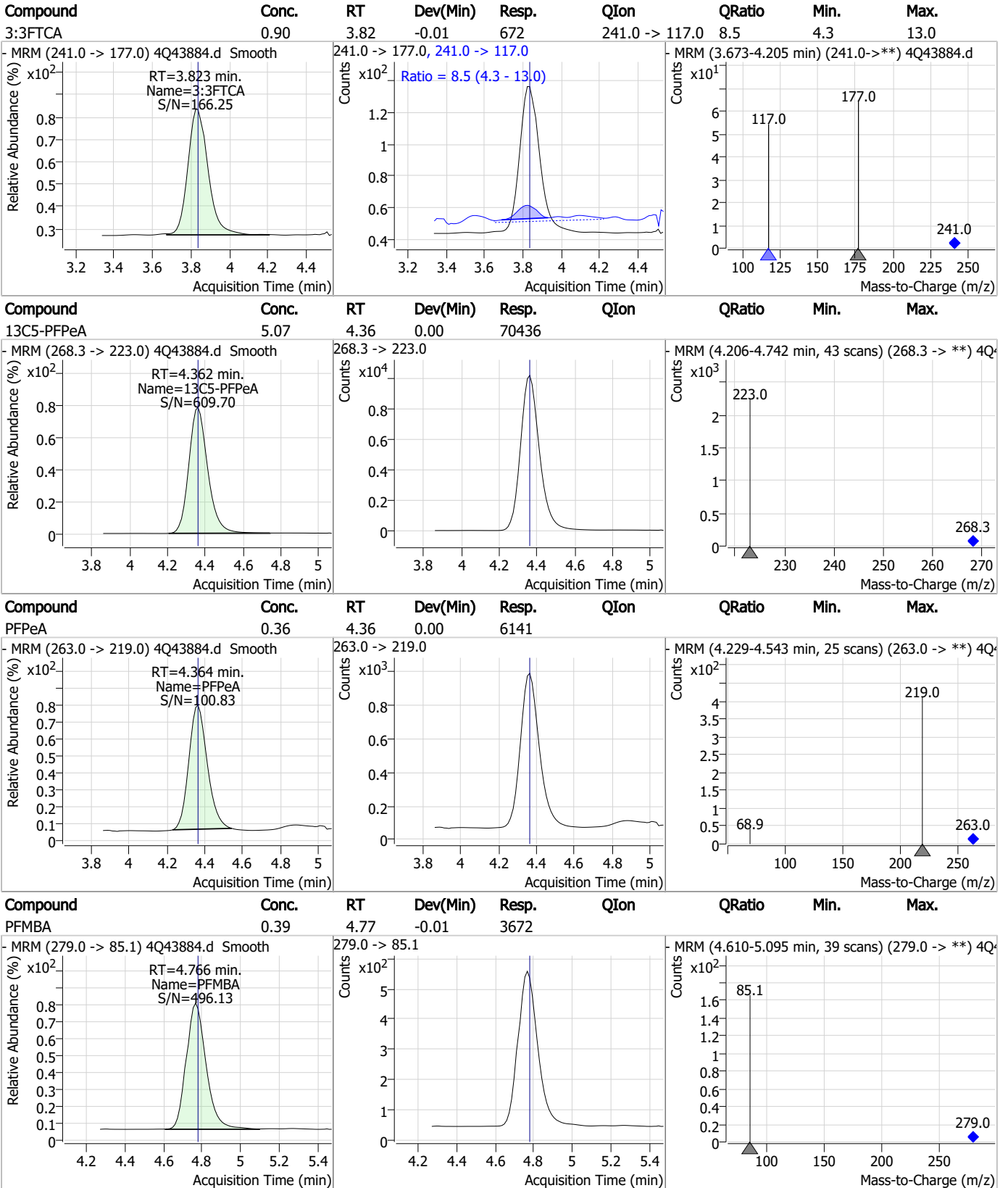
7.7.2  
7



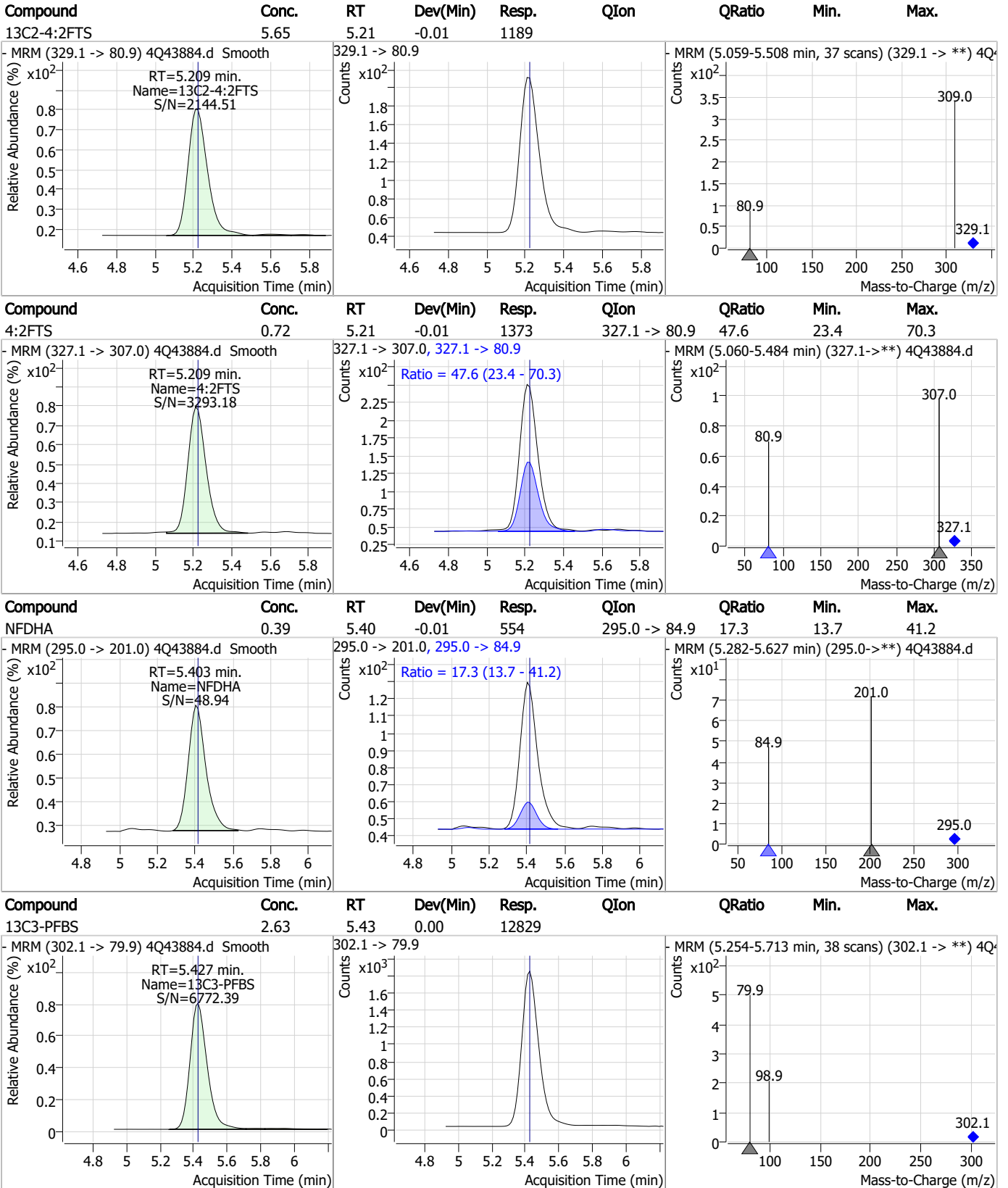
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



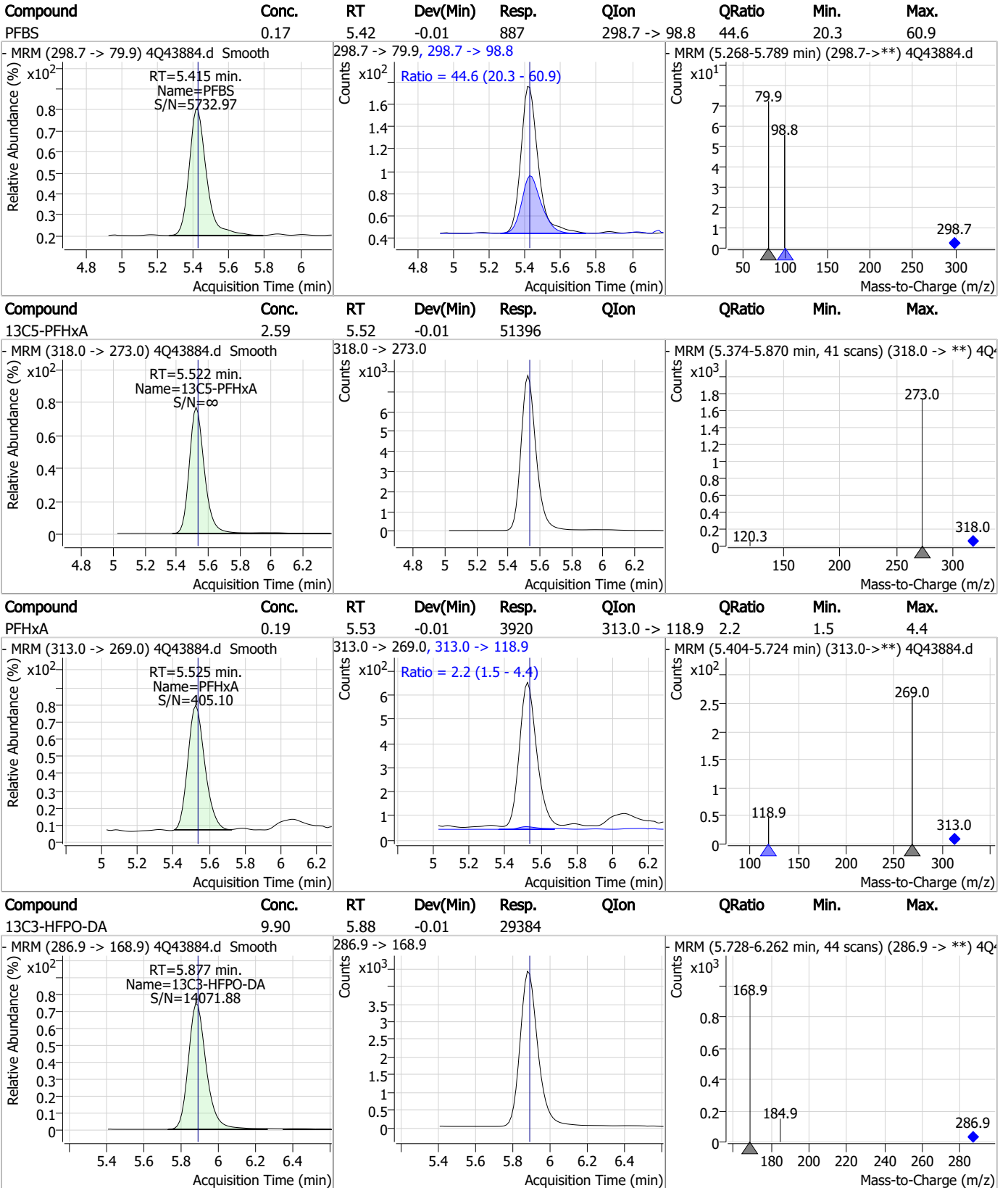
### Perfluorinated Compounds by LC/MS/MS



7.7.2

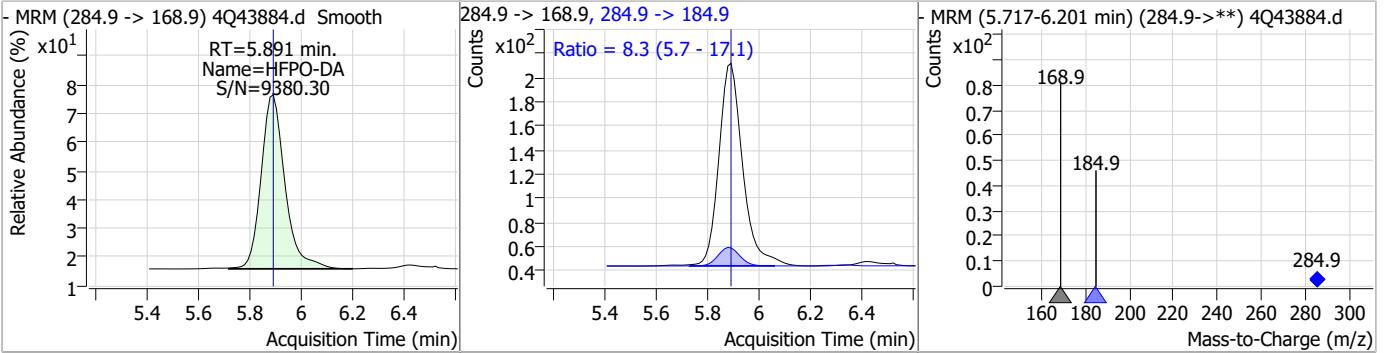
7

### Perfluorinated Compounds by LC/MS/MS

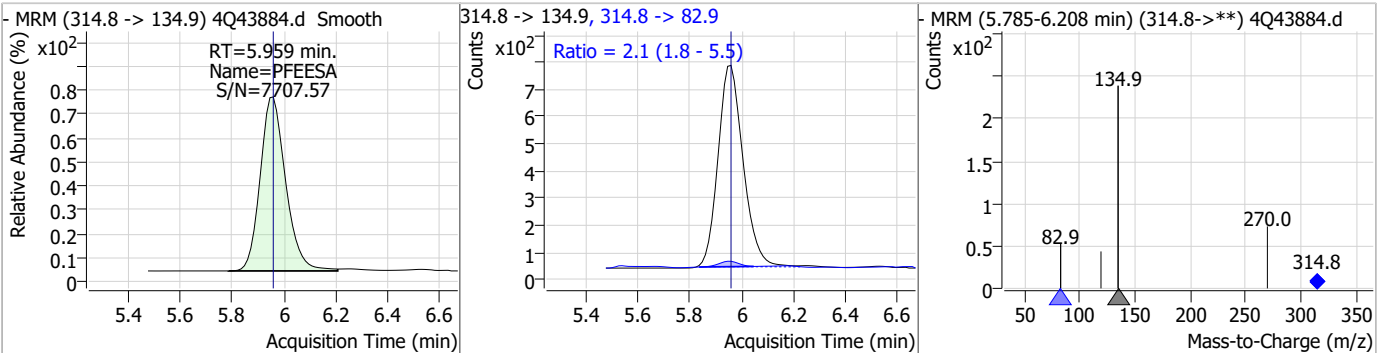


### Perfluorinated Compounds by LC/MS/MS

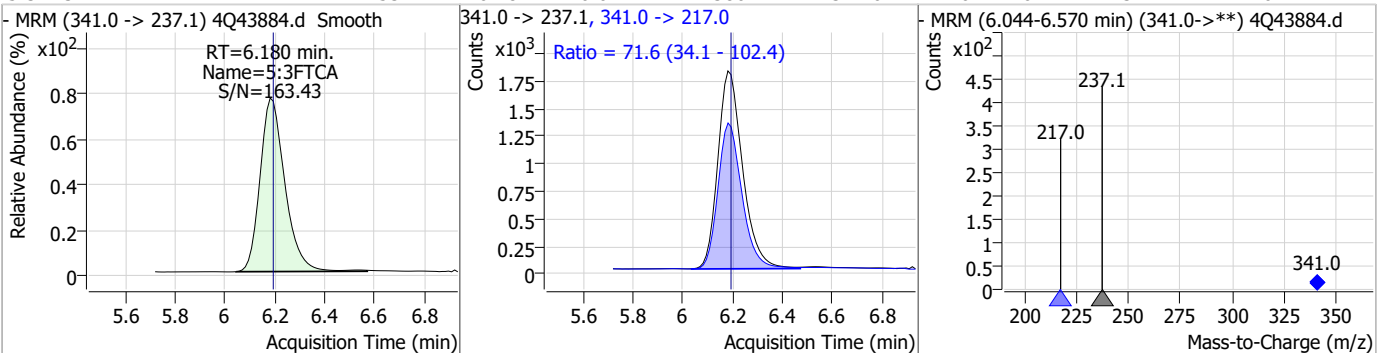
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	0.39	5.89	0.00	1087	284.9 -> 184.9	8.3	5.7	17.1



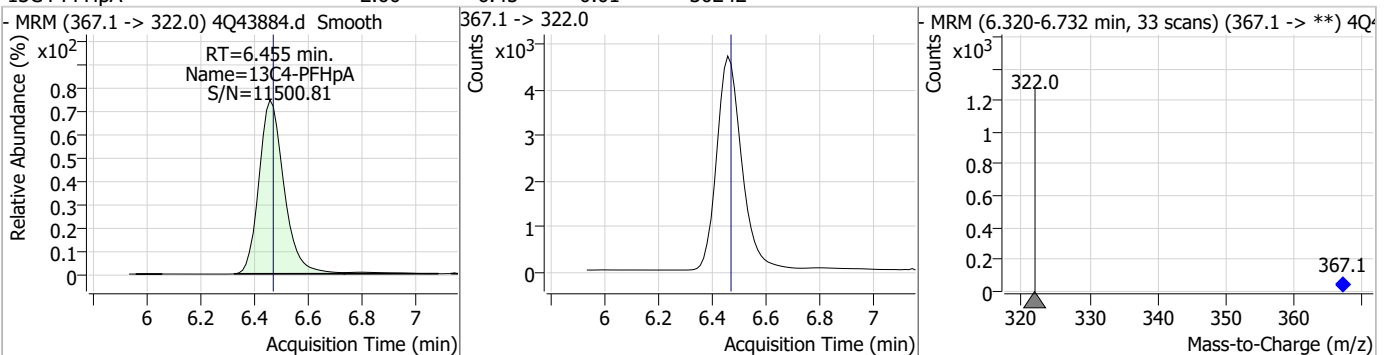
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	0.33	5.96	0.00	5092	314.8 -> 82.9	2.1	1.8	5.5



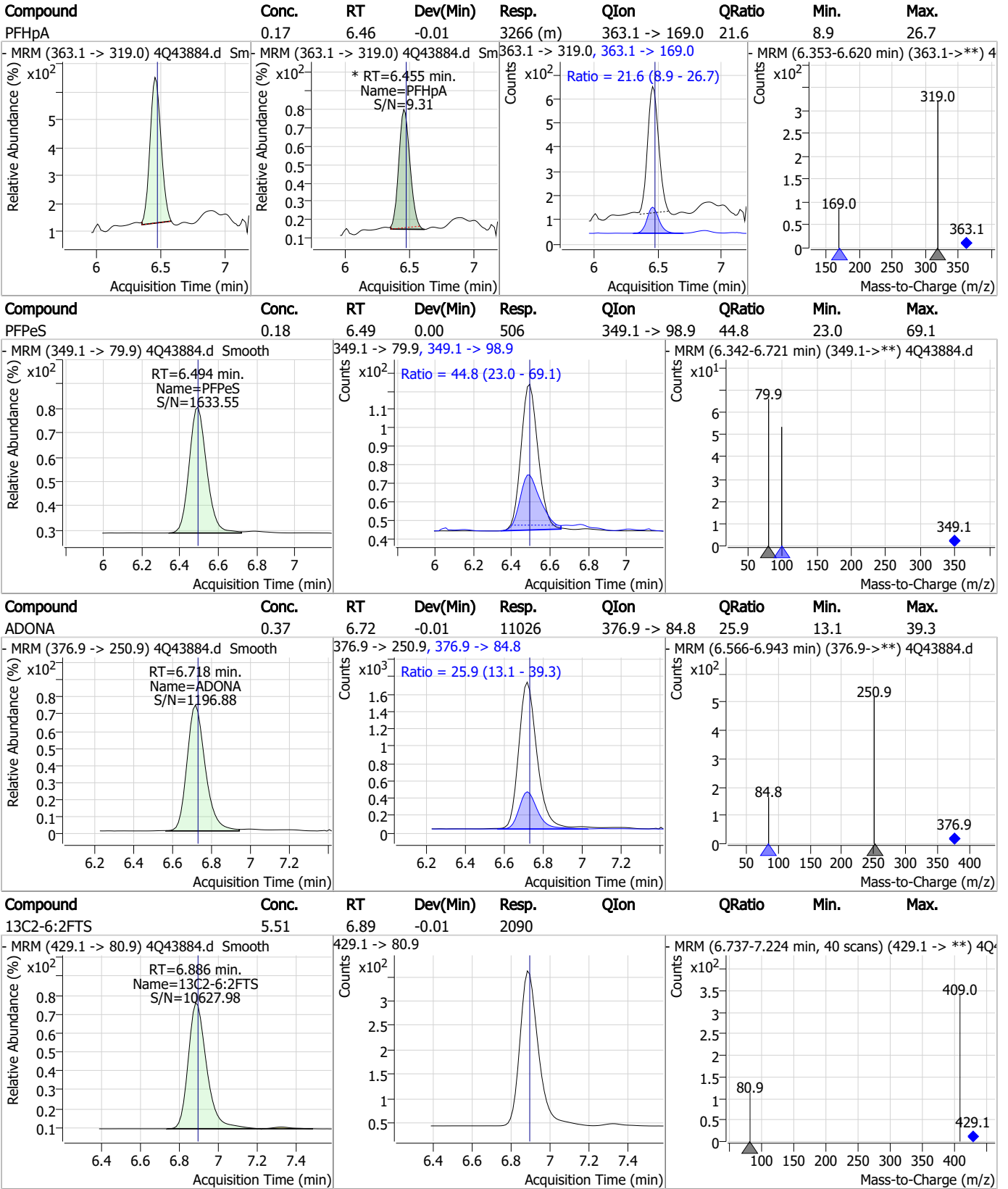
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	4.53	6.18	-0.01	12380	341.0 -> 217.0	71.6	34.1	102.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.60	6.45	-0.01	30242	367.1 -> 322.0			



### Perfluorinated Compounds by LC/MS/MS

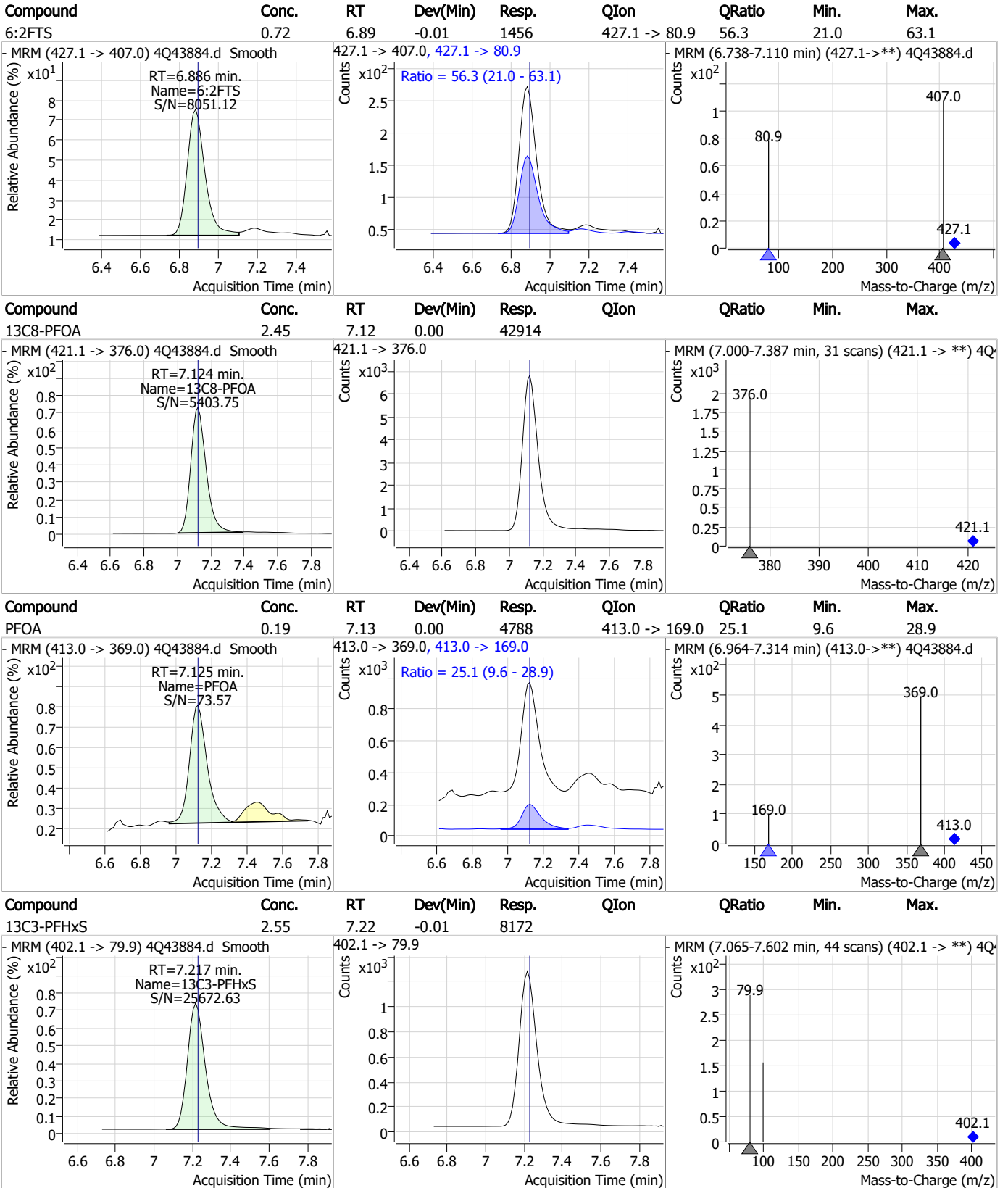


7.7.2

7



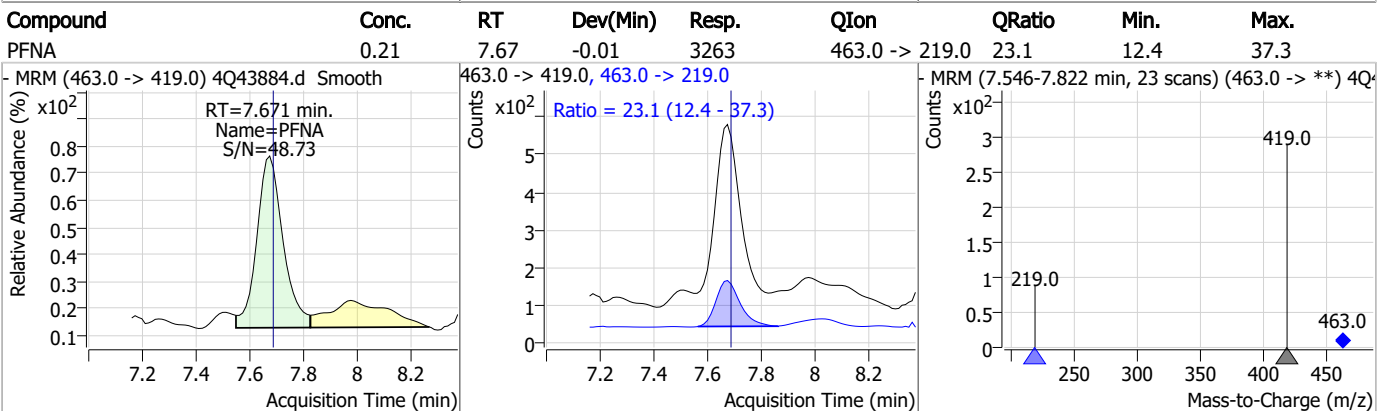
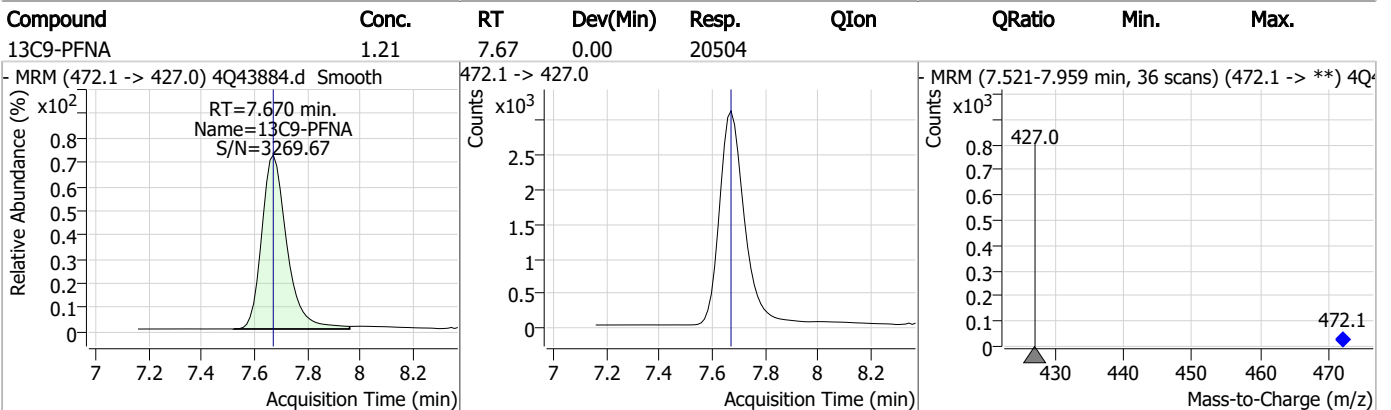
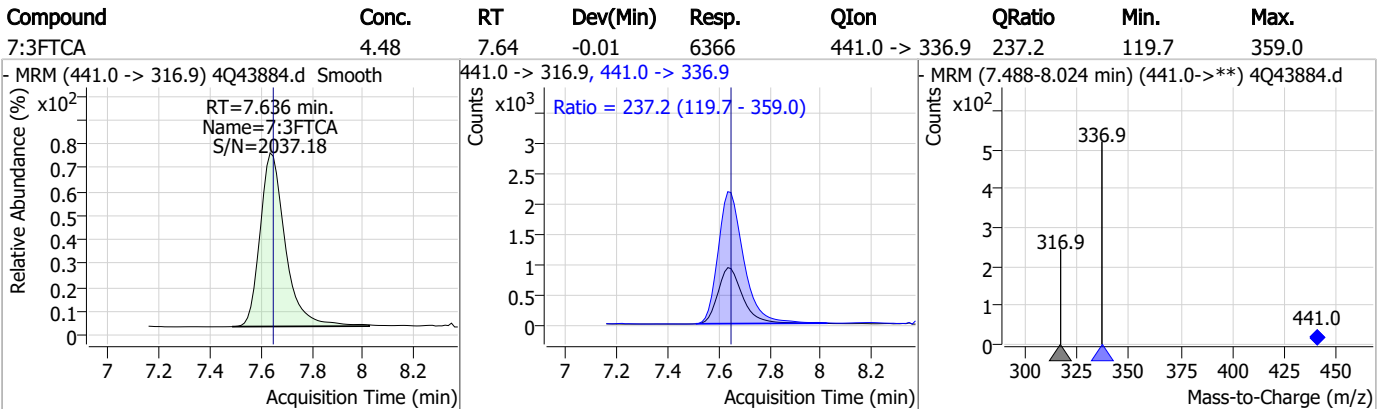
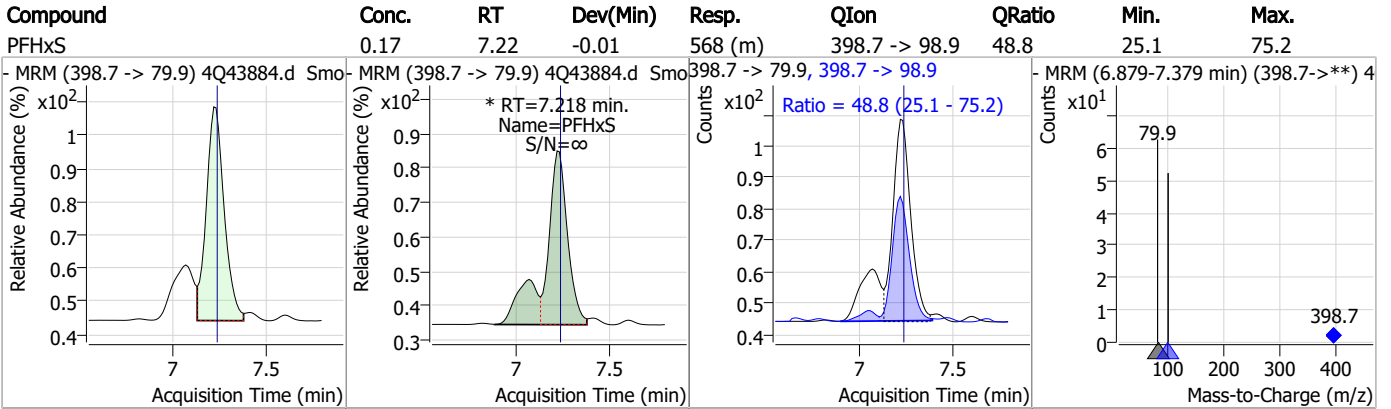
### Perfluorinated Compounds by LC/MS/MS



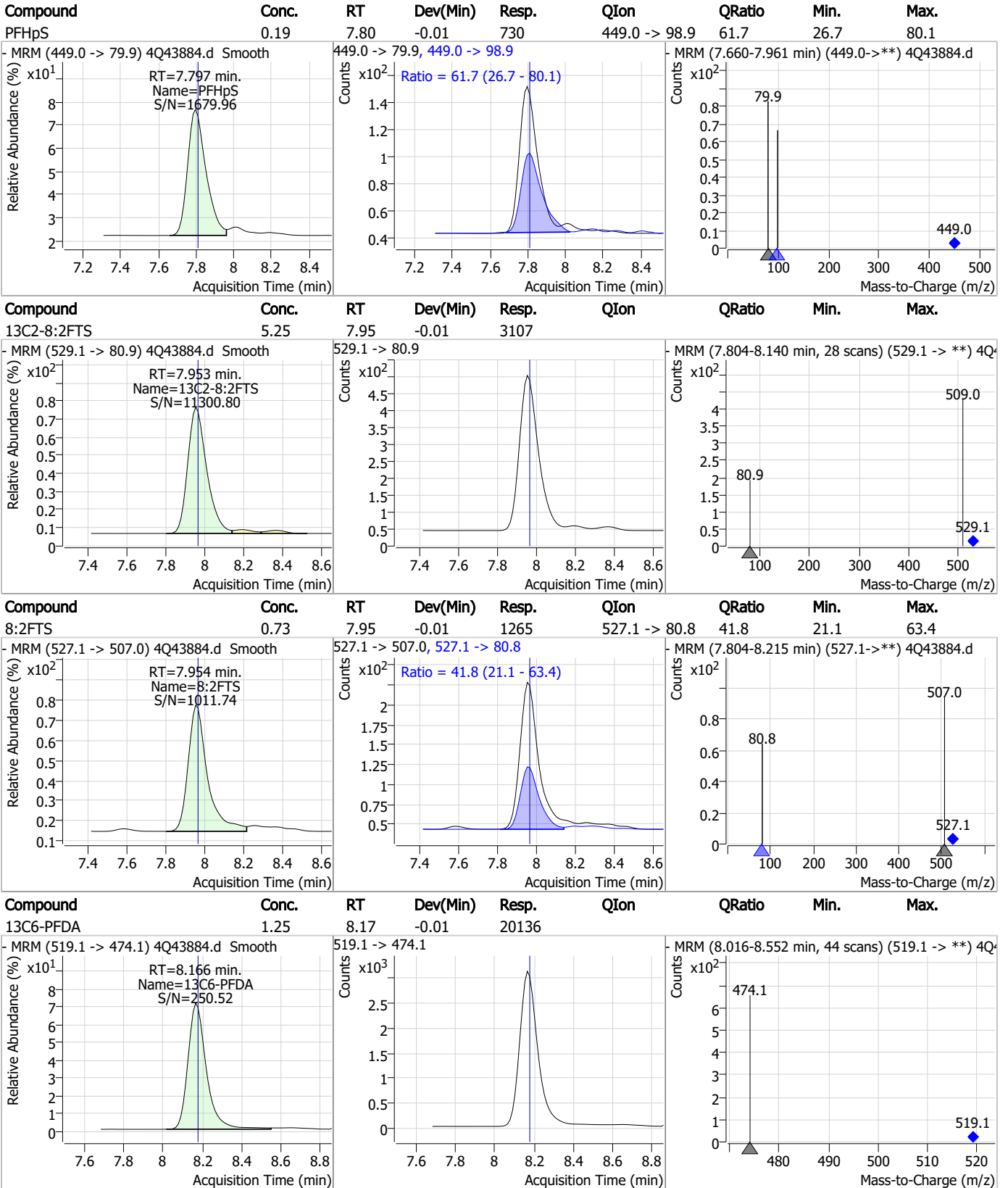
7.7.2

7

### Perfluorinated Compounds by LC/MS/MS



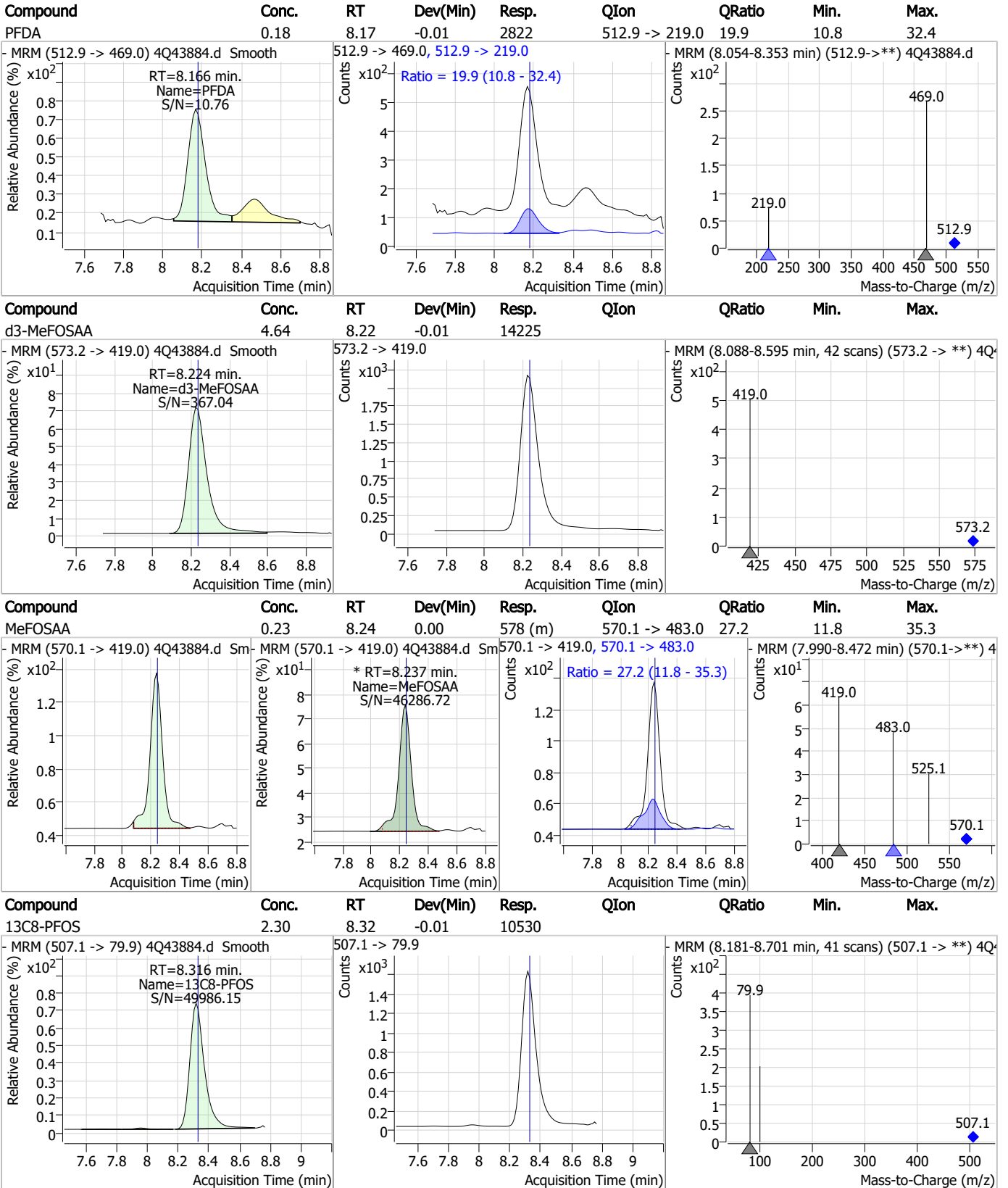
### Perfluorinated Compounds by LC/MS/MS



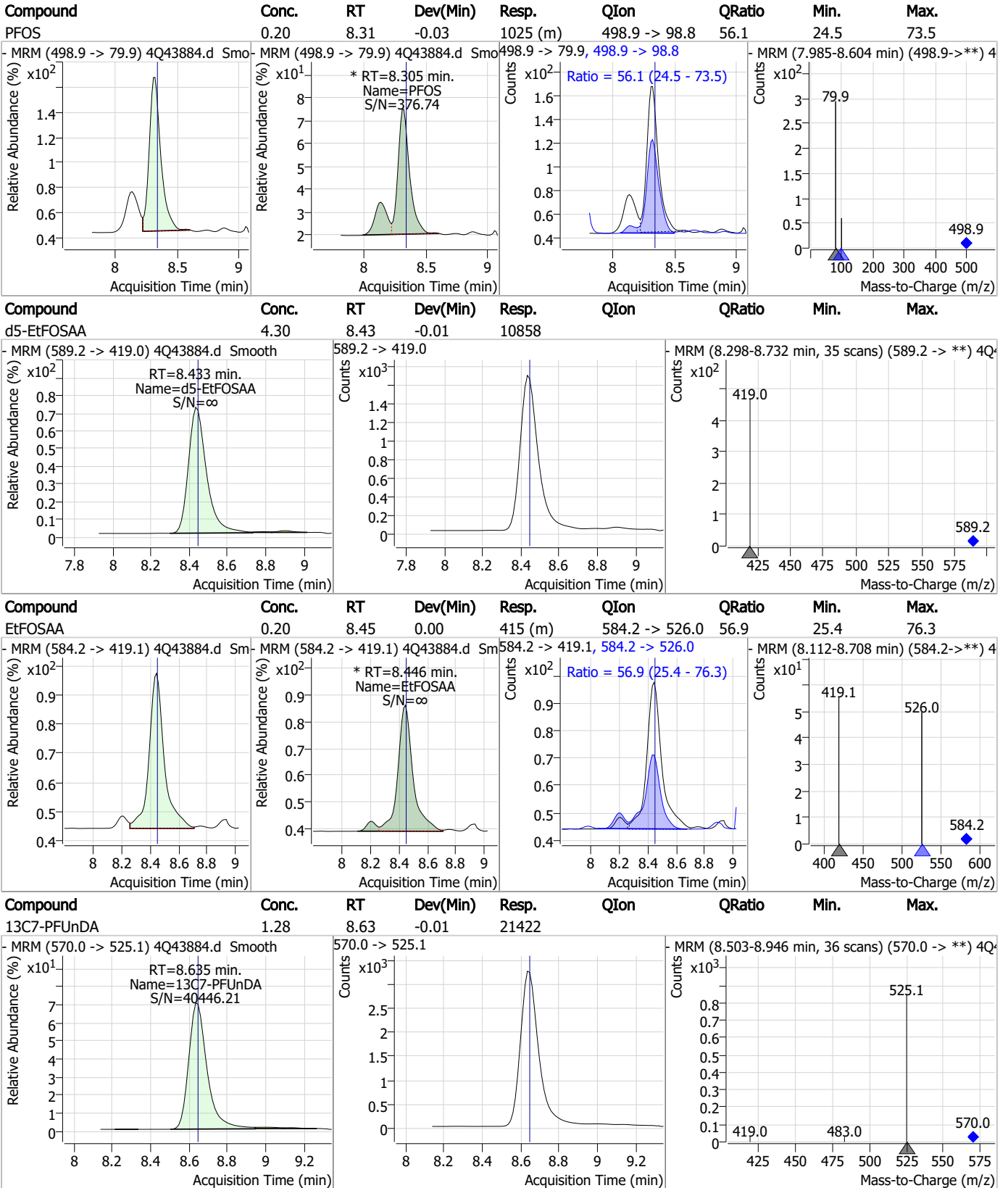
7.7.2

7

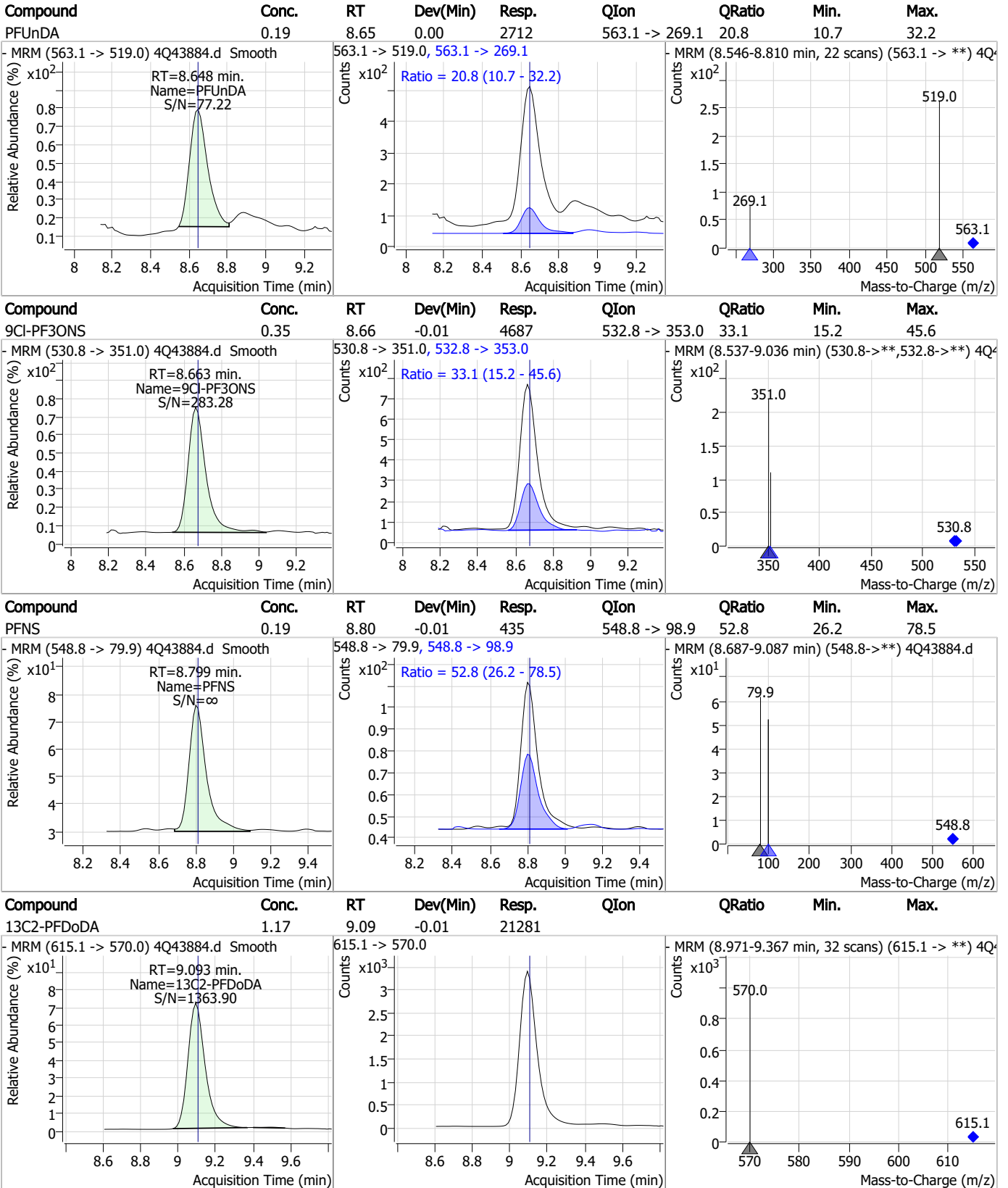
### Perfluorinated Compounds by LC/MS/MS



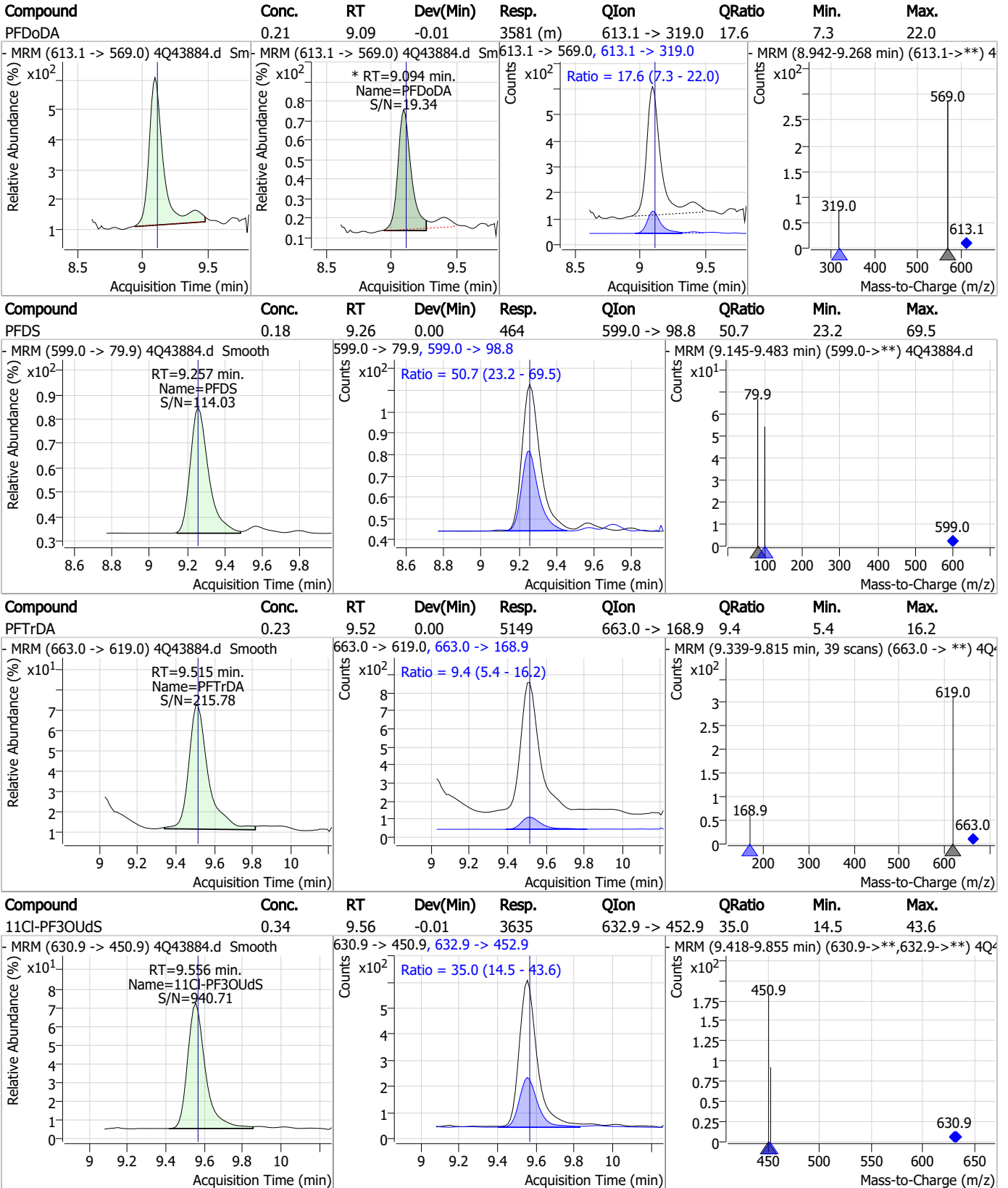
### Perfluorinated Compounds by LC/MS/MS



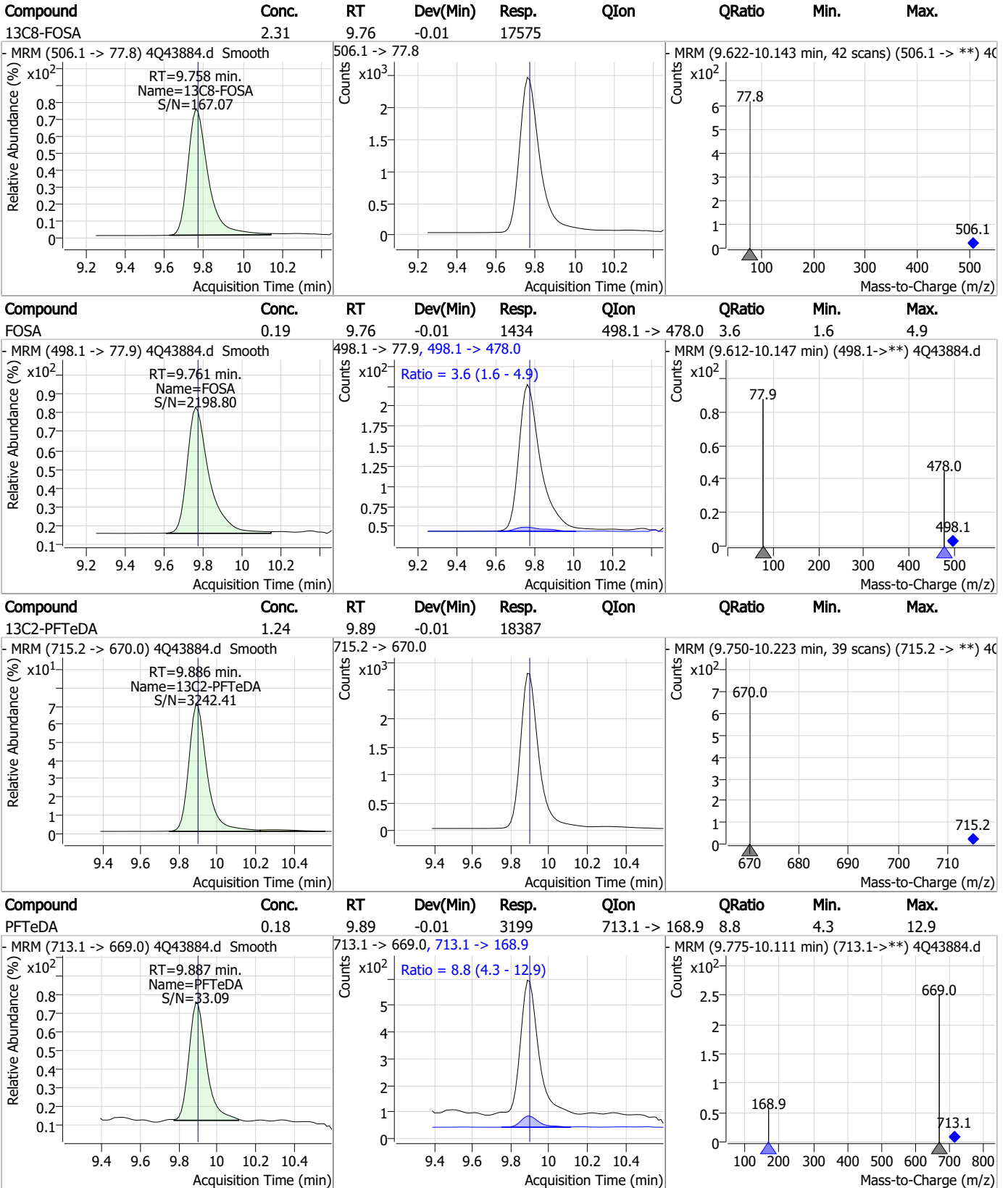
### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



7.7.2

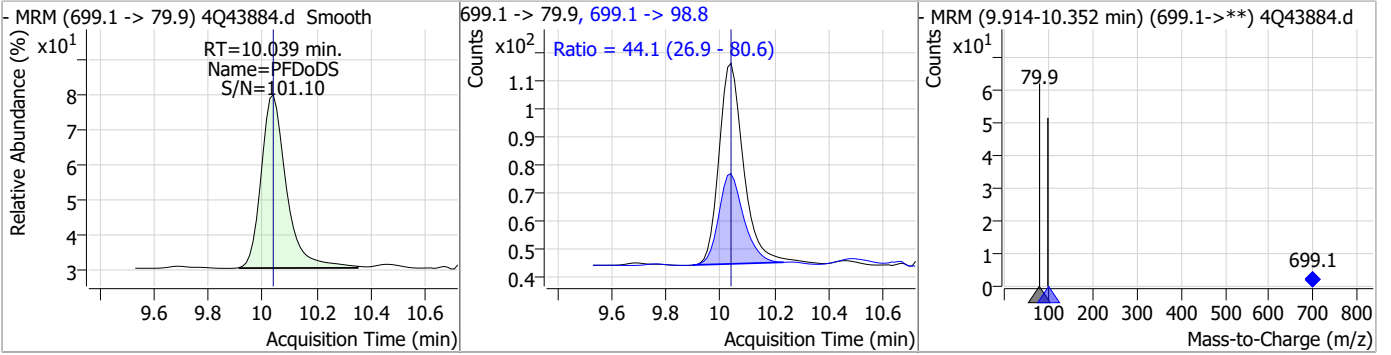
7



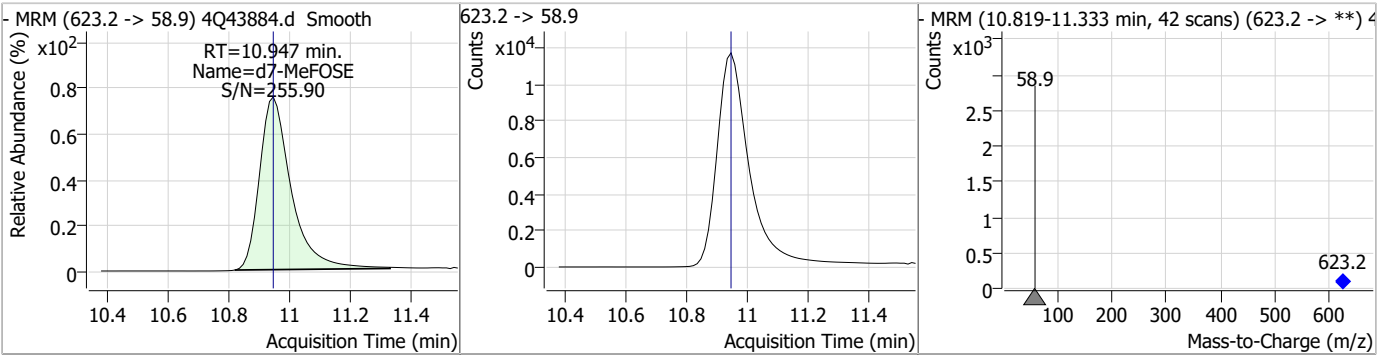


### Perfluorinated Compounds by LC/MS/MS

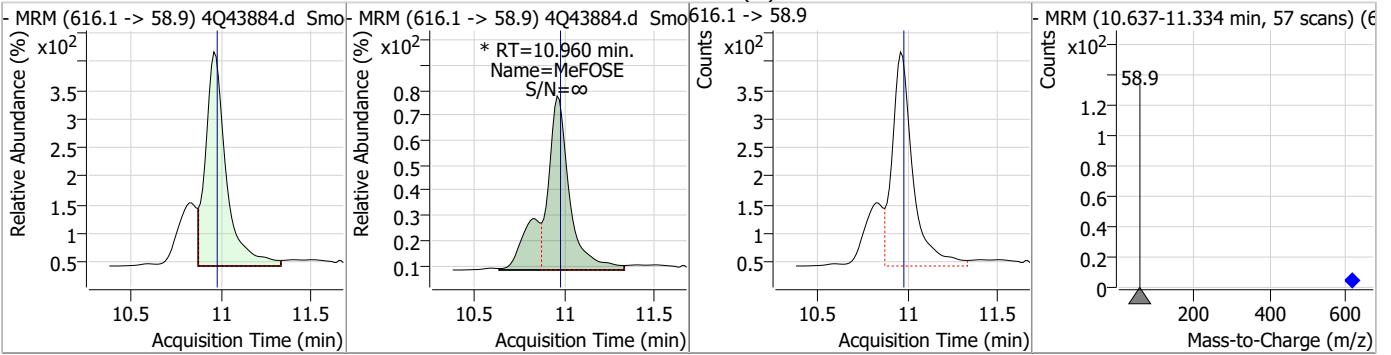
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.20	10.04	0.00	469	699.1 -> 98.8	44.1	26.9	80.6



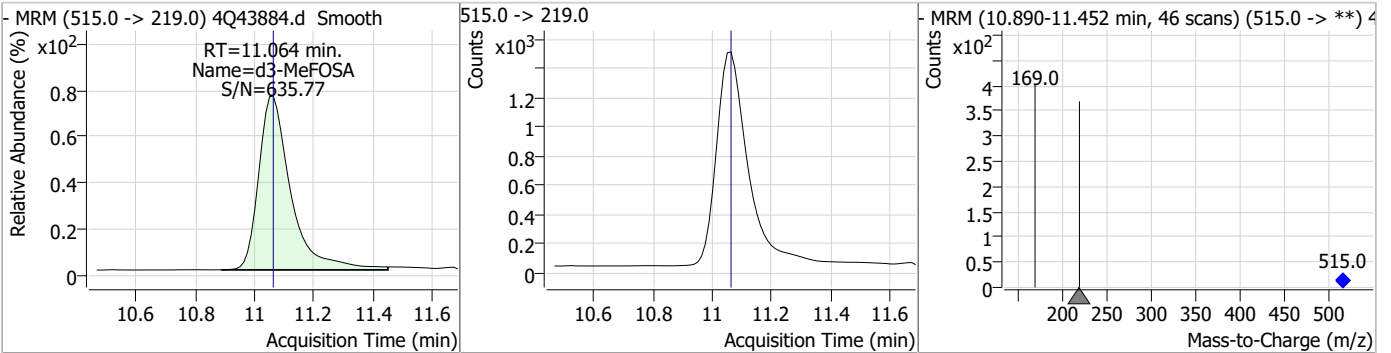
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	22.31	10.95	0.00	84284				



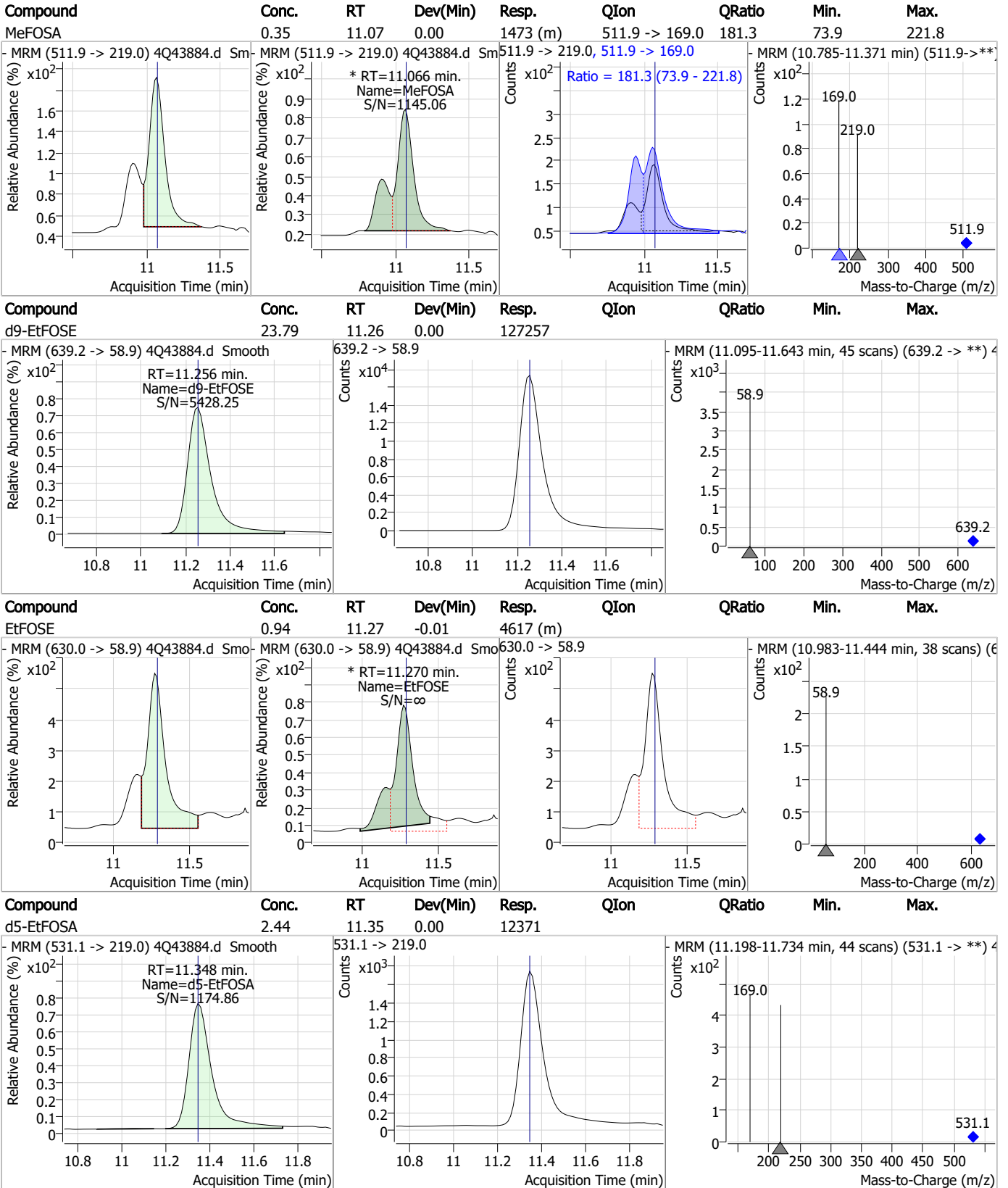
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	1.09	10.96	-0.01	3786 (m)				



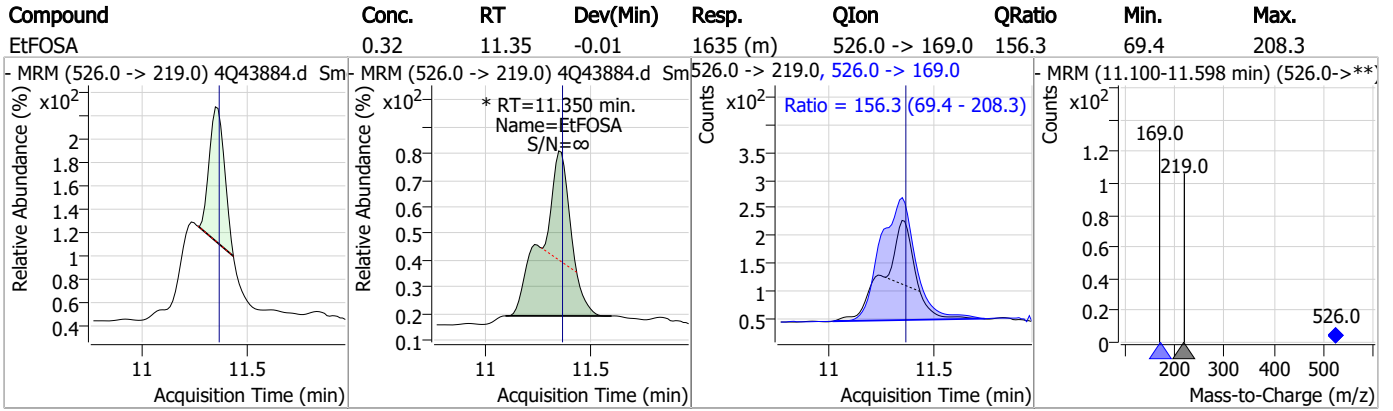
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.06	0.00	11108				



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



7.7.2

7

# Manual Integration Approval Summary

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

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

7.7.2.1  
7

## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43885.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 11:26:14 AM  
 Sample Name : ic634-2  
 Vial : P1-A3  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.924	216.8 -> 171.9	137179	10.00 µg/L	0.000
M5-PFPeA	4.362	268.3 -> 223.0	72419	5.00 µg/L	0.000
M5-PFHxA	5.522	318.0 -> 273.0	52123	2.50 µg/L	-0.012
M4-PFHpA	6.455	367.1 -> 322.0	29993	2.50 µg/L	-0.012
M8-PFOA	7.124	421.1 -> 376.0	46706	2.50 µg/L	0.000
M9-PFNA	7.670	472.1 -> 427.0	22151	1.25 µg/L	0.000
M6-PFDA	8.166	519.1 -> 474.1	20112	1.25 µg/L	-0.012
M7-PFUnDA	8.647	570.0 -> 525.1	20563	1.25 µg/L	0.000
M2-PFDoDA	9.093	615.1 -> 570.0	22014	1.25 µg/L	-0.012
M2-PFTeDA	9.899	715.2 -> 670.0	18668	1.25 µg/L	0.000
M8-FOSA	9.771	506.1 -> 77.8	18230	2.50 µg/L	0.000
M3-PFBS	5.427	302.1 -> 79.9	12687	2.50 µg/L	0.000
M3-PFHxS	7.217	402.1 -> 79.9	8282	2.50 µg/L	-0.012
M8-PFOS	8.316	507.1 -> 79.9	11826	2.50 µg/L	-0.013
M2-4:2FTS	5.209	329.1 -> 80.9	1103	5.00 µg/L	-0.014
M2-6:2FTS	6.898	429.1 -> 80.9	2015	5.00 µg/L	0.000
M2-8:2FTS	7.953	529.1 -> 80.9	3205	5.00 µg/L	-0.012
M3-MeFOSAA	8.236	573.2 -> 419.0	14463	5.00 µg/L	0.000
M3-HFPO-DA	5.890	286.9 -> 168.9	30118	10.00 µg/L	0.000
M5-EtFOSAA	8.433	589.2 -> 419.0	11942	5.00 µg/L	-0.012
M7-MeFOSE	10.947	623.2 -> 58.9	94353	25.00 µg/L	0.000
M9-EtFOSE	11.256	639.2 -> 58.9	137343	25.00 µg/L	0.000
M5-EtFOSA	11.348	531.1 -> 219.0	12459	2.50 µg/L	0.000
M3-MeFOSA	11.064	515.0 -> 219.0	11960	2.50 µg/L	0.000
13C4-PFOS	8.317	502.8 -> 79.9	11988	2.50 µg/L	-0.013
13C3-PFBA	2.916	216.0 -> 172.0	72783	5.00 µg/L	-0.013
18O2-PFHxS	7.216	403.0 -> 83.9	5458	2.50 µg/L	-0.012
13C4-PFOA	7.124	417.1 -> 372.0	55739	2.50 µg/L	0.000
13C2-PFDA	8.166	515.1 -> 470.1	19514	1.25 µg/L	-0.012
13C5-PFNA	7.671	468.0 -> 423.0	25301	1.25 µg/L	-0.013
13C2-PFHxA	5.523	315.1 -> 270.0	47423	2.50 µg/L	-0.012
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.209	329.1 -> 80.9	1103	4.97 µg/L	-0.014
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C2-6:2FTS	6.898	429.1 -> 80.9	2015	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C2-8:2FTS	7.953	529.1 -> 80.9	3205	5.13 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.7%		
13C2-PFDoDA	9.093	615.1 -> 570.0	22014	1.16 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.1%		
13C2-PFTeDA	9.899	715.2 -> 670.0	18668	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C3-PFBS	5.427	302.1 -> 79.9	12687	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C3-PFHxS	7.217	402.1 -> 79.9	8282	2.45 µg/L	-0.012

## Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C4-PFBA	2.924	216.8 -> 171.9	137179	10.02 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C4-PFHpA	6.455	367.1 -> 322.0	29993	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
13C5-PFHxA	5.522	318.0 -> 273.0	52123	2.50 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFPeA	4.362	268.3 -> 223.0	72419	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C6-PFDA	8.166	519.1 -> 474.1	20112	1.20 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.3%	
13C7-PFUnDA	8.647	570.0 -> 525.1	20563	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.6%	
13C8-FOSA	9.771	506.1 -> 77.8	18230	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-PFOA	7.124	421.1 -> 376.0	46706	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.1%	
13C8-PFOS	8.316	507.1 -> 79.9	11826	2.62 µg/L	-0.013
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	
13C9-PFNA	7.670	472.1 -> 427.0	22151	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%	
d3-MeFOSAA	8.236	573.2 -> 419.0	14463	4.78 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.6%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	30118	9.65 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
d3-MeFOSA	11.064	515.0 -> 219.0	11960	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
d5-EtFOSAA	8.433	589.2 -> 419.0	11942	4.79 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
d7-MeFOSE	10.947	623.2 -> 58.9	94353	25.30 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
d9-EtFOSE	11.256	639.2 -> 58.9	137343	26.01 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d5-EtFOSA	11.348	531.1 -> 219.0	12459	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.223	327.1 -> 307.0	2662	1.50 µg/L	99
		327.1 -> 80.9	1226		
6:2FTS	6.886	427.1 -> 407.0	2993	1.54 µg/L	98
		427.1 -> 80.9	1289		
8:2FTS	7.966	527.1 -> 507.0	2323	1.30 µg/L	94
		527.1 -> 80.8	1062		
EtFOSAA	8.446	584.2 -> 419.1	911	0.40 µg/L	m 95
		584.2 -> 526.0	435		
FOSA	9.761	498.1 -> 77.9	3015	0.39 µg/L	95
		498.1 -> 478.0	54		
MeFOSAA	8.237	570.1 -> 419.0	963	0.38 µg/L	m 91
		570.1 -> 483.0	272		
PFBA	2.920	212.8 -> 168.9	5570	1.52 µg/L	100
PFBS	5.428	298.7 -> 79.9	1783	0.34 µg/L	97
		298.7 -> 98.8	691		
PFDA	8.166	512.9 -> 469.0	5587	0.37 µg/L	m 97
		512.9 -> 219.0	1133		
PFDODA	9.094	613.1 -> 569.0	6564	0.37 µg/L	96
		613.1 -> 319.0	1053		
PFDS	9.257	599.0 -> 79.9	1121	0.38 µg/L	100

## Perfluorinated Compounds by LC/MS/MS

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

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

### Perfluorinated Compounds by LC/MS/MS

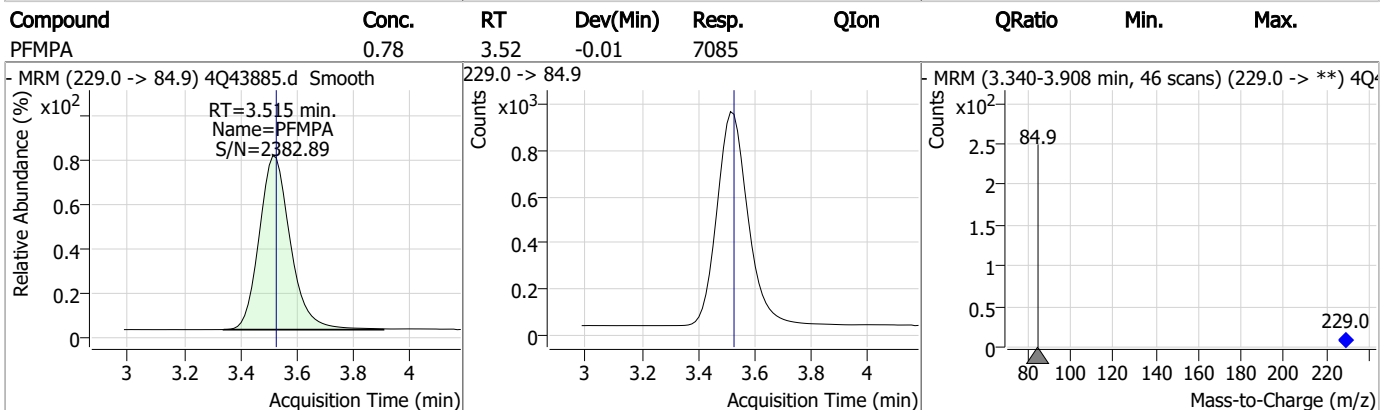
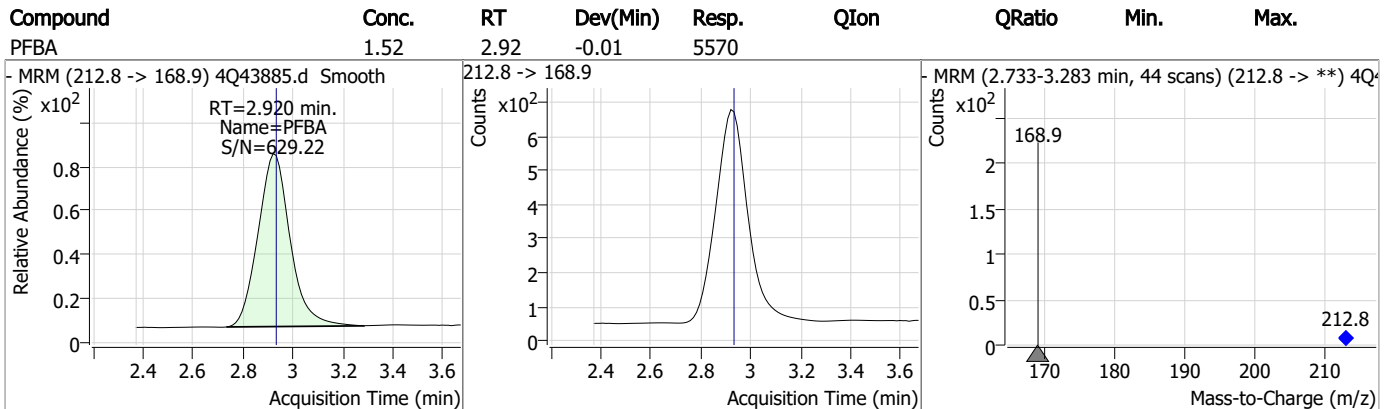
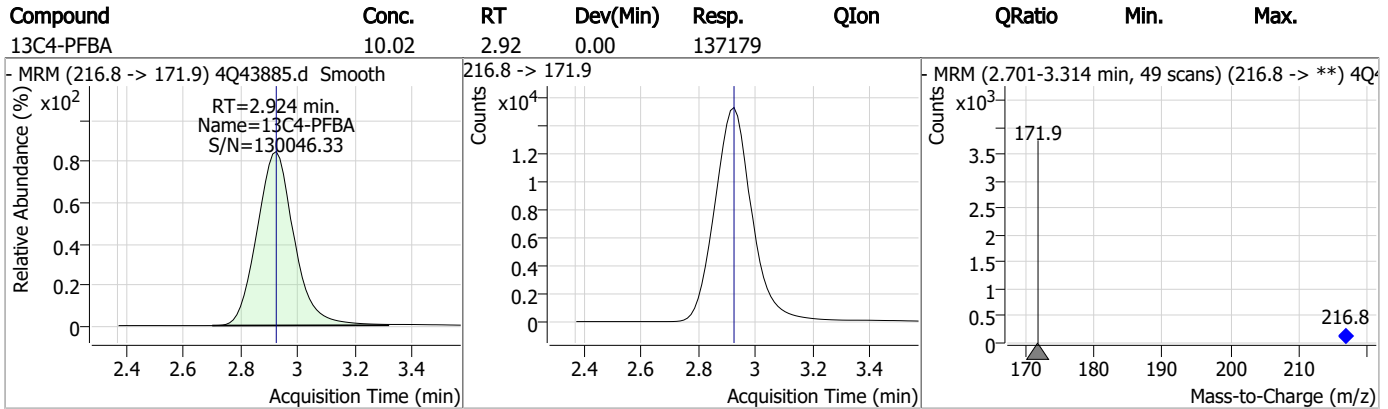
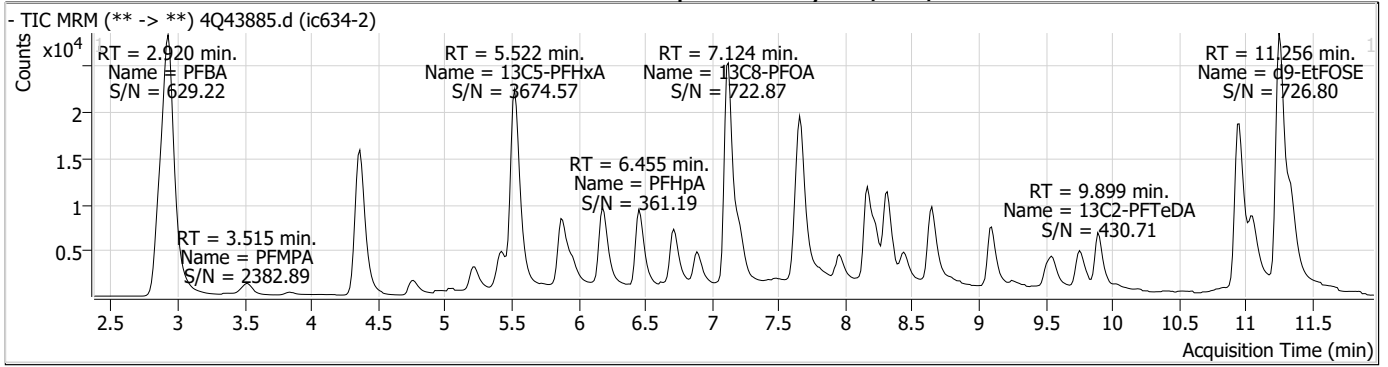
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
----------	----	------------	----------	-------------	----------

7.7.3

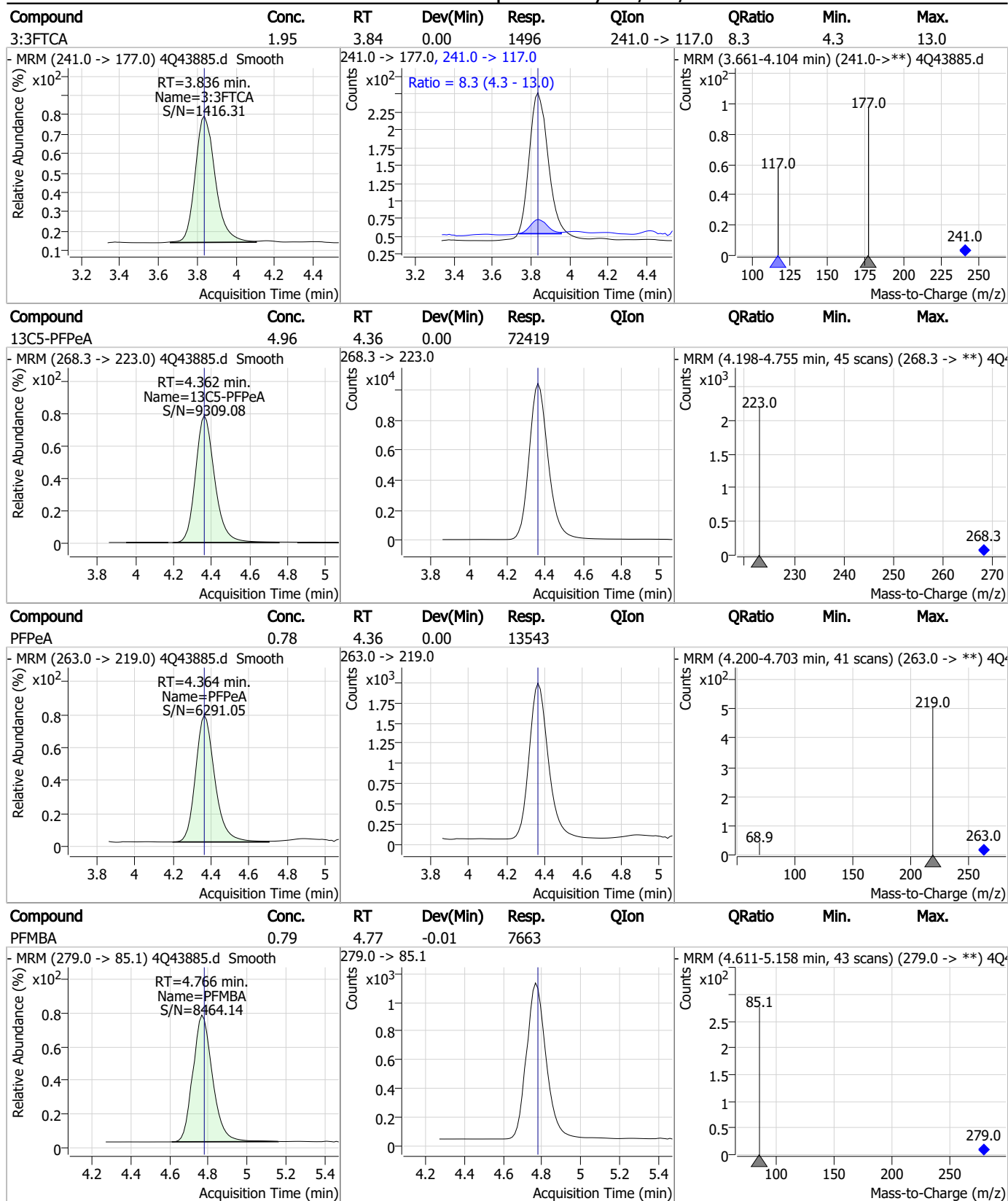
7



### Perfluorinated Compounds by LC/MS/MS

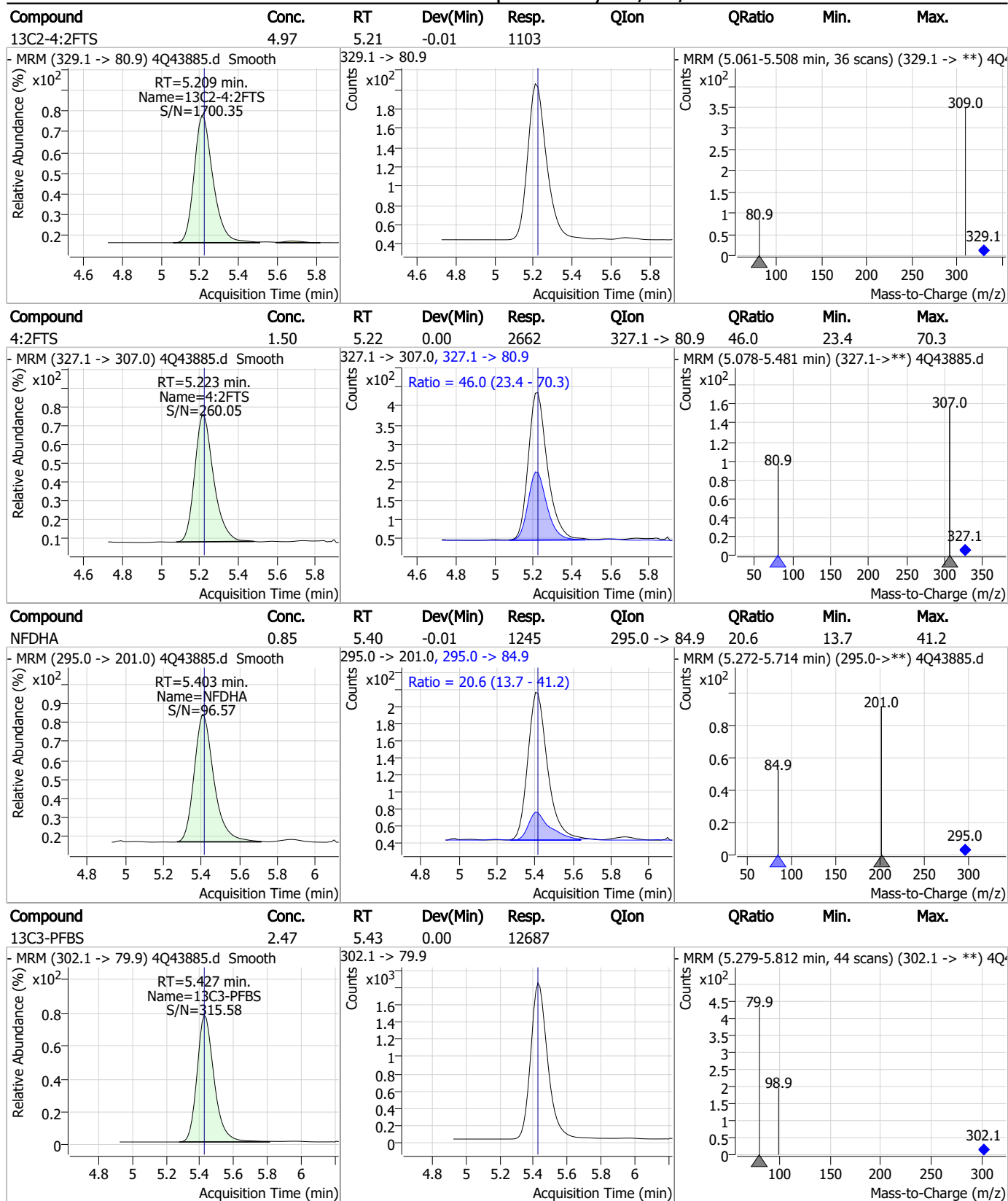


### Perfluorinated Compounds by LC/MS/MS



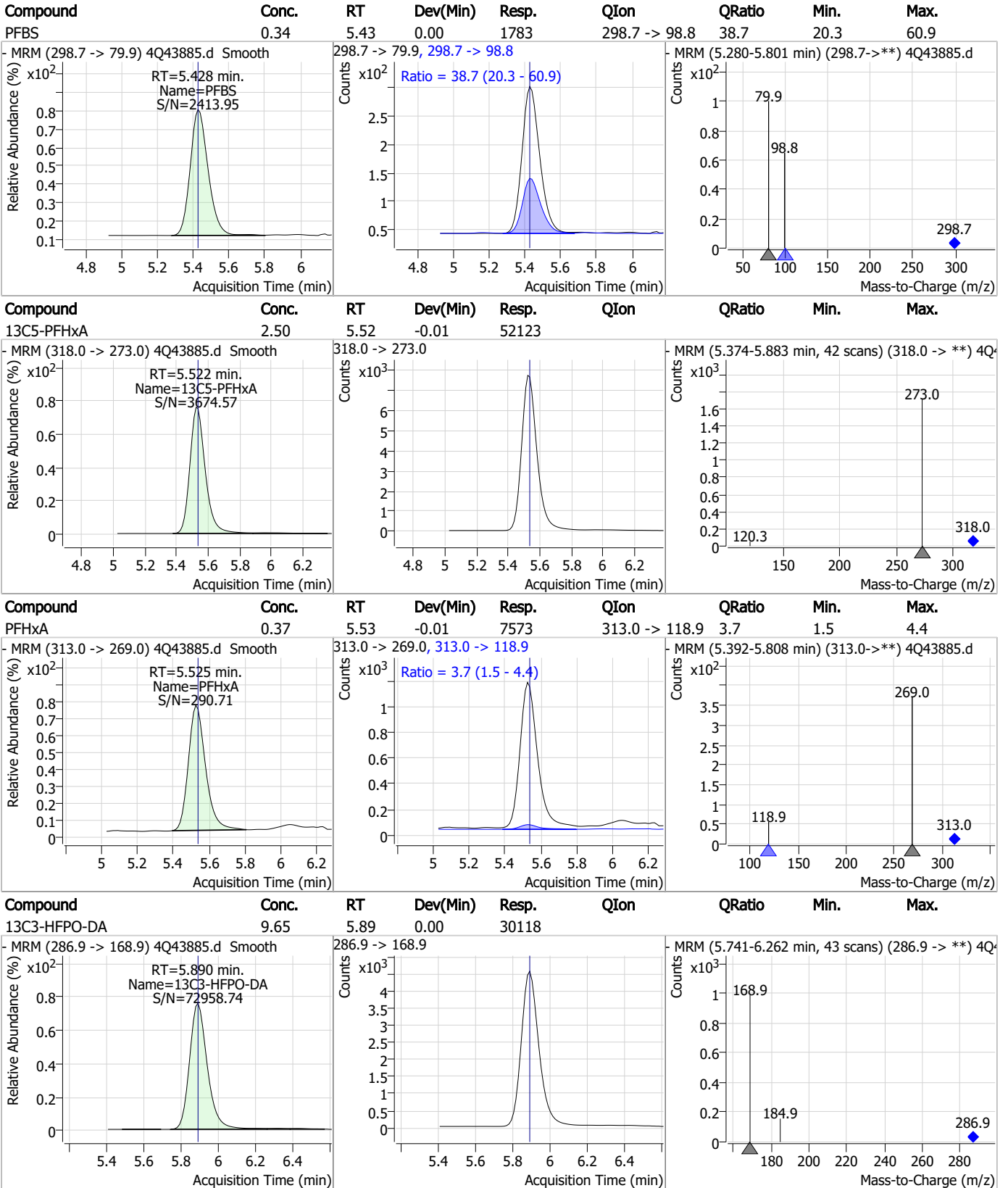
7.7.3  
7

### Perfluorinated Compounds by LC/MS/MS

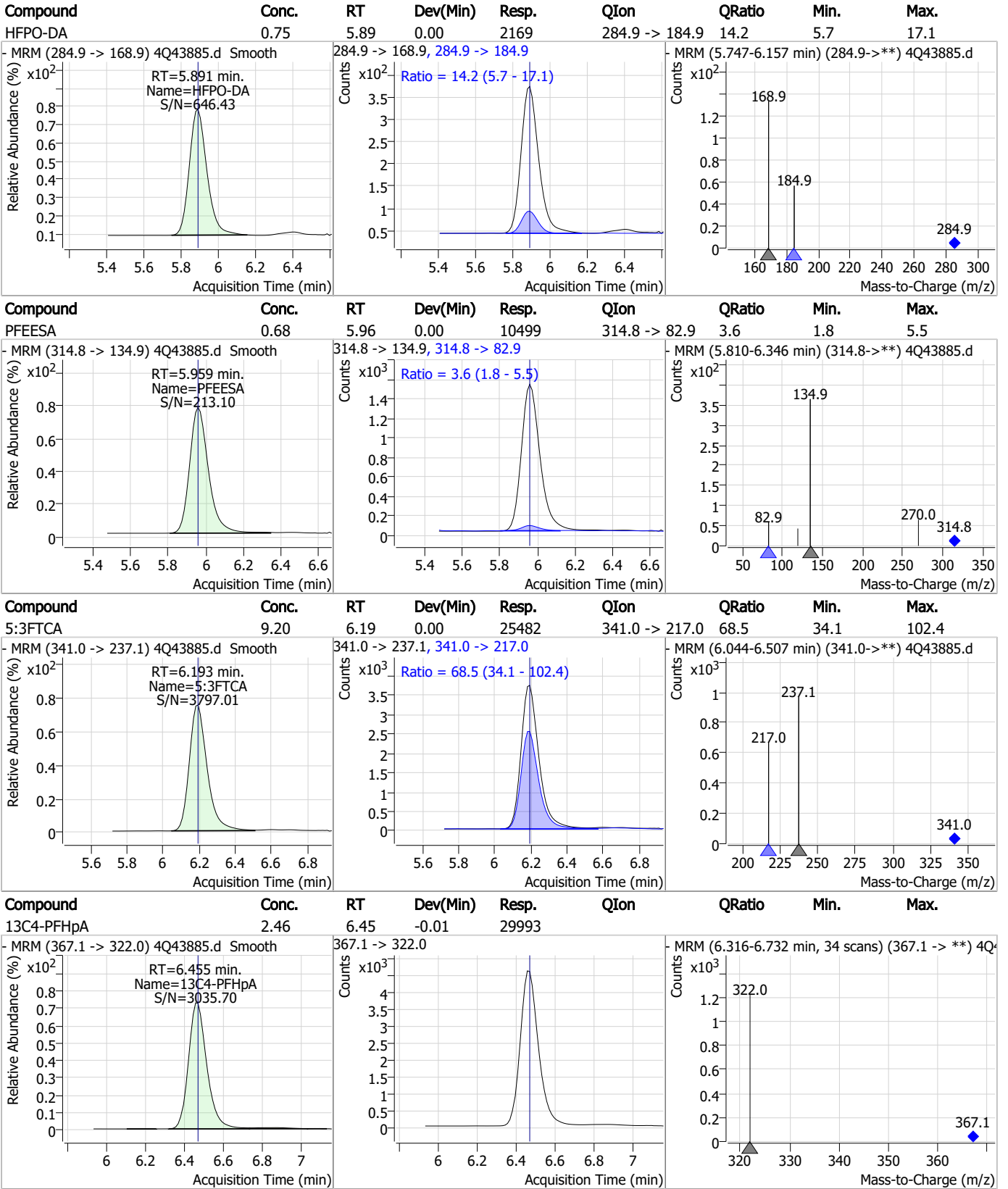


7.7.3  
7

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

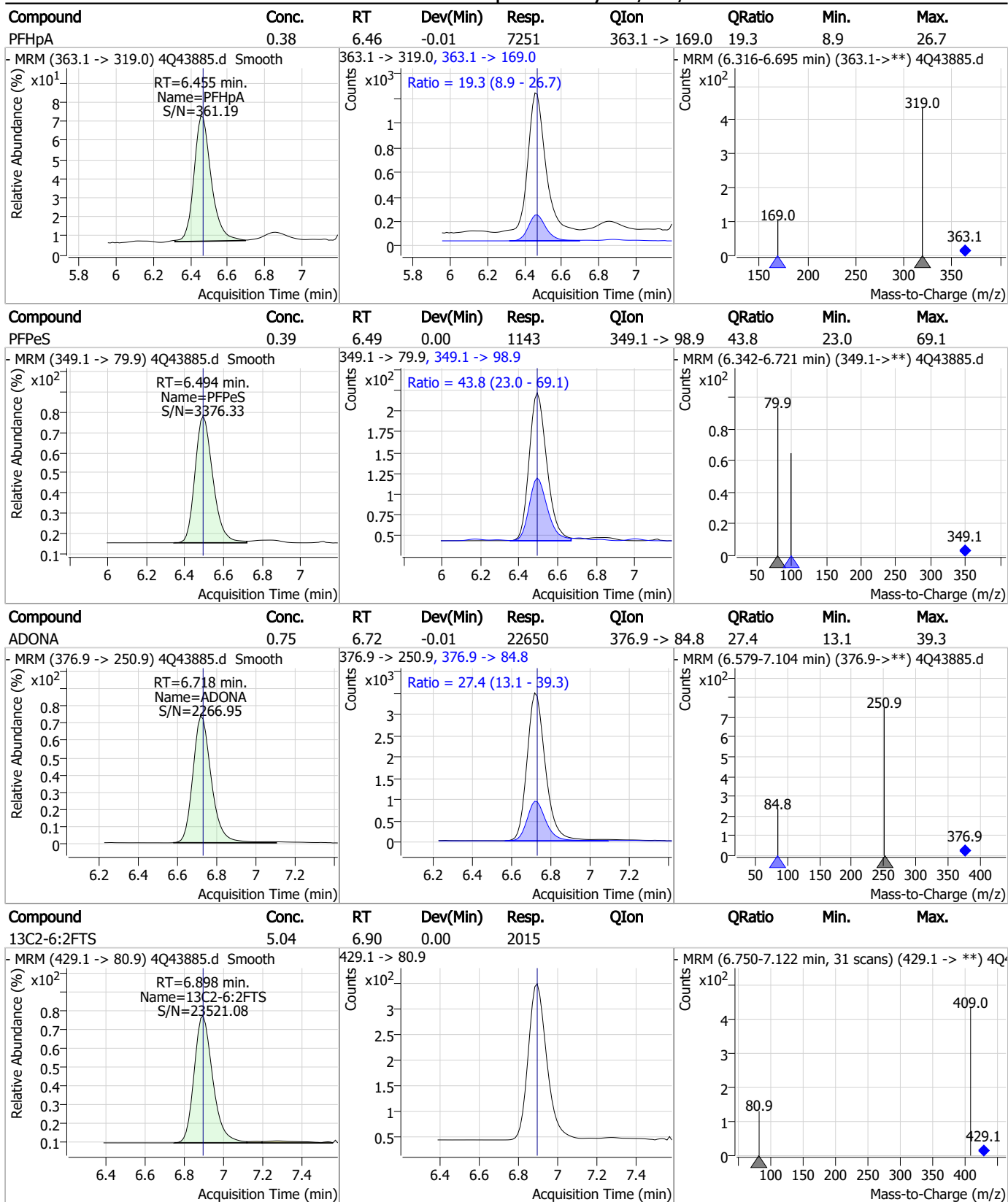


7.7.3

7

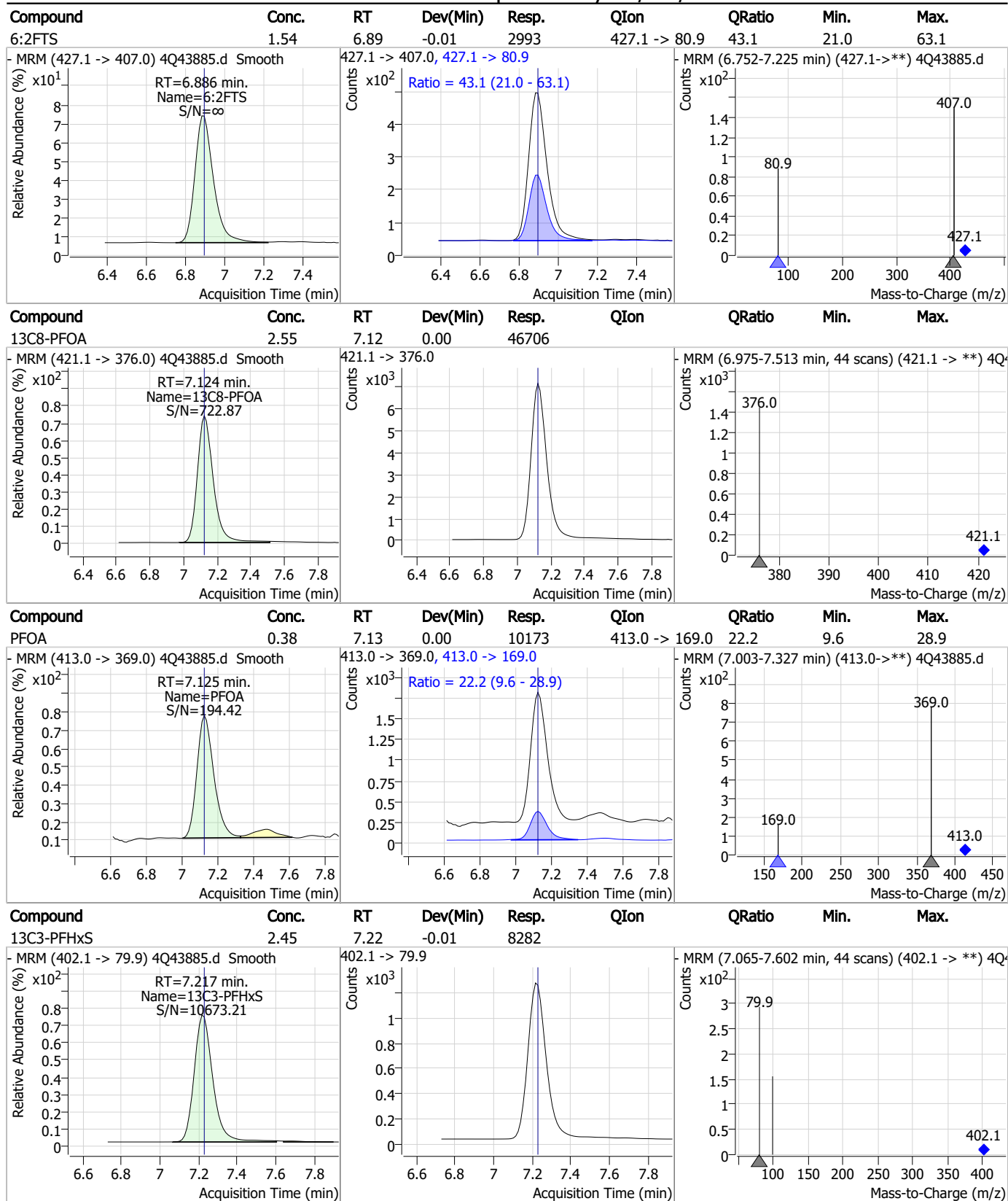


### Perfluorinated Compounds by LC/MS/MS



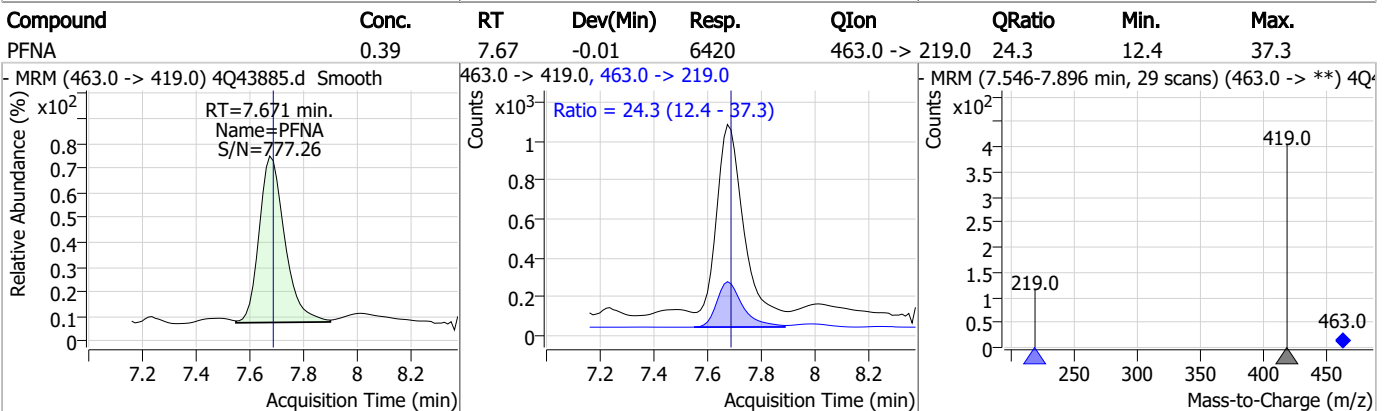
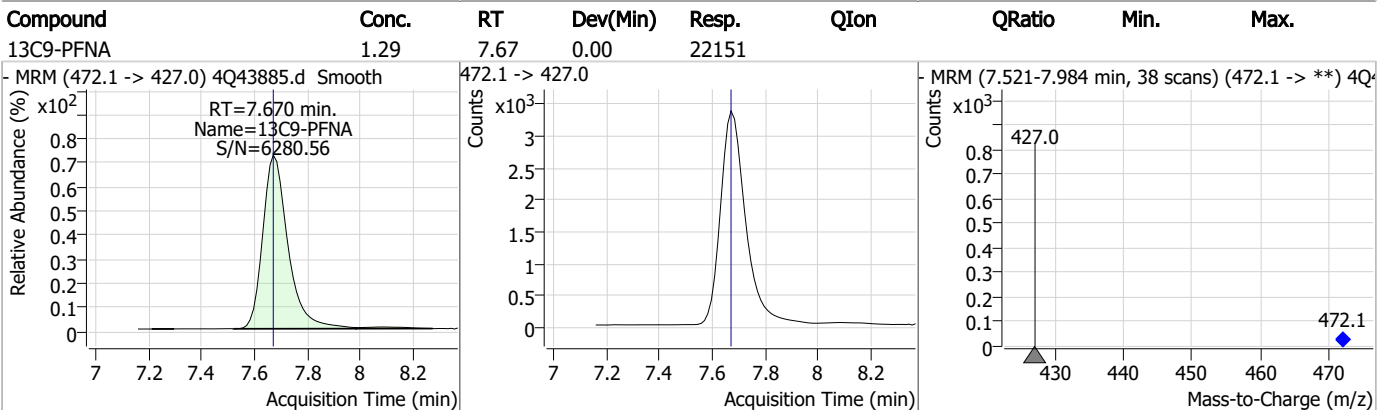
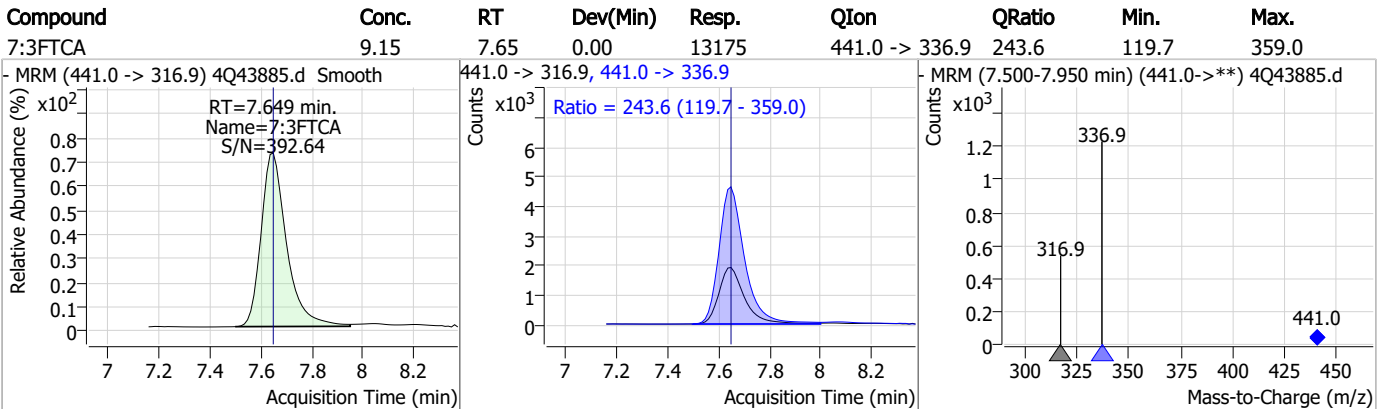
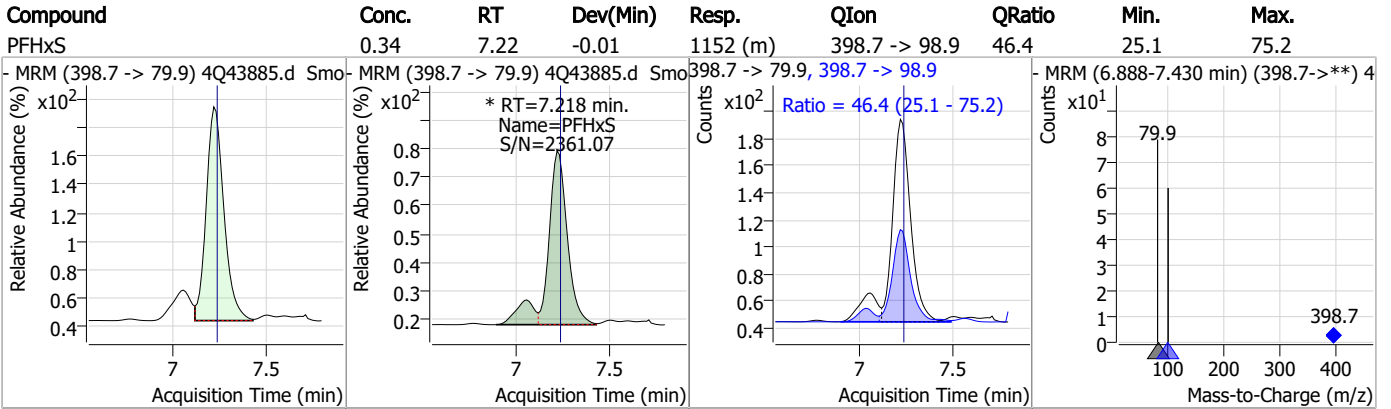
7.7.3  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.3  
7

### Perfluorinated Compounds by LC/MS/MS

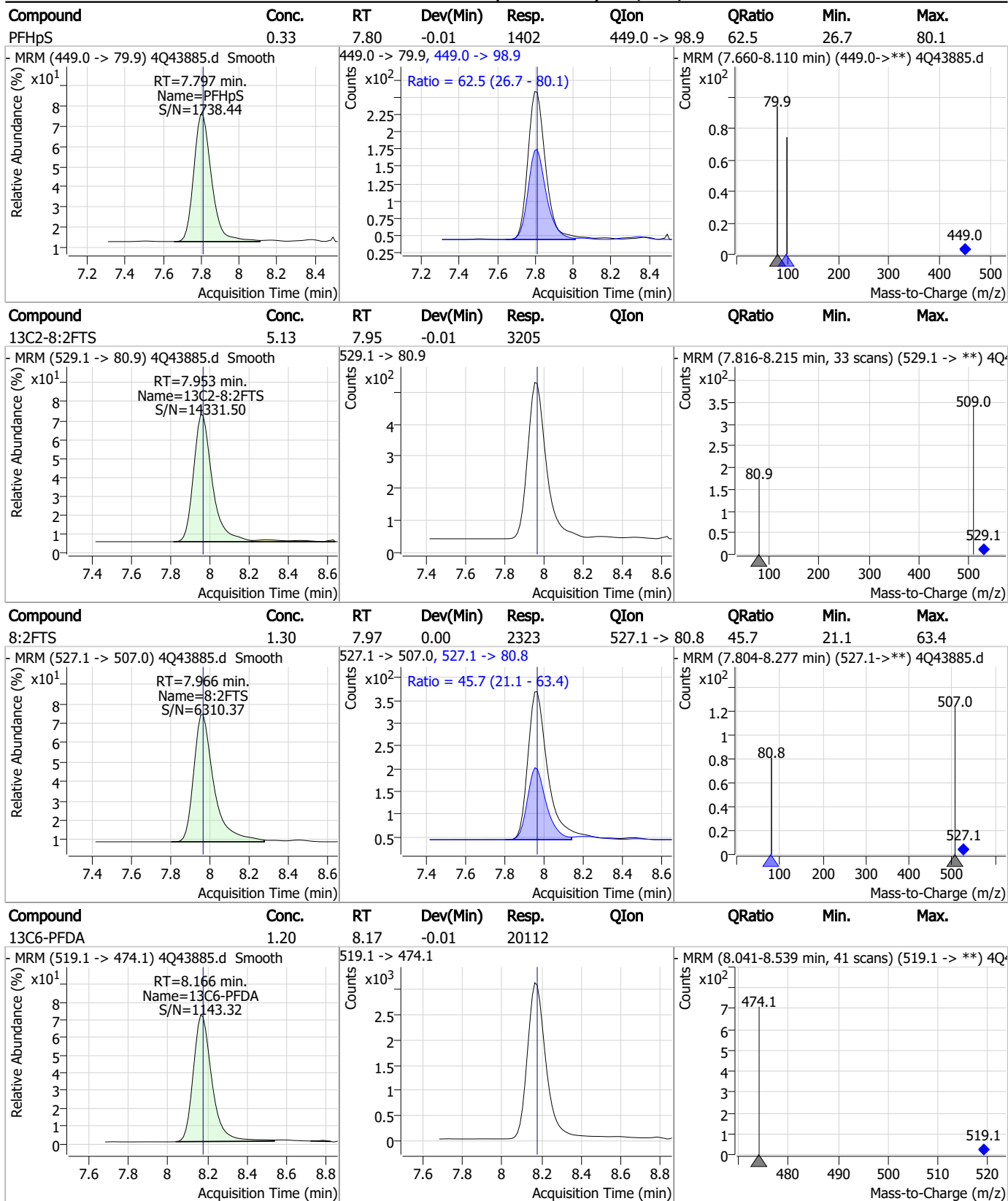


7.7.3

7



### Perfluorinated Compounds by LC/MS/MS

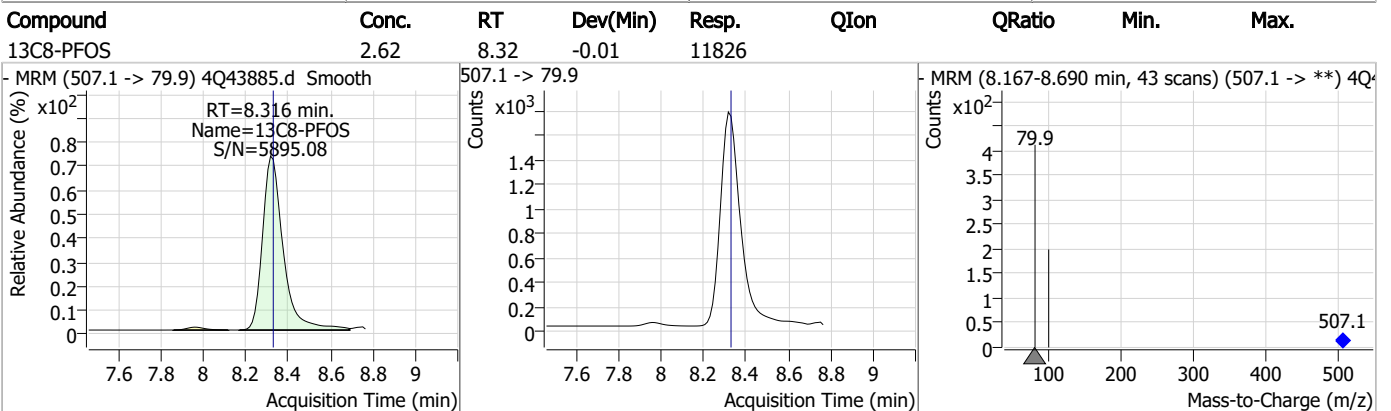
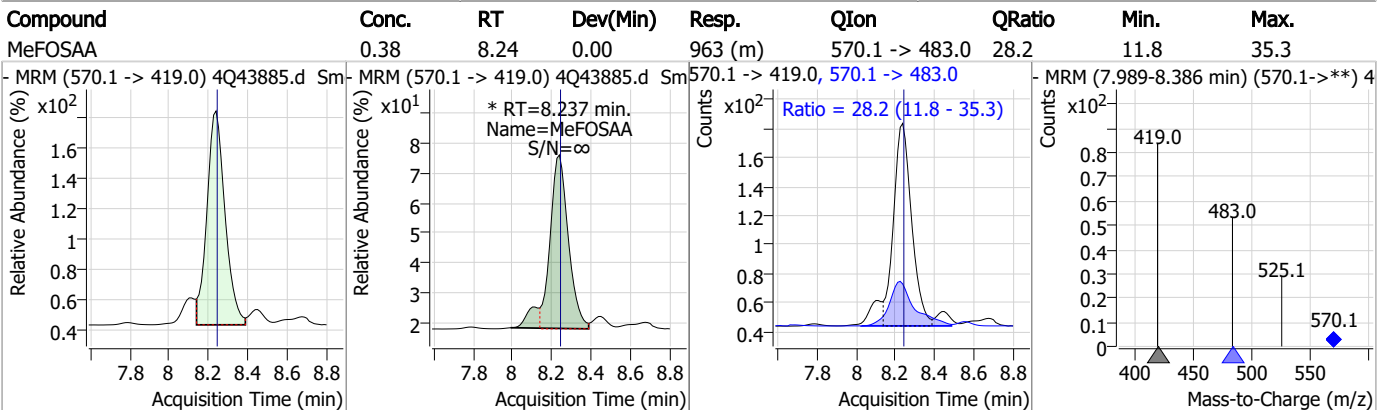
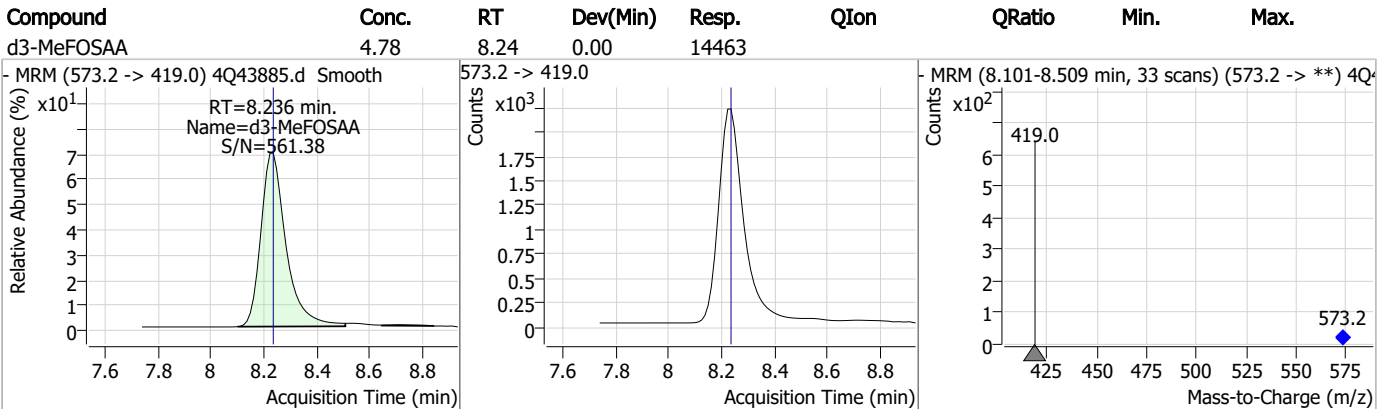
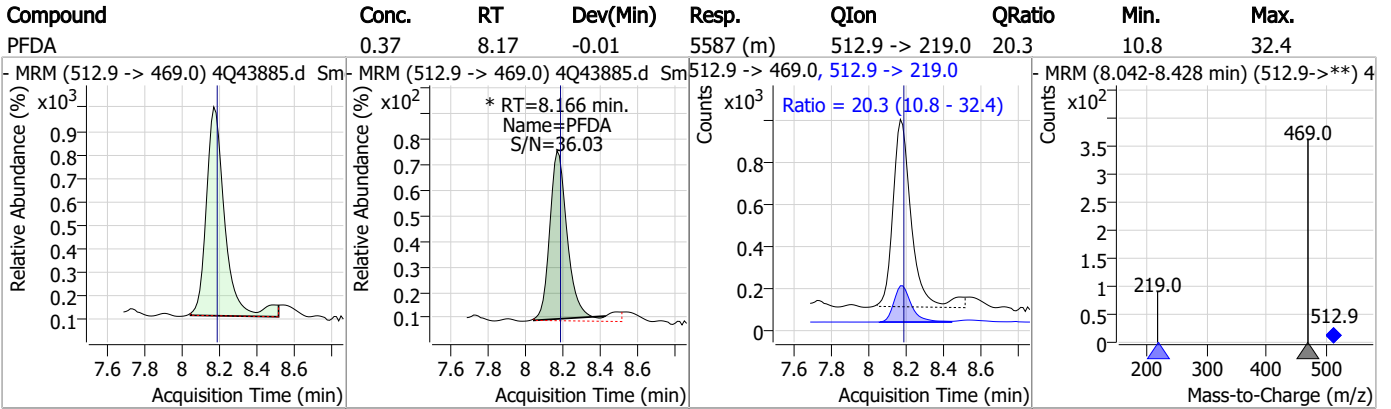


7.7.3

7



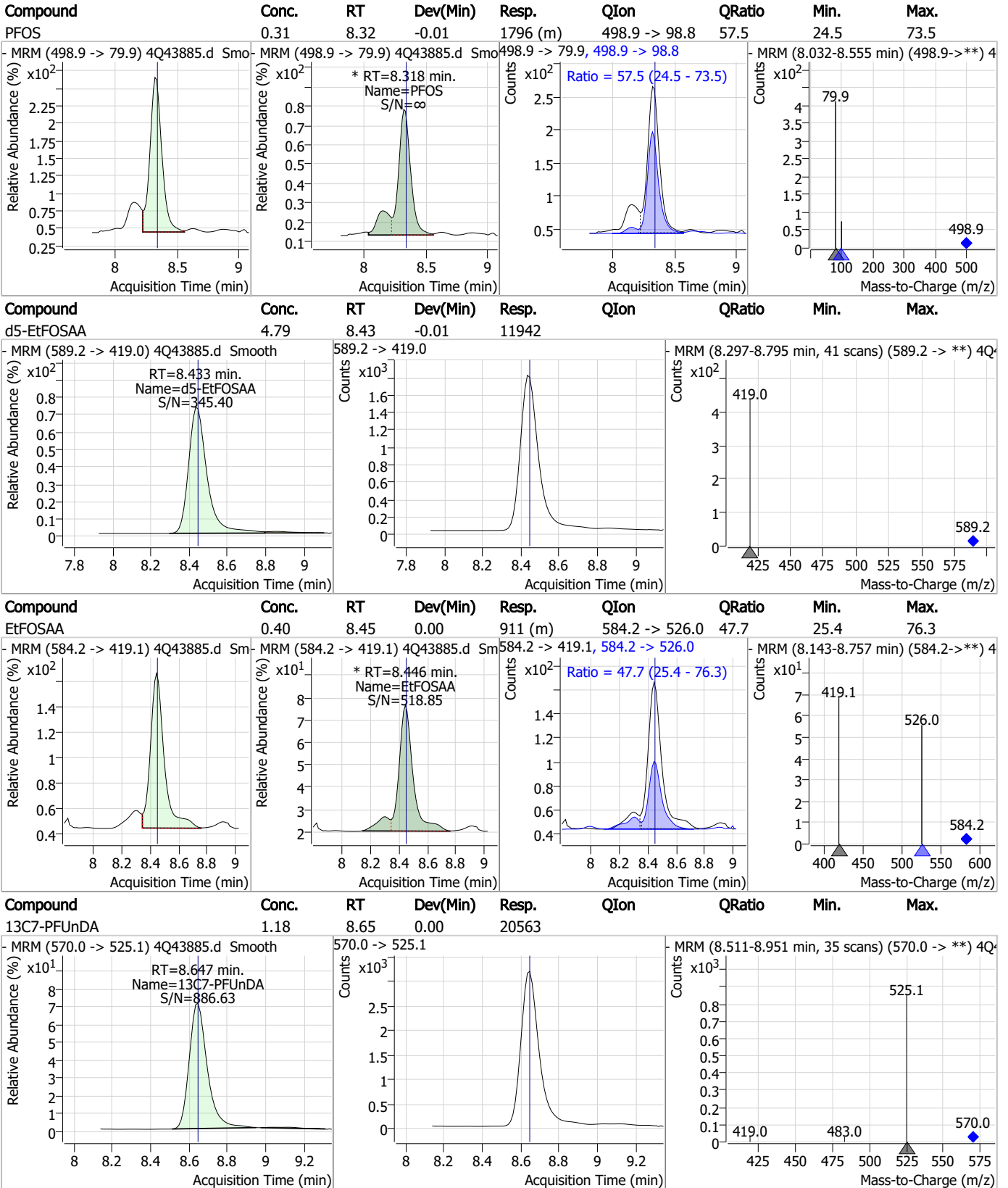
### Perfluorinated Compounds by LC/MS/MS



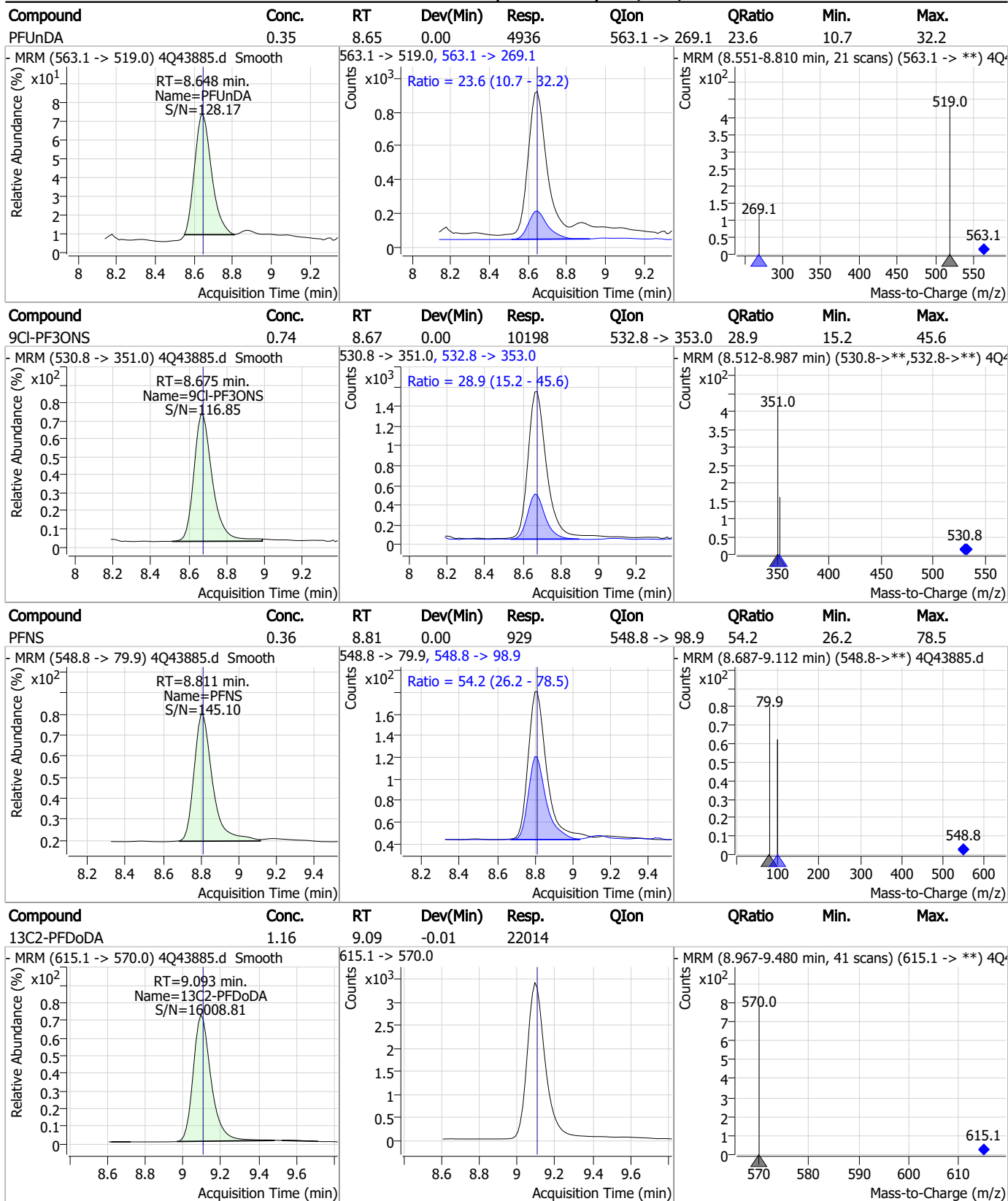
7.7.3

7

### Perfluorinated Compounds by LC/MS/MS

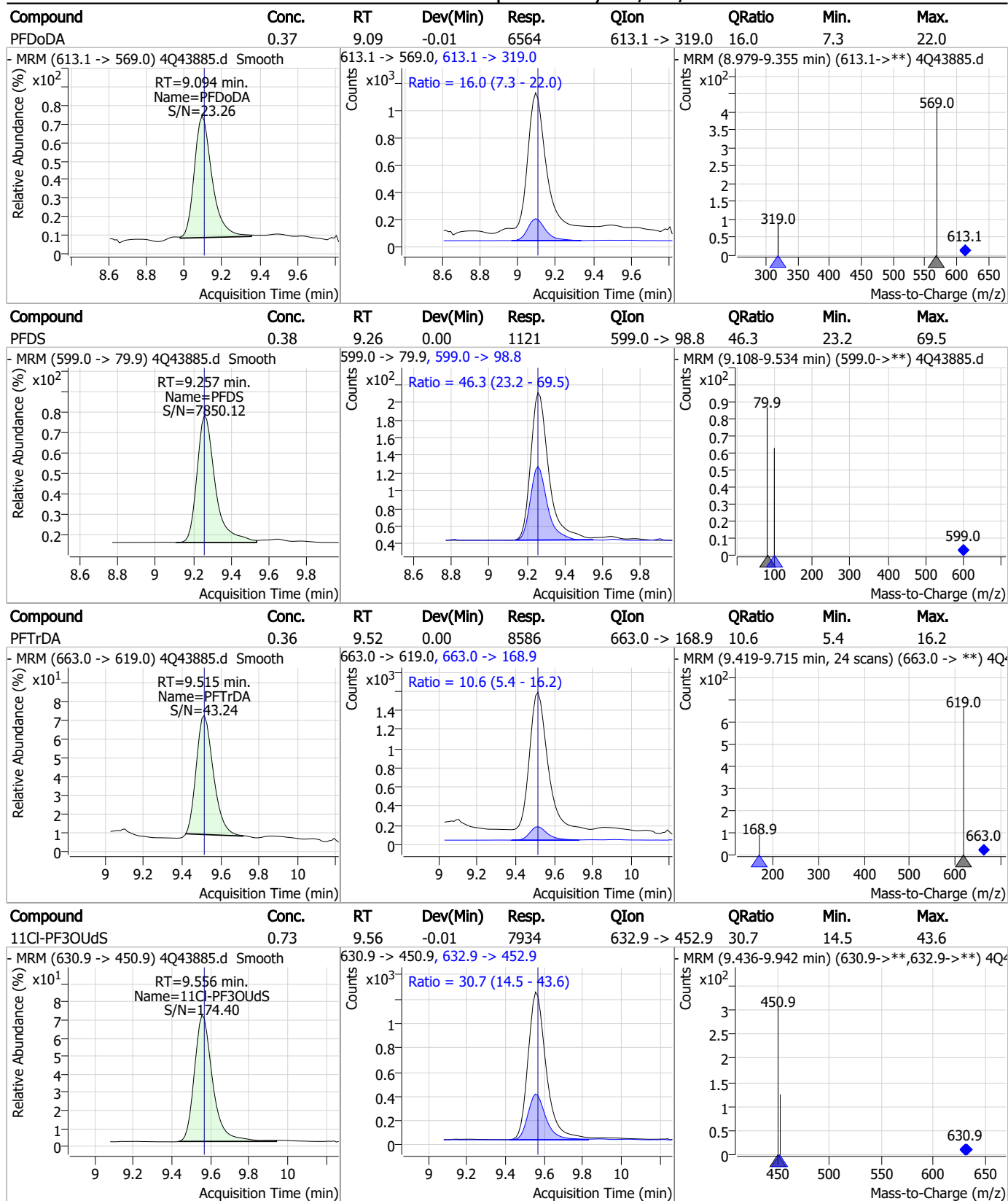


### Perfluorinated Compounds by LC/MS/MS



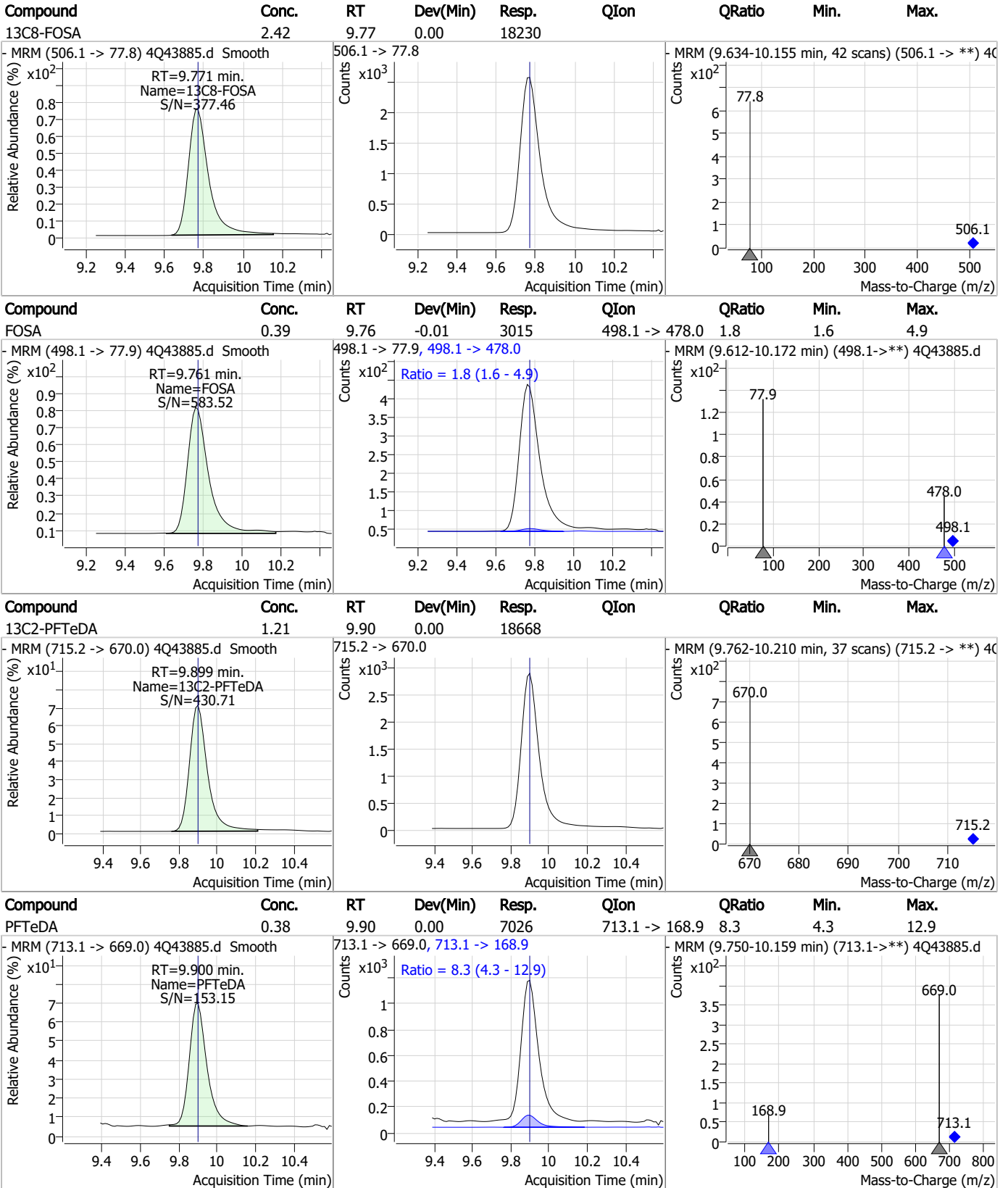
7.7.3  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.3  
7

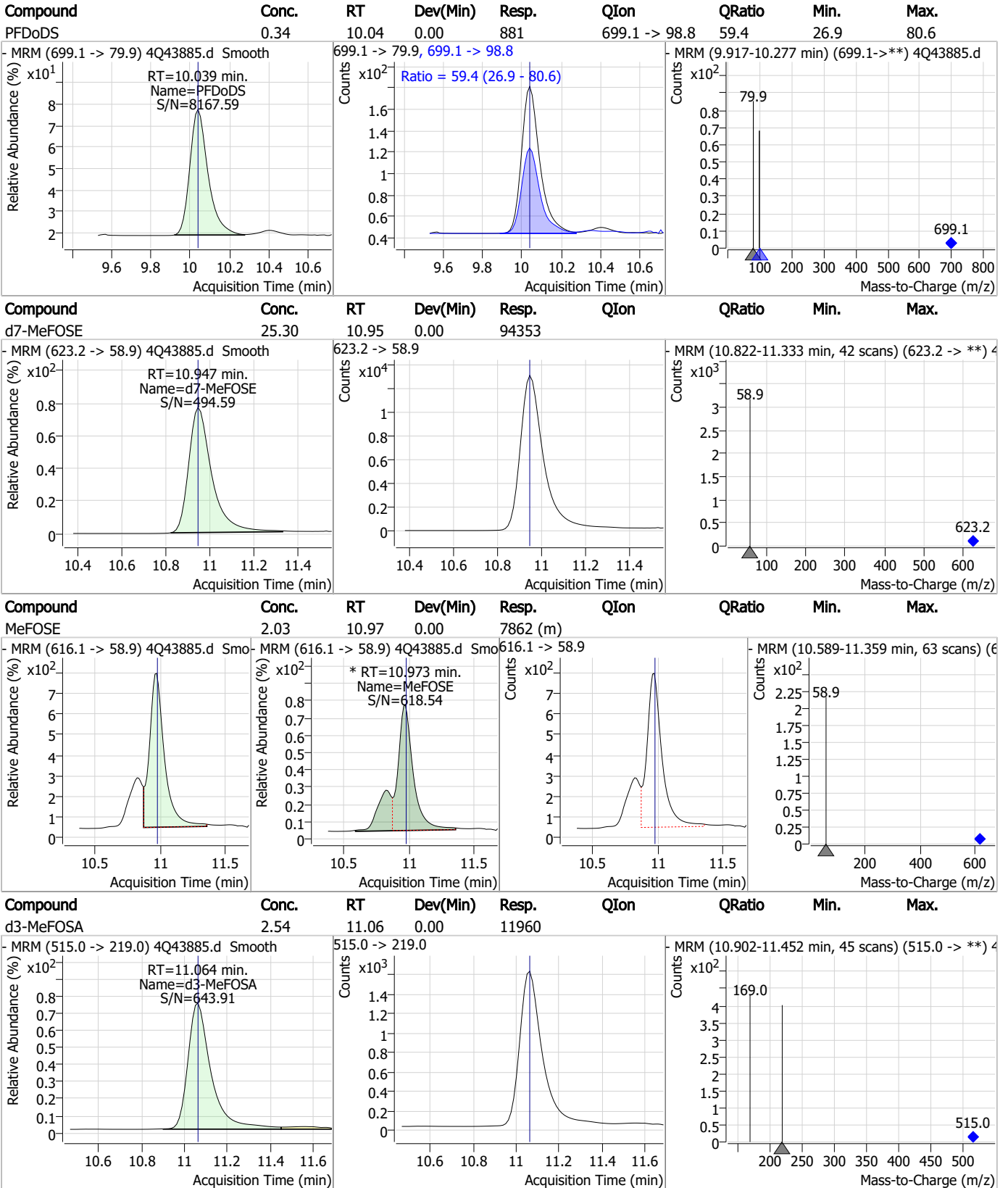
### Perfluorinated Compounds by LC/MS/MS



