UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
Environmental Sciences Center
701 Mapes Road
Fort Meade, Maryland 20755-5350

DATE: 5/9/2019

SUBJECT: Region III Data QA Review

FROM: Brandon McDonald
Region III ESAT RPO(3EA22)

TO: CONNOR O'LOUGHLIN
Hazardous Site Cleanup Division (HSCD)

Attached is the data validation report for the BLADES GROUNDWATER site for DAS# R35542; SDG# C0AR3 completed by the Region III Environmental Services Assistance Team(ESAT) contractor, ICF International, under the direction of Region III EAID.

If you have any questions regarding this review, please call Brandon McDonald at (410) 305-2607 or you can call Eric Graybill at (410)-305-2665.

Attachment

cc: Ex. 4 CBI

TO: #0002 TDF: #0419031

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ICF
ESAT Region 3
US Environmental Protection Agency Environmental Science Center
701 Mapes Road Ft. Meade, MD 20755-5350
Phone 410-305-3012

Date: May 2, 2019

To: Brandon McDonald
ESAT Region 3 Project Officer

From: Ex. 4 CBI
Validator

Ex. 4 CBI
Reviewer

Subject: Organic Data Validation (S4VM)
Blades Groundwater
R35542 C0AR3

Overview

This data package consisted of five (5) Field Reagent Blanks (FRBs) and five (5) ground water samples analyzed for perfluorinated alkyl acid compounds by Liquid Chromatography/Mass Spectrometry (LC/MS).

Analyses were performed by Eurofins Test America Sacramento (TAMC). The samples were submitted to the laboratory directly by the sampling contractor. The laboratory indicated analyses were performed according to EPA Method 537 utilizing a quantitative isotope dilution-internal standard technique.

Data were validated according to the National Functional Guidelines for Organic Superfund Methods Data Review and applicable USEPA Region 3 modifications. The validation report has been assigned the Superfund Data Validation Label S4VM (Stage_4_Validation_Manual).

The following validation narrative is an evaluation of laboratory reported data based on the electronic data package received by Region 3 on April 10, 2019.

The laboratory did not provide sufficient data to determine if branched chain isomers of PFOA were included in the reporting of this analyte in field samples. No data were qualified based on this finding.

Summary

No significant data quality outliers or technical deficiencies were identified that would require rejection or estimation of sample results.

Notes

Accuracy and precision criteria were met by the laboratory in the initial and continuing calibration verification standard analyses associated with the samples in this Sample Data Group (SDG).

Analytes detected below Reporting Limits (RLs) are estimated and have been qualified "J".

The method blank and FRBs associated with the samples in this SDG were free from contamination. No data were qualified based on blank contamination.

Percent recoveries and Relative Percent Differences (RPDs) for target analytes in Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) analyses were within control limits. No field sample data were qualified based on these findings.

Due to insufficient sample volume received by the laboratory, Matrix Spike/Matrix Spike Duplicate (MS/MSD) analyses were not performed in this SDG. No data were qualified based on these findings.

Concentrations for perfluorooctanoic acid (PFOA) and perfluoroheptanoic acid (PFHpA) exceeded the calibration range in the initial analysis for sample C0AR4. This sample was reanalyzed at a five-fold (5x) dilution in order to quantitate these analytes within the calibration range. Results for these analytes were reported from the dilution. There is no indication that these exceedance issues impacted subsequent sample analyses.

The samples in this SDG were found to be free of residual chlorine at the time of sample preparation by the laboratory. No data were qualified based on this finding.

The samples in this SDG were preserved and reported pH within the optimum range. No data were qualified based on these findings.

Manual integrations were performed and identified by the laboratory. A subset of these were evaluated by the reviewer and were found to be accurate and consistent. No action was taken by the reviewer based on manual integrations.

Glossary of Organic Data Qualifier Codes

Validation Qualifiers	In order of descending precedence. Only one of these qualifiers may apply to any result.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the sample.
UJ	The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.

Additional Qualifiers	Additional qualifiers may be combined with other qualifiers.
N	The analyte has been “tentatively identified” or “presumptively” as present.
B	The result is presumed a blank contaminant. This qualifier is used for drinking water samples only.
C	The target Pesticide or Aroclor analyte identification has been confirmed by Gas Chromatography/Mass Spectrometry (GC/MS). This qualifier may be added to other qualifiers.
X	The target Pesticide or Aroclor analyte identification was not confirmed when GC/MS analysis was performed. This qualifier may be added to other qualifiers.

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR3
Lab Sample ID: 320-48799-1
Matrix: Water
Lab File ID: 2019.04.04_537AA_047.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 09:55
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 285.2(mL)
Date Analyzed: 04/05/2019 01:48
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	6.4		1.8	0.83
335-67-1	Perfluorooctanoic acid	9.2		5.3	2.4
375-95-1	Perfluorononanoic acid	1.6	J	1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.56
375-85-9	Perfluoroheptanoic acid	5.9		2.6	1.1
375-73-5	Perfluorobutanesulfonic acid	3.5		1.8	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	105		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR4
Lab Sample ID: 320-48799-2
Matrix: Water
Lab File ID: 2019.04.04_537AA_048.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:00
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 283.9(mL)
Date Analyzed: 04/05/2019 01:57
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	190		1.8	0.84
375-95-1	Perfluorononanoic acid	290		1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	2.7		1.8	0.56
375-73-5	Perfluorobutanesulfonic acid	3.2		1.8	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	112		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR4 DL
Lab Sample ID: 320-48799-2 DL
Matrix: Water
Lab File ID: 2019.04.05_537.1A_009.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:00
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 283.9(mL)
Date Analyzed: 04/05/2019 12:42
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 5
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286320
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid	610		26	12
375-85-9	Perfluoroheptanoic acid	510		13	5.7

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	108		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR6
Lab Sample ID: 320-48799-3
Matrix: Water
Lab File ID: 2019.04.04_537AA_049.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 12:10
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 280.4(mL)
Date Analyzed: 04/05/2019 02:07
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	25		1.8	0.85
335-67-1	Perfluorooctanoic acid	39		5.3	2.4
375-95-1	Perfluorononanoic acid	14		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	1.8		1.8	0.57
375-85-9	Perfluoroheptanoic acid	23		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	1.0	J	1.8	0.71

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	113		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR7
Lab Sample ID: 320-48799-4
Matrix: Water
Lab File ID: 2019.04.04_537AA_050.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 12:50
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 283.3(mL)
Date Analyzed: 04/05/2019 02:16
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	13		1.8	0.84
335-67-1	Perfluorooctanoic acid	13		5.3	2.4
375-95-1	Perfluorononanoic acid	3.9		1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	3.0		1.8	0.56
375-85-9	Perfluoroheptanoic acid	5.5		2.6	1.1
375-73-5	Perfluorobutanesulfonic acid	2.6		1.8	0.71

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	111		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AS2
Lab Sample ID: 320-48799-5
Matrix: Water
Lab File ID: 2019.04.04_537AA_051.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:50
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 284.2(mL)
Date Analyzed: 04/05/2019 02:26
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	34		1.8	0.84
335-67-1	Perfluorooctanoic acid	34		5.3	2.4
375-95-1	Perfluorononanoic acid	9.5		1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	12		1.8	0.56
375-85-9	Perfluoroheptanoic acid	13		2.6	1.1
375-73-5	Perfluorobutanesulfonic acid	11		1.8	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	106		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AW3
Lab Sample ID: 320-48799-6
Matrix: Water
Lab File ID: 2019.04.04_537AA_052.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 12:55
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 277.9(mL)
Date Analyzed: 04/05/2019 02:35
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.85
335-67-1	Perfluorooctanoic acid	ND		5.4	2.4
375-95-1	Perfluorononanoic acid	ND		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.58
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	104		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AW4
Lab Sample ID: 320-48799-7
Matrix: Water
Lab File ID: 2019.04.04_537AA_053.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 12:15
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 276.6(mL)
Date Analyzed: 04/05/2019 02:45
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.86
335-67-1	Perfluorooctanoic acid	ND		5.4	2.4
375-95-1	Perfluorononanoic acid	ND		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.58
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	106		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AW6
Lab Sample ID: 320-48799-8
Matrix: Water
Lab File ID: 2019.04.04_537AA_056.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:55
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 278.4(mL)
Date Analyzed: 04/05/2019 03:13
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286198
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.85
335-67-1	Perfluorooctanoic acid	ND		5.4	2.4
375-95-1	Perfluorononanoic acid	ND		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.57
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AW7
Lab Sample ID: 320-48799-9
Matrix: Water
Lab File ID: 2019.04.04_537AA_057.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:05
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 275.1(mL)
Date Analyzed: 04/05/2019 03:23
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286198
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.86
335-67-1	Perfluorooctanoic acid	ND		5.5	2.5
375-95-1	Perfluorononanoic acid	ND		1.8	0.43
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.58
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.73

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AW8 Lab Sample ID: 320-48799-10
Matrix: Water Lab File ID: 2019.04.04_537AA_058.d
Analysis Method: 537 DW Date Collected: 03/27/2019 10:00
Extraction Method: 537 DW Date Extracted: 04/03/2019 06:57
Sample wt/vol: 277.1(mL) Date Analyzed: 04/05/2019 03:32
Con. Extract Vol.: 10.00(mL) Dilution Factor: 1
Injection Volume: 10(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture: GPC Cleanup:(Y/N) N
Analysis Batch No.: 286198 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.86
335-67-1	Perfluorooctanoic acid	ND		5.4	2.4
375-95-1	Perfluorononanoic acid	ND		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.58
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	105		70-130

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Job Number: 320-48799-1

Job Description: DAS R35542, SDG C0AR3

For:
Weston Solutions, Inc.
1400 Weston Way
PO BOX 2653
West Chester, PA 19380

Attention: Ex. 4 CBI

Ex. 4 CBI

Ex. 4 CBI, Project Manager I
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-Ex. 6 Personal Privacy (PP)
Ex. 4 CBI@testamericainc.com
04/08/2019

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Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Job Narrative
320-48799-1

Receipt
The samples were received on 3/29/2019 9:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

LCMS
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Organic Prep
Method(s) 537 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with 320-285793

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR3

Job ID: 320-48799-1

Client Sample ID: C0AR3 — Lab Sample ID: 320-48799-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	6.4		1.8	0.83	ng/L	1		537 DW	Total/NA
Perfluorooctanoic acid	9.2		5.3	2.4	ng/L	1		537 DW	Total/NA
Perfluorononanoic acid	1.6	J	1.8	0.41	ng/L	1		537 DW	Total/NA
Perfluoroheptanoic acid	5.9		2.6	1.1	ng/L	1		537 DW	Total/NA
Perfluorobutanesulfonic acid	3.5		1.8	0.70	ng/L	1		537 DW	Total/NA

Client Sample ID: C0AR4 — Lab Sample ID: 320-48799-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	190		1.8	0.84	ng/L	1		537 DW	Total/NA
Perfluorononanoic acid	290		1.8	0.41	ng/L	1		537 DW	Total/NA
Perfluorohexanesulfonic acid	2.7		1.8	0.56	ng/L	1		537 DW	Total/NA
Perfluorobutanesulfonic acid	3.2		1.8	0.70	ng/L	1		537 DW	Total/NA
Perfluorooctanoic acid - DL	610		26	12	ng/L	5		537 DW	Total/NA
Perfluoroheptanoic acid - DL	510		13	5.7	ng/L	5		537 DW	Total/NA

Client Sample ID: C0AR6 — Lab Sample ID: 320-48799-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	25		1.8	0.85	ng/L	1		537 DW	Total/NA
Perfluorooctanoic acid	39		5.3	2.4	ng/L	1		537 DW	Total/NA
Perfluorononanoic acid	14		1.8	0.42	ng/L	1		537 DW	Total/NA
Perfluorohexanesulfonic acid	1.8		1.8	0.57	ng/L	1		537 DW	Total/NA
Perfluoroheptanoic acid	23		2.7	1.2	ng/L	1		537 DW	Total/NA
Perfluorobutanesulfonic acid	1.0	J	1.8	0.71	ng/L	1		537 DW	Total/NA

Client Sample ID: C0AR7 — Lab Sample ID: 320-48799-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	13		1.8	0.84	ng/L	1		537 DW	Total/NA
Perfluorooctanoic acid	13		5.3	2.4	ng/L	1		537 DW	Total/NA
Perfluorononanoic acid	3.9		1.8	0.41	ng/L	1		537 DW	Total/NA
Perfluorohexanesulfonic acid	3.0		1.8	0.56	ng/L	1		537 DW	Total/NA
Perfluoroheptanoic acid	5.5		2.6	1.1	ng/L	1		537 DW	Total/NA
Perfluorobutanesulfonic acid	2.6		1.8	0.71	ng/L	1		537 DW	Total/NA

Client Sample ID: C0AS2 — Lab Sample ID: 320-48799-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	34		1.8	0.84	ng/L	1		537 DW	Total/NA
Perfluorooctanoic acid	34		5.3	2.4	ng/L	1		537 DW	Total/NA
Perfluorononanoic acid	9.5		1.8	0.41	ng/L	1		537 DW	Total/NA
Perfluorohexanesulfonic acid	12		1.8	0.56	ng/L	1		537 DW	Total/NA
Perfluoroheptanoic acid	13		2.6	1.1	ng/L	1		537 DW	Total/NA
Perfluorobutanesulfonic acid	11		1.8	0.70	ng/L	1		537 DW	Total/NA

Client Sample ID: C0AW3 — Lab Sample ID: 320-48799-6

No Detections.

Client Sample ID: C0AW4 — Lab Sample ID: 320-48799-7

No Detections.

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Weston Solutions, Inc.
Job ID: 320-48799-1
Project/Site: DAS R35542, SDG C0AR3

Client Sample ID: C0AW6 — Lab Sample ID: 320-48799-8

No Detections.

Client Sample ID: C0AW7 — Lab Sample ID: 320-48799-9

No Detections.

Client Sample ID: C0AW8 — Lab Sample ID: 320-48799-10

No Detections.

This Detection Summary does not include radiochemical test results.

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR3

Client Sample ID: C0AR3
Lab Sample ID: 320-48799-1

Date Collected: 03/27/19 09:55
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	**6.4**		1.8	0.83	ng/L		04/03/19 06:57	04/05/19 01:48	1
Perfluorooctanoic acid	**9.2**		5.3	2.4	ng/L		04/03/19 06:57	04/05/19 01:48	1
Perfluorononanoic acid	**1.6**	J	1.8	0.41	ng/L		04/03/19 06:57	04/05/19 01:48	1
Perfluorohexanesulfonic acid	ND		1.8	0.56	ng/L		04/03/19 06:57	04/05/19 01:48	1
Perfluoroheptanoic acid	**5.9**		2.6	1.1	ng/L		04/03/19 06:57	04/05/19 01:48	1
Perfluorobutanesulfonic acid	**3.5**		1.8	0.70	ng/L		04/03/19 06:57	04/05/19 01:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*04/03/19 06:57*	*04/05/19 01:48*	*1*
13C2 PFDA	*105*		*70 - 130*	*04/03/19 06:57*	*04/05/19 01:48*	*1*

Client Sample ID: C0AR4
Lab Sample ID: 320-48799-2

Date Collected: 03/26/19 14:00
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	**190**		1.8	0.84	ng/L		04/03/19 06:57	04/05/19 01:57	1
Perfluorononanoic acid	**290**		1.8	0.41	ng/L		04/03/19 06:57	04/05/19 01:57	1
Perfluorohexanesulfonic acid	**2.7**		1.8	0.56	ng/L		04/03/19 06:57	04/05/19 01:57	1
Perfluorobutanesulfonic acid	**3.2**		1.8	0.70	ng/L		04/03/19 06:57	04/05/19 01:57	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*87*		*70 - 130*	*04/03/19 06:57*	*04/05/19 01:57*	*1*
13C2 PFDA	*112*		*70 - 130*	*04/03/19 06:57*	*04/05/19 01:57*	*1*

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS) - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid	**610**		26	12	ng/L		04/03/19 06:57	04/05/19 12:42	5
Perfluoroheptanoic acid	**510**		13	5.7	ng/L		04/03/19 06:57	04/05/19 12:42	5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*96*		*70 - 130*	*04/03/19 06:57*	*04/05/19 12:42*	*5*
13C2 PFDA	*108*		*70 - 130*	*04/03/19 06:57*	*04/05/19 12:42*	*5*

Client Sample ID: C0AR6
Lab Sample ID: 320-48799-3

Date Collected: 03/26/19 12:10
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	**25**		1.8	0.85	ng/L		04/03/19 06:57	04/05/19 02:07	1
Perfluorooctanoic acid	**39**		5.3	2.4	ng/L		04/03/19 06:57	04/05/19 02:07	1
Perfluorononanoic acid	**14**		1.8	0.42	ng/L		04/03/19 06:57	04/05/19 02:07	1
Perfluorohexanesulfonic acid	**1.8**		1.8	0.57	ng/L		04/03/19 06:57	04/05/19 02:07	1
Perfluoroheptanoic acid	**23**		2.7	1.2	ng/L		04/03/19 06:57	04/05/19 02:07	1
Perfluorobutanesulfonic acid	**1.0**	J	1.8	0.71	ng/L		04/03/19 06:57	04/05/19 02:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:07*	*1*
13C2 PFDA	*113*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:07*	*1*

Client Sample ID: C0AR7
Lab Sample ID: 320-48799-4
Date Collected: 03/26/19 12:50
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	**13**		1.8	0.84	ng/L		04/03/19 06:57	04/05/19 02:16	1
Perfluorooctanoic acid	**13**		5.3	2.4	ng/L		04/03/19 06:57	04/05/19 02:16	1
Perfluorononanoic acid	**3.9**		1.8	0.41	ng/L		04/03/19 06:57	04/05/19 02:16	1
Perfluorohexanesulfonic acid	**3.0**		1.8	0.56	ng/L		04/03/19 06:57	04/05/19 02:16	1
Perfluoroheptanoic acid	**5.5**		2.6	1.1	ng/L		04/03/19 06:57	04/05/19 02:16	1
Perfluorobutanesulfonic acid	**2.6**		1.8	0.71	ng/L		04/03/19 06:57	04/05/19 02:16	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:16*	*1*
13C2 PFDA	*111*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:16*	*1*

Client Sample ID: C0AS2
Lab Sample ID: 320-48799-5
Date Collected: 03/26/19 14:50
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	**34**		1.8	0.84	ng/L		04/03/19 06:57	04/05/19 02:26	1
Perfluorooctanoic acid	**34**		5.3	2.4	ng/L		04/03/19 06:57	04/05/19 02:26	1
Perfluorononanoic acid	**9.5**		1.8	0.41	ng/L		04/03/19 06:57	04/05/19 02:26	1
Perfluorohexanesulfonic acid	**12**		1.8	0.56	ng/L		04/03/19 06:57	04/05/19 02:26	1
Perfluoroheptanoic acid	**13**		2.6	1.1	ng/L		04/03/19 06:57	04/05/19 02:26	1
Perfluorobutanesulfonic acid	**11**		1.8	0.70	ng/L		04/03/19 06:57	04/05/19 02:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*89*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:26*	*1*
13C2 PFDA	*106*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:26*	*1*

Client Sample ID: C0AW3
Lab Sample ID: 320-48799-6
Date Collected: 03/26/19 12:55
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	ND		1.8	0.85	ng/L		04/03/19 06:57	04/05/19 02:35	1
Perfluorooctanoic acid	ND		5.4	2.4	ng/L		04/03/19 06:57	04/05/19 02:35	1
Perfluorononanoic acid	ND		1.8	0.42	ng/L		04/03/19 06:57	04/05/19 02:35	1
Perfluorohexanesulfonic acid	ND		1.8	0.58	ng/L		04/03/19 06:57	04/05/19 02:35	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/03/19 06:57	04/05/19 02:35	1
Perfluorobutanesulfonic acid	ND		1.8	0.72	ng/L		04/03/19 06:57	04/05/19 02:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:35*	*1*
13C2 PFDA	*104*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:35*	*1*

Client Sample ID: C0AW4
Lab Sample ID: 320-48799-7
Date Collected: 03/26/19 12:15
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	ND		1.8	0.86	ng/L		04/03/19 06:57	04/05/19 02:45	1

Client Sample ID: C0AW4
Lab Sample ID: 320-48799-7
Date Collected: 03/26/19 12:15
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid	ND		5.4	2.4	ng/L		04/03/19 06:57	04/05/19 02:45	1
Perfluorononanoic acid	ND		1.8	0.42	ng/L		04/03/19 06:57	04/05/19 02:45	1
Perfluorohexanesulfonic acid	ND		1.8	0.58	ng/L		04/03/19 06:57	04/05/19 02:45	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/03/19 06:57	04/05/19 02:45	1
Perfluorobutanesulfonic acid	ND		1.8	0.72	ng/L		04/03/19 06:57	04/05/19 02:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:45*	*1*
13C2 PFDA	*106*		*70 - 130*	*04/03/19 06:57*	*04/05/19 02:45*	*1*

Client Sample ID: C0AW6
Lab Sample ID: 320-48799-8
Date Collected: 03/26/19 14:55
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	ND		1.8	0.85	ng/L		04/03/19 06:57	04/05/19 03:13	1
Perfluorooctanoic acid	ND		5.4	2.4	ng/L		04/03/19 06:57	04/05/19 03:13	1
Perfluorononanoic acid	ND		1.8	0.42	ng/L		04/03/19 06:57	04/05/19 03:13	1
Perfluorohexanesulfonic acid	ND		1.8	0.57	ng/L		04/03/19 06:57	04/05/19 03:13	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/03/19 06:57	04/05/19 03:13	1
Perfluorobutanesulfonic acid	ND		1.8	0.72	ng/L		04/03/19 06:57	04/05/19 03:13	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*04/03/19 06:57*	*04/05/19 03:13*	*1*
13C2 PFDA	*102*		*70 - 130*	*04/03/19 06:57*	*04/05/19 03:13*	*1*

Client Sample ID: C0AW7
Lab Sample ID: 320-48799-9
Date Collected: 03/26/19 14:05
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	ND		1.8	0.86	ng/L		04/03/19 06:57	04/05/19 03:23	1
Perfluorooctanoic acid	ND		5.5	2.5	ng/L		04/03/19 06:57	04/05/19 03:23	1
Perfluorononanoic acid	ND		1.8	0.43	ng/L		04/03/19 06:57	04/05/19 03:23	1
Perfluorohexanesulfonic acid	ND		1.8	0.58	ng/L		04/03/19 06:57	04/05/19 03:23	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/03/19 06:57	04/05/19 03:23	1
Perfluorobutanesulfonic acid	ND		1.8	0.73	ng/L		04/03/19 06:57	04/05/19 03:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*93*		*70 - 130*	*04/03/19 06:57*	*04/05/19 03:23*	*1*
13C2 PFDA	*101*		*70 - 130*	*04/03/19 06:57*	*04/05/19 03:23*	*1*

Client Sample ID: C0AW8
Lab Sample ID: 320-48799-10
Date Collected: 03/27/19 10:00
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	ND		1.8	0.86	ng/L		04/03/19 06:57	04/05/19 03:32	1
Perfluorooctanoic acid	ND		5.4	2.4	ng/L		04/03/19 06:57	04/05/19 03:32	1

Client: Weston Solutions, Inc.
Job ID: 320-48799-1
Project/Site: DAS R35542, SDG C0AR3

Client Sample ID: C0AW8
Lab Sample ID: 320-48799-10
Date Collected: 03/27/19 10:00
Matrix: Water
Date Received: 03/29/19 09:25

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid	ND		1.8	0.42	ng/L		04/03/19 06:57	04/05/19 03:32	1
Perfluorohexanesulfonic acid	ND		1.8	0.58	ng/L		04/03/19 06:57	04/05/19 03:32	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/03/19 06:57	04/05/19 03:32	1
Perfluorobutanesulfonic acid	ND		1.8	0.72	ng/L		04/03/19 06:57	04/05/19 03:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*86*		*70 - 130*	*04/03/19 06:57*	*04/05/19 03:32*	*1*
13C2 PFDA	*105*		*70 - 130*	*04/03/19 06:57*	*04/05/19 03:32*	*1*

Default Detection Limits

Client: Weston Solutions, Inc.
Job ID: 320-48799-1
Project/Site: DAS R35542, SDG C0AR3

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Prep: 537 DW

Analyte	RL	MDL	Units
Perfluorobutanesulfonic acid	2.0	0.80	ng/L
Perfluoroheptanoic acid	3.0	1.3	ng/L
Perfluorohexanesulfonic acid	2.0	0.64	ng/L
Perfluorononanoic acid	2.0	0.47	ng/L
Perfluorooctanesulfonic acid	2.0	0.95	ng/L
Perfluorooctanoic acid	6.0	2.7	ng/L

Surrogate Summary

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR3

Job ID: 320-48799-1

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)							
Lab Sample ID	**Client Sample ID**	**PFHxA (70-130)**	**PFDA (70-130)**						
320-48799-1	C0AR3	91	105						
320-48799-2	C0AR4	87	112						
320-48799-2 - DL	C0AR4	96	108						
320-48799-3	C0AR6	90	113						
320-48799-4	C0AR7	90	111						
320-48799-5	C0AS2	89	106						
320-48799-6	C0AW3	93	104						
320-48799-7	C0AW4	98	106						
320-48799-8	C0AW6	95	102						
320-48799-9	C0AW7	93	101						
320-48799-10	C0AW8	86	105						
LCS 320-285793/2-A	Lab Control Sample	88	102						
LCSD 320-285793/3-A	Lab Control Sample Dup	90	106						
MB 320-285793/1-A	Method Blank	90	102						

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC Sample Results

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR3

Job ID: 320-48799-1

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-285793/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 286196 — **Prep Batch: 285793**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	ND		2.0	0.95	ng/L		04/03/19 06:57	04/05/19 01:20	1
Perfluorooctanoic acid	ND		6.0	2.7	ng/L		04/03/19 06:57	04/05/19 01:20	1
Perfluorononanoic acid	ND		2.0	0.47	ng/L		04/03/19 06:57	04/05/19 01:20	1
Perfluorohexanesulfonic acid	ND		2.0	0.64	ng/L		04/03/19 06:57	04/05/19 01:20	1
Perfluoroheptanoic acid	ND		3.0	1.3	ng/L		04/03/19 06:57	04/05/19 01:20	1
Perfluorobutanesulfonic acid	ND		2.0	0.80	ng/L		04/03/19 06:57	04/05/19 01:20	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*70 - 130*	*04/03/19 06:57*	*04/05/19 01:20*	*1*
13C2 PFDA	*102*		*70 - 130*	*04/03/19 06:57*	*04/05/19 01:20*	*1*

Lab Sample ID: LCS 320-285793/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 286196 — **Prep Batch: 285793**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid	186	175		ng/L		94	70 - 130
Perfluorooctanoic acid	200	194		ng/L		97	70 - 130
Perfluorononanoic acid	200	192		ng/L		96	70 - 130
Perfluorohexanesulfonic acid	182	178		ng/L		98	70 - 130
Perfluoroheptanoic acid	200	201		ng/L		101	70 - 130
Perfluorobutanesulfonic acid	177	144		ng/L		82	70 - 130

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*88*		*70 - 130*
13C2 PFDA	*102*		*70 - 130*

Lab Sample ID: LCSD 320-285793/3-A — **Client Sample ID: Lab Control Sample Dup**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 286196 — **Prep Batch: 285793**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid	186	178		ng/L		96	70 - 130	2	30
Perfluorooctanoic acid	200	202		ng/L		101	70 - 130	4	30
Perfluorononanoic acid	200	197		ng/L		98	70 - 130	2	30
Perfluorohexanesulfonic acid	182	178		ng/L		98	70 - 130	0	30
Perfluoroheptanoic acid	200	196		ng/L		98	70 - 130	3	30
Perfluorobutanesulfonic acid	177	137		ng/L		77	70 - 130	5	30

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
13C2 PFHxA	*90*		*70 - 130*
13C2 PFDA	*106*		*70 - 130*

QC Association Summary

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR3

Job ID: 320-48799-1

LCMS

Prep Batch: 285793

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48799-1	C0AR3	Total/NA	Water	537 DW	
320-48799-2	C0AR4	Total/NA	Water	537 DW	
320-48799-2 - DL	C0AR4	Total/NA	Water	537 DW	
320-48799-3	C0AR6	Total/NA	Water	537 DW	
320-48799-4	C0AR7	Total/NA	Water	537 DW	
320-48799-5	C0AS2	Total/NA	Water	537 DW	
320-48799-6	C0AW3	Total/NA	Water	537 DW	
320-48799-7	C0AW4	Total/NA	Water	537 DW	
320-48799-8	C0AW6	Total/NA	Water	537 DW	
320-48799-9	C0AW7	Total/NA	Water	537 DW	
320-48799-10	C0AW8	Total/NA	Water	537 DW	
MB 320-285793/1-A	Method Blank	Total/NA	Water	537 DW	
LCS 320-285793/2-A	Lab Control Sample	Total/NA	Water	537 DW	
LCSD 320-285793/3-A	Lab Control Sample Dup	Total/NA	Water	537 DW	

Analysis Batch: 286196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48799-1	C0AR3	Total/NA	Water	537 DW	285793
320-48799-2	C0AR4	Total/NA	Water	537 DW	285793
320-48799-3	C0AR6	Total/NA	Water	537 DW	285793
320-48799-4	C0AR7	Total/NA	Water	537 DW	285793
320-48799-5	C0AS2	Total/NA	Water	537 DW	285793
320-48799-6	C0AW3	Total/NA	Water	537 DW	285793
320-48799-7	C0AW4	Total/NA	Water	537 DW	285793
MB 320-285793/1-A	Method Blank	Total/NA	Water	537 DW	285793
LCS 320-285793/2-A	Lab Control Sample	Total/NA	Water	537 DW	285793
LCSD 320-285793/3-A	Lab Control Sample Dup	Total/NA	Water	537 DW	285793

Analysis Batch: 286198

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48799-8	C0AW6	Total/NA	Water	537 DW	285793
320-48799-9	C0AW7	Total/NA	Water	537 DW	285793
320-48799-10	C0AW8	Total/NA	Water	537 DW	285793

Analysis Batch: 286320

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48799-2 - DL	C0AR4	Total/NA	Water	537 DW	285793

Client Sample ID: C0AR3 — Lab Sample ID: 320-48799-1

Date Collected: 03/27/19 09:55 — **Matrix: Water**
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286196	04/05/19 01:48	JRB	TAL SAC

Client Sample ID: C0AR4 — Lab Sample ID: 320-48799-2

Date Collected: 03/26/19 14:00 — **Matrix: Water**
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286196	04/05/19 01:57	JRB	TAL SAC
Total/NA	Prep	537 DW	DL		285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW	DL	5	286320	04/05/19 12:42	JRB	TAL SAC

Client Sample ID: C0AR6 — Lab Sample ID: 320-48799-3

Date Collected: 03/26/19 12:10 — **Matrix: Water**
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286196	04/05/19 02:07	JRB	TAL SAC

Client Sample ID: C0AR7 — Lab Sample ID: 320-48799-4

Date Collected: 03/26/19 12:50 — **Matrix: Water**
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286196	04/05/19 02:16	JRB	TAL SAC

Client Sample ID: C0AS2 — Lab Sample ID: 320-48799-5

Date Collected: 03/26/19 14:50 — **Matrix: Water**
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286196	04/05/19 02:26	JRB	TAL SAC

Client Sample ID: C0AW3 — Lab Sample ID: 320-48799-6

Date Collected: 03/26/19 12:55 — **Matrix: Water**
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286196	04/05/19 02:35	JRB	TAL SAC

Client Sample ID: C0AW4
Lab Sample ID: 320-48799-7
Date Collected: 03/26/19 12:15
Matrix: Water
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286196	04/05/19 02:45	JRB	TAL SAC

Client Sample ID: C0AW6
Lab Sample ID: 320-48799-8
Date Collected: 03/26/19 14:55
Matrix: Water
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286198	04/05/19 03:13	JRB	TAL SAC

Client Sample ID: C0AW7
Lab Sample ID: 320-48799-9
Date Collected: 03/26/19 14:05
Matrix: Water
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286198	04/05/19 03:23	JRB	TAL SAC

Client Sample ID: C0AW8
Lab Sample ID: 320-48799-10
Date Collected: 03/27/19 10:00
Matrix: Water
Date Received: 03/29/19 09:25

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			285793	04/03/19 06:57	HJA	TAL SAC
Total/NA	Analysis	537 DW		1	286198	04/05/19 03:32	JRB	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Weston Solutions, Inc.
Job ID: 320-48799-1
Project/Site: DAS R35542, SDG C0AR3

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD / DOE		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-20
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19 *
Hawaii	State Program	9	N/A	01-29-20
Illinois	NELAP	5	200060	03-17-19 *
Kansas	NELAP	7	E-10375	10-31-19
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19 *
Oregon	NELAP	10	4040	01-29-20
Pennsylvania	NELAP	3	68-01272	03-31-19 *
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-28-19 *
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19 *
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-19
Wyoming	State Program	8	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR3

Job ID: 320-48799-1

Method	Method Description	Protocol	Laboratory
537 DW	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
537 DW	Extraction of Perfluorinated Alkyl Acids	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR3

Job ID: 320-48799-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-48799-1	C0AR3	Water	03/27/19 09:55	03/29/19 09:25
320-48799-2	C0AR4	Water	03/26/19 14:00	03/29/19 09:25
320-48799-3	C0AR6	Water	03/26/19 12:10	03/29/19 09:25
320-48799-4	C0AR7	Water	03/26/19 12:50	03/29/19 09:25
320-48799-5	C0AS2	Water	03/26/19 14:50	03/29/19 09:25
320-48799-6	C0AW3	Water	03/26/19 12:55	03/29/19 09:25
320-48799-7	C0AW4	Water	03/26/19 12:15	03/29/19 09:25
320-48799-8	C0AW6	Water	03/26/19 14:55	03/29/19 09:25
320-48799-9	C0AW7	Water	03/26/19 14:05	03/29/19 09:25
320-48799-10	C0AW8	Water	03/27/19 10:00	03/29/19 09:25

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286141

Lab Sample ID: IC 320-286141/2 Client Sample ID:

