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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC9640

Sampling Date: 09/13/23



Report to:

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Total number of pages in report: 593



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 unless noted in the narrative, comments or footnotes.

Norm Farmer
Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)

DoD ELAP(ANAB L2229), AZ(AZ0806), CA(2937), TX(T104704404), PA(68-03573), VA(460177),

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

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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC9640

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC9640-1	09/13/23	12:05	AYLW09/15/23	AQ	Ground Water	AF-RHP02-WGN01LF-2309
FC9640-2	09/13/23	12:05	AYLW09/15/23	AQ	Ground Water	AF-RHP02-WGFD01LF-2309

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC9640

Site: N6274223F0104 RH Fire Suppression System

Report Date: 9/22/2023 2:50:26 PM

On 09/15/2023, 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 4.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC9640 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: OP99077

Sample(s) FC9640-1MS, FC9640-2DUP 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: FC9640
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 09/13/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC9640-1 AF-RHP02-WGN01LF-2309

Perfluorobutanoic acid	14.2	14	3.5	ng/l	EPA DRAFT 1633
Perfluoropentanoic acid	12.3	7.0	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	6.3	3.5	1.8	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	5.0	3.5	1.8	ng/l	EPA DRAFT 1633
Perfluorooctanoic acid	5.8	3.5	0.88	ng/l	EPA DRAFT 1633
Perfluorononanoic acid	1.6 J	3.5	1.8	ng/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	4.3	3.5	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	5.0	3.5	1.8	ng/l	EPA DRAFT 1633
Perfluoroheptanesulfonic acid	0.46 J	3.5	1.8	ng/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	16.0	3.5	1.8	ng/l	EPA DRAFT 1633

FC9640-2 AF-RHP02-WGFD01LF-2309

Perfluorobutanoic acid	12.9 J	15	3.6	ng/l	EPA DRAFT 1633
Perfluoropentanoic acid	11.2	7.3	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	5.8	3.6	1.8	ng/l	EPA DRAFT 1633
Perfluoroheptanoic acid	5.2	3.6	1.8	ng/l	EPA DRAFT 1633
Perfluorooctanoic acid	5.2	3.6	0.91	ng/l	EPA DRAFT 1633
Perfluorononanoic acid	1.3 J	3.6	1.8	ng/l	EPA DRAFT 1633
Perfluorobutanesulfonic acid	3.6	3.6	1.8	ng/l	EPA DRAFT 1633
Perfluorohexanesulfonic acid	4.5	3.6	1.8	ng/l	EPA DRAFT 1633
Perfluorooctanesulfonic acid	11.4	3.6	1.8	ng/l	EPA DRAFT 1633

Sample Results

Report of Analysis

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHP02-WGN01LF-2309		
Lab Sample ID:	FC9640-1	Date Sampled:	09/13/23
Matrix:	AQ - Ground Water	Date Received:	09/15/23
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	6Q24836.D	1	09/22/23 02:34	MV	09/19/23 10:30	OP99077	S6Q355
Run #2							

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

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	14.2	14	3.5	1.7	ng/l	
2706-90-3	Perfluoropentanoic acid	12.3	7.0	1.8	0.82	ng/l	
307-24-4	Perfluorohexanoic acid	6.3	3.5	1.8	0.44	ng/l	
375-85-9	Perfluoroheptanoic acid	5.0	3.5	1.8	0.44	ng/l	
335-67-1	Perfluorooctanoic acid	5.8	3.5	0.88	0.44	ng/l	
375-95-1	Perfluorononanoic acid	1.6	3.5	1.8	0.54	ng/l	J
335-76-2	Perfluorodecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.5	1.8	0.53	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.5	1.8	0.74	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.5	1.8	0.44	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	4.3	3.5	1.8	0.44	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.5 U	4.4	3.5	0.98	ng/l	
355-46-4	Perfluorohexanesulfonic acid	5.0	3.5	1.8	0.61	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	0.46	3.5	1.8	0.44	ng/l	J
1763-23-1	Perfluorooctanesulfonic acid	16.0	3.5	1.8	0.47	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.5	1.8	0.50	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.5	1.8	0.56	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.5 U	4.4	3.5	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.0 U	18	7.0	2.8	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.0	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.0 U	18	7.0	3.6	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	3.5	1.8	0.59	ng/l	
31506-32-8	MeFOSA	3.5 U	7.0	3.5	0.88	ng/l	
4151-50-2	EtFOSA	3.5 U	7.0	3.5	0.88	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHP02-WGN01LF-2309		
Lab Sample ID:	FC9640-1	Date Sampled:	09/13/23
Matrix:	AQ - Ground Water	Date Received:	09/15/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

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

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

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

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

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

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

PER and POLYFLUOROETHER SULFONIC ACIDS

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

FLUOROTELOMER CARBOXYLIC ACIDS

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

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	104%		20-150%
	13C5-PFPeA	109%		20-150%
	13C5-PFHxA	111%		20-150%
	13C4-PFHpA	115%		20-150%
	13C8-PFOA	106%		20-150%
	13C9-PFNA	106%		20-150%
	13C6-PFDA	114%		20-150%
	13C7-PFUnDA	110%		20-150%
	13C2-PFDoDA	104%		20-150%
	13C2-PFTeDA	91%		20-150%
	13C3-PFBS	108%		20-150%
	13C3-PFHxS	109%		20-150%

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

Report of Analysis

Client Sample ID:	AF-RHP02-WGN01LF-2309	
Lab Sample ID:	FC9640-1	Date Sampled: 09/13/23
Matrix:	AQ - Ground Water	Date Received: 09/15/23
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	106%		20-150%
	13C8-FOSA	85%		20-150%
	d3-MeFOSA	86%		20-150%
	d5-EtFOSA	88%		20-150%
	d3-MeFOSAA	105%		20-150%
	d5-EtFOSAA	90%		20-150%
	d7-MeFOSE	83%		20-150%
	d9-EtFOSE	88%		20-150%
	13C2-4:2FTS	104%		20-180%
	13C2-6:2FTS	114%		20-180%
	13C2-8:2FTS	99%		20-180%
	13C3-HFPO-DA	114%		20-150%

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

SGS North America Inc.

Report of Analysis

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Client Sample ID:	AF-RHP02-WGFD01LF-2309		
Lab Sample ID:	FC9640-2	Date Sampled:	09/13/23
Matrix:	AQ - Ground Water	Date Received:	09/15/23
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	6Q24838.D	1	09/22/23 03:02	MV	09/19/23 10:30	OP99077	S6Q355
Run #2							

Run #	Initial Volume	Final Volume
Run #1	550 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
PERFLUOROALKYL CARBOXYLIC ACIDS							
375-22-4	Perfluorobutanoic acid	12.9	15	3.6	1.7	ng/l	J
2706-90-3	Perfluoropentanoic acid	11.2	7.3	1.8	0.85	ng/l	
307-24-4	Perfluorohexanoic acid	5.8	3.6	1.8	0.45	ng/l	
375-85-9	Perfluoroheptanoic acid	5.2	3.6	1.8	0.45	ng/l	
335-67-1	Perfluorooctanoic acid	5.2	3.6	0.91	0.45	ng/l	
375-95-1	Perfluorononanoic acid	1.3	3.6	1.8	0.55	ng/l	J
335-76-2	Perfluorodecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.8 U	3.6	1.8	0.55	ng/l	
307-55-1	Perfluorododecanoic acid	1.8 U	3.6	1.8	0.55	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.8 U	3.6	1.8	0.76	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.8 U	3.6	1.8	0.45	ng/l	
PERFLUOROALKYL SULFONIC ACIDS							
375-73-5	Perfluorobutanesulfonic acid	3.6	3.6	1.8	0.45	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.6 U	4.5	3.6	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	4.5	3.6	1.8	0.64	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.8 U	3.6	1.8	0.45	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	11.4	3.6	1.8	0.49	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.8 U	3.6	1.8	0.52	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.8 U	3.6	1.8	0.58	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.6 U	4.5	3.6	1.0	ng/l	
FLUOROTELOMER SULFONIC ACIDS							
757124-72-4	4:2 Fluorotelomer sulfonate	7.3 U	18	7.3	2.9	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.2	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.3 U	18	7.3	3.7	ng/l	
PERFLUOROOCCTANE SULFONAMIDES							
754-91-6	PFOSA	1.8 U	3.6	1.8	0.61	ng/l	
31506-32-8	MeFOSA	3.6 U	7.3	3.6	0.91	ng/l	
4151-50-2	EtFOSA	3.6 U	7.3	3.6	0.91	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-RHP02-WGFD01LF-2309		Date Sampled:	09/13/23
Lab Sample ID:	FC9640-2		Date Received:	09/15/23
Matrix:	AQ - Ground Water		Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT			
Project:	N6274223F0104 RH Fire Suppression System			

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

2355-31-9	MeFOSAA	3.6 U	4.5	3.6	0.91	ng/l	
2991-50-6	EtFOSAA	3.6 U	4.5	3.6	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	18 U	36	18	4.0	ng/l	
1691-99-2	EtFOSE	18 U	36	18	6.7	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.8 U	3.6	1.8	0.91	ng/l	
919005-14-4	ADONA	3.6 U	7.3	3.6	1.7	ng/l	
377-73-1	PFMPA	1.8 U	7.3	1.8	0.91	ng/l	
863090-89-5	PFMBA	3.6 U	7.3	3.6	1.0	ng/l	
151772-58-6	NFDHA	3.6 U	7.3	3.6	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major)	3.6 U	7.3	3.6	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.6 U	7.3	3.6	1.6	ng/l	
113507-82-7	PFEESA	1.8 U	7.3	1.8	0.71	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.1 U	18	9.1	4.1	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	18 U	91	18	7.9	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	18 U	91	18	7.1	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	109%		20-150%
	13C5-PFPeA	113%		20-150%
	13C5-PFHxA	115%		20-150%
	13C4-PFHpA	111%		20-150%
	13C8-PFOA	109%		20-150%
	13C9-PFNA	103%		20-150%
	13C6-PFDA	111%		20-150%
	13C7-PFUnDA	109%		20-150%
	13C2-PFDoDA	102%		20-150%
	13C2-PFTeDA	97%		20-150%
	13C3-PFBS	115%		20-150%
	13C3-PFHxS	111%		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-RHP02-WGFD01LF-2309	
Lab Sample ID:	FC9640-2	Date Sampled: 09/13/23
Matrix:	AQ - Ground Water	Date Received: 09/15/23
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	113%		20-150%
	13C8-FOSA	86%		20-150%
	d3-MeFOSA	87%		20-150%
	d5-EtFOSA	94%		20-150%
	d3-MeFOSAA	101%		20-150%
	d5-EtFOSAA	95%		20-150%
	d7-MeFOSE	86%		20-150%
	d9-EtFOSE	94%		20-150%
	13C2-4:2FTS	112%		20-180%
	13C2-6:2FTS	118%		20-180%
	13C2-8:2FTS	101%		20-180%
	13C3-HFPO-DA	117%		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

QC Evaluation: DOD QSM5.x Limits

Job Number: FC9640
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 09/13/23

QC Sample ID	CAS#	Analyte	Sample Result Type	Result Type	Units	Limits
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No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC9640

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: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q355-IBLK	6Q24819.D	1	09/21/23	MV	n/a	n/a	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

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: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q355-IBLK	6Q24819.D	1	09/21/23	MV	n/a	n/a	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

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	101% 20-150%
	13C5-PFPeA	97% 20-150%
	13C5-PFHxA	95% 20-150%
	13C4-PFHpA	98% 20-150%
	13C8-PFOA	108% 20-150%
	13C9-PFNA	113% 20-150%
	13C6-PFDA	104% 20-150%
	13C7-PFUnDA	109% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	99% 20-150%
	13C3-PFBS	104% 20-150%
	13C3-PFHxS	103% 20-150%
	13C8-PFOS	110% 20-150%
	13C8-FOSA	103% 20-150%
	d3-MeFOSAA	103% 20-150%
	d5-EtFOSAA	98% 20-150%
	13C2-4:2FTS	106% 20-180%
	13C2-6:2FTS	113% 20-180%
	13C2-8:2FTS	107% 20-180%

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Continuing Calibration Blank

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q355-ICCB	6Q24835.D	1	09/22/23	MV	n/a	n/a	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

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

Continuing Calibration Blank

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q355-ICCB	6Q24835.D	1	09/22/23	MV	n/a	n/a	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

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	102% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	106% 20-150%
	13C8-PFOA	98% 20-150%
	13C9-PFNA	102% 20-150%
	13C6-PFDA	108% 20-150%
	13C7-PFUnDA	111% 20-150%
	13C2-PFDoDA	97% 20-150%
	13C2-PFTeDA	105% 20-150%
	13C3-PFBS	101% 20-150%
	13C3-PFHxS	103% 20-150%
	13C8-PFOS	108% 20-150%
	13C8-FOSA	100% 20-150%
	d3-MeFOSAA	101% 20-150%
	d5-EtFOSAA	101% 20-150%
	13C2-4:2FTS	106% 20-180%
	13C2-6:2FTS	107% 20-180%
	13C2-8:2FTS	112% 20-180%

Method Blank Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-MB	6Q24826.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

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: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-MB	6Q24826.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

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	112% 20-150%
	13C5-PFPeA	113% 20-150%
	13C5-PFHxA	118% 20-150%
	13C4-PFHpA	110% 20-150%
	13C8-PFOA	109% 20-150%
	13C9-PFNA	103% 20-150%
	13C6-PFDA	114% 20-150%
	13C7-PFUnDA	113% 20-150%
	13C2-PFDoDA	108% 20-150%
	13C2-PFTeDA	95% 20-150%
	13C3-PFBS	111% 20-150%
	13C3-PFHxS	111% 20-150%
	13C8-PFOS	119% 20-150%
	13C8-FOSA	70% 20-150%
	d3-MeFOSA	79% 20-150%
	d5-EtFOSA	88% 20-150%
	d3-MeFOSAA	118% 20-150%
	d5-EtFOSAA	111% 20-150%
	d7-MeFOSE	73% 20-150%
	d9-EtFOSE	85% 20-150%
	13C2-4:2FTS	120% 20-180%
	13C2-6:2FTS	125% 20-180%
	13C2-8:2FTS	117% 20-180%
	13C3-HFPO-DA	120% 20-150%

Blank Spike Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-LLBS	6Q24825.D	1	09/21/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0312	104	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0156	104	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0074	99	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0081	108	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0083	111	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0074	99	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0084	112	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0079	105	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0072	96	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0073	97	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0075	100	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0071	107	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0071	101	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0065	95	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0077	108	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0076	109	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0079	109	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0072	99	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0070	96	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0308	110	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0299	105	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0280	97	40-150
754-91-6	PFOSA	0.0075	0.0081	108	40-150
31506-32-8	MeFOSA	0.015	0.0157	105	40-150
4151-50-2	EtFOSA	0.015	0.0151	101	40-150
2355-31-9	MeFOSAA	0.0075	0.0081	108	40-150
2991-50-6	EtFOSAA	0.0075	0.0086	115	40-150
24448-09-7	MeFOSE	0.0375	0.0379	101	40-150
1691-99-2	EtFOSE	0.0375	0.0384	102	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0155	103	40-150
919005-14-4	ADONA	0.0142	0.0157	111	40-150
377-73-1	PFMPA	0.015	0.0156	104	40-150
863090-89-5	PFMBA	0.015	0.0156	104	40-150
151772-58-6	NFDHA	0.015	0.0151	101	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0146	104	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0140	99	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-LLBS	6Q24825.D	1	09/21/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0140	105	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0289	77	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.181	97	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.196	105	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	112%	20-150%
	13C5-PFPeA	111%	20-150%
	13C5-PFHxA	112%	20-150%
	13C4-PFHpA	108%	20-150%
	13C8-PFOA	107%	20-150%
	13C9-PFNA	103%	20-150%
	13C6-PFDA	108%	20-150%
	13C7-PFUnDA	115%	20-150%
	13C2-PFDoDA	112%	20-150%
	13C2-PFTeDA	107%	20-150%
	13C3-PFBS	113%	20-150%
	13C3-PFHxS	118%	20-150%
	13C8-PFOS	112%	20-150%
	13C8-FOSA	81%	20-150%
	d3-MeFOSA	84%	20-150%
	d5-EtFOSA	91%	20-150%
	d3-MeFOSAA	112%	20-150%
	d5-EtFOSAA	108%	20-150%
	d7-MeFOSE	83%	20-150%
	d9-EtFOSE	91%	20-150%
	13C2-4:2FTS	118%	20-180%
	13C2-6:2FTS	123%	20-180%
	13C2-8:2FTS	121%	20-180%
	13C3-HFPO-DA	108%	20-150%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-BS	6Q24824.D	1	09/21/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.0976	98	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0495	99	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0239	96	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0241	96	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0234	94	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0252	101	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0240	96	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0231	92	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0231	92	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0210	84	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0236	94	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0219	99	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0232	99	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0224	98	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0215	90	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0214	92	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0235	98	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0225	93	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0220	91	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.0930	99	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.0919	97	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.0914	95	40-150
754-91-6	PFOSA	0.025	0.0249	100	40-150
31506-32-8	MeFOSA	0.05	0.0490	98	40-150
4151-50-2	EtFOSA	0.05	0.0453	91	40-150
2355-31-9	MeFOSAA	0.025	0.0251	100	40-150
2991-50-6	EtFOSAA	0.025	0.0274	110	40-150
24448-09-7	MeFOSE	0.125	0.119	95	40-150
1691-99-2	EtFOSE	0.125	0.113	90	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0492	98	40-150
919005-14-4	ADONA	0.0473	0.0453	96	40-150
377-73-1	PFMPA	0.05	0.0484	97	40-150
863090-89-5	PFMBA	0.05	0.0499	100	40-150
151772-58-6	NFDHA	0.05	0.0486	97	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0438	94	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0453	96	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-BS	6Q24824.D	1	09/21/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0439	99	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.107	86	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.601	96	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.603	96	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	86%	20-150%
	13C5-PFPeA	109%	20-150%
	13C5-PFHxA	110%	20-150%
	13C4-PFHpA	109%	20-150%
	13C8-PFOA	110%	20-150%
	13C9-PFNA	114%	20-150%
	13C6-PFDA	106%	20-150%
	13C7-PFUnDA	113%	20-150%
	13C2-PFDoDA	109%	20-150%
	13C2-PFTeDA	98%	20-150%
	13C3-PFBS	105%	20-150%
	13C3-PFHxS	108%	20-150%
	13C8-PFOS	122%	20-150%
	13C8-FOSA	90%	20-150%
	d3-MeFOSA	91%	20-150%
	d5-EtFOSA	98%	20-150%
	d3-MeFOSAA	115%	20-150%
	d5-EtFOSAA	111%	20-150%
	d7-MeFOSE	81%	20-150%
	d9-EtFOSE	91%	20-150%
	13C2-4:2FTS	111%	20-180%
	13C2-6:2FTS	116%	20-180%
	13C2-8:2FTS	113%	20-180%
	13C3-HFPO-DA	113%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-MS	6Q24837.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355
FC9640-1	6Q24836.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

CAS No.	Compound	FC9640-1 ug/l	Spike Q	MS ug/l	MS %	Limits	
375-22-4	Perfluorobutanoic acid	0.0142		0.0943	0.116	108	40-150
2706-90-3	Perfluoropentanoic acid	0.0123		0.0472	0.0649	112	40-150
307-24-4	Perfluorohexanoic acid	0.0063		0.0236	0.0305	103	40-150
375-85-9	Perfluoroheptanoic acid	0.0050		0.0236	0.0307	109	40-150
335-67-1	Perfluorooctanoic acid	0.0058		0.0236	0.0311	107	40-150
375-95-1	Perfluorononanoic acid	0.0016	J	0.0236	0.0262	104	40-150
335-76-2	Perfluorodecanoic acid	0.0035	U	0.0236	0.0246	104	40-150
2058-94-8	Perfluoroundecanoic acid	0.0035	U	0.0236	0.0226	96	40-150
307-55-1	Perfluorododecanoic acid	0.0035	U	0.0236	0.0247	105	40-150
72629-94-8	Perfluorotridecanoic acid	0.0035	U	0.0236	0.0230	98	40-150
376-06-7	Perfluorotetradecanoic acid	0.0035	U	0.0236	0.0264	112	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0043		0.0209	0.0265	106	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0044	U	0.0222	0.0242	109	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0050		0.0216	0.0266	100	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00046	J	0.0225	0.0253	111	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0160		0.0219	0.0407	113	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0035	U	0.0227	0.0237	104	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0035	U	0.0228	0.0213	94	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0044	U	0.0229	0.0211	92	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.018	U	0.0884	0.0970	110	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.018	U	0.0896	0.0918	102	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.018	U	0.0906	0.104	115	40-150
754-91-6	PFOSA	0.0035	U	0.0236	0.0254	108	40-150
31506-32-8	MeFOSA	0.0070	U	0.0472	0.0515	109	40-150
4151-50-2	EtFOSA	0.0070	U	0.0472	0.0478	101	40-150
2355-31-9	MeFOSAA	0.0044	U	0.0236	0.0242	103	40-150
2991-50-6	EtFOSAA	0.0044	U	0.0236	0.0285	121	40-150
24448-09-7	MeFOSE	0.035	U	0.118	0.129	109	40-150
1691-99-2	EtFOSE	0.035	U	0.118	0.124	105	40-150
13252-13-6	HFPO-DA (GenX)	0.0035	U	0.0472	0.0483	102	40-150
919005-14-4	ADONA	0.0070	U	0.0446	0.0479	107	40-150
377-73-1	PFMPA	0.0070	U	0.0472	0.0519	110	40-150
863090-89-5	PFMBA	0.0070	U	0.0472	0.0531	113	40-150
151772-58-6	NFDHA	0.0070	U	0.0472	0.0485	103	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0070	U	0.0441	0.0457	104	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0070	U	0.0446	0.0404	91	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-MS	6Q24837.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355
FC9640-1	6Q24836.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

CAS No.	Compound	FC9640-1 ug/l	Spike Q	ug/l	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0070	U	0.042	0.0429	102	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.018	U	0.118	0.0955	81	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.088	U	0.59	0.599	102	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.088	U	0.59	0.633	107	40-150

CAS No.	ID Standard Recoveries	MS	FC9640-1	Limits
	13C4-PFBA	97%	104%	20-150%
	13C5-PFPeA	100%	109%	20-150%
	13C5-PFHxA	106%	111%	20-150%
	13C4-PFHpA	103%	115%	20-150%
	13C8-PFOA	94%	106%	20-150%
	13C9-PFNA	97%	106%	20-150%
	13C6-PFDA	105%	114%	20-150%
	13C7-PFUnDA	99%	110%	20-150%
	13C2-PFDoDA	92%	104%	20-150%
	13C2-PFTeDA	83%	91%	20-150%
	13C3-PFBS	105%	108%	20-150%
	13C3-PFHxS	103%	109%	20-150%
	13C8-PFOS	90%	106%	20-150%
	13C8-FOSA	74%	85%	20-150%
	d3-MeFOSA	77%	86%	20-150%
	d5-EtFOSA	84%	88%	20-150%
	d3-MeFOSAA	92%	105%	20-150%
	d5-EtFOSAA	83%	90%	20-150%
	d7-MeFOSE	74%	83%	20-150%
	d9-EtFOSE	80%	88%	20-150%
	13C2-4:2FTS	96%	104%	20-180%
	13C2-6:2FTS	102%	114%	20-180%
	13C2-8:2FTS	97%	99%	20-180%
	13C3-HFPO-DA	108%	114%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-DUP	6Q24839.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355
FC9640-2	6Q24838.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

CAS No.	Compound	FC9640-2		DUP		Q	RPD	Limits
		ug/l	Q	ug/l	Q			
375-22-4	Perfluorobutanoic acid	0.0129	J	0.0144	J	11	30	
2706-90-3	Perfluoropentanoic acid	0.0112		0.0124		10	30	
307-24-4	Perfluorohexanoic acid	0.0058		0.0065		11	30	
375-85-9	Perfluoroheptanoic acid	0.0052		0.0055		6	30	
335-67-1	Perfluorooctanoic acid	0.0052		0.0057		9	30	
375-95-1	Perfluorononanoic acid	0.0013	J	0.0013	J	0	30	
335-76-2	Perfluorodecanoic acid	0.0036	U	ND		nc	30	
2058-94-8	Perfluoroundecanoic acid	0.0036	U	ND		nc	30	
307-55-1	Perfluorododecanoic acid	0.0036	U	ND		nc	30	
72629-94-8	Perfluorotridecanoic acid	0.0036	U	ND		nc	30	
376-06-7	Perfluorotetradecanoic acid	0.0036	U	ND		nc	30	
375-73-5	Perfluorobutanesulfonic acid	0.0036		0.0040		11	30	
2706-91-4	Perfluoropentanesulfonic acid	0.0045	U	ND		nc	30	
355-46-4	Perfluorohexanesulfonic acid	0.0045		0.0054		18	30	
375-92-8	Perfluoroheptanesulfonic acid	0.0036	U	ND		nc	30	
1763-23-1	Perfluorooctanesulfonic acid	0.0114		0.0149		27	30	
68259-12-1	Perfluorononanesulfonic acid	0.0036	U	ND		nc	30	
335-77-3	Perfluorodecanesulfonic acid	0.0036	U	ND		nc	30	
79780-39-5	Perfluorododecanesulfonic aci	0.0045	U	ND		nc	30	
757124-72-44:2	Fluorotelomer sulfonate	0.018	U	ND		nc	30	
27619-97-2	6:2 Fluorotelomer sulfonate	0.018	U	ND		nc	30	
39108-34-4	8:2 Fluorotelomer sulfonate	0.018	U	ND		nc	30	
754-91-6	PFOSA	0.0036	U	ND		nc	30	
31506-32-8	MeFOSA	0.0073	U	ND		nc	30	
4151-50-2	EtFOSA	0.0073	U	ND		nc	30	
2355-31-9	MeFOSAA	0.0045	U	ND		nc	30	
2991-50-6	EtFOSAA	0.0045	U	ND		nc	30	
24448-09-7	MeFOSE	0.036	U	ND		nc	30	
1691-99-2	EtFOSE	0.036	U	ND		nc	30	
13252-13-6	HFPO-DA (GenX)	0.0036	U	ND		nc	30	
919005-14-4	ADONA	0.0073	U	ND		nc	30	
377-73-1	PFMPA	0.0073	U	ND		nc	30	
863090-89-5	PFMBA	0.0073	U	ND		nc	30	
151772-58-6	NFDHA	0.0073	U	ND		nc	30	
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0073	U	ND		nc	30	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0073	U	ND		nc	30	

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP99077-DUP	6Q24839.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355
FC9640-2	6Q24838.D	1	09/22/23	MV	09/19/23	OP99077	S6Q355

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC9640-1, FC9640-2

CAS No.	Compound	FC9640-2 ug/l	DUP Q	ug/l	Q	RPD	Limits
113507-82-7PFEESA		0.0073 U		ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.018 U		ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.091 U		ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.091 U		ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC9640-2	Limits
	13C4-PFBA	104%	109%	20-150%
	13C5-PFPeA	102%	113%	20-150%
	13C5-PFHxA	105%	115%	20-150%
	13C4-PFHpA	106%	111%	20-150%
	13C8-PFOA	101%	109%	20-150%
	13C9-PFNA	100%	103%	20-150%
	13C6-PFDA	101%	111%	20-150%
	13C7-PFUnDA	94%	109%	20-150%
	13C2-PFDoDA	89%	102%	20-150%
	13C2-PFTeDA	76%	97%	20-150%
	13C3-PFBS	110%	115%	20-150%
	13C3-PFHxS	108%	111%	20-150%
	13C8-PFOS	105%	113%	20-150%
	13C8-FOSA	83%	86%	20-150%
	d3-MeFOSA	81%	87%	20-150%
	d5-EtFOSA	86%	94%	20-150%
	d3-MeFOSAA	100%	101%	20-150%
	d5-EtFOSAA	99%	95%	20-150%
	d7-MeFOSE	80%	86%	20-150%
	d9-EtFOSE	84%	94%	20-150%
	13C2-4:2FTS	103%	112%	20-180%
	13C2-6:2FTS	106%	118%	20-180%
	13C2-8:2FTS	95%	101%	20-180%
	13C3-HFPO-DA	105%	117%	20-150%

* = Outside of Control Limits.

Injection Standard Area Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q355-CC355	Injection Date:	09/21/23
Lab File ID:	6Q24822.D	Injection Time:	23:13
Instrument ID:	GCMS6Q	Method:	EPA DRAFT 1633

	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT
	AREA		AREA		AREA		AREA		AREA	
Initial Cal ^b	130326	3.00	91295	5.64	142329	7.20	58075	7.72	44799	8.20
Check Std ^c	135787	3.00	89163	5.64	144416	7.20	61200	7.73	46444	8.20
Upper Limit ^d	260652	3.40	182590	6.04	284658	7.60	116150	8.13	89598	8.60
Lower Limit ^e	52130	2.60	36518	5.24	56932	6.80	23230	7.33	17920	7.80

Lab Sample ID	IS 1	RT	IS 2	RT	IS 3	RT	IS 4	RT	IS 5	RT	DF ^a
	AREA		AREA		AREA		AREA		AREA		
OP99077-BS	98266	3.01	68243	5.64	104087	7.20	42255	7.73	34042	8.21	1
OP99077-LLBS	100719	3.01	68883	5.64	105761	7.20	46086	7.72	31531	8.20	1
OP99077-MB	96592	3.01	64196	5.64	106145	7.20	43201	7.72	32423	8.20	1
ZZZZZZ	100906	3.01	66795	5.64	108070	7.20	44566	7.73	32402	8.20	1
ZZZZZZ	103524	3.01	67902	5.64	115170	7.20	47124	7.72	34334	8.20	1
ZZZZZZ	98294	3.01	66591	5.64	107485	7.20	42932	7.73	31885	8.20	1
ZZZZZZ	95438	3.01	66596	5.64	112536	7.20	45732	7.72	33796	8.20	1
ZZZZZZ	100581	3.01	70578	5.64	109309	7.20	44800	7.73	32327	8.20	1
ZZZZZZ	103297	3.01	66201	5.64	112680	7.20	45611	7.73	33993	8.20	1
ZZZZZZ	106044	3.01	69447	5.64	113783	7.20	45882	7.73	34974	8.20	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: S6Q355-ICC355 6Q24814.D 09/21/23 21:18. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 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 = -60% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
6

Injection Standard Area Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q355-CC355	Injection Date:	09/21/23
Lab File ID:	6Q24822.D	Injection Time:	23:13
Instrument ID:	GCMS6Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	15707	7.30	26262	8.35
Check Std ^c	16371	7.31	25674	8.36
Upper Limit ^d	31414	7.71	52524	8.76
Lower Limit ^e	6283	6.91	10505	7.96

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
OP99077-BS	11990	7.31	18065	8.36	1
OP99077-LLBS	11519	7.31	19470	8.35	1
OP99077-MB	11249	7.31	17795	8.35	1
ZZZZZZ	11838	7.31	20454	8.35	1
ZZZZZZ	11919	7.31	19979	8.35	1
ZZZZZZ	11599	7.31	20326	8.35	1
ZZZZZZ	11501	7.31	20245	8.35	1
ZZZZZZ	11564	7.31	21522	8.35	1
ZZZZZZ	12284	7.31	20810	8.36	1
ZZZZZZ	12586	7.31	19091	8.35	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S6Q355-ICC355 6Q24814.D 09/21/23 21:18. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 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 = -60% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.1
6

Injection Standard Area Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q355-CC355	Injection Date:	09/22/23
Lab File ID:	6Q24834.D	Injection Time:	02:05
Instrument ID:	GCMS6Q	Method:	EPA DRAFT 1633

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Initial Cal ^b	130326	3.00	91295	5.64	142329	7.20	58075	7.72	44799	8.20
Check Std ^c	137655	3.00	96701	5.64	145099	7.20	60724	7.72	47378	8.20
Upper Limit ^d	260652	3.40	182590	6.04	284658	7.60	116150	8.12	89598	8.60
Lower Limit ^e	52130	2.60	36518	5.24	56932	6.80	23230	7.32	17920	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 ^a
S6Q355-ICCB	121471	2.99	84617	5.64	138546	7.20	55608	7.72	40552	8.20	1
S6Q355-ICCB	121471	2.99	84617	5.64	138546	7.20	55608	7.72	40552	8.20	1
FC9640-1	101401	3.01	67687	5.64	111075	7.20	44665	7.72	32641	8.20	1
OP99077-MS	102193	3.01	67107	5.64	113559	7.20	44198	7.72	34562	8.20	1
FC9640-2	102318	3.01	68825	5.64	113084	7.20	47399	7.72	33969	8.20	1
OP99077-DUP	98032	3.01	67617	5.64	109286	7.20	45173	7.73	33146	8.20	1
ZZZZZZ	105326	3.01	70605	5.64	117366	7.20	47459	7.73	36030	8.20	1
ZZZZZZ	105123	3.01	73338	5.64	112501	7.20	45594	7.73	34659	8.20	1
ZZZZZZ	99664	3.01	68439	5.64	103896	7.20	43273	7.72	34236	8.20	1
OP99032-MS	104244	3.01	69148	5.64	115628	7.20	48835	7.72	42465	8.20	1
OP99032-MSD	103134	3.01	71971	5.64	115208	7.20	49666	7.72	43631	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: S6Q355-ICC355 6Q24814.D 09/21/23 21:18. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 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 = -60% of initial standard area; Retention time -0.4 minutes of check standard.

6.5.2
6

Injection Standard Area Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Check Std:	S6Q355-CC355	Injection Date:	09/22/23
Lab File ID:	6Q24834.D	Injection Time:	02:05
Instrument ID:	GCMS6Q	Method:	EPA DRAFT 1633

	IS 6 AREA	RT	IS 7 AREA	RT
Initial Cal ^b	15707	7.30	26262	8.35
Check Std ^c	16148	7.31	27416	8.36
Upper Limit ^d	31414	7.71	52524	8.76
Lower Limit ^e	6283	6.91	10505	7.96

Lab Sample ID	IS 6 AREA	RT	IS 7 AREA	RT	DF ^a
S6Q355-ICCB	14440	7.30	24850	8.35	1
S6Q355-ICCB	14440	7.30	24850	8.35	1
FC9640-1	11729	7.31	19640	8.35	1
OP99077-MS	11570	7.31	20946	8.35	1
FC9640-2	12145	7.30	20276	8.35	1
OP99077-DUP	11283	7.31	19205	8.35	1
ZZZZZZ	12173	7.31	20583	8.36	1
ZZZZZZ	12116	7.31	20155	8.35	1
ZZZZZZ	11722	7.31	19955	8.35	1
OP99032-MS	12383	7.30	22201	8.35	1
OP99032-MSD	11590	7.30	19964	8.35	1

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

- (a) Sample areas corrected for dilution where applicable.
- (b) Initial Cal is: S6Q355-ICC355 6Q24814.D 09/21/23 21:18. Area is AVERAGE of initial cal points.
- (c) Check Std Limit = -60 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 = -60% of initial standard area; Retention time -0.4 minutes of check standard.

TDCA Retention Time Check

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S6Q355-RT	Injection Date:	09/21/23
Lab File ID:	6Q24808.D	Injection Time:	19:52
Instrument ID:	GCMS6Q		

Compound	RT (min)	RT Difference	Low Limit
PFOS	8.350	--	--
TDCA	6.923	1.427	1.000
TCDCA	6.774	1.576	1.000
TUDCA	5.947	2.403	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
S6Q355-IC355	6Q24810.D	09/21/23	20:21	00:29	Mass Calibration Verification
S6Q355-IC355	6Q24811.D	09/21/23	20:35	00:43	Initial cal 1
S6Q355-IC355	6Q24812.D	09/21/23	20:50	00:58	Initial cal 2
S6Q355-IC355	6Q24813.D	09/21/23	21:04	01:12	Initial cal 3
S6Q355-ICC355	6Q24814.D	09/21/23	21:18	01:26	Initial cal 4
S6Q355-IC355	6Q24815.D	09/21/23	21:33	01:41	Initial cal 5
S6Q355-IC355	6Q24816.D	09/21/23	21:47	01:55	Initial cal 6
S6Q355-IC355	6Q24817.D	09/21/23	22:01	02:09	Initial cal 7
S6Q355-IC355	6Q24818.D	09/21/23	22:16	02:24	Initial cal 8
S6Q355-IBLK	6Q24819.D	09/21/23	22:30	02:38	Instrument Blank
S6Q355-IBLK	6Q24819.D	09/21/23	22:30	02:38	Instrument Blank
S6Q355-ICV355	6Q24820.D	09/21/23	22:44	02:52	Initial cal verification 4
S6Q355-ICV355	6Q24821.D	09/21/23	22:59	03:07	Initial cal verification 20
S6Q355-CC355	6Q24822.D	09/21/23	23:13	03:21	Continuing cal 4
S6Q355-CC355	6Q24823.D	09/21/23	23:27	03:35	Continuing cal 1.0LL
OP99077-BS	6Q24824.D	09/21/23	23:42	03:50	Blank Spike
OP99077-LLBS	6Q24825.D	09/21/23	23:56	04:04	Blank Spike
OP99077-MB	6Q24826.D	09/22/23	00:10	04:18	Method Blank
ZZZZZZ	6Q24827.D	09/22/23	00:25	04:33	(unrelated sample)
ZZZZZZ	6Q24828.D	09/22/23	00:39	04:47	(unrelated sample)
ZZZZZZ	6Q24829.D	09/22/23	00:53	05:01	(unrelated sample)
ZZZZZZ	6Q24830.D	09/22/23	01:08	05:16	(unrelated sample)
ZZZZZZ	6Q24831.D	09/22/23	01:22	05:30	(unrelated sample)
ZZZZZZ	6Q24832.D	09/22/23	01:36	05:44	(unrelated sample)
ZZZZZZ	6Q24833.D	09/22/23	01:51	05:59	(unrelated sample)
S6Q355-CC355	6Q24834.D	09/22/23	02:05	06:13	Continuing cal 4
S6Q355-ICCB	6Q24835.D	09/22/23	02:19	06:27	Continuing Calibration Blank
S6Q355-ICCB	6Q24835.D	09/22/23	02:19	06:27	Continuing Calibration Blank
FC9640-1	6Q24836.D	09/22/23	02:34	06:42	AF-RHP02-WGN01LF-2309
OP99077-MS	6Q24837.D	09/22/23	02:48	06:56	Matrix Spike
FC9640-2	6Q24838.D	09/22/23	03:02	07:10	AF-RHP02-WGFD01LF-2309
OP99077-DUP	6Q24839.D	09/22/23	03:17	07:25	Duplicate
ZZZZZZ	6Q24840.D	09/22/23	03:31	07:39	(unrelated sample)
ZZZZZZ	6Q24841.D	09/22/23	03:45	07:53	(unrelated sample)

TDCA Retention Time Check

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample:	S6Q355-RT	Injection Date:	09/21/23
Lab File ID:	6Q24808.D	Injection Time:	19:52
Instrument ID:	GCMS6Q		

Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed	Hours Lapsed	Client Sample ID
ZZZZZZ	6Q24842.D	09/22/23	04:00	08:08	(unrelated sample)
OP99032-MS	6Q24843.D	09/22/23	04:14	08:22	Matrix Spike
OP99032-MSD	6Q24844.D	09/22/23	04:28	08:36	Matrix Spike Duplicate
S6Q355-CC355	6Q24845.D	09/22/23	04:43	08:51	Continuing cal 4
S6Q355-ICCB	6Q24846.D	09/22/23	04:57	09:05	Continuing Calibration Blank
S6Q355-ICCB	6Q24846.D	09/22/23	04:57	09:05	Continuing Calibration Blank

6.6.1

6

Ion Ratio Summary

Job Number: FC9640
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q355 Method: EPA DRAFT 1633

Lab Sample ID	Lab File ID	Ion Ratios (Set 1)		PFHxA	PFHpA	PFOA	PFNA	PFBS
		PFBA	PFPeA					
S6Q355-ICC355	6Q24814.D	0	0	4.7	16.1	17.4	24	36.4
FC9640-1	6Q24836.D	0	0	4	15.1	19.3	22.9	34.1
FC9640-2	6Q24838.D	0	0	4.9	14.8	18.9	24.8	39.4

6.7.1

6

Ion Ratio Summary

Job Number: FC9640
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q355	Method: EPA DRAFT 1633
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Lab Sample ID	Lab File ID	Ion Ratios (Set 2)		
		PFHxS	PFHpS	PFOS
S6Q355-ICC355	6Q24814.D	47.6	47.1	51.9
FC9640-1	6Q24836.D	50.5	32.4	41.9
FC9640-2	6Q24838.D	46.2		48.4

6.7.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6	S7	S8
FC9640-1	6Q24836.D	104	109	111	115	106	106	114	110
FC9640-2	6Q24838.D	109	113	115	111	109	103	111	109
OP99077-BS	6Q24824.D	86	109	110	109	110	114	106	113
OP99077-DUP	6Q24839.D	104	102	105	106	101	100	101	94
OP99077-LLBS	6Q24825.D	112	111	112	108	107	103	108	115
OP99077-MB	6Q24826.D	112	113	118	110	109	103	114	113
OP99077-MS	6Q24837.D	97	100	106	103	94	97	105	99
S6Q355-IBLK	6Q24819.D	101	97	95	98	108	113	104	109
S6Q355-ICCB	6Q24835.D	102	100	97	106	98	102	108	111

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

6.8.1

6

Isotope Dilution Standard Recovery Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S9	S10	S11	S12	S13	S14	S15	S16
FC9640-1	6Q24836.D	104	91	108	109	106	85	86	88
FC9640-2	6Q24838.D	102	97	115	111	113	86	87	94
OP99077-BS	6Q24824.D	109	98	105	108	122	90	91	98
OP99077-DUP	6Q24839.D	89	76	110	108	105	83	81	86
OP99077-LLBS	6Q24825.D	112	107	113	118	112	81	84	91
OP99077-MB	6Q24826.D	108	95	111	111	119	70	79	88
OP99077-MS	6Q24837.D	92	83	105	103	90	74	77	84
S6Q355-IBLK	6Q24819.D	102	99	104	103	110	103		
S6Q355-ICCB	6Q24835.D	97	105	101	103	108	100		

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: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Method: EPA DRAFT 1633	Matrix: AQ
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Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S17	S18	S19	S20	S21	S22	S23	S24
FC9640-1	6Q24836.D	105	90	83	88	104	114	99	114
FC9640-2	6Q24838.D	101	95	86	94	112	118	101	117
OP99077-BS	6Q24824.D	115	111	81	91	111	116	113	113
OP99077-DUP	6Q24839.D	100	99	80	84	103	106	95	105
OP99077-LLBS	6Q24825.D	112	108	83	91	118	123	121	108
OP99077-MB	6Q24826.D	118	111	73	85	120	125	117	120
OP99077-MS	6Q24837.D	92	83	74	80	96	102	97	108
S6Q355-IBLK	6Q24819.D	103	98			106	113	107	
S6Q355-ICCB	6Q24835.D	101	101			106	107	112	

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

6.8.1

6

Initial Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-ICC355
 Lab FileID: 6Q24814.D

Initial Calibration Report

Method Path	D:\MassHunter\Methods											
Method File	1633_092123_S6Q355.quantmethod.xml											
Batch Name	D:\MassHunter\Data\092123_1633_S6Q355\QuantResults\6q355.batch.bin											
Last Calib Update	9/22/2023 10:19:15 AM											
Level Name	Calibration Files	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
1	D:\MassHunter\Data\092123_1633_S6Q355\6Q24811.d											
2	D:\MassHunter\Data\092123_1633_S6Q355\6Q24812.d											
3	D:\MassHunter\Data\092123_1633_S6Q355\6Q24813.d											
4	D:\MassHunter\Data\092123_1633_S6Q355\6Q24814.d											
5	D:\MassHunter\Data\092123_1633_S6Q355\6Q24815.d											
6	D:\MassHunter\Data\092123_1633_S6Q355\6Q24816.d											
7	D:\MassHunter\Data\092123_1633_S6Q355\6Q24817.d											
8	D:\MassHunter\Data\092123_1633_S6Q355\6Q24818.d											
Compound												
I M4-PFBA												
T PFBA												
T 3:3FTCA												
I M5-PFPeA												
T PFMPA												
T PFPeA												
T PFMBA												
I M5-PFHxA												
T NFDHA												
T PFHxA												
T PFEEA												
T 5:3FTCA												
T 7:3FTCA												
I M4-PFHpA												
T PFHpA												
I M8-PFOA												
T PFOA												
I M9-PFNA												
T PFNA												
I M6-PFDA												
T PFDA												
I M7-PFUnDA												
T PFUnDA												
I M2-PFDODA												

Generated at 10:19 AM on 9/22/2023

Initial Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-ICC355
 Lab FileID: 6Q24814.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
T PFDoDA	Avg RF	0.8548	0.8506	0.9235	0.8043	0.9128	0.9994	1.0638	0.8759	0.9106	9.348
T PFTfDA	Avg RF	0.9393	0.9547	0.9654	0.8737	1.0072	1.0437	1.0203	0.9568	0.9701	5.508
I M2-PFTeDA	Avg RF	1.7483	1.6737	1.6662	1.4258	1.6279	1.8070	1.8017	1.6273	1.6722	7.341
T PFTeDA	Avg RF					ISTD					
I M8-FOSA	Avg RF	0.8878	0.8577	0.8334	0.7573	0.8713	0.8673	0.9521	0.8730	0.8625	6.325
T FOSA	Avg RF					ISTD					
I M3-PFBS	Avg RF	1.2192	1.1692	1.1358	1.0324	1.1726	1.2643	1.2537	1.2214	1.1836	6.355
T PFBS	Avg RF					ISTD					
I M3-PFHxS	Avg RF	1.3815	1.3412	1.2916	1.2229	1.3366	1.3785	1.3964	1.3954	1.3430	4.489
T PFPeS	Avg RF	1.6878	1.7256	1.4779	1.4904	1.5740	1.6243	1.6946	1.6517	1.6158	5.792
T PFHxS	Avg RF					ISTD					
I M8-PFOS	Avg RF	1.1616	1.1596	1.1661	1.1953	1.1815	1.3267	1.2715	1.3286	1.2239	6.002
T PFHpS	Avg RF	1.6203	1.4613	1.1994	1.2736	1.3817	1.5048	1.3713	1.4939	1.4133	9.571
T PFOS	Avg RF	1.1232	1.1762	1.1749	1.0839	1.2045	1.3116	1.3199	1.3240	1.2148	7.688
T PFNS	Avg RF	0.7311	0.7406	0.7073	0.6926	0.7310	0.7834	0.7063	0.7732	0.7332	4.384
T PFDS	Avg RF	0.3479	0.3766	0.3476	0.3255	0.3653	0.3693	0.3805	0.3706	0.3604	5.151
T PFDoDS	Avg RF					ISTD					
I M2-4:2FTS	Avg RF	8.1423	7.5621	8.3358	7.0752	8.3866	8.6914	8.9874	7.6092	8.0987	7.889
T 4:2FTS	Avg RF					ISTD					
I M2-6:2FTS	Avg RF	5.1039	4.6828	4.5963	4.3648	4.5111	4.6491	4.7300	4.3468	4.6231	5.191
T 6:2FTS	Avg RF					ISTD					
I M2-8:2FTS	Avg RF	3.4930	3.1794	2.9027	3.1848	3.4415	3.3773	3.0773	2.7452	3.1751	8.261
T 8:2FTS	Avg RF					ISTD					
I M3-MeFOSAA	Avg RF	1.1051	1.0926	1.1191	0.9893	1.1515	1.1265	1.2568	1.2343	1.1344	7.391
T MeFOSAA	Avg RF					ISTD					
I M3-HFO-DA	Avg RF	0.9903	0.9888	0.9092	0.8316	0.9819	0.9386	0.9802	0.9730	0.9492	5.822
T HFPO-DA	Avg RF	14.81	15.05	14.63	13.18	14.86	15.00	15.83	14.74	14.76	4.988
T ADONA	Avg RF	6.0841	5.7177	5.8576	5.1924	6.3230	5.5832	5.8124	5.2553	5.7282	6.717
T 9Cl-PF3ONS	Avg RF	3.2458	3.2998	3.0855	2.9955	3.5001	3.3542	3.2821	3.2014	3.2455	4.815
T 11Cl-PF3OUds	Avg RF					ISTD					
I M5-EFOSAA	Avg RF	0.7541	0.6691	0.7202	0.6730	0.7787	0.8748	0.7829	0.7952	0.7560	9.028
T EFOSAA	Avg RF					ISTD					
I M7-MeFOSE	Avg RF	0.9993	1.0509	1.0489	0.9190	1.1209	1.1186	1.1848	1.1434	1.0732	8.034
T MeFOSE	Avg RF					ISTD					
I M9-EFOSE	Avg RF	1.1238	1.0953	1.1155	1.0976	1.1986	1.2615	1.2404	1.2418	1.1718	6.052
T EFOSE	Avg RF					ISTD					



Initial Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-ICC355
 Lab FileID: 6Q24814.D

Initial Calibration Report

Compound	Curve Fit	1	2	3	4	5	6	7	8	Avg RF	%RSD
I M5-EFOSA	Avg RF	1.2841	1.2520	1.2686	1.2123	1.3007	1.3985	1.4505	1.3429	1.3137	6.030
T EFOSA						ISTD					
I M3-MeFOSA	Avg RF	1.0631	1.1865	1.1387	1.0337	1.1366	1.2134	1.1759	1.0527	1.1251	6.001
T MeFOSA						ISTD					
I 13C4-PFOS						ISTD					
S d3-MeFOSAA	Avg RF	0.7088	0.7373	0.6552	0.6691	0.6875	0.7141	0.6463	0.6427	0.6826	5.114
S 13C8-PFOS	Avg RF	0.7415	0.7182	0.7218	0.7000	0.7430	0.7442	0.7438	0.7190	0.7364	3.154
S d5-EFOSAA	Avg RF	0.5667	0.6128	0.5687	0.5787	0.5866	0.5704	0.5833	0.5984	0.5832	2.740
S 13C8-FOSA	Avg RF	1.5800	1.7241	1.6009	1.6434	1.6355	1.6749	1.5520	1.7229	1.6417	3.855
S d7-MeFOSE	Avg RF	0.5347	0.5544	0.5078	0.5444	0.5210	0.5542	0.5183	0.5331	0.5335	3.196
S d3-MeFOSA	Avg RF	0.5887	0.5979	0.5347	0.5727	0.5861	0.5896	0.6017	0.6839	0.5944	7.035
S d9-EFOSE	Avg RF	0.6890	0.7529	0.6709	0.6792	0.7199	0.7083	0.6903	0.6910	0.7002	3.756
S d5-EFOSA	Avg RF	0.5440	0.5770	0.5229	0.5472	0.5514	0.5691	0.5318	0.5846	0.5535	3.926
I 13C3-PFBA						ISTD					
S 13C4-PFBA	Avg RF	1.2217	1.2132	1.2224	1.2227	1.2272	1.2186	1.2114	1.2189	1.2195	0.426
I 18O2-PFHxS						ISTD					
S 13C2-4:2FTS	Avg RF	0.1382	0.1492	0.1295	0.1408	0.1357	0.1261	0.1140	0.1101	0.1304	10.244
S 13C3-PFBS	Avg RF	2.3742	2.4992	2.4313	2.5811	2.4380	2.4548	2.3998	2.1952	2.4217	4.602
S 13C2-6:2FTS	Avg RF	0.1907	0.2058	0.1850	0.1886	0.1957	0.1872	0.1658	0.1527	0.1839	9.197
S 13C3-PFHxS	Avg RF	1.3727	1.3316	1.3530	1.3199	1.3791	1.4191	1.3694	1.2864	1.3539	3.017
S 13C2-8:2FTS	Avg RF	0.1935	0.2065	0.1940	0.1915	0.1793	0.1826	0.1861	0.1685	0.1878	6.066
I 13C4-PFOA						ISTD					
S 13C8-PFOA	Avg RF	0.8708	0.8975	0.9685	0.9060	0.9570	0.8802	0.8897	0.8917	0.9077	3.934
I 13C2-PFDA						ISTD					
S 13C6-PFDA	Avg RF	1.2225	1.1716	1.1284	1.1219	1.0741	1.1791	1.0773	1.1275	1.1378	4.480
S 13C7-PFUnDA	Avg RF	1.4558	1.3368	1.4142	1.3840	1.2240	1.4547	1.2914	1.1977	1.3448	7.430
S 13C2-PFDODA	Avg RF	1.2991	1.2847	1.2469	1.2673	1.2158	1.3041	1.2538	1.2591	1.2664	2.308
S 13C2-PFTeDA	Avg RF	0.5092	0.5006	0.4768	0.5193	0.4998	0.5226	0.4941	0.5251	0.5059	3.253
I 13C5-PFNA						ISTD					
S 13C9-PFNA	Avg RF	0.9668	0.8536	0.8971	0.9721	0.8431	0.9298	0.8953	0.8941	0.9065	5.217
I 13C2-PFHxA						ISTD					
S 13C5-PPFA	Avg RF	0.2983	0.2877	0.2878	0.2896	0.2758	0.2909	0.2824	0.2607	0.2842	4.050
S 13C5-PFHxA	Avg RF	1.3115	1.3330	1.3067	1.3707	1.2765	1.3360	1.3336	1.2659	1.3168	2.593
S 13C3-HPODA	Avg RF	0.1810	0.1828	0.1848	0.1889	0.1791	0.1977	0.1900	0.1787	0.1854	3.512
S 13C4-PFHxA	Avg RF	1.1043	1.0754	1.1216	1.0960	1.0440	1.0992	1.0240	1.0284	1.0741	3.482

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

Initial Calibration Verification

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-ICV355
 Lab FileID: 6Q24820.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\092123_1633_S6Q355\s6q355.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\092123_1633_S6Q355\6Q24811.d
 2:D:\MassHunter\Data\092123_1633_S6Q355\6Q24812.d
 3:D:\MassHunter\Data\092123_1633_S6Q355\6Q24813.d
 4:D:\MassHunter\Data\092123_1633_S6Q355\6Q24814.d
 5:D:\MassHunter\Data\092123_1633_S6Q355\6Q24815.d
 6:D:\MassHunter\Data\092123_1633_S6Q355\6Q24816.d
 7:D:\MassHunter\Data\092123_1633_S6Q355\6Q24817.d
 8:D:\MassHunter\Data\092123_1633_S6Q355\6Q24818.d

Data File: 6Q24820
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.398	8.0	108.0
13C2-6:2FTS	5.000	5.295	5.9	105.9
13C2-8:2FTS	5.000	5.012	0.2	100.2
13C2-PFDoDA	1.250	1.251	0.1	100.1
13C2-PFTeDA	1.250	1.162	-7.0	93.0
13C3-PFBS	2.500	2.468	-1.3	98.7
13C3-PFHxS	2.500	2.532	1.3	101.3
13C4-PFBA	10.000	10.063	0.6	100.6
13C4-PFHpA	2.500	2.602	4.1	104.1
13C5-PFHxA	2.500	2.603	4.1	104.1
13C5-PFPeA	5.000	5.290	5.8	105.8
13C6-PFDA	1.250	1.288	3.1	103.1
13C7-PFUnDA	1.250	1.347	7.8	107.8
13C8-FOSA	2.500	2.417	-3.3	96.7
13C8-PFOA	2.500	2.366	-5.4	94.6
13C8-PFOS	2.500	2.651	6.0	106.0
13C9-PFNA	1.250	1.343	7.5	107.5
4:2FTS	9.375	8.099	-13.6	86.4
6:2FTS	9.500	8.309	-12.5	87.5
8:2FTS	9.600	8.981	-6.4	93.6
d3-MeFOSAA	5.000	5.001	0.0	100.0
EtFOSAA	2.500	2.405	-3.8	96.2
FOSA	2.500	2.203	-11.9	88.1
MeFOSAA	2.500	2.114	-15.4	84.6
PFBA	10.000	8.835	-11.6	88.4
PFBS	2.218	1.955	-11.9	88.1
PFDA	2.500	2.177	-12.9	87.1
PFDoDA	2.500	2.085	-16.6	83.4
PFDS	2.413	1.936	-19.8	80.2
PFHpA	2.500	2.284	-8.7	91.3
PFHpS	2.383	2.044	-14.2	85.8
PFHxA	2.500	2.167	-13.3	86.7
PFHxS	2.285	1.944	-14.9	85.1
PFNA	2.500	2.054	-17.8	82.2
PFNS	2.405	2.044	-15.0	85.0
PFOA	2.500	2.363	-5.5	94.5
PFOS	2.320	1.809	-22.0	78.0

Initial Calibration Verification

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-ICV355
 Lab FileID: 6Q24820.D

PFPeA	5.000	4.413	-11.7	88.3
PFPeS	2.353	2.141	-9.0	91.0
PFTeDA	2.500	2.292	-8.3	91.7
PFTrDA	2.500	2.110	-15.6	84.4
PFUnDA	2.500	2.099	-16.0	84.0
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.575	-3.2	96.8
13C3-HFPO-DA	10.000	10.543	5.4	105.4
9C1-PF3ONS	4.675	4.469	-4.4	95.6
ADONA	4.725	4.201	-11.1	88.9
HFPO-DA	5.000	4.460	-10.8	89.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	10.731	-14.0	86.0
5:3FTCA	62.400	59.029	-5.4	94.6
7:3FTCA	62.400	55.752	-10.7	89.3
d3-MeFOSA	2.500	2.243	-10.3	89.7
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.671	-6.6	93.4
EtFOSE	12.500	10.583	-15.3	84.7
MeFOSA	5.000	4.692	-6.2	93.8
MeFOSE	12.500	11.662	-6.7	93.3
PFDoDS	2.425	2.029	-16.3	83.7
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.873	-2.5	97.5
d7-MeFOSE	25.000	23.259	-7.0	93.0
d9-EtFOSE	25.000	25.473	1.9	101.9
d5-EtFOSA	2.500	2.419	-3.2	96.8
NFDHA	5.000	4.397	-12.1	87.9
PFMBA	5.000	4.517	-9.7	90.3
PFMPA	5.000	4.531	-9.4	90.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.198	-5.7	94.3

CC Criteria: +/- 30%

Initial Calibration Verification

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-ICV355
 Lab FileID: 6Q24821.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\092123_1633_S6Q355\s6q355.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\092123_1633_S6Q355\6Q24811.d
 2:D:\MassHunter\Data\092123_1633_S6Q355\6Q24812.d
 3:D:\MassHunter\Data\092123_1633_S6Q355\6Q24813.d
 4:D:\MassHunter\Data\092123_1633_S6Q355\6Q24814.d
 5:D:\MassHunter\Data\092123_1633_S6Q355\6Q24815.d
 6:D:\MassHunter\Data\092123_1633_S6Q355\6Q24816.d
 7:D:\MassHunter\Data\092123_1633_S6Q355\6Q24817.d
 8:D:\MassHunter\Data\092123_1633_S6Q355\6Q24818.d

Data File: 6Q24821
 Type : QC
 Level : 20

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.302	6.0	106.0
13C2-6:2FTS	5.000	5.324	6.5	106.5
13C2-8:2FTS	5.000	5.224	4.5	104.5
13C2-PFDoDA	1.250	1.328	6.3	106.3
13C2-PFTeDA	1.250	1.231	-1.5	98.5
13C3-PFBS	2.500	2.545	1.8	101.8
13C3-PFHxS	2.500	2.534	1.4	101.4
13C4-PFBA	10.000	9.927	-0.7	99.3
13C4-PFHpA	2.500	2.548	1.9	101.9
13C5-PFHxA	2.500	2.523	0.9	100.9
13C5-PFPeA	5.000	5.057	1.1	101.1
13C6-PFDA	1.250	1.282	2.6	102.6
13C7-PFUnDA	1.250	1.369	9.5	109.5
13C8-FOSA	2.500	2.342	-6.3	93.7
13C8-PFOA	2.500	2.554	2.2	102.2
13C8-PFOS	2.500	2.375	-5.0	95.0
13C9-PFNA	1.250	1.256	0.5	100.5
4:2FTS	20.000	23.355	16.8	116.8
6:2FTS	20.000	22.613	13.1	113.1
8:2FTS	20.000	22.232	11.2	111.2
d3-MeFOSAA	5.000	4.639	-7.2	92.8
EtFOSAA	20.000	22.904	14.5	114.5
FOSA	20.000	21.740	8.7	108.7
MeFOSAA	20.000	22.658	13.3	113.3
PFBA	20.000	20.853	4.3	104.3
PFBS	20.000	21.665	8.3	108.3
PFDA	20.000	21.381	6.9	106.9
PFDoDA	20.000	17.786	-11.1	88.9
PFDS	20.000	21.965	9.8	109.8
PFHpA	20.000	21.445	7.2	107.2
PFHpS	20.000	22.193	11.0	111.0
PFHxA	20.000	22.779	13.9	113.9
PFHxS	20.000	22.080	10.4	110.4
PFNA	20.000	23.481	17.4	117.4
PFNS	20.000	22.278	11.4	111.4
PFOA	20.000	19.982	-0.1	99.9
PFOS	20.000	21.287	6.4	106.4

Initial Calibration Verification

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-ICV355
 Lab FileID: 6Q24821.D

PFPeA	20.000	21.930	9.6	109.6
PFPeS	20.000	21.301	6.5	106.5
PFTeDA	20.000	22.272	11.4	111.4
PFTrDA	20.000	17.738	-11.3	88.7
PFUnDA	20.000	19.072	-4.6	95.4
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	20.000	22.444	12.2	112.2
13C3-HFPO-DA	10.000	10.135	1.3	101.3
9C1-PF3ONS	20.000	20.981	4.9	104.9
ADONA	20.000	19.919	-0.4	99.6
HFPO-DA	20.000	20.697	3.5	103.5
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	20.000	19.772	-1.1	98.9
5:3FTCA	20.000	22.251	11.3	111.3
7:3FTCA	20.000	20.617	3.1	103.1
d3-MeFOSA	2.500	2.537	1.5	101.5
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	20.000	19.069	-4.7	95.3
EtFOSE	100.000	108.087	8.1	108.1
MeFOSA	20.000	18.228	-8.9	91.1
MeFOSE	100.000	107.910	7.9	107.9
PFDoDS	20.000	20.957	4.8	104.8
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	4.795	-4.1	95.9
d7-MeFOSE	25.000	25.497	2.0	102.0
d9-EtFOSE	25.000	25.202	0.8	100.8
d5-EtFOSA	2.500	2.479	-0.8	99.2
NFDHA	20.000	21.251	6.3	106.3
PFMBA	20.000	21.395	7.0	107.0
PFMPA	20.000	21.529	7.6	107.6
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	20.000	18.628	-6.9	93.1

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-CC355
 Lab FileID: 6Q24822.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\092123_1633_S6Q355\s6q355.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\092123_1633_S6Q355\6Q24811.d
 2:D:\MassHunter\Data\092123_1633_S6Q355\6Q24812.d
 3:D:\MassHunter\Data\092123_1633_S6Q355\6Q24813.d
 4:D:\MassHunter\Data\092123_1633_S6Q355\6Q24814.d
 5:D:\MassHunter\Data\092123_1633_S6Q355\6Q24815.d
 6:D:\MassHunter\Data\092123_1633_S6Q355\6Q24816.d
 7:D:\MassHunter\Data\092123_1633_S6Q355\6Q24817.d
 8:D:\MassHunter\Data\092123_1633_S6Q355\6Q24818.d

Data File: 6Q24822
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.329	6.6	106.6
13C2-6:2FTS	5.000	5.276	5.5	105.5
13C2-8:2FTS	5.000	5.103	2.1	102.1
13C2-PFDoDA	1.250	1.251	0.0	100.0
13C2-PFTeDA	1.250	1.148	-8.1	91.9
13C3-PFBS	2.500	2.407	-3.7	96.3
13C3-PFHxS	2.500	2.592	3.7	103.7
13C4-PFBA	10.000	10.149	1.5	101.5
13C4-PFHpA	2.500	2.517	0.7	100.7
13C5-PFHxA	2.500	2.483	-0.7	99.3
13C5-PFPeA	5.000	5.355	7.1	107.1
13C6-PFDA	1.250	1.140	-8.8	91.2
13C7-PFUnDA	1.250	1.331	6.5	106.5
13C8-FOSA	2.500	2.593	3.7	103.7
13C8-PFOA	2.500	2.595	3.8	103.8
13C8-PFOS	2.500	2.743	9.7	109.7
13C9-PFNA	1.250	1.203	-3.8	96.2
4:2FTS	9.375	8.004	-14.6	85.4
6:2FTS	9.500	8.389	-11.7	88.3
8:2FTS	9.600	9.172	-4.5	95.5
d3-MeFOSAA	5.000	5.100	2.0	102.0
EtFOSAA	2.500	2.017	-19.3	80.7
FOSA	2.500	2.274	-9.0	91.0
MeFOSAA	2.500	2.391	-4.4	95.6
PFBA	10.000	8.901	-11.0	89.0
PFBS	2.218	2.021	-8.9	91.1
PFDA	2.500	2.452	-1.9	98.1
PFDoDA	2.500	2.237	-10.5	89.5
PFDS	2.413	1.928	-20.1	79.9
PFHpA	2.500	2.351	-6.0	94.0
PFHpS	2.383	2.023	-15.1	84.9
PFHxA	2.500	2.258	-9.7	90.3
PFHxS	2.285	1.855	-18.8	81.2
PFNA	2.500	2.223	-11.1	88.9
PFNS	2.405	2.083	-13.4	86.6
PFOA	2.500	2.302	-7.9	92.1
PFOS	2.320	1.991	-14.2	85.8

Continuing Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-CC355
 Lab FileID: 6Q24822.D

PFPeA	5.000	4.326	-13.5	86.5
PFPeS	2.353	1.949	-17.2	82.8
PFTeDA	2.500	2.442	-2.3	97.7
PFTTrDA	2.500	2.196	-12.2	87.8
PFUnDA	2.500	2.032	-18.7	81.3
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.178	-11.6	88.4
13C3-HFPO-DA	10.000	11.020	10.2	110.2
9C1-PF3ONS	4.675	4.177	-10.7	89.3
ADONA	4.725	4.101	-13.2	86.8
HFPO-DA	5.000	4.111	-17.8	82.2
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.027	-11.6	88.4
5:3FTCA	62.400	60.940	-2.3	97.7
7:3FTCA	62.400	59.323	-4.9	95.1
d3-MeFOSA	2.500	2.558	2.3	102.3
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.780	-4.4	95.6
EtFOSE	12.500	11.235	-10.1	89.9
MeFOSA	5.000	4.645	-7.1	92.9
MeFOSE	12.500	11.366	-9.1	90.9
PFDoDS	2.425	2.037	-16.0	84.0
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.729	14.6	114.6
d7-MeFOSE	25.000	26.416	5.7	105.7
d9-EtFOSE	25.000	26.380	5.5	105.5
d5-EtFOSA	2.500	2.514	0.6	100.6
NFDHA	5.000	4.810	-3.8	96.2
PFMBA	5.000	4.448	-11.0	89.0
PFMPA	5.000	4.460	-10.8	89.2
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	4.317	-3.0	97.0

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-CC355
 Lab FileID: 6Q24823.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\092123_1633_S6Q355\s6q355.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\092123_1633_S6Q355\6Q24811.d
 2:D:\MassHunter\Data\092123_1633_S6Q355\6Q24812.d
 3:D:\MassHunter\Data\092123_1633_S6Q355\6Q24813.d
 4:D:\MassHunter\Data\092123_1633_S6Q355\6Q24814.d
 5:D:\MassHunter\Data\092123_1633_S6Q355\6Q24815.d
 6:D:\MassHunter\Data\092123_1633_S6Q355\6Q24816.d
 7:D:\MassHunter\Data\092123_1633_S6Q355\6Q24817.d
 8:D:\MassHunter\Data\092123_1633_S6Q355\6Q24818.d

Data File: 6Q24823
 Type : QC
 Level : 1

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.606	12.1	112.1
13C2-6:2FTS	5.000	5.867	17.3	117.3
13C2-8:2FTS	5.000	4.904	-1.9	98.1
13C2-PFDoDA	1.250	1.218	-2.5	97.5
13C2-PFTeDA	1.250	1.220	-2.4	97.6
13C3-PFBS	2.500	2.457	-1.7	98.3
13C3-PFHxS	2.500	2.618	4.7	104.7
13C4-PFBA	10.000	10.110	1.1	101.1
13C4-PFHpA	2.500	2.626	5.0	105.0
13C5-PFHxA	2.500	2.594	3.7	103.7
13C5-PFPeA	5.000	5.296	5.9	105.9
13C6-PFDA	1.250	1.216	-2.7	97.3
13C7-PFUnDA	1.250	1.228	-1.8	98.2
13C8-FOSA	2.500	2.739	9.5	109.5
13C8-PFOA	2.500	2.510	0.4	100.4
13C8-PFOS	2.500	2.810	12.4	112.4
13C9-PFNA	1.250	1.333	6.7	106.7
4:2FTS	0.750	0.717	-4.4	95.6
6:2FTS	0.760	0.737	-3.1	96.9
8:2FTS	0.768	0.803	4.6	104.6
d3-MeFOSAA	5.000	5.623	12.5	112.5
EtFOSAA	0.200	0.210	4.8	104.8
FOSA	0.200	0.180	-9.9	90.1
MeFOSAA	0.200	0.207	3.6	103.6
PFBA	0.800	0.793	-0.8	99.2
PFBS	0.177	0.202	14.1	114.1
PFDA	0.200	0.189	-5.3	94.7
PFDoDA	0.200	0.193	-3.4	96.6
PFDS	0.193	0.197	1.9	101.9
PFHpA	0.200	0.188	-6.0	94.0
PFHpS	0.191	0.178	-6.8	93.2
PFHxA	0.200	0.199	-0.3	99.7
PFHxS	0.183	0.203	11.2	111.2
PFNA	0.200	0.186	-6.9	93.1
PFNS	0.192	0.173	-9.7	90.3
PFOA	0.200	0.229	14.4	114.4
PFOS	0.186	0.180	-3.0	97.0

Continuing Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-CC355
 Lab FileID: 6Q24823.D

PFPeA	0.400	0.392	-2.1	97.9
PFPeS	0.188	0.199	6.1	106.1
PFTeDA	0.200	0.183	-8.6	91.4
PFTTrDA	0.200	0.181	-9.6	90.4
PFUnDA	0.200	0.202	1.1	101.1
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	0.378	0.350	-7.5	92.5
13C3-HFPO-DA	10.000	10.880	8.8	108.8
9C1-PF3ONS	0.374	0.355	-5.0	95.0
ADONA	0.378	0.347	-8.1	91.9
HFPO-DA	0.400	0.379	-5.2	94.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	0.998	0.924	-7.4	92.6
5:3FTCA	4.992	4.606	-7.7	92.3
7:3FTCA	4.992	4.638	-7.1	92.9
d3-MeFOSA	2.500	2.436	-2.6	97.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	0.400	0.401	0.2	100.2
EtFOSE	1.000	0.988	-1.2	98.8
MeFOSA	0.400	0.416	4.1	104.1
MeFOSE	1.000	0.960	-4.0	96.0
PFDoDS	0.194	0.175	-9.9	90.1
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.547	10.9	110.9
d7-MeFOSE	25.000	25.725	2.9	102.9
d9-EtFOSE	25.000	26.669	6.7	106.7
d5-EtFOSA	2.500	2.662	6.5	106.5
NFDHA	0.400	0.387	-3.3	96.7
PFMBA	0.400	0.386	-3.5	96.5
PFMPA	0.400	0.374	-6.5	93.5
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	0.356	0.339	-4.8	95.2

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-CC355
 Lab FileID: 6Q24834.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\092123_1633_S6Q355\s6q355.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\092123_1633_S6Q355\6Q24811.d
 2:D:\MassHunter\Data\092123_1633_S6Q355\6Q24812.d
 3:D:\MassHunter\Data\092123_1633_S6Q355\6Q24813.d
 4:D:\MassHunter\Data\092123_1633_S6Q355\6Q24814.d
 5:D:\MassHunter\Data\092123_1633_S6Q355\6Q24815.d
 6:D:\MassHunter\Data\092123_1633_S6Q355\6Q24816.d
 7:D:\MassHunter\Data\092123_1633_S6Q355\6Q24817.d
 8:D:\MassHunter\Data\092123_1633_S6Q355\6Q24818.d

Data File: 6Q24834
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.073	1.5	101.5
13C2-6:2FTS	5.000	5.085	1.7	101.7
13C2-8:2FTS	5.000	5.068	1.4	101.4
13C2-PFDoDA	1.250	1.201	-3.9	96.1
13C2-PFTeDA	1.250	1.127	-9.8	90.2
13C3-PFBS	2.500	2.446	-2.2	97.8
13C3-PFHxS	2.500	2.498	-0.1	99.9
13C4-PFBA	10.000	10.052	0.5	100.5
13C4-PFHpA	2.500	2.382	-4.7	95.3
13C5-PFHxA	2.500	2.410	-3.6	96.4
13C5-PFPeA	5.000	4.955	-0.9	99.1
13C6-PFDA	1.250	1.169	-6.5	93.5
13C7-PFUnDA	1.250	1.228	-1.8	98.2
13C8-FOSA	2.500	2.470	-1.2	98.8
13C8-PFOA	2.500	2.536	1.5	101.5
13C8-PFOS	2.500	2.463	-1.5	98.5
13C9-PFNA	1.250	1.259	0.8	100.8
4:2FTS	9.375	8.780	-6.3	93.7
6:2FTS	9.500	8.534	-10.2	89.8
8:2FTS	9.600	8.777	-8.6	91.4
d3-MeFOSAA	5.000	5.071	1.4	101.4
EtFOSAA	2.500	2.208	-11.7	88.3
FOSA	2.500	2.131	-14.8	85.2
MeFOSAA	2.500	2.110	-15.6	84.4
PFBA	10.000	8.922	-10.8	89.2
PFBS	2.218	1.976	-10.9	89.1
PFDA	2.500	2.335	-6.6	93.4
PFDoDA	2.500	2.295	-8.2	91.8
PFDS	2.413	2.037	-15.6	84.4
PFHpA	2.500	2.283	-8.7	91.3
PFHpS	2.383	2.037	-14.5	85.5
PFHxA	2.500	2.264	-9.4	90.6
PFHxS	2.285	1.938	-15.2	84.8
PFNA	2.500	2.190	-12.4	87.6
PFNS	2.405	2.232	-7.2	92.8
PFOA	2.500	2.257	-9.7	90.3
PFOS	2.320	1.903	-18.0	82.0

Continuing Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-CC355
 Lab FileID: 6Q24834.D

PFPeA	5.000	4.302	-14.0	86.0
PFPeS	2.353	2.078	-11.7	88.3
PFTeDA	2.500	2.379	-4.9	95.1
PFTTrDA	2.500	2.292	-8.3	91.7
PFUnDA	2.500	2.119	-15.3	84.7
M4-PFBA	---	--ISTD--		
M5-PFPeA	---	--ISTD--		
M5-PFHxA	---	--ISTD--		
M4-PFHpA	---	--ISTD--		
M8-PFOA	---	--ISTD--		
M9-PFNA	---	--ISTD--		
M6-PFDA	---	--ISTD--		
M7-PFUnDA	---	--ISTD--		
M2-PFDoDA	---	--ISTD--		
M2-PFTeDA	---	--ISTD--		
M8-FOSA	---	--ISTD--		
M3-PFBS	---	--ISTD--		
M3-PFHxS	---	--ISTD--		
M8-PFOS	---	--ISTD--		
M2-4:2FTS	---	--ISTD--		
M2-6:2FTS	---	--ISTD--		
M2-8:2FTS	---	--ISTD--		
M3-MeFOSAA	---	--ISTD--		
11C1-PF3OUdS	4.725	4.195	-11.2	88.8
13C3-HFPO-DA	10.000	9.820	-1.8	98.2
9C1-PF3ONS	4.675	4.183	-10.5	89.5
ADONA	4.725	4.148	-12.2	87.8
HFPO-DA	5.000	4.579	-8.4	91.6
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.023	-11.7	88.3
5:3FTCA	62.400	59.279	-5.0	95.0
7:3FTCA	62.400	58.159	-6.8	93.2
d3-MeFOSA	2.500	2.273	-9.1	90.9
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.509	-9.8	90.2
EtFOSE	12.500	11.198	-10.4	89.6
MeFOSA	5.000	4.928	-1.4	98.6
MeFOSE	12.500	11.403	-8.8	91.2
PFDoDS	2.425	2.168	-10.6	89.4
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.178	3.6	103.6
d7-MeFOSE	25.000	23.384	-6.5	93.5
d9-EtFOSE	25.000	24.326	-2.7	97.3
d5-EtFOSA	2.500	2.430	-2.8	97.2
NFDHA	5.000	4.569	-8.6	91.4
PFMBA	5.000	4.425	-11.5	88.5
PFMPA	5.000	4.421	-11.6	88.4
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEEESA	4.450	4.025	-9.5	90.5

CC Criteria: +/- 30%

Continuing Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-CC355
 Lab FileID: 6Q24845.D

Continuing Calibration Report

Batch: D:\MassHunter\Data\092123_1633_S6Q355\s6q355.batch.bin

Level ID: Calibration File

1:D:\MassHunter\Data\092123_1633_S6Q355\6Q24811.d
 2:D:\MassHunter\Data\092123_1633_S6Q355\6Q24812.d
 3:D:\MassHunter\Data\092123_1633_S6Q355\6Q24813.d
 4:D:\MassHunter\Data\092123_1633_S6Q355\6Q24814.d
 5:D:\MassHunter\Data\092123_1633_S6Q355\6Q24815.d
 6:D:\MassHunter\Data\092123_1633_S6Q355\6Q24816.d
 7:D:\MassHunter\Data\092123_1633_S6Q355\6Q24817.d
 8:D:\MassHunter\Data\092123_1633_S6Q355\6Q24818.d

Data File: 6Q24845
 Type : QC
 Level : 4

Cpnd Name	Exp. Conc	Final Conc	Dev %	Area %
13C2-4:2FTS	5.000	5.167	3.3	103.3
13C2-6:2FTS	5.000	5.276	5.5	105.5
13C2-8:2FTS	5.000	4.791	-4.2	95.8
13C2-PFDoDA	1.250	1.385	10.8	110.8
13C2-PFTeDA	1.250	1.443	15.5	115.5
13C3-PFBS	2.500	2.457	-1.7	98.3
13C3-PFHxS	2.500	2.345	-6.2	93.8
13C4-PFBA	10.000	10.122	1.2	101.2
13C4-PFHpA	2.500	2.599	4.0	104.0
13C5-PFHxA	2.500	2.698	7.9	107.9
13C5-PFPeA	5.000	5.127	2.5	102.5
13C6-PFDA	1.250	1.257	0.6	100.6
13C7-PFUnDA	1.250	1.244	-0.5	99.5
13C8-FOSA	2.500	2.692	7.7	107.7
13C8-PFOA	2.500	2.395	-4.2	95.8
13C8-PFOS	2.500	2.544	1.8	101.8
13C9-PFNA	1.250	1.294	3.5	103.5
4:2FTS	9.375	8.478	-9.6	90.4
6:2FTS	9.500	8.185	-13.8	86.2
8:2FTS	9.600	9.037	-5.9	94.1
d3-MeFOSAA	5.000	5.741	14.8	114.8
EtFOSAA	2.500	2.308	-7.7	92.3
FOSA	2.500	2.167	-13.3	86.7
MeFOSAA	2.500	2.054	-17.8	82.2
PFBA	10.000	9.056	-9.4	90.6
PFBS	2.218	1.918	-13.5	86.5
PFDA	2.500	1.950	-22.0	78.0
PFDoDA	2.500	2.030	-18.8	81.2
PFDS	2.413	2.028	-16.0	84.0
PFHpA	2.500	2.118	-15.3	84.7
PFHpS	2.383	2.052	-13.9	86.1
PFHxA	2.500	2.073	-17.1	82.9
PFHxS	2.285	2.001	-12.4	87.6
PFNA	2.500	2.138	-14.5	85.5
PFNS	2.405	2.043	-15.1	84.9
PFOA	2.500	2.125	-15.0	85.0
PFOS	2.320	1.900	-18.1	81.9

Continuing Calibration Summary

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample: S6Q355-CC355
 Lab FileID: 6Q24845.D

PFPeA	5.000	4.372	-12.6	87.4
PFPeS	2.353	2.186	-7.1	92.9
PFTeDA	2.500	2.176	-13.0	87.0
PFTTrDA	2.500	2.094	-16.2	83.8
PFUnDA	2.500	2.313	-7.5	92.5
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	4.330	-8.4	91.6
13C3-HFPO-DA	10.000	10.089	0.9	100.9
9C1-PF3ONS	4.675	4.433	-5.2	94.8
ADONA	4.725	4.579	-3.1	96.9
HFPO-DA	5.000	4.792	-4.2	95.8
M3-HFPO-DA	---	--ISTD--		
3:3FTCA	12.480	11.053	-11.4	88.6
5:3FTCA	62.400	58.812	-5.8	94.2
7:3FTCA	62.400	60.842	-2.5	97.5
d3-MeFOSA	2.500	2.309	-7.6	92.4
M5-EtFOSAA	---	--ISTD--		
M7-MeFOSE	---	--ISTD--		
M9-EtFOSE	---	--ISTD--		
M5-EtFOSA	---	--ISTD--		
EtFOSA	5.000	4.589	-8.2	91.8
EtFOSE	12.500	11.535	-7.7	92.3
MeFOSA	5.000	4.894	-2.1	97.9
MeFOSE	12.500	11.183	-10.5	89.5
PFDoDS	2.425	2.177	-10.2	89.8
M3-MeFOSA	---	--ISTD--		
d5-EtFOSAA	5.000	5.310	6.2	106.2
d7-MeFOSE	25.000	24.306	-2.8	97.2
d9-EtFOSE	25.000	24.448	-2.2	97.8
d5-EtFOSA	2.500	2.367	-5.3	94.7
NFDHA	5.000	4.194	-16.1	83.9
PFMBA	5.000	4.540	-9.2	90.8
PFMPA	5.000	4.494	-10.1	89.9
13C4-PFOS	---	--ISTD--		
13C3-PFBA	---	--ISTD--		
18O2-PFHxS	---	--ISTD--		
13C4-PFOA	---	--ISTD--		
13C2-PFDA	---	--ISTD--		
13C5-PFNA	---	--ISTD--		
13C2-PFHxA	---	--ISTD--		
PFEESA	4.450	3.759	-15.5	84.5

CC Criteria: +/- 30%

Run Sequence Report

Job Number: FC9640
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Run ID: S6Q355	Method: EPA DRAFT 1633	Instrument ID: GCMS6Q
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Lab Sample ID	Lab File ID	Date/Time Analyzed	Prep QC Batch	Client Sample ID
S6Q355-RT	6Q24808.D	09/21/23 19:52	n/a	Retention Time Marker
S6Q355-RT	6Q24809.D	09/21/23 20:07	n/a	Retention Time Marker
S6Q355-IC355	6Q24810.D	09/21/23 20:21	n/a	Mass Calibration Verification
S6Q355-IC355	6Q24811.D	09/21/23 20:35	n/a	Initial cal 1
S6Q355-IC355	6Q24812.D	09/21/23 20:50	n/a	Initial cal 2
S6Q355-IC355	6Q24813.D	09/21/23 21:04	n/a	Initial cal 3
S6Q355-ICC355	6Q24814.D	09/21/23 21:18	n/a	Initial cal 4
S6Q355-IC355	6Q24815.D	09/21/23 21:33	n/a	Initial cal 5
S6Q355-IC355	6Q24816.D	09/21/23 21:47	n/a	Initial cal 6
S6Q355-IC355	6Q24817.D	09/21/23 22:01	n/a	Initial cal 7
S6Q355-IC355	6Q24818.D	09/21/23 22:16	n/a	Initial cal 8
S6Q355-IBLK	6Q24819.D	09/21/23 22:30	n/a	Instrument Blank
S6Q355-IBLK	6Q24819.D	09/21/23 22:30	n/a	Instrument Blank
S6Q355-ICV355	6Q24820.D	09/21/23 22:44	n/a	Initial cal verification 4
S6Q355-ICV355	6Q24821.D	09/21/23 22:59	n/a	Initial cal verification 20
S6Q355-CC355	6Q24822.D	09/21/23 23:13	n/a	Continuing cal 4
S6Q355-CC355	6Q24823.D	09/21/23 23:27	n/a	Continuing cal 1.0LL
OP99077-BS	6Q24824.D	09/21/23 23:42	OP99077	Blank Spike
OP99077-LLBS	6Q24825.D	09/21/23 23:56	OP99077	Blank Spike
OP99077-MB	6Q24826.D	09/22/23 00:10	OP99077	Method Blank
ZZZZZZ	6Q24827.D	09/22/23 00:25	OP99077	(unrelated sample)
ZZZZZZ	6Q24828.D	09/22/23 00:39	OP99077	(unrelated sample)
ZZZZZZ	6Q24829.D	09/22/23 00:53	OP99077	(unrelated sample)
ZZZZZZ	6Q24830.D	09/22/23 01:08	OP99077	(unrelated sample)
ZZZZZZ	6Q24831.D	09/22/23 01:22	OP99077	(unrelated sample)
ZZZZZZ	6Q24832.D	09/22/23 01:36	OP99077	(unrelated sample)
ZZZZZZ	6Q24833.D	09/22/23 01:51	OP99077	(unrelated sample)
S6Q355-CC355	6Q24834.D	09/22/23 02:05	n/a	Continuing cal 4
S6Q355-ICCB	6Q24835.D	09/22/23 02:19	n/a	Continuing Calibration Blank
S6Q355-ICCB	6Q24835.D	09/22/23 02:19	n/a	Continuing Calibration Blank
FC9640-1	6Q24836.D	09/22/23 02:34	OP99077	AF-RHP02-WGN01LF-2309
OP99077-MS	6Q24837.D	09/22/23 02:48	OP99077	Matrix Spike
FC9640-2	6Q24838.D	09/22/23 03:02	OP99077	AF-RHP02-WGFD01LF-2309
OP99077-DUP	6Q24839.D	09/22/23 03:17	OP99077	Duplicate
ZZZZZZ	6Q24840.D	09/22/23 03:31	OP99077	(unrelated sample)
ZZZZZZ	6Q24841.D	09/22/23 03:45	OP99077	(unrelated sample)
ZZZZZZ	6Q24842.D	09/22/23 04:00	OP99077	(unrelated sample)
OP99032-MS	6Q24843.D	09/22/23 04:14	OP99032	Matrix Spike
OP99032-MSD	6Q24844.D	09/22/23 04:28	OP99032	Matrix Spike Duplicate
S6Q355-CC355	6Q24845.D	09/22/23 04:43	n/a	Continuing cal 4
S6Q355-ICCB	6Q24846.D	09/22/23 04:57	n/a	Continuing Calibration Blank
S6Q355-ICCB	6Q24846.D	09/22/23 04:57	n/a	Continuing Calibration Blank

MS Semi-volatiles

Raw Data

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24836.d
Operator : marthav
Acq. Method : 1633full.m
Acq. Date-Time : 9/22/2023 2:34:06 AM
Sample Name : FC9640-1
Vial : P2-B2
DA Method File : 1633_092123_S6Q355.quantmethod.xml
Batch Name : s6q355.batch.bin
Sample Information : OP99077,S6Q355,570,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	256194	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	41790	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	98537	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	83969	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	107304	2.50 µg/L	0.000
M9-PFNA	7.729	472.1 -> 427.0	42899	1.25 µg/L	0.012
M6-PFDA	8.198	519.1 -> 474.1	42245	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	48249	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	42822	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	14953	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	27280	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	30569	2.50 µg/L	0.000
M3-PFHxS	7.301	402.1 -> 79.9	17251	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	15282	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	3195	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	4915	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	4359	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	28210	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	57307	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	20597	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	87365	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	121666	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	9543	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	10014	2.50 µg/L	0.012
13C4-PFOS	8.349	502.8 -> 79.9	19640	2.50 µg/L	0.000
13C3-PFBA	3.014	216.0 -> 172.0	101401	5.00 µg/L	0.012
18O2-PFHxS	7.313	403.0 -> 83.9	11729	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	111075	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	32641	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	44665	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	67687	2.50 µg/L	0.000

System Monitoring Compounds

13C2-4:2FTS	5.317	329.1 -> 80.9	3195	5.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.4%		
13C2-6:2FTS	6.974	429.1 -> 80.9	4915	5.70 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.9%		
13C2-8:2FTS	7.998	529.1 -> 80.9	4359	4.95 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C2-PFDoDA	9.079	615.1 -> 570.0	42822	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.6%		
13C2-PFTeDA	9.784	715.2 -> 670.0	14953	1.13 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.5%		
13C3-PFBS	5.571	302.1 -> 79.9	30569	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 107.6%		
13C3-PFHxS	7.301	402.1 -> 79.9	17251	2.72 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.6%	
13C4-PFBA	3.010	216.8 -> 171.9	256194	10.36 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C4-PFHpA	6.569	367.1 -> 322.0	83969	2.89 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.5%	
13C5-PFHxA	5.641	318.0 -> 273.0	98537	2.76 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.6%	
13C5-PFPeA	4.434	268.3 -> 223.0	41790	5.43 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.6%	
13C6-PFDA	8.198	519.1 -> 474.1	42245	1.42 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.7%	
13C7-PFUnDA	8.651	570.0 -> 525.1	48249	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.9%	
13C8-FOSA	9.682	506.1 -> 77.8	27280	2.12 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 84.6%	
13C8-PFOA	7.198	421.1 -> 376.0	107304	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.4%	
13C8-PFOS	8.348	507.1 -> 79.9	15282	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.7%	
13C9-PFNA	7.729	472.1 -> 427.0	42899	1.32 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.0%	
d3-MeFOSAA	8.256	573.2 -> 419.0	28210	5.26 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	57307	11.42 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 114.2%	
d3-MeFOSA	10.769	515.0 -> 219.0	10014	2.14 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.8%	
d5-EtFOSAA	8.452	589.2 -> 419.0	20597	4.50 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 89.9%	
d7-MeFOSE	10.678	623.2 -> 58.9	87365	20.85 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 83.4%	
d9-EtFOSE	10.923	639.2 -> 58.9	121666	22.12 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 88.5%	
d5-EtFOSA	10.989	531.1 -> 219.0	9543	2.19 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 87.8%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	3.018	212.8 -> 168.9	12777	1.62 µg/L	100
PFBS	5.572	298.7 -> 79.9	7041	0.49 µg/L	96
		298.7 -> 98.8	2404		
PFDA	8.198	512.9 -> 469.0	1808	0.05 µg/L	96
		512.9 -> 219.0	272		
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	6.569	599.0 -> 98.8				
		363.1 -> 319.0	24218	0.57 µg/L	m	98
PFHpS	7.856	363.1 -> 169.0	3666			
		449.0 -> 79.9	388	0.05 µg/L		78
PFHxA	5.644	449.0 -> 98.9	126			
		313.0 -> 269.0	24755	0.72 µg/L		98
PFHxS	7.314	313.0 -> 118.9	983			
		398.7 -> 79.9	6345	0.57 µg/L	m	96
PFNA	7.717	398.7 -> 98.9	3202			
		463.0 -> 419.0	5081	0.18 µg/L	m	98
PFNS	-	463.0 -> 219.0	1166			
		548.8 -> 79.9	-	N.D.		
PFOA	7.200	548.8 -> 98.9	-			
		413.0 -> 369.0	32772	0.66 µg/L	m	96
PFOS	8.350	413.0 -> 169.0	6325			
		498.9 -> 79.9	15723	1.82 µg/L	m	86
PFPeA	4.436	498.9 -> 98.8	6593			
		263.0 -> 219.0	28754	1.40 µg/L		100
PFPeS	6.633	349.1 -> 79.9	671	0.07 µg/L	m	90
		349.1 -> 98.9	282			
PFTeDA	-	713.1 -> 669.0	-	N.D.		
PFTrDA	-	713.1 -> 168.9	-			
		663.0 -> 619.0	-	N.D.		
PFUnDA	-	663.0 -> 168.9	-			
		563.1 -> 519.0	-	N.D.		
11Cl-PF3OUdS	-	563.1 -> 269.1	-			
		630.9 -> 450.9	-	N.D.		
9Cl-PF3ONS	-	632.9 -> 452.9	-			
		530.8 -> 351.0	-	N.D.		
ADONA	-	532.8 -> 353.0	-			
		376.9 -> 250.9	-	N.D.		
HFPO-DA	-	376.9 -> 84.8	-			
		284.9 -> 168.9	-	N.D.		
3:3FTCA	-	284.9 -> 184.9	-			
		241.0 -> 177.0	-	N.D.		
5:3FTCA	-	241.0 -> 117.0	-			
		341.0 -> 237.1	-	N.D.		
7:3FTCA	-	341.0 -> 217.0	-			
		441.0 -> 316.9	-	N.D.		
EtFOSA	-	441.0 -> 336.9	-			
		526.0 -> 219.0	-	N.D.		
EtFOSE	-	526.0 -> 169.0	-			
		630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-			
		511.9 -> 169.0	-	N.D.		
MeFOSE	-	616.1 -> 58.9	-			
		699.1 -> 79.9	-	N.D.		
PFDoDS	-	699.1 -> 98.8	-			
		295.0 -> 201.0	-	N.D.		
NFDHA	-	295.0 -> 84.9	-			
		279.0 -> 85.1	-	N.D.		
PFMBA	-	229.0 -> 84.9	-			
PFMPA	-	314.8 -> 134.9	-			
PFEESA	-	314.8 -> 82.9	-			

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

7.1.1
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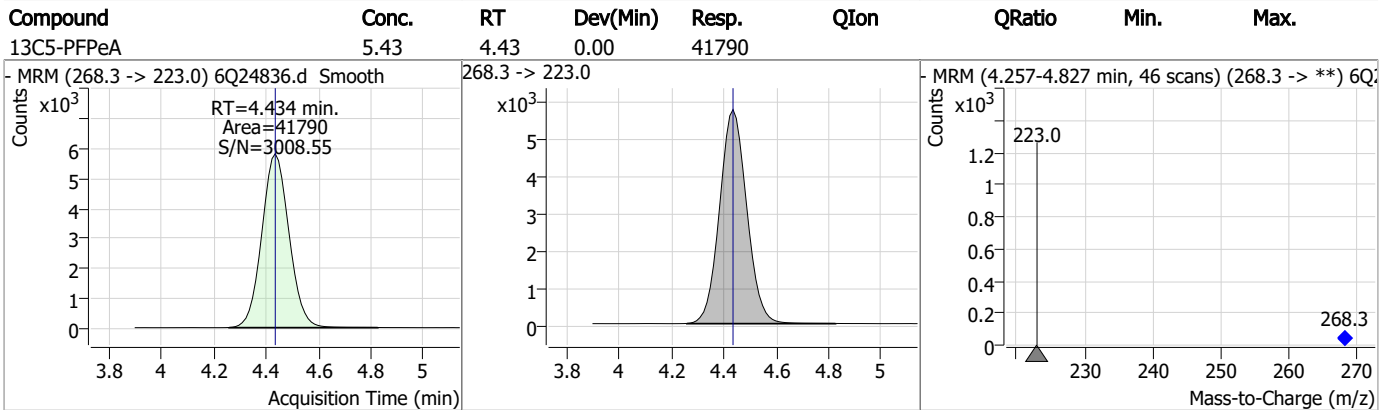
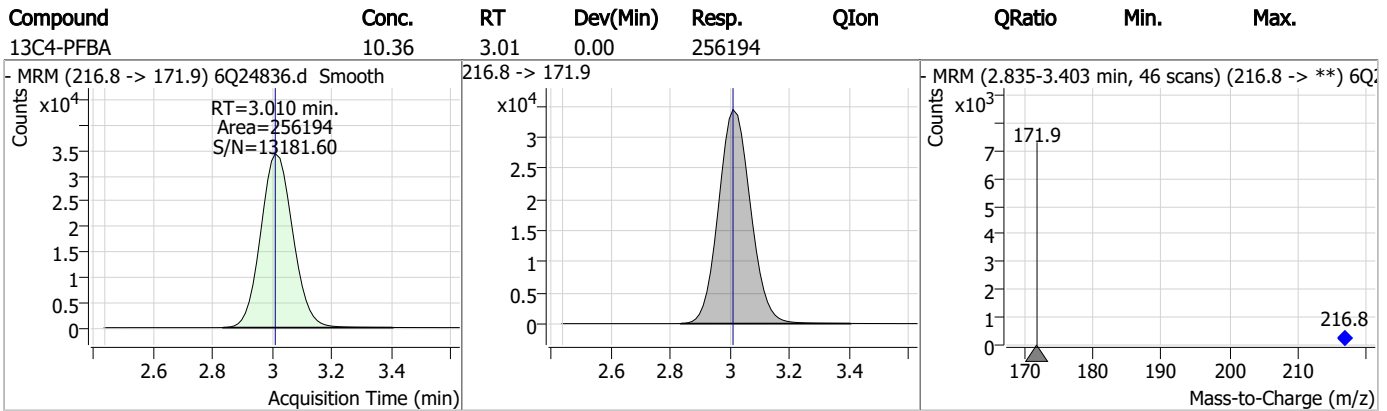
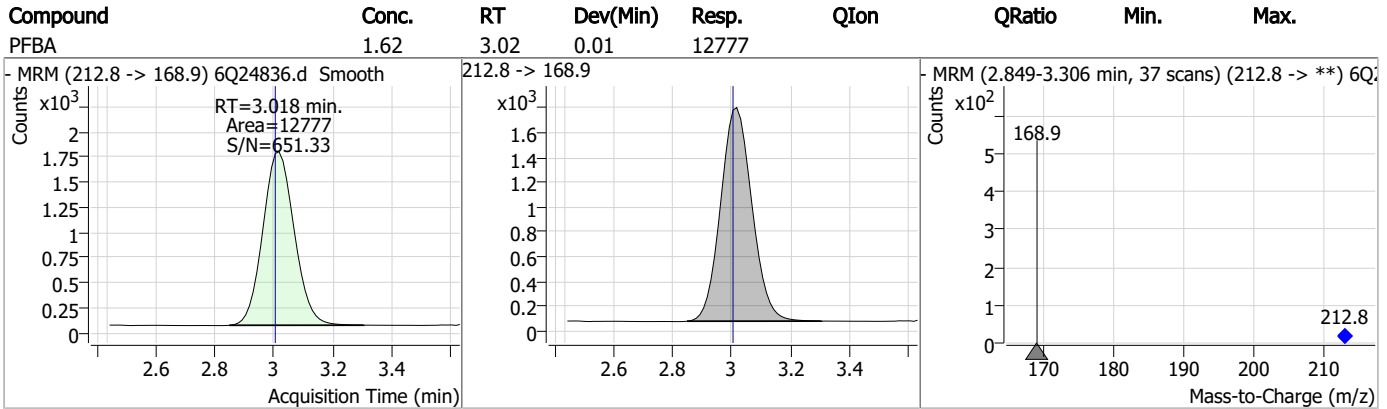
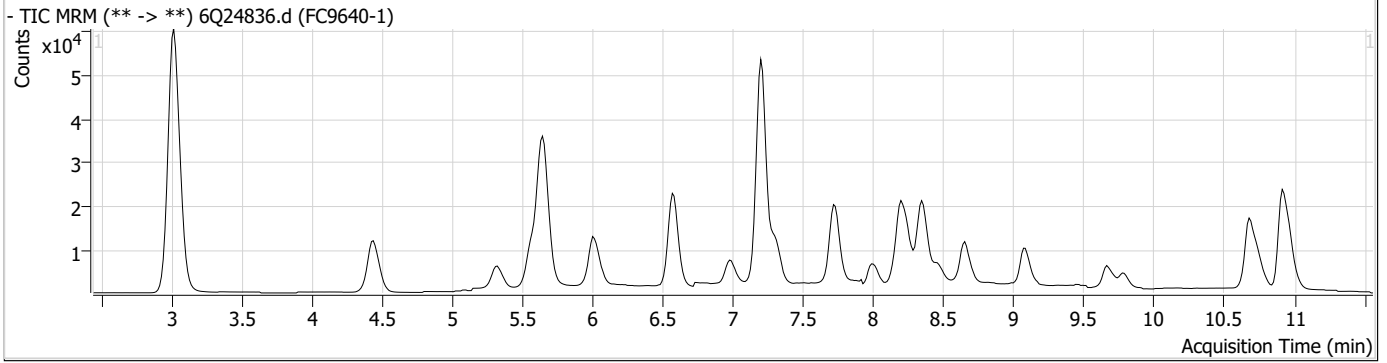
Perfluorinated Compounds by LC/MS/MS

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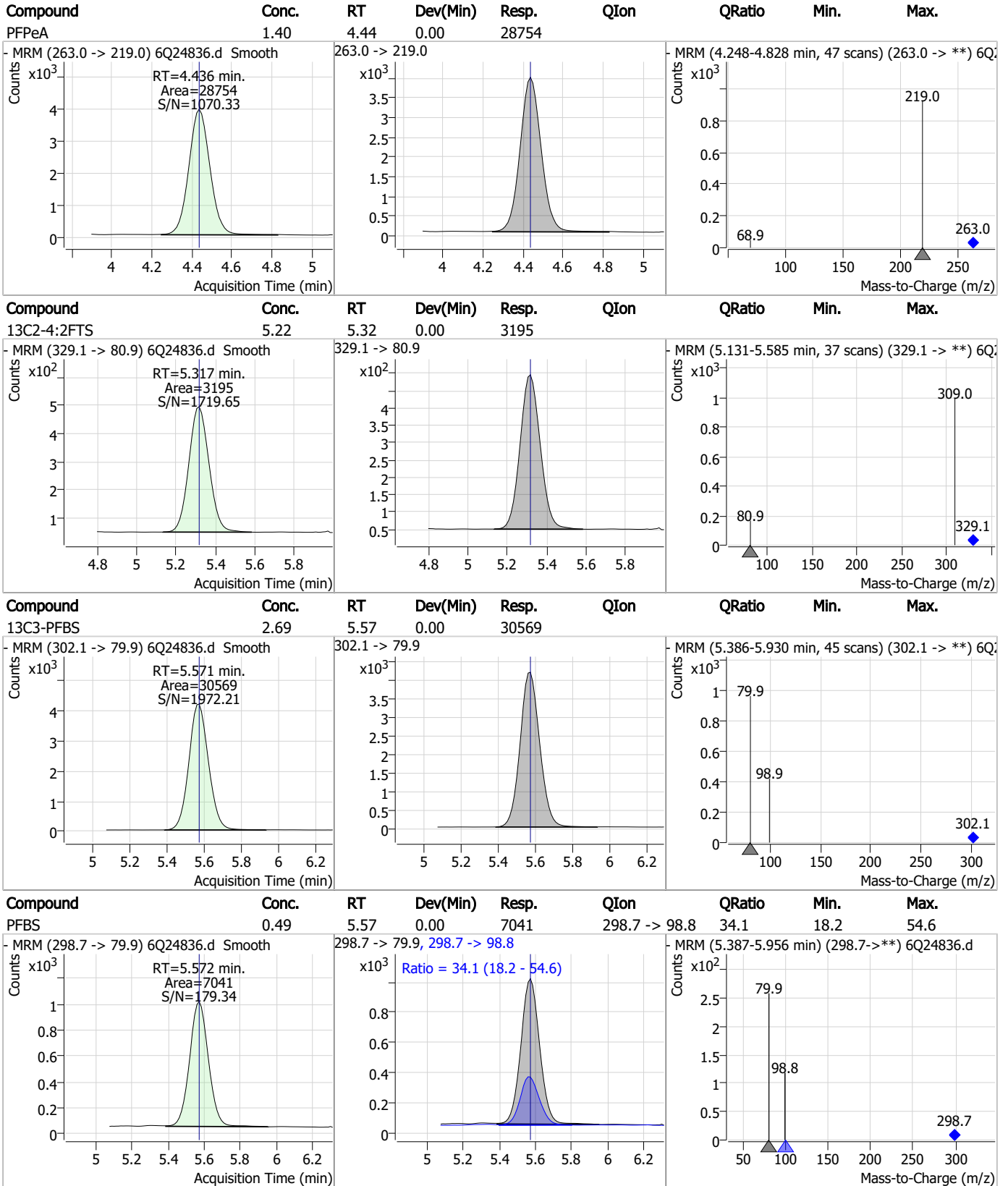
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Perfluorinated Compounds by LC/MS/MS

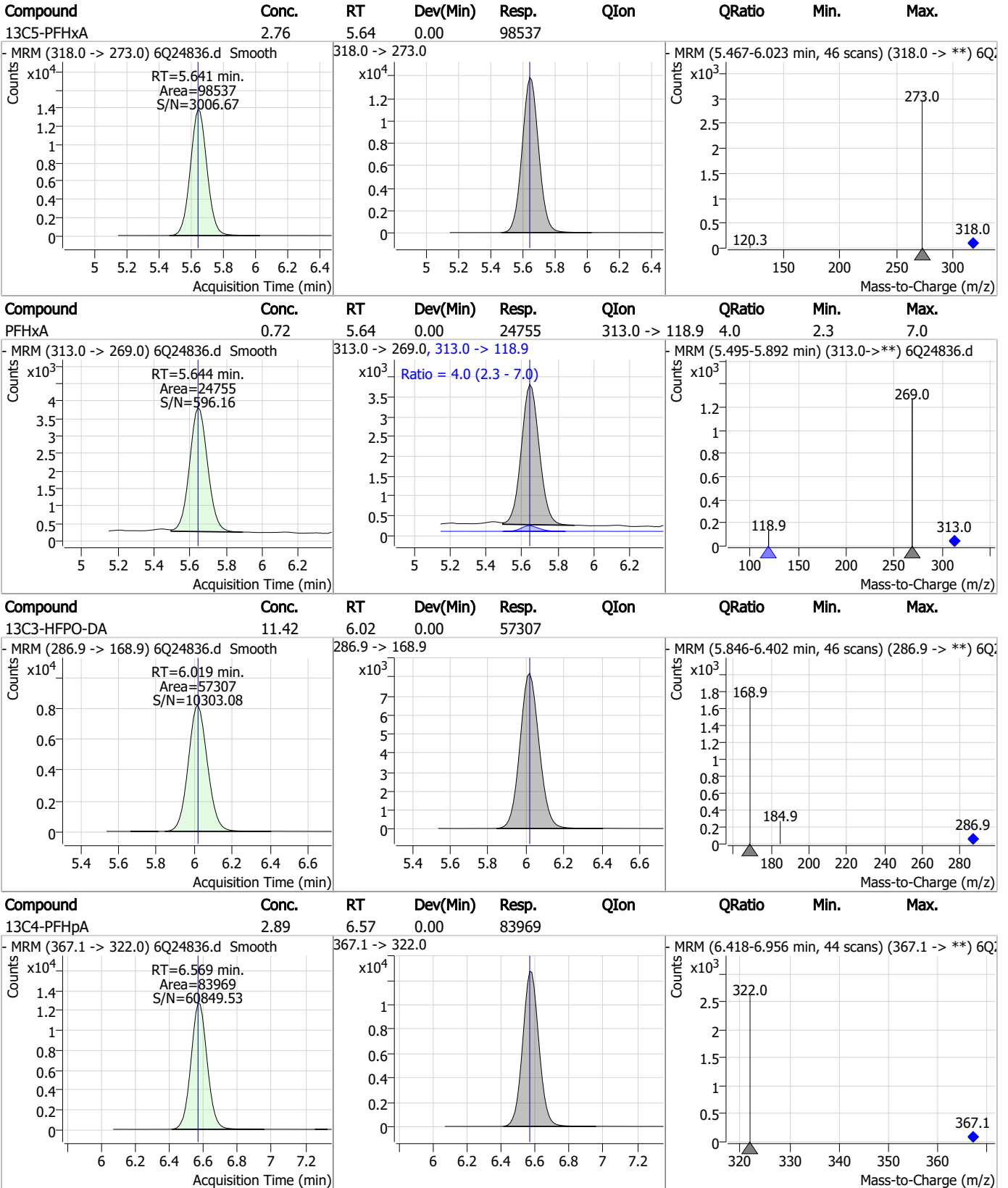


Perfluorinated Compounds by LC/MS/MS



7.1.1
7

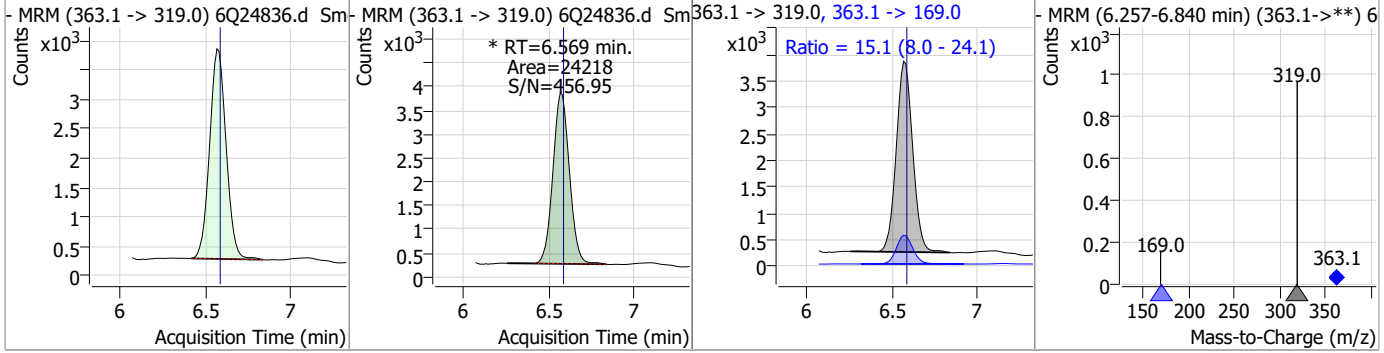
Perfluorinated Compounds by LC/MS/MS



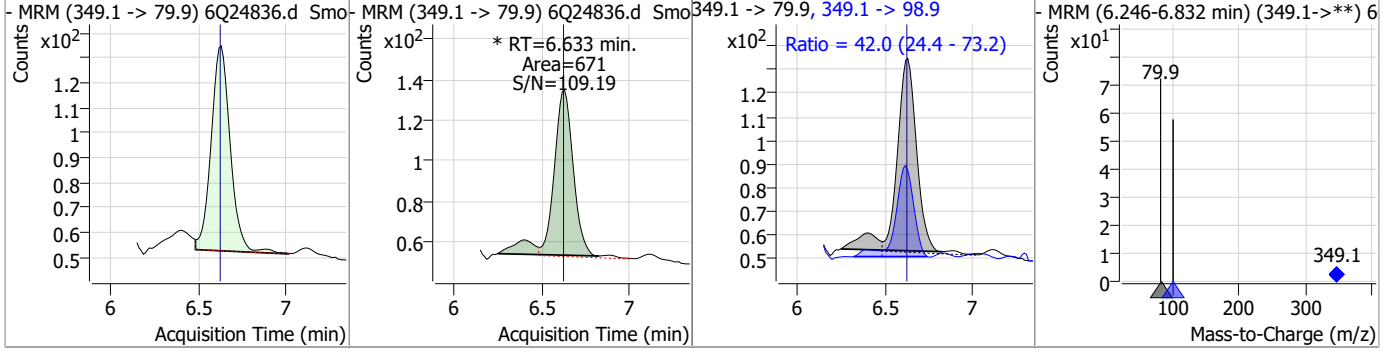
7.1.1
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Perfluorinated Compounds by LC/MS/MS

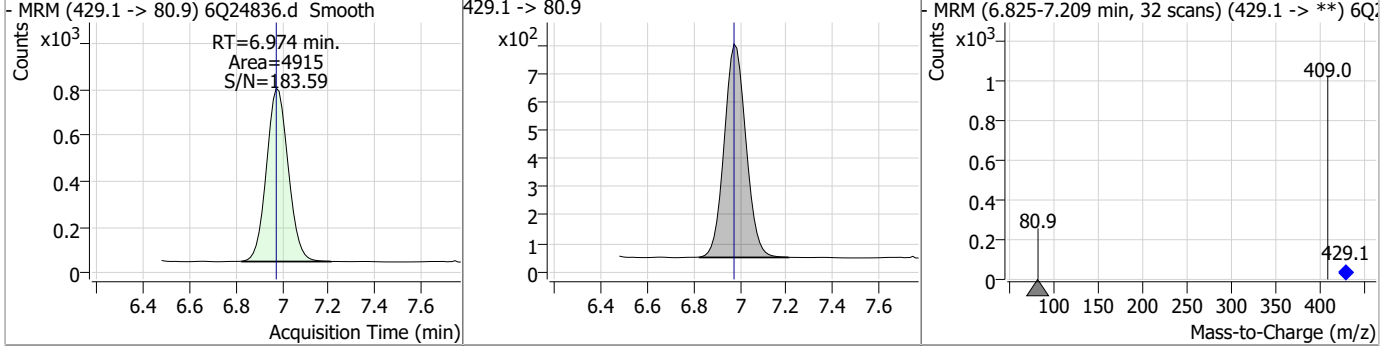
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.57	6.57	-0.01	24218 (m)	363.1 -> 169.0	15.1	8.0	24.1



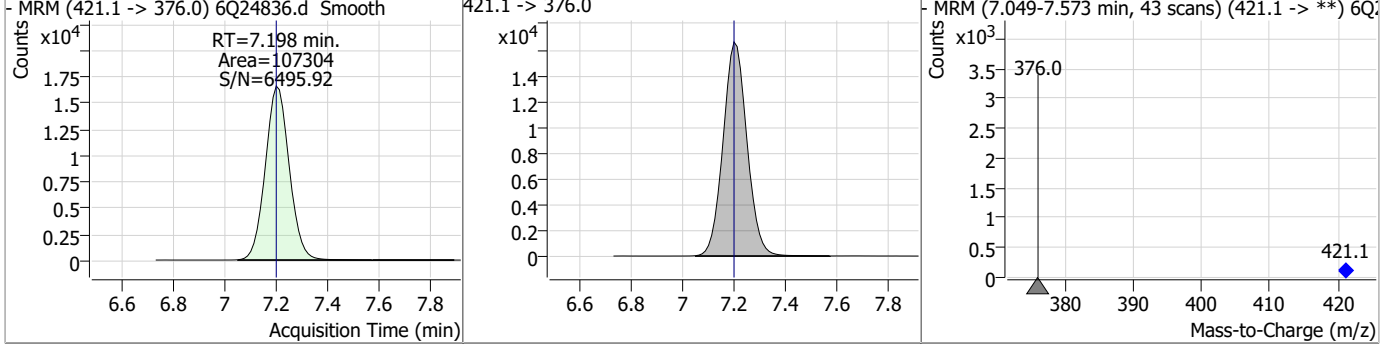
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.07	6.63	0.01	671 (m)	349.1 -> 98.9	42.0	24.4	73.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.70	6.97	0.00	4915				

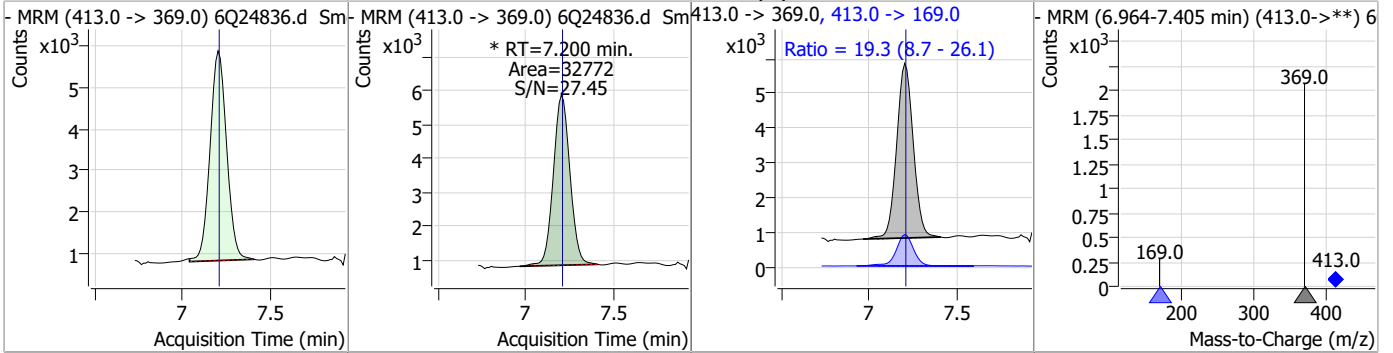


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.66	7.20	0.00	107304				

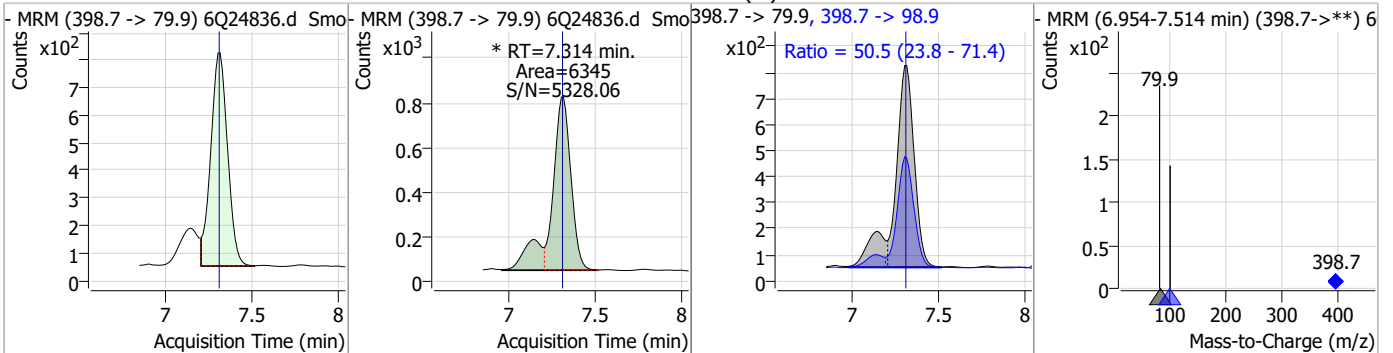


Perfluorinated Compounds by LC/MS/MS

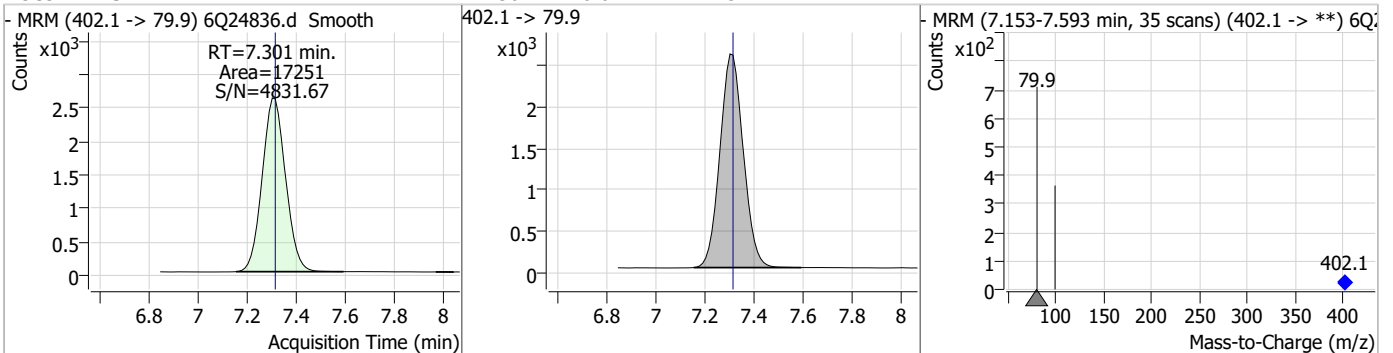
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.66	7.20	0.00	32772 (m)	413.0 -> 169.0	19.3	8.7	26.1



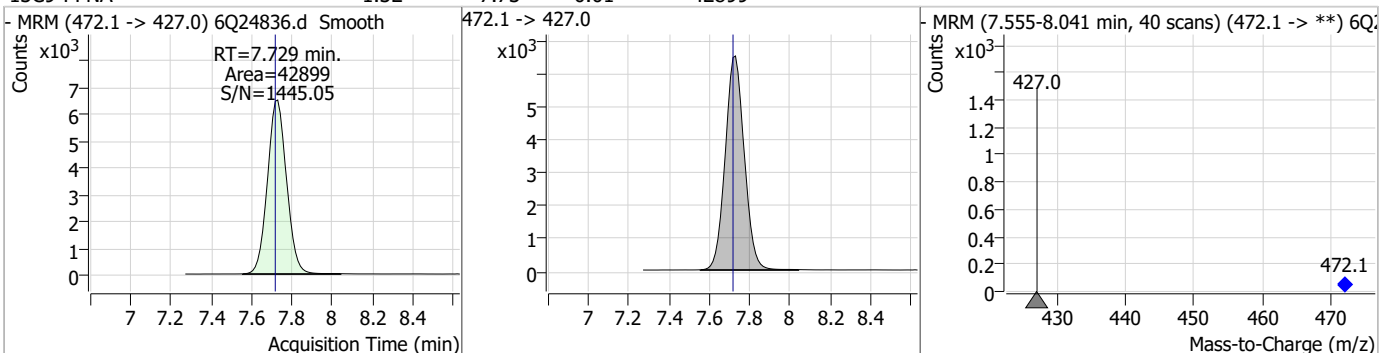
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.57	7.31	0.01	6345 (m)	398.7 -> 98.9	50.5	23.8	71.4



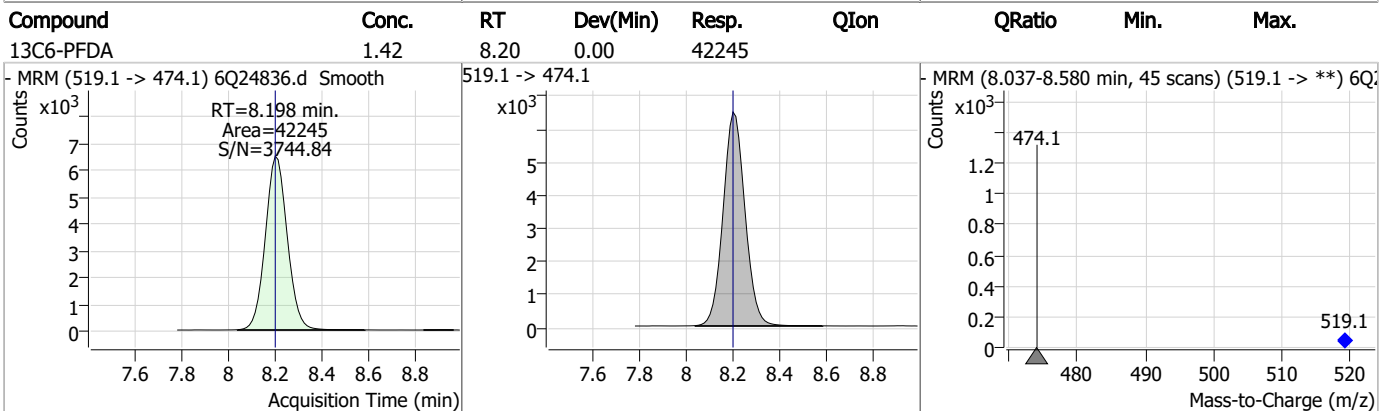
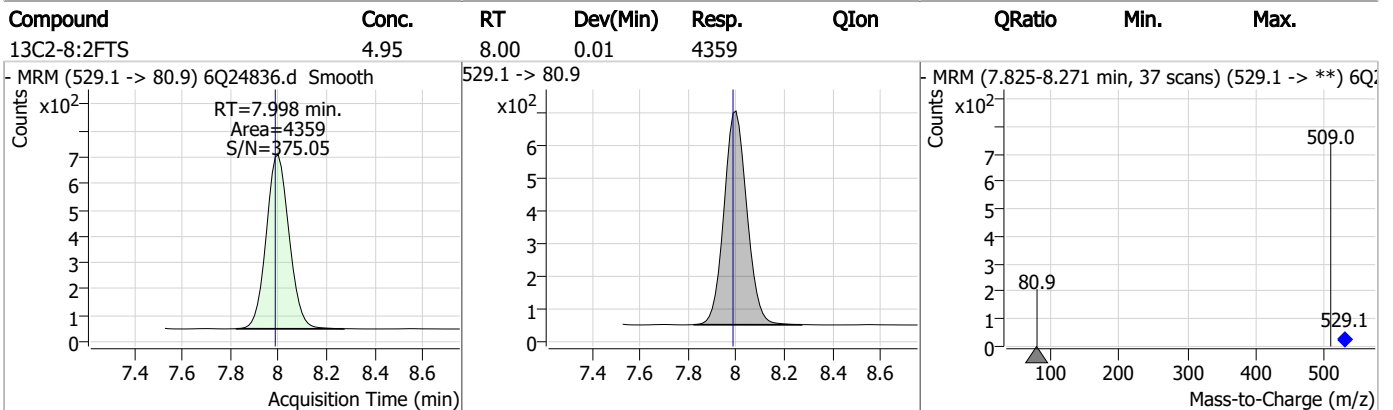
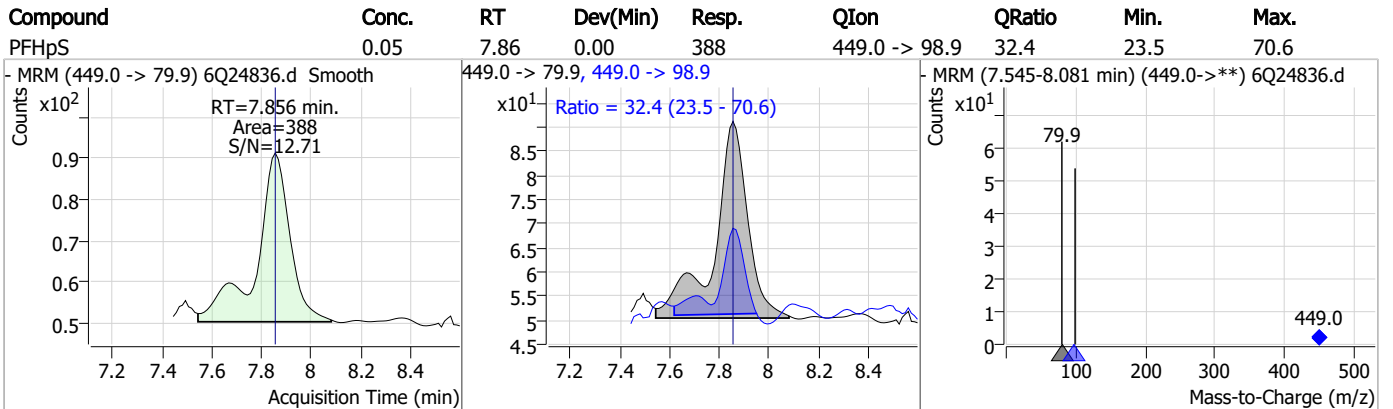
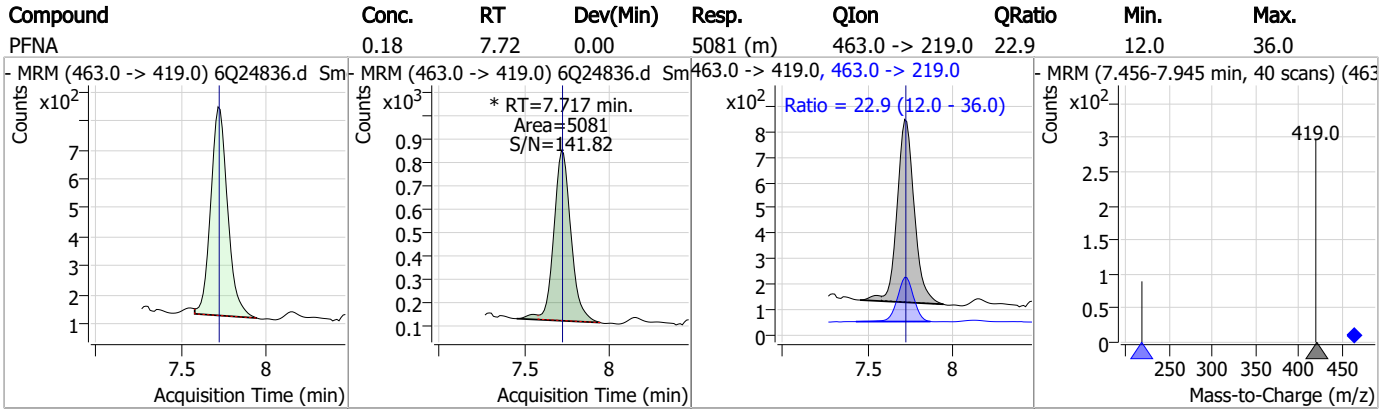
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	2.72	7.30	-0.01	17251				



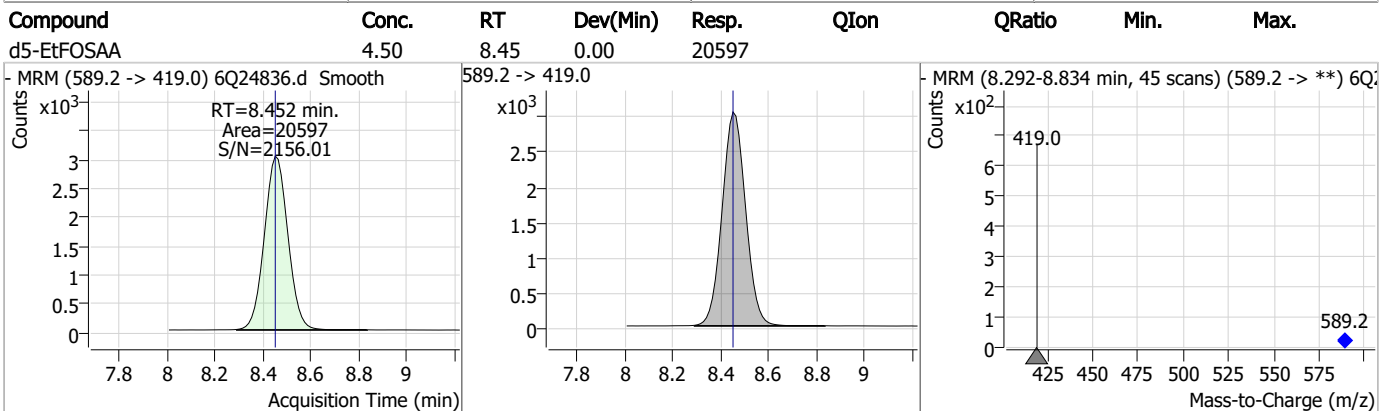
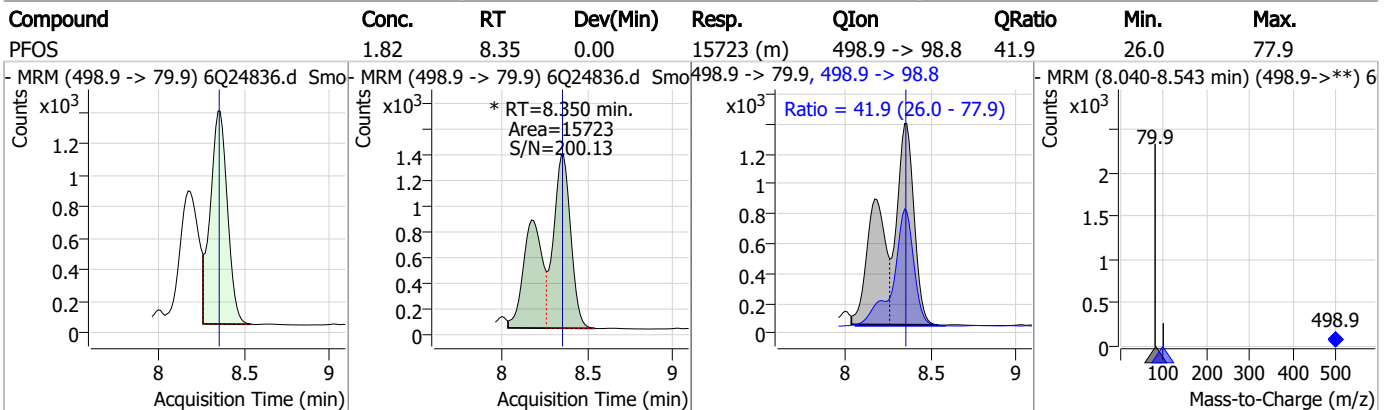
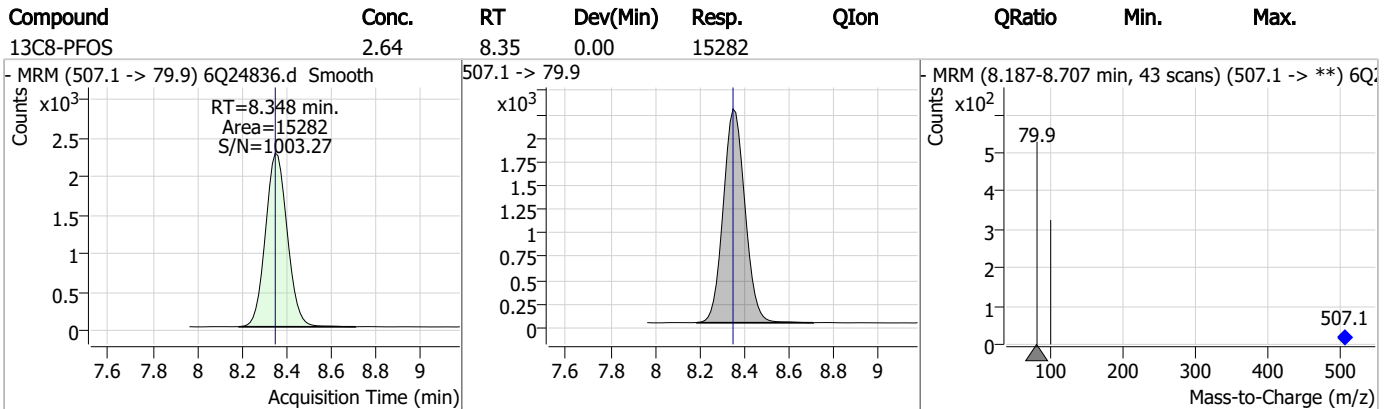
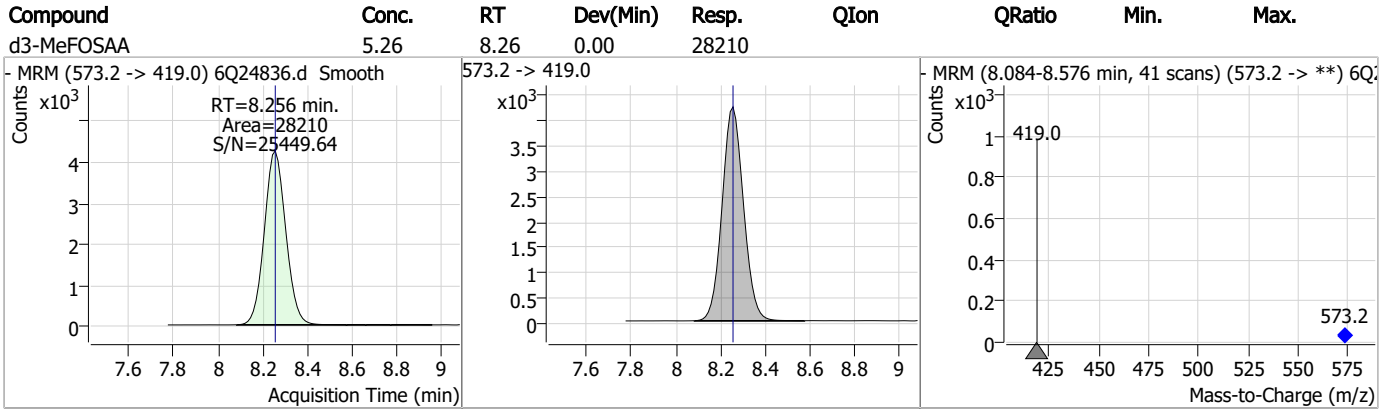
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.32	7.73	0.01	42899				



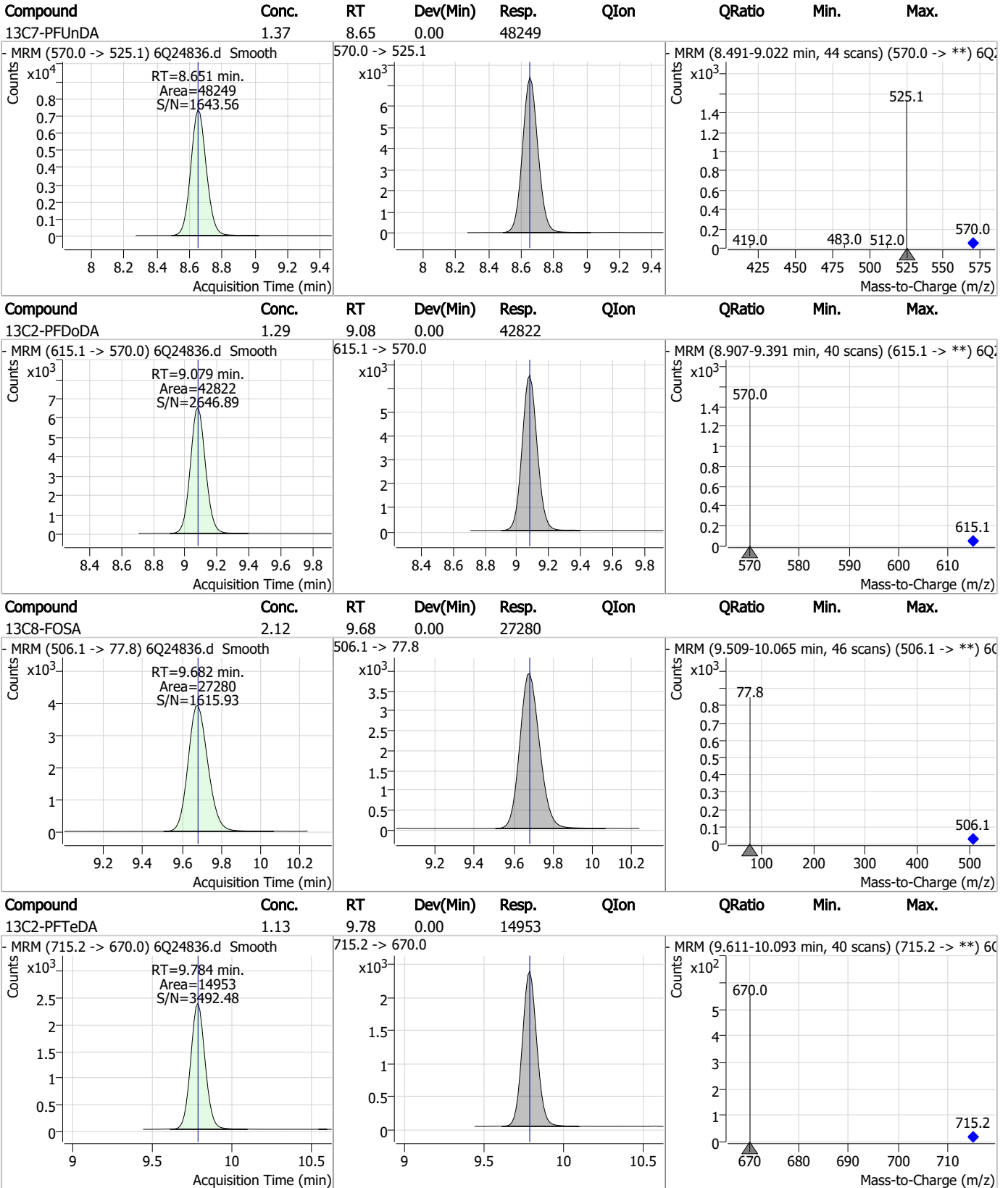
Perfluorinated Compounds by LC/MS/MS



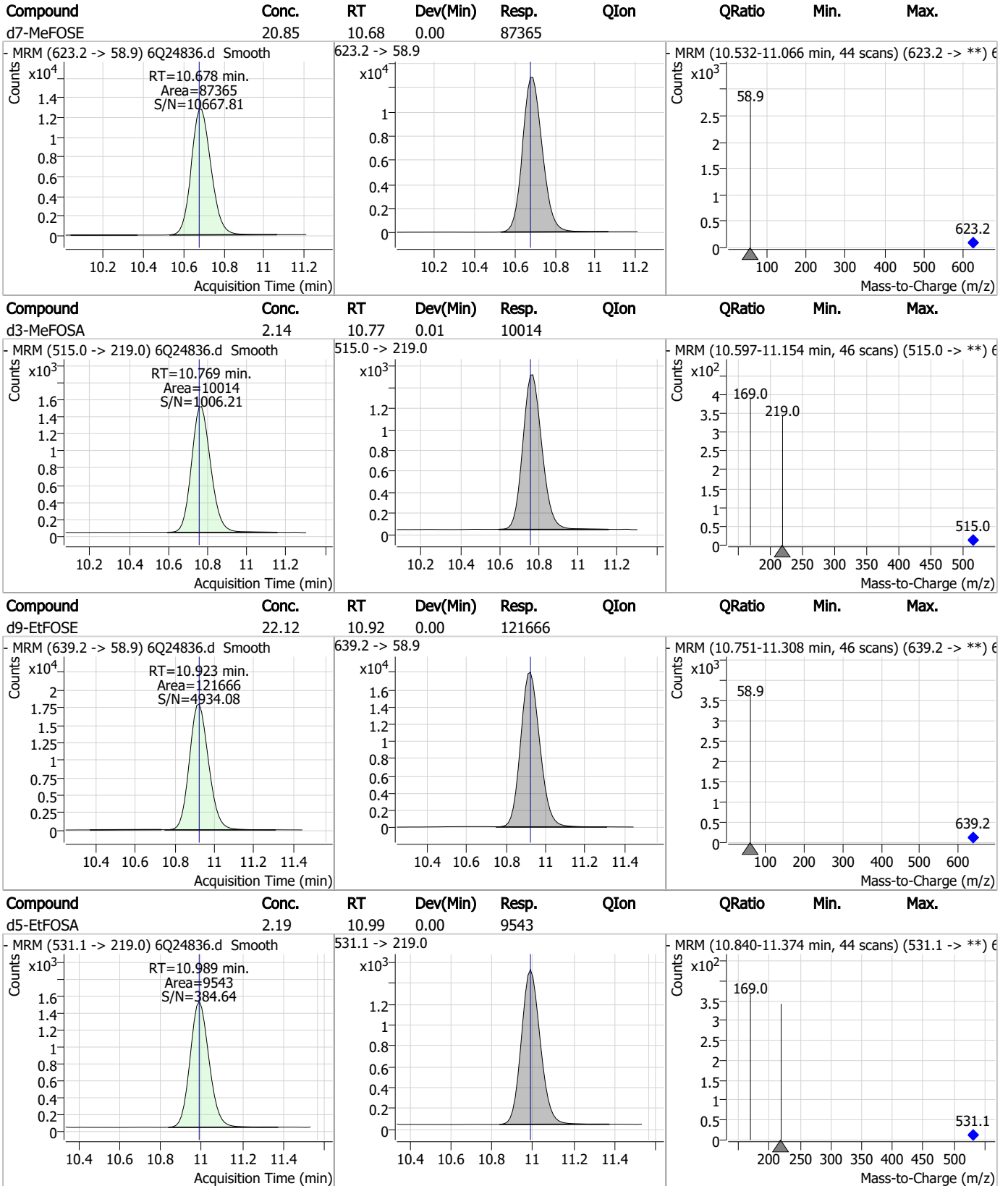
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: FC9640-1 Method: EPA DRAFT 1633
Lab FileID: 6Q24836.D Analyst approved: 09/22/23 11:10 Anna Ludwig
Injection Time: 09/22/23 02:34 Supervisor approved: 09/22/23 13:19 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.57	Split peak
Perfluoropentanesulfonic acid	2706-91-4		6.63	Split peak
Perfluorooctanoic acid	335-67-1		7.20	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.31	Split peak
Perfluorononanoic acid	375-95-1		7.72	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.1.1.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24838.d
Operator : marthav
Acq. Method : 1633full.m
Acq. Date-Time : 9/22/2023 3:02:45 AM
Sample Name : FC9640-2
Vial : P2-B4
DA Method File : 1633_092123_S6Q355.quantmethod.xml
Batch Name : s6q355.batch.bin
Sample Information : OP99077,S6Q355,550,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	273213	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	44329	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	104470	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	82200	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	112329	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	44359	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	42920	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	49667	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	43949	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	16693	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	28487	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	33772	2.50 µg/L	0.000
M3-PFHxS	7.301	402.1 -> 79.9	18322	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	16830	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	3543	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	5292	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	4627	5.00 µg/L	0.000
M3-MeFOSAA	8.256	573.2 -> 419.0	27902	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	59491	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	22417	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	93291	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	133163	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	10577	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	10447	2.50 µg/L	0.012
13C4-PFOS	8.349	502.8 -> 79.9	20276	2.50 µg/L	0.000
13C3-PFBA	3.014	216.0 -> 172.0	102318	5.00 µg/L	0.012
18O2-PFHxS	7.300	403.0 -> 83.9	12145	2.50 µg/L	0.000
13C4-PFOA	7.199	417.1 -> 372.0	113084	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	33969	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	47399	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	68825	2.50 µg/L	0.000

System Monitoring Compounds

13C2-4:2FTS	5.317	329.1 -> 80.9	3543	5.59 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.8%		
13C2-6:2FTS	6.974	429.1 -> 80.9	5292	5.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.4%		
13C2-8:2FTS	7.986	529.1 -> 80.9	4627	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C2-PFDoDA	9.079	615.1 -> 570.0	43949	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.2%		
13C2-PFTeDA	9.784	715.2 -> 670.0	16693	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C3-PFBS	5.571	302.1 -> 79.9	33772	2.87 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 114.8%		
13C3-PFHxS	7.301	402.1 -> 79.9	18322	2.79 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.4%	
13C4-PFBA	3.010	216.8 -> 171.9	273213	10.95 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C4-PFHpA	6.569	367.1 -> 322.0	82200	2.78 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 111.2%	
13C5-PFHxA	5.641	318.0 -> 273.0	104470	2.88 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.3%	
13C5-PFPeA	4.434	268.3 -> 223.0	44329	5.67 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 113.3%	
13C6-PFDA	8.198	519.1 -> 474.1	42920	1.39 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 111.0%	
13C7-PFUnDA	8.651	570.0 -> 525.1	49667	1.36 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.7%	
13C8-FOSA	9.682	506.1 -> 77.8	28487	2.14 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.6%	
13C8-PFOA	7.198	421.1 -> 376.0	112329	2.74 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.4%	
13C8-PFOS	8.348	507.1 -> 79.9	16830	2.82 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C9-PFNA	7.717	472.1 -> 427.0	44359	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.2%	
d3-MeFOSAA	8.256	573.2 -> 419.0	27902	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	59491	11.66 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 116.6%	
d3-MeFOSA	10.769	515.0 -> 219.0	10447	2.17 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 86.7%	
d5-EtFOSAA	8.452	589.2 -> 419.0	22417	4.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.8%	
d7-MeFOSE	10.678	623.2 -> 58.9	93291	21.56 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 86.2%	
d9-EtFOSE	10.923	639.2 -> 58.9	133163	23.45 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.8%	
d5-EtFOSA	10.989	531.1 -> 219.0	10577	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.3%	

Target Compounds

Compound	RT	Transition	Response	Conc. Units	QValue
4:2FTS	-	327.1 -> 307.0	-	N.D.	
		327.1 -> 80.9			
6:2FTS	-	427.1 -> 407.0	-	N.D.	
		427.1 -> 80.9			
8:2FTS	-	527.1 -> 507.0	-	N.D.	
		527.1 -> 80.8			
EtFOSAA	-	584.2 -> 419.1	-	N.D.	
		584.2 -> 526.0			
FOSA	-	498.1 -> 77.9	-	N.D.	
		498.1 -> 478.0			
MeFOSAA	-	570.1 -> 419.0	-	N.D.	
		570.1 -> 483.0			
PFBA	3.018	212.8 -> 168.9	11973	1.42 µg/L	100
PFBS	5.572	298.7 -> 79.9	6305	0.39 µg/L	95
		298.7 -> 98.8	2484		
PFDA	8.198	512.9 -> 469.0	1549	0.04 µg/L	89
		512.9 -> 219.0	186		
PFDODA	-	613.1 -> 569.0	-	N.D.	
		613.1 -> 319.0			
PFDS	9.057	599.0 -> 79.9	0	µg/L m	1



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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	0			
PFHpA	6.569	363.1 -> 319.0	23739	0.57	µg/L	m 97
		363.1 -> 169.0	3515			
PFHpS	-	449.0 -> 79.9	-	N.D.		
		449.0 -> 98.9				
PFHxA	5.644	313.0 -> 269.0	23067	0.64	µg/L	99
		313.0 -> 118.9	1123			
PFHxS	7.314	398.7 -> 79.9	5888	0.50	µg/L	m 98
		398.7 -> 98.9	2718			
PFNA	7.717	463.0 -> 419.0	4225	0.15	µg/L	m 98
		463.0 -> 219.0	1047			
PFNS	-	548.8 -> 79.9	-	N.D.		
		548.8 -> 98.9				
PFOA	7.200	413.0 -> 369.0	29486	0.57	µg/L	m 97
		413.0 -> 169.0	5559			
PFOS	8.350	498.9 -> 79.9	11880	1.25	µg/L	m 95
		498.9 -> 98.8	5754			
PFPeA	4.436	263.0 -> 219.0	26900	1.23	µg/L	100
PFPeS	6.620	349.1 -> 79.9	543	0.06	µg/L	m 85
		349.1 -> 98.9	322			
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

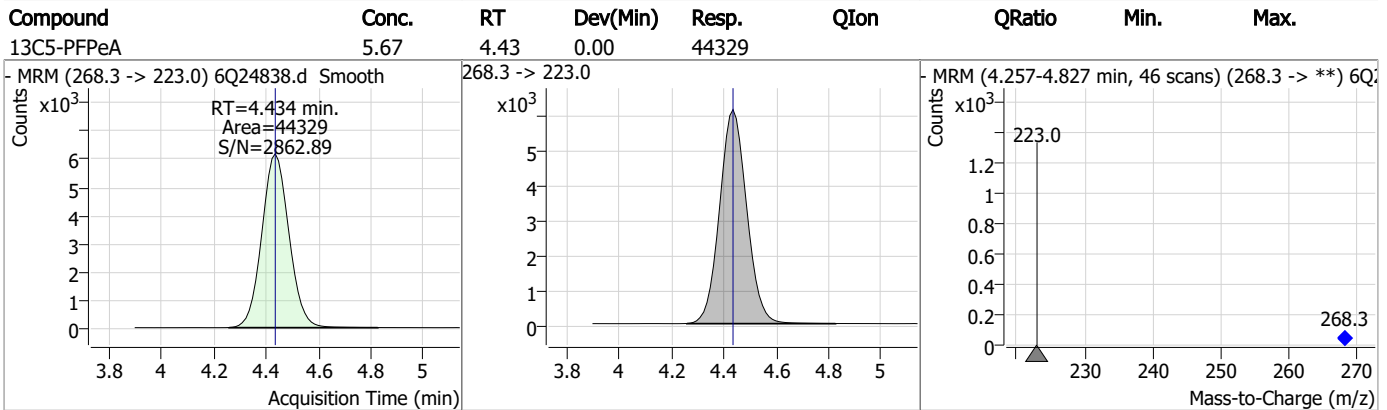
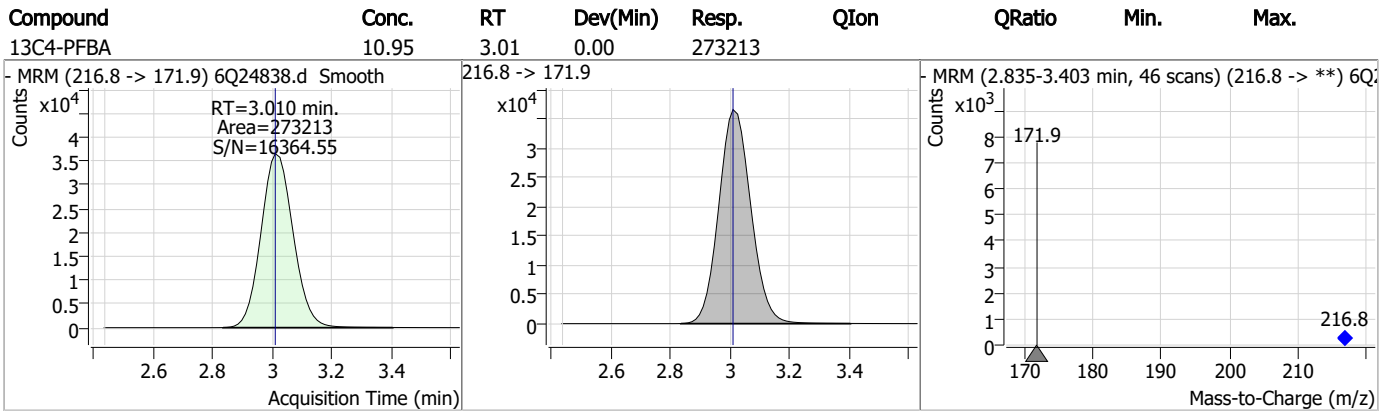
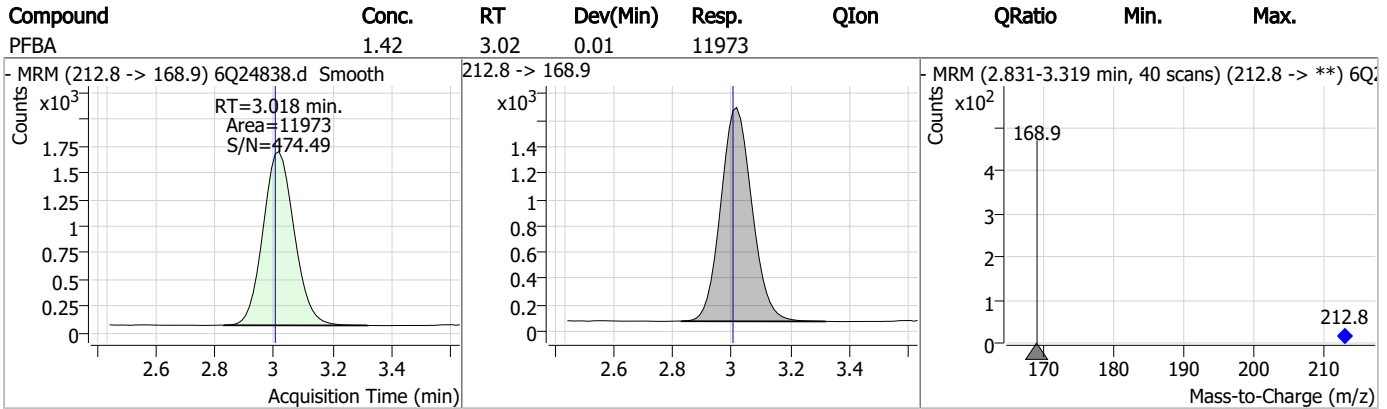
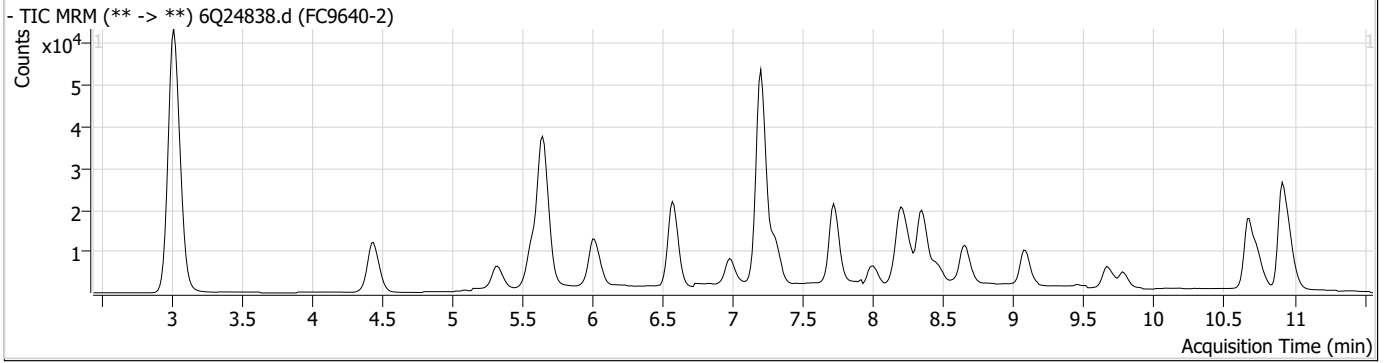
Perfluorinated Compounds by LC/MS/MS

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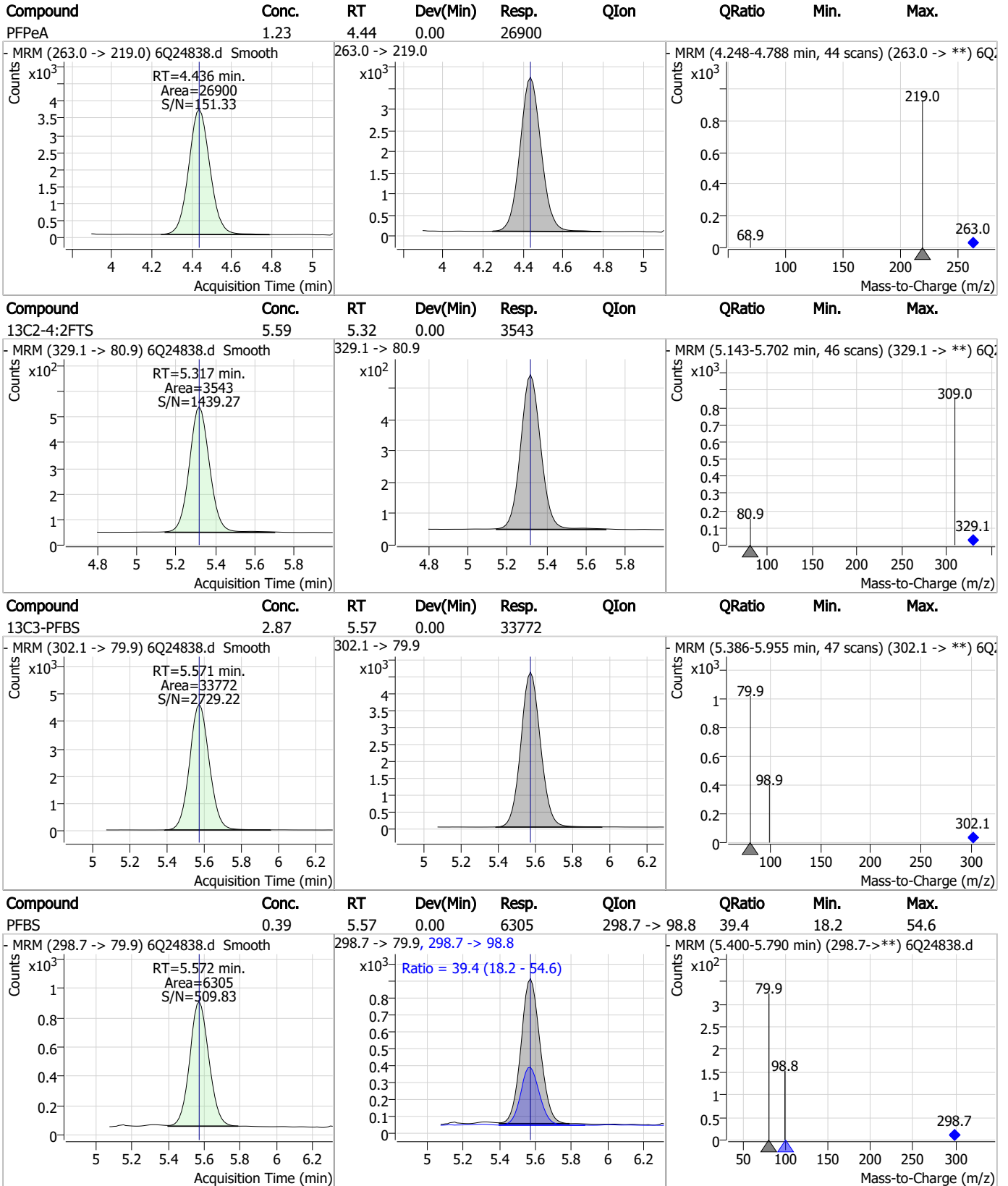
7.1.2

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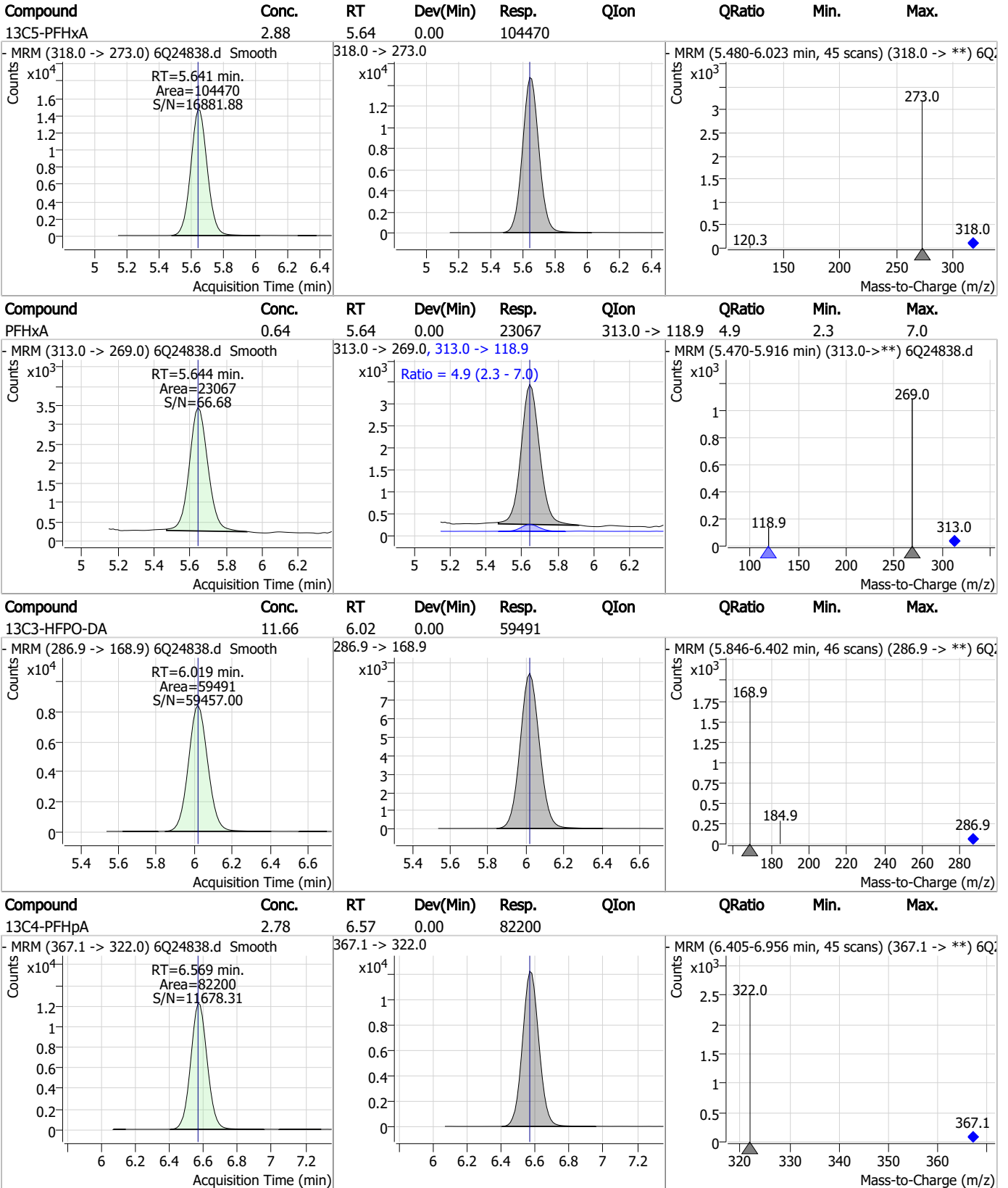
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



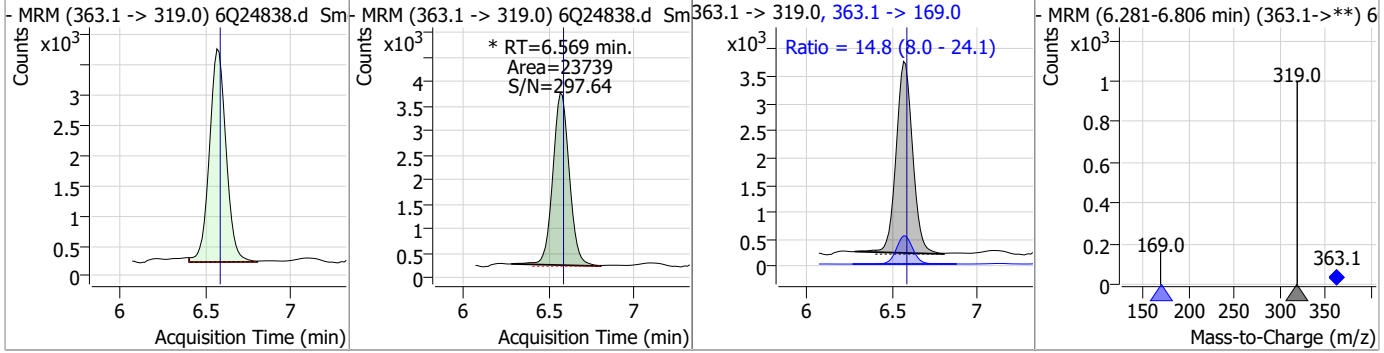
7.1.2

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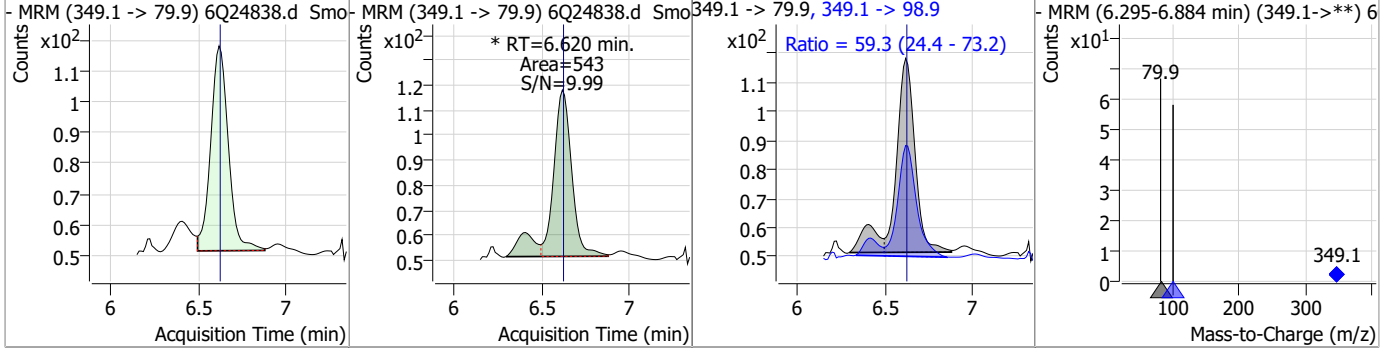


Perfluorinated Compounds by LC/MS/MS

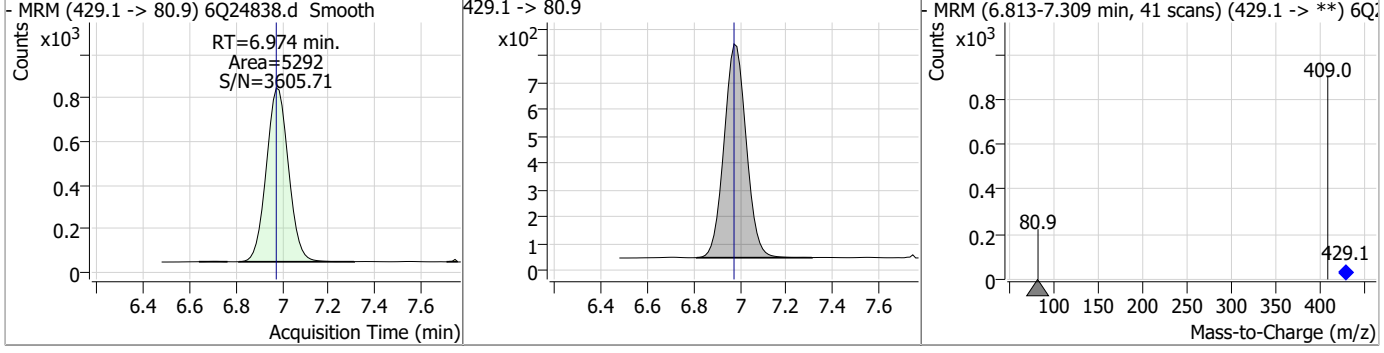
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	0.57	6.57	-0.01	23739 (m)	363.1 -> 169.0	14.8	8.0	24.1



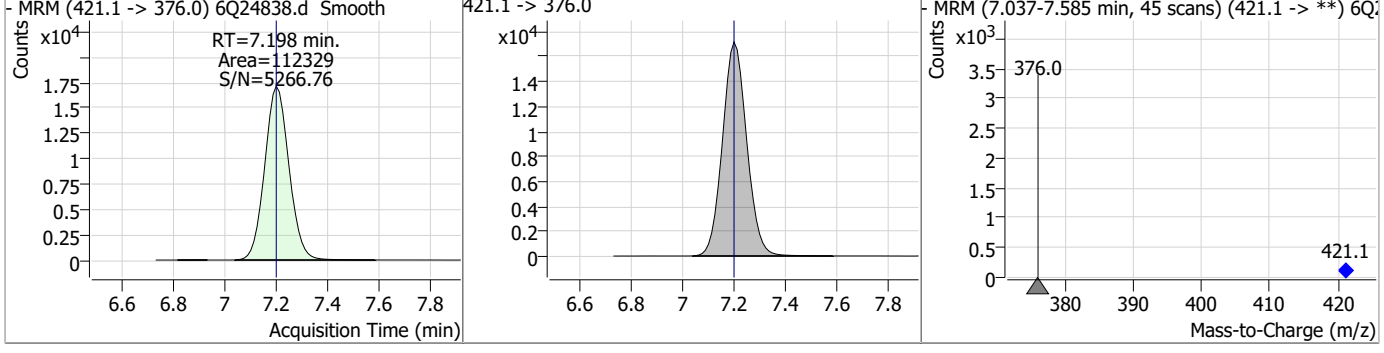
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeS	0.06	6.62	0.00	543 (m)	349.1 -> 98.9	59.3	24.4	73.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-6:2FTS	5.92	6.97	0.00	5292				



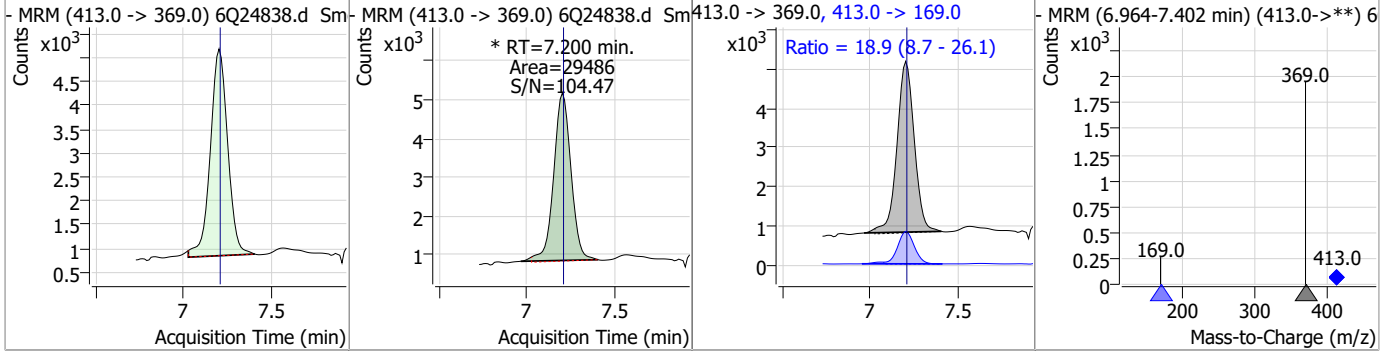
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOA	2.74	7.20	0.00	112329				



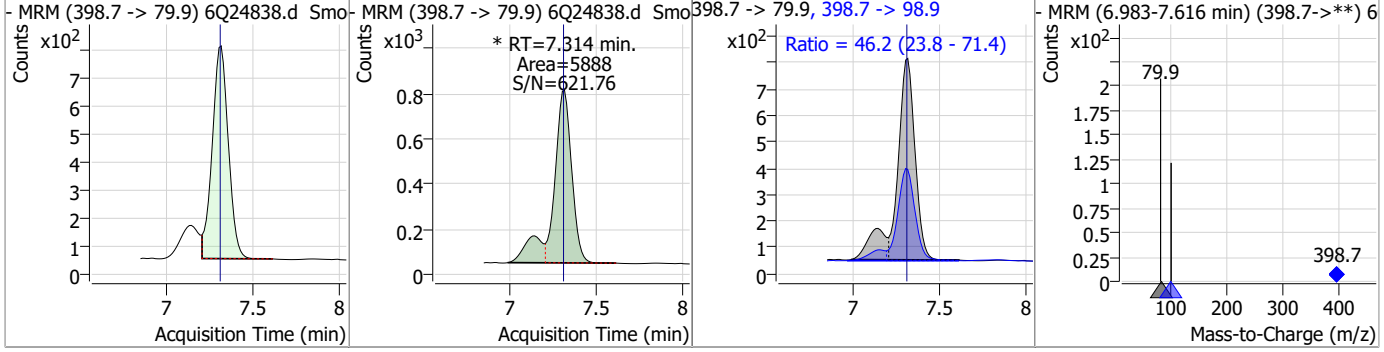
7.1.2
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Perfluorinated Compounds by LC/MS/MS

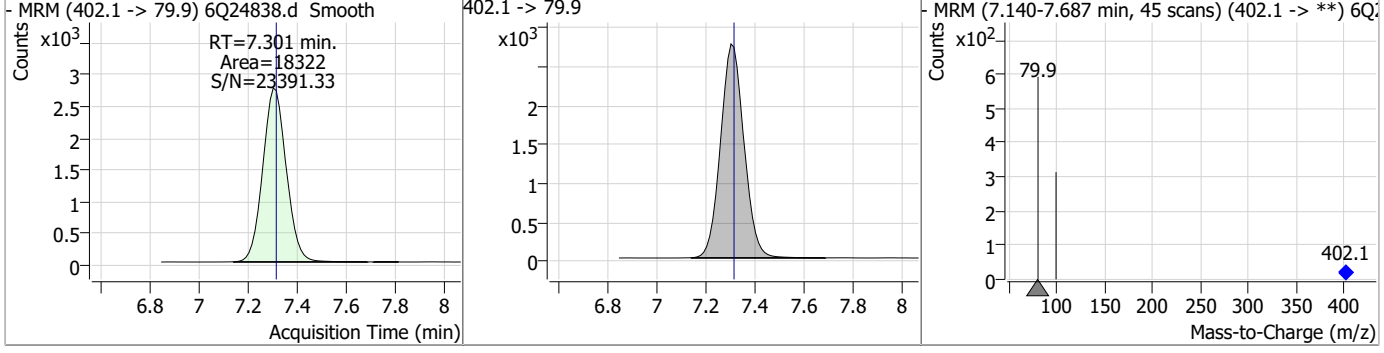
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOA	0.57	7.20	0.00	29486 (m)	413.0 -> 169.0	18.9	8.7	26.1



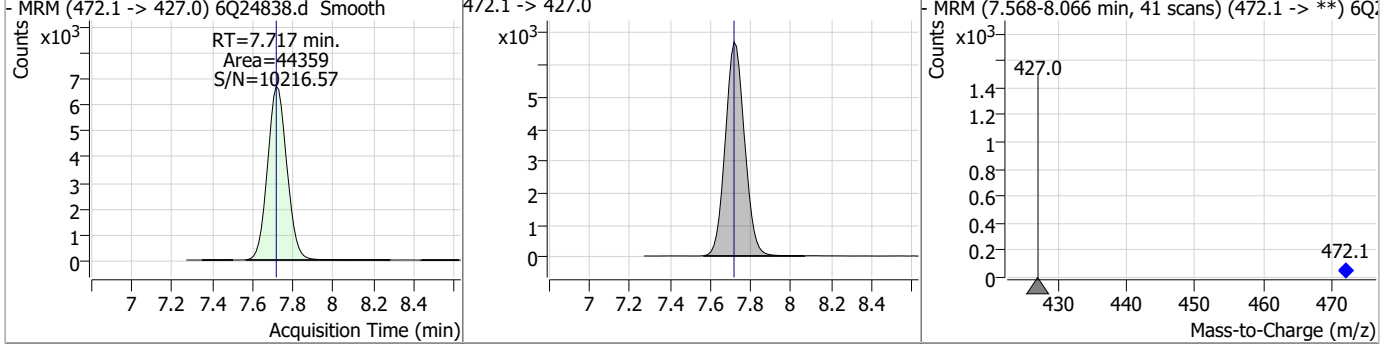
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxS	0.50	7.31	0.01	5888 (m)	398.7 -> 98.9	46.2	23.8	71.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	2.79	7.30	-0.01	18322				

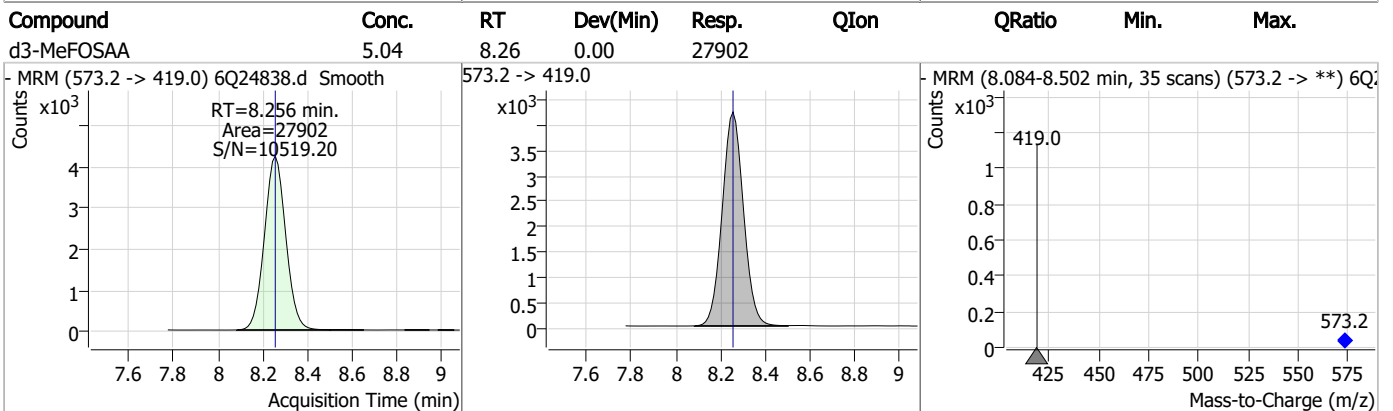
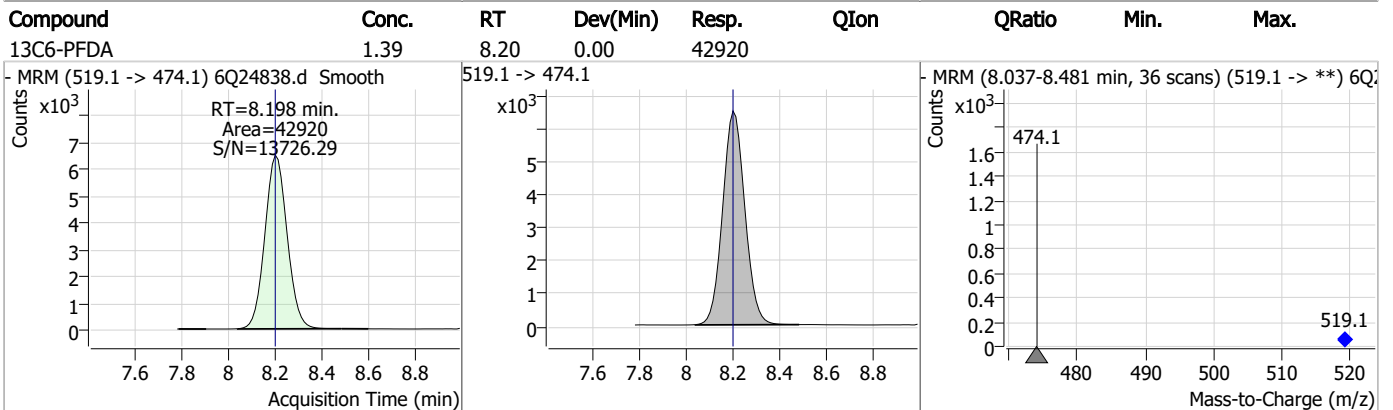
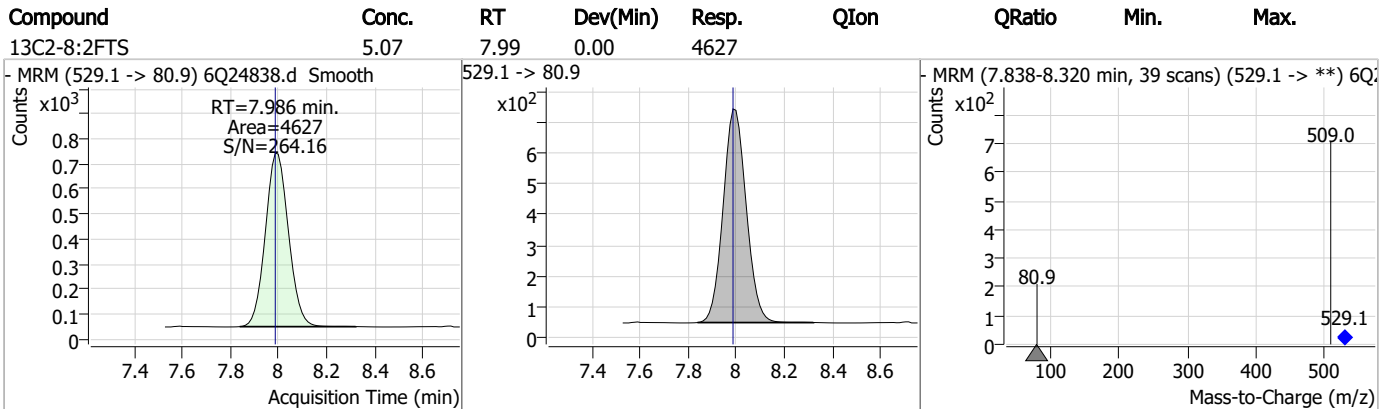
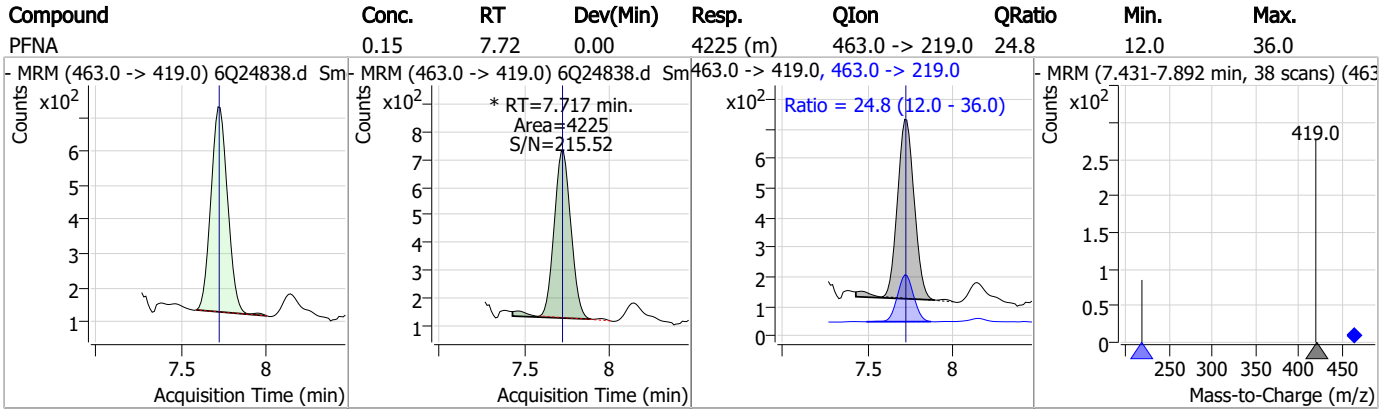


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C9-PFNA	1.29	7.72	0.00	44359				



7.12
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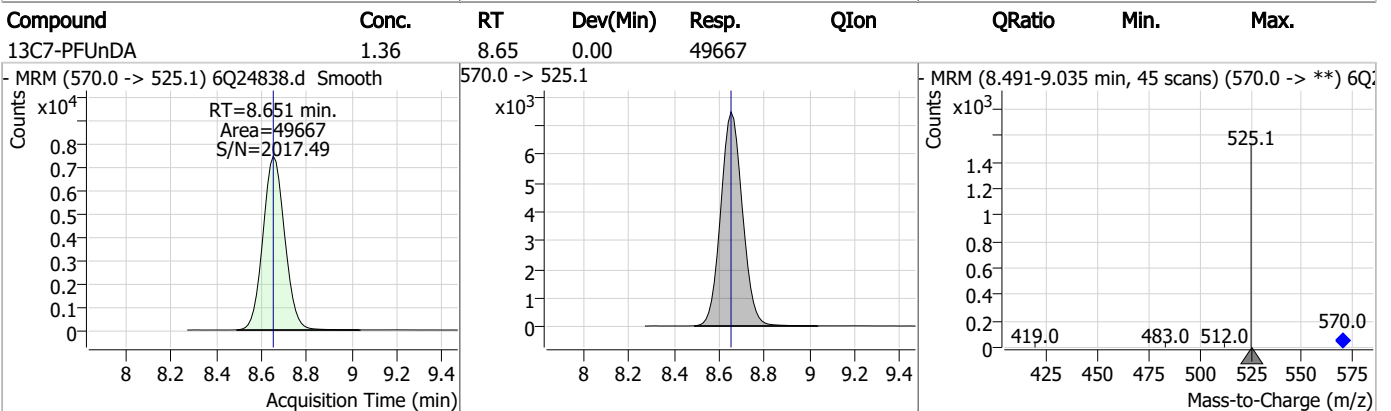
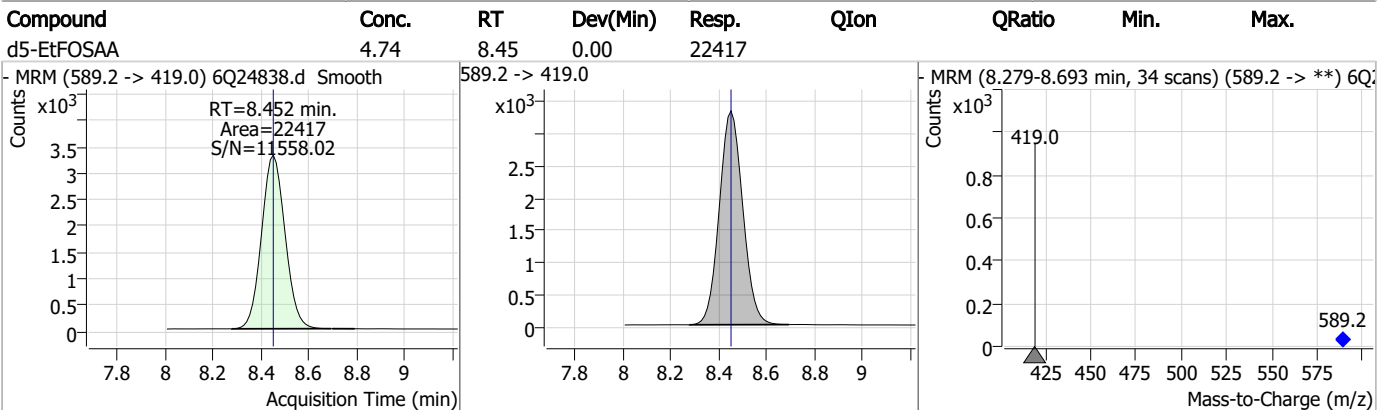
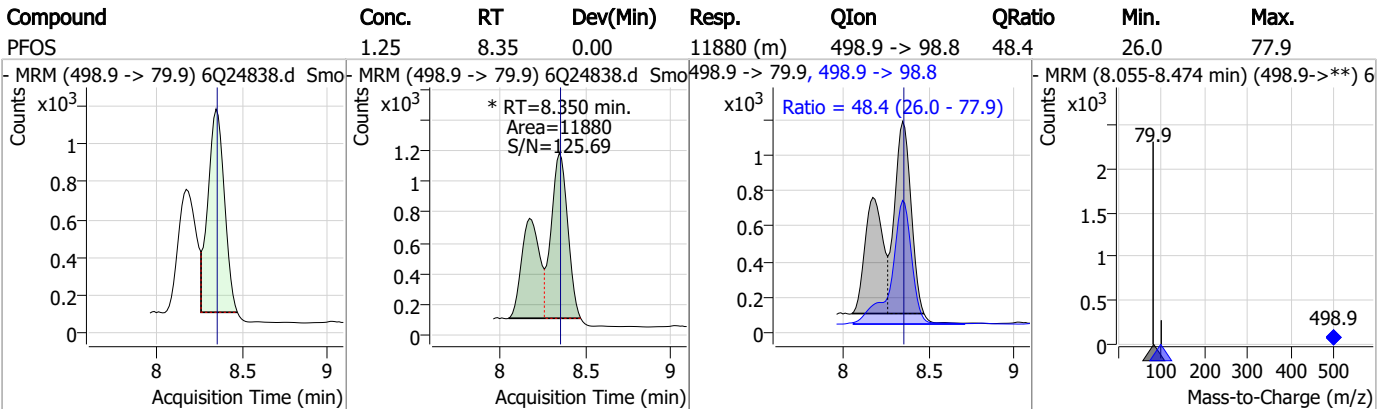
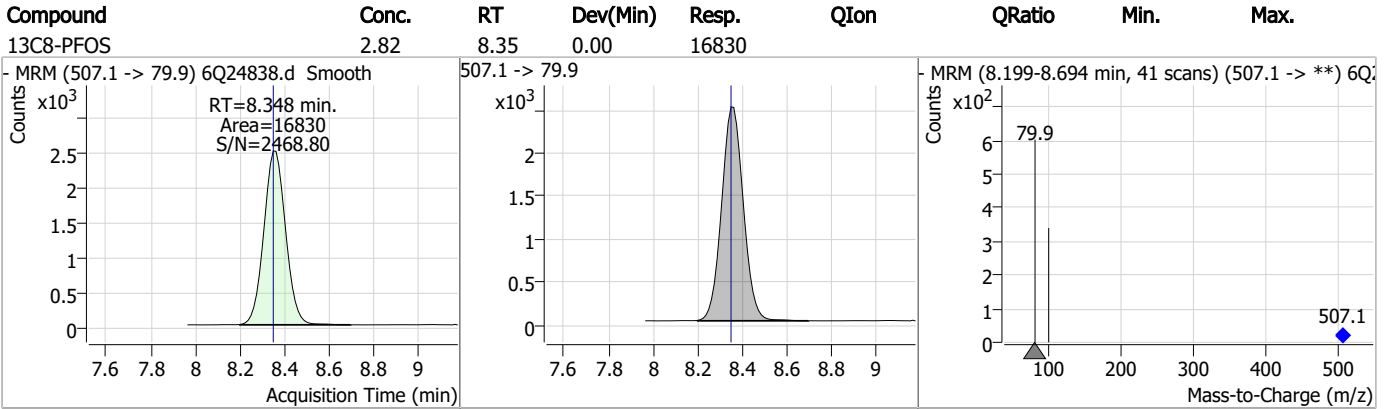
Perfluorinated Compounds by LC/MS/MS



7.1.2

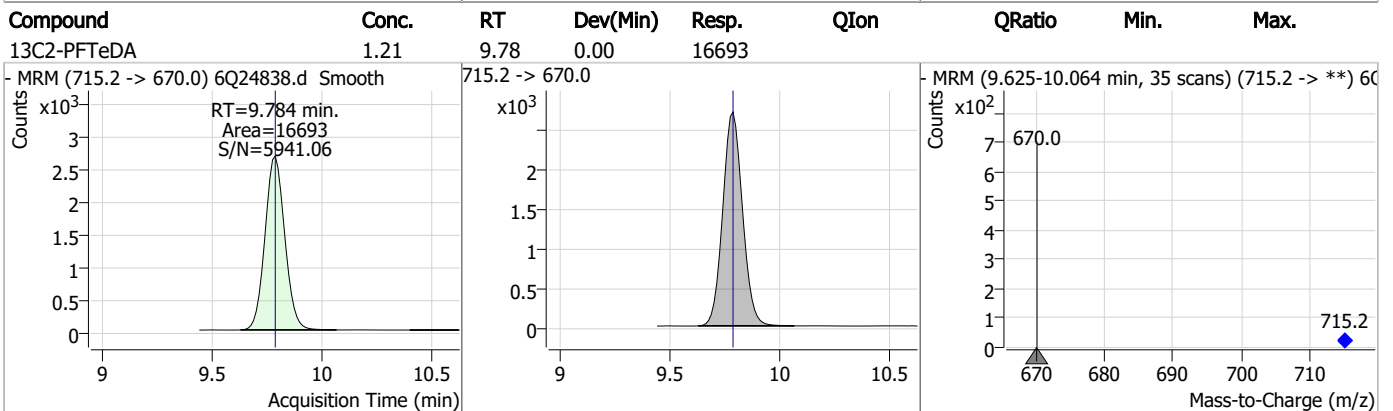
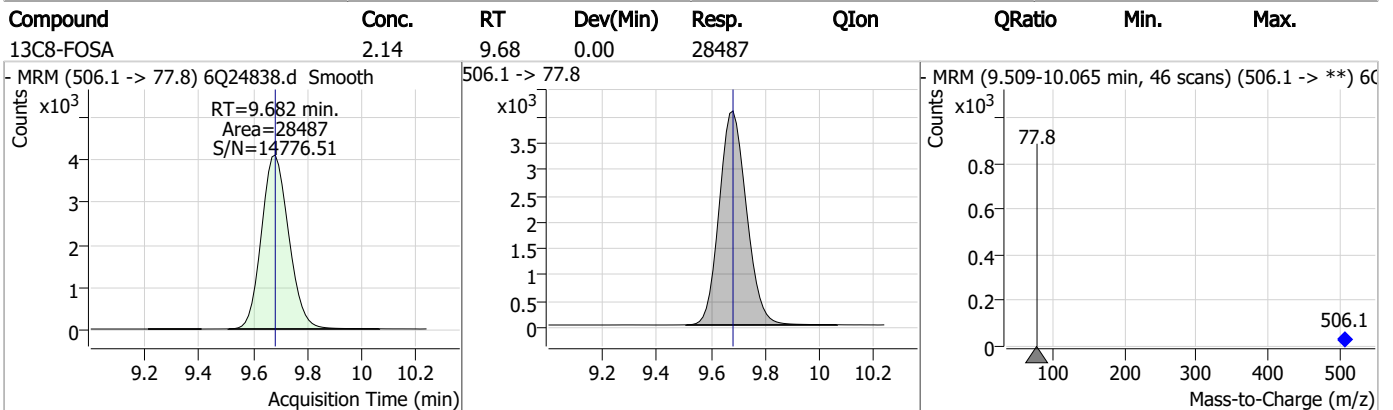
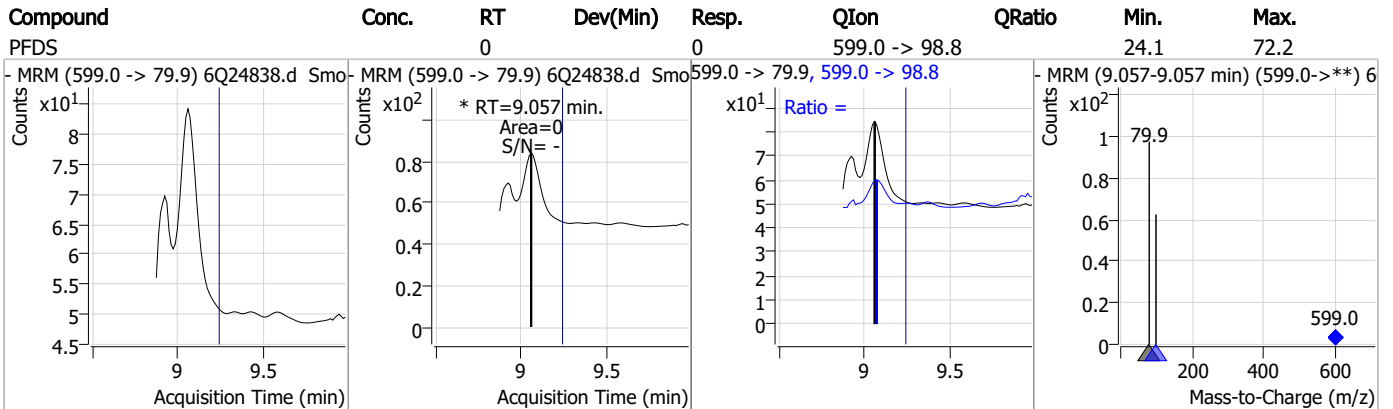
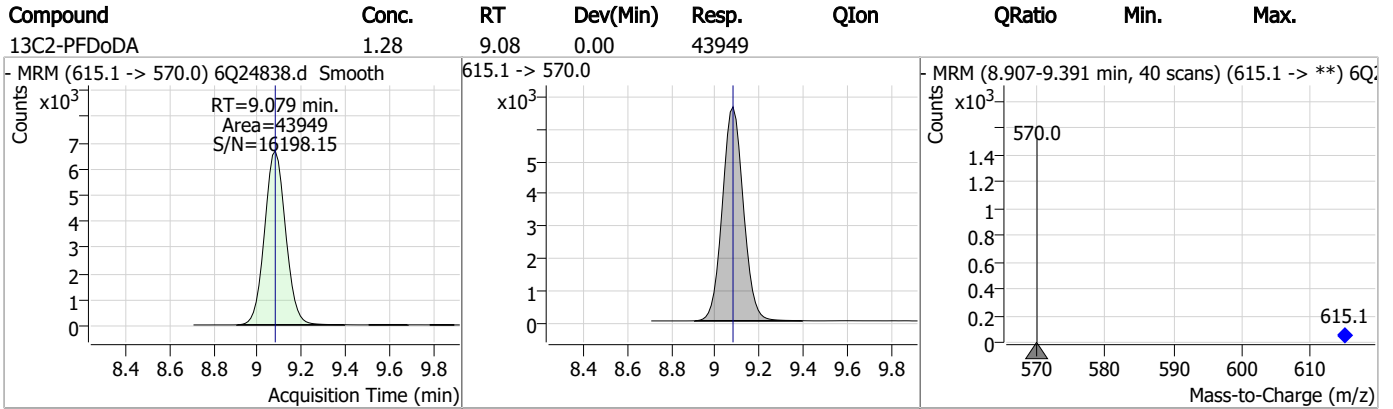
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Perfluorinated Compounds by LC/MS/MS



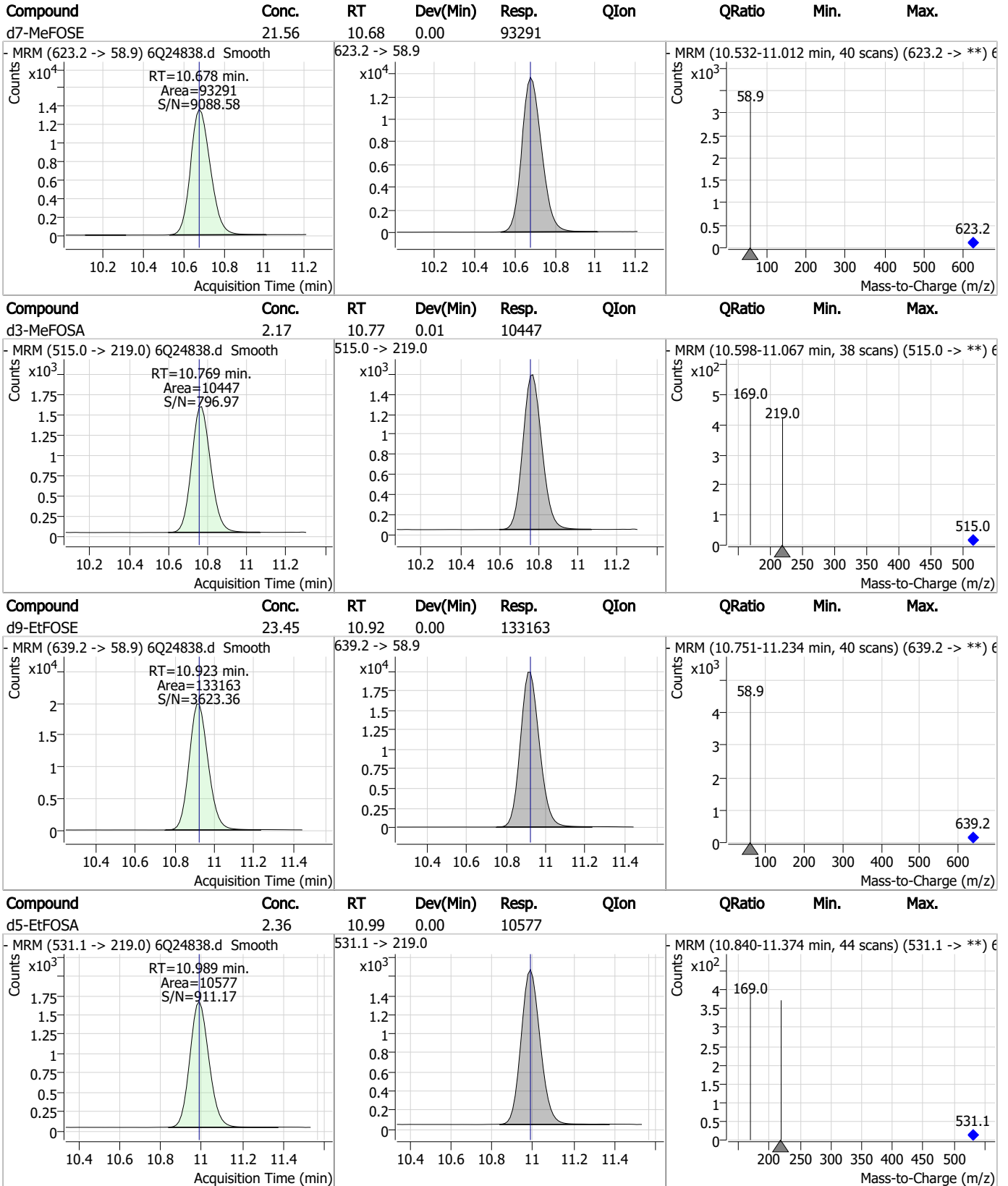
7.1.2
7

Perfluorinated Compounds by LC/MS/MS



7.1.2
7

Perfluorinated Compounds by LC/MS/MS



Manual Integration Approval Summary

Sample Number: FC9640-2 Method: EPA DRAFT 1633
Lab FileID: 6Q24838.D Analyst approved: 09/22/23 11:10 Anna Ludwig
Injection Time: 09/22/23 03:02 Supervisor approved: 09/22/23 13:19 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.57	Split peak
Perfluoropentanesulfonic acid	2706-91-4		6.62	Split peak
Perfluorooctanoic acid	335-67-1		7.20	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.31	Split peak
Perfluorononanoic acid	375-95-1		7.72	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.1.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24826.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/22/2023 12:10:50 AM
 Sample Name : OP99077-MB
 Vial : P2-A3
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99077,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	264561	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	41112	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	99597	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	76162	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	104684	2.50 µg/L	0.000
M9-PFNA	7.729	472.1 -> 427.0	40333	1.25 µg/L	0.012
M6-PFDA	8.198	519.1 -> 474.1	41909	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	49155	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	44461	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	15545	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	20553	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	30347	2.50 µg/L	0.000
M3-PFHxS	7.301	402.1 -> 79.9	16961	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	15599	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	3536	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	5173	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	4928	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	28623	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	56969	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	22979	5.00 µg/L	0.000
M7-MeFOSE	10.690	623.2 -> 58.9	68967	25.00 µg/L	0.012
M9-EtFOSE	10.923	639.2 -> 58.9	105398	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	8664	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	8320	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	17795	2.50 µg/L	0.000
13C3-PFBA	3.014	216.0 -> 172.0	96592	5.00 µg/L	0.012
18O2-PFHxS	7.313	403.0 -> 83.9	11249	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	106145	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	32423	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	43201	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	64196	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	3536	6.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.5%		
13C2-6:2FTS	6.974	429.1 -> 80.9	5173	6.25 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 125.0%		
13C2-8:2FTS	7.998	529.1 -> 80.9	4928	5.83 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.7%		
13C2-PFDoDA	9.079	615.1 -> 570.0	44461	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 108.3%		
13C2-PFTeDA	9.784	715.2 -> 670.0	15545	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.8%		
13C3-PFBS	5.571	302.1 -> 79.9	30347	2.79 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 111.4%		
13C3-PFHxS	7.301	402.1 -> 79.9	16961	2.78 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 = 111.4%	
13C4-PFBA	3.010	216.8 -> 171.9	264561	11.23 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.3%	
13C4-PFHpA	6.569	367.1 -> 322.0	76162	2.76 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.5%	
13C5-PFHxA	5.641	318.0 -> 273.0	99597	2.95 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 117.8%	
13C5-PFPeA	4.434	268.3 -> 223.0	41112	5.63 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C6-PFDA	8.198	519.1 -> 474.1	41909	1.42 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.6%	
13C7-PFUnDA	8.651	570.0 -> 525.1	49155	1.41 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 112.7%	
13C8-FOSA	9.682	506.1 -> 77.8	20553	1.76 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 70.4%	
13C8-PFOA	7.198	421.1 -> 376.0	104684	2.72 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.7%	
13C8-PFOS	8.348	507.1 -> 79.9	15599	2.98 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 119.0%	
13C9-PFNA	7.729	472.1 -> 427.0	40333	1.29 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.0%	
d3-MeFOSAA	8.256	573.2 -> 419.0	28623	5.89 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 117.8%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	56969	11.97 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 119.7%	
d3-MeFOSA	10.757	515.0 -> 219.0	8320	1.97 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 78.7%	
d5-EtFOSAA	8.452	589.2 -> 419.0	22979	5.54 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.7%	
d7-MeFOSE	10.690	623.2 -> 58.9	68967	18.16 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 72.6%	
d9-EtFOSE	10.923	639.2 -> 58.9	105398	21.15 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 84.6%	
d5-EtFOSA	10.989	531.1 -> 219.0	8664	2.20 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 88.0%	

Target Compounds

QValue

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



7.2.1
7

Perfluorinated Compounds by LC/MS/MS

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

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

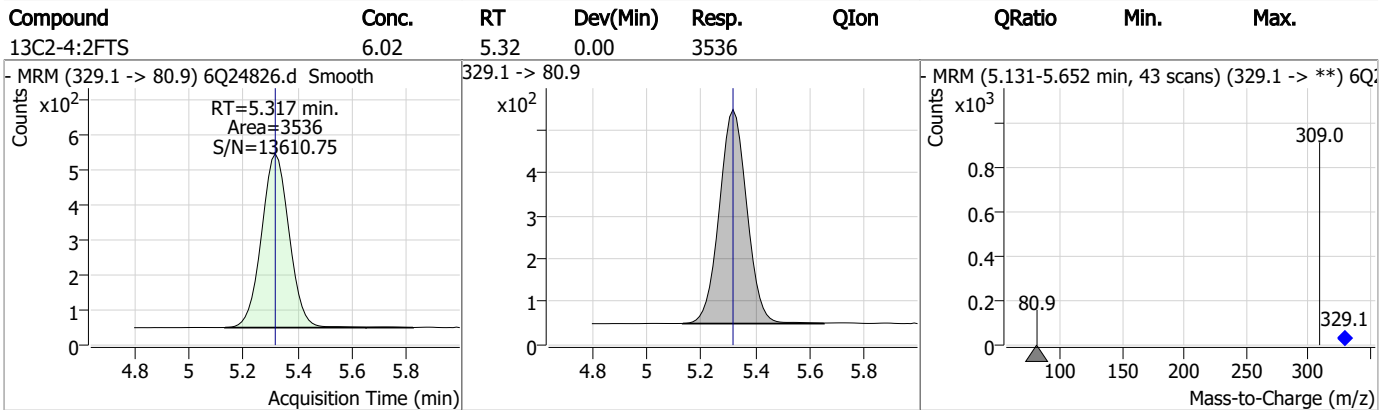
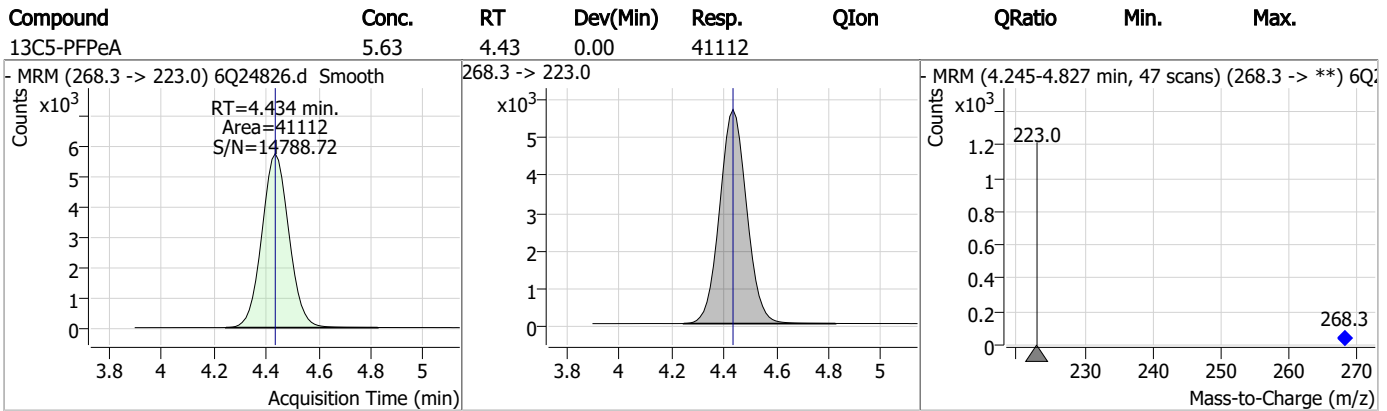
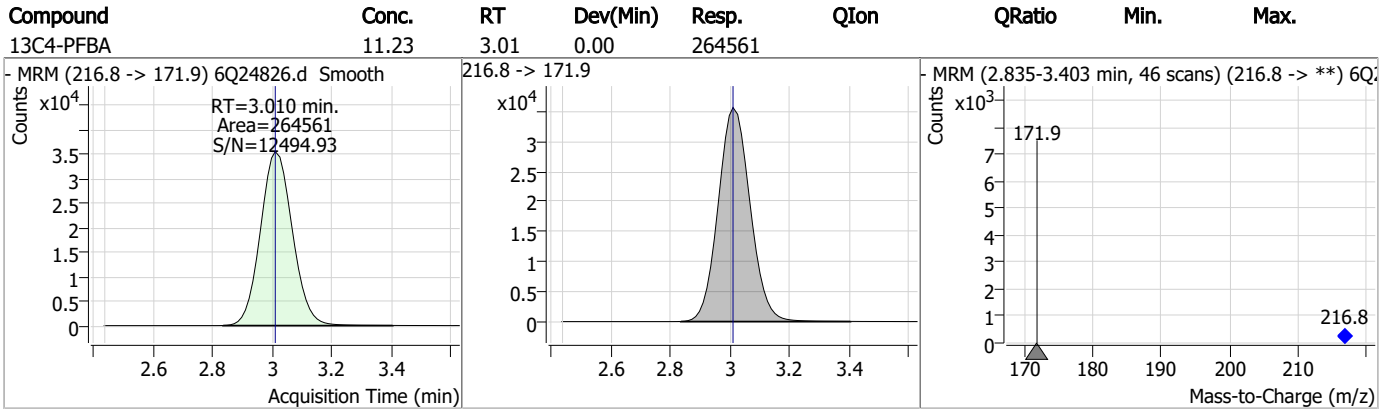
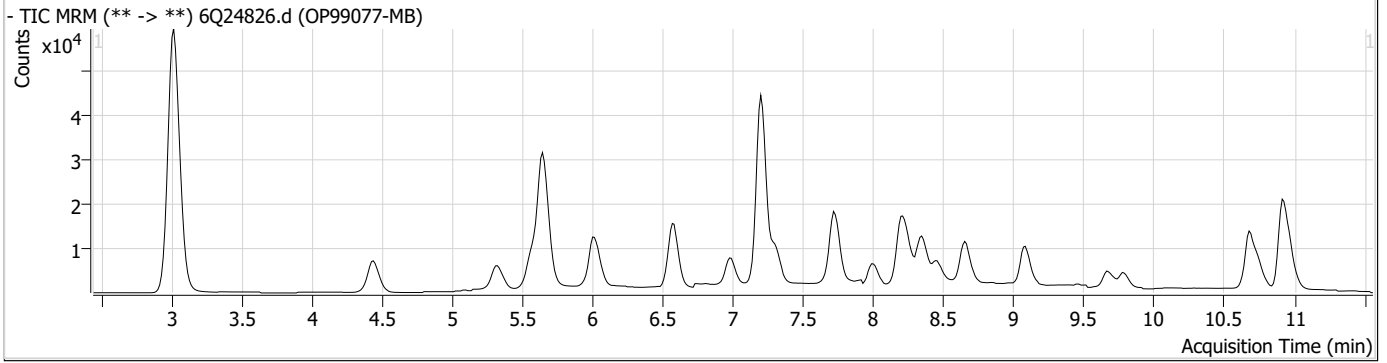
Perfluorinated Compounds by LC/MS/MS

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

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Perfluorinated Compounds by LC/MS/MS

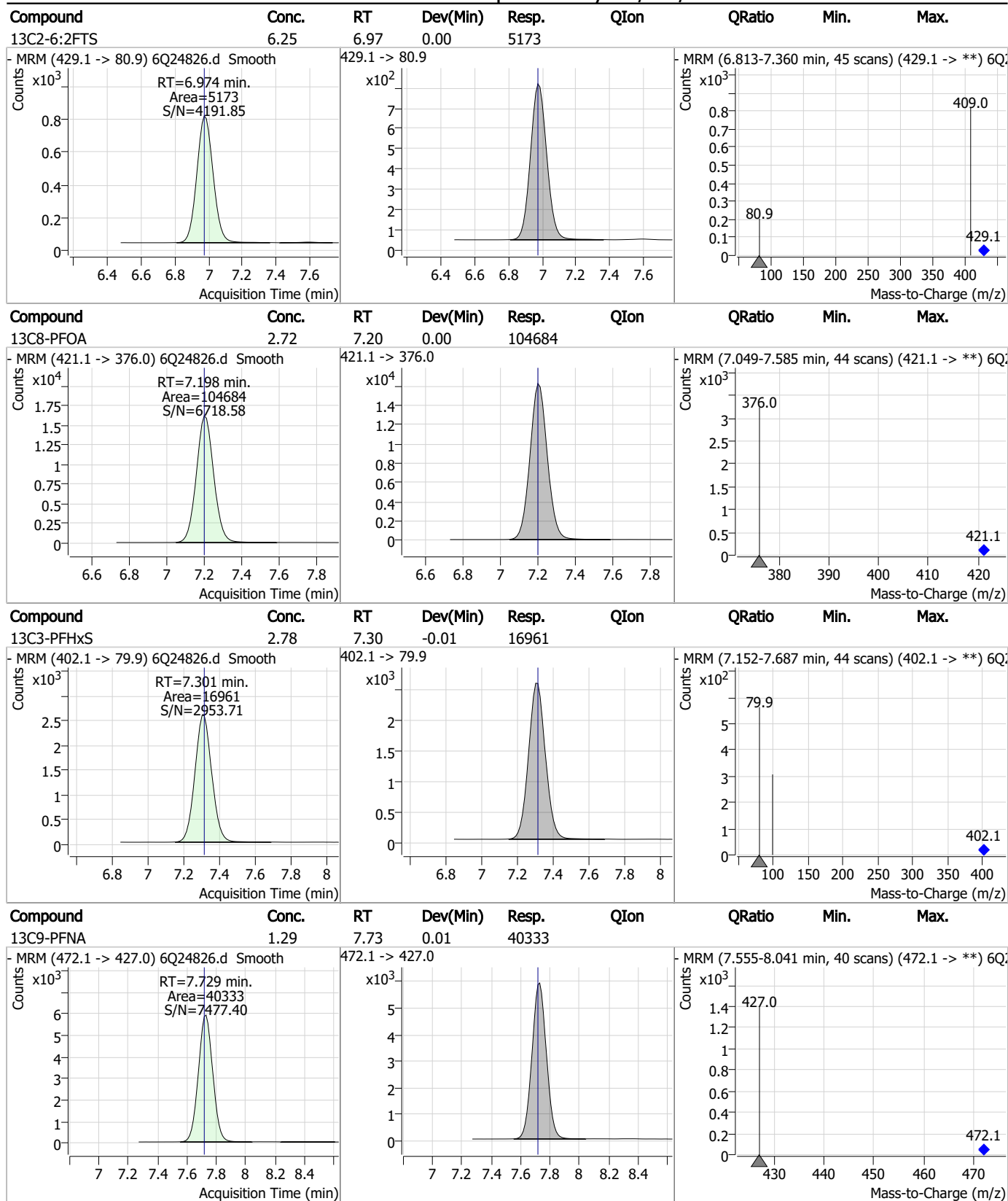


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFBS	2.79	5.57	0.00	30347				
13C5-PFHxA	2.95	5.64	0.00	99597				
13C3-HFPO-DA	11.97	6.02	0.00	56969				
13C4-PFHpA	2.76	6.57	0.00	76162				

7.2.1
7

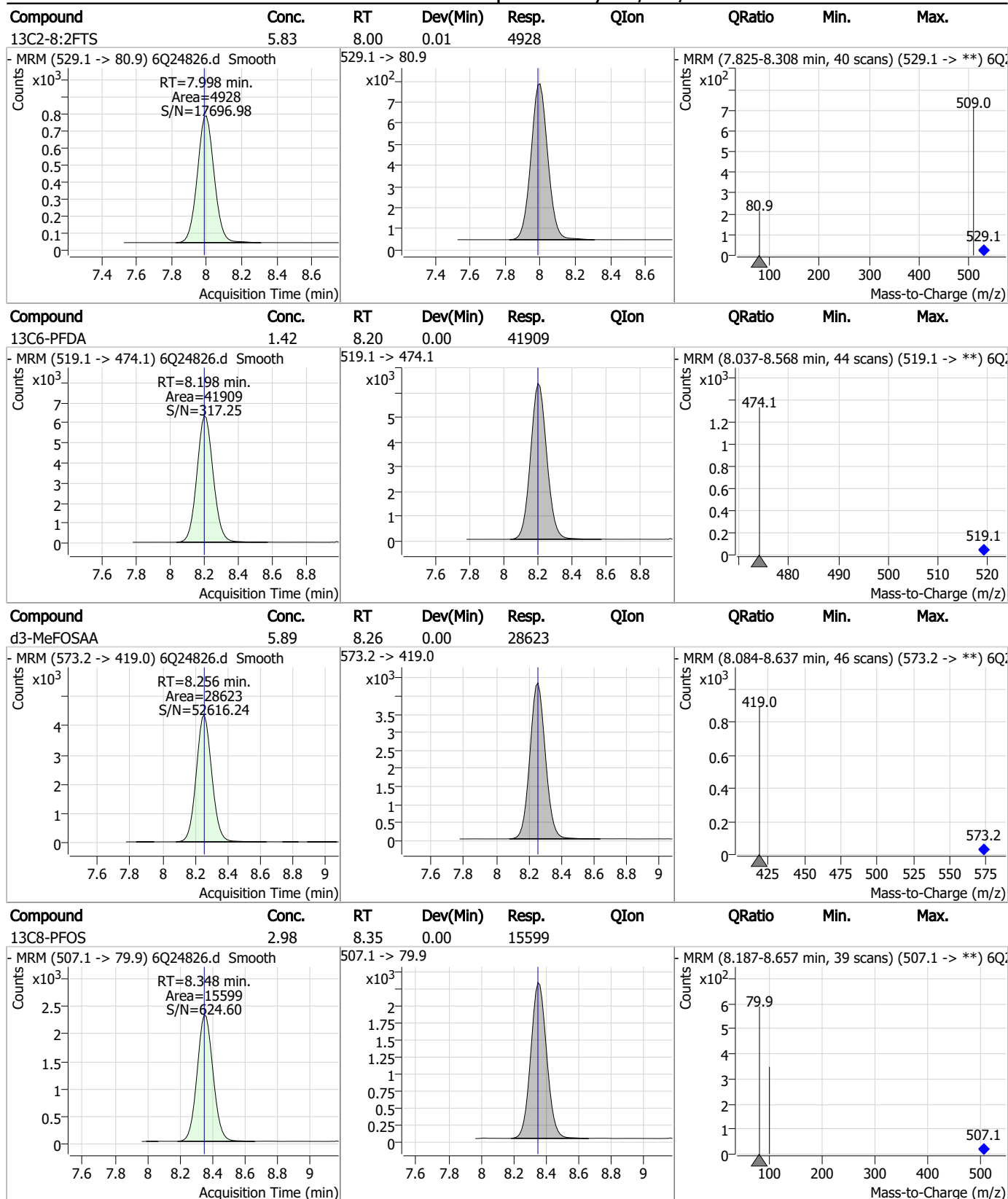
Perfluorinated Compounds by LC/MS/MS



7.2.1
7

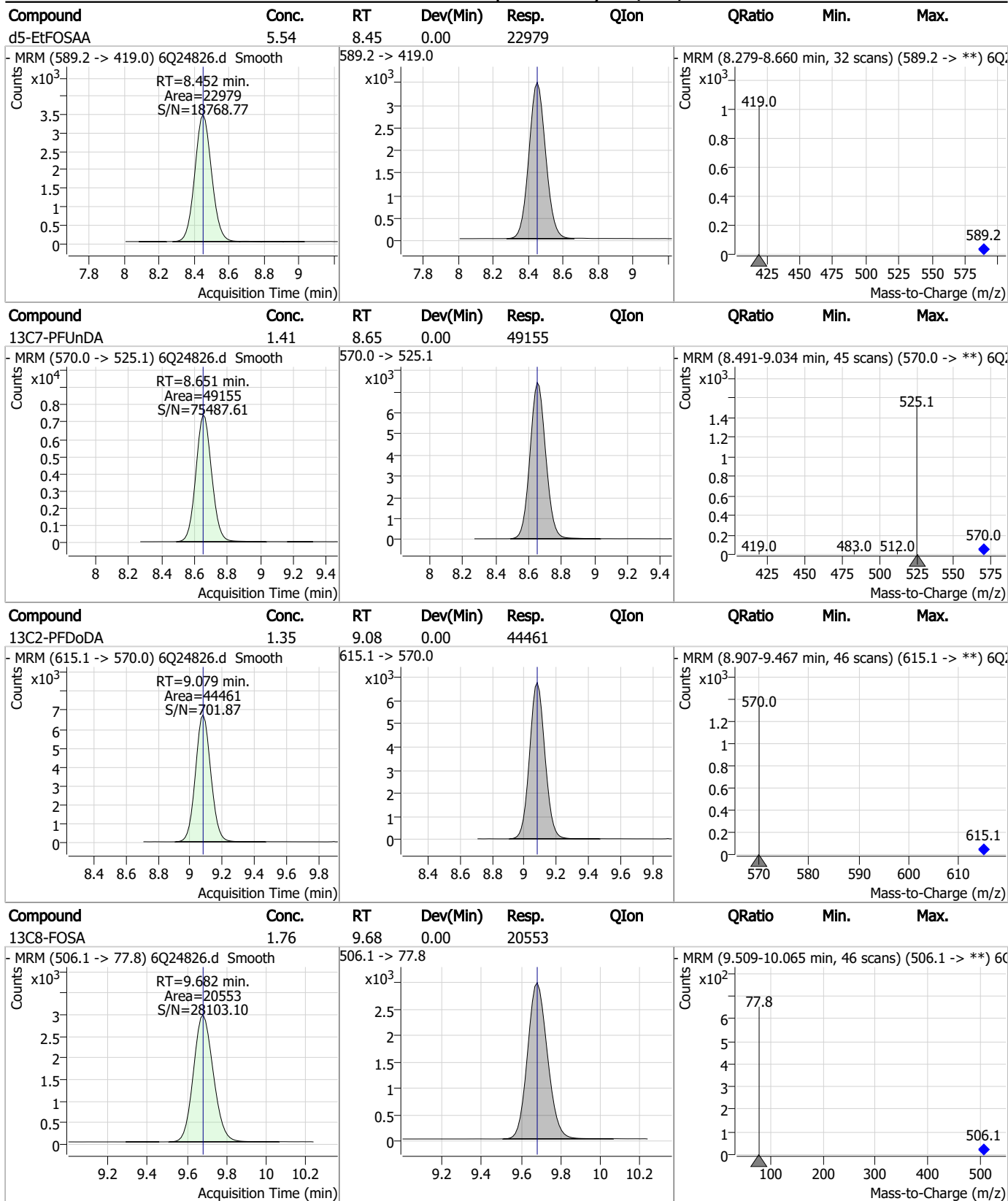


Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS



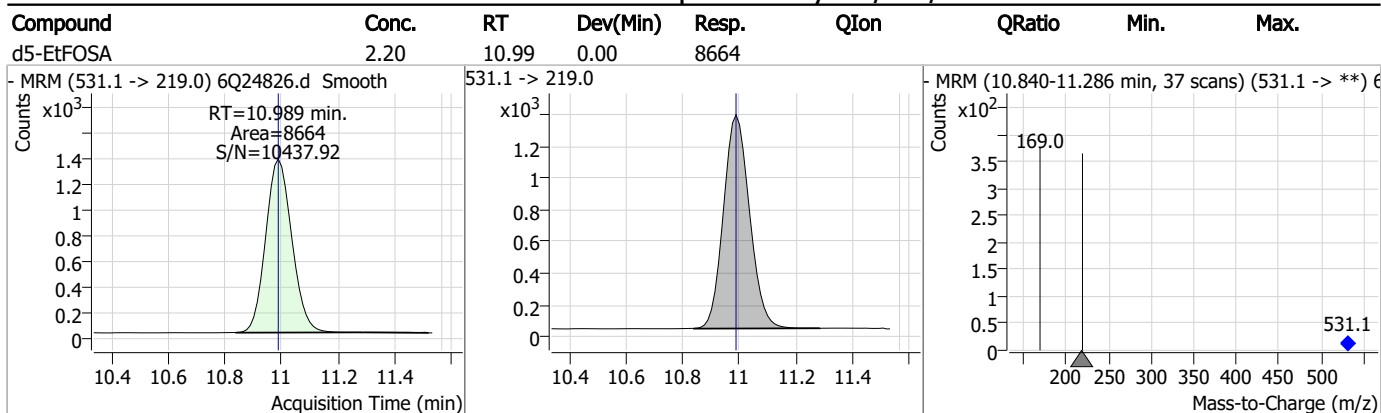
7.2.1
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.18	9.78	0.00	15545				
d7-MeFOSE	18.16	10.69	0.01	68967				
d3-MeFOSA	1.97	10.76	0.00	8320				
d9-EtFOSE	21.15	10.92	0.00	105398				

7.2.1
7

Perfluorinated Compounds by LC/MS/MS



7.2.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24819.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 10:30:35 PM
 Sample Name : IBLK
 Vial : P1-A1
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	303789	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	49449	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	112371	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	94757	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	128846	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	53806	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	47592	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	59149	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	51887	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	20243	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	40304	2.50 µg/L	-0.012
M3-PFBS	5.559	302.1 -> 79.9	36444	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	20321	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	19331	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	4019	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6036	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	5845	5.00 µg/L	0.000
M3-MeFOSAA	8.244	573.2 -> 419.0	33447	5.00 µg/L	-0.012
M3-HFPO-DA	6.007	286.9 -> 168.9	62882	10.00 µg/L	-0.012
M5-EtFOSAA	8.452	589.2 -> 419.0	27285	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	131228	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	172460	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	13834	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	14041	2.50 µg/L	0.012
13C4-PFOS	8.349	502.8 -> 79.9	23839	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	123525	5.00 µg/L	-0.012
18O2-PFHxS	7.300	403.0 -> 83.9	14536	2.50 µg/L	0.000
13C4-PFOA	7.199	417.1 -> 372.0	131488	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	40316	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	52355	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	90123	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4019	5.30 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6036	5.64 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.9%		
13C2-8:2FTS	7.986	529.1 -> 80.9	5845	5.35 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.1%		
13C2-PFDoDA	9.079	615.1 -> 570.0	51887	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.6%		
13C2-PFTeDA	9.784	715.2 -> 670.0	20243	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.2%		
13C3-PFBS	5.559	302.1 -> 79.9	36444	2.59 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.5%		
13C3-PFHxS	7.301	402.1 -> 79.9	20321	2.58 µg/L	-0.012

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 = 103.3%	
13C4-PFBA	2.985	216.8 -> 171.9	303789	10.08 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
13C4-PFHpA	6.569	367.1 -> 322.0	94757	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.9%	
13C5-PFHxA	5.641	318.0 -> 273.0	112371	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.7%	
13C5-PFPeA	4.422	268.3 -> 223.0	49449	4.83 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.5%	
13C6-PFDA	8.198	519.1 -> 474.1	47592	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C7-PFUnDA	8.651	570.0 -> 525.1	59149	1.36 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.1%	
13C8-FOSA	9.670	506.1 -> 77.8	40304	2.57 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.0%	
13C8-PFOA	7.198	421.1 -> 376.0	128846	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.0%	
13C8-PFOS	8.348	507.1 -> 79.9	19331	2.75 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.1%	
13C9-PFNA	7.717	472.1 -> 427.0	53806	1.42 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.4%	
d3-MeFOSAA	8.244	573.2 -> 419.0	33447	5.14 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C3-HFPO-DA	6.007	286.9 -> 168.9	62882	9.41 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 94.1%	
d3-MeFOSA	10.769	515.0 -> 219.0	14041	2.48 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.1%	
d5-EtFOSAA	8.452	589.2 -> 419.0	27285	4.91 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.1%	
d7-MeFOSE	10.678	623.2 -> 58.9	131228	25.80 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.2%	
d9-EtFOSE	10.923	639.2 -> 58.9	172460	25.83 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.3%	
d5-EtFOSA	10.989	531.1 -> 219.0	13834	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.8%	

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

7.2.2
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.249	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.22
7

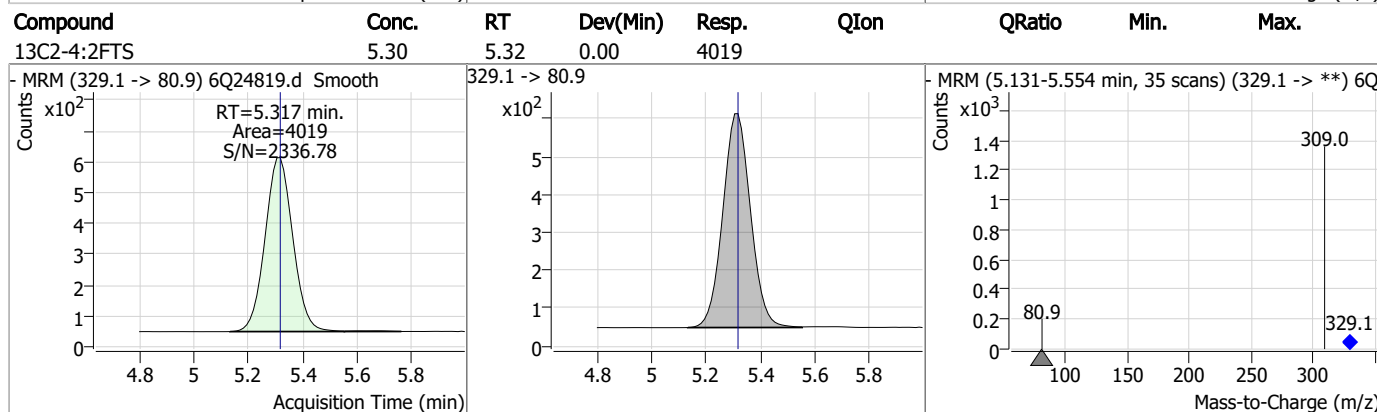
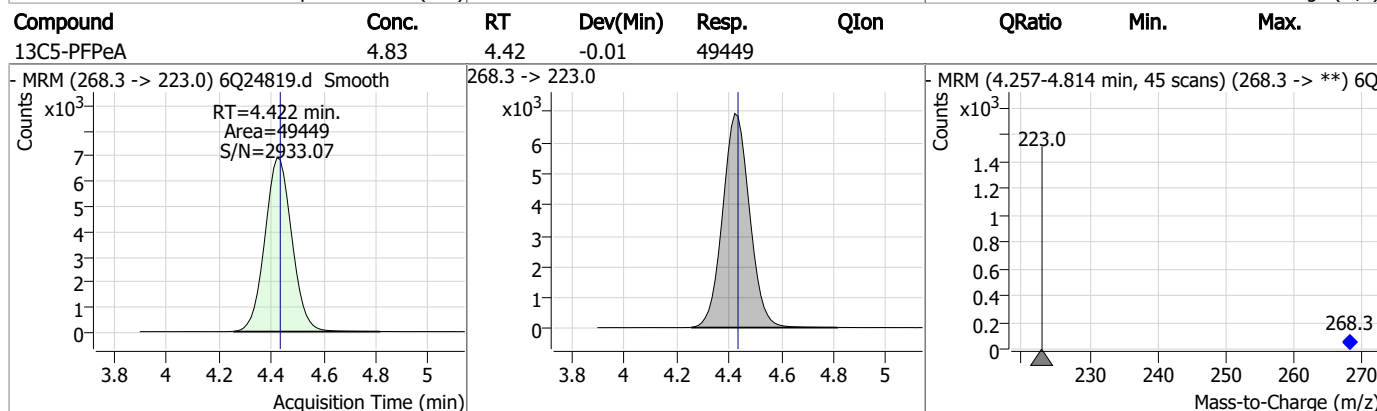
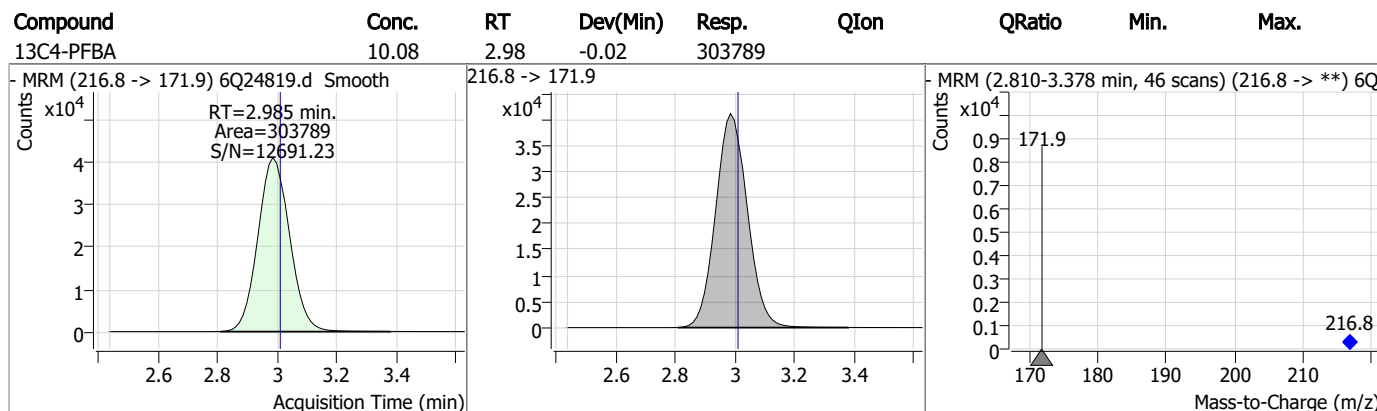
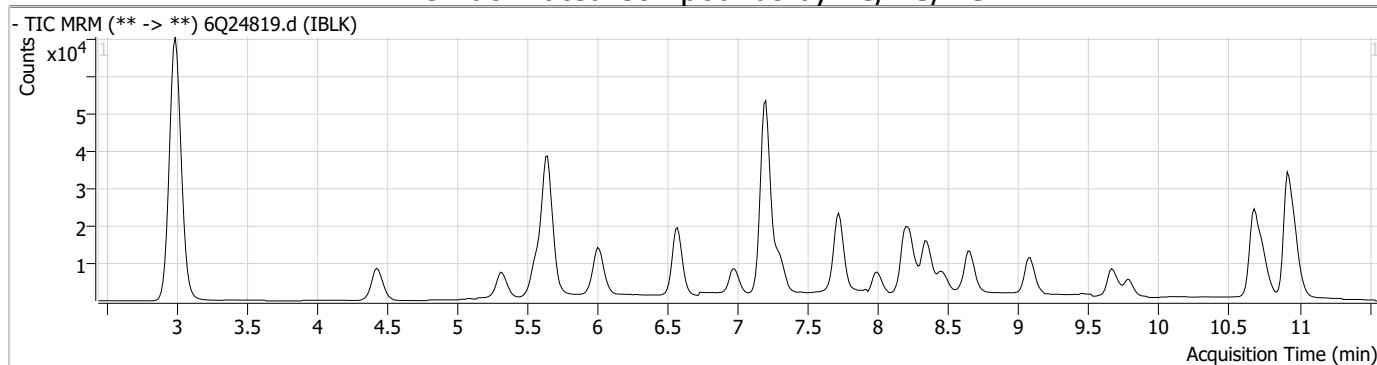
Perfluorinated Compounds by LC/MS/MS

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

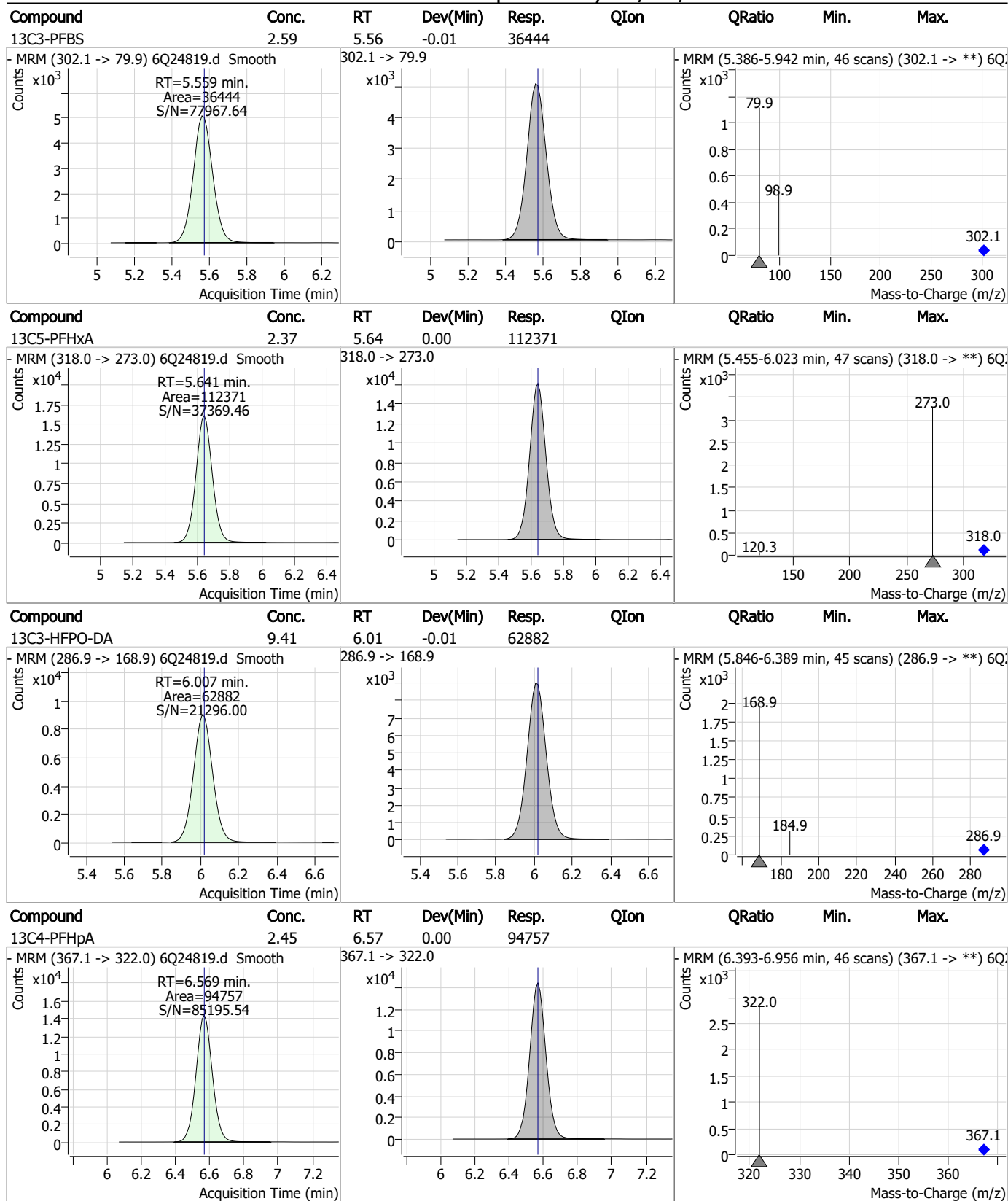
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Perfluorinated Compounds by LC/MS/MS



7.2.2
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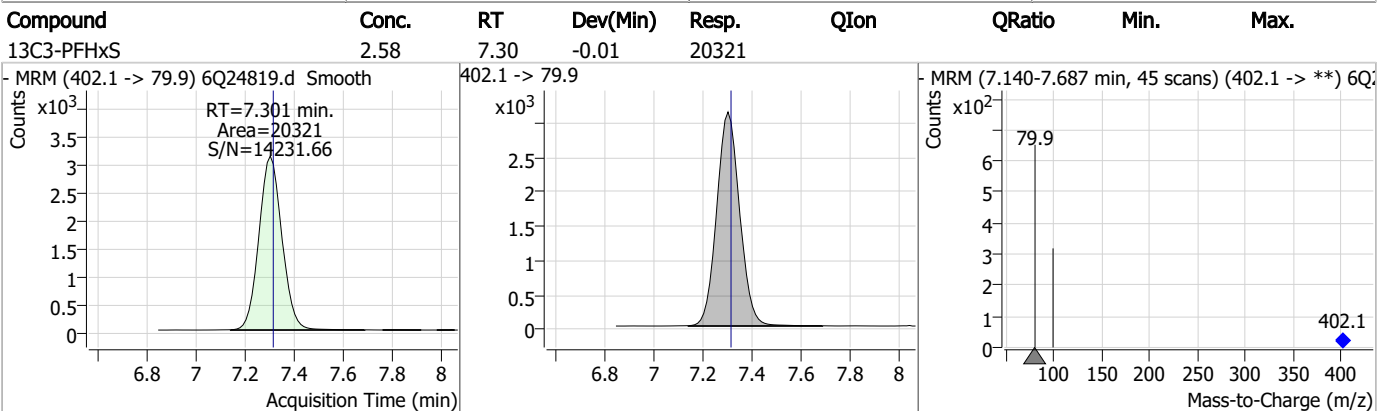
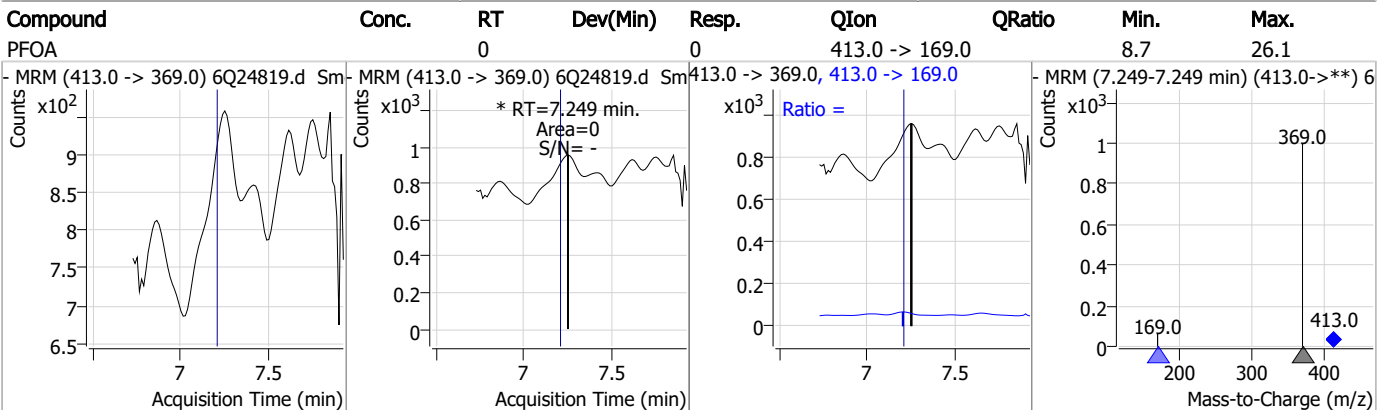
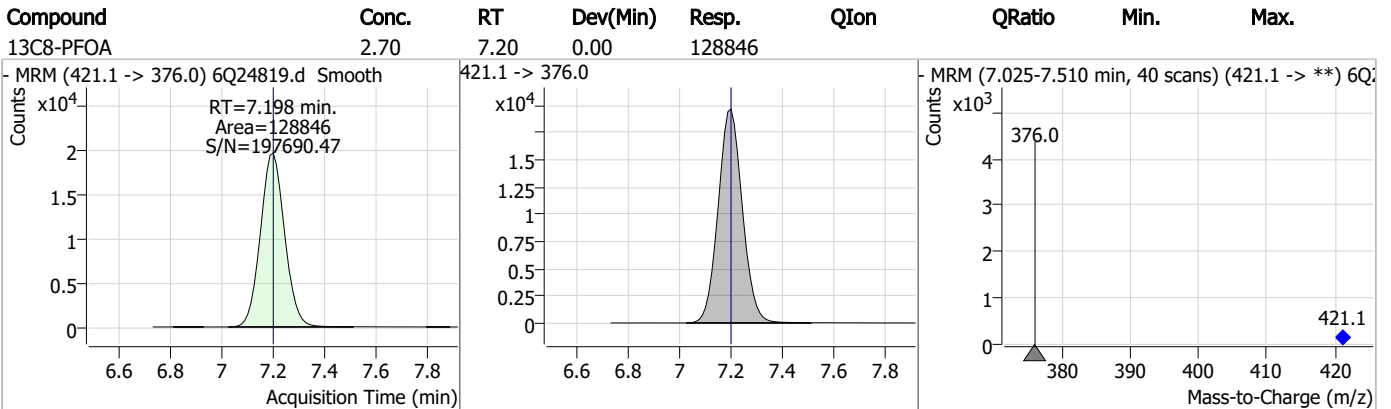
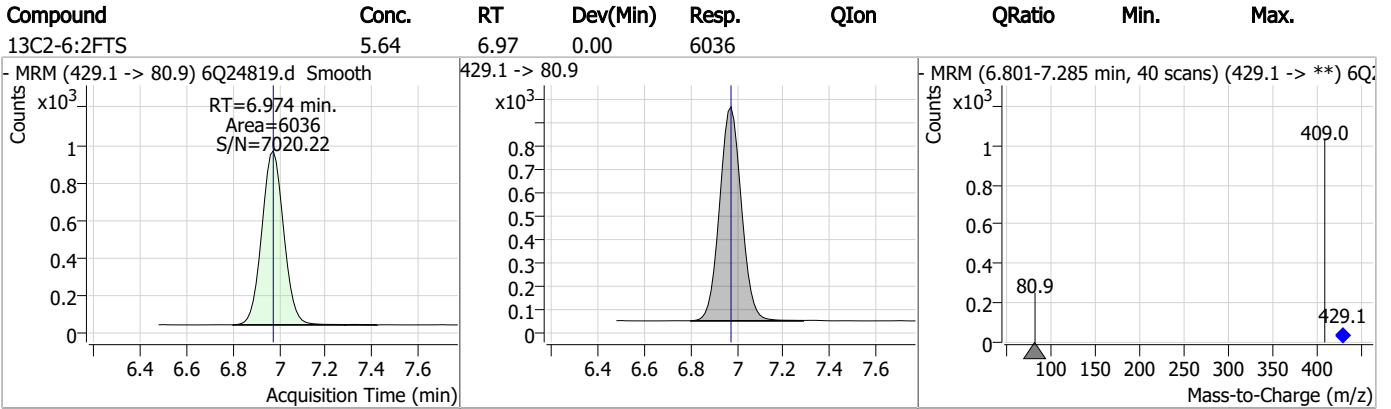
Perfluorinated Compounds by LC/MS/MS