7.7.3

7

### Perfluorinated Compounds by LC/MS/MS



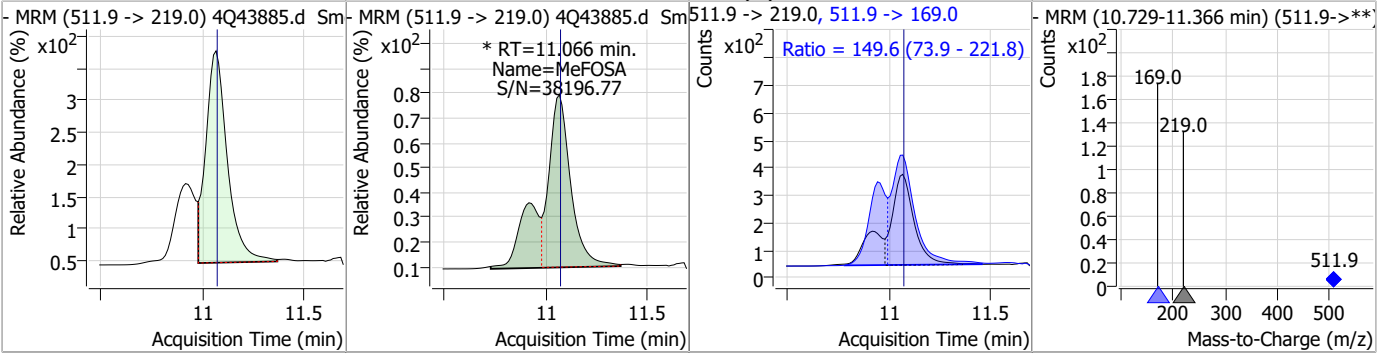
7.7.3

7

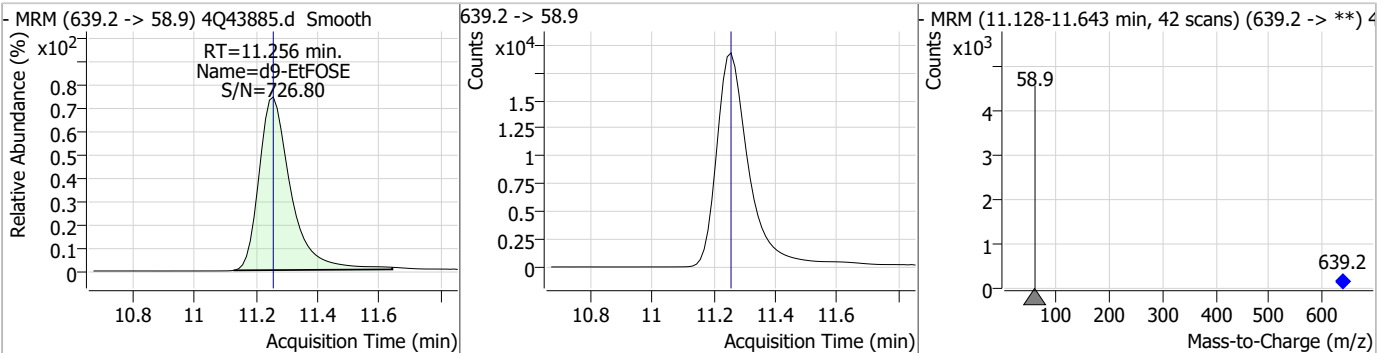


### Perfluorinated Compounds by LC/MS/MS

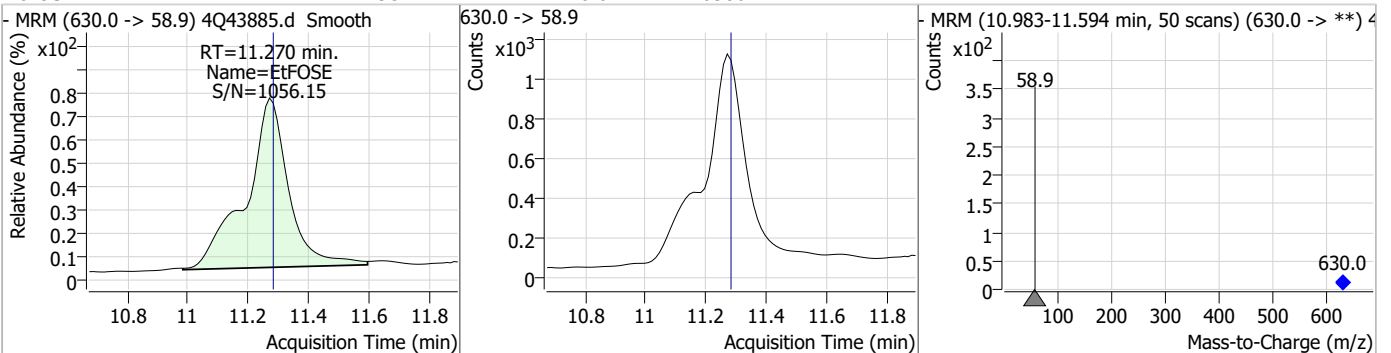
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	0.74	11.07	0.00	3333 (m)	511.9 -> 169.0	149.6	73.9	221.8



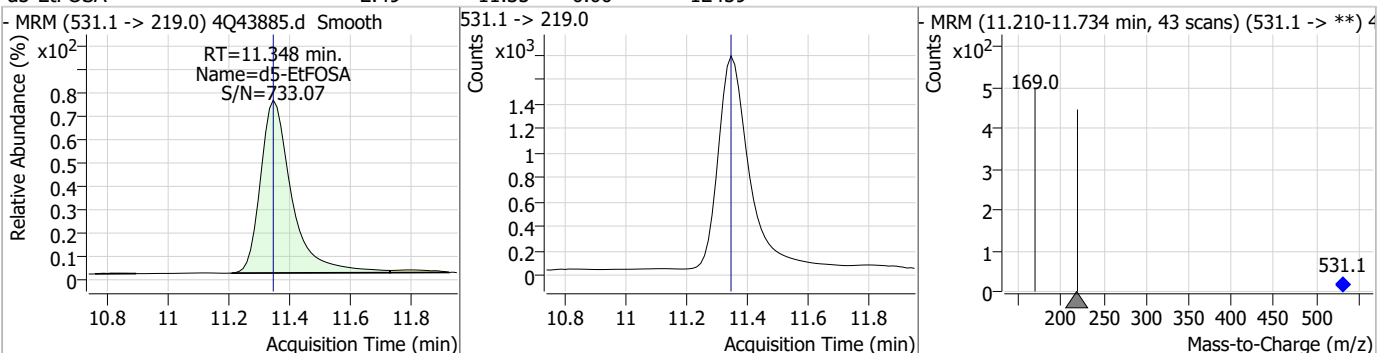
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.01	11.26	0.00	137343				



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

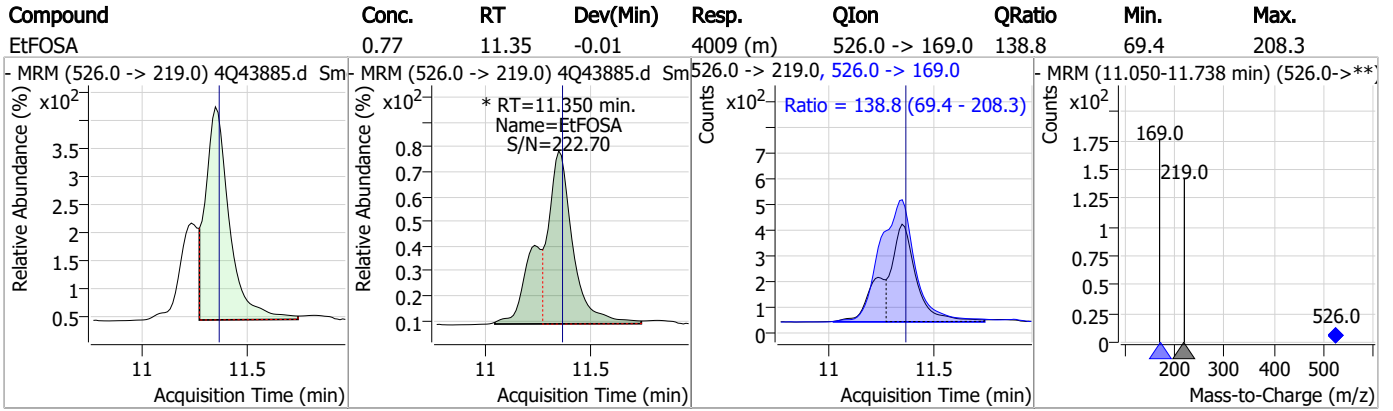


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.49	11.35	0.00	12459				





### Perfluorinated Compounds by LC/MS/MS



7.7.3

7

# Manual Integration Approval Summary

Sample Number: S4Q634-IC634  
Lab FileID: 4Q43885.D  
Injection Time: 05/03/23 11:26

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

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

7.7.3.1

7

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43886.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 11:40:17 AM  
 Sample Name : ic634-3  
 Vial : P1-A4  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

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

7.7.4  
7

## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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

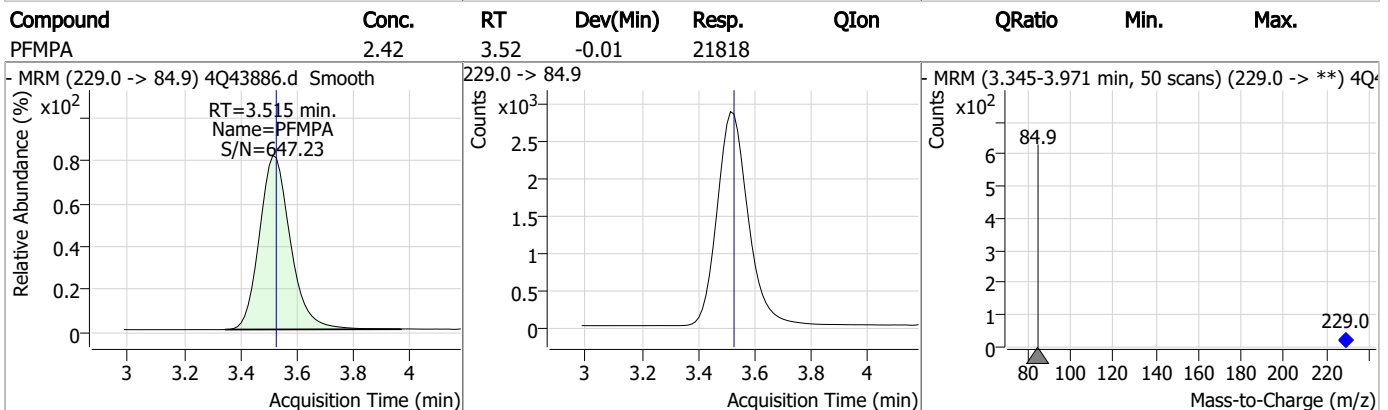
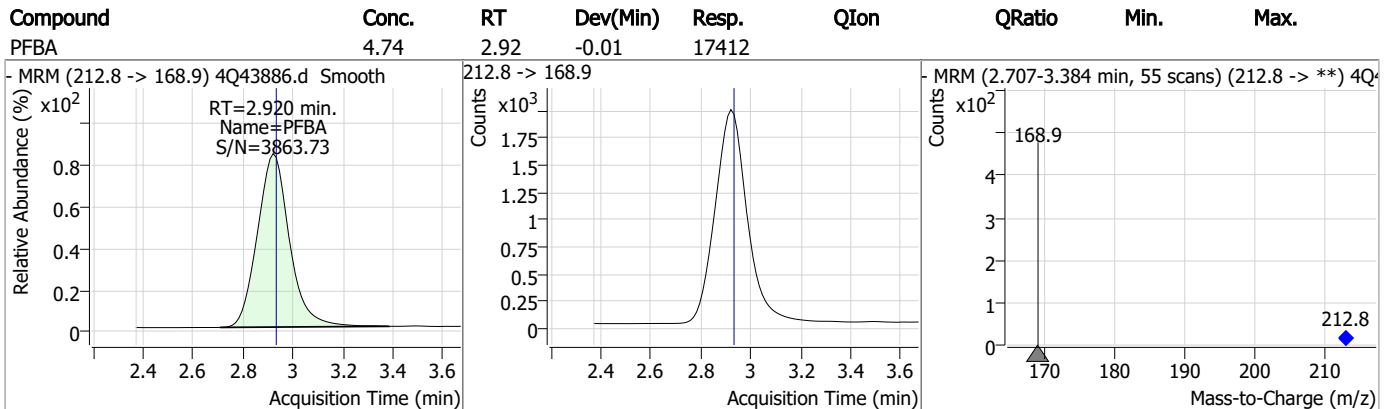
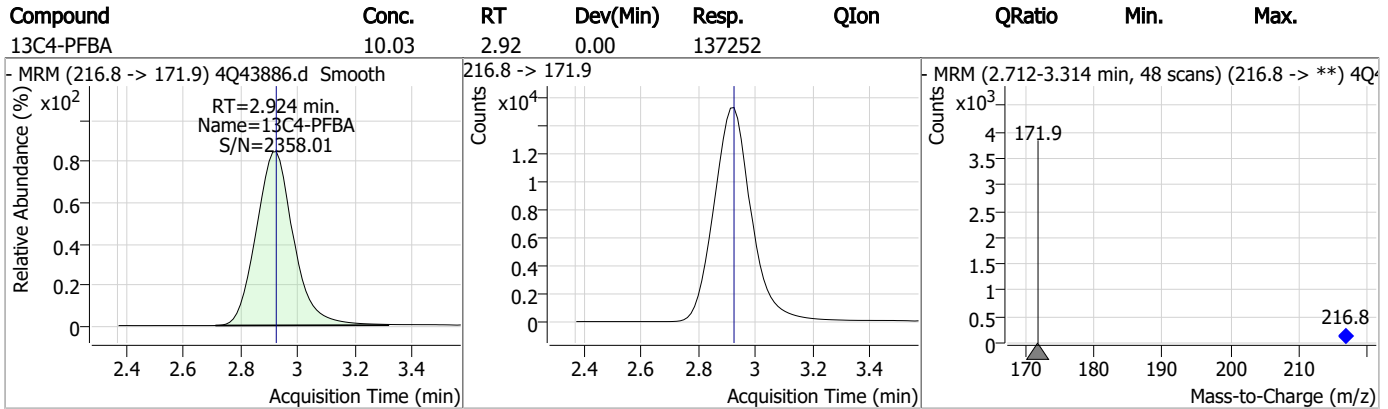
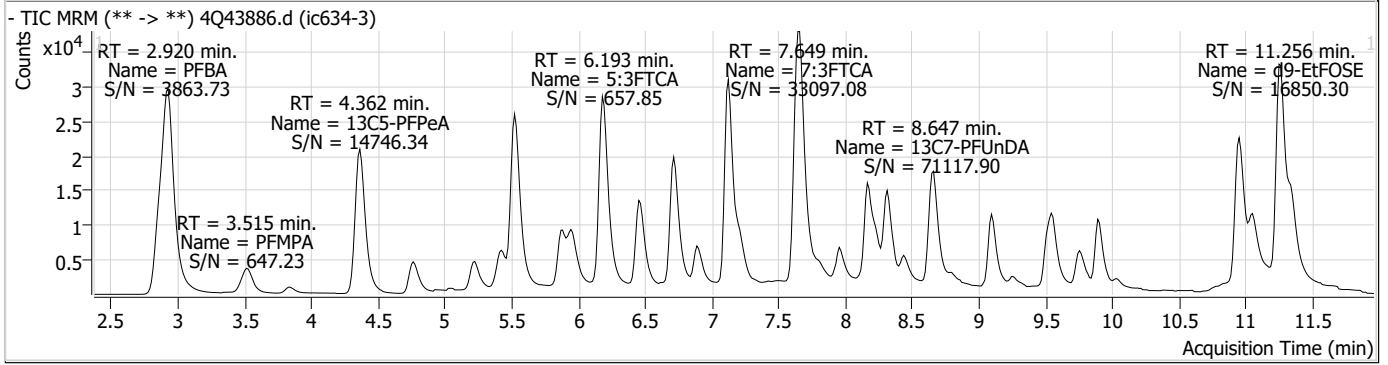
### Perfluorinated Compounds by LC/MS/MS

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

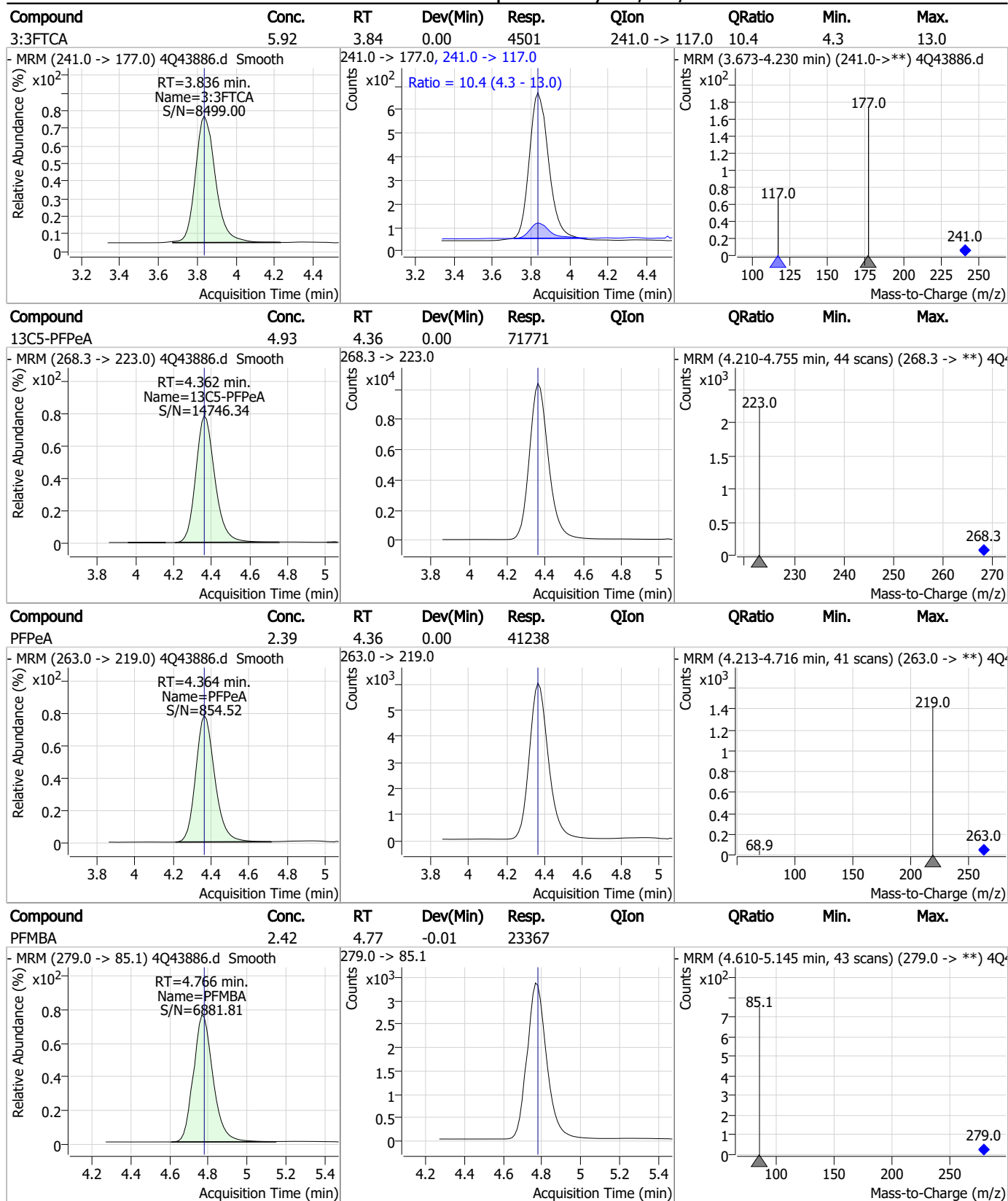
7.7.4

7

### Perfluorinated Compounds by LC/MS/MS



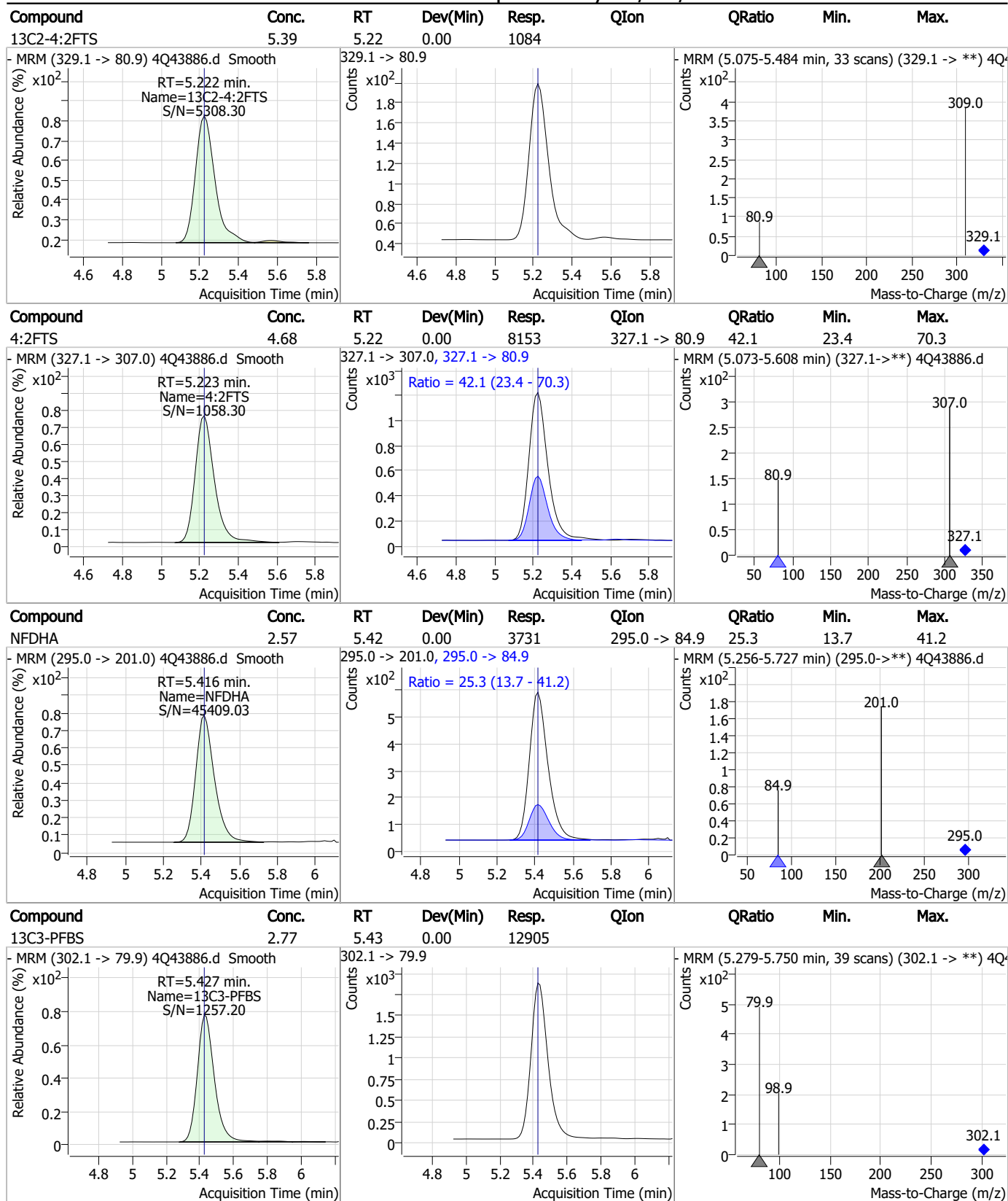
### Perfluorinated Compounds by LC/MS/MS



7.7.4  
7



### Perfluorinated Compounds by LC/MS/MS

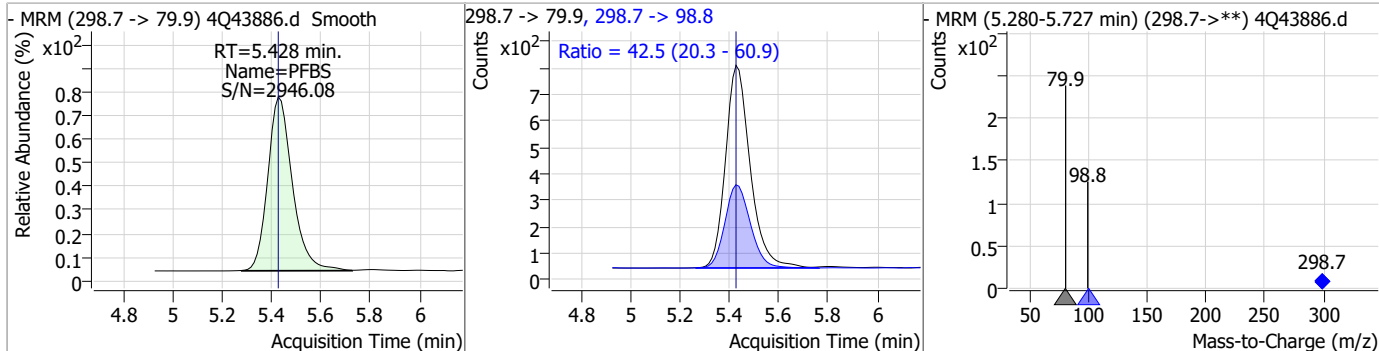


7.7.4

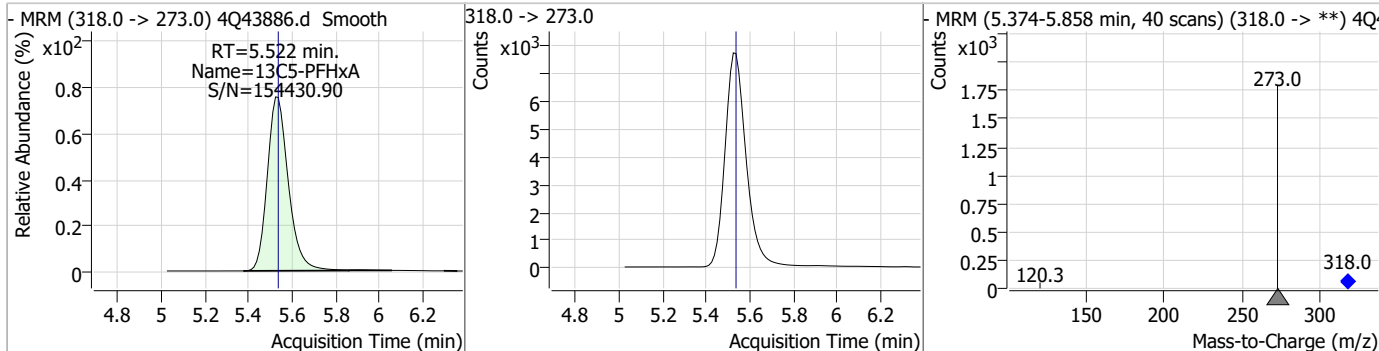
7

### Perfluorinated Compounds by LC/MS/MS

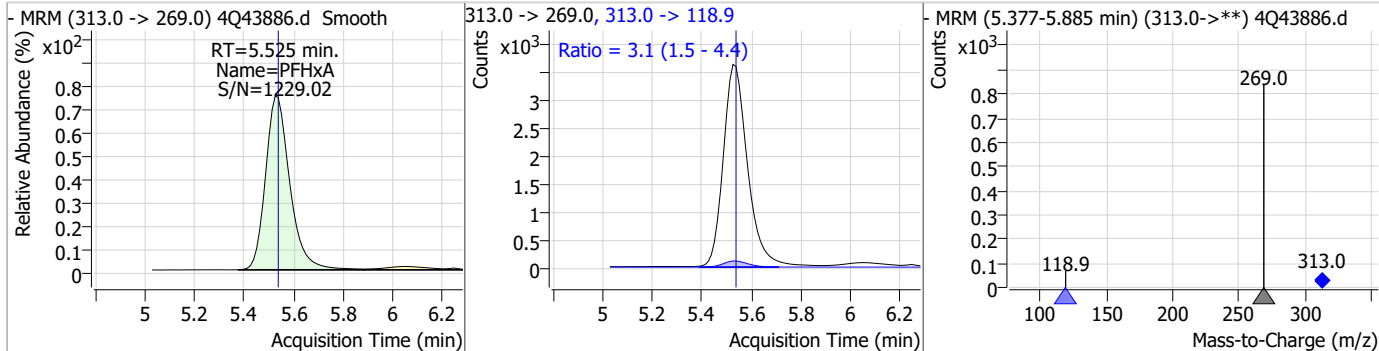
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	1.00	5.43	0.00	5301	298.7 -> 98.8	42.5	20.3	60.9



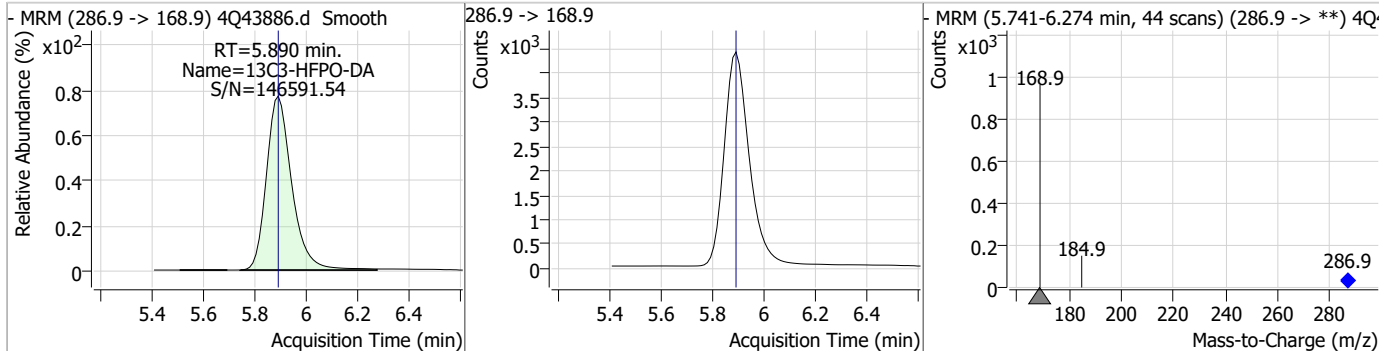
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.49	5.52	-0.01	51796				



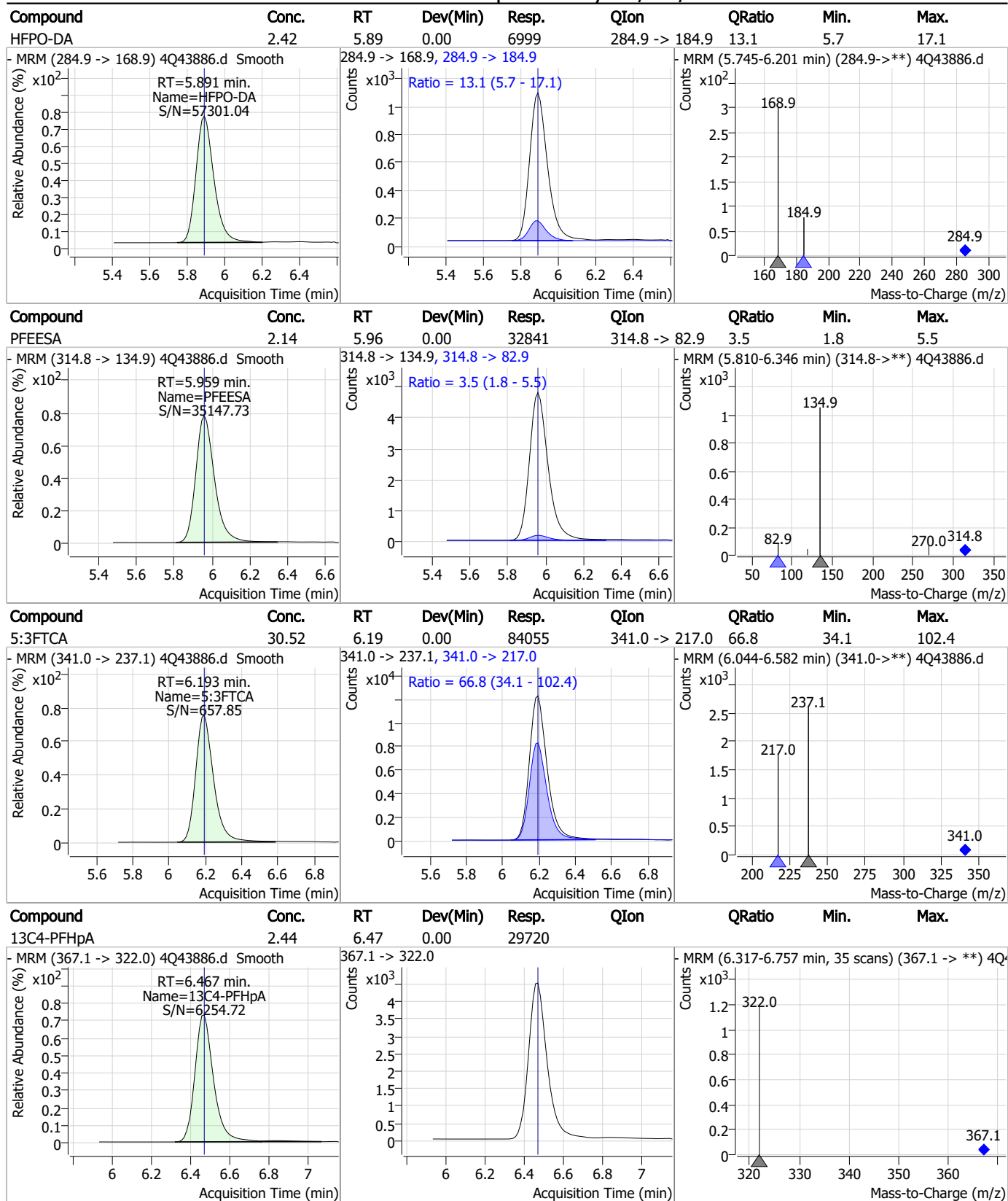
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	1.21	5.53	-0.01	24548	313.0 -> 118.9	3.1	1.5	4.4



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

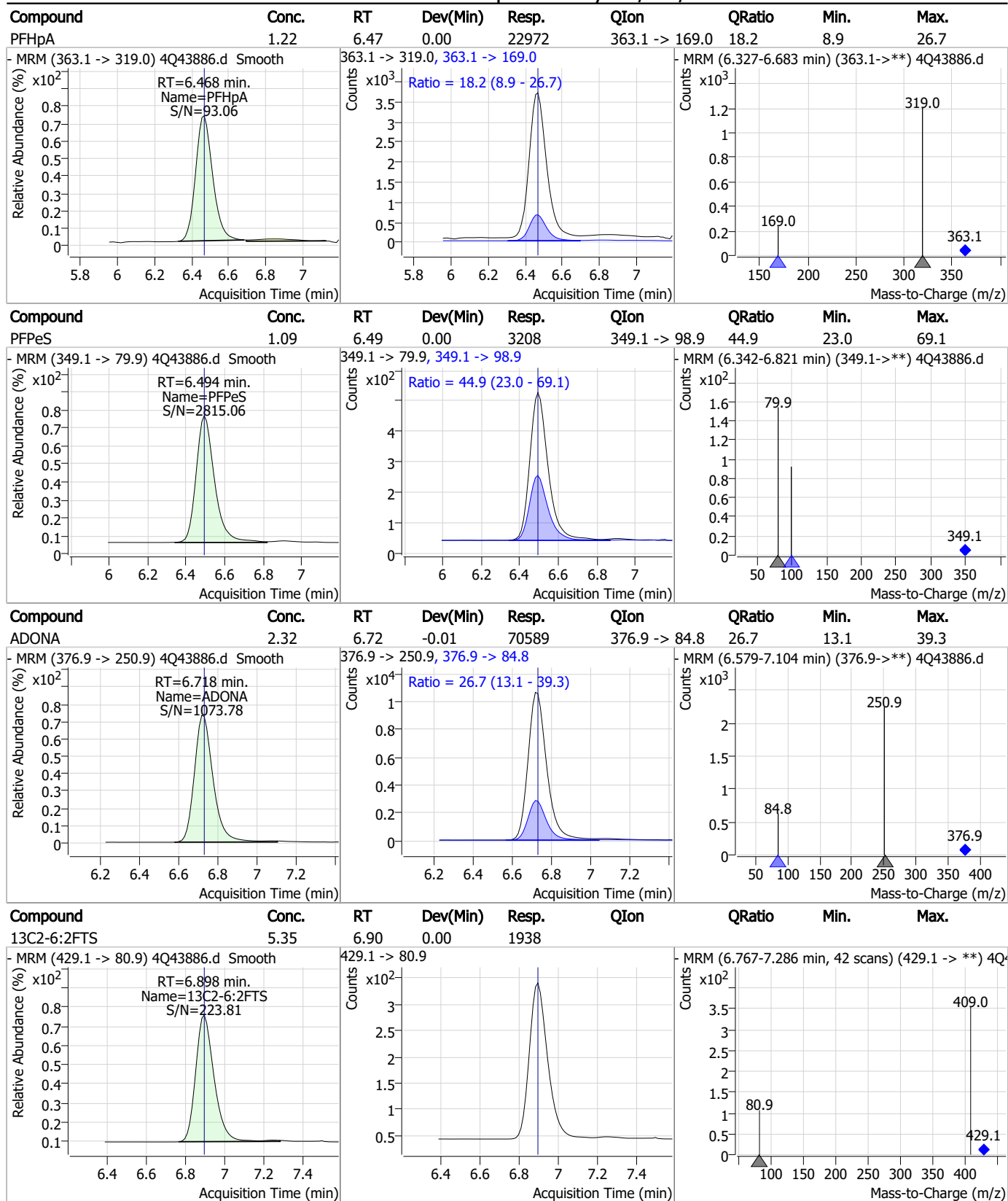


### Perfluorinated Compounds by LC/MS/MS



7.7.4  
7

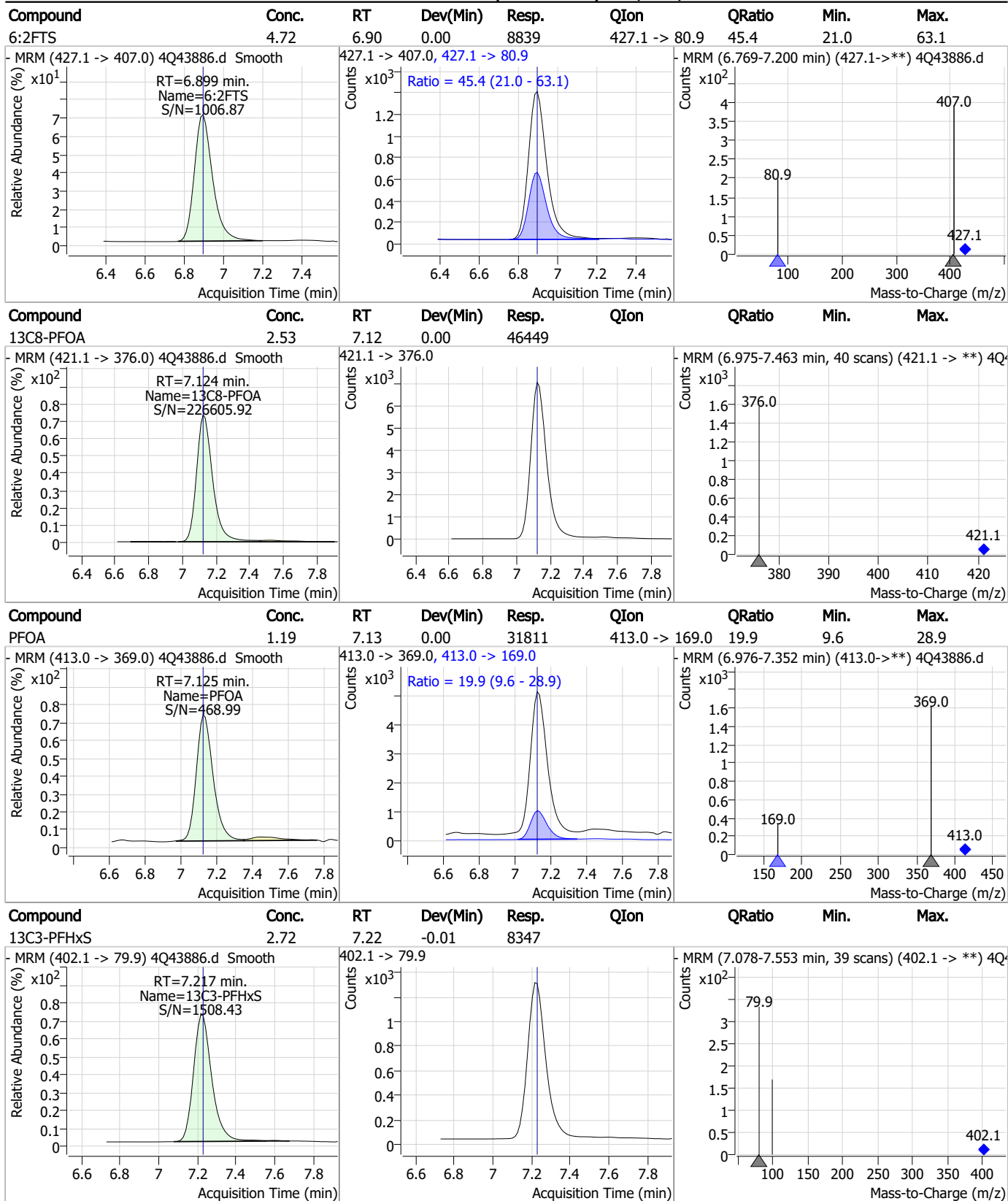
### Perfluorinated Compounds by LC/MS/MS



7.7.4  
7



### Perfluorinated Compounds by LC/MS/MS

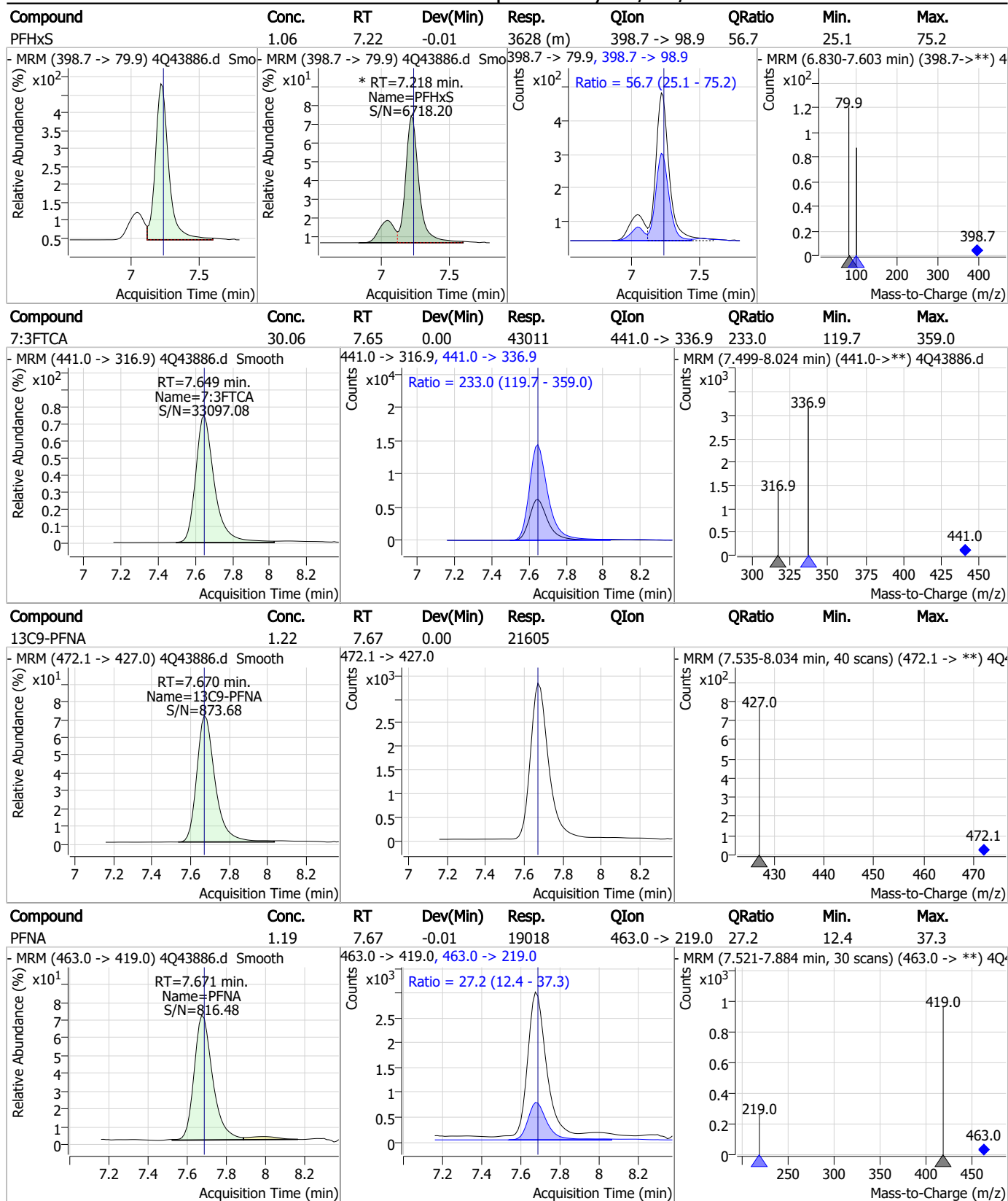


7.7.4

7



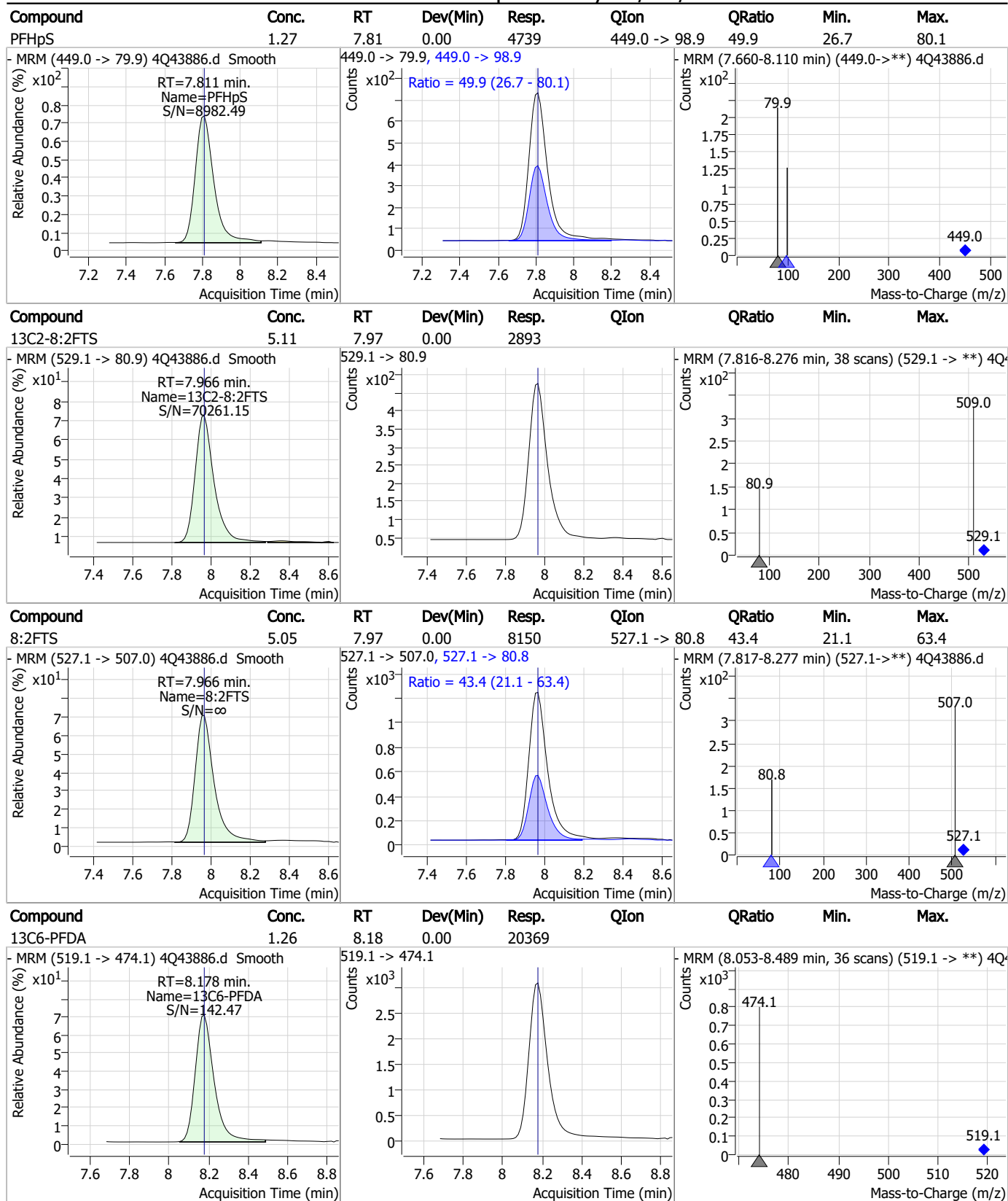
### Perfluorinated Compounds by LC/MS/MS



7.7.4  
7



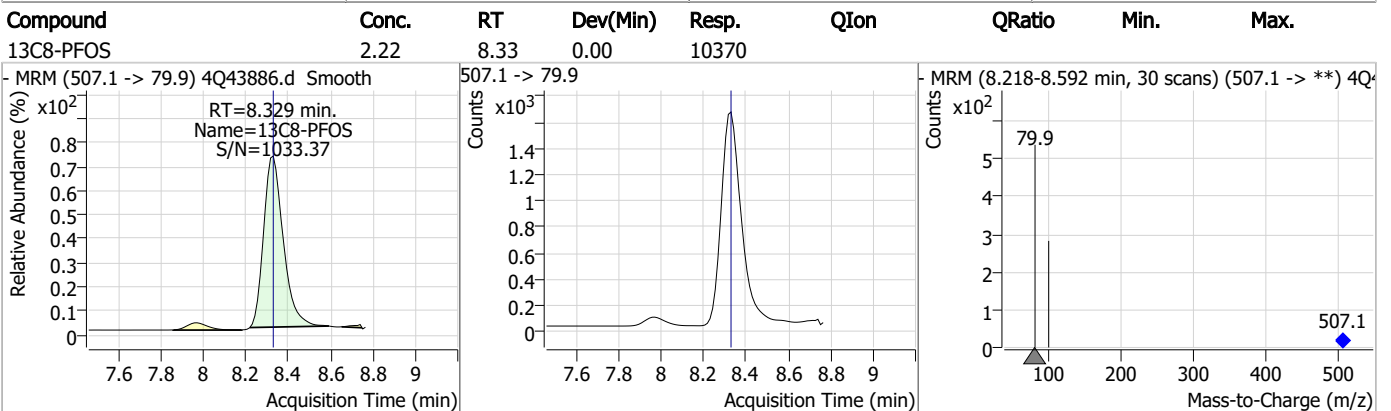
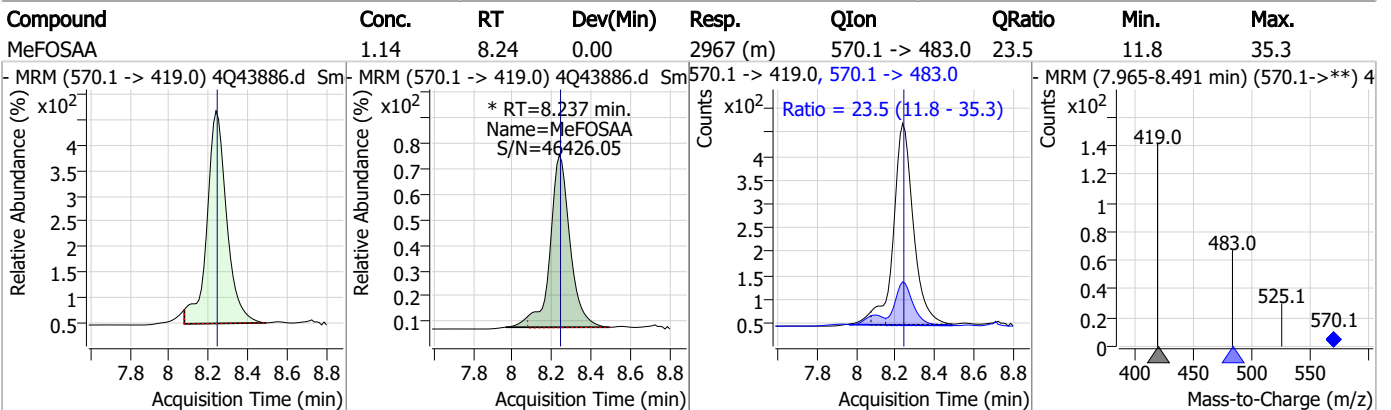
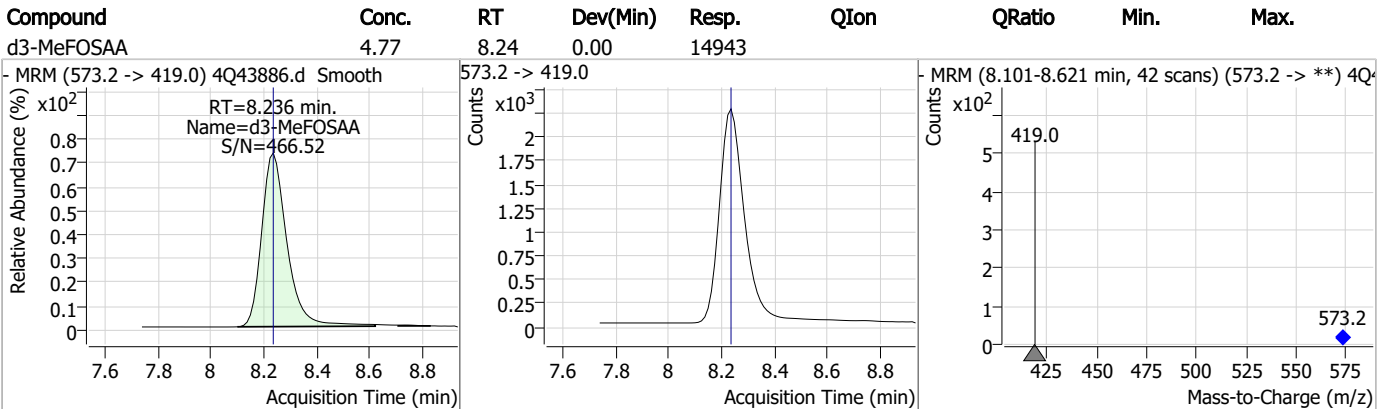
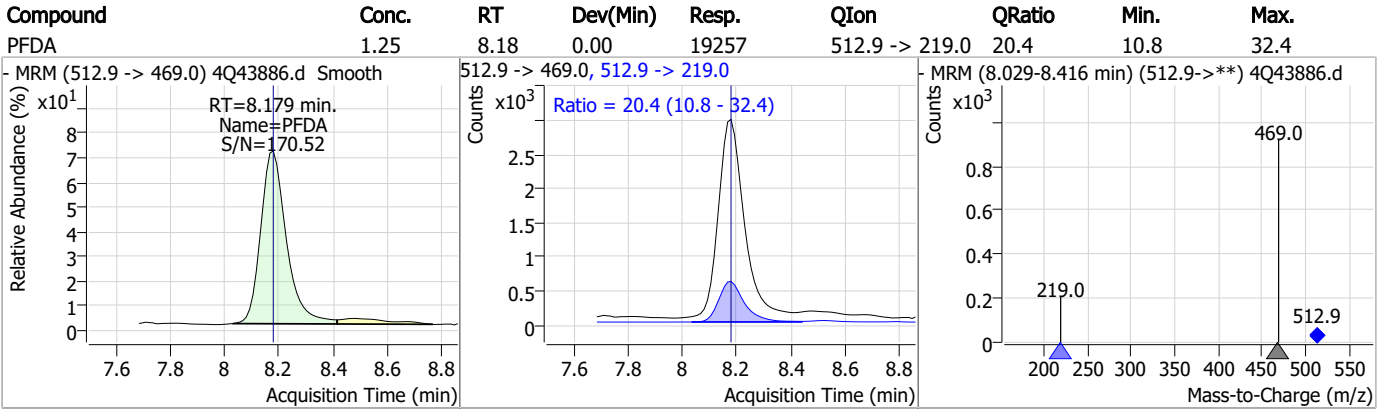
### Perfluorinated Compounds by LC/MS/MS



7.7.4

7

### Perfluorinated Compounds by LC/MS/MS

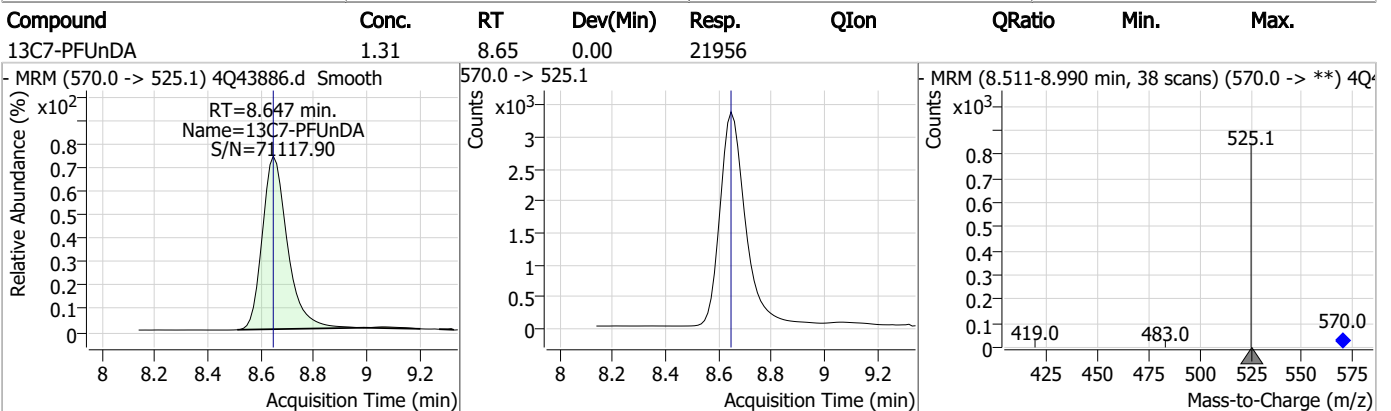
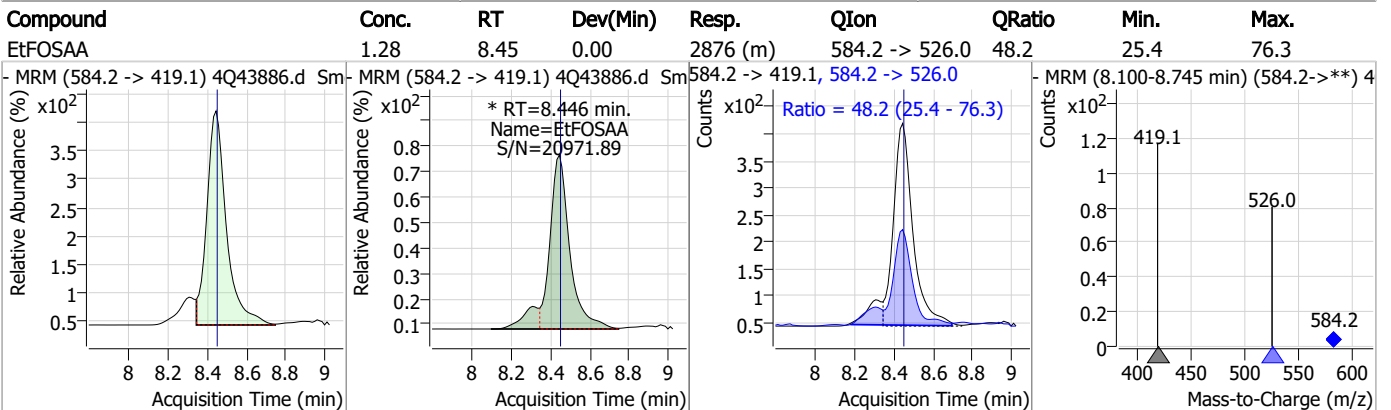
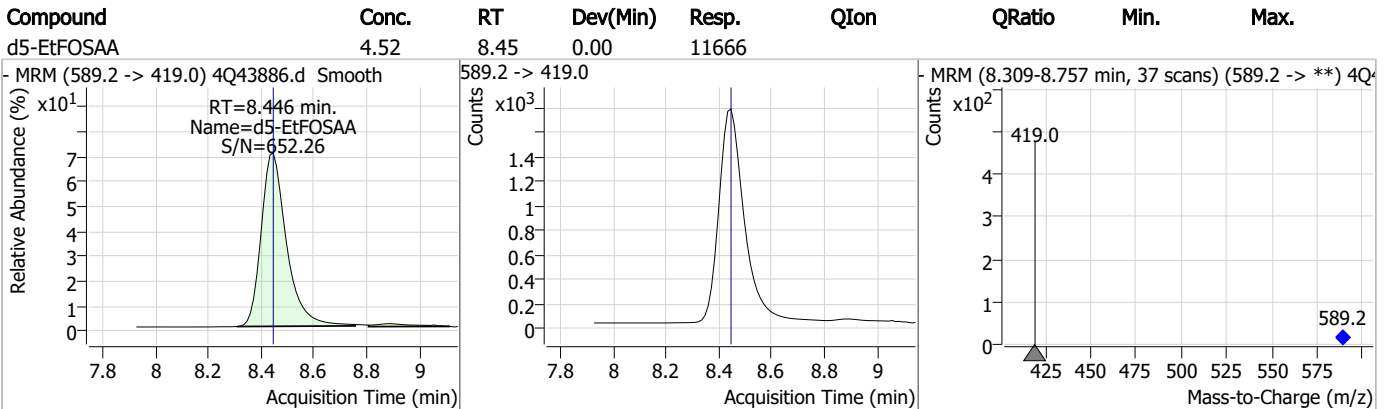
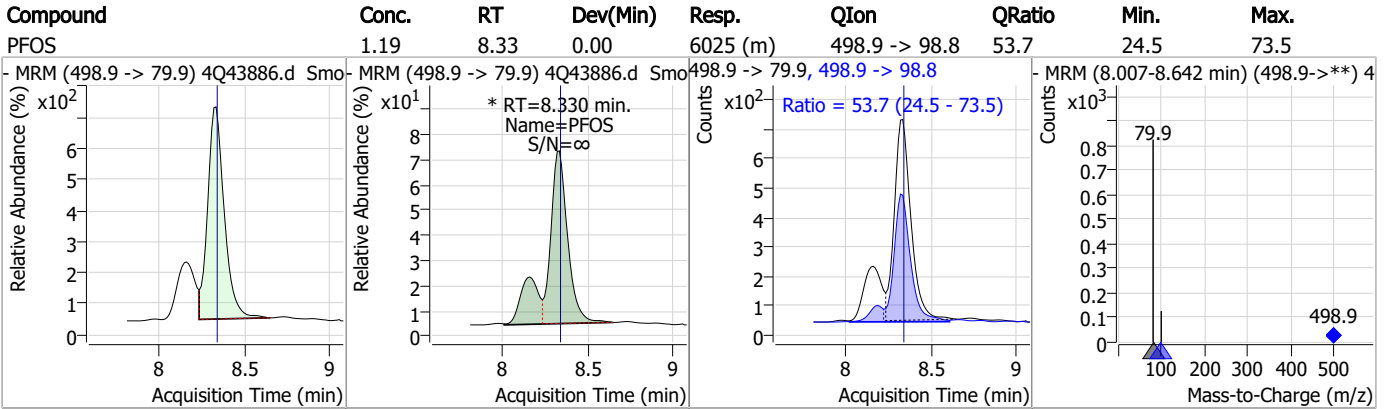


7.7.4

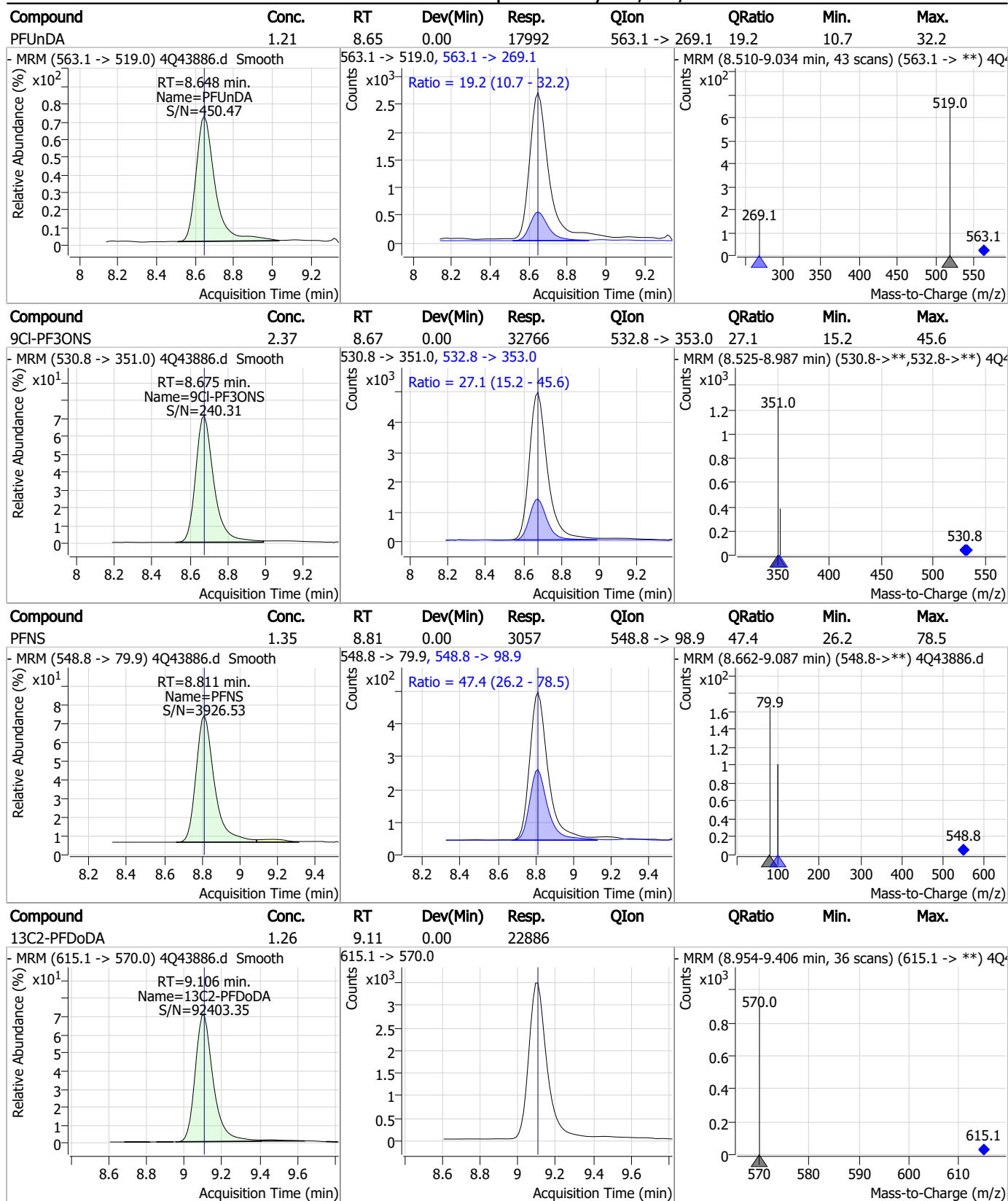
7



### Perfluorinated Compounds by LC/MS/MS

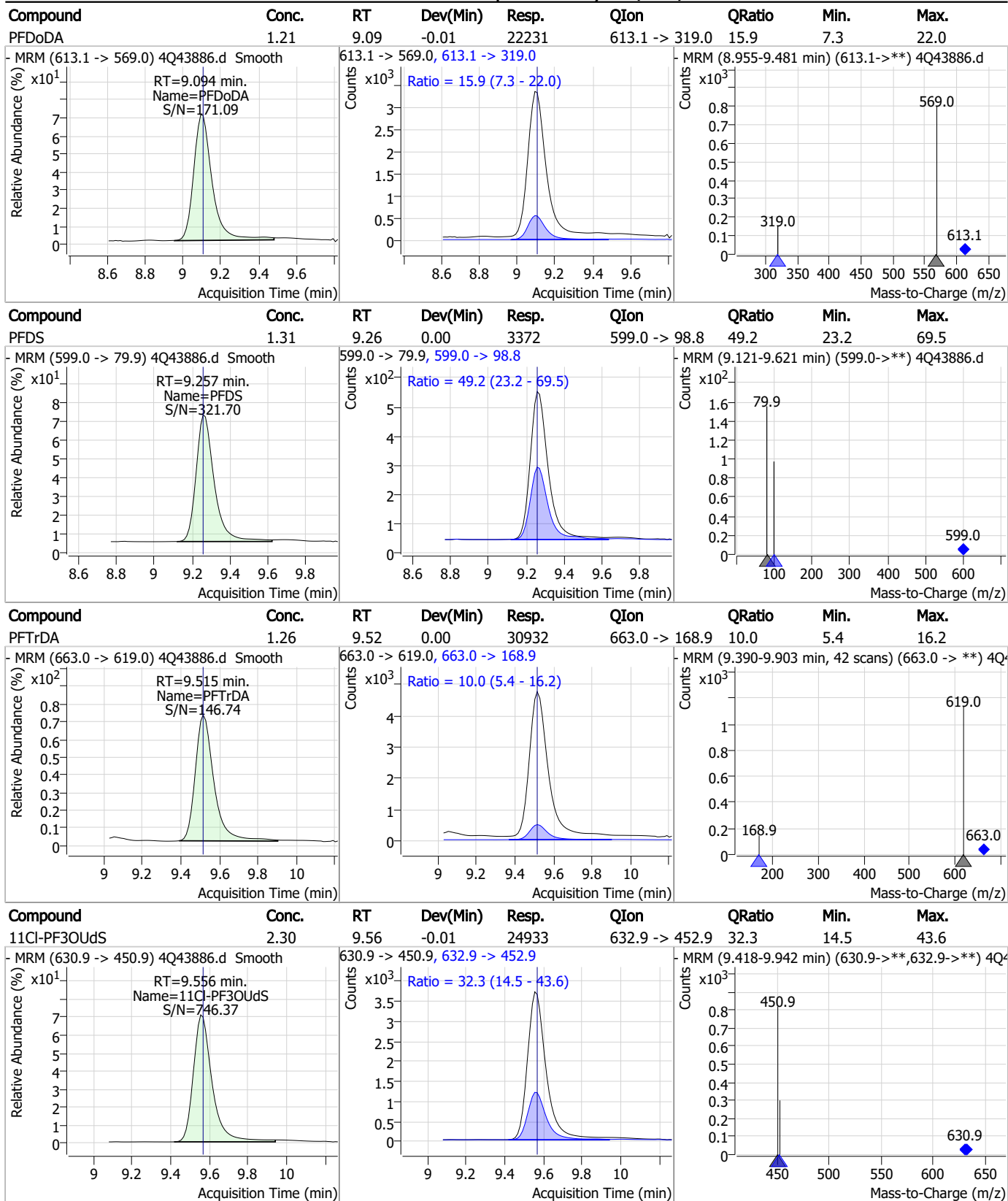


### Perfluorinated Compounds by LC/MS/MS



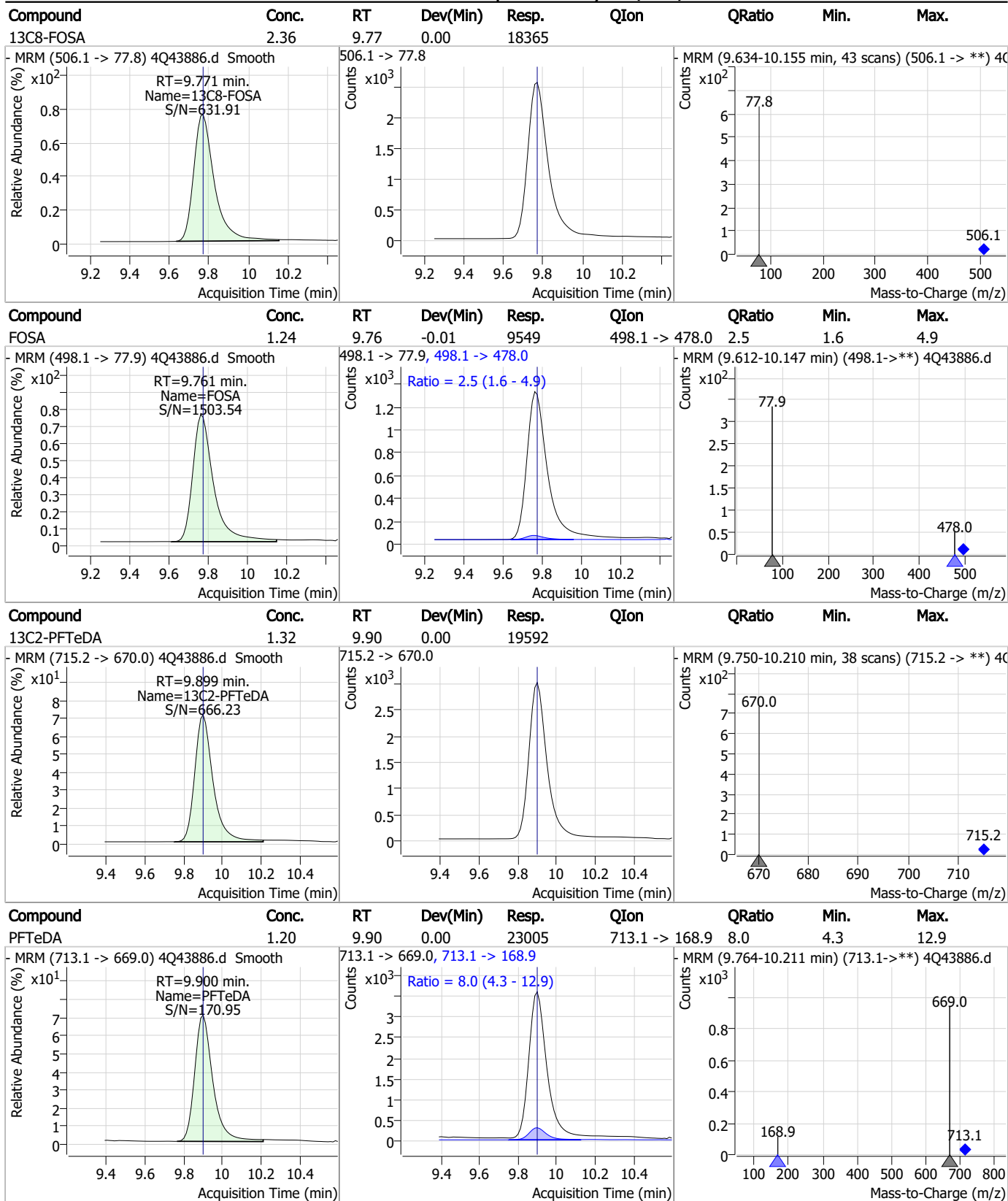
7.7.4  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.4  
7

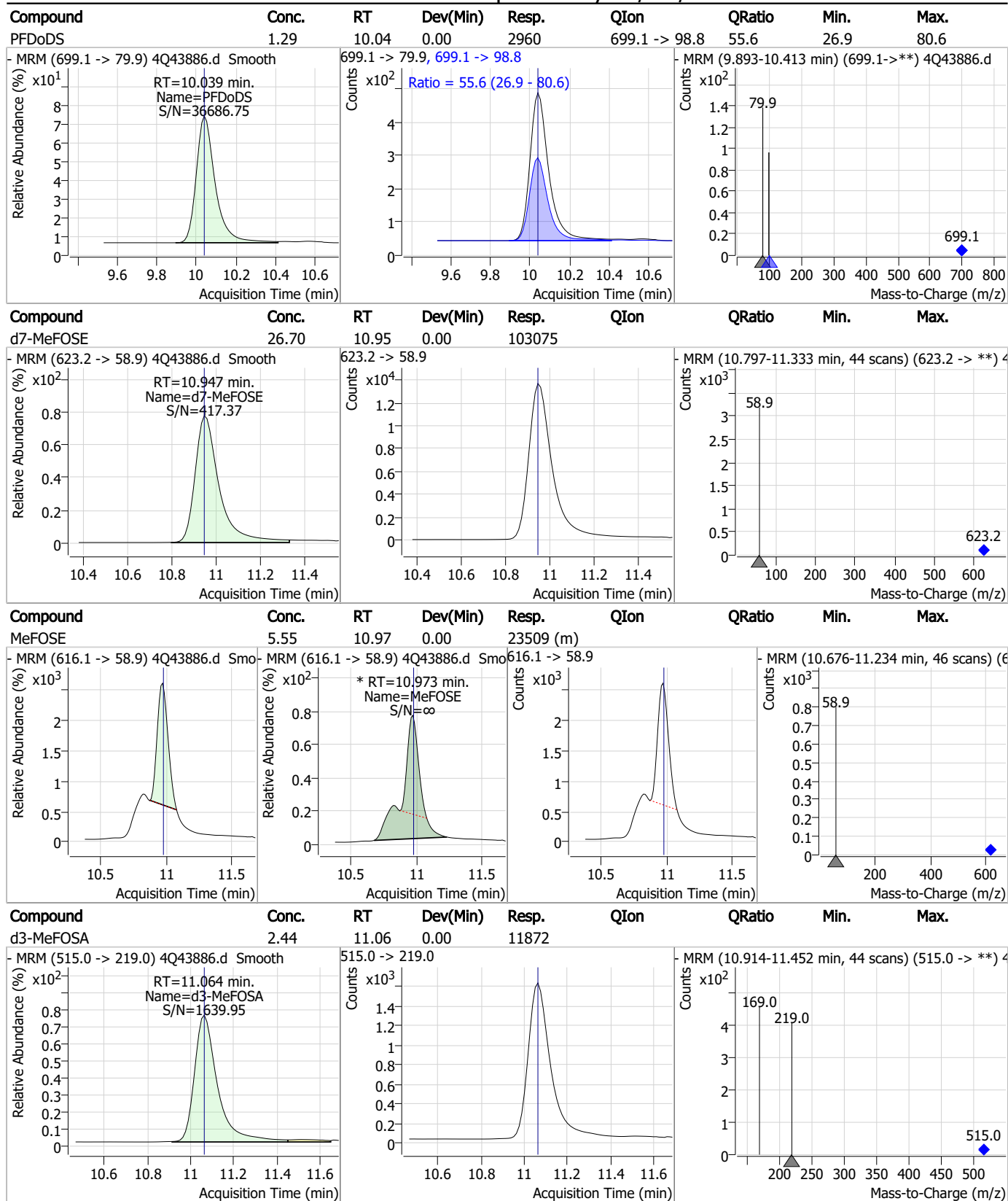
### Perfluorinated Compounds by LC/MS/MS



7.7.4

7

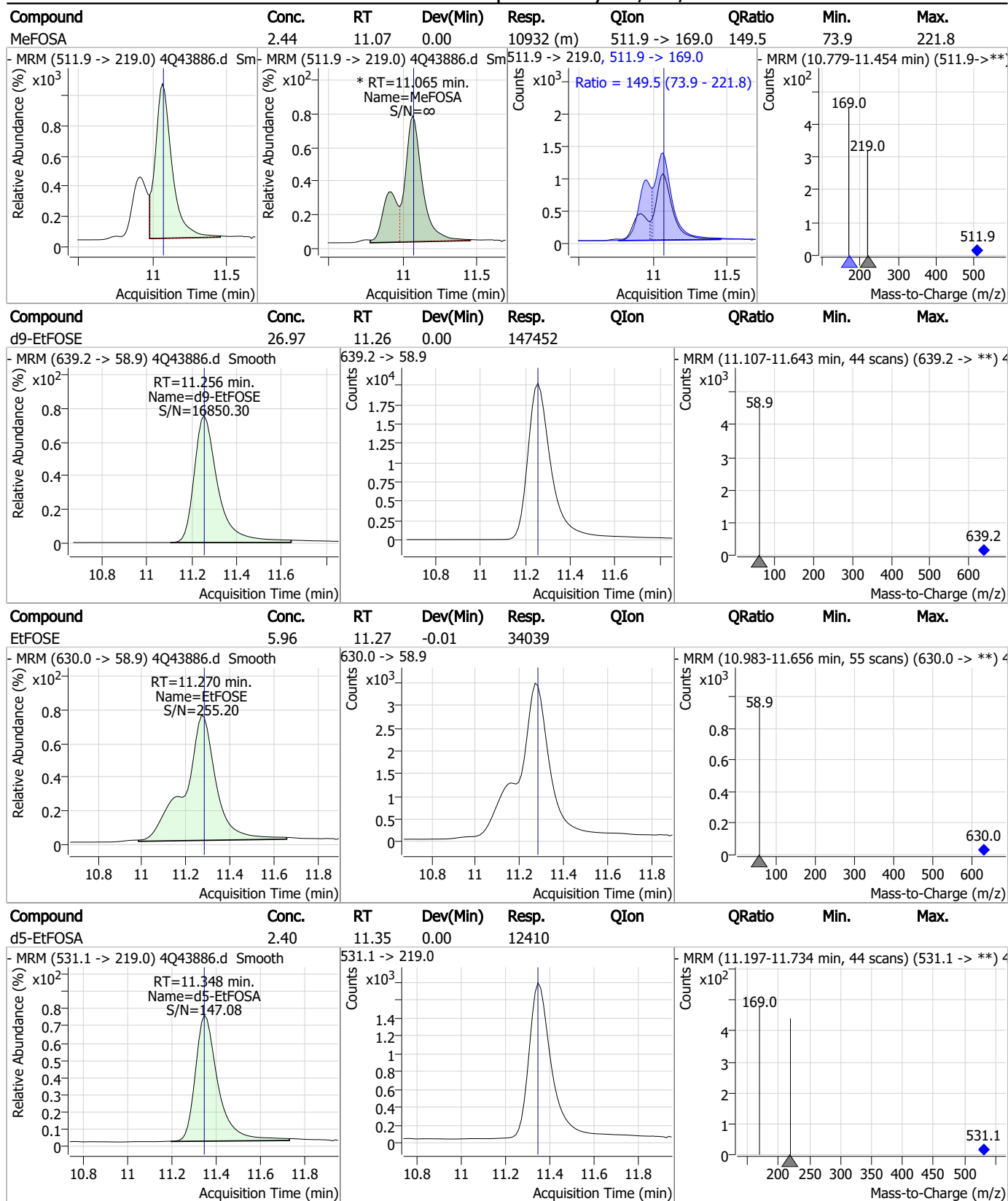
### Perfluorinated Compounds by LC/MS/MS



7.7.4

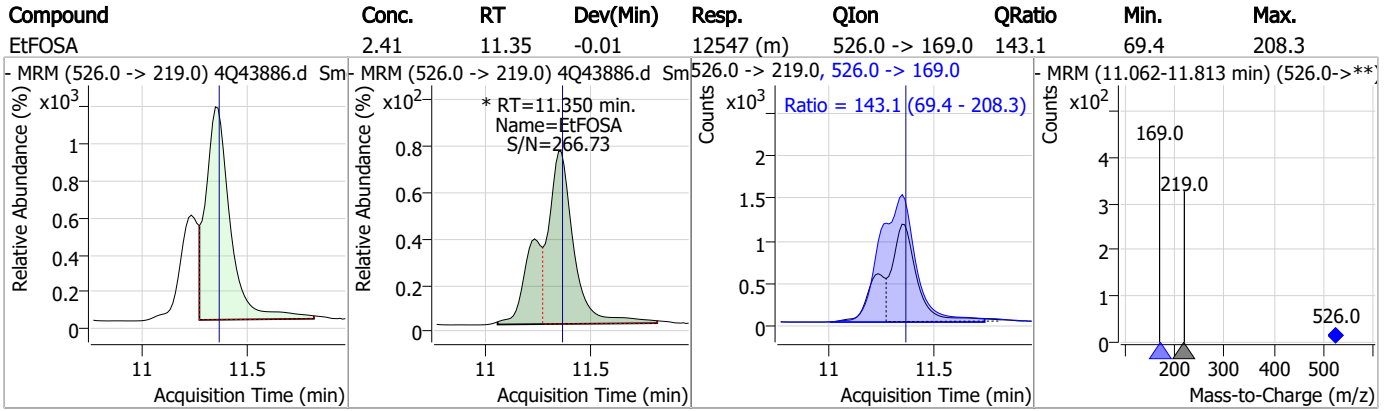
7

### Perfluorinated Compounds by LC/MS/MS



7.7.4

### Perfluorinated Compounds by LC/MS/MS



7.7.4

7

# Manual Integration Approval Summary

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

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

7.7.4.1  
7



## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43887.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 11:54:24 AM  
 Sample Name : icc634-4  
 Vial : P1-A5  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

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

## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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

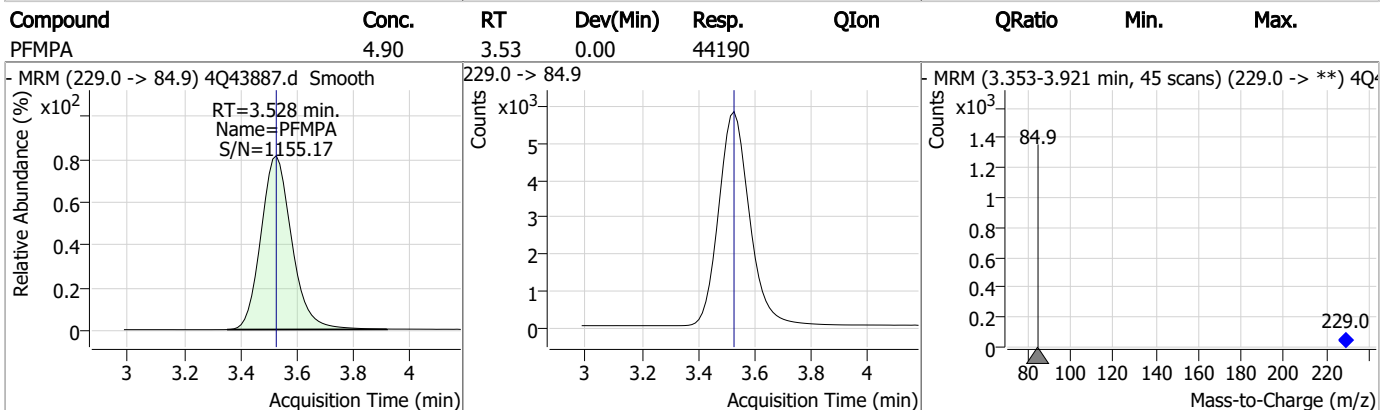
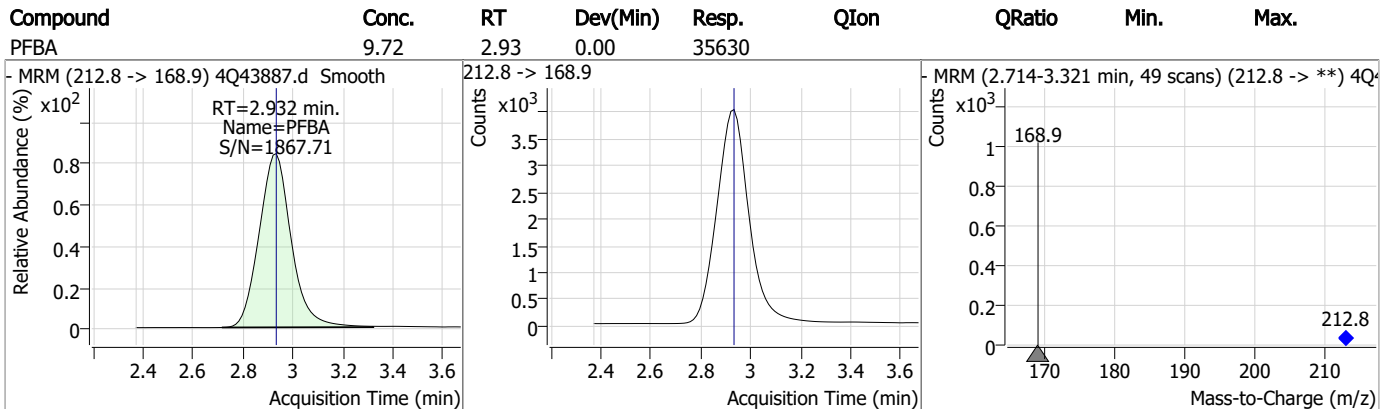
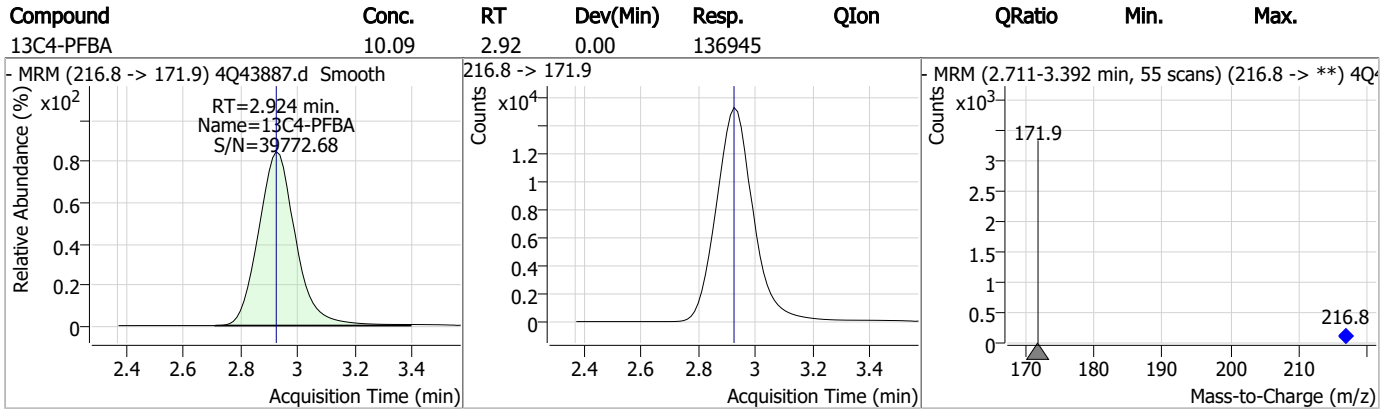
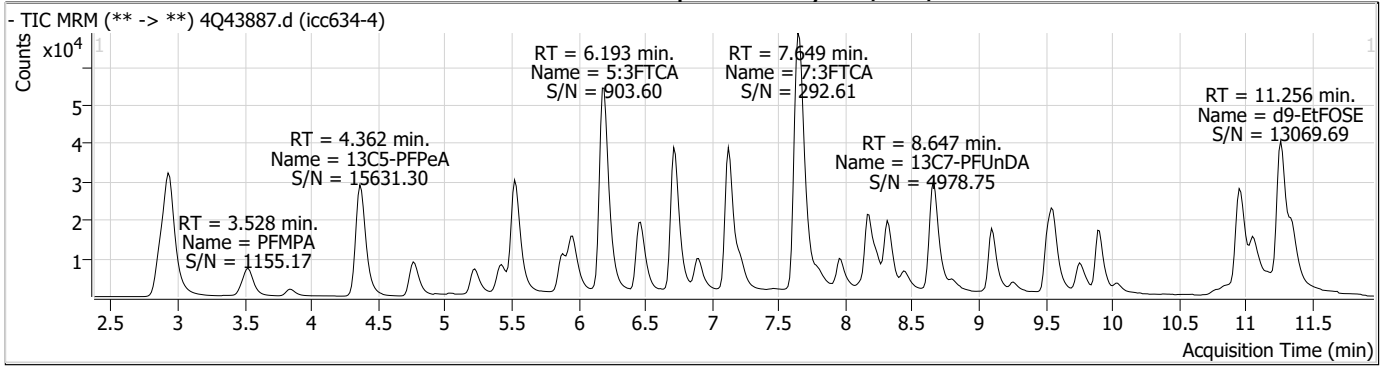
### Perfluorinated Compounds by LC/MS/MS

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

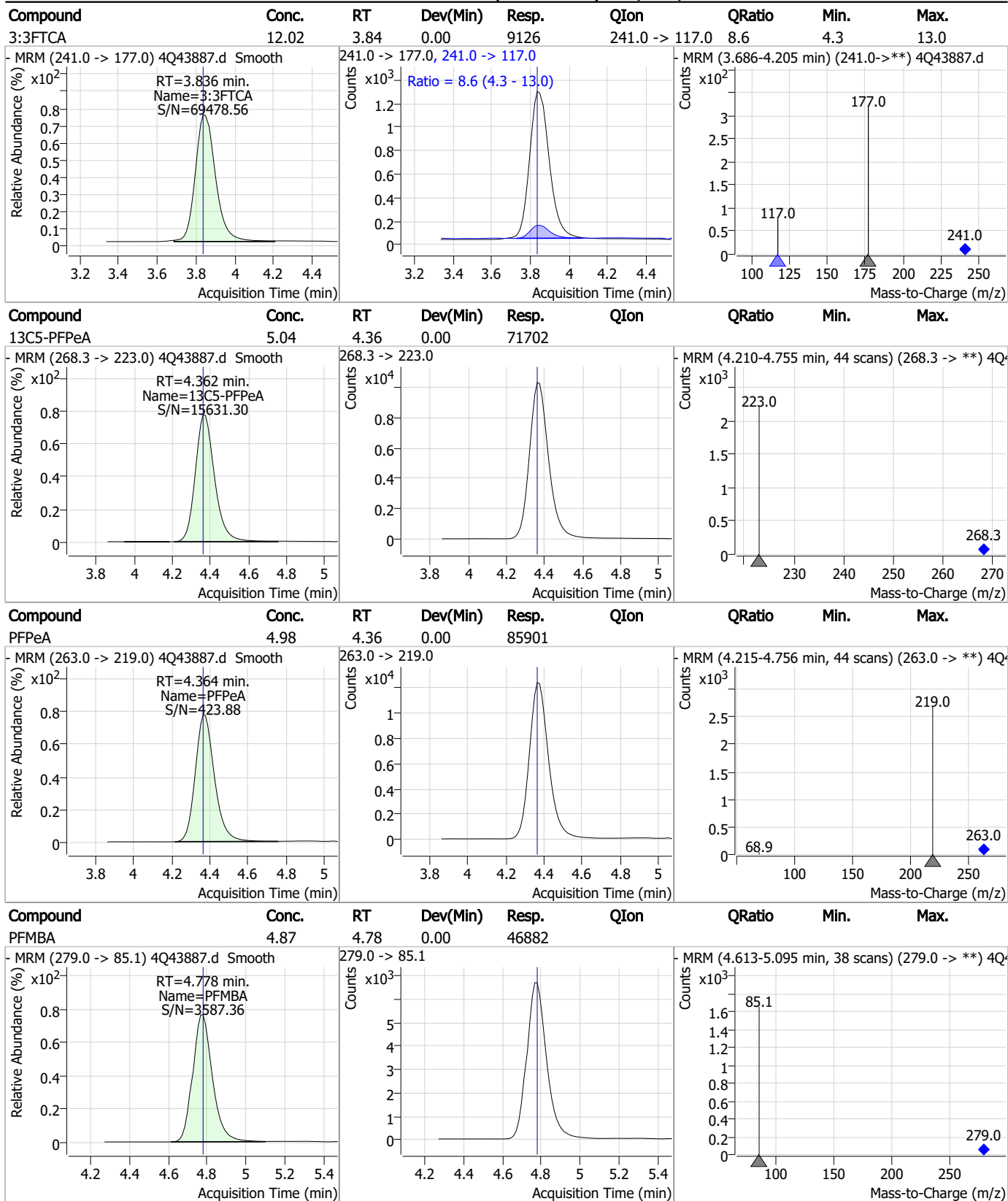
7.7.5

7

### Perfluorinated Compounds by LC/MS/MS

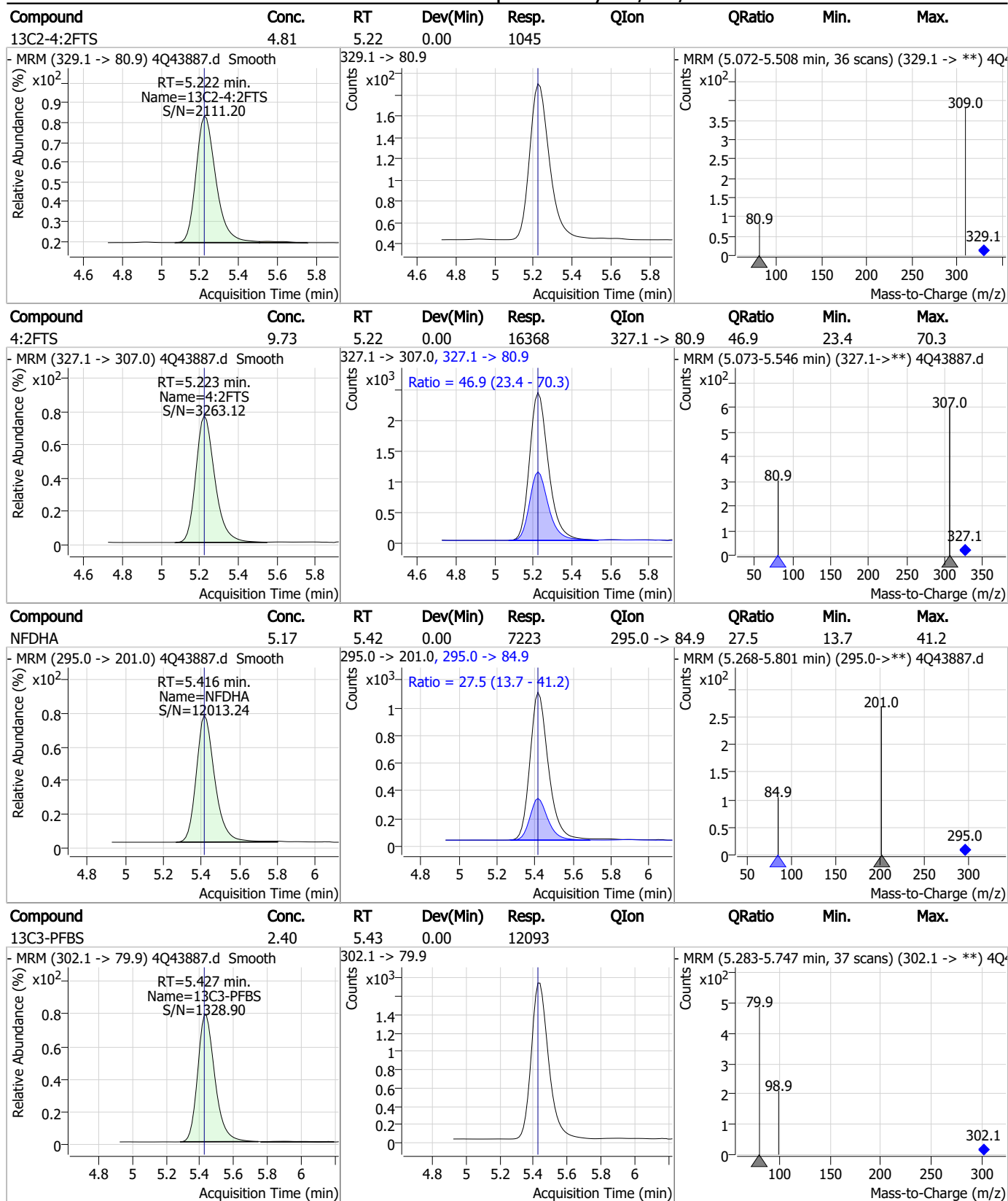


### Perfluorinated Compounds by LC/MS/MS



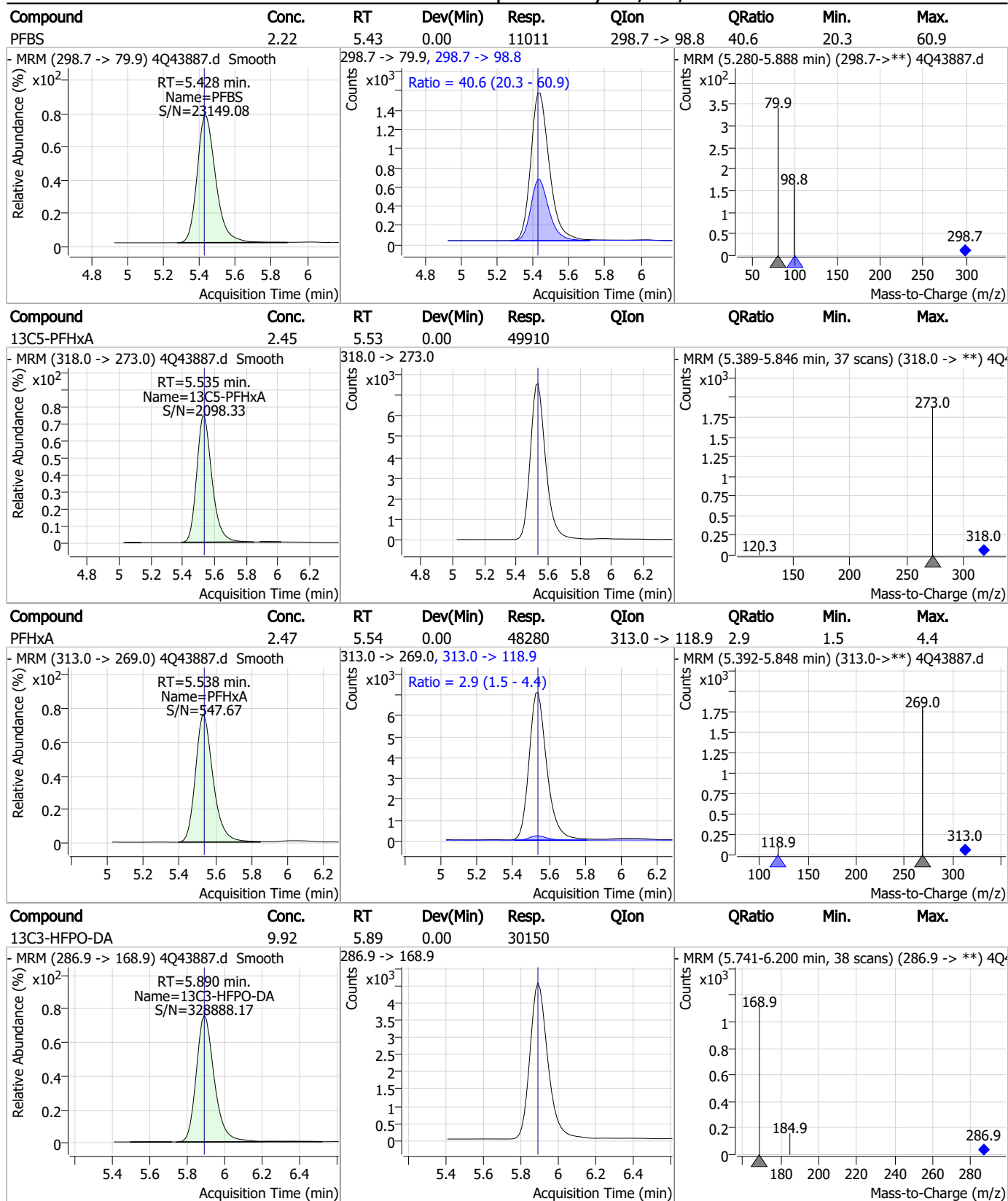
7.7.5  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.5  
7

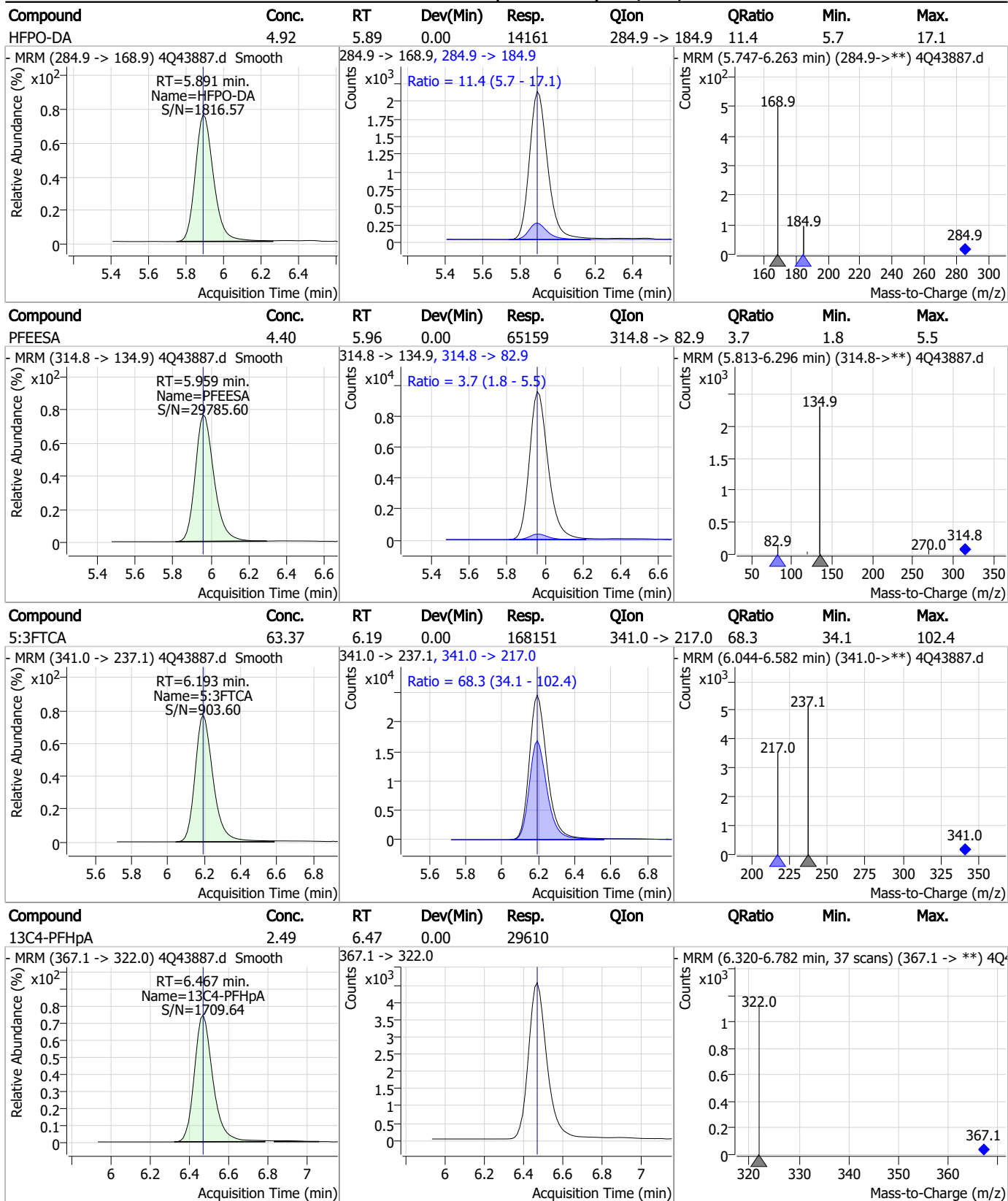
### Perfluorinated Compounds by LC/MS/MS



7.7.5  
7

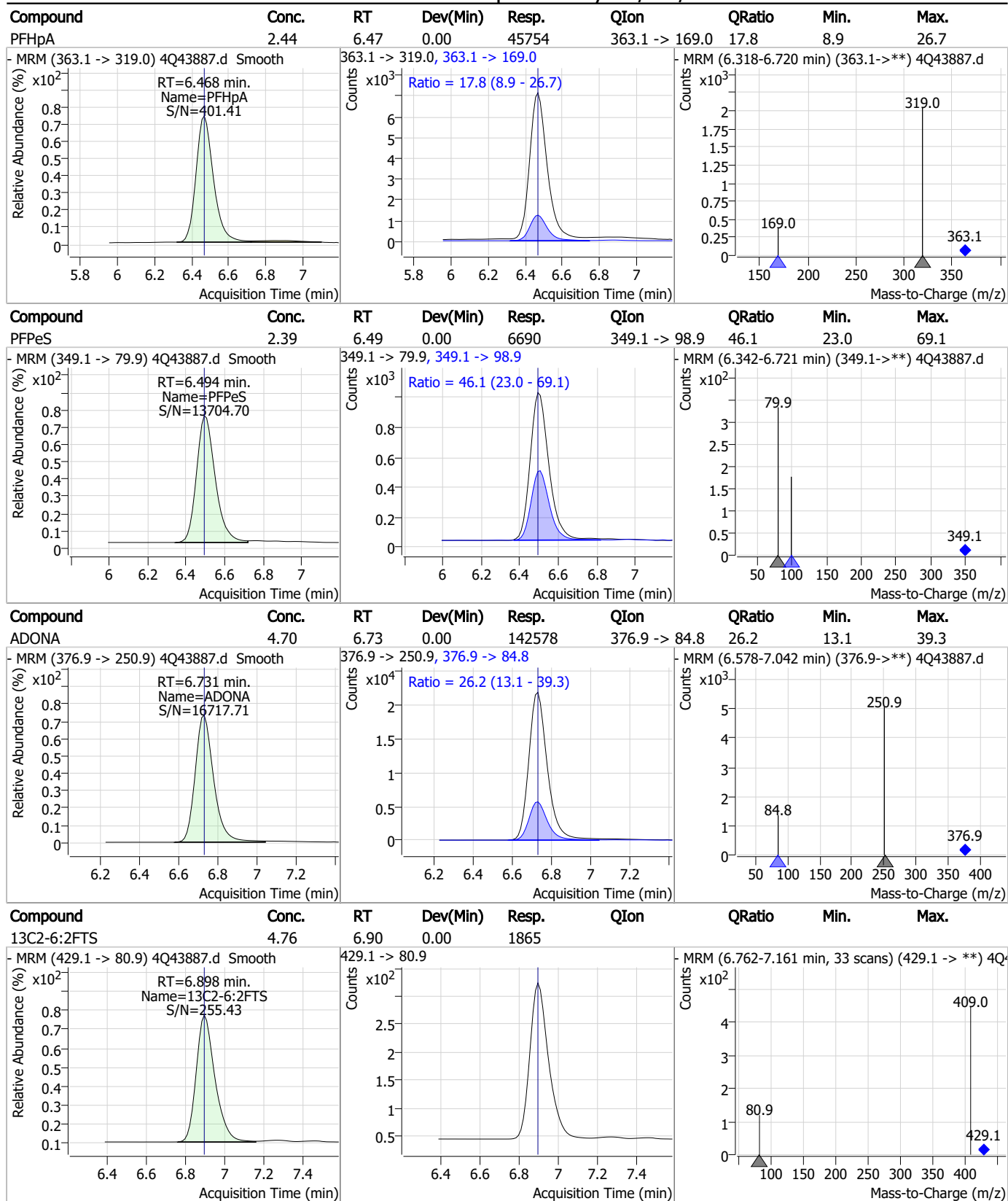


### Perfluorinated Compounds by LC/MS/MS



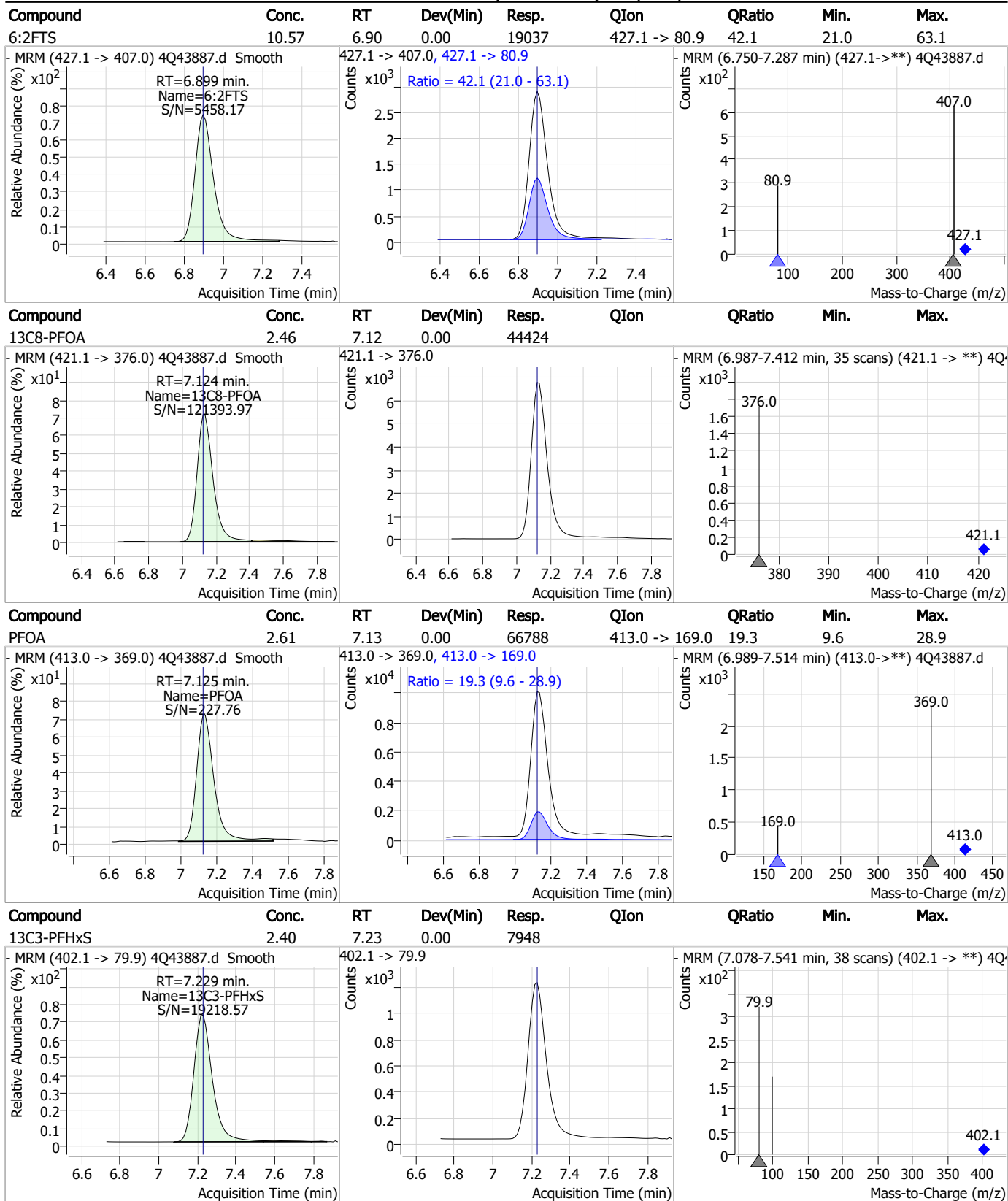
7.7.5  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.5  
7

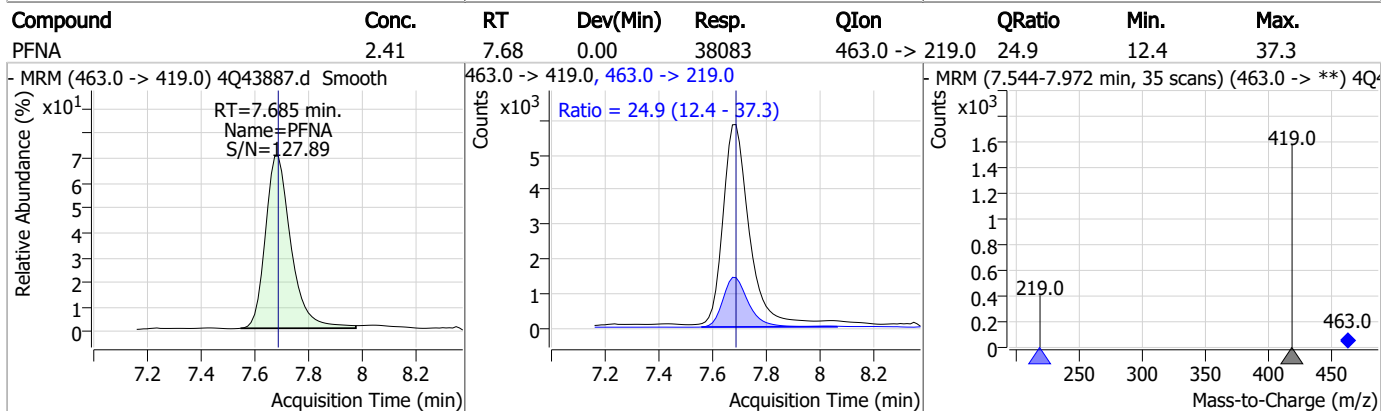
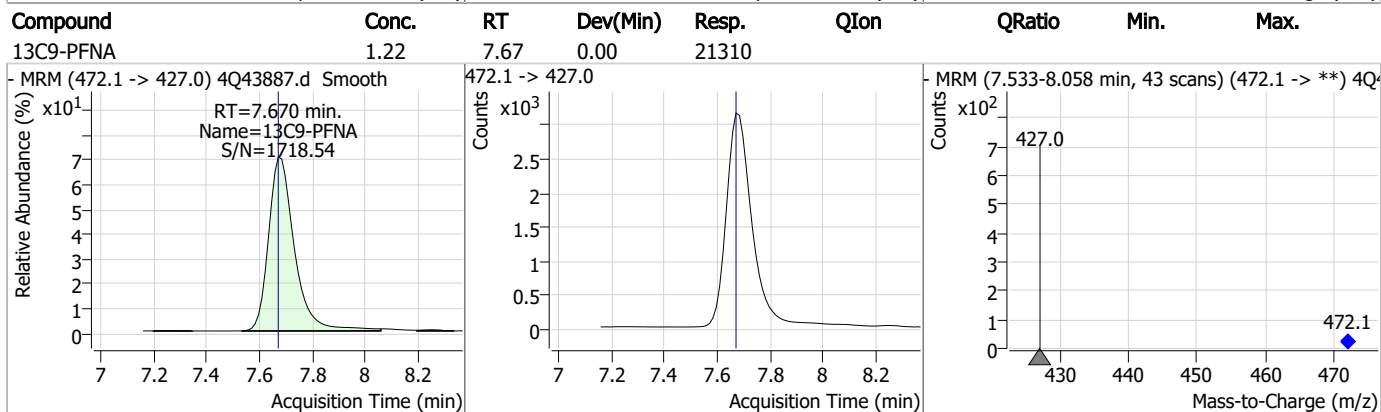
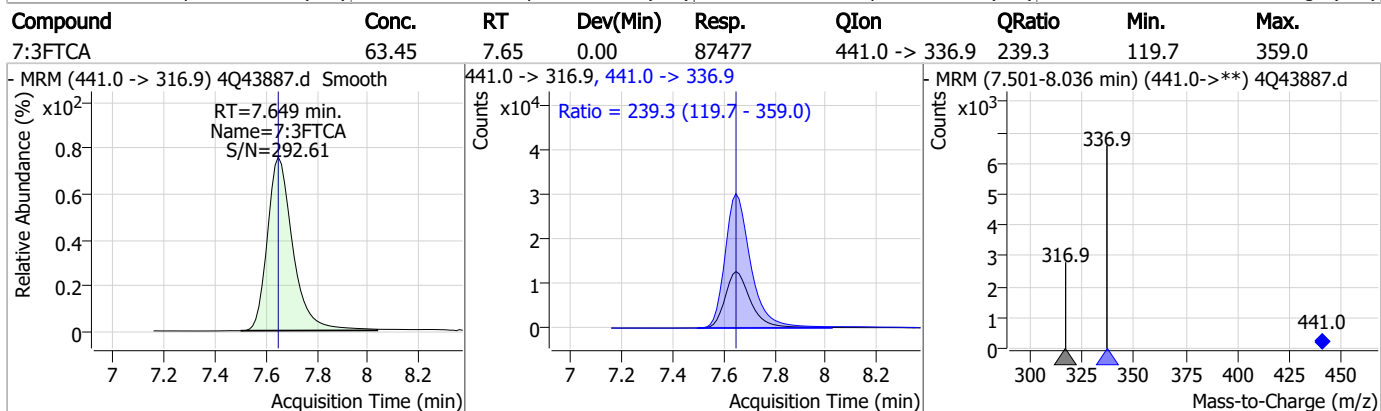
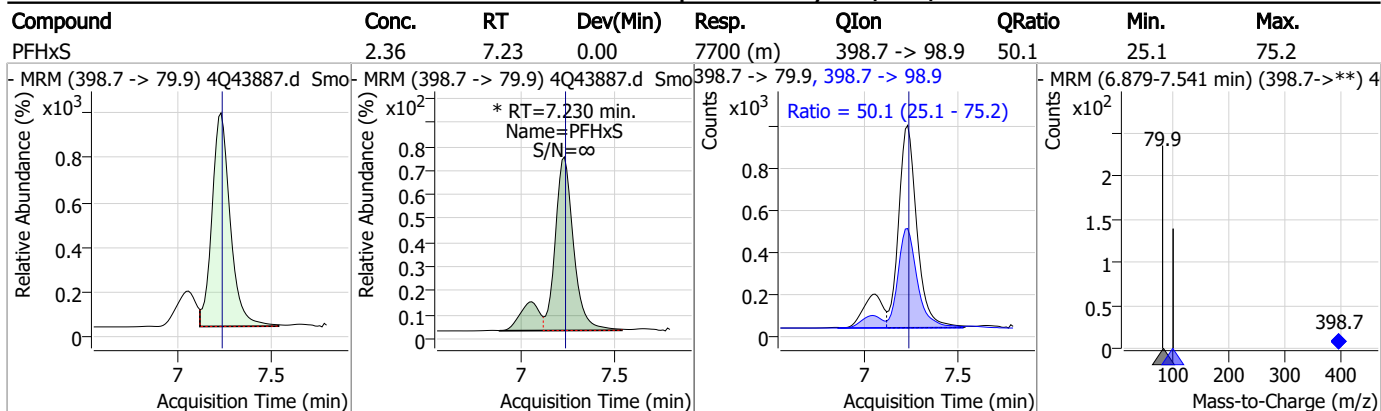
### Perfluorinated Compounds by LC/MS/MS



7.7.5

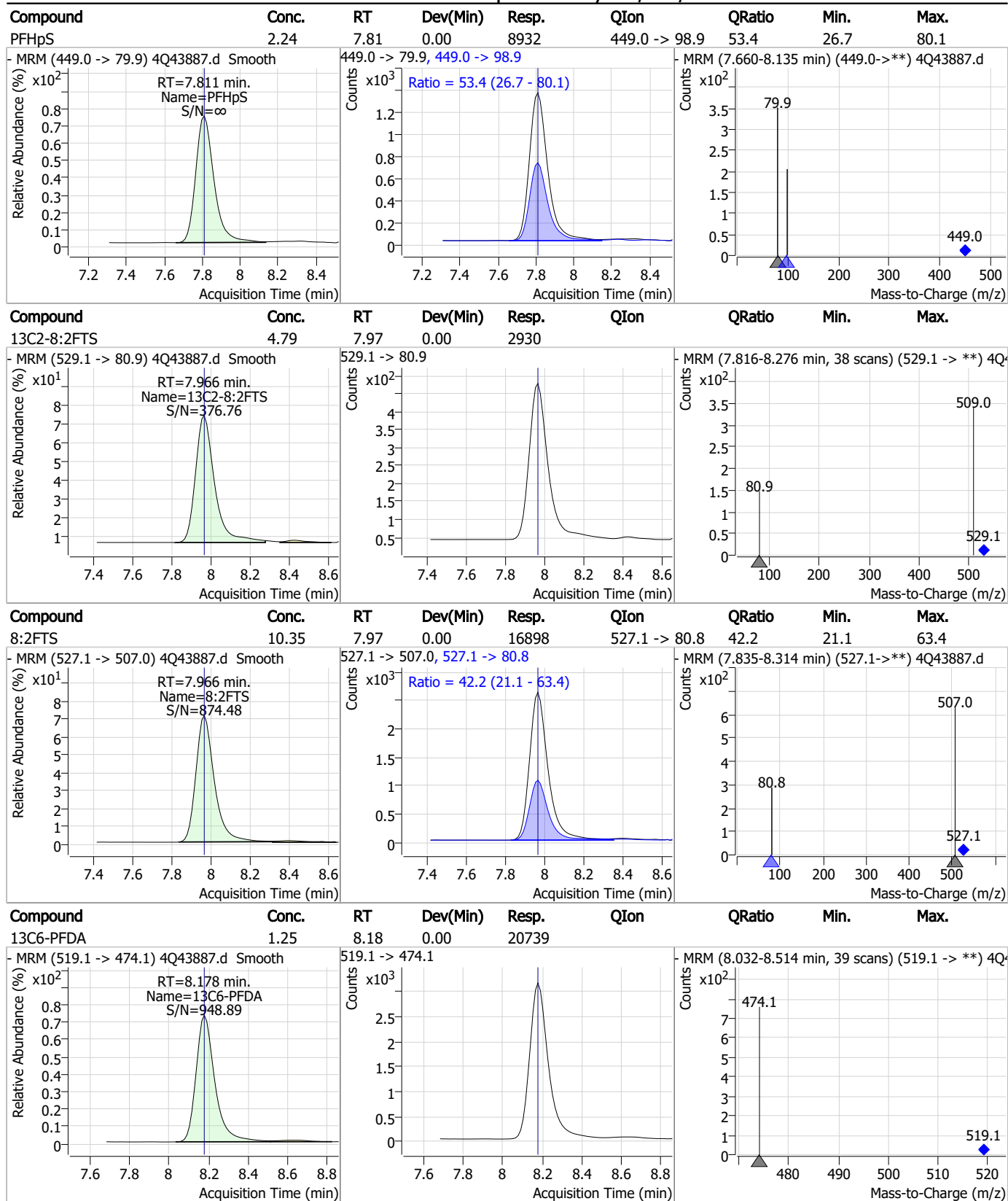
7

### Perfluorinated Compounds by LC/MS/MS



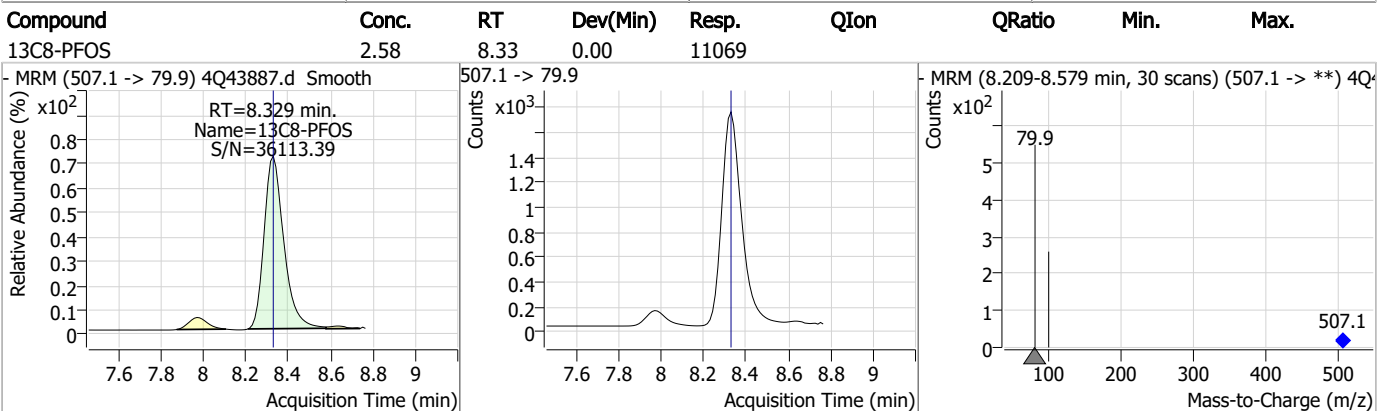
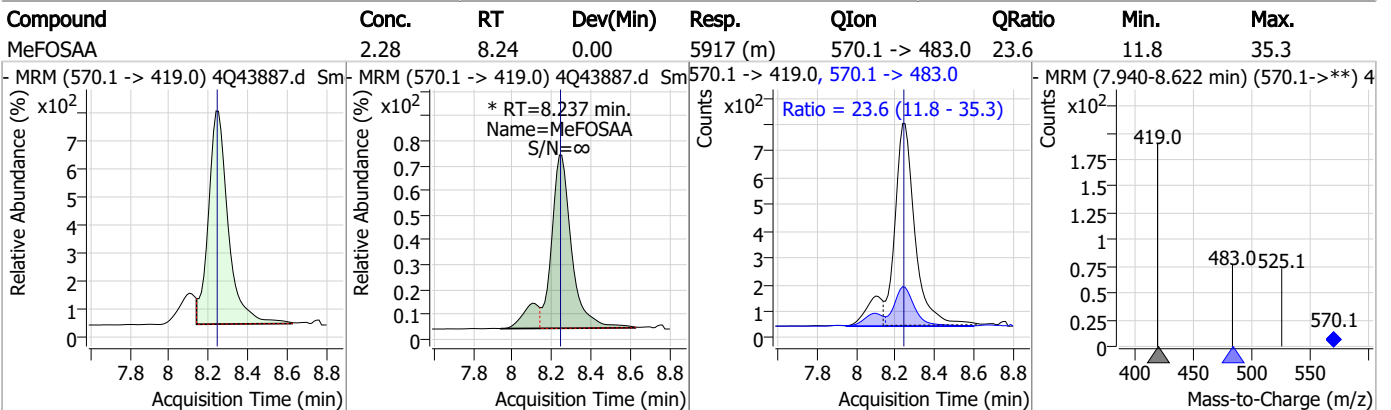
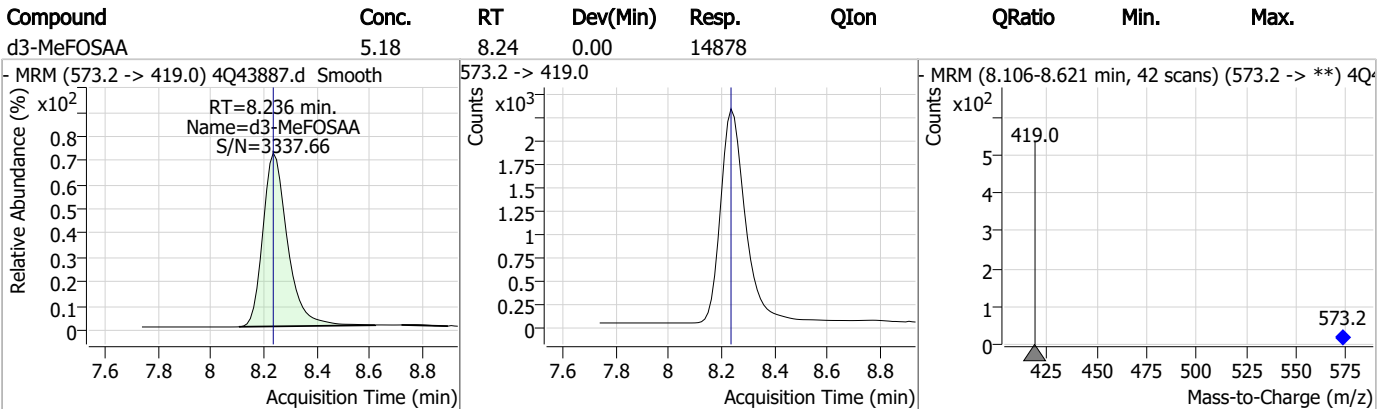
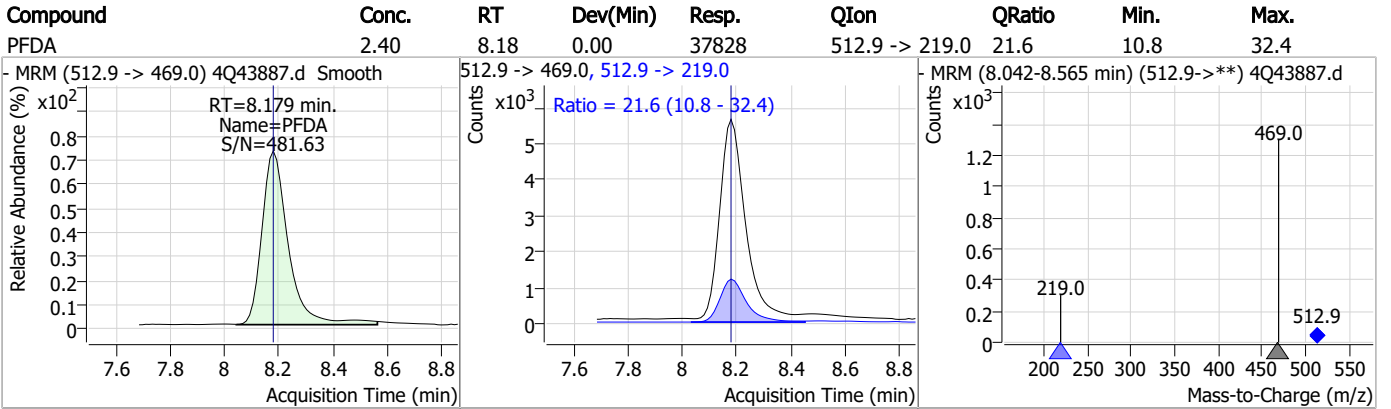
7.7.5  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.5  
7

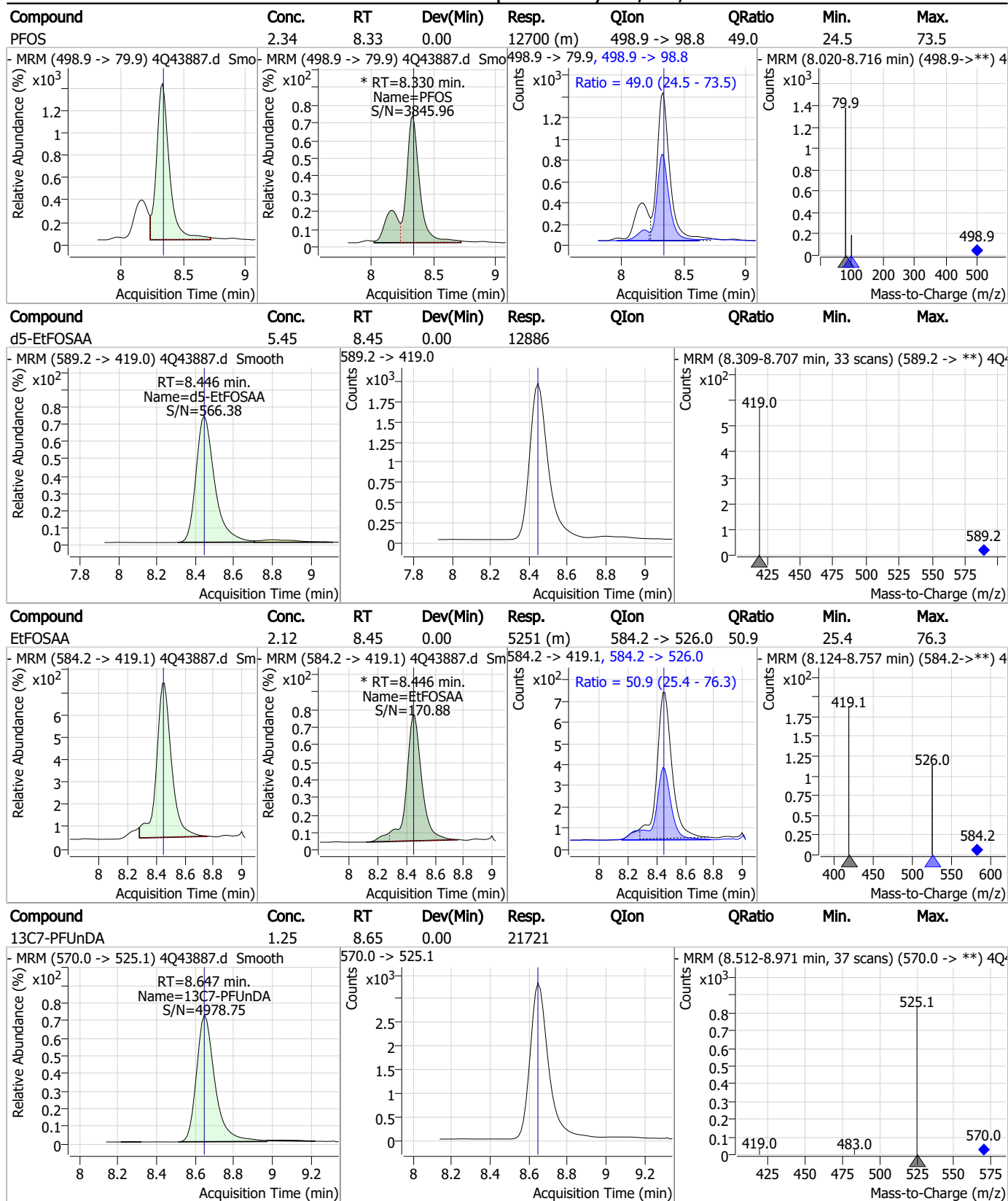
### Perfluorinated Compounds by LC/MS/MS



7.7.5

7

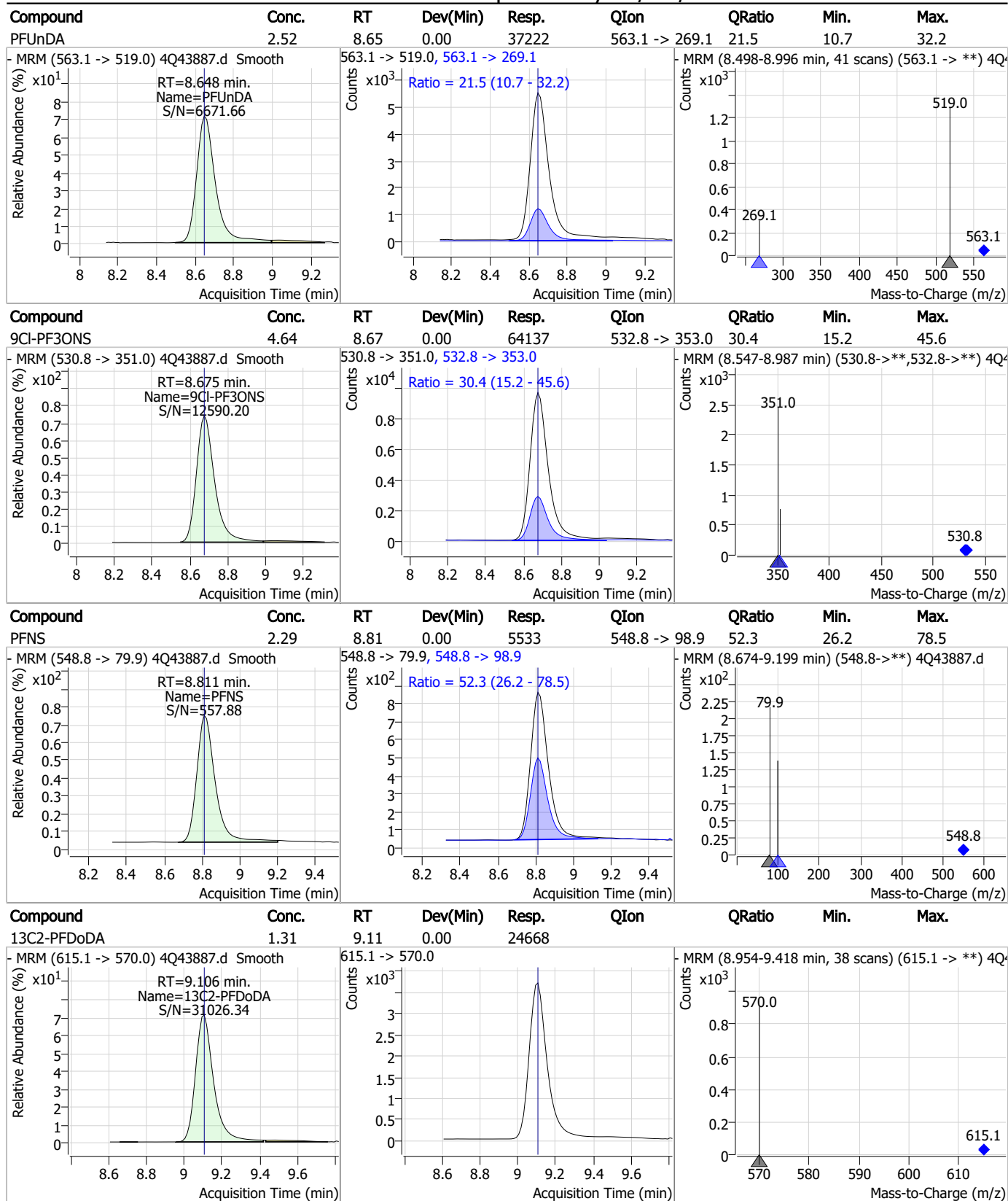
### Perfluorinated Compounds by LC/MS/MS