Date Analyzed: 04/04/19 15:14 Lab File ID: 2019.04.04_537ICAL_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	2.78	Baseline	Ex. 4 CBI	04/04/19 16:23
Perfluorohexanesulfonic acid	2.80	Baseline		04/04/19 16:23
Perfluorooctanesulfonic acid	3.56	Baseline		04/04/19 16:23
Perfluorodecanoic acid	3.92	Baseline		04/04/19 16:24
N-ethylperfluorooctanesulfonamido acetic acid	4.25	Baseline		04/04/19 16:24
Perfluorotetradecanoic acid	4.99	Baseline		04/04/19 16:24

Lab Sample ID: IC 320-286141/3 Client Sample ID:

Date Analyzed: 04/04/19 15:23 Lab File ID: 2019.04.04_537ICAL_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	2.78	Baseline	Ex. 4 CBI	04/04/19 16:25
Perfluorohexanesulfonic acid	2.80	Baseline		04/04/19 16:25
Perfluorooctanesulfonic acid	3.56	Baseline		04/04/19 16:25

Lab Sample ID: IC 320-286141/4 Client Sample ID:

Date Analyzed: 04/04/19 15:33 Lab File ID: 2019.04.04_537ICAL_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	2.78	Baseline	Ex. 4 CBI	04/04/19 16:26
Perfluorohexanesulfonic acid	2.78	Baseline		04/04/19 16:26
Perfluorooctanesulfonic acid	3.56	Baseline		04/04/19 16:26

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286141

Lab Sample ID: CCVL 320-286141/10 Client Sample ID:

Date Analyzed: 04/04/19 16:29 Lab File ID: 2019.04.04_537ICAL_011.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid	2.80	Baseline	Ex. 4 CBI	04/04/19 16:42
Perfluorooctanoic acid	3.20	Baseline		04/04/19 16:43
Perfluorooctanesulfonic acid	3.58	Baseline		04/04/19 16:43

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286196

Lab Sample ID: MB 320-285793/1-A Client Sample ID:

Date Analyzed: 04/05/19 01:20 Lab File ID: 2019.04.04_537AA_044.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid		Invalid Compound ID	Ex. 4 CBI	04/05/19 09:44

Lab Sample ID: 320-48799-1 Client Sample ID: C0AR3

Date Analyzed: 04/05/19 01:48 Lab File ID: 2019.04.04_537AA_047.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	2.76	Baseline	Ex. 4 CBI	04/05/19 13:15
Perfluorohexanesulfonic acid	2.78	Baseline		04/05/19 13:14
Perfluorooctanoic acid	3.16	Isomers		04/05/19 13:15
Perfluorooctanesulfonic acid	3.53	Baseline		04/05/19 13:15

Lab Sample ID: 320-48799-2 Client Sample ID: C0AR4

Date Analyzed: 04/05/19 01:57 Lab File ID: 2019.04.04_537AA_048.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid	2.78	Baseline	Ex. 4 CBI	04/05/19 13:18

Lab Sample ID: 320-48799-3 Client Sample ID: C0AR6

Date Analyzed: 04/05/19 02:07 Lab File ID: 2019.04.04_537AA_049.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	2.76	Baseline	Ex. 4 CBI	04/05/19 13:21
Perfluorohexanesulfonic acid	2.78	Baseline		04/05/19 13:20
Perfluorooctanoic acid	3.16	Isomers		04/05/19 13:21
Perfluorooctanesulfonic acid	3.42	Baseline		04/05/19 13:24

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286196

Lab Sample ID: 320-48799-4 Client Sample ID: C0AR7

Date Analyzed: 04/05/19 02:16 Lab File ID: 2019.04.04_537AA_050.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	2.78	Isomers	Ex. 4 CBI	04/05/19 13:25
Perfluorohexanesulfonic acid	2.78	Isomers		04/05/19 13:24
Perfluorooctanoic acid	3.18	Isomers		04/05/19 13:25
Perfluorooctanesulfonic acid	3.43	Baseline		04/05/19 13:25

Lab Sample ID: 320-48799-5 Client Sample ID: C0AS2

Date Analyzed: 04/05/19 02:26 Lab File ID: 2019.04.04_537AA_051.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	2.78	Baseline	Ex. 4 CBI	04/05/19 13:26
Perfluorohexanesulfonic acid	2.78	Baseline		04/05/19 13:26
Perfluorooctanoic acid	3.18	Isomers		04/05/19 13:27
Perfluorooctanesulfonic acid	3.42	Baseline		04/05/19 13:27

Lab Sample ID: 320-48799-6 Client Sample ID: C0AW3

Date Analyzed: 04/05/19 02:35 Lab File ID: 2019.04.04_537AA_052.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid		Invalid Compound ID	Ex. 4 CBI	04/05/19 13:28
Perfluorooctanoic acid		Invalid Compound ID		04/05/19 13:28

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286196

Lab Sample ID: 320-48799-7 Client Sample ID: C0AW4

Date Analyzed: 04/05/19 02:45 Lab File ID: 2019.04.04_537AA_053.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanesulfonic acid		Invalid Compound ID	Ex. 4 CBI	04/05/19 13:28
Perfluorooctanesulfonic acid		Invalid Compound ID		04/05/19 13:28
Perfluorooctanoic acid		Invalid Compound ID		04/05/19 13:28

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286198

Lab Sample ID: 320-48799-8 Client Sample ID: C0AW6

Date Analyzed: 04/05/19 03:13 Lab File ID: 2019.04.04_537AA_056.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid		Invalid Compound ID	Ex. 4 CBI	04/05/19 13:28
Perfluorooctanoic acid		Invalid Compound ID		04/05/19 13:28

Lab Sample ID: 320-48799-9 Client Sample ID: C0AW7

Date Analyzed: 04/05/19 03:23 Lab File ID: 2019.04.04_537AA_057.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid		Invalid Compound ID	Ex. 4 CBI	04/05/19 13:29

Lab Sample ID: 320-48799-10 Client Sample ID: C0AW8

Date Analyzed: 04/05/19 03:32 Lab File ID: 2019.04.04_537AA_058.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid		Invalid Compound ID	Ex. 4 CBI	04/05/19 13:29

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286320

Lab Sample ID: CCVL 320-286320/1 Client Sample ID:

Date Analyzed: 04/05/19 11:55 Lab File ID: 2019.04.05_537.1A_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid	2.78	Baseline	Ex. 4 CBI	04/05/19 14:28
Perfluorohexanesulfonic acid	2.78	Baseline		04/05/19 14:28
Perfluorooctanoic acid	3.17	Baseline		04/05/19 14:29
N-ethylperfluorooctanesulfonamido acetic acid	4.24	Baseline		04/05/19 14:29

Lab Sample ID: 320-48799-2 DL Client Sample ID: C0AR4 DL

Date Analyzed: 04/05/19 12:42 Lab File ID: 2019.04.05_537.1A_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid	3.18	Isomers	Ex. 4 CBI	04/05/19 14:35

537 DW

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537-IS_00100	09/16/19	03/18/19	Methanol, Lot 186954	200 mL	LCd3-NMeFOSAA_00012	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCM2PFOA_00015	200 uL	13C2 PFOA	0.05 ug/mL
					LCMPFOS_00031	200 uL	13C4 PFOS	0.0478 ug/mL
.LCd3-NMeFOSAA_00012	08/23/23	WELLINGTON, Lot d3NMeFOSAA0818			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
.LCM2PFOA_00015	10/10/23	Wellington Laboratories, Lot M2PFOA1018			(Purchased Reagent)		13C2 PFOA	50 ug/mL
.LCMPFOS_00031	09/11/23	Wellington Laboratories, Lot MPFOS0918			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537-SU_00101	09/29/19	03/29/19	Methanol, Lot 186960	200 mL	LCd5-NEtFOSAA_00013	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM3HFPO-DA_00006	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCMPFDA_00024	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFHxA_00026	200 uL	13C2 PFHxA	0.05 ug/mL
.LCd5-NEtFOSAA_00013	08/23/23	WELLINGTON, Lot d5NEtFOSAA0818			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
.LCM3HFPO-DA_00006	10/24/21	WELLINGTON, Lot M3HFPODA1018			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
.LCMPFDA_00024	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFHxA_00026	05/22/23	Wellington Laboratories, Lot MPFHxA0518			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
LC537_NC_ICV_00003	08/02/19	02/05/19	MeOH/H2O, Lot Fisher 185850	200 mL	LC537-IS/SU_00002	10 mL	d3-NMeFOSAA	2.5 ng/mL
							13C2 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCd3-NMeFOSAA_00012	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCM2PFOA_00015	200 uL	13C2 PFOA	0.05 ug/mL
					LCMPFOS_00031	200 uL	13C4 PFOS	0.0478 ug/mL
..LCd3-NMeFOSAA_00012	08/23/23	WELLINGTON, Lot d3NMeFOSAA0818			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCM2PFOA_00015	10/10/23	Wellington Laboratories, Lot M2PFOA1018			(Purchased Reagent)		13C2 PFOA	50 ug/mL
..LCMPFOS_00031	09/11/23	Wellington Laboratories, Lot MPFOS0918			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
LC537_NC_ICV_00003	08/02/19	02/05/19	MeOH/H2O, Lot Fisher 185850	200 mL	LC537-IS/SU_00002	10 mL	d5-NEtFOSAA	2.5 ng/mL
							13C3 HFPO-DA	2.5 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
					LCPFAC-24PAR_00002	200 uL	Perfluorobutanesulfonic acid	1.77 ng/mL
							Perfluoroheptanoic acid	2 ng/mL
							Perfluorohexanesulfonic acid	1.824 ng/mL
							Perfluorononanoic acid	2 ng/mL
							Perfluorooctanesulfonic acid	1.851 ng/mL
							Perfluorooctanoic acid	2 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCd5-NEtFOSAA_00013	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM3HFPO-DA_00006	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCMPFDA_00024	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFHxA_00026	200 uL	13C2 PFHxA	0.05 ug/mL
..LCd5-NEtFOSAA_00013	08/23/23	WELLINGTON, Lot d5NEtFOSAA0818			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM3HFPO-DA_00006	10/24/21	WELLINGTON, Lot M3HFPODA1018			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
..LCMPFDA_00024	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00026	05/22/23	Wellington Laboratories, Lot MPFHxA0518			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCPFAC-24PAR_00002	04/18/23	Wellington Laboratories, Lot PFAC24PAR0418			(Purchased Reagent)		Perfluorobutanesulfonic acid	1.77 ug/mL
							Perfluoroheptanoic acid	2 ug/mL
							Perfluorohexanesulfonic acid	1.824 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorononanoic acid	2 ug/mL
							Perfluorooctanesulfonic acid	1.851 ug/mL
							Perfluorooctanoic acid	2 ug/mL
LC537_NC_L1_00004	08/02/19	02/02/19	MeOH/H2O, Lot 185850	200 mL	LC537-IS/SU_00002	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							13C2 PFOA	2.5 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
					LC537HSP_00002	50 uL	N-ethylperfluorooctanesulfonamidoacetic acid	0.025 ng/mL
							N-methylperfluorooctanesulfonamidoacetic acid	0.025 ng/mL
							Perfluorobutanesulfonic acid	0.0221 ng/mL
							Perfluorodecanoic acid	0.025 ng/mL
							Perfluorododecanoic acid	0.025 ng/mL
							Perfluoroheptanoic acid	0.025 ng/mL
							Perfluorohexanoic acid	0.025 ng/mL
							Perfluorohexanesulfonic acid	0.02275 ng/mL
							Perfluorononanoic acid	0.025 ng/mL
							Perfluorooctanoic acid	0.025 ng/mL
							Perfluorooctanesulfonic acid	0.0232 ng/mL
							Perfluorotetradecanoic acid	0.025 ng/mL
							Perfluorotridecanoic acid	0.025 ng/mL
							Perfluoroundecanoic acid	0.025 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCd3-NMeFOSAA_00012	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00013	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2PFOA_00015	200 uL	13C2 PFOA	0.05 ug/mL
					LCMPFDA_00024	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFHxA_00026	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFOS_00031	200 uL	13C4 PFOS	0.0478 ug/mL
..LCd3-NMeFOSAA_00012	08/23/23	WELLINGTON, Lot d3NMeFOSAA0818			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00013	08/23/23	WELLINGTON, Lot d5NEtFOSAA0818			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2PFOA_00015	10/10/23	Wellington Laboratories, Lot M2PFOA1018			(Purchased Reagent)		13C2 PFOA	50 ug/mL
..LCMPFDA_00024	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00026	05/22/23	Wellington Laboratories, Lot MPFHxA0518			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFOS_00031	09/11/23	Wellington Laboratories, Lot MPFOS0918			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537HSP_00002	08/02/19	02/02/19	Methanol, Lot 185850	250 mL	LCbr-NEtFOSAA_00004	500 uL	N-ethylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCbr-NMeFOSAA_00004	500 uL	N-methylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCPFBSA_00005	500 uL	Perfluorobutanesulfonic acid	0.0884 ug/mL
					LCPFDA_00012	500 uL	Perfluorodecanoic acid	0.1 ug/mL
					LCPFDoA_00012	500 uL	Perfluorododecanoic acid	0.1 ug/mL
					LCPFHpA_00013	500 uL	Perfluoroheptanoic acid	0.1 ug/mL
					LCPFHxA_00012	500 uL	Perfluorohexanoic acid	0.1 ug/mL
					LCPFHxS-br_00009	500 uL	Perfluorohexanesulfonic acid	0.091 ug/mL
					LCPFNA_00012	500 uL	Perfluorononanoic acid	0.1 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOA_00014	500 uL	Perfluorooctanoic acid	0.1 ug/mL
					LCPFOS-br_00009	500 uL	Perfluorooctanesulfonic acid	0.0928 ug/mL
					LCPFTeDA_00012	500 uL	Perfluorotetradecanoic acid	0.1 ug/mL
					LCPFTrDA_00012	500 uL	Perfluorotridecanoic acid	0.1 ug/mL
					LCPFUdA_00012	500 uL	Perfluoroundecanoic acid	0.1 ug/mL
..LCbr-NEtFOSAA_00004	07/26/23	WELLINGTON, Lot brNEtFOSAA0718			(Purchased Reagent)		N-ethylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00004	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCPFBSA_00005	05/04/23	Wellington Laboratories, Lot LPFBS0418			(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00012	12/14/22	Wellington Laboratories, Lot PFDA1217			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00012	04/18/23	Wellington Laboratories, Lot PFDoA0418			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFHpA_00013	07/12/23	Wellington Laboratories, Lot PFHpA0718			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHxA_00012	05/18/23	Wellington Laboratories, Lot PFHxA0518			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00009	10/02/23	Wellington Laboratories, Lot brPFHxSK1018			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00012	02/16/23	Wellington Laboratories, Lot PFNA0218			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00014	08/23/23	Wellington Laboratories, Lot PFOA0818			(Purchased Reagent)		Perfluorooctanoic acid	50 ug/mL
..LCPFOS-br_00009	04/18/23	Wellington Laboratories, Lot brPFOSK0418			(Purchased Reagent)		Perfluorooctanesulfonic acid	46.4 ug/mL
..LCPFTeDA_00012	08/23/23	Wellington Laboratories, Lot PFTeDA0818			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00012	02/16/23	Wellington Laboratories, Lot PFTrDA0218			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00012	08/23/23	Wellington Laboratories, Lot PFUdA0818			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LC537_NC_L2_00004	08/02/19	02/02/19	MeOH/H2O, Lot 185850	200 mL	LC537-IS/SU_00002	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							13C2 PFOA	2.5 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
					LC537HSP_00002	100 uL	N-ethylperfluorooctanesulfonamidoacetic acid	0.05 ng/mL
							N-methylperfluorooctanesulfonamidoacetic acid	0.05 ng/mL
							Perfluorobutanesulfonic acid	0.0442 ng/mL
							Perfluorodecanoic acid	0.05 ng/mL
							Perfluorododecanoic acid	0.05 ng/mL
							Perfluoroheptanoic acid	0.05 ng/mL
							Perfluorohexanoic acid	0.05 ng/mL
							Perfluorohexanesulfonic acid	0.0455 ng/mL
							Perfluorononanoic acid	0.05 ng/mL
							Perfluorooctanoic acid	0.05 ng/mL
							Perfluorooctanesulfonic acid	0.0464 ng/mL
							Perfluorotetradecanoic acid	0.05 ng/mL
							Perfluorotridecanoic acid	0.05 ng/mL
							Perfluoroundecanoic acid	0.05 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCd3-NMeFOSAA_00012	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00013	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2PFOA_00015	200 uL	13C2 PFOA	0.05 ug/mL
					LCMPFDA_00024	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFHxA_00026	200 uL	13C2 PFHxA	0.05 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFOS_00031	200 uL	13C4 PFOS	0.0478 ug/mL
..LCd3-NMeFOSAA_00012	08/23/23	WELLINGTON, Lot d3NMeFOSAA0818			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00013	08/23/23	WELLINGTON, Lot d5NEtFOSAA0818			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2PFOA_00015	10/10/23	Wellington Laboratories, Lot M2PFOA1018			(Purchased Reagent)		13C2 PFOA	50 ug/mL
..LCMPFDA_00024	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00026	05/22/23	Wellington Laboratories, Lot MPFHxA0518			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFOS_00031	09/11/23	Wellington Laboratories, Lot MPFOS0918			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537HSP_00002	08/02/19	02/02/19	Methanol, Lot 185850	250 mL	LCbr-NEtFOSAA_00004	500 uL	N-ethylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCbr-NMeFOSAA_00004	500 uL	N-methylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCPFBSA_00005	500 uL	Perfluorobutanesulfonic acid	0.0884 ug/mL
					LCPFDA_00012	500 uL	Perfluorodecanoic acid	0.1 ug/mL
					LCPFDoA_00012	500 uL	Perfluorododecanoic acid	0.1 ug/mL
					LCPFHpA_00013	500 uL	Perfluoroheptanoic acid	0.1 ug/mL
					LCPFHxA_00012	500 uL	Perfluorohexanoic acid	0.1 ug/mL
					LCPFHxS-br_00009	500 uL	Perfluorohexanesulfonic acid	0.091 ug/mL
					LCPFNA_00012	500 uL	Perfluorononanoic acid	0.1 ug/mL
					LCPFOA_00014	500 uL	Perfluorooctanoic acid	0.1 ug/mL
					LCPFOS-br_00009	500 uL	Perfluorooctanesulfonic acid	0.0928 ug/mL
					LCPFTeDA_00012	500 uL	Perfluorotetradecanoic acid	0.1 ug/mL
					LCPFTrDA_00012	500 uL	Perfluorotridecanoic acid	0.1 ug/mL
					LCPFUdA_00012	500 uL	Perfluoroundecanoic acid	0.1 ug/mL
..LCbr-NEtFOSAA_00004	07/26/23	WELLINGTON, Lot brNEtFOSAA0718			(Purchased Reagent)		N-ethylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00004	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCPFBSA_00005	05/04/23	Wellington Laboratories, Lot LPFBS0418			(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00012	12/14/22	Wellington Laboratories, Lot PFDA1217			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00012	04/18/23	Wellington Laboratories, Lot PFDoA0418			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFHpA_00013	07/12/23	Wellington Laboratories, Lot PFHpA0718			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHxA_00012	05/18/23	Wellington Laboratories, Lot PFHxA0518			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00009	10/02/23	Wellington Laboratories, Lot brPFHxSK1018			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00012	02/16/23	Wellington Laboratories, Lot PFNA0218			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00014	08/23/23	Wellington Laboratories, Lot PFOA0818			(Purchased Reagent)		Perfluorooctanoic acid	50 ug/mL
..LCPFOS-br_00009	04/18/23	Wellington Laboratories, Lot brPFOSK0418			(Purchased Reagent)		Perfluorooctanesulfonic acid	46.4 ug/mL
..LCPFTeDA_00012	08/23/23	Wellington Laboratories, Lot PFTeDA0818			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00012	02/16/23	Wellington Laboratories, Lot PFTrDA0218			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00012	08/23/23	Wellington Laboratories, Lot PFUdA0818			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LC537_NC_L2_00004	08/02/19	02/02/19	MeOH/H2O, Lot 185850	200 mL	LC537-IS/SU_00002	10 mL	13C3 HFPO-DA	2.5 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCM3HFPO-DA_00006	200 uL	13C3 HFPO-DA	0.05 ug/mL
..LCM3HFPO-DA_00006	10/24/21	WELLINGTON, Lot M3HFPODA1018			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
LC537_NC_L3_00004	08/02/19	02/02/19	MeOH/H2O, Lot 185850	200 mL	LC537-IS/SU_00002	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							13C2 PFOA	2.5 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

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Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC537HSP_00002	500 uL	N-ethylperfluorooctanesulfonamidoacetic acid	0.25 ng/mL
							N-methylperfluorooctanesulfonamidoacetic acid	0.25 ng/mL
							Perfluorobutanesulfonic acid	0.221 ng/mL
							Perfluorodecanoic acid	0.25 ng/mL
							Perfluorododecanoic acid	0.25 ng/mL
							Perfluoroheptanoic acid	0.25 ng/mL
							Perfluorohexanoic acid	0.25 ng/mL
							Perfluorohexanesulfonic acid	0.2275 ng/mL
							Perfluorononanoic acid	0.25 ng/mL
							Perfluorooctanoic acid	0.25 ng/mL
							Perfluorooctanesulfonic acid	0.232 ng/mL
							Perfluorotetradecanoic acid	0.25 ng/mL
							Perfluorotridecanoic acid	0.25 ng/mL
							Perfluoroundecanoic acid	0.25 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCd3-NMeFOSAA_00012	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00013	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2PFOA_00015	200 uL	13C2 PFOA	0.05 ug/mL
					LCMPFDA_00024	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFHxA_00026	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFOS_00031	200 uL	13C4 PFOS	0.0478 ug/mL
..LCd3-NMeFOSAA_00012	08/23/23	WELLINGTON, Lot d3NMeFOSAA0818			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00013	08/23/23	WELLINGTON, Lot d5NEtFOSAA0818			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2PFOA_00015	10/10/23	Wellington Laboratories, Lot M2PFOA1018			(Purchased Reagent)		13C2 PFOA	50 ug/mL
..LCMPFDA_00024	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00026	05/22/23	Wellington Laboratories, Lot MPFHxA0518			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFOS_00031	09/11/23	Wellington Laboratories, Lot MPFOS0918			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537HSP_00002	08/02/19	02/02/19	Methanol, Lot 185850	250 mL	LCbr-NEtFOSAA_00004	500 uL	N-ethylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCbr-NMeFOSAA_00004	500 uL	N-methylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCPFBSA_00005	500 uL	Perfluorobutanesulfonic acid	0.0884 ug/mL
					LCPFDA_00012	500 uL	Perfluorodecanoic acid	0.1 ug/mL
					LCPFDoA_00012	500 uL	Perfluorododecanoic acid	0.1 ug/mL
					LCPFHpA_00013	500 uL	Perfluoroheptanoic acid	0.1 ug/mL
					LCPFHxA_00012	500 uL	Perfluorohexanoic acid	0.1 ug/mL
					LCPFHxS-br_00009	500 uL	Perfluorohexanesulfonic acid	0.091 ug/mL
					LCPFNA_00012	500 uL	Perfluorononanoic acid	0.1 ug/mL
					LCPFOA_00014	500 uL	Perfluorooctanoic acid	0.1 ug/mL
					LCPFOS-br_00009	500 uL	Perfluorooctanesulfonic acid	0.0928 ug/mL
					LCPFTeDA_00012	500 uL	Perfluorotetradecanoic acid	0.1 ug/mL
					LCPFTrDA_00012	500 uL	Perfluorotridecanoic acid	0.1 ug/mL
					LCPFUdA_00012	500 uL	Perfluoroundecanoic acid	0.1 ug/mL
..LCbr-NEtFOSAA_00004	07/26/23	WELLINGTON, Lot brNEtFOSAA0718			(Purchased Reagent)		N-ethylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00004	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCPFBSA_00005	05/04/23	Wellington Laboratories, Lot LPFBS0418			(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDA_00012	12/14/22	Wellington Laboratories, Lot PFDA1217			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00012	04/18/23	Wellington Laboratories, Lot PFDoA0418			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFHpA_00013	07/12/23	Wellington Laboratories, Lot PFHpA0718			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHxA_00012	05/18/23	Wellington Laboratories, Lot PFHxA0518			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00009	10/02/23	Wellington Laboratories, Lot brPFHxSK1018			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00012	02/16/23	Wellington Laboratories, Lot PFNA0218			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00014	08/23/23	Wellington Laboratories, Lot PFOA0818			(Purchased Reagent)		Perfluorooctanoic acid	50 ug/mL
..LCPFOS-br_00009	04/18/23	Wellington Laboratories, Lot brPFOSK0418			(Purchased Reagent)		Perfluorooctanesulfonic acid	46.4 ug/mL
..LCPFTeDA_00012	08/23/23	Wellington Laboratories, Lot PFTeDA0818			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00012	02/16/23	Wellington Laboratories, Lot PFTrDA0218			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00012	08/23/23	Wellington Laboratories, Lot PFUdA0818			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LC537_NC_L4_00003	08/02/19	02/02/19	MeOH/H2O, Lot 185850	200 mL	LC537-IS/SU_00002	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							13C2 PFOA	2.5 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
					LC537SP_00014	200 uL	N-ethylperfluorooctanesulfonamidoacetic acid	1 ng/mL
							N-methylperfluorooctanesulfonamidoacetic acid	1 ng/mL
							Perfluorobutanesulfonic acid	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluoroheptanoic acid	1 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid	0.91 ng/mL
							Perfluorononanoic acid	1 ng/mL
							Perfluorooctanoic acid	1 ng/mL
							Perfluorooctanesulfonic acid	0.928 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCd3-NMeFOSAA_00012	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00013	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2PFOA_00015	200 uL	13C2 PFOA	0.05 ug/mL
					LCMPFDA_00024	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFHxA_00026	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFOS_00031	200 uL	13C4 PFOS	0.0478 ug/mL
..LCd3-NMeFOSAA_00012	08/23/23	WELLINGTON, Lot d3NMeFOSAA0818			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00013	08/23/23	WELLINGTON, Lot d5NEtFOSAA0818			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2PFOA_00015	10/10/23	Wellington Laboratories, Lot M2PFOA1018			(Purchased Reagent)		13C2 PFOA	50 ug/mL
..LCMPFDA_00024	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00026	05/22/23	Wellington Laboratories, Lot MPFHxA0518			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFOS_00031	09/11/23	Wellington Laboratories, Lot MPFOS0918			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537SP_00014	08/02/19	02/02/19	Methanol, Lot 185850	10 mL	LCbr-NEtFOSAA_00004	200 uL	N-ethylperfluorooctanesulfonamidoacetic acid	1 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCbr-NMeFOSAA_00004	200 uL	N-methylperfluorooctanesulfonamidoacetic acid	1 ug/mL
					LCPFBSA_00005	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA_00012	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00012	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFHpA_00013	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHxA_00012	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00009	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00012	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00014	200 uL	Perfluorooctanoic acid	1 ug/mL
					LCPFOS-br_00009	200 uL	Perfluorooctanesulfonic acid	0.928 ug/mL
					LCPFTeDA_00012	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00012	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00012	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCbr-NEtFOSAA_00004	07/26/23	WELLINGTON, Lot brNEtFOSAA0718			(Purchased Reagent)		N-ethylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00004	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCPFBSA_00005	05/04/23	Wellington Laboratories, Lot LPFBS0418			(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00012	12/14/22	Wellington Laboratories, Lot PFDA1217			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00012	04/18/23	Wellington Laboratories, Lot PFDoA0418			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFHpA_00013	07/12/23	Wellington Laboratories, Lot PFHpA0718			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHxA_00012	05/18/23	Wellington Laboratories, Lot PFHxA0518			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00009	10/02/23	Wellington Laboratories, Lot brPFHxSK1018			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00012	02/16/23	Wellington Laboratories, Lot PFNA0218			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00014	08/23/23	Wellington Laboratories, Lot PFOA0818			(Purchased Reagent)		Perfluorooctanoic acid	50 ug/mL
..LCPFOS-br_00009	04/18/23	Wellington Laboratories, Lot brPFOSK0418			(Purchased Reagent)		Perfluorooctanesulfonic acid	46.4 ug/mL
..LCPFTeDA_00012	08/23/23	Wellington Laboratories, Lot PFTeDA0818			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00012	02/16/23	Wellington Laboratories, Lot PFTrDA0218			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00012	08/23/23	Wellington Laboratories, Lot PFUdA0818			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LC537_NC_L5_00003	08/02/19	02/02/19	MeOH/H2O, Lot 185850	200 mL	LC537-IS/SU_00002	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							13C2 PFOA	2.5 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
					LC537SP_00014	500 uL	N-ethylperfluorooctanesulfonamidoacetic acid	2.5 ng/mL
							N-methylperfluorooctanesulfonamidoacetic acid	2.5 ng/mL
							Perfluorobutanesulfonic acid	2.21 ng/mL
							Perfluorodecanoic acid	2.5 ng/mL
							Perfluorododecanoic acid	2.5 ng/mL
							Perfluoroheptanoic acid	2.5 ng/mL
							Perfluorohexanoic acid	2.5 ng/mL
							Perfluorohexanesulfonic acid	2.275 ng/mL
							Perfluorononanoic acid	2.5 ng/mL
							Perfluorooctanoic acid	2.5 ng/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid	2.32 ng/mL
							Perfluorotetradecanoic acid	2.5 ng/mL
							Perfluorotridecanoic acid	2.5 ng/mL
							Perfluoroundecanoic acid	2.5 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCd3-NMeFOSAA_00012	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00013	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2PFOA_00015	200 uL	13C2 PFOA	0.05 ug/mL
					LCMPFDA_00024	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFHxA_00026	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFOS_00031	200 uL	13C4 PFOS	0.0478 ug/mL
..LCd3-NMeFOSAA_00012	08/23/23	WELLINGTON, Lot d3NMeFOSAA0818			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00013	08/23/23	WELLINGTON, Lot d5NEtFOSAA0818			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2PFOA_00015	10/10/23	Wellington Laboratories, Lot M2PFOA1018			(Purchased Reagent)		13C2 PFOA	50 ug/mL
..LCMPFDA_00024	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00026	05/22/23	Wellington Laboratories, Lot MPFHxA0518			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFOS_00031	09/11/23	Wellington Laboratories, Lot MPFOS0918			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537SP_00014	08/02/19	02/02/19	Methanol, Lot 185850	10 mL	LCbr-NEtFOSAA_00004	200 uL	N-ethylperfluorooctanesulfonamidoacetic acid	1 ug/mL
					LCbr-NMeFOSAA_00004	200 uL	N-methylperfluorooctanesulfonamidoacetic acid	1 ug/mL
					LCPFBSA_00005	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA_00012	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00012	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFHpA_00013	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHxA_00012	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00009	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00012	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00014	200 uL	Perfluorooctanoic acid	1 ug/mL
					LCPFOS-br_00009	200 uL	Perfluorooctanesulfonic acid	0.928 ug/mL
					LCPFTeDA_00012	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00012	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00012	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCbr-NEtFOSAA_00004	07/26/23	WELLINGTON, Lot brNEtFOSAA0718			(Purchased Reagent)		N-ethylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00004	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCPFBSA_00005	05/04/23	Wellington Laboratories, Lot LPFBS0418			(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00012	12/14/22	Wellington Laboratories, Lot PFDA1217			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00012	04/18/23	Wellington Laboratories, Lot PFDoA0418			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFHpA_00013	07/12/23	Wellington Laboratories, Lot PFHpA0718			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHxA_00012	05/18/23	Wellington Laboratories, Lot PFHxA0518			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00009	10/02/23	Wellington Laboratories, Lot brPFHxSK1018			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00012	02/16/23	Wellington Laboratories, Lot PFNA0218			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00014	08/23/23	Wellington Laboratories, Lot PFOA0818			(Purchased Reagent)		Perfluorooctanoic acid	50 ug/mL
..LCPFOS-br_00009	04/18/23	Wellington Laboratories, Lot brPFOSK0418			(Purchased Reagent)		Perfluorooctanesulfonic acid	46.4 ug/mL
..LCPFTeDA_00012	08/23/23	Wellington Laboratories, Lot PFTeDA0818			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00012	02/16/23	Wellington Laboratories, Lot PFTrDA0218			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00012	08/23/23	Wellington Laboratories, Lot PFUdA0818			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LC537_NC_L6_00003	08/02/19	02/02/19	MeOH/H2O, Lot 185850	200 mL	LC537-IS/SU_00002	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							13C2 PFOA	2.5 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
					LC537SP_00014	1 mL	N-ethylperfluorooctanesulfonamidoacetic acid	5 ng/mL
							N-methylperfluorooctanesulfonamidoacetic acid	5 ng/mL
							Perfluorobutanesulfonic acid	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							Perfluoroheptanoic acid	5 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid	4.55 ng/mL
							Perfluorononanoic acid	5 ng/mL
							Perfluorooctanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid	4.64 ng/mL
							Perfluorotetradecanoic acid	5 ng/mL
							Perfluorotridecanoic acid	5 ng/mL
							Perfluoroundecanoic acid	5 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCd3-NMeFOSAA_00012	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00013	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2PFOA_00015	200 uL	13C2 PFOA	0.05 ug/mL
					LCMPFDA_00024	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFHxA_00026	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFOS_00031	200 uL	13C4 PFOS	0.0478 ug/mL
..LCd3-NMeFOSAA_00012	08/23/23	WELLINGTON, Lot d3NMeFOSAA0818			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00013	08/23/23	WELLINGTON, Lot d5NEtFOSAA0818			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2PFOA_00015	10/10/23	Wellington Laboratories, Lot M2PFOA1018			(Purchased Reagent)		13C2 PFOA	50 ug/mL
..LCMPFDA_00024	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00026	05/22/23	Wellington Laboratories, Lot MPFHxA0518			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFOS_00031	09/11/23	Wellington Laboratories, Lot MPFOS0918			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537SP_00014	08/02/19	02/02/19	Methanol, Lot 185850	10 mL	LCbr-NEtFOSAA_00004	200 uL	N-ethylperfluorooctanesulfonamidoacetic acid	1 ug/mL
					LCbr-NMeFOSAA_00004	200 uL	N-methylperfluorooctanesulfonamidoacetic acid	1 ug/mL
					LCPFBSA_00005	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA_00012	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00012	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFHpA_00013	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHxA_00012	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00009	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00012	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00014	200 uL	Perfluorooctanoic acid	1 ug/mL
					LCPFOS-br_00009	200 uL	Perfluorooctanesulfonic acid	0.928 ug/mL
					LCPFTeDA_00012	200 uL	Perfluorotetradecanoic acid	1 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFTrDA_00012	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00012	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCbr-NEtFOSAA_00004	07/26/23	WELLINGTON, Lot brNEtFOSAA0718			(Purchased Reagent)		N-ethylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00004	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCPFBSA_00005	05/04/23	Wellington Laboratories, Lot LPFBS0418			(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00012	12/14/22	Wellington Laboratories, Lot PFDA1217			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00012	04/18/23	Wellington Laboratories, Lot PFDoA0418			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFHpA_00013	07/12/23	Wellington Laboratories, Lot PFHpA0718			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHxA_00012	05/18/23	Wellington Laboratories, Lot PFHxA0518			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00009	10/02/23	Wellington Laboratories, Lot brPFHxSK1018			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00012	02/16/23	Wellington Laboratories, Lot PFNA0218			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00014	08/23/23	Wellington Laboratories, Lot PFOA0818			(Purchased Reagent)		Perfluorooctanoic acid	50 ug/mL
..LCPFOS-br_00009	04/18/23	Wellington Laboratories, Lot brPFOSK0418			(Purchased Reagent)		Perfluorooctanesulfonic acid	46.4 ug/mL
..LCPFTeDA_00012	08/23/23	Wellington Laboratories, Lot PFTeDA0818			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00012	02/16/23	Wellington Laboratories, Lot PFTrDA0218			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00012	08/23/23	Wellington Laboratories, Lot PFUdA0818			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LC537_NC_L7_00003	08/02/19	02/02/19	MeOH/H2O, Lot 185850	200 mL	LC537-IS/SU_00002	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							13C2 PFOA	2.5 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
					LC537SP_00014	2 mL	N-ethylperfluorooctanesulfonamidoacetic acid	10 ng/mL
							N-methylperfluorooctanesulfonamidoacetic acid	10 ng/mL
							Perfluorobutanesulfonic acid	8.84 ng/mL
							Perfluorodecanoic acid	10 ng/mL
							Perfluorododecanoic acid	10 ng/mL
							Perfluoroheptanoic acid	10 ng/mL
							Perfluorohexanoic acid	10 ng/mL
							Perfluorohexanesulfonic acid	9.1 ng/mL
							Perfluorononanoic acid	10 ng/mL
							Perfluorooctanoic acid	10 ng/mL
							Perfluorooctanesulfonic acid	9.28 ng/mL
							Perfluorotetradecanoic acid	10 ng/mL
							Perfluorotridecanoic acid	10 ng/mL
							Perfluoroundecanoic acid	10 ng/mL
.LC537-IS/SU_00002	08/02/19	02/02/19	Methanol, Lot 185850	200 mL	LCd3-NMeFOSAA_00012	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00013	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2PFOA_00015	200 uL	13C2 PFOA	0.05 ug/mL
					LCMPFDA_00024	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFHxA_00026	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFOS_00031	200 uL	13C4 PFOS	0.0478 ug/mL
..LCd3-NMeFOSAA_00012	08/23/23	WELLINGTON, Lot d3NMeFOSAA0818			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00013	08/23/23	WELLINGTON, Lot d5NEtFOSAA0818			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2PFOA_00015	10/10/23	Wellington Laboratories, Lot M2PFOA1018			(Purchased Reagent)		13C2 PFOA	50 ug/mL
..LCMPFDA_00024	02/16/23	Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFHxA_00026	05/22/23	Wellington Laboratories, Lot MPFHxA0518			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFOS_00031	09/11/23	Wellington Laboratories, Lot MPFOS0918			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LC537SP_00014	08/02/19	02/02/19	Methanol, Lot 185850	10 mL	LCbr-NEtFOSAA_00004	200 uL	N-ethylperfluorooctanesulfonamidoacetic acid	1 ug/mL
					LCbr-NMeFOSAA_00004	200 uL	N-methylperfluorooctanesulfonamidoacetic acid	1 ug/mL
					LCPFBSA_00005	200 uL	Perfluorobutanesulfonic acid	0.884 ug/mL
					LCPFDA_00012	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00012	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFHpA_00013	200 uL	Perfluoroheptanoic acid	1 ug/mL
					LCPFHxA_00012	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxS-br_00009	200 uL	Perfluorohexanesulfonic acid	0.91 ug/mL
					LCPFNA_00012	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00014	200 uL	Perfluorooctanoic acid	1 ug/mL
					LCPFOS-br_00009	200 uL	Perfluorooctanesulfonic acid	0.928 ug/mL
					LCPFTeDA_00012	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00012	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00012	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCbr-NEtFOSAA_00004	07/26/23	WELLINGTON, Lot brNEtFOSAA0718			(Purchased Reagent)		N-ethylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00004	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCPFBSA_00005	05/04/23	Wellington Laboratories, Lot LPFBS0418			(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00012	12/14/22	Wellington Laboratories, Lot PFDA1217			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00012	04/18/23	Wellington Laboratories, Lot PFDoA0418			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFHpA_00013	07/12/23	Wellington Laboratories, Lot PFHpA0718			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHxA_00012	05/18/23	Wellington Laboratories, Lot PFHxA0518			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00009	10/02/23	Wellington Laboratories, Lot brPFHxSK1018			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00012	02/16/23	Wellington Laboratories, Lot PFNA0218			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
..LCPFOA_00014	08/23/23	Wellington Laboratories, Lot PFOA0818			(Purchased Reagent)		Perfluorooctanoic acid	50 ug/mL
..LCPFOS-br_00009	04/18/23	Wellington Laboratories, Lot brPFOSK0418			(Purchased Reagent)		Perfluorooctanesulfonic acid	46.4 ug/mL
..LCPFTeDA_00012	08/23/23	Wellington Laboratories, Lot PFTeDA0818			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00012	02/16/23	Wellington Laboratories, Lot PFTrDA0218			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00012	08/23/23	Wellington Laboratories, Lot PFUdA0818			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LC537HSP_00002	08/02/19	02/02/19	Methanol, Lot 185850	250 mL	LC11ClPF3OUdS_00004	500 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.0942 ug/mL
					LC9Cl-PF3ONS_00004	500 uL	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	0.0932 ug/mL
					LCbr-NEtFOSAA_00004	500 uL	N-ethylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCbr-NMeFOSAA_00004	500 uL	N-methylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCDONA_00009	500 uL	DONA	0.0942 ug/mL
					LCHFPO-DA_00007	500 uL	Perfluoro(2-propoxypropanoic) acid	0.1 ug/mL
					LCPFBSA_00005	500 uL	Perfluorobutanesulfonic acid	0.0884 ug/mL
					LCPFDA_00012	500 uL	Perfluorodecanoic acid	0.1 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFDoA_00012	500 uL	Perfluorododecanoic acid	0.1 ug/mL
					LCPFHpA_00013	500 uL	Perfluoroheptanoic acid	0.1 ug/mL
					LCPFHxA_00012	500 uL	Perfluorohexanoic acid	0.1 ug/mL
					LCPFHxS-br_00009	500 uL	Perfluorohexanesulfonic acid	0.091 ug/mL
					LCPFNA_00012	500 uL	Perfluorononanoic acid	0.1 ug/mL
					LCPFOA_00014	500 uL	Perfluorooctanoic acid	0.1 ug/mL
					LCPFOS-br_00009	500 uL	Perfluorooctanesulfonic acid	0.0928 ug/mL
					LCPFTeDA_00012	500 uL	Perfluorotetradecanoic acid	0.1 ug/mL
					LCPFTrDA_00012	500 uL	Perfluorotridecanoic acid	0.1 ug/mL
					LCPFUdA_00012	500 uL	Perfluoroundecanoic acid	0.1 ug/mL
.LC11CIPF3OUdS_00004	07/13/23	Wellington Labs, Lot 11CIPF3OUdS0718			(Purchased Reagent)		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL
.LC9CI-PF3ONS_00004	05/18/23	Wellington Labs, Lot 9CIPF3ONS0518			(Purchased Reagent)		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	46.6 ug/mL
.LCbr-NEtFOSAA_00004	07/26/23	WELLINGTON, Lot brNEtFOSAA0718			(Purchased Reagent)		N-ethylperfluorooctanesulfonamidoacetic acid	50 ug/mL
.LCbr-NMeFOSAA_00004	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methylperfluorooctanesulfonamidoacetic acid	50 ug/mL
.LCDONA_00009	03/26/23	WELLINGTON, Lot NADONA0318			(Purchased Reagent)		DONA	47.1 ug/mL
.LCHFPO-DA_00007	10/24/21	WELLINGTON, Lot HFPODA1018			(Purchased Reagent)		Perfluoro(2-propoxypropanoic) acid	50 ug/mL
.LCPFBSA_00005	05/04/23	Wellington Laboratories, Lot LPFBS0418			(Purchased Reagent)		Perfluorobutanesulfonic acid	44.2 ug/mL
.LCPFDA_00012	12/14/22	Wellington Laboratories, Lot PFDA1217			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA_00012	04/18/23	Wellington Laboratories, Lot PFDoA0418			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFHpA_00013	07/12/23	Wellington Laboratories, Lot PFHpA0718			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
.LCPFHxA_00012	05/18/23	Wellington Laboratories, Lot PFHxA0518			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxS-br_00009	10/02/23	Wellington Laboratories, Lot brPFHxSK1018			(Purchased Reagent)		Perfluorohexanesulfonic acid	45.5 ug/mL
.LCPFNA_00012	02/16/23	Wellington Laboratories, Lot PFNA0218			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
.LCPFOA_00014	08/23/23	Wellington Laboratories, Lot PFOA0818			(Purchased Reagent)		Perfluorooctanoic acid	50 ug/mL
.LCPFOS-br_00009	04/18/23	Wellington Laboratories, Lot brPFOSK0418			(Purchased Reagent)		Perfluorooctanesulfonic acid	46.4 ug/mL
.LCPFTeDA_00012	08/23/23	Wellington Laboratories, Lot PFTeDA0818			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA_00012	02/16/23	Wellington Laboratories, Lot PFTrDA0218			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUdA_00012	08/23/23	Wellington Laboratories, Lot PFUdA0818			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Reagent