7.2.2
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Perfluorinated Compounds by LC/MS/MS

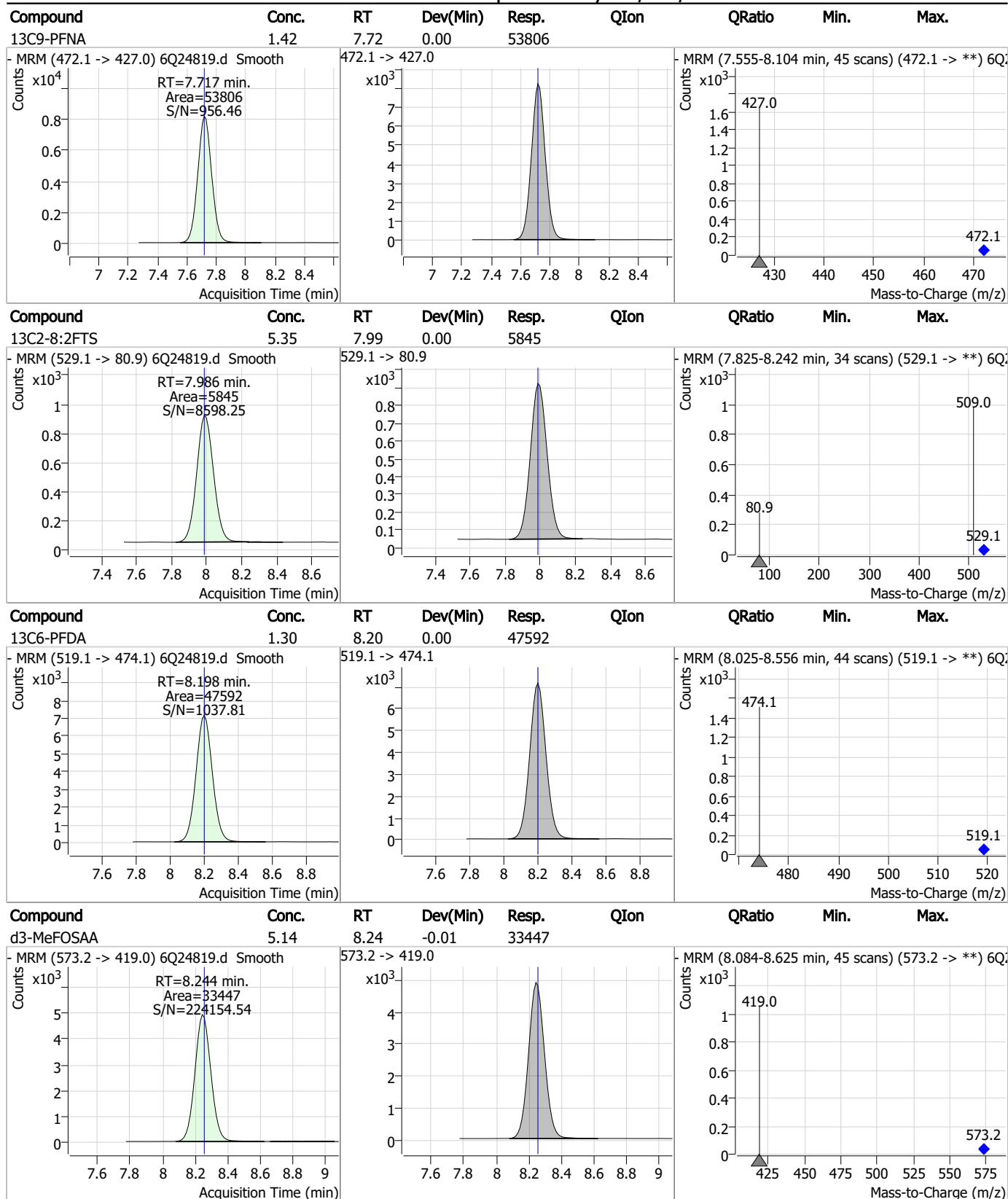


7.22

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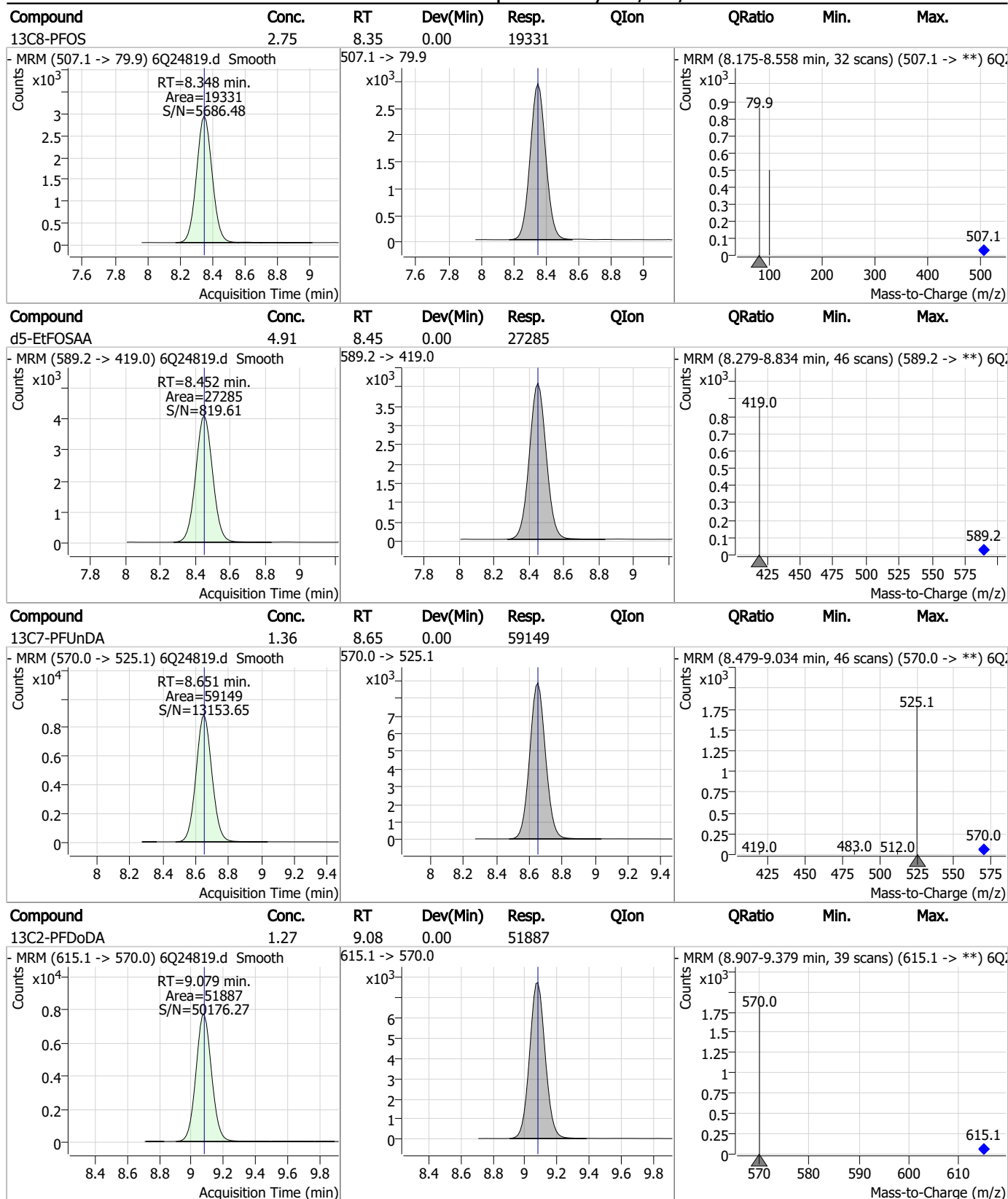
Perfluorinated Compounds by LC/MS/MS



7.2.2
7



Perfluorinated Compounds by LC/MS/MS



7.2.2
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.57	9.67	-0.01	40304				
- MRM (506.1 -> 77.8) 6Q24819.d Smooth Counts x10 ³ RT=9.670 min. Area=40304 S/N=438617.67 Acquisition Time (min)			506.1 -> 77.8 x10 ³ Acquisition Time (min)			- MRM (9.521-10.053 min, 44 scans) (506.1 -> **) 6Q24819.d Smooth Counts x10 ³ 77.8 506.1 Mass-to-Charge (m/z)		
13C2-PFTeDA	1.24	9.78	0.00	20243				
- MRM (715.2 -> 670.0) 6Q24819.d Smooth Counts x10 ³ RT=9.784 min. Area=20243 S/N=19303.48 Acquisition Time (min)			715.2 -> 670.0 x10 ³ Acquisition Time (min)			- MRM (9.611-10.093 min, 40 scans) (715.2 -> **) 6Q24819.d Smooth Counts x10 ² 670.0 715.2 Mass-to-Charge (m/z)		
d7-MeFOSE	25.80	10.68	0.00	131228				
- MRM (623.2 -> 58.9) 6Q24819.d Smooth Counts x10 ⁴ RT=10.678 min. Area=131228 S/N=2601.56 Acquisition Time (min)			623.2 -> 58.9 x10 ⁴ Acquisition Time (min)			- MRM (10.532-11.136 min, 50 scans) (623.2 -> **) 6Q24819.d Smooth Counts x10 ³ 58.9 623.2 Mass-to-Charge (m/z)		
d3-MeFOSA	2.48	10.77	0.01	14041				
- MRM (515.0 -> 219.0) 6Q24819.d Smooth Counts x10 ³ RT=10.769 min. Area=14041 S/N=1197.22 Acquisition Time (min)			515.0 -> 219.0 x10 ³ Acquisition Time (min)			- MRM (10.597-11.067 min, 39 scans) (515.0 -> **) 6Q24819.d Smooth Counts x10 ² 169.0 219.0 515.0 Mass-to-Charge (m/z)		

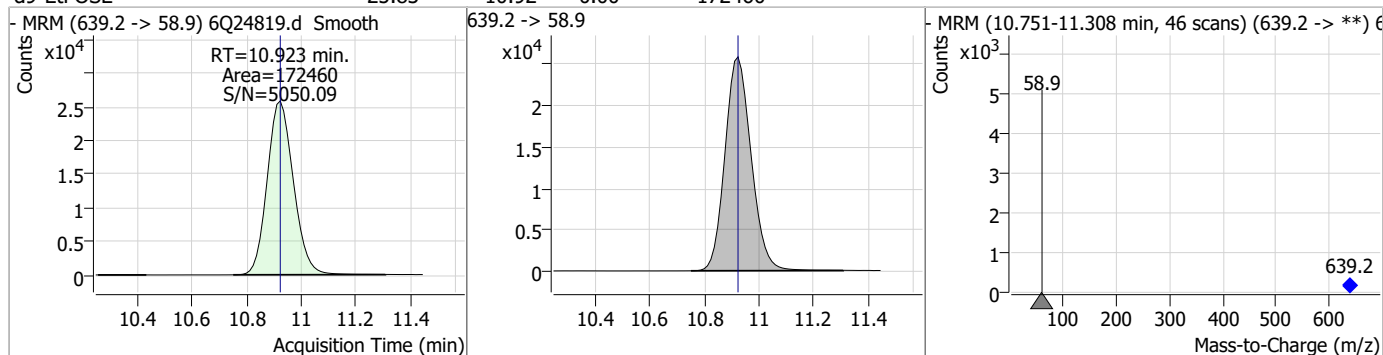
7.2.2

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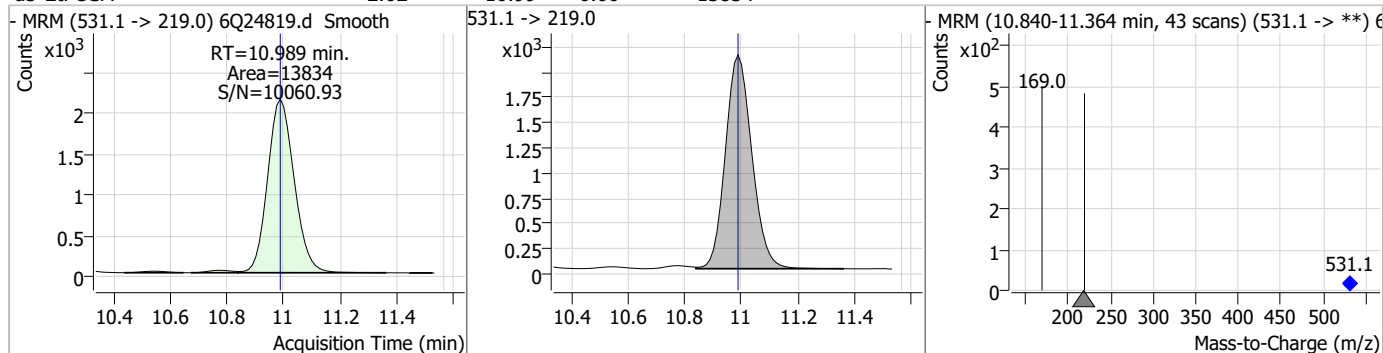


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.83	10.92	0.00	172460				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.62	10.99	0.00	13834				



7.2.2
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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24835.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/22/2023 2:19:47 AM
 Sample Name : iccb
 Vial : P1-A1
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	301100	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	48058	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	108139	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	95938	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	122907	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	51583	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	49775	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	60296	1.25 µg/L	0.000
M2-PFDoDA	9.080	615.1 -> 570.0	49876	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	21461	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	40959	2.50 µg/L	-0.012
M3-PFBS	5.559	302.1 -> 79.9	35253	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	20157	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	19706	2.50 µg/L	0.000
M2-4:2FTS	5.304	329.1 -> 80.9	3991	5.00 µg/L	-0.012
M2-6:2FTS	6.974	429.1 -> 80.9	5684	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	6083	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	34140	5.00 µg/L	0.000
M3-HFPO-DA	6.007	286.9 -> 168.9	63445	10.00 µg/L	-0.012
M5-EtFOSAA	8.452	589.2 -> 419.0	29277	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	128101	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	167544	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	13544	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	13995	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	24850	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	121471	5.00 µg/L	-0.012
18O2-PFHxS	7.300	403.0 -> 83.9	14440	2.50 µg/L	0.000
13C4-PFOA	7.199	417.1 -> 372.0	138546	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	40552	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	55608	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	84617	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.304	329.1 -> 80.9	3991	5.30 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C2-6:2FTS	6.974	429.1 -> 80.9	5684	5.35 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 107.0%		
13C2-8:2FTS	7.998	529.1 -> 80.9	6083	5.61 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.2%		
13C2-PFDoDA	9.080	615.1 -> 570.0	49876	1.21 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.1%		
13C2-PFTeDA	9.784	715.2 -> 670.0	21461	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 104.6%		
13C3-PFBS	5.559	302.1 -> 79.9	35253	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.8%		
13C3-PFHxS	7.301	402.1 -> 79.9	20157	2.58 µg/L	-0.012

7.2.3
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C4-PFBA	2.985	216.8 -> 171.9	301100	10.16 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.6%	
13C4-PFHpA	6.569	367.1 -> 322.0	95938	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C5-PFHxA	5.641	318.0 -> 273.0	108139	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C5-PFPeA	4.422	268.3 -> 223.0	48058	5.00 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C6-PFDA	8.198	519.1 -> 474.1	49775	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.9%	
13C7-PFUnDA	8.651	570.0 -> 525.1	60296	1.38 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 110.6%	
13C8-FOSA	9.670	506.1 -> 77.8	40959	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C8-PFOA	7.198	421.1 -> 376.0	122907	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.7%	
13C8-PFOS	8.348	507.1 -> 79.9	19706	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C9-PFNA	7.717	472.1 -> 427.0	51583	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.3%	
d3-MeFOSAA	8.256	573.2 -> 419.0	34140	5.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C3-HFPO-DA	6.007	286.9 -> 168.9	63445	10.11 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
d3-MeFOSA	10.757	515.0 -> 219.0	13995	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.7%	
d5-EtFOSAA	8.452	589.2 -> 419.0	29277	5.05 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.0%	
d7-MeFOSE	10.678	623.2 -> 58.9	128101	24.16 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d9-EtFOSE	10.923	639.2 -> 58.9	167544	24.07 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 96.3%	
d5-EtFOSA	10.989	531.1 -> 219.0	13544	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	

Target Compounds

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



7.2.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	-	599.0 -> 98.8	-	N.D.		
		363.1 -> 319.0				
PFHpS	-	363.1 -> 169.0	-	N.D.		
		449.0 -> 79.9				
PFHxA	-	449.0 -> 98.9	-	N.D.		
		313.0 -> 269.0				
PFHxS	-	313.0 -> 118.9	-	N.D.		
		398.7 -> 79.9				
PFNA	-	398.7 -> 98.9	-	N.D.		
		463.0 -> 419.0				
PFNS	-	463.0 -> 219.0	-	N.D.		
		548.8 -> 79.9				
PFOA	7.858	548.8 -> 98.9	0	µg/L	m	1
		413.0 -> 369.0				
PFOS	-	413.0 -> 169.0	-	N.D.		
		498.9 -> 79.9				
PFPeA	-	498.9 -> 98.8	-	N.D.		
		263.0 -> 219.0				
PFPeS	-	349.1 -> 79.9	-	N.D.		
		349.1 -> 98.9				
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
		511.9 -> 219.0				
MeFOSA	-	511.9 -> 169.0	-	N.D.		
		616.1 -> 58.9				
MeFOSE	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
PFDoDS	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
NFDHA	-	279.0 -> 85.1	-	N.D.		
		229.0 -> 84.9				
PFMBA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.2.3
7

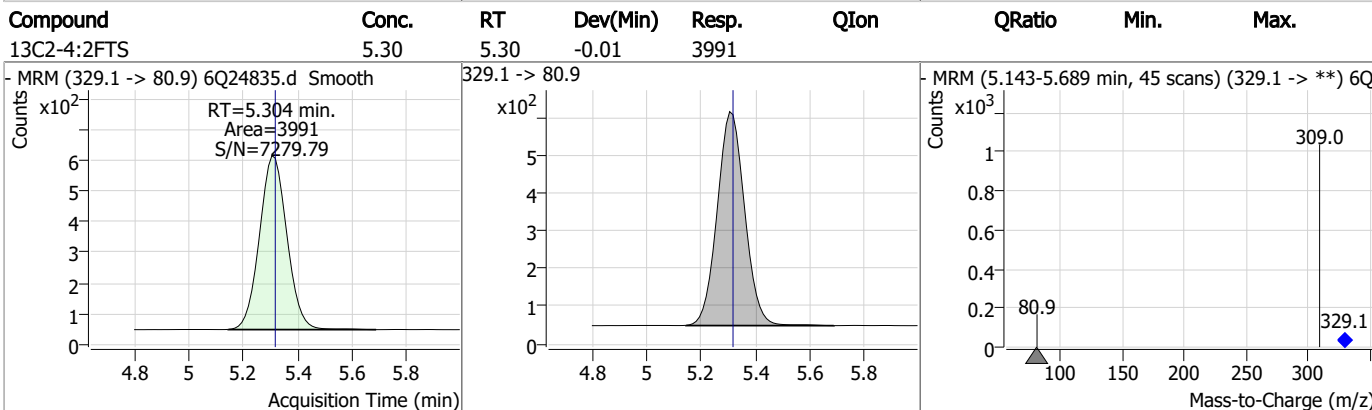
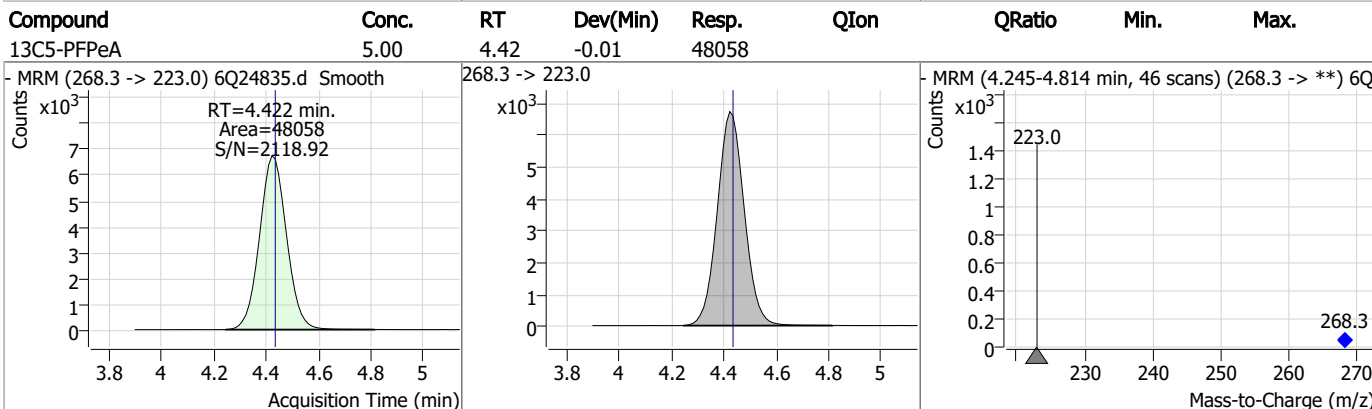
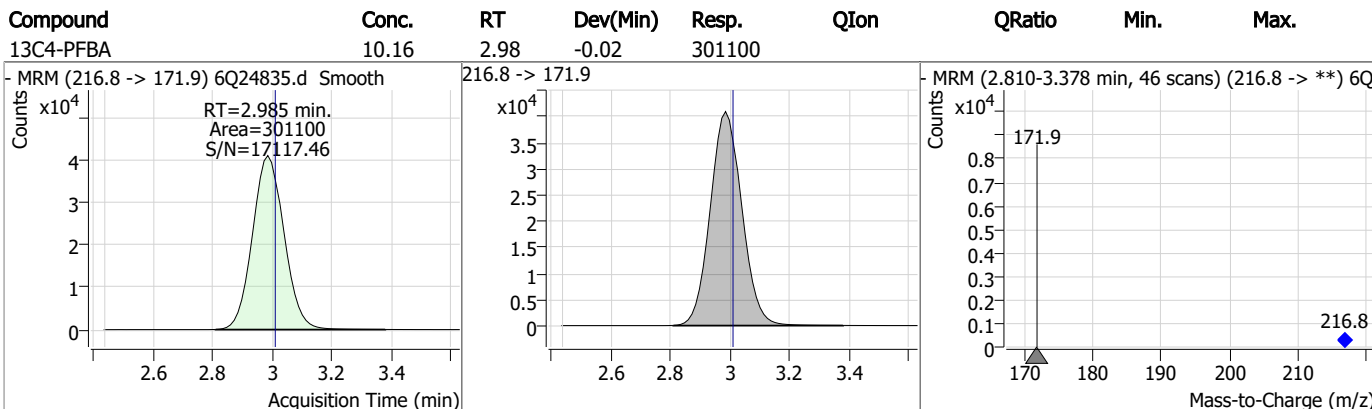
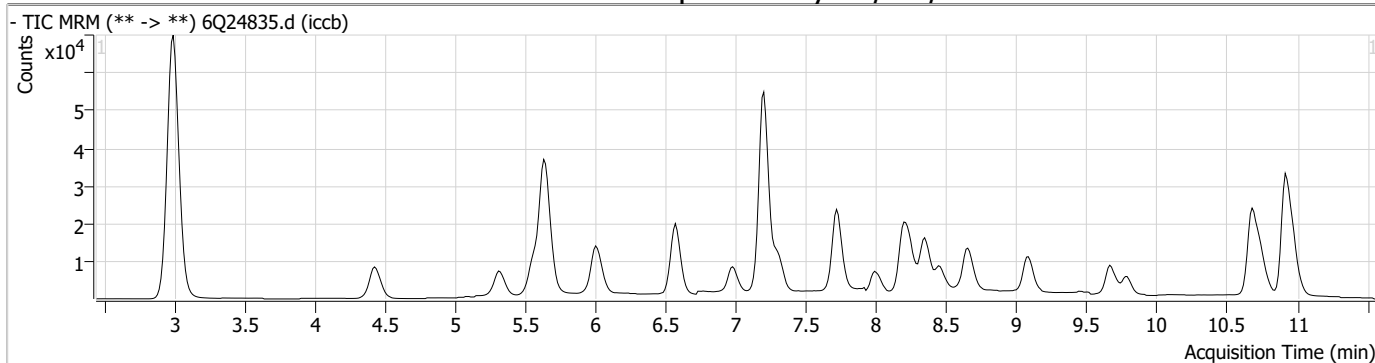
Perfluorinated Compounds by LC/MS/MS

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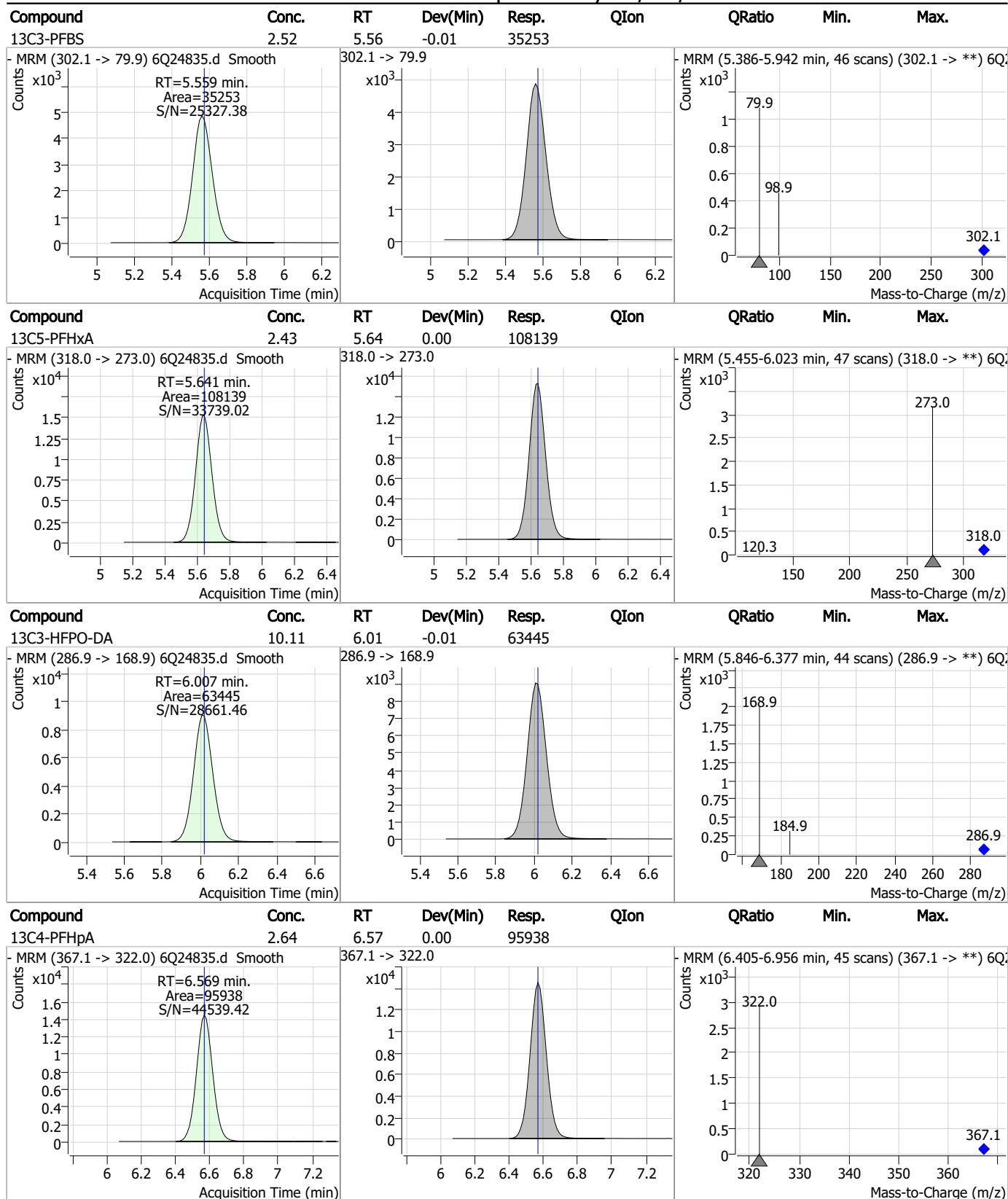
7.2.3

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Perfluorinated Compounds by LC/MS/MS

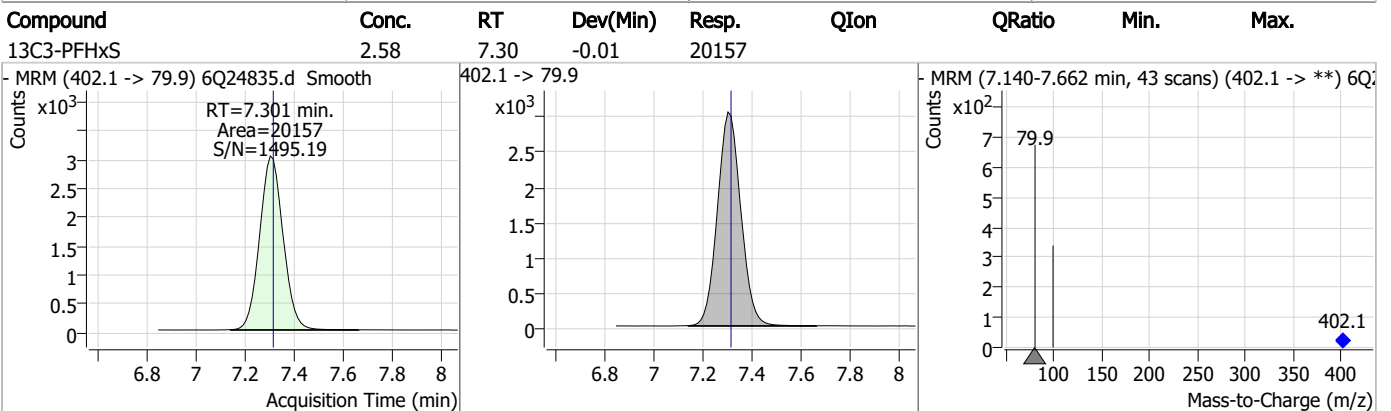
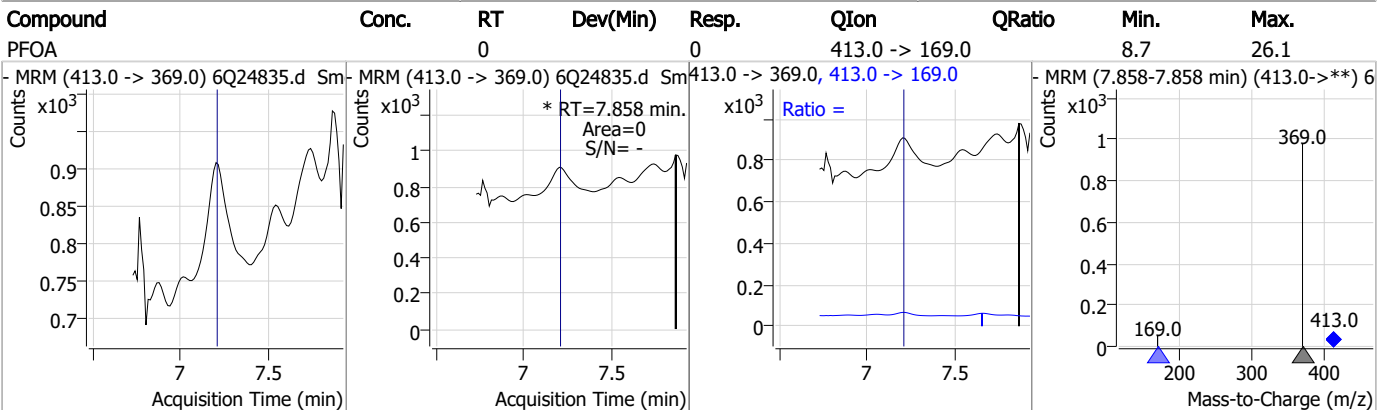
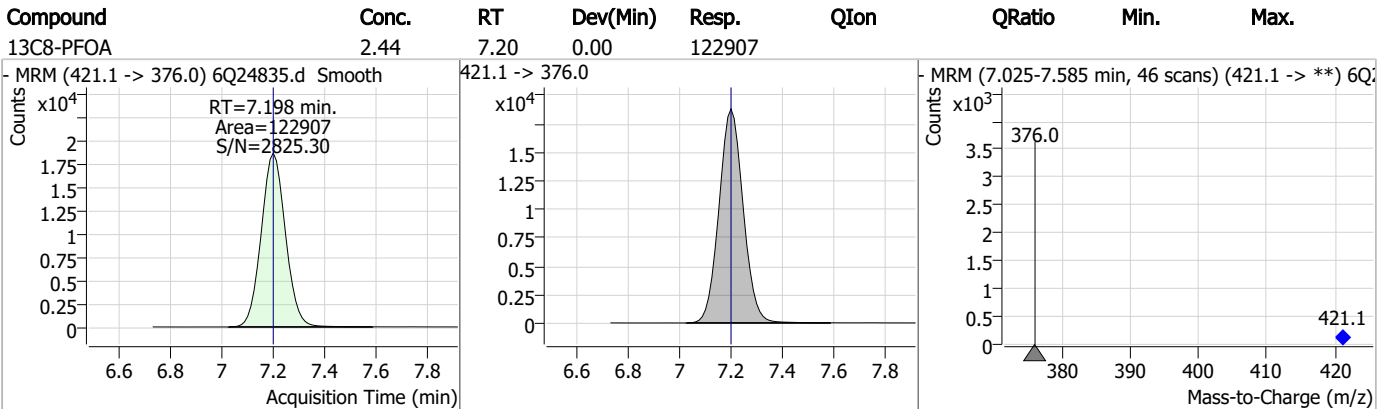
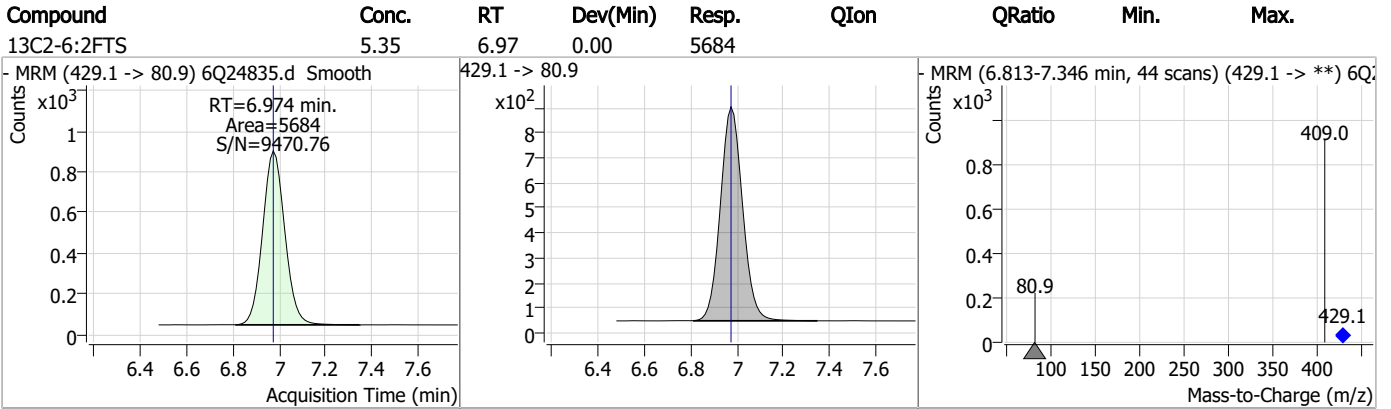


Perfluorinated Compounds by LC/MS/MS

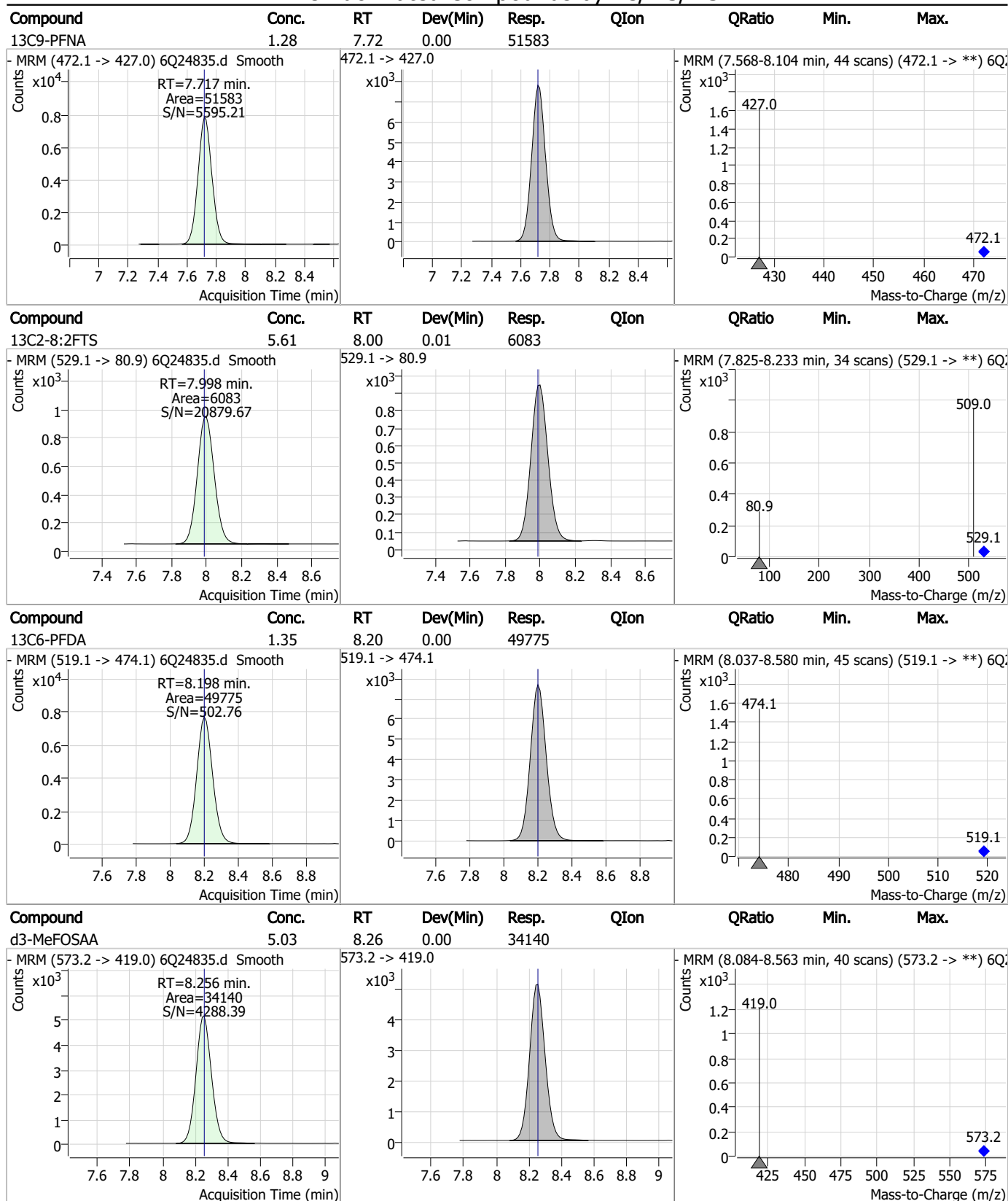


7.2.3
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Perfluorinated Compounds by LC/MS/MS

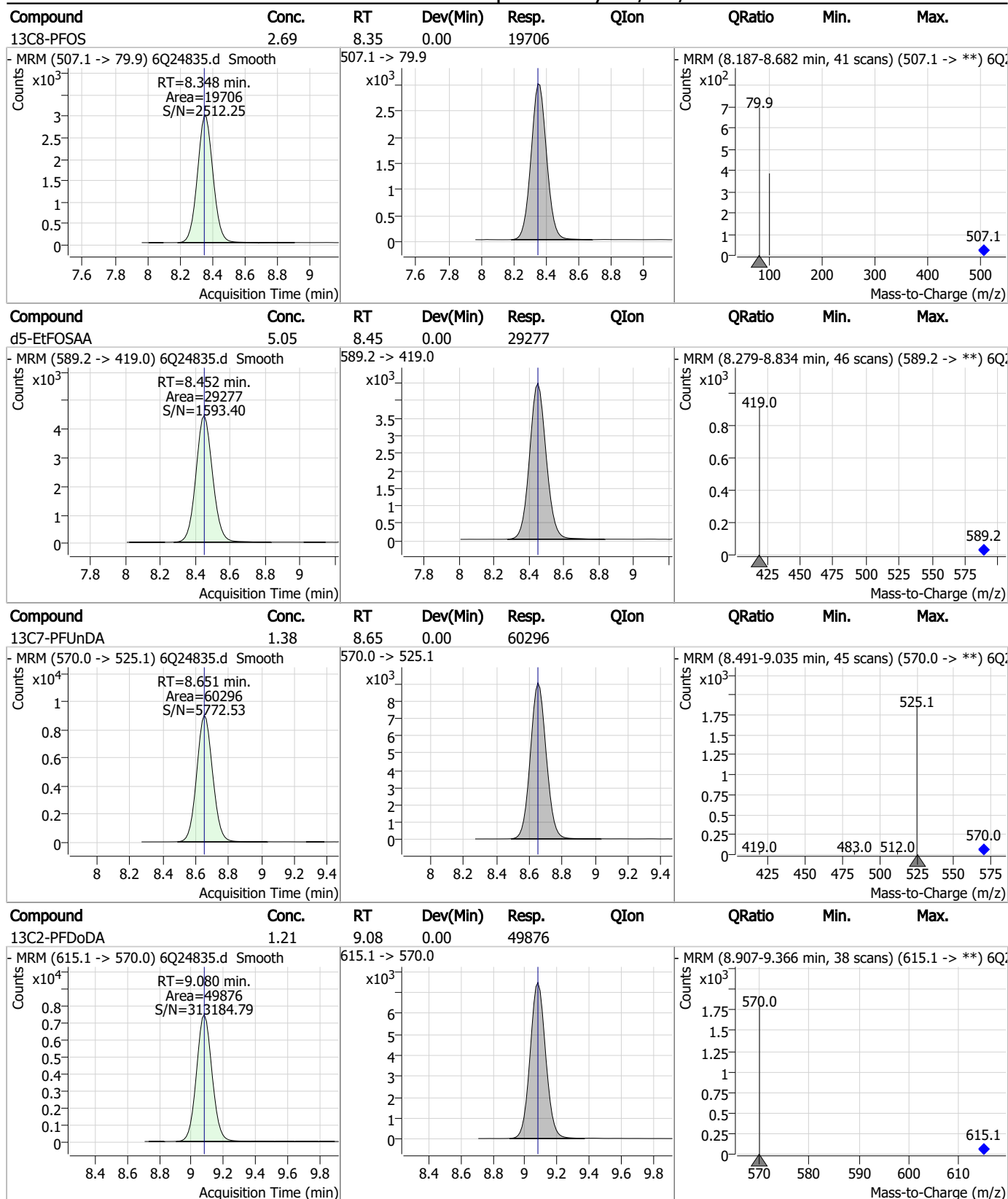


Perfluorinated Compounds by LC/MS/MS



7.2.3
7

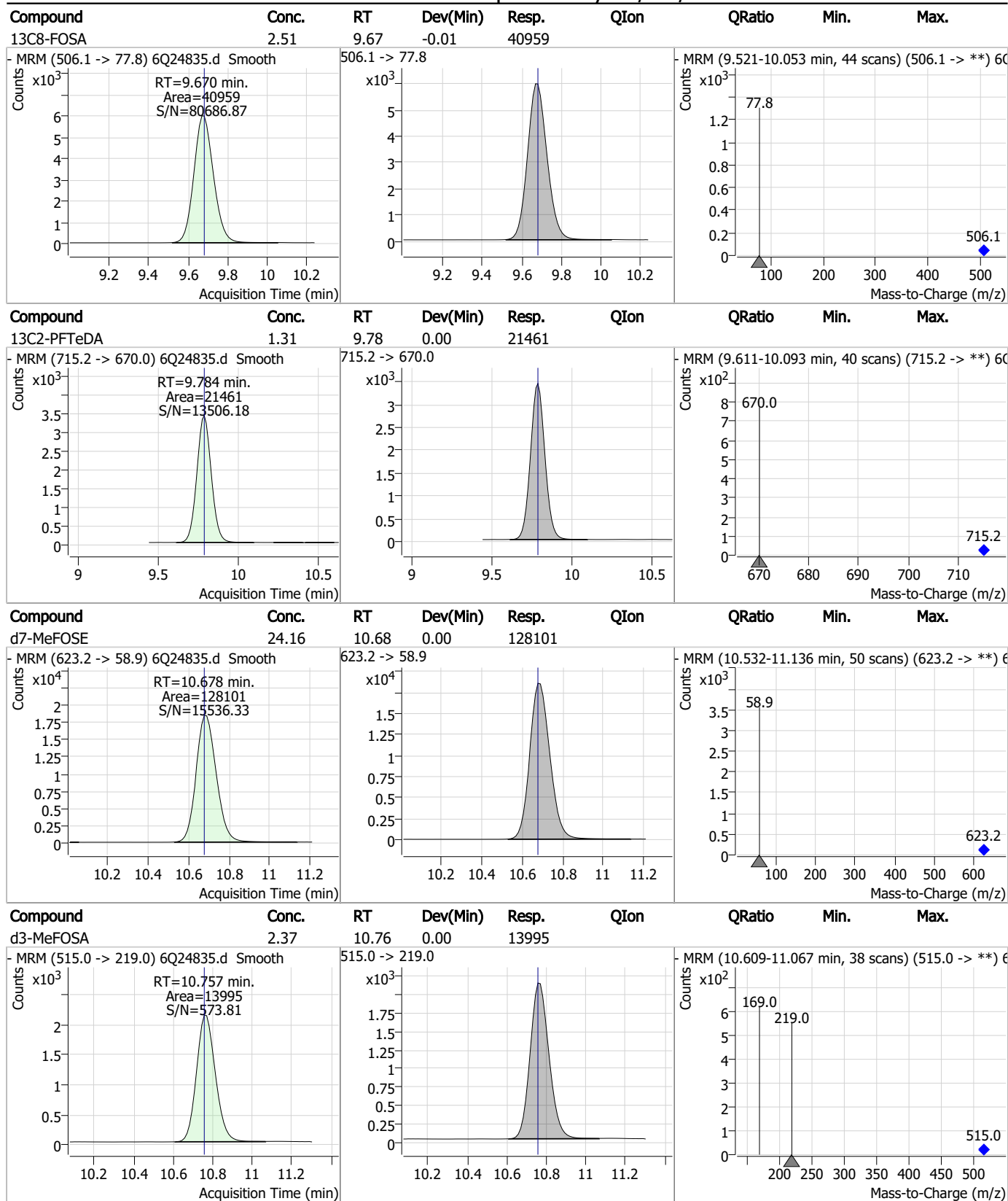
Perfluorinated Compounds by LC/MS/MS



7.2.3

7

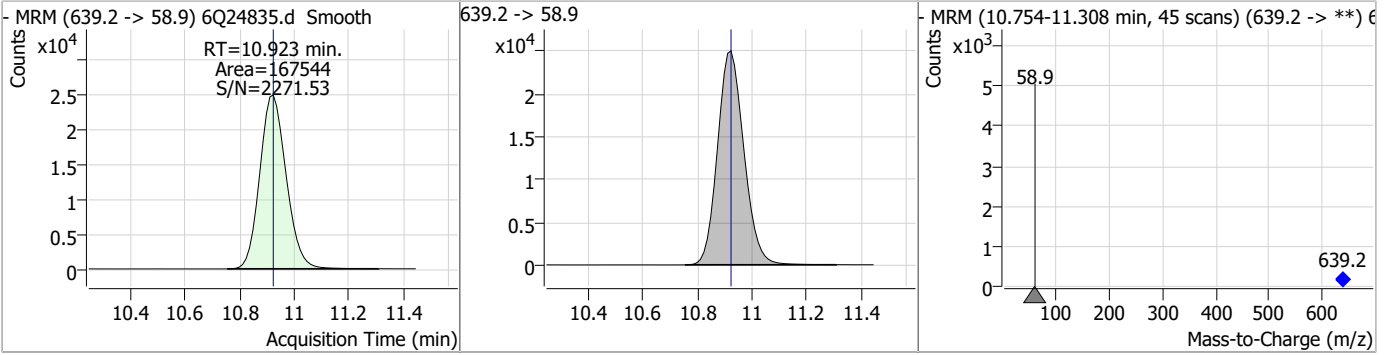
Perfluorinated Compounds by LC/MS/MS



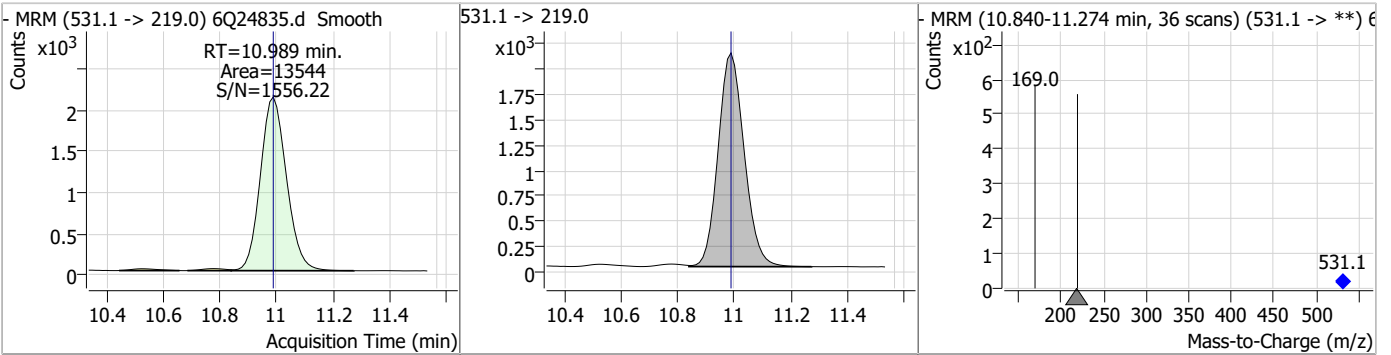
7.2.3
7

Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.07	10.92	0.00	167544				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOFA	2.46	10.99	0.00	13544				



7.2.3

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24824.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 11:42:12 PM
 Sample Name : OP99077-BS
 Vial : P2-A1
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99077,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	205783	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	42279	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	98806	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	80155	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	103662	2.50 µg/L	0.000
M9-PFNA	7.729	472.1 -> 427.0	43542	1.25 µg/L	0.012
M6-PFDA	8.198	519.1 -> 474.1	40975	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	51927	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	46978	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	16879	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	26557	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	30603	2.50 µg/L	0.000
M3-PFHxS	7.313	402.1 -> 79.9	17531	2.50 µg/L	0.000
M8-PFOS	8.361	507.1 -> 79.9	16237	2.50 µg/L	0.012
M2-4:2FTS	5.317	329.1 -> 80.9	3462	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	5131	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	5105	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	28484	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	57378	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	23408	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	78477	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	114873	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	9781	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	9782	2.50 µg/L	0.012
13C4-PFOS	8.361	502.8 -> 79.9	18065	2.50 µg/L	0.012
13C3-PFBA	3.014	216.0 -> 172.0	98266	5.00 µg/L	0.012
18O2-PFHxS	7.313	403.0 -> 83.9	11990	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	104087	2.50 µg/L	0.000
13C2-PFDA	8.210	515.1 -> 470.1	34042	1.25 µg/L	0.012
13C5-PFNA	7.729	468.0 -> 423.0	42255	1.25 µg/L	0.012
13C2-PFHxA	5.642	315.1 -> 270.0	68243	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	3462	5.53 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.7%		
13C2-6:2FTS	6.974	429.1 -> 80.9	5131	5.82 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 116.3%		
13C2-8:2FTS	7.998	529.1 -> 80.9	5105	5.67 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 113.4%		
13C2-PFDoDA	9.079	615.1 -> 570.0	46978	1.36 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 109.0%		
13C2-PFTeDA	9.784	715.2 -> 670.0	16879	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFBS	5.571	302.1 -> 79.9	30603	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.4%		
13C3-PFHxS	7.313	402.1 -> 79.9	17531	2.70 µg/L	0.000

7.31
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 = 108.0%	
13C4-PFBA	3.010	216.8 -> 171.9	205783	8.59 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 85.9%	
13C4-PFHpA	6.569	367.1 -> 322.0	80155	2.73 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.4%	
13C5-PFHxA	5.641	318.0 -> 273.0	98806	2.75 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.0%	
13C5-PFPeA	4.434	268.3 -> 223.0	42279	5.45 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 109.0%	
13C6-PFDA	8.198	519.1 -> 474.1	40975	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C7-PFUnDA	8.651	570.0 -> 525.1	51927	1.42 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.4%	
13C8-FOSA	9.682	506.1 -> 77.8	26557	2.24 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.5%	
13C8-PFOA	7.198	421.1 -> 376.0	103662	2.74 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.7%	
13C8-PFOS	8.361	507.1 -> 79.9	16237	3.05 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 122.0%	
13C9-PFNA	7.729	472.1 -> 427.0	43542	1.42 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 113.7%	
d3-MeFOSAA	8.256	573.2 -> 419.0	28484	5.77 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 115.5%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	57378	11.34 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 113.4%	
d3-MeFOSA	10.769	515.0 -> 219.0	9782	2.28 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.1%	
d5-EtFOSAA	8.452	589.2 -> 419.0	23408	5.55 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.1%	
d7-MeFOSE	10.678	623.2 -> 58.9	78477	20.36 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 81.4%	
d9-EtFOSE	10.923	639.2 -> 58.9	114873	22.70 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 90.8%	
d5-EtFOSA	10.989	531.1 -> 219.0	9781	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.8%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	52128	9.30 µg/L	99
		327.1 -> 80.9	20198		
6:2FTS	6.974	427.1 -> 407.0	43616	9.19 µg/L	97
		427.1 -> 80.9	17351		
8:2FTS	7.999	527.1 -> 507.0	29639	9.14 µg/L	88
		527.1 -> 80.8	11608		
EtFOSAA	8.465	584.2 -> 419.1	9696	2.74 µg/L	96
		584.2 -> 526.0	5959		
FOSA	9.684	498.1 -> 77.9	22833	2.49 µg/L	99
		498.1 -> 478.0	678		
MeFOSAA	8.257	570.1 -> 419.0	16215	2.51 µg/L	96
		570.1 -> 483.0	3532		
PFBA	3.018	212.8 -> 168.9	61915	9.76 µg/L	100
PFBS	5.572	298.7 -> 79.9	31770	2.19 µg/L	97
		298.7 -> 98.8	12072		
PFDA	8.198	512.9 -> 469.0	87673	2.40 µg/L	98
		512.9 -> 219.0	15452		
PFDoDA	9.080	613.1 -> 569.0	79003	2.31 µg/L	100
		613.1 -> 319.0	9489		
PFDS	9.233	599.0 -> 79.9	10708	2.25 µg/L	99

7.31
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.569	599.0 -> 98.8	5094	2.41	µg/L	97
		363.1 -> 319.0	98122			
PFHpS	7.856	363.1 -> 169.0	14713	2.15	µg/L	93
		449.0 -> 79.9	17121			
PFHxA	5.644	449.0 -> 98.9	8906	2.39	µg/L	100
		313.0 -> 269.0	82091			
PFHxS	7.314	313.0 -> 118.9	3745	2.24	µg/L	97
		398.7 -> 79.9	25385			
PFNA	7.730	398.7 -> 98.9	11548	2.52	µg/L	97
		463.0 -> 419.0	70629			
PFNS	8.814	463.0 -> 219.0	15747	2.35	µg/L	94
		548.8 -> 79.9	18547			
PFOA	7.200	548.8 -> 98.9	9718	2.34	µg/L	97
		413.0 -> 369.0	112040			
PFOS	8.362	413.0 -> 169.0	20902	2.14	µg/L	98
		498.9 -> 79.9	19655			
PFPeA	4.436	498.9 -> 98.8	9929	4.95	µg/L	100
		263.0 -> 219.0	103095			
PFPeS	6.620	349.1 -> 79.9	21804	2.32	µg/L	94
		349.1 -> 98.9	9744			
PFTeDA	9.785	713.1 -> 669.0	53360	2.36	µg/L	100
		713.1 -> 168.9	4368			
PFTrDA	9.452	663.0 -> 619.0	76732	2.10	µg/L	97
		663.0 -> 168.9	6742			
PFUnDA	8.652	563.1 -> 519.0	69565	2.31	µg/L	97
		563.1 -> 269.1	11111			
11CI-PF3OUdS	9.491	630.9 -> 450.9	84361	4.53	µg/L	99
		632.9 -> 452.9	26469			
9CI-PF3ONS	8.690	530.8 -> 351.0	144099	4.38	µg/L	94
		532.8 -> 353.0	40528			
ADONA	6.817	376.9 -> 250.9	383687	4.53	µg/L	98
		376.9 -> 84.8	97969			
HFPO-DA	6.020	284.9 -> 168.9	26780	4.92	µg/L	98
		284.9 -> 184.9	3544			
3:3FTCA	3.902	241.0 -> 177.0	11845	10.71	µg/L	99
		241.0 -> 117.0	1169			
5:3FTCA	6.296	341.0 -> 237.1	362087	60.07	µg/L	93
		341.0 -> 217.0	238538			
7:3FTCA	7.682	441.0 -> 316.9	212050	60.30	µg/L	99
		441.0 -> 336.9	484951			
EtFOSA	10.990	526.0 -> 219.0	23265	4.53	µg/L	98
		526.0 -> 169.0	29398			
EtFOSE	10.937	630.0 -> 58.9	60661	11.27	µg/L	100
		511.9 -> 219.0	21552			
MeFOSA	10.758	511.9 -> 169.0	28876	4.90	µg/L	92
		616.1 -> 58.9	40024			
MeFOSE	10.691	699.1 -> 79.9	5154	11.88	µg/L	100
		699.1 -> 98.8	3023			
PFDoDS	9.898	295.0 -> 201.0	19757	2.20	µg/L	97
		295.0 -> 84.9	4896			
NFDHA	5.524	279.0 -> 85.1	73632	4.86	µg/L	99
		229.0 -> 84.9	52843			
PFMBA	4.850	314.8 -> 134.9	198317	4.99	µg/L	100
		314.8 -> 82.9	6479			
PFMPA	3.563			4.84	µg/L	100
PFEESA	6.112			4.39	µg/L	100

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

7.3.1
7

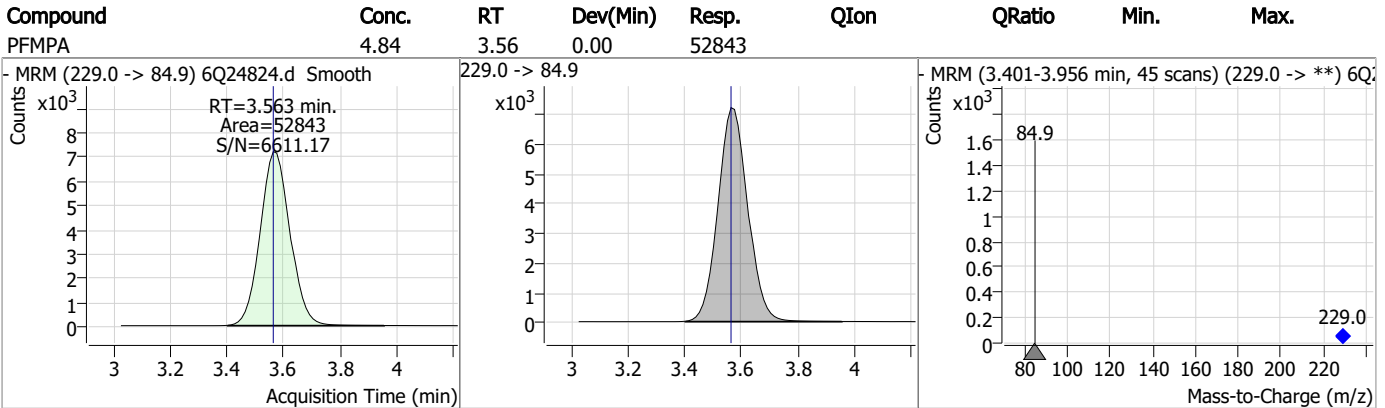
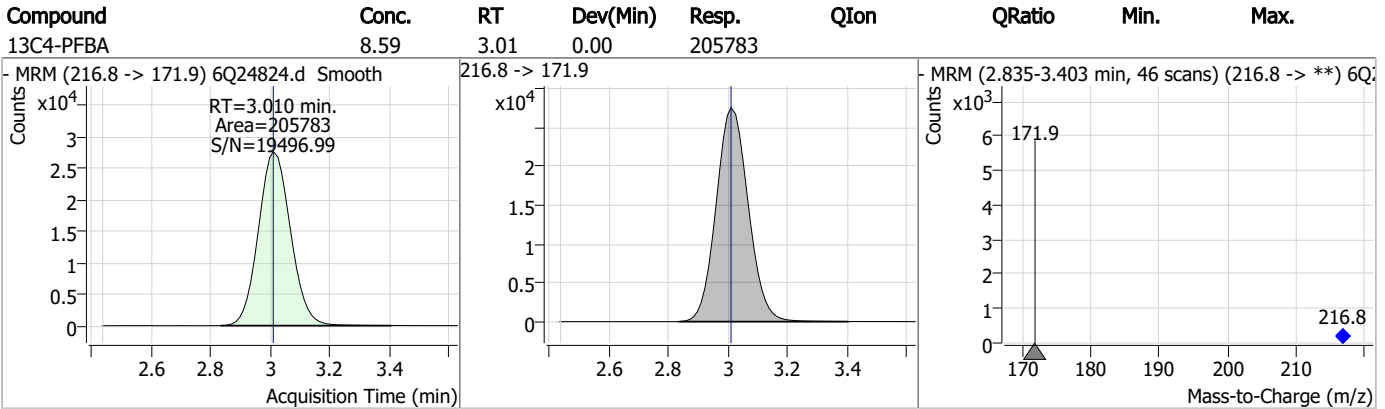
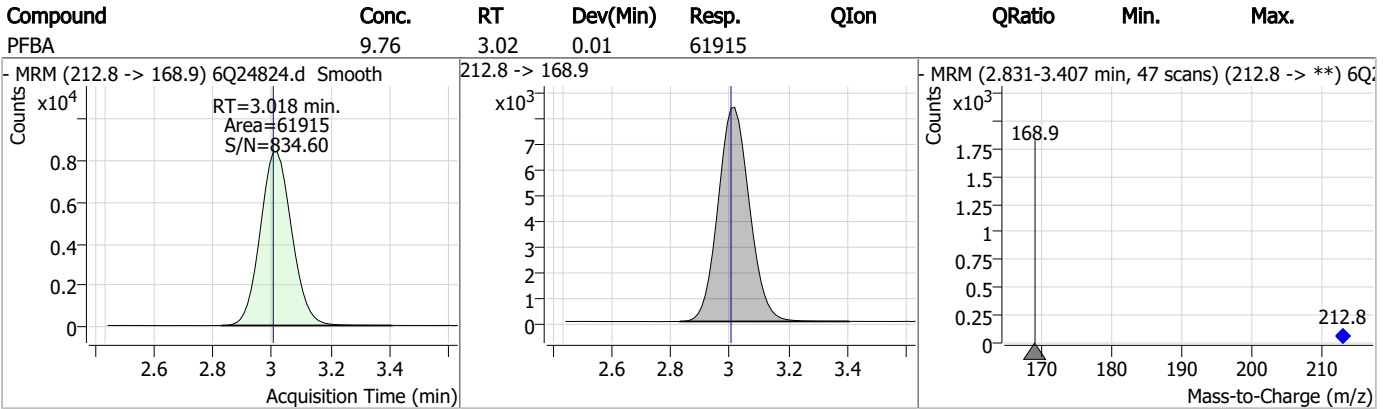
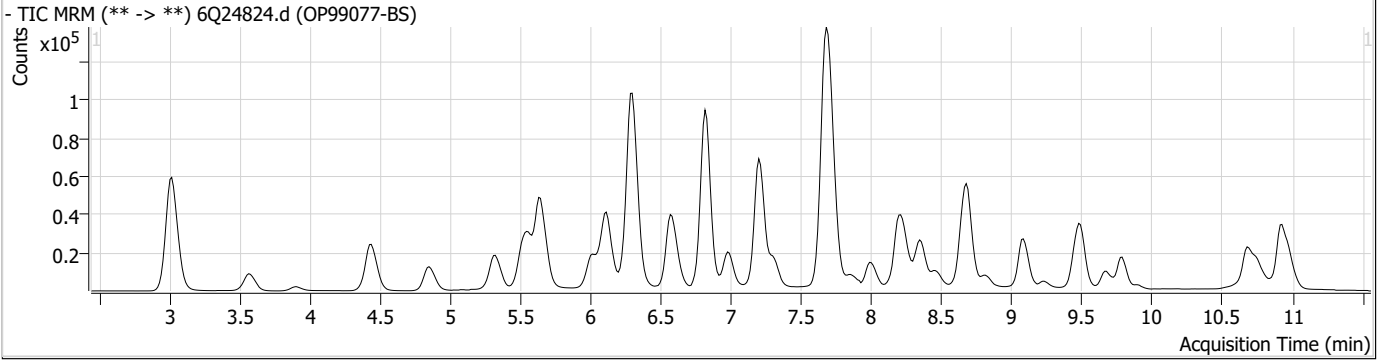
Perfluorinated Compounds by LC/MS/MS

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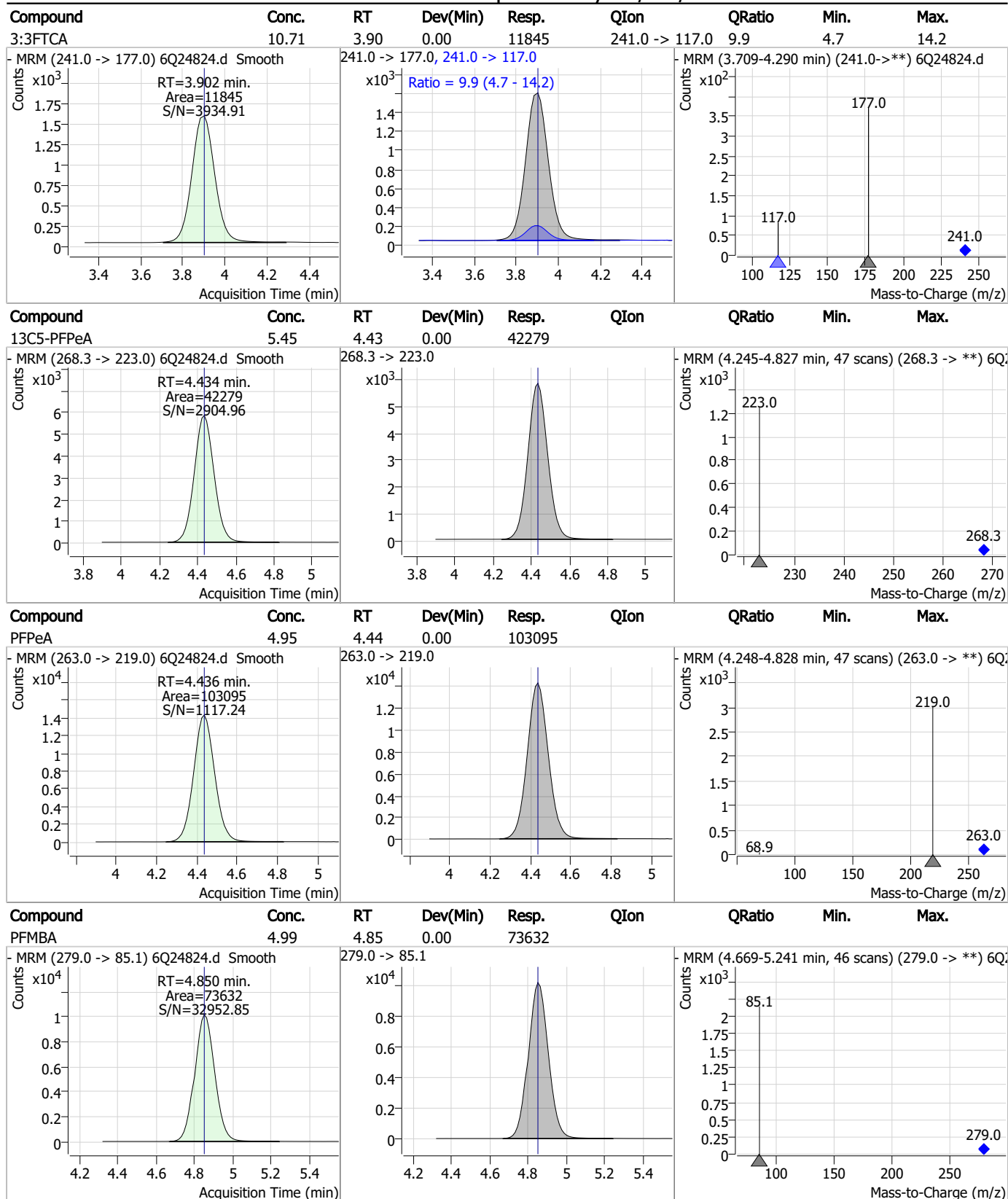
7.3.1

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Perfluorinated Compounds by LC/MS/MS

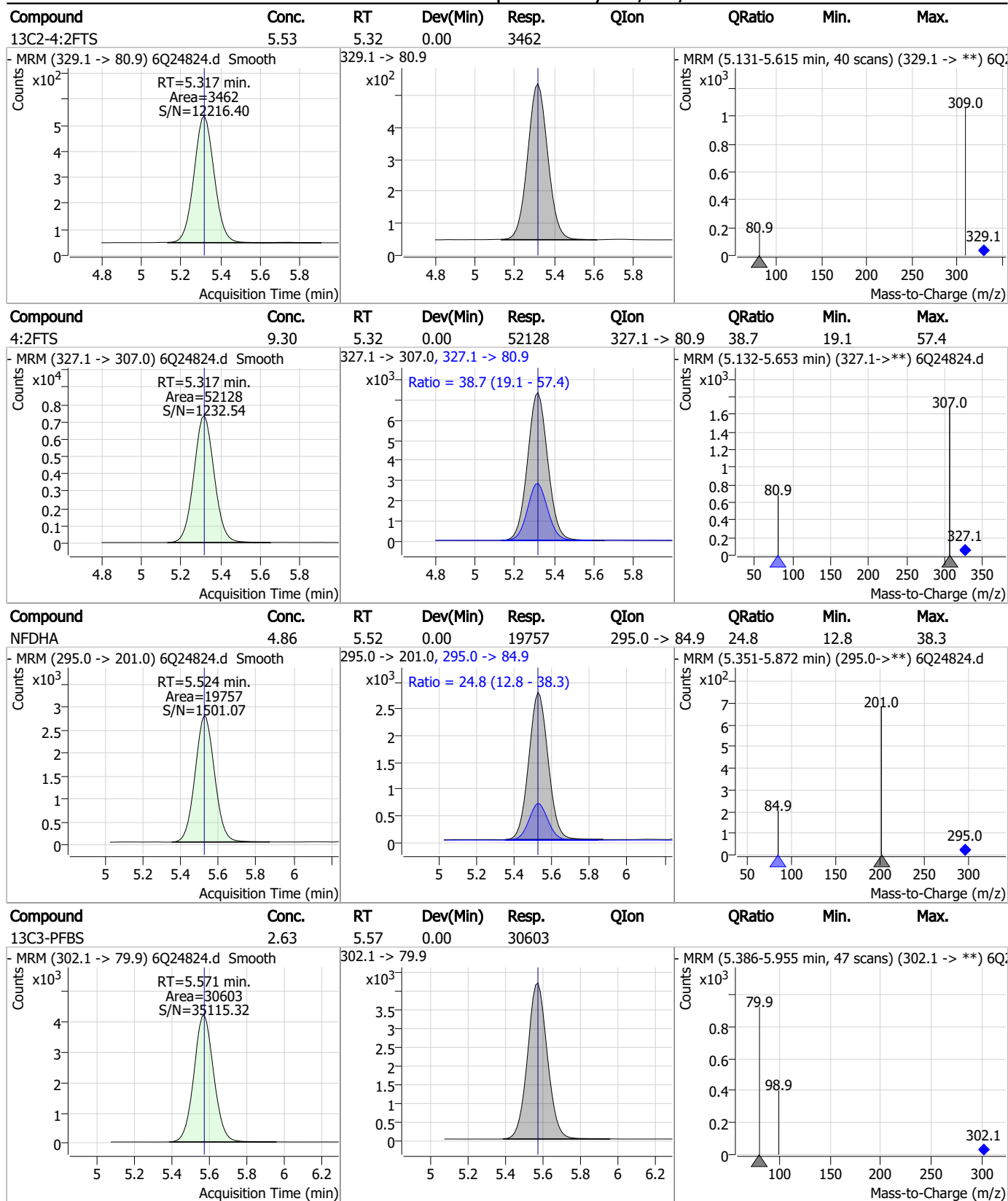


Perfluorinated Compounds by LC/MS/MS



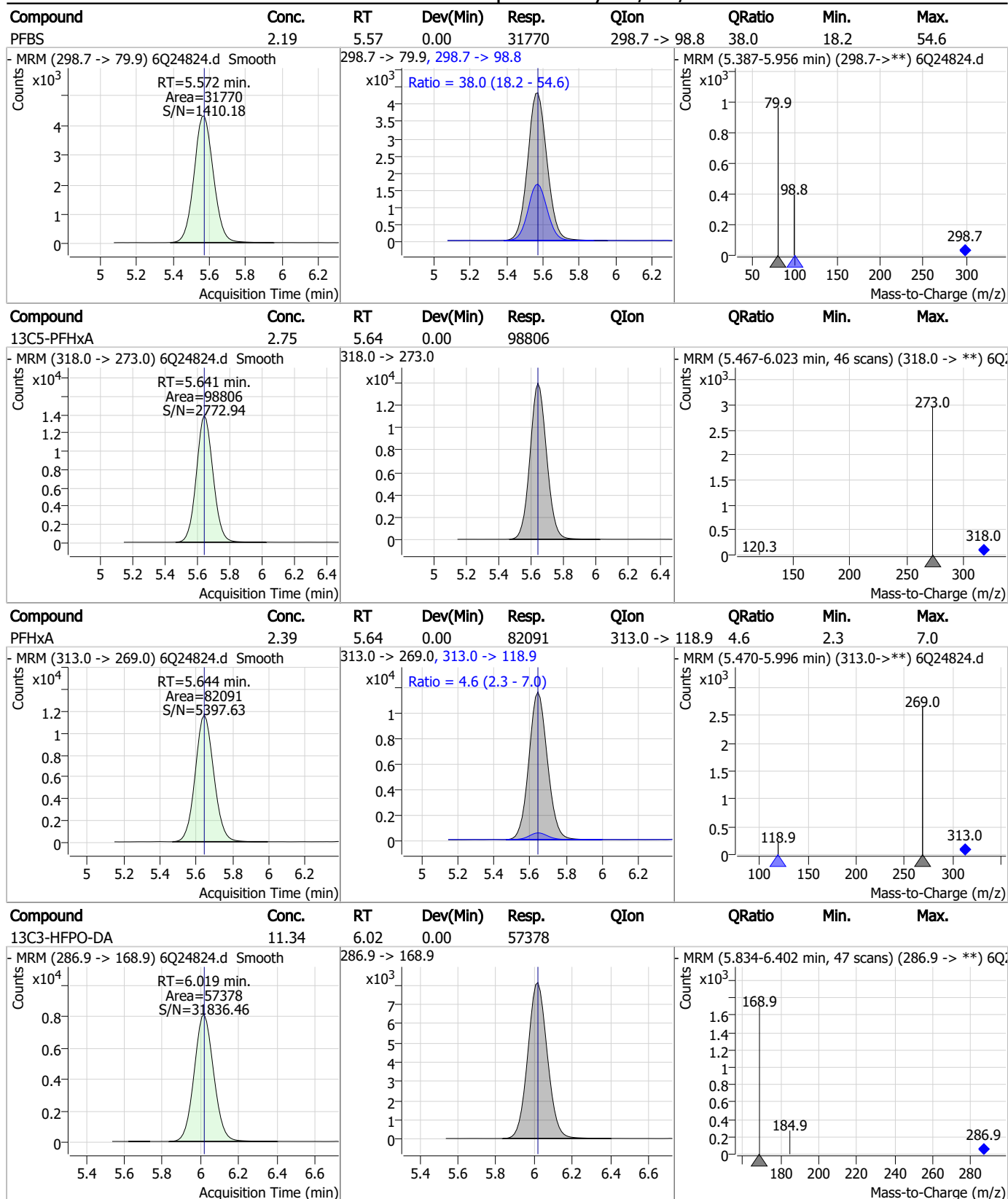
7.3.1
7

Perfluorinated Compounds by LC/MS/MS



7.3.1
7

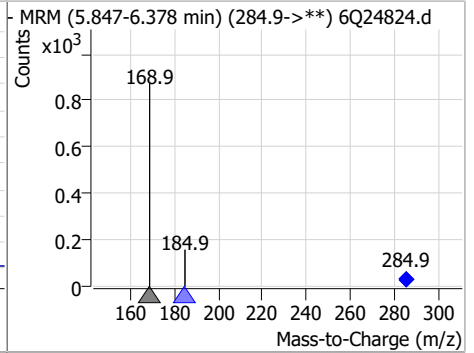
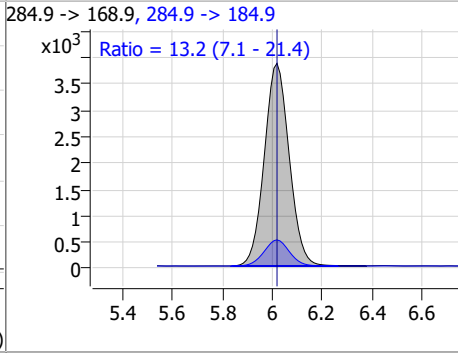
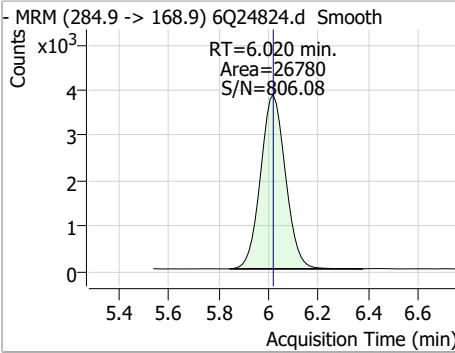
Perfluorinated Compounds by LC/MS/MS



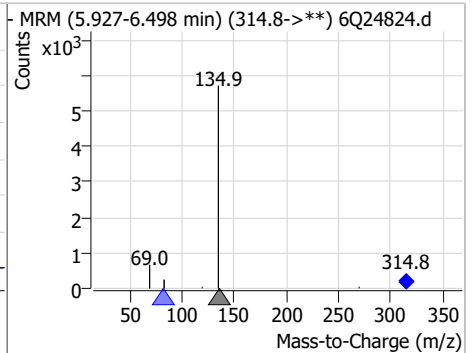
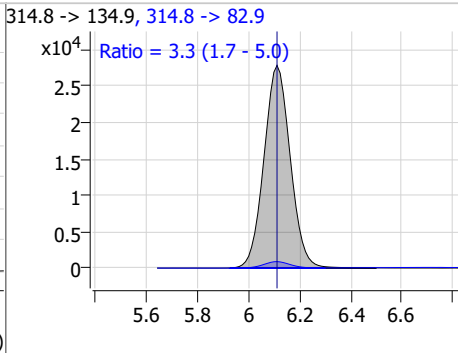
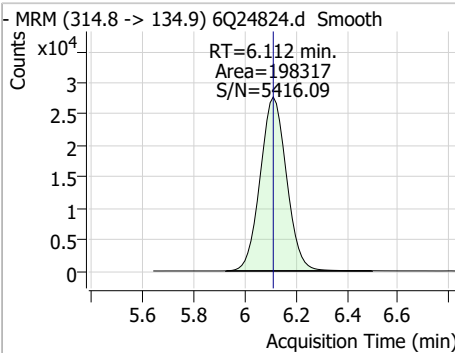
7.3.1
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Perfluorinated Compounds by LC/MS/MS

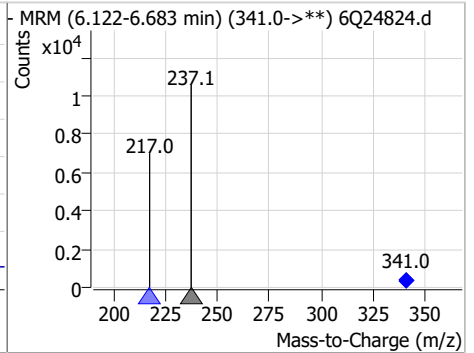
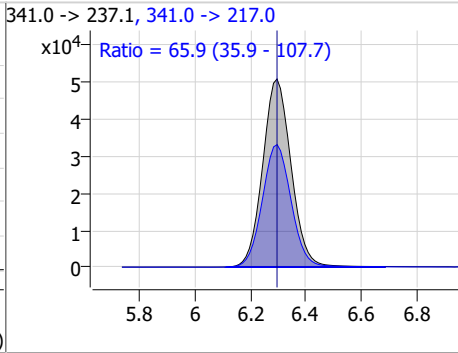
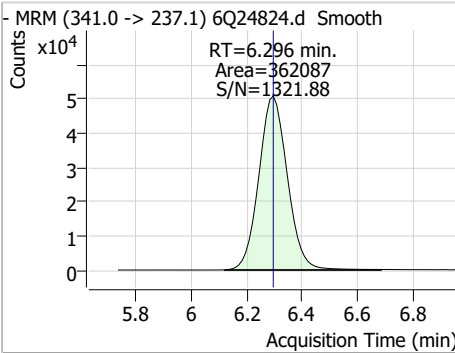
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.92	6.02	0.00	26780	284.9 -> 184.9	13.2	7.1	21.4



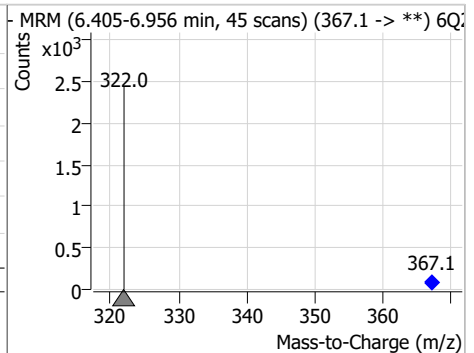
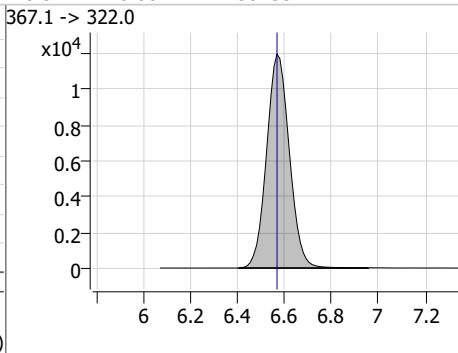
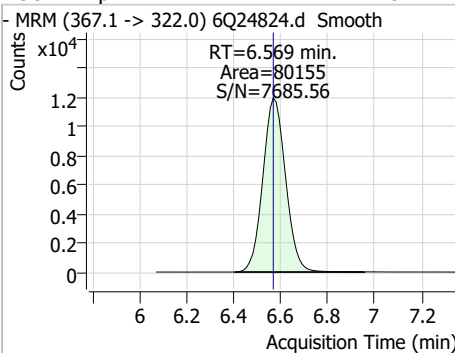
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	4.39	6.11	0.00	198317	314.8 -> 82.9	3.3	1.7	5.0



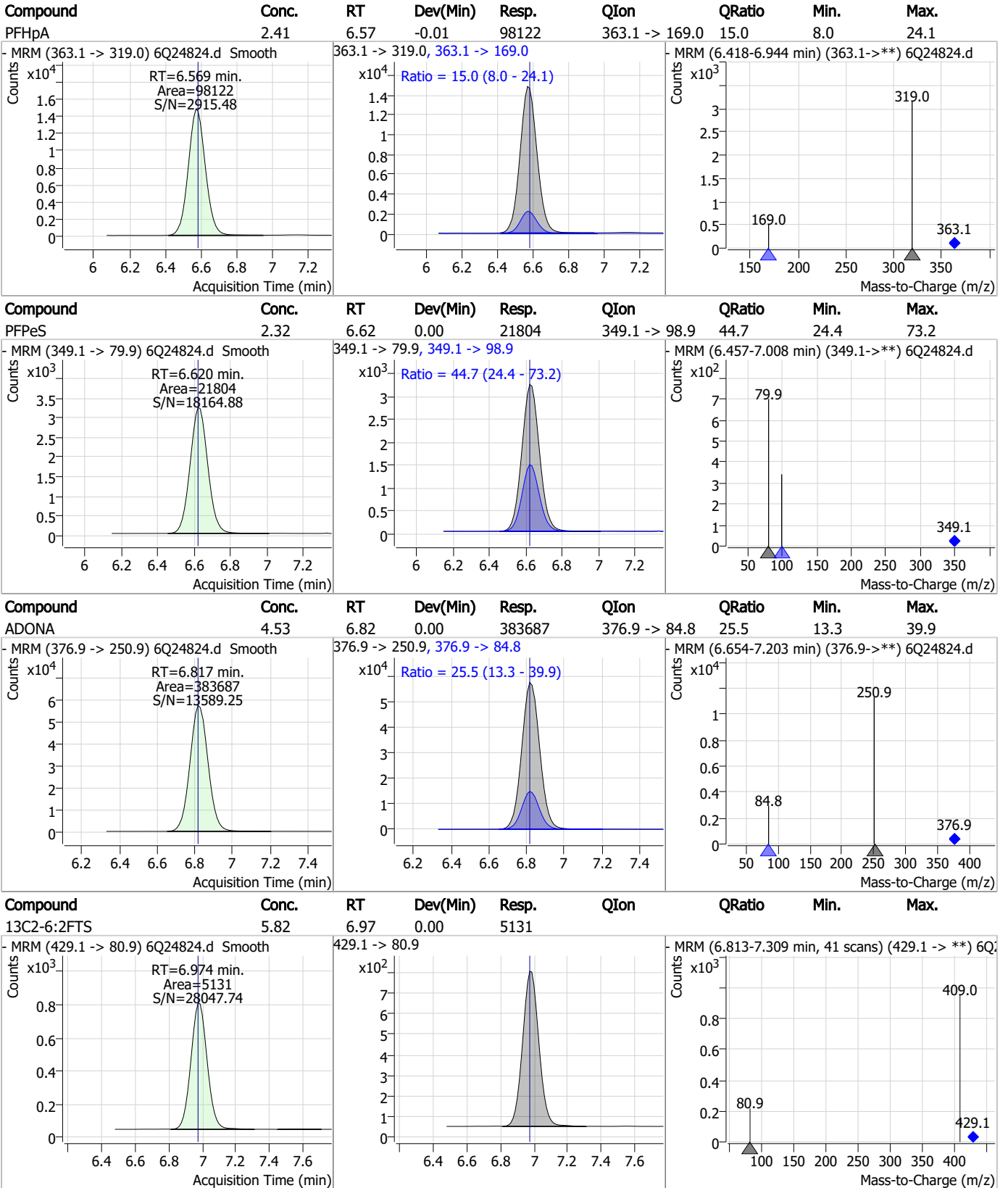
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	60.07	6.30	0.00	362087	341.0 -> 217.0	65.9	35.9	107.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpa	2.73	6.57	0.00	80155	367.1 -> 322.0			



Perfluorinated Compounds by LC/MS/MS

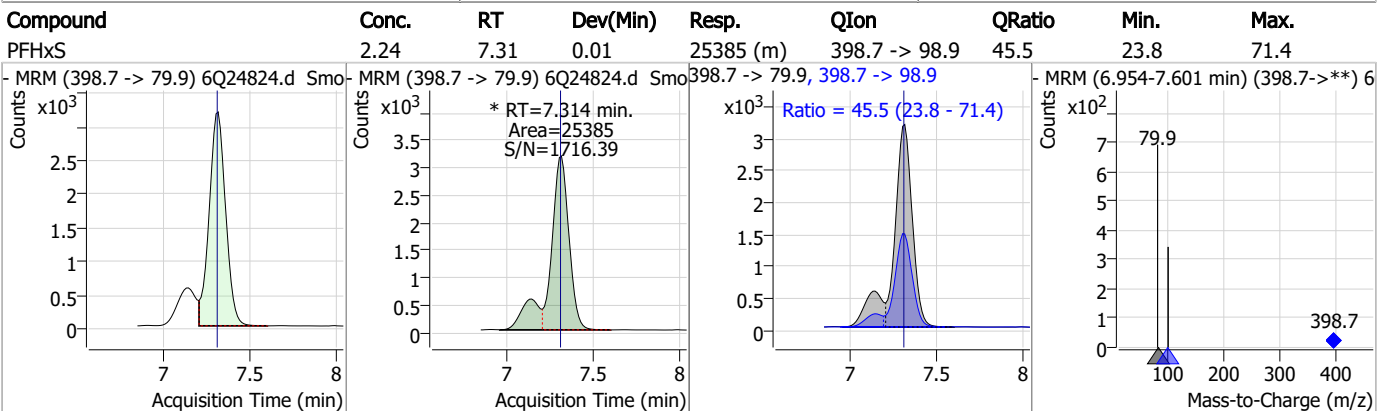
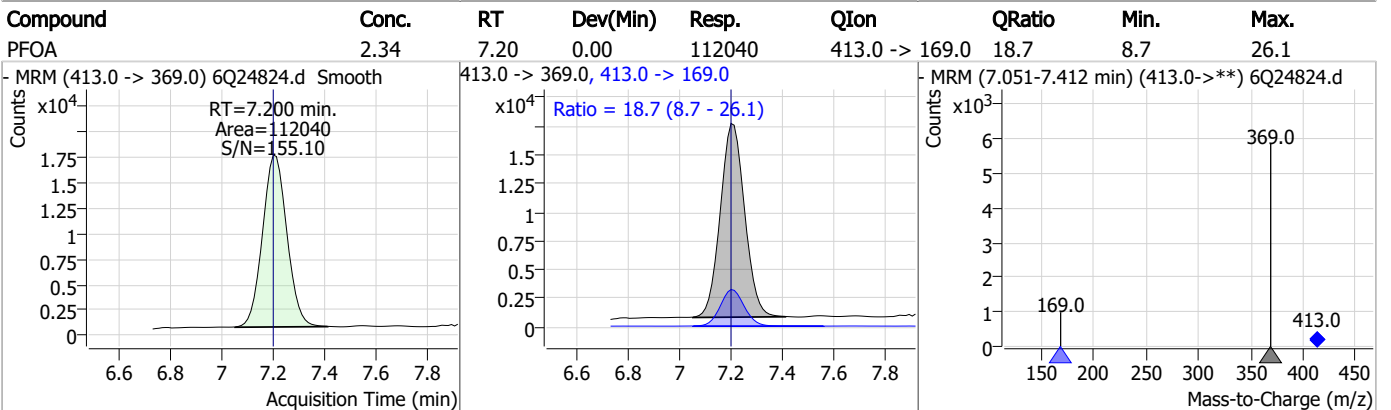
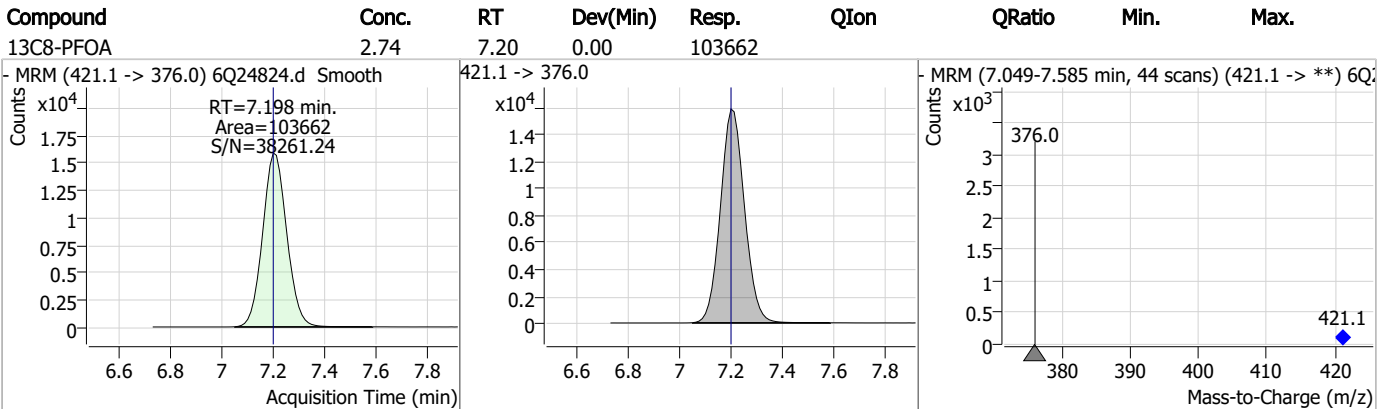
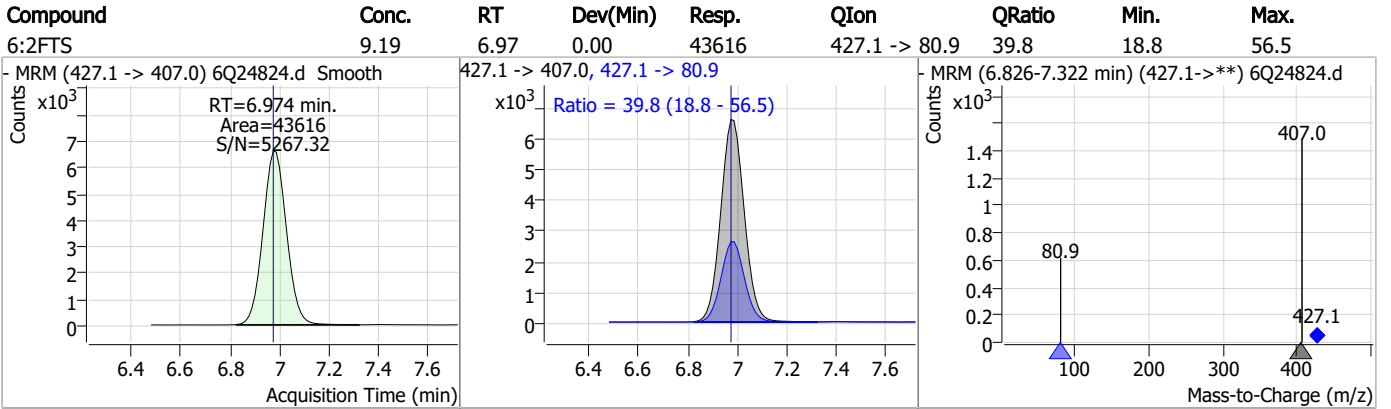


7.3.1

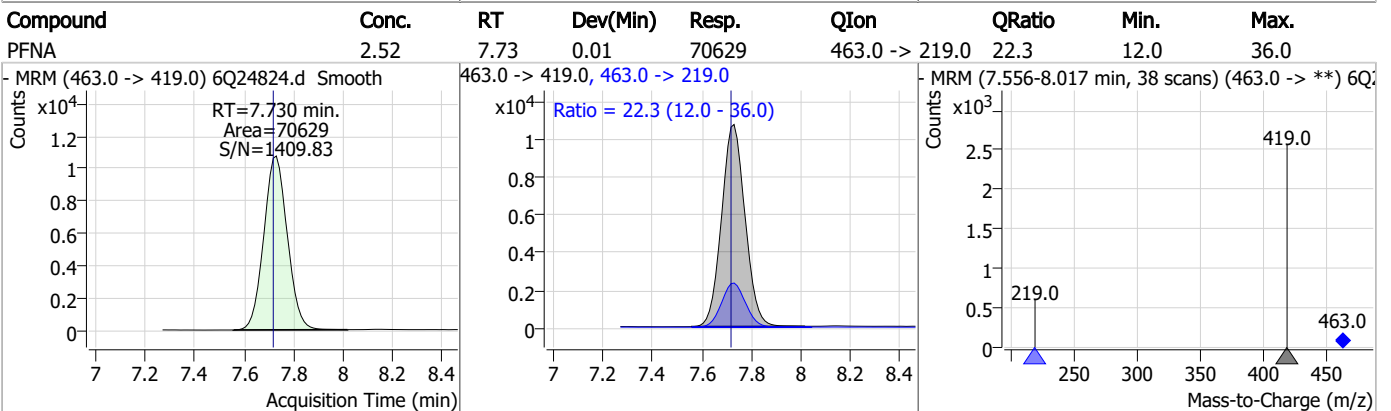
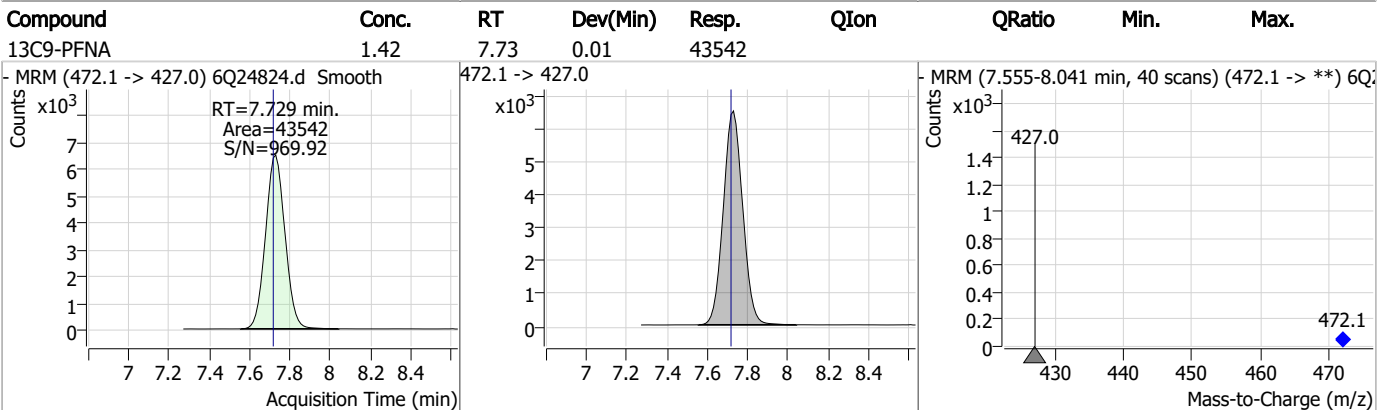
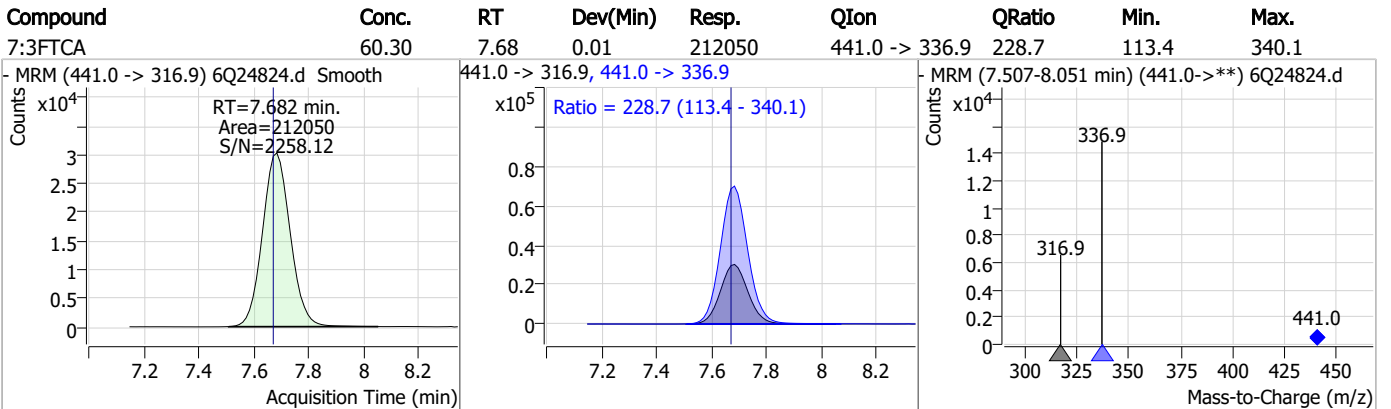
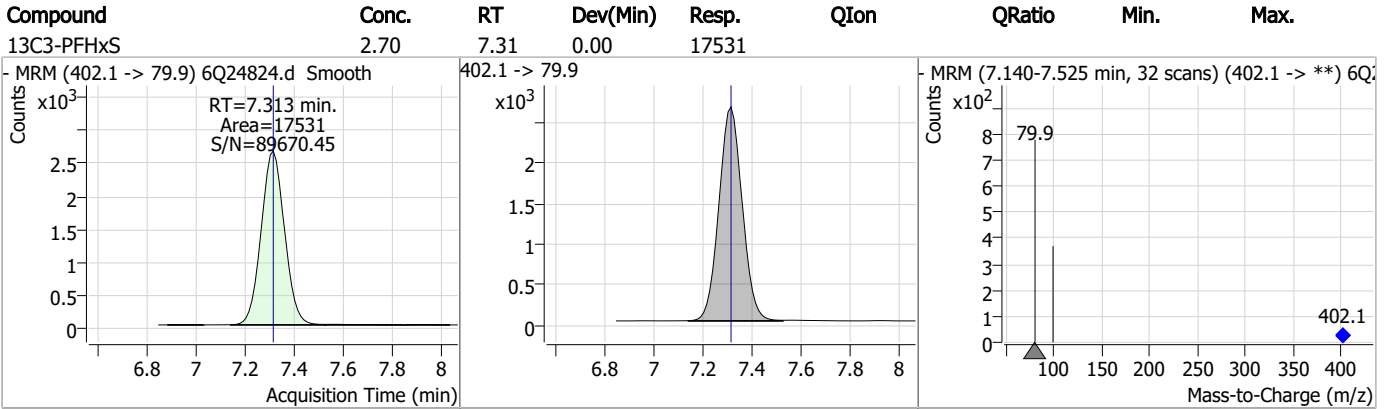
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

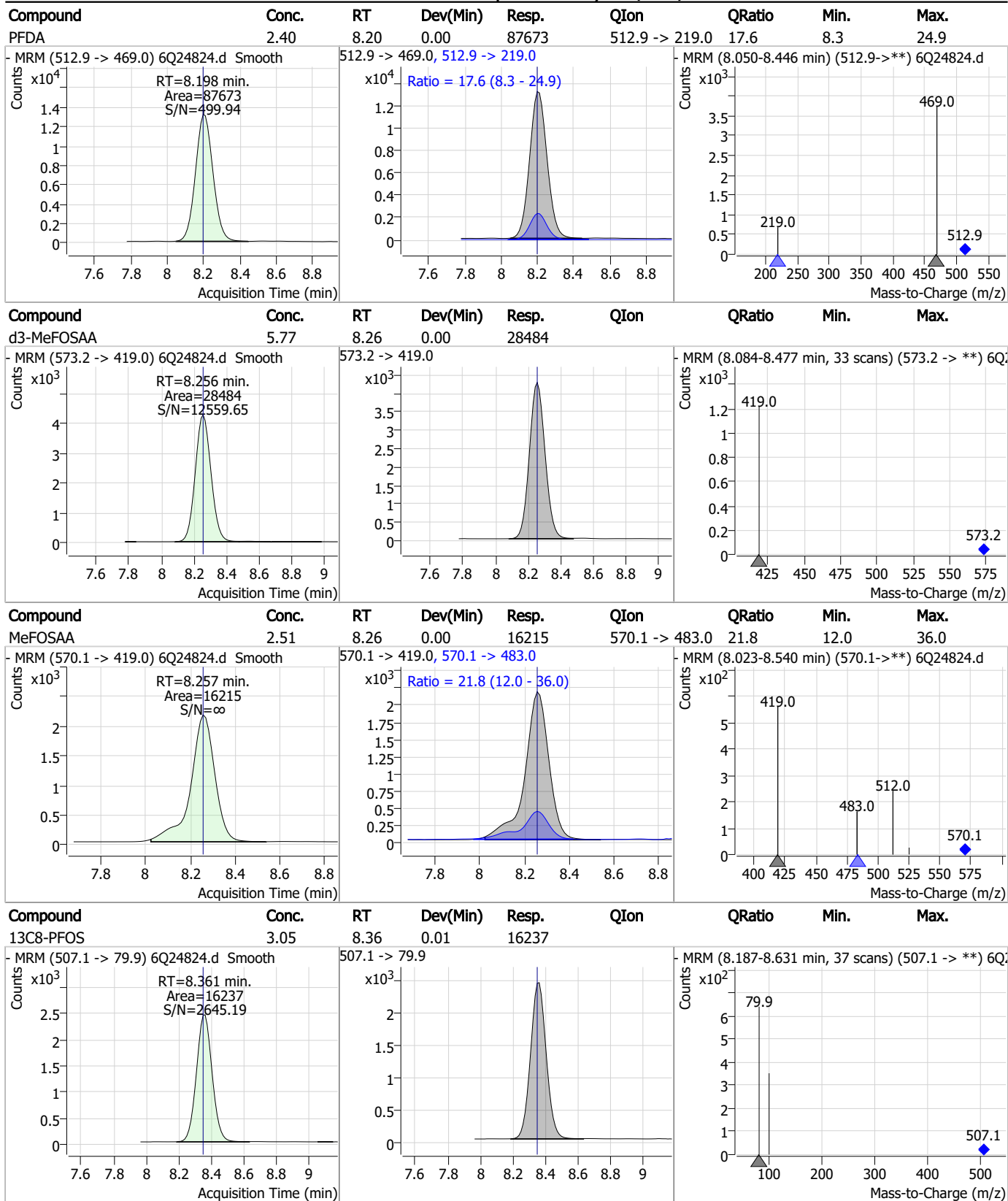


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	2.15	7.86	0.00	17121	449.0 -> 98.9	52.0	23.5	70.6
13C2-8:2FTS	5.67	8.00	0.01	5105	529.1 -> 80.9			
8:2FTS	9.14	8.00	0.00	29639	527.1 -> 80.8	39.2	16.2	48.5
13C6-PFDA	1.32	8.20	0.00	40975	519.1 -> 474.1			

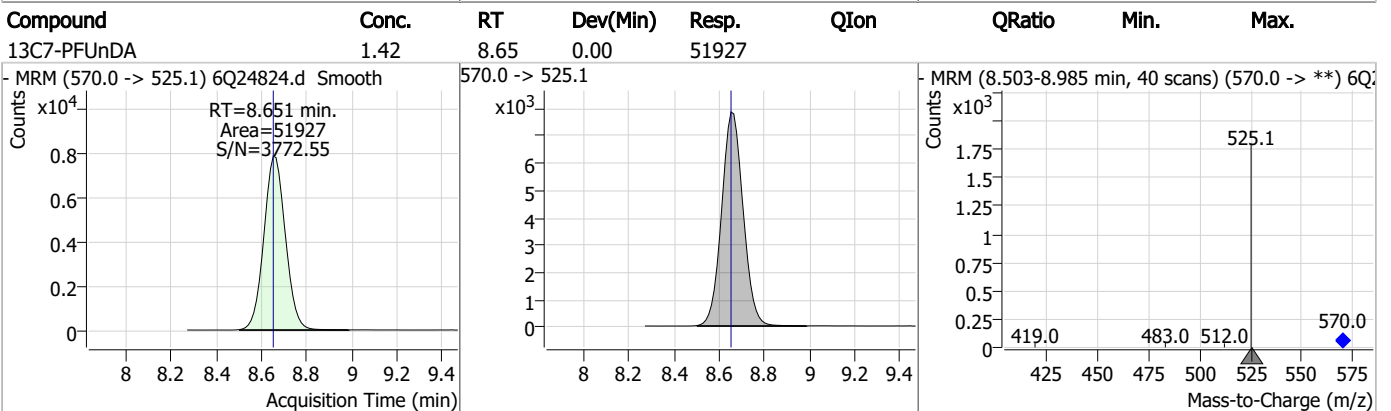
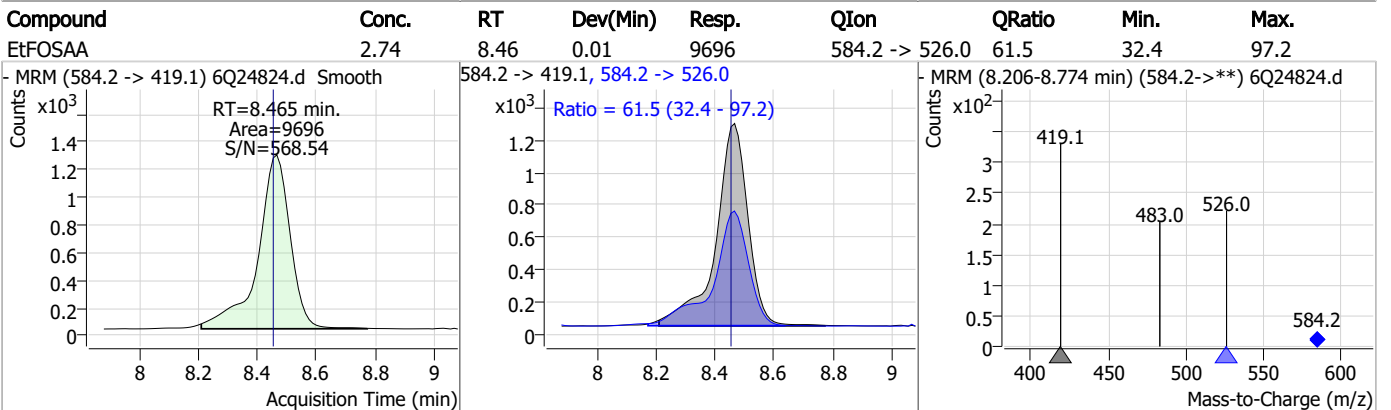
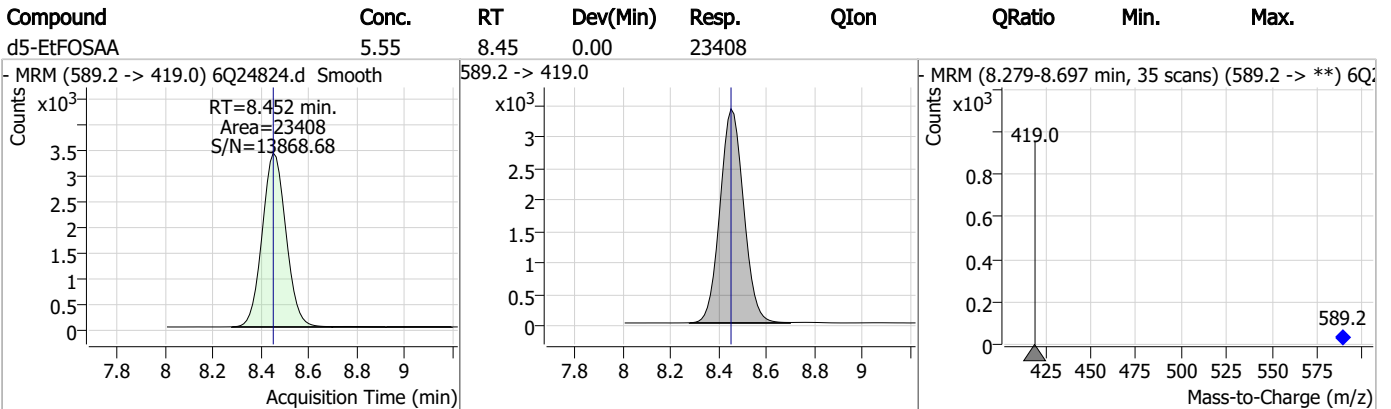
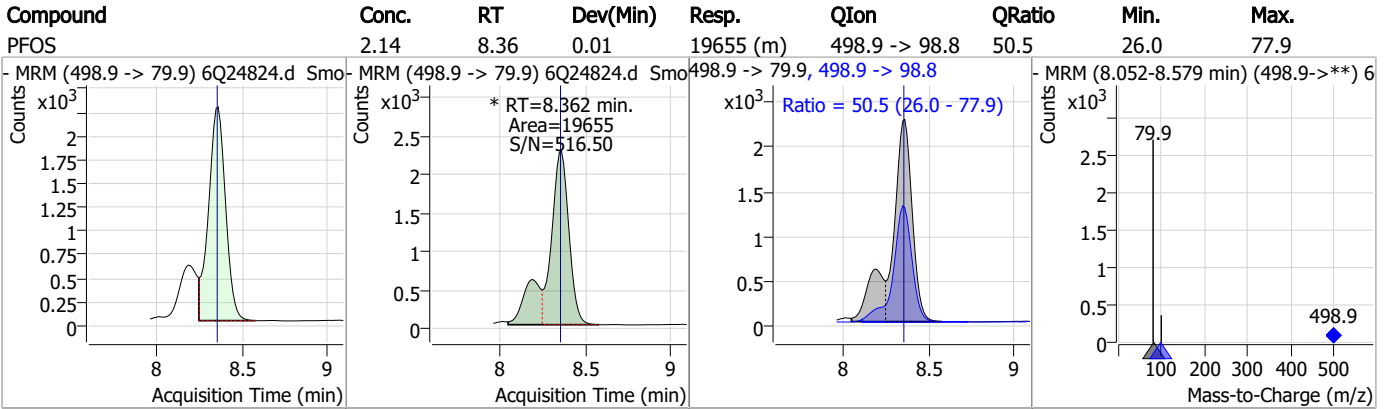
7.3.1

Perfluorinated Compounds by LC/MS/MS

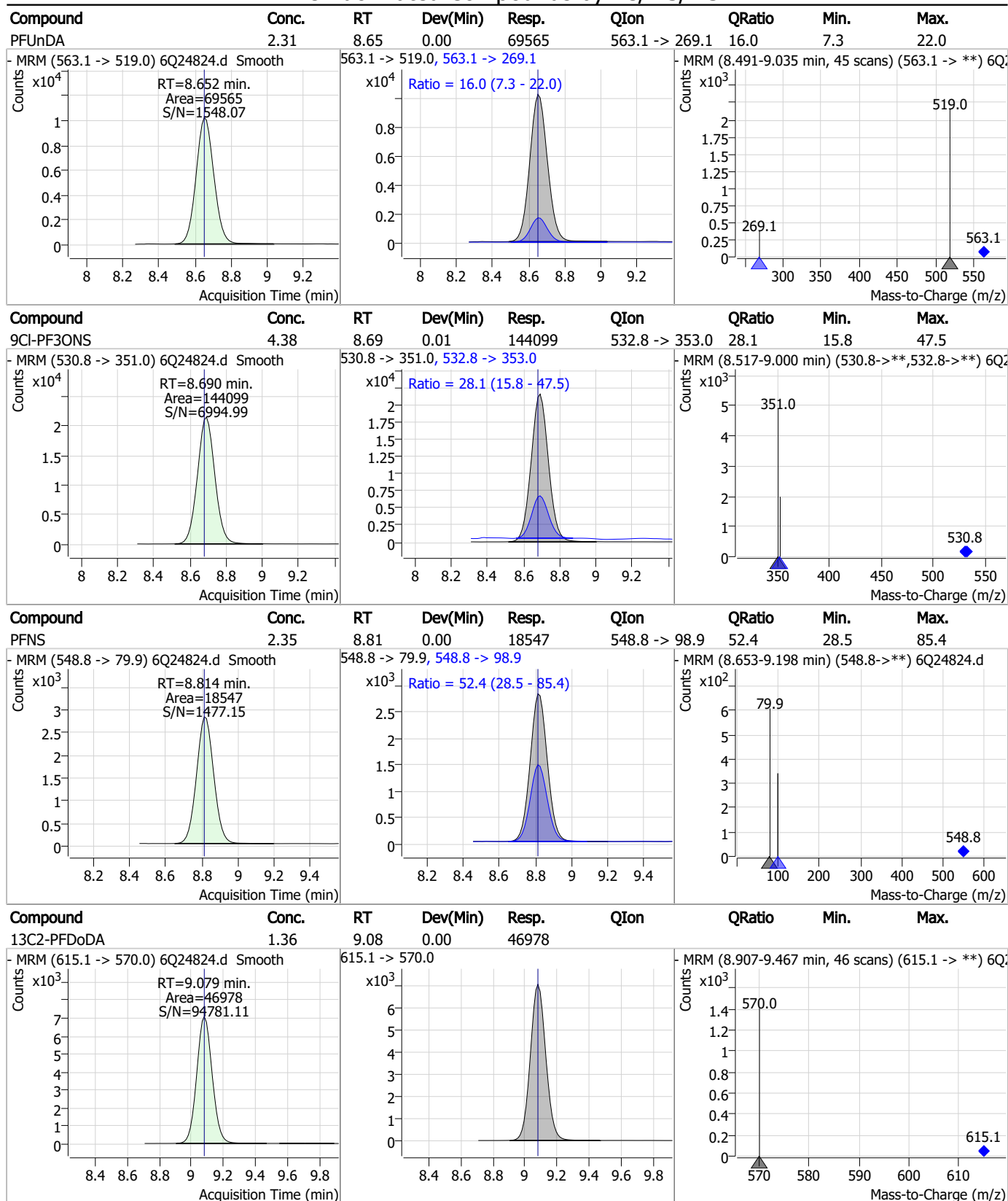


7.3.1
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Perfluorinated Compounds by LC/MS/MS



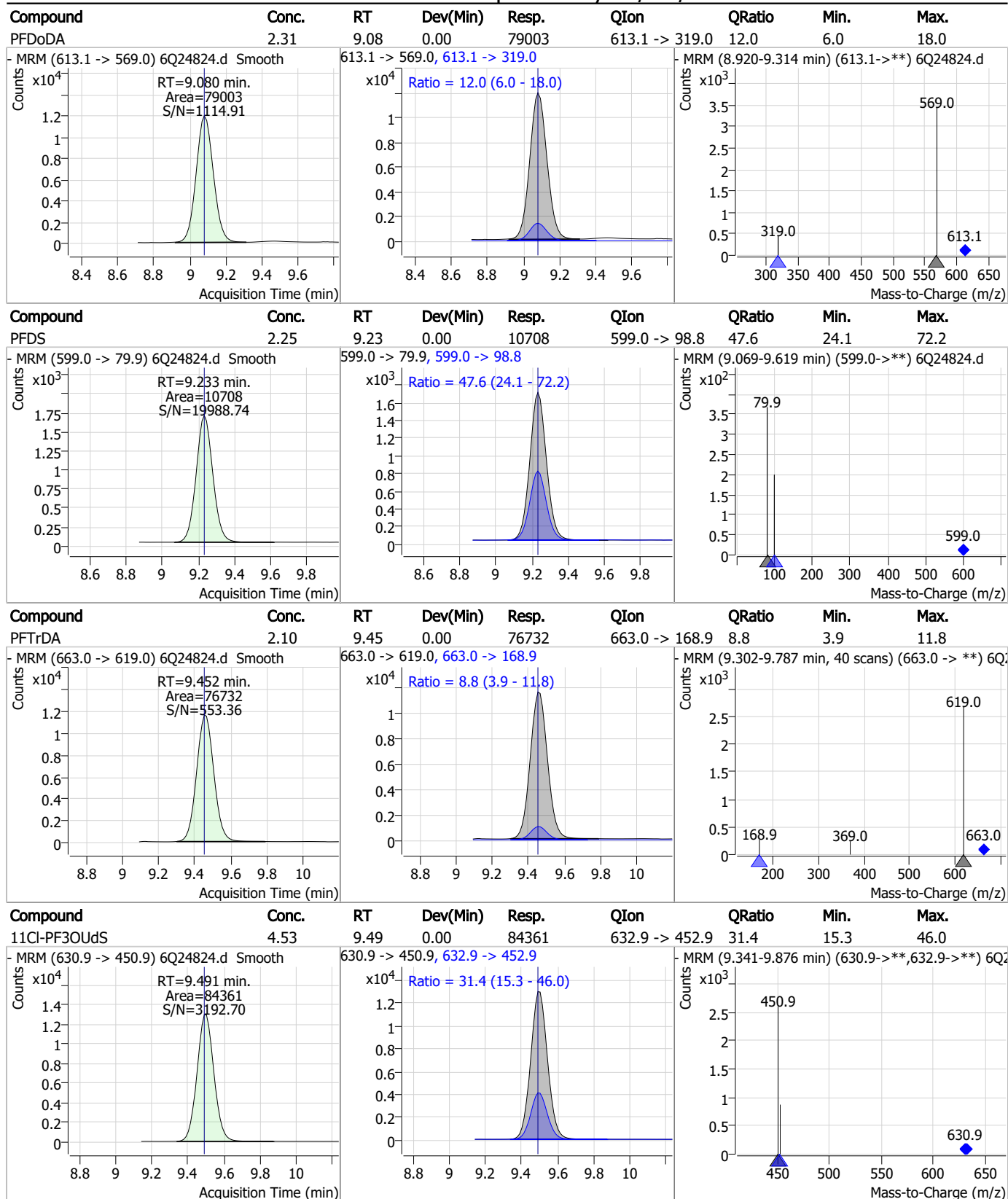
Perfluorinated Compounds by LC/MS/MS



7.3.1
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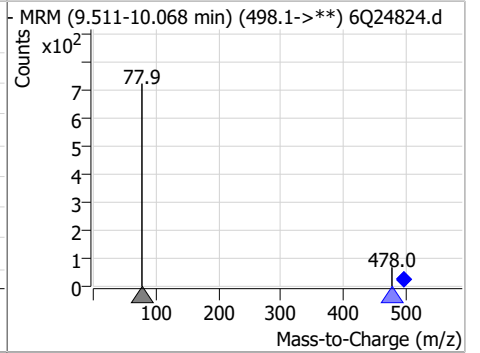
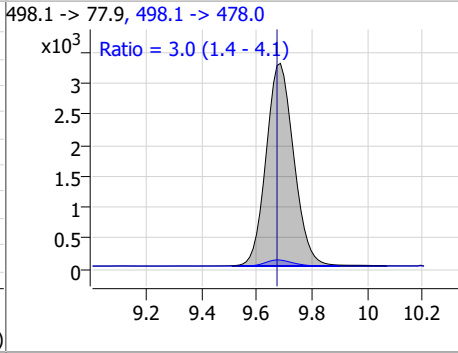
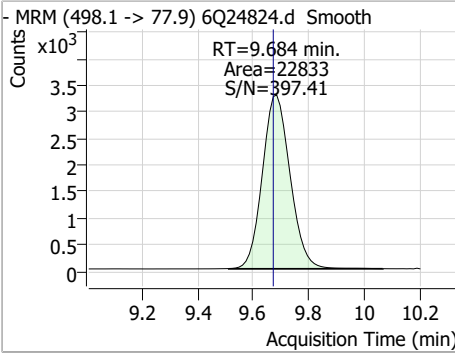
Perfluorinated Compounds by LC/MS/MS



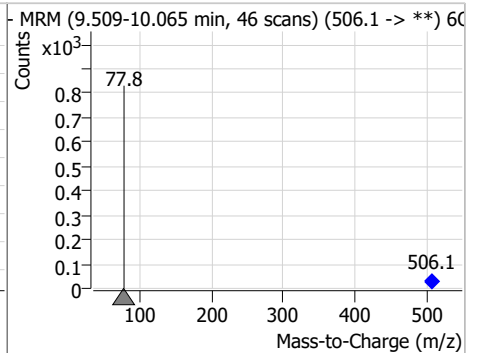
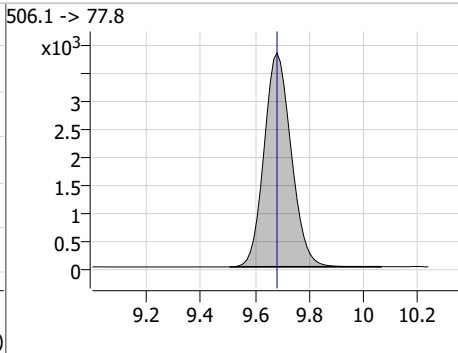
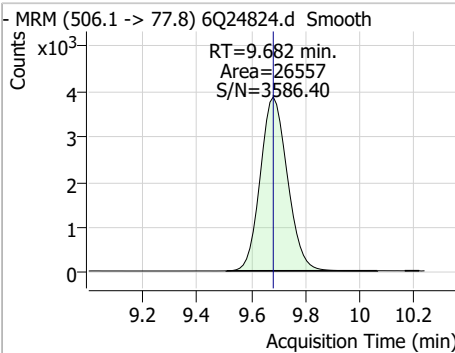
7.3.1
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Perfluorinated Compounds by LC/MS/MS

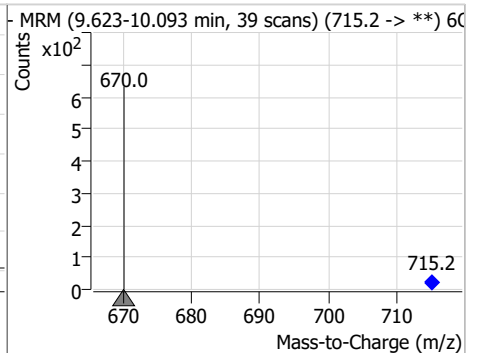
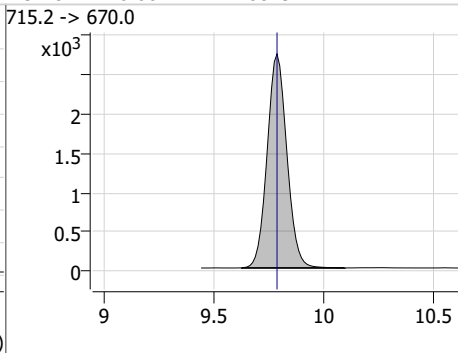
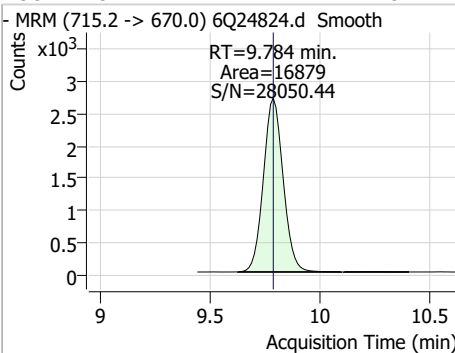
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.49	9.68	0.01	22833	498.1 -> 478.0	3.0	1.4	4.1



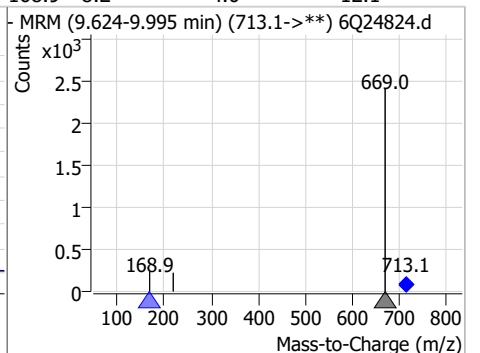
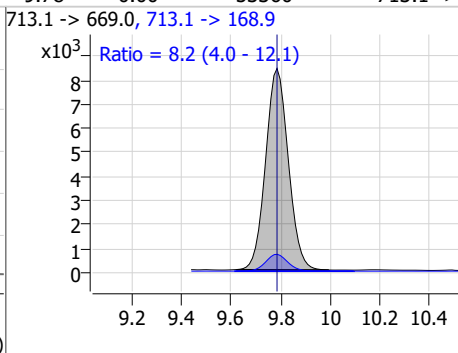
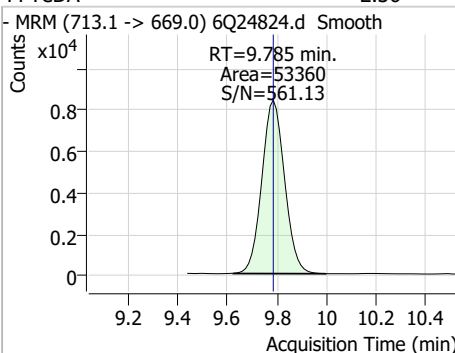
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.24	9.68	0.00	26557				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.23	9.78	0.00	16879				

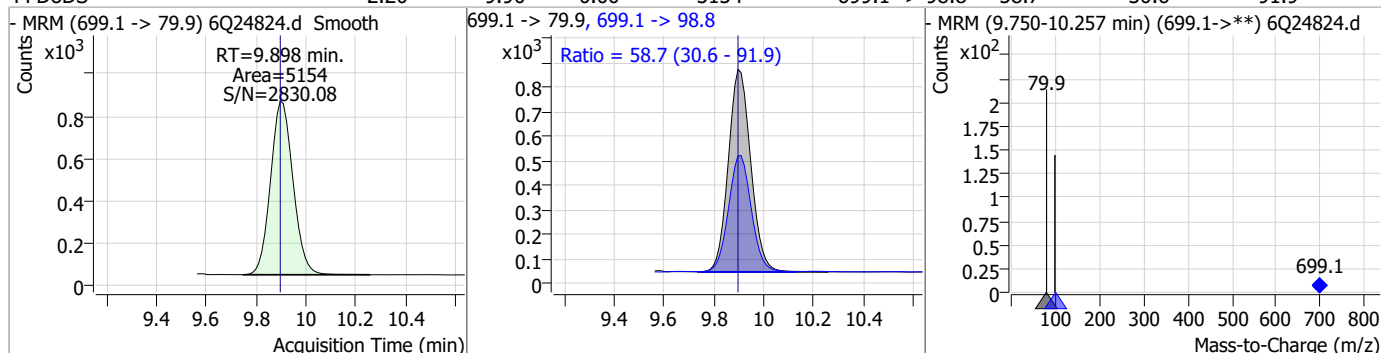


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.36	9.78	0.00	53360	713.1 -> 168.9	8.2	4.0	12.1

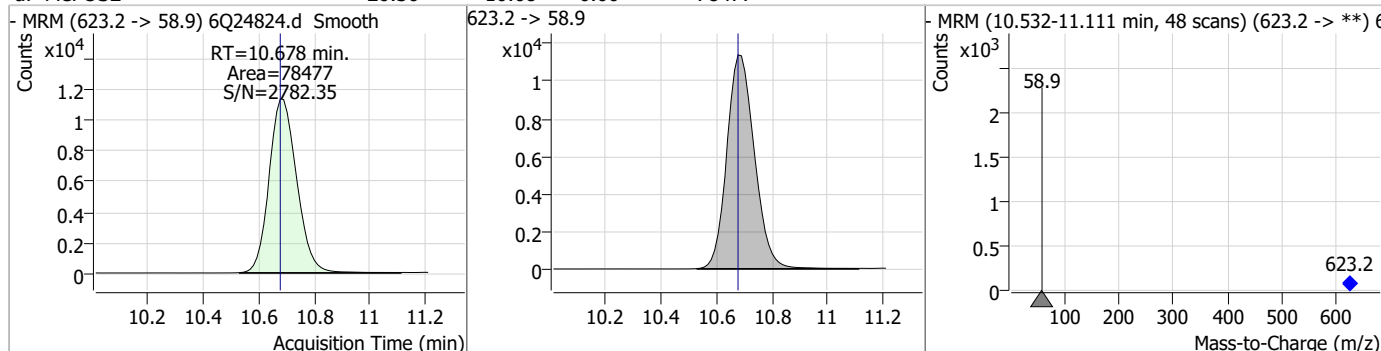


Perfluorinated Compounds by LC/MS/MS

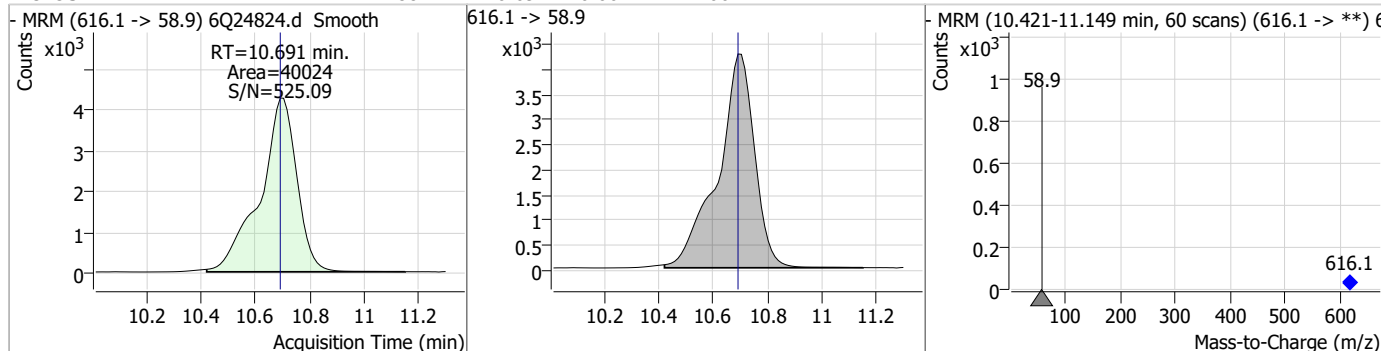
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.20	9.90	0.00	5154	699.1 -> 98.8	58.7	30.6	91.9



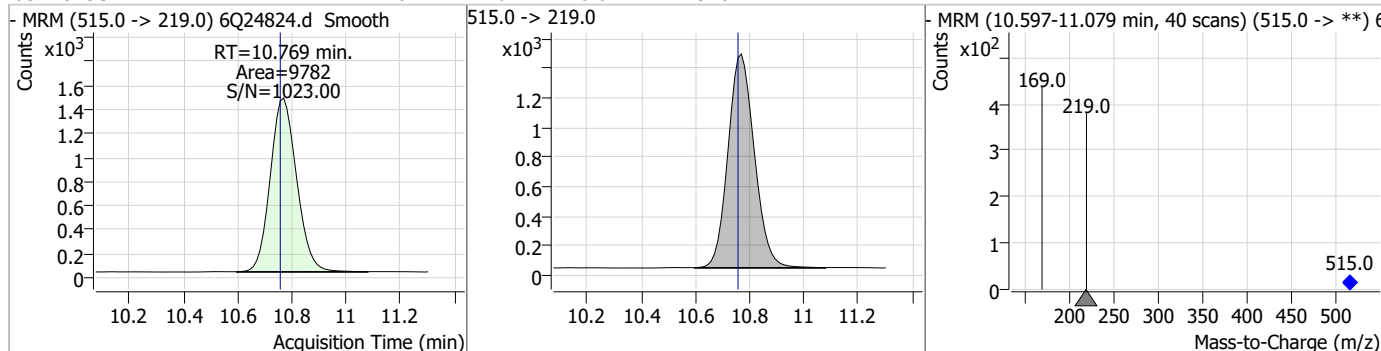
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.36	10.68	0.00	78477	623.2 -> 58.9			



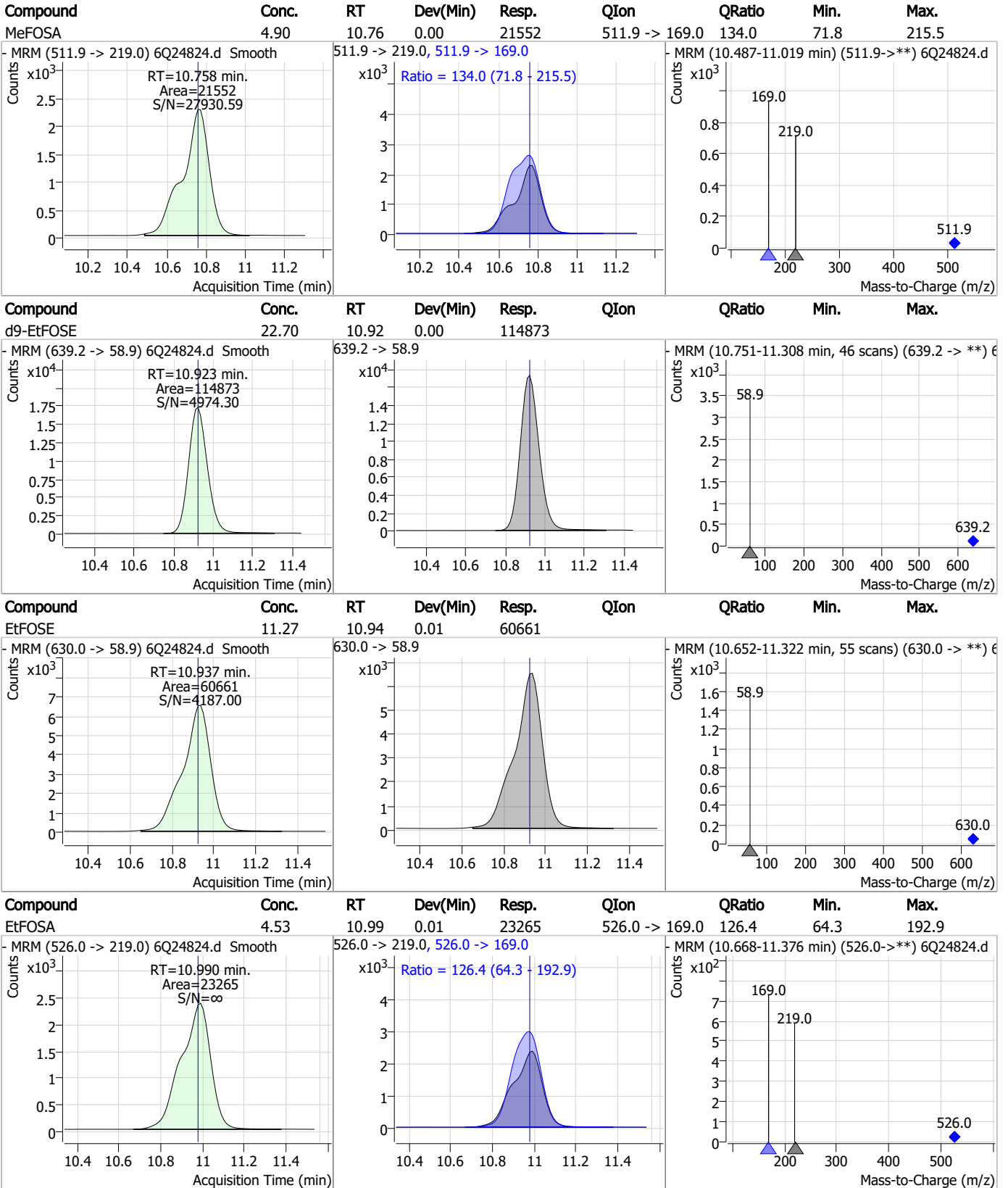
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.88	10.69	0.00	40024	616.1 -> 58.9			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.28	10.77	0.01	9782	515.0 -> 219.0			



Perfluorinated Compounds by LC/MS/MS

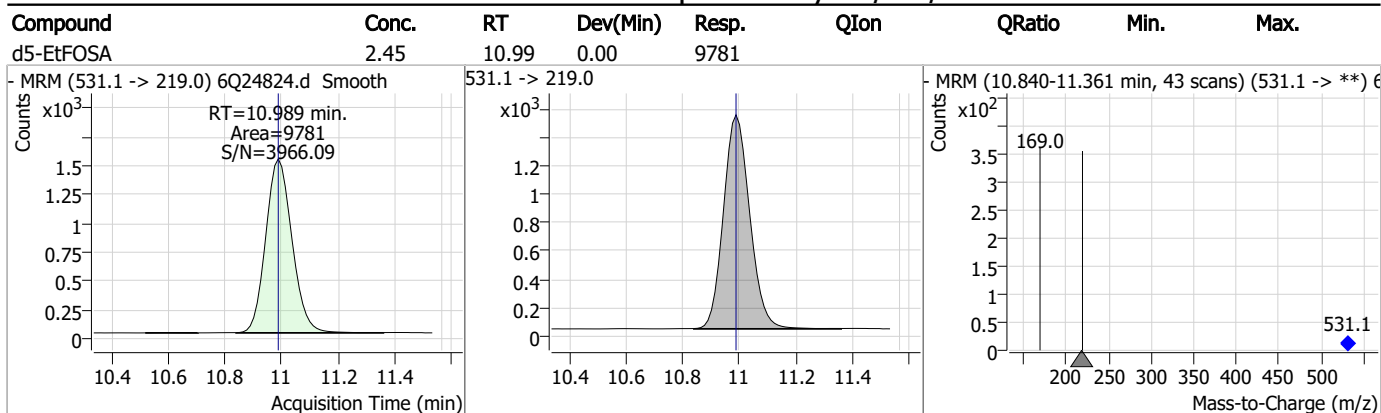


7.3.1

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Perfluorinated Compounds by LC/MS/MS



7.3.1

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Manual Integration Approval Summary

Sample Number: OP99077-BS Method: EPA DRAFT 1633
Lab FileID: 6Q24824.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 23:42 Supervisor approved: 09/22/23 13:19 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24825.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 11:56:30 PM
 Sample Name : OP99077-LLBS:3
 Vial : P2-A2
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99077,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	275819	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	43482	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	101728	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	79875	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	103105	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	42946	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	38921	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	48555	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	44537	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	17050	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	25880	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	31515	2.50 µg/L	0.000
M3-PFHxS	7.313	402.1 -> 79.9	18397	2.50 µg/L	0.000
M8-PFOS	8.348	507.1 -> 79.9	16071	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	3557	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	5209	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	5221	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	29874	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	55303	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	24544	5.00 µg/L	0.000
M7-MeFOSE	10.690	623.2 -> 58.9	86117	25.00 µg/L	0.012
M9-EtFOSE	10.923	639.2 -> 58.9	124467	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	9810	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	9686	2.50 µg/L	0.012
13C4-PFOS	8.349	502.8 -> 79.9	19470	2.50 µg/L	0.000
13C3-PFBA	3.014	216.0 -> 172.0	100719	5.00 µg/L	0.012
18O2-PFHxS	7.313	403.0 -> 83.9	11519	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	105761	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	31531	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	46086	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	68883	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	3557	5.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 118.4%		
13C2-6:2FTS	6.974	429.1 -> 80.9	5209	6.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 122.9%		
13C2-8:2FTS	7.998	529.1 -> 80.9	5221	6.04 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 120.7%		
13C2-PFDoDA	9.079	615.1 -> 570.0	44537	1.39 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 111.5%		
13C2-PFTeDA	9.784	715.2 -> 670.0	17050	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.9%		
13C3-PFBS	5.571	302.1 -> 79.9	31515	2.82 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 113.0%		
13C3-PFHxS	7.313	402.1 -> 79.9	18397	2.95 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 118.0%	
13C4-PFBA	3.010	216.8 -> 171.9	275819	11.23 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 112.3%	
13C4-PFHpA	6.569	367.1 -> 322.0	79875	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.0%	
13C5-PFHxA	5.641	318.0 -> 273.0	101728	2.80 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.2%	
13C5-PFPeA	4.434	268.3 -> 223.0	43482	5.55 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 111.1%	
13C6-PFDA	8.198	519.1 -> 474.1	38921	1.36 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.5%	
13C7-PFUnDA	8.651	570.0 -> 525.1	48555	1.43 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 114.5%	
13C8-FOSA	9.682	506.1 -> 77.8	25880	2.02 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.0%	
13C8-PFOA	7.198	421.1 -> 376.0	103105	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.4%	
13C8-PFOS	8.348	507.1 -> 79.9	16071	2.80 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.1%	
13C9-PFNA	7.717	472.1 -> 427.0	42946	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.8%	
d3-MeFOSAA	8.256	573.2 -> 419.0	29874	5.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.4%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	55303	10.83 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.3%	
d3-MeFOSA	10.769	515.0 -> 219.0	9686	2.09 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.7%	
d5-EtFOSAA	8.452	589.2 -> 419.0	24544	5.40 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 108.1%	
d7-MeFOSE	10.690	623.2 -> 58.9	86117	20.73 µg/L	0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 82.9%	
d9-EtFOSE	10.923	639.2 -> 58.9	124467	22.83 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 91.3%	
d5-EtFOSA	10.989	531.1 -> 219.0	9810	2.28 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 91.0%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	17757	3.08 µg/L	98
		327.1 -> 80.9	6524		
6:2FTS	6.974	427.1 -> 407.0	14400	2.99 µg/L	99
		427.1 -> 80.9	5546		
8:2FTS	7.999	527.1 -> 507.0	9293	2.80 µg/L	85
		527.1 -> 80.8	3803		
EtFOSAA	8.465	584.2 -> 419.1	3190	0.86 µg/L	95
		584.2 -> 526.0	1935		
FOSA	9.684	498.1 -> 77.9	7241	0.81 µg/L	100
		498.1 -> 478.0	197		
MeFOSAA	8.257	570.1 -> 419.0	5457	0.81 µg/L	92
		570.1 -> 483.0	1107		
PFBA	3.018	212.8 -> 168.9	26541	3.12 µg/L	100
PFBS	5.572	298.7 -> 79.9	10536	0.71 µg/L	98
		298.7 -> 98.8	3983		
PFDA	8.198	512.9 -> 469.0	29171	0.84 µg/L	100
		512.9 -> 219.0	4800		
PFDODA	9.080	613.1 -> 569.0	23272	0.72 µg/L	95
		613.1 -> 319.0	3215		
PFDS	9.233	599.0 -> 79.9	3373	0.72 µg/L	96

7.3.2
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
PFHpA	6.569	599.0 -> 98.8	1710	0.81 µg/L	95
		363.1 -> 319.0	32770		
PFHpS	7.856	363.1 -> 169.0	4609	0.77 µg/L	99
		449.0 -> 79.9	6071		
PFHxA	5.644	449.0 -> 98.9	2803	0.74 µg/L	99
		313.0 -> 269.0	26187		
PFHxS	7.314	313.0 -> 118.9	1324	0.65 µg/L	93
		398.7 -> 79.9	7753		
PFNA	7.717	398.7 -> 98.9	4055	0.74 µg/L	97
		463.0 -> 419.0	20356		
PFNS	8.814	463.0 -> 219.0	5194	0.79 µg/L	98
		548.8 -> 79.9	6159		
PFOA	7.200	548.8 -> 98.9	3418	0.83 µg/L	99
		413.0 -> 369.0	39305		
PFOS	8.350	413.0 -> 169.0	6597	0.76 µg/L	92
		498.9 -> 79.9	6900		
PFPeA	4.436	498.9 -> 98.8	3198	1.56 µg/L	100
		263.0 -> 219.0	33320		
PFPeS	6.620	349.1 -> 79.9	7037	0.71 µg/L	97
		349.1 -> 98.9	3296		
PFTeDA	9.785	713.1 -> 669.0	17117	0.75 µg/L	99
		713.1 -> 168.9	1450		
PFTrDA	9.452	663.0 -> 619.0	25254	0.73 µg/L	98
		663.0 -> 168.9	2171		
PFUnDA	8.652	563.1 -> 519.0	22181	0.79 µg/L	99
		563.1 -> 269.1	3172		
11Cl-PF3OUdS	9.491	630.9 -> 450.9	25200	1.40 µg/L	96
		632.9 -> 452.9	8319		
9Cl-PF3ONS	8.690	530.8 -> 351.0	46205	1.46 µg/L	94
		532.8 -> 353.0	16015		
ADONA	6.817	376.9 -> 250.9	128370	1.57 µg/L	97
		376.9 -> 84.8	31865		
HFPO-DA	6.020	284.9 -> 168.9	8111	1.55 µg/L	99
		284.9 -> 184.9	1112		
3:3FTCA	3.902	241.0 -> 177.0	4290	2.89 µg/L	99
		241.0 -> 117.0	429		
5:3FTCA	6.296	341.0 -> 237.1	112538	18.13 µg/L	93
		341.0 -> 217.0	74682		
7:3FTCA	7.682	441.0 -> 316.9	70844	19.57 µg/L	99
		441.0 -> 336.9	159943		
EtFOSA	10.990	526.0 -> 219.0	7806	1.51 µg/L	99
		526.0 -> 169.0	10116		
EtFOSE	10.937	630.0 -> 58.9	22410	3.84 µg/L	100
		511.9 -> 219.0	6855		
MeFOSA	10.758	511.9 -> 169.0	9873	1.57 µg/L	100
		616.1 -> 58.9	14026		
MeFOSE	10.691	699.1 -> 79.9	1624	3.79 µg/L	100
		699.1 -> 98.8	965		
PFDoDS	9.898	295.0 -> 201.0	6306	0.70 µg/L	98
		295.0 -> 84.9	1652		
NFDHA	5.524	279.0 -> 85.1	23601	1.56 µg/L	100
		229.0 -> 84.9	17506		
PFMBA	4.850	314.8 -> 134.9	65082	1.56 µg/L	100
		314.8 -> 82.9	1732		
PFMPA	3.575			1.40 µg/L	98
PFEESA	6.112				

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

7.3.2
7

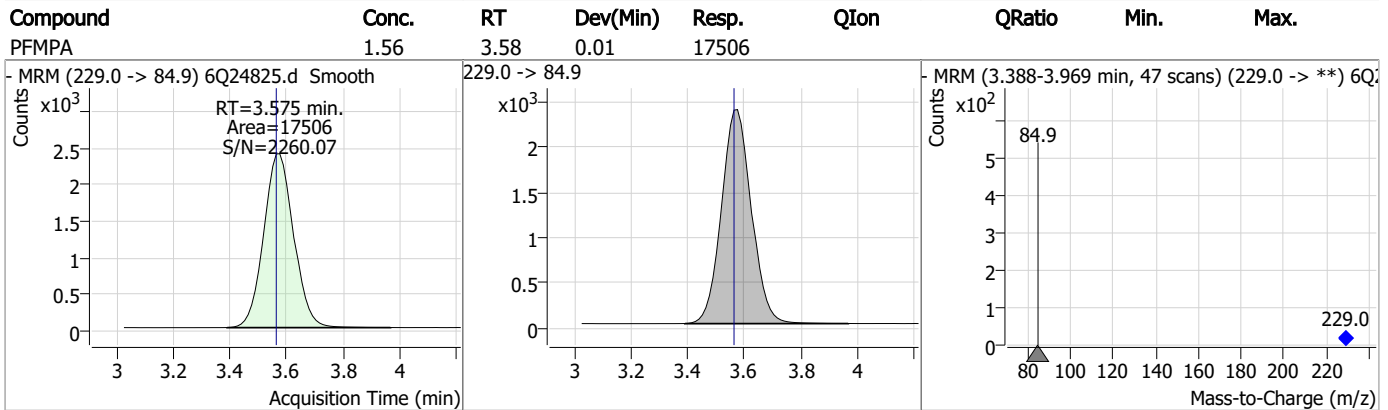
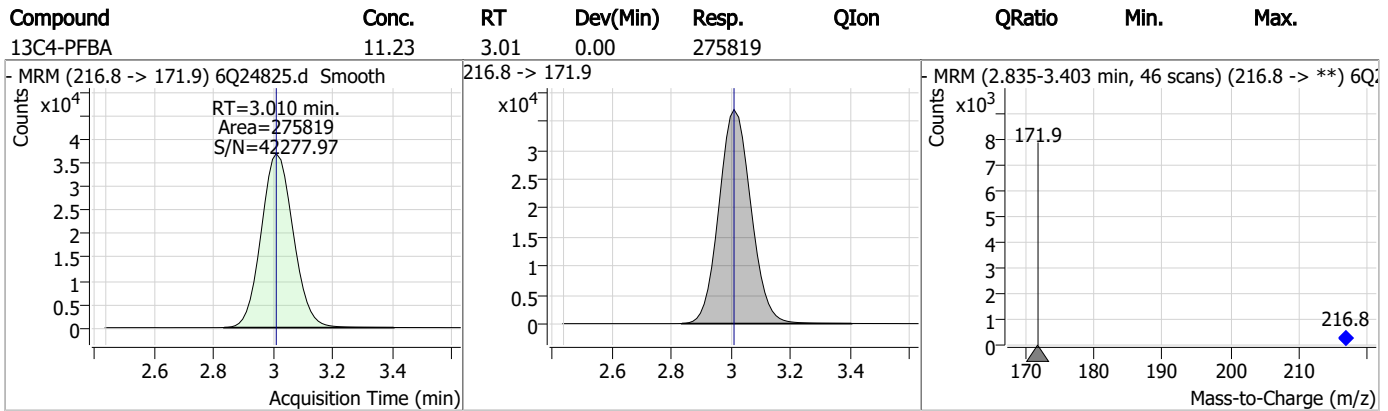
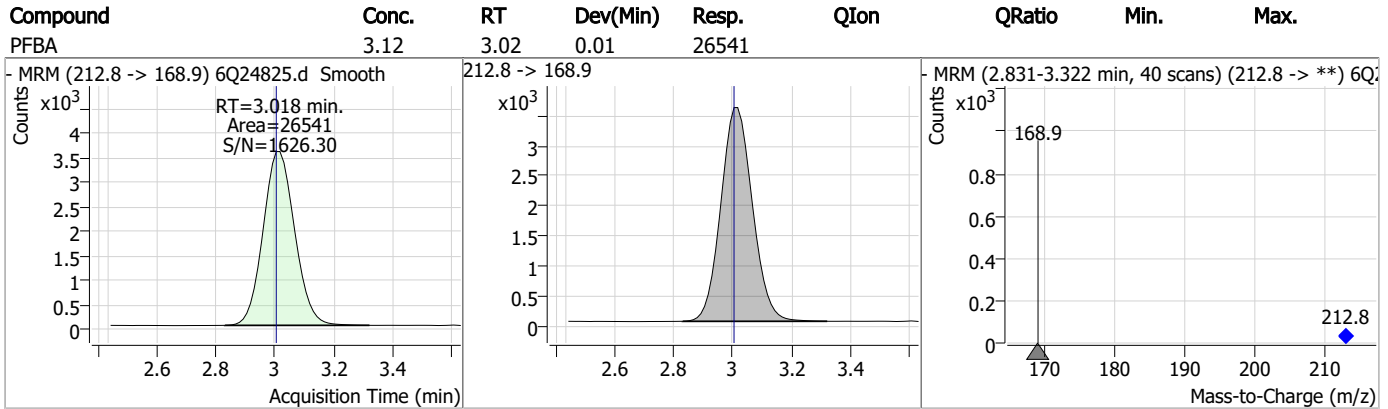
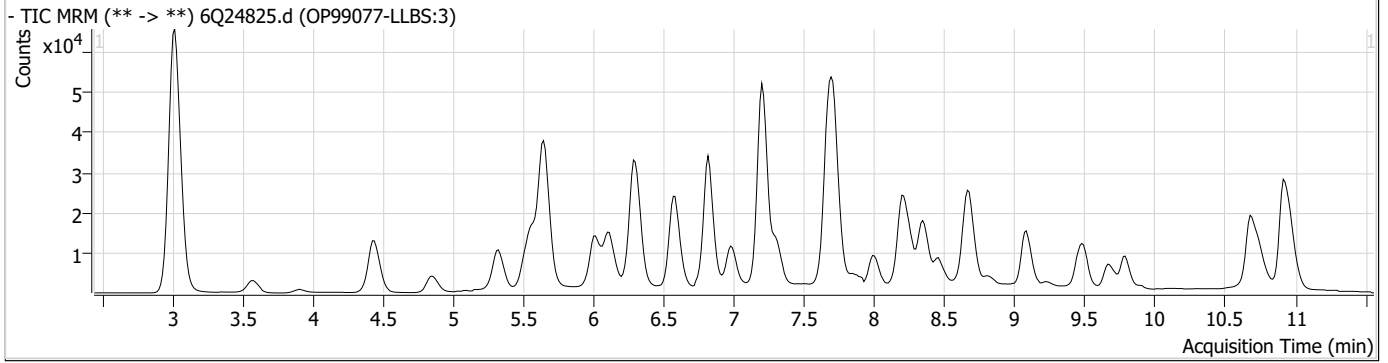
Perfluorinated Compounds by LC/MS/MS

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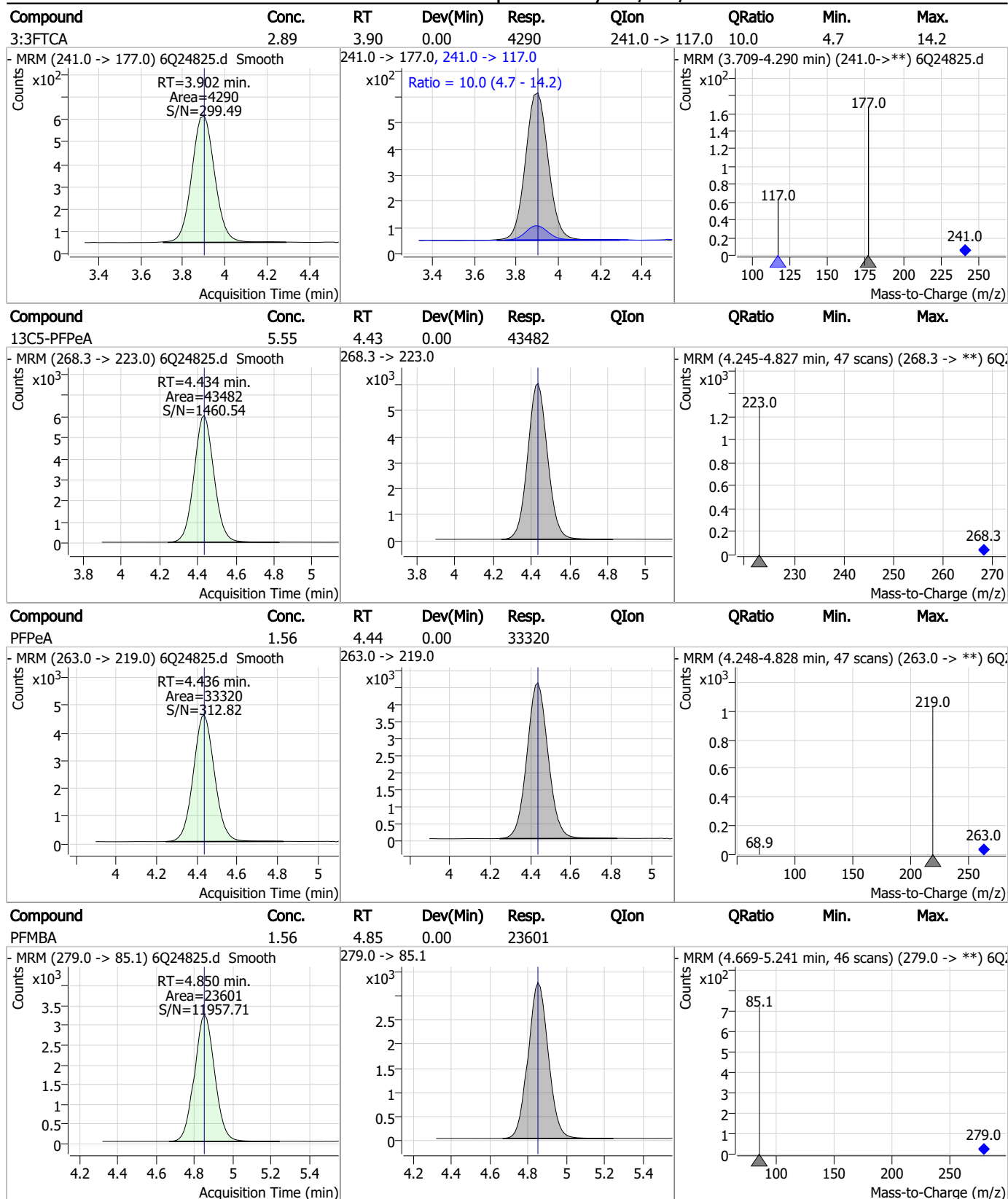
7.3.2

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Perfluorinated Compounds by LC/MS/MS

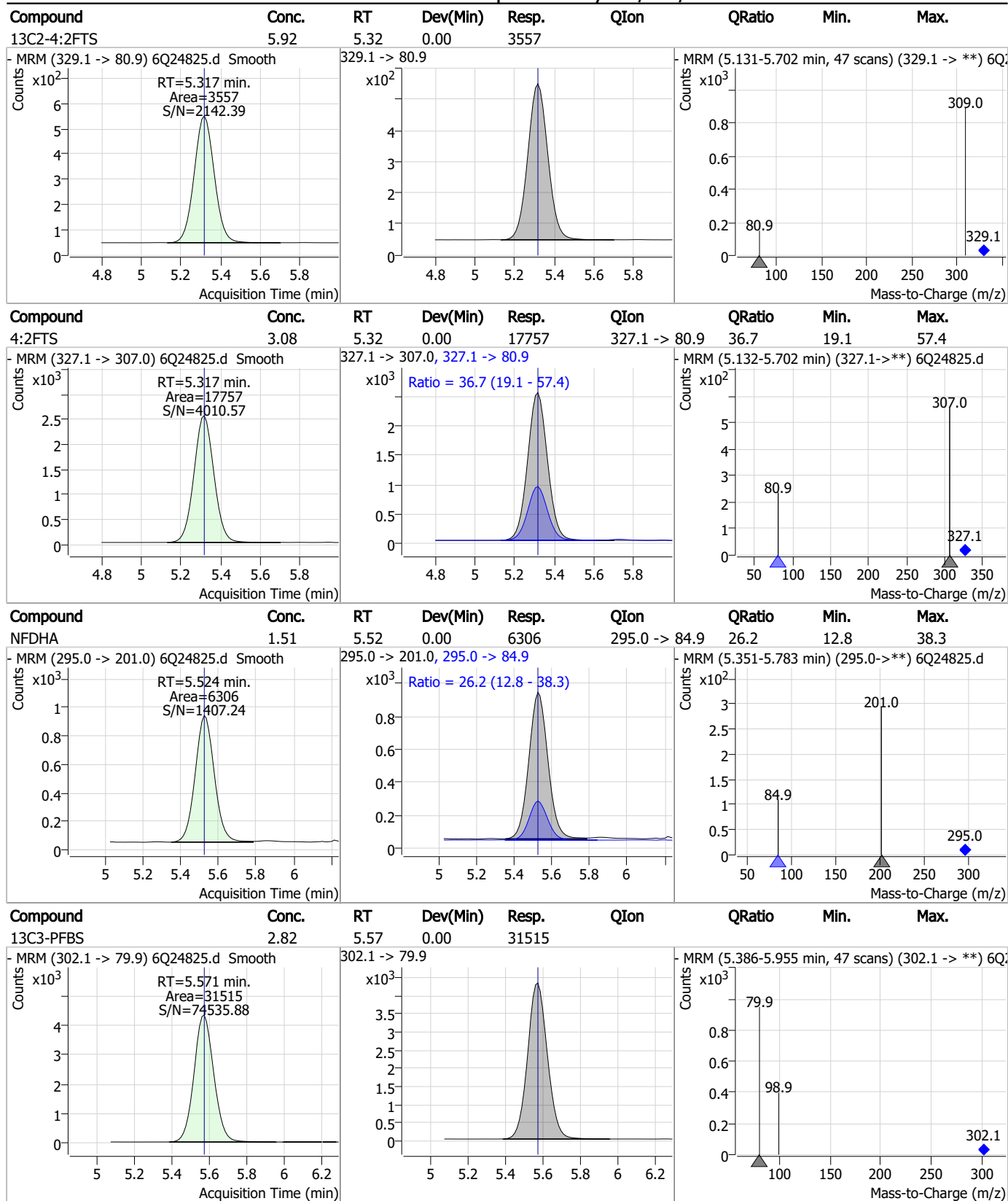


Perfluorinated Compounds by LC/MS/MS



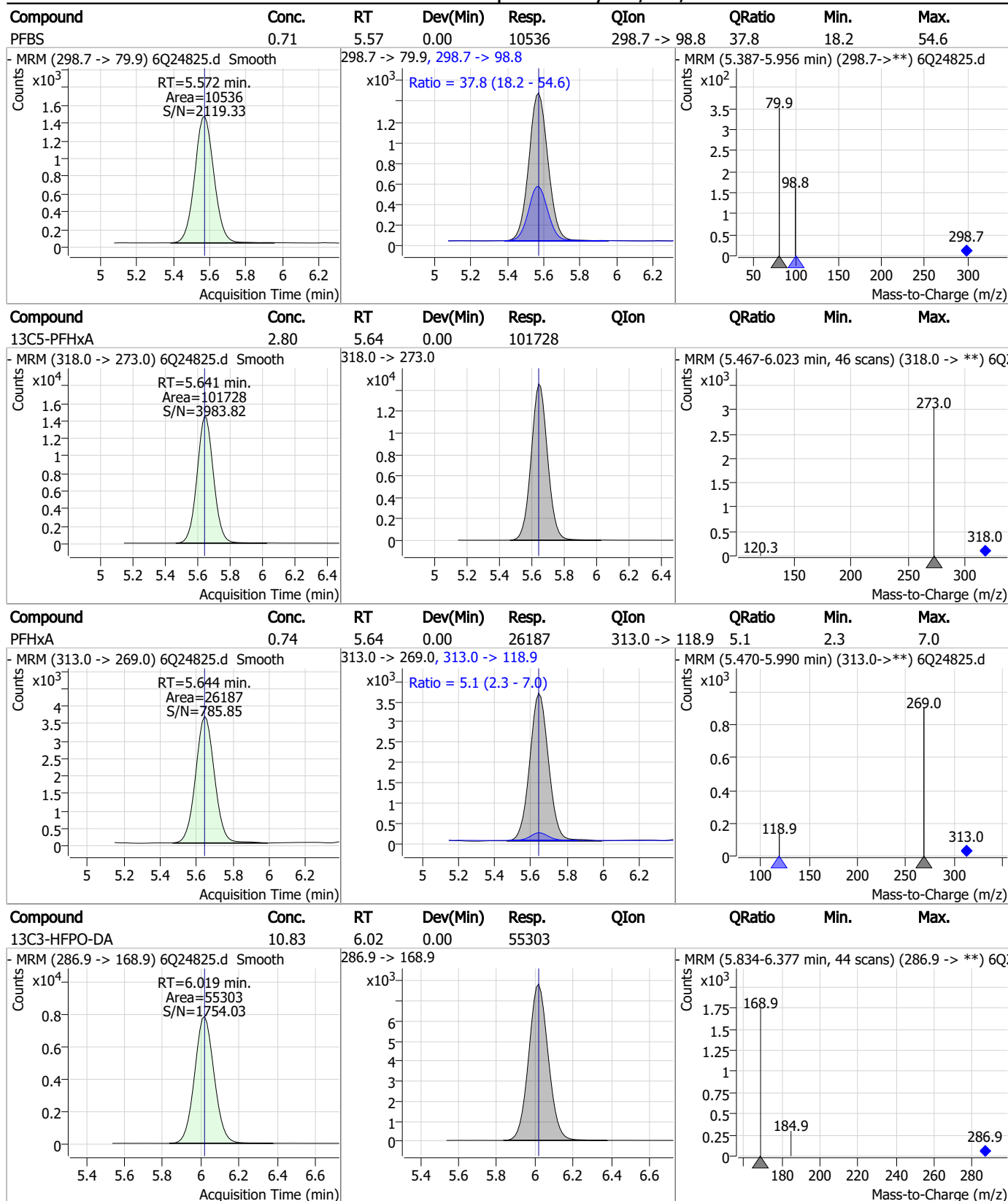
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Perfluorinated Compounds by LC/MS/MS



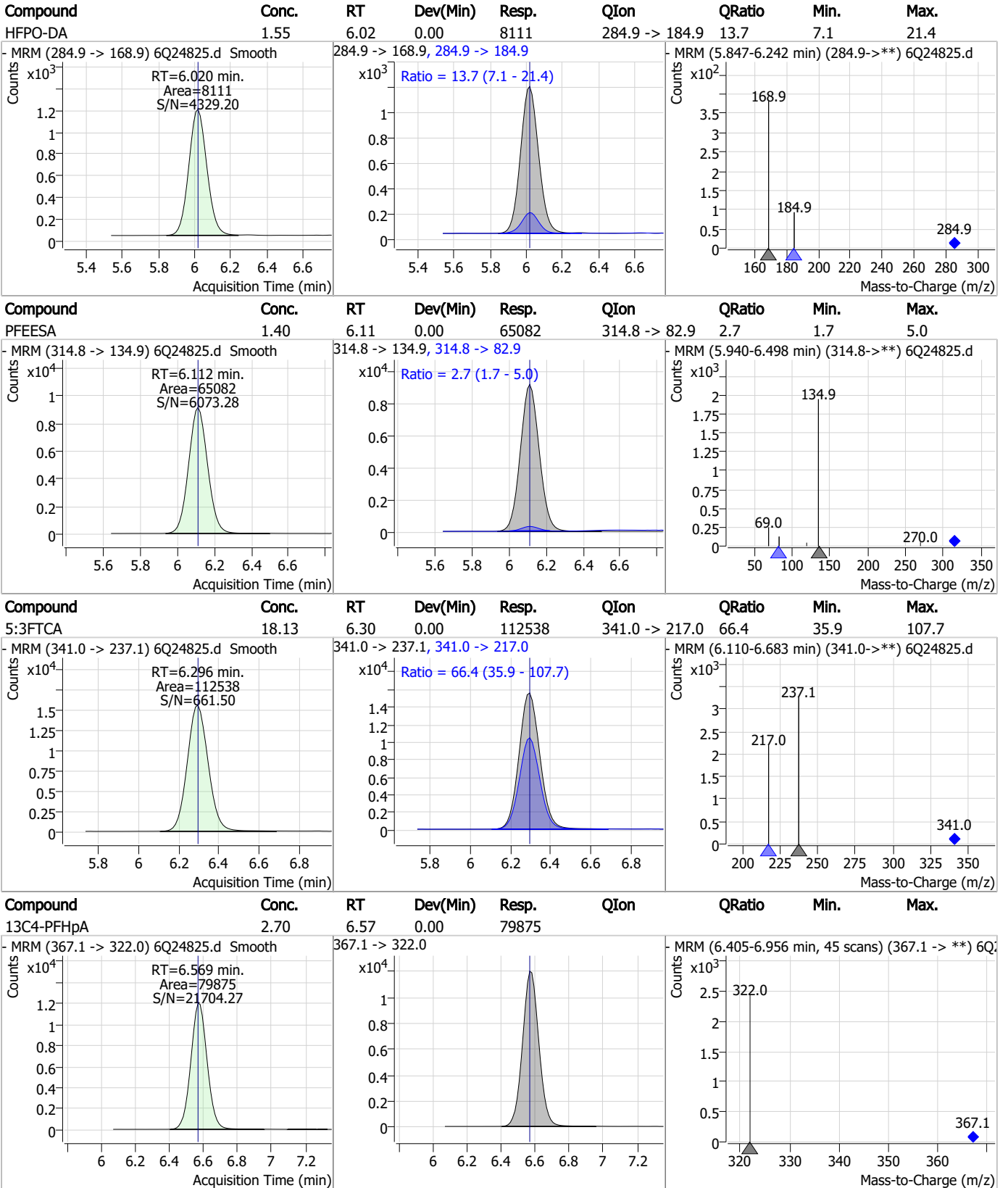
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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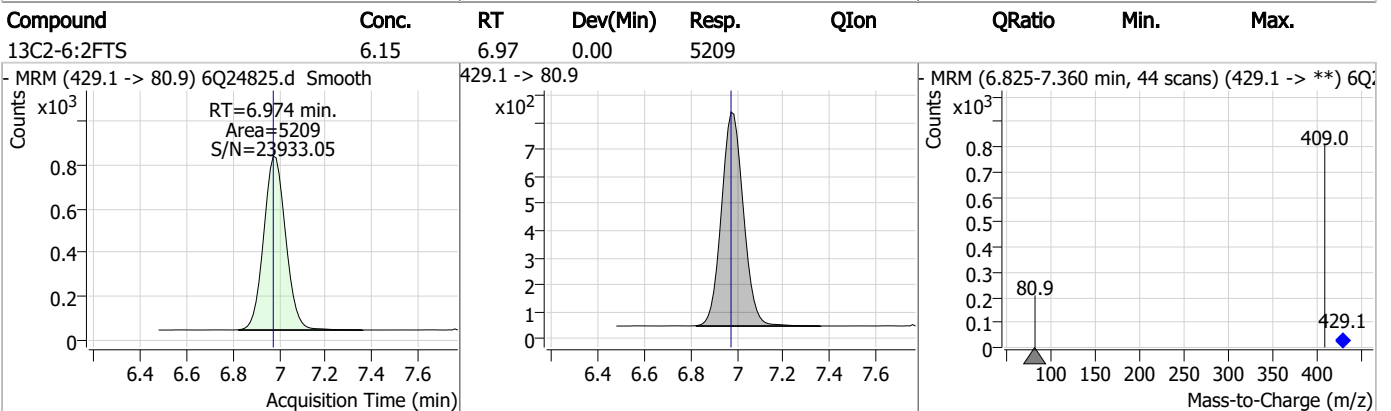
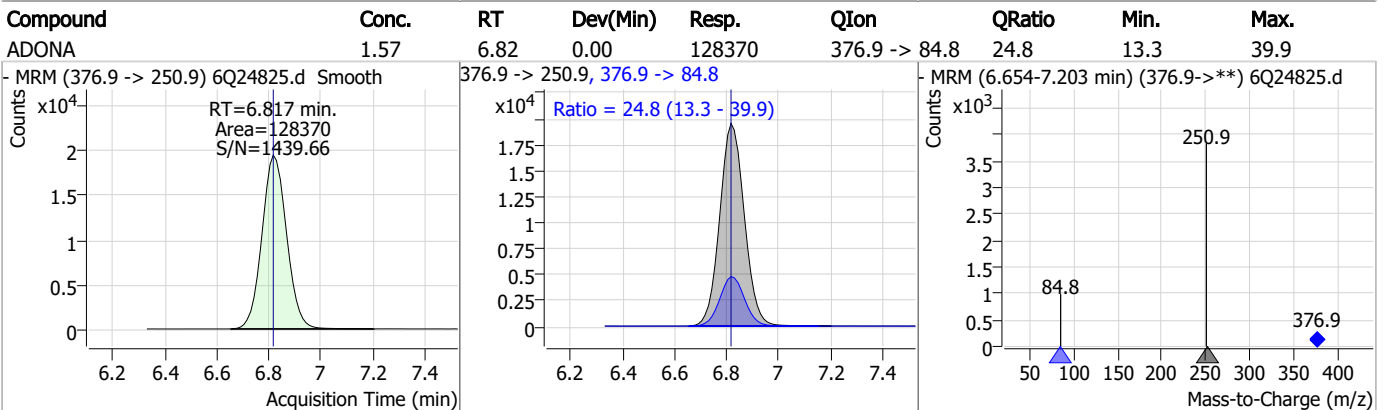
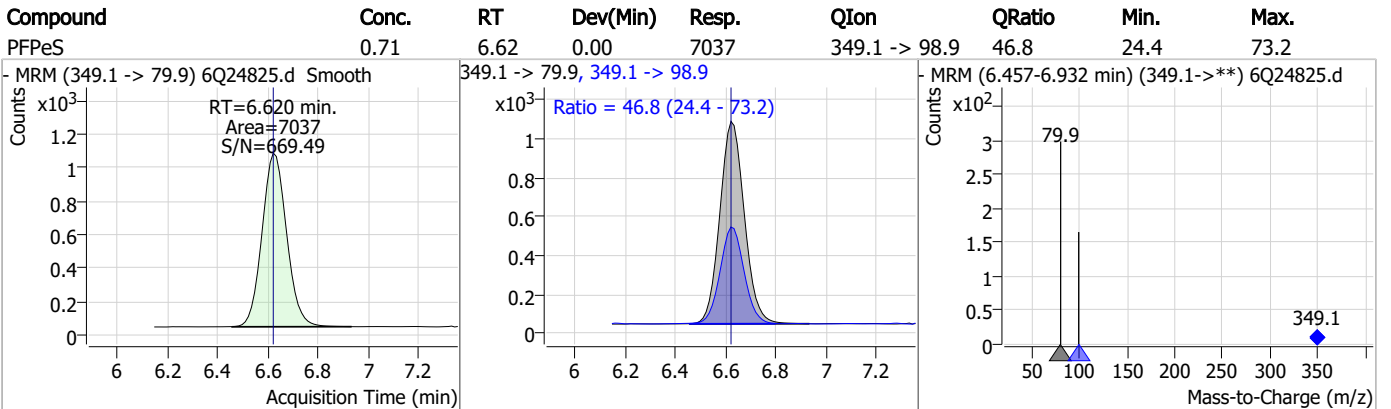
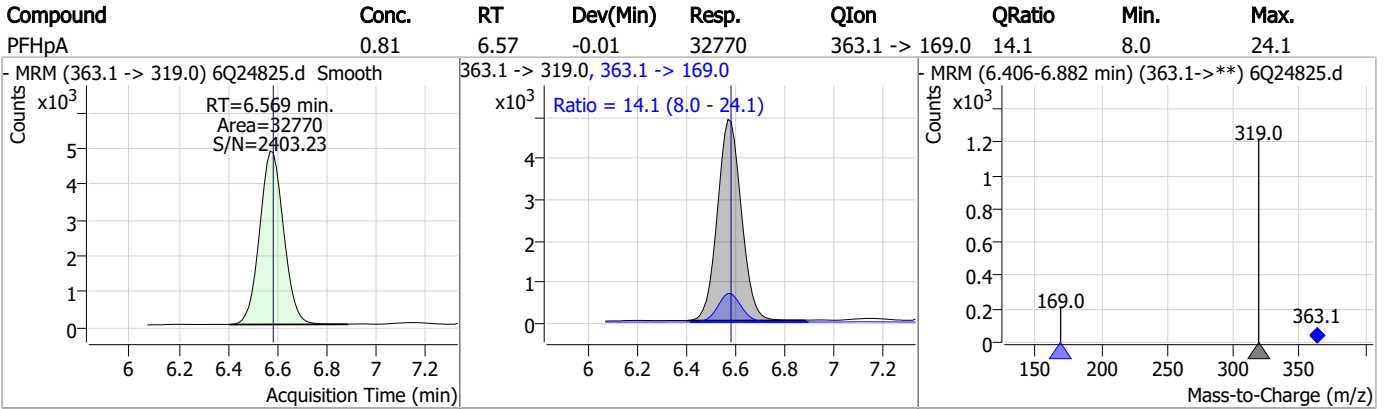
Perfluorinated Compounds by LC/MS/MS



7.3.2
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Perfluorinated Compounds by LC/MS/MS

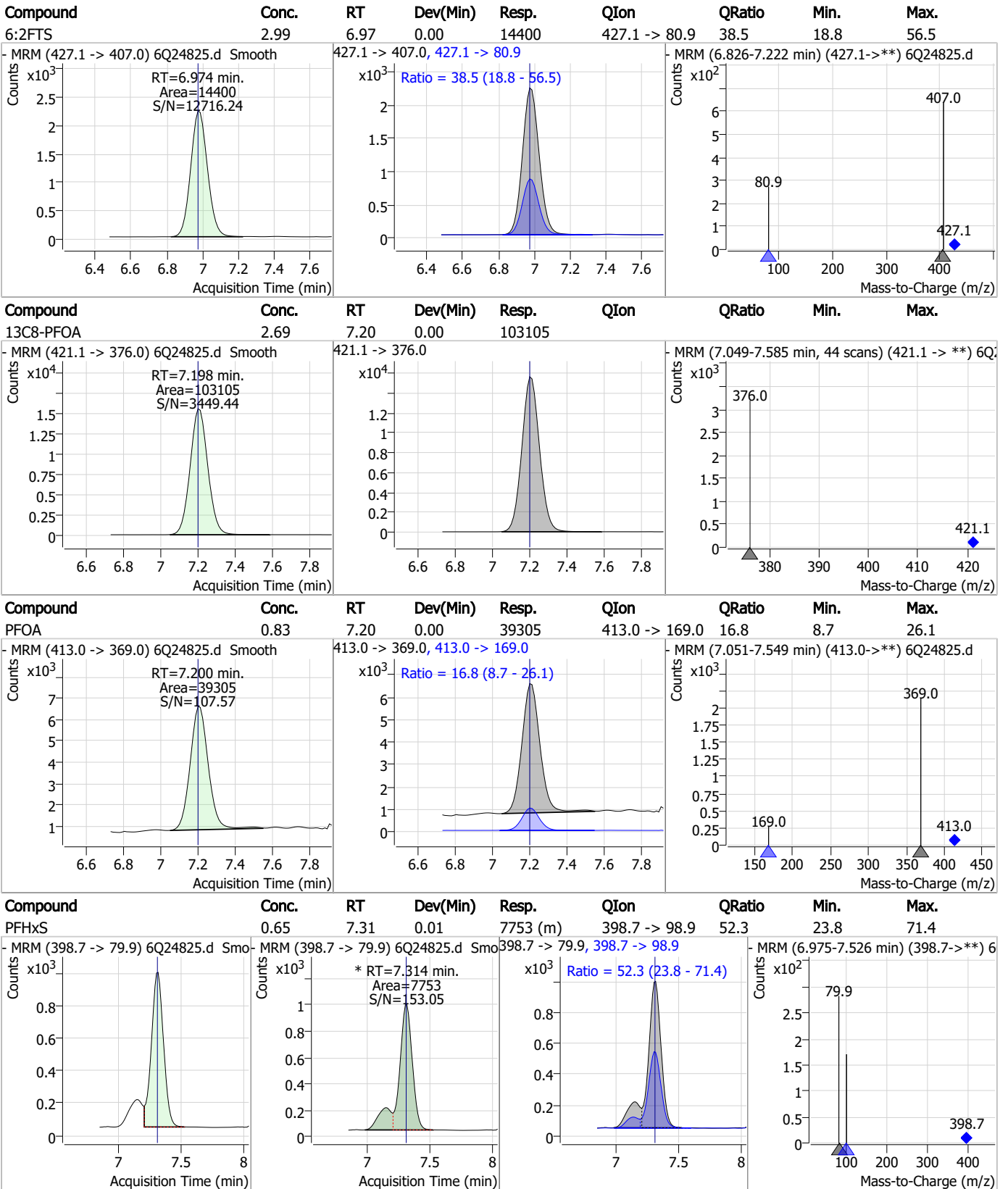


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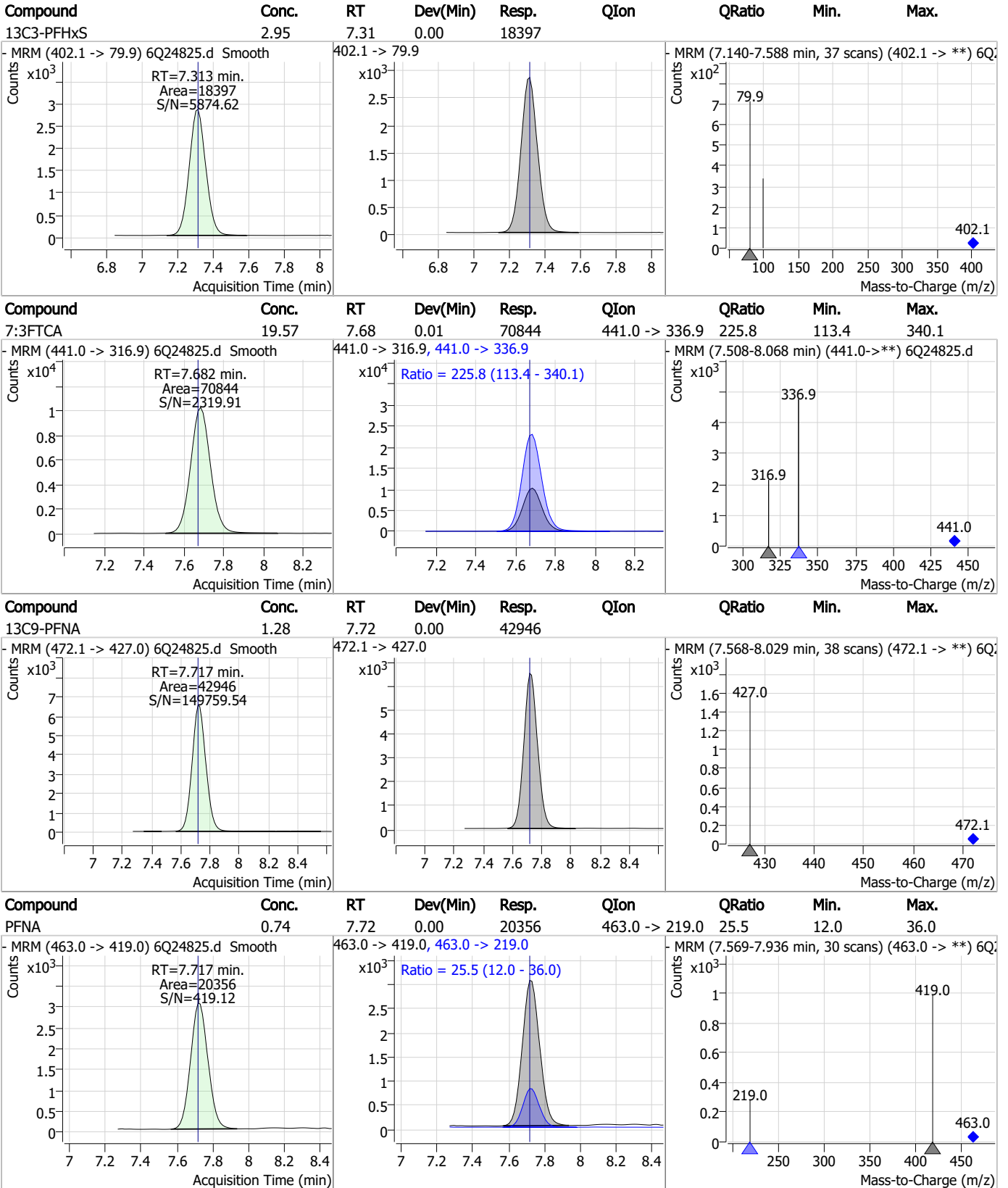
Perfluorinated Compounds by LC/MS/MS



7.3.2
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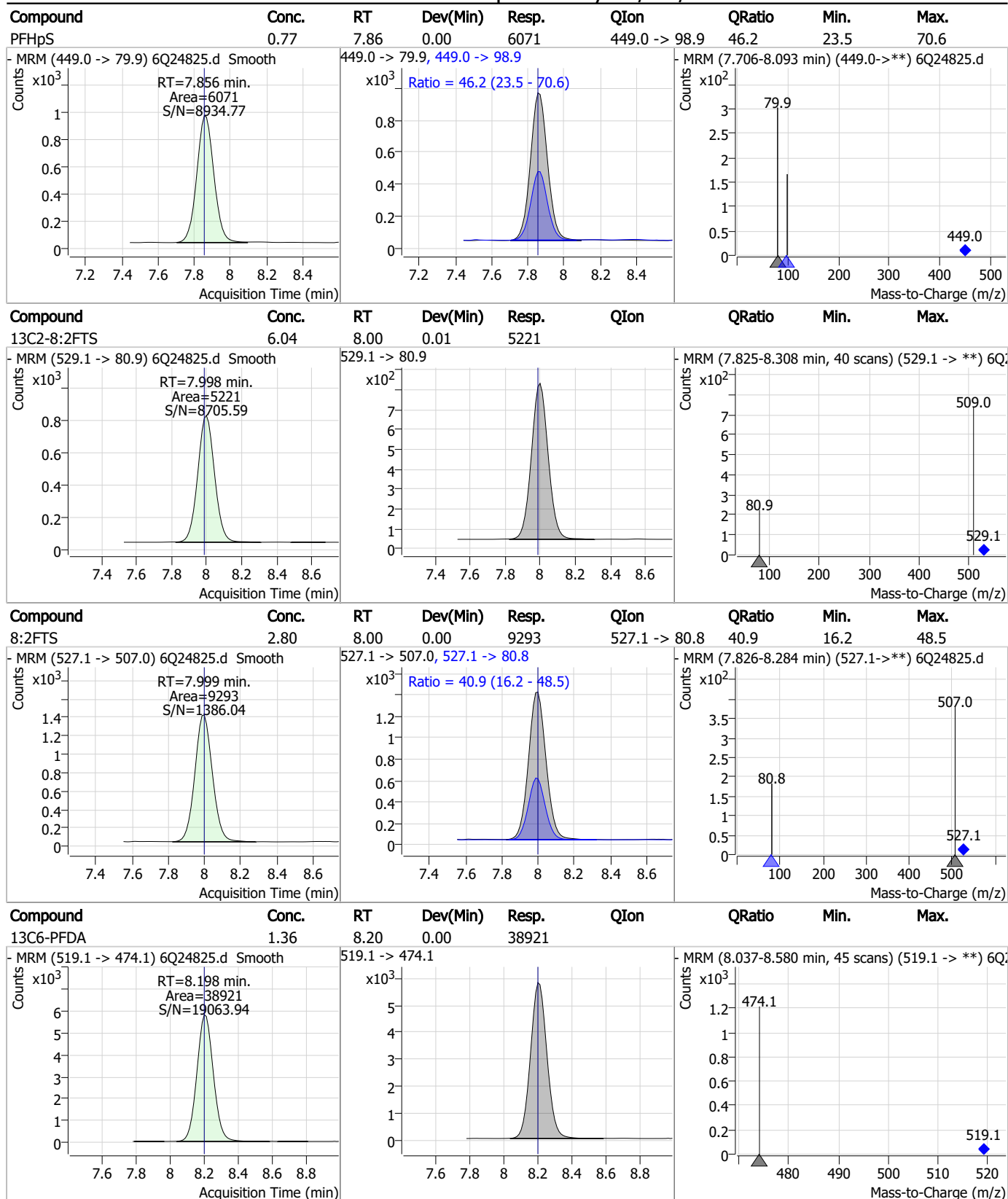
Perfluorinated Compounds by LC/MS/MS



7.3.2

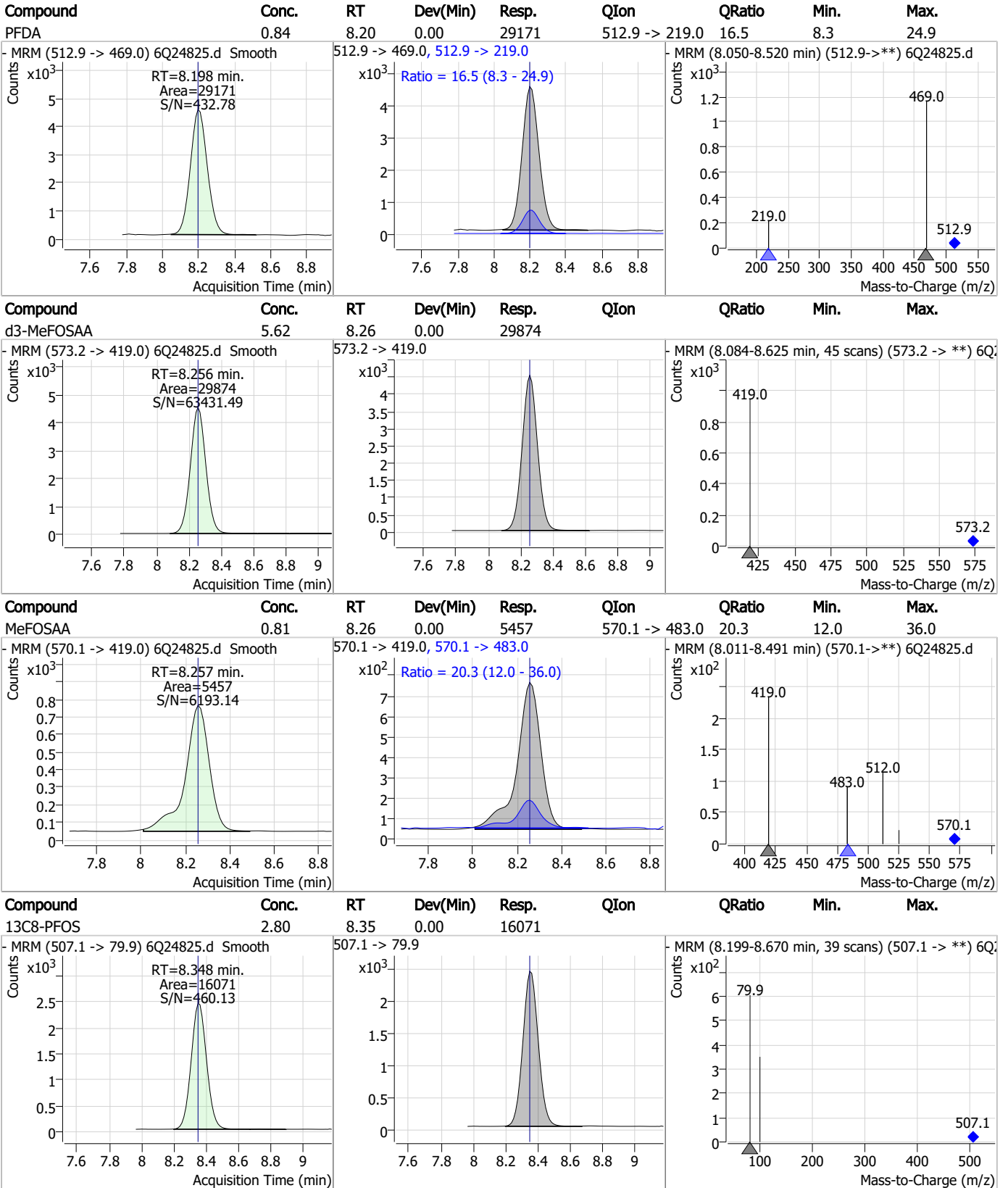
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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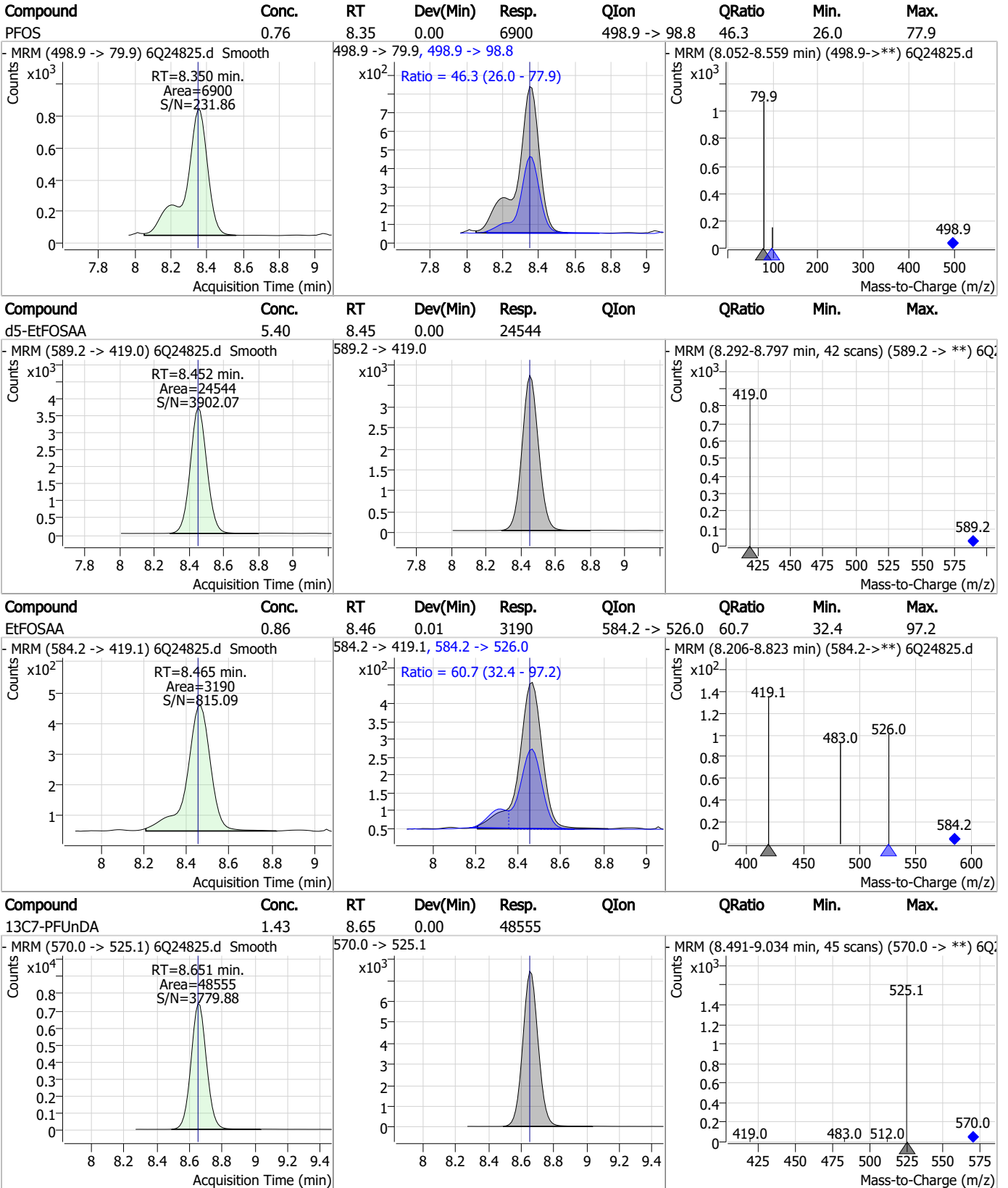
Perfluorinated Compounds by LC/MS/MS



7.3.2

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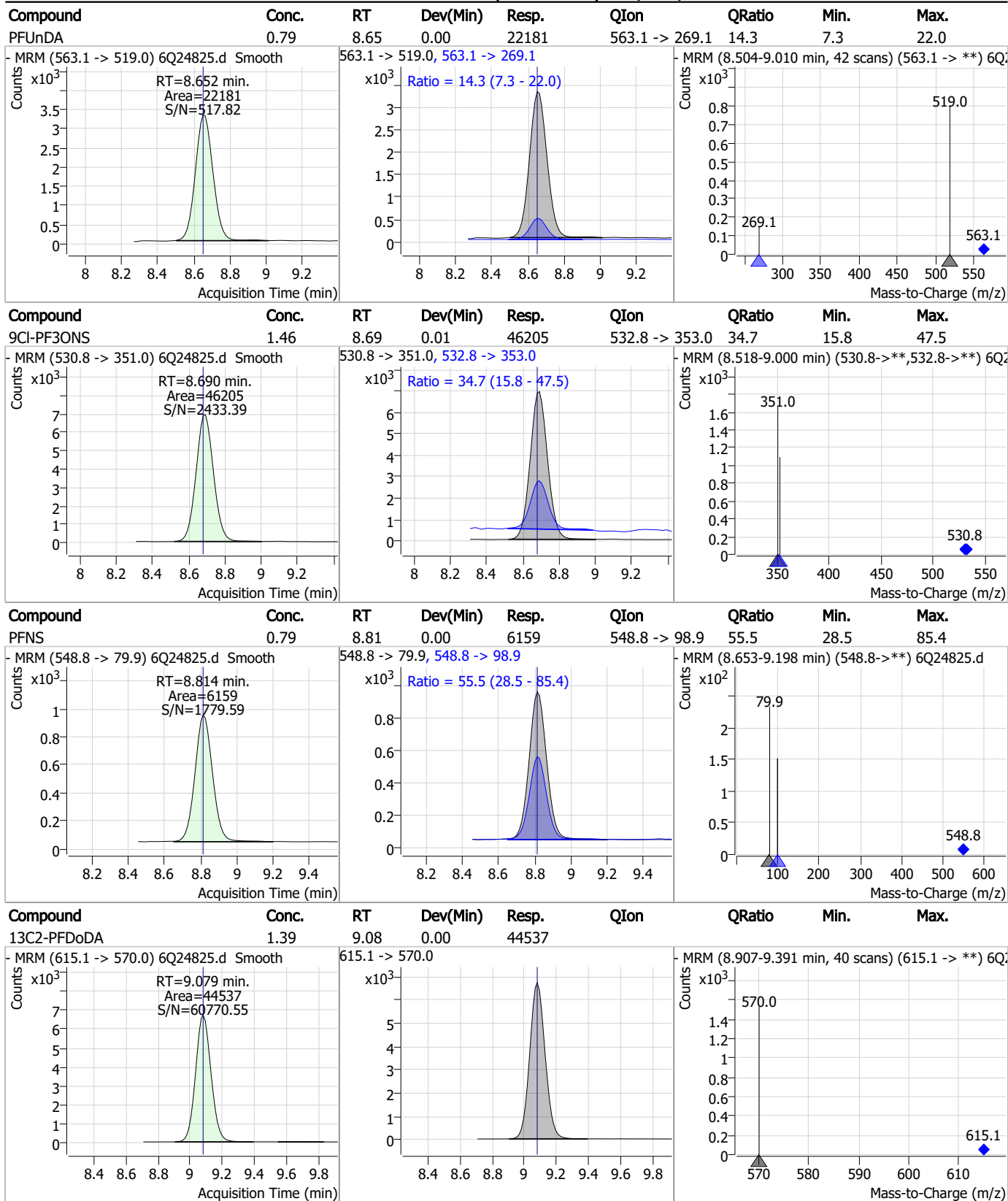
Perfluorinated Compounds by LC/MS/MS



7.3.2

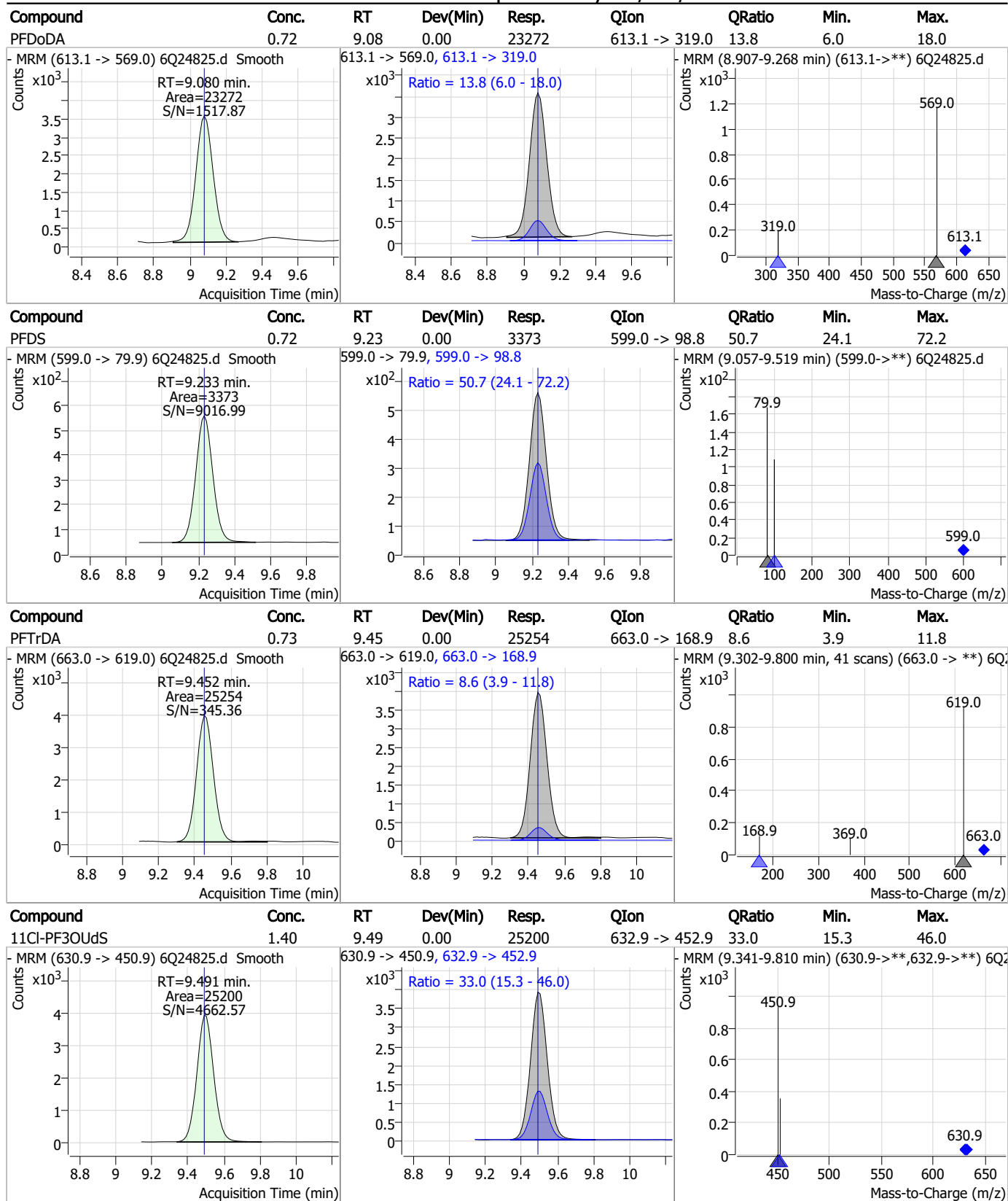
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Perfluorinated Compounds by LC/MS/MS



7.3.2
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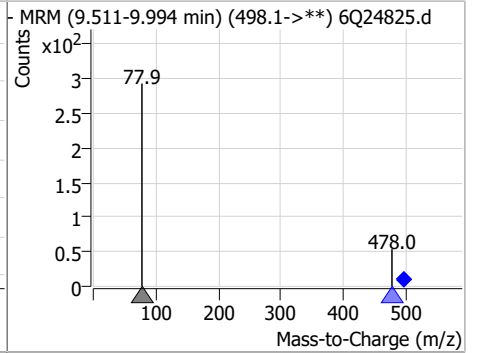
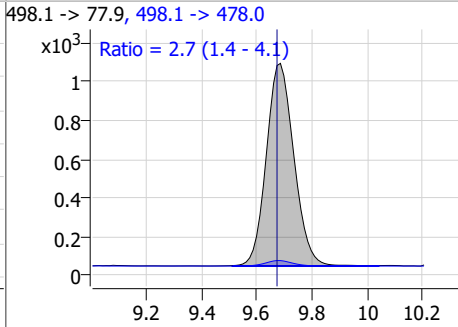
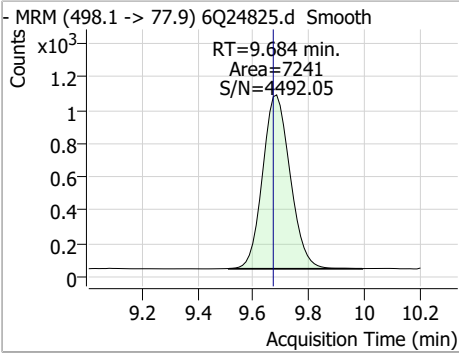
Perfluorinated Compounds by LC/MS/MS



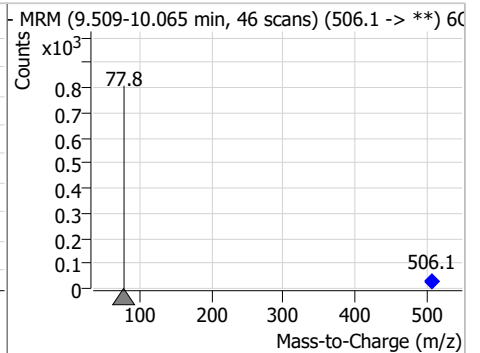
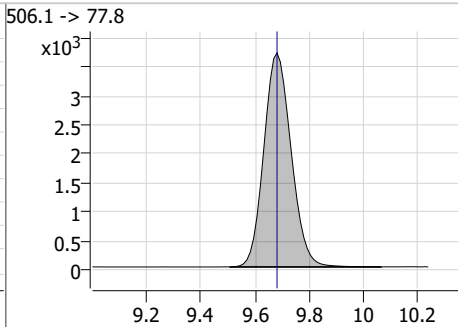
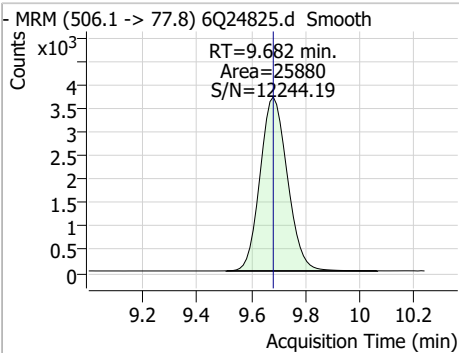
7.3.2
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Perfluorinated Compounds by LC/MS/MS

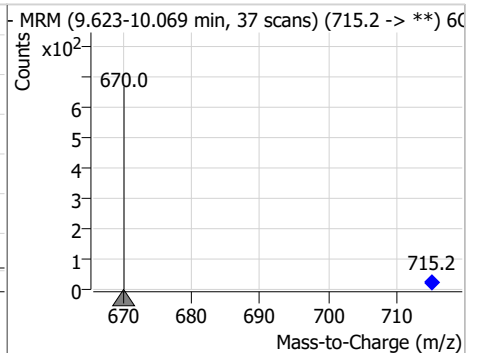
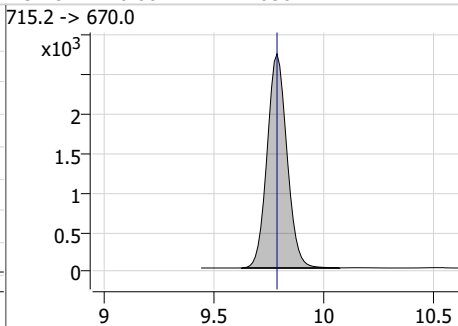
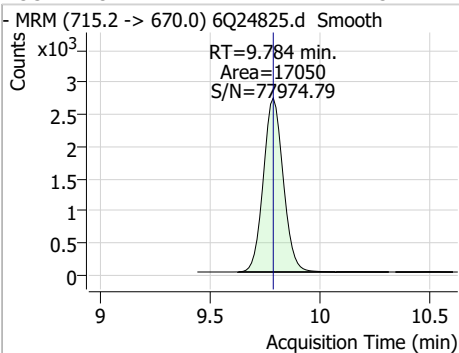
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.81	9.68	0.01	7241	498.1 -> 478.0	2.7	1.4	4.1



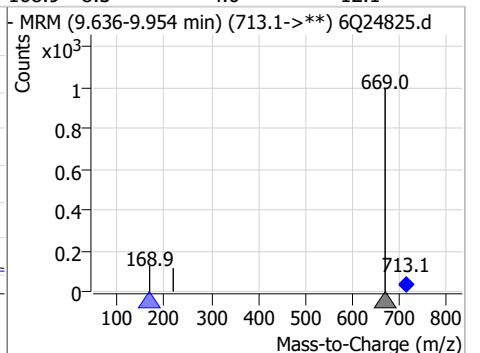
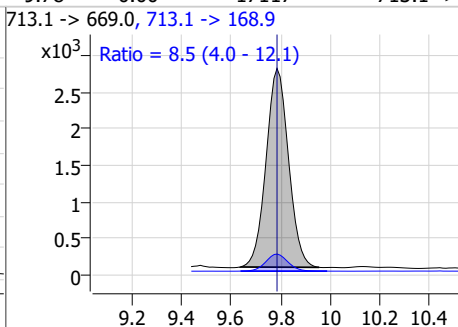
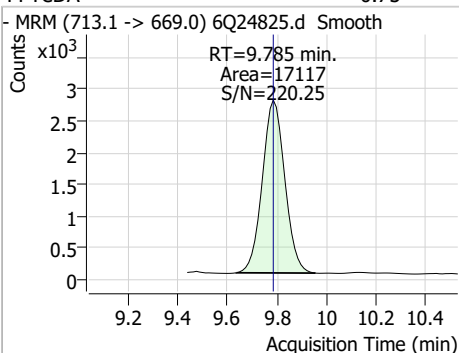
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.02	9.68	0.00	25880				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.34	9.78	0.00	17050				

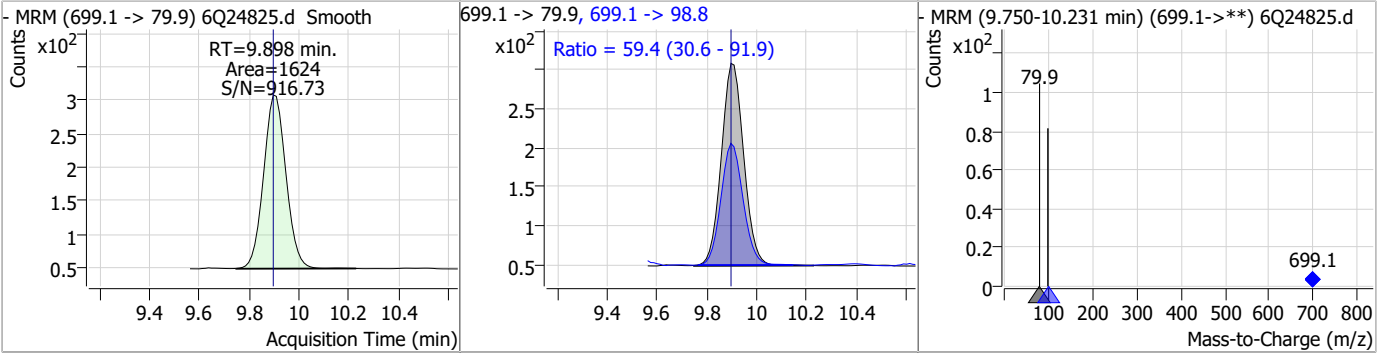


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.75	9.78	0.00	17117	713.1 -> 168.9	8.5	4.0	12.1

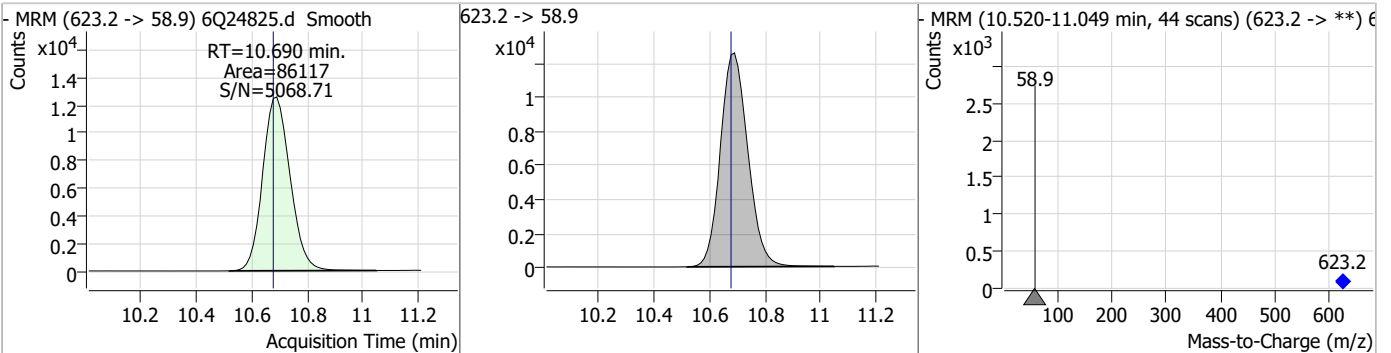


Perfluorinated Compounds by LC/MS/MS

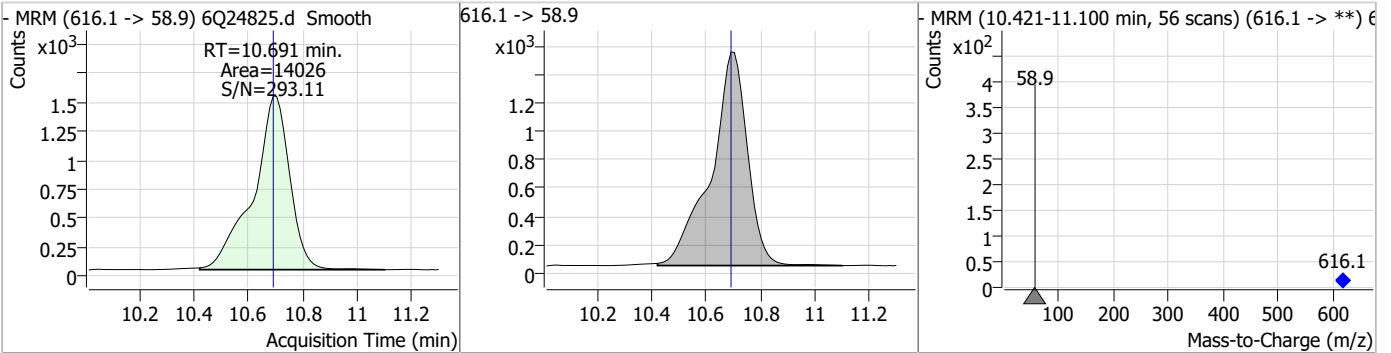
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.70	9.90	0.00	1624	699.1 -> 98.8	59.4	30.6	91.9



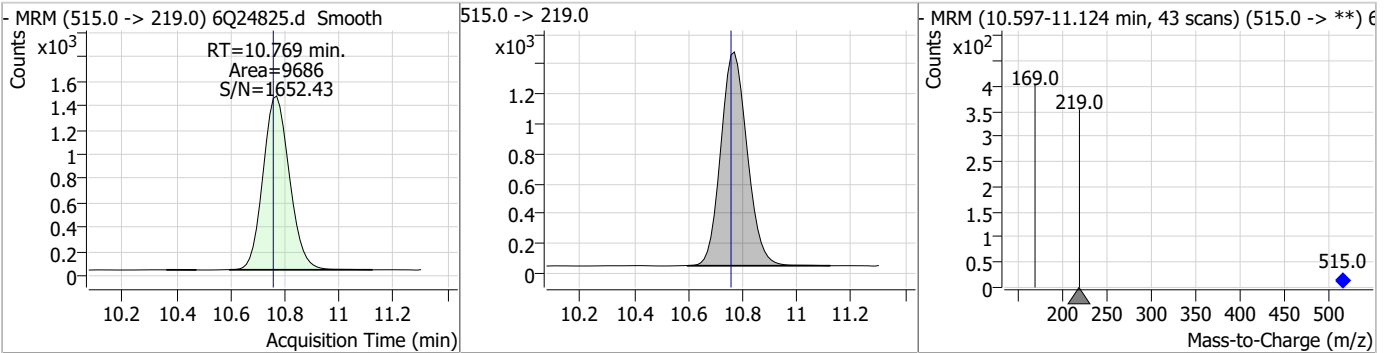
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	20.73	10.69	0.01	86117				



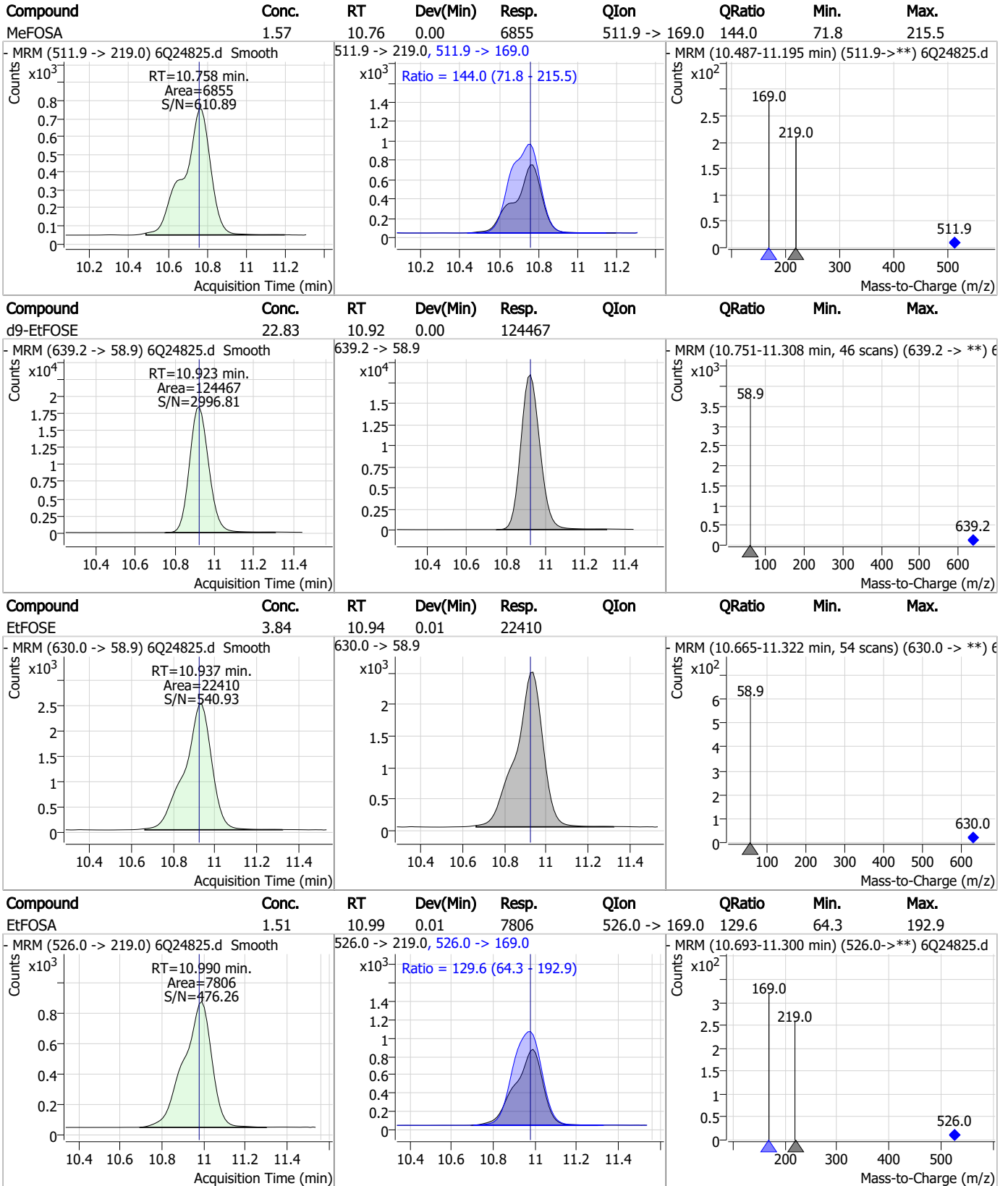
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	3.79	10.69	0.00	14026				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.09	10.77	0.01	9686				

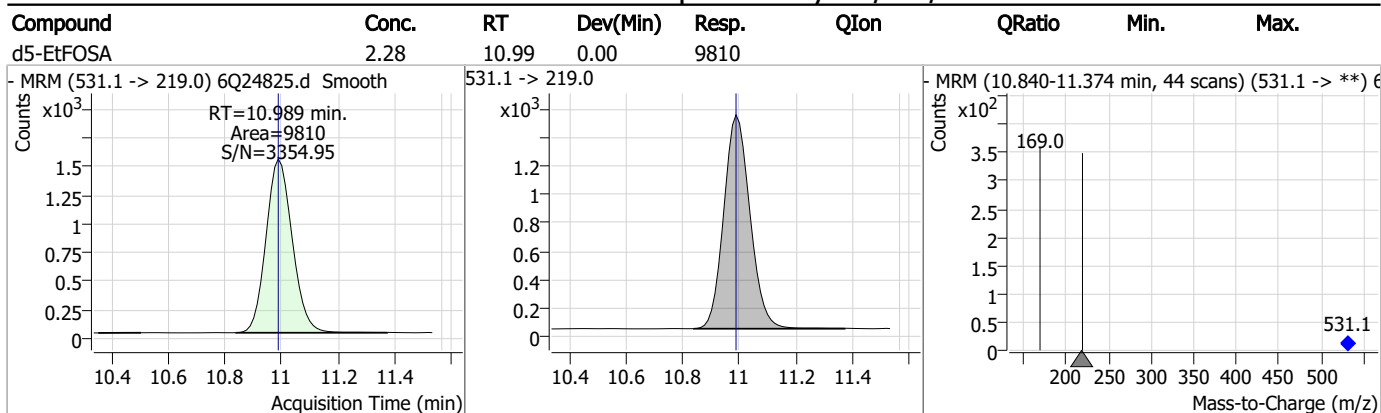


Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Perfluorinated Compounds by LC/MS/MS



7.3.2
7

Manual Integration Approval Summary

Sample Number: OP99077-LLBS Method: EPA DRAFT 1633
Lab FileID: 6Q24825.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 23:56 Supervisor approved: 09/22/23 13:19 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.31	Split peak

7.3.2.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24837.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/22/2023 2:48:25 AM
 Sample Name : OP99077-MS
 Vial : P2-B3
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99077,S6Q355,530,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	241144	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	38273	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	93346	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	74431	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	96397	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	39045	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	41419	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	46062	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	40156	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	14556	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	25495	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	29516	2.50 µg/L	0.000
M3-PFHxS	7.313	402.1 -> 79.9	16192	2.50 µg/L	0.000
M8-PFOS	8.348	507.1 -> 79.9	13898	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	2894	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	4327	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	4215	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	26347	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	53661	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	20255	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	82696	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	117885	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	9691	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	9637	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	20946	2.50 µg/L	0.000
13C3-PFBA	3.014	216.0 -> 172.0	102193	5.00 µg/L	0.012
18O2-PFHxS	7.313	403.0 -> 83.9	11570	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	113559	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	34562	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	44198	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	67107	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	2894	4.79 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.9%		
13C2-6:2FTS	6.974	429.1 -> 80.9	4327	5.08 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C2-8:2FTS	7.998	529.1 -> 80.9	4215	4.85 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.0%		
13C2-PFDoDA	9.079	615.1 -> 570.0	40156	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.7%		
13C2-PFTeDA	9.784	715.2 -> 670.0	14556	1.04 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 83.2%		
13C3-PFBS	5.571	302.1 -> 79.9	29516	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.3%		
13C3-PFHxS	7.313	402.1 -> 79.9	16192	2.58 µg/L	0.000

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 = 103.4%	
13C4-PFBA	3.010	216.8 -> 171.9	241144	9.67 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C4-PFHpA	6.569	367.1 -> 322.0	74431	2.58 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.3%	
13C5-PFHxA	5.641	318.0 -> 273.0	93346	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
13C5-PFPeA	4.434	268.3 -> 223.0	38273	5.02 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.3%	
13C6-PFDA	8.198	519.1 -> 474.1	41419	1.32 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C7-PFUnDA	8.651	570.0 -> 525.1	46062	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C8-FOSA	9.682	506.1 -> 77.8	25495	1.85 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 74.1%	
13C8-PFOA	7.198	421.1 -> 376.0	96397	2.34 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.5%	
13C8-PFOS	8.348	507.1 -> 79.9	13898	2.25 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.1%	
13C9-PFNA	7.717	472.1 -> 427.0	39045	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.5%	
d3-MeFOSAA	8.256	573.2 -> 419.0	26347	4.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.1%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	53661	10.78 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 107.8%	
d3-MeFOSA	10.757	515.0 -> 219.0	9637	1.94 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 77.4%	
d5-EtFOSAA	8.452	589.2 -> 419.0	20255	4.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 82.9%	
d7-MeFOSE	10.678	623.2 -> 58.9	82696	18.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 74.0%	
d9-EtFOSE	10.923	639.2 -> 58.9	117885	20.10 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 80.4%	
d5-EtFOSA	10.989	531.1 -> 219.0	9691	2.09 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.6%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	48173	10.28 µg/L	99
		327.1 -> 80.9	18620		
6:2FTS	6.974	427.1 -> 407.0	38910	9.73 µg/L	93
		427.1 -> 80.9	16367		
8:2FTS	7.987	527.1 -> 507.0	29450	11.00 µg/L	93
		527.1 -> 80.8	10660		
EtFOSAA	8.452	584.2 -> 419.1	9261	3.02 µg/L	100
		584.2 -> 526.0	5993		
FOSA	9.672	498.1 -> 77.9	23665	2.69 µg/L	100
		498.1 -> 478.0	660		
MeFOSAA	8.257	570.1 -> 419.0	15320	2.56 µg/L	100
		570.1 -> 483.0	3684		
PFBA	3.018	212.8 -> 168.9	91729	12.34 µg/L	100
PFBS	5.572	298.7 -> 79.9	39195	2.80 µg/L	99
		298.7 -> 98.8	14590		
PFDA	8.198	512.9 -> 469.0	96590	2.61 µg/L	99
		512.9 -> 219.0	15430		
PFDODA	9.080	613.1 -> 569.0	76571	2.62 µg/L	99
		613.1 -> 319.0	8974		
PFDS	9.233	599.0 -> 79.9	9203	2.26 µg/L	91

7.4.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.569	599.0 -> 98.8	4965	3.25	µg/L	m
		363.1 -> 319.0	123071			
PFHpS	7.856	363.1 -> 169.0	18682	2.69	µg/L	100
		449.0 -> 79.9	18275			
PFHxA	5.644	449.0 -> 98.9	8583	3.23	µg/L	100
		313.0 -> 269.0	104866			
PFHxS	7.314	313.0 -> 118.9	4924	2.82	µg/L	m
		398.7 -> 79.9	29520			
PFNA	7.717	398.7 -> 98.9	14453	2.77	µg/L	m
		463.0 -> 419.0	69608			
PFNS	8.814	463.0 -> 219.0	17860	2.51	µg/L	95
		548.8 -> 79.9	16935			
PFOA	7.200	548.8 -> 98.9	9019	3.29	µg/L	m
		413.0 -> 369.0	146455			
PFOS	8.350	413.0 -> 169.0	26017	4.32	µg/L	m
		498.9 -> 79.9	33907			
PFPeA	4.436	498.9 -> 98.8	15435	6.88	µg/L	100
		263.0 -> 219.0	129769			
PFPeS	6.620	349.1 -> 79.9	22325	2.57	µg/L	m
		349.1 -> 98.9	10023			
PFTeDA	9.785	713.1 -> 669.0	54511	2.80	µg/L	97
		713.1 -> 168.9	3865			
PFTrDA	9.452	663.0 -> 619.0	76137	2.44	µg/L	99
		663.0 -> 168.9	6105			
PFUnDA	8.652	563.1 -> 519.0	63933	2.39	µg/L	96
		563.1 -> 269.1	10367			
11CI-PF3OUdS	9.491	630.9 -> 450.9	74559	4.28	µg/L	95
		632.9 -> 452.9	24953			
9CI-PF3ONS	8.690	530.8 -> 351.0	149063	4.85	µg/L	97
		532.8 -> 353.0	44834			
ADONA	6.817	376.9 -> 250.9	402437	5.08	µg/L	97
		376.9 -> 84.8	100590			
HFPO-DA	6.020	284.9 -> 168.9	26077	5.12	µg/L	98
		284.9 -> 184.9	3488			
3:3FTCA	3.902	241.0 -> 177.0	13129	10.13	µg/L	100
		241.0 -> 117.0	1237			
5:3FTCA	6.296	341.0 -> 237.1	361505	63.48	µg/L	92
		341.0 -> 217.0	236534			
7:3FTCA	7.682	441.0 -> 316.9	222931	67.11	µg/L	98
		441.0 -> 336.9	497312			
EtFOSA	10.990	526.0 -> 219.0	25789	5.06	µg/L	99
		526.0 -> 169.0	32732			
EtFOSE	10.924	630.0 -> 58.9	72643	13.15	µg/L	100
		511.9 -> 219.0	23663			
MeFOSA	10.758	511.9 -> 169.0	32722	5.46	µg/L	96
		616.1 -> 58.9	48602			
MeFOSE	10.691	699.1 -> 79.9	4476	13.69	µg/L	100
		699.1 -> 98.8	2629			
PFDoDS	9.898	295.0 -> 201.0	19719	2.23	µg/L	97
		295.0 -> 84.9	4703			
NFDHA	5.524	279.0 -> 85.1	75101	5.14	µg/L	97
		229.0 -> 84.9	54376			
PFMBA	4.850	314.8 -> 134.9	194281	5.50	µg/L	100
		314.8 -> 82.9	7384			
PFMPA	3.575			4.55	µg/L	99
PFEESA	6.112					

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

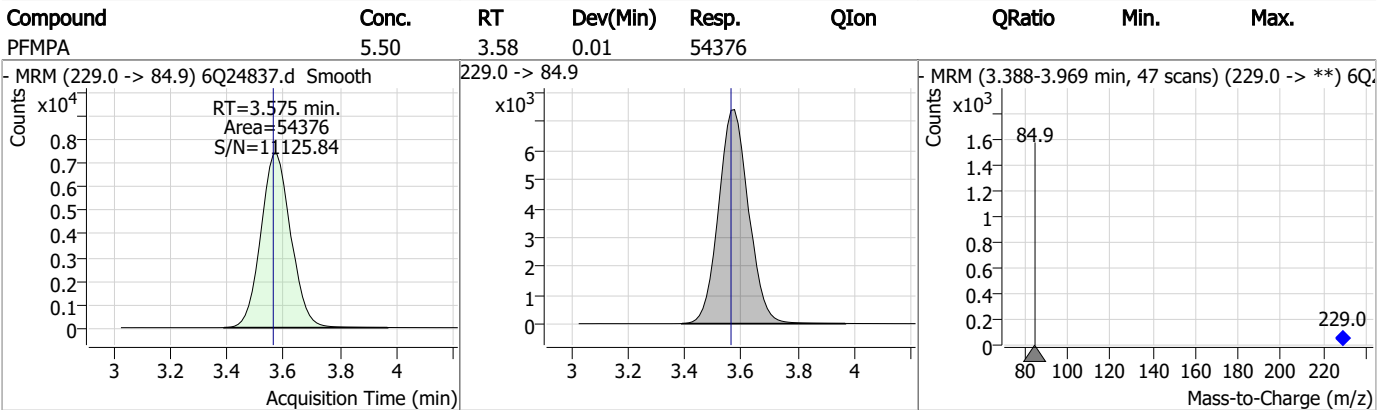
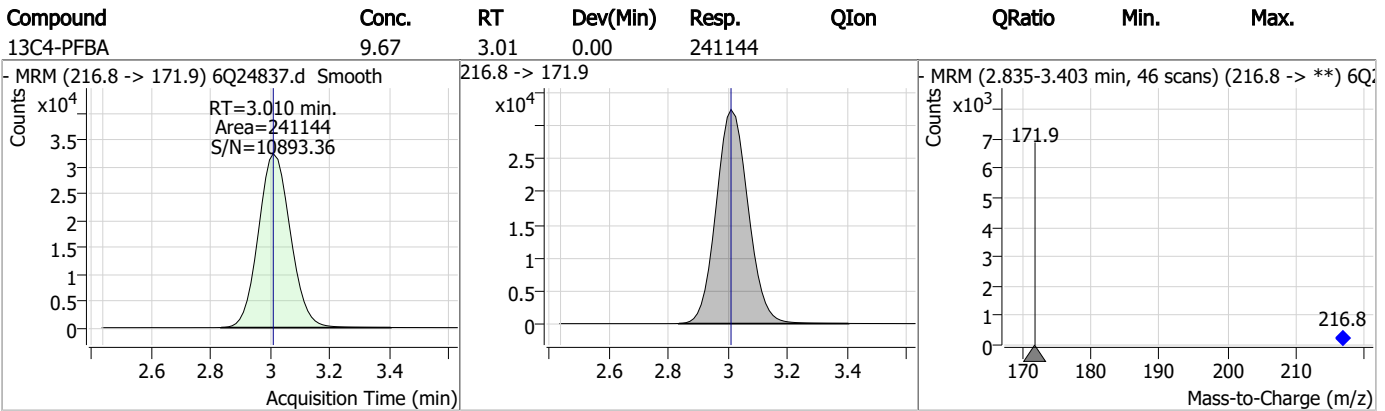
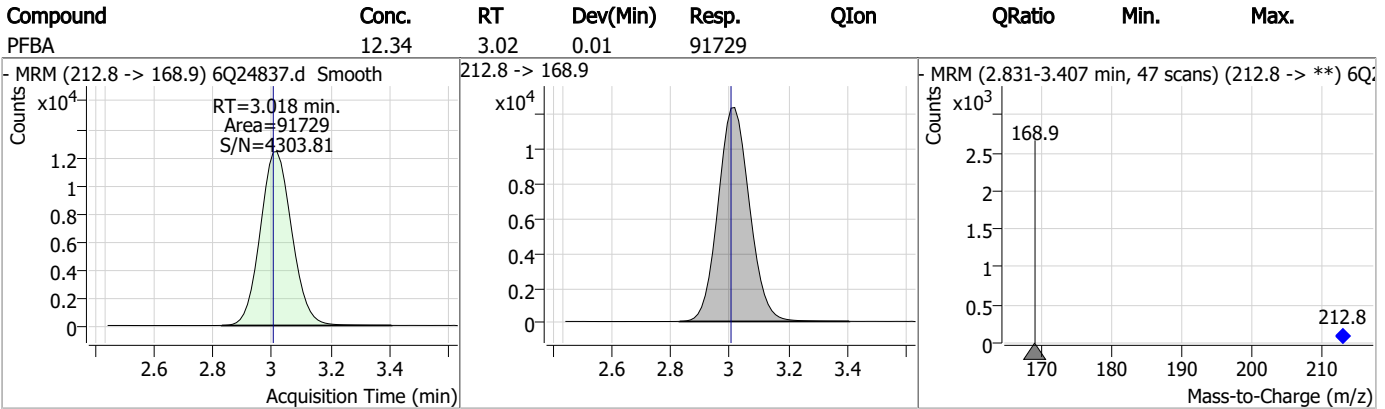
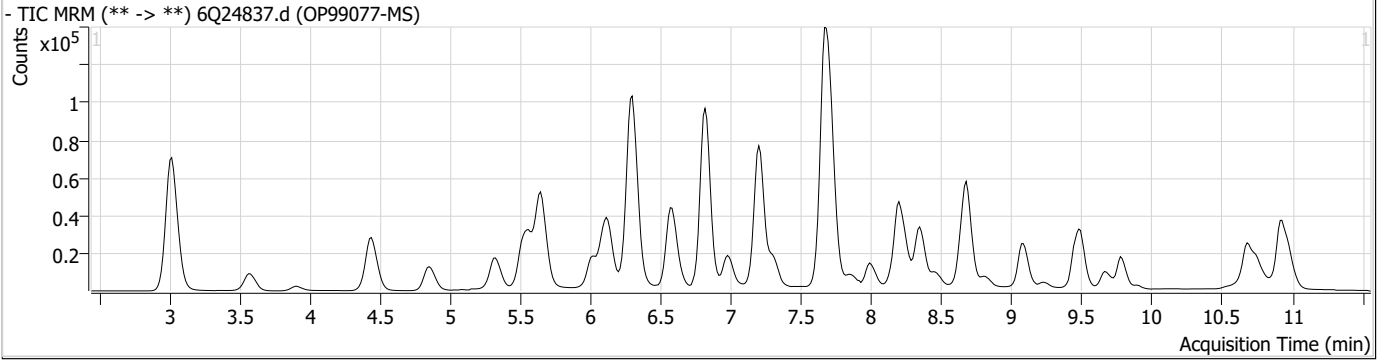
Perfluorinated Compounds by LC/MS/MS

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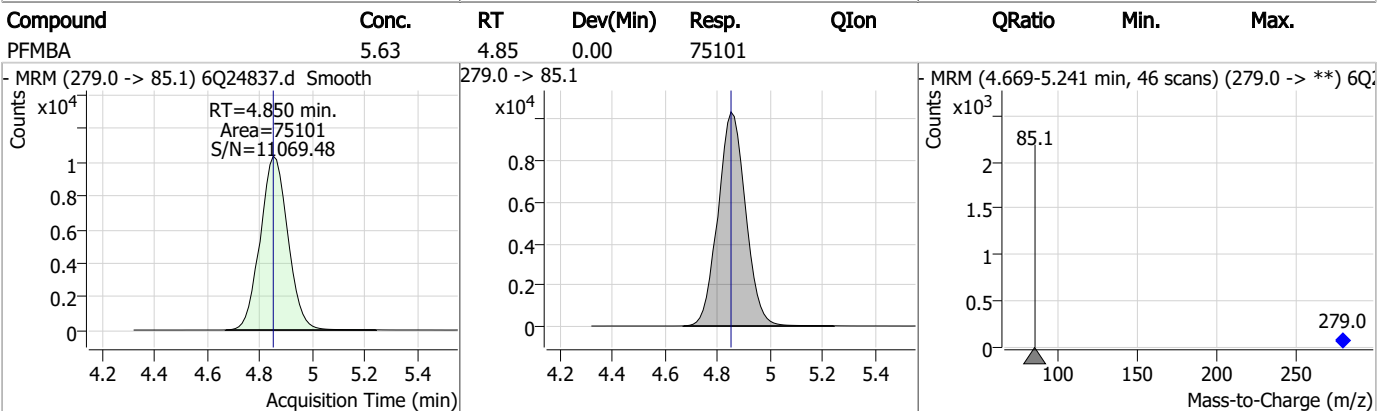
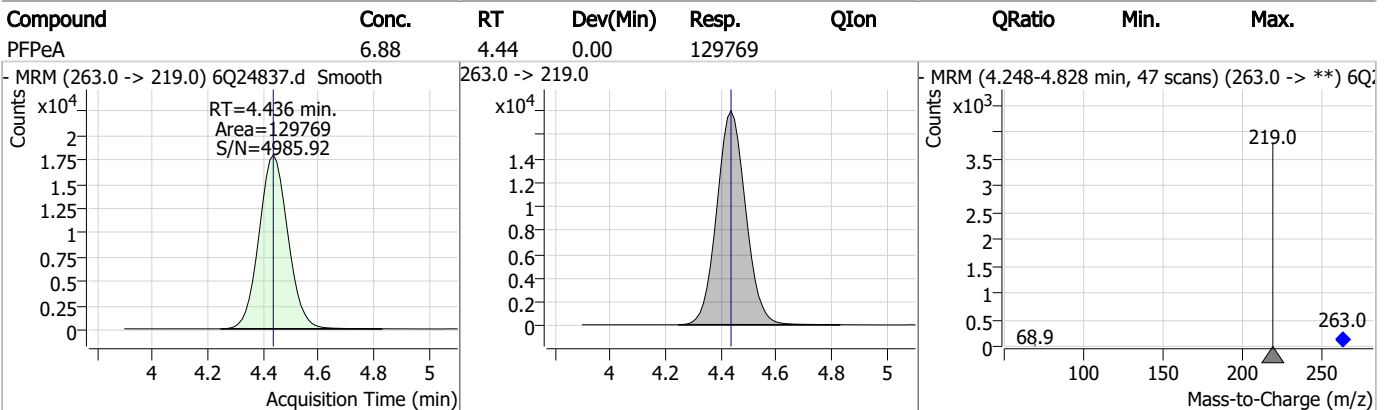
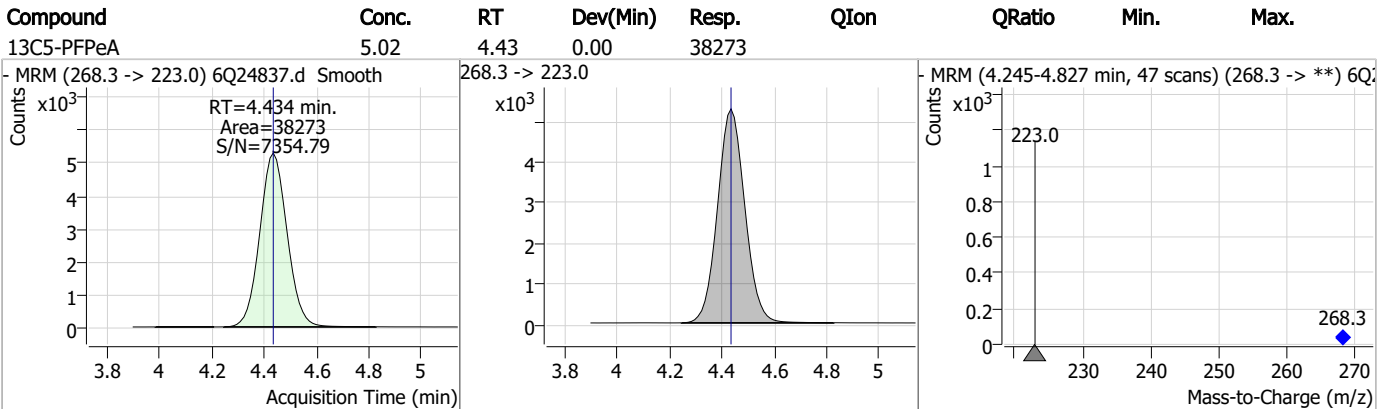
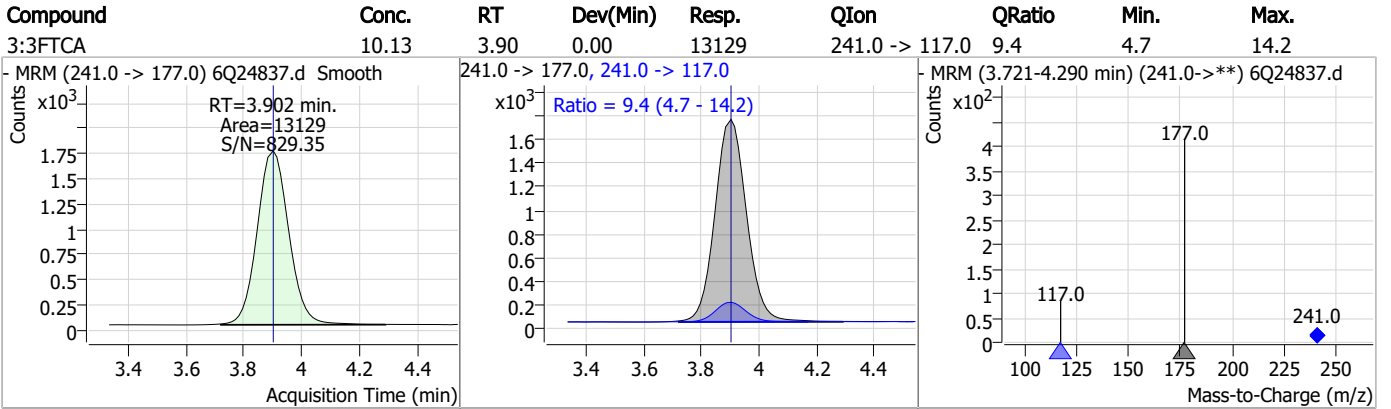
7.4.1

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Perfluorinated Compounds by LC/MS/MS