7.7.5

7

### Perfluorinated Compounds by LC/MS/MS

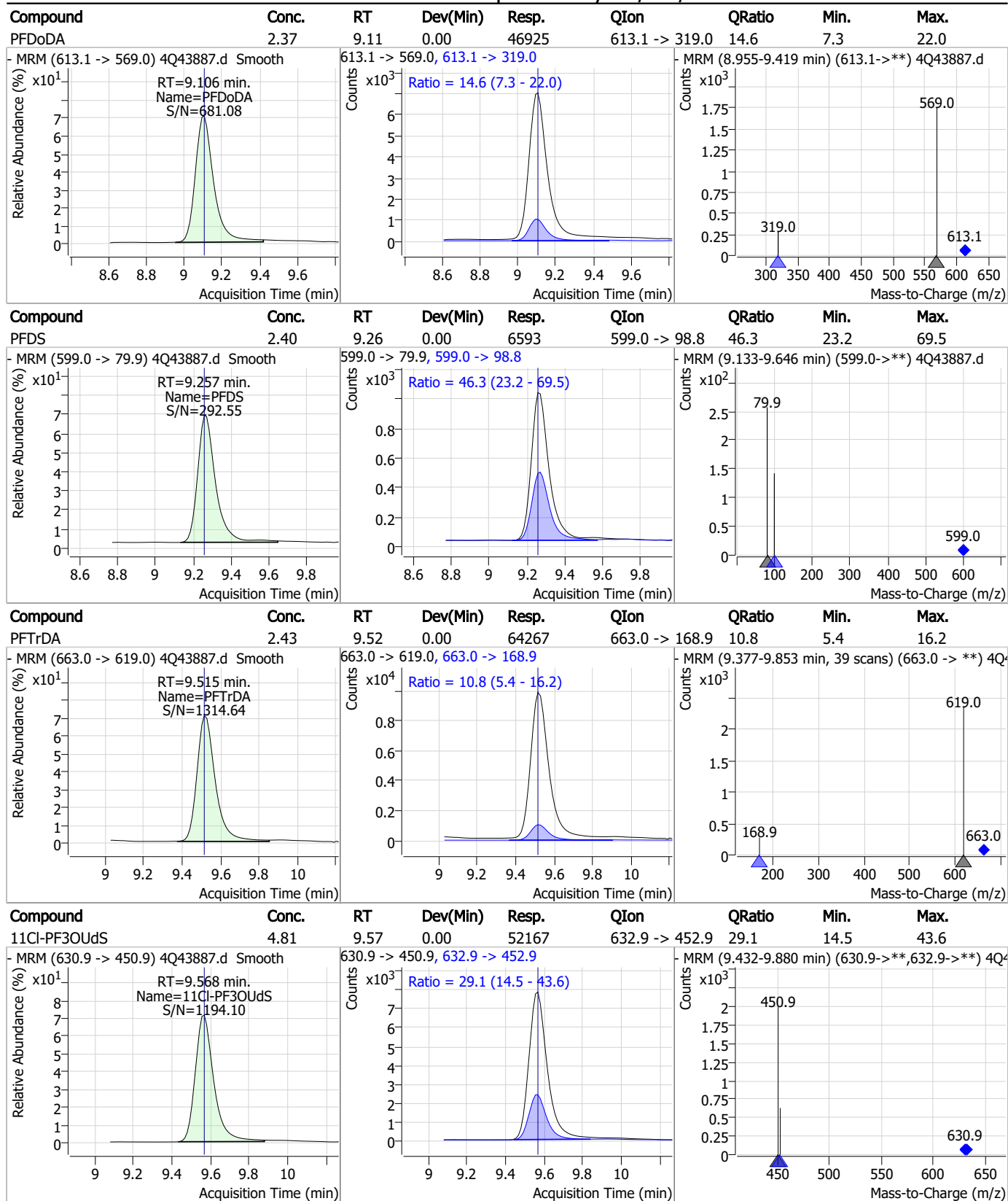


7.7.5

7



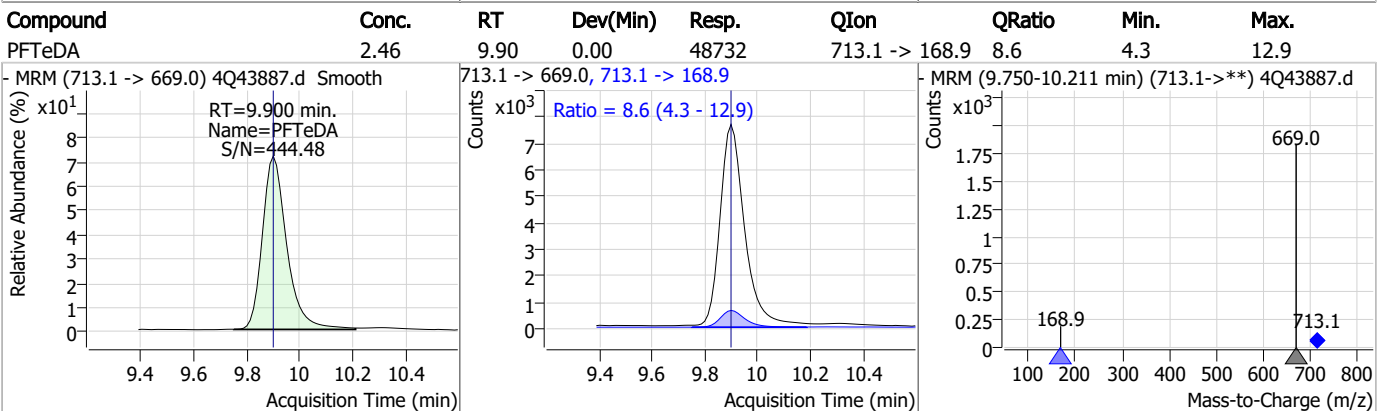
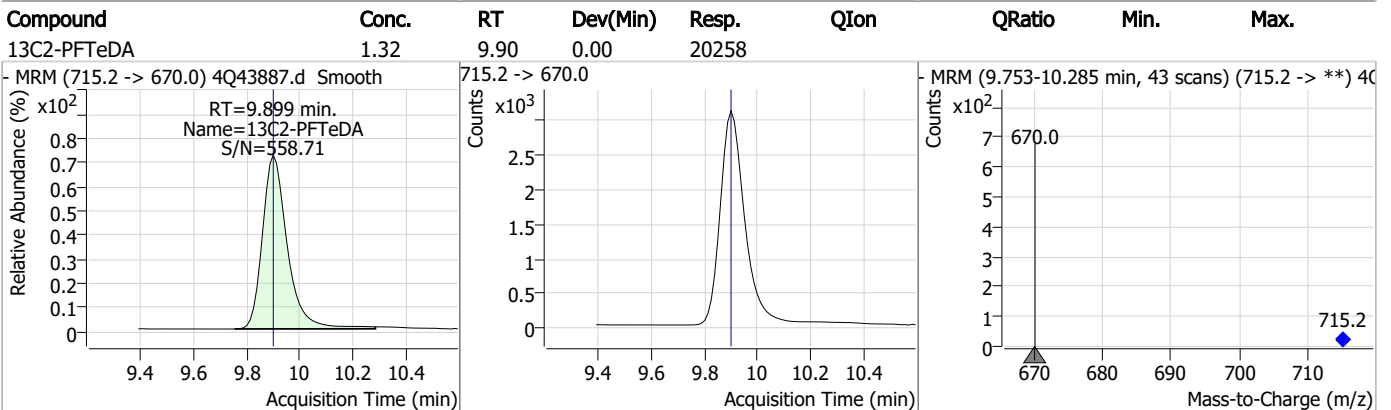
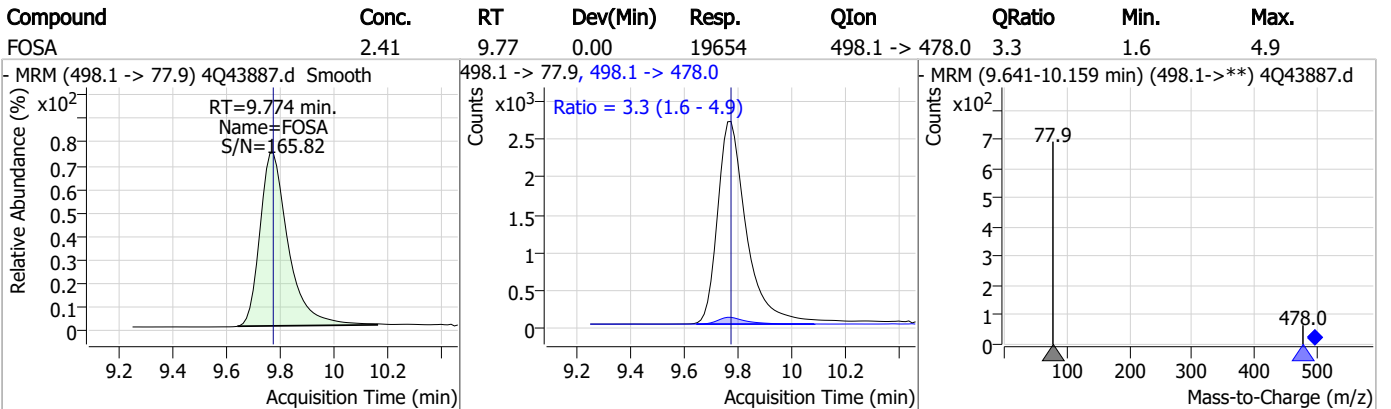
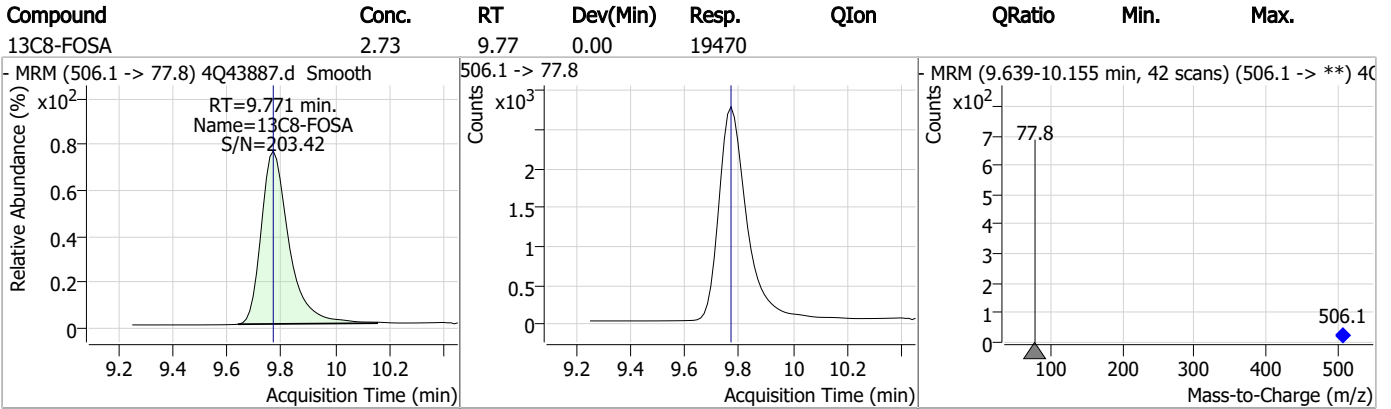
### Perfluorinated Compounds by LC/MS/MS



7.7.5

7

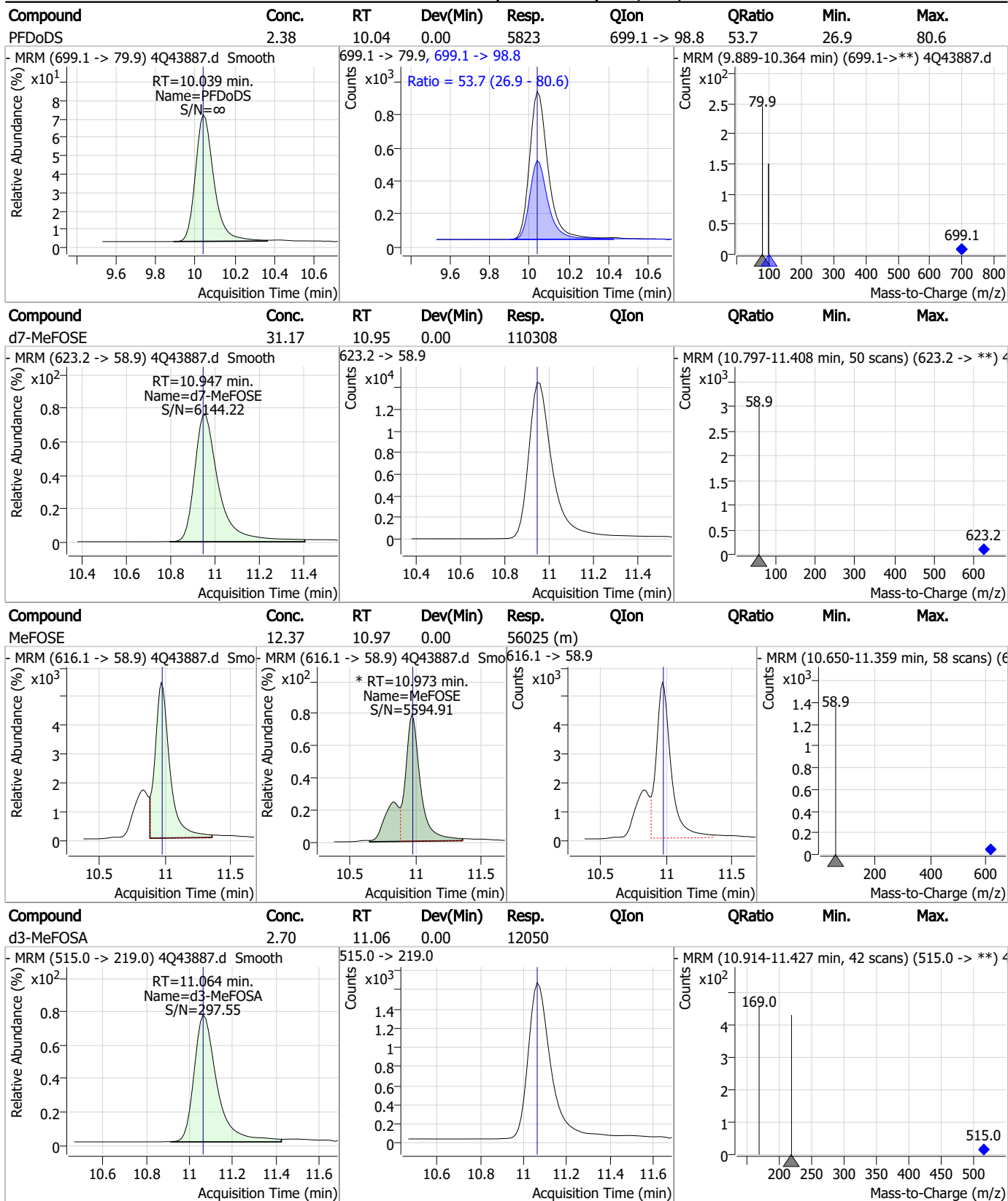
### Perfluorinated Compounds by LC/MS/MS



7.7.5

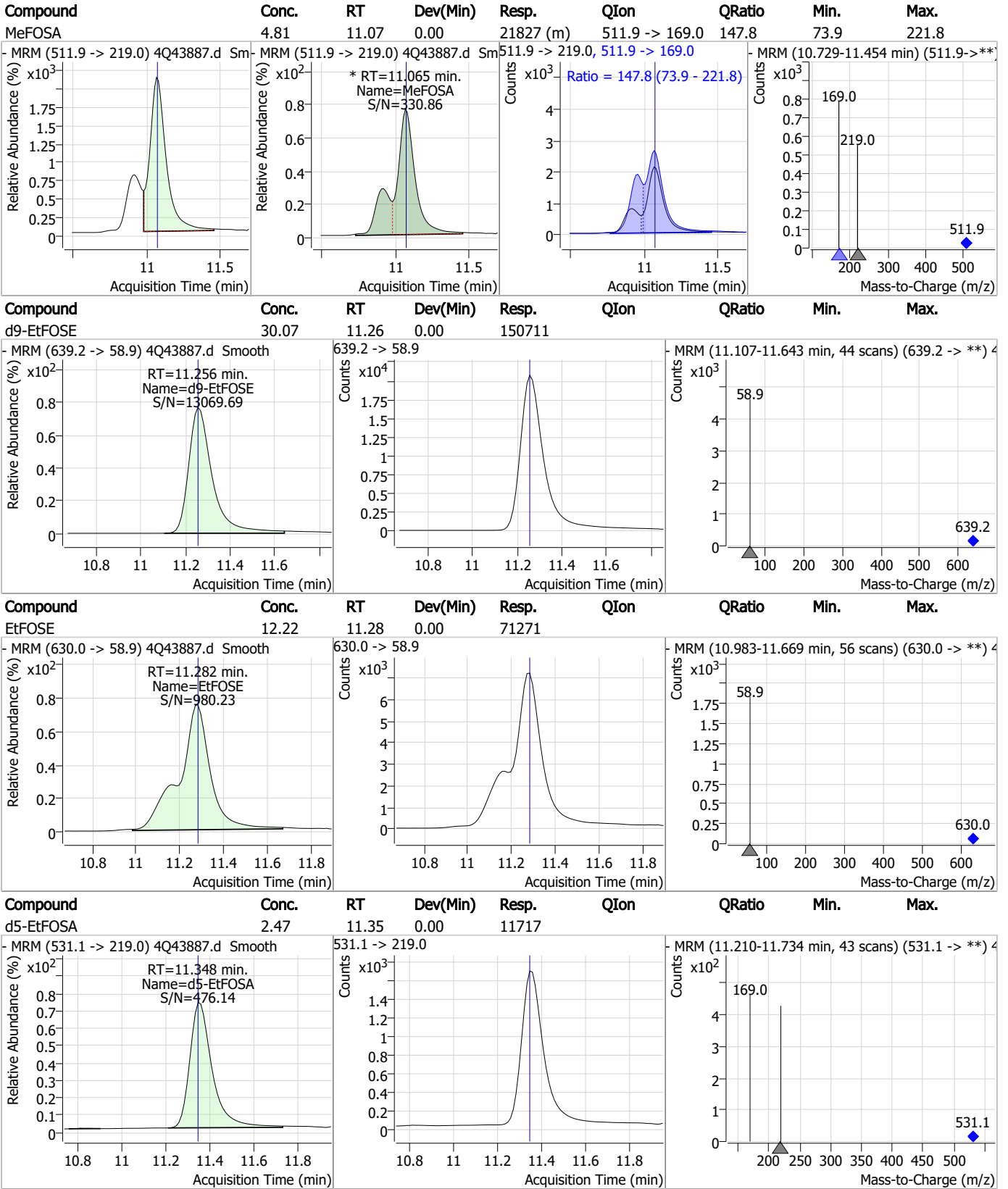
7

### Perfluorinated Compounds by LC/MS/MS



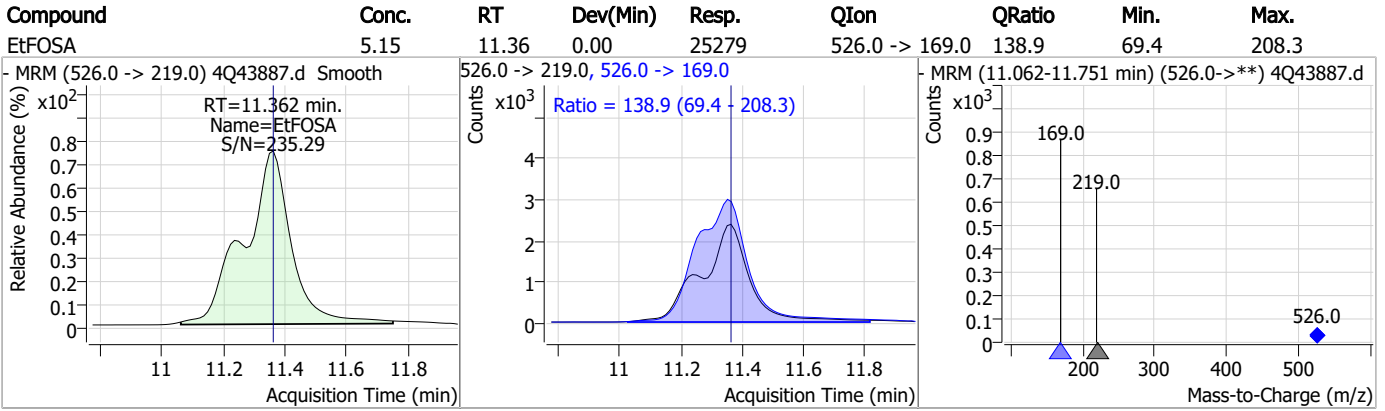
7.7.5  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.5  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.5

7

# Manual Integration Approval Summary

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

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

7.7.5.1

7

## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43888.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 12:08:27 PM  
 Sample Name : ic634-5  
 Vial : P1-A6  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

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

## Perfluorinated Compounds by LC/MS/MS

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



## Perfluorinated Compounds by LC/MS/MS

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

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

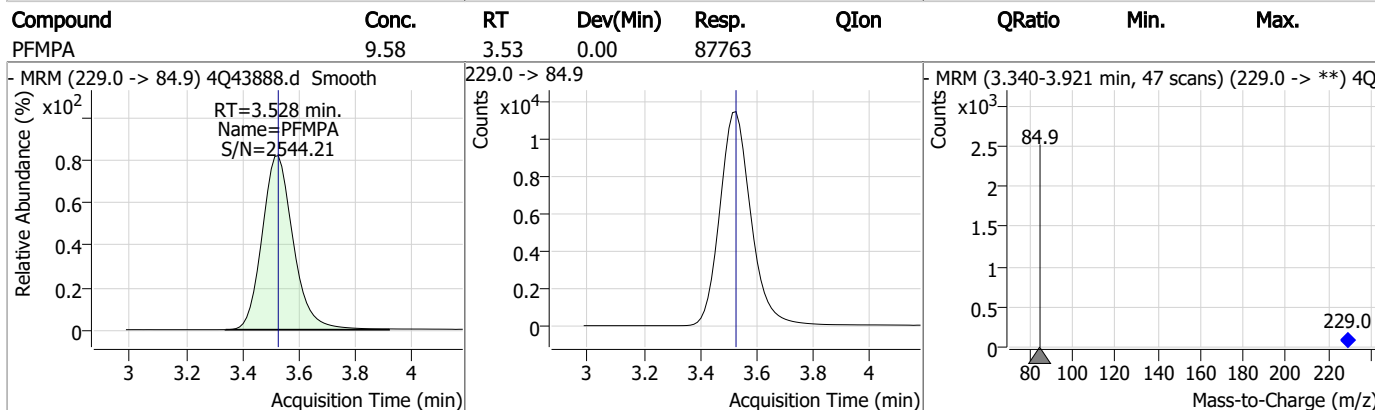
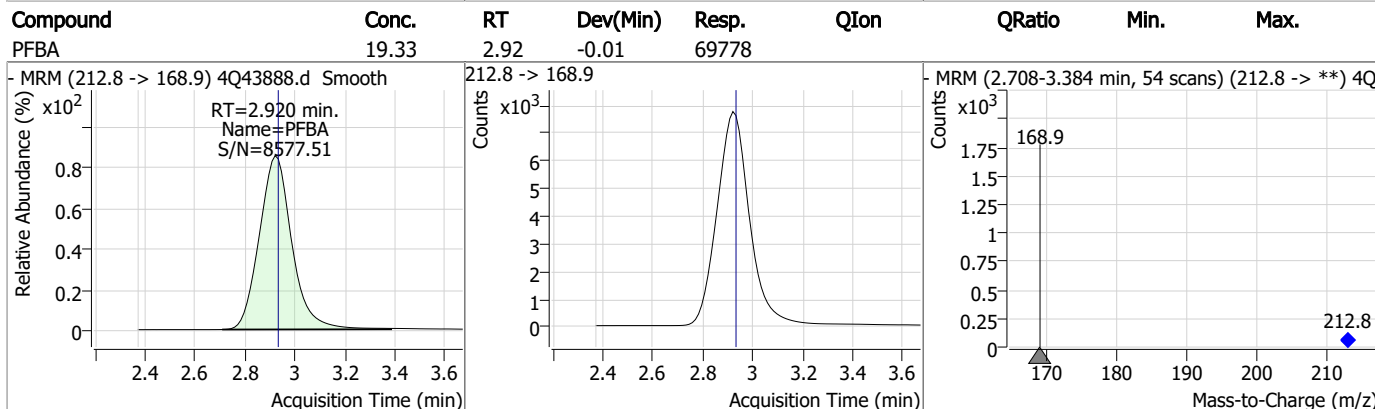
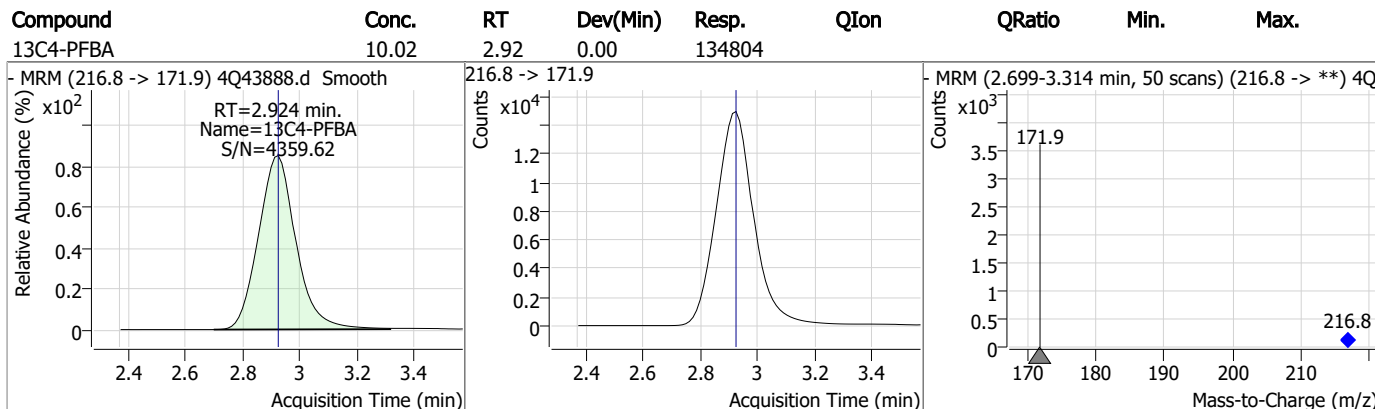
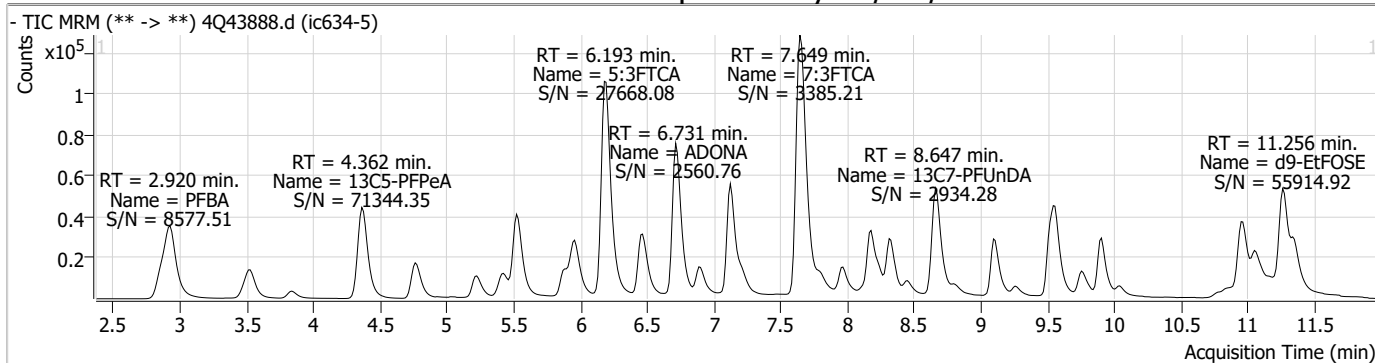
### Perfluorinated Compounds by LC/MS/MS

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

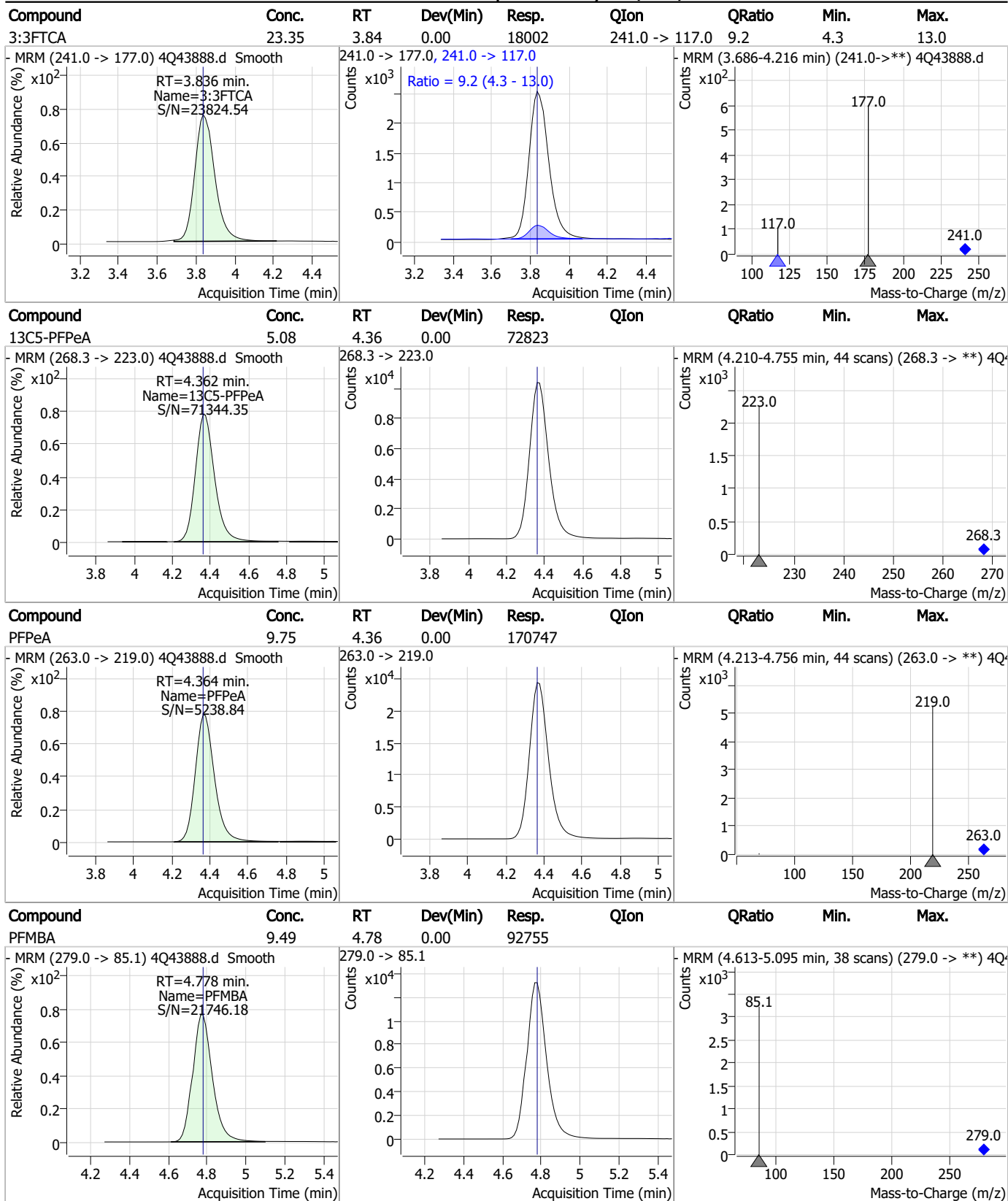
7.7.6

7

### Perfluorinated Compounds by LC/MS/MS

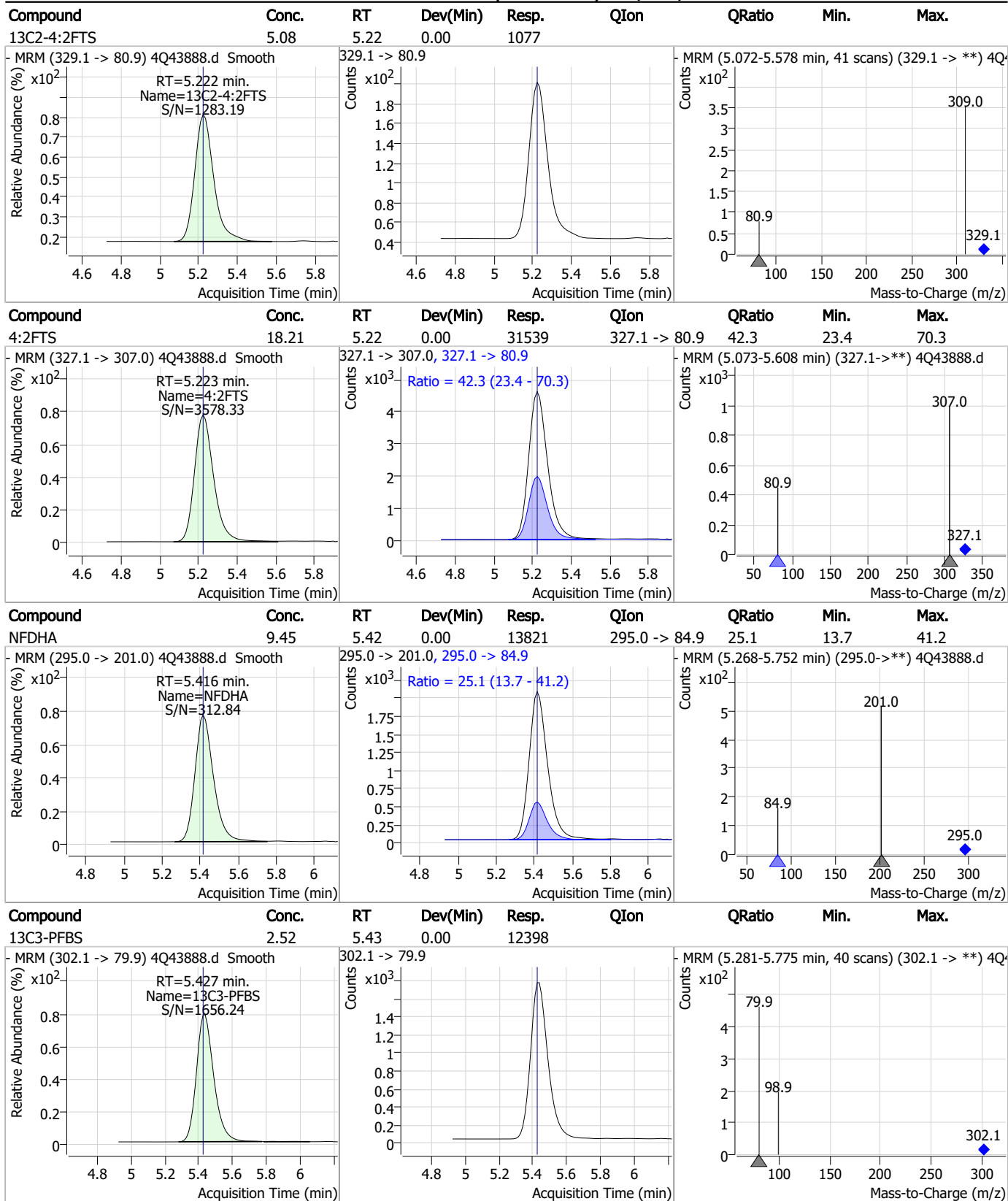


### Perfluorinated Compounds by LC/MS/MS



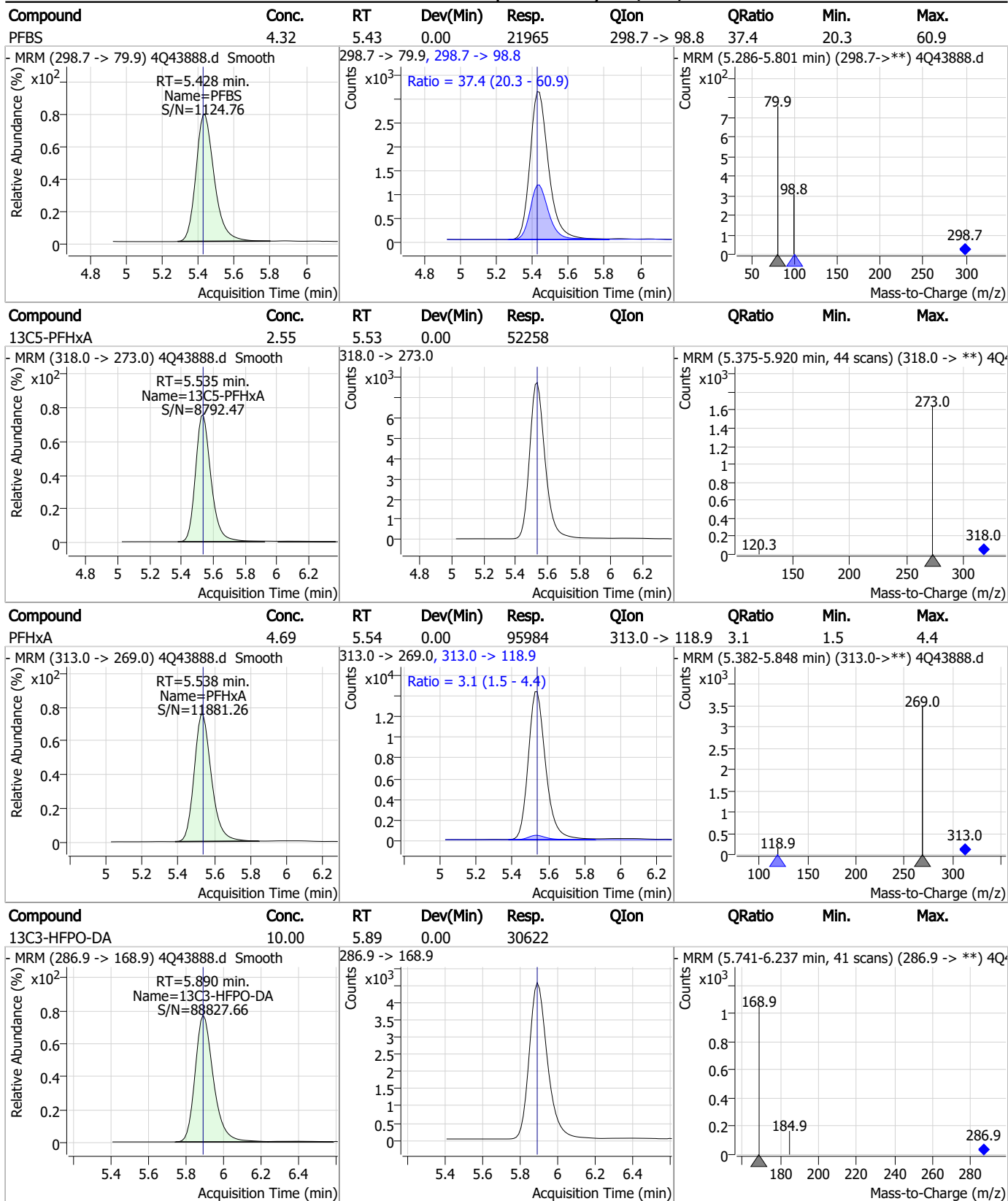
7.7.6  
7

### Perfluorinated Compounds by LC/MS/MS



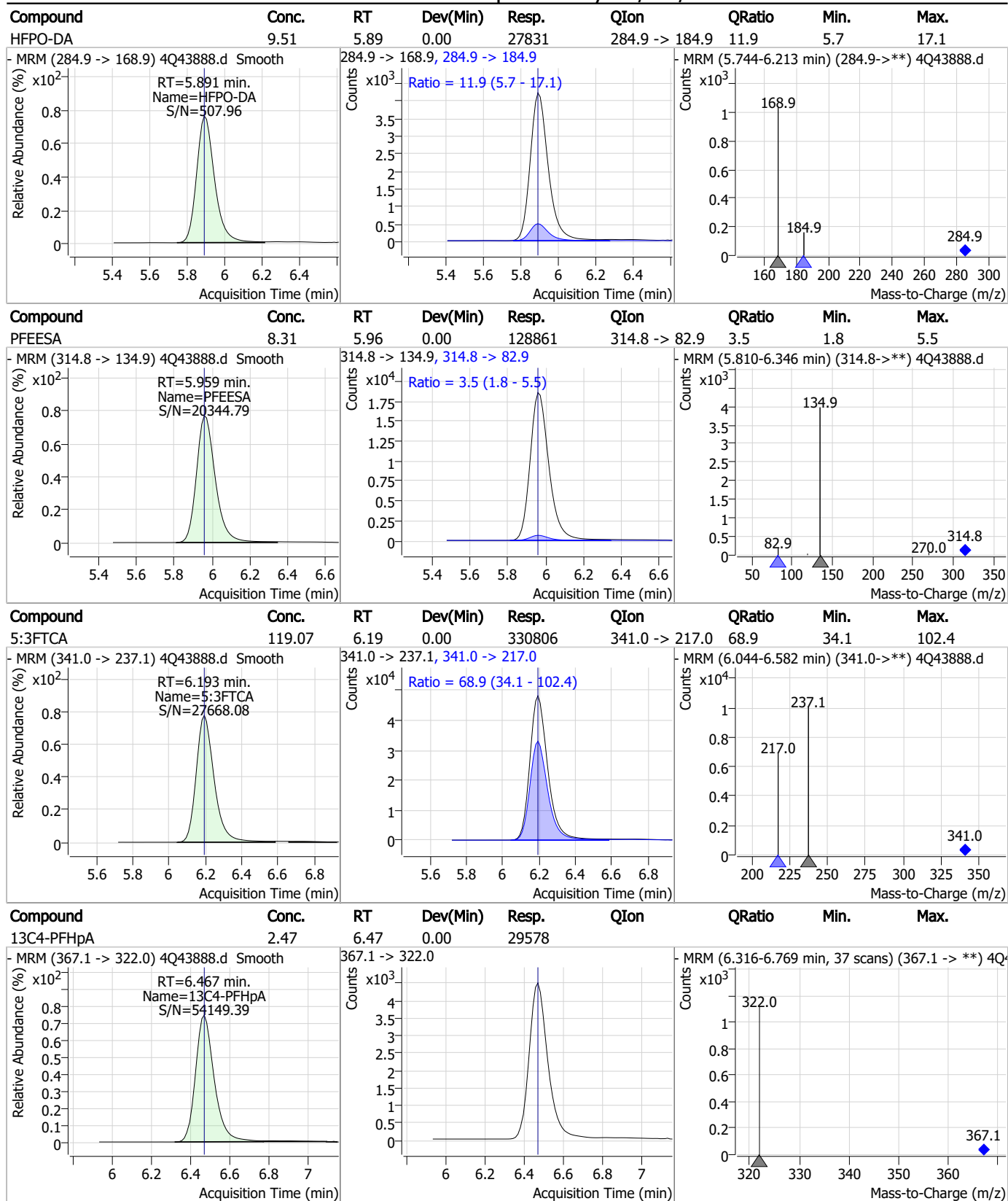
7.7.6  
7

### Perfluorinated Compounds by LC/MS/MS



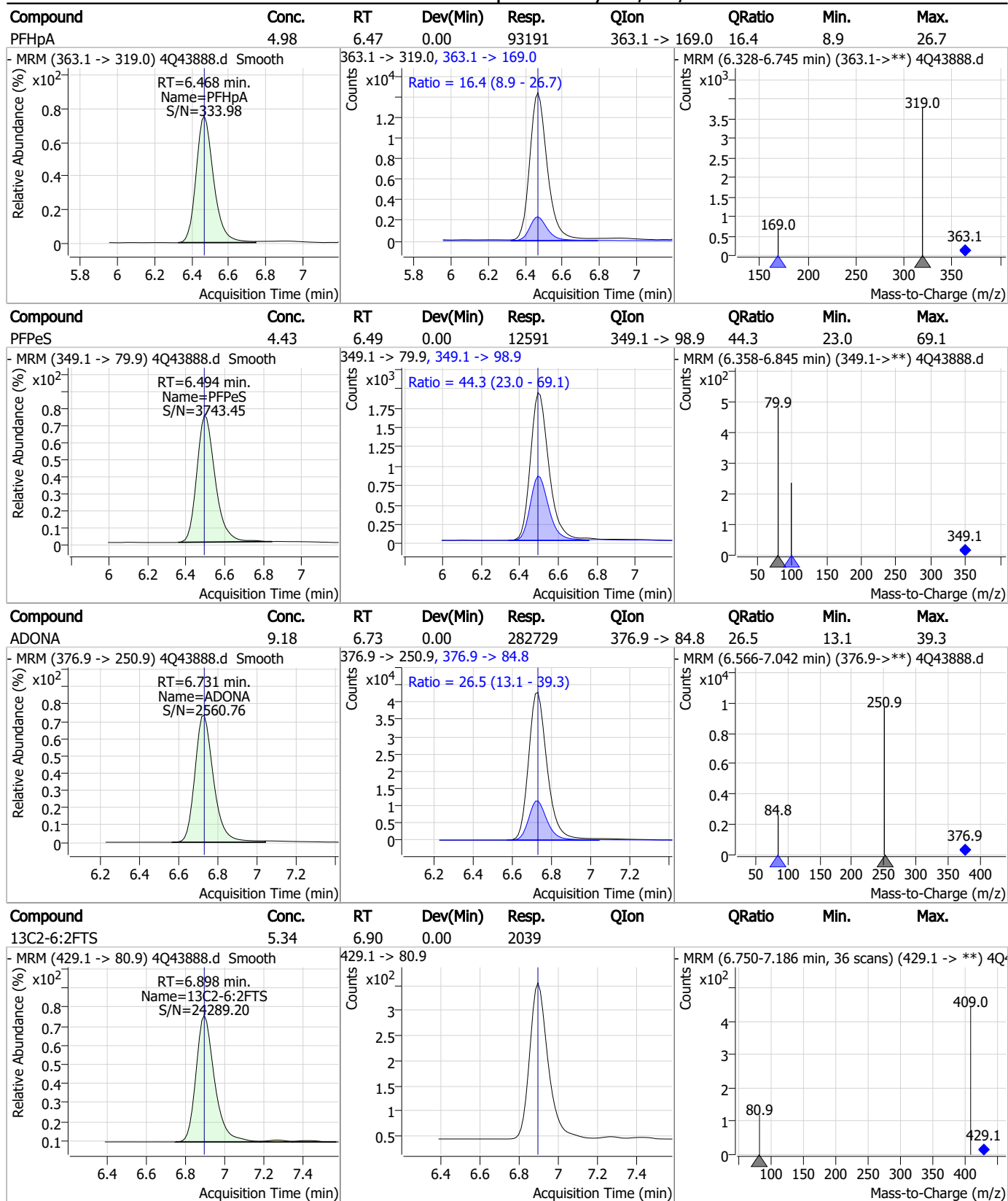
7.7.6  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.6  
7

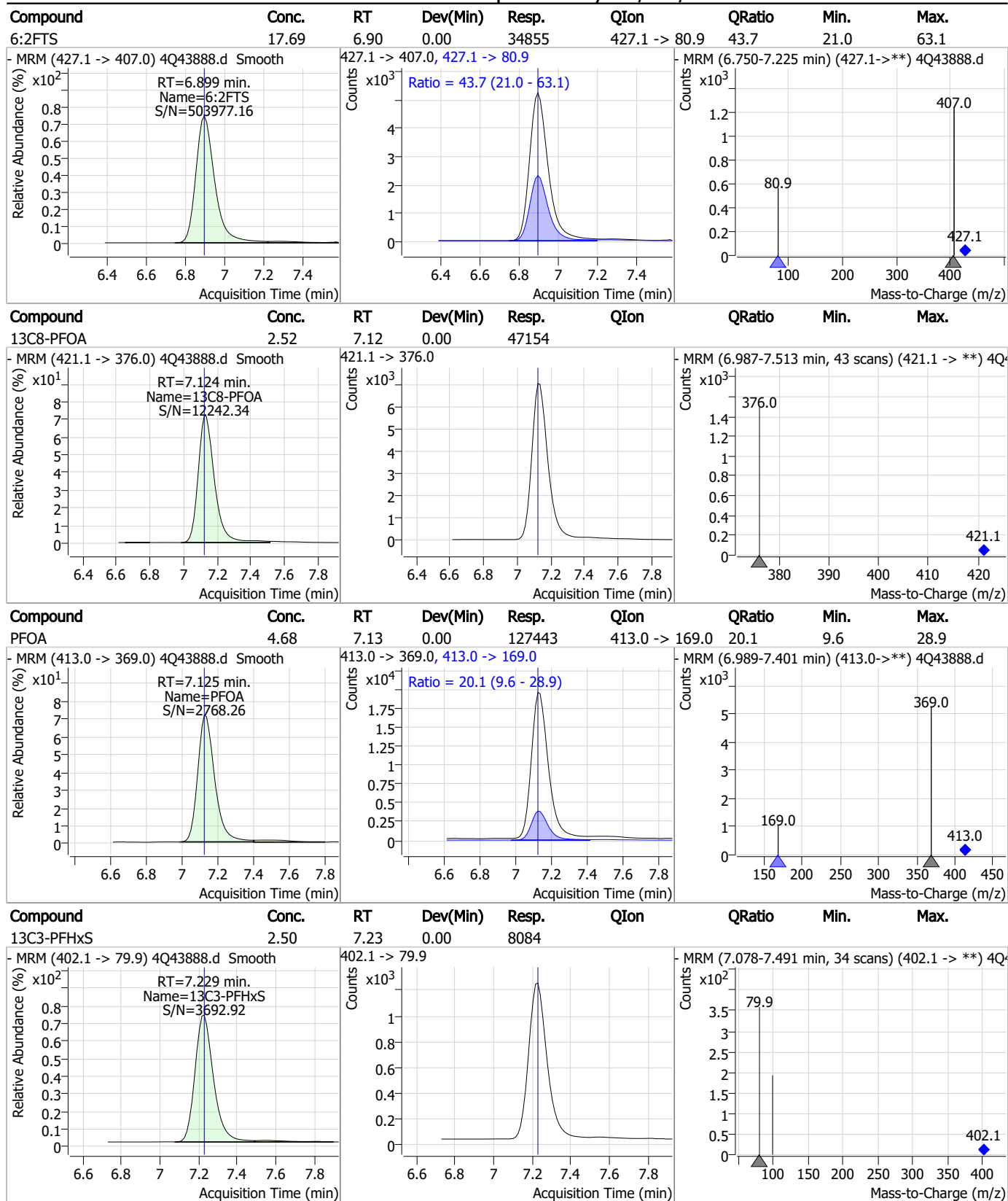
### Perfluorinated Compounds by LC/MS/MS



7.7.6  
7

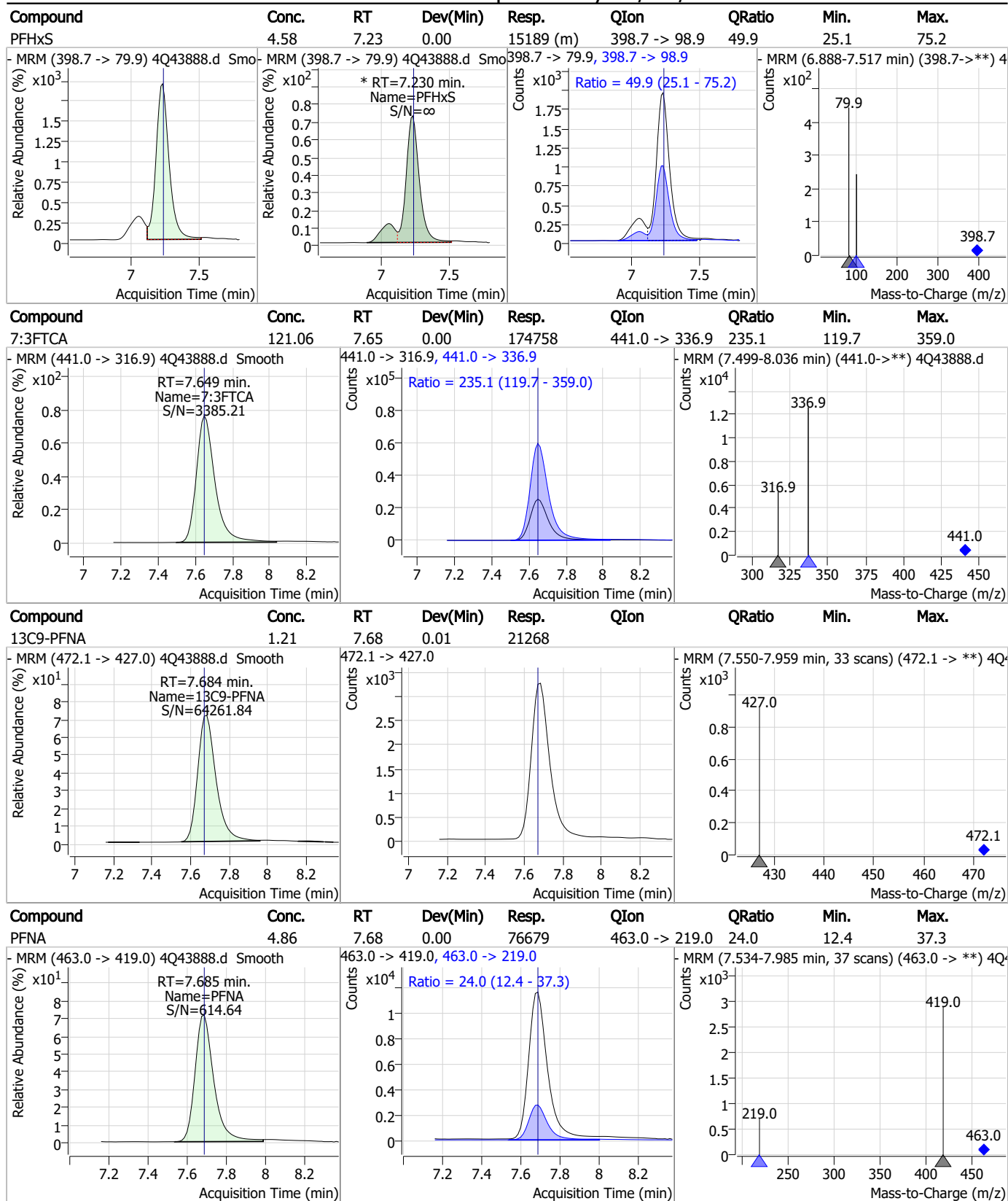


### Perfluorinated Compounds by LC/MS/MS



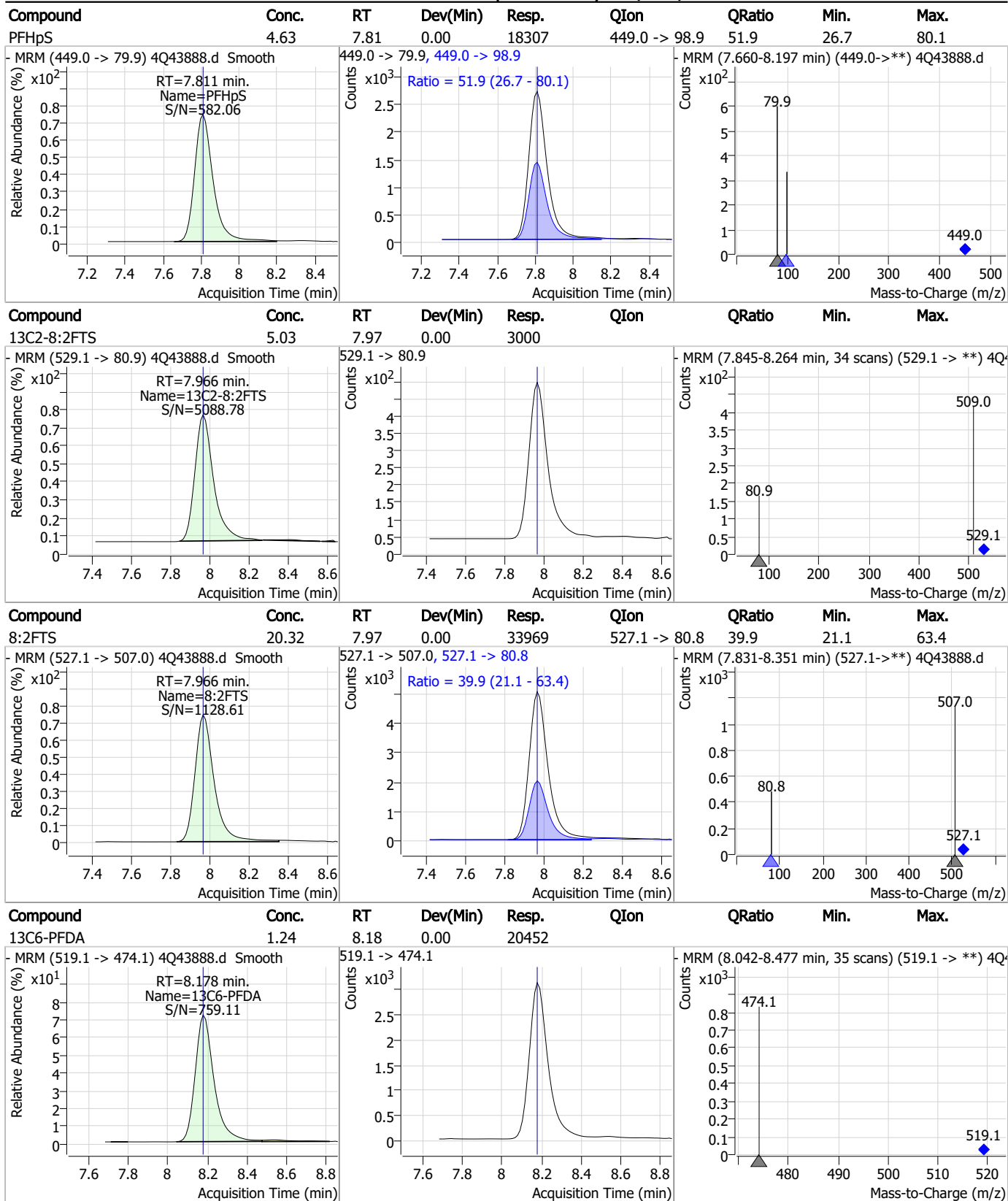
7.7.6  
7

### Perfluorinated Compounds by LC/MS/MS



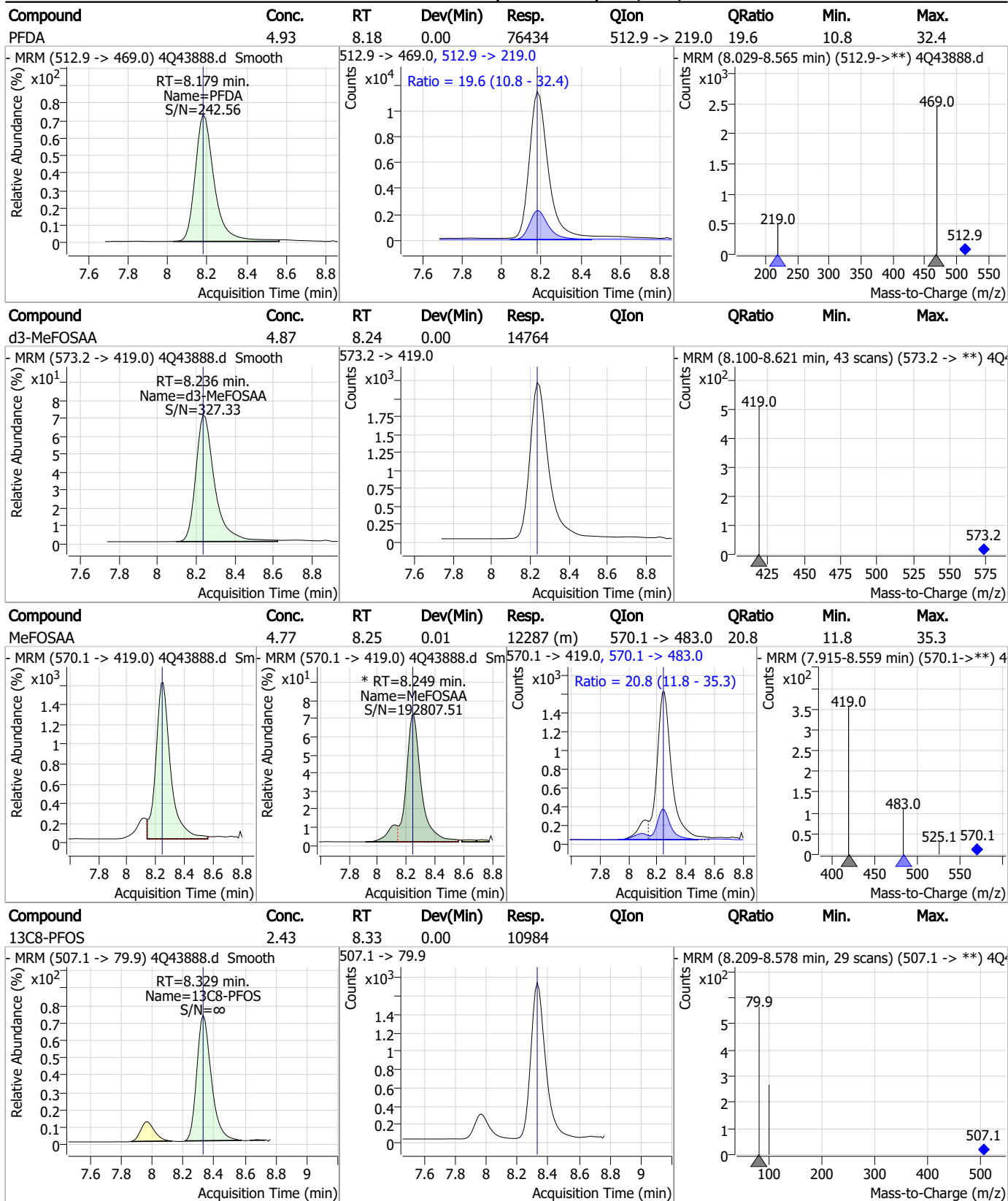
7.7.6  
7

### Perfluorinated Compounds by LC/MS/MS



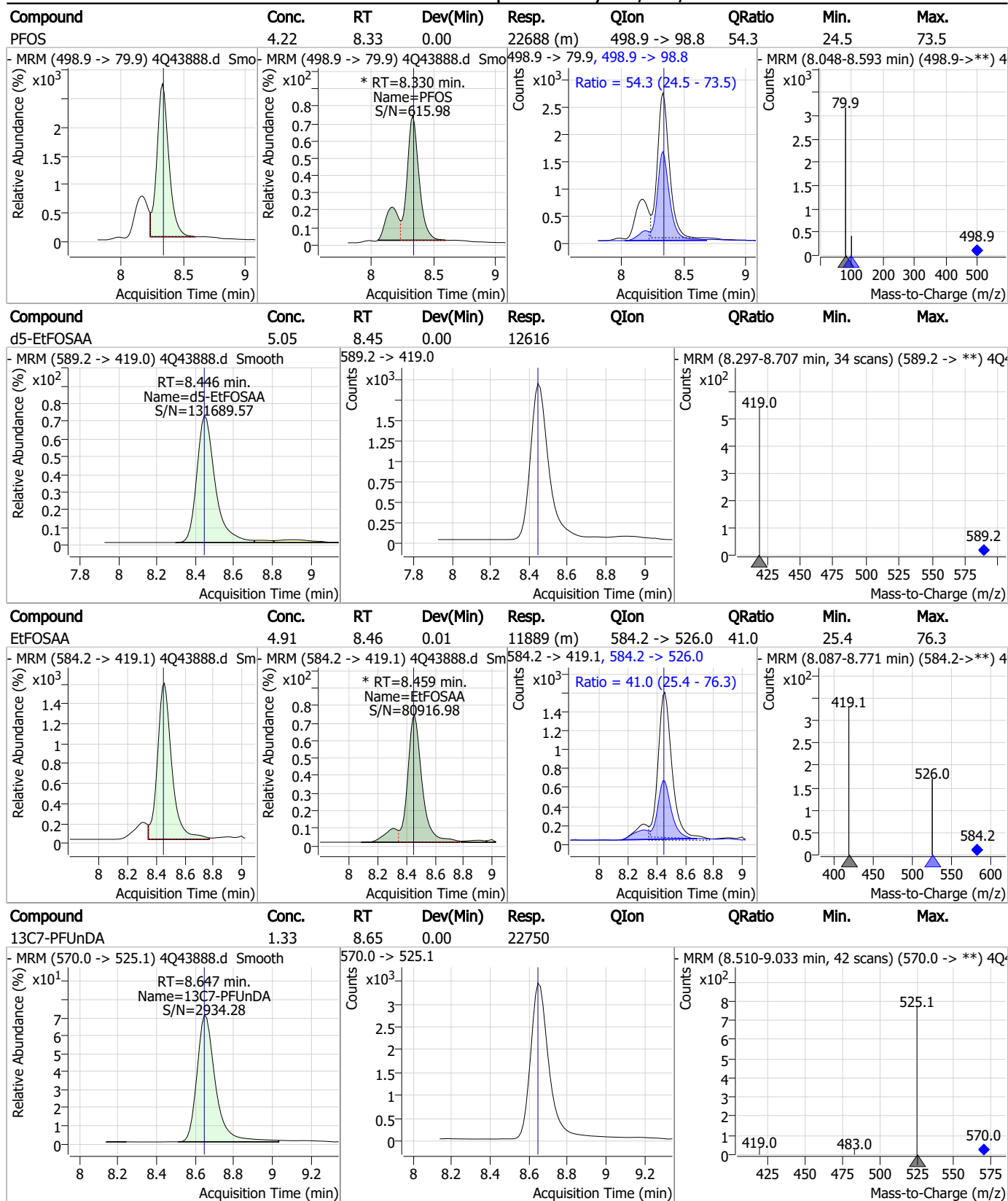
7.7.6  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.6  
7

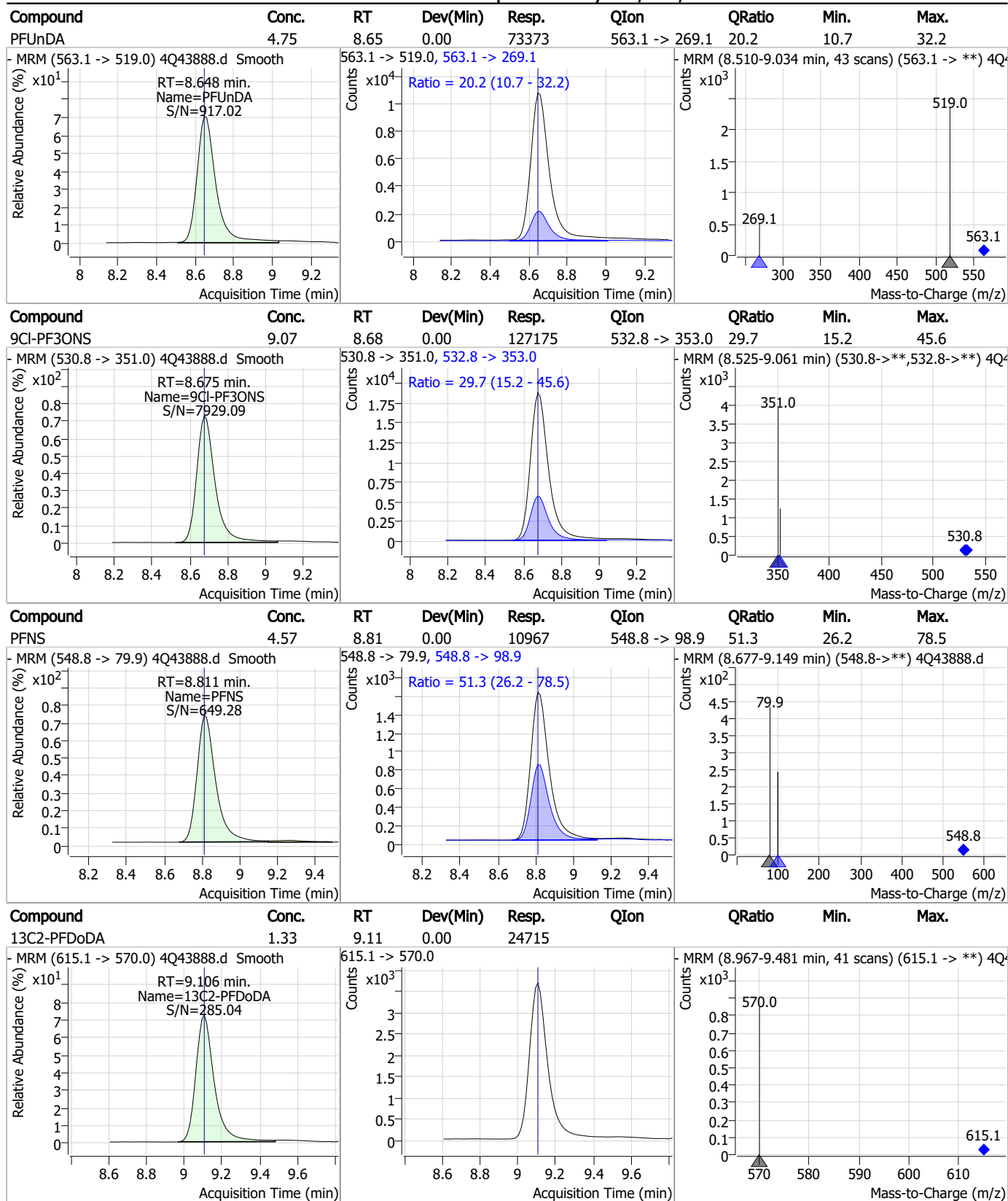
### Perfluorinated Compounds by LC/MS/MS



7.7.6

7

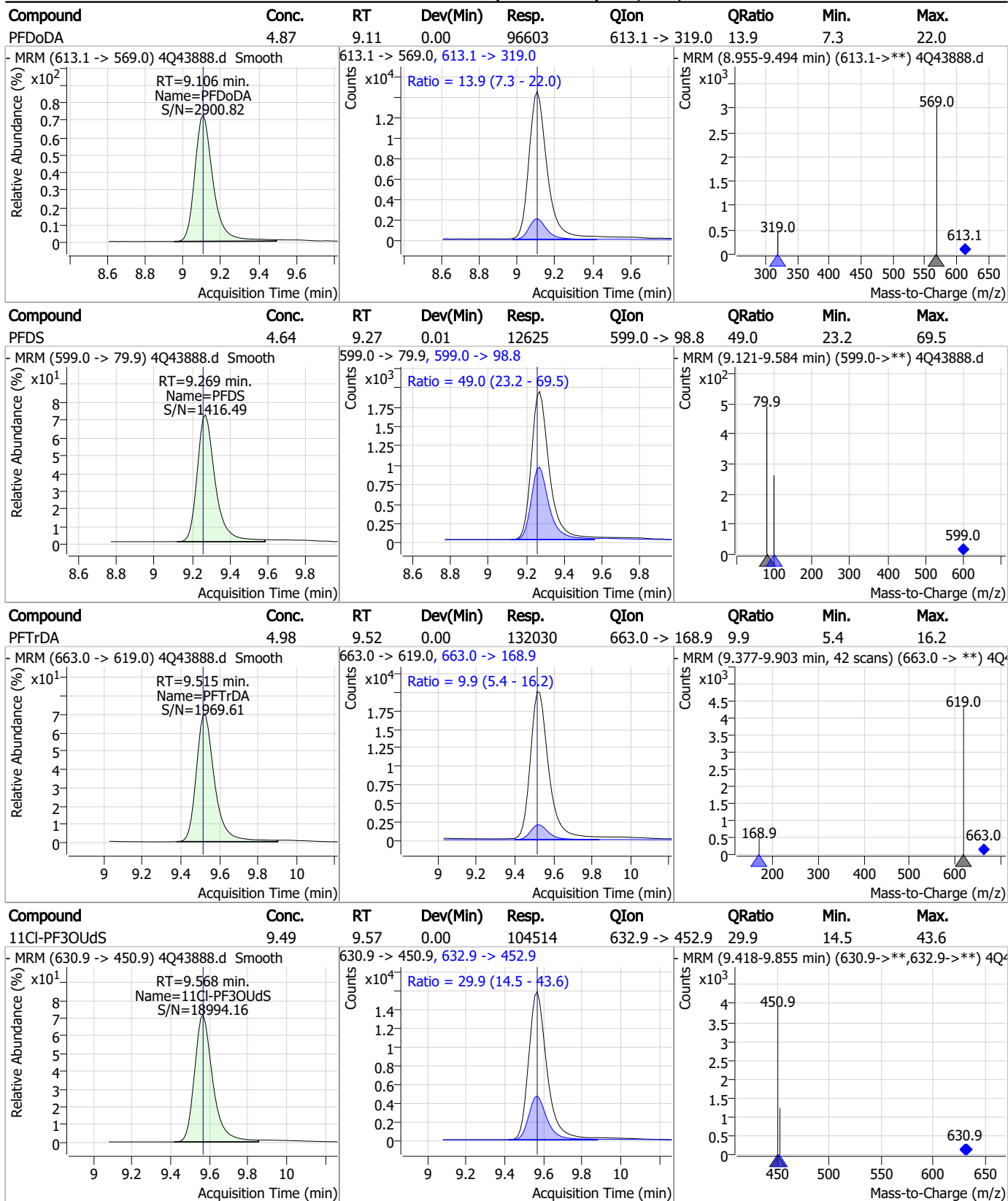
### Perfluorinated Compounds by LC/MS/MS



7.7.6

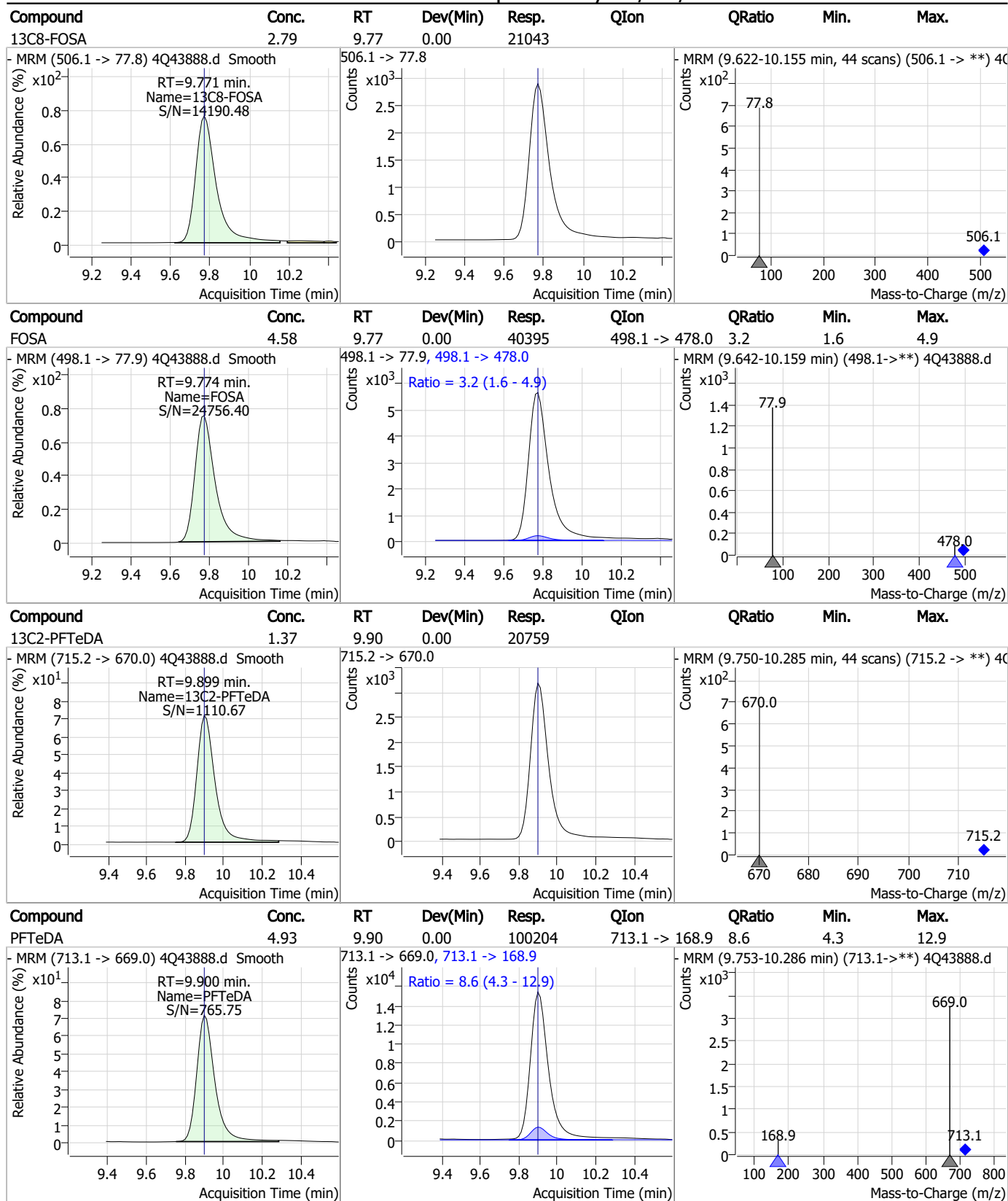
7

### Perfluorinated Compounds by LC/MS/MS



7.7.6  
7

### Perfluorinated Compounds by LC/MS/MS

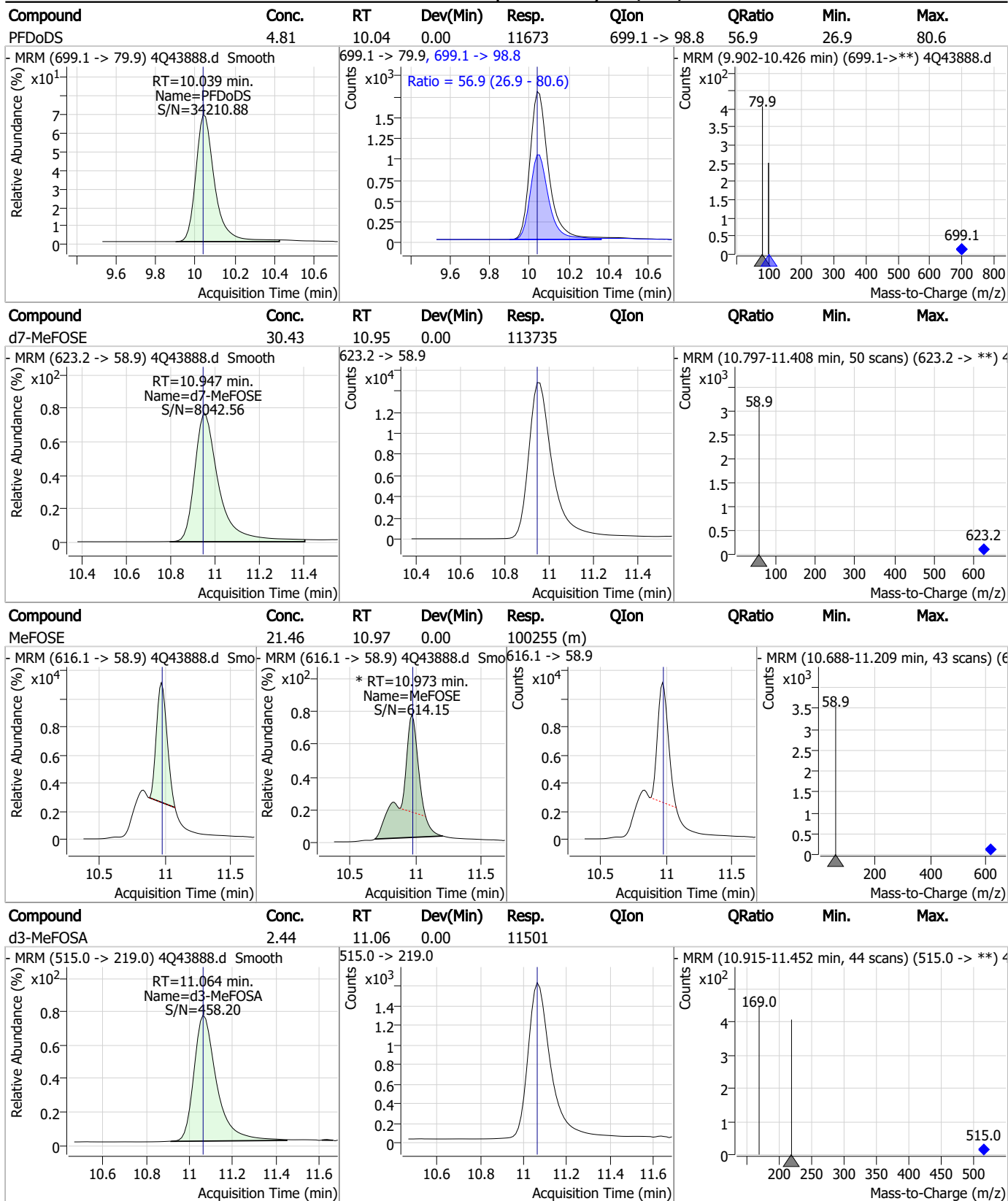


7.7.6

7



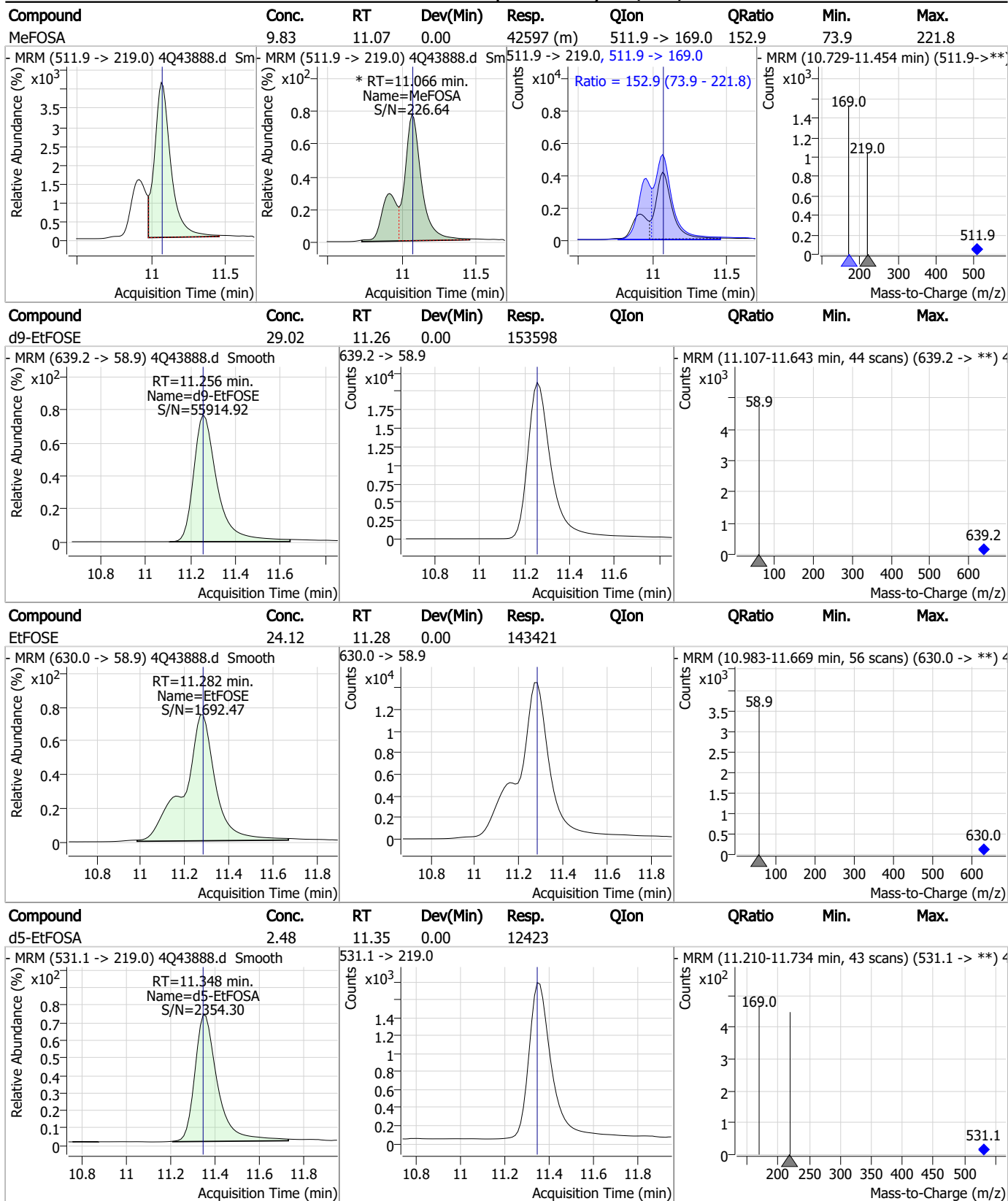
### Perfluorinated Compounds by LC/MS/MS



7.7.6

7

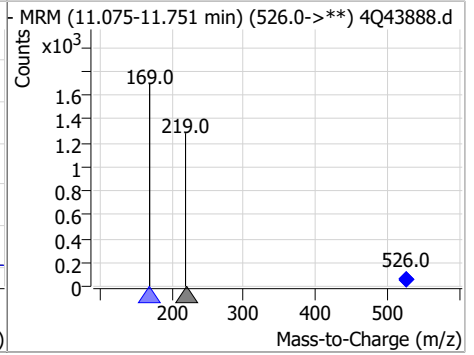
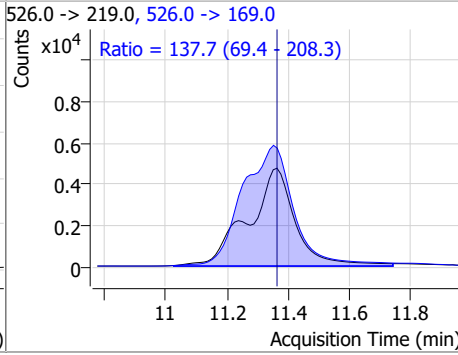
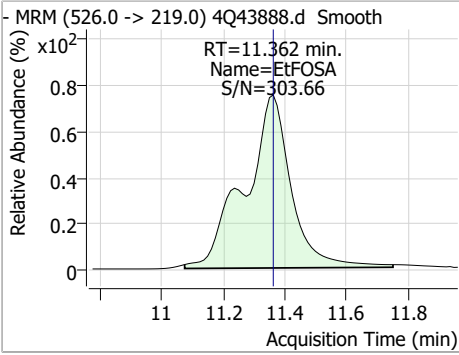
### Perfluorinated Compounds by LC/MS/MS



7.7.6  
7

### Perfluorinated Compounds by LC/MS/MS

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



7.7.6

7

# Manual Integration Approval Summary

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

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

7.7.6.1  
7

## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43889.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 12:22:30 PM  
 Sample Name : ic634-6  
 Vial : P1-A7  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

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

## Perfluorinated Compounds by LC/MS/MS

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

## Perfluorinated Compounds by LC/MS/MS

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

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

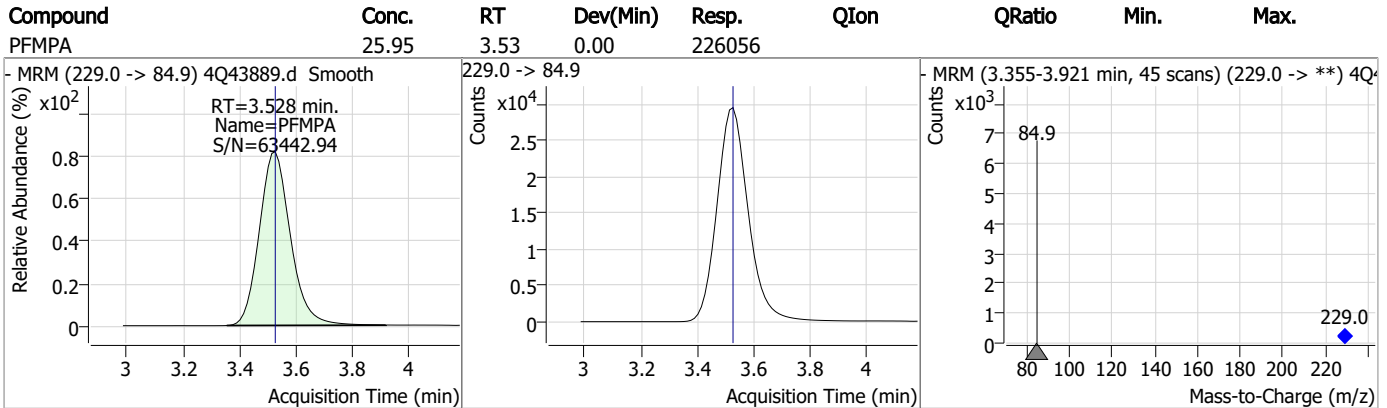
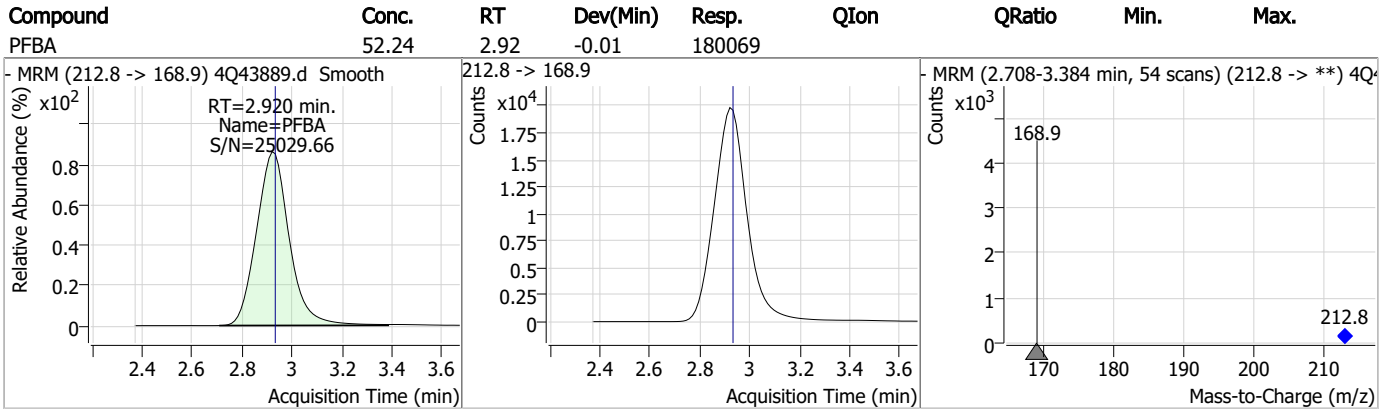
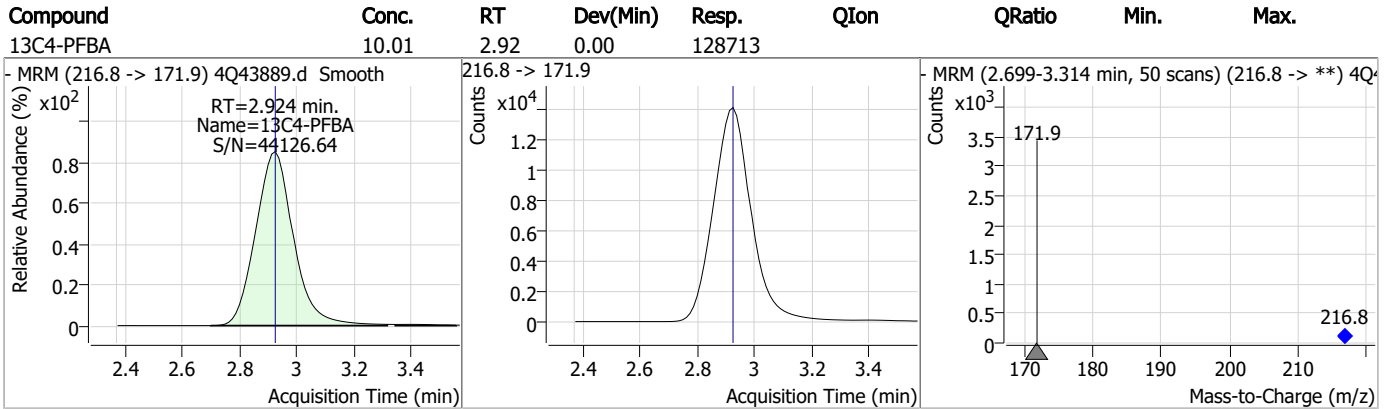
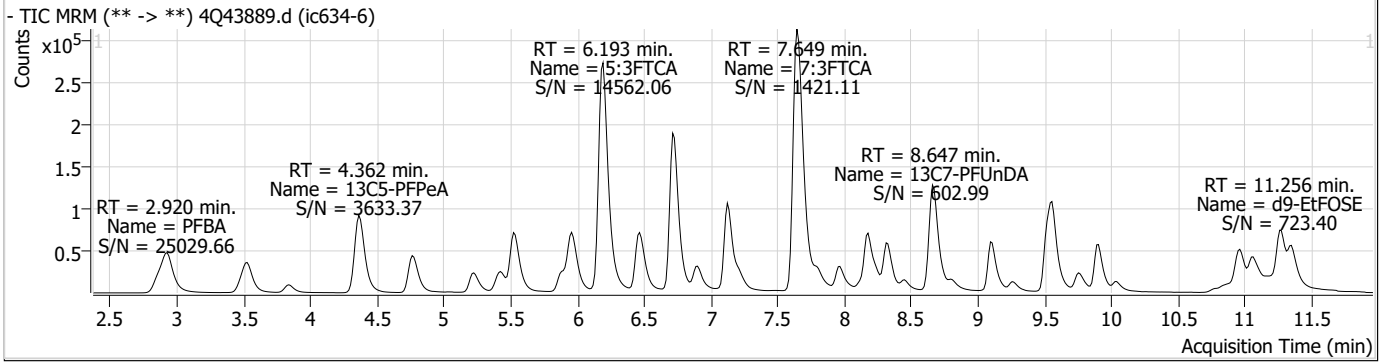
### Perfluorinated Compounds by LC/MS/MS

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

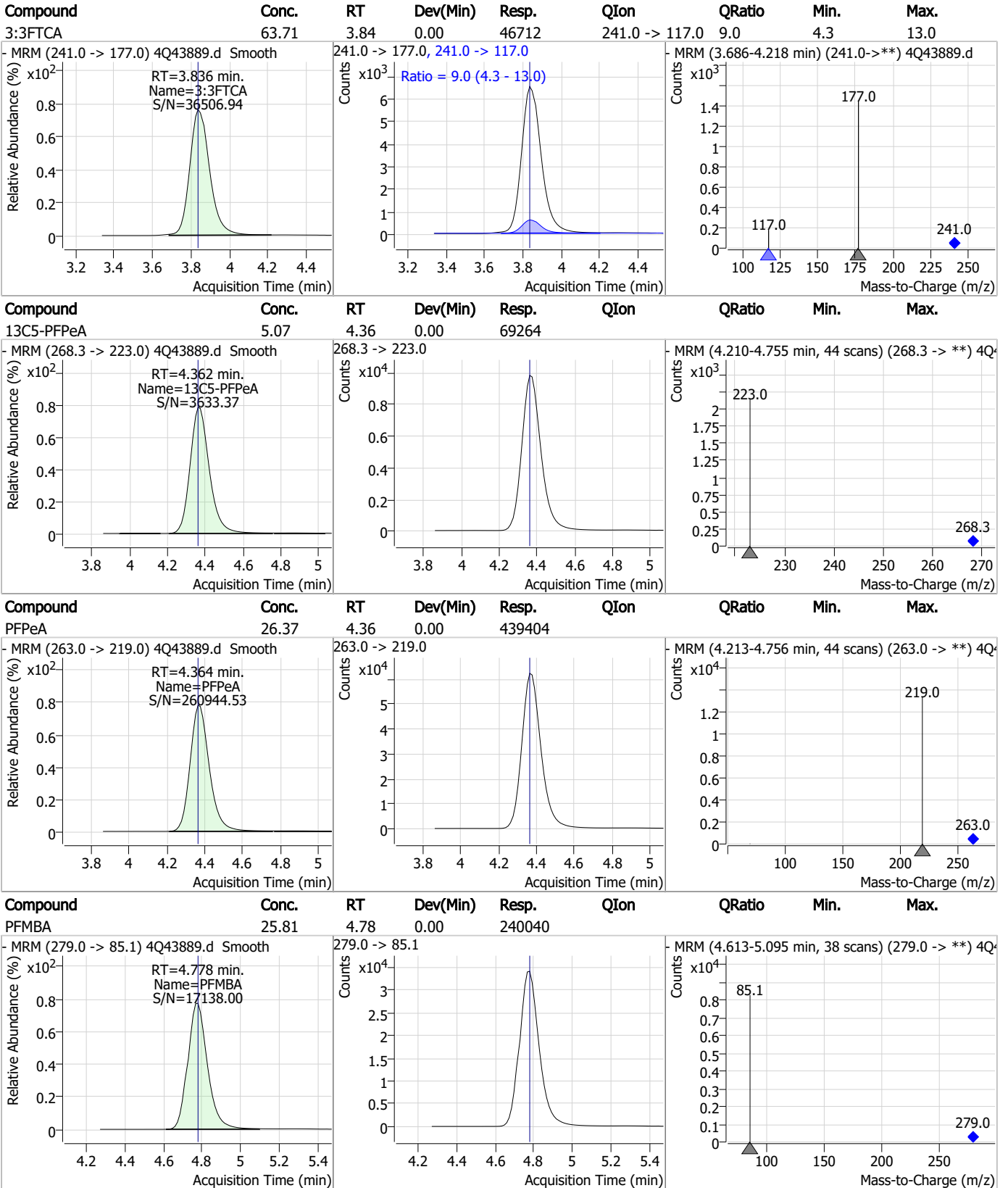
7.7.7  
7



### Perfluorinated Compounds by LC/MS/MS



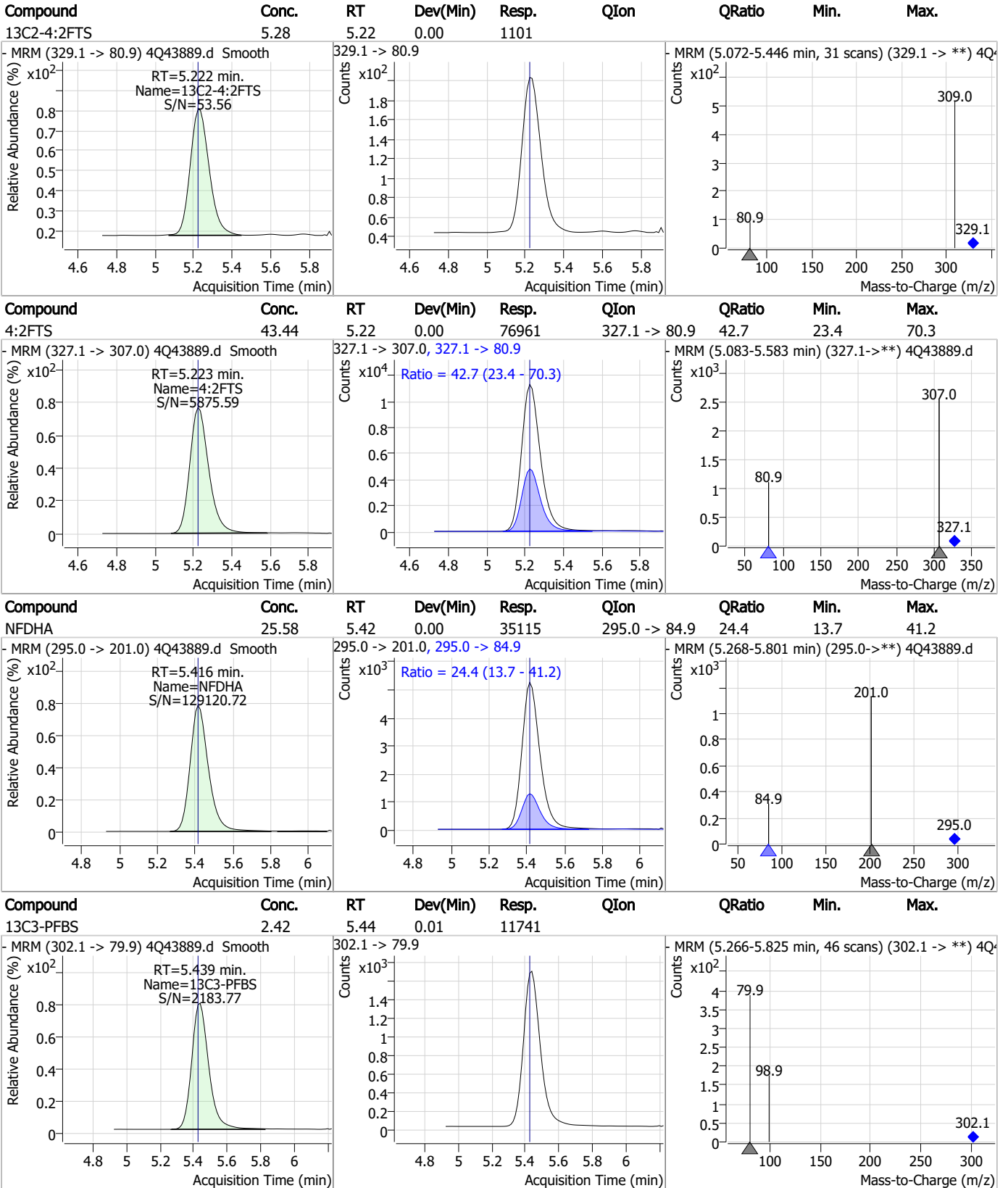
### Perfluorinated Compounds by LC/MS/MS



7.7.7

7

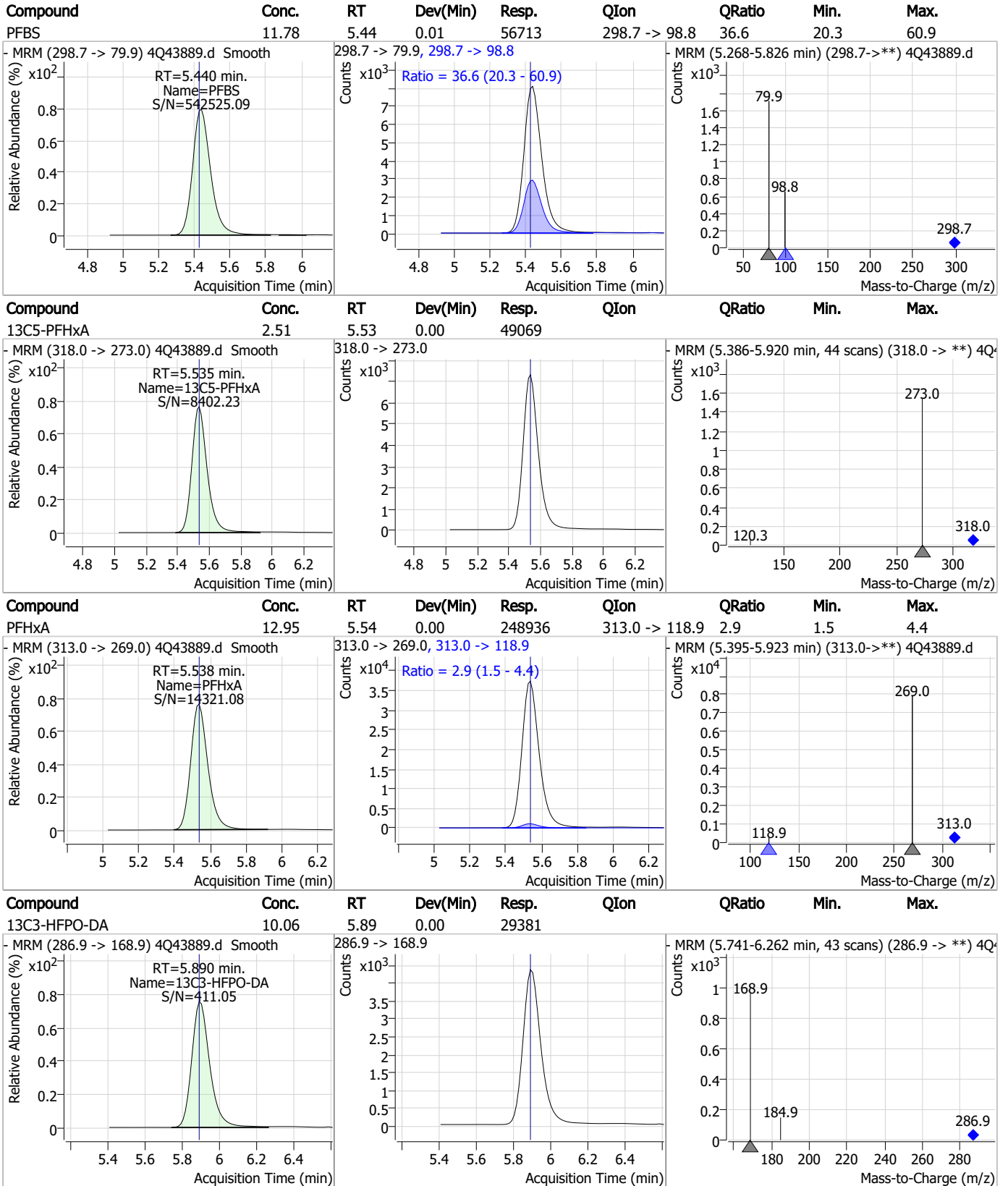
### Perfluorinated Compounds by LC/MS/MS



7.7.7

7

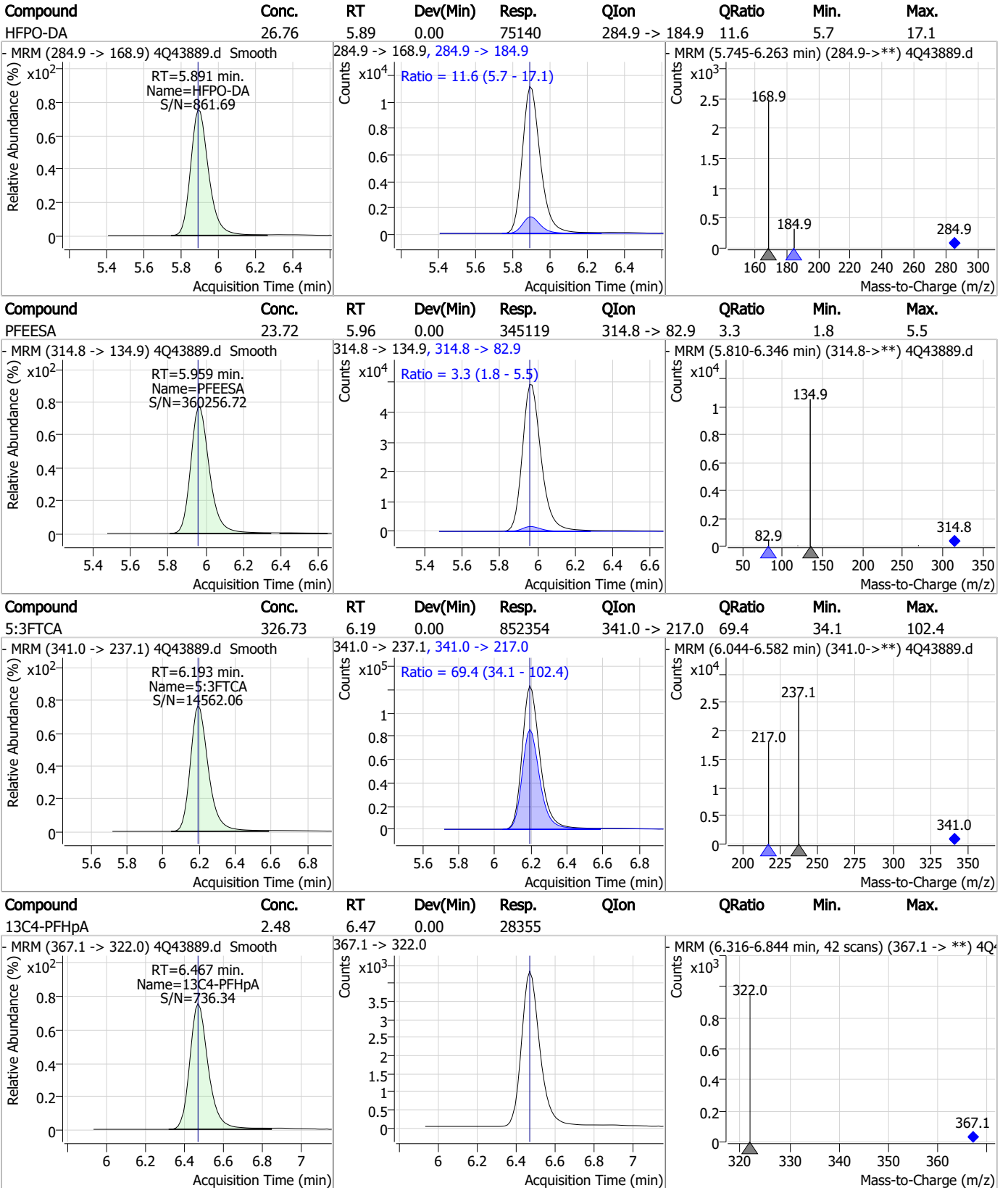
### Perfluorinated Compounds by LC/MS/MS



7.7.7

7

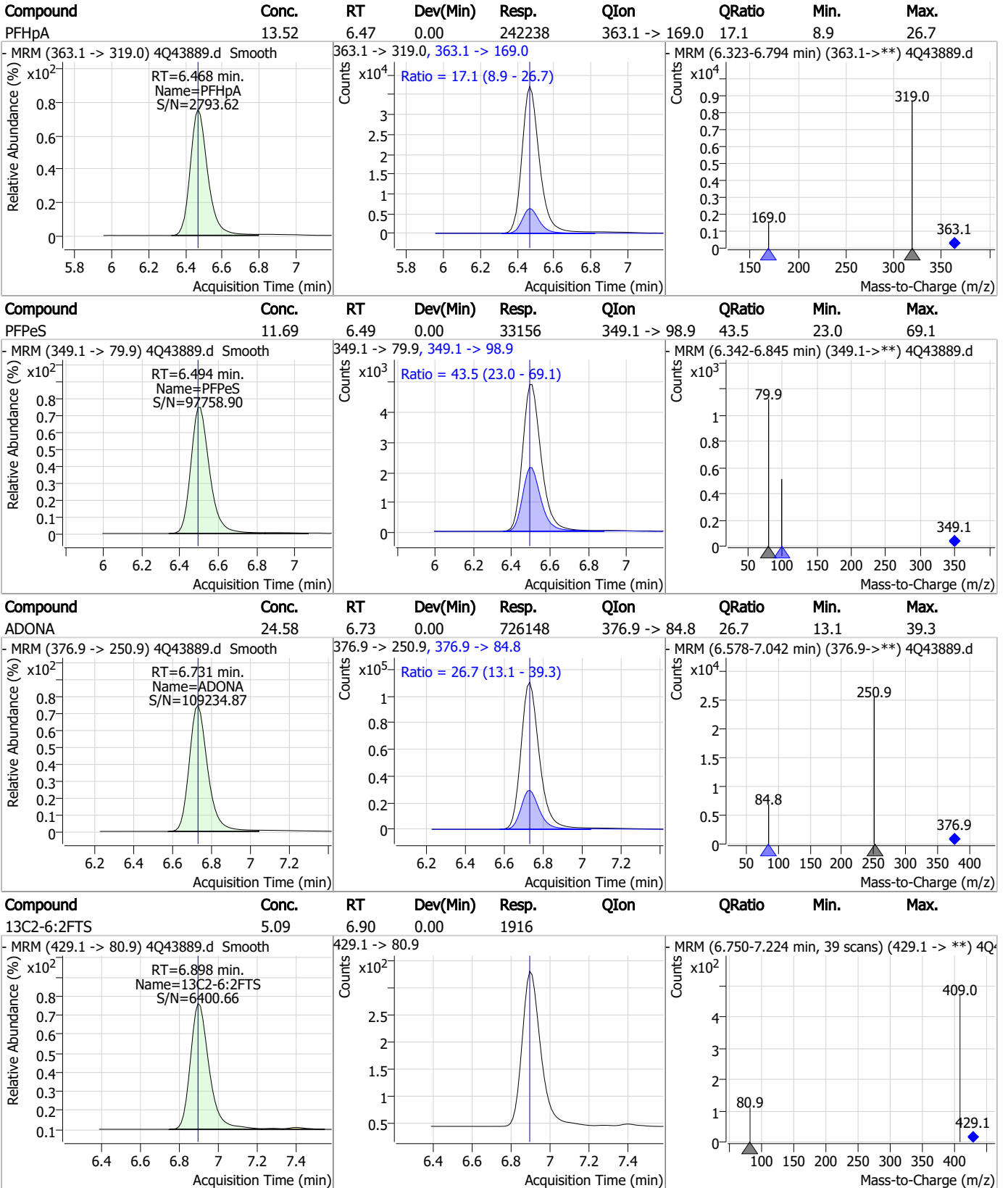
### Perfluorinated Compounds by LC/MS/MS



7.7.7

7

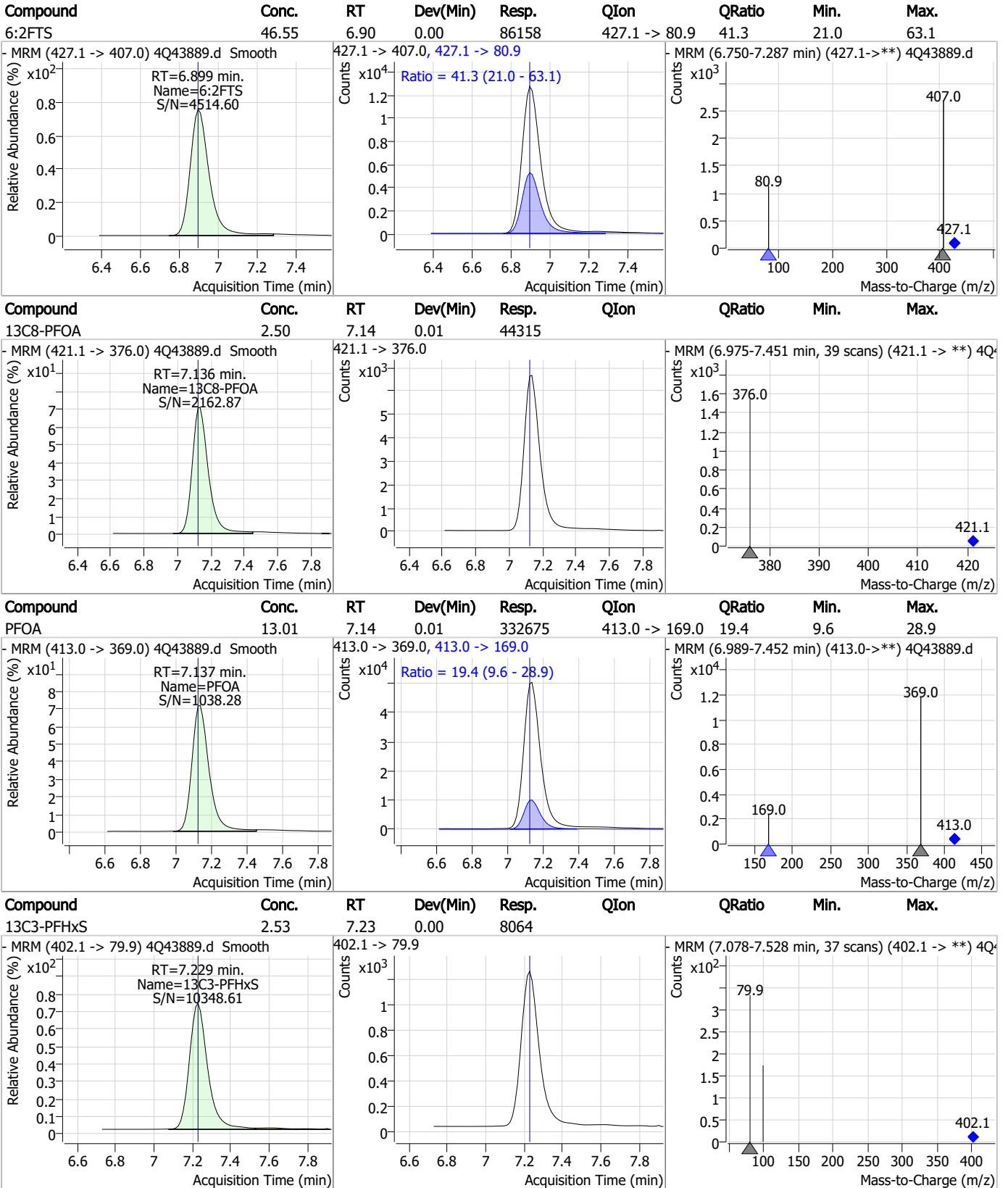
### Perfluorinated Compounds by LC/MS/MS



7.7.7  
7



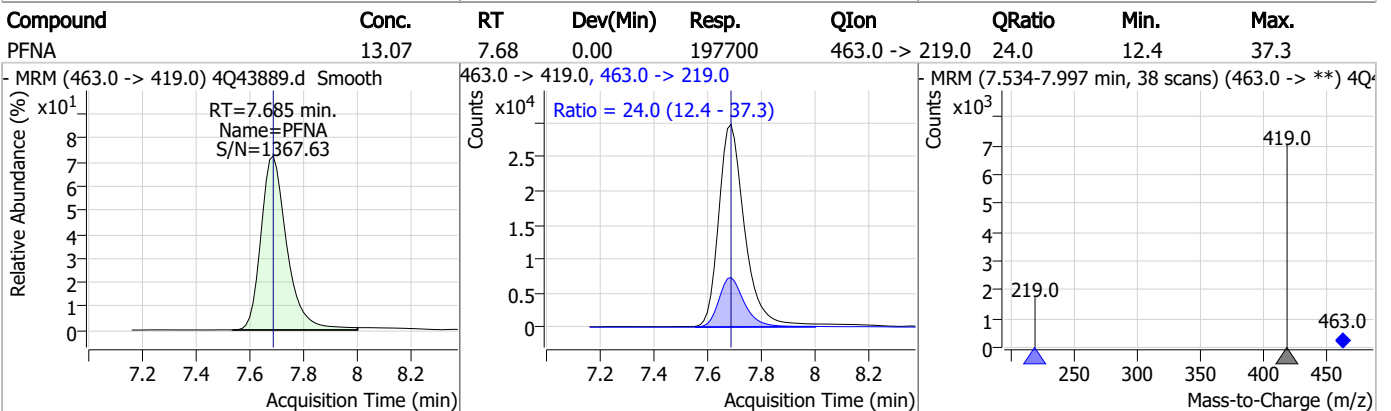
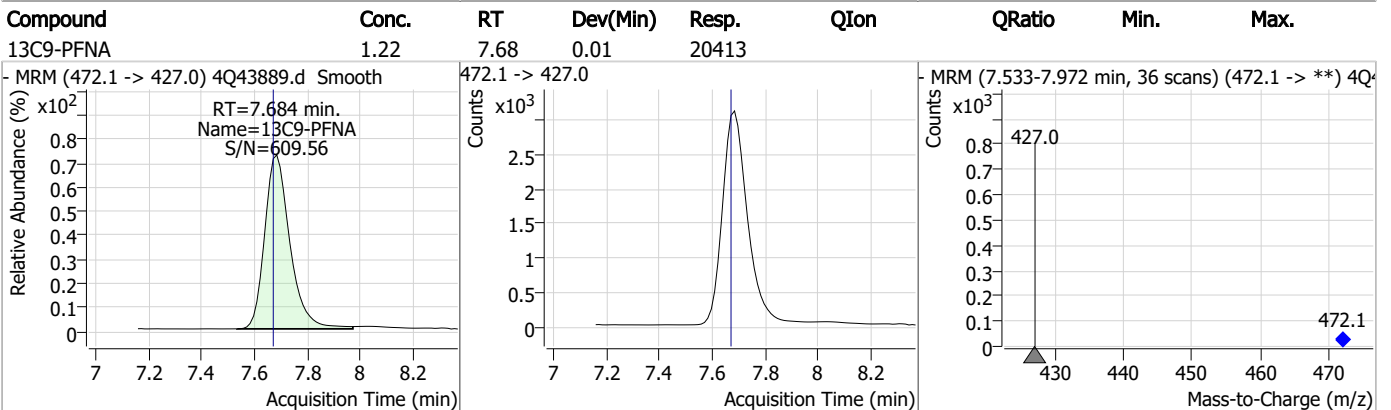
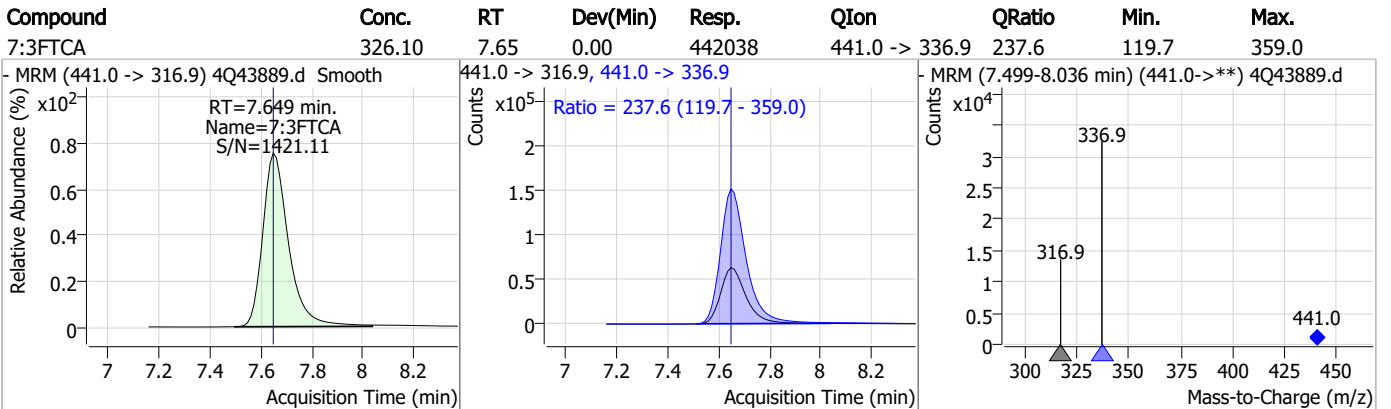
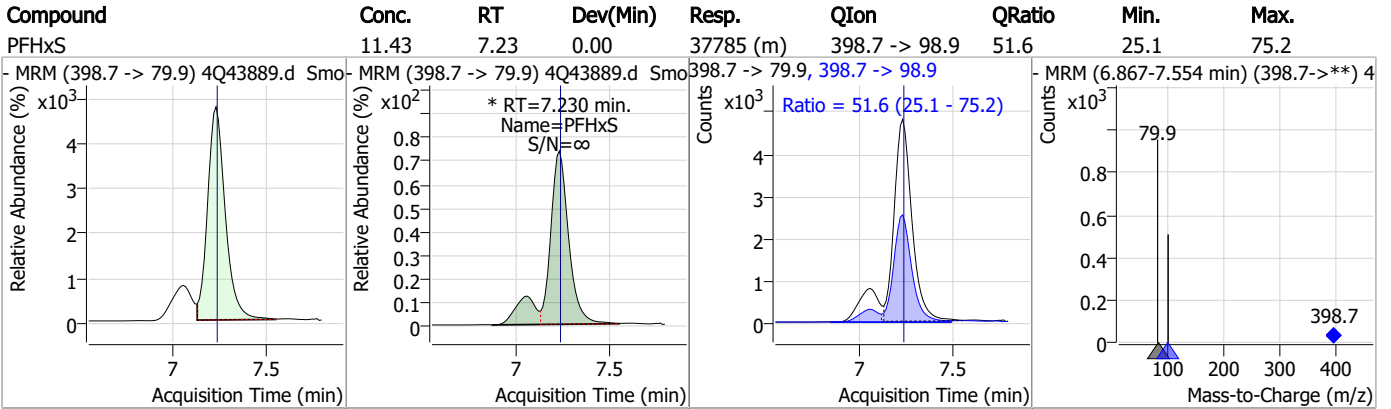
### Perfluorinated Compounds by LC/MS/MS



7.7.7

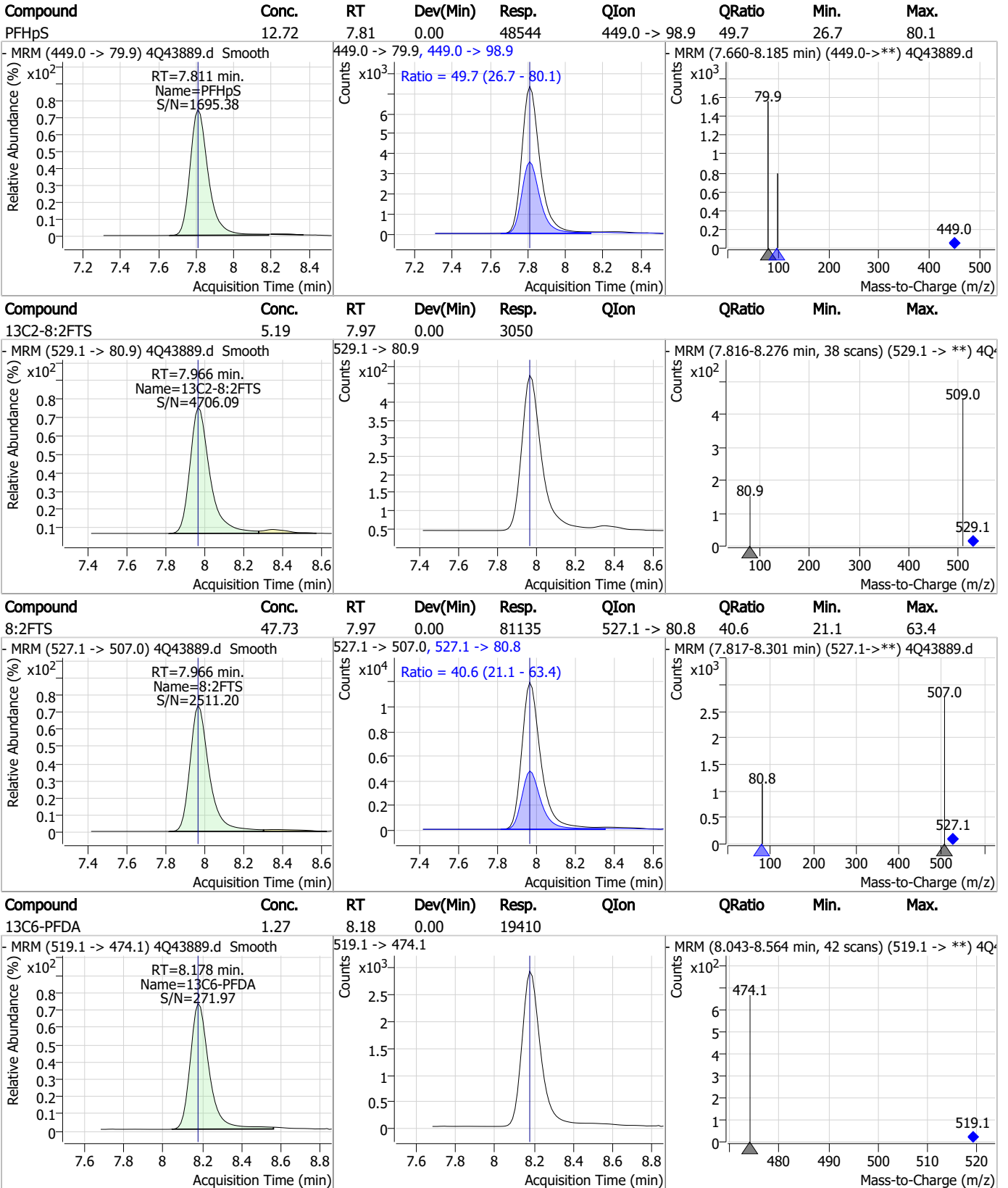
7

### Perfluorinated Compounds by LC/MS/MS





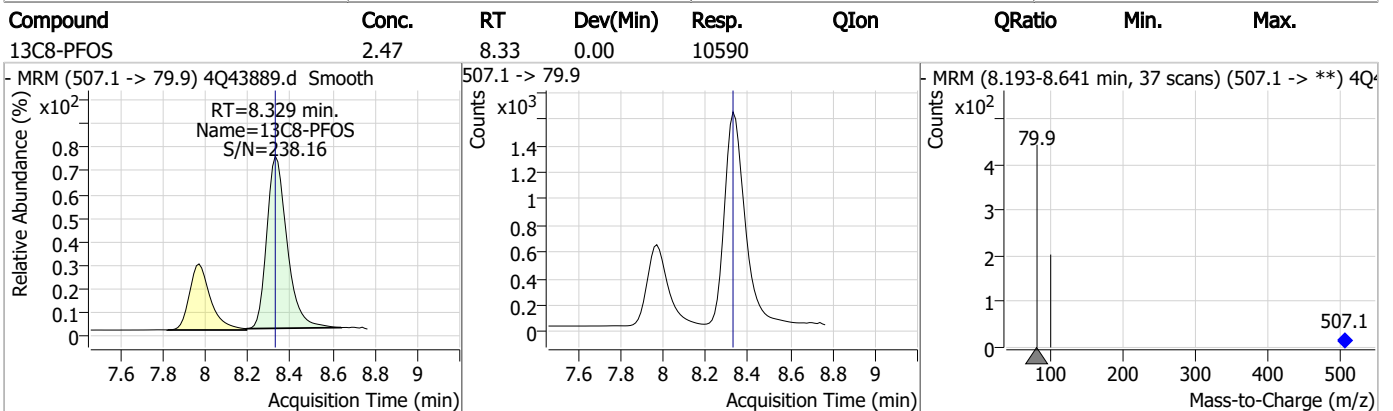
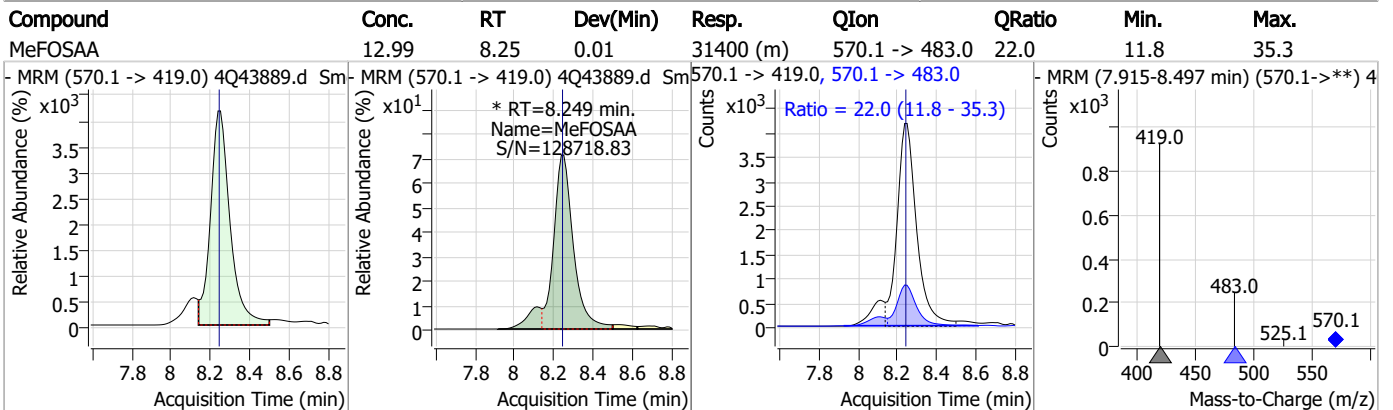
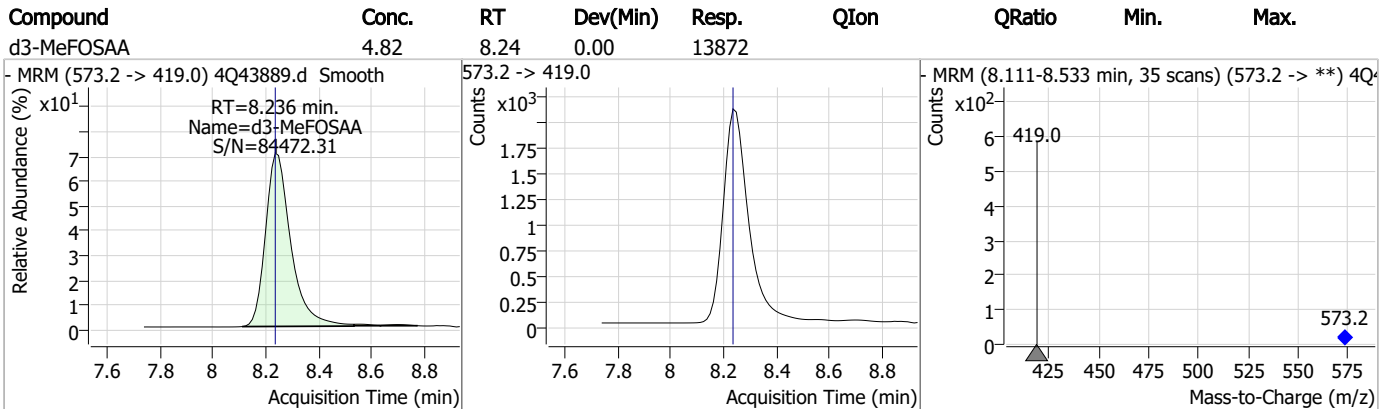
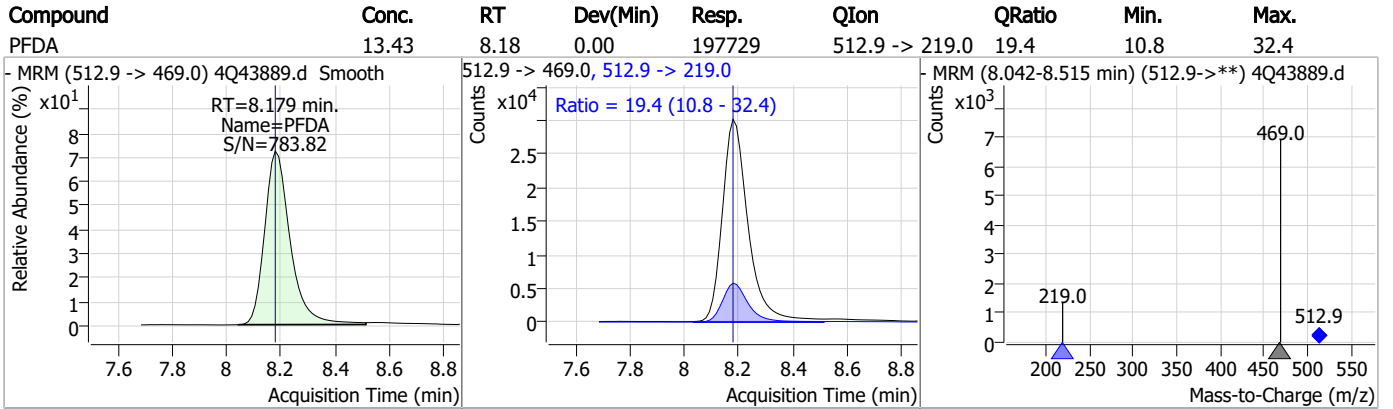
### Perfluorinated Compounds by LC/MS/MS



7.7.7

7

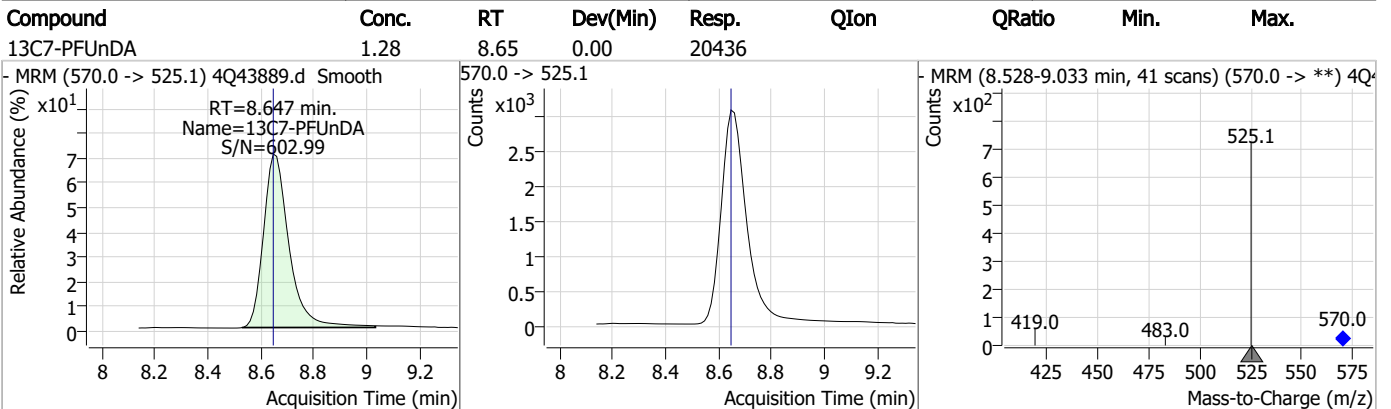
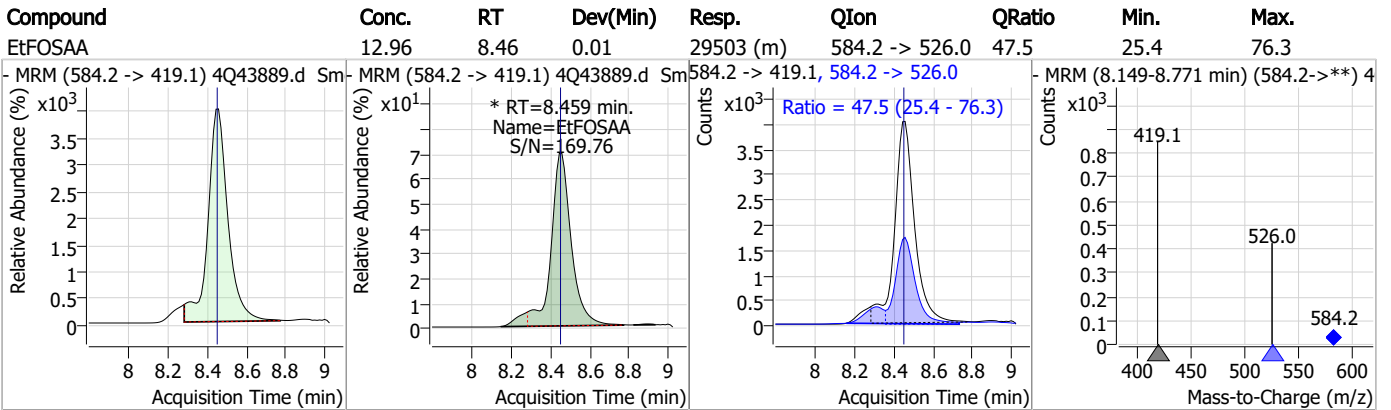
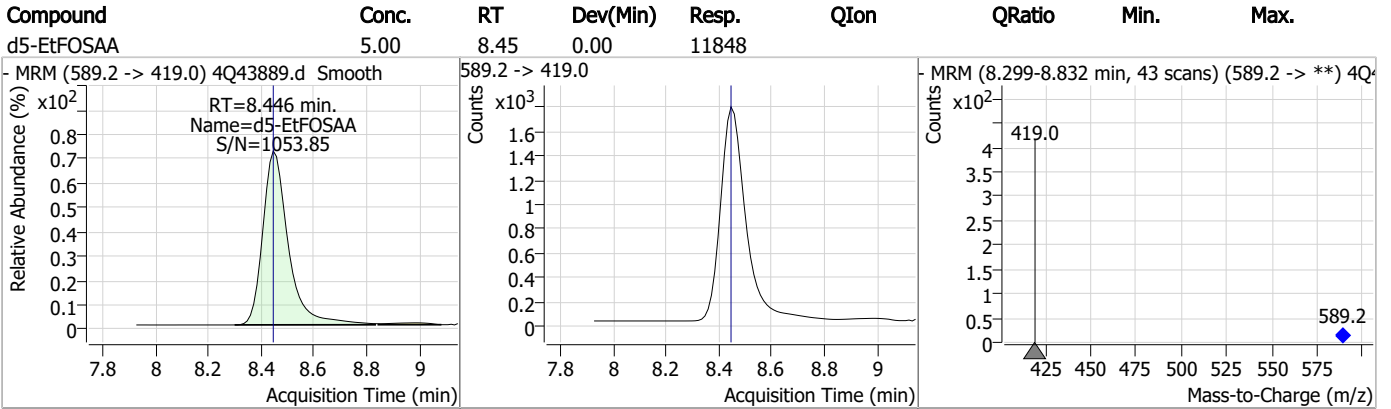
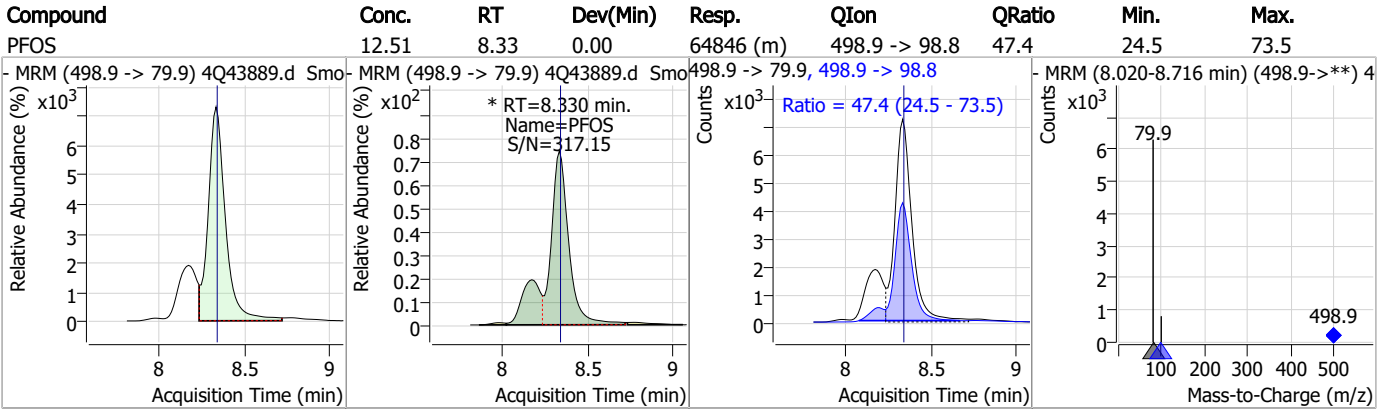
### Perfluorinated Compounds by LC/MS/MS