LC11CIPF3OUdS_00004

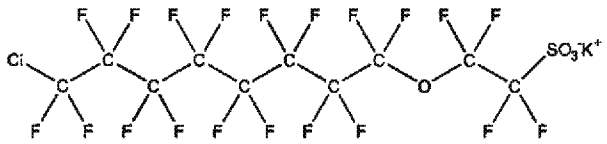
1416128
ID: LC11ClPF3OUdS_00004
Exp:07/13/23 Prpd:CBW Opn:10/29/18
11Cl-PF3OUdS

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 11Cl-PF3OUdS **LOT NUMBER:** 11ClPF3OUdS0718
COMPOUND: Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate

STRUCTURE: **CAS #:** 83329-89-9



MOLECULAR FORMULA: $C_{10}F_{20}ClSO_4K$ **MOLECULAR WEIGHT:** 670.69
CONCENTRATION: 50.0 ± 2.5 µg/ml (K Salt) **SOLVENT(S):** Methanol
47.1 ± 2.4 µg/ml (11Cl-PF3OUdS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/13/2018
EXPIRY DATE: (mm/dd/yyyy) 07/13/2023
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.
- This compound is a minor component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 07/20/2018 (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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

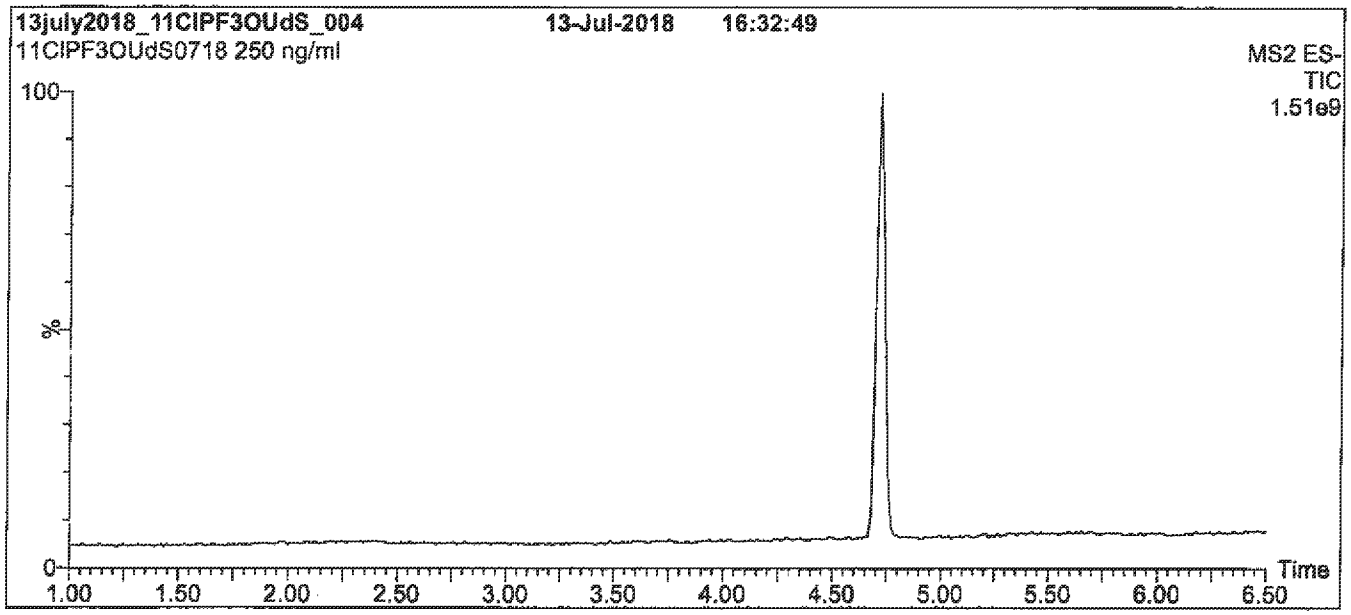
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

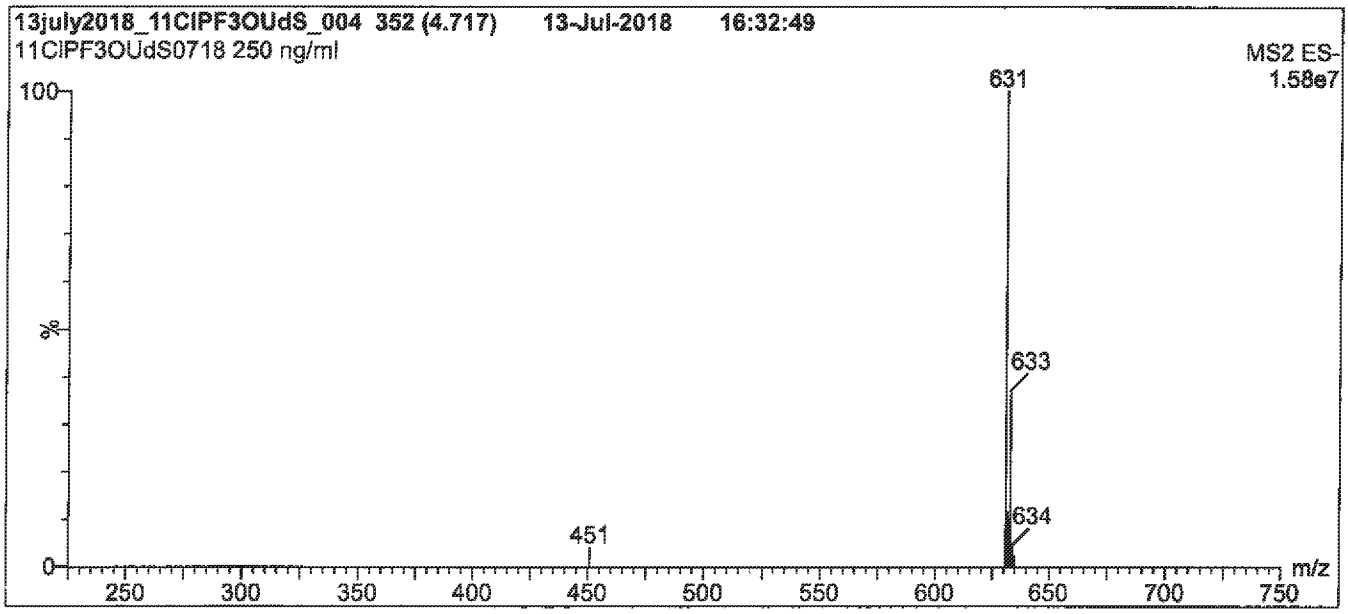
CALA

ANAB

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **11Cl-PF3OUdS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

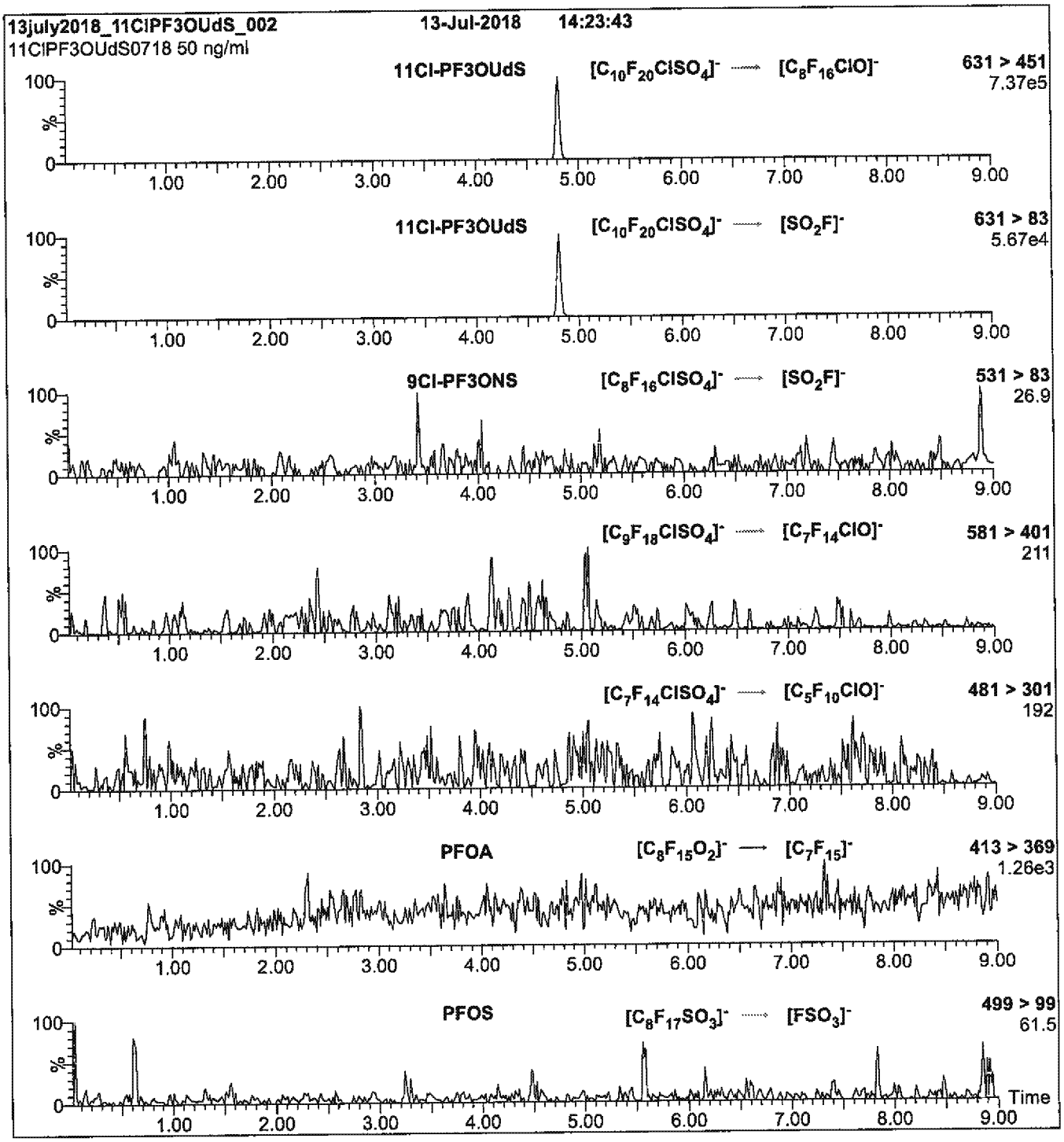
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.60
Cone Voltage (V) = 70.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **11Cl-PF3OUdS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (11Cl-PF3OUdS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.45e-3
Collision Energy (eV) = 24

Reagent

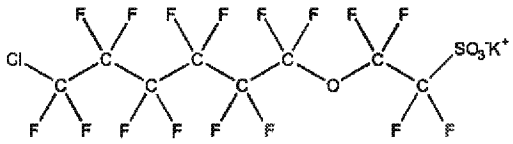
LC9CI-PF3ONS_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 9Cl-PF3ONS **LOT NUMBER:** 9ClPF3ONS0518
COMPOUND: Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate

STRUCTURE: **CAS #:** 73606-19-6



MOLECULAR FORMULA: $C_8F_{16}ClSO_4K$ **MOLECULAR WEIGHT:** 570.67
CONCENTRATION: 50.0 ± 2.5 µg/ml (K Salt) **SOLVENT(S):** Methanol
46.6 ± 2.3 µg/ml (9Cl-PF3ONS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/18/2018
EXPIRY DATE: (mm/dd/yyyy) 05/18/2023
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.
- This compound is the major component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI Date: 05/25/2018 (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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

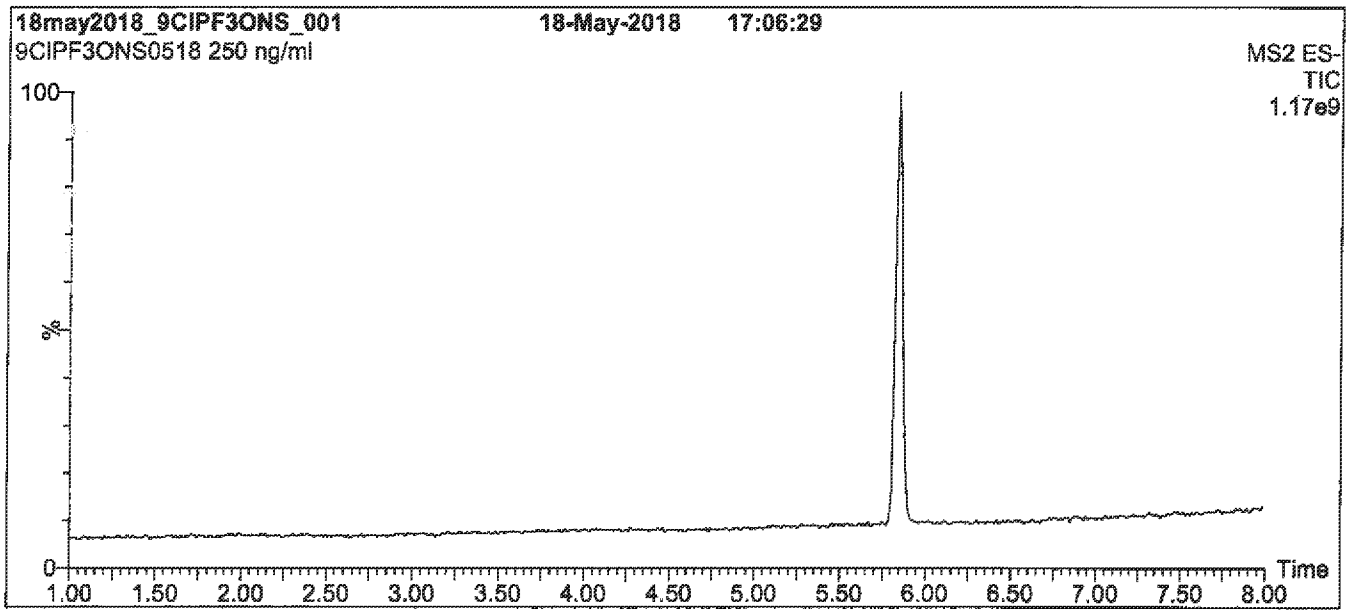
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

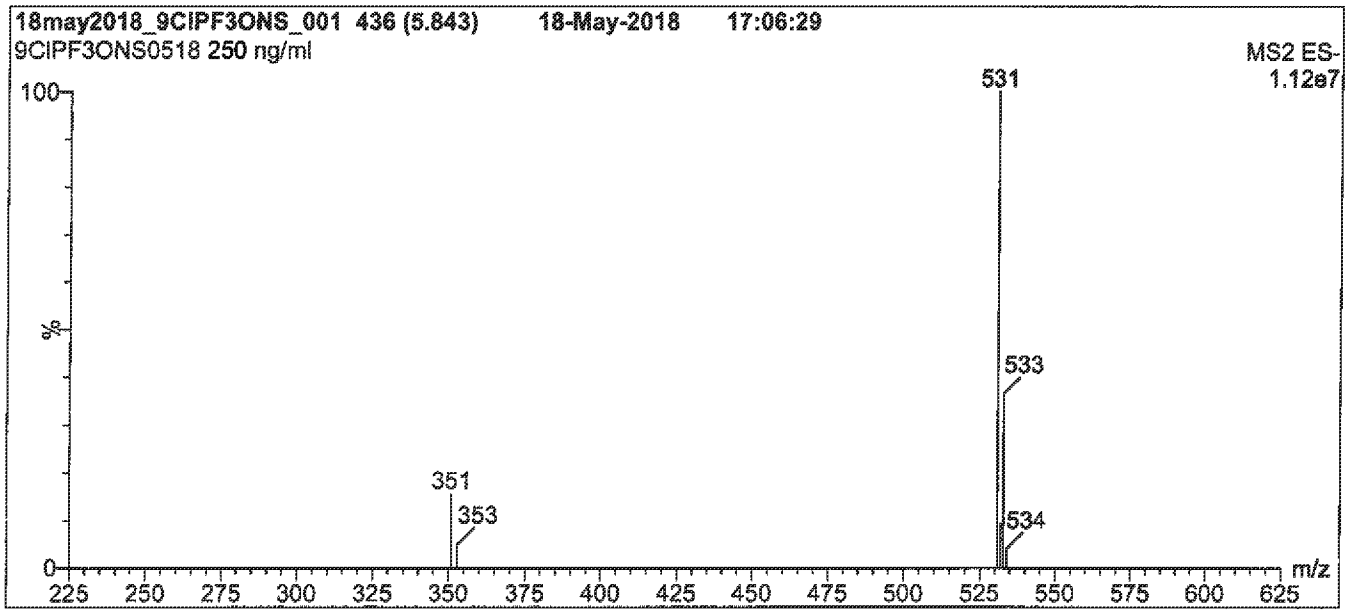
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **9Cl-PF3ONS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

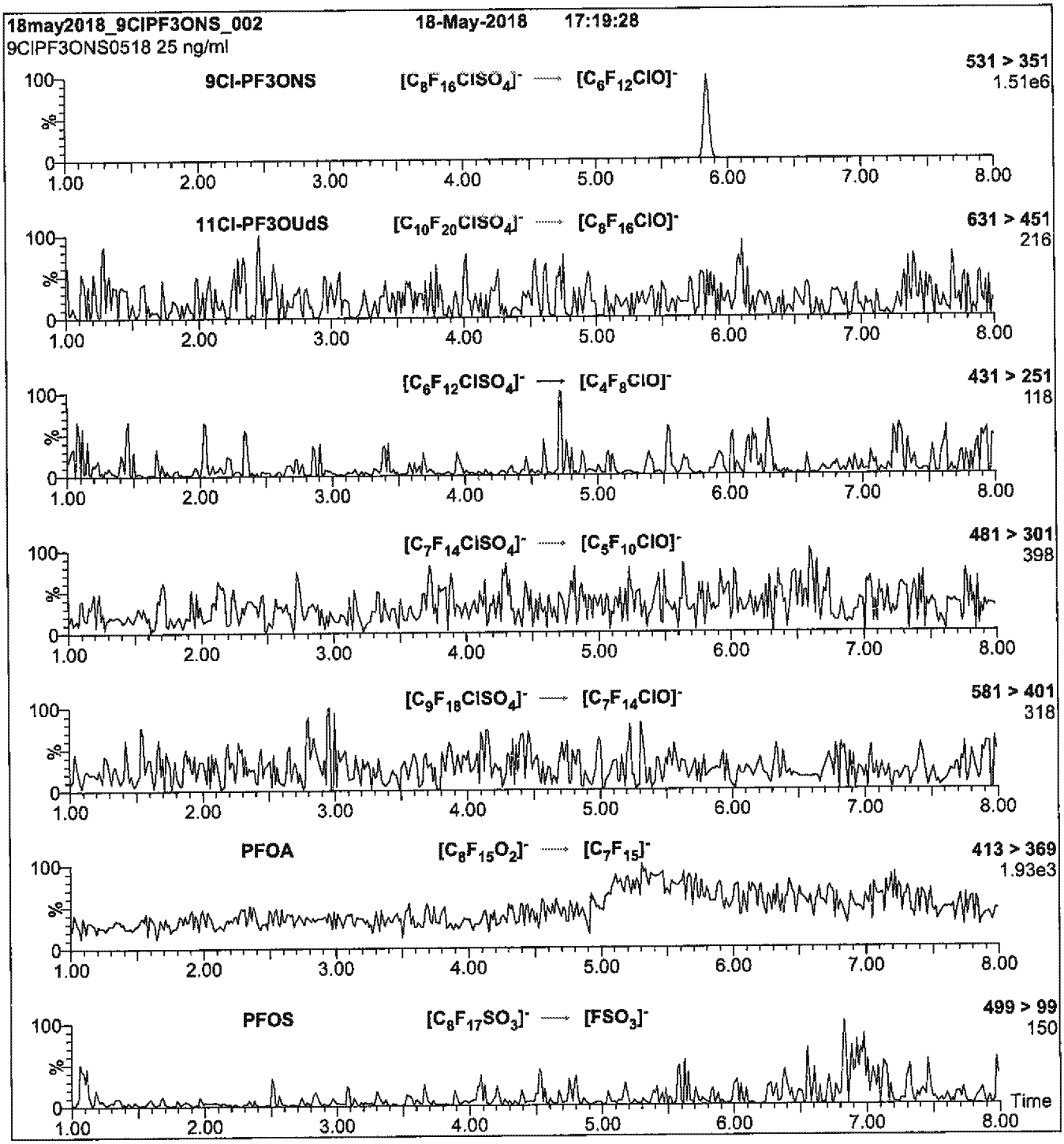
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.60
Cone Voltage (V) = 70.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **9Cl-PF3ONS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (9Cl-PF3ONS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 20

Reagent

LCbr-NEtFOSAA_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSAA

N-Ethylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-NEtFOSAA
LOT NUMBER:	brNEtFOSAA0718
CONCENTRATION:	50.0 ± 2.5 µg/ml
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	07/25/2018
LAST TESTED: (mm/dd/yyyy)	07/26/2018
EXPIRY DATE: (mm/dd/yyyy)	07/26/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamidoacetic acid (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 ^{19}F-NMR
Figure 1: LC/MS Data (TIC 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.
* Contains 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.
* Contains ~ 0.6% of perfluoro-n-octanoic acid.