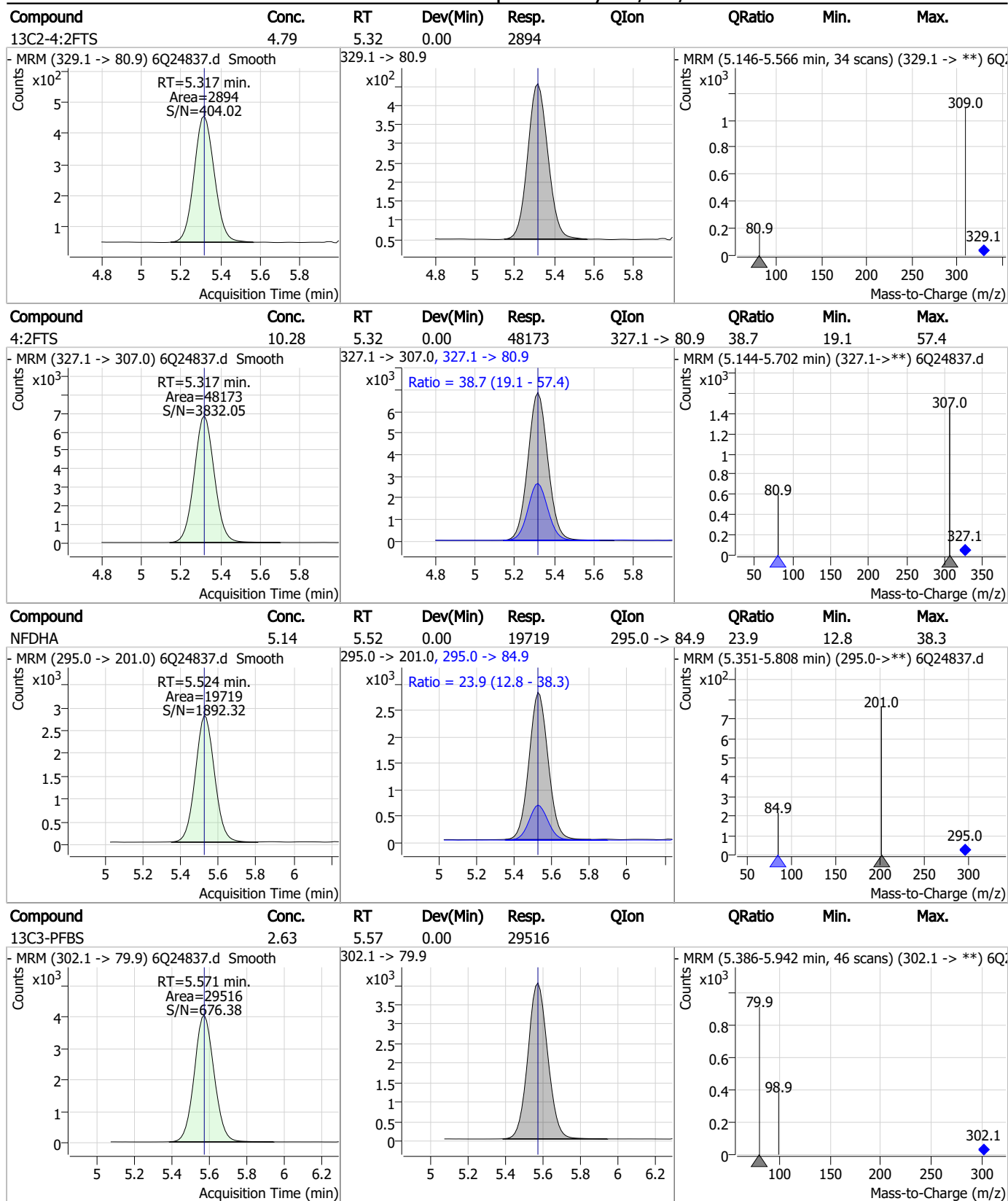
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



7.4.1
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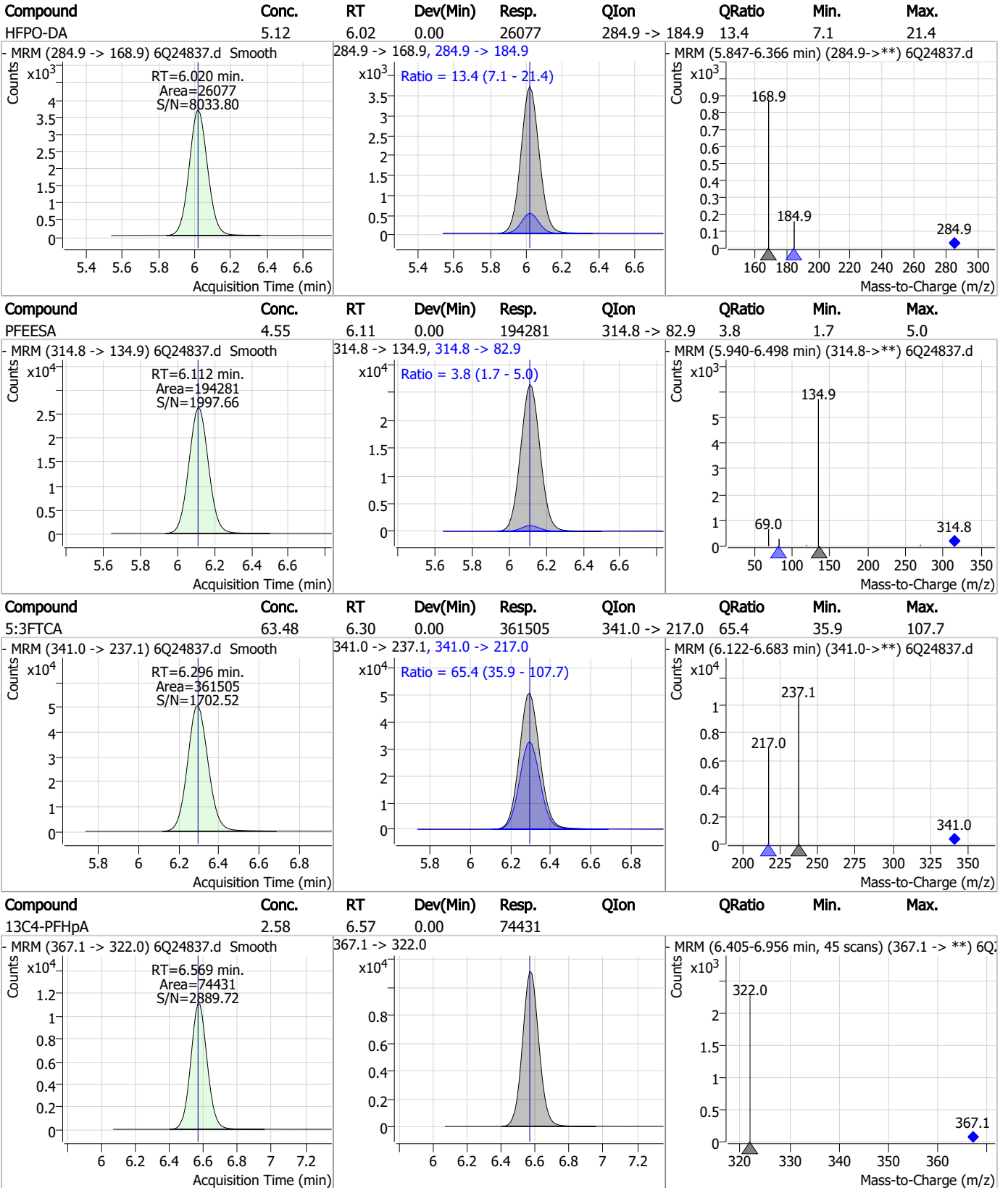
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.80	5.57	0.00	39195	298.7 -> 98.8	37.2	18.2	54.6
13C5-PFHxA	2.64	5.64	0.00	93346				
PFHxA	3.23	5.64	0.00	104866	313.0 -> 118.9	4.7	2.3	7.0
13C3-HFPO-DA	10.78	6.02	0.00	53661				

7.4.1

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Perfluorinated Compounds by LC/MS/MS

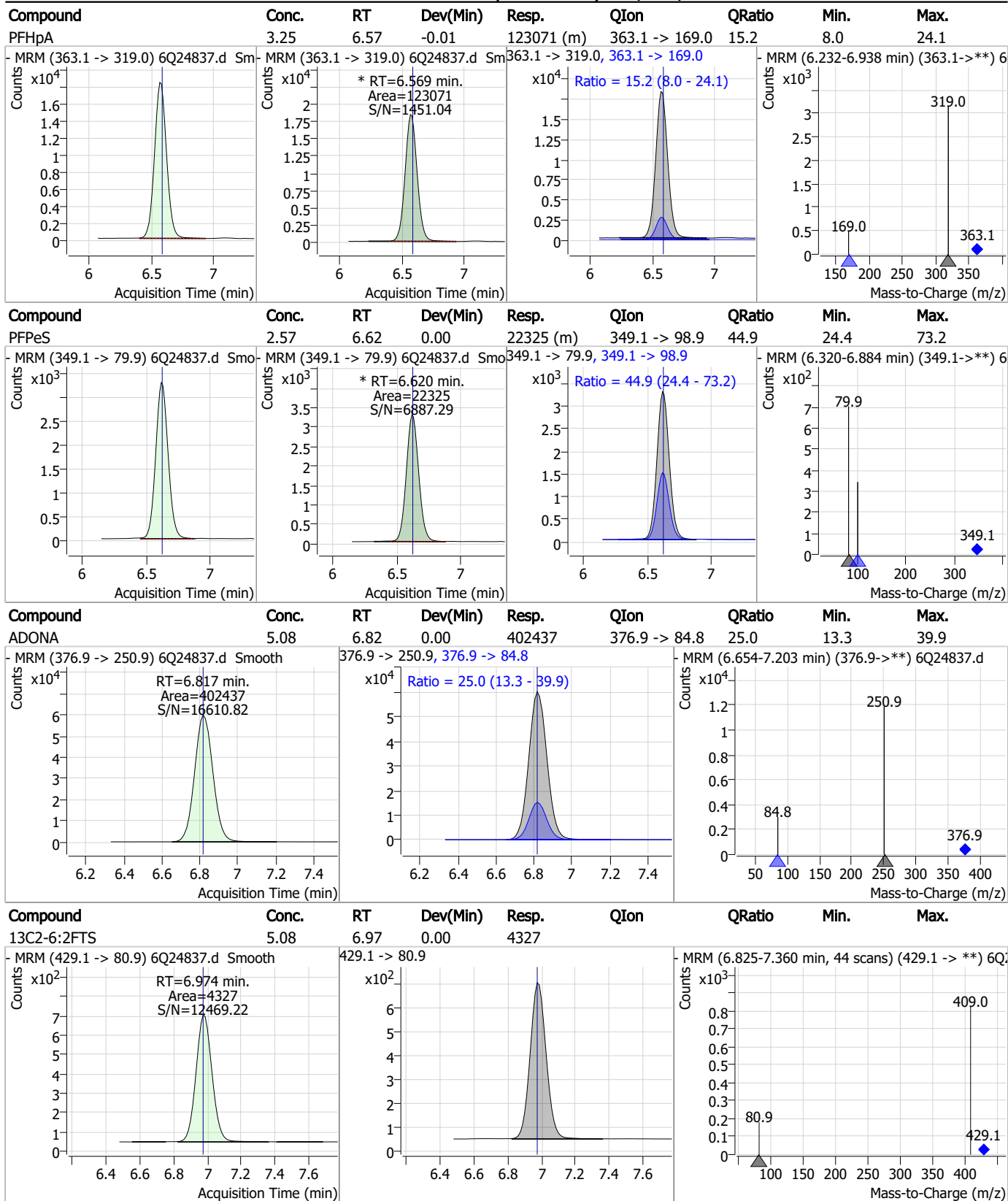


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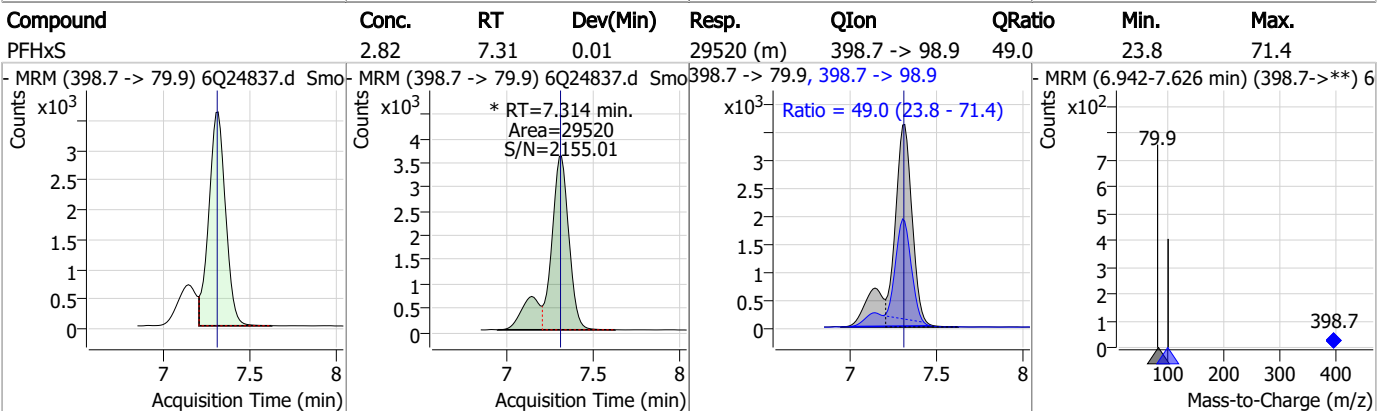
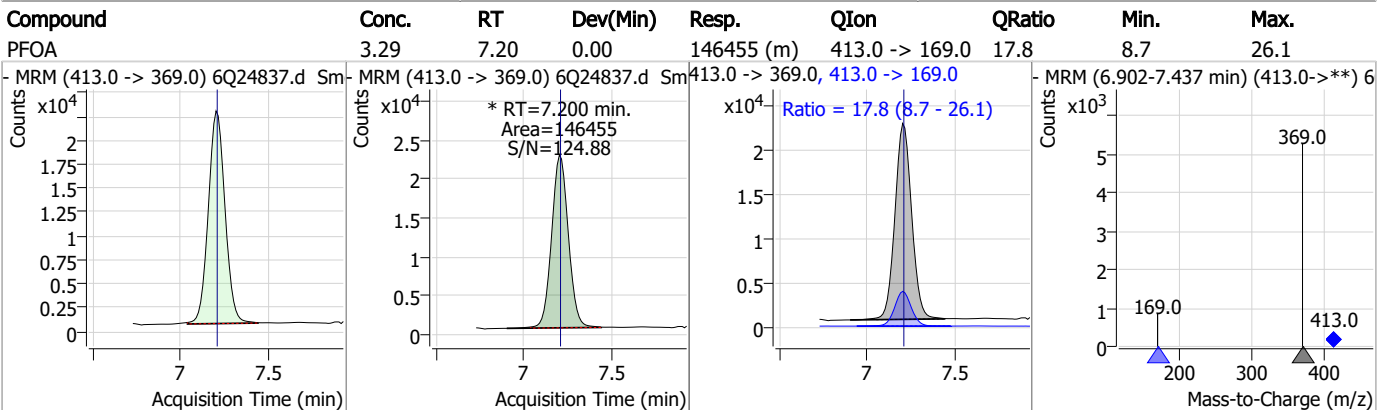
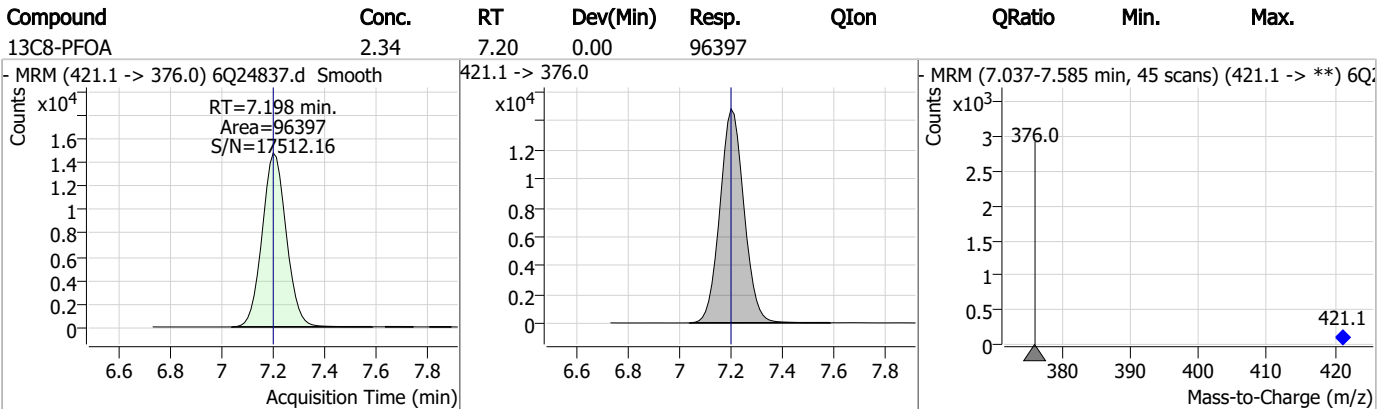
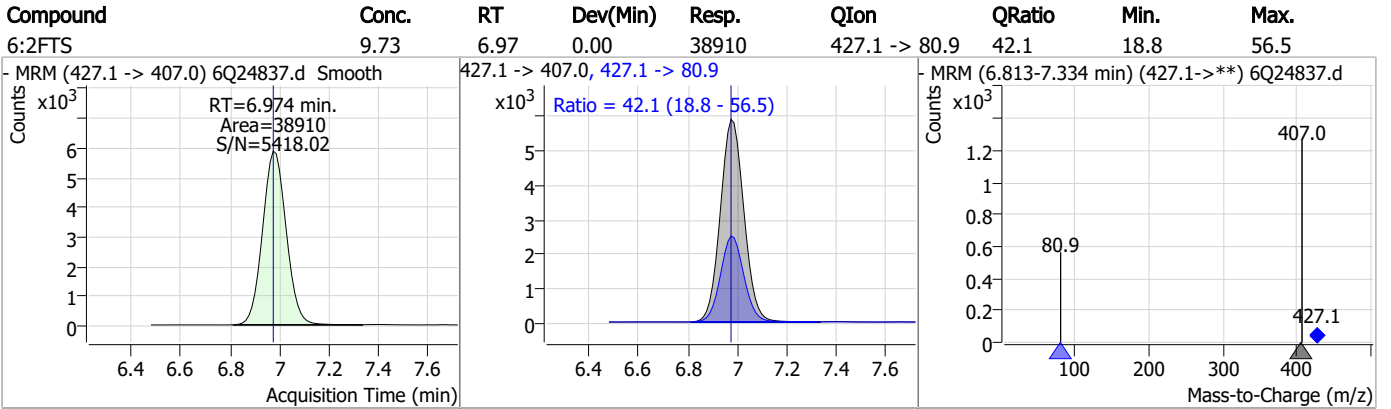


Perfluorinated Compounds by LC/MS/MS

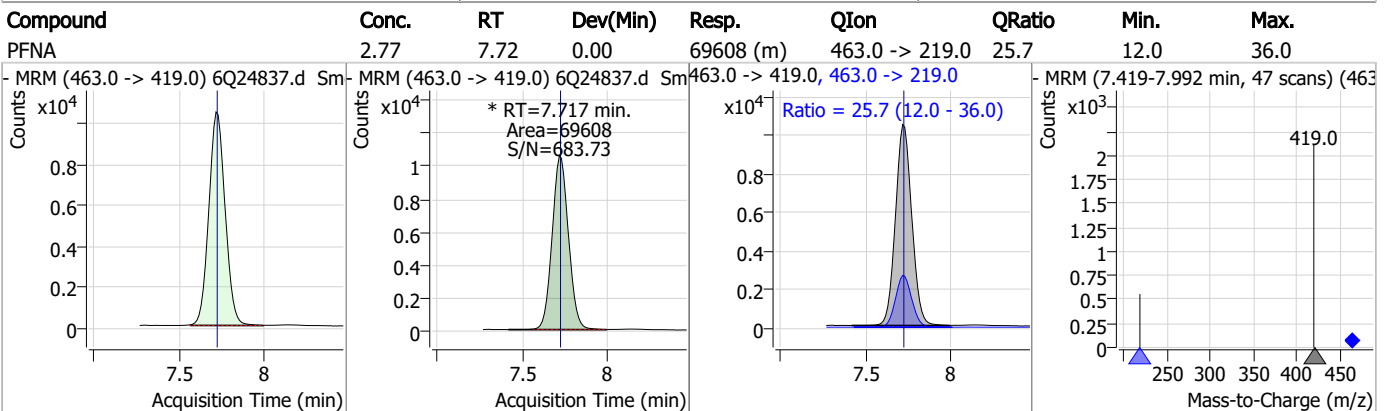
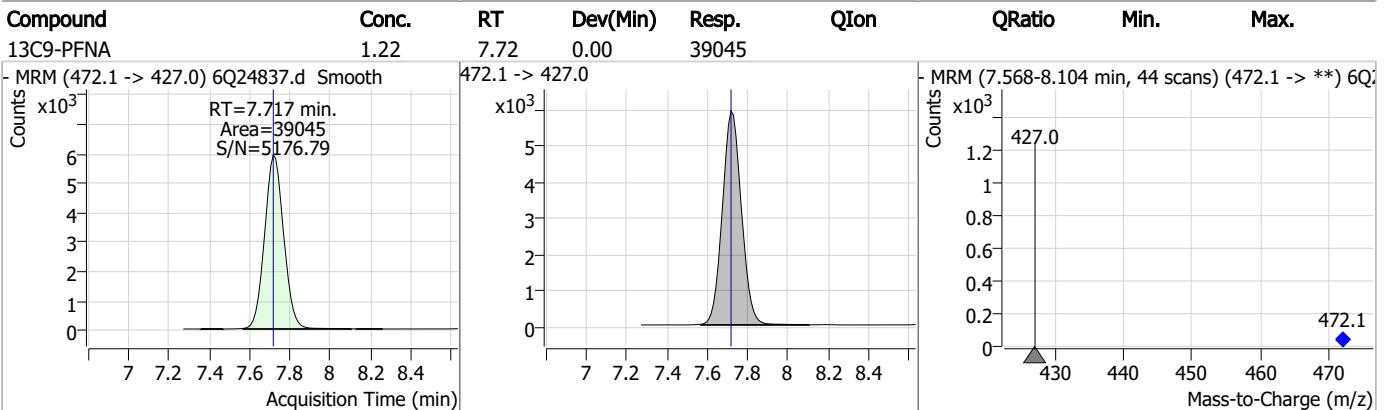
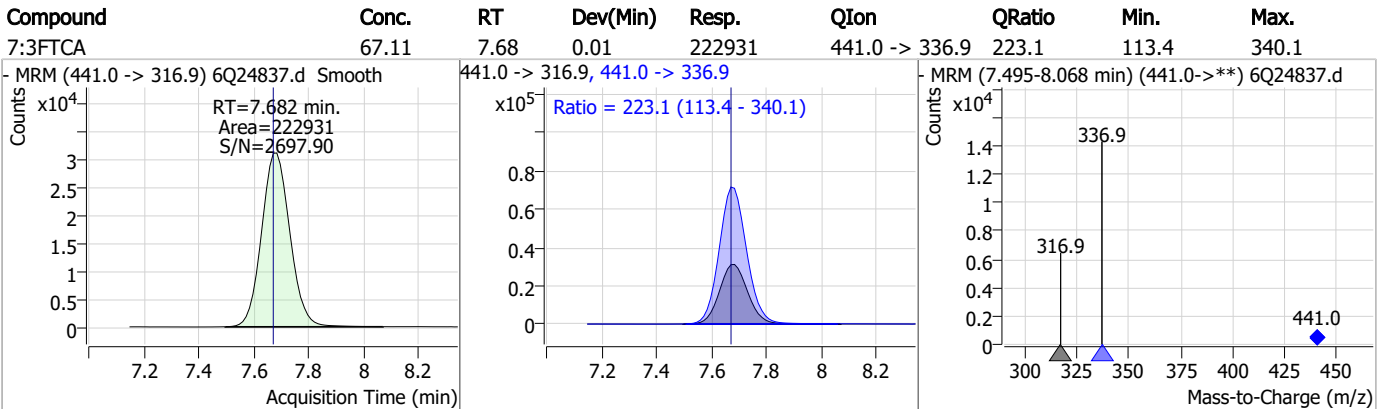
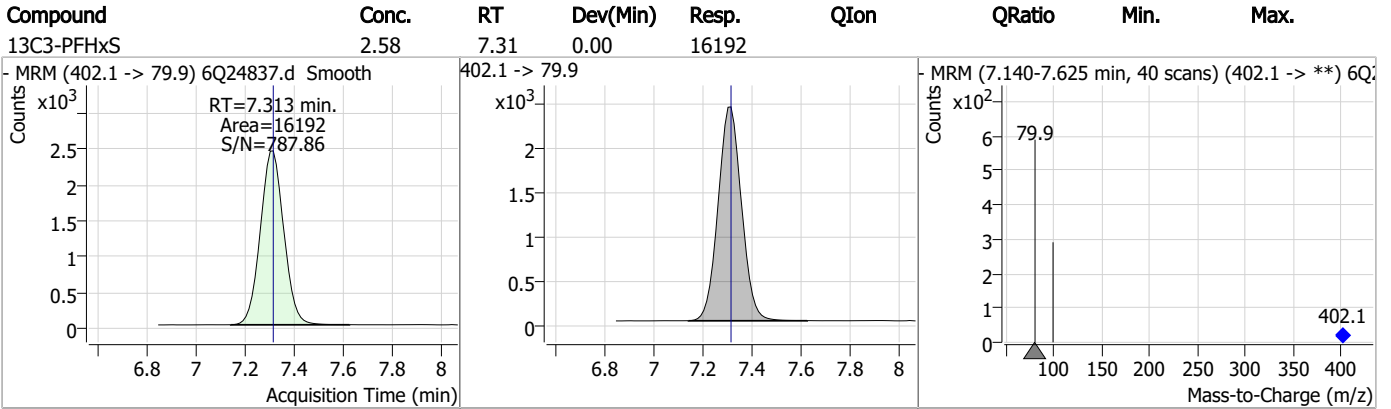


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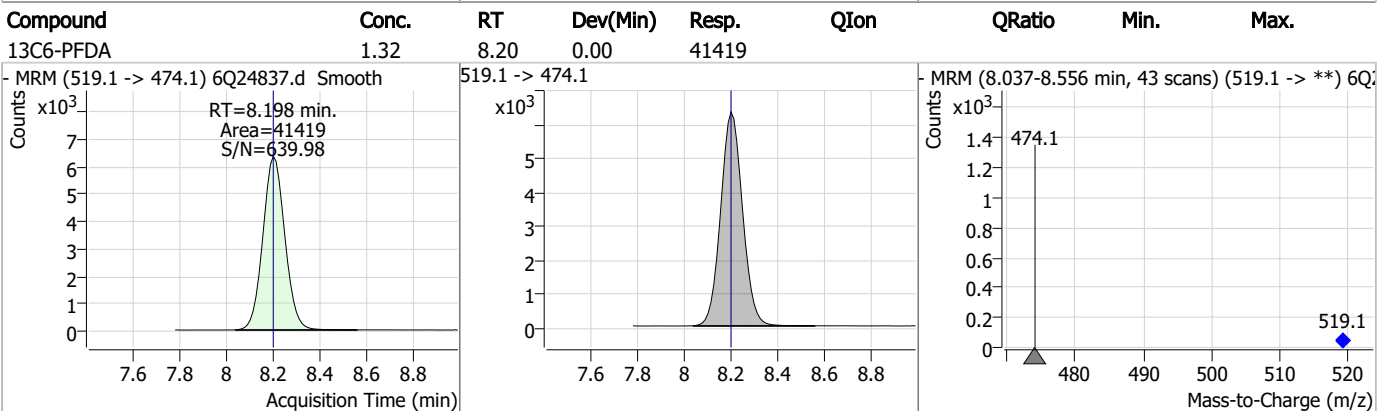
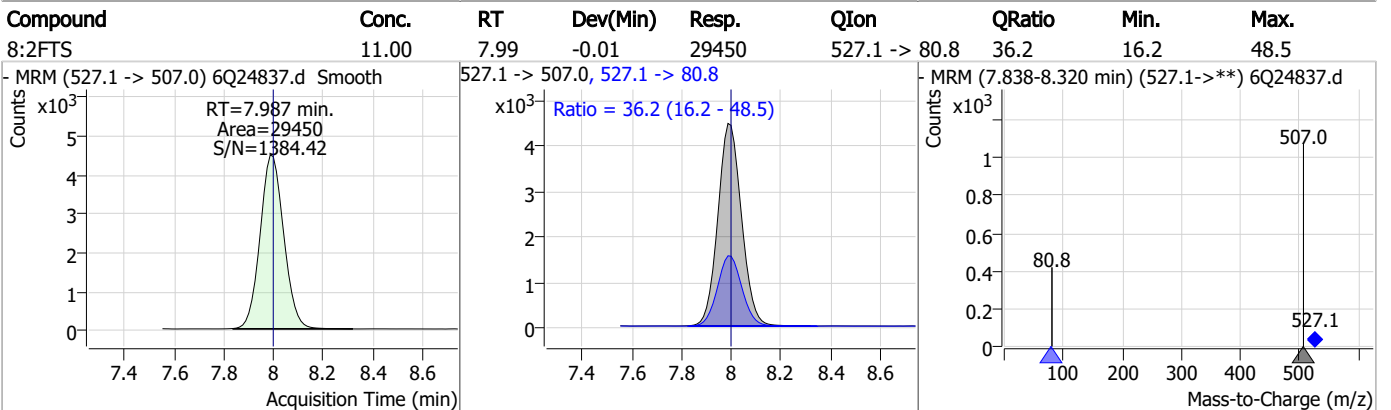
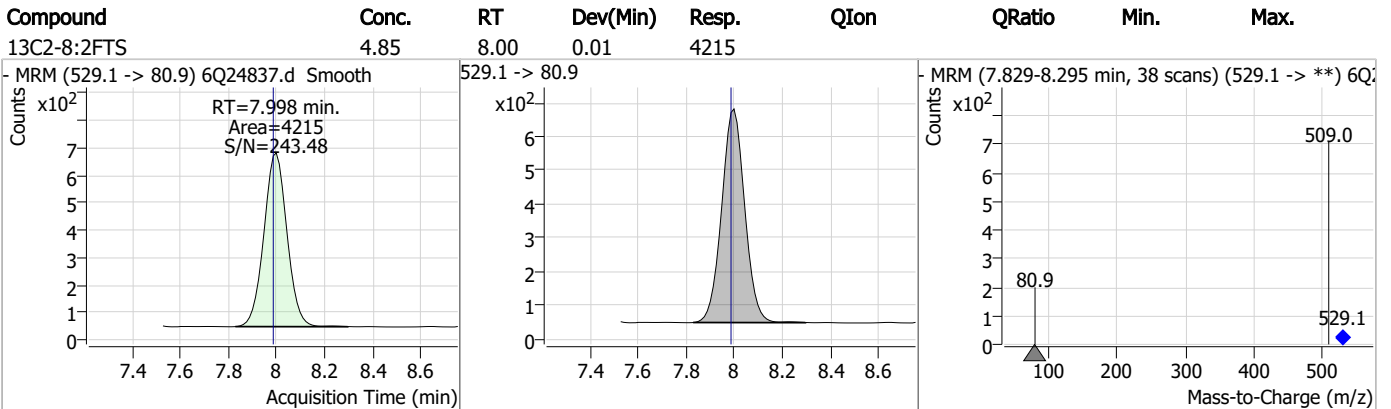
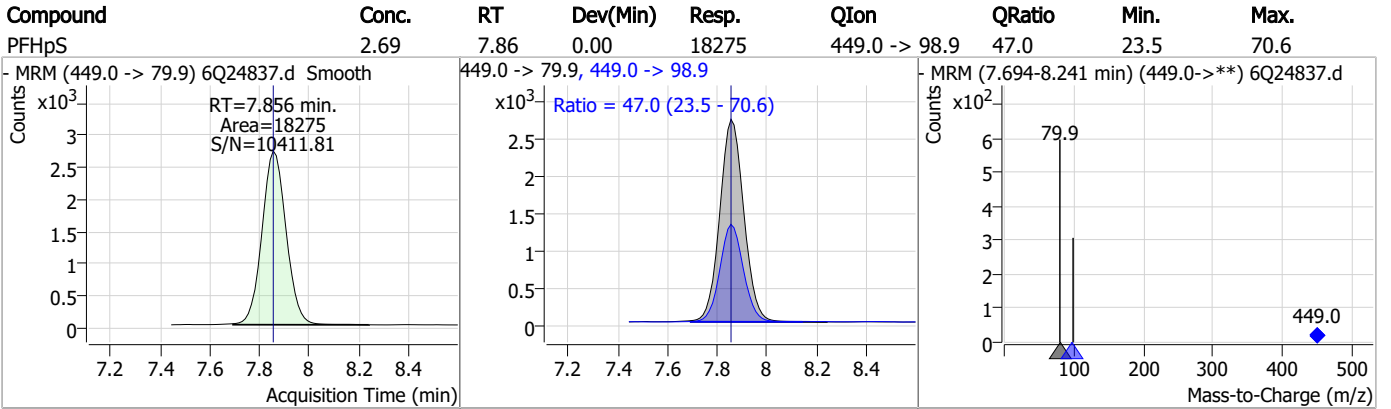
Perfluorinated Compounds by LC/MS/MS



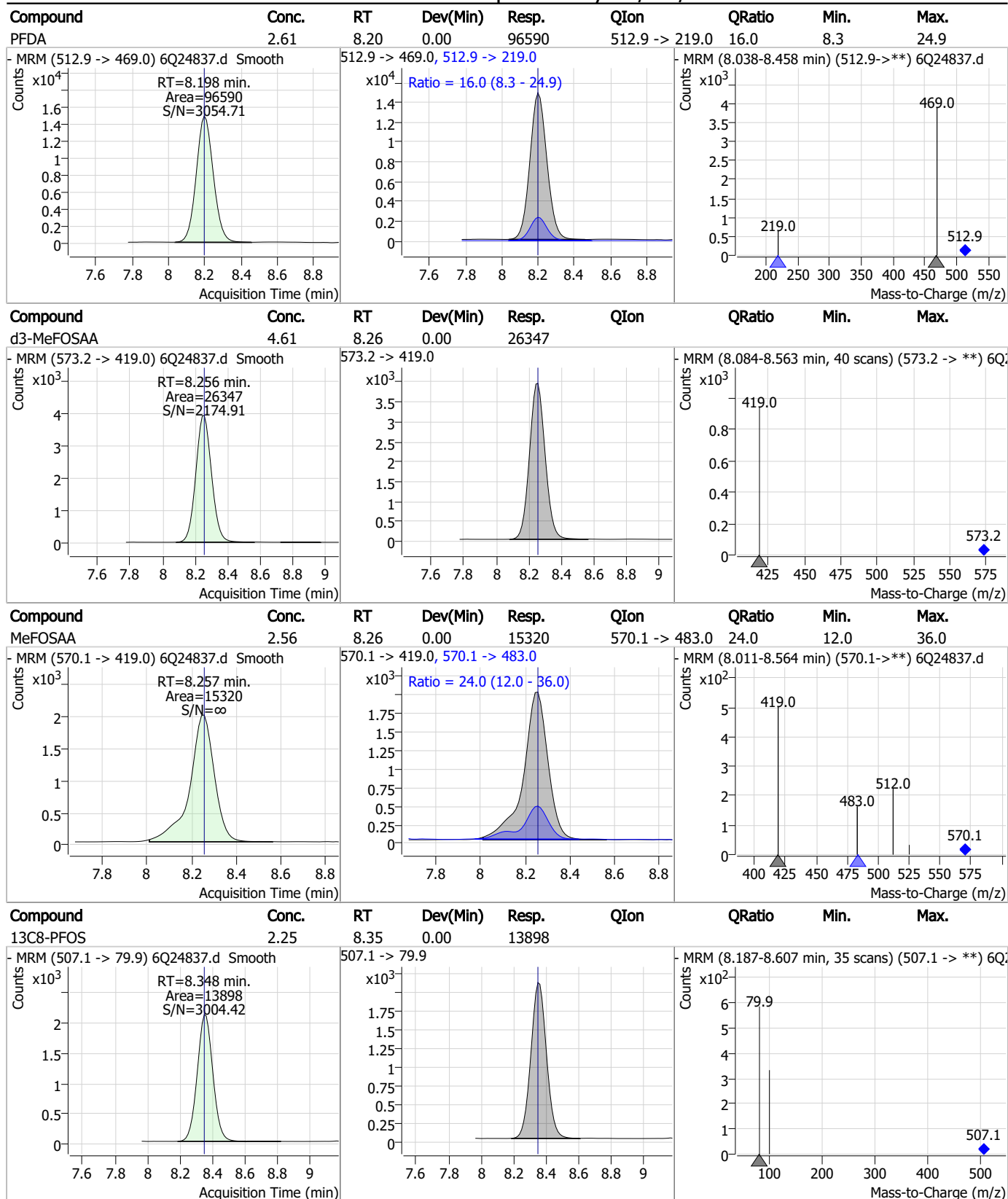
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



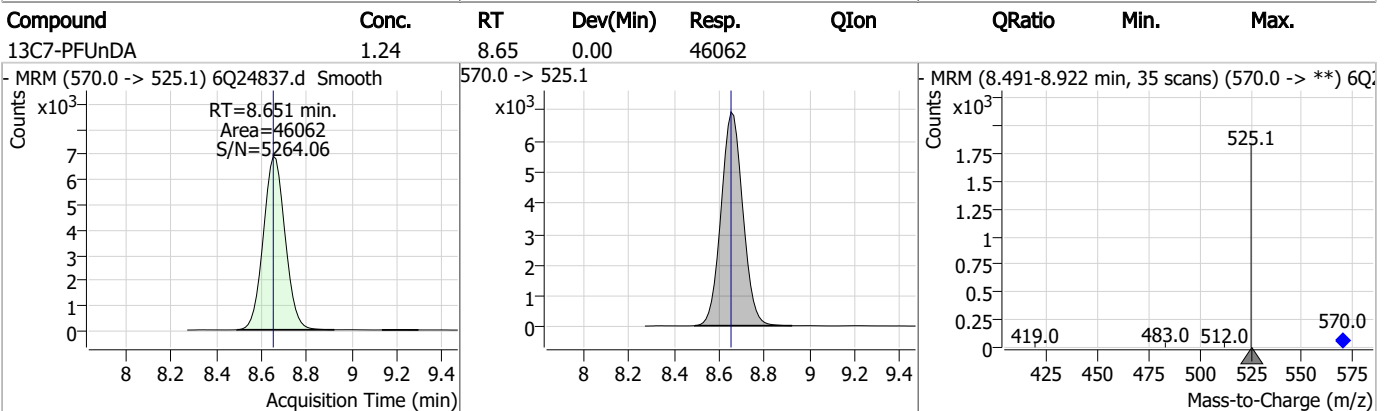
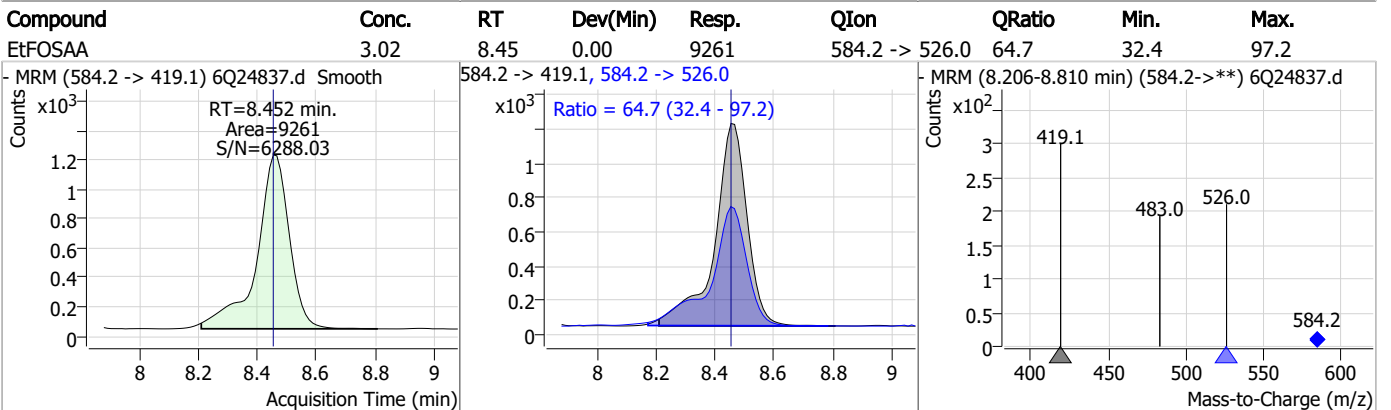
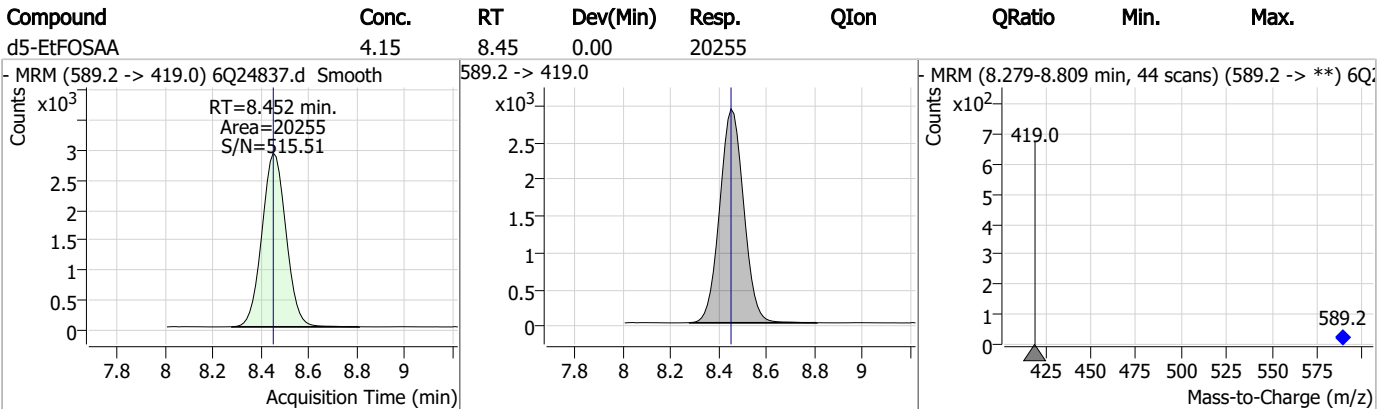
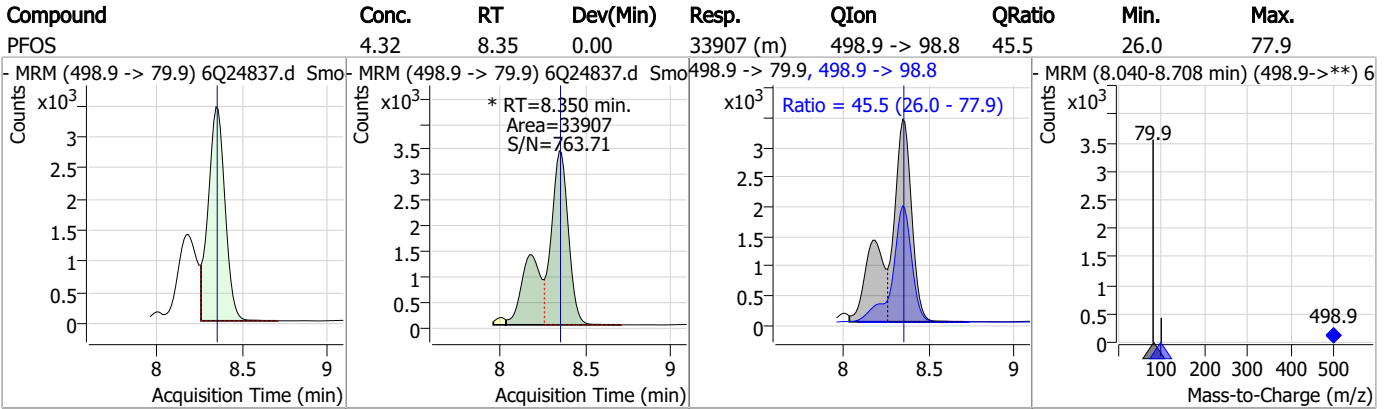
Perfluorinated Compounds by LC/MS/MS



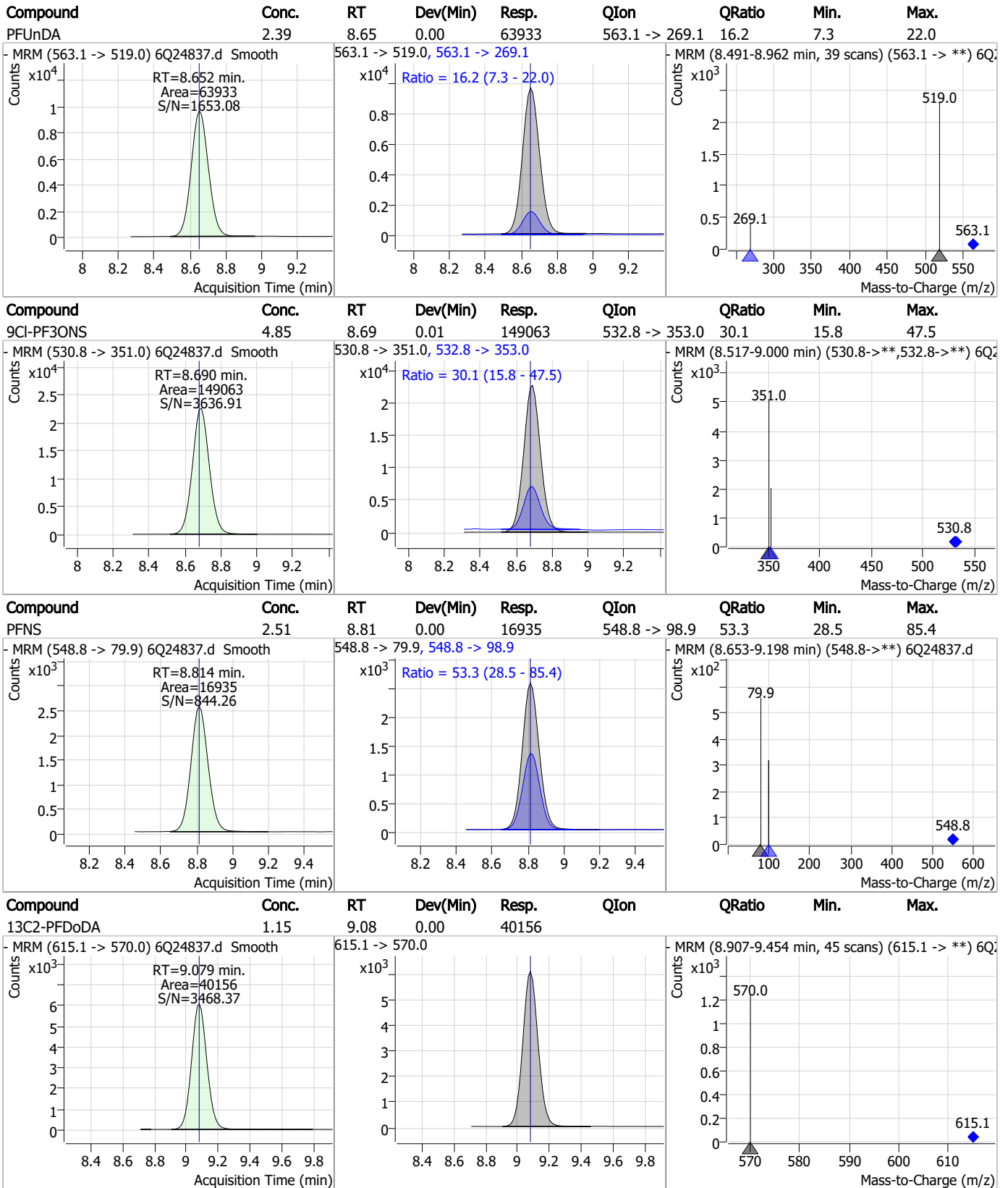
7.4.1
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Perfluorinated Compounds by LC/MS/MS



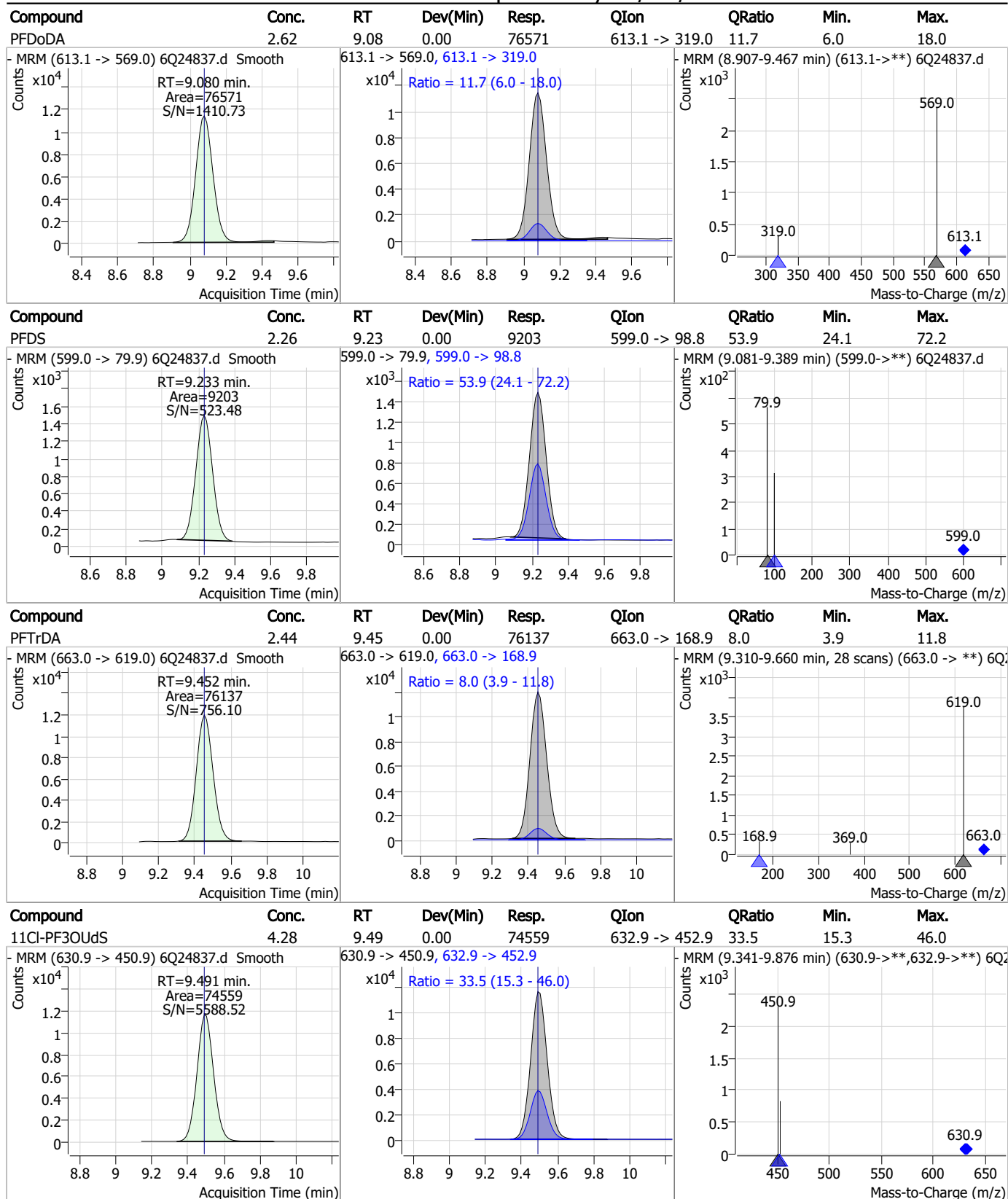
Perfluorinated Compounds by LC/MS/MS



7.4.1

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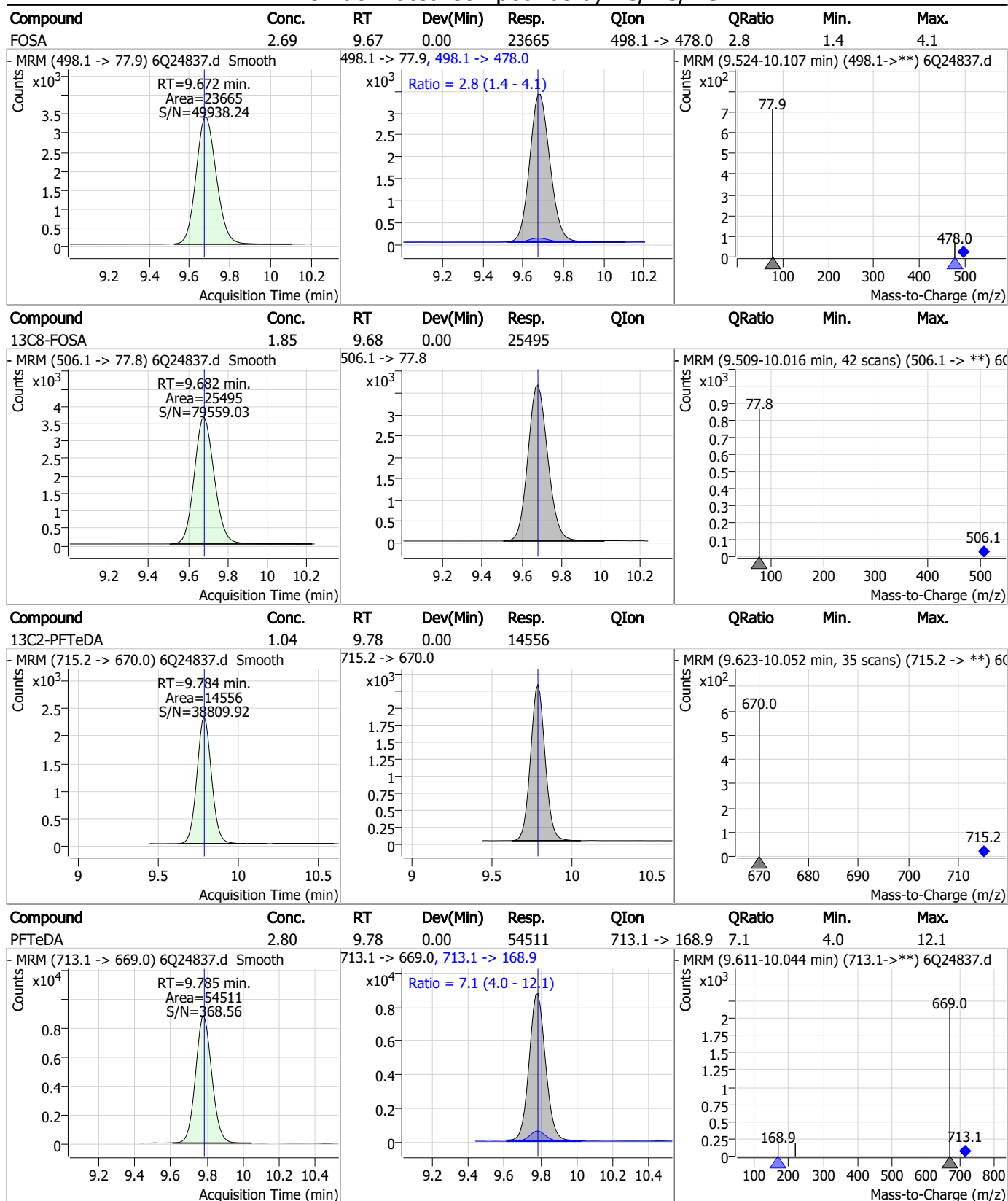
Perfluorinated Compounds by LC/MS/MS



7.4.1

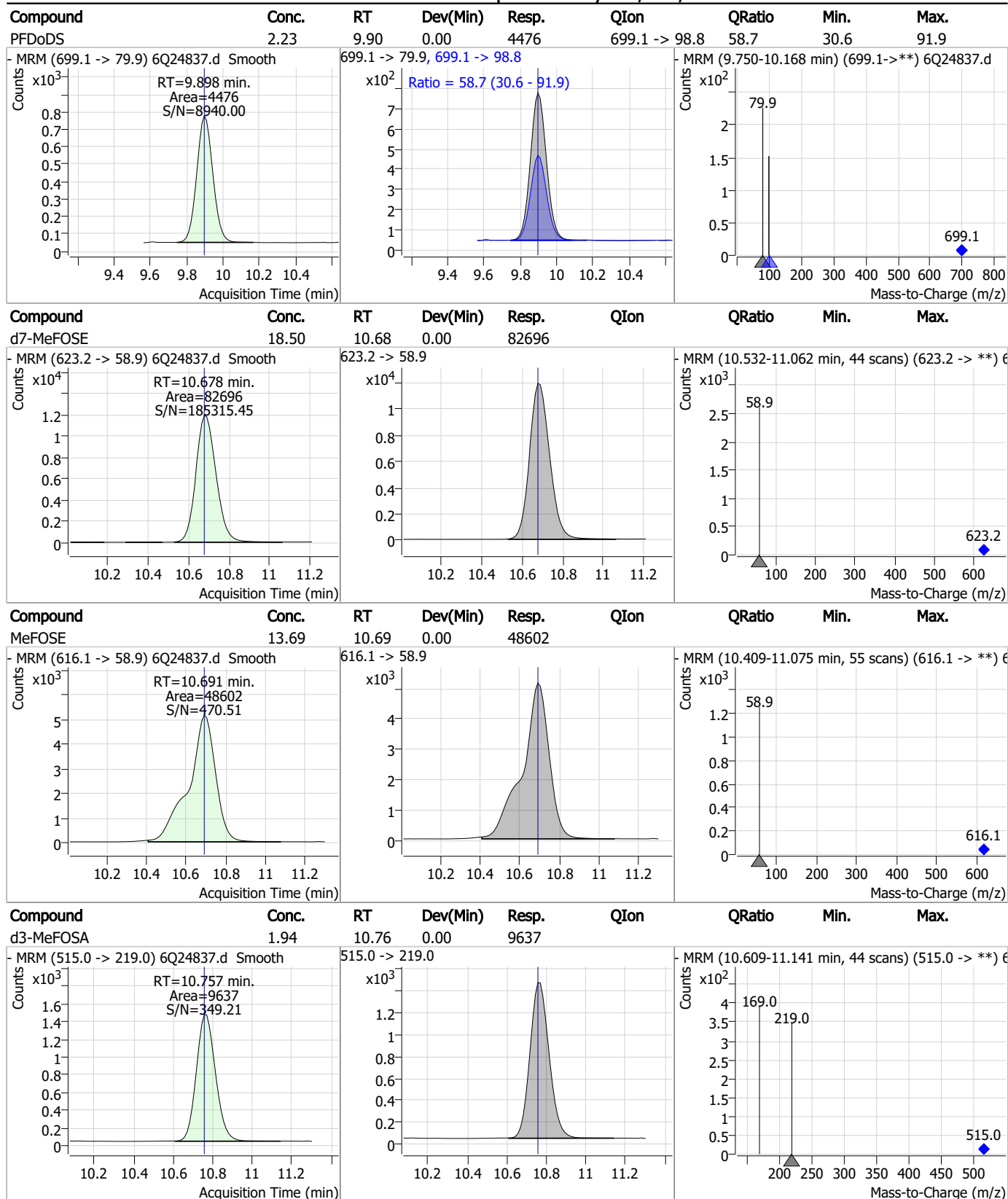
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Perfluorinated Compounds by LC/MS/MS



7.4.1
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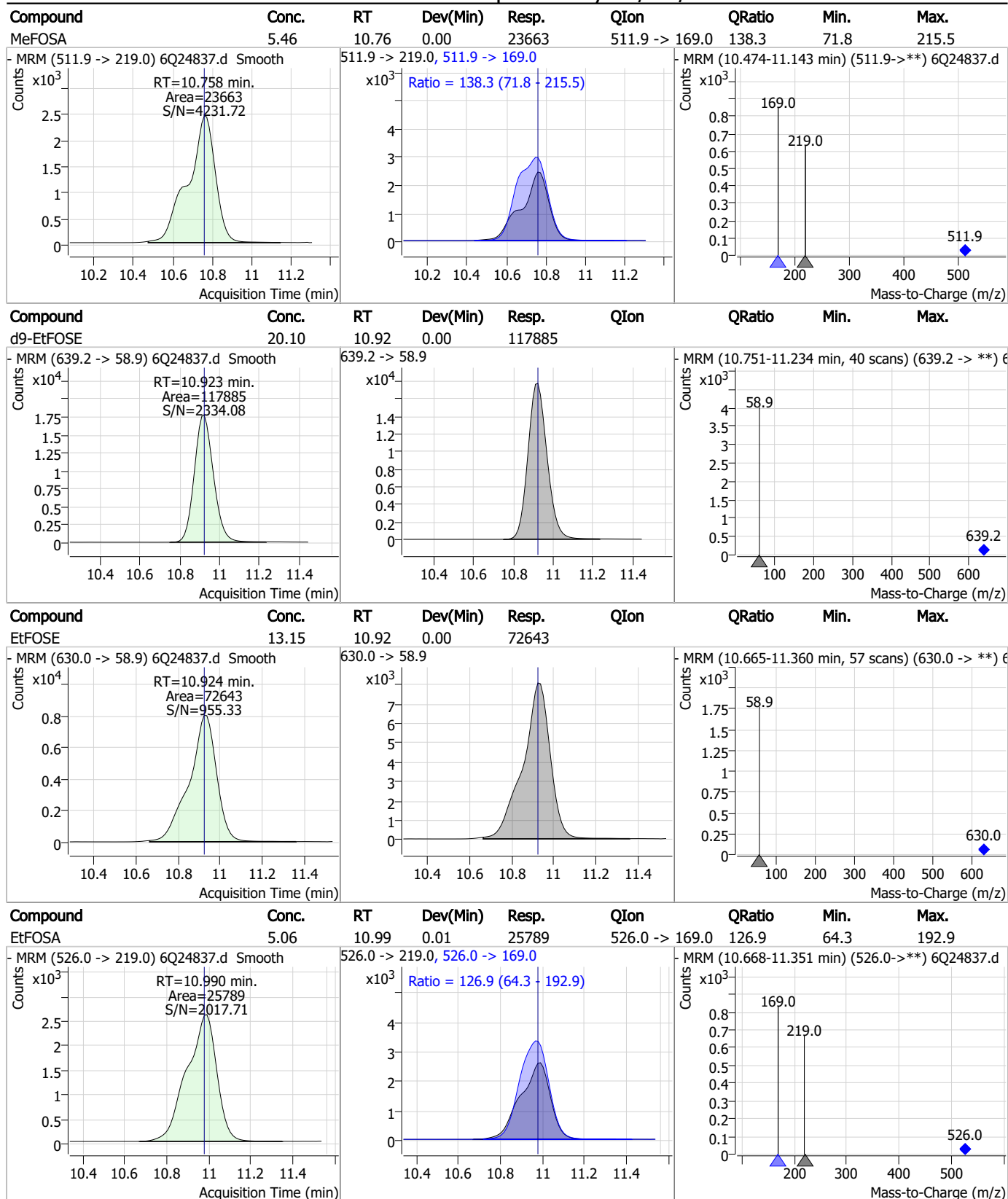
Perfluorinated Compounds by LC/MS/MS



7.4.1
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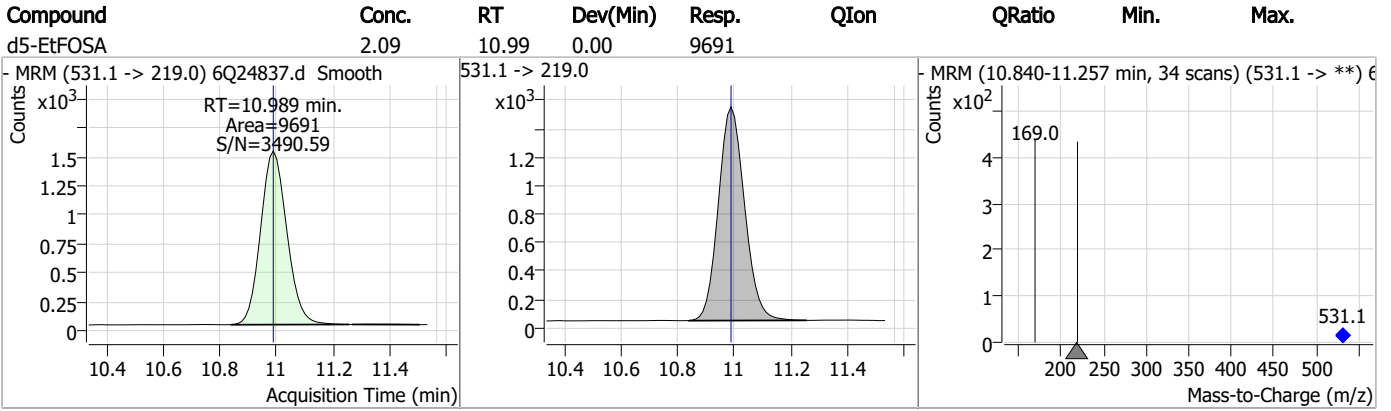
Perfluorinated Compounds by LC/MS/MS



7.4.1
7



Perfluorinated Compounds by LC/MS/MS



7.4.1

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Manual Integration Approval Summary

Sample Number: OP99077-MS Method: EPA DRAFT 1633
Lab FileID: 6Q24837.D Analyst approved: 09/22/23 11:10 Anna Ludwig
Injection Time: 09/22/23 02:48 Supervisor approved: 09/22/23 13:19 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.57	Split peak
Perfluoropentanesulfonic acid	2706-91-4		6.62	Split peak
Perfluorooctanoic acid	335-67-1		7.20	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.31	Split peak
Perfluorononanoic acid	375-95-1		7.72	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.4.1.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24839.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/22/2023 3:17:04 AM
 Sample Name : OP99077-DUP
 Vial : P2-B5
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99077,S6Q355,520,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	248027	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	39355	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	93171	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	77121	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	100568	2.50 µg/L	0.000
M9-PFNA	7.729	472.1 -> 427.0	40902	1.25 µg/L	0.012
M6-PFDA	8.198	519.1 -> 474.1	38206	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	41753	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	37431	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	12668	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	26163	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	30027	2.50 µg/L	0.000
M3-PFHxS	7.313	402.1 -> 79.9	16434	2.50 µg/L	0.000
M8-PFOS	8.361	507.1 -> 79.9	14892	2.50 µg/L	0.012
M2-4:2FTS	5.317	329.1 -> 80.9	3019	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	4387	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	4008	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	26265	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	52509	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	22113	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	81659	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	113195	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	9128	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	9275	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	19205	2.50 µg/L	0.000
13C3-PFBA	3.014	216.0 -> 172.0	98032	5.00 µg/L	0.012
18O2-PFHxS	7.313	403.0 -> 83.9	11283	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	109286	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	33146	1.25 µg/L	0.000
13C5-PFNA	7.729	468.0 -> 423.0	45173	1.25 µg/L	0.012
13C2-PFHxA	5.642	315.1 -> 270.0	67617	2.50 µg/L	0.000

System Monitoring Compounds

13C2-4:2FTS	5.317	329.1 -> 80.9	3019	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.5%		
13C2-6:2FTS	6.974	429.1 -> 80.9	4387	5.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C2-8:2FTS	7.998	529.1 -> 80.9	4008	4.73 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 94.6%		
13C2-PFDoDA	9.079	615.1 -> 570.0	37431	1.11 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 89.2%		
13C2-PFTeDA	9.784	715.2 -> 670.0	12668	0.94 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 75.5%		
13C3-PFBS	5.571	302.1 -> 79.9	30027	2.75 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 109.9%		
13C3-PFHxS	7.313	402.1 -> 79.9	16434	2.69 µg/L	0.000

7.5.1
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.6%	
13C4-PFBA	3.010	216.8 -> 171.9	248027	10.37 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C4-PFHpA	6.569	367.1 -> 322.0	77121	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.2%	
13C5-PFHxA	5.641	318.0 -> 273.0	93171	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.6%	
13C5-PFPeA	4.434	268.3 -> 223.0	39355	5.12 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C6-PFDA	8.198	519.1 -> 474.1	38206	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C7-PFUnDA	8.651	570.0 -> 525.1	41753	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.7%	
13C8-FOSA	9.682	506.1 -> 77.8	26163	2.07 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 83.0%	
13C8-PFOA	7.198	421.1 -> 376.0	100568	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C8-PFOS	8.361	507.1 -> 79.9	14892	2.63 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.3%	
13C9-PFNA	7.729	472.1 -> 427.0	40902	1.25 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.9%	
d3-MeFOSAA	8.256	573.2 -> 419.0	26265	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	52509	10.47 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 104.7%	
d3-MeFOSA	10.757	515.0 -> 219.0	9275	2.03 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 81.3%	
d5-EtFOSAA	8.452	589.2 -> 419.0	22113	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
d7-MeFOSE	10.678	623.2 -> 58.9	81659	19.93 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 79.7%	
d9-EtFOSE	10.923	639.2 -> 58.9	113195	21.05 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 84.2%	
d5-EtFOSA	10.989	531.1 -> 219.0	9128	2.15 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 85.9%	
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	3.018	212.8 -> 168.9	11461	1.50 µg/L	100
PFBS	5.572	298.7 -> 79.9 298.7 -> 98.8	5948 2274	0.42 µg/L	97
PFDA	-	512.9 -> 469.0 512.9 -> 219.0	-	N.D.	
PFDODA	-	613.1 -> 569.0 613.1 -> 319.0	-	N.D.	
PFDS	9.069	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	0			
PFHpA	6.582	363.1 -> 319.0	22445	0.57	µg/L m	97
		363.1 -> 169.0	3326			
PFHpS	-	449.0 -> 79.9	-	N.D.		
		449.0 -> 98.9				
PFHxA	5.644	313.0 -> 269.0	21995	0.68	µg/L	99
		313.0 -> 118.9	950			
PFHxS	7.314	398.7 -> 79.9	5932	0.56	µg/L m	100
		398.7 -> 98.9	2835			
PFNA	7.730	463.0 -> 419.0	3547	0.13	µg/L m	89
		463.0 -> 219.0	1050			
PFNS	-	548.8 -> 79.9	-	N.D.		
		548.8 -> 98.9				
PFOA	7.200	413.0 -> 369.0	27477	0.59	µg/L m	98
		413.0 -> 169.0	5034			
PFOS	8.362	498.9 -> 79.9	13086	1.55	µg/L m	84
		498.9 -> 98.8	5313			
PFPeA	4.436	263.0 -> 219.0	25007	1.29	µg/L	100
PFPeS	6.633	349.1 -> 79.9	635	0.07	µg/L m	93
		349.1 -> 98.9	279			
PFTeDA	-	713.1 -> 669.0	-	N.D.		
		713.1 -> 168.9				
PFTTrDA	-	663.0 -> 619.0	-	N.D.		
		663.0 -> 168.9				
PFUnDA	-	563.1 -> 519.0	-	N.D.		
		563.1 -> 269.1				
11Cl-PF3OUdS	-	630.9 -> 450.9	-	N.D.		
		632.9 -> 452.9				
9Cl-PF3ONS	-	530.8 -> 351.0	-	N.D.		
		532.8 -> 353.0				
ADONA	-	376.9 -> 250.9	-	N.D.		
		376.9 -> 84.8				
HFPO-DA	-	284.9 -> 168.9	-	N.D.		
		284.9 -> 184.9				
3:3FTCA	-	241.0 -> 177.0	-	N.D.		
		241.0 -> 117.0				
5:3FTCA	-	341.0 -> 237.1	-	N.D.		
		341.0 -> 217.0				
7:3FTCA	-	441.0 -> 316.9	-	N.D.		
		441.0 -> 336.9				
EtFOSA	-	526.0 -> 219.0	-	N.D.		
		526.0 -> 169.0				
EtFOSE	-	630.0 -> 58.9	-	N.D.		
MeFOSA	-	511.9 -> 219.0	-	N.D.		
		511.9 -> 169.0				
MeFOSE	-	616.1 -> 58.9	-	N.D.		
PFDoDS	-	699.1 -> 79.9	-	N.D.		
		699.1 -> 98.8				
NFDHA	-	295.0 -> 201.0	-	N.D.		
		295.0 -> 84.9				
PFMBA	-	279.0 -> 85.1	-	N.D.		
PFMPA	-	229.0 -> 84.9	-	N.D.		
PFEESA	-	314.8 -> 134.9	-	N.D.		
		314.8 -> 82.9				

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

7.5.1
7

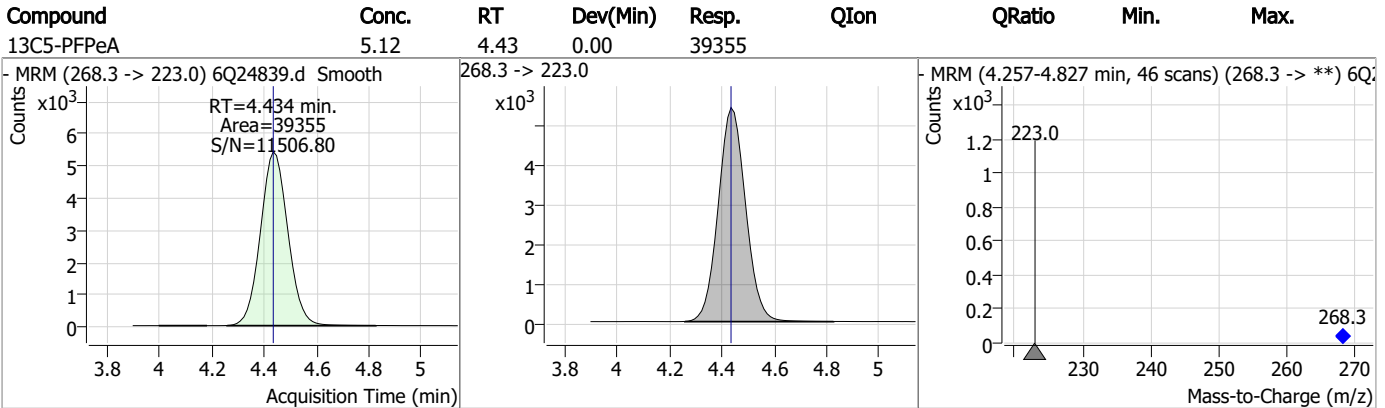
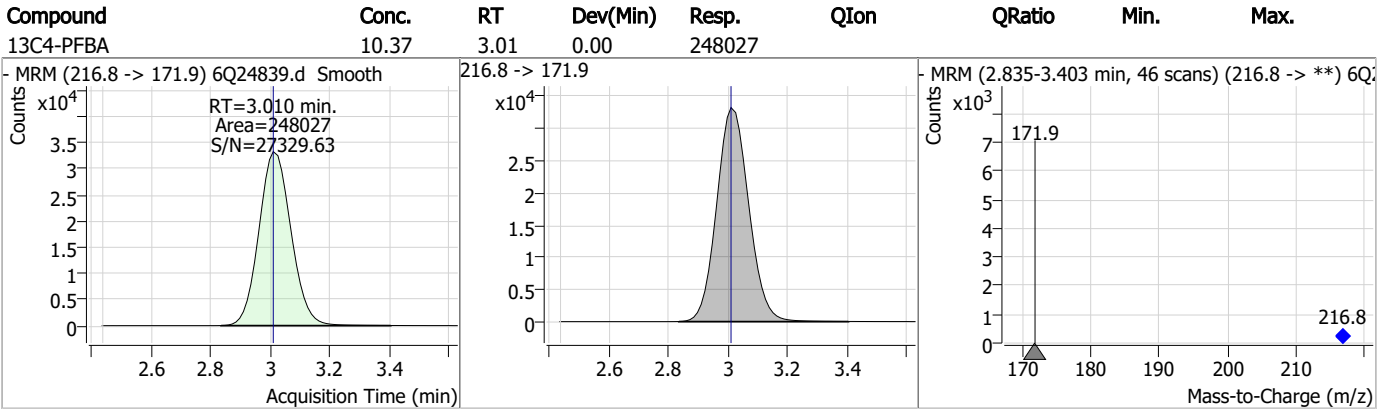
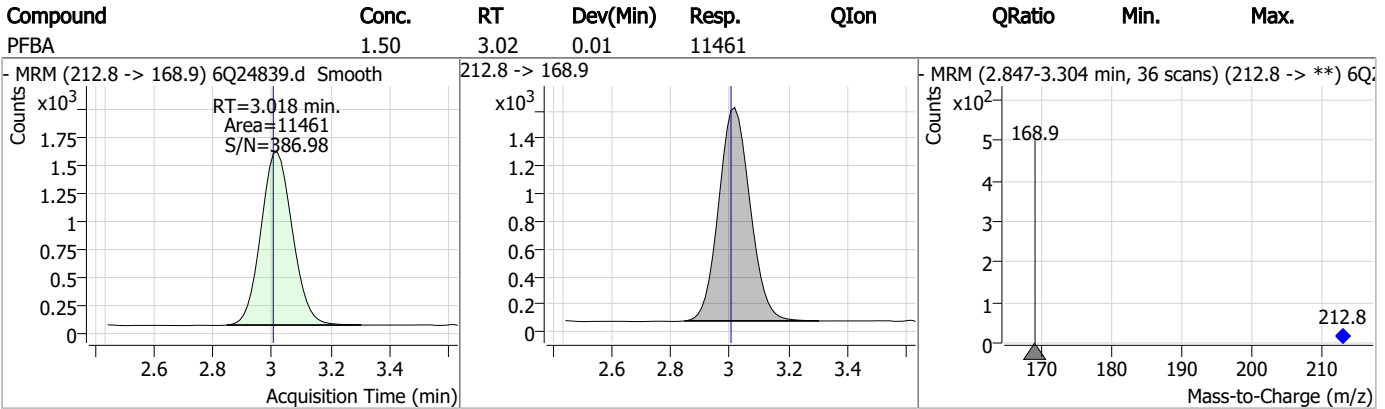
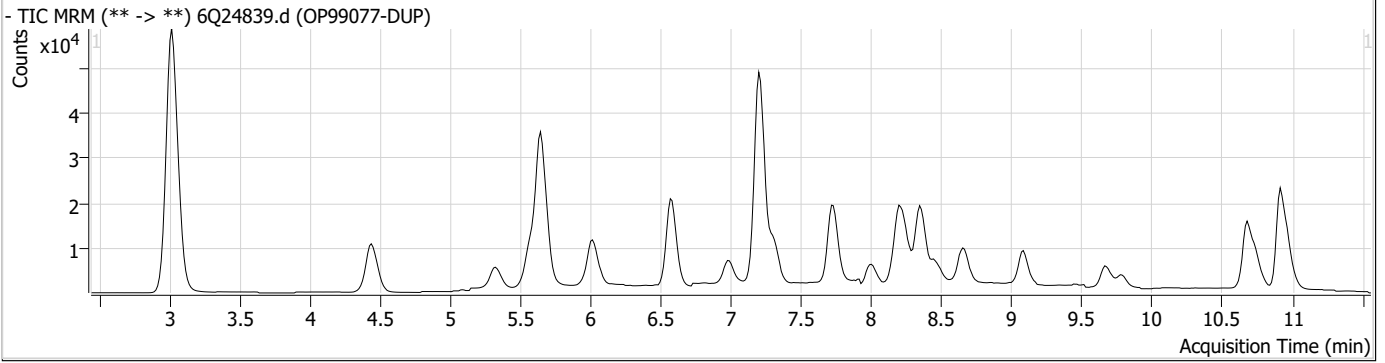
Perfluorinated Compounds by LC/MS/MS

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

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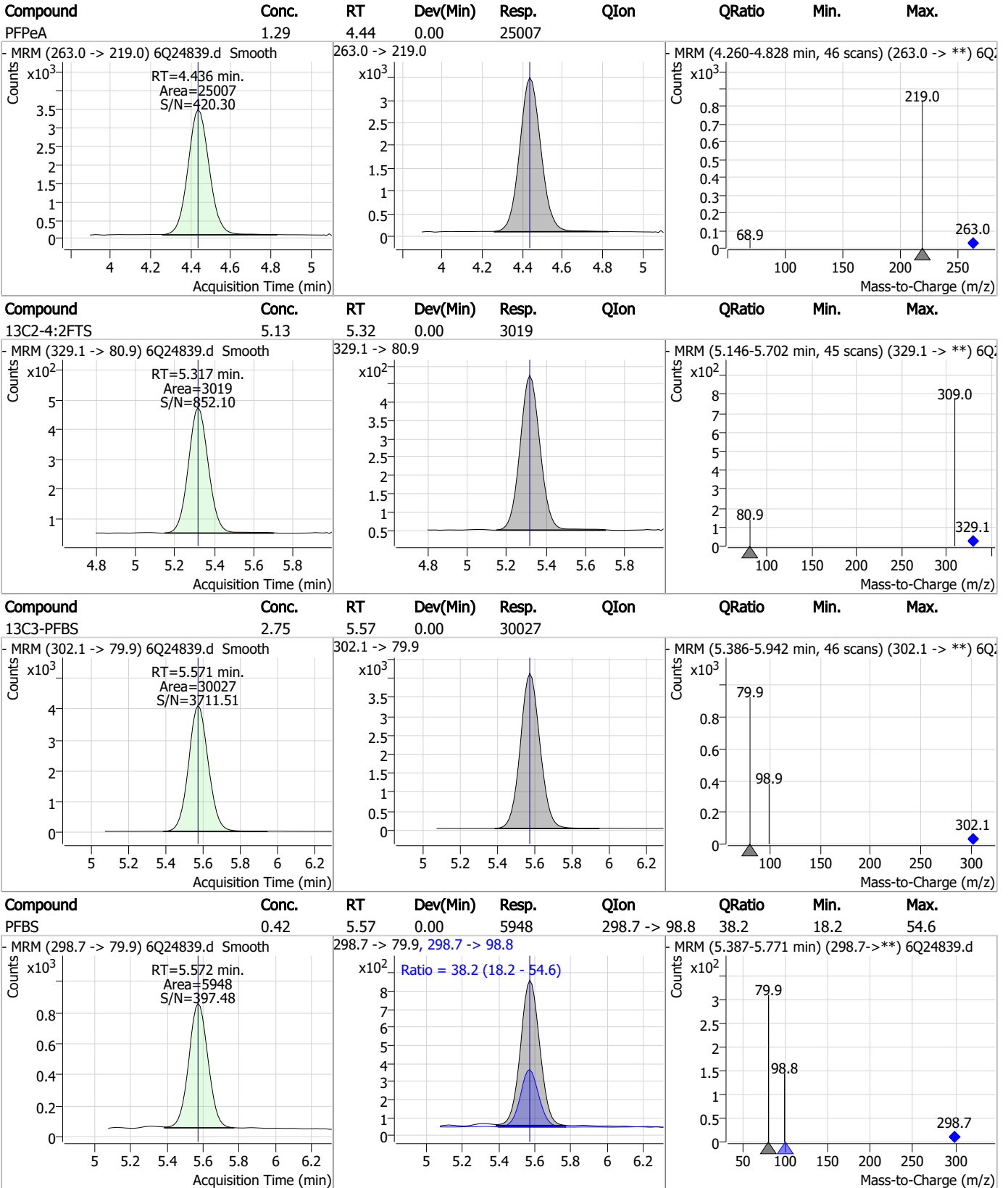
Perfluorinated Compounds by LC/MS/MS



7.5.1

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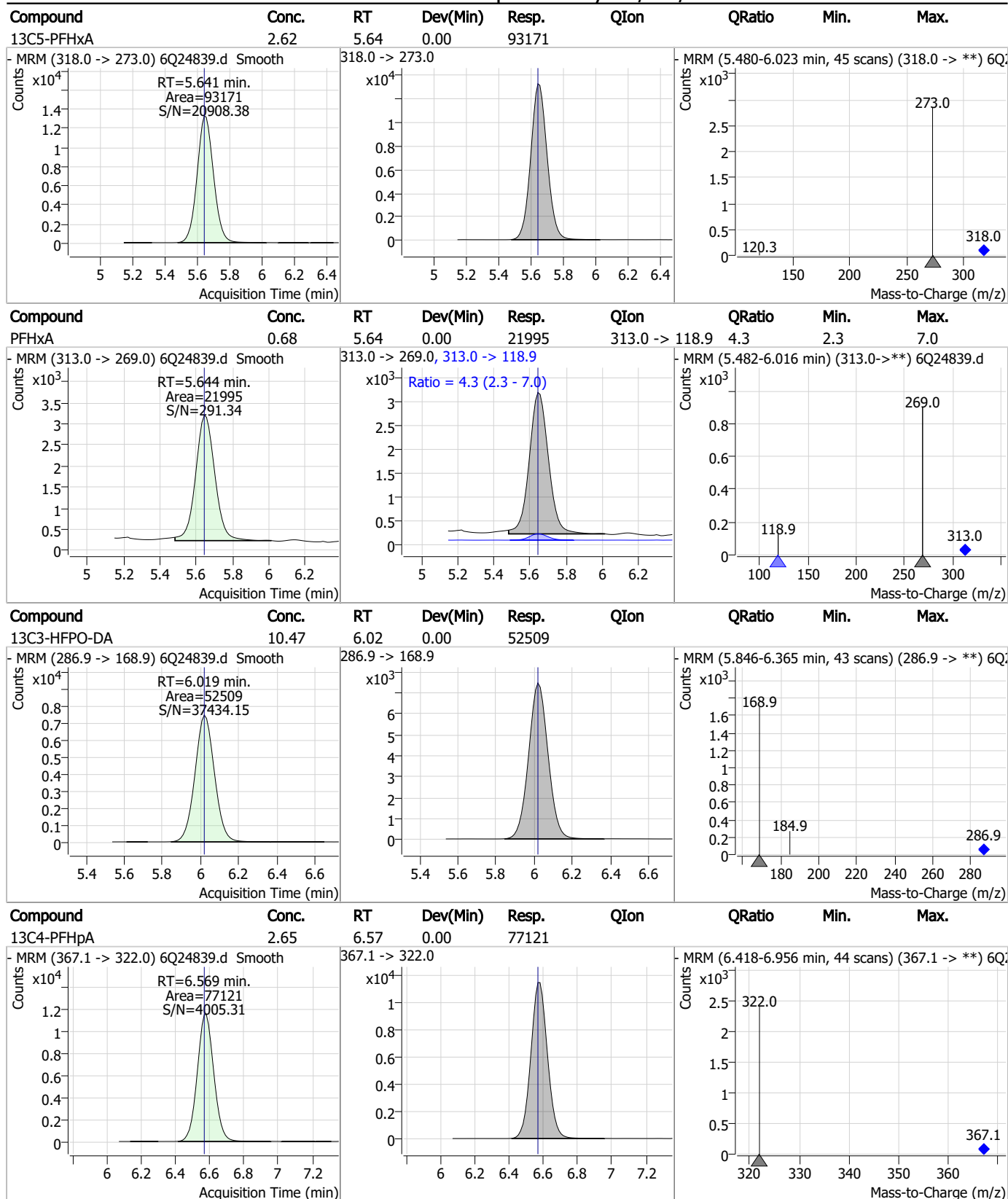
Perfluorinated Compounds by LC/MS/MS



7.5.1

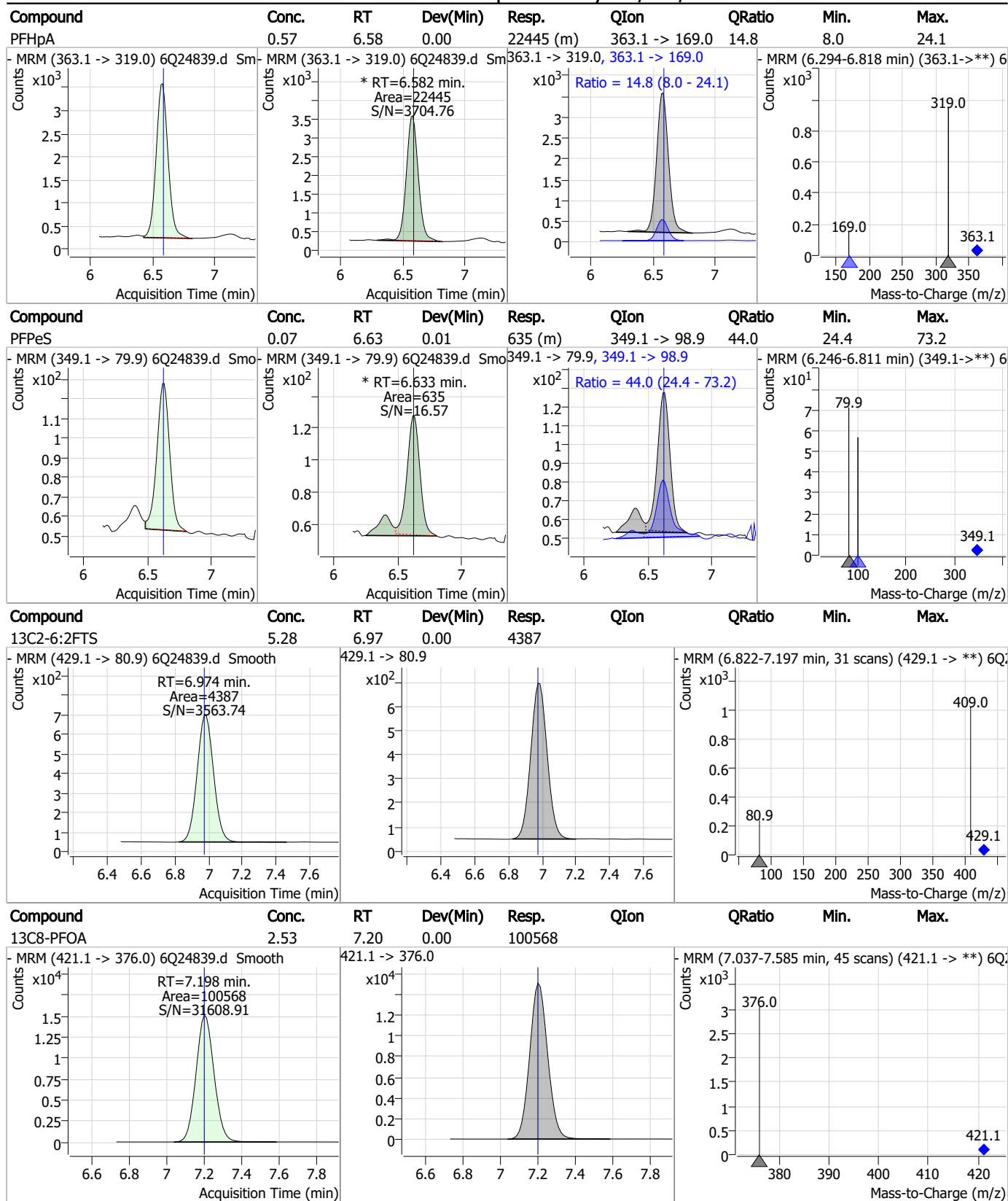
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Perfluorinated Compounds by LC/MS/MS



7.5.1
7

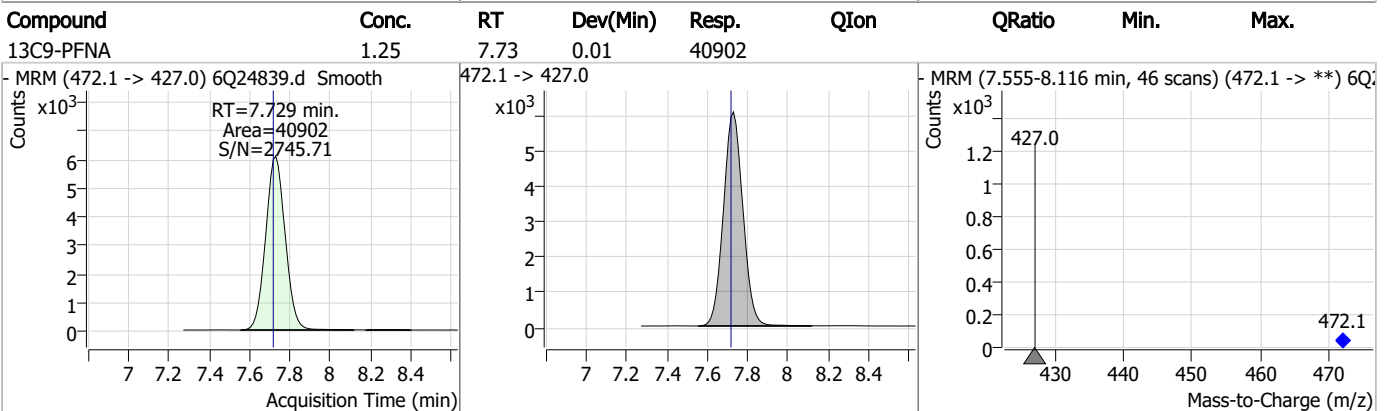
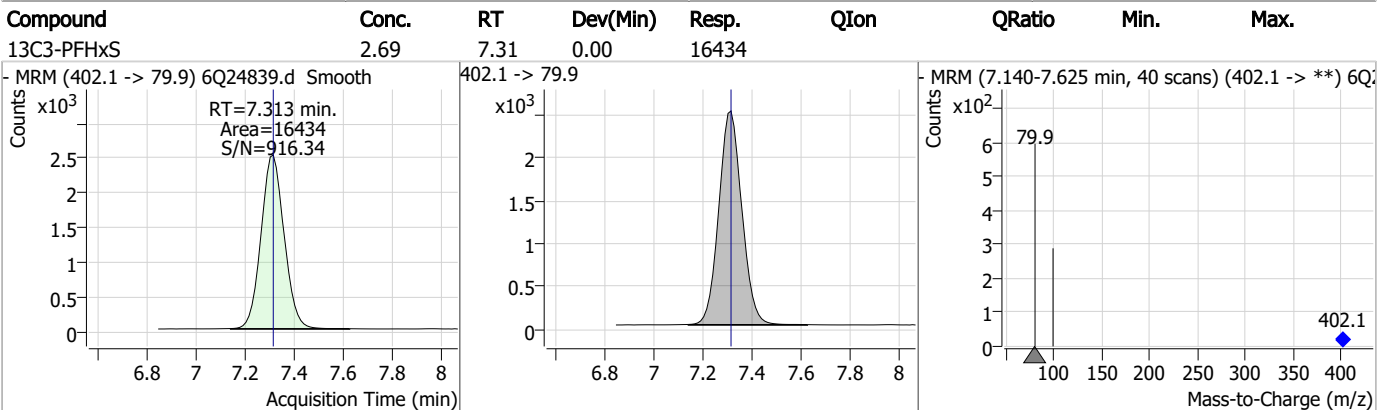
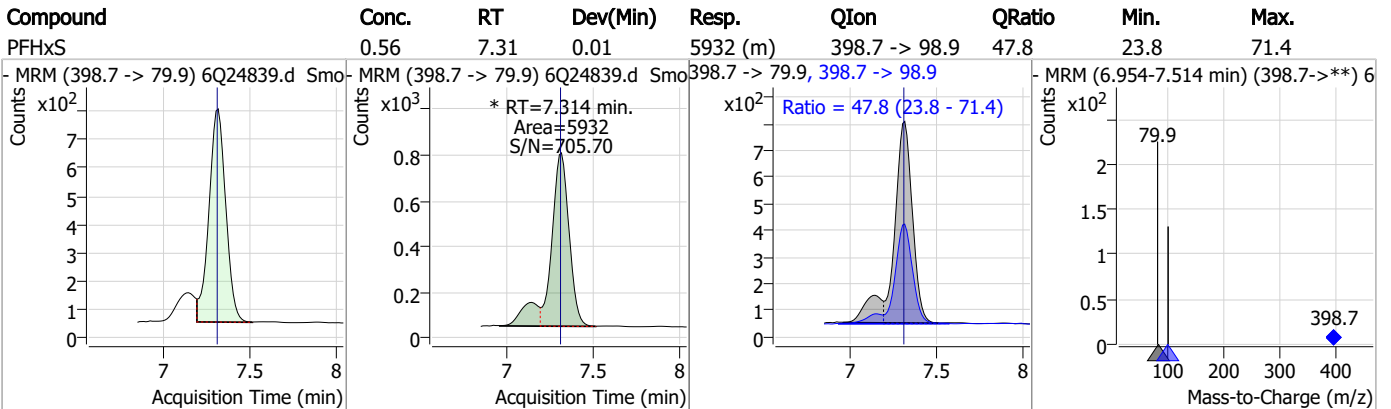
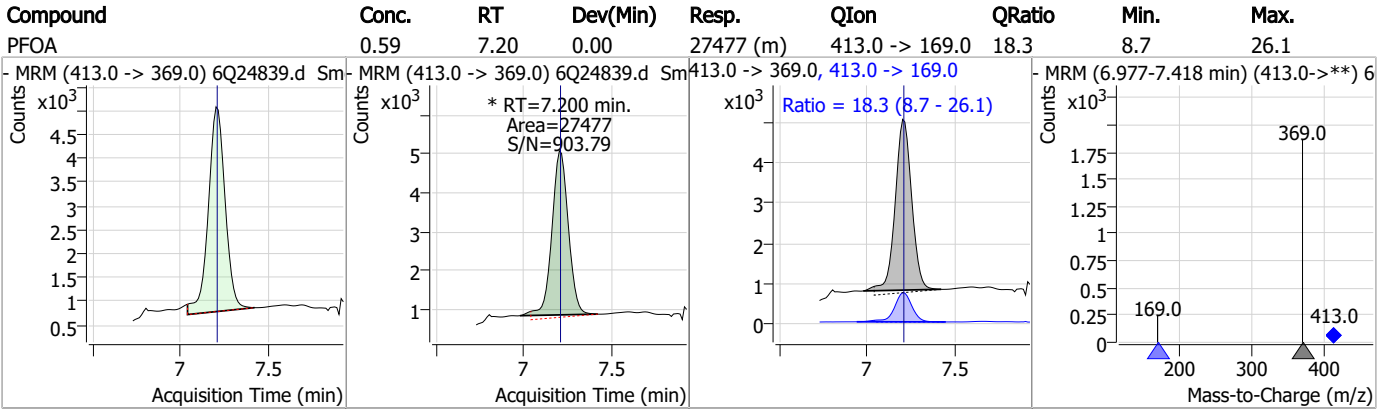
Perfluorinated Compounds by LC/MS/MS



7.5.1
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Perfluorinated Compounds by LC/MS/MS

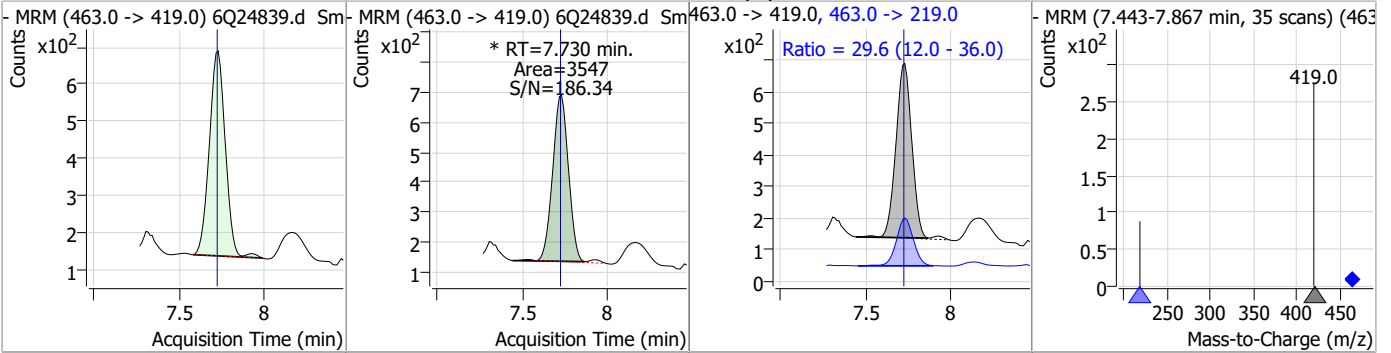


7.5.1

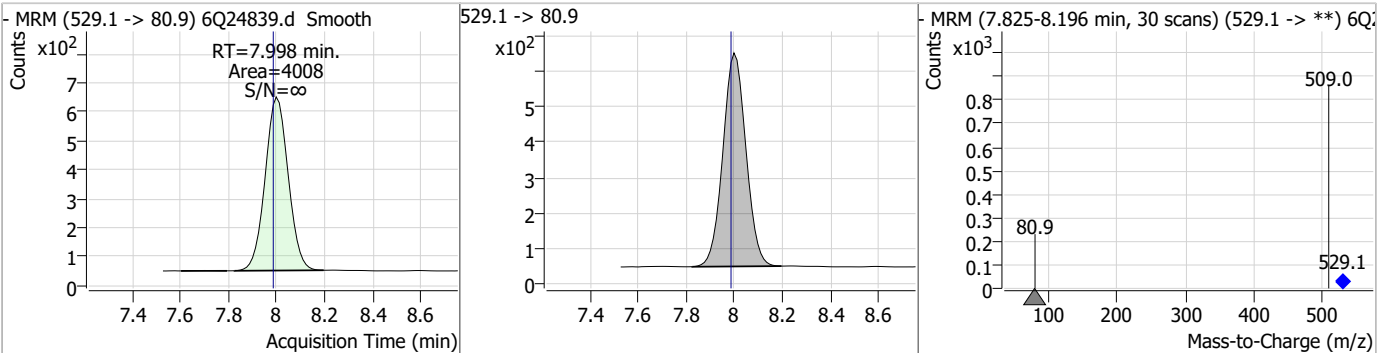
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Perfluorinated Compounds by LC/MS/MS

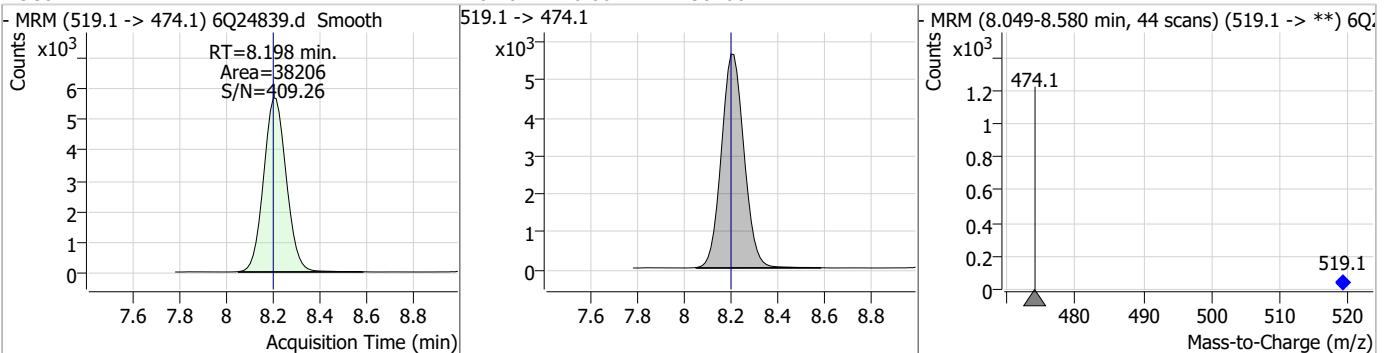
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNA	0.13	7.73	0.01	3547 (m)	463.0 -> 219.0	29.6	12.0	36.0



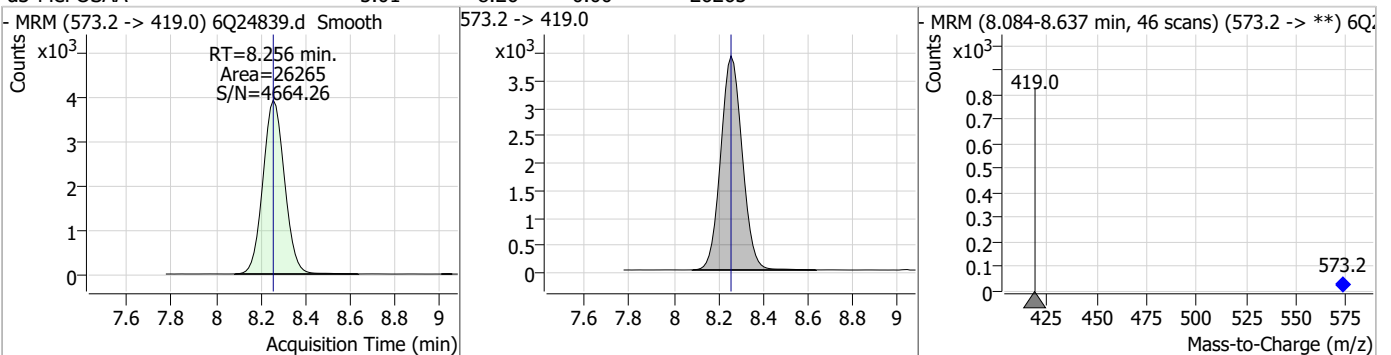
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-8:2FTS	4.73	8.00	0.01	4008				



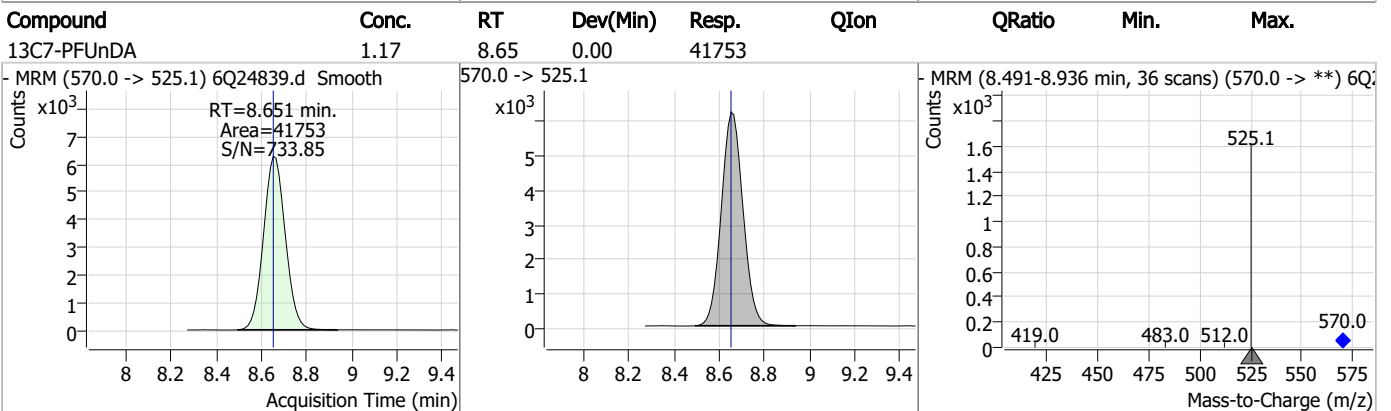
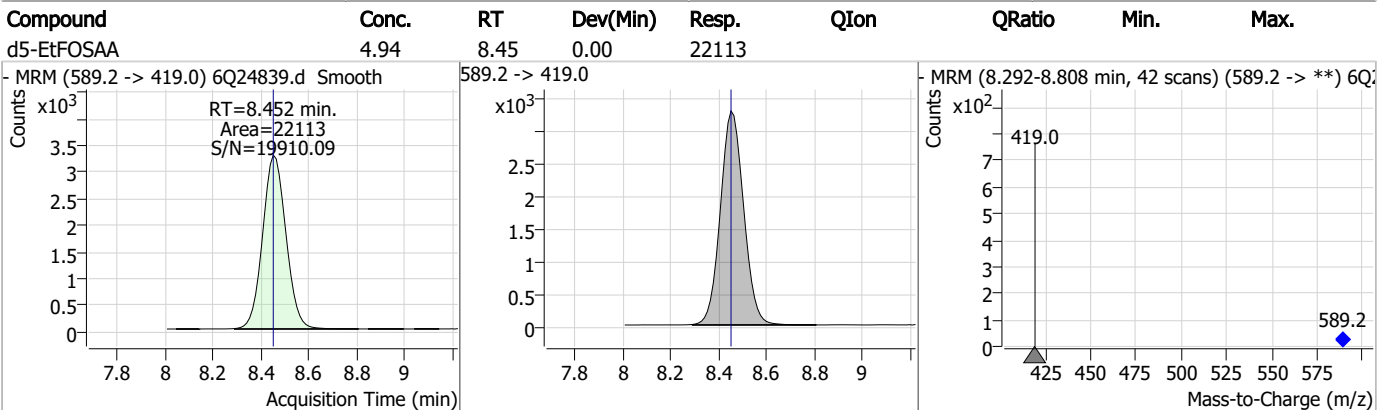
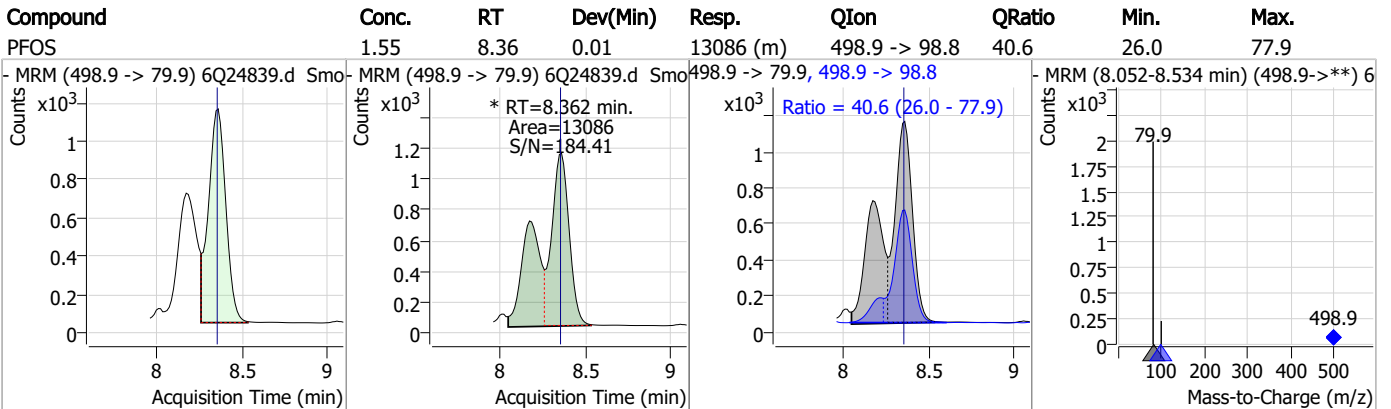
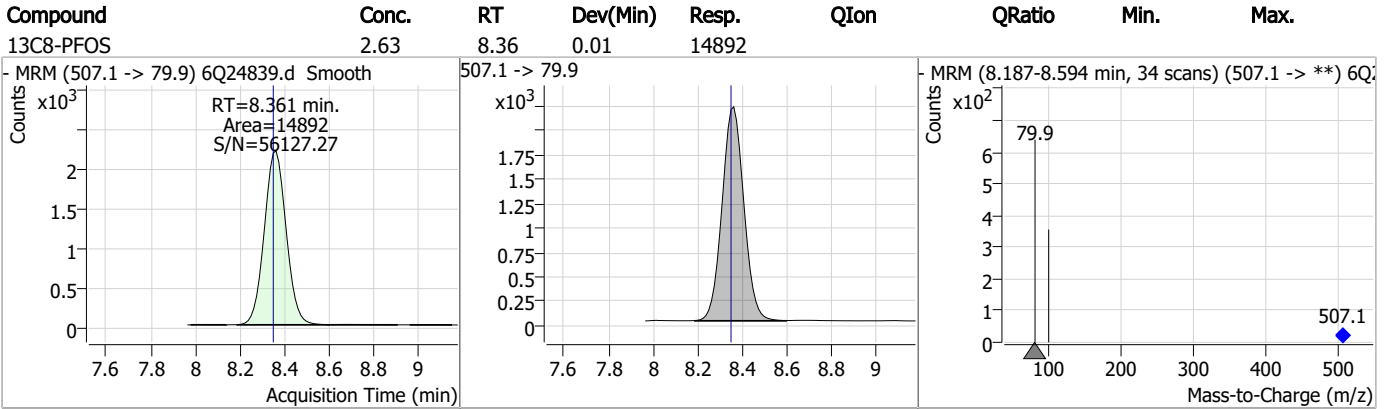
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C6-PFDA	1.27	8.20	0.00	38206				



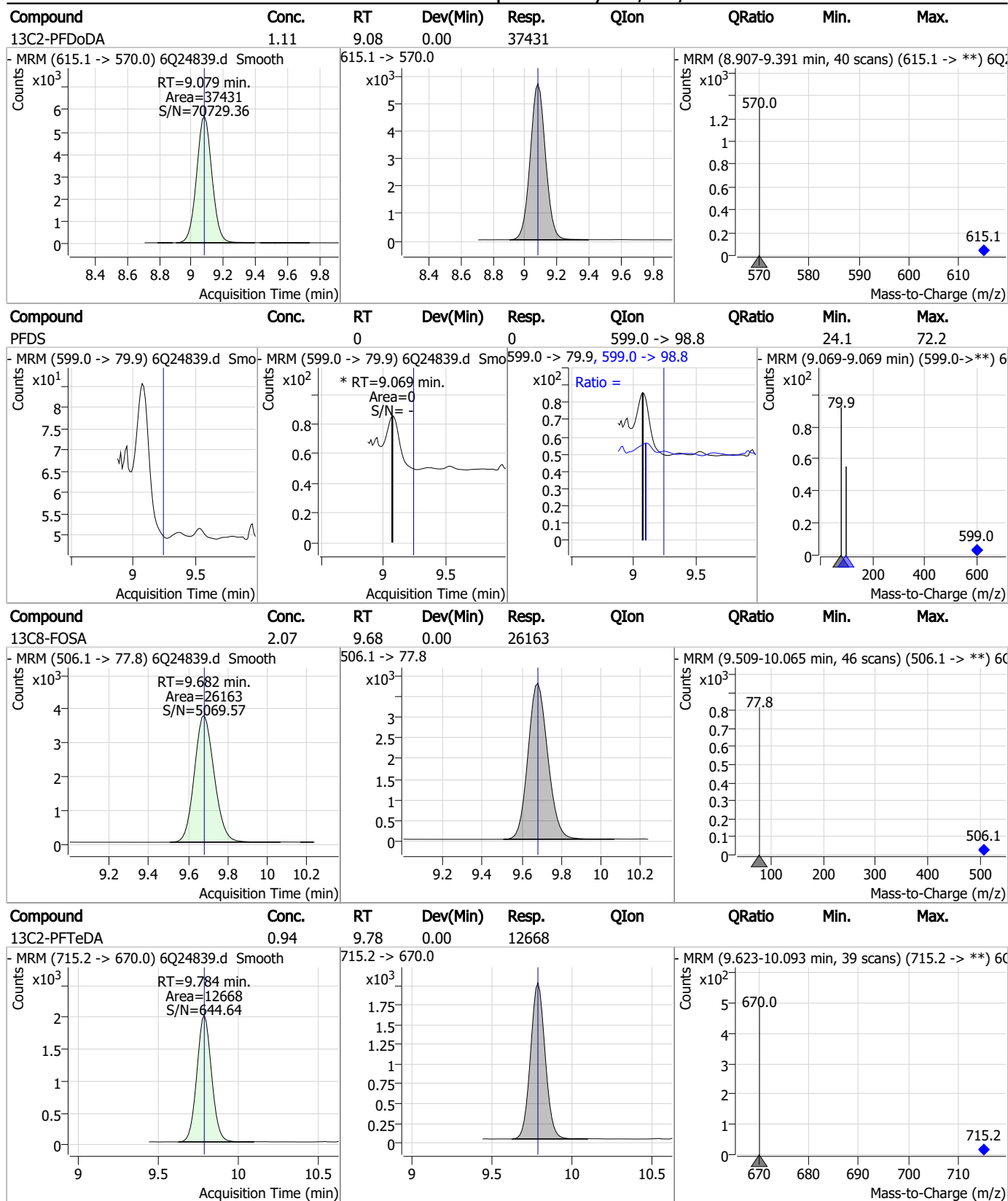
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.01	8.26	0.00	26265				



Perfluorinated Compounds by LC/MS/MS

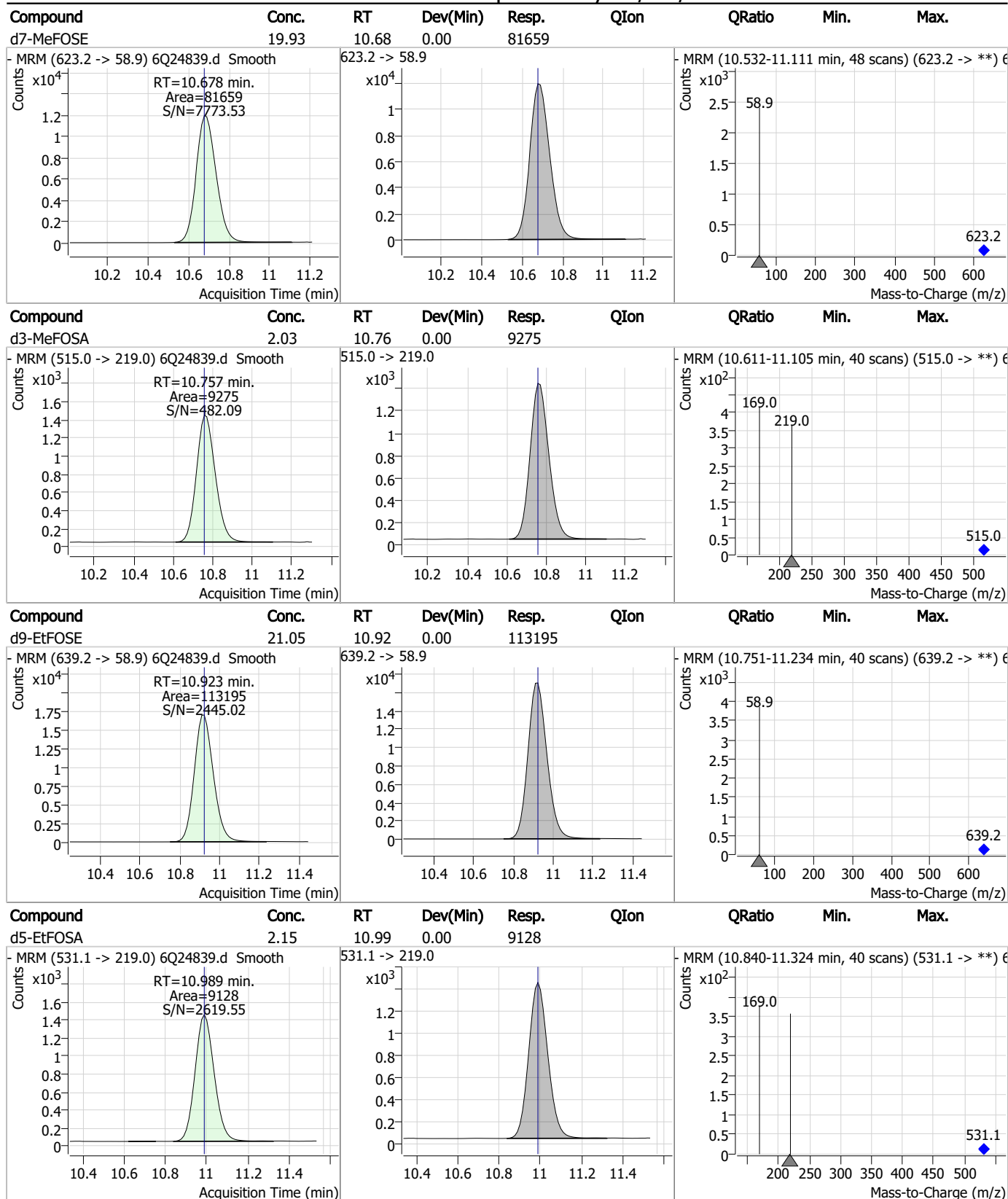


Perfluorinated Compounds by LC/MS/MS



7.5.1
7

Perfluorinated Compounds by LC/MS/MS



7.5.1

7



Manual Integration Approval Summary

Sample Number: OP99077-DUP Method: EPA DRAFT 1633
Lab FileID: 6Q24839.D Analyst approved: 09/22/23 11:10 Anna Ludwig
Injection Time: 09/22/23 03:17 Supervisor approved: 09/22/23 13:19 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluoroheptanoic acid	375-85-9		6.58	Split peak
Perfluoropentanesulfonic acid	2706-91-4		6.63	Split peak
Perfluorooctanoic acid	335-67-1		7.20	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.31	Split peak
Perfluorononanoic acid	375-95-1		7.73	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.36	Split peak

7.5.1.1
7

Manual Integrations
APPROVED
 (compounds with "m" flag)
 Natasha Gumtie
 09/22/23 13:16

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24808.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 7:52:54 PM
 Sample Name : RT TDCA
 Vial : P1-B3
 DA Method File : TDCA.quantmethod.xml
 Batch Name : s6q355 TDCA.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M8-PFOS	8.348	507.1 -> 79.9	29744	2.50 µg/L	-0.025
13C4-PFOS	8.349	502.8 -> 79.9	44003	2.50 µg/L	-0.025
System Monitoring Compounds					
13C8-PFOS	8.348	507.1 -> 79.9	29744	1.71 µg/L	-0.025
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 68.6%		
Target Compounds					
PFOS	8.350	498.9 -> 79.9 498.9 -> 98.8	40124 18876	3.95 µg/L m	97
TCDCa	6.774	498.9 -> 79.9	12603	9.18 ng/ml	100
TDCA	6.923	498.9 -> 79.9	15684	12.62 ng/ml	100
TUDCA	5.947	498.9 -> 79.9	18387	6.97 ng/ml	100

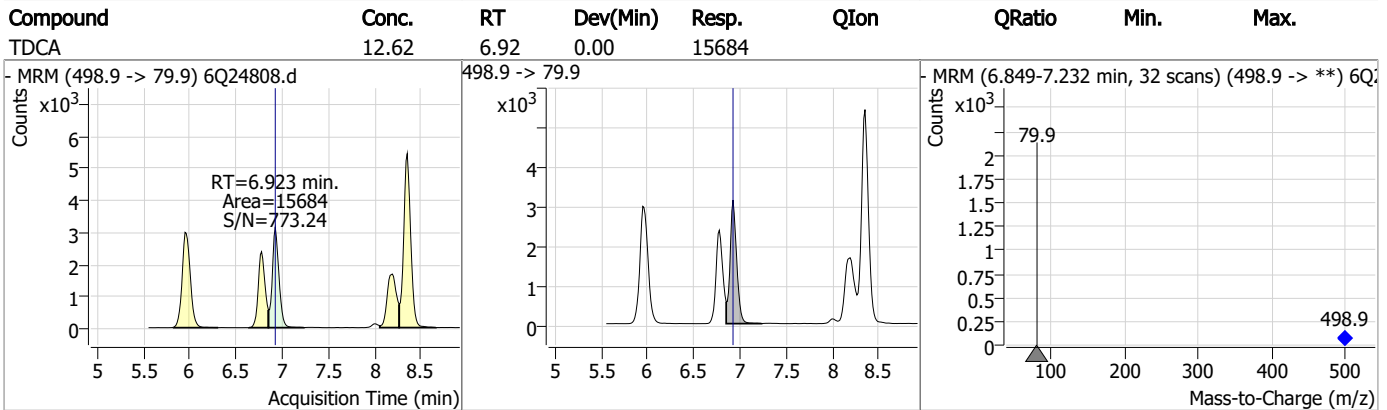
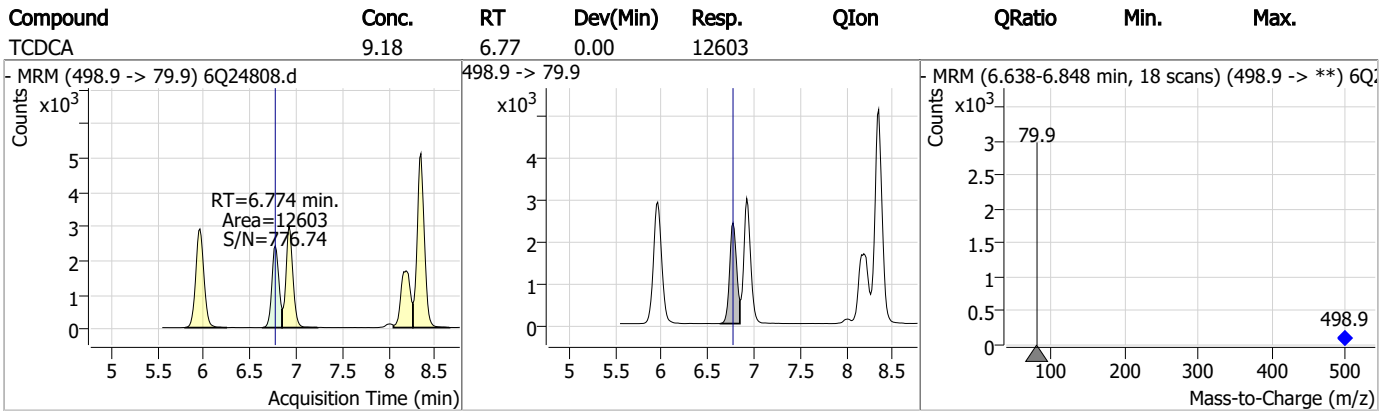
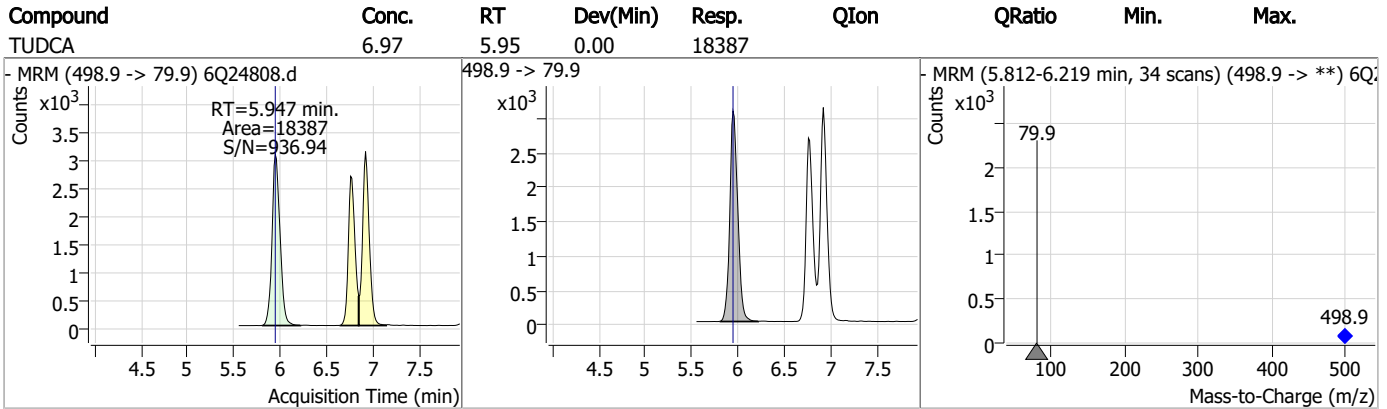
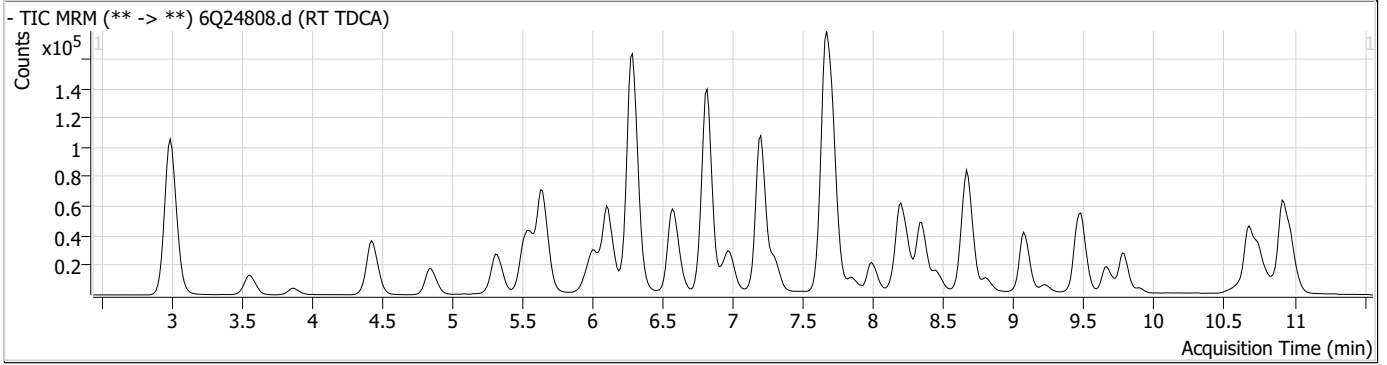
= Qualifier out of range, m = manually integrated, + = Area summed

7.6.1

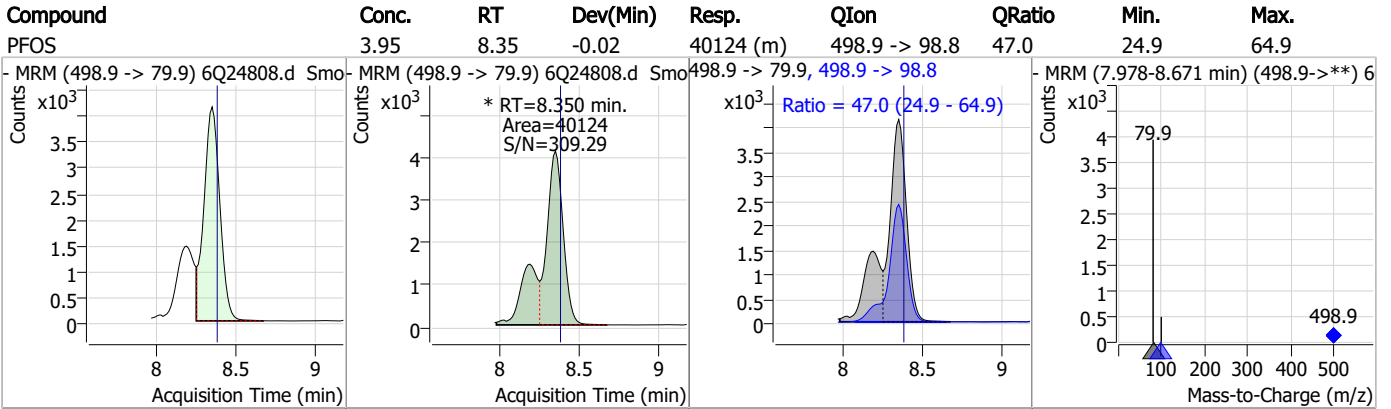
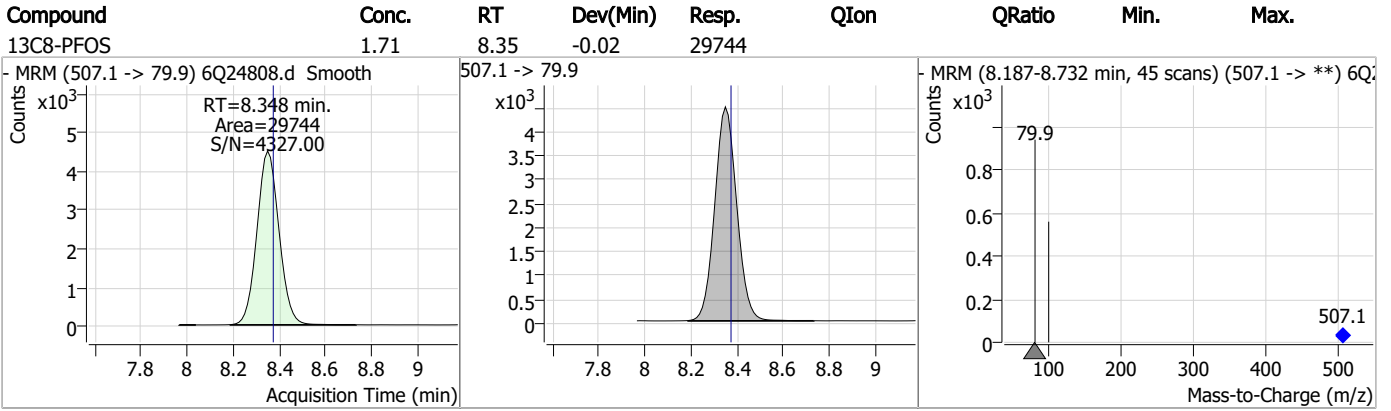
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.1
7



Manual Integration Approval Summary

Sample Number: S6Q355-RT Method: EPA DRAFT 1633
Lab FileID: 6Q24808.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 19:52 Supervisor approved: 09/22/23 13:16 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24809.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 8:07:13 PM
 Sample Name : RT BR-LN
 Vial : P1-B4
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	312484	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	52372	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	119467	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	95540	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	127364	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	51427	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	51156	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	62723	1.25 µg/L	0.000
M2-PFDoDA	9.080	615.1 -> 570.0	57408	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	21990	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	43748	2.50 µg/L	-0.012
M3-PFBS	5.559	302.1 -> 79.9	36866	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	20897	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	20403	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	3924	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	5496	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	5686	5.00 µg/L	0.000
M3-MeFOSAA	8.256	573.2 -> 419.0	33825	5.00 µg/L	0.000
M3-HFPO-DA	6.007	286.9 -> 168.9	67301	10.00 µg/L	-0.012
M5-EtFOSAA	8.452	589.2 -> 419.0	28657	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	141317	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	181036	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	14435	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	16043	2.50 µg/L	0.012
13C4-PFOS	8.349	502.8 -> 79.9	24990	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	129593	5.00 µg/L	-0.012
18O2-PFHxS	7.300	403.0 -> 83.9	15137	2.50 µg/L	0.000
13C4-PFOA	7.199	417.1 -> 372.0	137918	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	47057	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	58033	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	85749	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	3924	4.97 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C2-6:2FTS	6.974	429.1 -> 80.9	5496	4.94 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C2-8:2FTS	7.986	529.1 -> 80.9	5686	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-PFDoDA	9.080	615.1 -> 570.0	57408	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C2-PFTeDA	9.784	715.2 -> 670.0	21990	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 92.4%		
13C3-PFBS	5.559	302.1 -> 79.9	36866	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C3-PFHxS	7.301	402.1 -> 79.9	20897	2.55 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 = 102.0%	
13C4-PFBA	2.985	216.8 -> 171.9	312484	9.89 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.9%	
13C4-PFHpA	6.569	367.1 -> 322.0	95540	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C5-PFHxA	5.641	318.0 -> 273.0	119467	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C5-PFPeA	4.422	268.3 -> 223.0	52372	5.37 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.5%	
13C6-PFDA	8.198	519.1 -> 474.1	51156	1.19 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 95.5%	
13C7-PFUnDA	8.651	570.0 -> 525.1	62723	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C8-FOSA	9.670	506.1 -> 77.8	43748	2.67 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.6%	
13C8-PFOA	7.198	421.1 -> 376.0	127364	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.7%	
13C8-PFOS	8.348	507.1 -> 79.9	20403	2.77 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 110.9%	
13C9-PFNA	7.717	472.1 -> 427.0	51427	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.8%	
d3-MeFOSAA	8.256	573.2 -> 419.0	33825	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C3-HFPO-DA	6.007	286.9 -> 168.9	67301	10.58 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.8%	
d3-MeFOSA	10.769	515.0 -> 219.0	16043	2.70 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 108.0%	
d5-EtFOSAA	8.452	589.2 -> 419.0	28657	4.92 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 98.3%	
d7-MeFOSE	10.678	623.2 -> 58.9	141317	26.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.0%	
d9-EtFOSE	10.923	639.2 -> 58.9	181036	25.87 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.5%	
d5-EtFOSA	10.989	531.1 -> 219.0	14435	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	334797	52.68 µg/L	100
		327.1 -> 80.9	127070		
6:2FTS	6.974	427.1 -> 407.0	272382	53.60 µg/L	99
		427.1 -> 80.9	101586		
8:2FTS	7.987	527.1 -> 507.0	198865	55.07 µg/L	95
		527.1 -> 80.8	69511		
EtFOSAA	8.452	584.2 -> 419.1	65383	15.09 µg/L	93
		584.2 -> 526.0	45781		
FOSA	9.672	498.1 -> 77.9	483224	32.02 µg/L	100
		498.1 -> 478.0	13375		
MeFOSAA	8.257	570.1 -> 419.0	112624	14.68 µg/L	94
		570.1 -> 483.0	23637		
PFBA	2.993	212.8 -> 168.9	541235	56.20 µg/L	100
PFBS	5.560	298.7 -> 79.9	226038	12.95 µg/L	99
		298.7 -> 98.8	82948		
PFDA	8.198	512.9 -> 469.0	637351	13.95 µg/L	99
		512.9 -> 219.0	103560		
PFDoDA	9.080	613.1 -> 569.0	604815	14.46 µg/L	100
		613.1 -> 319.0	72372		
PFDS	9.220	599.0 -> 79.9	76599	12.80 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	36467			
PFHpA	6.569	363.1 -> 319.0	703774	14.49	µg/L	97
		363.1 -> 169.0	104916			
PFHpS	7.856	449.0 -> 79.9	127648	12.78	µg/L	96
		449.0 -> 98.9	63428			
PFHxA	5.644	313.0 -> 269.0	573496	13.81	µg/L	100
		313.0 -> 118.9	26218			
PFHxS	7.302	398.7 -> 79.9	170272	12.61	µg/L	m 96
		398.7 -> 98.9	85614			
PFNA	7.593	463.0 -> 419.0	1000052	30.26	µg/L	m 94
		463.0 -> 219.0	271062			
PFNS	8.814	548.8 -> 79.9	127248	12.84	µg/L	94
		548.8 -> 98.9	67252			
PFOA	7.200	413.0 -> 369.0	1873821	31.91	µg/L	m 99
		413.0 -> 169.0	337486			
PFOS	8.350	498.9 -> 79.9	140970	12.22	µg/L	m 100
		498.9 -> 98.8	72691			
PFPeA	4.424	263.0 -> 219.0	715124	27.72	µg/L	100
PFPeS	6.620	349.1 -> 79.9	152684	13.60	µg/L	94
		349.1 -> 98.9	68328			
PFTeDA	9.785	713.1 -> 669.0	412227	14.01	µg/L	100
		713.1 -> 168.9	33731			
PFTrDA	9.452	663.0 -> 619.0	642374	14.42	µg/L	100
		663.0 -> 168.9	50971			
PFUnDA	8.652	563.1 -> 519.0	474832	13.04	µg/L	100
		563.1 -> 269.1	69090			
11CI-PF3OUdS	9.491	630.9 -> 450.9	584151	26.74	µg/L	100
		632.9 -> 452.9	179797			
9CI-PF3ONS	8.678	530.8 -> 351.0	1070955	27.78	µg/L	92
		532.8 -> 353.0	289913			
ADONA	6.817	376.9 -> 250.9	2727907	27.46	µg/L	96
		376.9 -> 84.8	669602			
HFPO-DA	6.020	284.9 -> 168.9	176270	27.59	µg/L	99
		284.9 -> 184.9	25543			
3:3FTCA	3.858	241.0 -> 177.0	117103	69.71	µg/L	100
		241.0 -> 117.0	11051			
5:3FTCA	6.283	341.0 -> 237.1	2573276	353.08	µg/L	94
		341.0 -> 217.0	1721458			
7:3FTCA	7.669	441.0 -> 316.9	1464784	344.52	µg/L	92
		441.0 -> 336.9	3140381			
EtFOSA	10.990	526.0 -> 219.0	370852	48.89	µg/L	100
		526.0 -> 169.0	474970			
EtFOSE	10.924	630.0 -> 58.9	795770	93.78	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	342252	47.41	µg/L	93
		511.9 -> 169.0	461261			
MeFOSE	10.691	616.1 -> 58.9	538051	88.69	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	38647	13.14	µg/L	92
		699.1 -> 98.8	21418			
NFDHA	5.524	295.0 -> 201.0	131772	26.82	µg/L	97
		295.0 -> 84.9	31931			
PFMBA	4.850	279.0 -> 85.1	502721	27.53	µg/L	100
PFMPA	3.551	229.0 -> 84.9	373332	27.61	µg/L	100
PFEESA	6.112	314.8 -> 134.9	1386918	25.37	µg/L	100
		314.8 -> 82.9	45278			

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

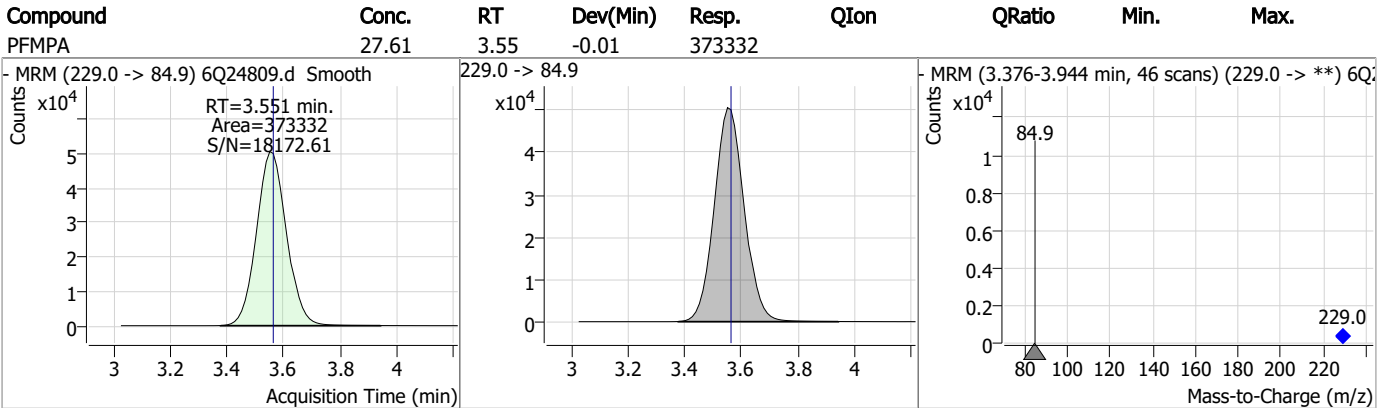
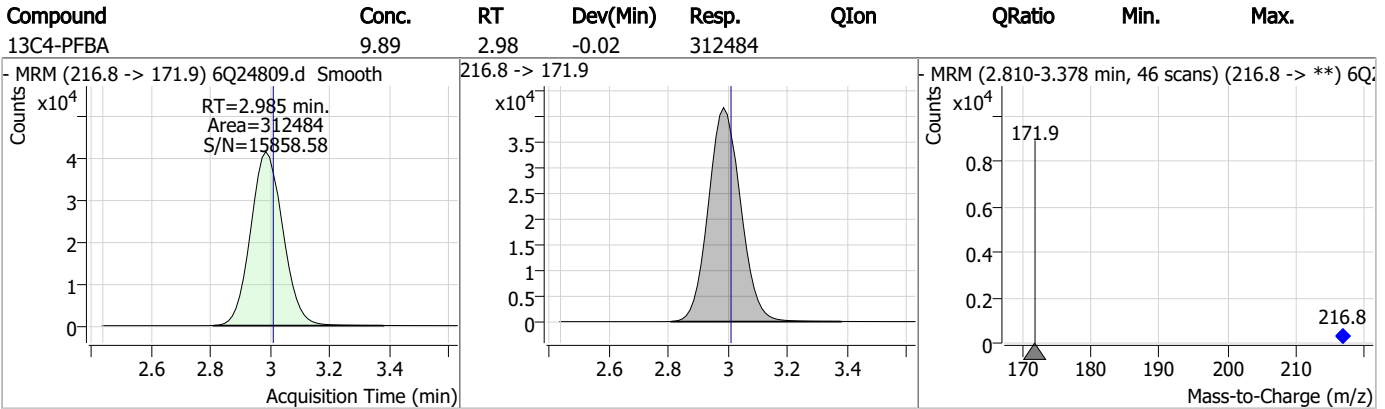
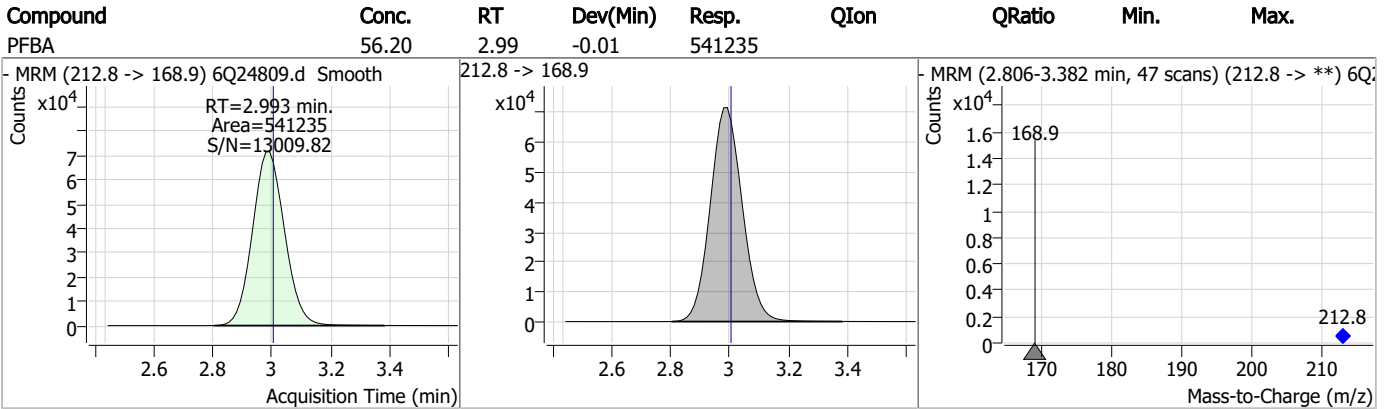
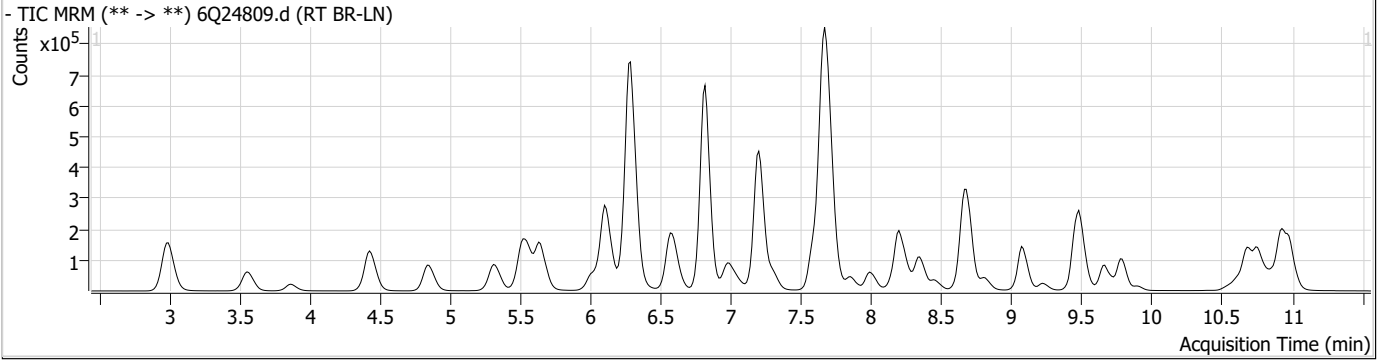
Perfluorinated Compounds by LC/MS/MS

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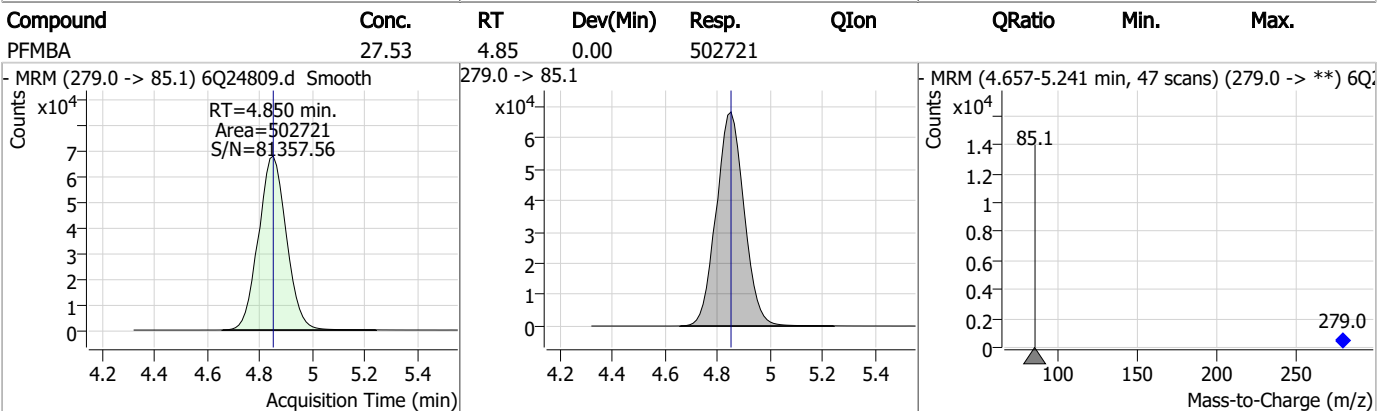
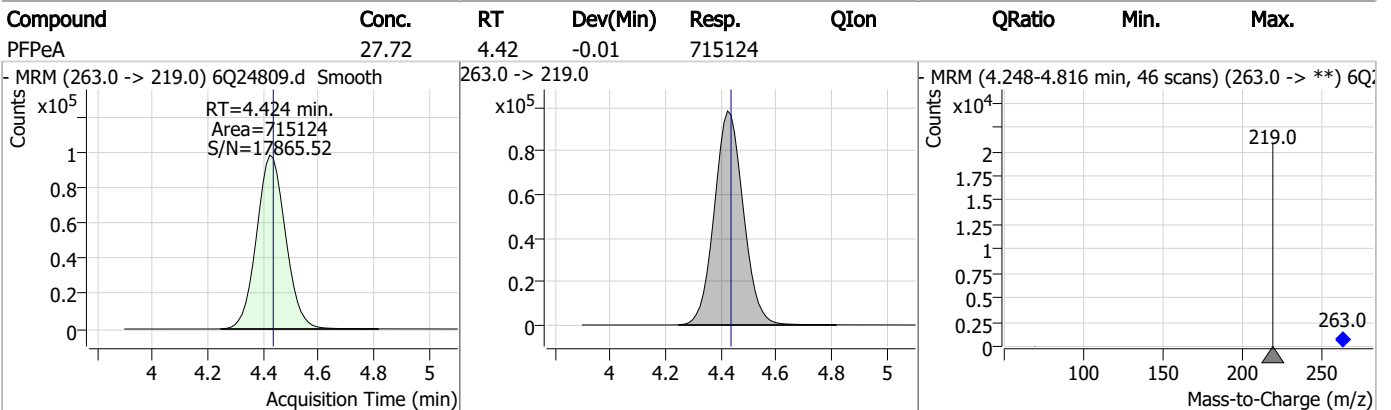
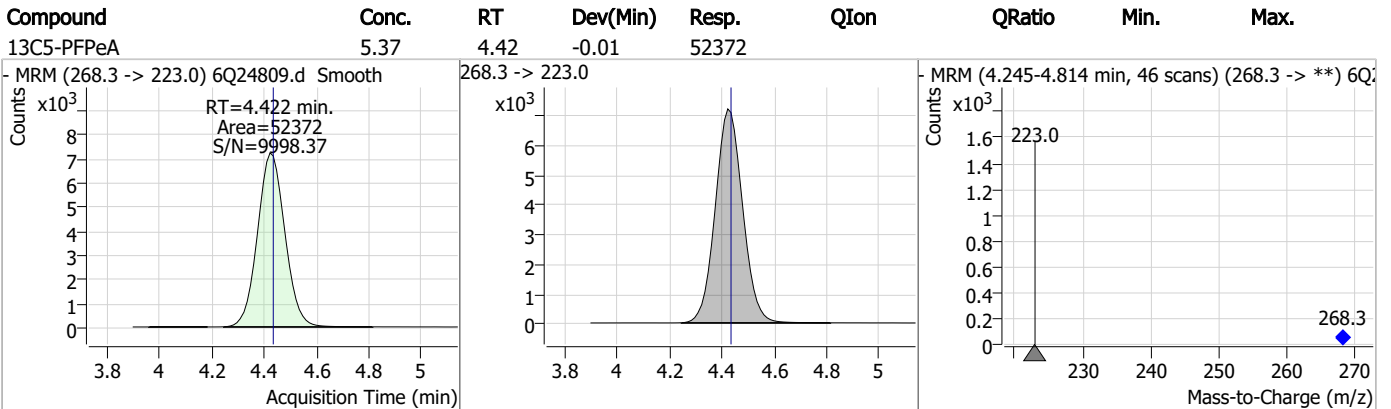
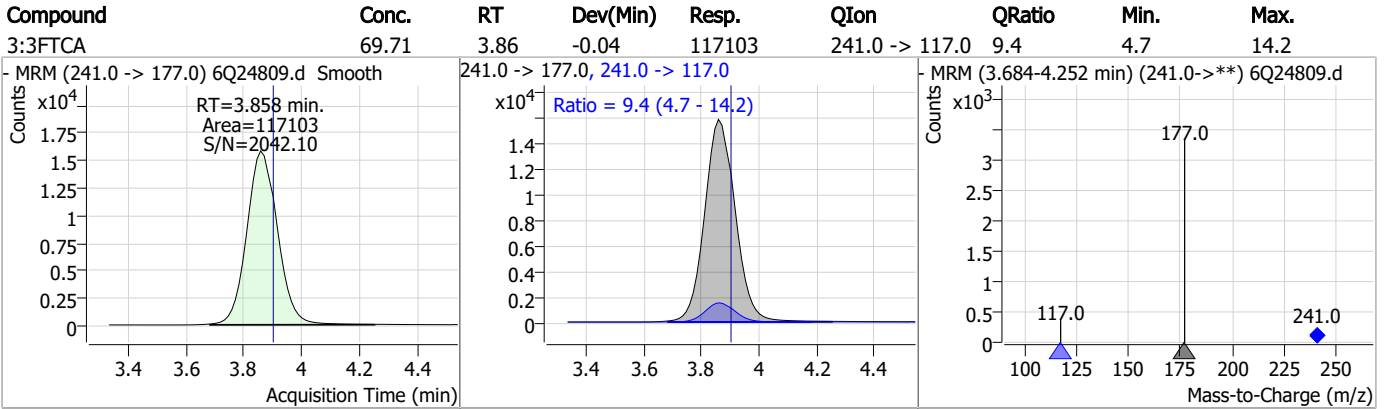
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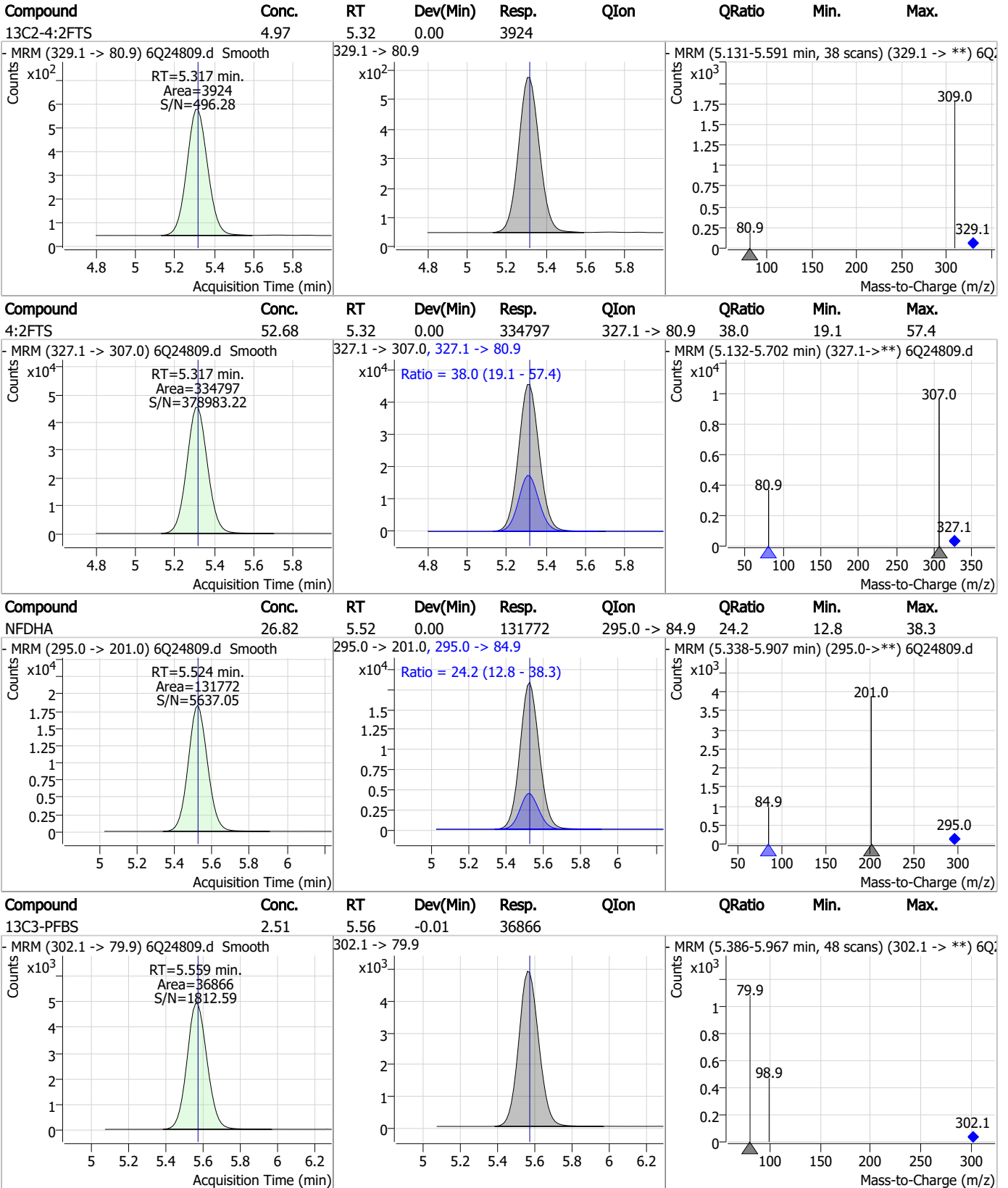
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



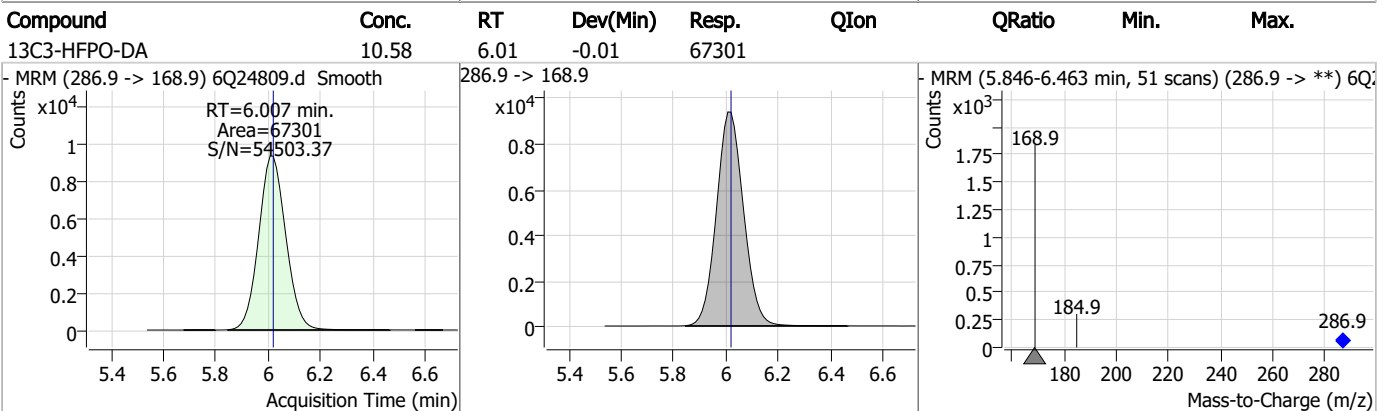
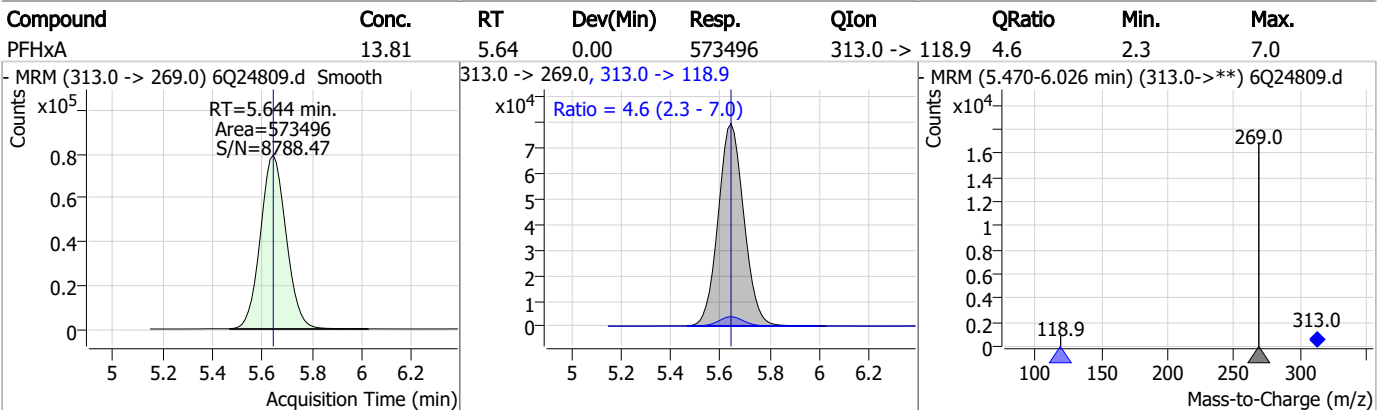
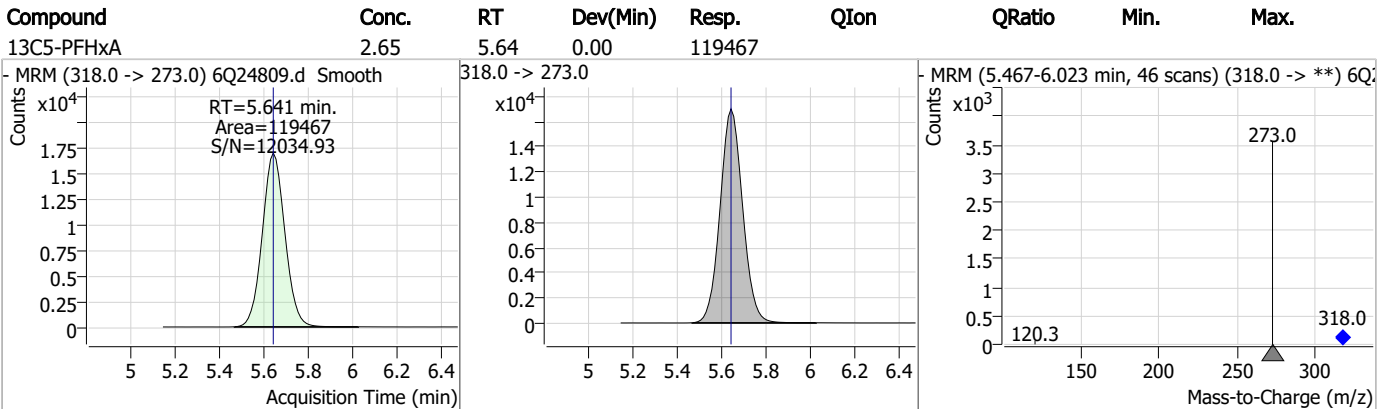
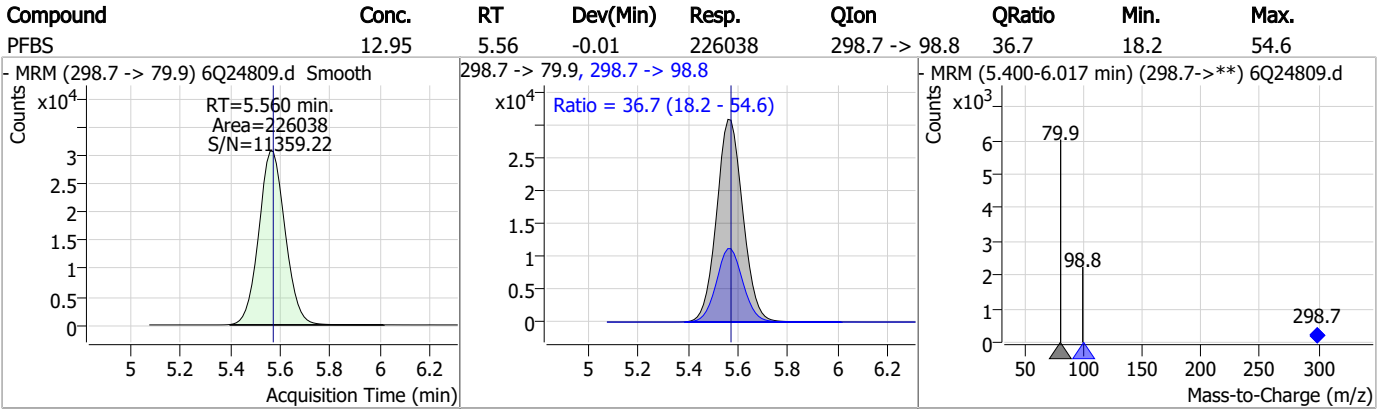
Perfluorinated Compounds by LC/MS/MS



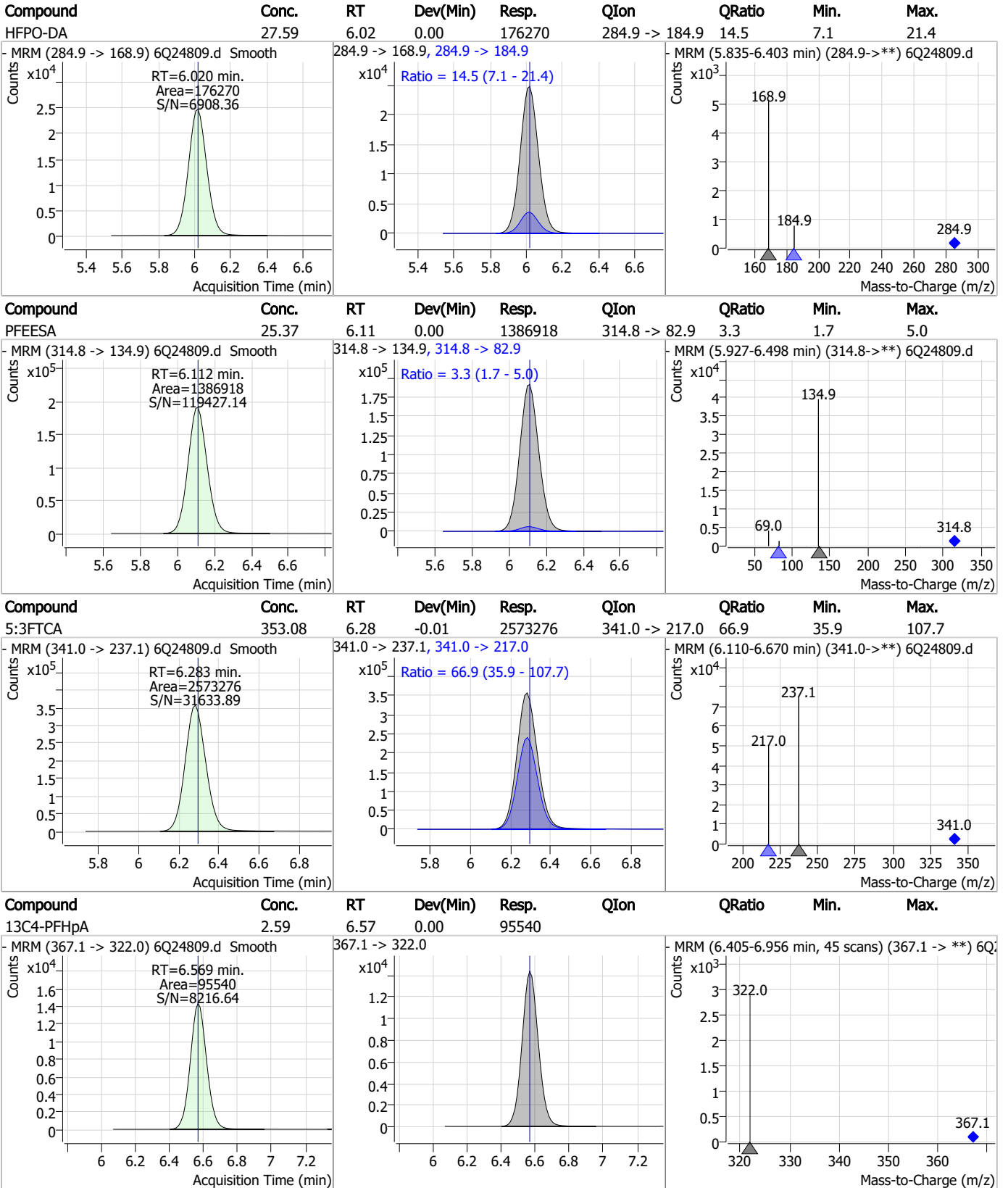
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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

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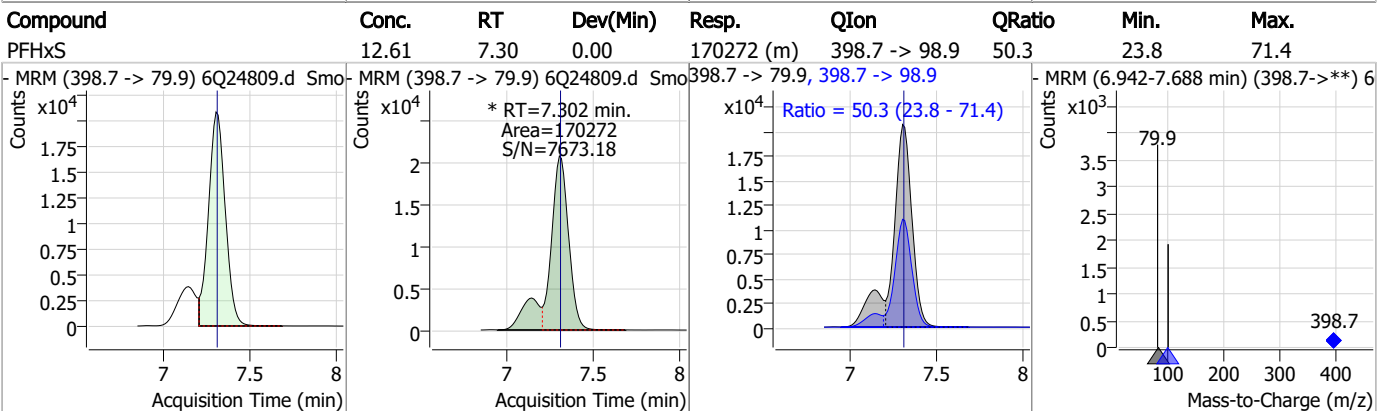
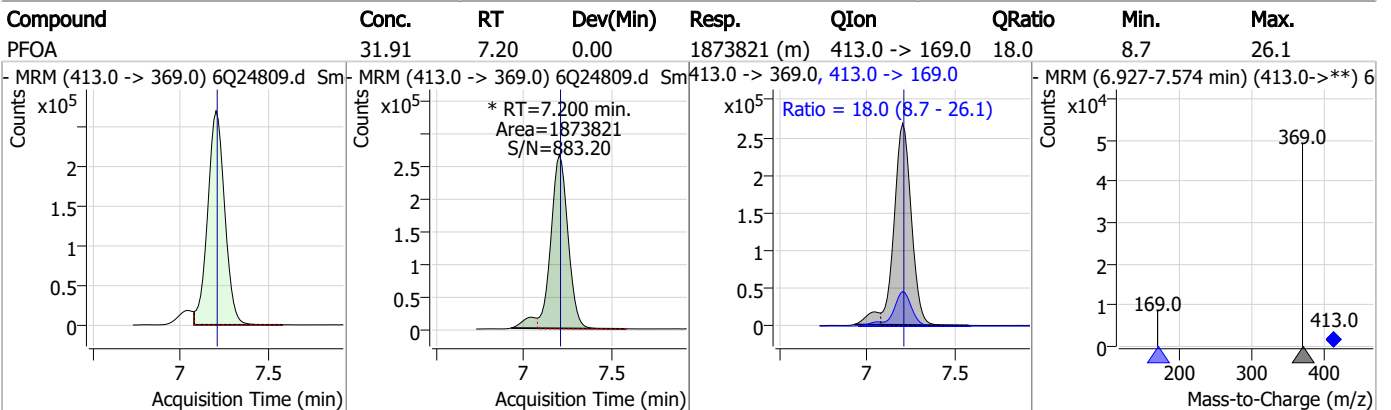
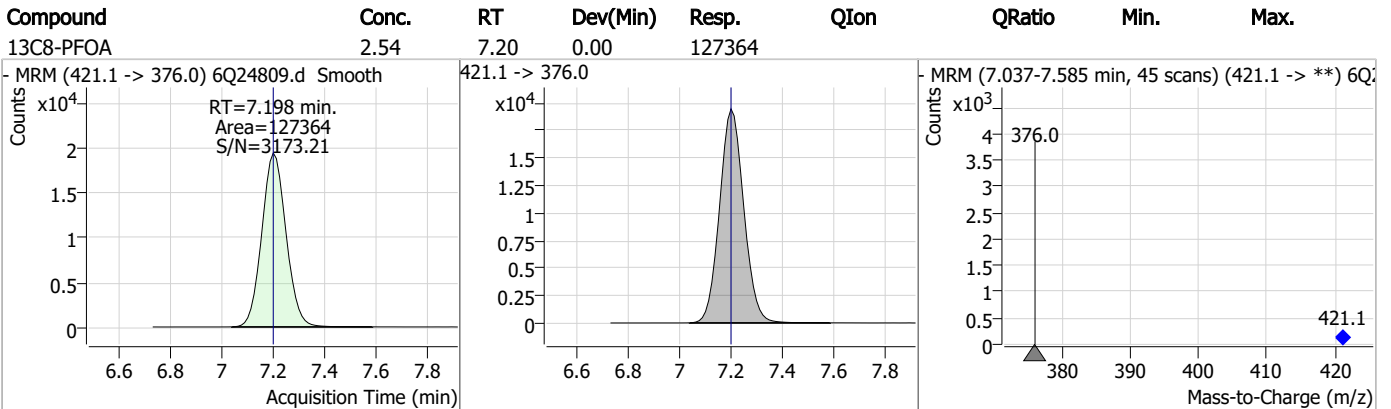
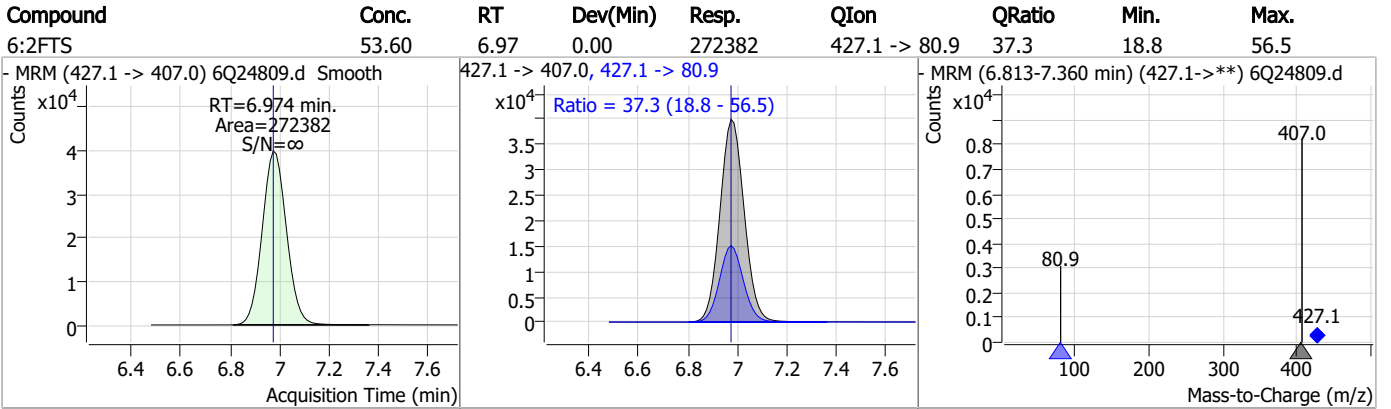
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpA	14.49	6.57	-0.01	703774	363.1 -> 169.0	14.9	8.0	24.1
PFPeS	13.60	6.62	0.00	152684	349.1 -> 98.9	44.8	24.4	73.2
ADONA	27.46	6.82	0.00	2727907	376.9 -> 84.8	24.5	13.3	39.9
13C2-6:2FTS	4.94	6.97	0.00	5496	429.1 -> 80.9			

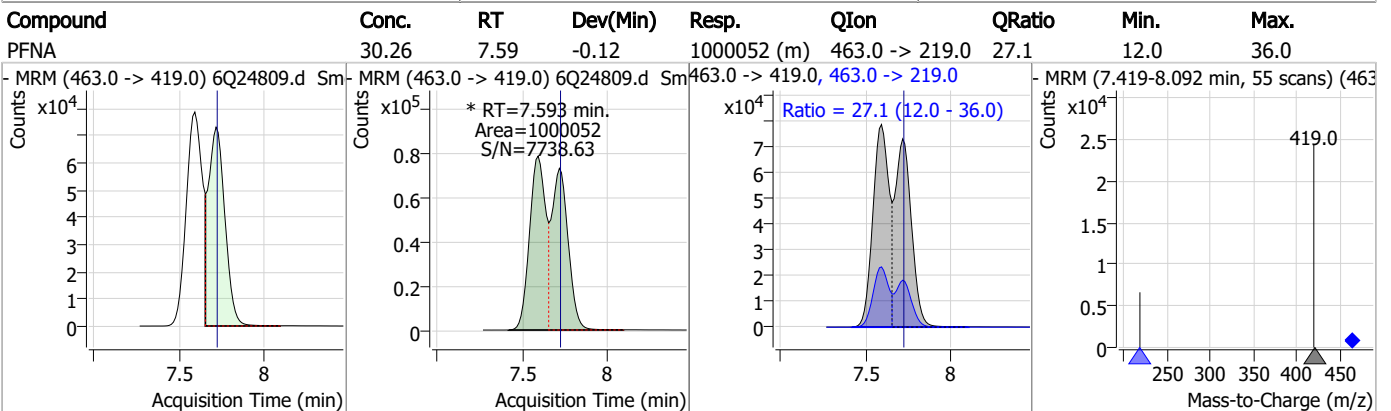
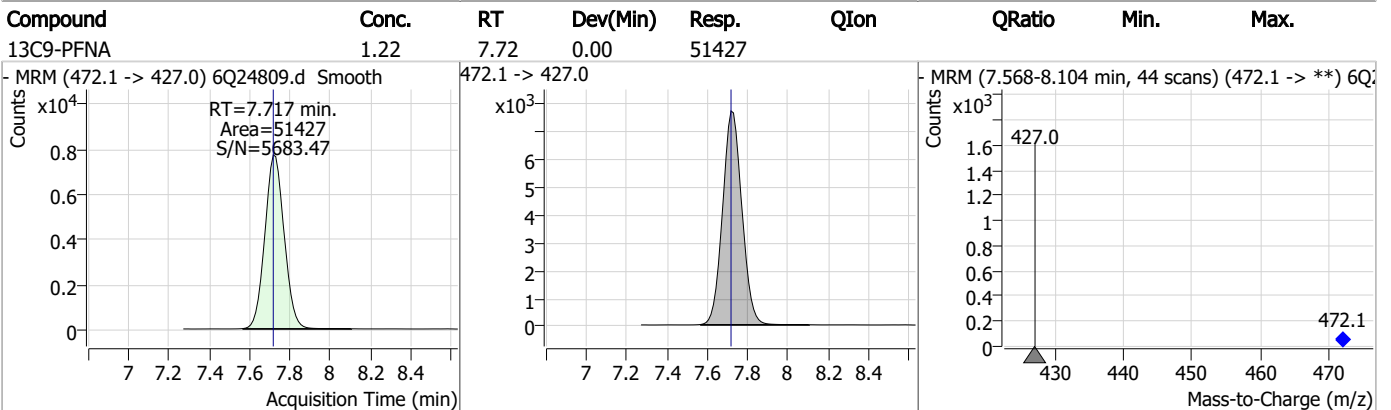
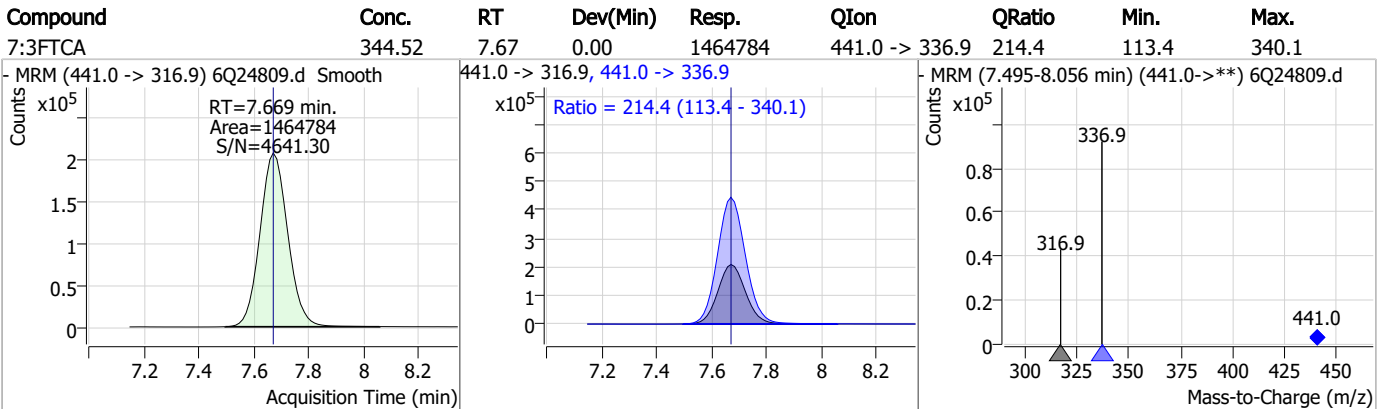
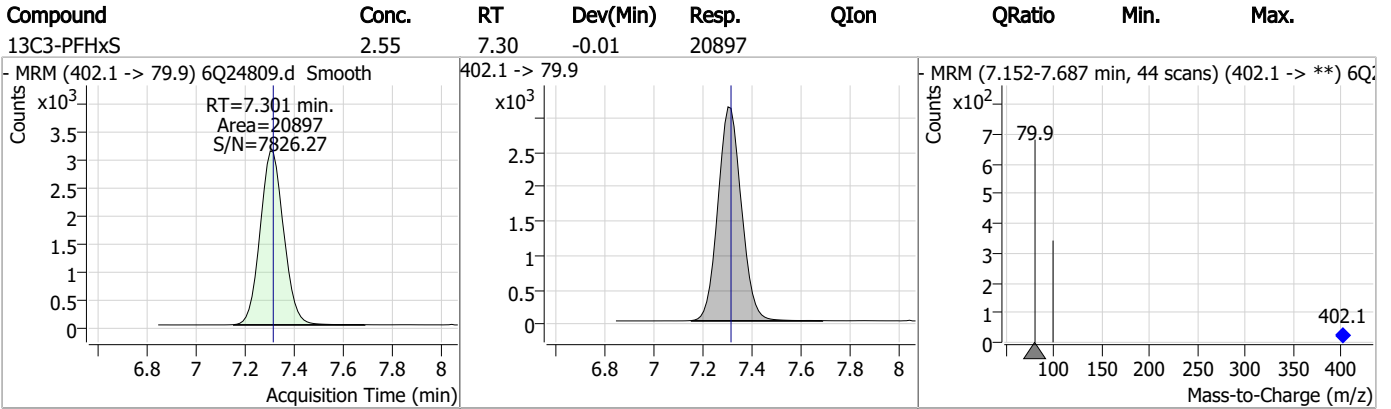
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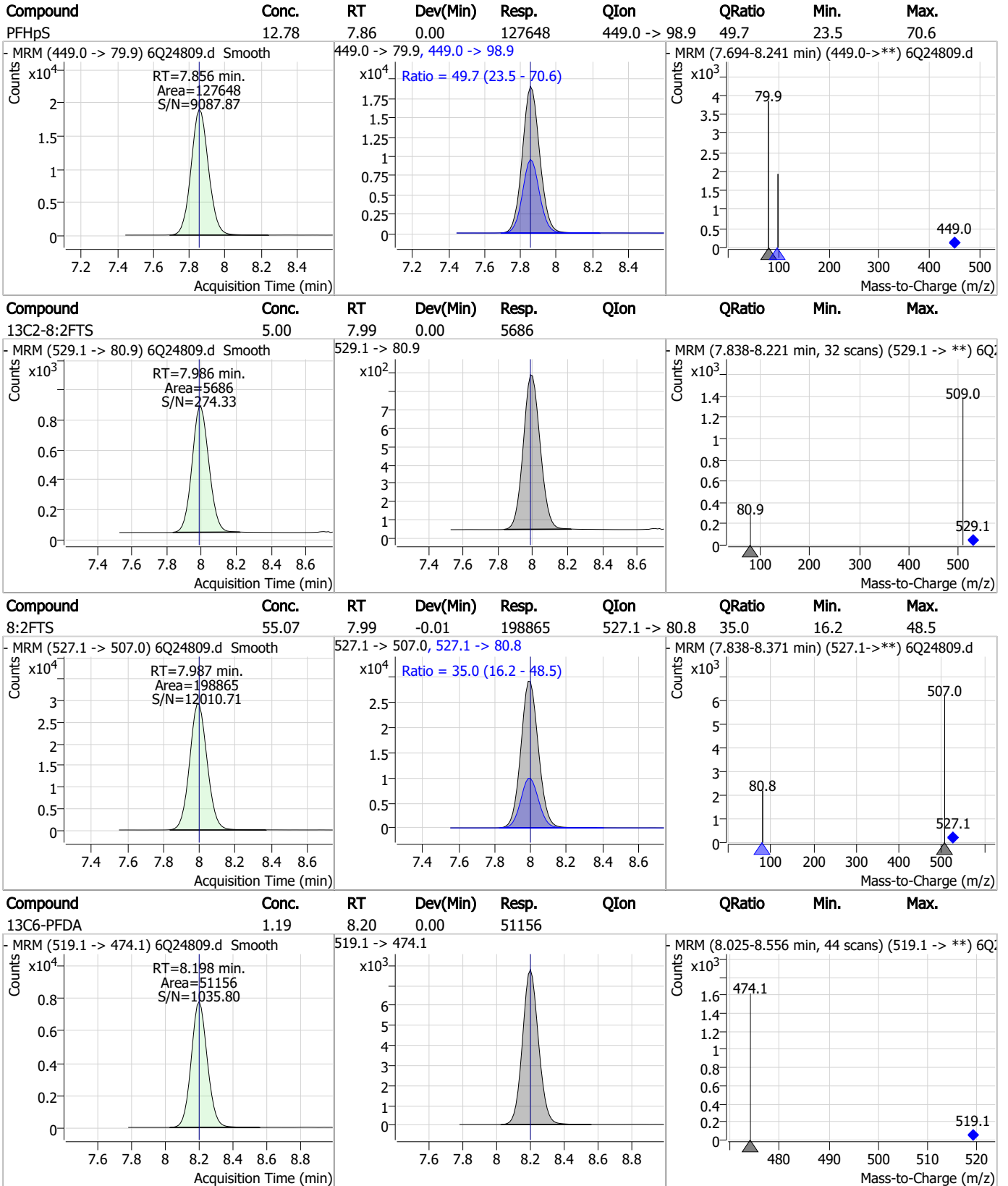
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



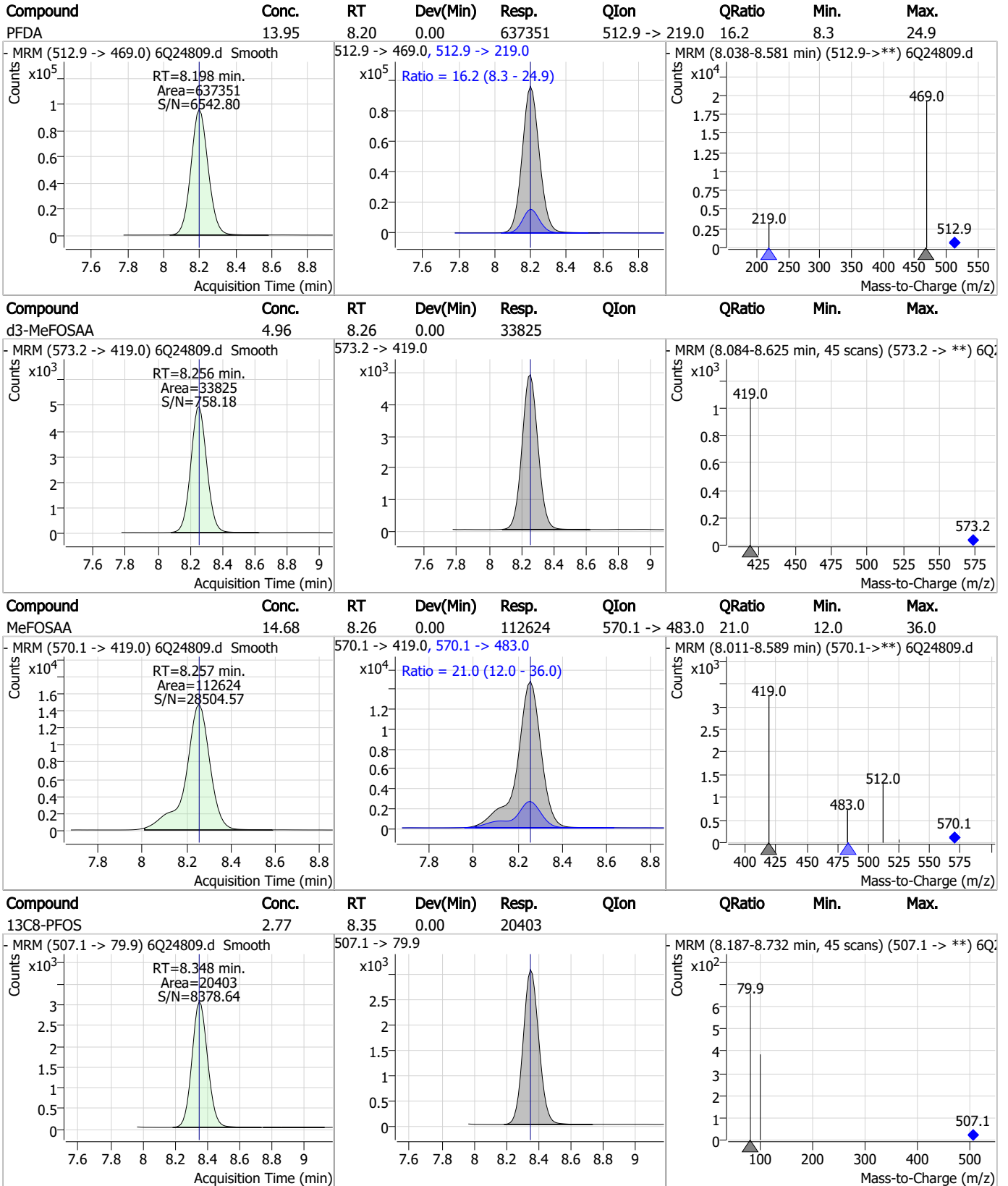
Perfluorinated Compounds by LC/MS/MS



7.6.2

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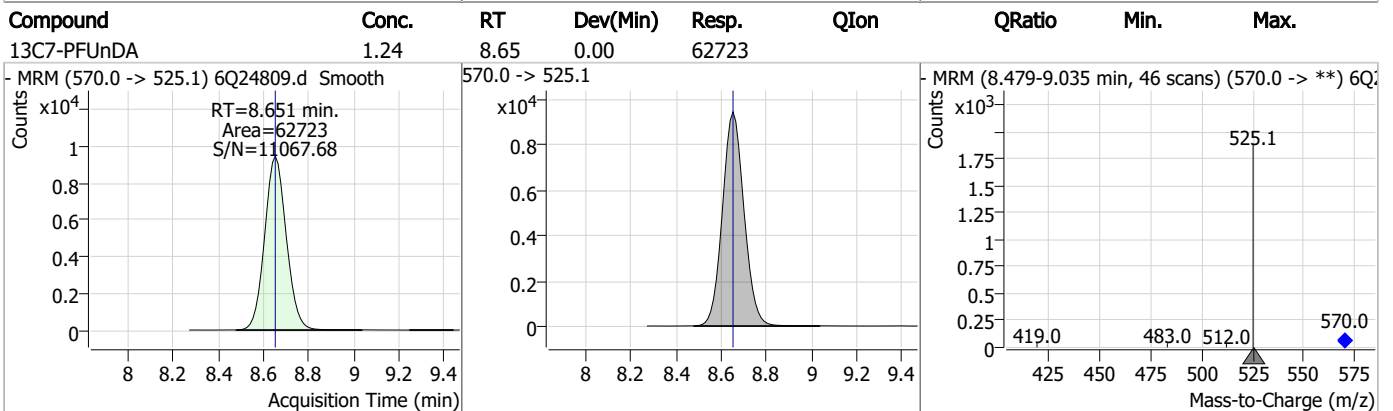
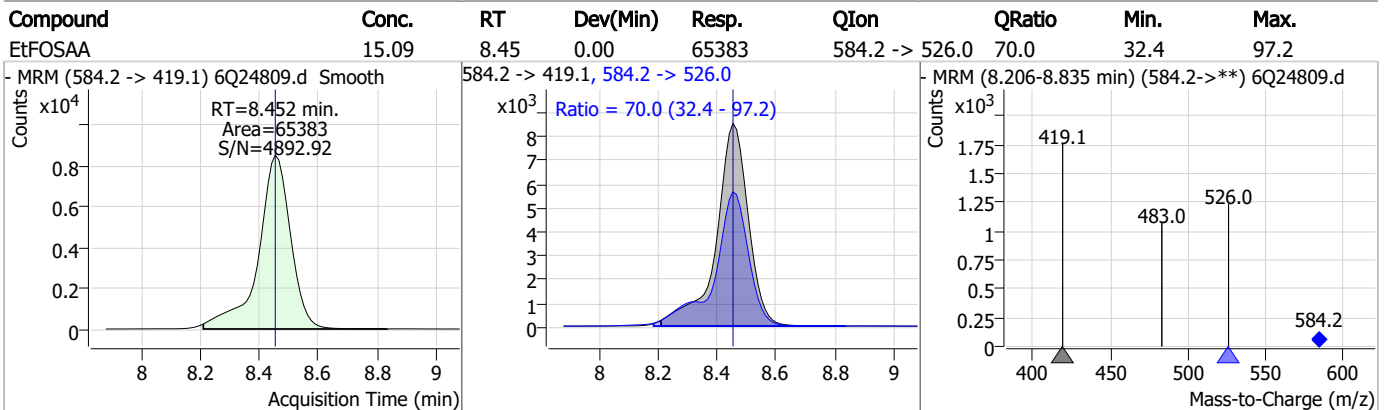
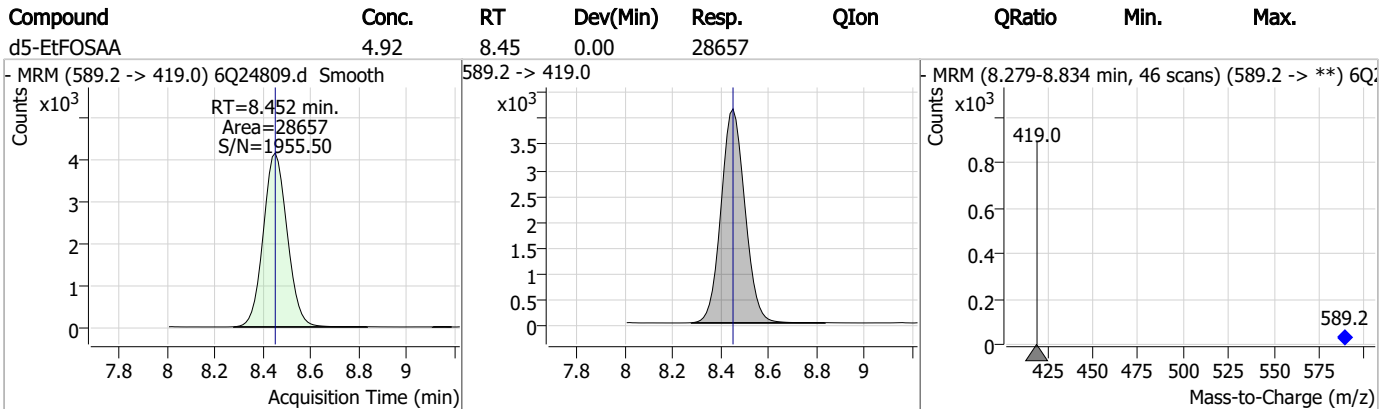
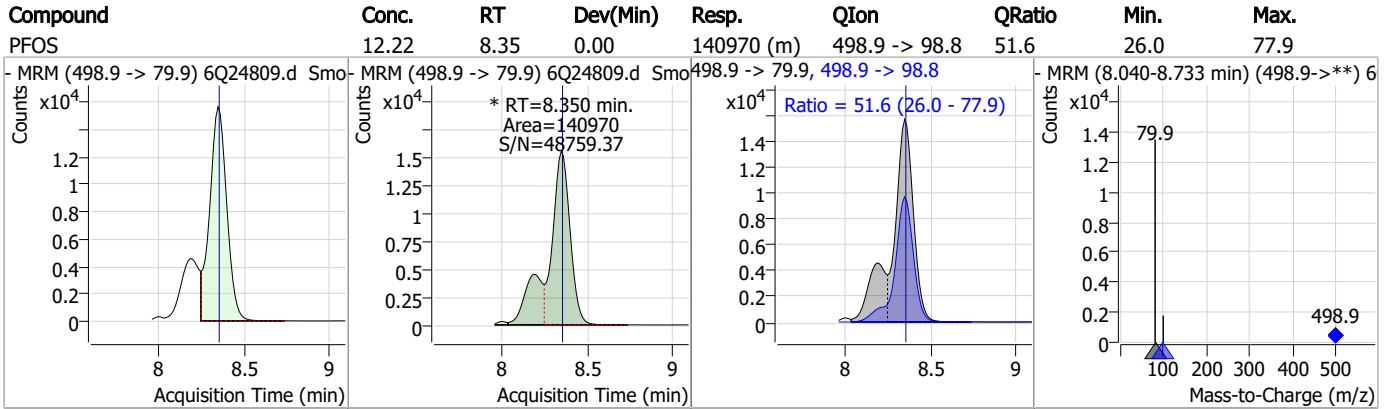
Perfluorinated Compounds by LC/MS/MS



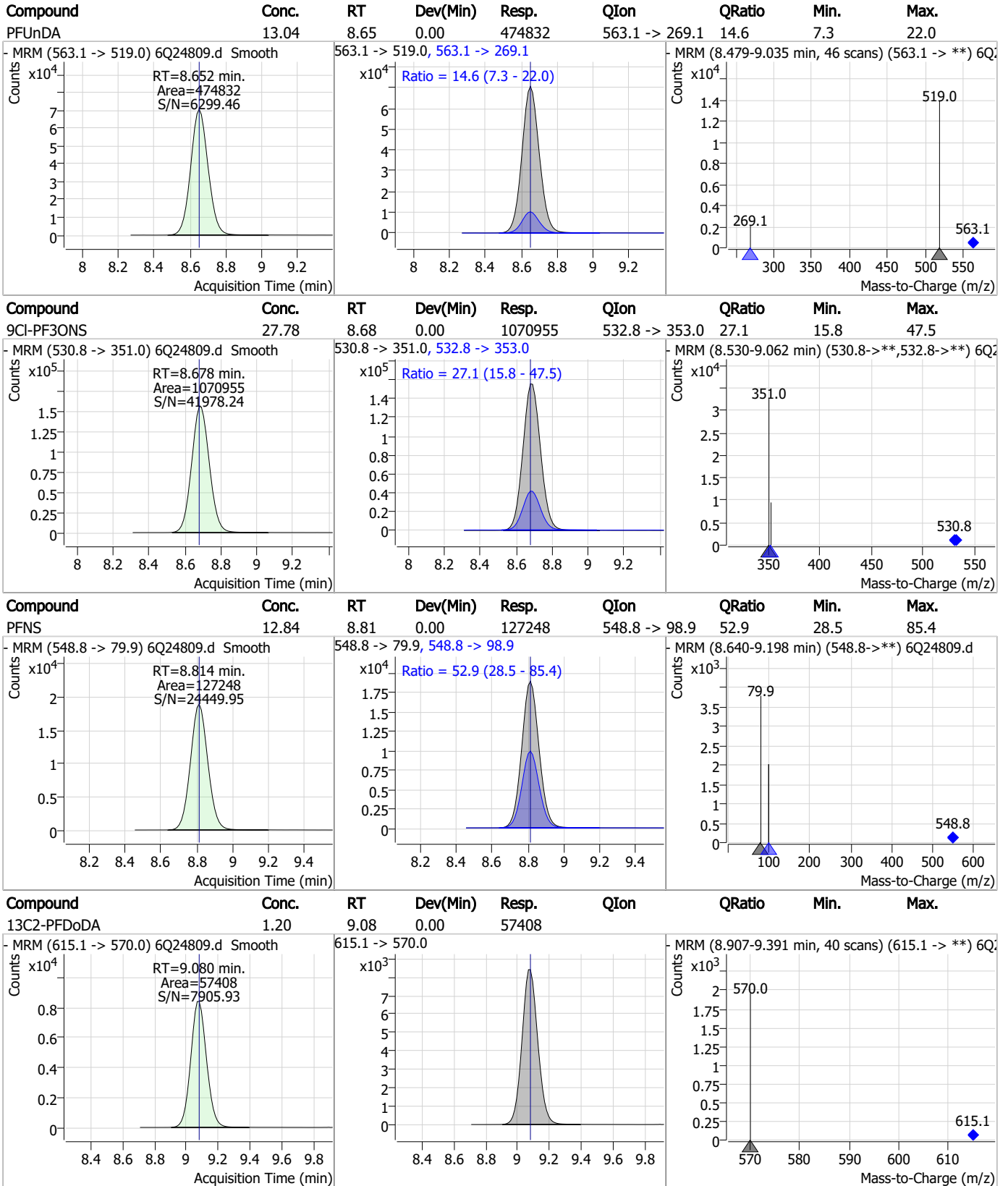
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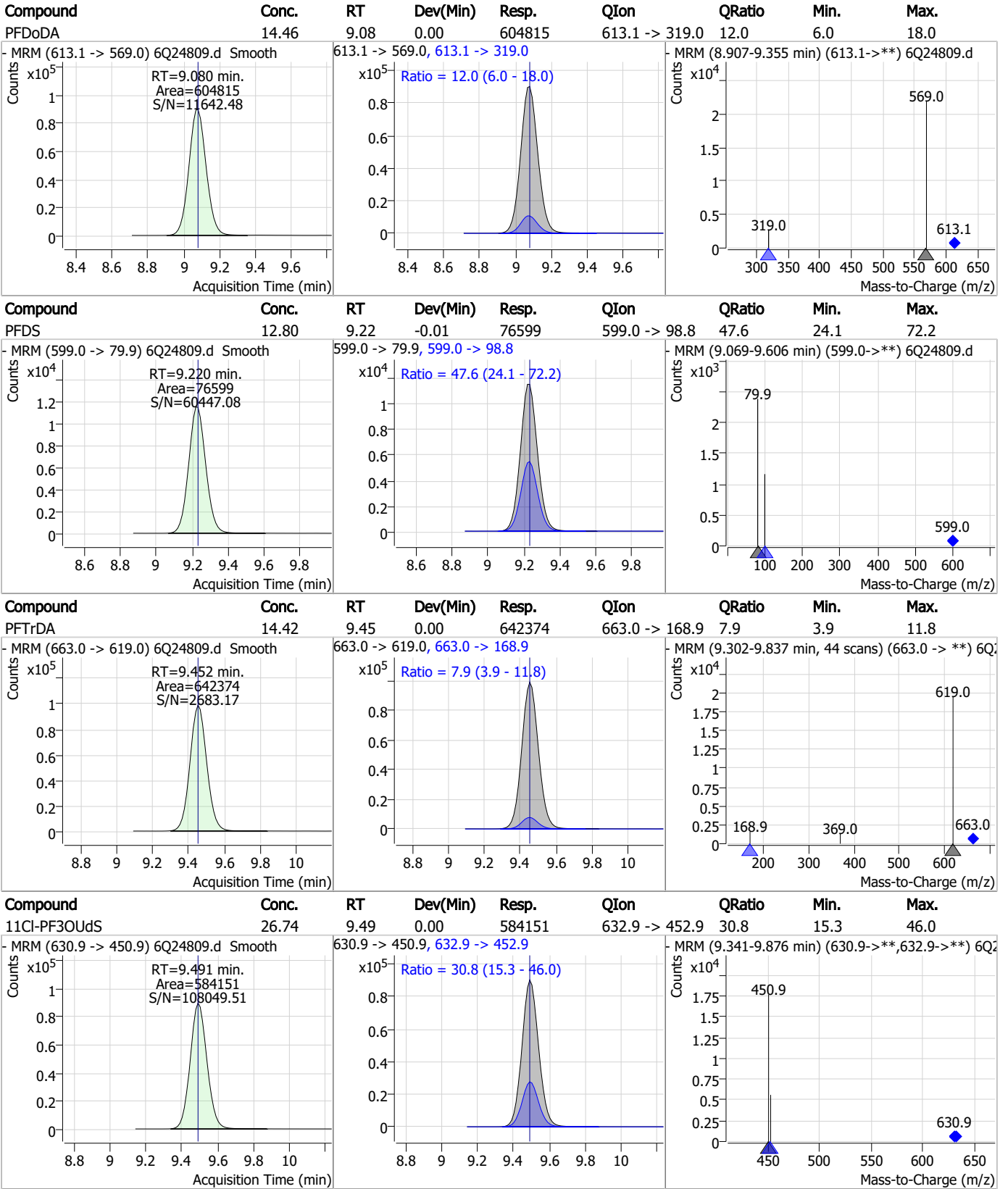
Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS

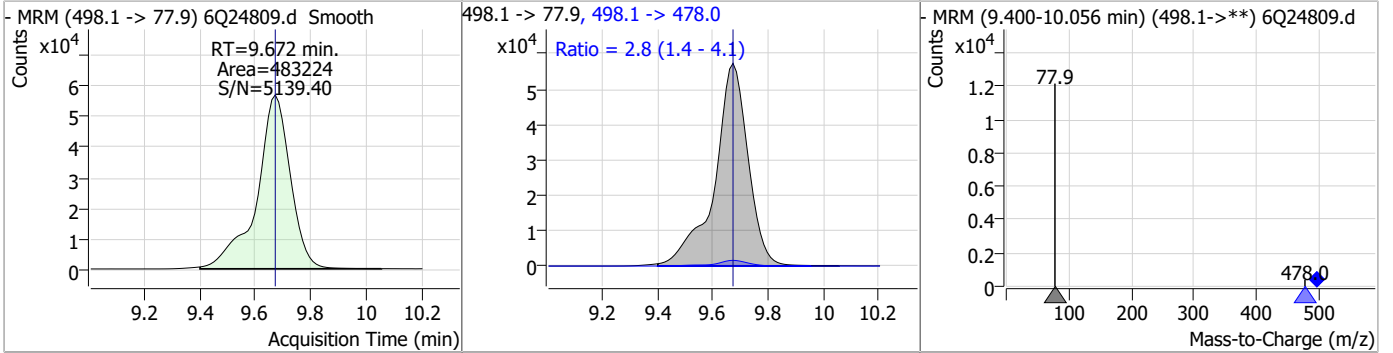


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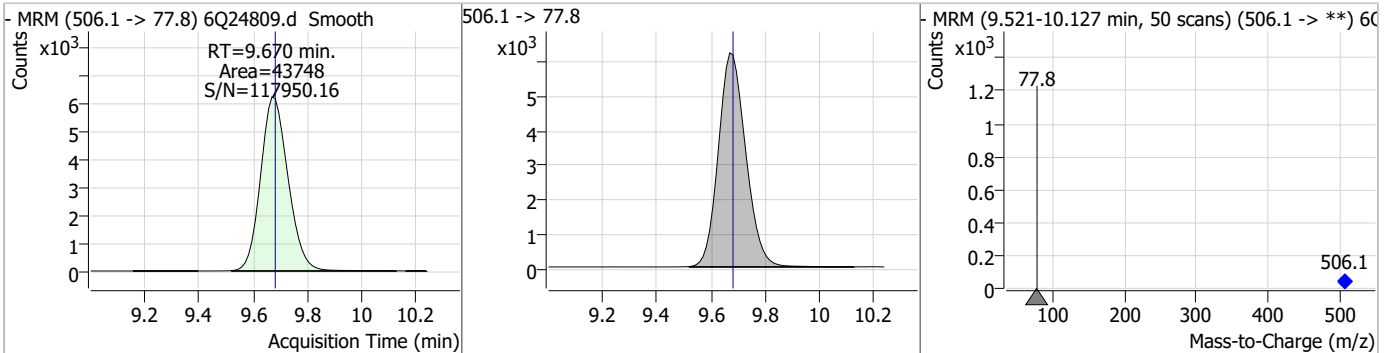
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Perfluorinated Compounds by LC/MS/MS

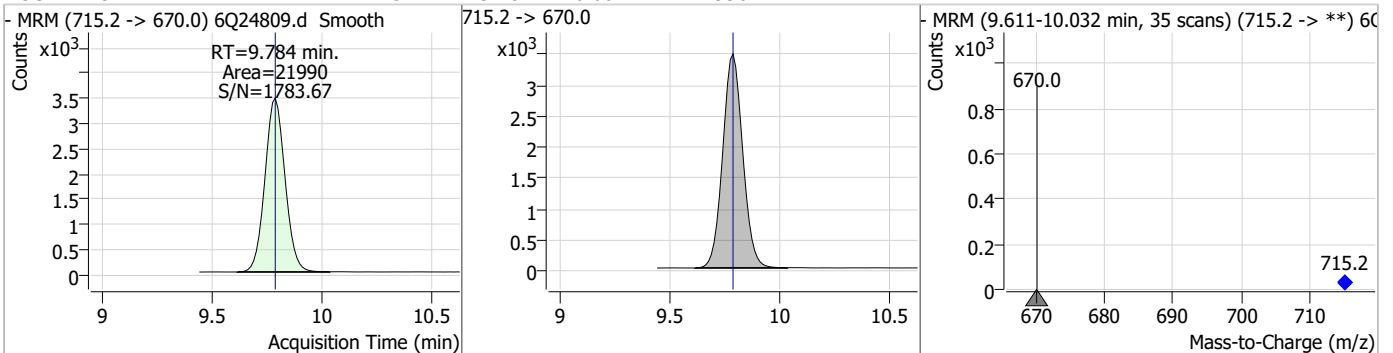
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	32.02	9.67	0.00	483224	498.1 -> 478.0	2.8	1.4	4.1



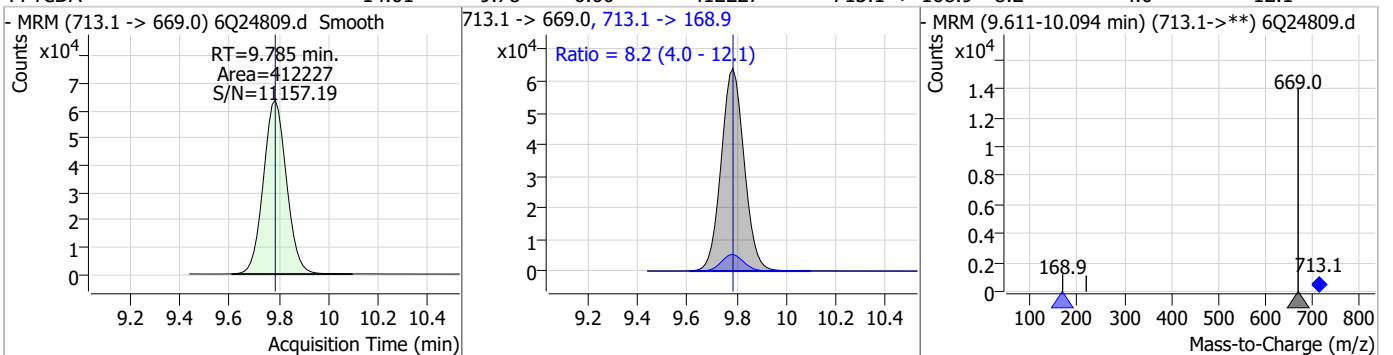
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.67	9.67	-0.01	43748				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.15	9.78	0.00	21990				

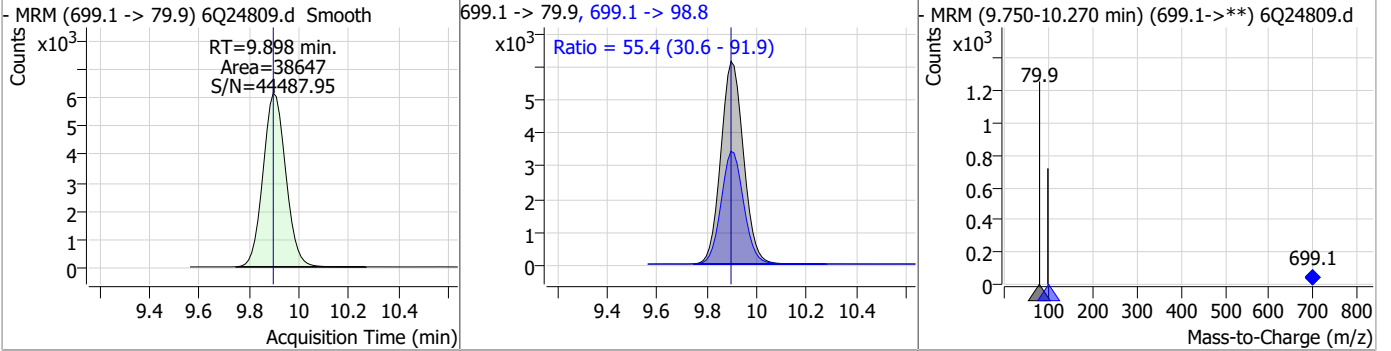


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	14.01	9.78	0.00	412227	713.1 -> 168.9	8.2	4.0	12.1

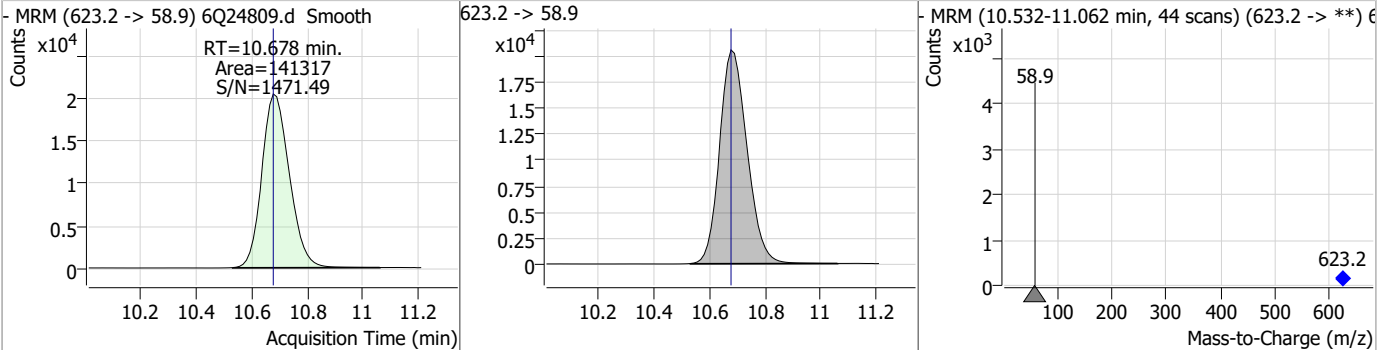


Perfluorinated Compounds by LC/MS/MS

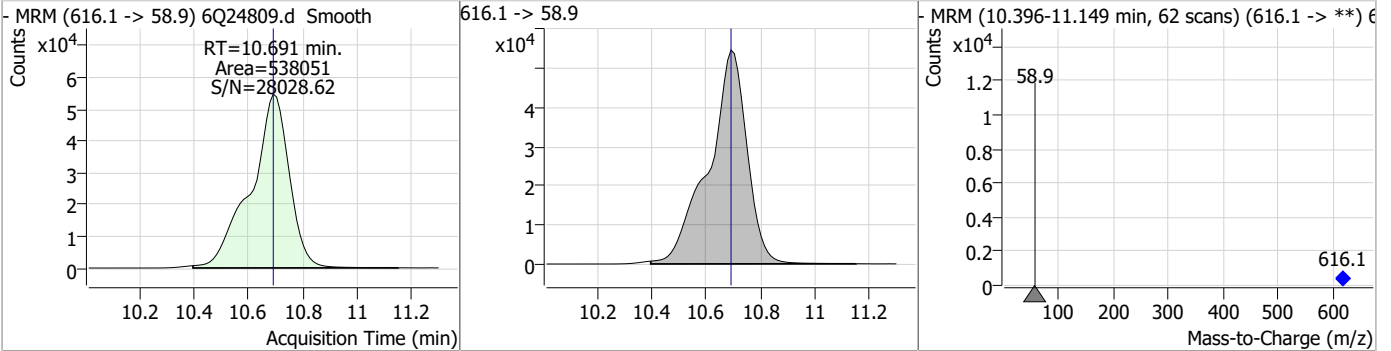
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	13.14	9.90	0.00	38647	699.1 -> 98.8	55.4	30.6	91.9



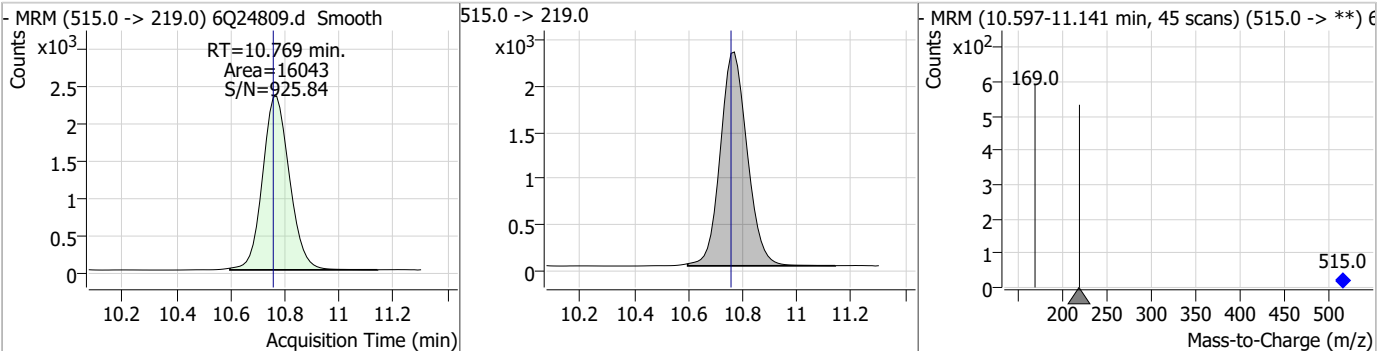
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.50	10.68	0.00	141317				



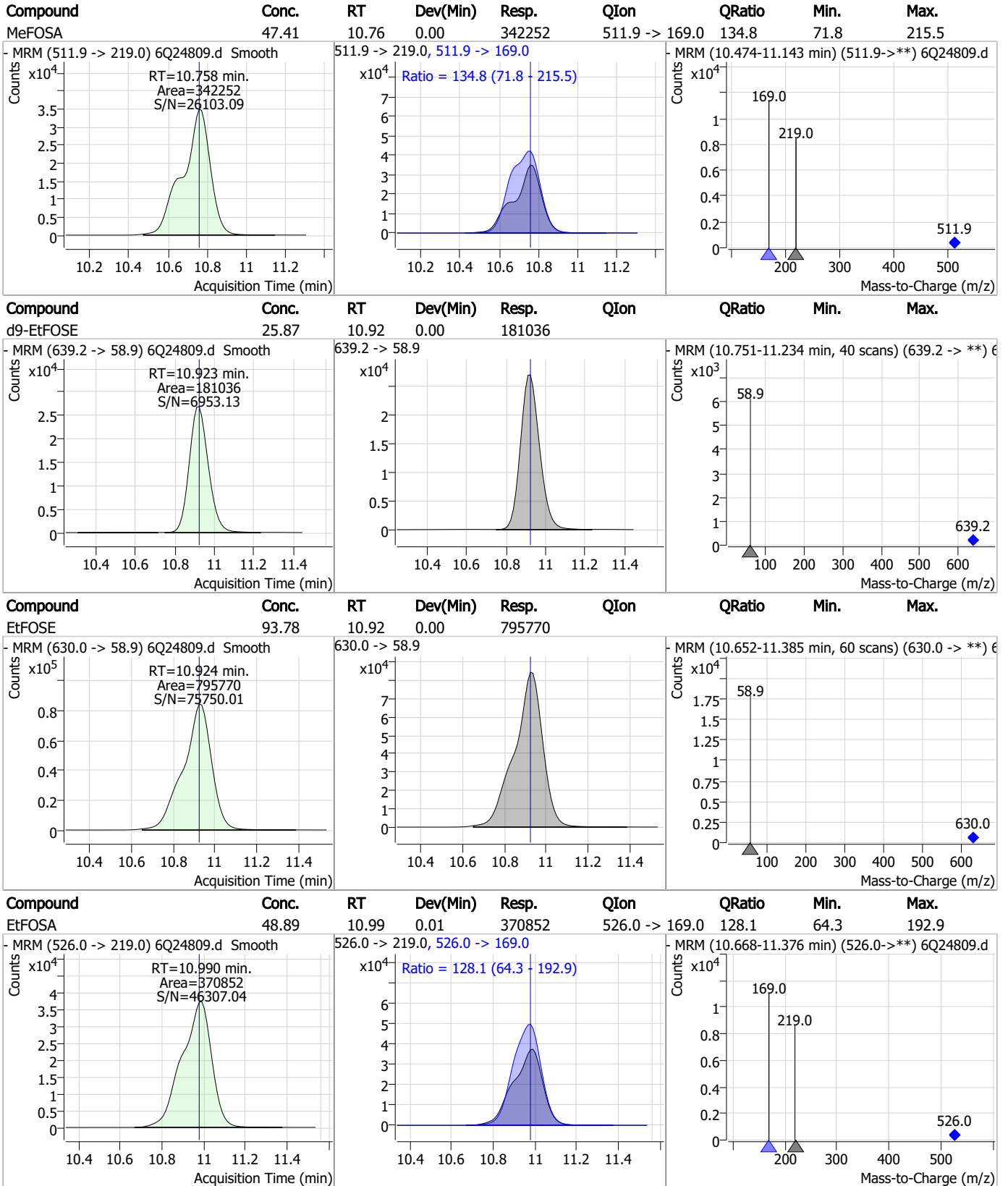
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	88.69	10.69	0.00	538051				



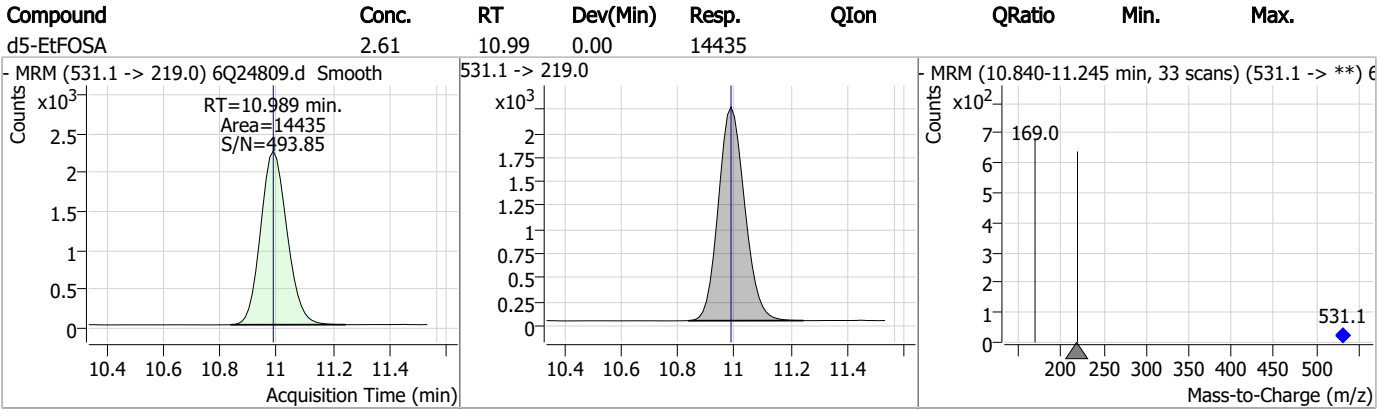
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.70	10.77	0.01	16043				



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.6.2

7

Manual Integration Approval Summary

Sample Number: S6Q355-RT Method: EPA DRAFT 1633
Lab FileID: 6Q24809.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 20:07 Supervisor approved: 09/22/23 13:16 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorooctanoic acid	335-67-1		7.20	Split peak
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorononanoic acid	375-95-1		7.59	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.6.2.1

7

QQQ Check Tune Report



Instrument Name LCMS Q6
MS Model G6495B
MS Instrument Serial SG1752D103
Software_Firmware Version 10.1.67, FW: A.00.08.112
Tune Date & Time 08 September 2023 10:38:10
File Path D:\MassHunter\Tune\QQQ\G6495B\atunes.TUNE.XML
Ion Source AJS ESI
Ionization Mode AJS ESI
Tuned Resolution All
Vacuum Pressure 1.81E+0 [R] (Torr); 2.89E-5 [H] (Torr)

Source Parameters

Parameter	Negative
Gas Temp (°C)	220
Gas Flow (l/min)	14
Nebulizer (psi)	20
Capillary (V)	3000
Nozzle Voltage (V)	1500
Sheath Gas Temp (°C)	250
Sheath Gas Flow (l/min)	11

7.7.1

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QQQ Check Tune Report



Negative Results

Analyzer: MS1 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.92	-0.07	Pass	0.70	0.75	0.05	Pass	589408
302.00	301.90	-0.10	Pass	0.70	0.82	0.12	Pass	2012303
601.98	601.87	-0.11	Pass	0.70	0.78	0.08	Pass	2774400
1033.99	1033.92	-0.07	Pass	0.70	0.69	-0.01	Pass	1828876
1633.95	1633.92	-0.03	Pass	0.70	0.78	0.08	Pass	1214432
2233.91	2233.80	-0.11	Pass	0.70	0.82	0.12	Pass	615071

Analyzer: MS2 Polarity: Negative Width: Unit

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.05	0.05	Pass	0.70	0.63	-0.07	Pass	207094
112.99	112.98	-0.01	Pass	0.70	0.73	0.03	Pass	703374
302.00	301.98	-0.02	Pass	0.70	0.72	0.02	Pass	1830422
601.98	602.01	0.03	Pass	0.70	0.68	-0.02	Pass	2651956
1033.99	1033.99	0.00	Pass	0.70	0.72	0.02	Pass	1332855
1633.95	1633.95	0.00	Pass	0.70	0.73	0.03	Pass	1015072
2233.91	2233.83	-0.08	Pass	0.70	0.70	0.00	Pass	430759

Analyzer: MS1 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.91	-0.08	Pass	1.20	1.34	0.14	Pass	688563
302.00	301.83	-0.17	Pass	1.20	1.61	0.41	Pass	2815407
601.98	601.82	-0.16	Pass	1.20	1.74	0.54	Pass	4213825
1033.99	1033.88	-0.11	Pass	1.20	1.71	0.51	Pass	3045914
1633.95	1633.89	-0.06	Pass	1.20	1.67	0.47	Pass	2571946
2233.91	2233.73	-0.18	Pass	1.20	1.50	0.30	Pass	1157215

Analyzer: MS2 Polarity: Negative Width: Wide

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	69.05	0.05	Pass	1.20	1.15	-0.05	Pass	263040
112.99	112.97	-0.02	Pass	1.20	1.21	0.01	Pass	1036516
302.00	301.90	-0.10	Pass	1.20	1.41	0.21	Pass	2387216
601.98	601.95	-0.03	Pass	1.20	1.41	0.21	Pass	3443771
1033.99	1033.94	-0.05	Pass	1.20	1.40	0.20	Pass	2419136
1633.95	1633.91	-0.04	Pass	1.20	1.30	0.10	Pass	2300119
2233.91	2233.84	-0.07	Pass	1.20	1.17	-0.03	Pass	1137390

Analyzer: MS1 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
112.99	112.83	-0.16	Pass	2.50	2.66	0.16	Pass	714524
302.00	301.85	-0.15	Pass	2.50	2.98	0.48	Pass	3305801
601.98	601.77	-0.21	Pass	2.50	3.03	0.53	Pass	4346811
1033.99	1033.78	-0.21	Pass	2.50	3.04	0.54	Pass	4542787
1633.95	1633.78	-0.17	Pass	2.50	3.14	0.64	Pass	4299429
2233.91	2233.82	-0.09	Pass	2.50	2.46	-0.04	Pass	2697015

Analyzer: MS2 Polarity: Negative Width: Widest

m/z Expected	m/z Measured	Delta	Result	FWHM Expected	FWHM Measured	Delta	Result	Abundance
69.00	68.99	-0.01	Pass	2.50	2.45	-0.05	Pass	283898
112.99	112.96	-0.03	Pass	2.50	2.57	0.07	Pass	1214436
302.00	301.85	-0.15	Pass	2.50	2.56	0.06	Pass	3299787
601.98	602.05	0.07	Pass	2.50	2.79	0.29	Pass	4553553
1033.99	1033.94	-0.05	Pass	2.50	2.86	0.36	Pass	3846373
1633.95	1633.95	0.00	Pass	2.50	2.62	0.12	Pass	4259139
2233.91	2233.85	-0.06	Pass	2.50	2.77	0.27	Pass	2967219

7.7.1
7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24811.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 8:35:51 PM
 Sample Name : ic355-1
 Vial : P1-A2
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	337420	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	55718	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	122466	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	103120	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	132881	2.50 µg/L	0.000
M9-PFNA	7.729	472.1 -> 427.0	58760	1.25 µg/L	0.012
M6-PFDA	8.198	519.1 -> 474.1	56618	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	67422	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	60168	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	23582	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	43672	2.50 µg/L	-0.012
M3-PFBS	5.559	302.1 -> 79.9	39081	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	22595	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	20496	2.50 µg/L	0.000
M2-4:2FTS	5.304	329.1 -> 80.9	4549	5.00 µg/L	-0.012
M2-6:2FTS	6.974	429.1 -> 80.9	6277	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	6371	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	39184	5.00 µg/L	0.000
M3-HFPO-DA	6.007	286.9 -> 168.9	67601	10.00 µg/L	-0.012
M5-EtFOSAA	8.452	589.2 -> 419.0	31327	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	147792	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	190452	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	15036	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	16270	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	27640	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	138089	5.00 µg/L	-0.012
18O2-PFHxS	7.313	403.0 -> 83.9	16460	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	152589	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	46314	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	60778	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	93377	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.304	329.1 -> 80.9	4549	5.30 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6277	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.7%		
13C2-8:2FTS	7.998	529.1 -> 80.9	6371	5.15 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.1%		
13C2-PFDoDA	9.079	615.1 -> 570.0	60168	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C2-PFTeDA	9.784	715.2 -> 670.0	23582	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C3-PFBS	5.559	302.1 -> 79.9	39081	2.45 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-PFHxS	7.301	402.1 -> 79.9	22595	2.53 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 = 101.4%	
13C4-PFBA	2.985	216.8 -> 171.9	337420	10.02 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C4-PFHpA	6.569	367.1 -> 322.0	103120	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
13C5-PFHxA	5.641	318.0 -> 273.0	122466	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C5-PFPeA	4.422	268.3 -> 223.0	55718	5.25 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C6-PFDA	8.198	519.1 -> 474.1	56618	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.4%	
13C7-PFUnDA	8.651	570.0 -> 525.1	67422	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.3%	
13C8-FOSA	9.670	506.1 -> 77.8	43672	2.41 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.2%	
13C8-PFOA	7.198	421.1 -> 376.0	132881	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.9%	
13C8-PFOS	8.348	507.1 -> 79.9	20496	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C9-PFNA	7.729	472.1 -> 427.0	58760	1.33 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.7%	
d3-MeFOSAA	8.256	573.2 -> 419.0	39184	5.19 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C3-HFPO-DA	6.007	286.9 -> 168.9	67601	9.76 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 97.6%	
d3-MeFOSA	10.757	515.0 -> 219.0	16270	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.0%	
d5-EtFOSAA	8.452	589.2 -> 419.0	31327	4.86 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
d7-MeFOSE	10.678	623.2 -> 58.9	147792	25.06 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
d9-EtFOSE	10.923	639.2 -> 58.9	190452	24.60 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.4%	
d5-EtFOSA	10.989	531.1 -> 219.0	15036	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.3%	
Target Compounds					QValue
4:2FTS	5.305	327.1 -> 307.0	5556	0.75 µg/L	98
		327.1 -> 80.9	2055		
6:2FTS	6.974	427.1 -> 407.0	4869	0.84 µg/L	100
		427.1 -> 80.9	1828		
8:2FTS	7.999	527.1 -> 507.0	3418	0.84 µg/L	99
		527.1 -> 80.8	1121		
EtFOSAA	8.465	584.2 -> 419.1	945	0.20 µg/L	98
		584.2 -> 526.0	600		
FOSA	9.672	498.1 -> 77.9	3102	0.21 µg/L	99
		498.1 -> 478.0	93		
MeFOSAA	8.257	570.1 -> 419.0	1732	0.19 µg/L	87
		570.1 -> 483.0	308		
PFBA	2.981	212.8 -> 168.9	8122	0.78 µg/L	100
PFBS	5.560	298.7 -> 79.9	3373	0.18 µg/L	100
		298.7 -> 98.8	1225		
PFDA	8.198	512.9 -> 469.0	9902	0.20 µg/L	98
		512.9 -> 219.0	1540		
PFDODA	9.080	613.1 -> 569.0	8229	0.19 µg/L	92
		613.1 -> 319.0	1237		
PFDS	9.233	599.0 -> 79.9	1157	0.19 µg/L	84

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	681			
PFHpA	6.569	363.1 -> 319.0	10145	0.19	µg/L	99
		363.1 -> 169.0	1582			
PFHpS	7.868	449.0 -> 79.9	1819	0.18	µg/L	97
		449.0 -> 98.9	899			
PFHxA	5.644	313.0 -> 269.0	8751	0.21	µg/L	100
		313.0 -> 118.9	415			
PFHxS	7.314	398.7 -> 79.9	2792	0.19	µg/L	m 94
		398.7 -> 98.9	1212			
PFNA	7.717	463.0 -> 419.0	6892	0.18	µg/L	97
		463.0 -> 219.0	1761			
PFNS	8.814	548.8 -> 79.9	1768	0.18	µg/L	90
		548.8 -> 98.9	1141			
PFOA	7.200	413.0 -> 369.0	13519	0.22	µg/L	97
		413.0 -> 169.0	2189			
PFOS	8.350	498.9 -> 79.9	2471	0.21	µg/L	90
		498.9 -> 98.8	1115			
PFPeA	4.424	263.0 -> 219.0	10953	0.40	µg/L	100
PFPeS	6.620	349.1 -> 79.9	2347	0.19	µg/L	87
		349.1 -> 98.9	935			
PFTeDA	9.785	713.1 -> 669.0	6597	0.21	µg/L	98
		713.1 -> 168.9	482			
PFTrDA	9.452	663.0 -> 619.0	9043	0.19	µg/L	94
		663.0 -> 168.9	898			
PFUnDA	8.652	563.1 -> 519.0	6915	0.18	µg/L	97
		563.1 -> 269.1	1091			
11CI-PF3OUdS	9.491	630.9 -> 450.9	8294	0.38	µg/L	98
		632.9 -> 452.9	2644			
9CI-PF3ONS	8.678	530.8 -> 351.0	15382	0.40	µg/L	92
		532.8 -> 353.0	5528			
ADONA	6.817	376.9 -> 250.9	37852	0.38	µg/L	100
		376.9 -> 84.8	10048			
HFPO-DA	6.007	284.9 -> 168.9	2678	0.42	µg/L	98
		284.9 -> 184.9	359			
3:3FTCA	3.858	241.0 -> 177.0	1640	0.90	µg/L	99
		241.0 -> 117.0	164			
5:3FTCA	6.283	341.0 -> 237.1	36176	4.84	µg/L	96
		341.0 -> 217.0	24719			
7:3FTCA	7.669	441.0 -> 316.9	20479	4.70	µg/L	90
		441.0 -> 336.9	43018			
EtFOSA	10.990	526.0 -> 219.0	3089	0.39	µg/L	95
		526.0 -> 169.0	3797			
EtFOSE	10.924	630.0 -> 58.9	8561	0.96	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	2767	0.38	µg/L	93
		511.9 -> 169.0	3751			
MeFOSE	10.691	616.1 -> 58.9	5908	0.93	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	553	0.19	µg/L	94
		699.1 -> 98.8	364			
NFDHA	5.524	295.0 -> 201.0	2084	0.41	µg/L	99
		295.0 -> 84.9	516			
PFMBA	4.850	279.0 -> 85.1	7361	0.38	µg/L	100
PFMPA	3.551	229.0 -> 84.9	5498	0.38	µg/L	100
PFEESA	6.112	314.8 -> 134.9	19089	0.34	µg/L	100
		314.8 -> 82.9	653			

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

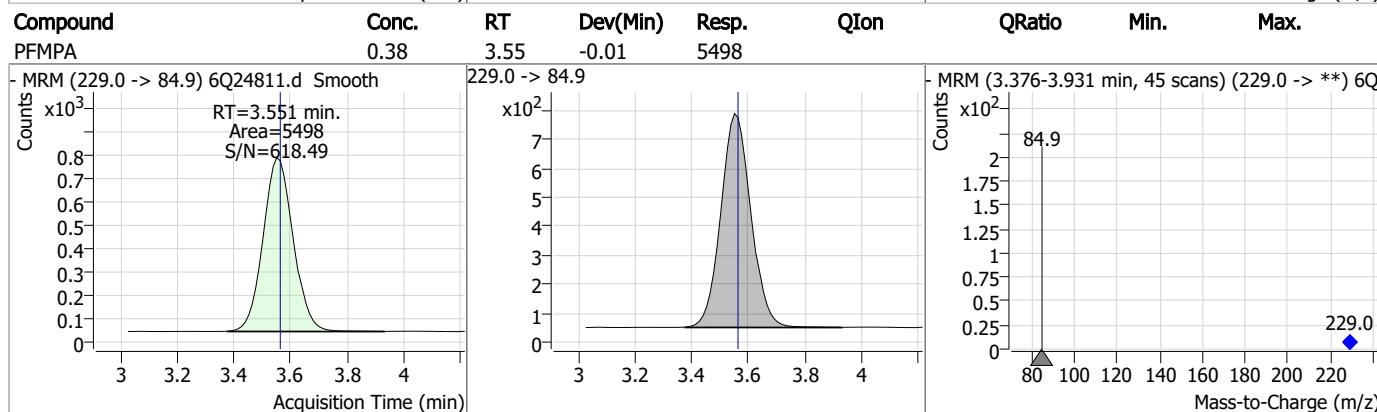
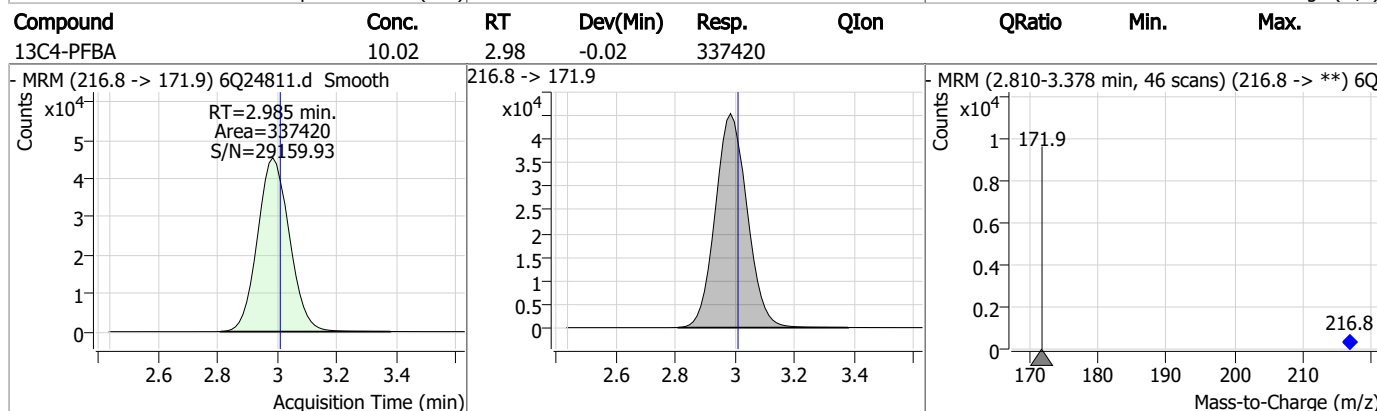
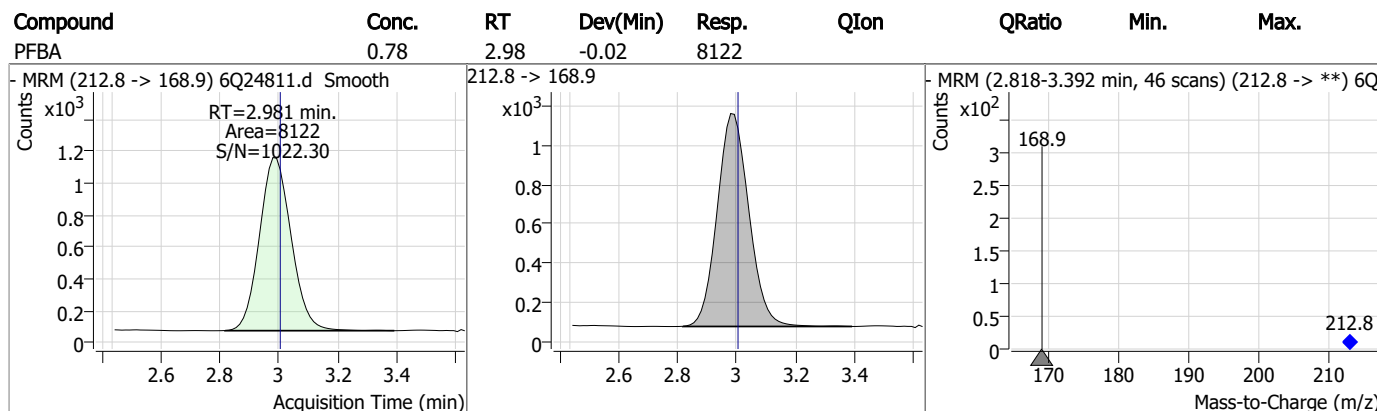
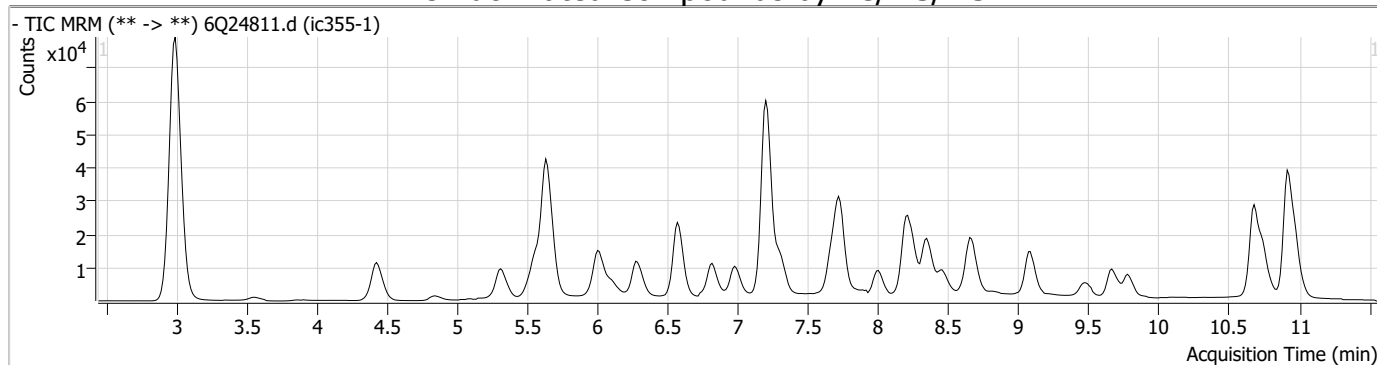
Perfluorinated Compounds by LC/MS/MS

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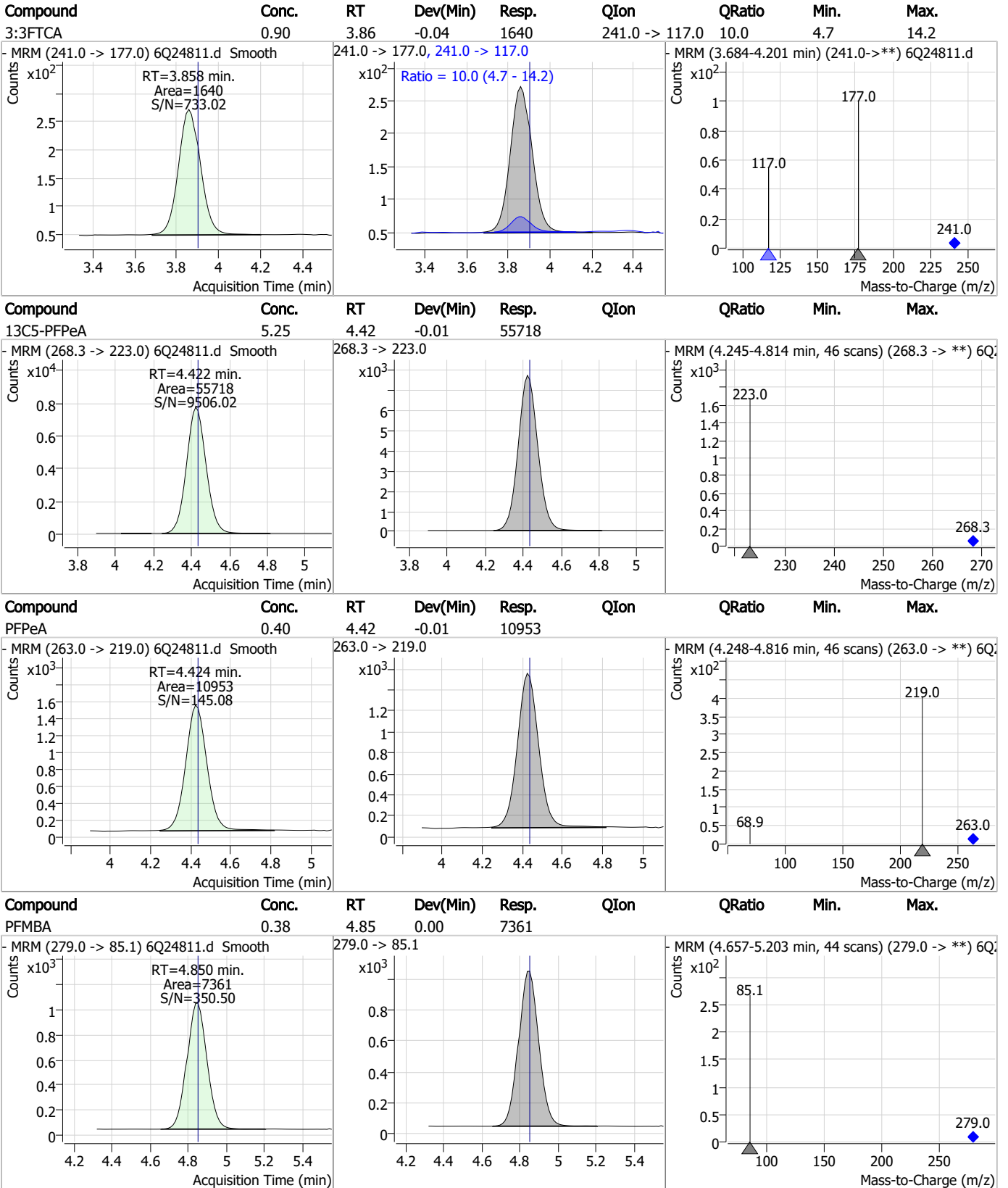
7.7.2
7