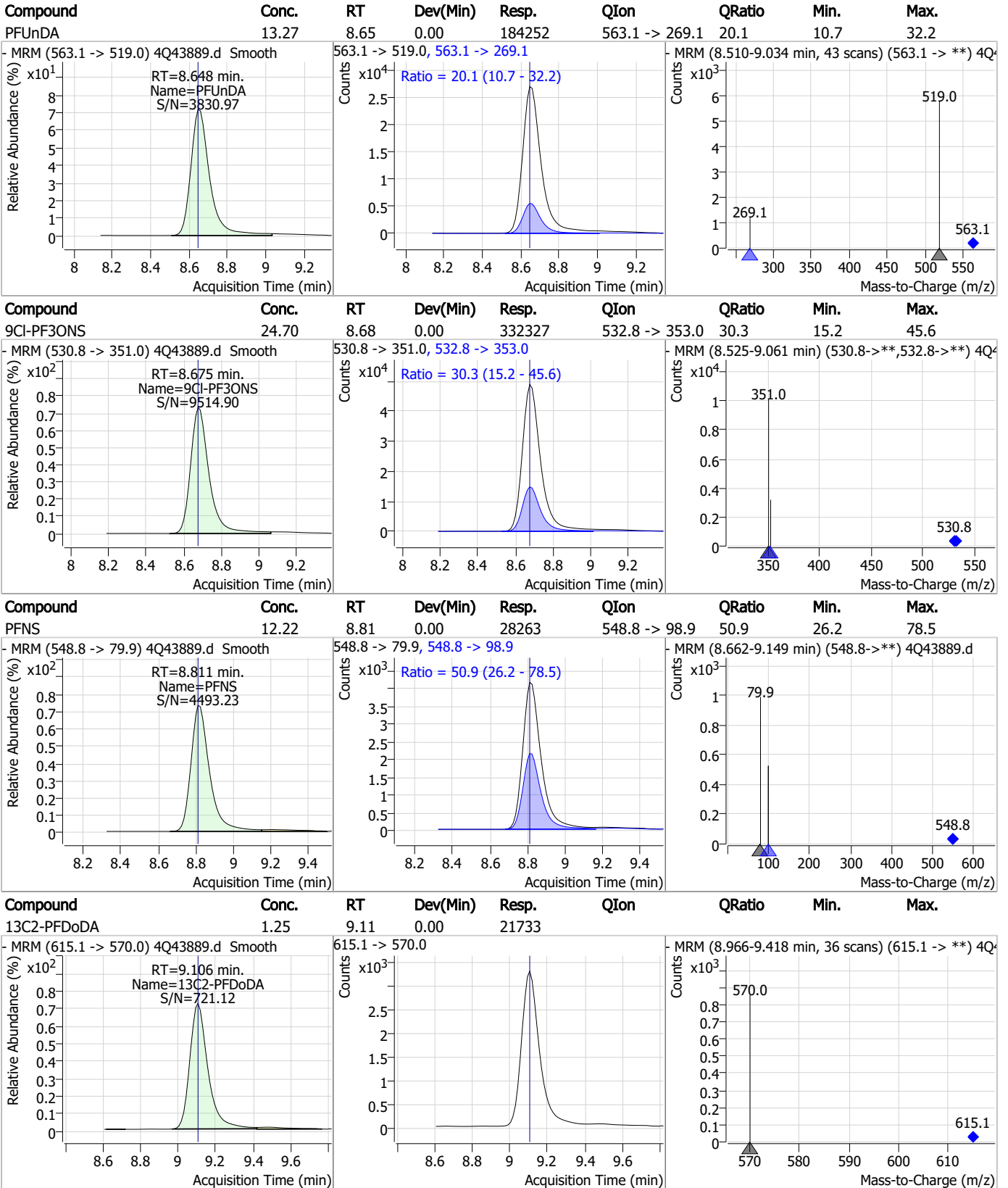
7.7.7

7

### Perfluorinated Compounds by LC/MS/MS



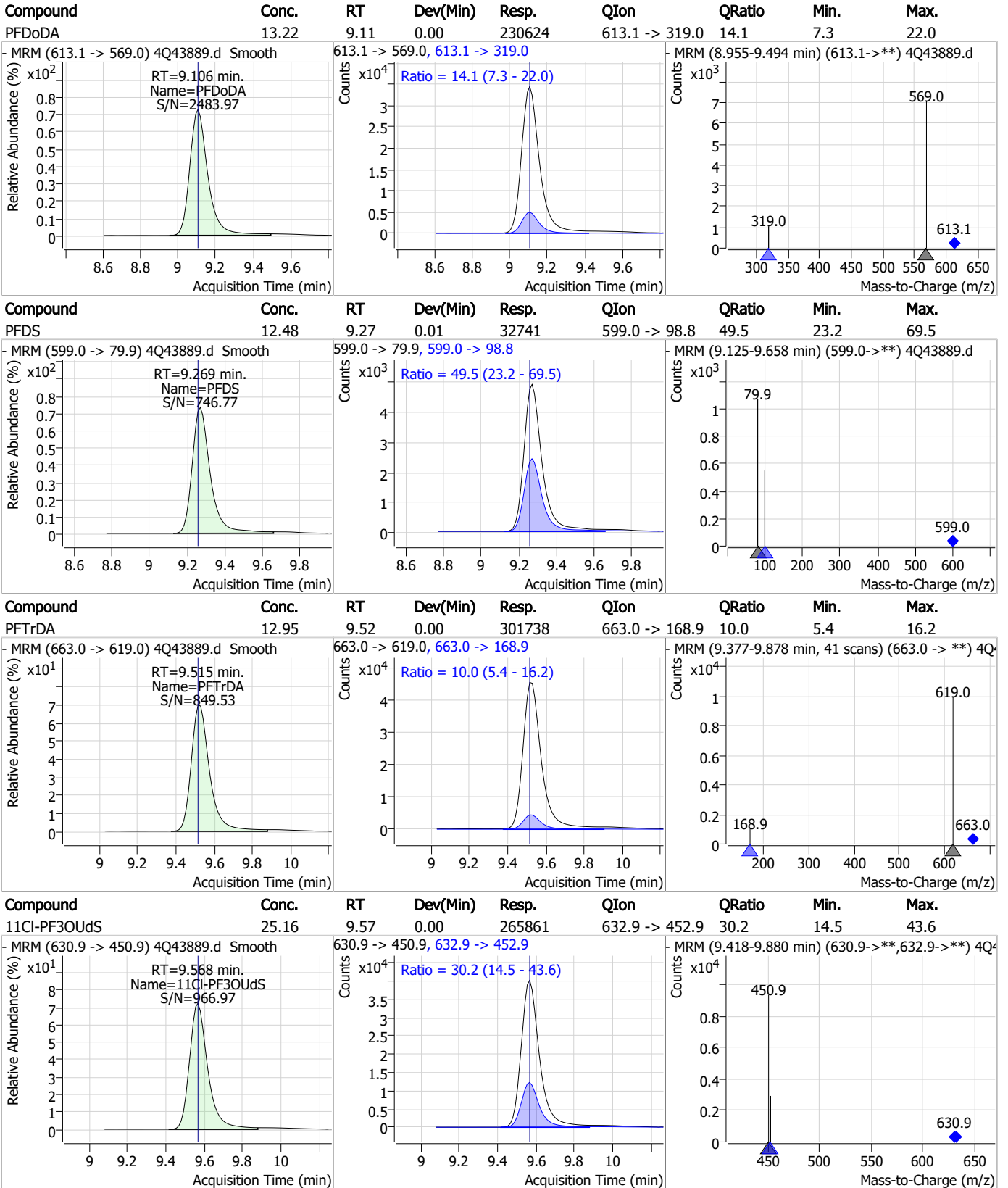
### Perfluorinated Compounds by LC/MS/MS



7.7.7

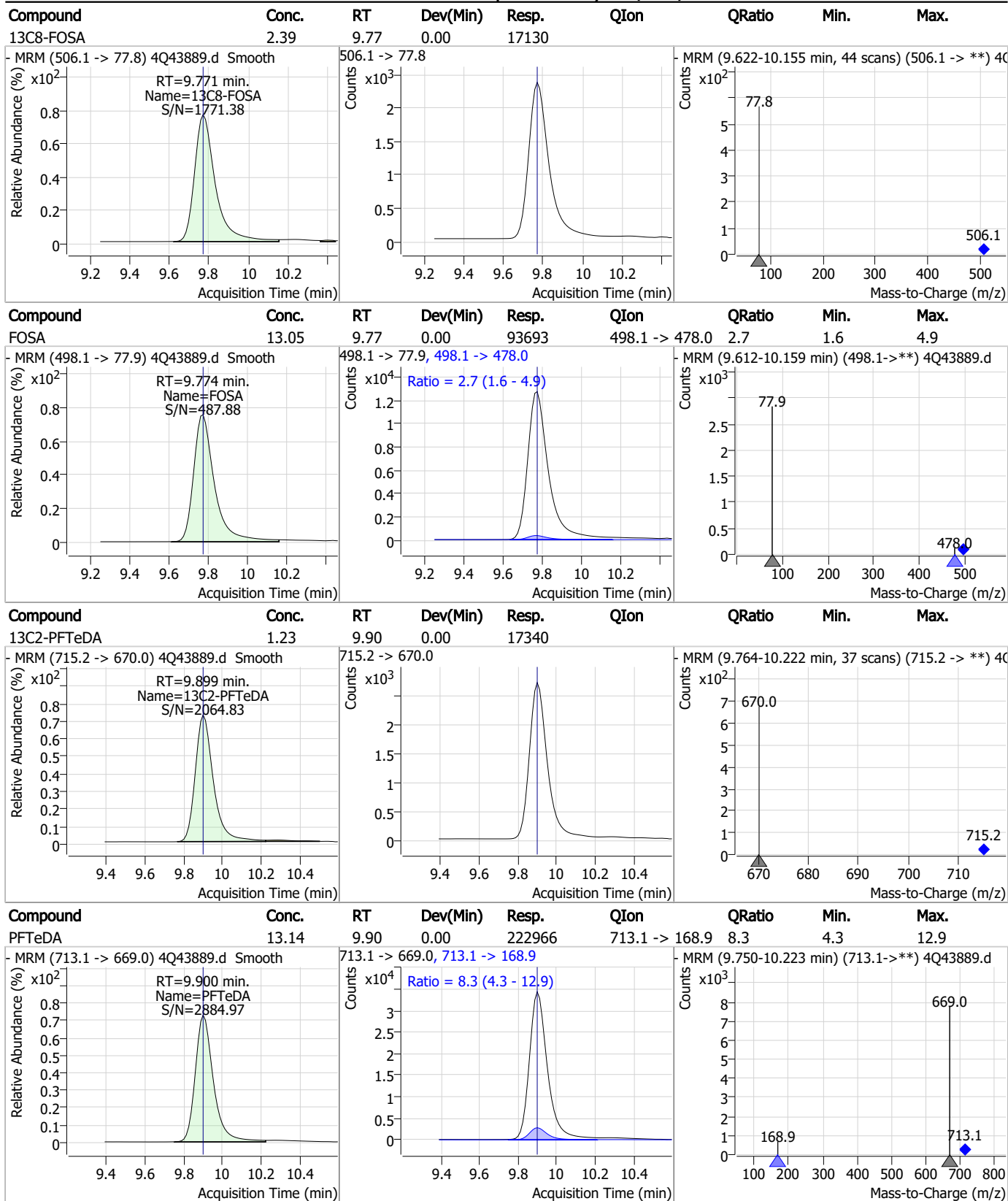
7

### Perfluorinated Compounds by LC/MS/MS



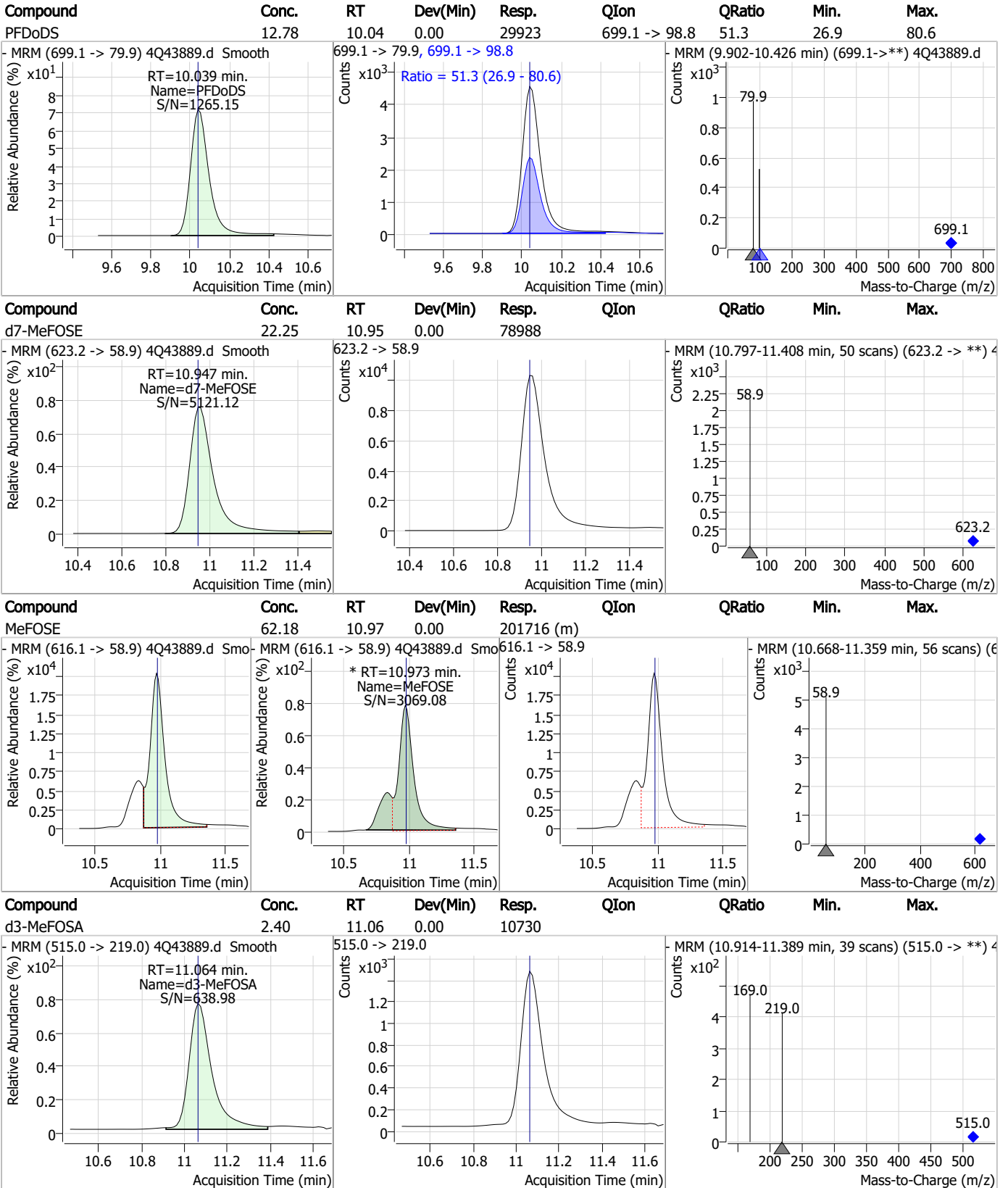
7.7.7  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.7  
7

### Perfluorinated Compounds by LC/MS/MS

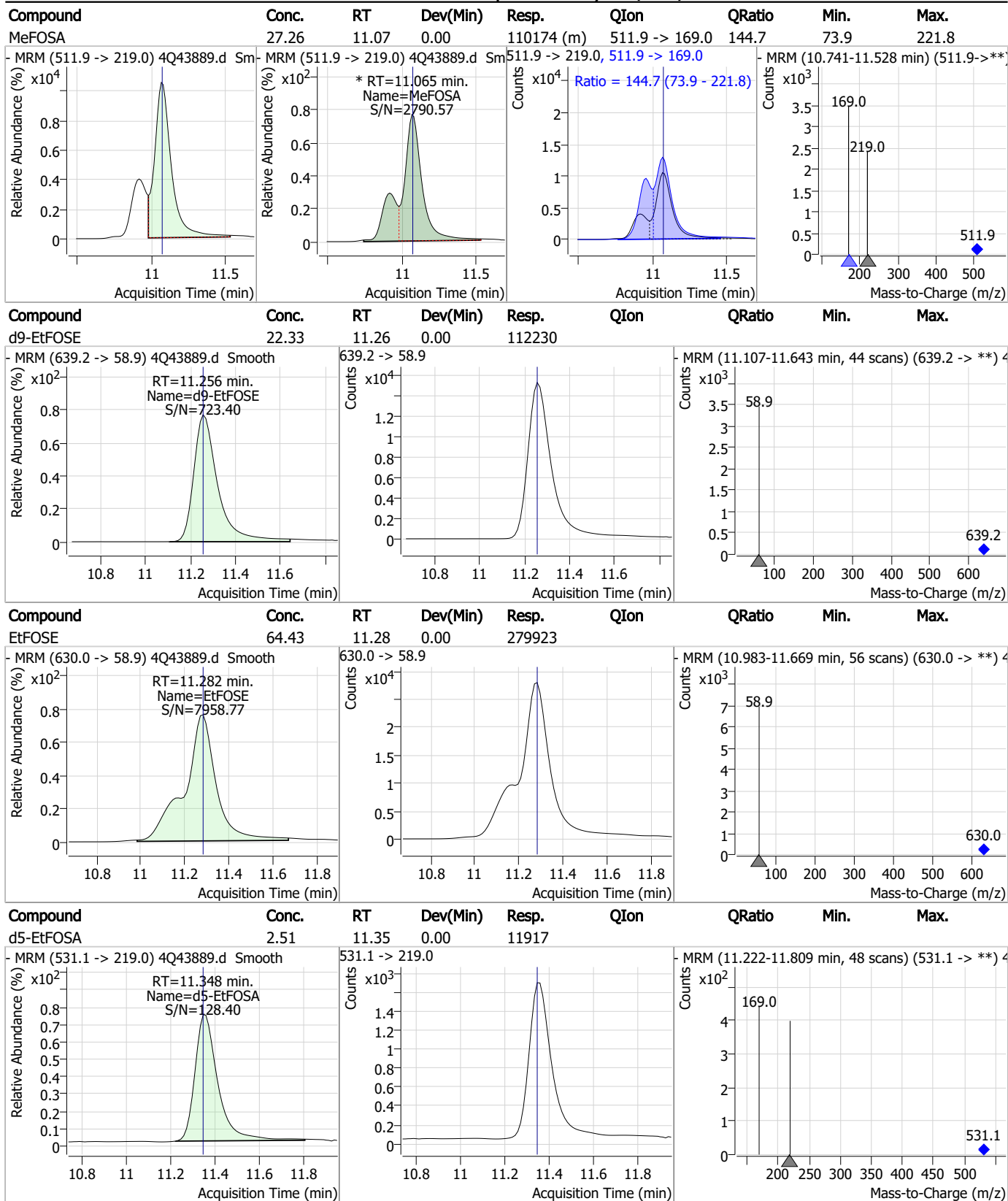


7.7.7

7



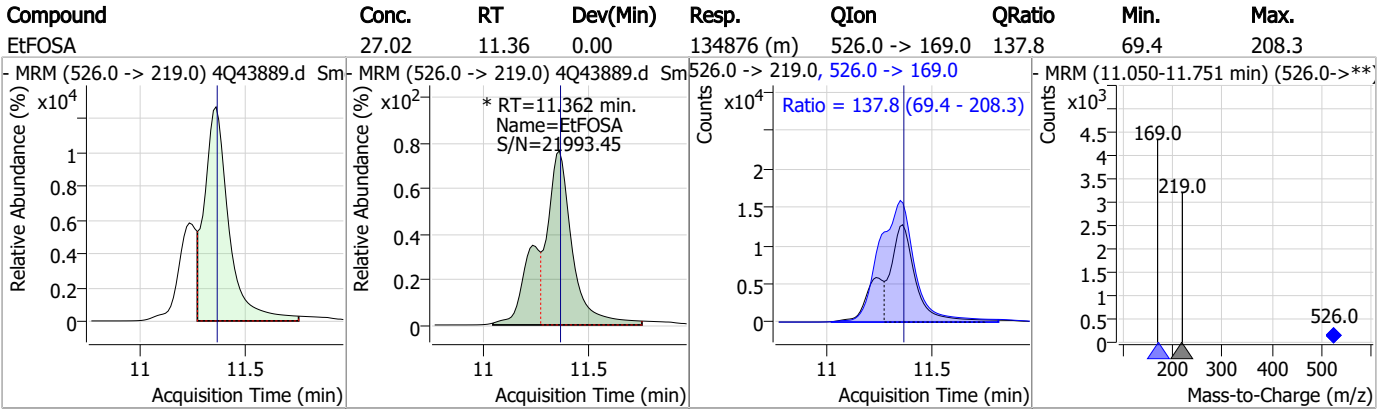
### Perfluorinated Compounds by LC/MS/MS



7.7.7  
7



Perfluorinated Compounds by LC/MS/MS



7.7.7

7

# Manual Integration Approval Summary

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

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.06	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.7.1  
7

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

**Norman Farmer**  
 05/04/23 17:44

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43890.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 12:36:33 PM  
 Sample Name : ic634-7  
 Vial : P1-A8  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

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

7.7.8  
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 = 102.1%	
13C4-PFBA	2.911	216.8 -> 171.9	120121	9.99 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.467	367.1 -> 322.0	28586	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C5-PFHxA	5.535	318.0 -> 273.0	46821	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C5-PFPeA	4.362	268.3 -> 223.0	66273	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C6-PFDA	8.178	519.1 -> 474.1	19612	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C7-PFUnDA	8.647	570.0 -> 525.1	18650	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-FOSA	9.771	506.1 -> 77.8	16278	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C8-PFOA	7.136	421.1 -> 376.0	41636	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C8-PFOS	8.329	507.1 -> 79.9	10878	2.80 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.0%	
13C9-PFNA	7.684	472.1 -> 427.0	20543	1.30 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 104.1%	
d3-MeFOSAA	8.236	573.2 -> 419.0	14413	5.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.6%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	29456	10.34 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.4%	
d3-MeFOSA	11.064	515.0 -> 219.0	10176	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
d5-EtFOSAA	8.446	589.2 -> 419.0	11475	5.35 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.0%	
d7-MeFOSE	10.959	623.2 -> 58.9	70051	21.81 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 87.2%	
d9-EtFOSE	11.256	639.2 -> 58.9	98044	21.56 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 86.2%	
d5-EtFOSA	11.348	531.1 -> 219.0	11250	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.6%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.223	327.1 -> 307.0	146301	104.28 µg/L	92
		327.1 -> 80.9	60380		
6:2FTS	6.899	427.1 -> 407.0	156292	101.17 µg/L	98
		427.1 -> 80.9	64052		
8:2FTS	7.966	527.1 -> 507.0	149695	106.75 µg/L	95
		527.1 -> 80.8	58775		
EtFOSAA	8.459	584.2 -> 419.1	57787	26.21 µg/L	m 94
		584.2 -> 526.0	26926		
FOSA	9.774	498.1 -> 77.9	174421	25.57 µg/L	99
		498.1 -> 478.0	4957		
MeFOSAA	8.249	570.1 -> 419.0	61802	24.60 µg/L	m 99
		570.1 -> 483.0	14322		
PFBA	2.920	212.8 -> 168.9	346581	107.75 µg/L	100
PFBS	5.440	298.7 -> 79.9	109963	23.53 µg/L	95
		298.7 -> 98.8	41302		
PFDA	8.179	512.9 -> 469.0	385953	25.94 µg/L	97
		512.9 -> 219.0	77211		
PFDoDA	9.106	613.1 -> 569.0	447161	26.30 µg/L	100
		613.1 -> 319.0	64881		
PFDS	9.269	599.0 -> 79.9	61928	22.98 µg/L	95

## Perfluorinated Compounds by LC/MS/MS

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

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

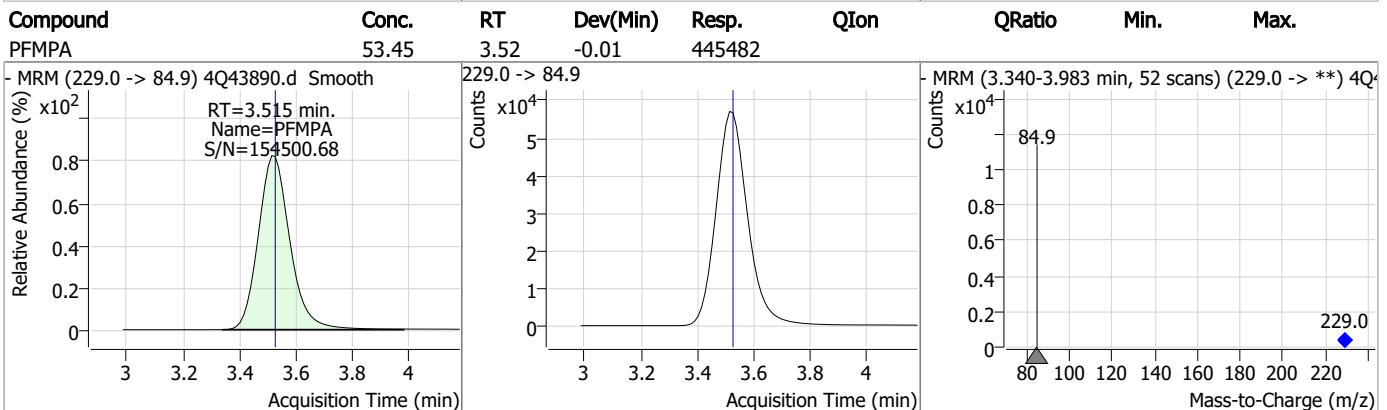
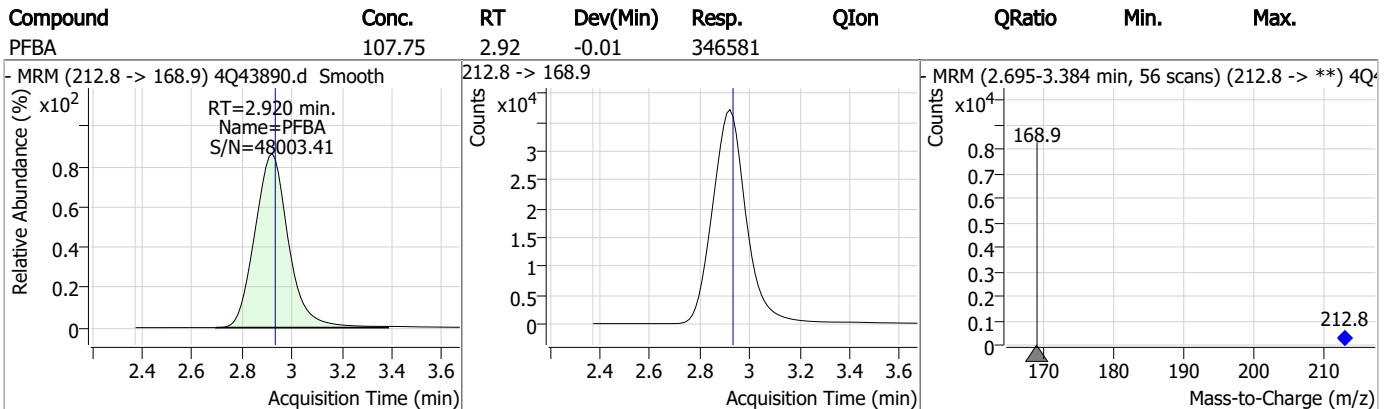
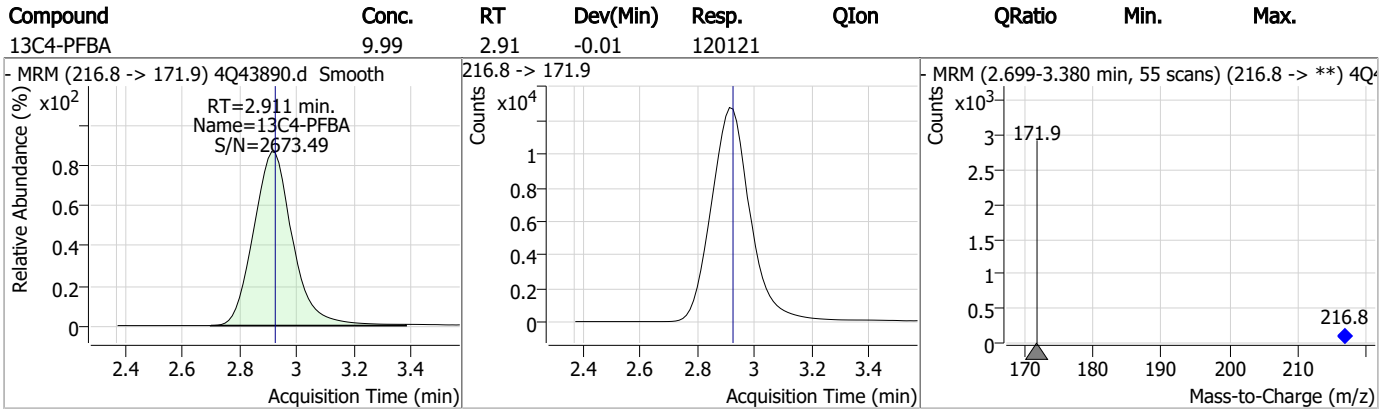
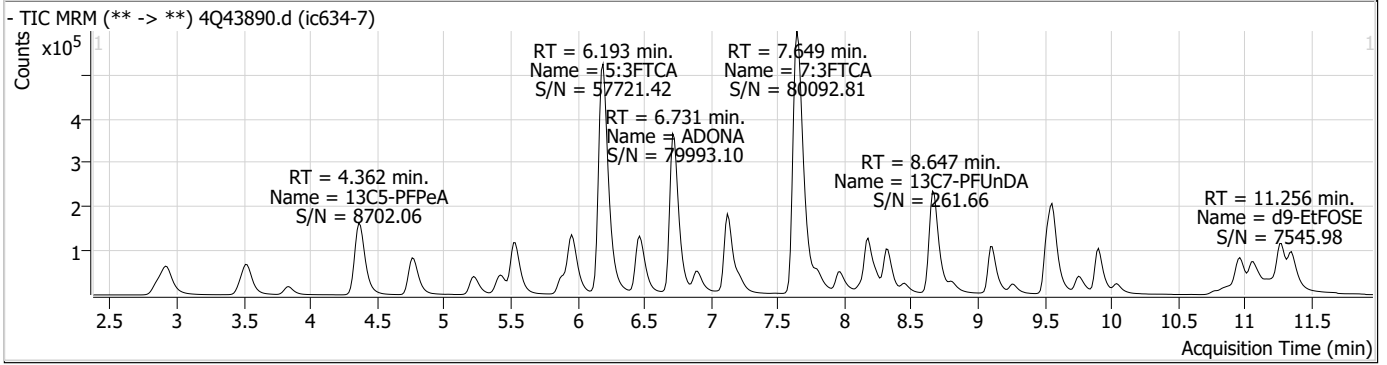
### Perfluorinated Compounds by LC/MS/MS

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

7.7.8  
7

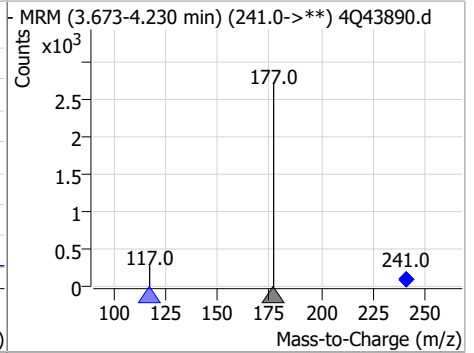
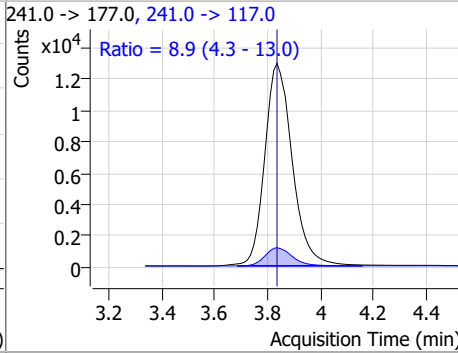
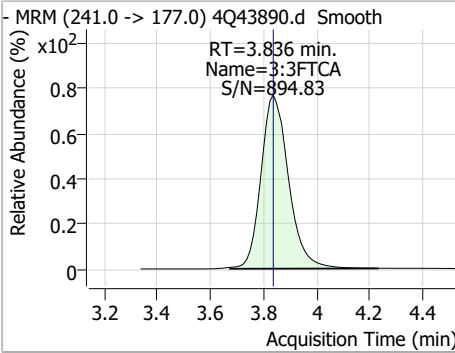


### Perfluorinated Compounds by LC/MS/MS

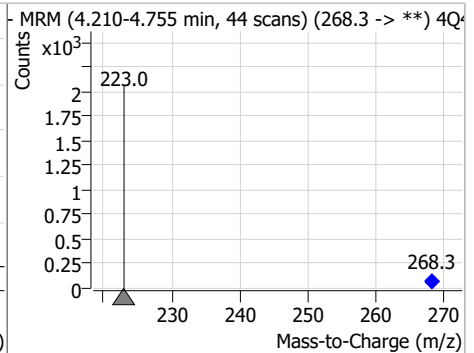
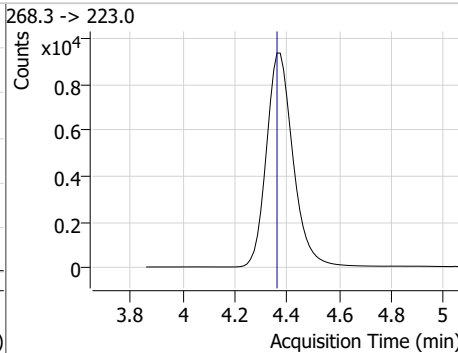
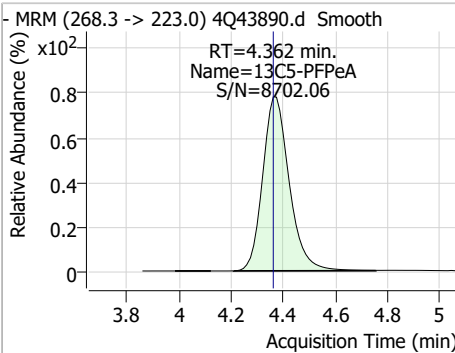


### Perfluorinated Compounds by LC/MS/MS

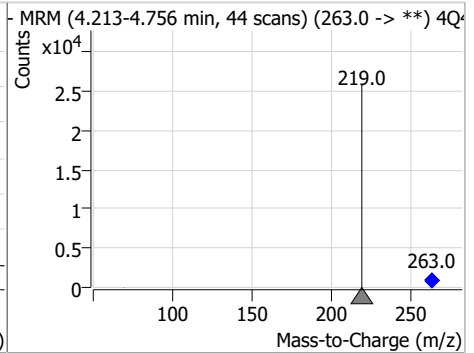
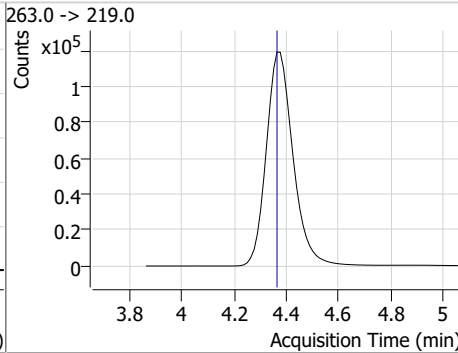
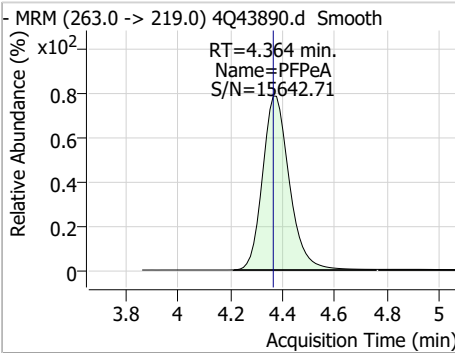
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	133.25	3.84	0.00	93481	241.0 -> 117.0	8.9	4.3	13.0



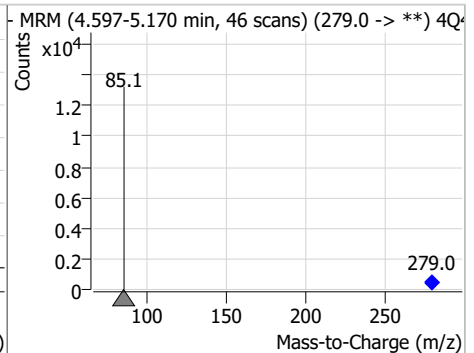
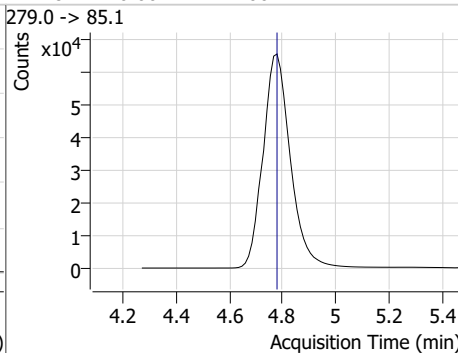
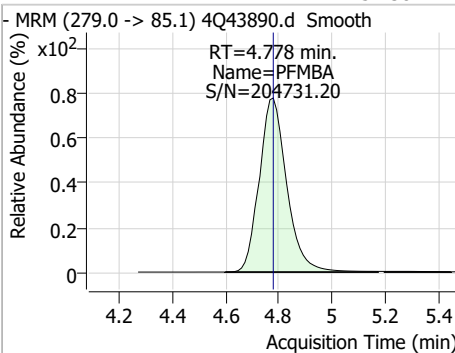
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.97	4.36	0.00	66273				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	53.27	4.36	0.00	849369				

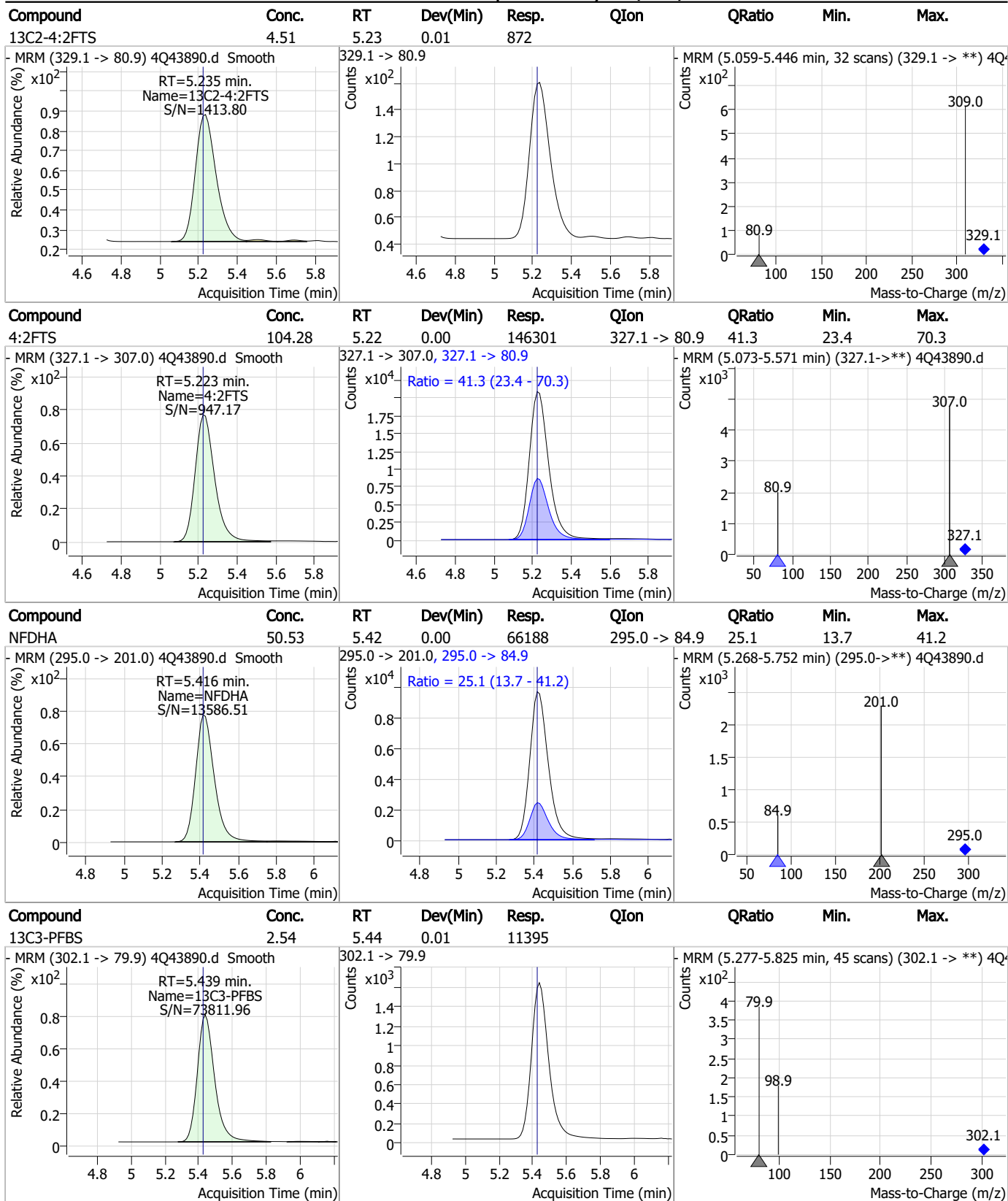


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	52.38	4.78	0.00	466141				





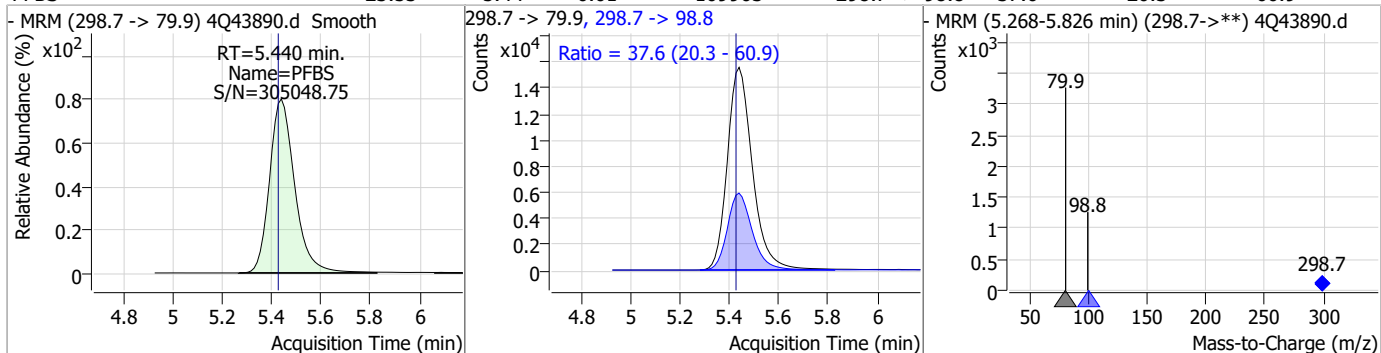
### Perfluorinated Compounds by LC/MS/MS



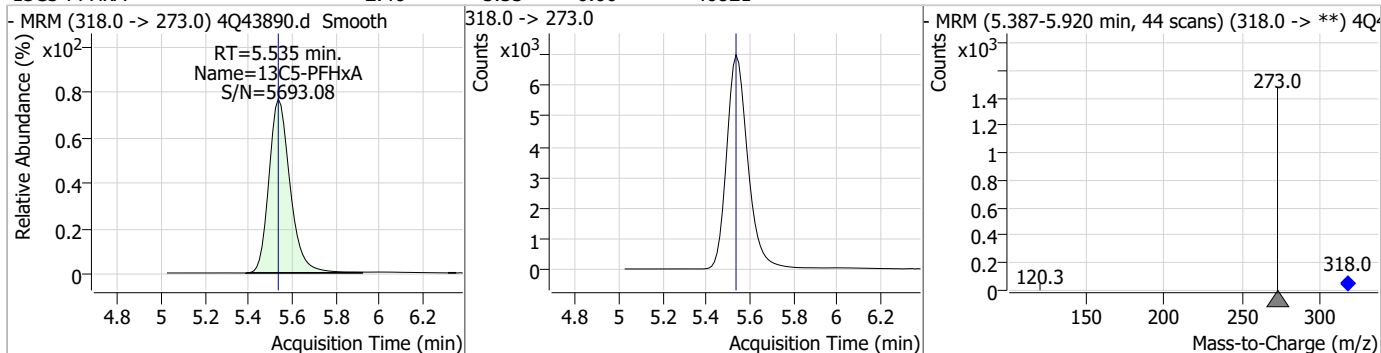
7.7.8  
7

### Perfluorinated Compounds by LC/MS/MS

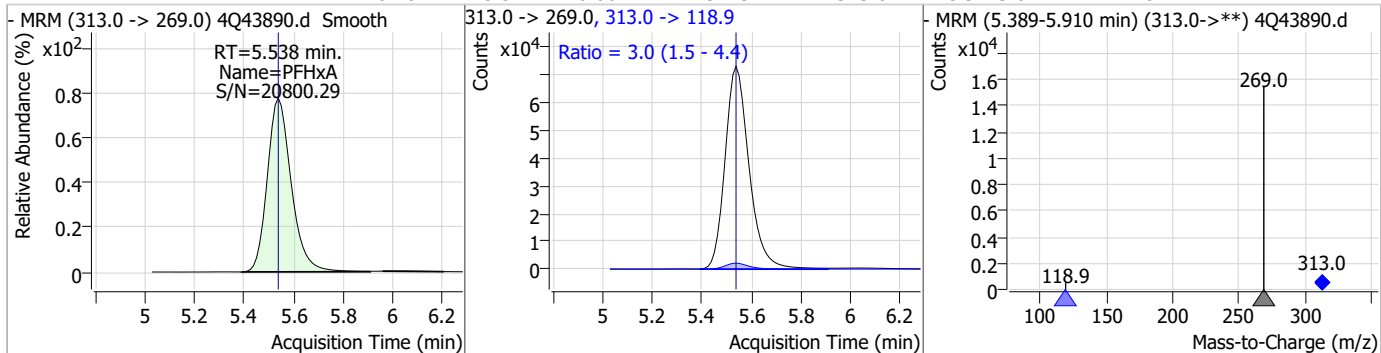
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	23.53	5.44	0.01	109963	298.7 -> 98.8	37.6	20.3	60.9



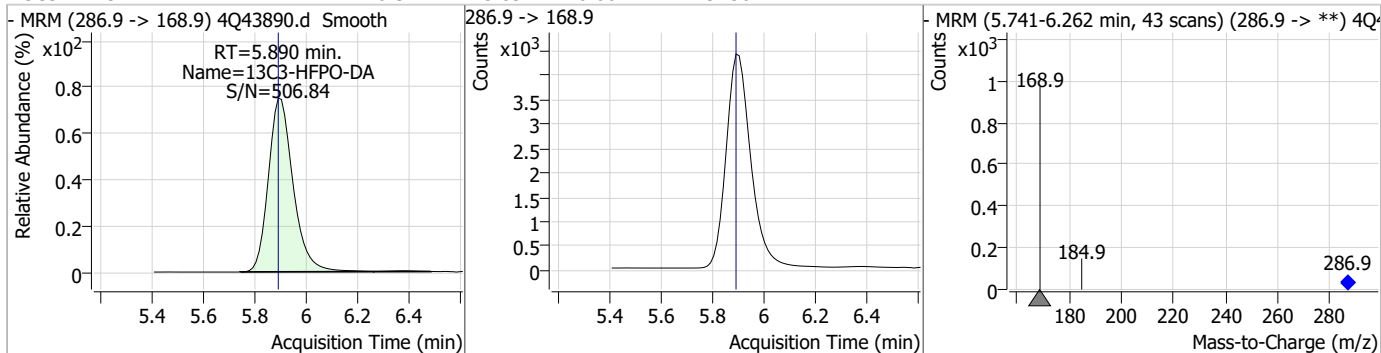
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.53	0.00	46821				



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

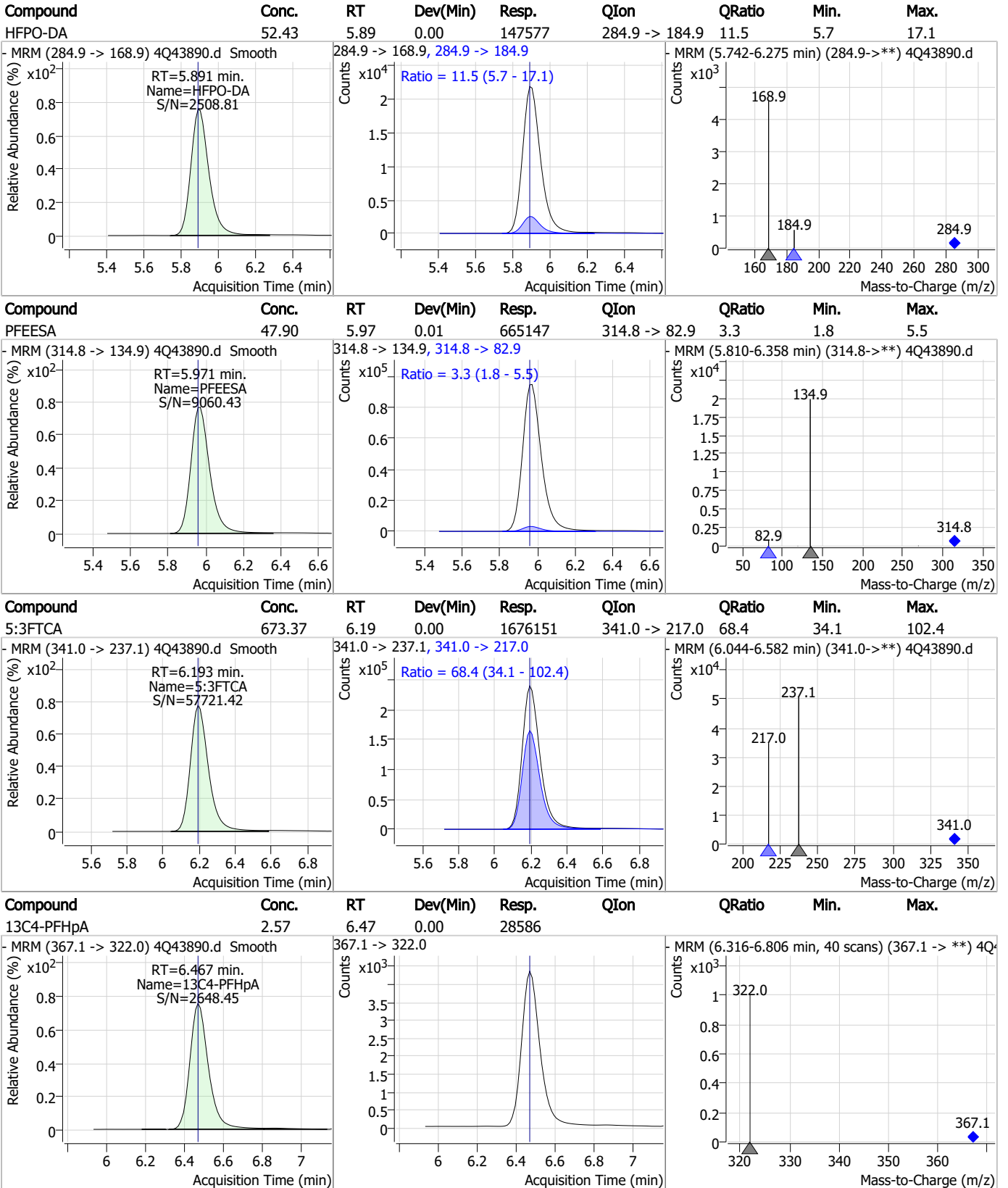


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.34	5.89	0.00	29456				



7.7.8  
7

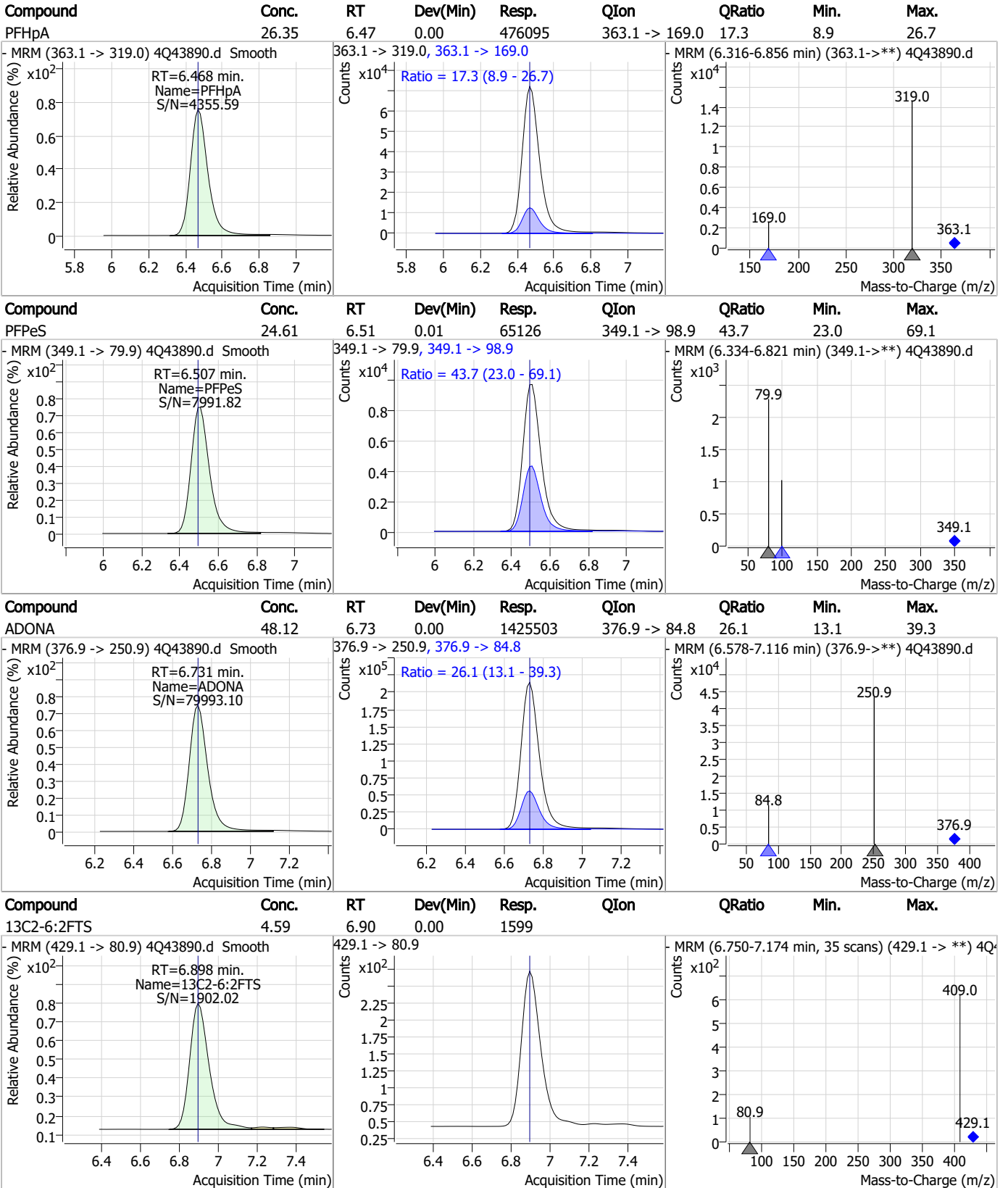
### Perfluorinated Compounds by LC/MS/MS



7.7.8

7

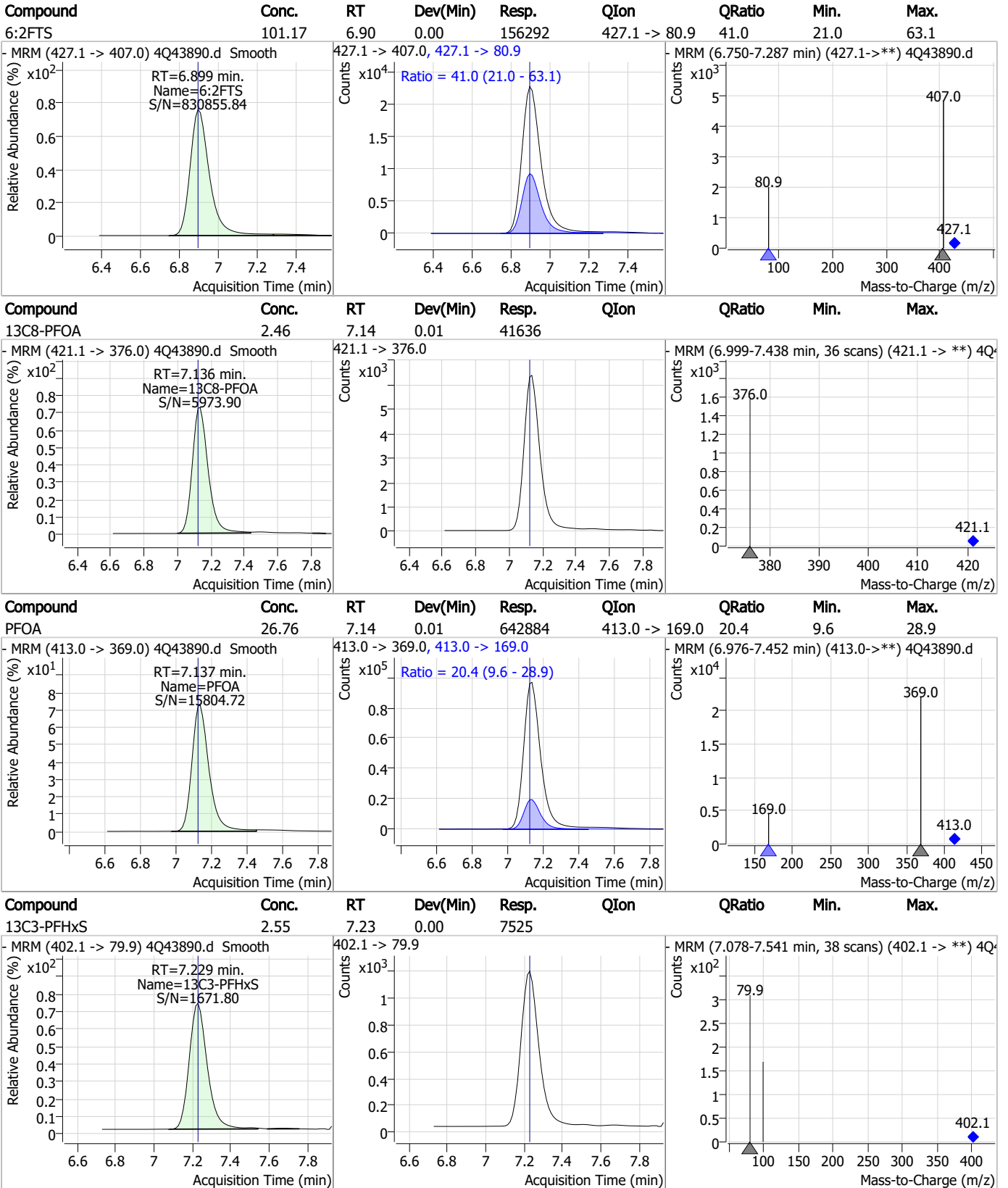
### Perfluorinated Compounds by LC/MS/MS



7.7.8

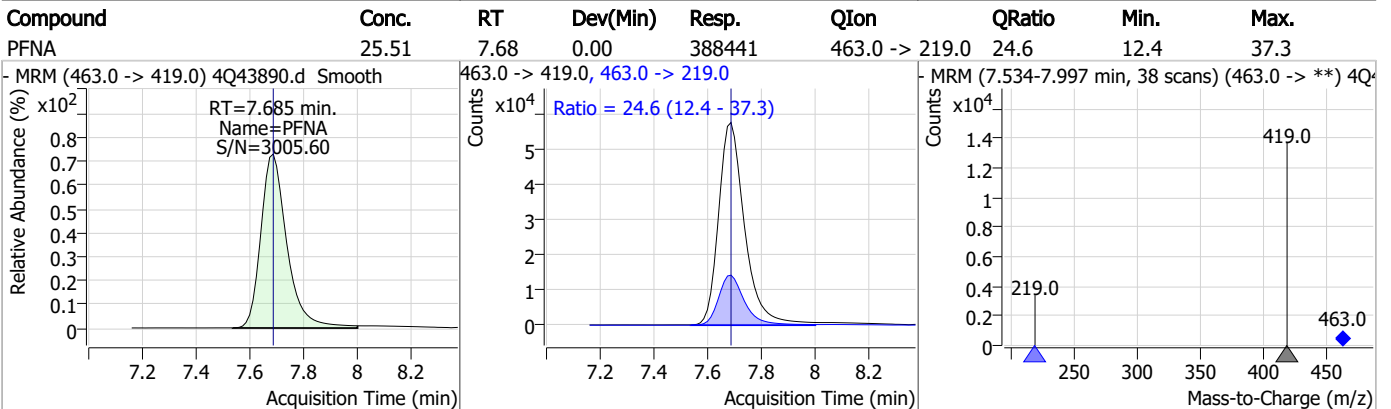
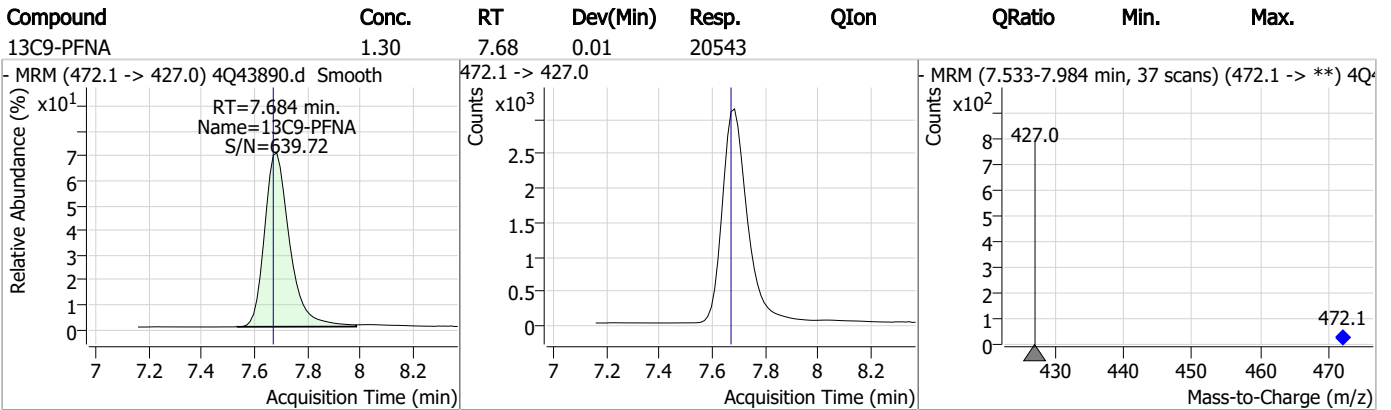
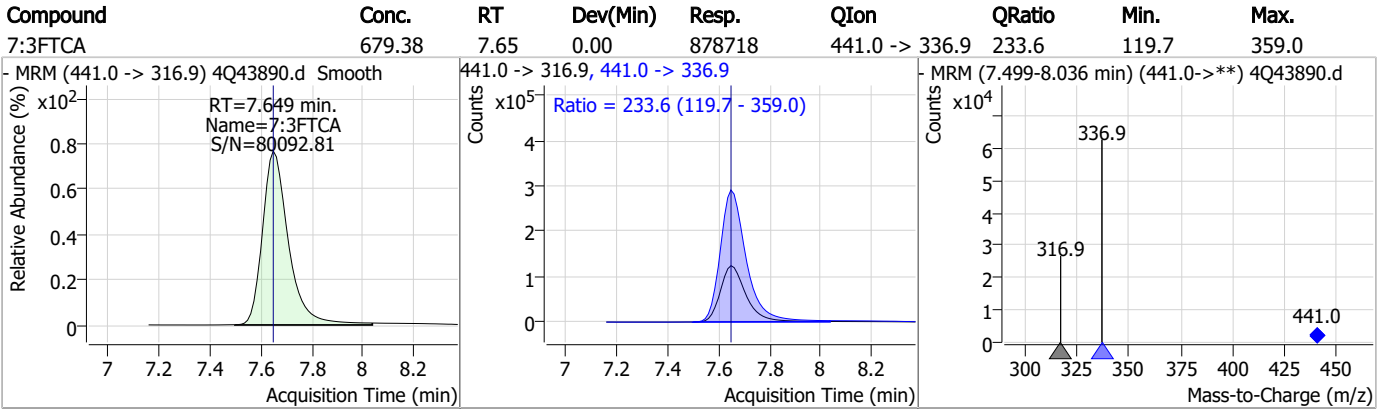
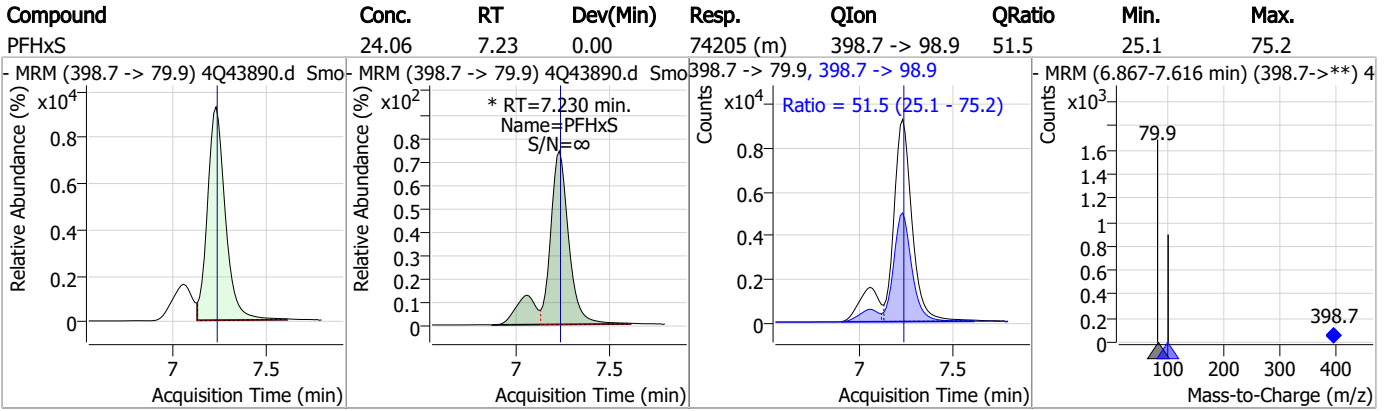
7

### Perfluorinated Compounds by LC/MS/MS



7.7.8  
7

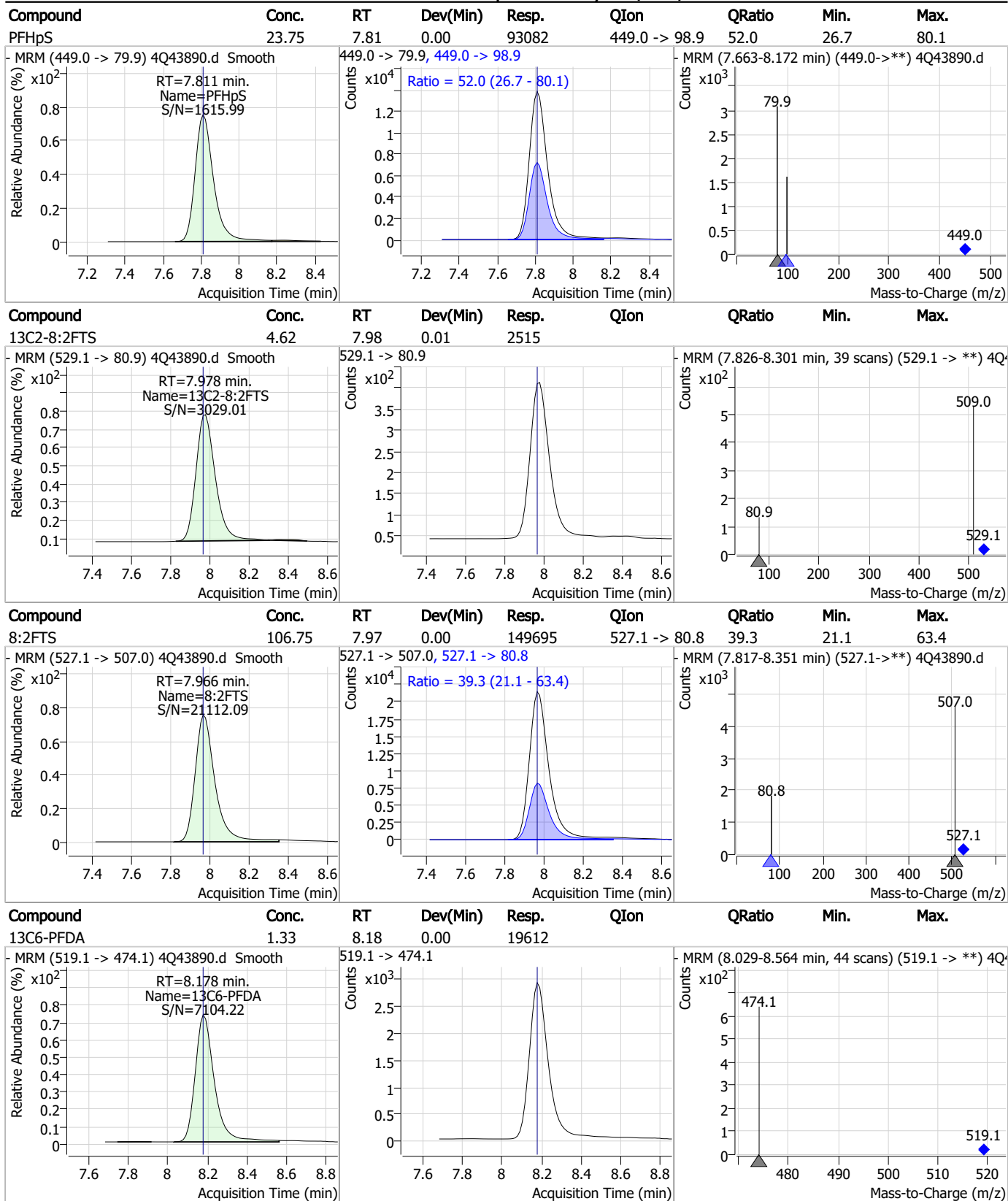
### Perfluorinated Compounds by LC/MS/MS



7.7.8

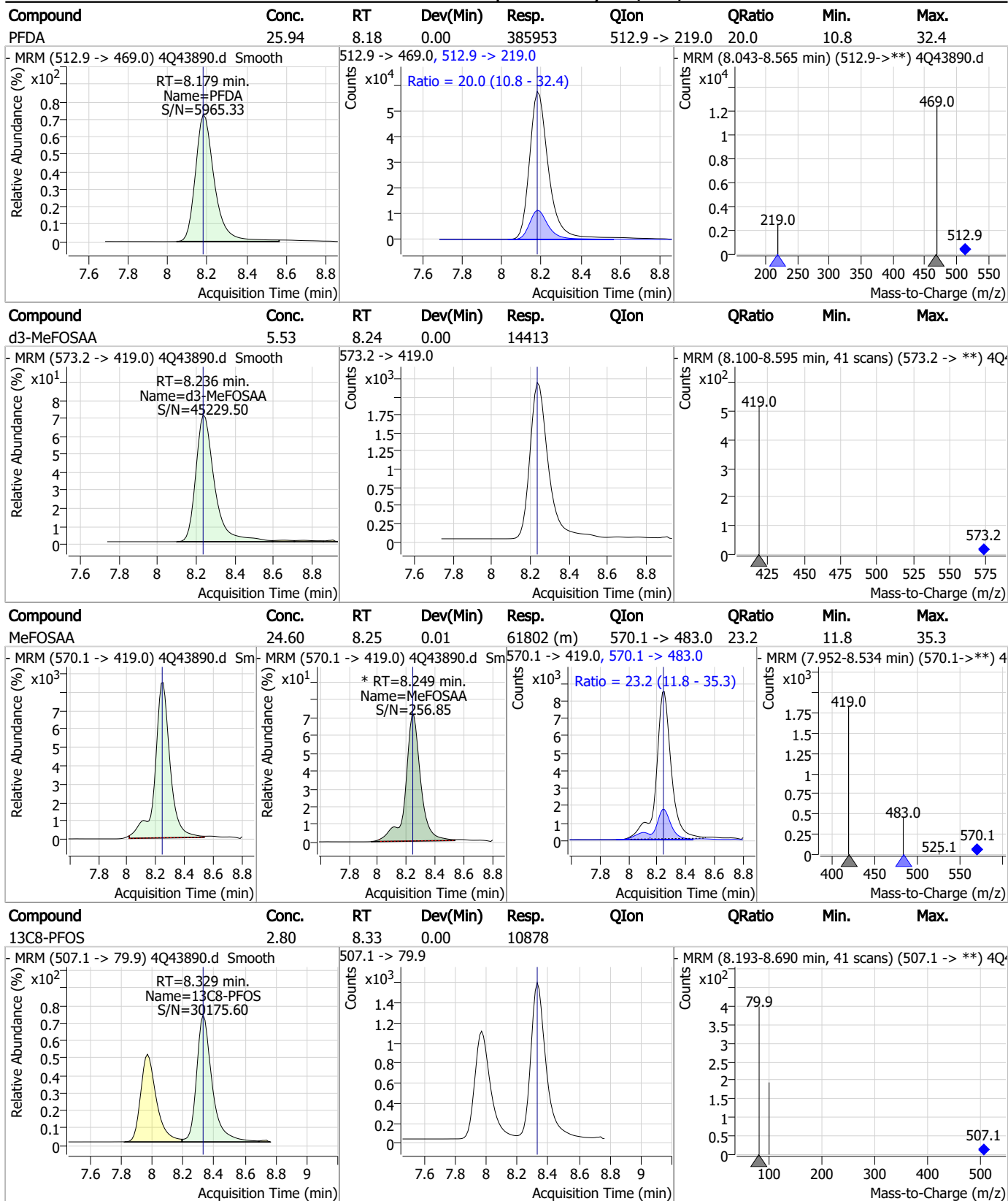
7

### Perfluorinated Compounds by LC/MS/MS



7.7.8  
7

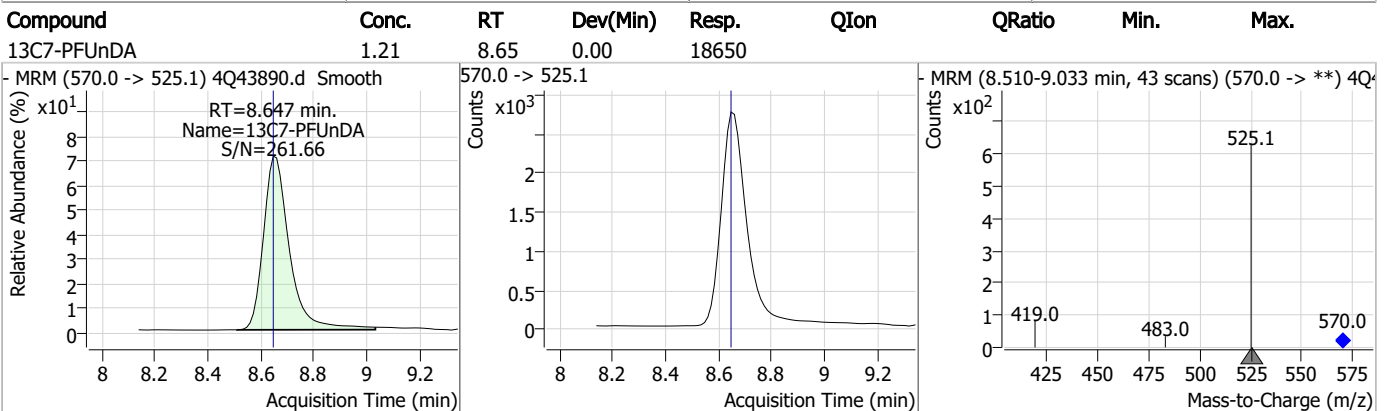
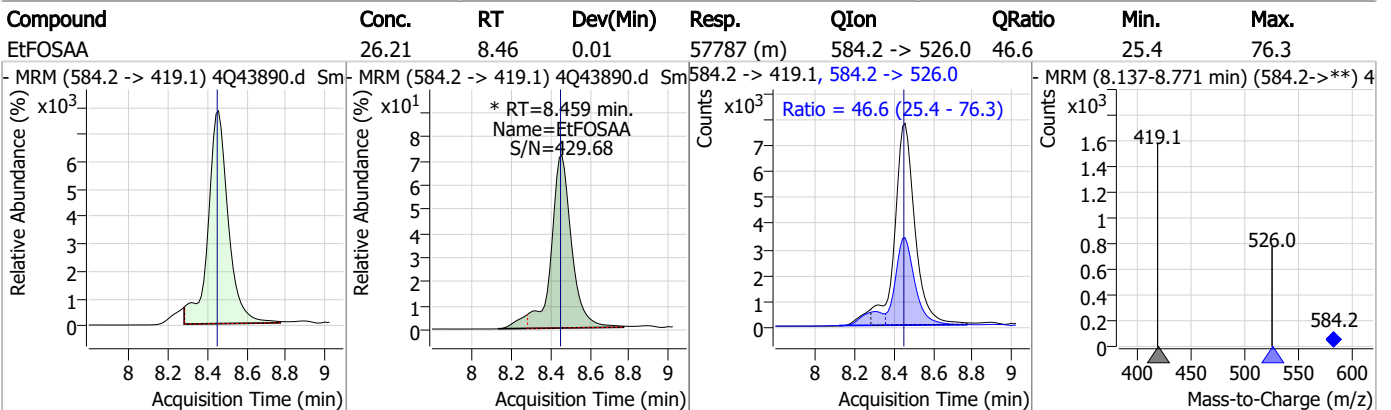
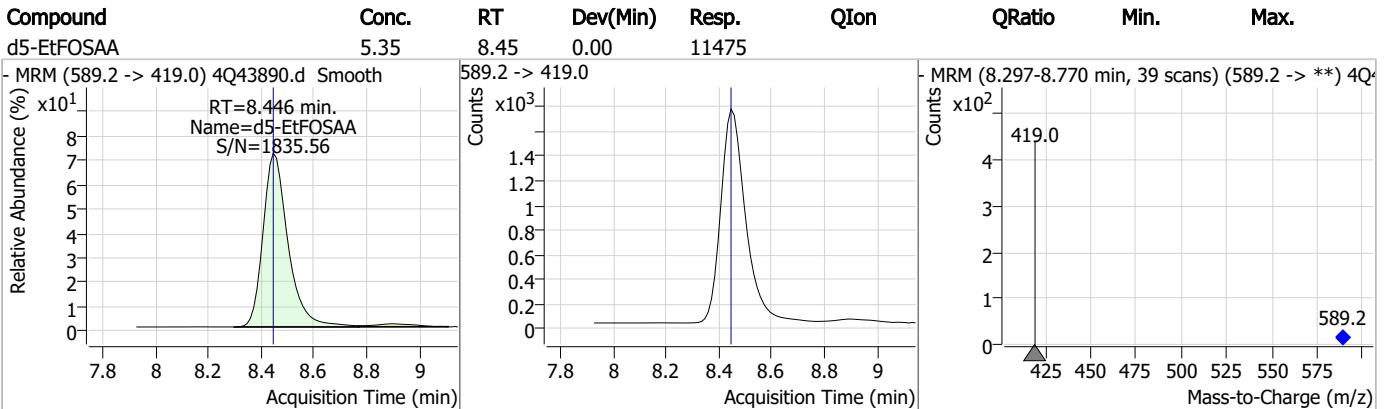
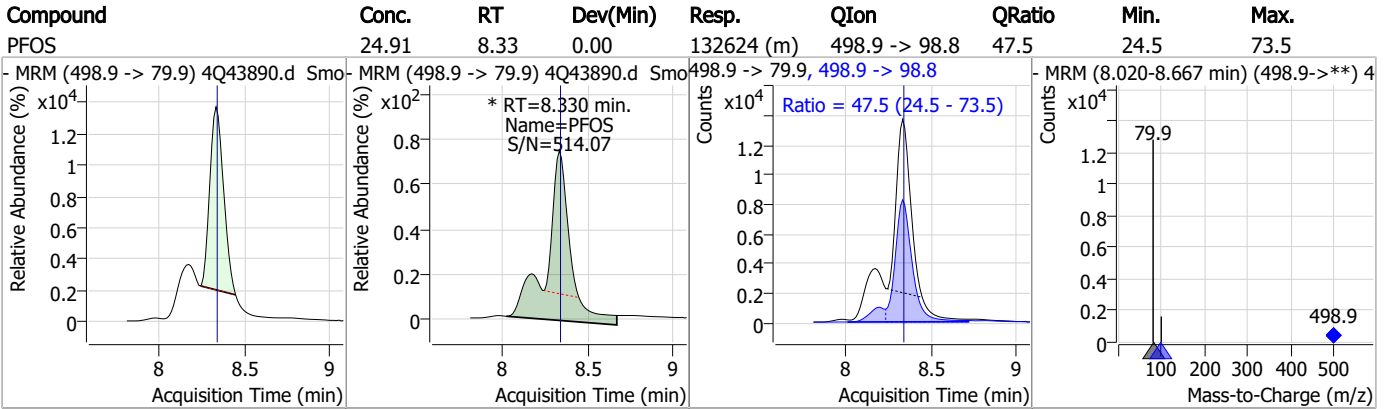
### Perfluorinated Compounds by LC/MS/MS



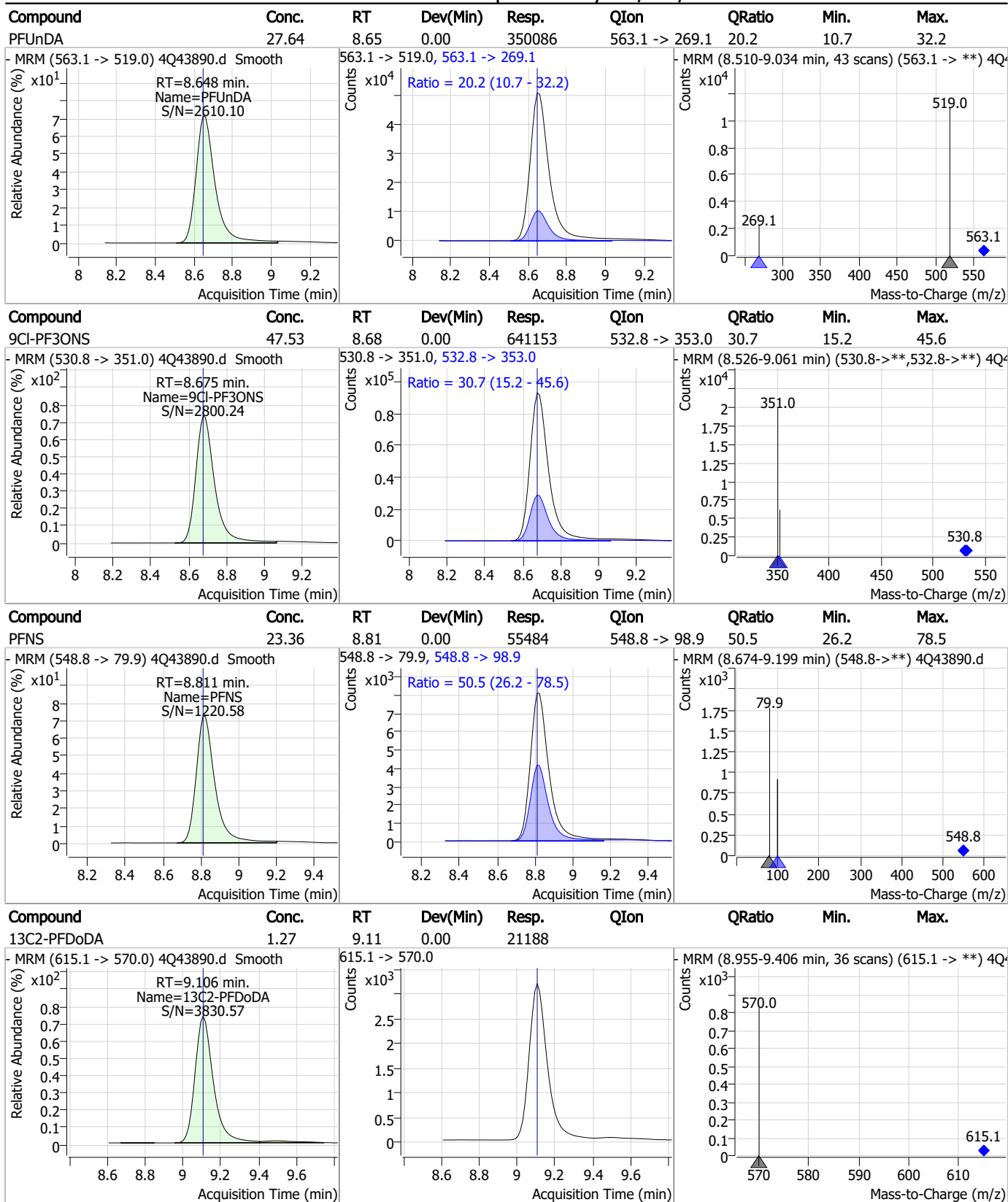
7.7.8  
7



### Perfluorinated Compounds by LC/MS/MS

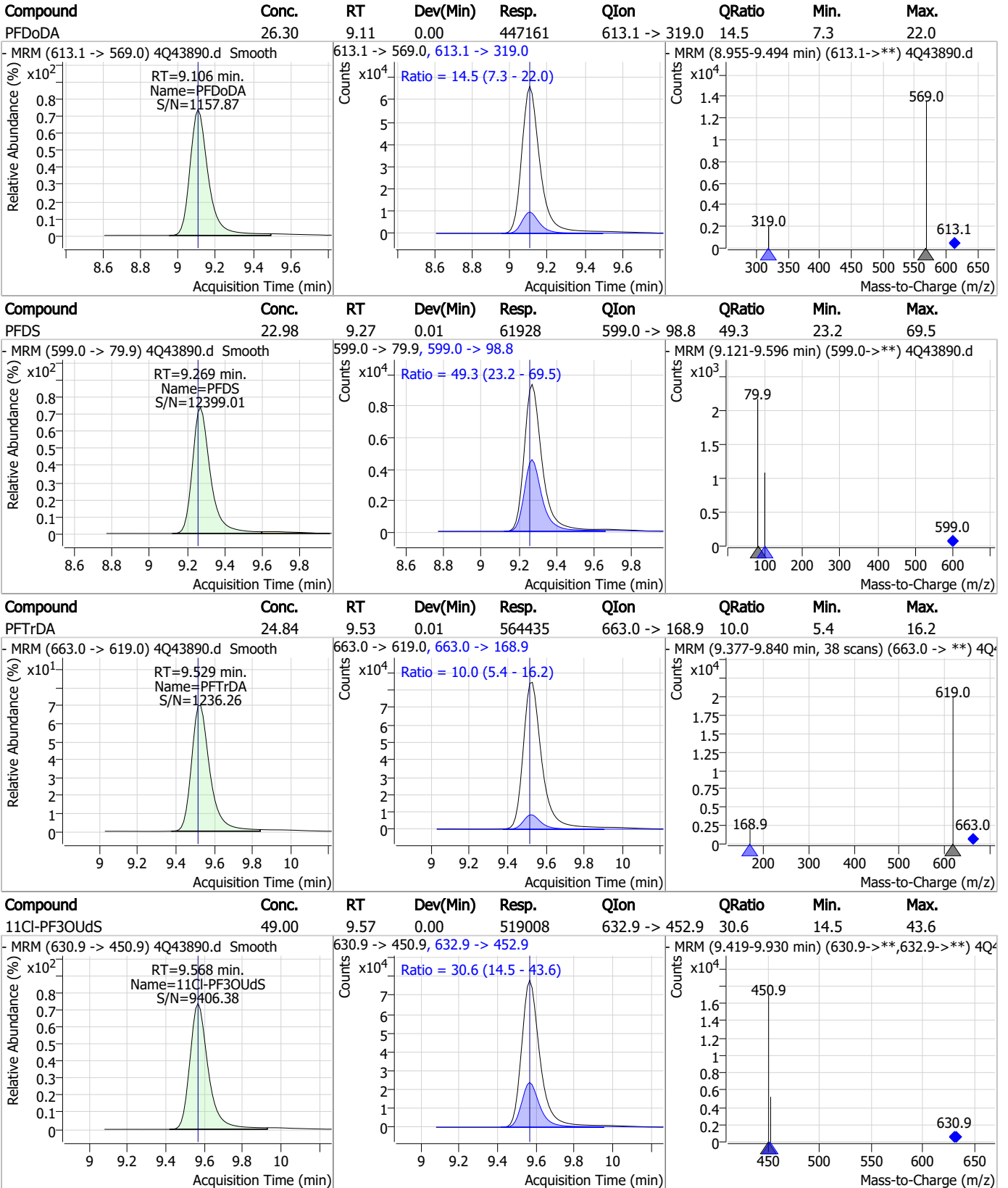


### Perfluorinated Compounds by LC/MS/MS



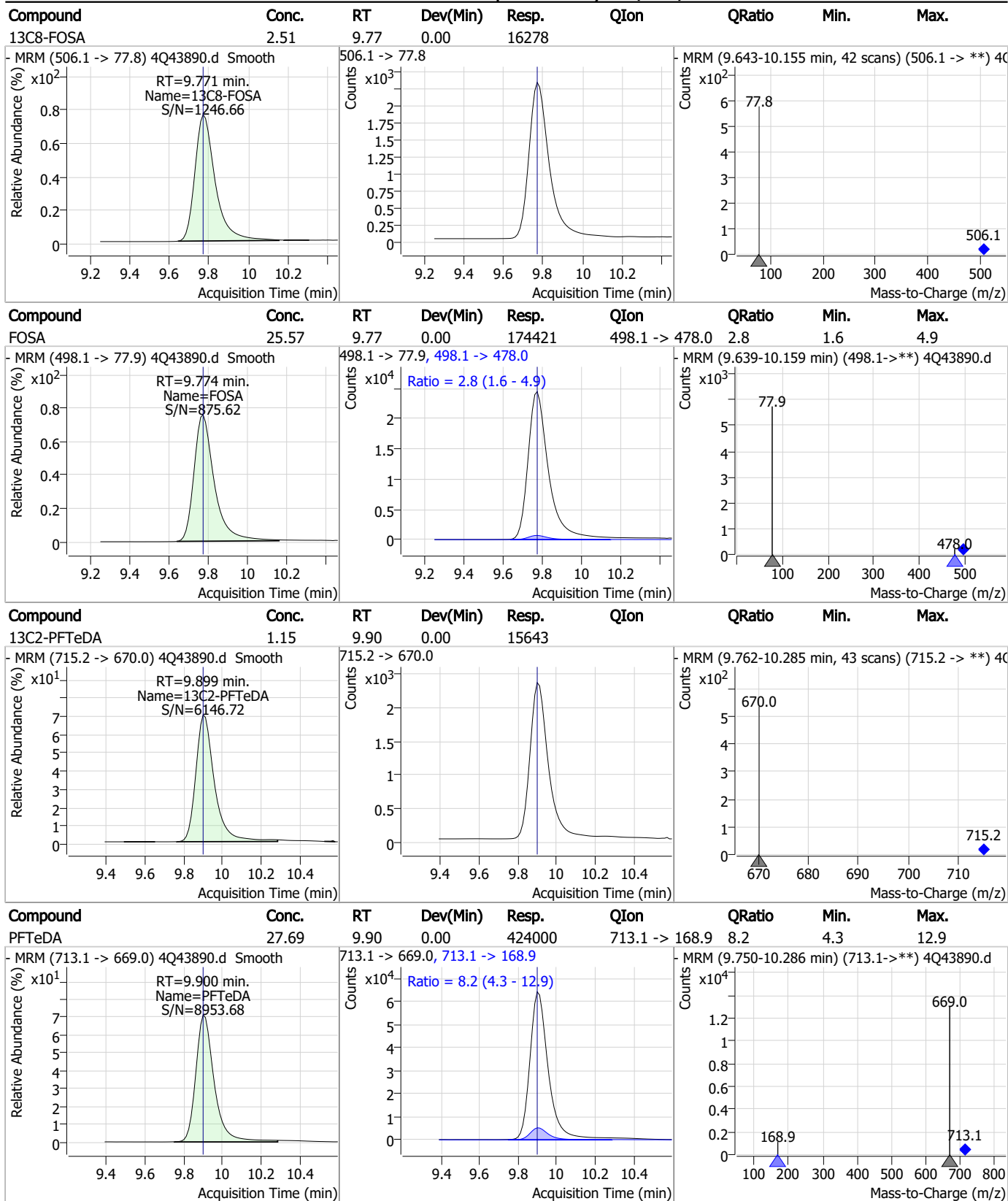
7.7.8  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.8  
7

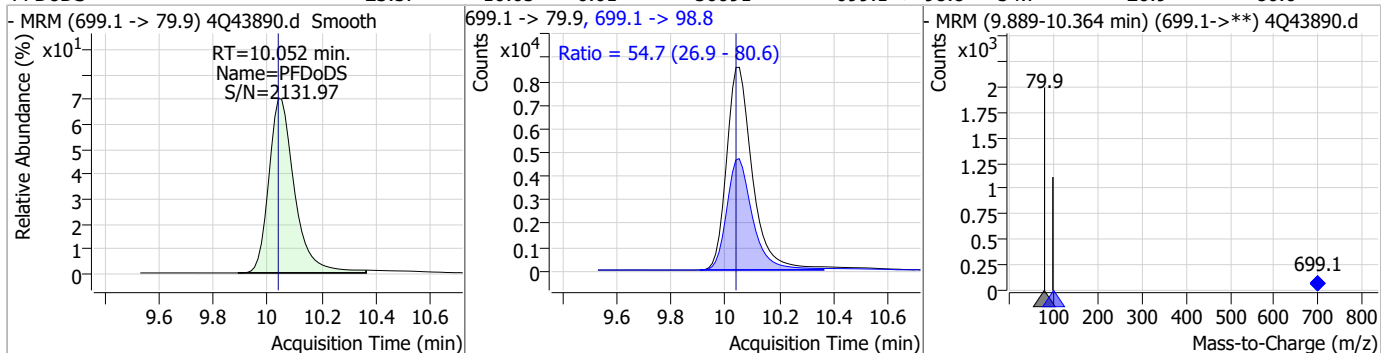
### Perfluorinated Compounds by LC/MS/MS



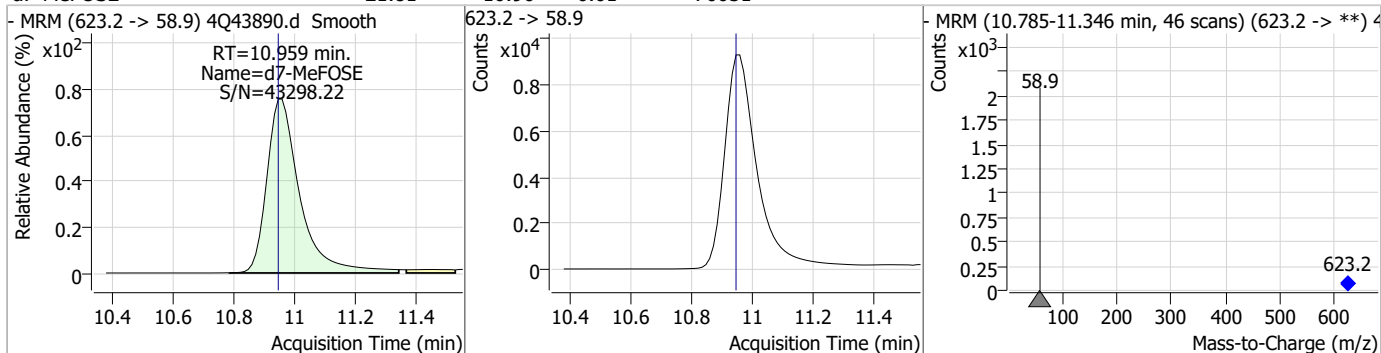
7.7.8  
7

### Perfluorinated Compounds by LC/MS/MS

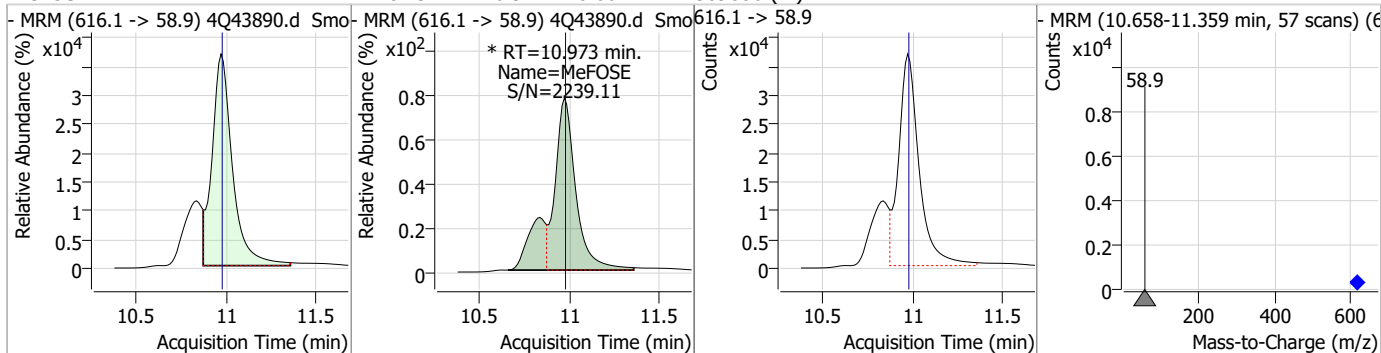
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	23.57	10.05	0.01	56691	699.1 -> 98.8	54.7	26.9	80.6



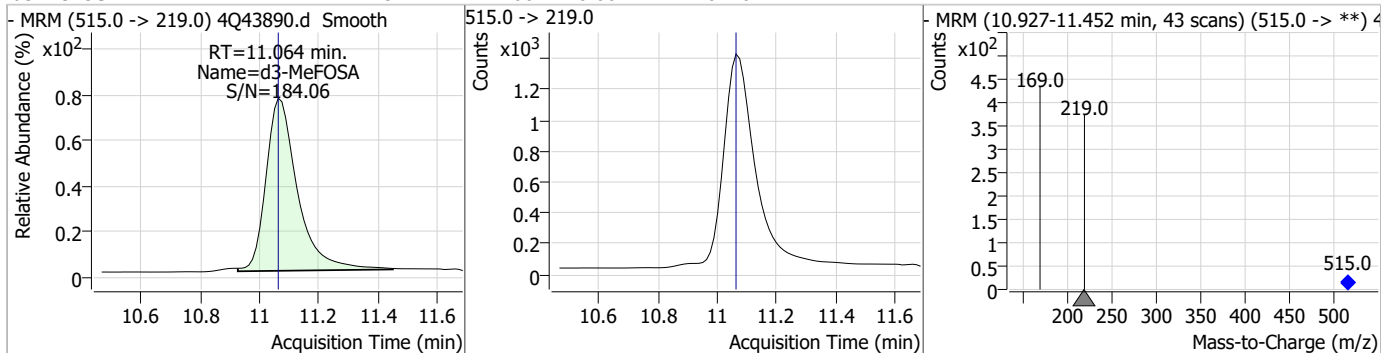
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	21.81	10.96	0.01	70051				



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

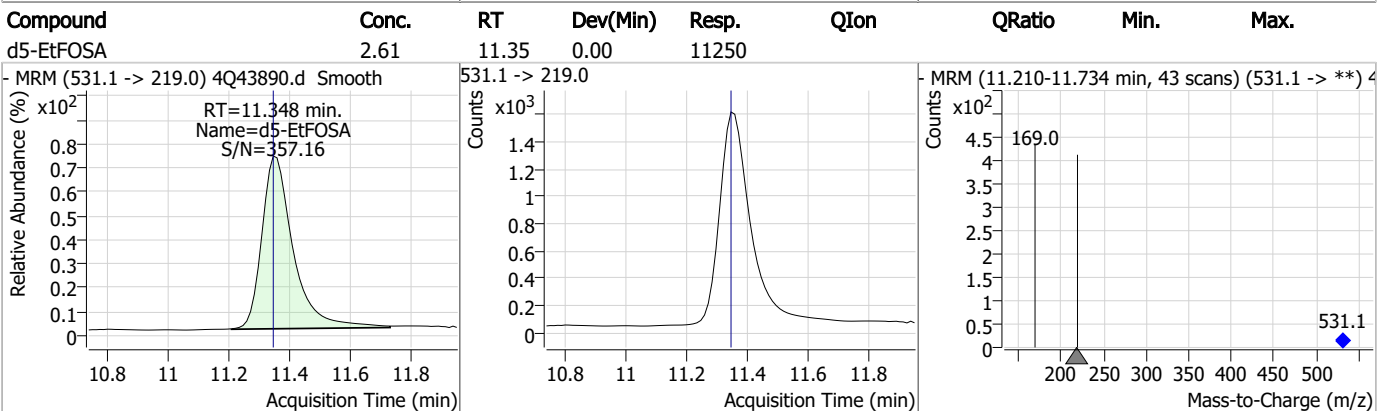
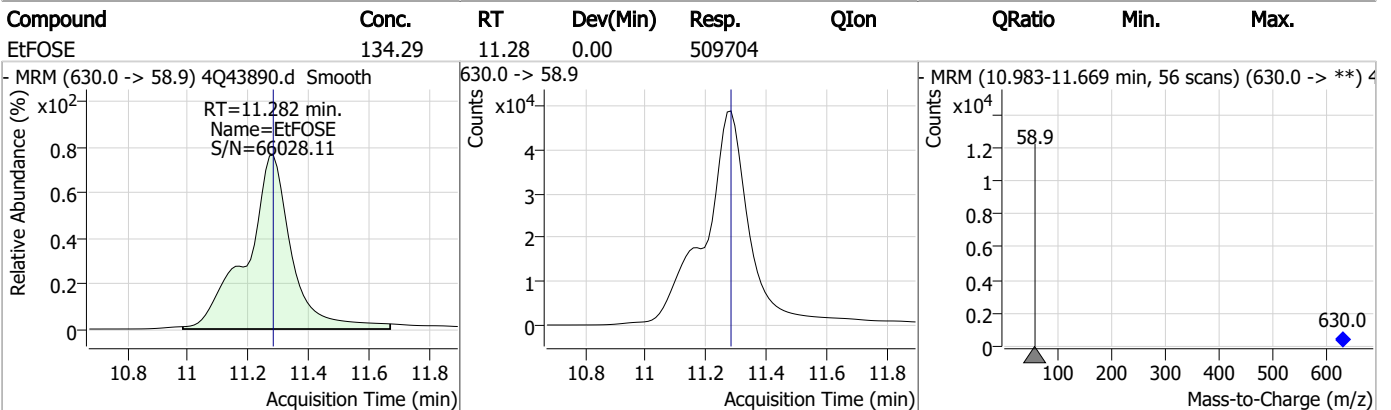
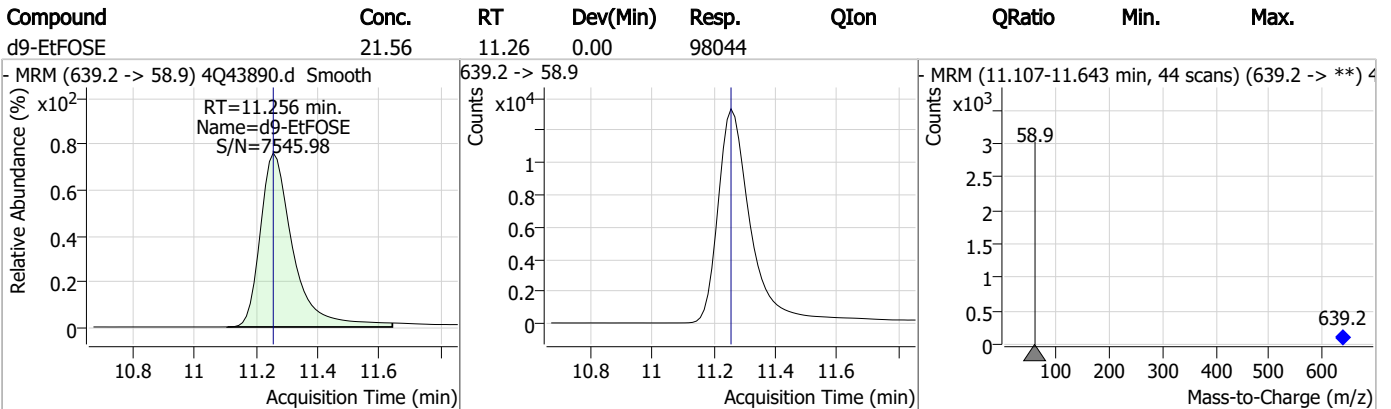
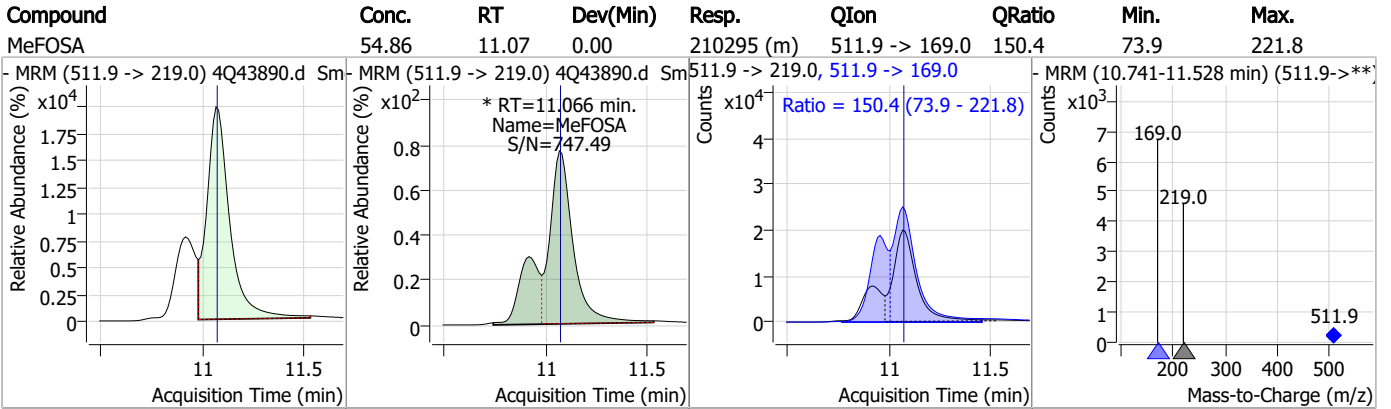


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.51	11.06	0.00	10176				



7.7.8  
7

### Perfluorinated Compounds by LC/MS/MS

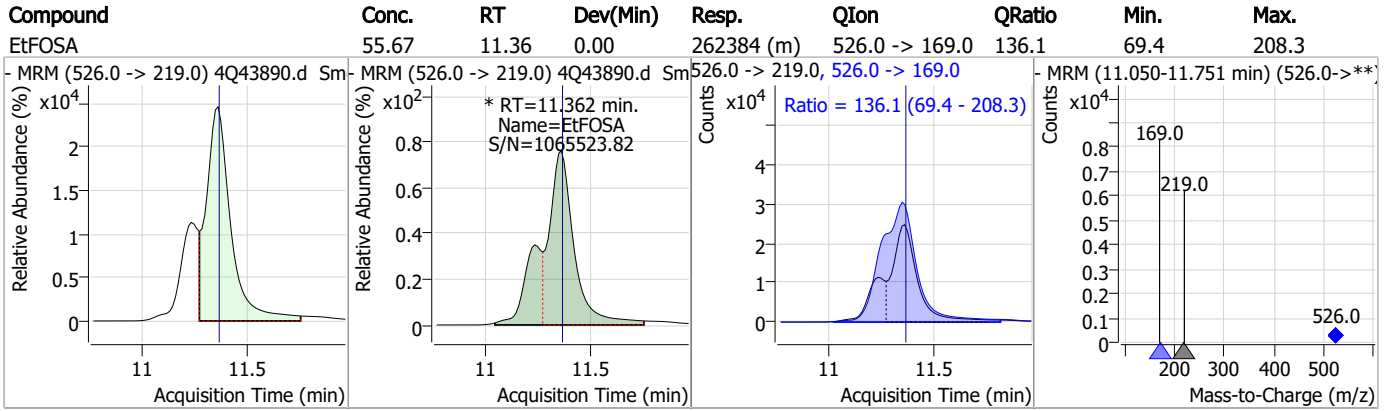


7.7.8

7



### Perfluorinated Compounds by LC/MS/MS



7.7.8

7

# Manual Integration Approval Summary

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

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

7.7.8.1  
7



Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43891.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 12:50:36 PM  
 Sample Name : ic634-8  
 Vial : P1-A9  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

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

7.7.9  
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 = 92.0%	
13C4-PFBA	2.911	216.8 -> 171.9	105134	9.84 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
13C4-PFHpA	6.467	367.1 -> 322.0	25658	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.7%	
13C5-PFHxA	5.535	318.0 -> 273.0	43396	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C5-PFPeA	4.362	268.3 -> 223.0	60246	4.89 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
13C6-PFDA	8.178	519.1 -> 474.1	17478	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C7-PFUnDA	8.647	570.0 -> 525.1	17471	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 92.0%	
13C8-FOSA	9.771	506.1 -> 77.8	15213	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
13C8-PFOA	7.136	421.1 -> 376.0	39570	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C8-PFOS	8.329	507.1 -> 79.9	9515	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C9-PFNA	7.684	472.1 -> 427.0	19681	1.33 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.2%	
d3-MeFOSAA	8.236	573.2 -> 419.0	13382	5.41 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.2%	
13C3-HFPO-DA	5.890	286.9 -> 168.9	27378	10.40 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.0%	
d3-MeFOSA	11.064	515.0 -> 219.0	10104	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.2%	
d5-EtFOSAA	8.446	589.2 -> 419.0	11277	5.54 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.7%	
d7-MeFOSE	10.959	623.2 -> 58.9	61091	20.04 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.1%	
d9-EtFOSE	11.256	639.2 -> 58.9	87409	20.25 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.0%	
d5-EtFOSA	11.360	531.1 -> 219.0	10591	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.223	327.1 -> 307.0 327.1 -> 80.9	316462 134287	233.64 µg/L	93
6:2FTS	6.899	427.1 -> 407.0 427.1 -> 80.9	333858 133307	227.27 µg/L	97
8:2FTS	7.966	527.1 -> 507.0 527.1 -> 80.8	324709 121732	217.87 µg/L	93
EtFOSAA	8.459	584.2 -> 419.1 584.2 -> 526.0	145113 66283	66.98 µg/L	m 92
FOSA	9.774	498.1 -> 77.9 498.1 -> 478.0	438428 11984	68.77 µg/L	98
MeFOSAA	8.249	570.1 -> 419.0 570.1 -> 483.0	157123 34451	67.37 µg/L	m 97
PFBA	2.920	212.8 -> 168.9	780608	277.27 µg/L	100
PFBS	5.440	298.7 -> 79.9 298.7 -> 98.8	251571 94993	60.03 µg/L	95
PFDA	8.179	512.9 -> 469.0 512.9 -> 219.0	916605 178851	69.12 µg/L	96
PFDoDA	9.106	613.1 -> 569.0 613.1 -> 319.0	1058949 155967	63.85 µg/L	100
PFDS	9.269	599.0 -> 79.9	149623	63.48 µg/L	95

7.7.9  
7



Perfluorinated Compounds by LC/MS/MS

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

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

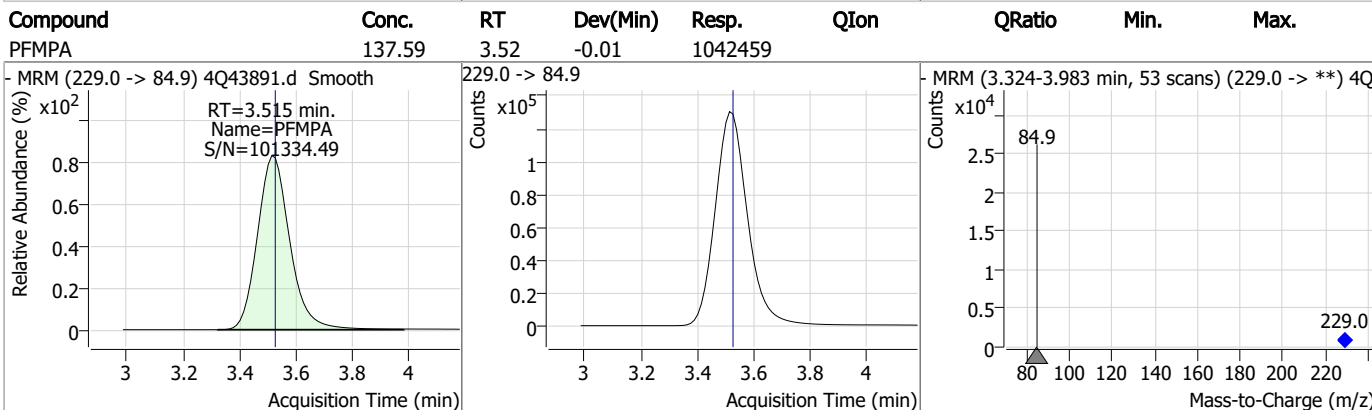
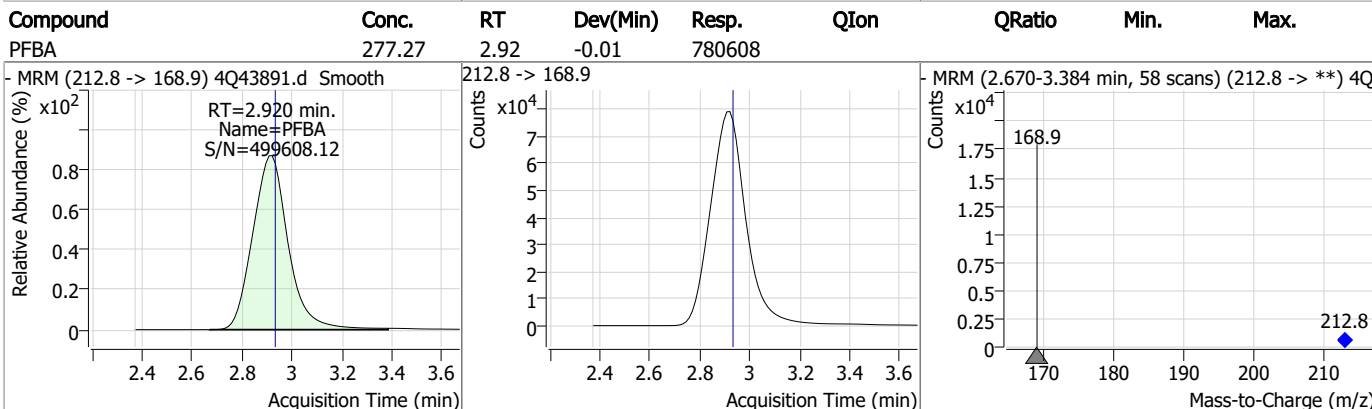
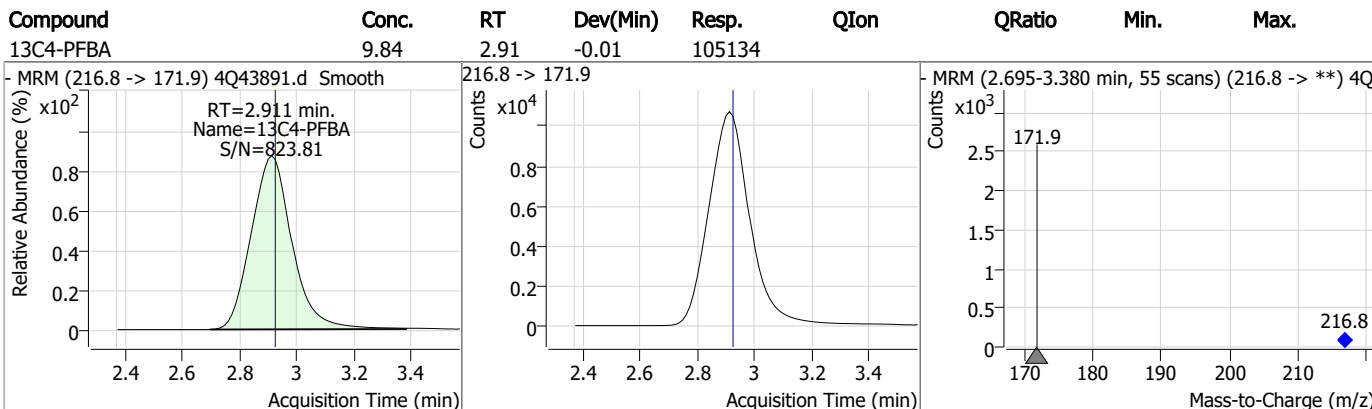
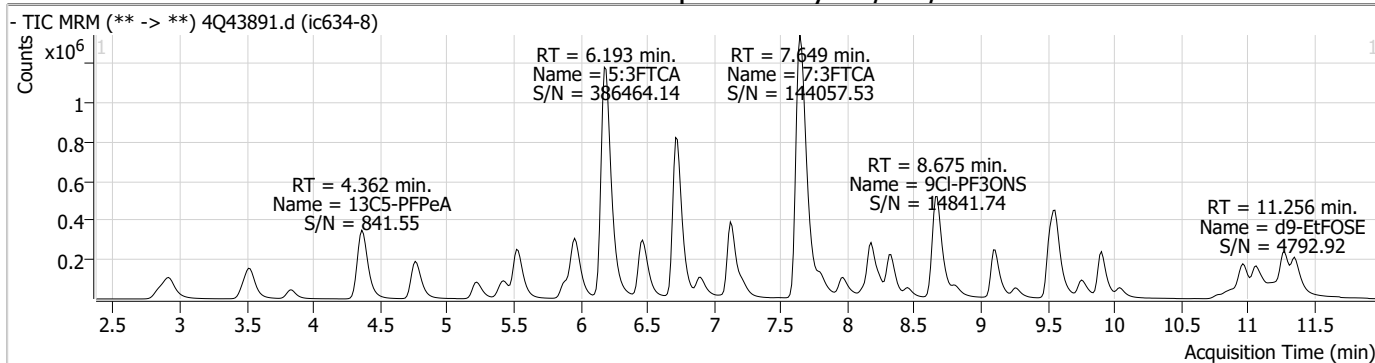
### Perfluorinated Compounds by LC/MS/MS

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

7.7.9

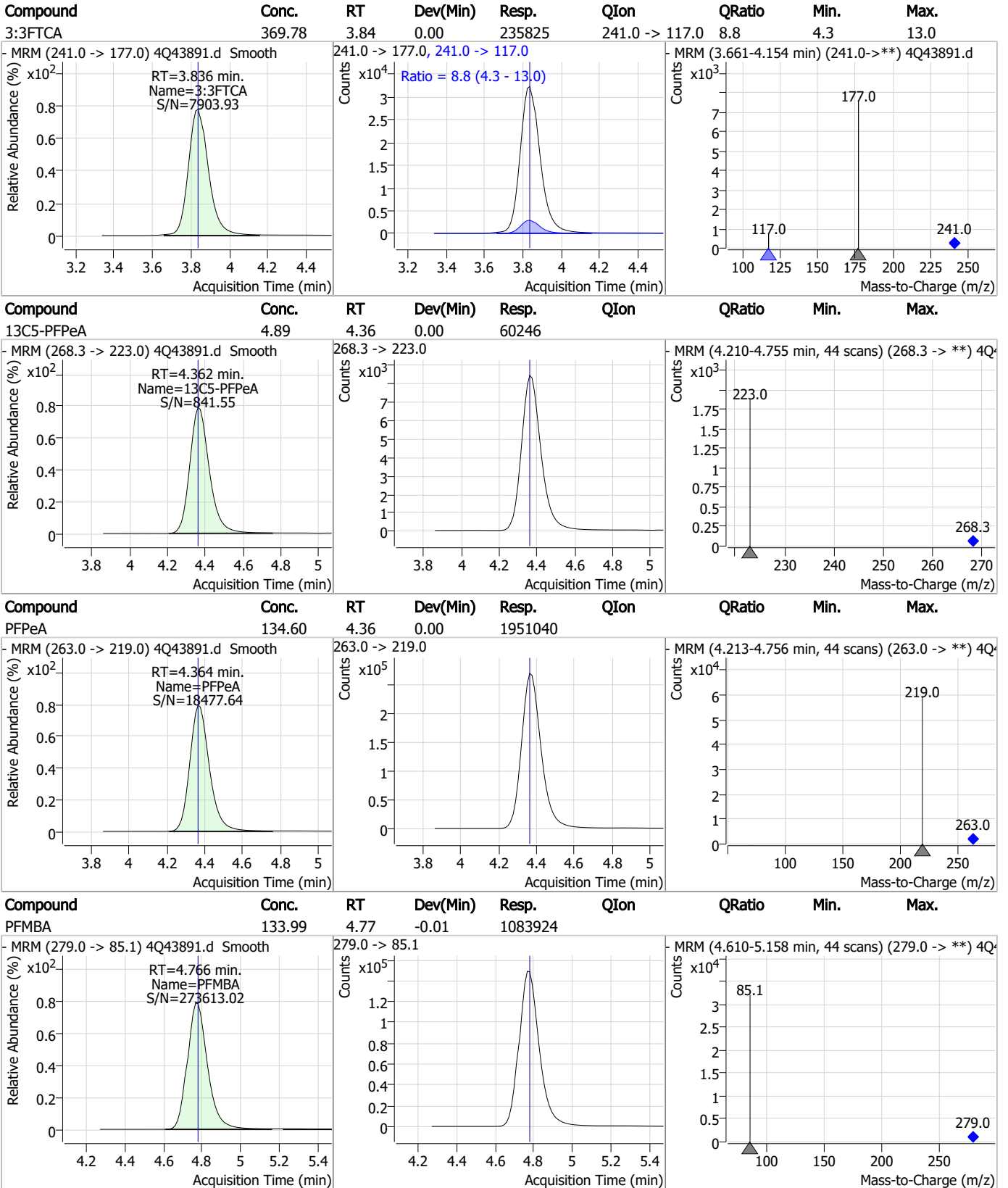
7

### Perfluorinated Compounds by LC/MS/MS

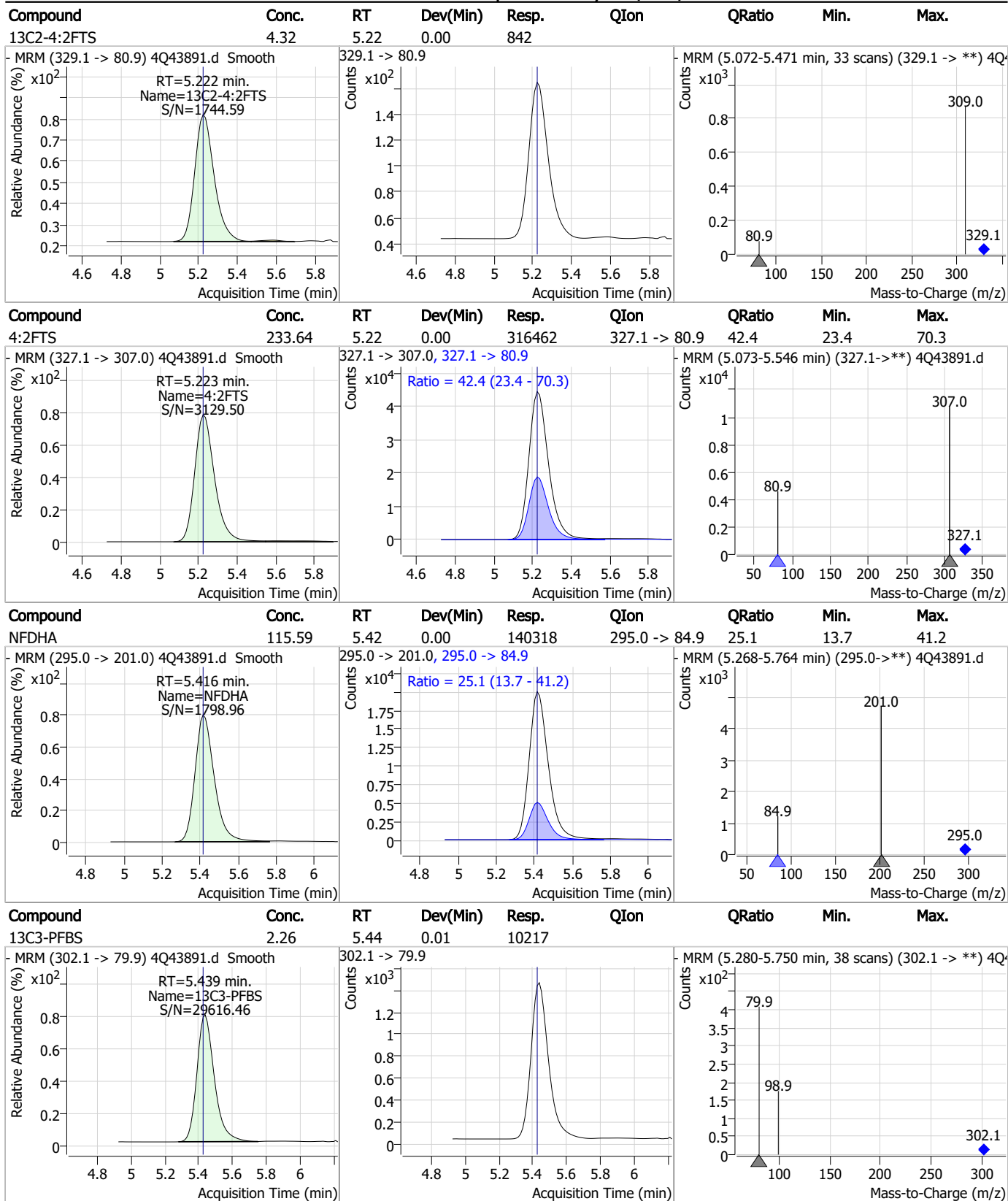


7.7.9

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

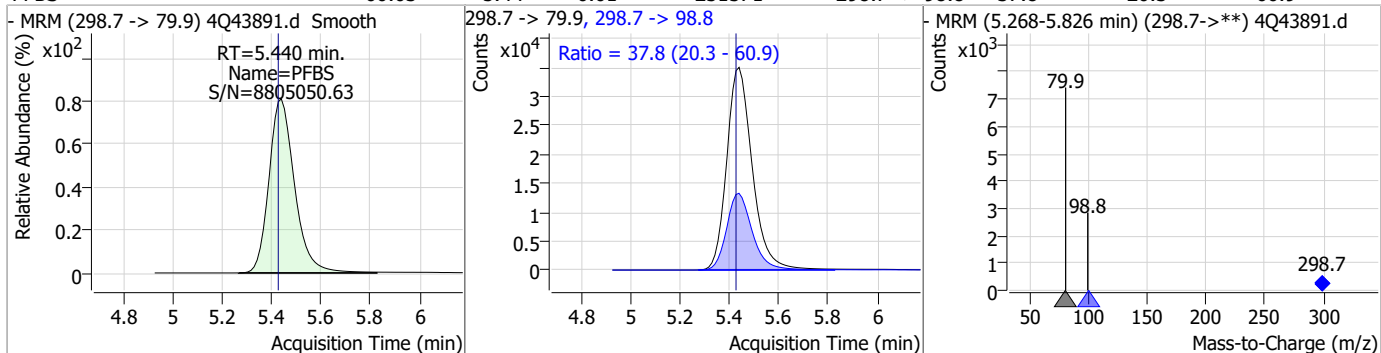


7.7.9

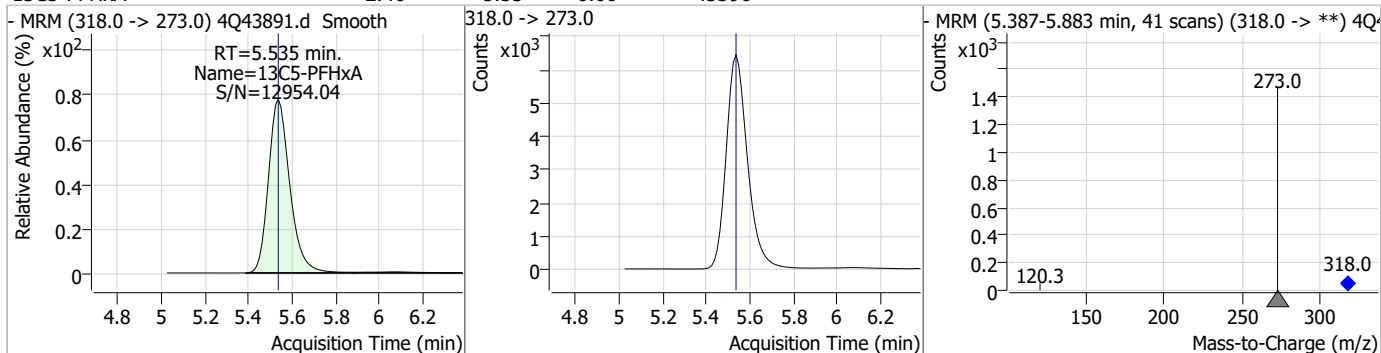
7

### Perfluorinated Compounds by LC/MS/MS

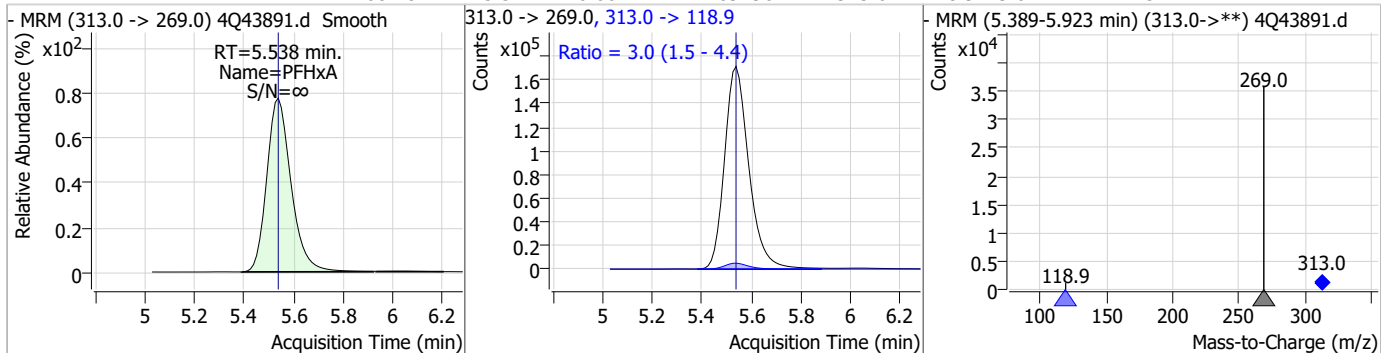
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	60.03	5.44	0.01	251571	298.7 -> 98.8	37.8	20.3	60.9



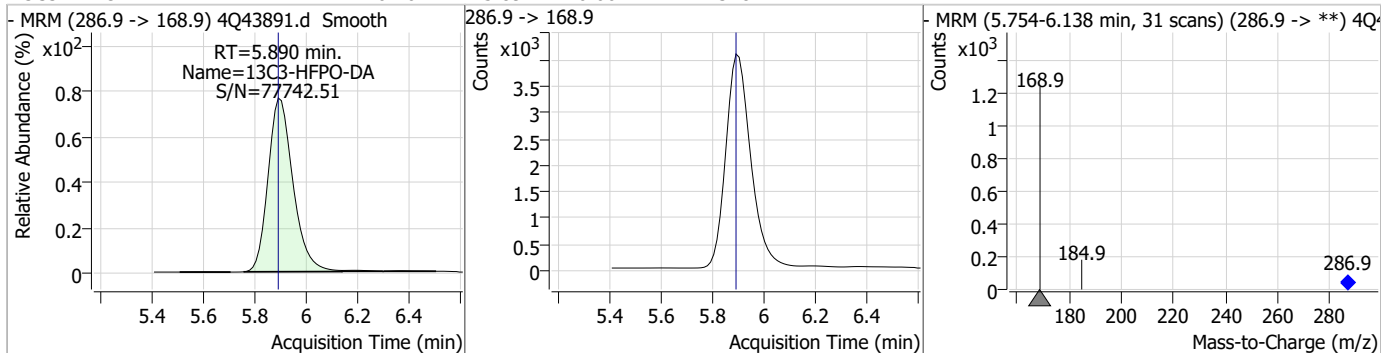
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.53	0.00	43396				



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



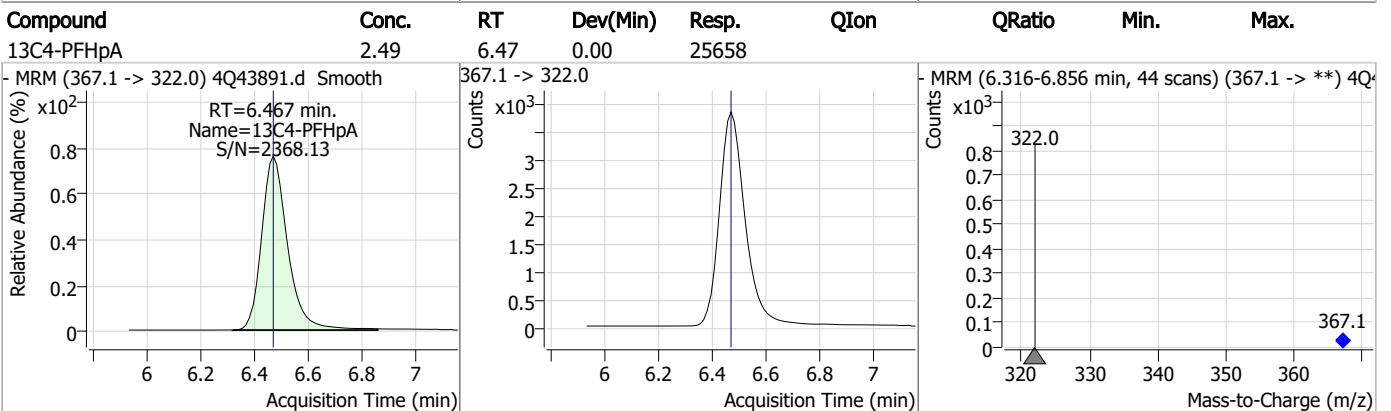
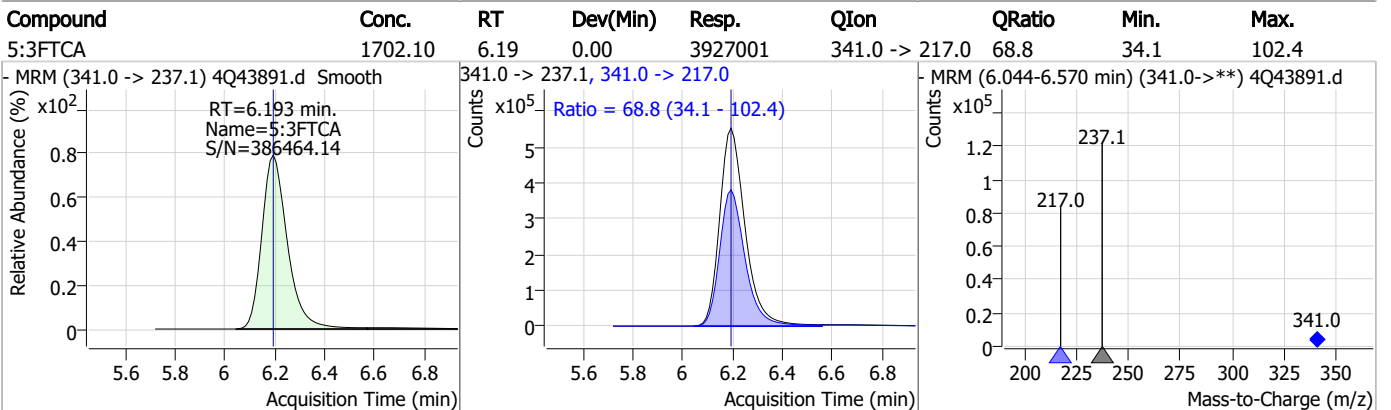
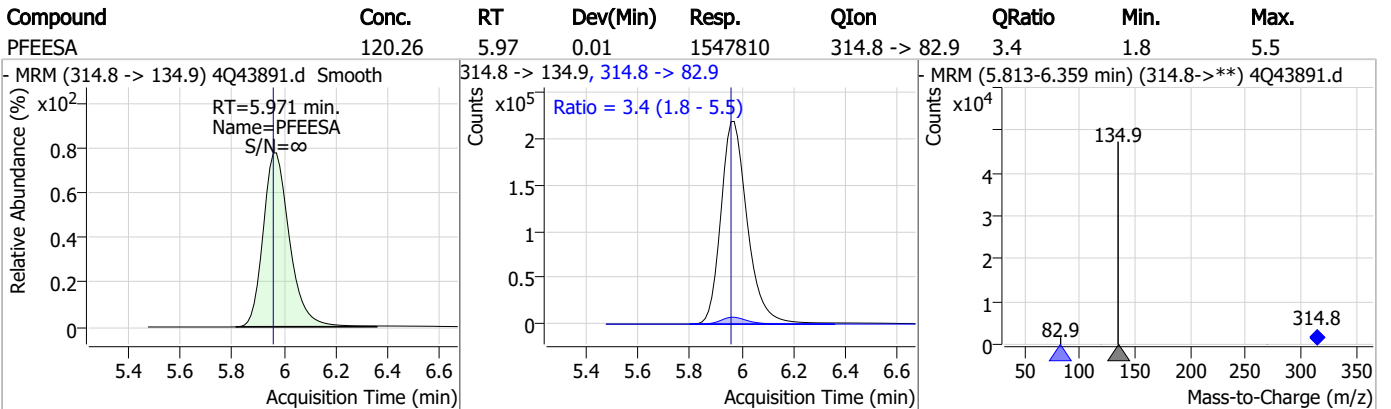
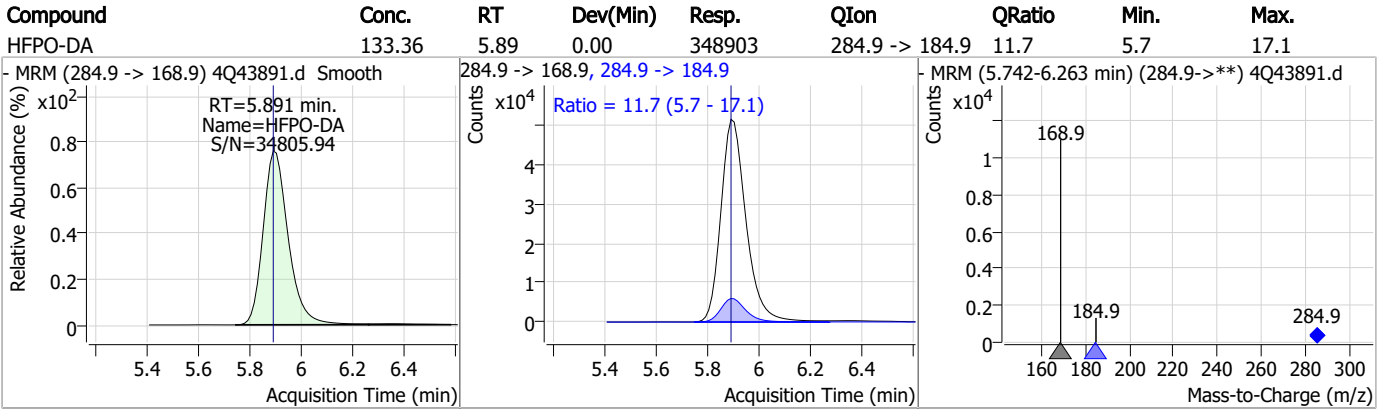
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.40	5.89	0.00	27378				