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INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

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

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LIMITED WARRANTY:

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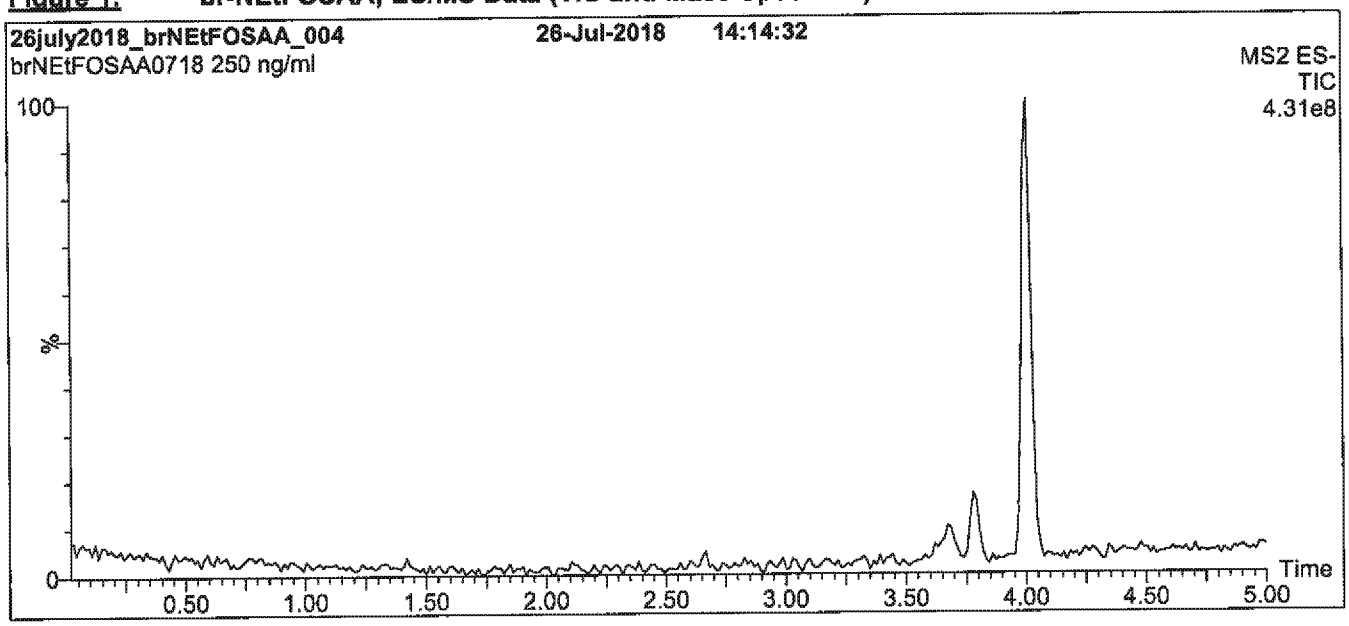
Table A: **br-NEtFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

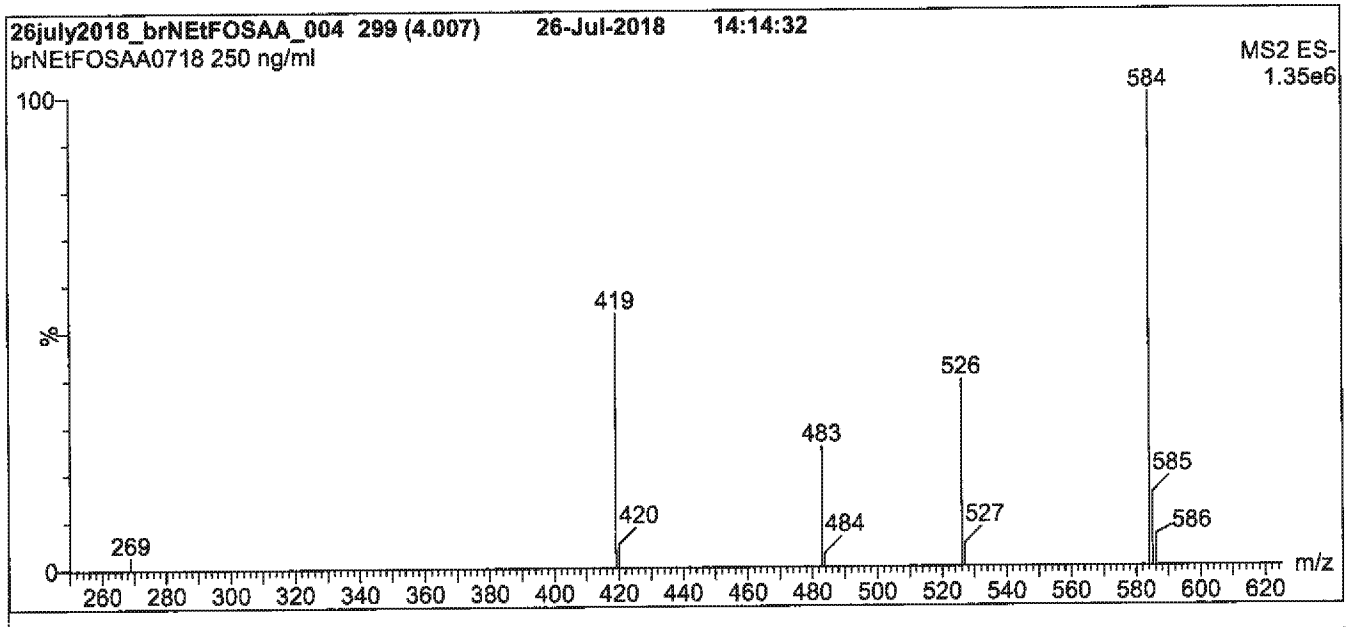
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(C_2H_5)CH_2CO_2H$	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	2.3
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	2.2
4	N-ethylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	5.4
5	N-ethylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(C_2H_5)CH_2CO_2H$	10.4
6	N-ethylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(C_2H_5)CH_2CO_2H$	0.3
7	N-ethylperfluoro-4,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF(CF_2)_3SO_2N(C_2H_5)CH_2CO_2H$	0.3
8	N-ethylperfluoro-3,5-dimethylhexanesulfonamidoacetic acid	$CF_3CF(CF_3)CF_2CF(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	0.3
9	Other Unidentified Isomers		1.3

* Percent of total N-ethylperfluorooctanesulfonamidoacetic acid isomers only.

Certified By: Ex. 4 CBI **Date:** 07/27/2018 (mm/dd/yyyy)

Figure 1: **br-NEtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

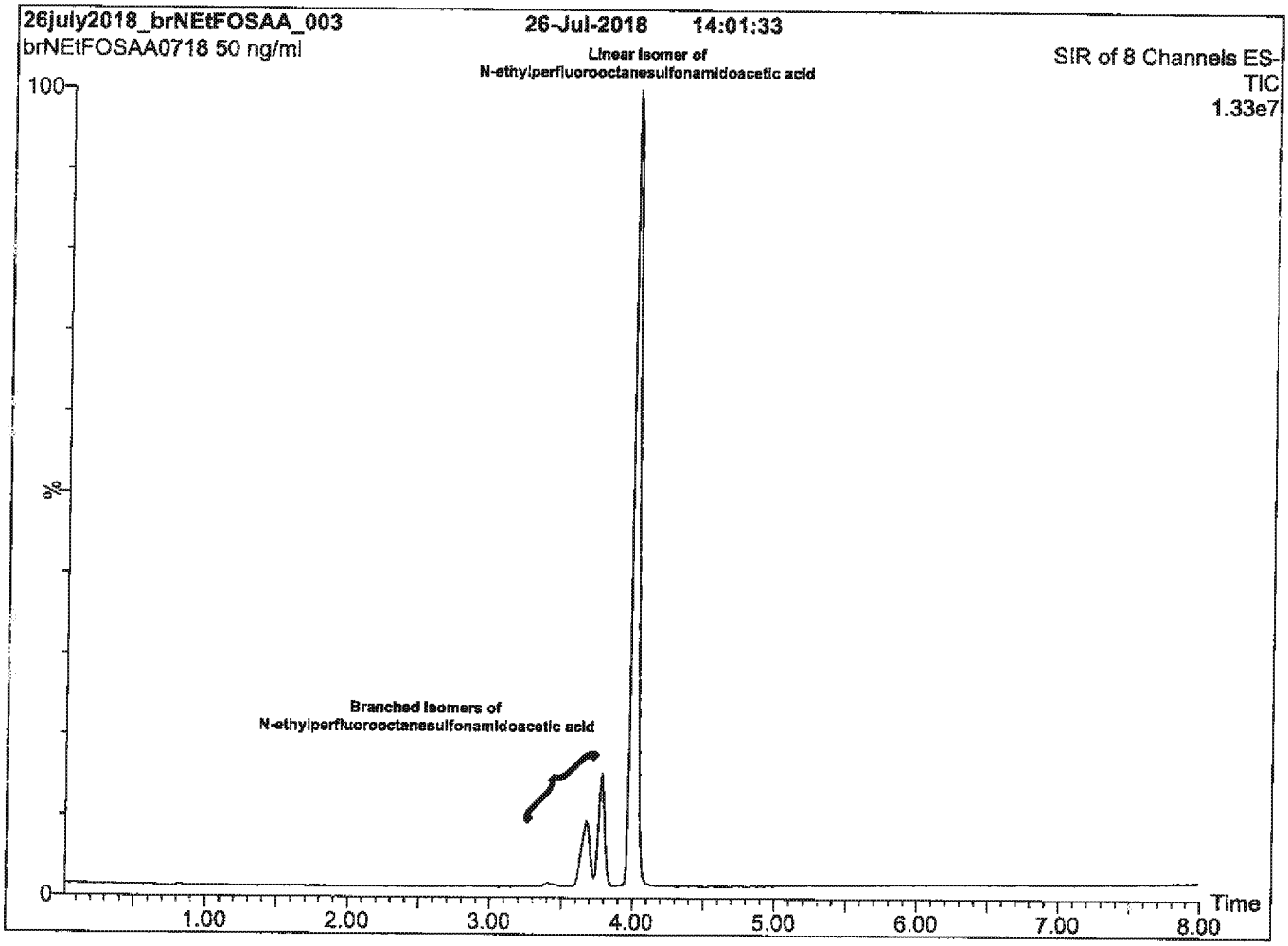
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 64
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-NEtFOSAA; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

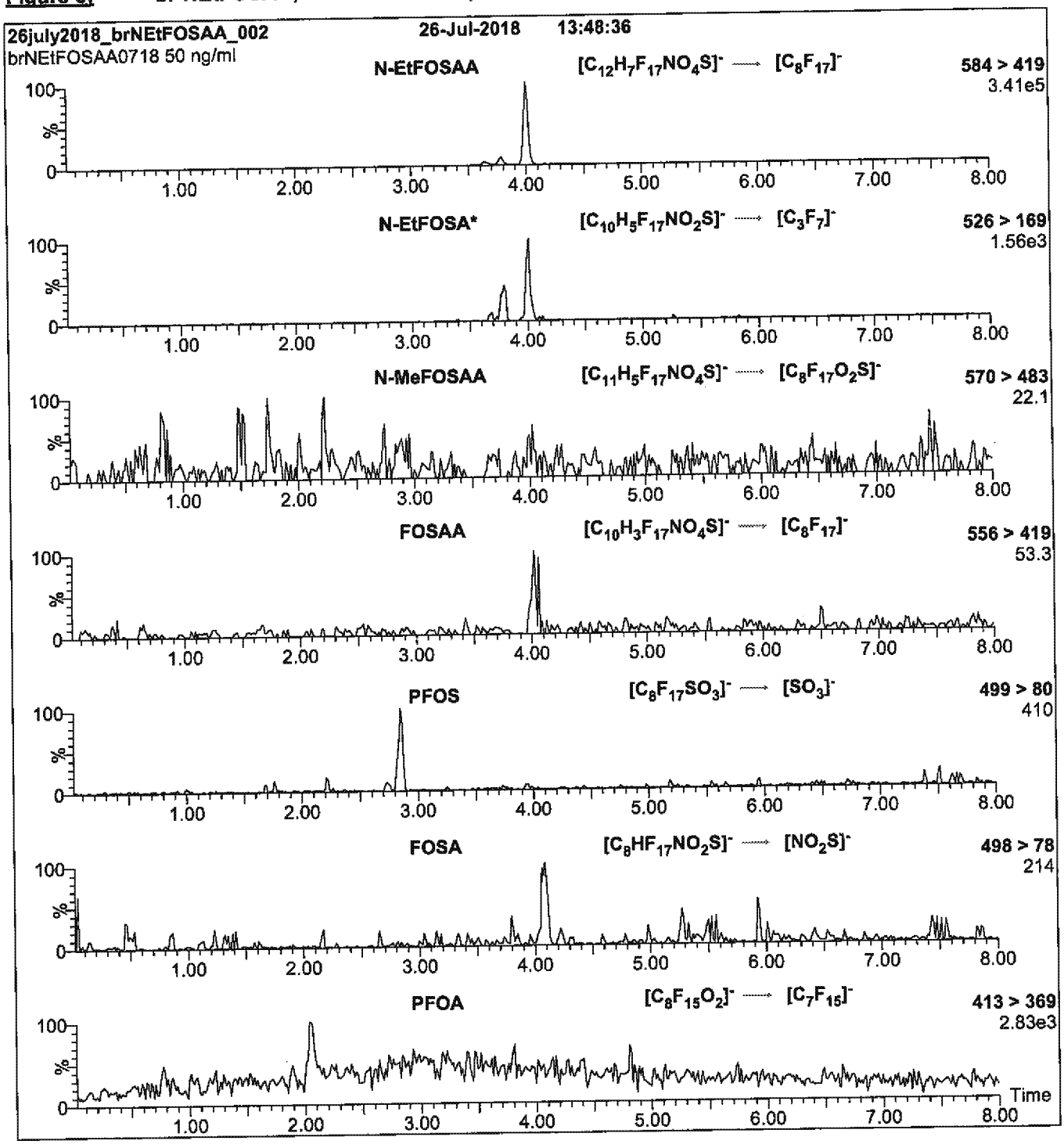
Flow: 300 µl/min

MS Parameters

Experiment: SIR (8 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = variable (2-64)
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 3: br-NEtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



***Note**: N-EtFOSA is formed by in-source fragmentation.

Conditions for Figure 3:

Injection: On-column (br-NEtFOSAA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.76e-3
Collision Energy (eV) = 18

Reagent

LCbr-NMeFOSAA_00004

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSAA

N-Methylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched isomers

PRODUCT CODE:	br-NMeFOSAA
LOT NUMBER:	brNMeFOSAA0118
CONCENTRATION:	50.0 ± 2.5 µg/ml
SOLVENT(S):	Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	01/10/2018
LAST TESTED: (mm/dd/yyyy)	01/17/2018
EXPIRY DATE: (mm/dd/yyyy)	01/17/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamidoacetic acid (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 ^{19}F-NMR
Figure 1: LC/MS Data (TIC 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.
- Contains 4 mole eq. of NaOH to prevent conversion of the acetic acid moiety to its respective methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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HANDLING:

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HOMOGENEITY:

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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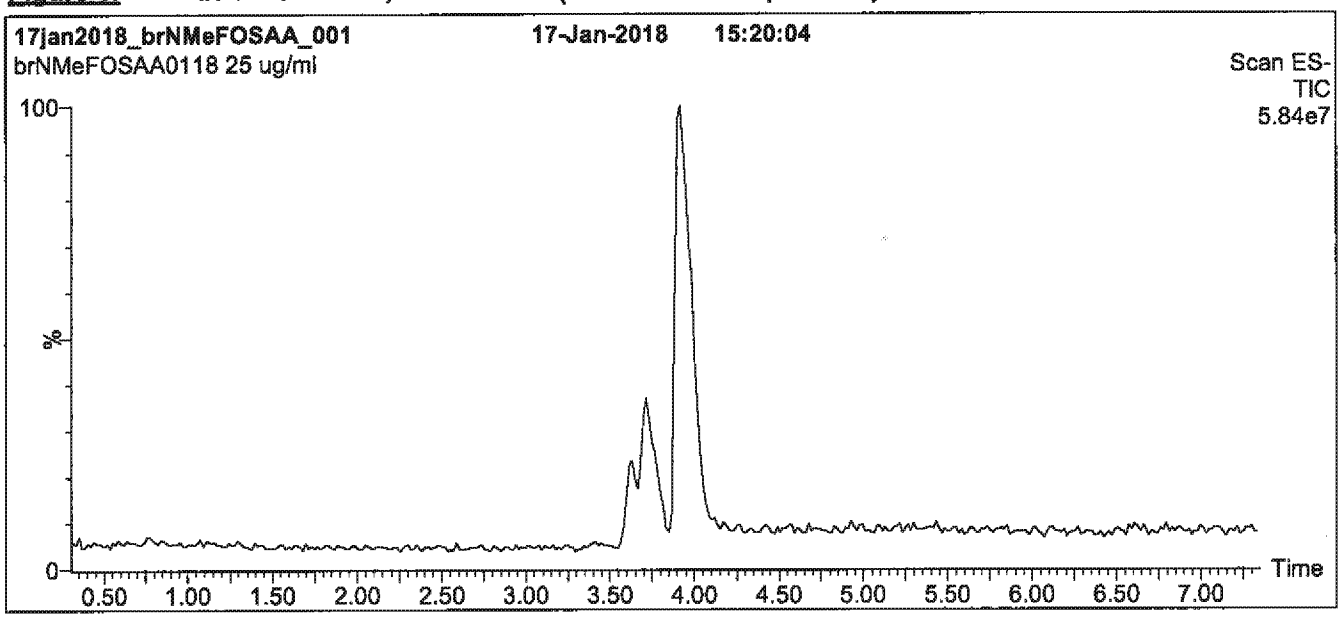
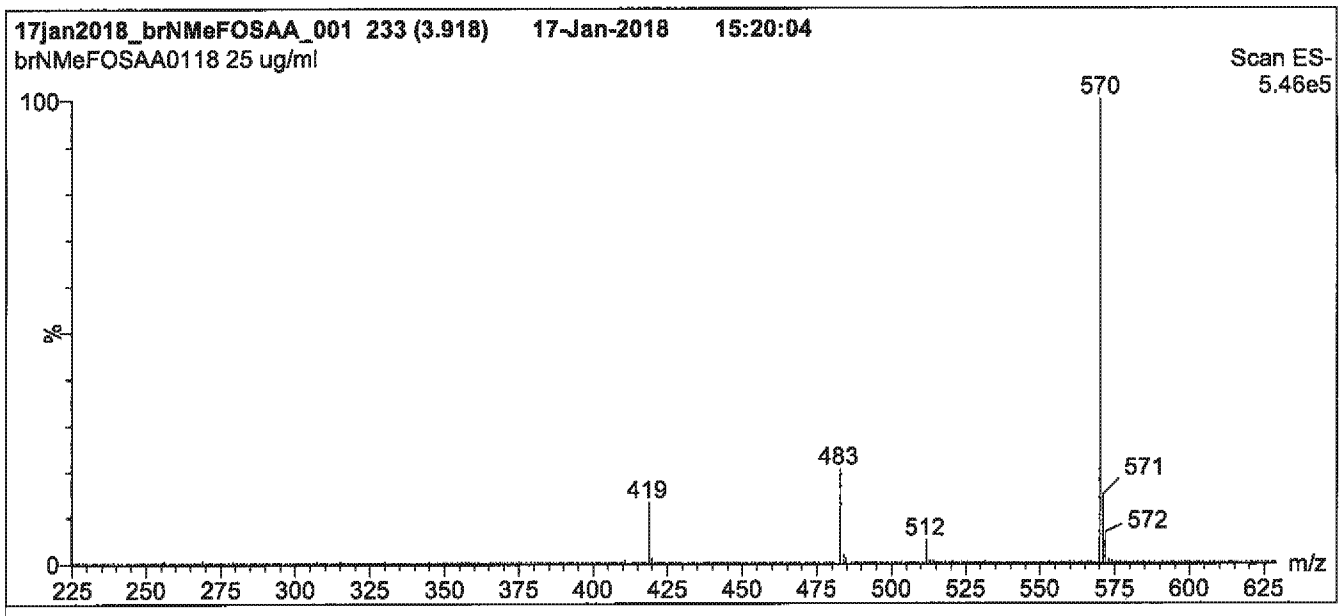
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-methylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2H$	76.0
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$	0.7
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(CH_3)CH_2CO_2H$	2.0
4	N-methylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	6.0
5	N-methylperfluoro-6-methylheptanesulfonamidoacetic acid	$CF_3CF(CF_3)(CF_2)_5SO_2N(CH_3)CH_2CO_2H$	14.0
6	N-methylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$CF_3C(CF_3)_2(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	0.2
7	Other Unidentified Isomers		1.1

* Percent of total N-methylperfluorooctanesulfonamidoacetic acid isomers only.

Certified By: Ex. 4 CBI **Date:** 03/22/2018 (mm/dd/yyyy)

Figure 1: **br-NMeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

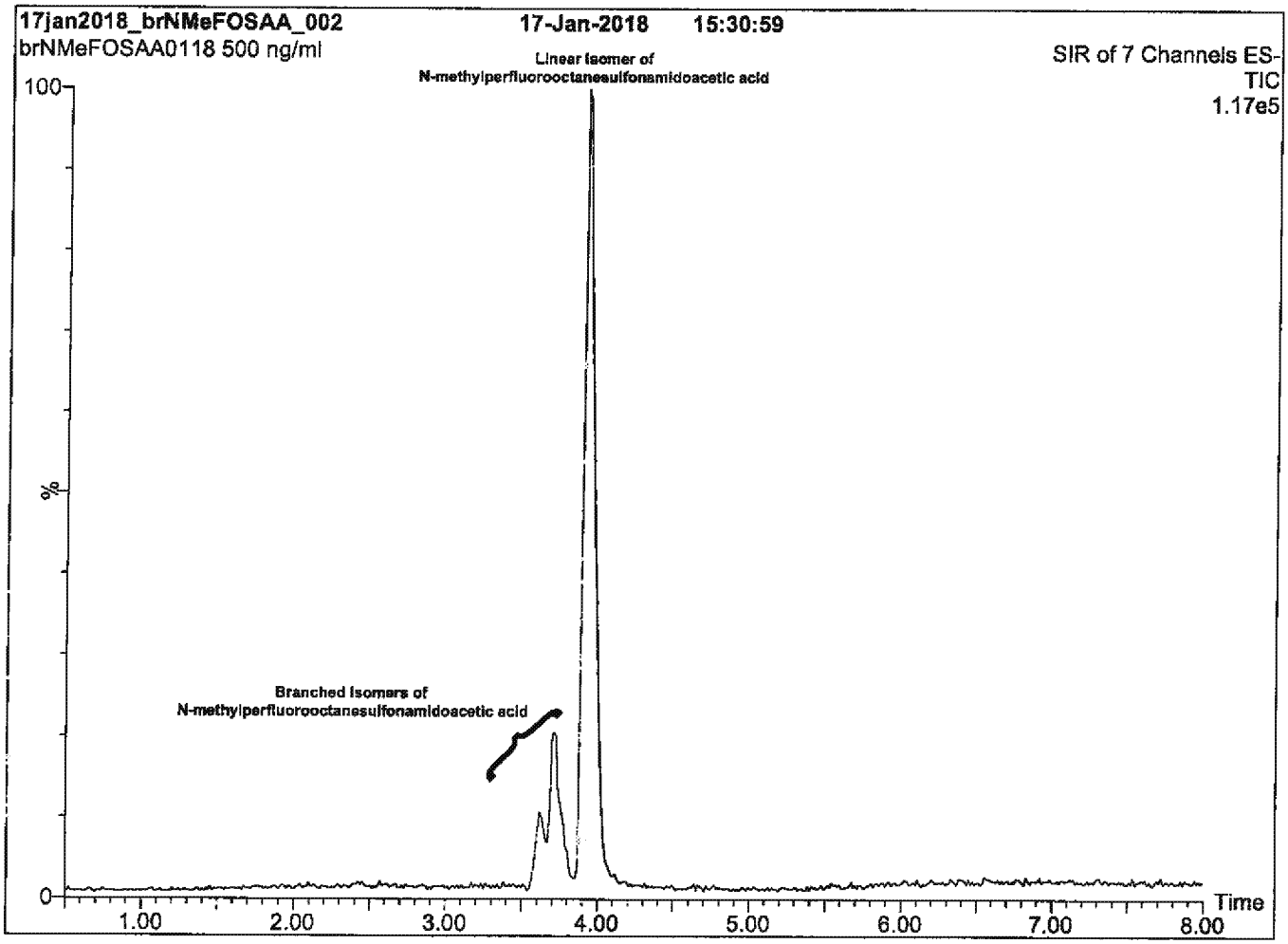
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-NMeFOSAA; LC/MS Data (SIR)**



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.

Time: 10 min

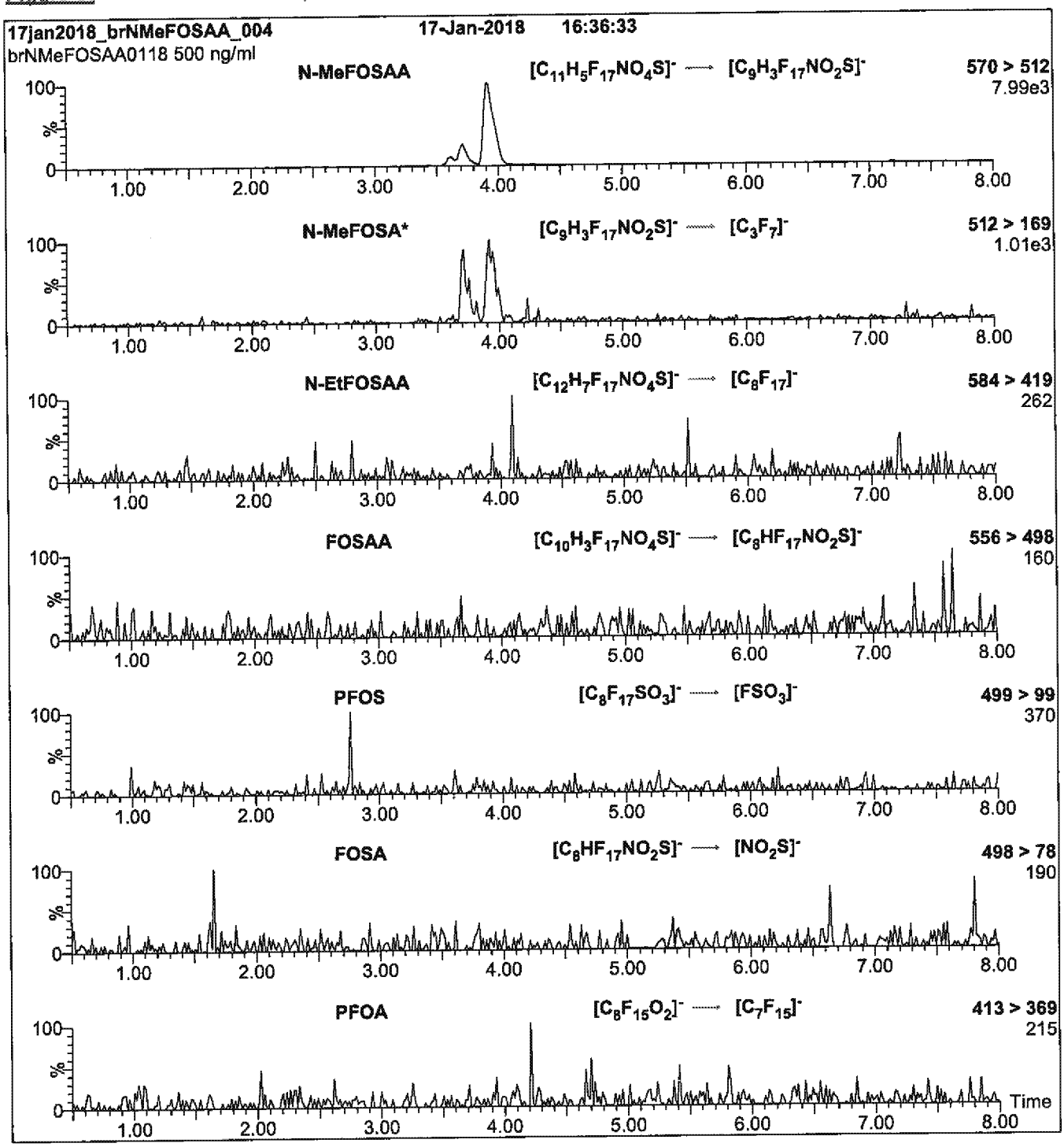
Flow: 300 µl/min

MS Parameters

Experiment: SIR (7 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15-60
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 3: **br-NMeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



*Note: N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11-40 (variable)

Reagent

LCd3-NMeFOSAA_00012

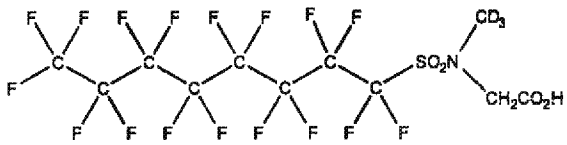
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0818

COMPOUND: N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{11}D_3H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	574.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	08/23/2018		
EXPIRY DATE: (mm/dd/yyyy)	08/23/2023		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 08/24/2018 (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

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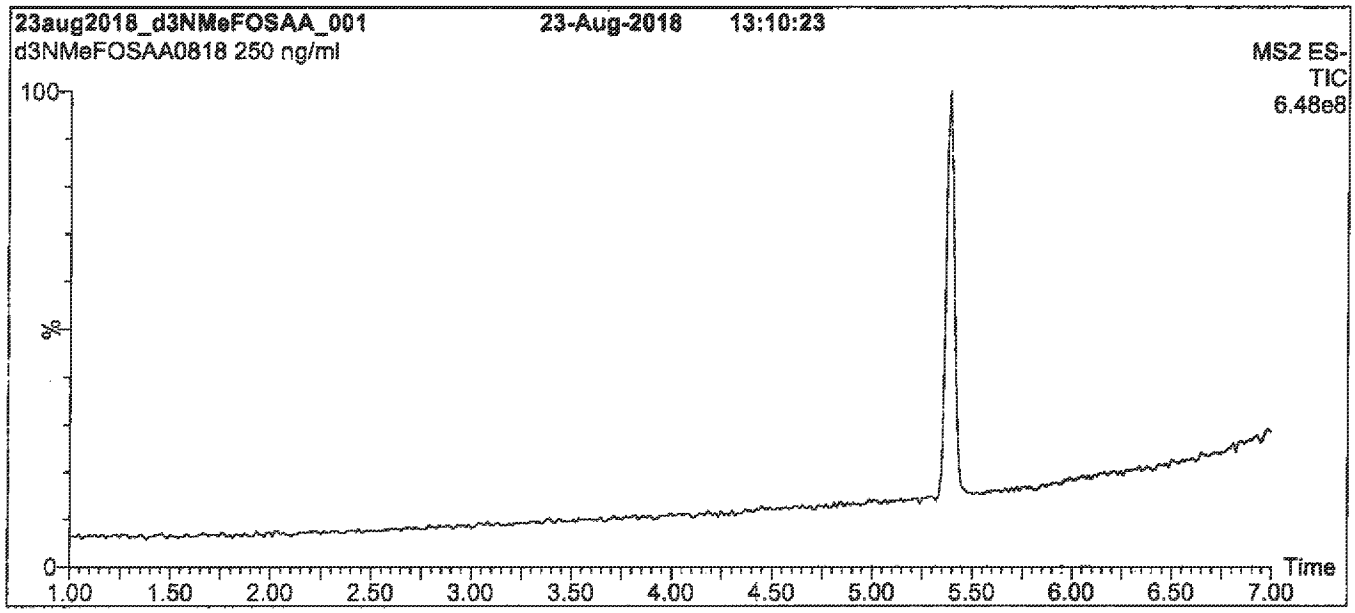
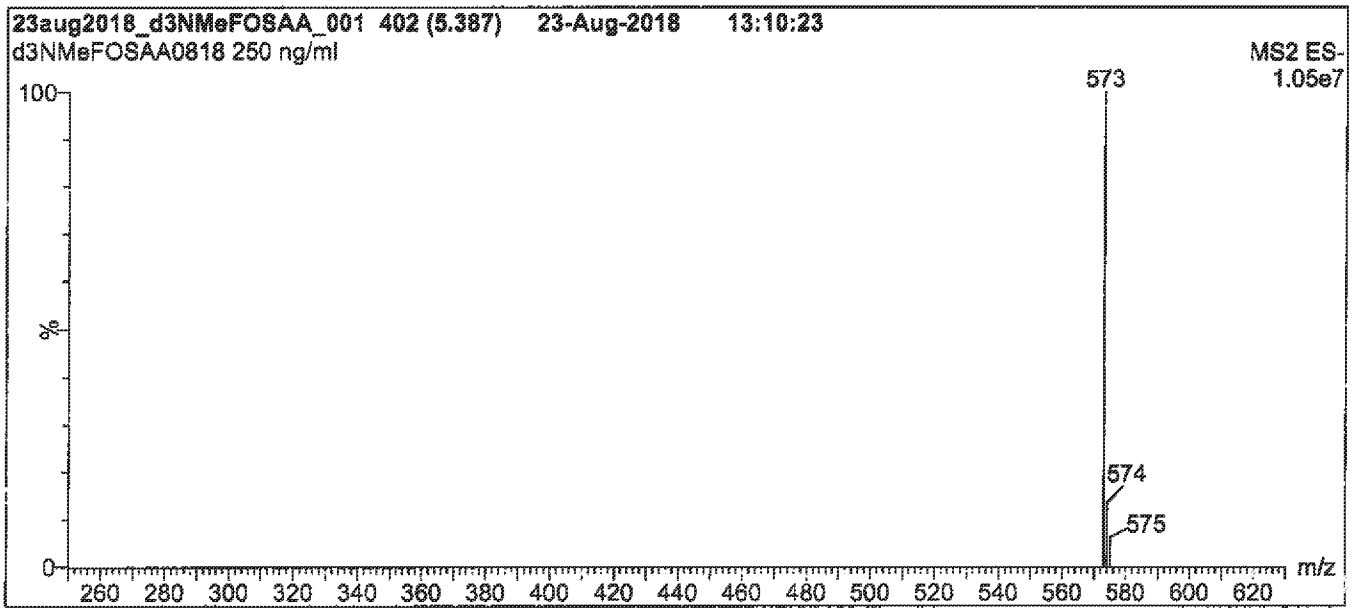
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

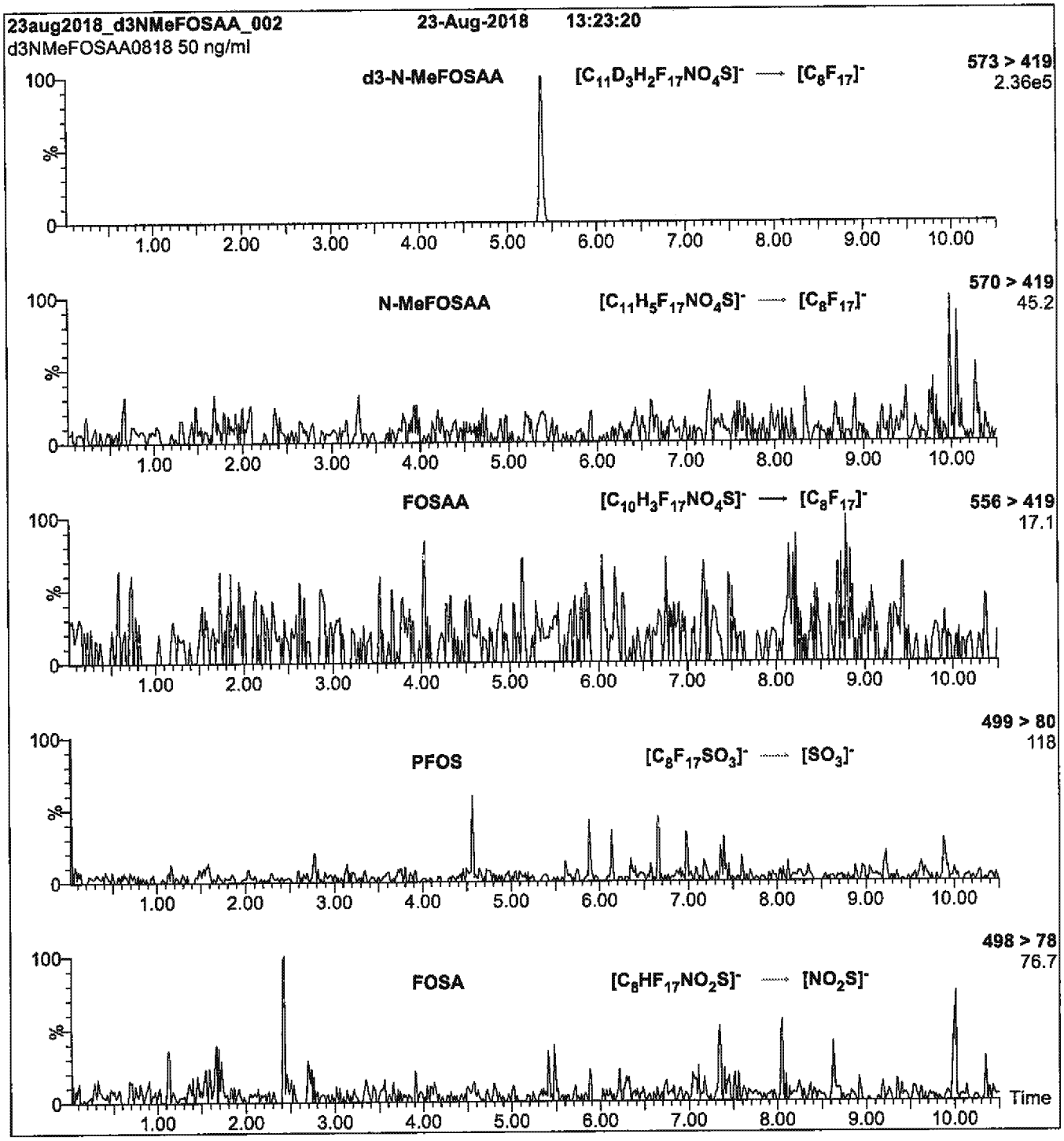
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Figure 2: **d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (d3-N-MeFOSAA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 18