Perfluorinated Compounds by LC/MS/MS



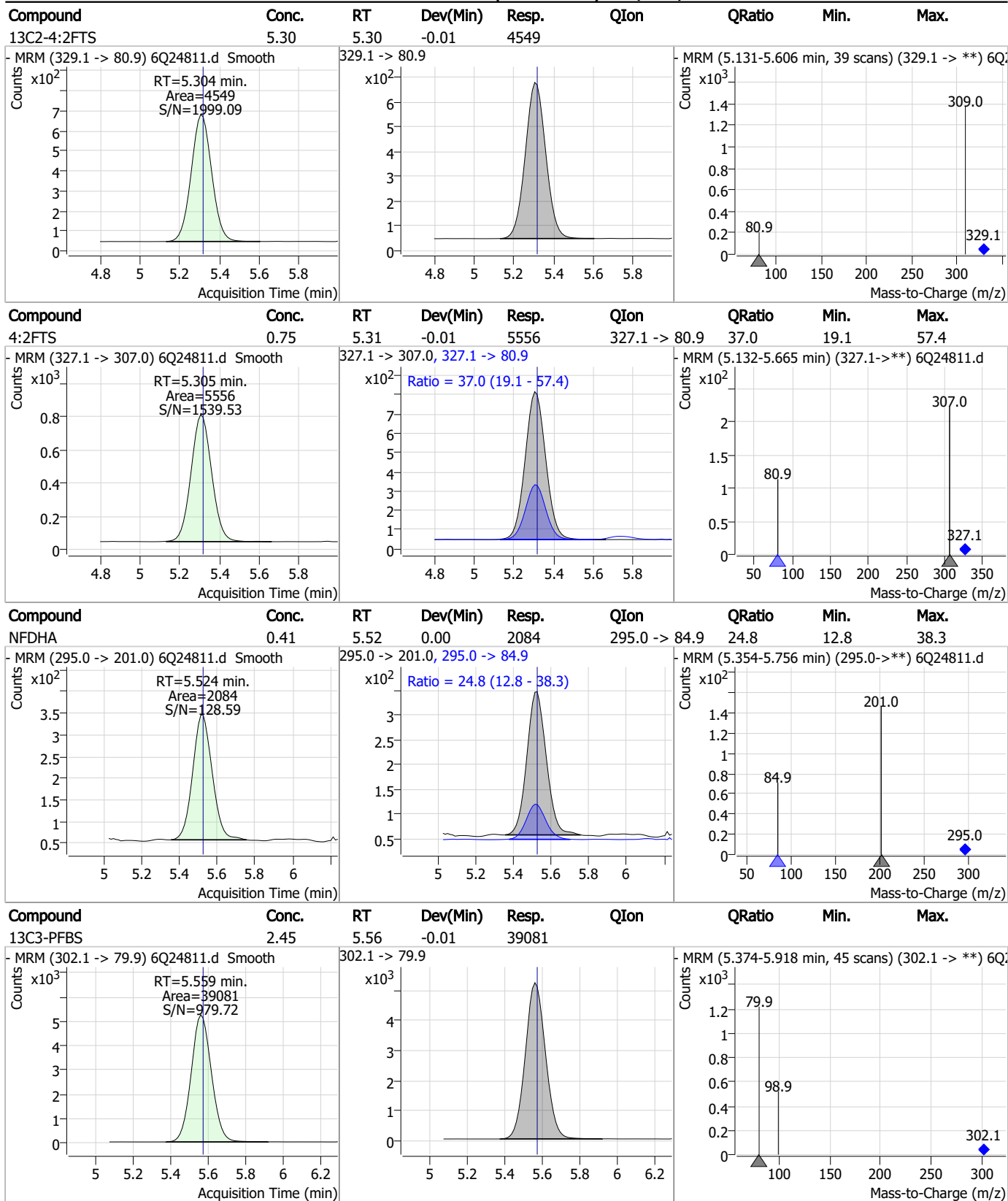
Perfluorinated Compounds by LC/MS/MS



7.7.2

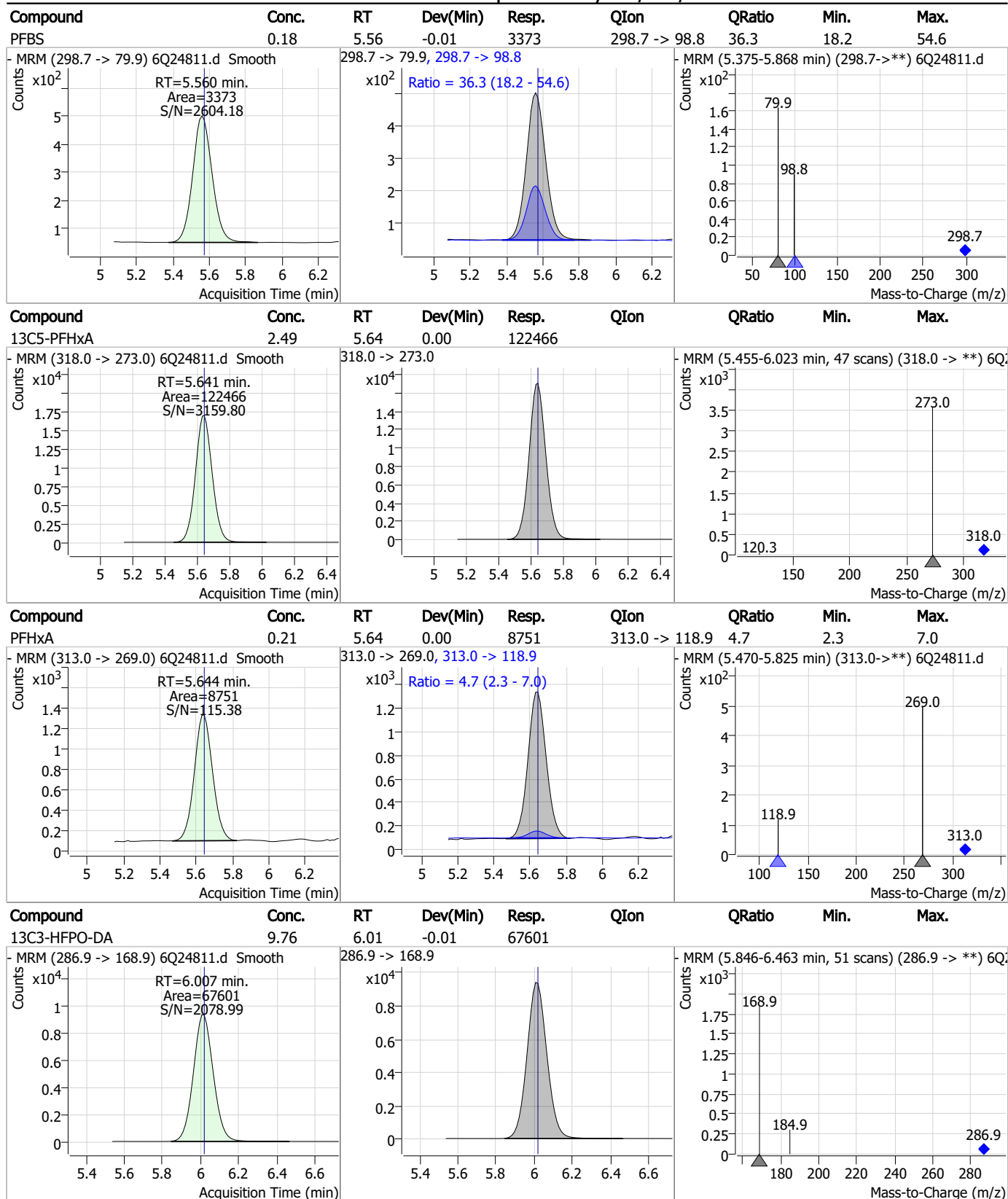
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Perfluorinated Compounds by LC/MS/MS



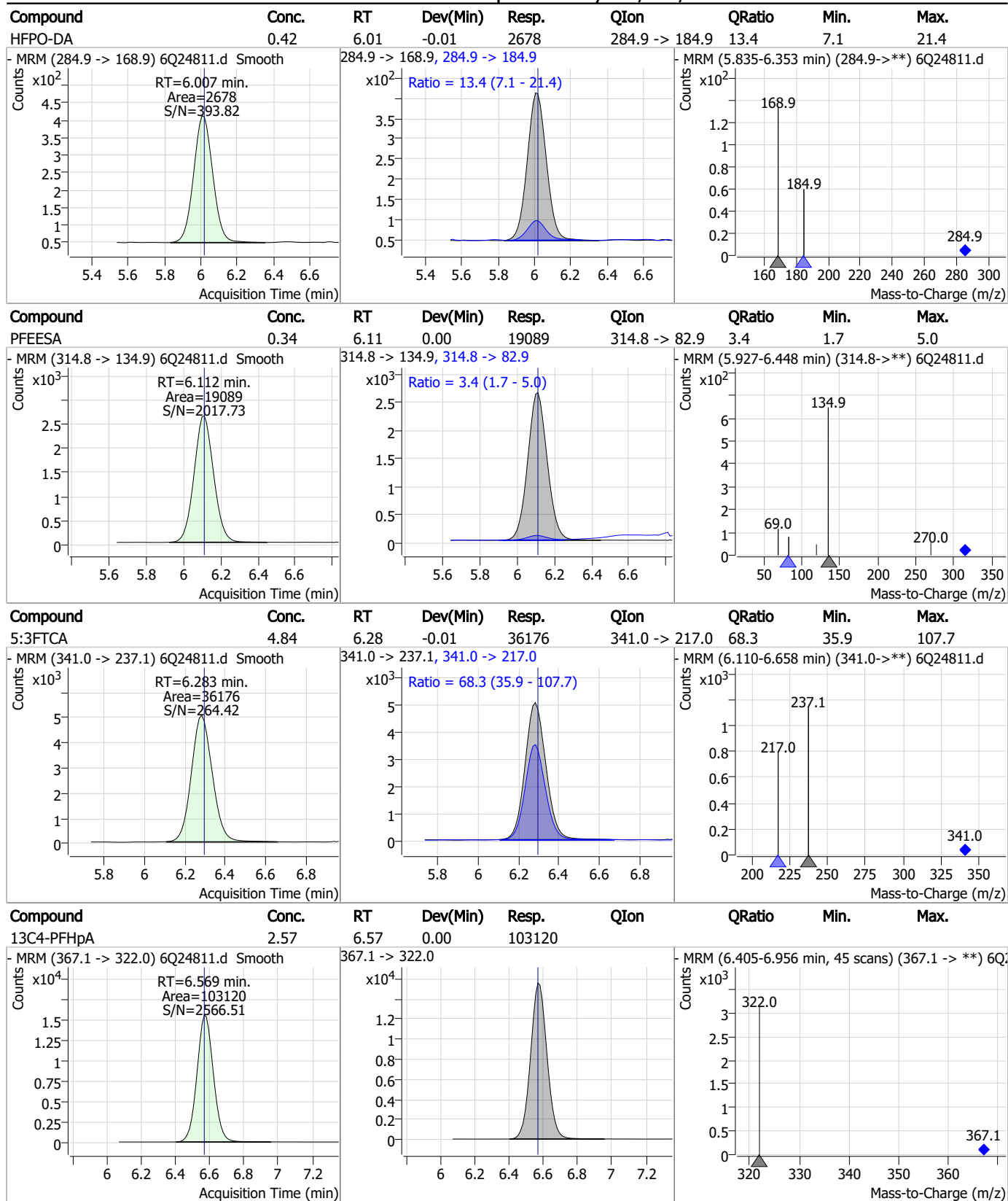
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Perfluorinated Compounds by LC/MS/MS



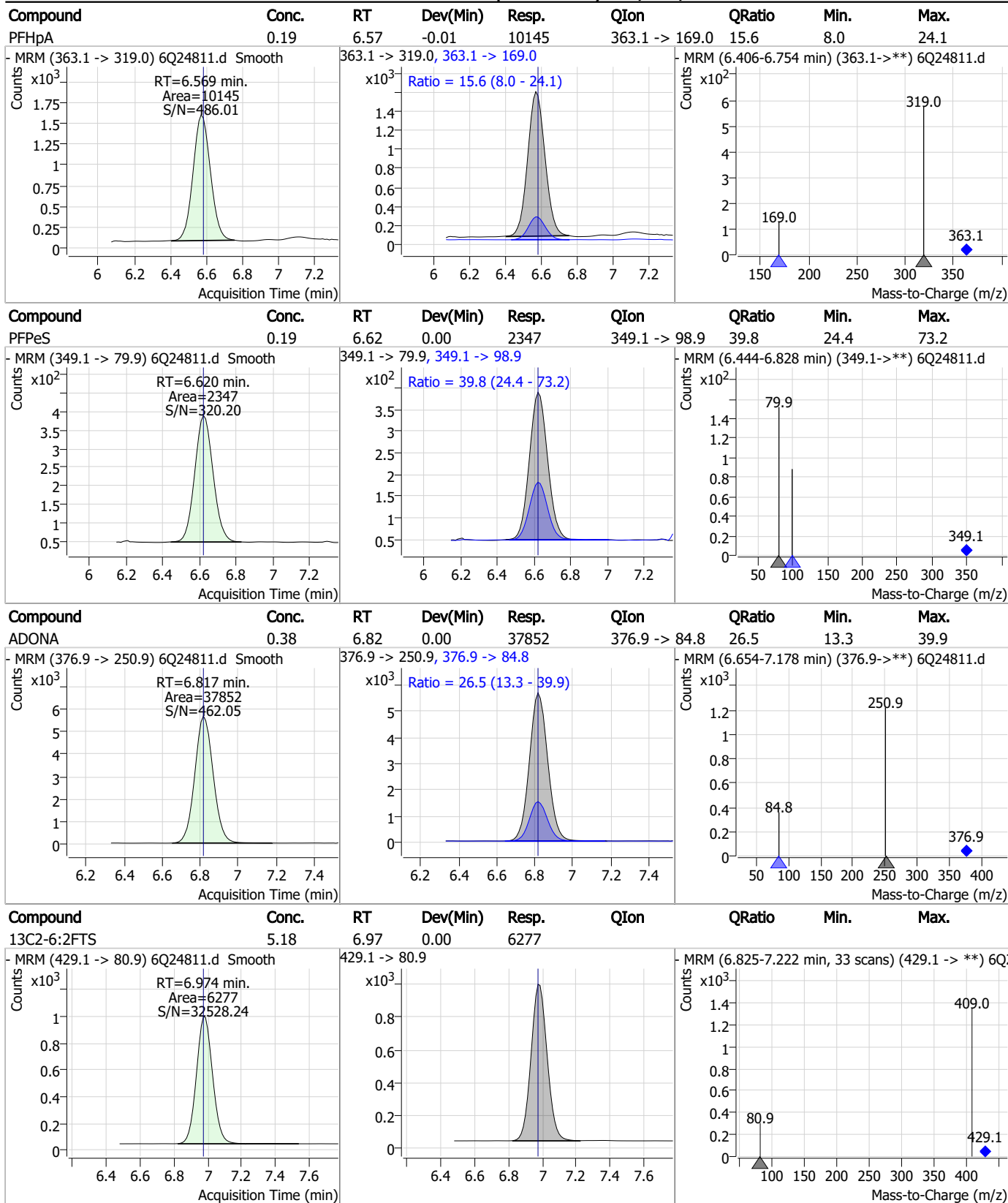
7.7.2
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Perfluorinated Compounds by LC/MS/MS



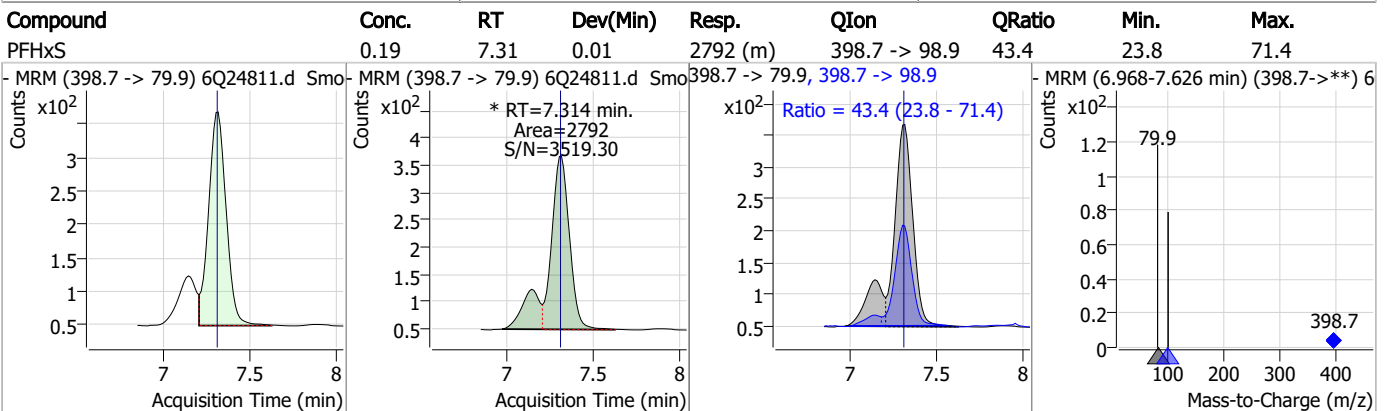
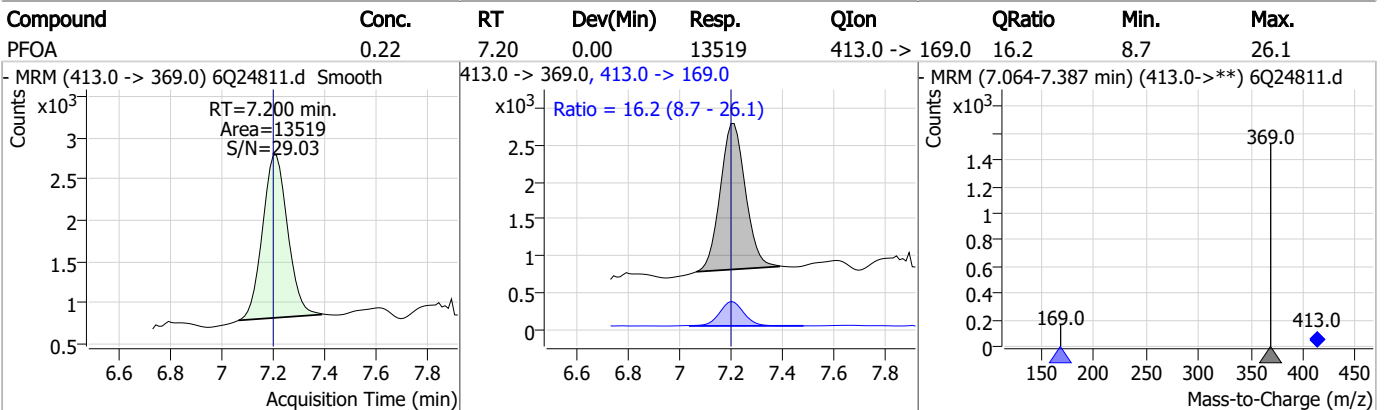
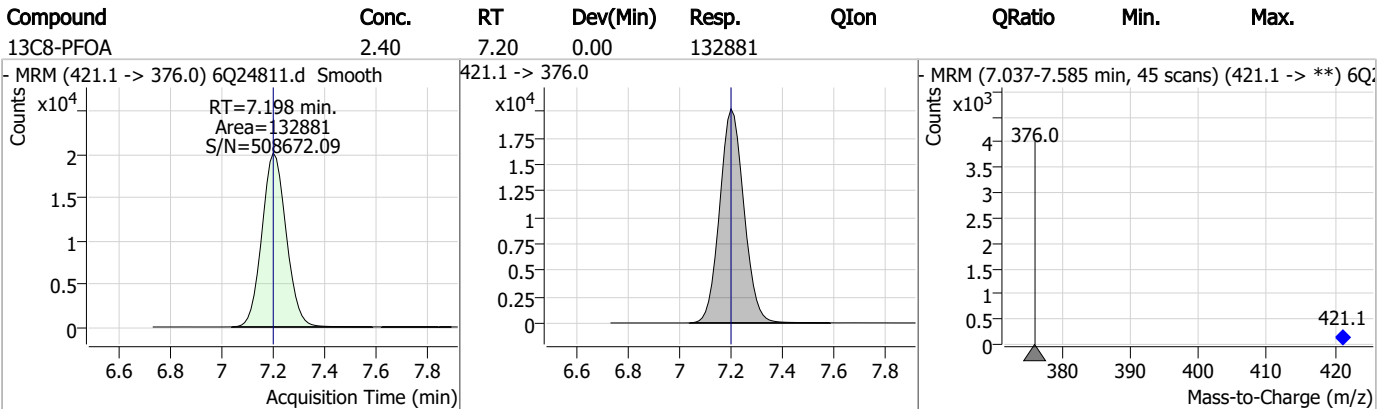
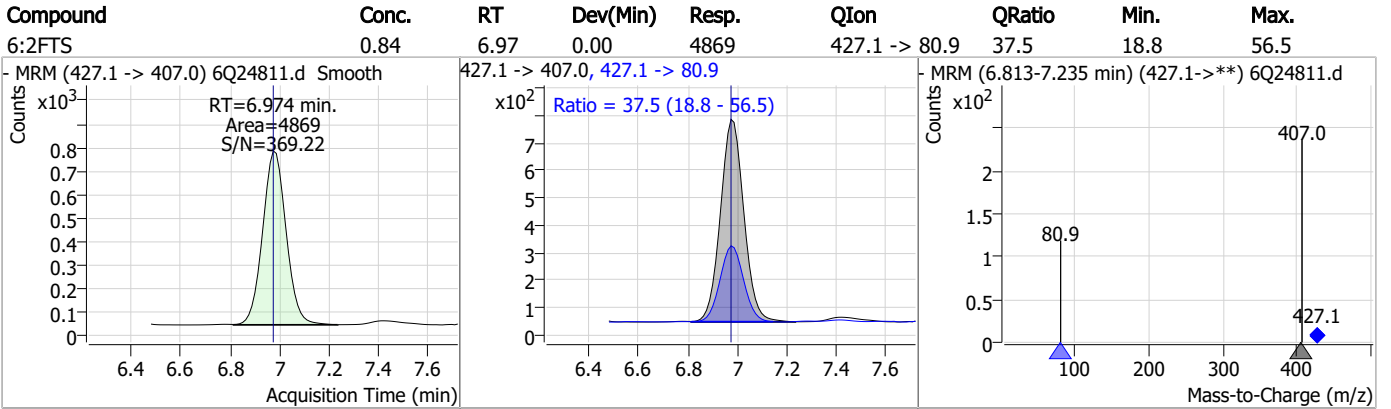
7.7.2
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Perfluorinated Compounds by LC/MS/MS



7.7.2
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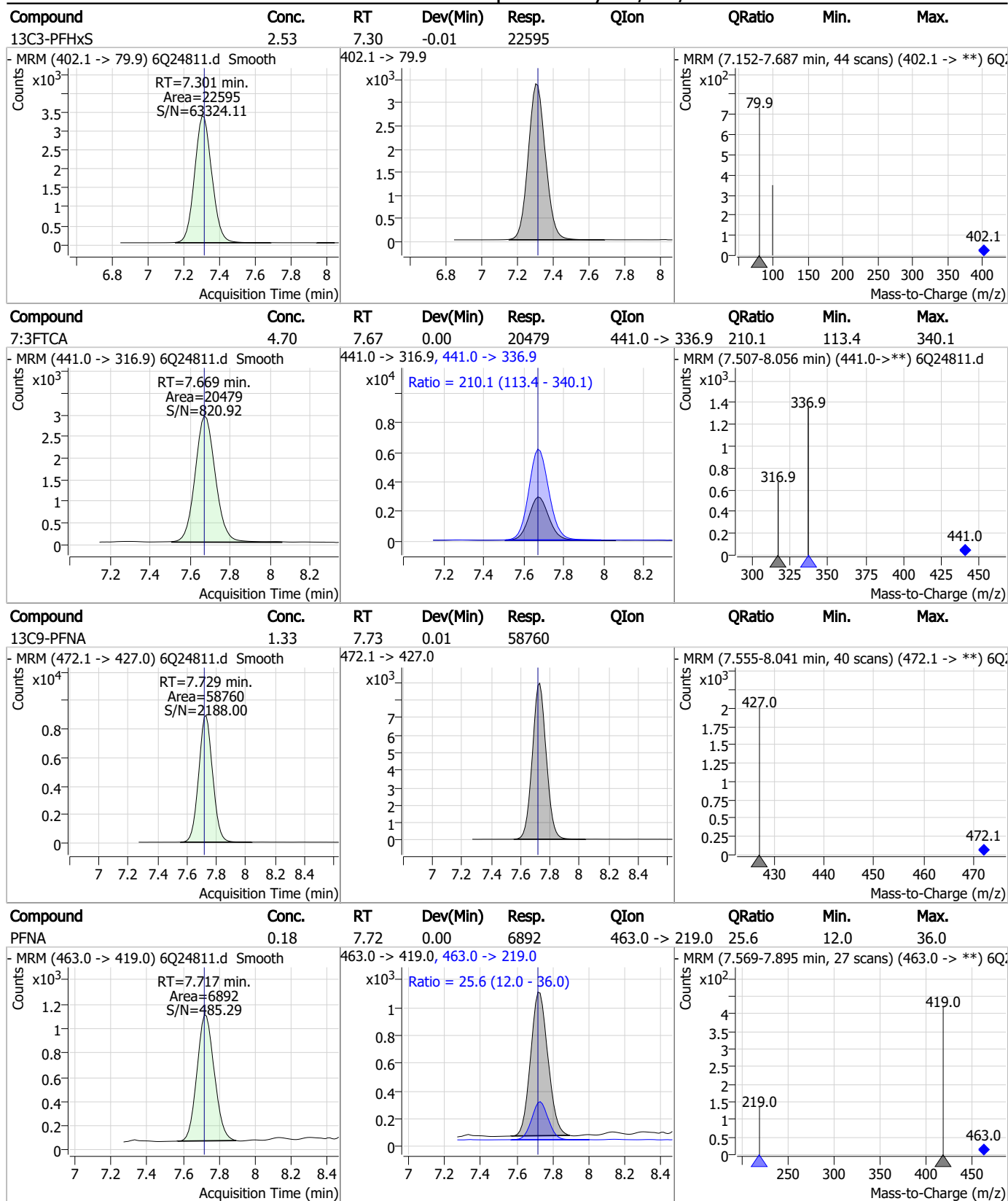
Perfluorinated Compounds by LC/MS/MS



7.7.2

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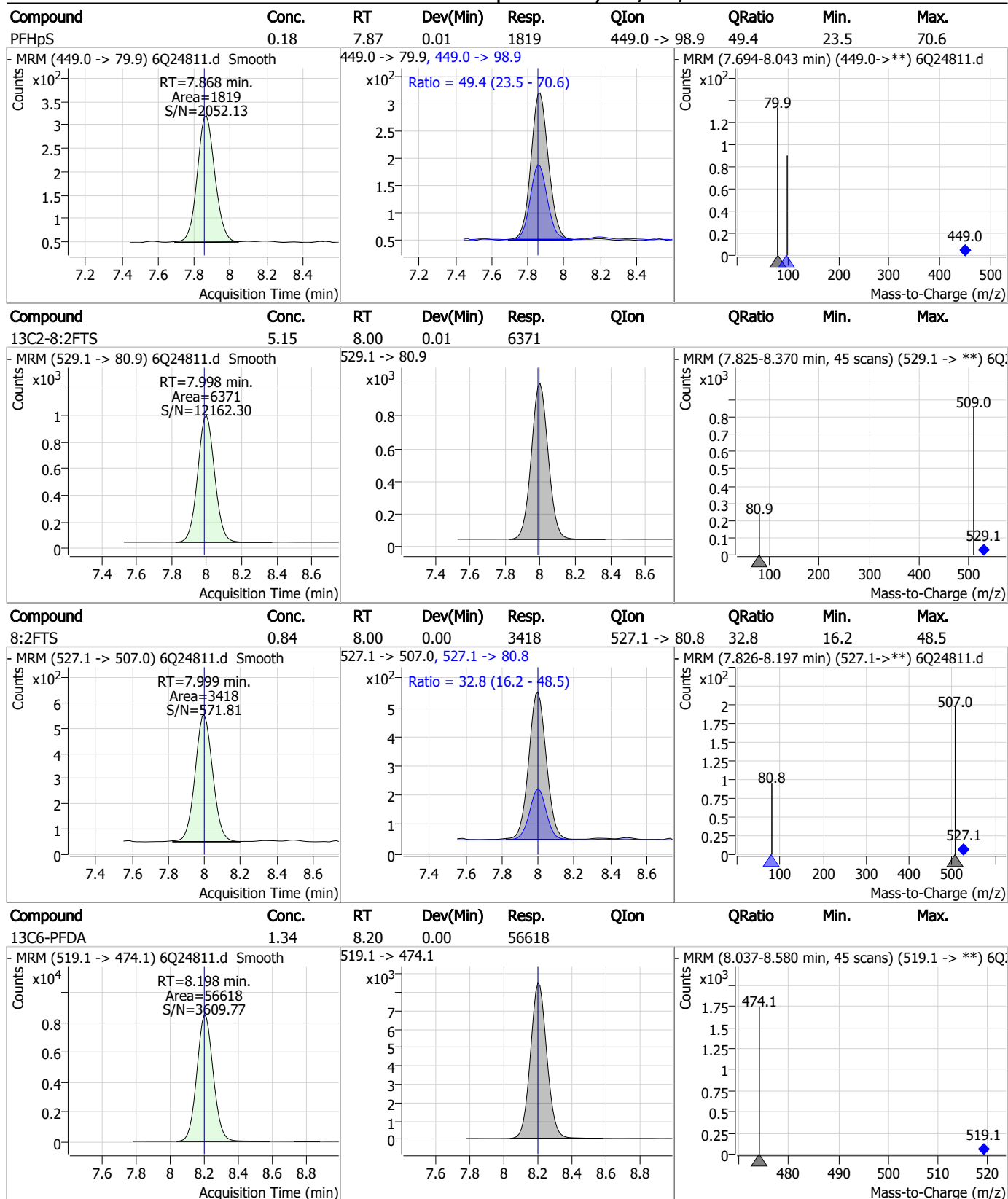
Perfluorinated Compounds by LC/MS/MS



7.7.2
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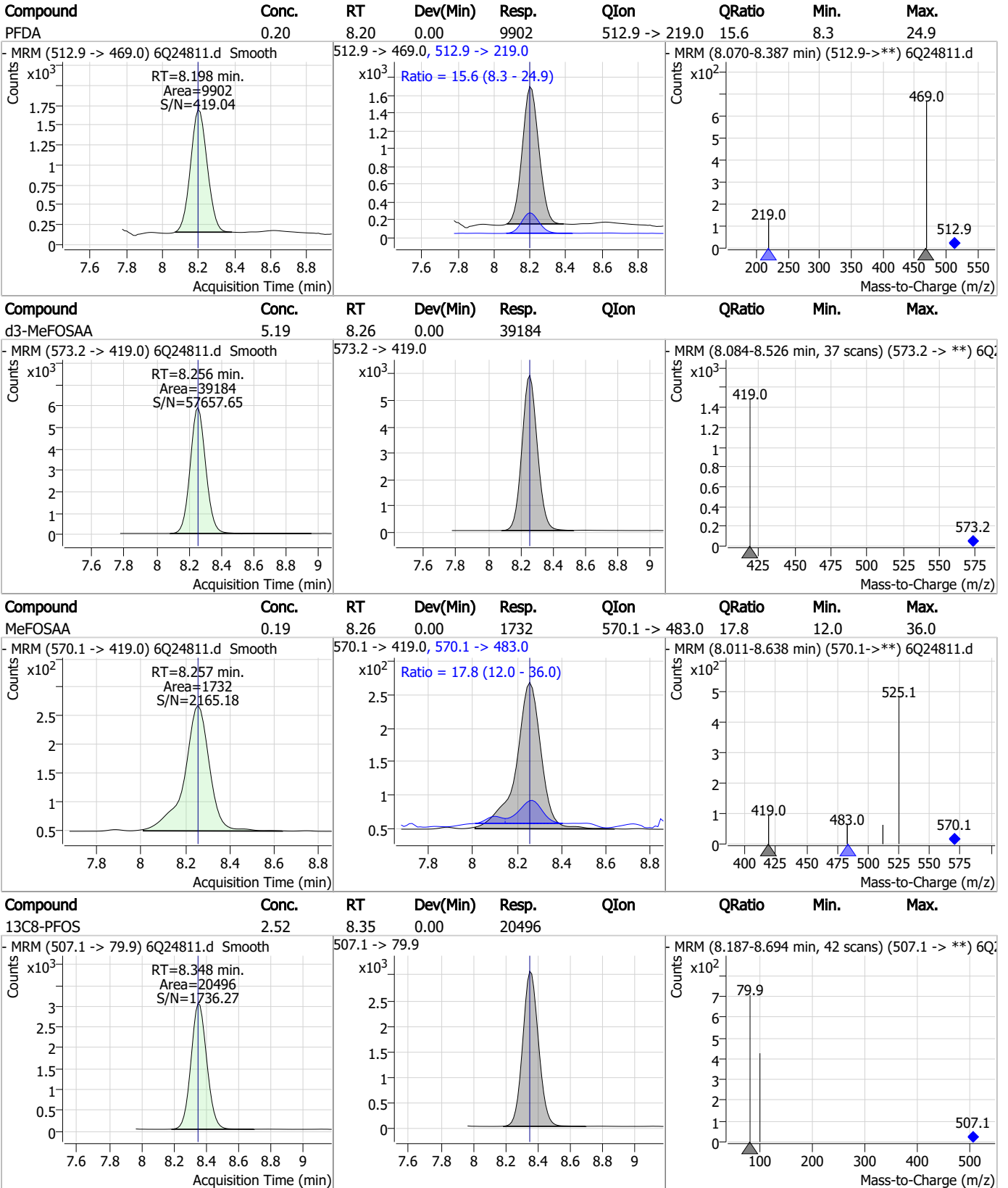


Perfluorinated Compounds by LC/MS/MS



7.7.2
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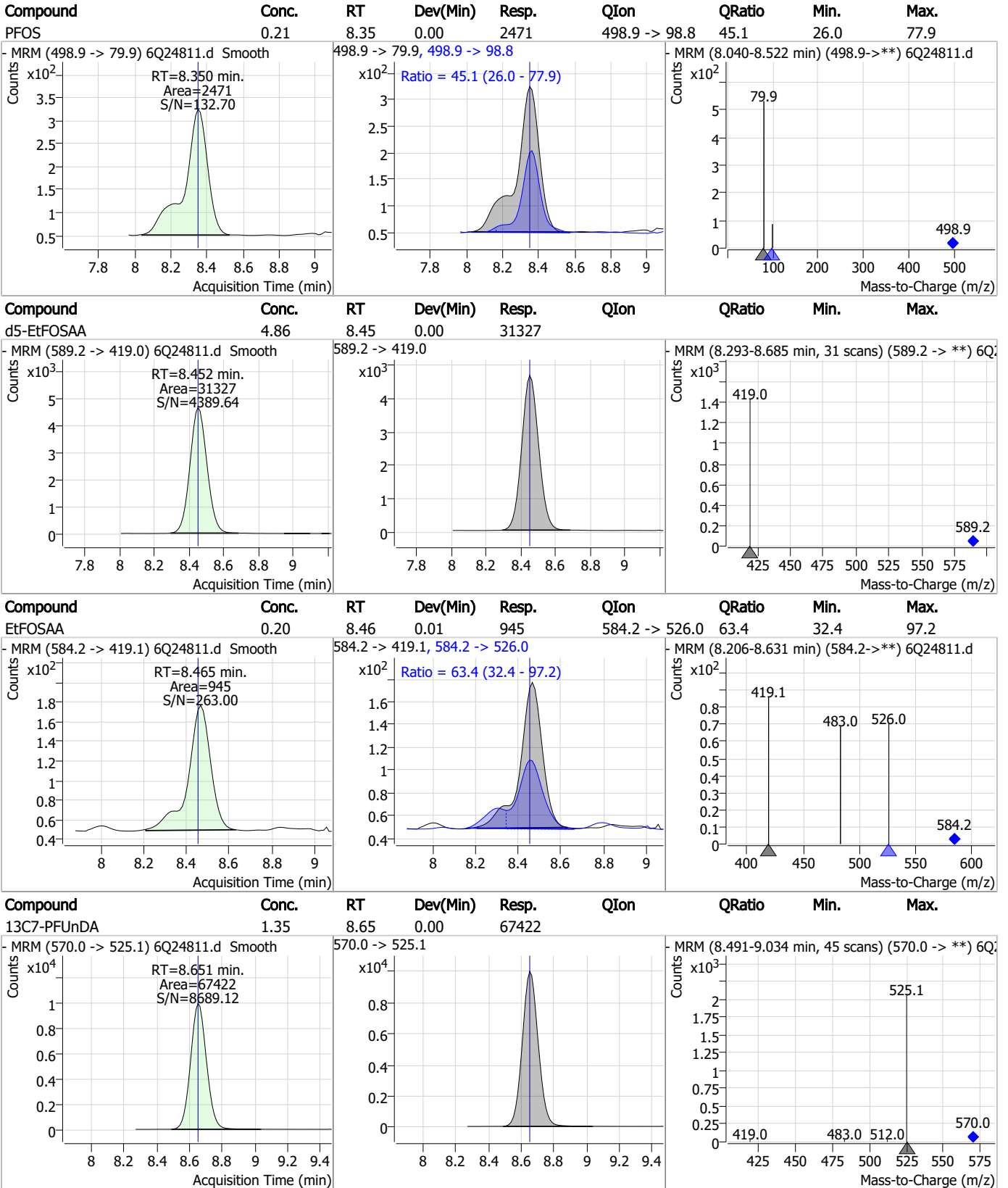
Perfluorinated Compounds by LC/MS/MS



7.7.2

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Perfluorinated Compounds by LC/MS/MS

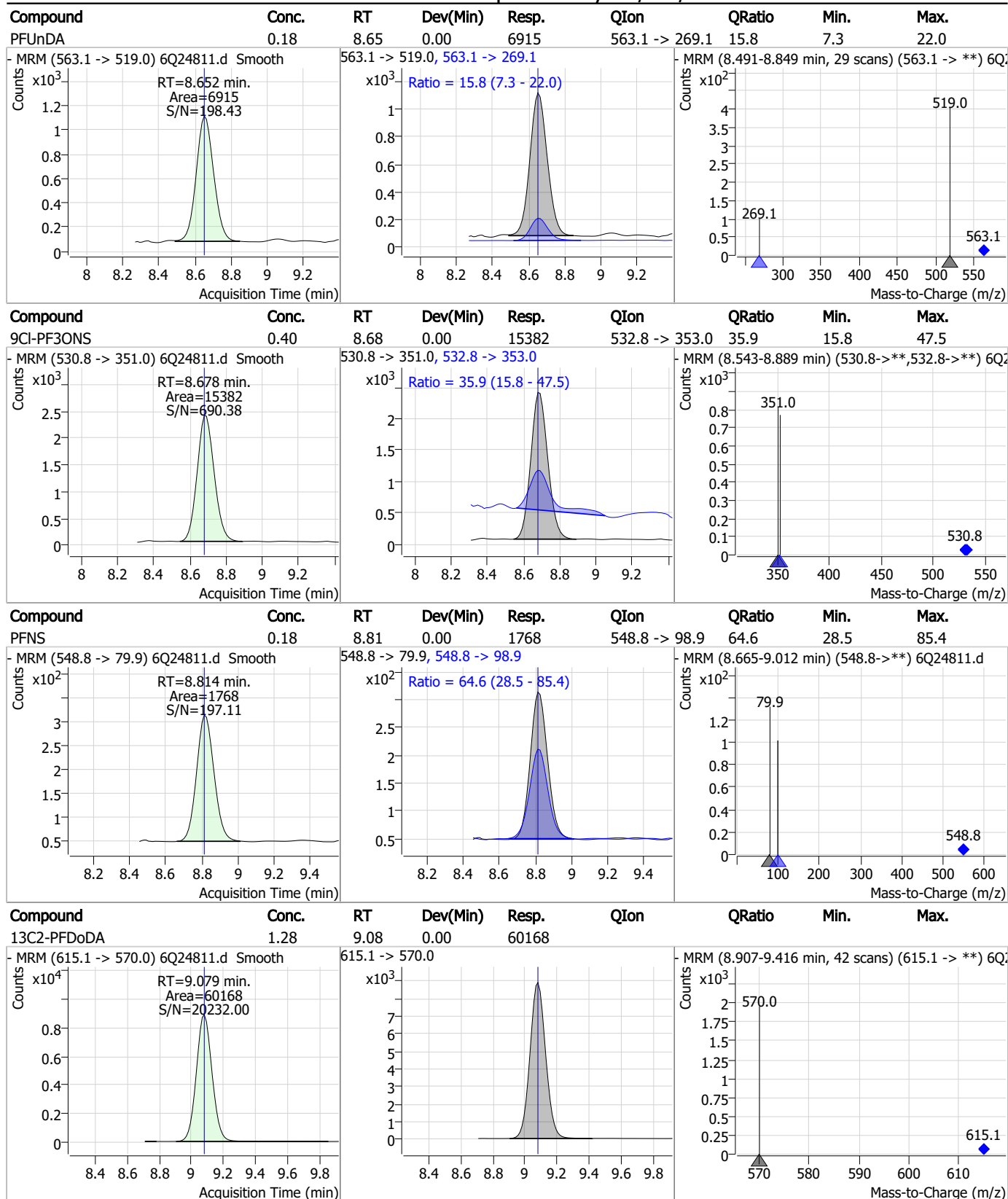


7.7.2

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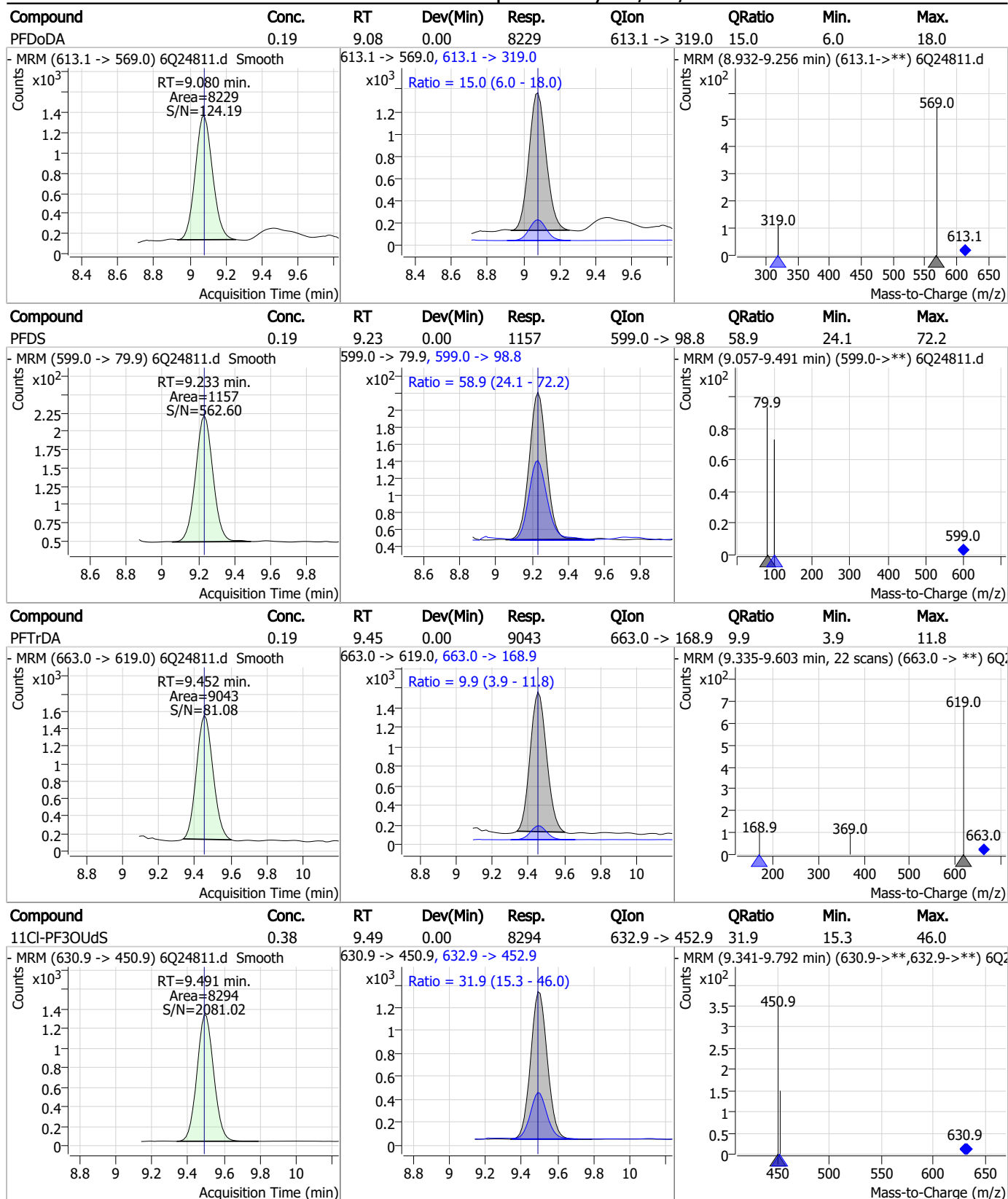
Perfluorinated Compounds by LC/MS/MS



7.7.2

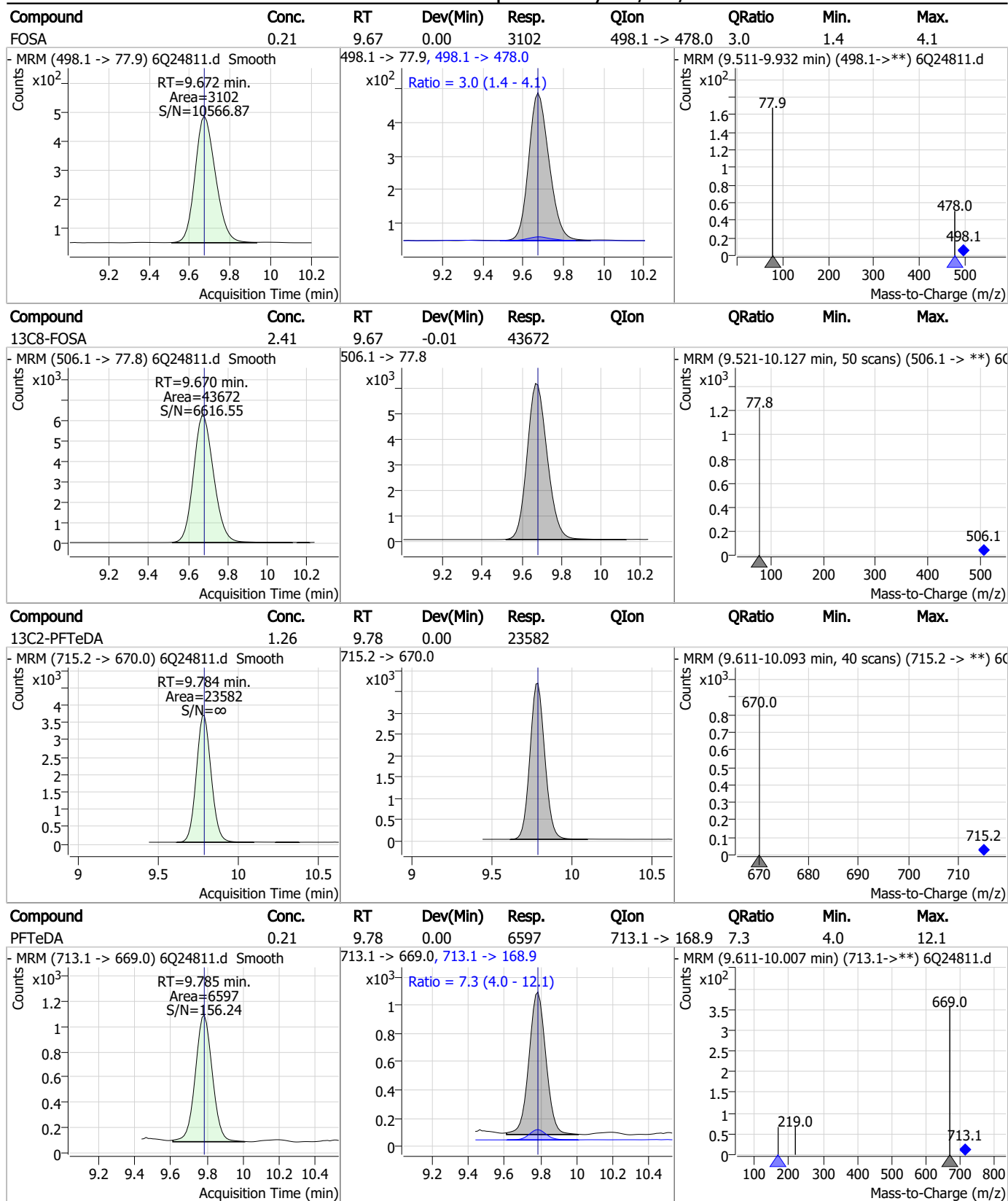
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Perfluorinated Compounds by LC/MS/MS



7.7.2
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Perfluorinated Compounds by LC/MS/MS



7.7.2
7

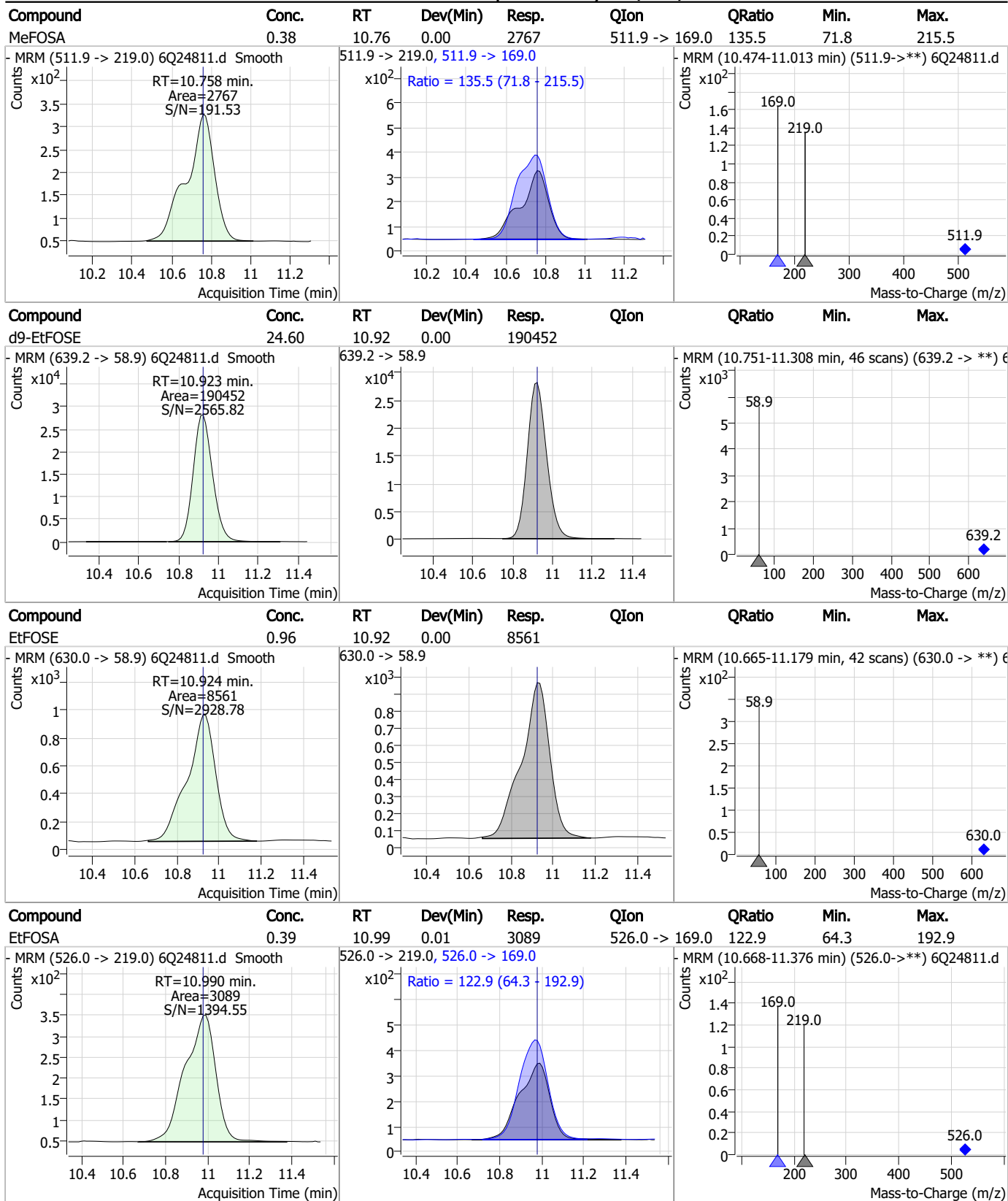
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	0.19	9.90	0.00	553	699.1 -> 98.8	65.7	30.6	91.9
d7-MeFOSE	25.06	10.68	0.00	147792				
MeFOSE	0.93	10.69	0.00	5908				
d3-MeFOSA	2.48	10.76	0.00	16270				

7.7.2
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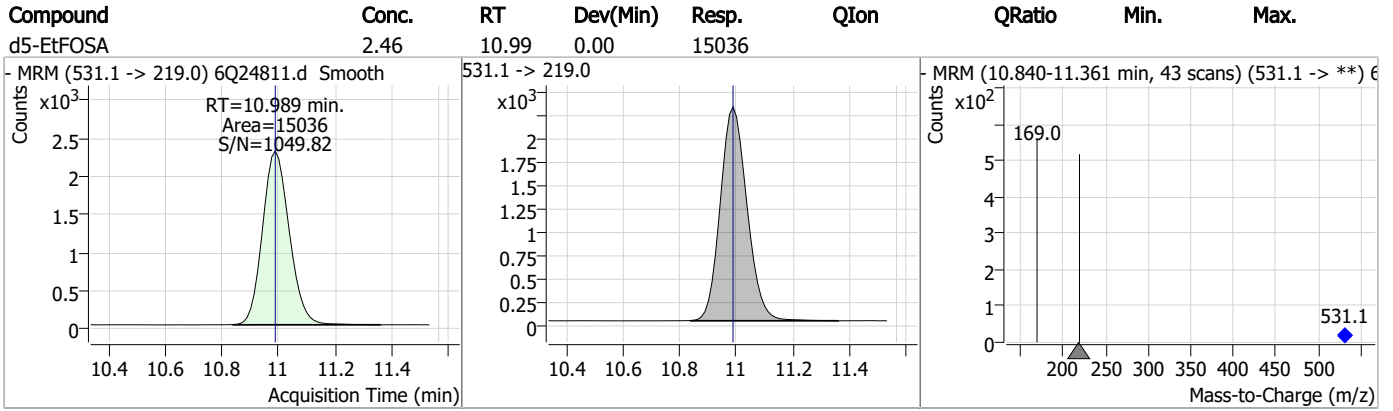


Perfluorinated Compounds by LC/MS/MS



7.7.2
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Perfluorinated Compounds by LC/MS/MS



7.7.2

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Manual Integration Approval Summary

Sample Number: S6Q355-IC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24811.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 20:35 Supervisor approved: 09/22/23 13:16 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.31	Split peak

7.7.2.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24812.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 8:50:13 PM
 Sample Name : ic355-2
 Vial : P1-A3
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	332247	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	54322	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	125823	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	101513	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	129615	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	52885	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	53989	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	61600	1.25 µg/L	0.000
M2-PFDoDA	9.080	615.1 -> 570.0	59201	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	23067	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	45312	2.50 µg/L	-0.012
M3-PFBS	5.559	302.1 -> 79.9	40080	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	21356	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	20452	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	4785	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6602	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	6623	5.00 µg/L	0.000
M3-MeFOSAA	8.244	573.2 -> 419.0	38755	5.00 µg/L	-0.012
M3-HFPO-DA	6.007	286.9 -> 168.9	69038	10.00 µg/L	-0.012
M5-EtFOSAA	8.452	589.2 -> 419.0	32213	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	145716	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	197890	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	15164	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	15715	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	26282	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	136927	5.00 µg/L	-0.012
18O2-PFHxS	7.300	403.0 -> 83.9	16037	2.50 µg/L	0.000
13C4-PFOA	7.199	417.1 -> 372.0	144424	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	46080	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	61953	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	94393	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4785	5.72 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 114.4%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6602	5.60 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 111.9%		
13C2-8:2FTS	7.986	529.1 -> 80.9	6623	5.50 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 110.0%		
13C2-PFDoDA	9.080	615.1 -> 570.0	59201	1.27 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C2-PFTeDA	9.784	715.2 -> 670.0	23067	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C3-PFBS	5.559	302.1 -> 79.9	40080	2.58 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 103.2%		
13C3-PFHxS	7.301	402.1 -> 79.9	21356	2.46 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 = 98.4%		
13C4-PFBA	2.985	216.8 -> 171.9	332247	9.95 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 99.5%		
13C4-PFHpA	6.569	367.1 -> 322.0	101513	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C5-PFHxA	5.641	318.0 -> 273.0	125823	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.2%		
13C5-PFPeA	4.422	268.3 -> 223.0	54322	5.06 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.3%		
13C6-PFDA	8.198	519.1 -> 474.1	53989	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C7-PFUnDA	8.651	570.0 -> 525.1	61600	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C8-FOSA	9.670	506.1 -> 77.8	45312	2.63 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.0%		
13C8-PFOA	7.198	421.1 -> 376.0	129615	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
13C8-PFOS	8.348	507.1 -> 79.9	20452	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 105.7%		
13C9-PFNA	7.717	472.1 -> 427.0	52885	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.2%		
d3-MeFOSAA	8.244	573.2 -> 419.0	38755	5.40 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C3-HFPO-DA	6.007	286.9 -> 168.9	69038	9.86 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 98.6%		
d3-MeFOSA	10.757	515.0 -> 219.0	15715	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.6%		
d5-EtFOSAA	8.452	589.2 -> 419.0	32213	5.25 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.1%		
d7-MeFOSE	10.678	623.2 -> 58.9	145716	25.98 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 103.9%		
d9-EtFOSE	10.923	639.2 -> 58.9	197890	26.88 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 107.5%		
d5-EtFOSA	10.989	531.1 -> 219.0	15164	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.2%		
Target Compounds					QValue
4:2FTS	5.305	327.1 -> 307.0	10856	1.40 µg/L	97
		327.1 -> 80.9	4367		
6:2FTS	6.974	427.1 -> 407.0	9399	1.54 µg/L	96
		427.1 -> 80.9	3773		
8:2FTS	7.987	527.1 -> 507.0	6469	1.54 µg/L	88
		527.1 -> 80.8	2509		
EtFOSAA	8.465	584.2 -> 419.1	1724	0.35 µg/L	91
		584.2 -> 526.0	1242		
FOSA	9.672	498.1 -> 77.9	6218	0.40 µg/L	100
		498.1 -> 478.0	174		
MeFOSAA	8.245	570.1 -> 419.0	3387	0.39 µg/L	98
		570.1 -> 483.0	850		
PFBA	2.981	212.8 -> 168.9	16174	1.58 µg/L	100
PFBS	5.560	298.7 -> 79.9	6654	0.35 µg/L	99
		298.7 -> 98.8	2469		
PFDA	8.198	512.9 -> 469.0	17258	0.36 µg/L	94
		512.9 -> 219.0	3316		
PFDODA	9.080	613.1 -> 569.0	16113	0.37 µg/L	98
		613.1 -> 319.0	2054		
PFDS	9.233	599.0 -> 79.9	2339	0.39 µg/L	99

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	1134			
PFHpA	6.569	363.1 -> 319.0	20738	0.40	µg/L	97
		363.1 -> 169.0	3041			
PFHpS	7.856	449.0 -> 79.9	3614	0.36	µg/L	90
		449.0 -> 98.9	1946			
PFHxA	5.644	313.0 -> 269.0	17030	0.39	µg/L	100
		313.0 -> 118.9	825			
PFHxS	7.302	398.7 -> 79.9	5395	0.39	µg/L	m 99
		398.7 -> 98.9	2518			
PFNA	7.717	463.0 -> 419.0	13780	0.41	µg/L	97
		463.0 -> 219.0	3545			
PFNS	8.814	548.8 -> 79.9	3704	0.37	µg/L	95
		548.8 -> 98.9	1965			
PFOA	7.200	413.0 -> 369.0	25633	0.43	µg/L	99
		413.0 -> 169.0	4578			
PFOS	8.350	498.9 -> 79.9	4435	0.38	µg/L	m 98
		498.9 -> 98.8	2255			
PFPeA	4.424	263.0 -> 219.0	21342	0.80	µg/L	100
PFPeS	6.620	349.1 -> 79.9	4308	0.38	µg/L	94
		349.1 -> 98.9	2285			
PFTeDA	9.785	713.1 -> 669.0	12354	0.40	µg/L	98
		713.1 -> 168.9	892			
PFTrDA	9.452	663.0 -> 619.0	18086	0.39	µg/L	96
		663.0 -> 168.9	1672			
PFUnDA	8.652	563.1 -> 519.0	14405	0.40	µg/L	96
		563.1 -> 269.1	2337			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	17222	0.77	µg/L	98
		632.9 -> 452.9	5146			
9Cl-PF3ONS	8.678	530.8 -> 351.0	29526	0.75	µg/L	89
		532.8 -> 353.0	11071			
ADONA	6.804	376.9 -> 250.9	78544	0.77	µg/L	94
		376.9 -> 84.8	18411			
HFPO-DA	6.007	284.9 -> 168.9	5461	0.83	µg/L	95
		284.9 -> 184.9	667			
3:3FTCA	3.858	241.0 -> 177.0	3418	1.91	µg/L	100
		241.0 -> 117.0	326			
5:3FTCA	6.271	341.0 -> 237.1	72598	9.46	µg/L	96
		341.0 -> 217.0	54497			
7:3FTCA	7.669	441.0 -> 316.9	41344	9.23	µg/L	100
		441.0 -> 336.9	93948			
EtFOSA	10.978	526.0 -> 219.0	6075	0.76	µg/L	95
		526.0 -> 169.0	8146			
EtFOSE	10.937	630.0 -> 58.9	17339	1.87	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	5967	0.84	µg/L	88
		511.9 -> 169.0	7652			
MeFOSE	10.691	616.1 -> 58.9	12251	1.96	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	1196	0.41	µg/L	89
		699.1 -> 98.8	630			
NFDHA	5.524	295.0 -> 201.0	4315	0.83	µg/L	95
		295.0 -> 84.9	992			
PFMBA	4.850	279.0 -> 85.1	14710	0.78	µg/L	100
PFMPA	3.551	229.0 -> 84.9	11005	0.78	µg/L	100
PFEESA	6.100	314.8 -> 134.9	39571	0.69	µg/L	99
		314.8 -> 82.9	1429			

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

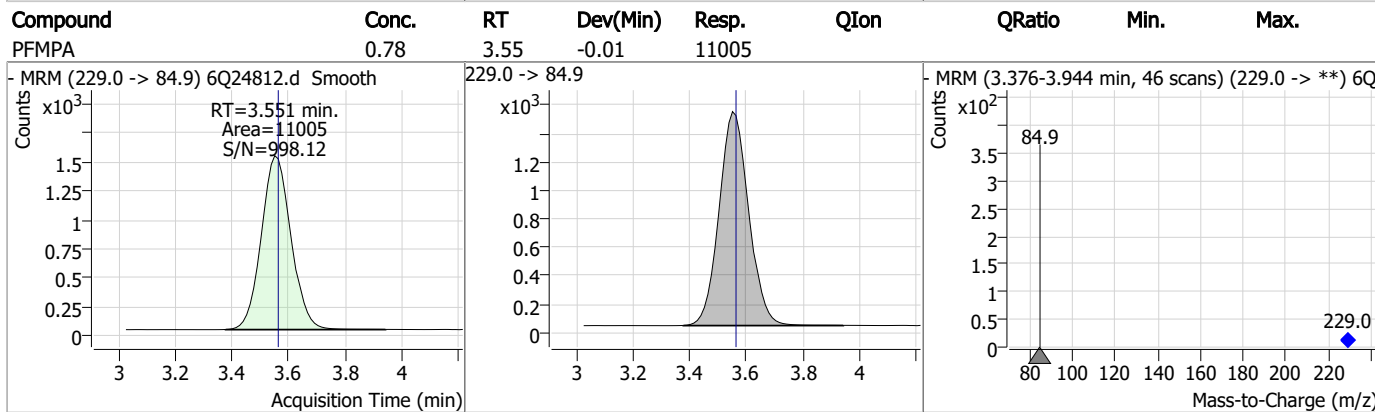
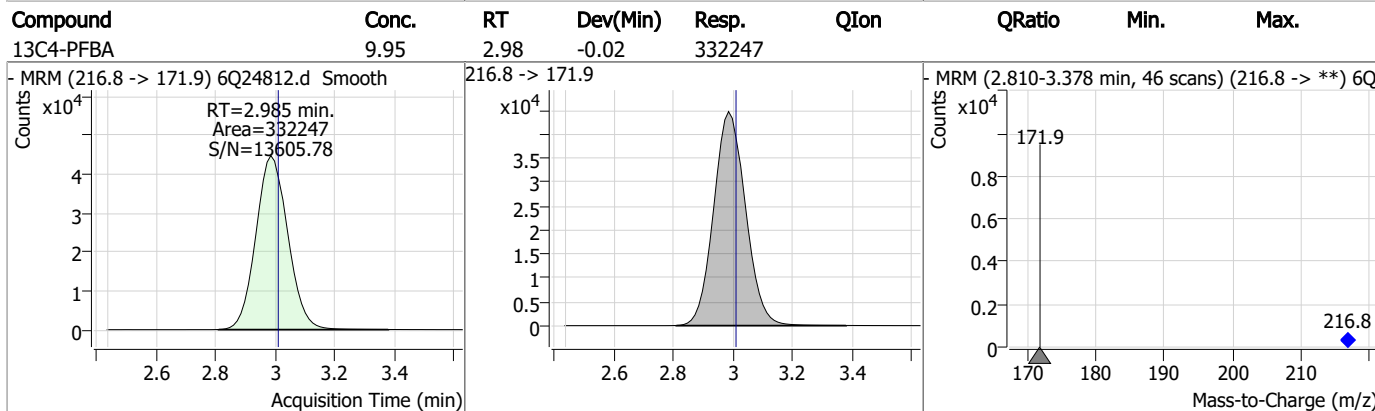
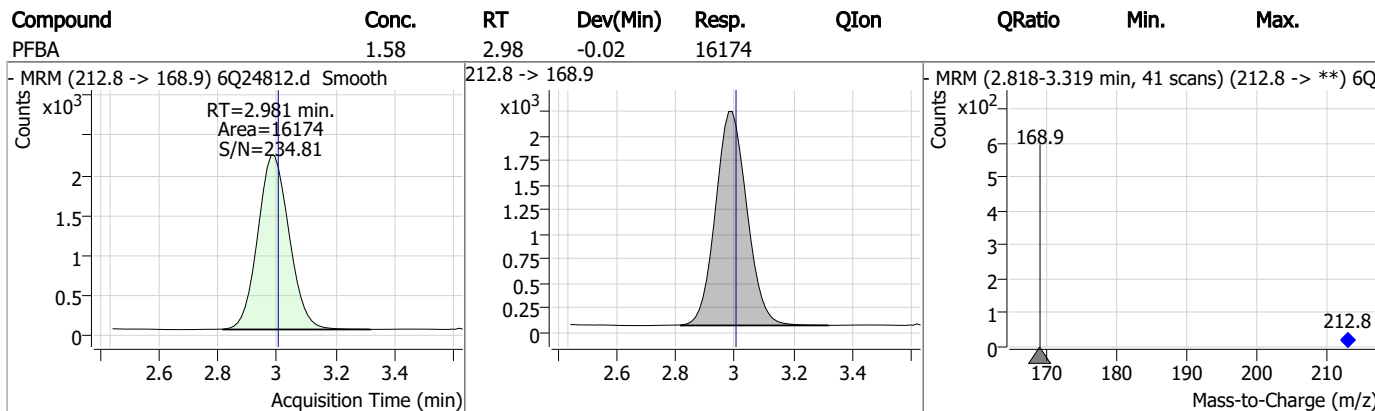
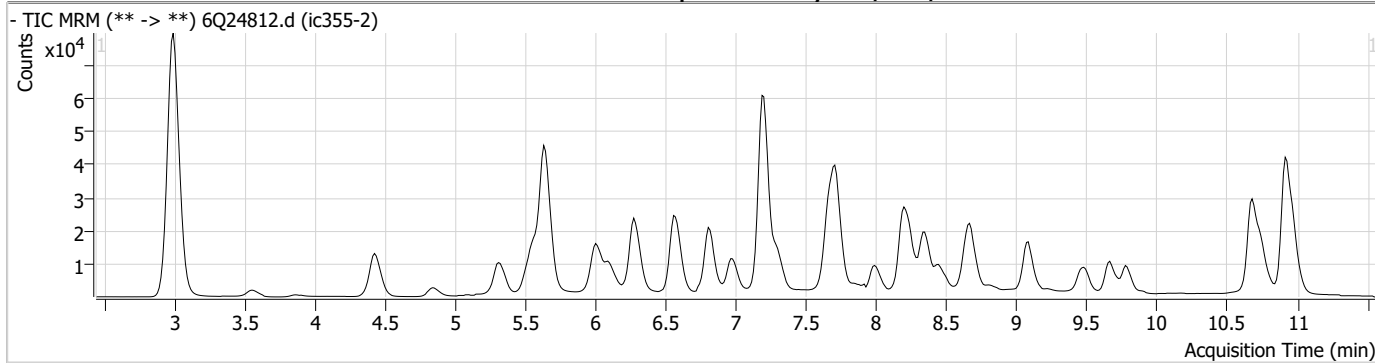
Perfluorinated Compounds by LC/MS/MS

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

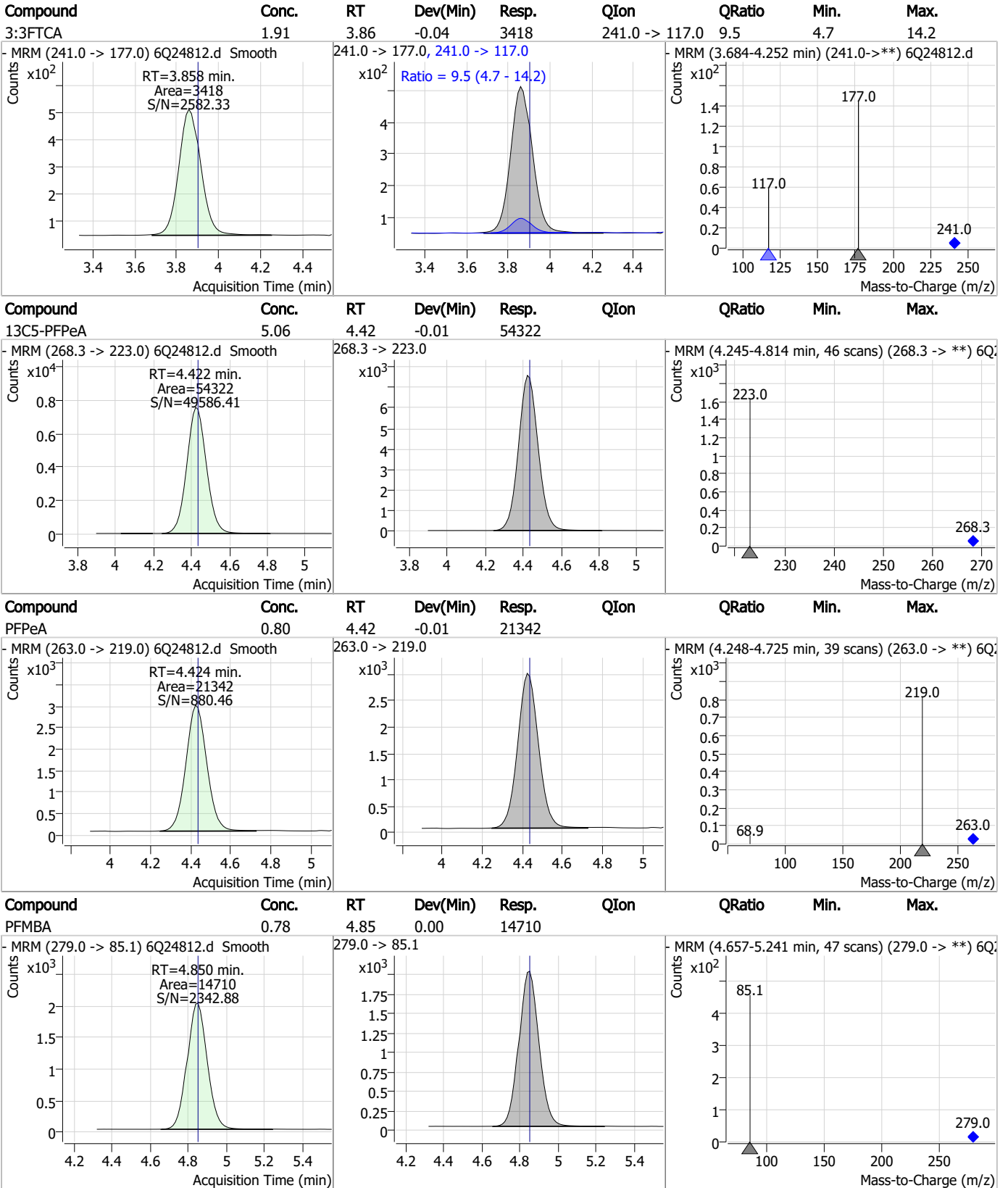
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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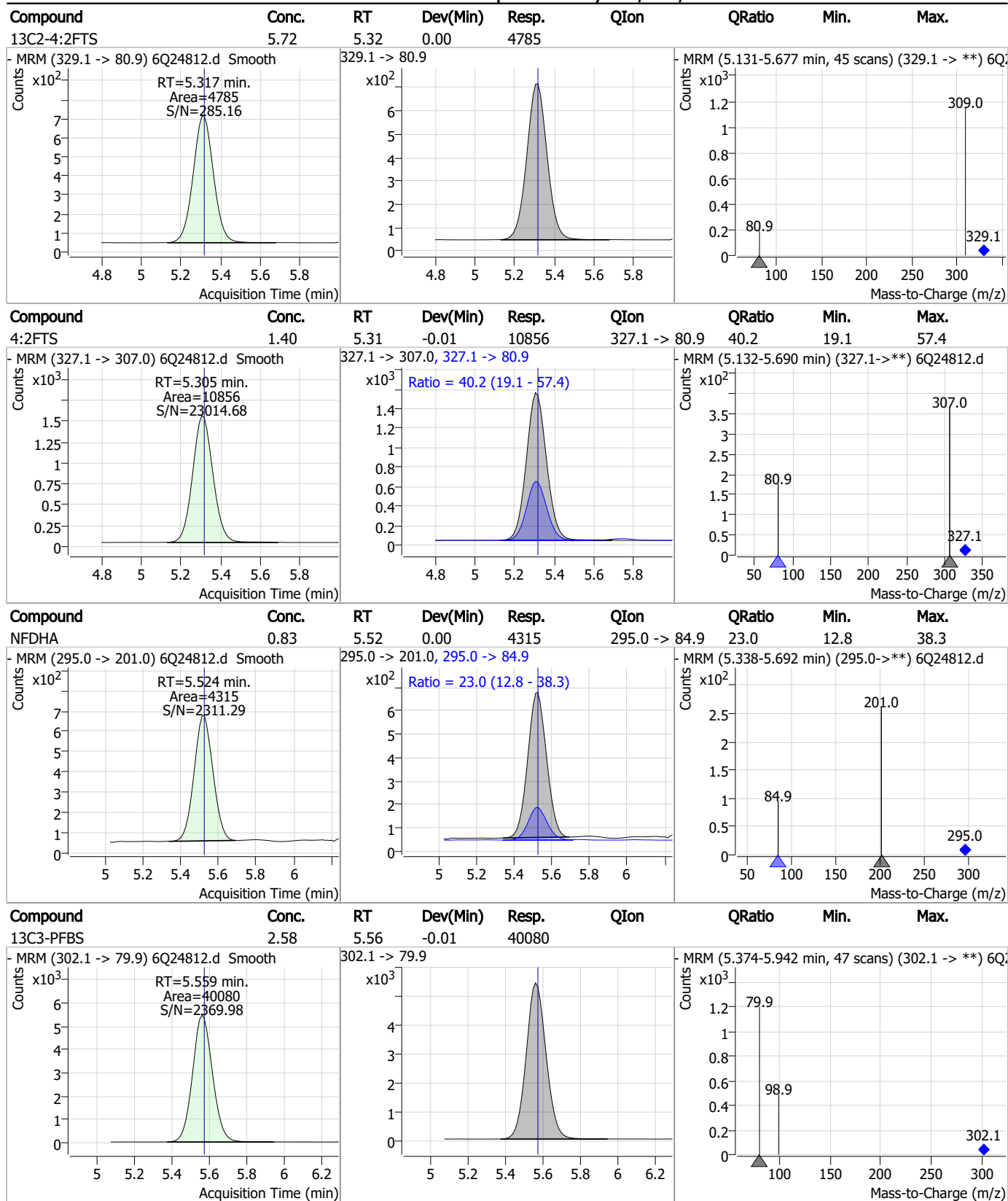
Perfluorinated Compounds by LC/MS/MS



7.7.3

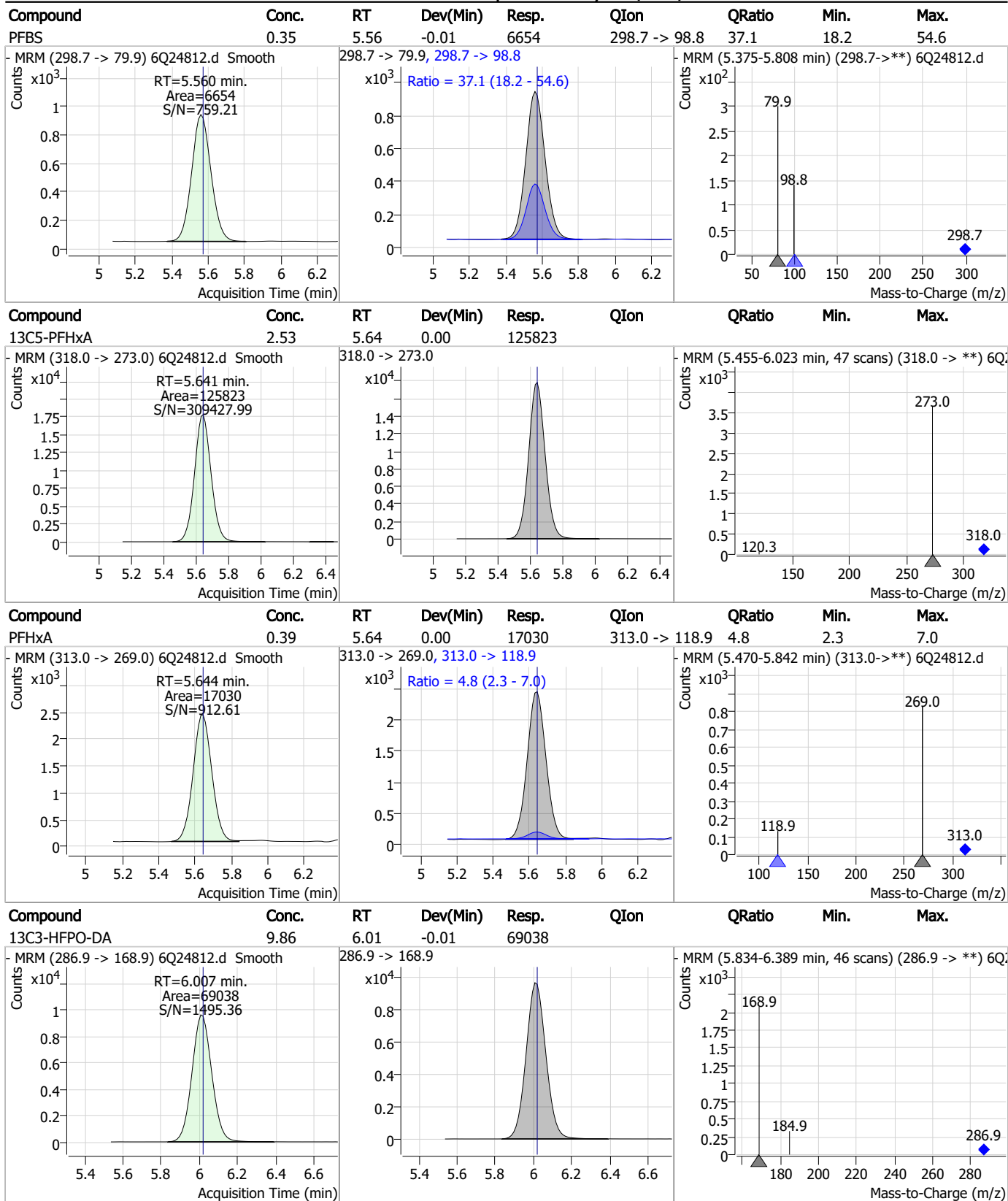
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Perfluorinated Compounds by LC/MS/MS



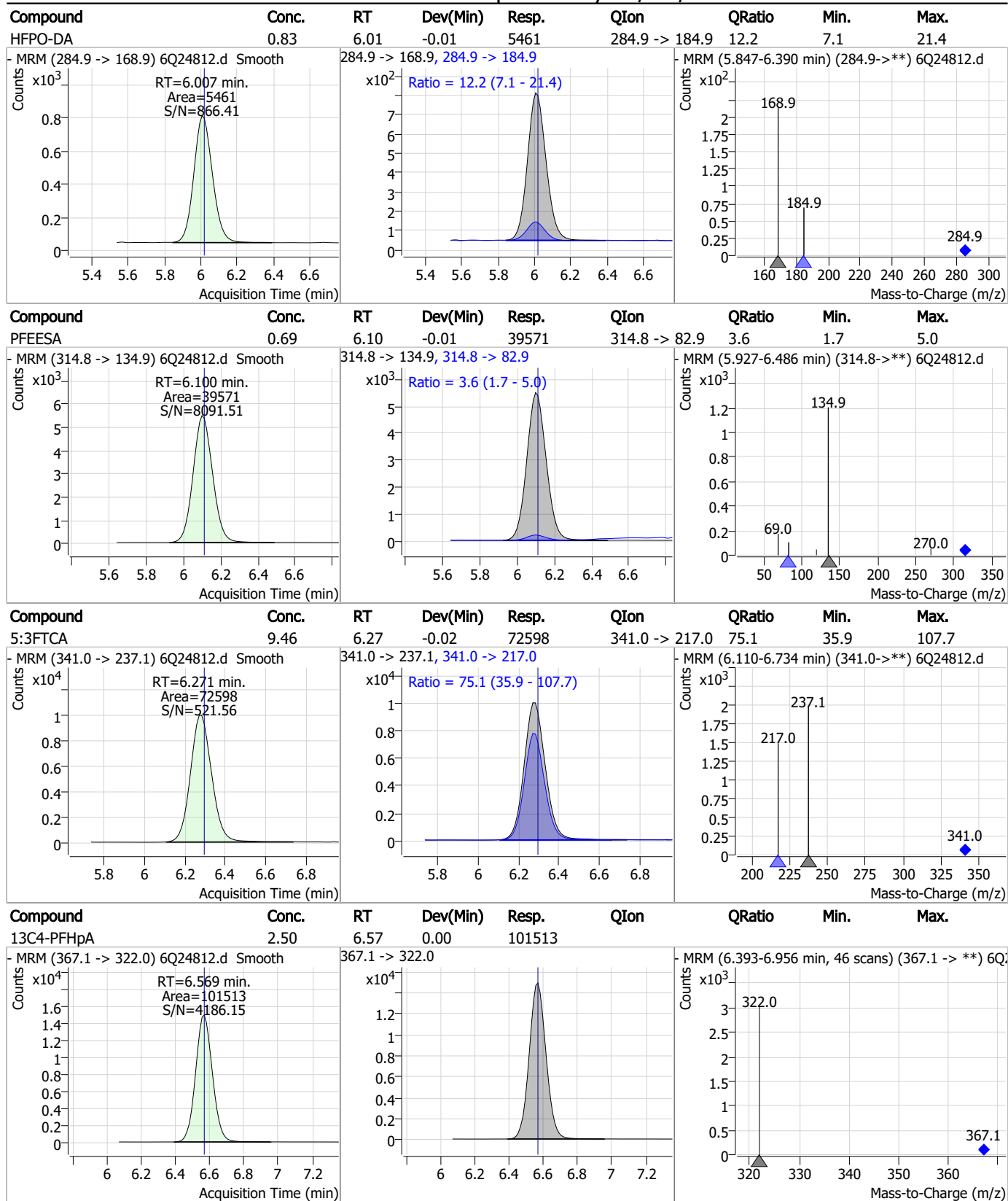
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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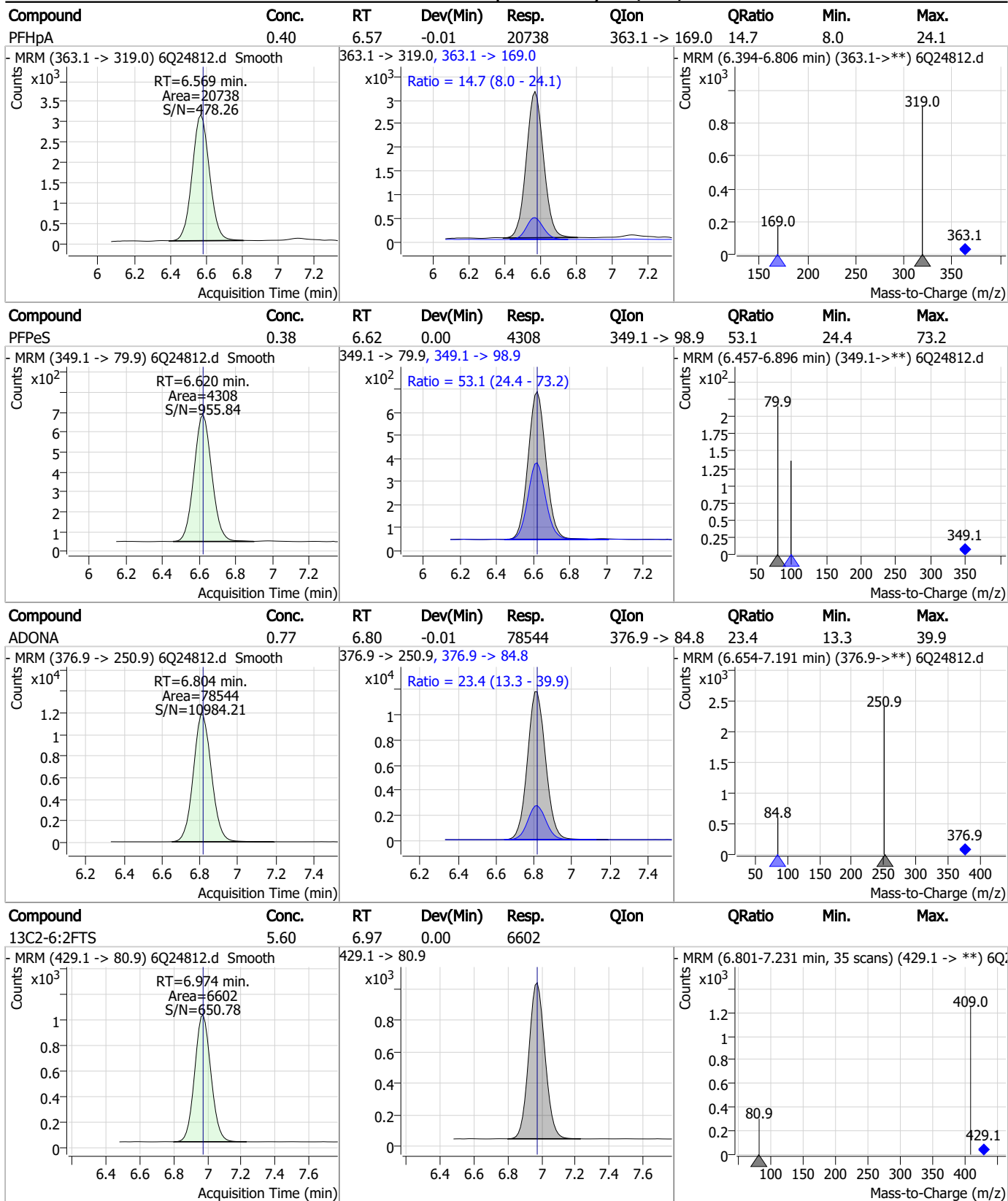
Perfluorinated Compounds by LC/MS/MS



7.7.3

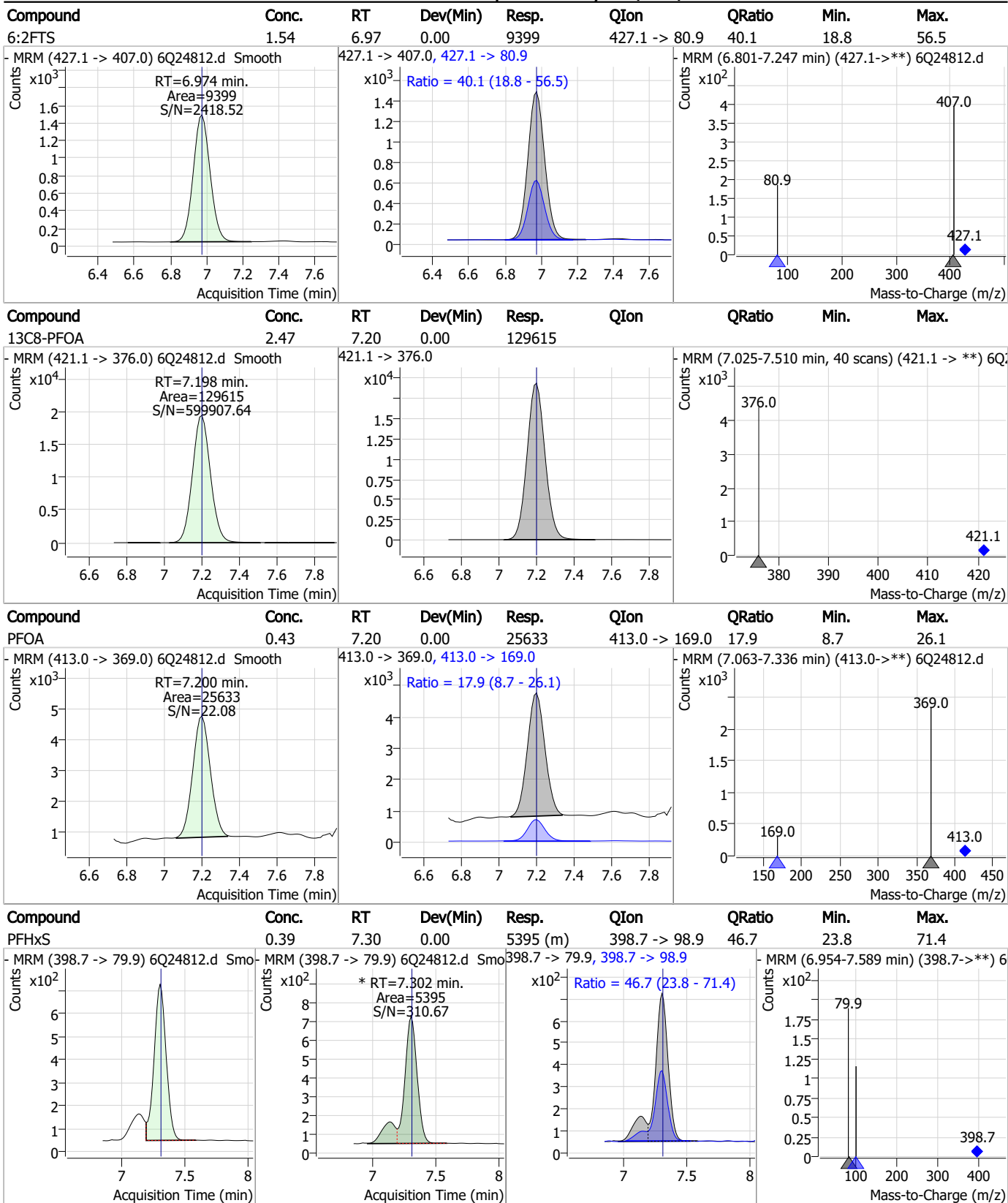
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Perfluorinated Compounds by LC/MS/MS



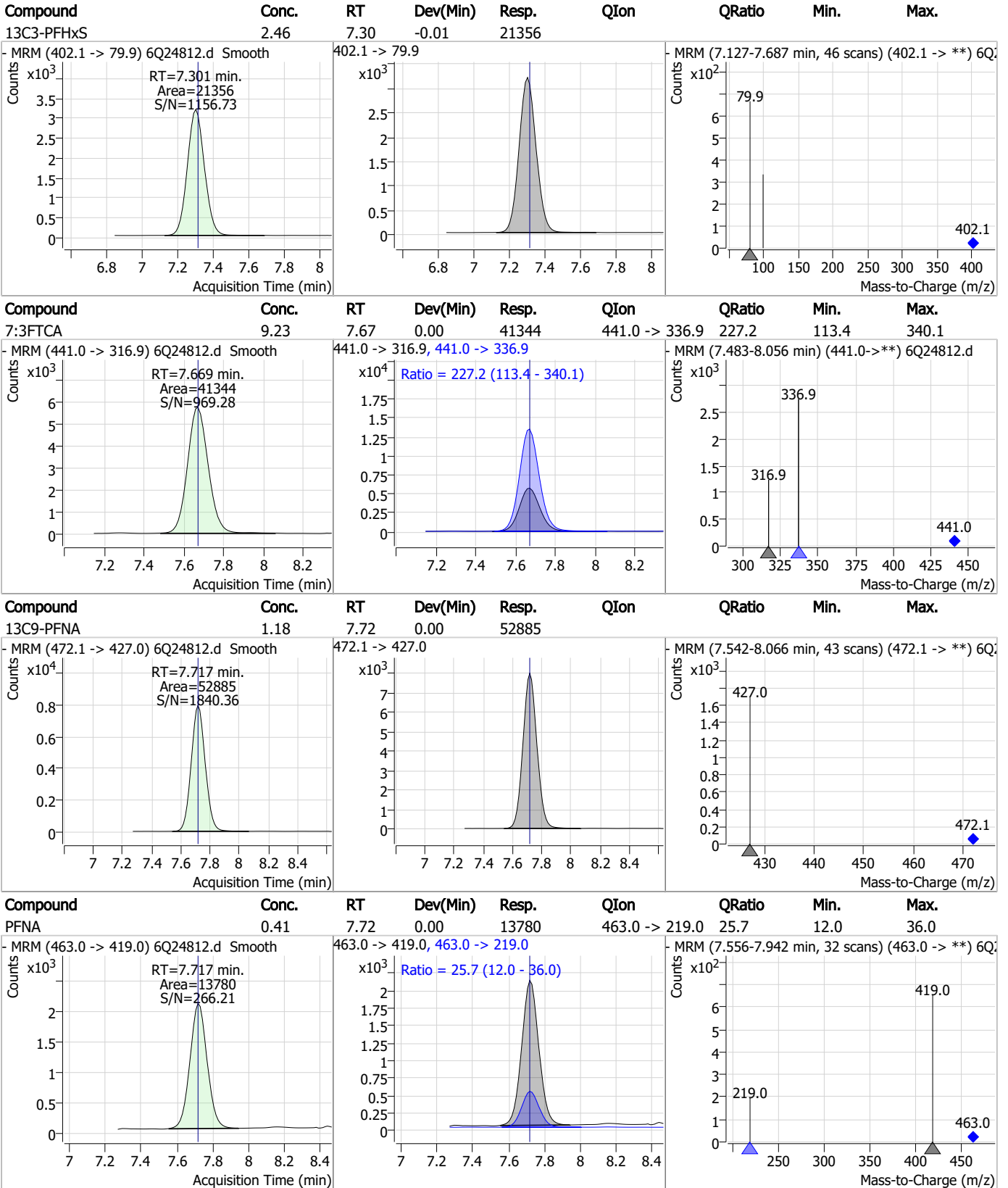
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Perfluorinated Compounds by LC/MS/MS



7.7.3
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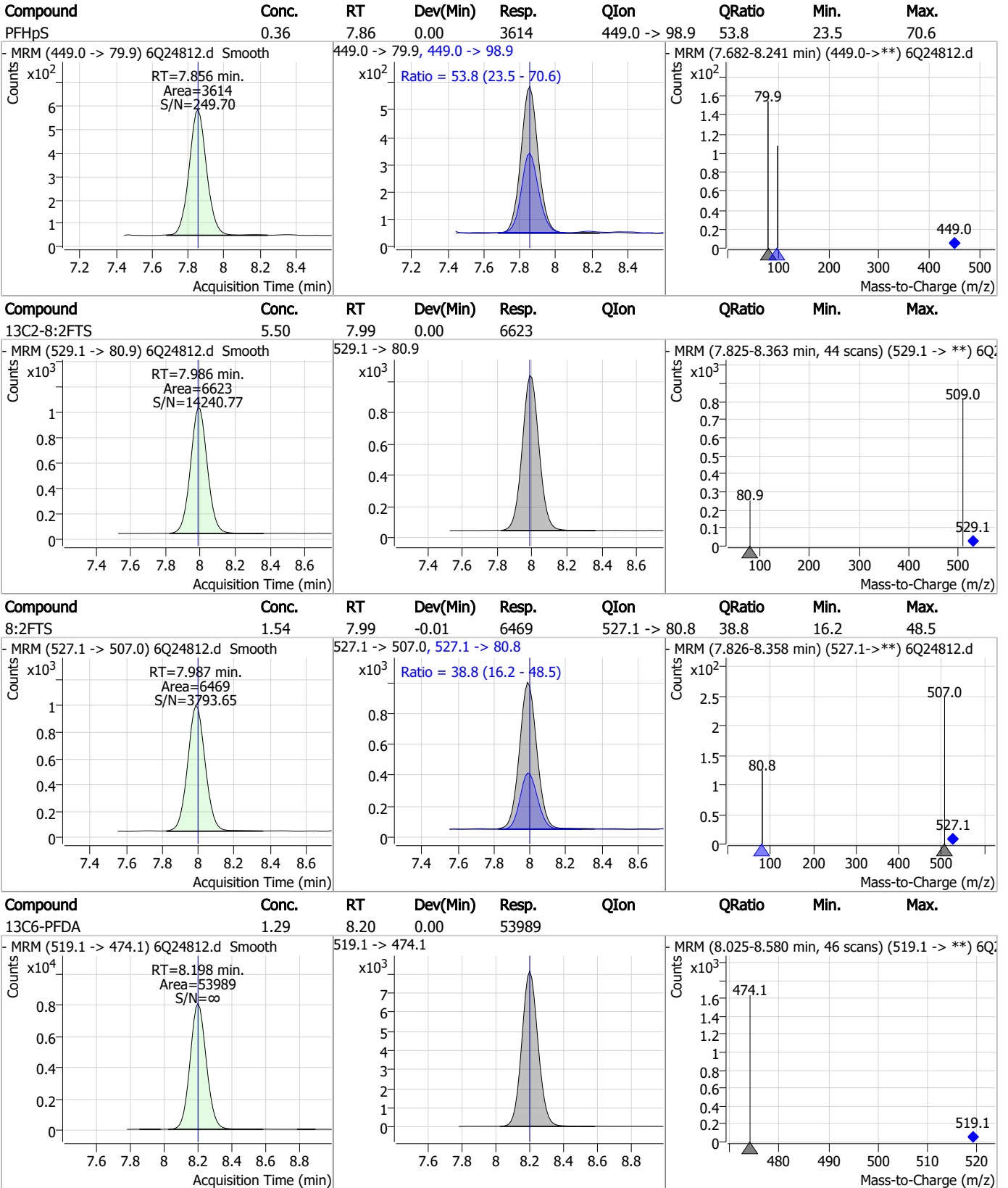
Perfluorinated Compounds by LC/MS/MS



7.7.3

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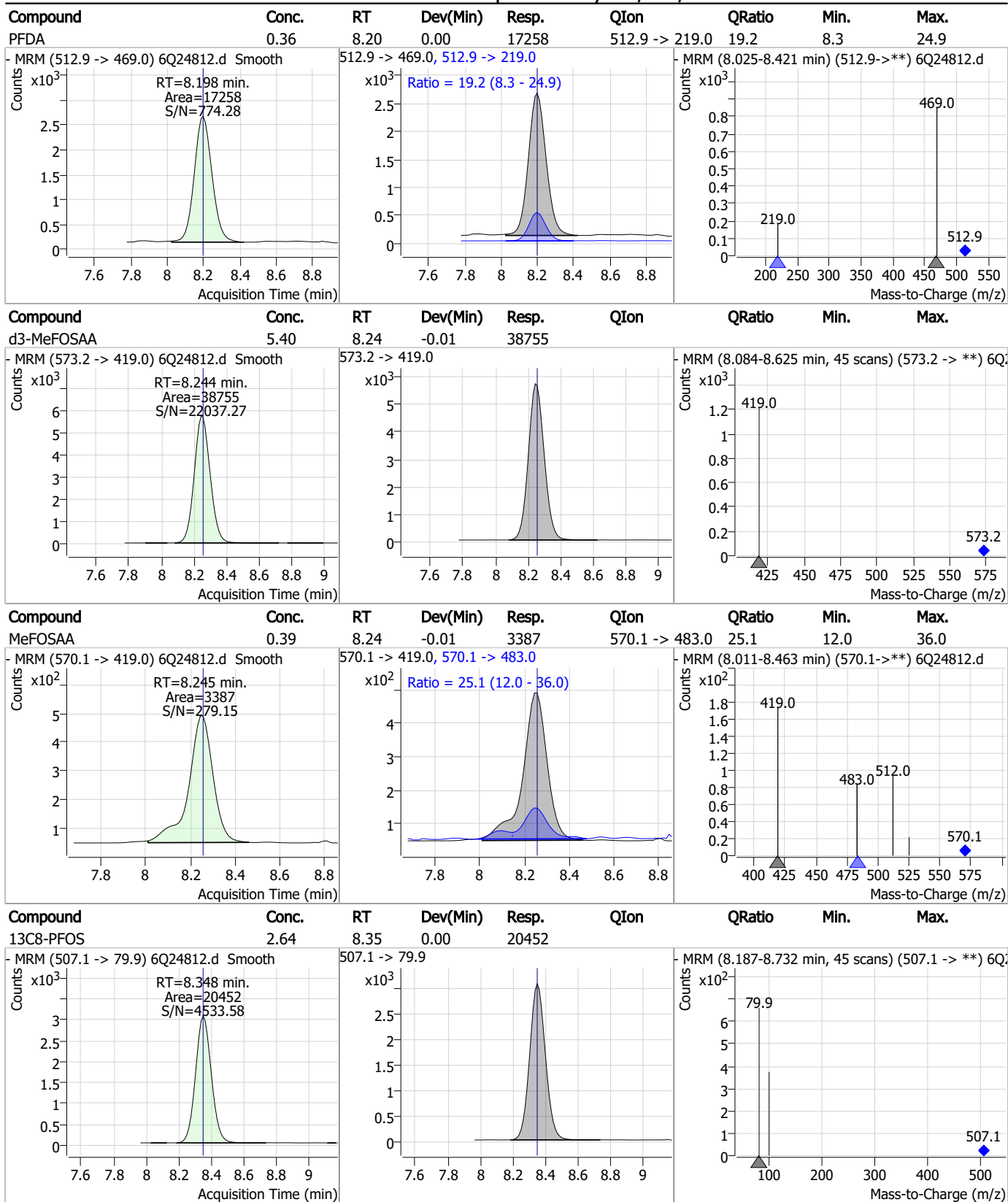
Perfluorinated Compounds by LC/MS/MS



7.7.3

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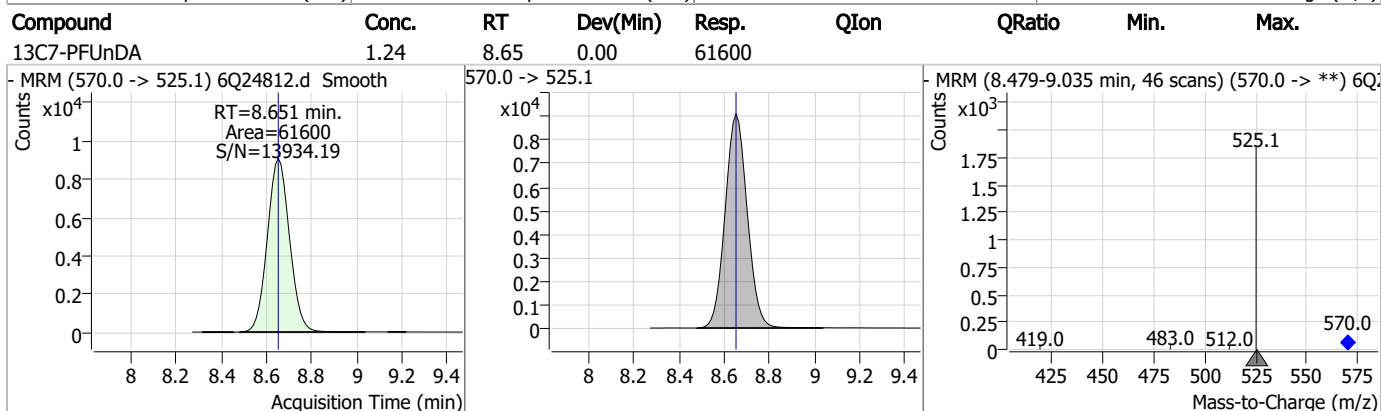
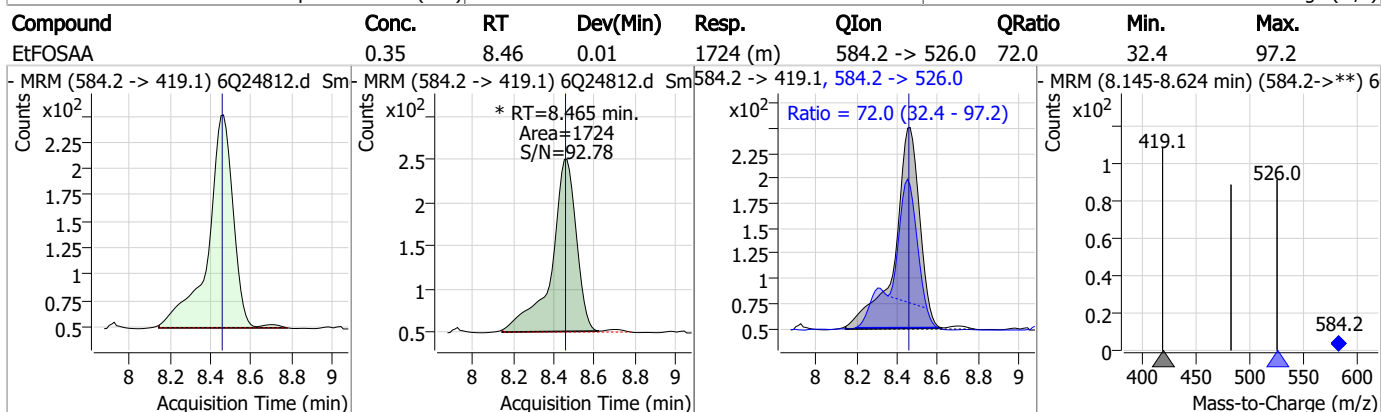
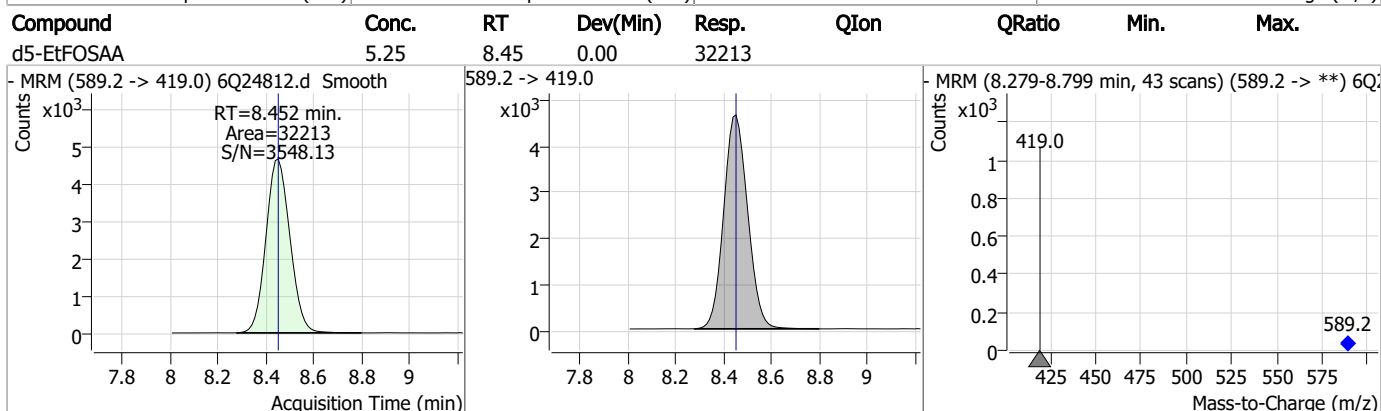
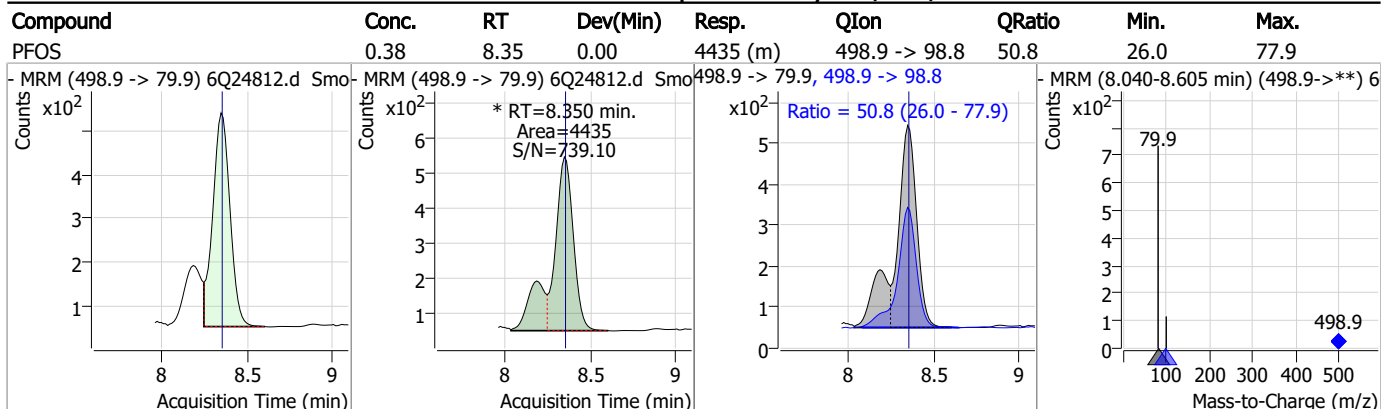
Perfluorinated Compounds by LC/MS/MS



7.7.3

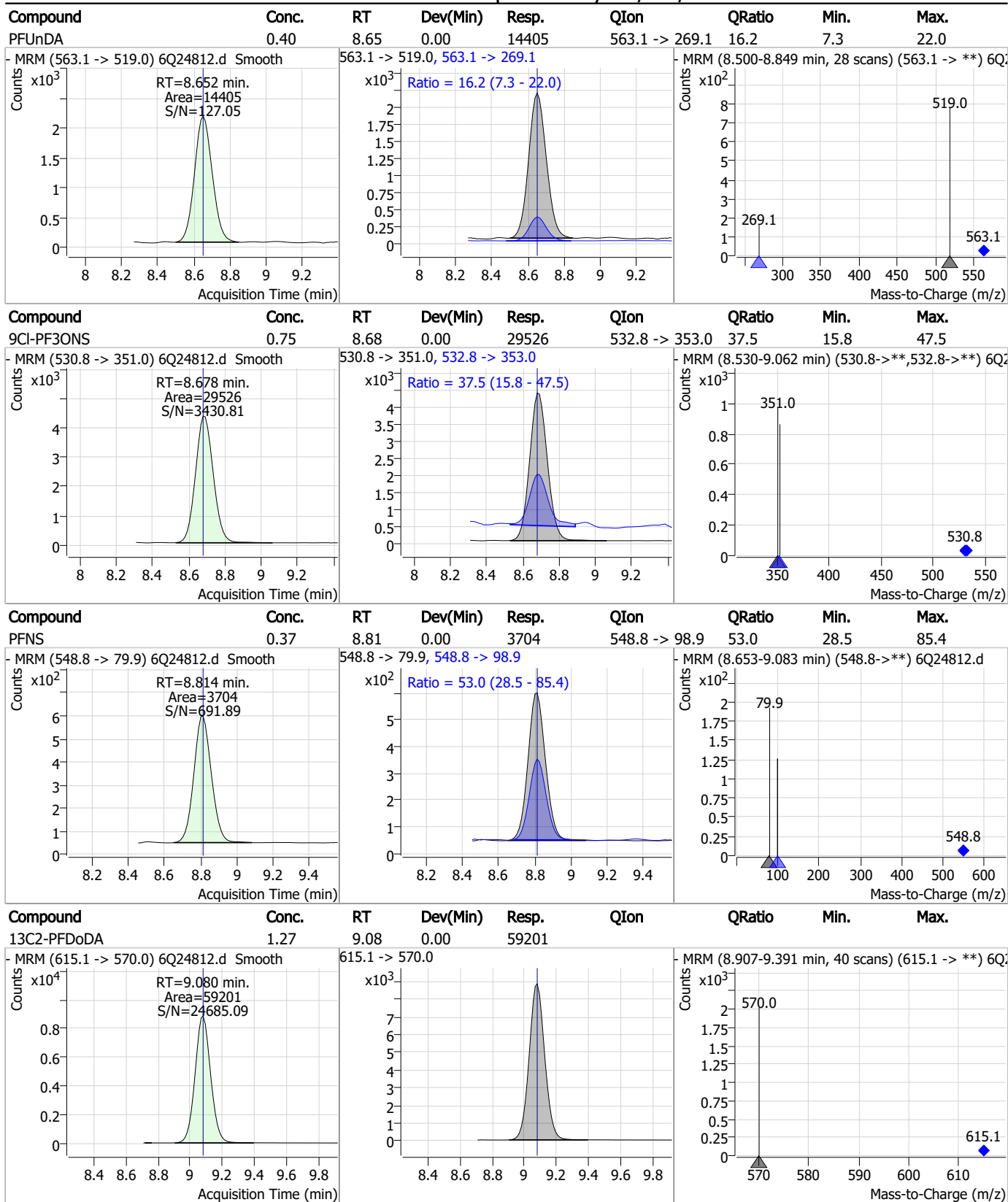
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Perfluorinated Compounds by LC/MS/MS



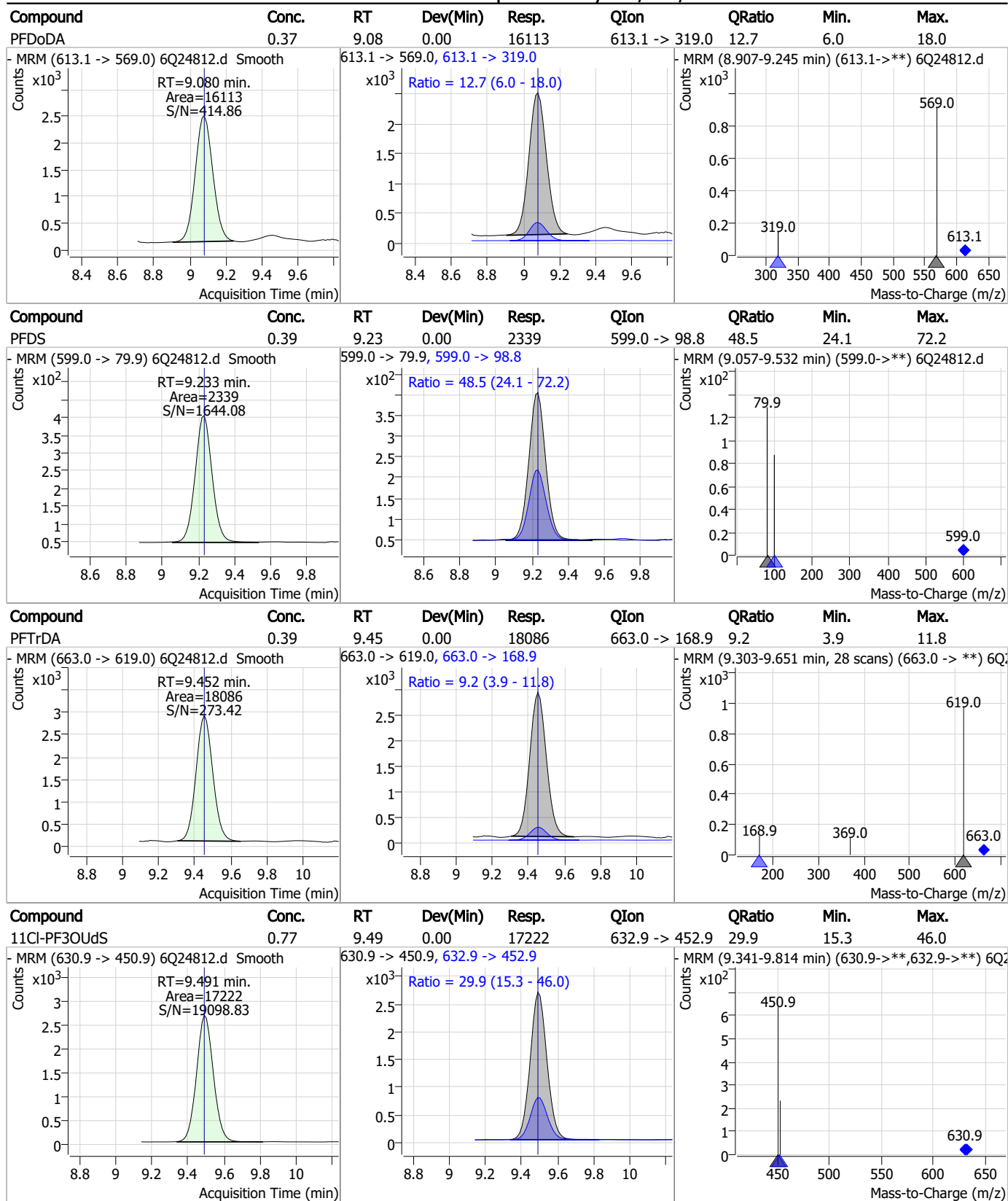
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

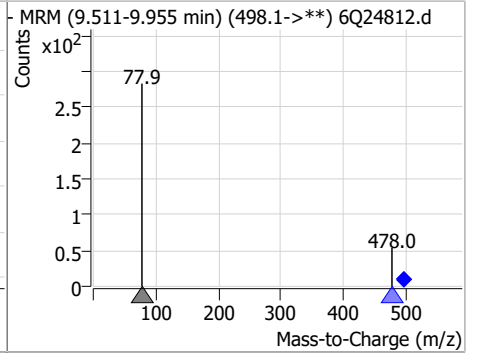
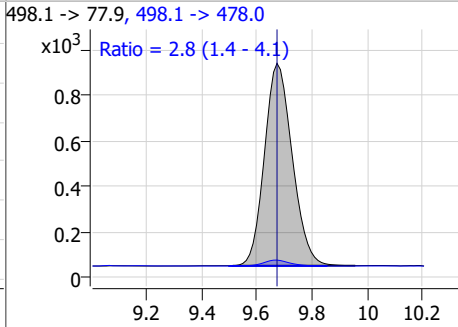
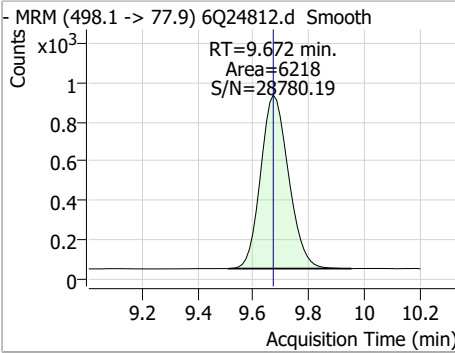


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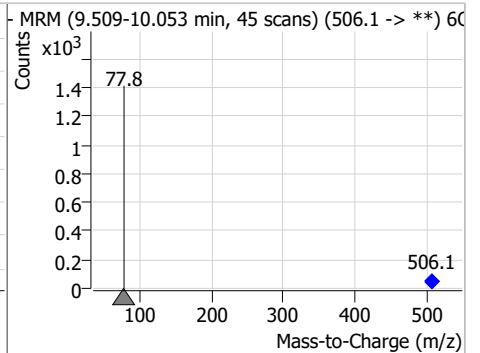
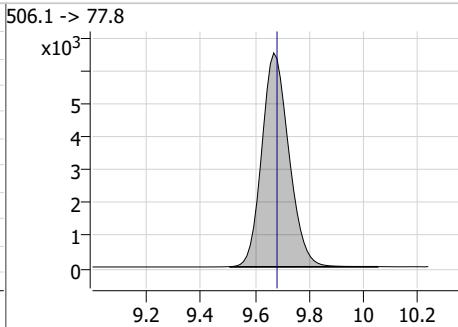
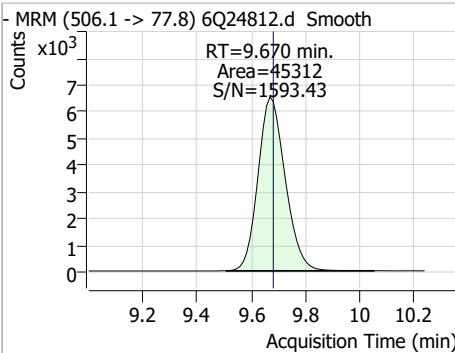
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Perfluorinated Compounds by LC/MS/MS

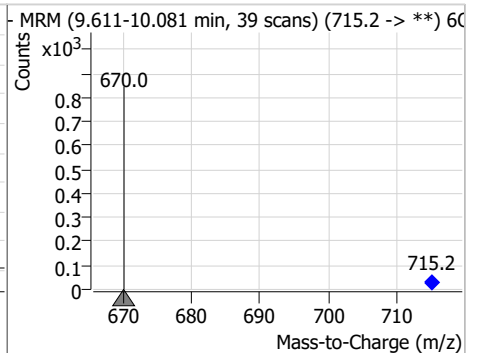
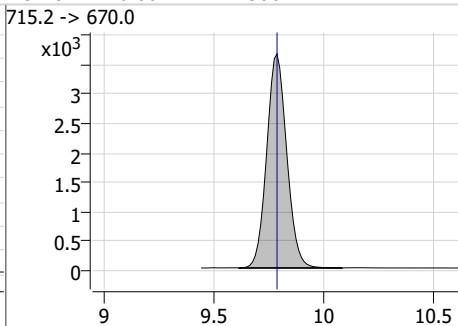
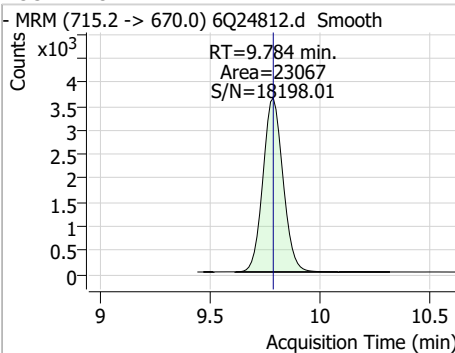
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	0.40	9.67	0.00	6218	498.1 -> 478.0	2.8	1.4	4.1



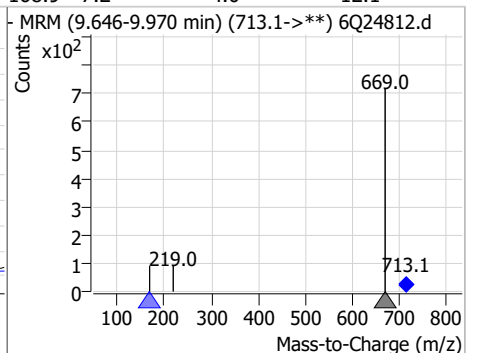
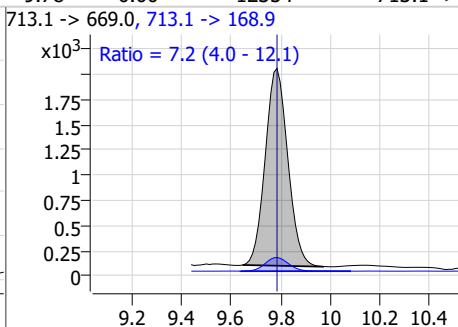
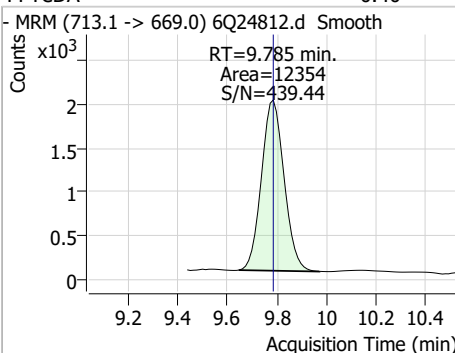
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.63	9.67	-0.01	45312				



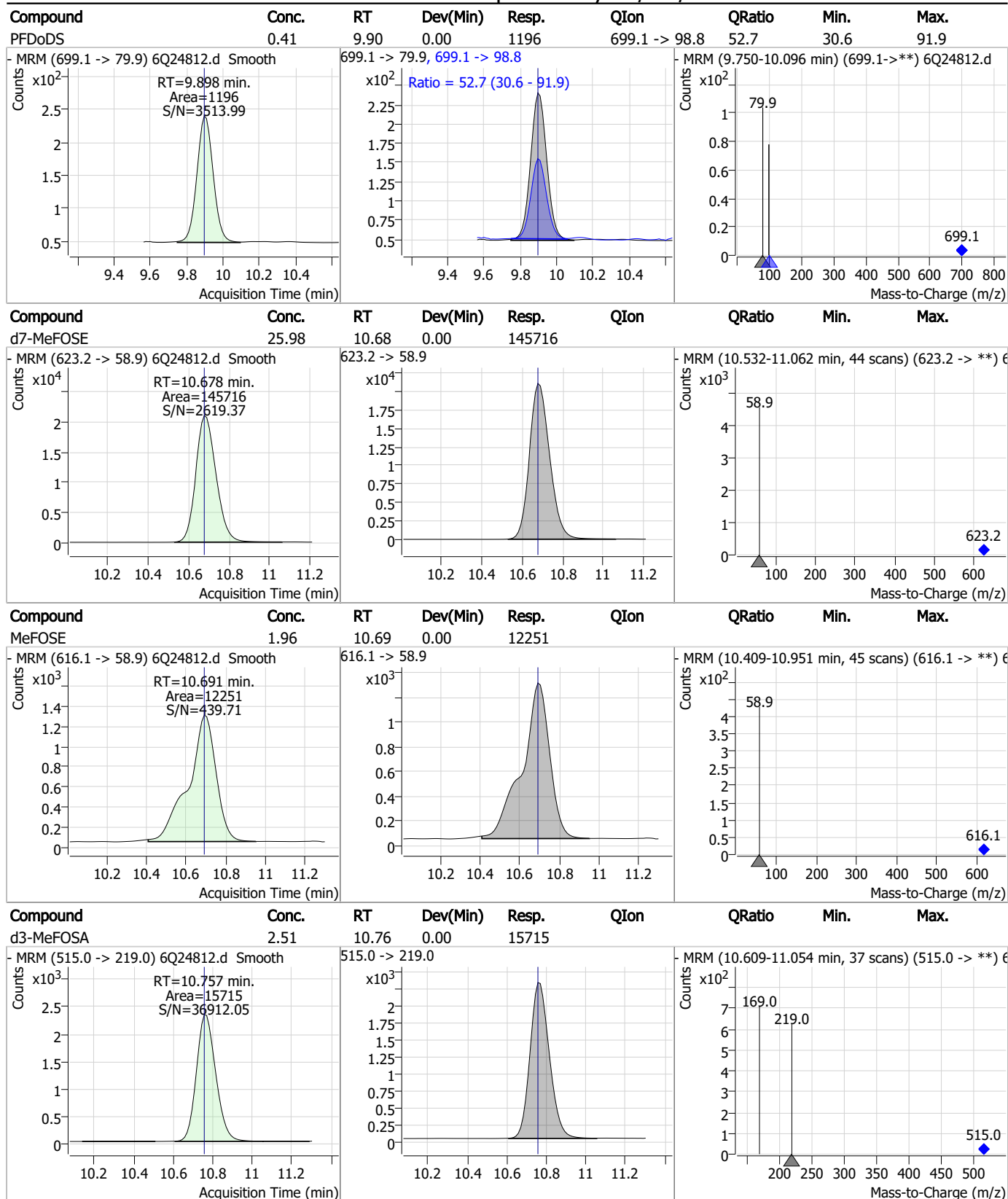
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.24	9.78	0.00	23067				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	0.40	9.78	0.00	12354	713.1 -> 168.9	7.2	4.0	12.1



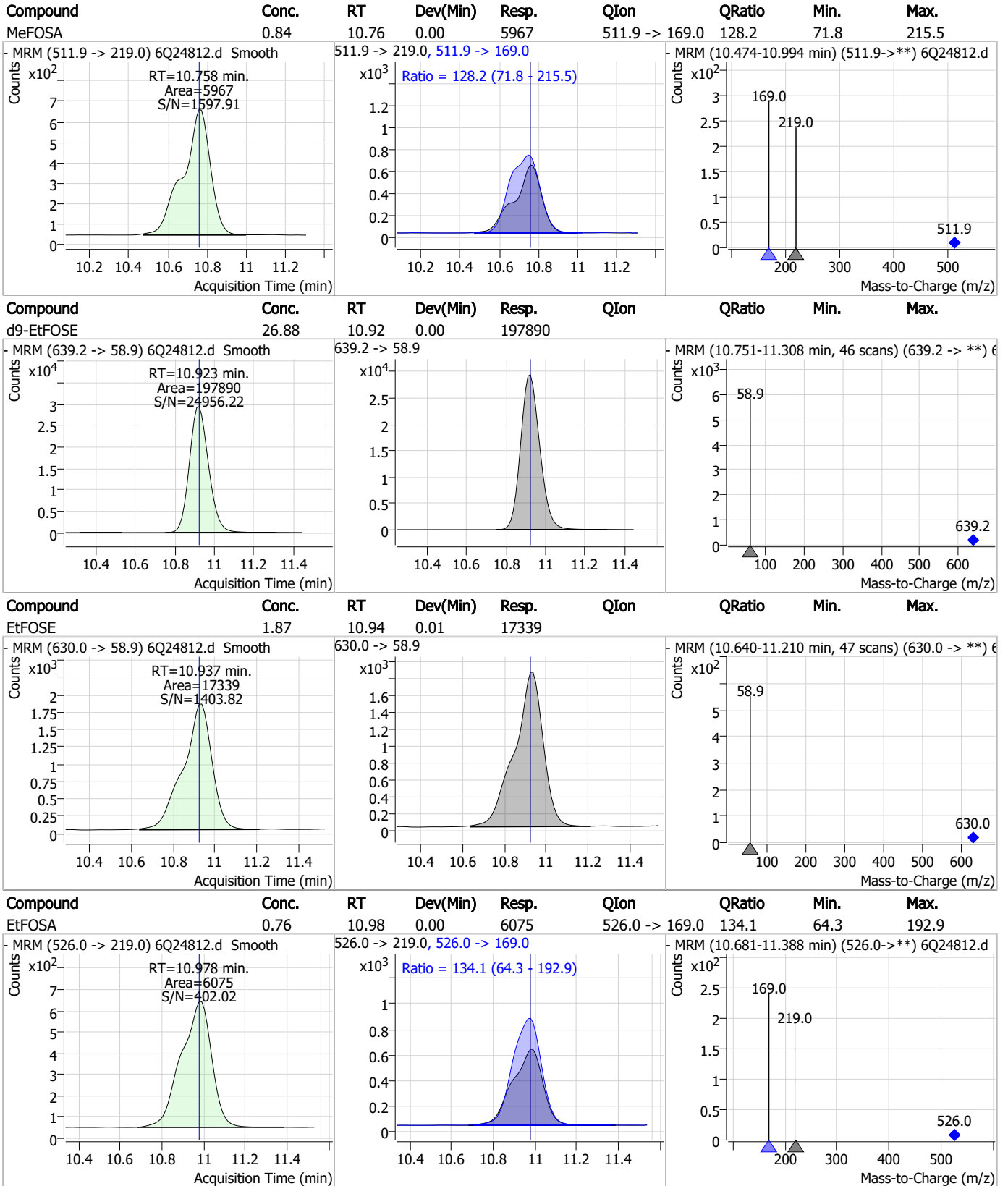
Perfluorinated Compounds by LC/MS/MS



7.7.3

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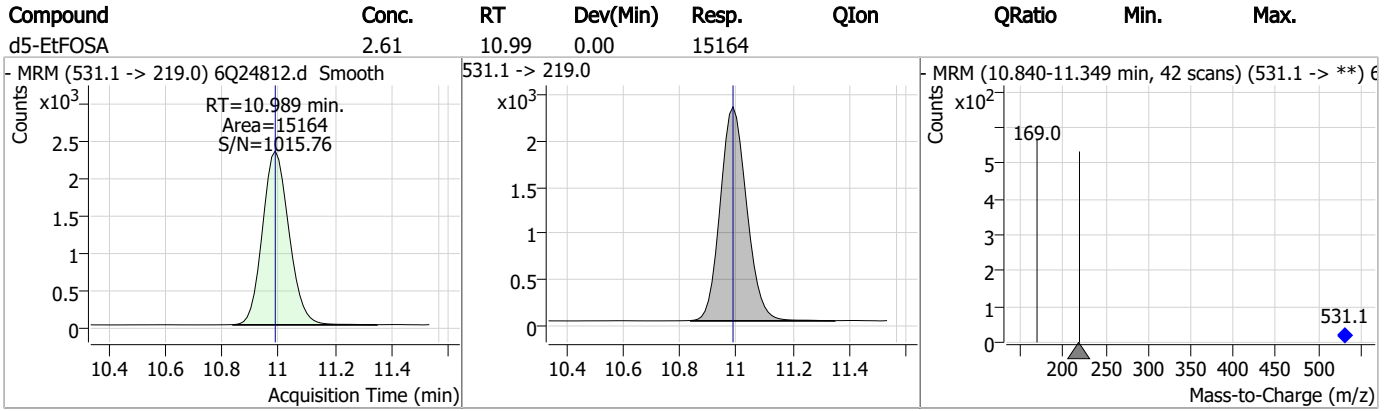
Perfluorinated Compounds by LC/MS/MS



7.7.3

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Perfluorinated Compounds by LC/MS/MS



7.7.3

7

Manual Integration Approval Summary

Sample Number: S6Q355-IC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24812.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 20:50 Supervisor approved: 09/22/23 13:16 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak
EtFOSAA	2991-50-6		8.46	Split peak

7.7.3.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24813.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 9:04:32 PM
 Sample Name : ic355-3
 Vial : P1-A4
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	352404	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	56926	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	129214	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	110914	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	144061	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	55435	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	54618	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	68453	1.25 µg/L	0.000
M2-PFDoDA	9.067	615.1 -> 570.0	60354	1.25 µg/L	-0.012
M2-PFTeDA	9.784	715.2 -> 670.0	23077	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	47129	2.50 µg/L	-0.012
M3-PFBS	5.559	302.1 -> 79.9	42293	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	23535	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	21248	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	4505	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6436	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	6748	5.00 µg/L	0.000
M3-MeFOSAA	8.256	573.2 -> 419.0	38577	5.00 µg/L	0.000
M3-HFPO-DA	6.007	286.9 -> 168.9	73114	10.00 µg/L	-0.012
M5-EtFOSAA	8.452	589.2 -> 419.0	33485	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	149482	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	197495	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	15392	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	15739	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	29438	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	144142	5.00 µg/L	-0.012
18O2-PFHxS	7.300	403.0 -> 83.9	17395	2.50 µg/L	0.000
13C4-PFOA	7.199	417.1 -> 372.0	148749	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	48403	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	61793	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	98887	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4505	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.3%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6436	5.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.6%		
13C2-8:2FTS	7.986	529.1 -> 80.9	6748	5.17 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C2-PFDoDA	9.067	615.1 -> 570.0	60354	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C2-PFTeDA	9.784	715.2 -> 670.0	23077	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 94.2%		
13C3-PFBS	5.559	302.1 -> 79.9	42293	2.51 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.4%		
13C3-PFHxS	7.301	402.1 -> 79.9	23535	2.50 µg/L	-0.012

7.7.4
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFBA	2.985	216.8 -> 171.9	352404	10.02 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.2%	
13C4-PFHpA	6.569	367.1 -> 322.0	110914	2.61 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.4%	
13C5-PFHxA	5.641	318.0 -> 273.0	129214	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C5-PFPeA	4.422	268.3 -> 223.0	56926	5.06 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C6-PFDA	8.198	519.1 -> 474.1	54618	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.2%	
13C7-PFUnDA	8.651	570.0 -> 525.1	68453	1.31 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 105.2%	
13C8-FOSA	9.670	506.1 -> 77.8	47129	2.44 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.5%	
13C8-PFOA	7.198	421.1 -> 376.0	144061	2.67 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.7%	
13C8-PFOS	8.348	507.1 -> 79.9	21248	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C9-PFNA	7.717	472.1 -> 427.0	55435	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.0%	
d3-MeFOSAA	8.256	573.2 -> 419.0	38577	4.80 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C3-HFPO-DA	6.007	286.9 -> 168.9	73114	9.97 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.7%	
d3-MeFOSA	10.757	515.0 -> 219.0	15739	2.25 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.9%	
d5-EtFOSAA	8.452	589.2 -> 419.0	33485	4.88 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d7-MeFOSE	10.678	623.2 -> 58.9	149482	23.80 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.2%	
d9-EtFOSE	10.923	639.2 -> 58.9	197495	23.95 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 95.8%	
d5-EtFOSA	10.989	531.1 -> 219.0	15392	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.5%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	35210	4.83 µg/L	98
		327.1 -> 80.9	13074		
6:2FTS	6.974	427.1 -> 407.0	28104	4.72 µg/L	98
		427.1 -> 80.9	11014		
8:2FTS	7.999	527.1 -> 507.0	18805	4.39 µg/L	85
		527.1 -> 80.8	7637		
EtFOSAA	8.452	584.2 -> 419.1	6029	1.19 µg/L	96
		584.2 -> 526.0	4118		
FOSA	9.672	498.1 -> 77.9	19638	1.21 µg/L	99
		498.1 -> 478.0	568		
MeFOSAA	8.257	570.1 -> 419.0	10793	1.23 µg/L	96
		570.1 -> 483.0	2374		
PFBA	2.993	212.8 -> 168.9	51590	4.75 µg/L	100
PFBS	5.560	298.7 -> 79.9	21309	1.06 µg/L	99
		298.7 -> 98.8	7640		
PFDA	8.198	512.9 -> 469.0	58030	1.19 µg/L	97
		512.9 -> 219.0	10452		
PFDODA	9.068	613.1 -> 569.0	55735	1.27 µg/L	99
		613.1 -> 319.0	6420		
PFDS	9.220	599.0 -> 79.9	7250	1.16 µg/L	98

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	3395			
PFHpA	6.569	363.1 -> 319.0	63790	1.13	µg/L	99
		363.1 -> 169.0	9964			
PFHpS	7.856	449.0 -> 79.9	11803	1.13	µg/L	95
		449.0 -> 98.9	5929			
PFHxA	5.644	313.0 -> 269.0	55330	1.23	µg/L	99
		313.0 -> 118.9	2377			
PFHxS	7.302	398.7 -> 79.9	15902	1.05	µg/L	m 94
		398.7 -> 98.9	8260			
PFNA	7.717	463.0 -> 419.0	43714	1.23	µg/L	97
		463.0 -> 219.0	11232			
PFNS	8.814	548.8 -> 79.9	12012	1.16	µg/L	94
		548.8 -> 98.9	6350			
PFOA	7.200	413.0 -> 369.0	69648	1.05	µg/L	95
		413.0 -> 169.0	13524			
PFOS	8.350	498.9 -> 79.9	11825	0.98	µg/L	m 94
		498.9 -> 98.8	6624			
PFPeA	4.424	263.0 -> 219.0	67892	2.42	µg/L	100
PFPeS	6.620	349.1 -> 79.9	14300	1.13	µg/L	92
		349.1 -> 98.9	6237			
PFTeDA	9.785	713.1 -> 669.0	38451	1.25	µg/L	99
		713.1 -> 168.9	3021			
PFTrDA	9.452	663.0 -> 619.0	58266	1.24	µg/L	98
		663.0 -> 168.9	5020			
PFUnDA	8.652	563.1 -> 519.0	45601	1.15	µg/L	96
		563.1 -> 269.1	7408			
11CI-PF3OUdS	9.491	630.9 -> 450.9	53296	2.25	µg/L	95
		632.9 -> 452.9	17735			
9CI-PF3ONS	8.678	530.8 -> 351.0	100109	2.39	µg/L	94
		532.8 -> 353.0	28152			
ADONA	6.817	376.9 -> 250.9	252629	2.34	µg/L	97
		376.9 -> 84.8	63811			
HFPO-DA	6.007	284.9 -> 168.9	16620	2.39	µg/L	98
		284.9 -> 184.9	2256			
3:3FTCA	3.858	241.0 -> 177.0	10821	5.71	µg/L	99
		241.0 -> 117.0	1079			
5:3FTCA	6.283	341.0 -> 237.1	238209	30.22	µg/L	95
		341.0 -> 217.0	161606			
7:3FTCA	7.669	441.0 -> 316.9	142286	30.94	µg/L	87
		441.0 -> 336.9	293223			
EtFOSA	10.990	526.0 -> 219.0	19527	2.41	µg/L	97
		526.0 -> 169.0	25718			
EtFOSE	10.924	630.0 -> 58.9	55074	5.95	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	17922	2.53	µg/L	97
		511.9 -> 169.0	25174			
MeFOSE	10.691	616.1 -> 58.9	39198	6.11	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	3583	1.17	µg/L	92
		699.1 -> 98.8	1975			
NFDHA	5.524	295.0 -> 201.0	13073	2.46	µg/L	97
		295.0 -> 84.9	3145			
PFMBA	4.850	279.0 -> 85.1	47618	2.40	µg/L	100
PFMPA	3.551	229.0 -> 84.9	34760	2.37	µg/L	100
PFEESA	6.112	314.8 -> 134.9	131706	2.23	µg/L	100
		314.8 -> 82.9	4447			

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

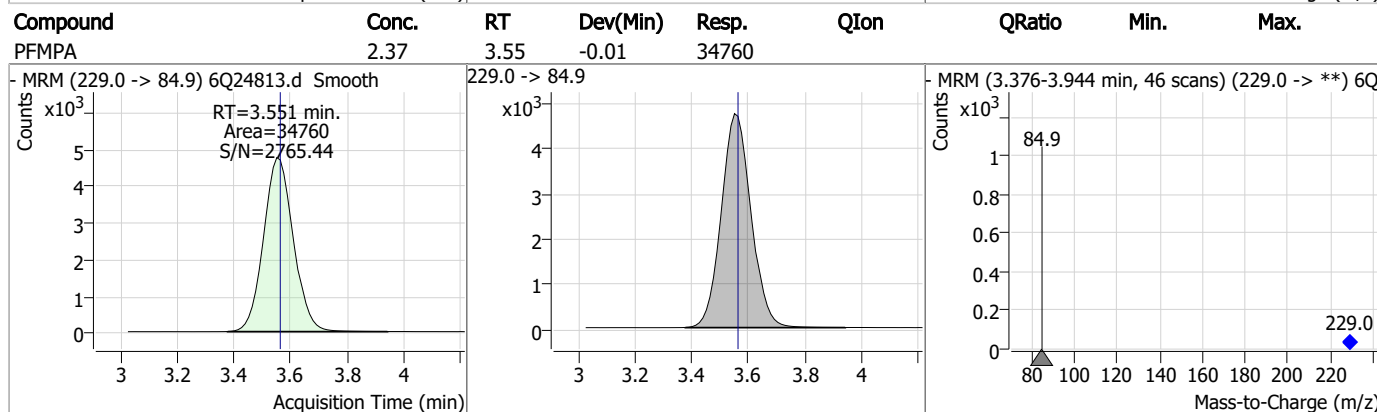
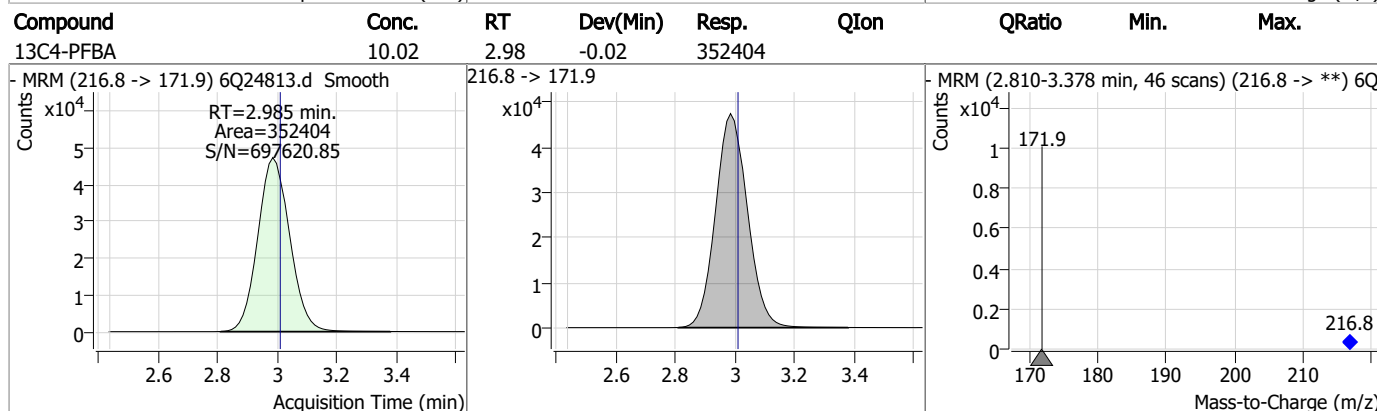
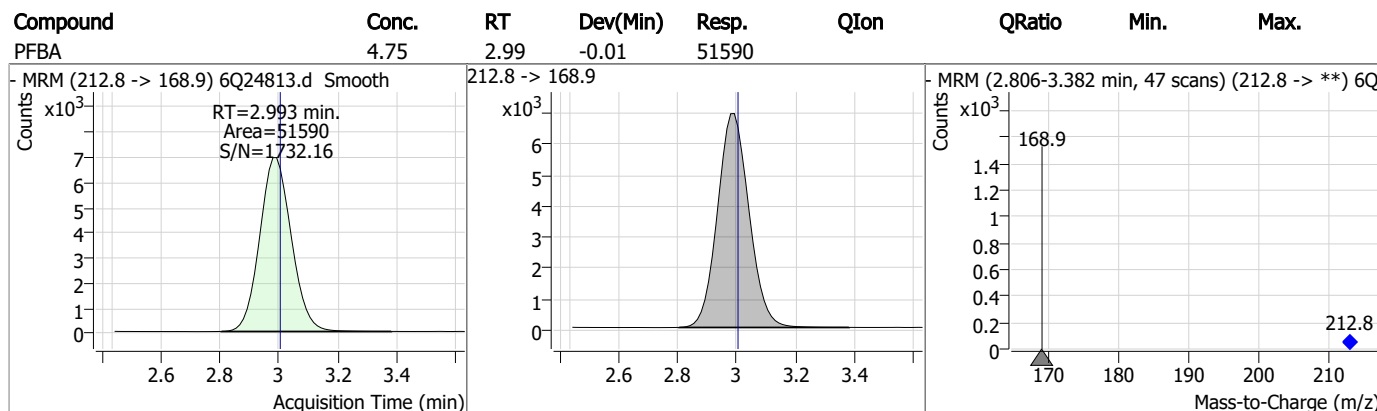
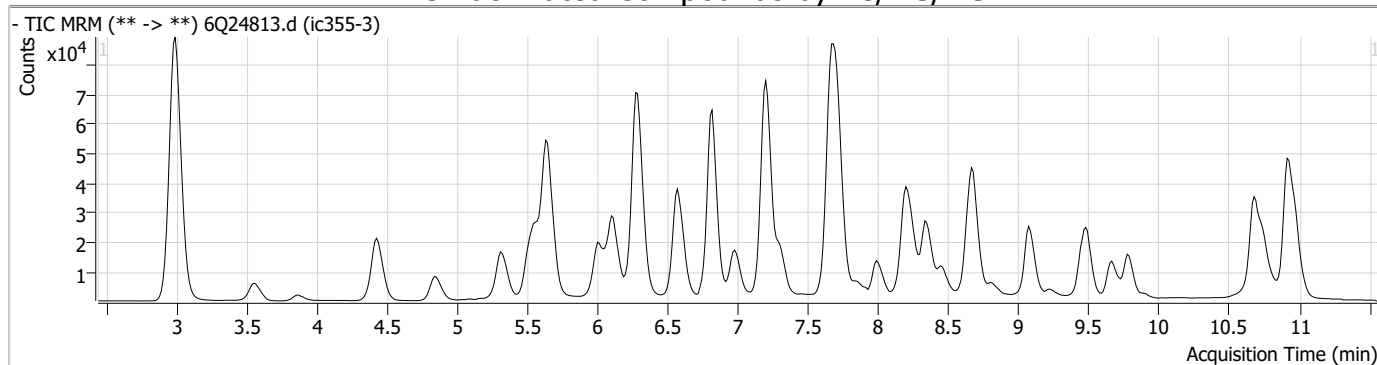
Perfluorinated Compounds by LC/MS/MS

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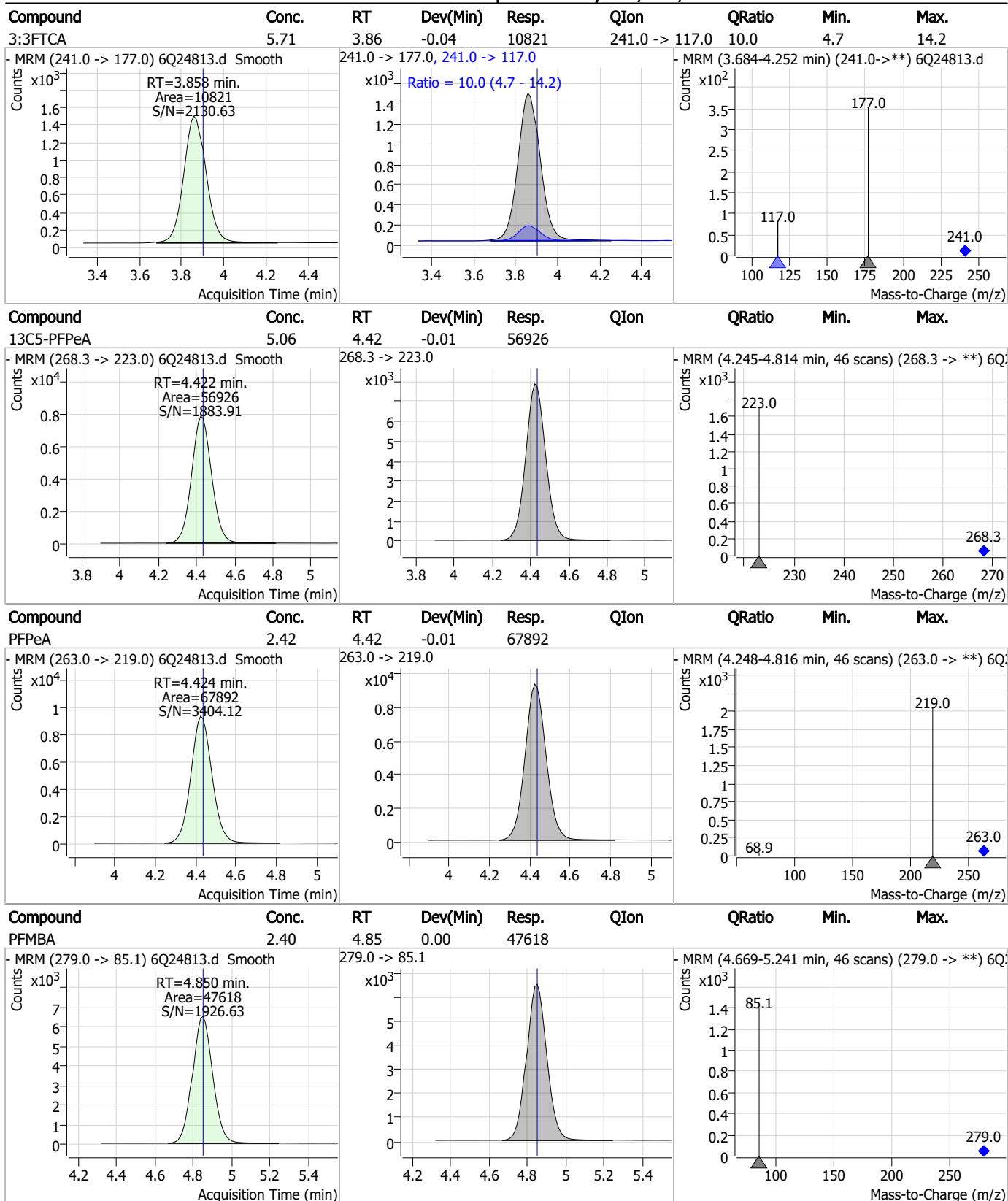
7.7.4

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Perfluorinated Compounds by LC/MS/MS



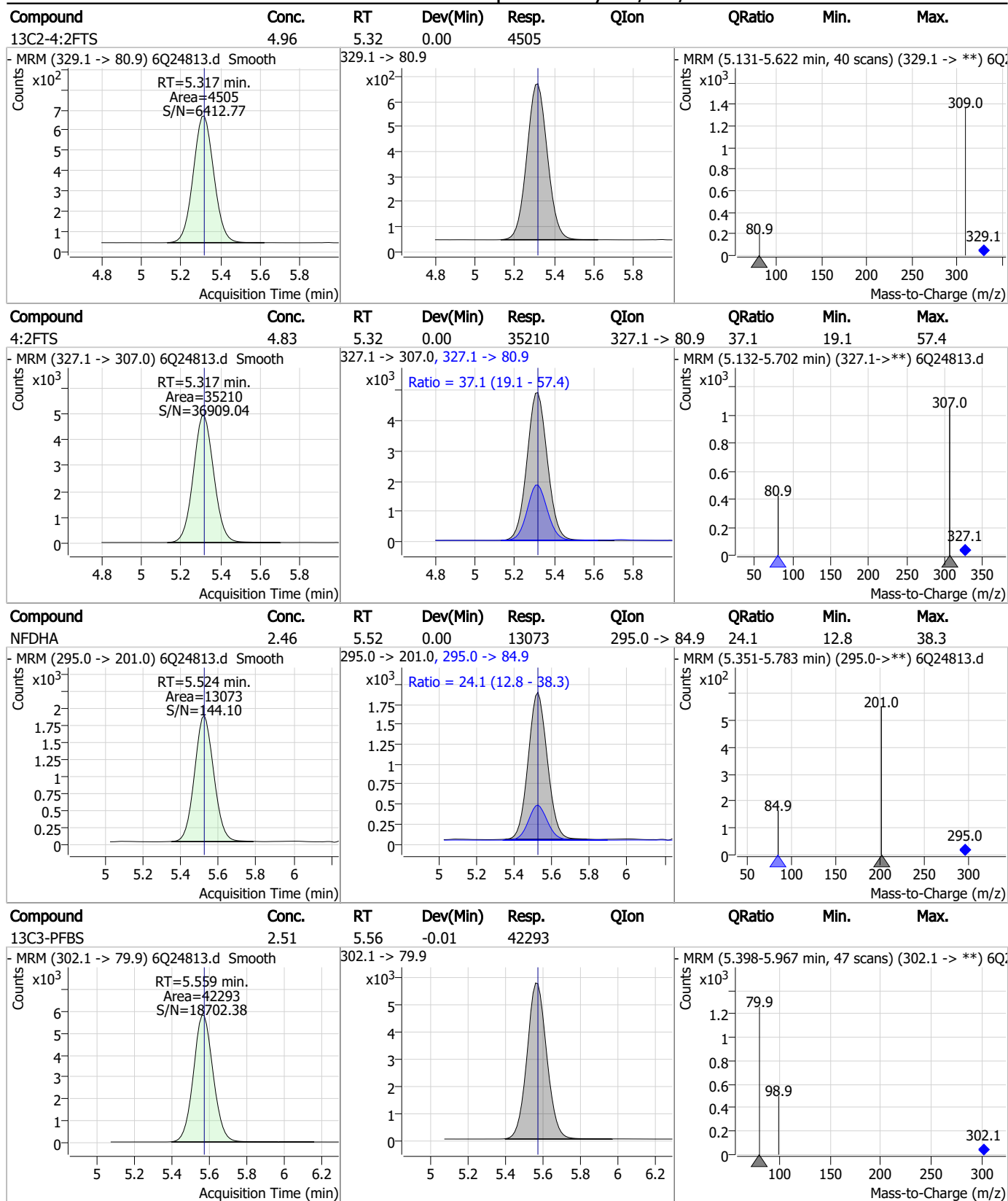
Perfluorinated Compounds by LC/MS/MS



7.7.4

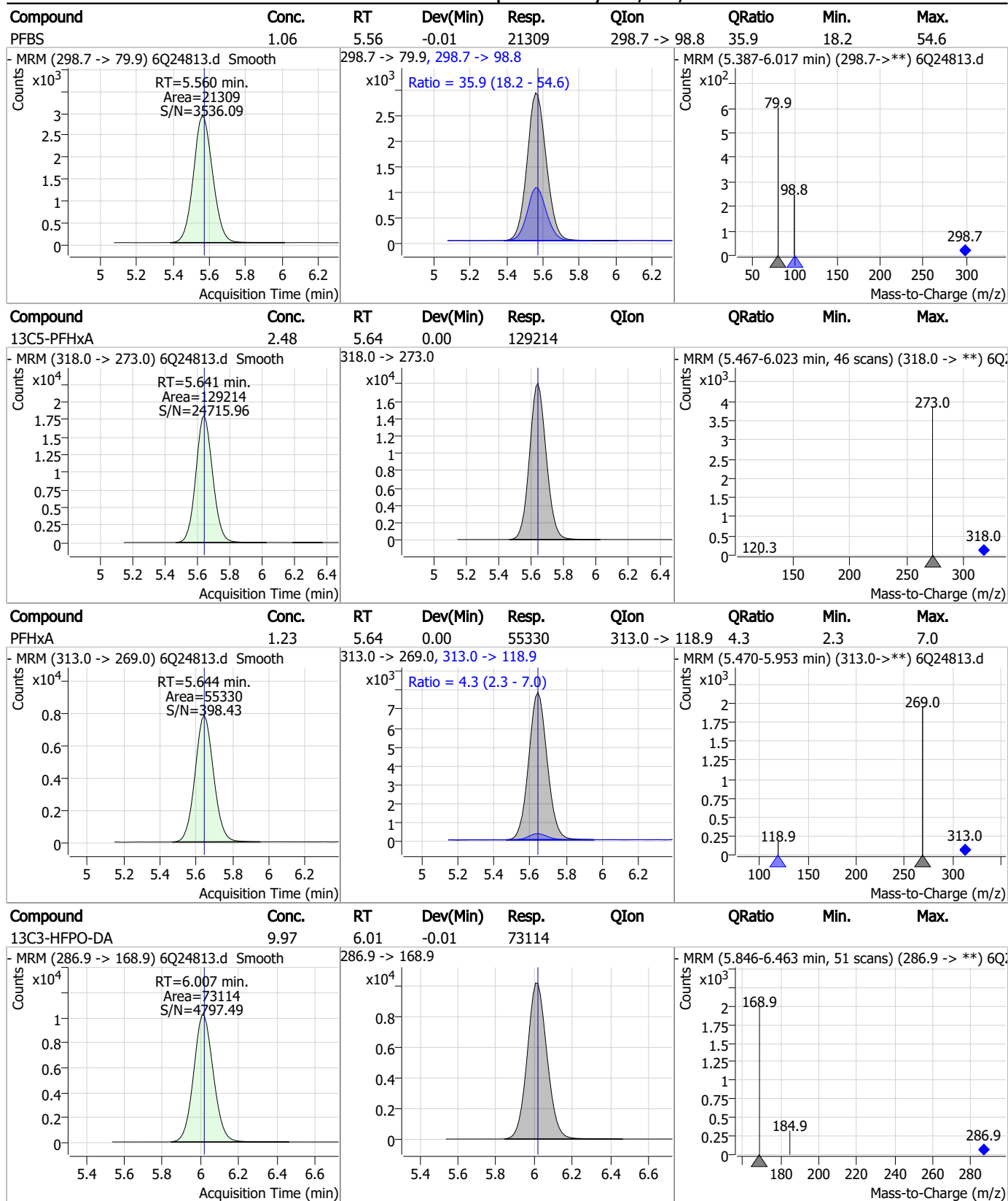
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Perfluorinated Compounds by LC/MS/MS



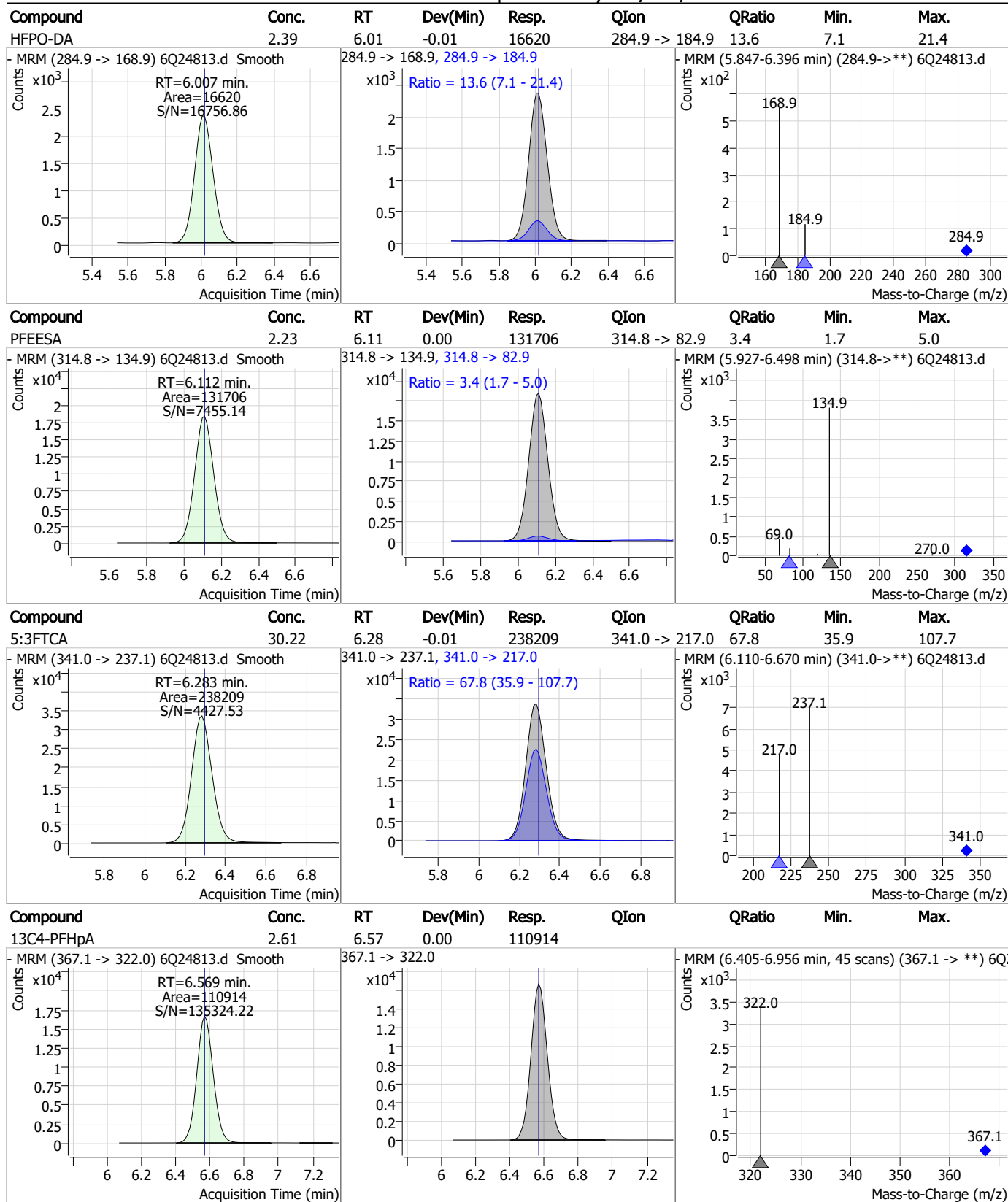
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Perfluorinated Compounds by LC/MS/MS



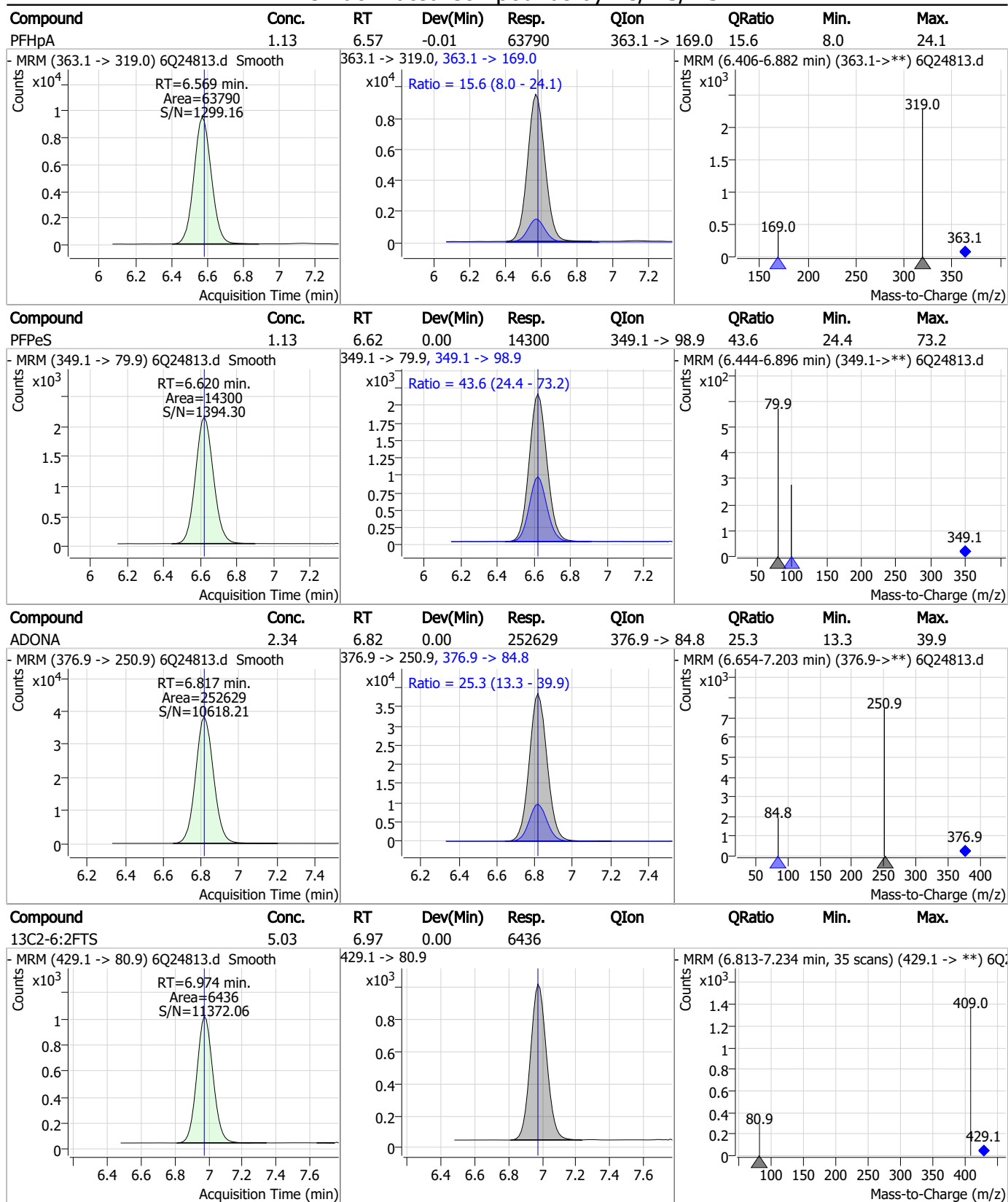
7.7.4
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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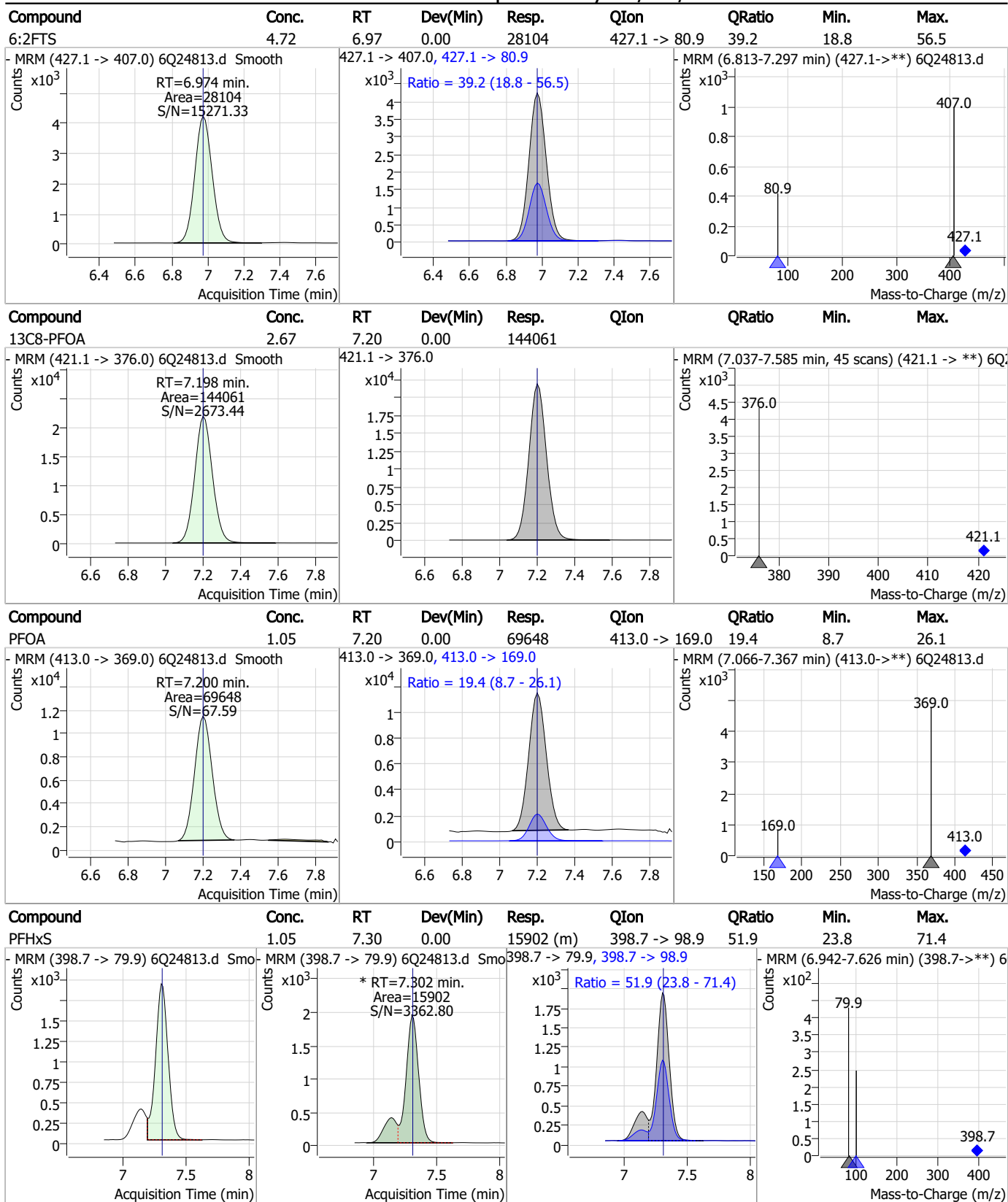
Perfluorinated Compounds by LC/MS/MS



7.7.4
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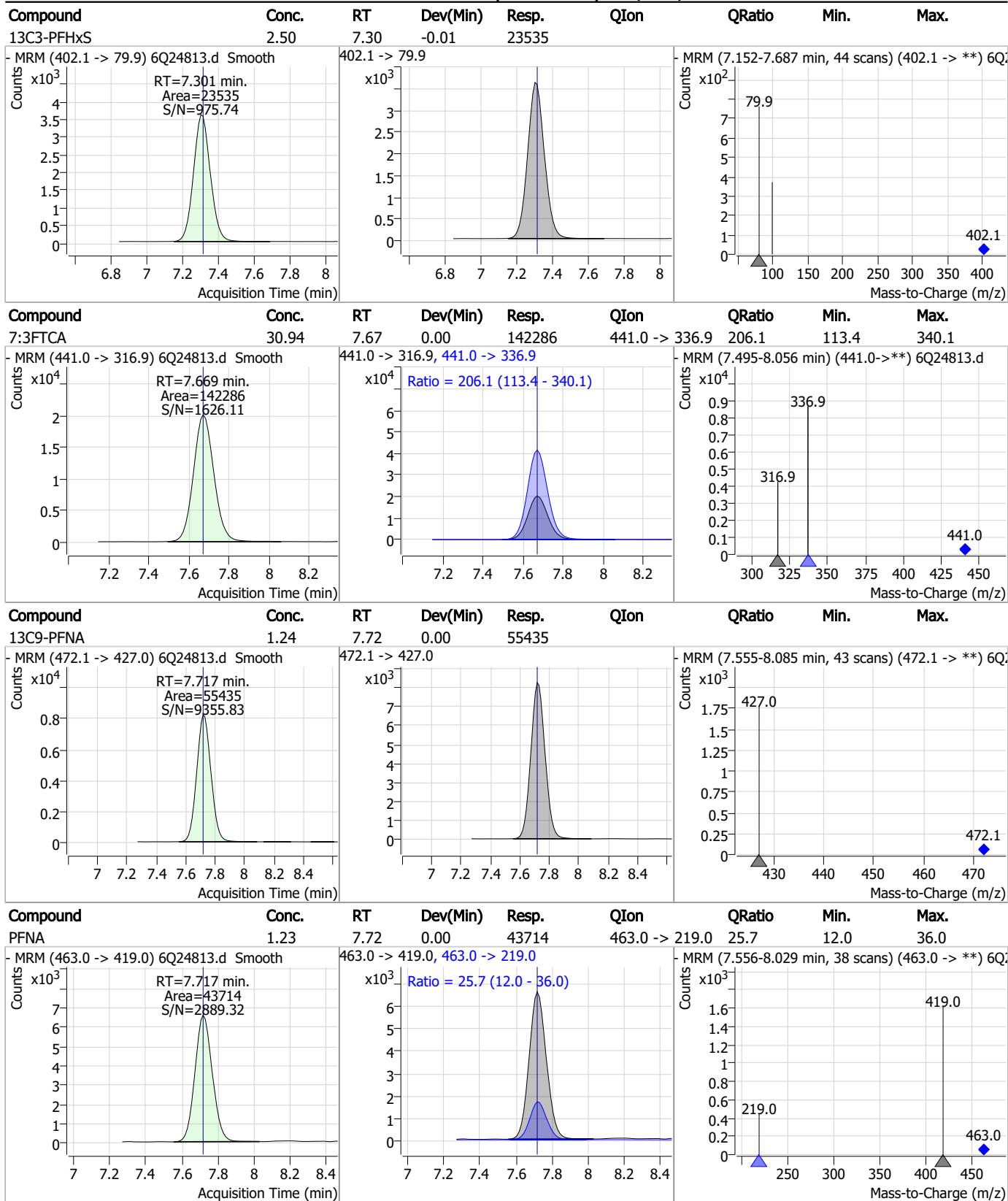
Perfluorinated Compounds by LC/MS/MS



7.7.4

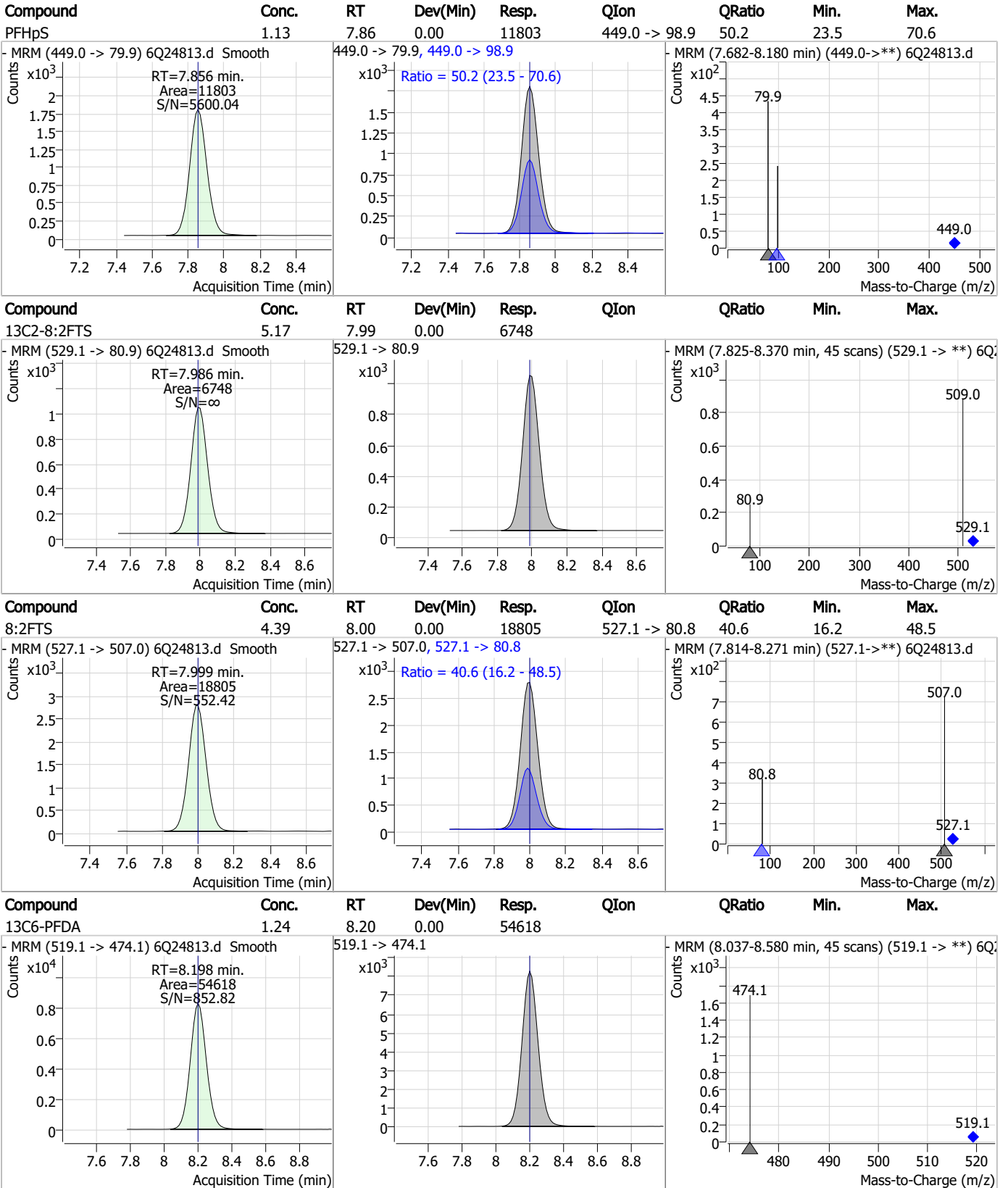
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Perfluorinated Compounds by LC/MS/MS



7.7.4
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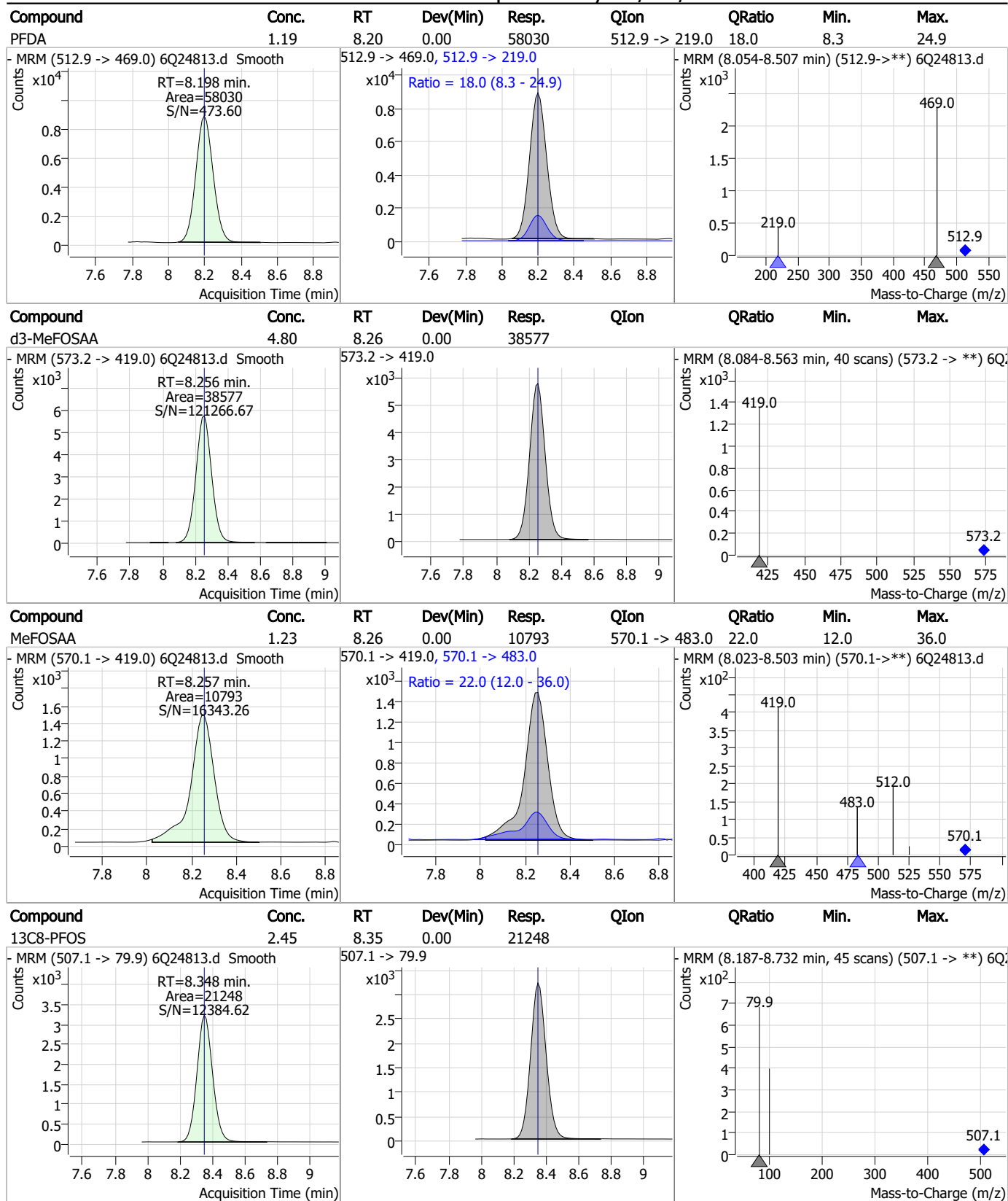
Perfluorinated Compounds by LC/MS/MS



7.7.4

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Perfluorinated Compounds by LC/MS/MS

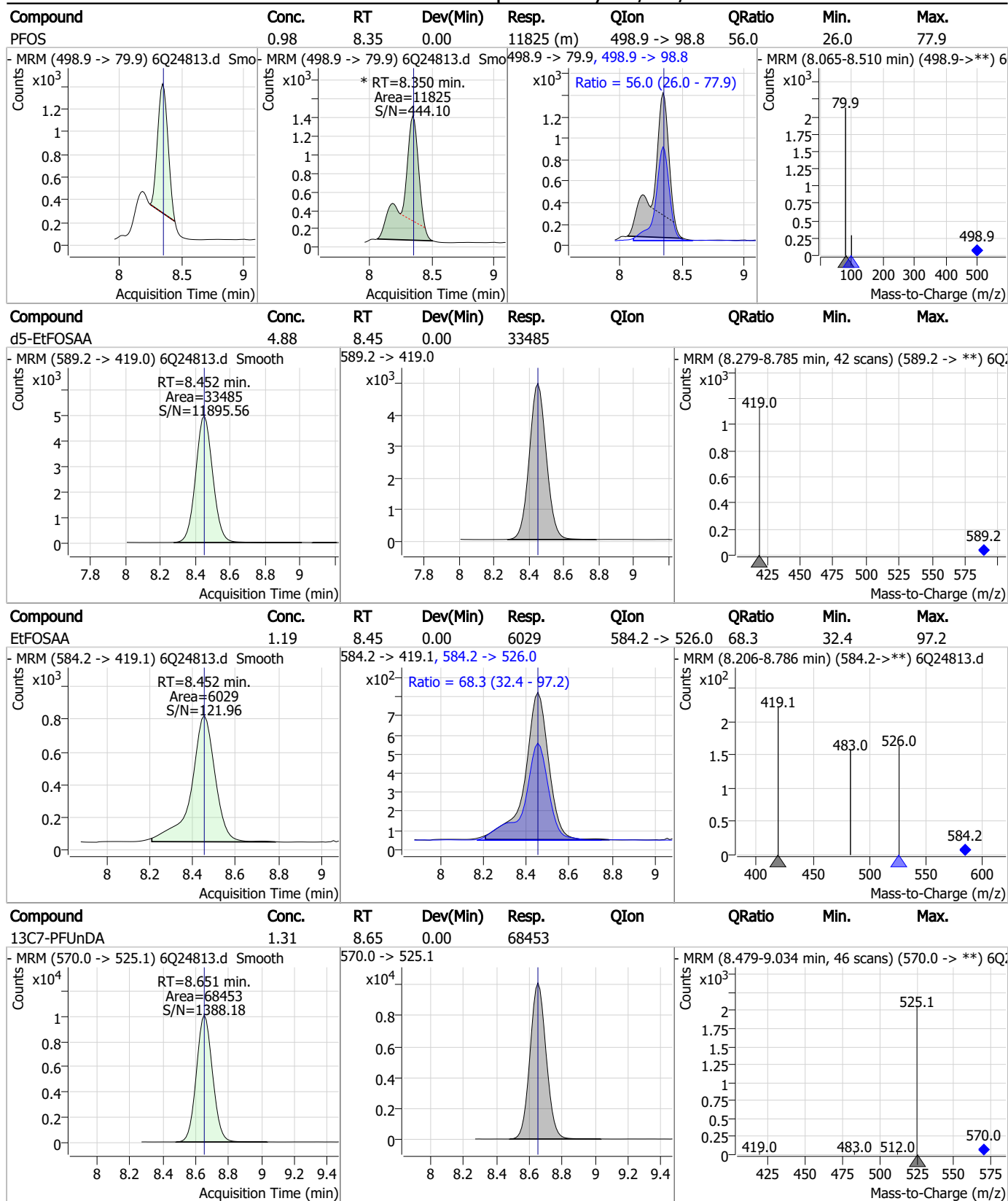


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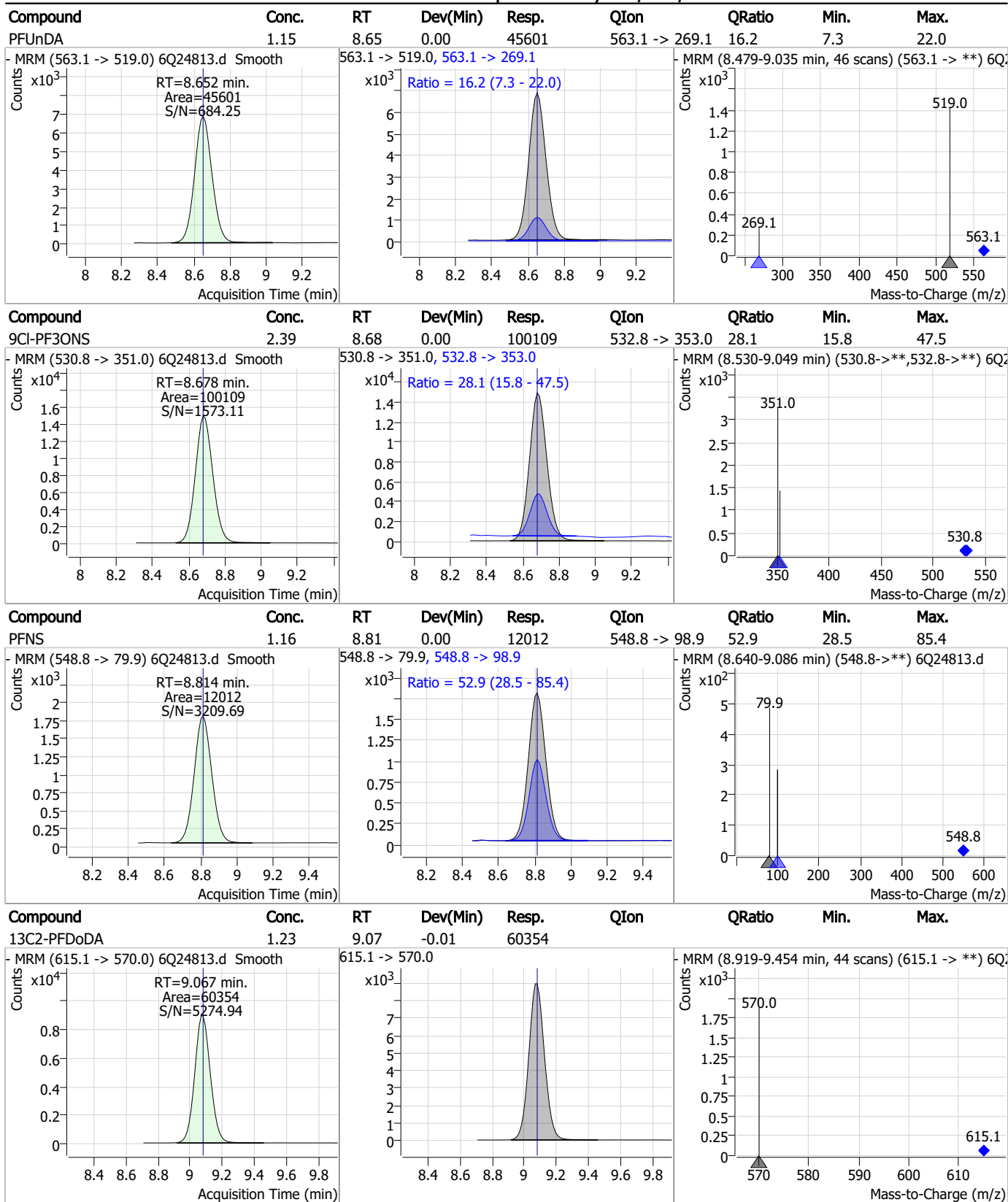


Perfluorinated Compounds by LC/MS/MS



7.7.4
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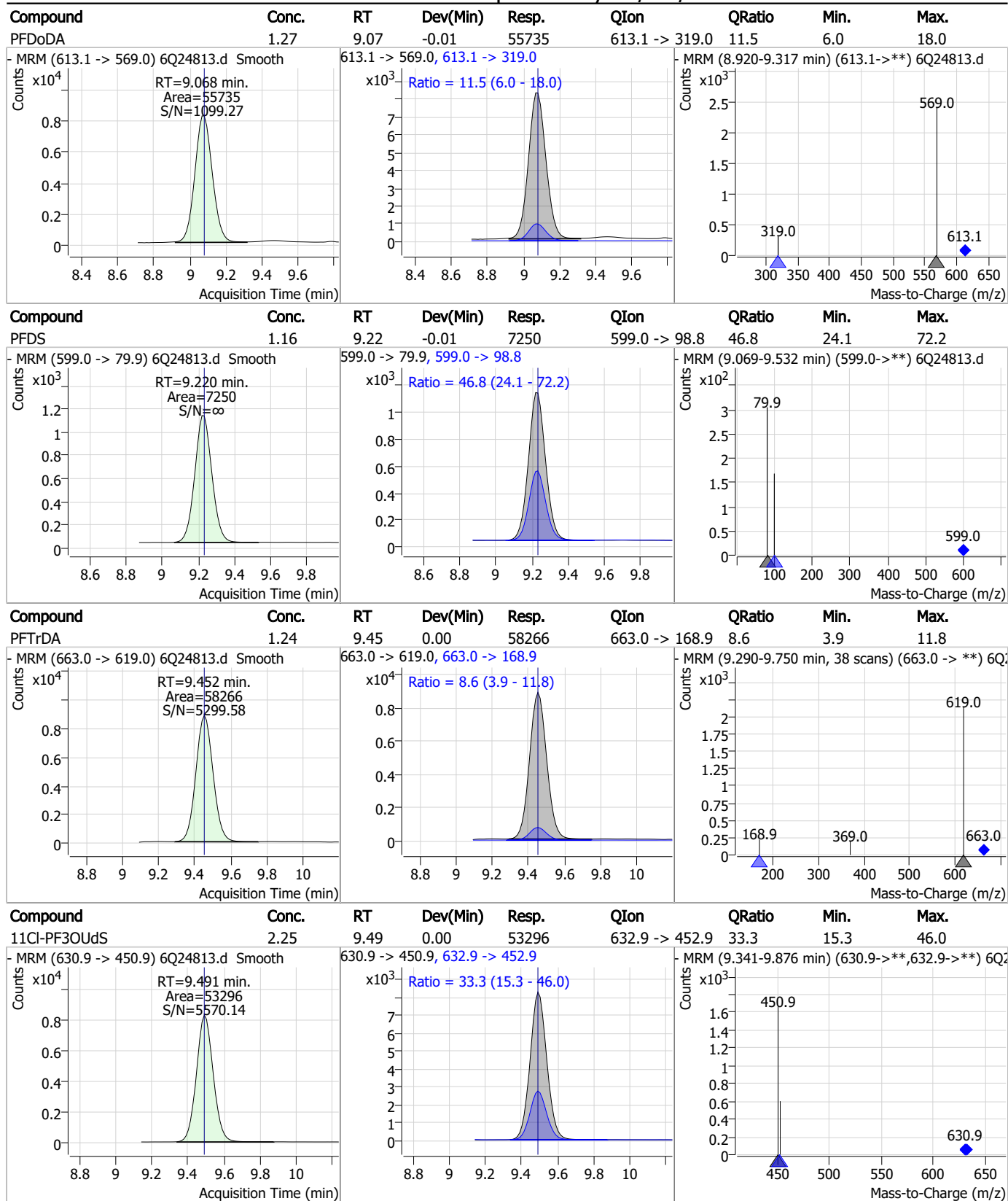
Perfluorinated Compounds by LC/MS/MS



7.7.4

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Perfluorinated Compounds by LC/MS/MS

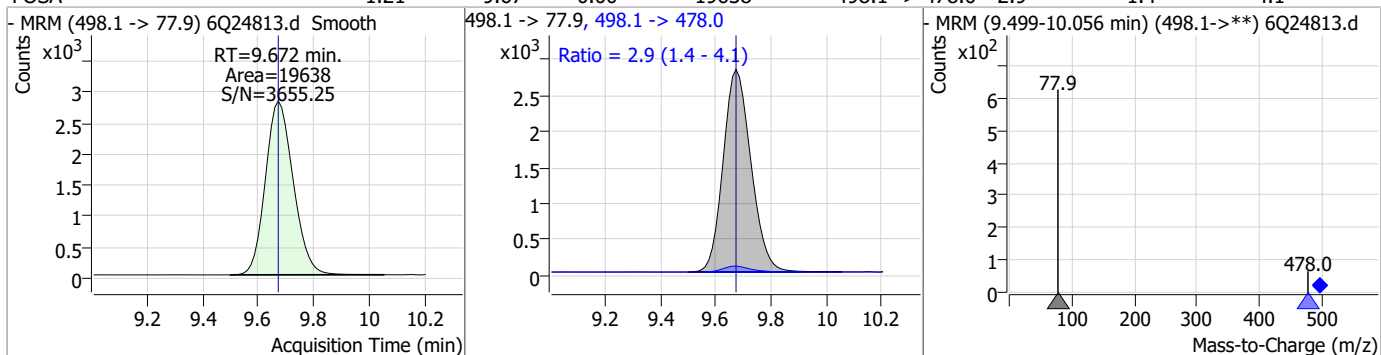


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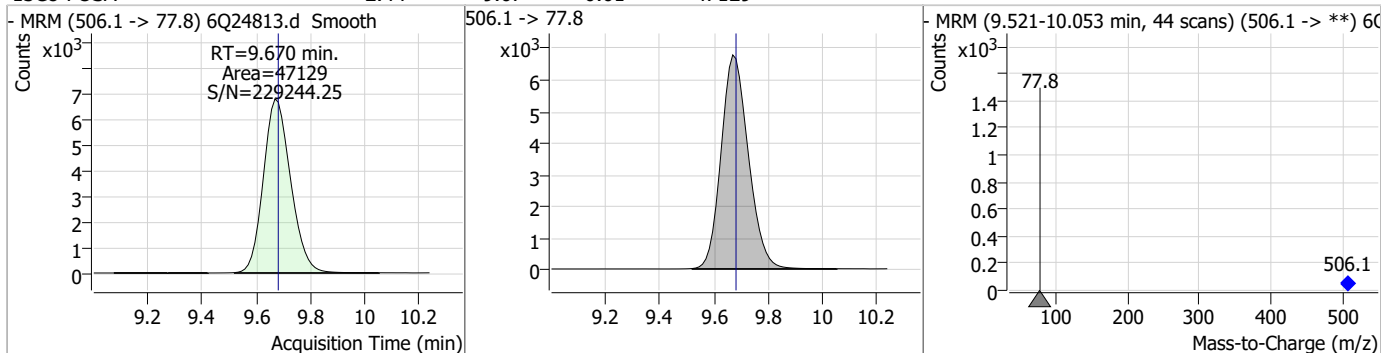
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Perfluorinated Compounds by LC/MS/MS

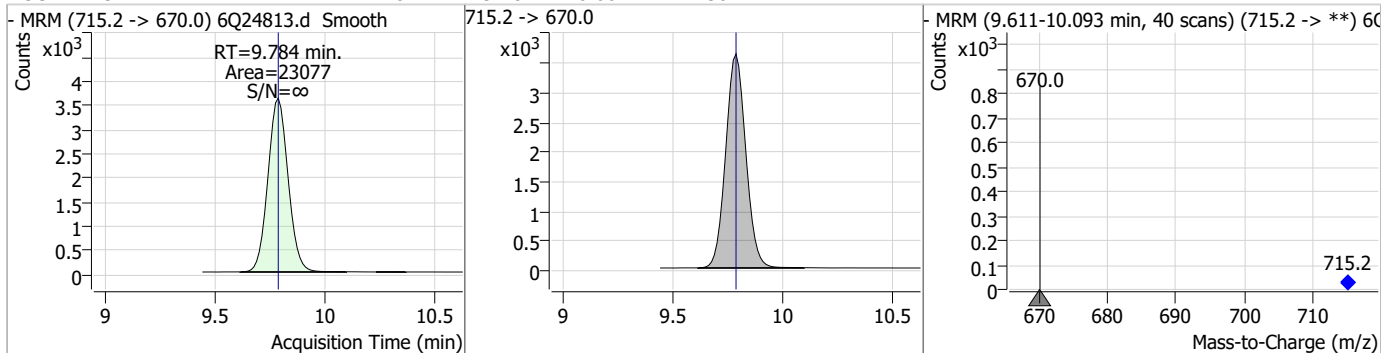
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	1.21	9.67	0.00	19638	498.1 -> 478.0	2.9	1.4	4.1



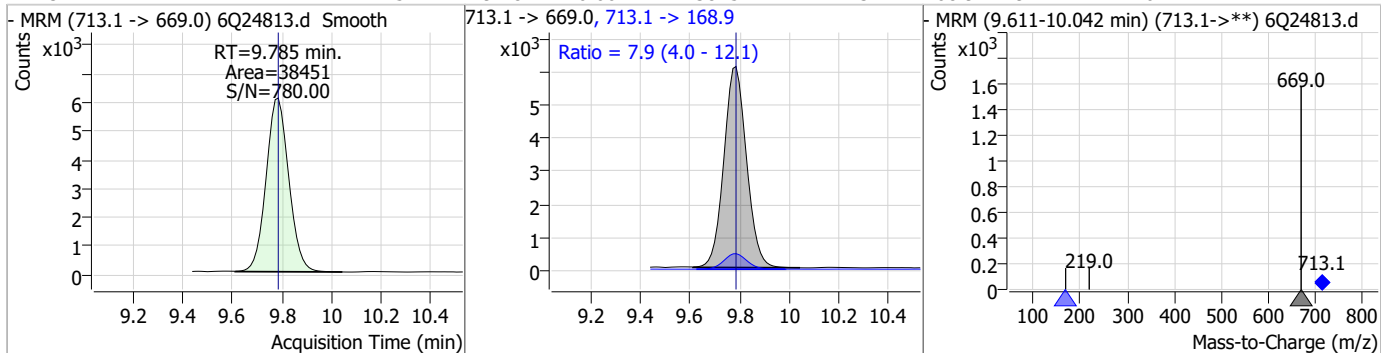
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.44	9.67	-0.01	47129				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.18	9.78	0.00	23077				



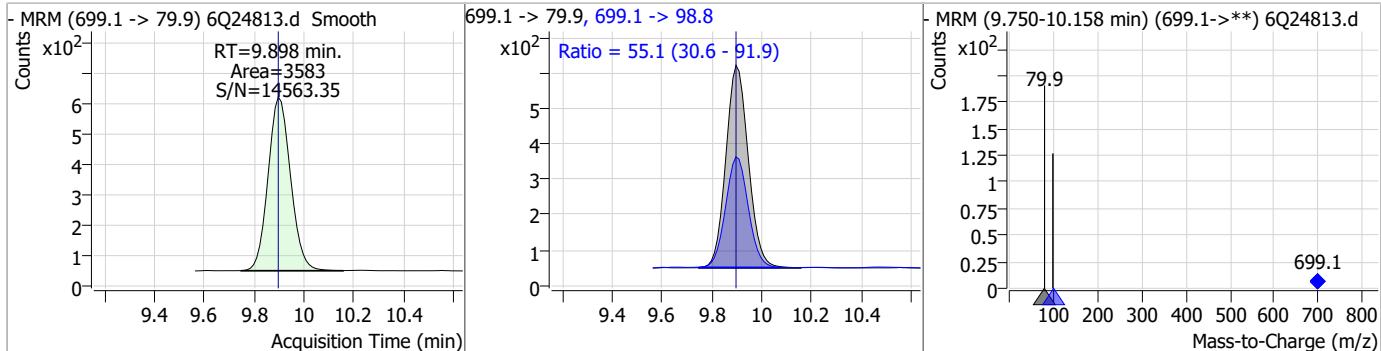
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	1.25	9.78	0.00	38451	713.1 -> 168.9	7.9	4.0	12.1



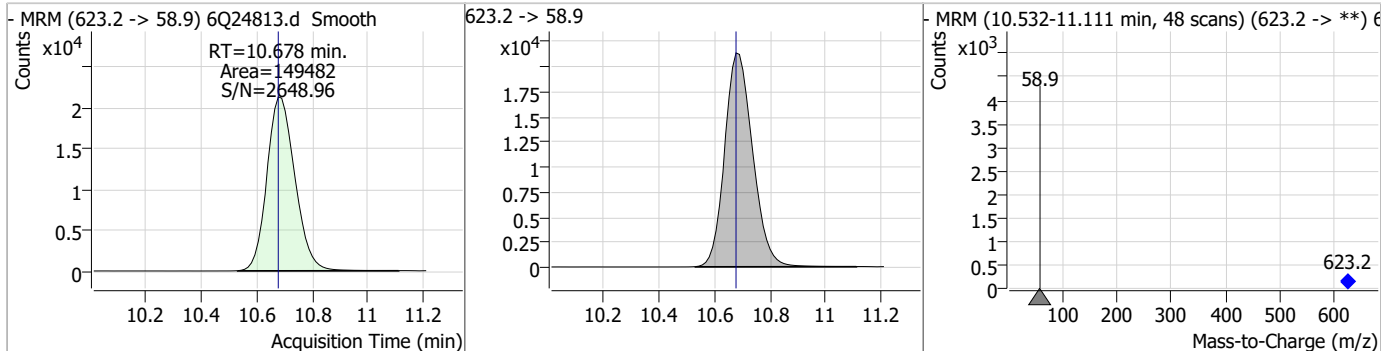
7.7.4
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Perfluorinated Compounds by LC/MS/MS

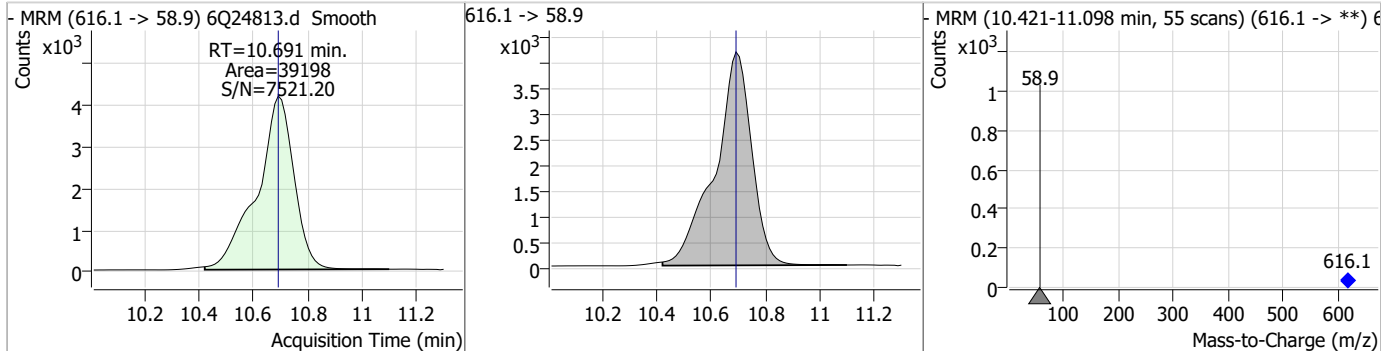
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	1.17	9.90	0.00	3583	699.1 -> 98.8	55.1	30.6	91.9



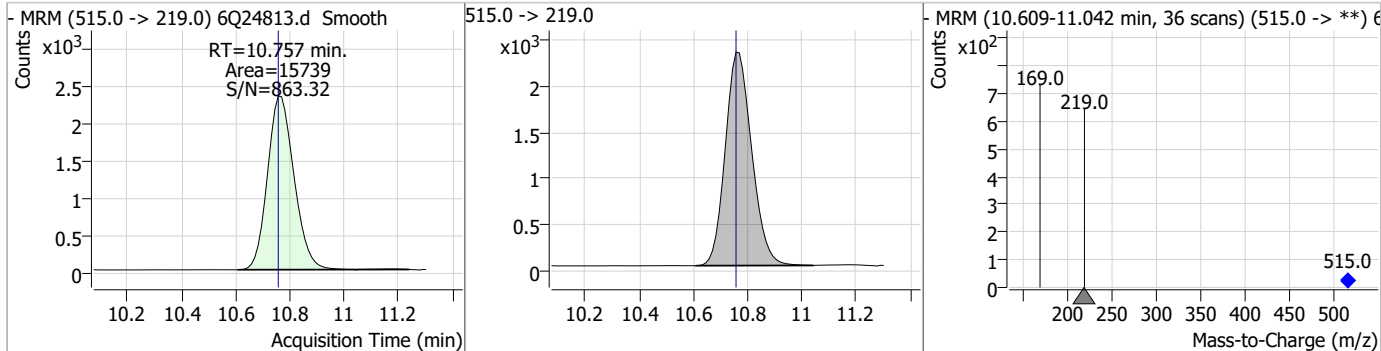
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.80	10.68	0.00	149482				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	6.11	10.69	0.00	39198				

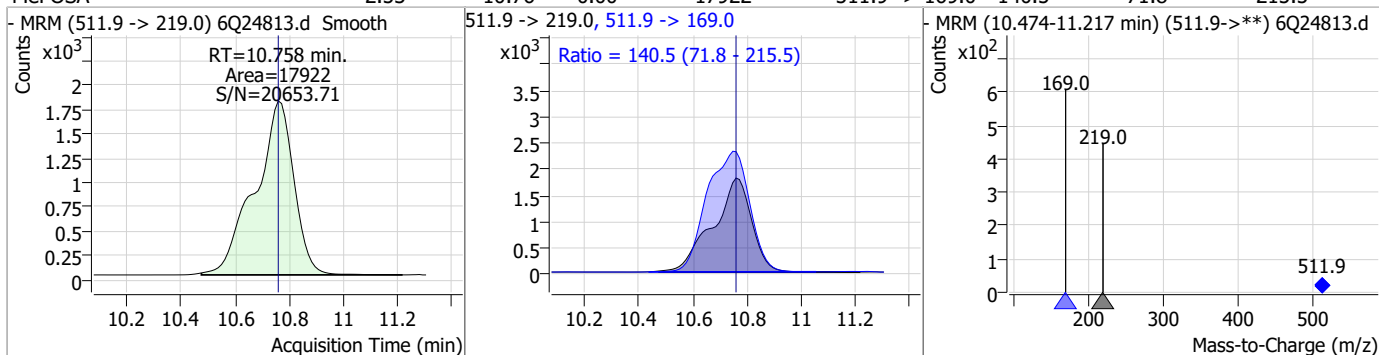


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.25	10.76	0.00	15739				

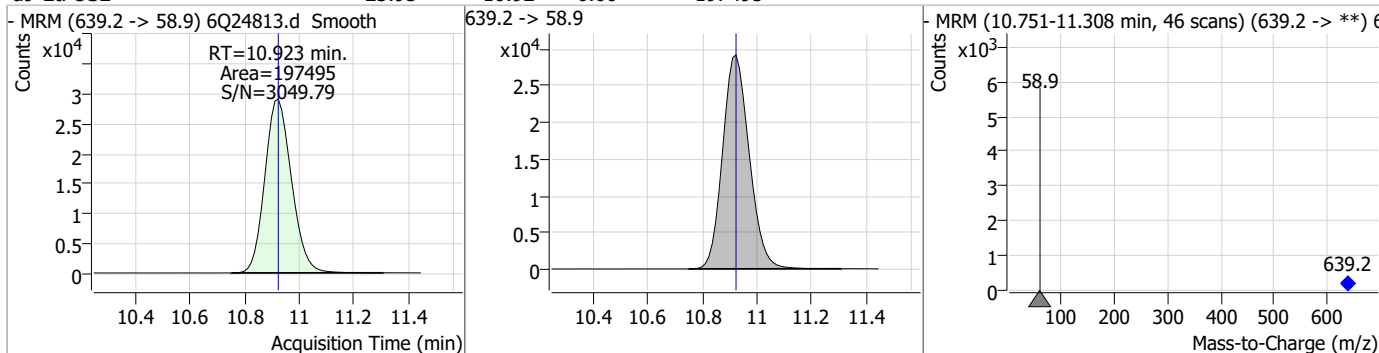


Perfluorinated Compounds by LC/MS/MS

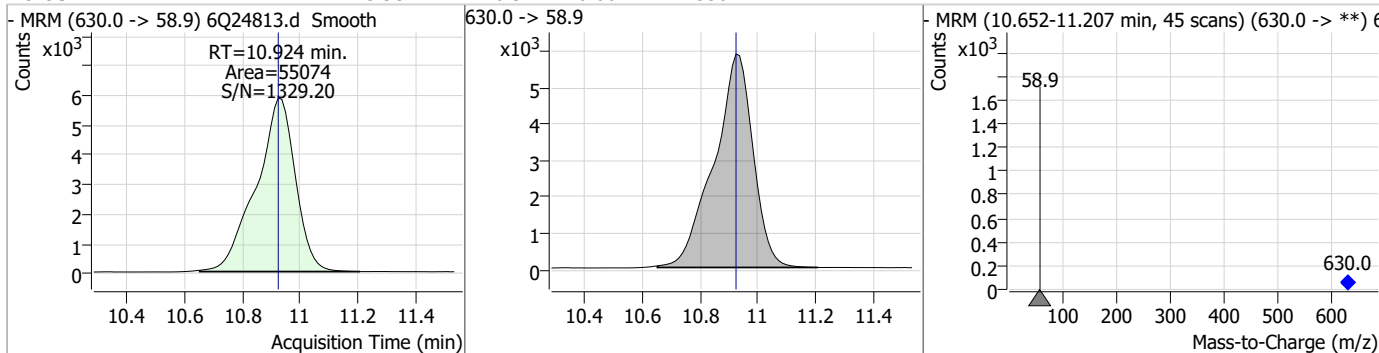
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	2.53	10.76	0.00	17922	511.9 -> 169.0	140.5	71.8	215.5



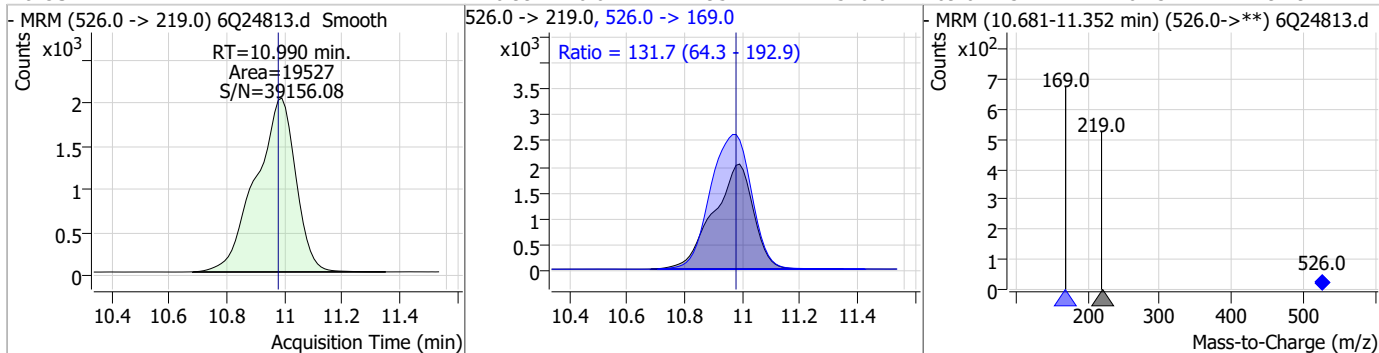
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	23.95	10.92	0.00	197495				



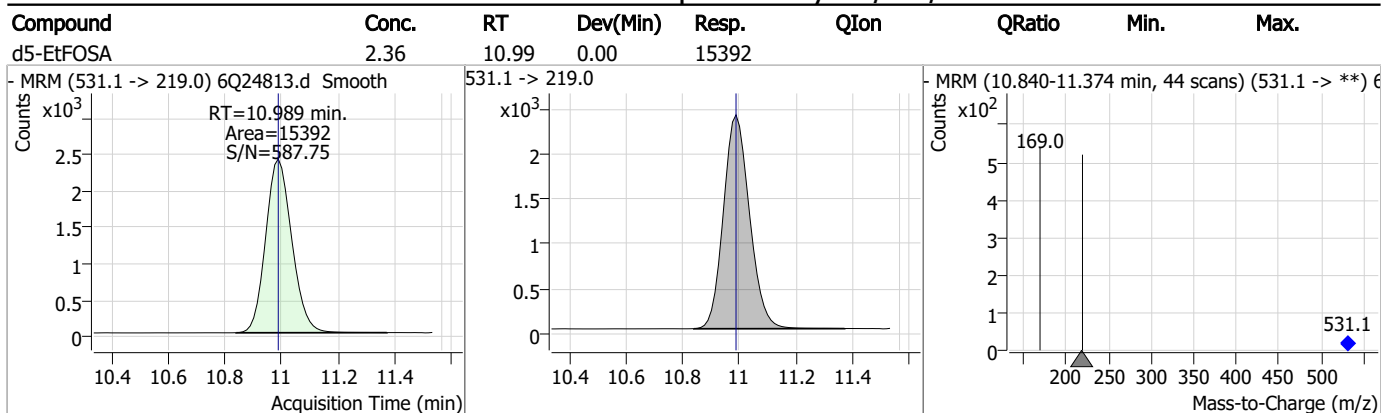
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	5.95	10.92	0.00	55074				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	2.41	10.99	0.01	19527	526.0 -> 169.0	131.7	64.3	192.9



Perfluorinated Compounds by LC/MS/MS



7.7.4

7

Manual Integration Approval Summary

Sample Number: S6Q355-IC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24813.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 21:04 Supervisor approved: 09/22/23 13:16 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.7.4.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24814.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 9:18:55 PM
 Sample Name : icc355-4
 Vial : P1-A5
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	348134	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	56055	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	132642	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	106056	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	138831	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	56566	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	52884	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	65238	1.25 µg/L	0.000
M2-PFDoDA	9.080	615.1 -> 570.0	59737	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	24481	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	45886	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	42319	2.50 µg/L	0.000
M3-PFHxS	7.313	402.1 -> 79.9	21641	2.50 µg/L	0.000
M8-PFOS	8.348	507.1 -> 79.9	19544	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	4618	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6185	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	6278	5.00 µg/L	0.000
M3-MeFOSAA	8.256	573.2 -> 419.0	37365	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	73119	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	32314	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	151989	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	189631	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	15280	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	15990	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	27921	2.50 µg/L	0.000
13C3-PFBA	3.001	216.0 -> 172.0	142360	5.00 µg/L	0.000
18O2-PFHxS	7.300	403.0 -> 83.9	16395	2.50 µg/L	0.000
13C4-PFOA	7.199	417.1 -> 372.0	153238	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	47138	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	58191	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	96767	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4618	5.40 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6185	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C2-8:2FTS	7.986	529.1 -> 80.9	6278	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C2-PFDoDA	9.080	615.1 -> 570.0	59737	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C2-PFTeDA	9.784	715.2 -> 670.0	24481	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.6%		
13C3-PFBS	5.571	302.1 -> 79.9	42319	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 106.6%		
13C3-PFHxS	7.313	402.1 -> 79.9	21641	2.44 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 = 97.5%		
13C4-PFBA	3.010	216.8 -> 171.9	348134	10.03 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 100.3%		
13C4-PFHpA	6.569	367.1 -> 322.0	106056	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 102.0%		
13C5-PFHxA	5.641	318.0 -> 273.0	132642	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 104.1%		
13C5-PFPeA	4.434	268.3 -> 223.0	56055	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
13C6-PFDA	8.198	519.1 -> 474.1	52884	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.6%		
13C7-PFUnDA	8.651	570.0 -> 525.1	65238	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 102.9%		
13C8-FOSA	9.682	506.1 -> 77.8	45886	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C8-PFOA	7.198	421.1 -> 376.0	138831	2.50 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.8%		
13C8-PFOS	8.348	507.1 -> 79.9	19544	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 95.1%		
13C9-PFNA	7.717	472.1 -> 427.0	56566	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 107.2%		
d3-MeFOSAA	8.256	573.2 -> 419.0	37365	4.90 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.0%		
13C3-HFPO-DA	6.019	286.9 -> 168.9	73119	10.19 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%		Recovery = 101.9%		
d3-MeFOSA	10.757	515.0 -> 219.0	15990	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.4%		
d5-EtFOSAA	8.452	589.2 -> 419.0	32314	4.96 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.2%		
d7-MeFOSE	10.678	623.2 -> 58.9	151989	25.51 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 102.0%		
d9-EtFOSE	10.923	639.2 -> 58.9	189631	24.25 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%		Recovery = 97.0%		
d5-EtFOSA	10.989	531.1 -> 219.0	15280	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.9%		
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	61256	8.19 µg/L	100
		327.1 -> 80.9	23426		
6:2FTS	6.974	427.1 -> 407.0	51294	8.97 µg/L	100
		427.1 -> 80.9	19321		
8:2FTS	7.999	527.1 -> 507.0	38391	9.63 µg/L	100
		527.1 -> 80.8	12406		
EtFOSAA	8.452	584.2 -> 419.1	10874	2.23 µg/L	100
		584.2 -> 526.0	7048		
FOSA	9.672	498.1 -> 77.9	34747	2.19 µg/L	100
		498.1 -> 478.0	950		
MeFOSAA	8.257	570.1 -> 419.0	18483	2.18 µg/L	100
		570.1 -> 483.0	4441		
PFBA	3.006	212.8 -> 168.9	94327	8.79 µg/L	100
PFBS	5.572	298.7 -> 79.9	38761	1.93 µg/L	100
		298.7 -> 98.8	14099		
PFDA	8.198	512.9 -> 469.0	110632	2.34 µg/L	100
		512.9 -> 219.0	18398		
PFDoDA	9.080	613.1 -> 569.0	96097	2.21 µg/L	100
		613.1 -> 319.0	11542		
PFDS	9.233	599.0 -> 79.9	13064	2.28 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	6289			
PFHpA	6.582	363.1 -> 319.0	113272	2.10	µg/L	100
		363.1 -> 169.0	18221			
PFHpS	7.856	449.0 -> 79.9	22268	2.33	µg/L	100
		449.0 -> 98.9	10478			
PFHxA	5.644	313.0 -> 269.0	95259	2.07	µg/L	100
		313.0 -> 118.9	4453			
PFHxS	7.302	398.7 -> 79.9	29479	2.11	µg/L	m 100
		398.7 -> 98.9	14041			
PFNA	7.717	463.0 -> 419.0	81843	2.25	µg/L	100
		463.0 -> 219.0	19653			
PFNS	8.814	548.8 -> 79.9	20378	2.15	µg/L	100
		548.8 -> 98.9	11606			
PFOA	7.200	413.0 -> 369.0	143160	2.24	µg/L	100
		413.0 -> 169.0	24910			
PFOS	8.350	498.9 -> 79.9	23099	2.09	µg/L	m 100
		498.9 -> 98.8	11994			
PFPeA	4.436	263.0 -> 219.0	120346	4.36	µg/L	100
PFPeS	6.620	349.1 -> 79.9	24909	2.14	µg/L	100
		349.1 -> 98.9	12160			
PFTeDA	9.785	713.1 -> 669.0	69808	2.13	µg/L	100
		713.1 -> 168.9	5652			
PFTrDA	9.452	663.0 -> 619.0	104385	2.25	µg/L	100
		663.0 -> 168.9	8178			
PFUnDA	8.652	563.1 -> 519.0	87804	2.32	µg/L	100
		563.1 -> 269.1	12851			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	103490	4.36	µg/L	100
		632.9 -> 452.9	31727			
9Cl-PF3ONS	8.678	530.8 -> 351.0	177491	4.24	µg/L	100
		532.8 -> 353.0	56158			
ADONA	6.817	376.9 -> 250.9	455506	4.22	µg/L	100
		376.9 -> 84.8	121017			
HFPO-DA	6.020	284.9 -> 168.9	30404	4.38	µg/L	100
		284.9 -> 184.9	4329			
3:3FTCA	3.902	241.0 -> 177.0	20815	11.12	µg/L	100
		241.0 -> 117.0	1971			
5:3FTCA	6.296	341.0 -> 237.1	446899	55.23	µg/L	100
		341.0 -> 217.0	320835			
7:3FTCA	7.669	441.0 -> 316.9	264785	56.09	µg/L	100
		441.0 -> 336.9	600329			
EtFOSA	10.978	526.0 -> 219.0	37046	4.61	µg/L	100
		526.0 -> 169.0	47638			
EtFOSE	10.924	630.0 -> 58.9	104074	11.71	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	33057	4.59	µg/L	100
		511.9 -> 169.0	47484			
MeFOSE	10.691	616.1 -> 58.9	69840	10.70	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	6171	2.19	µg/L	100
		699.1 -> 98.8	3779			
NFDHA	5.524	295.0 -> 201.0	23352	4.28	µg/L	100
		295.0 -> 84.9	5956			
PFMBA	4.850	279.0 -> 85.1	87494	4.48	µg/L	100
PFMPA	3.563	229.0 -> 84.9	64649	4.47	µg/L	100
PFEESA	6.112	314.8 -> 134.9	235516	3.88	µg/L	100
		314.8 -> 82.9	7909			

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

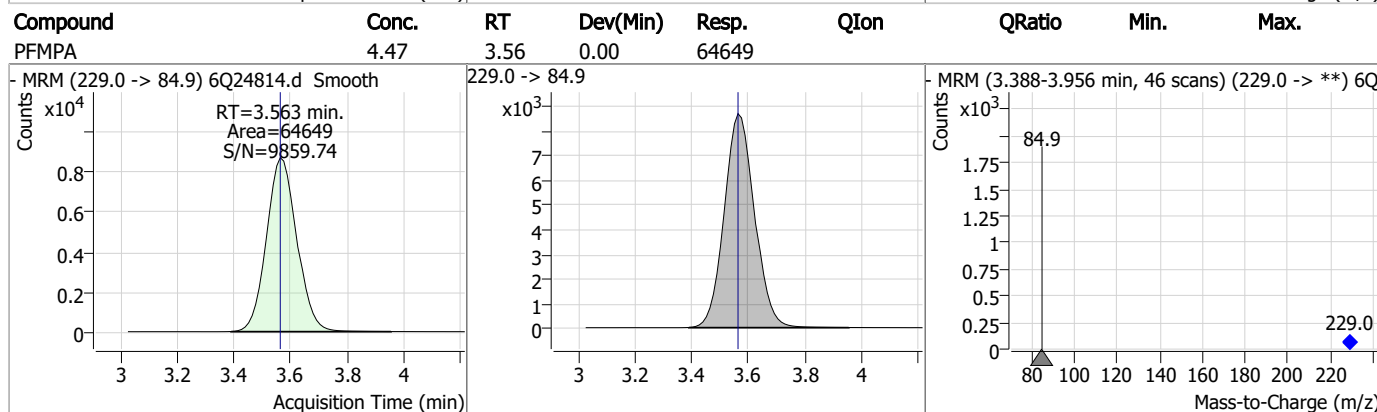
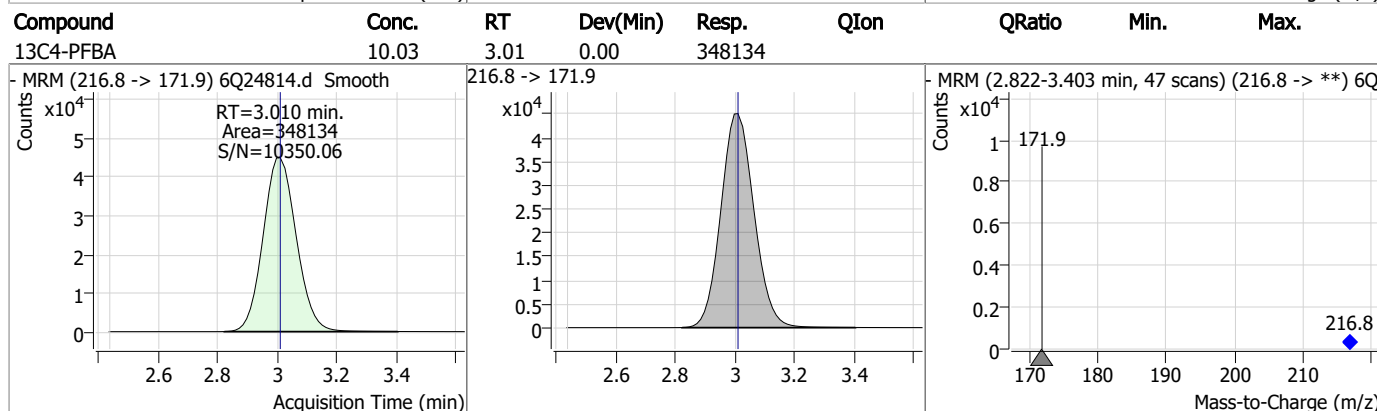
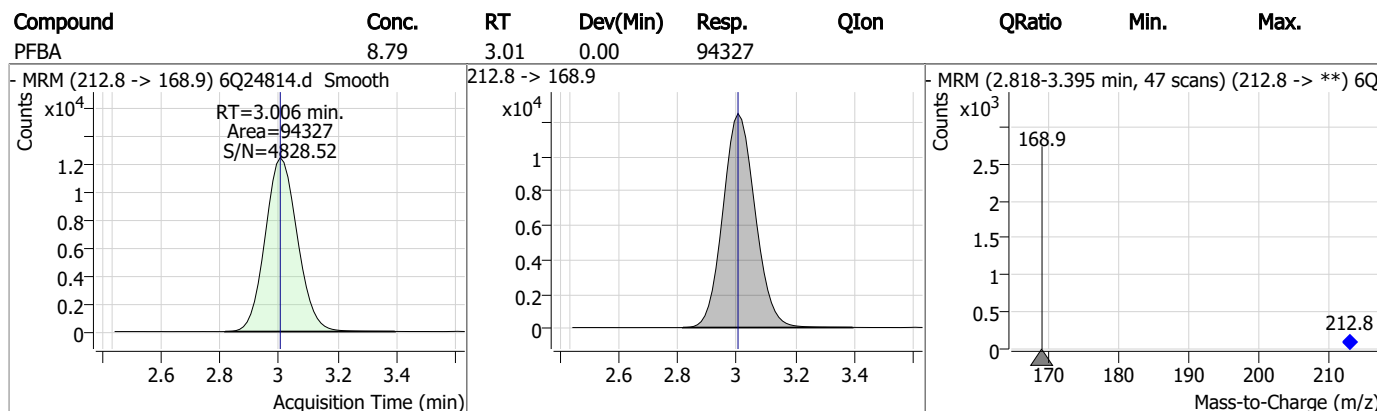
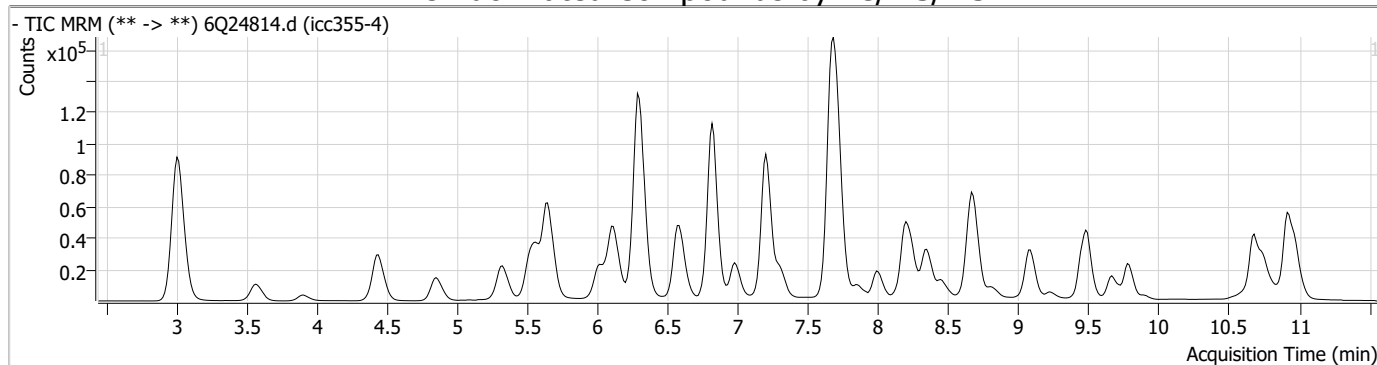
Perfluorinated Compounds by LC/MS/MS

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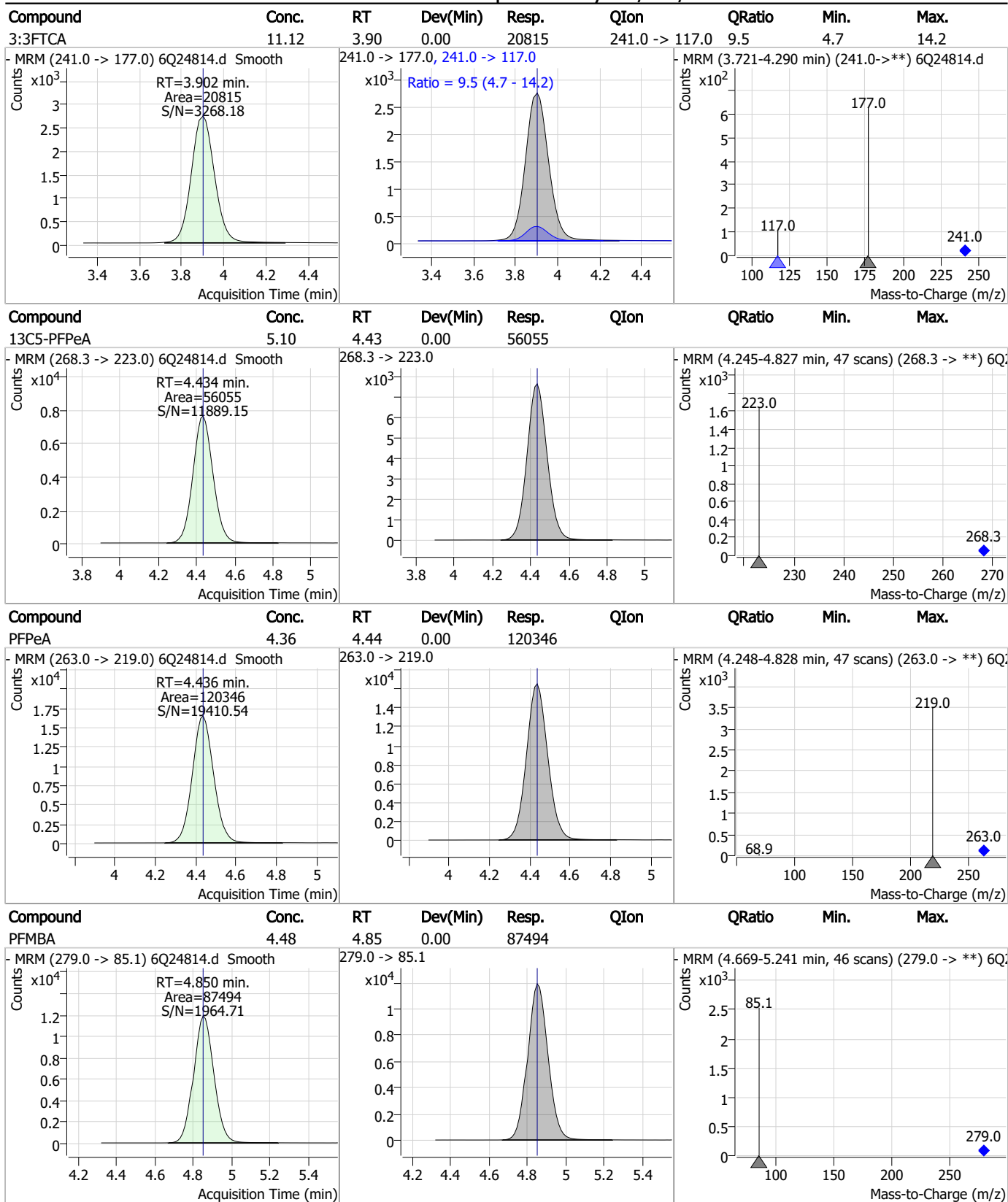
7.7.5

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Perfluorinated Compounds by LC/MS/MS

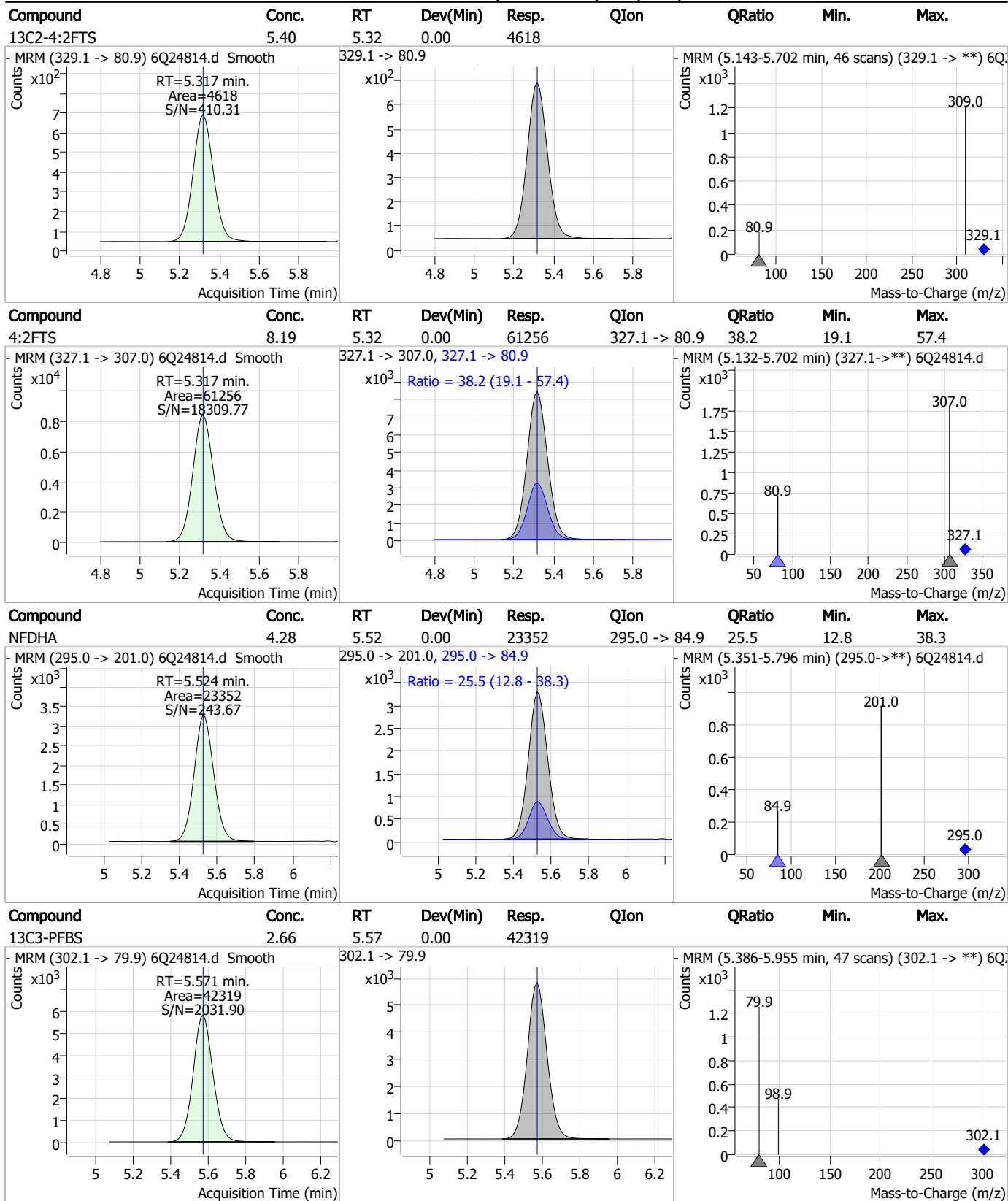


Perfluorinated Compounds by LC/MS/MS



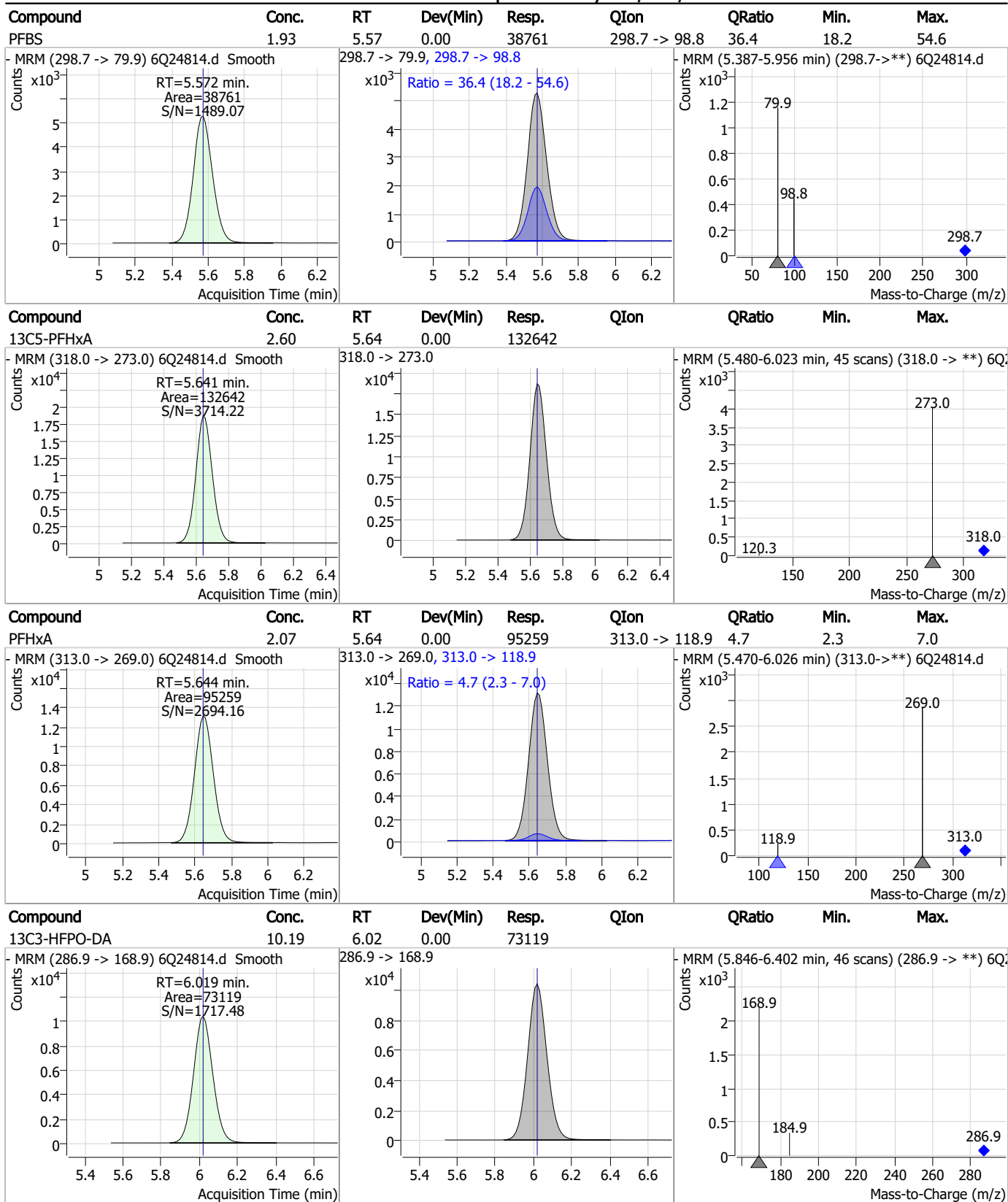
7.7.5
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Perfluorinated Compounds by LC/MS/MS



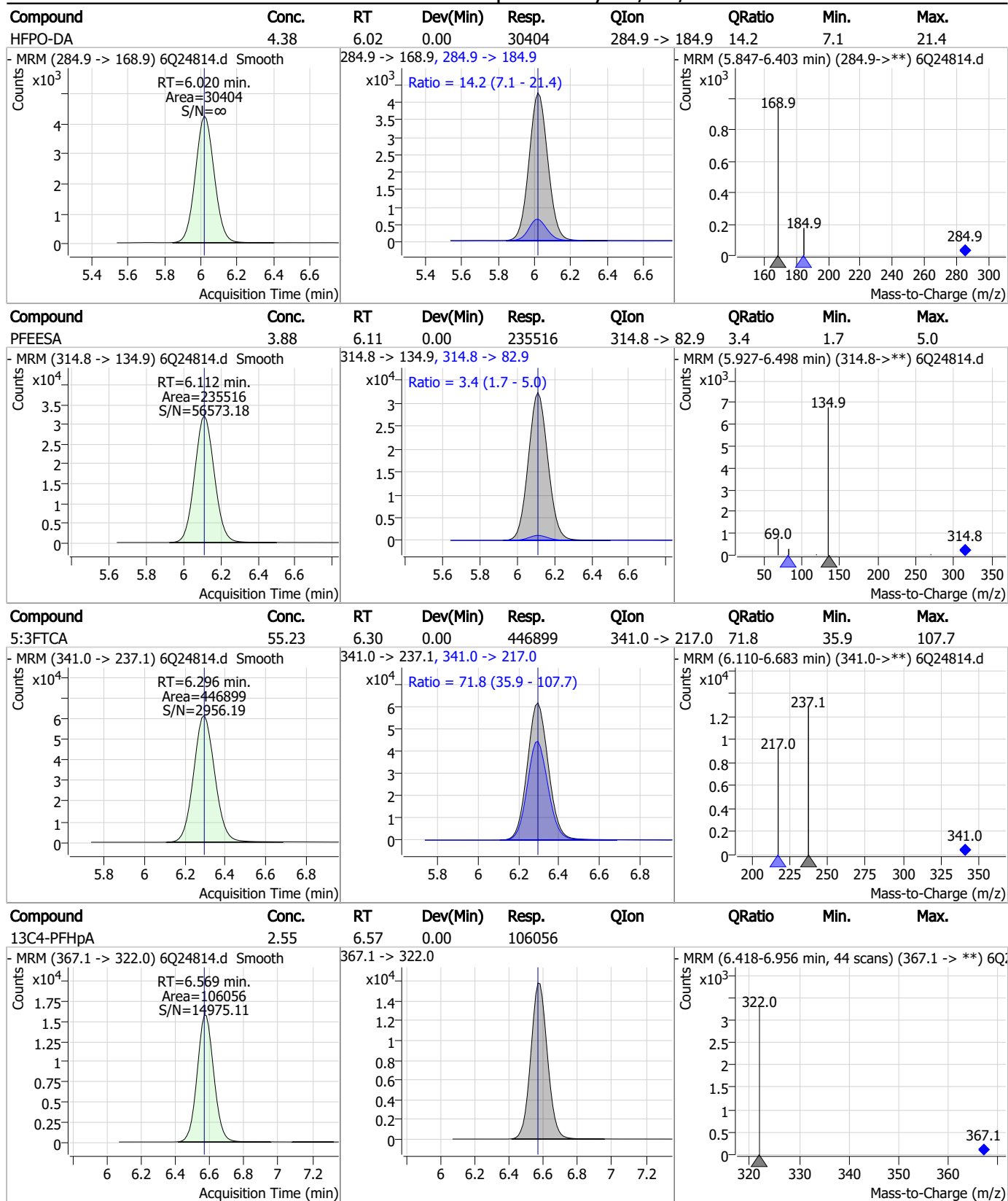
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Perfluorinated Compounds by LC/MS/MS