7.7.9  
7



### Perfluorinated Compounds by LC/MS/MS

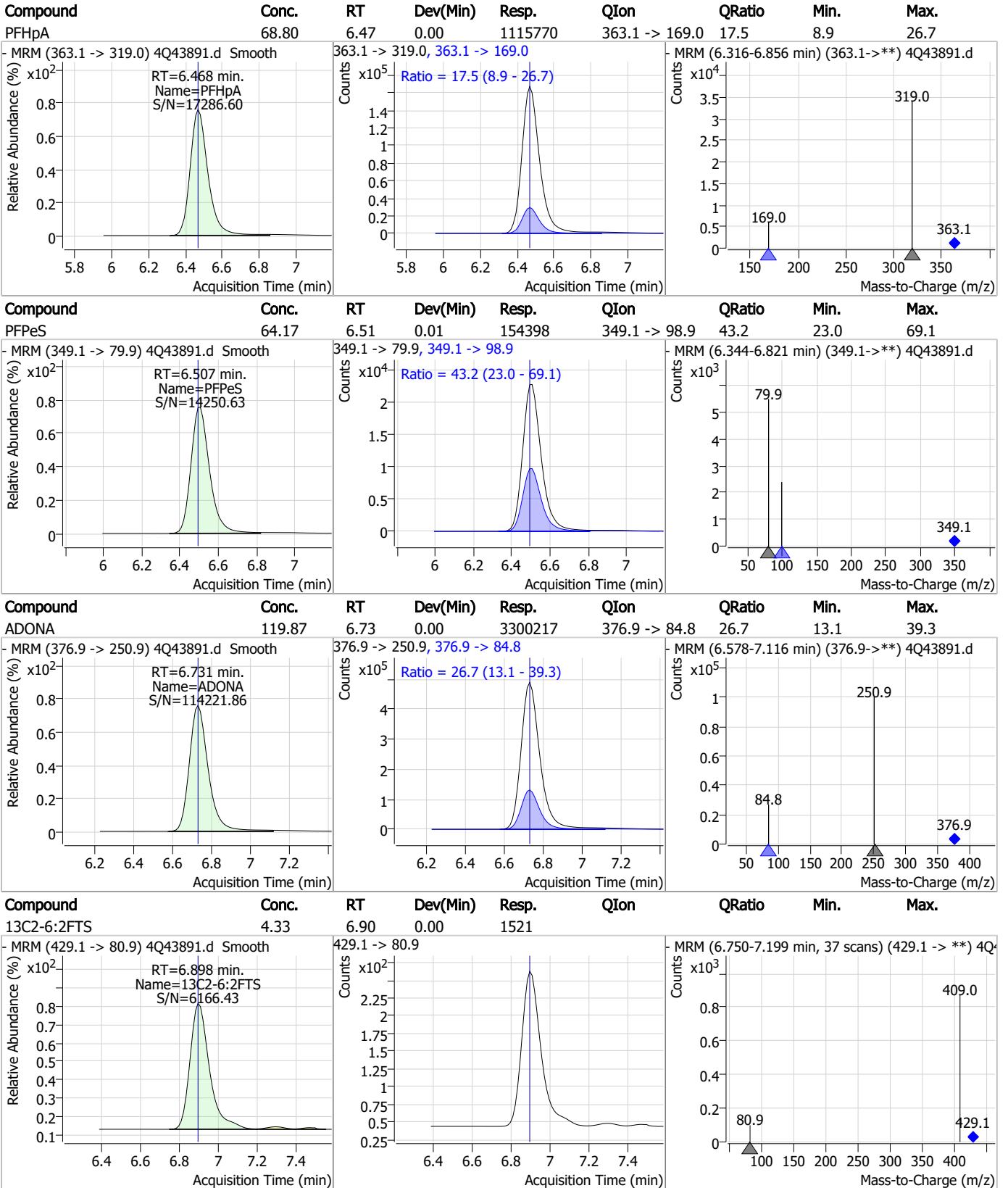


7.7.9

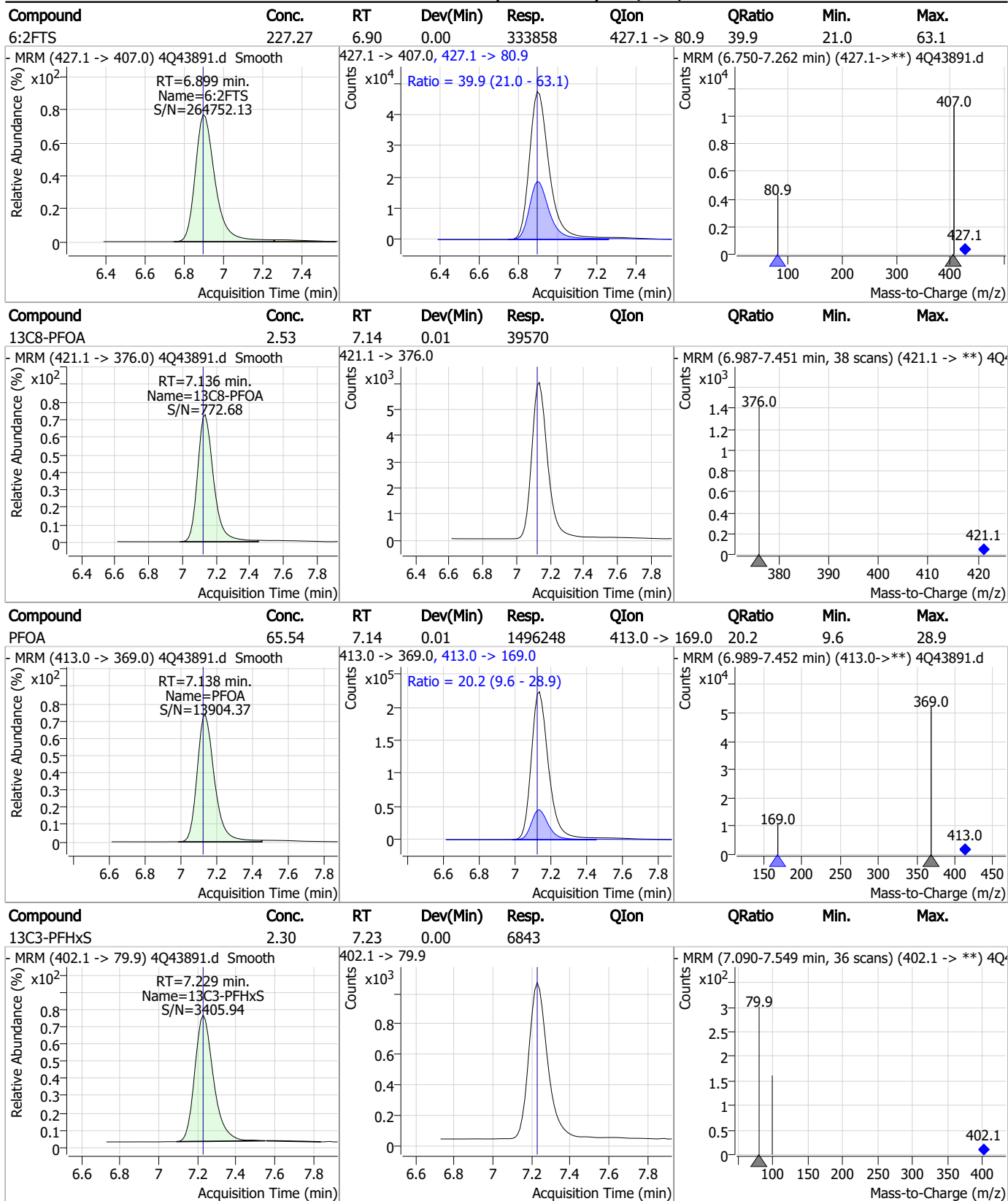
7



### Perfluorinated Compounds by LC/MS/MS



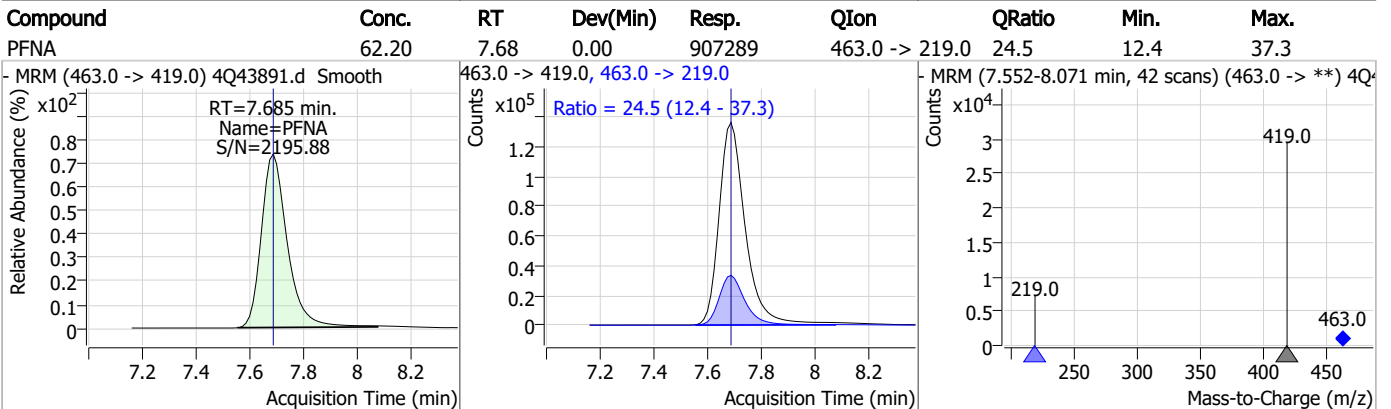
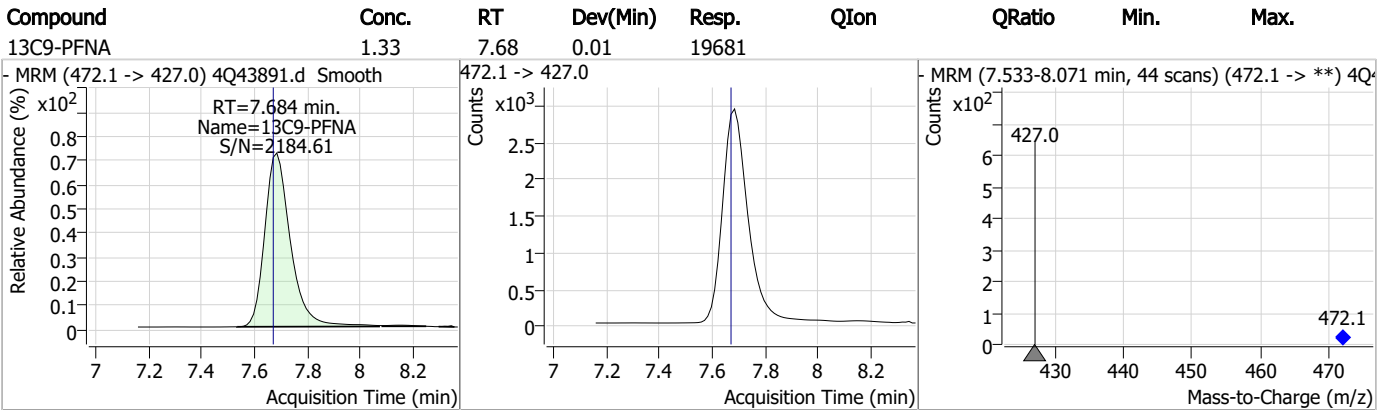
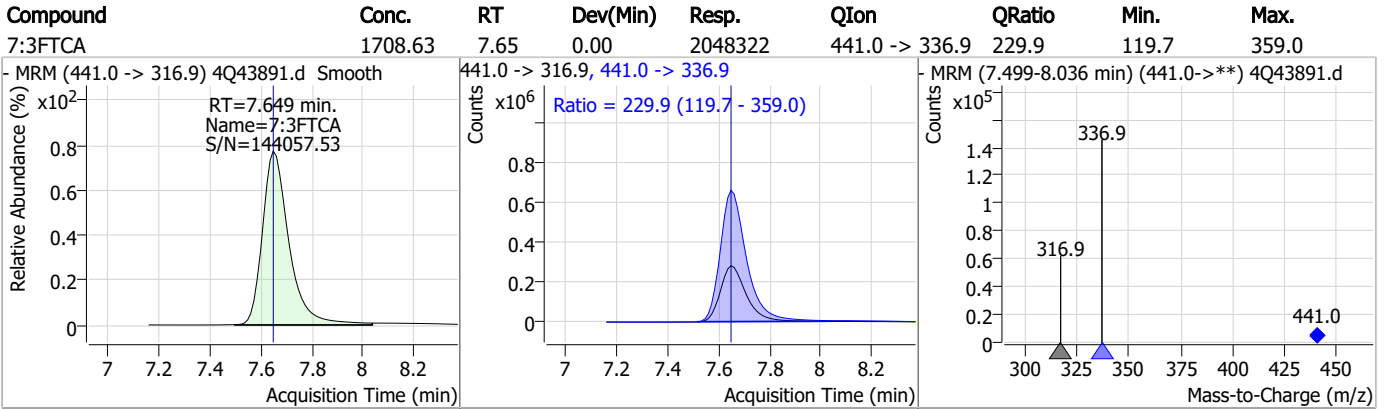
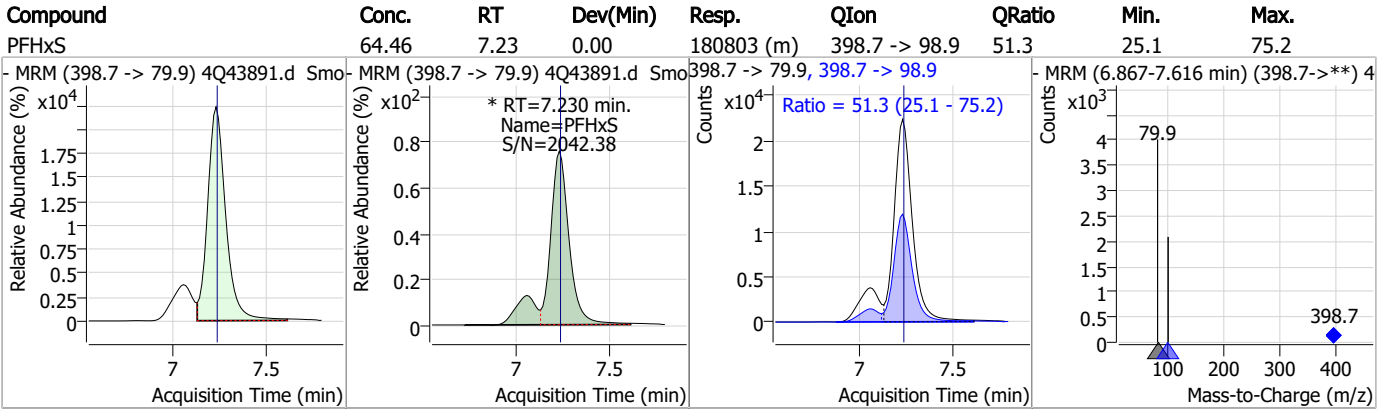
### Perfluorinated Compounds by LC/MS/MS



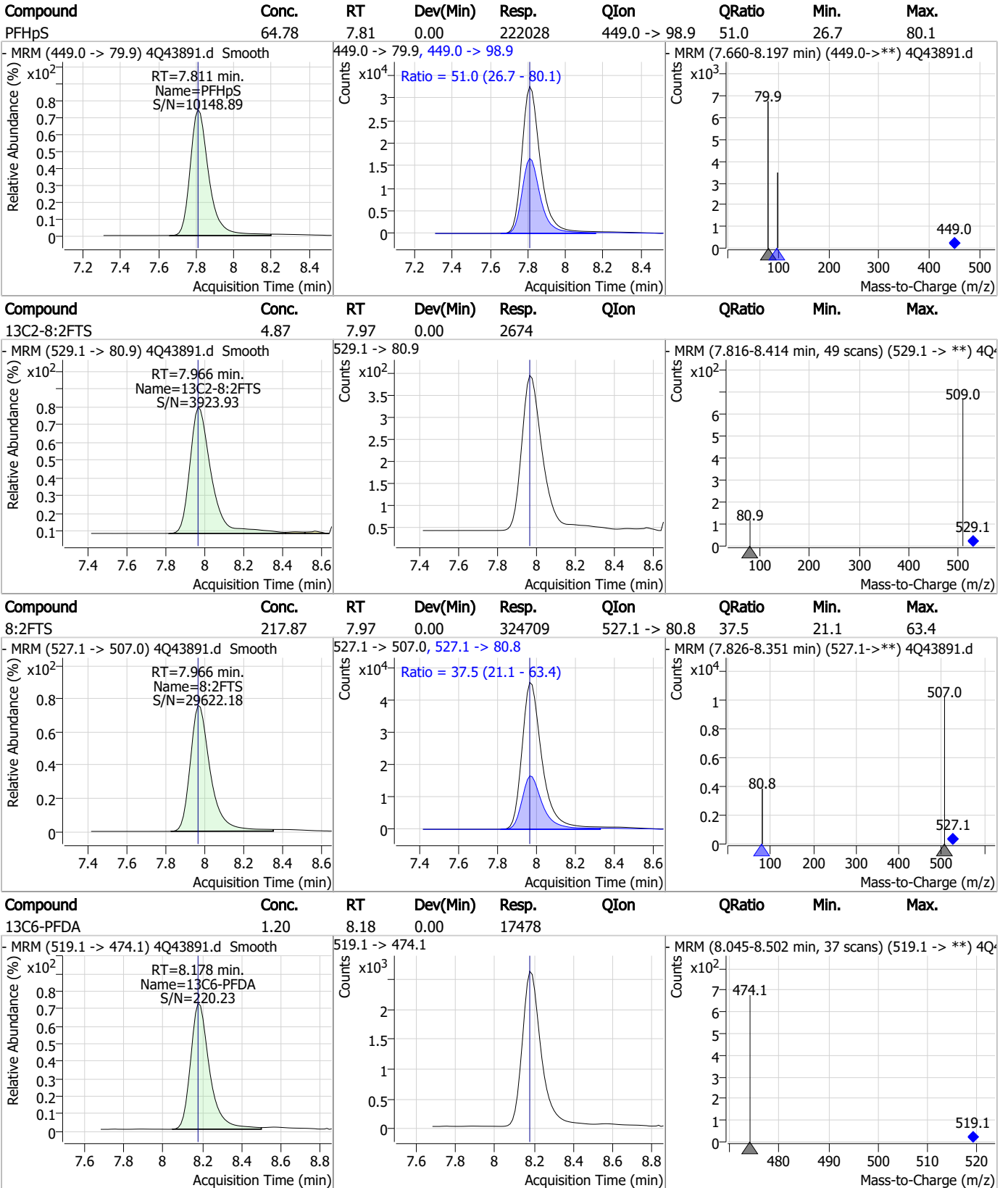
7.7.9  
7



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

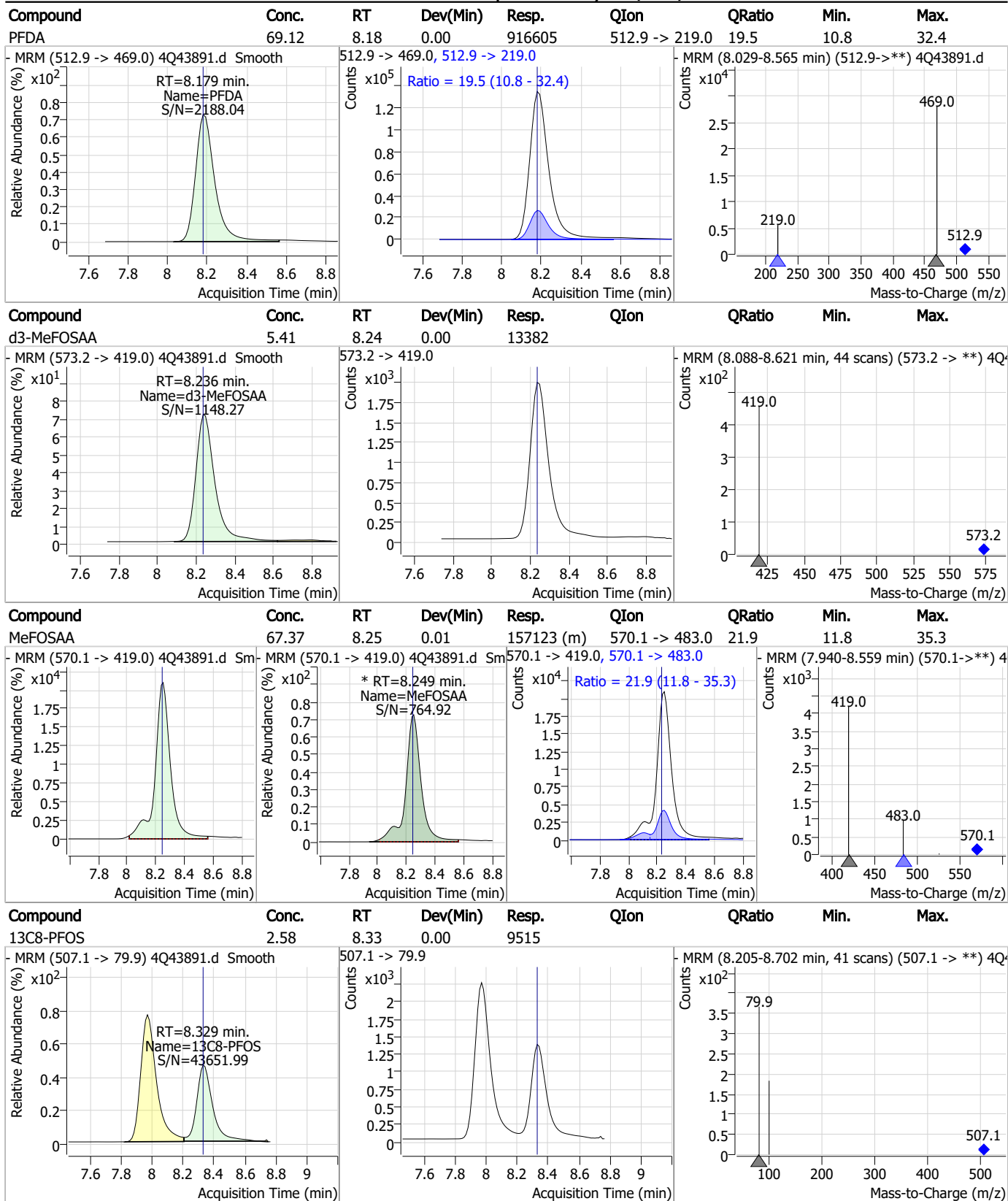


7.7.9

7

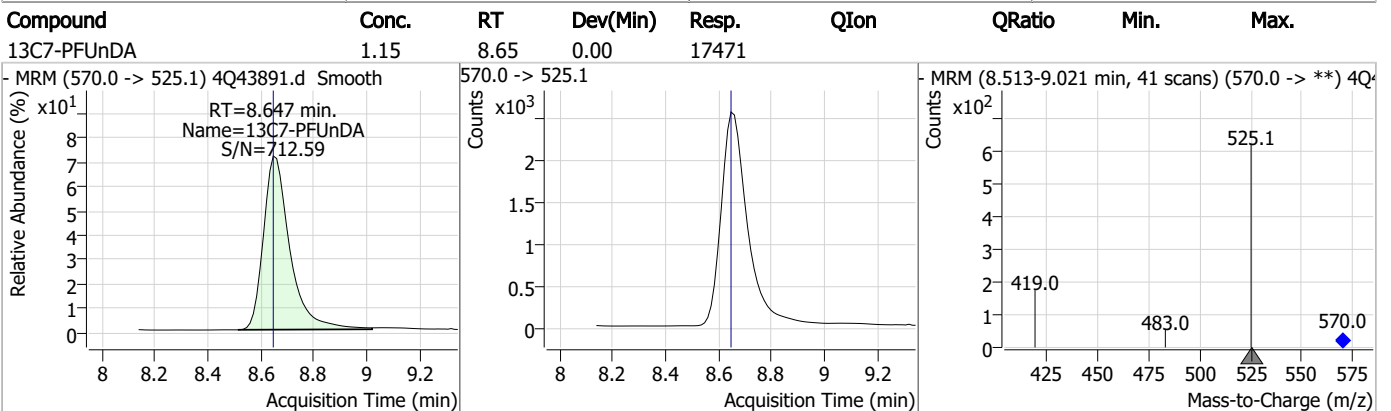
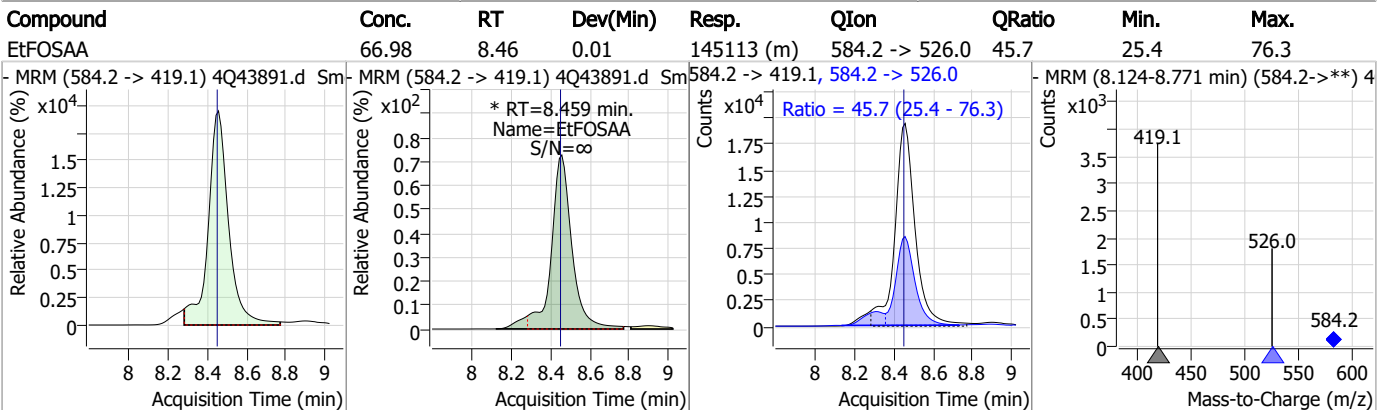
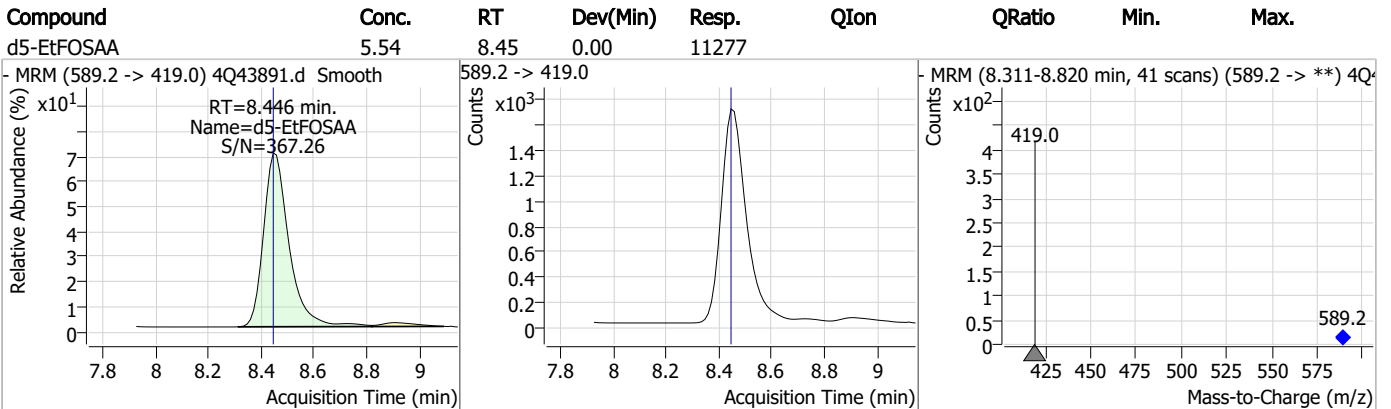
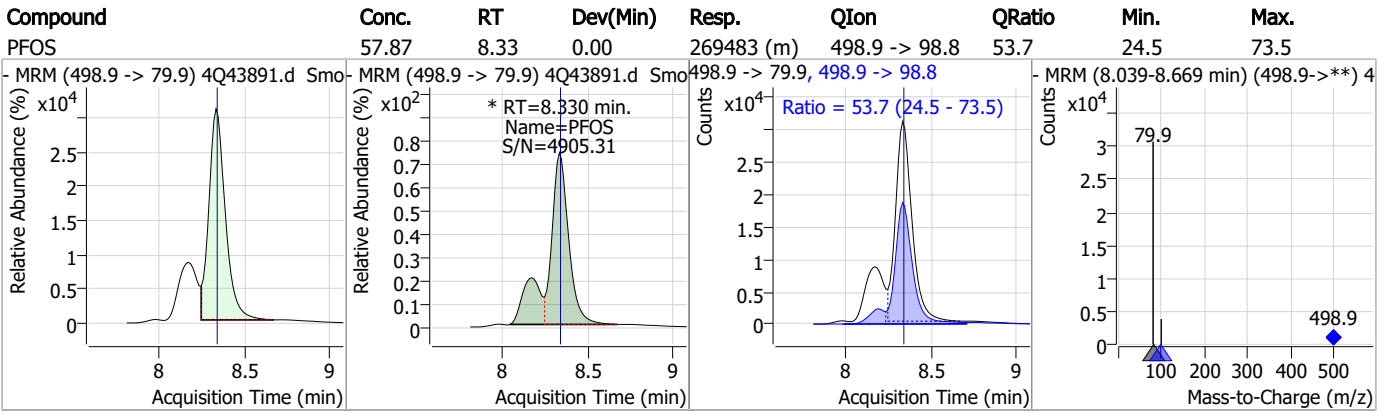


### Perfluorinated Compounds by LC/MS/MS

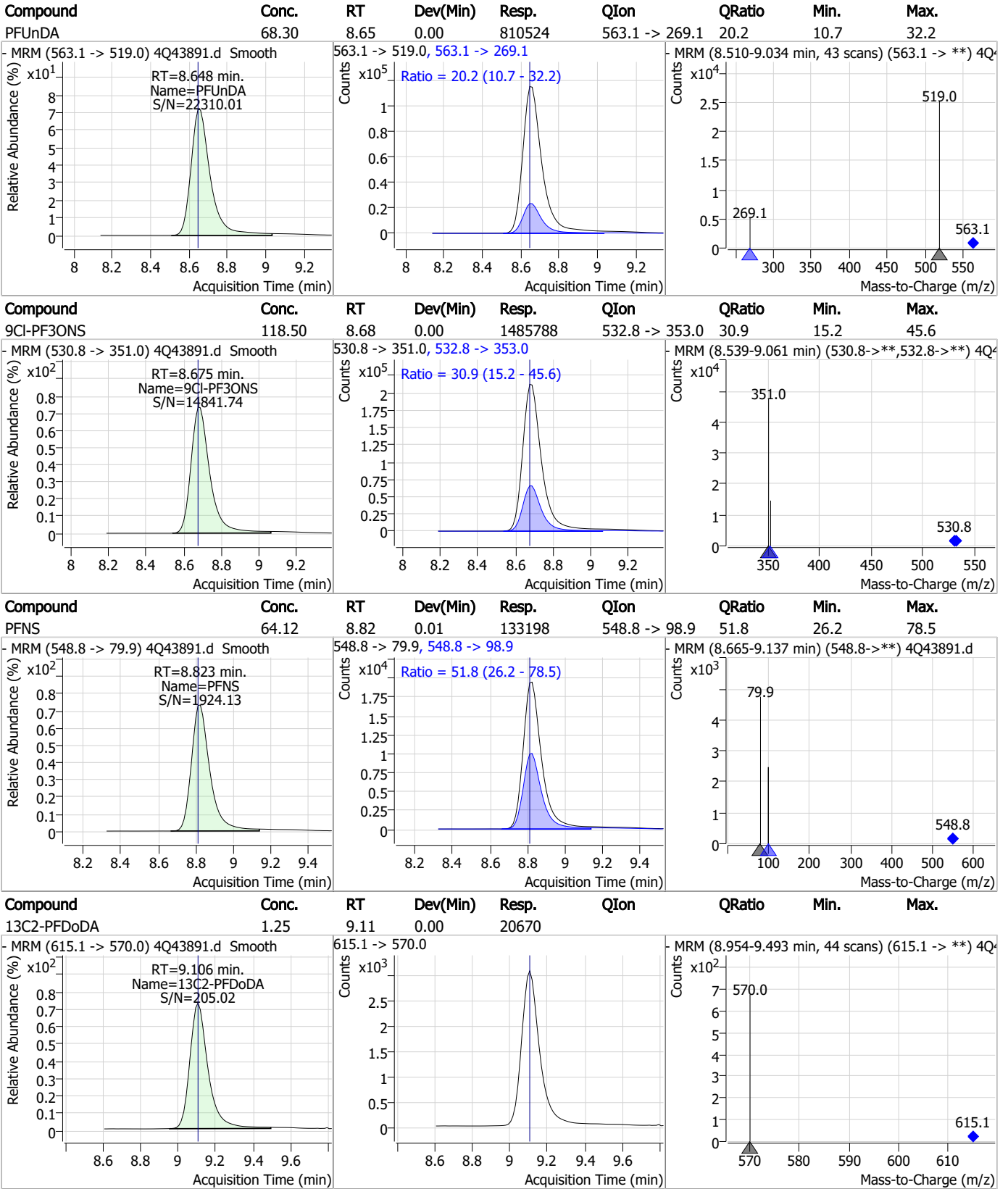


7.7.9  
7

### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS

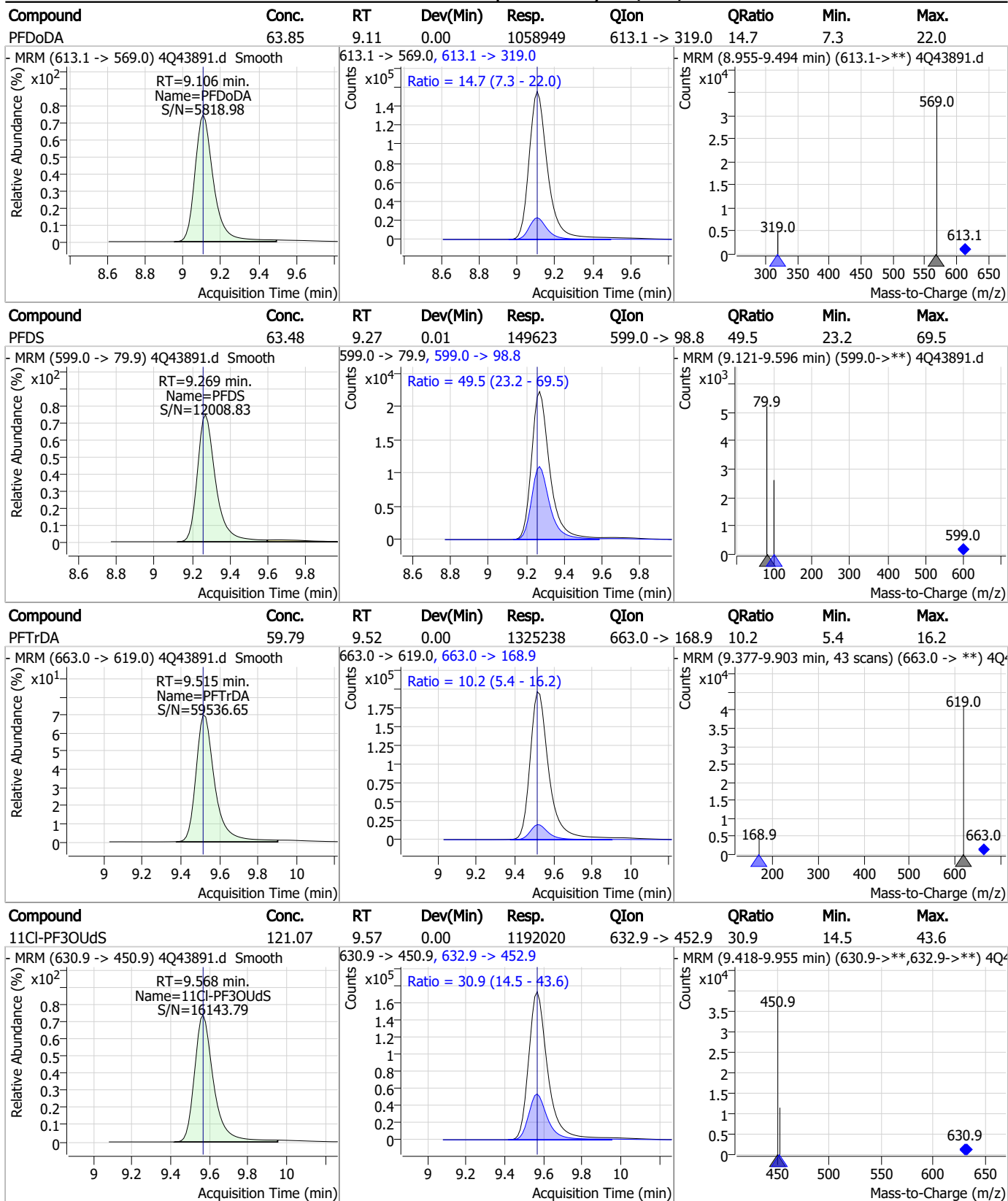


7.7.9

7



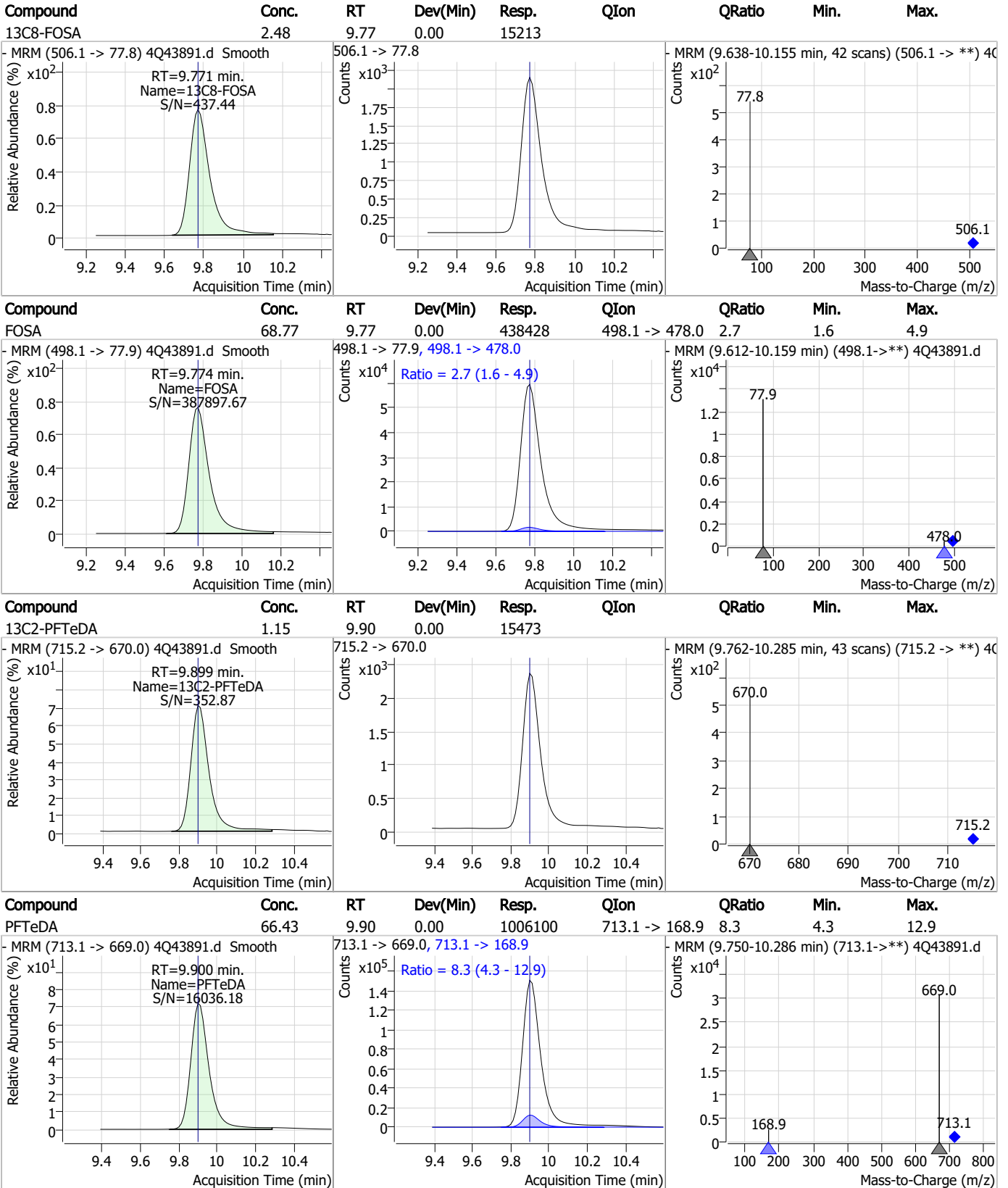
### Perfluorinated Compounds by LC/MS/MS



7.7.9  
7



### Perfluorinated Compounds by LC/MS/MS

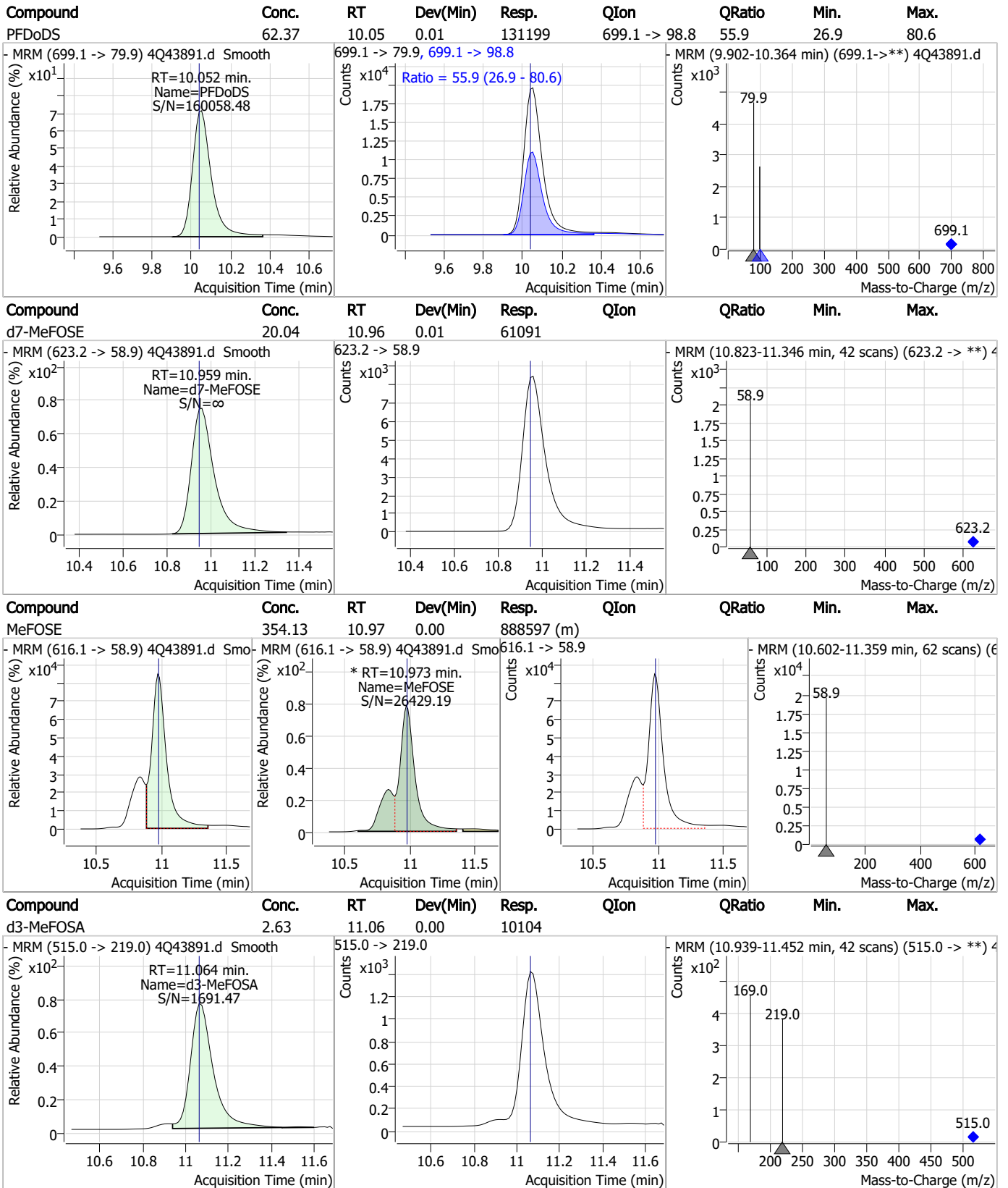


7.7.9

7



### Perfluorinated Compounds by LC/MS/MS

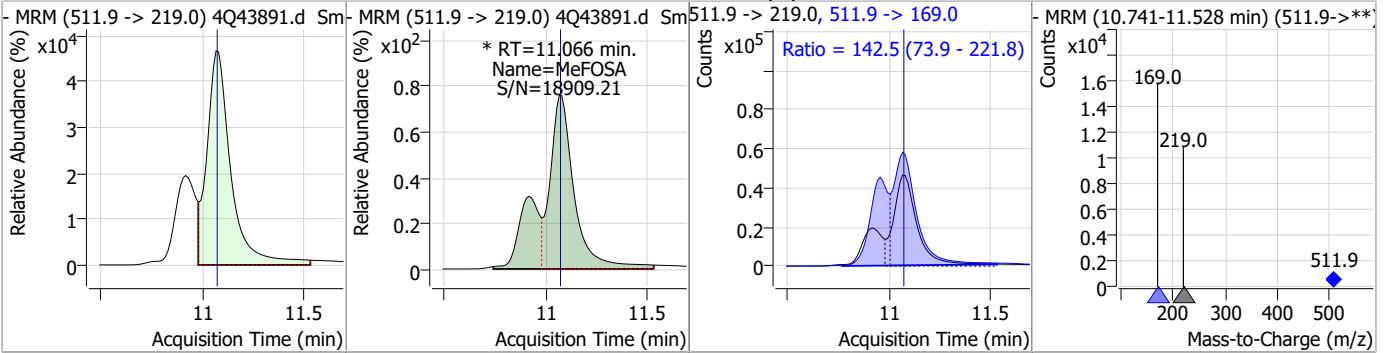


7.7.9

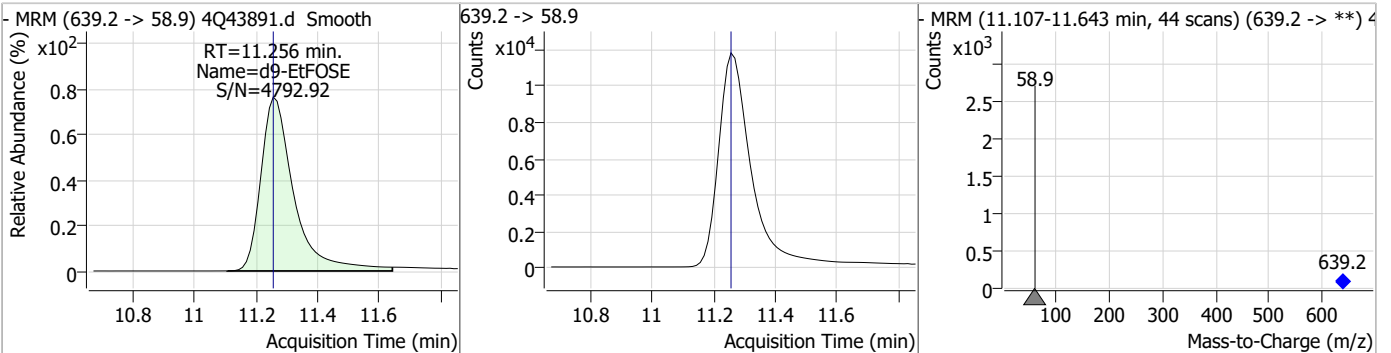
7

### Perfluorinated Compounds by LC/MS/MS

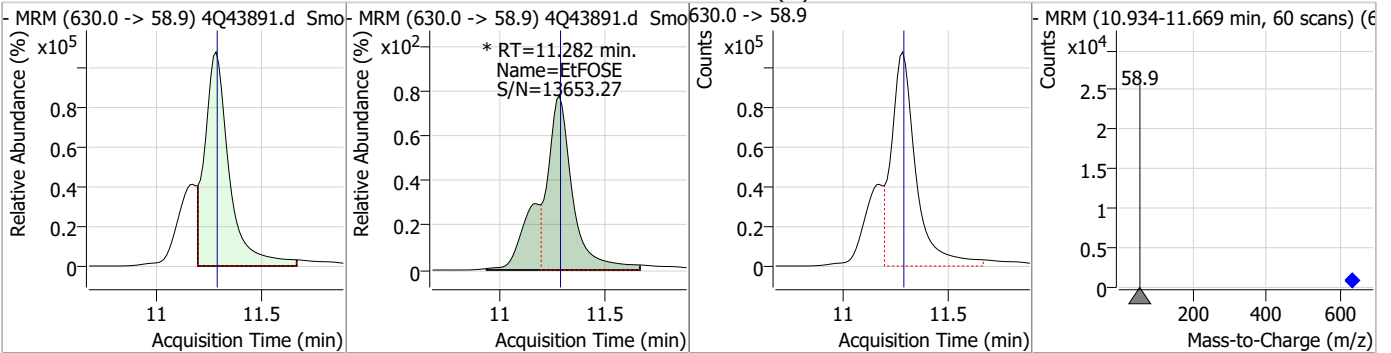
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	135.61	11.07	0.00	516182 (m)	511.9 -> 169.0	142.5	73.9	221.8



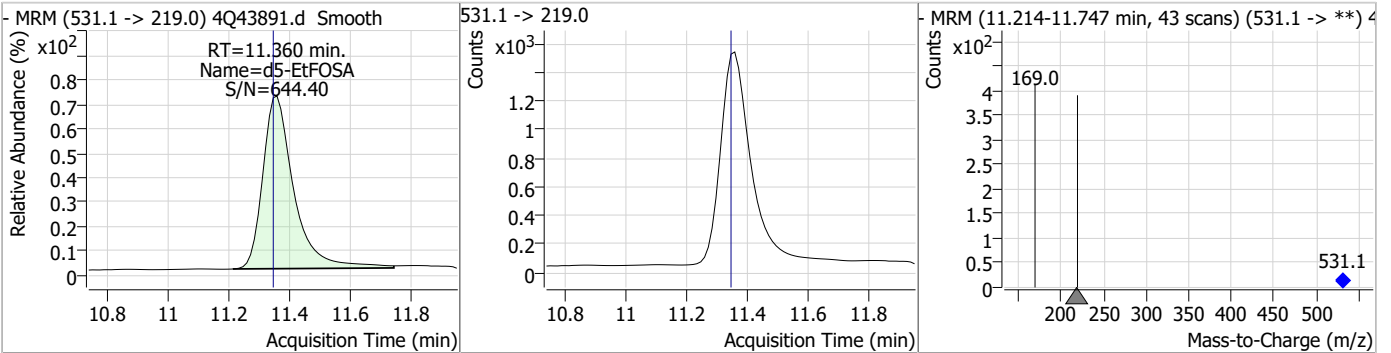
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	20.25	11.26	0.00	87409				



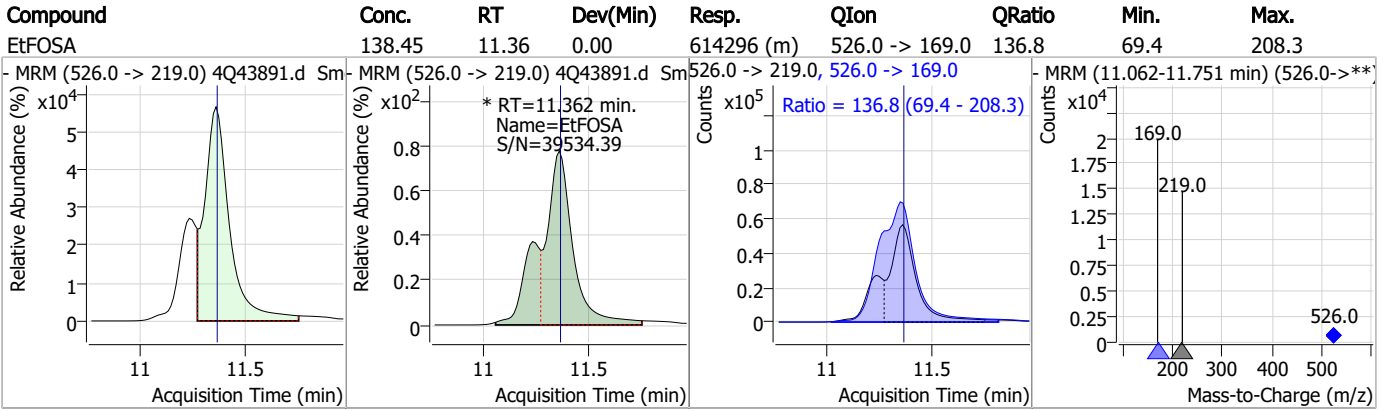
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	339.18	11.28	0.00	1147731 (m)				



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



### Perfluorinated Compounds by LC/MS/MS



7.7.9

7

# Manual Integration Approval Summary

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

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

7.7.9.1  
7

### Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43894.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 1:20:27 PM  
 Sample Name : icv634-20  
 Vial : P1-B4  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.961	216.8 -> 171.9	130791	10.00 µg/L	0.037
M5-PFPeA	4.387	268.3 -> 223.0	66851	5.00 µg/L	0.025
M5-PFHxA	5.547	318.0 -> 273.0	46251	2.50 µg/L	0.012
M4-PFHpA	6.480	367.1 -> 322.0	27970	2.50 µg/L	0.012
M8-PFOA	7.136	421.1 -> 376.0	42684	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	20224	1.25 µg/L	0.013
M6-PFDA	8.191	519.1 -> 474.1	18744	1.25 µg/L	0.013
M7-PFUnDA	8.660	570.0 -> 525.1	18716	1.25 µg/L	0.013
M2-PFDoDA	9.106	615.1 -> 570.0	21397	1.25 µg/L	0.000
M2-PFTeDA	9.911	715.2 -> 670.0	15850	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	15950	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11303	2.50 µg/L	0.025
M3-PFHxS	7.242	402.1 -> 79.9	7645	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	10355	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1075	5.00 µg/L	0.025
M2-6:2FTS	6.911	429.1 -> 80.9	1967	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	3100	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	13820	5.00 µg/L	0.012
M3-HFPO-DA	5.902	286.9 -> 168.9	28905	10.00 µg/L	0.012
M5-EtFOSAA	8.458	589.2 -> 419.0	11868	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	64121	25.00 µg/L	0.012
M9-EtFOSE	11.256	639.2 -> 58.9	90962	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11004	2.50 µg/L	0.012
M3-MeFOSA	11.064	515.0 -> 219.0	9720	2.50 µg/L	0.000
13C4-PFOS	8.342	502.8 -> 79.9	10619	2.50 µg/L	0.012
13C3-PFBA	2.966	216.0 -> 172.0	68812	5.00 µg/L	0.037
18O2-PFHxS	7.228	403.0 -> 83.9	5057	2.50 µg/L	0.000
13C4-PFOA	7.136	417.1 -> 372.0	50127	2.50 µg/L	0.012
13C2-PFDA	8.191	515.1 -> 470.1	16617	1.25 µg/L	0.013
13C5-PFNA	7.684	468.0 -> 423.0	23190	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	42103	2.50 µg/L	0.012
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.247	329.1 -> 80.9	1075	5.23 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.6%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1967	5.31 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.2%		
13C2-8:2FTS	7.978	529.1 -> 80.9	3100	5.36 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.2%		
13C2-PFDoDA	9.106	615.1 -> 570.0	21397	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C2-PFTeDA	9.911	715.2 -> 670.0	15850	1.21 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.8%		
13C3-PFBS	5.452	302.1 -> 79.9	11303	2.37 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C3-PFHxS	7.242	402.1 -> 79.9	7645	2.44 µg/L	0.012

7.7.10  
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C4-PFBA	2.961	216.8 -> 171.9	130791	10.10 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C4-PFHpA	6.480	367.1 -> 322.0	27970	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.2%	
13C5-PFHxA	5.547	318.0 -> 273.0	46251	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C5-PFPeA	4.387	268.3 -> 223.0	66851	5.15 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C6-PFDA	8.191	519.1 -> 474.1	18744	1.32 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C7-PFUnDA	8.660	570.0 -> 525.1	18716	1.26 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C8-FOSA	9.783	506.1 -> 77.8	15950	2.40 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C8-PFOA	7.136	421.1 -> 376.0	42684	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C8-PFOS	8.341	507.1 -> 79.9	10355	2.59 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C9-PFNA	7.684	472.1 -> 427.0	20224	1.28 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSAA	8.249	573.2 -> 419.0	13820	5.16 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C3-HFPO-DA	5.902	286.9 -> 168.9	28905	10.44 µg/L	0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.4%	
d3-MeFOSA	11.064	515.0 -> 219.0	9720	2.33 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.4%	
d5-EtFOSAA	8.458	589.2 -> 419.0	11868	5.38 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.5%	
d7-MeFOSE	10.959	623.2 -> 58.9	64121	19.41 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.6%	
d9-EtFOSE	11.256	639.2 -> 58.9	90962	19.44 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.8%	
d5-EtFOSA	11.360	531.1 -> 219.0	11004	2.49 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.4%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.236	327.1 -> 307.0	36343	21.01 µg/L	93
		327.1 -> 80.9	15405		
6:2FTS	6.911	427.1 -> 407.0	37596	19.78 µg/L	98
		427.1 -> 80.9	15426		
8:2FTS	7.978	527.1 -> 507.0	34017	19.68 µg/L	99
		527.1 -> 80.8	14554		
EtFOSAA	8.459	584.2 -> 419.1	44738	19.62 µg/L	m 97
		584.2 -> 526.0	21689		
FOSA	9.774	498.1 -> 77.9	141624	21.19 µg/L	98
		498.1 -> 478.0	3779		
MeFOSAA	8.249	570.1 -> 419.0	51036	21.19 µg/L	m 95
		570.1 -> 483.0	10701		
PFBA	2.957	212.8 -> 168.9	67542	19.28 µg/L	100
PFBS	5.453	298.7 -> 79.9	100483	21.67 µg/L	95
		298.7 -> 98.8	37786		
PFDA	8.192	512.9 -> 469.0	305610	21.49 µg/L	96
		512.9 -> 219.0	60753		
PFDoDA	9.106	613.1 -> 569.0	317329	18.48 µg/L	96
		613.1 -> 319.0	41610		
PFDS	9.269	599.0 -> 79.9	52213	20.36 µg/L	96

7.7.10  
7





Perfluorinated Compounds by LC/MS/MS

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

7.7.10  
7

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



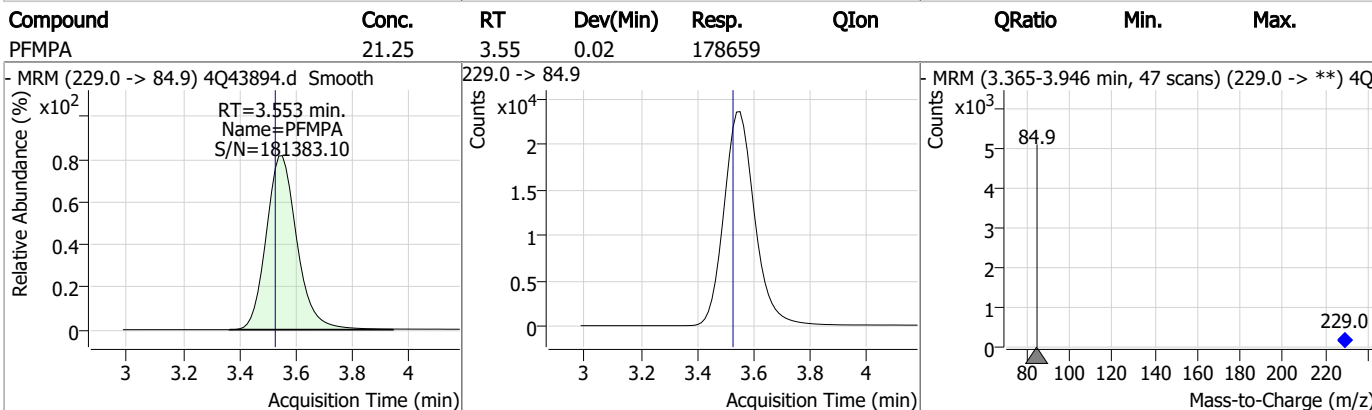
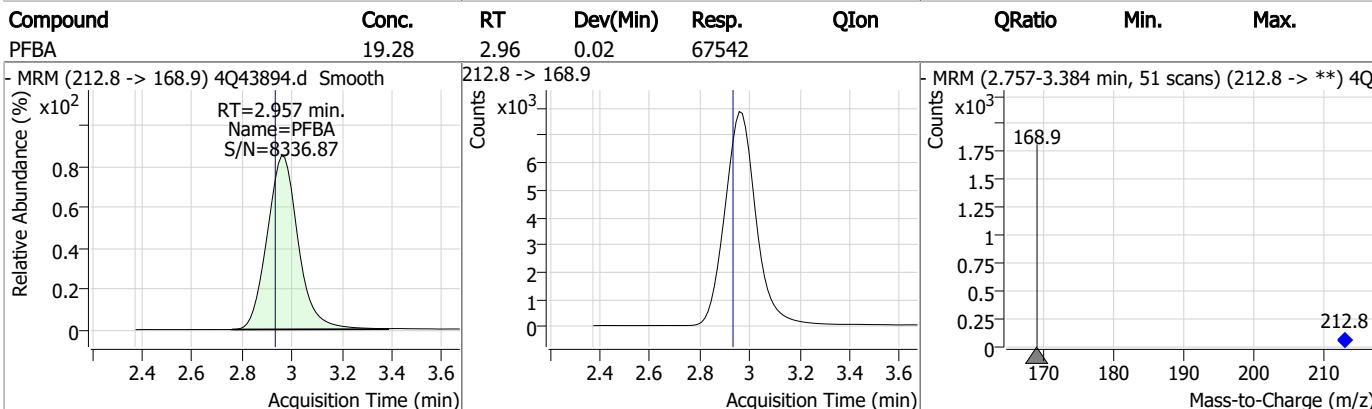
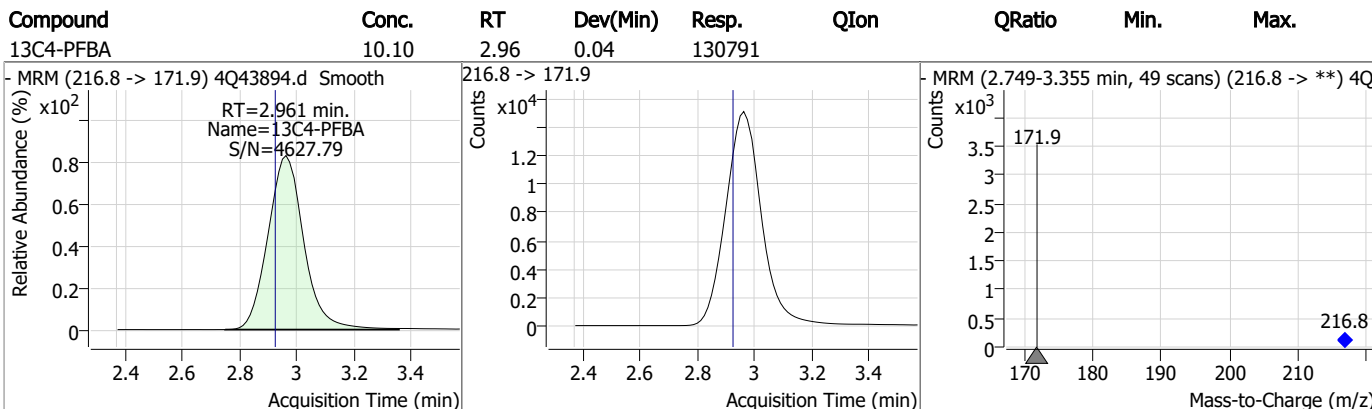
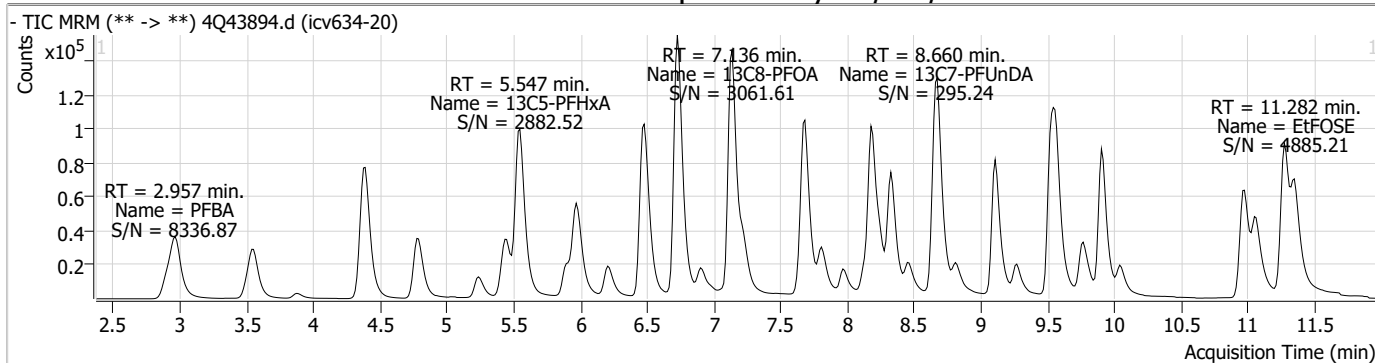
### Perfluorinated Compounds by LC/MS/MS

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

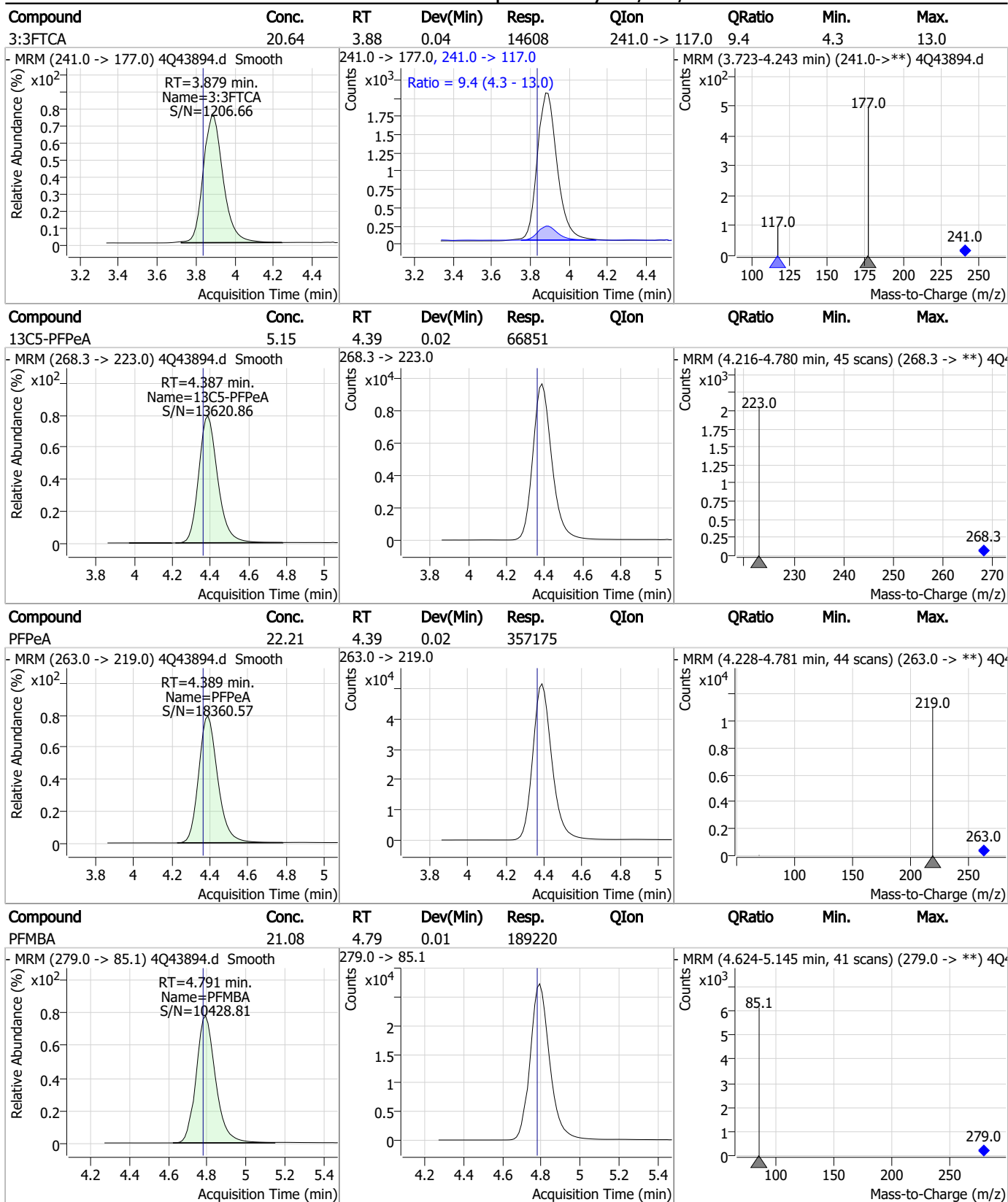
7.7.10

7

### Perfluorinated Compounds by LC/MS/MS

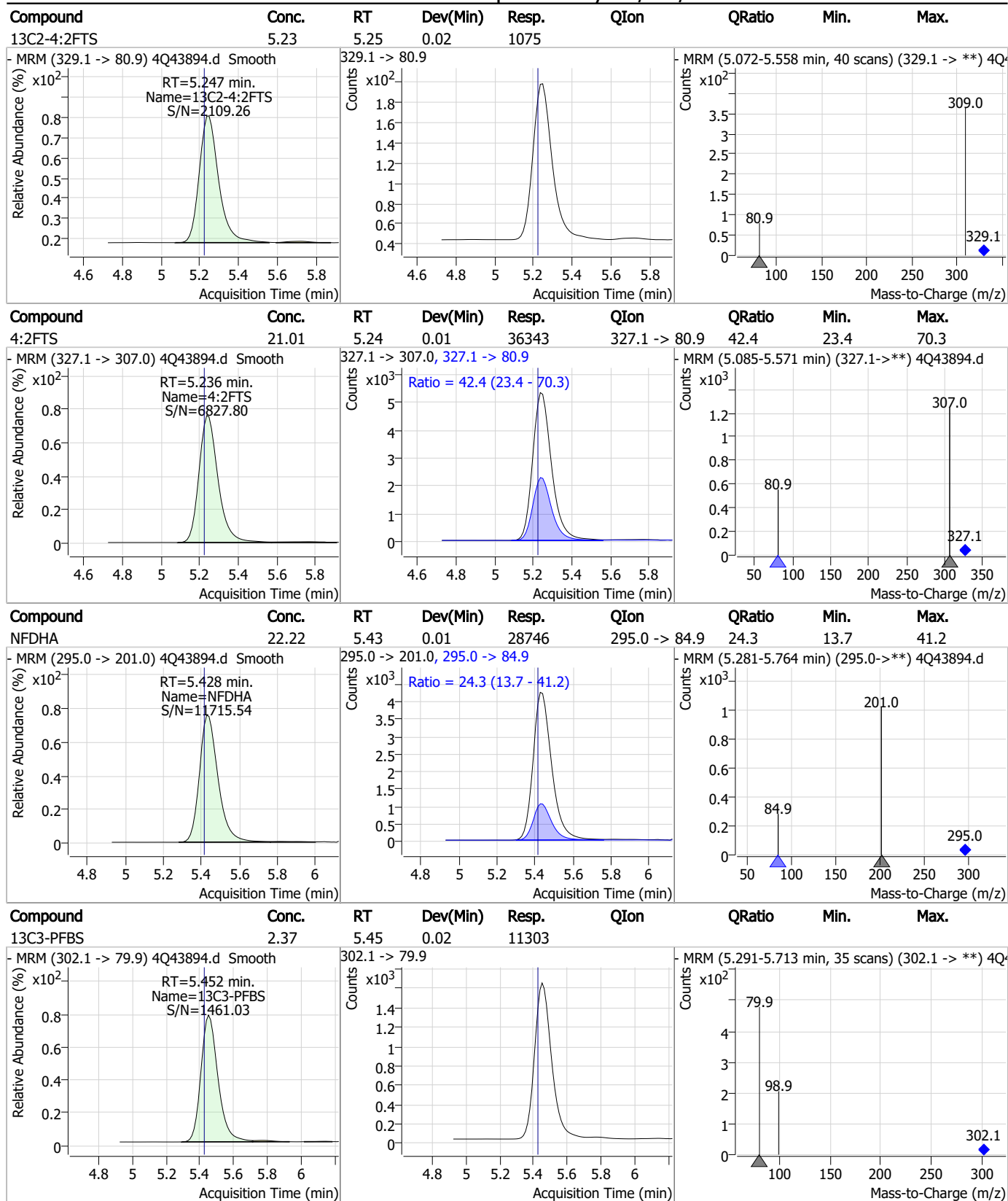


### Perfluorinated Compounds by LC/MS/MS



7.7.10 7

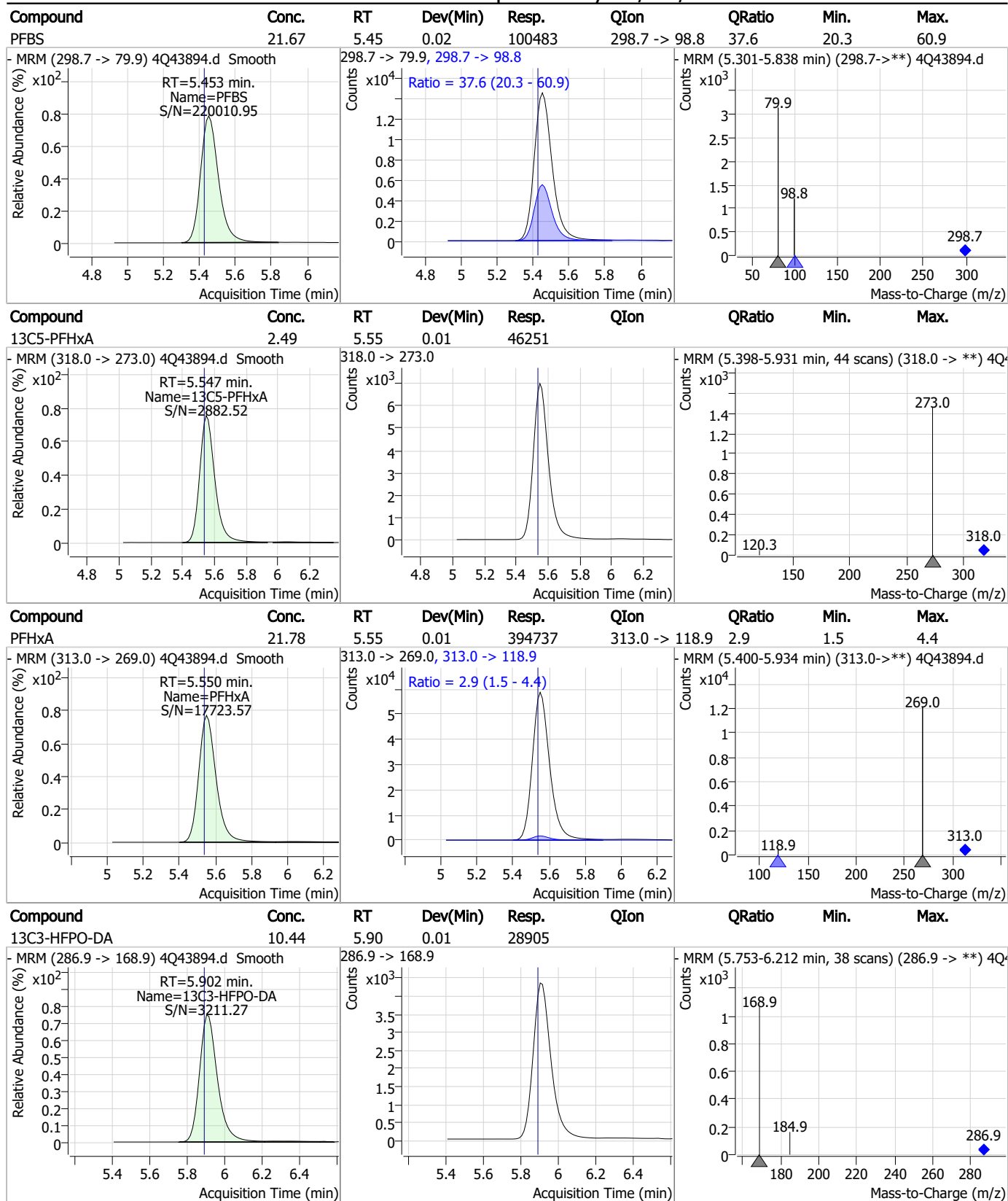
### Perfluorinated Compounds by LC/MS/MS



7.7.10  
7

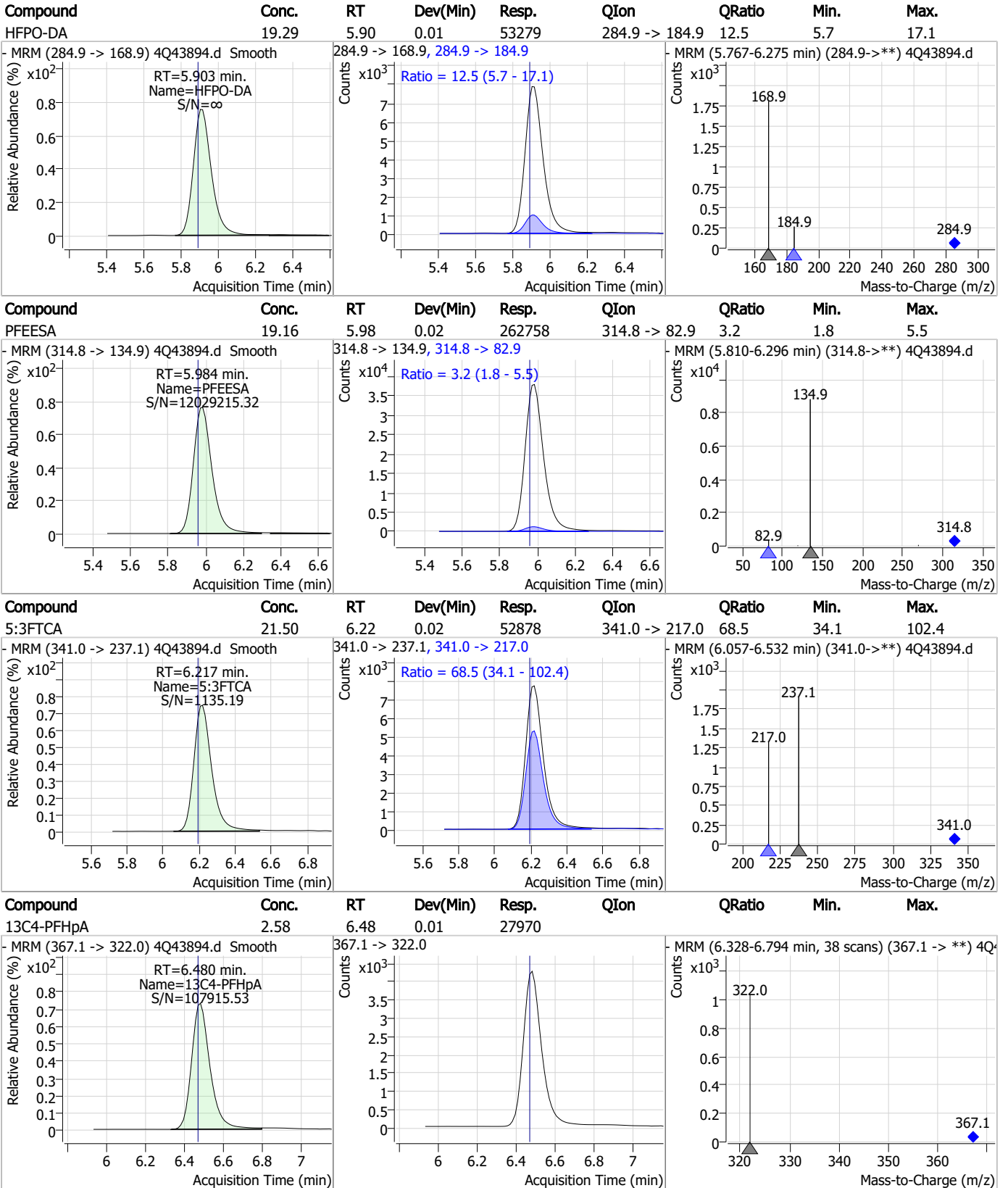


### Perfluorinated Compounds by LC/MS/MS



7.7.10  
7

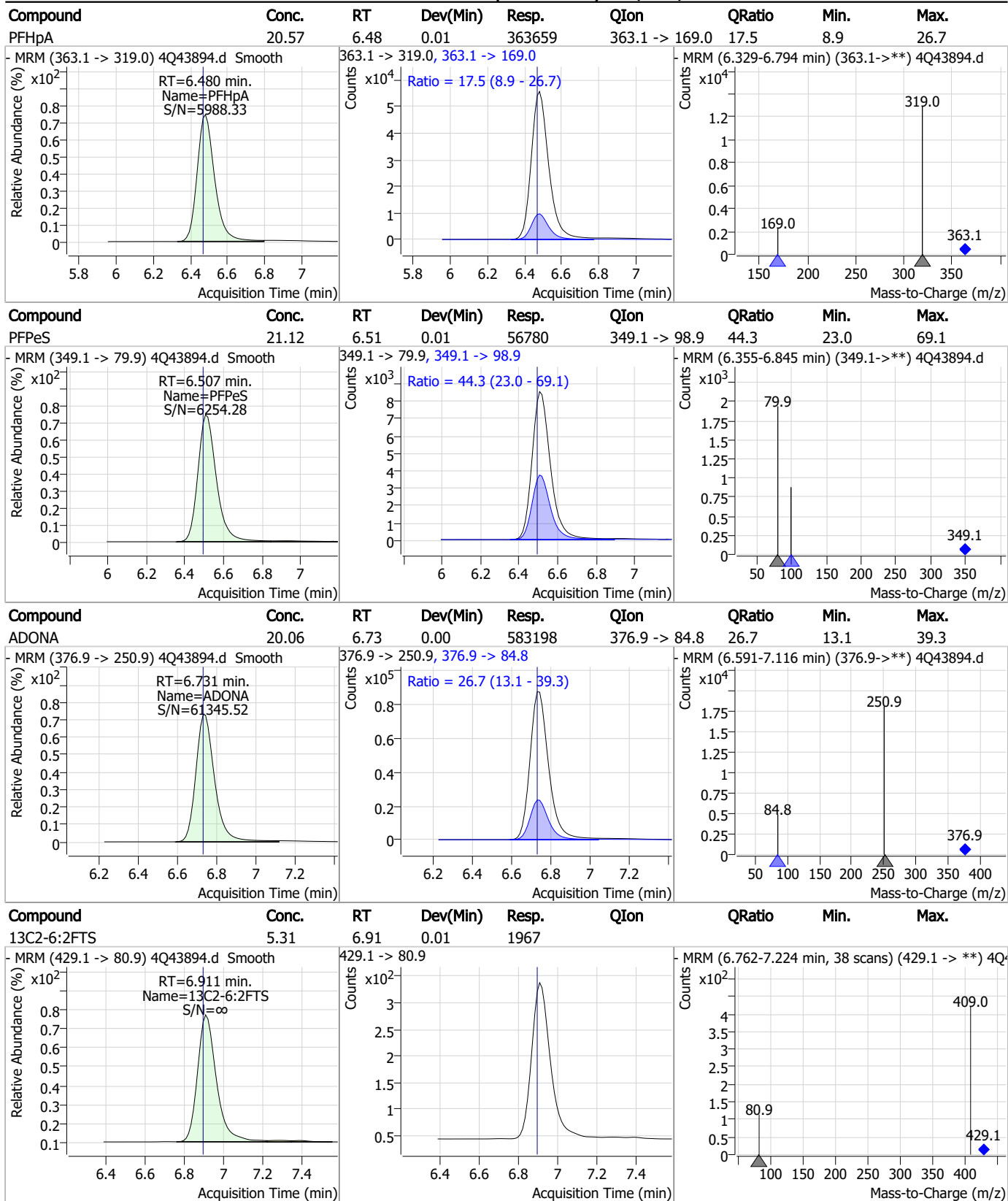
### Perfluorinated Compounds by LC/MS/MS



7.7.10 7



### Perfluorinated Compounds by LC/MS/MS

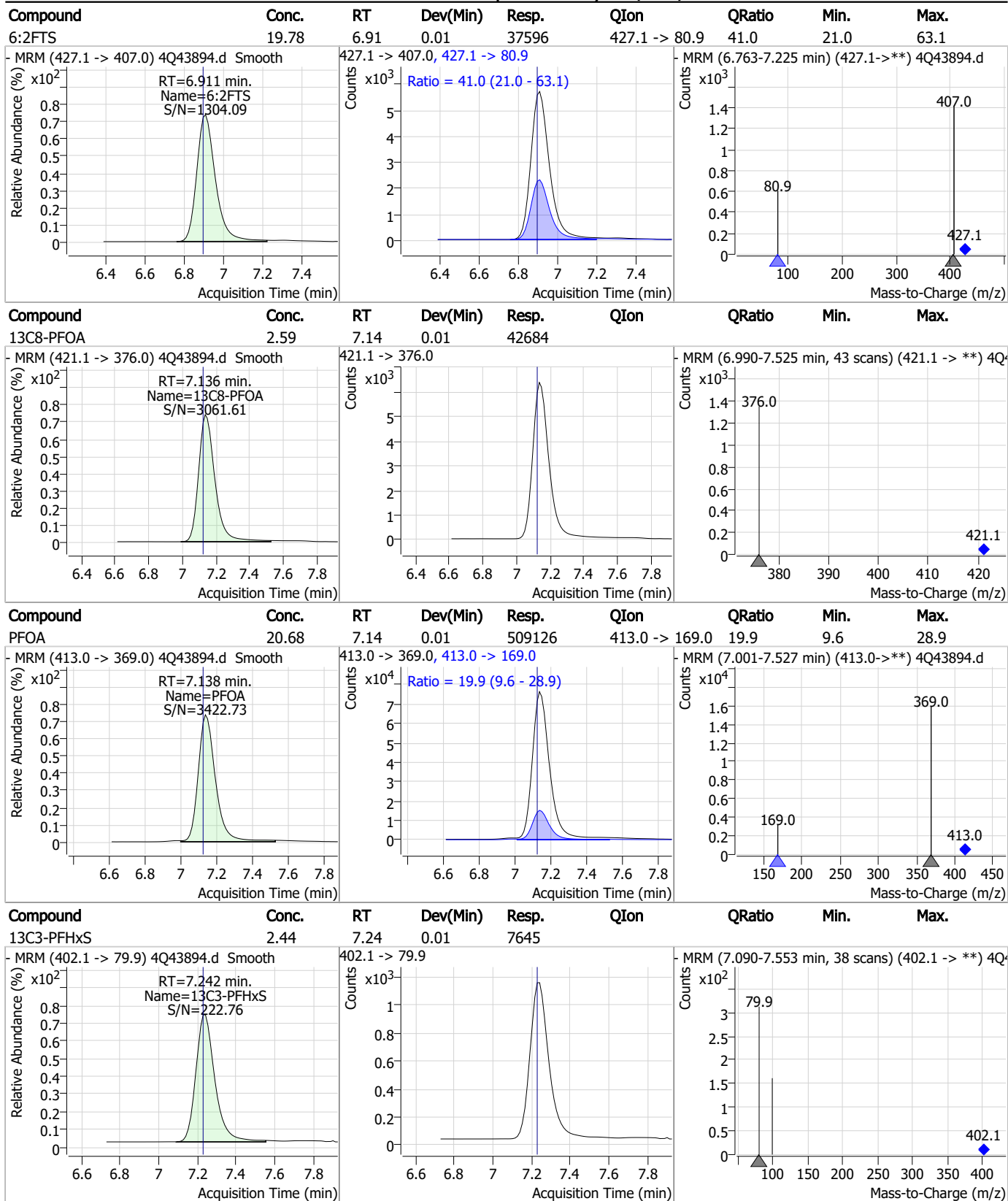


7.7.10 7





### Perfluorinated Compounds by LC/MS/MS

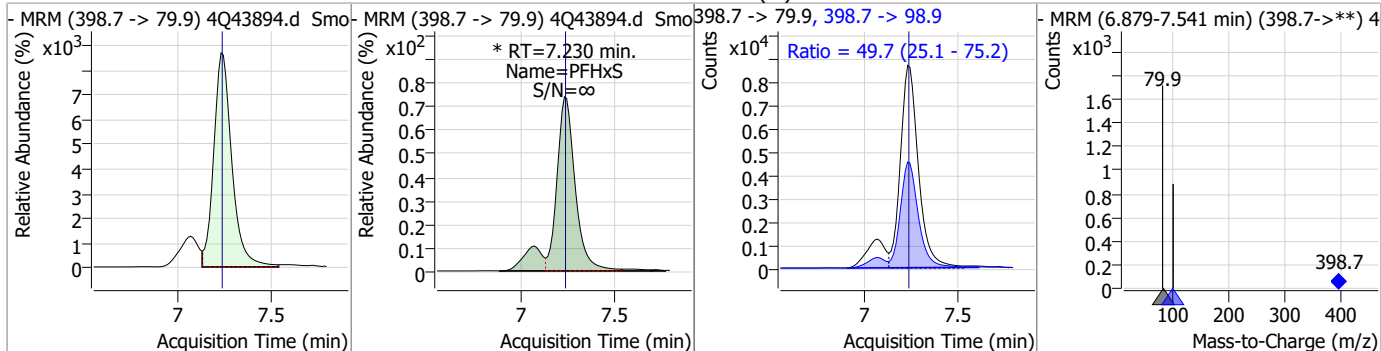


7.7.10 7

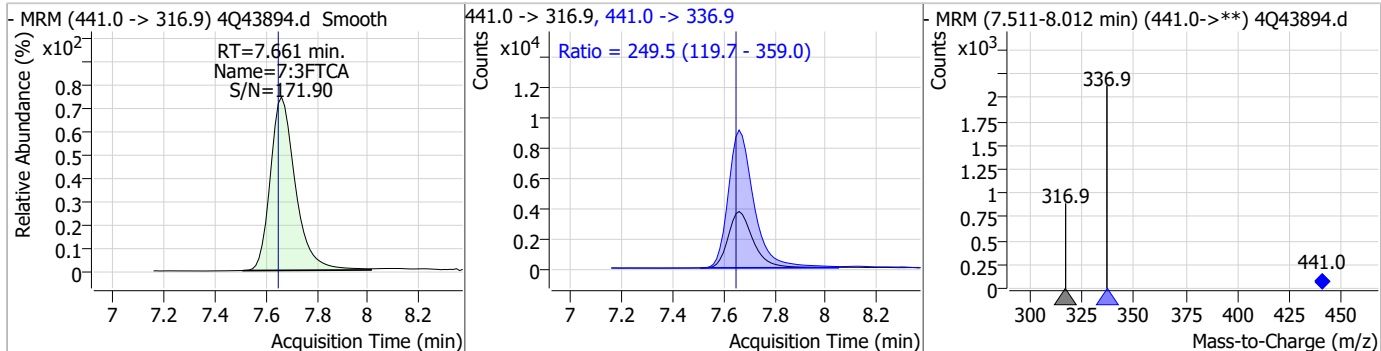


### Perfluorinated Compounds by LC/MS/MS

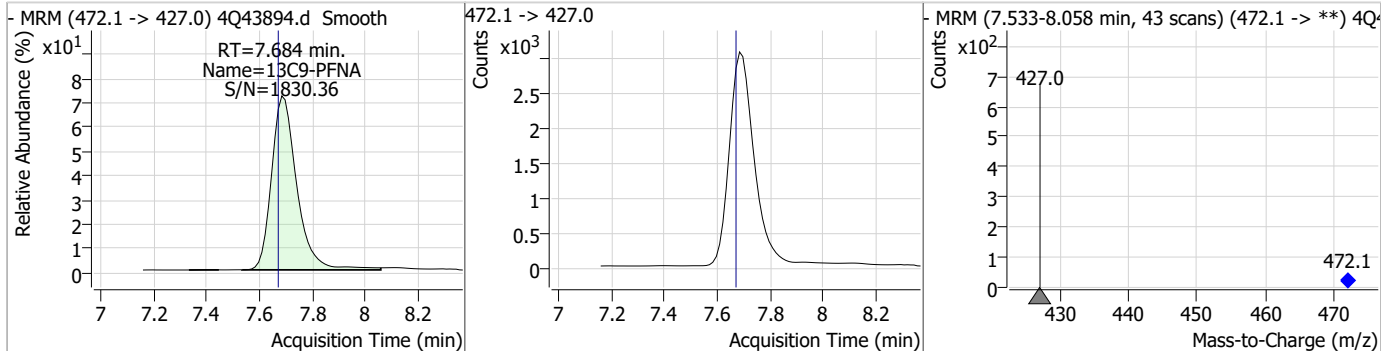
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	21.63	7.23	0.00	67769 (m)	398.7 -> 98.9	49.7	25.1	75.2



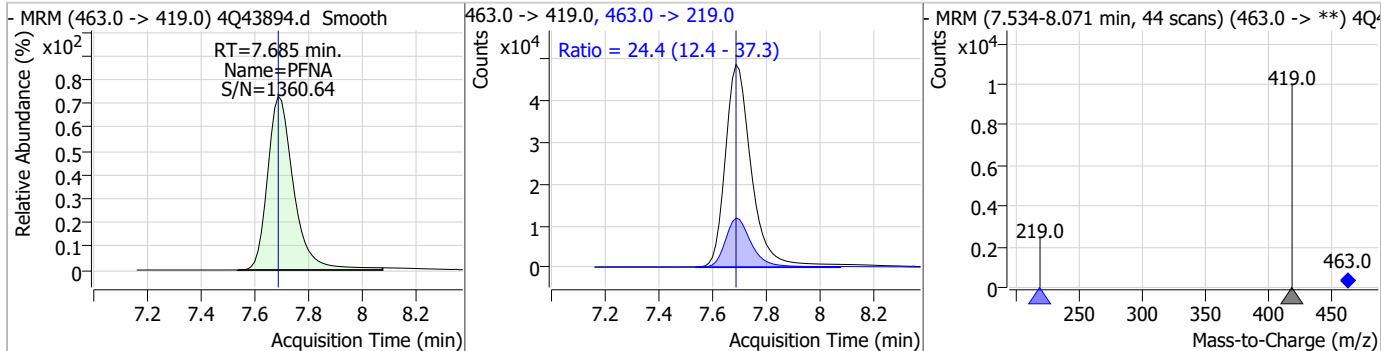
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
7:3FTCA	19.97	7.66	0.01	25510	441.0 -> 336.9	249.5	119.7	359.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.28	7.68	0.01	20224	472.1 -> 427.0			

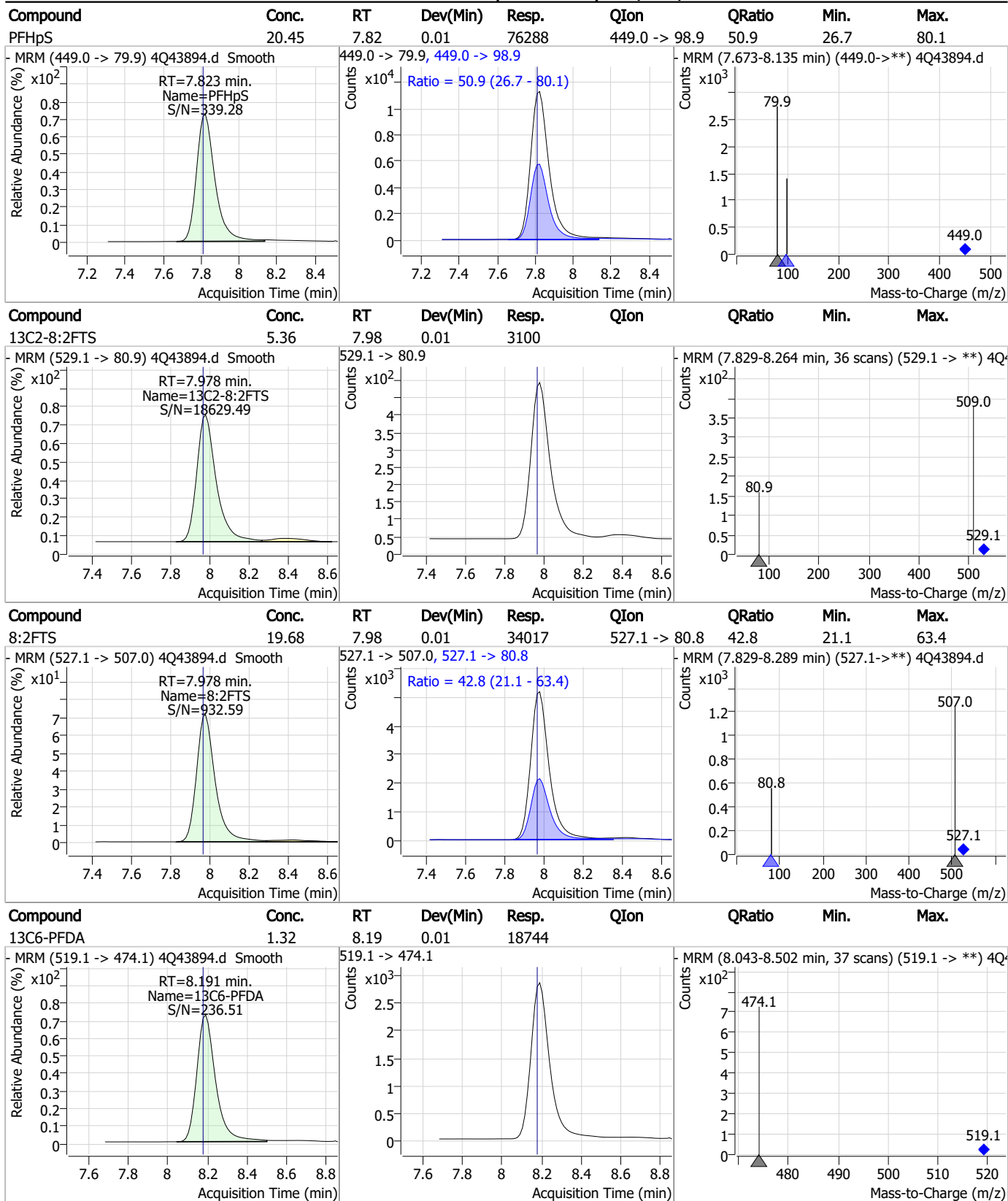


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	21.77	7.68	0.00	326243	463.0 -> 219.0	24.4	12.4	37.3



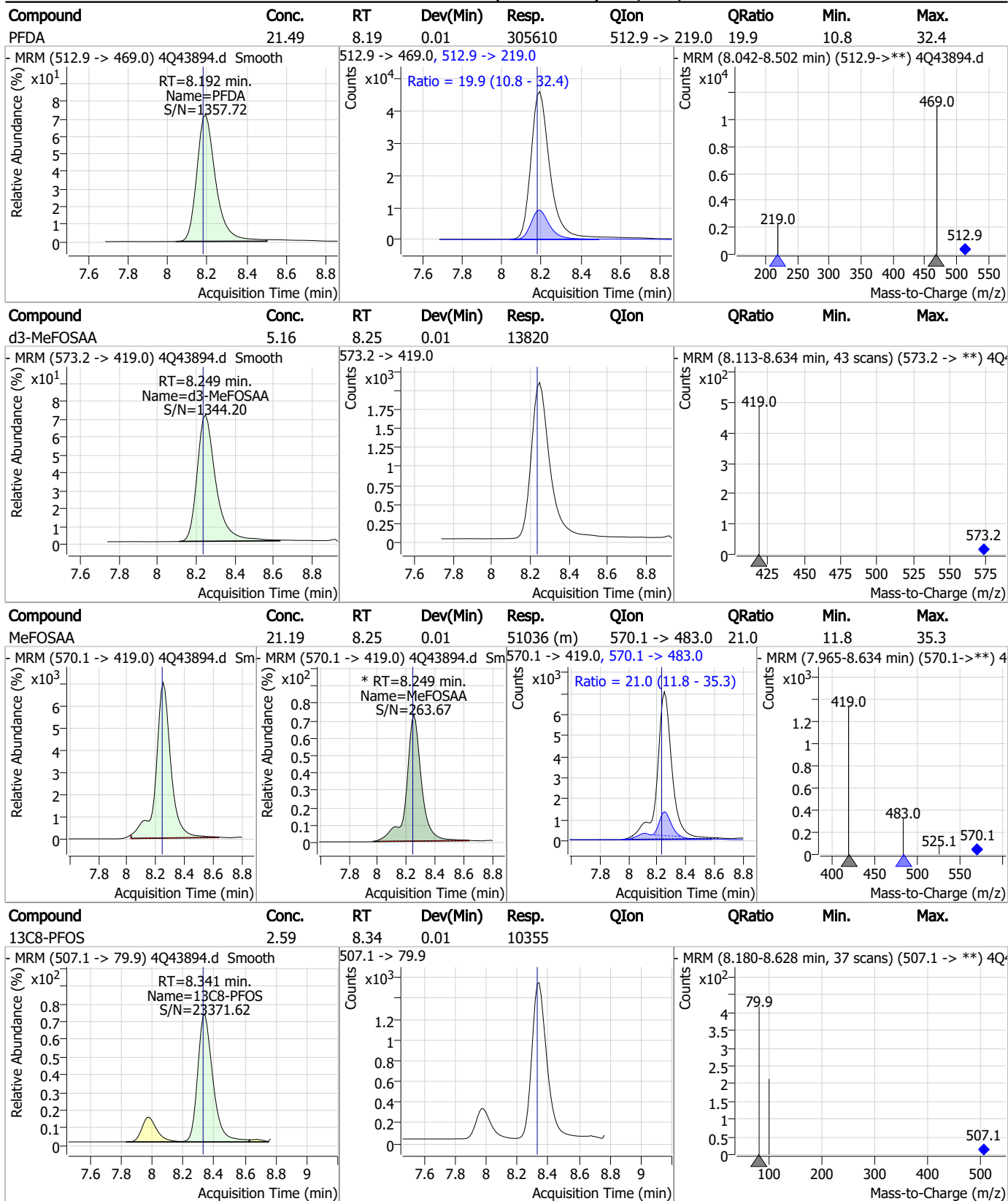
7.7.10 7

### Perfluorinated Compounds by LC/MS/MS



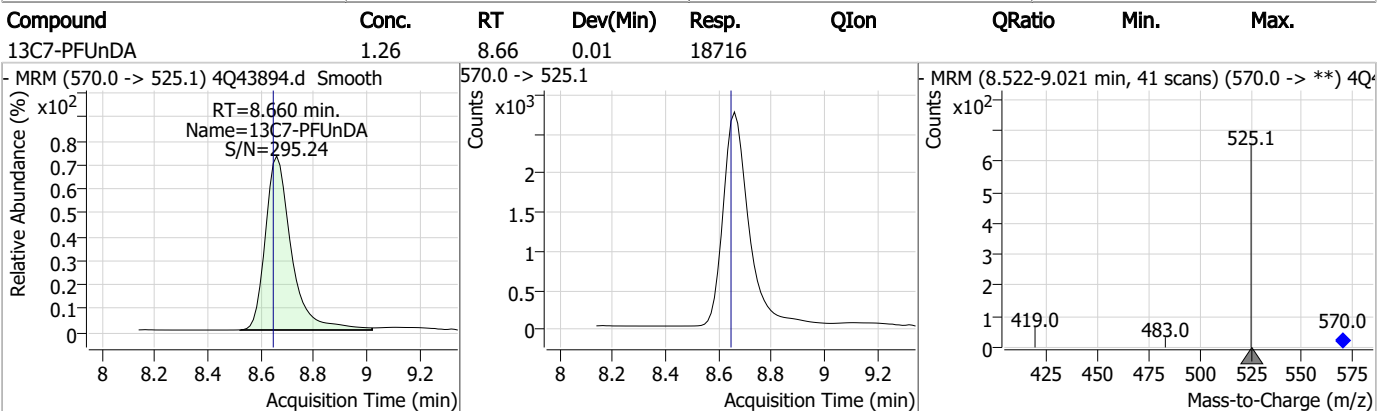
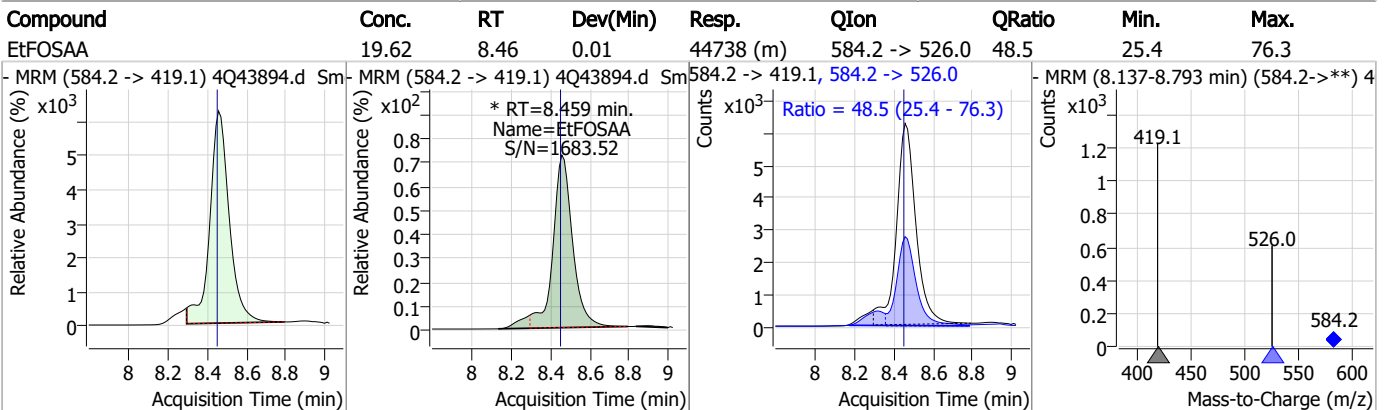
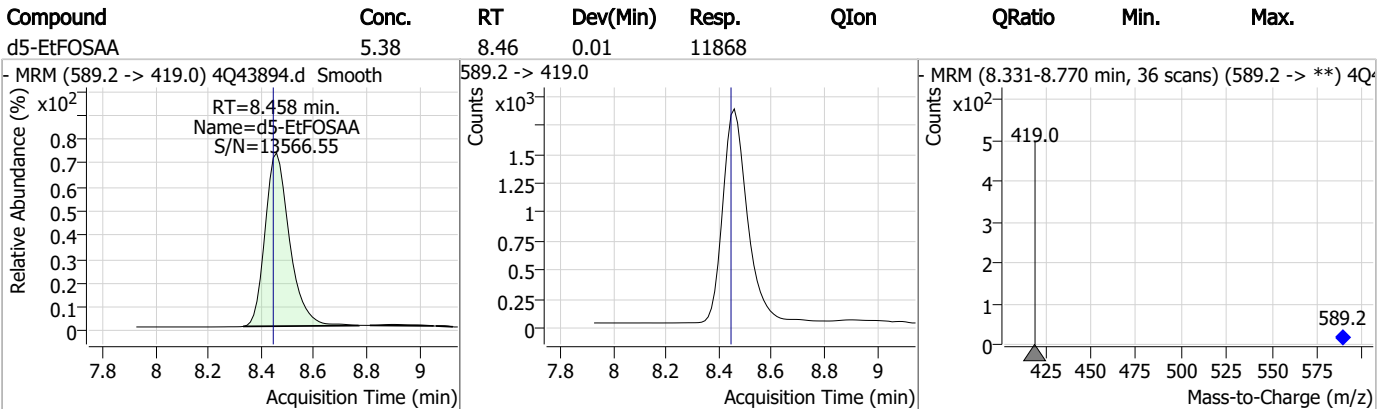
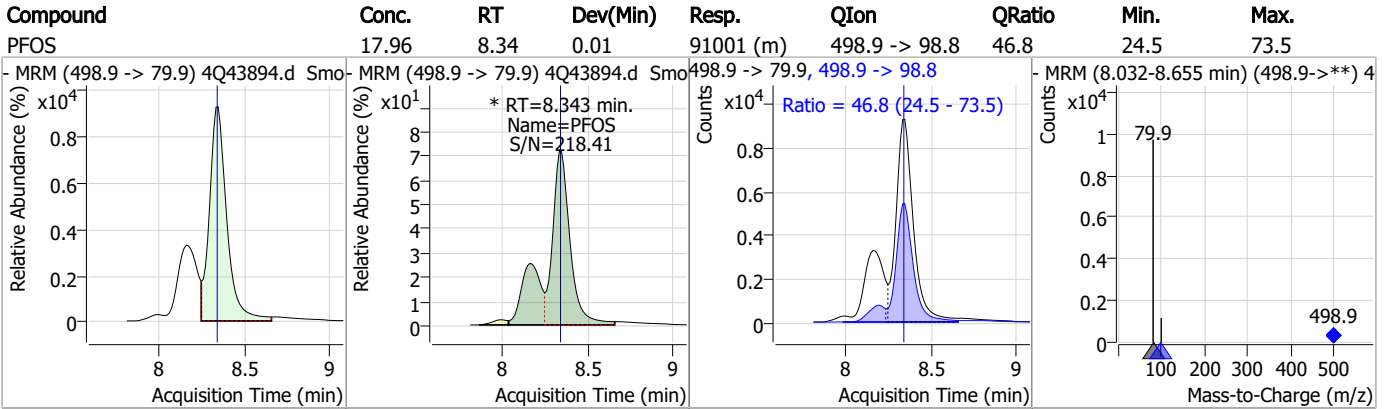
7.7.10 7

### Perfluorinated Compounds by LC/MS/MS



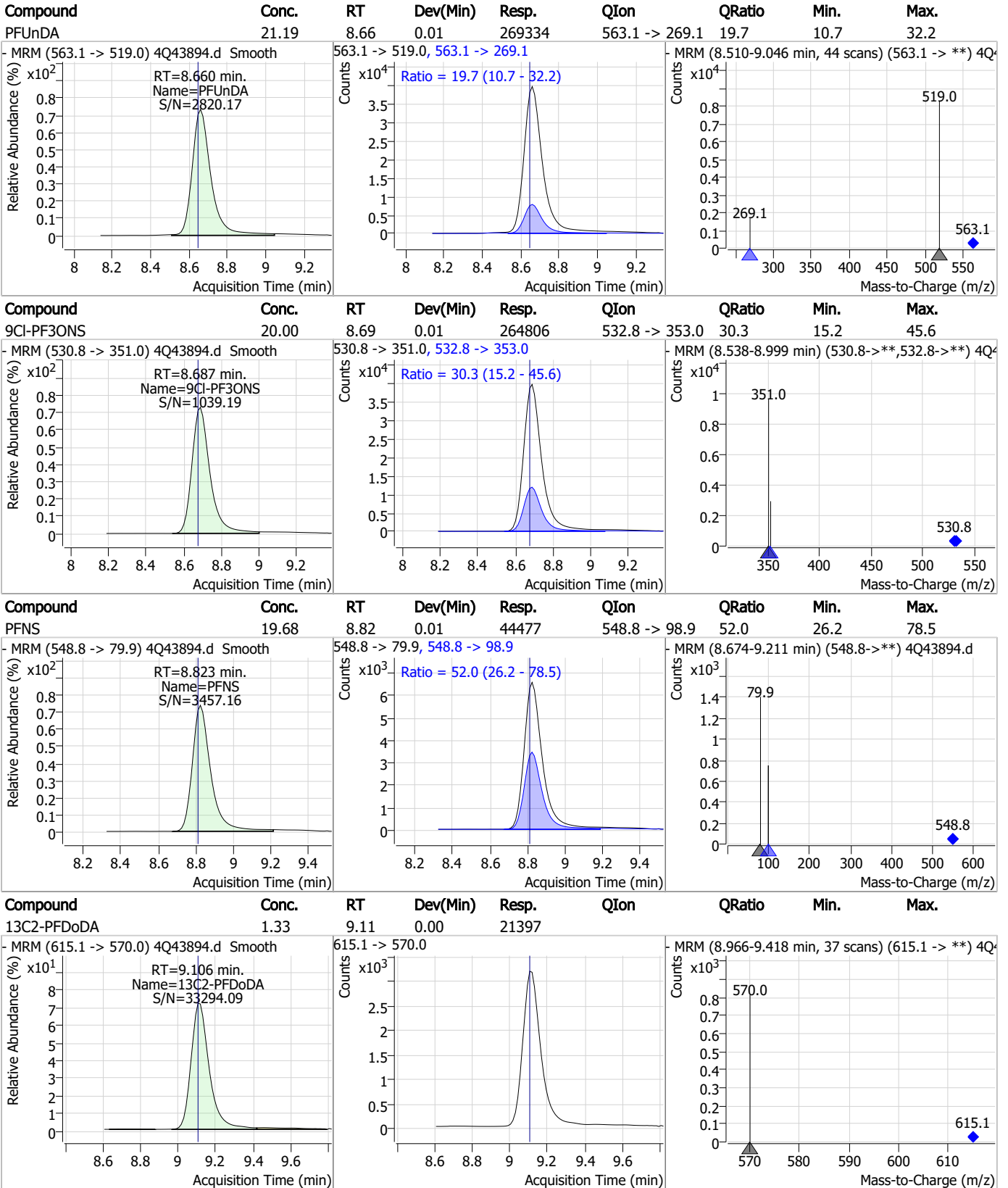
7.7.10  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.10 7

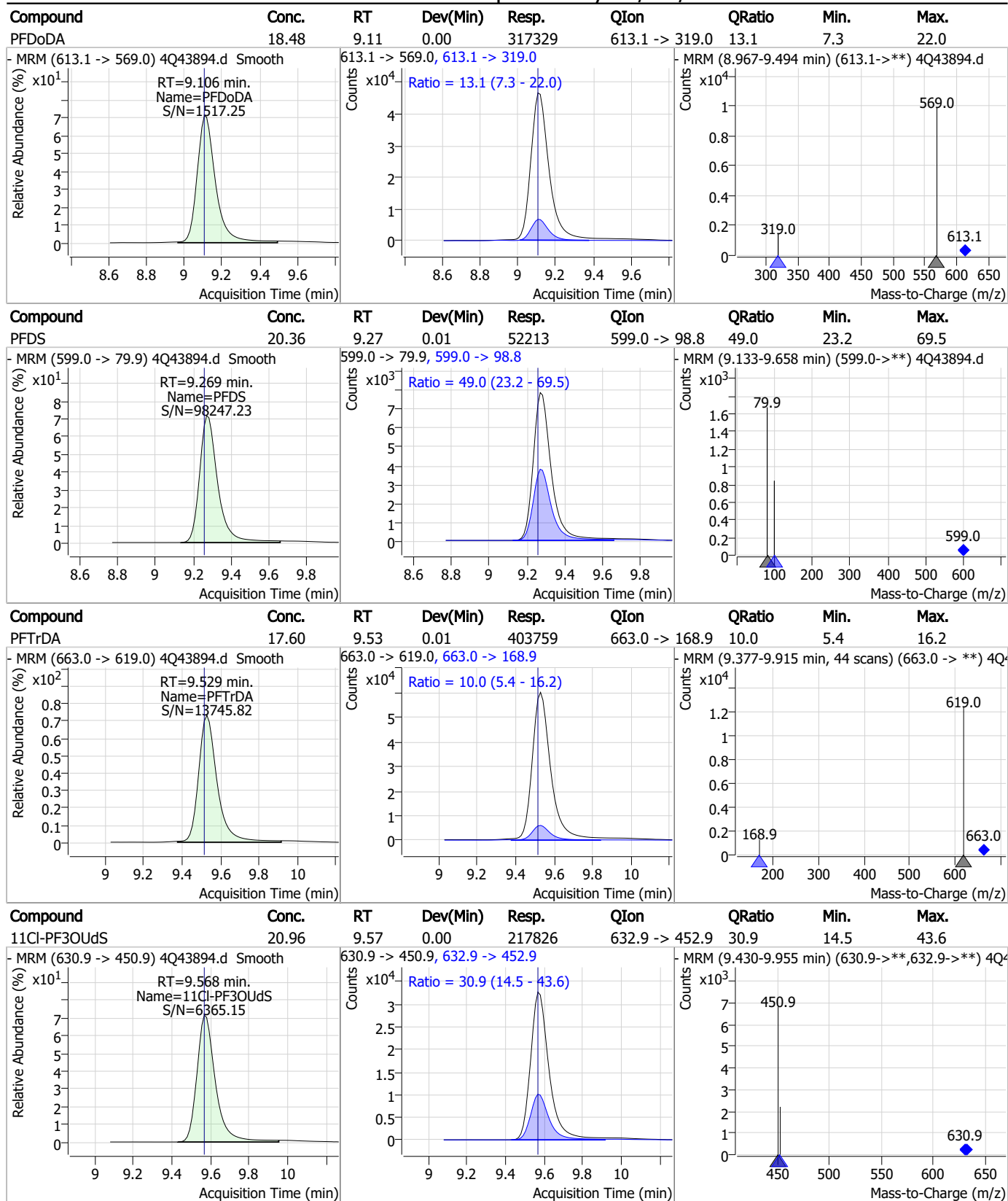
### Perfluorinated Compounds by LC/MS/MS



7.7.10 7



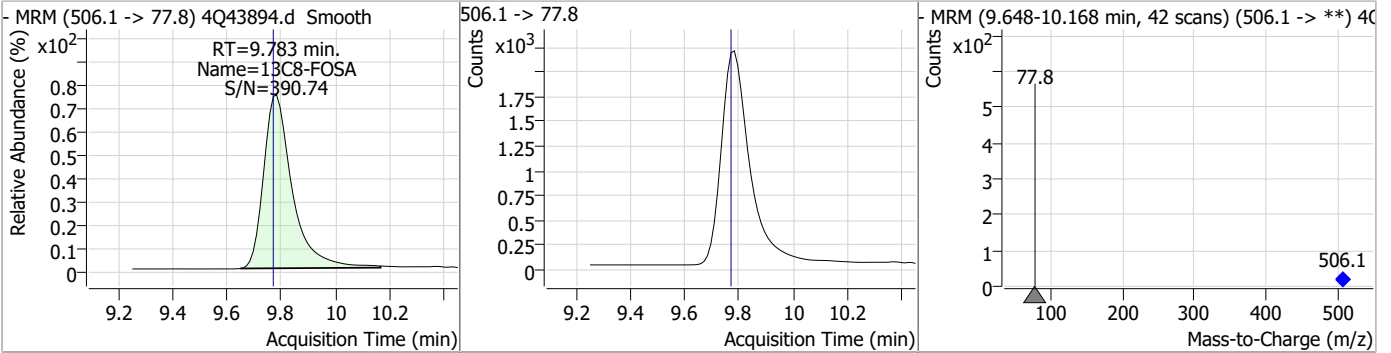
### Perfluorinated Compounds by LC/MS/MS



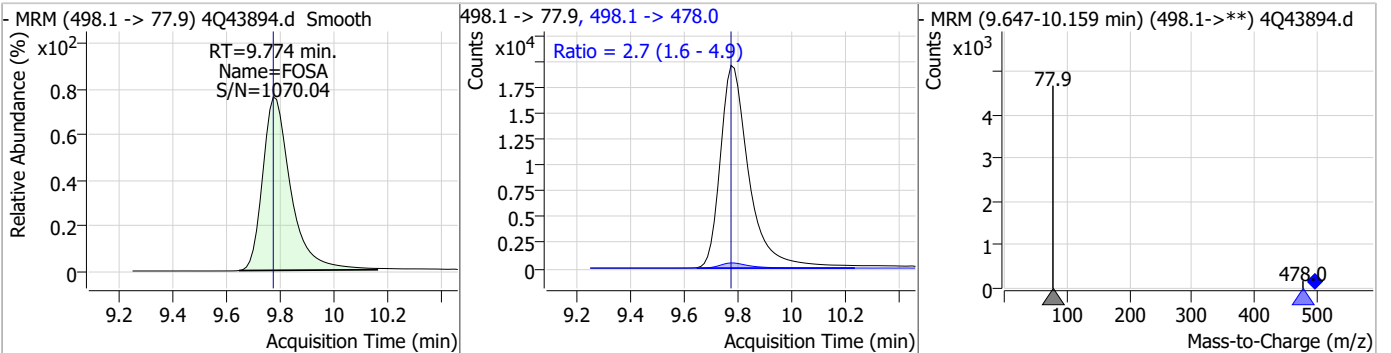
7.7.10 7

### Perfluorinated Compounds by LC/MS/MS

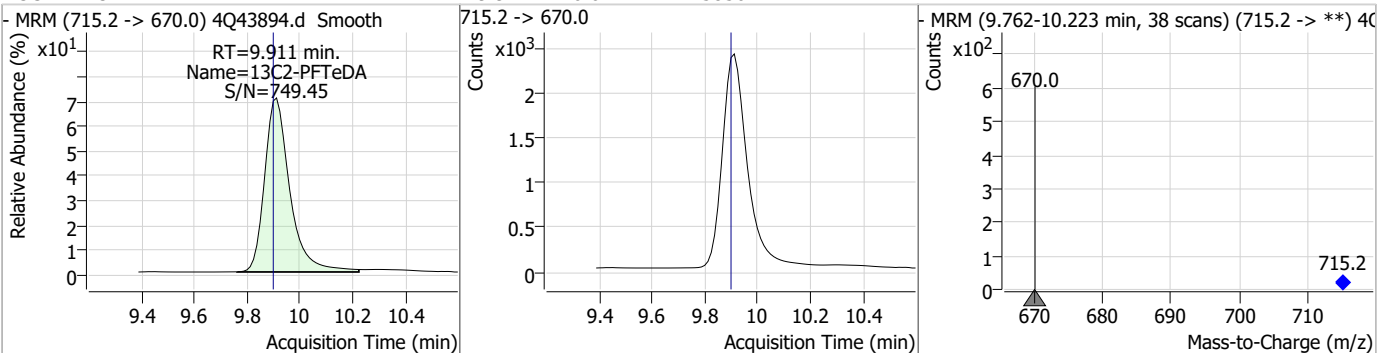
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.40	9.78	0.01	15950				



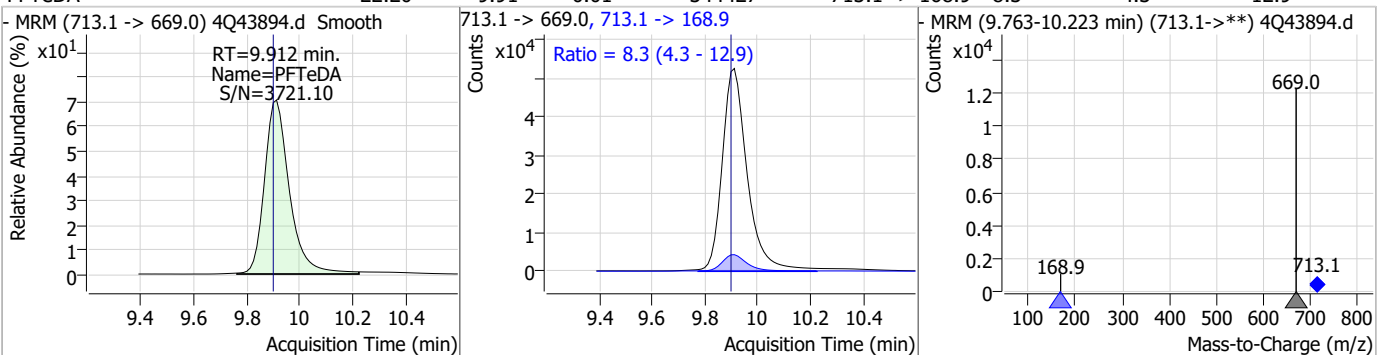
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	21.19	9.77	0.00	141624	498.1 -> 478.0	2.7	1.6	4.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.21	9.91	0.01	15850				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	22.20	9.91	0.01	344427	713.1 -> 168.9	8.3	4.3	12.9

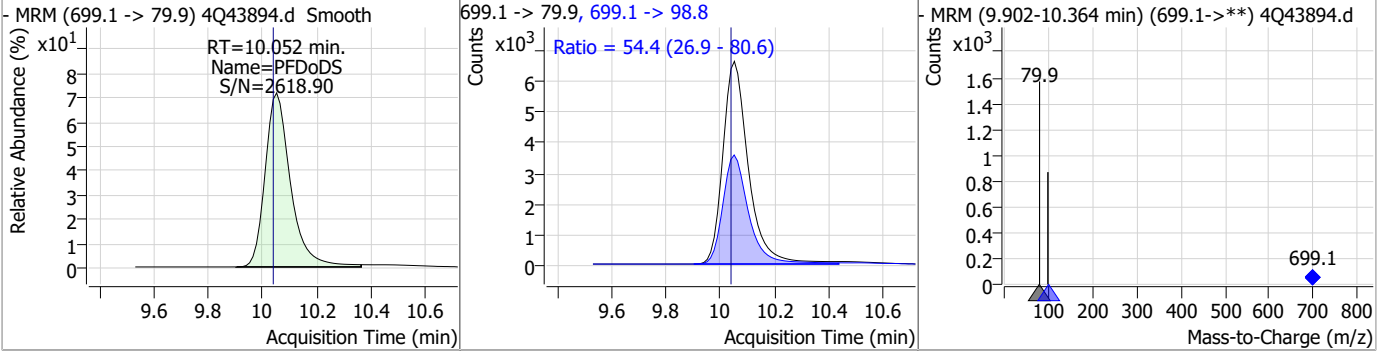


7.7.10  
7

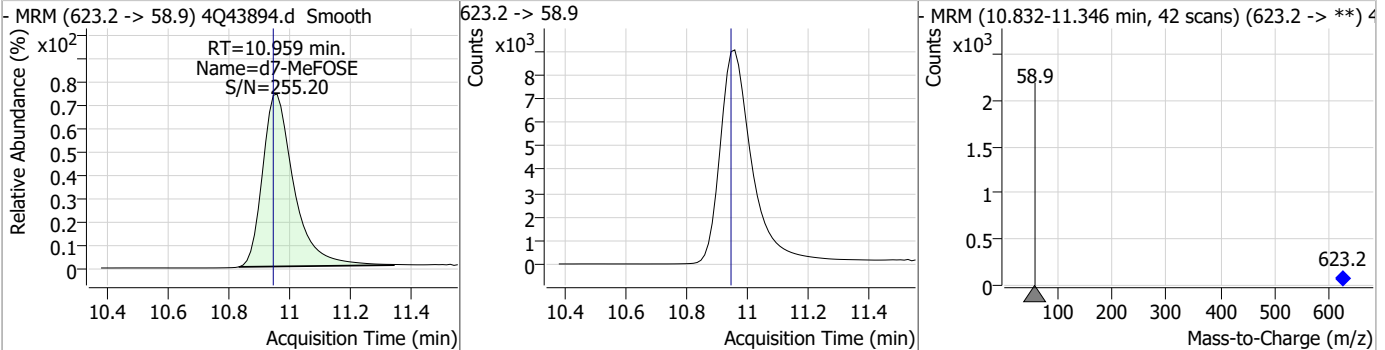


### Perfluorinated Compounds by LC/MS/MS

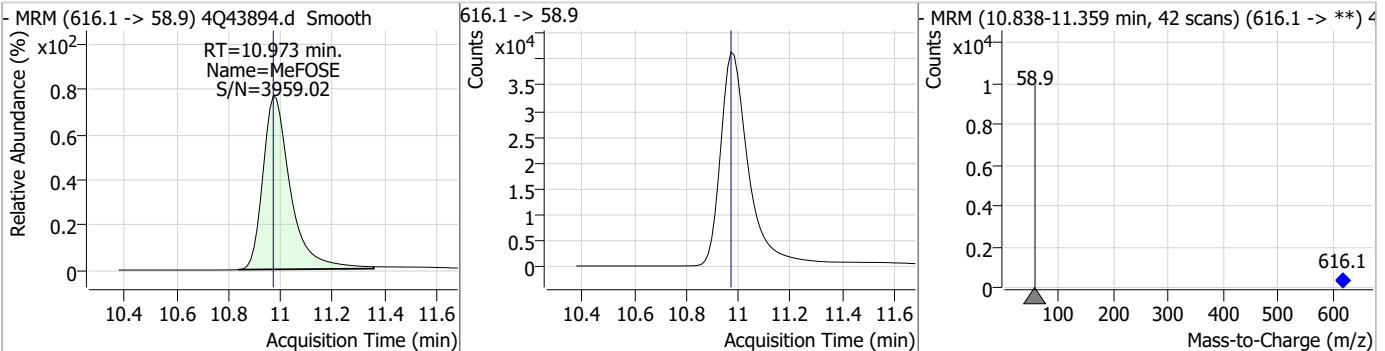
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	18.91	10.05	0.01	43287	699.1 -> 98.8	54.4	26.9	80.6



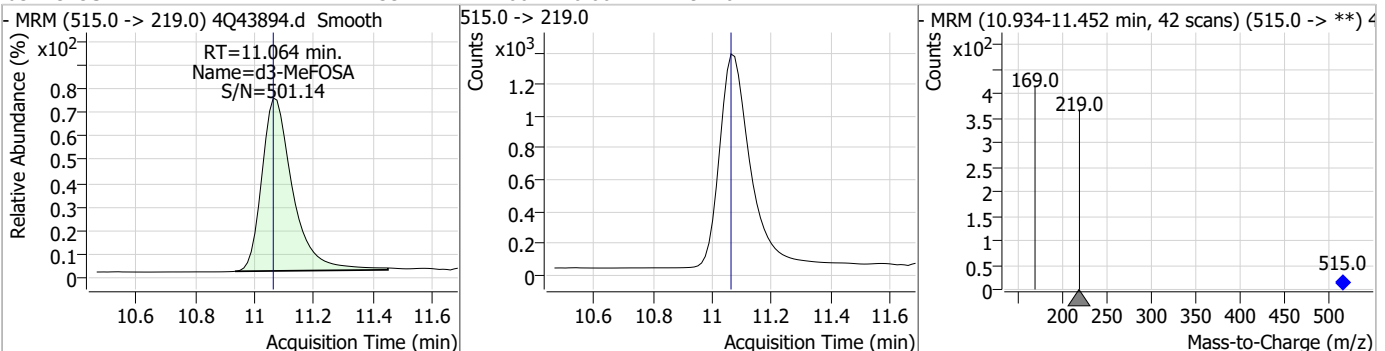
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.41	10.96	0.01	64121				



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

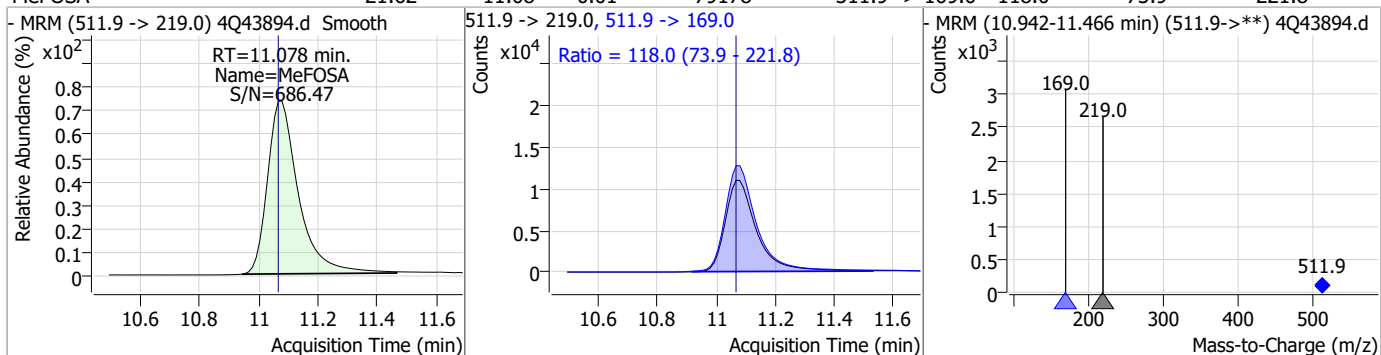


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.33	11.06	0.00	9720				

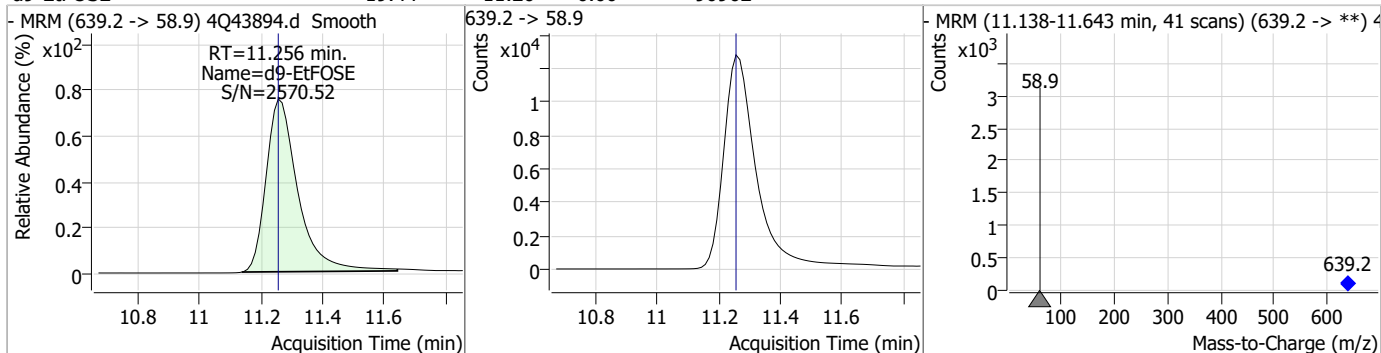


### Perfluorinated Compounds by LC/MS/MS

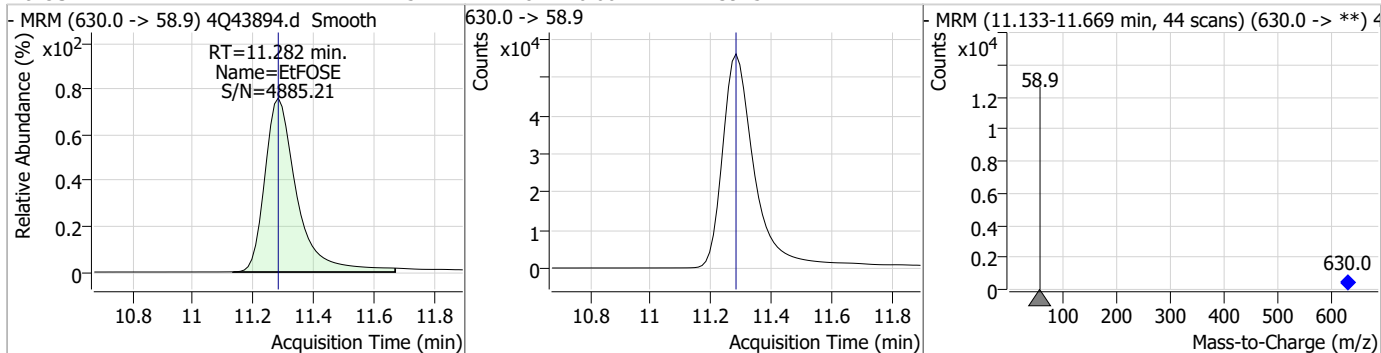
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	21.62	11.08	0.01	79178	511.9 -> 169.0	118.0	73.9	221.8



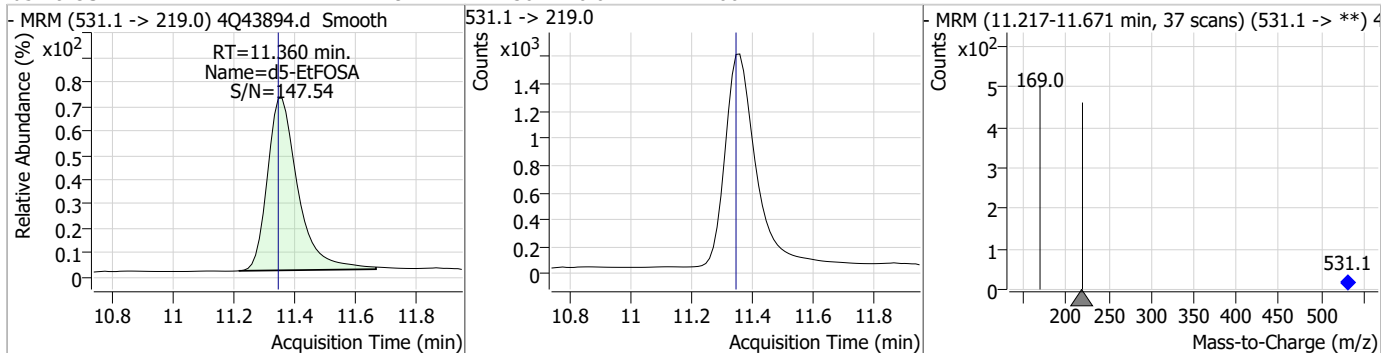
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	19.44	11.26	0.00	90962	639.2 -> 58.9			



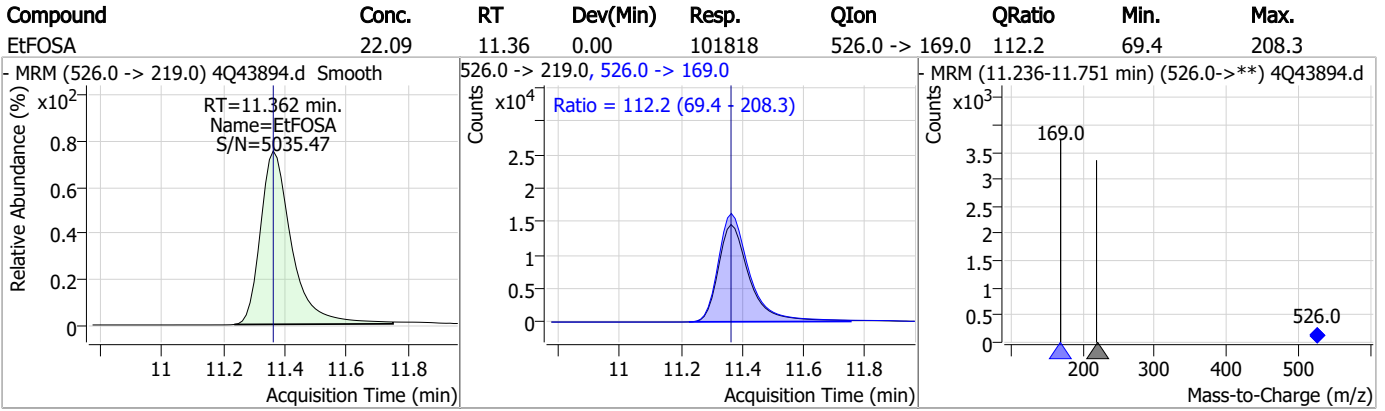
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	117.54	11.28	0.00	413915	630.0 -> 58.9			



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



### Perfluorinated Compounds by LC/MS/MS



7.7.10  
7

# Manual Integration Approval Summary

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

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

7.7.10.1  
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43895.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 1:35:25 PM  
 Sample Name : icv634-4  
 Vial : P1-B3  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