Reagent

LCd5-NEtFOSAA_00013

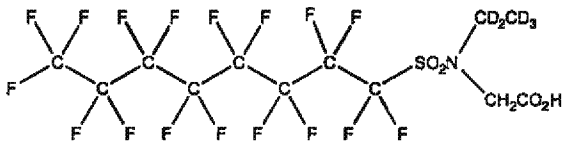
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA0818

COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{12}D_5H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	590.26
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	08/23/2018		
EXPIRY DATE: (mm/dd/yyyy)	08/23/2023		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 08/28/2018 (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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

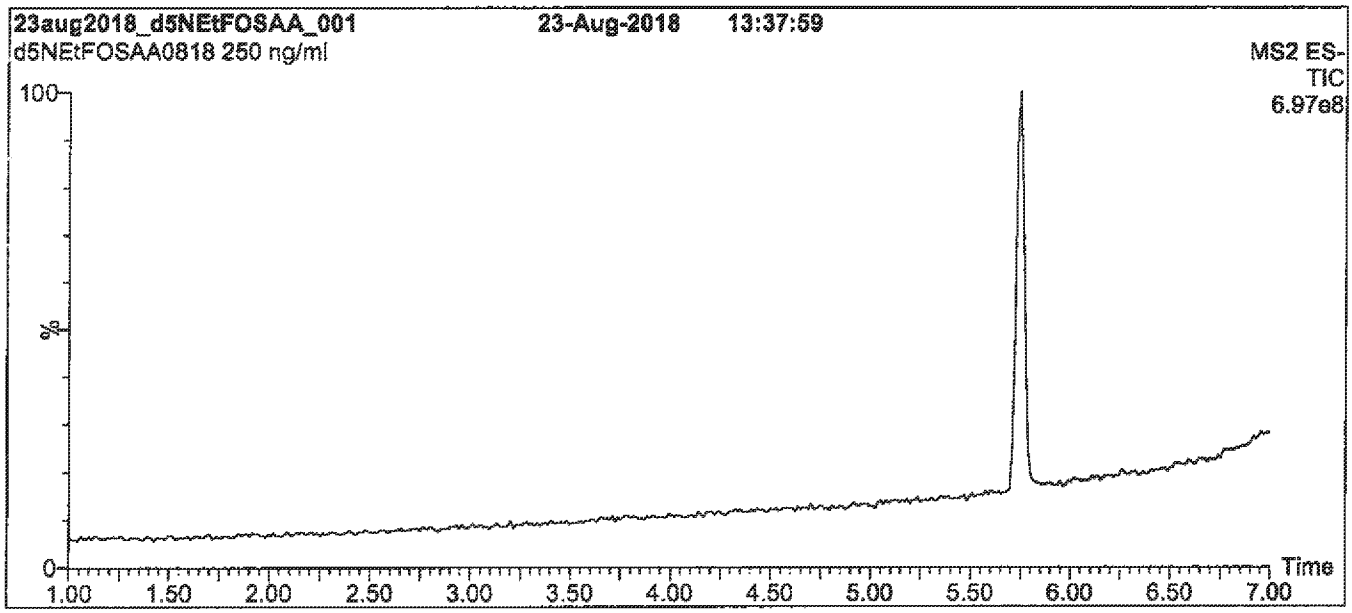
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

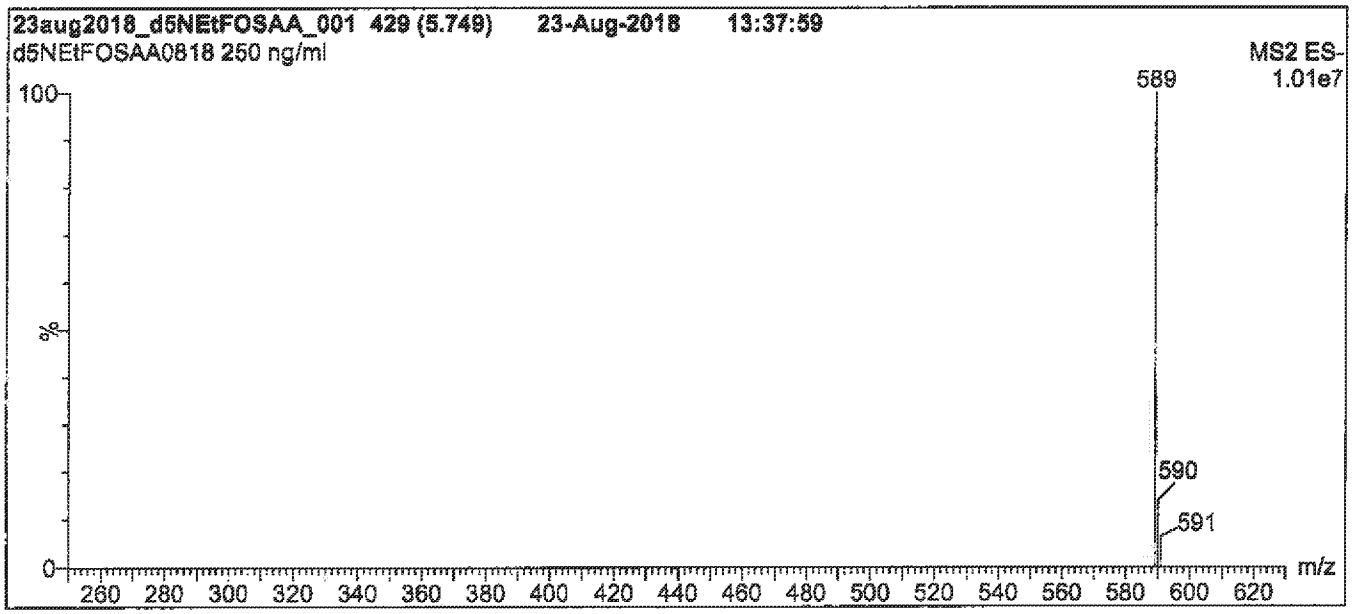
CALA

ANAB ACCREDITED

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

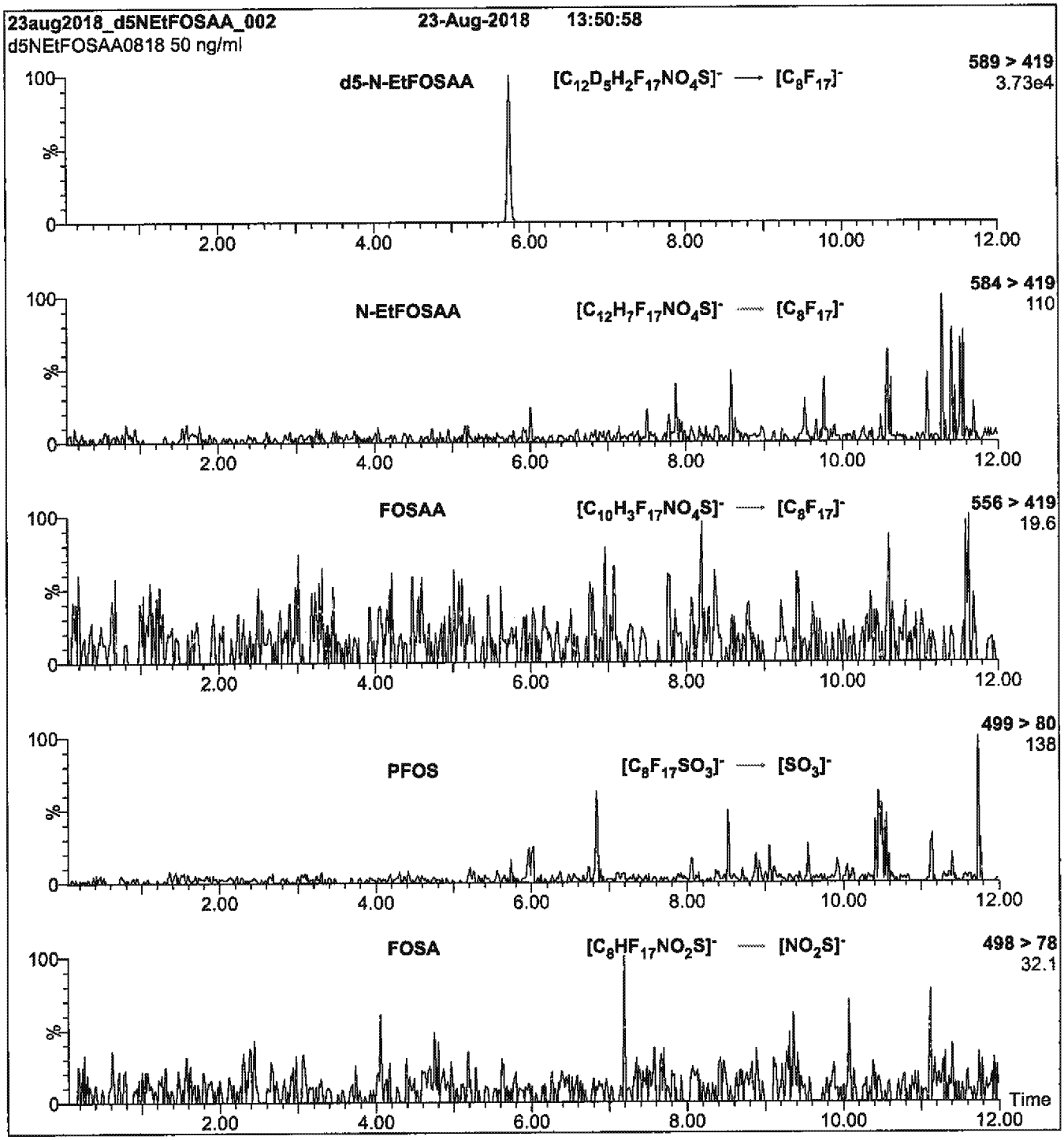
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Figure 2: **d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (d5-N-EtFOSAA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 18

Reagent

LCDONA_00009

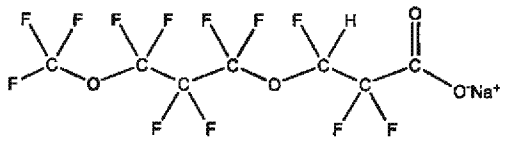
1416205
ID: LCDONA_00009
Exp:03/26/23 Prpd:CBW Opn:10/29/18
DONA

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: NaDONA
LOT NUMBER: NaDONA0318
COMPOUND: Sodium dodecafluoro-3H-4,8-dioxanonanoate

STRUCTURE:
CAS #: 958445-44-8 (ammonium salt)



MOLECULAR FORMULA: $C_7HF_{12}O_4Na$
MOLECULAR WEIGHT: 400.05
CONCENTRATION: 50 ± 2.5 µg/ml (Na Salt)
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/26/2018
EXPIRY DATE: (mm/dd/yyyy) 03/26/2023
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.
- Product is commercially known as ADONA.
- 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: Ex. 4 CBI **Date:** 03/27/2018 (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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

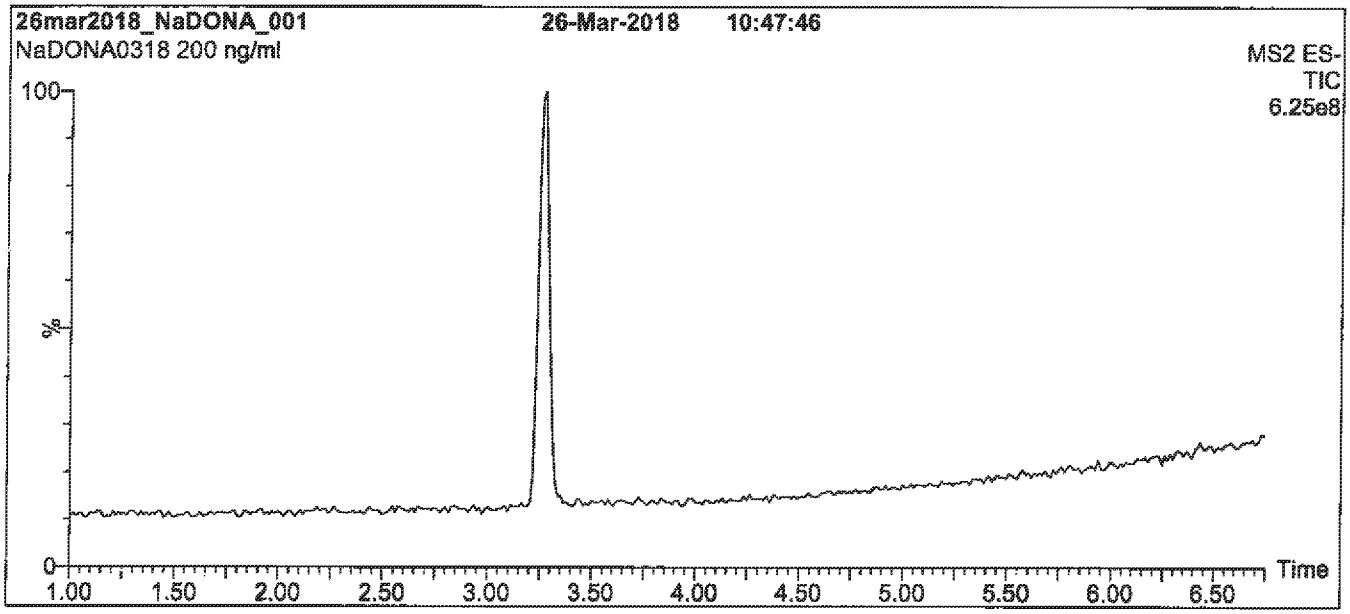
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

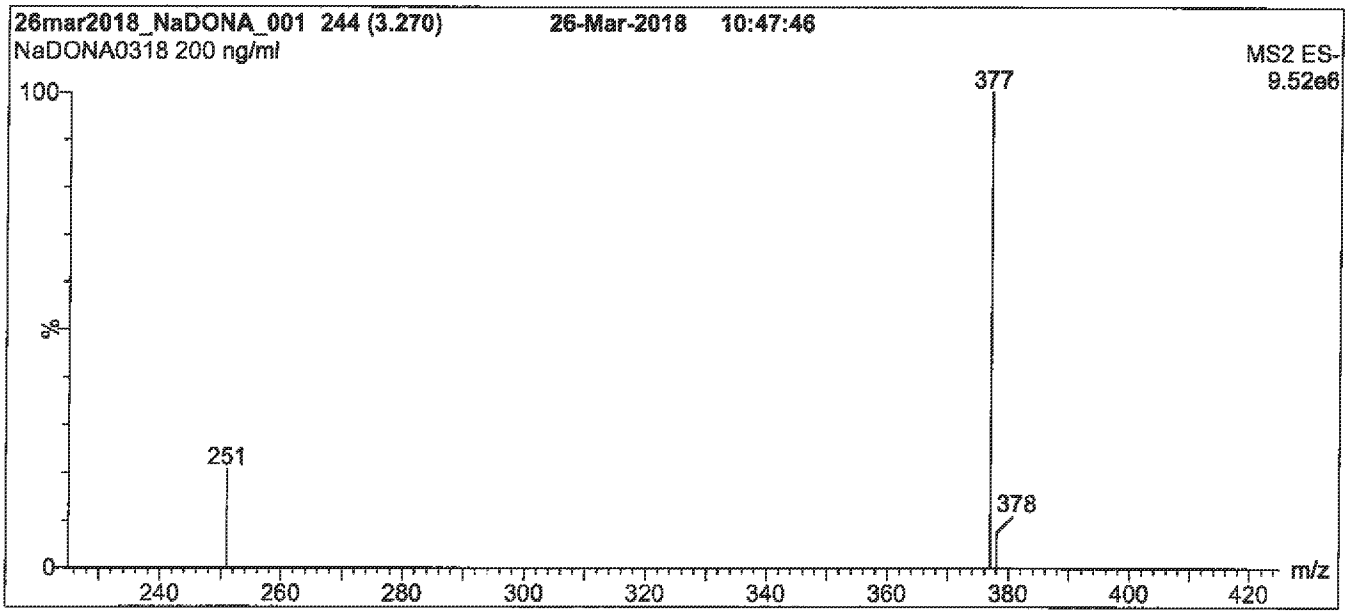
CALA

ANAB ACCREDITED

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

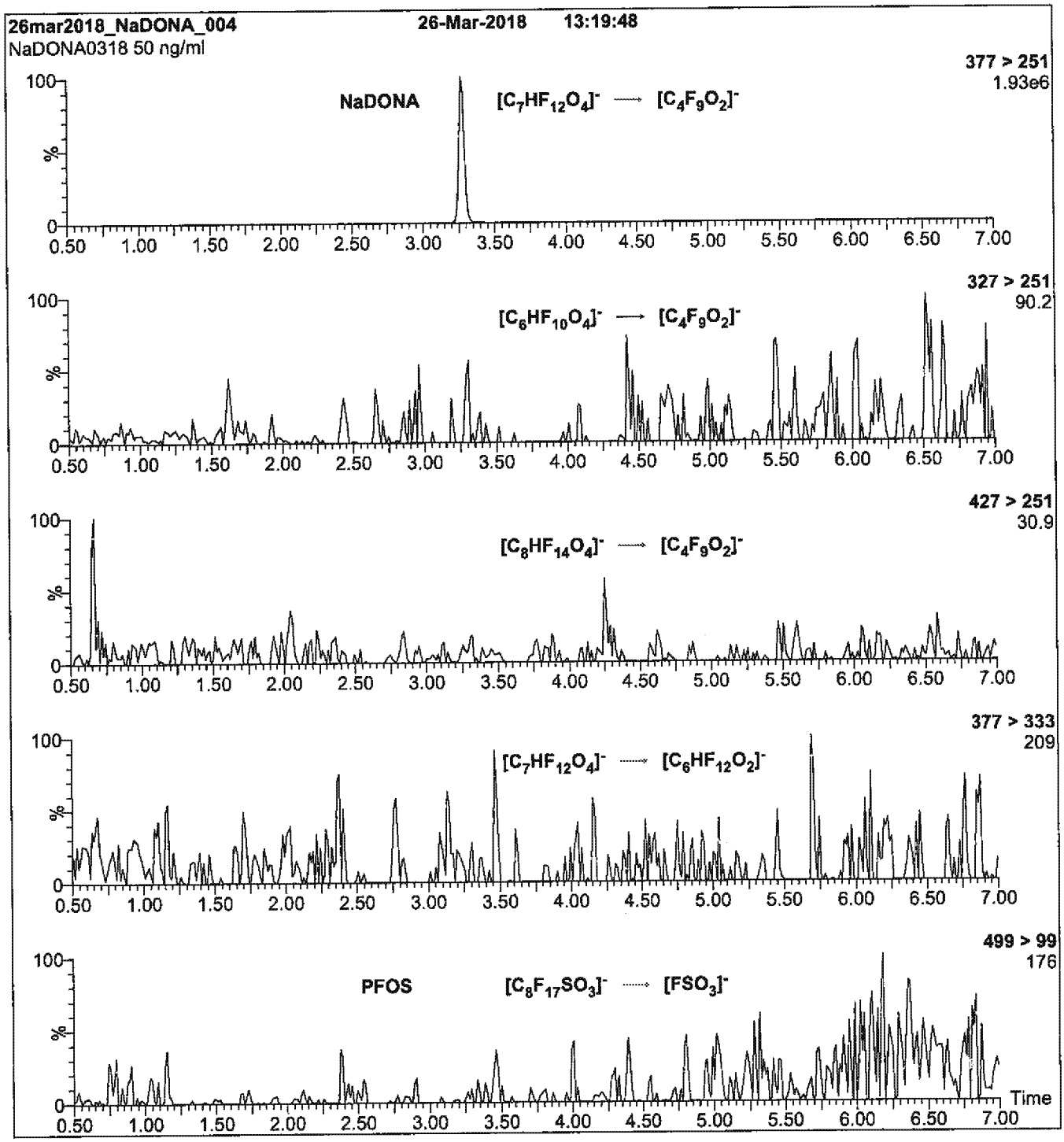
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.70
Cone Voltage (V) = 20.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: On-column (NaDONA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.65e-3
Collision Energy (eV) = 10

Reagent

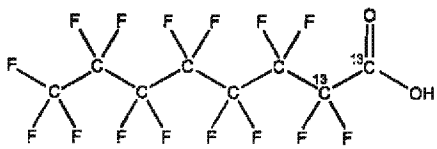
LCM2PFOA_00015

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]octanoic acid
LOT NUMBER: M2PFOA1018

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_6HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 416.05
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 10/10/2018
EXPIRY DATE: (mm/dd/yyyy) 10/10/2023
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 < 0.1% of perfluoro-n-[$^{13}C_2$]heptanoic acid ($^{13}C_1$-PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI Date: 10/17/2018 (mm/dd/yyyy)

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

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

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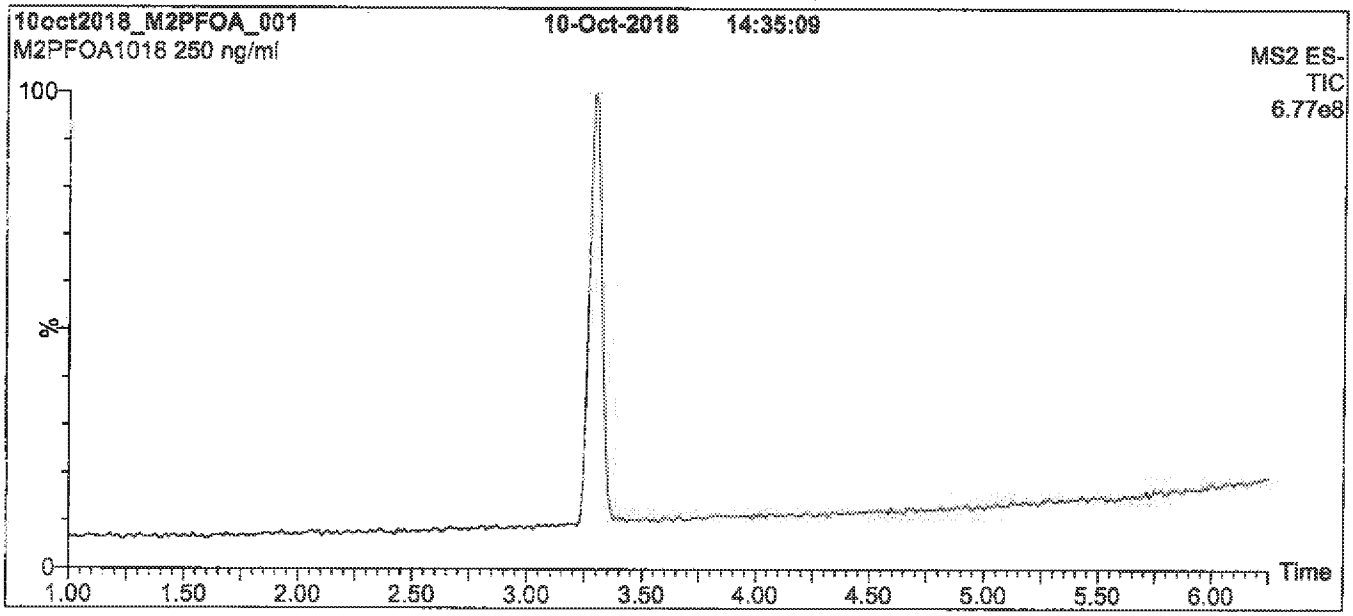
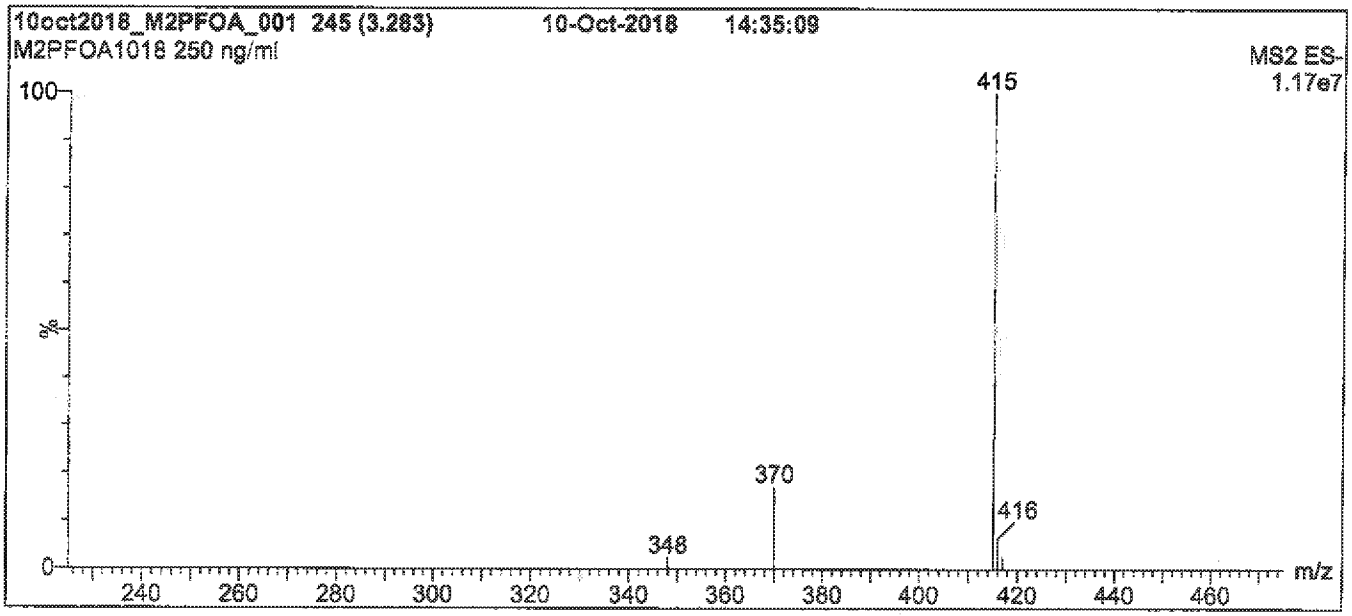
CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **M2PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

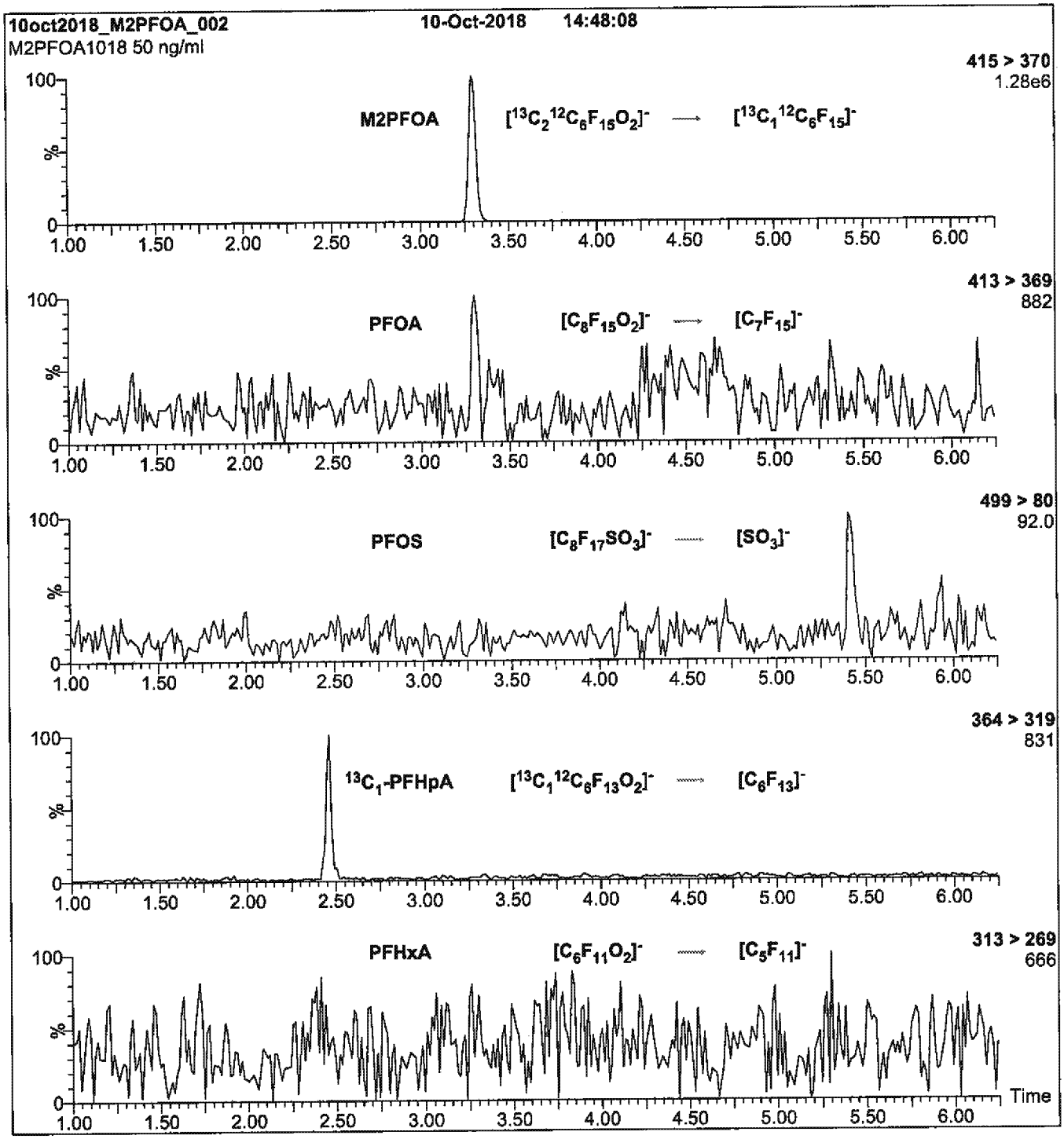
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Figure 2: **M2PFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M2PFOA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.97e-3
Collision Energy (eV) = 8

Reagent

LCM3HFPO-DA_00006

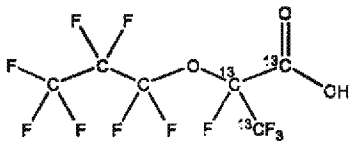
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3HFPO-DA **LOT NUMBER:** M3HFPODA1018

COMPOUND: 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-$^{13}C_3$-propanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_3{}^{12}C_3HF_{11}O_3$	**MOLECULAR WEIGHT:**	333.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_3$)
LAST TESTED: (mm/dd/yyyy)	10/24/2018		
EXPIRY DATE: (mm/dd/yyyy)	10/24/2021		
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 ~ 1.9% of the linear M3HFPO-DA isomer.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 10/31/2018 (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

INTENDED USE:

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HANDLING:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

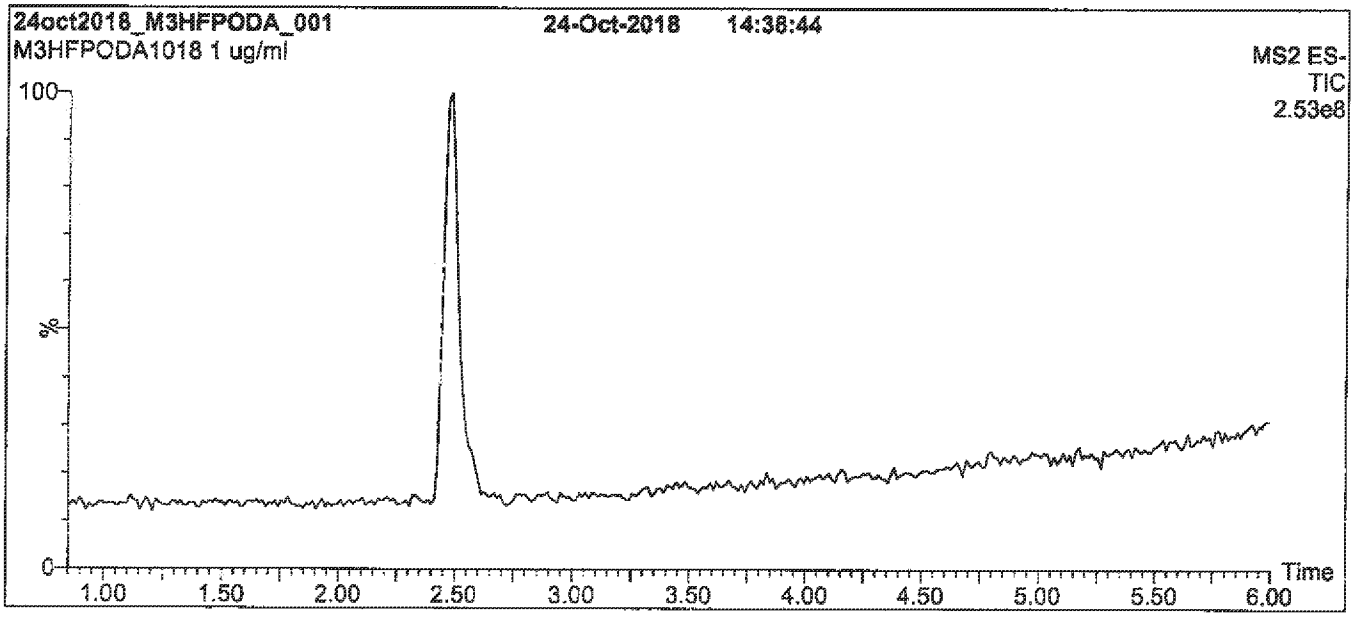
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