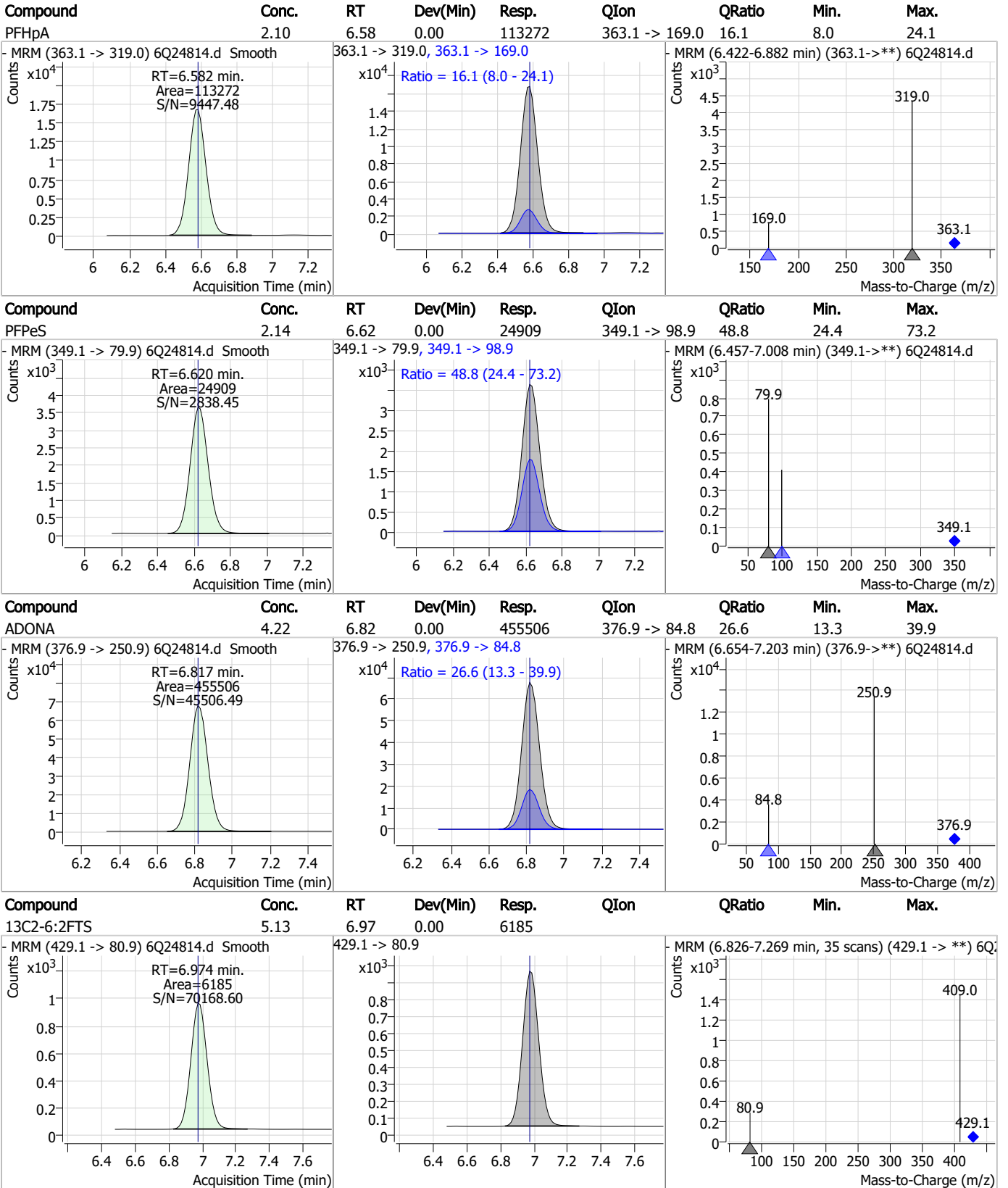
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
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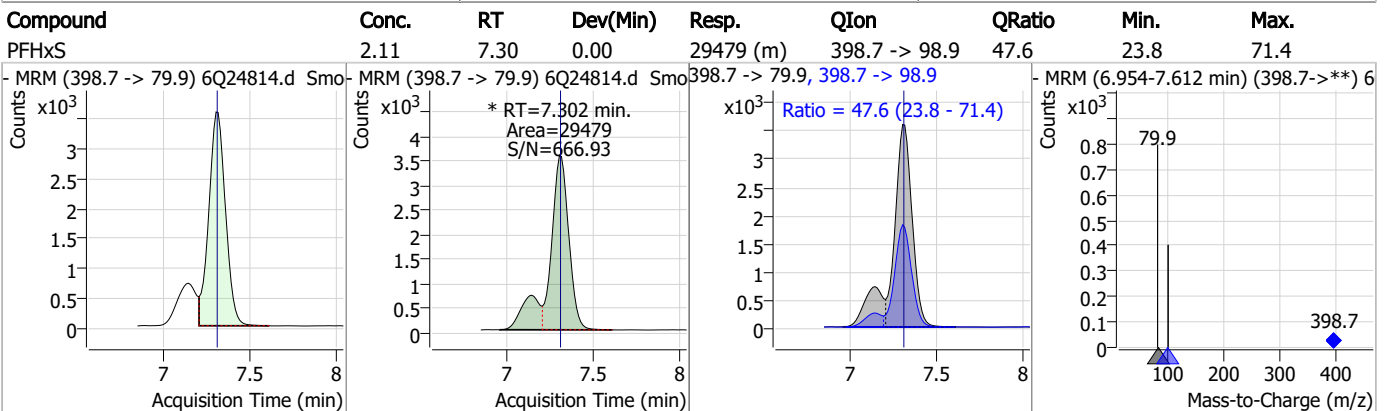
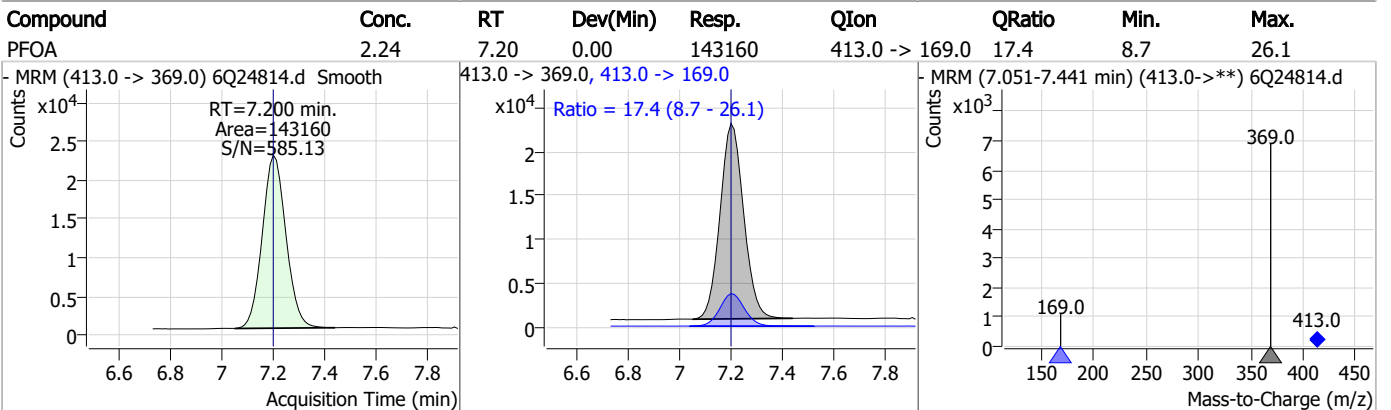
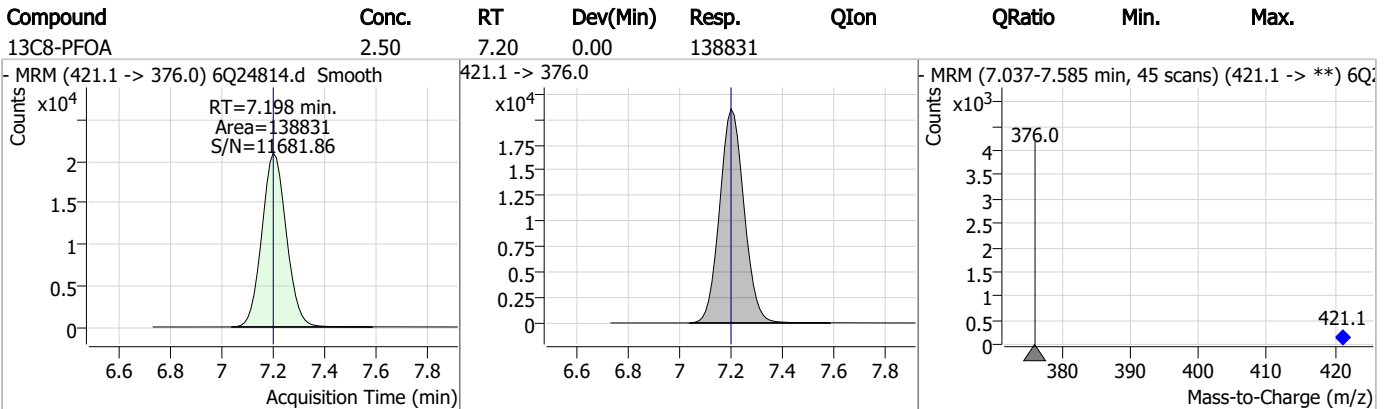
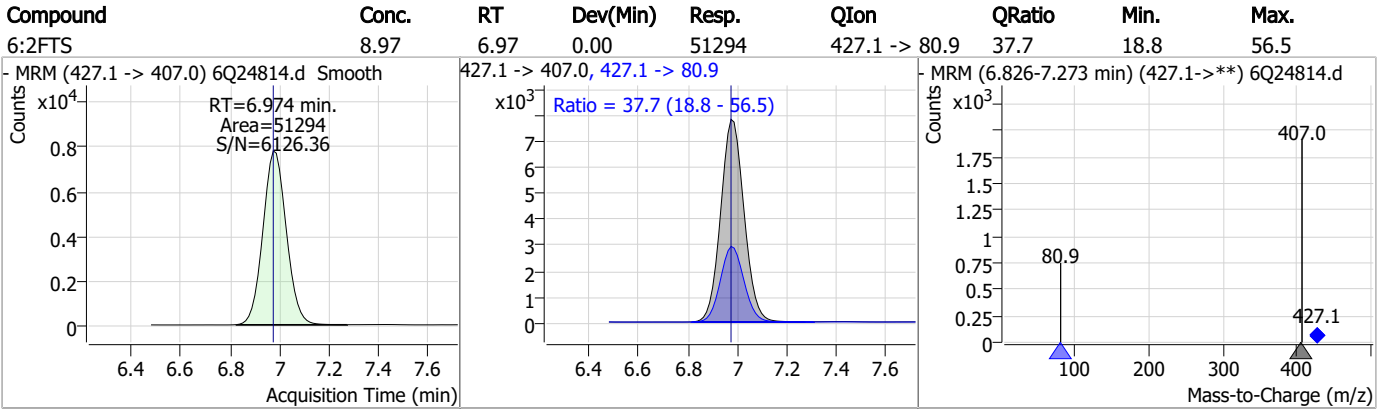
Perfluorinated Compounds by LC/MS/MS



7.7.5

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Perfluorinated Compounds by LC/MS/MS

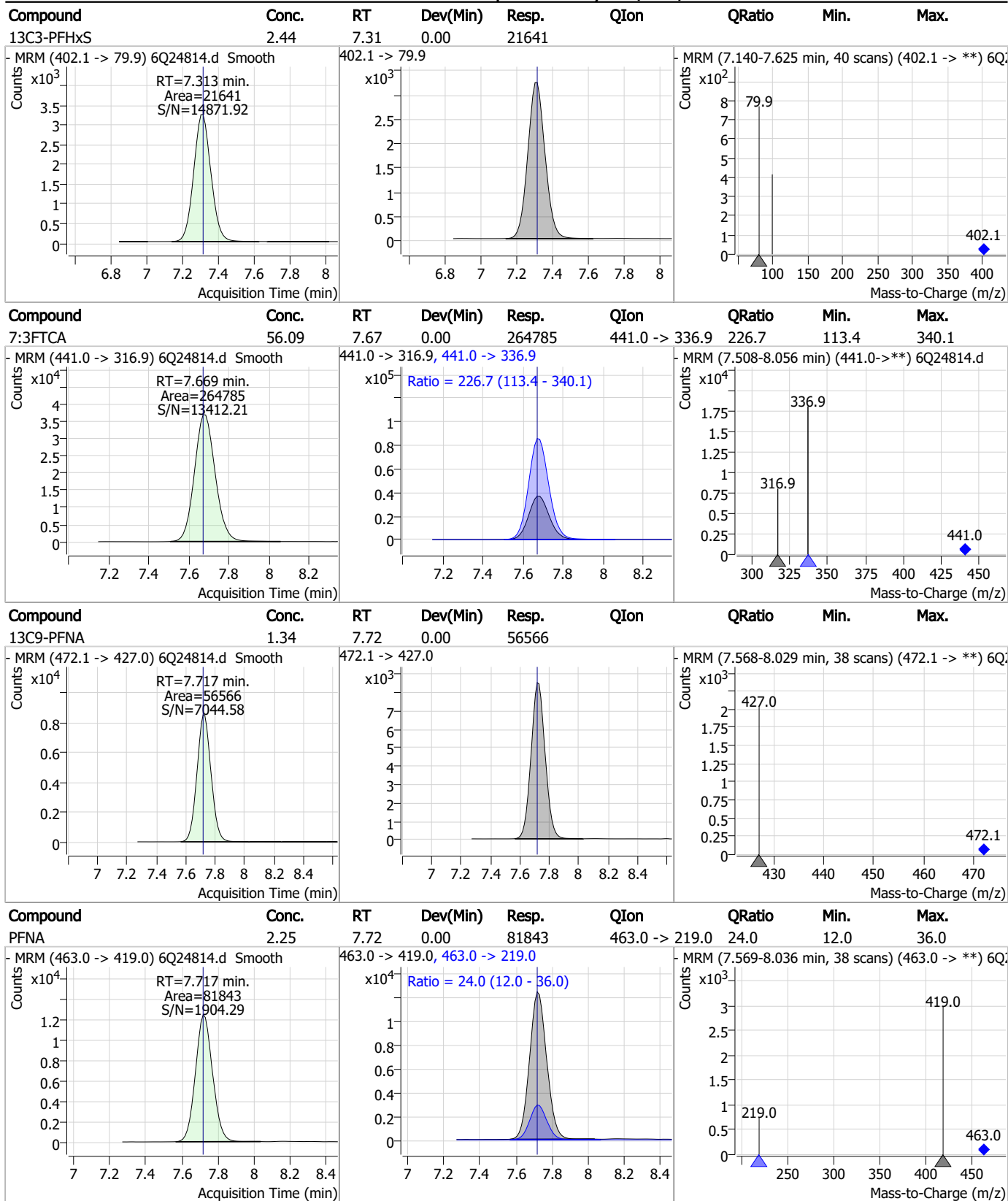


7.7.5

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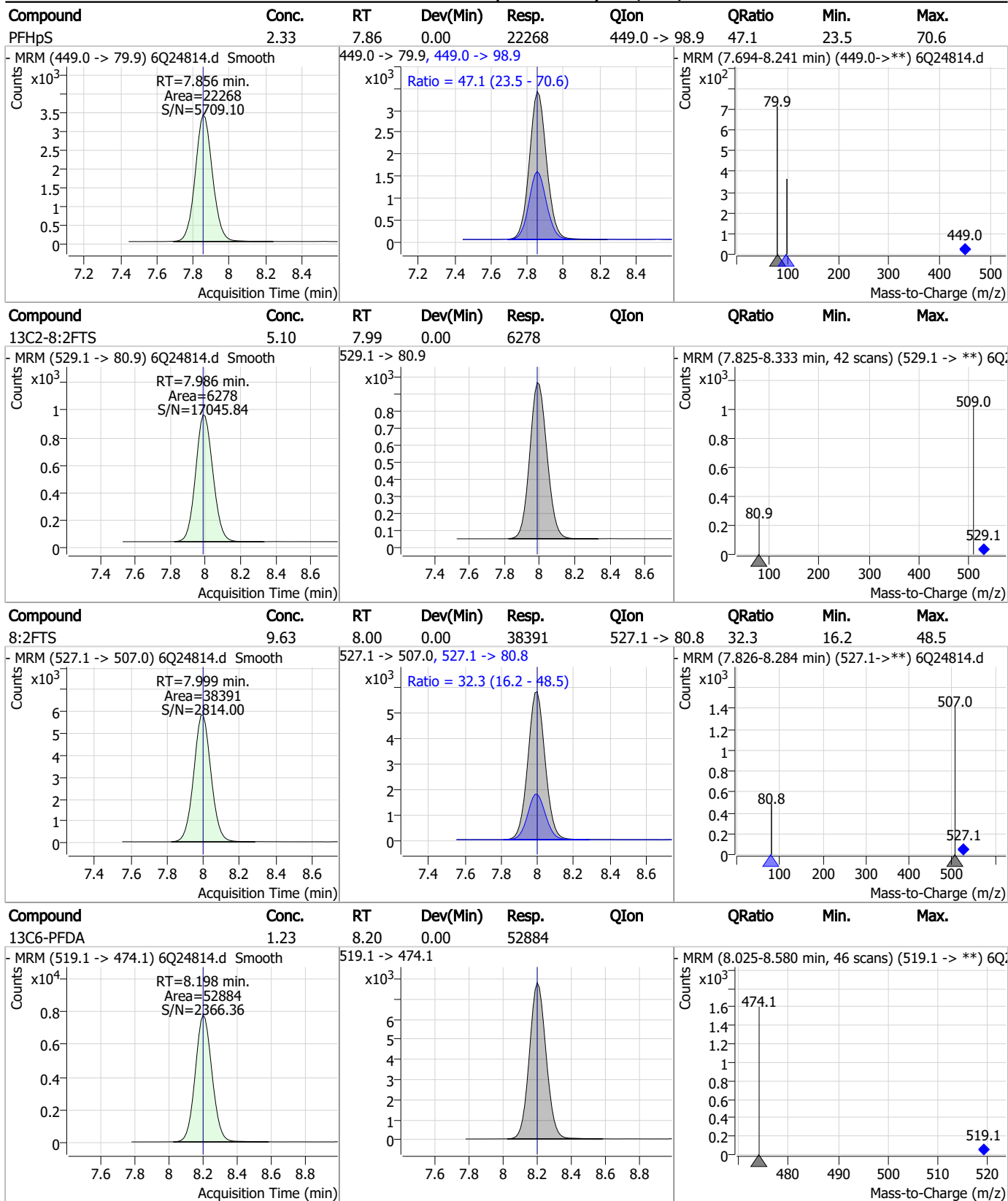


Perfluorinated Compounds by LC/MS/MS



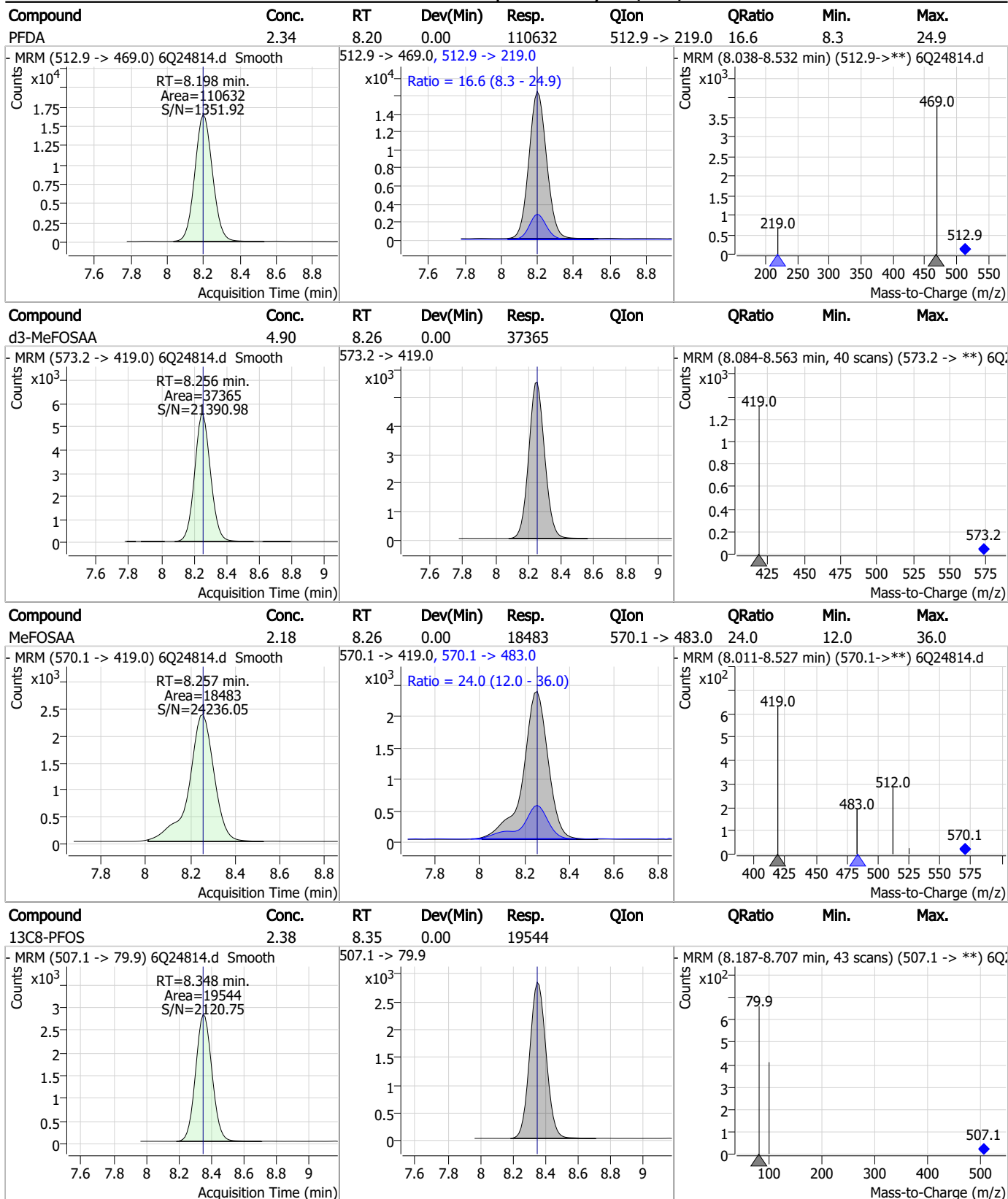
7.7.5
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Perfluorinated Compounds by LC/MS/MS



7.7.5
7

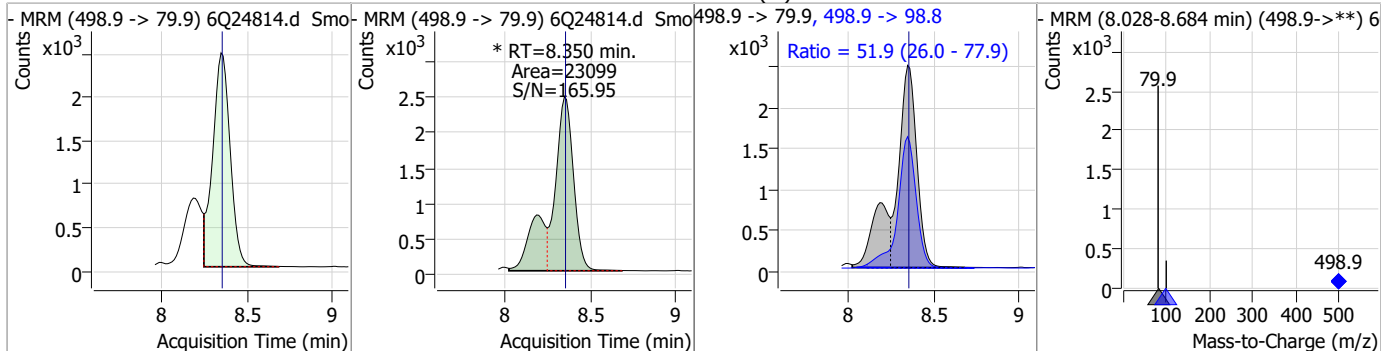
Perfluorinated Compounds by LC/MS/MS



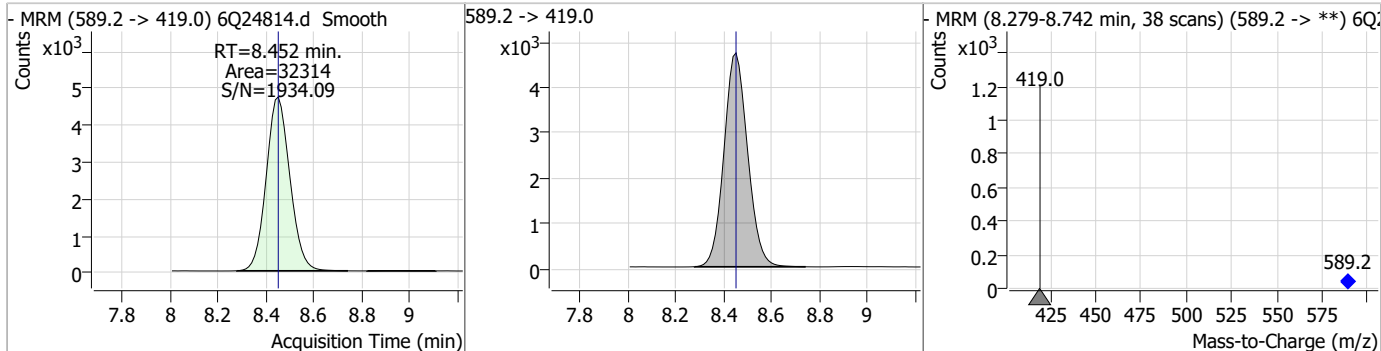
7.7.5
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Perfluorinated Compounds by LC/MS/MS

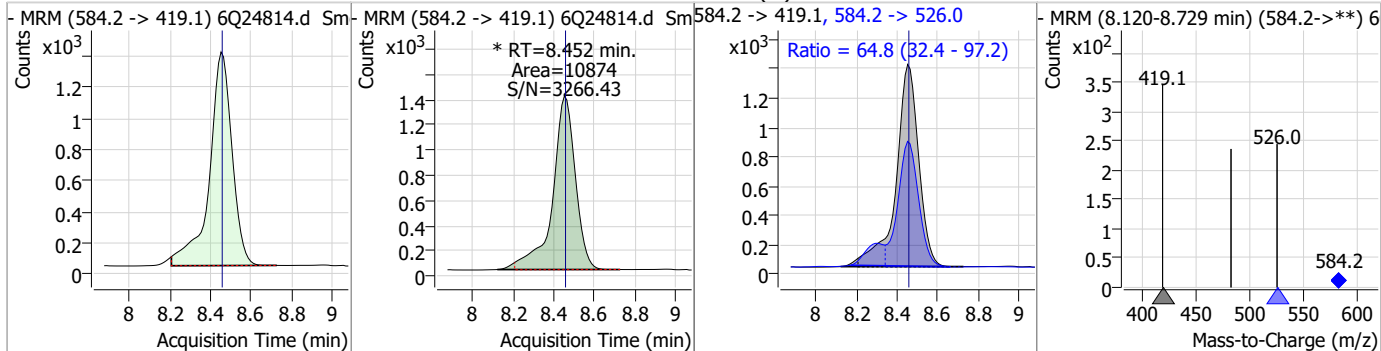
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	2.09	8.35	0.00	23099 (m)	498.9 -> 98.8	51.9	26.0	77.9



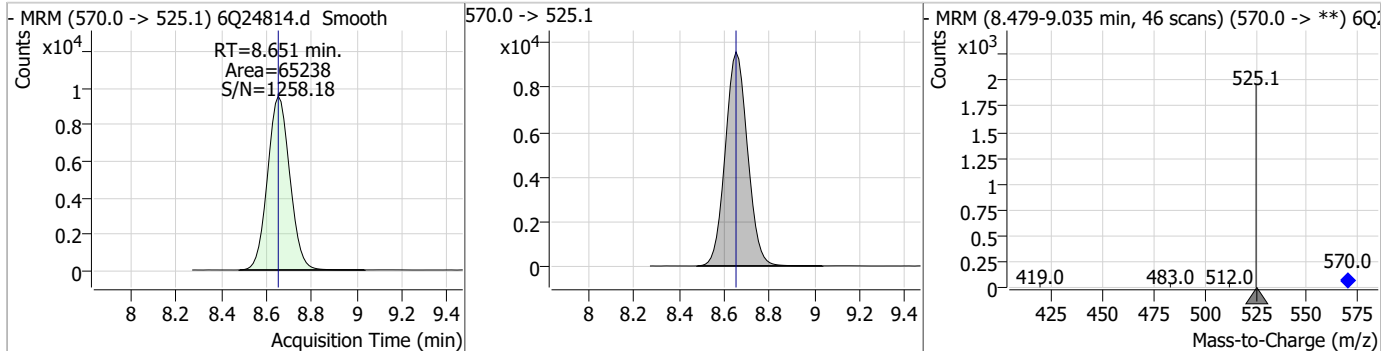
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.96	8.45	0.00	32314				



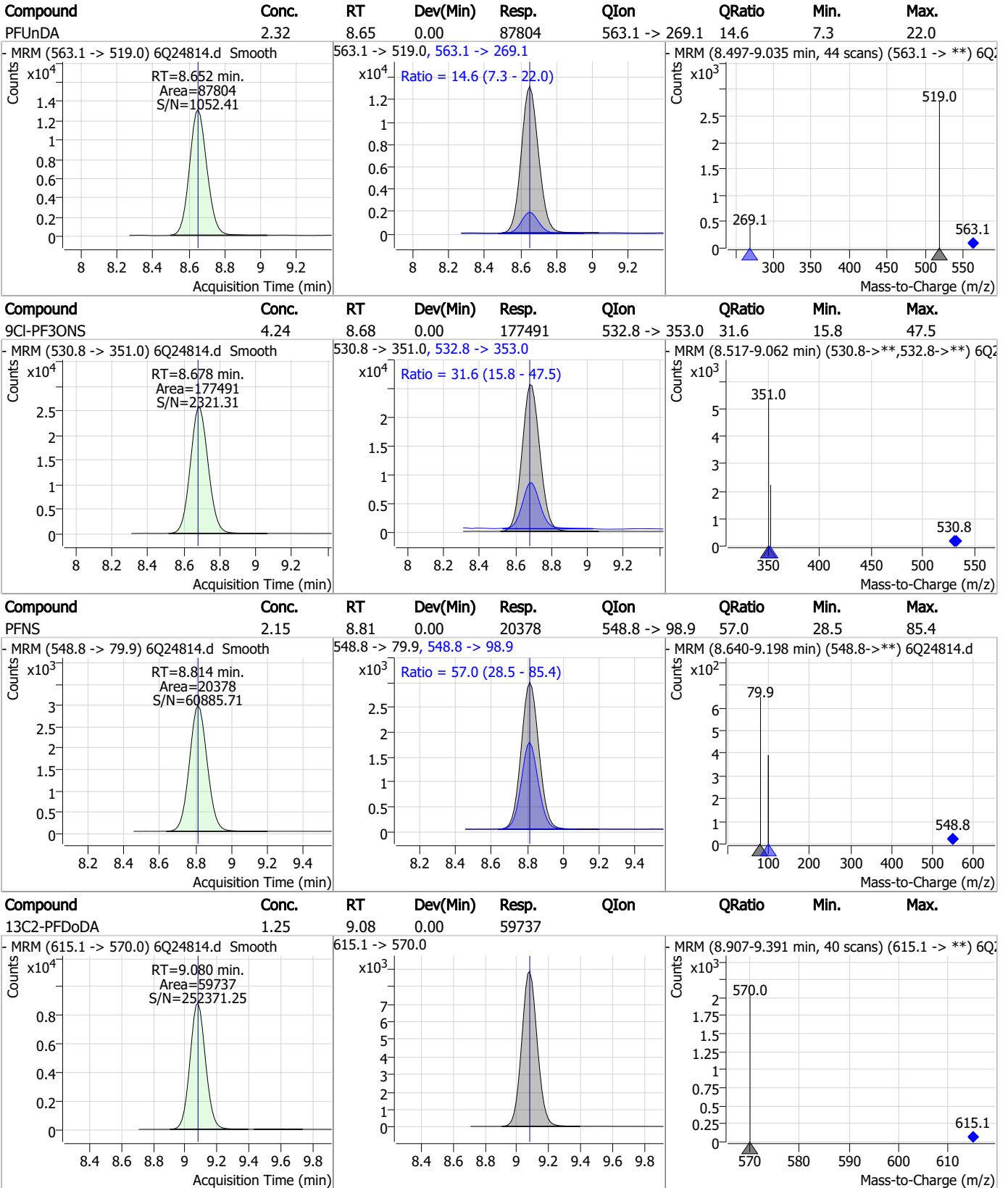
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.23	8.45	0.00	10874 (m)	584.2 -> 526.0	64.8	32.4	97.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.29	8.65	0.00	65238				



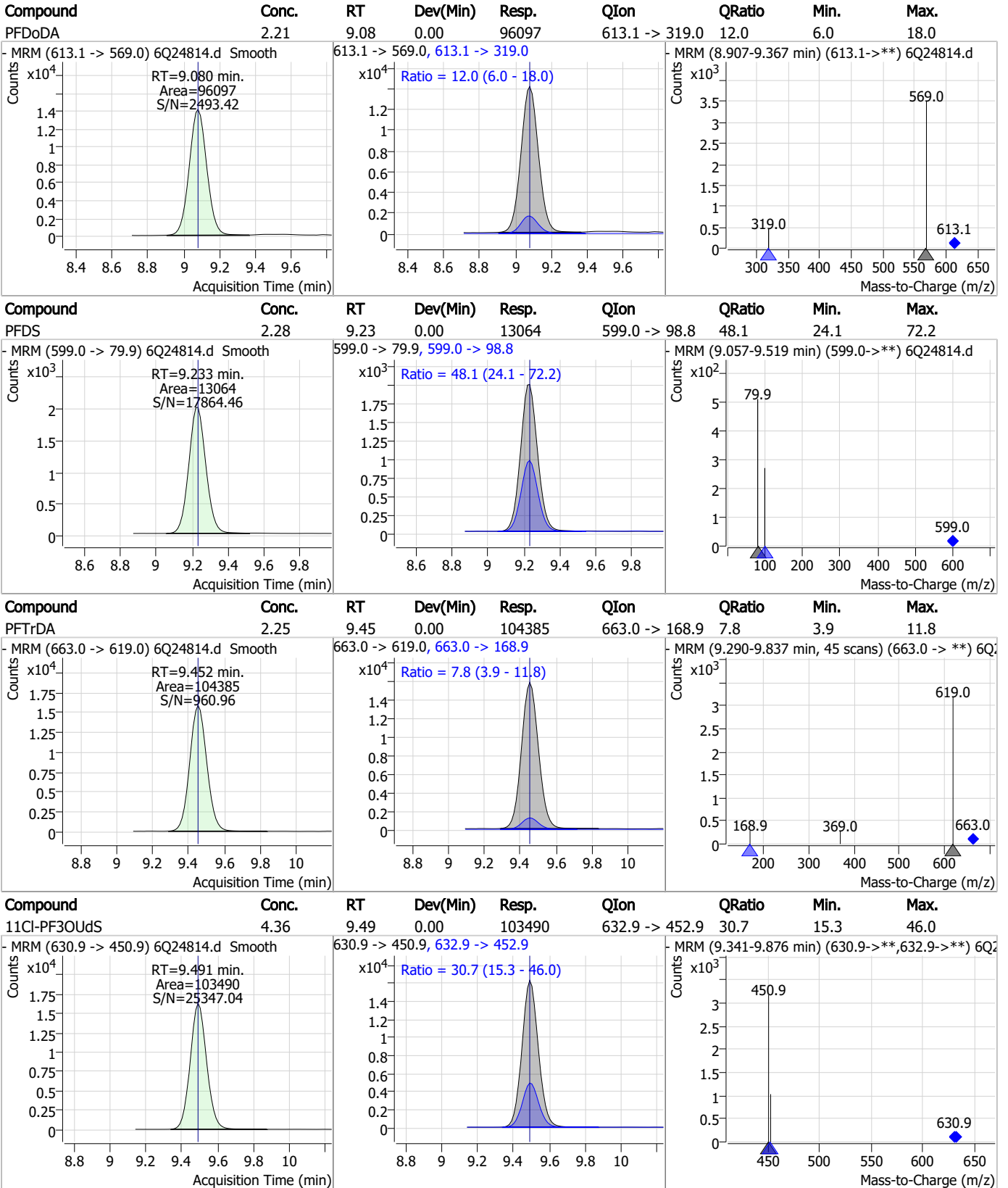
Perfluorinated Compounds by LC/MS/MS



7.7.5

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Perfluorinated Compounds by LC/MS/MS

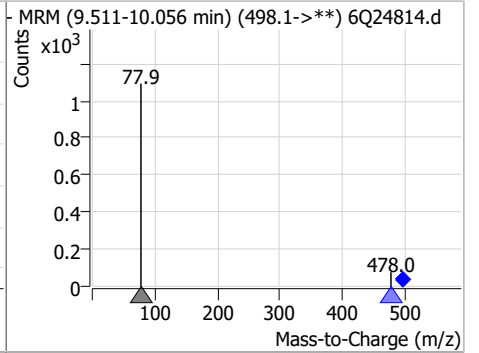
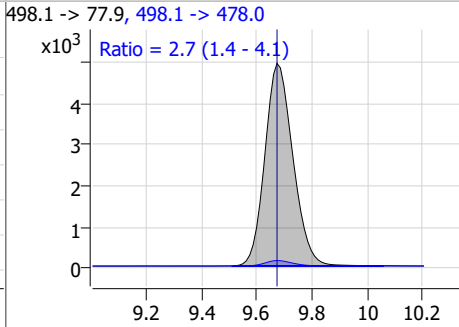
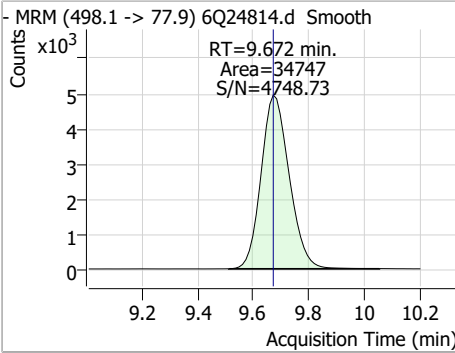


7.7.5

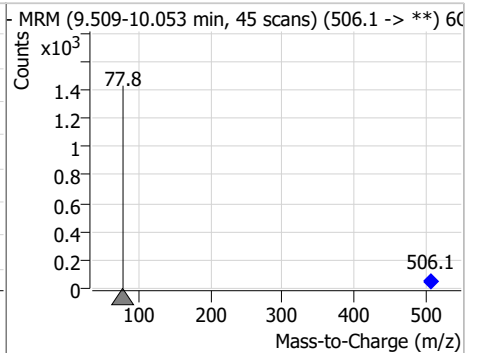
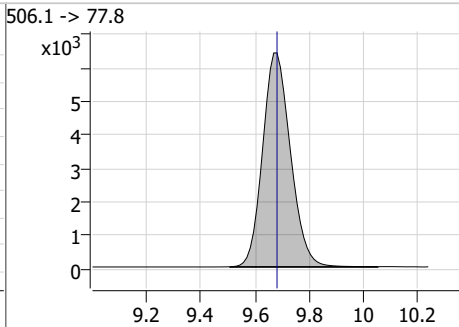
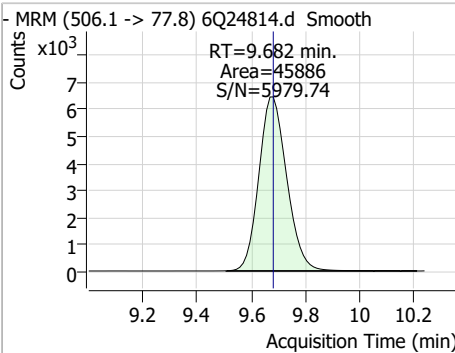
7

Perfluorinated Compounds by LC/MS/MS

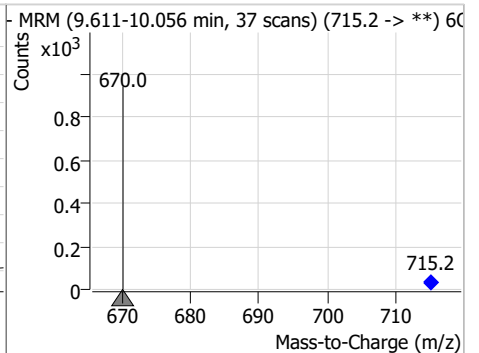
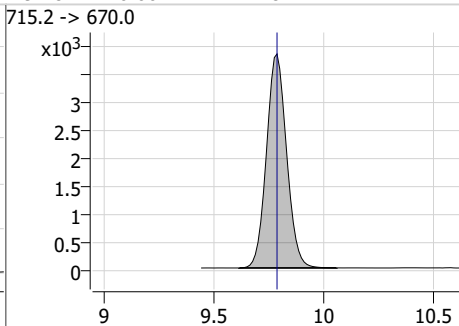
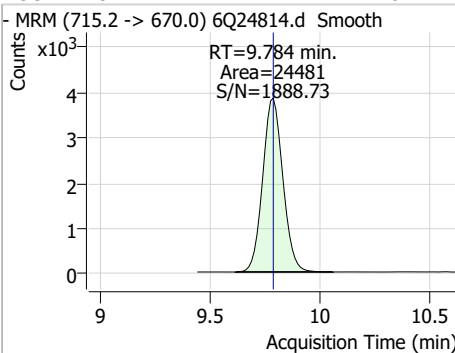
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.19	9.67	0.00	34747	498.1 -> 478.0	2.7	1.4	4.1



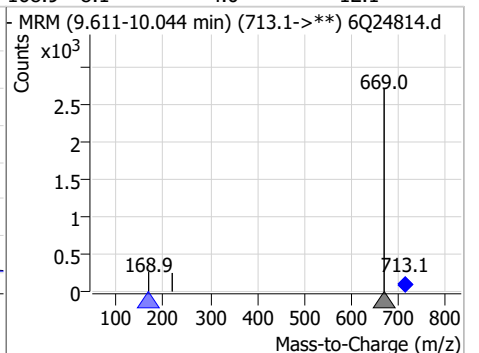
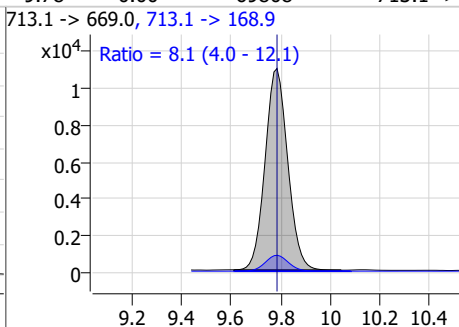
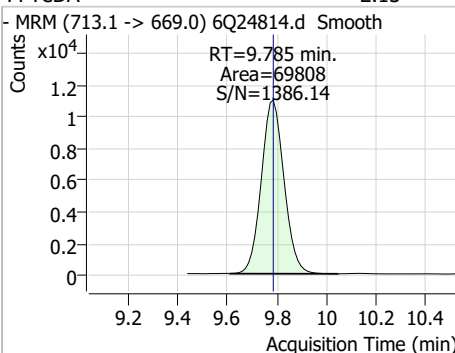
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.50	9.68	0.00	45886				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.28	9.78	0.00	24481				

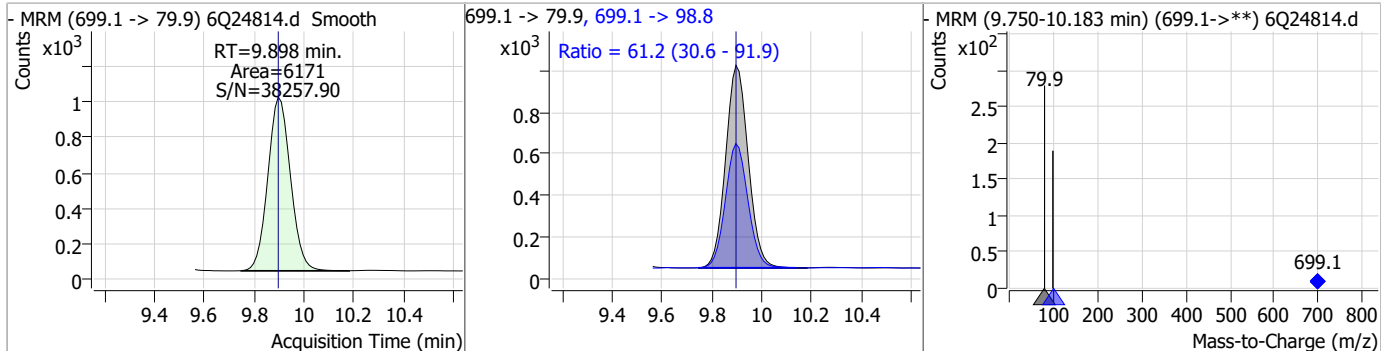


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.13	9.78	0.00	69808	713.1 -> 168.9	8.1	4.0	12.1

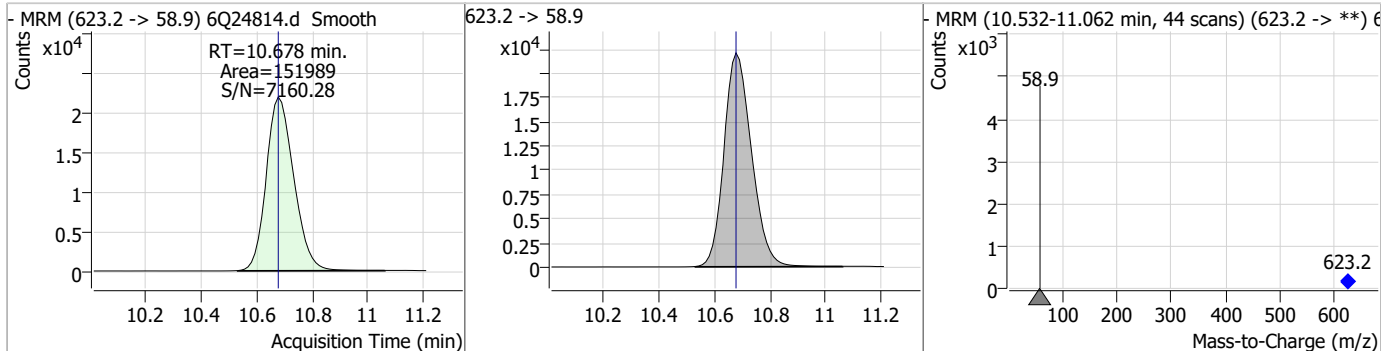


Perfluorinated Compounds by LC/MS/MS

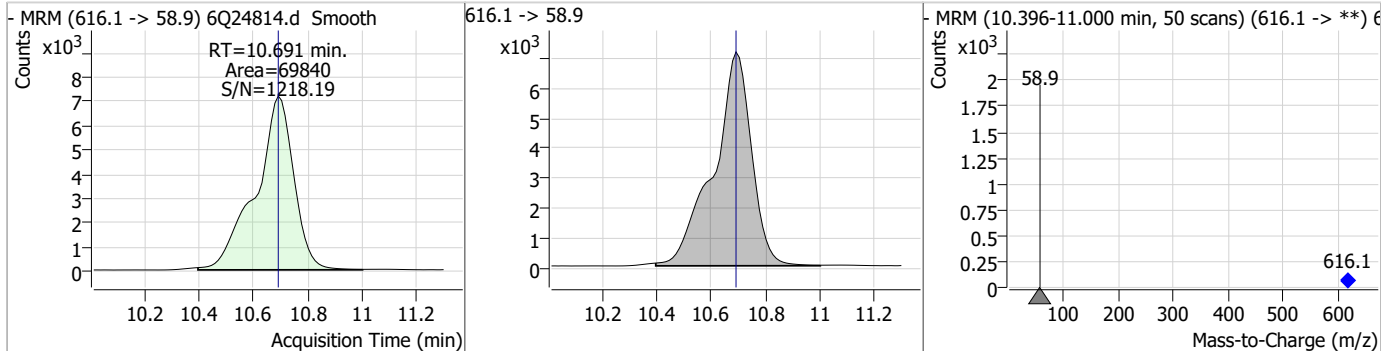
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	2.19	9.90	0.00	6171	699.1 -> 98.8	61.2	30.6	91.9



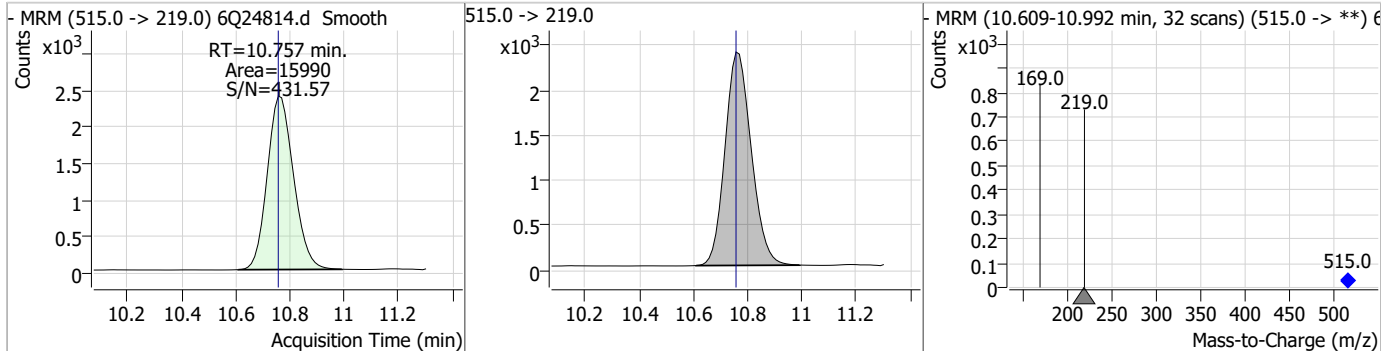
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.51	10.68	0.00	151989				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	10.70	10.69	0.00	69840				

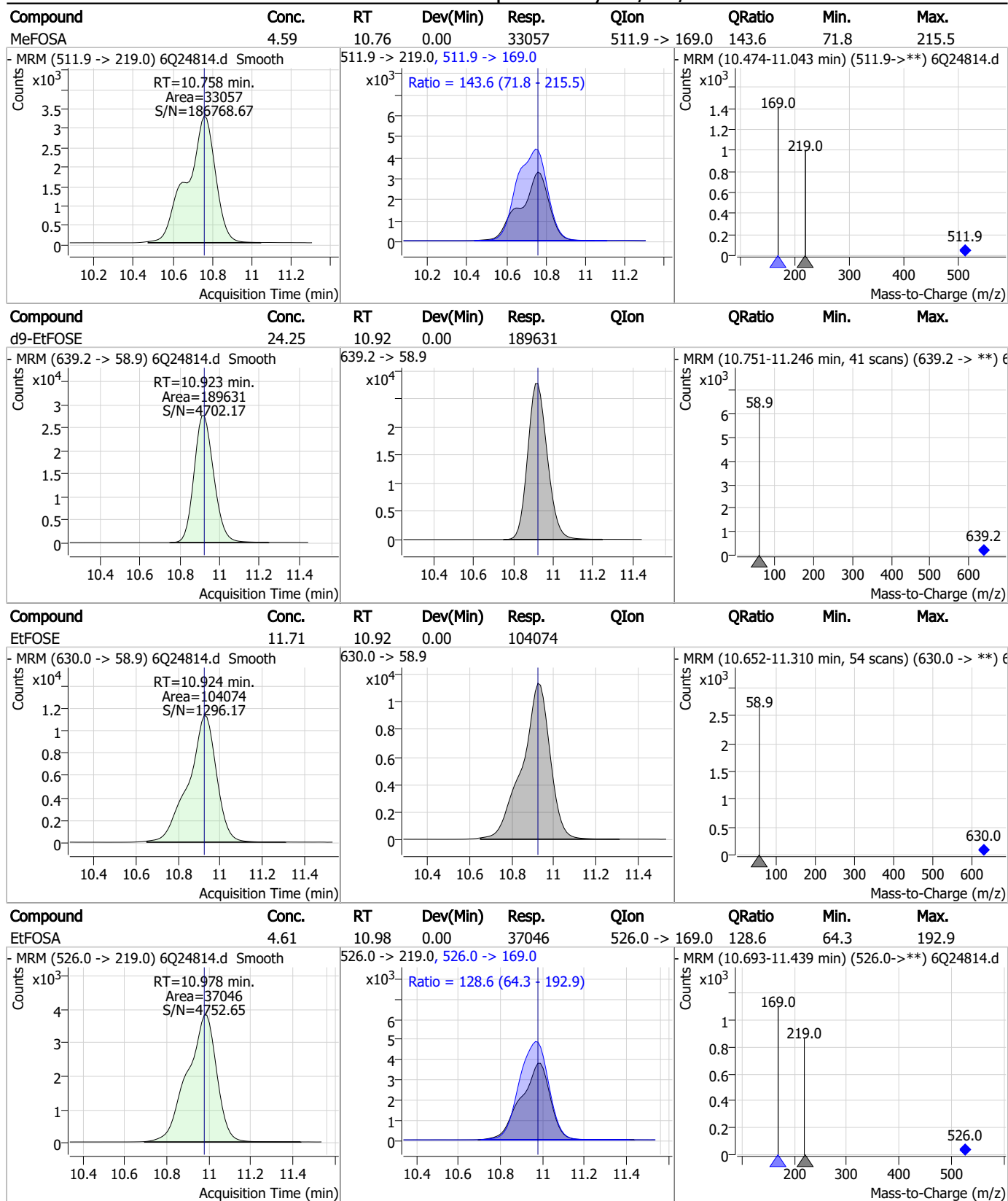


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.41	10.76	0.00	15990				



7.7.5
7

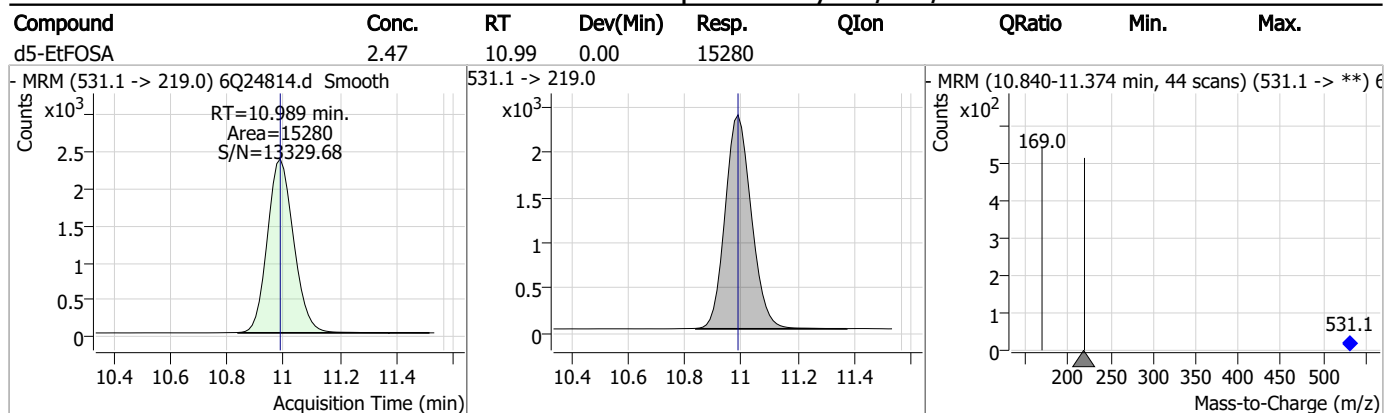
Perfluorinated Compounds by LC/MS/MS



7.7.5

7

Perfluorinated Compounds by LC/MS/MS



7.7.5
7

Manual Integration Approval Summary

Sample Number: S6Q355-ICC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24814.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 21:18 Supervisor approved: 09/22/23 13:16 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

7.7.5.1

7

Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtje
 09/22/23 13:16

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24815.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 9:33:15 PM
 Sample Name : ic355-5
 Vial : P1-A6
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	325232	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	51685	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	119603	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	97812	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	131938	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	51596	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	50498	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	57546	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	57161	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	23497	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	43567	2.50 µg/L	-0.012
M3-PFBS	5.559	302.1 -> 79.9	38318	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	21676	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	19792	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	4265	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6151	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	5638	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	36630	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	67127	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	31252	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	138796	25.00 µg/L	0.000
M9-EtFOSE	10.911	639.2 -> 58.9	191757	25.00 µg/L	-0.012
M5-EtFOSA	10.989	531.1 -> 219.0	14688	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	15612	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	26638	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	132512	5.00 µg/L	-0.012
18O2-PFHxS	7.313	403.0 -> 83.9	15717	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	137870	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	47014	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	61195	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	93693	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4265	5.20 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.0%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6151	5.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.4%		
13C2-8:2FTS	7.998	529.1 -> 80.9	5638	4.78 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.5%		
13C2-PFDoDA	9.079	615.1 -> 570.0	57161	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.0%		
13C2-PFTeDA	9.784	715.2 -> 670.0	23497	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.8%		
13C3-PFBS	5.559	302.1 -> 79.9	38318	2.52 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 100.7%		
13C3-PFHxS	7.301	402.1 -> 79.9	21676	2.55 µg/L	-0.012

7.7.6
7



Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C4-PFBA	2.985	216.8 -> 171.9	325232	10.06 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFHpA	6.569	367.1 -> 322.0	97812	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
13C5-PFHxA	5.641	318.0 -> 273.0	119603	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.9%	
13C5-PFPeA	4.422	268.3 -> 223.0	51685	4.85 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
13C6-PFDA	8.198	519.1 -> 474.1	50498	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.4%	
13C7-PFUnDA	8.651	570.0 -> 525.1	57546	1.14 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.0%	
13C8-FOSA	9.670	506.1 -> 77.8	43567	2.49 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
13C8-PFOA	7.198	421.1 -> 376.0	131938	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.4%	
13C8-PFOS	8.348	507.1 -> 79.9	19792	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C9-PFNA	7.717	472.1 -> 427.0	51596	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.0%	
d3-MeFOSAA	8.256	573.2 -> 419.0	36630	5.04 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	67127	9.66 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.6%	
d3-MeFOSA	10.757	515.0 -> 219.0	15612	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.6%	
d5-EtFOSAA	8.452	589.2 -> 419.0	31252	5.03 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
d7-MeFOSE	10.678	623.2 -> 58.9	138796	24.42 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.7%	
d9-EtFOSE	10.911	639.2 -> 58.9	191757	25.70 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.8%	
d5-EtFOSA	10.989	531.1 -> 219.0	14688	2.49 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.6%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	134145	19.42 µg/L	98
		327.1 -> 80.9	49221		
6:2FTS	6.974	427.1 -> 407.0	105436	18.54 µg/L	99
		427.1 -> 80.9	40130		
8:2FTS	7.999	527.1 -> 507.0	74502	20.81 µg/L	89
		527.1 -> 80.8	28532		
EtFOSAA	8.452	584.2 -> 419.1	24337	5.15 µg/L	m 97
		584.2 -> 526.0	15290		
FOSA	9.672	498.1 -> 77.9	75918	5.05 µg/L	99
		498.1 -> 478.0	2266		
MeFOSAA	8.257	570.1 -> 419.0	42180	5.08 µg/L	95
		570.1 -> 483.0	9006		
PFBA	2.993	212.8 -> 168.9	202917	20.25 µg/L	100
PFBS	5.572	298.7 -> 79.9	79713	4.39 µg/L	94
		298.7 -> 98.8	31747		
PFDA	8.198	512.9 -> 469.0	233368	5.17 µg/L	98
		512.9 -> 219.0	36589		
PFDoDA	9.080	613.1 -> 569.0	208707	5.01 µg/L	98
		613.1 -> 319.0	23808		
PFDS	9.233	599.0 -> 79.9	27923	4.81 µg/L	97

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	12884			
PFHpA	6.569	363.1 -> 319.0	256155	5.15	µg/L	97
		363.1 -> 169.0	37532			
PFHpS	7.856	449.0 -> 79.9	44571	4.60	µg/L	90
		449.0 -> 98.9	23888			
PFHxA	5.644	313.0 -> 269.0	213888	5.14	µg/L	99
		313.0 -> 118.9	9162			
PFHxS	7.302	398.7 -> 79.9	62366	4.45	µg/L	m 98
		398.7 -> 98.9	30503			
PFNA	7.717	463.0 -> 419.0	170325	5.14	µg/L	98
		463.0 -> 219.0	42500			
PFNS	8.814	548.8 -> 79.9	45869	4.77	µg/L	98
		548.8 -> 98.9	25315			
PFOA	7.200	413.0 -> 369.0	304088	5.00	µg/L	99
		413.0 -> 169.0	52210			
PFOS	8.350	498.9 -> 79.9	50754	4.54	µg/L	m 99
		498.9 -> 98.8	26152			
PFPeA	4.424	263.0 -> 219.0	259432	10.19	µg/L	100
PFPeS	6.620	349.1 -> 79.9	54525	4.68	µg/L	96
		349.1 -> 98.9	25025			
PFTeDA	9.785	713.1 -> 669.0	153006	4.87	µg/L	100
		713.1 -> 168.9	12448			
PFTrDA	9.452	663.0 -> 619.0	230283	5.19	µg/L	100
		663.0 -> 168.9	17963			
PFUnDA	8.652	563.1 -> 519.0	185677	5.56	µg/L	98
		563.1 -> 269.1	28423			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	222031	10.19	µg/L	99
		632.9 -> 452.9	67517			
9Cl-PF3ONS	8.690	530.8 -> 351.0	396857	10.32	µg/L	92
		532.8 -> 353.0	107629			
ADONA	6.817	376.9 -> 250.9	942619	9.51	µg/L	99
		376.9 -> 84.8	257343			
HFPO-DA	6.020	284.9 -> 168.9	65913	10.34	µg/L	99
		284.9 -> 184.9	9203			
3:3FTCA	3.858	241.0 -> 177.0	42675	24.41	µg/L	100
		241.0 -> 117.0	4106			
5:3FTCA	6.283	341.0 -> 237.1	939448	128.76	µg/L	95
		341.0 -> 217.0	633405			
7:3FTCA	7.669	441.0 -> 316.9	551551	129.58	µg/L	91
		441.0 -> 336.9	1169924			
EtFOSA	10.990	526.0 -> 219.0	76420	9.90	µg/L	97
		526.0 -> 169.0	100639			
EtFOSE	10.924	630.0 -> 58.9	229838	25.57	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	70976	10.10	µg/L	92
		511.9 -> 169.0	95178			
MeFOSE	10.691	616.1 -> 58.9	155576	26.11	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	14028	4.92	µg/L	88
		699.1 -> 98.8	7331			
NFDHA	5.524	295.0 -> 201.0	49371	10.04	µg/L	100
		295.0 -> 84.9	12544			
PFMBA	4.850	279.0 -> 85.1	186608	10.35	µg/L	100
PFMPA	3.551	229.0 -> 84.9	136106	10.20	µg/L	100
PFEESA	6.112	314.8 -> 134.9	507041	9.27	µg/L	100
		314.8 -> 82.9	17173			

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

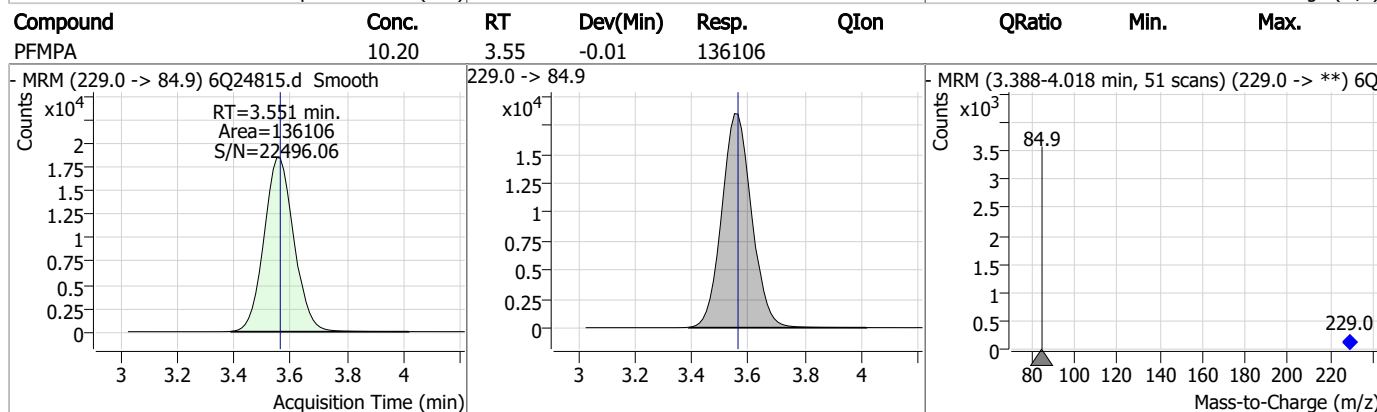
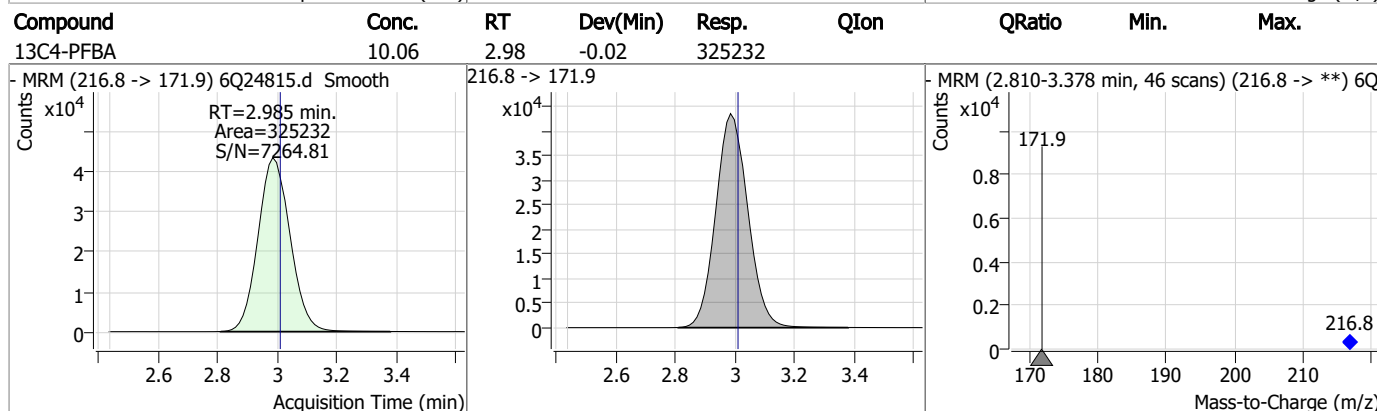
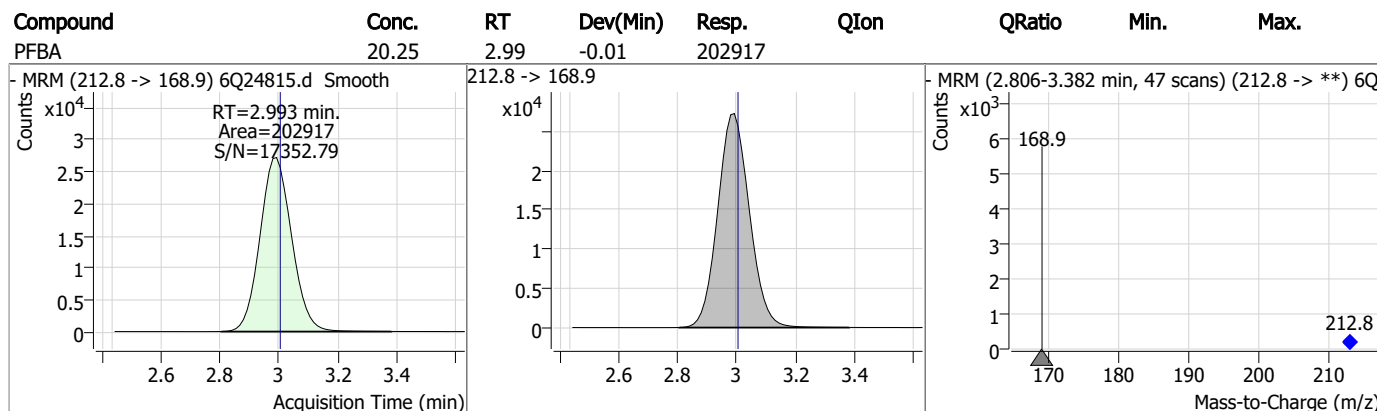
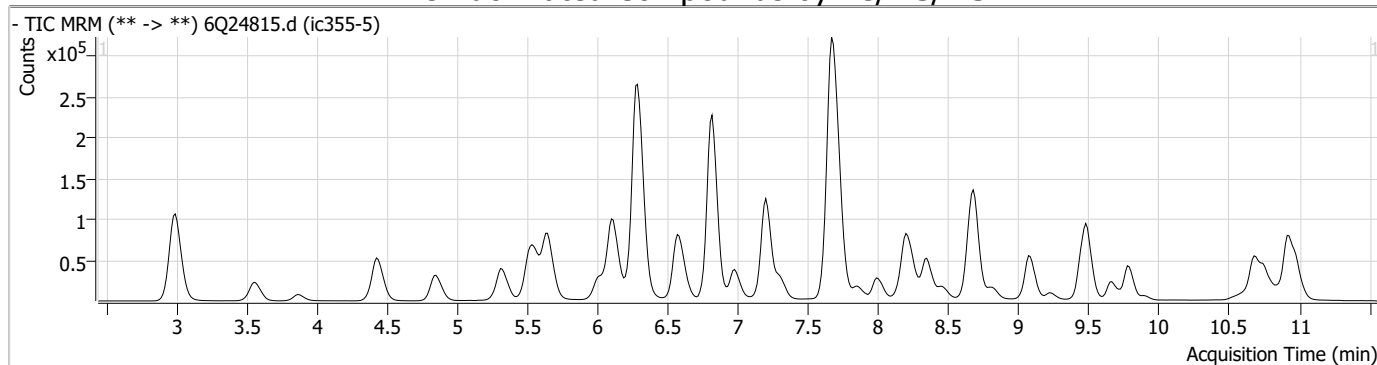
Perfluorinated Compounds by LC/MS/MS

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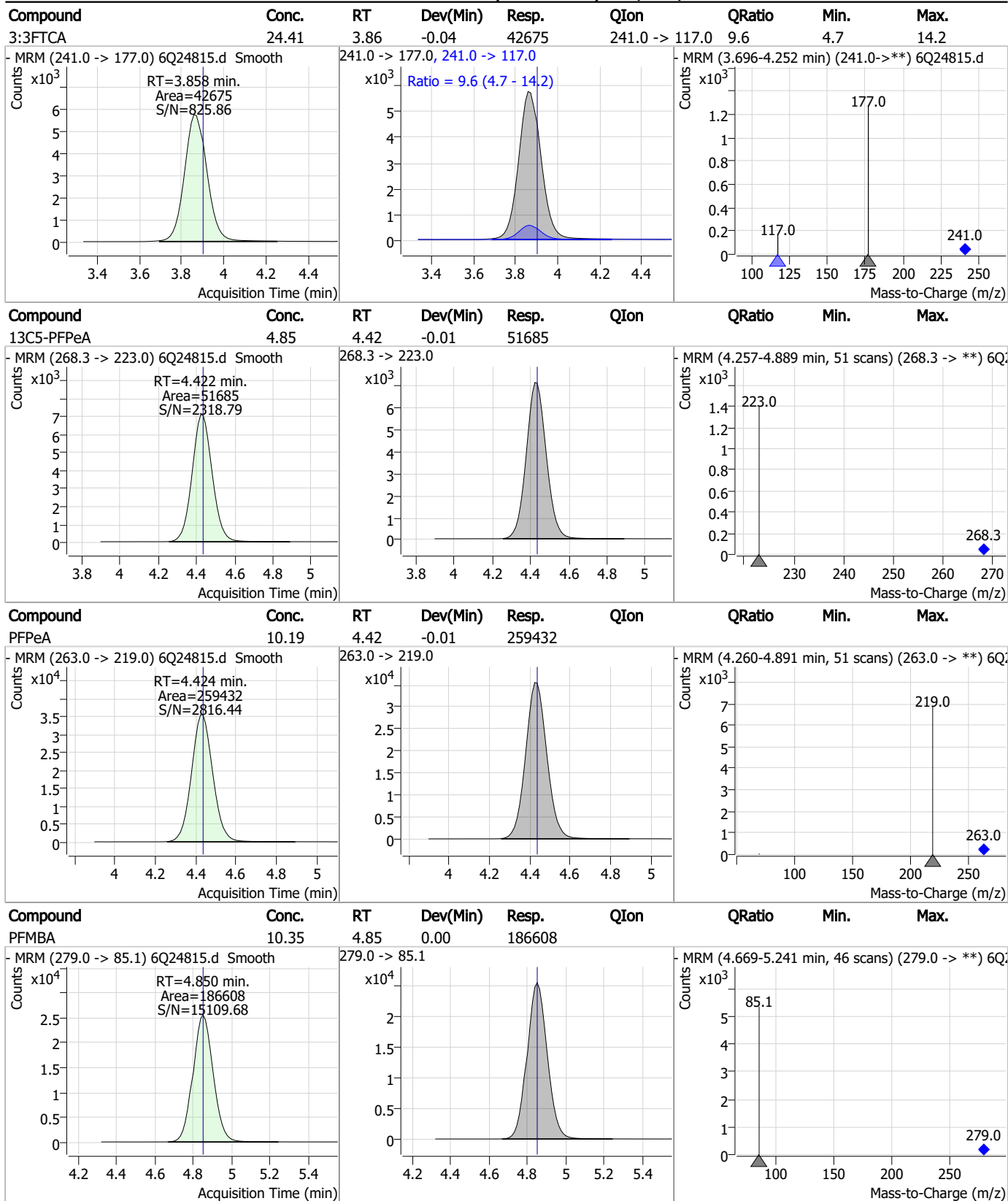
7.7.6

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Perfluorinated Compounds by LC/MS/MS

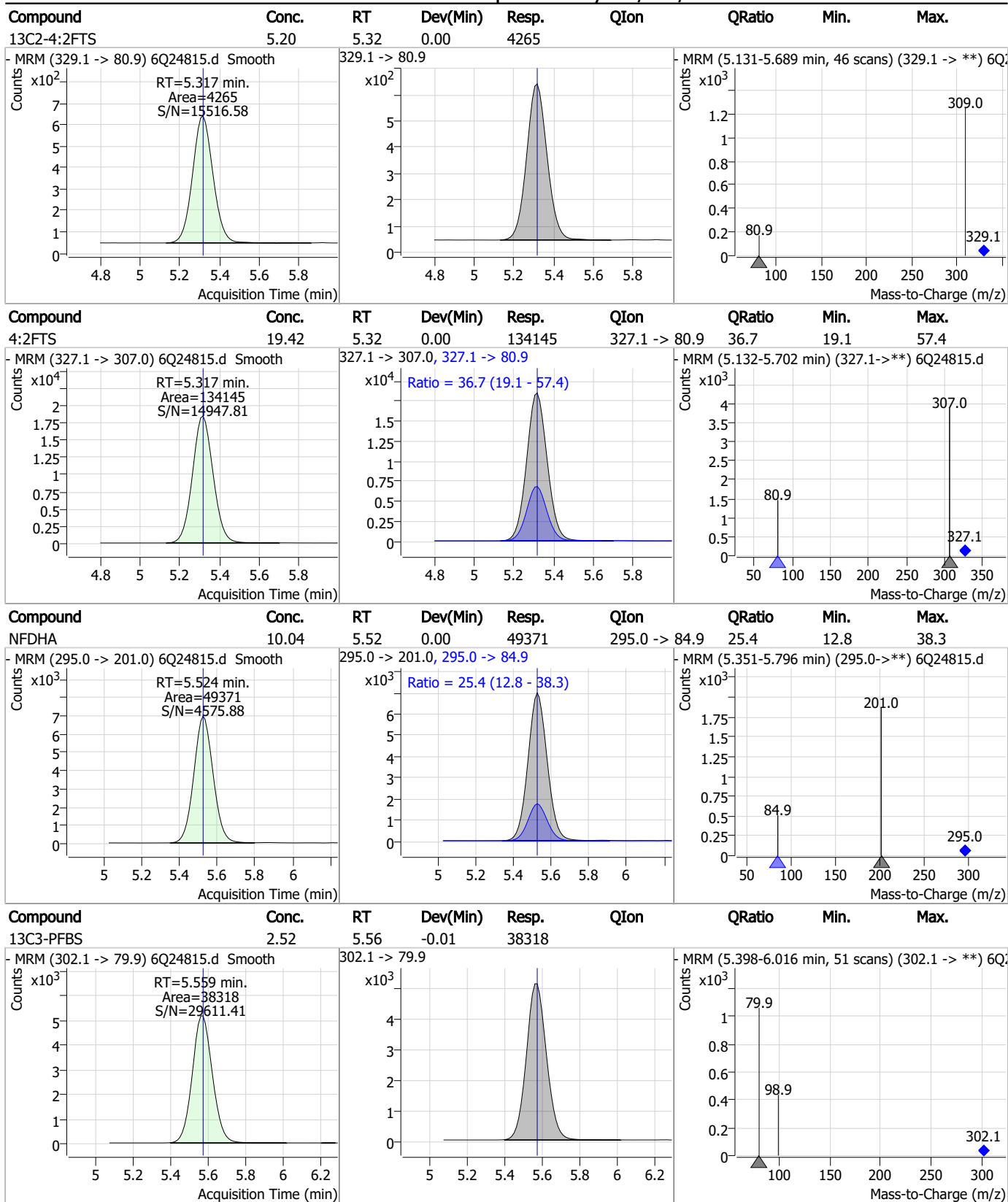


Perfluorinated Compounds by LC/MS/MS



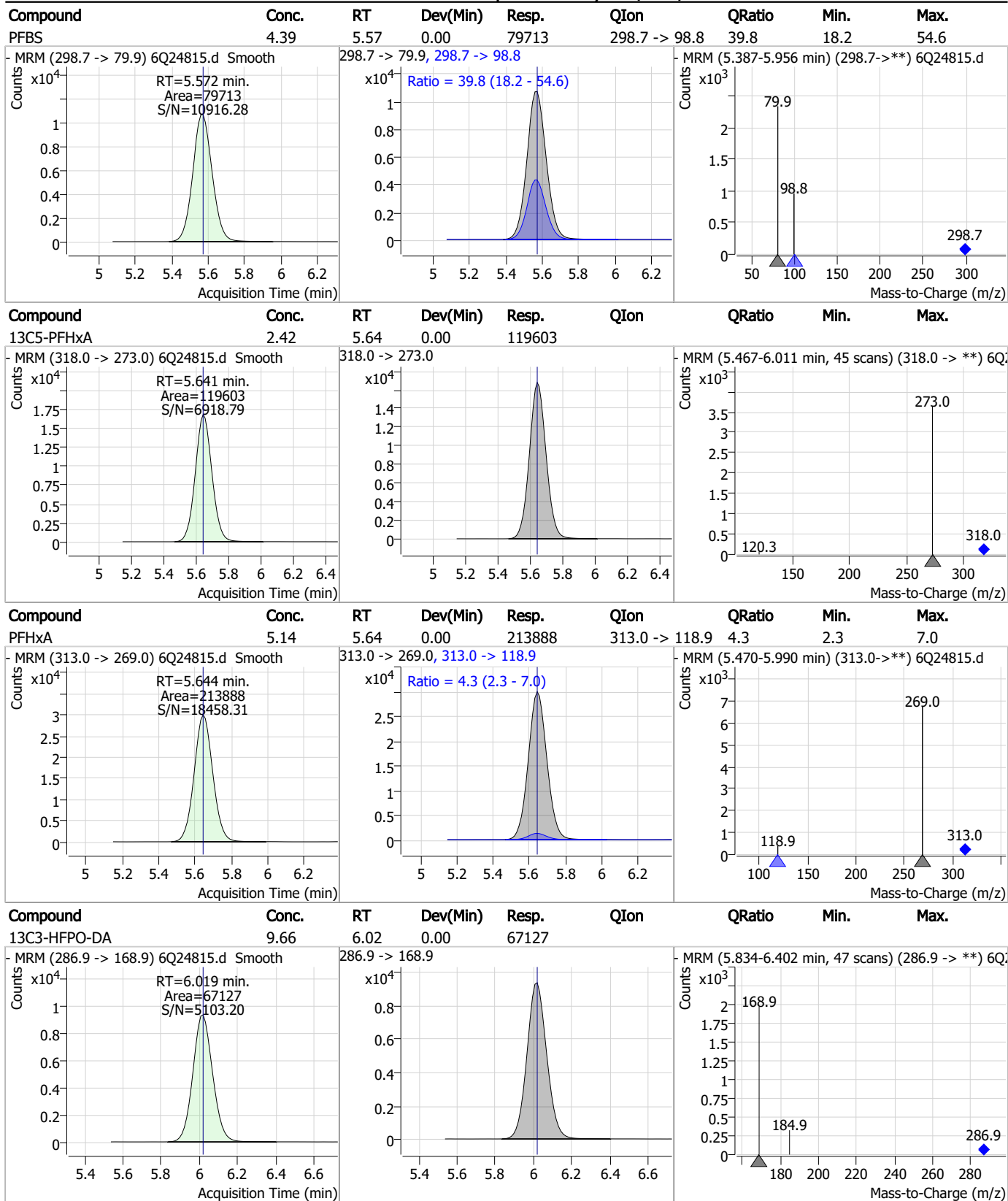
7.7.6
7

Perfluorinated Compounds by LC/MS/MS



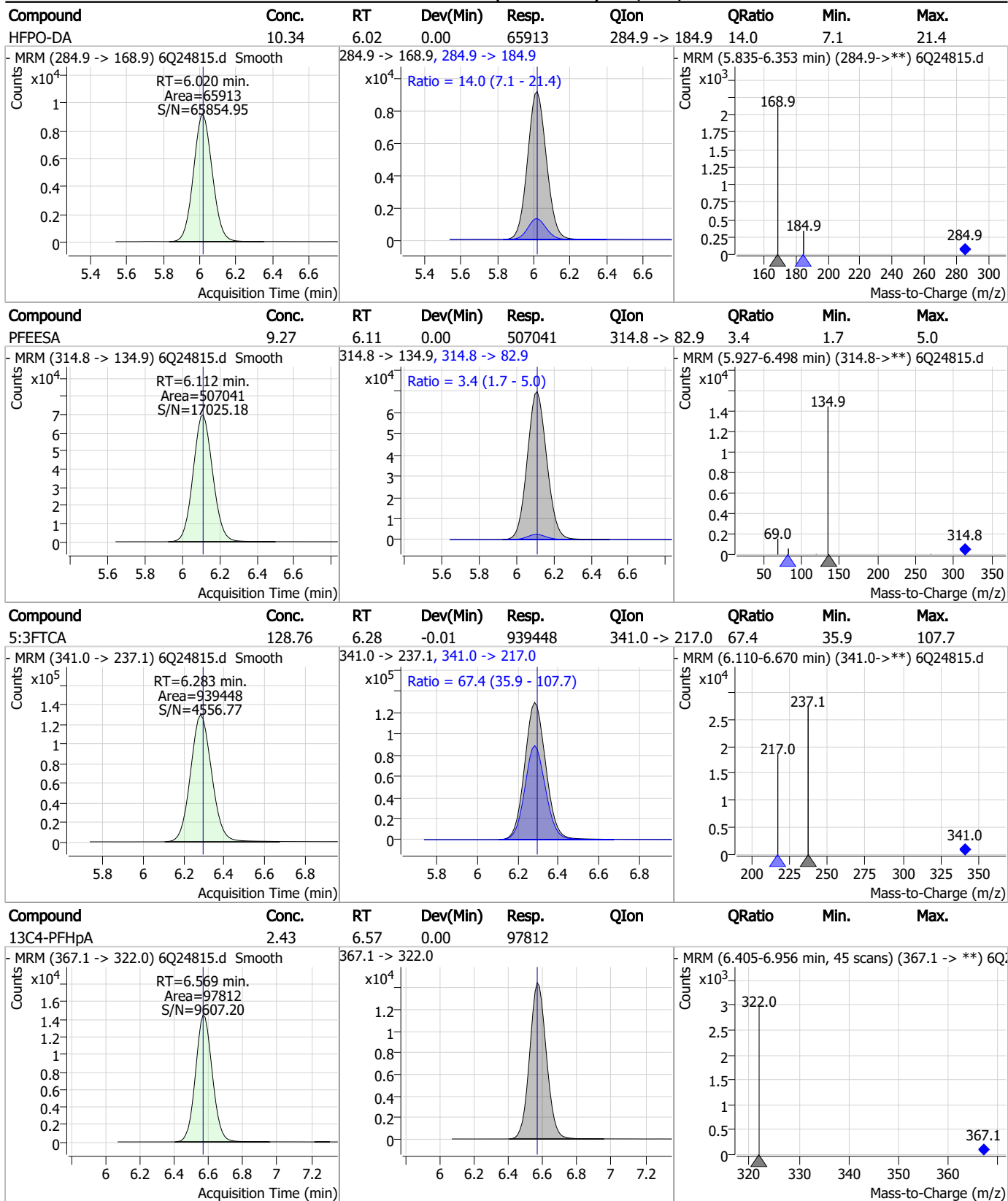
7.7.6
7

Perfluorinated Compounds by LC/MS/MS



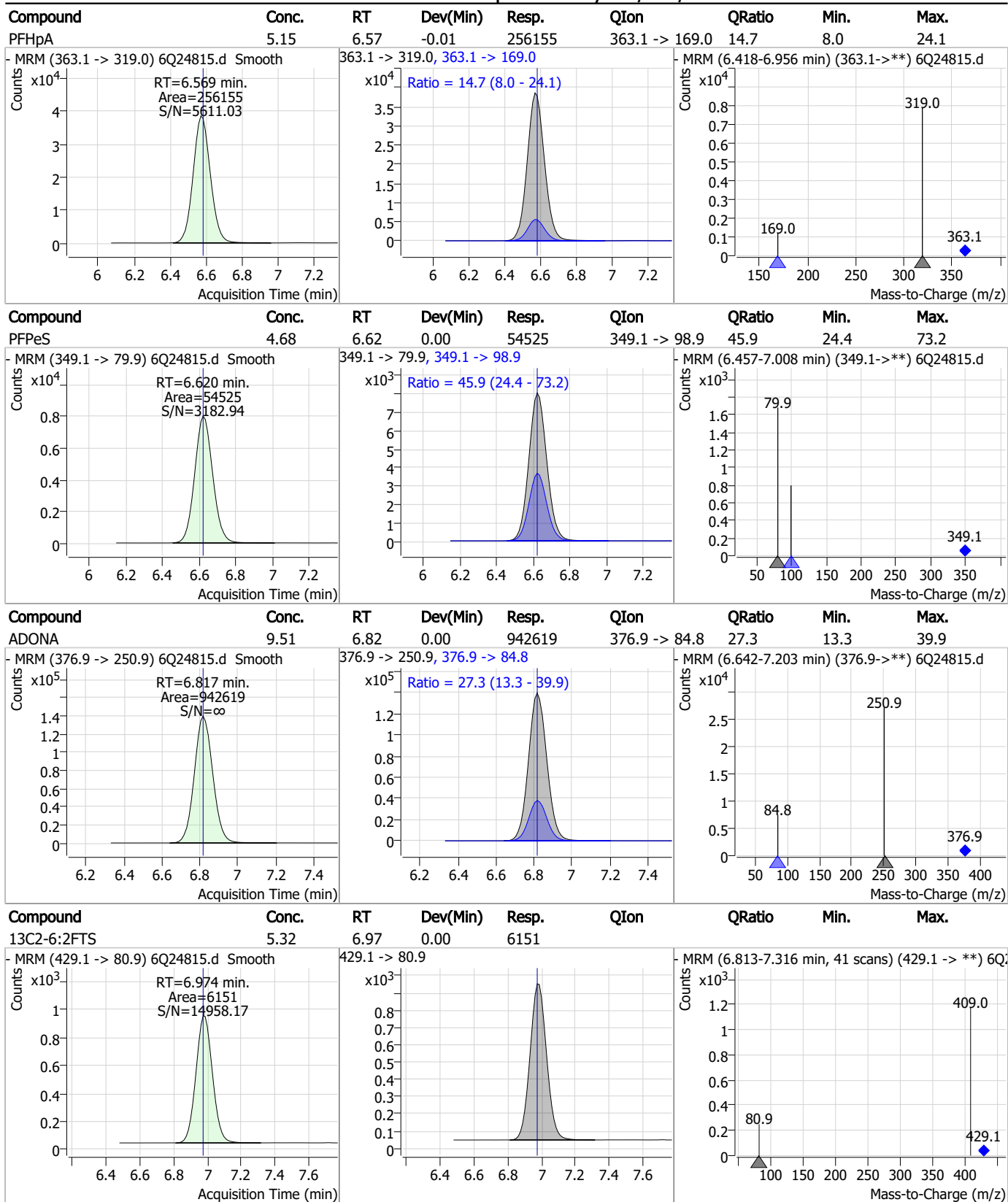
7.7.6
7

Perfluorinated Compounds by LC/MS/MS



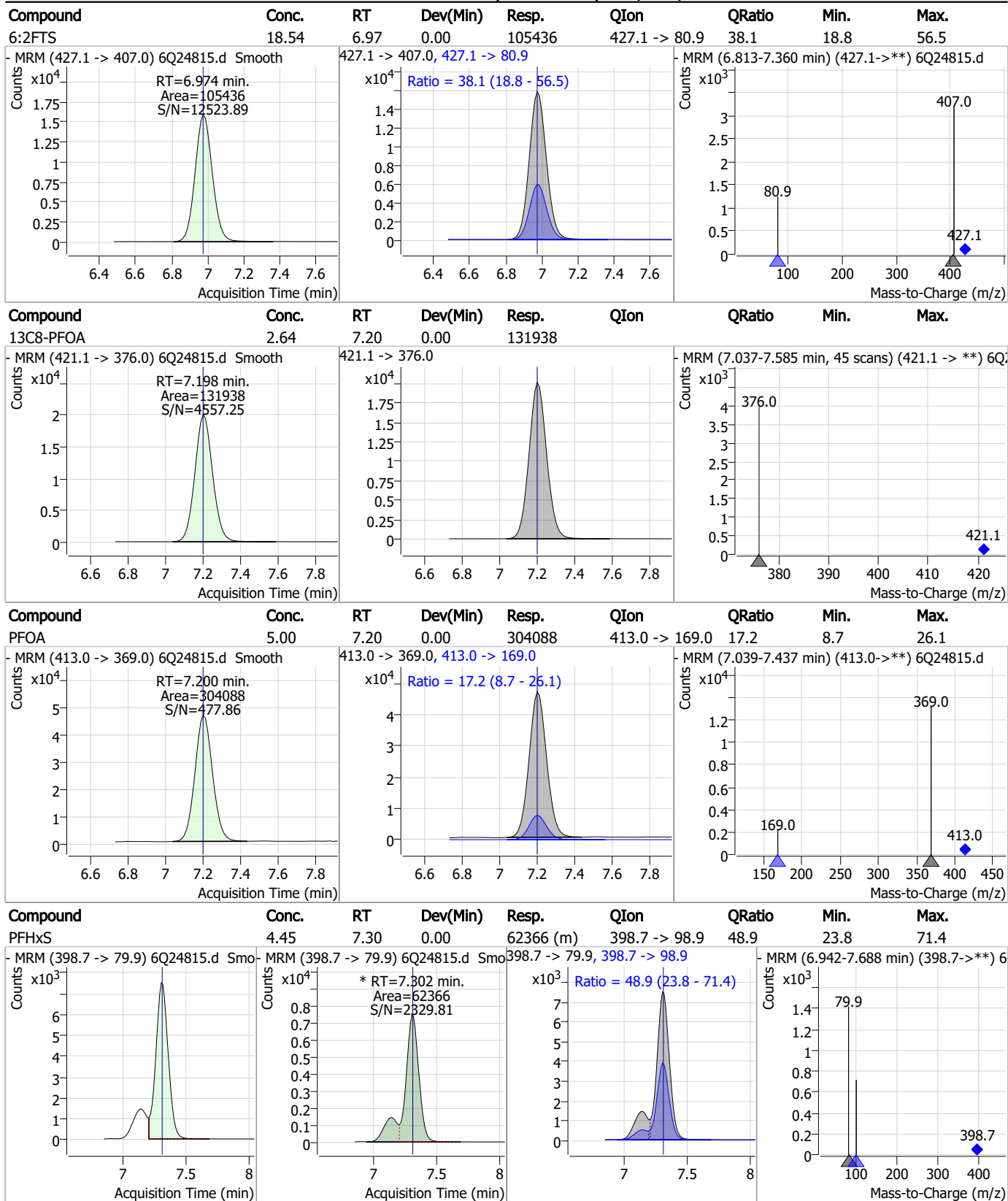
7.7.6
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Perfluorinated Compounds by LC/MS/MS



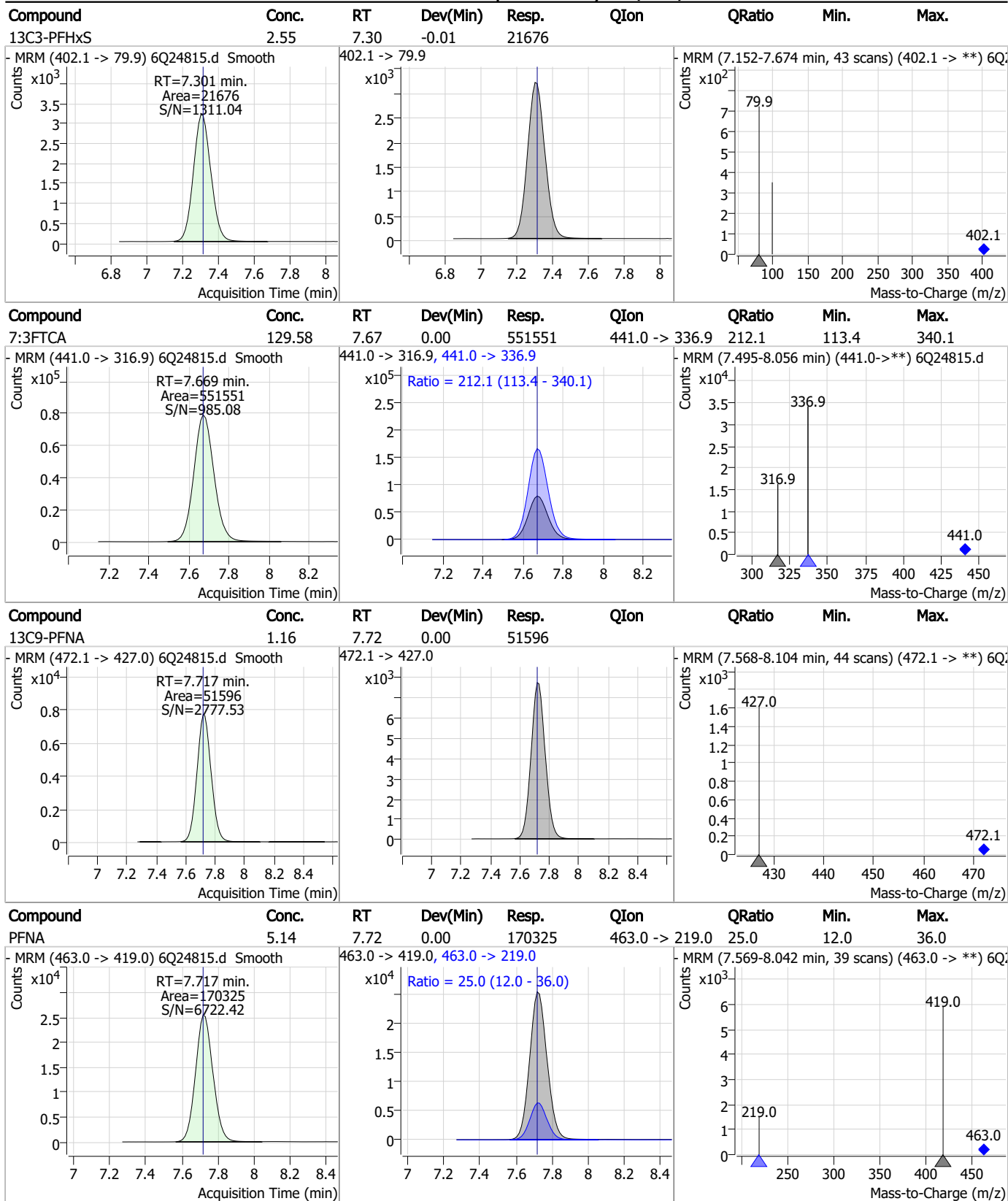
7.7.6
7

Perfluorinated Compounds by LC/MS/MS



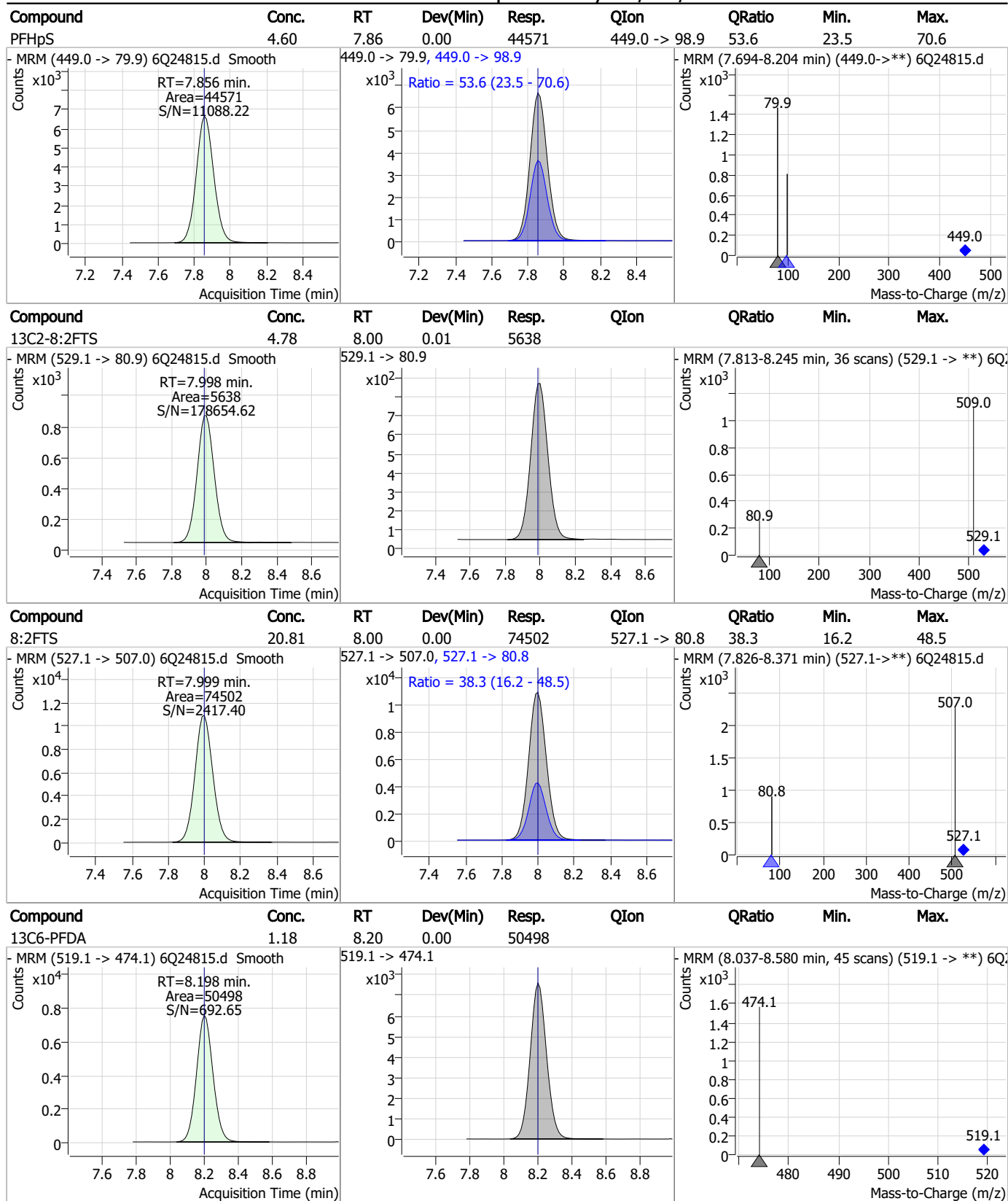
7.7.6

Perfluorinated Compounds by LC/MS/MS



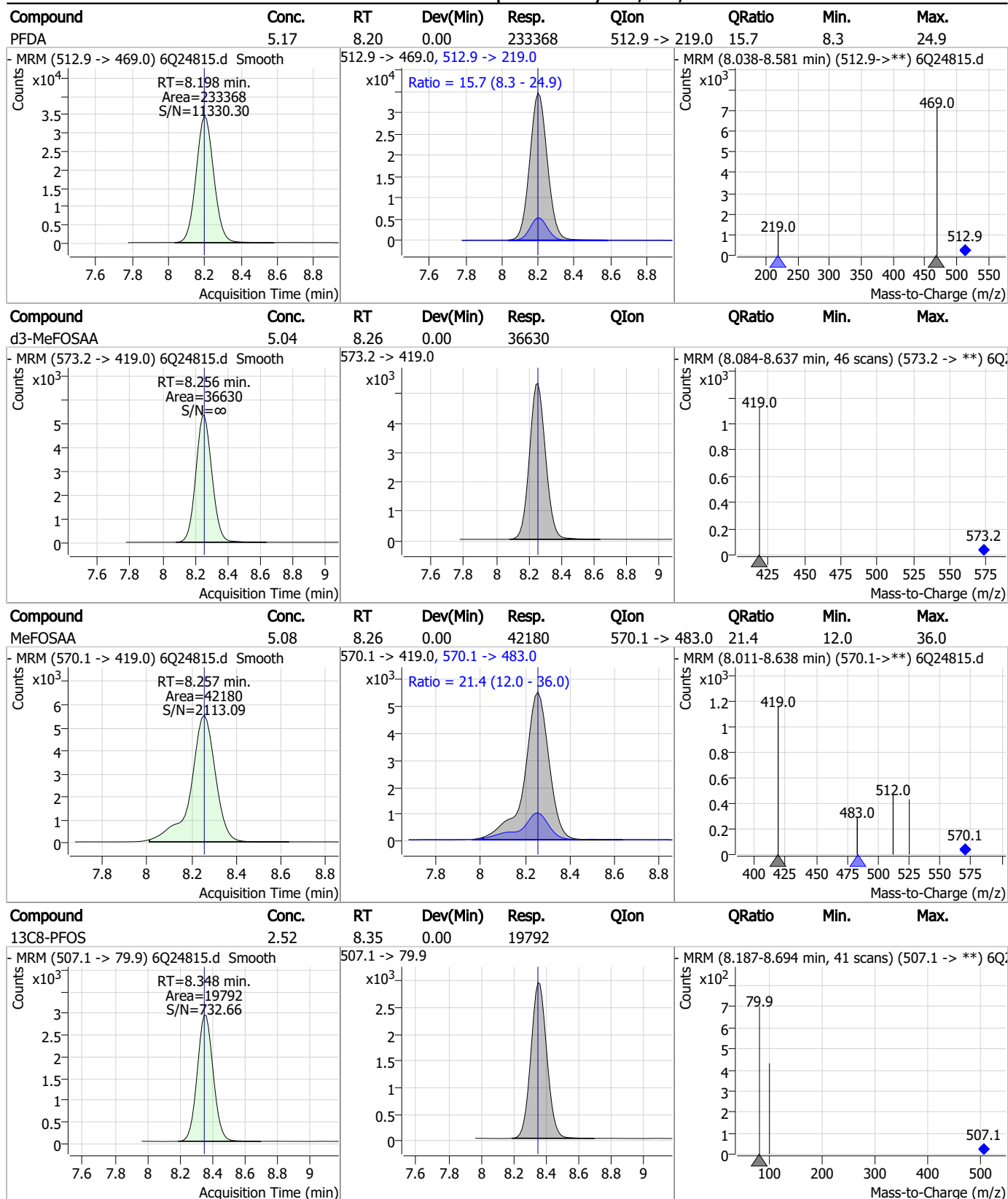
7.7.6
7

Perfluorinated Compounds by LC/MS/MS



7.7.6
7

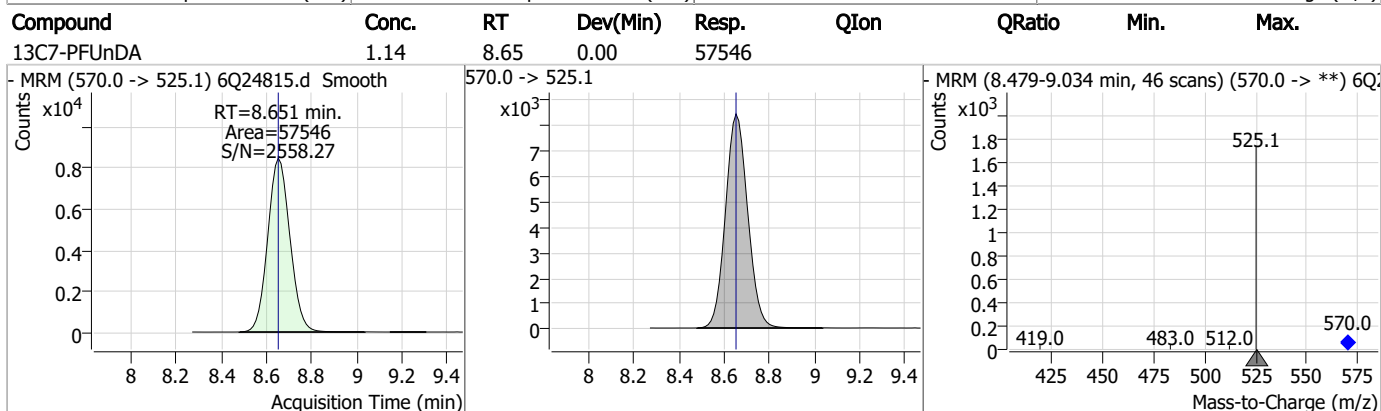
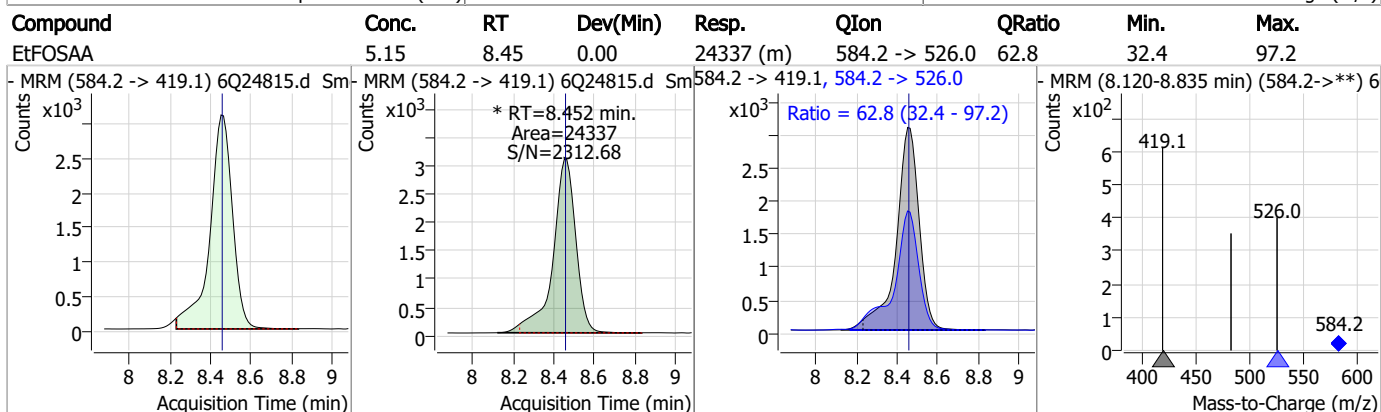
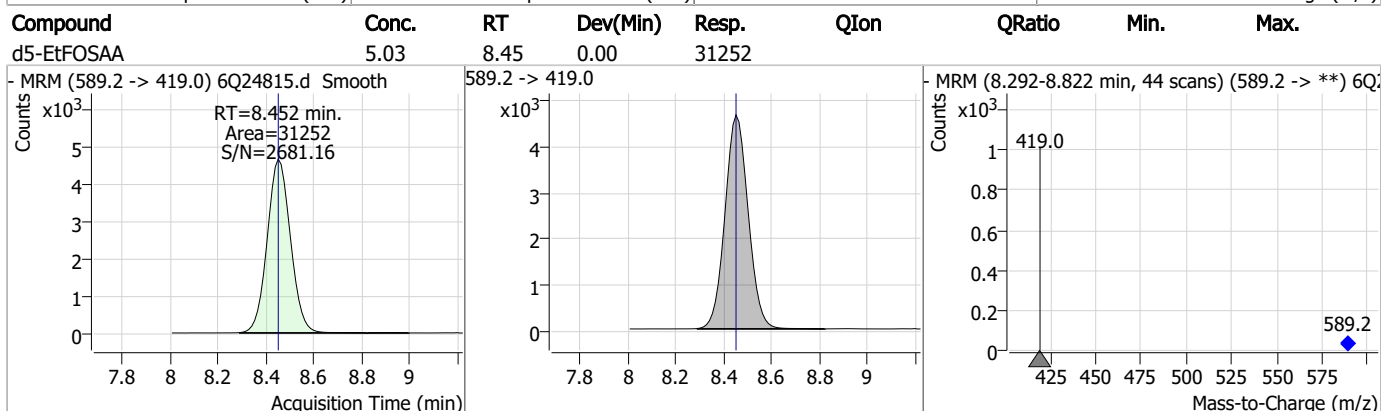
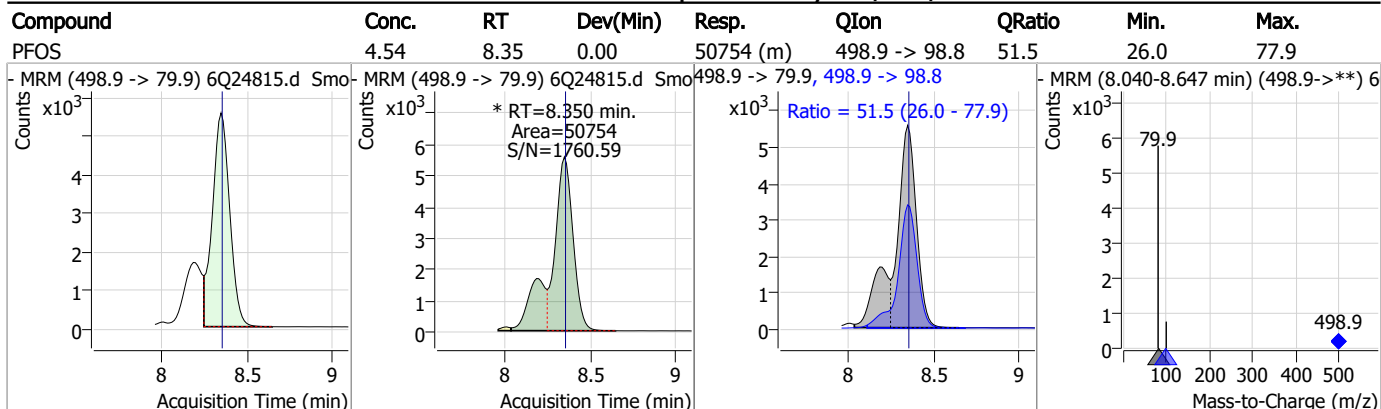
Perfluorinated Compounds by LC/MS/MS



7.7.6

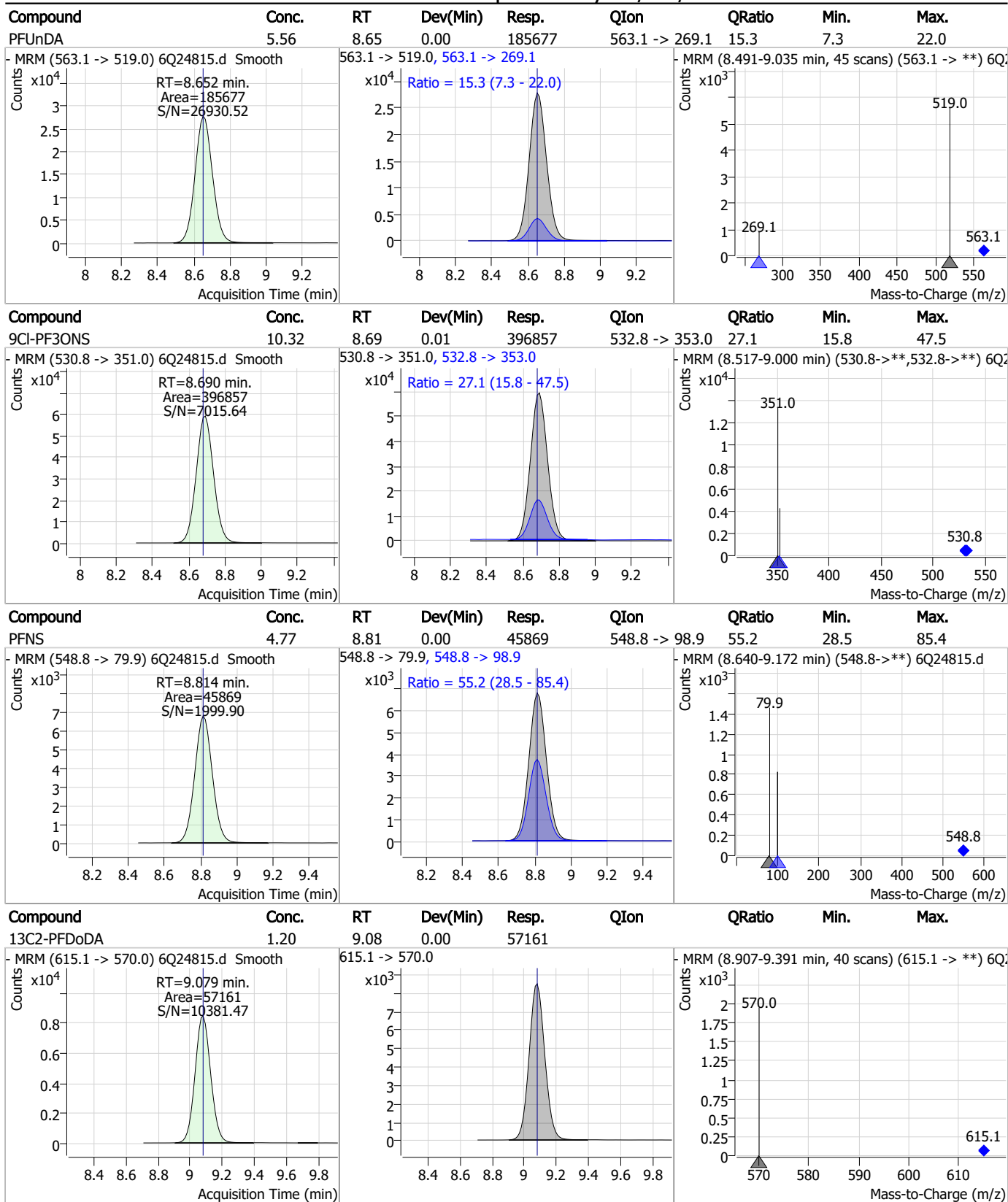
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Perfluorinated Compounds by LC/MS/MS



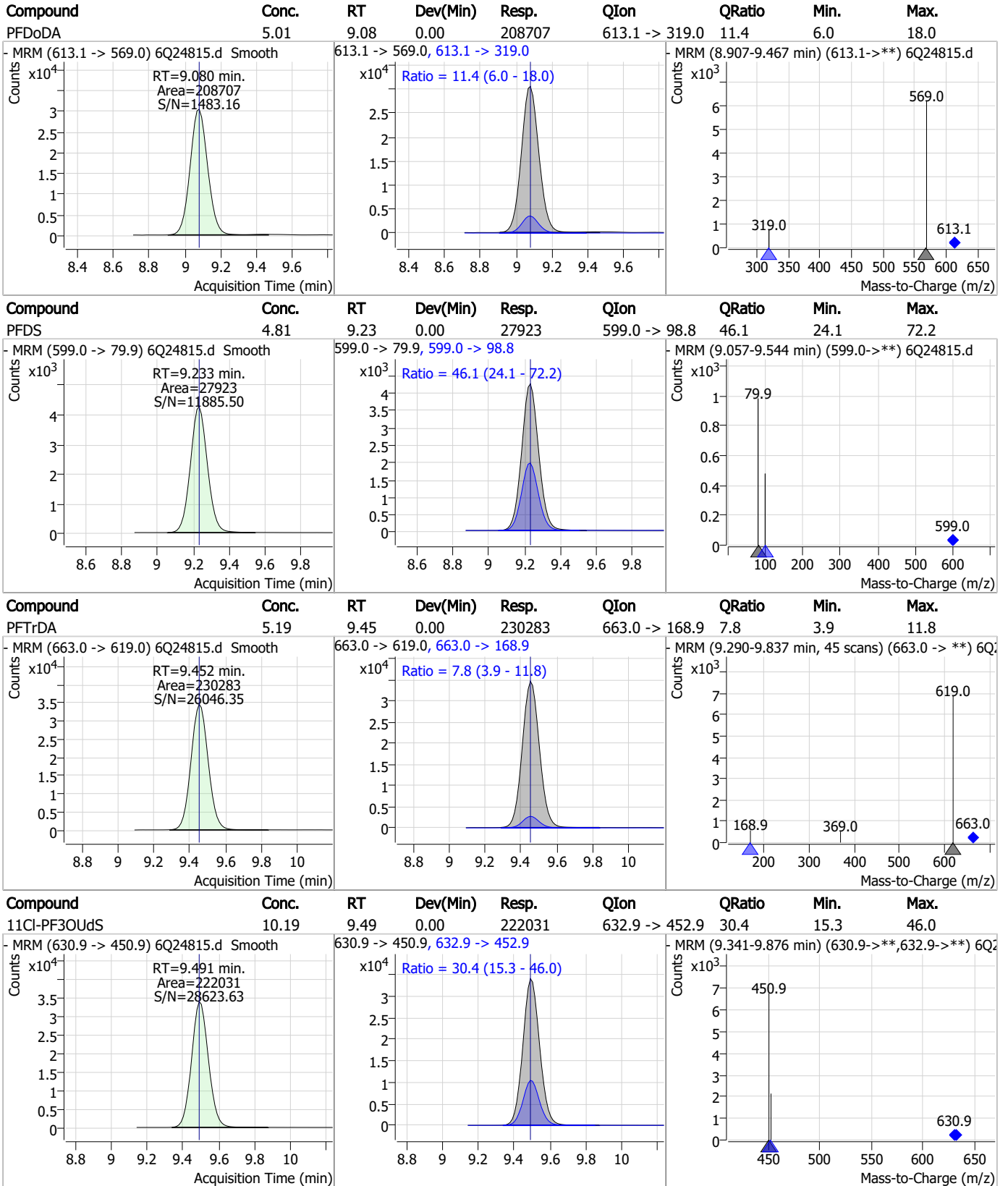
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Perfluorinated Compounds by LC/MS/MS



7.7.6
7

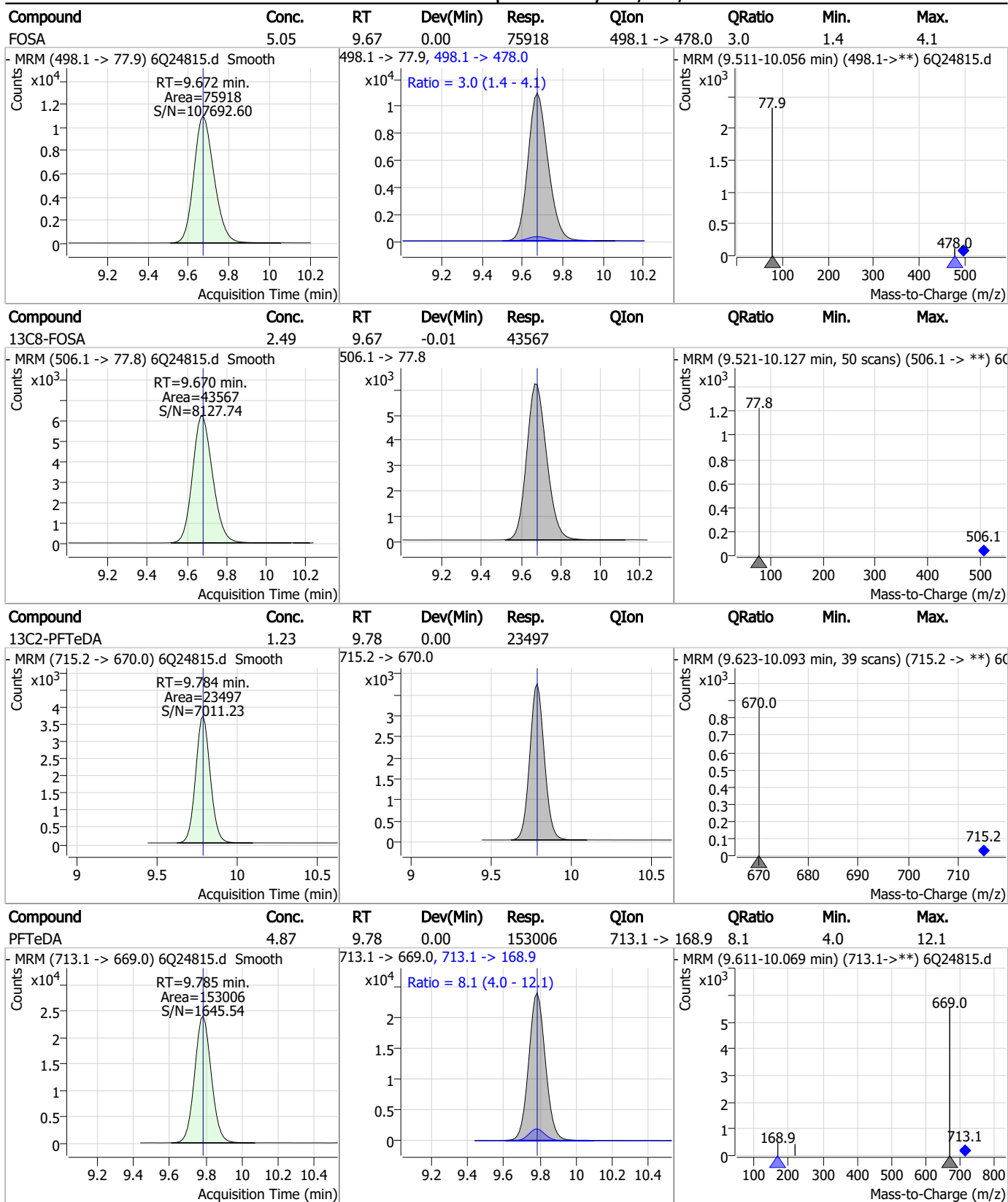
Perfluorinated Compounds by LC/MS/MS



7.7.6

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Perfluorinated Compounds by LC/MS/MS

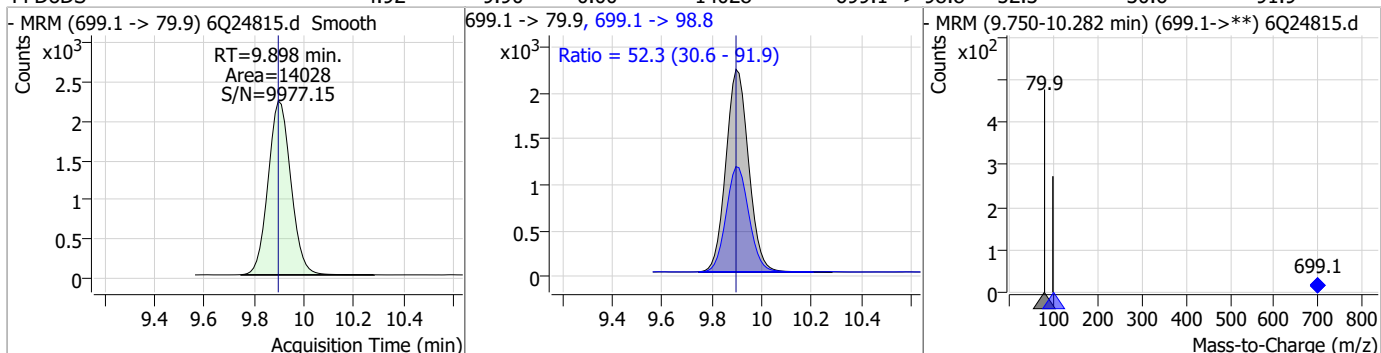


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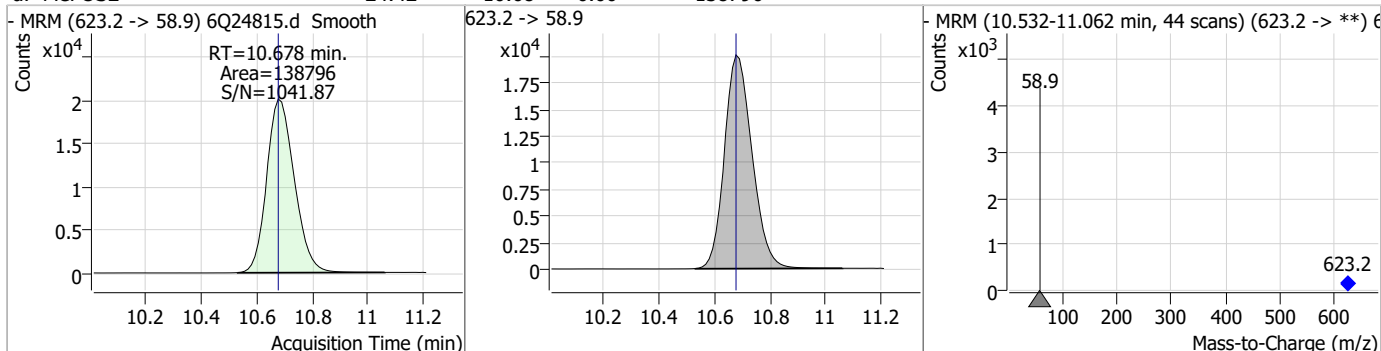
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Perfluorinated Compounds by LC/MS/MS

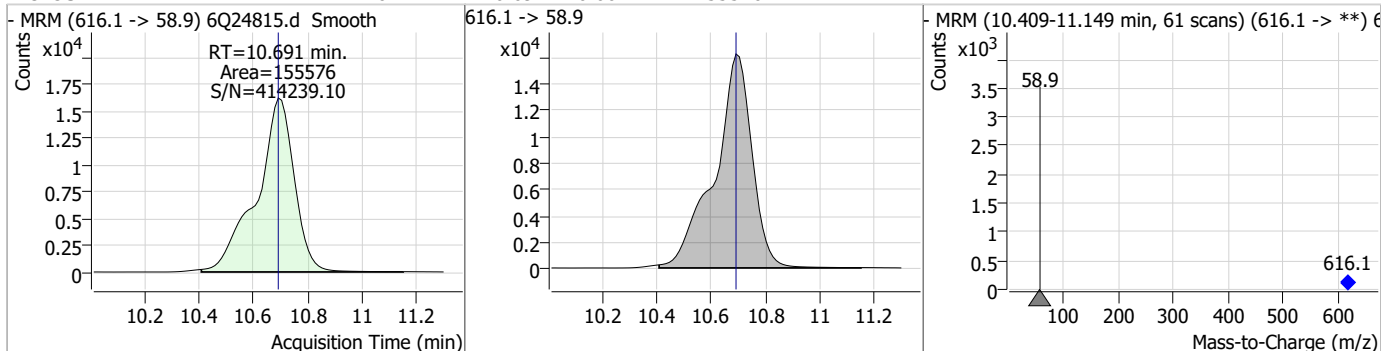
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	4.92	9.90	0.00	14028	699.1 -> 98.8	52.3	30.6	91.9



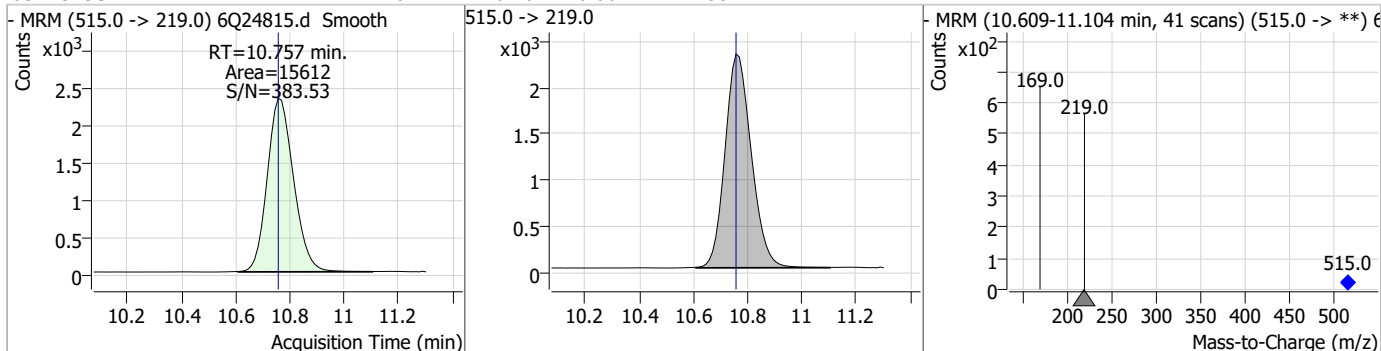
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.42	10.68	0.00	138796				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	26.11	10.69	0.00	155576				

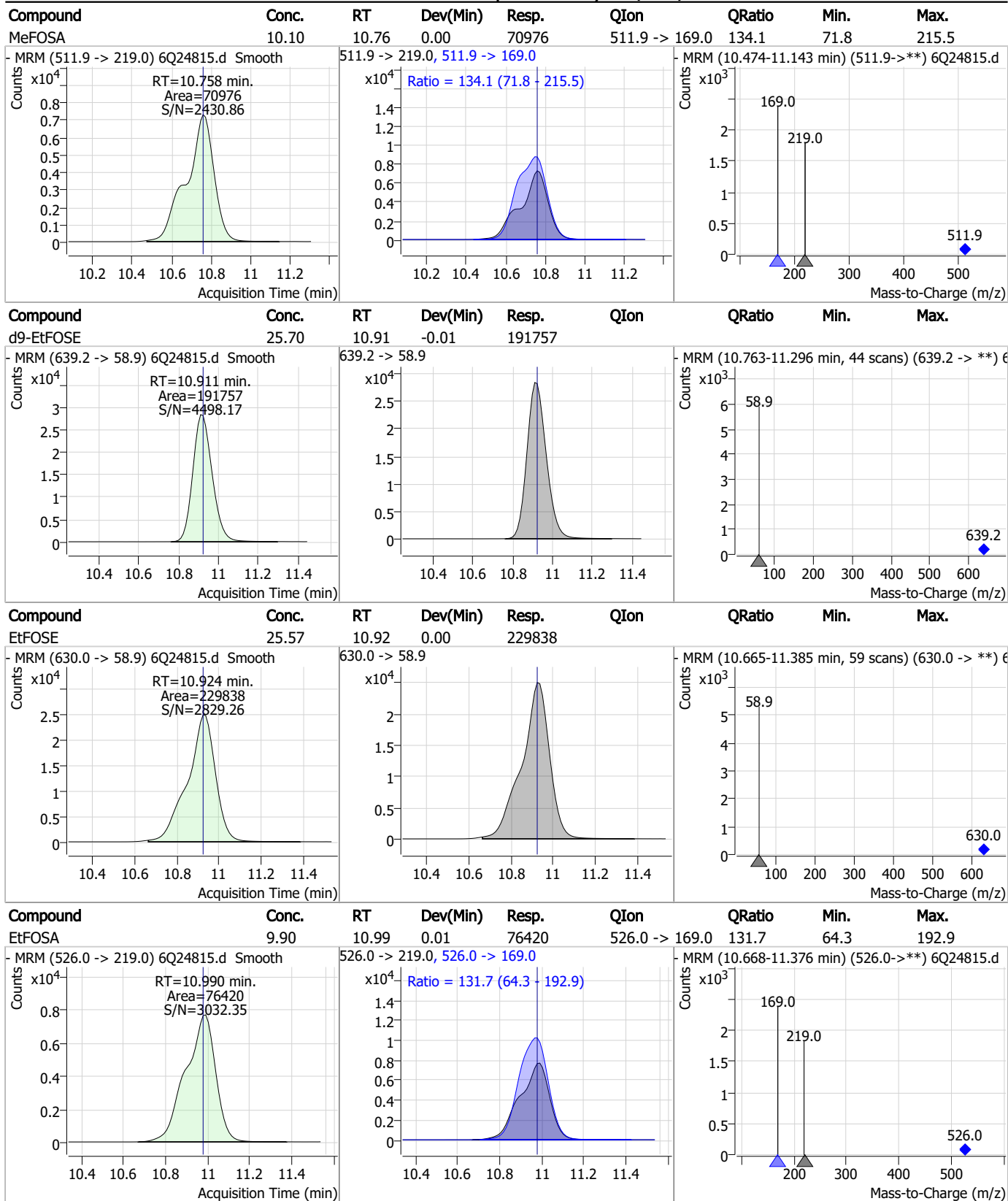


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.46	10.76	0.00	15612				



7.7.6
7

Perfluorinated Compounds by LC/MS/MS

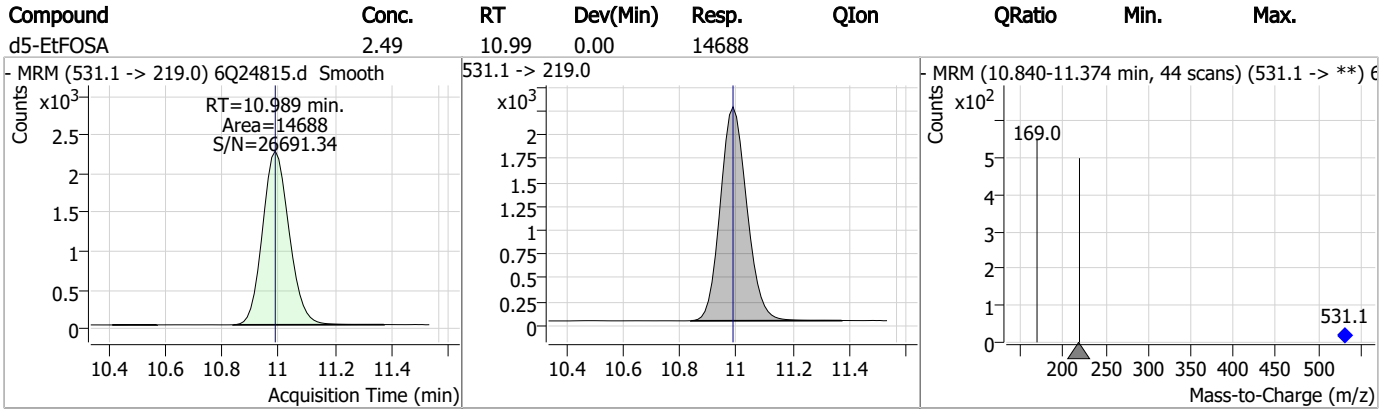


7.7.6

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Perfluorinated Compounds by LC/MS/MS



7.7.6

7

Manual Integration Approval Summary

Sample Number: S6Q355-IC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24815.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 21:33 Supervisor approved: 09/22/23 13:16 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

7.7.6.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24816.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 9:47:34 PM
 Sample Name : ic355-6
 Vial : P1-A7
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	302010	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	48729	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	111889	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	92052	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	121696	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	51411	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	48251	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	59530	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	53369	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	21388	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	40498	2.50 µg/L	-0.012
M3-PFBS	5.559	302.1 -> 79.9	36214	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	20935	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	17996	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	3719	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	5523	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	5388	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	34533	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	66241	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	27585	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	134004	25.00 µg/L	0.000
M9-EtFOSE	10.911	639.2 -> 58.9	171258	25.00 µg/L	-0.012
M5-EtFOSA	10.989	531.1 -> 219.0	13760	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	14255	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	24180	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	123917	5.00 µg/L	-0.012
18O2-PFHxS	7.300	403.0 -> 83.9	14753	2.50 µg/L	0.000
13C4-PFOA	7.199	417.1 -> 372.0	138266	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	40923	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	55294	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	83746	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	3719	4.83 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 96.6%		
13C2-6:2FTS	6.974	429.1 -> 80.9	5523	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C2-8:2FTS	7.998	529.1 -> 80.9	5388	4.86 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 97.3%		
13C2-PFDoDA	9.079	615.1 -> 570.0	53369	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.0%		
13C2-PFTeDA	9.784	715.2 -> 670.0	21388	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C3-PFBS	5.559	302.1 -> 79.9	36214	2.53 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C3-PFHxS	7.301	402.1 -> 79.9	20935	2.62 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 = 104.8%	
13C4-PFBA	2.985	216.8 -> 171.9	302010	9.99 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.569	367.1 -> 322.0	92052	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
13C5-PFHxA	5.641	318.0 -> 273.0	111889	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C5-PFPeA	4.422	268.3 -> 223.0	48729	5.12 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.4%	
13C6-PFDA	8.198	519.1 -> 474.1	48251	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.6%	
13C7-PFUnDA	8.651	570.0 -> 525.1	59530	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 108.2%	
13C8-FOSA	9.670	506.1 -> 77.8	40498	2.55 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C8-PFOA	7.198	421.1 -> 376.0	121696	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.0%	
13C8-PFOS	8.348	507.1 -> 79.9	17996	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C9-PFNA	7.717	472.1 -> 427.0	51411	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
d3-MeFOSAA	8.256	573.2 -> 419.0	34533	5.23 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 104.6%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	66241	10.67 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
d3-MeFOSA	10.757	515.0 -> 219.0	14255	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
d5-EtFOSAA	8.452	589.2 -> 419.0	27585	4.89 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
d7-MeFOSE	10.678	623.2 -> 58.9	134004	25.97 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 103.9%	
d9-EtFOSE	10.911	639.2 -> 58.9	171258	25.29 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
d5-EtFOSA	10.989	531.1 -> 219.0	13760	2.57 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.8%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	303053	50.31 µg/L	99
		327.1 -> 80.9	113792		
6:2FTS	6.974	427.1 -> 407.0	243930	47.77 µg/L	99
		427.1 -> 80.9	93360		
8:2FTS	7.987	527.1 -> 507.0	174692	51.06 µg/L	84
		527.1 -> 80.8	72520		
EtFOSAA	8.452	584.2 -> 419.1	60329	14.46 µg/L	m 96
		584.2 -> 526.0	41197		
FOSA	9.672	498.1 -> 77.9	175629	12.57 µg/L	100
		498.1 -> 478.0	4893		
MeFOSAA	8.257	570.1 -> 419.0	97251	12.41 µg/L	96
		570.1 -> 483.0	21377		
PFBA	2.993	212.8 -> 168.9	494137	53.09 µg/L	100
PFBS	5.560	298.7 -> 79.9	203064	11.84 µg/L	99
		298.7 -> 98.8	72214		
PFDA	8.198	512.9 -> 469.0	581801	13.50 µg/L	97
		512.9 -> 219.0	89582		
PFDoDA	9.080	613.1 -> 569.0	533362	13.72 µg/L	99
		613.1 -> 319.0	60898		
PFDS	9.233	599.0 -> 79.9	68026	12.89 µg/L	100

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	32559			
PFHpA	6.569	363.1 -> 319.0	624189	13.33	µg/L	98
		363.1 -> 169.0	94143			
PFHpS	7.856	449.0 -> 79.9	113766	12.91	µg/L	97
		449.0 -> 98.9	56107			
PFHxA	5.644	313.0 -> 269.0	517632	13.31	µg/L	99
		313.0 -> 118.9	23109			
PFHxS	7.302	398.7 -> 79.9	155403	11.49	µg/L	m 97
		398.7 -> 98.9	71192			
PFNA	7.717	463.0 -> 419.0	417554	12.64	µg/L	100
		463.0 -> 219.0	100752			
PFNS	8.814	548.8 -> 79.9	113533	12.98	µg/L	97
		548.8 -> 98.9	62613			
PFOA	7.200	413.0 -> 369.0	726330	12.94	µg/L	98
		413.0 -> 169.0	133541			
PFOS	8.350	498.9 -> 79.9	125647	12.35	µg/L	m 98
		498.9 -> 98.8	63841			
PFPeA	4.424	263.0 -> 219.0	626855	26.12	µg/L	100
PFPeS	6.620	349.1 -> 79.9	135783	12.07	µg/L	95
		349.1 -> 98.9	61571			
PFTeDA	9.785	713.1 -> 669.0	386483	13.51	µg/L	99
		713.1 -> 168.9	29777			
PFTrDA	9.452	663.0 -> 619.0	557010	13.45	µg/L	98
		663.0 -> 168.9	47775			
PFUnDA	8.652	563.1 -> 519.0	421696	12.20	µg/L	99
		563.1 -> 269.1	63207			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	524919	24.42	µg/L	99
		632.9 -> 452.9	165122			
9Cl-PF3ONS	8.690	530.8 -> 351.0	864497	22.78	µg/L	100
		532.8 -> 353.0	274999			
ADONA	6.817	376.9 -> 250.9	2348110	24.01	µg/L	97
		376.9 -> 84.8	587345			
HFPO-DA	6.020	284.9 -> 168.9	155439	24.72	µg/L	99
		284.9 -> 184.9	21679			
3:3FTCA	3.858	241.0 -> 177.0	105856	65.20	µg/L	100
		241.0 -> 117.0	10093			
5:3FTCA	6.283	341.0 -> 237.1	2317911	339.58	µg/L	94
		341.0 -> 217.0	1543322			
7:3FTCA	7.669	441.0 -> 316.9	1300708	326.64	µg/L	99
		441.0 -> 336.9	2922572			
EtFOSA	10.990	526.0 -> 219.0	192444	26.61	µg/L	97
		526.0 -> 169.0	240220			
EtFOSE	10.924	630.0 -> 58.9	540114	67.29	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	172970	26.96	µg/L	100
		511.9 -> 169.0	247839			
MeFOSE	10.691	616.1 -> 58.9	374729	65.14	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	32234	12.42	µg/L	98
		699.1 -> 98.8	19163			
NFDHA	5.524	295.0 -> 201.0	124519	27.06	µg/L	98
		295.0 -> 84.9	30394			
PFMBA	4.850	279.0 -> 85.1	454091	26.72	µg/L	100
PFMPA	3.551	229.0 -> 84.9	332900	26.46	µg/L	100
PFEESA	6.112	314.8 -> 134.9	1184318	23.13	µg/L	100
		314.8 -> 82.9	39395			

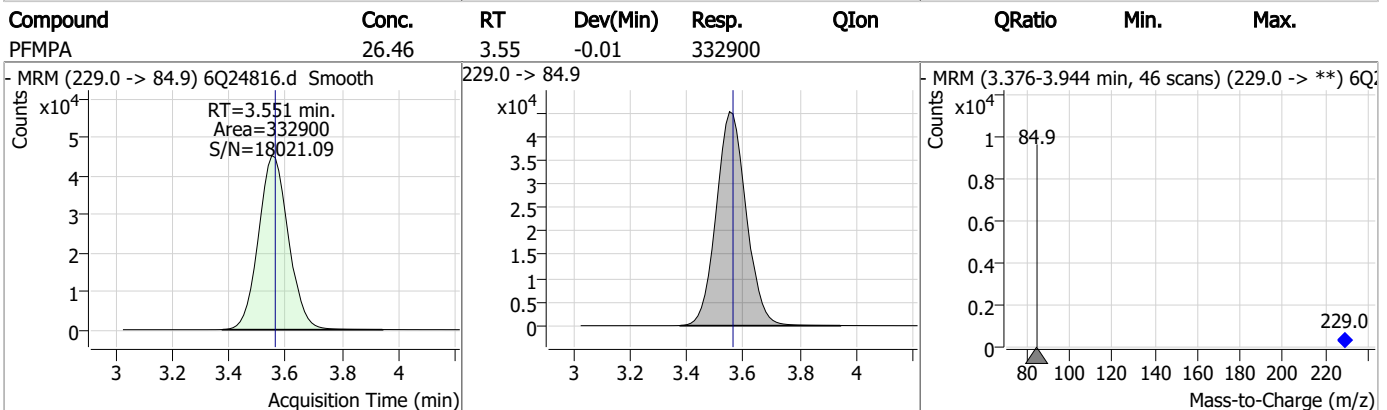
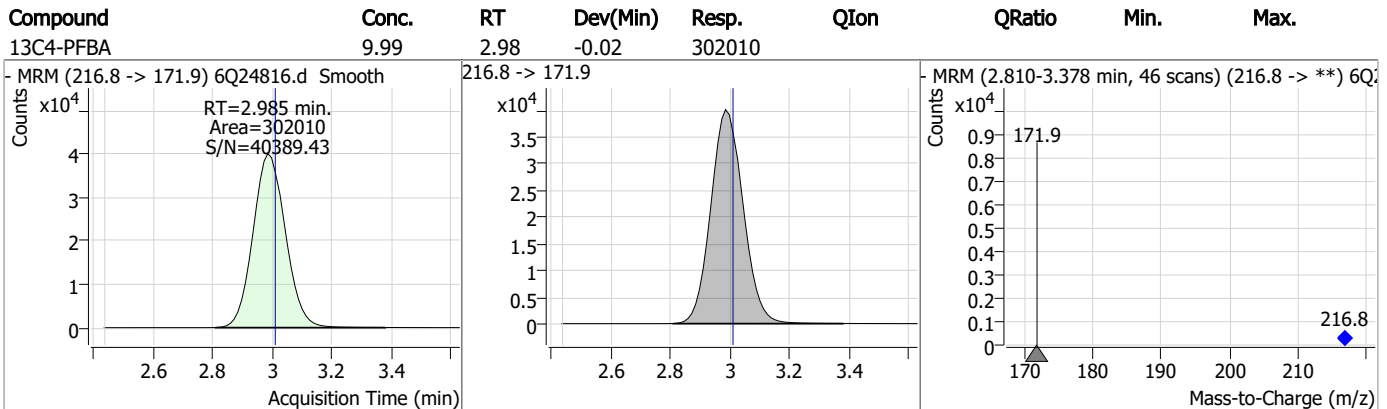
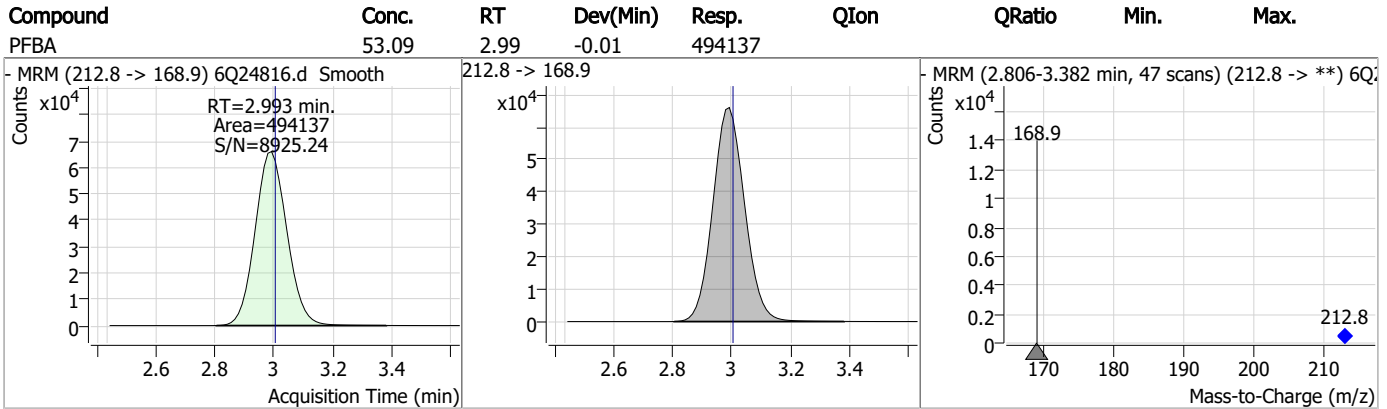
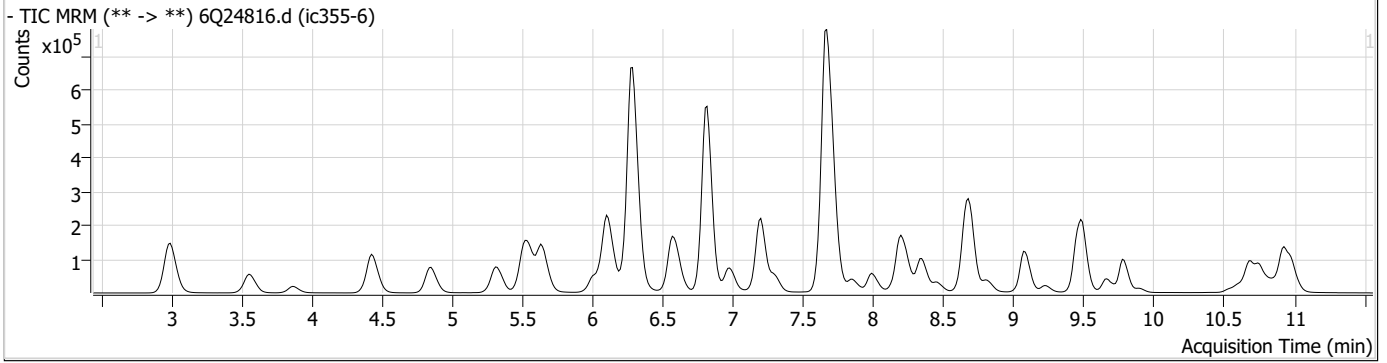
= Qualifier out of range, m = manually integrated, + = Area summed

Perfluorinated Compounds by LC/MS/MS

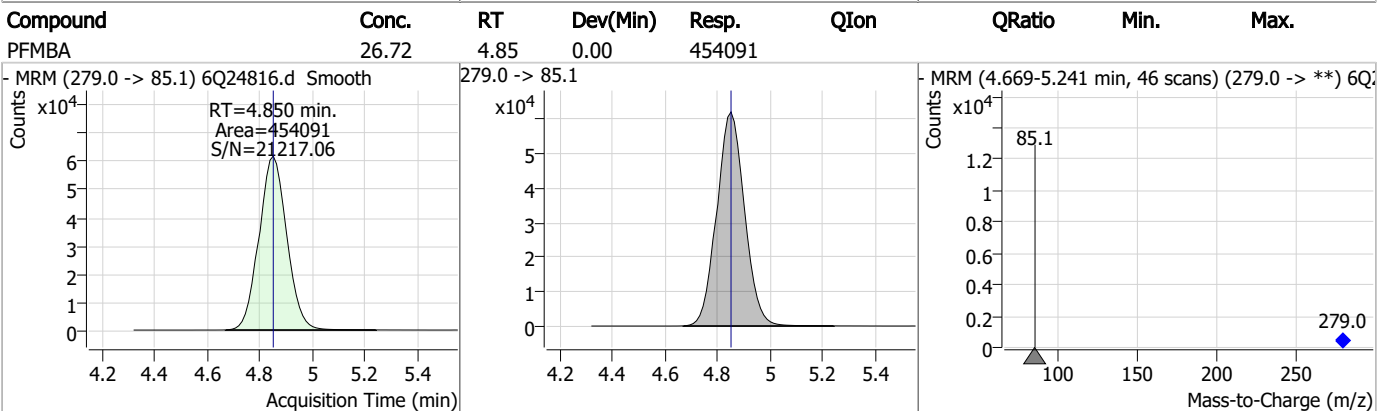
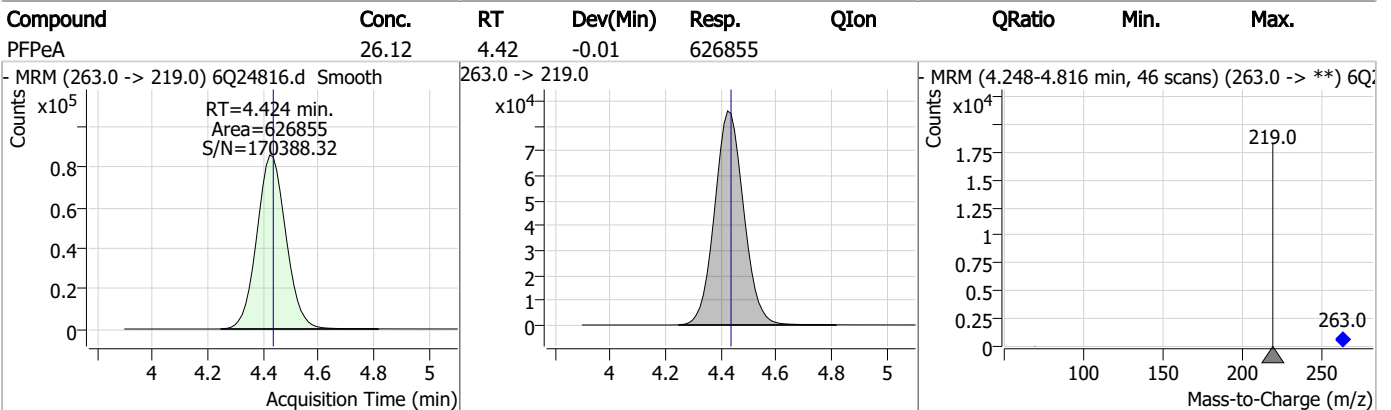
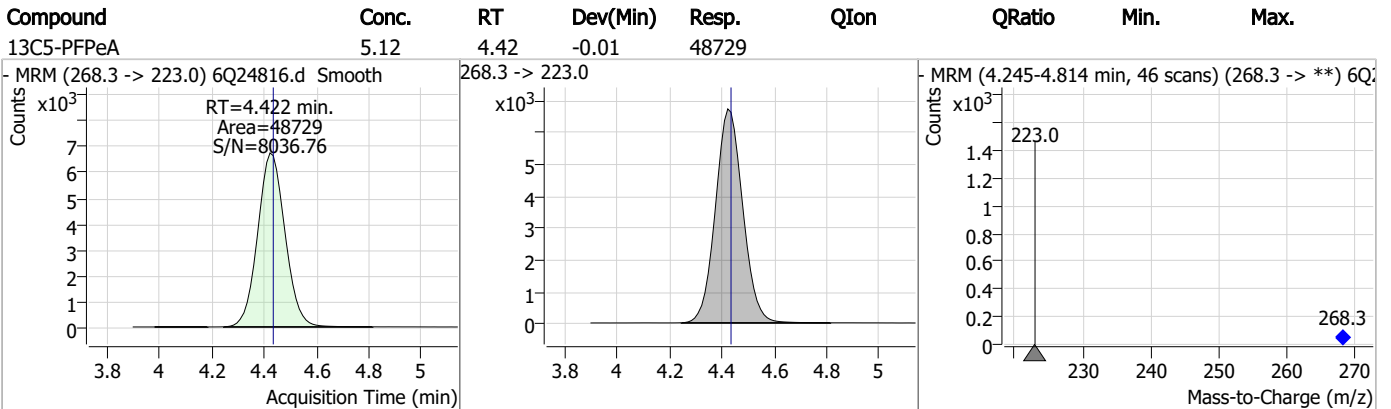
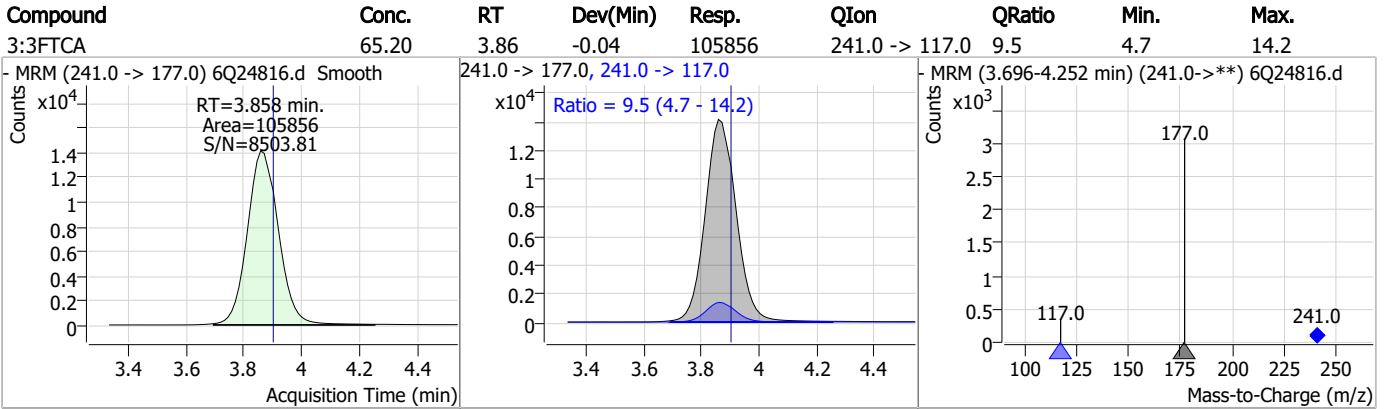
Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
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7.7.7
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Perfluorinated Compounds by LC/MS/MS



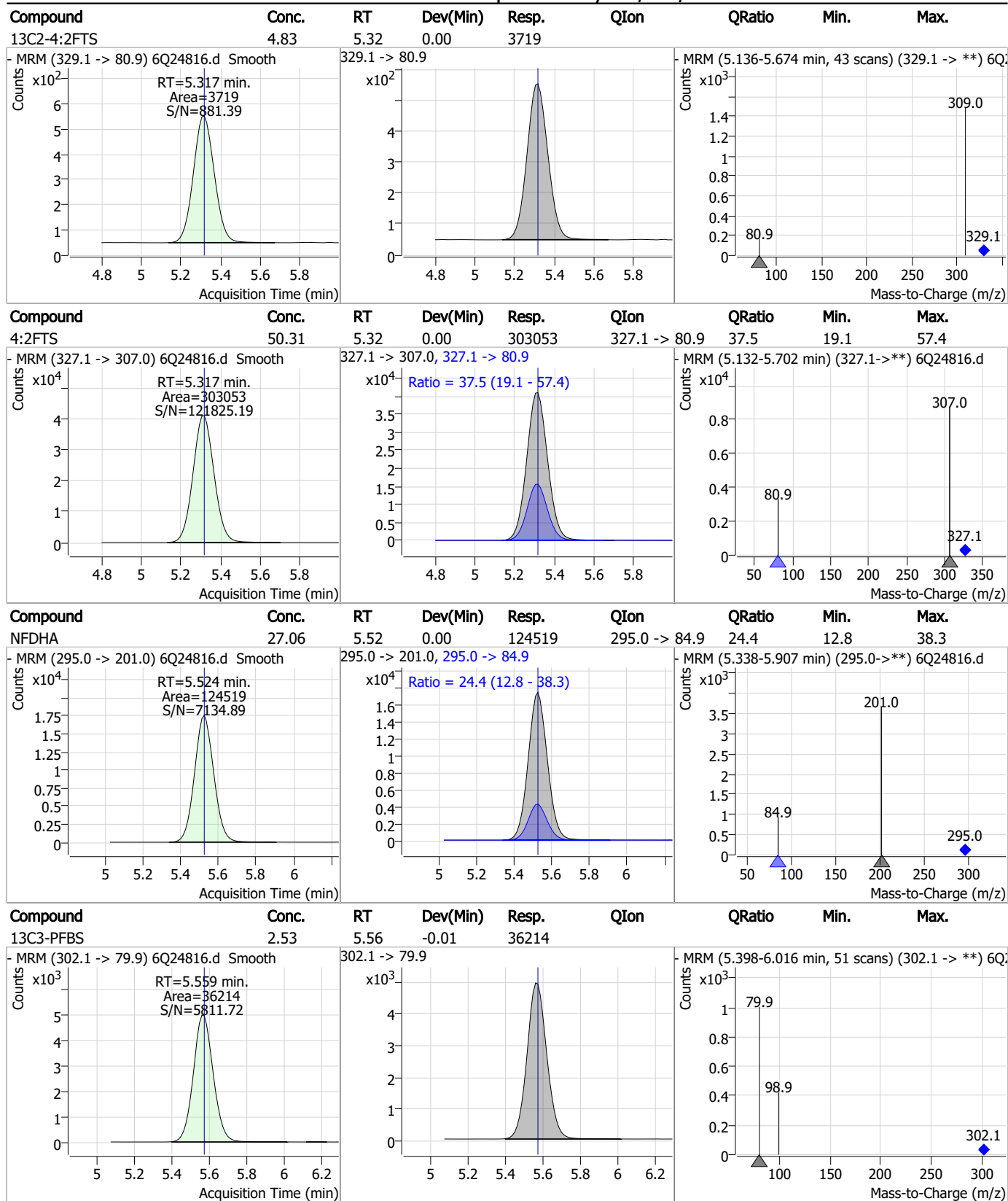
Perfluorinated Compounds by LC/MS/MS



7.7.7

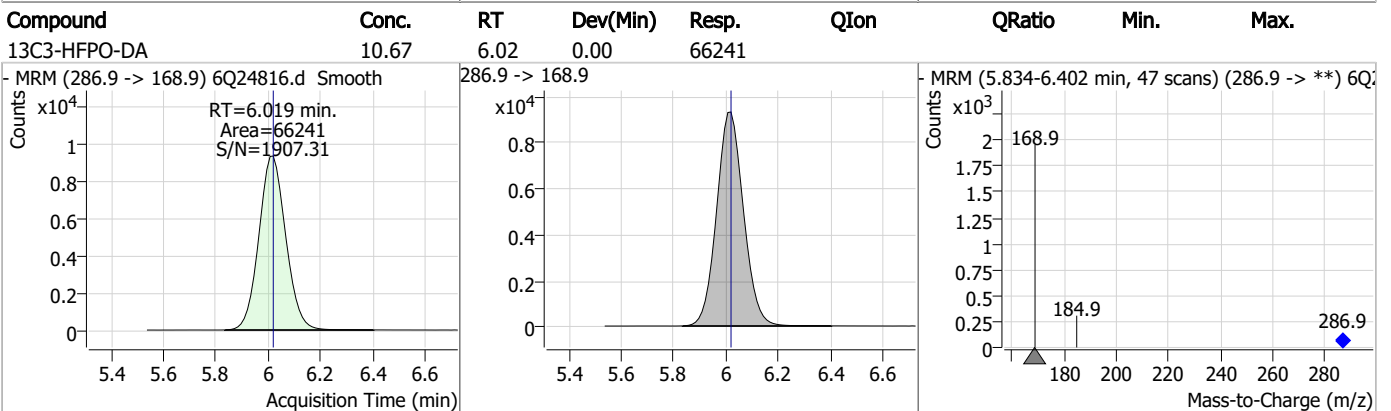
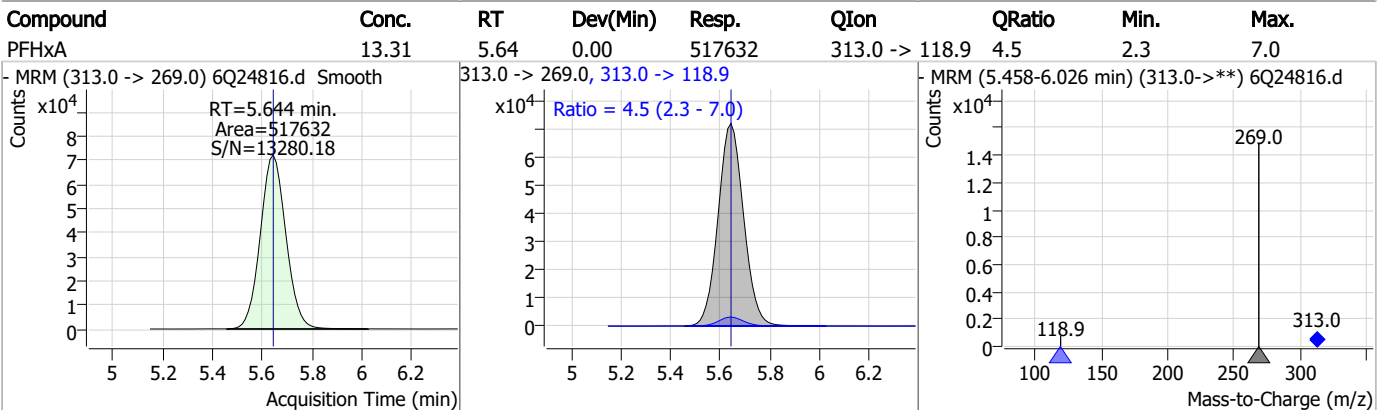
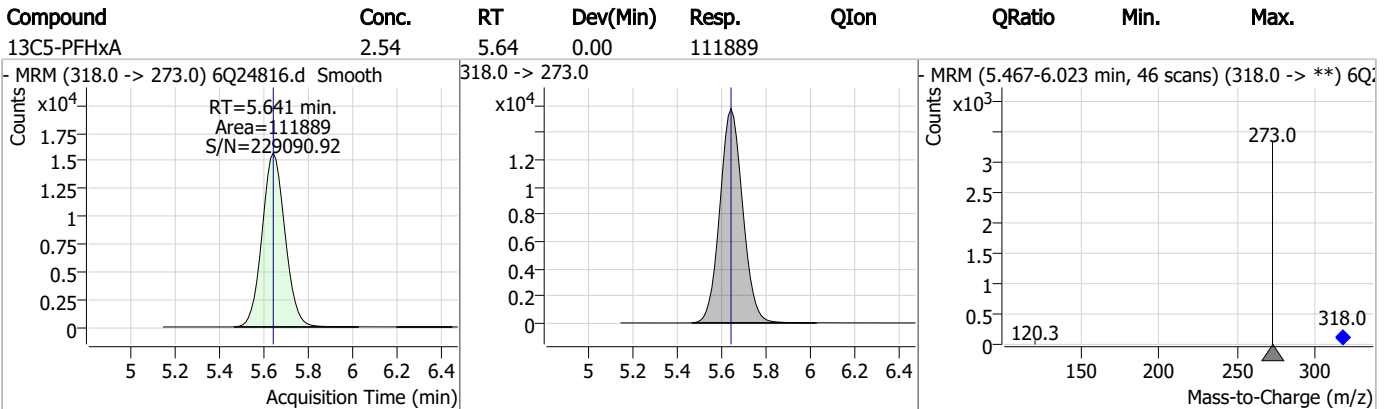
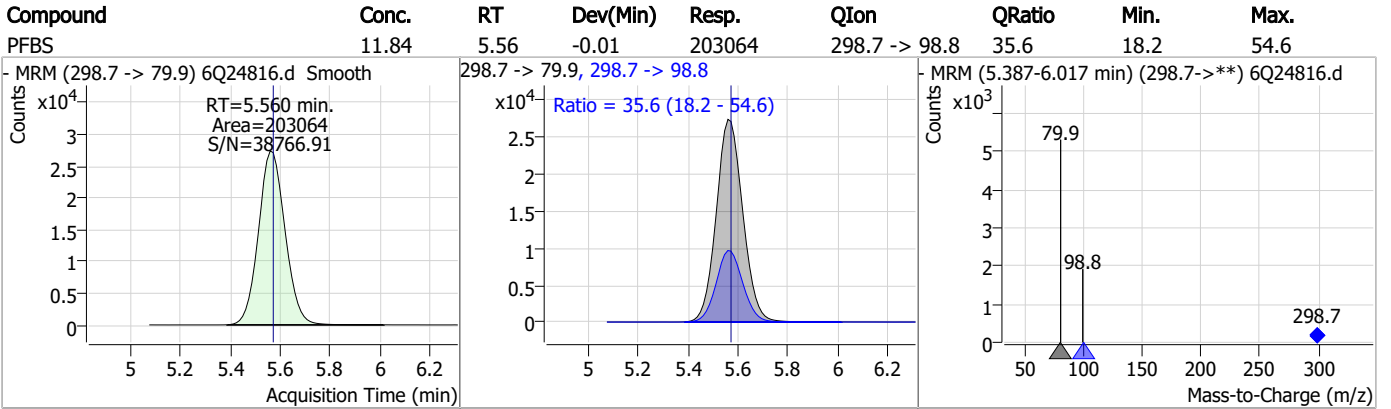
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Perfluorinated Compounds by LC/MS/MS



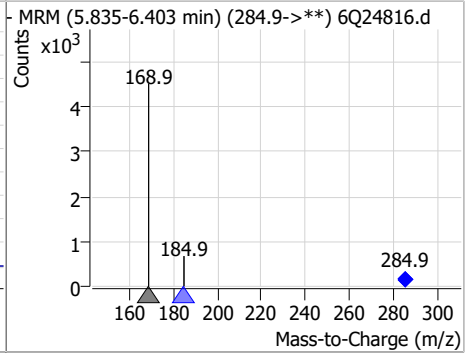
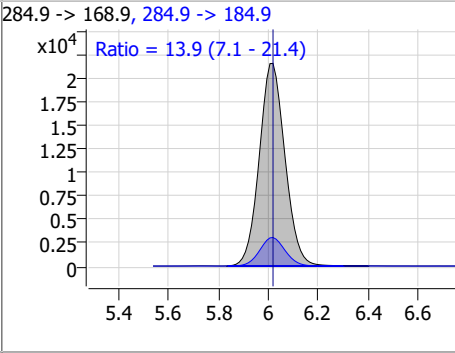
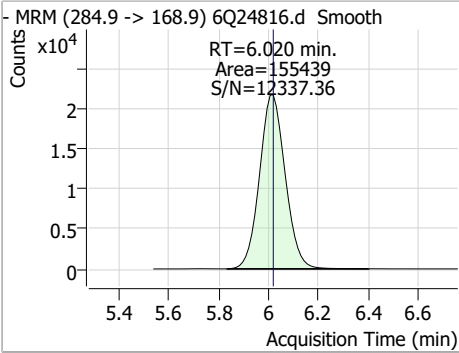
7.7.7

Perfluorinated Compounds by LC/MS/MS

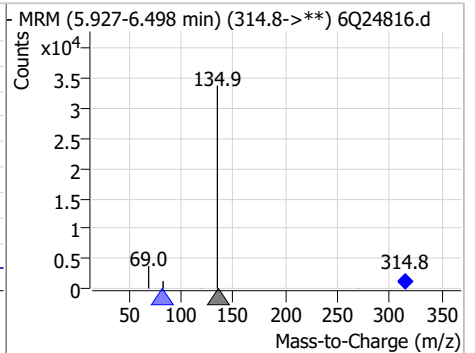
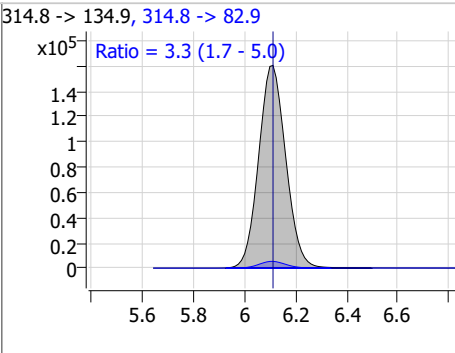
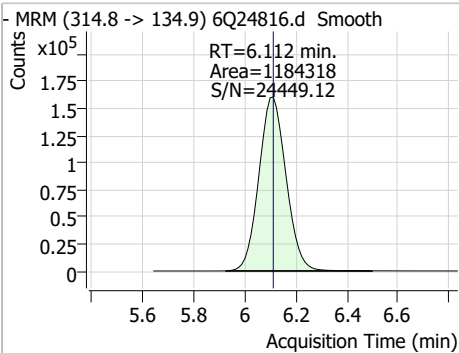


Perfluorinated Compounds by LC/MS/MS

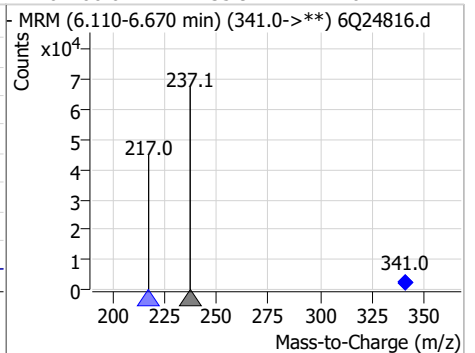
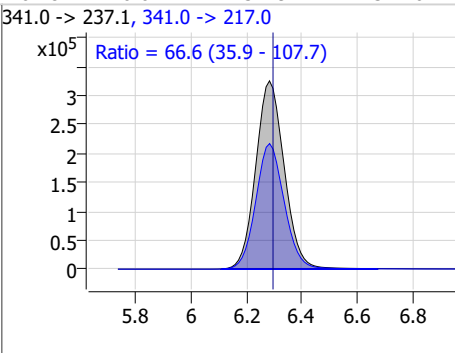
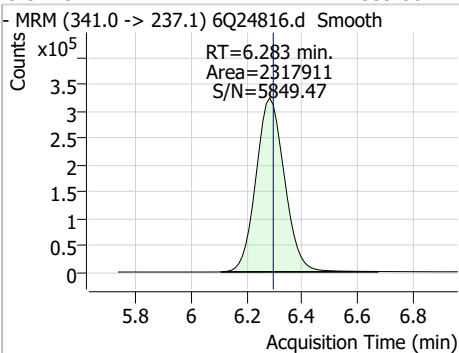
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	24.72	6.02	0.00	155439	284.9 -> 184.9	13.9	7.1	21.4



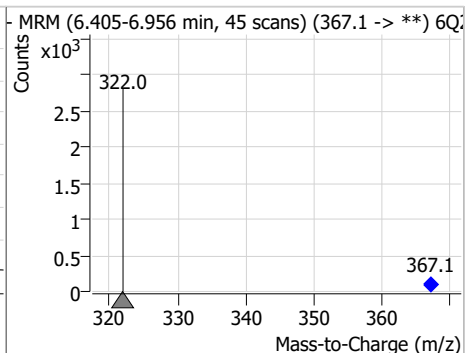
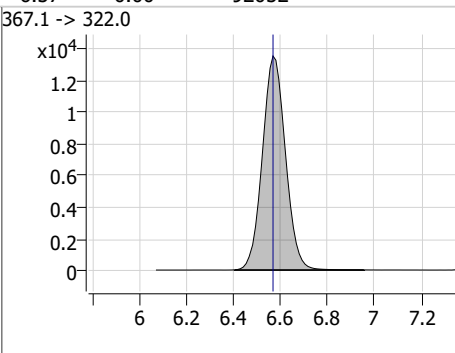
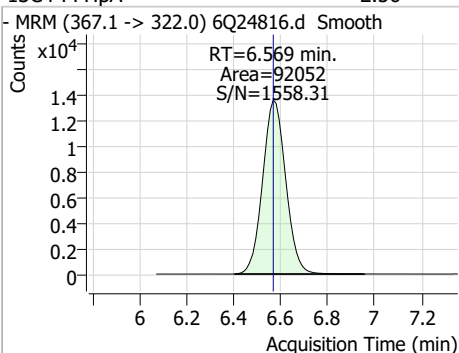
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	23.13	6.11	0.00	1184318	314.8 -> 82.9	3.3	1.7	5.0



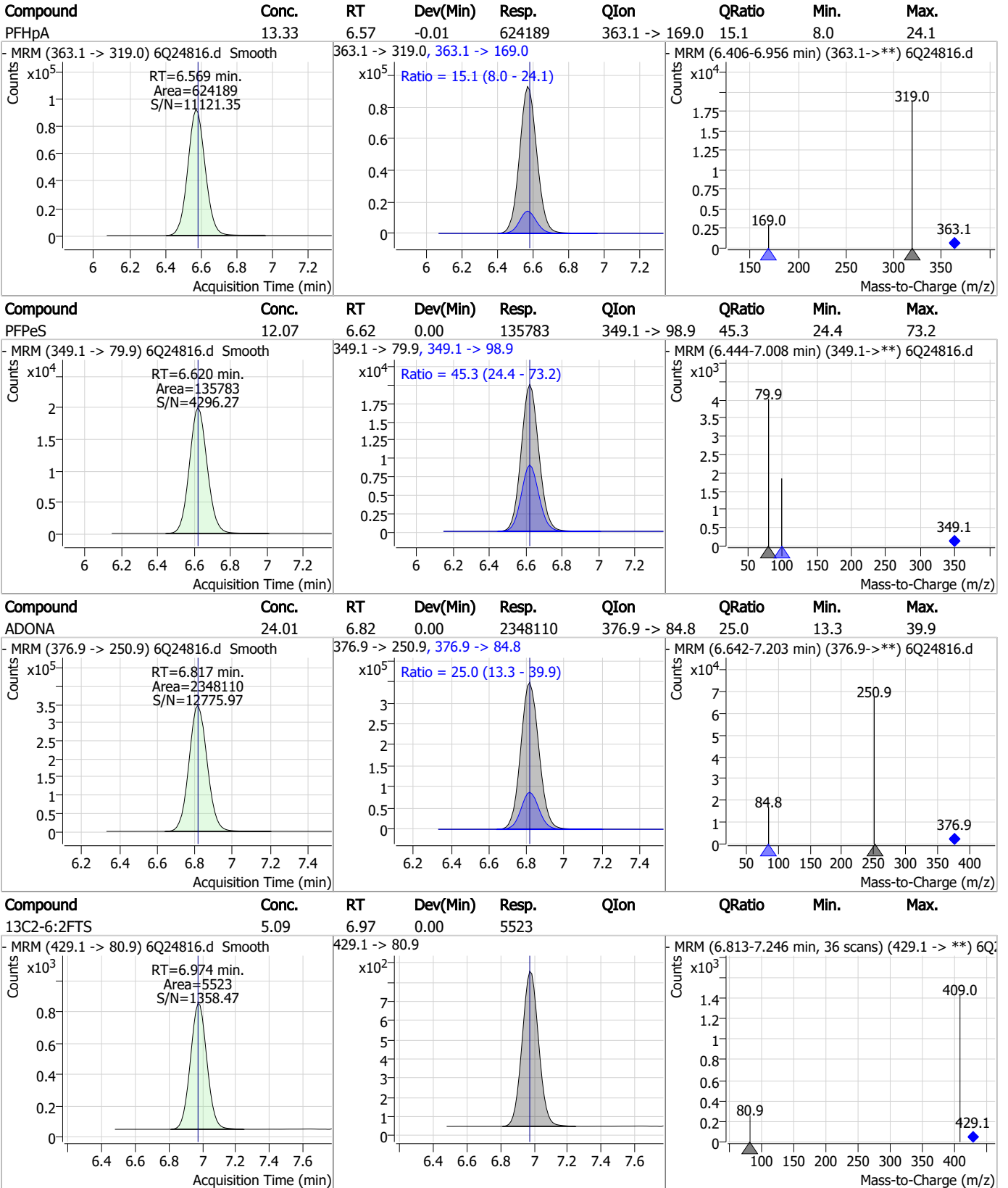
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	339.58	6.28	-0.01	2317911	341.0 -> 217.0	66.6	35.9	107.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.56	6.57	0.00	92052	367.1 -> 322.0			



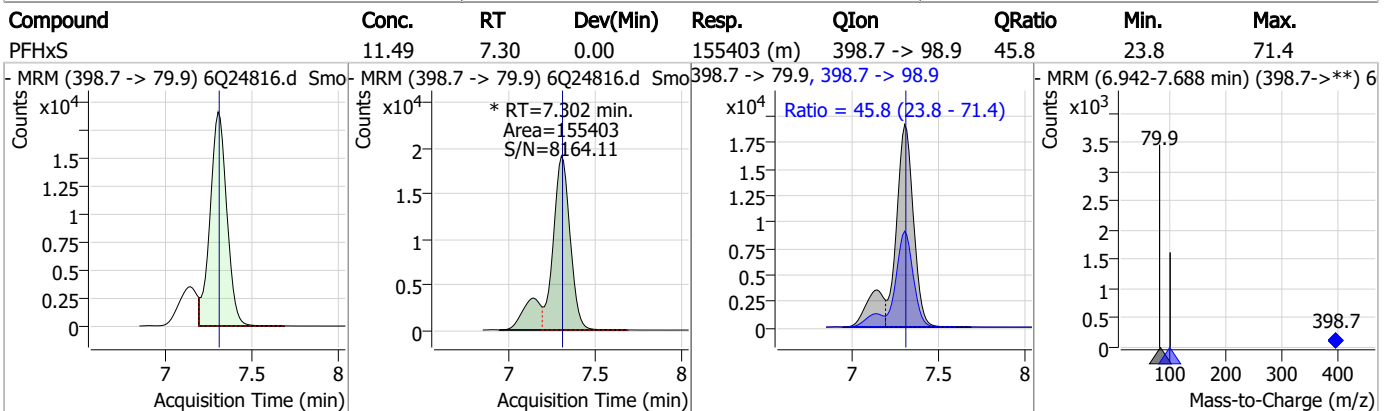
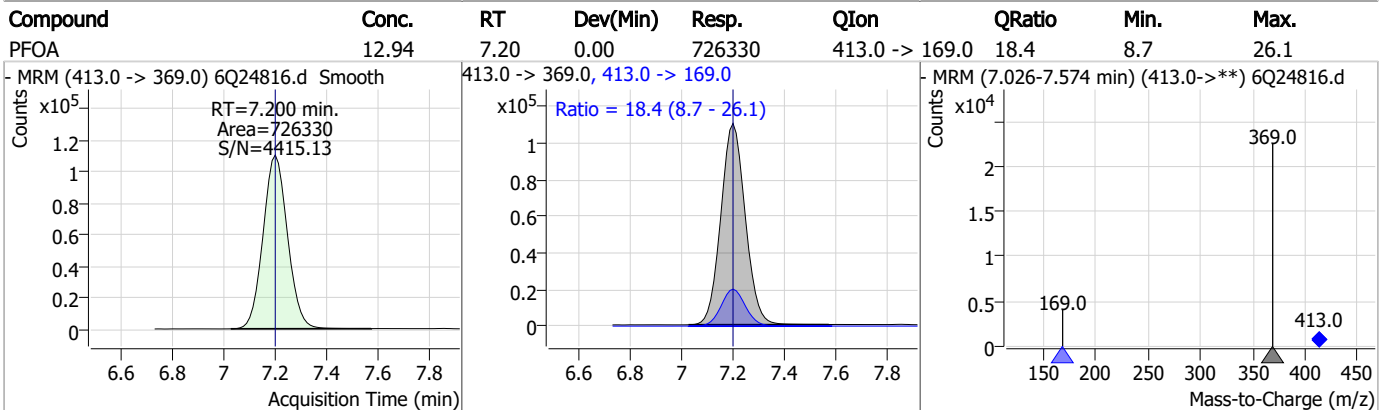
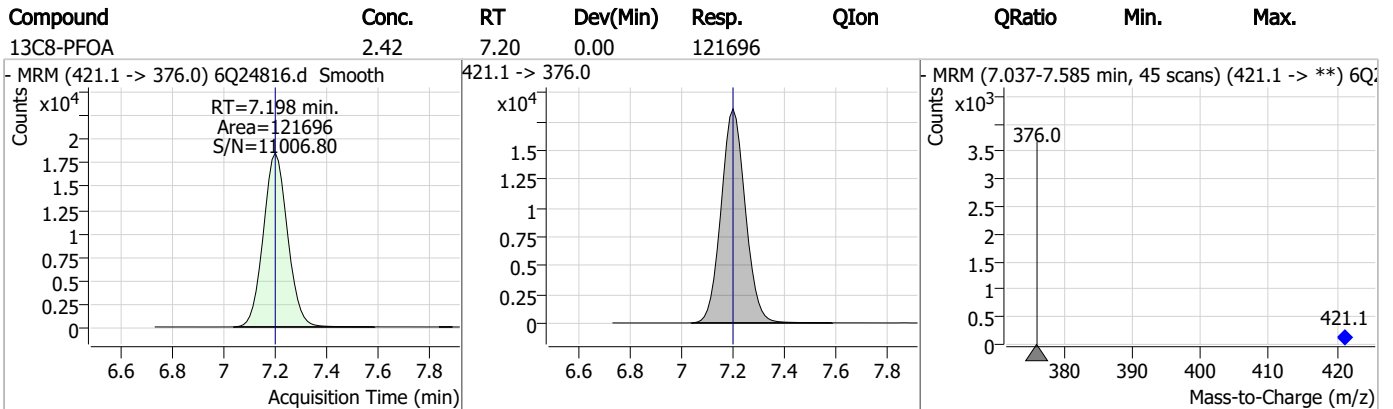
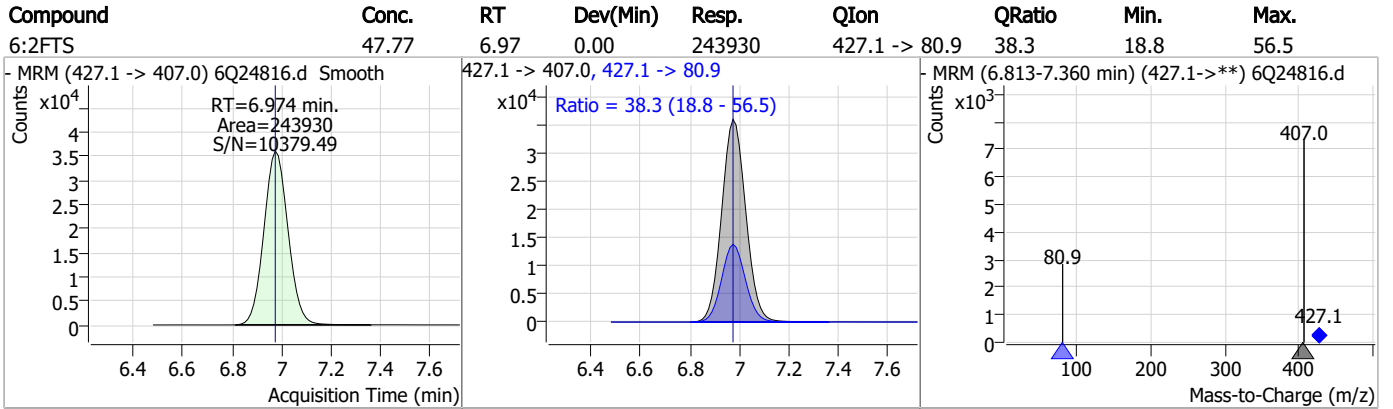
Perfluorinated Compounds by LC/MS/MS



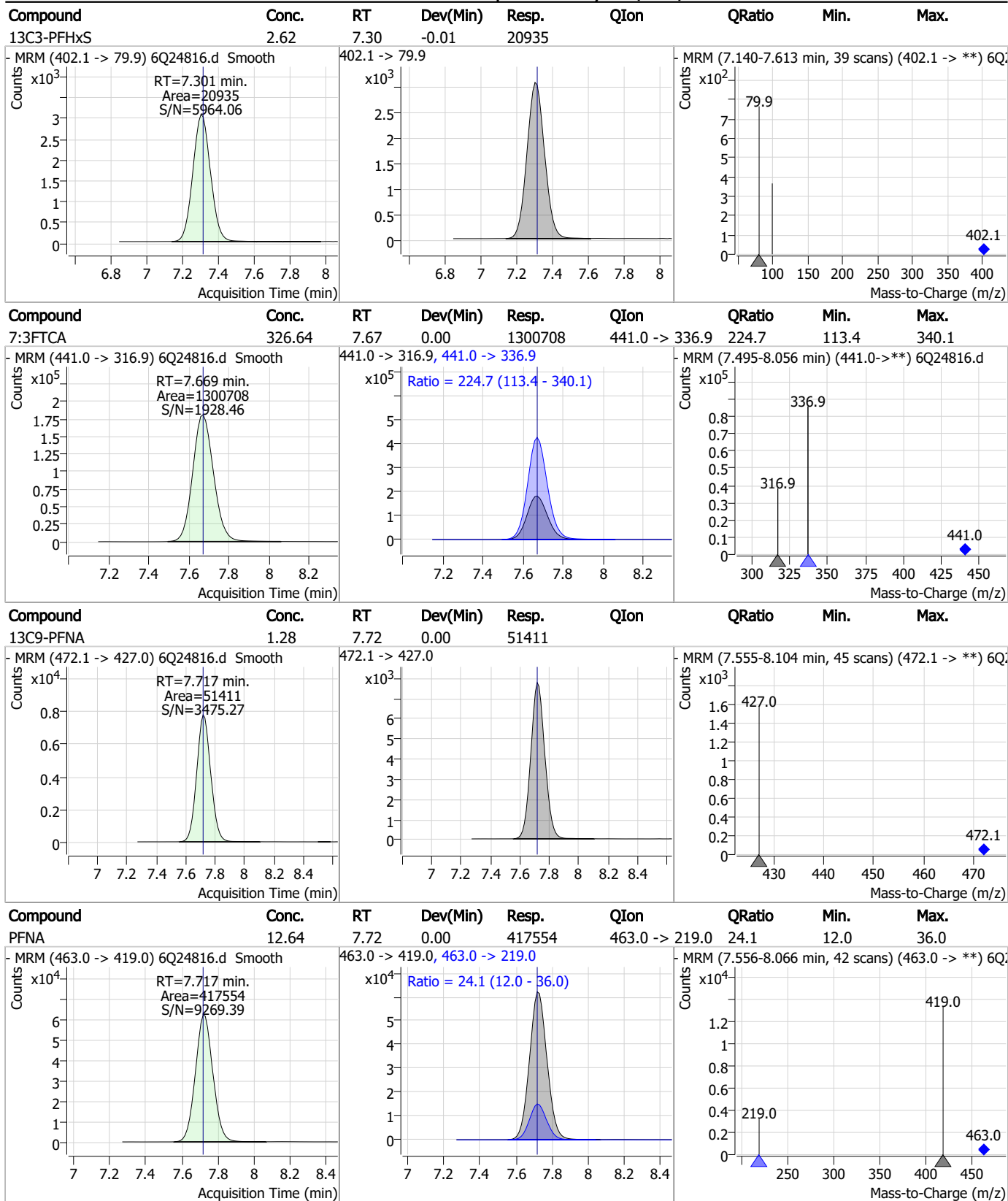
7.7.7

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



7.7.7

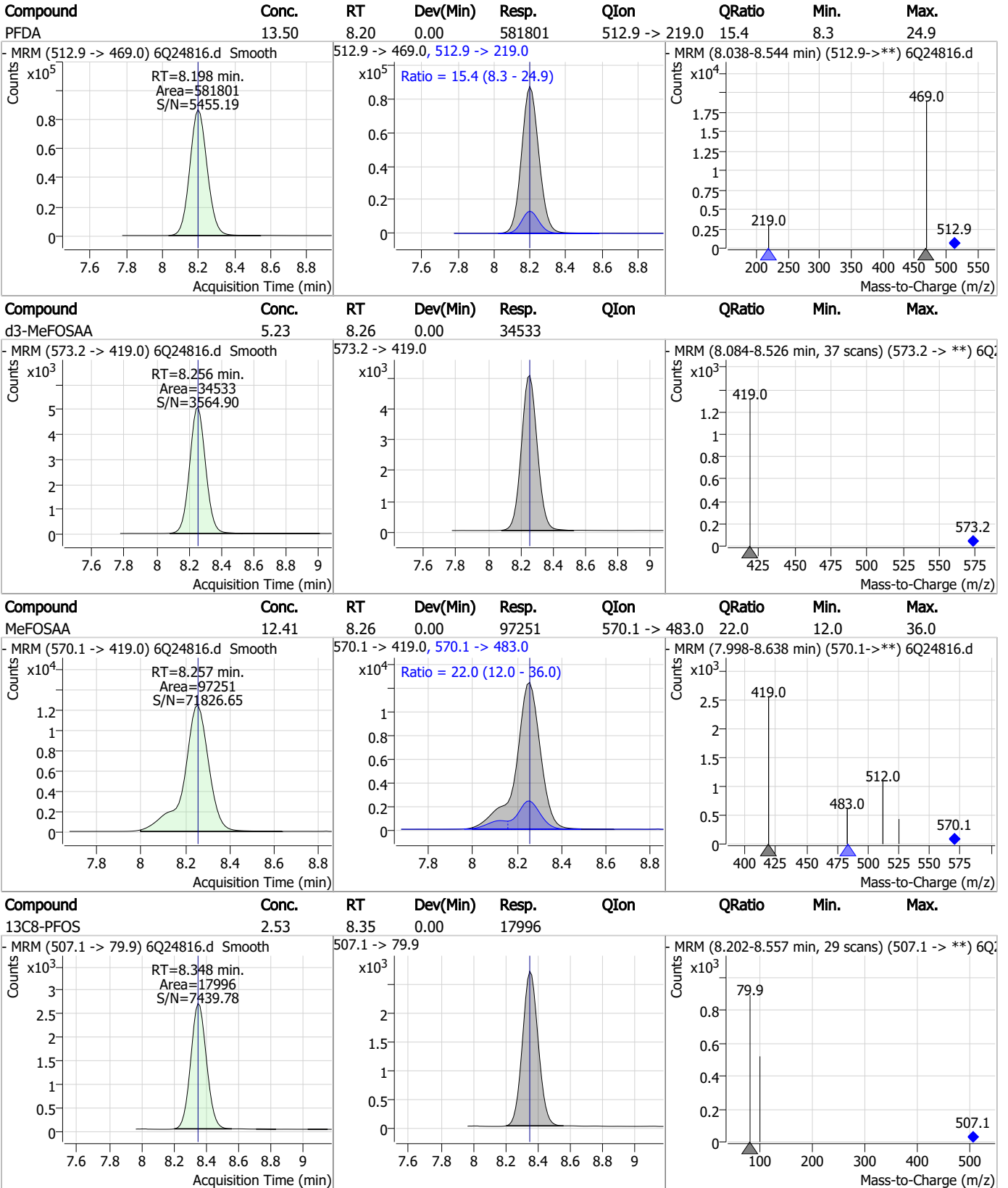
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	12.91	7.86	0.00	113766	449.0 -> 98.9	49.3	23.5	70.6
13C2-8:2FTS	4.86	8.00	0.01	5388	529.1 -> 80.9			
8:2FTS	51.06	7.99	-0.01	174692	527.1 -> 80.8	41.5	16.2	48.5
13C6-PFDA	1.30	8.20	0.00	48251	519.1 -> 474.1			

7.7.7

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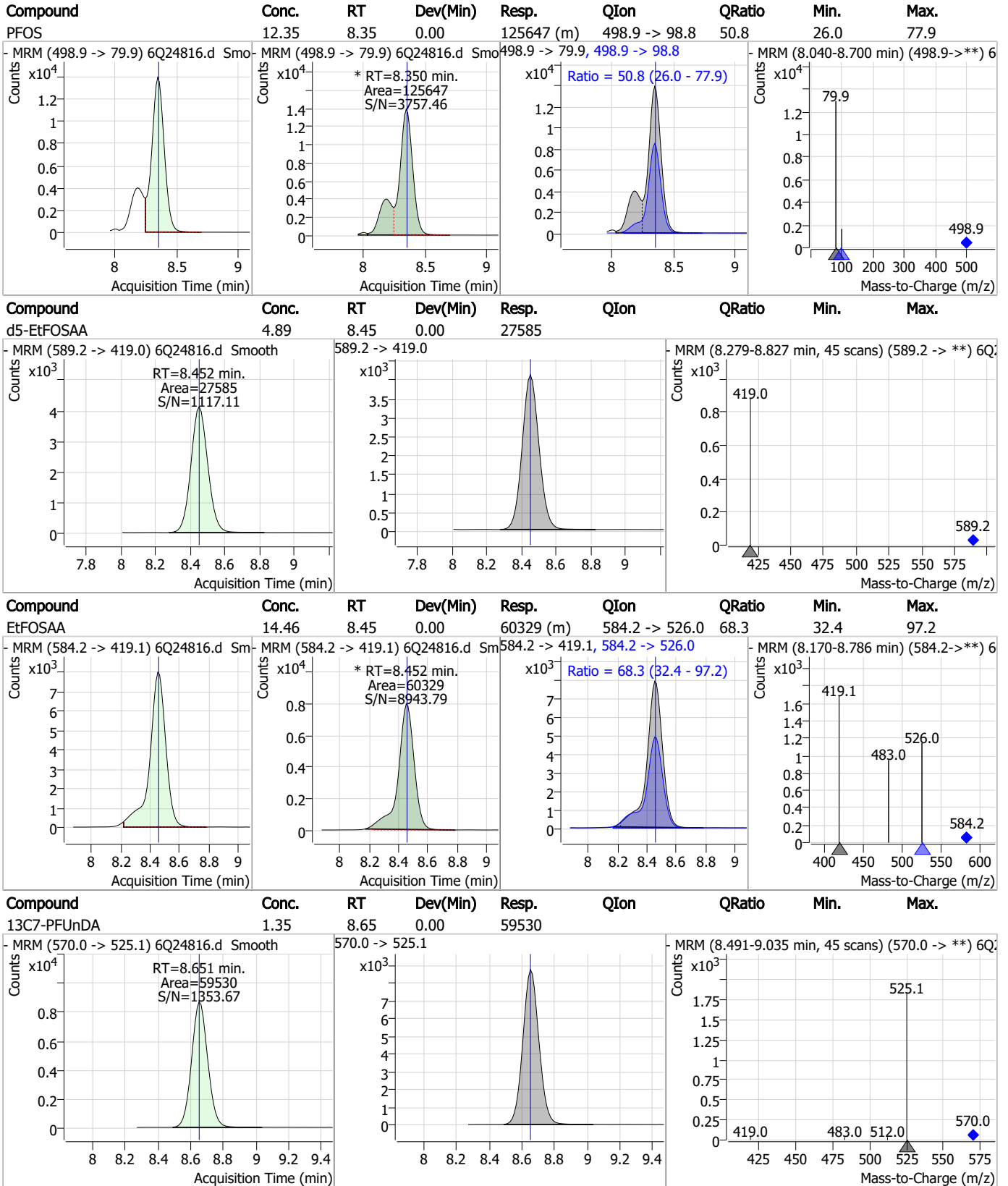
Perfluorinated Compounds by LC/MS/MS



7.7.7

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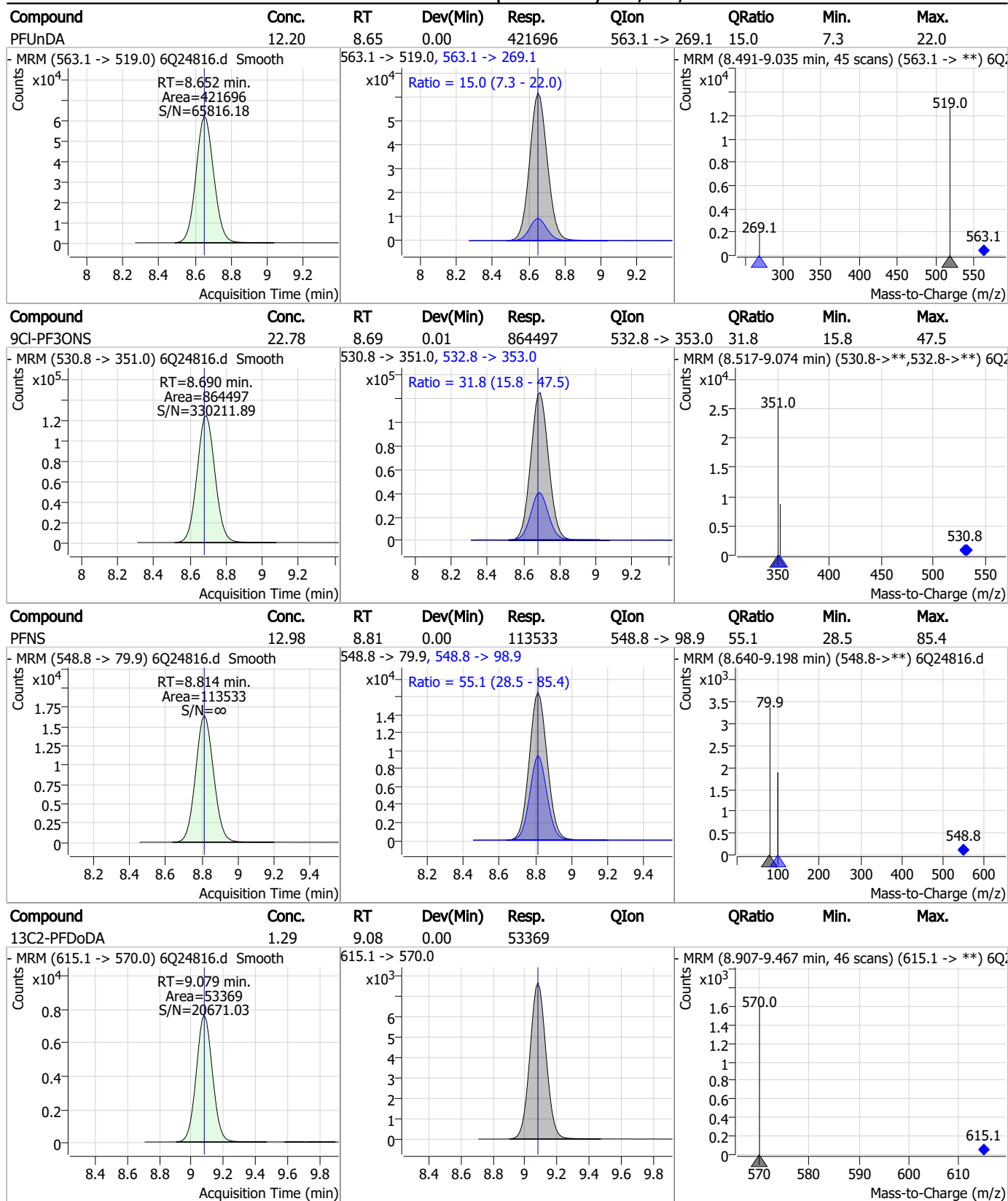
Perfluorinated Compounds by LC/MS/MS



7.7.7

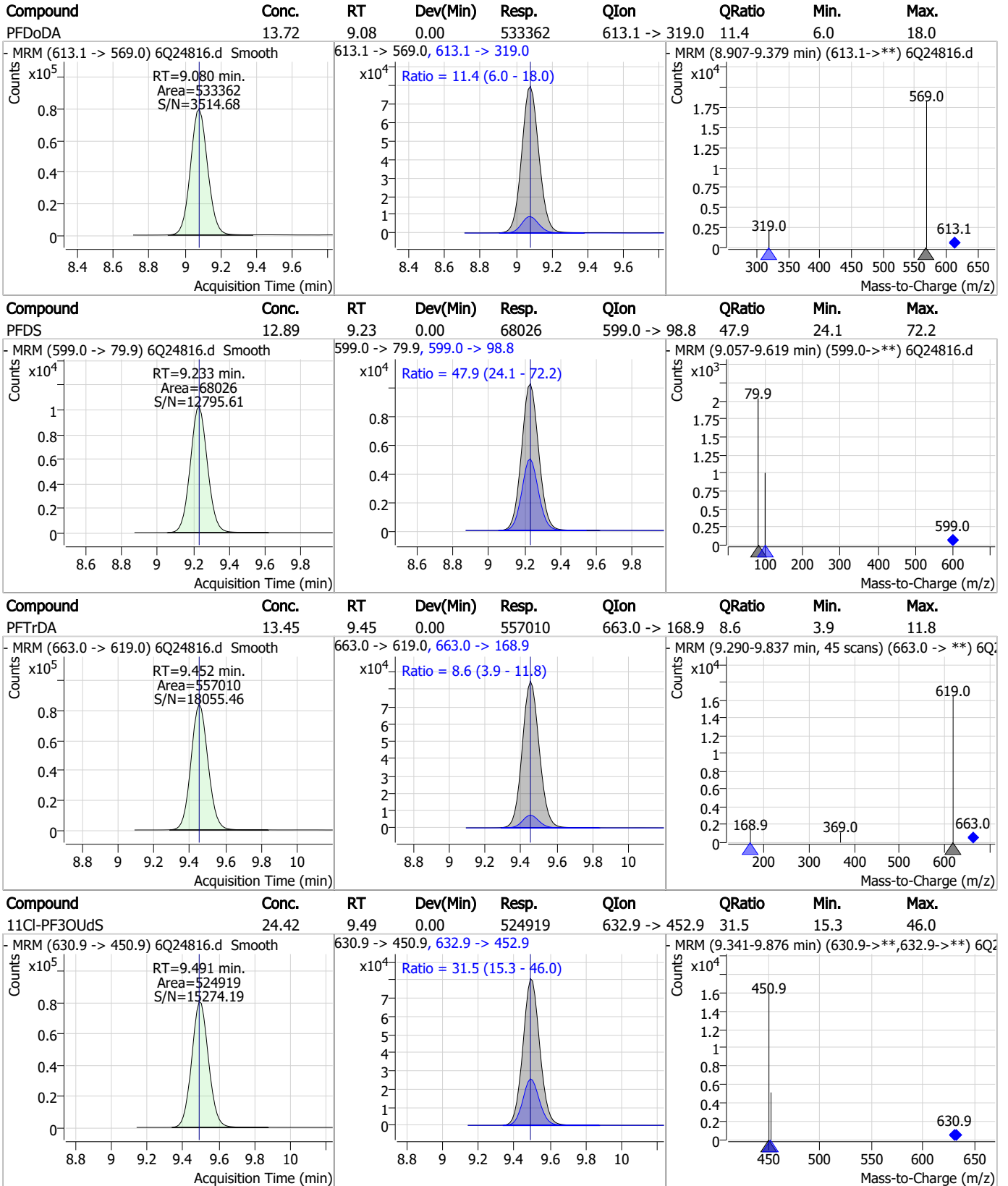
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Perfluorinated Compounds by LC/MS/MS



7.7.7
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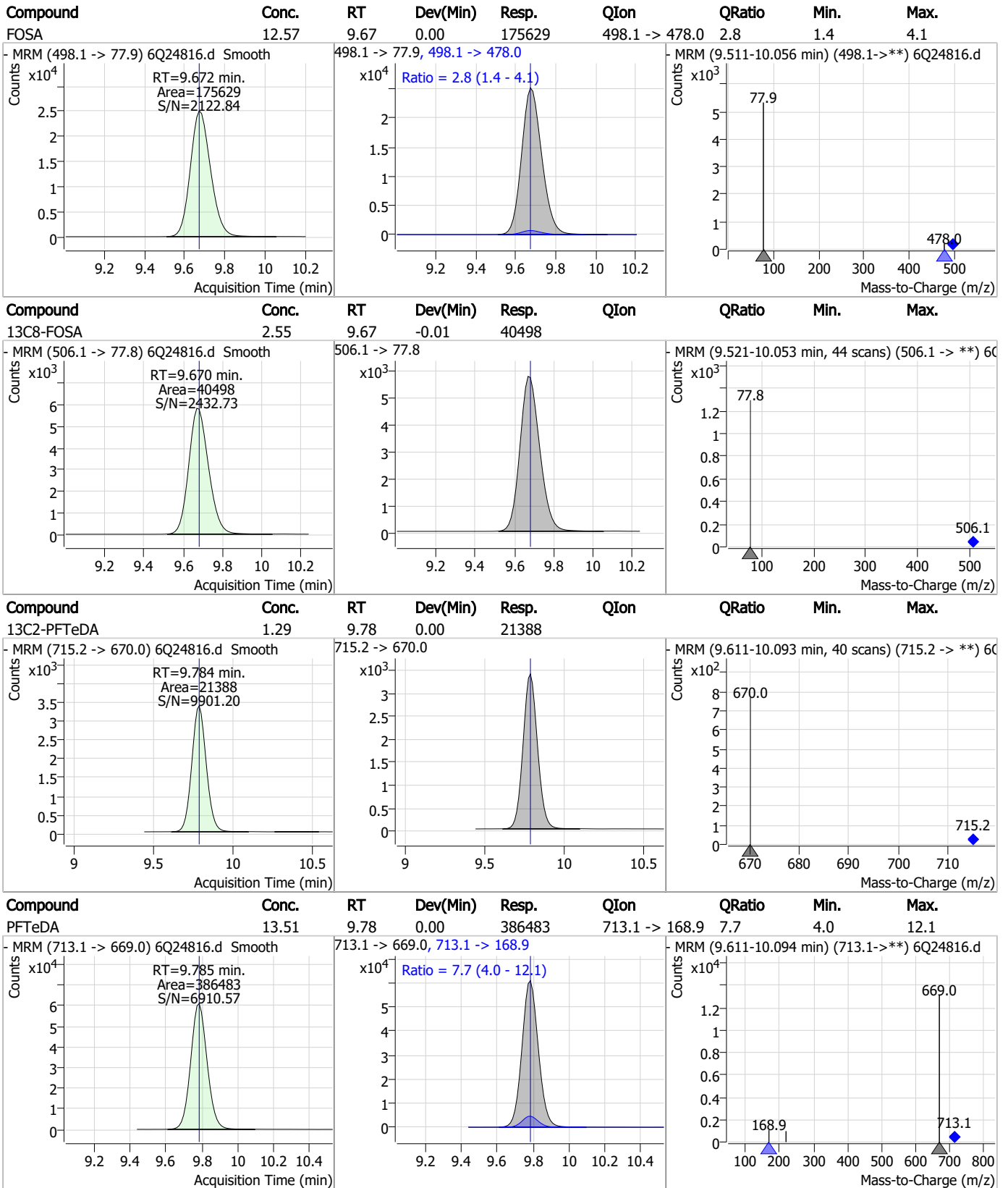
Perfluorinated Compounds by LC/MS/MS



7.7.7

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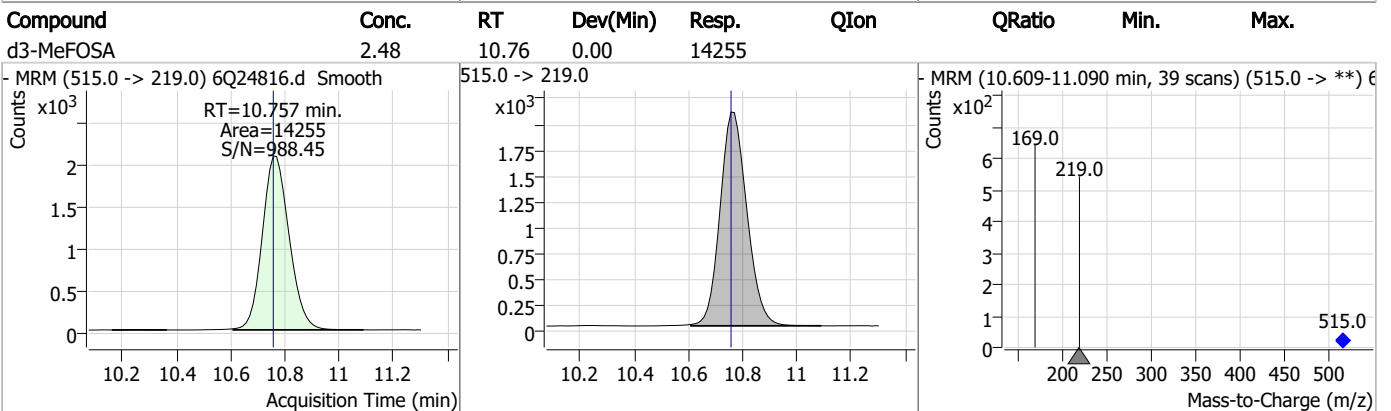
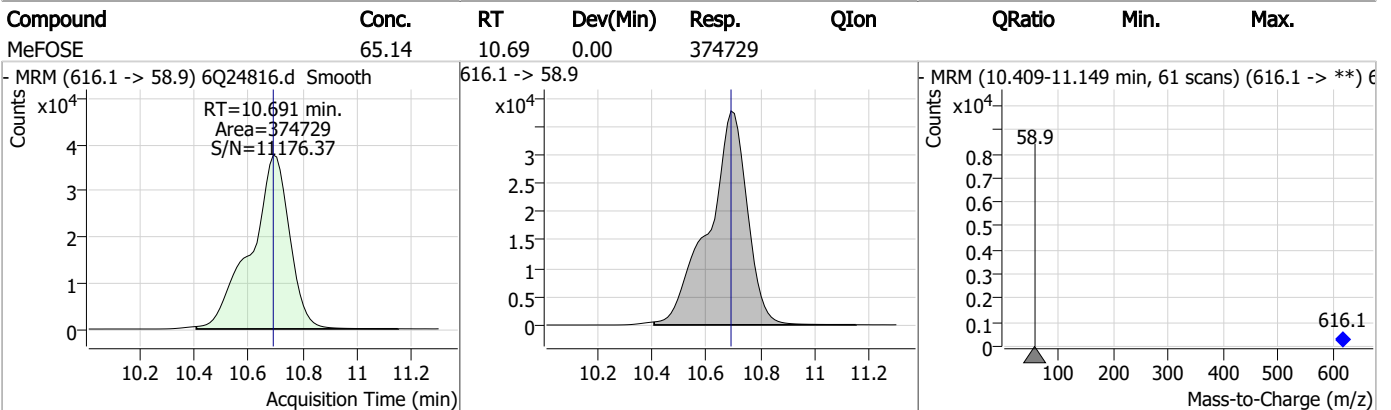
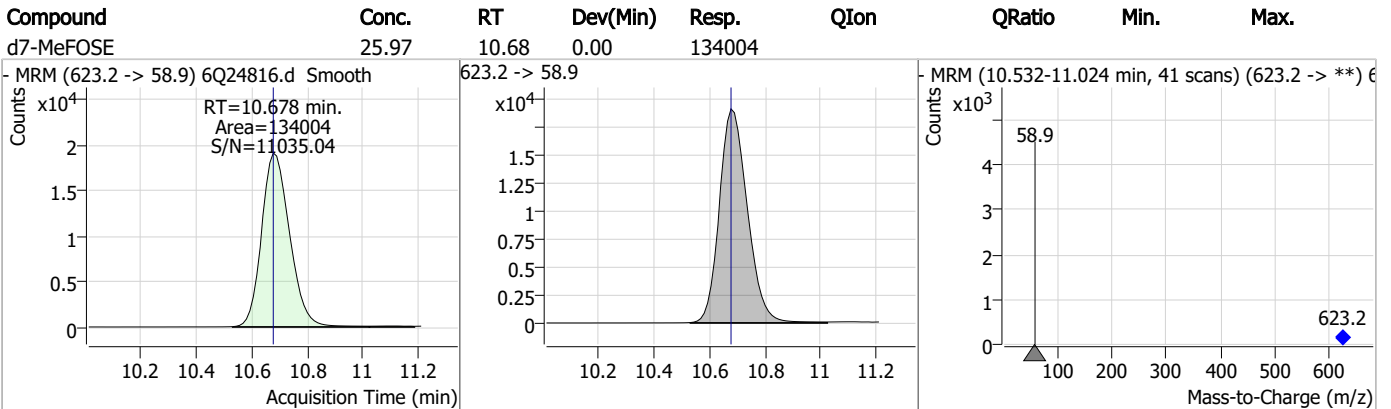
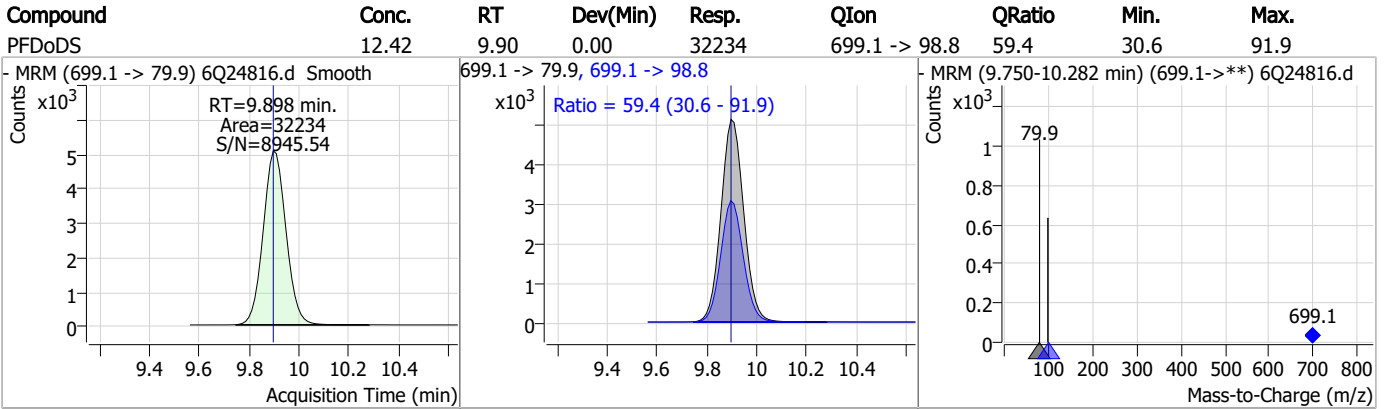
Perfluorinated Compounds by LC/MS/MS



7.7.7

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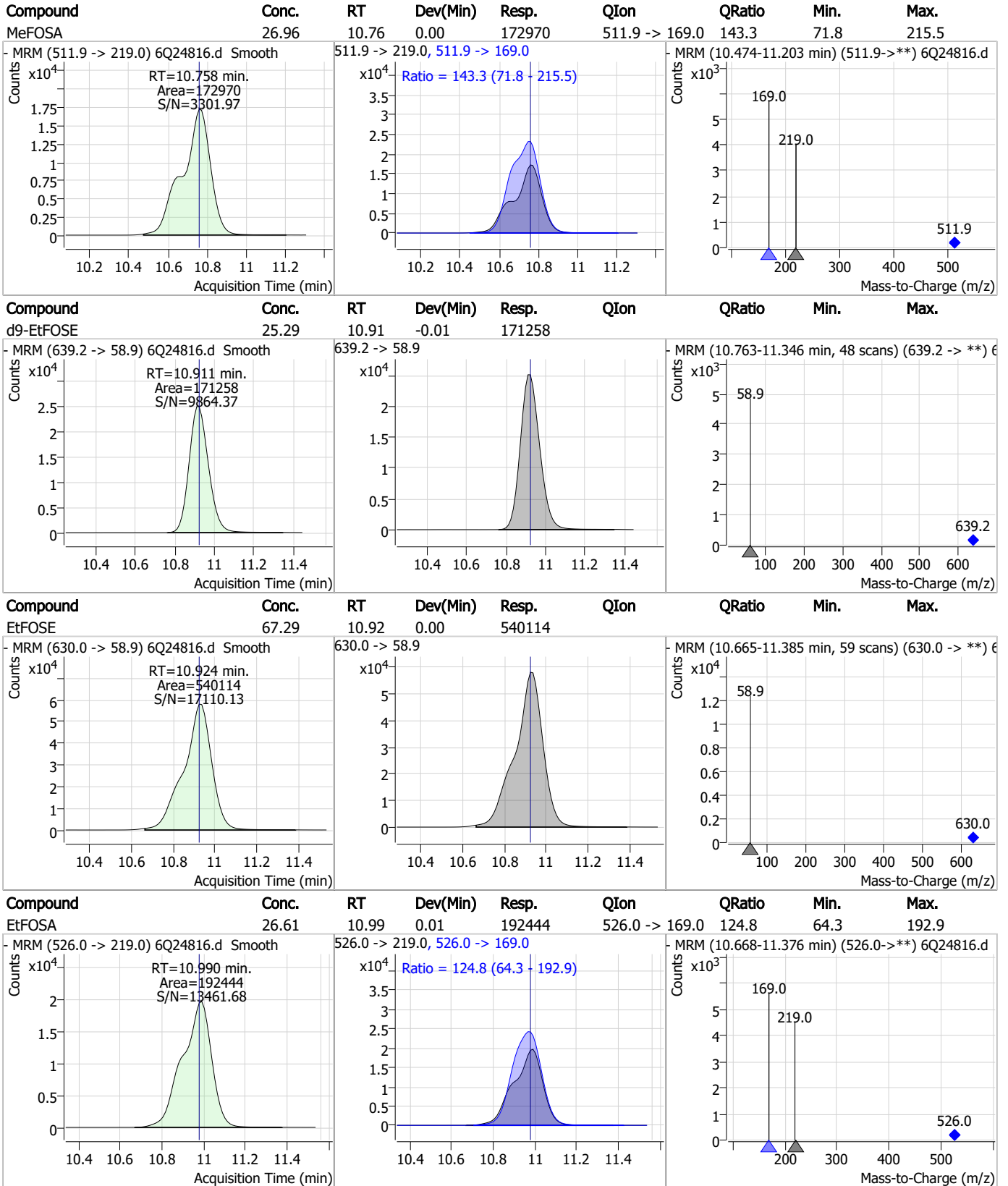
Perfluorinated Compounds by LC/MS/MS



7.7.7

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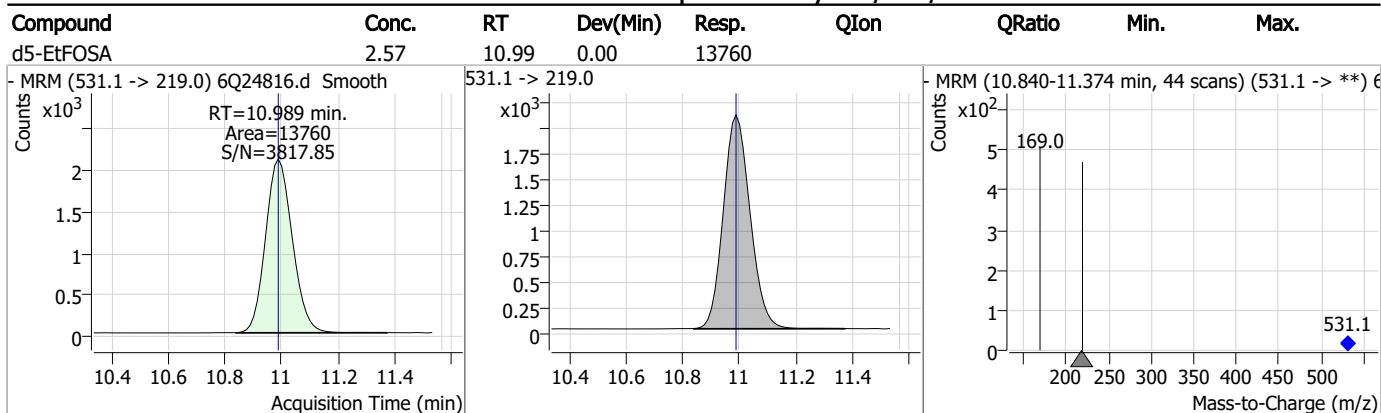
Perfluorinated Compounds by LC/MS/MS



7.7.7

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Perfluorinated Compounds by LC/MS/MS



7.7.7
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Manual Integration Approval Summary

Sample Number: S6Q355-IC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24816.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 21:47 Supervisor approved: 09/22/23 13:16 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

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Manual Integrations
APPROVED
 (compounds with "m" flag)

Natasha Gumtje
 09/22/23 13:16

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24817.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 10:01:55 PM
 Sample Name : ic355-7
 Vial : P1-A8
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	289279	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	48363	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	114189	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	87678	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	121762	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	48745	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	45696	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	54778	1.25 µg/L	0.000
M2-PFDoDA	9.080	615.1 -> 570.0	53183	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	20957	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	38959	2.50 µg/L	0.000
M3-PFBS	5.559	302.1 -> 79.9	35128	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	20045	2.50 µg/L	-0.012
M8-PFOS	8.361	507.1 -> 79.9	18671	2.50 µg/L	0.012
M2-4:2FTS	5.304	329.1 -> 80.9	3338	5.00 µg/L	-0.012
M2-6:2FTS	6.974	429.1 -> 80.9	4853	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	5449	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	32449	5.00 µg/L	0.000
M3-HFPO-DA	6.007	286.9 -> 168.9	65088	10.00 µg/L	-0.012
M5-EtFOSAA	8.452	589.2 -> 419.0	29284	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	130092	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	173270	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	13349	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	15105	2.50 µg/L	0.012
13C4-PFOS	8.349	502.8 -> 79.9	25102	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	119396	5.00 µg/L	-0.012
18O2-PFHxS	7.313	403.0 -> 83.9	14638	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	136859	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	42418	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	54446	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	85623	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.304	329.1 -> 80.9	3338	4.37 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 87.4%		
13C2-6:2FTS	6.974	429.1 -> 80.9	4853	4.51 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 90.1%		
13C2-8:2FTS	7.998	529.1 -> 80.9	5449	4.96 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C2-PFDoDA	9.080	615.1 -> 570.0	53183	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.0%		
13C2-PFTeDA	9.784	715.2 -> 670.0	20957	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.7%		
13C3-PFBS	5.559	302.1 -> 79.9	35128	2.48 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 99.1%		
13C3-PFHxS	7.301	402.1 -> 79.9	20045	2.53 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C4-PFBA	2.985	216.8 -> 171.9	289279	9.93 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C4-PFHpA	6.569	367.1 -> 322.0	87678	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C5-PFHxA	5.641	318.0 -> 273.0	114189	2.53 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C5-PFPeA	4.422	268.3 -> 223.0	48363	4.97 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.4%	
13C6-PFDA	8.198	519.1 -> 474.1	45696	1.18 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 94.7%	
13C7-PFUnDA	8.651	570.0 -> 525.1	54778	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.0%	
13C8-FOSA	9.682	506.1 -> 77.8	38959	2.36 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.5%	
13C8-PFOA	7.198	421.1 -> 376.0	121762	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.0%	
13C8-PFOS	8.361	507.1 -> 79.9	18671	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.0%	
13C9-PFNA	7.717	472.1 -> 427.0	48745	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.8%	
d3-MeFOSAA	8.256	573.2 -> 419.0	32449	4.73 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.7%	
13C3-HFPO-DA	6.007	286.9 -> 168.9	65088	10.25 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
d3-MeFOSA	10.769	515.0 -> 219.0	15105	2.53 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.2%	
d5-EtFOSAA	8.452	589.2 -> 419.0	29284	5.00 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
d7-MeFOSE	10.678	623.2 -> 58.9	130092	24.29 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.1%	
d9-EtFOSE	10.923	639.2 -> 58.9	173270	24.65 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.6%	
d5-EtFOSA	10.989	531.1 -> 219.0	13349	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	562438	104.04 µg/L	99
		327.1 -> 80.9	209792		
6:2FTS	6.974	427.1 -> 407.0	436108	97.20 µg/L	99
		427.1 -> 80.9	168009		
8:2FTS	7.987	527.1 -> 507.0	321941	93.04 µg/L	91
		527.1 -> 80.8	121012		
EtFOSAA	8.452	584.2 -> 419.1	114639	25.89 µg/L	94
		584.2 -> 526.0	80033		
FOSA	9.672	498.1 -> 77.9	370935	27.60 µg/L	100
		498.1 -> 478.0	10401		
MeFOSAA	8.257	570.1 -> 419.0	203910	27.70 µg/L	96
		570.1 -> 483.0	44693		
PFBA	2.993	212.8 -> 168.9	960877	107.79 µg/L	100
PFBS	5.560	298.7 -> 79.9	390644	23.49 µg/L	98
		298.7 -> 98.8	147087		
PFDA	8.198	512.9 -> 469.0	1097652	26.89 µg/L	99
		512.9 -> 219.0	187252		
PFDoDA	9.080	613.1 -> 569.0	1131491	29.20 µg/L	97
		613.1 -> 319.0	123285		
PFDS	9.233	599.0 -> 79.9	127267	23.24 µg/L	91

Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	68587			
PFHpA	6.569	363.1 -> 319.0	1264805	28.37	µg/L	98
		363.1 -> 169.0	190991			
PFHpS	7.856	449.0 -> 79.9	226253	24.75	µg/L	98
		449.0 -> 98.9	109518			
PFHxA	5.644	313.0 -> 269.0	1029209	25.92	µg/L	100
		313.0 -> 118.9	46923			
PFHxS	7.302	398.7 -> 79.9	310455	23.96	µg/L	m 99
		398.7 -> 98.9	145275			
PFNA	7.717	463.0 -> 419.0	891375	28.46	µg/L	95
		463.0 -> 219.0	193535			
PFNS	8.814	548.8 -> 79.9	237078	26.13	µg/L	95
		548.8 -> 98.9	126996			
PFOA	7.200	413.0 -> 369.0	1464549	26.09	µg/L	99
		413.0 -> 169.0	263231			
PFOS	8.350	498.9 -> 79.9	237609	22.51	µg/L	m 96
		498.9 -> 98.8	116837			
PFPeA	4.424	263.0 -> 219.0	1266558	53.17	µg/L	100
PFPeS	6.620	349.1 -> 79.9	263397	24.46	µg/L	96
		349.1 -> 98.9	121239			
PFTeDA	9.785	713.1 -> 669.0	755149	26.94	µg/L	98
		713.1 -> 168.9	55362			
PFTrDA	9.452	663.0 -> 619.0	1085235	26.29	µg/L	99
		663.0 -> 168.9	87155			
PFUnDA	8.652	563.1 -> 519.0	883225	27.77	µg/L	100
		563.1 -> 269.1	128801			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	1009366	47.78	µg/L	97
		632.9 -> 452.9	327578			
9Cl-PF3ONS	8.690	530.8 -> 351.0	1768614	47.44	µg/L	99
		532.8 -> 353.0	566434			
ADONA	6.817	376.9 -> 250.9	4867448	50.66	µg/L	95
		376.9 -> 84.8	1158165			
HFPO-DA	6.020	284.9 -> 168.9	318986	51.63	µg/L	100
		284.9 -> 184.9	45742			
3:3FTCA	3.871	241.0 -> 177.0	217147	139.63	µg/L	100
		241.0 -> 117.0	20274			
5:3FTCA	6.283	341.0 -> 237.1	4666857	669.95	µg/L	94
		341.0 -> 217.0	3120289			
7:3FTCA	7.669	441.0 -> 316.9	2737241	673.55	µg/L	90
		441.0 -> 336.9	5775537			
EtFOSA	10.990	526.0 -> 219.0	387248	55.21	µg/L	98
		526.0 -> 169.0	505466			
EtFOSE	10.937	630.0 -> 58.9	1074582	132.31	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	355242	52.26	µg/L	96
		511.9 -> 169.0	490821			
MeFOSE	10.691	616.1 -> 58.9	770683	138.00	µg/L	100
PFDoS	9.898	699.1 -> 79.9	68910	25.60	µg/L	94
		699.1 -> 98.8	38903			
NFDHA	5.524	295.0 -> 201.0	246518	52.50	µg/L	97
		295.0 -> 84.9	58568			
PFMBA	4.850	279.0 -> 85.1	903492	53.57	µg/L	100
PFMPA	3.551	229.0 -> 84.9	669360	53.61	µg/L	100
PFEESA	6.100	314.8 -> 134.9	2515476	48.15	µg/L	100
		314.8 -> 82.9	84735			

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

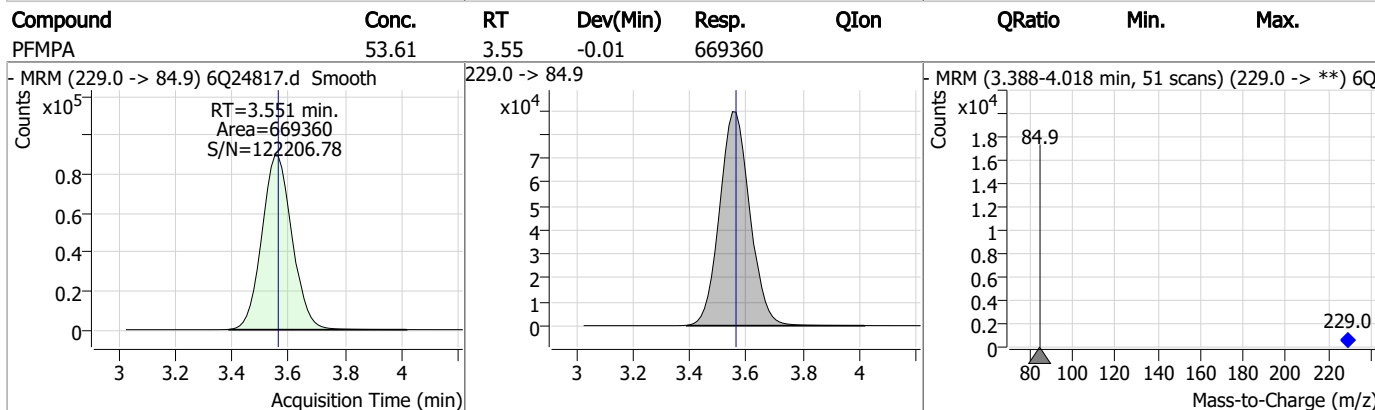
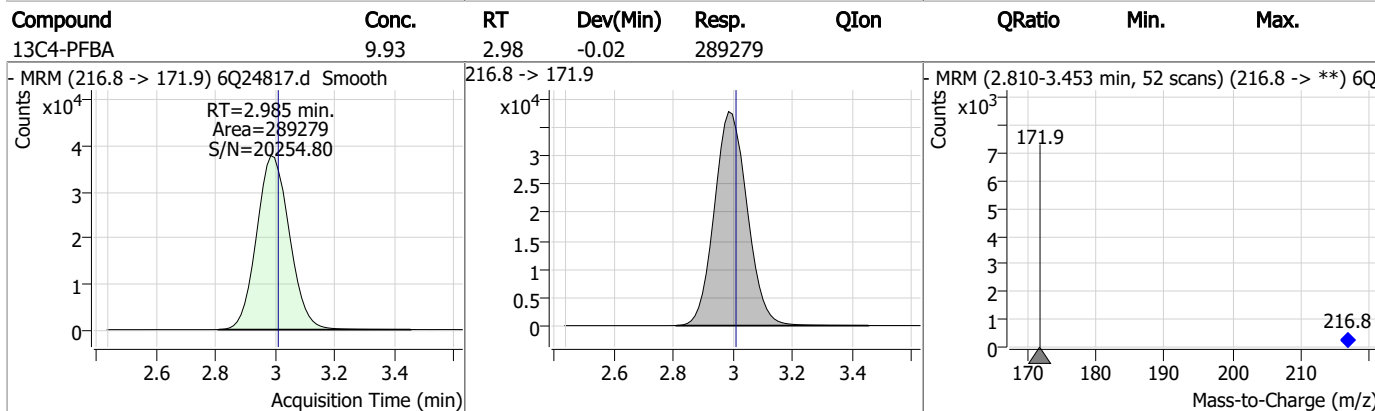
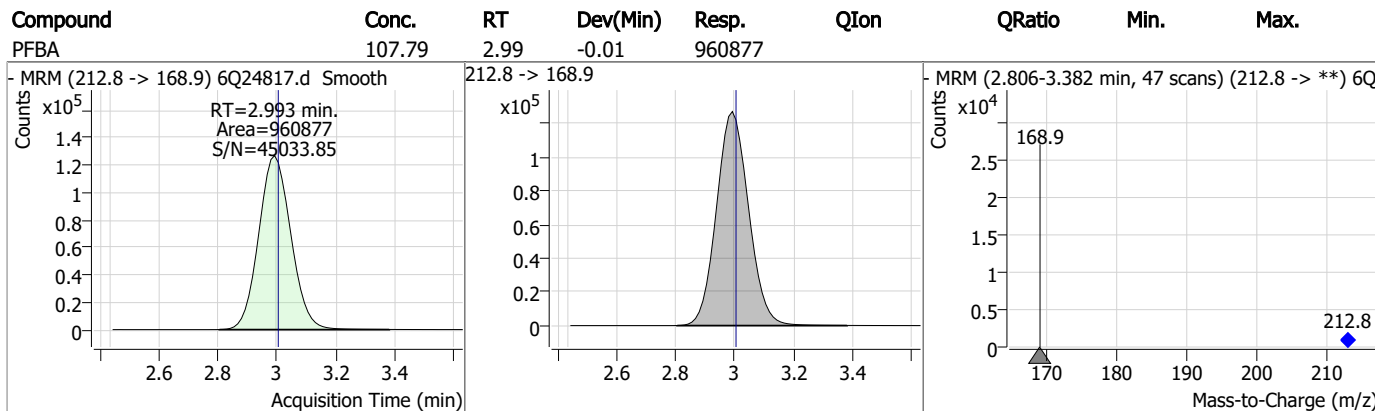
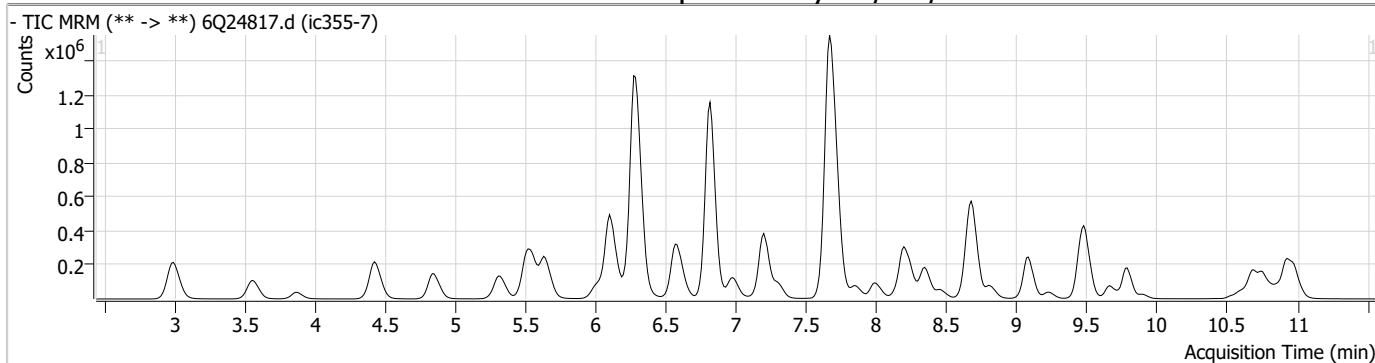
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7.7.8
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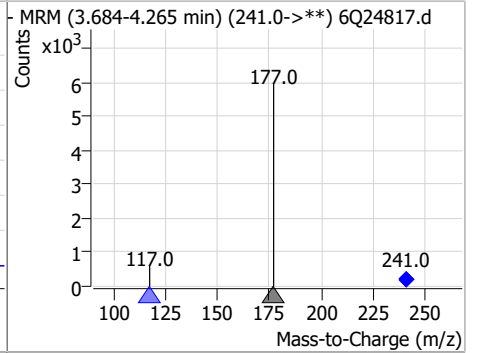
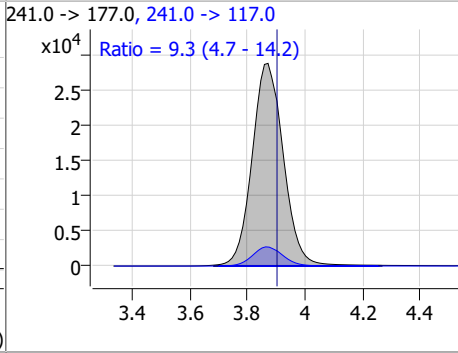
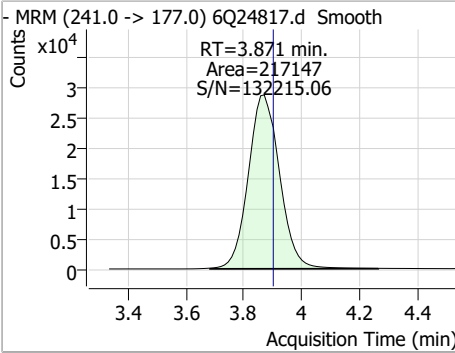


Perfluorinated Compounds by LC/MS/MS

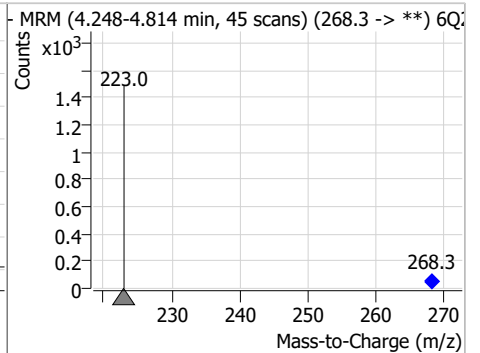
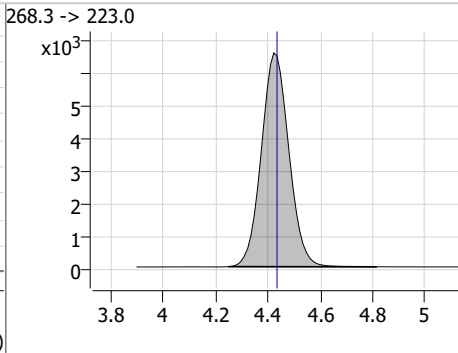
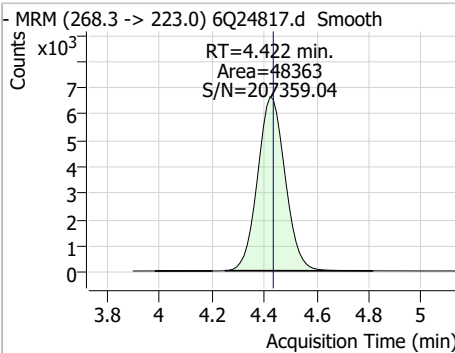


Perfluorinated Compounds by LC/MS/MS

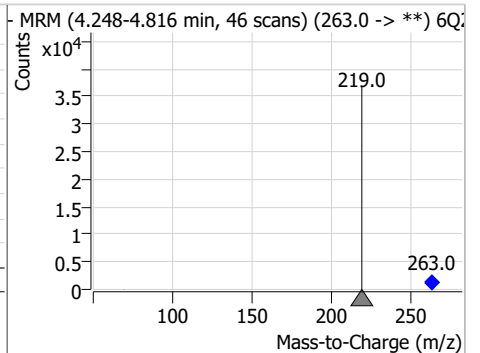
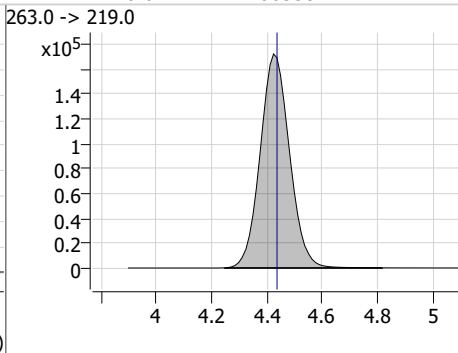
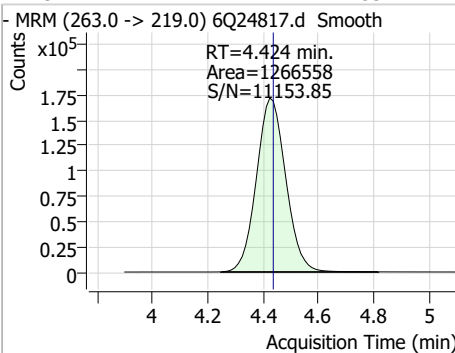
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	139.63	3.87	-0.03	217147	241.0 -> 117.0	9.3	4.7	14.2



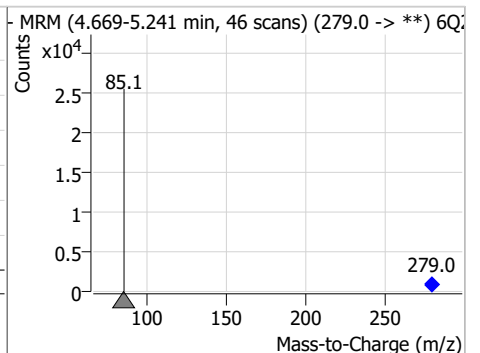
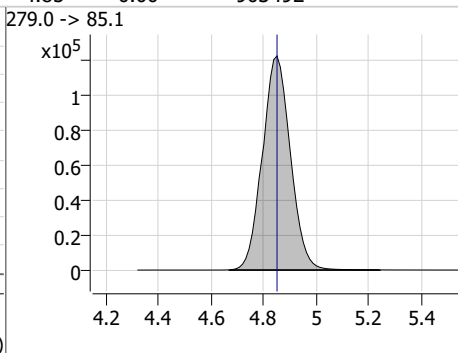
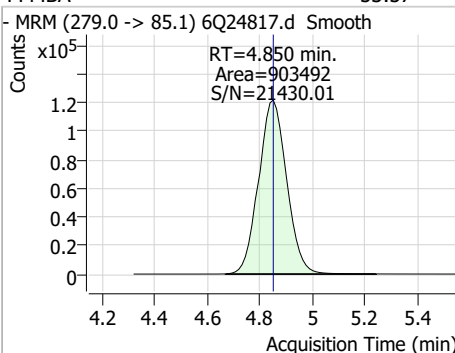
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	4.97	4.42	-0.01	48363				



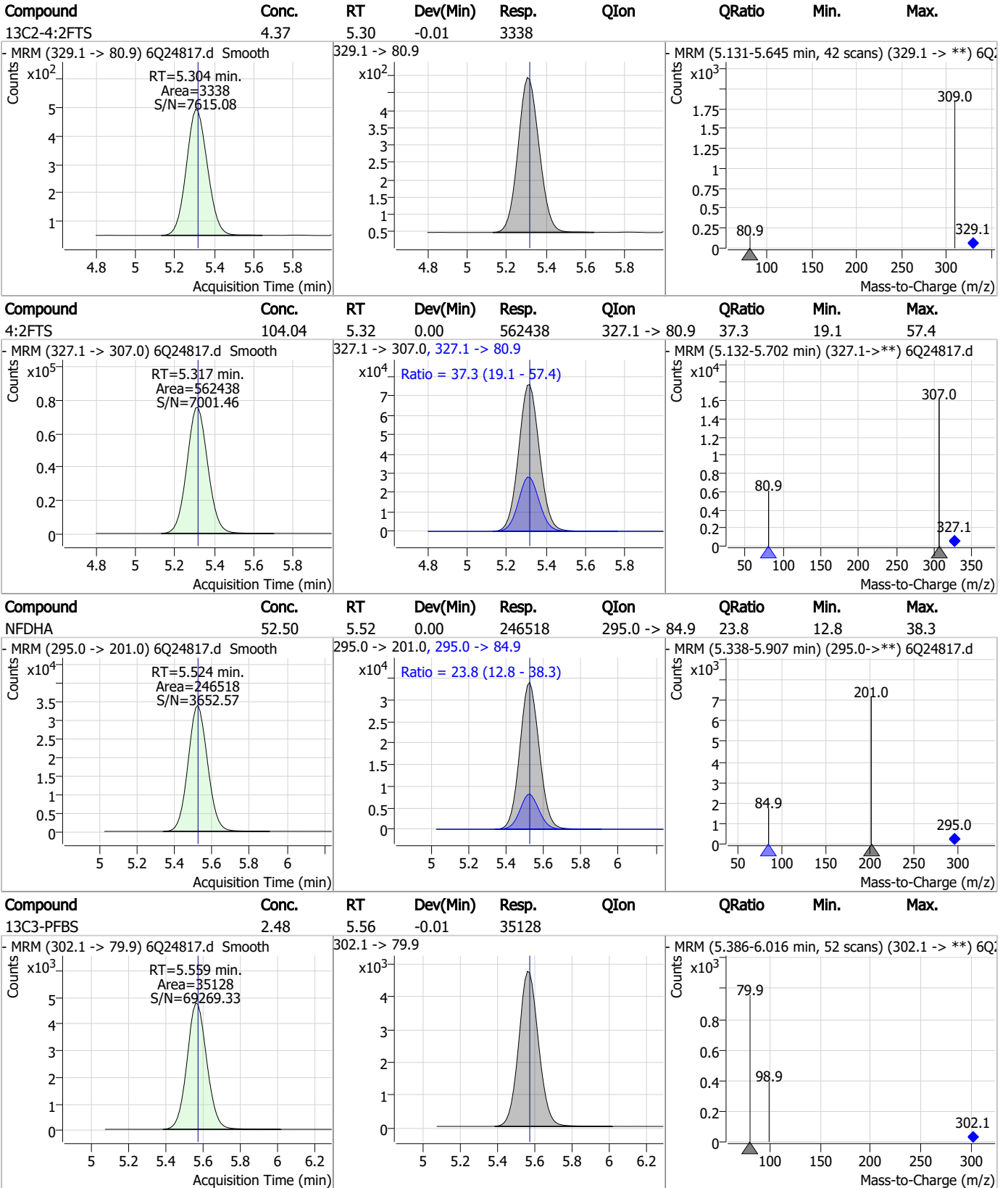
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	53.17	4.42	-0.01	1266558				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	53.57	4.85	0.00	903492				