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

7.7.11  
7

### Perfluorinated Compounds by LC/MS/MS

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

7.7.11  
7



Perfluorinated Compounds by LC/MS/MS

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

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

### Perfluorinated Compounds by LC/MS/MS

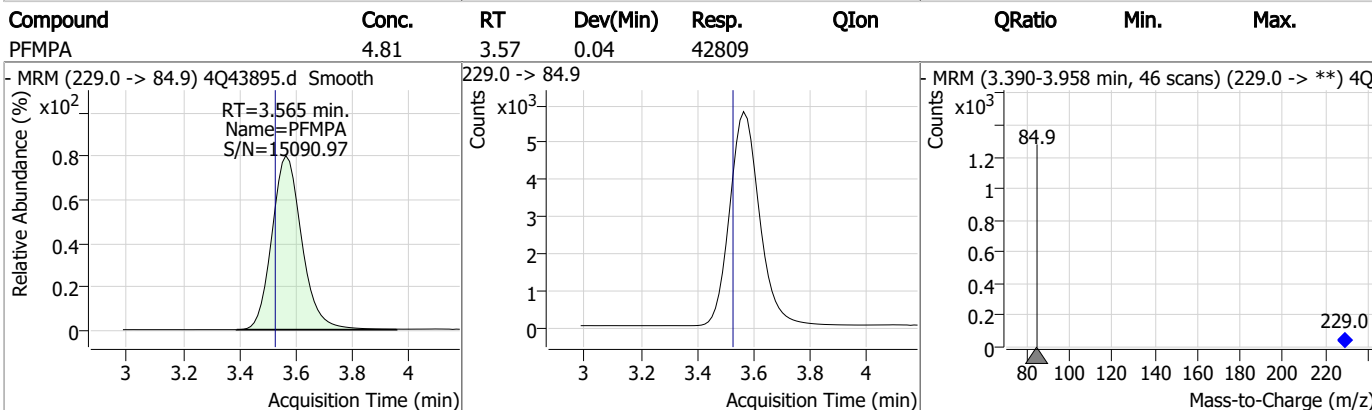
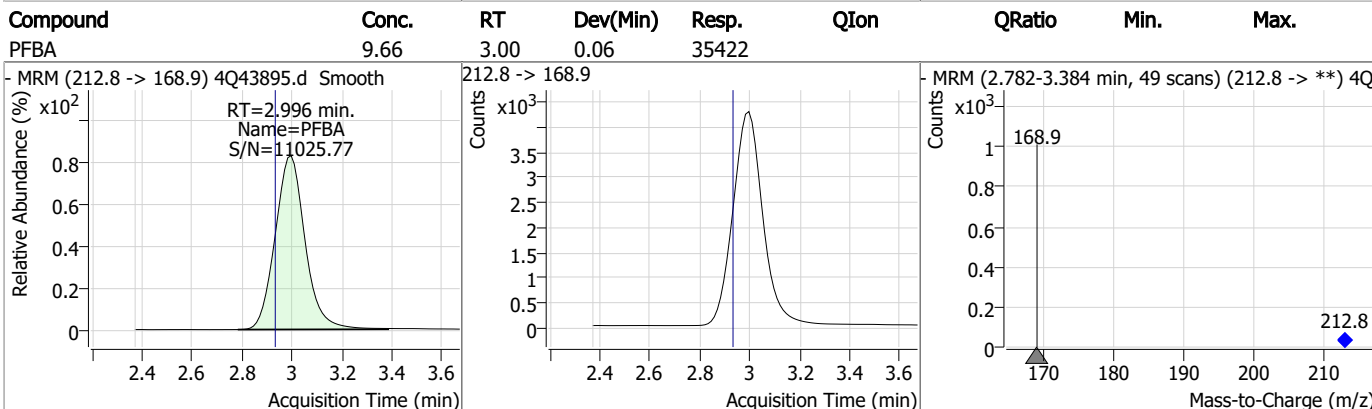
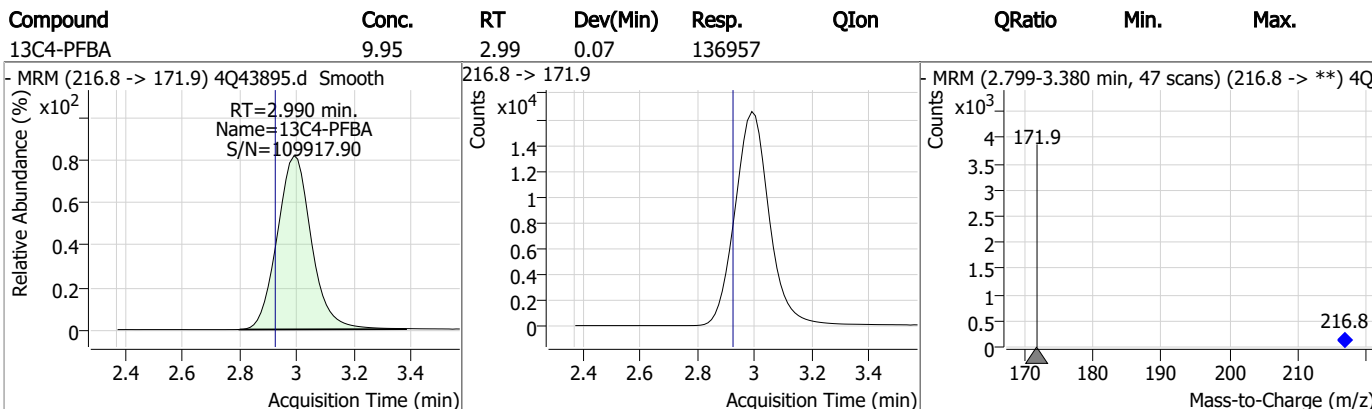
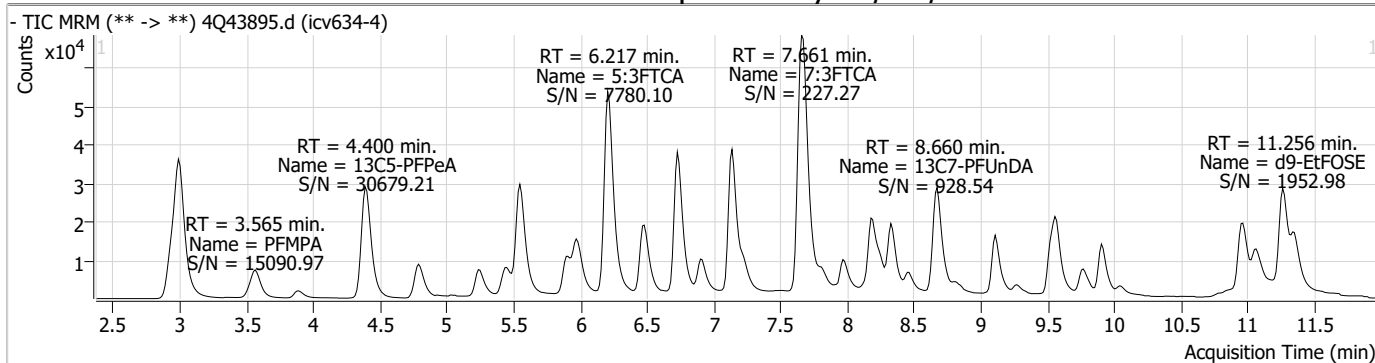
Compound	RT	Transition	Response	Conc. Units	Dev(Min)
----------	----	------------	----------	-------------	----------

7.7.11

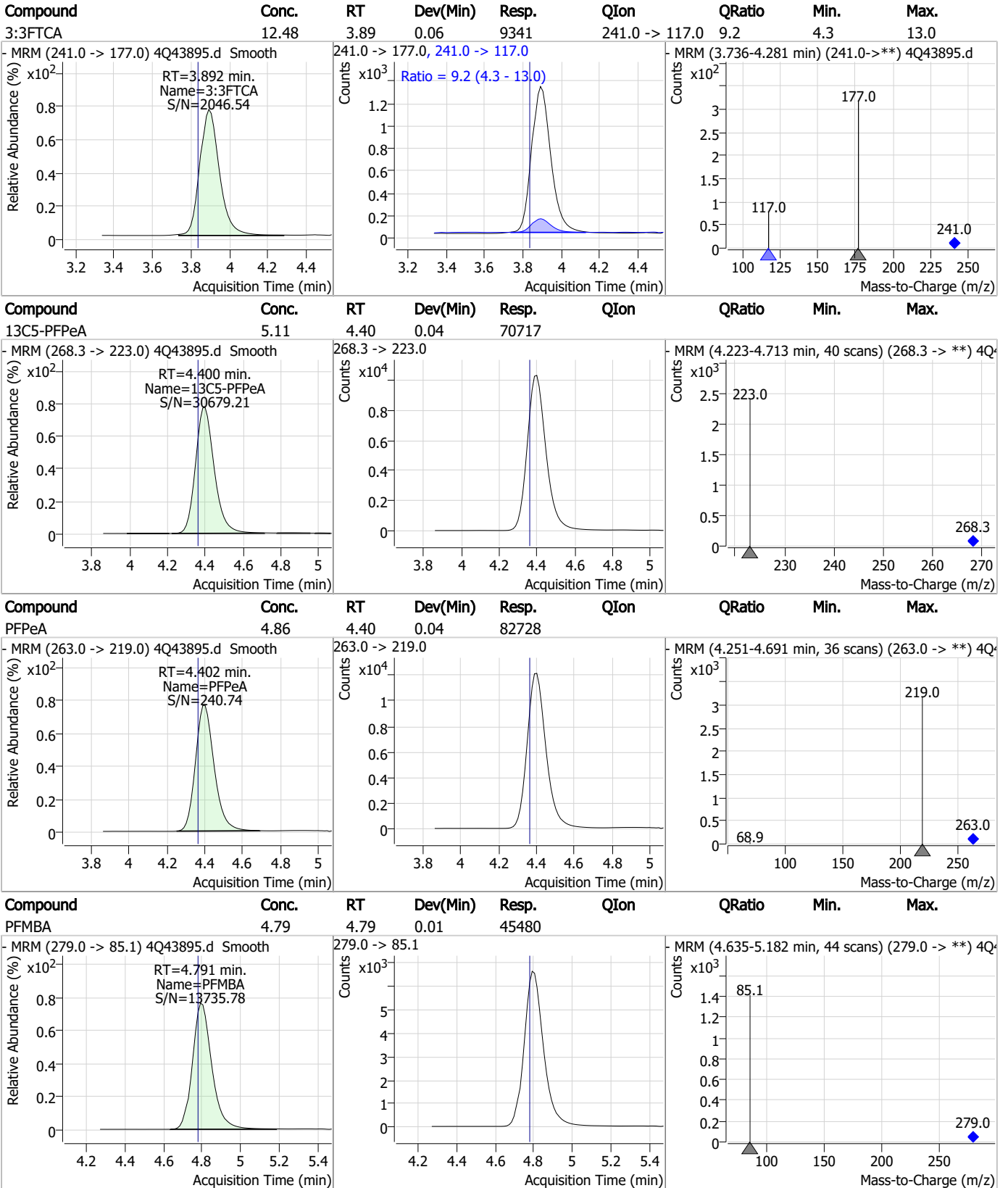
7



### Perfluorinated Compounds by LC/MS/MS



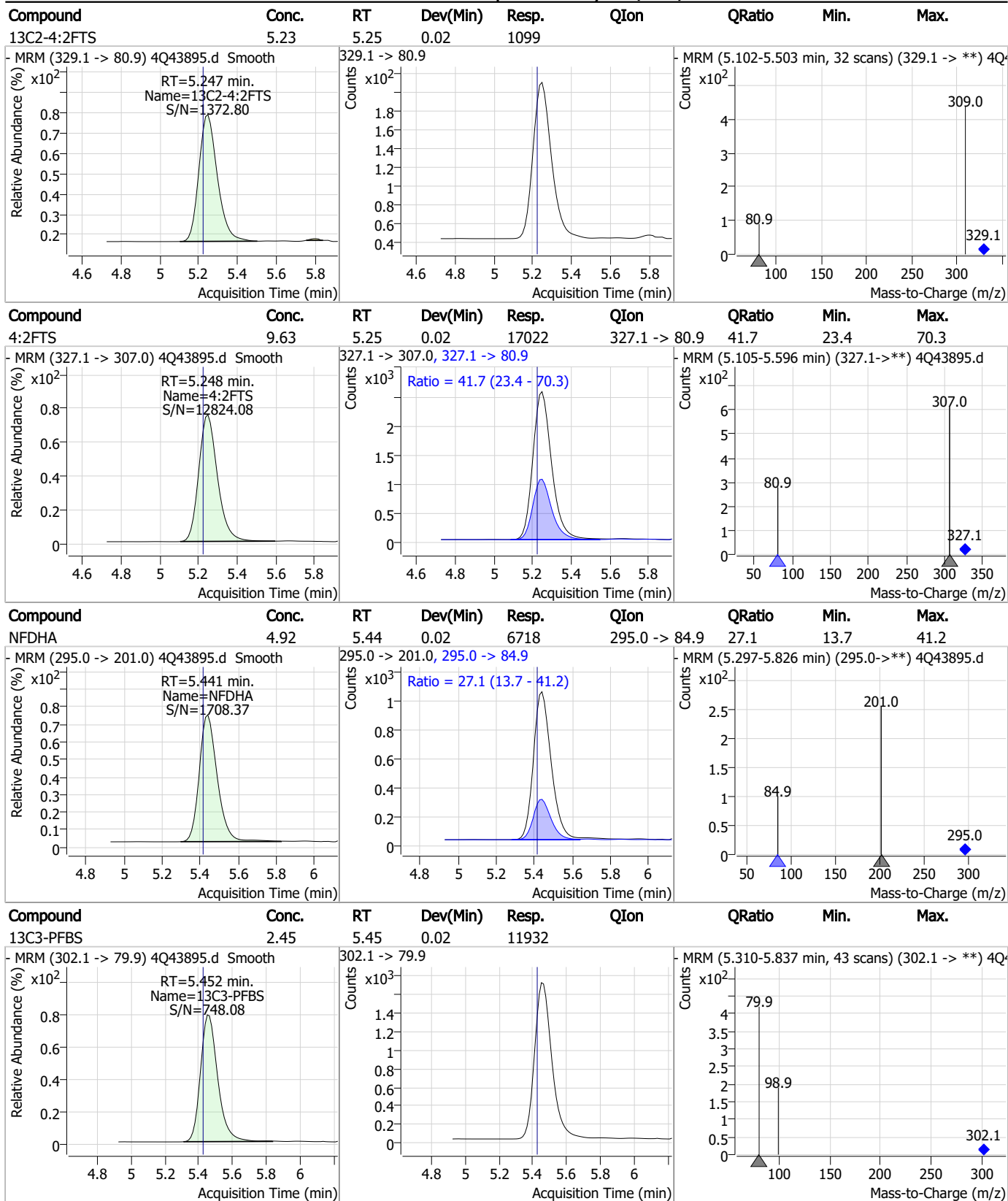
### Perfluorinated Compounds by LC/MS/MS



7.7.11

7

### Perfluorinated Compounds by LC/MS/MS

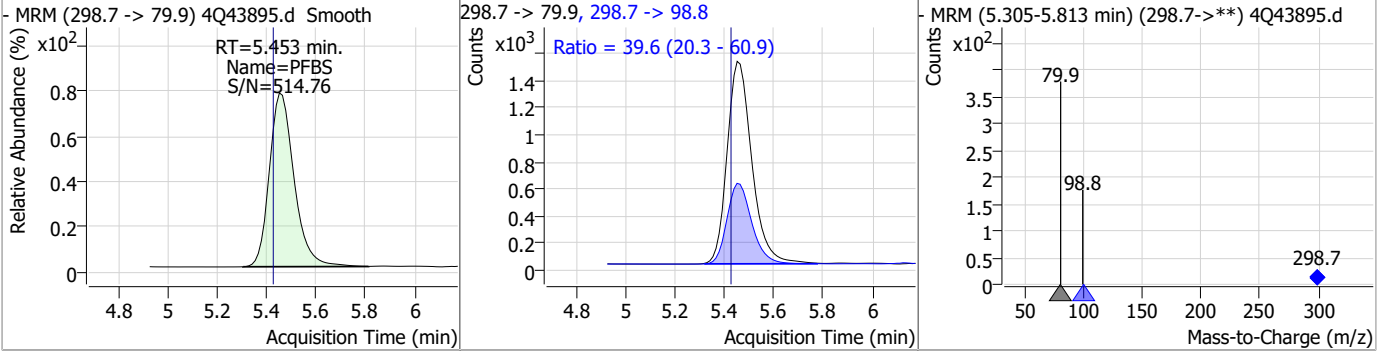


7.7.11  
7

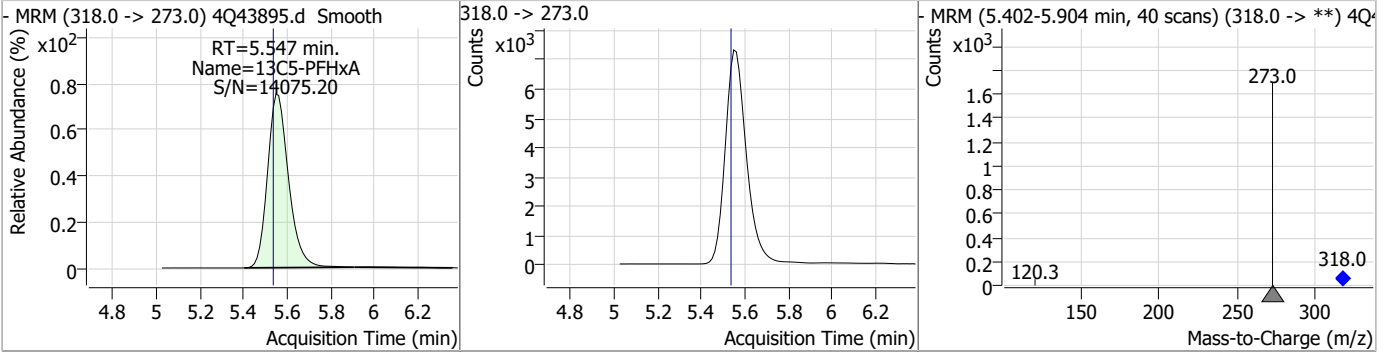


### Perfluorinated Compounds by LC/MS/MS

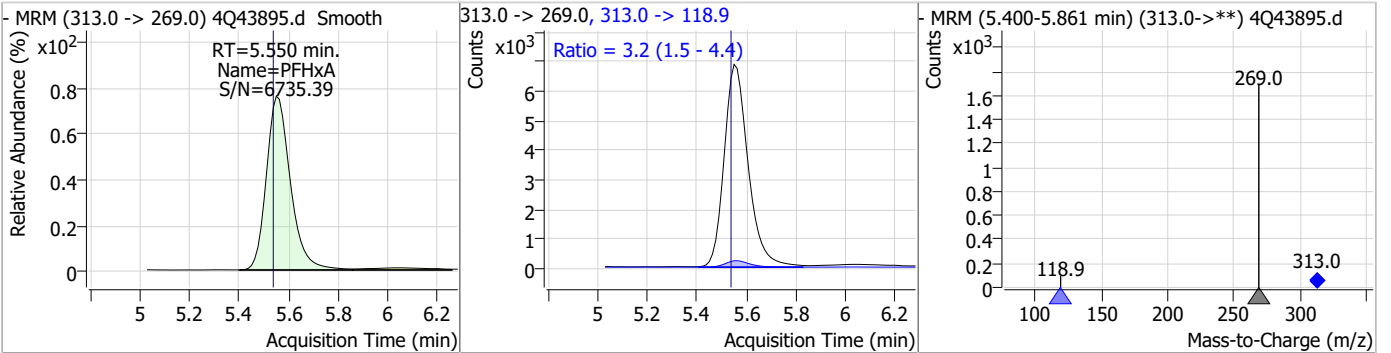
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.13	5.45	0.02	10405	298.7 -> 98.8	39.6	20.3	60.9



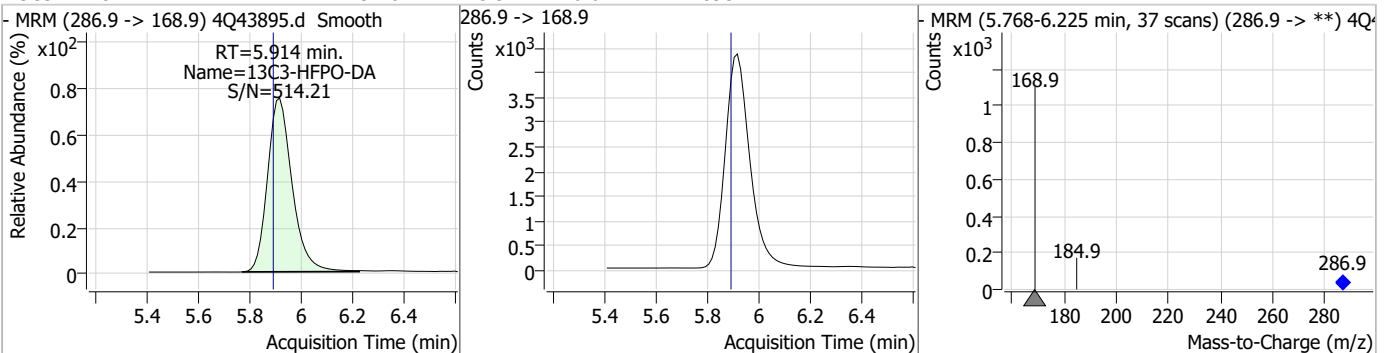
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.46	5.55	0.01	48764				



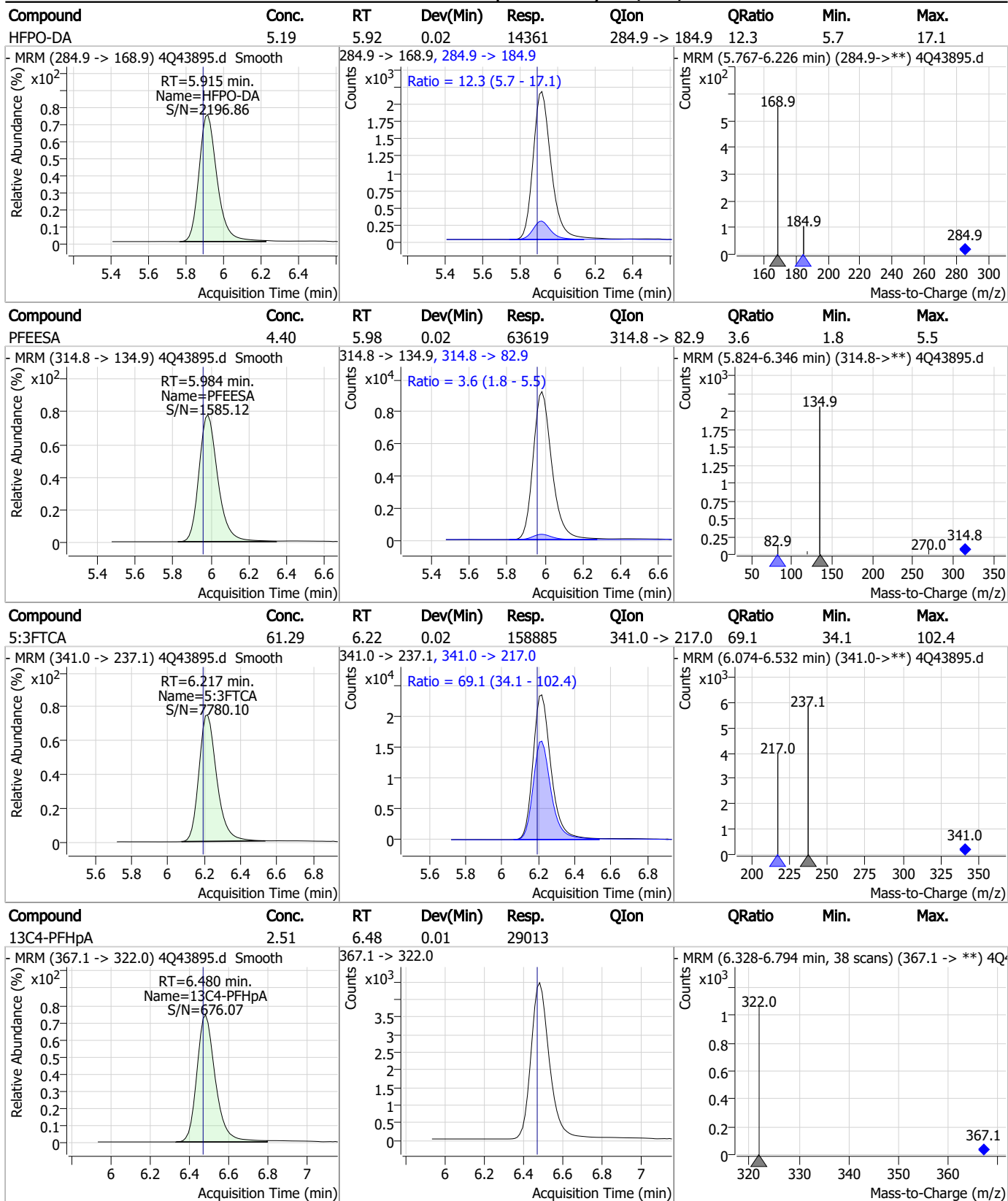
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.43	5.55	0.01	46362	313.0 -> 118.9	3.2	1.5	4.4



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

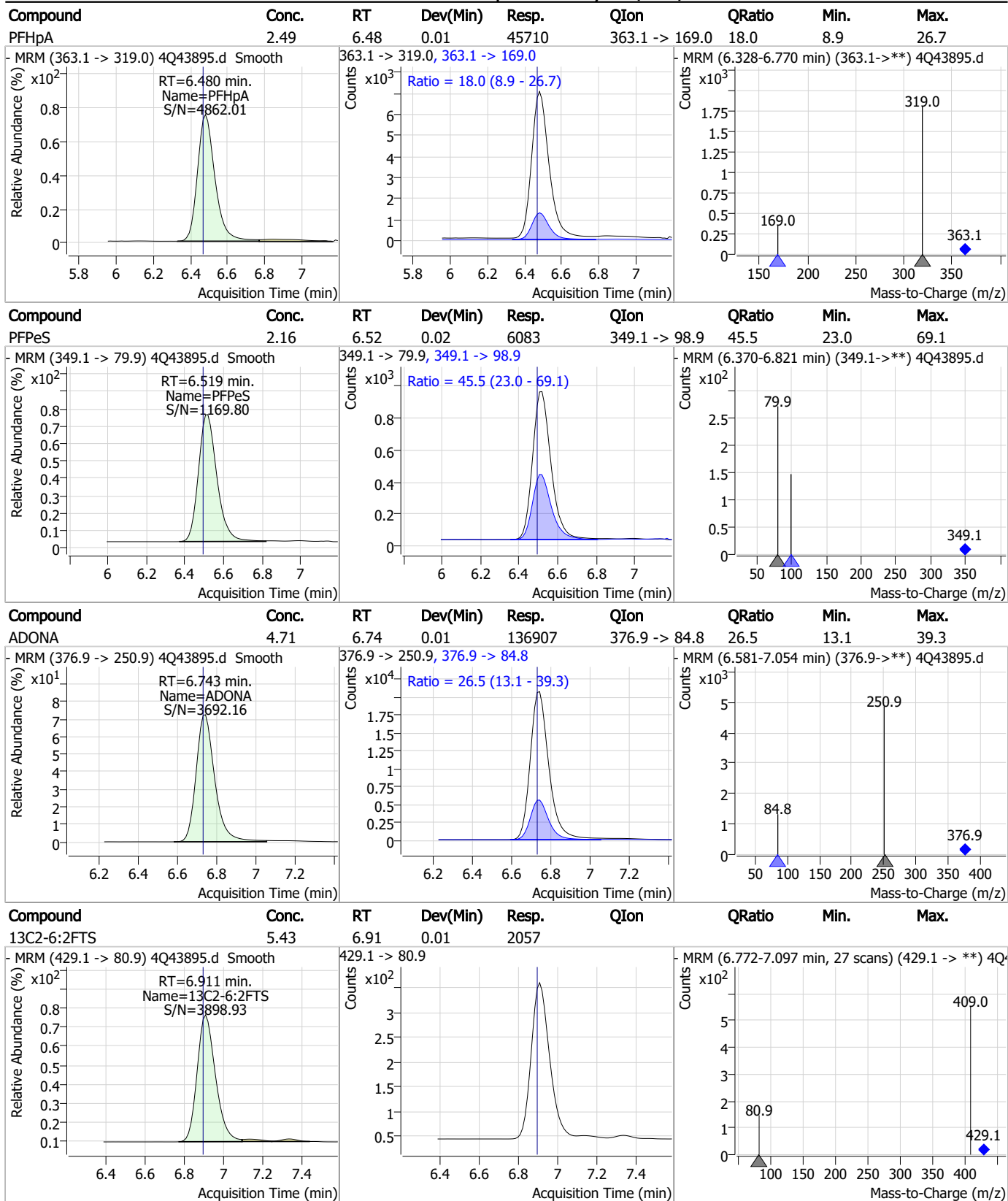


### Perfluorinated Compounds by LC/MS/MS



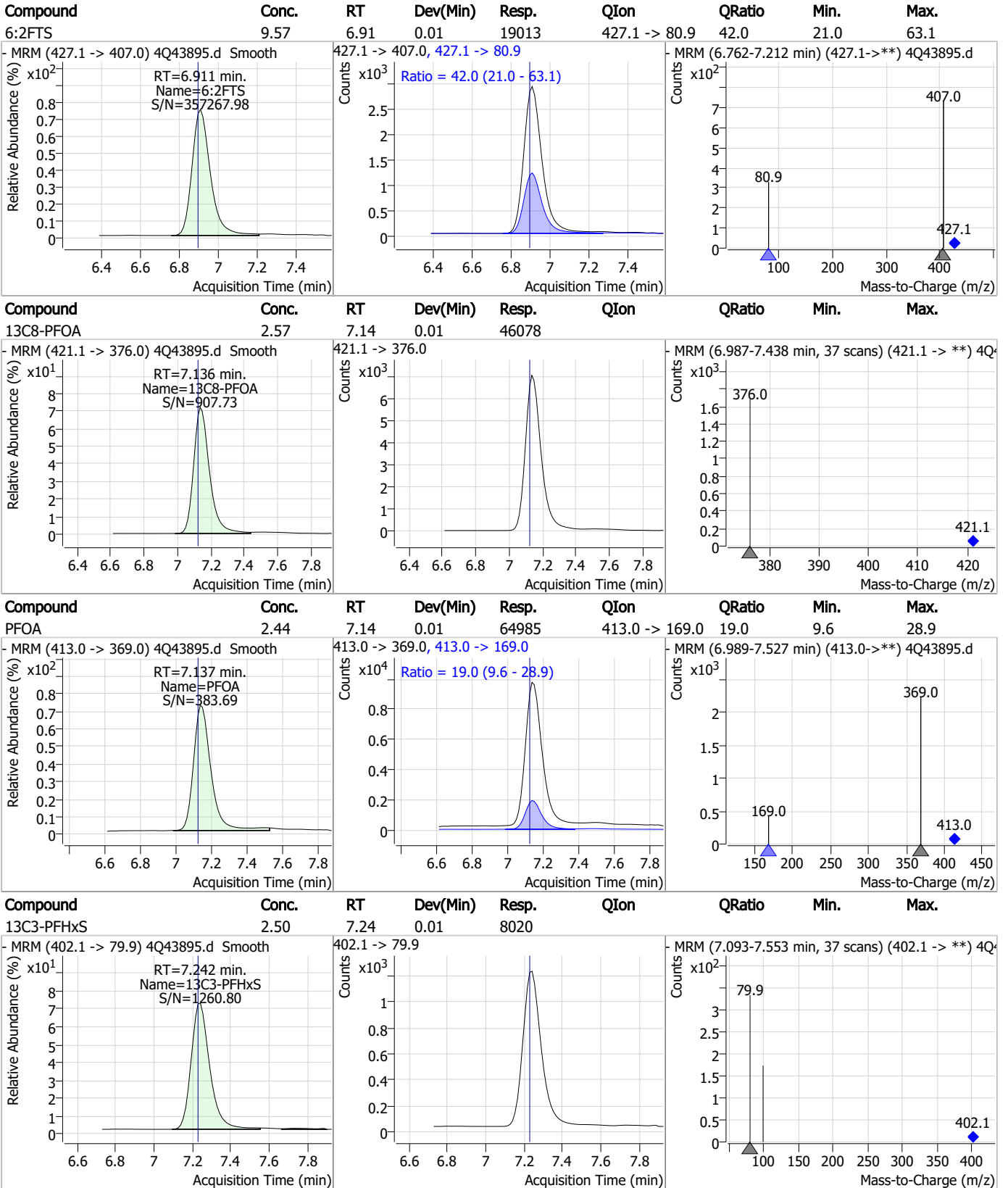
7.7.11  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.11  
7

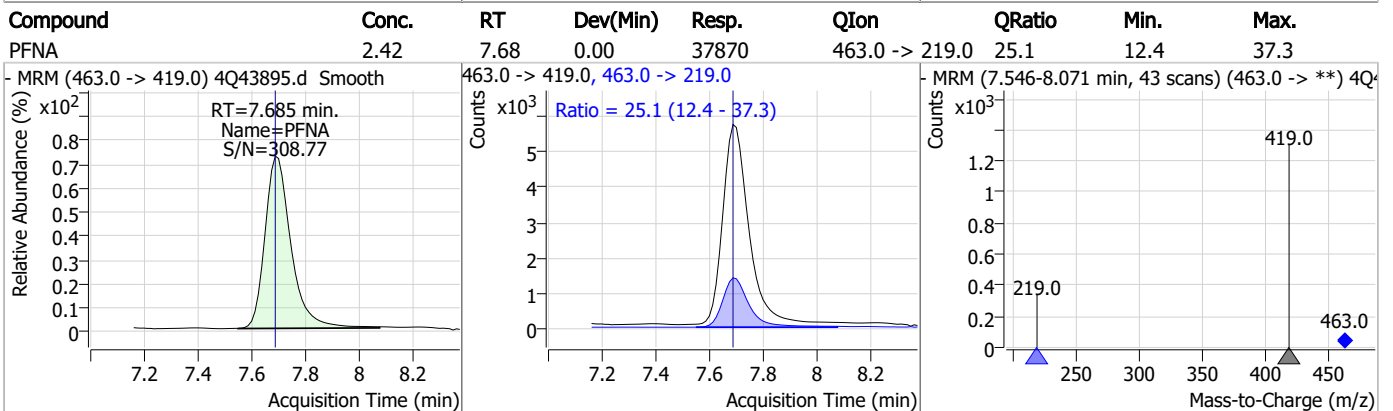
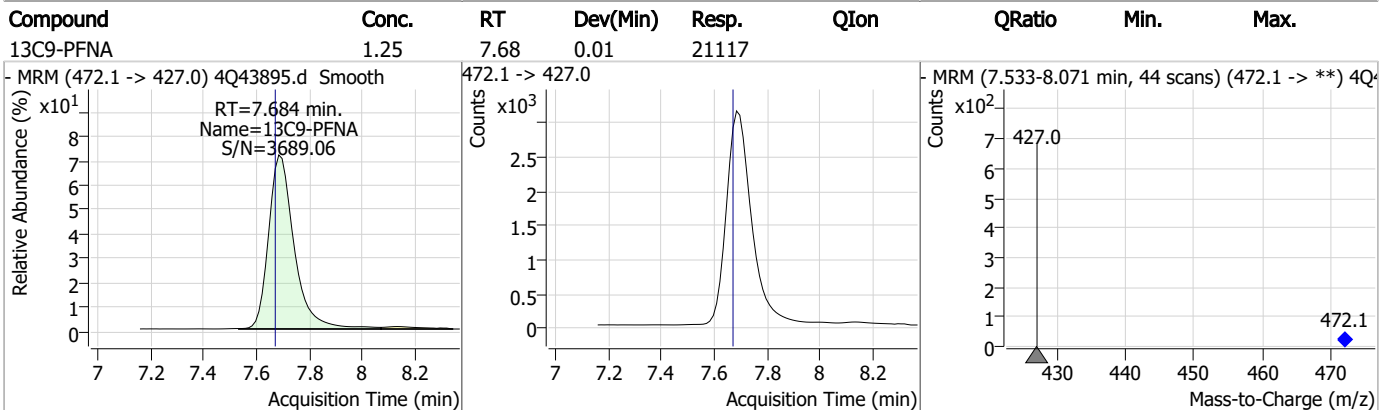
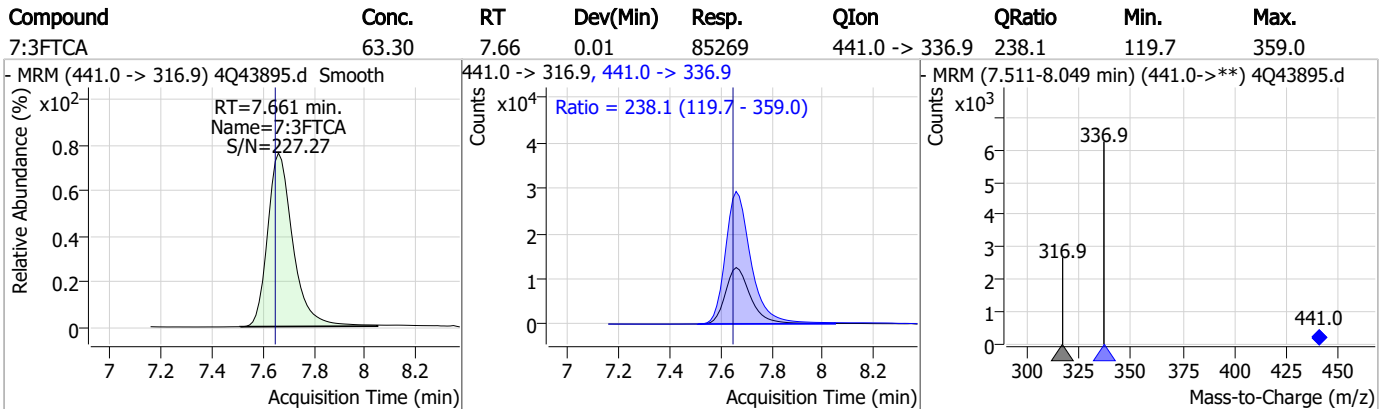
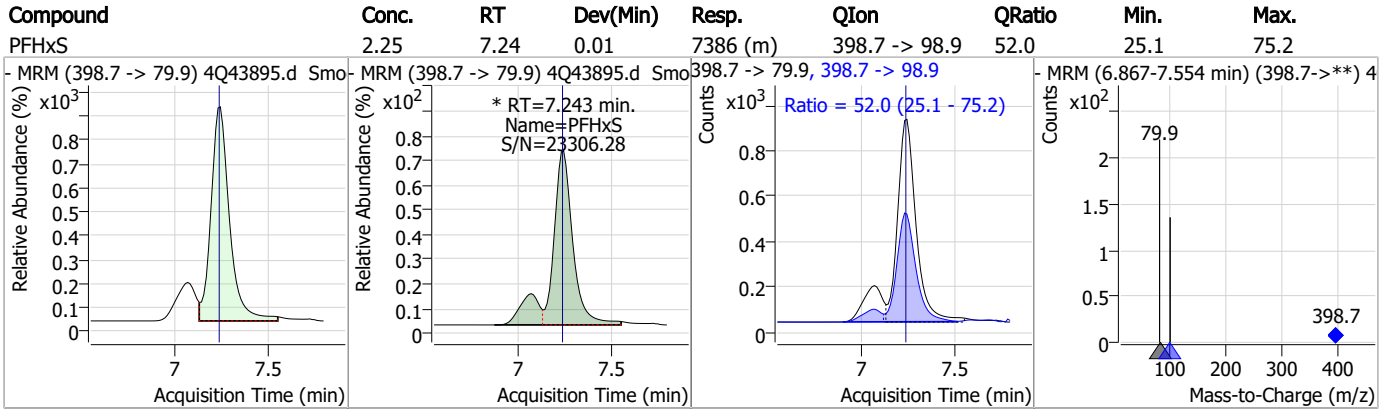
### Perfluorinated Compounds by LC/MS/MS



7.7.11

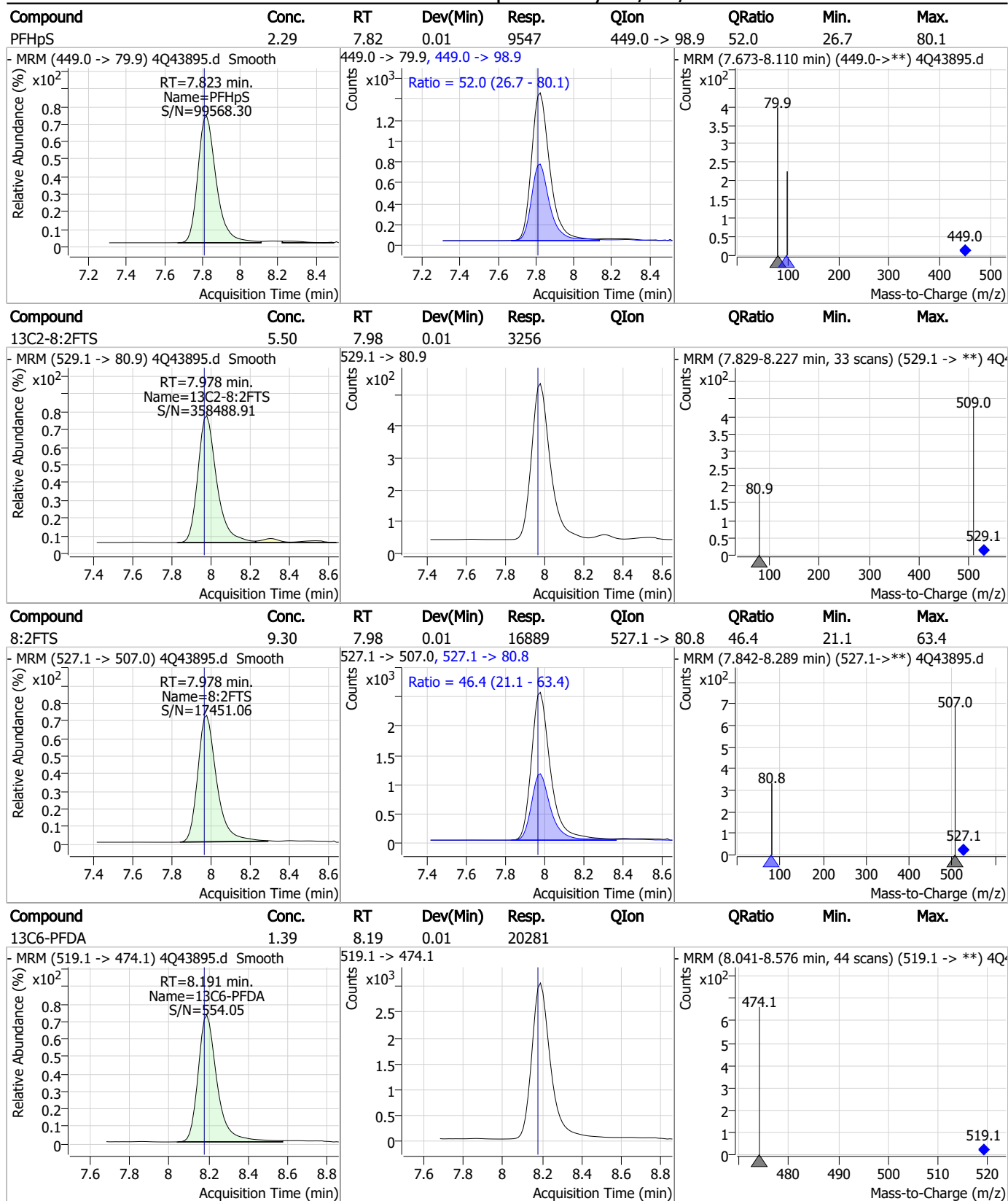
7

### Perfluorinated Compounds by LC/MS/MS





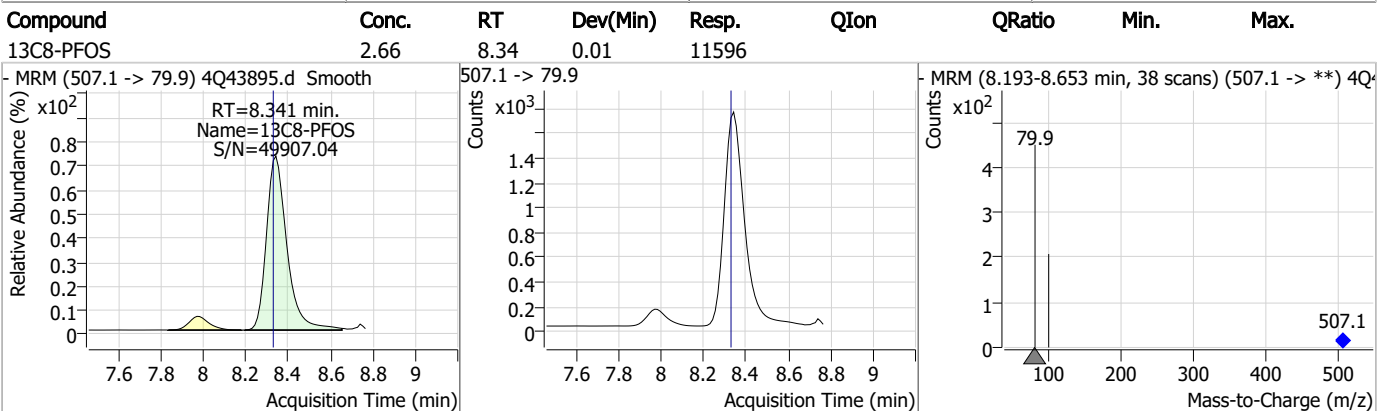
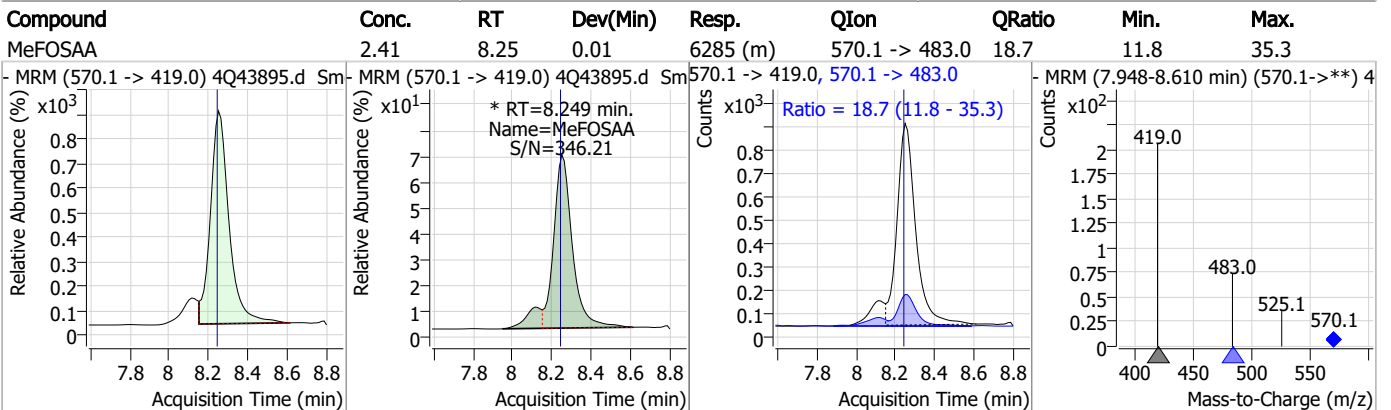
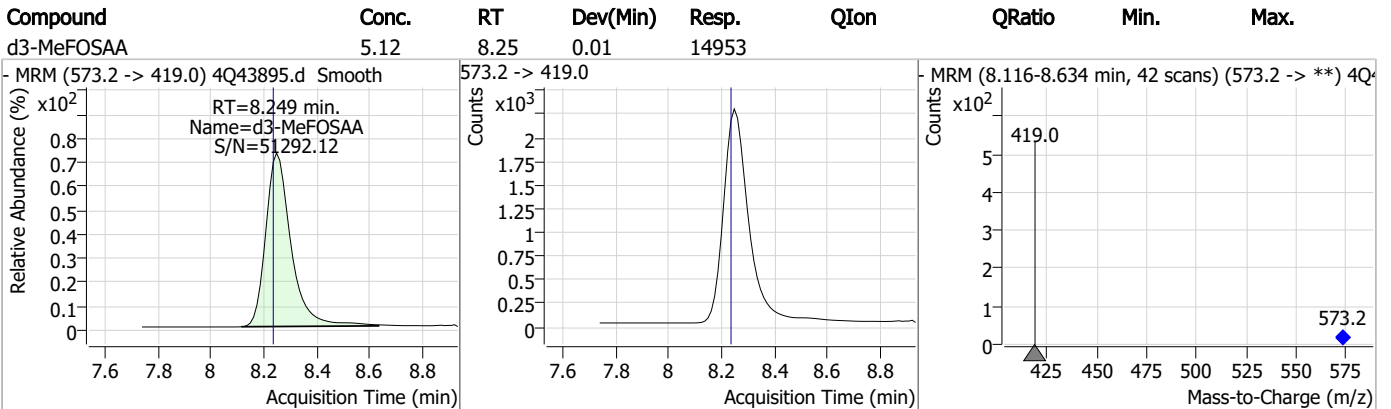
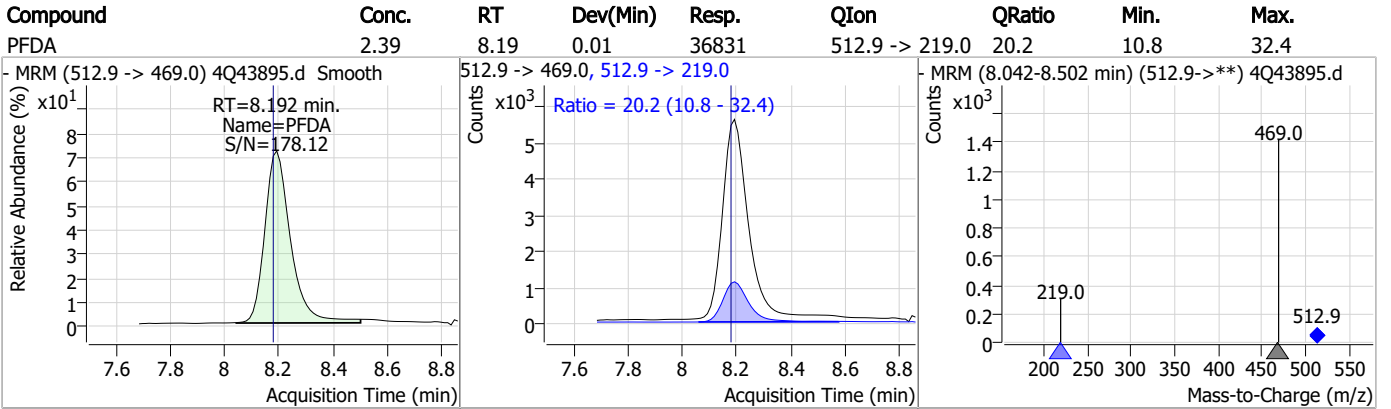
### Perfluorinated Compounds by LC/MS/MS



7.7.11

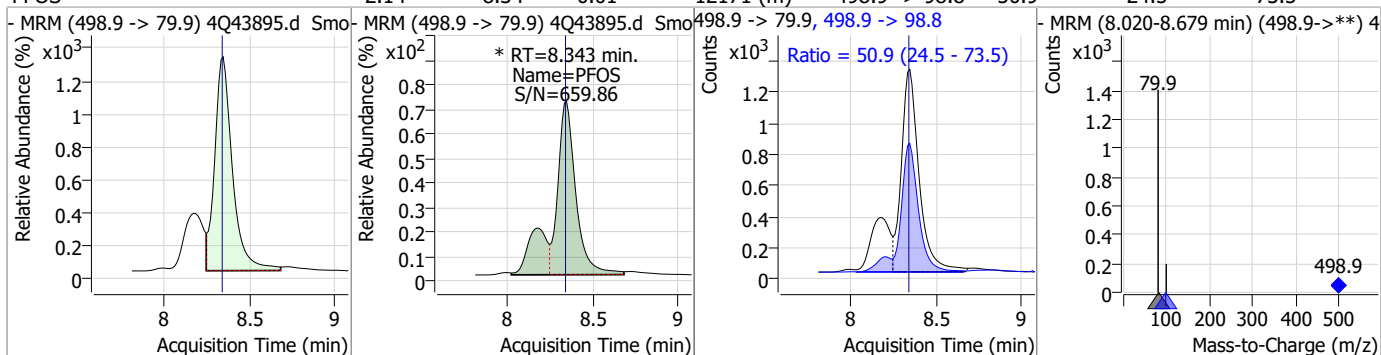
7

### Perfluorinated Compounds by LC/MS/MS

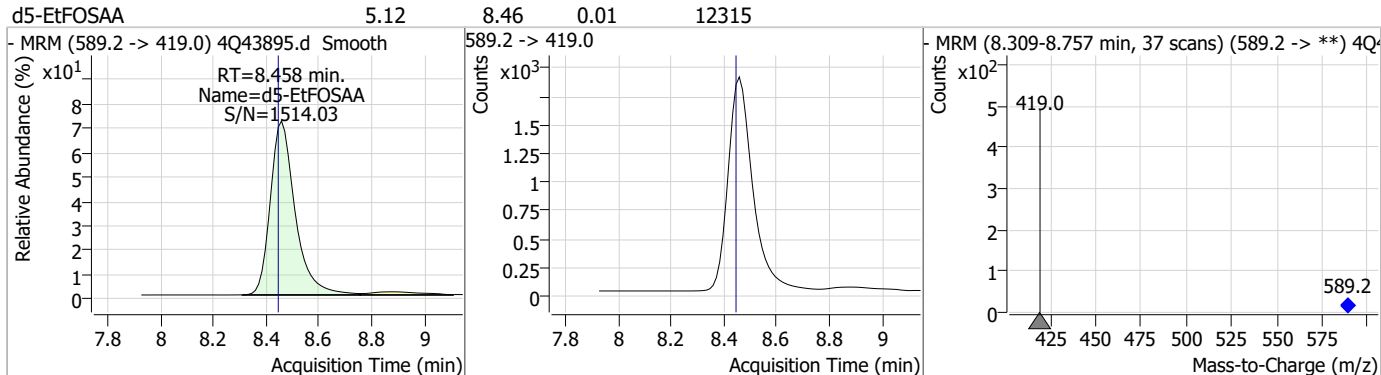


### Perfluorinated Compounds by LC/MS/MS

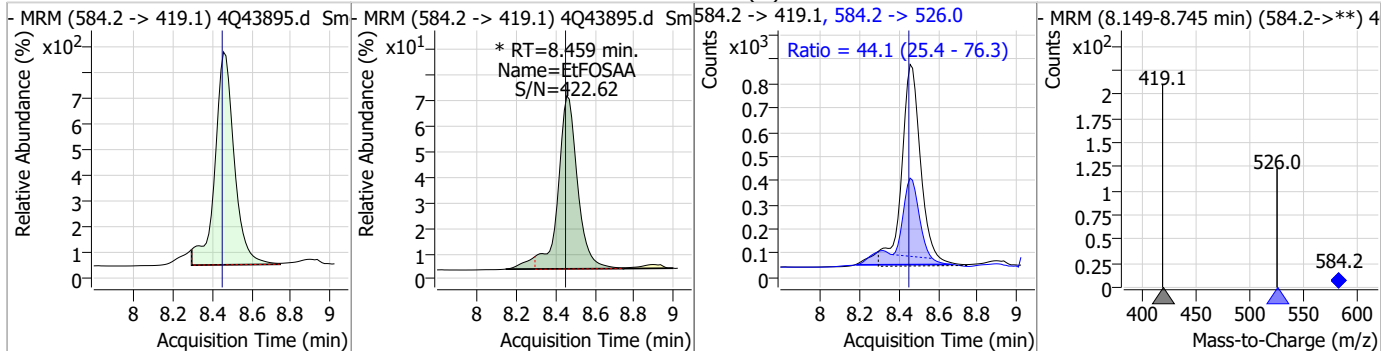
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.14	8.34	0.01	12171 (m)	498.9 -> 98.8	50.9	24.5	73.5



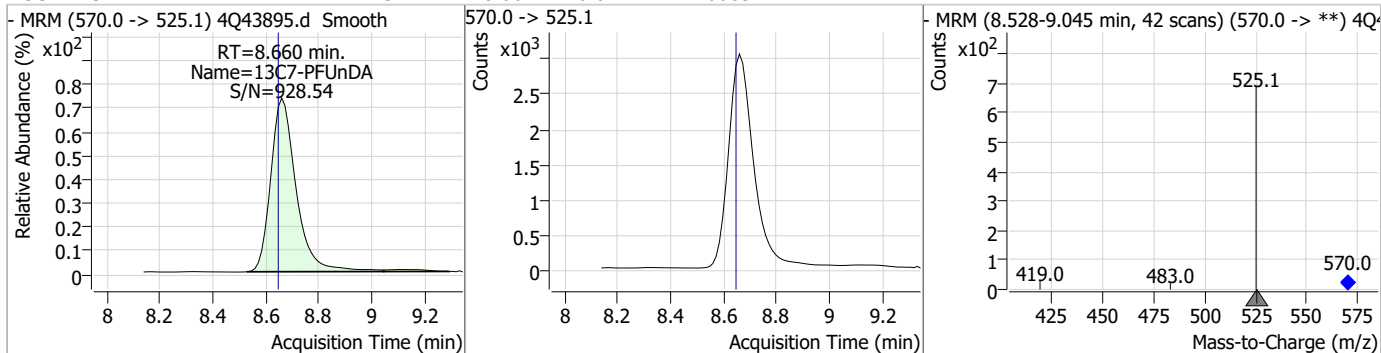
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.12	8.46	0.01	12315				



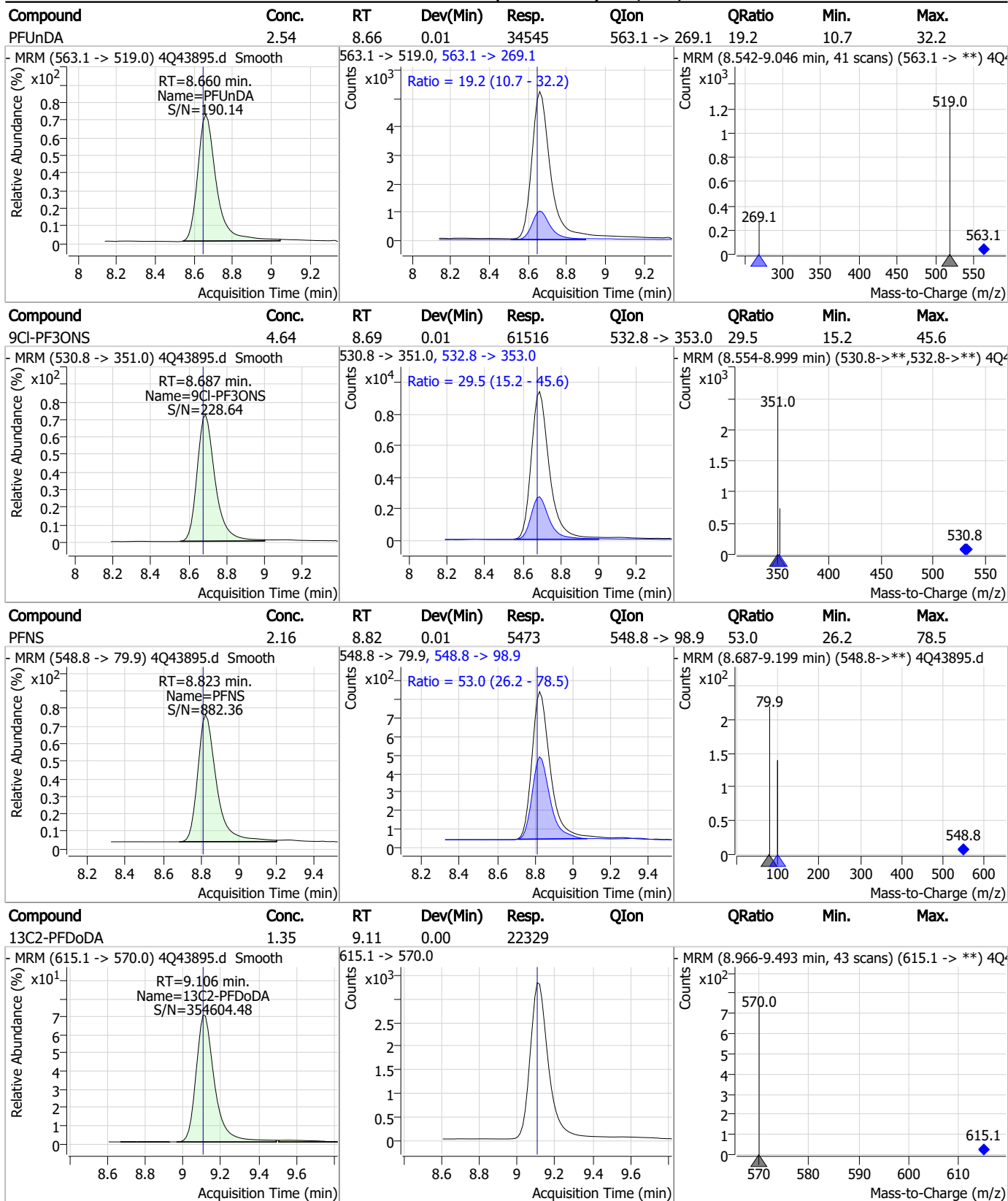
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.48	8.46	0.01	5858 (m)	584.2 -> 526.0	44.1	25.4	76.3



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

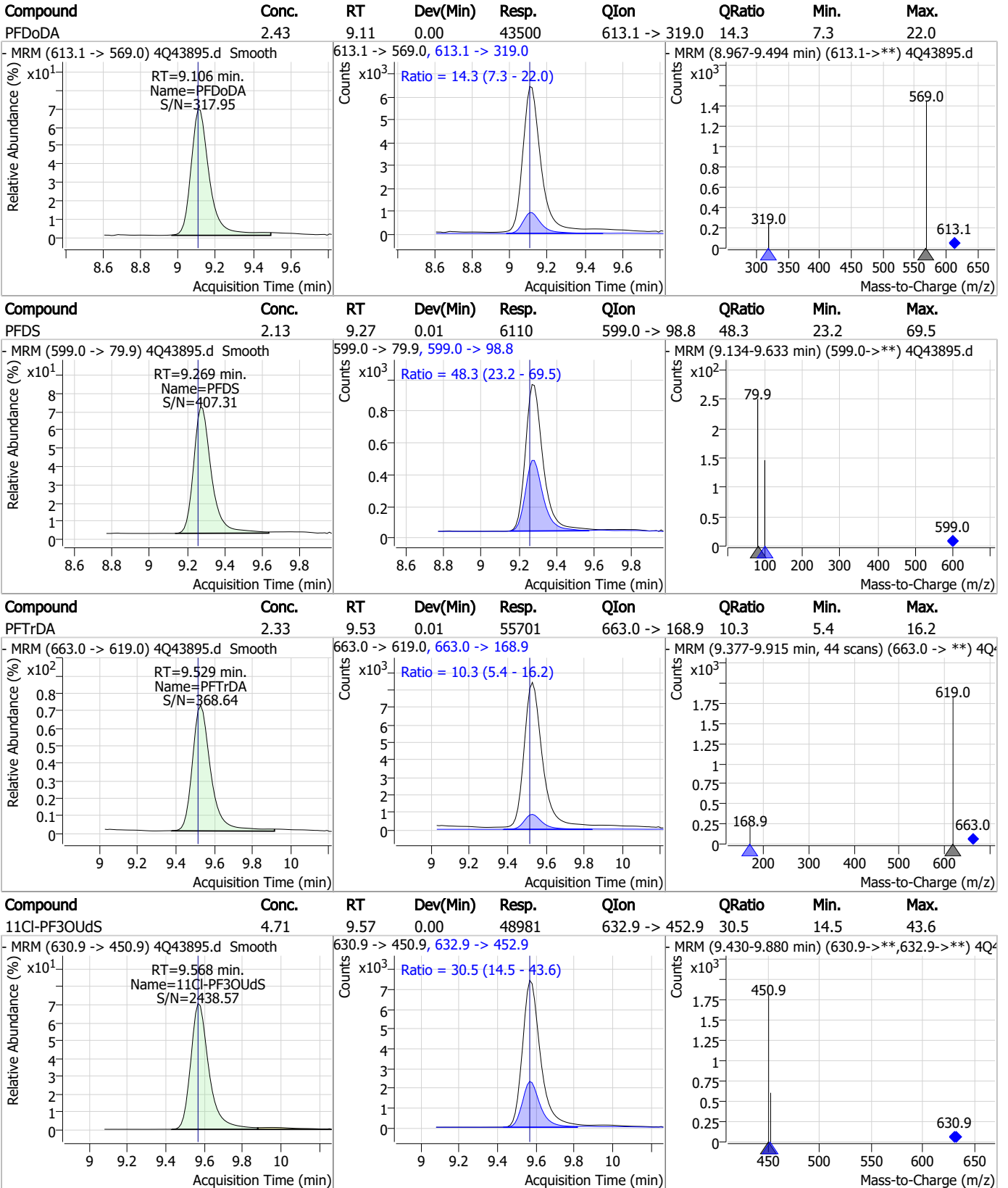


### Perfluorinated Compounds by LC/MS/MS

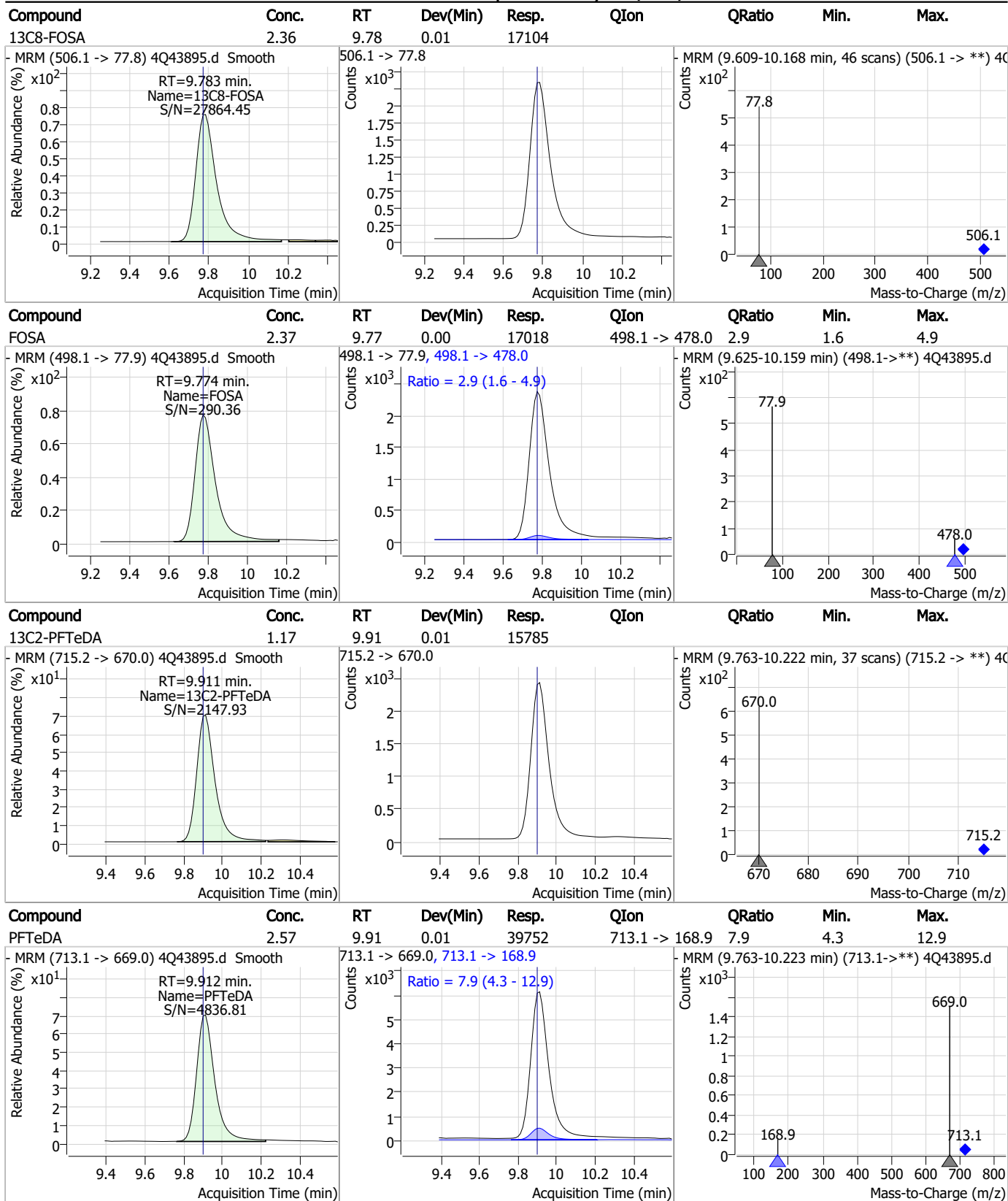


7.7.11  
7

### Perfluorinated Compounds by LC/MS/MS



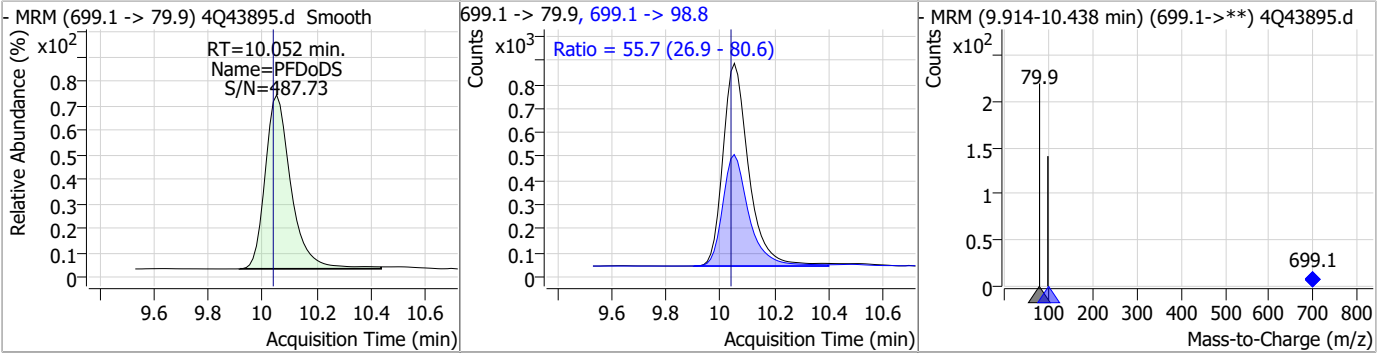
### Perfluorinated Compounds by LC/MS/MS



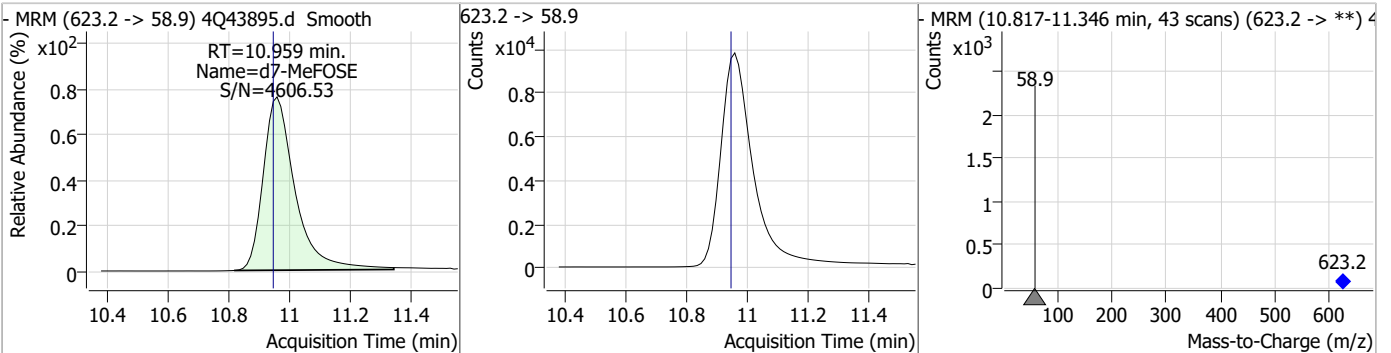
7.7.11  
7

### Perfluorinated Compounds by LC/MS/MS

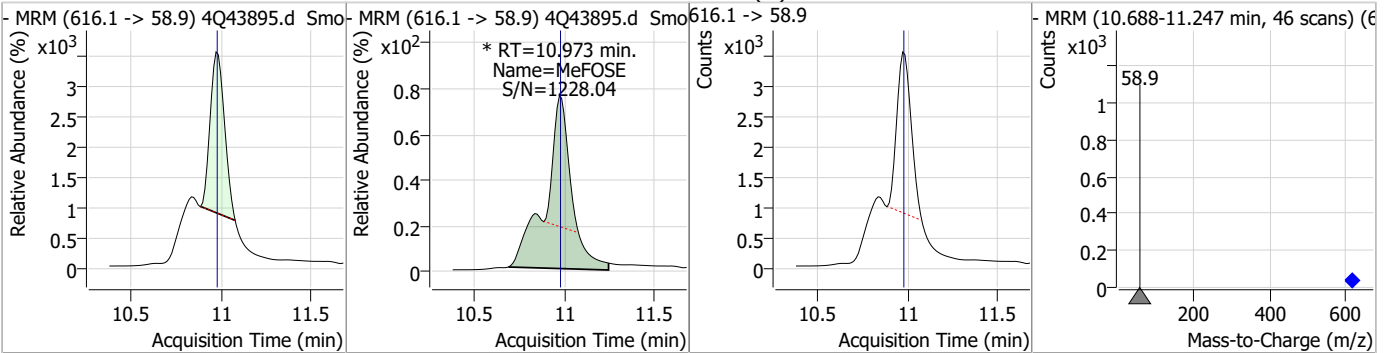
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.18	10.05	0.01	5598	699.1 -> 98.8	55.7	26.9	80.6



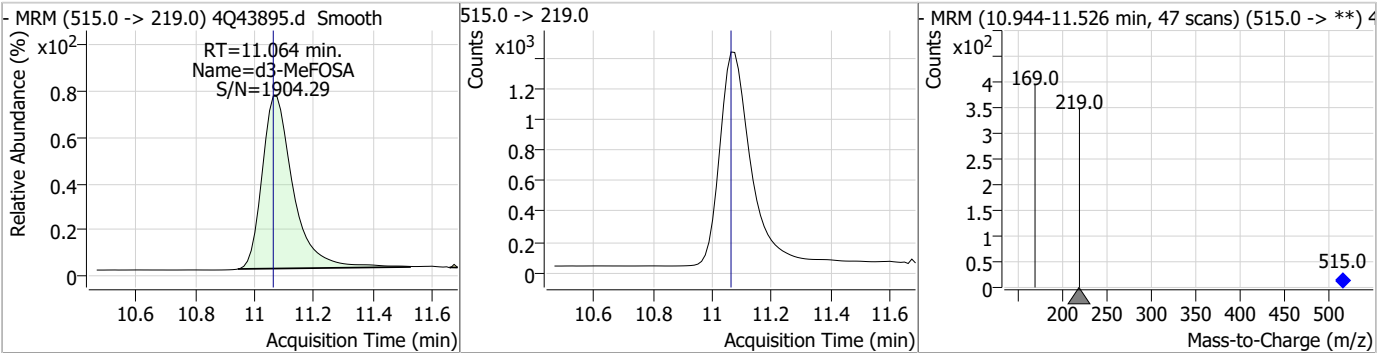
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.96	10.96	0.01	71810				



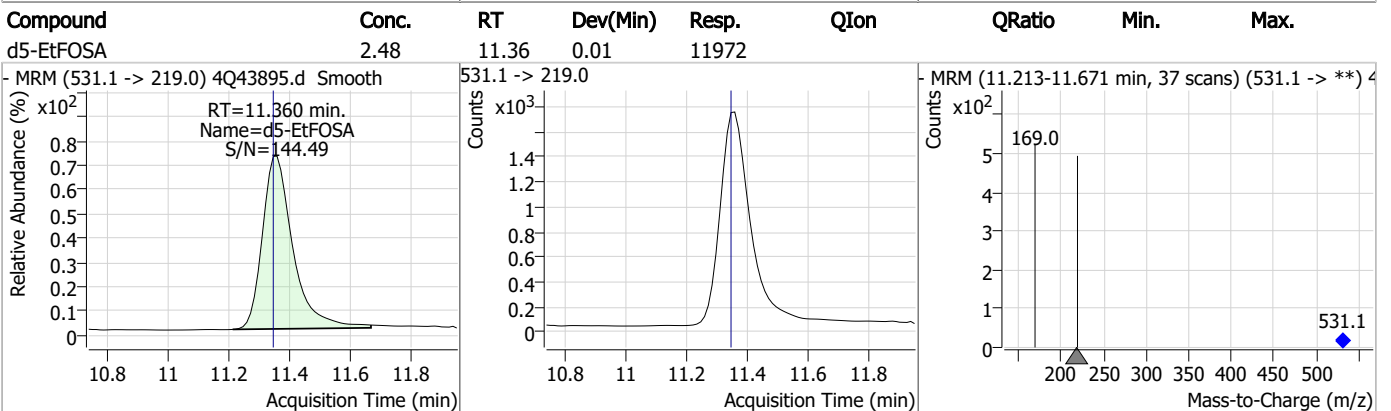
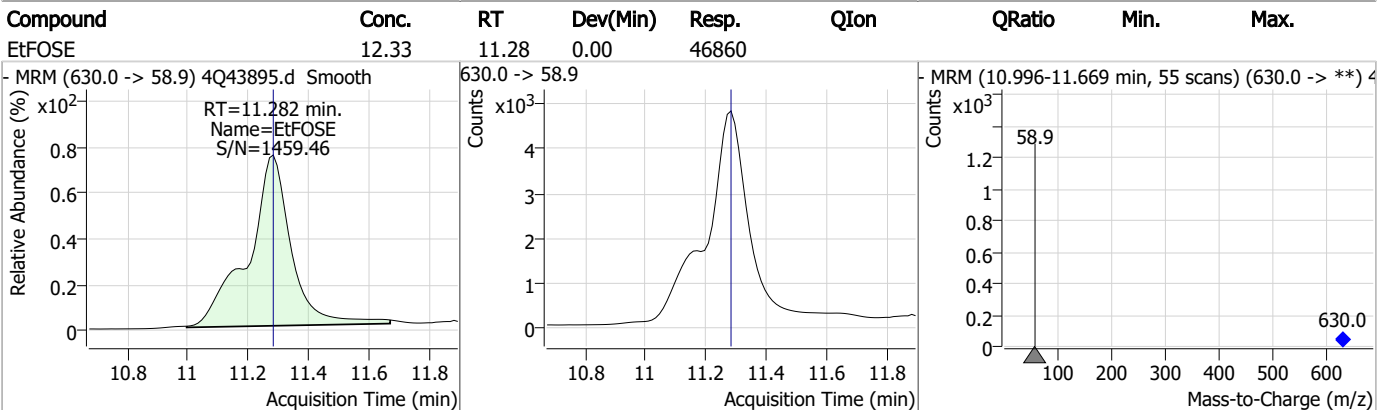
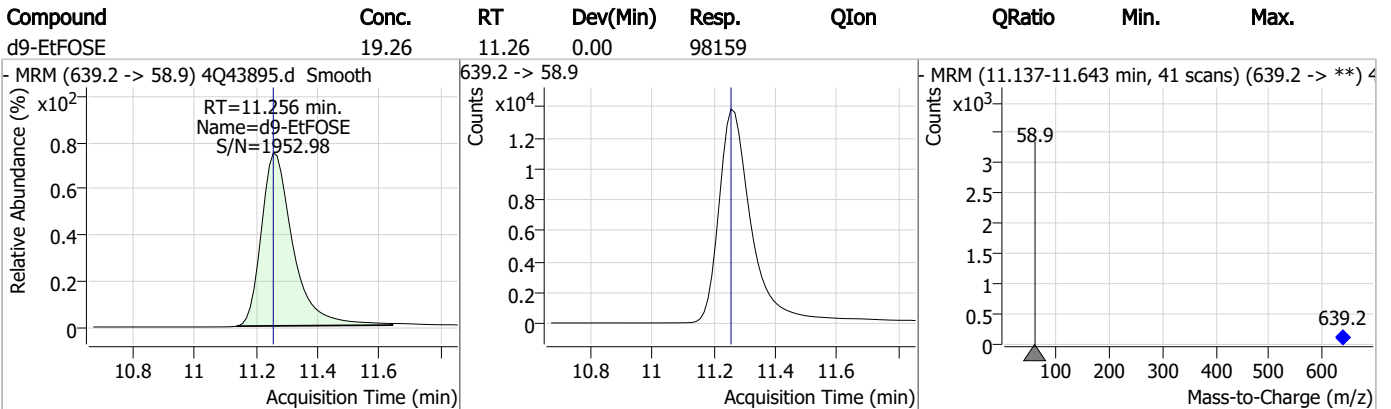
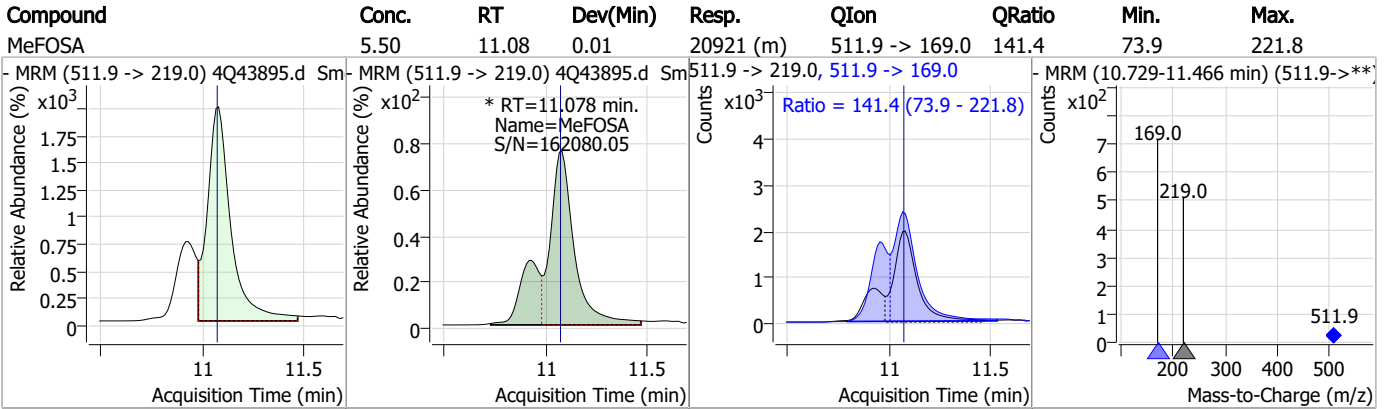
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.97	10.97	0.00	35294 (m)				



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



### Perfluorinated Compounds by LC/MS/MS

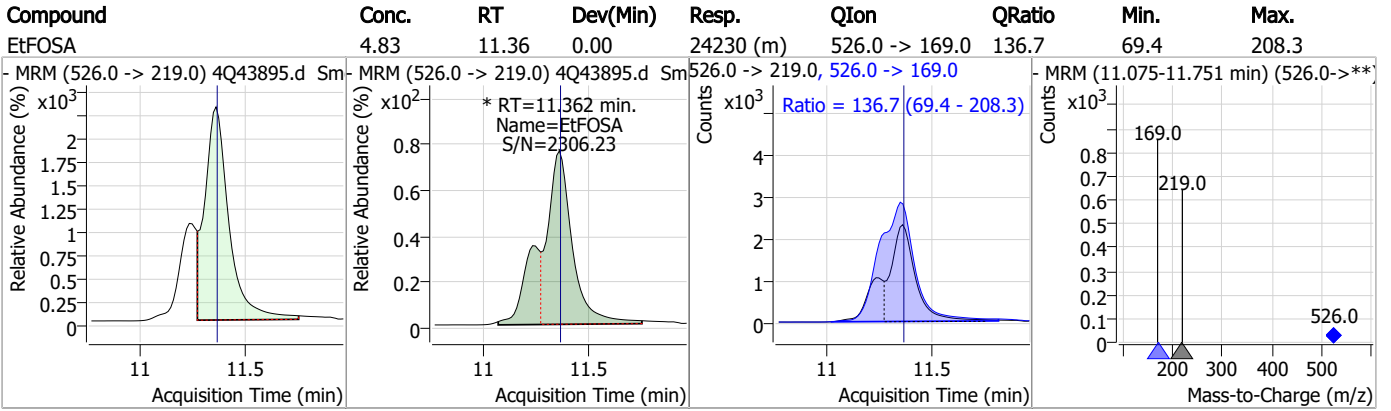


7.7.11  
7





### Perfluorinated Compounds by LC/MS/MS



7.7.11

7

# Manual Integration Approval Summary

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

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

7.7.11.1  
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43897.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 1:51:15 PM  
 Sample Name : cc634-1.0LL  
 Vial : P1-A2  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.961	216.8 -> 171.9	132159	10.00 µg/L	0.037
M5-PFPeA	4.387	268.3 -> 223.0	69534	5.00 µg/L	0.025
M5-PFHxA	5.547	318.0 -> 273.0	47026	2.50 µg/L	0.012
M4-PFHpA	6.479	367.1 -> 322.0	28312	2.50 µg/L	0.012
M8-PFOA	7.136	421.1 -> 376.0	44553	2.50 µg/L	0.012
M9-PFNA	7.684	472.1 -> 427.0	21132	1.25 µg/L	0.013
M6-PFDA	8.191	519.1 -> 474.1	19697	1.25 µg/L	0.013
M7-PFUnDA	8.660	570.0 -> 525.1	21256	1.25 µg/L	0.013
M2-PFDoDA	9.106	615.1 -> 570.0	20837	1.25 µg/L	0.000
M2-PFTeDA	9.911	715.2 -> 670.0	15464	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	16232	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	12224	2.50 µg/L	0.025
M3-PFHxS	7.242	402.1 -> 79.9	7357	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	10186	2.50 µg/L	0.012
M2-4:2FTS	5.247	329.1 -> 80.9	1181	5.00 µg/L	0.025
M2-6:2FTS	6.911	429.1 -> 80.9	1872	5.00 µg/L	0.012
M2-8:2FTS	7.978	529.1 -> 80.9	3085	5.00 µg/L	0.012
M3-MeFOSAA	8.249	573.2 -> 419.0	14413	5.00 µg/L	0.012
M3-HFPO-DA	5.914	286.9 -> 168.9	28263	10.00 µg/L	0.025
M5-EtFOSAA	8.458	589.2 -> 419.0	12518	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	67258	25.00 µg/L	0.012
M9-EtFOSE	11.256	639.2 -> 58.9	96692	25.00 µg/L	0.000
M5-EtFOSA	11.360	531.1 -> 219.0	11218	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	9714	2.50 µg/L	0.012
13C4-PFOS	8.342	502.8 -> 79.9	10957	2.50 µg/L	0.012
13C3-PFBA	2.966	216.0 -> 172.0	70356	5.00 µg/L	0.037
18O2-PFHxS	7.241	403.0 -> 83.9	4850	2.50 µg/L	0.012
13C4-PFOA	7.136	417.1 -> 372.0	53375	2.50 µg/L	0.012
13C2-PFDA	8.191	515.1 -> 470.1	17954	1.25 µg/L	0.013
13C5-PFNA	7.684	468.0 -> 423.0	24269	1.25 µg/L	0.000
13C2-PFHxA	5.548	315.1 -> 270.0	42989	2.50 µg/L	0.012
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.247	329.1 -> 80.9	1181	5.99 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 119.8%		
13C2-6:2FTS	6.911	429.1 -> 80.9	1872	5.27 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C2-8:2FTS	7.978	529.1 -> 80.9	3085	5.56 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.2%		
13C2-PFDoDA	9.106	615.1 -> 570.0	20837	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C2-PFTeDA	9.911	715.2 -> 670.0	15464	1.09 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 87.4%		
13C3-PFBS	5.452	302.1 -> 79.9	12224	2.67 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.9%		
13C3-PFHxS	7.242	402.1 -> 79.9	7357	2.45 µg/L	0.012

7.7.12  
7

### Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C4-PFBA	2.961	216.8 -> 171.9	132159	9.98 µg/L	0.037
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.8%	
13C4-PFHpA	6.479	367.1 -> 322.0	28312	2.56 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C5-PFHxA	5.547	318.0 -> 273.0	47026	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFPeA	4.387	268.3 -> 223.0	69534	5.25 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C6-PFDA	8.191	519.1 -> 474.1	19697	1.28 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C7-PFUnDA	8.660	570.0 -> 525.1	21256	1.33 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.3%	
13C8-FOSA	9.783	506.1 -> 77.8	16232	2.36 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C8-PFOA	7.136	421.1 -> 376.0	44553	2.54 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C8-PFOS	8.341	507.1 -> 79.9	10186	2.47 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C9-PFNA	7.684	472.1 -> 427.0	21132	1.28 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.5%	
d3-MeFOSAA	8.249	573.2 -> 419.0	14413	5.21 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.2%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	28263	9.99 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d3-MeFOSA	11.076	515.0 -> 219.0	9714	2.26 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.4%	
d5-EtFOSAA	8.458	589.2 -> 419.0	12518	5.50 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.9%	
d7-MeFOSE	10.959	623.2 -> 58.9	67258	19.73 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 78.9%	
d9-EtFOSE	11.256	639.2 -> 58.9	96692	20.03 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.1%	
d5-EtFOSA	11.360	531.1 -> 219.0	11218	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.248	327.1 -> 307.0	1364	0.72 µg/L	98
		327.1 -> 80.9	621		
6:2FTS	6.911	427.1 -> 407.0	1292	0.71 µg/L	80
		427.1 -> 80.9	707		
8:2FTS	7.978	527.1 -> 507.0	1431	0.83 µg/L	96
		527.1 -> 80.8	568		
EtFOSAA	8.459	584.2 -> 419.1	521	0.22 µg/L	100
		584.2 -> 526.0	267	m	
FOSA	9.774	498.1 -> 77.9	1365	0.20 µg/L	98
		498.1 -> 478.0	34		
MeFOSAA	8.249	570.1 -> 419.0	478	0.19 µg/L	94
		570.1 -> 483.0	127	m	
PFBA	2.970	212.8 -> 168.9	2659	0.75 µg/L	100
PFBS	5.453	298.7 -> 79.9	813	0.16 µg/L	92
		298.7 -> 98.8	370		
PFDA	8.192	512.9 -> 469.0	3285	0.22 µg/L	86
		512.9 -> 219.0	491		
PFDODA	9.106	613.1 -> 569.0	3463	0.21 µg/L	94
		613.1 -> 319.0	420		
PFDS	9.282	599.0 -> 79.9	450	0.18 µg/L	88

7.7.12  
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	243			
PFHpA	6.480	363.1 -> 319.0	3269	0.18	µg/L	95
		363.1 -> 169.0	661			
PFHpS	7.823	449.0 -> 79.9	758	0.21	µg/L	100
		449.0 -> 98.9	405			
PFHxA	5.550	313.0 -> 269.0	3692	0.20	µg/L	98
		313.0 -> 118.9	79			
PFHxS	7.230	398.7 -> 79.9	615	0.20	µg/L	m 99
		398.7 -> 98.9	313			
PFNA	7.685	463.0 -> 419.0	3039	0.19	µg/L	97
		463.0 -> 219.0	714			
PFNS	8.823	548.8 -> 79.9	470	0.21	µg/L	68
		548.8 -> 98.9	139			
PFOA	7.137	413.0 -> 369.0	3916	0.15	µg/L	89
		413.0 -> 169.0	954			
PFOS	8.330	498.9 -> 79.9	1003	0.20	µg/L	m 91
		498.9 -> 98.8	550			
PFPeA	4.389	263.0 -> 219.0	6015	0.36	µg/L	100
PFPeS	6.519	349.1 -> 79.9	541	0.21	µg/L	84
		349.1 -> 98.9	192			
PFTeDA	9.912	713.1 -> 669.0	3077	0.20	µg/L	98
		713.1 -> 168.9	284			
PFTrDA	9.529	663.0 -> 619.0	3991	0.18	µg/L	98
		663.0 -> 168.9	463			
PFUnDA	8.660	563.1 -> 519.0	2558	0.18	µg/L	97
		563.1 -> 269.1	517			
11CI-PF3OUdS	9.568	630.9 -> 450.9	3803	0.37	µg/L	93
		632.9 -> 452.9	1241			
9CI-PF3ONS	8.687	530.8 -> 351.0	4637	0.36	µg/L	96
		532.8 -> 353.0	1304			
ADONA	6.743	376.9 -> 250.9	9626	0.34	µg/L	94
		376.9 -> 84.8	2805			
HFPO-DA	5.903	284.9 -> 168.9	1164	0.43	µg/L	85
		284.9 -> 184.9	68			
3:3FTCA	3.892	241.0 -> 177.0	680	0.92	µg/L	97
		241.0 -> 117.0	65			
5:3FTCA	6.217	341.0 -> 237.1	11789	4.72	µg/L	99
		341.0 -> 217.0	8146			
7:3FTCA	7.661	441.0 -> 316.9	6039	4.65	µg/L	97
		441.0 -> 336.9	14805			
EtFOSA	11.362	526.0 -> 219.0	1866	0.40	µg/L	m 97
		526.0 -> 169.0	2534			
EtFOSE	11.282	630.0 -> 58.9	3260	0.87	µg/L	m 100
MeFOSA	11.078	511.9 -> 219.0	1390	0.38	µg/L	m 94
		511.9 -> 169.0	2163			
MeFOSE	10.973	616.1 -> 58.9	2638	0.96	µg/L	m 100
PFDoDS	10.052	699.1 -> 79.9	388	0.17	µg/L	76
		699.1 -> 98.8	275			
NFDHA	5.441	295.0 -> 201.0	474	0.36	µg/L	95
		295.0 -> 84.9	118			
PFMBA	4.791	279.0 -> 85.1	3524	0.38	µg/L	100
PFMPA	3.553	229.0 -> 84.9	3333	0.38	µg/L	100
PFEESA	5.984	314.8 -> 134.9	4755	0.34	µg/L	99
		314.8 -> 82.9	161			

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

7.7.12  
7

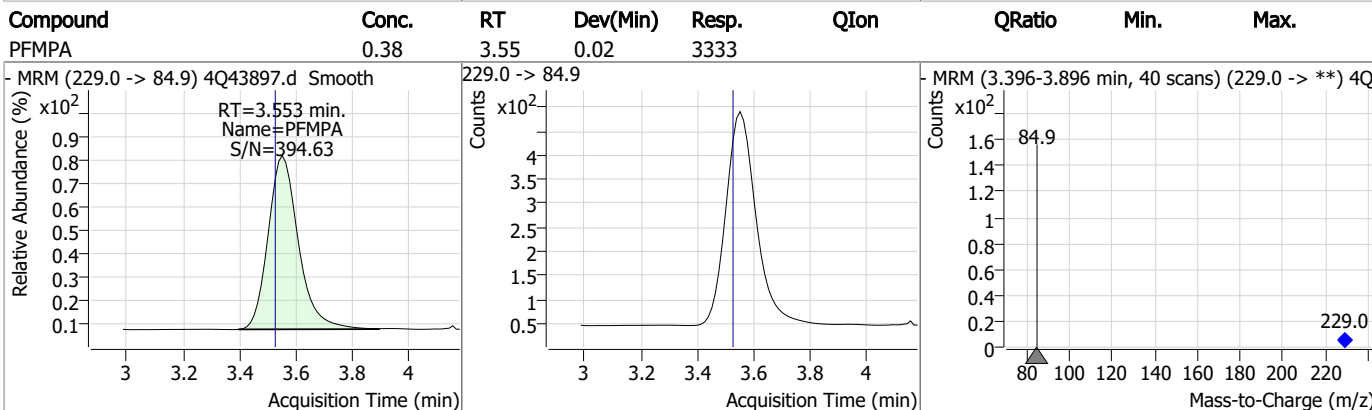
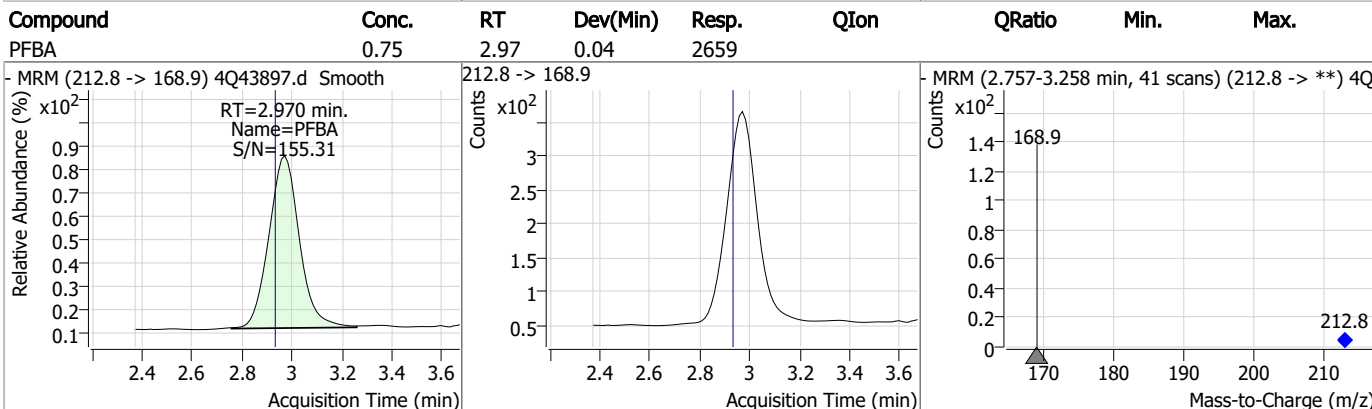
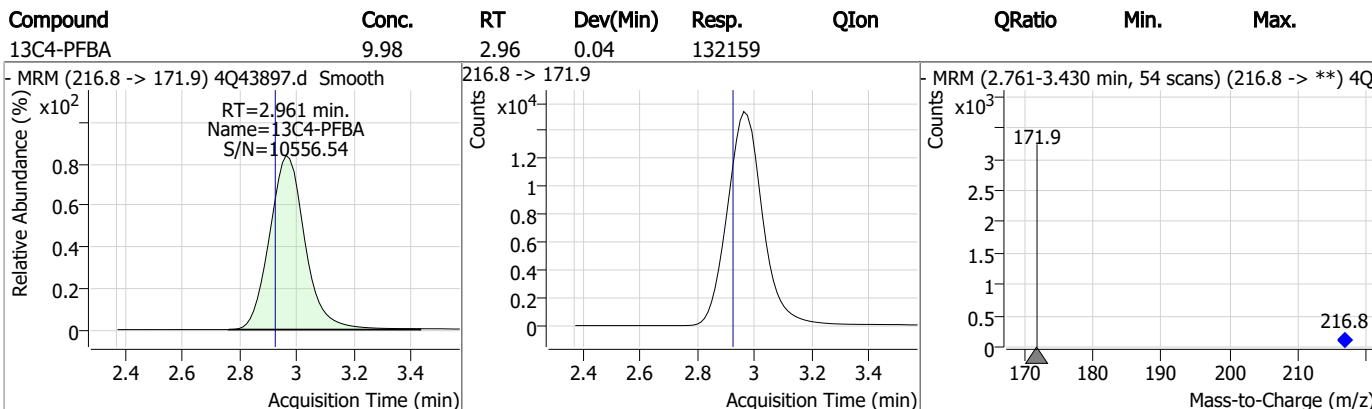
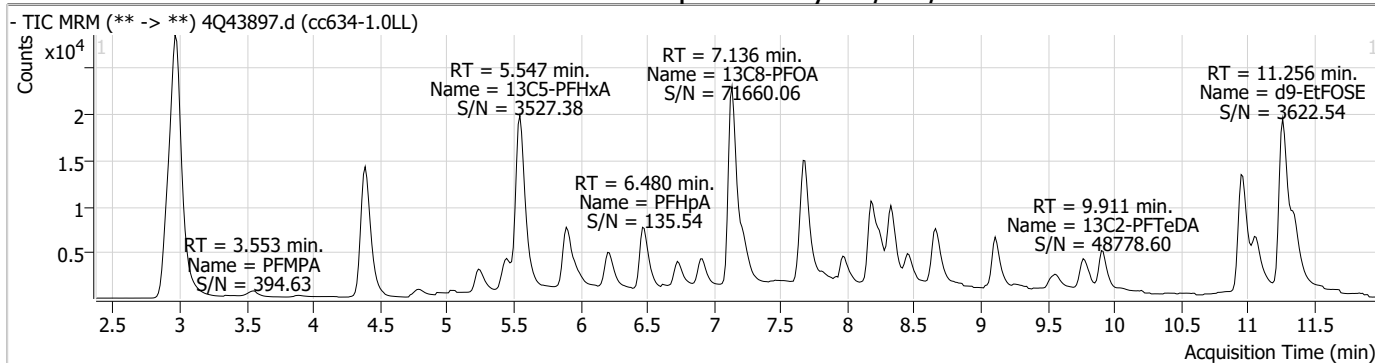
### Perfluorinated Compounds by LC/MS/MS

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

7.7.12

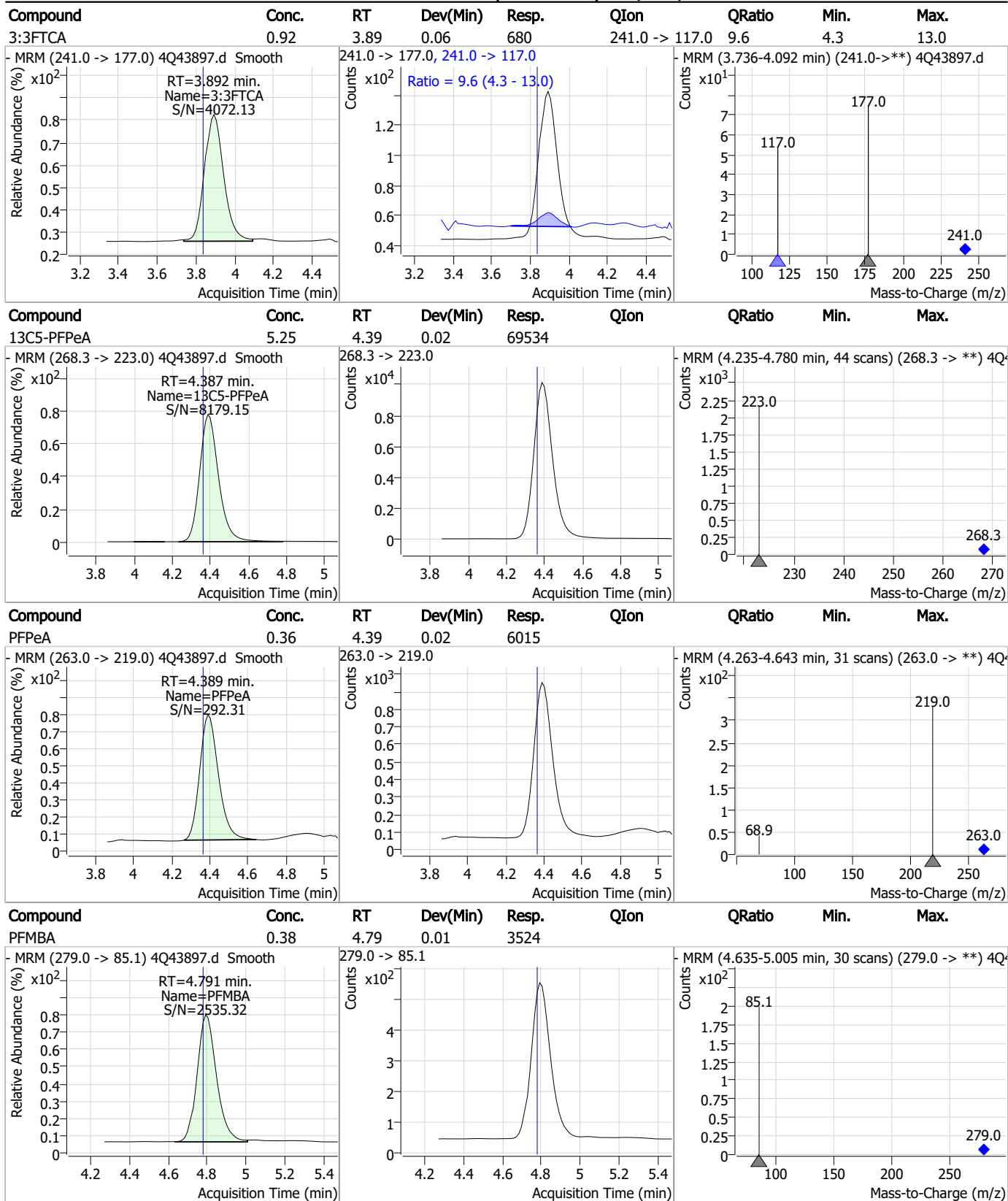
7

### Perfluorinated Compounds by LC/MS/MS



7.7.12  
7

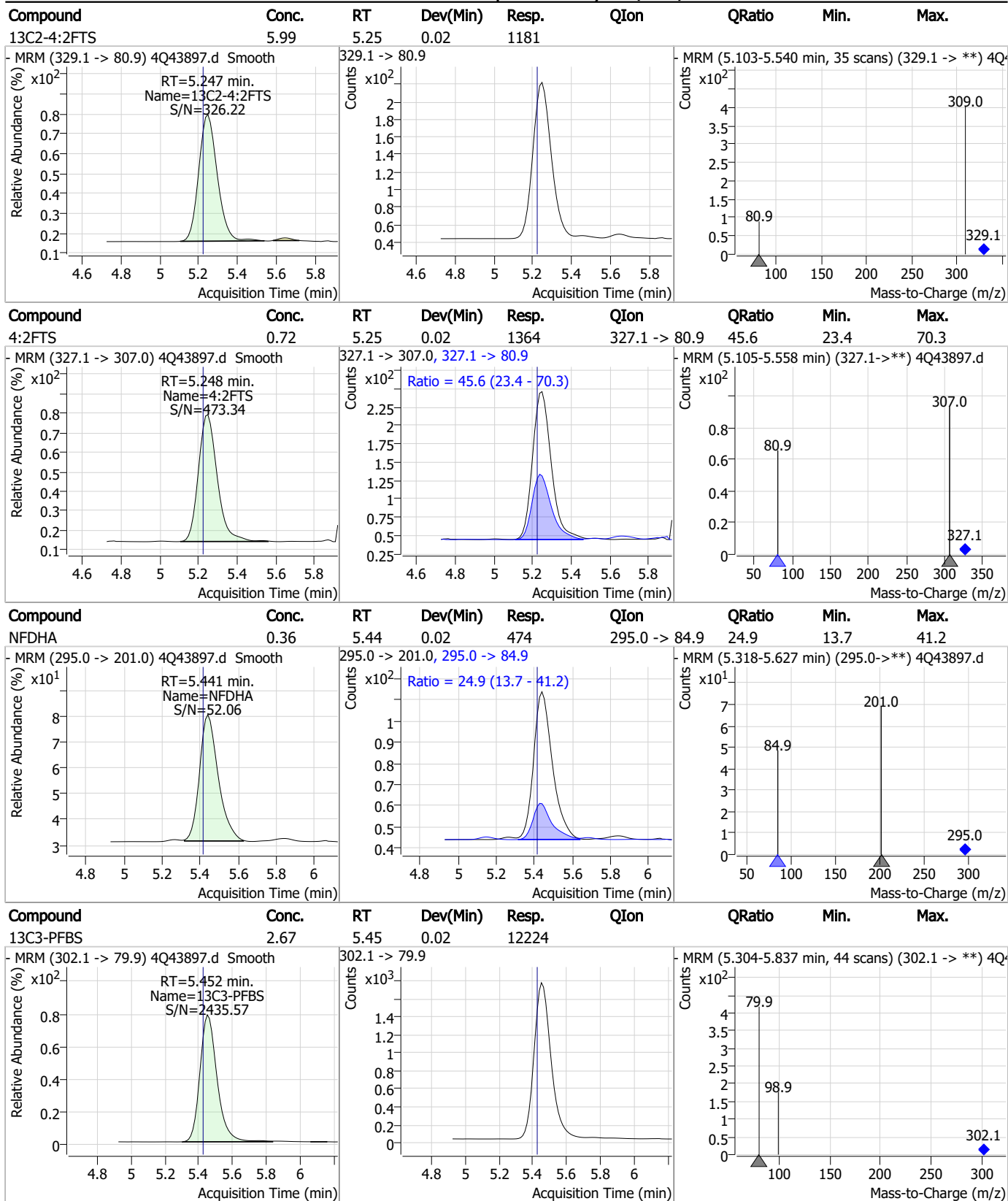
### Perfluorinated Compounds by LC/MS/MS



7.7.12  
7



### Perfluorinated Compounds by LC/MS/MS

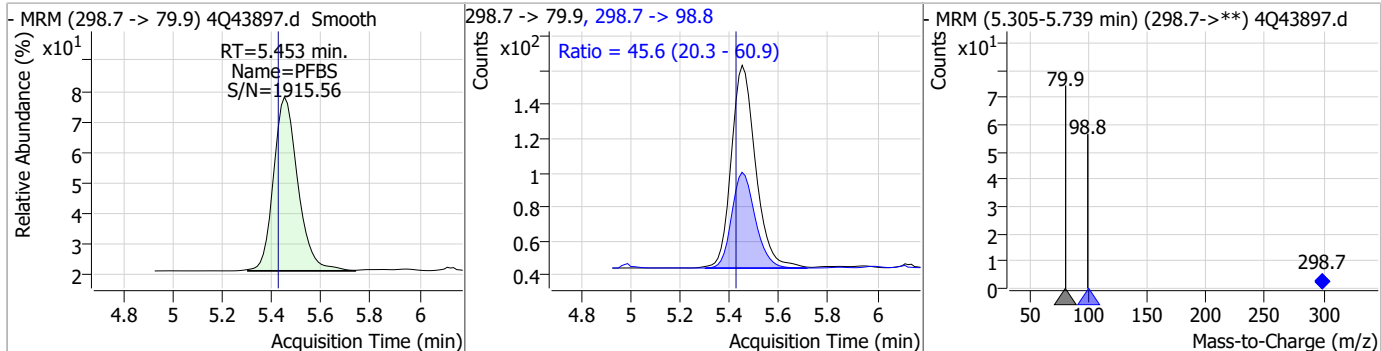


7.7.12  
7

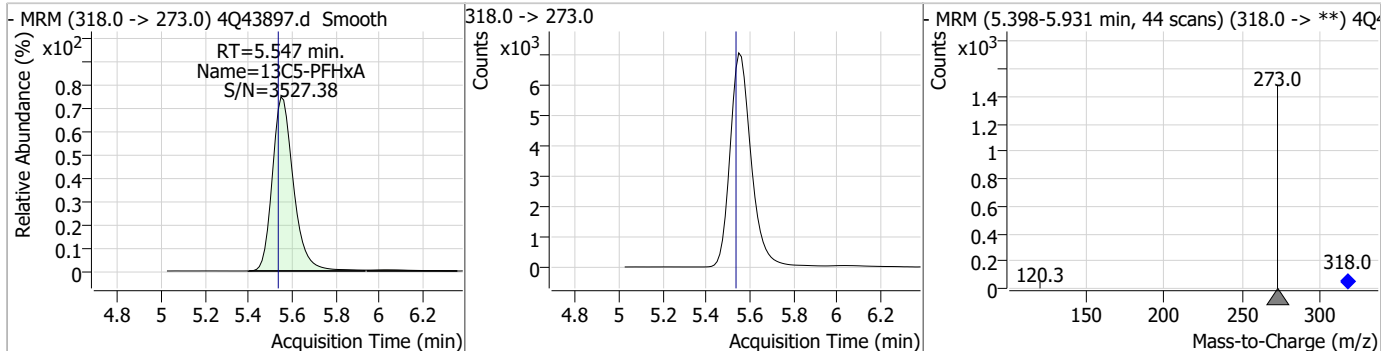


### Perfluorinated Compounds by LC/MS/MS

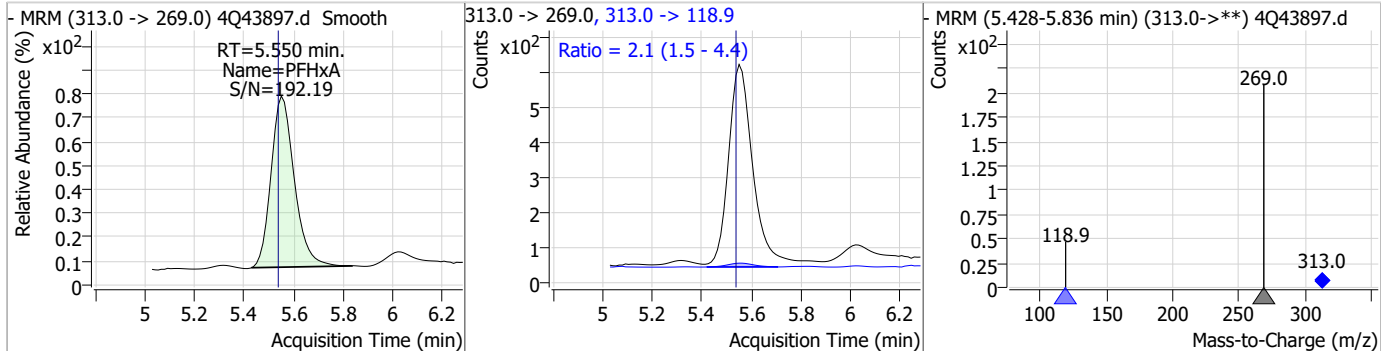
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.16	5.45	0.02	813	298.7 -> 98.8	45.6	20.3	60.9



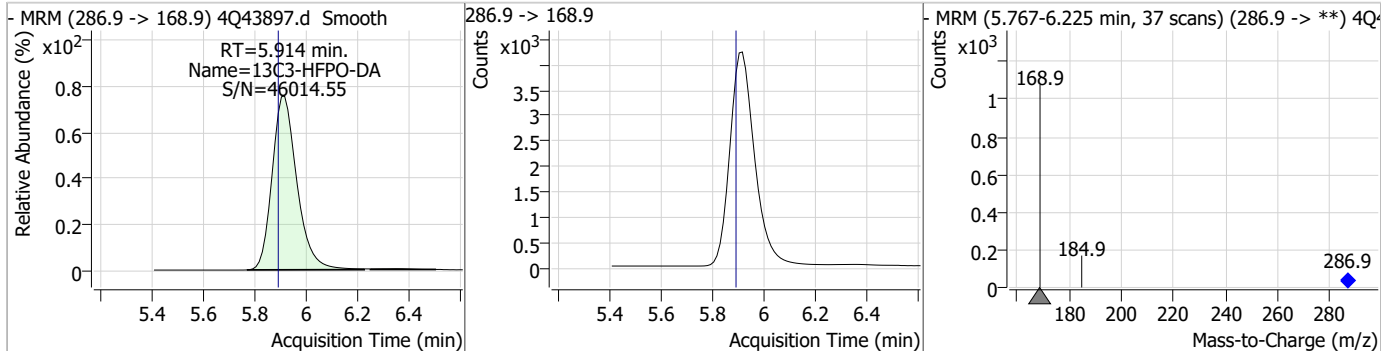
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.48	5.55	0.01	47026				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.20	5.55	0.01	3692	313.0 -> 118.9	2.1	1.5	4.4

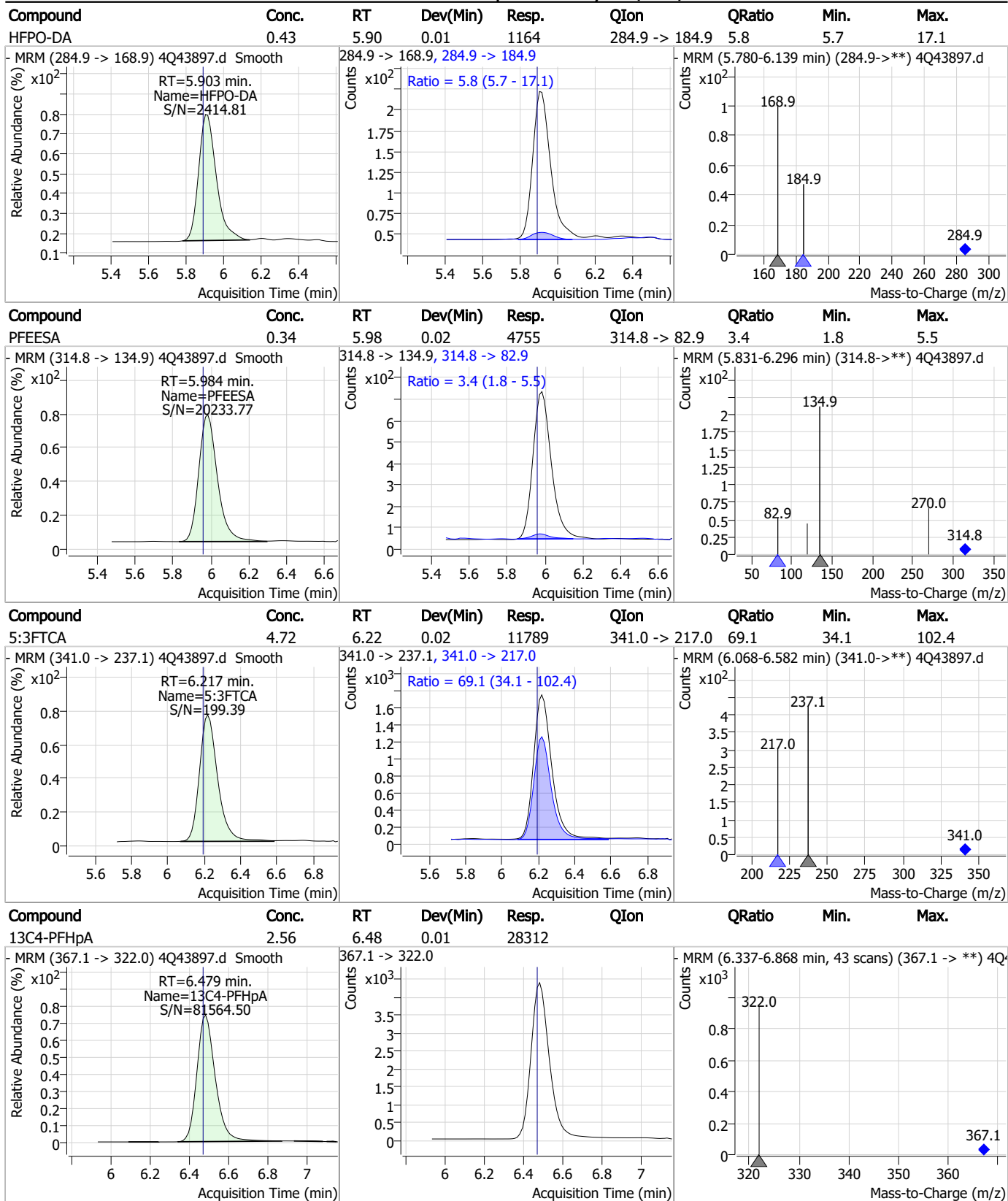


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.99	5.91	0.02	28263				



7.7.12  
7

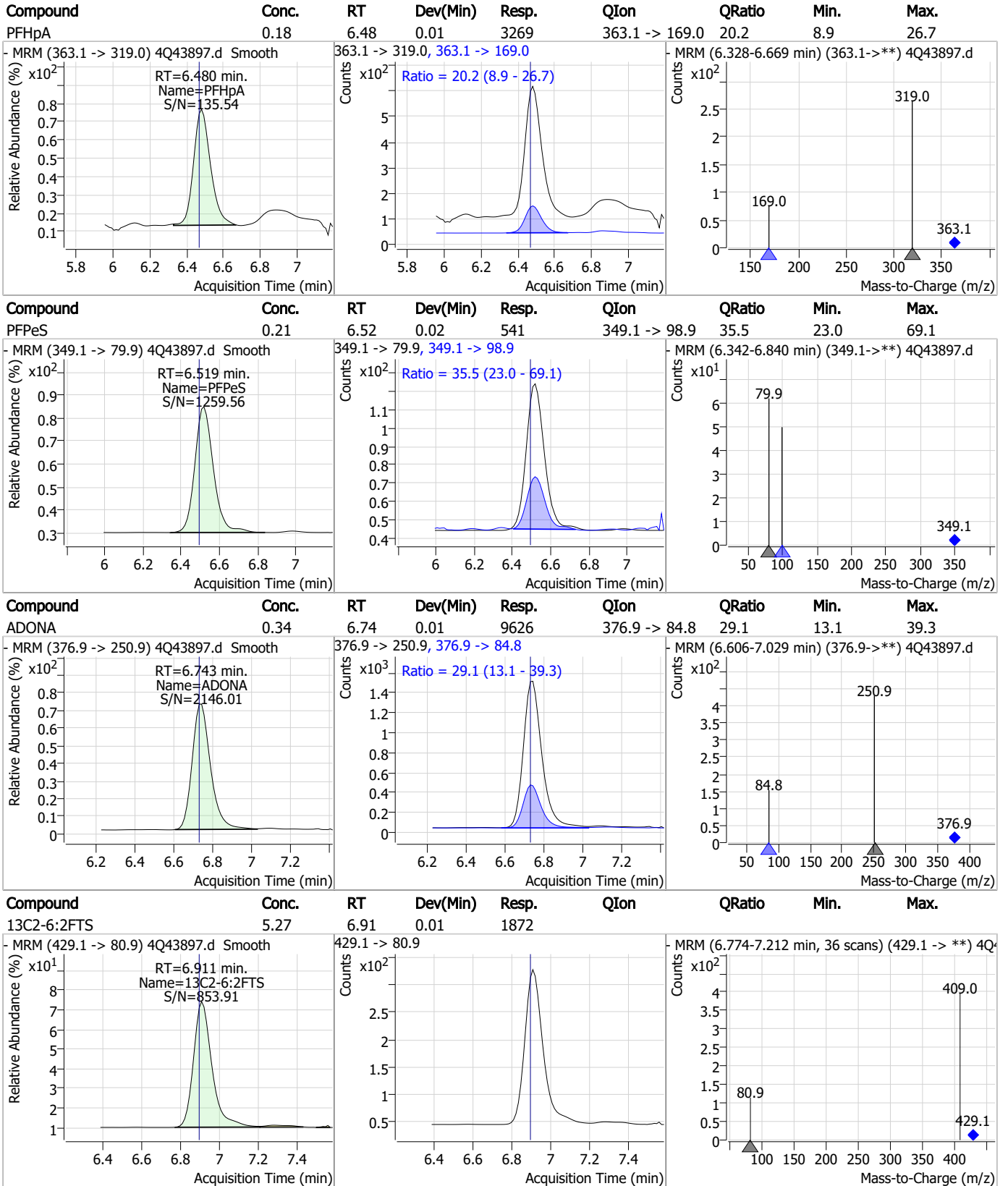
### Perfluorinated Compounds by LC/MS/MS



7.7.12  
7



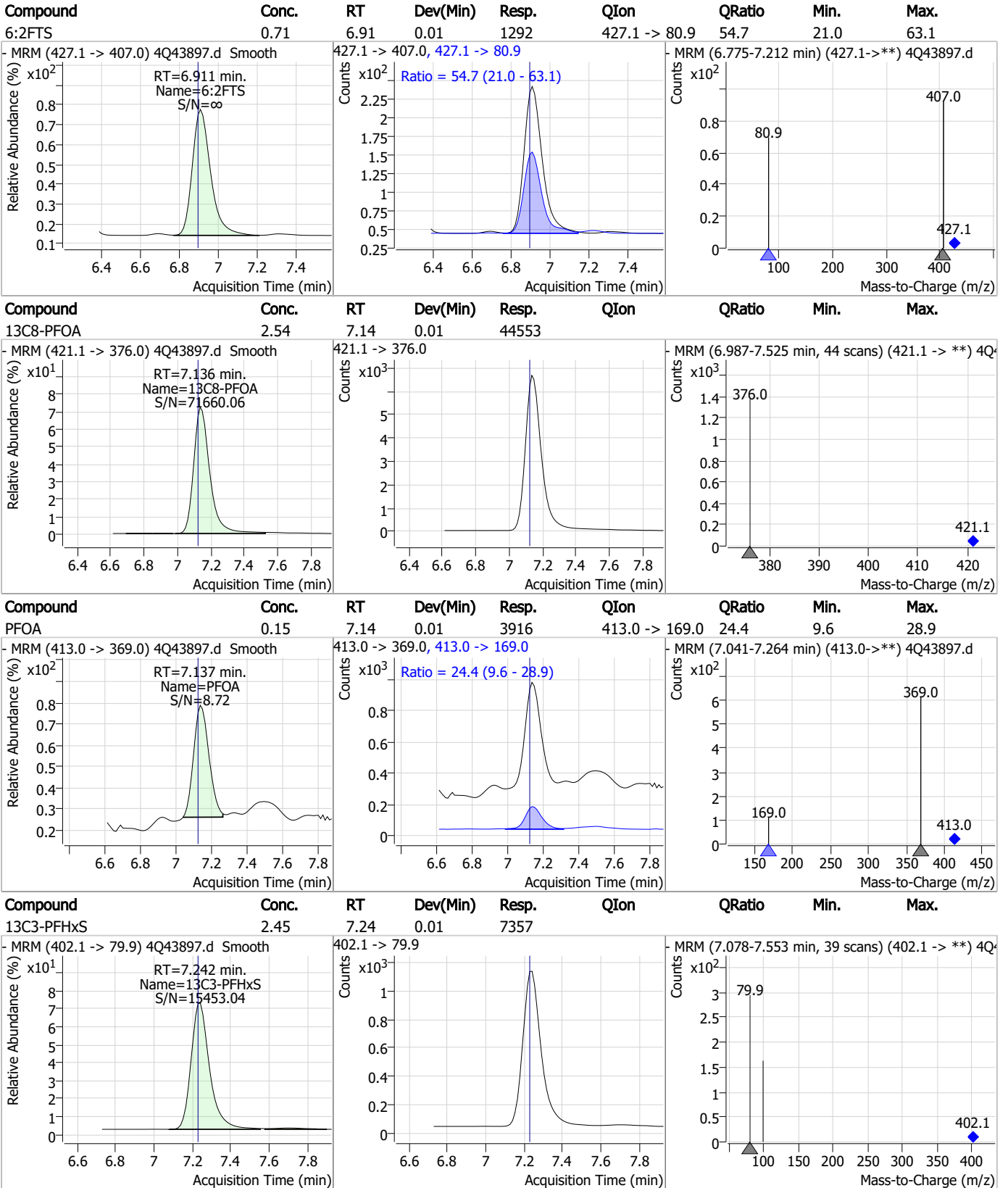
### Perfluorinated Compounds by LC/MS/MS



7.7.12 7



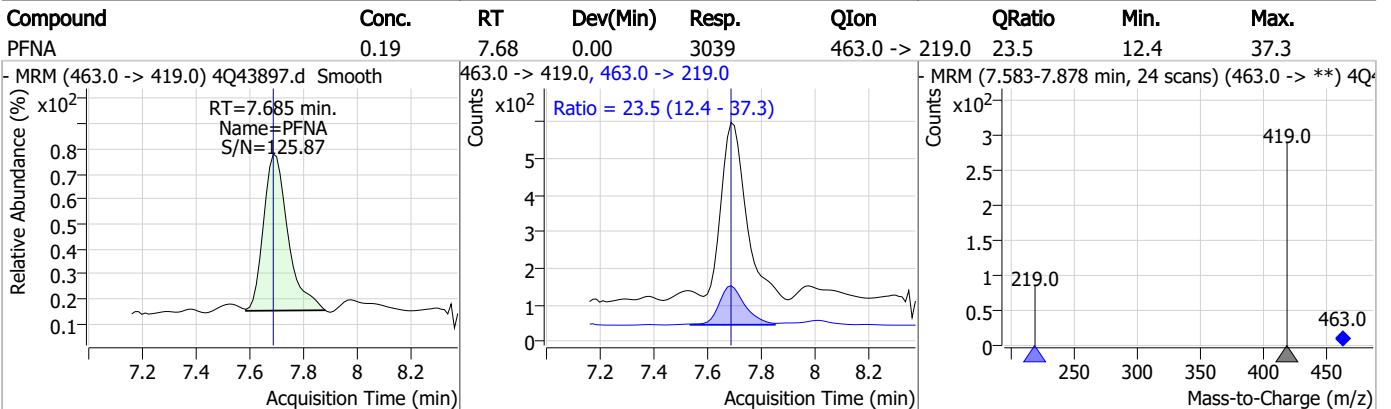
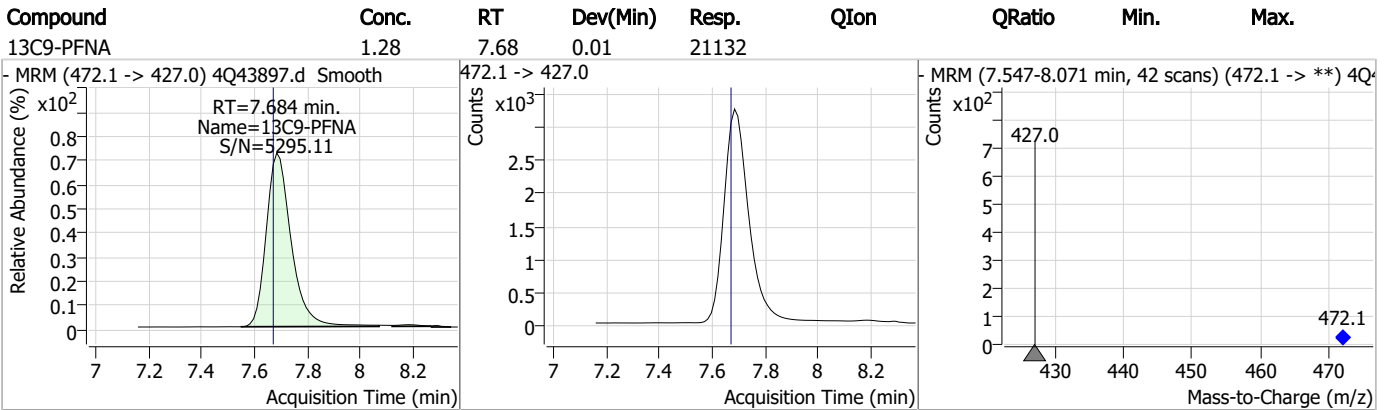
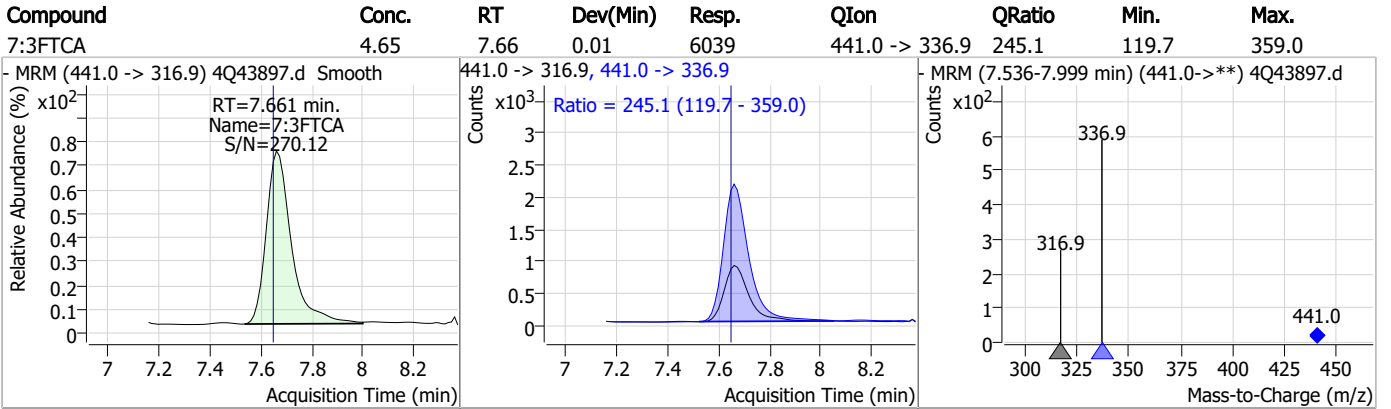
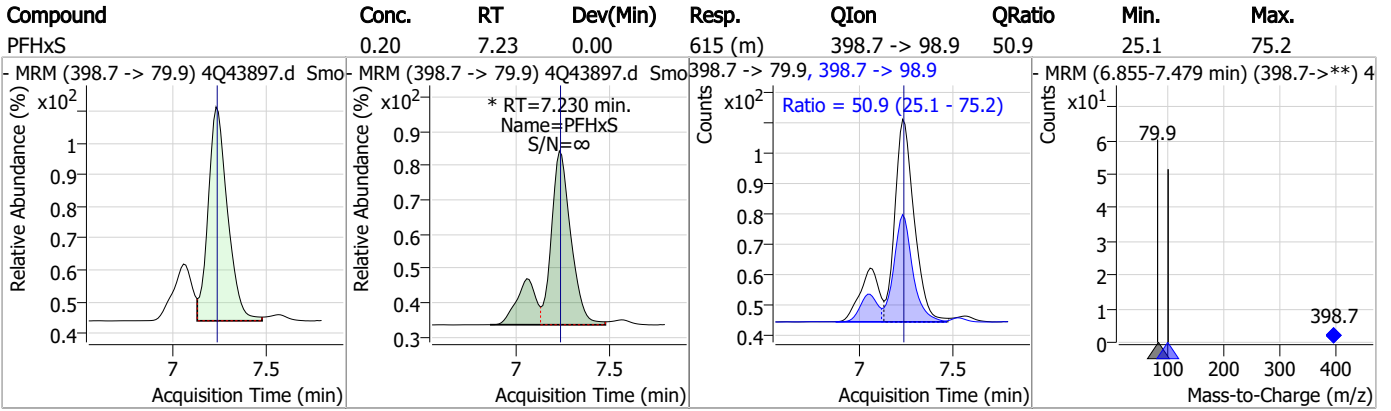
### Perfluorinated Compounds by LC/MS/MS



7.7.12 7



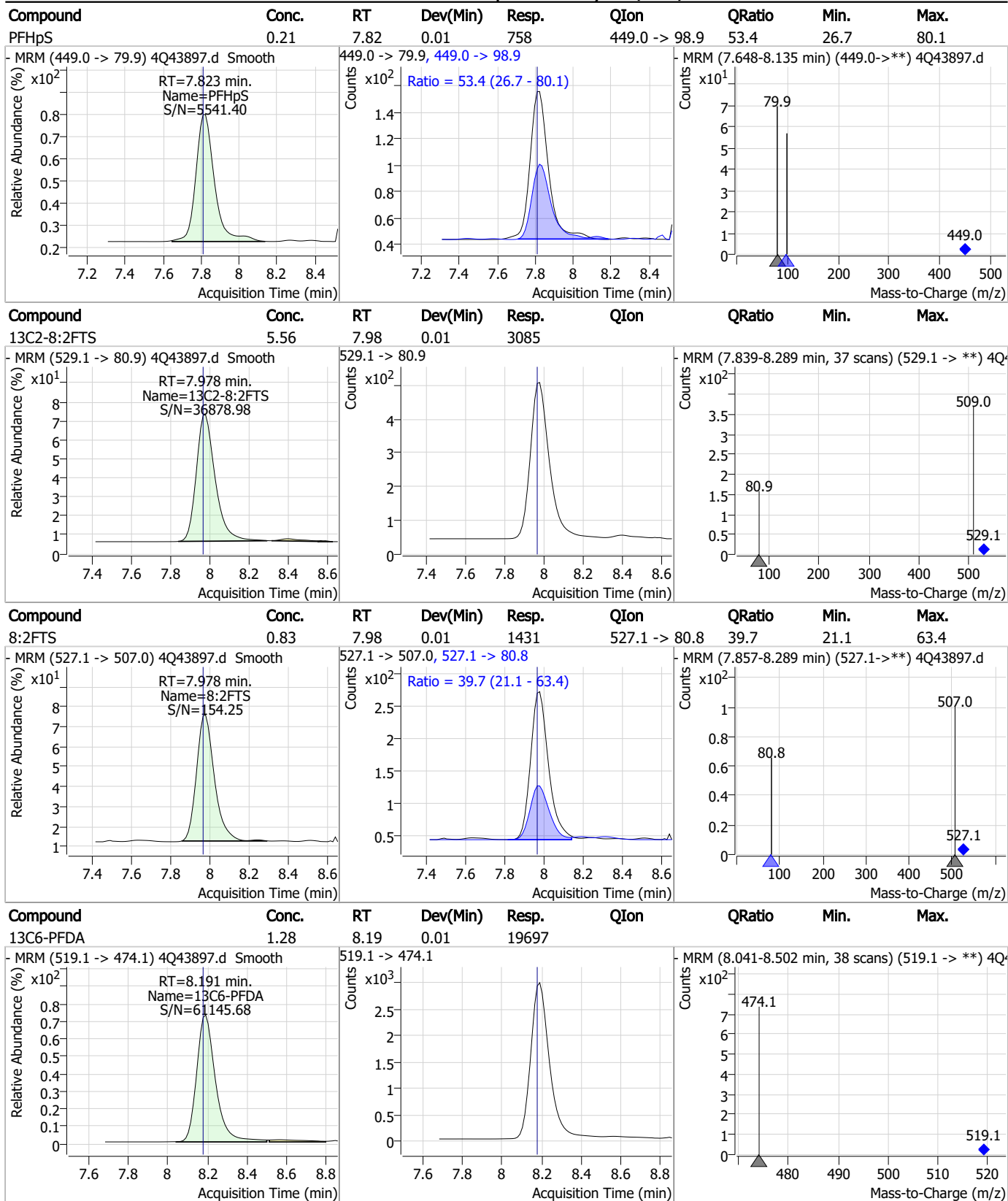
### Perfluorinated Compounds by LC/MS/MS



7.7.12  
7

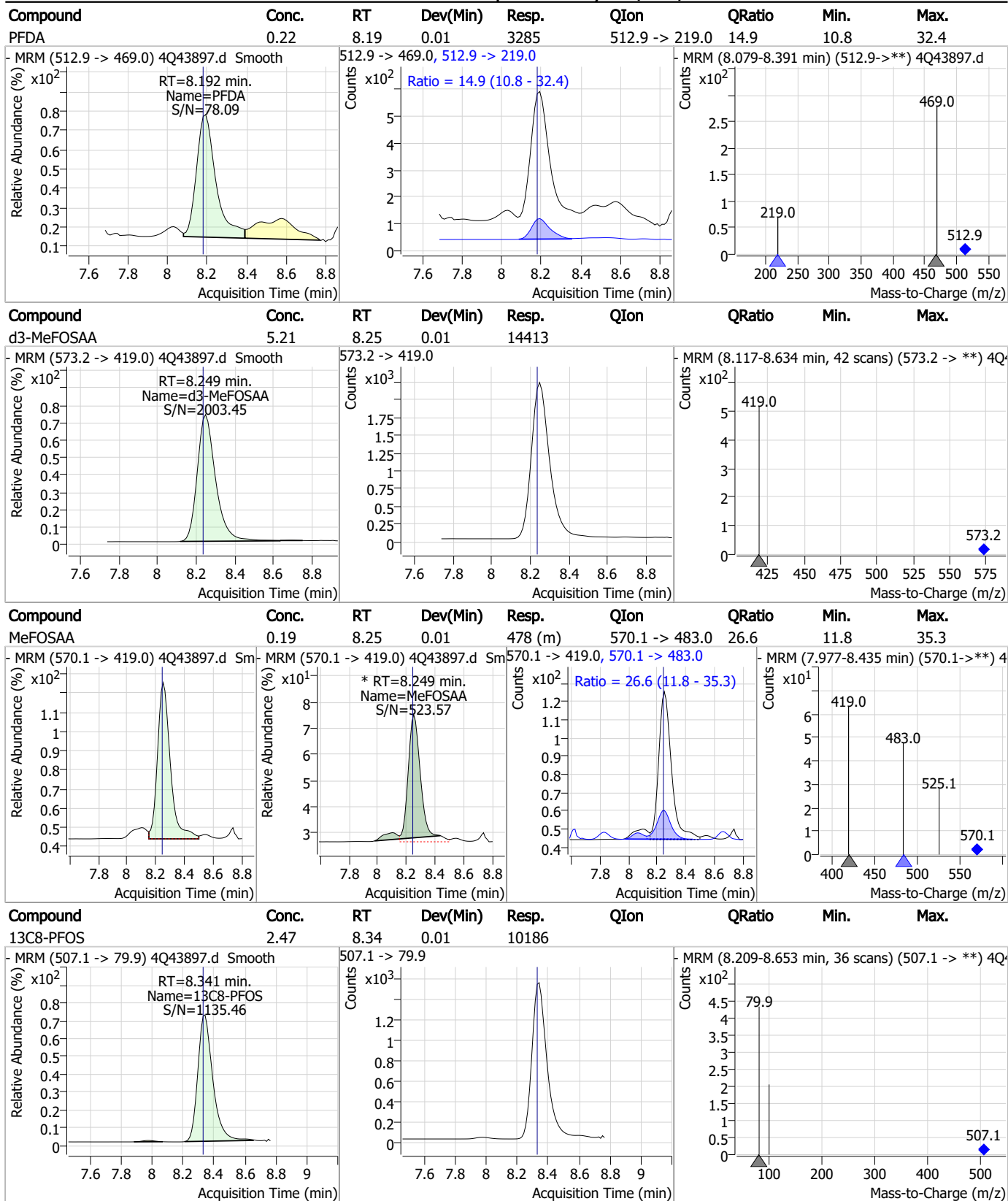


### Perfluorinated Compounds by LC/MS/MS



7.7.12

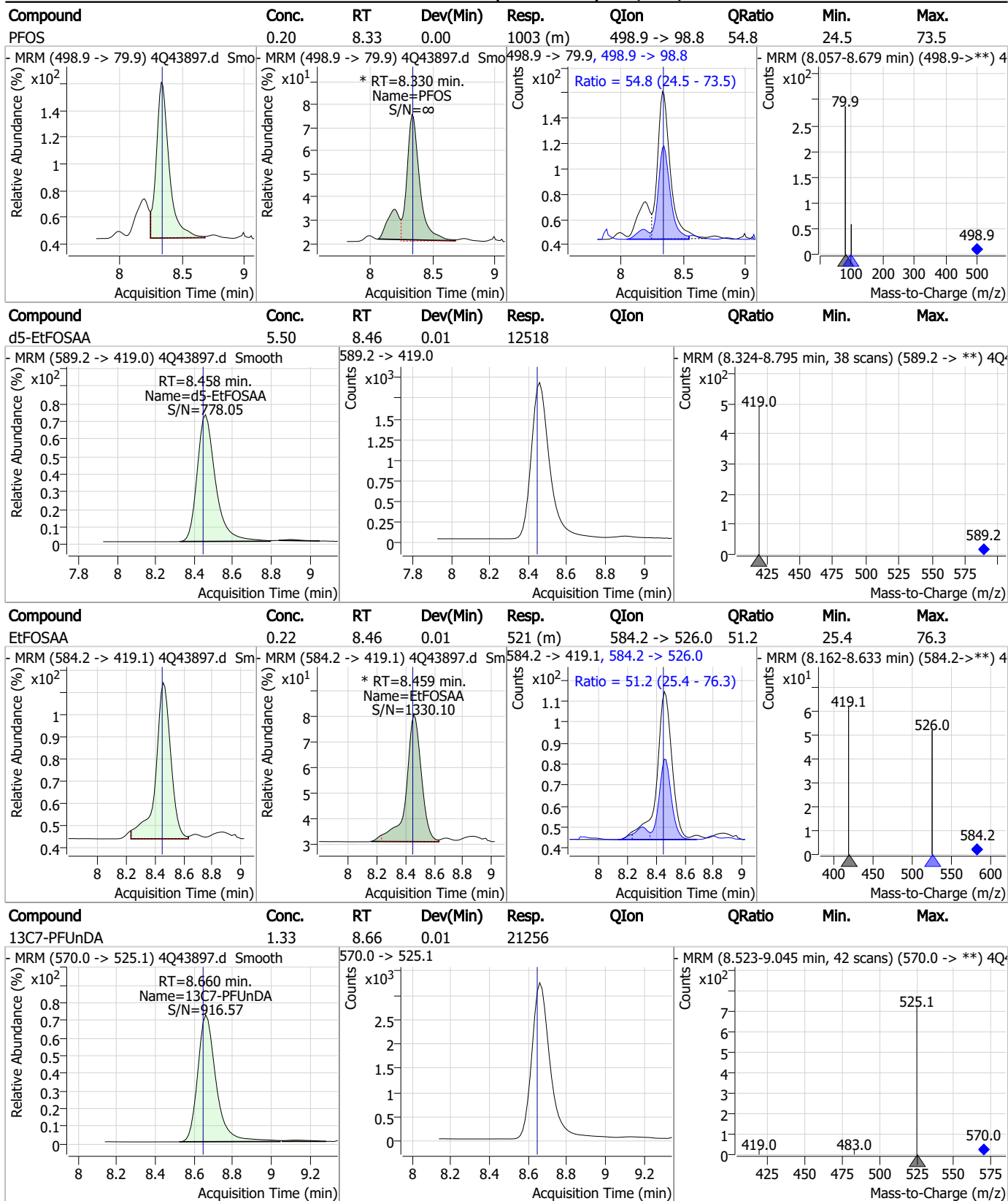
### Perfluorinated Compounds by LC/MS/MS