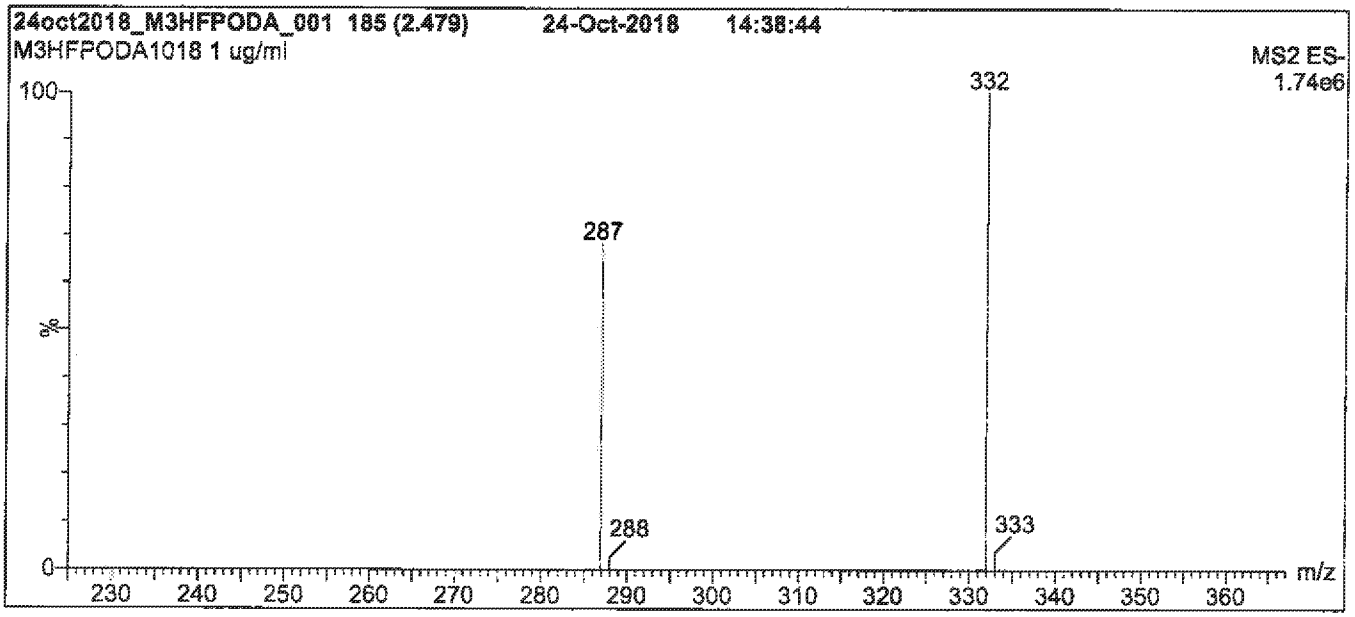
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: **M3HFPO-DA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

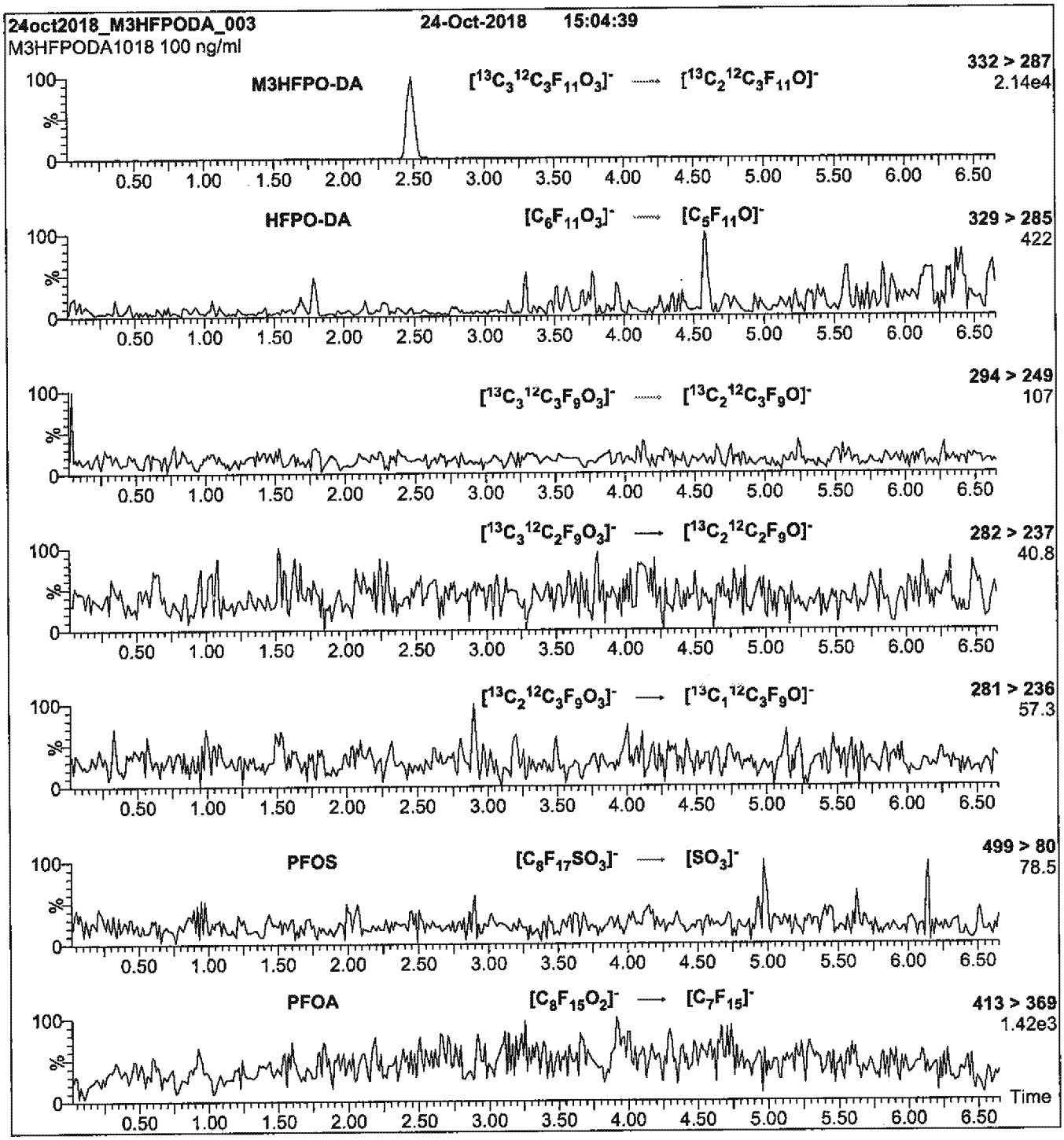
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Desolvation Temperature (°C) = 325
Desolvation Gas Flow (l/hr) = 1000

Figure 2: **M3HFPO-DA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (M3HFPO-DA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.02e-3
Collision Energy (eV) = 6

Reagent

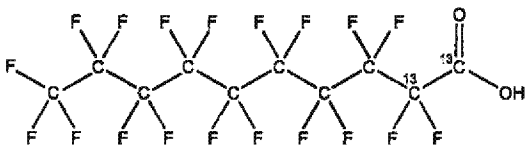
LCMPFDA_00024

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA
LOT NUMBER: MPFDA0218
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_8HF_{18}O_2$
MOLECULAR WEIGHT: 516.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 02/16/2018
EXPIRY DATE: (mm/dd/yyyy) 02/16/2023
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 < 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 03/07/2018 (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

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CALA

ANAB ACCREDITED

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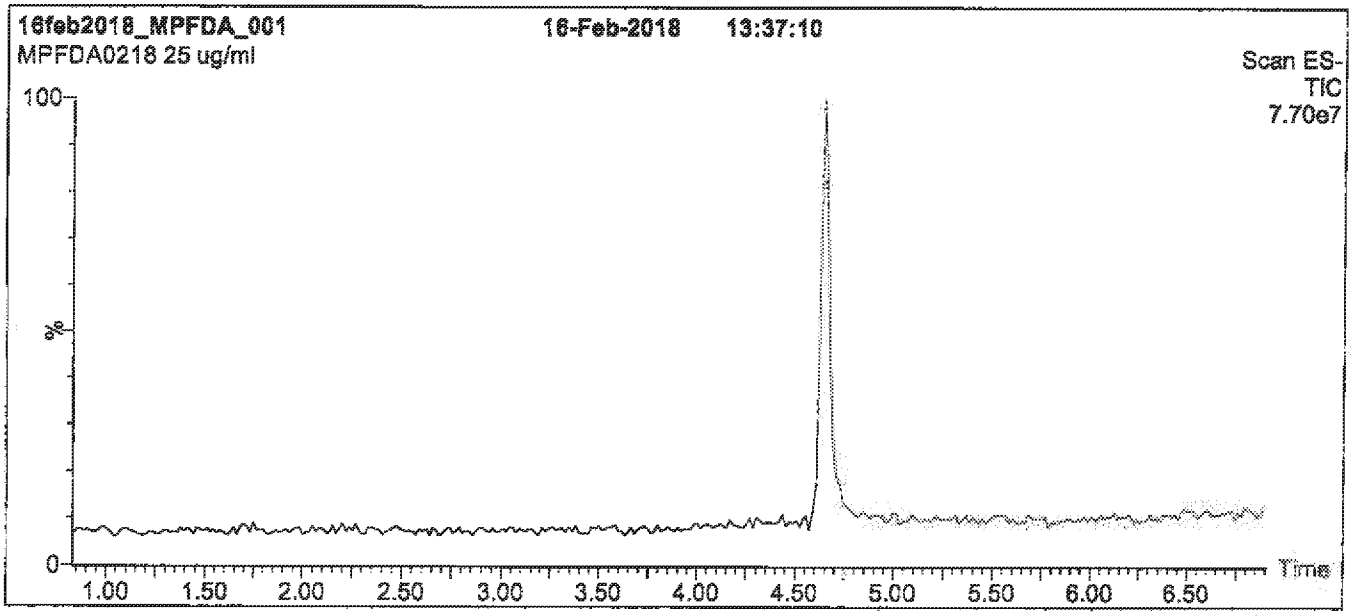
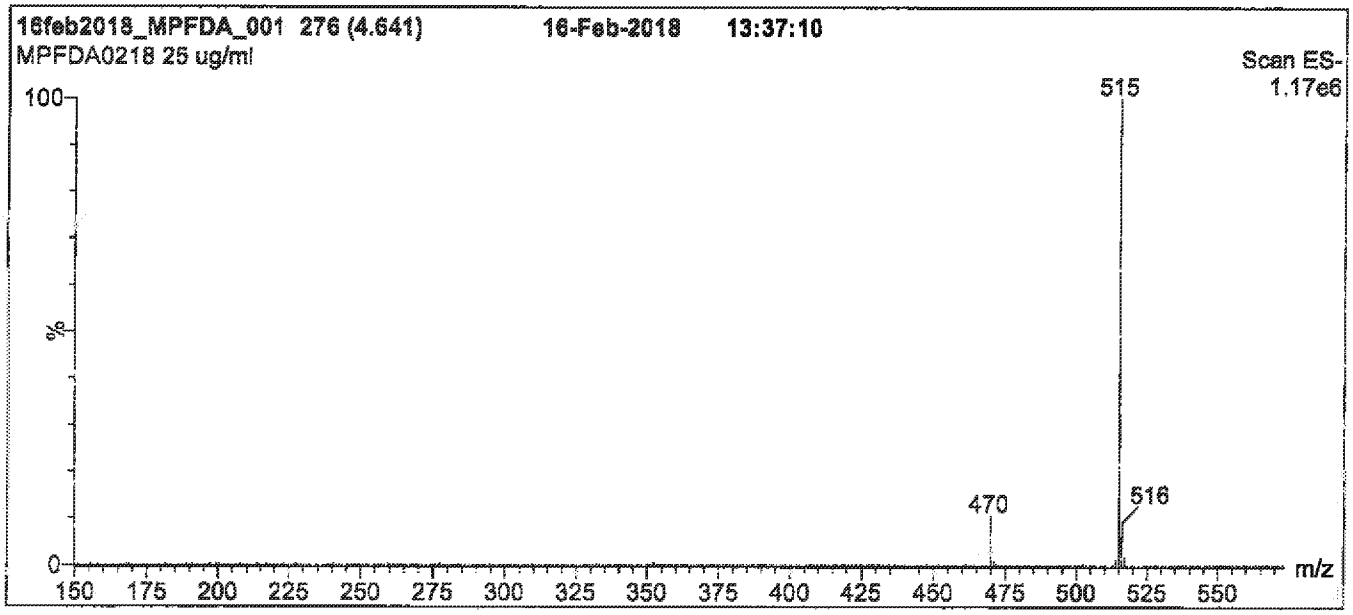
Figure 1: **MPFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

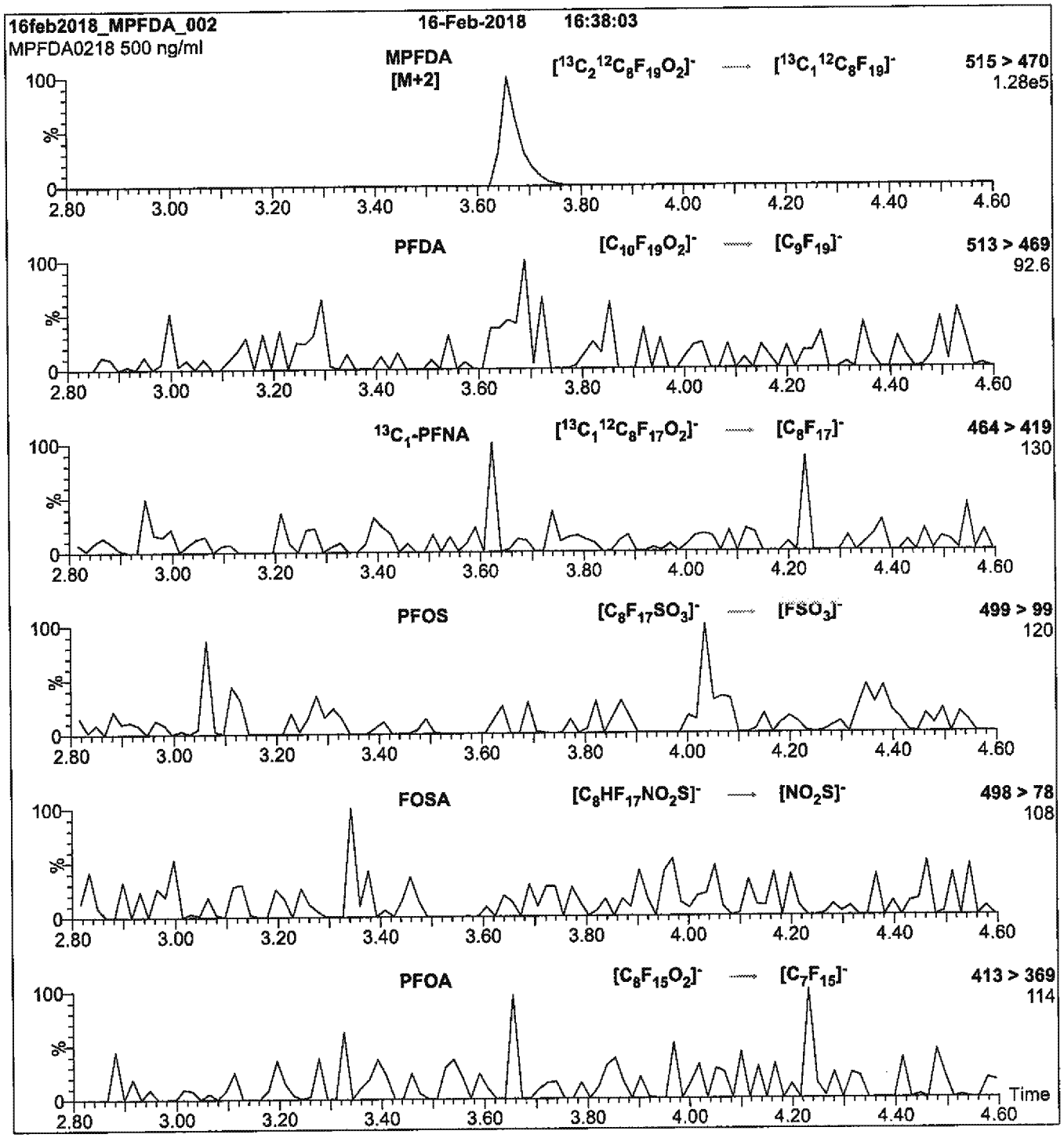
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00026

WELLINGTON LABORATORIES

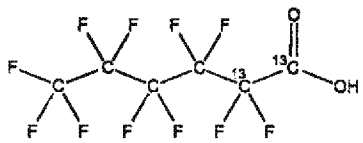
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid

LOT NUMBER: MPFHxA0518

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_4HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/22/2018
EXPIRY DATE: (mm/dd/yyyy) 05/22/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)

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 < 0.1% of perfluoro-n-hexanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 05/30/2018 (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

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CALA

ANAB ACCREDITED

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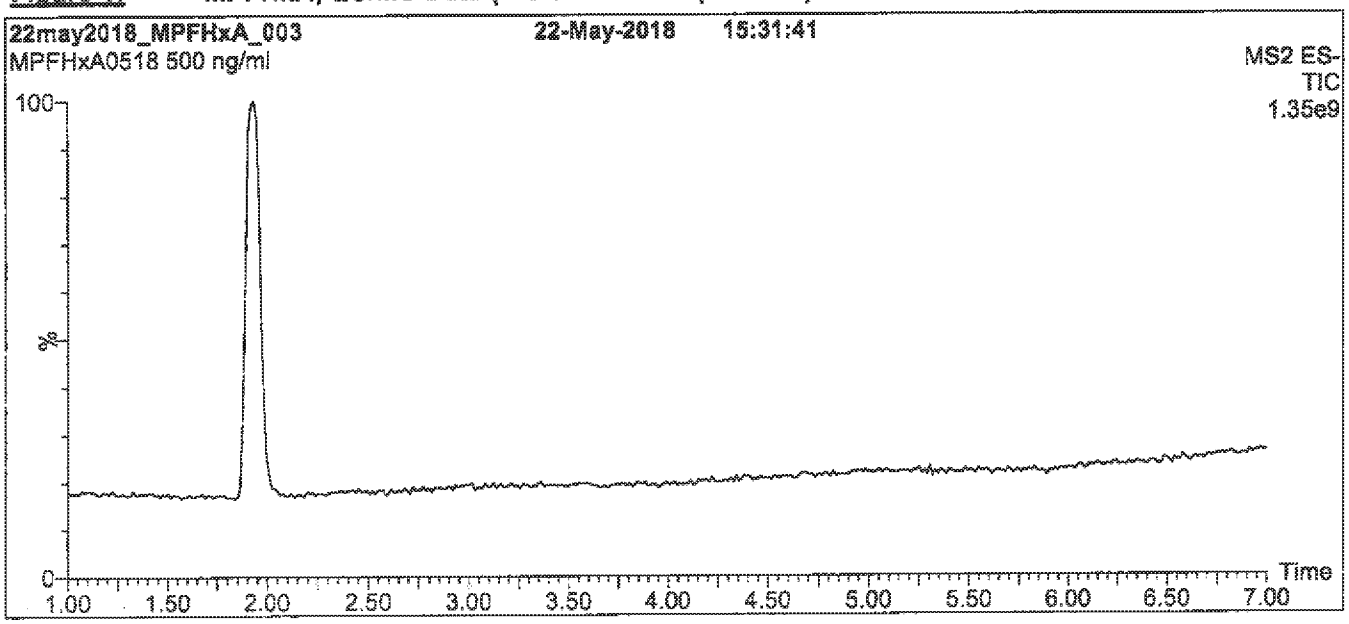
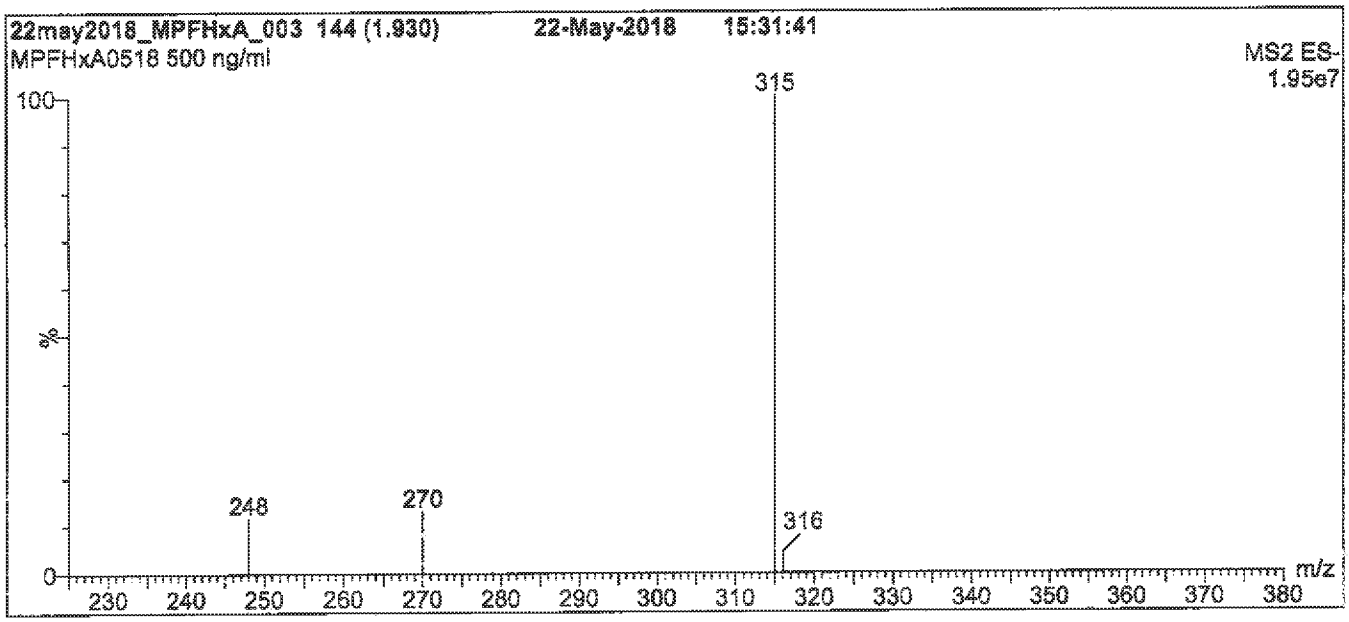
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

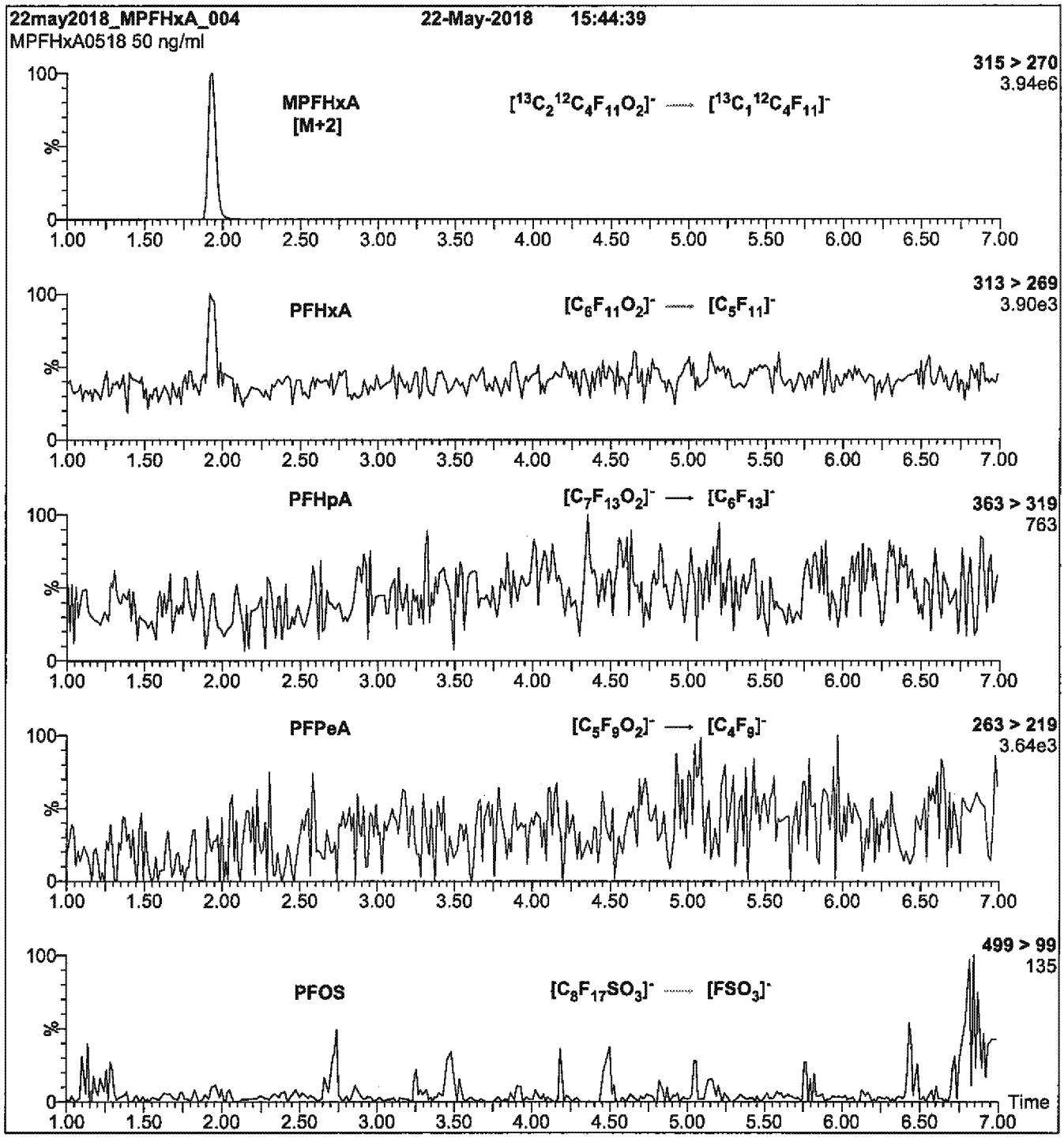
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: On-column (MPFHxA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.55e-3
Collision Energy (eV) = 8

Reagent

LCMPFOS_00031

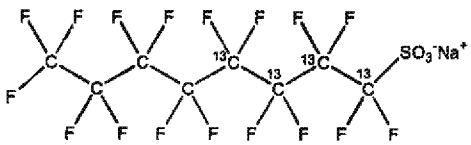
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0918

COMPOUND: Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4$-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	09/11/2018		
EXPIRY DATE: (mm/dd/yyyy)	09/11/2023		
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 ~ 0.3% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

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Certified By: Ex. 4 CBI **Date:** 09/14/2018 (mm/dd/yyyy)

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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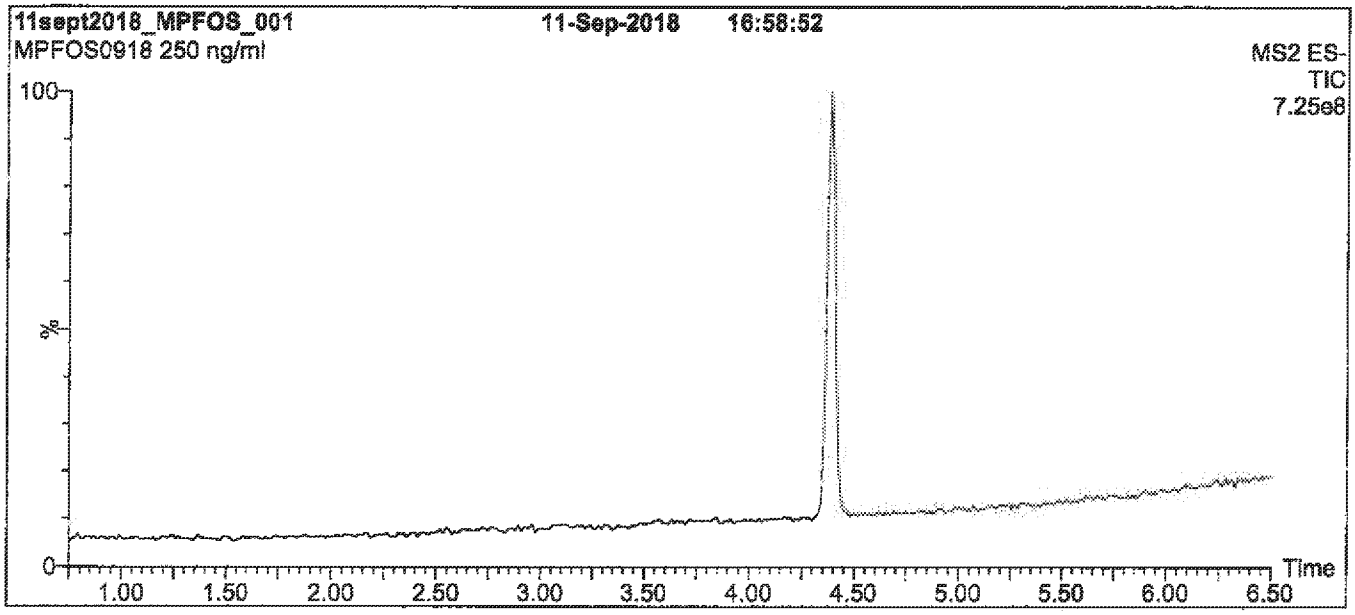
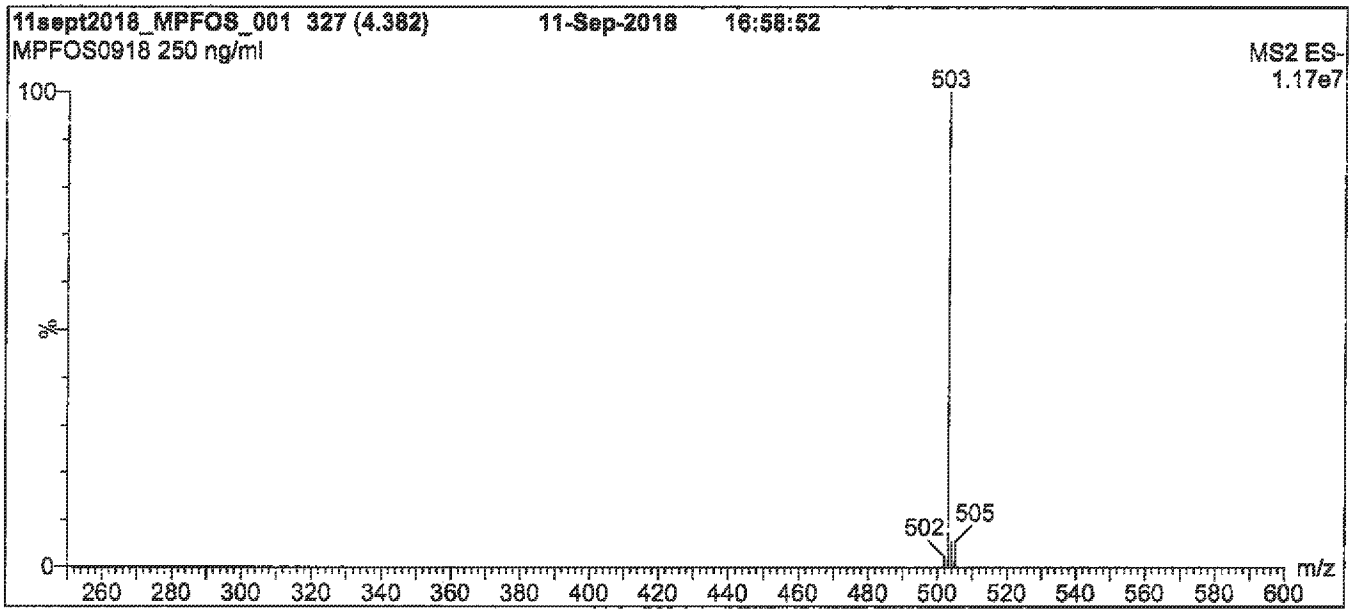
Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