Perfluorinated Compounds by LC/MS/MS



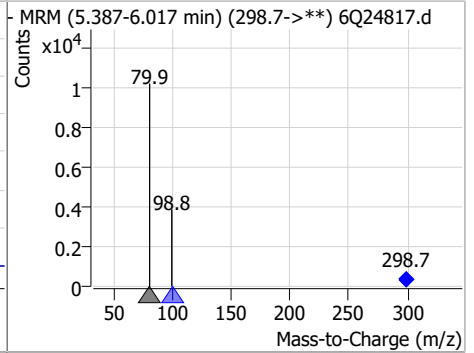
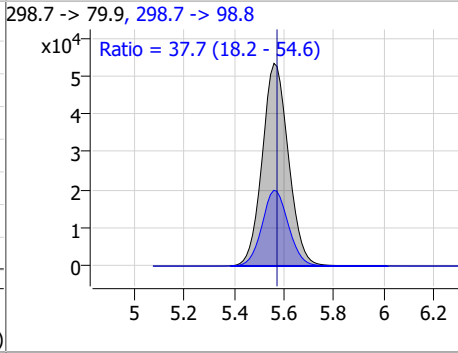
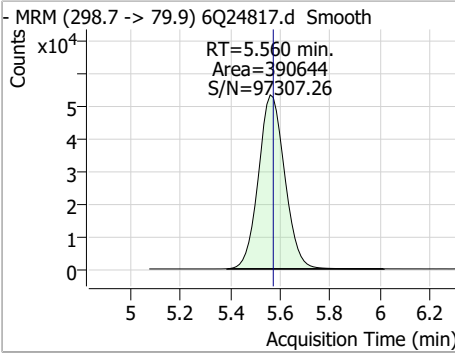
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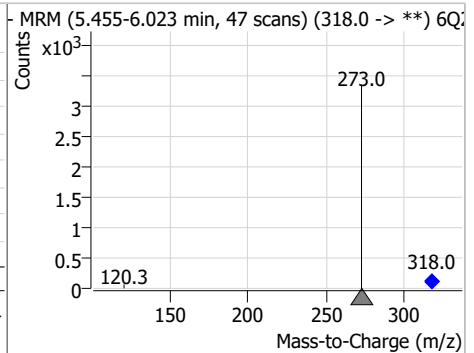
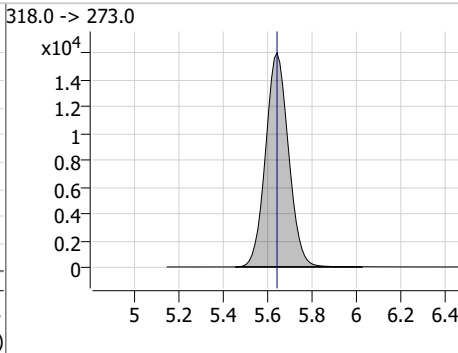
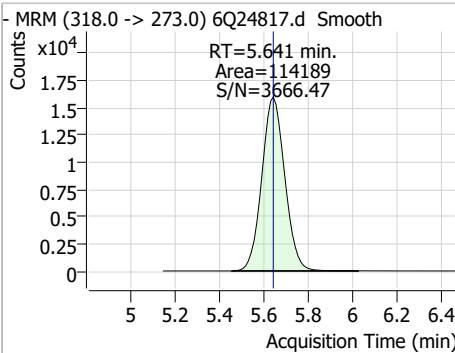


Perfluorinated Compounds by LC/MS/MS

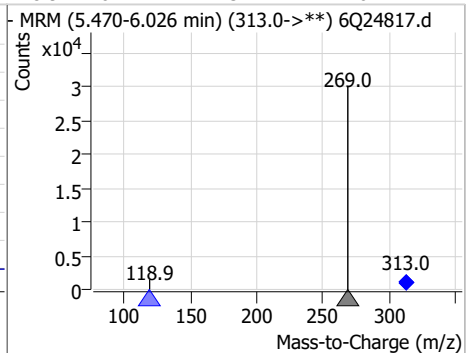
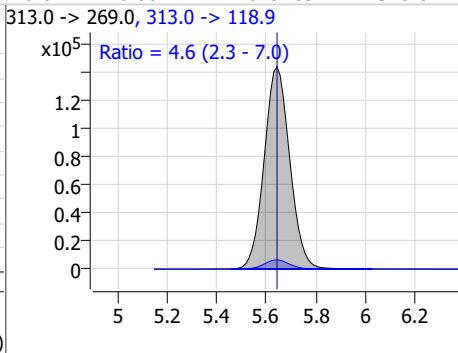
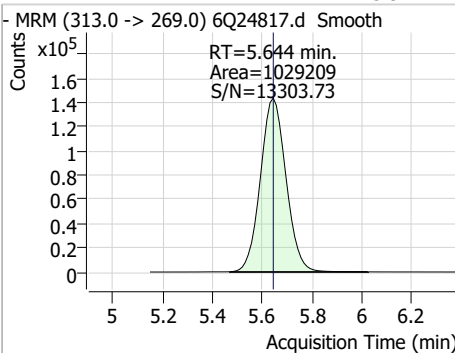
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	23.49	5.56	-0.01	390644	298.7 -> 98.8	37.7	18.2	54.6



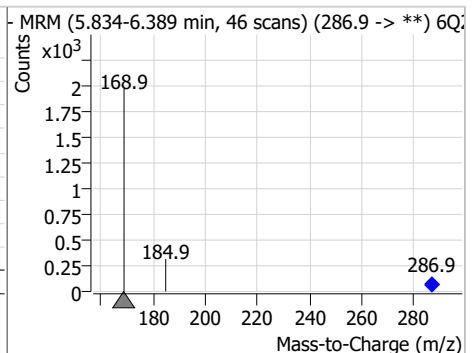
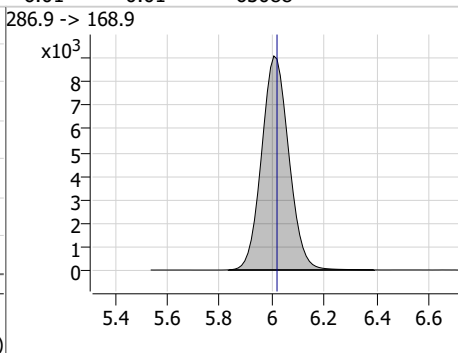
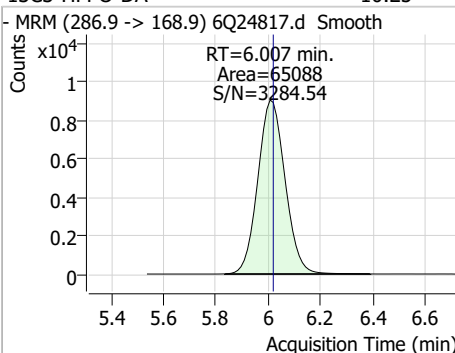
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.53	5.64	0.00	114189				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	25.92	5.64	0.00	1029209	313.0 -> 118.9	4.6	2.3	7.0

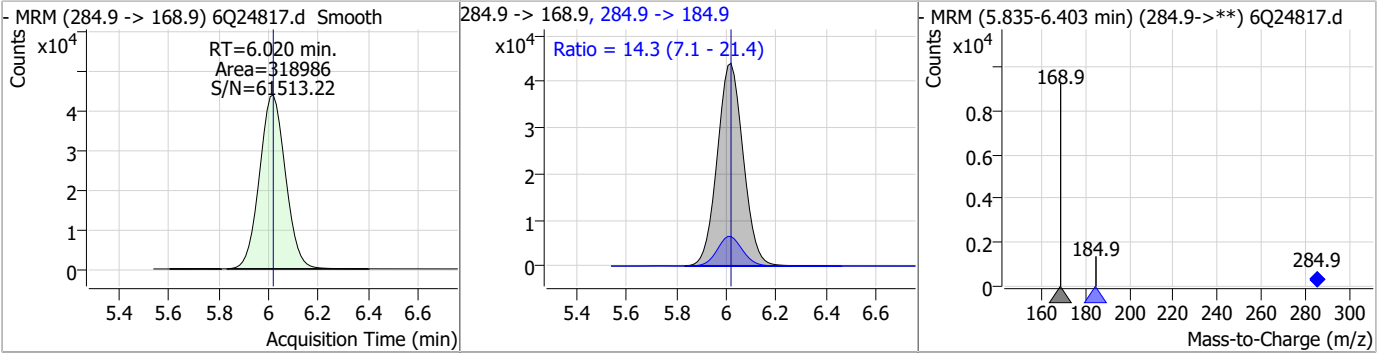


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.25	6.01	-0.01	65088				

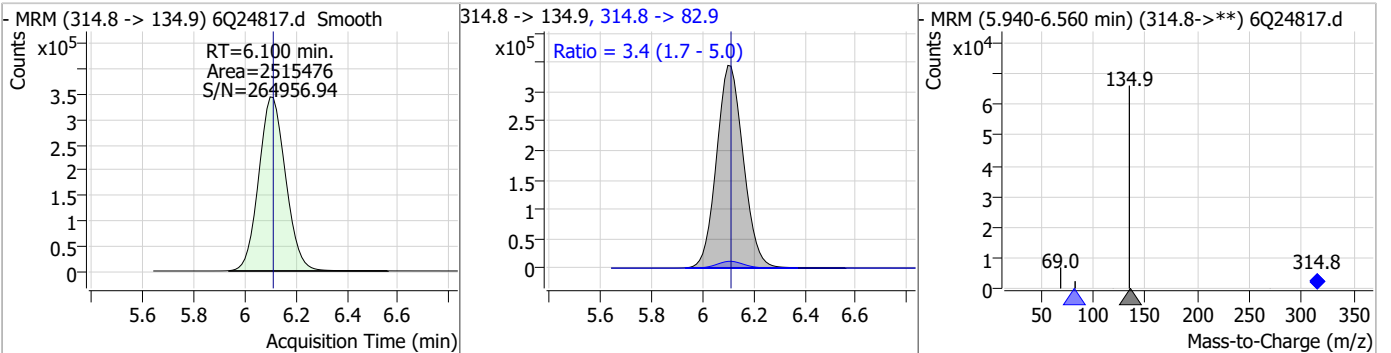


Perfluorinated Compounds by LC/MS/MS

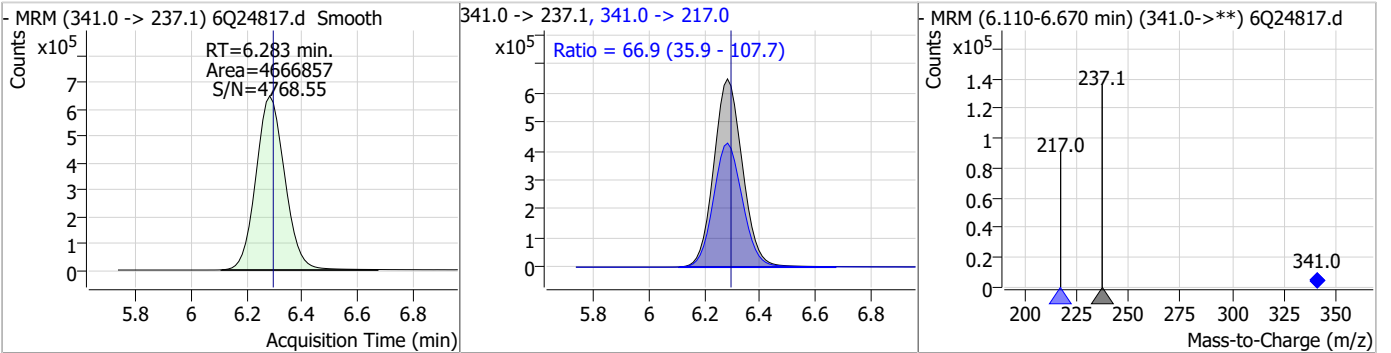
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	51.63	6.02	0.00	318986	284.9 -> 184.9	14.3	7.1	21.4



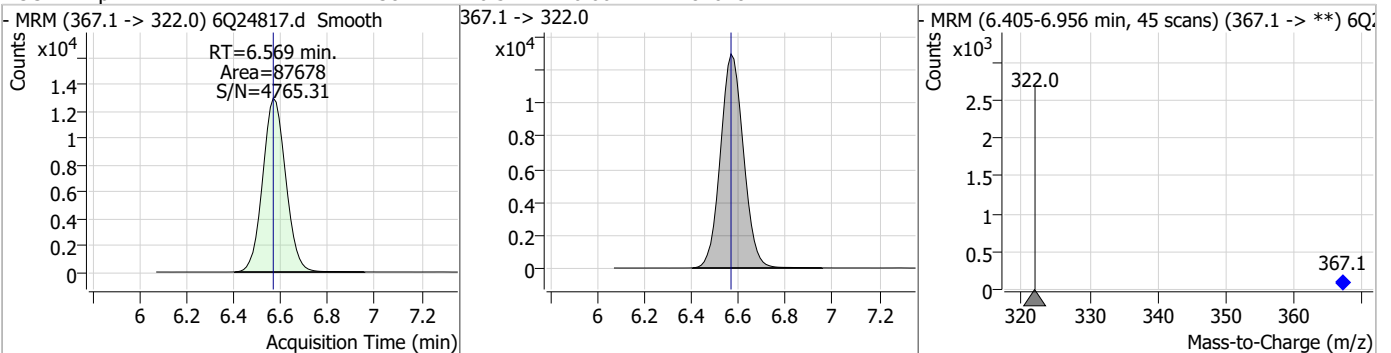
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	48.15	6.10	-0.01	2515476	314.8 -> 82.9	3.4	1.7	5.0



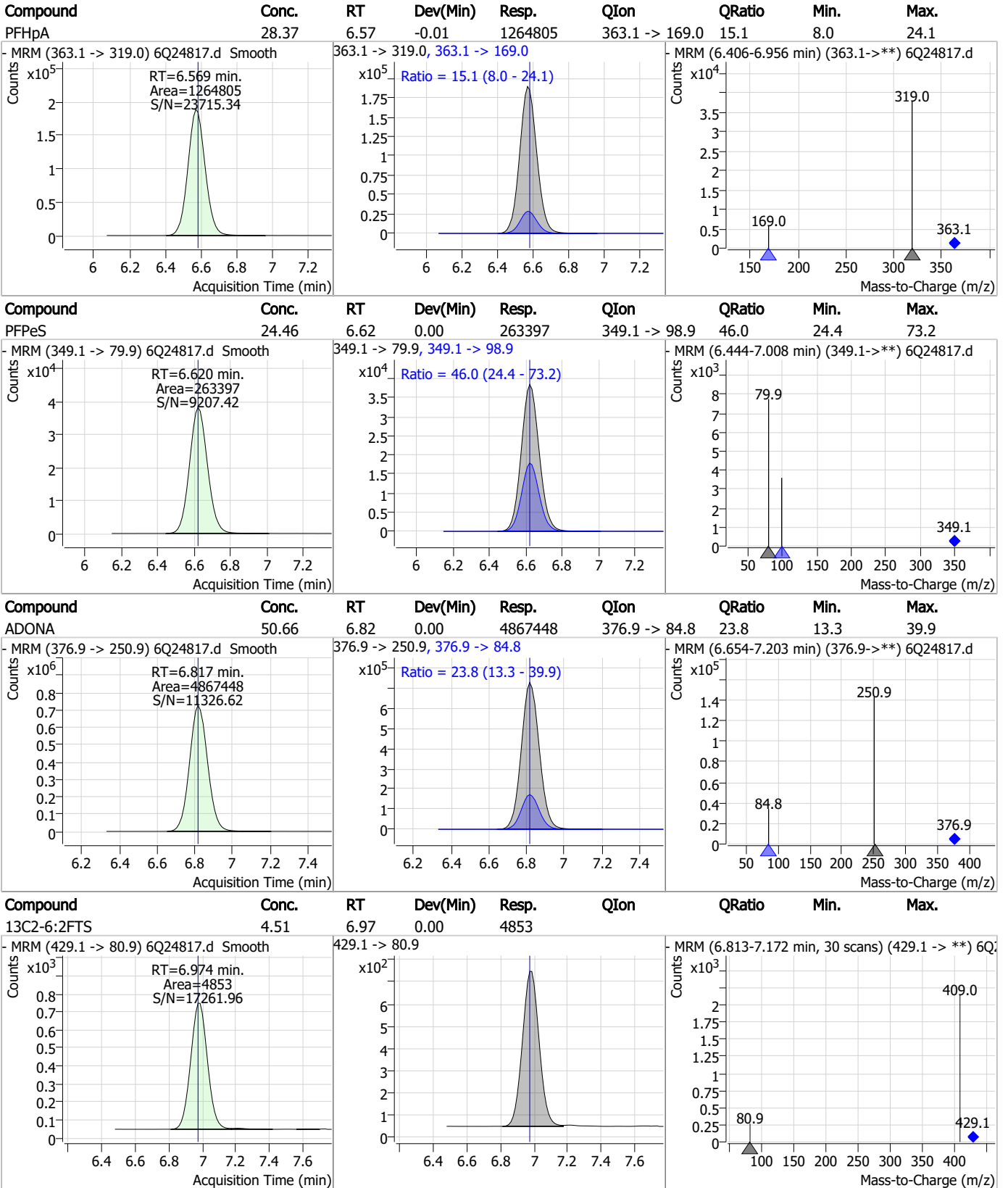
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	669.95	6.28	-0.01	4666857	341.0 -> 217.0	66.9	35.9	107.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpA	2.38	6.57	0.00	87678	367.1 -> 322.0			



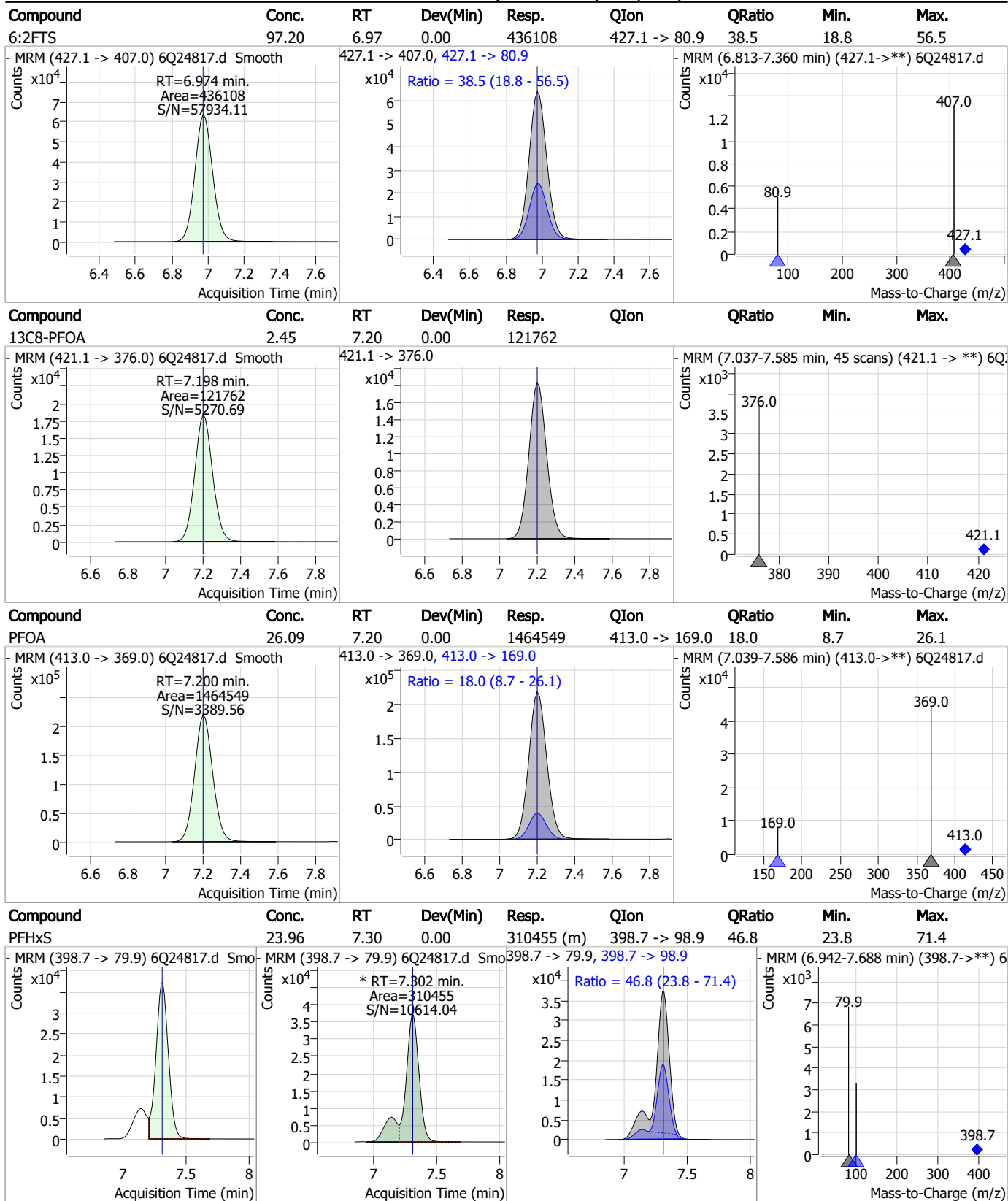
Perfluorinated Compounds by LC/MS/MS



7.7.8

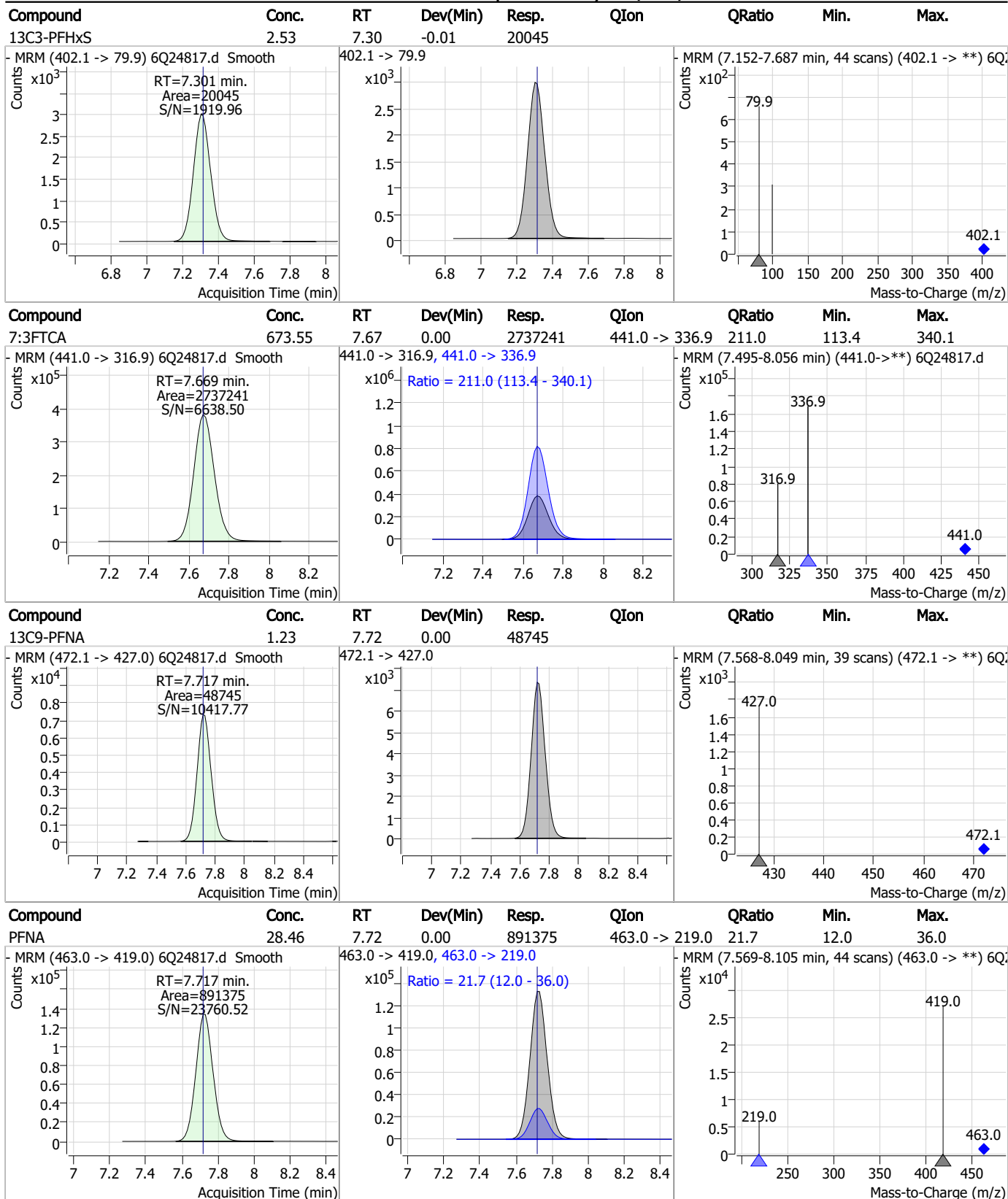
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Perfluorinated Compounds by LC/MS/MS



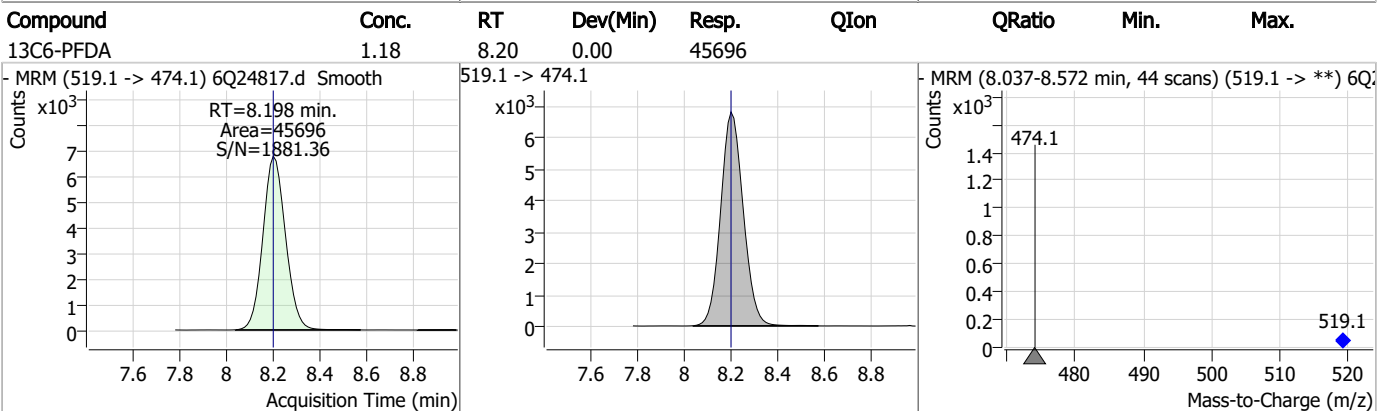
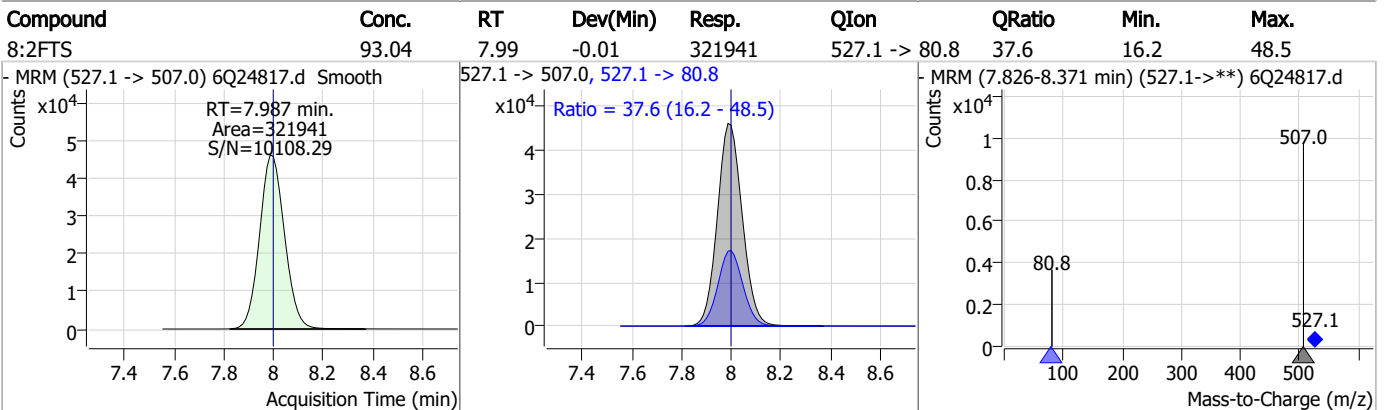
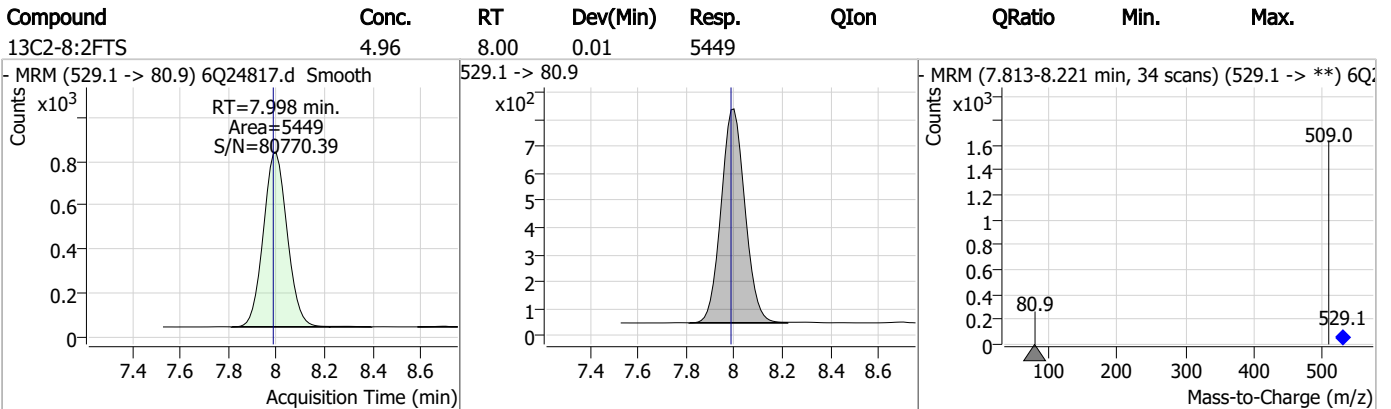
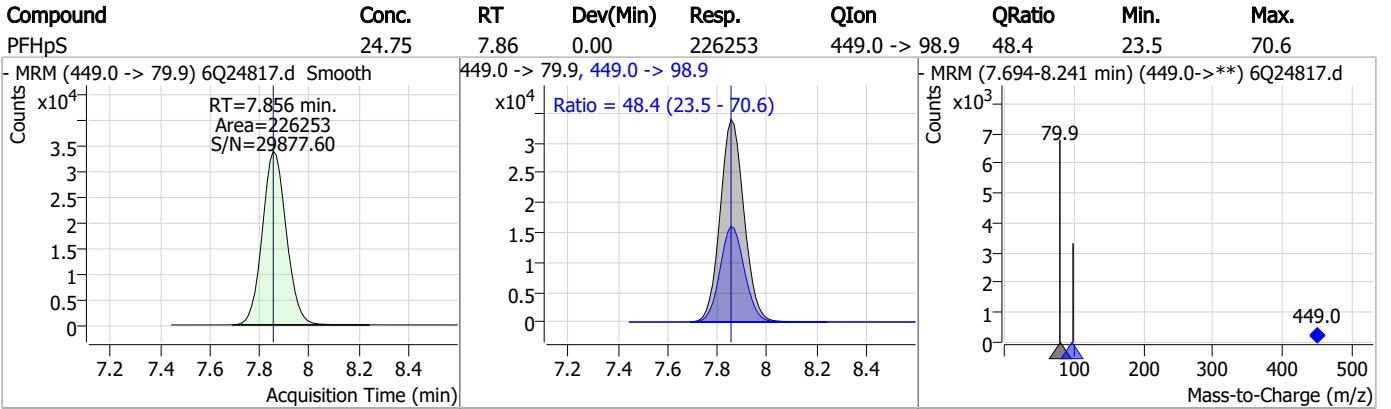
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Perfluorinated Compounds by LC/MS/MS



7.7.8
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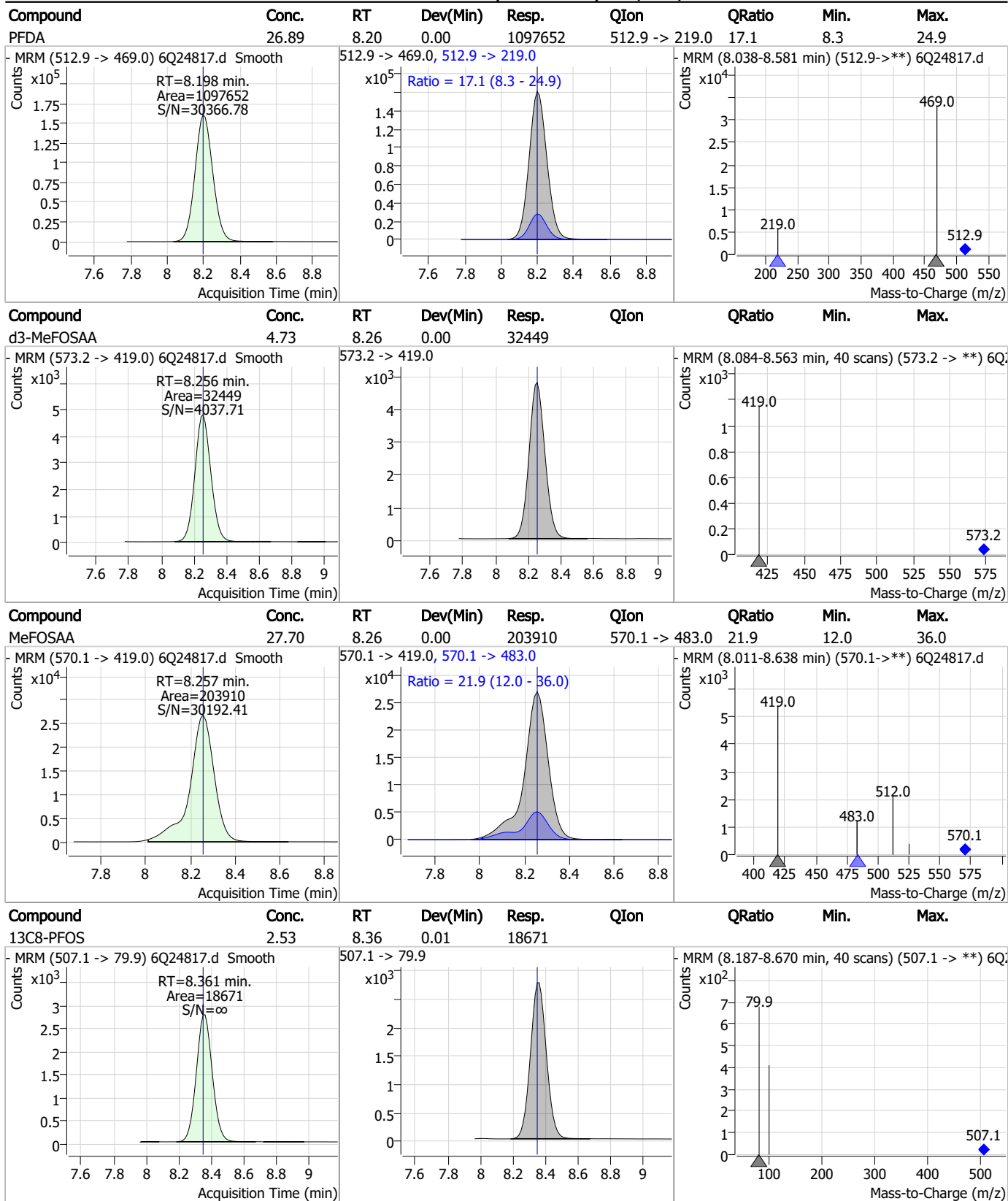
Perfluorinated Compounds by LC/MS/MS



7.7.8

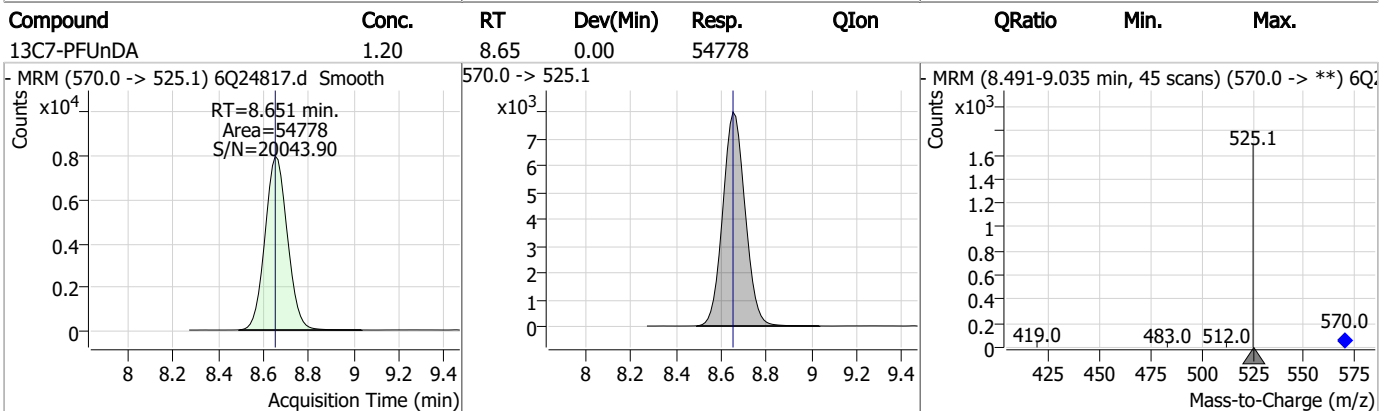
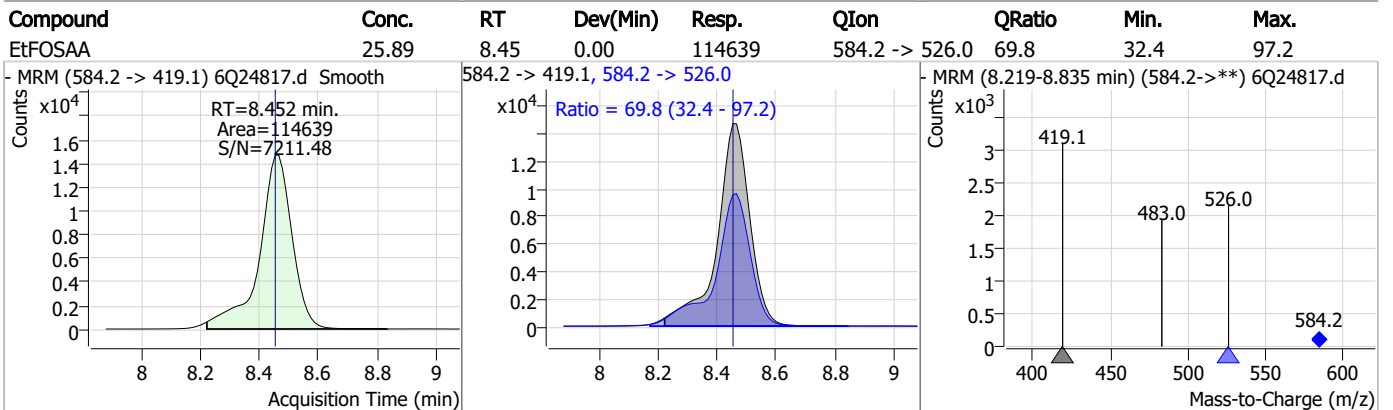
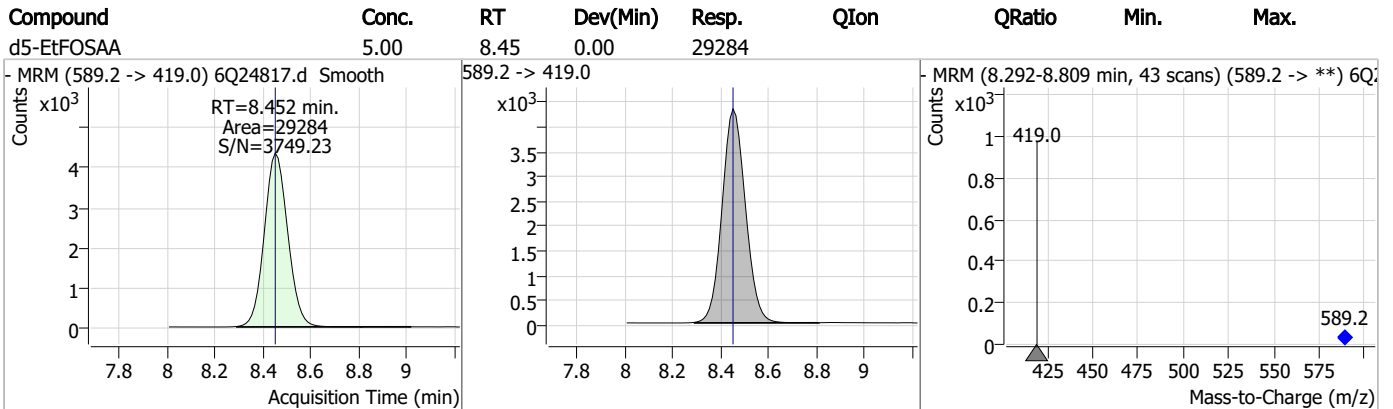
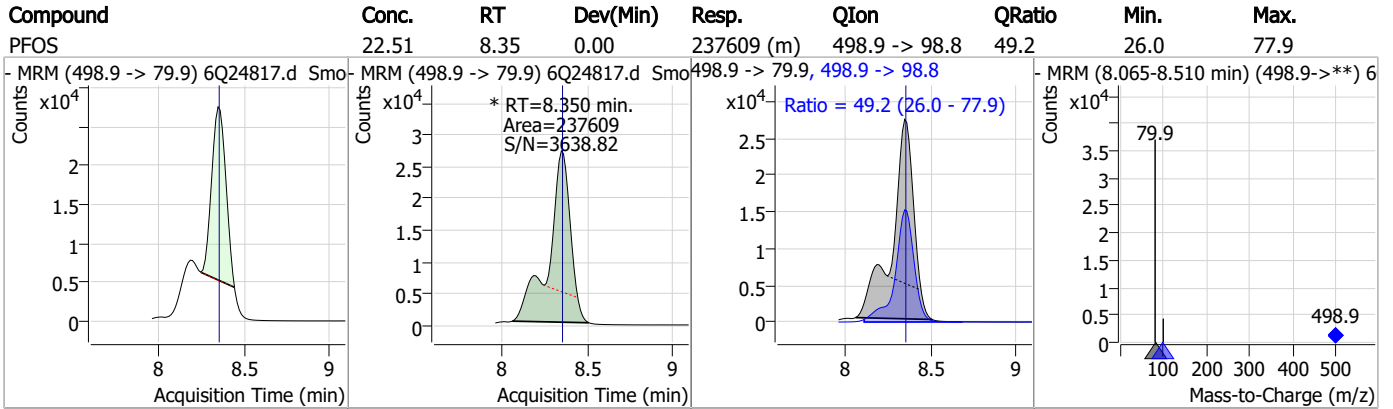
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Perfluorinated Compounds by LC/MS/MS

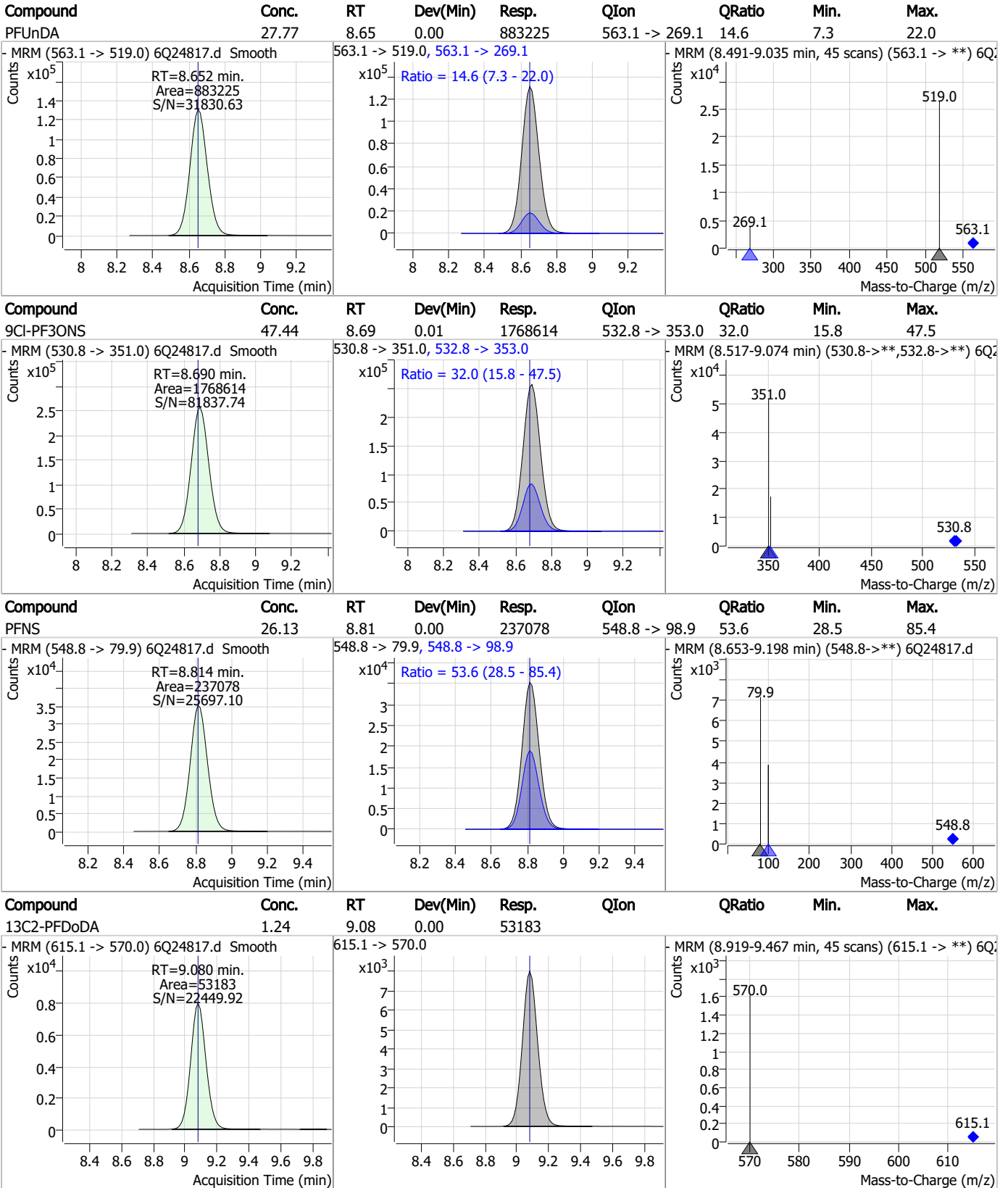


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Perfluorinated Compounds by LC/MS/MS



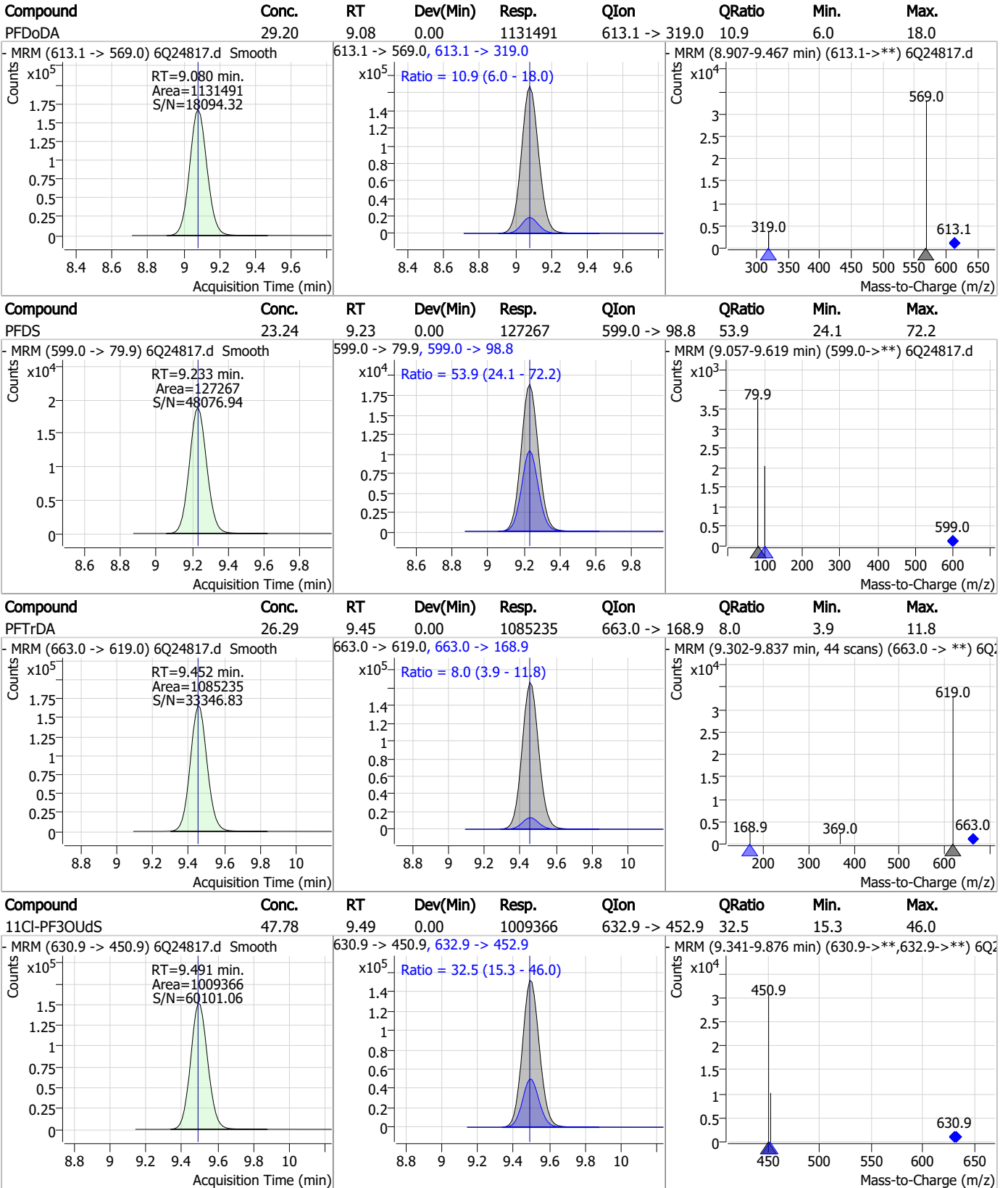
Perfluorinated Compounds by LC/MS/MS



7.7.8

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Perfluorinated Compounds by LC/MS/MS

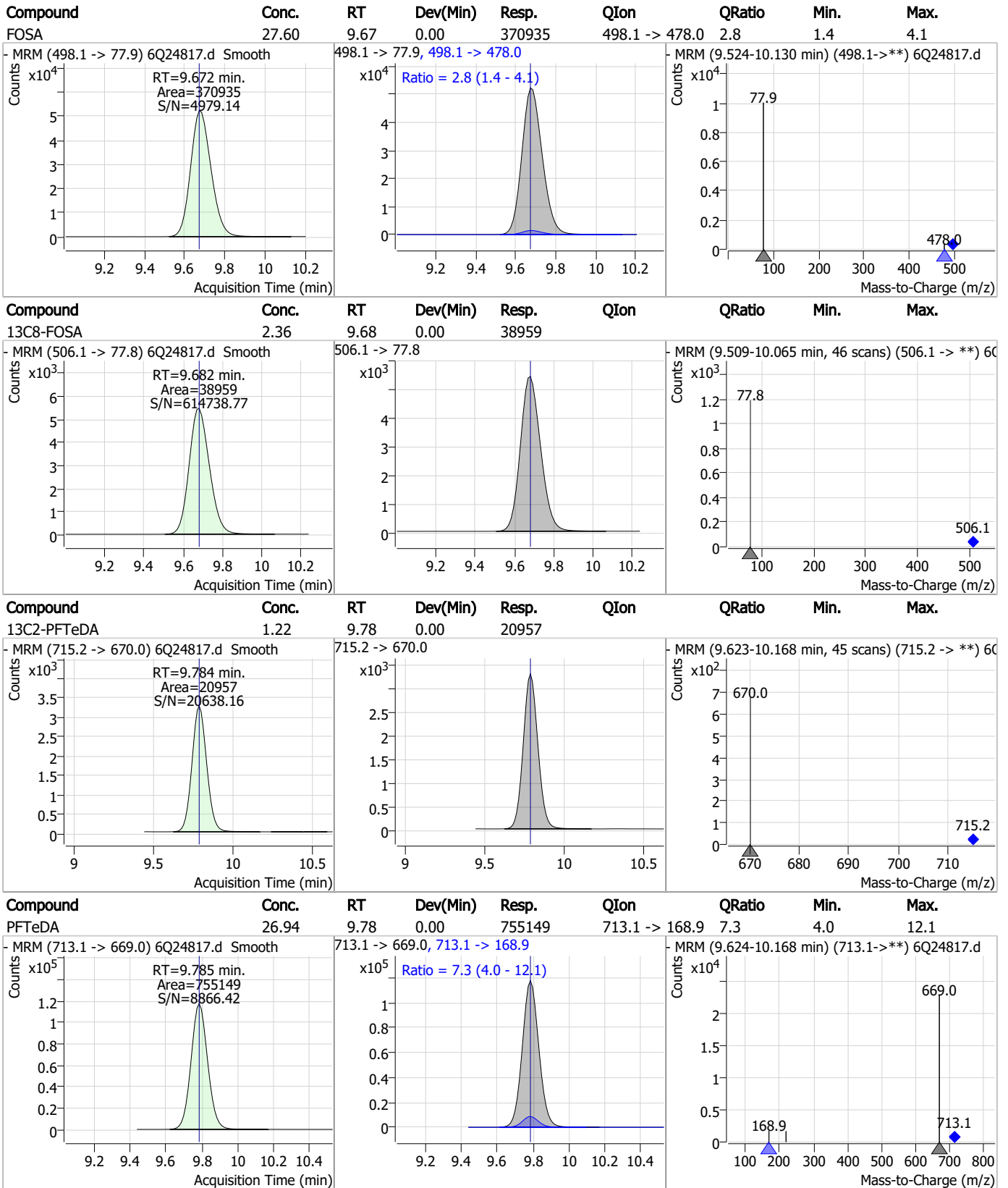


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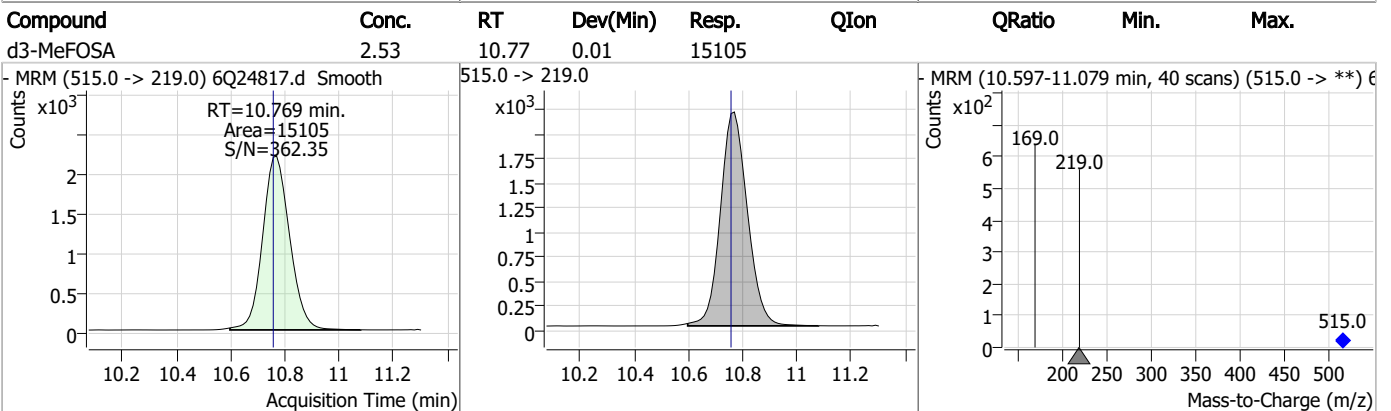
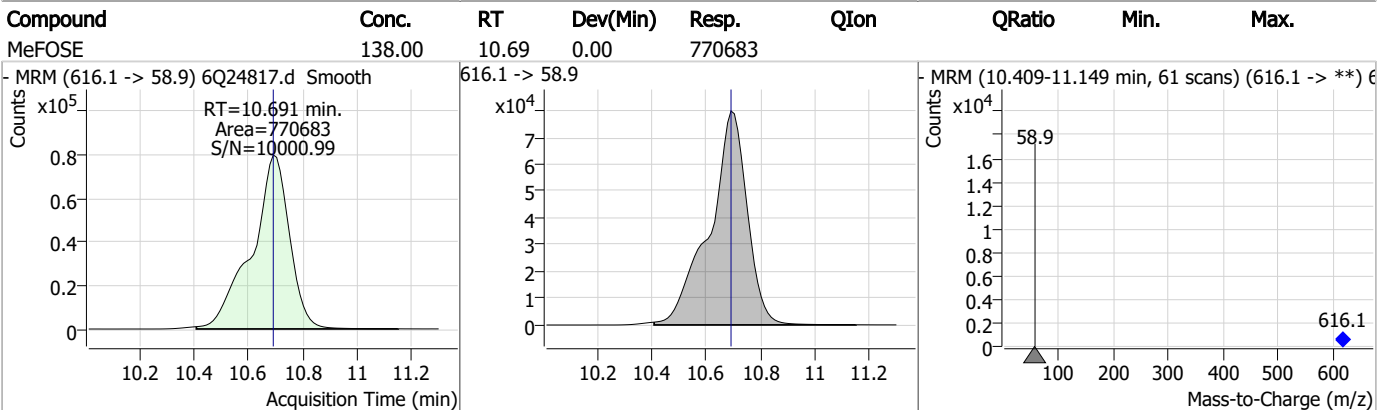
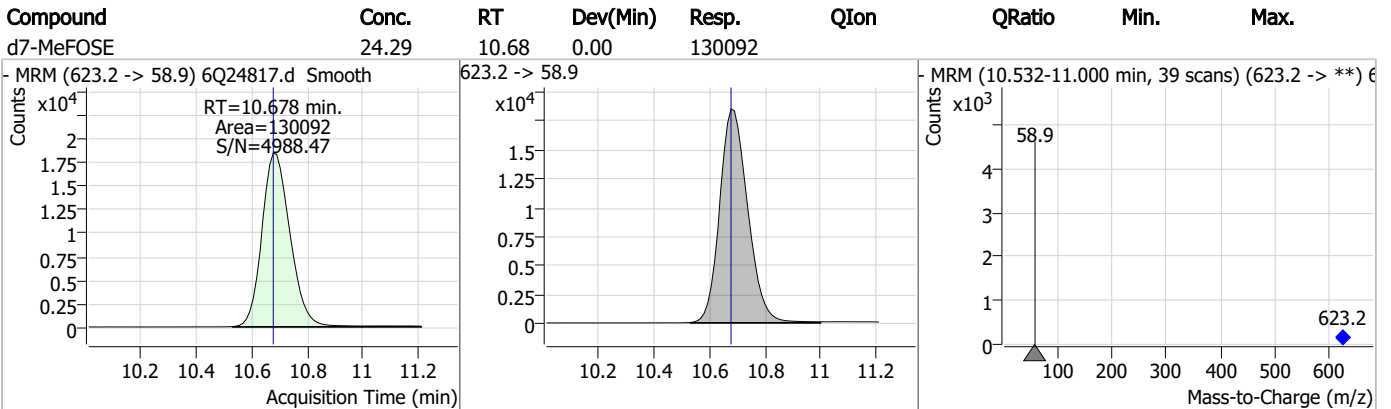
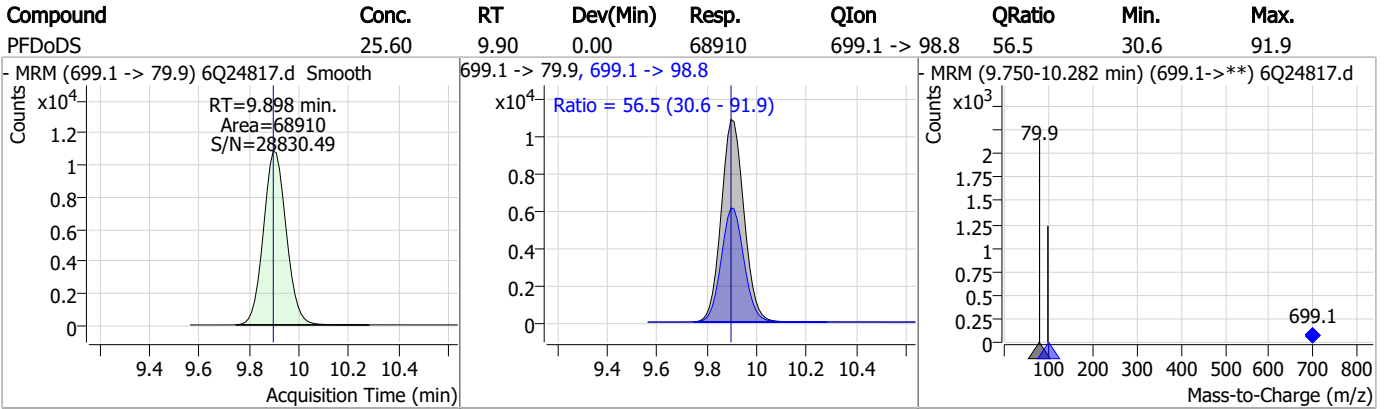
Perfluorinated Compounds by LC/MS/MS



7.7.8

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Perfluorinated Compounds by LC/MS/MS

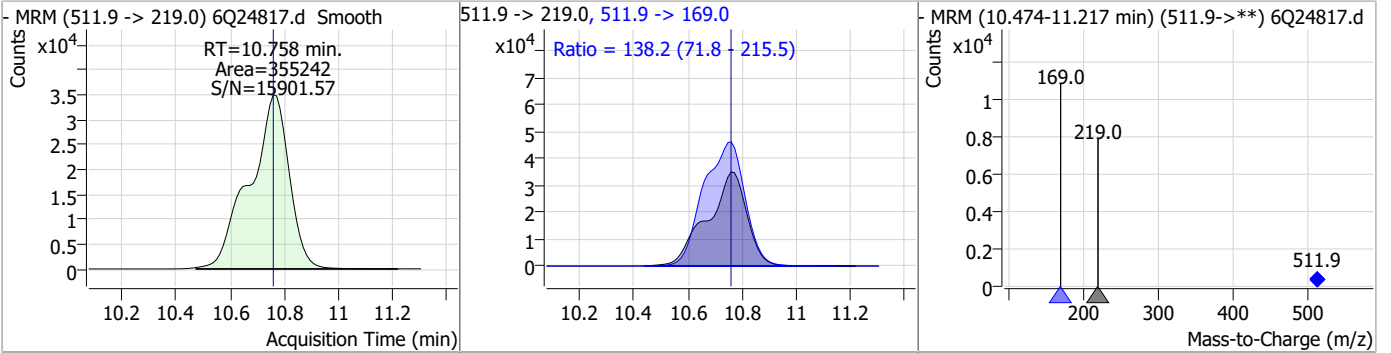


7.7.8

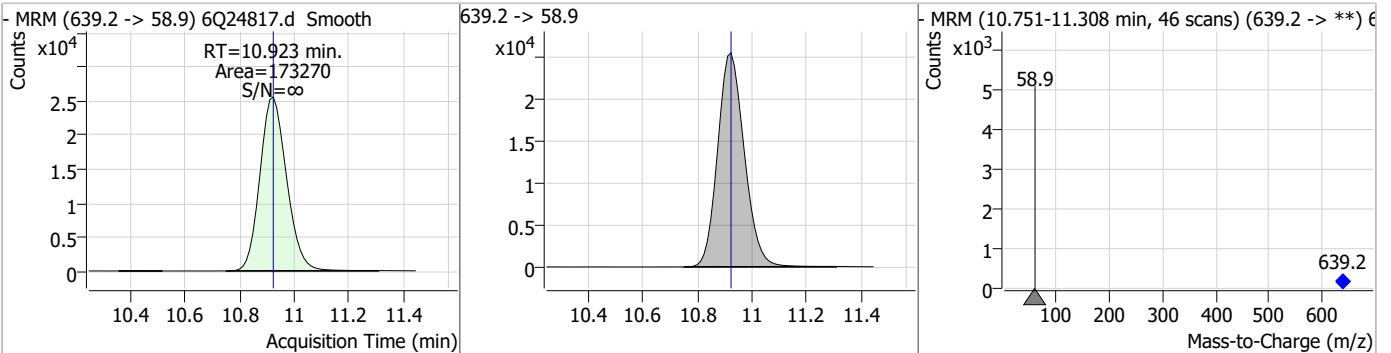
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Perfluorinated Compounds by LC/MS/MS

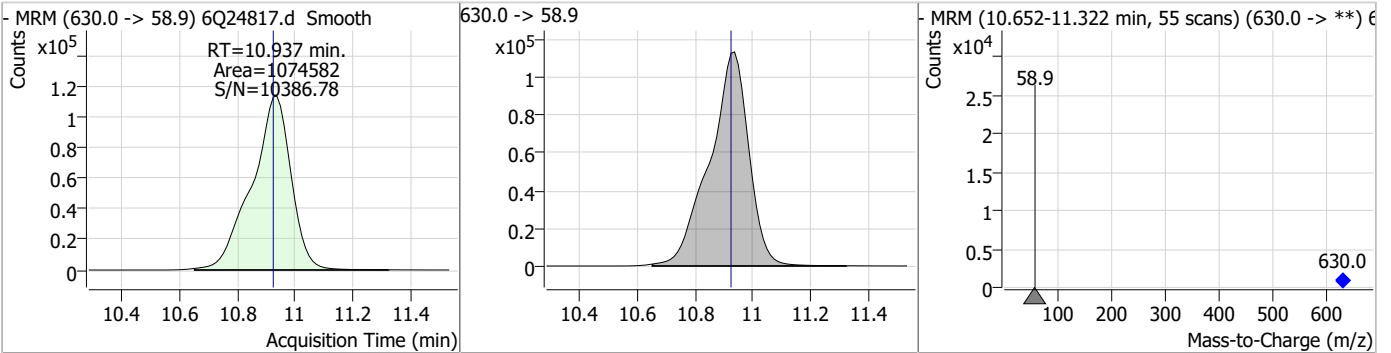
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	52.26	10.76	0.00	355242	511.9 -> 169.0	138.2	71.8	215.5



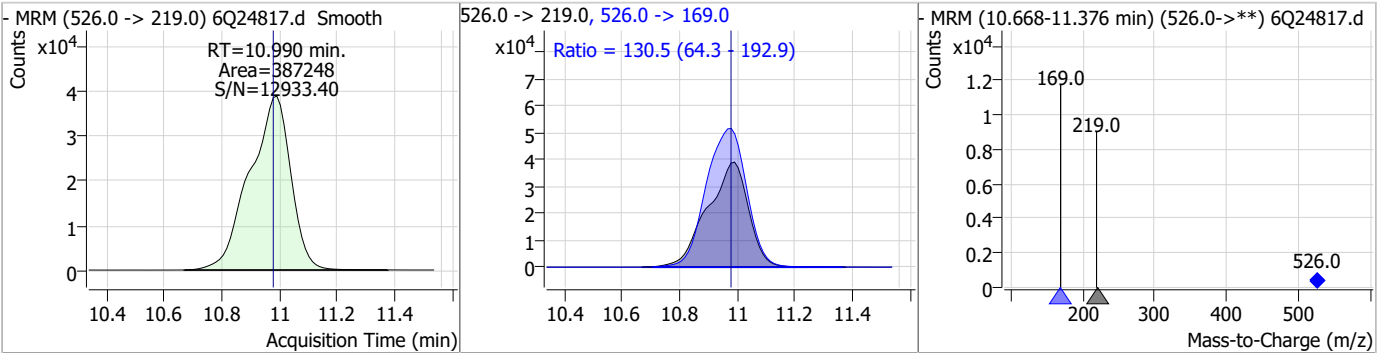
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.65	10.92	0.00	173270				



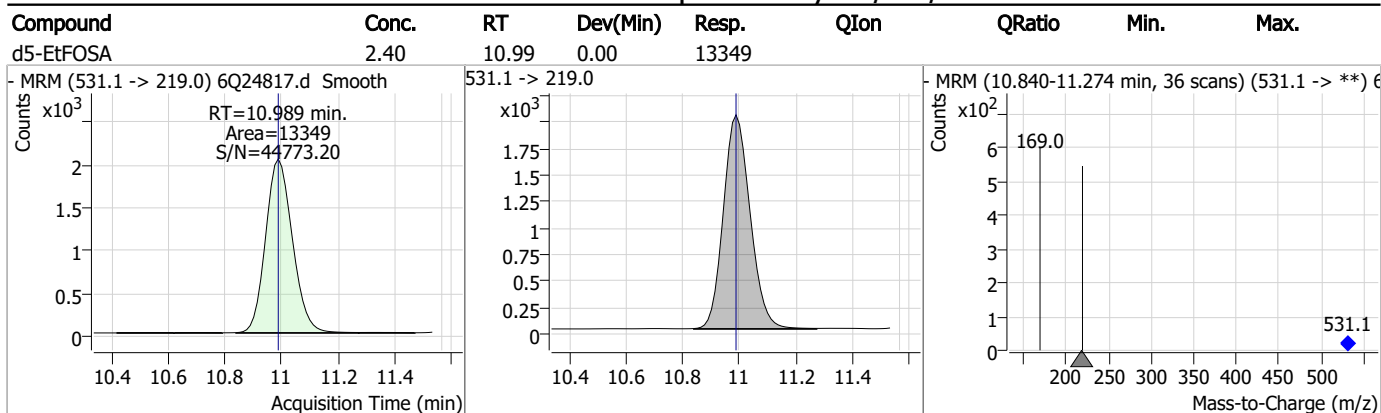
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	132.31	10.94	0.01	1074582				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	55.21	10.99	0.01	387248	526.0 -> 169.0	130.5	64.3	192.9



Perfluorinated Compounds by LC/MS/MS



7.7.8

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Manual Integration Approval Summary

Sample Number: S6Q355-IC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24817.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 22:01 Supervisor approved: 09/22/23 13:16 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.7.8.1

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24818.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 10:16:15 PM
 Sample Name : ic355-8
 Vial : P1-A9
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	256620	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	43728	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	106178	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	86251	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	112924	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	45555	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	45216	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	48030	1.25 µg/L	0.000
M2-PFDoDA	9.080	615.1 -> 570.0	50491	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	21059	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	39442	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	31313	2.50 µg/L	0.000
M3-PFHxS	7.301	402.1 -> 79.9	18350	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	16459	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	3142	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	4356	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	4807	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	29427	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	59956	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	27399	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	122045	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	158190	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	13383	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	15656	2.50 µg/L	0.012
13C4-PFOS	8.349	502.8 -> 79.9	22892	2.50 µg/L	0.000
13C3-PFBA	3.014	216.0 -> 172.0	105267	5.00 µg/L	0.012
18O2-PFHxS	7.313	403.0 -> 83.9	14264	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	126637	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	40102	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	50953	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	83872	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	3142	4.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 84.4%		
13C2-6:2FTS	6.974	429.1 -> 80.9	4356	4.15 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 83.0%		
13C2-8:2FTS	7.998	529.1 -> 80.9	4807	4.49 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 89.7%		
13C2-PFDoDA	9.080	615.1 -> 570.0	50491	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 99.4%		
13C2-PFTeDA	9.784	715.2 -> 670.0	21059	1.30 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 103.8%		
13C3-PFBS	5.571	302.1 -> 79.9	31313	2.27 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 90.6%		
13C3-PFHxS	7.301	402.1 -> 79.9	18350	2.38 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C4-PFBA	3.010	216.8 -> 171.9	256620	9.99 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFHpA	6.569	367.1 -> 322.0	86251	2.39 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.7%	
13C5-PFHxA	5.641	318.0 -> 273.0	106178	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.1%	
13C5-PFPeA	4.434	268.3 -> 223.0	43728	4.59 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 91.7%	
13C6-PFDA	8.198	519.1 -> 474.1	45216	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C7-PFUnDA	8.651	570.0 -> 525.1	48030	1.11 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 89.1%	
13C8-FOSA	9.682	506.1 -> 77.8	39442	2.62 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.9%	
13C8-PFOA	7.198	421.1 -> 376.0	112924	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C8-PFOS	8.348	507.1 -> 79.9	16459	2.44 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.6%	
13C9-PFNA	7.717	472.1 -> 427.0	45555	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.6%	
d3-MeFOSAA	8.256	573.2 -> 419.0	29427	4.71 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 94.2%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	59956	9.64 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 96.4%	
d3-MeFOSA	10.769	515.0 -> 219.0	15656	2.88 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 115.1%	
d5-EtFOSAA	8.452	589.2 -> 419.0	27399	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.6%	
d7-MeFOSE	10.678	623.2 -> 58.9	122045	24.98 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 99.9%	
d9-EtFOSE	10.923	639.2 -> 58.9	158190	24.67 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 98.7%	
d5-EtFOSA	10.989	531.1 -> 219.0	13383	2.64 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.6%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	1120515	220.21 µg/L	100
		327.1 -> 80.9	427325		
6:2FTS	6.974	427.1 -> 407.0	899405	223.30 µg/L	99
		427.1 -> 80.9	334410		
8:2FTS	7.987	527.1 -> 507.0	633421	207.50 µg/L	91
		527.1 -> 80.8	235922		
EtFOSAA	8.452	584.2 -> 419.1	272351	65.74 µg/L	m 99
		584.2 -> 526.0	179078		
FOSA	9.672	498.1 -> 77.9	860849	63.27 µg/L	99
		498.1 -> 478.0	24935		
MeFOSAA	8.257	570.1 -> 419.0	454006	68.00 µg/L	94
		570.1 -> 483.0	94851		
PFBA	3.006	212.8 -> 168.9	2085787	263.75 µg/L	100
PFBS	5.572	298.7 -> 79.9	848079	57.21 µg/L	98
		298.7 -> 98.8	319770		
PFDA	8.198	512.9 -> 469.0	2643877	65.46 µg/L	97
		512.9 -> 219.0	406673		
PFDODA	9.080	613.1 -> 569.0	2211341	60.12 µg/L	98
		613.1 -> 319.0	285380		
PFDS	9.233	599.0 -> 79.9	307028	63.61 µg/L	98

7.7.9
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.569	599.0 -> 98.8	144244	65.75	µg/L	94
		363.1 -> 319.0	2883614			
PFHpS	7.856	363.1 -> 169.0	395969	64.66	µg/L	96
		449.0 -> 79.9	520980			
PFHxA	5.644	449.0 -> 98.9	258071	66.08	µg/L	99
		313.0 -> 269.0	2439302			
PFHxS	7.302	313.0 -> 118.9	103241	58.40	µg/L	m
		398.7 -> 79.9	692571			
PFNA	7.717	398.7 -> 98.9	334091	63.38	µg/L	98
		463.0 -> 419.0	1855341			
PFNS	8.814	463.0 -> 219.0	467929	65.53	µg/L	92
		548.8 -> 79.9	524067			
PFOA	7.200	548.8 -> 98.9	268881	63.29	µg/L	97
		413.0 -> 369.0	3295360			
PFOS	8.350	413.0 -> 169.0	611981	61.31	µg/L	m
		498.9 -> 79.9	570449			
PFPeA	4.436	498.9 -> 98.8	275775	129.70	µg/L	100
		263.0 -> 219.0	2793465			
PFPeS	6.620	349.1 -> 79.9	602385	61.11	µg/L	96
		349.1 -> 98.9	277382			
PFTeDA	9.785	713.1 -> 669.0	1713472	60.82	µg/L	99
		713.1 -> 168.9	134247			
PFTrDA	9.452	663.0 -> 619.0	2415623	61.64	µg/L	100
		663.0 -> 168.9	189665			
PFUnDA	8.652	563.1 -> 519.0	1859549	66.68	µg/L	100
		563.1 -> 269.1	269401			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	2267319	116.52	µg/L	100
		632.9 -> 452.9	701964			
9Cl-PF3ONS	8.690	530.8 -> 351.0	3682585	107.23	µg/L	100
		532.8 -> 353.0	1161986			
ADONA	6.817	376.9 -> 250.9	10436152	117.91	µg/L	99
		376.9 -> 84.8	2747735			
HFPO-DA	6.020	284.9 -> 168.9	729218	128.14	µg/L	99
		284.9 -> 184.9	100230			
3:3FTCA	3.902	241.0 -> 177.0	511390	370.69	µg/L	100
		241.0 -> 117.0	48661			
5:3FTCA	6.283	341.0 -> 237.1	10399312	1605.50	µg/L	98
		341.0 -> 217.0	7607397			
7:3FTCA	7.669	441.0 -> 316.9	6324202	1673.61	µg/L	96
		441.0 -> 336.9	13973629			
EtFOSA	10.990	526.0 -> 219.0	898615	127.78	µg/L	99
		526.0 -> 169.0	1164708			
EtFOSE	10.924	630.0 -> 58.9	2455560	331.17	µg/L	100
		511.9 -> 219.0	824032			
MeFOSA	10.758	511.9 -> 169.0	1142459	116.96	µg/L	96
		616.1 -> 58.9	1744280			
MeFOSE	10.691	699.1 -> 79.9	147929	332.92	µg/L	100
		699.1 -> 98.8	85393			
PFDoDS	9.898	295.0 -> 201.0	516879	62.34	µg/L	95
		295.0 -> 84.9	124819			
NFDHA	5.524	279.0 -> 85.1	2004840	118.37	µg/L	97
		229.0 -> 84.9	1514557			
PFMBA	4.850	314.8 -> 134.9	5629922	134.16	µg/L	100
		314.8 -> 82.9	177117			
PFMPA	3.563			115.89	µg/L	99
PFEESA	6.112					

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

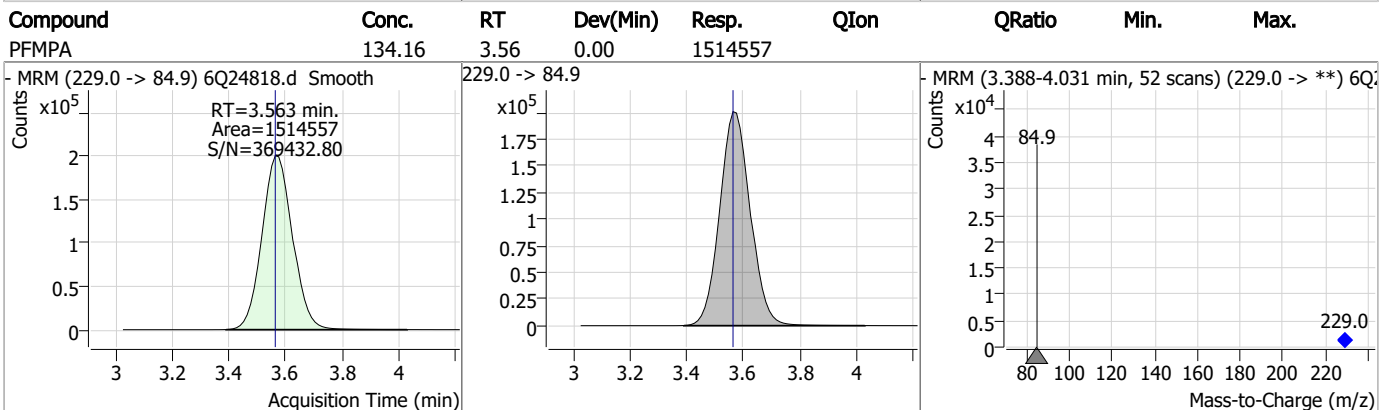
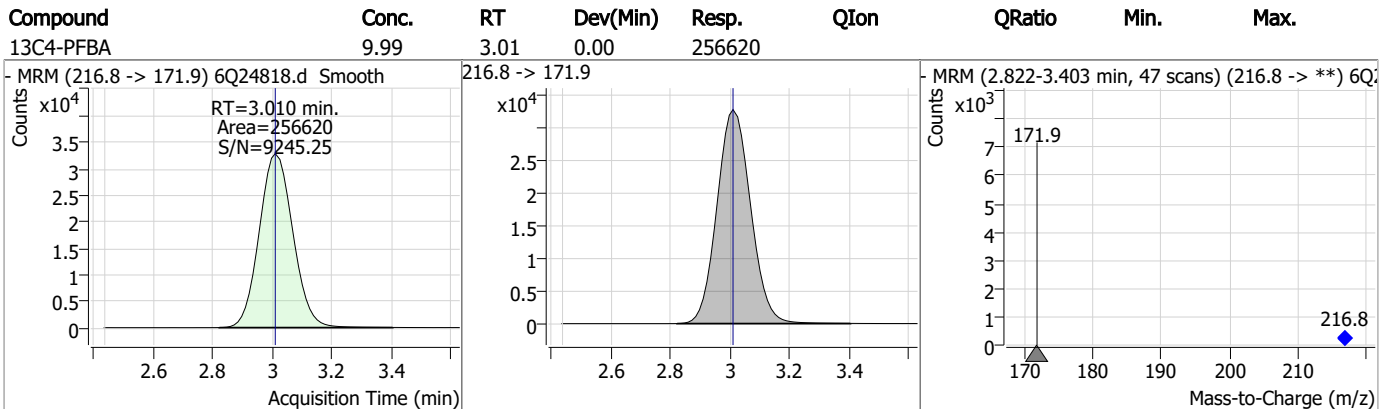
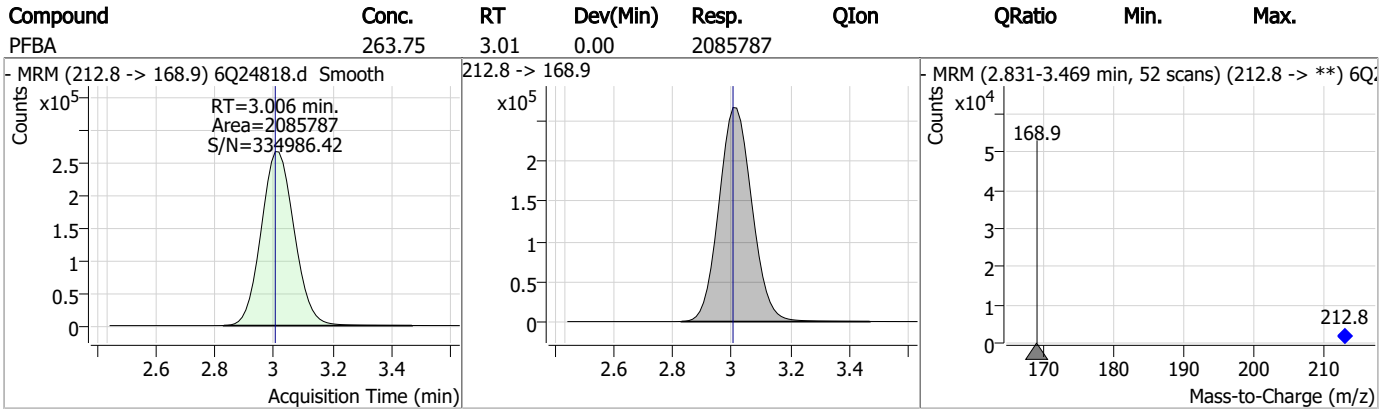
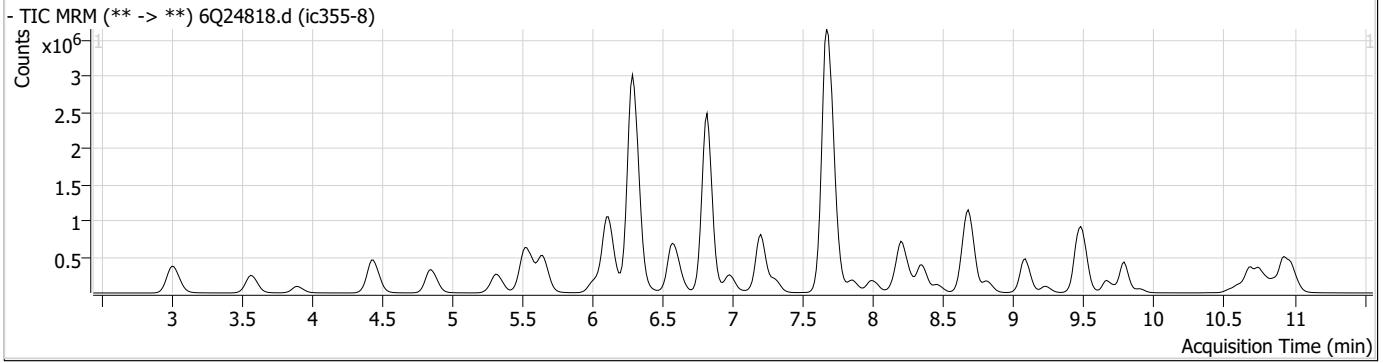
Perfluorinated Compounds by LC/MS/MS

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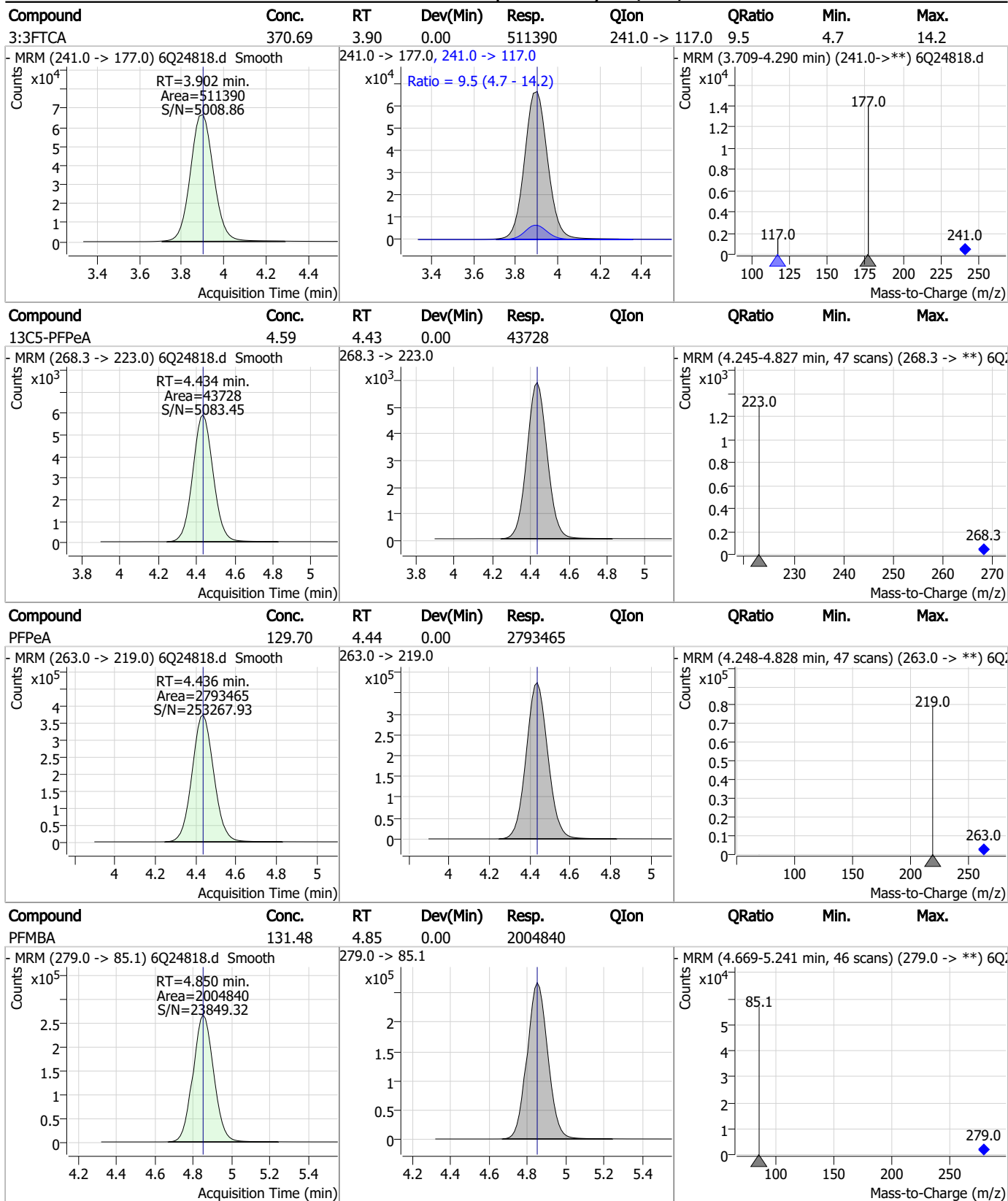
7.7.9

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Perfluorinated Compounds by LC/MS/MS

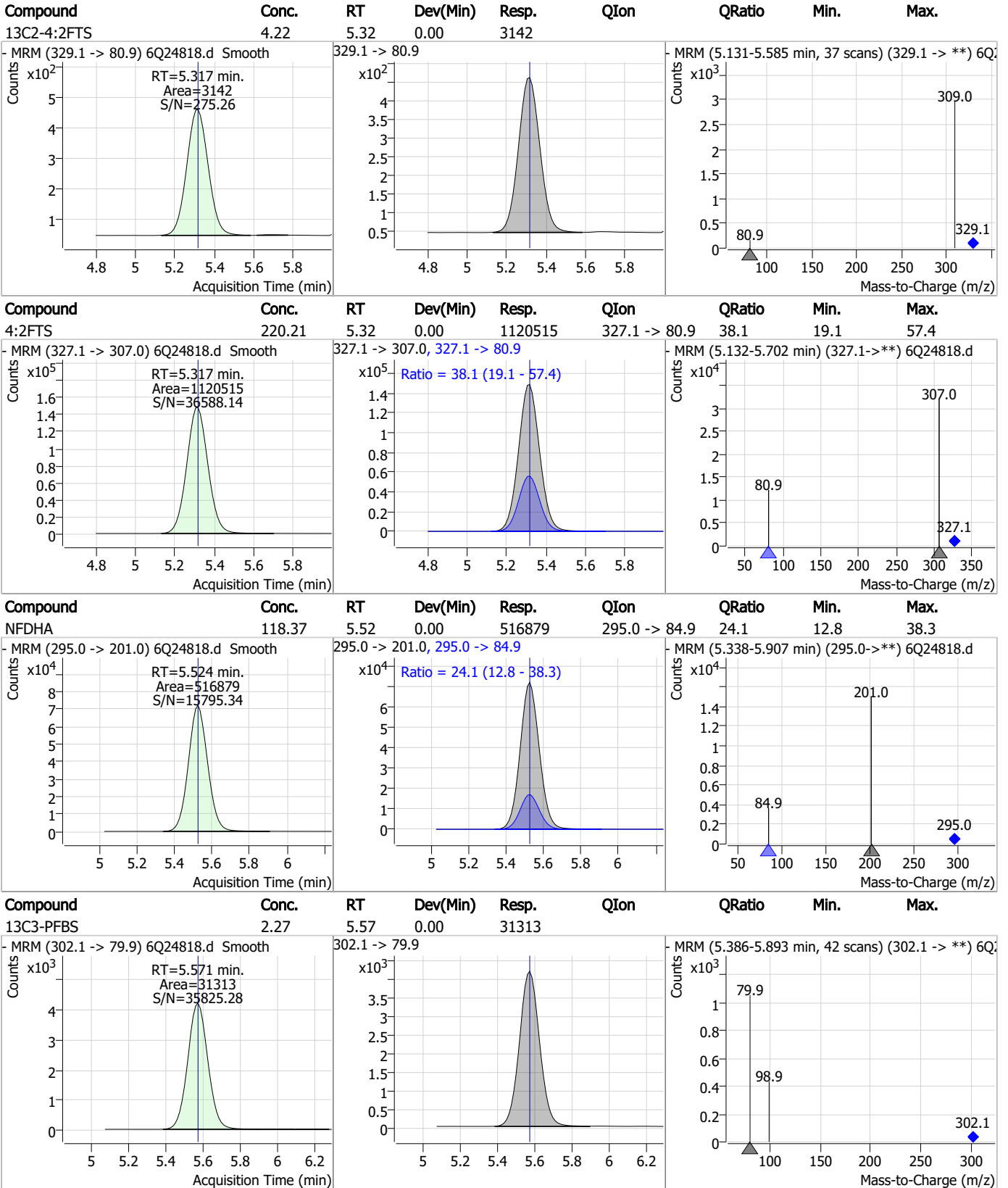


Perfluorinated Compounds by LC/MS/MS



7.7.9
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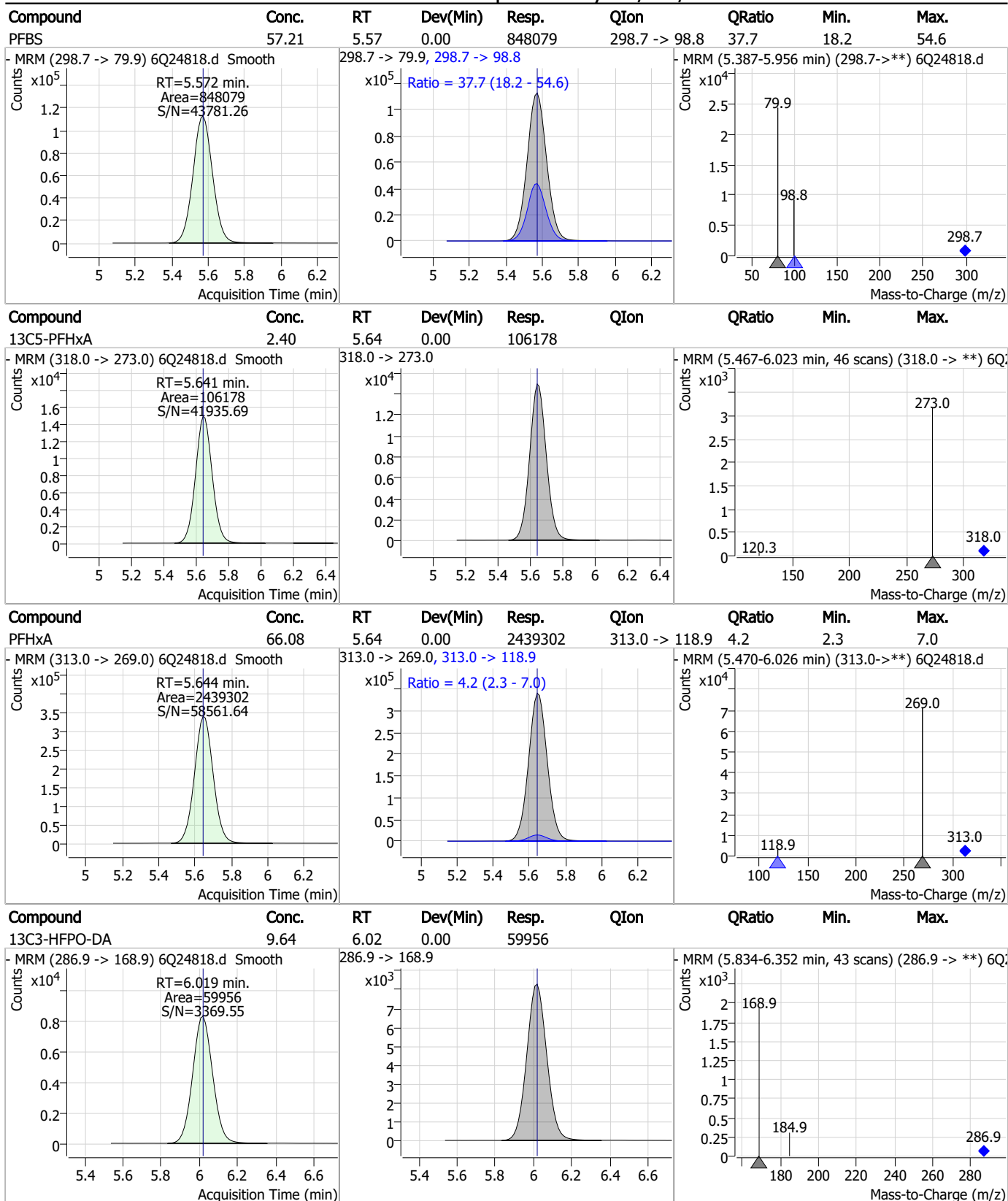
Perfluorinated Compounds by LC/MS/MS



7.7.9

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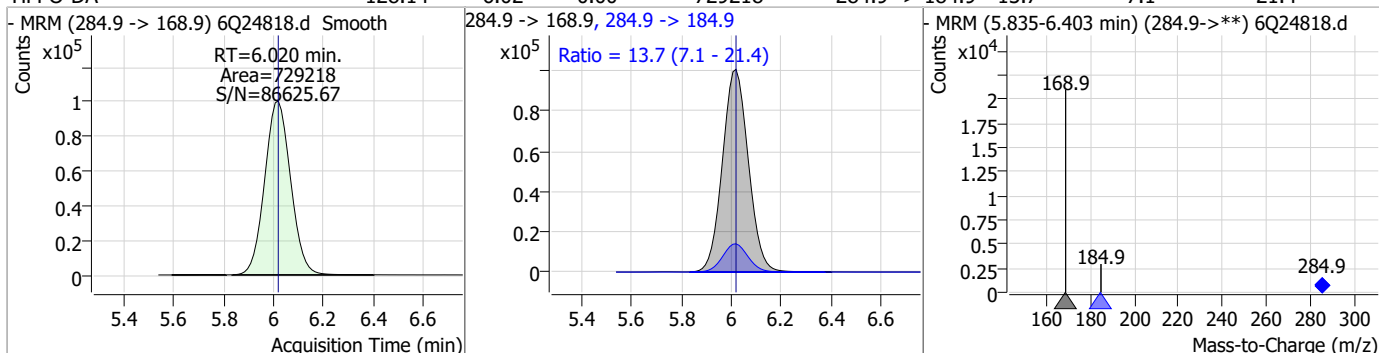
Perfluorinated Compounds by LC/MS/MS



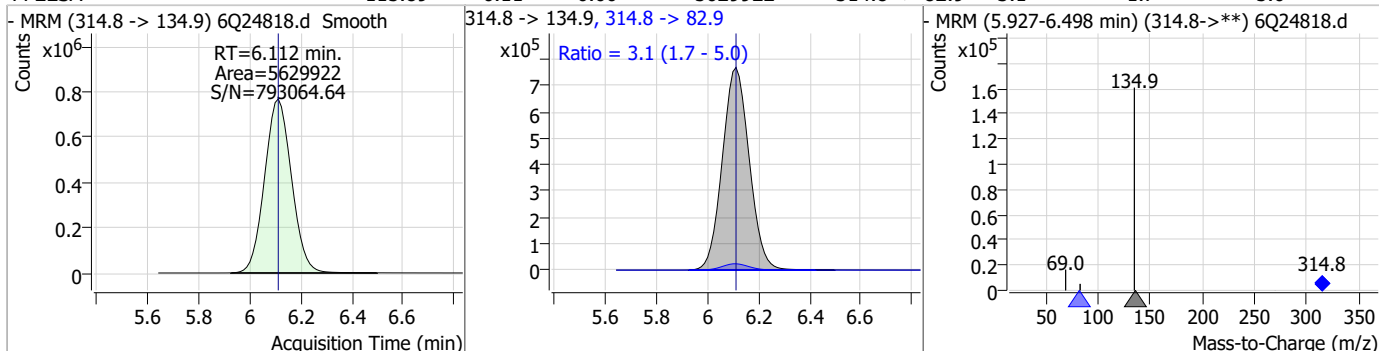
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Perfluorinated Compounds by LC/MS/MS

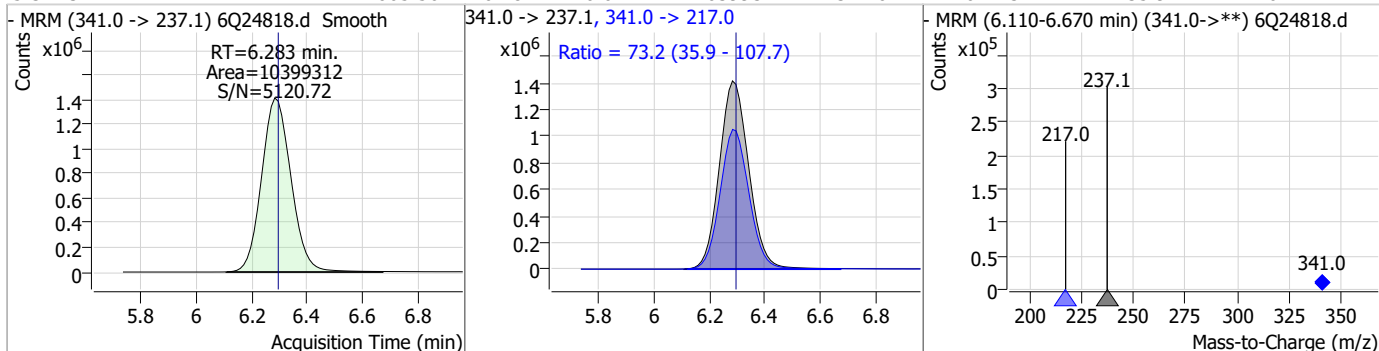
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	128.14	6.02	0.00	729218	284.9 -> 184.9	13.7	7.1	21.4



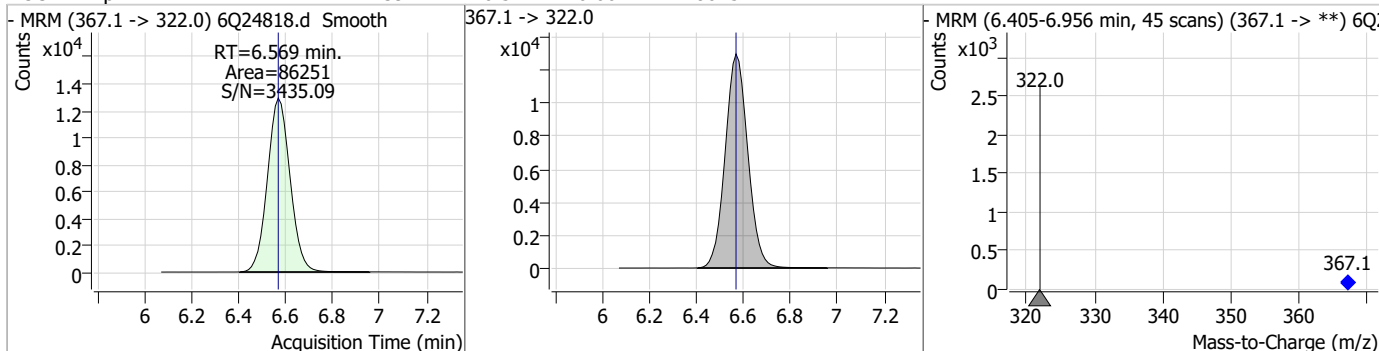
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	115.89	6.11	0.00	5629922	314.8 -> 82.9	3.1	1.7	5.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	1605.50	6.28	-0.01	10399312	341.0 -> 217.0	73.2	35.9	107.7

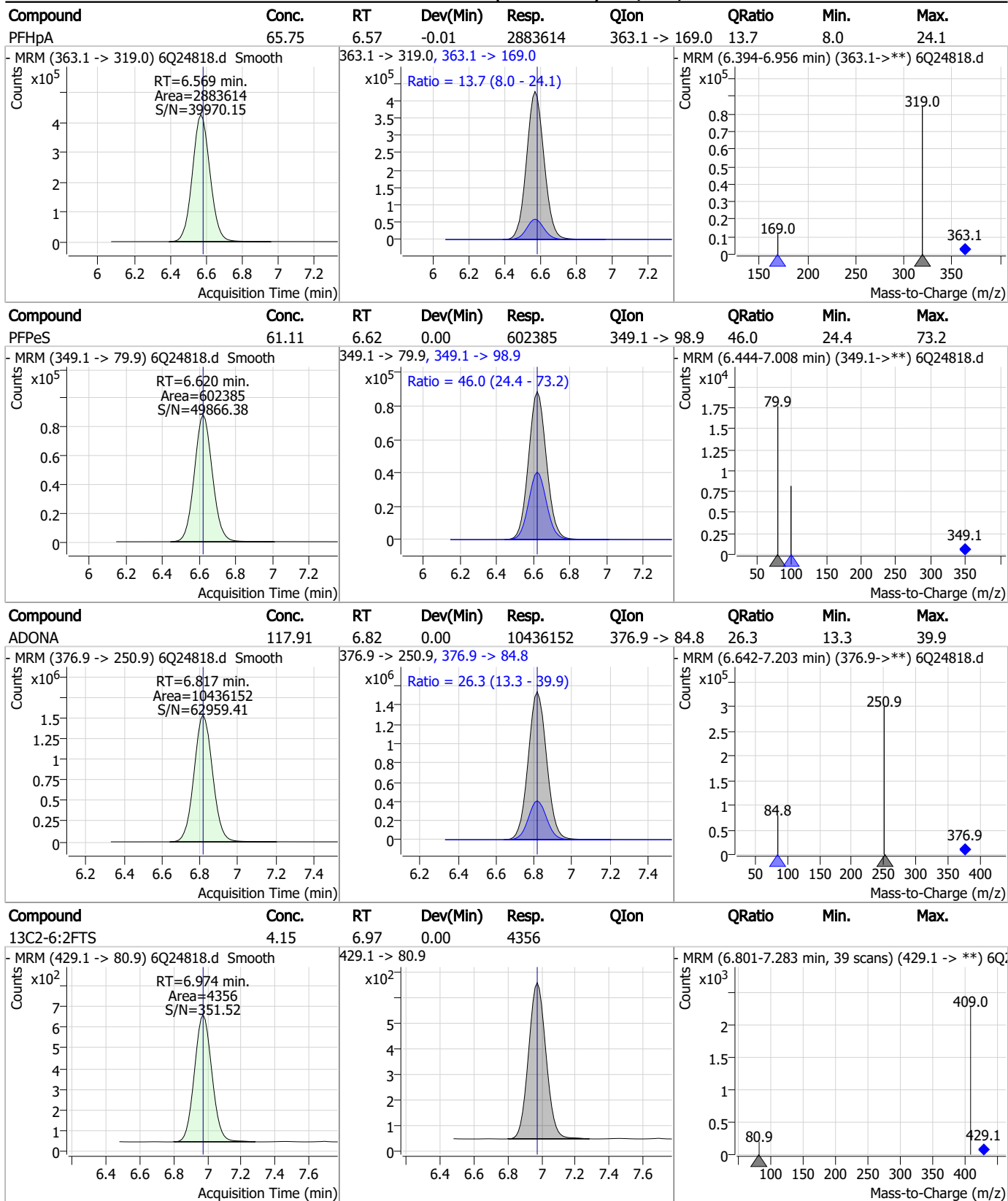


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpa	2.39	6.57	0.00	86251	367.1 -> 322.0			



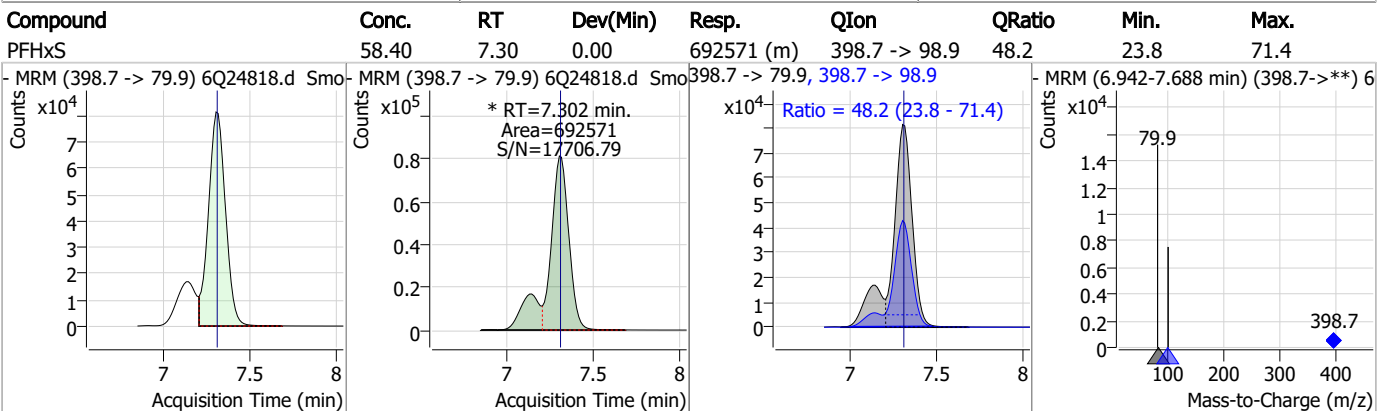
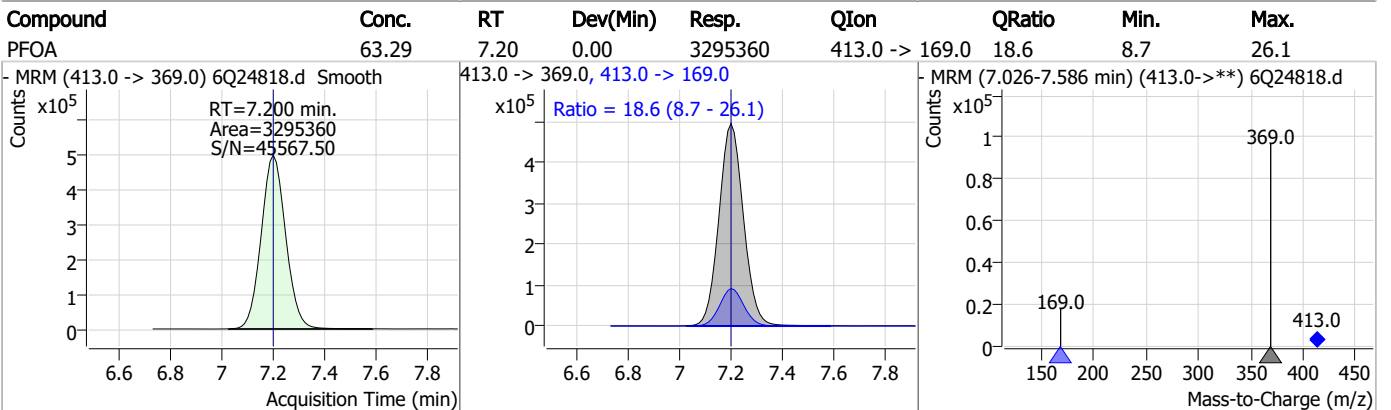
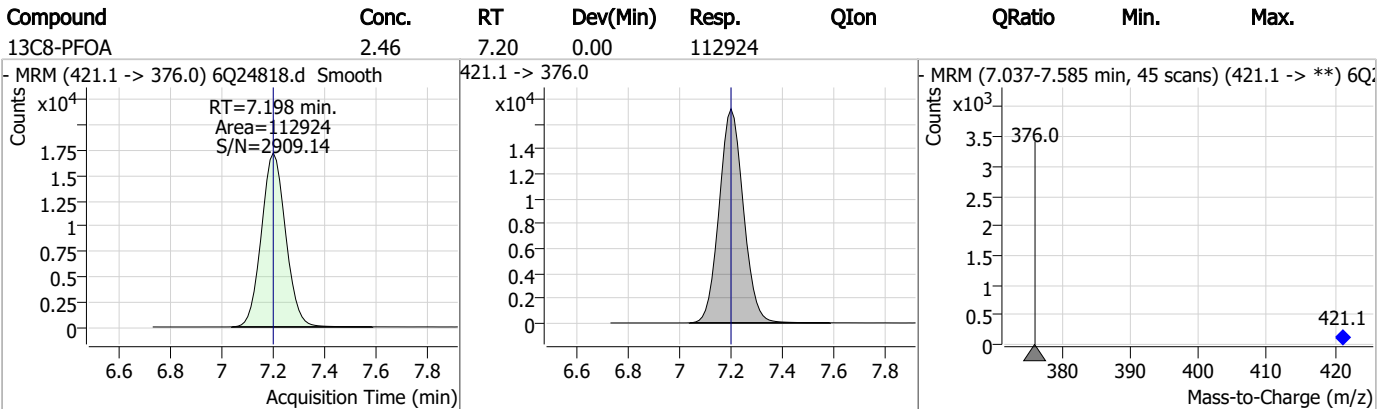
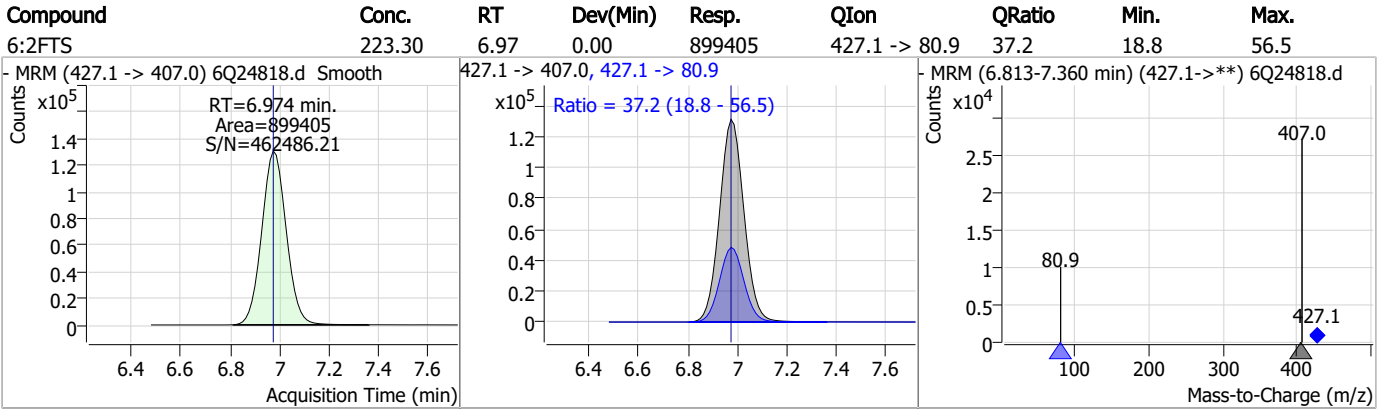
7.7.9
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Perfluorinated Compounds by LC/MS/MS



7.7.9
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Perfluorinated Compounds by LC/MS/MS

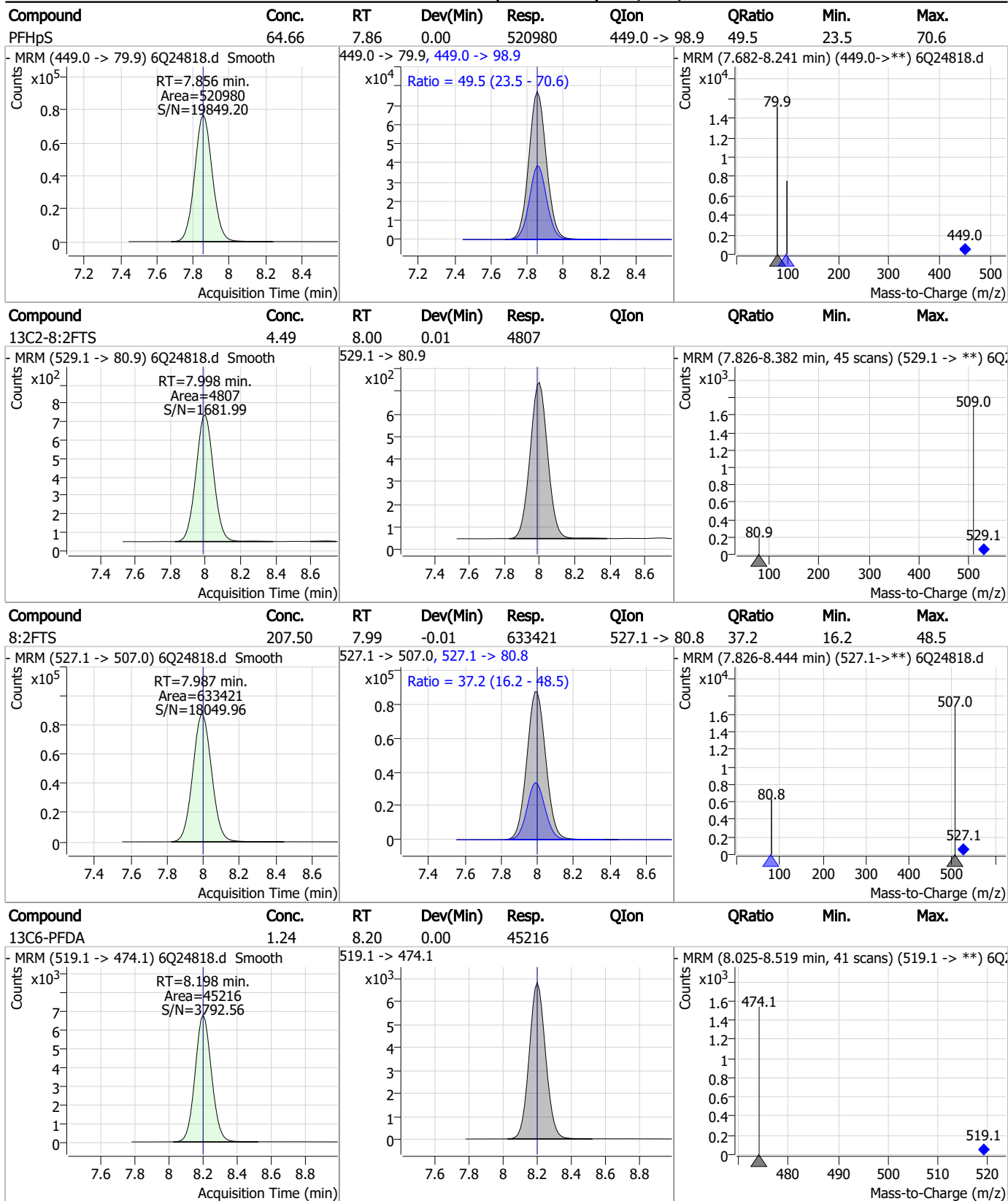


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-PFHxS	2.38	7.30	-0.01	18350				
7:3FTCA	1673.61	7.67	0.00	6324202	441.0 -> 336.9	221.0	113.4	340.1
13C9-PFNA	1.23	7.72	0.00	45555				
PFNA	63.38	7.72	0.00	1855341	463.0 -> 219.0	25.2	12.0	36.0

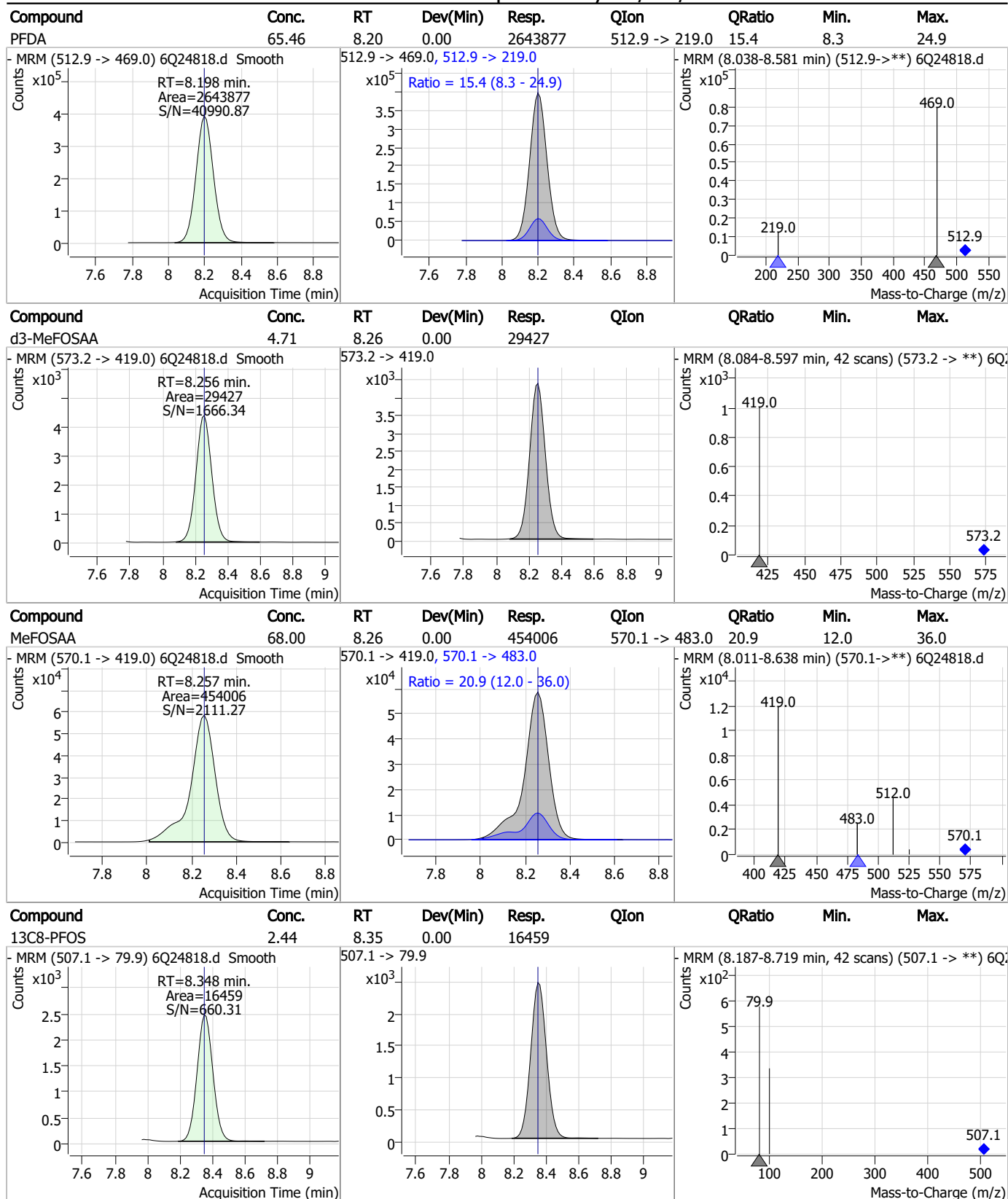
7.7.9
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Perfluorinated Compounds by LC/MS/MS



7.7.9
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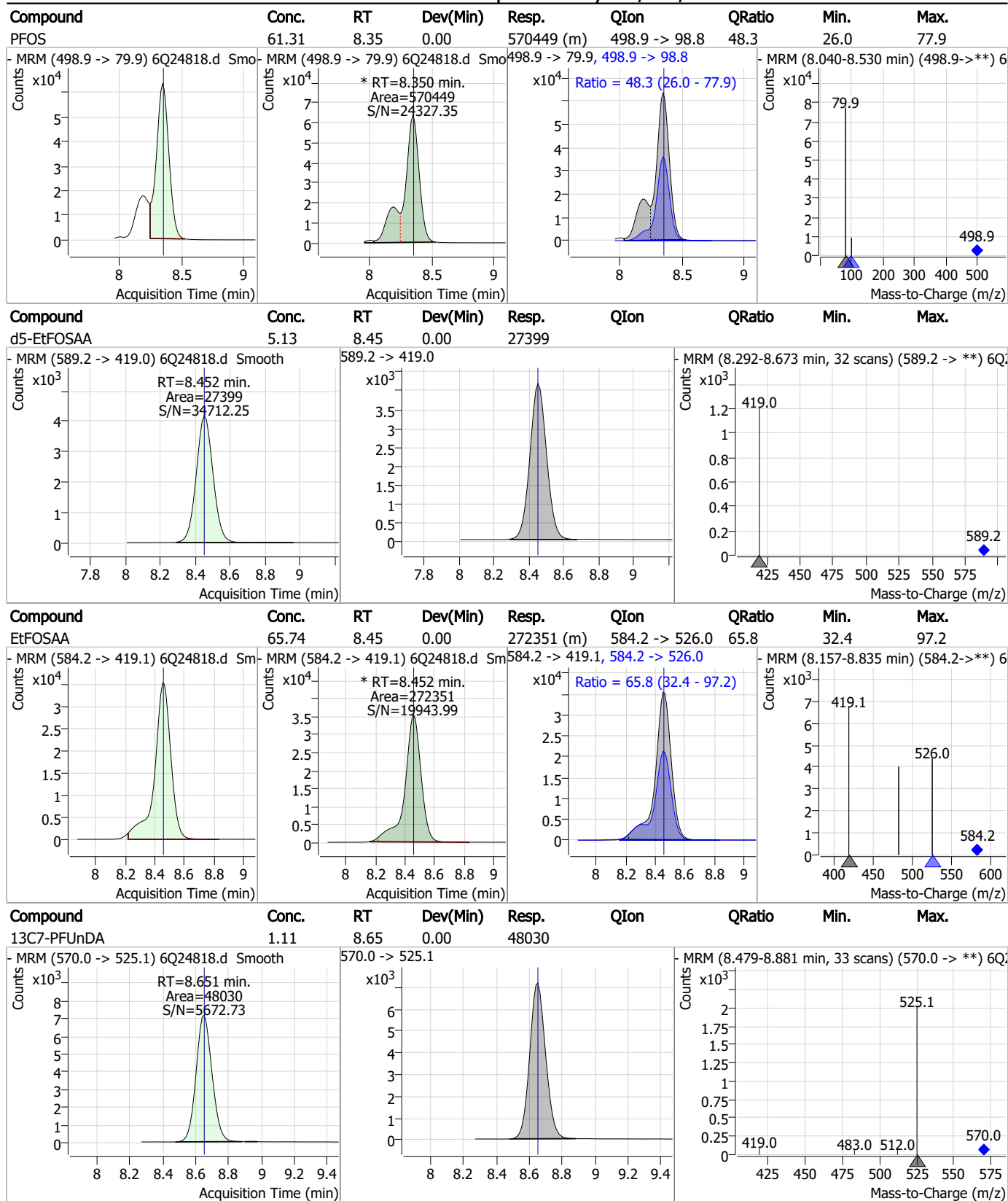
Perfluorinated Compounds by LC/MS/MS



7.7.9
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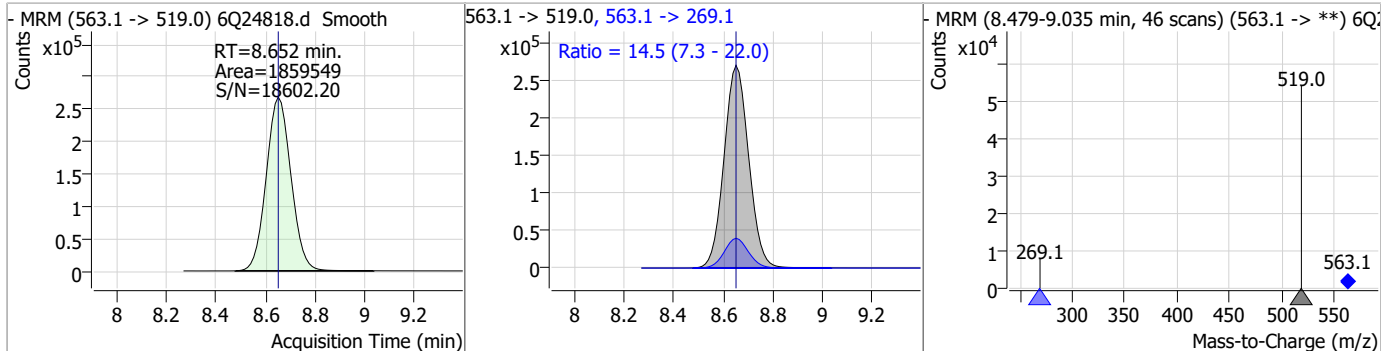
Perfluorinated Compounds by LC/MS/MS



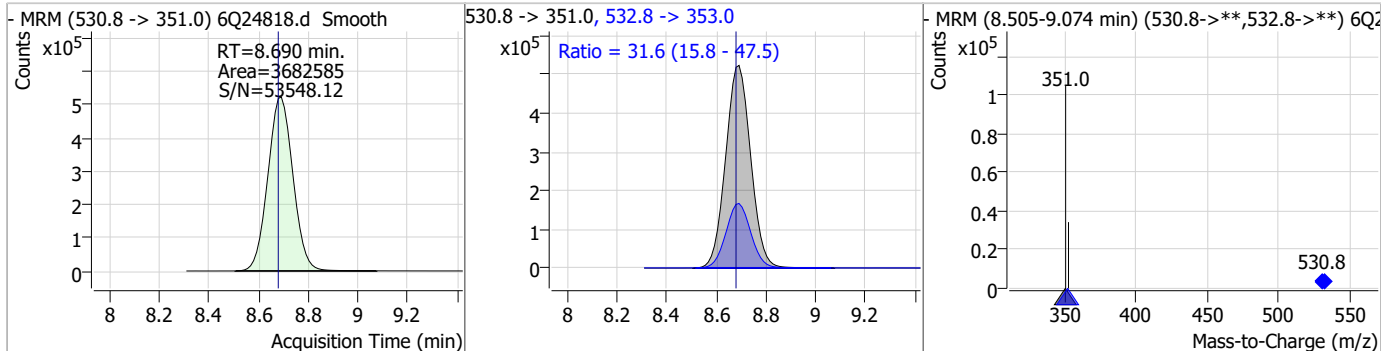
7.7.9
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Perfluorinated Compounds by LC/MS/MS

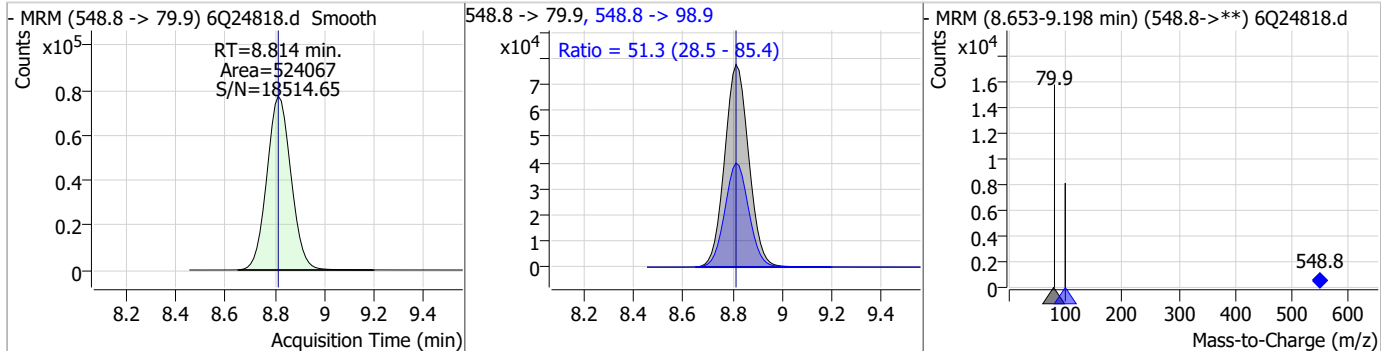
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	66.68	8.65	0.00	1859549	563.1 -> 269.1	14.5	7.3	22.0



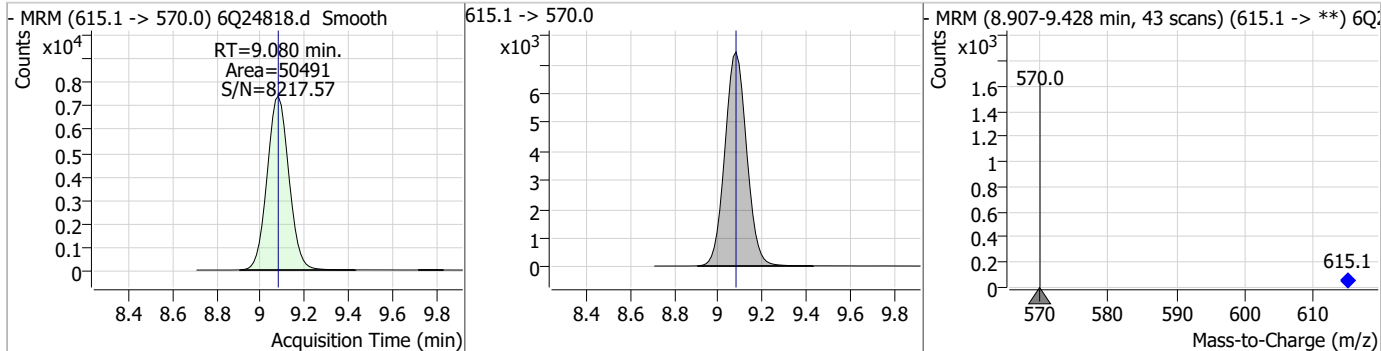
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9CI-PF3ONS	107.23	8.69	0.01	3682585	532.8 -> 353.0	31.6	15.8	47.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	65.53	8.81	0.00	524067	548.8 -> 98.9	51.3	28.5	85.4

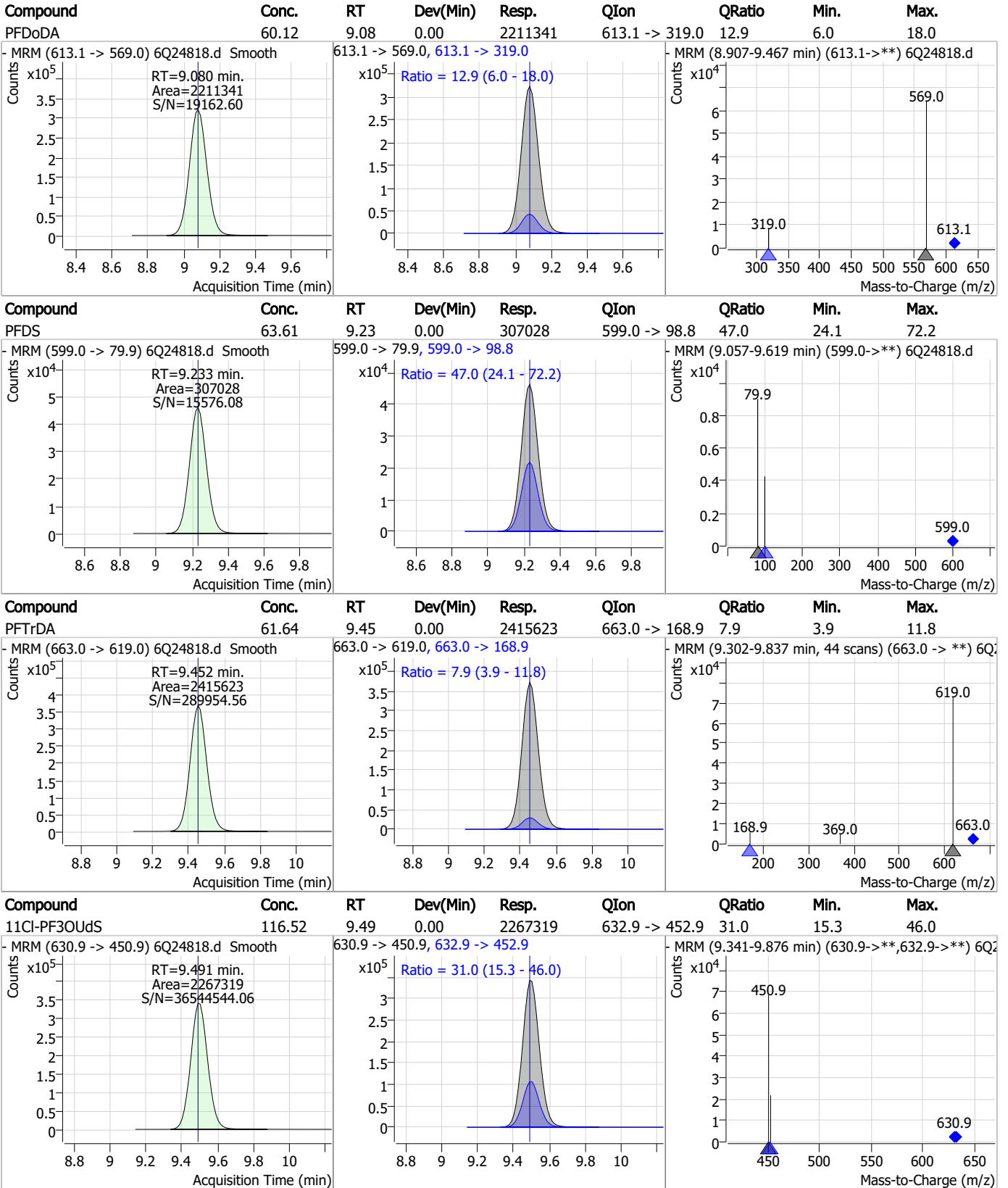


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.24	9.08	0.00	50491	615.1 -> 570.0			



7.7.9
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Perfluorinated Compounds by LC/MS/MS

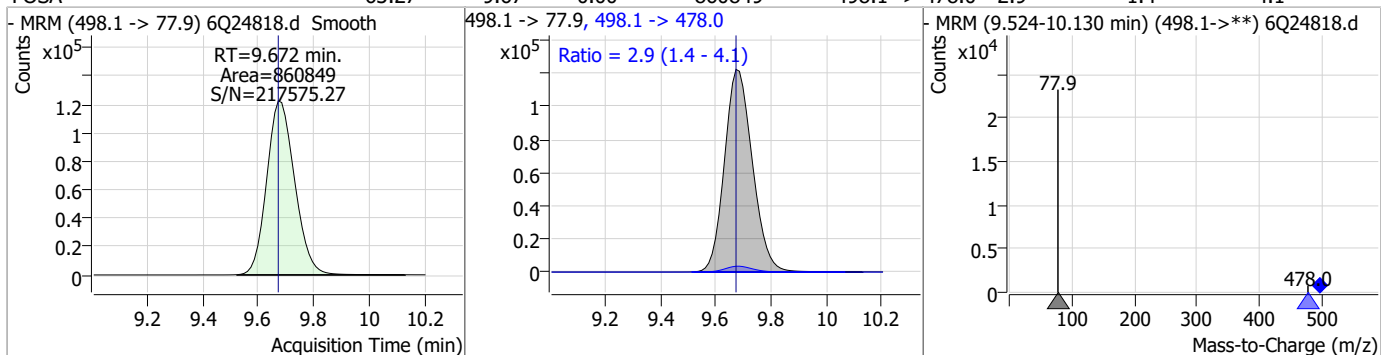


7.7.9

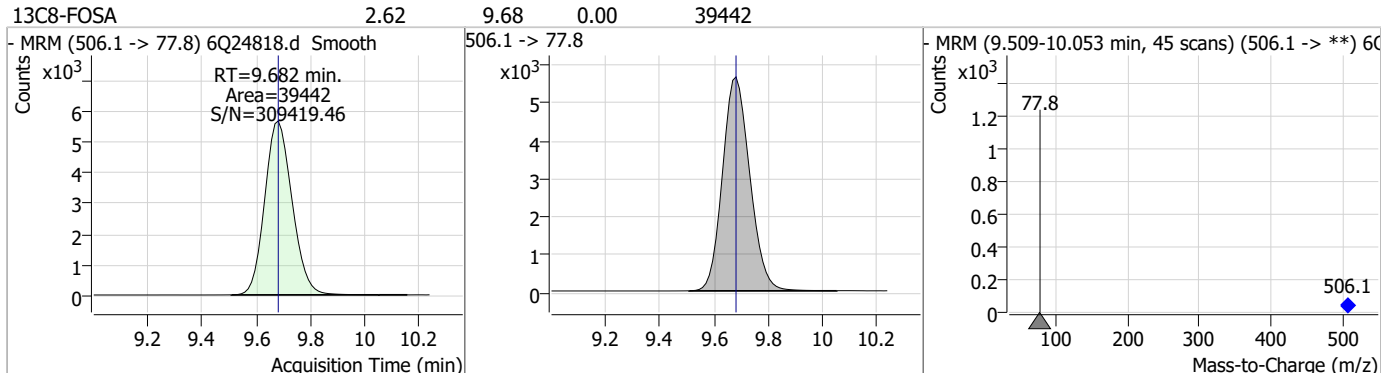
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Perfluorinated Compounds by LC/MS/MS

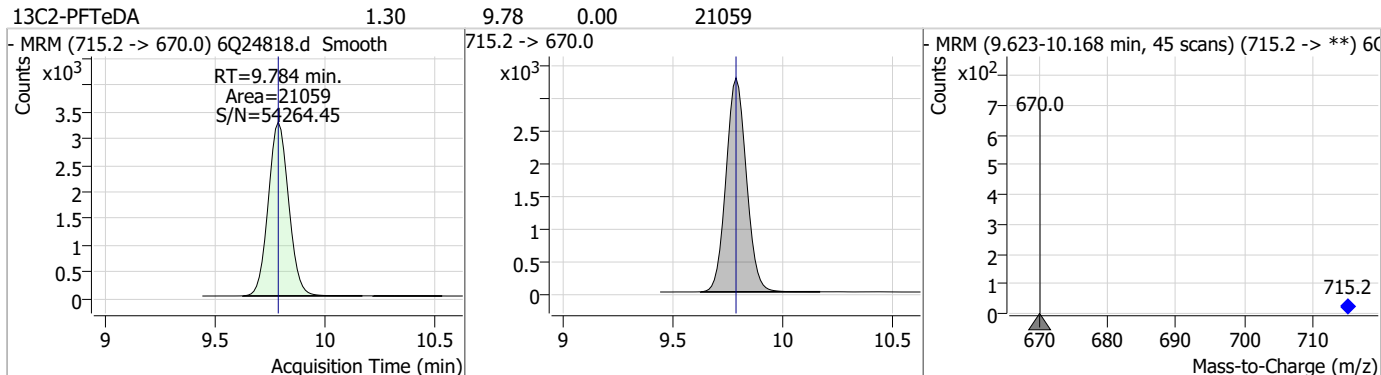
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	63.27	9.67	0.00	860849	498.1 -> 478.0	2.9	1.4	4.1



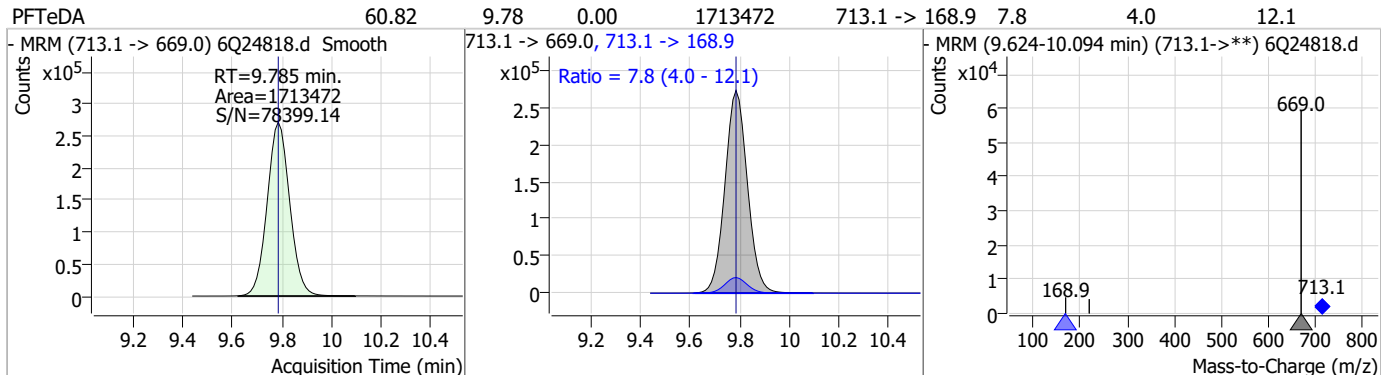
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.62	9.68	0.00	39442				



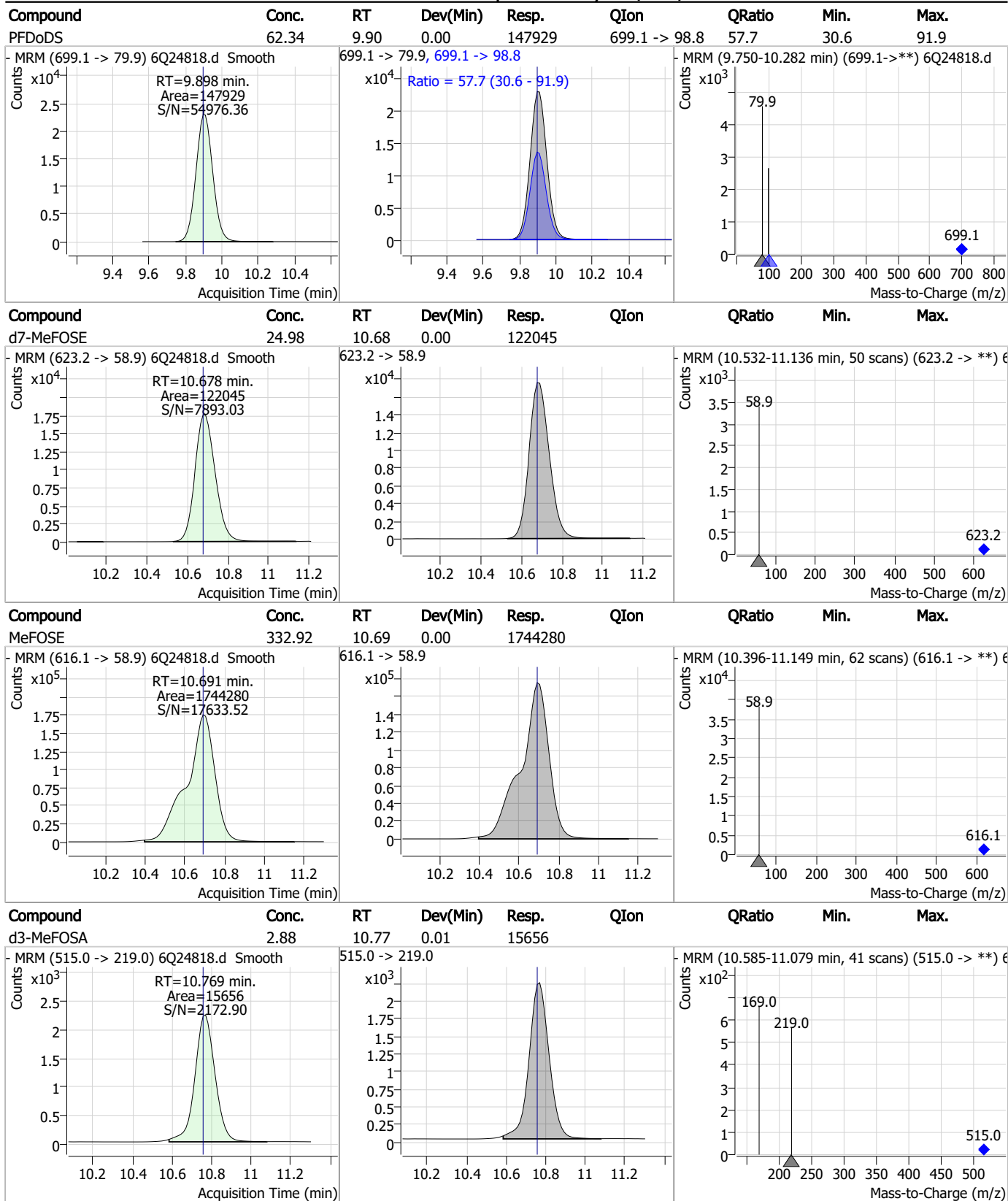
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.30	9.78	0.00	21059				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	60.82	9.78	0.00	1713472	713.1 -> 168.9	7.8	4.0	12.1



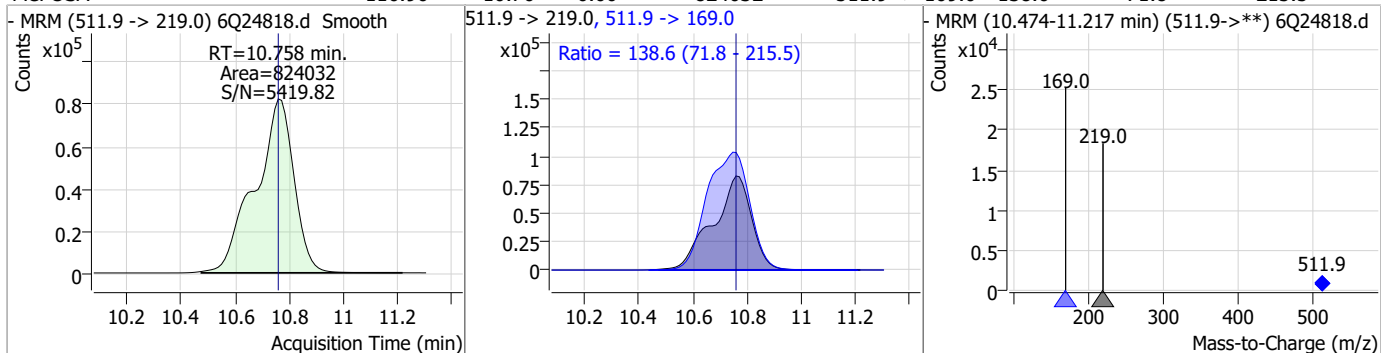
Perfluorinated Compounds by LC/MS/MS



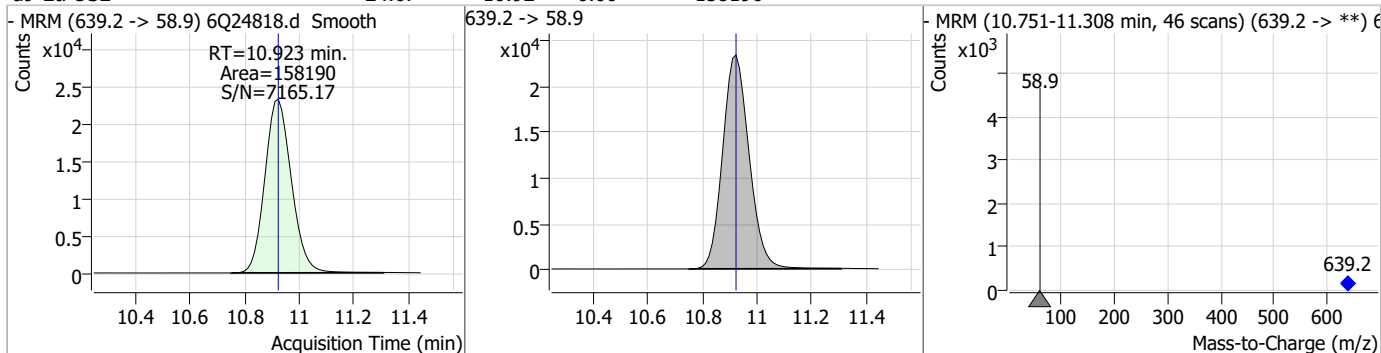
7.7.9
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Perfluorinated Compounds by LC/MS/MS

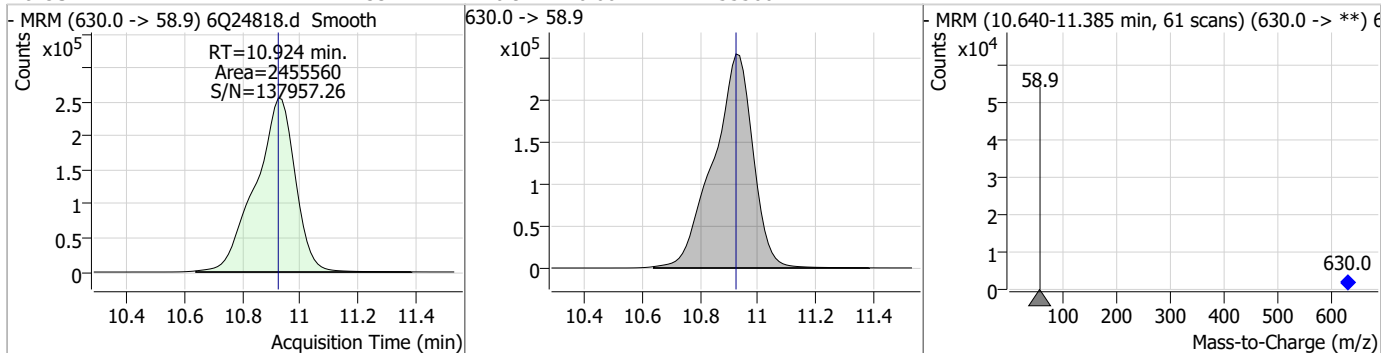
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	116.96	10.76	0.00	824032	511.9 -> 169.0	138.6	71.8	215.5



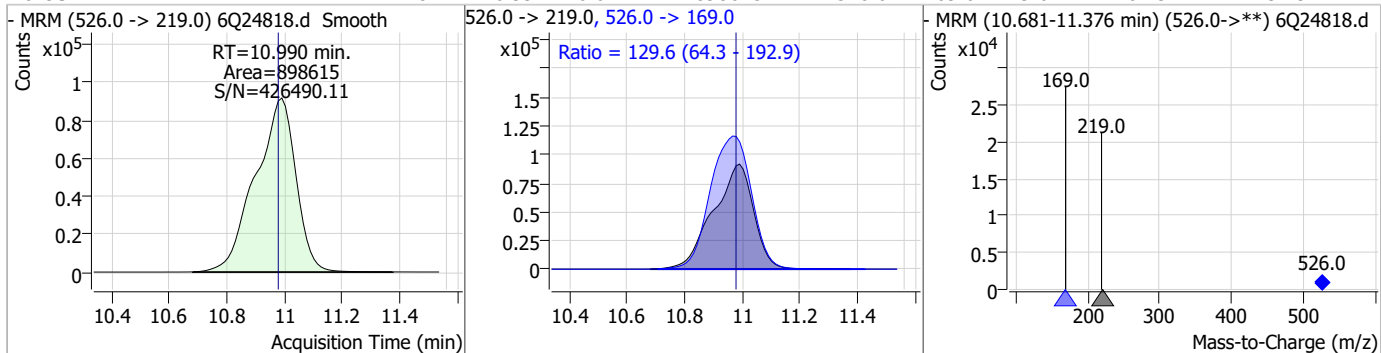
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.67	10.92	0.00	158190				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	331.17	10.92	0.00	2455560				

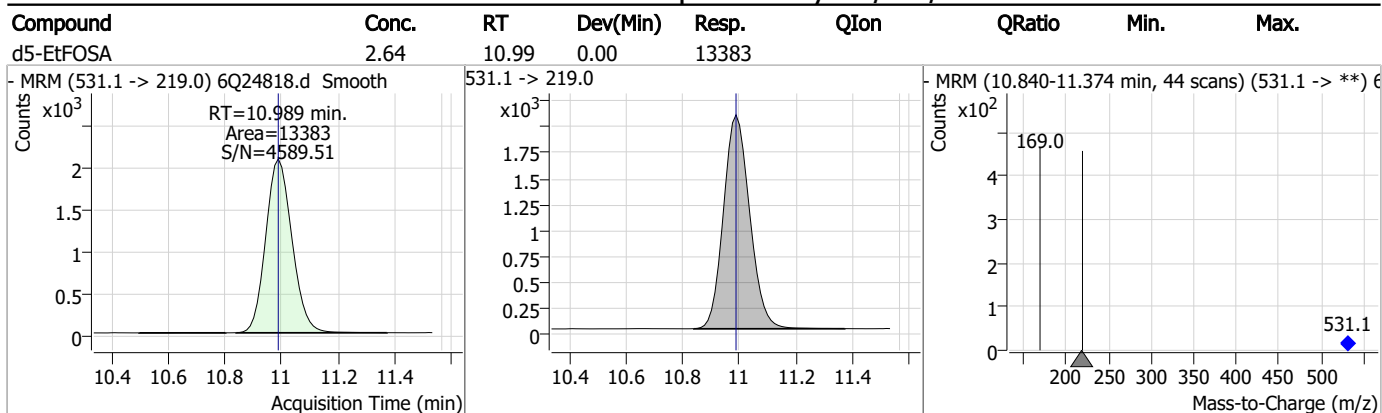


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	127.78	10.99	0.01	898615	526.0 -> 169.0	129.6	64.3	192.9



7.7.9
7

Perfluorinated Compounds by LC/MS/MS



7.7.9

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Manual Integration Approval Summary

Sample Number: S6Q355-IC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24818.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 22:16 Supervisor approved: 09/22/23 13:16 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24820.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 10:44:53 PM
 Sample Name : icv355-4
 Vial : P1-B1
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	339151	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	53696	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	122427	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	99831	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	128283	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	58447	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	54790	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	67725	1.25 µg/L	0.000
M2-PFDoDA	9.080	615.1 -> 570.0	59228	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	21977	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	44262	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	38396	2.50 µg/L	0.000
M3-PFHxS	7.301	402.1 -> 79.9	22022	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	21776	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	4524	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6256	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	6046	5.00 µg/L	0.000
M3-MeFOSAA	8.244	573.2 -> 419.0	38087	5.00 µg/L	-0.012
M3-HFPO-DA	6.019	286.9 -> 168.9	69811	10.00 µg/L	0.000
M5-EtFOSAA	8.439	589.2 -> 419.0	31706	5.00 µg/L	-0.012
M7-MeFOSE	10.678	623.2 -> 58.9	138417	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	198964	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	14938	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	14872	2.50 µg/L	0.012
13C4-PFOS	8.349	502.8 -> 79.9	27888	2.50 µg/L	0.000
13C3-PFBA	3.001	216.0 -> 172.0	138177	5.00 µg/L	0.000
18O2-PFHxS	7.300	403.0 -> 83.9	16061	2.50 µg/L	0.000
13C4-PFOA	7.199	417.1 -> 372.0	149360	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	46726	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	59991	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	89291	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4524	5.40 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 108.0%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6256	5.29 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.9%		
13C2-8:2FTS	7.986	529.1 -> 80.9	6046	5.01 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 100.2%		
13C2-PFDoDA	9.080	615.1 -> 570.0	59228	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.1%		
13C2-PFTeDA	9.784	715.2 -> 670.0	21977	1.16 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 93.0%		
13C3-PFBS	5.571	302.1 -> 79.9	38396	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.7%		
13C3-PFHxS	7.301	402.1 -> 79.9	22022	2.53 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.3%	
13C4-PFBA	3.010	216.8 -> 171.9	339151	10.06 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C4-PFHpA	6.569	367.1 -> 322.0	99831	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C5-PFHxA	5.641	318.0 -> 273.0	122427	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.1%	
13C5-PFPeA	4.434	268.3 -> 223.0	53696	5.29 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.8%	
13C6-PFDA	8.198	519.1 -> 474.1	54790	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.1%	
13C7-PFUnDA	8.651	570.0 -> 525.1	67725	1.35 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.8%	
13C8-FOSA	9.682	506.1 -> 77.8	44262	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.7%	
13C8-PFOA	7.198	421.1 -> 376.0	128283	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.6%	
13C8-PFOS	8.348	507.1 -> 79.9	21776	2.65 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.0%	
13C9-PFNA	7.717	472.1 -> 427.0	58447	1.34 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 107.5%	
d3-MeFOSAA	8.244	573.2 -> 419.0	38087	5.00 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 100.0%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	69811	10.54 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 105.4%	
d3-MeFOSA	10.769	515.0 -> 219.0	14872	2.24 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 89.7%	
d5-EtFOSAA	8.439	589.2 -> 419.0	31706	4.87 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 97.5%	
d7-MeFOSE	10.678	623.2 -> 58.9	138417	23.26 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.0%	
d9-EtFOSE	10.923	639.2 -> 58.9	198964	25.47 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 101.9%	
d5-EtFOSA	10.989	531.1 -> 219.0	14938	2.42 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.8%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	59347	8.10 µg/L	98
		327.1 -> 80.9	22116		
6:2FTS	6.974	427.1 -> 407.0	48063	8.31 µg/L	96
		427.1 -> 80.9	19136		
8:2FTS	7.987	527.1 -> 507.0	34478	8.98 µg/L	87
		527.1 -> 80.8	13598		
EtFOSAA	8.452	584.2 -> 419.1	11530	2.40 µg/L	98
		584.2 -> 526.0	7298		
FOSA	9.672	498.1 -> 77.9	33637	2.20 µg/L	99
		498.1 -> 478.0	1028		
MeFOSAA	8.257	570.1 -> 419.0	18270	2.11 µg/L	96
		570.1 -> 483.0	4035		
PFBA	3.006	212.8 -> 168.9	92341	8.84 µg/L	100
PFBS	5.572	298.7 -> 79.9	35538	1.96 µg/L	94
		298.7 -> 98.8	14235		
PFDA	8.198	512.9 -> 469.0	106526	2.18 µg/L	98
		512.9 -> 219.0	16756		
PFDODA	9.080	613.1 -> 569.0	89959	2.08 µg/L	100
		613.1 -> 319.0	10955		
PFDS	9.220	599.0 -> 79.9	12367	1.94 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.569	599.0 -> 98.8	6221	2.28	µg/L	96
		363.1 -> 319.0	115924			
PFHpS	7.856	363.1 -> 169.0	16640	2.04	µg/L	99
		449.0 -> 79.9	21792			
PFHxA	5.644	449.0 -> 98.9	10421	2.17	µg/L	100
		313.0 -> 269.0	92229			
PFHxS	7.302	313.0 -> 118.9	4438	1.94	µg/L	100
		398.7 -> 79.9	27675			
PFNA	7.717	398.7 -> 98.9	13221	2.05	µg/L	99
		463.0 -> 419.0	77149			
PFNS	8.814	463.0 -> 219.0	18095	2.04	µg/L	95
		548.8 -> 79.9	21628			
PFOA	7.200	548.8 -> 98.9	11606	2.36	µg/L	98
		413.0 -> 369.0	139793			
PFOS	8.350	413.0 -> 169.0	25420	1.81	µg/L	95
		498.9 -> 79.9	22268			
PFPeA	4.436	498.9 -> 98.8	10829	4.41	µg/L	100
		263.0 -> 219.0	116711			
PFPeS	6.620	349.1 -> 79.9	25329	2.14	µg/L	89
		349.1 -> 98.9	10498			
PFTeDA	9.785	713.1 -> 669.0	67372	2.29	µg/L	98
		713.1 -> 168.9	5049			
PFTrDA	9.452	663.0 -> 619.0	96987	2.11	µg/L	98
		663.0 -> 168.9	8161			
PFUnDA	8.652	563.1 -> 519.0	82560	2.10	µg/L	100
		563.1 -> 269.1	12203			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	103660	4.58	µg/L	100
		632.9 -> 452.9	31793			
9Cl-PF3ONS	8.678	530.8 -> 351.0	178722	4.47	µg/L	96
		532.8 -> 353.0	52798			
ADONA	6.817	376.9 -> 250.9	432895	4.20	µg/L	98
		376.9 -> 84.8	118613			
HFPO-DA	6.020	284.9 -> 168.9	29557	4.46	µg/L	98
		284.9 -> 184.9	4401			
3:3FTCA	3.902	241.0 -> 177.0	19565	10.73	µg/L	99
		241.0 -> 117.0	1914			
5:3FTCA	6.296	341.0 -> 237.1	440861	59.03	µg/L	92
		341.0 -> 217.0	288177			
7:3FTCA	7.669	441.0 -> 316.9	242915	55.75	µg/L	98
		441.0 -> 336.9	558736			
EtFOSA	10.990	526.0 -> 219.0	36663	4.67	µg/L	97
		526.0 -> 169.0	45973			
EtFOSE	10.937	630.0 -> 58.9	98694	10.58	µg/L	100
		511.9 -> 219.0	31406			
MeFOSA	10.758	511.9 -> 169.0	46661	4.69	µg/L	96
		616.1 -> 58.9	69298			
MeFOSE	10.691	699.1 -> 79.9	6371	11.66	µg/L	100
		699.1 -> 98.8	3557			
PFDoDS	9.898	295.0 -> 201.0	22136	2.03	µg/L	93
		295.0 -> 84.9	5291			
NFDHA	5.524	279.0 -> 85.1	84577	4.40	µg/L	97
		229.0 -> 84.9	62805			
PFMBA	4.850	314.8 -> 134.9	235134	4.52	µg/L	100
		314.8 -> 82.9	7717			
PFMPA	3.563			4.53	µg/L	100
PFEESA	6.112			4.20	µg/L	100

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

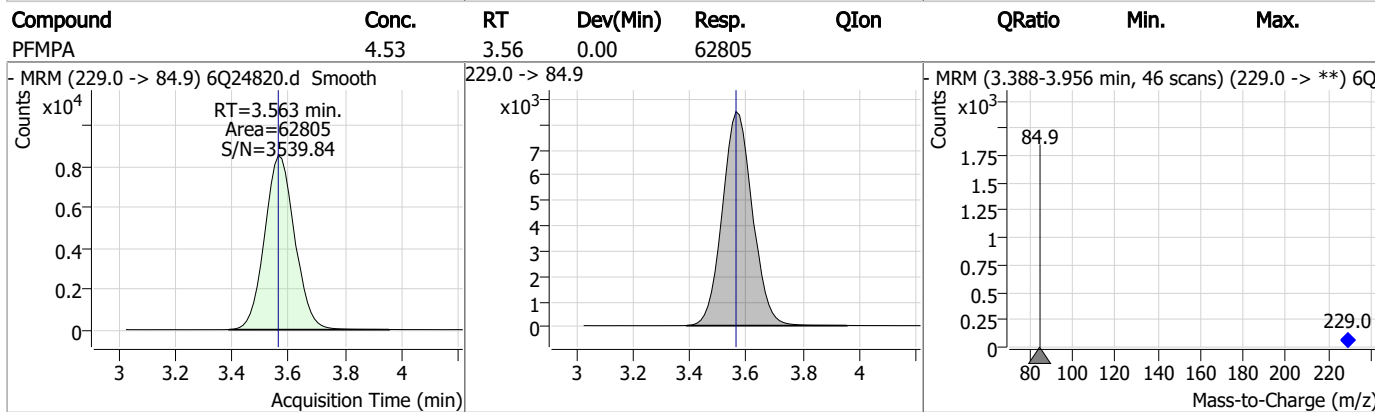
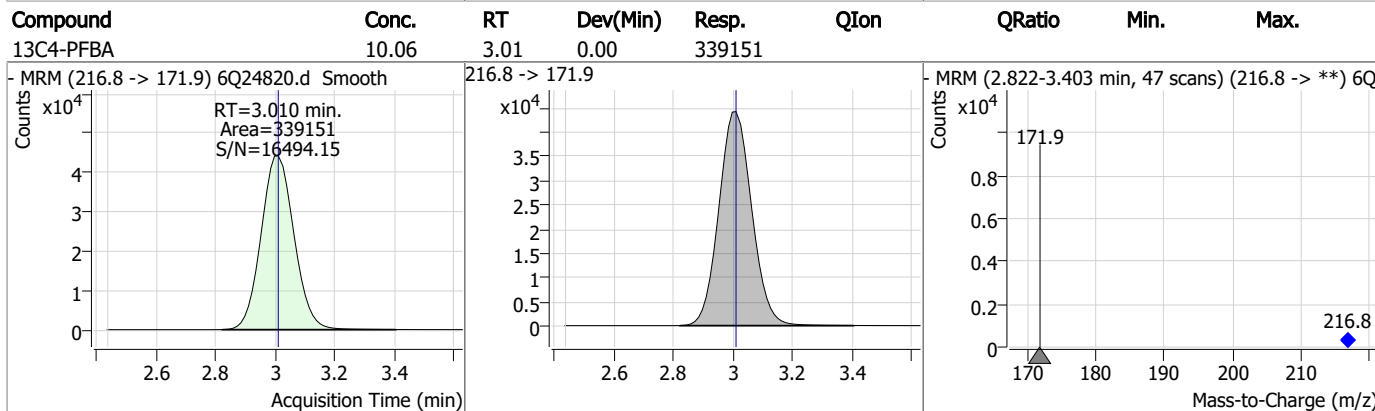
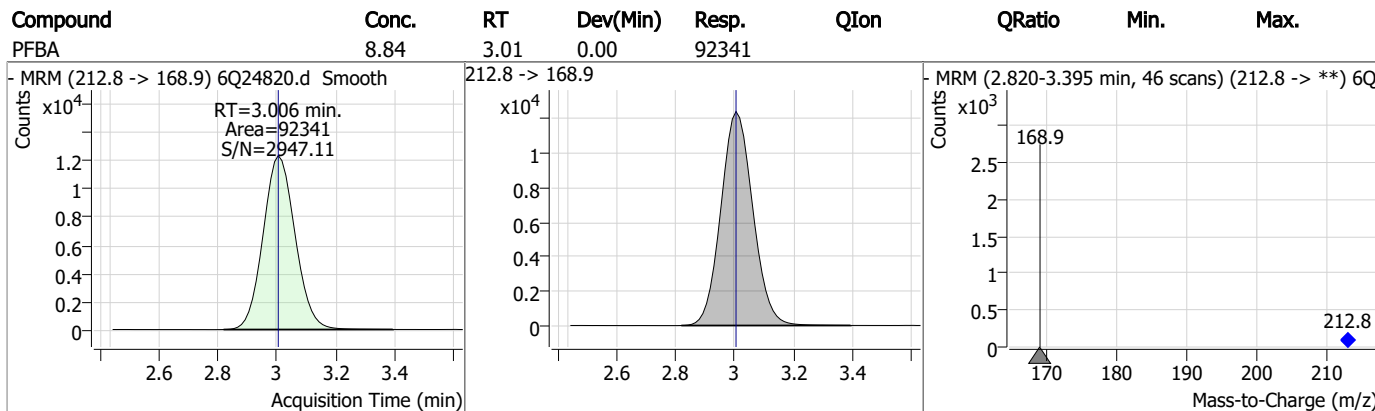
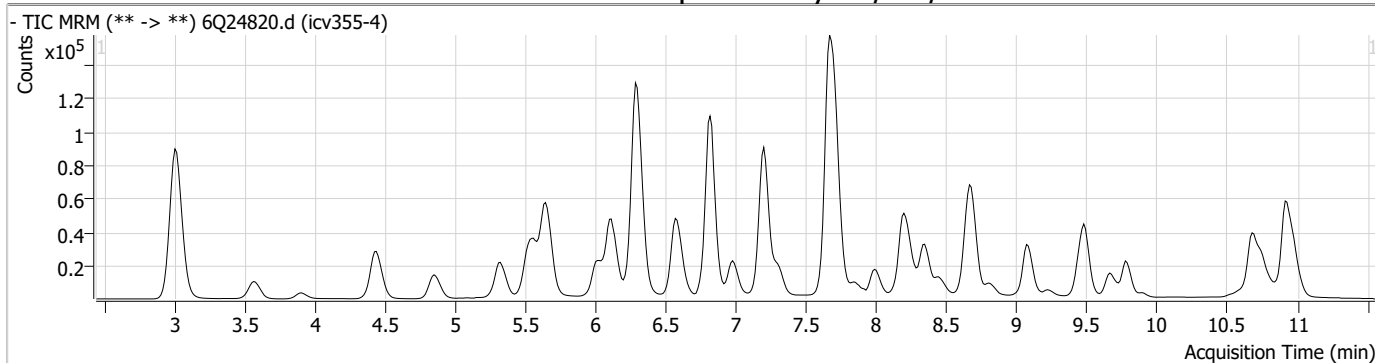
Perfluorinated Compounds by LC/MS/MS

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

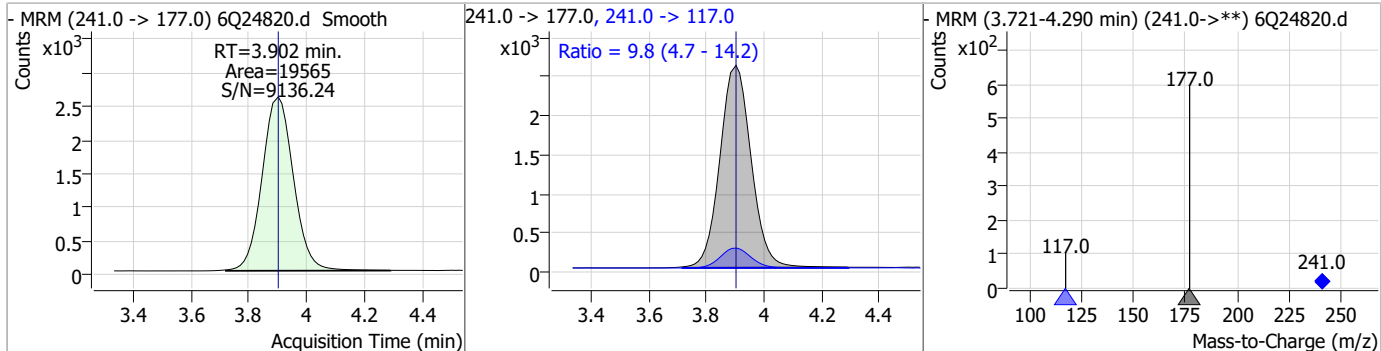
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Perfluorinated Compounds by LC/MS/MS

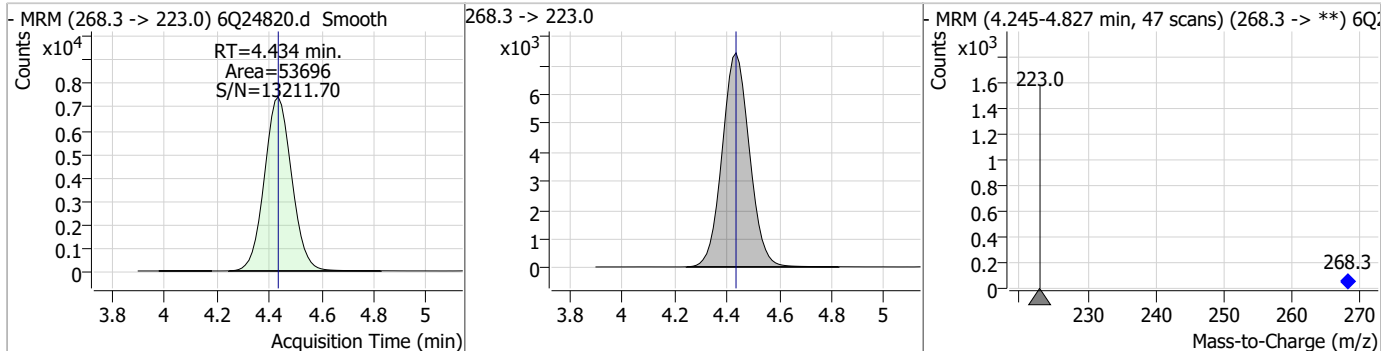


Perfluorinated Compounds by LC/MS/MS

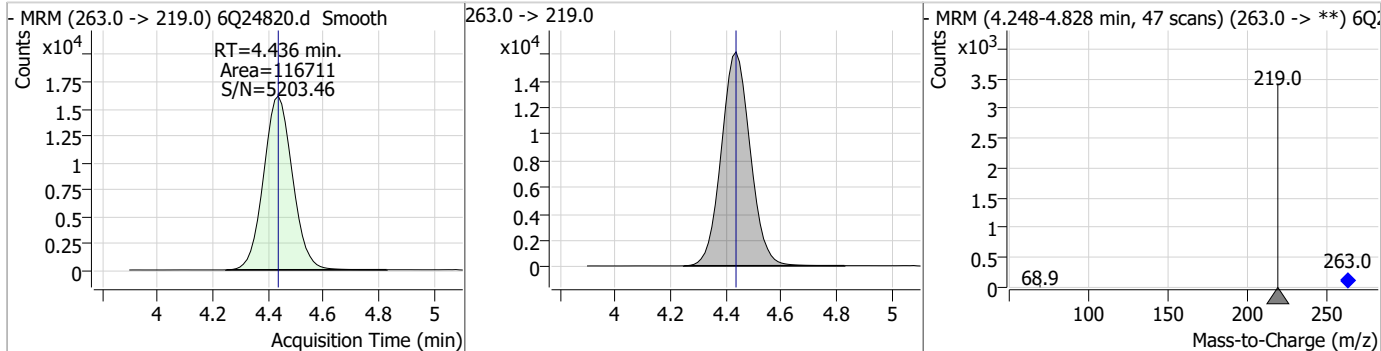
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	10.73	3.90	0.00	19565	241.0 -> 117.0	9.8	4.7	14.2



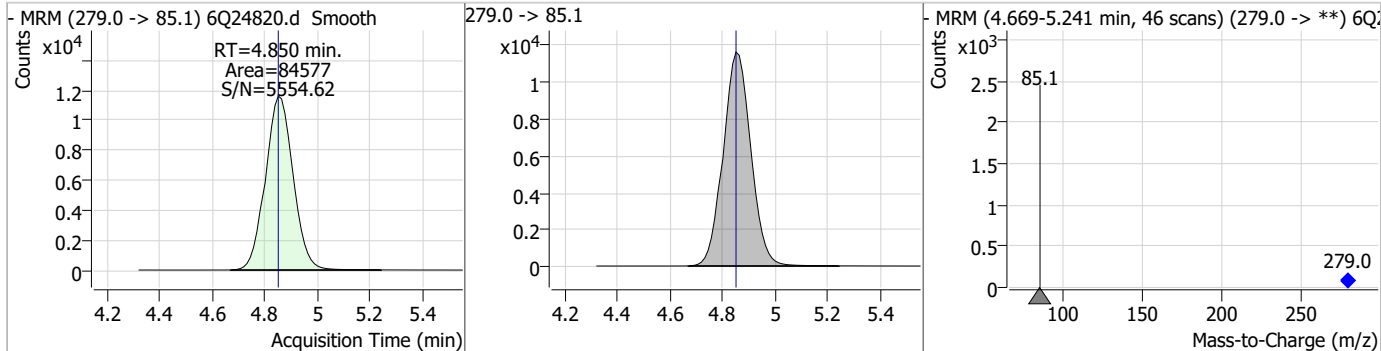
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.29	4.43	0.00	53696				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	4.41	4.44	0.00	116711				

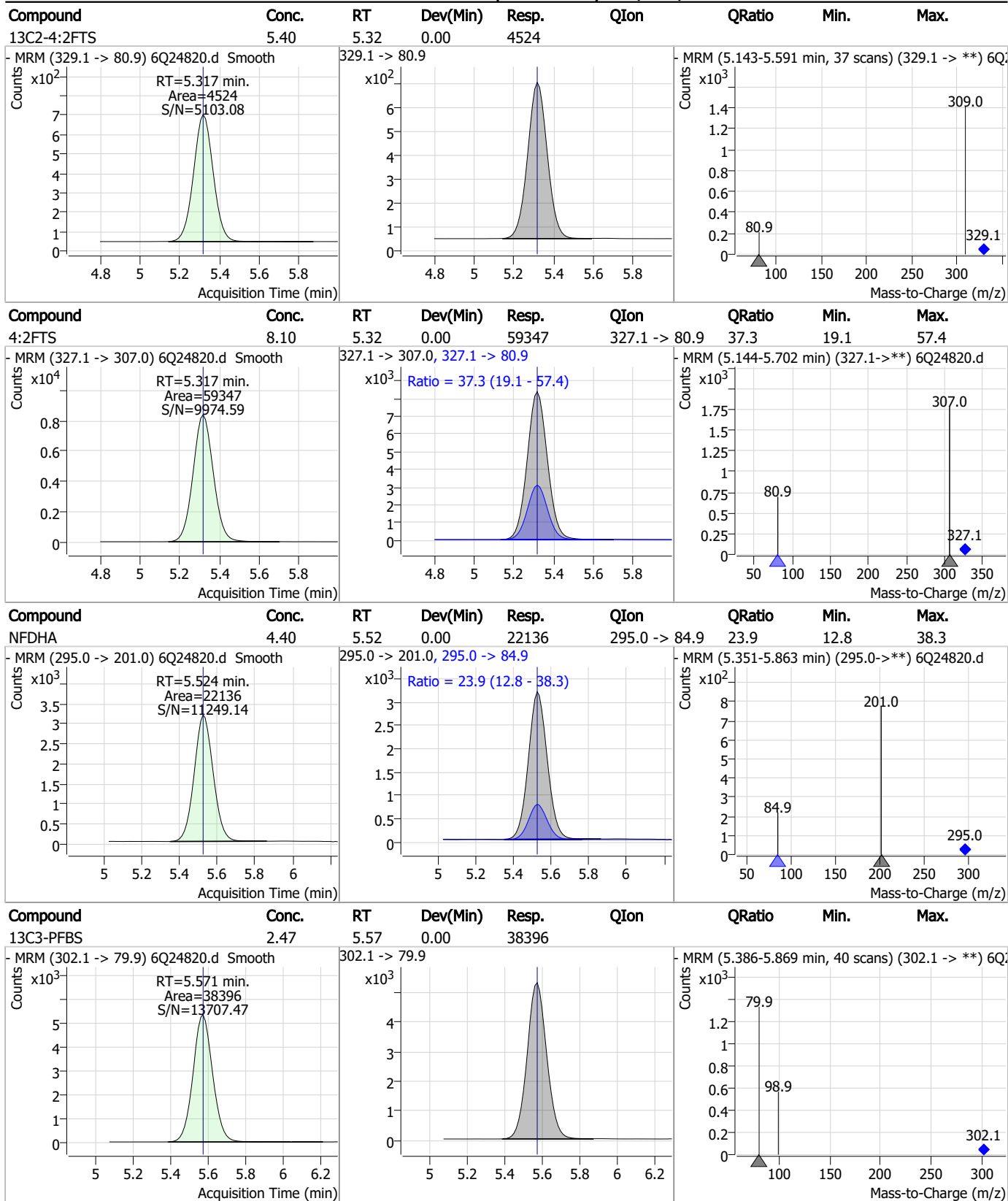


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	4.52	4.85	0.00	84577				



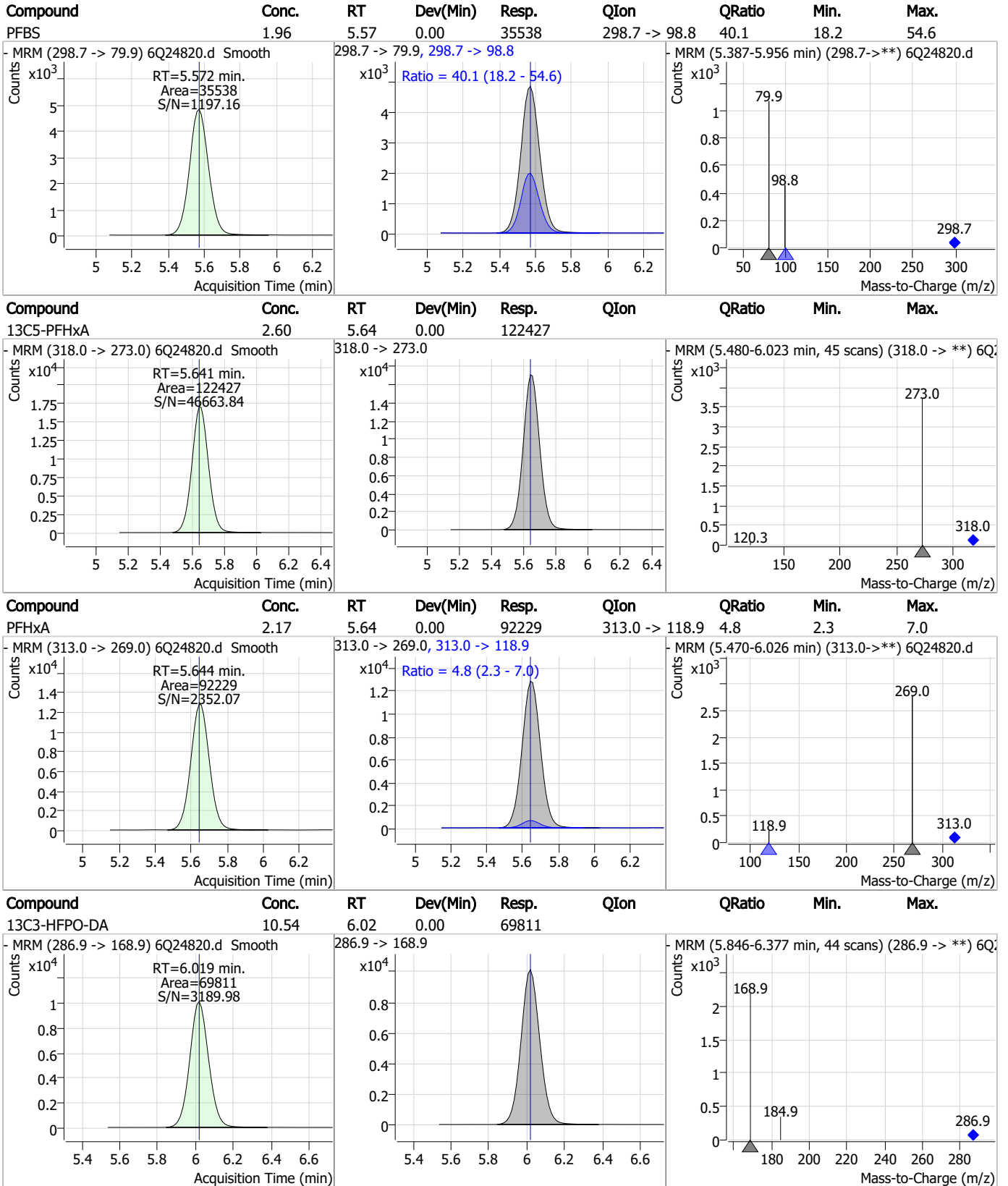
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



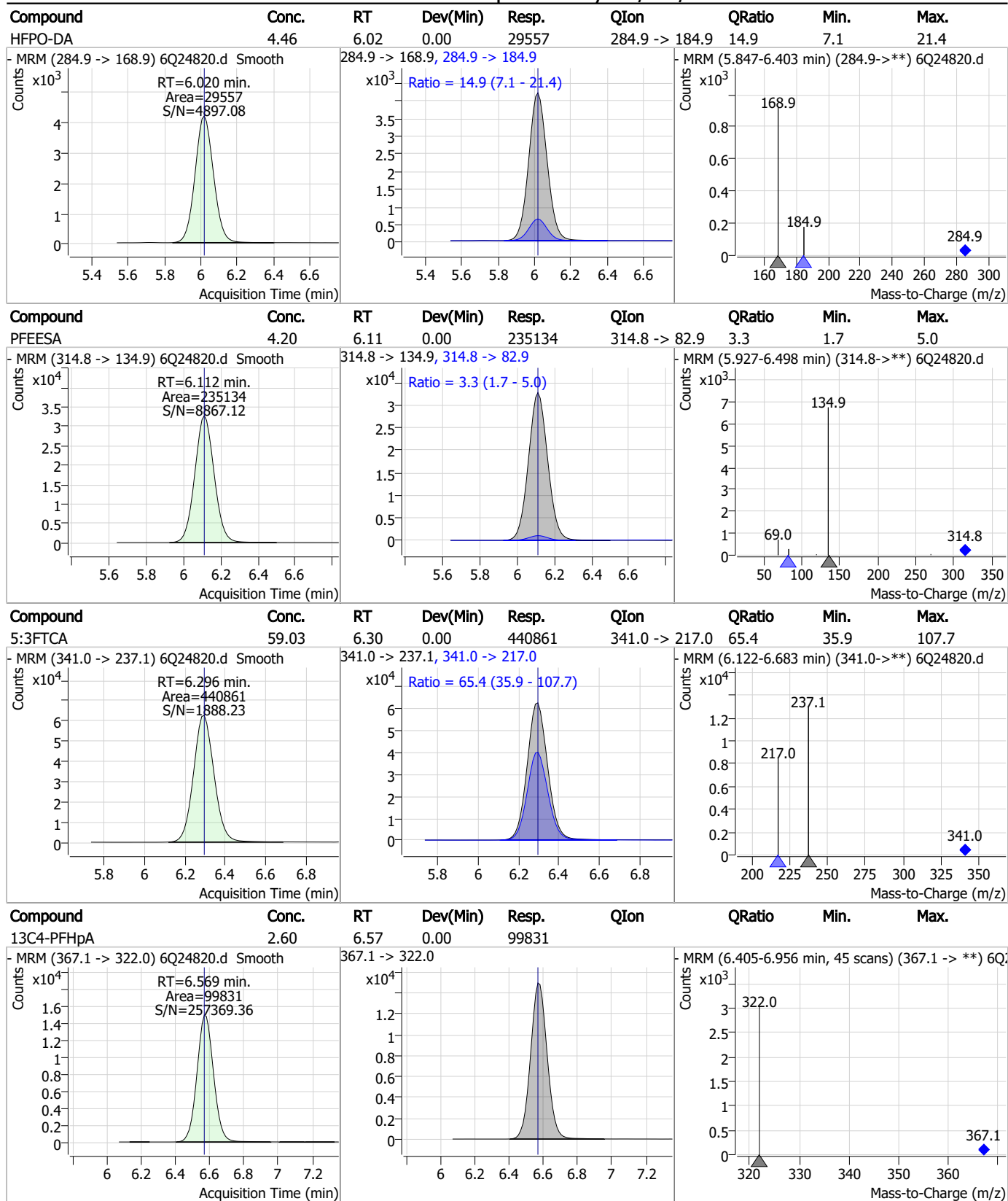
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



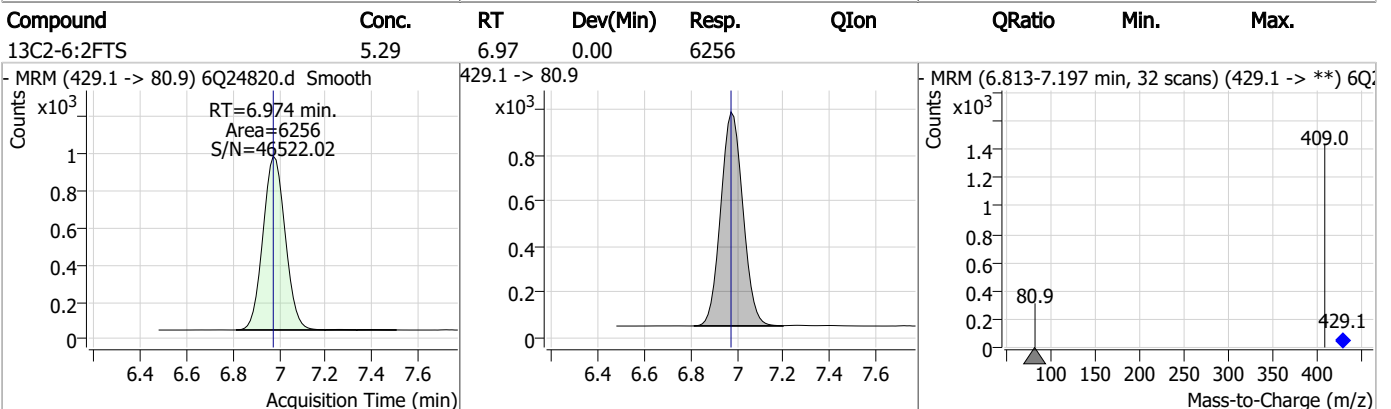
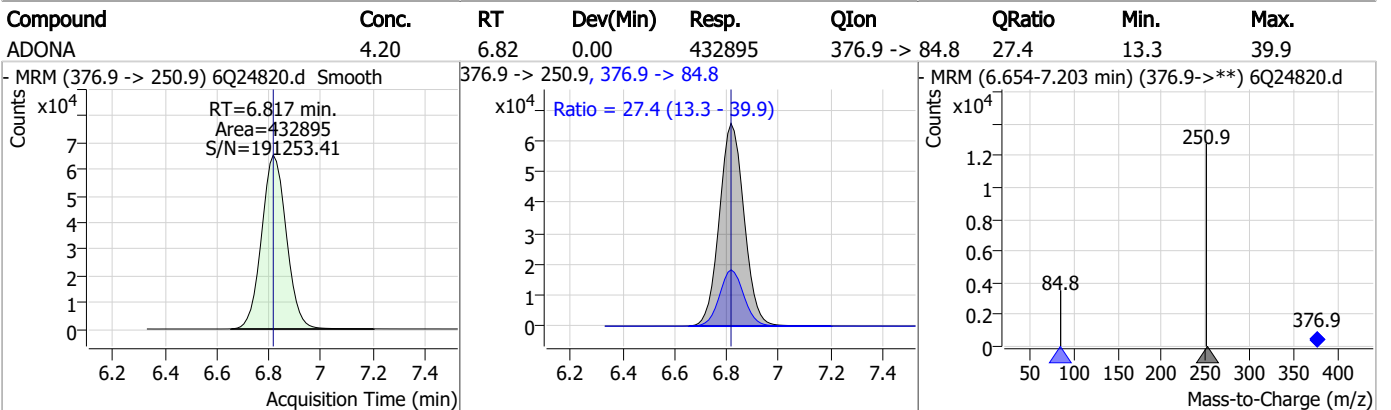
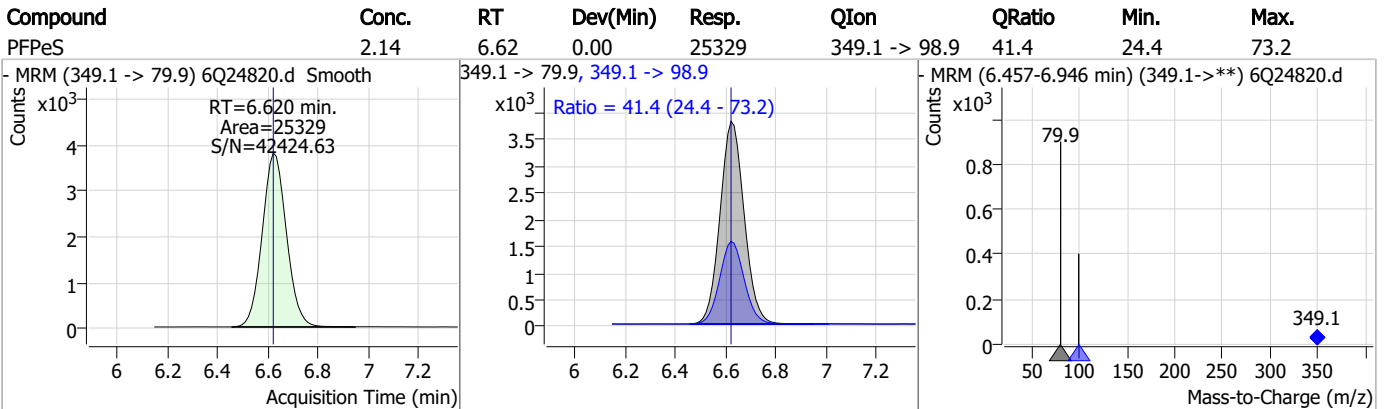
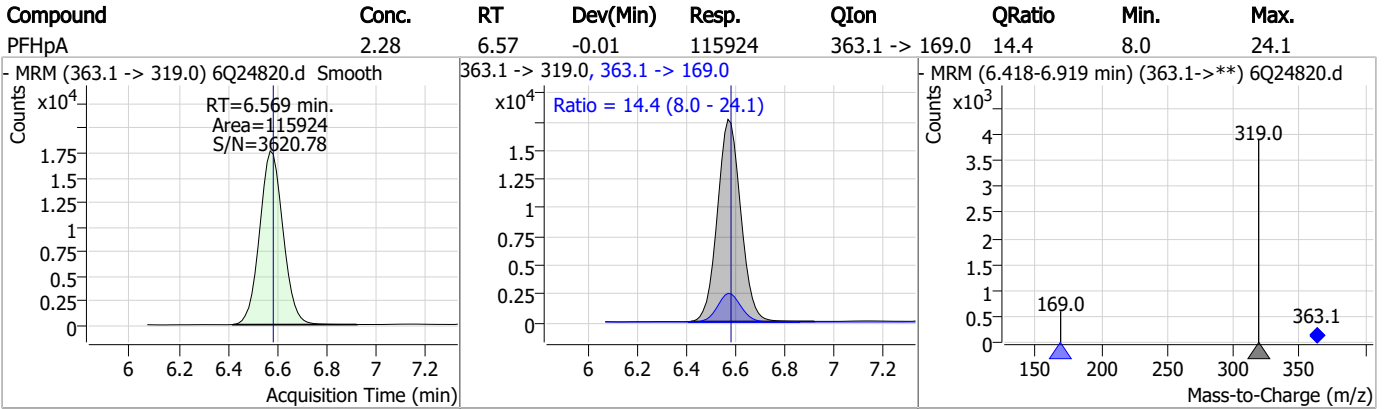
7.7.10 7

Perfluorinated Compounds by LC/MS/MS



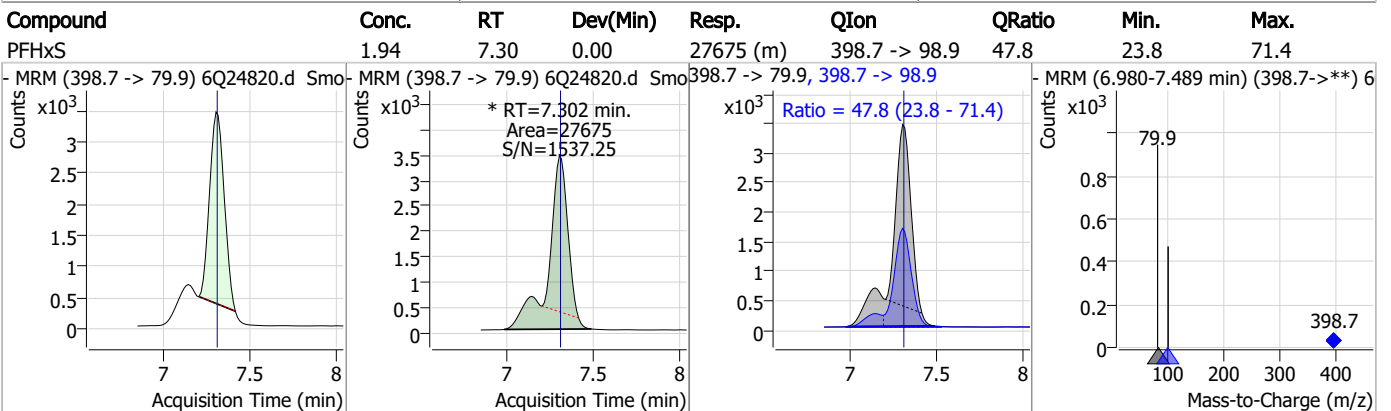
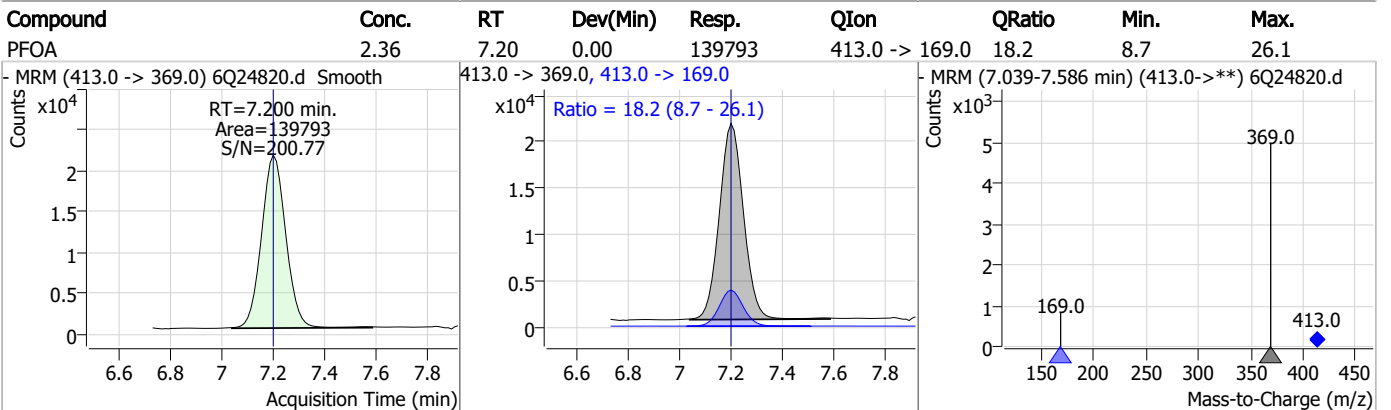
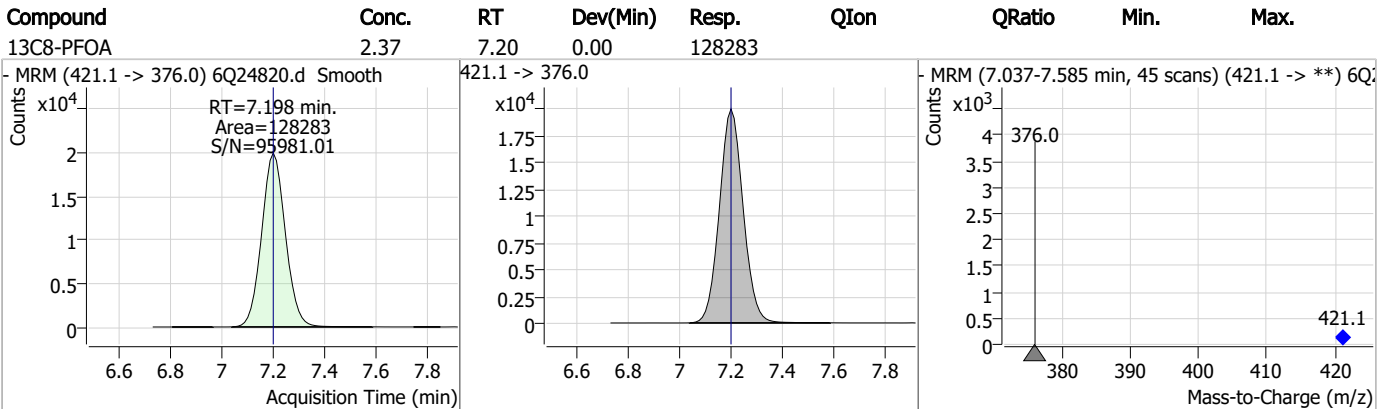
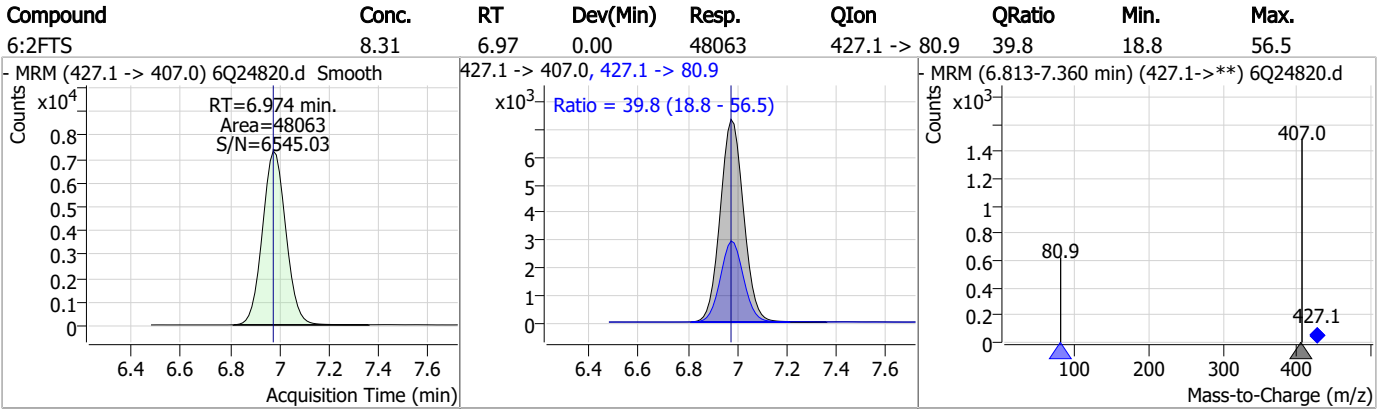
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

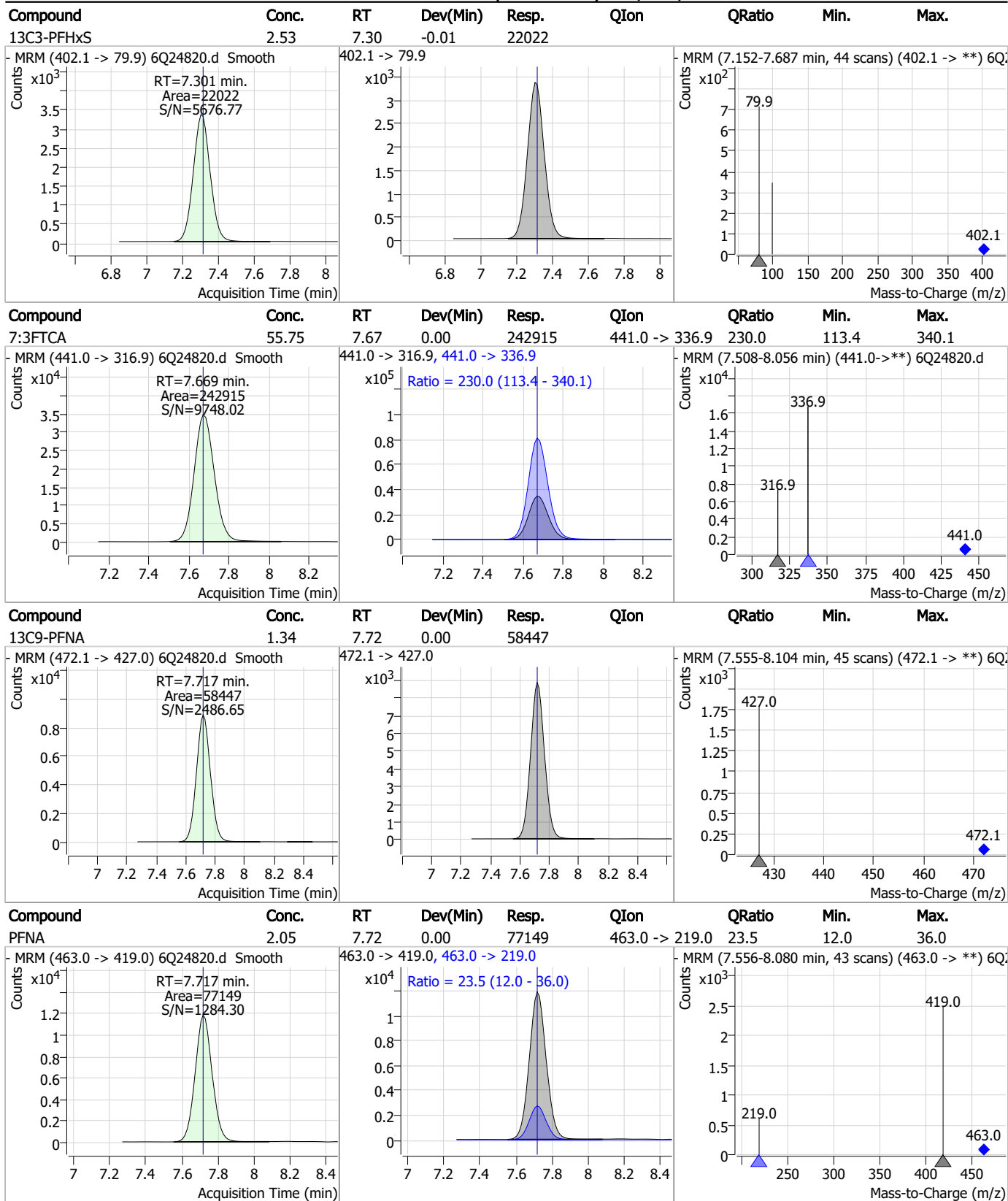


7.7.10 7

Perfluorinated Compounds by LC/MS/MS



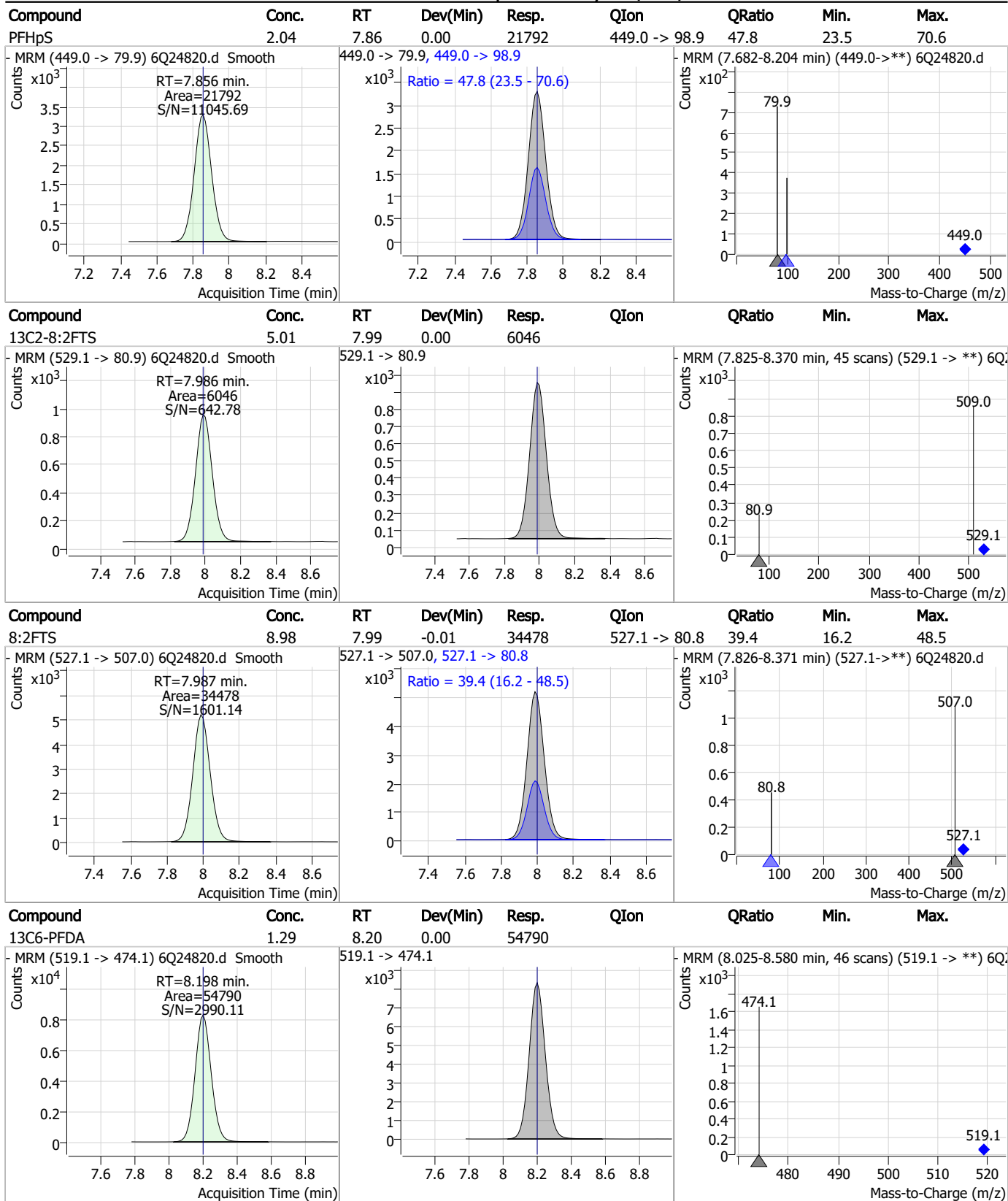
Perfluorinated Compounds by LC/MS/MS



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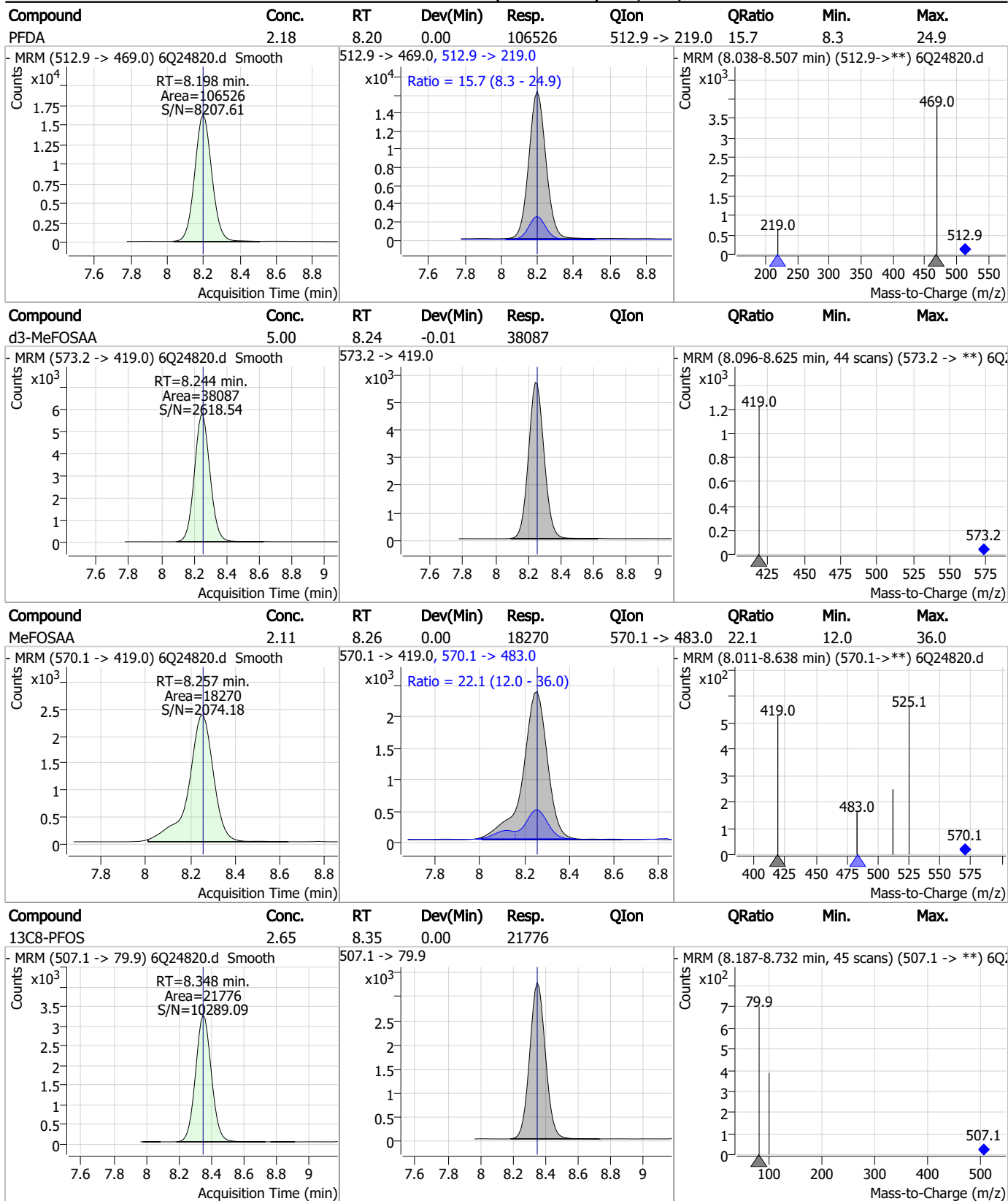


Perfluorinated Compounds by LC/MS/MS



7.7.10 7

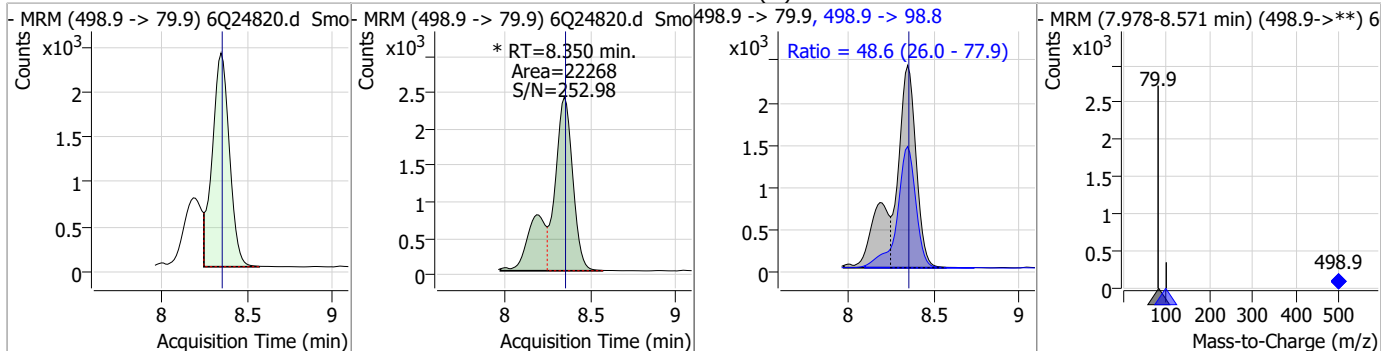
Perfluorinated Compounds by LC/MS/MS



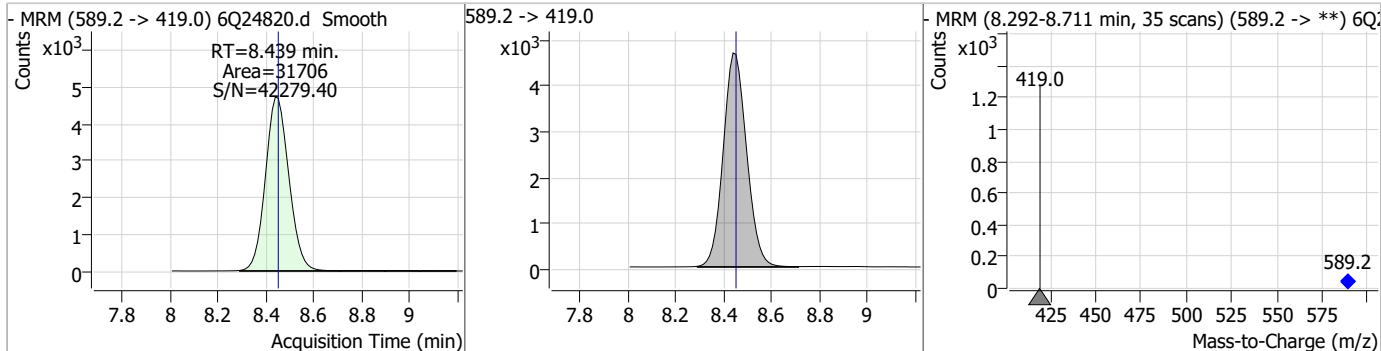
7.7.10 7

Perfluorinated Compounds by LC/MS/MS

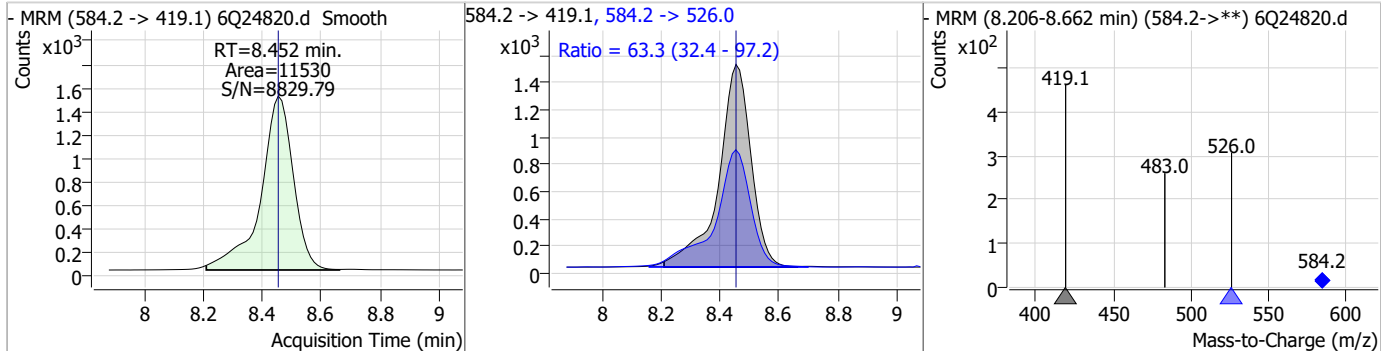
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.81	8.35	0.00	22268 (m)	498.9 -> 98.8	48.6	26.0	77.9



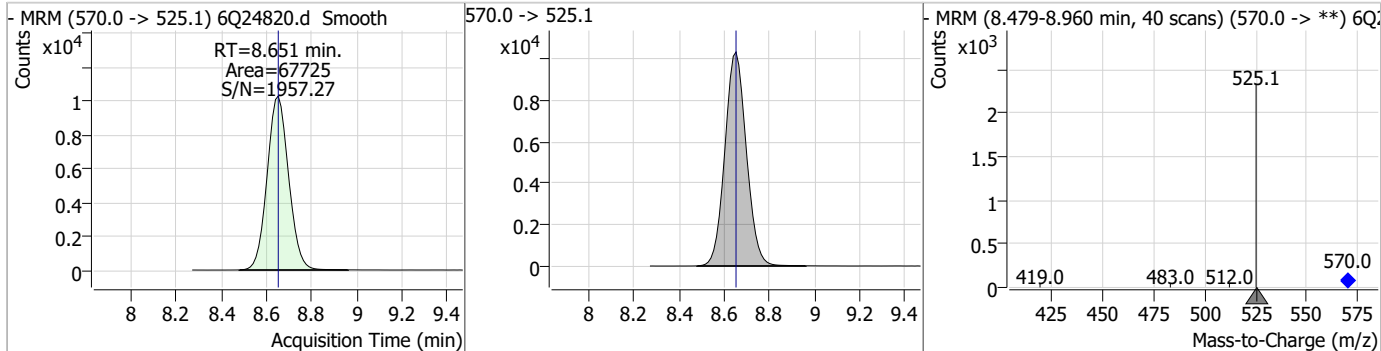
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.87	8.44	-0.01	31706				



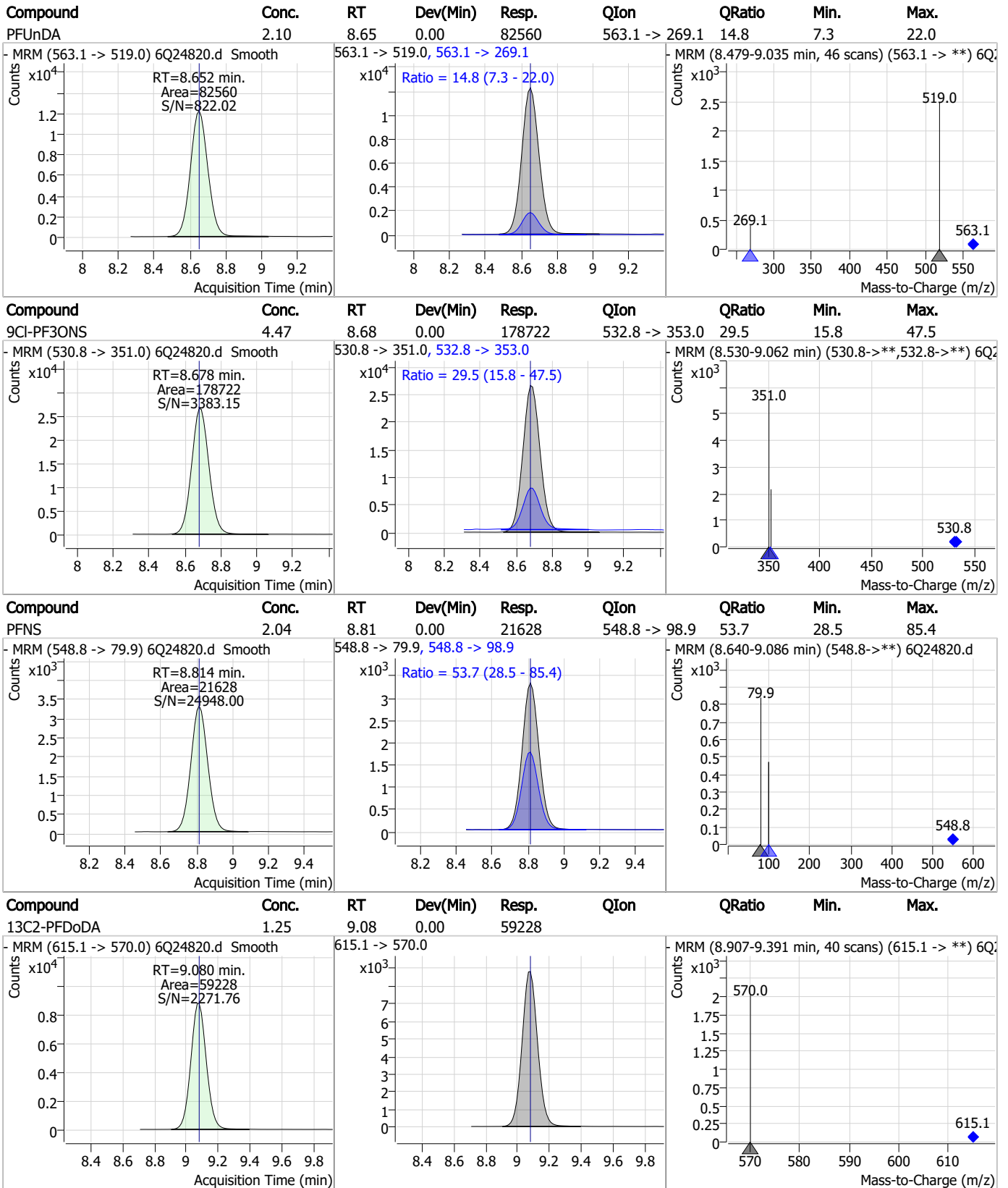
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.40	8.45	0.00	11530	584.2 -> 526.0	63.3	32.4	97.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.35	8.65	0.00	67725				



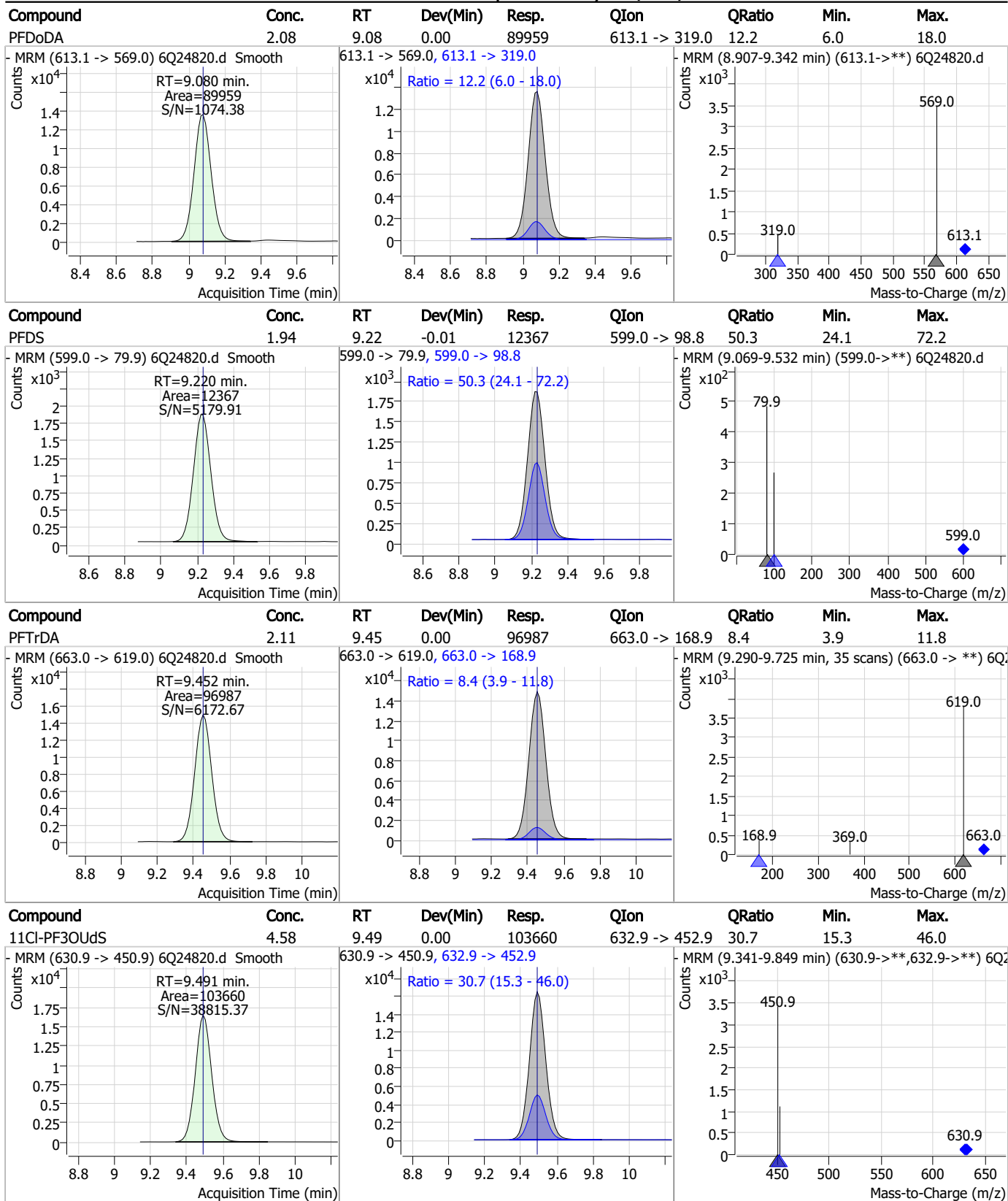
Perfluorinated Compounds by LC/MS/MS



7.7.10 7

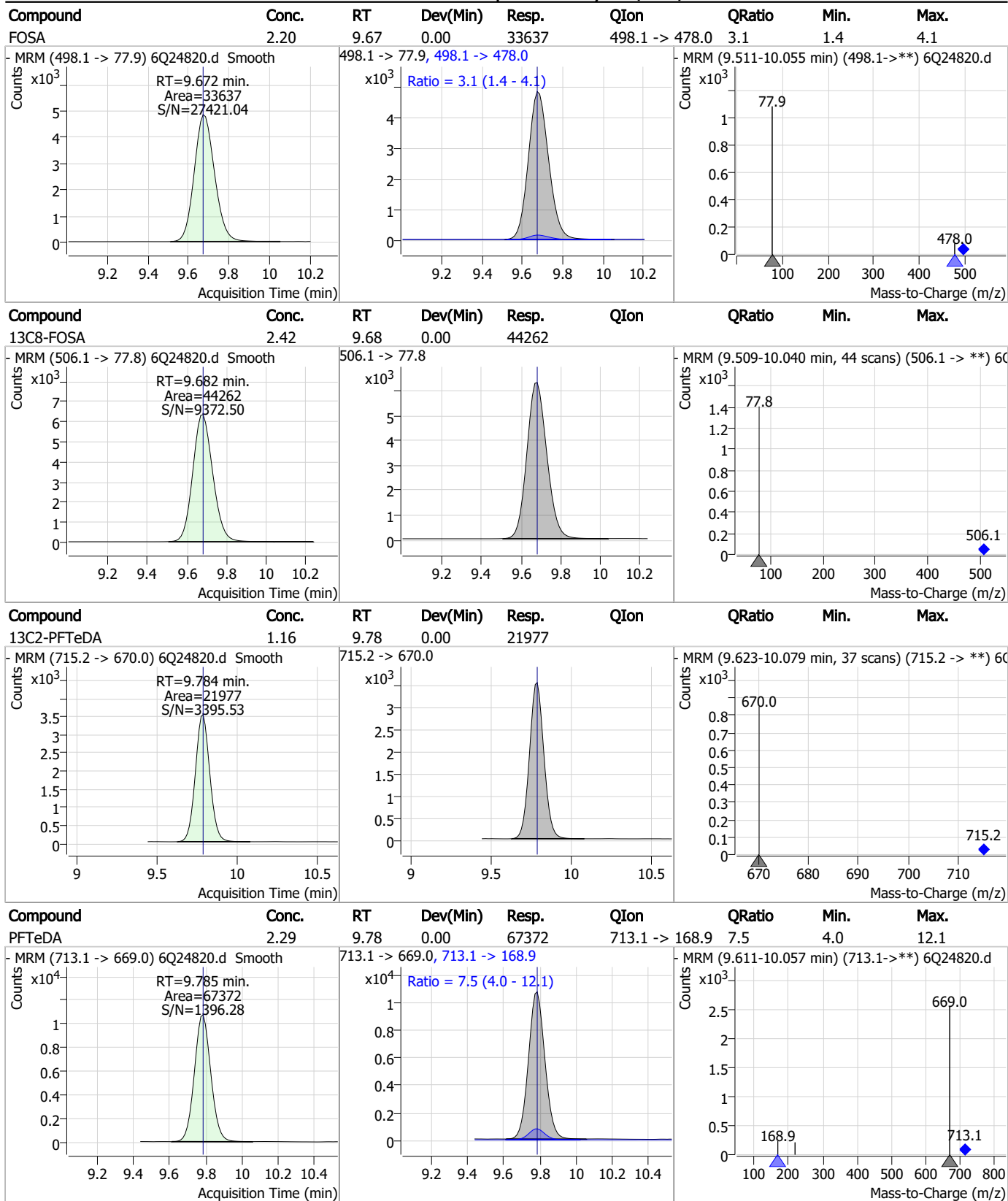


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

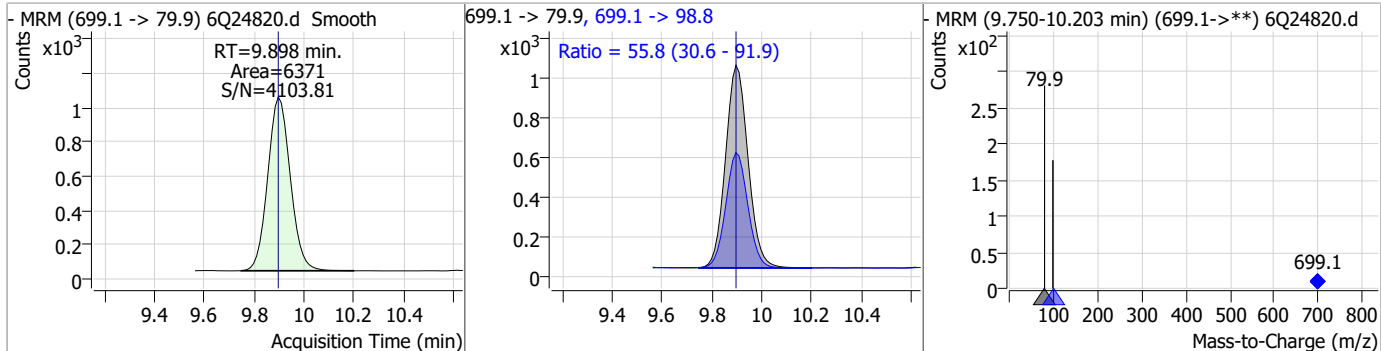


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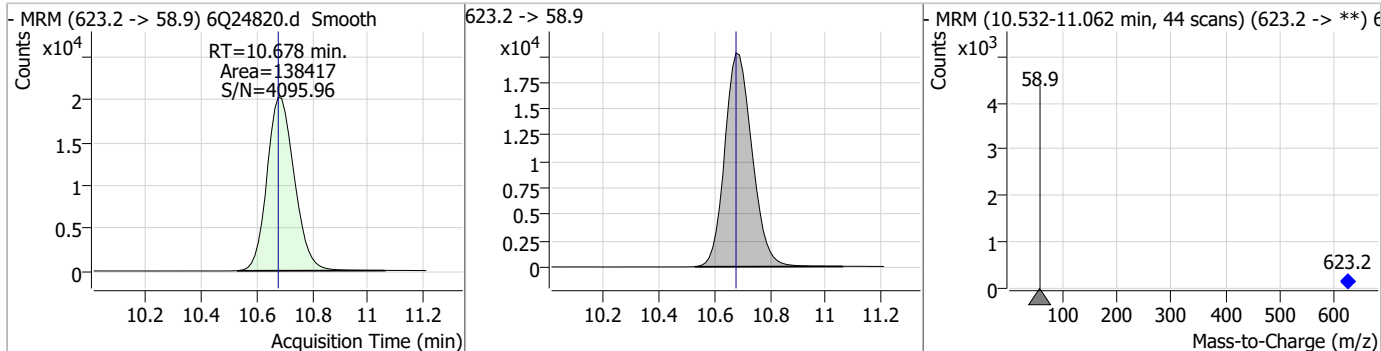


Perfluorinated Compounds by LC/MS/MS

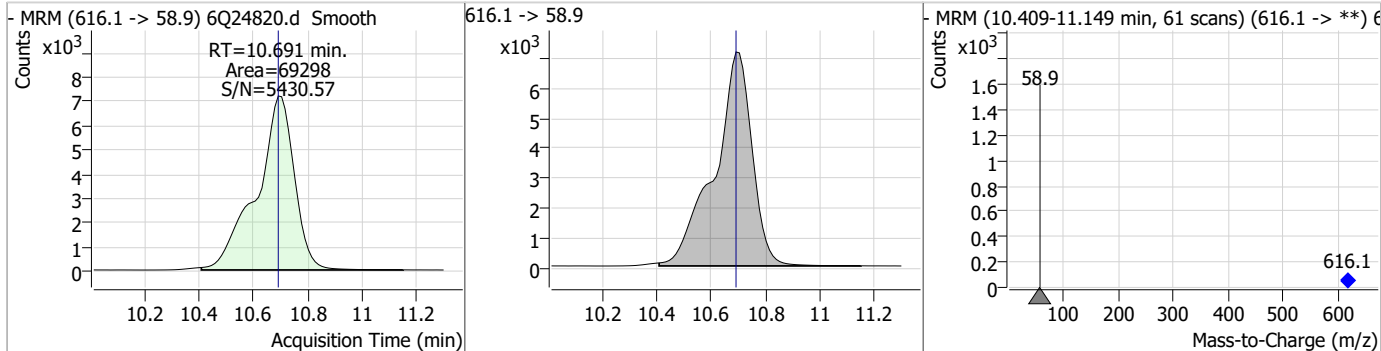
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	2.03	9.90	0.00	6371	699.1 -> 98.8	55.8	30.6	91.9



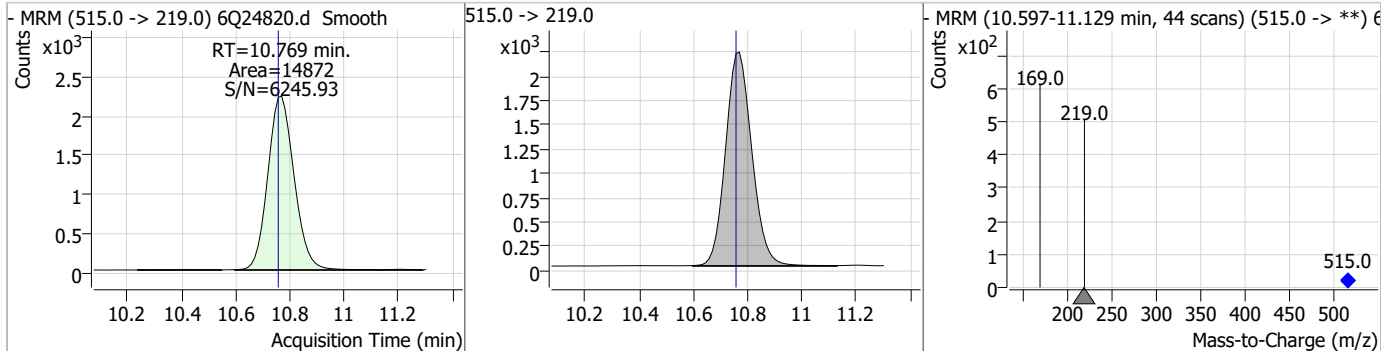
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	23.26	10.68	0.00	138417				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.66	10.69	0.00	69298				



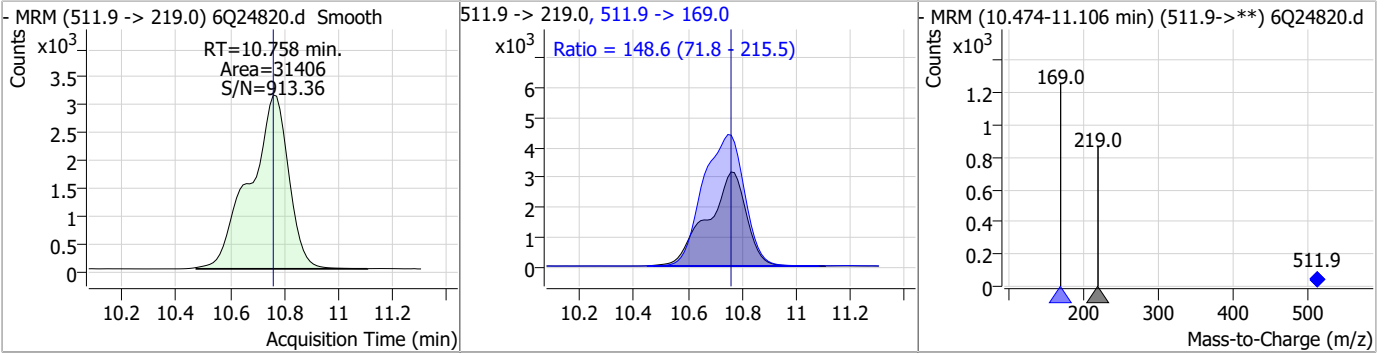
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.24	10.77	0.01	14872				



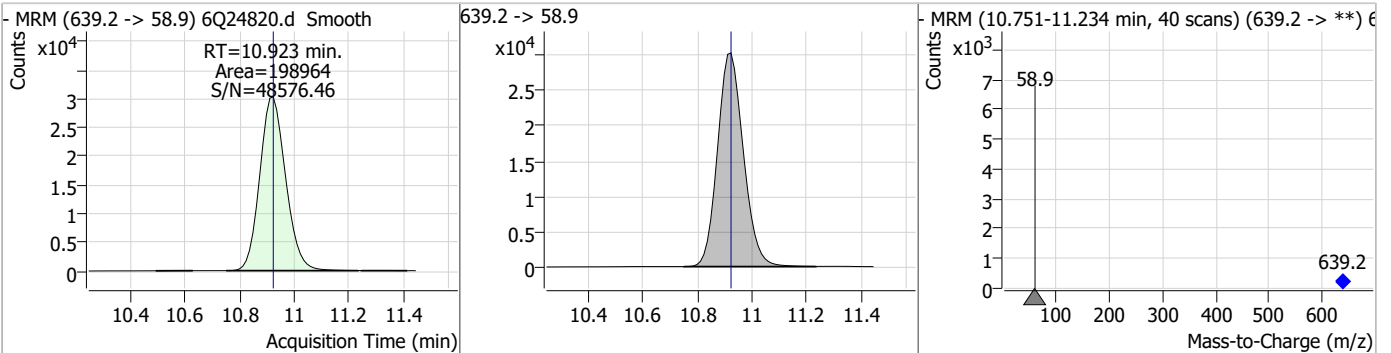
7.7.10
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Perfluorinated Compounds by LC/MS/MS

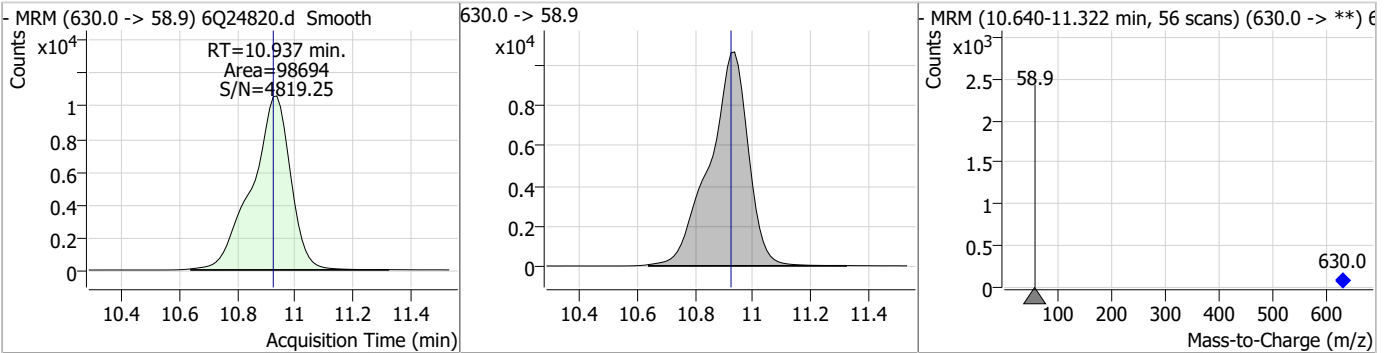
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOFA	4.69	10.76	0.00	31406	511.9 -> 169.0	148.6	71.8	215.5



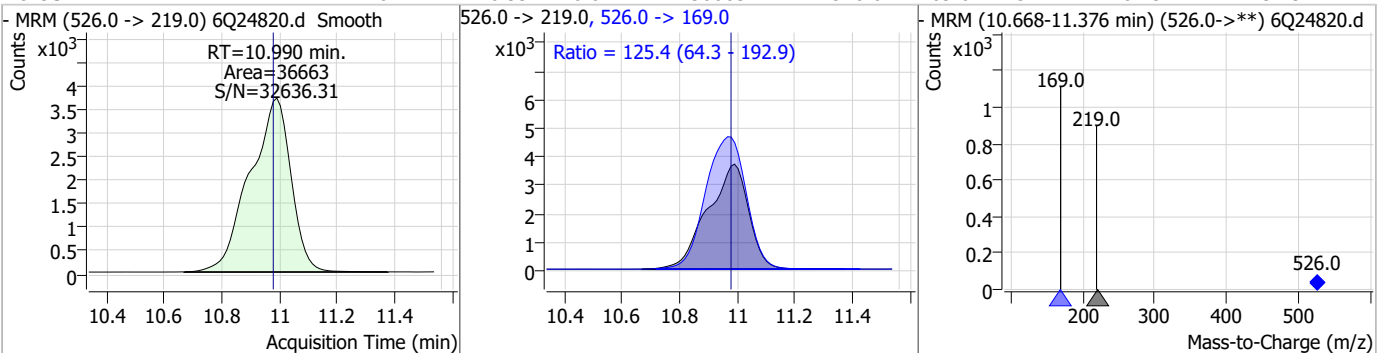
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.47	10.92	0.00	198964				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	10.58	10.94	0.01	98694				

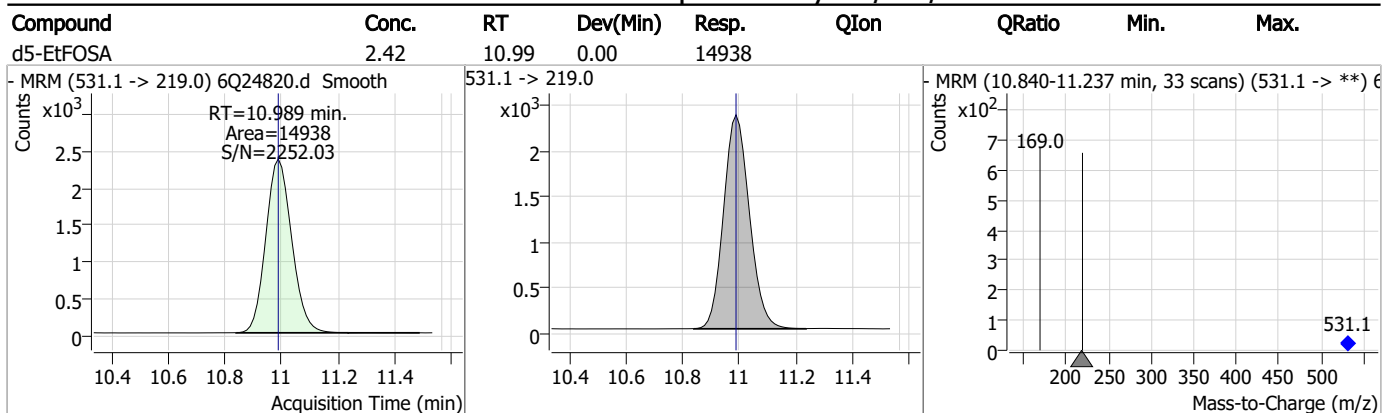


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOFA	4.67	10.99	0.01	36663	526.0 -> 169.0	125.4	64.3	192.9