7.7.12  
7

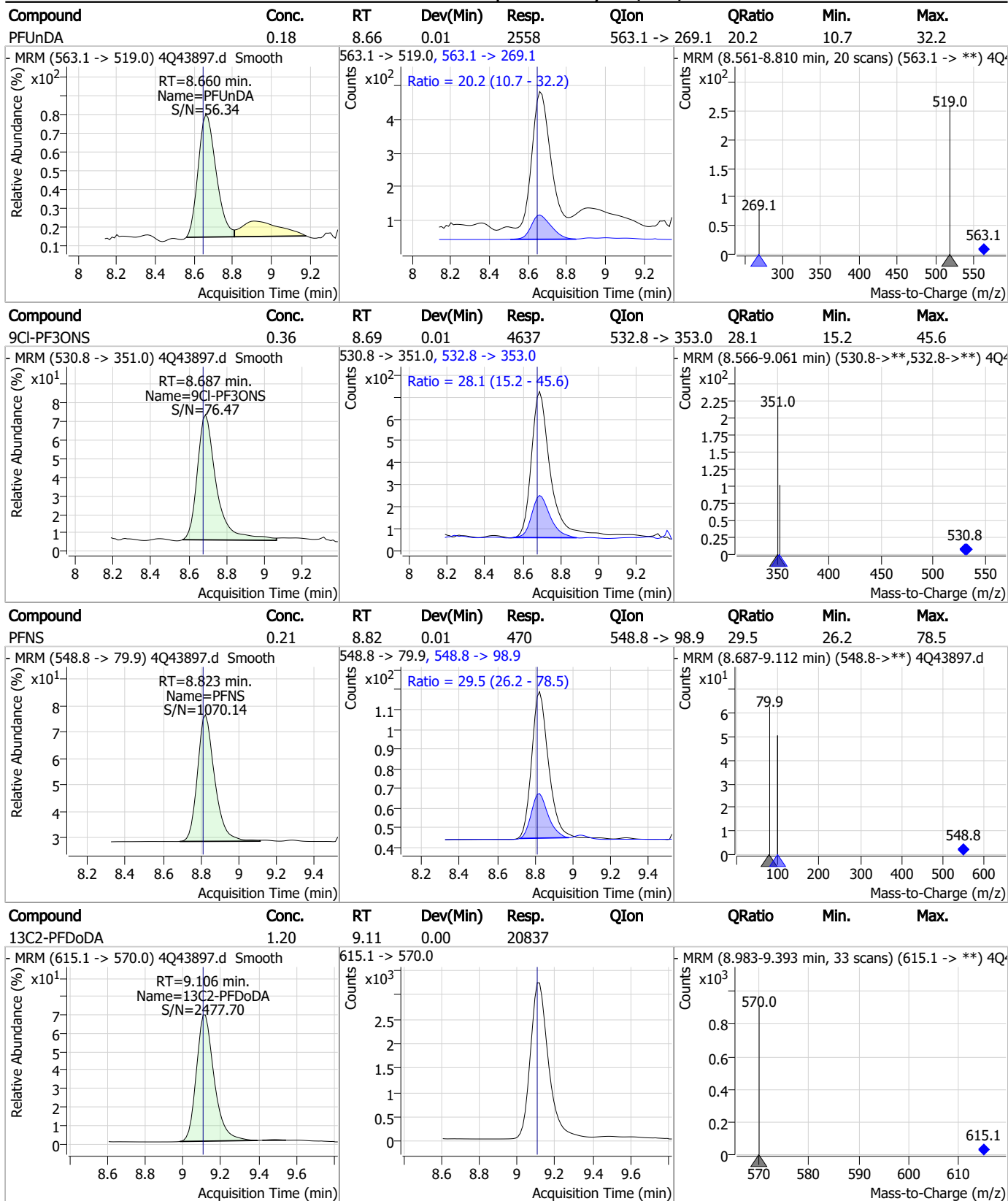


### Perfluorinated Compounds by LC/MS/MS



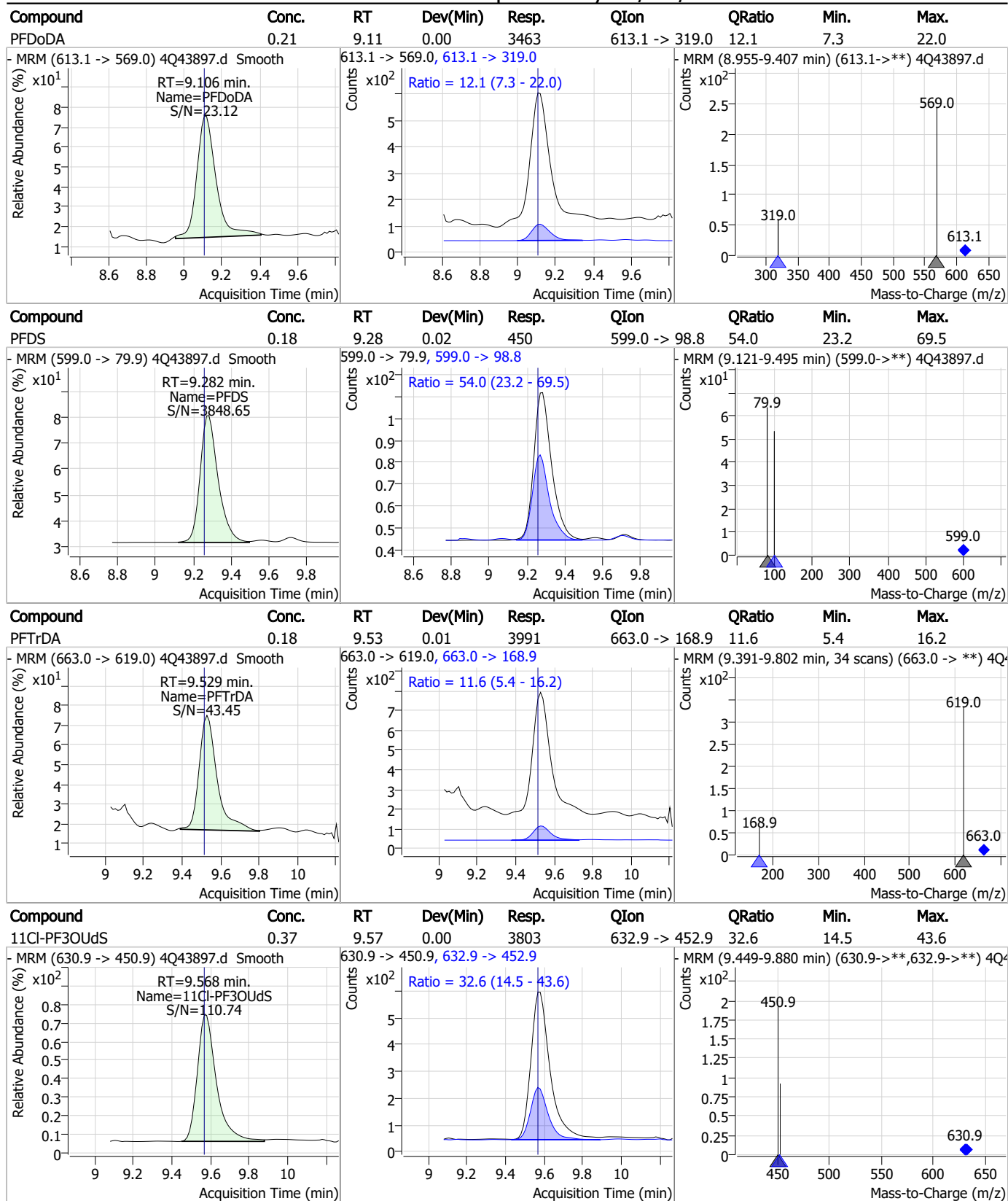
7.7.12  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.12  
7

### Perfluorinated Compounds by LC/MS/MS

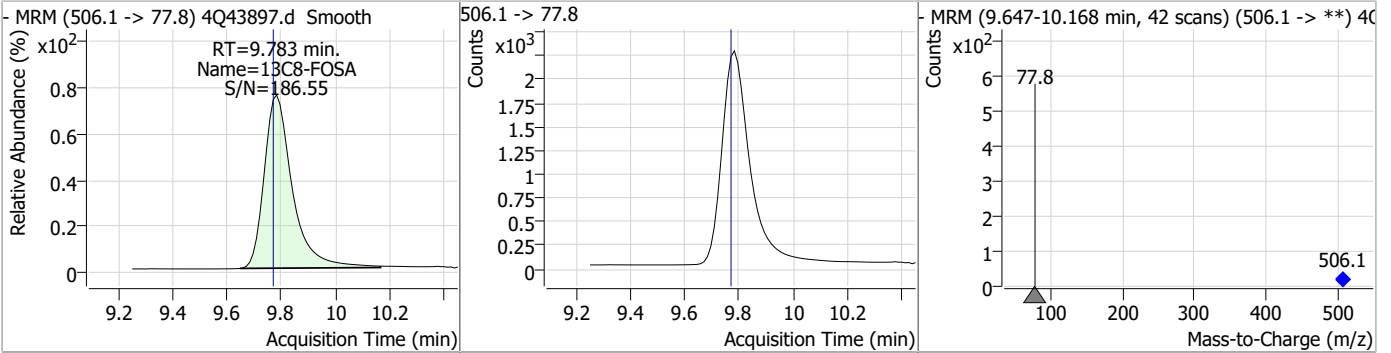


7.7.12  
7

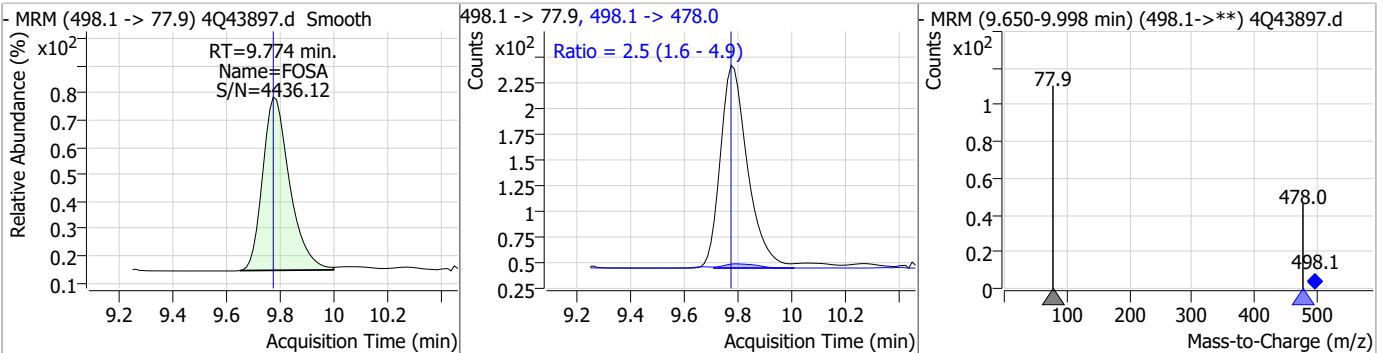


### Perfluorinated Compounds by LC/MS/MS

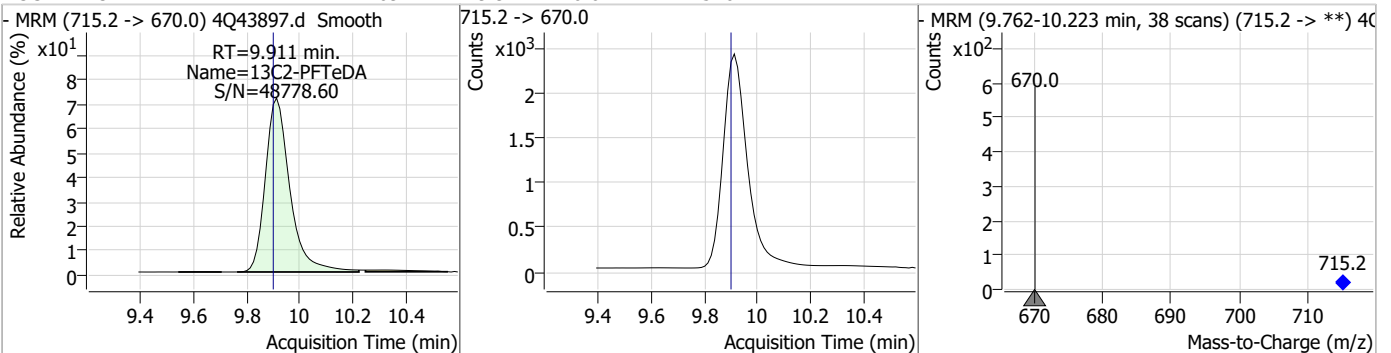
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.36	9.78	0.01	16232				



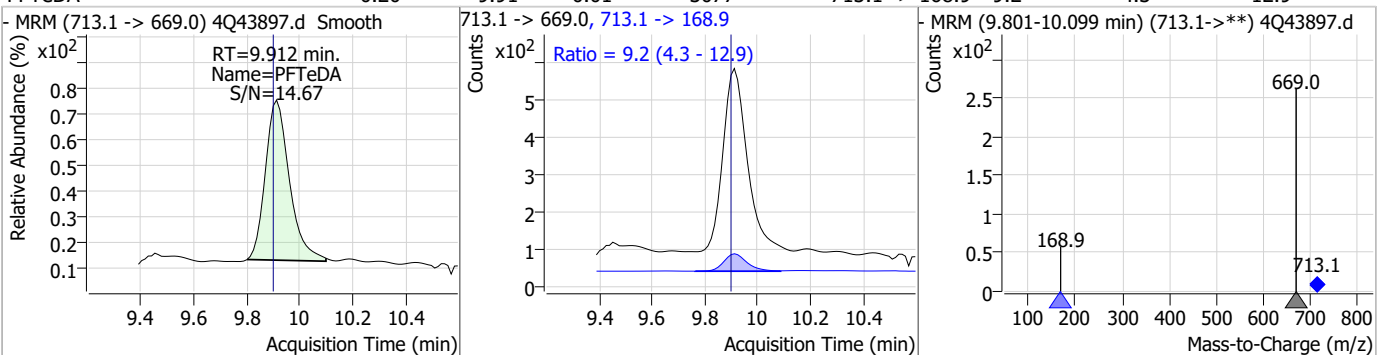
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.20	9.77	0.00	1365	498.1 -> 478.0	2.5	1.6	4.9



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.09	9.91	0.01	15464				



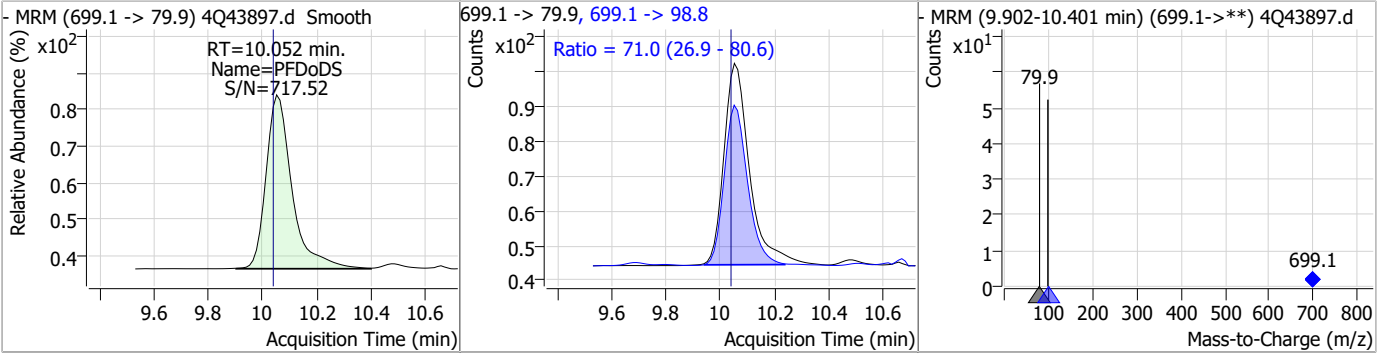
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.20	9.91	0.01	3077	713.1 -> 168.9	9.2	4.3	12.9



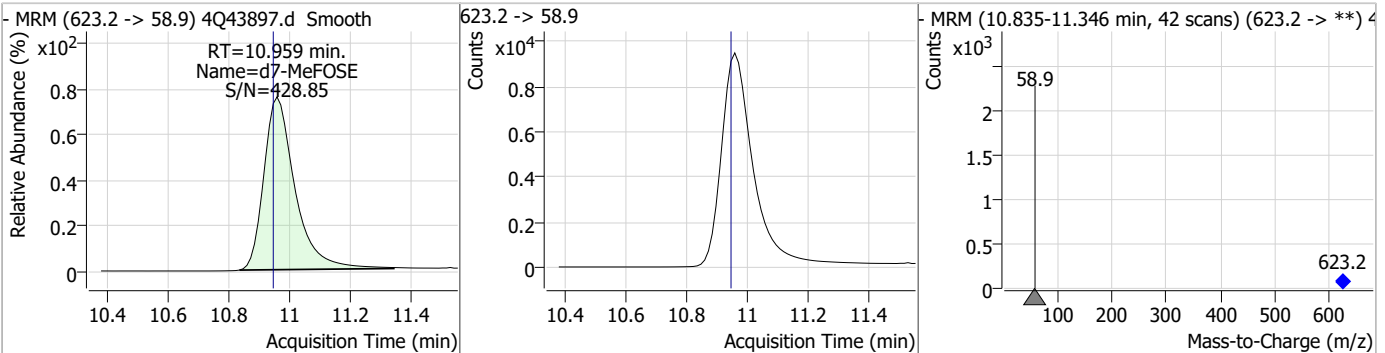
7.7.12 7

### Perfluorinated Compounds by LC/MS/MS

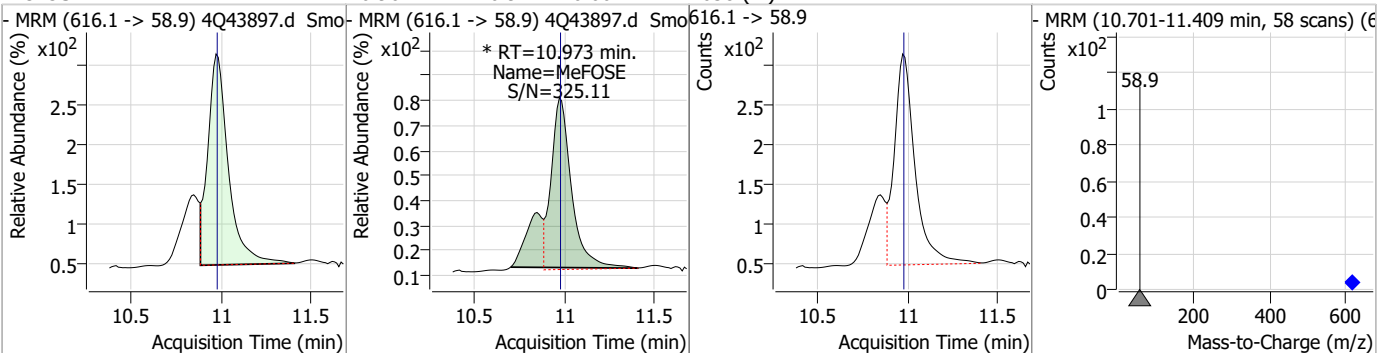
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	0.17	10.05	0.01	388	699.1 -> 98.8	71.0	26.9	80.6



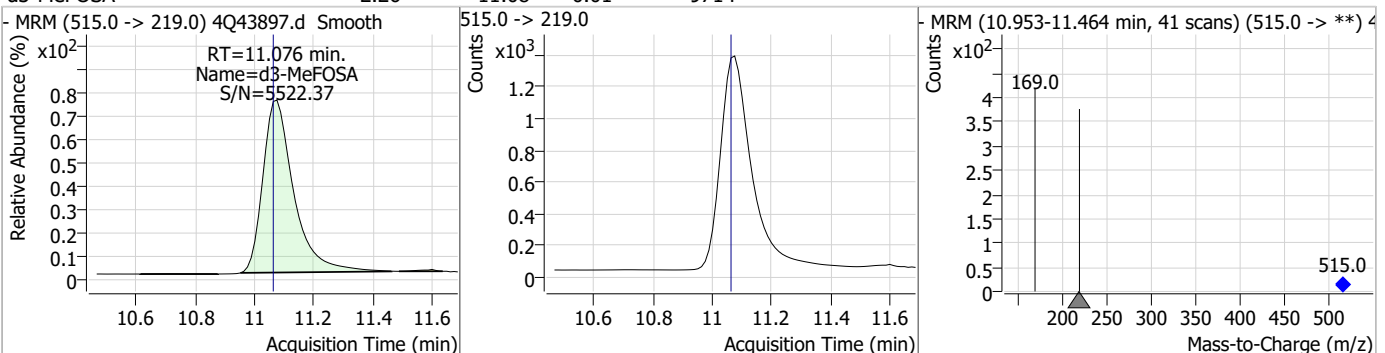
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.73	10.96	0.01	67258				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.96	10.97	0.00	2638 (m)				

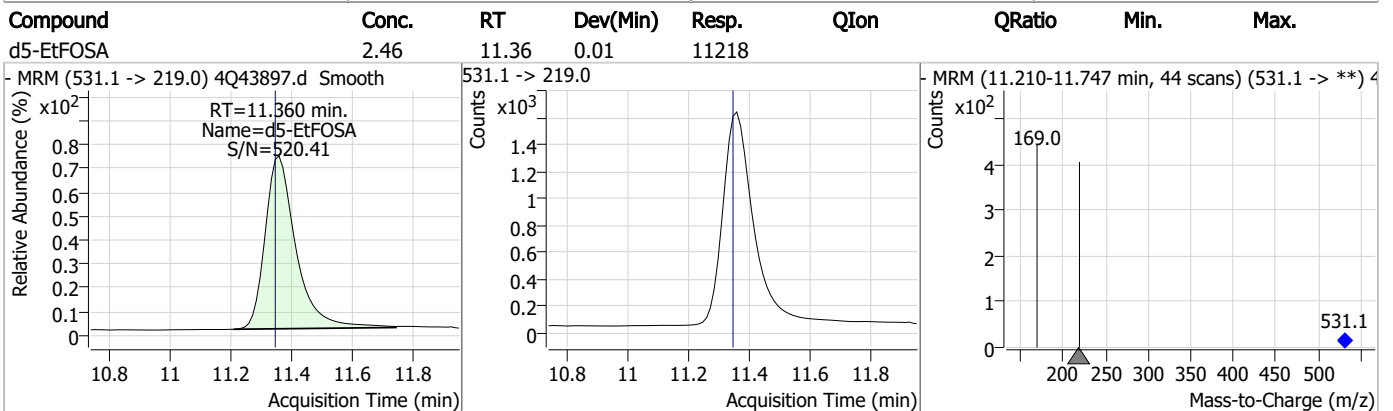
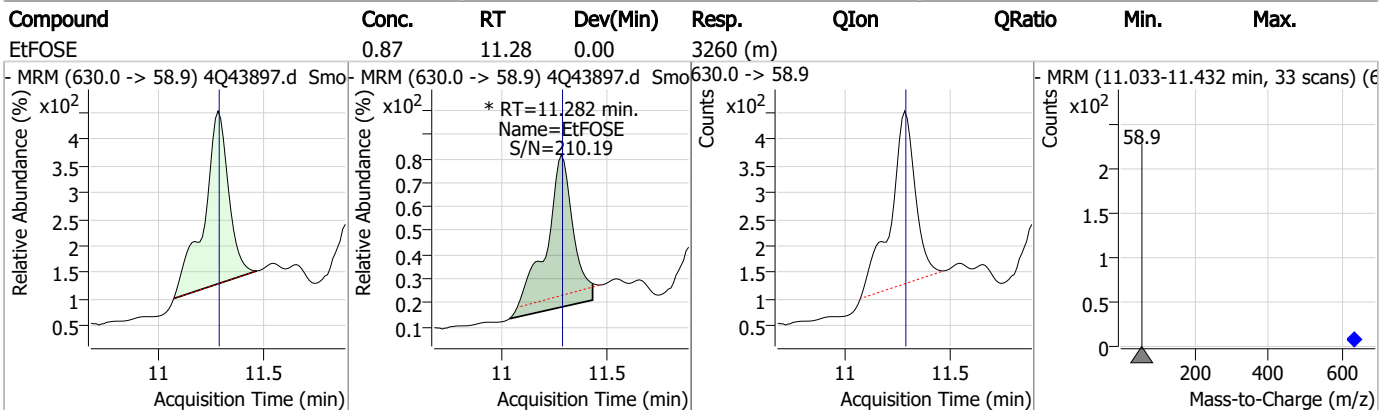
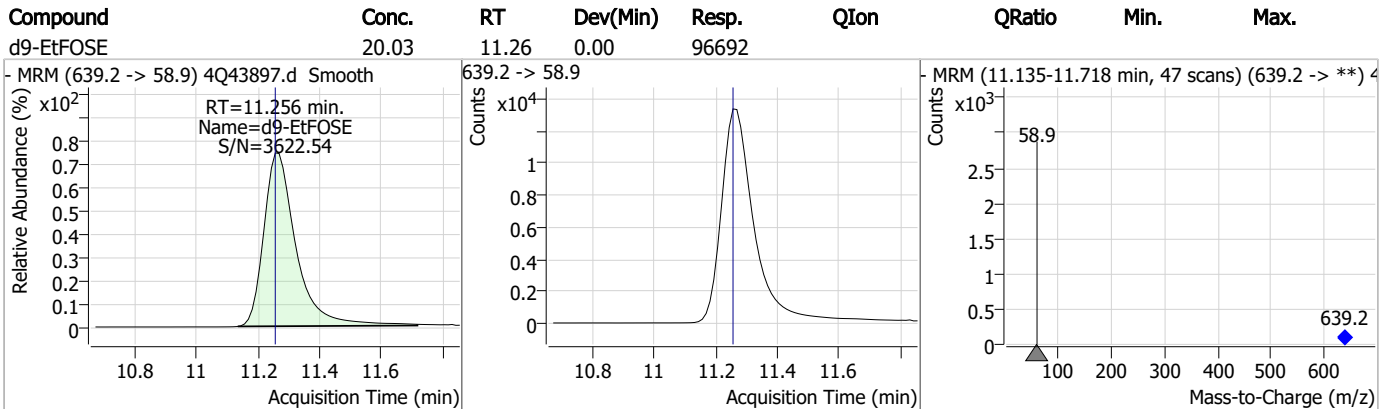
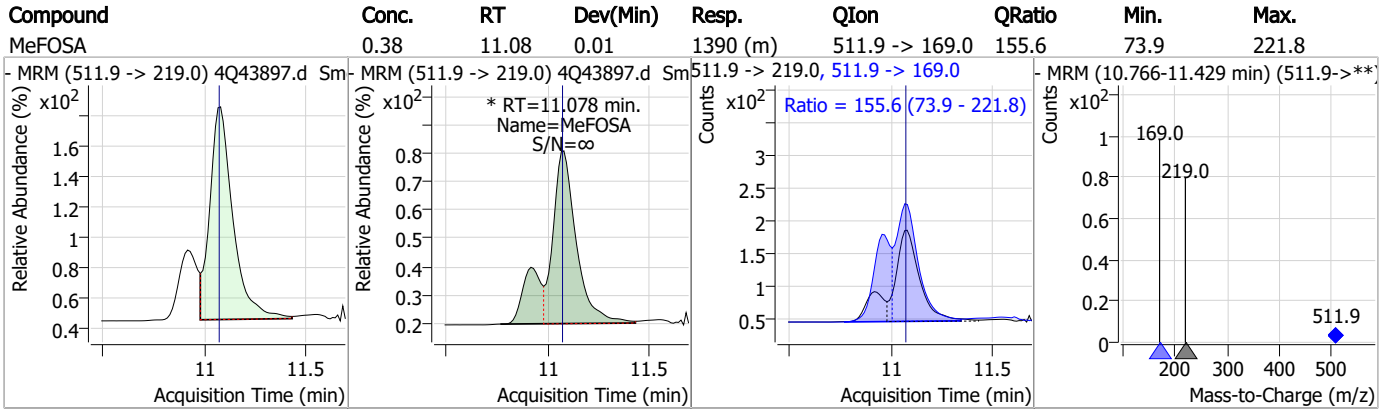


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.26	11.08	0.01	9714				



7.7.12  
7

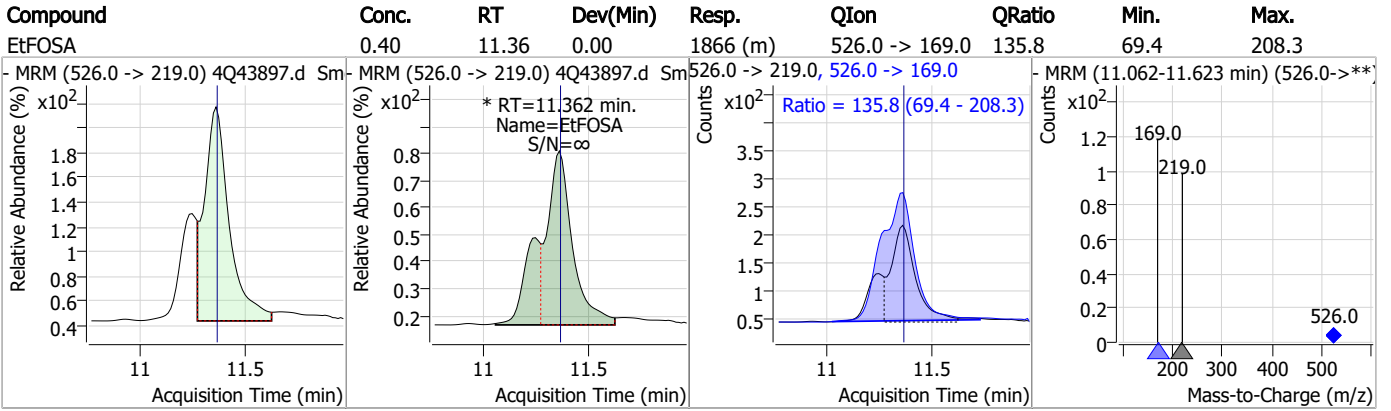
### Perfluorinated Compounds by LC/MS/MS



7.7.12  
7



### Perfluorinated Compounds by LC/MS/MS



7.7.12

7

# Manual Integration Approval Summary

Sample Number: S4Q634-CC634  
Lab FileID: 4Q43897.D  
Injection Time: 05/03/23 13:51

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

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.23	Split peak
MeFOSAA	2355-31-9		8.25	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.33	Split peak
EtFOSAA	2991-50-6		8.46	Split peak
MeFOSE	24448-09-7		10.97	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSE	1691-99-2		11.28	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.12.1  
7



## Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43907.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 4:11:53 PM  
 Sample Name : cc634-4  
 Vial : P1-A5  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.924	216.8 -> 171.9	131814	10.00 µg/L	0.000
M5-PFPeA	4.375	268.3 -> 223.0	70114	5.00 µg/L	0.012
M5-PFHxA	5.547	318.0 -> 273.0	48521	2.50 µg/L	0.012
M4-PFHpA	6.479	367.1 -> 322.0	29220	2.50 µg/L	0.012
M8-PFOA	7.148	421.1 -> 376.0	44445	2.50 µg/L	0.025
M9-PFNA	7.696	472.1 -> 427.0	21618	1.25 µg/L	0.026
M6-PFDA	8.191	519.1 -> 474.1	19495	1.25 µg/L	0.013
M7-PFUnDA	8.672	570.0 -> 525.1	20905	1.25 µg/L	0.025
M2-PFDoDA	9.118	615.1 -> 570.0	22930	1.25 µg/L	0.012
M2-PFTeDA	9.911	715.2 -> 670.0	15946	1.25 µg/L	0.012
M8-FOSA	9.783	506.1 -> 77.8	16495	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	12065	2.50 µg/L	0.025
M3-PFHxS	7.242	402.1 -> 79.9	7999	2.50 µg/L	0.012
M8-PFOS	8.341	507.1 -> 79.9	10748	2.50 µg/L	0.012
M2-4:2FTS	5.235	329.1 -> 80.9	1182	5.00 µg/L	0.012
M2-6:2FTS	6.923	429.1 -> 80.9	2062	5.00 µg/L	0.025
M2-8:2FTS	7.978	529.1 -> 80.9	3543	5.00 µg/L	0.012
M3-MeFOSAA	8.261	573.2 -> 419.0	16353	5.00 µg/L	0.025
M3-HFPO-DA	5.914	286.9 -> 168.9	27476	10.00 µg/L	0.025
M5-EtFOSAA	8.458	589.2 -> 419.0	13087	5.00 µg/L	0.012
M7-MeFOSE	10.959	623.2 -> 58.9	69908	25.00 µg/L	0.012
M9-EtFOSE	11.269	639.2 -> 58.9	99293	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	11733	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	9872	2.50 µg/L	0.012
13C4-PFOS	8.342	502.8 -> 79.9	11516	2.50 µg/L	0.012
13C3-PFBA	2.928	216.0 -> 172.0	70689	5.00 µg/L	0.000
18O2-PFHxS	7.241	403.0 -> 83.9	4910	2.50 µg/L	0.012
13C4-PFOA	7.149	417.1 -> 372.0	53561	2.50 µg/L	0.025
13C2-PFDA	8.204	515.1 -> 470.1	18855	1.25 µg/L	0.025
13C5-PFNA	7.697	468.0 -> 423.0	24646	1.25 µg/L	0.012
13C2-PFHxA	5.548	315.1 -> 270.0	43941	2.50 µg/L	0.012
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.235	329.1 -> 80.9	1182	5.92 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.5%		
13C2-6:2FTS	6.923	429.1 -> 80.9	2062	5.73 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.7%		
13C2-8:2FTS	7.978	529.1 -> 80.9	3543	6.31 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 126.2%		
13C2-PFDoDA	9.118	615.1 -> 570.0	22930	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C2-PFTeDA	9.911	715.2 -> 670.0	15946	1.07 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 85.8%		
13C3-PFBS	5.452	302.1 -> 79.9	12065	2.61 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
13C3-PFHxS	7.242	402.1 -> 79.9	7999	2.63 µg/L	0.012

7.7.13  
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 = 105.1%		
13C4-PFBA	2.924	216.8 -> 171.9	131814	9.91 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C4-PFHpA	6.479	367.1 -> 322.0	29220	2.58 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C5-PFHxA	5.547	318.0 -> 273.0	48521	2.51 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C5-PFPeA	4.375	268.3 -> 223.0	70114	5.18 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C6-PFDA	8.191	519.1 -> 474.1	19495	1.21 µg/L	0.013
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C7-PFUnDA	8.672	570.0 -> 525.1	20905	1.24 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C8-FOSA	9.783	506.1 -> 77.8	16495	2.28 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 91.4%		
13C8-PFOA	7.148	421.1 -> 376.0	44445	2.53 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.1%		
13C8-PFOS	8.341	507.1 -> 79.9	10748	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C9-PFNA	7.696	472.1 -> 427.0	21618	1.29 µg/L	0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.2%		
d3-MeFOSAA	8.261	573.2 -> 419.0	16353	5.63 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.5%		
13C3-HFPO-DA	5.914	286.9 -> 168.9	27476	9.50 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 95.0%		
d3-MeFOSA	11.076	515.0 -> 219.0	9872	2.19 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 87.4%		
d5-EtFOSAA	8.458	589.2 -> 419.0	13087	5.47 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 109.3%		
d7-MeFOSE	10.959	623.2 -> 58.9	69908	19.51 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 78.0%		
d9-EtFOSE	11.269	639.2 -> 58.9	99293	19.57 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 78.3%		
d5-EtFOSA	11.360	531.1 -> 219.0	11733	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.236	327.1 -> 307.0	17525	9.21 µg/L	92
		327.1 -> 80.9	7230		
6:2FTS	6.911	427.1 -> 407.0	20655	10.37 µg/L	98
		427.1 -> 80.9	8433		
8:2FTS	7.978	527.1 -> 507.0	19521	9.88 µg/L	95
		527.1 -> 80.8	7645		
EtFOSAA	8.471	584.2 -> 419.1	6173	2.46 µg/L	m 90
		584.2 -> 526.0	2697		
FOSA	9.774	498.1 -> 77.9	17438	2.52 µg/L	99
		498.1 -> 478.0	612		
MeFOSAA	8.262	570.1 -> 419.0	6746	2.37 µg/L	m 98
		570.1 -> 483.0	1533		
PFBA	2.932	212.8 -> 168.9	34659	9.82 µg/L	100
PFBS	5.453	298.7 -> 79.9	10381	2.10 µg/L	99
		298.7 -> 98.8	4288		
PFDA	8.192	512.9 -> 469.0	37954	2.57 µg/L	96
		512.9 -> 219.0	7524		
PFDODA	9.119	613.1 -> 569.0	42866	2.33 µg/L	100
		613.1 -> 319.0	6238		
PFDS	9.282	599.0 -> 79.9	5986	2.25 µg/L	90

7.7.13  
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.480	599.0 -> 98.8	3187	2.47	µg/L	100
		363.1 -> 319.0	45702			
PFHpS	7.823	363.1 -> 169.0	8203	2.44	µg/L	93
		449.0 -> 79.9	9447			
PFHxA	5.550	449.0 -> 98.9	4595	2.44	µg/L	98
		313.0 -> 269.0	46424			
PFHxS	7.243	313.0 -> 118.9	1600	2.14	µg/L	100
		398.7 -> 79.9	7008			
PFNA	7.697	398.7 -> 98.9	3529	2.26	µg/L	98
		463.0 -> 419.0	36204			
PFNS	8.836	463.0 -> 219.0	9370	2.23	µg/L	97
		548.8 -> 79.9	5221			
PFOA	7.150	548.8 -> 98.9	2853	2.34	µg/L	97
		413.0 -> 369.0	59886			
PFOS	8.343	413.0 -> 169.0	12343	2.28	µg/L	97
		498.9 -> 79.9	11983			
PFPeA	4.377	498.9 -> 98.8	6141	4.86	µg/L	100
		263.0 -> 219.0	82057			
PFPeS	6.519	349.1 -> 79.9	6060	2.15	µg/L	95
		349.1 -> 98.9	2994			
PFTeDA	9.912	713.1 -> 669.0	39800	2.55	µg/L	99
		713.1 -> 168.9	3517			
PFTrDA	9.541	663.0 -> 619.0	56398	2.29	µg/L	98
		663.0 -> 168.9	5750			
PFUnDA	8.673	563.1 -> 519.0	34151	2.41	µg/L	99
		563.1 -> 269.1	7226			
11CI-PF3OUdS	9.581	630.9 -> 450.9	49316	4.99	µg/L	97
		632.9 -> 452.9	15143			
9CI-PF3ONS	8.700	530.8 -> 351.0	62134	4.94	µg/L	99
		532.8 -> 353.0	18395			
ADONA	6.743	376.9 -> 250.9	138704	5.02	µg/L	100
		376.9 -> 84.8	36377			
HFPO-DA	5.915	284.9 -> 168.9	12640	4.81	µg/L	96
		284.9 -> 184.9	1618			
3:3FTCA	3.848	241.0 -> 177.0	8598	11.58	µg/L	98
		241.0 -> 117.0	814			
5:3FTCA	6.217	341.0 -> 237.1	161372	62.56	µg/L	100
		341.0 -> 217.0	109861			
7:3FTCA	7.661	441.0 -> 316.9	88069	65.71	µg/L	98
		441.0 -> 336.9	207705			
EtFOSA	11.362	526.0 -> 219.0	23947	4.87	µg/L	98
		526.0 -> 169.0	33717			
EtFOSE	11.282	630.0 -> 58.9	45164	11.75	µg/L	100
MeFOSA	11.078	511.9 -> 219.0	20014	5.38	µg/L	99
		511.9 -> 169.0	29733			
MeFOSE	10.985	616.1 -> 58.9	33234	11.57	µg/L	100
PFDoDS	10.052	699.1 -> 79.9	5539	2.33	µg/L	100
		699.1 -> 98.8	2963			
NFDHA	5.428	295.0 -> 201.0	6880	5.07	µg/L	94
		295.0 -> 84.9	1682			
PFMBA	4.778	279.0 -> 85.1	44315	4.71	µg/L	100
PFMPA	3.528	229.0 -> 84.9	42352	4.80	µg/L	100
PFEESA	5.984	314.8 -> 134.9	61481	4.27	µg/L	99
		314.8 -> 82.9	2015			

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

7.7.13  
7

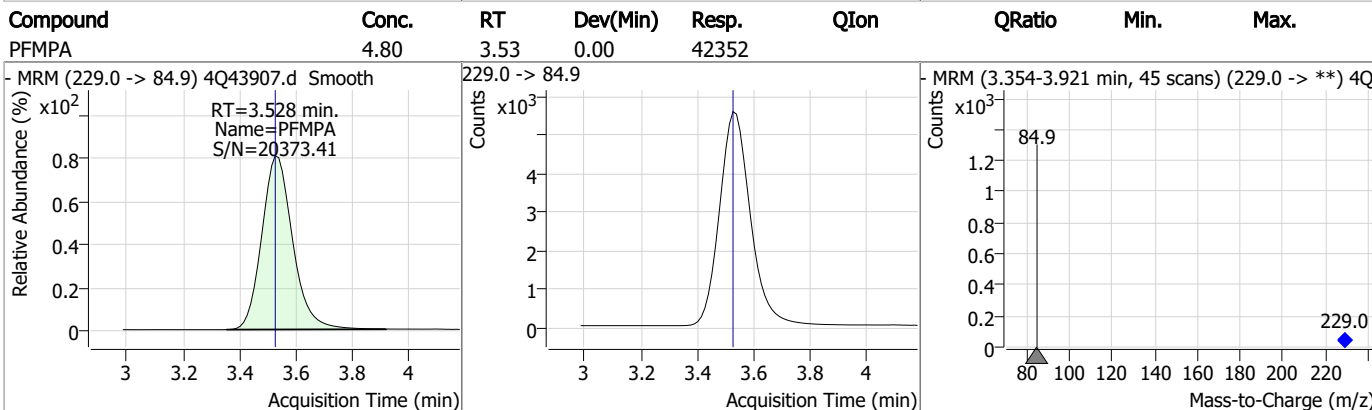
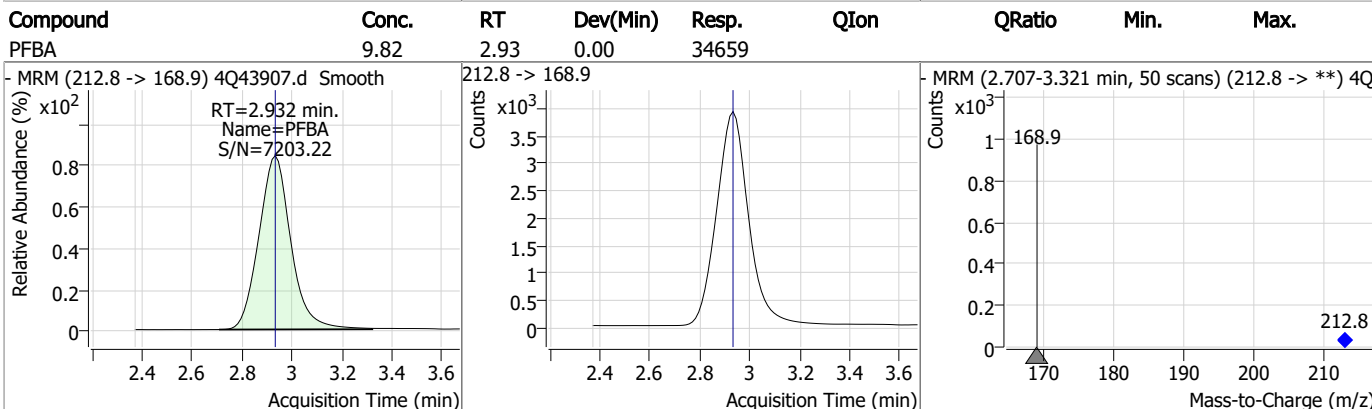
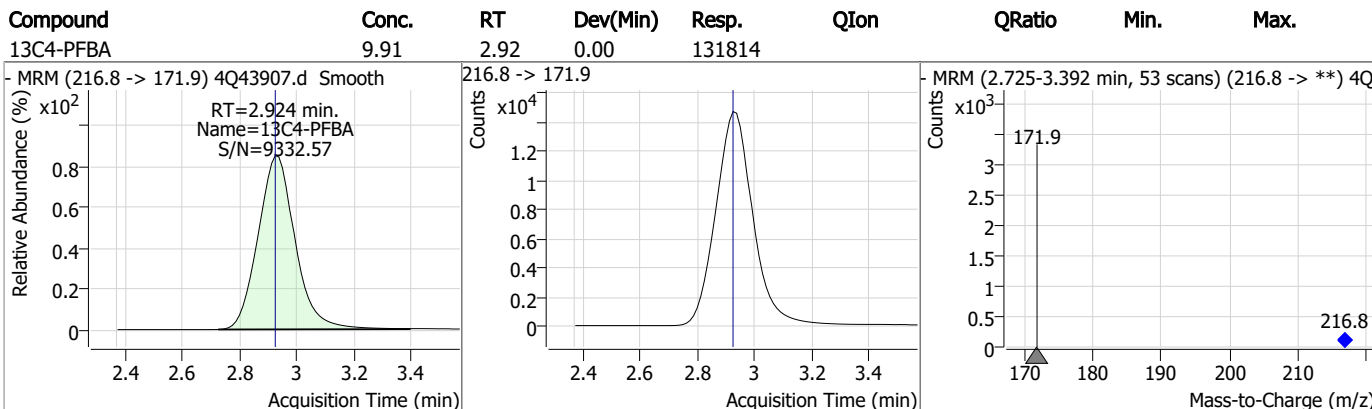
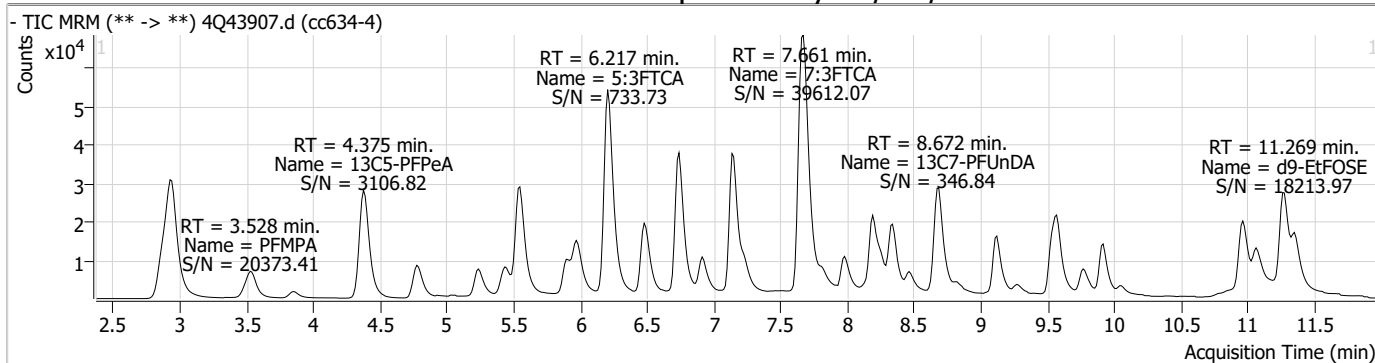
### Perfluorinated Compounds by LC/MS/MS

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

7.7.13

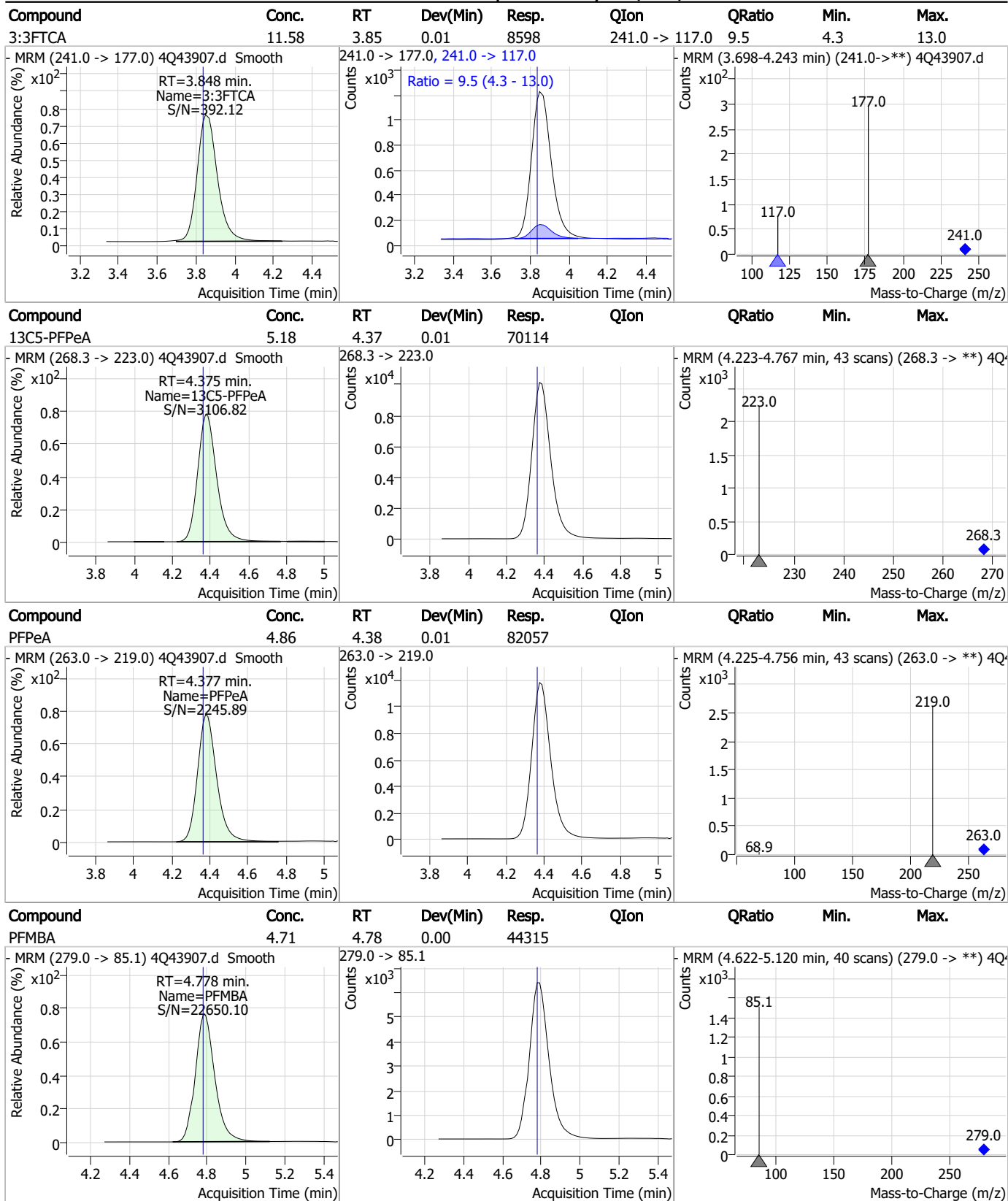
7

### Perfluorinated Compounds by LC/MS/MS



7.7.13  
7

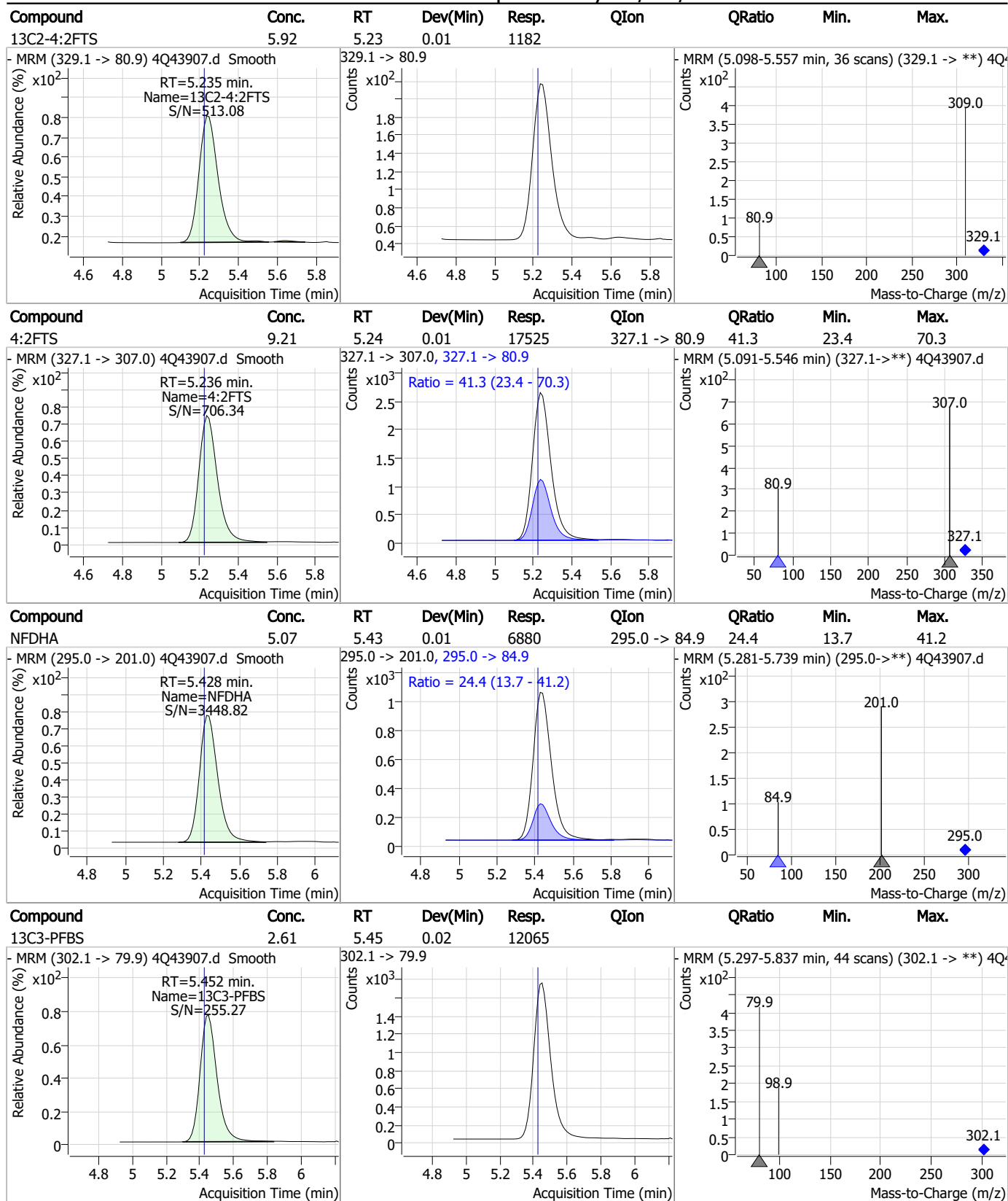
### Perfluorinated Compounds by LC/MS/MS



7.7.13

7

### Perfluorinated Compounds by LC/MS/MS

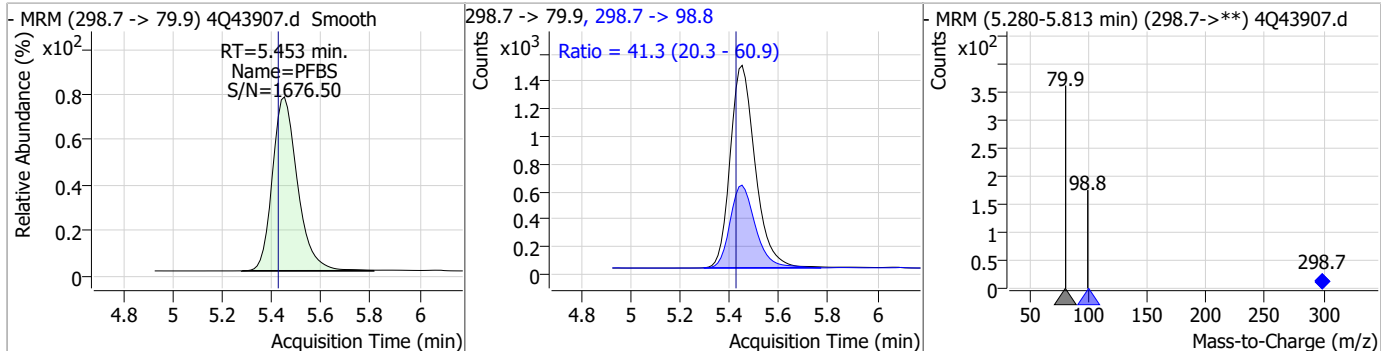


7.7.13

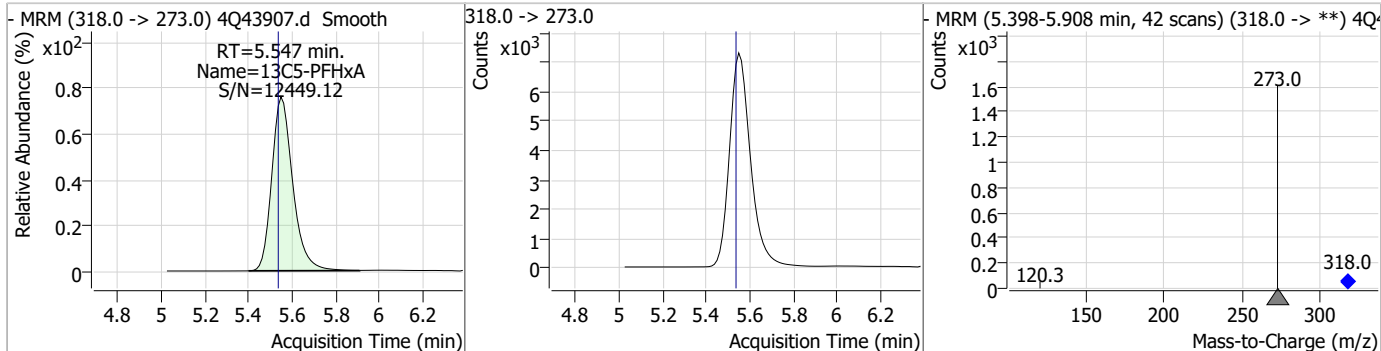
7

### Perfluorinated Compounds by LC/MS/MS

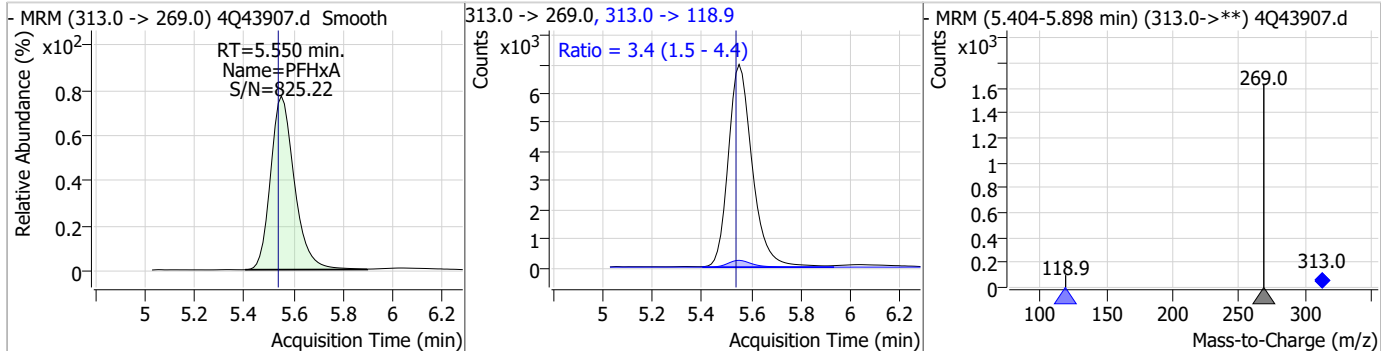
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.10	5.45	0.02	10381	298.7 -> 98.8	41.3	20.3	60.9



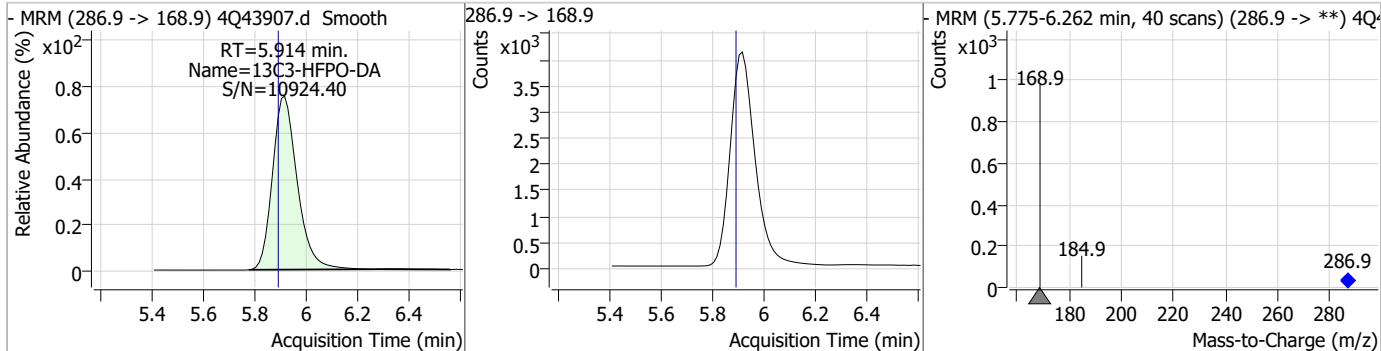
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.51	5.55	0.01	48521				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.44	5.55	0.01	46424	313.0 -> 118.9	3.4	1.5	4.4



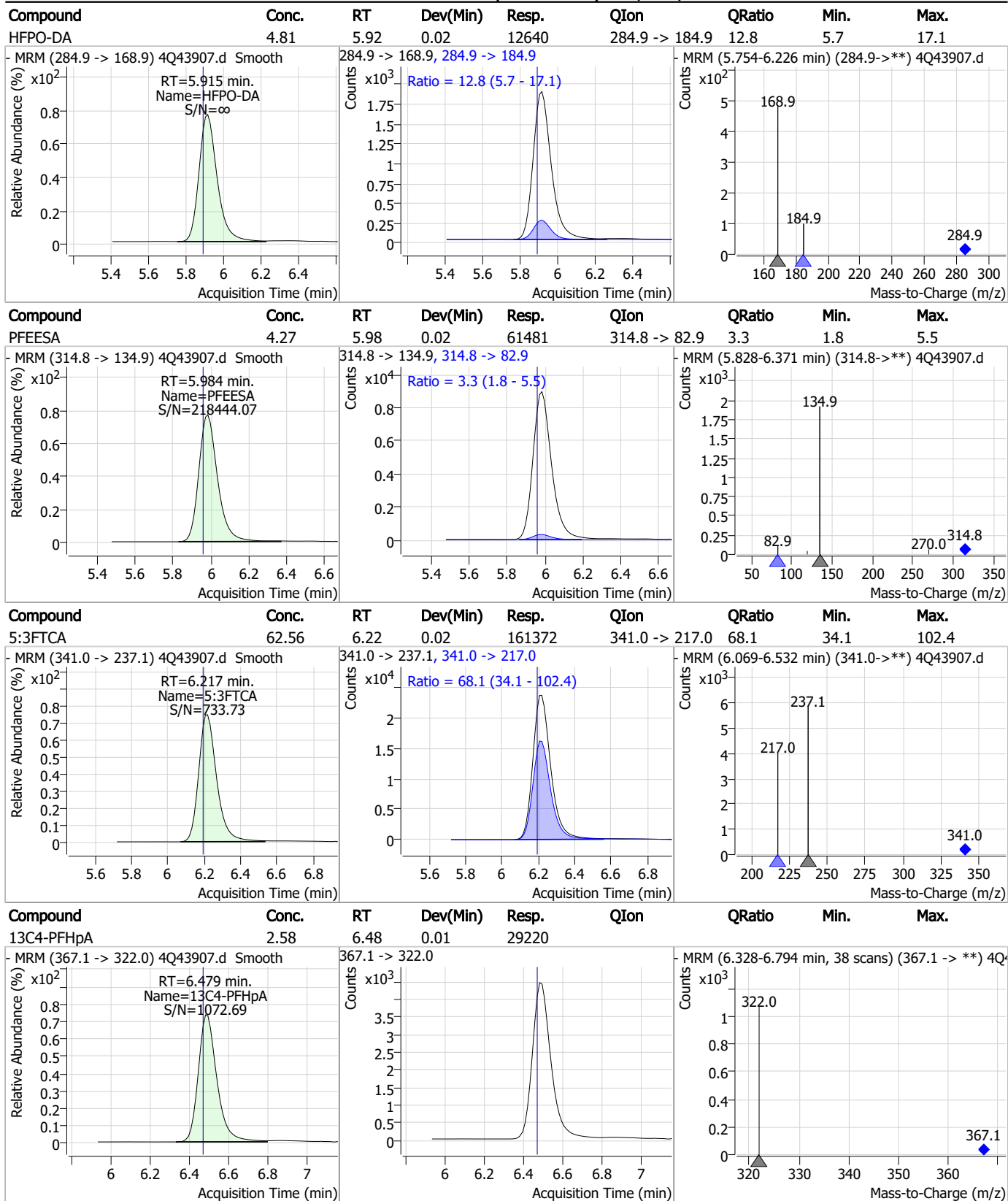
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.50	5.91	0.02	27476				



7.7.13  
7



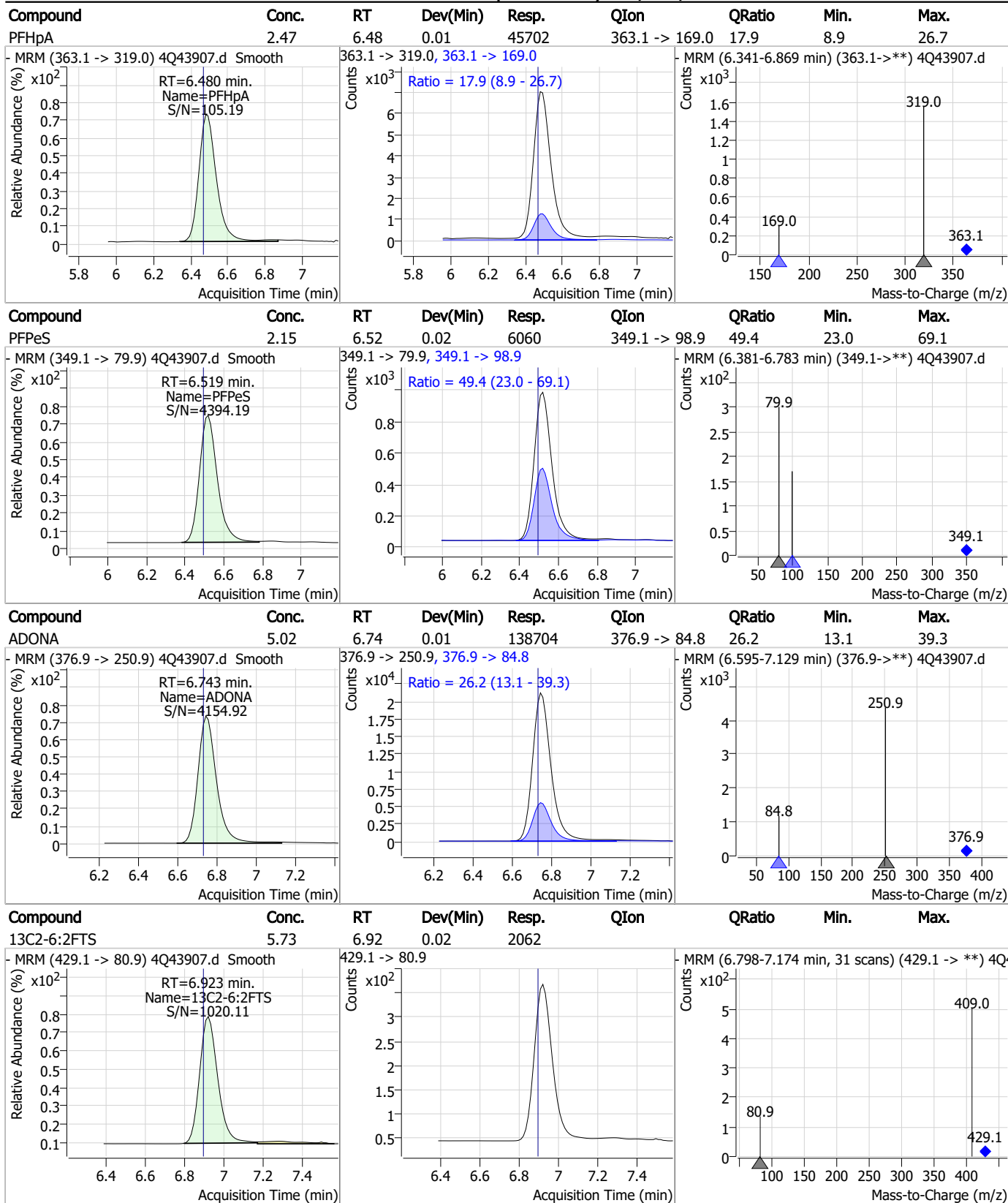
### Perfluorinated Compounds by LC/MS/MS



7.7.13

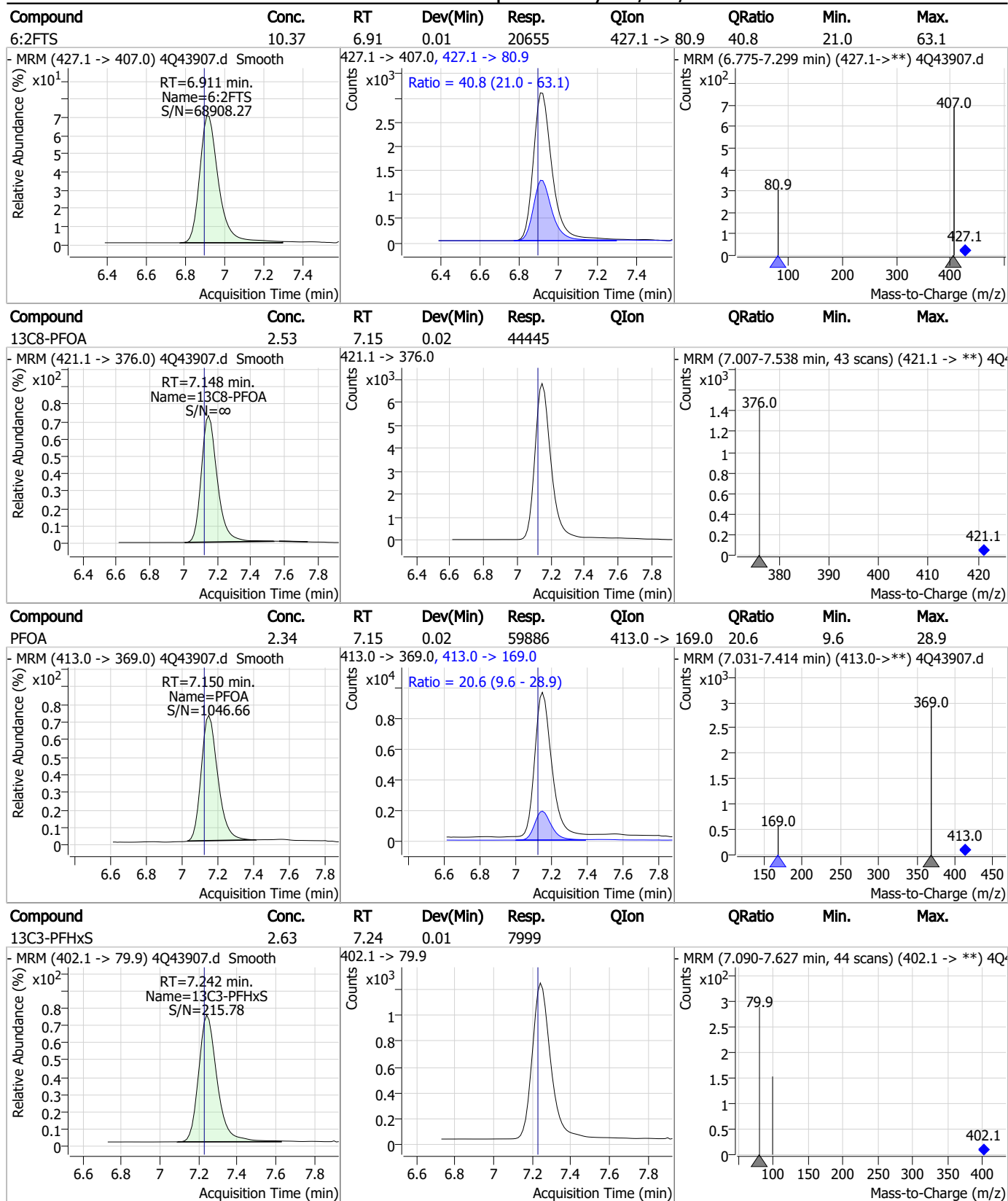
7

### Perfluorinated Compounds by LC/MS/MS



7.7.13  
7

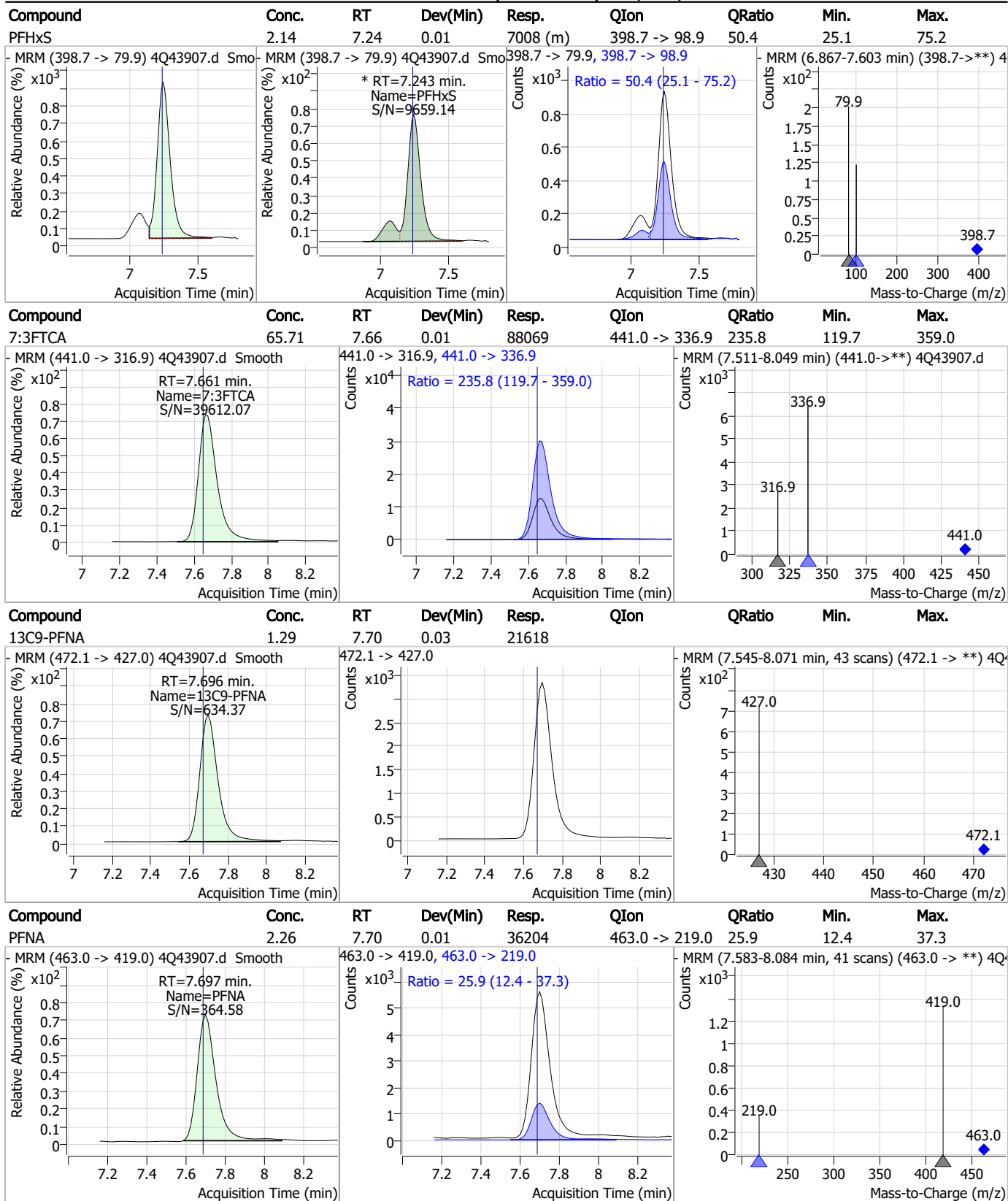
### Perfluorinated Compounds by LC/MS/MS



7.7.13

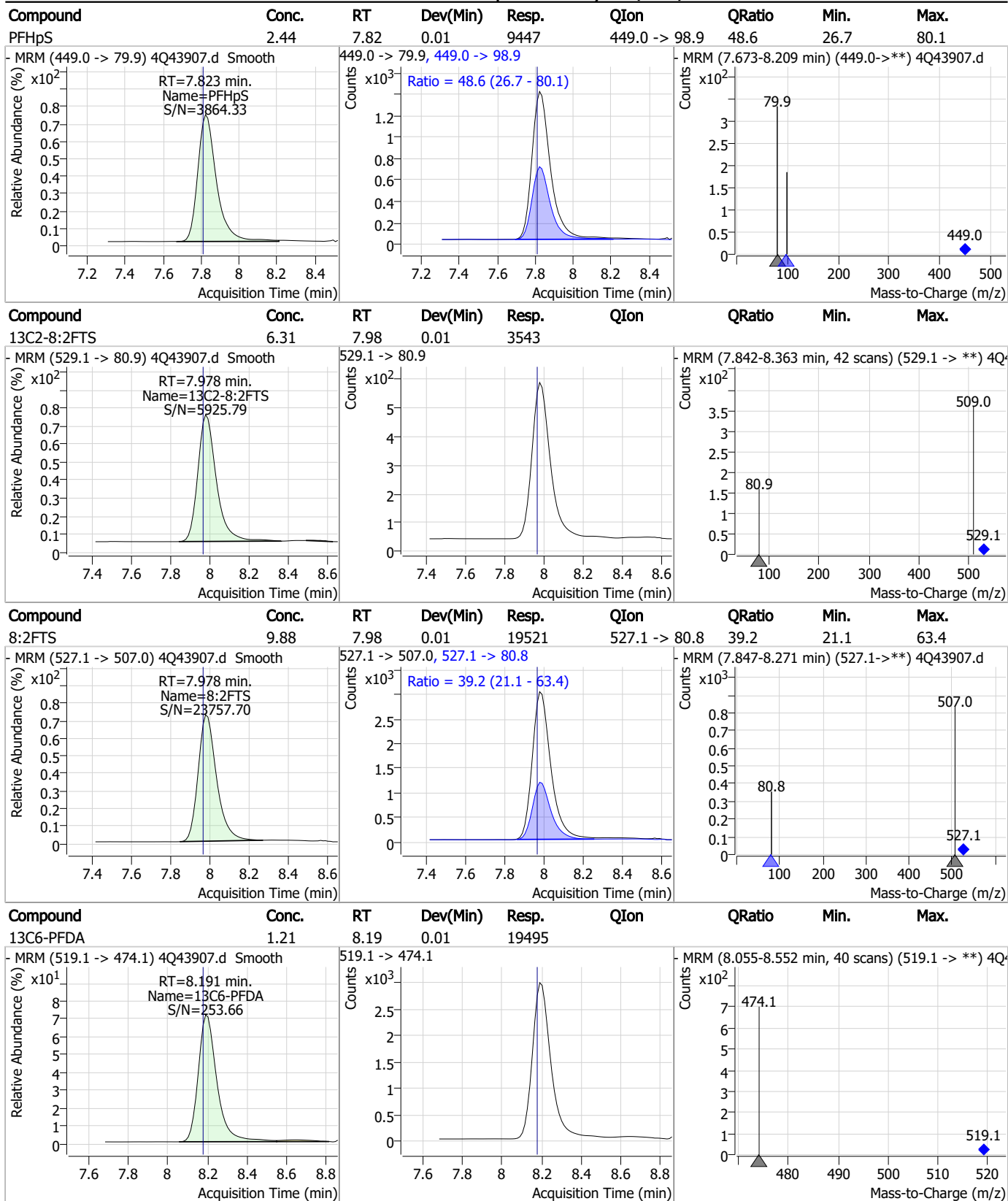
7

### Perfluorinated Compounds by LC/MS/MS



7.7.13  
7

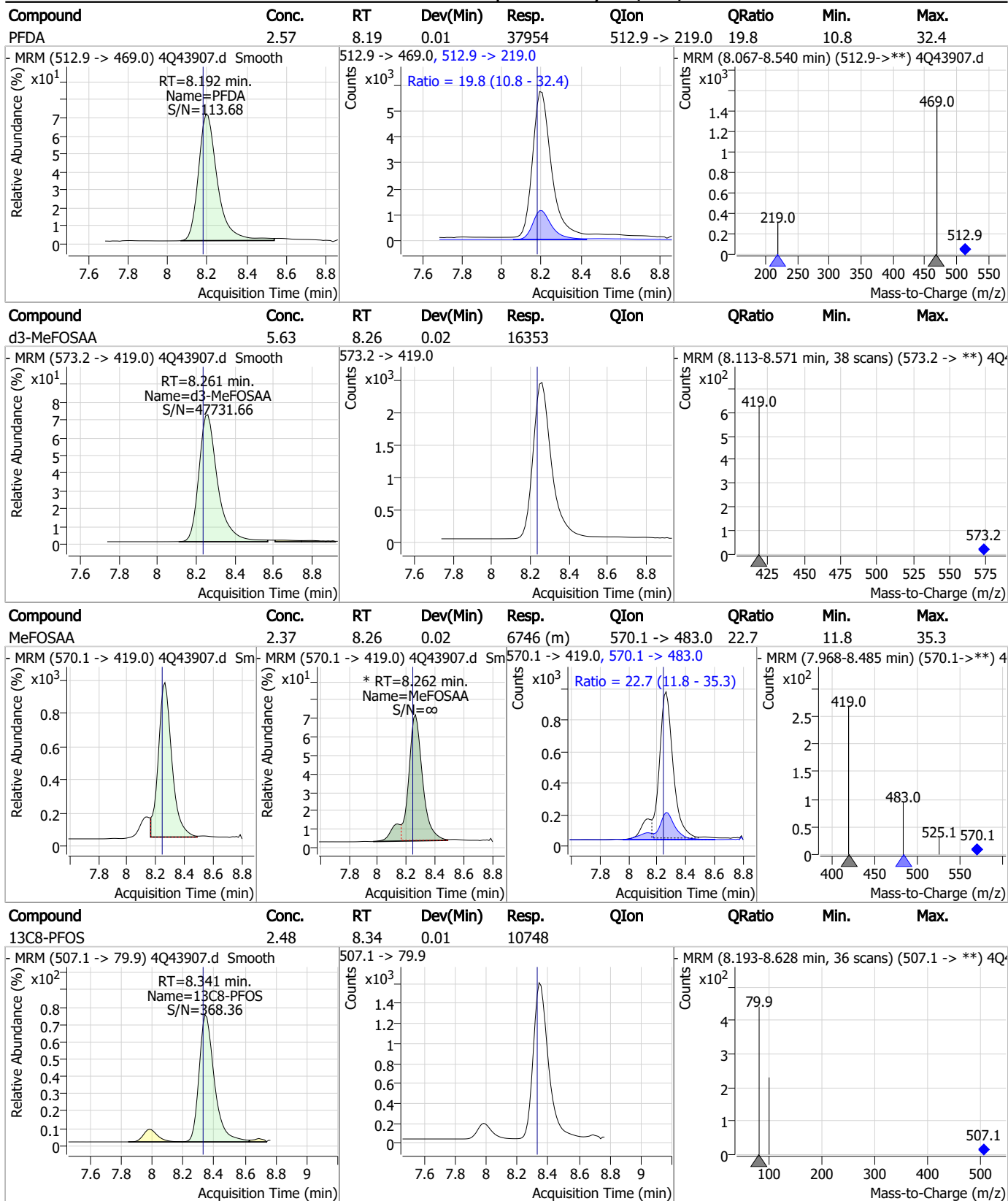
### Perfluorinated Compounds by LC/MS/MS



7.7.13

7

### Perfluorinated Compounds by LC/MS/MS

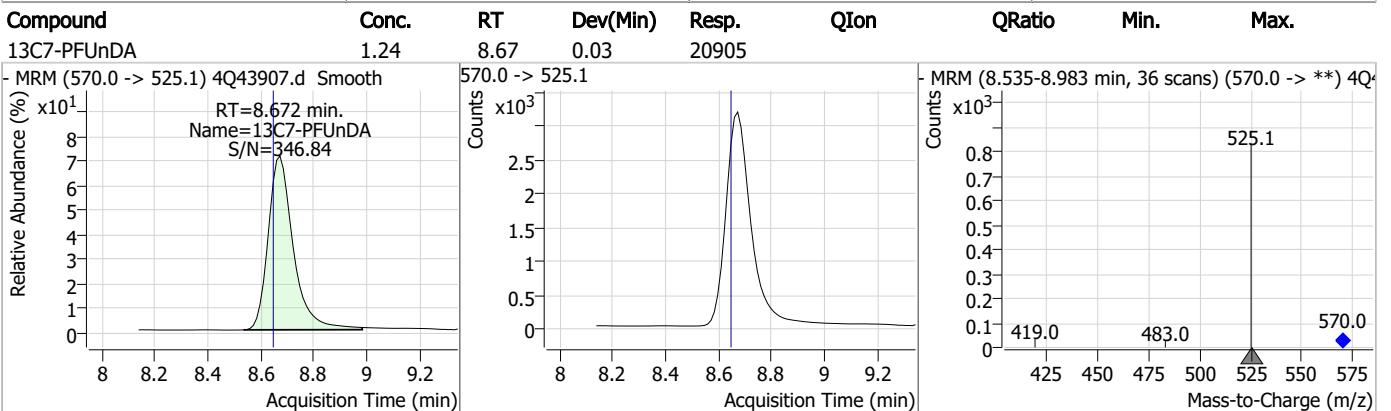
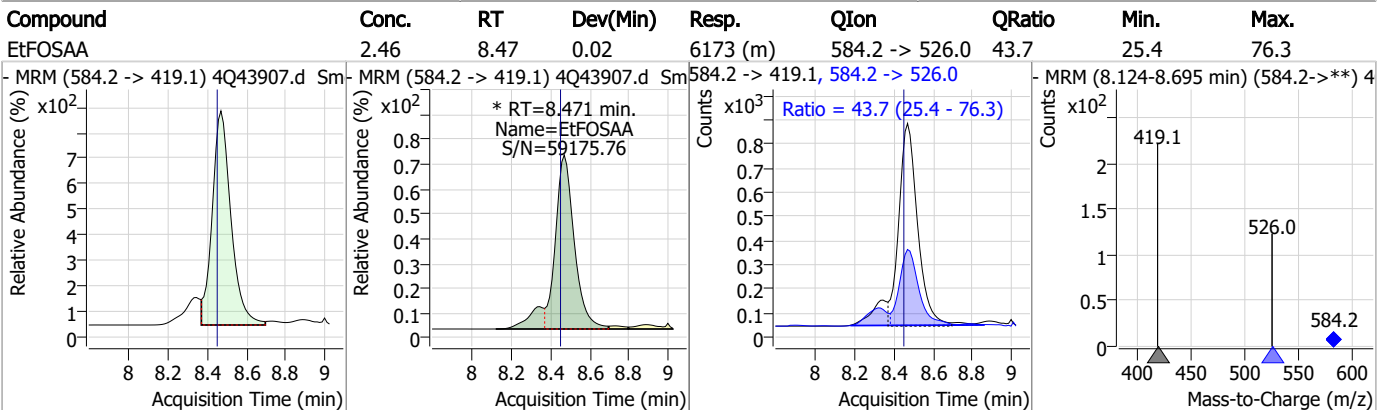
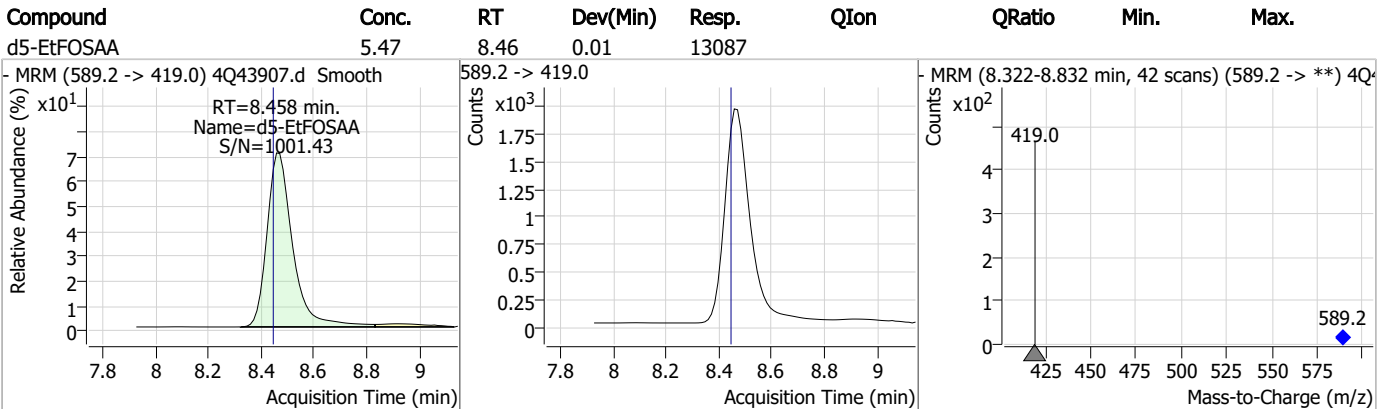
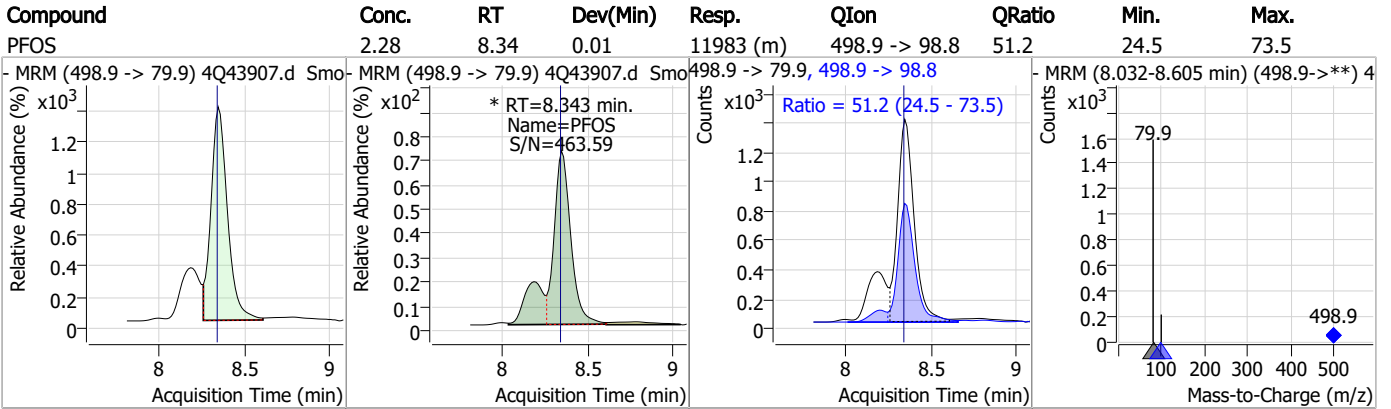


7.7.13

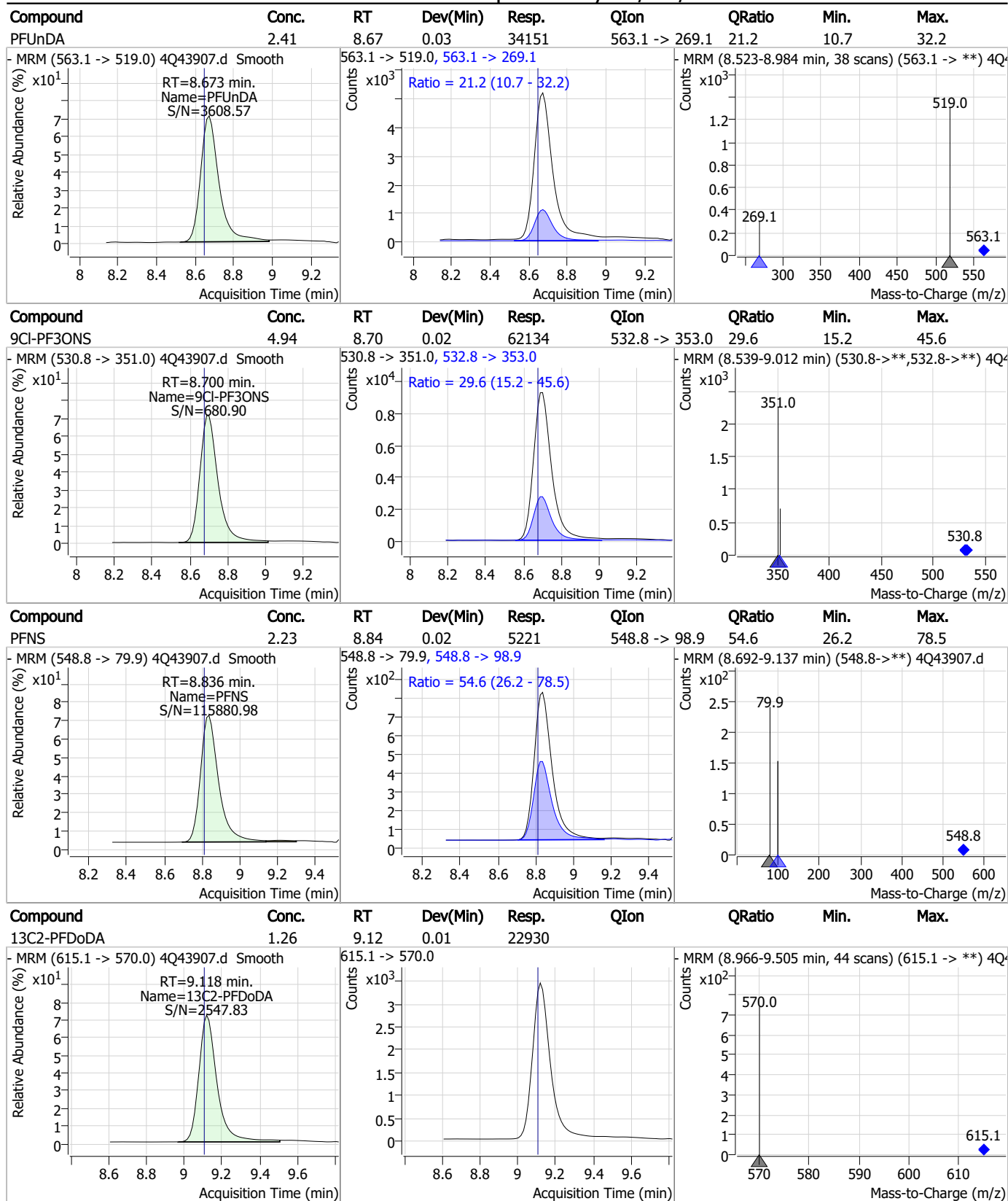
7



### Perfluorinated Compounds by LC/MS/MS



### Perfluorinated Compounds by LC/MS/MS



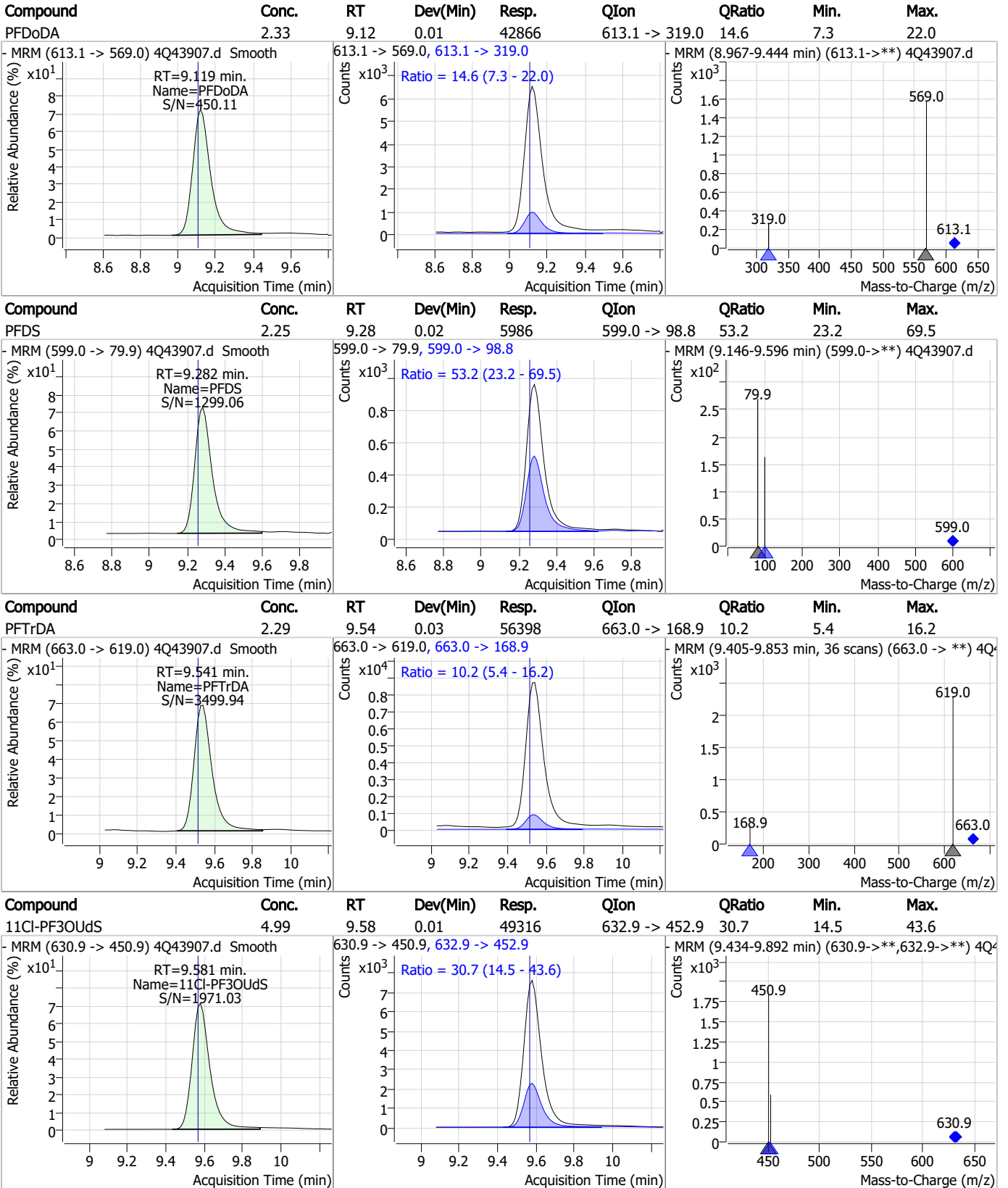
7.7.13

7





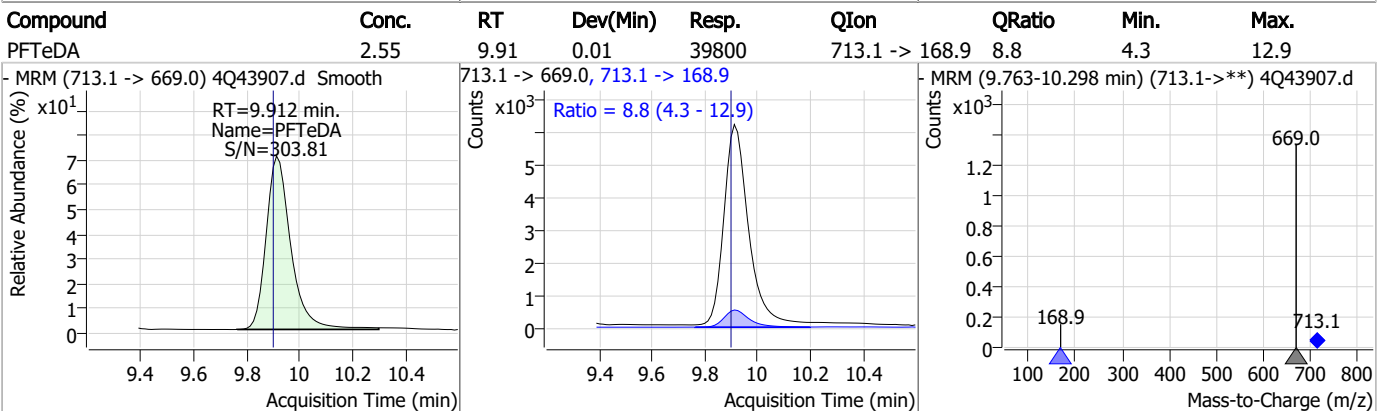
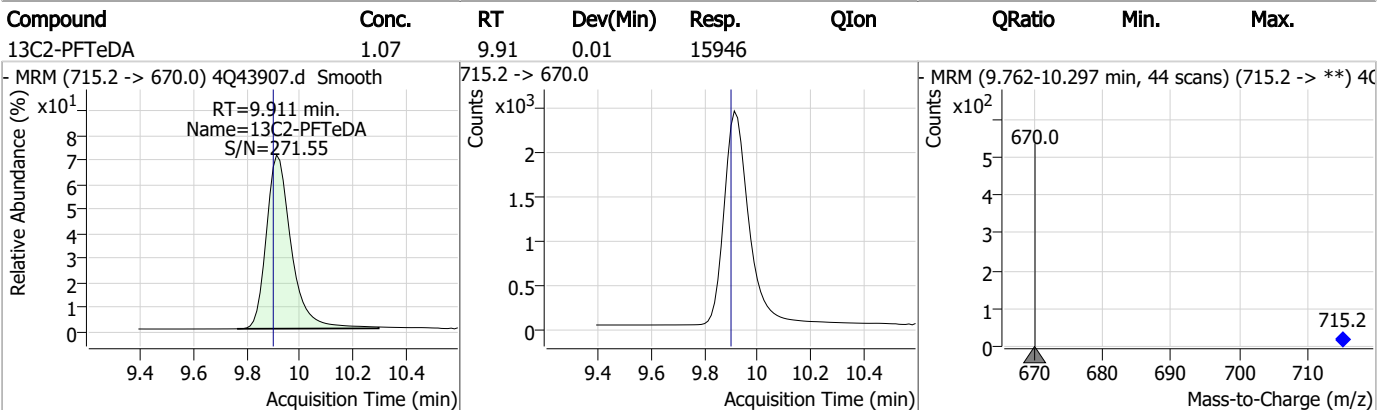
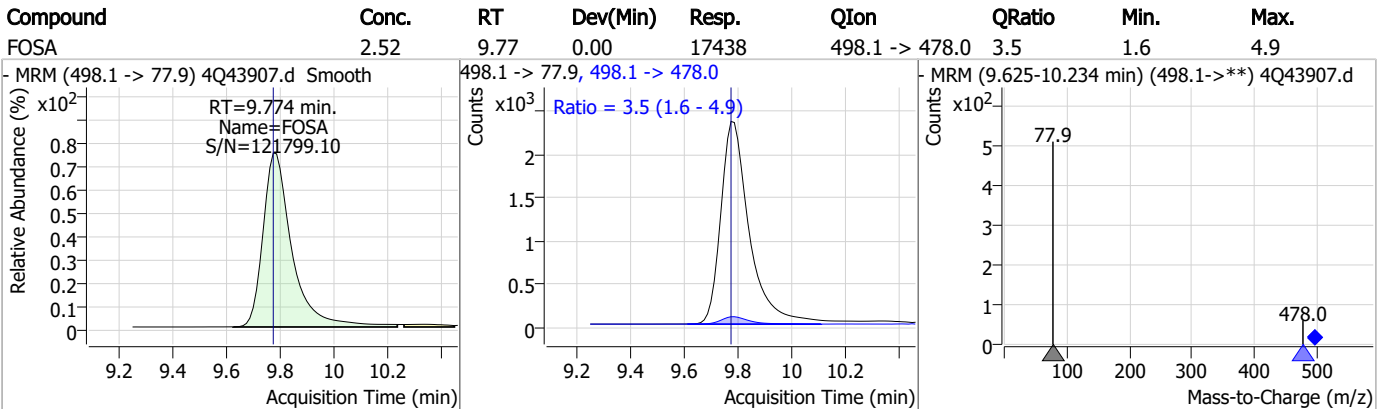
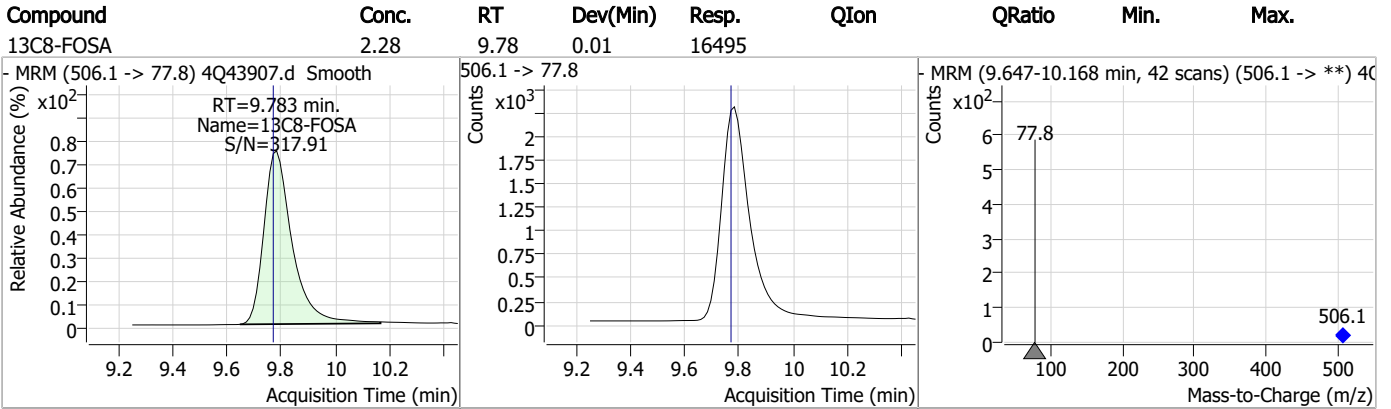
### Perfluorinated Compounds by LC/MS/MS



7.7.13  
7



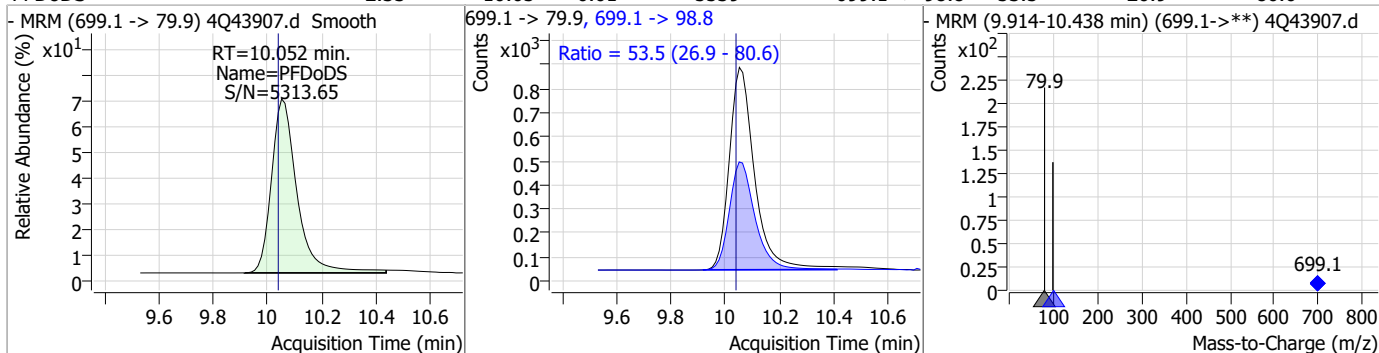
### Perfluorinated Compounds by LC/MS/MS



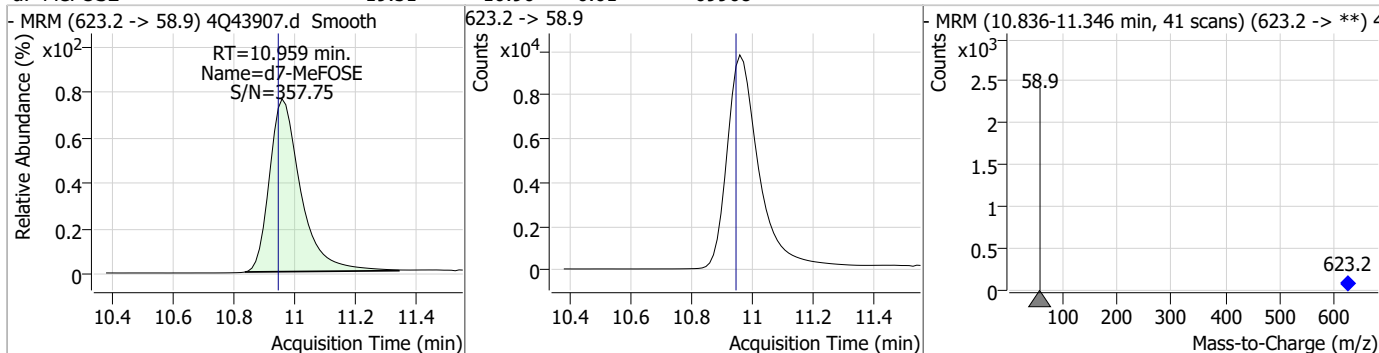
7.7.13  
7

### Perfluorinated Compounds by LC/MS/MS

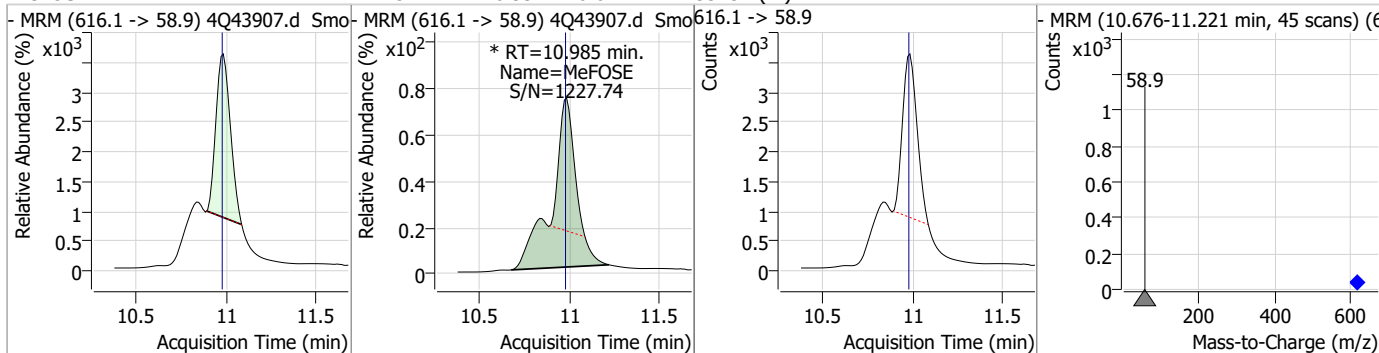
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.33	10.05	0.01	5539	699.1 -> 98.8	53.5	26.9	80.6



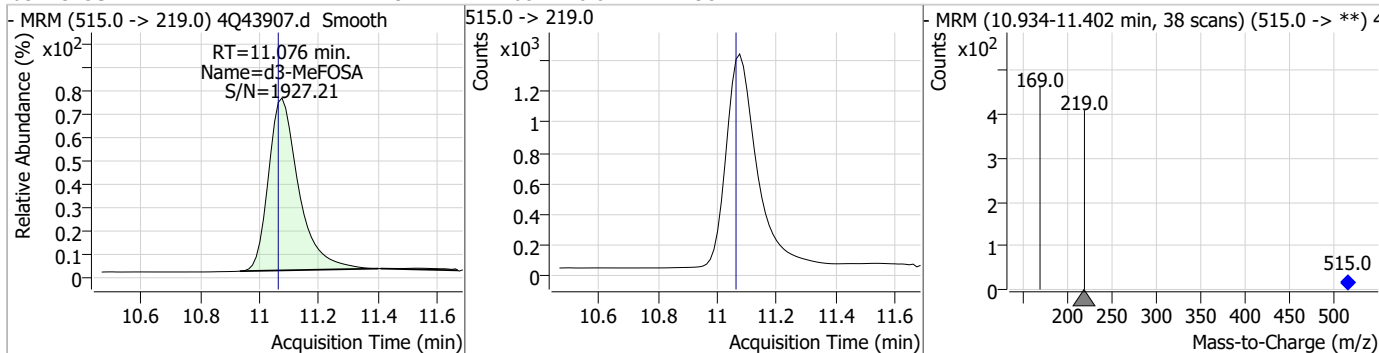
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	19.51	10.96	0.01	69908				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.57	10.99	0.01	33234 (m)				

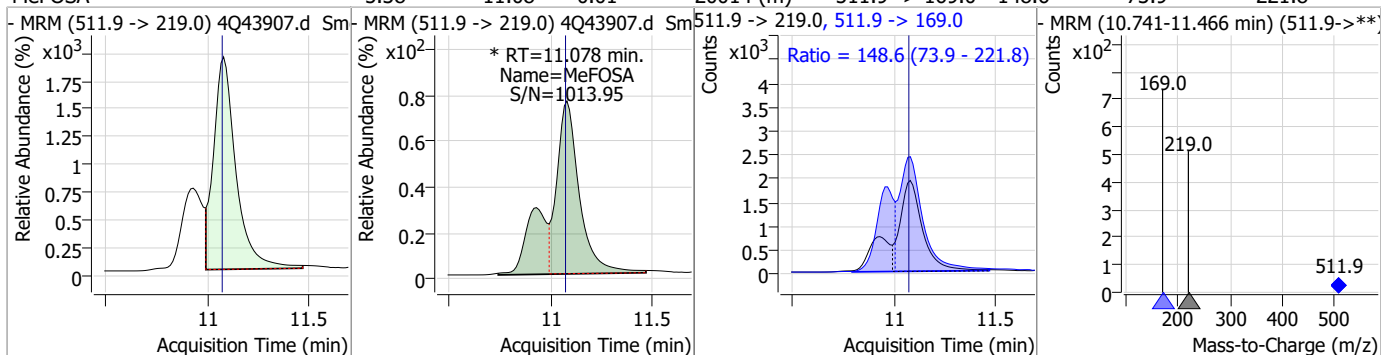


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.19	11.08	0.01	9872				

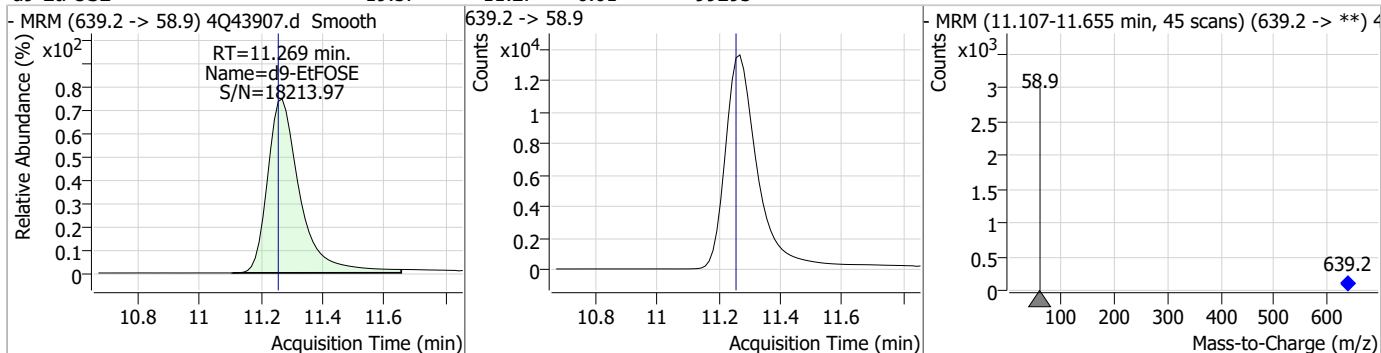


### Perfluorinated Compounds by LC/MS/MS

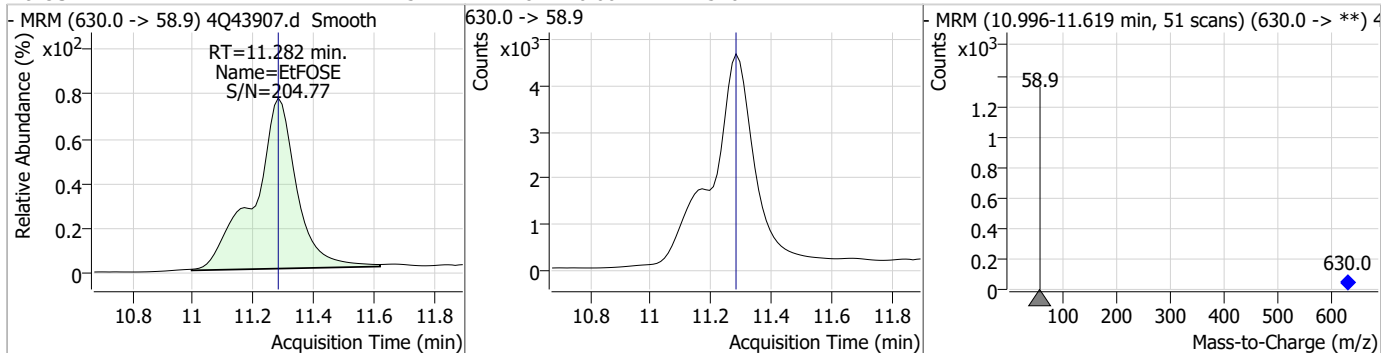
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	5.38	11.08	0.01	20014 (m)	511.9 -> 169.0	148.6	73.9	221.8



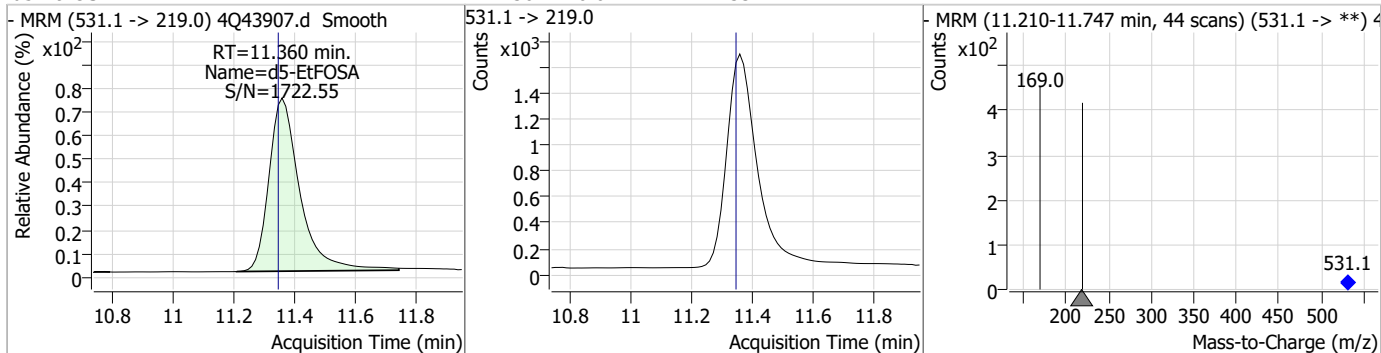
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	19.57	11.27	0.01	99293				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.75	11.28	0.00	45164				

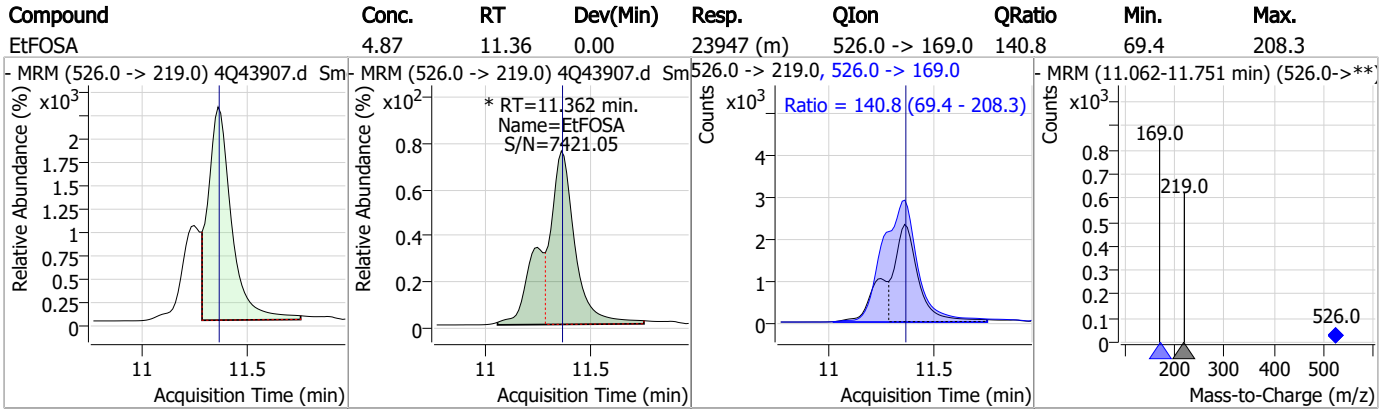


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSA	2.44	11.36	0.01	11733				



7.7.13  
7

### Perfluorinated Compounds by LC/MS/MS



7.7.13

7

# Manual Integration Approval Summary

Sample Number: S4Q634-CC634      Method: EPA DRAFT 1633  
Lab FileID: 4Q43907.D      Analyst approved: 05/04/23 11:23 Natasha Gumtie  
Injection Time: 05/03/23 16:11      Supervisor approved: 05/04/23 17:48 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.24	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.34	Split peak
EtFOSAA	2991-50-6		8.47	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak
EtFOSA	4151-50-2		11.36	Split peak

7.7.13.1  
7

Perfluorinated Compounds by LC/MS/MS

Data File : 4Q43917.d  
 Operator : natashag  
 Acq. Method : 1633full\_4Q.m  
 Acq. Date-Time : 5/3/2023 6:32:28 PM  
 Sample Name : cc634-4  
 Vial : P1-A5  
 DA Method File : 1633\_050323\_S4Q634.quantmethod.xml  
 Batch Name : s4q634.batch.bin  
 Sample Information : OP96548,S4Q634,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
<b>Internal Standards</b>					
M4-PFBA	2.936	216.8 -> 171.9	137883	10.00 µg/L	0.013
M5-PFPeA	4.387	268.3 -> 223.0	69002	5.00 µg/L	0.025
M5-PFHxA	5.559	318.0 -> 273.0	50135	2.50 µg/L	0.025
M4-PFHpA	6.492	367.1 -> 322.0	28755	2.50 µg/L	0.025
M8-PFOA	7.148	421.1 -> 376.0	44128	2.50 µg/L	0.025
M9-PFNA	7.696	472.1 -> 427.0	22205	1.25 µg/L	0.026
M6-PFDA	8.203	519.1 -> 474.1	19394	1.25 µg/L	0.025
M7-PFUnDA	8.672	570.0 -> 525.1	21225	1.25 µg/L	0.025
M2-PFDoDA	9.130	615.1 -> 570.0	23483	1.25 µg/L	0.025
M2-PFTeDA	9.924	715.2 -> 670.0	16060	1.25 µg/L	0.025
M8-FOSA	9.783	506.1 -> 77.8	17376	2.50 µg/L	0.012
M3-PFBS	5.452	302.1 -> 79.9	11479	2.50 µg/L	0.025
M3-PFHxS	7.254	402.1 -> 79.9	7734	2.50 µg/L	0.025
M8-PFOS	8.354	507.1 -> 79.9	10610	2.50 µg/L	0.025
M2-4:2FTS	5.247	329.1 -> 80.9	1108	5.00 µg/L	0.025
M2-6:2FTS	6.923	429.1 -> 80.9	2360	5.00 µg/L	0.025
M2-8:2FTS	7.990	529.1 -> 80.9	3764	5.00 µg/L	0.025
M3-MeFOSAA	8.261	573.2 -> 419.0	16571	5.00 µg/L	0.025
M3-HFPO-DA	5.914	286.9 -> 168.9	27237	10.00 µg/L	0.025
M5-EtFOSAA	8.470	589.2 -> 419.0	13698	5.00 µg/L	0.025
M7-MeFOSE	10.972	623.2 -> 58.9	73803	25.00 µg/L	0.025
M9-EtFOSE	11.269	639.2 -> 58.9	100684	25.00 µg/L	0.012
M5-EtFOSA	11.360	531.1 -> 219.0	11477	2.50 µg/L	0.012
M3-MeFOSA	11.076	515.0 -> 219.0	9954	2.50 µg/L	0.012
13C4-PFOS	8.354	502.8 -> 79.9	11837	2.50 µg/L	0.025
13C3-PFBA	2.928	216.0 -> 172.0	71573	5.00 µg/L	0.000
18O2-PFHxS	7.253	403.0 -> 83.9	4834	2.50 µg/L	0.025
13C4-PFOA	7.149	417.1 -> 372.0	54536	2.50 µg/L	0.025
13C2-PFDA	8.204	515.1 -> 470.1	17958	1.25 µg/L	0.025
13C5-PFNA	7.697	468.0 -> 423.0	24884	1.25 µg/L	0.012
13C2-PFHxA	5.560	315.1 -> 270.0	44289	2.50 µg/L	0.025
<b>System Monitoring Compounds</b>					
13C2-4:2FTS	5.247	329.1 -> 80.9	1108	5.64 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.8%		
13C2-6:2FTS	6.923	429.1 -> 80.9	2360	6.66 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 133.3%		
13C2-8:2FTS	7.990	529.1 -> 80.9	3764	6.81 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 136.2%		
13C2-PFDoDA	9.130	615.1 -> 570.0	23483	1.35 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C2-PFTeDA	9.924	715.2 -> 670.0	16060	1.13 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.7%		
13C3-PFBS	5.452	302.1 -> 79.9	11479	2.52 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C3-PFHxS	7.254	402.1 -> 79.9	7734	2.58 µg/L	0.025

7.7.14  
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 = 103.2%	
13C4-PFBA	2.936	216.8 -> 171.9	137883	10.24 µg/L	0.013
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C4-PFHpA	6.492	367.1 -> 322.0	28755	2.52 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C5-PFHxA	5.559	318.0 -> 273.0	50135	2.57 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C5-PFPeA	4.387	268.3 -> 223.0	69002	5.06 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C6-PFDA	8.203	519.1 -> 474.1	19394	1.26 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C7-PFUnDA	8.672	570.0 -> 525.1	21225	1.33 µg/L	0.025
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.1%	
13C8-FOSA	9.783	506.1 -> 77.8	17376	2.34 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.6%	
13C8-PFOA	7.148	421.1 -> 376.0	44128	2.46 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
13C8-PFOS	8.354	507.1 -> 79.9	10610	2.38 µg/L	0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.2%	
13C9-PFNA	7.696	472.1 -> 427.0	22205	1.31 µg/L	0.026
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.0%	
d3-MeFOSAA	8.261	573.2 -> 419.0	16571	5.55 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.9%	
13C3-HFPO-DA	5.914	286.9 -> 168.9	27237	9.35 µg/L	0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 93.5%	
d3-MeFOSA	11.076	515.0 -> 219.0	9954	2.14 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.8%	
d5-EtFOSAA	8.470	589.2 -> 419.0	13698	5.57 µg/L	0.025
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.3%	
d7-MeFOSE	10.972	623.2 -> 58.9	73803	20.04 µg/L	0.025
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.2%	
d9-EtFOSE	11.269	639.2 -> 58.9	100684	19.31 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 77.2%	
d5-EtFOSA	11.360	531.1 -> 219.0	11477	2.33 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.0%	
<b>Target Compounds</b>					<b>QValue</b>
4:2FTS	5.248	327.1 -> 307.0	18317	10.27 µg/L	96
		327.1 -> 80.9	8087		
6:2FTS	6.924	427.1 -> 407.0	21675	9.51 µg/L	98
		427.1 -> 80.9	9345		
8:2FTS	7.991	527.1 -> 507.0	21191	10.10 µg/L	95
		527.1 -> 80.8	8249		
EtFOSAA	8.483	584.2 -> 419.1	6243	2.37 µg/L	m 97
		584.2 -> 526.0	3292		
FOSA	9.786	498.1 -> 77.9	17587	2.42 µg/L	99
		498.1 -> 478.0	539		
MeFOSAA	8.262	570.1 -> 419.0	7065	2.45 µg/L	m 94
		570.1 -> 483.0	1453		
PFBA	2.932	212.8 -> 168.9	35873	9.72 µg/L	100
PFBS	5.453	298.7 -> 79.9	10221	2.17 µg/L	97
		298.7 -> 98.8	3962		
PFDA	8.204	512.9 -> 469.0	37508	2.55 µg/L	99
		512.9 -> 219.0	7879		
PFDODA	9.131	613.1 -> 569.0	43594	2.31 µg/L	100
		613.1 -> 319.0	6337		
PFDS	9.294	599.0 -> 79.9	6142	2.34 µg/L	91

7.7.14  
7





Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.492	599.0 -> 98.8	3216	2.48	µg/L	99
		363.1 -> 319.0	45151			
PFHpS	7.836	363.1 -> 169.0	8273	2.42	µg/L	99
		449.0 -> 79.9	9242			
PFHxA	5.562	449.0 -> 98.9	4993	2.33	µg/L	100
		313.0 -> 269.0	45864			
PFHxS	7.255	313.0 -> 118.9	1404	2.31	µg/L	100
		398.7 -> 79.9	7314			
PFNA	7.709	398.7 -> 98.9	3682	2.31	µg/L	99
		463.0 -> 419.0	37990			
PFNS	8.836	463.0 -> 219.0	9681	2.35	µg/L	94
		548.8 -> 79.9	5451			
PFOA	7.150	548.8 -> 98.9	2634	2.54	µg/L	99
		413.0 -> 369.0	64744			
PFOS	8.355	413.0 -> 169.0	12117	2.36	µg/L	100
		498.9 -> 79.9	12237			
PFPeA	4.389	498.9 -> 98.8	6025	5.03	µg/L	100
		263.0 -> 219.0	83554			
PFPeS	6.519	349.1 -> 79.9	6302	2.32	µg/L	96
		349.1 -> 98.9	2728			
PFTeDA	9.924	713.1 -> 669.0	40019	2.55	µg/L	100
		713.1 -> 168.9	3416			
PFTrDA	9.541	663.0 -> 619.0	57468	2.28	µg/L	98
		663.0 -> 168.9	5772			
PFUnDA	8.673	563.1 -> 519.0	37643	2.61	µg/L	95
		563.1 -> 269.1	7161			
11CI-PF3OUdS	9.581	630.9 -> 450.9	49383	5.04	µg/L	98
		632.9 -> 452.9	14907			
9CI-PF3ONS	8.700	530.8 -> 351.0	64379	5.16	µg/L	99
		532.8 -> 353.0	19077			
ADONA	6.756	376.9 -> 250.9	141263	5.16	µg/L	99
		376.9 -> 84.8	37927			
HFPO-DA	5.915	284.9 -> 168.9	12884	4.95	µg/L	97
		284.9 -> 184.9	1599			
3:3FTCA	3.848	241.0 -> 177.0	8797	12.04	µg/L	95
		241.0 -> 117.0	920			
5:3FTCA	6.217	341.0 -> 237.1	162577	61.00	µg/L	100
		341.0 -> 217.0	111298			
7:3FTCA	7.673	441.0 -> 316.9	87022	62.83	µg/L	97
		441.0 -> 336.9	212976			
EtFOSA	11.375	526.0 -> 219.0	24192	5.03	µg/L	98
		526.0 -> 169.0	34098			
EtFOSE	11.295	630.0 -> 58.9	47806	12.26	µg/L	100
		511.9 -> 219.0	20285			
MeFOSA	11.078	511.9 -> 169.0	29239	5.41	µg/L	97
		616.1 -> 58.9	35633			
MeFOSE	10.985	699.1 -> 79.9	5452	11.75	µg/L	100
		699.1 -> 98.8	3268			
PFDoDS	10.064	295.0 -> 201.0	6431	2.32	µg/L	91
		295.0 -> 84.9	1654			
NFDHA	5.441	279.0 -> 85.1	45047	4.59	µg/L	97
		229.0 -> 84.9	42896			
PFMBA	4.791	314.8 -> 134.9	63276	4.86	µg/L	100
		314.8 -> 82.9	2205			
PFMPA	3.540			4.94	µg/L	100
PFEESA	5.984			4.26	µg/L	99

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



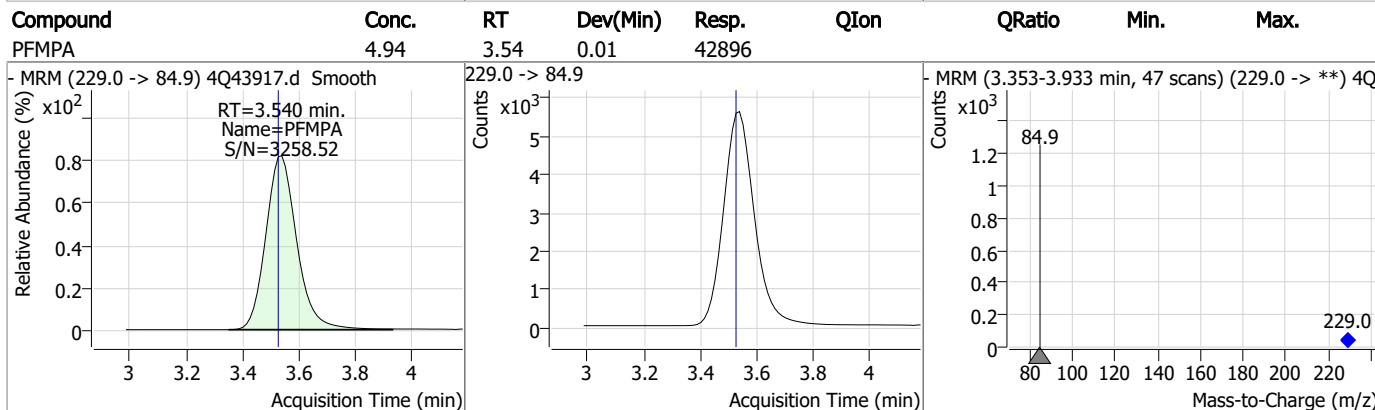
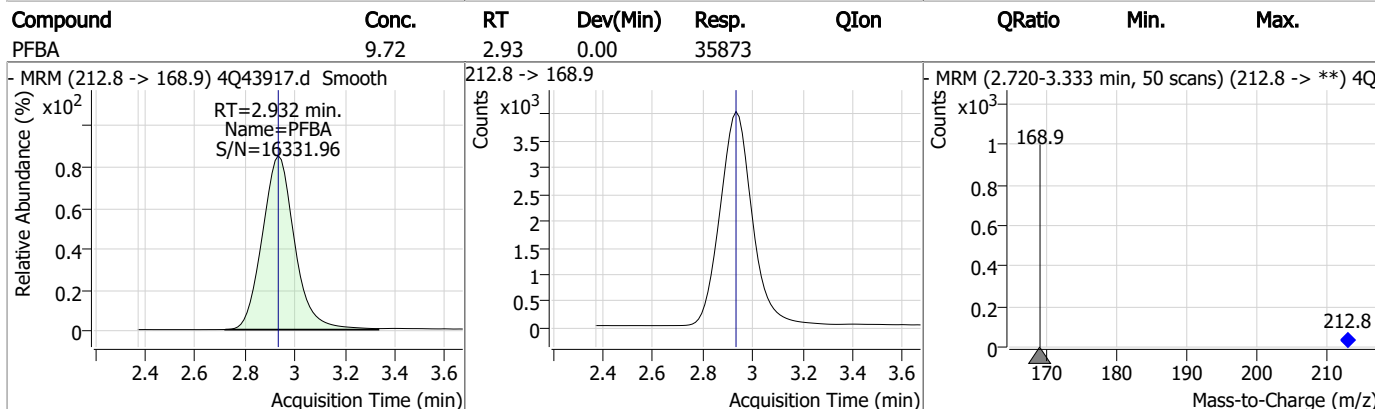
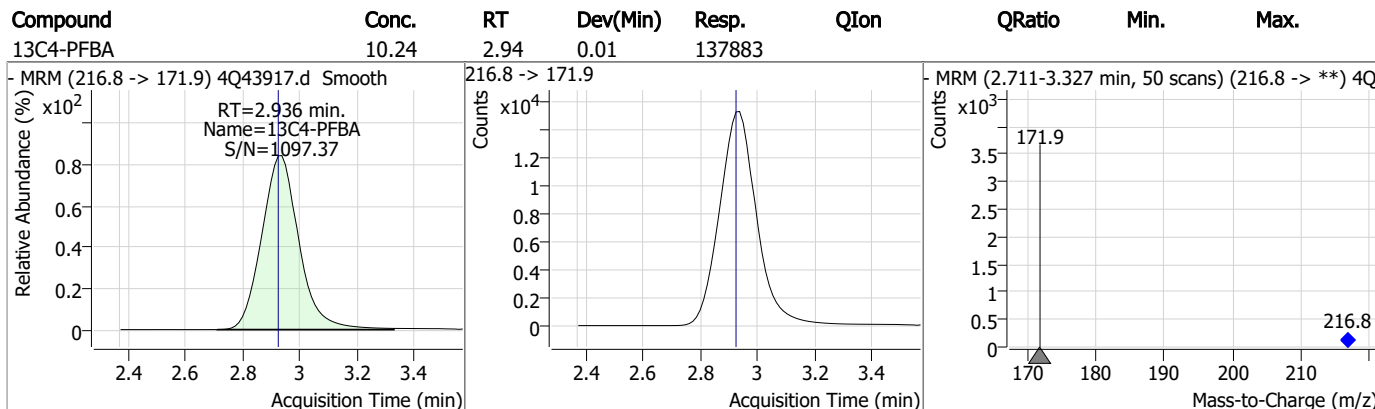
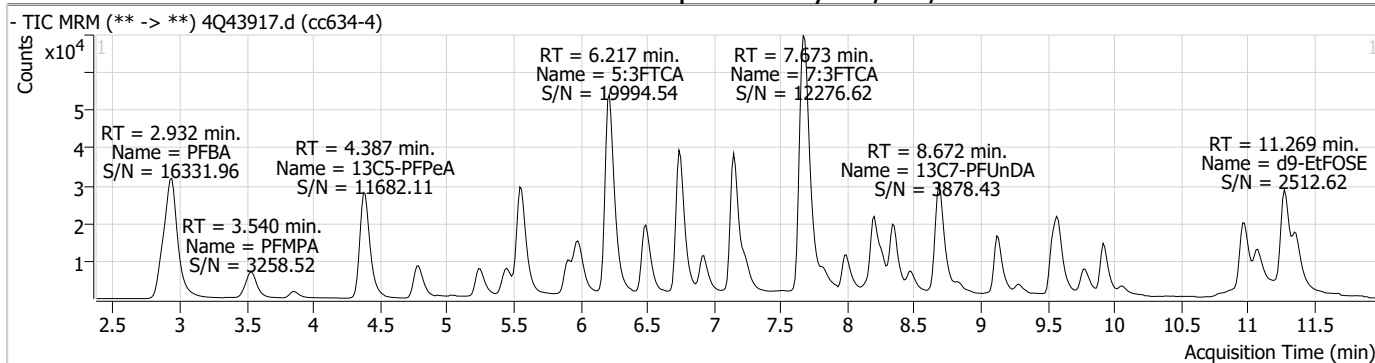
### Perfluorinated Compounds by LC/MS/MS