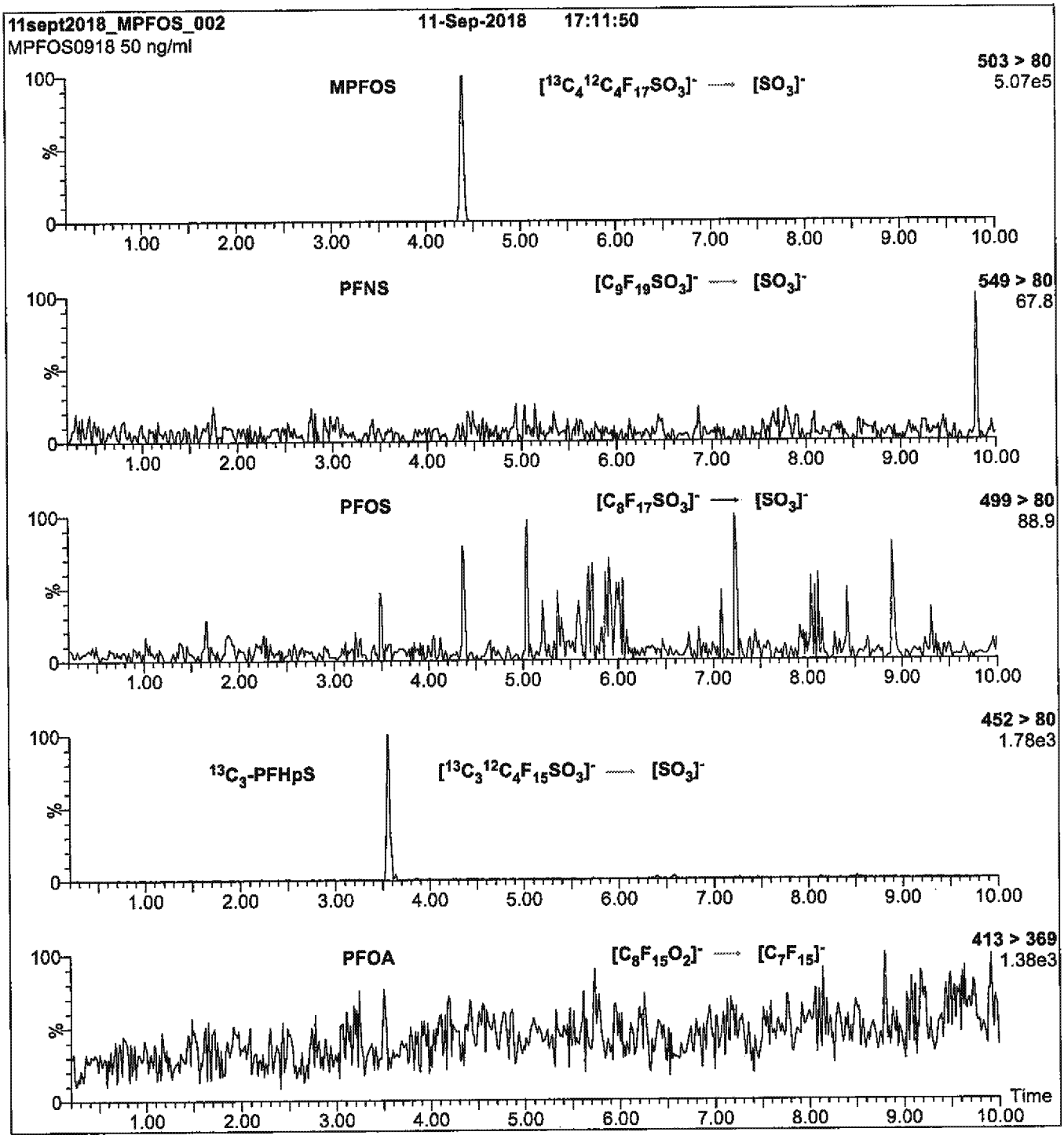
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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



Conditions for Figure 2:

Injection: On-column (MPFOS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.99e-3
Collision Energy (eV) = 42

Reagent

LCPFAC-24PAR_00002

1310191
ID: LCPFAC-24PAR_00002
Exp:04/18/23 Prpd:TTP Opn:07/24/18
PFAC/PFAS Mix

Prep: 7/24/18 TTP
Open: 7/24/18 TTP
Exp: 4/18/23

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-24PAR

Native Per- and Poly-fluoroalkyl Substance
Precision and Recovery Standard Solution

PRODUCT CODE:	PFAC-24PAR
LOT NUMBER:	PFAC24PAR0418
SOLVENT(S):	Methanol / Isopropanol (4%) / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	04/09/2018
LAST TESTED: (mm/dd/yyyy)	04/18/2018
EXPIRY DATE: (mm/dd/yyyy)	04/18/2023
RECOMMENDED STORAGE:	Refrigerate ampoule

DESCRIPTION:

PFAC-24PAR is a solution/mixture of eleven native linear perfluoroalkylcarboxylic acids (C_4-C_{14}), seven native perfluoroalkylsulfonates (C_4, C_5, C_7, C_9, and C_{10} linear; C_6 and C_8 linear and branched), three native telomer sulfonates (4:2, 6:2, and 8:2), two native perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual native perfluoroalkylcarboxylic acids, native perfluoroalkylsulfonates, native telomer sulfonates, native perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide 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 PFHxSK
Table C: 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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Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED

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Table A: **PFAC-24PAR; Components and Concentrations (ng/ml, ± 5% in Methanol / Isopropanol (4%) / Water (<1%))**

Compound	Abbreviation	Concentration *** (ng/ml)	Peak Assignment in Figure 1
Perfluoro-n-butanoic acid	PFBA	2000	A
Perfluoro-n-pentanoic acid	PFPeA	2000	B
Perfluoro-n-hexanoic acid	PFHxA	2000	E
Perfluoro-n-heptanoic acid	PFHpA	2000	G
Perfluoro-n-octanoic acid	PFOA	2000	K
Perfluoro-n-nonanoic acid	PFNA	2000	M
Perfluoro-n-decanoic acid	PFDA	2000	Q
Perfluoro-n-undecanoic acid	PFUdA	2000	V
Perfluoro-n-dodecanoic acid	PFDoA	2000	X
Perfluoro-n-tridecanoic acid	PFTrDA	2000	Y
Perfluoro-n-tetradecanoic acid	PFTeDA	2000	Z
Perfluoro-1-octanesulfonamide	FOSA	2000	T
N-methylperfluoro-1-octanesulfonamidoacetic acid	N-MeFOSAA	2000	S
N-ethylperfluoro-1-octanesulfonamidoacetic acid	N-EtFOSAA	2000	U

Compound	Abbreviation	Concentration *** (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-butanesulfonate	L-PFBS	2000	1770	C
Sodium perfluoro-1-pentanesulfonate	L-PFPeS	2000	1880	F
Potassium perfluorohexanesulfonate*	PFHxSK: linear isomer	1620	1480	I
	PFHxSK: ∑ branched isomers	378	344	H
Sodium perfluoro-1-heptanesulfonate	L-PFHpS	2000	1900	L
Potassium perfluorooctanesulfonate**	PFOSK: linear isomer	1580	1460	O
	PFOSK: ∑ branched isomers	422	391	N
Sodium perfluoro-1-nonanesulfonate	L-PFNS	2000	1920	R
Sodium perfluoro-1-decanesulfonate	L-PFDS	2000	1930	W
Sodium 1H,1H,2H,2H-perfluoro-1-hexanesulfonate	4:2FTS	2000	1870	D
Sodium 1H,1H,2H,2H-perfluoro-1-octanesulfonate	6:2FTS	2000	1900	J
Sodium 1H,1H,2H,2H-perfluoro-1-decanesulfonate	8:2FTS	2000	1920	P

* See Table B for percent composition of linear and branched PFHxSK isomers.
** See Table C for percent composition of linear and branched PFOSK isomers.
*** Concentrations have been rounded to three significant figures.

Table B: **PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9	18.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4	
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0	
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9	
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)_2CF_2CF_2SO_3^-K^+$	0.2	
7	Other Unidentified Isomers		0.5	

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

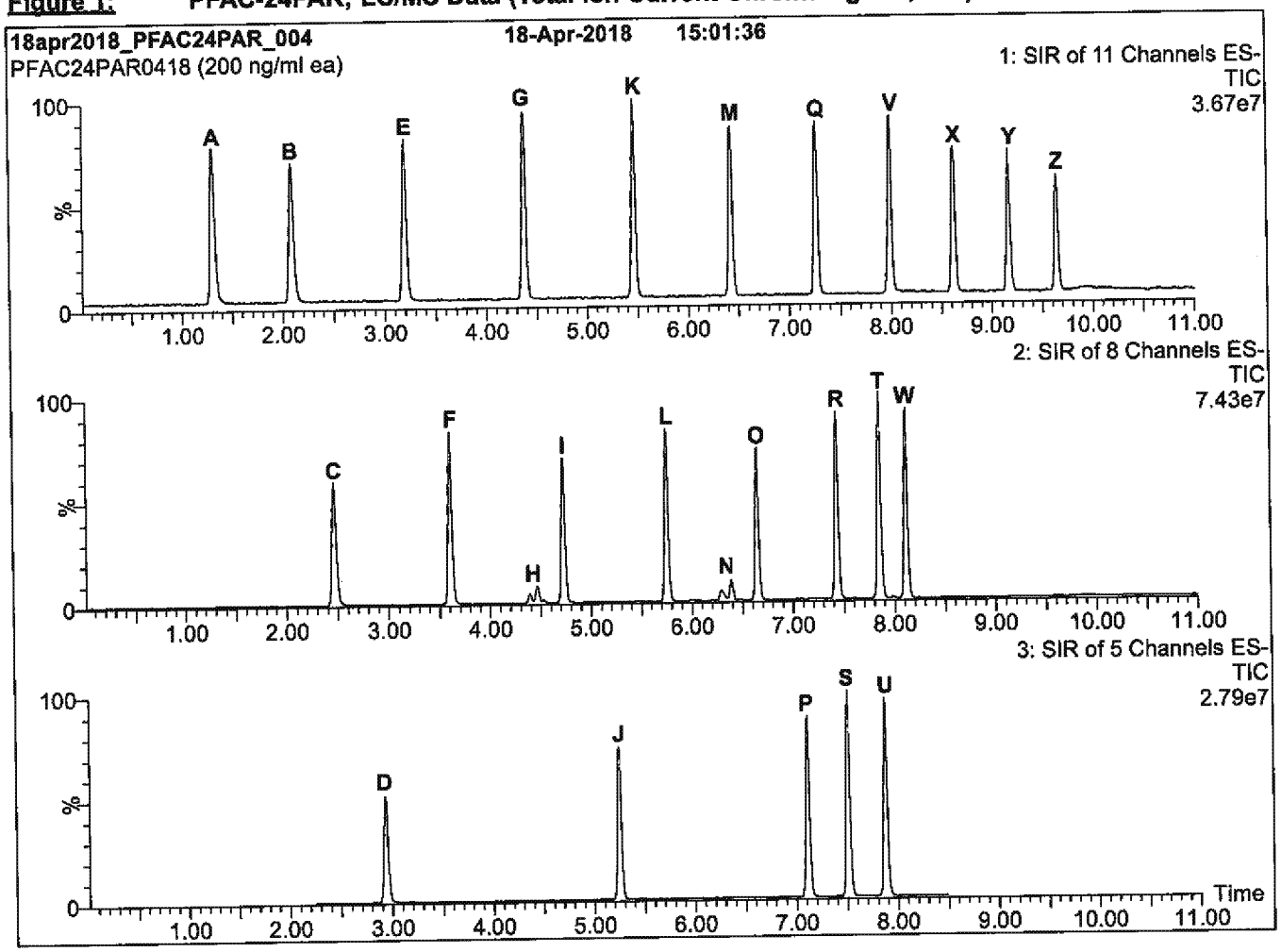
Table C: **PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

Isomer	Name	Structure	Percent Composition by ^{19}F-NMR	
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2	21.1
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6	
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9	
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2	
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5	
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0	
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3C(CF_3)_2CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2	
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)_2CF_2CF_2CF_2SO_3^-K^+$	0.03	
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.4	
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	0.07	

* Percent of total perfluorooctanesulfonate isomers only.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: Ex. 4 CBI **Date:** 04/24/2018 (mm/dd/yyyy)

Figure 1: **PFAC-24PAR; LC/MS Data (Total Ion Current Chromatogram; SIR)**



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 10 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 15 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = variable (2-38)
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)**

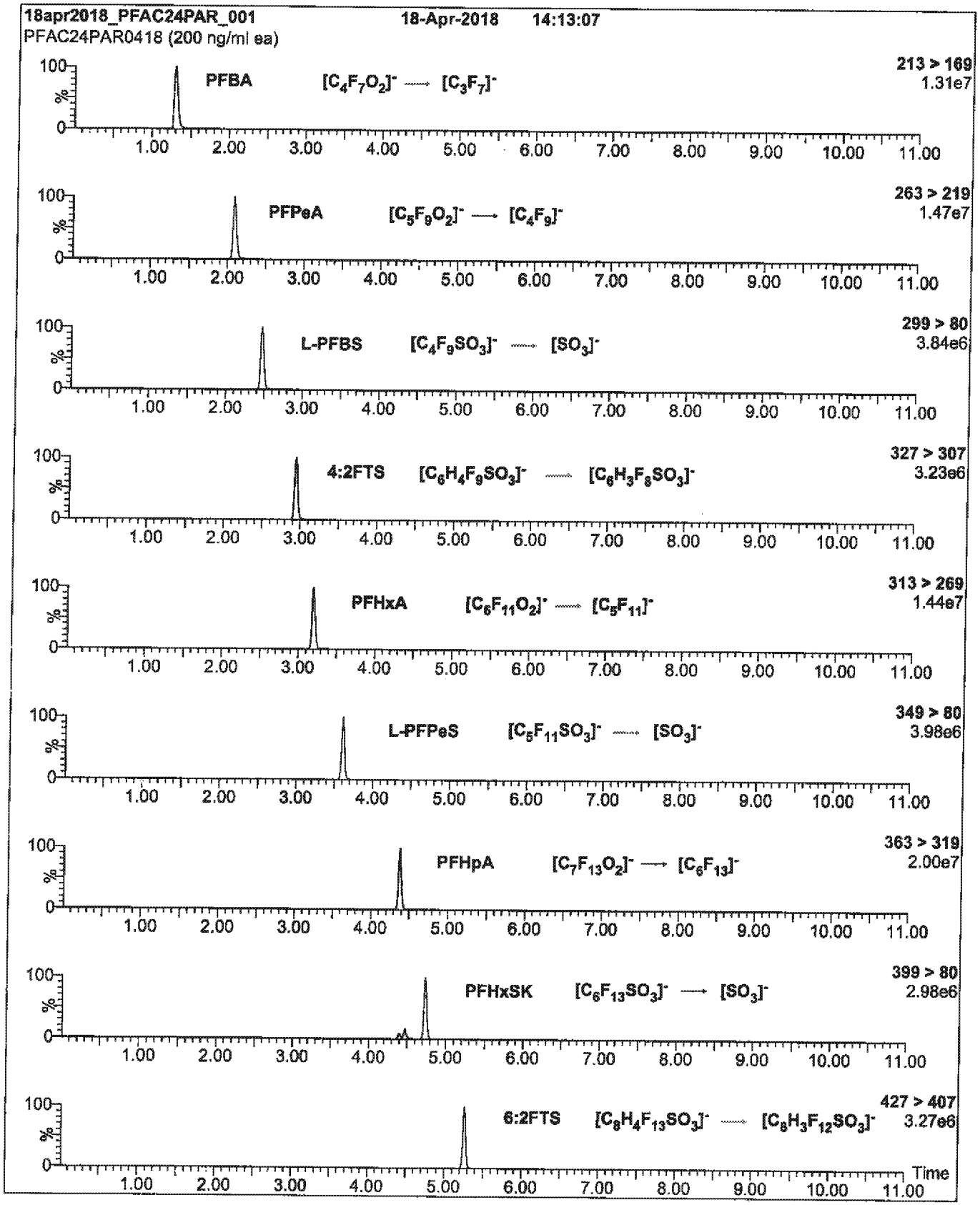


Figure 2: **PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)**

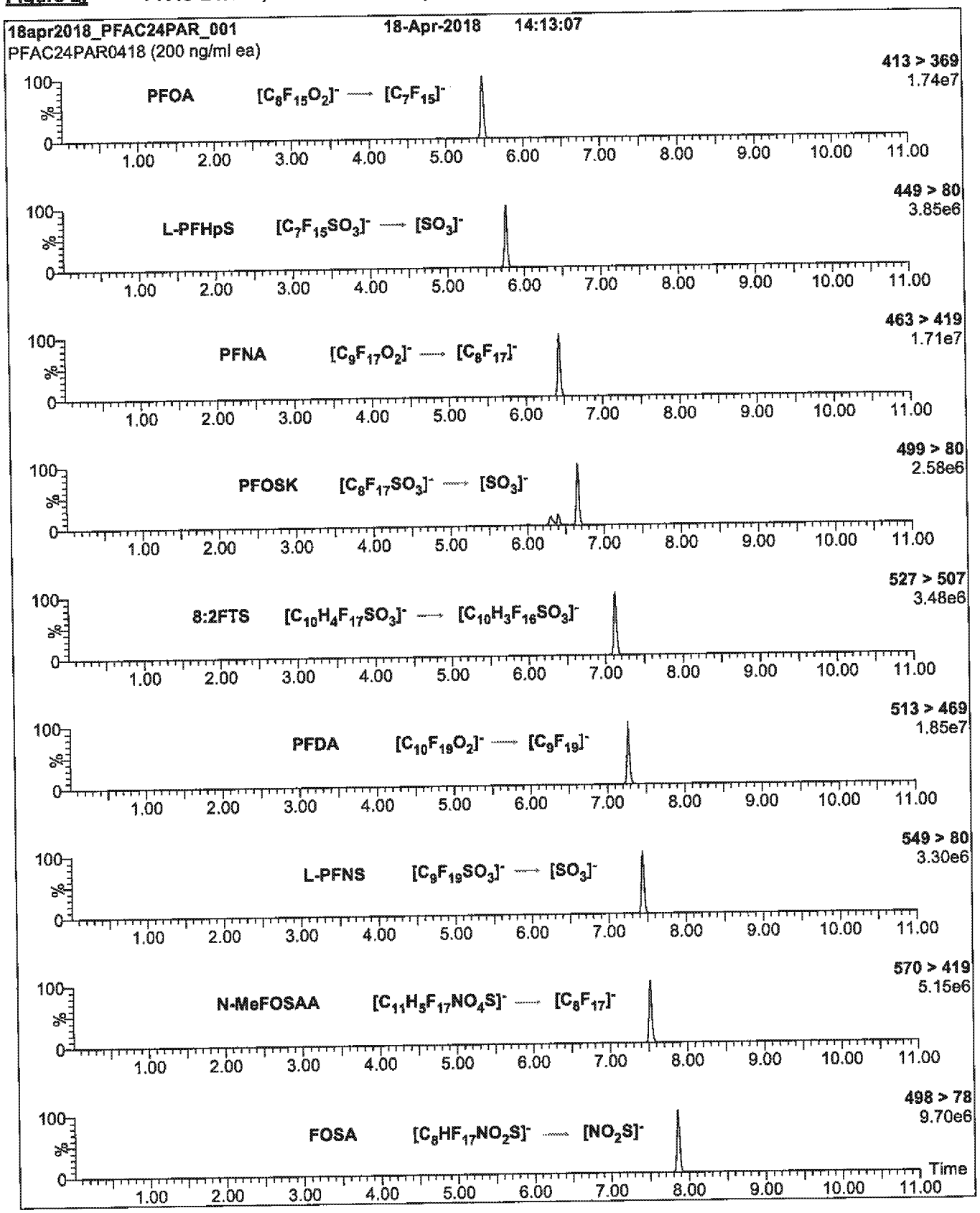
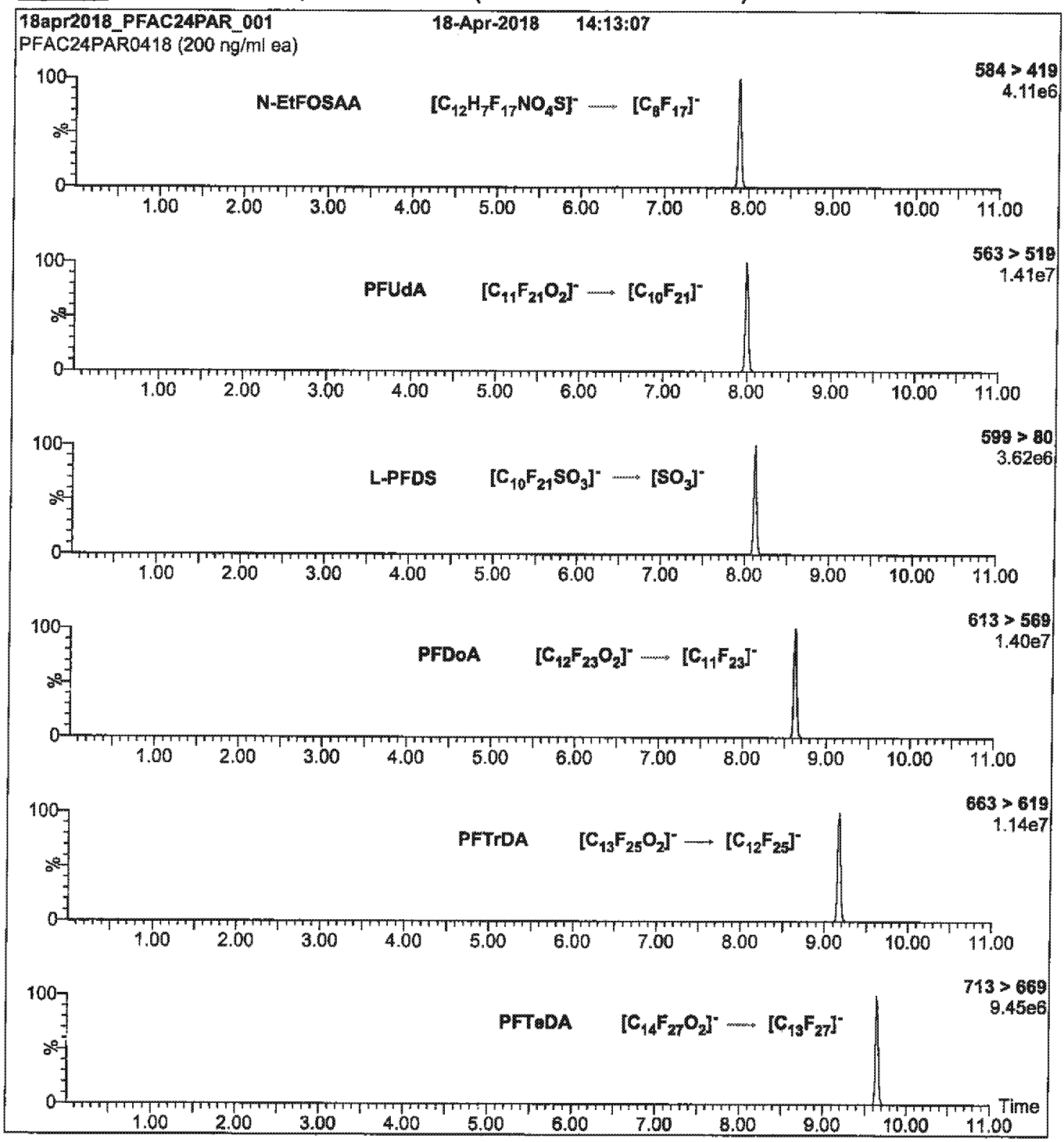


Figure 2: **PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (PFAC-24PAR)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters
Collision Gas (mbar) = 3.47e-3
Collision Energy (eV) = 8-64 (variable)

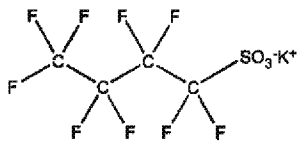
Reagent

LCPFBSA_00005

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
LOT NUMBER: LPFBS0418
COMPOUND: Potassium perfluoro-1-butanesulfonate
STRUCTURE:
CAS #: 29420-49-3



MOLECULAR FORMULA: $C_4F_9SO_3K$
MOLECULAR WEIGHT: 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/04/2018
EXPIRY DATE: (mm/dd/yyyy) 05/04/2023
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 05/25/2018 (mm/dd/yyyy)

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INTENDED USE:

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB

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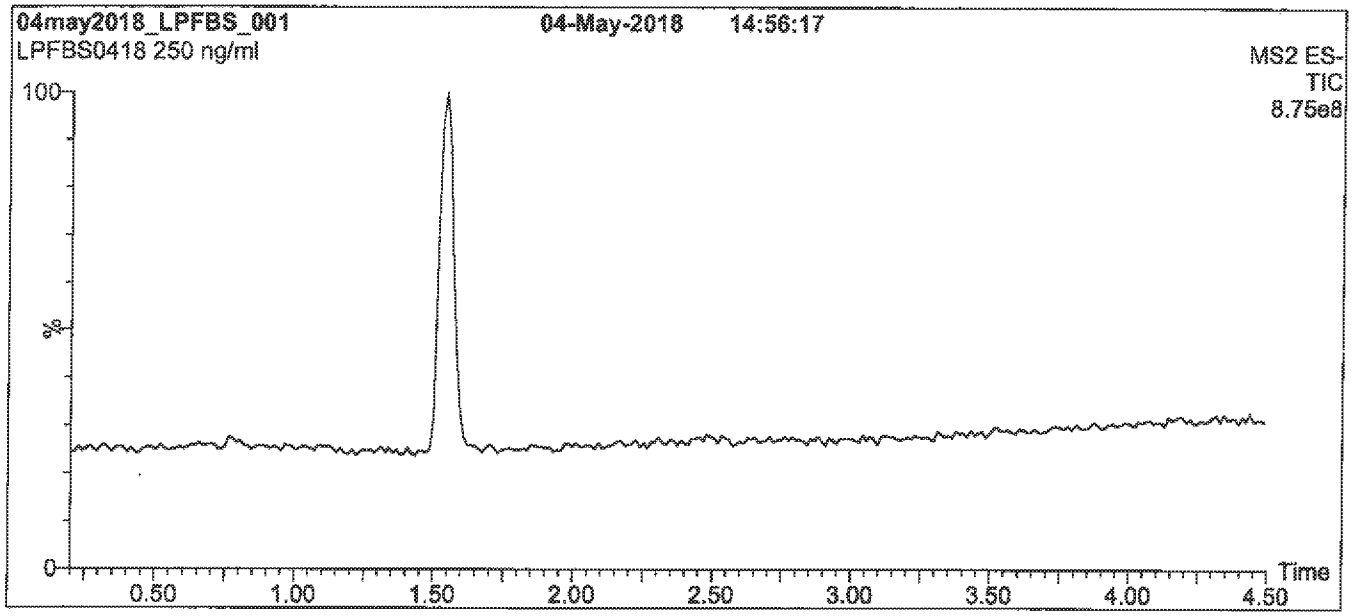
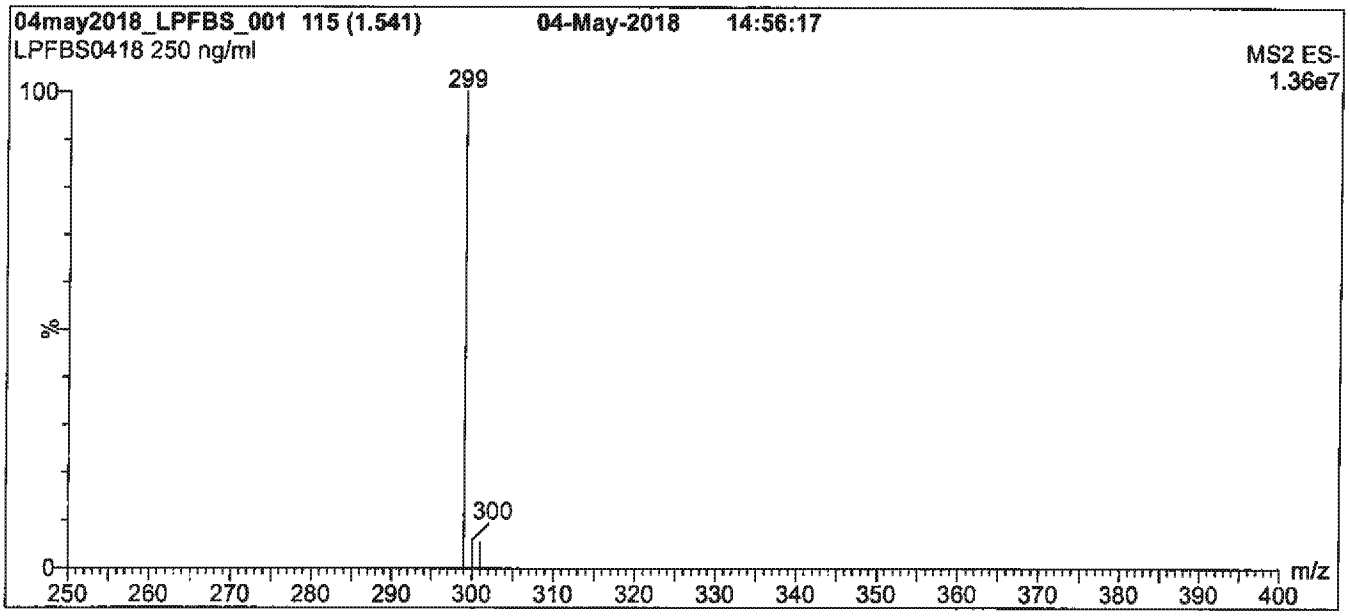
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

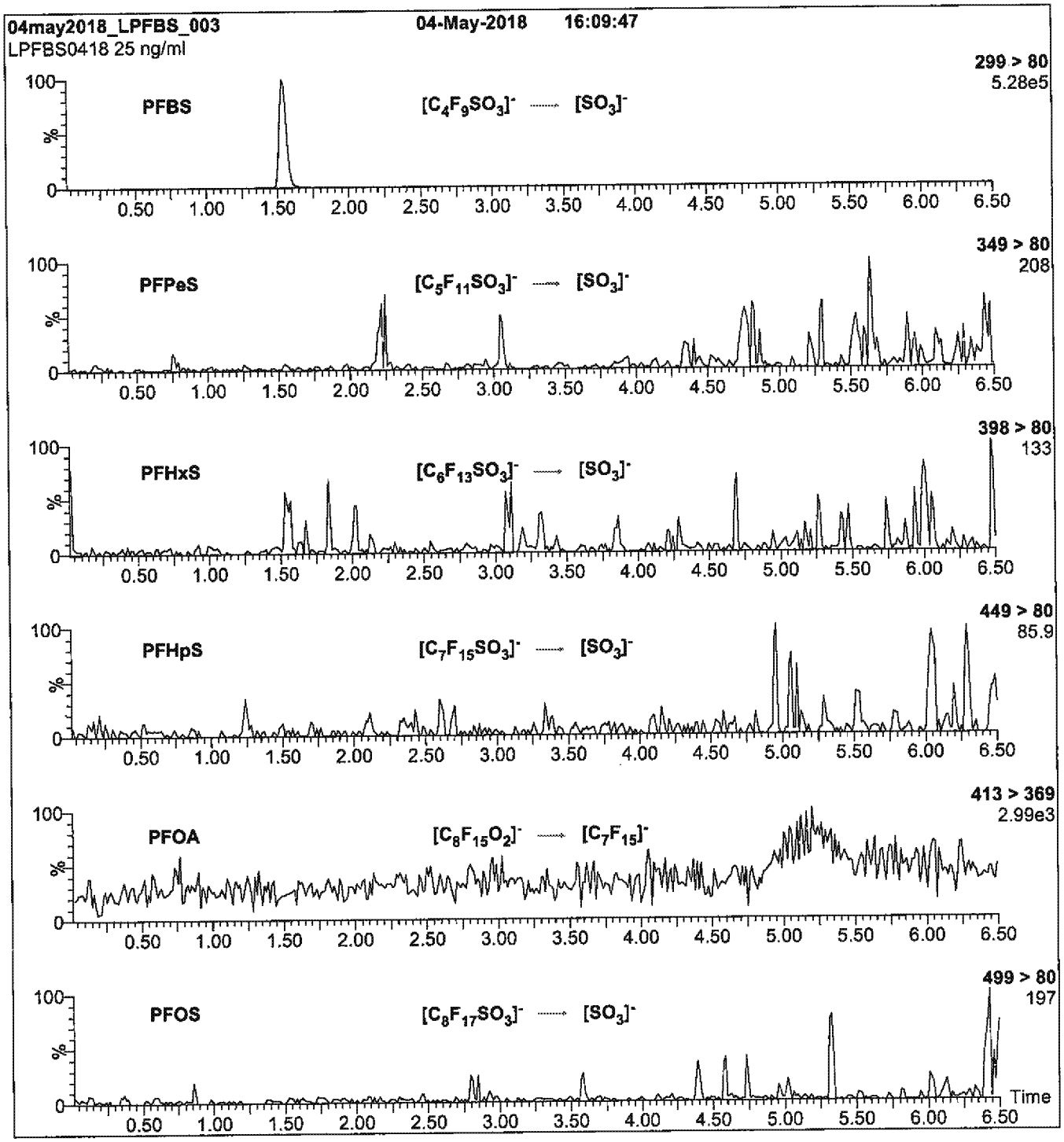
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **L-PFBS; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

Injection: On-column (L-PFBS)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.45e-3
Collision Energy (eV) = 30

Reagent

LCPFDA_00012

14162229
ID: LCPFDA_00012
Exp:12/04/22 Prpd:CBW Opn:10/29/18
PFDA PF-n-decanoic acid

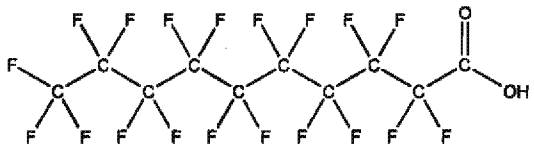
E. 10/27/18

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDA
LOT NUMBER: PFDA1217
COMPOUND: Perfluoro-n-decanoic acid

STRUCTURE:
CAS #: 335-76-2



MOLECULAR FORMULA: $C_{10}HF_{19}O_2$
MOLECULAR WEIGHT: 514.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/14/2017
EXPIRY DATE: (mm/dd/yyyy) 12/14/2022
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 ~ 0.2% of perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 12/18/2017 (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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