7.7.10 7

Perfluorinated Compounds by LC/MS/MS



7.7.10
7

Manual Integration Approval Summary

Sample Number: S6Q355-ICV355 Method: EPA DRAFT 1633
Lab FileID: 6Q24820.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 22:44 Supervisor approved: 09/22/23 13:16 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.7.10.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24821.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 10:59:12 PM
 Sample Name : icv355-20
 Vial : P1-B2
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	293367	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	46018	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	106399	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	87648	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	116893	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	47144	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	46354	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	58475	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	53442	1.25 µg/L	0.000
M2-PFTeDA	9.772	715.2 -> 670.0	19787	1.25 µg/L	-0.012
M8-FOSA	9.670	506.1 -> 77.8	36599	2.50 µg/L	-0.012
M3-PFBS	5.571	302.1 -> 79.9	33332	2.50 µg/L	0.000
M3-PFHxS	7.301	402.1 -> 79.9	18552	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	16652	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	3740	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	5295	5.00 µg/L	0.000
M2-8:2FTS	7.986	529.1 -> 80.9	5304	5.00 µg/L	0.000
M3-MeFOSAA	8.244	573.2 -> 419.0	30152	5.00 µg/L	-0.012
M3-HFPO-DA	6.019	286.9 -> 168.9	60170	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	26624	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	129500	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	167997	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	13065	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	14355	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	23801	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	121169	5.00 µg/L	-0.012
18O2-PFHxS	7.313	403.0 -> 83.9	13519	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	126045	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	39714	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	51765	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	80057	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	3740	5.30 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.0%		
13C2-6:2FTS	6.974	429.1 -> 80.9	5295	5.32 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.5%		
13C2-8:2FTS	7.986	529.1 -> 80.9	5304	5.22 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 104.5%		
13C2-PFDoDA	9.079	615.1 -> 570.0	53442	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 106.3%		
13C2-PFTeDA	9.772	715.2 -> 670.0	19787	1.23 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 98.5%		
13C3-PFBS	5.571	302.1 -> 79.9	33332	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 101.8%		
13C3-PFHxS	7.301	402.1 -> 79.9	18552	2.53 µg/L	-0.012

7.7.11
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C4-PFBA	2.985	216.8 -> 171.9	293367	9.93 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C4-PFHpA	6.569	367.1 -> 322.0	87648	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.9%	
13C5-PFHxA	5.641	318.0 -> 273.0	106399	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.9%	
13C5-PFPeA	4.422	268.3 -> 223.0	46018	5.06 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C6-PFDA	8.198	519.1 -> 474.1	46354	1.28 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 102.6%	
13C7-PFUnDA	8.651	570.0 -> 525.1	58475	1.37 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C8-FOSA	9.670	506.1 -> 77.8	36599	2.34 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.7%	
13C8-PFOA	7.198	421.1 -> 376.0	116893	2.55 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.2%	
13C8-PFOS	8.348	507.1 -> 79.9	16652	2.38 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.0%	
13C9-PFNA	7.717	472.1 -> 427.0	47144	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.5%	
d3-MeFOSAA	8.244	573.2 -> 419.0	30152	4.64 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 92.8%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	60170	10.13 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.3%	
d3-MeFOSA	10.757	515.0 -> 219.0	14355	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
d5-EtFOSAA	8.452	589.2 -> 419.0	26624	4.80 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 95.9%	
d7-MeFOSE	10.678	623.2 -> 58.9	129500	25.50 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
d9-EtFOSE	10.923	639.2 -> 58.9	167997	25.20 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 100.8%	
d5-EtFOSA	10.989	531.1 -> 219.0	13065	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.2%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	141483	23.36 µg/L	97
		327.1 -> 80.9	51292		
6:2FTS	6.974	427.1 -> 407.0	110705	22.61 µg/L	98
		427.1 -> 80.9	40492		
8:2FTS	7.987	527.1 -> 507.0	74875	22.23 µg/L	90
		527.1 -> 80.8	28305		
EtFOSAA	8.452	584.2 -> 419.1	92205	22.90 µg/L	m 96
		584.2 -> 526.0	56861		
FOSA	9.672	498.1 -> 77.9	274500	21.74 µg/L	100
		498.1 -> 478.0	7495		
MeFOSAA	8.257	570.1 -> 419.0	154998	22.66 µg/L	95
		570.1 -> 483.0	33086		
PFBA	2.993	212.8 -> 168.9	188528	20.85 µg/L	100
PFBS	5.560	298.7 -> 79.9	341883	21.67 µg/L	96
		298.7 -> 98.8	133321		
PFDA	8.198	512.9 -> 469.0	885269	21.38 µg/L	99
		512.9 -> 219.0	142683		
PFDoDA	9.080	613.1 -> 569.0	692457	17.79 µg/L	99
		613.1 -> 319.0	85986		
PFDS	9.233	599.0 -> 79.9	107269	21.96 µg/L	99

7.7.11
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	52522			
PFHpA	6.569	363.1 -> 319.0	955815	21.45	µg/L	97
		363.1 -> 169.0	141136			
PFHpS	7.856	449.0 -> 79.9	180920	22.19	µg/L	97
		449.0 -> 98.9	88328			
PFHxA	5.644	313.0 -> 269.0	842637	22.78	µg/L	99
		313.0 -> 118.9	35966			
PFHxS	7.302	398.7 -> 79.9	264745	22.08	µg/L	m 99
		398.7 -> 98.9	128133			
PFNA	7.717	463.0 -> 419.0	711318	23.48	µg/L	98
		463.0 -> 219.0	165450			
PFNS	8.814	548.8 -> 79.9	180259	22.28	µg/L	93
		548.8 -> 98.9	93259			
PFOA	7.200	413.0 -> 369.0	1077029	19.98	µg/L	98
		413.0 -> 169.0	197207			
PFOS	8.350	498.9 -> 79.9	200394	21.29	µg/L	m 86
		498.9 -> 98.8	83942			
PFPeA	4.424	263.0 -> 219.0	497053	21.93	µg/L	100
PFPeS	6.620	349.1 -> 79.9	212291	21.30	µg/L	98
		349.1 -> 98.9	100945			
PFTeDA	9.785	713.1 -> 669.0	589568	22.27	µg/L	98
		713.1 -> 168.9	44149			
PFTrDA	9.452	663.0 -> 619.0	735727	17.74	µg/L	98
		663.0 -> 168.9	61643			
PFUnDA	8.652	563.1 -> 519.0	647548	19.07	µg/L	99
		563.1 -> 269.1	93044			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	438284	22.44	µg/L	98
		632.9 -> 452.9	130798			
9Cl-PF3ONS	8.678	530.8 -> 351.0	723144	20.98	µg/L	96
		532.8 -> 353.0	243125			
ADONA	6.817	376.9 -> 250.9	1769297	19.92	µg/L	98
		376.9 -> 84.8	449378			
HFPO-DA	6.020	284.9 -> 168.9	118206	20.70	µg/L	99
		284.9 -> 184.9	17147			
3:3FTCA	3.858	241.0 -> 177.0	31183	19.77	µg/L	100
		241.0 -> 117.0	2980			
5:3FTCA	6.283	341.0 -> 237.1	144427	22.25	µg/L	96
		341.0 -> 217.0	98529			
7:3FTCA	7.669	441.0 -> 316.9	78071	20.62	µg/L	100
		441.0 -> 336.9	176742			
EtFOSA	10.990	526.0 -> 219.0	130923	19.07	µg/L	76
		526.0 -> 169.0	131900			
EtFOSE	10.937	630.0 -> 58.9	851115	108.09	µg/L	100
MeFOSA	10.771	511.9 -> 219.0	117755	18.23	µg/L	74
		511.9 -> 169.0	131276			
MeFOSE	10.703	616.1 -> 58.9	599904	107.91	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	50313	20.96	µg/L	93
		699.1 -> 98.8	28039			
NFDHA	5.524	295.0 -> 201.0	92988	21.25	µg/L	99
		295.0 -> 84.9	23249			
PFMBA	4.850	279.0 -> 85.1	343326	21.39	µg/L	100
PFMPA	3.551	229.0 -> 84.9	255776	21.53	µg/L	100
PFEESA	6.112	314.8 -> 134.9	906863	18.63	µg/L	100
		314.8 -> 82.9	31725			

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

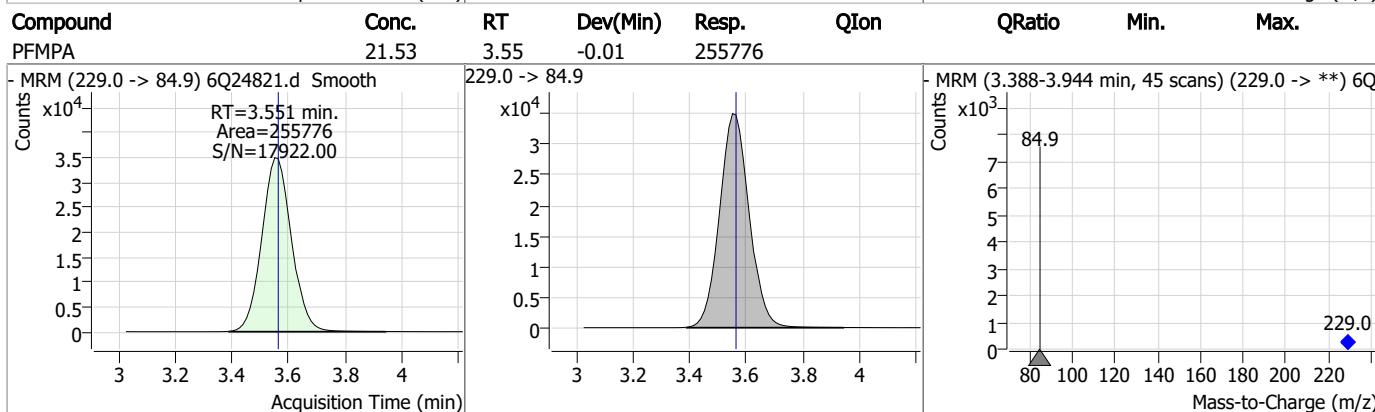
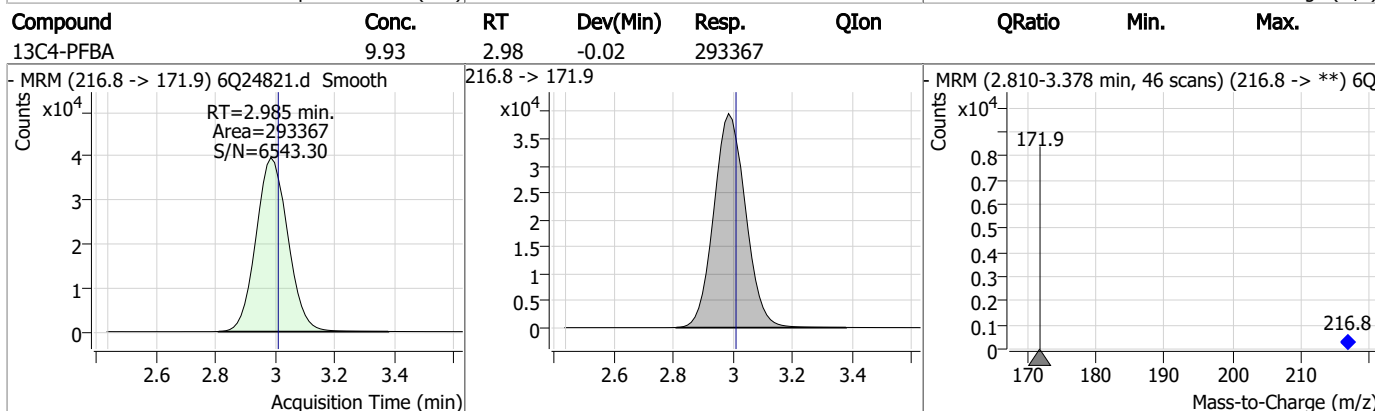
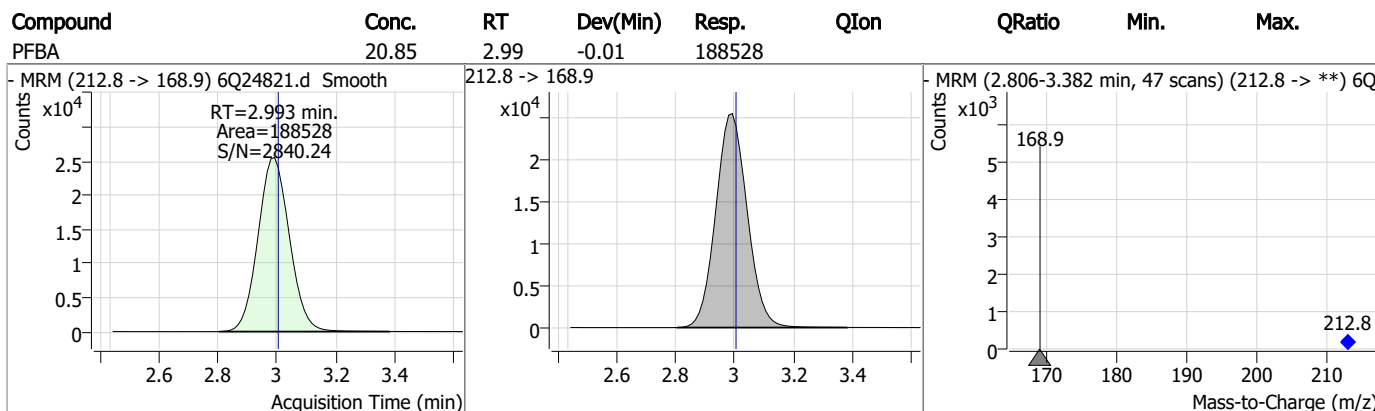
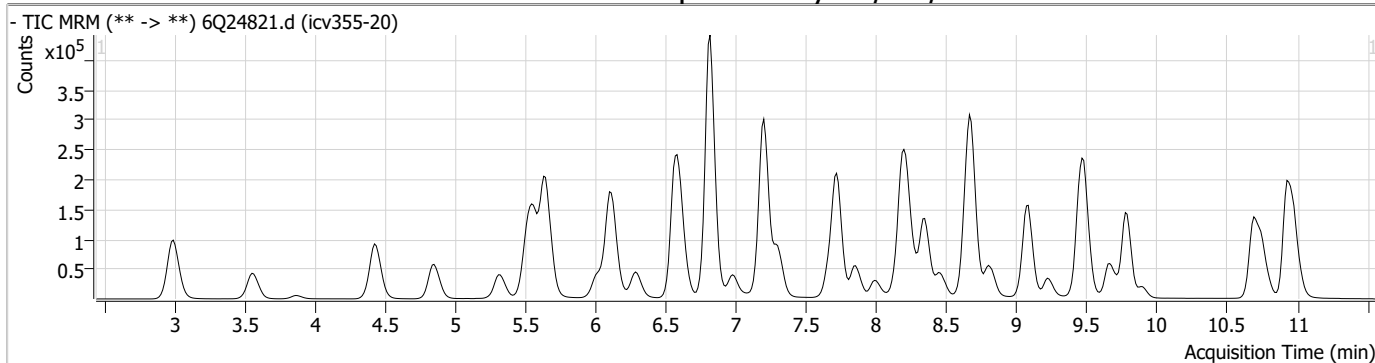
Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
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7:7.11

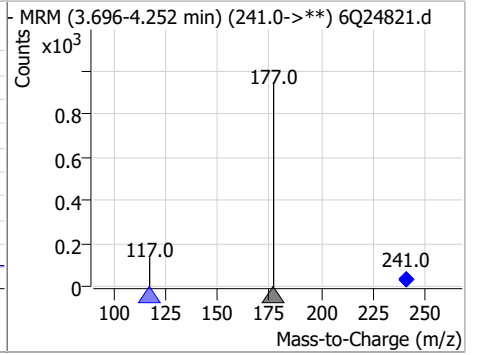
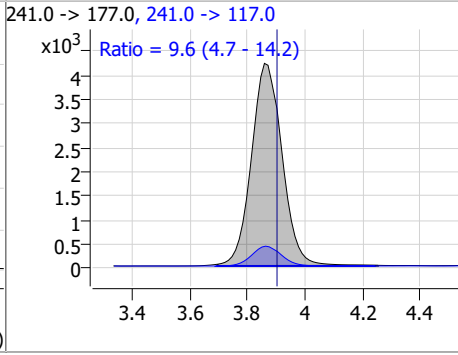
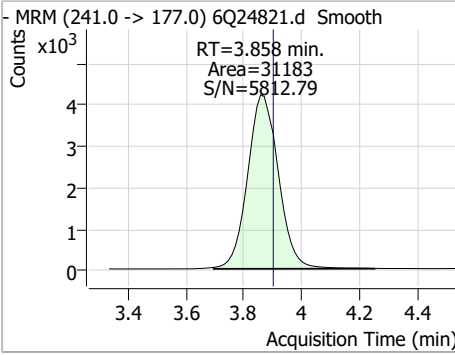
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Perfluorinated Compounds by LC/MS/MS

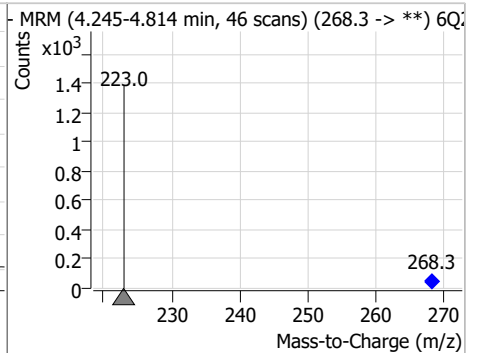
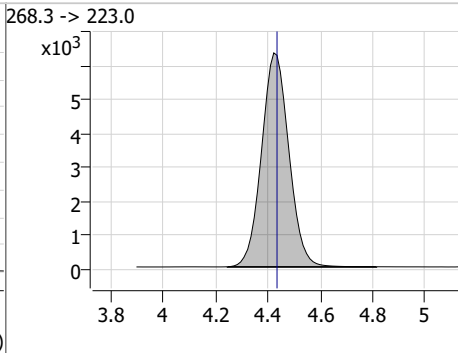
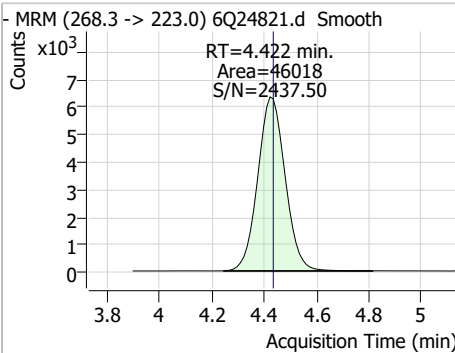


Perfluorinated Compounds by LC/MS/MS

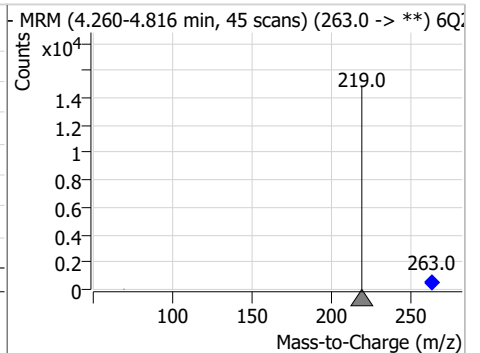
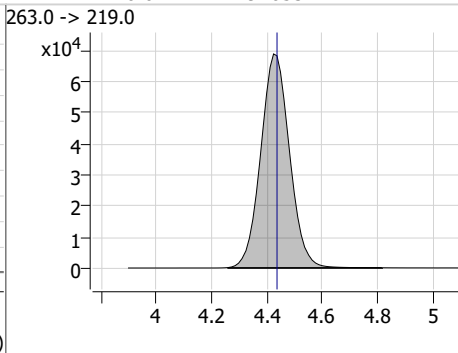
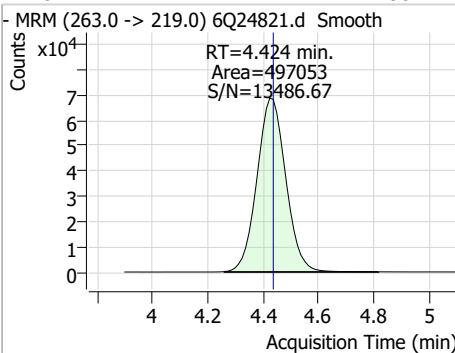
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	19.77	3.86	-0.04	31183	241.0 -> 117.0	9.6	4.7	14.2



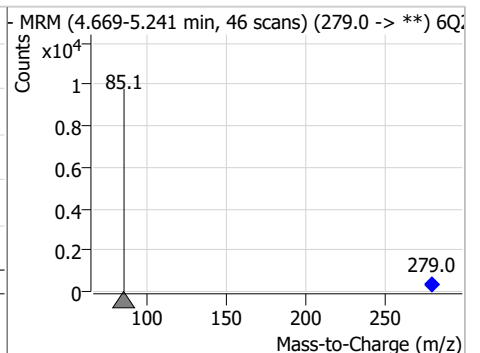
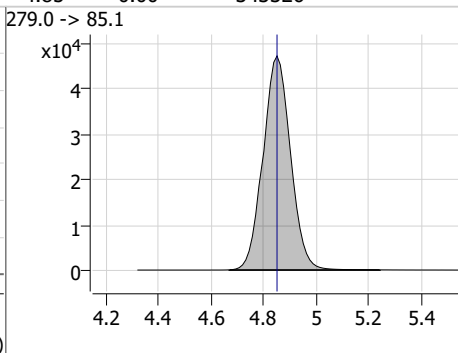
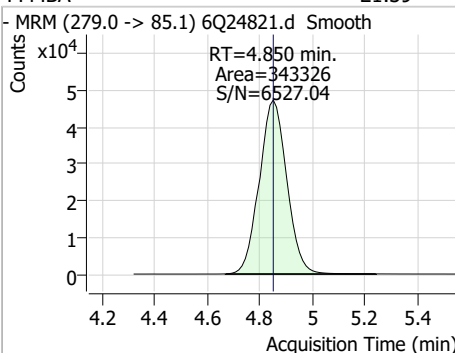
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFPeA	5.06	4.42	-0.01	46018				



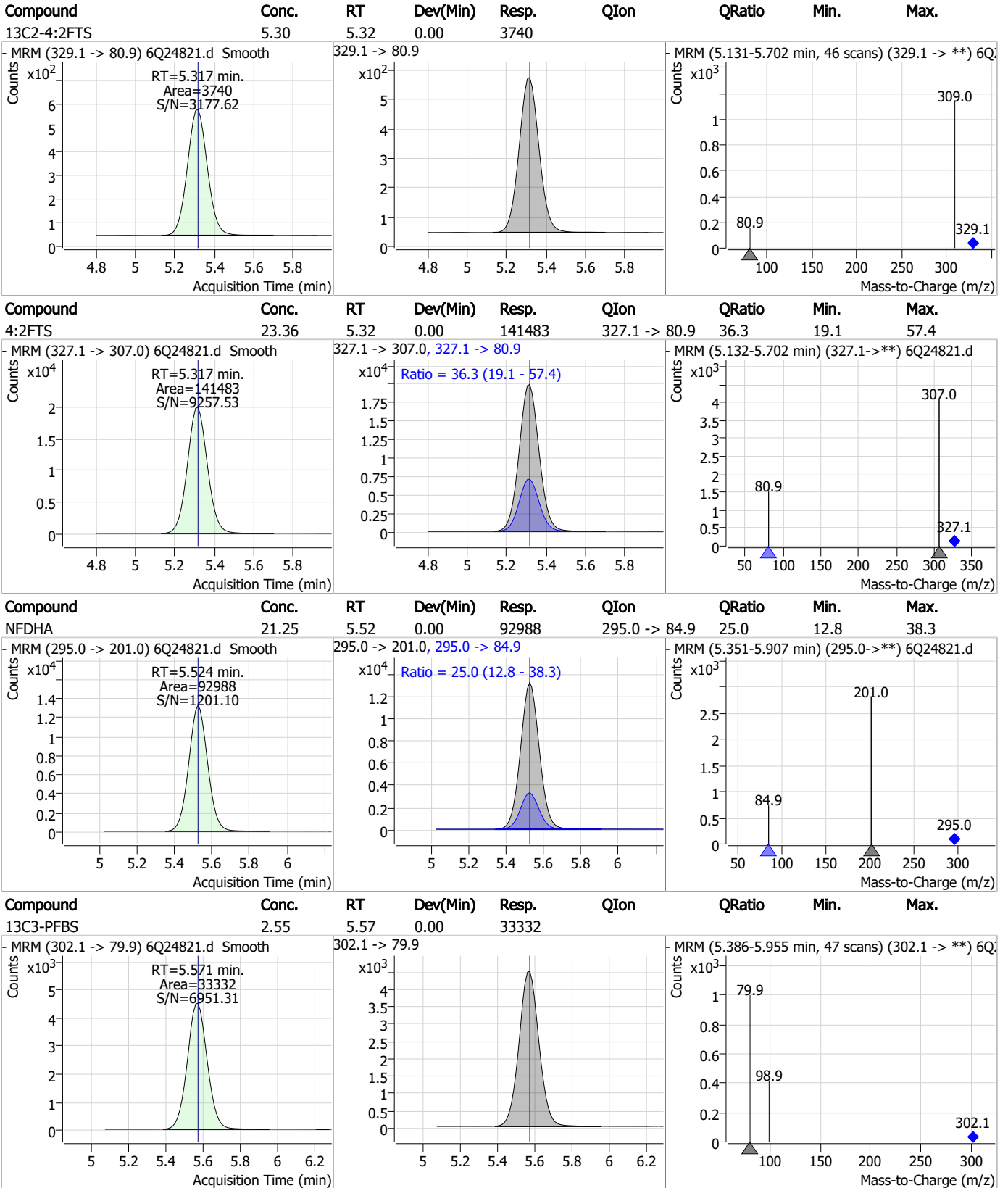
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFPeA	21.93	4.42	-0.01	497053				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFMBA	21.39	4.85	0.00	343326				



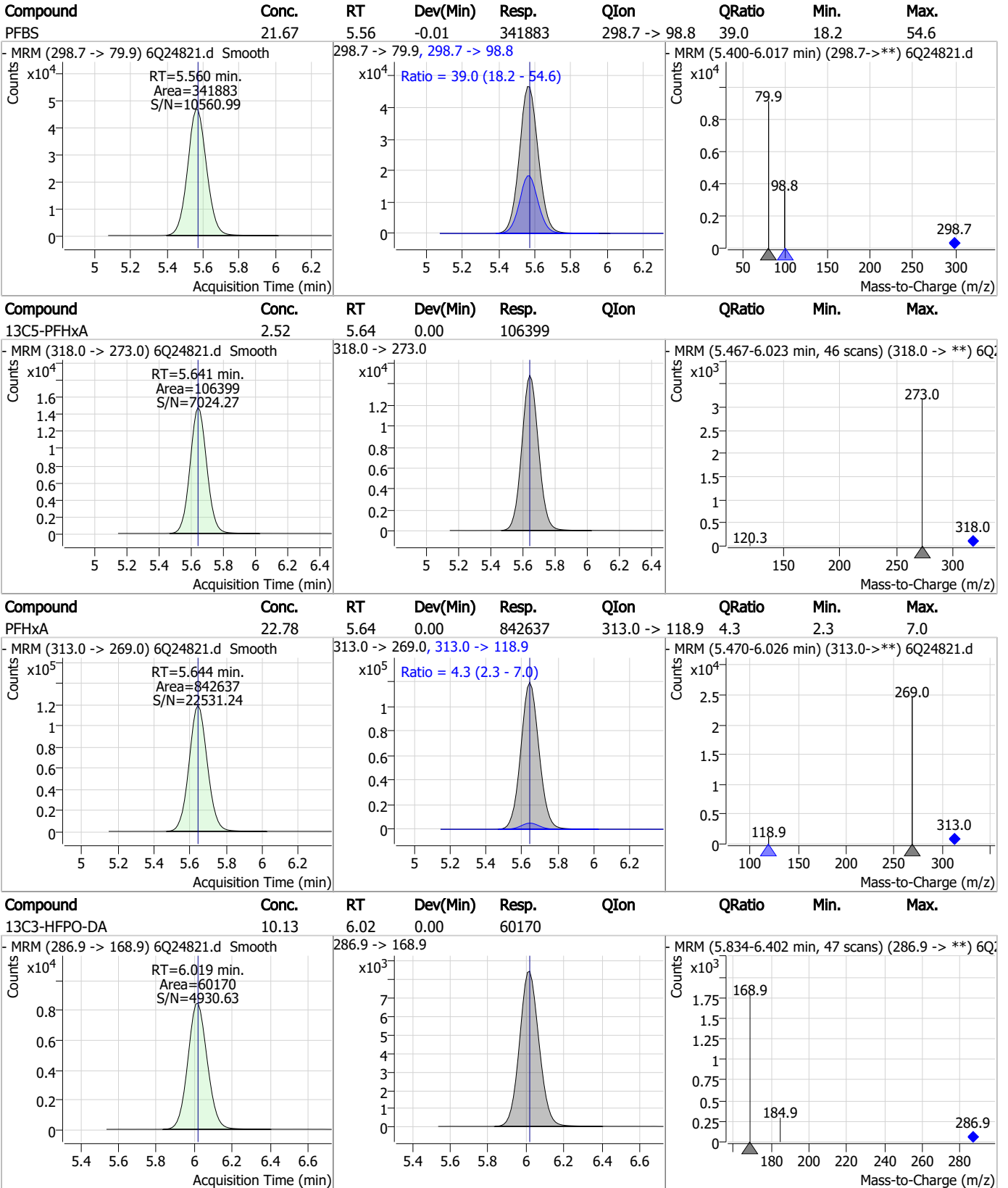
Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



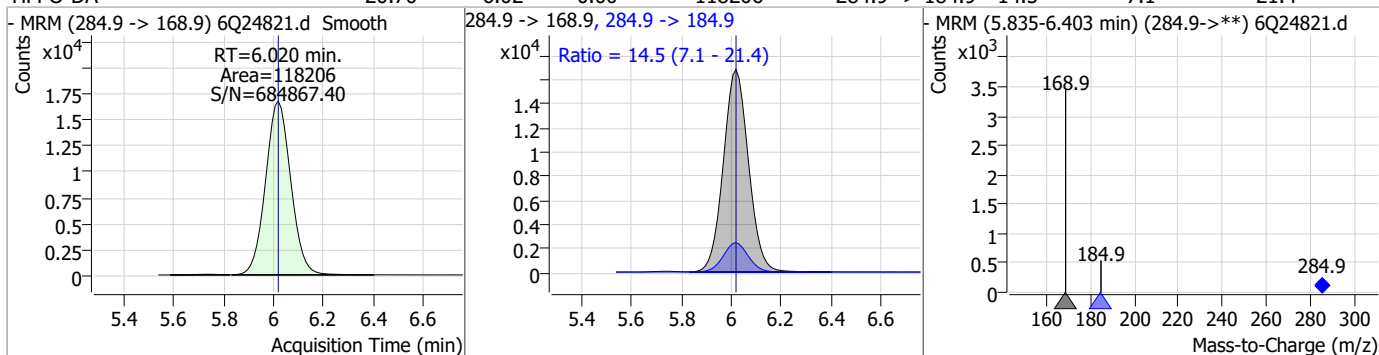
7.7.11

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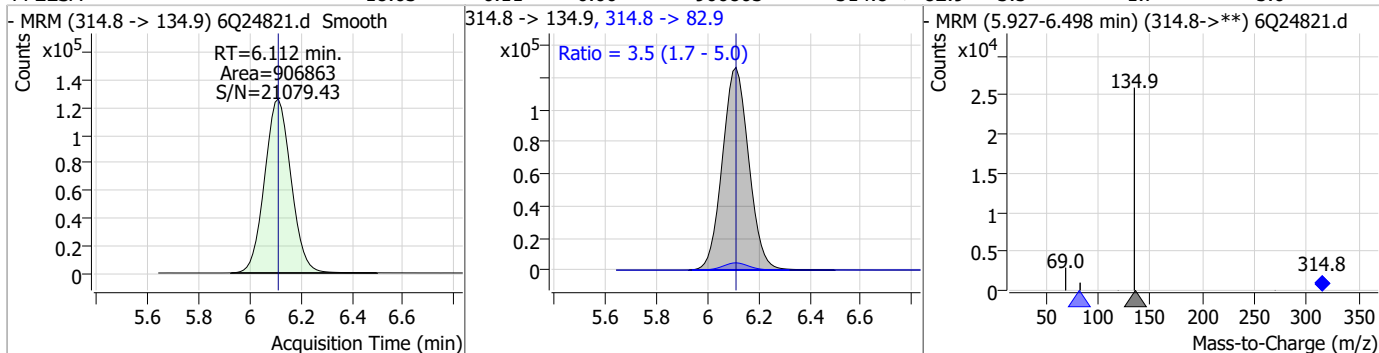


Perfluorinated Compounds by LC/MS/MS

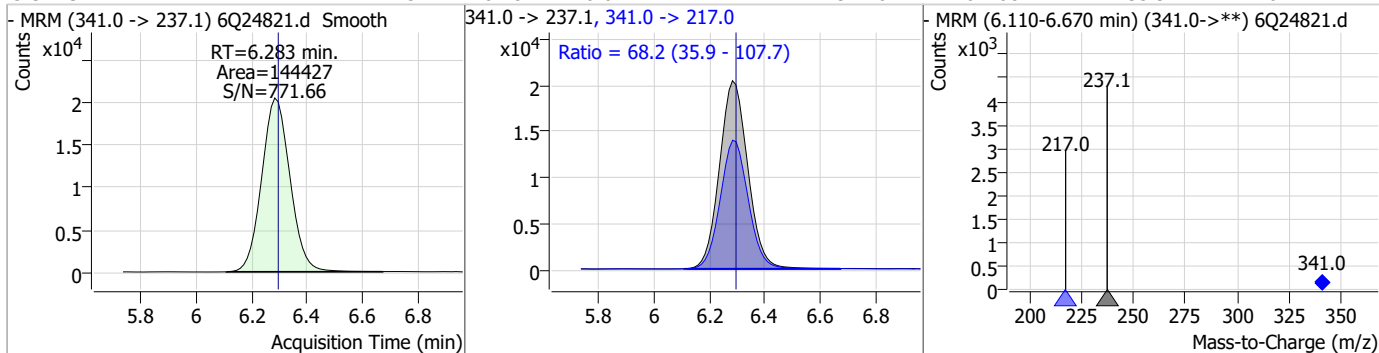
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	20.70	6.02	0.00	118206	284.9 -> 184.9	14.5	7.1	21.4



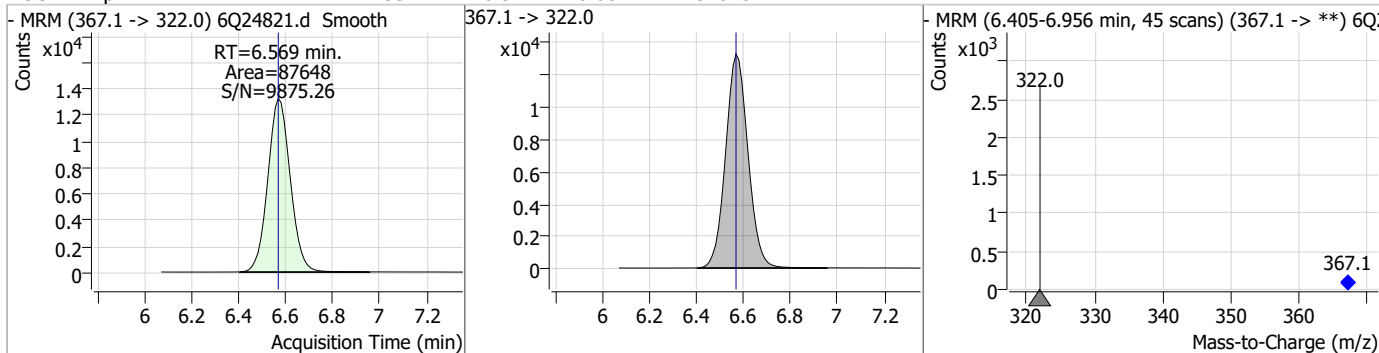
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	18.63	6.11	0.00	906863	314.8 -> 82.9	3.5	1.7	5.0



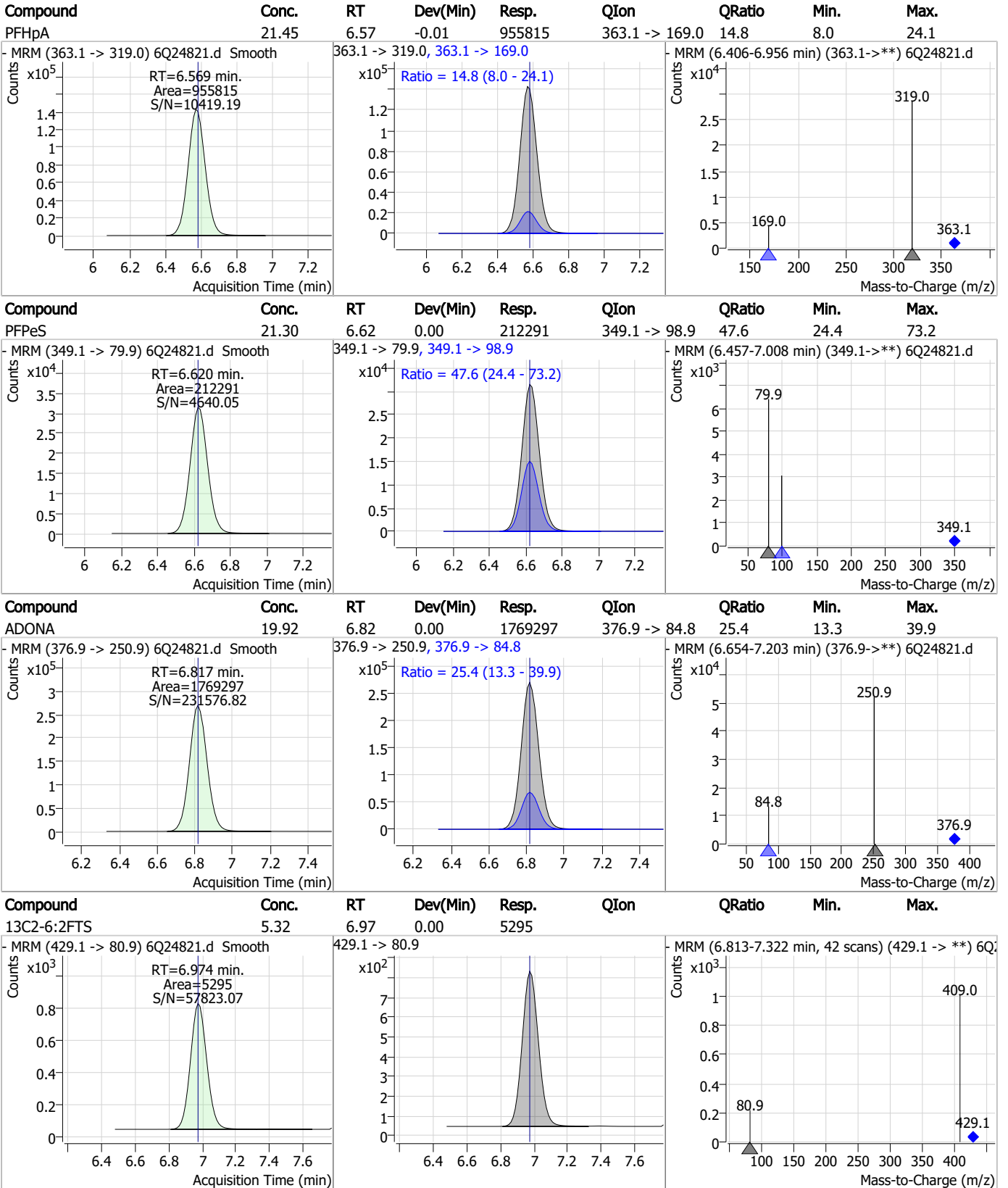
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	22.25	6.28	-0.01	144427	341.0 -> 217.0	68.2	35.9	107.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpa	2.55	6.57	0.00	87648	367.1 -> 322.0			



Perfluorinated Compounds by LC/MS/MS

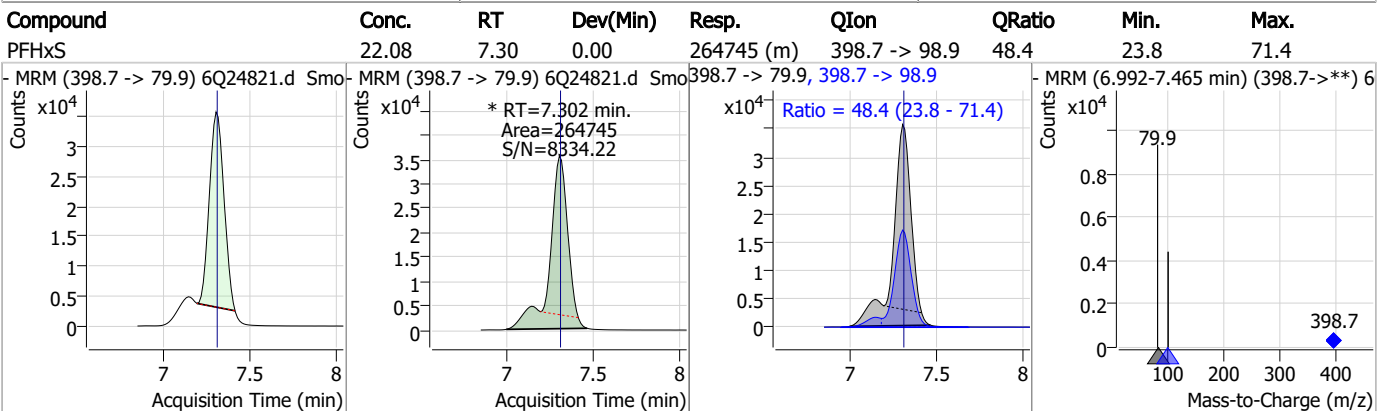
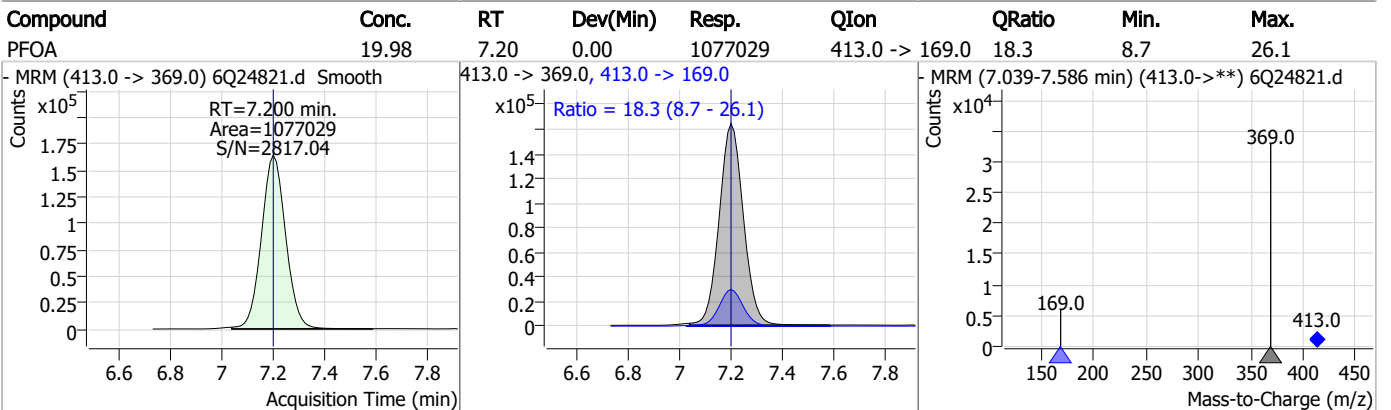
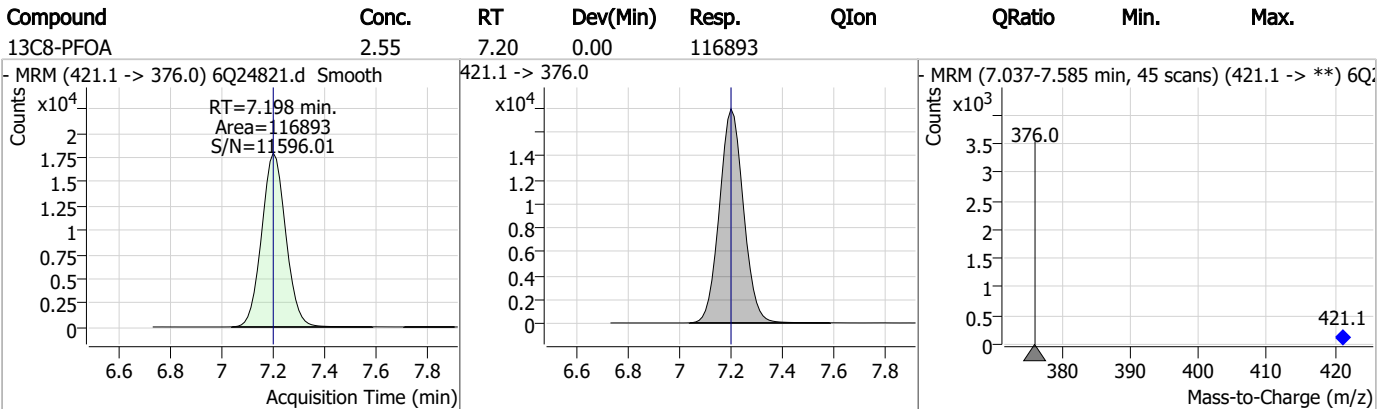
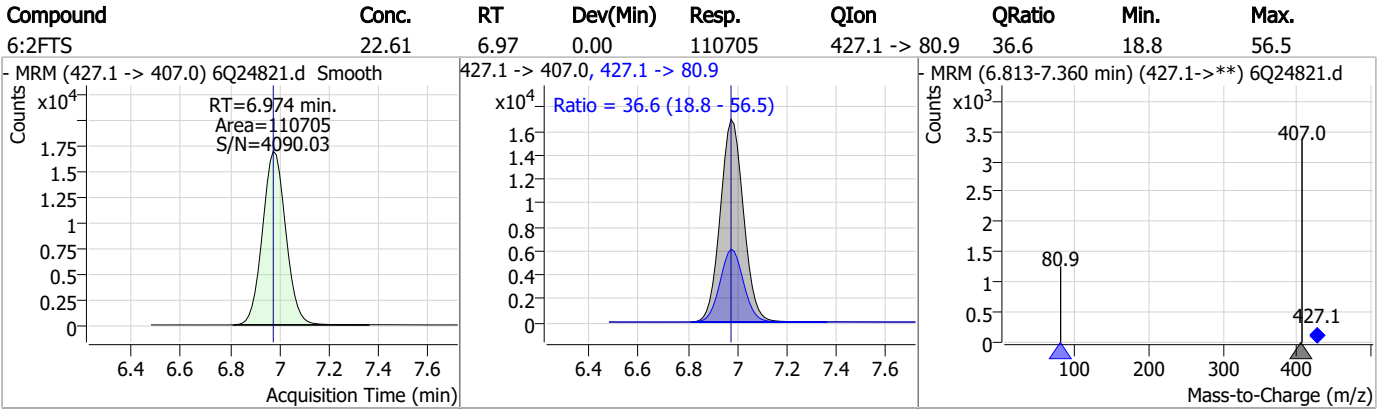


7.7.11

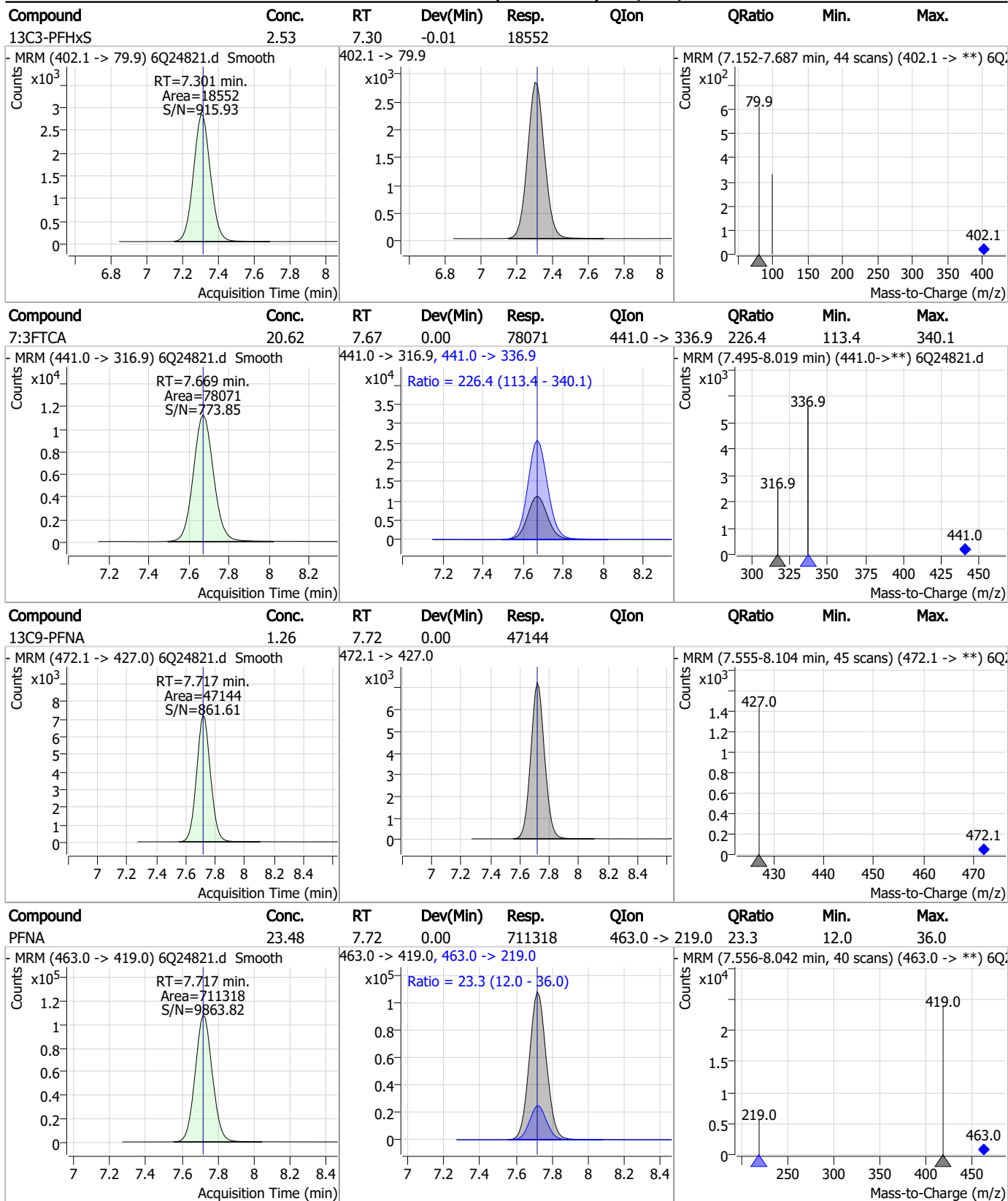
7



Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



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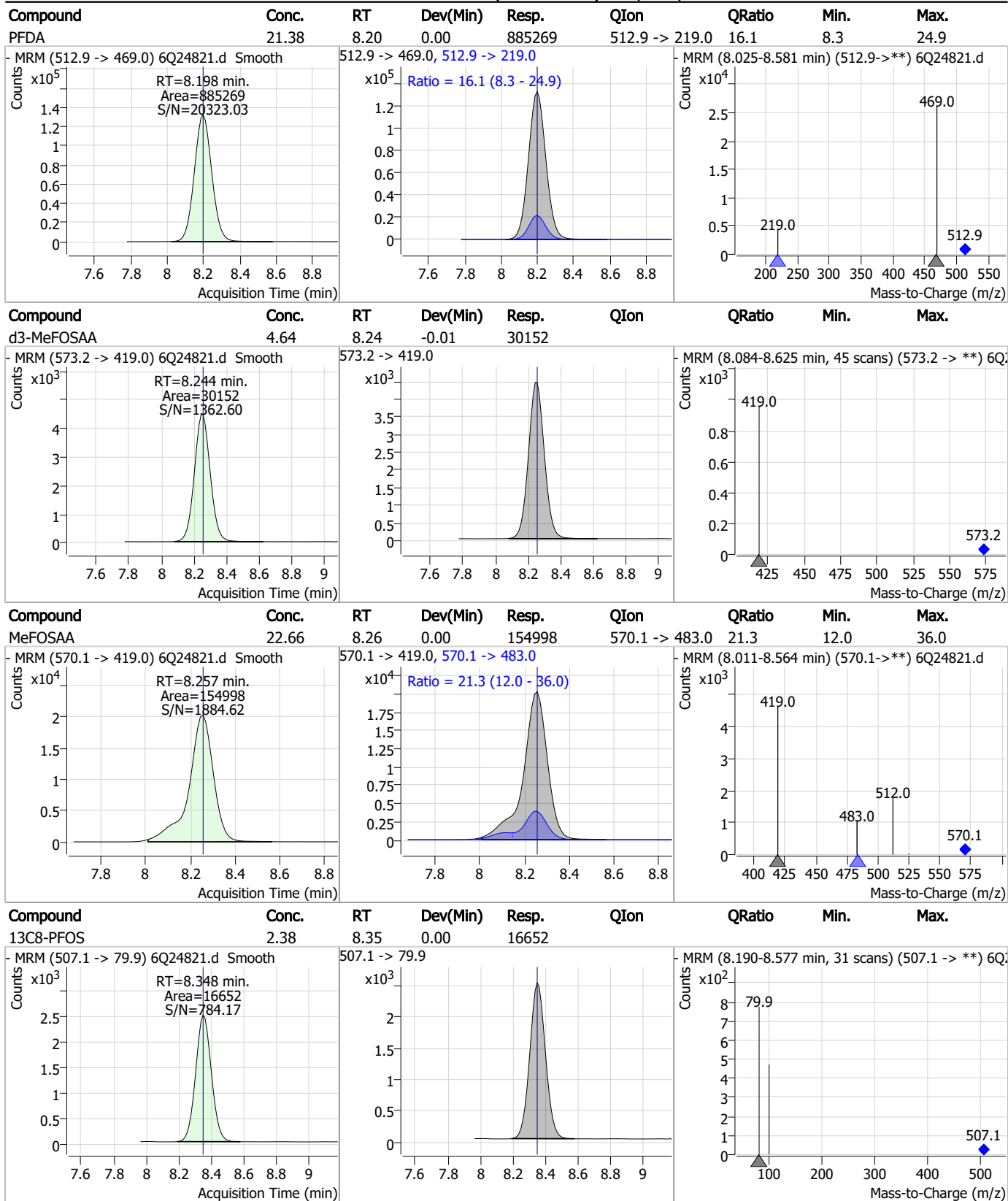
Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	22.19	7.86	0.00	180920	449.0 -> 98.9	48.8	23.5	70.6
13C2-8:2FTS	5.22	7.99	0.00	5304				
8:2FTS	22.23	7.99	-0.01	74875	527.1 -> 80.8	37.8	16.2	48.5
13C6-PFDA	1.28	8.20	0.00	46354				

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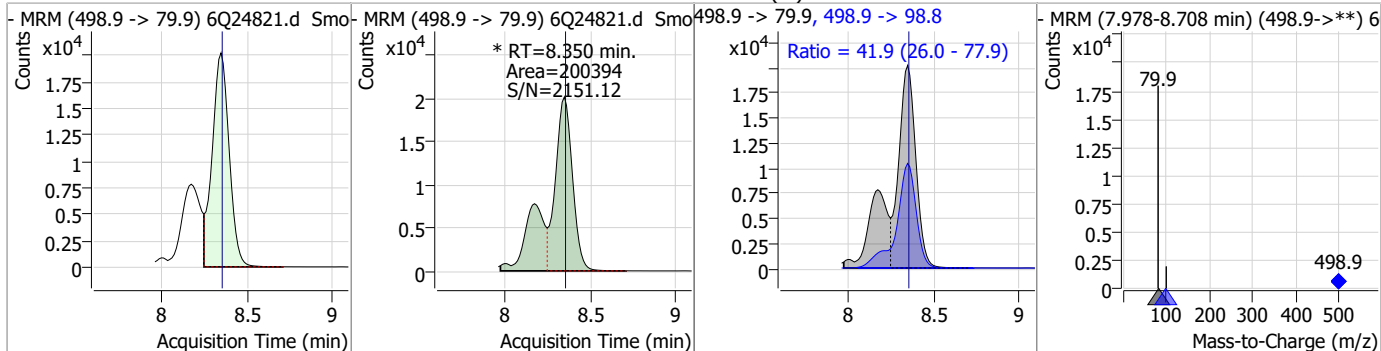
Perfluorinated Compounds by LC/MS/MS



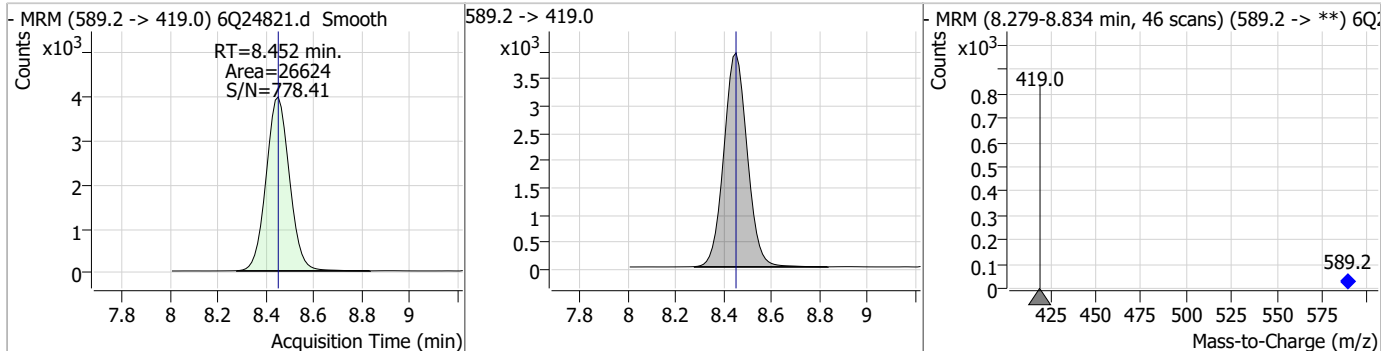
7.7.11
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Perfluorinated Compounds by LC/MS/MS

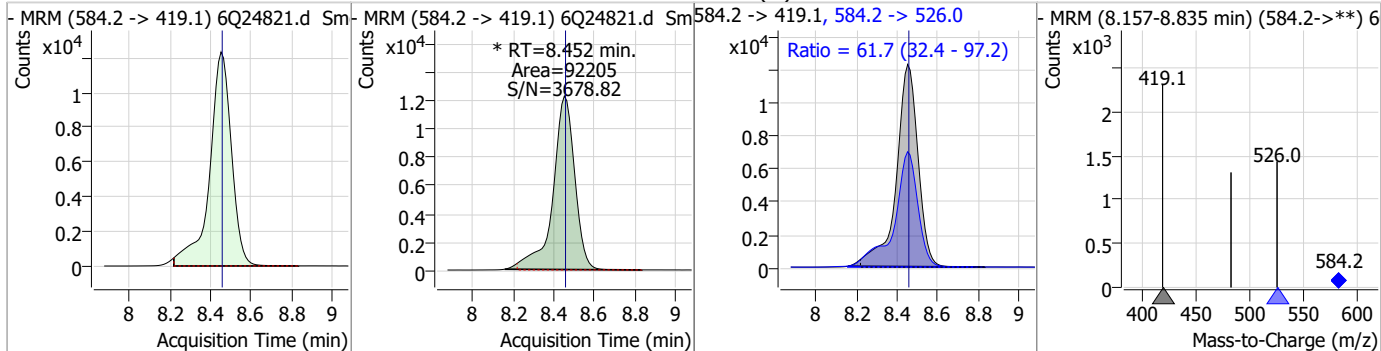
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	21.29	8.35	0.00	200394 (m)	498.9 -> 98.8	41.9	26.0	77.9



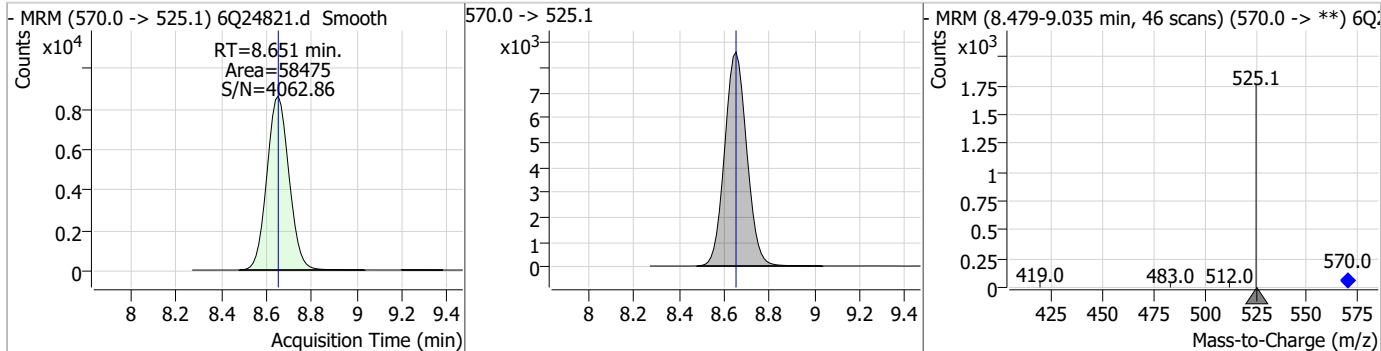
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	4.80	8.45	0.00	26624				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	22.90	8.45	0.00	92205 (m)	584.2 -> 526.0	61.7	32.4	97.2

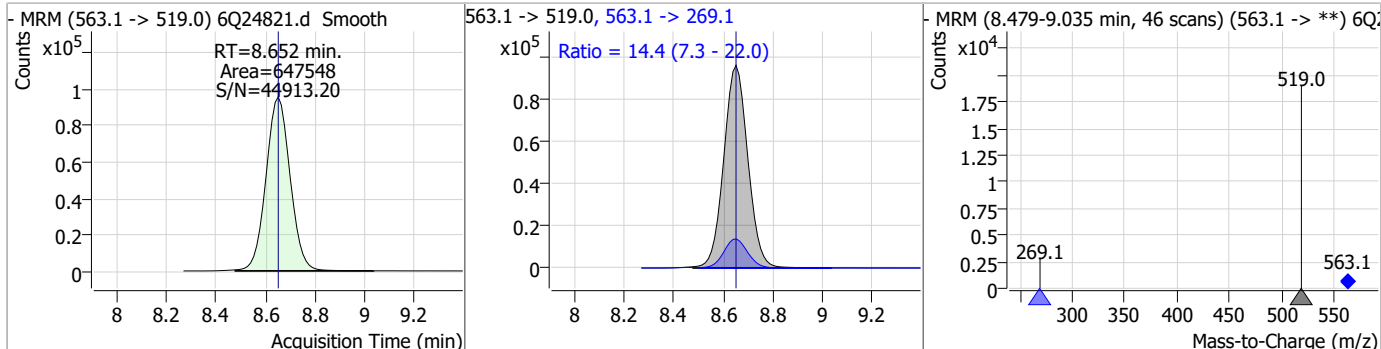


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.37	8.65	0.00	58475				

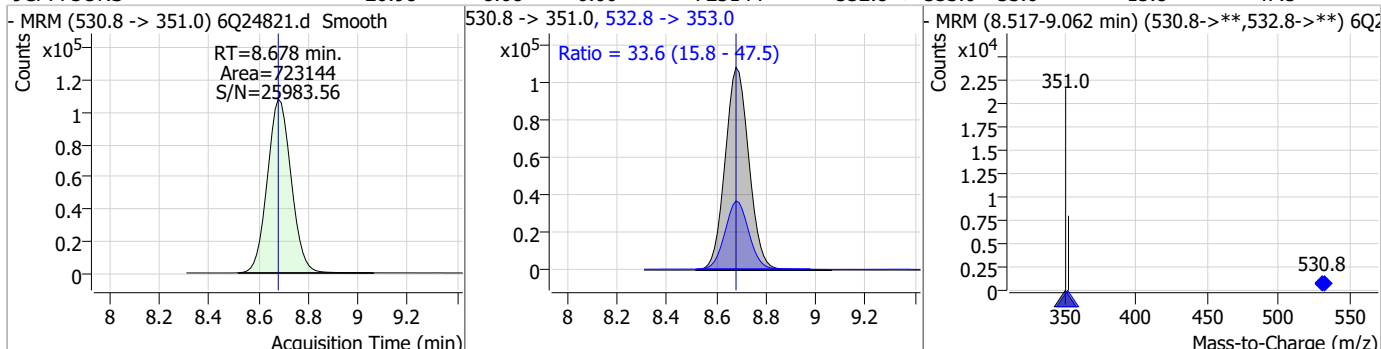


Perfluorinated Compounds by LC/MS/MS

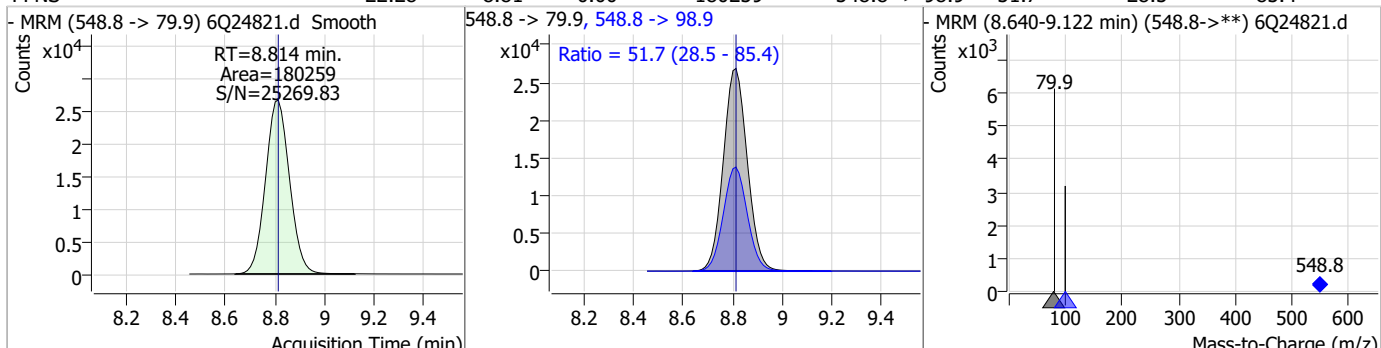
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	19.07	8.65	0.00	647548	563.1 -> 269.1	14.4	7.3	22.0



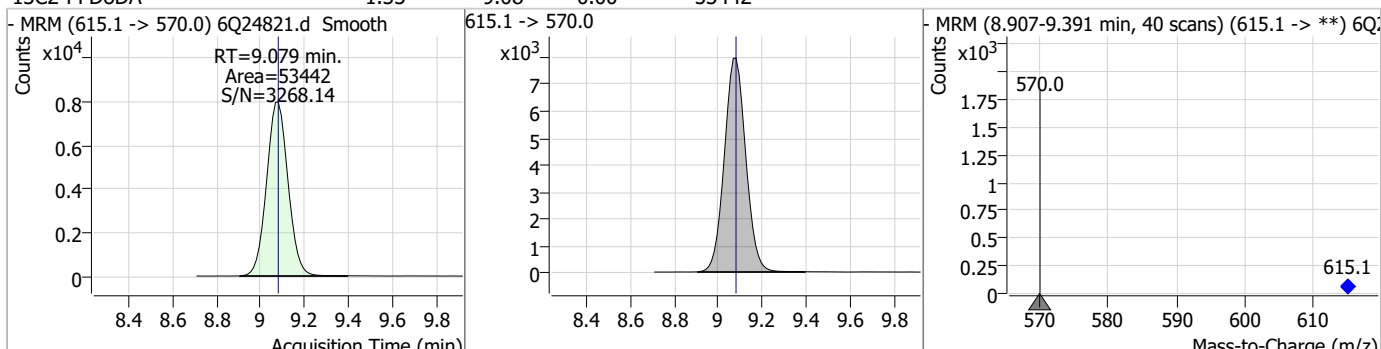
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9CI-PF3ONS	20.98	8.68	0.00	723144	532.8 -> 353.0	33.6	15.8	47.5



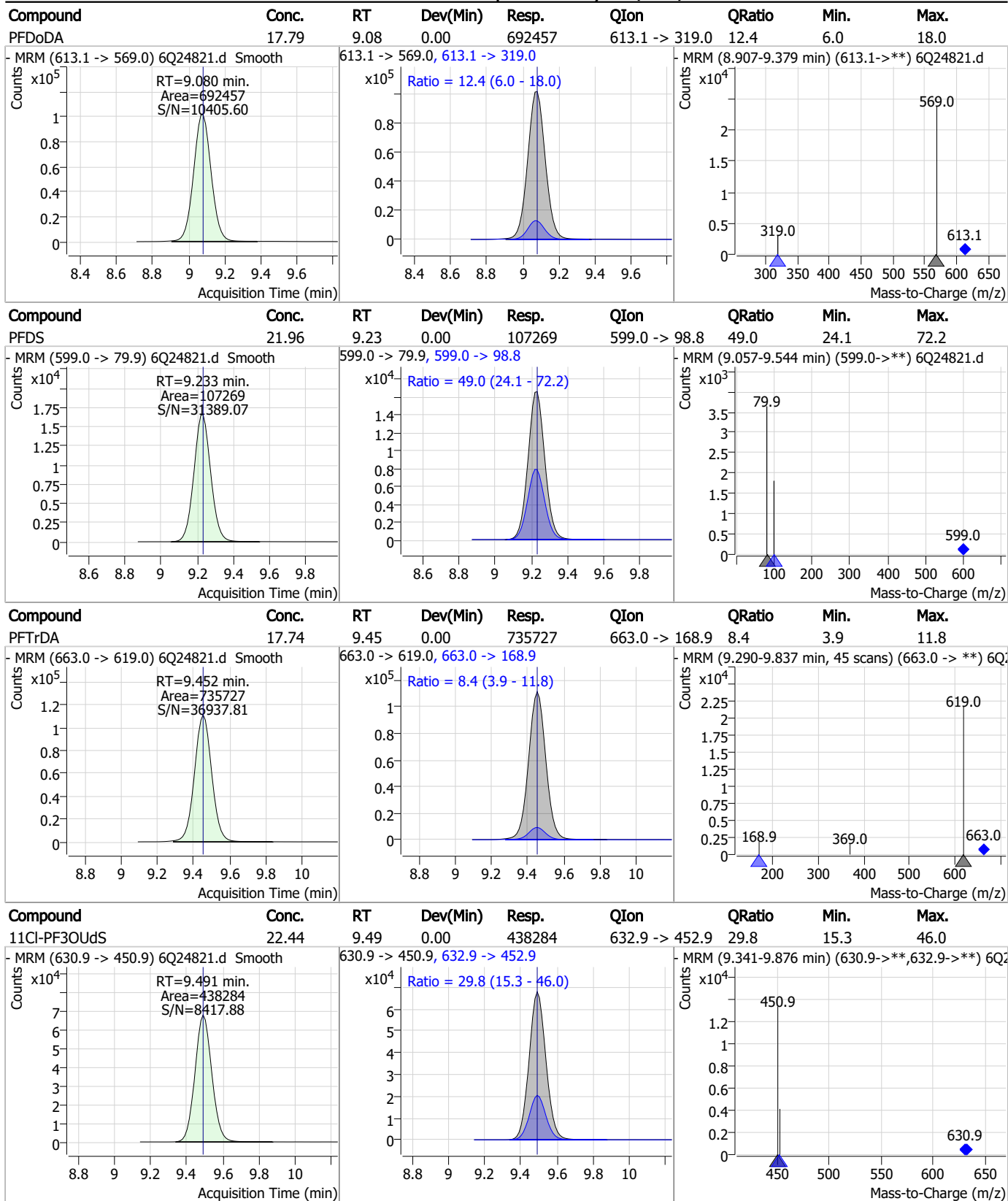
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	22.28	8.81	0.00	180259	548.8 -> 98.9	51.7	28.5	85.4



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.33	9.08	0.00	53442	615.1 -> 570.0			



Perfluorinated Compounds by LC/MS/MS

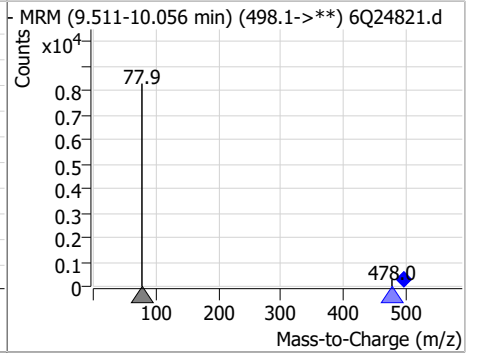
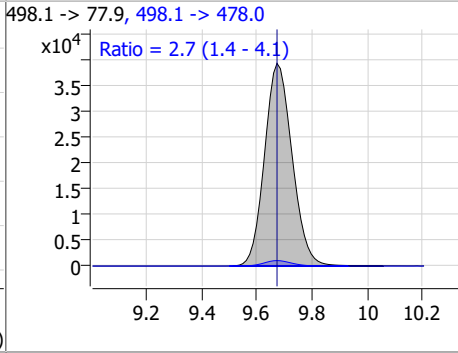
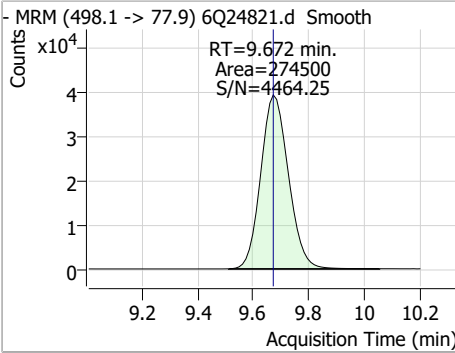


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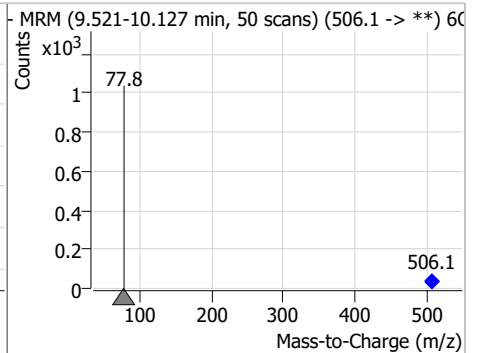
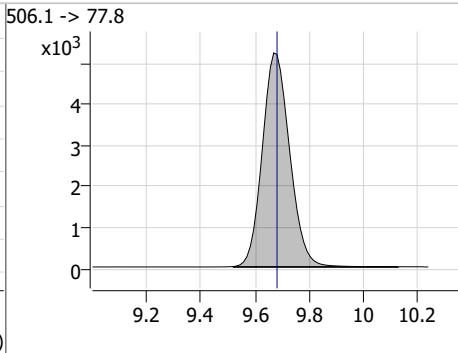
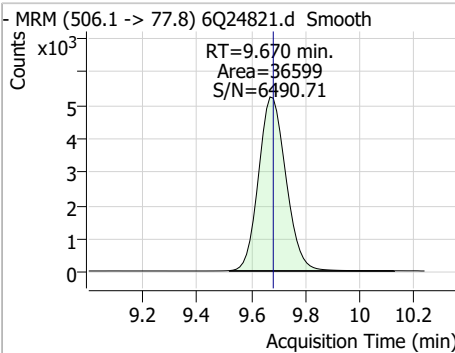


Perfluorinated Compounds by LC/MS/MS

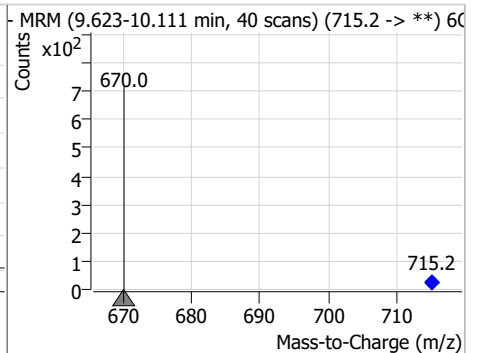
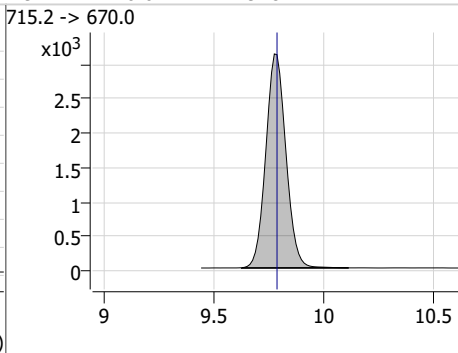
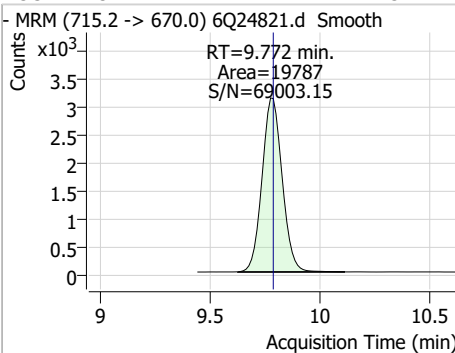
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	21.74	9.67	0.00	274500	498.1 -> 478.0	2.7	1.4	4.1



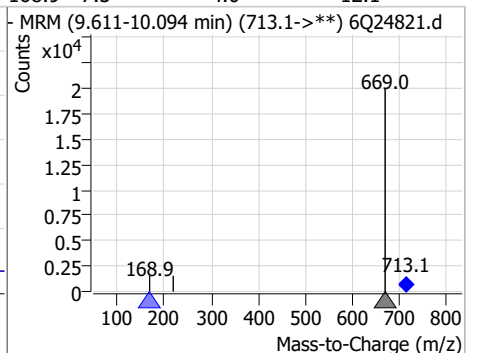
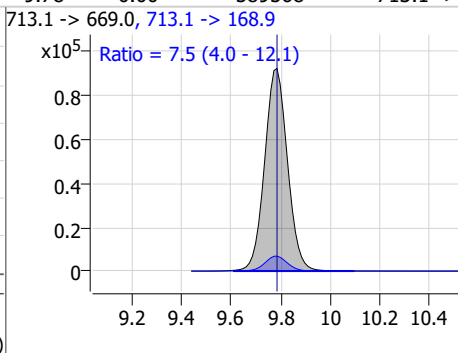
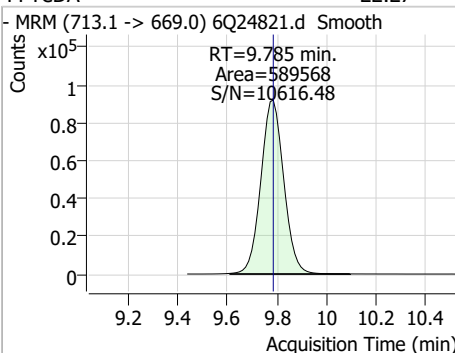
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.34	9.67	-0.01	36599				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.23	9.77	-0.01	19787				

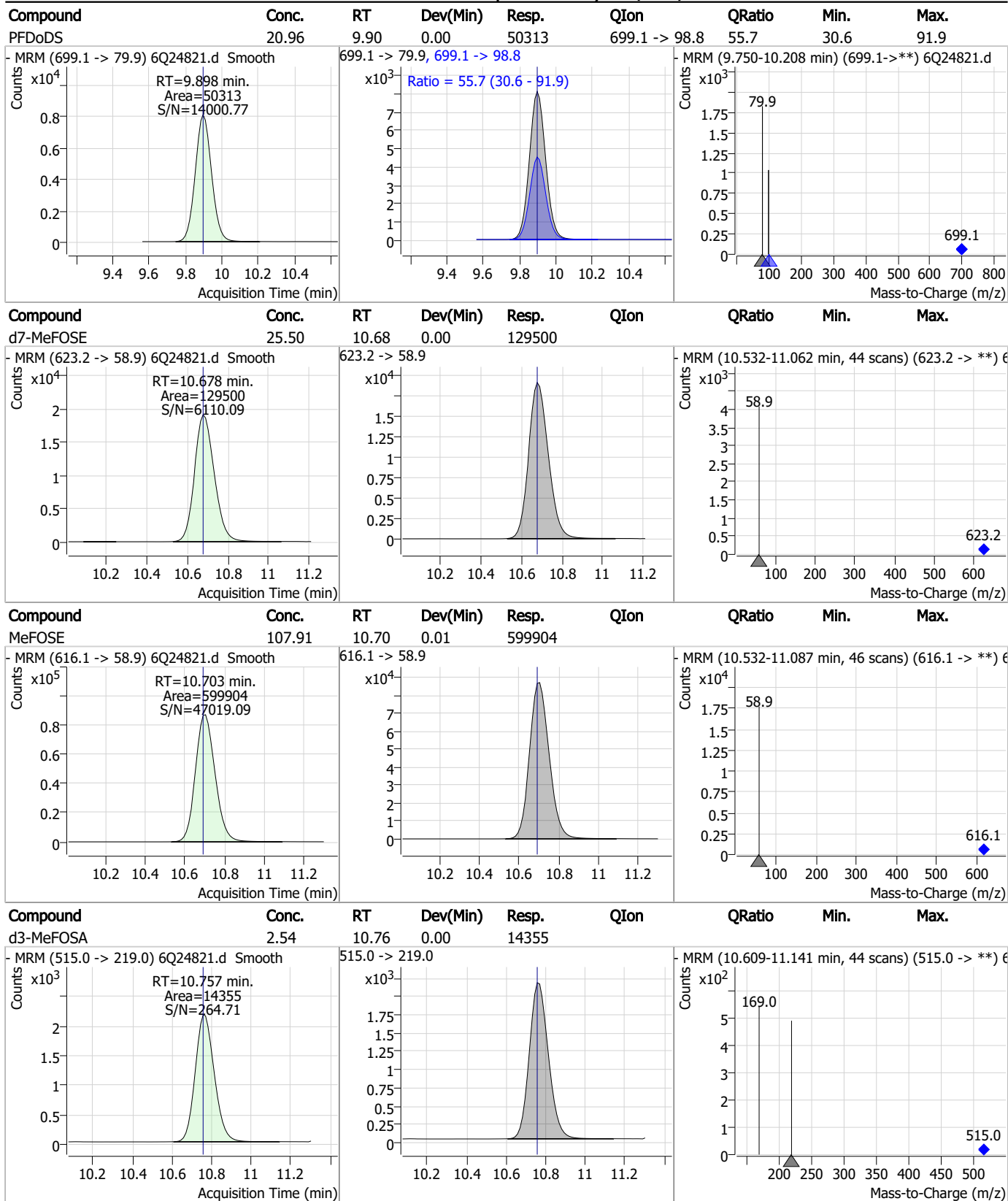


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	22.27	9.78	0.00	589568	713.1 -> 168.9	7.5	4.0	12.1



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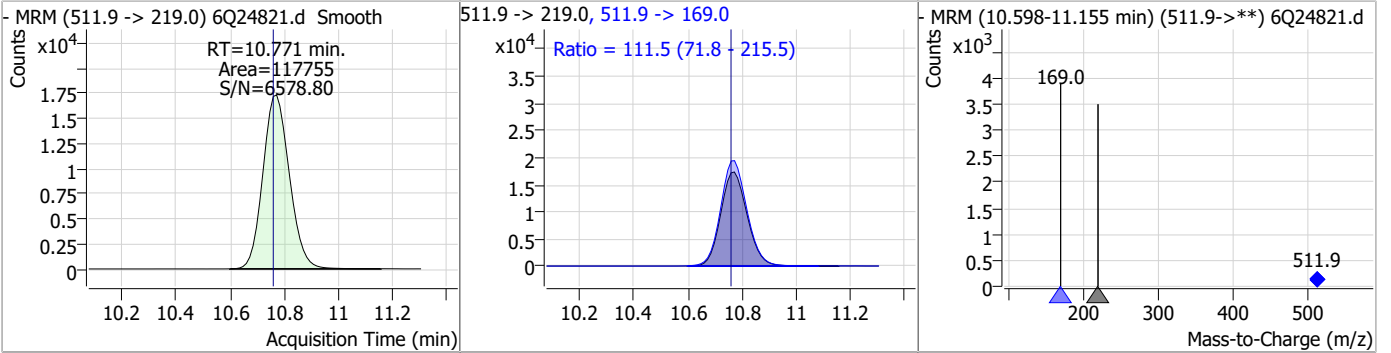
Perfluorinated Compounds by LC/MS/MS



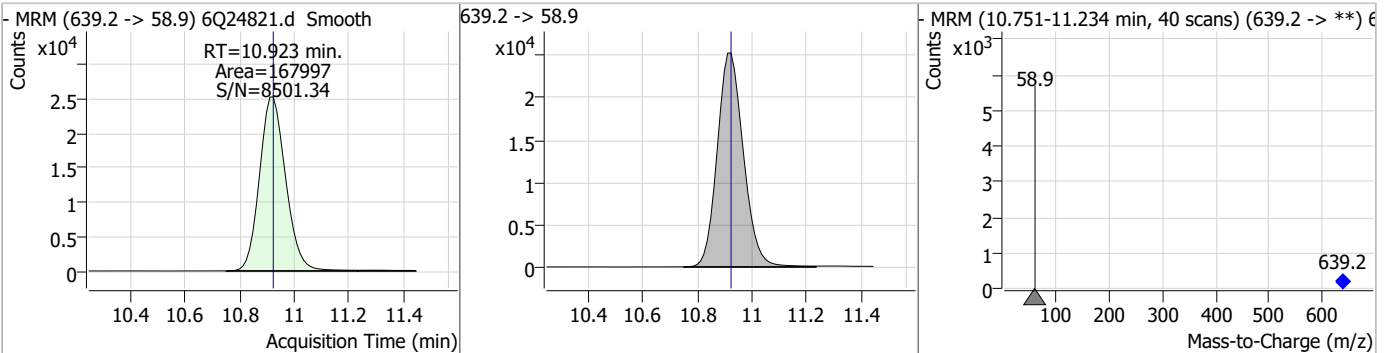
7.7.11
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Perfluorinated Compounds by LC/MS/MS

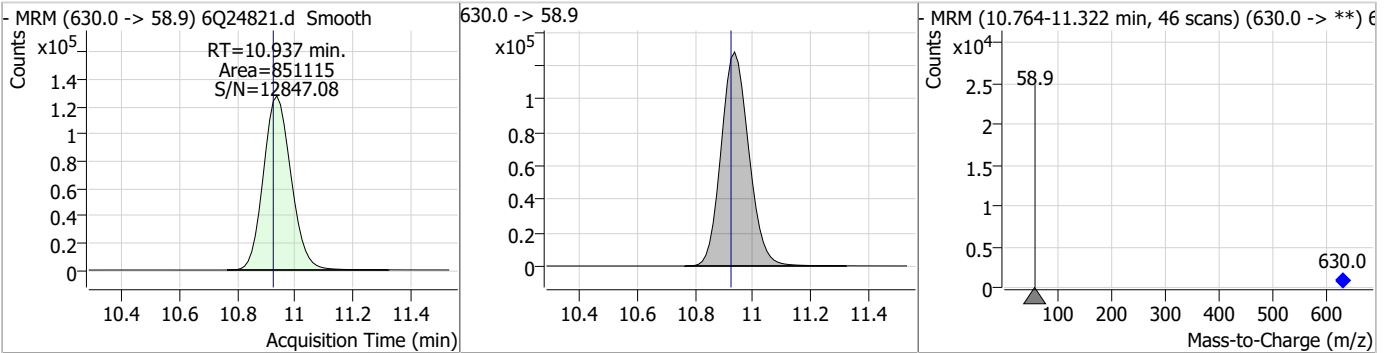
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	18.23	10.77	0.01	117755	511.9 -> 169.0	111.5	71.8	215.5



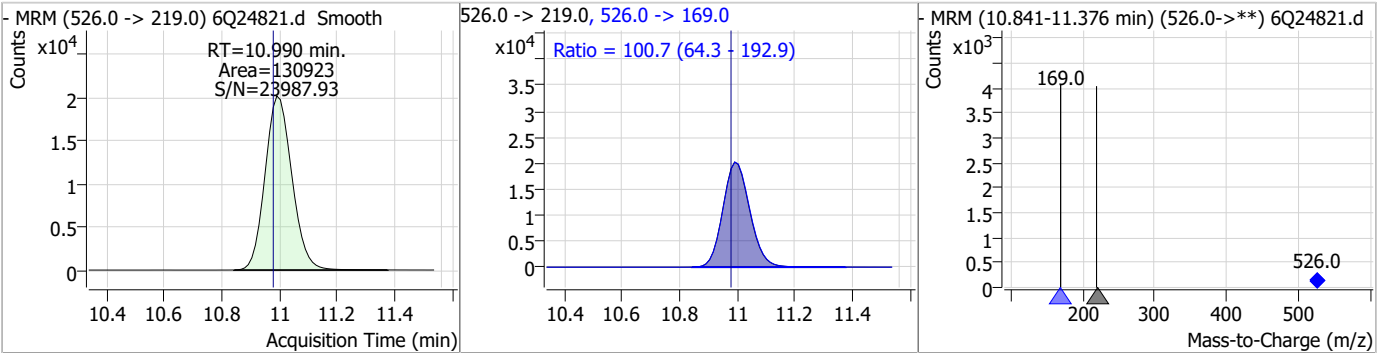
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	25.20	10.92	0.00	167997				



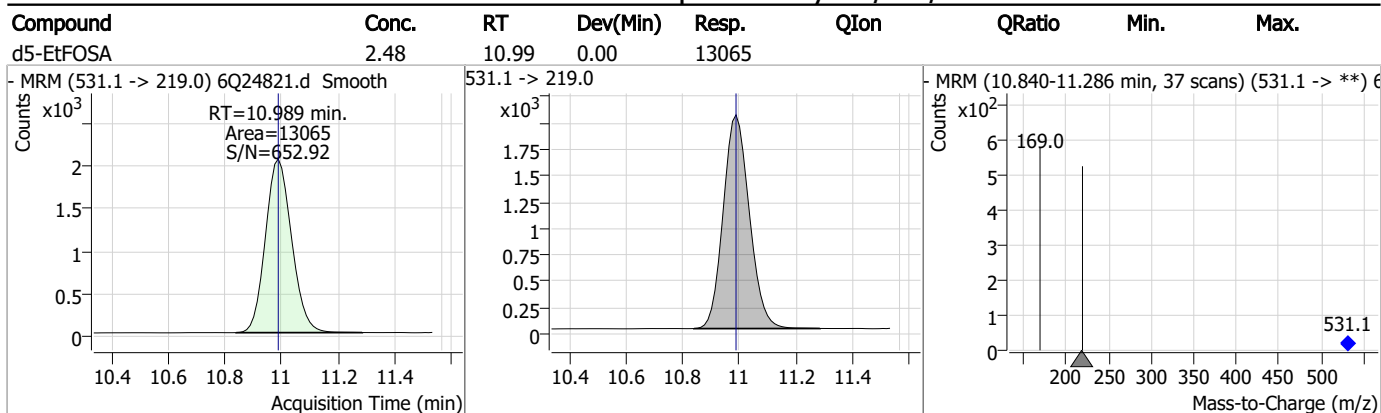
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	108.09	10.94	0.01	851115				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	19.07	10.99	0.01	130923	526.0 -> 169.0	100.7	64.3	192.9



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q355-ICV355 Method: EPA DRAFT 1633
Lab FileID: 6Q24821.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 22:59 Supervisor approved: 09/22/23 13:16 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24822.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 11:13:31 PM
 Sample Name : cc355-4
 Vial : P1-A5
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	336139	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	54277	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	116598	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	96426	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	136061	2.50 µg/L	0.000
M9-PFNA	7.729	472.1 -> 427.0	53389	1.25 µg/L	0.012
M6-PFDA	8.198	519.1 -> 474.1	48203	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	66515	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	58844	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	21584	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	43719	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	38174	2.50 µg/L	0.000
M3-PFHxS	7.313	402.1 -> 79.9	22977	2.50 µg/L	0.000
M8-PFOS	8.361	507.1 -> 79.9	20743	2.50 µg/L	0.012
M2-4:2FTS	5.317	329.1 -> 80.9	4552	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6355	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	6274	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	35753	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	72870	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	34311	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	144724	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	189682	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	14290	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	15612	2.50 µg/L	0.000
13C4-PFOS	8.361	502.8 -> 79.9	25674	2.50 µg/L	0.012
13C3-PFBA	3.001	216.0 -> 172.0	135787	5.00 µg/L	0.000
18O2-PFHxS	7.313	403.0 -> 83.9	16371	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	144416	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	46444	1.25 µg/L	0.000
13C5-PFNA	7.729	468.0 -> 423.0	61200	1.25 µg/L	0.012
13C2-PFHxA	5.642	315.1 -> 270.0	89163	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4552	5.33 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 106.6%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6355	5.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-8:2FTS	7.998	529.1 -> 80.9	6274	5.10 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 102.1%		
13C2-PFDoDA	9.079	615.1 -> 570.0	58844	1.25 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 100.0%		
13C2-PFTeDA	9.784	715.2 -> 670.0	21584	1.15 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 91.9%		
13C3-PFBS	5.571	302.1 -> 79.9	38174	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 96.3%		
13C3-PFHxS	7.313	402.1 -> 79.9	22977	2.59 µg/L	0.000

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C4-PFBA	3.010	216.8 -> 171.9	336139	10.15 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C4-PFHpA	6.569	367.1 -> 322.0	96426	2.52 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.7%	
13C5-PFHxA	5.641	318.0 -> 273.0	116598	2.48 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.3%	
13C5-PFPeA	4.434	268.3 -> 223.0	54277	5.36 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 107.1%	
13C6-PFDA	8.198	519.1 -> 474.1	48203	1.14 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 91.2%	
13C7-PFUnDA	8.651	570.0 -> 525.1	66515	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.5%	
13C8-FOSA	9.682	506.1 -> 77.8	43719	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C8-PFOA	7.198	421.1 -> 376.0	136061	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.8%	
13C8-PFOS	8.361	507.1 -> 79.9	20743	2.74 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.7%	
13C9-PFNA	7.729	472.1 -> 427.0	53389	1.20 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 96.2%	
d3-MeFOSAA	8.256	573.2 -> 419.0	35753	5.10 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.0%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	72870	11.02 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 110.2%	
d3-MeFOSA	10.757	515.0 -> 219.0	15612	2.56 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 102.3%	
d5-EtFOSAA	8.452	589.2 -> 419.0	34311	5.73 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.6%	
d7-MeFOSE	10.678	623.2 -> 58.9	144724	26.42 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.7%	
d9-EtFOSE	10.923	639.2 -> 58.9	189682	26.38 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 105.5%	
d5-EtFOSA	10.989	531.1 -> 219.0	14290	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.6%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	59017	8.00 µg/L	97
		327.1 -> 80.9	21444		
6:2FTS	6.987	427.1 -> 407.0	49293	8.39 µg/L	100
		427.1 -> 80.9	18677		
8:2FTS	7.999	527.1 -> 507.0	36543	9.17 µg/L	95
		527.1 -> 80.8	12793		
EtFOSAA	8.465	584.2 -> 419.1	10463	2.02 µg/L	94
		584.2 -> 526.0	7312		
FOSA	9.672	498.1 -> 77.9	34302	2.27 µg/L	99
		498.1 -> 478.0	795		
MeFOSAA	8.257	570.1 -> 419.0	19396	2.39 µg/L	93
		570.1 -> 483.0	3958		
PFBA	3.006	212.8 -> 168.9	92205	8.90 µg/L	100
PFBS	5.572	298.7 -> 79.9	36517	2.02 µg/L	98
		298.7 -> 98.8	13712		
PFDA	8.198	512.9 -> 469.0	105550	2.45 µg/L	99
		512.9 -> 219.0	16946		
PFDODA	9.080	613.1 -> 569.0	95903	2.24 µg/L	97
		613.1 -> 319.0	10400		
PFDS	9.233	599.0 -> 79.9	11726	1.93 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.569	599.0 -> 98.8	5886	2.35	µg/L	96
		363.1 -> 319.0	115268			
PFHpS	7.856	363.1 -> 169.0	16829	2.02	µg/L	93
		449.0 -> 79.9	20543			
PFHxA	5.644	449.0 -> 98.9	10625	2.26	µg/L	100
		313.0 -> 269.0	91520			
PFHxS	7.302	313.0 -> 118.9	4323	1.86	µg/L	m
		398.7 -> 79.9	27552			
PFNA	7.730	398.7 -> 98.9	13591	2.22	µg/L	98
		463.0 -> 419.0	76265			
PFNS	8.814	463.0 -> 219.0	19107	2.08	µg/L	93
		548.8 -> 79.9	21000			
PFOA	7.200	548.8 -> 98.9	10825	2.30	µg/L	98
		413.0 -> 369.0	144441			
PFOS	8.350	413.0 -> 169.0	24074	1.99	µg/L	m
		498.9 -> 79.9	23350			
PFPeA	4.436	498.9 -> 98.8	11444	4.33	µg/L	100
		263.0 -> 219.0	115653			
PFPeS	6.620	349.1 -> 79.9	24056	1.95	µg/L	97
		349.1 -> 98.9	11219			
PFTeDA	9.785	713.1 -> 669.0	70521	2.44	µg/L	98
		713.1 -> 168.9	5159			
PFTrDA	9.452	663.0 -> 619.0	100277	2.20	µg/L	98
		663.0 -> 168.9	8495			
PFUnDA	8.652	563.1 -> 519.0	78473	2.03	µg/L	95
		563.1 -> 269.1	12982			
11CI-PF3OUdS	9.491	630.9 -> 450.9	98809	4.18	µg/L	99
		632.9 -> 452.9	29842			
9CI-PF3ONS	8.690	530.8 -> 351.0	174344	4.18	µg/L	99
		532.8 -> 353.0	55912			
ADONA	6.817	376.9 -> 250.9	441168	4.10	µg/L	97
		376.9 -> 84.8	109808			
HFPO-DA	6.020	284.9 -> 168.9	28437	4.11	µg/L	99
		284.9 -> 184.9	3906			
3:3FTCA	3.902	241.0 -> 177.0	19926	11.03	µg/L	100
		241.0 -> 117.0	1918			
5:3FTCA	6.296	341.0 -> 237.1	433468	60.94	µg/L	94
		341.0 -> 217.0	288676			
7:3FTCA	7.682	441.0 -> 316.9	246167	59.32	µg/L	96
		441.0 -> 336.9	575489			
EtFOSA	10.990	526.0 -> 219.0	35890	4.78	µg/L	98
		526.0 -> 169.0	45519			
EtFOSE	10.924	630.0 -> 58.9	99884	11.23	µg/L	100
		511.9 -> 219.0	32634			
MeFOSA	10.758	511.9 -> 169.0	44604	4.64	µg/L	94
		616.1 -> 58.9	70618			
MeFOSE	10.691	699.1 -> 79.9	6090	11.37	µg/L	100
		699.1 -> 98.8	3481			
PFDoDS	9.898	295.0 -> 201.0	23066	2.04	µg/L	95
		295.0 -> 84.9	5556			
NFDHA	5.524	279.0 -> 85.1	84189	4.81	µg/L	97
		229.0 -> 84.9	62500			
PFMBA	4.850	314.8 -> 134.9	230300	4.45	µg/L	100
		314.8 -> 82.9	7012			
PFMPA	3.563			4.46	µg/L	100
PFEESA	6.112			4.32	µg/L	99

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



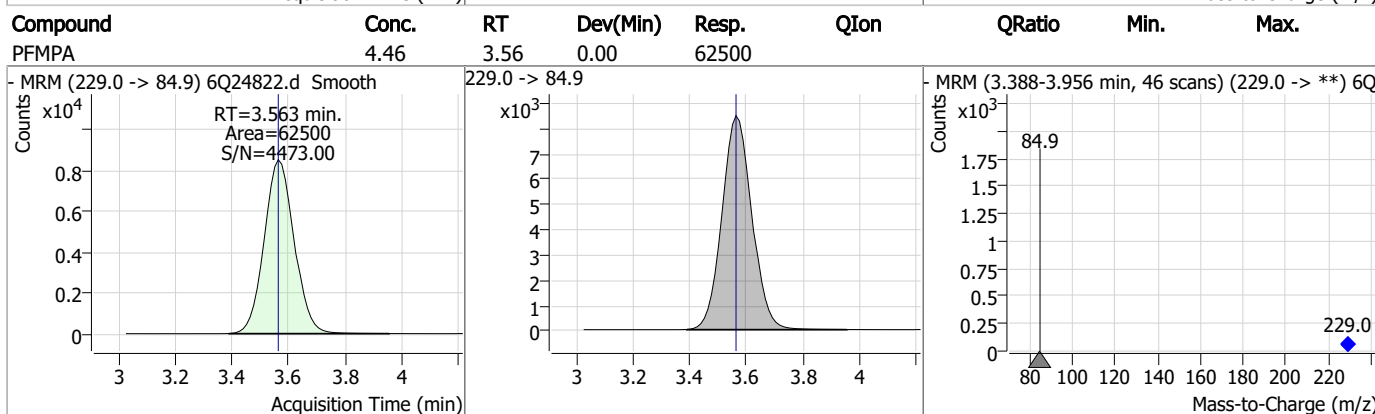
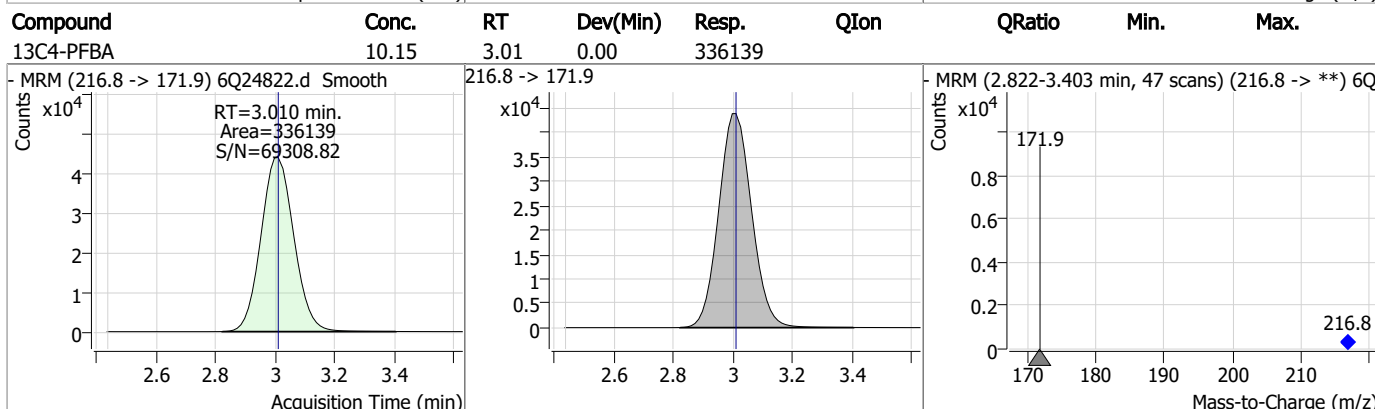
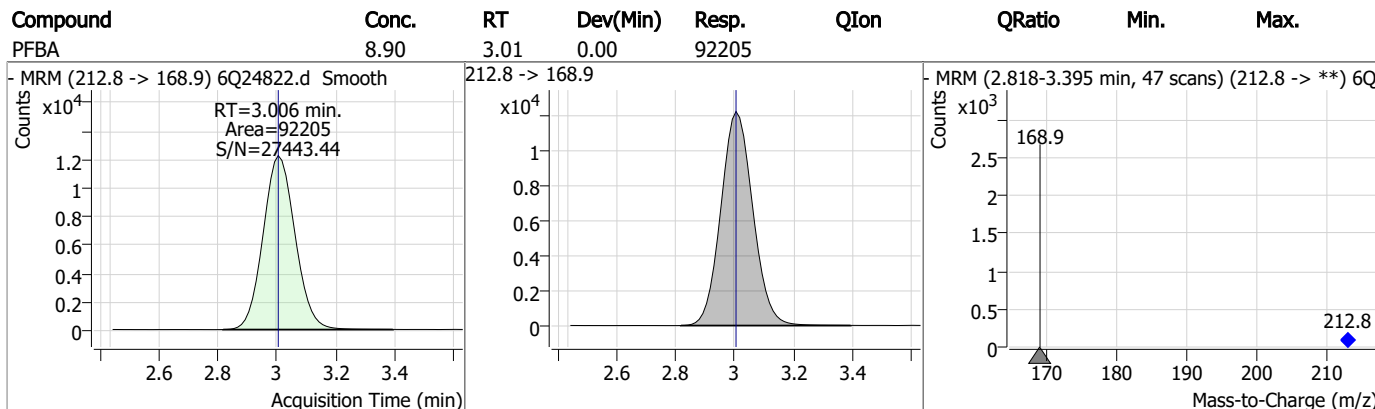
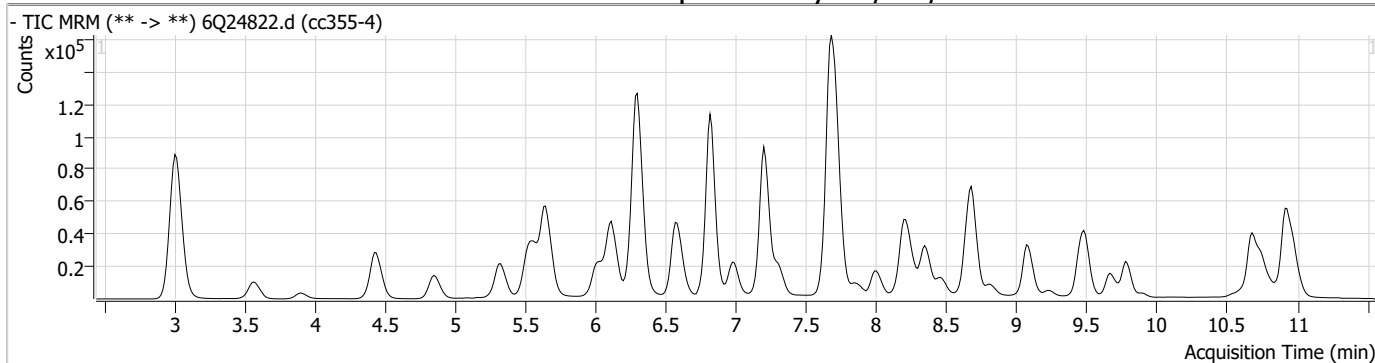
Perfluorinated Compounds by LC/MS/MS

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

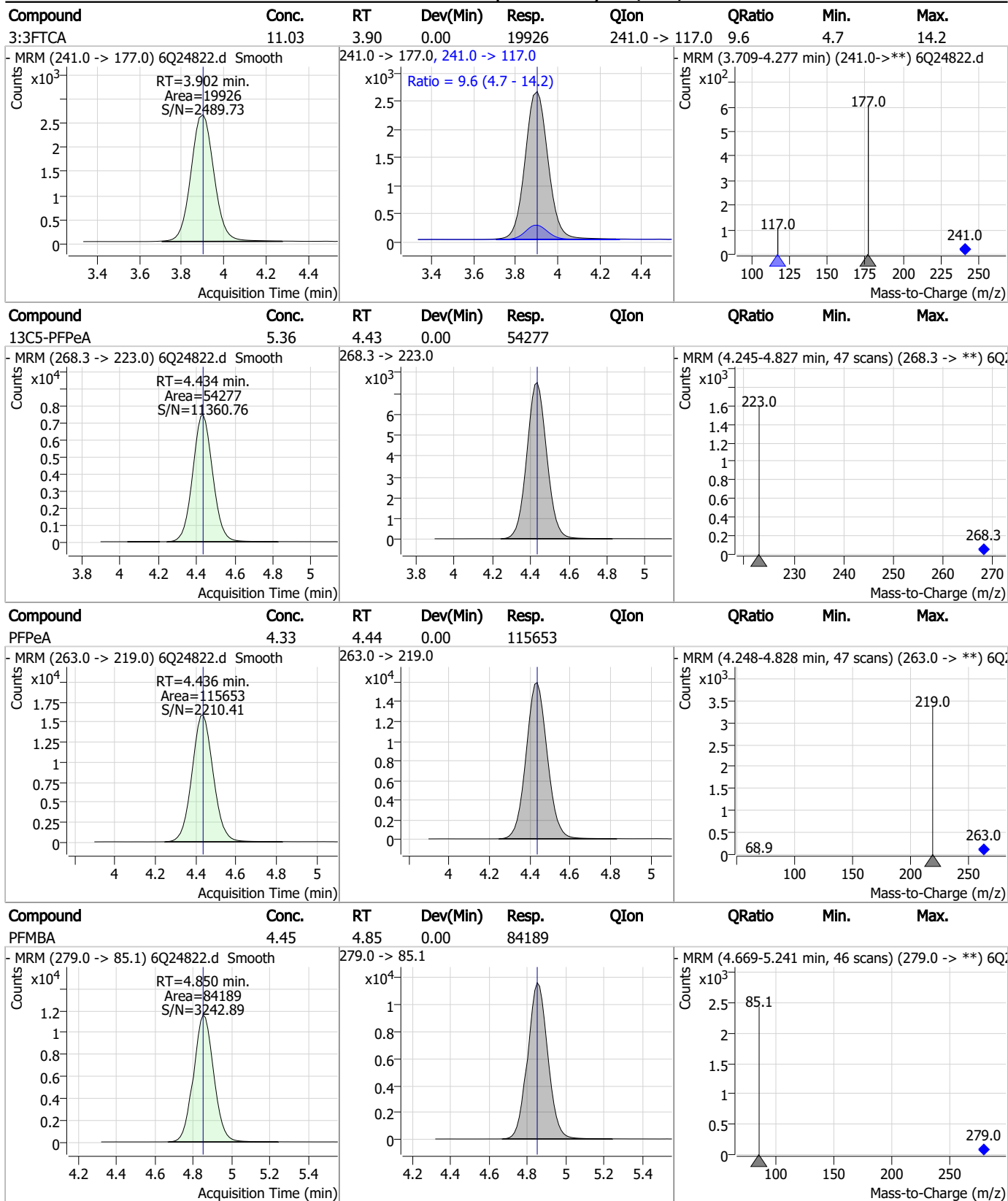
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Perfluorinated Compounds by LC/MS/MS



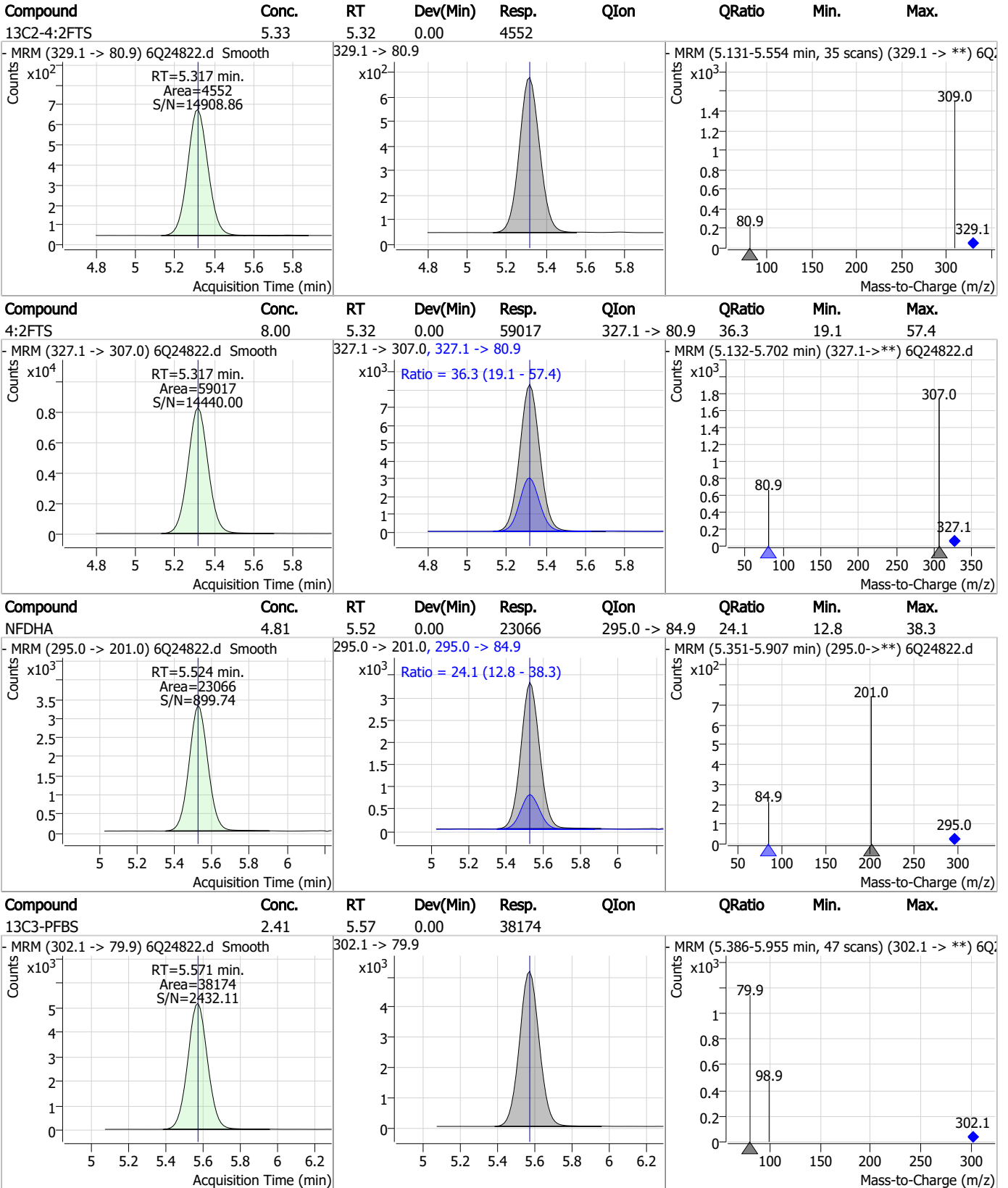
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Perfluorinated Compounds by LC/MS/MS



7.7.12

Perfluorinated Compounds by LC/MS/MS



7.7.12 7

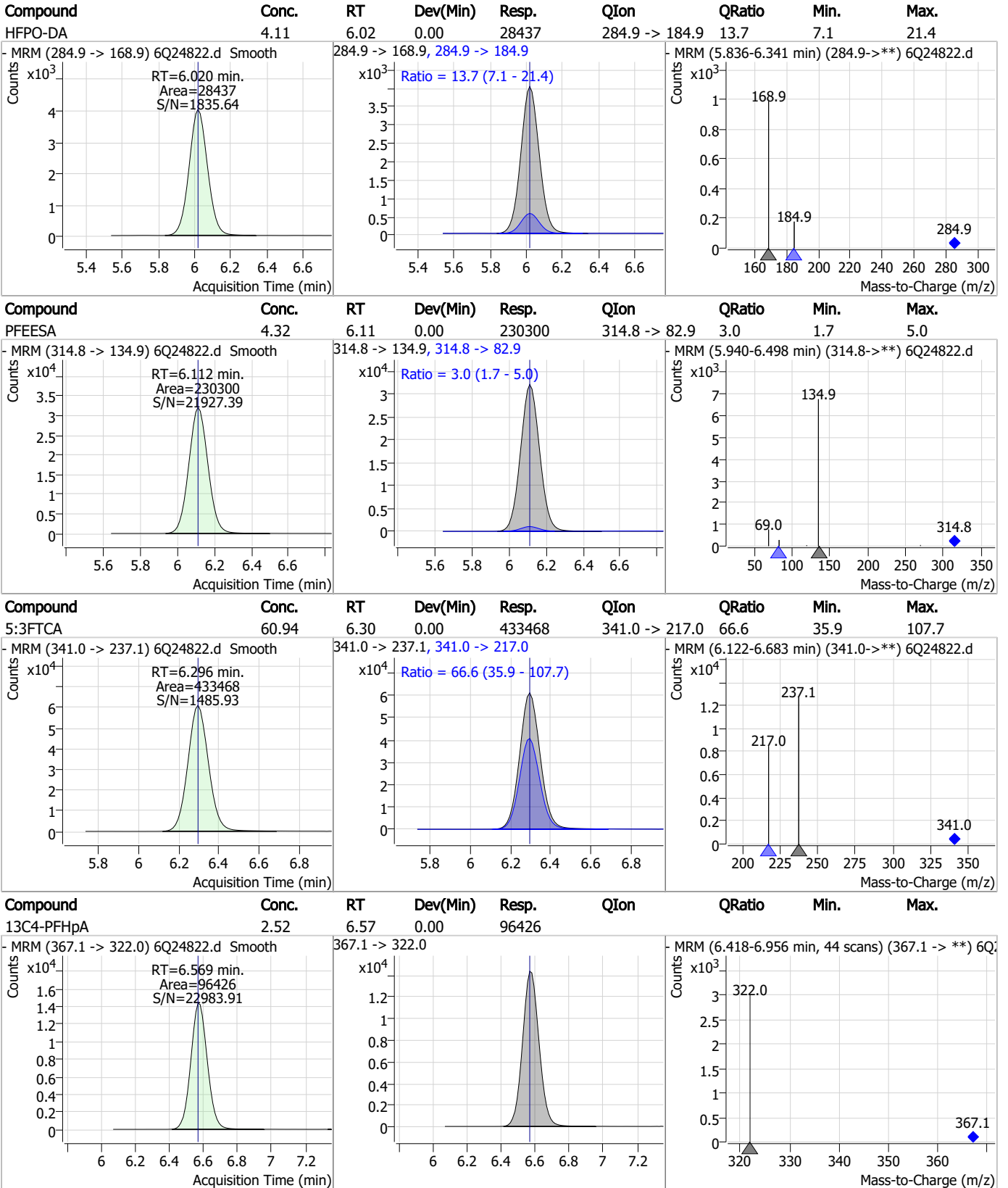


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	2.02	5.57	0.00	36517	298.7 -> 98.8	37.6	18.2	54.6
13C5-PFHxA	2.48	5.64	0.00	116598				
PFHxA	2.26	5.64	0.00	91520	313.0 -> 118.9	4.7	2.3	7.0
13C3-HFPO-DA	11.02	6.02	0.00	72870				

7.7.12 7

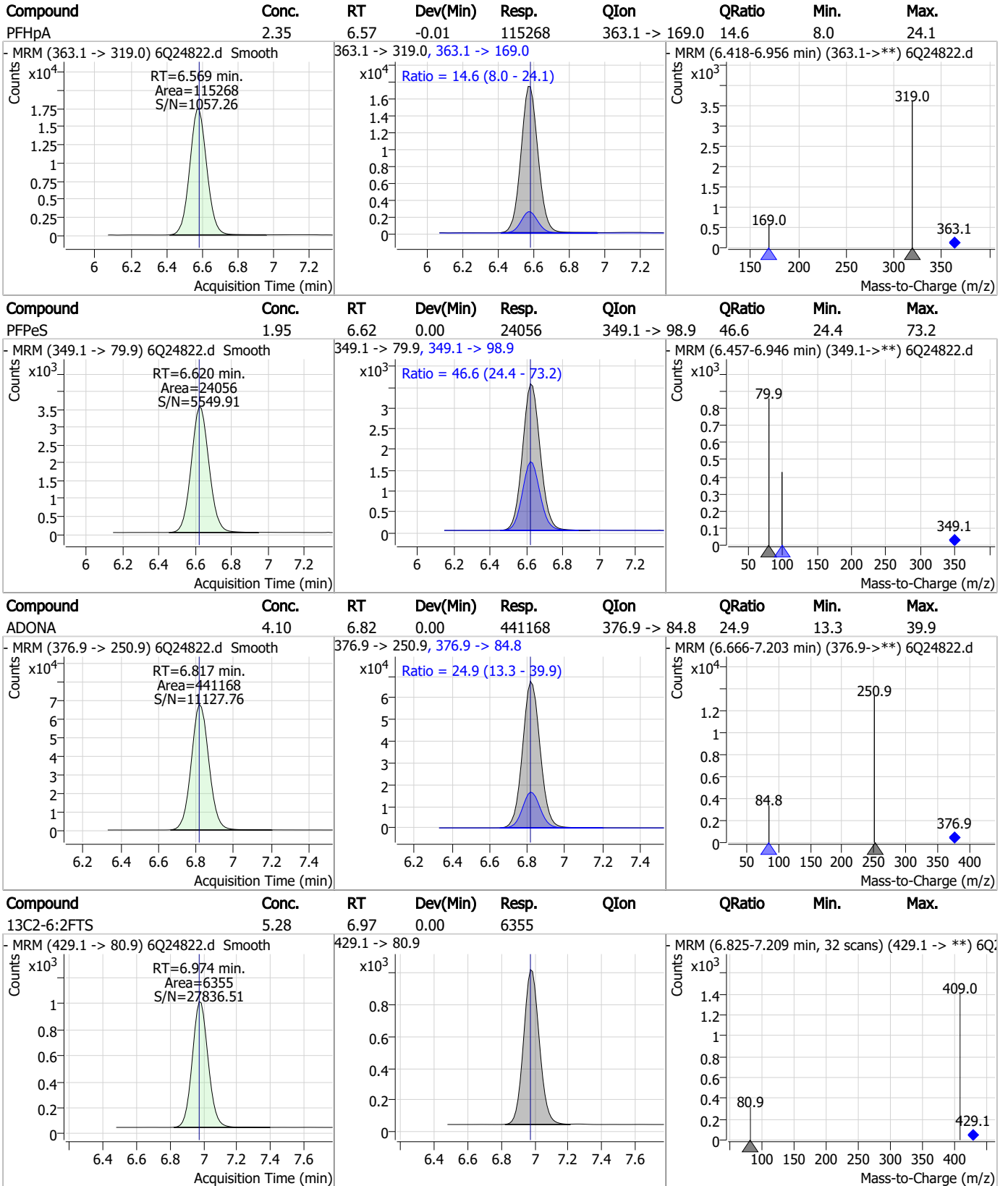
Perfluorinated Compounds by LC/MS/MS



7.7.12 7



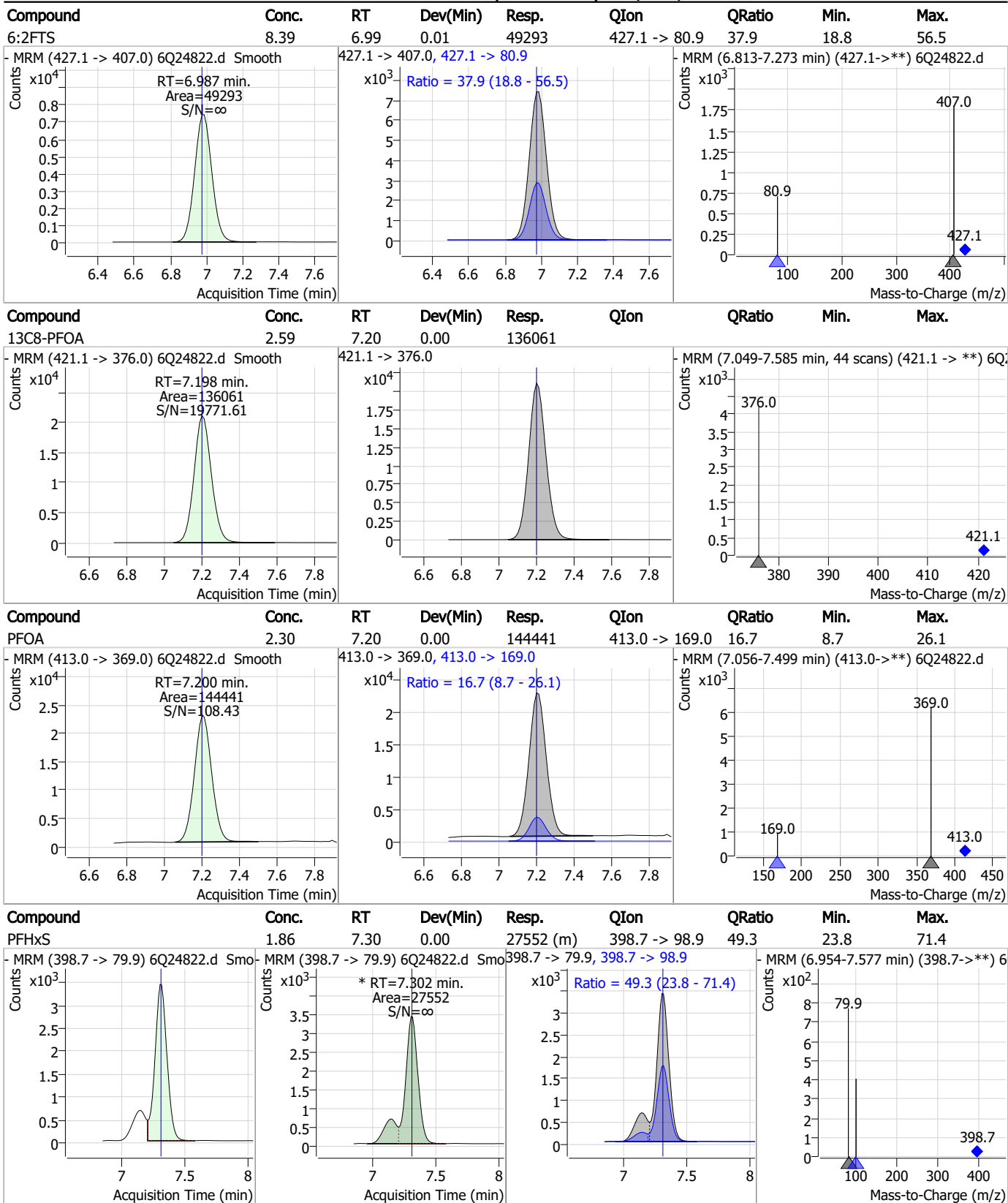
Perfluorinated Compounds by LC/MS/MS



7.7.12 7

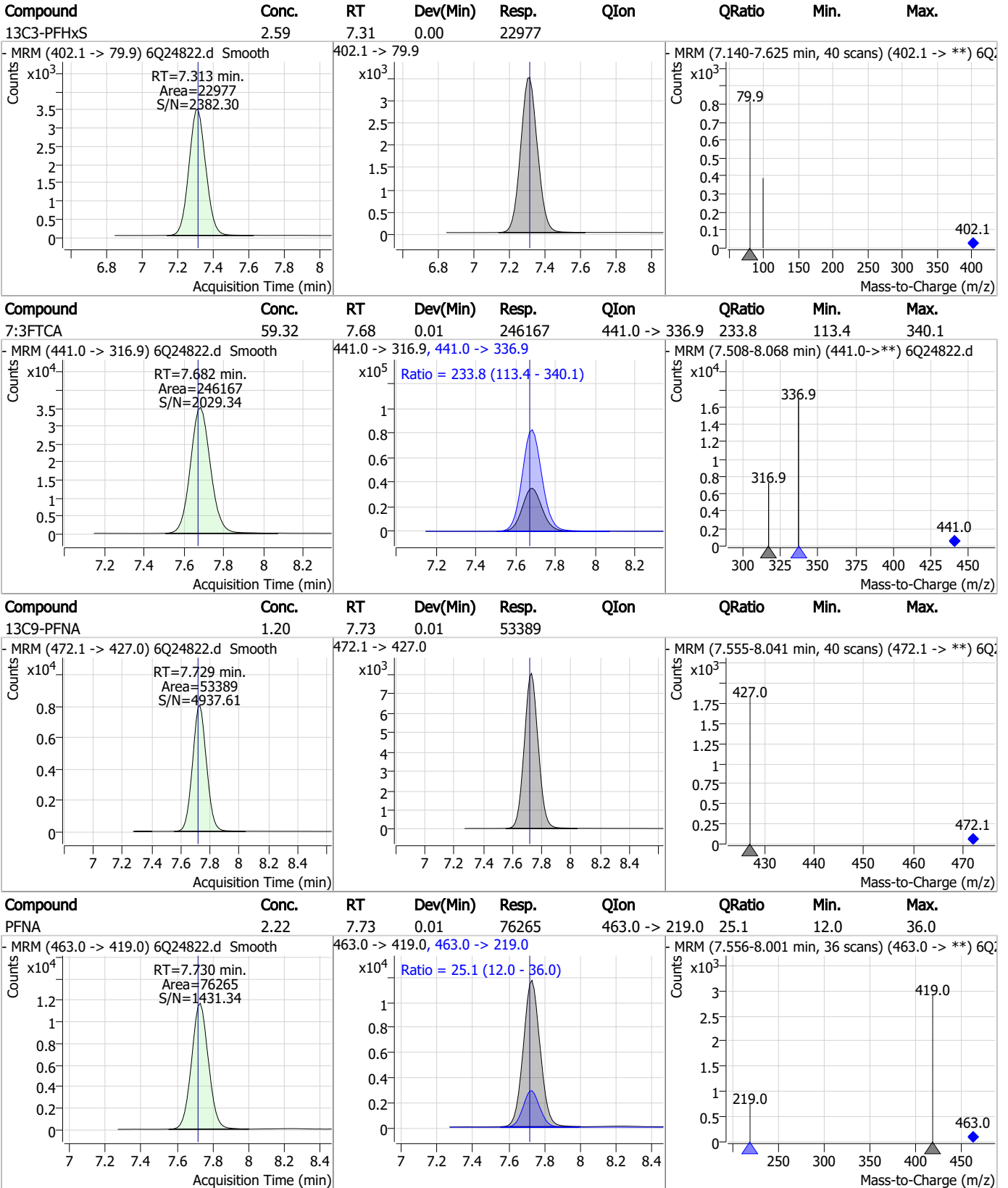


Perfluorinated Compounds by LC/MS/MS



7.7.12

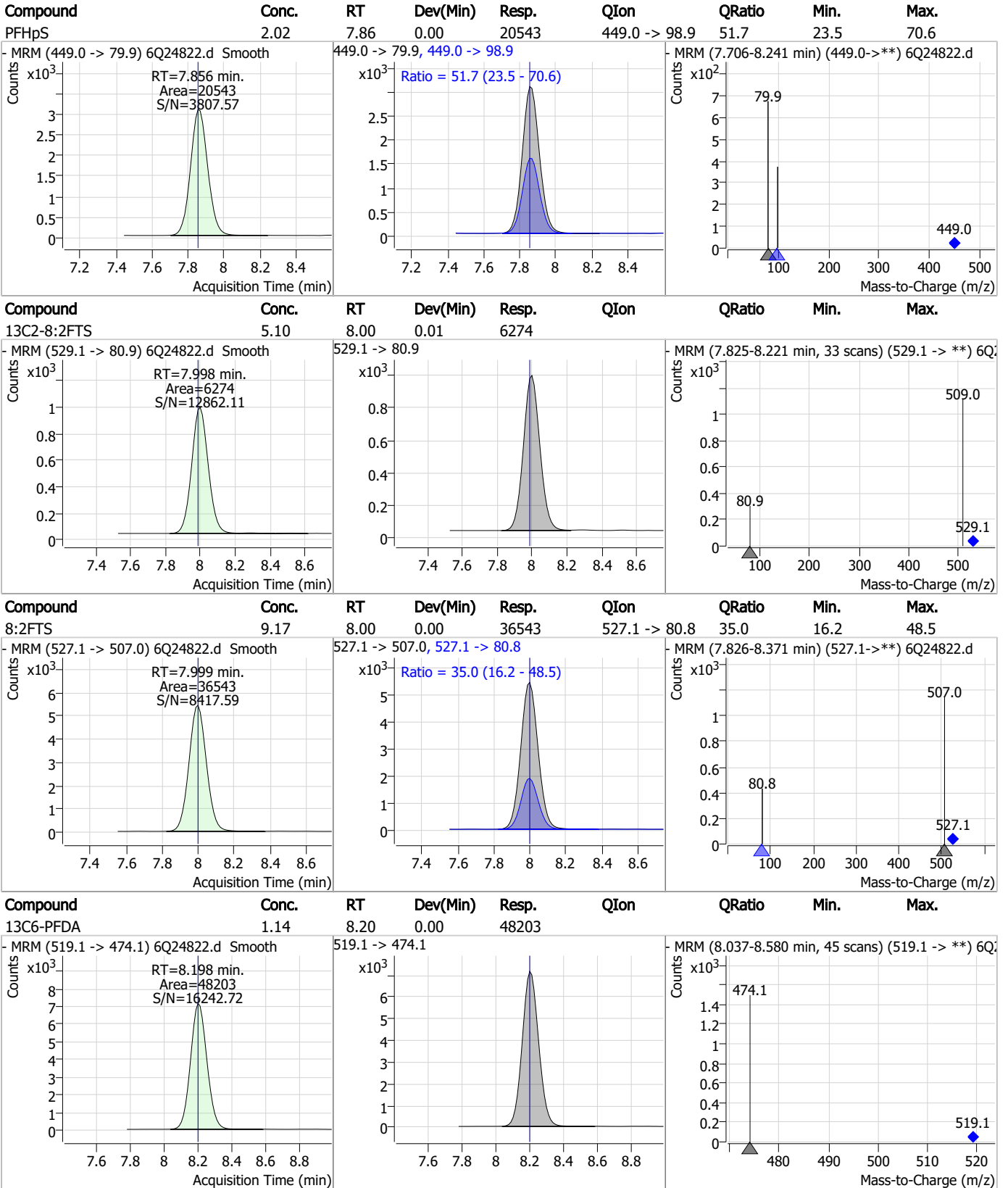
Perfluorinated Compounds by LC/MS/MS



7.7.12 7



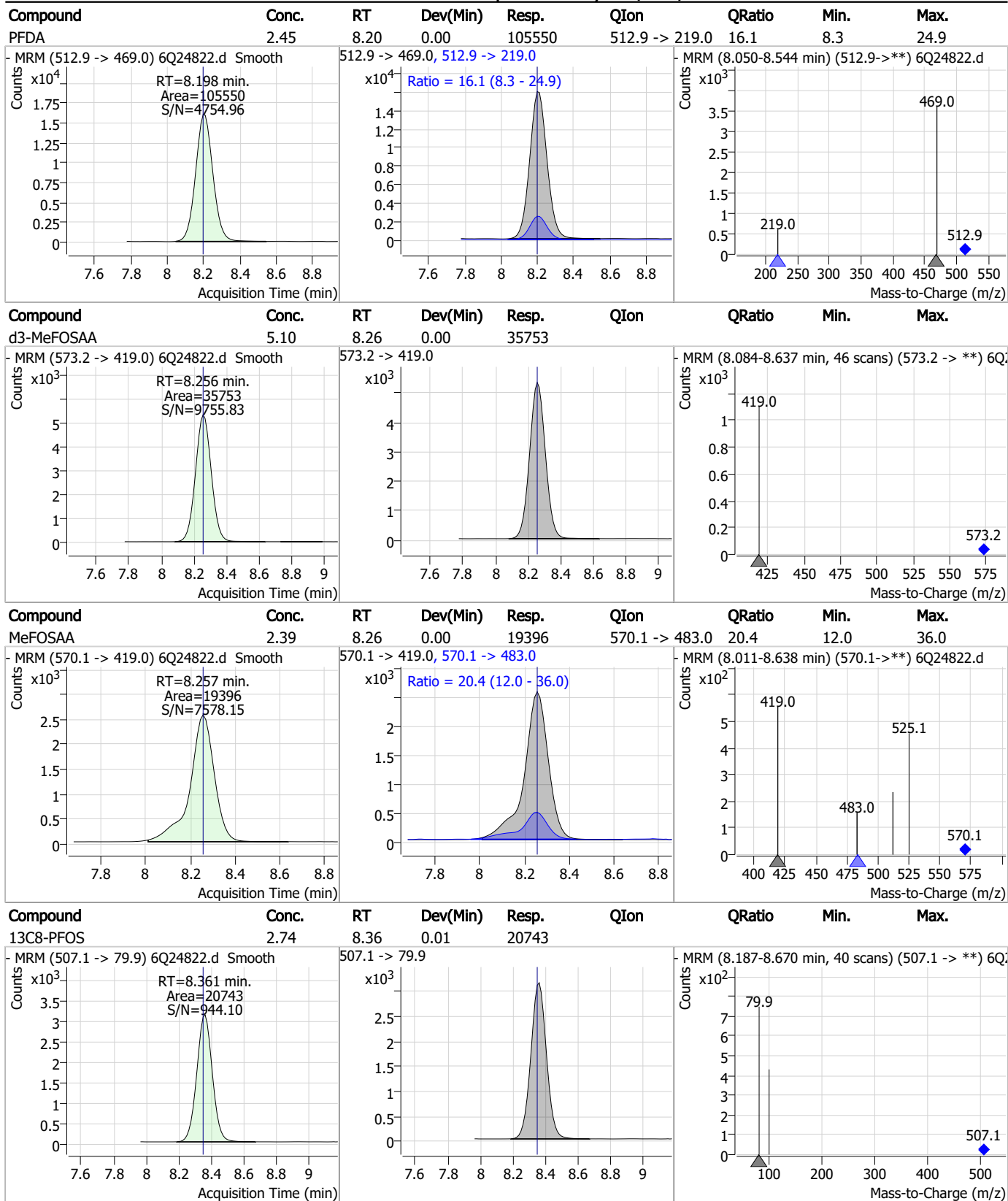
Perfluorinated Compounds by LC/MS/MS



7.7.12



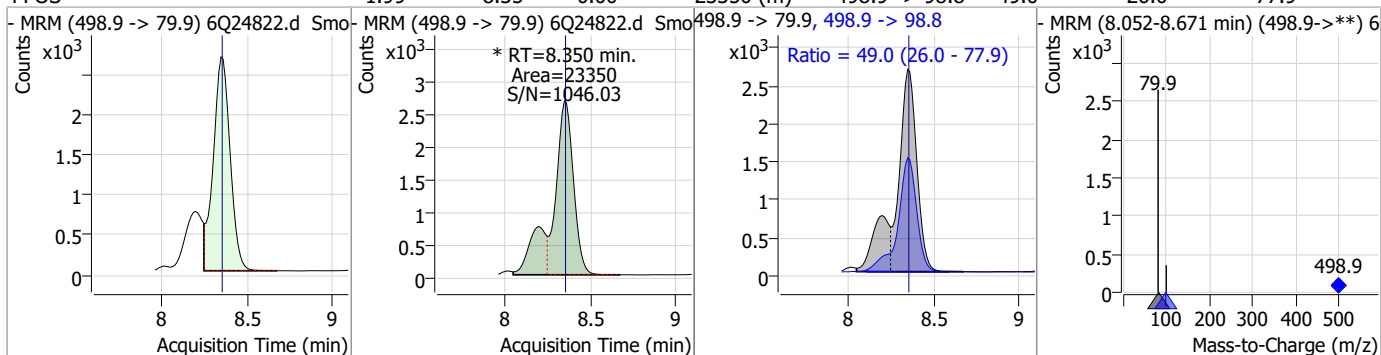
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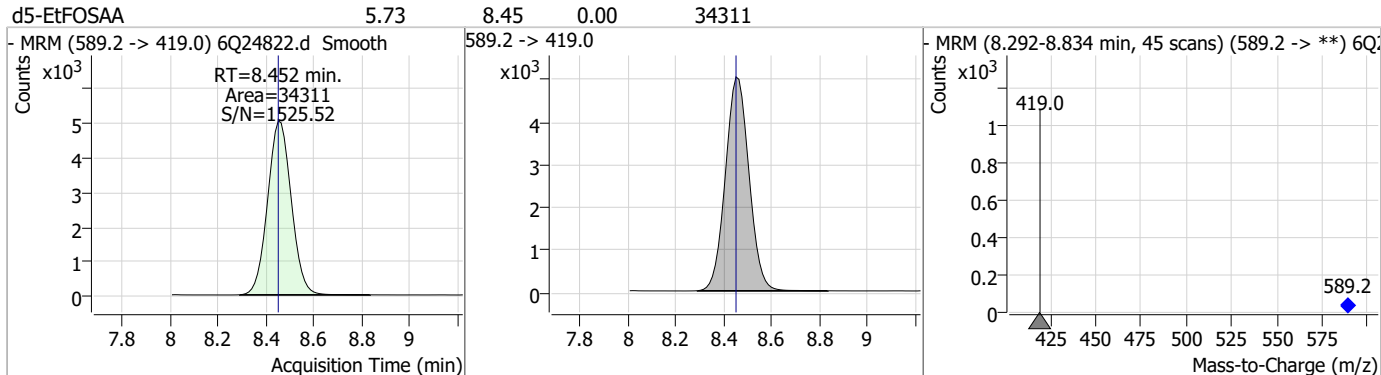
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Perfluorinated Compounds by LC/MS/MS

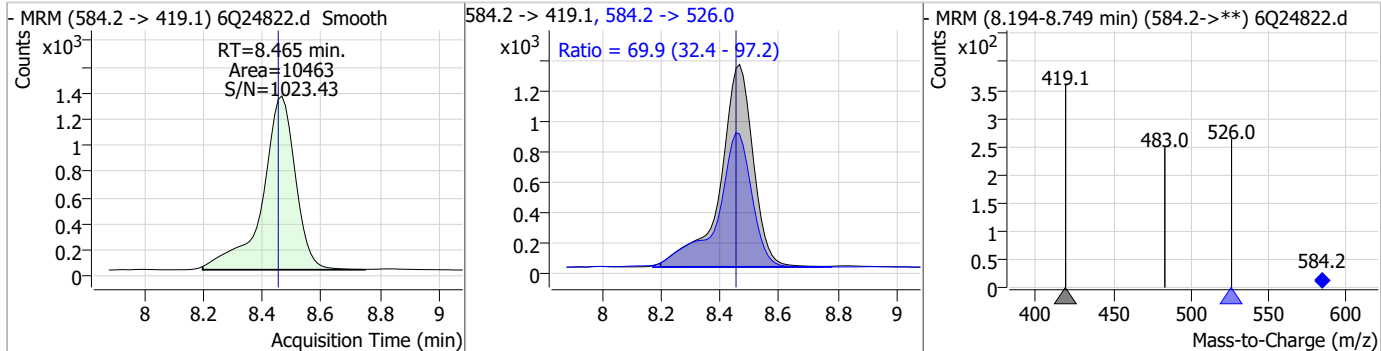
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.99	8.35	0.00	23350 (m)	498.9 -> 98.8	49.0	26.0	77.9



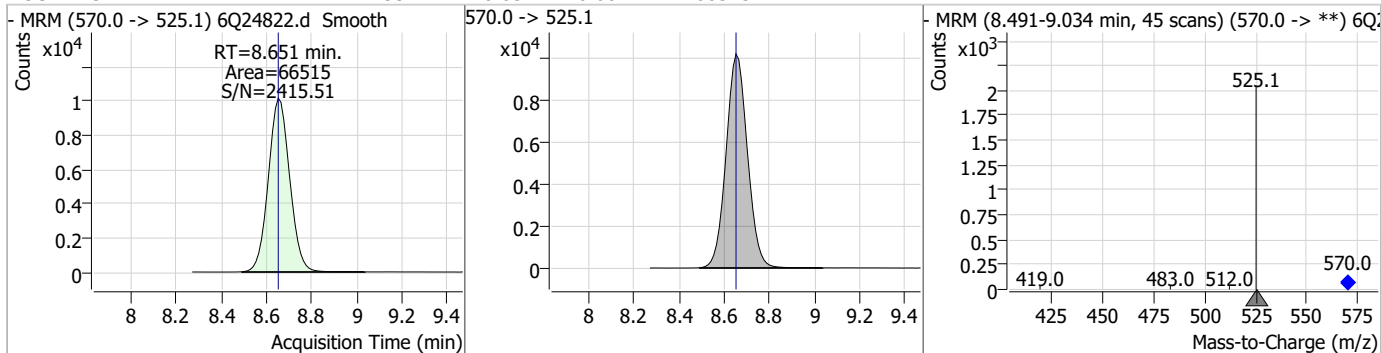
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.73	8.45	0.00	34311				



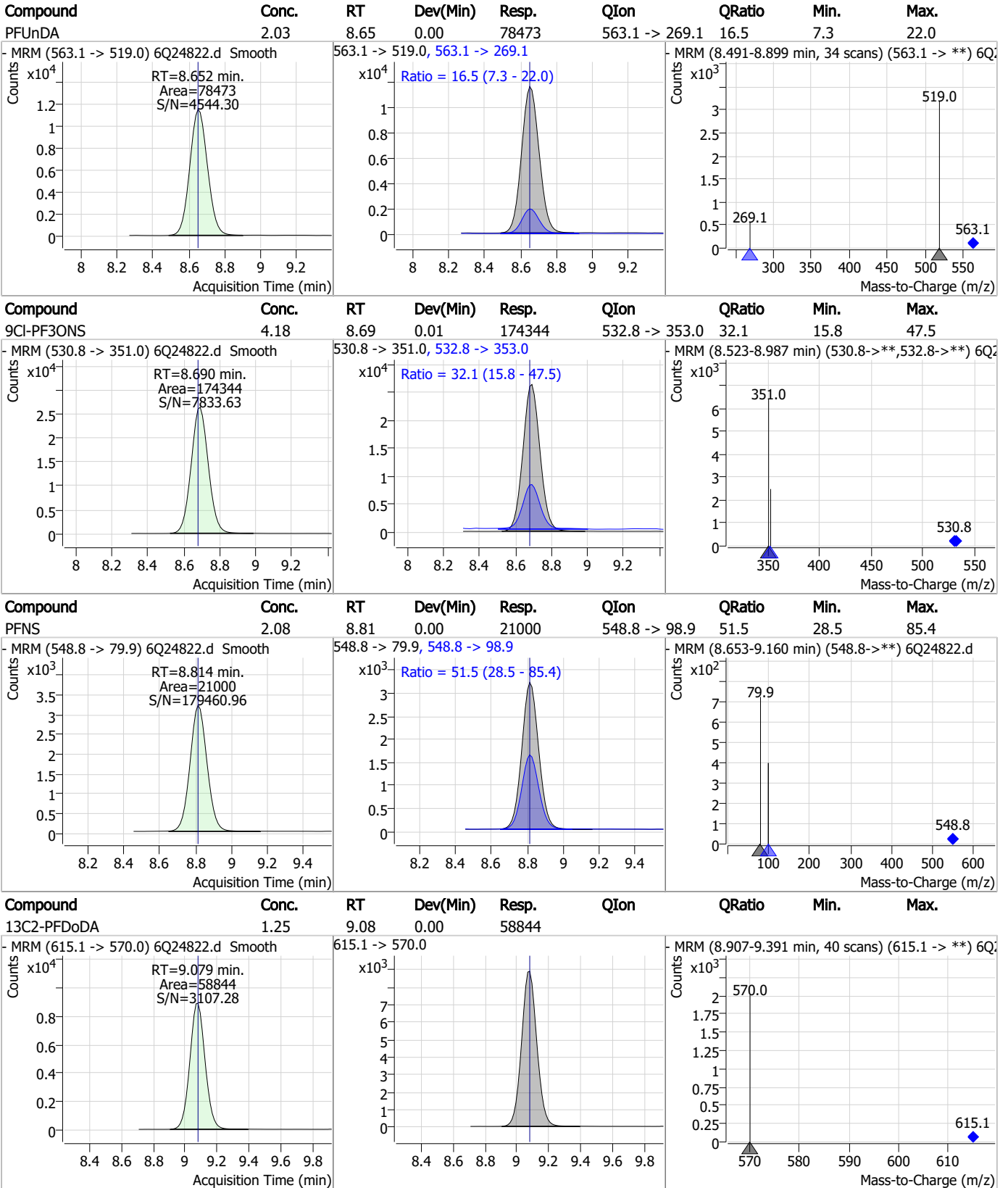
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.02	8.46	0.01	10463	584.2 -> 526.0	69.9	32.4	97.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.33	8.65	0.00	66515				

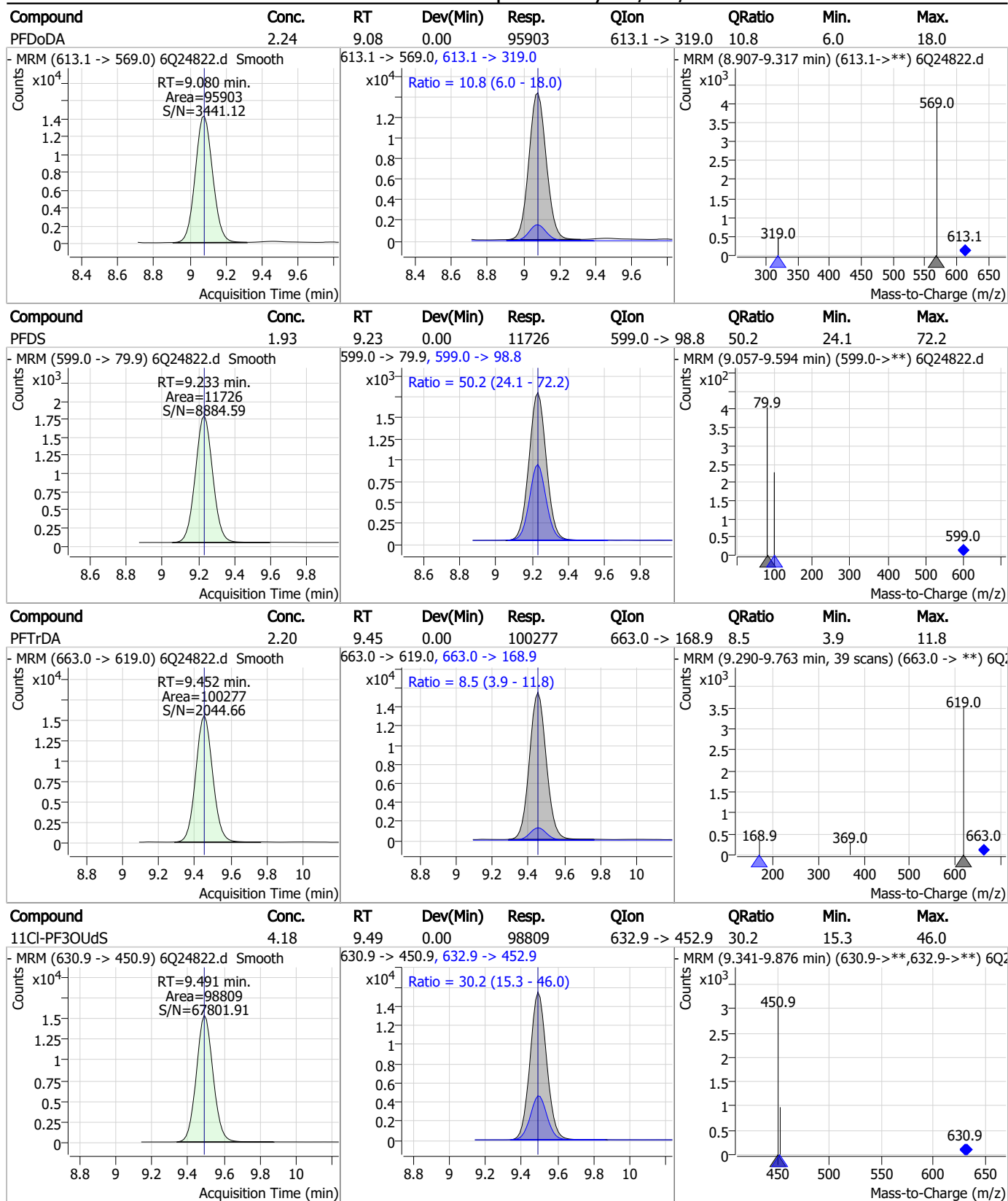


Perfluorinated Compounds by LC/MS/MS



7.7.12 7

Perfluorinated Compounds by LC/MS/MS

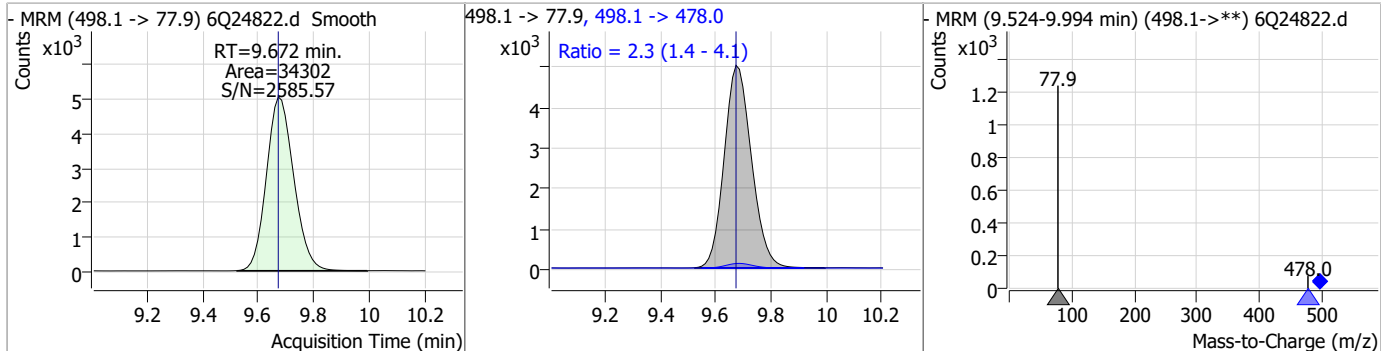


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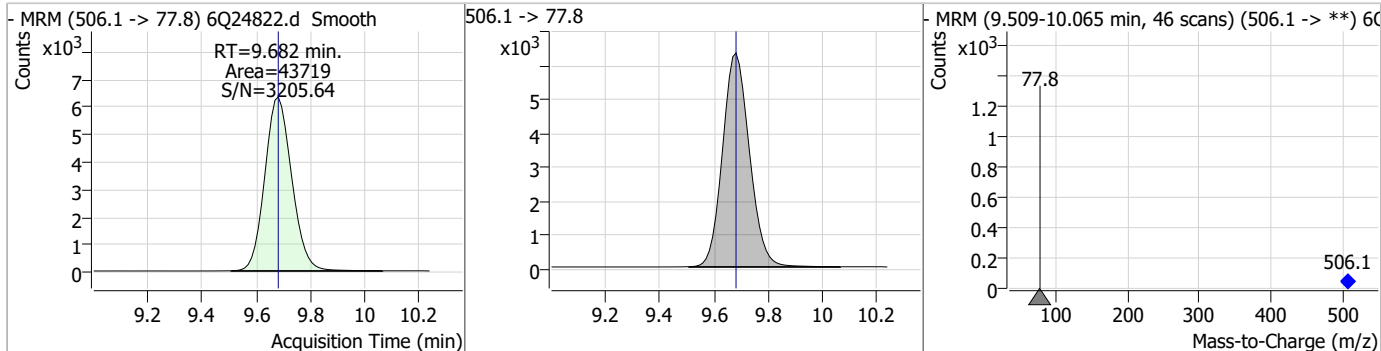
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Perfluorinated Compounds by LC/MS/MS

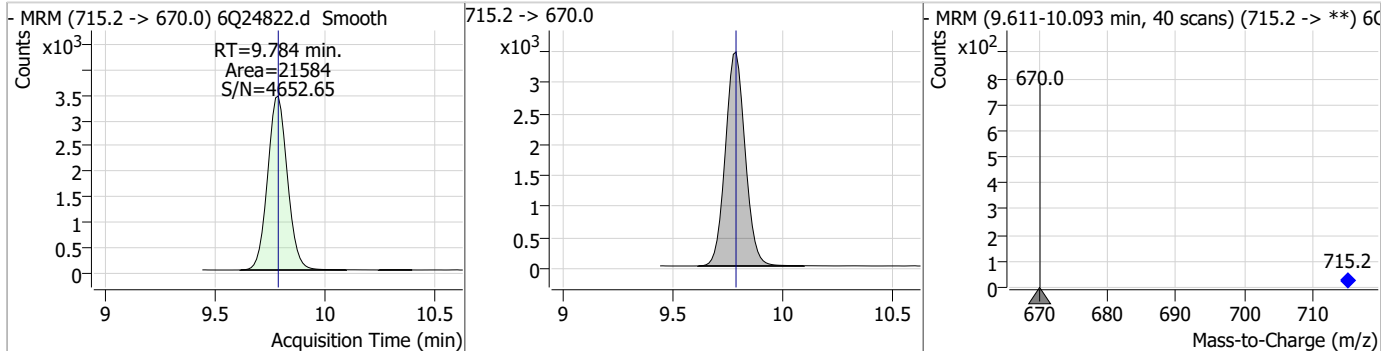
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.27	9.67	0.00	34302	498.1 -> 478.0	2.3	1.4	4.1



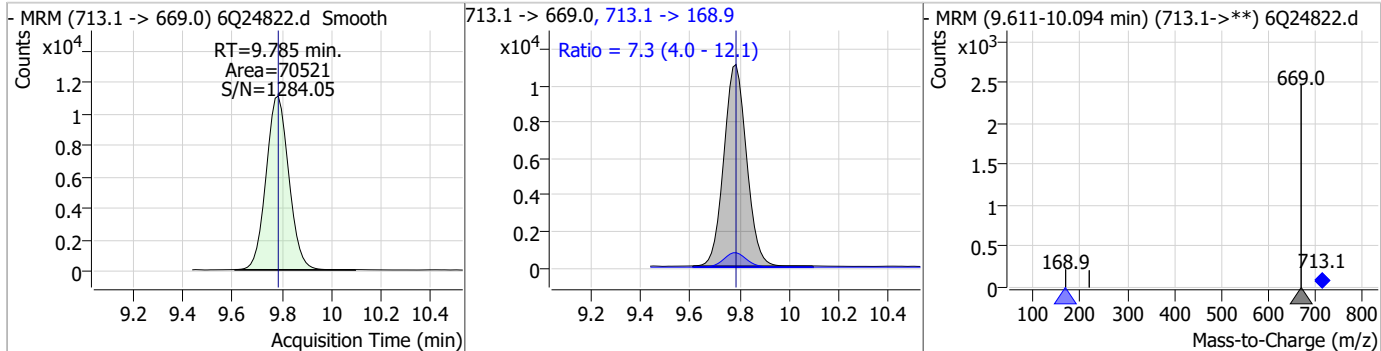
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.59	9.68	0.00	43719				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.15	9.78	0.00	21584				



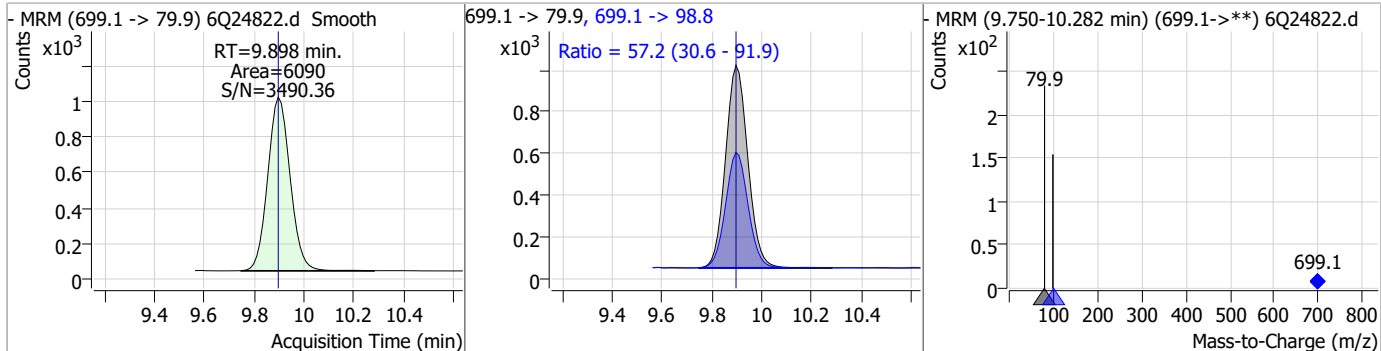
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.44	9.78	0.00	70521	713.1 -> 168.9	7.3	4.0	12.1



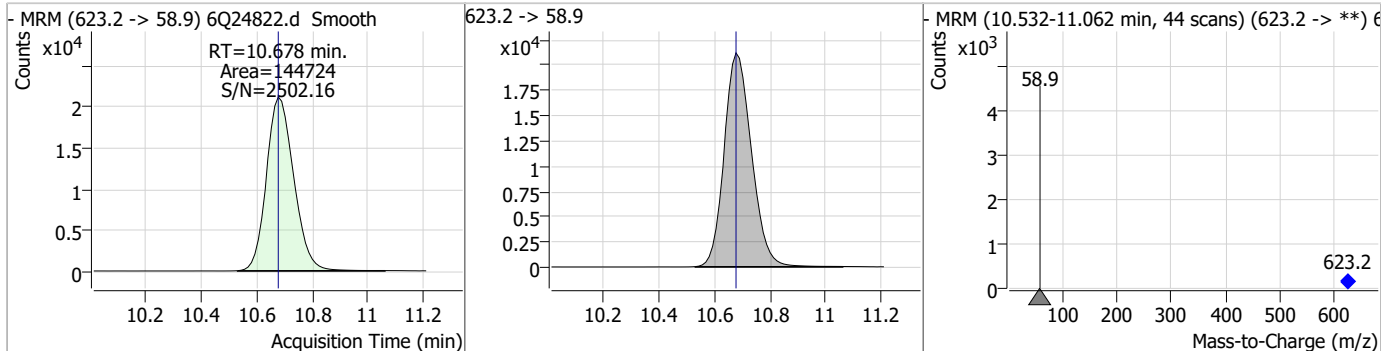
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Perfluorinated Compounds by LC/MS/MS

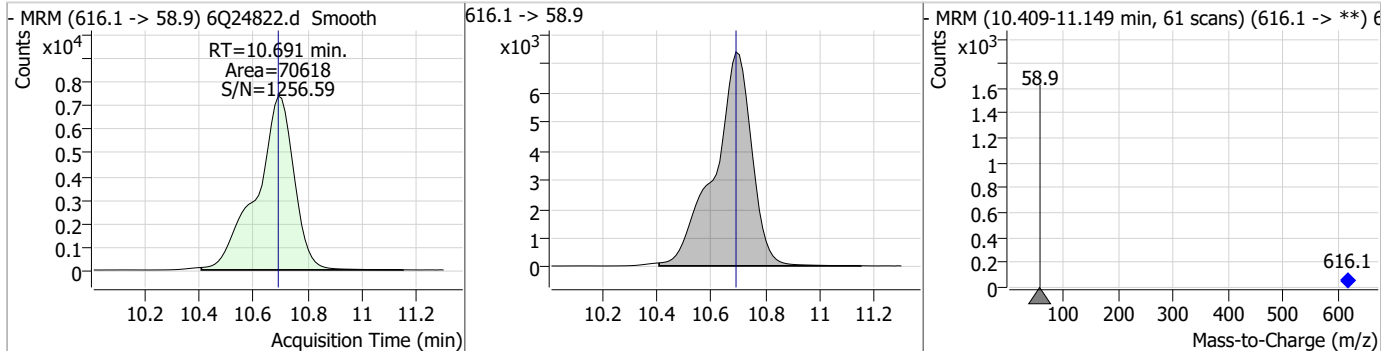
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.04	9.90	0.00	6090	699.1 -> 98.8	57.2	30.6	91.9



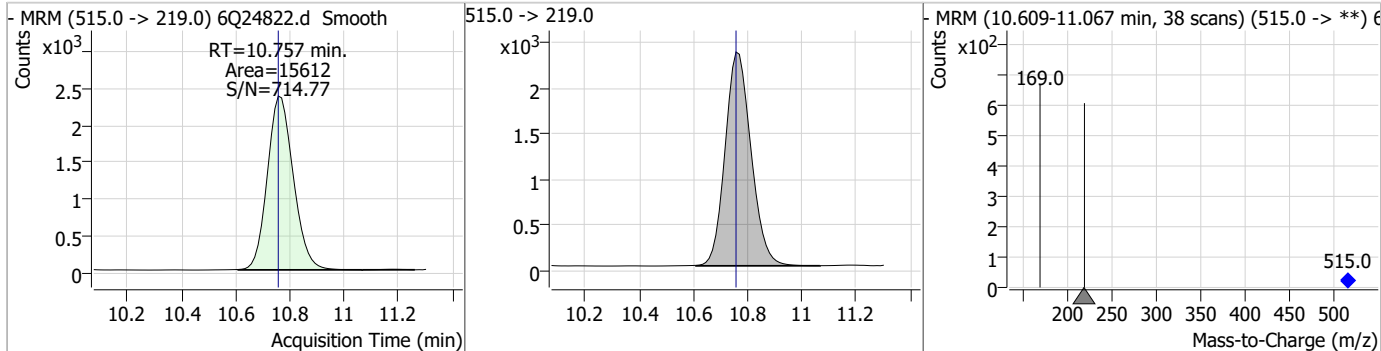
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	26.42	10.68	0.00	144724				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.37	10.69	0.00	70618				



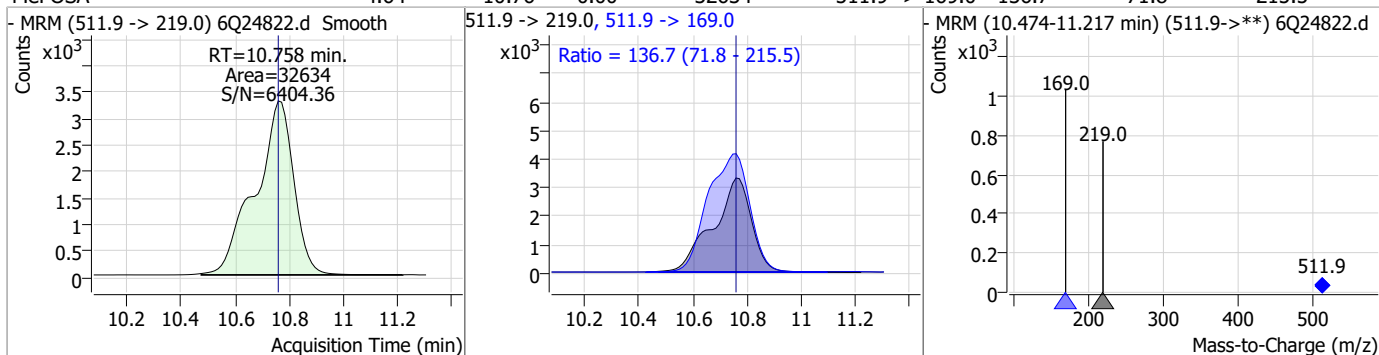
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.56	10.76	0.00	15612				



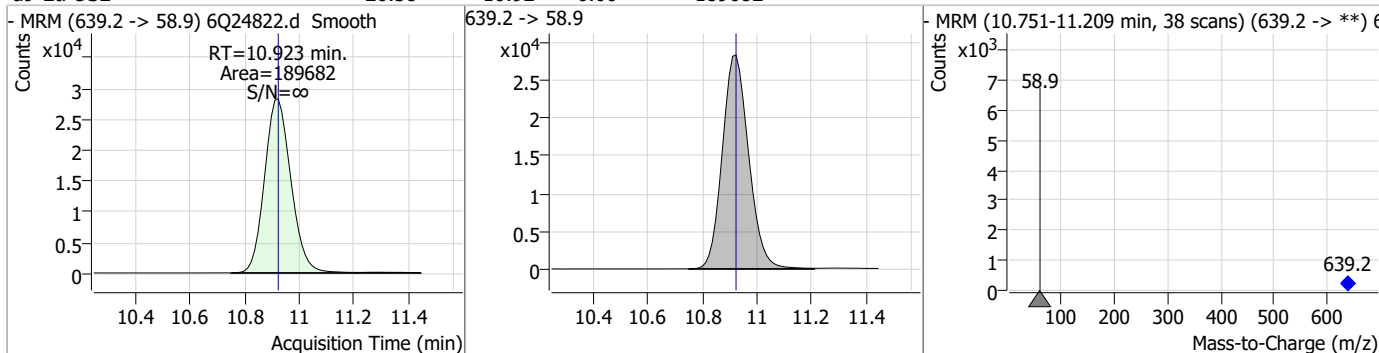
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Perfluorinated Compounds by LC/MS/MS

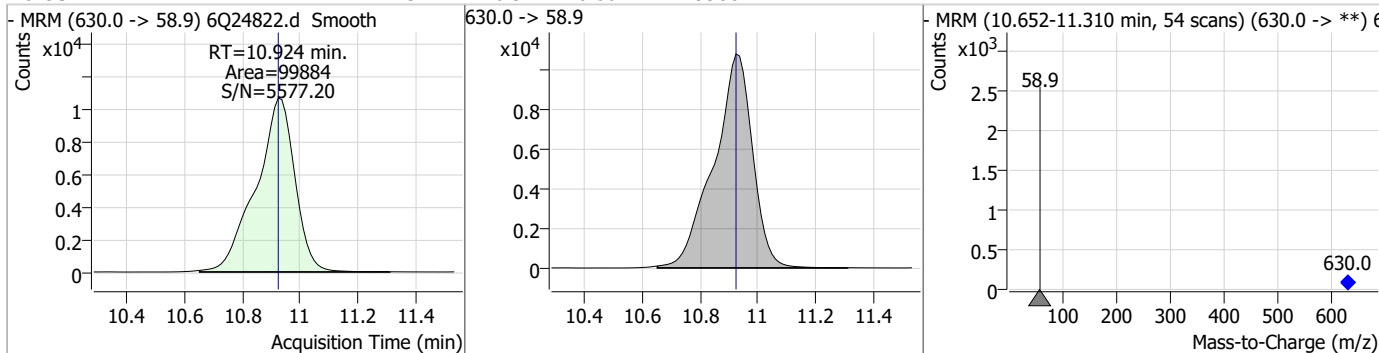
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOFA	4.64	10.76	0.00	32634	511.9 -> 169.0	136.7	71.8	215.5



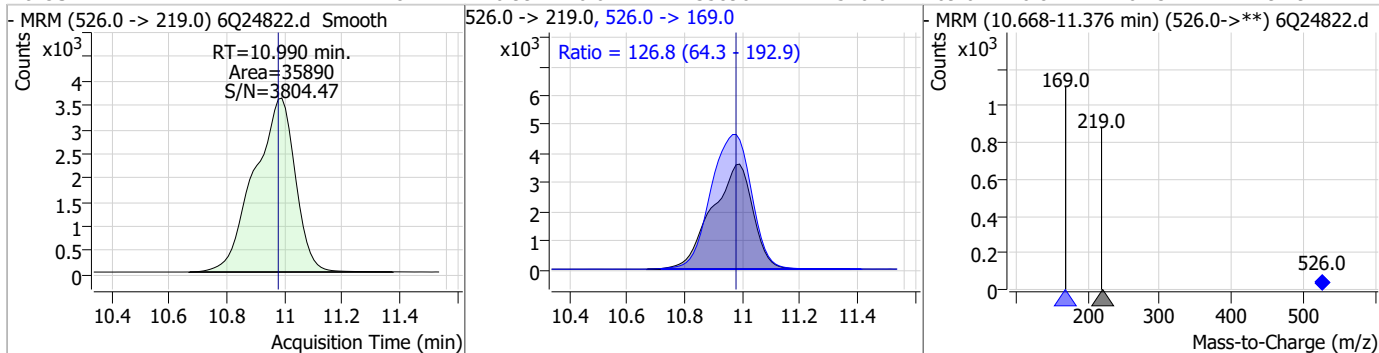
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	26.38	10.92	0.00	189682				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.23	10.92	0.00	99884				

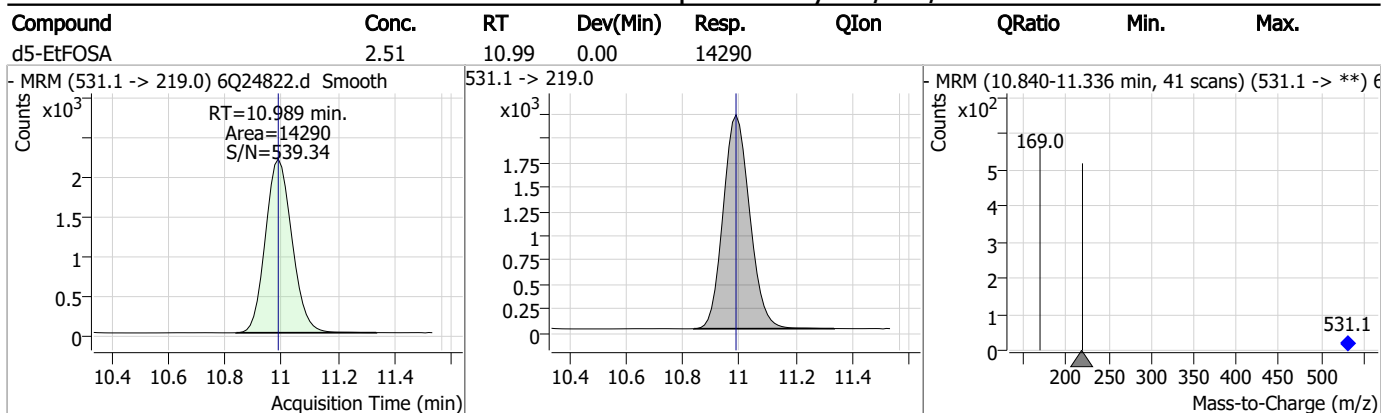


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOFA	4.78	10.99	0.01	35890	526.0 -> 169.0	126.8	64.3	192.9



7.7.12
7

Perfluorinated Compounds by LC/MS/MS



7.7.12

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Manual Integration Approval Summary

Sample Number: S6Q355-CC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24822.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 23:13 Supervisor approved: 09/22/23 13:16 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.7.12.1

7

Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24823.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/21/2023 11:27:50 PM
 Sample Name : cc355-1.0LL
 Vial : P1-A2
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.985	216.8 -> 171.9	324943	10.00 µg/L	-0.025
M5-PFPeA	4.422	268.3 -> 223.0	53539	5.00 µg/L	-0.012
M5-PFHxA	5.641	318.0 -> 273.0	121500	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	100344	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	126309	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	53894	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	52320	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	62434	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	58343	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	23339	1.25 µg/L	0.000
M8-FOSA	9.670	506.1 -> 77.8	44579	2.50 µg/L	-0.012
M3-PFBS	5.559	302.1 -> 79.9	37411	2.50 µg/L	-0.012
M3-PFHxS	7.301	402.1 -> 79.9	22284	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	20520	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	4597	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6784	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	5789	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	38059	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	71759	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	32075	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	136070	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	185143	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	14610	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	14354	2.50 µg/L	0.012
13C4-PFOS	8.349	502.8 -> 79.9	24787	2.50 µg/L	0.000
13C3-PFBA	2.989	216.0 -> 172.0	131769	5.00 µg/L	-0.012
18O2-PFHxS	7.313	403.0 -> 83.9	15717	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	138582	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	47263	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	55746	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	88940	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4597	5.61 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 112.1%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6784	5.87 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 117.3%		
13C2-8:2FTS	7.998	529.1 -> 80.9	5789	4.90 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 98.1%		
13C2-PFDoDA	9.079	615.1 -> 570.0	58343	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.5%		
13C2-PFTeDA	9.784	715.2 -> 670.0	23339	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 97.6%		
13C3-PFBS	5.559	302.1 -> 79.9	37411	2.46 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFHxS	7.301	402.1 -> 79.9	22284	2.62 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.7%	
13C4-PFBA	2.985	216.8 -> 171.9	324943	10.11 µg/L	-0.025
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.1%	
13C4-PFHpA	6.569	367.1 -> 322.0	100344	2.63 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 105.0%	
13C5-PFHxA	5.641	318.0 -> 273.0	121500	2.59 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 103.7%	
13C5-PFPeA	4.422	268.3 -> 223.0	53539	5.30 µg/L	-0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 105.9%	
13C6-PFDA	8.198	519.1 -> 474.1	52320	1.22 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 97.3%	
13C7-PFUnDA	8.651	570.0 -> 525.1	62434	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C8-FOSA	9.670	506.1 -> 77.8	44579	2.74 µg/L	-0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 109.5%	
13C8-PFOA	7.198	421.1 -> 376.0	126309	2.51 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 100.4%	
13C8-PFOS	8.348	507.1 -> 79.9	20520	2.81 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 112.4%	
13C9-PFNA	7.717	472.1 -> 427.0	53894	1.33 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 106.7%	
d3-MeFOSAA	8.256	573.2 -> 419.0	38059	5.62 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 112.5%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	71759	10.88 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 108.8%	
d3-MeFOSA	10.769	515.0 -> 219.0	14354	2.44 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.4%	
d5-EtFOSAA	8.452	589.2 -> 419.0	32075	5.55 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 110.9%	
d7-MeFOSE	10.678	623.2 -> 58.9	136070	25.72 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 102.9%	
d9-EtFOSE	10.923	639.2 -> 58.9	185143	26.67 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 106.7%	
d5-EtFOSA	10.989	531.1 -> 219.0	14610	2.66 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 106.5%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	5337	0.72 µg/L	98
		327.1 -> 80.9	2087		
6:2FTS	6.974	427.1 -> 407.0	4621	0.74 µg/L	99
		427.1 -> 80.9	1779		
8:2FTS	7.999	527.1 -> 507.0	2953	0.80 µg/L	93
		527.1 -> 80.8	1076		
EtFOSAA	8.452	584.2 -> 419.1	1016	0.21 µg/L	m 91
		584.2 -> 526.0	584		
FOSA	9.672	498.1 -> 77.9	2772	0.18 µg/L	97
		498.1 -> 478.0	100		
MeFOSAA	8.257	570.1 -> 419.0	1789	0.21 µg/L	m 88
		570.1 -> 483.0	327		
PFBA	2.993	212.8 -> 168.9	7944	0.79 µg/L	100
PFBS	5.560	298.7 -> 79.9	3577	0.20 µg/L	96
		298.7 -> 98.8	1213		
PFDA	8.198	512.9 -> 469.0	8851	0.19 µg/L	98
		512.9 -> 219.0	1562		
PFDODA	9.080	613.1 -> 569.0	8214	0.19 µg/L	98
		613.1 -> 319.0	1038		
PFDS	9.233	599.0 -> 79.9	1184	0.20 µg/L	98

7.7.13
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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
PFHpA	6.569	599.0 -> 98.8	586	0.19	µg/L	99
		363.1 -> 319.0	9593			
PFHpS	7.856	363.1 -> 169.0	1515	0.18	µg/L	96
		449.0 -> 79.9	1789			
PFHxA	5.644	449.0 -> 98.9	891	0.20	µg/L	98
		313.0 -> 269.0	8427			
PFHxS	7.302	313.0 -> 118.9	350	0.20	µg/L	95
		398.7 -> 79.9	2931			
PFNA	7.730	398.7 -> 98.9	1287	0.19	µg/L	97
		463.0 -> 419.0	6446			
PFNS	8.814	463.0 -> 219.0	1657	0.17	µg/L	98
		548.8 -> 79.9	1729			
PFOA	7.200	548.8 -> 98.9	1005	0.23	µg/L	100
		413.0 -> 369.0	13326			
PFOS	8.350	413.0 -> 169.0	2316	0.18	µg/L	94
		498.9 -> 79.9	2093			
PFPeA	4.424	498.9 -> 98.8	1002	0.39	µg/L	100
		263.0 -> 219.0	10326			
PFPeS	6.620	349.1 -> 79.9	2387	0.20	µg/L	90
		349.1 -> 98.9	1005			
PFTeDA	9.785	713.1 -> 669.0	5709	0.18	µg/L	96
		713.1 -> 168.9	540			
PFTrDA	9.452	663.0 -> 619.0	8190	0.18	µg/L	93
		663.0 -> 168.9	829			
PFUnDA	8.652	563.1 -> 519.0	7330	0.20	µg/L	99
		563.1 -> 269.1	1031			
11Cl-PF3OUdS	9.491	630.9 -> 450.9	8146	0.35	µg/L	96
		632.9 -> 452.9	2672			
9Cl-PF3ONS	8.690	530.8 -> 351.0	14611	0.36	µg/L	98
		532.8 -> 353.0	4415			
ADONA	6.817	376.9 -> 250.9	36805	0.35	µg/L	100
		376.9 -> 84.8	9750			
HFPO-DA	6.020	284.9 -> 168.9	2582	0.38	µg/L	97
		284.9 -> 184.9	396			
3:3FTCA	3.858	241.0 -> 177.0	1615	0.92	µg/L	98
		241.0 -> 117.0	141			
5:3FTCA	6.283	341.0 -> 237.1	34142	4.61	µg/L	97
		341.0 -> 217.0	23590			
7:3FTCA	7.669	441.0 -> 316.9	20054	4.64	µg/L	89
		441.0 -> 336.9	41917			
EtFOSA	10.990	526.0 -> 219.0	3077	0.40	µg/L	97
		526.0 -> 169.0	3848			
EtFOSE	10.924	630.0 -> 58.9	8577	0.99	µg/L	100
		511.9 -> 219.0	2690			
MeFOSA	10.758	511.9 -> 169.0	3772	0.42	µg/L	97
		616.1 -> 58.9	5607			
MeFOSE	10.691	699.1 -> 79.9	517	0.96	µg/L	100
		699.1 -> 98.8	261			
PFDoDS	9.898	295.0 -> 201.0	1933	0.17	µg/L	86
		295.0 -> 84.9	474			
NFDHA	5.524	279.0 -> 85.1	7208	0.39	µg/L	100
		229.0 -> 84.9	5171			
PFMBA	3.551	314.8 -> 134.9	18848	0.37	µg/L	100
		314.8 -> 82.9	633			
PFEESA	6.112			0.34	µg/L	100

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

7.7.13
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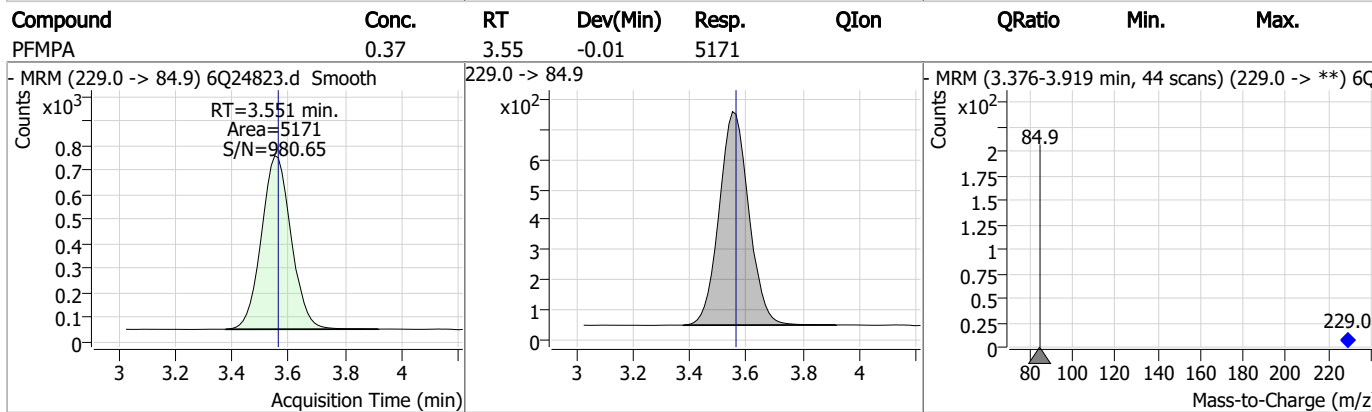
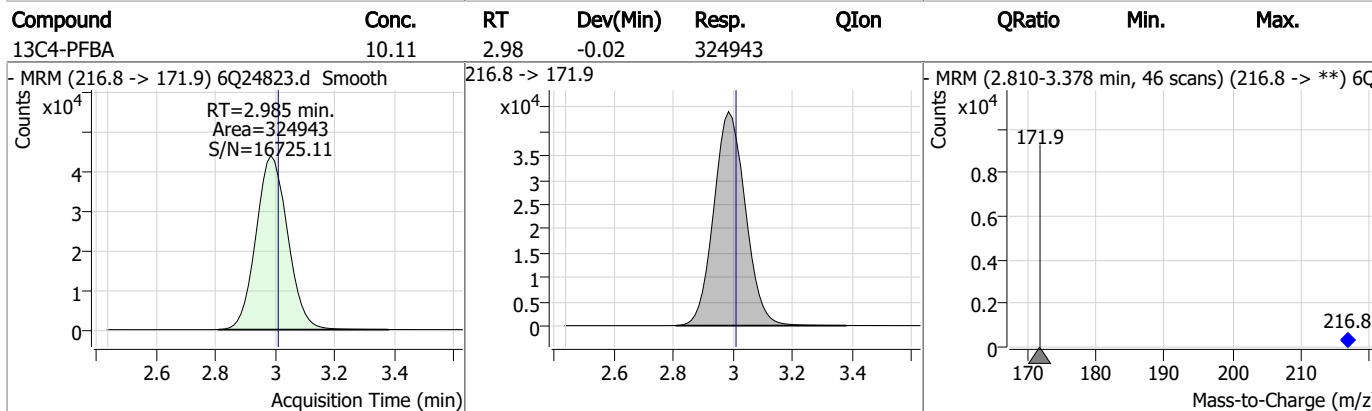
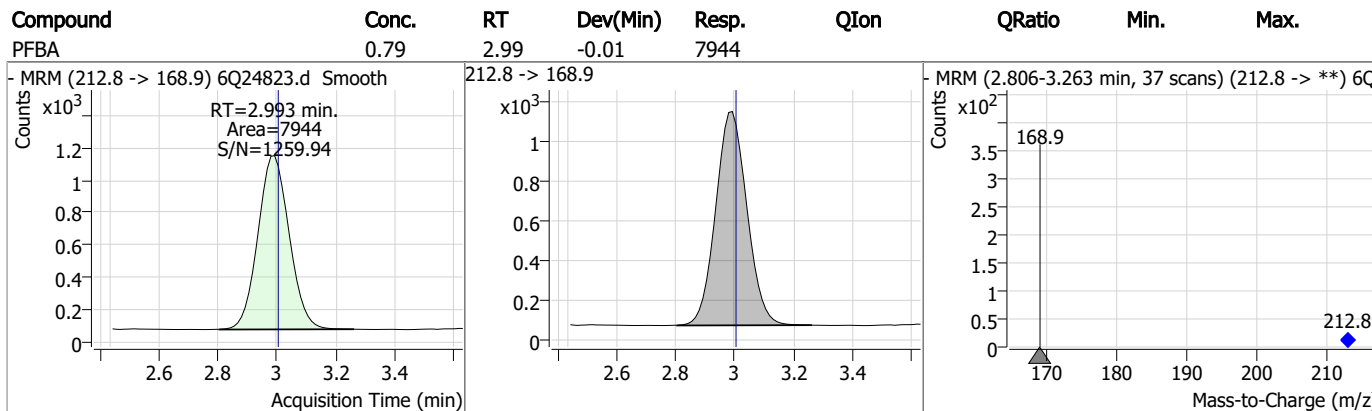
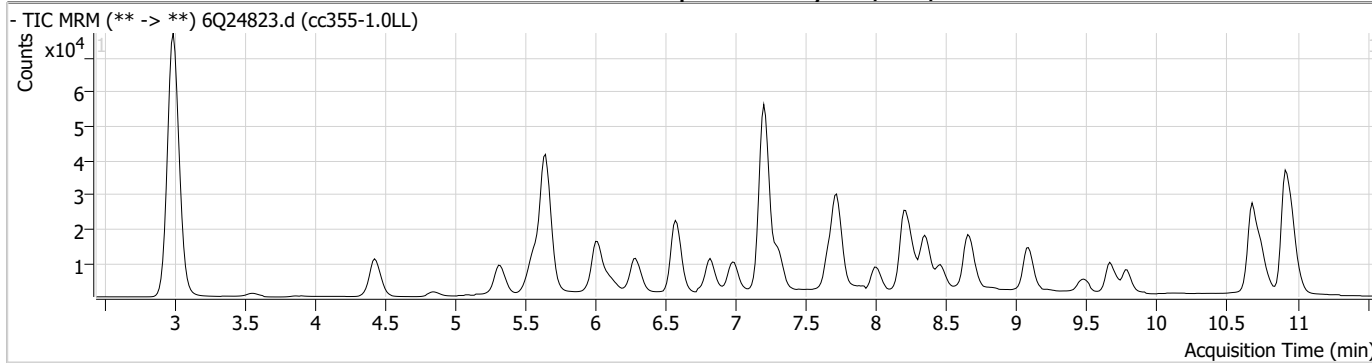
Perfluorinated Compounds by LC/MS/MS

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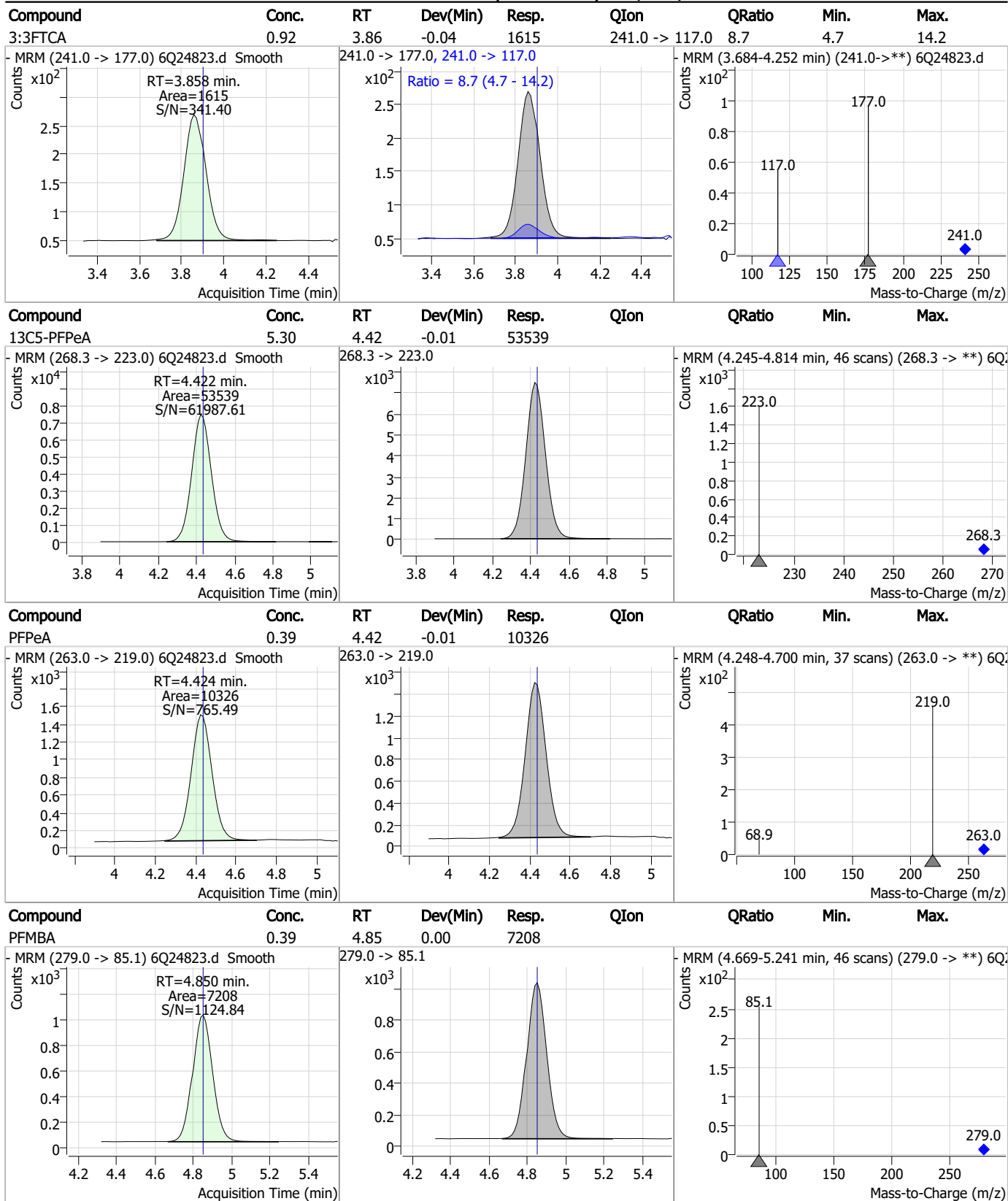
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Perfluorinated Compounds by LC/MS/MS

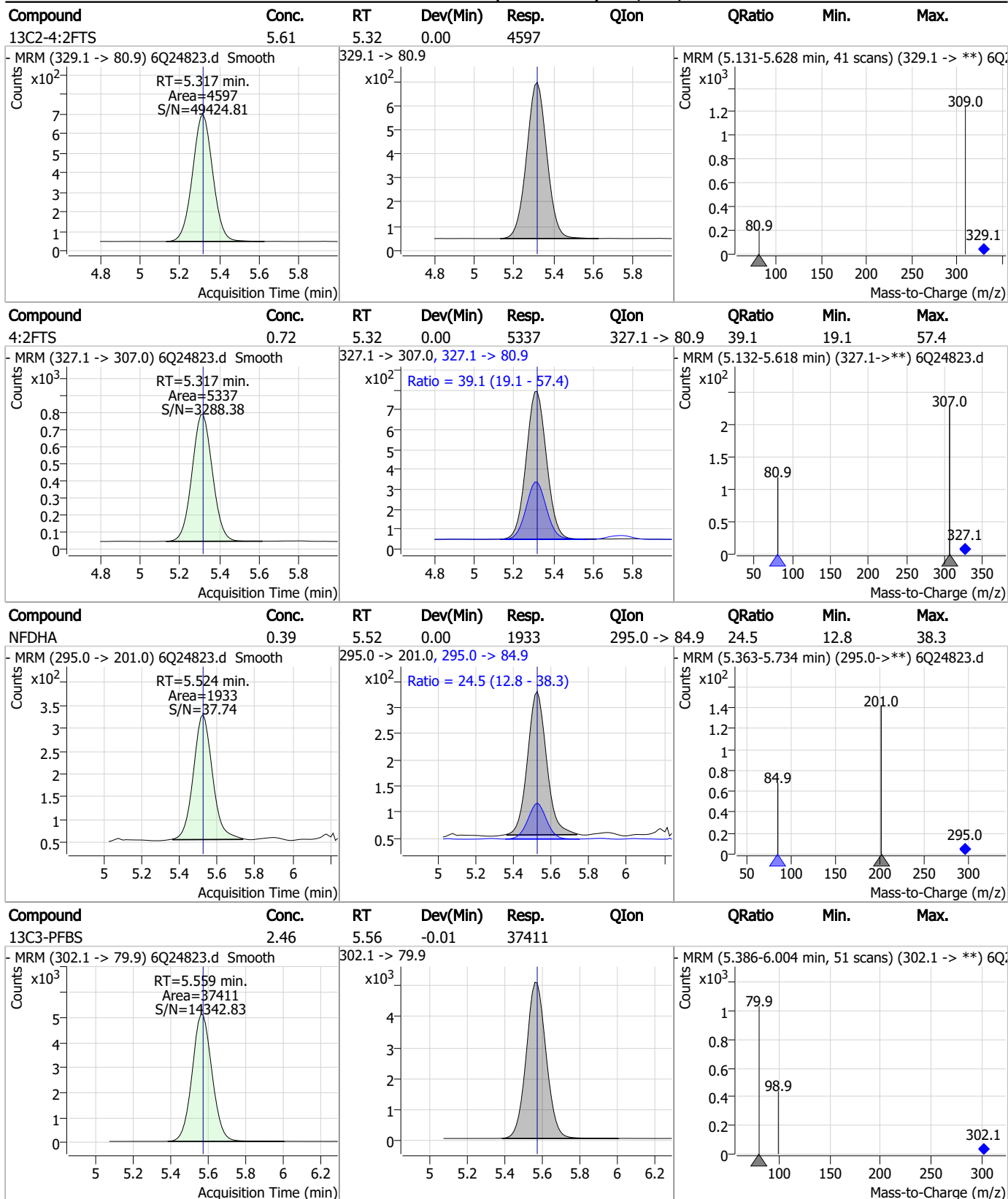


Perfluorinated Compounds by LC/MS/MS



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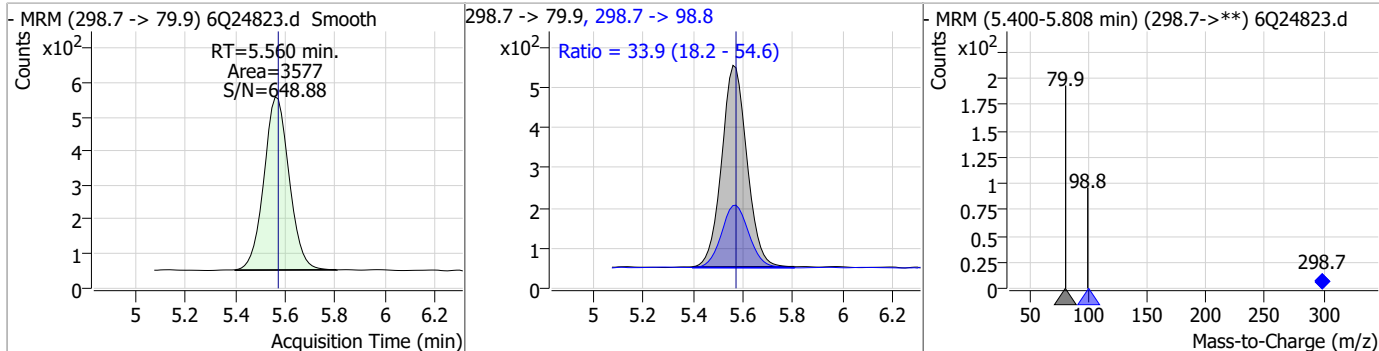
Perfluorinated Compounds by LC/MS/MS



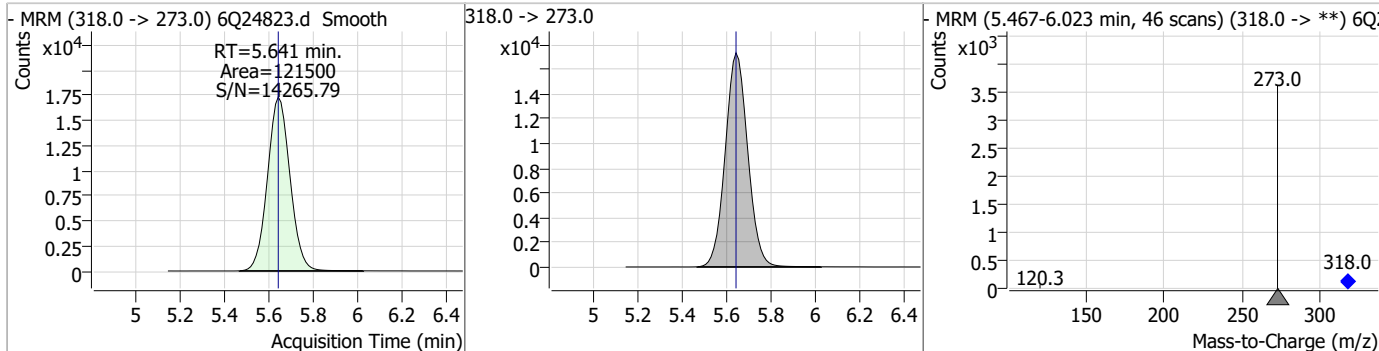
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Perfluorinated Compounds by LC/MS/MS

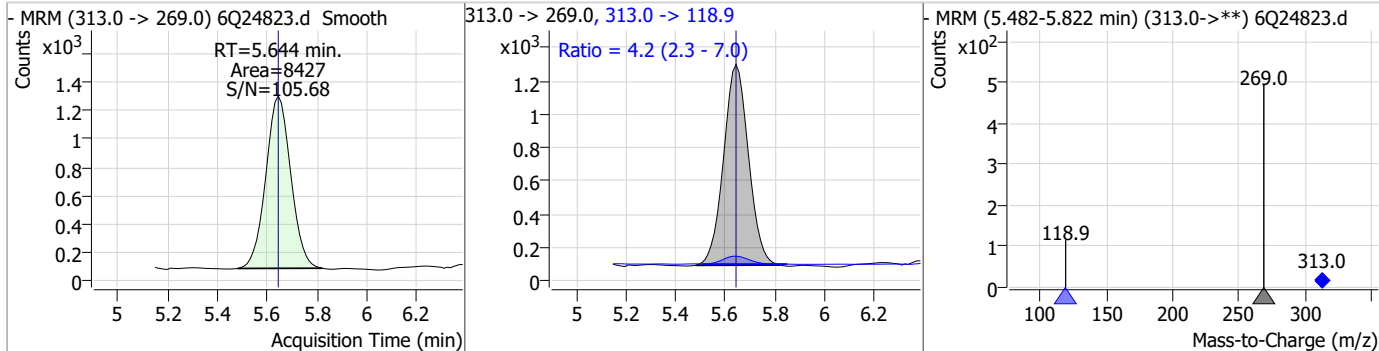
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFBS	0.20	5.56	-0.01	3577	298.7 -> 98.8	33.9	18.2	54.6



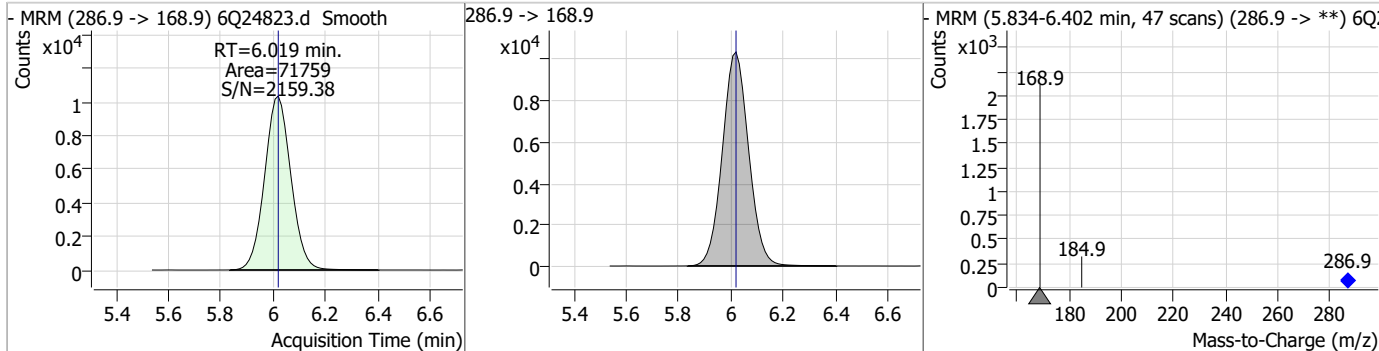
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C5-PFHxA	2.59	5.64	0.00	121500				



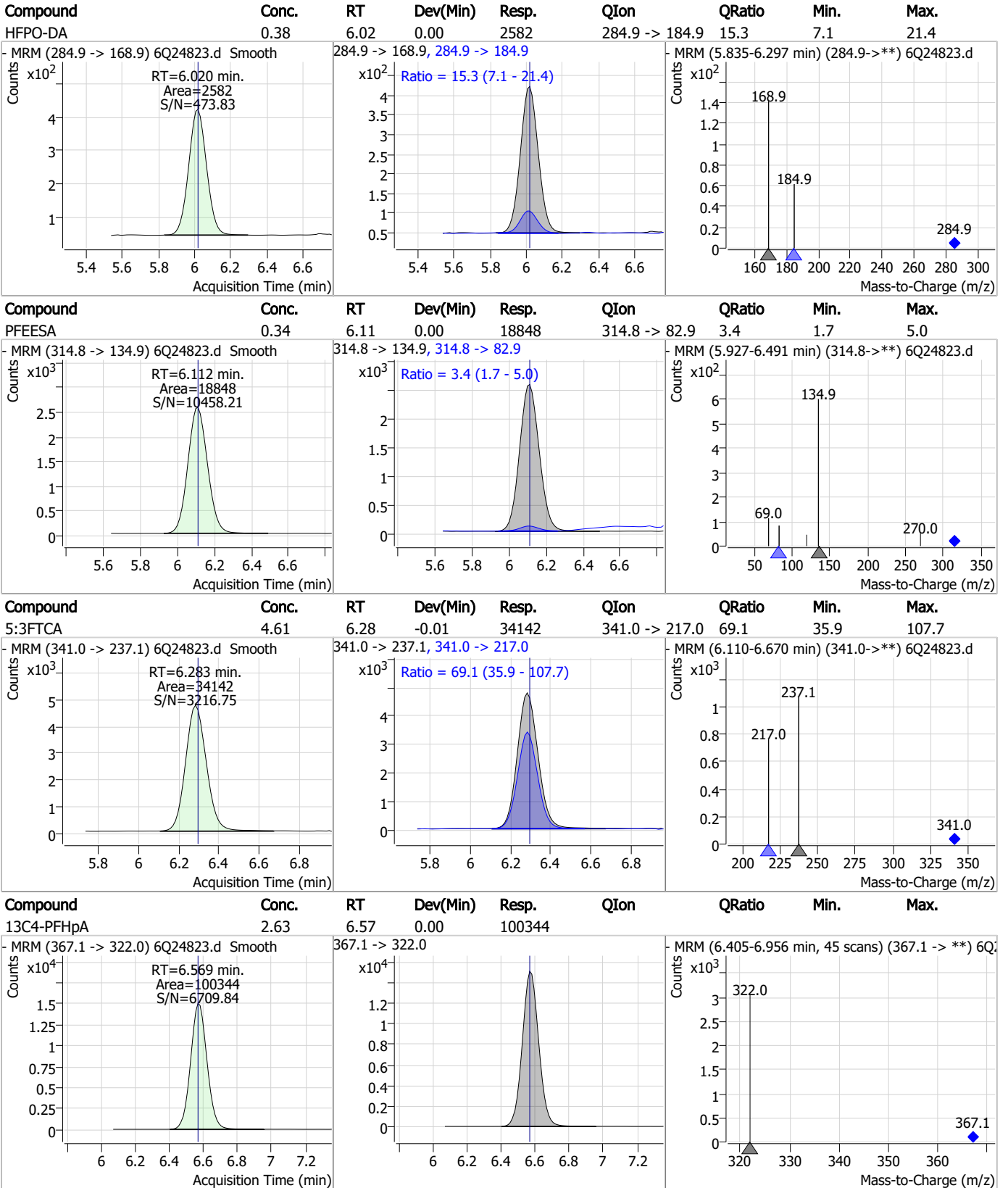
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHxA	0.20	5.64	0.00	8427	313.0 -> 118.9	4.2	2.3	7.0



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C3-HFPO-DA	10.88	6.02	0.00	71759				



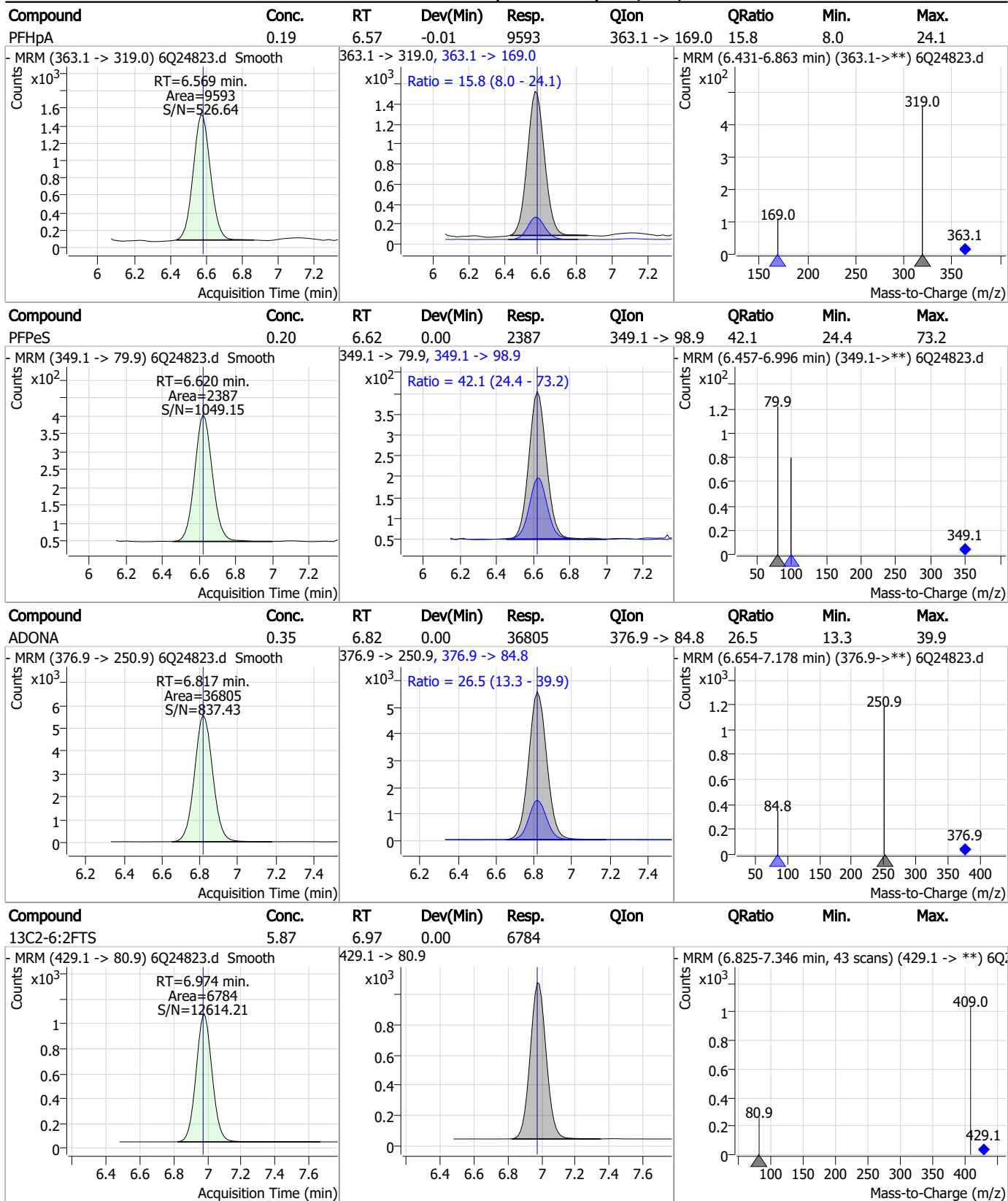
Perfluorinated Compounds by LC/MS/MS



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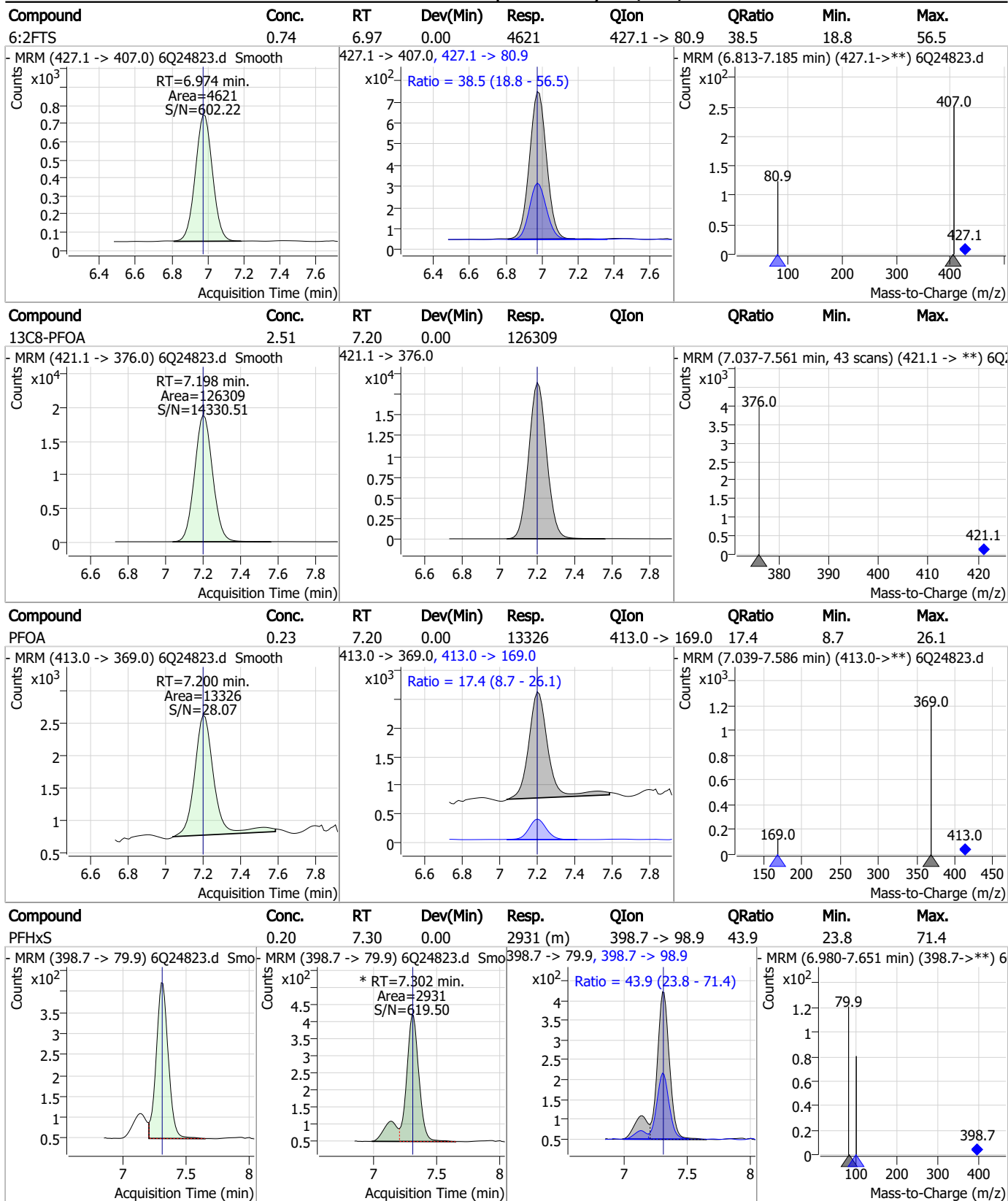


Perfluorinated Compounds by LC/MS/MS



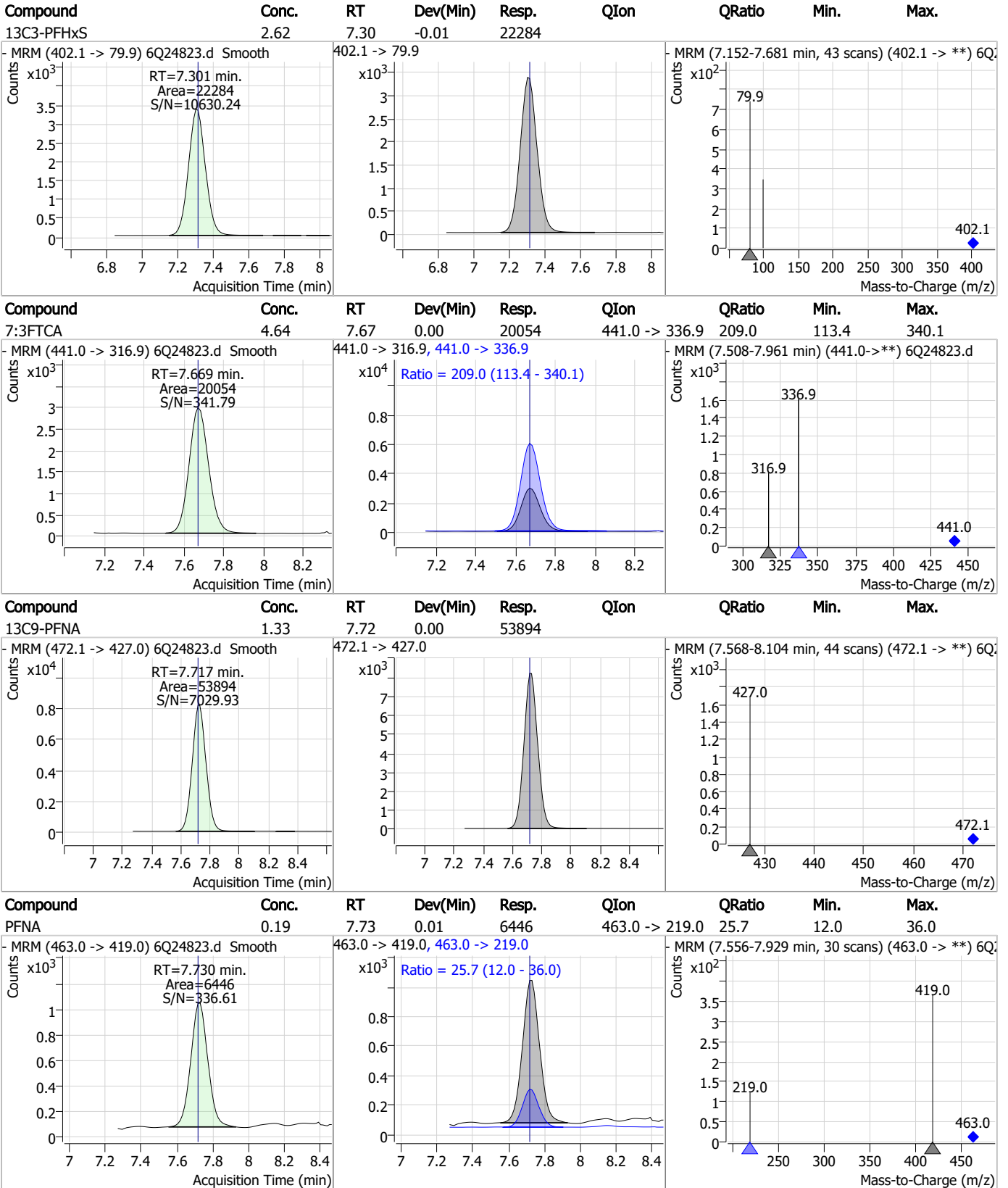
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Perfluorinated Compounds by LC/MS/MS



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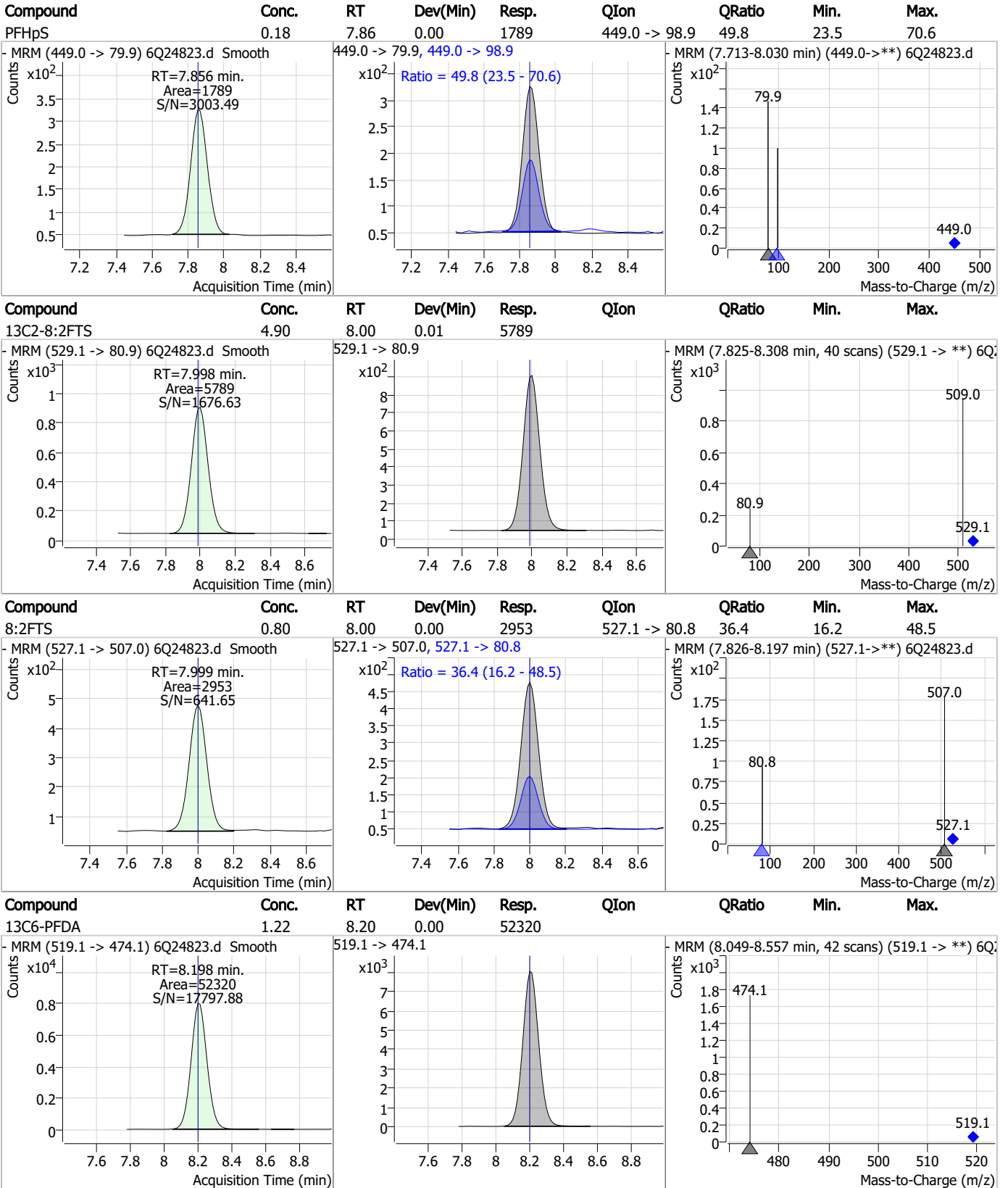
Perfluorinated Compounds by LC/MS/MS



7.7.13 7



Perfluorinated Compounds by LC/MS/MS

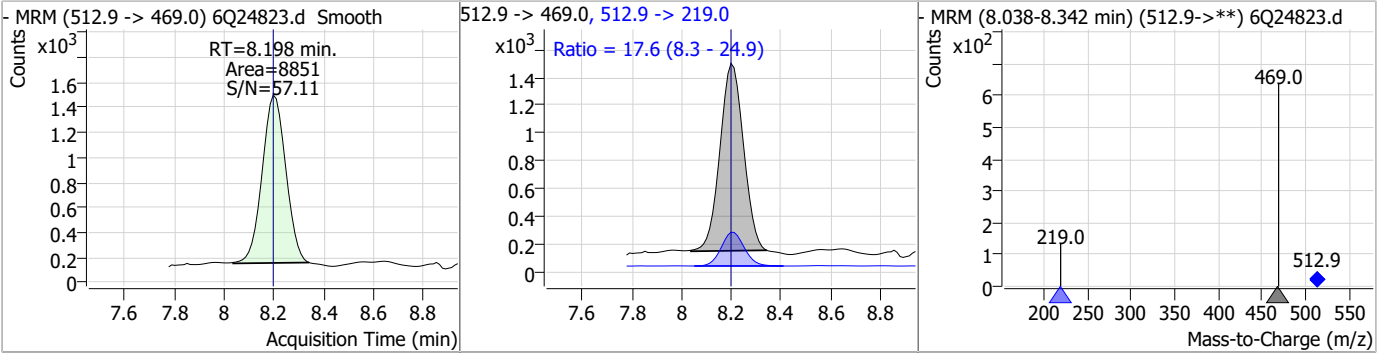


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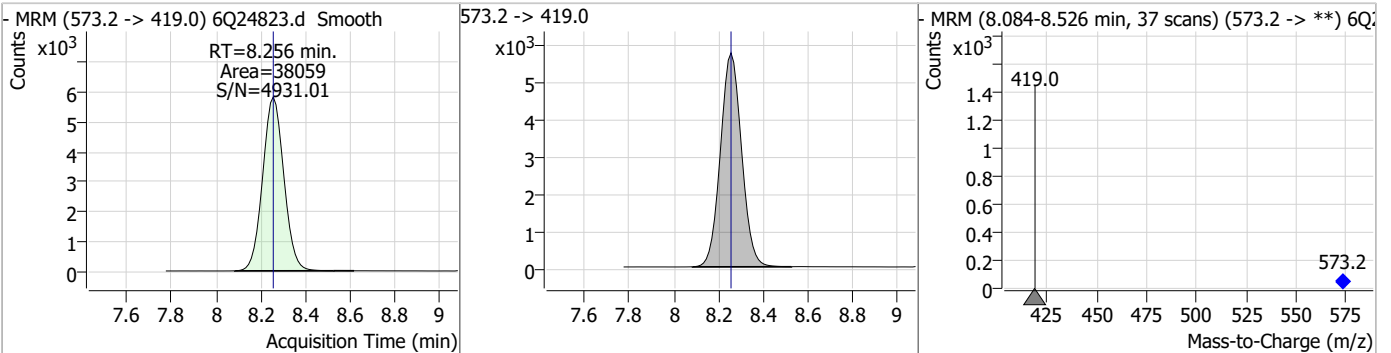


Perfluorinated Compounds by LC/MS/MS

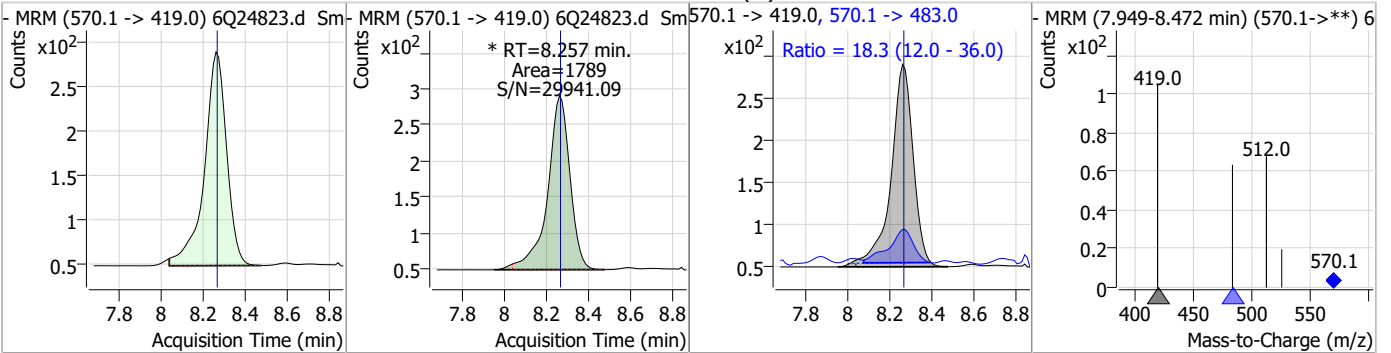
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDA	0.19	8.20	0.00	8851	512.9 -> 219.0	17.6	8.3	24.9



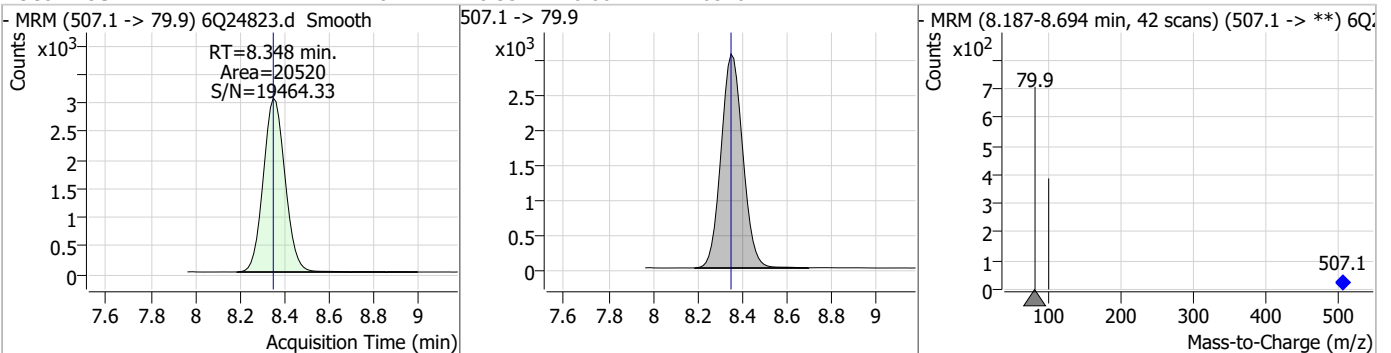
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSAA	5.62	8.26	0.00	38059				



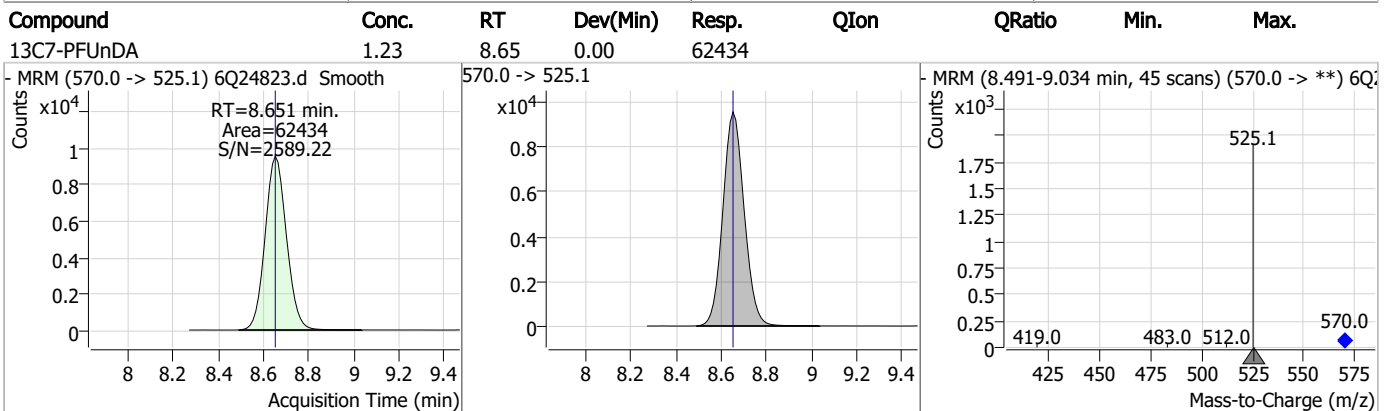
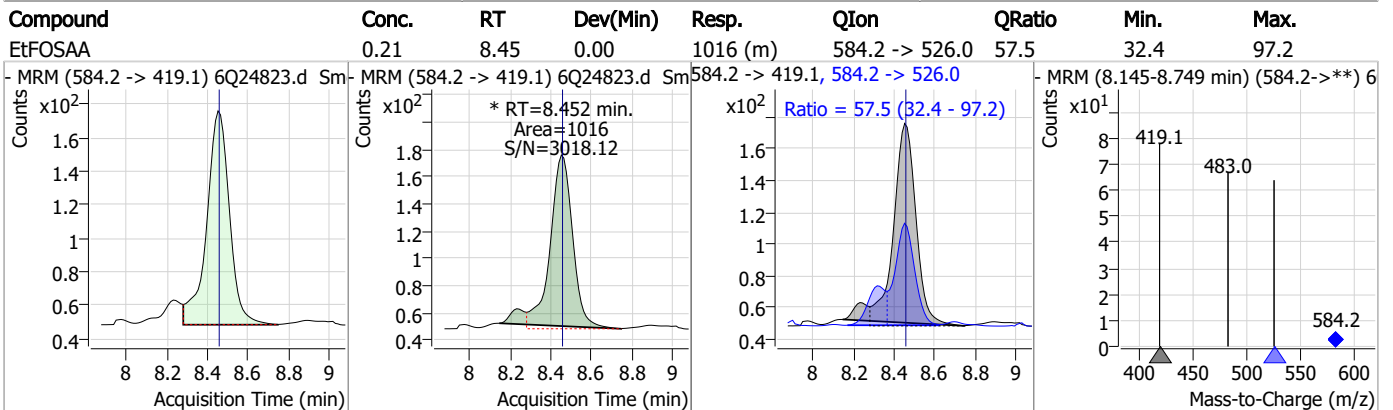
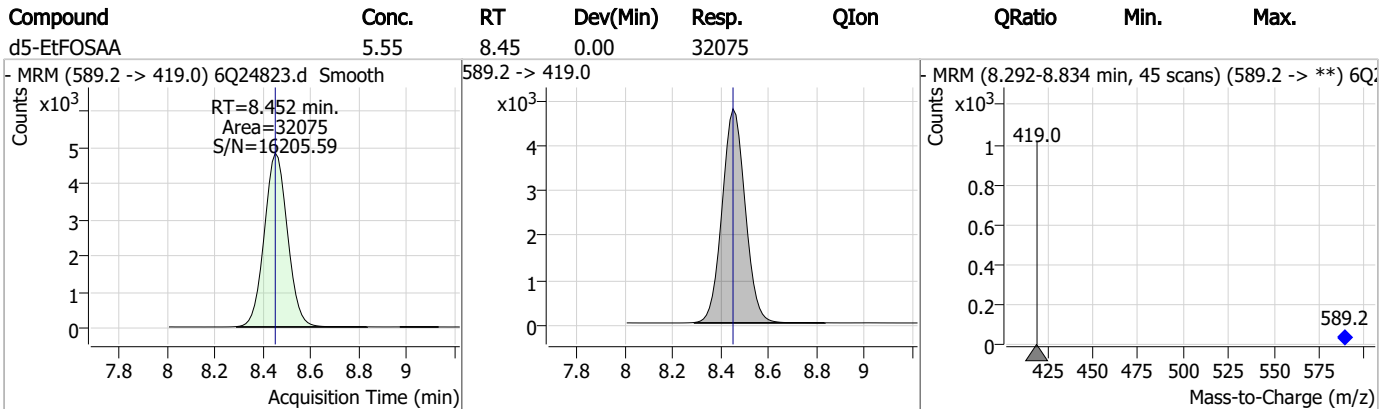
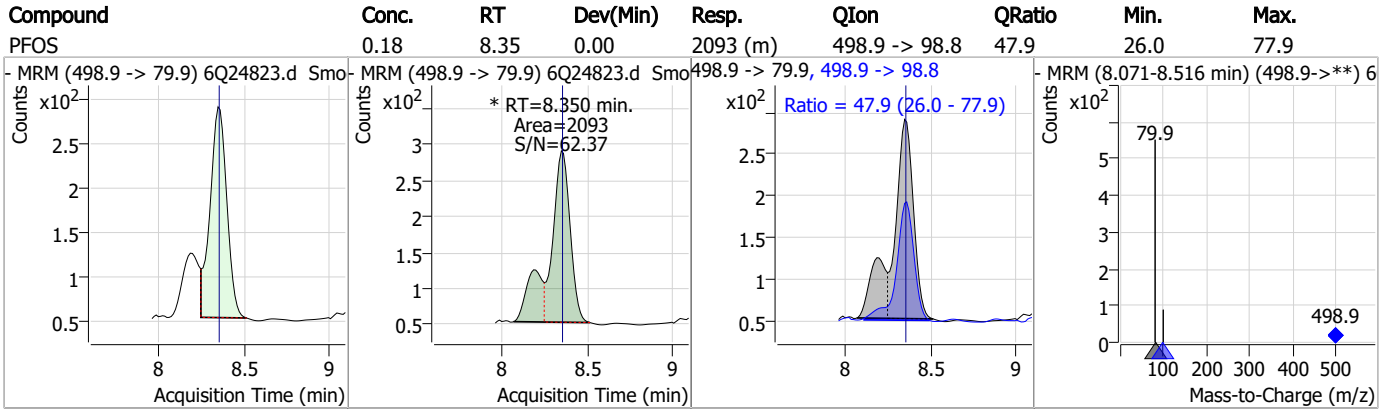
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSAA	0.21	8.26	0.00	1789 (m)	570.1 -> 483.0	18.3	12.0	36.0



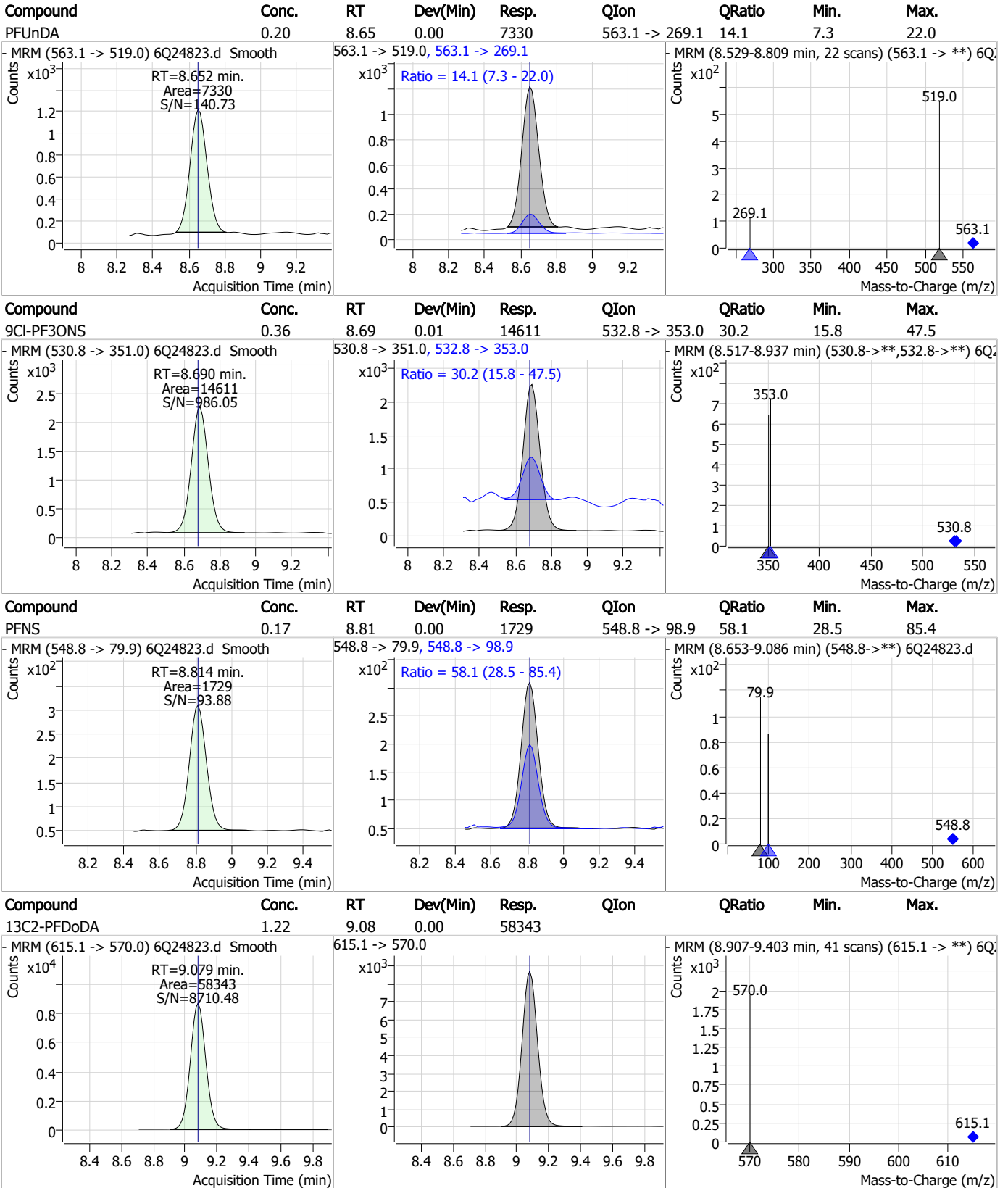
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-PFOS	2.81	8.35	0.00	20520				



Perfluorinated Compounds by LC/MS/MS

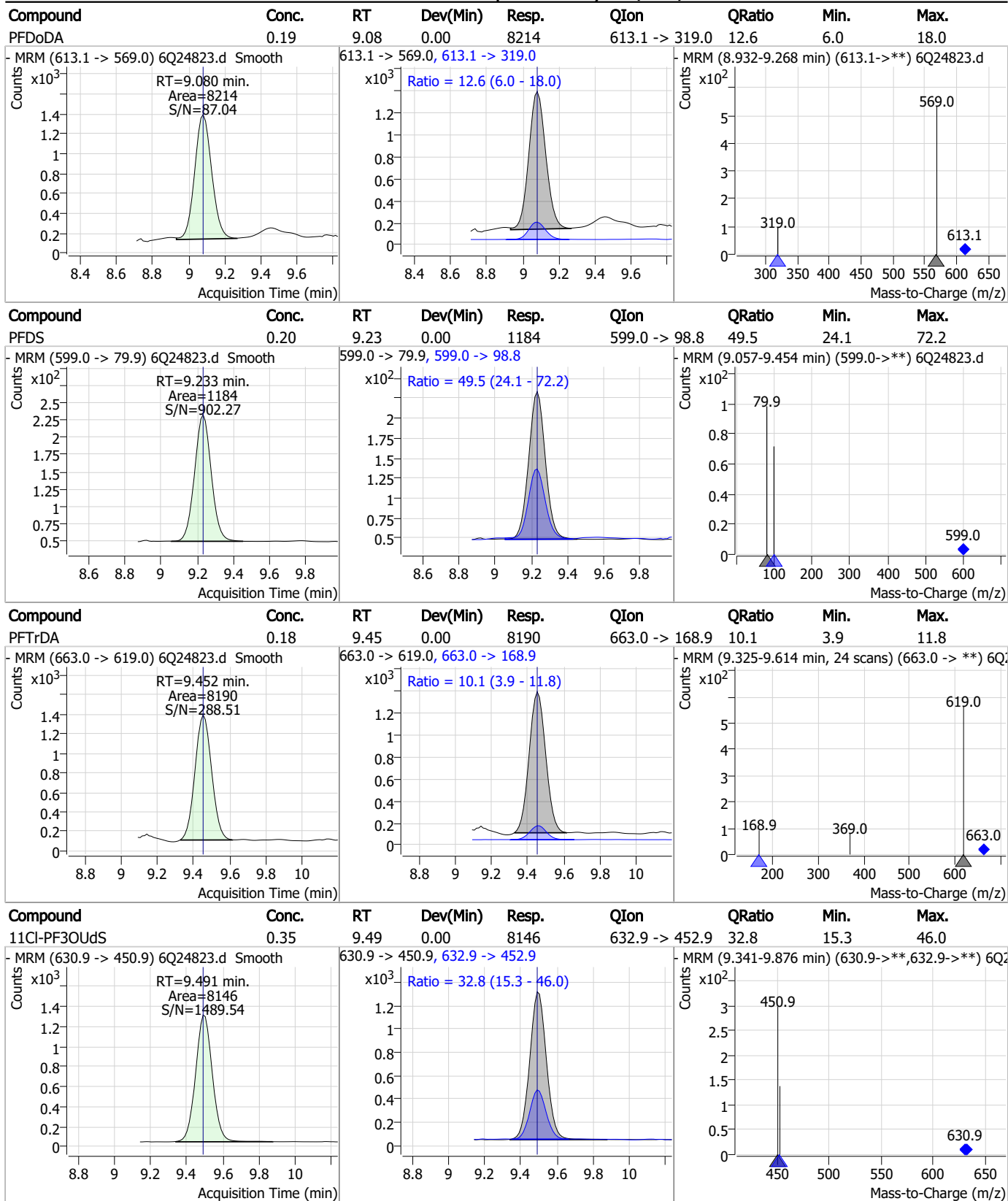


Perfluorinated Compounds by LC/MS/MS



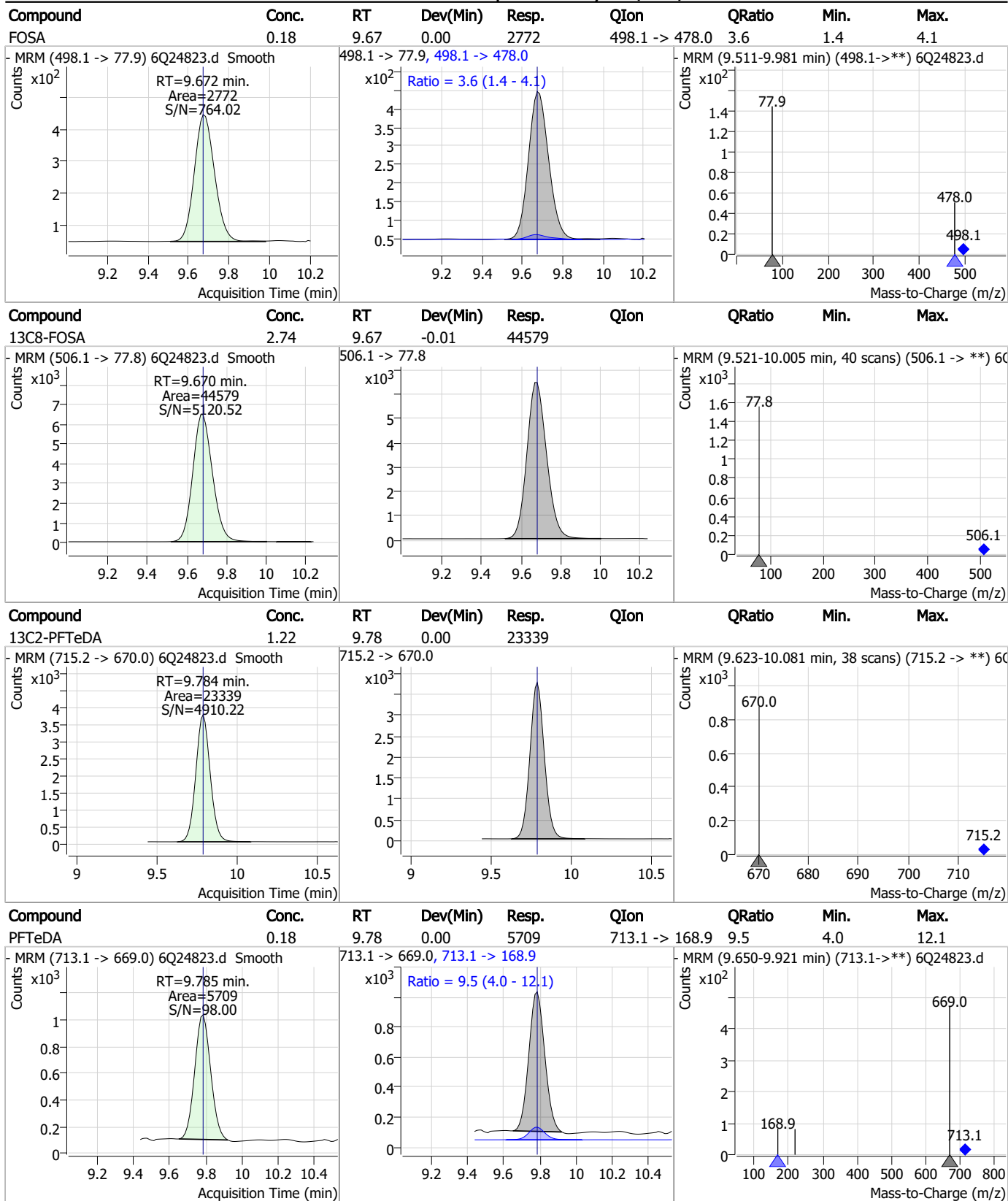
7.7.13
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Perfluorinated Compounds by LC/MS/MS



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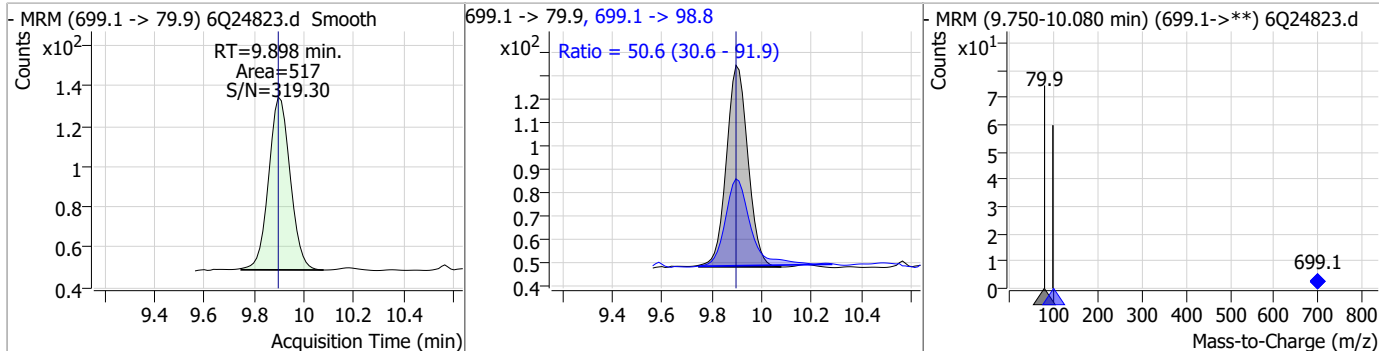
Perfluorinated Compounds by LC/MS/MS