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

7.7.14

7

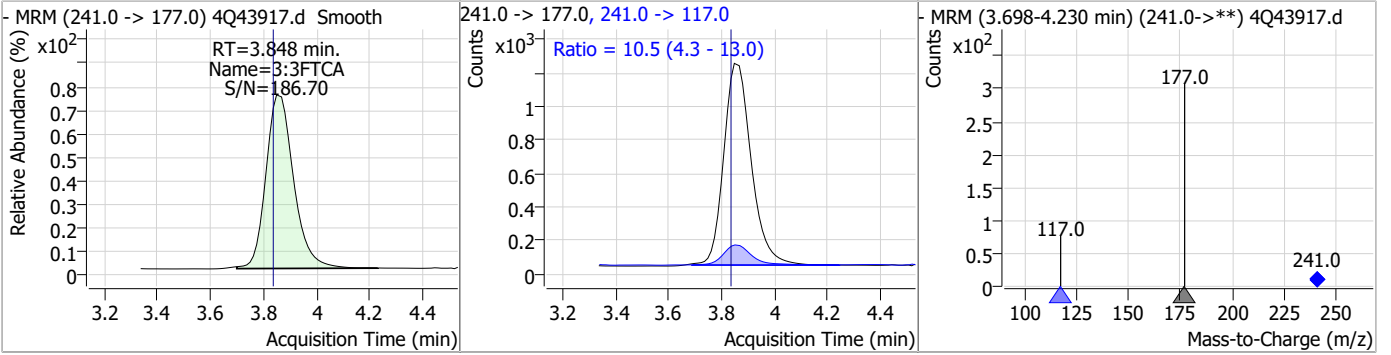
### Perfluorinated Compounds by LC/MS/MS



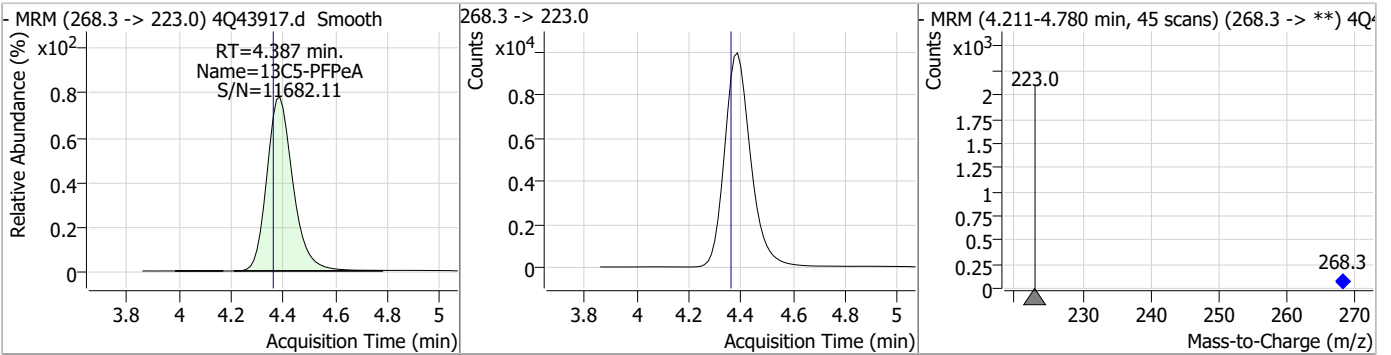
7.7.14  
7

### Perfluorinated Compounds by LC/MS/MS

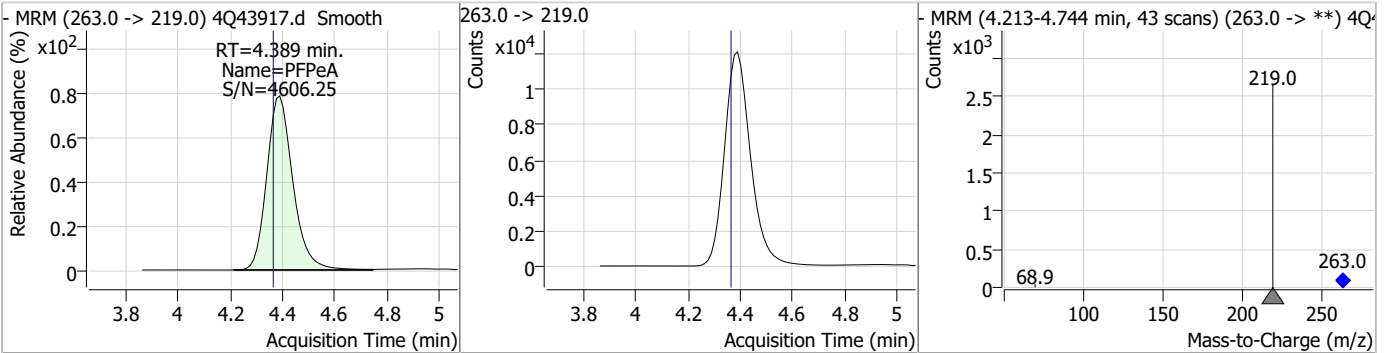
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	12.04	3.85	0.01	8797	241.0 -> 117.0	10.5	4.3	13.0



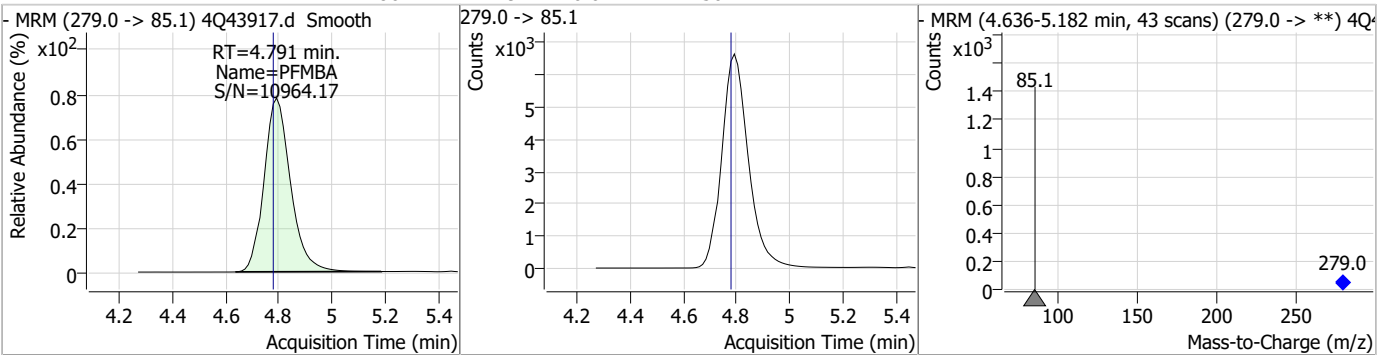
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.06	4.39	0.02	69002	268.3 -> 223.0			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	5.03	4.39	0.02	83554	263.0 -> 219.0			

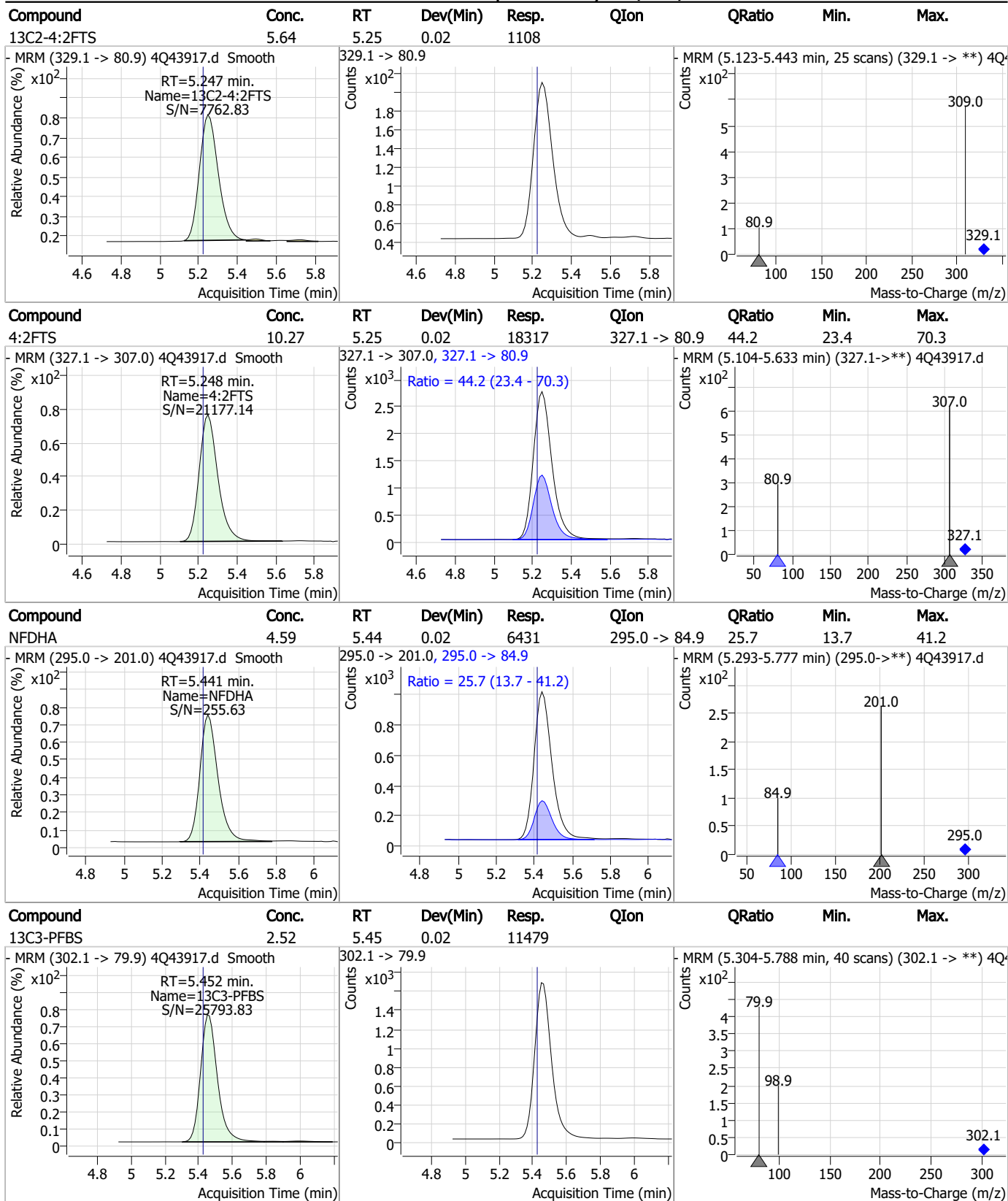


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.86	4.79	0.01	45047	279.0 -> 85.1			



7.7.14  
7

### Perfluorinated Compounds by LC/MS/MS

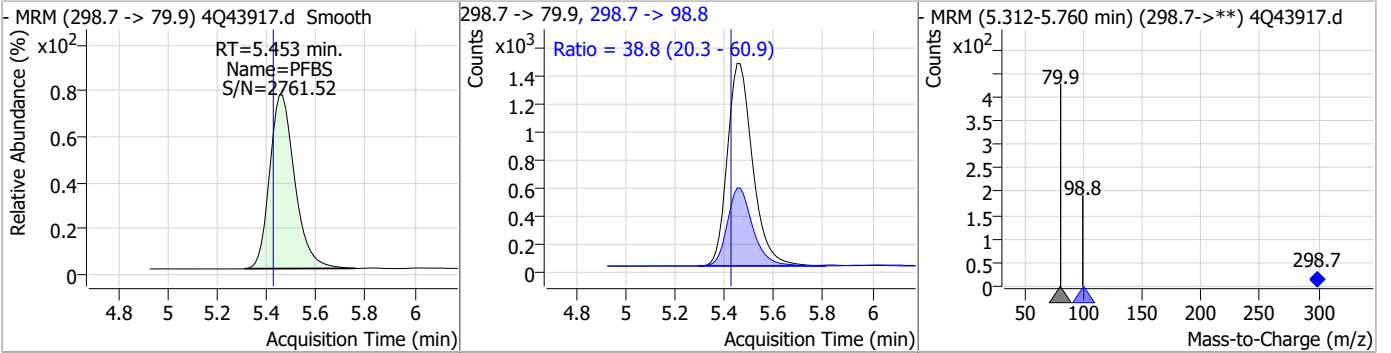


7.7.14  
7

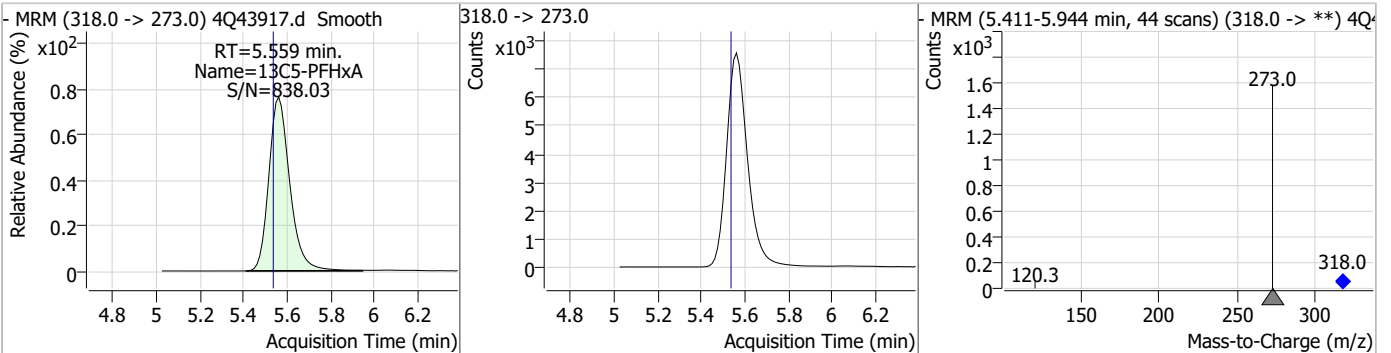


### Perfluorinated Compounds by LC/MS/MS

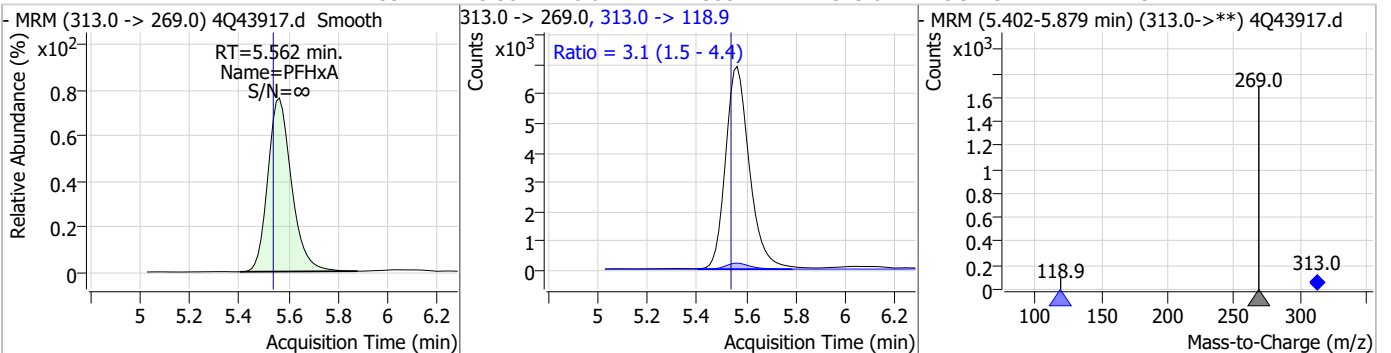
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.17	5.45	0.02	10221	298.7 -> 98.8	38.8	20.3	60.9



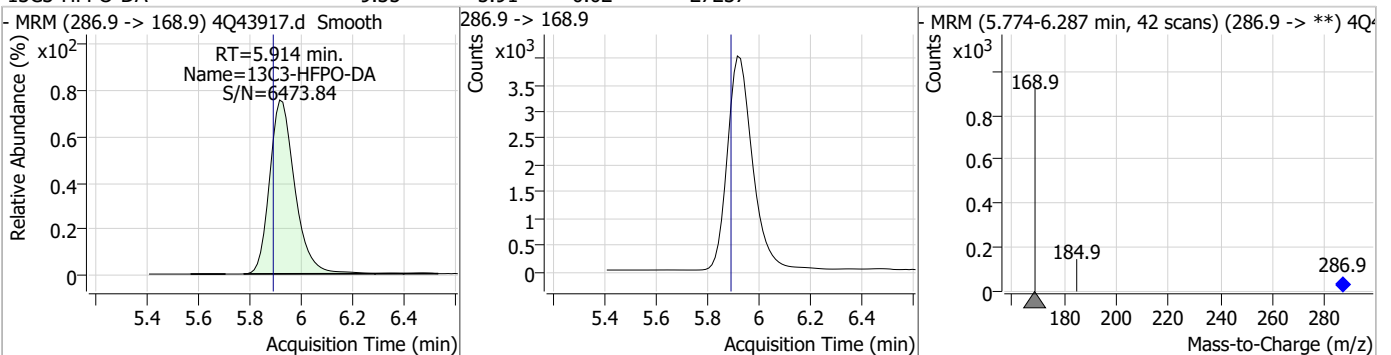
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.57	5.56	0.02	50135				



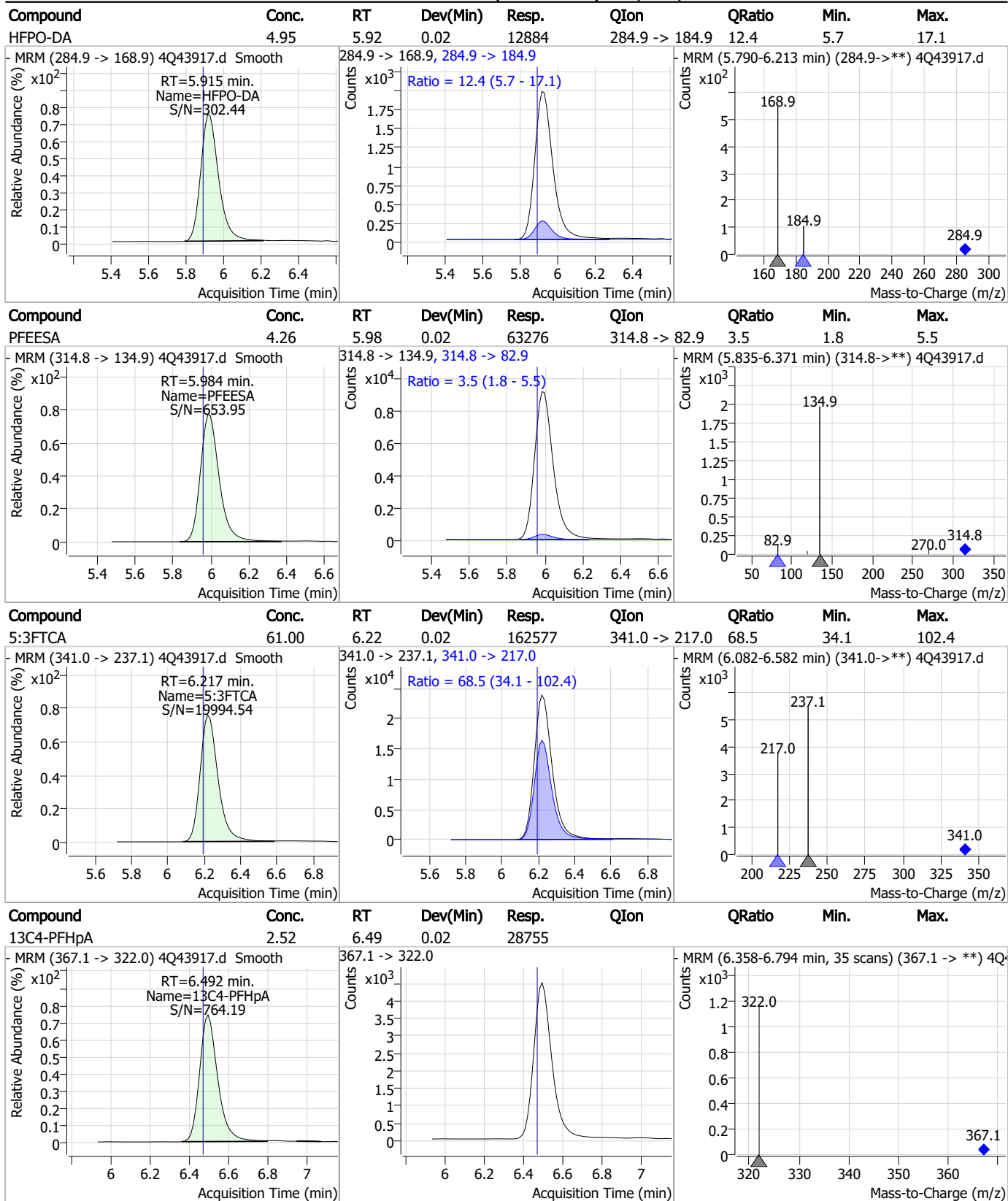
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	2.33	5.56	0.02	45864	313.0 -> 118.9	3.1	1.5	4.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	9.35	5.91	0.02	27237				



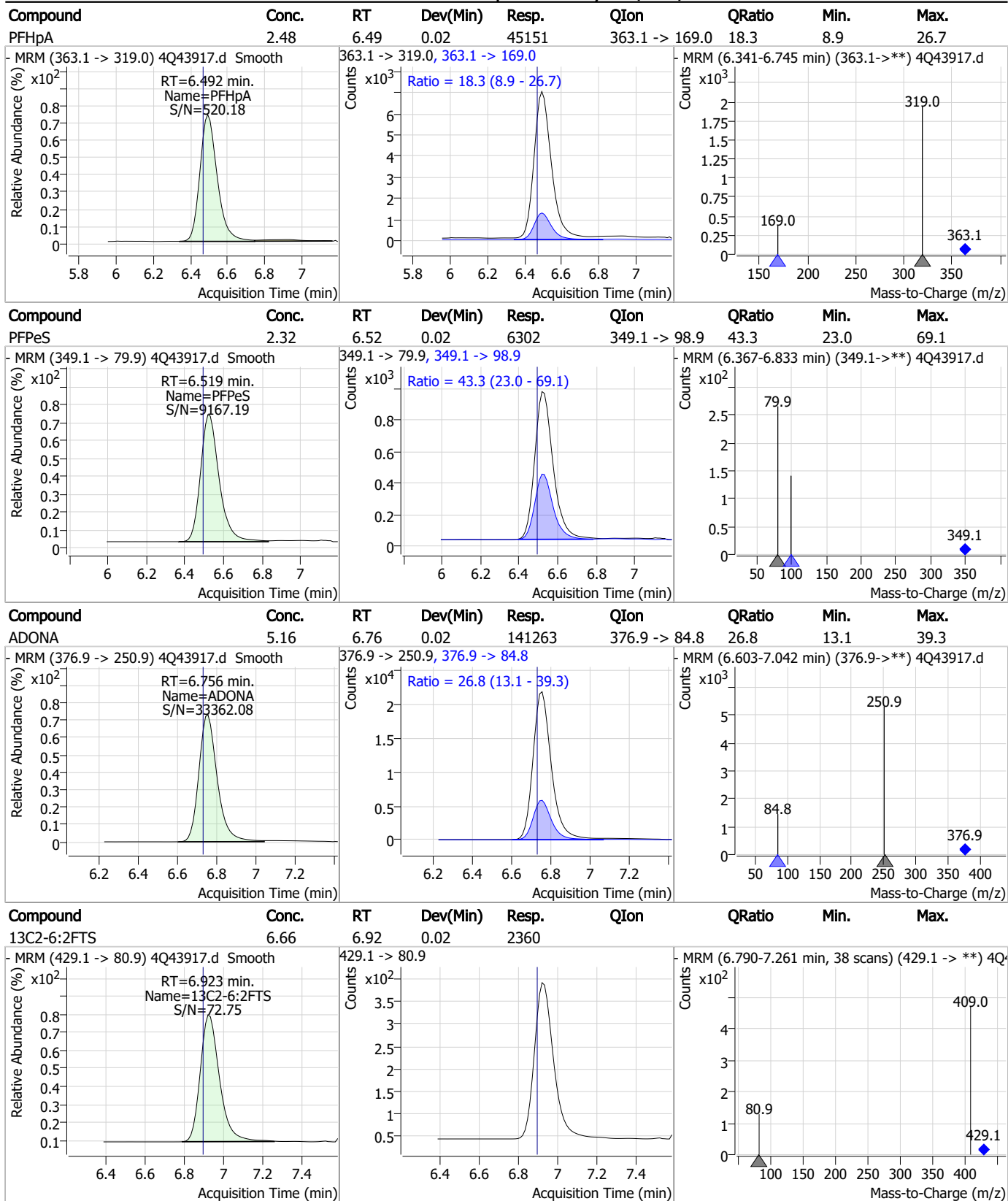
### Perfluorinated Compounds by LC/MS/MS



7.7.14  
7



### Perfluorinated Compounds by LC/MS/MS

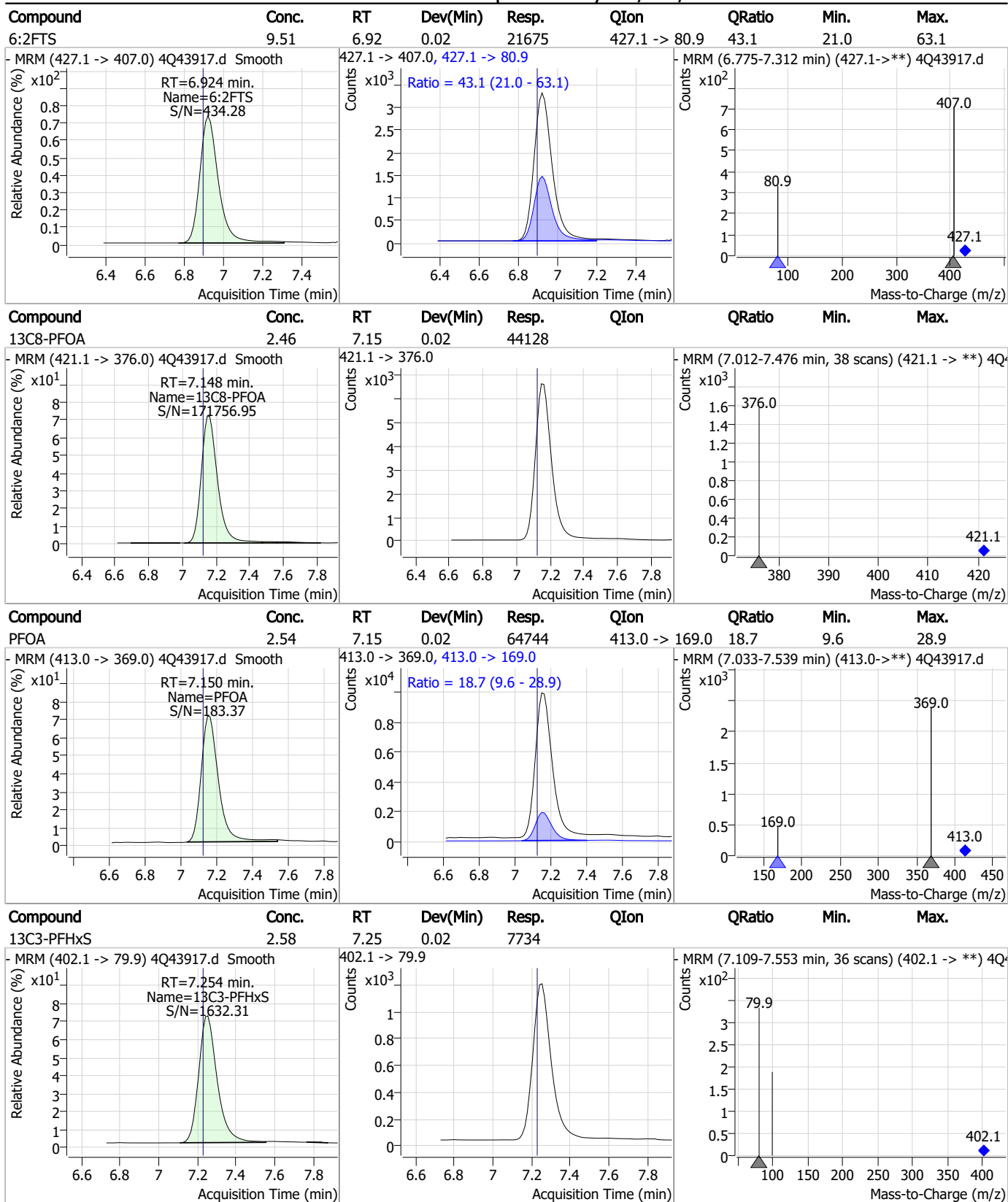


7.7.14  
7



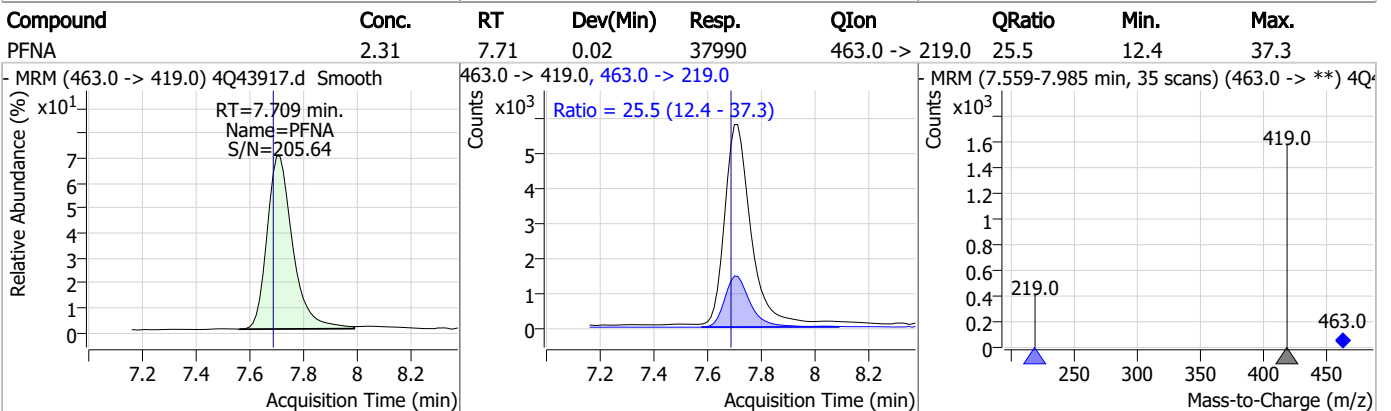
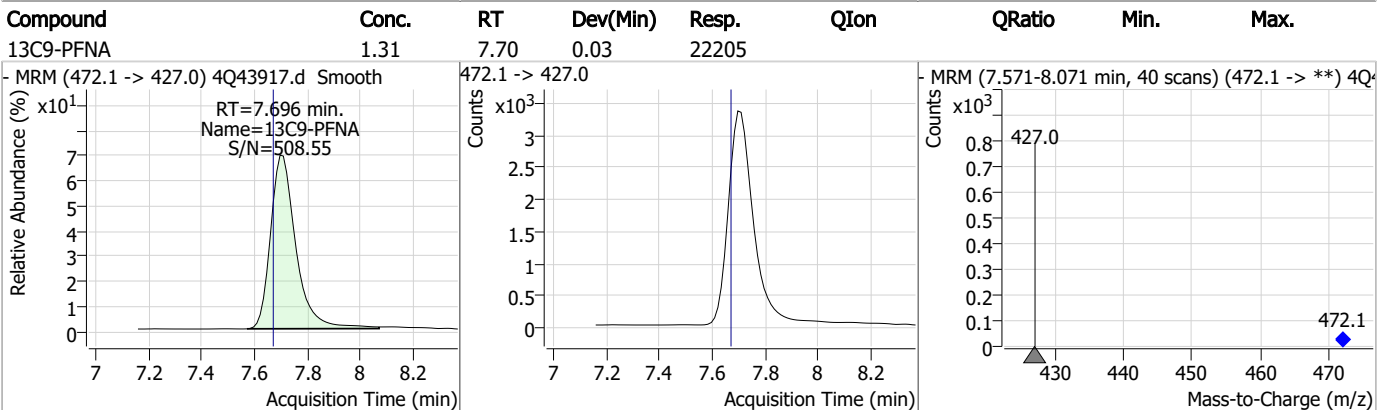
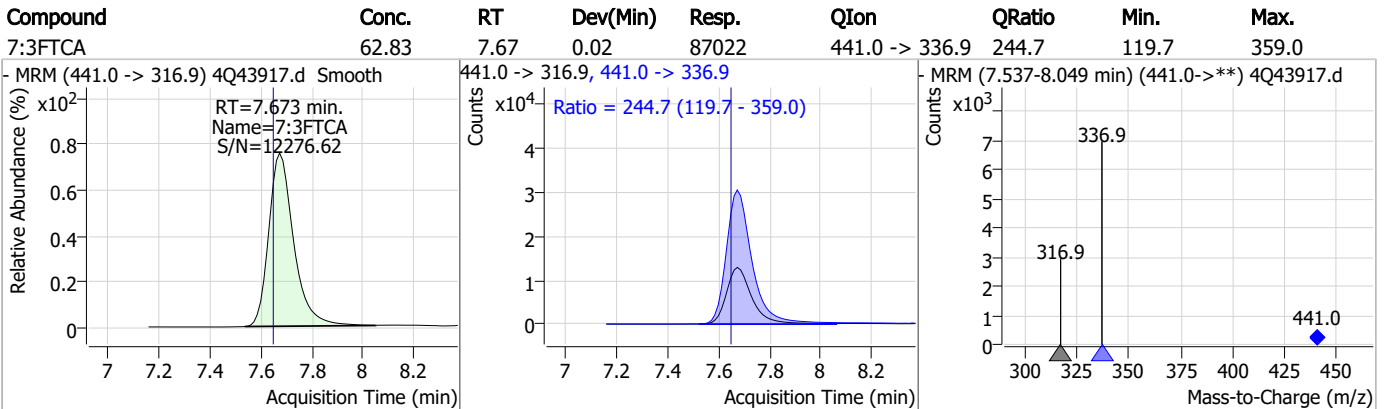
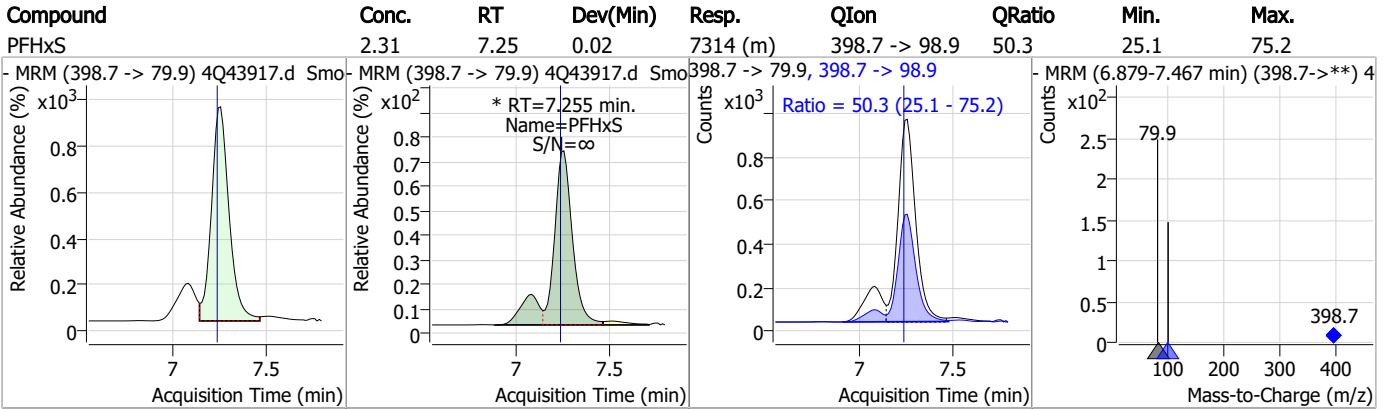


### Perfluorinated Compounds by LC/MS/MS



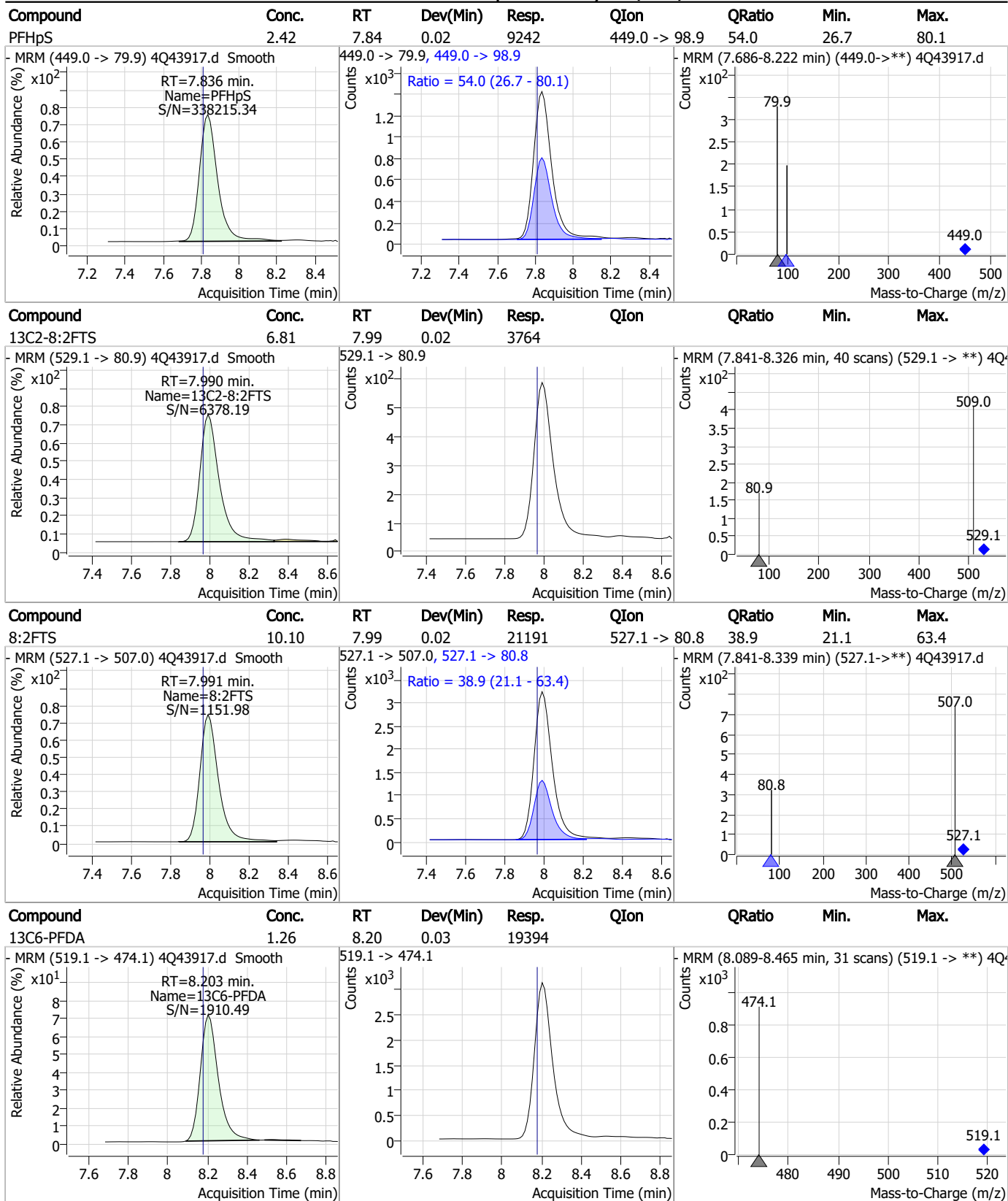
7.7.14

### Perfluorinated Compounds by LC/MS/MS



7.7.14  
7

### Perfluorinated Compounds by LC/MS/MS

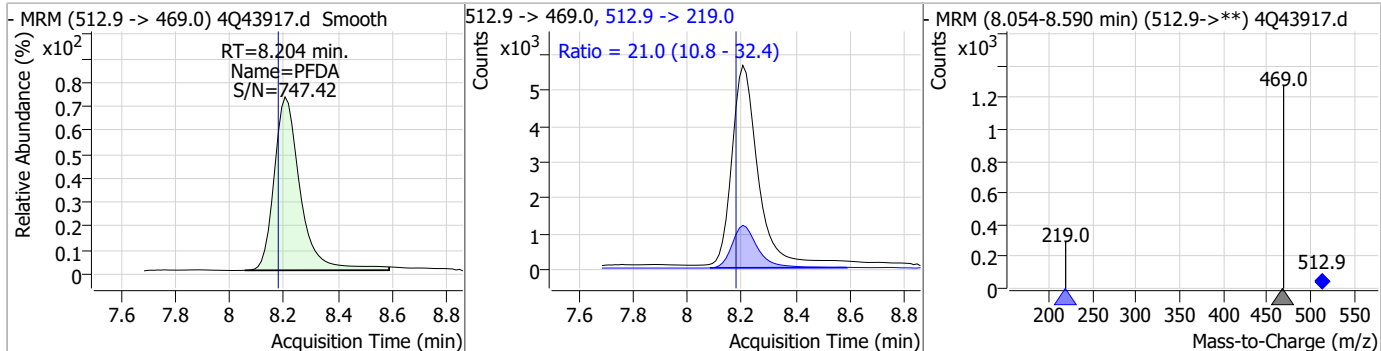


7.7.14

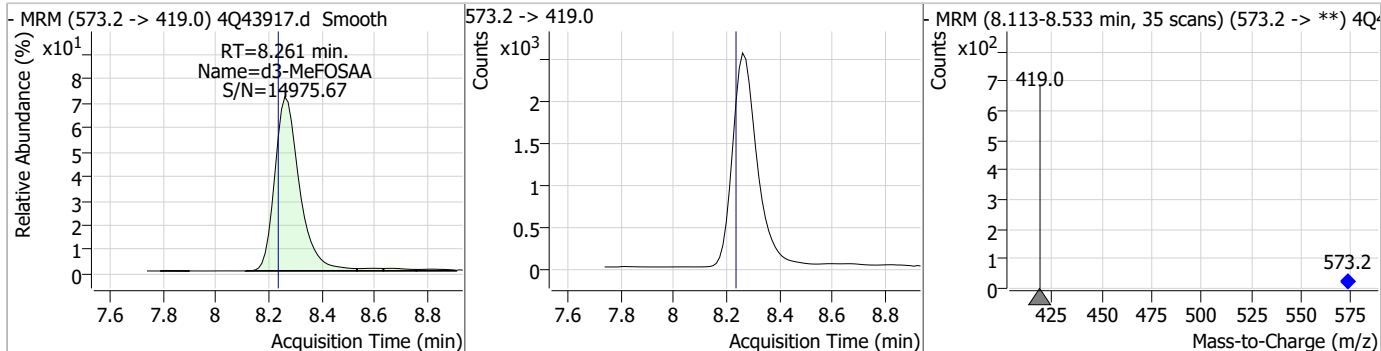


### Perfluorinated Compounds by LC/MS/MS

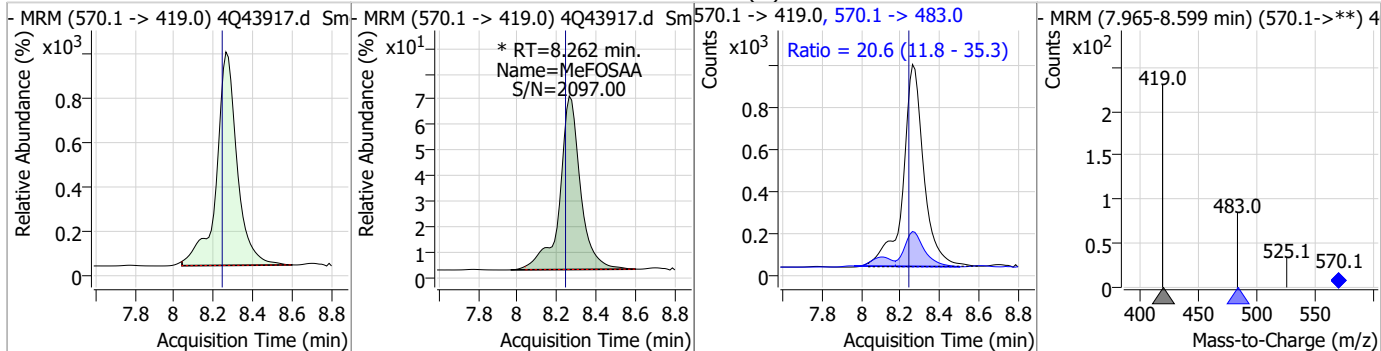
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	2.55	8.20	0.03	37508	512.9 -> 219.0	21.0	10.8	32.4



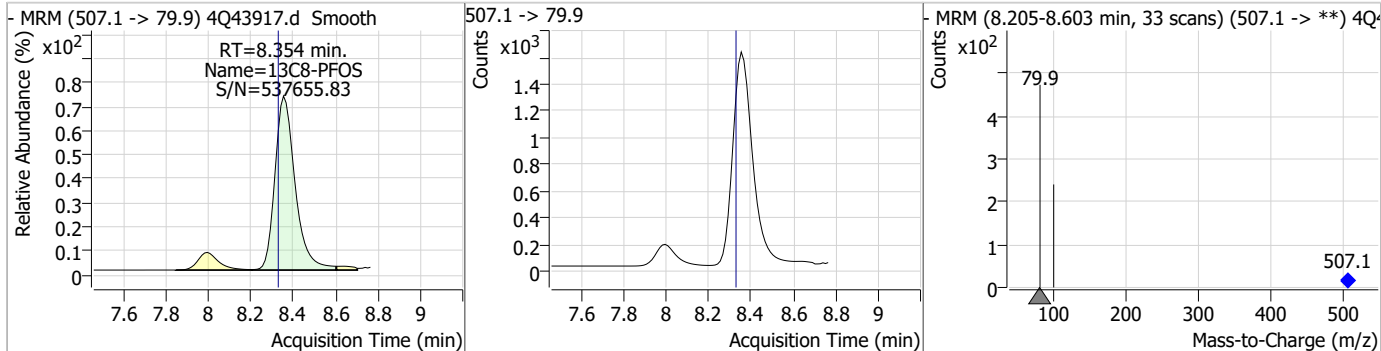
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.55	8.26	0.02	16571				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	2.45	8.26	0.02	7065 (m)	570.1 -> 483.0	20.6	11.8	35.3

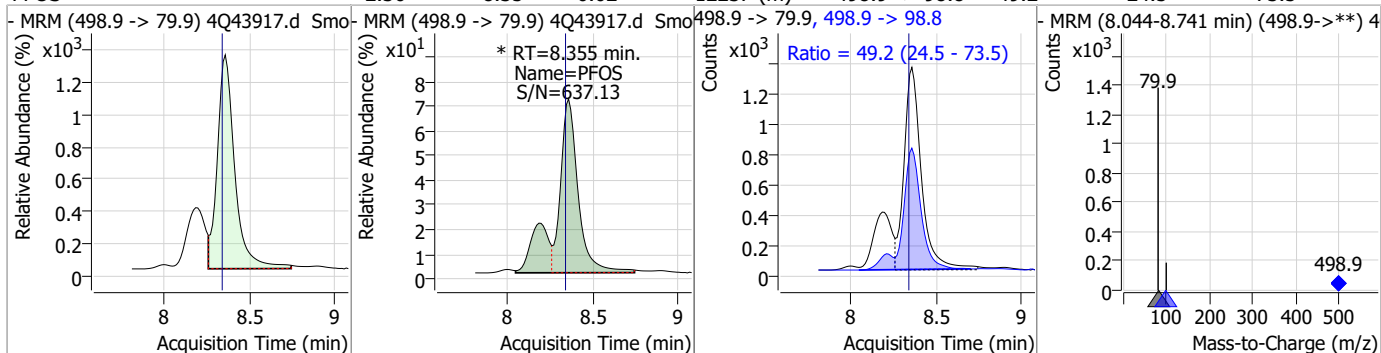


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.38	8.35	0.02	10610				

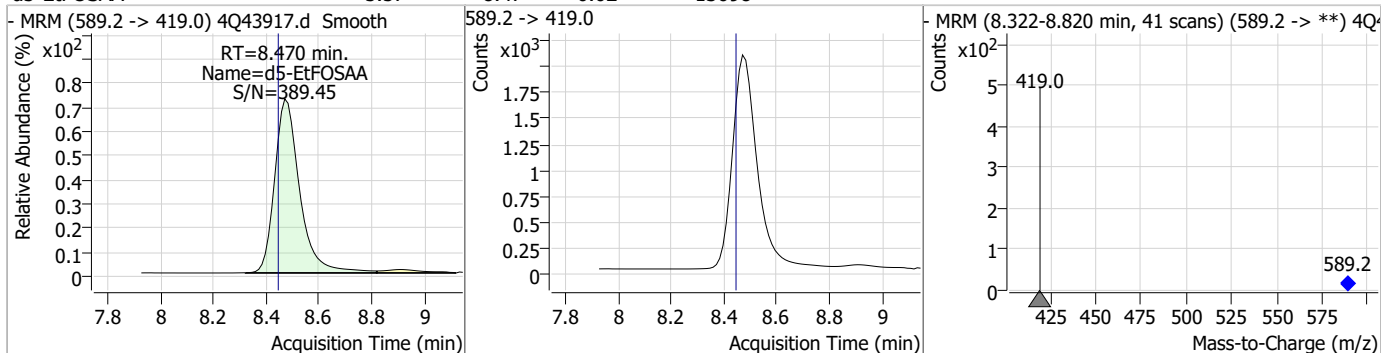


### Perfluorinated Compounds by LC/MS/MS

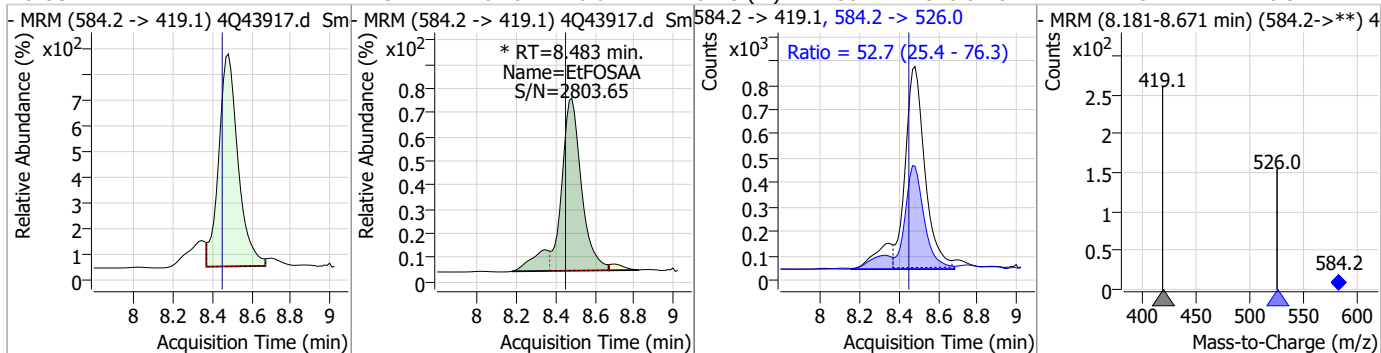
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.36	8.35	0.02	12237 (m)	498.9 -> 98.8	49.2	24.5	73.5



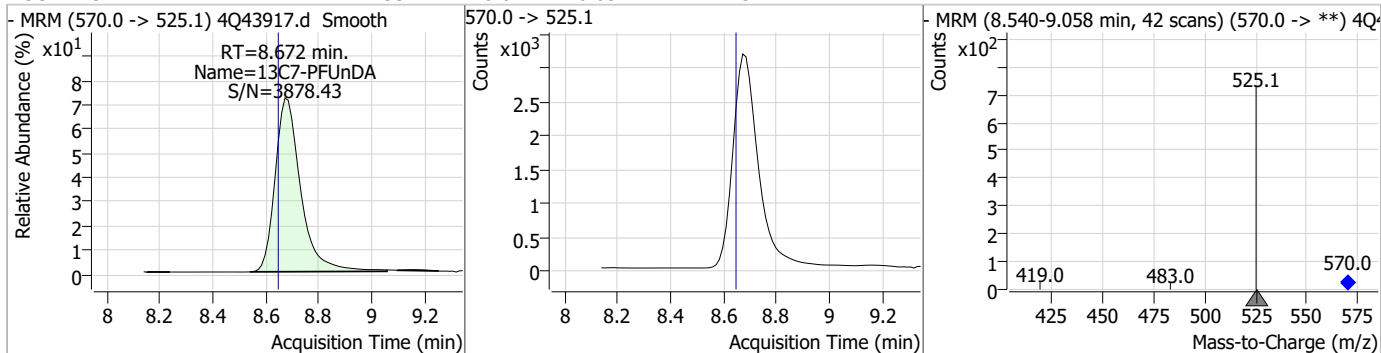
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.57	8.47	0.02	13698				



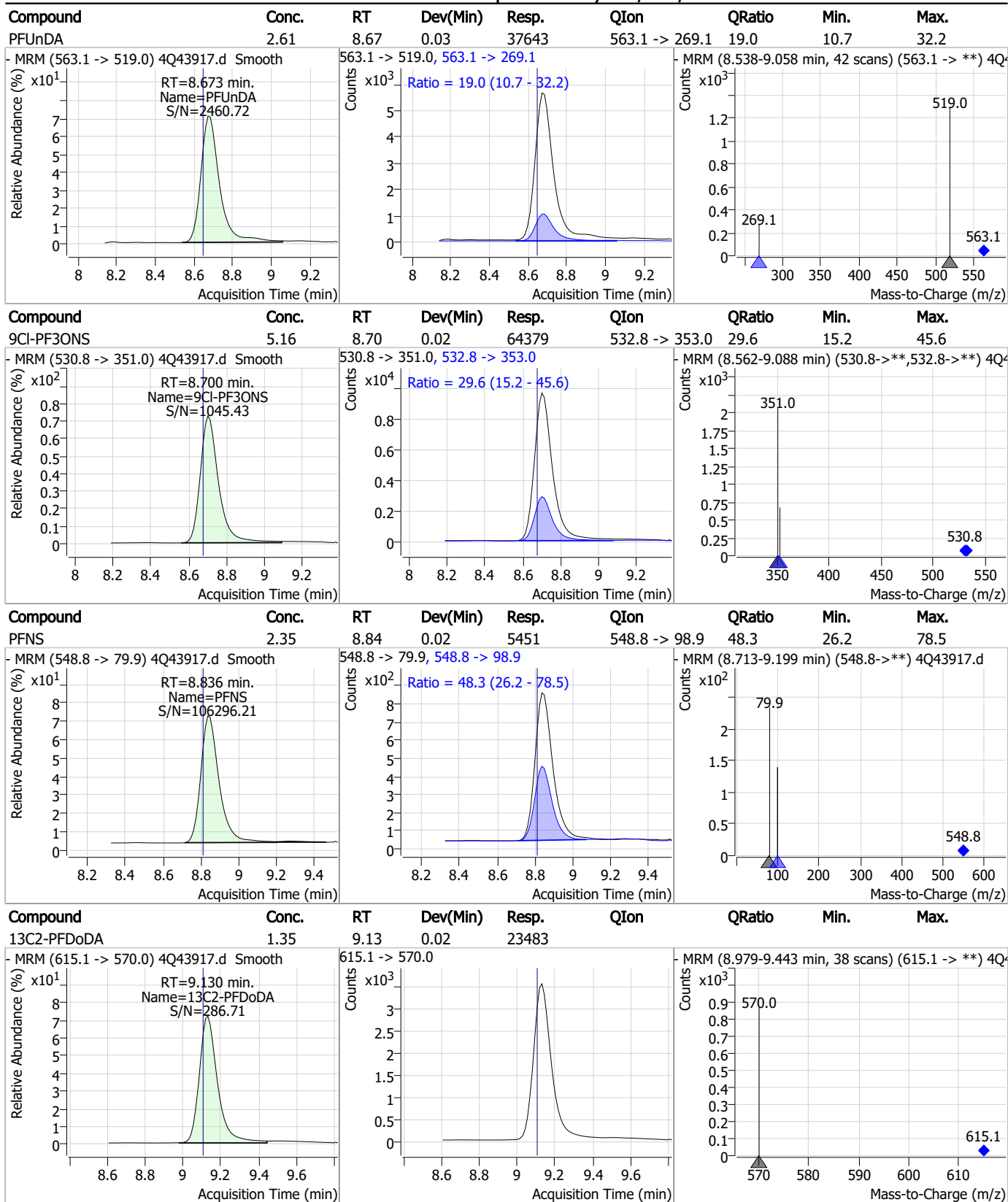
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.37	8.48	0.04	6243 (m)	584.2 -> 526.0	52.7	25.4	76.3



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.33	8.67	0.03	21225				

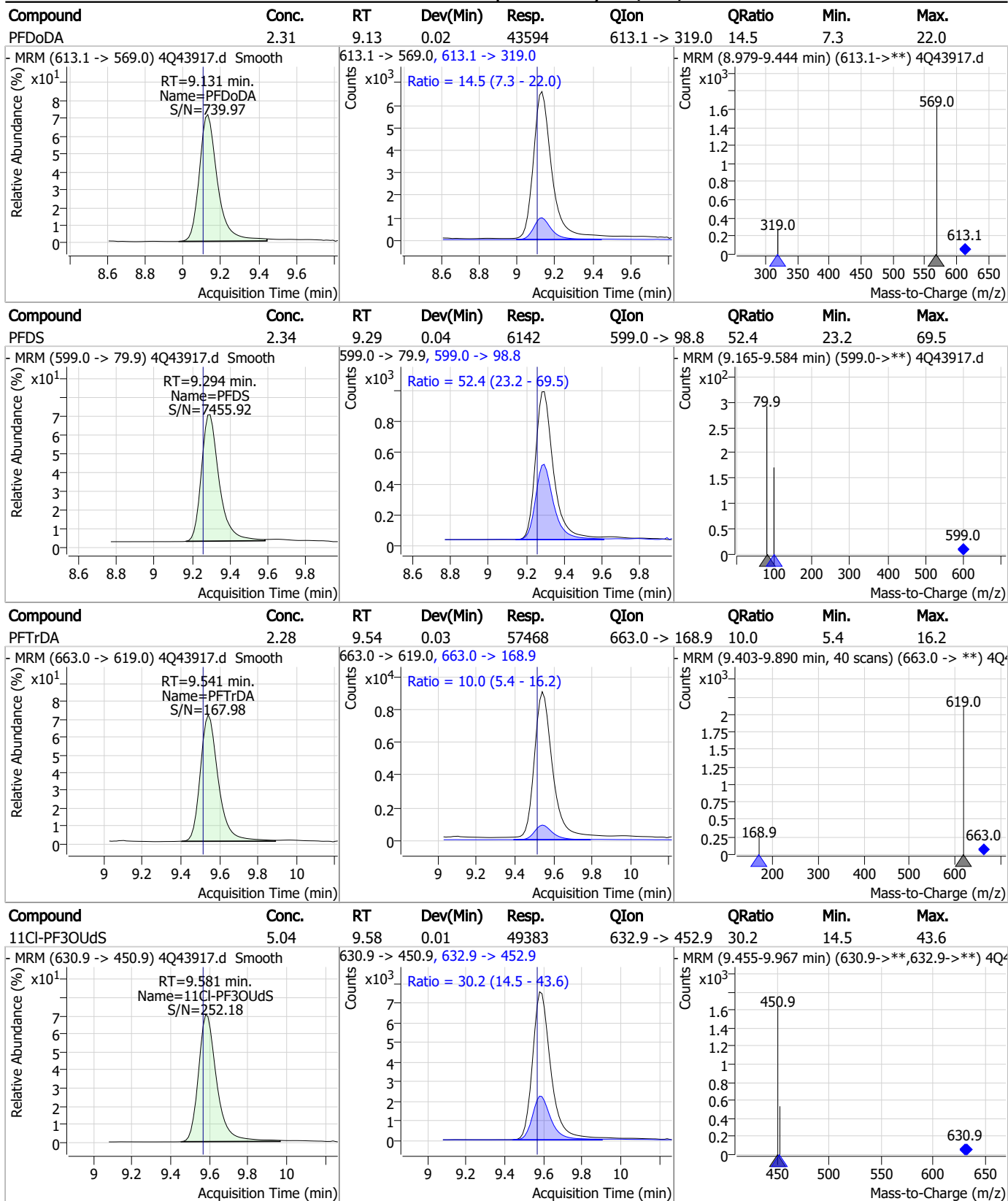


### Perfluorinated Compounds by LC/MS/MS



7.7.14  
7

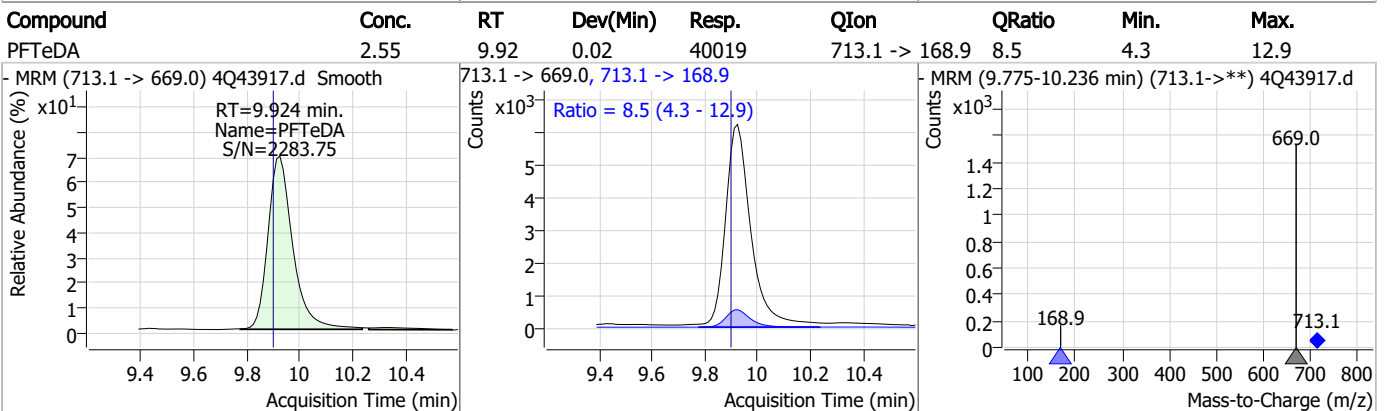
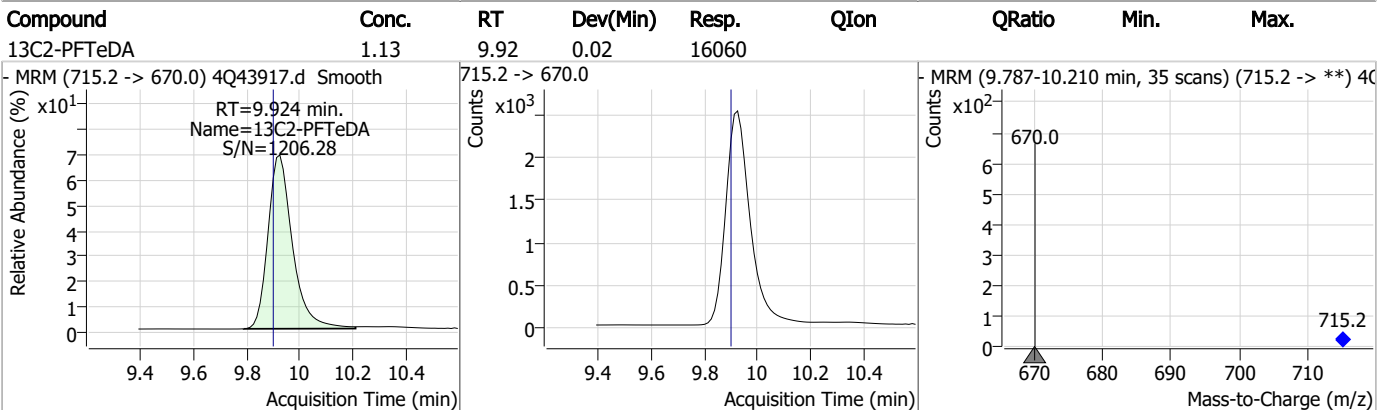
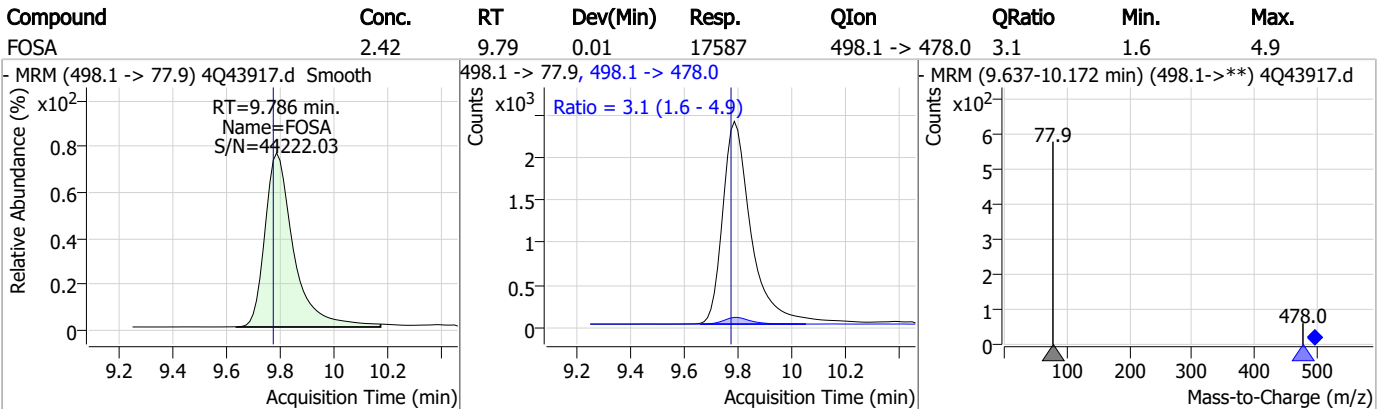
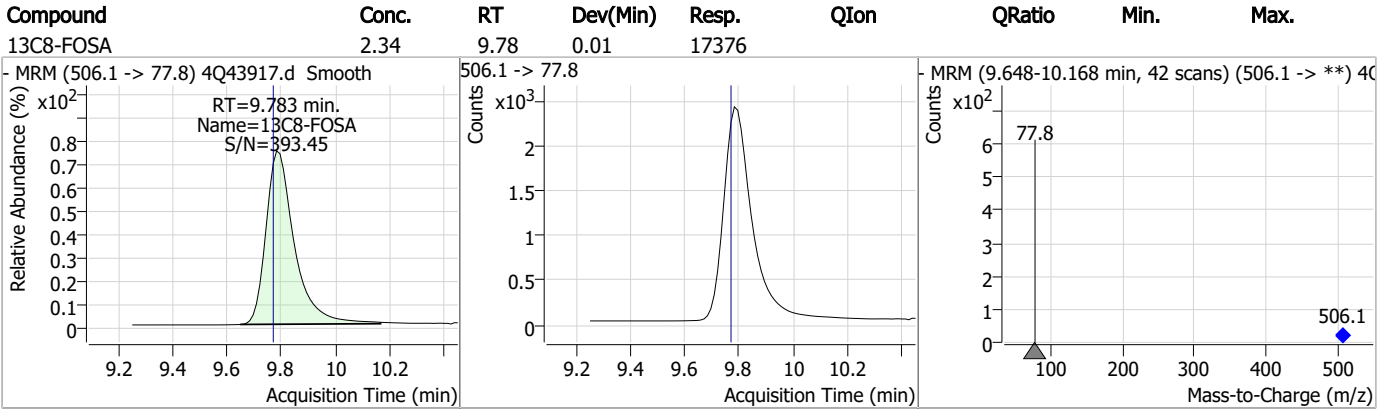
### Perfluorinated Compounds by LC/MS/MS



7.7.14



### Perfluorinated Compounds by LC/MS/MS



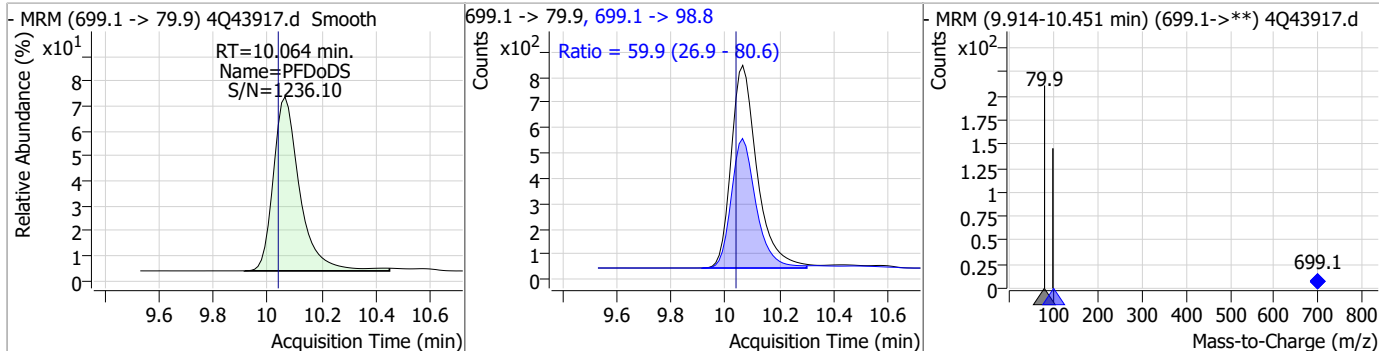
7.7.14



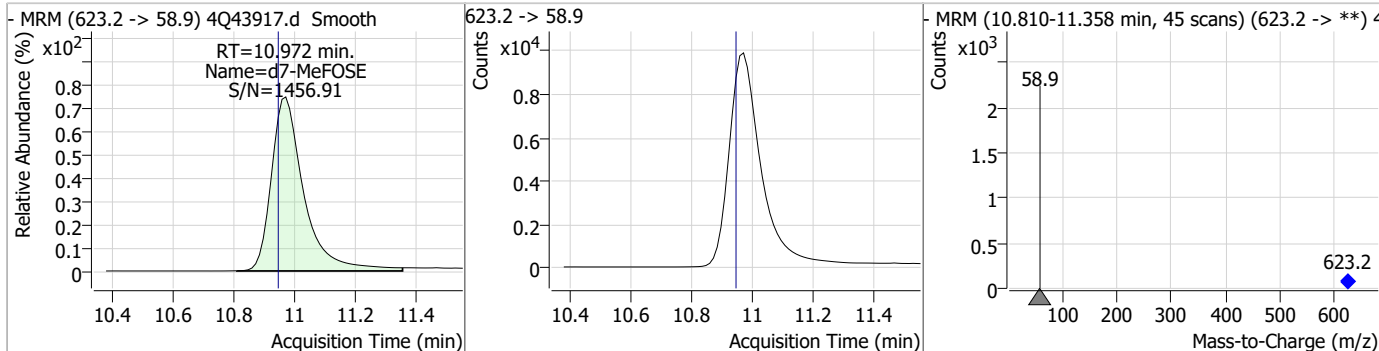


### Perfluorinated Compounds by LC/MS/MS

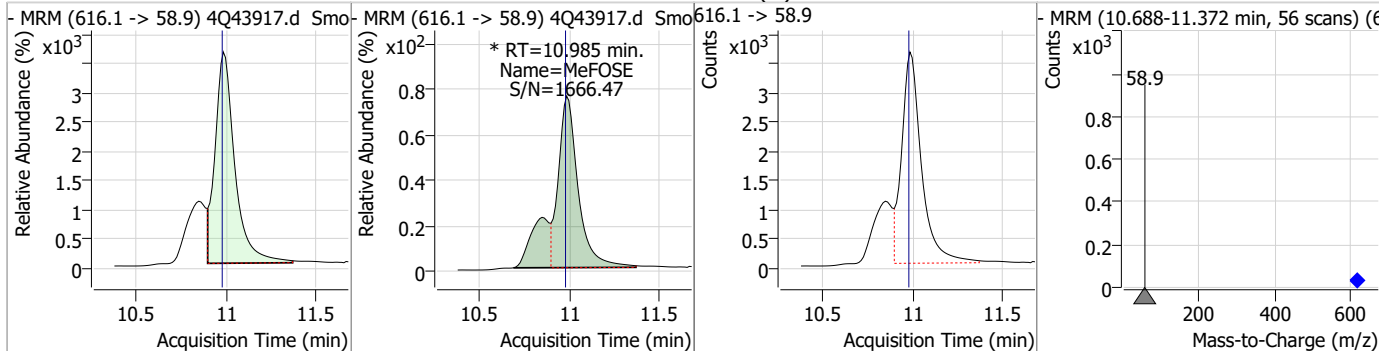
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoDS	2.32	10.06	0.02	5452	699.1 -> 98.8	59.9	26.9	80.6



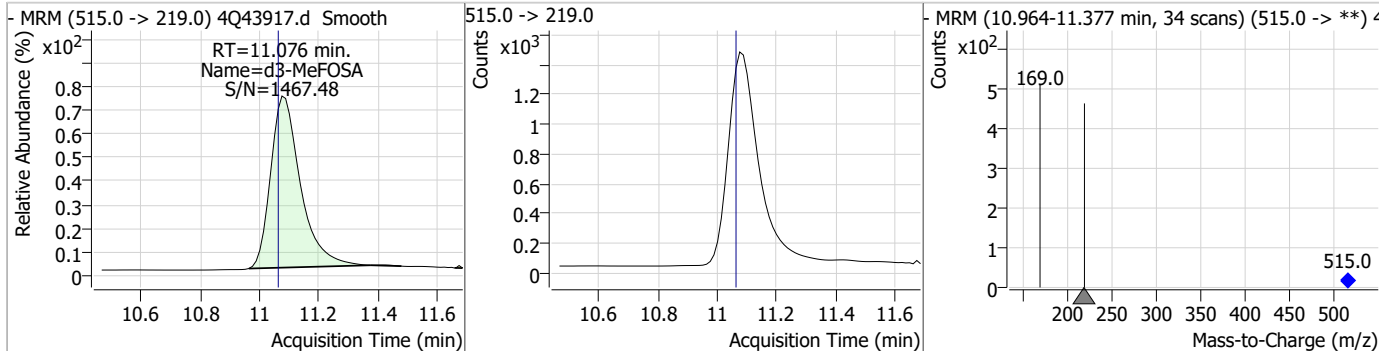
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.04	10.97	0.02	73803				



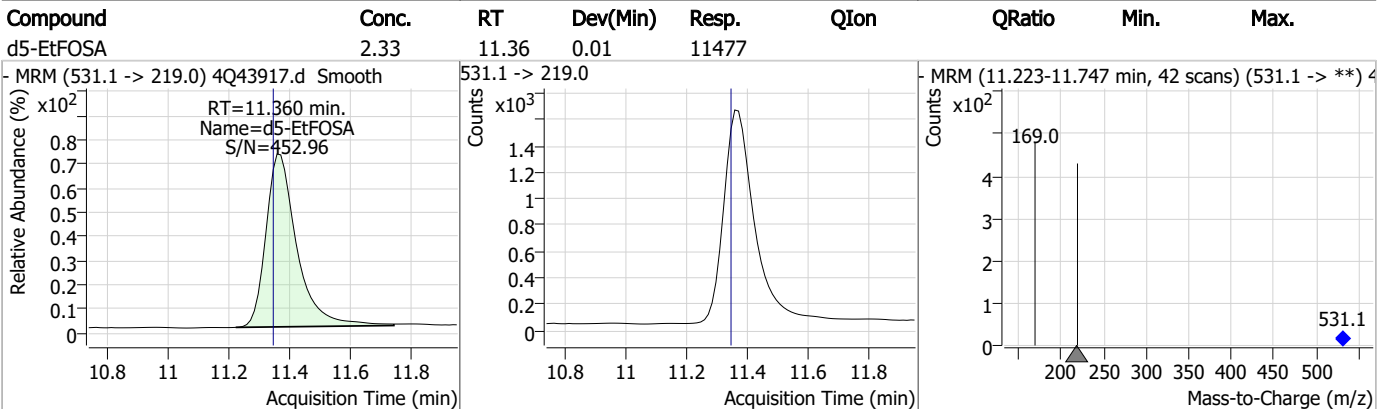
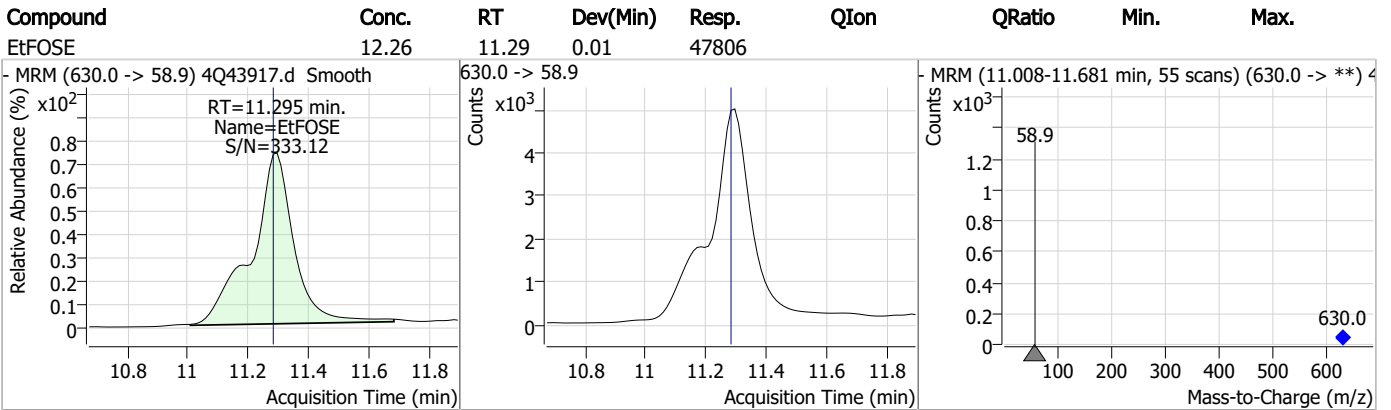
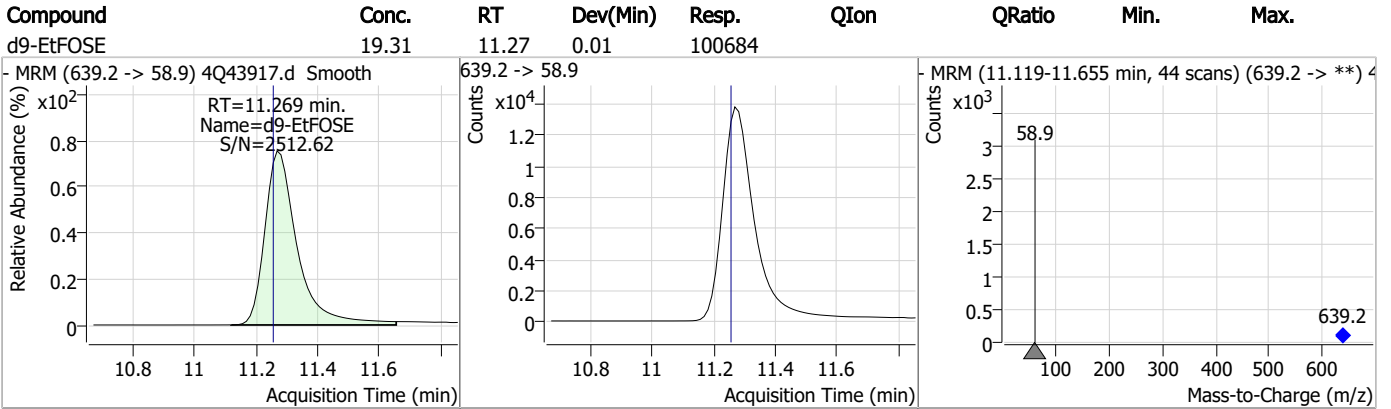
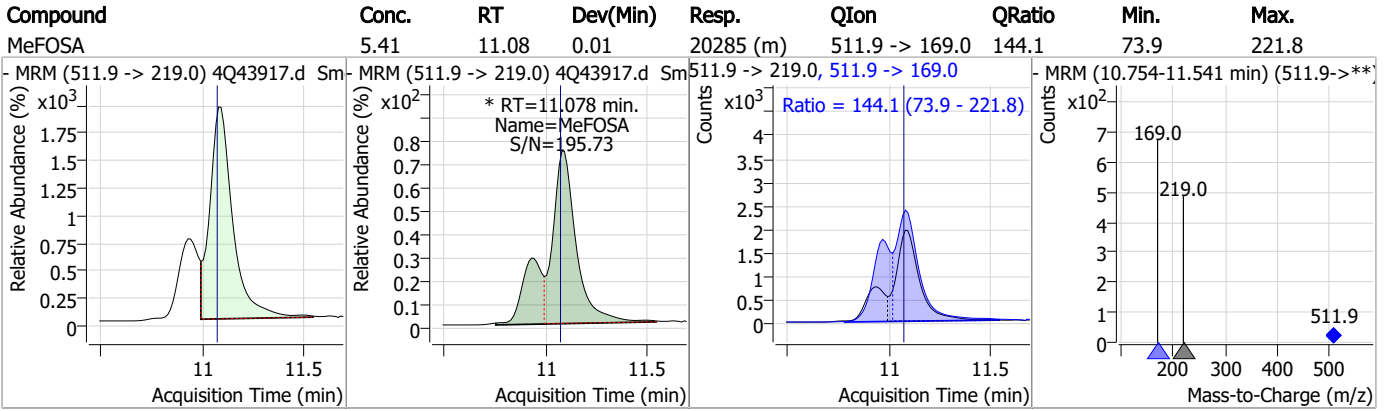
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.75	10.99	0.01	35633 (m)				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.14	11.08	0.01	9954				



### Perfluorinated Compounds by LC/MS/MS

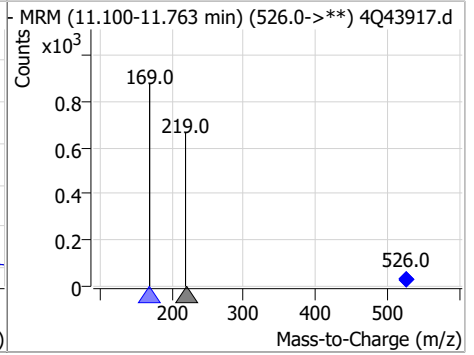
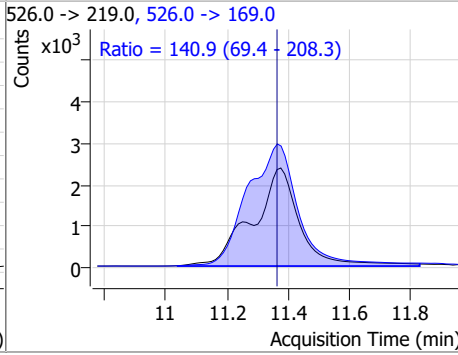
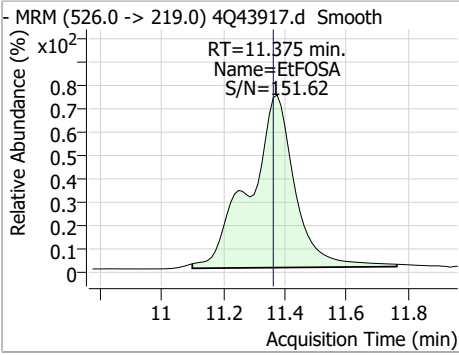


7.7.14  
7



### Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	5.03	11.37	0.01	24192	526.0 -> 169.0	140.9	69.4	208.3



7.7.14  
7



# Manual Integration Approval Summary

Sample Number: S4Q634-CC634      Method: EPA DRAFT 1633  
Lab FileID: 4Q43917.D      Analyst approved: 05/04/23 11:23 Natasha Gumtie  
Injection Time: 05/03/23 18:32      Supervisor approved: 05/04/23 17:49 Norman Farmer

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.25	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak
EtFOSAA	2991-50-6		8.48	Split peak
MeFOSE	24448-09-7		10.98	Split peak
MeFOSA	31506-32-8		11.08	Split peak

7.7.14.1  
7

SGS ORLANDO

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

LCMS4-4Q ANALYSIS LOG

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

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

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

LCMS4-4Q ANALYSIS LOG

SGS ORLANDO

36	4Q43914.d	P1-D1	op96659-mb	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
37	4Q43915.d	P1-D2	jd63879-1	1633full_4Q.m	Sample		OP96659,S4Q634,60,,,5.0,1,water	✓
38	4Q43916.d	P1-D3	jd63879-1	1633full_4Q.m	Sample	50/500	OP96659,S4Q634,60,,,5.0,10,water	✓
39	4Q43917.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
40	4Q43918.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
41	4Q43919.d	P1-D4	fc5212-1	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
42	4Q43920.d	P1-D5	fc5212-1A	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
43	4Q43921.d	P1-D6	fc5214-1	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
44	4Q43922.d	P1-D7	fc5214-1A	1633full_4Q.m	Sample		OP96659,S4Q634,500,,,5.0,1,water	✓
45	4Q43923.d	P1-D8	op96657-bs	1633full_4Q.m	Sample		OP96657,S4Q634,5.00,,,5.0,1,soil	DoDS low rerun BS
46	4Q43924.d	P1-D9	op96657-llbs:3	1633full_4Q.m	Sample		OP96657,S4Q634,5.00,,,5.0,1,soil	DoDS low rerun LLBS
47	4Q43925.d	P1-E1	op96657-mb	1633full_4Q.m	Sample		OP96657,S4Q634,5.00,,,5.0,1,soil	✓
48	4Q43926.d	P1-E2	fc5371-10	1633full_4Q.m	Sample		OP96657,S4Q634,4.98,,,5.0,1,soil	✓
49	4Q43927.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
50	4Q43928.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
51	4Q43929.d	P1-E3	fc5371-11	1633full_4Q.m	Sample		OP96657,S4Q634,5.02,,,5.0,1,soil	✓
52	4Q43930.d	P1-E4	op96657-ms	1633full_4Q.m	Sample		OP96657,S4Q634,5.01,,,5.0,1,soil	✓
53	4Q43931.d	P1-E5	op96657-msd	1633full_4Q.m	Sample		OP96657,S4Q634,5.03,,,5.0,1,soil	✓
54	4Q43932.d	P1-E6	fc5371-12	1633full_4Q.m	Sample		OP96657,S4Q634,5.02,,,5.0,1,soil	✓
55	4Q43933.d	P1-E7	fc5371-13	1633full_4Q.m	Sample		OP96657,S4Q634,5.04,,,5.0,1,soil	rr 10x
56	4Q43934.d	P1-E8	fc5371-14	1633full_4Q.m	Sample		OP96657,S4Q634,5.02,,,5.0,1,soil	rr 1x c/o
57	4Q43935.d	P1-E9	fc5371-15	1633full_4Q.m	Sample		OP96657,S4Q634,5.05,,,5.0,1,soil	✓
58	4Q43936.d	P1-F1	fc5371-16	1633full_4Q.m	Sample		OP96657,S4Q634,4.97,,,5.0,1,soil	rr 10x
59	4Q43937.d	P1-F2	fc5371-17	1633full_4Q.m	Sample		OP96657,S4Q634,5.03,,,5.0,1,soil	rr 1x c/o
60	4Q43938.d	P1-F3	fc5371-18	1633full_4Q.m	Sample		OP96657,S4Q634,5.03,,,5.0,1,soil	rr 10x
61	4Q43939.d	P1-A5	cc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
62	4Q43940.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND
63	4Q43941.d	P1-F4	fc5371-19	1633full_4Q.m	Sample		OP96657,S4Q634,4.96,,,5.0,1,soil	✓
64	4Q43942.d	P1-F5	fc5371-20	1633full_4Q.m	Sample		OP96657,S4Q634,5.05,,,5.0,1,soil	✓
65	4Q43943.d	P1-F6	op96657-ms2	1633full_4Q.m	Sample		OP96657,S4Q634,4.96,,,5.0,1,soil	✓
66	4Q43944.d	P1-F7	op96657-msd2	1633full_4Q.m	Sample		OP96657,S4Q634,5.05,,,5.0,1,soil	✓
67	4Q43945.d	P1-F8	fc5371-21	1633full_4Q.m	Sample		OP96657,S4Q634,4.99,,,5.0,1,soil	✓
68	4Q43946.d	P1-A5	ecc634-4	1633full_4Q.m	QC	20/500	OP96548,S4Q634,500,,,5.0,1,water	PASS
69	4Q43947.d	P1-A1	iccb	1633full_4Q.m	Sample		OP96548,S4Q634,500,,,5.0,1,water	ND

Organic Standards Preparation Log

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

\* B/C checked are normal

\* tested & passed on 10/11/23

LCMS 2100 91B \* 100% 100% 100%

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

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

(1,000)



Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2095A-J	(10ppb) PFC ID SURF	A-J 11669	PFAC-2YES	Wellington Labs	01/15/23	03/28/24	1.0ppm	2.4mL	~50mL	0.5ppm	05/11/23	03/28/23	09/26/23	NS
↓	↓	11585	M2HFO-DA	↓	11/08/23	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
↓	↓	11431	d-N-METOSA	↓	05/06/27	03/13/24	50ppm	48uL	↓	↓	↓	↓	↓	NS
LCMS 2096A-B	1033 spike Cal cert.	11672	PFAC-MxH	Wellington Labs	8/15/27	3/23/24	1-4 ppm	250uL	4mL	0.25 1.25 2.50ppb	1033 MIX	3/30/23	9/30/23	MU
↓	↓	11686	PFAC-MxI	↓	2/27/28	3/30/24	170 ppm	250uL	↓	0.25 0.25ppb	↓	↓	↓	↓
↓	↓	11674A	PFAC-MxH	↓	11/1/25	3/23/24	2ppm	500uL	↓	250ppb	↓	↓	↓	↓
↓	↓	11674B	PFAC-MxH	↓	12/1/27	3/30/24	2ppm	250uL	↓	125ppb	↓	↓	↓	↓
↓	↓	11675	PFAC-MxG	↓	9/14/26	3/30/24	4-20 ppm	312uL	↓	312/100 ppb	↓	↓	↓	↓
↓	↓	11642B	PFAC-MxJ	↓	10/28/23	10/28/23	50ppm	200uL	5mL	2ppm	1033 MIX	4/16/23	10/28/23	MU
LCMS 2097A-B	BR-LN metet for 1033	11497	br-N metosa	Wellington Labs	08/23/27	10/28/23	50ppm	200uL	↓	2ppm	↓	↓	↓	↓
↓	↓	11498	br-N Effosa	↓	10/07/27	10/28/23	50ppm	200uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11495	br-N metosa	↓	10/28/23	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓	11494	br-N Effosa	↓	10/17/27	10/28/23	50ppm	500uL	↓	5ppm	↓	↓	↓	↓
↓	↓					4/6/24								

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

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



Organic Standards Preparation Log

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

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

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
* 2074 A-B LCMS	PFC SPIKE	11613	PROA-SD C8000MS	Absolute	11/09/27	02/23/24	1.0ppm	2mL	5mL	400ppb	95% MeOH 5% H2O	02/23/23	03/23/23	UG
↓	↓	10829	N-Me- FSA-M	Wellington Labs	08/23/26	09/23/23	50ppm	40uL	↓	↓	↓	↓	↓	NG
↓	↓	11250	FBSA-1	↓	11/10/26	11/08/23	↓	↓	↓	↓	↓	↓	↓	NG
↓	↓	11249	FHSA-1	↓	12/29/26	11/03/23	↓	↓	↓	↓	↓	↓	↓	NG
↓	↓	11332	FTECHS	↓	03/28/27	10/18/23	↓	↓	↓	↓	↓	↓	↓	NG
* 2075 A-F LCMS	(10 PPB) PFC ID SURC	11639	MPAC- 24ES	Wellington Labs	03/24/27	02/23/24	1.0ppm	2.4mL	~50 mL	0.5ppm	95% MeOH 5% H2O	02/23/23	02/23/23	NG
↓	↓	11585	N2HFO- DA	Wellington Labs	11/08/25	01/26/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
↓	↓	11385	A-N- NFCOSAM	Wellington Labs	05/10/27	01/01/24	50ppm	48uL	↓	↓	↓	↓	↓	NG
↓	↓	11250	FBSA-1	Wellington Labs	11/10/26	11/8/23	50ppm	80uL	4.0mL	1ppm	95% MeOH 5% H2O	2/17/23	5/19/26	MV
↓	↓	11249	FHSA-1	↓	2/29/26	11/3/23	50ppm	80uL	↓	↓	↓	↓	↓	↓
↓	↓	11140	L-PFAS	↓	7/12/26	5/26/23	50ppm	80uL	↓	↓	↓	↓	↓	↓
LCMS 2077A-B	1633 Solvent B	11387	Ammonium Acetate	Sigmall drich	---	1/25/24	99.9%	0.62g	4L	2mM	MA	2/28/23	4/28/23	MV
↓	↓	224870	HPLC water	Fisher	---	2/28/23	↓	3,800ml	↓	95%	↓	↓	↓	↓
↓	↓	220225	Acetonil trile	↓	---	2/20/24	↓	200mL	↓	5%	↓	↓	↓	↓
↓	↓					n/a	n/a	n/a	2/28/23					
↓	↓					Continue next page 21								

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

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

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

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

11494



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### br-NMeFOSE

#### 2-(N-Methylperfluorooctanesulfonamido)ethanol Isomeric Mix

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

#### DESCRIPTION:

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

#### DOCUMENTATION/ DATA ATTACHED:

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

#### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

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

brNMeFOSE0922 (1 of 7)  
rev1

7.9.1

7

11495



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### br-NEtFOSE

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

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

### DESCRIPTION:

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

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

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

brNEtFOSE1022 (1 of 7)  
rev1

7.9.1

7

11497



**WELLINGTON  
LABORATORIES**

**CERTIFICATE OF ANALYSIS  
DOCUMENTATION**

**br-NMeFOSA**

**N-Methylperfluorooctanesulfonamide  
Isomeric Mix**

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

**DESCRIPTION:**

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

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

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

brNMeFOSA0822 (1 of 6)  
rev1

11498



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### br-NEtFOSA

#### N-Ethylperfluorooctanesulfonamide Isomeric Mix

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

### DESCRIPTION:

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

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

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

brNEtFOSA0922 (1 of 6)  
rev1

7.9.1  
7

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



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic  
Acid Solution/Mixture

<b><u>PRODUCT CODE:</u></b>	PFAC-MXJ
<b><u>LOT NUMBER:</u></b>	PFACMXJ0921
<b><u>SOLVENT(S):</u></b>	Methanol
<b><u>DATE PREPARED:</u></b> (mm/dd/yyyy)	09/08/2021
<b><u>LAST TESTED:</u></b> (mm/dd/yyyy)	09/14/2021
<b><u>EXPIRY DATE:</u></b> (mm/dd/yyyy)	09/14/2026
<b><u>RECOMMENDED STORAGE:</u></b>	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.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

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

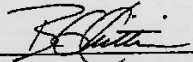
PFACMXJ:0921 (1 of 5)  
rev1

7.9.1  
7



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

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

Certified By:   
 B.G. Chittim, General Manager

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

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

PFACMX.0921 (3 of 5)  
 rev1

7.9.1  
 7

11672  
rec'd: 02/23/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXH

**Native PFAS  
Solution/Mixture**

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

#### DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C<sub>4</sub>-C<sub>14</sub>), eight native perfluoroalkanesulfonates (C<sub>4</sub>, C<sub>5</sub>, C<sub>7</sub>, C<sub>9</sub>, C<sub>10</sub> and C<sub>12</sub> linear; C<sub>6</sub> and C<sub>8</sub> linear and branched), three native fluorotelomer sulfonates (4:2, 6:2, and 8:2), two native linear and branched perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide (FOSA). The components and their concentrations are given in Table A.

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

#### DOCUMENTATION/ DATA ATTACHED:

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

#### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

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

PFACMXH0822 1 of 11  
rev0

7.9.1

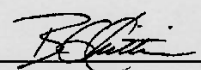
7

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

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

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

\* Concentrations have been rounded to three significant figures.

Certified By:   
 B.G. Chittim, General Manager

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

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



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXF

#### Native Replacement PFAS Solution/Mixture

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

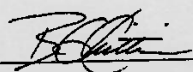
Table A:

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

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

\* Concentrations have been rounded to three significant figures.

Certified By:



B.G. Chittim, General Manager

Date: 01/12/2022

(mm/dd/yyyy)

11675  
rec'd: 02/23/23



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### PFAC-MXG

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

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

#### DESCRIPTION:

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

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

#### DOCUMENTATION/ DATA ATTACHED:

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

#### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

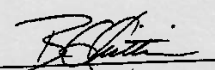
7.9.1  
7

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

**Table A**

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

\* Concentrations have been rounded to three significant figures.

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

7.9.1  
7

10685A



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

FPePA

**LOT NUMBER:**

FPePA1120

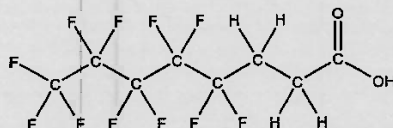
**COMPOUND:**

3-Perfluoropentyl propanoic acid

**STRUCTURE:**

**CAS #:**

914637-49-3



**MOLECULAR FORMULA:**

C<sub>8</sub>H<sub>5</sub>F<sub>11</sub>O<sub>2</sub>

**MOLECULAR WEIGHT:**

342.11

**CONCENTRATION:**

50.0 ± 2.5 µg/mL

**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

11/11/2020

**EXPIRY DATE:** (mm/dd/yyyy)

11/11/2025

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

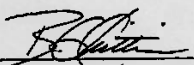
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains <1% of the unsaturated 5:3 telomer acid (C<sub>8</sub>H<sub>3</sub>F<sub>11</sub>O<sub>2</sub>) as an impurity determined by <sup>19</sup>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)

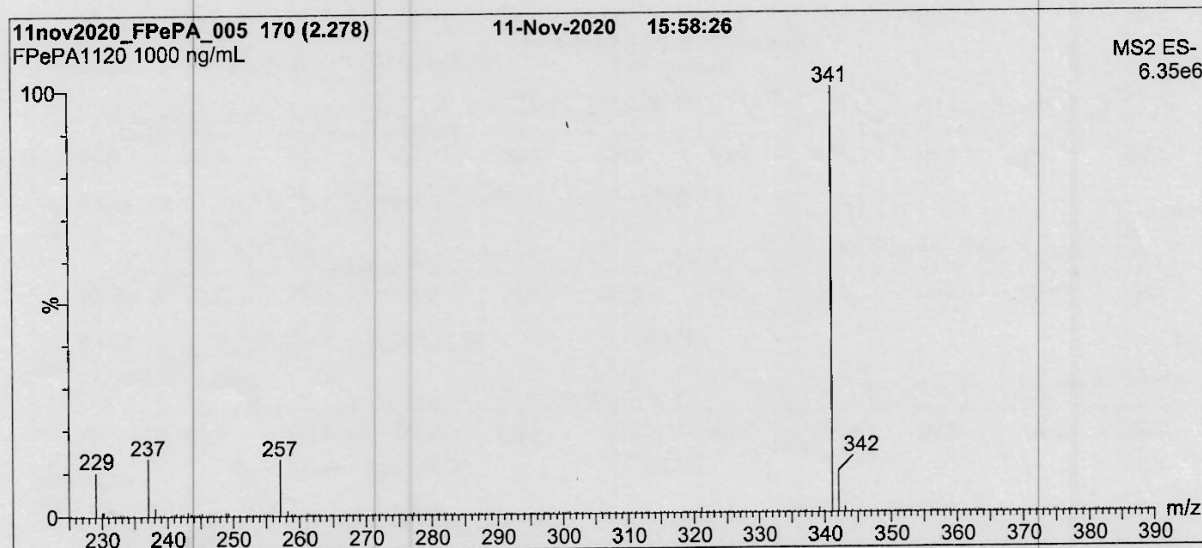
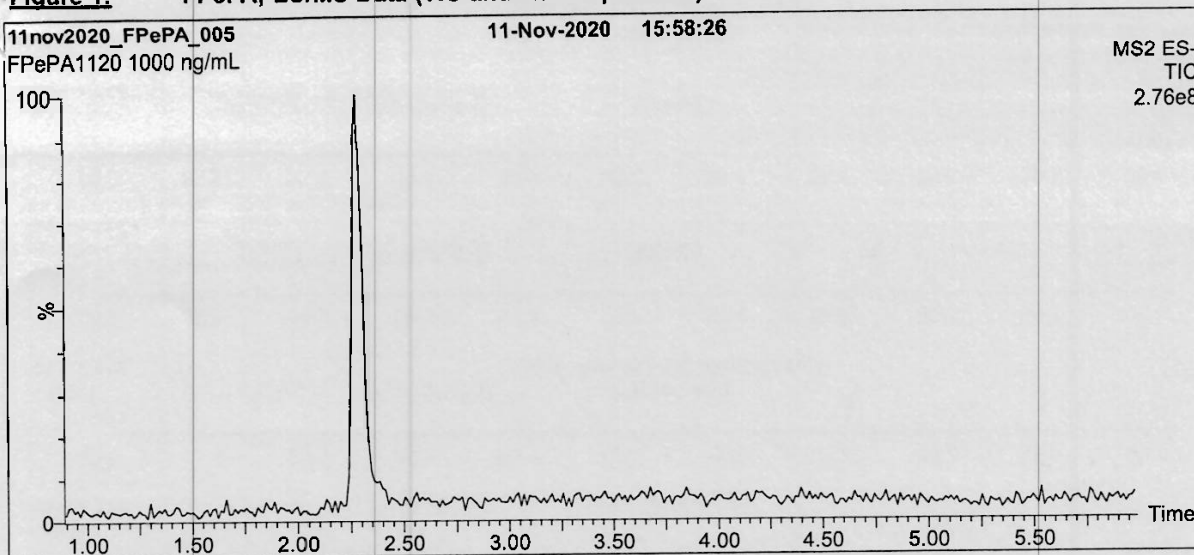
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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

FPePA1120 (1 of 4)  
rev0



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



**Conditions for Figure 1:**

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

**Chromatographic Conditions:**

Column: Acquity UPLC BEH Shield RP<sub>1a</sub>  
1.7 μm, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 45% H<sub>2</sub>O / 55% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>OAc buffer)  
Ramp to 90% organic over 8 min and hold for  
2 min before returning to initial conditions in 0.75 min.  
Time: 12 min

Flow: 300 μL/min

**MS Parameters:**

Experiment: Full Scan (225 - 850 amu)

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

10726 A

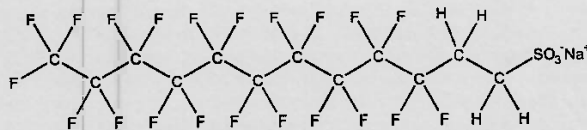


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



**MOLECULAR FORMULA:** C<sub>12</sub>H<sub>4</sub>F<sub>21</sub>SO<sub>3</sub>Na **MOLECULAR WEIGHT:** 650.18  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol  
48.3 ± 2.4 µg/mL (10:2FTS acid)  
48.2 ± 2.4 µg/mL (10:2FTS anion)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 03/03/2021  
**EXPIRY DATE:** (mm/dd/yyyy) 03/03/2026  
**RECOMMENDED STORAGE:** Refrigerate ampoule

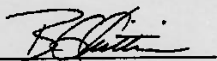
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

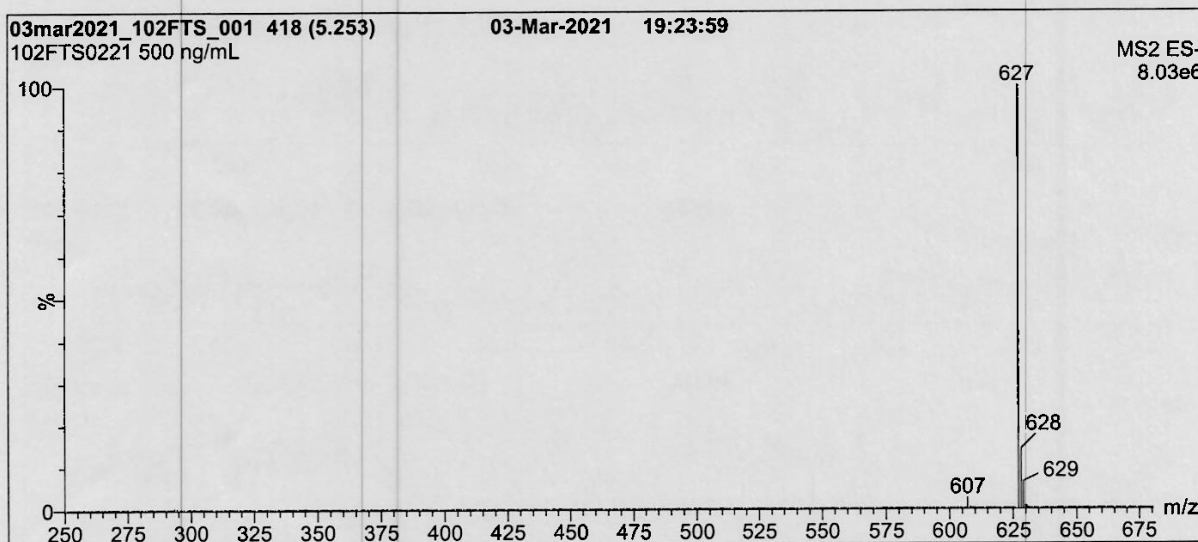
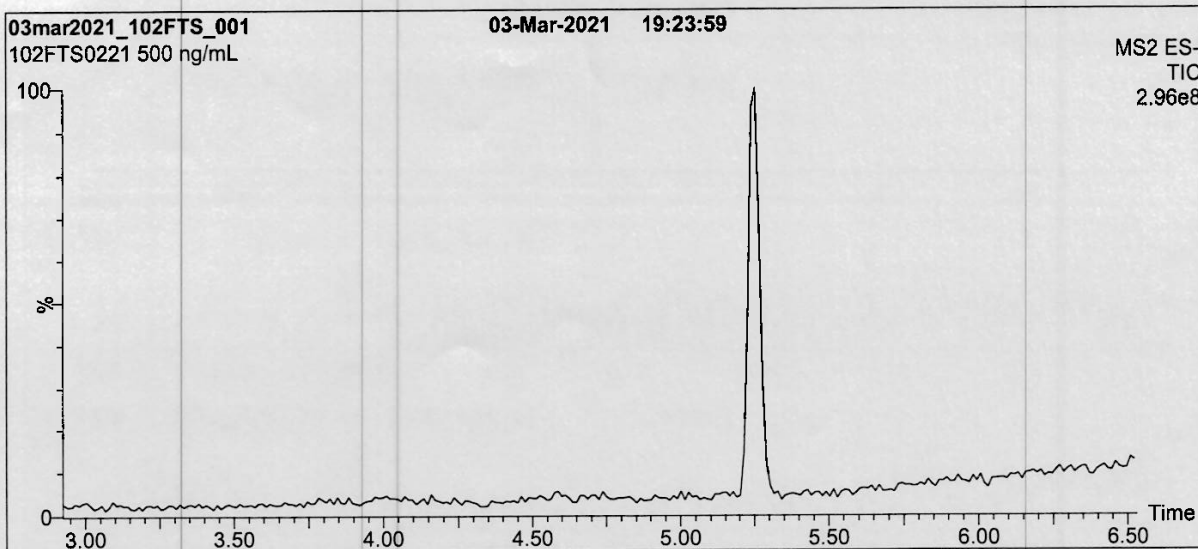
Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA  
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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

7.9.1

7

**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 RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 40% H<sub>2</sub>O / 60% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>OAc 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  $\mu$ 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

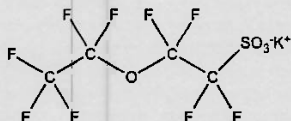


# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** PFEESA *rec'd 8/20/21 WPH* **LOT NUMBER:** PFEESA0520  
**COMPOUND:** Potassium perfluoro(2-ethoxyethane)sulfonate

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



**MOLECULAR FORMULA:** C<sub>4</sub>F<sub>8</sub>SO<sub>4</sub>K **MOLECULAR WEIGHT:** 354.19  
**CONCENTRATION:** 50.0 ± 2.5 µg/ml (K salt) **SOLVENT(S):** Methanol  
44.6 ± 2.2 µg/ml (PFEESA acid)  
44.5 ± 2.2 µg/ml (PFEESA anion)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 05/13/2020  
**EXPIRY DATE:** (mm/dd/yyyy) 05/13/2025  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

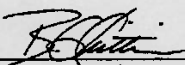
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**   
B.G. Chittim, General Manager **Date:** 05/29/2020  
(mm/dd/yyyy)

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

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

7.9.1

7

10763 A-B



# WELLINGTON LABORATORIES

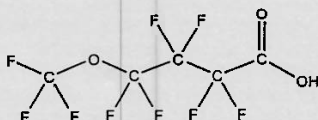
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**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:** C<sub>5</sub>HF<sub>9</sub>O<sub>3</sub> **MOLECULAR WEIGHT:** 280.05

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

**CHEMICAL PURITY:** >98%

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

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

**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

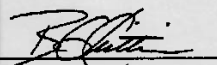
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

B.G. Chittim, General Manager

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

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

PF5OHxA0320 (1 of 4)  
rev1

7.9.1  
7

10764A-B



# WELLINGTON LABORATORIES

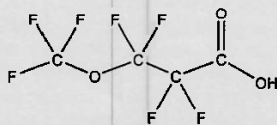
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**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:** C<sub>4</sub>HF<sub>7</sub>O<sub>3</sub> **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

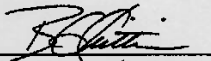
### DOCUMENTATION/ DATA ATTACHED:

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)

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

10765 A-13



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

3,6-OPFHpA

*rec'd  
WPH  
8/20/21*

**LOT NUMBER:**

36OPFHpA0320

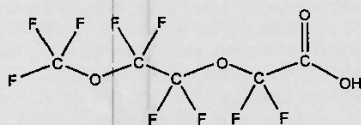
**COMPOUND:**

Perfluoro-3,6-dioxaheptanoic acid

**STRUCTURE:**

**CAS #:**

151772-58-6



**MOLECULAR FORMULA:**

C<sub>6</sub>H<sub>2</sub>F<sub>9</sub>O<sub>4</sub>

**MOLECULAR WEIGHT:**

296.04

**CONCENTRATION:**

50.0 ± 2.5 µg/ml

**SOLVENT(S):**

Methanol  
Water (<1%)

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

03/31/2020

**EXPIRY DATE:** (mm/dd/yyyy)

03/31/2025

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**

*B.G. Chittim*  
B.G. Chittim, General Manager

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

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

10829



# WELLINGTON LABORATORIES

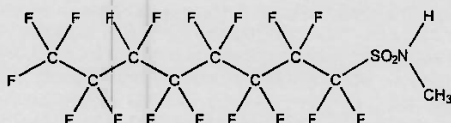
## CERTIFICATE OF ANALYSIS DOCUMENTATION

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

**LOT NUMBER:** NMeFOSA0721M

**STRUCTURE:**

**CAS #:** 31506-32-8



rec'd  
w/mt  
10/5/21

**MOLECULAR FORMULA:** C<sub>9</sub>H<sub>4</sub>F<sub>17</sub>NO<sub>2</sub>S  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 08/03/2021  
**EXPIRY DATE:** (mm/dd/yyyy) 08/03/2026  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 513.17  
**SOLVENT(S):** Methanol

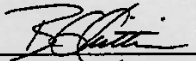
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**   
B.G. Chittim, General Manager

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

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

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

NMeFOSA0721M (1 of 4)  
rev0

7.9.1

7





# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

N-EtFOSA-M

10837

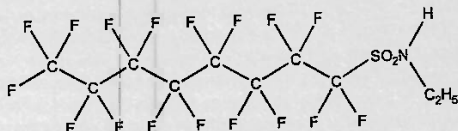
**LOT NUMBER:** NEtFOSA0821M

**COMPOUND:**

N-ethylperfluoro-1-octanesulfonamide

**STRUCTURE:**

**CAS #:** 4151-50-2



**MOLECULAR FORMULA:**

C<sub>10</sub>H<sub>9</sub>F<sub>17</sub>NO<sub>2</sub>S

**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)

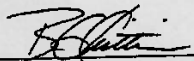
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**

  
B.G. Chittim, General Manager

**Date:** 08/16/2021

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA

7.9.1  
7



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

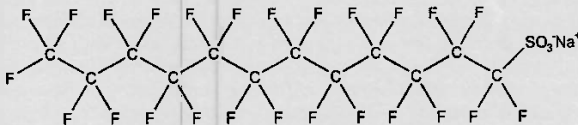
10840

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

**LOT NUMBER:** LPFDoS0721

**STRUCTURE:**

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



**MOLECULAR FORMULA:** C<sub>12</sub>F<sub>25</sub>SO<sub>3</sub>Na  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL (Na salt)  
48.5 ± 2.4 µg/mL (PFDoS acid)  
48.4 ± 2.4 µg/mL (PFDoS anion)  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 07/09/2021  
**EXPIRY DATE:** (mm/dd/yyyy) 07/09/2026  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 722.14  
**SOLVENT(S):** Methanol


**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**   
B.G. Chittim, General Manager

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

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



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

PFODA

10847 NG 01/18/23

**LOT NUMBER:**

PFODA0821

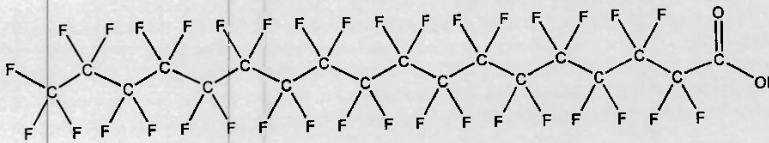
**COMPOUND:**

Perfluoro-n-octadecanoic acid

**STRUCTURE:**

**CAS #:**

16517-11-6



**MOLECULAR FORMULA:**

C<sub>18</sub>H<sub>35</sub>O<sub>2</sub>

**MOLECULAR WEIGHT:**

914.14

**CONCENTRATION:**

50.0 ± 2.5 µg/mL

**SOLVENT(S):**

Methanol  
Water (<1%)

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

09/03/2021

**EXPIRY DATE:** (mm/dd/yyyy)

09/03/2026

**RECOMMENDED STORAGE:**

Store ampoule at ambient temperature in a dark place

### DOCUMENTATION/ DATA ATTACHED:

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

### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**

B.G. Chittim, General Manager

**Date:** 09/28/2021

(mm/dd/yyyy)

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

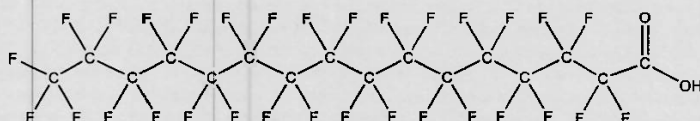


10842 \* NG 01/18/23

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

**COMPOUND:** Perfluoro-n-hexadecanoic acid

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



**MOLECULAR FORMULA:** C<sub>16</sub>HF<sub>31</sub>O<sub>2</sub> **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

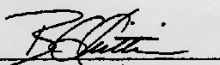
**DOCUMENTATION/ DATA ATTACHED:**

- 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)

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

1116 A/B NW

1116B on the back NW



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

FHpPA

**LOT NUMBER:**

FHpPA1020

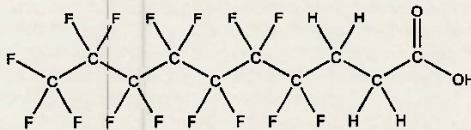
**COMPOUND:**

3-Perfluoroheptyl propanoic acid

**STRUCTURE:**

**CAS #:**

812-70-4



**MOLECULAR FORMULA:**

C<sub>10</sub>H<sub>5</sub>F<sub>15</sub>O<sub>2</sub>

**MOLECULAR WEIGHT:**

442.12

**CONCENTRATION:**

50.0 ± 2.5 µg/mL

**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

11/12/2020

**EXPIRY DATE:** (mm/dd/yyyy)

11/12/2025

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**

B.G. Chittim, General Manager

**Date:** 11/27/2020

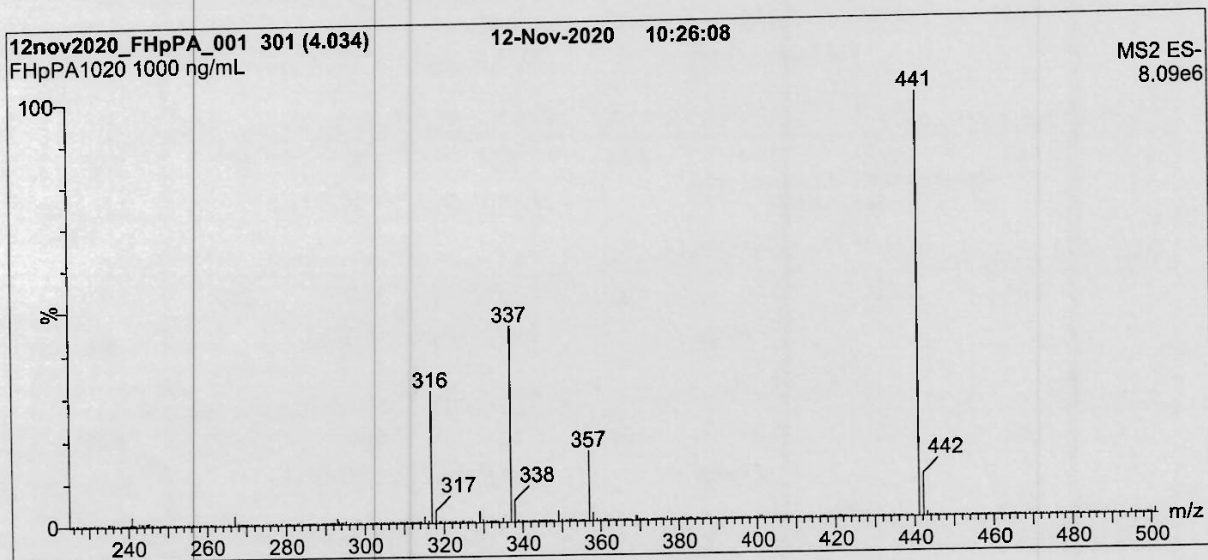
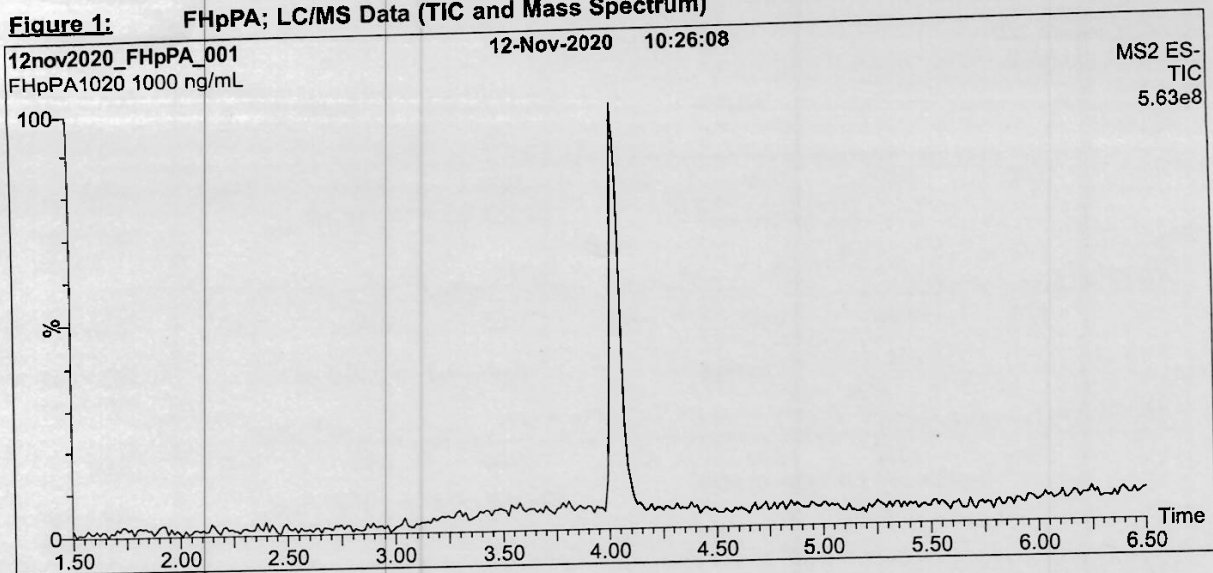
(mm/dd/yyyy)

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

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

FHpPA1020 (1 of 4)  
rev0

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



**Conditions for Figure 1:**

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

**Chromatographic Conditions:**

Column: Acquity UPLC BEH Shield RP<sub>18</sub>  
1.7  $\mu$ m, 2.1 x 100 mm

Mobile phase: Gradient  
Start: 45% H<sub>2</sub>O / 55% (80:20 MeOH:ACN)  
(both with 10 mM NH<sub>4</sub>OAc 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  $\mu$ L/min

**MS Parameters:**

Experiment: Full Scan (225 - 850 amu)

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

FPrPA(3:3FTEA) 1116 B



**WELLINGTON**  
LABORATORIES

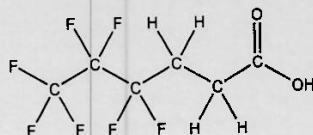
**CERTIFICATE OF ANALYSIS**  
DOCUMENTATION

**PRODUCT CODE:** FPrPA  
**COMPOUND:** 3-Perfluoropropyl propanoic acid

**LOT NUMBER:** FPrPA0122

**STRUCTURE:**

**CAS #:** 356-02-5



**MOLECULAR FORMULA:** C<sub>6</sub>H<sub>5</sub>F<sub>7</sub>O<sub>2</sub>  
**CONCENTRATION:** 50.0 ± 2.5 µg/mL  
**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 02/03/2022  
**EXPIRY DATE:** (mm/dd/yyyy) 02/03/2027  
**RECOMMENDED STORAGE:** Refrigerate ampoule

**MOLECULAR WEIGHT:** 242.09  
**SOLVENT(S):** Methanol

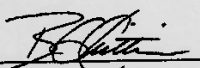
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.
- Contains <1% of the unsaturated 3:3 telomer acid (C<sub>6</sub>H<sub>3</sub>F<sub>7</sub>O<sub>2</sub>) as an impurity determined by <sup>19</sup>F NMR.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**   
B.G. Chittim, General Manager

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

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

11140



# WELLINGTON LABORATORIES

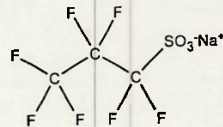
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:** L-PFPrS  
**COMPOUND:** Sodium perfluoro-1-propanesulfonate

**LOT NUMBER:** LPFPrS0721

**STRUCTURE:**

**CAS #:** Not available



**MOLECULAR FORMULA:** C<sub>3</sub>F<sub>7</sub>SO<sub>3</sub>Na  
**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)

**MOLECULAR WEIGHT:** 272.07  
**SOLVENT(S):** Methanol

**CHEMICAL PURITY:** >98%  
**LAST TESTED:** (mm/dd/yyyy) 07/12/2021  
**EXPIRY DATE:** (mm/dd/yyyy) 07/12/2026  
**RECOMMENDED STORAGE:** Store ampoule in a cool, dark place

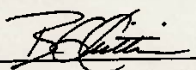
**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**   
B.G. Chittim, General Manager

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

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

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

LPFPrS0721 (1 of 4)  
rev0

7.9.1

7



11252 11249  
7/1/22 KA



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

FHxSA-I

**LOT NUMBER:**

FHxSA12211

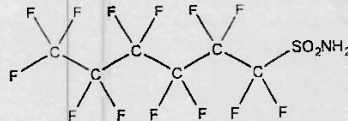
**COMPOUND:**

Perfluoro-1-hexanesulfonamide

**STRUCTURE:**

**CAS #:**

41997-13-1



**MOLECULAR FORMULA:**

C<sub>6</sub>H<sub>2</sub>F<sub>13</sub>NO<sub>2</sub>S

**MOLECULAR WEIGHT:**

399.13

**CONCENTRATION:**

50.0 ± 2.5 µg/mL

**SOLVENT(S):**

isopropanol

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

12/29/2021

**EXPIRY DATE:** (mm/dd/yyyy)

12/29/2026

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:

B.G. Chittim, General Manager

Date: 01/10/2022

(mm/dd/yyyy)

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

11250 Lx 7/1122



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

FBSA-I

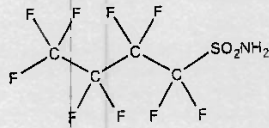
**LOT NUMBER:** FBSA11211

**COMPOUND:**

Perfluoro-1-butananesulfonamide

**STRUCTURE:**

**CAS #:** 30334-69-1



**MOLECULAR FORMULA:**

C<sub>4</sub>H<sub>2</sub>F<sub>9</sub>NO<sub>2</sub>S

**MOLECULAR WEIGHT:** 299.11

**CONCENTRATION:**

50.0 ± 2.5 µg/mL

**SOLVENT(S):** Isopropanol

**CHEMICAL PURITY:**

>98%

**LAST TESTED:** (mm/dd/yyyy)

11/10/2021

**EXPIRY DATE:** (mm/dd/yyyy)

11/10/2026

**RECOMMENDED STORAGE:**

Refrigerate ampoule

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

- See page 2 for further details.

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

**Certified By:**

B.G. Chittim, General Manager

**Date:** 11/10/2021

(mm/dd/yyyy)

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

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

FBSA11211 (1 of 4)  
rev0

11332



# WELLINGTON LABORATORIES

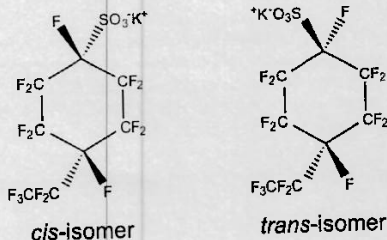
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**  
**COMPOUND:**

PFECHS  
Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

**LOT NUMBER:** PFECHS0222

**STRUCTURE:**



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

**MOLECULAR FORMULA:**  
**CONCENTRATION:**

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

**MOLECULAR WEIGHT:** 500.22  
**SOLVENT(S):** Methanol

**CHEMICAL PURITY:**

**LAST TESTED:** (mm/dd/yyyy)

03/28/2022

**EXPIRY DATE:** (mm/dd/yyyy)

03/28/2027

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

**ADDITIONAL INFORMATION:**

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:

B.G. Chittim, General Manager

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

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

7.9.1  
7

11336



# WELLINGTON LABORATORIES

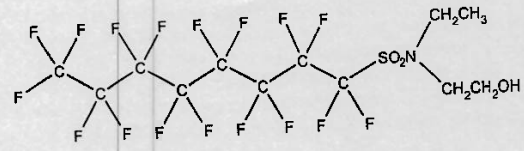
## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**  
**COMPOUND:**  
**STRUCTURE:**

N-EtFOSE-M  
2-(N-ethylperfluoro-1-octanesulfonamido)ethanol

**LOT NUMBER:** NEtFOSE0622M

**CAS #:** 1691-99-2



**MOLECULAR FORMULA:**  
**CONCENTRATION:**  
**CHEMICAL PURITY:**  
**LAST TESTED:** (mm/dd/yyyy)  
**EXPIRY DATE:** (mm/dd/yyyy)  
**RECOMMENDED STORAGE:**

C<sub>12</sub>H<sub>10</sub>F<sub>17</sub>NO<sub>3</sub>S  
50.0 ± 2.5 µg/mL  
>98%  
05/13/2022 (HRGC/LRMS)  
05/13/2022 (LC/MS)  
05/13/2027  
Store ampoule in a cool, dark place

**MOLECULAR WEIGHT:** 571.25  
**SOLVENT(S):** Methanol


**DOCUMENTATION/ DATA ATTACHED:**

- Figure 1: HRGC/LRMS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 3: LC/MS/MS Data (Selected MRM Transitions)

**ADDITIONAL INFORMATION:**

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:  Date: 07/13/2022 (mm/dd/yyyy)  
B.G. Chittim, General Manager

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

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

NEtFOSE0622M (1 of 5)  
rev0



11338



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

**PRODUCT CODE:**

N-MeFOSE-M

**LOT NUMBER:**

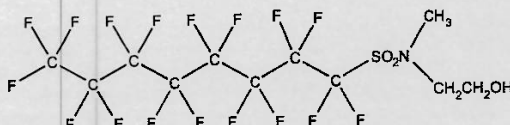
NMeFOSE0522M

**COMPOUND:**

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

**STRUCTURE:****CAS #:**

24448-09-7

**MOLECULAR FORMULA:**C<sub>11</sub>H<sub>8</sub>F<sub>17</sub>NO<sub>3</sub>S**MOLECULAR WEIGHT:**

557.22

**CONCENTRATION:**

50.0 ± 2.5 µg/mL

**SOLVENT(S):**

Methanol

**CHEMICAL PURITY:**

&gt;98%

**LAST TESTED:** (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)

05/13/2022 (LC/MS)

**EXPIRY DATE:** (mm/dd/yyyy)

05/13/2027

**RECOMMENDED STORAGE:**

Store ampoule in a cool, dark place

**DOCUMENTATION/ DATA ATTACHED:**

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

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

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

**ADDITIONAL INFORMATION:**

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

Certified By:

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

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

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



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### MPFAC-HIF-IS

Mass-Labelled PFAS Injection  
Standard Solution/Mixture

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

#### DESCRIPTION:

MPFAC-HIF-IS is a solution/mixture of five mass-labelled (<sup>13</sup>C) perfluoroalkylcarboxylic acids (C<sub>4</sub>, C<sub>6</sub>, C<sub>8</sub>-C<sub>10</sub>) and two mass-labelled (<sup>18</sup>O and <sup>13</sup>C) perfluoroalkanesulfonates (C<sub>6</sub> and C<sub>8</sub>). 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 <sup>13</sup>C or >94% per <sup>18</sup>O.

#### DOCUMENTATION/ DATA ATTACHED:

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

#### ADDITIONAL INFORMATION:

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

**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

**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- <sup>13</sup> C <sub>3</sub> )butanoic acid	M3PFBA	1000		1
Perfluoro-n-(1,2- <sup>13</sup> C <sub>2</sub> )hexanoic acid	MPFHxA	500		2
Perfluoro-n-(1,2,3,4- <sup>13</sup> C <sub>4</sub> )octanoic acid	MPFOA	500		4
Perfluoro-n-(1,2,3,4,5- <sup>13</sup> C <sub>5</sub> )nonanoic acid	MPFNA	250		5
Perfluoro-n-(1,2- <sup>13</sup> C <sub>2</sub> )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( <sup>18</sup> O <sub>2</sub> )sulfonate	MPFHxS	500	474	3
Sodium perfluoro-1-(1,2,3,4- <sup>13</sup> C <sub>4</sub> )octanesulfonate	MPFOS	500	479	6

\* Concentrations have been rounded to three significant figures.

Certified By:   
 B.G. Chittim, General Manager

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



11626  
rec'd 01/26/23

CERTIFIED WEIGHT REPORT

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

Solvent(s): Methanol (1 mM KOH)  
2-Propanol

Lot# 102722 (98%)  
32500 (2%)

Formulated By: <i>P. S. Chauhan</i>	110922
Prepared By: <i>Prashant Chauhan</i>	DATE
Reviewed By: <i>Pedro L. Rentas</i>	110822
	DATE

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

Compound	Part Number	Lot Number	Dilution Factor	Initial Vol. (mL)	Uncertainty Pipette (mL)	Initial Conc. (µg/mL)	Final Conc. (µg/mL)	Expanded Uncertainty (+/-) µg/mL	SDS Information (Solvent Safety Info. On Attached pg.)		
									Free Acid CAS#	OSHA PEL (TWA)	LD50
1. Perfluoro-n-butanoic acid (PFBA)	99542	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-22-4	N/A	N/A
2. Perfluoro-n-pentanoic acid (PFPeA)	99543	050222	0.02	2.00	0.017	50.3	1.01	0.02	2706-90-3	N/A	N/A
3. Perfluorohexanoic acid (PFHxA)	99199	071122	0.02	2.00	0.017	50.2	1.00	0.02	307-24-4	N/A	N/A
4. Perfluoroheptanoic acid (PFHpA)	99197	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-85-9	N/A	N/A
5. Perfluorooctanoic acid (br-PFOA)*	99202	080522	0.02	2.00	0.017	50.2	1.00	0.02	335-67-1 (L)	N/A	ip-rat 189mg/kg
6. Perfluorononanoic acid (PFNA)	99200	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-95-1	N/A	N/A
7. Perfluorodecanoic acid (PFDA)	99195	110922	0.02	2.00	0.017	50.0	1.00	0.02	335-76-2	N/A	rat 57mg/kg
8. Perfluoroundecanoic acid (PFUnA)	99205	071522	0.02	2.00	0.017	50.2	1.00	0.02	2058-94-8	N/A	N/A
9. Perfluorododecanoic acid (PFDoA)	99196	071522	0.02	2.00	0.017	50.1	1.00	0.02	307-55-1	N/A	N/A
10. Perfluorotridecanoic acid (PTTDA)	99204	110922	0.02	2.00	0.017	50.1	1.00	0.02	72629-94-8	N/A	N/A
11. Perfluorotetradecanoic acid (PFTeDA)	99203	033022	0.02	2.00	0.017	50.1	1.00	0.02	376-06-7	N/A	N/A
12. Perfluoro-1-octanesulfonamide (FOSA)	3677	FOSA03221	0.02	2.00	0.017	50.0	1.00	0.05	2355-31-9 (L)	N/A	N/A
13. N-Methylperfluorooctanesulfonamidoacetic acid (br-NMeFOSAA)*	4162	brNMeFOSA0422	0.02	2.00	0.017	50.0	1.00	0.05	2991-50-6 (L)	N/A	N/A
14. N-Ethylperfluorooctanesulfonamidoacetic acid (br-NEFOSAA)*	4163	brNEFOSA1121	0.02	2.00	0.017	50.0	1.00	0.05	2991-50-6 (L)	N/A	N/A
15. Perfluorobutanesulfonic acid (PFBS)	99194	080522	0.02	2.00	0.017	50.2	1.00	0.02	375-73-5	N/A	N/A
16. Perfluoro-1-pentanesulfonic acid (PFPeS)	99544	032422	0.02	2.00	0.017	50.1	1.00	0.02	2706-91-4	N/A	N/A
17. Perfluorohexanesulfonic acid (br-PFHxS)*	99198	071522	0.02	2.00	0.017	50.2	1.00	0.02	355-46-4 (L)	N/A	N/A
18. Perfluoro-1-heptanesulfonic acid (PFHpS)	3672	LPFHpS0822	0.021	2.10	0.017	47.6	1.00	0.05	375-92-8	N/A	N/A
19. Heptadecafluorooctanesulfonic acid (br-PFOS)*	99201	033022	0.02	2.00	0.017	50.1	1.00	0.02	1763-23-1 (L)	N/A	N/A
20. Perfluoro-1-nonanesulfonic acid (PFNS)	3957	LPFNS1021	0.021	2.10	0.017	48.0	1.01	0.05	68259-12-1	N/A	N/A
21. Perfluoro-1-decanesulfonic acid (PFDS)	3671	LPFDS0222	0.021	2.10	0.017	48.2	1.01	0.05	335-77-3	N/A	N/A
22. 1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2FTS)	65271	080522	0.02	2.00	0.017	50.2	1.00	0.05	757124-72-4	N/A	N/A
23. 1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2FTS)	65272	071522	0.02	2.00	0.017	50.2	1.00	0.05	29187-87-2	N/A	N/A
24. 1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2FTS)	3662	82FTS0822	0.021	2.10	0.017	47.9	1.01	0.05	39108-34-4	N/A	N/A
25. 2-(Heptafluoropropoxy)-2,3,3,3-tetrafluoropropionic acid (HFPO-DA)	99666	080522	0.02	2.00	0.017	50.1	1.00	0.02	13252-13-6	N/A	N/A
26. 11-Chlorooctadecafluoro-3-oxadecane-1-sulfonic acid (11Cl-PF3OUds)	4165	11ClPF3OUds0522	0.021	2.12	0.017	47.1	1.00	0.05	763051-92-9	N/A	N/A
27. 9-Chlorooctadecafluoro-3-oxadecane-1-sulfonic acid (9Cl-PF3ONS)	4164	9ClPF3ONS0522	0.021	2.14	0.017	46.8	1.00	0.05	756426-56-1	N/A	N/A
28. Dodecafluoro-3H,4,8-dioxanonanoic acid (ADONA)	4103	NaDONA0922	0.021	2.12	0.017	47.1	1.00	0.05	919005-14-4	N/A	N/A
Perfluorooctanoic acid (linear)*	99202	080522	0.02	2.00	0.004	49.6	0.99	0.010	335-67-1 (L)	N/A	ip-rat 189mg/kg
Perfluorooctanoic acid (branched isomer)*	99202	080522	0.02	2.00	0.004	0.6	0.01	0.001	335-67-1 (L)	N/A	ip-rat 189mg/kg
Perfluorohexanesulfonic acid (linear)*	99198	071522	0.02	2.00	0.017	44.2	0.88	0.02	355-46-4 (L)	N/A	N/A
Perfluorohexanesulfonic acid (branched isomer)*	99198	071522	0.02	2.00	0.017	6.0	0.12	0.0021	355-46-4 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (linear)*	99201	033022	0.02	2.00	0.017	38.1	0.76	0.02	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	7.5	0.15	0.003	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	4.0	0.08	0.002	1763-23-1 (L)	N/A	N/A
Heptadecafluorooctanesulfonic acid (branched isomer)*	99201	033022	0.02	2.00	0.017	0.5	0.010	0.0002	1763-23-1 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4162	brNMeFOSA0422	0.02	2.00	0.017	36.0	0.72	0.04	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSA0422	0.02	2.00	0.017	6.5	0.13	0.011	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSA0422	0.02	2.00	0.017	5.0	0.10	0.005	2355-31-9 (L)	N/A	N/A
N-Methylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4162	brNMeFOSA0422	0.02	2.00	0.017	2.5	0.05	0.0009	2355-31-9 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (linear)*	4163	brNEFOSA1121	0.02	2.00	0.017	36.6	0.73	0.04	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSA1121	0.02	2.00	0.017	7.7	0.15	0.009	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSA1121	0.02	2.00	0.017	6.3	0.11	0.005	2991-50-6 (L)	N/A	N/A
N-Ethylperfluoro-1-octanesulfonamidoacetic acid (branched)*	4163	brNEFOSA1121	0.02	2.00	0.017	0.4	0.007	0.0006	2991-50-6 (L)	N/A	N/A

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

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

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



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



# WELLINGTON LABORATORIES

## CERTIFICATE OF ANALYSIS DOCUMENTATION

### MPFAC-HIF-ES

#### Mass-Labelled PFAS Extraction Standard Solution/Mixture

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

#### DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (<sup>13</sup>C) perfluoroalkylcarboxylic acids (C<sub>4</sub>-C<sub>12</sub>, C<sub>14</sub>), three mass-labelled (<sup>13</sup>C) perfluoroalkanesulfonates (C<sub>4</sub>, C<sub>6</sub>, and C<sub>8</sub>), three mass-labelled (one <sup>13</sup>C and two <sup>2</sup>H) perfluoro-1-octanesulfonamides, three mass-labelled (<sup>13</sup>C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (<sup>2</sup>H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (<sup>2</sup>H) perfluorooctanesulfonamidoethanols, and mass-labelled (<sup>13</sup>C) hexafluoropropylene oxide dimer acid (GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

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

#### DOCUMENTATION/ DATA ATTACHED:

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

#### ADDITIONAL INFORMATION:

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

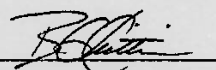
**FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**

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

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

\* Concentrations have been rounded to three significant figures.

Certified By:   
B.G. Chittim, General Manager

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

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 05/01/23 11:00  
Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (QSM) 2:5440

Date/Time: 05/03/23 10:00  
Finished (mm/dd/yy 24:00)

Balance ID: \_\_\_\_\_

Batch#: OP96662 Ext. By: GH

Conc. By: \_\_\_\_\_ Viald By: \_\_\_\_\_

Sample ID	Bottle Number	Amount Extracted (ml)	Initial pH	Adjusted pH	Surrogate Amount (ul)	Spike Amount (ul)	Final Volume (ml)	Manifold ID	Comments
OP 96662 MB		500	7	N/A	25		5	AG	
OP 96662 BS		500	7			200			
OP 96662 LBS		500	7			60			
FC5685-1	2	530	6						
	2	530	6						
FC5685-1	2	550	6						
	2	530	6						
	3	560	6						
	4	570	7						
	5	550	6	N/A	25		5	AG	
OPFC5685-3MS	3	520	6	N/A	25	200	5	AG	
OP MSD									
OPFC5685-4DUP	3	570	7	N/A	25		5	AG	

Comments:

EIS (SURR) ID: 11777A-C Conc: 250-5000 ng/ml Exp. Date: 04/28/24 Inj. By: GH Ver. By: CM  
 SPIKE 1 ID: LMS 2107A Conc: VARIOUS Exp. Date: 10/27/23 Inj. By: GH Ver. By: CM  
 SPIKE 2 ID: \_\_\_\_\_ Conc: \_\_\_\_\_ Exp. Date: \_\_\_\_\_ Inj. By: \_\_\_\_\_ Ver. By: \_\_\_\_\_  
 NIS (ISTD) ID: 11764G-E Conc: 250-1000 ng/ml Exp. Date: 04/27/24 Inj. By: NG Ver. By: MV

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

Methanol Lot # 224231 1% NH4OH MeOH PF 379 SPE Lot # 614-0-05  
 Water Lot# 0990255 0.3M Formic Acid PF 375 Syringe filter Lot #  
 Acetic Acid# 194003 3% NH4OH Sol pH paper Lot# 215322  
 0.1M Formic PF 377 5% Formic Acid Carbon Lot# 160898

Relinquished By: [Signature]  
 Accepted By: [Signature]

Date: 05/01/23  
 Date: 05/03/23

7.10.1  
7