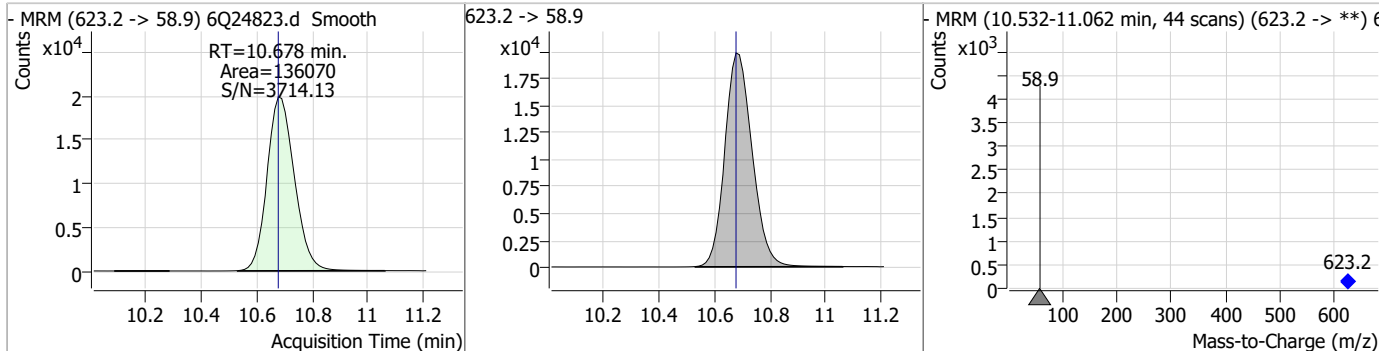
7.7.13
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Perfluorinated Compounds by LC/MS/MS

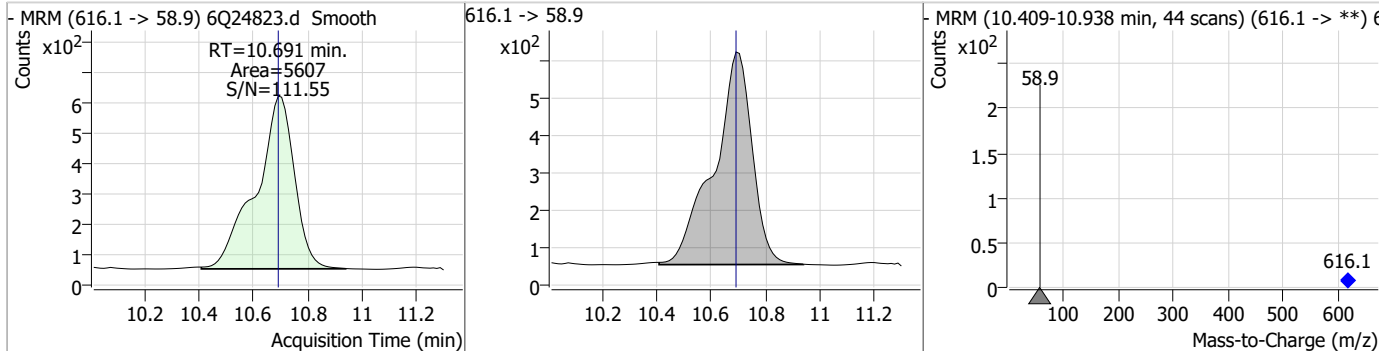
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFD _o DS	0.17	9.90	0.00	517	699.1 -> 98.8	50.6	30.6	91.9



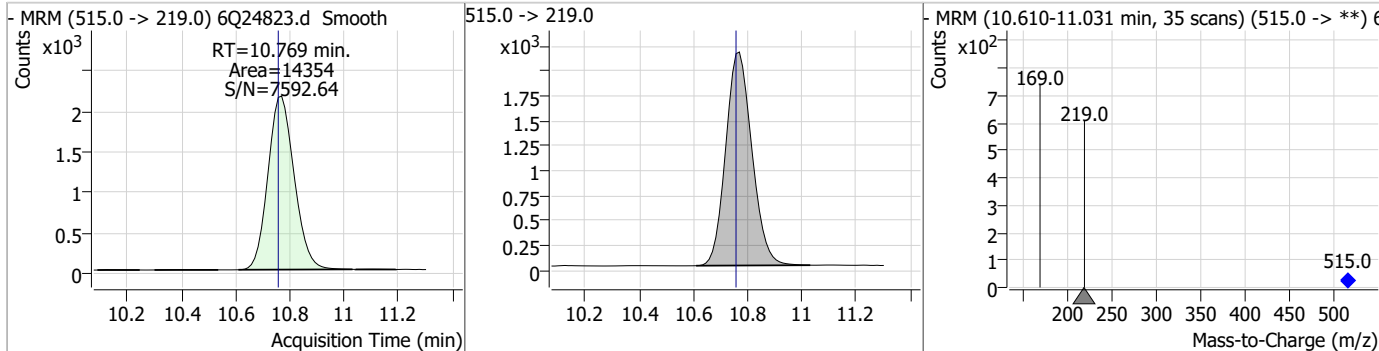
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	25.72	10.68	0.00	136070				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	0.96	10.69	0.00	5607				

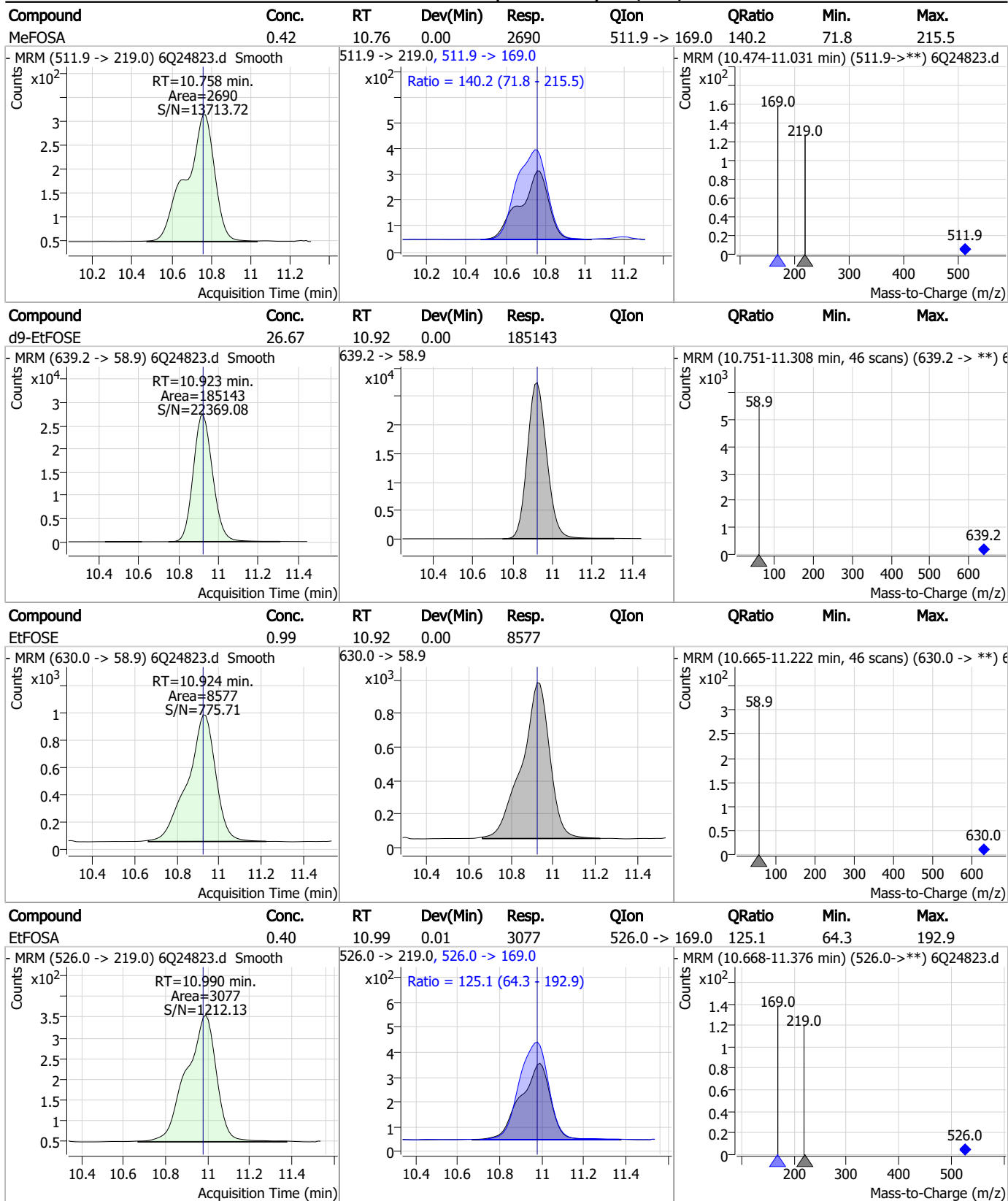


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.44	10.77	0.01	14354				



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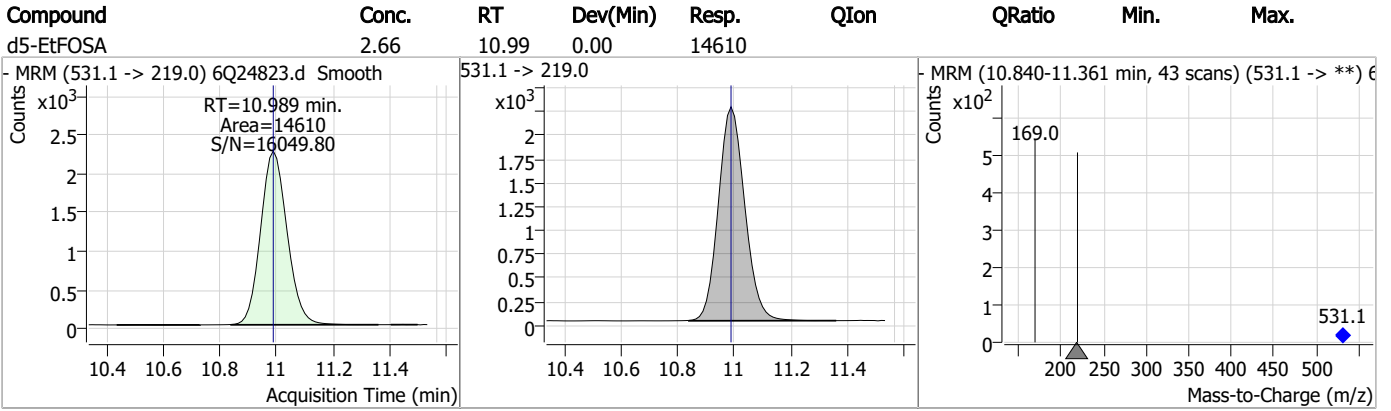
Perfluorinated Compounds by LC/MS/MS



7.7.13

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Perfluorinated Compounds by LC/MS/MS



7.7.13

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Manual Integration Approval Summary

Sample Number: S6Q355-CC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24823.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/21/23 23:27 Supervisor approved: 09/22/23 13:16 Natasha Gumtie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
MeFOSAA	2355-31-9		8.26	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak
EtFOSAA	2991-50-6		8.45	Split peak

7.7.13.1
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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24834.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/22/2023 2:05:28 AM
 Sample Name : cc355-4
 Vial : P1-A5
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	3.010	216.8 -> 171.9	337496	10.00 µg/L	0.000
M5-PFPeA	4.434	268.3 -> 223.0	54465	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	122766	2.50 µg/L	0.000
M4-PFHpA	6.581	367.1 -> 322.0	98959	2.50 µg/L	0.012
M8-PFOA	7.198	421.1 -> 376.0	133616	2.50 µg/L	0.000
M9-PFNA	7.729	472.1 -> 427.0	55462	1.25 µg/L	0.012
M6-PFDA	8.198	519.1 -> 474.1	50424	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	62574	1.25 µg/L	0.000
M2-PFDoDA	9.079	615.1 -> 570.0	57640	1.25 µg/L	0.000
M2-PFTeDA	9.784	715.2 -> 670.0	21618	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	44473	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	38259	2.50 µg/L	0.000
M3-PFHxS	7.301	402.1 -> 79.9	21842	2.50 µg/L	-0.012
M8-PFOS	8.361	507.1 -> 79.9	19890	2.50 µg/L	0.012
M2-4:2FTS	5.317	329.1 -> 80.9	4274	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6041	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	6146	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	37963	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	70426	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	33116	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	136806	25.00 µg/L	0.000
M9-EtFOSE	10.923	639.2 -> 58.9	186785	25.00 µg/L	0.000
M5-EtFOSA	10.989	531.1 -> 219.0	14752	2.50 µg/L	0.000
M3-MeFOSA	10.769	515.0 -> 219.0	14819	2.50 µg/L	0.012
13C4-PFOS	8.361	502.8 -> 79.9	27416	2.50 µg/L	0.012
13C3-PFBA	3.001	216.0 -> 172.0	137655	5.00 µg/L	0.000
18O2-PFHxS	7.313	403.0 -> 83.9	16148	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	145099	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	47378	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	60724	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	96701	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4274	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.5%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6041	5.09 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.7%		
13C2-8:2FTS	7.998	529.1 -> 80.9	6146	5.07 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 101.4%		
13C2-PFDoDA	9.079	615.1 -> 570.0	57640	1.20 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 96.1%		
13C2-PFTeDA	9.784	715.2 -> 670.0	21618	1.13 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 90.2%		
13C3-PFBS	5.571	302.1 -> 79.9	38259	2.45 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 97.8%		
13C3-PFHxS	7.301	402.1 -> 79.9	21842	2.50 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 99.9%	
13C4-PFBA	3.010	216.8 -> 171.9	337496	10.05 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.5%	
13C4-PFHpA	6.581	367.1 -> 322.0	98959	2.38 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.3%	
13C5-PFHxA	5.641	318.0 -> 273.0	122766	2.41 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 96.4%	
13C5-PFPeA	4.434	268.3 -> 223.0	54465	4.95 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 99.1%	
13C6-PFDA	8.198	519.1 -> 474.1	50424	1.17 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 93.5%	
13C7-PFUnDA	8.651	570.0 -> 525.1	62574	1.23 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 98.2%	
13C8-FOSA	9.682	506.1 -> 77.8	44473	2.47 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.8%	
13C8-PFOA	7.198	421.1 -> 376.0	133616	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.5%	
13C8-PFOS	8.361	507.1 -> 79.9	19890	2.46 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 98.5%	
13C9-PFNA	7.729	472.1 -> 427.0	55462	1.26 µg/L	0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.8%	
d3-MeFOSAA	8.256	573.2 -> 419.0	37963	5.07 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 101.4%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	70426	9.82 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 98.2%	
d3-MeFOSA	10.769	515.0 -> 219.0	14819	2.27 µg/L	0.012
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 90.9%	
d5-EtFOSAA	8.452	589.2 -> 419.0	33116	5.18 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 103.6%	
d7-MeFOSE	10.678	623.2 -> 58.9	136806	23.38 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 93.5%	
d9-EtFOSE	10.923	639.2 -> 58.9	186785	24.33 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.3%	
d5-EtFOSA	10.989	531.1 -> 219.0	14752	2.43 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 97.2%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	60785	8.78 µg/L	99
		327.1 -> 80.9	22938		
6:2FTS	6.974	427.1 -> 407.0	47668	8.53 µg/L	97
		427.1 -> 80.9	18906		
8:2FTS	7.999	527.1 -> 507.0	34256	8.78 µg/L	93
		527.1 -> 80.8	12478		
EtFOSAA	8.452	584.2 -> 419.1	11055	2.21 µg/L	98
		584.2 -> 526.0	7012		
FOSA	9.672	498.1 -> 77.9	32699	2.13 µg/L	99
		498.1 -> 478.0	993		
MeFOSAA	8.257	570.1 -> 419.0	18176	2.11 µg/L	97
		570.1 -> 483.0	4107		
PFBA	3.006	212.8 -> 168.9	92796	8.92 µg/L	100
PFBS	5.572	298.7 -> 79.9	35800	1.98 µg/L	98
		298.7 -> 98.8	13522		
PFDA	8.198	512.9 -> 469.0	105182	2.34 µg/L	97
		512.9 -> 219.0	16124		
PFDoDA	9.080	613.1 -> 569.0	96379	2.30 µg/L	98
		613.1 -> 319.0	10990		
PFDS	9.233	599.0 -> 79.9	11883	2.04 µg/L	97

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	5927			
PFHpA	6.569	363.1 -> 319.0	114867	2.28	µg/L	95
		363.1 -> 169.0	16182			
PFHpS	7.856	449.0 -> 79.9	19831	2.04	µg/L	94
		449.0 -> 98.9	10118			
PFHxA	5.644	313.0 -> 269.0	96630	2.26	µg/L	98
		313.0 -> 118.9	4039			
PFHxS	7.314	398.7 -> 79.9	27358	1.94	µg/L	m 98
		398.7 -> 98.9	13349			
PFNA	7.730	463.0 -> 419.0	78051	2.19	µg/L	99
		463.0 -> 219.0	18168			
PFNS	8.814	548.8 -> 79.9	21573	2.23	µg/L	94
		548.8 -> 98.9	11387			
PFOA	7.200	413.0 -> 369.0	139030	2.26	µg/L	99
		413.0 -> 169.0	23731			
PFOS	8.350	498.9 -> 79.9	21399	1.90	µg/L	m 99
		498.9 -> 98.8	11222			
PFPeA	4.436	263.0 -> 219.0	115421	4.30	µg/L	100
PFPeS	6.620	349.1 -> 79.9	24383	2.08	µg/L	97
		349.1 -> 98.9	11342			
PFTeDA	9.785	713.1 -> 669.0	68792	2.38	µg/L	98
		713.1 -> 168.9	5084			
PFTrDA	9.452	663.0 -> 619.0	102532	2.29	µg/L	99
		663.0 -> 168.9	8414			
PFUnDA	8.652	563.1 -> 519.0	76980	2.12	µg/L	95
		563.1 -> 269.1	12884			
11CI-PF3OUdS	9.491	630.9 -> 450.9	95882	4.19	µg/L	99
		632.9 -> 452.9	29723			
9CI-PF3ONS	8.690	530.8 -> 351.0	168742	4.18	µg/L	95
		532.8 -> 353.0	48748			
ADONA	6.817	376.9 -> 250.9	431261	4.15	µg/L	99
		376.9 -> 84.8	113412			
HFPO-DA	6.020	284.9 -> 168.9	30607	4.58	µg/L	98
		284.9 -> 184.9	4144			
3:3FTCA	3.902	241.0 -> 177.0	20000	11.02	µg/L	99
		241.0 -> 117.0	1976			
5:3FTCA	6.296	341.0 -> 237.1	443955	59.28	µg/L	93
		341.0 -> 217.0	293516			
7:3FTCA	7.682	441.0 -> 316.9	254104	58.16	µg/L	98
		441.0 -> 336.9	568737			
EtFOSA	10.990	526.0 -> 219.0	34955	4.51	µg/L	98
		526.0 -> 169.0	45720			
EtFOSE	10.924	630.0 -> 58.9	98037	11.20	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	32867	4.93	µg/L	94
		511.9 -> 169.0	44558			
MeFOSE	10.691	616.1 -> 58.9	66971	11.40	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	6216	2.17	µg/L	94
		699.1 -> 98.8	3506			
NFDHA	5.524	295.0 -> 201.0	23068	4.57	µg/L	97
		295.0 -> 84.9	5503			
PFMBA	4.850	279.0 -> 85.1	84042	4.42	µg/L	100
PFMPA	3.563	229.0 -> 84.9	62159	4.42	µg/L	100
PFEESA	6.112	314.8 -> 134.9	226093	4.03	µg/L	100
		314.8 -> 82.9	7490			

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



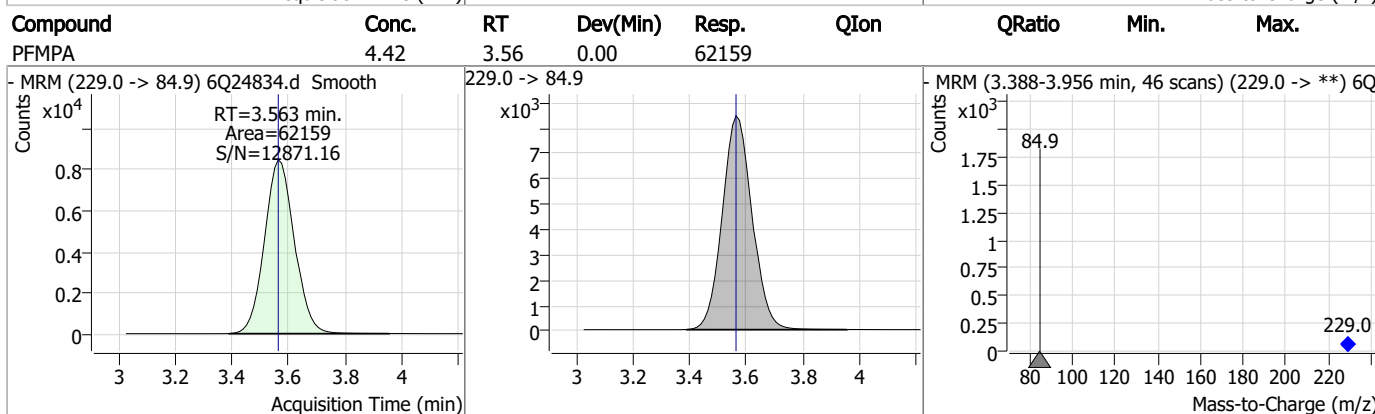
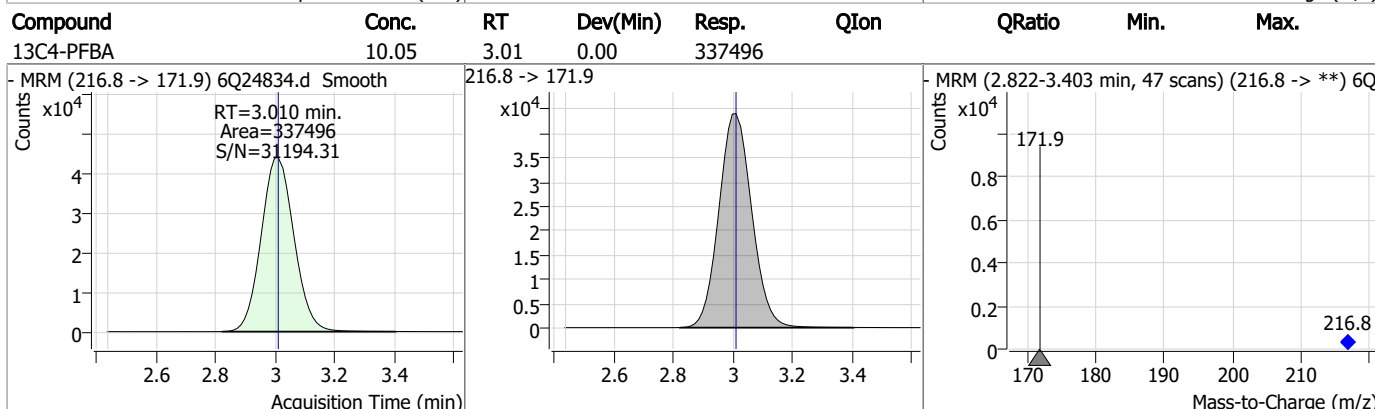
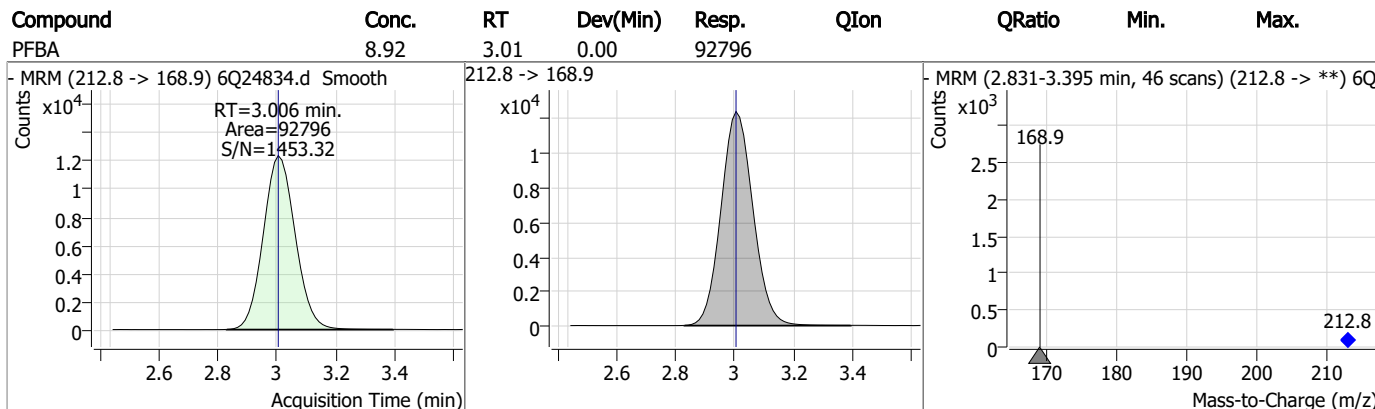
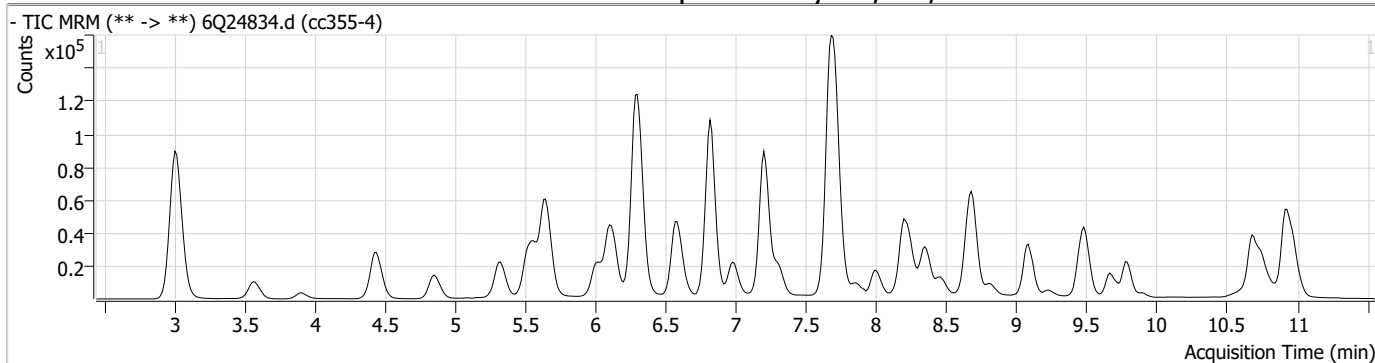
Perfluorinated Compounds by LC/MS/MS

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

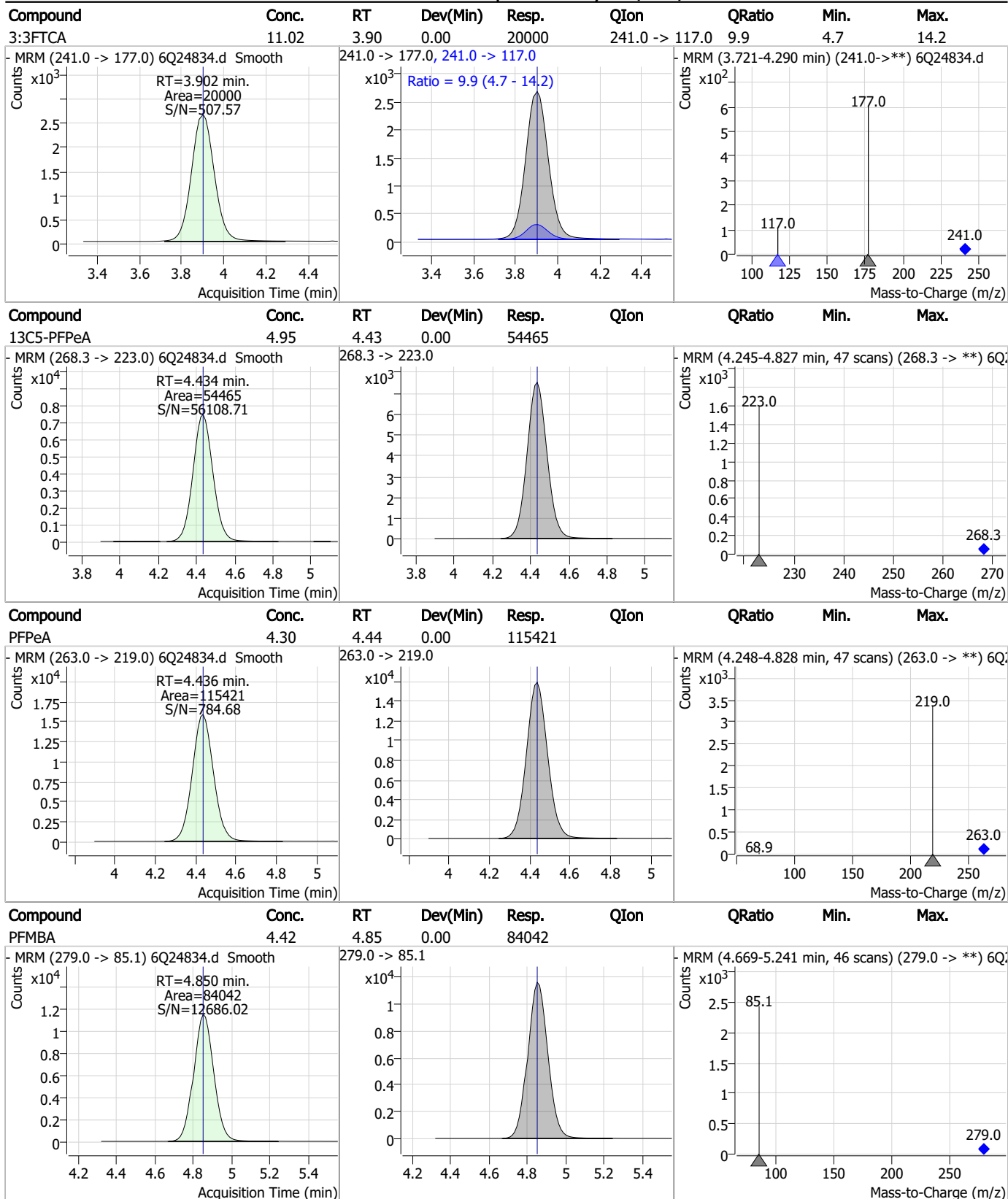
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Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS



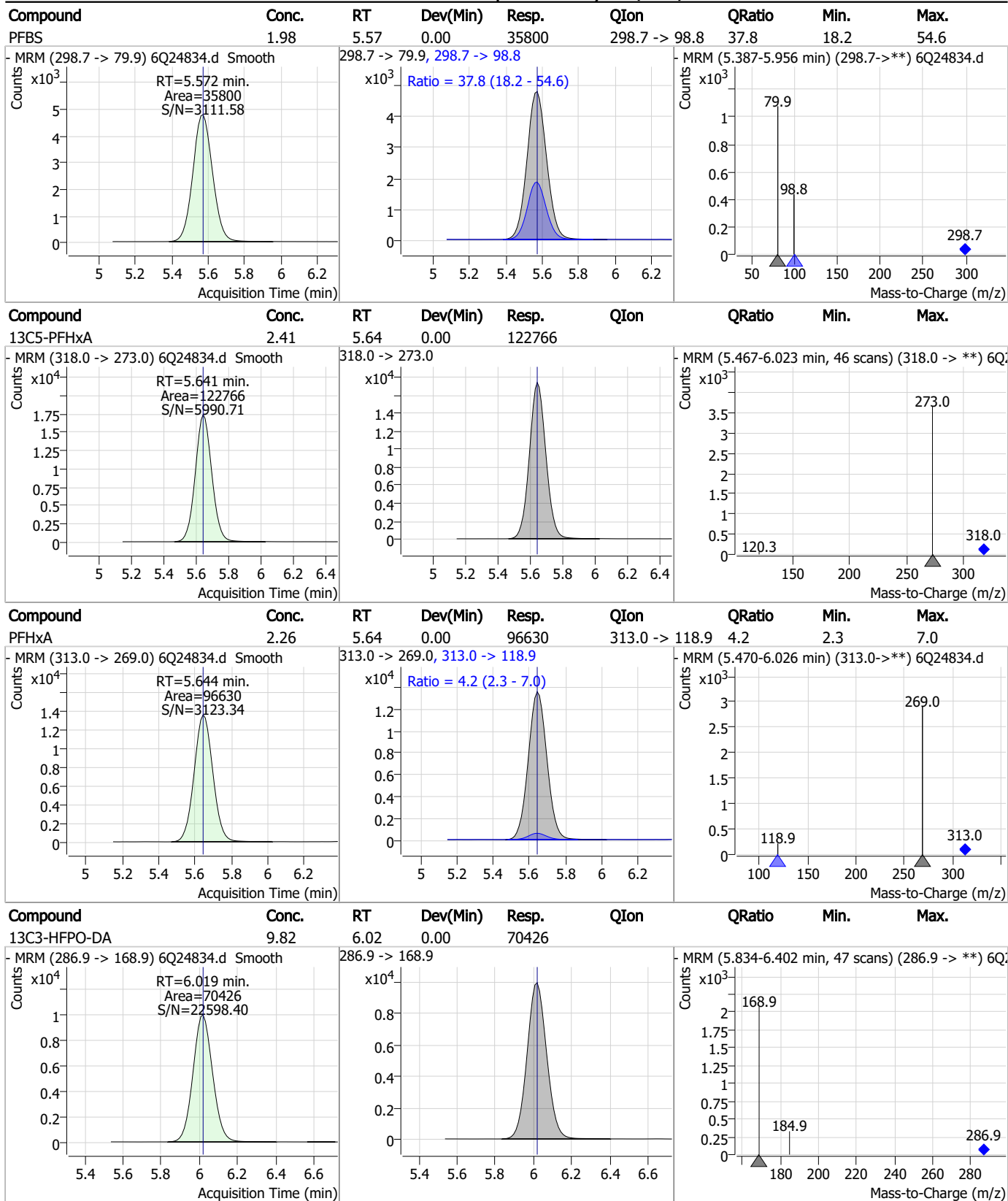
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-4:2FTS	5.07	5.32	0.00	4274				
4:2FTS	8.78	5.32	0.00	60785	327.1 -> 80.9	37.7	19.1	57.4
NFDHA	4.57	5.52	0.00	23068	295.0 -> 84.9	23.9	12.8	38.3
13C3-PFBS	2.45	5.57	0.00	38259				

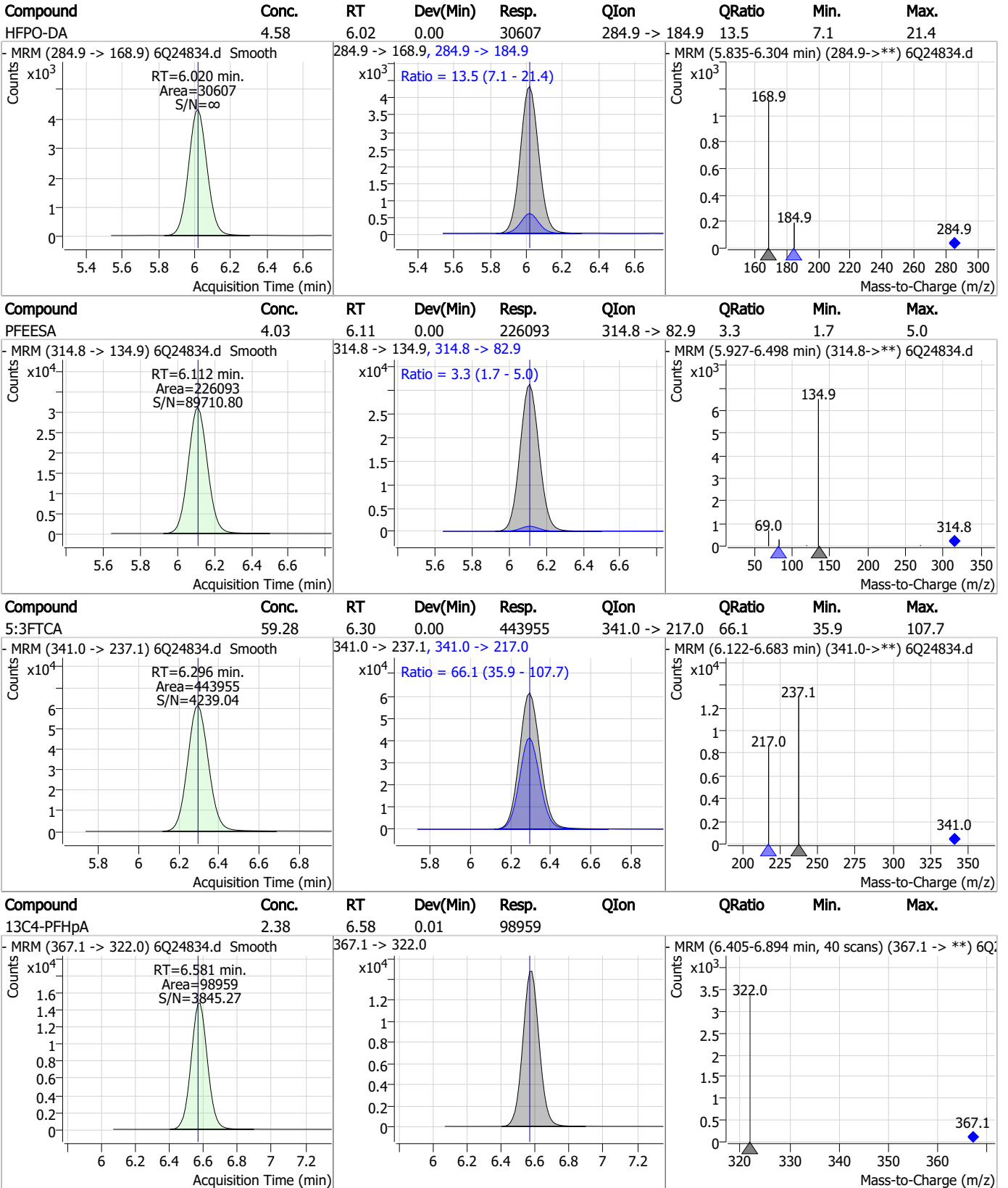
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Perfluorinated Compounds by LC/MS/MS



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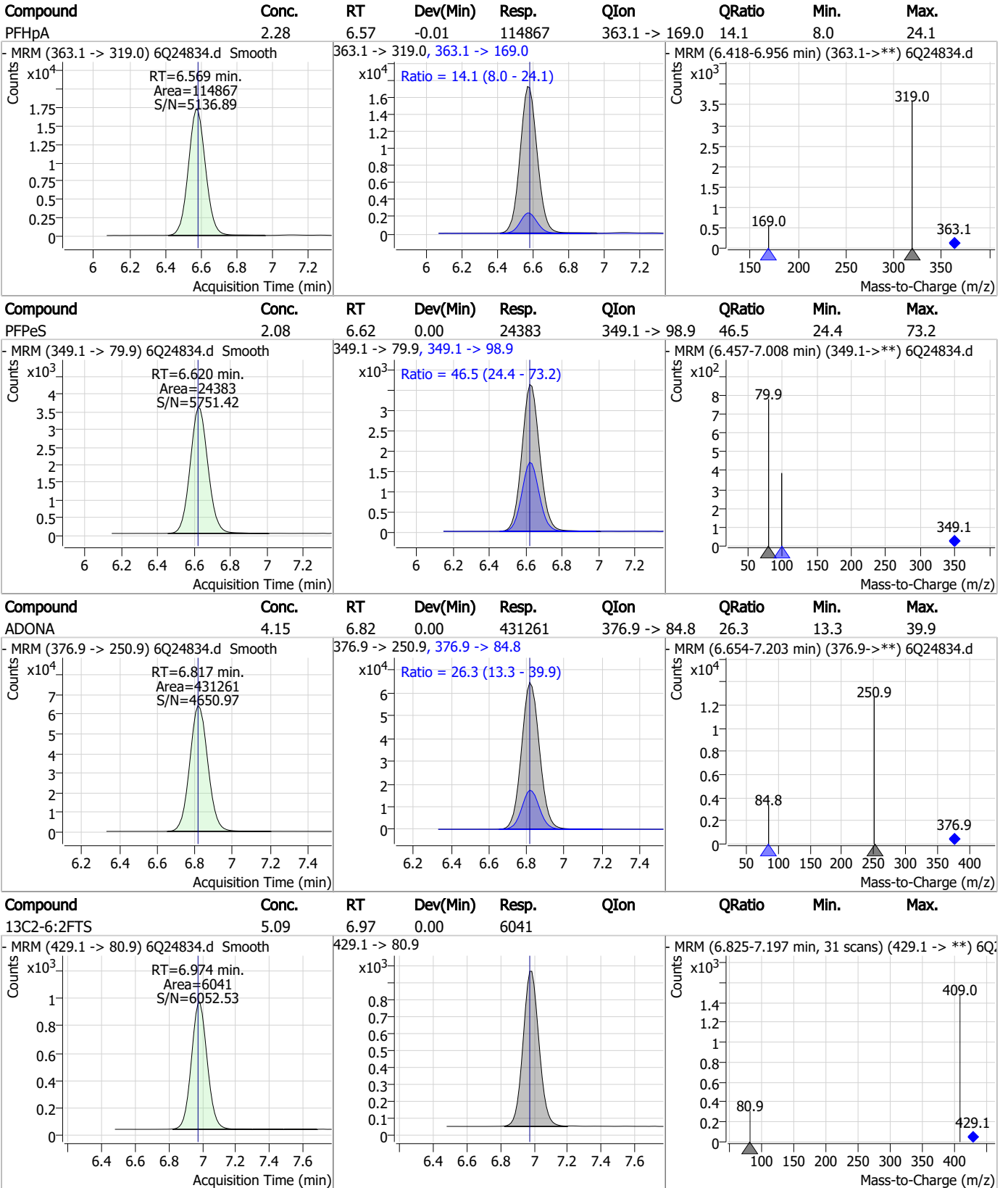
Perfluorinated Compounds by LC/MS/MS



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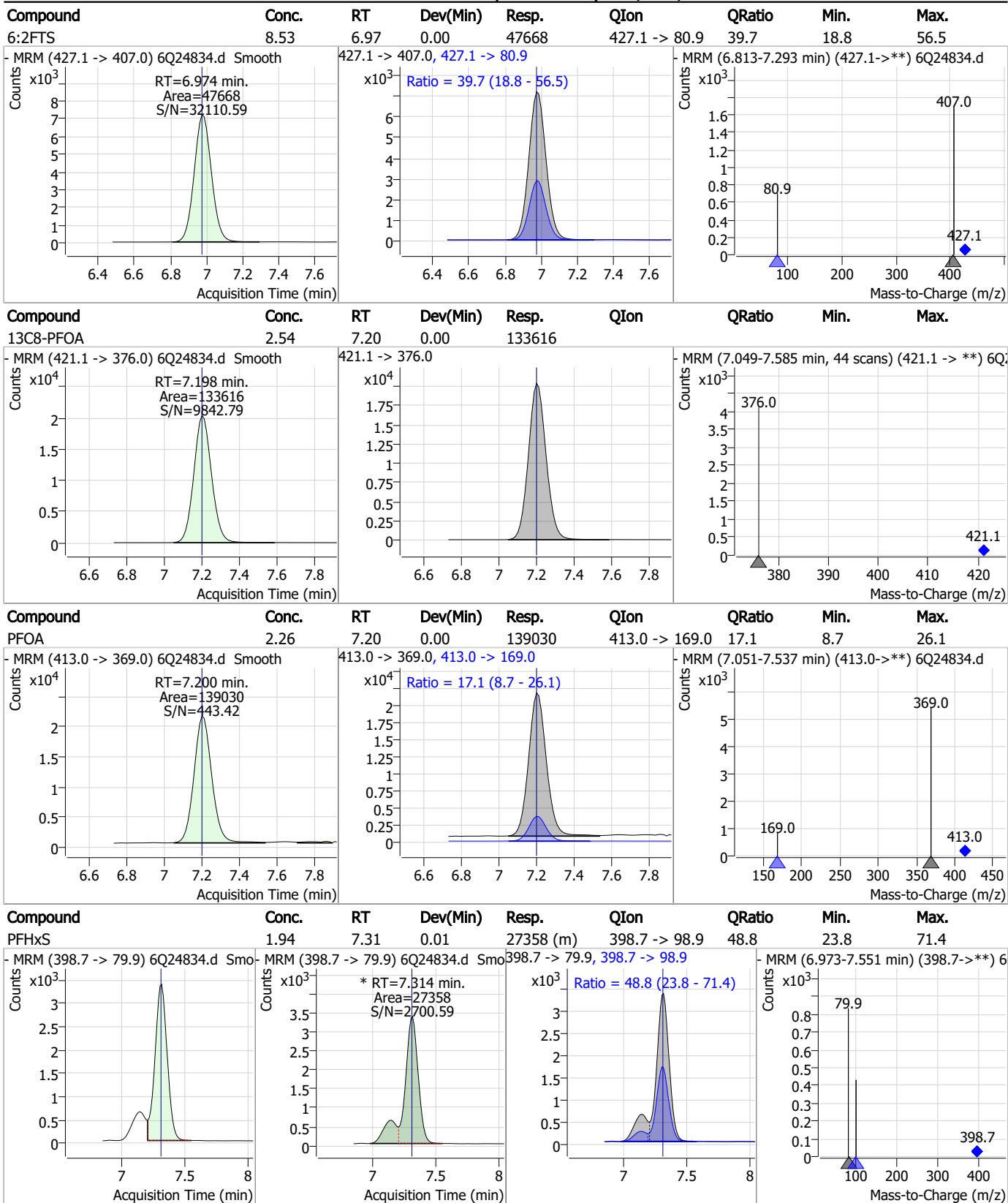
Perfluorinated Compounds by LC/MS/MS



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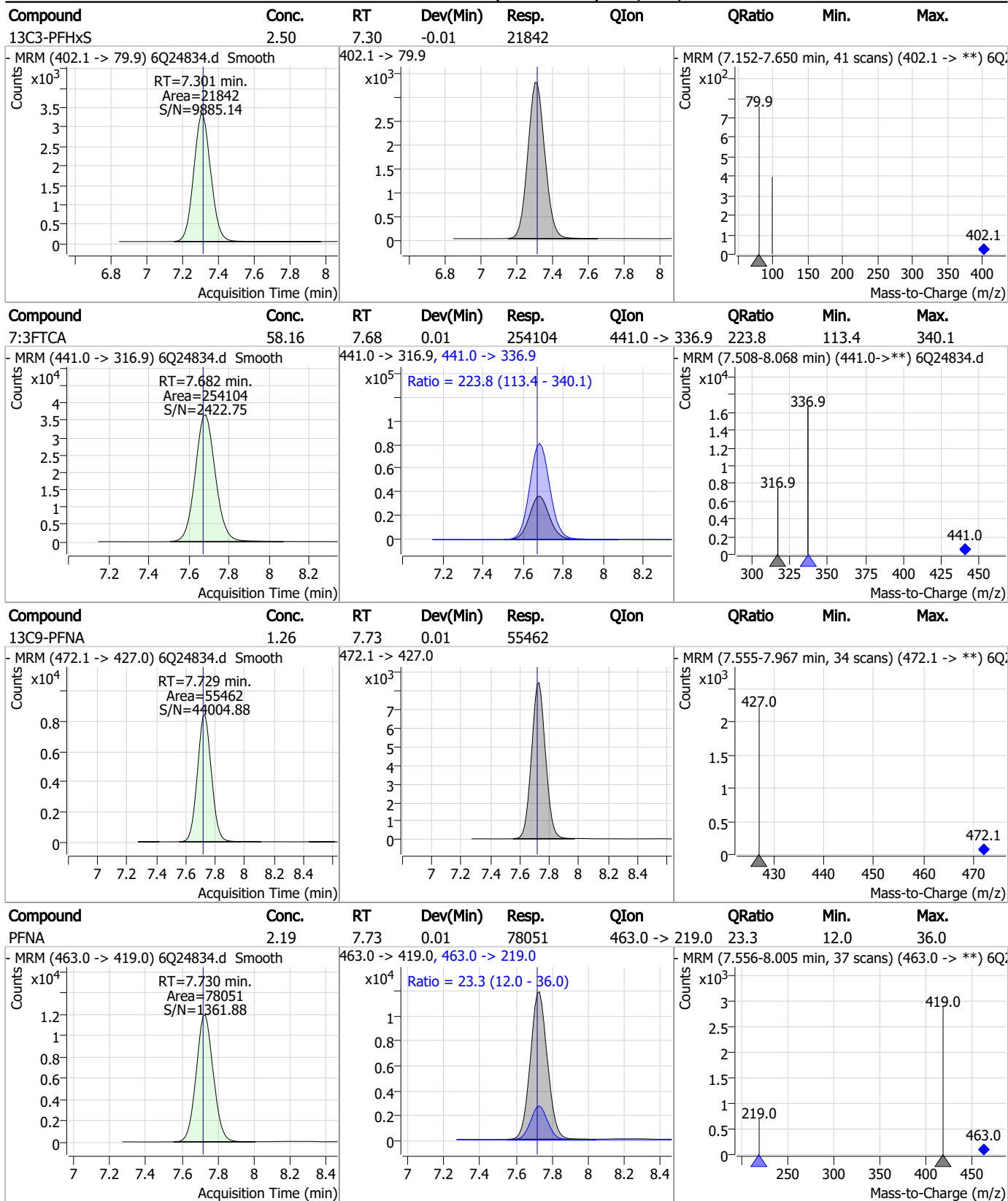


Perfluorinated Compounds by LC/MS/MS



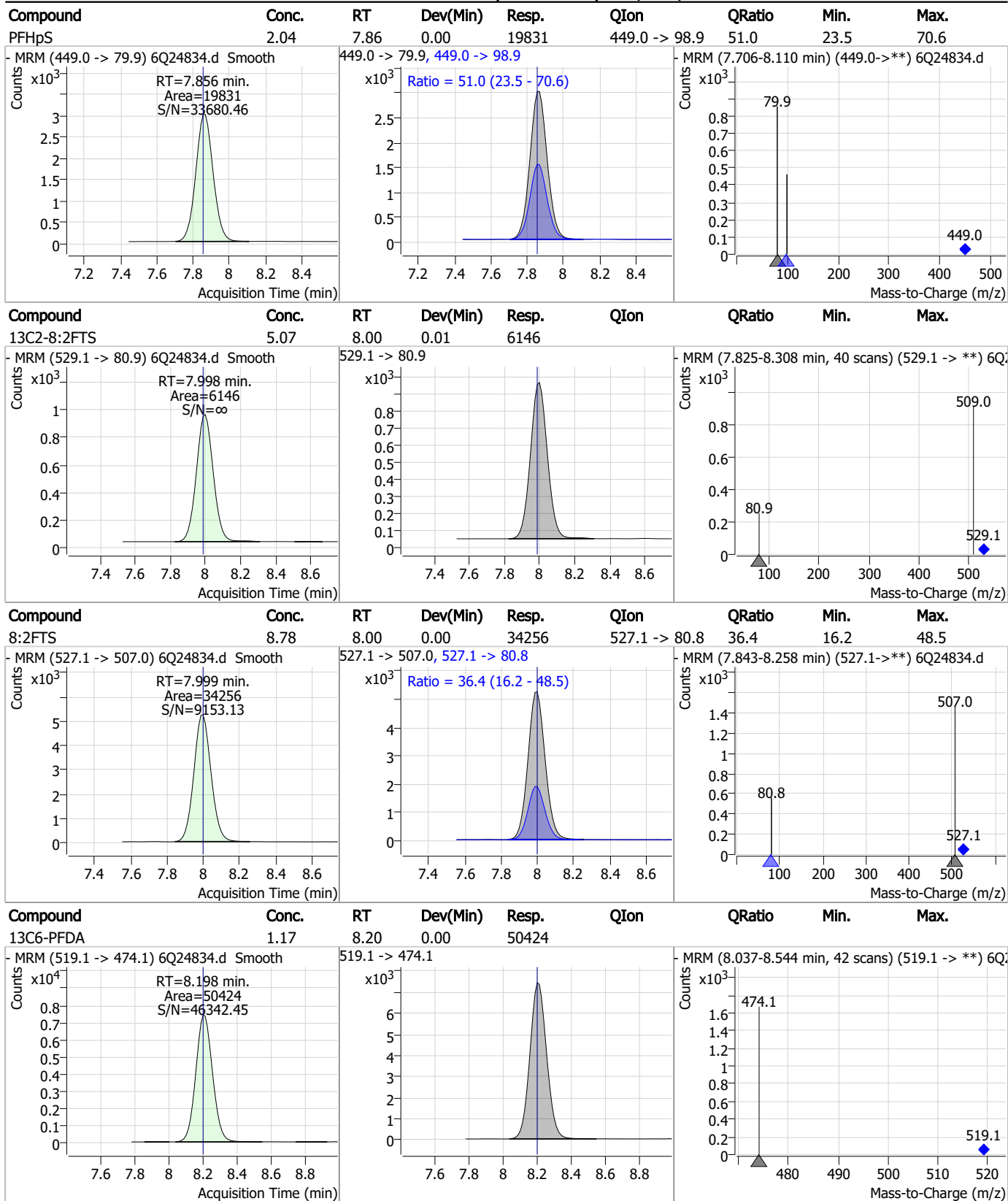
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Perfluorinated Compounds by LC/MS/MS



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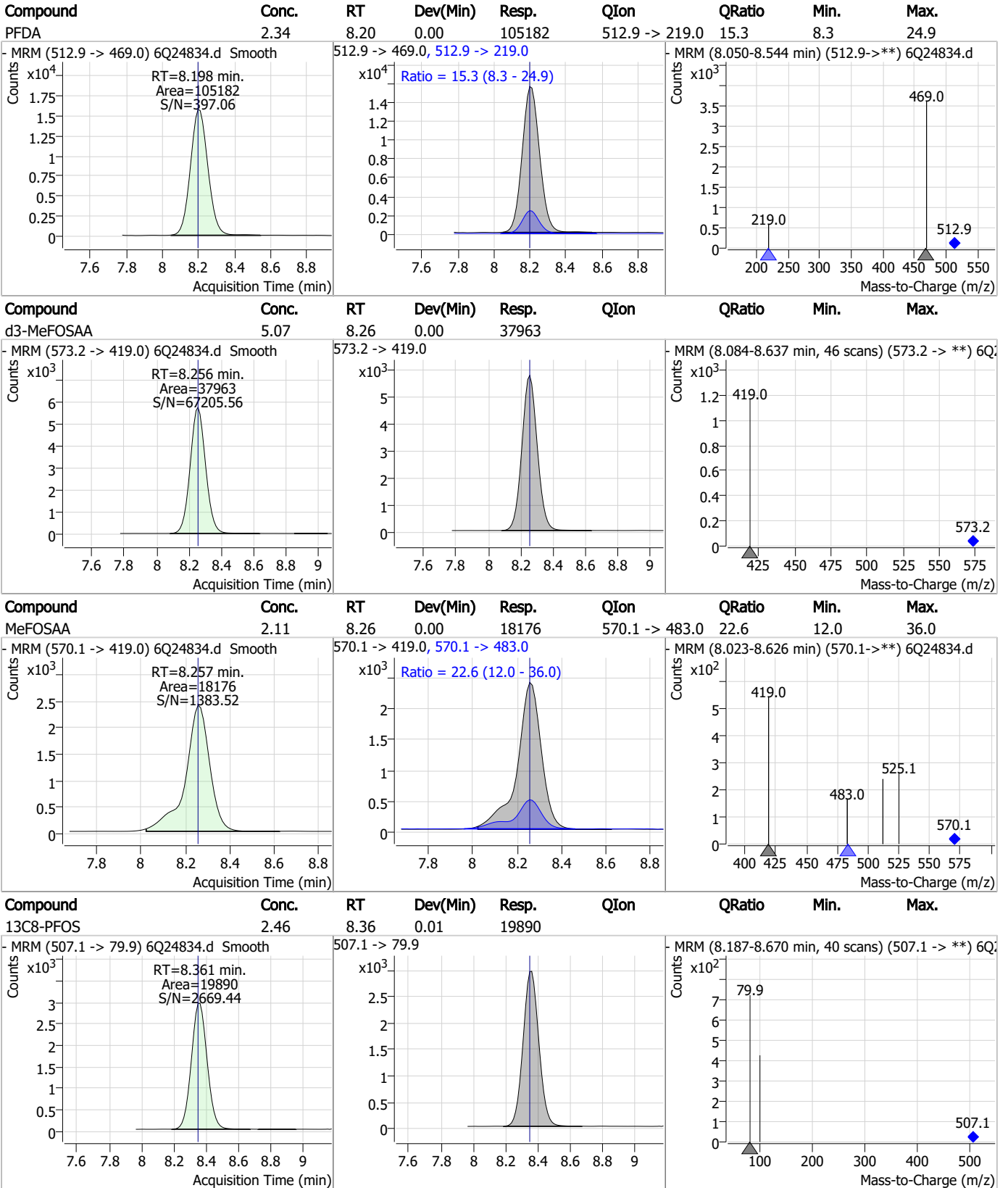
Perfluorinated Compounds by LC/MS/MS



7.7.14



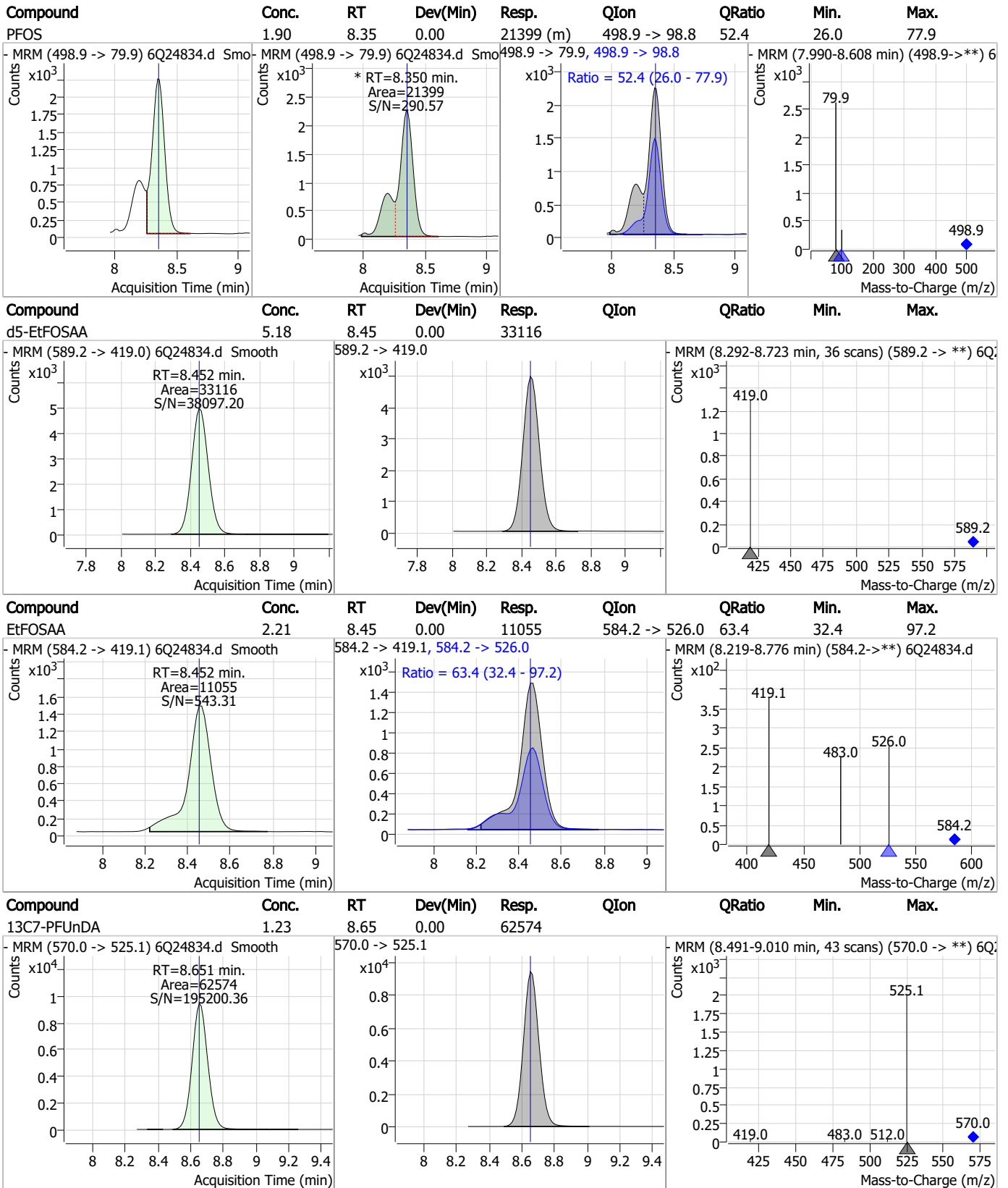
Perfluorinated Compounds by LC/MS/MS



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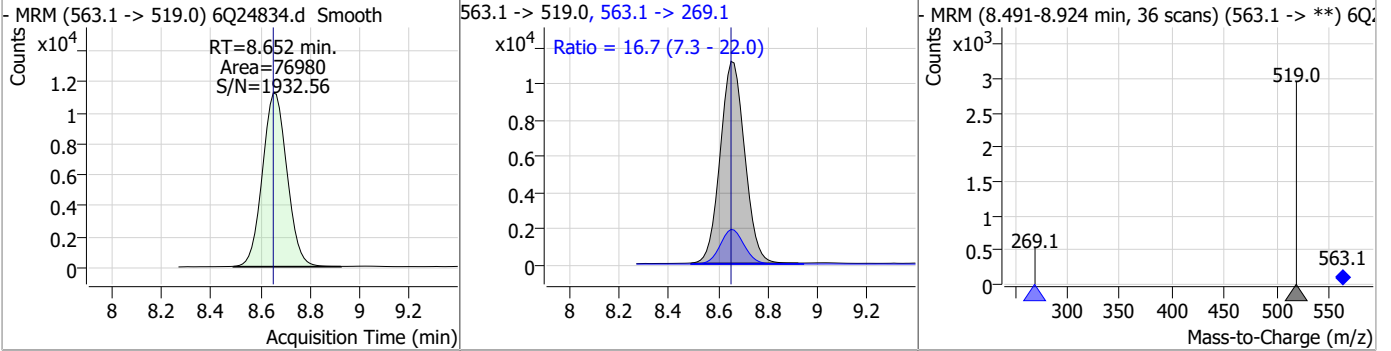
Perfluorinated Compounds by LC/MS/MS



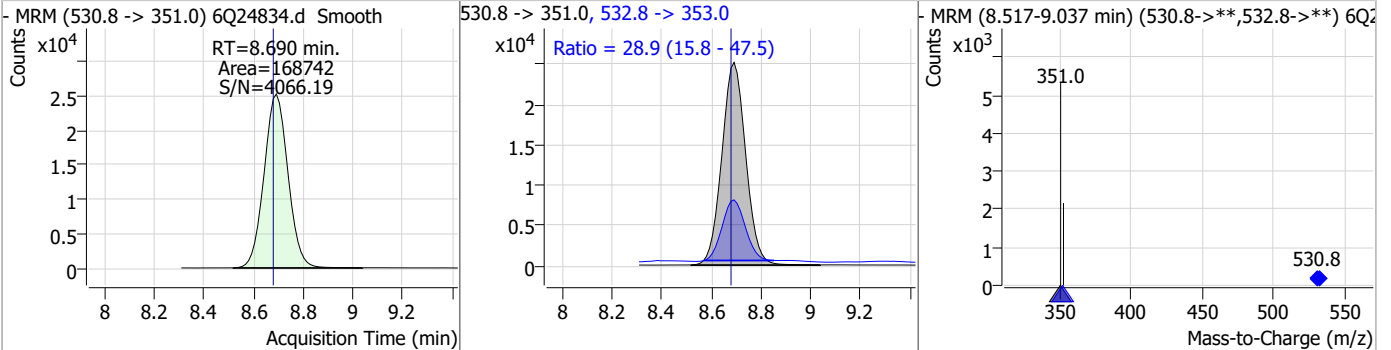
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Perfluorinated Compounds by LC/MS/MS

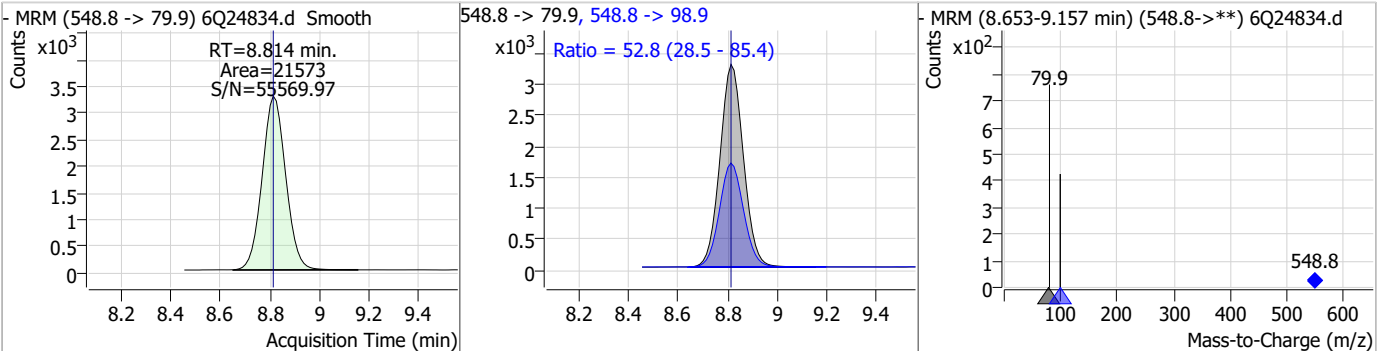
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFUnDA	2.12	8.65	0.00	76980	563.1 -> 269.1	16.7	7.3	22.0



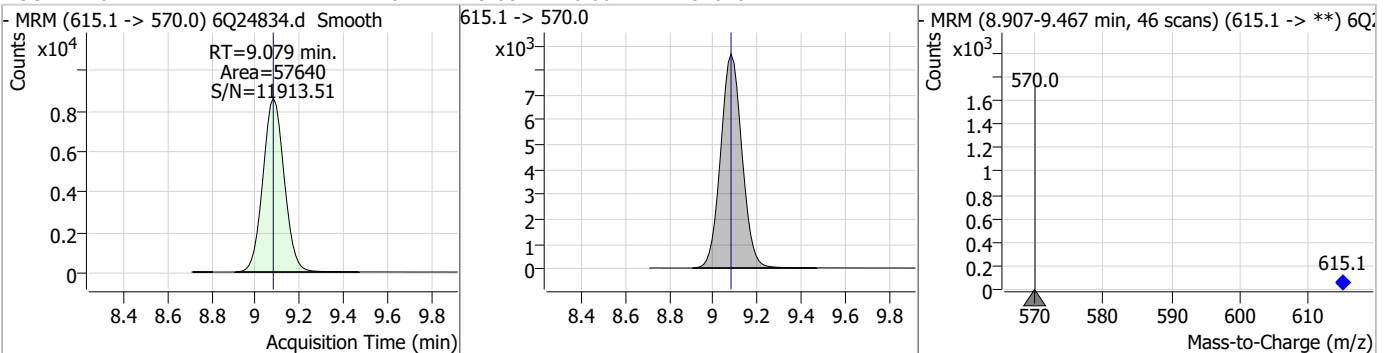
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
9CI-PF3ONS	4.18	8.69	0.01	168742	532.8 -> 353.0	28.9	15.8	47.5



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFNS	2.23	8.81	0.00	21573	548.8 -> 98.9	52.8	28.5	85.4

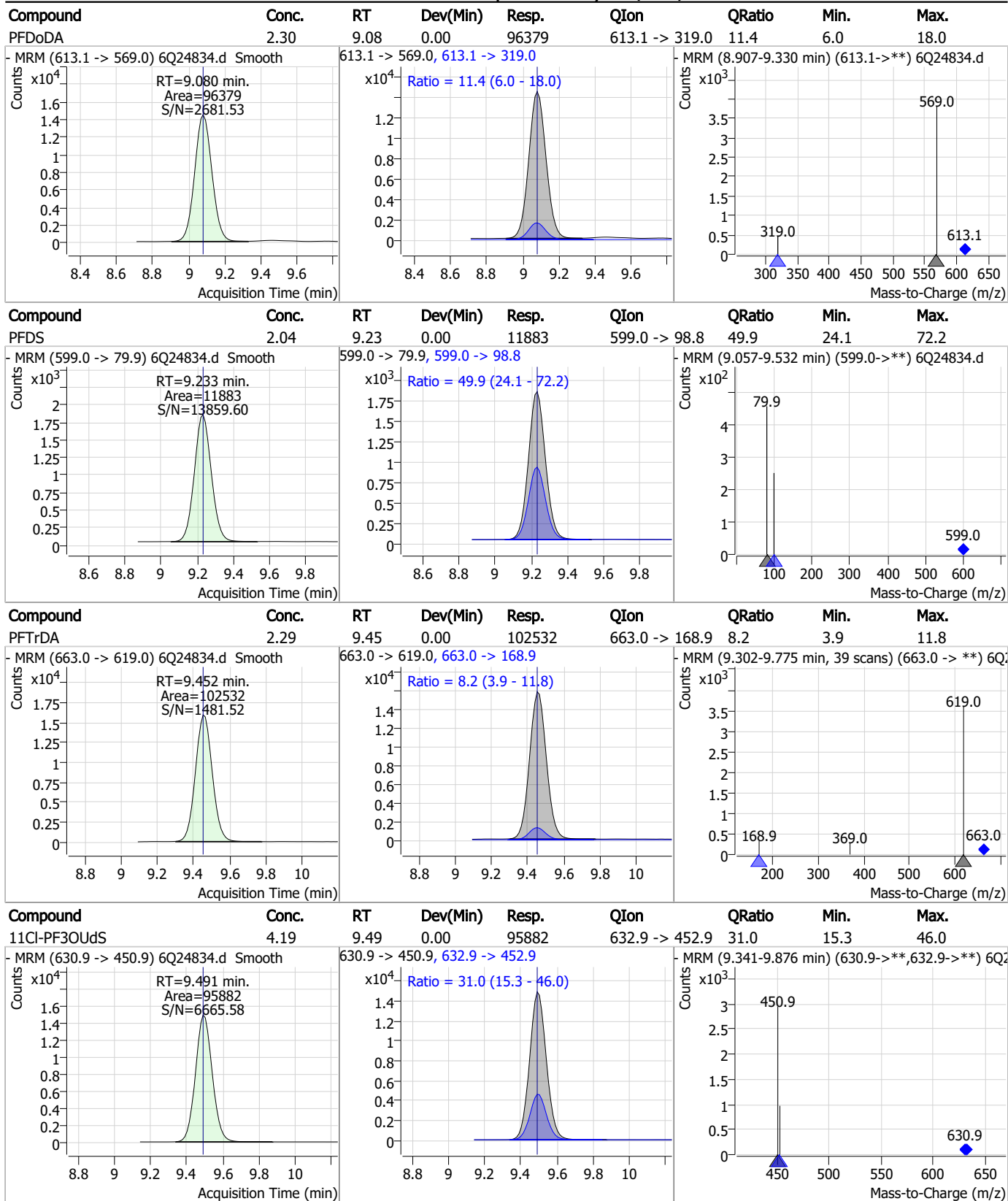


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFDoDA	1.20	9.08	0.00	57640	615.1 -> 570.0	-	-	-



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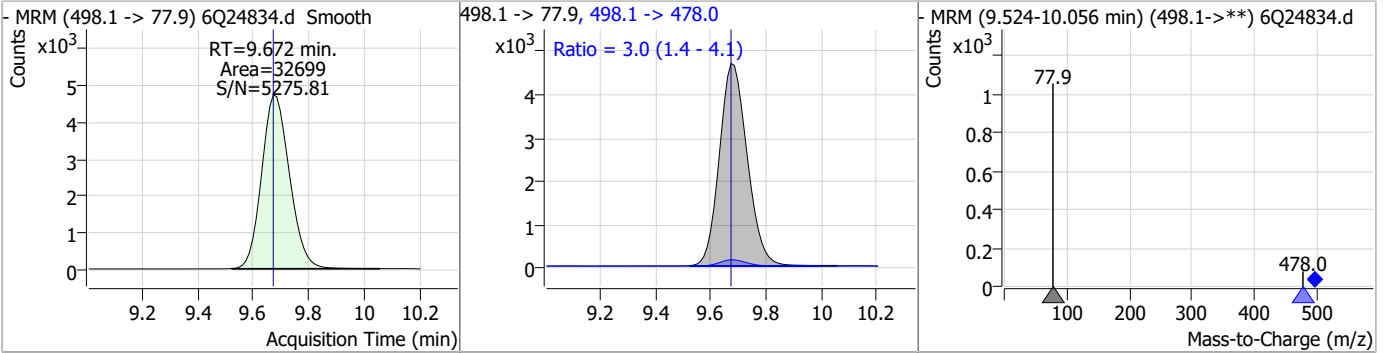
Perfluorinated Compounds by LC/MS/MS



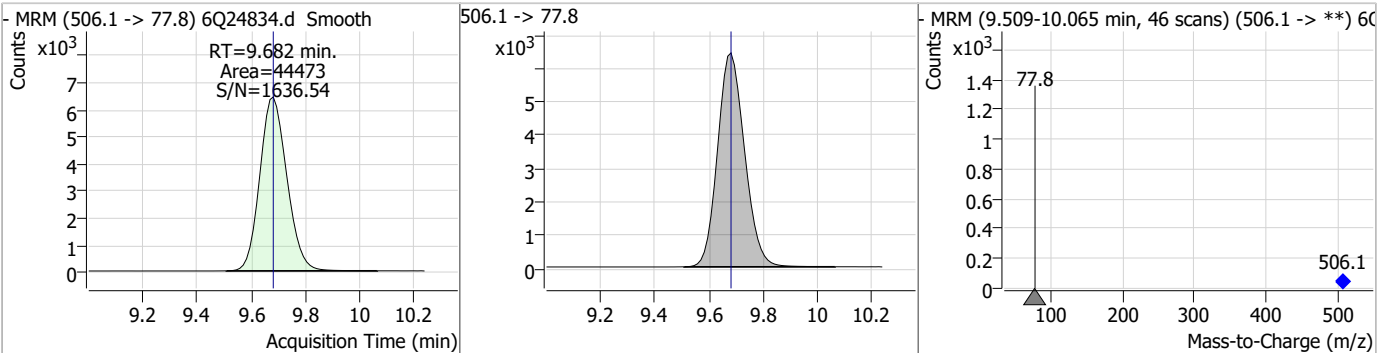
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Perfluorinated Compounds by LC/MS/MS

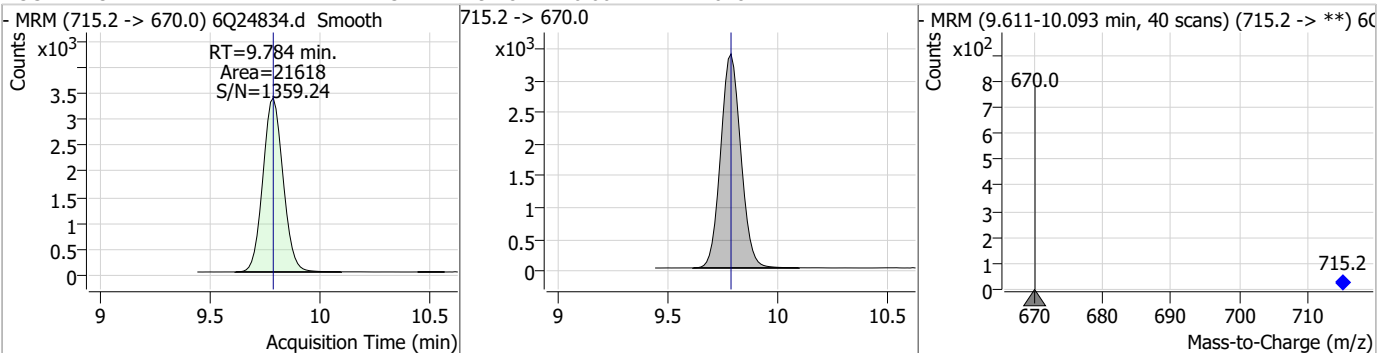
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.13	9.67	0.00	32699	498.1 -> 478.0	3.0	1.4	4.1



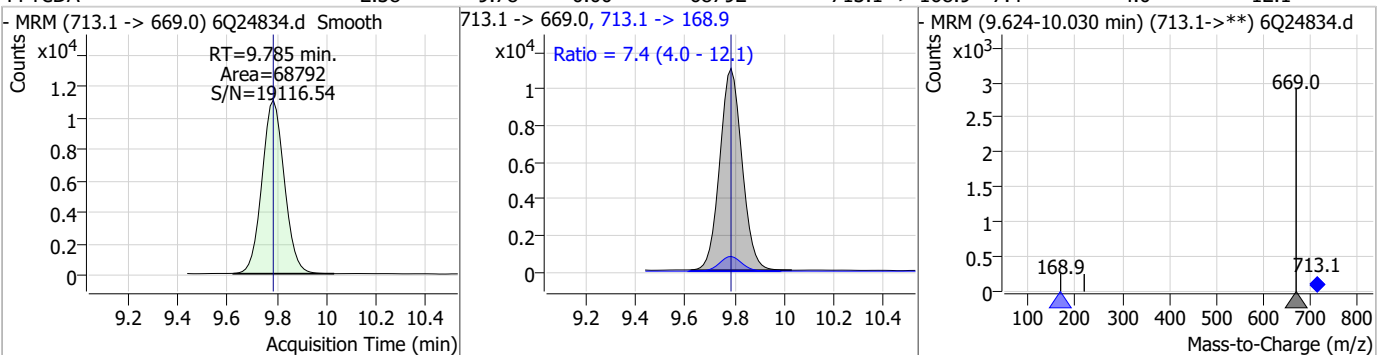
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.47	9.68	0.00	44473				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.13	9.78	0.00	21618				

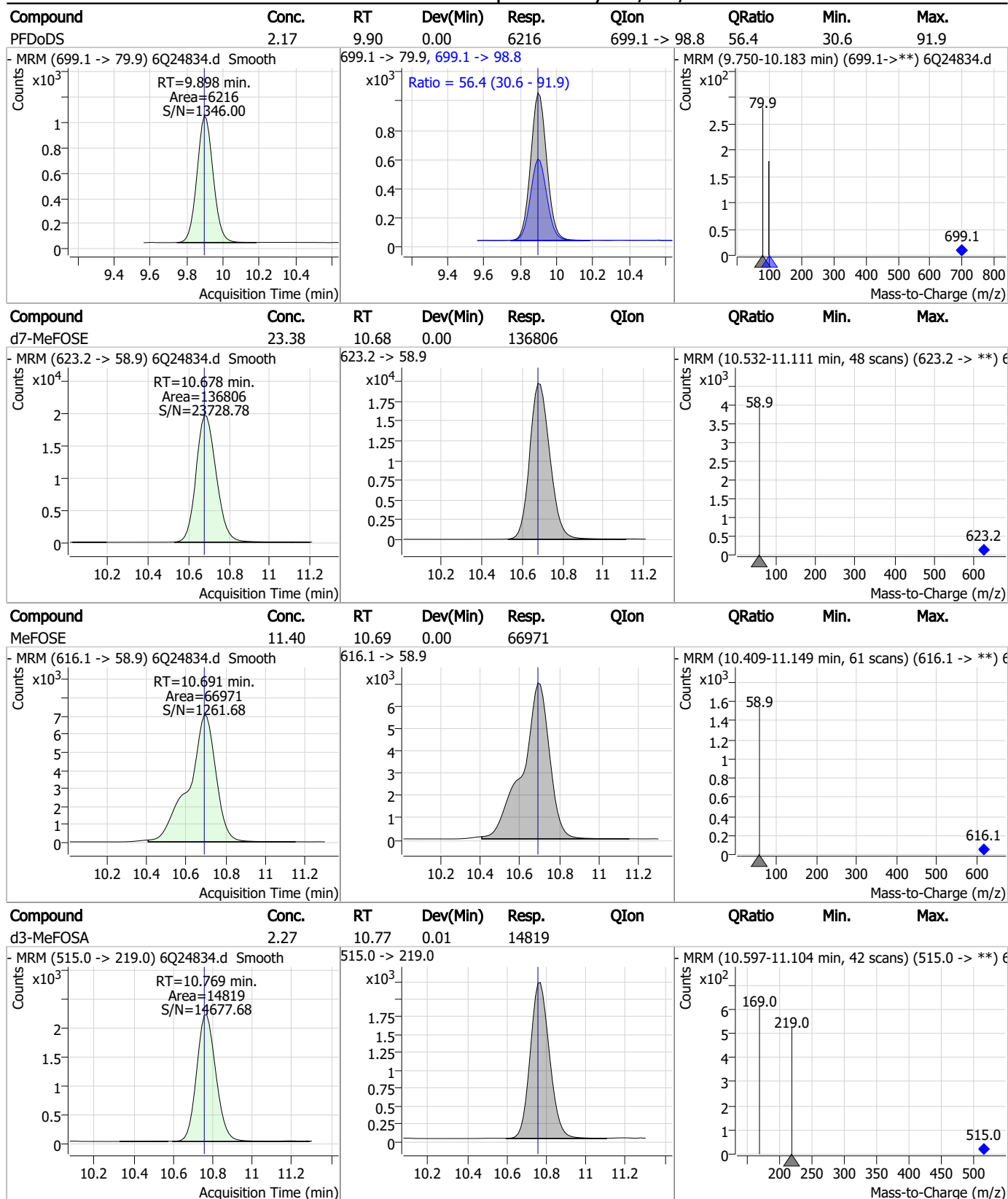


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.38	9.78	0.00	68792	713.1 -> 168.9	7.4	4.0	12.1



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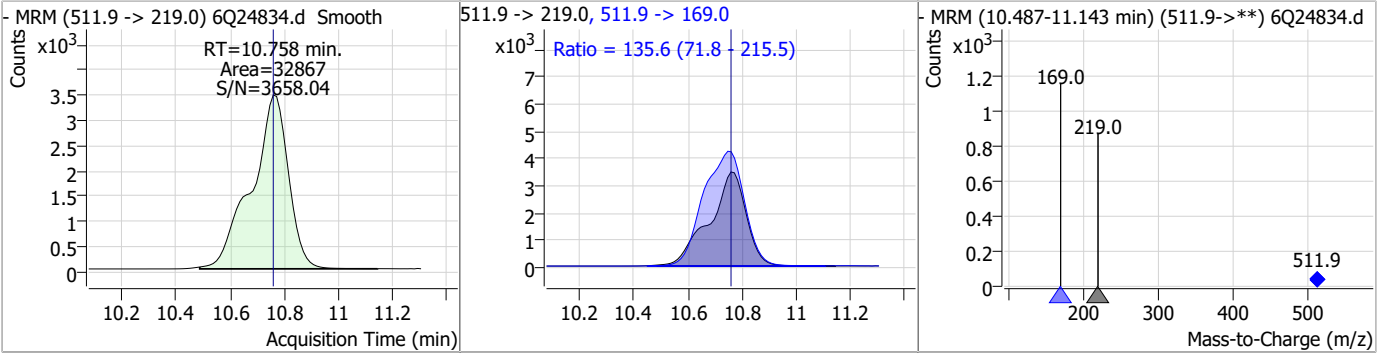
Perfluorinated Compounds by LC/MS/MS



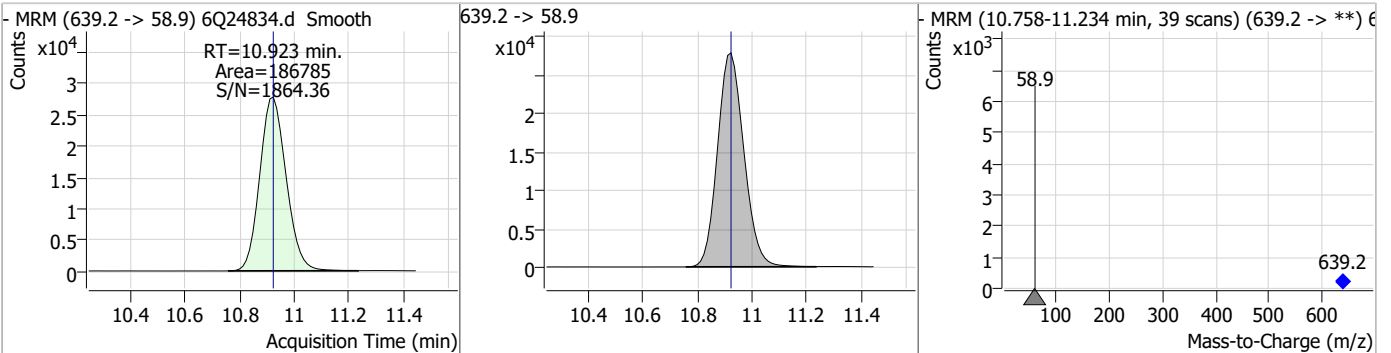
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Perfluorinated Compounds by LC/MS/MS

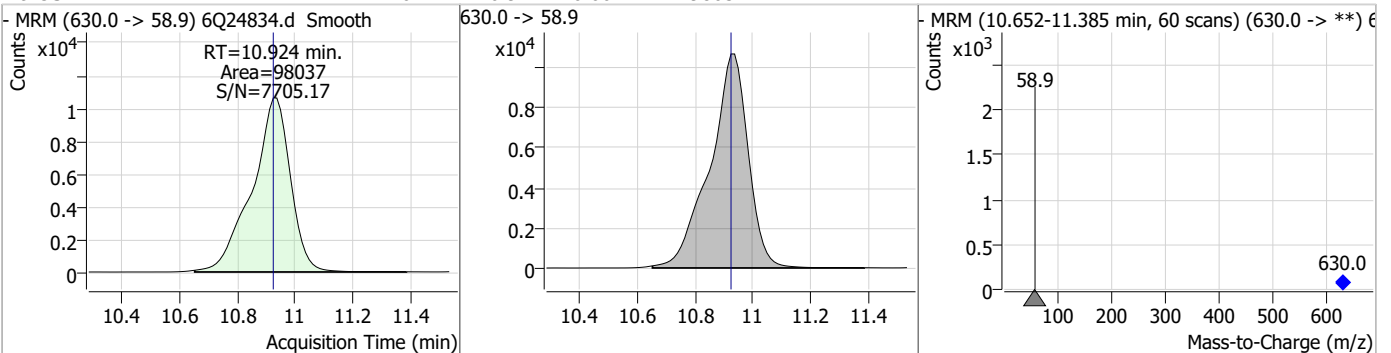
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.93	10.76	0.00	32867	511.9 -> 169.0	135.6	71.8	215.5



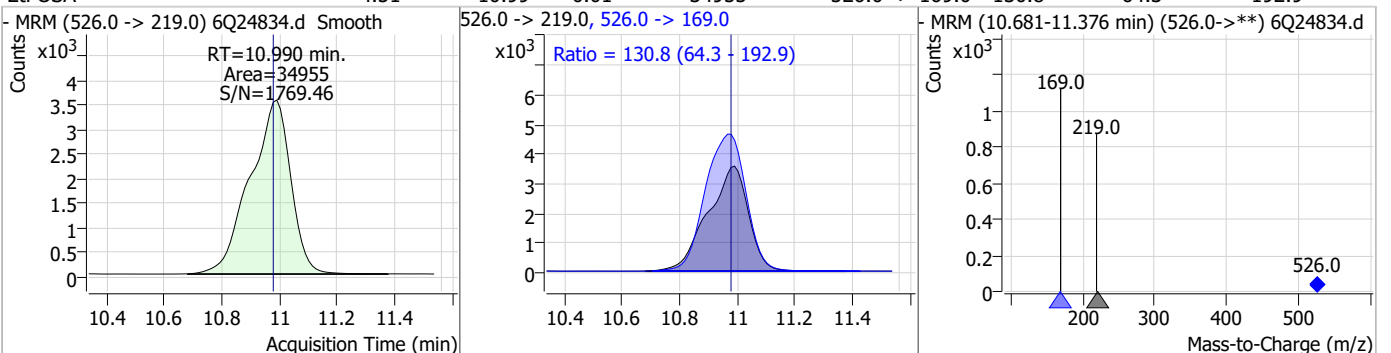
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.33	10.92	0.00	186785				



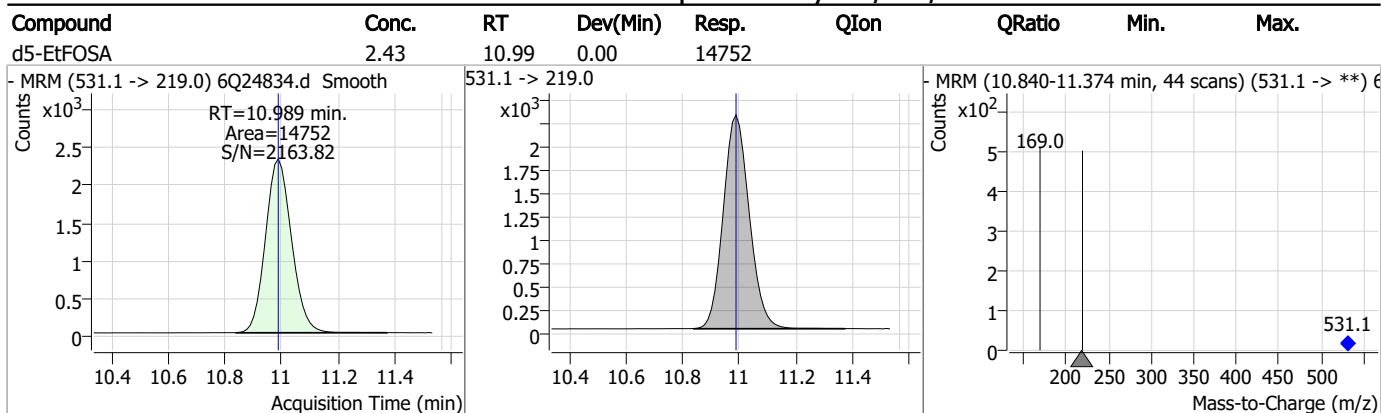
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.20	10.92	0.00	98037				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.51	10.99	0.01	34955	526.0 -> 169.0	130.8	64.3	192.9



Perfluorinated Compounds by LC/MS/MS



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Manual Integration Approval Summary

Sample Number: S6Q355-CC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24834.D Analyst approved: 09/22/23 11:03 Anna Ludwig
Injection Time: 09/22/23 02:05 Supervisor approved: 09/22/23 13:16 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.31	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

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Perfluorinated Compounds by LC/MS/MS

Data File : 6Q24845.d
 Operator : marthav
 Acq. Method : 1633full.m
 Acq. Date-Time : 9/22/2023 4:43:04 AM
 Sample Name : cc355-4
 Vial : P1-A5
 DA Method File : 1633_092123_S6Q355.quantmethod.xml
 Batch Name : s6q355.batch.bin
 Sample Information : OP99081,S6Q355,500,,,5.0,1,water

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Internal Standards					
M4-PFBA	2.997	216.8 -> 171.9	335636	10.00 µg/L	-0.012
M5-PFPeA	4.434	268.3 -> 223.0	52867	5.00 µg/L	0.000
M5-PFHxA	5.641	318.0 -> 273.0	128918	2.50 µg/L	0.000
M4-PFHpA	6.569	367.1 -> 322.0	101306	2.50 µg/L	0.000
M8-PFOA	7.198	421.1 -> 376.0	131743	2.50 µg/L	0.000
M9-PFNA	7.717	472.1 -> 427.0	58583	1.25 µg/L	0.000
M6-PFDA	8.198	519.1 -> 474.1	57979	1.25 µg/L	0.000
M7-PFUnDA	8.651	570.0 -> 525.1	67799	1.25 µg/L	0.000
M2-PFDoDA	9.067	615.1 -> 570.0	71104	1.25 µg/L	-0.012
M2-PFTeDA	9.784	715.2 -> 670.0	29600	1.25 µg/L	0.000
M8-FOSA	9.682	506.1 -> 77.8	49290	2.50 µg/L	0.000
M3-PFBS	5.571	302.1 -> 79.9	39159	2.50 µg/L	0.000
M3-PFHxS	7.301	402.1 -> 79.9	20889	2.50 µg/L	-0.012
M8-PFOS	8.348	507.1 -> 79.9	20898	2.50 µg/L	0.000
M2-4:2FTS	5.317	329.1 -> 80.9	4435	5.00 µg/L	0.000
M2-6:2FTS	6.974	429.1 -> 80.9	6386	5.00 µg/L	0.000
M2-8:2FTS	7.998	529.1 -> 80.9	5920	5.00 µg/L	0.012
M3-MeFOSAA	8.256	573.2 -> 419.0	43717	5.00 µg/L	0.000
M3-HFPO-DA	6.019	286.9 -> 168.9	67876	10.00 µg/L	0.000
M5-EtFOSAA	8.452	589.2 -> 419.0	34545	5.00 µg/L	0.000
M7-MeFOSE	10.678	623.2 -> 58.9	144638	25.00 µg/L	0.000
M9-EtFOSE	10.911	639.2 -> 58.9	190941	25.00 µg/L	-0.012
M5-EtFOSA	10.989	531.1 -> 219.0	14616	2.50 µg/L	0.000
M3-MeFOSA	10.757	515.0 -> 219.0	15311	2.50 µg/L	0.000
13C4-PFOS	8.349	502.8 -> 79.9	27886	2.50 µg/L	0.000
13C3-PFBA	3.001	216.0 -> 172.0	135949	5.00 µg/L	0.000
18O2-PFHxS	7.313	403.0 -> 83.9	16451	2.50 µg/L	0.012
13C4-PFOA	7.199	417.1 -> 372.0	151496	2.50 µg/L	0.000
13C2-PFDA	8.198	515.1 -> 470.1	50674	1.25 µg/L	0.000
13C5-PFNA	7.717	468.0 -> 423.0	62445	1.25 µg/L	0.000
13C2-PFHxA	5.642	315.1 -> 270.0	90720	2.50 µg/L	0.000
System Monitoring Compounds					
13C2-4:2FTS	5.317	329.1 -> 80.9	4435	5.17 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 103.3%		
13C2-6:2FTS	6.974	429.1 -> 80.9	6386	5.28 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 105.5%		
13C2-8:2FTS	7.998	529.1 -> 80.9	5920	4.79 µg/L	0.012
Spiked Amount: 5.00	Range: 50.0 - 150.0%		Recovery = 95.8%		
13C2-PFDoDA	9.067	615.1 -> 570.0	71104	1.39 µg/L	-0.012
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 110.8%		
13C2-PFTeDA	9.784	715.2 -> 670.0	29600	1.44 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%		Recovery = 115.5%		
13C3-PFBS	5.571	302.1 -> 79.9	39159	2.46 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%		Recovery = 98.3%		
13C3-PFHxS	7.301	402.1 -> 79.9	20889	2.34 µg/L	-0.012

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc. Units	Dev(Min)
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 93.8%	
13C4-PFBA	2.997	216.8 -> 171.9	335636	10.12 µg/L	-0.012
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 101.2%	
13C4-PFHpA	6.569	367.1 -> 322.0	101306	2.60 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 104.0%	
13C5-PFHxA	5.641	318.0 -> 273.0	128918	2.70 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.9%	
13C5-PFPeA	4.434	268.3 -> 223.0	52867	5.13 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 102.5%	
13C6-PFDA	8.198	519.1 -> 474.1	57979	1.26 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 100.6%	
13C7-PFUnDA	8.651	570.0 -> 525.1	67799	1.24 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 99.5%	
13C8-FOSA	9.682	506.1 -> 77.8	49290	2.69 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 107.7%	
13C8-PFOA	7.198	421.1 -> 376.0	131743	2.40 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 95.8%	
13C8-PFOS	8.348	507.1 -> 79.9	20898	2.54 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 101.8%	
13C9-PFNA	7.717	472.1 -> 427.0	58583	1.29 µg/L	0.000
Spiked Amount: 1.25	Range: 50.0 - 150.0%			Recovery = 103.5%	
d3-MeFOSAA	8.256	573.2 -> 419.0	43717	5.74 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 114.8%	
13C3-HFPO-DA	6.019	286.9 -> 168.9	67876	10.09 µg/L	0.000
Spiked Amount: 10.00	Range: 50.0 - 150.0%			Recovery = 100.9%	
d3-MeFOSA	10.757	515.0 -> 219.0	15311	2.31 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 92.4%	
d5-EtFOSAA	8.452	589.2 -> 419.0	34545	5.31 µg/L	0.000
Spiked Amount: 5.00	Range: 50.0 - 150.0%			Recovery = 106.2%	
d7-MeFOSE	10.678	623.2 -> 58.9	144638	24.31 µg/L	0.000
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.2%	
d9-EtFOSE	10.911	639.2 -> 58.9	190941	24.45 µg/L	-0.012
Spiked Amount: 25.00	Range: 50.0 - 150.0%			Recovery = 97.8%	
d5-EtFOSA	10.989	531.1 -> 219.0	14616	2.37 µg/L	0.000
Spiked Amount: 2.50	Range: 50.0 - 150.0%			Recovery = 94.7%	
Target Compounds					QValue
4:2FTS	5.317	327.1 -> 307.0	60905	8.48 µg/L	96
		327.1 -> 80.9	21810		
6:2FTS	6.974	427.1 -> 407.0	48330	8.19 µg/L	96
		427.1 -> 80.9	19252		
8:2FTS	7.999	527.1 -> 507.0	33972	9.04 µg/L	88
		527.1 -> 80.8	13348		
EtFOSAA	8.452	584.2 -> 419.1	12054	2.31 µg/L	92
		584.2 -> 526.0	8574		
FOSA	9.672	498.1 -> 77.9	36848	2.17 µg/L	99
		498.1 -> 478.0	1122		
MeFOSAA	8.257	570.1 -> 419.0	20372	2.05 µg/L	94
		570.1 -> 483.0	4311		
PFBA	3.006	212.8 -> 168.9	93667	9.06 µg/L	100
PFBS	5.572	298.7 -> 79.9	35550	1.92 µg/L	97
		298.7 -> 98.8	13565		
PFDA	8.198	512.9 -> 469.0	100988	1.95 µg/L	99
		512.9 -> 219.0	17087		
PFDODA	9.080	613.1 -> 569.0	105146	2.03 µg/L	99
		613.1 -> 319.0	12236		
PFDS	9.233	599.0 -> 79.9	12429	2.03 µg/L	95

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Perfluorinated Compounds by LC/MS/MS

Compound	RT	Transition	Response	Conc.	Units	Dev(Min)
		599.0 -> 98.8	6362			
PFHpA	6.569	363.1 -> 319.0	109094	2.12	µg/L	98
		363.1 -> 169.0	16570			
PFHpS	7.856	449.0 -> 79.9	20991	2.05	µg/L	100
		449.0 -> 98.9	9875			
PFHxA	5.644	313.0 -> 269.0	92913	2.07	µg/L	99
		313.0 -> 118.9	4156			
PFHxS	7.302	398.7 -> 79.9	27020	2.00	µg/L	m 97
		398.7 -> 98.9	13473			
PFNA	7.717	463.0 -> 419.0	80478	2.14	µg/L	99
		463.0 -> 219.0	19536			
PFNS	8.814	548.8 -> 79.9	20743	2.04	µg/L	98
		548.8 -> 98.9	11571			
PFOA	7.200	413.0 -> 369.0	129074	2.12	µg/L	100
		413.0 -> 169.0	22656			
PFOS	8.350	498.9 -> 79.9	22448	1.90	µg/L	m 93
		498.9 -> 98.8	10566			
PFPeA	4.436	263.0 -> 219.0	113838	4.37	µg/L	100
PFPeS	6.620	349.1 -> 79.9	24533	2.19	µg/L	98
		349.1 -> 98.9	11581			
PFTeDA	9.785	713.1 -> 669.0	86159	2.18	µg/L	99
		713.1 -> 168.9	6573			
PFTrDA	9.452	663.0 -> 619.0	115568	2.09	µg/L	99
		663.0 -> 168.9	9539			
PFUnDA	8.652	563.1 -> 519.0	91066	2.31	µg/L	100
		563.1 -> 269.1	13183			
11CI-PF3OUdS	9.491	630.9 -> 450.9	95394	4.33	µg/L	94
		632.9 -> 452.9	32659			
9CI-PF3ONS	8.678	530.8 -> 351.0	172346	4.43	µg/L	95
		532.8 -> 353.0	59051			
ADONA	6.817	376.9 -> 250.9	458843	4.58	µg/L	96
		376.9 -> 84.8	112117			
HFPO-DA	6.020	284.9 -> 168.9	30876	4.79	µg/L	98
		284.9 -> 184.9	4189			
3:3FTCA	3.902	241.0 -> 177.0	19944	11.05	µg/L	99
		241.0 -> 117.0	1952			
5:3FTCA	6.296	341.0 -> 237.1	462532	58.81	µg/L	89
		341.0 -> 217.0	289928			
7:3FTCA	7.669	441.0 -> 316.9	279147	60.84	µg/L	95
		441.0 -> 336.9	608779			
EtFOSA	10.990	526.0 -> 219.0	35246	4.59	µg/L	95
		526.0 -> 169.0	47437			
EtFOSE	10.924	630.0 -> 58.9	103233	11.53	µg/L	100
MeFOSA	10.758	511.9 -> 219.0	33719	4.89	µg/L	97
		511.9 -> 169.0	46988			
MeFOSE	10.691	616.1 -> 58.9	69435	11.18	µg/L	100
PFDoDS	9.898	699.1 -> 79.9	6558	2.18	µg/L	94
		699.1 -> 98.8	3702			
NFDHA	5.524	295.0 -> 201.0	22233	4.19	µg/L	98
		295.0 -> 84.9	5490			
PFMBA	4.850	279.0 -> 85.1	83702	4.54	µg/L	100
PFMPA	3.563	229.0 -> 84.9	61339	4.49	µg/L	100
PFEESA	6.112	314.8 -> 134.9	221749	3.76	µg/L	100
		314.8 -> 82.9	7743			

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

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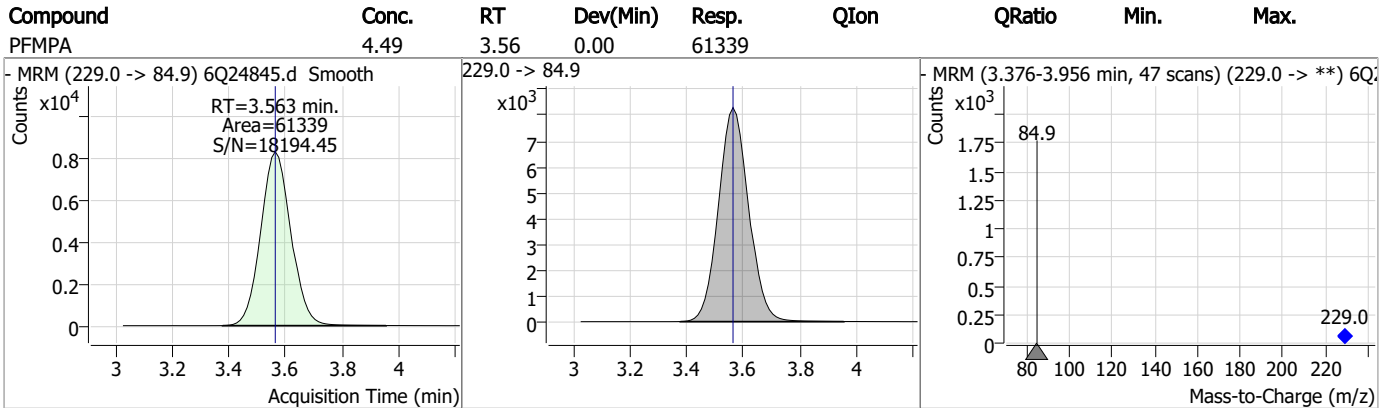
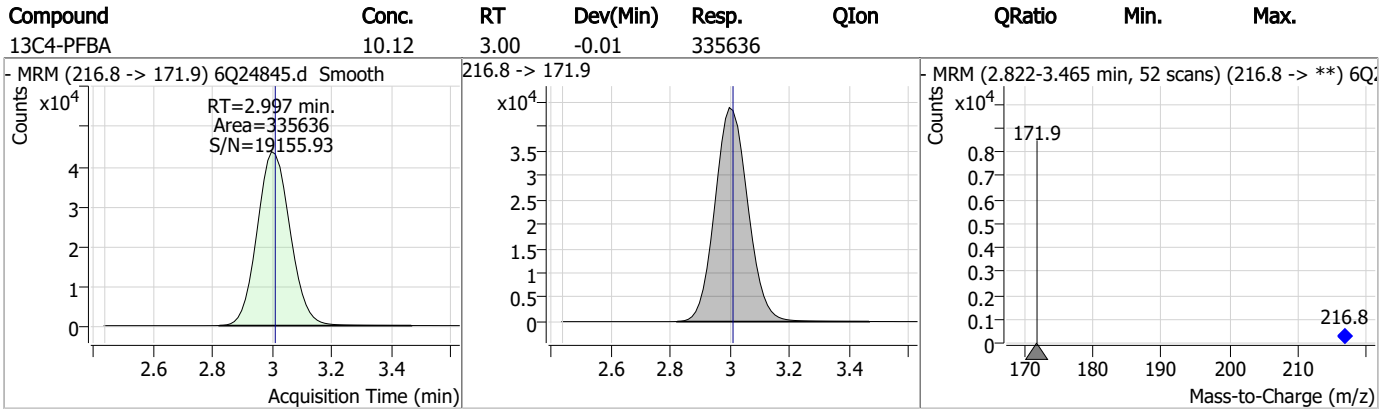
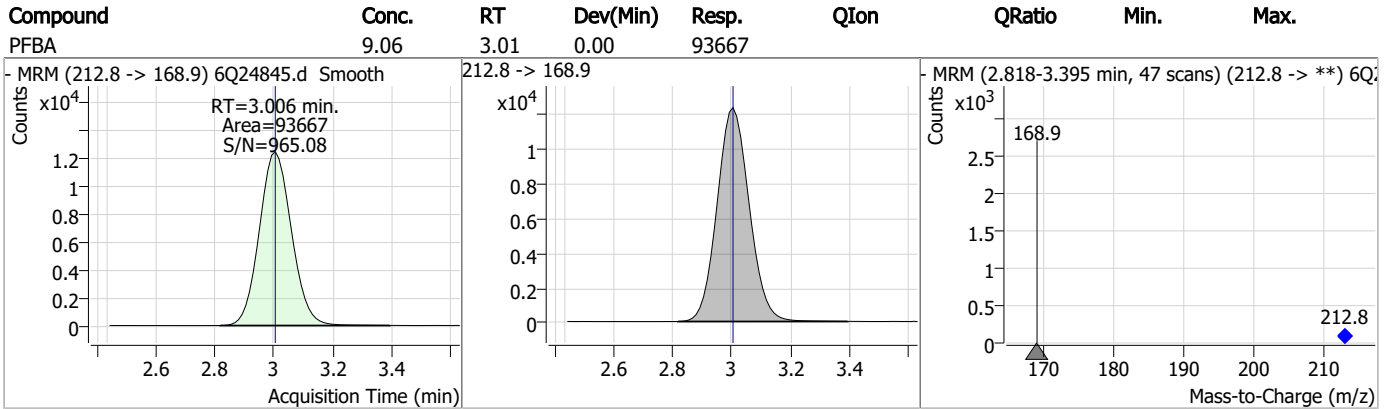
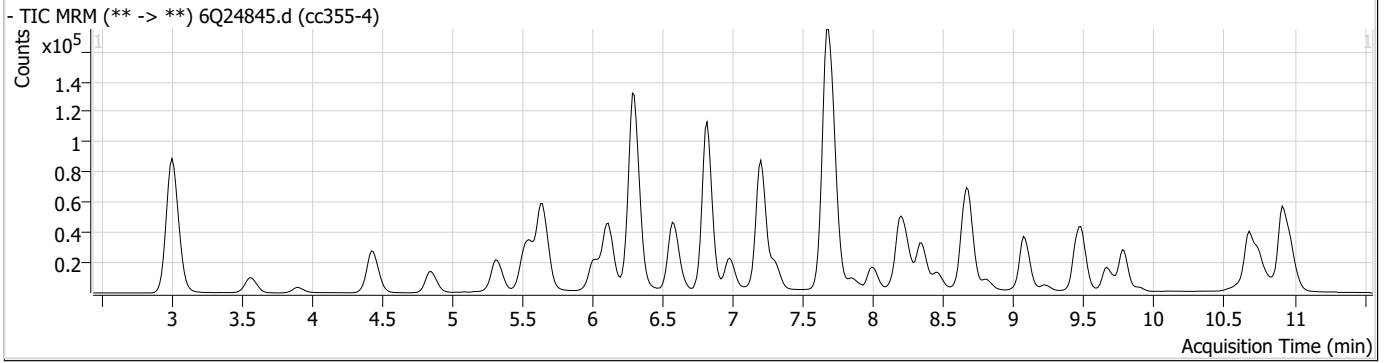
Perfluorinated Compounds by LC/MS/MS

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

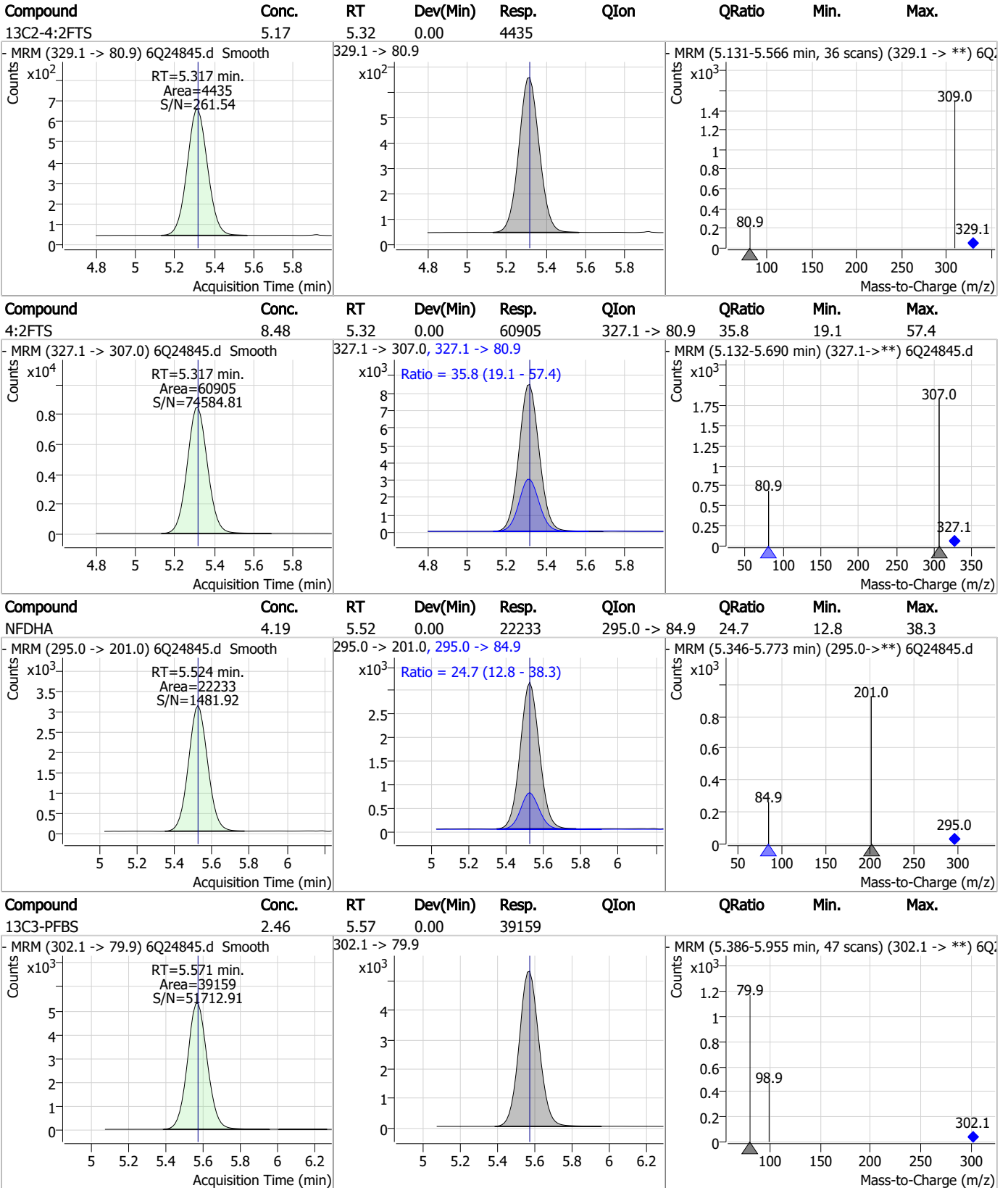


Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
3:3FTCA	11.05	3.90	0.00	19944	241.0 -> 117.0	9.8	4.7	14.2
13C5-PFPeA	5.13	4.43	0.00	52867				
PFPeA	4.37	4.44	0.00	113838				
PFMBA	4.54	4.85	0.00	83702				

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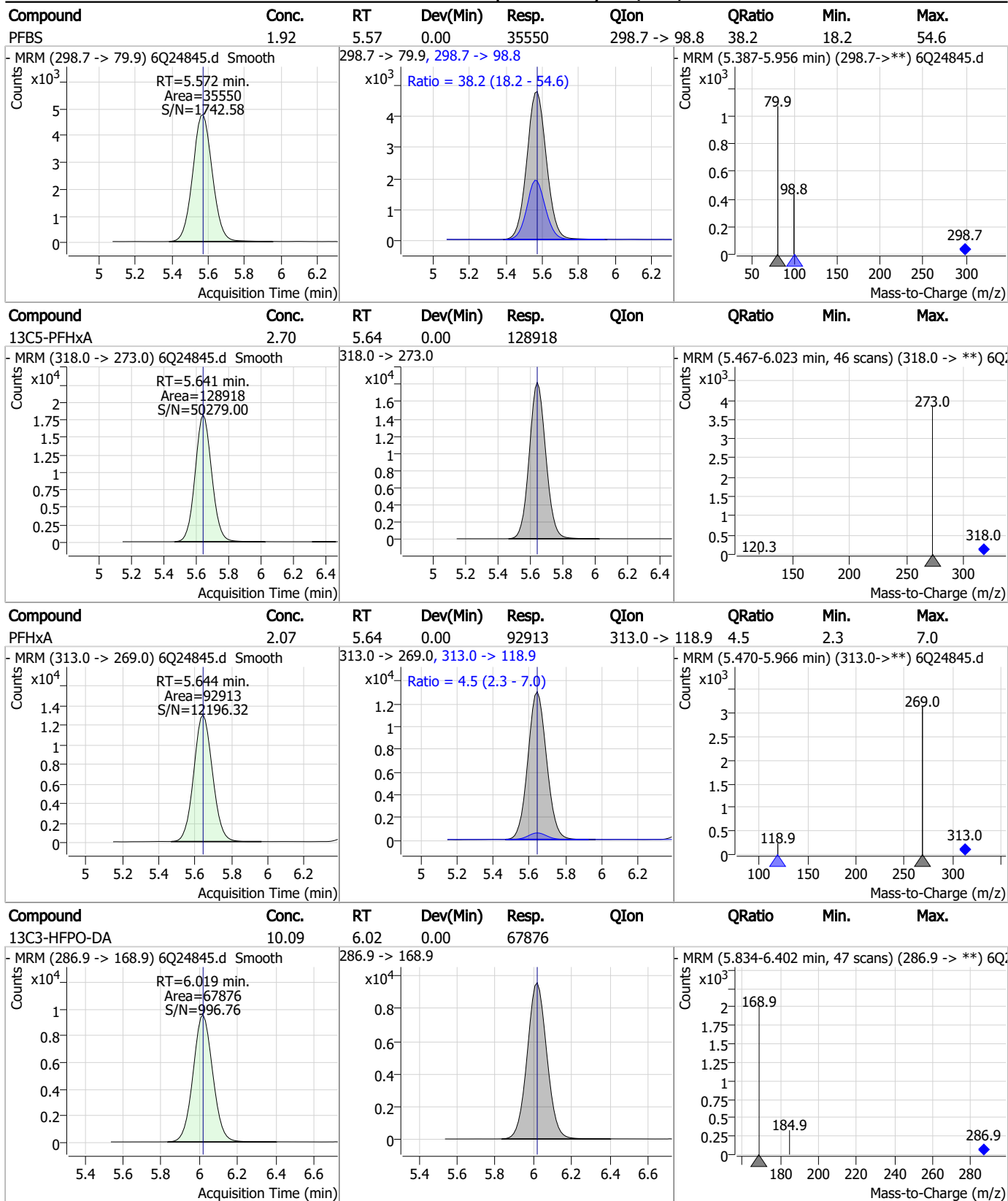
Perfluorinated Compounds by LC/MS/MS



7.7.15 7



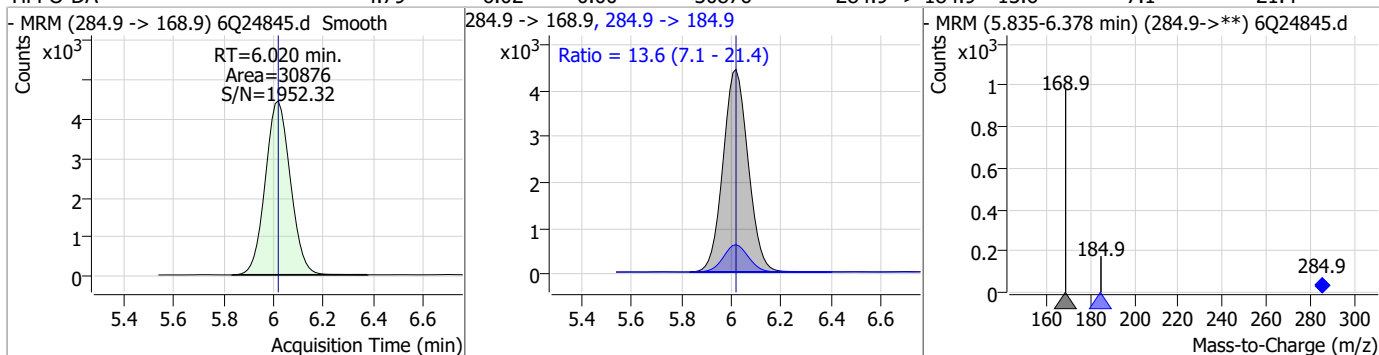
Perfluorinated Compounds by LC/MS/MS



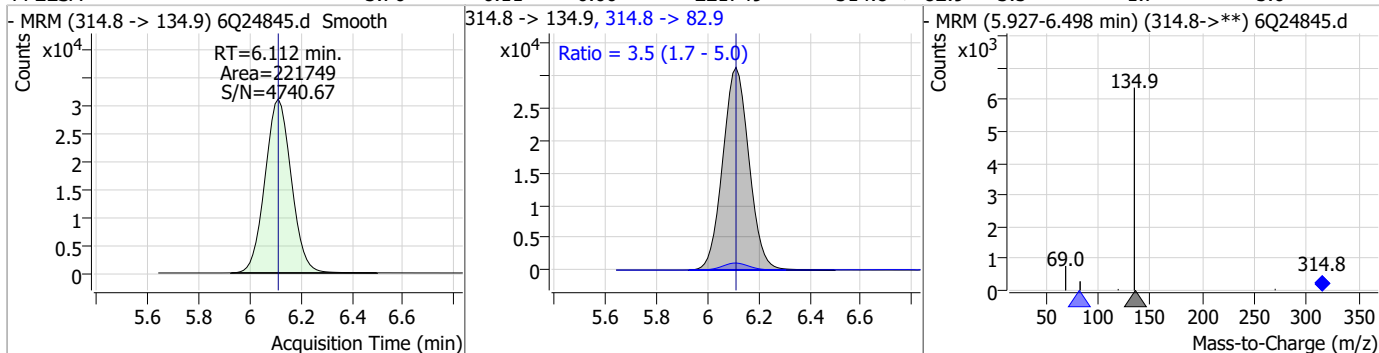
7.7.15 7

Perfluorinated Compounds by LC/MS/MS

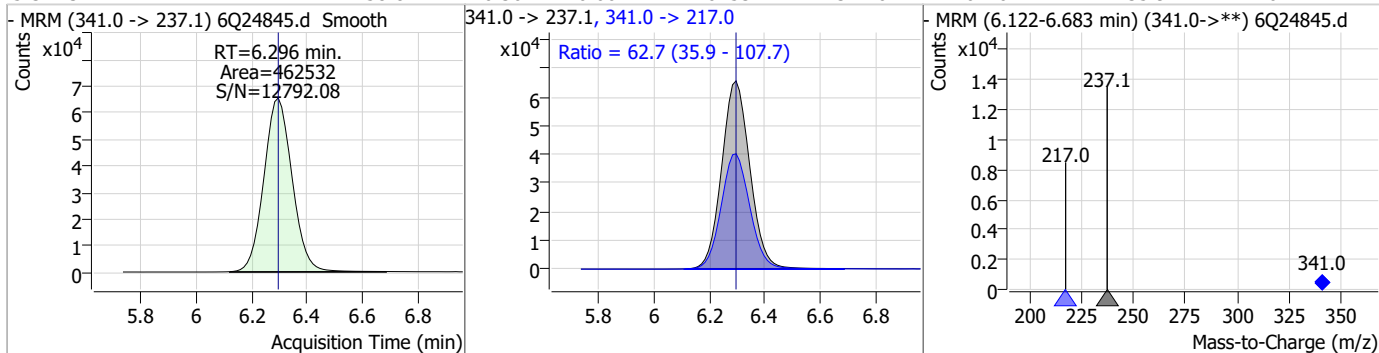
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
HFPO-DA	4.79	6.02	0.00	30876	284.9 -> 184.9	13.6	7.1	21.4



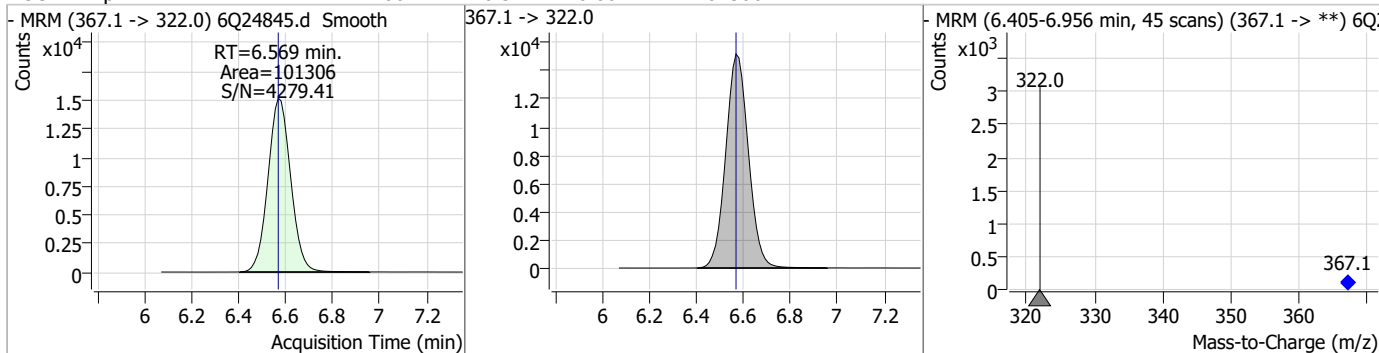
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFEESA	3.76	6.11	0.00	221749	314.8 -> 82.9	3.5	1.7	5.0



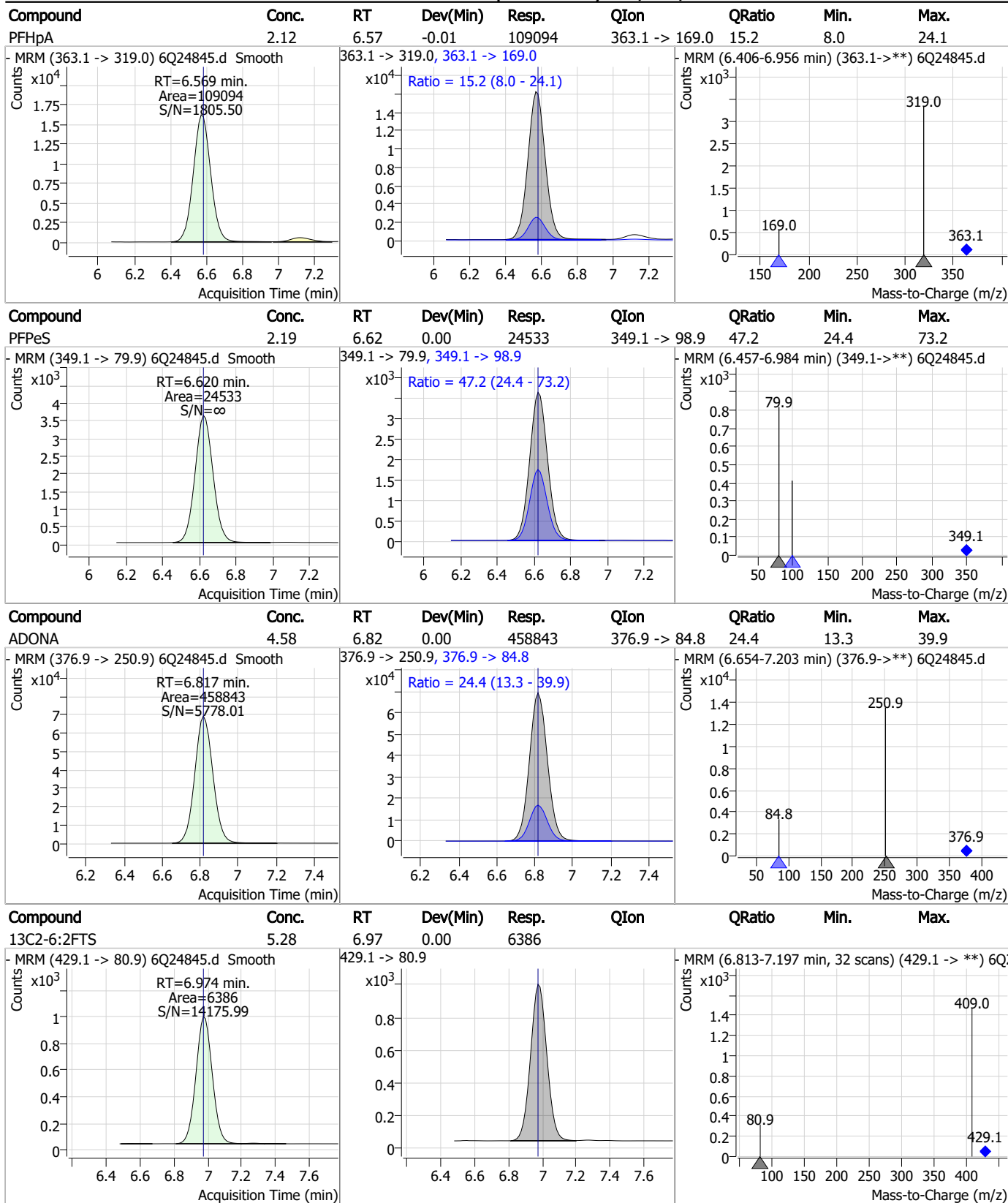
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
5:3FTCA	58.81	6.30	0.00	462532	341.0 -> 217.0	62.7	35.9	107.7



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C4-PFHpa	2.60	6.57	0.00	101306	367.1 -> 322.0			



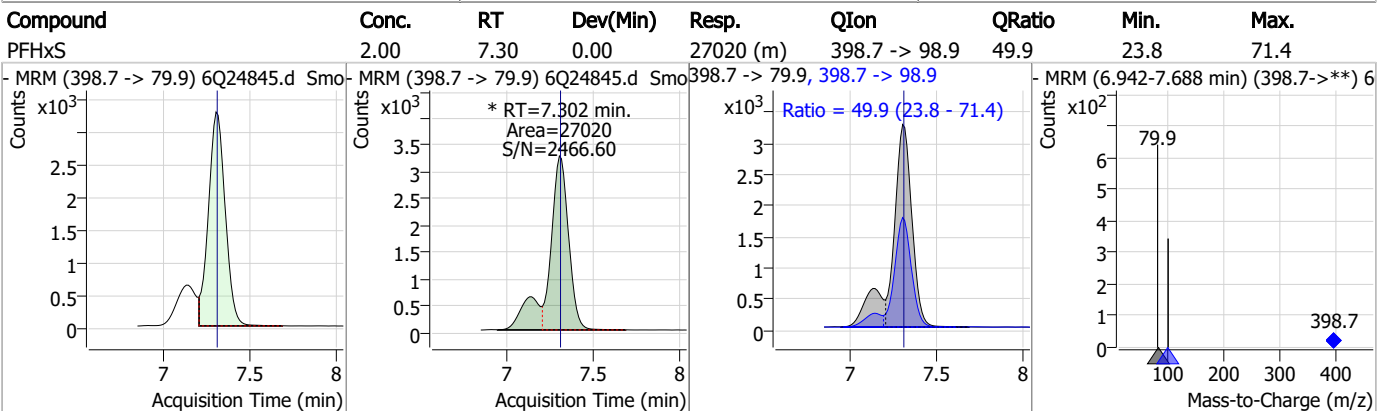
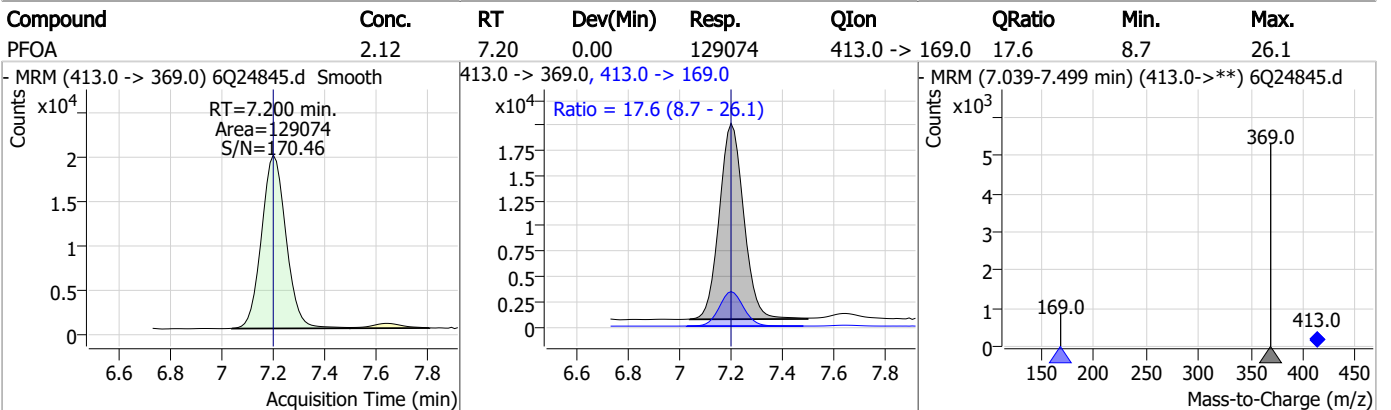
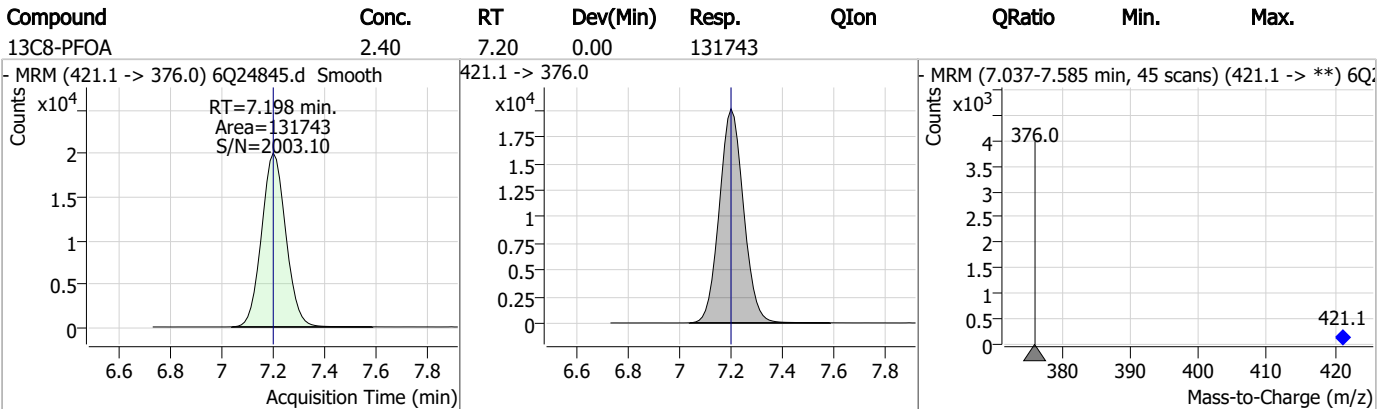
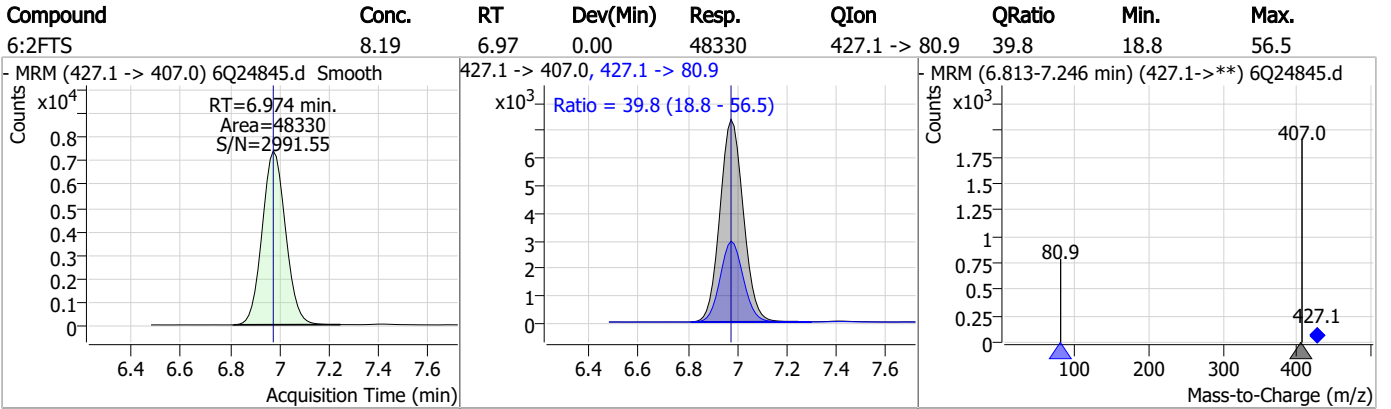
Perfluorinated Compounds by LC/MS/MS



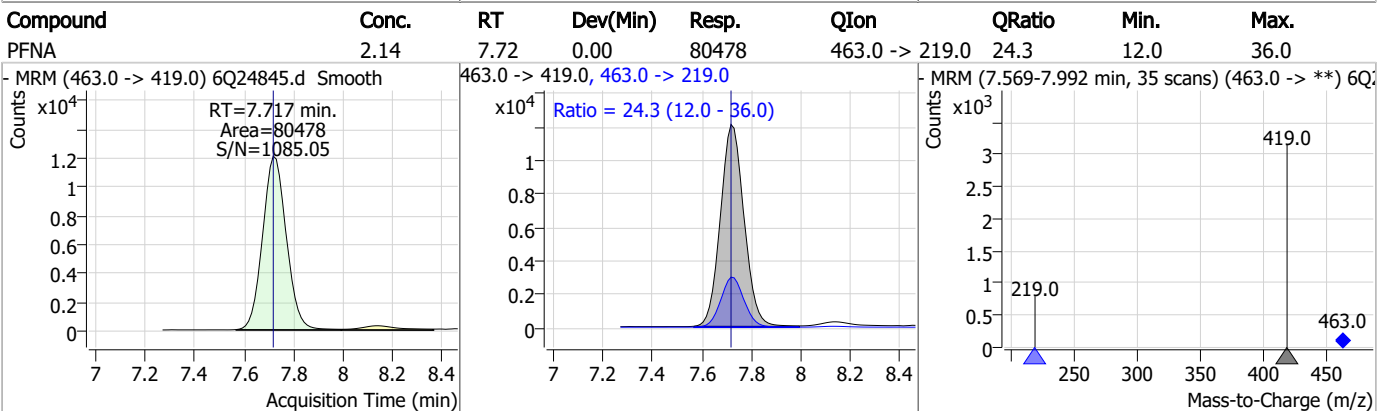
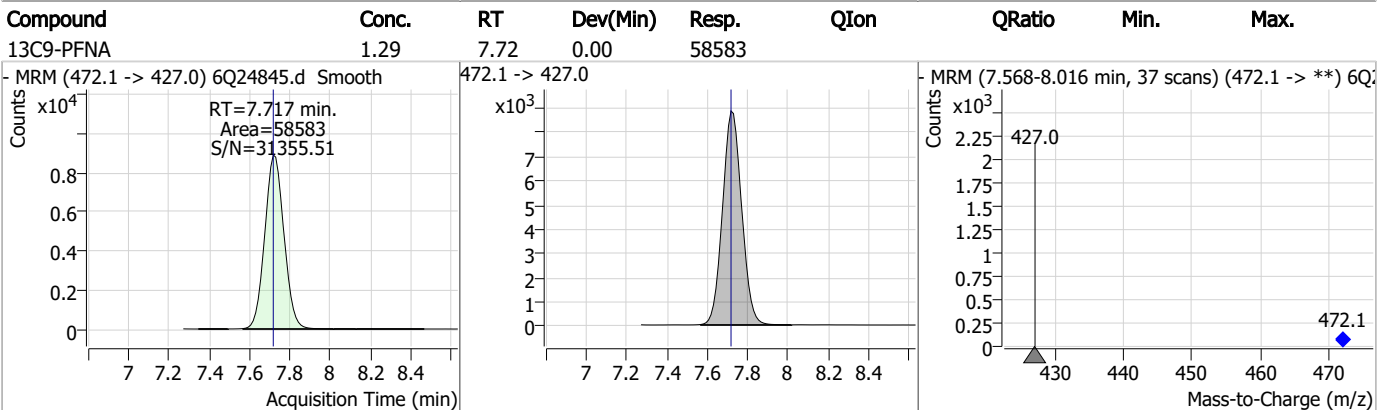
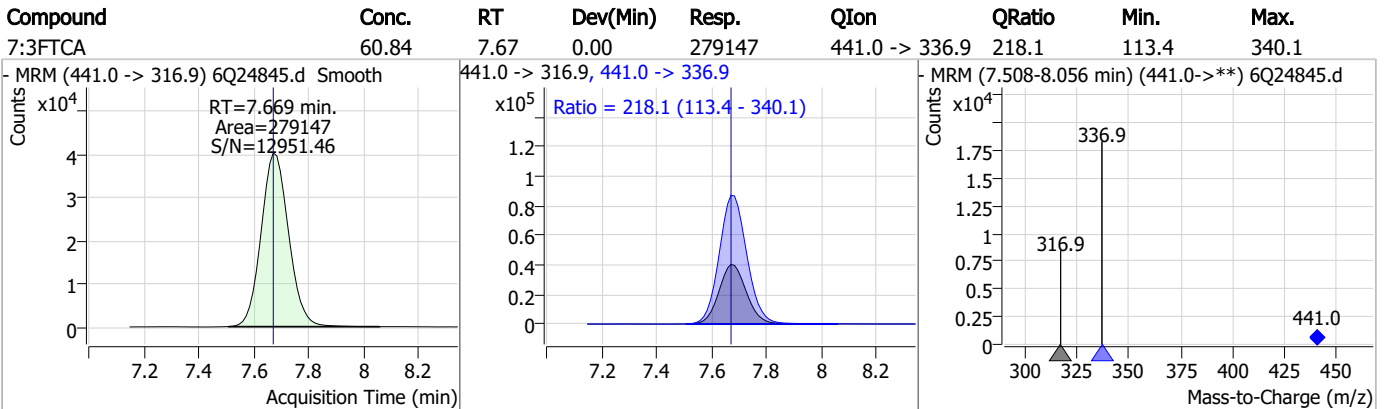
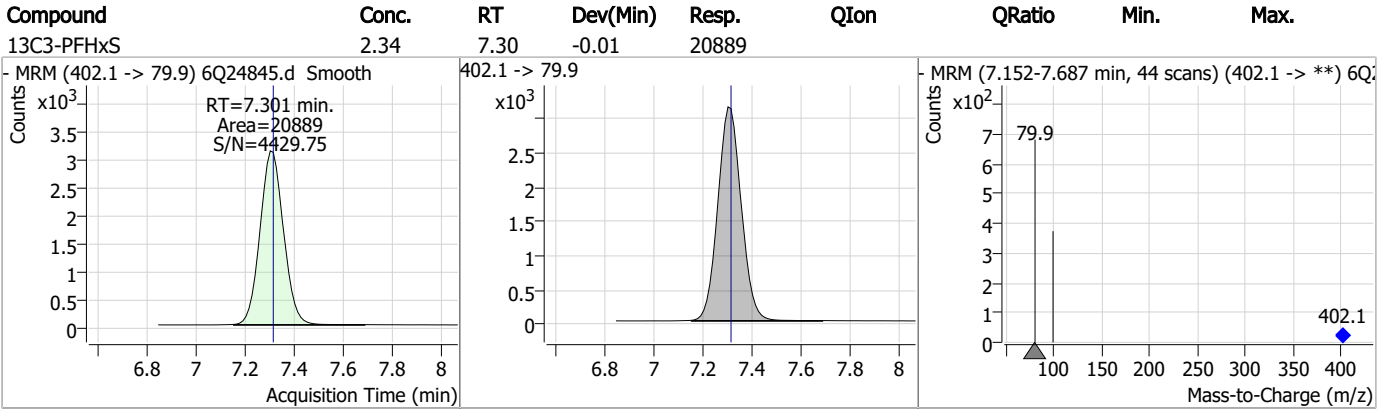
7.7.15

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Perfluorinated Compounds by LC/MS/MS



Perfluorinated Compounds by LC/MS/MS



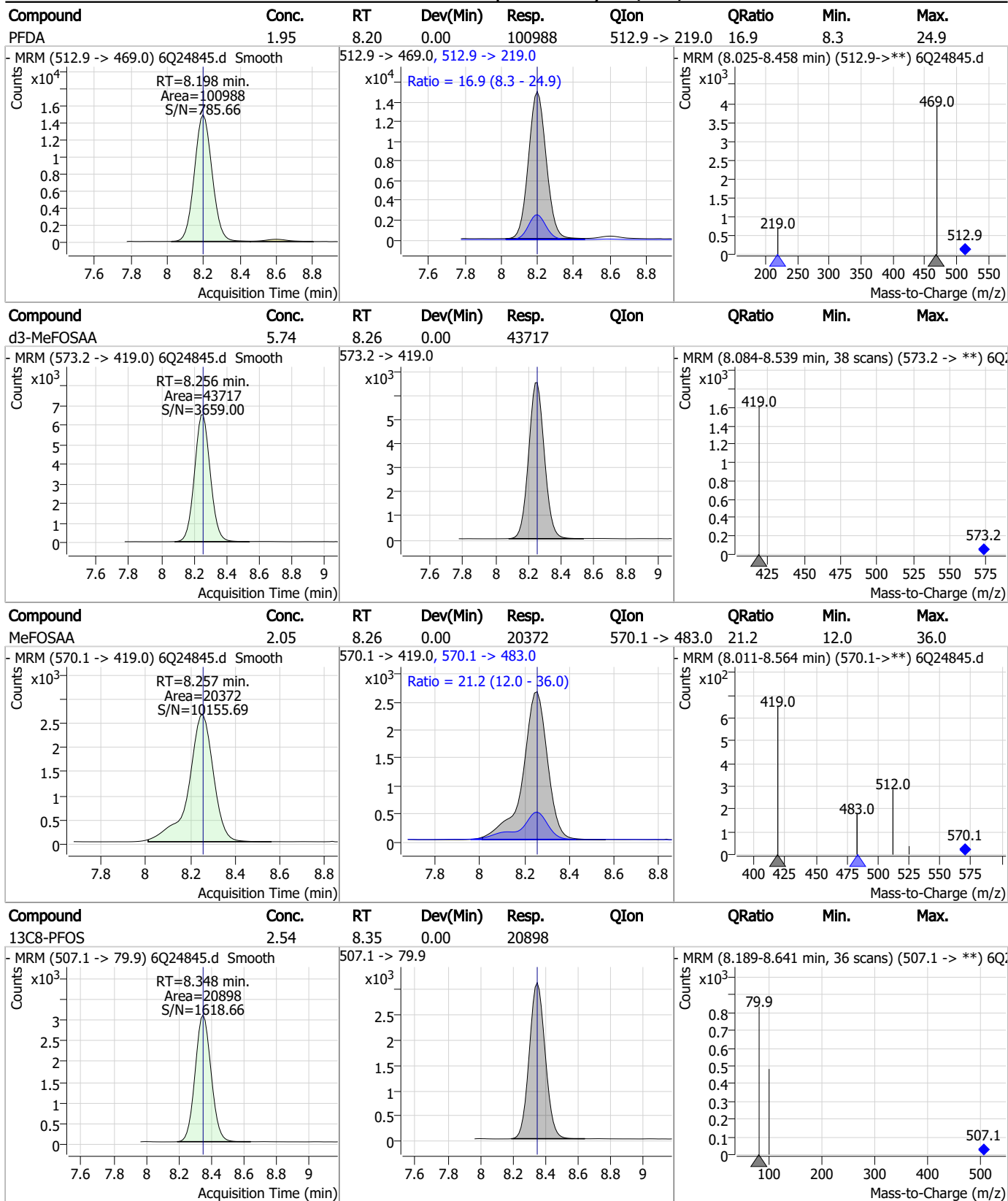
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Perfluorinated Compounds by LC/MS/MS

Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFHpS	2.05	7.86	0.00	20991	449.0 -> 98.9	47.0	23.5	70.6
13C2-8:2FTS	4.79	8.00	0.01	5920	529.1 -> 80.9			
8:2FTS	9.04	8.00	0.00	33972	527.1 -> 80.8	39.3	16.2	48.5
13C6-PFDA	1.26	8.20	0.00	57979	519.1 -> 474.1			

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Perfluorinated Compounds by LC/MS/MS

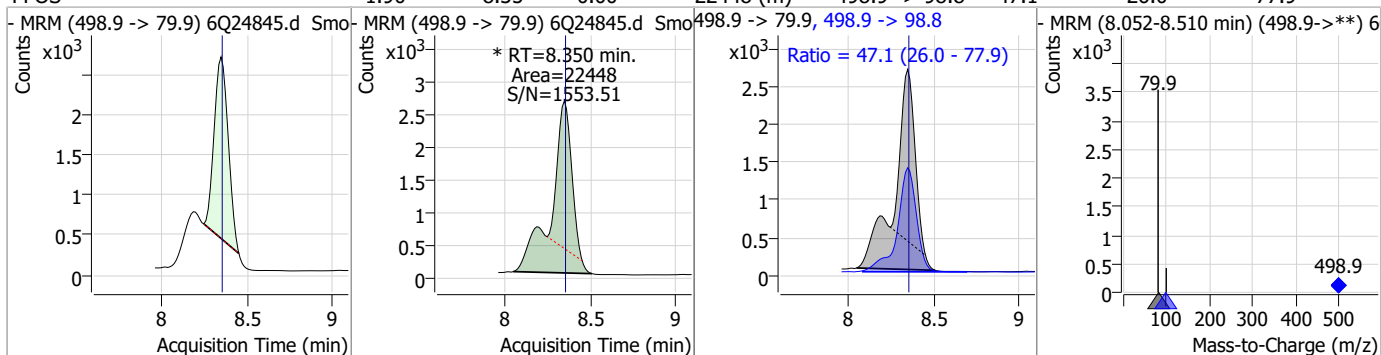


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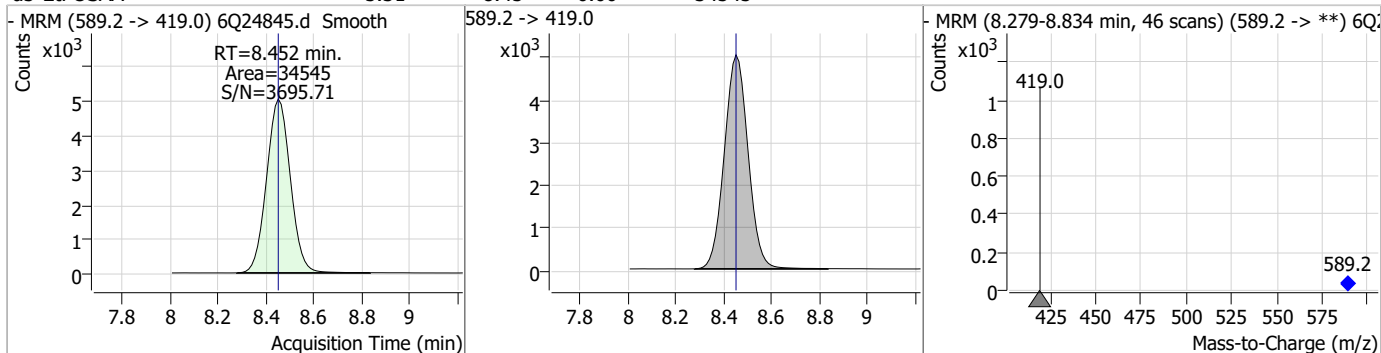


Perfluorinated Compounds by LC/MS/MS

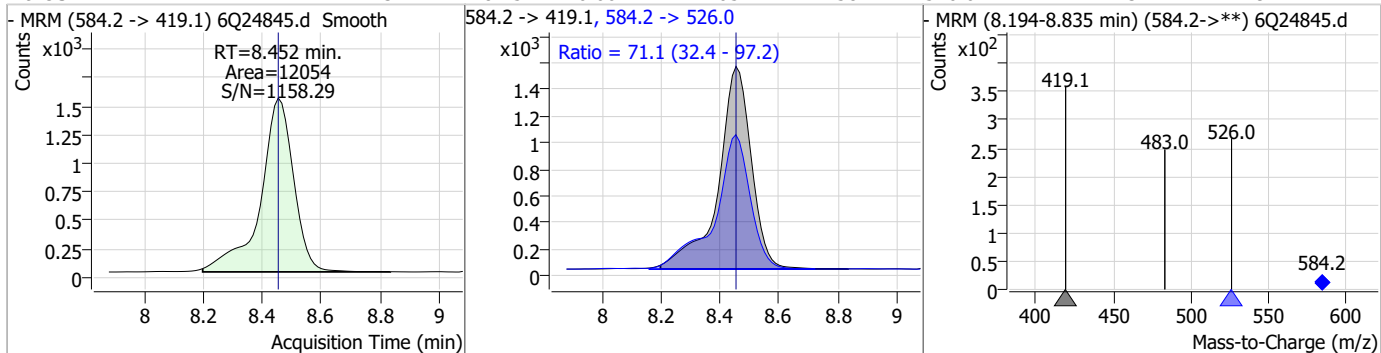
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFOS	1.90	8.35	0.00	22448 (m)	498.9 -> 98.8	47.1	26.0	77.9



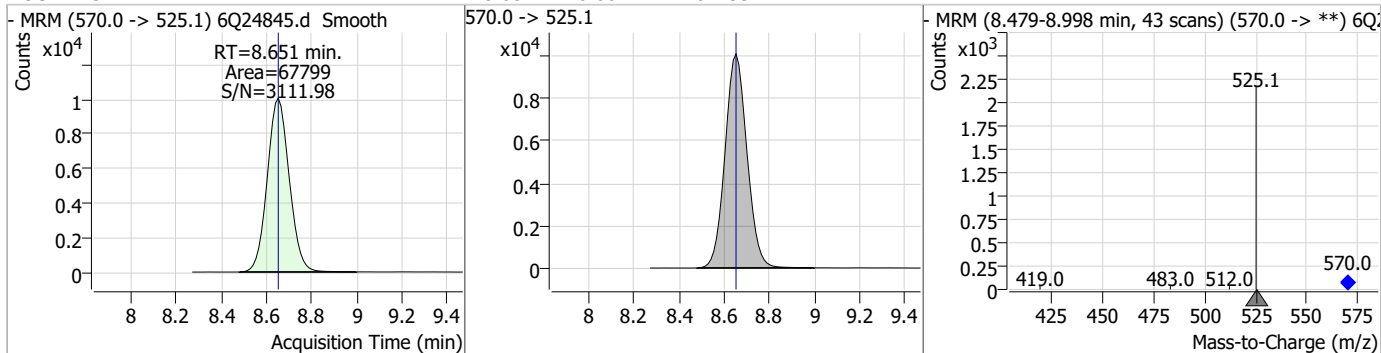
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d5-EtFOSAA	5.31	8.45	0.00	34545				



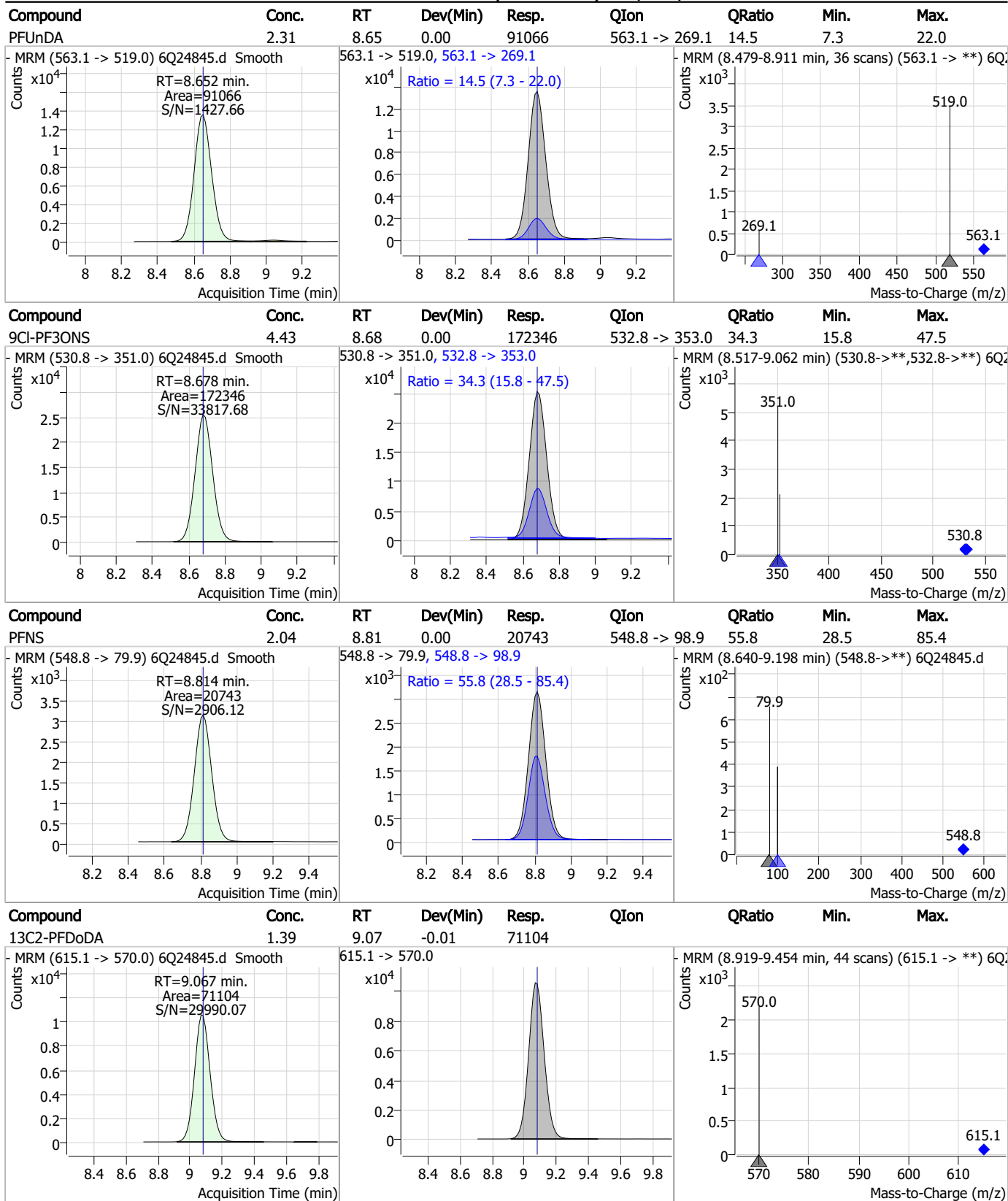
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSAA	2.31	8.45	0.00	12054	584.2 -> 526.0	71.1	32.4	97.2



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C7-PFUnDA	1.24	8.65	0.00	67799				

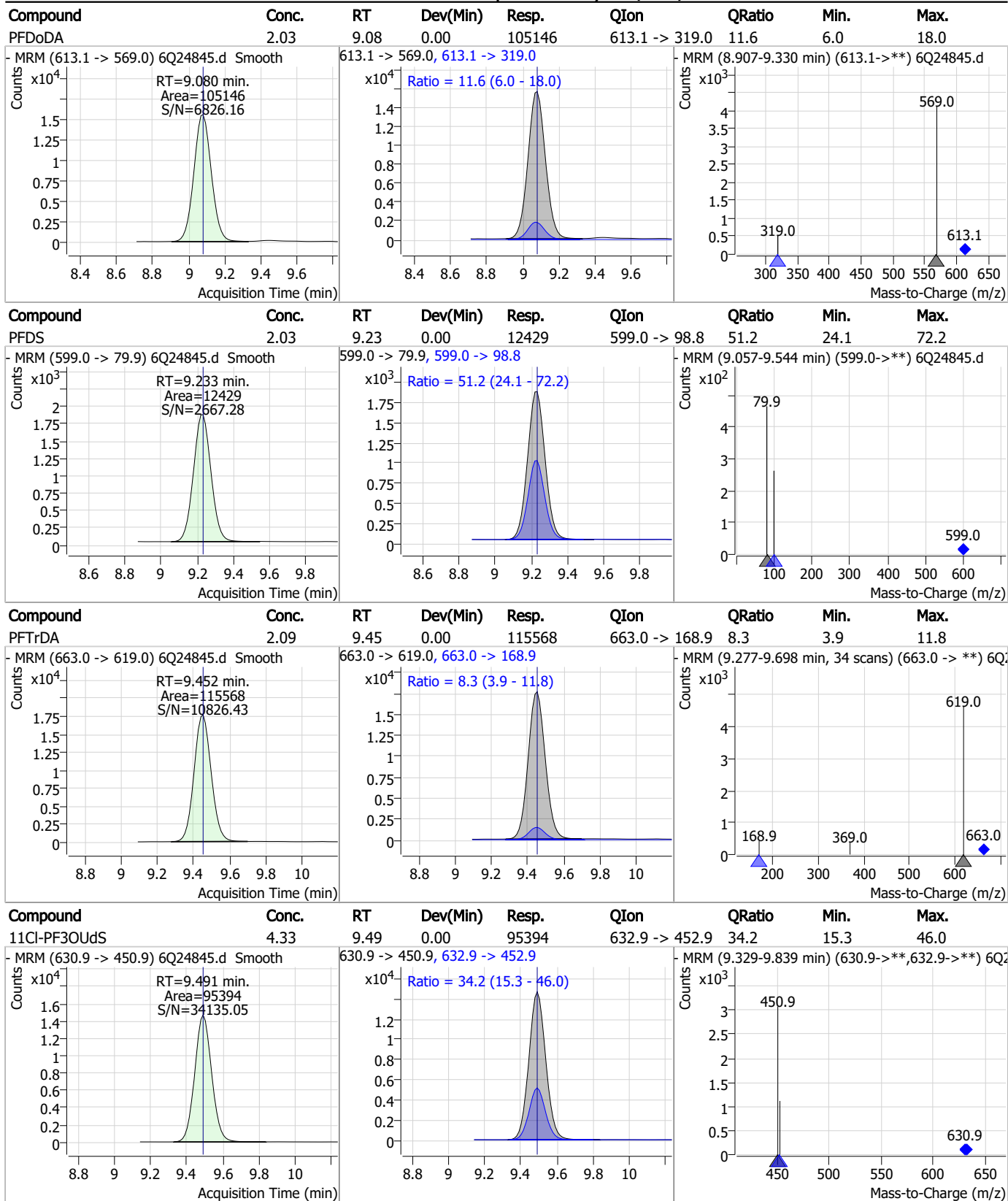


Perfluorinated Compounds by LC/MS/MS



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Perfluorinated Compounds by LC/MS/MS

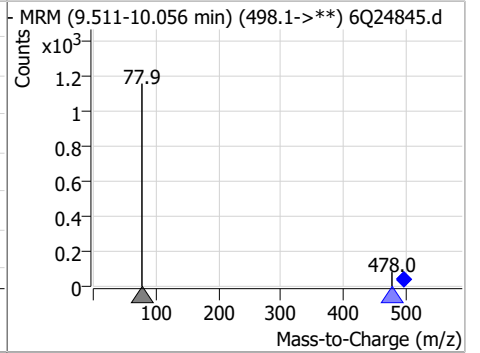
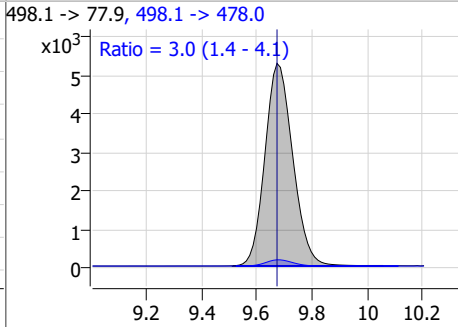
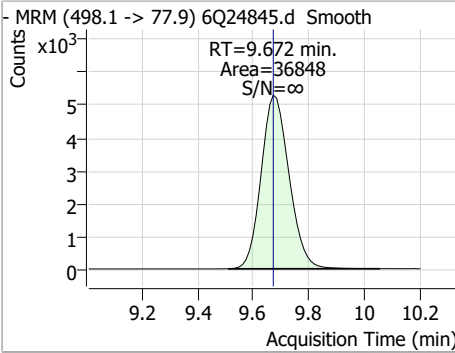


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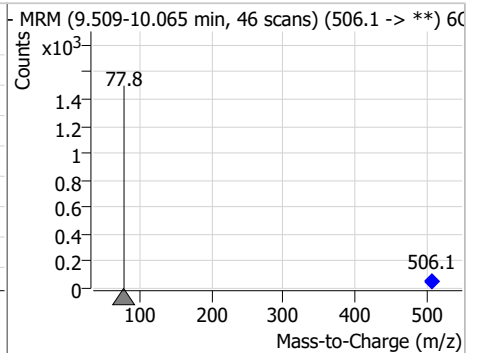
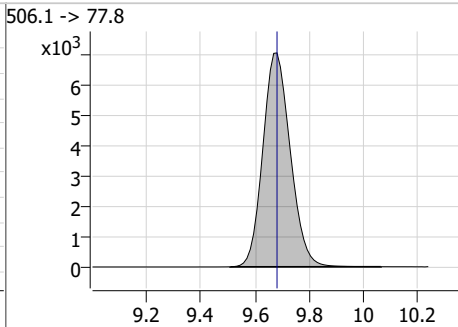
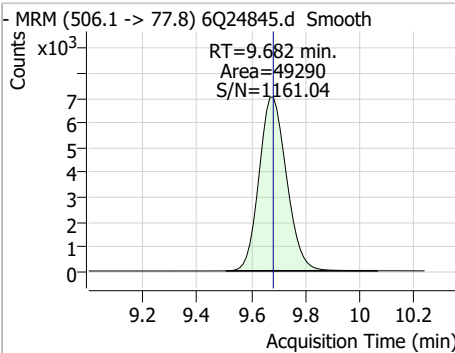


Perfluorinated Compounds by LC/MS/MS

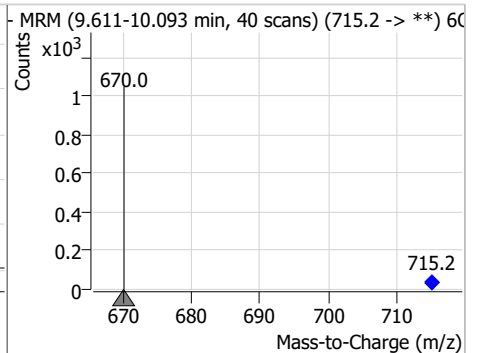
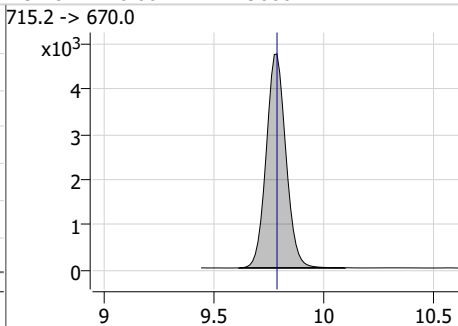
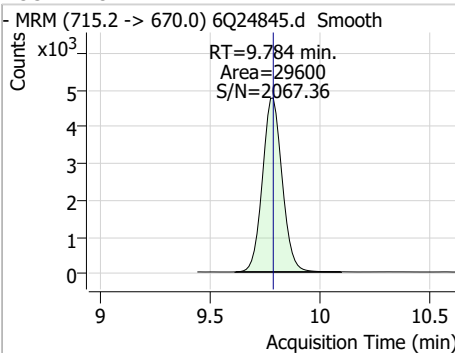
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
FOSA	2.17	9.67	0.00	36848	498.1 -> 478.0	3.0	1.4	4.1



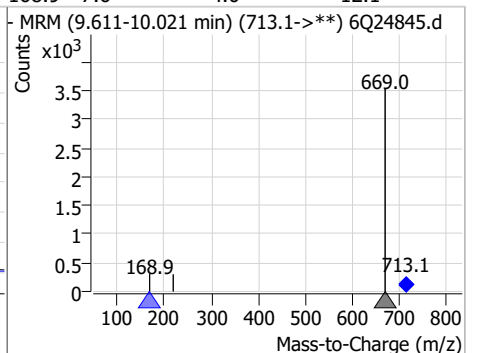
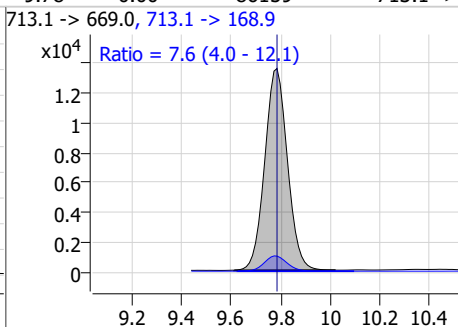
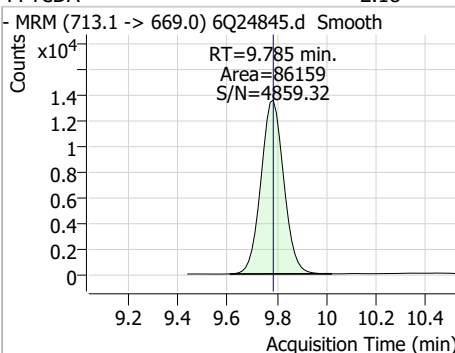
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C8-FOSA	2.69	9.68	0.00	49290	506.1 -> 77.8			



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
13C2-PFTeDA	1.44	9.78	0.00	29600	715.2 -> 670.0			

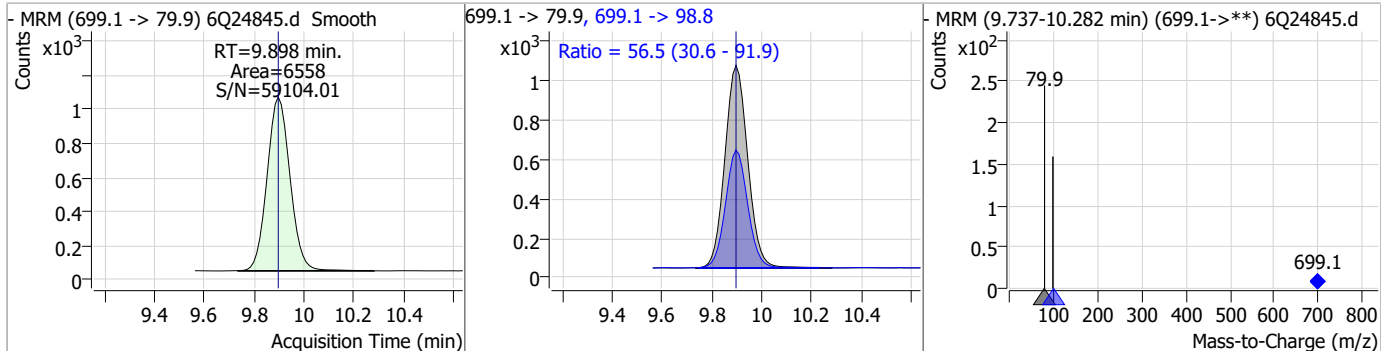


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFTeDA	2.18	9.78	0.00	86159	713.1 -> 168.9	7.6	4.0	12.1

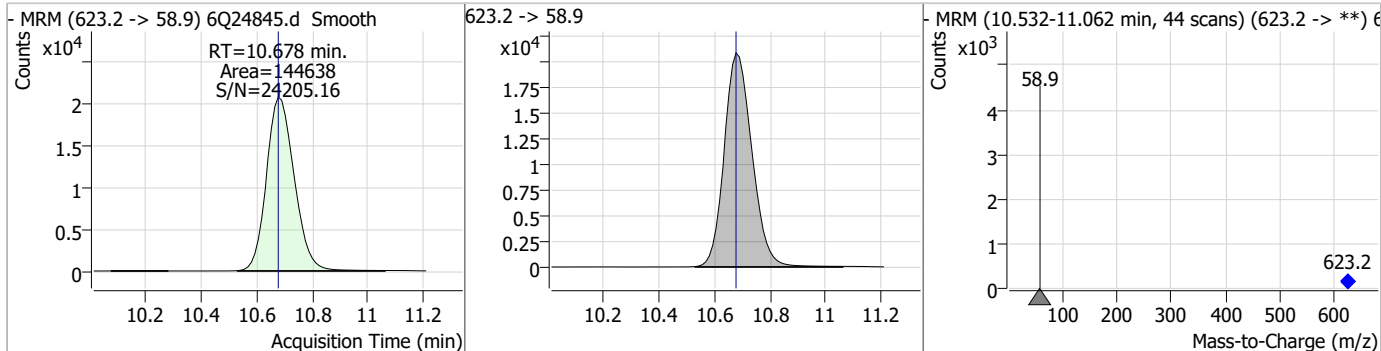


Perfluorinated Compounds by LC/MS/MS

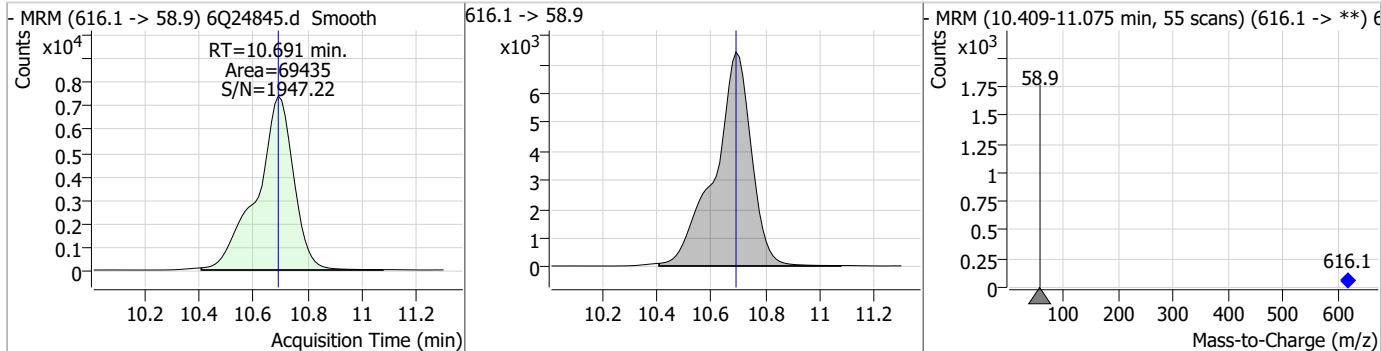
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
PFDoS	2.18	9.90	0.00	6558	699.1 -> 98.8	56.5	30.6	91.9



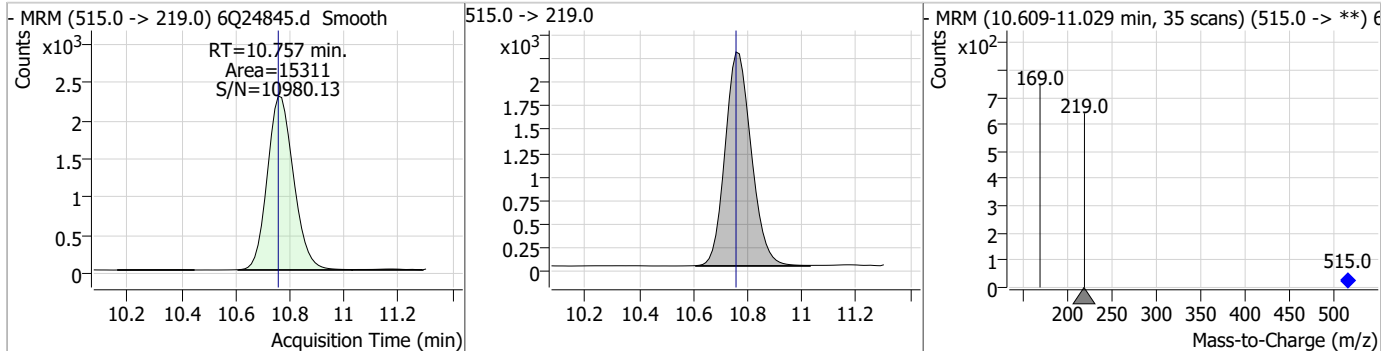
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d7-MeFOSE	24.31	10.68	0.00	144638				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSE	11.18	10.69	0.00	69435				



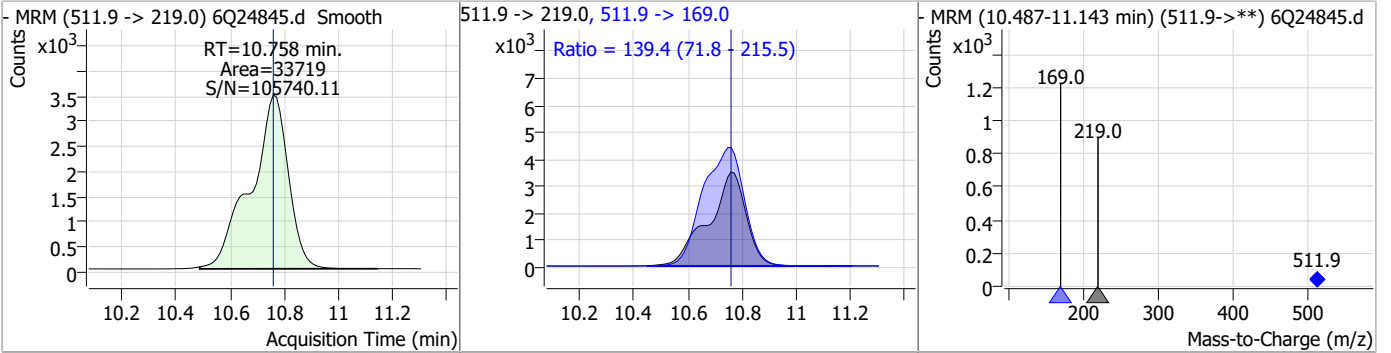
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d3-MeFOSA	2.31	10.76	0.00	15311				



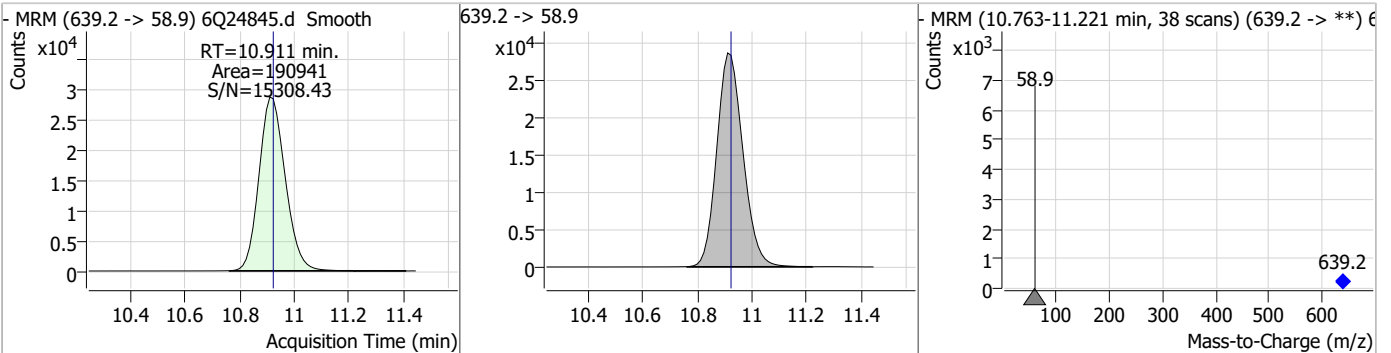
7.7.15
7

Perfluorinated Compounds by LC/MS/MS

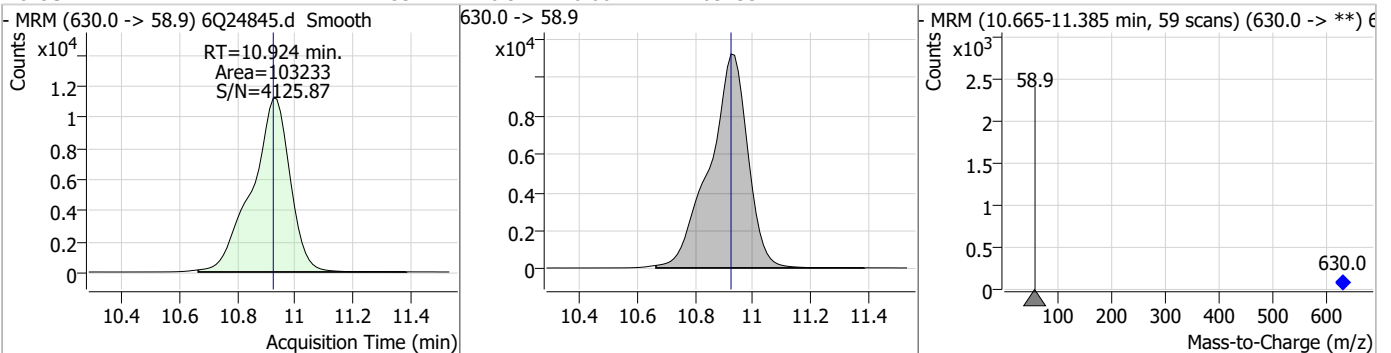
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
MeFOSA	4.89	10.76	0.00	33719	511.9 -> 169.0	139.4	71.8	215.5



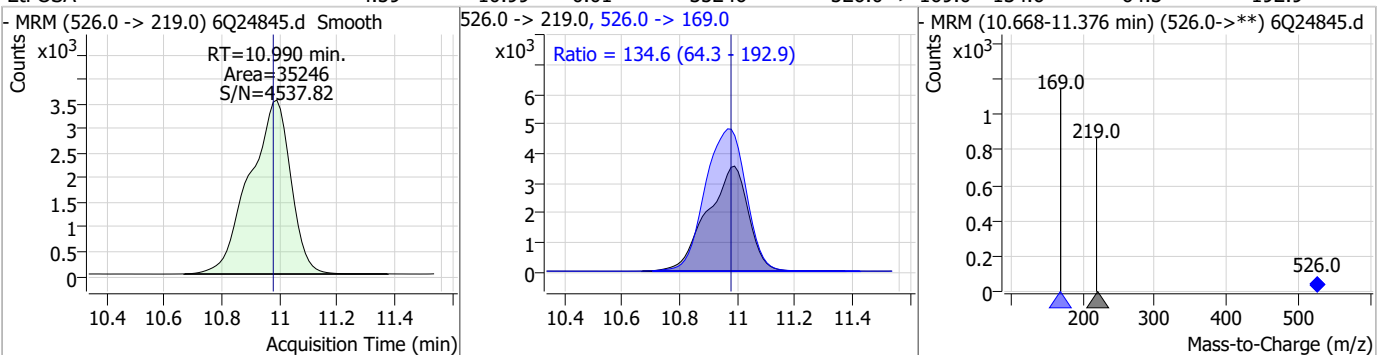
Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
d9-EtFOSE	24.45	10.91	-0.01	190941				



Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSE	11.53	10.92	0.00	103233				

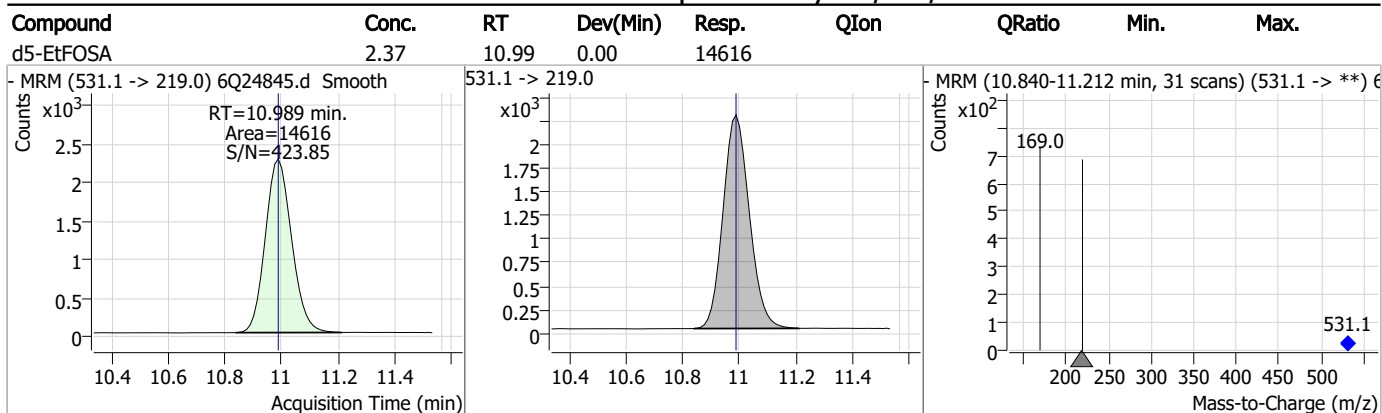


Compound	Conc.	RT	Dev(Min)	Resp.	QIon	QRatio	Min.	Max.
EtFOSA	4.59	10.99	0.01	35246	526.0 -> 169.0	134.6	64.3	192.9



7.7.15
7

Perfluorinated Compounds by LC/MS/MS



7.7.15
7

Manual Integration Approval Summary

Sample Number: S6Q355-CC355 Method: EPA DRAFT 1633
Lab FileID: 6Q24845.D Analyst approved: 09/22/23 14:10 Anna Ludwig
Injection Time: 09/22/23 04:43 Supervisor approved: 09/22/23 14:15 Natasha Guntie

Parameter	CAS	Sig#	R.T. (min.)	Reason
Perfluorohexanesulfonic acid	355-46-4		7.30	Split peak
Perfluorooctanesulfonic acid	1763-23-1		8.35	Split peak

7.7.15.1

7

SGS ORLANDO

DATE:	09/21/23
COLUMN TYPE:	Poroshell EC18
AMOUNT INJ:	4 uI
INSTRUMENT:	LCMS6-6Q

LCMS6-6Q ANALYSIS LOG

METHODS:	1633
PROC. METH:	1633_092123_S6Q355
CAL DATE:	09/21/23
ANALYST:	M. Valls AL
RUN BATCH:	S6Q355

ELUENT A LOT #:	ACN 232980
ELUENT B LOT #:	HPLC WATER:231331 W5% Acetonitrile: 232980 2mM AMAC.
IC/CC STD LOT #:	LCMS 2151-E
ICV STD LOT #:	LCMS 2151B/2159
ISTD/ID STD LOT #:	11966A/11967A

	Data File	Sample	Sample Name	Method	Sample Type	Level	Misc. Info	Comments
1	6Q24772.d	P1-B9	CCB	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
2	6Q24773.d	P1-B9	CCB	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
3	6Q24774.d	P1-B3	RT TDCA	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
4	6Q24775.d	P1-B4	RT BR-LN	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
5	6Q24776.d	P1-A9	High Std	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
6	6Q24777.d	P1-A1	IBLK	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
7	6Q24778.d	P1-A5	cc347-4	1633full.m	QC	20/500	OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
8	6Q24779.d	P1-A2	cc347-1,0LL	1633full.m	QC	1.6/500	OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
9	6Q24780.d	P2-A1	OP99077-BS	1633full.m	Sample		OP99077,S6Q355,500,,,5.0,1,water	instrument shut off - recal
10	6Q24781.d	P2-A2	OP99077-LLBS:3	1633full.m	Sample		OP99077,S6Q355,500,,,5.0,1,water	instrument shut off - recal
11	6Q24782.d	P2-A3	OP99077-MB	1633full.m	Sample		OP99077,S6Q355,500,,,5.0,1,water	instrument shut off - recal
12	6Q24783.d	P2-A4	FC9604-1	1633full.m	Sample		OP99077,S6Q355,530,,,5.0,1,water	instrument shut off - recal
13	6Q24784.d	P2-A5	FC9604-2	1633full.m	Sample		OP99077,S6Q355,560,,,5.0,1,water	instrument shut off - recal
14	6Q24785.d	P2-A6	FC9604-3	1633full.m	Sample		OP99077,S6Q355,510,,,5.0,1,water	instrument shut off - recal
15	6Q24786.d	P2-A7	FC9604-4	1633full.m	Sample		OP99077,S6Q355,540,,,5.0,1,water	instrument shut off - recal
16	6Q24787.d	P2-A8	FC9604-5	1633full.m	Sample		OP99077,S6Q355,520,,,5.0,1,water	instrument shut off - recal
17	6Q24788.d	P2-A9	FC9604-6	1633full.m	Sample		OP99077,S6Q355,510,,,5.0,1,water	instrument shut off - recal
18	6Q24789.d	P2-B1	FC9604-7	1633full.m	Sample		OP99077,S6Q355,530,,,5.0,1,water	instrument shut off - recal
19	6Q24790.d	P1-A5	cc347-4	1633full.m	QC	20/500	OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
20	6Q24791.d	P1-A1	iccb	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
21	6Q24792.d	P2-B2	FC9640-1	1633full.m	Sample		OP99077,S6Q355,570,,,5.0,1,water	instrument shut off - recal
22	6Q24793.d	P1-B9	CCB	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
23	6Q24794.d	P1-B9	CCB	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
24	6Q24795.d	P2-B3	OP99077-MS	1633full.m	Sample		OP99077,S6Q355,530,,,5.0,1,water	instrument shut off - recal
25	6Q24796.d	P2-B4	FC9640-2	1633full.m	Sample		OP99077,S6Q355,560,,,5.0,1,water	instrument shut off - recal
26	6Q24797.d	P2-B5	OP99077-DUP	1633full.m	Sample		OP99077,S6Q355,520,,,5.0,1,water	instrument shut off - recal
27	6Q24798.d	P2-B6	FC9666-1	1633full.m	Sample		OP99077,S6Q355,520,,,5.0,1,water	instrument shut off - recal
28	6Q24799.d	P2-B7	FC9666-2	1633full.m	Sample		OP99077,S6Q355,520,,,5.0,1,water	instrument shut off - recal
29	6Q24800.d	P2-B8	FC9666-3	1633full.m	Sample		OP99077,S6Q355,530,,,5.0,1,water	instrument shut off - recal
30	6Q24801.d	P2-B9	OP99032-MS	1633full.m	Sample		OP99077,S6Q355,520,,,5.0,1,water	instrument shut off - recal
31	6Q24802.d	P2-C1	OP99032-MSD	1633full.m	Sample		OP99032,S6Q355,4.95,,,5.0,1,SOIL	instrument shut off - recal
32	6Q24803.d	P1-A5	cc347-4	1633full.m	QC	20/500	OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
33	6Q24804.d	P1-A1	iccb	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	instrument shut off - recal
34	6Q24805.d	P2-C2	OP99058-BS	1633full.m	Sample		OP99068,S6Q355,5.00,,,5.0,1,soil	instrument shut off - recal
35	6Q24806.d	P1-B9	CCB	1633full.m	Sample		OP99081,S6Q355,500,,,5.0,1,water	nd



SGS ORLANDO LCMS6-6Q ANALYSIS LOG

36	6Q24807.d	P1-B9	CCB	1633full.m	Sample	OP99081,S6Q355.500,,,5.0,1,water	nd
37	6Q24808.d	P1-B3	RT TDCA	1633full.m	Sample	OP99081,S6Q355.500,,,5.0,1,water	pass
38	6Q24809.d	P1-B4	RT BR-LN	1633full.m	Sample	OP99081,S6Q355.500,,,5.0,1,water	pass
39	6Q24810.d	P1-A1	ic355-0	1633full.m	Sample	OP99081,S6Q355.500,,,5.0,1,water	check tune file
40	6Q24811.d	P1-A2	ic355-1	1633full.m	Calibration	1.6/500	pass
41	6Q24812.d	P1-A3	ic355-2	1633full.m	Calibration	3.2/500	pass
42	6Q24813.d	P1-A4	ic355-3	1633full.m	Calibration	10/500	pass
43	6Q24814.d	P1-A5	icc355-4	1633full.m	Calibration	20/500	pass
44	6Q24815.d	P1-A6	ic355-5	1633full.m	Calibration	40/500	pass
45	6Q24816.d	P1-A7	ic355-6	1633full.m	Calibration	100/500	pass
46	6Q24817.d	P1-A8	ic355-7	1633full.m	Calibration	200/500	pass
47	6Q24818.d	P1-A9	ic355-8	1633full.m	Calibration	1x	pass
48	6Q24819.d	P1-A1	IBLK	1633full.m	Sample	OP99081,S6Q355.500,,,5.0,1,water	nd
49	6Q24820.d	P1-B1	icv355-4	1633full.m	QC	20/500	pass
50	6Q24821.d	P1-B2	icv355-20	1633full.m	QC	100/500	pass
51	6Q24822.d	P1-A5	cc355-4	1633full.m	QC	20/500	pass
52	6Q24823.d	P1-A2	cc355-1,0LL	1633full.m	QC	1.6/500	pass
53	6Q24824.d	P2-A1	OP99077-BS	1633full.m	Sample	OP99077,S6Q355.500,,,5.0,1,water	✓
54	6Q24825.d	P2-A2	OP99077-LLBS:3	1633full.m	Sample	OP99077,S6Q355.500,,,5.0,1,water	✓
55	6Q24826.d	P2-A3	OP99077-MB	1633full.m	Sample	OP99077,S6Q355.500,,,5.0,1,water	✓
56	6Q24827.d	P2-A4	FC9604-1	1633full.m	Sample	OP99077,S6Q355.530,,,5.0,1,water	✓
57	6Q24828.d	P2-A5	FC9604-2	1633full.m	Sample	OP99077,S6Q355.550,,,5.0,1,water	rr 1x
58	6Q24829.d	P2-A6	FC9604-3	1633full.m	Sample	OP99077,S6Q355.510,,,5.0,1,water	rr 1x
59	6Q24830.d	P2-A7	FC9604-4	1633full.m	Sample	OP99077,S6Q355.540,,,5.0,1,water	✓
60	6Q24831.d	P2-A8	FC9604-5	1633full.m	Sample	OP99077,S6Q355.520,,,5.0,1,water	✓
61	6Q24832.d	P2-A9	FC9604-6	1633full.m	Sample	OP99077,S6Q355.510,,,5.0,1,water	rr 1x
62	6Q24833.d	P2-B1	FC9604-7	1633full.m	Sample	OP99077,S6Q355.530,,,5.0,1,water	✓
63	6Q24834.d	P1-A5	cc355-4	1633full.m	QC	20/500	pass
64	6Q24835.d	P1-A1	iccb	1633full.m	Sample	OP99081,S6Q355.500,,,5.0,1,water	nd
65	6Q24836.d	P2-B2	FC9640-1	1633full.m	Sample	OP99077,S6Q355.570,,,5.0,1,water	✓
66	6Q24837.d	P2-B3	OP99077-MS	1633full.m	Sample	OP99077,S6Q355.530,,,5.0,1,water	✓
67	6Q24838.d	P2-B4	FC9640-2	1633full.m	Sample	OP99077,S6Q355.550,,,5.0,1,water	✓
68	6Q24839.d	P2-B5	OP99077-DUP	1633full.m	Sample	OP99077,S6Q355.520,,,5.0,1,water	✓
69	6Q24840.d	P2-B6	FC9666-1	1633full.m	Sample	OP99077,S6Q355.520,,,5.0,1,water	✓
70	6Q24841.d	P2-B7	FC9666-2	1633full.m	Sample	OP99077,S6Q355.530,,,5.0,1,water	✓
71	6Q24842.d	P2-B8	FC9666-3	1633full.m	Sample	OP99077,S6Q355.520,,,5.0,1,water	✓
72	6Q24843.d	P2-B9	OP99032-MS	1633full.m	Sample	OP99032,S6Q355.4.95,,,5.0,1,SOIL	✓
73	6Q24844.d	P2-C1	OP99032-MSD	1633full.m	Sample	OP99032,S6Q355.5.03,,,5.0,1,SOIL	✓
74	6Q24845.d	P1-A5	ecc355-4	1633full.m	QC	20/500	pass
75	6Q24846.d	P1-A1	iccb	1633full.m	Sample	OP99081,S6Q355.500,,,5.0,1,water	nd
76	6Q24847.d	P2-C2	OP99058-BS	1633full.m	Sample	OP99058,S6Q355.5.00,,,5.0,1,soil	✓
77	6Q24848.d	P2-C3	OP99058-LLBS:3	1633full.m	Sample	OP99058,S6Q355.5.00,,,5.0,1,soil	✓
78	6Q24849.d	P2-C4	OP99058-MB	1633full.m	Sample	OP99058,S6Q355.5.00,,,5.0,1,soil	✓



SGS ORLANDO LCMS6-6Q ANALYSIS LOG

79	6Q24850.d	P2-C5	FC9419-1	1633full.m	Sample	OP99058,S6Q355,5.01,,5.0,1,soil	
80	6Q24851.d	P2-C6	OP99058-MS	1633full.m	Sample	OP99058,S6Q355,5.00,,5.0,1,soil	
81	6Q24852.d	P2-C7	OP99058-MSD	1633full.m	Sample	OP99058,S6Q355,4.96,,5.0,1,soil	
82	6Q24853.d	P2-C8	FC9419-2	1633full.m	Sample	OP99058,S6Q355,5.04,,5.0,1,soil	
83	6Q24854.d	P2-C9	FC9419-2	1633full.m	Sample	OP99058,S6Q355,5.04,,5.0,5,soil	5X
84	6Q24855.d	P2-D1	FC9419-3	1633full.m	Sample	OP99058,S6Q355,5.03,,5.0,1,soil	
85	6Q24856.d	P2-D2	FC9419-4	1633full.m	Sample	OP99058,S6Q355,5.04,,5.0,1,soil	
86	6Q24857.d	P1-A5	cc355-4	1633full.m	QC	OP99081,S6Q355,5.00,,5.0,1,water	
87	6Q24858.d	P1-A1	iccb	1633full.m	Sample	OP99081,S6Q355,5.00,,5.0,1,water	
88	6Q24859.d	P2-D3	FC9419-5	1633full.m	Sample	OP99058,S6Q355,4.95,,5.0,1,soil	
89	6Q24860.d	P2-D4	FC9419-5	1633full.m	Sample	OP99058,S6Q355,4.95,,5.0,2,soil	2X
90	6Q24861.d	P2-D5	FC9419-6	1633full.m	Sample	OP99058,S6Q355,4.99,,5.0,1,soil	
91	6Q24862.d	P2-D6	FC9419-7	1633full.m	Sample	OP99058,S6Q355,5.01,,5.0,1,soil	
92	6Q24863.d	P2-D7	FC9419-7	1633full.m	Sample	OP99058,S6Q355,5.01,,5.0,10,soil	10X
93	6Q24864.d	P2-D8	FC9419-8	1633full.m	Sample	OP99058,S6Q355,5.03,,5.0,1,soil	
94	6Q24865.d	P2-D9	FC9419-8	1633full.m	Sample	OP99058,S6Q355,5.03,,5.0,5,soil	5X
95	6Q24866.d	P2-E1	FC9419-9	1633full.m	Sample	OP99058,S6Q355,5.01,,5.0,1,soil	
96	6Q24867.d	P2-E2	FC9419-10	1633full.m	Sample	OP99058,S6Q355,4.95,,5.0,1,soil	
97	6Q24868.d	P2-E3	FC9419-10	1633full.m	Sample	OP99058,S6Q355,4.95,,5.0,10,soil	10X
98	6Q24869.d	P1-A5	cc355-4	1633full.m	QC	OP99081,S6Q355,5.00,,5.0,1,water	
99	6Q24870.d	P1-A1	iccb	1633full.m	Sample	OP99081,S6Q355,5.00,,5.0,1,water	
100	6Q24871.d	P2-E4	FC9419-11	1633full.m	Sample	OP99058,S6Q355,0.98,,5.0,1,soil	
101	6Q24872.d	P2-E5	FC9419-11	1633full.m	Sample	OP99058,S6Q355,0.98,,5.0,10,soil	10X
102	6Q24873.d	P2-E6	FC9419-12	1633full.m	Sample	OP99058,S6Q355,5.05,,5.0,1,soil	
103	6Q24874.d	P2-E7	FC9419-13	1633full.m	Sample	OP99058,S6Q355,0.98,,5.0,1,soil	
104	6Q24875.d	P2-E8	FC9419-13	1633full.m	Sample	OP99058,S6Q355,0.98,,5.0,10,soil	10X
105	6Q24876.d	P2-E9	FC9419-14	1633full.m	Sample	OP99058,S6Q355,4.98,,5.0,1,soil	
106	6Q24877.d	P2-F1	FC9419-14	1633full.m	Sample	OP99058,S6Q355,4.98,,5.0,5,soil	5X
107	6Q24878.d	P2-F2	FC9419-15	1633full.m	Sample	OP99058,S6Q355,4.95,,5.0,1,soil	
108	6Q24879.d	P5-D1	op99081-mb	1633full.m	Sample	OP99081,S6Q355,5.00,,5.0,1,soil	rr
109	6Q24880.d	P1-A5	cc355-4	1633full.m	QC	OP99081,S6Q355,5.00,,5.0,1,water	
110	6Q24881.d	P1-A1	iccb	1633full.m	Sample	OP99081,S6Q355,5.00,,5.0,1,water	
111	6Q24882.d	P2-F3	OP99102-BS	1633full.m	Sample	OP99102,S6Q355,5.00,,5.0,1,water	
112	6Q24883.d	P2-F4	OP99102-LLBS:3	1633full.m	Sample	OP99102,S6Q355,5.00,,5.0,1,water	
113	6Q24884.d	P2-F5	OP99102-MB	1633full.m	Sample	OP99102,S6Q355,5.00,,5.0,1,water	
114	6Q24885.d	P2-F6	FC9579-7	1633full.m	Sample	OP99102,S6Q355,5.20,,5.0,1,water	
115	6Q24886.d	P2-F7	FC9579-8	1633full.m	Sample	OP99102,S6Q355,4.70,,5.0,1,water	
116	6Q24887.d	P2-F8	FC9579-9	1633full.m	Sample	OP99102,S6Q355,5.20,,5.0,1,water	
117	6Q24888.d	P2-F9	FC9580-1	1633full.m	Sample	OP99102,S6Q355,4.70,,5.0,1,water	
118	6Q24889.d	P3-A1	FC9580-2	1633full.m	Sample	OP99102,S6Q355,4.70,,5.0,1,water	
119	6Q24890.d	P3-A2	OP99102-MS	1633full.m	Sample	OP99102,S6Q355,5.00,,5.0,1,water	
120	6Q24891.d	P3-A5	FC9580-4	1633full.m	Sample	OP99102,S6Q355,5.05,,5.0,1,water	
121	6Q24892.d	P1-A5	cc355-4	1633full.m	QC	OP99081,S6Q355,5.00,,5.0,1,water	



SGS ORLANDO LCMS6-6Q ANALYSIS LOG

122	6Q24893.d	P1-A1	iccb	1633full.m	Sample	OP99081.S6Q355.500,,,5.0,1,water
123	6Q24894.d	P3-A3	FC9580-3	1633full.m	Sample	OP99102.S6Q355.475,,,5.0,1,water
124	6Q24895.d	P3-A4	OP99102-DUP	1633full.m	Sample	OP99102.S6Q355.480,,,5.0,1,water
125	6Q24896.d	P3-A6	FC9580-5	1633full.m	Sample	OP99102.S6Q355.510,,,5.0,1,water
126	6Q24897.d	P3-A7	FC9580-6	1633full.m	Sample	OP99102.S6Q355.480,,,5.0,1,water
127	6Q24898.d	P3-A8	FC9580-7	1633full.m	Sample	OP99102.S6Q355.480,,,5.0,1,water
128	6Q24899.d	P3-A9	FC9642-1	1633full.m	Sample	OP99102.S6Q355.530,,,5.0,1,water
129	6Q24900.d	P3-B1	FC9642-2	1633full.m	Sample	OP99102.S6Q355.520,,,5.0,1,water
130	6Q24901.d	P3-B2	FC9642-3	1633full.m	Sample	OP99102.S6Q355.510,,,5.0,1,water
131	6Q24902.d	P3-B3	FC9642-4	1633full.m	Sample	OP99102.S6Q355.525,,,5.0,1,water
132	6Q24903.d	P3-B4	FC9642-5	1633full.m	Sample	OP99102.S6Q355.490,,,5.0,1,water
133	6Q24904.d	P1-A5	Ecc355-4	1633full.m	QC	20/500
134	6Q24905.d	P1-A1	iccb	1633full.m	Sample	OP99081.S6Q355.500,,,5.0,1,water

Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2151A-E	1033 Cal std. (epike)	LCMS 2140	BR-LN Et-Me	SGS LABS	M/A	12/28/23	2 ppm	250uL	4 mL	125	1033 mix	7/31/23	12/28/23	MV
		11899	PFAC MXH	Wellington	4/9/28	7/31/24	1-4 ppm			62.5	(210884)			
		11930A	PFAC MXH		3/24/26	7/19/24	2 ppm			125				
		11900	PFAC MXF		3/24/26	7/31/24	2 ppm			250ppb				
		11931A	PFAC MXF		12/1/27	7/19/24	2 ppm			125ppb				
		11892	PFAC MXG		3/28/28	7/31/24	4-20 ppm	3/2NL		312				
		11901	PFAC MXG		3/28/28	7/31/24	4-20 ppm			1100ppb				
		11893	PFAC MXJ		3/13/28	8/1/24	1.0ppm	400uL	4.0 mL	100ppb	95% MeOH 5% H2O	8/6/23	8/23/23	JR
LCMS 2152	Full List 40 Spike (cal std)	11849/11872	PFAC (28 comp)	Absolute	3/13/28	8/1/24	1.0ppm			100ppb				JR
		LCMS 2047	40 List Add-on #1	SGS Std	-	8/23/25	1.0ppm			100ppb				JR
		LCMS 2117	40 List Add-on #2		-	11/05/25	1.0ppm			100ppb				JR
		LCMS 2101	FOSE Std		-	9/19/25	5.0ppm	200uL*		500ppb				JR
		LCMS 2153	FOSE Std		-	9/19/25	5.0ppm	200uL*		500ppb				JR
LCMS 2153	FOSE std.	11336	N-Me-FOSE	SGS Std	5/13/27	9/19/25	50ppm	200uL	2.0 mL	5 ppm	95% MeOH 5% H2O	8/6/23	9/19/23	JR
		11338	N-Me-FOSE	Wellington Labs	5/13/27	7/19/23								JR
LCMS 2154	1033 BR-LN Me + Et (fosa)	11497	BR-N Et-fosa	Wellington LABS	8/23/27	12/28/23	50ppm	200uL	5 mL	2 ppm	1033 mix (3000uL)	8/7/23	12/28/23	MV
		11795	BR-N MeFOSE		10/7/27	6/28/24		500uL		5ppm				
		11498	BR-N Et-fosa		10/7/27	12/28/23		200uL		2ppm				
		11796	BR-N Et-fosa		10/7/27	6/28/24		500uL		5ppm				

* based on date opened as specified in each SGS - Orlando SOP. * JR 8/11/25

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 2139	1033 RT BR-LN	11496	br-Fosa	Wellington Labs	10/7/27	12/28/23	50ppm	5uL	2.5mL	100ppb	1033 mix	6/28/23	12/28/23	MU
		11497	br- N-MeFosa		8/23/27									
		11498	bc N-EtFosa		10/7/27									
		11494	br- N-MeFosa		10/7/27									
		11495	br- N-EtFosa		10/7/27									
		11502	T-PFA		01/27/27									
		11527	IP PFNA		01/10/27									
LCMS 2140	1033 BR-LN me + Et	11497	br-N MeFosa	Wellington Labs	8/23/27	12/28/23	50ppm	200uL	5mL	2ppm	1033 mix (3000uL)	6/28/23	12/28/23	MU
		11498	br-N EtFosa		10/7/27	12/28/23		200uL		2ppm				
		11795	br-N MeFosa		10/7/27	6/28/24		500uL		5ppm				
		11796	br-N EtFosa		10/7/27	6/28/24		500uL		5ppm				
LCMS 2141	List 40 Sum ADD-ON Isotope	11523	dt-N- MeFosa	Wellington Labs	1/27/27	5/9/24	50ppm	400uL	4mL	5ppm	950meOH 500H2O	7/11/23	01/11/24	MU
		11537	dg-N EtFosa		1/27/27	6/1/24		400uL		5ppm				
		11334	M2- PFHDA		11/23/26	6/1/24		80uL		1ppm				
		11335	D-N- EtFosa		3/7/27	6/1/24		80uL		1ppm				
						PR 7/12/23								

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

ORLD-QAC-0017-6-03-FORM-lcms 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 2159	Full List Copike List 40 std.	11872	PF6A (28 comp)	Absolute	3/13/28	8/1/24	1.0ppm	400µL	4.0mL	100ppb	95% MeOH 5% H2O (2.1400ml)	8/17/23	9/19/23	MJ
		LCMS 2155	List 40 ADDON 1	SGS labs	MA	10/18/23								
		LCMS 2150	List 40 ADDON 2			2/7/24								
		LCMS 2153	FOSC std.			9/19/23	5.0ppm	400µL		500ppb				
LCMS 2160	PFC ID Std	11872	PF6A-D00 (28 comp)	Absolute	3/13/28	8/01/24	1µg/mL	400µL	4.0mL	100ppb	95% MeOH 5% H2O	8/08/23	02/08/24	JR
		11432	N-MeFSA	Wellington Labs	02/28/27	3/13/24	50µg/mL	8 mL						JR
		11793	FOSA-1		02/01/28	8/08/24								JR
		11792	FHSA-1		12/01/27	0/08/24								JR
		11332	PFECHS		3/29/27	4/18/24								JR
LCMS 2161	PFC Spike	11872	PF6A-D00 (28 comp)	Absolute	3/13/28	8/01/24	1.0ppm	2 mL	5mL	400ppb	95% MeOH 5% H2O	8/08/23	02/08/24	JR
		11432	N-Me-FSA-M	Wellington Labs	02/28/27	3/13/24	50ppm	40µL						JR
		11793	FOSA-1		02/01/28	8/08/24								JR
		11792	FHSA-1		12/01/27	8/08/24								JR
		11332	PFECHS		3/28/27	4/18/24								JR

MJ
Confidential
next page

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Organic Standards Preparation Log

SGS - Orlando Std. #	Name Description	Parent Std. #	Parent Name	Parent Vendor	Vendor Exp. Date	Lab* Exp. Date	Parent Conc.	Vol. Used	Final Vol.	Final Conc.	Diluent Lot	Prep. Date	Exp. Date	Initials
LCMS 2156	List 40 ADD ON #2	11513	FBSA-1	Wellington	11/10/20	4/18/24	50 ppm	800ul	4.0mL	1ppm	95% meth 5% H2O (3760)	8/7/23	2/7/24	MJ
		11514	FHSA1		12/29/20	4/18/24								
		11408	F-PFAS		7/12/26	5/9/24								
LCMS 2157	1033 RT BR-LN	11496	br-Fosa	Wellington	10/7/27	12/28/23	50 ppm	10NL 515ul	5mL	100ppb	1033 mix (4930)	8/7/23	12/28/23	MJ
		11497	br-N metosa		8/23/27			10NL						
		11498	br-N E-Fosa		10/7/27									
		11494	br-N metose		10/7/27									
		11495	br-N E-Fose		10/7/27									
		11502	T-PFOA		01/27/27									
		11527	IP-PFNA		01/10/27									
LCMS 2158 AE	1033 Cal std. Spike	LCMS 11931A 11931B 11931C	Br-LN Et-me LA60	SGS LABO	N/A	12/28/23	2ppm 5ppm	250ul	4mL	125 312.5ppb	1033 mix 21088NL	8/7/23	12/28/23	MJ
		11930	PFAC MXH	Wellington	4/19/28	7/31/24 8/7/24	1-4 ppm			42.5 125				
		11931A	PFAC MXF		3/24/26	7-31-24 8-7-24	2ppm			125ppb				
		11907 11932A	PFAC MXG		12/1/27	7-31-24 8-7-24	2ppm			125ppb				
		11933A 11933B	PFAC MXJ		3-28-28	7-31-24 8-7-24	4-20 ppm	312NL		312 1100ppb				
						MA	Continue next page	8/7/23						

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



11338



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSE-M

LOT NUMBER:

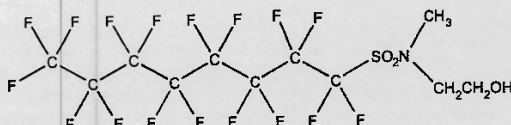
NMeFOSE0522M

COMPOUND:

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

STRUCTURE:**CAS #:**

24448-09-7

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

557.22

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/13/2022 (HRGC/LRMS)

05/13/2022 (LC/MS)

EXPIRY DATE: (mm/dd/yyyy)

05/13/2027

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

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

ADDITIONAL INFORMATION:

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

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Certified By:

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

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

11892
rec'd: 06/09/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic
Acids and Sulfonate Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

PFACMXG1122 (1 of 5)
rev0

7.9.1
7




Table A:

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

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

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

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

7.9.1
 7

11893
rec'd: 06/29/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

<u>PRODUCT CODE:</u>	PFAC-MXJ
<u>LOT NUMBER:</u>	PFACMXJ0323
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	03/27/2023
<u>LAST TESTED:</u> (mm/dd/yyyy)	03/28/2023
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	03/28/2028
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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


PFACMXJ0323 (1 of 5)
rev0

7.9.1
7

Table A:

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

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

Certified By: 
B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

11899
rec'd: 07/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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7.9.1
7

Title 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		23
Perfluoro-n-dodecanoic acid	PFDoA	1000		26
Perfluoro-n-tridecanoic acid	PFTrDA	1000		27
Perfluoro-n-tetradecanoic acid	PFTeDA	1000		29
Perfluoro-1-octanesulfonamide	FOSA	1000		24
N-Methylperfluorooctanesulfonamidoacetic acid ^a	N-MeFOSAA: linear isomer	760		20
	N-MeFOSAA: ∑ branched isomers	240		17
N-Ethylperfluorooctanesulfonamidoacetic acid ^b	N-EtFOSAA: linear isomer	775		22
	N-EtFOSAA: ∑ branched isomers	225		21
Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
Potassium perfluoro-1-butanesulfonate	L-PFBS	1000	887	3
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	1000	941	6
Potassium perfluorohexanesulfonate ^c	PFHxSK: linear isomer	811	741	9
	PFHxSK: ∑ branched isomers	189	173	8
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	1000	953	12
Potassium perfluorooctanesulfonate ^d	PFOSK: linear isomer	788	732	15
	PFOSK: ∑ branched isomers	211	196	13
Sodium perfluoro-1-nonanesulfonate	L-PFNs	1000	962	19
Sodium perfluoro-1-decanesulfonate	L-PFDS	1000	965	25
Sodium perfluoro-1-dodecanesulfonate	L-PFDoS	1000	970	28
Sodium 1H,1H,2H,2H-perfluorohexanesulfonate	4:2FTS	4000	3750	4
Sodium 1H,1H,2H,2H-perfluorooctanesulfonate	6:2FTS	4000	3800	10
Sodium 1H,1H,2H,2H-perfluorodecanesulfonate	8:2FTS	4000	3840	16

^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.

^c See Table D for percent composition of linear and branched PFHxSK isomers.

^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

11900
rec'd: 07/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0323
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 03/23/2023
LAST TESTED: (mm/dd/yyyy) 03/24/2023
EXPIRY DATE: (mm/dd/yyyy) 03/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). 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
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

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

PFACMXF0323 (1 of 5)
rev0

7.9.1
7

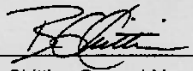


Table A:

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

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxanonoate	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: 03/29/2023
(mm/dd/yyyy)

1190)
rec'd: 07/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXG

Native Perfluoroalkyl Ether Carboxylic Acids and Sulfonate Solution/Mixture

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

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

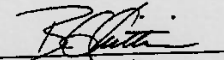
PFACMXG1122 (1 of 5)
rev0

7.9.1
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PFAC-MXG: Components and Concentrations (ng/mL; ± 5% in methanol/water (<1%))

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

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

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

7.9.1
7

11902
rec'd: 07/11/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0323
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 03/27/2023
LAST TESTED: (mm/dd/yyyy) 03/28/2023
EXPIRY DATE: (mm/dd/yyyy) 03/28/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

PFACMXJ0323 (1 of 5)
rev0

7.9.1

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Table A:

PFAC-MXJ; Components and Concentrations (µg/mL; ± 5% in methanol)

Compound	Acronym	Concentration (µg/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: 04/12/2023
(mm/dd/yyyy)

11930A-B
Rec #126/23
mw



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXH

Native PFAS
Solution/Mixture

PRODUCT CODE: PFAC-MXH
LOT NUMBER: PFACMXH0423
SOLVENT(S): Methanol/Isopropanol (2%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 04/06/2023
LAST TESTED: (mm/dd/yyyy) 04/19/2023
EXPIRY DATE: (mm/dd/yyyy) 04/19/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXH is a solution/mixture of 11 native linear perfluoroalkylcarboxylic acids (C₄-C₁₄), eight native perfluoroalkanesulfonates (C₄, C₅, C₇, C₉, C₁₀ and C₁₂ linear; C₅ and C₆ 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. The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

^a See Table B for percent composition of linear and branched N-MeFOSAA isomers.

^b See Table C for percent composition of linear and branched N-EtFOSAA isomers.

^c See Table D for percent composition of linear and branched PFHxSK isomers.

^d See Table E for percent composition of linear and branched PFOSK isomers.

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 05/11/2023
(mm/dd/yyyy)

11931 A-B
Rec 7/26/23 MW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXF

Native Replacement PFAS Solution/Mixture

PRODUCT CODE: PFAC-MXF
LOT NUMBER: PFACMXF0323
SOLVENT(S): Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 03/23/2023
LAST TESTED: (mm/dd/yyyy) 03/24/2023
EXPIRY DATE: (mm/dd/yyyy) 03/24/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-MXF is a solution/mixture of sodium dodecafluoro-3H-4,8-dioxanonanoate (NaDONA), the major and minor components of F-53B (9Cl-PF3ONS and 11Cl-PF3OUdS), and hexafluoropropylene oxide dimer acid (GenX, HFPO-DA). 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
- Figure 1: LC/MS Data (SIR)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

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

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

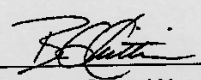
PFACMXF0323 (1 of 5)
rev0

7.9.1
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Table A: PFAC-MXF; Components and Concentrations (ng/mL; ± 5% in Methanol/Water (<1%))

Compound	Acronym	Concentration* (ng/mL)		Peak Assignment in Figure 1
		as the salt	as the acid	
2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)propanoic acid	HFPO-DA	2000		A
Sodium dodecafluoro-3H-4,8-dioxananoate	NaDONA	2000	1890	B
Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate	9Cl-PF3ONS	2000	1870	C
Potassium 11-chloroicosafafluoro-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: 03/29/2023
(mm/dd/yyyy)

11933 A-B
Rec 7/26/23
mw



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-MXJ

Native X:3 Fluorotelomer Carboxylic
Acid Solution/Mixture

PRODUCT CODE: PFAC-MXJ
LOT NUMBER: PFACMXJ0323
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 03/27/2023
LAST TESTED: (mm/dd/yyyy) 03/28/2023
EXPIRY DATE: (mm/dd/yyyy) 03/28/2028
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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

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

Certified By: 
 B.G. Chittim, General Manager

Date: 04/12/2023
(mm/dd/yyyy)

11966 A-J
rec'd 08/22/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-IS

**Mass-Labelled PFAS Injection
Standard Solution/Mixture**

PRODUCT CODE: MPFAC-HIF-IS
LOT NUMBER: MPFACHIFIS0723
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 07/05/2023
LAST TESTED: (mm/dd/yyyy) 07/05/2023
EXPIRY DATE: (mm/dd/yyyy) 07/05/2028
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

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

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

**Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Form#: 13, Issued 2004-11-10
Revision#: 9, Revised 2020-12-23

MPFACHIFIS0723 (1 of 5)
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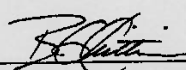




Table A: MPFAC-HIF-IS; Components and Concentrations (ng/mL, ± 5% in methanol/water (<1%))

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

* Concentrations have been rounded to three significant figures.

Certified By: 
 B.G. Chittim, General Manager

Date: 07/07/2023
(mm/dd/yyyy)

11967 A-J
rec'd: 08/22/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

MPFAC-HIF-ES

Mass-Labelled PFAS Extraction Standard Solution/Mixture

PRODUCT CODE: MPFAC-HIF-ES
LOT NUMBER: MPFACHIFES0623
SOLVENT(S): Methanol/Isopropanol (1%)/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 06/19/2023
LAST TESTED: (mm/dd/yyyy) 06/20/2023
EXPIRY DATE: (mm/dd/yyyy) 06/20/2026
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

MPFAC-HIF-ES is a solution/mixture of ten mass-labelled (¹³C) perfluoroalkylcarboxylic acids (C₄-C₁₂, C₁₄), three mass-labelled (¹³C) perfluoroalkanesulfonates (C₄, C₆, and C₈), three mass-labelled (one ¹³C and two ²H) perfluoro-1-octanesulfonamides, three mass-labelled (¹³C) fluorotelomer sulfonates (4:2, 6:2, and 8:2), two mass-labelled (²H) perfluorooctanesulfonamidoacetic acids, two mass-labelled (²H) perfluorooctanesulfonamidoethanols, and mass-labelled (¹³C) hexafluoropropylene oxide dimer acid (¹³C₃-GenX, M3HFPO-DA). The components and their concentrations are given in Table A.

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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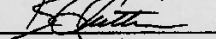
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1. e A:

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

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

* Concentrations have been rounded to three significant figures.

Certified By: 
B.G. Chittim, General Manager

Date: 06/22/2023
(mm/dd/yyyy)



CERTIFIED WEIGHT REPORT

Part Number: 64029A
Lot Number: 031323
Description: PFOA-DOD
26 components
Expiration Date: 03/1323
Recommended Storage: 1.0
Net Weight Concentration (µg/mL): 1.0
NIST Test ID: 64029A

Solvent(s): Methanol (1 mL KOH)
2-Propanol
Lot# 107722 (89%)
32600 (2%)

Formulated By: Prashant Chauhan
Reviewed By: Pedro L. Rencas

11872
rec'd: 06/19/23

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

Compound	Part Number	Lot Number	Division	Initial Factor	Initial Volume (mL)	Initial Concentration (µg/mL)	Final Concentration (µg/mL)	Final Volume (mL)	Final Concentration (µg/mL)	Expanded Uncertainty (k=2)	Expanded Uncertainty (k=2)	Free Acid CAS#	OSHA PEL (TWA)	LD50
1. Perfluoro-n-butyric acid (PFBA)	99542	110422	0.02	2.00	0.017	50.1	1.00	0.02	375-22-4	N/A	N/A	N/A	N/A	
2. Perfluoro-pentanoic acid (PFPA)	99543	011723	0.02	2.00	0.017	50.3	1.01	0.02	2766-80-3	N/A	N/A	N/A	N/A	
3. Perfluoro-hexanoic acid (PFHA)	99199	071122	0.02	2.00	0.017	50.2	1.00	0.02	307-24-4	N/A	N/A	N/A	N/A	
4. Perfluoroheptanoic acid (PFHnA)	99197	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-585-9	N/A	N/A	N/A	N/A	
5. Perfluorooctanoic acid (br-PFOA)*	99502	086522	0.02	2.00	0.017	50.2	1.00	0.02	335-87-1 (L)	N/A	spec. following	N/A	N/A	
6. Perfluorononanoic acid (br-PFNA)*	99500	110922	0.02	2.00	0.017	50.1	1.00	0.02	375-95-1	N/A	N/A	N/A	N/A	
7. Perfluorodecanoic acid (PFDA)	99195	110922	0.02	2.00	0.017	50.0	1.00	0.02	335-78-2	N/A	N/A	N/A	N/A	
8. Perfluoroundecanoic acid (PFUAnA)	99505	071522	0.02	2.00	0.017	50.2	1.00	0.02	2068-84-8	N/A	N/A	N/A	N/A	
9. Perfluorododecanoic acid (PFDDA)	99198	071522	0.02	2.00	0.017	50.1	1.00	0.02	307-55-1	N/A	N/A	N/A	N/A	
10. Perfluorotridecanoic acid (PFTrDA)	99504	110922	0.02	2.00	0.017	50.1	1.00	0.02	27839-84-9	N/A	N/A	N/A	N/A	
11. Perfluorotetradecanoic acid (PFTeDA)	99503	033022	0.02	2.00	0.017	50.1	1.00	0.02	375-08-7	N/A	N/A	N/A	N/A	
12. Perfluoro-1-iodooctadecanoic acid (br-PFOIA)*	3677	FQSA0221	0.02	2.00	0.017	50.0	1.00	0.02	74-81-9	N/A	N/A	N/A	N/A	
13. N-ethylperfluorooctadecanamide and (br-NPFOA)*	4162	INMPFOA0422	0.02	2.00	0.017	50.0	1.00	0.05	2355-31-9 (L)	N/A	N/A	N/A	N/A	
14. N-propylperfluorooctadecanamide and (br-NPFOA)*	4163	INPFOA0422	0.02	2.00	0.017	50.0	1.00	0.05	2991-50-8 (L)	N/A	N/A	N/A	N/A	
15. Perfluorobutanoic acid (PFBS)	99194	086522	0.02	2.00	0.017	50.2	1.00	0.02	375-73-5	N/A	N/A	N/A	N/A	
16. Perfluoro-1-pentanoic acid (PFPA5)	99544	091822	0.02	2.00	0.017	50.1	1.00	0.02	2766-91-4	N/A	N/A	N/A	N/A	
17. Perfluoroheptanoic acid (br-PFHnA5)	99198	030923	0.02	2.00	0.017	50.0	1.00	0.02	355-45-4 (L)	N/A	N/A	N/A	N/A	
18. Perfluoro-1-heptanoic acid (br-PFHnA5)	3672	LPHF050622	0.02	2.10	0.017	47.8	1.00	0.05	375-52-8	N/A	N/A	N/A	N/A	
19. Heptafluorooctanoic acid (br-PFO5)*	99201	030923	0.02	2.00	0.017	50.1	1.00	0.02	1783-23-1 (L)	N/A	N/A	N/A	N/A	
20. Perfluoro-1-nonanoic acid (PFNS)	3957	LPPNS1122	0.02	2.10	0.017	48.0	1.01	0.05	8259-12-1	N/A	N/A	N/A	N/A	
21. Perfluoro-1-decanoic acid (PFDS)	3671	086522	0.02	2.10	0.017	48.2	1.01	0.05	335-77-3	N/A	N/A	N/A	N/A	
22. 1H,1H,2H,2H-Perfluorodecanoic sulfonic acid (br-PFDS)	65271	086522	0.02	2.00	0.017	50.2	1.00	0.05	787124-72-4	N/A	N/A	N/A	N/A	
23. 1H,1H,2H,2H-Perfluorodecanoic sulfonic acid (br-PFDS)	65272	031023	0.02	2.10	0.017	50.2	1.00	0.05	27819-87-2	N/A	N/A	N/A	N/A	
24. 1H,1H,2H,2H-Perfluorodecanoic sulfonic acid (PFPO-DA)	99669	086522	0.02	2.10	0.017	47.9	1.01	0.05	81108-34-4	N/A	N/A	N/A	N/A	
25. 2-Heptafluoropropyl-2,3,3,3-tetrafluorodecanoic acid (PFPO-DA)	4165	11CFFPOA0522	0.02	2.00	0.017	50.1	1.00	0.02	53232-13-5	N/A	N/A	N/A	N/A	
26. 11-Chloroheptafluoro-3-oxooctadecanoic sulfonic acid (11C-HPFO-DA)	4164	9CFFPOA1022	0.02	2.14	0.017	47.1	1.00	0.05	78305-182-9	N/A	N/A	N/A	N/A	
27. 3-Chlorooctadecanoic acid (br-PFOA5)	4164	9CFFPOA1022	0.02	2.14	0.017	46.6	1.00	0.05	79649-56-1	N/A	N/A	N/A	N/A	
28. Dodecafluoro-3H,4-B-dioxanone acid (ADONA)	4103	NADONA0922	0.02	2.12	0.017	47.1	1.00	0.05	818035-14-4	N/A	N/A	N/A	N/A	
Perfluorooctanoic acid (linear)*	99502	086522	0.02	2.00	0.004	49.8	0.99	0.010	335-67-1 (L)	N/A	spec. following	N/A	N/A	
Perfluorooctanoic acid (branched isomer)*	99502	086522	0.02	2.00	0.004	0.6	0.01	0.001	335-67-1 (L)	N/A	spec. following	N/A	N/A	
Perfluorohexanoic acid (linear)*	99198	030923	0.02	2.00	0.017	44.0	0.95	0.02	355-46-4 (L)	N/A	N/A	N/A	N/A	
Perfluorohexanoic acid (branched isomer)*	99198	030923	0.02	2.00	0.017	0.0	0.12	0.000	355-46-4 (L)	N/A	N/A	N/A	N/A	
Heptafluorooctanoic acid (linear)*	99501	030923	0.02	2.00	0.017	38.1	0.76	0.02	1783-23-1 (L)	N/A	N/A	N/A	N/A	
Heptafluorooctanoic acid (branched isomer)*	99501	030923	0.02	2.00	0.017	7.5	0.15	0.003	1783-23-1 (L)	N/A	N/A	N/A	N/A	
Heptafluorooctanoic acid (branched isomer)*	99501	030923	0.02	2.00	0.017	4.0	0.08	0.002	1783-23-1 (L)	N/A	N/A	N/A	N/A	
Heptafluorooctanoic acid (branched isomer)*	99501	030923	0.02	2.00	0.017	0.5	0.010	0.0002	1783-23-1 (L)	N/A	N/A	N/A	N/A	
N-ethylperfluoro-1-octadecanamide (linear)*	4162	INMPFOA0422	0.02	2.00	0.017	38.0	0.72	0.04	2355-31-9 (L)	N/A	N/A	N/A	N/A	
N-ethylperfluoro-1-octadecanamide (branched)*	4162	INMPFOA0422	0.02	2.00	0.017	6.5	0.13	0.011	2355-31-9 (L)	N/A	N/A	N/A	N/A	
N-propylperfluoro-1-octadecanamide (linear)*	4162	INPFOA0422	0.02	2.00	0.017	5.0	0.10	0.005	2355-31-9 (L)	N/A	N/A	N/A	N/A	
N-propylperfluoro-1-octadecanamide (branched)*	4162	INPFOA0422	0.02	2.00	0.017	2.5	0.05	0.0009	2355-31-9 (L)	N/A	N/A	N/A	N/A	
N-ethylperfluoro-1-octadecanamide (linear)*	4163	INPFOA0422	0.02	2.00	0.017	38.6	0.73	0.04	2991-50-8 (L)	N/A	N/A	N/A	N/A	
N-ethylperfluoro-1-octadecanamide (branched)*	4163	INPFOA0422	0.02	2.00	0.017	7.7	0.15	0.008	2991-50-8 (L)	N/A	N/A	N/A	N/A	
N-propylperfluoro-1-octadecanamide (linear)*	4163	INPFOA0422	0.02	2.00	0.017	5.3	0.11	0.005	2991-50-8 (L)	N/A	N/A	N/A	N/A	
N-propylperfluoro-1-octadecanamide (branched)*	4163	INPFOA0422	0.02	2.00	0.017	0.4	0.007	0.0005	2991-50-8 (L)	N/A	N/A	N/A	N/A	

*Concentrations for branched and linear isomers are based on LC/MS 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).
 * All values are certified for 100% of the stated concentration, with the exception of the branched isomers, which are certified for 95% of the stated concentration.
 * All values are certified for 100% of the stated concentration, with the exception of the branched isomers, which are certified for 95% of the stated concentration.
 * University Reference: Taylor, K.N., and Kopy, C.E., "Guidelines for Preparing and Expanding the Uncertainty of NIST Measurement Bank," NIST Technical Note 1297, U.S. Government Printing Office, Washington, DC, (1994).

11796
rec'd: 05/15/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSE

2-(N-Ethylperfluorooctanesulfonamido)ethanol
Isomeric Mix

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

brNEtFOSE1022 (1 of 7)
rev1

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11795
rec'd 10/15/23



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSE

2-(N-Methylperfluorooctanesulfonamido)ethanol
Isomeric Mix

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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rec'd: 05/15/23



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

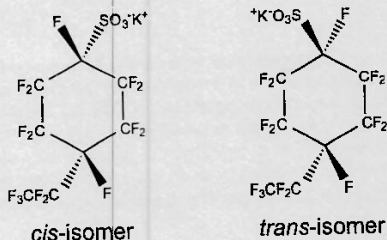
PFECHS

LOT NUMBER: PFECHS0223

COMPOUND:

Potassium perfluoro-4-ethylcyclohexanesulfonate (isomeric mixture)

STRUCTURE:



CAS #: 335-24-0

MOLECULAR FORMULA:

C₉F₁₅SO₃K

MOLECULAR WEIGHT: 500.22

CONCENTRATION:

50.0 ± 2.5 µg/mL (K salt)
46.2 ± 2.3 µg/mL (PFECHS acid)
46.1 ± 2.3 µg/mL (PFECHS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/14/2023

EXPIRY DATE: (mm/dd/yyyy)

03/14/2028

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*, by ¹⁹F NMR).

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Certified By:

B.G. Chittim, General Manager

Date: 03/16/2023
(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

M3PFPeA

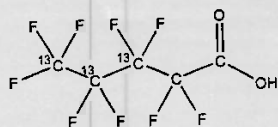
LOT NUMBER: M3PFPeA0720

COMPOUND:

Perfluoro-n-[3,4,5-¹³C₃]pentanoic acid

CAS #: Not available

STRUCTURE:



MOLECULAR FORMULA:

¹³C₃¹²C₂HF₉O₂

MOLECULAR WEIGHT: 267.02

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C
(3,4,5-¹³C₃)

LAST TESTED: (mm/dd/yyyy)

07/22/2020

EXPIRY DATE: (mm/dd/yyyy)

07/22/2025

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.
- Contains ~ 0.95% of perfluoro-n-[¹³C₃]butanoic acid and 0.05% of perfluoro-1-pentanoic acid.

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Certified By:

B.G. Chittim, General Manager

Date: 08/04/2020

(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSA

N-Ethylperfluorooctanesulfonamide Isomeric Mix

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

brNEtFOSA0922 (1 of 6)
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CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSA

N-Methylperfluorooctanesulfonamide Isomeric Mix

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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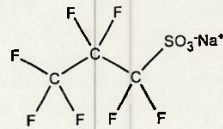
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: LPFPrS0721

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: C₃F₇SO₃Na
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

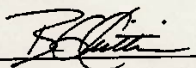
DOCUMENTATION/ DATA ATTACHED:

- 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.

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Certified By: 
B.G. Chittim, General Manager

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

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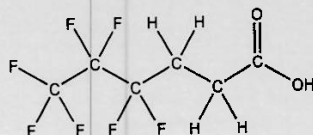
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FPrPA
COMPOUND: 3-Perfluoropropyl propanoic acid

LOT NUMBER: FPrPA0122

STRUCTURE:

CAS #: 356-02-5



MOLECULAR FORMULA: $C_6H_5F_7O_2$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$
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

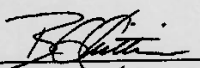
DOCUMENTATION/ DATA ATTACHED:

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 ($C_6H_3F_7O_2$) as an impurity determined by ^{19}F NMR.

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Certified By: 
B.G. Chittim, General Manager

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

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1116 A.B NW

1116B on the back NW



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHpPA

LOT NUMBER:

FHpPA1020

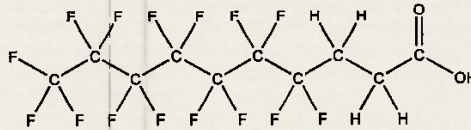
COMPOUND:

3-Perfluoroheptyl propanoic acid

STRUCTURE:

CAS #:

812-70-4



MOLECULAR FORMULA:

C₁₀H₅F₁₅O₂

MOLECULAR WEIGHT:

442.12

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/12/2020

EXPIRY DATE: (mm/dd/yyyy)

11/12/2025

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

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Certified By:

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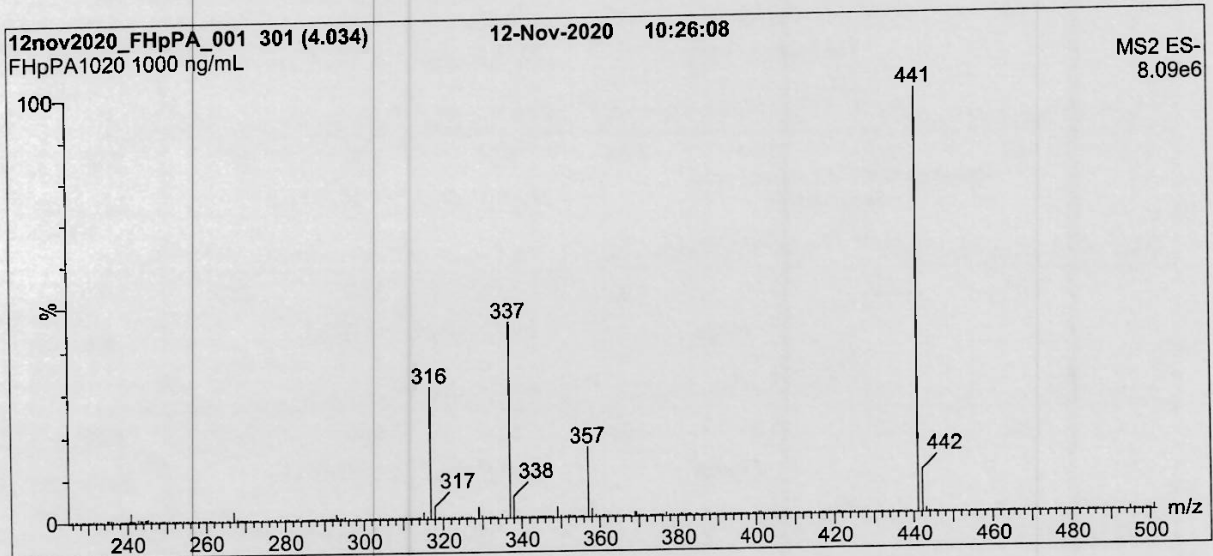
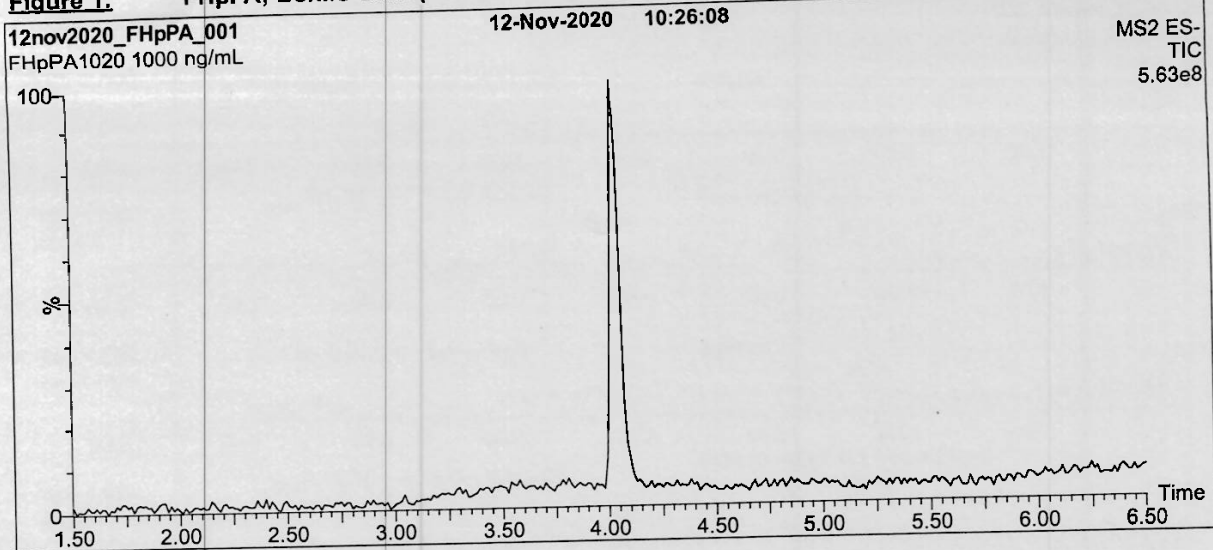
Date: 11/27/2020

(mm/dd/yyyy)

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

FHpPA1020 (1 of 4)
rev0

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

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

Chromatographic Conditions:

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

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

Flow: 300 μ L/min

MS Parameters:

Experiment: Full Scan (225 - 850 amu)

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



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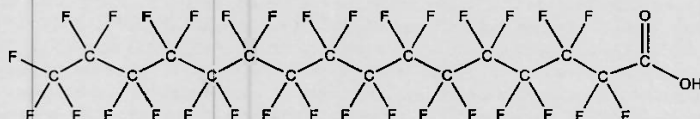
CERTIFICATE OF ANALYSIS DOCUMENTATION

10842 * NG 01/18/23

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

COMPOUND: Perfluoro-n-hexadecanoic acid

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



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

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

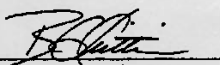
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

PFHxDA0421 (1 of 4)
 rev0

7.9.1
7



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFODA

10847 NS 01/18/23

LOT NUMBER:

PFODA0821

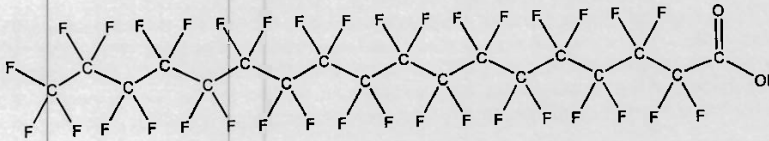
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

C₁₈H₃₅O₂

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/03/2021

EXPIRY DATE: (mm/dd/yyyy)

09/03/2026

RECOMMENDED STORAGE:

Store ampoules at ambient temperature in a dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/28/2021

(mm/dd/yyyy)

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CERTIFICATE OF ANALYSIS DOCUMENTATION

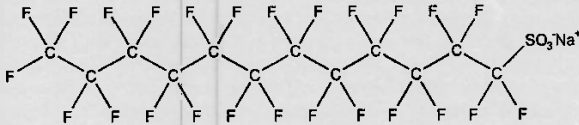
10840

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

LOT NUMBER: LPFDoS0721

STRUCTURE:

CAS #: 1260224-54-1



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

MOLECULAR WEIGHT: 722.14
SOLVENT(S): Methanol


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

LPFDoS0721 (1 of 4)
rev0

7.9.1

7



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSA-M

10837

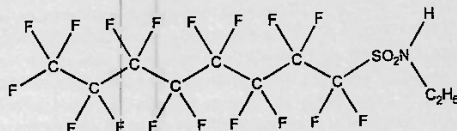
LOT NUMBER: NEtFOSA0821M

COMPOUND:

N-ethylperfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:

C₁₀H₉F₁₇NO₂S

MOLECULAR WEIGHT:

527.20

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/12/2021

EXPIRY DATE: (mm/dd/yyyy)

08/12/2026

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

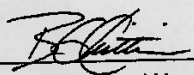
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim, General Manager

Date: 08/16/2021

(mm/dd/yyyy)

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10765 A-13



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

3,6-OPFHpA

*rec'd
WPH
8/20/21*

LOT NUMBER:

36OPFHpA0320

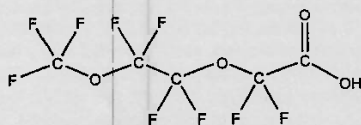
COMPOUND:

Perfluoro-3,6-dioxaheptanoic acid

STRUCTURE:

CAS #:

151772-58-6



MOLECULAR FORMULA:

C₆H₂F₉O₄

MOLECULAR WEIGHT:

296.04

CONCENTRATION:

50.0 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

03/31/2020

EXPIRY DATE: (mm/dd/yyyy)

03/31/2025

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

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

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10764A-B



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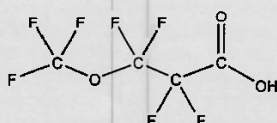
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-4-oxapentanoic acid

SYNONYM: Perfluoro-3-methoxypropanoic acid (PFMPA)

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

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

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10763 A-B



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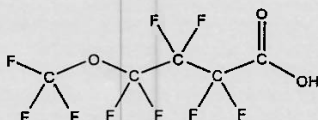
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

COMPOUND: Perfluoro-5-oxahexanoic acid

SYNONYM: Perfluoro-4-methoxybutanoic acid (PFMBA)

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



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

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

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

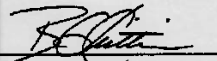
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

PF5OHxA0320 (1 of 4)
rev1

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10762 A-B



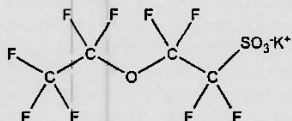
WELLINGTON LABORATORIES

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: C₄F₈SO₄K **MOLECULAR WEIGHT:** 354.19

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

44.6 ± 2.2 µg/ml (PFEESA acid)

44.5 ± 2.2 µg/ml (PFEESA anion)

CHEMICAL PURITY: >98%

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

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

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

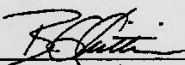
Figure 1: LC/MS Data (TIC and Mass Spectrum)

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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 rev0

7.9.1
7

11514 rec'd 11/14/22

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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

FHxSA-I

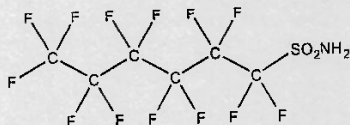
LOT NUMBER: FHxSA1221I

COMPOUND:

Perfluoro-1-hexanesulfonamide

CAS #: 41997-13-1

STRUCTURE:



MOLECULAR FORMULA:

C₆H₂F₁₃NO₂S

MOLECULAR WEIGHT: 399.13

CONCENTRATION:

50.0 ± 2.5 µg/mL

SOLVENT(S):

Isopropanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/29/2021

EXPIRY DATE: (mm/dd/yyyy)

12/29/2026

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

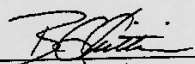
- Figure 1: LC/MS Data (Full Scan and Mass Spectrum)
- Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim, General Manager

Date:

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

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FHxSA1221I (1 of 4)

SGS

591 of 593

11649 Rec. 02/13/23

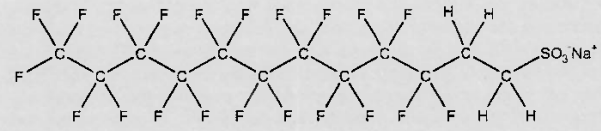


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 10:2FTS **LOT NUMBER:** 102FTS1122
COMPOUND: Sodium 1H,1H,2H,2H-perfluorododecanesulfonate

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



MOLECULAR FORMULA: C₁₂H₄F₂₁SO₃Na **MOLECULAR WEIGHT:** 650.18
CONCENTRATION: 50.0 ± 2.5 µg/mL (Na salt) **SOLVENT(S):** Methanol
 48.3 ± 2.4 µg/mL (10:2FTS acid)
 48.2 ± 2.4 µg/mL (10:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/01/2022
EXPIRY DATE: (mm/dd/yyyy) 12/01/2027
RECOMMENDED STORAGE: Refrigerate ampoule

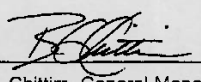
DOCUMENTATION/ DATA ATTACHED:

- 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:** 12/09/2022
 B.G. Chittim, General Manager (mm/dd/yyyy)

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

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rev0

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7

SGS - ORLANDO

SPE LIQUID SAMPLE PREP REPORT

Date/Time: 09/19/23 10:30
 Started (mm/dd/yy 24:00)

Method: EPA 1633 Draft (OSM) L5940

Date/Time: 9/20/23 14:30
 Finished (mm/dd/yy 24:00)

Balance ID: _____

Batch#: OP99077 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 99077 MB	/	500	7	N/A	25		5	A4	
OP 99077 BS	/	500	7			200			
OP 99077 LLBS	/	500	7			60			
FC9604-1	2	530	7						
	2	550							
	3	510							
	4	540							
	5	520							
	6	510							
	7	530							
FC9640-1	2	570						A4	
	2	550						A6	
FC9666-1	2	520							
	2	530							
	3	520	7	N/A	25		5	A6	
GH 09/19/23									
OPFC9640-1MS	3	530	7	N/A	25	200	5	A4	
OP MSD									
OPFC9640-2DUP	3	530	7	N/A	25		5	A4	

Comments:

EIS (SURR) ID: 119675-J Conc: 250-5000ng/ml Exp. Date: 09/07/24 Inj. By: GH Ver. By: Jca
 SPIKE.1 ID: LCM82175C Conc: VARIED Exp. Date: 12/28/23 Inj. By: GH Ver. By: Jca
 SPIKE.2 ID: _____ Conc: _____ Exp. Date: _____ Inj. By: _____ Ver. By: _____
 NIS (ISTD) ID: 119667-J Conc: 250-1000 Exp. Date: 9/18/24 Inj. By: MW Ver. By: NG

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

Methanol Lot# 232031 1% NH4OH MeOH PF604 SPE Lot# 6744688-01
 Water Lot# OP98930 0.3M Formic Acid PF585 Syringe filter Lot# _____
 Acetic Acid# 194003 3% NH4OH Sol _____ pH paper Lot# 205423
 0.1M Formic PF605 5% Formic Acid _____ Carbon Lot# 99687

Relinquished By: Gabriella Ford
 Accepted By: MW

Date: 09/19/23
 Date: 9/20/23

7.10.1
7