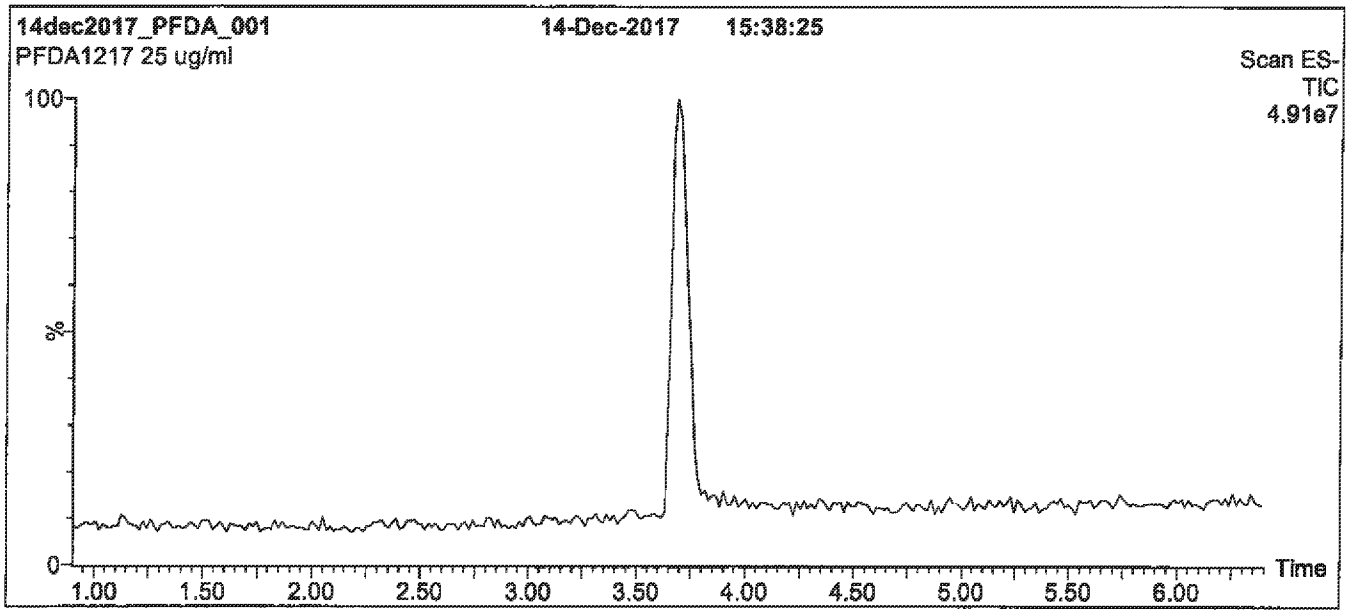
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

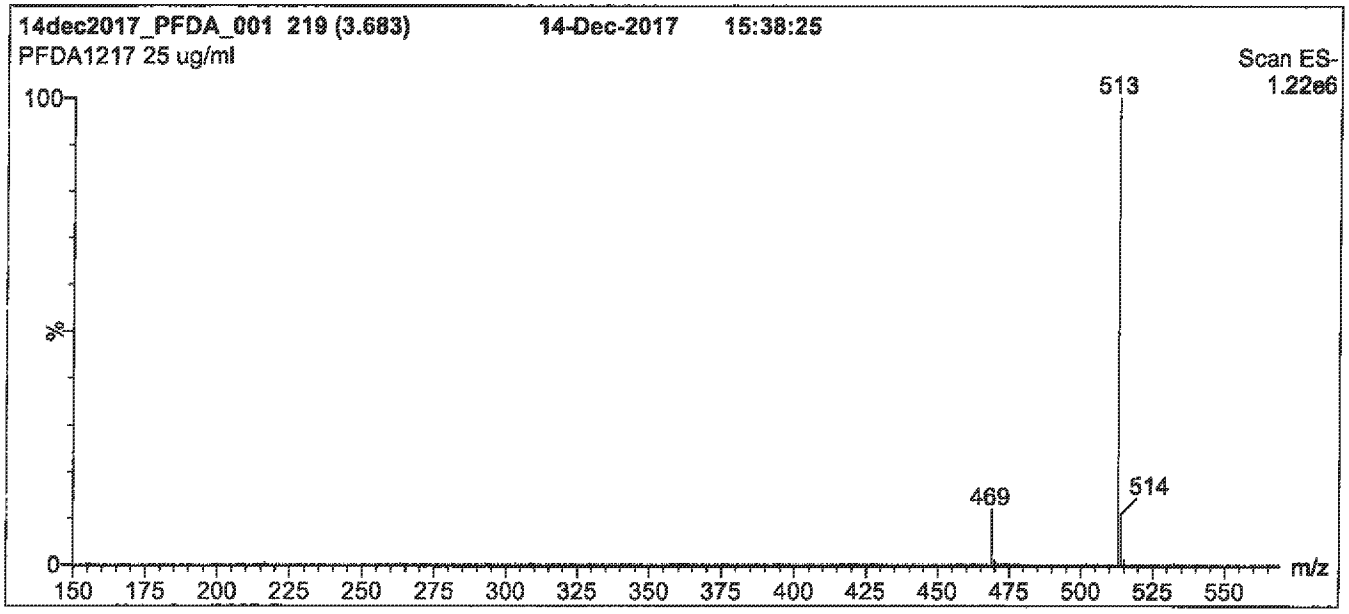
CALA

ANAB ACCREDITED

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

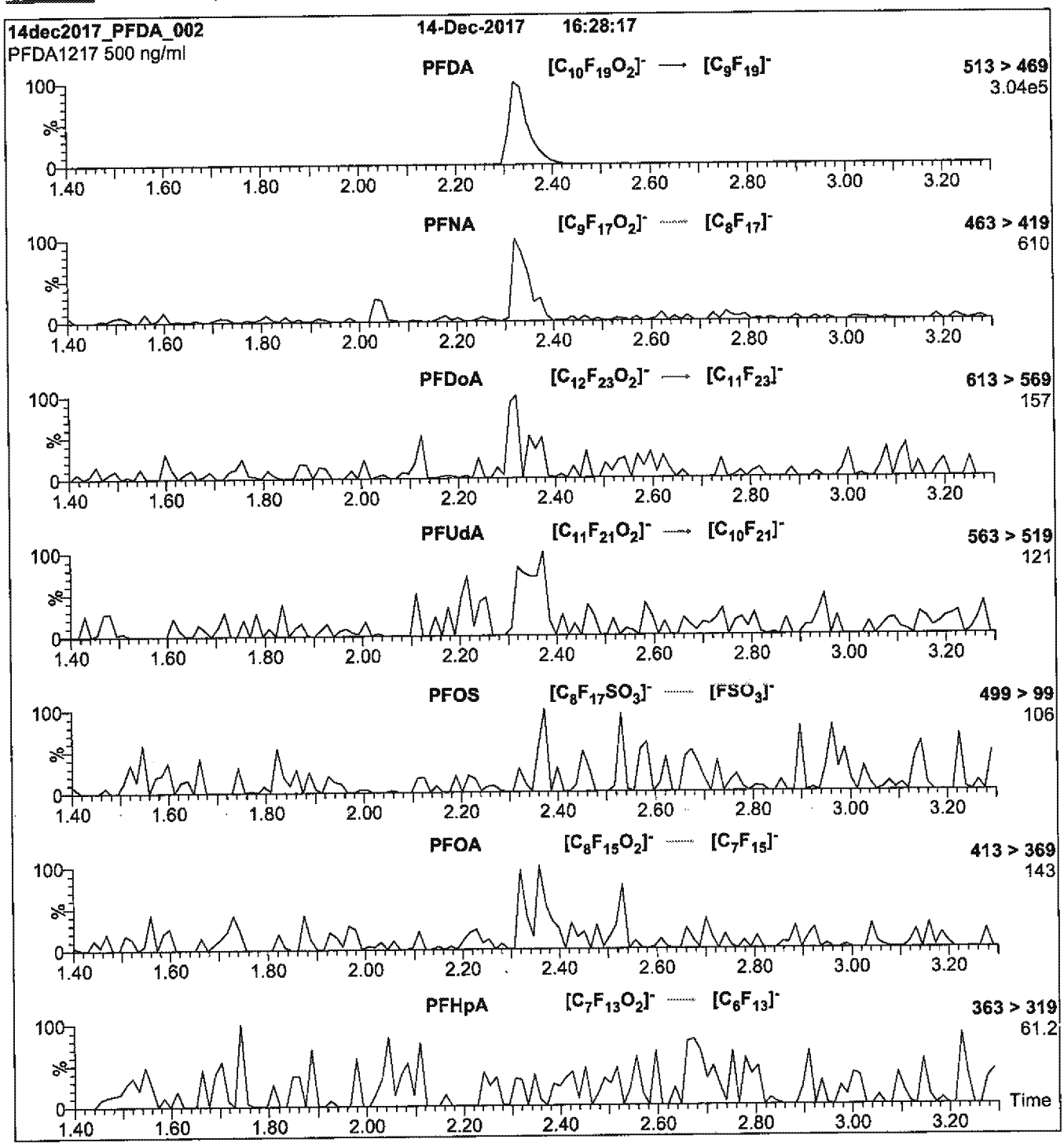
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00012

1416232
ID: LCPFDoA_00012
Exp:04/18/23 Prpd:CBW Opn:10/29/18
PF-n-dodecanoic acid

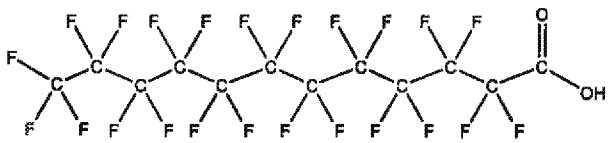
R: 10/29/18

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDoA
LOT NUMBER: PFDoA0418
COMPOUND: Perfluoro-n-dodecanoic acid

STRUCTURE:
CAS #: 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$
MOLECULAR WEIGHT: 614.10
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/18/2018
EXPIRY DATE: (mm/dd/yyyy) 04/18/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS Data (Mass Spectrum)
Figure 3: 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: Ex. 4 CBI **Date:** 04/24/2018 (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

INTENDED USE:

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED

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Figure 1: **PFDoA; LC/MS Data (SIR)**

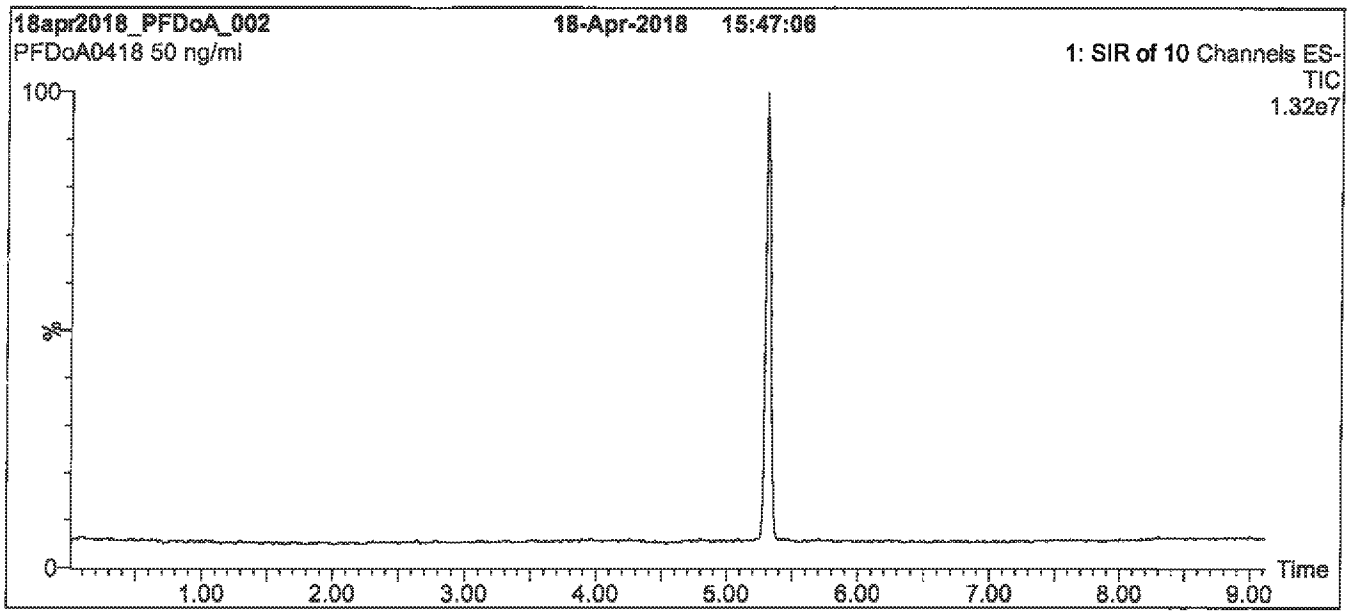
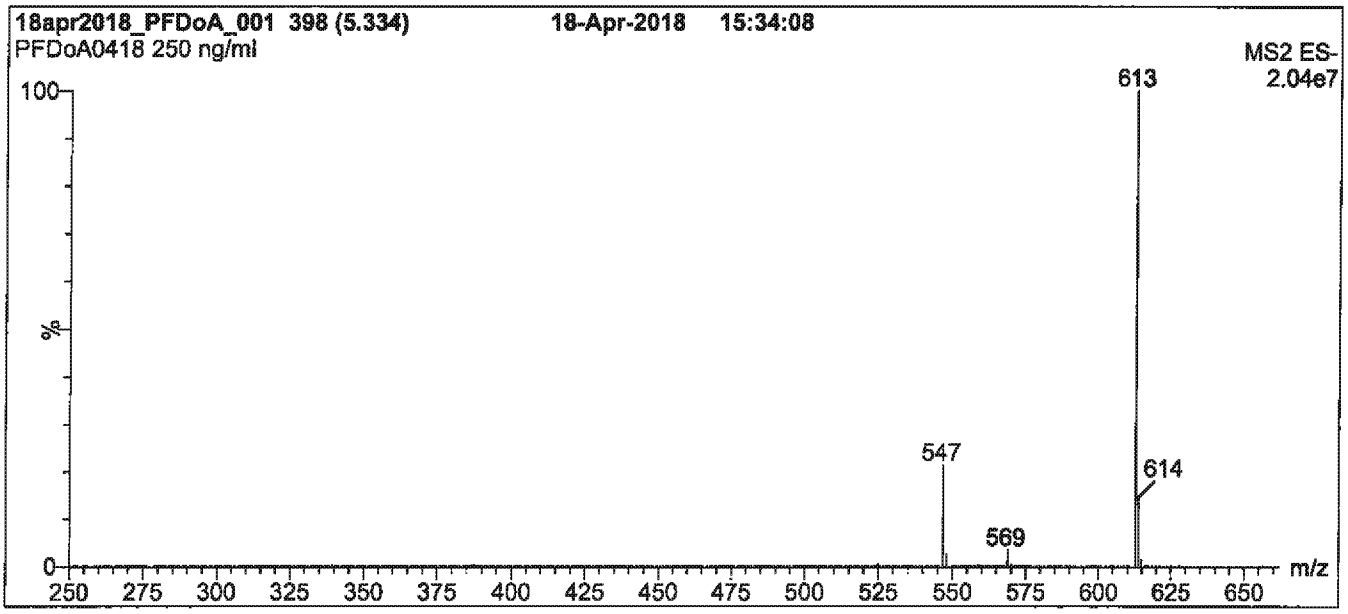


Figure 2: **PFDoA; LC/MS Data (Mass Spectrum)**



Conditions for Figures 1 & 2:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

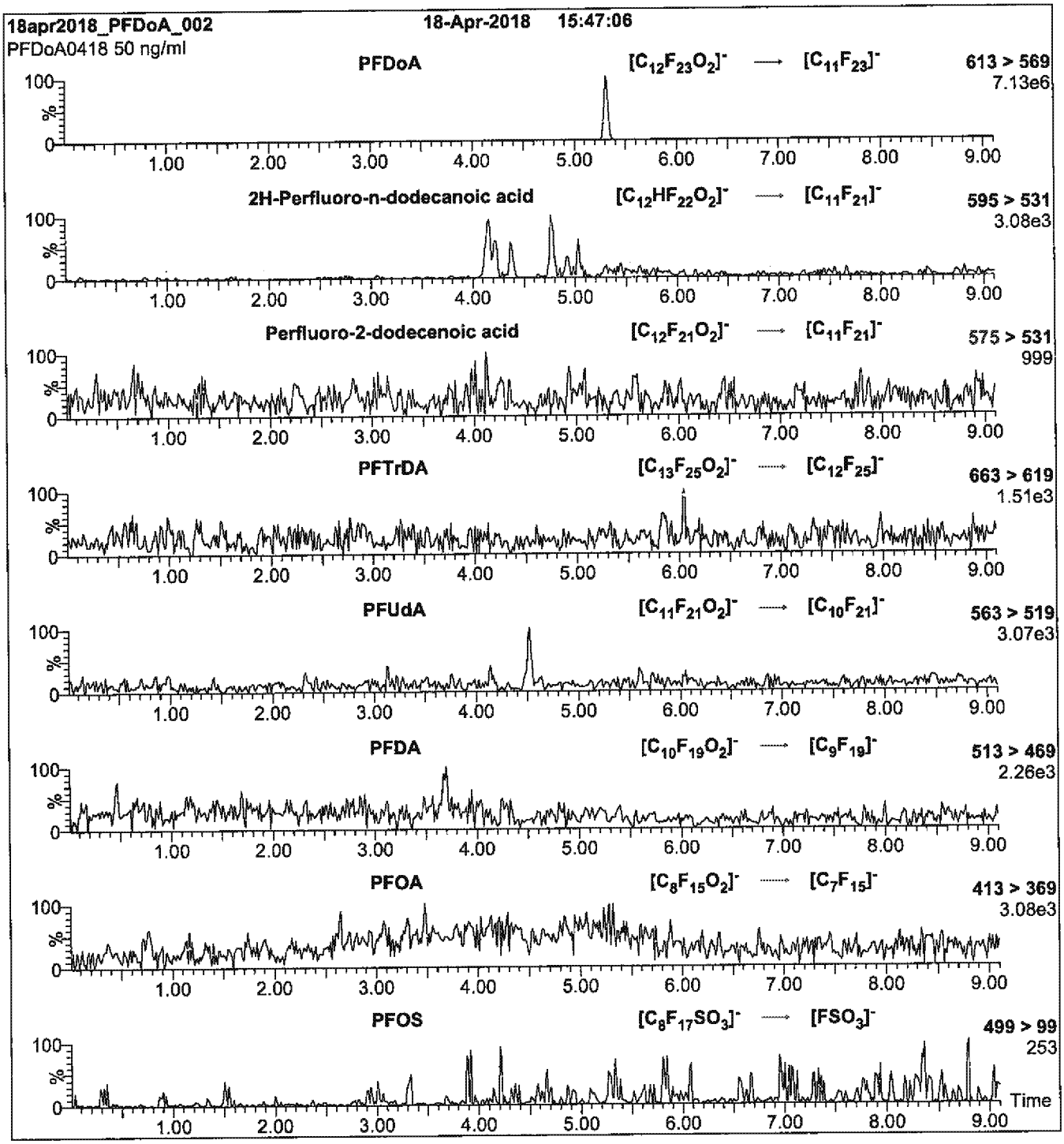
Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiments: SIR of 10 channels
Full Scan (250 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 5 (variable for SIR (2-12))
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 3:

Injection: On-column (PFDoA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.47e-3

Collision Energy (eV) = 12

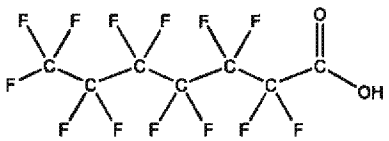
Reagent

LCPFHpA_00013

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHpA
LOT NUMBER: PFHpA0718
COMPOUND: Perfluoro-n-heptanoic acid
STRUCTURE:
CAS #: 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$
MOLECULAR WEIGHT: 364.06
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/12/2018
EXPIRY DATE: (mm/dd/yyyy) 07/12/2023
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: Ex. 4 CBI **Date:** 07/18/2018 (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

INTENDED USE:

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HANDLING:

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UNCERTAINTY:

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

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

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

TRACEABILITY:

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

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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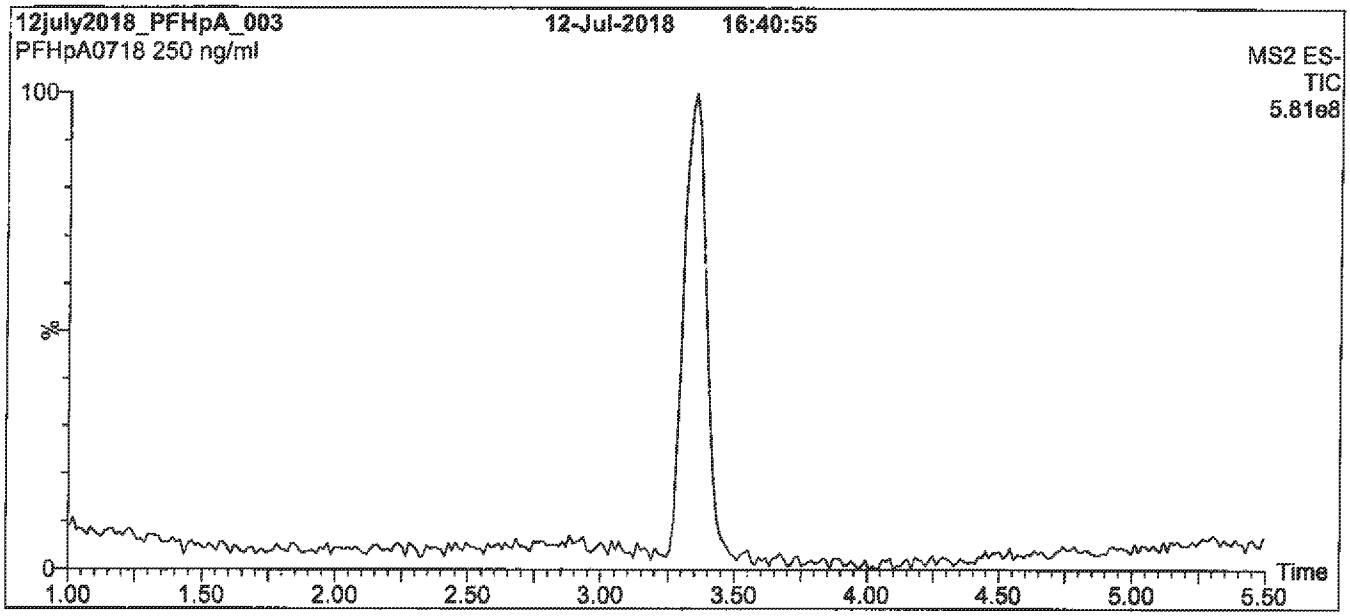
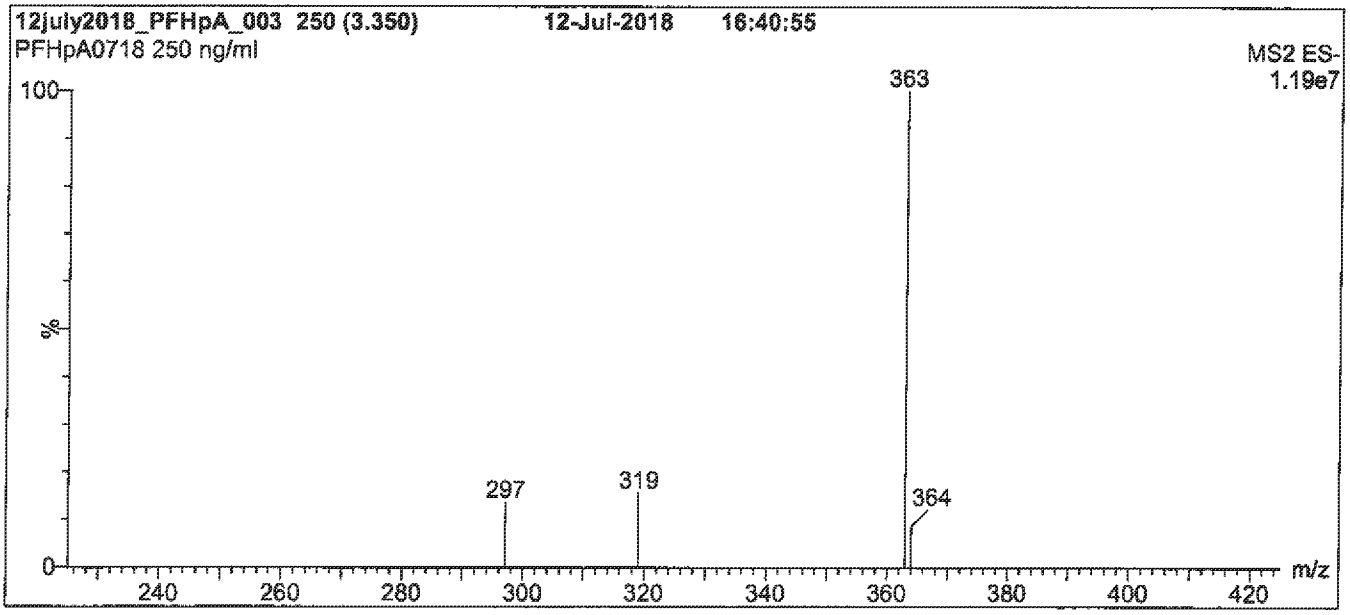
CALA

ANAB ACCREDITED

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

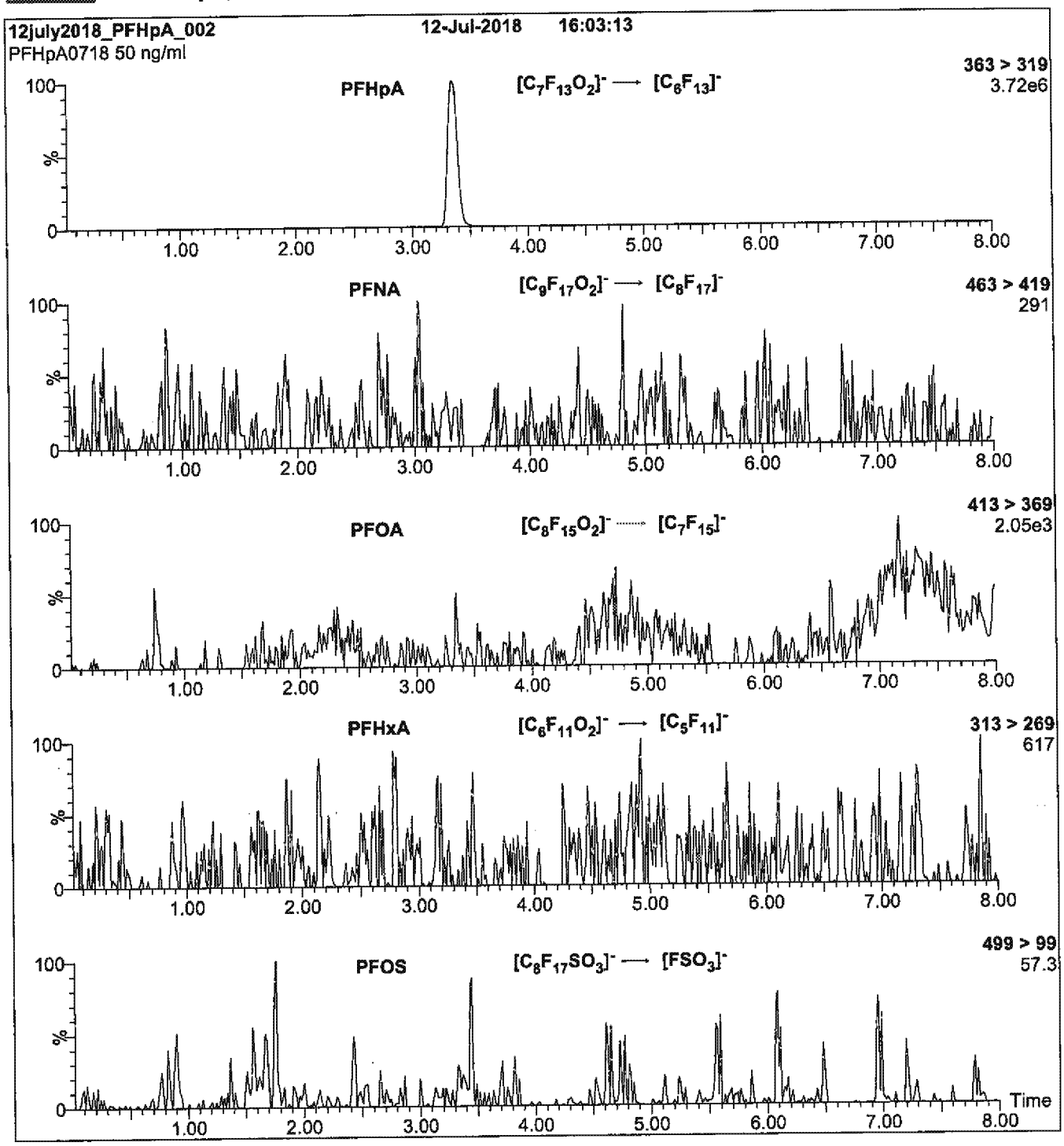
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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



Conditions for Figure 2:

Injection: On-column (PFHpA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.47e-3
Collision Energy (eV) = 8

Reagent

LCPFHxA_00012

1416256
ID: LCPFHxA_00012
Exp:05/18/23 Prpd:CBW Opn:10/29/18
PF-n-hexanoic acid

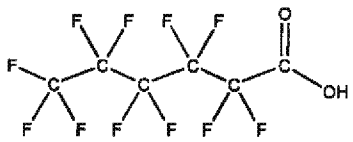
R: 10/29/18 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxA
LOT NUMBER: PFHxA0518
COMPOUND: Perfluoro-n-hexanoic acid

STRUCTURE:
CAS #: 307-24-4



MOLECULAR FORMULA: $C_8HF_{11}O_2$
MOLECULAR WEIGHT: 314.05
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/18/2018
EXPIRY DATE: (mm/dd/yyyy) 05/18/2023
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 ~ 1.0% of branched isomers.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 05/30/2018 (mm/dd/yyyy)

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB

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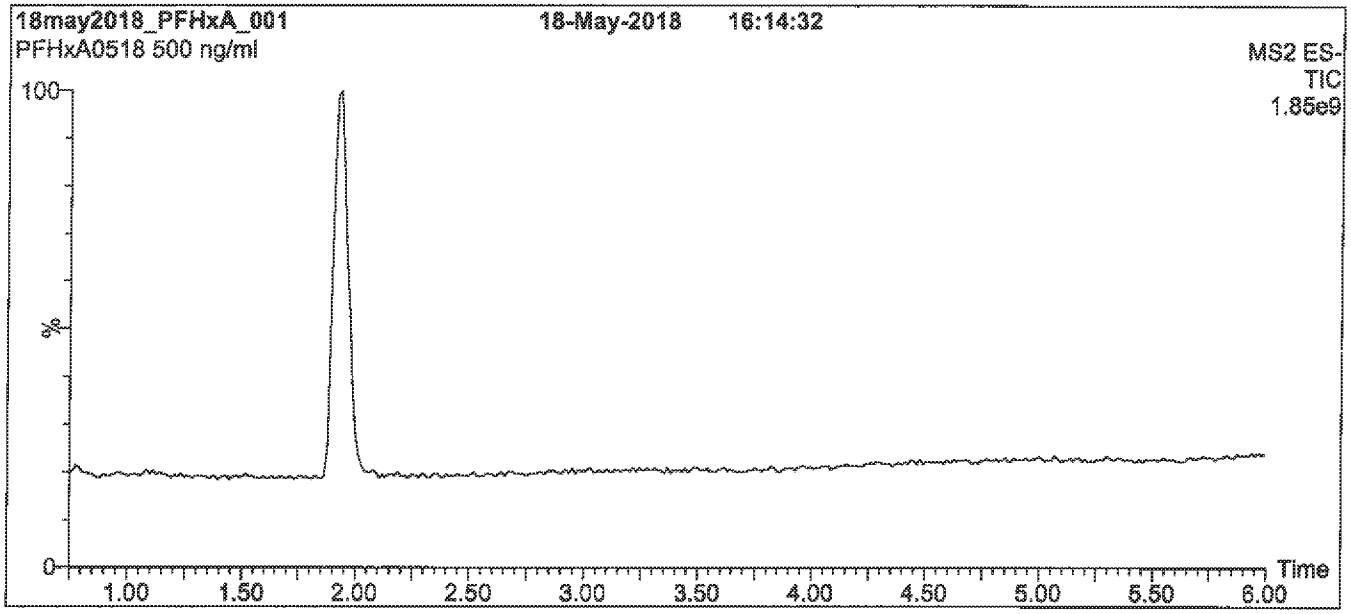
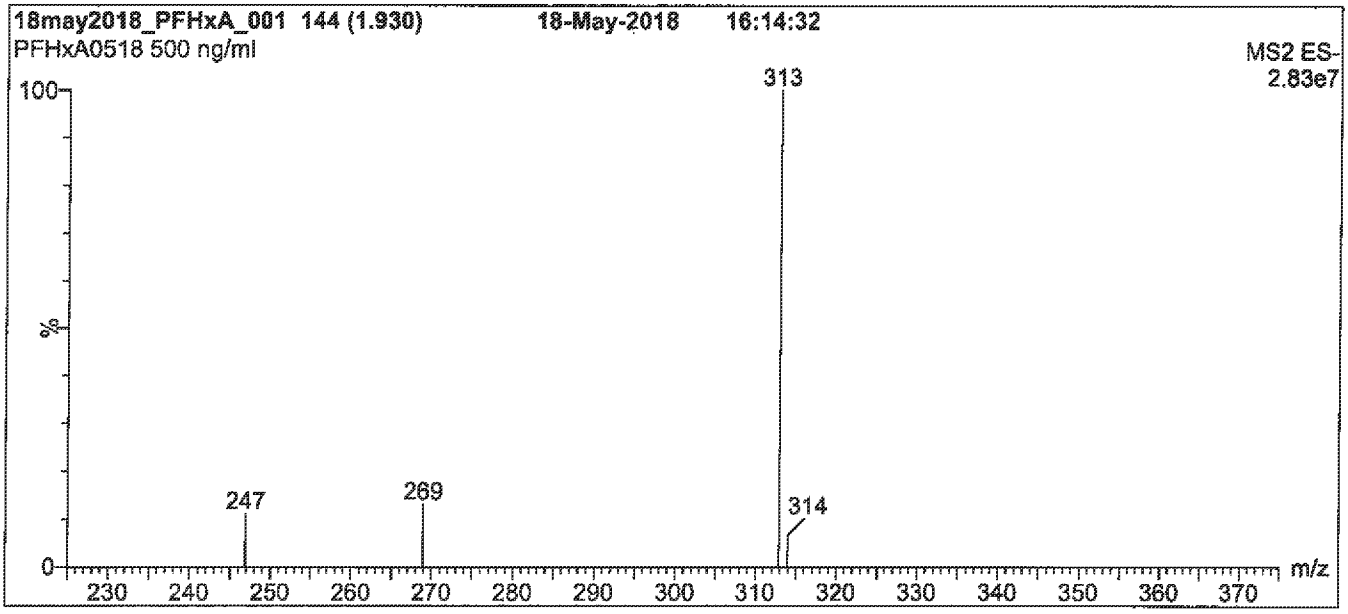
Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 80% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

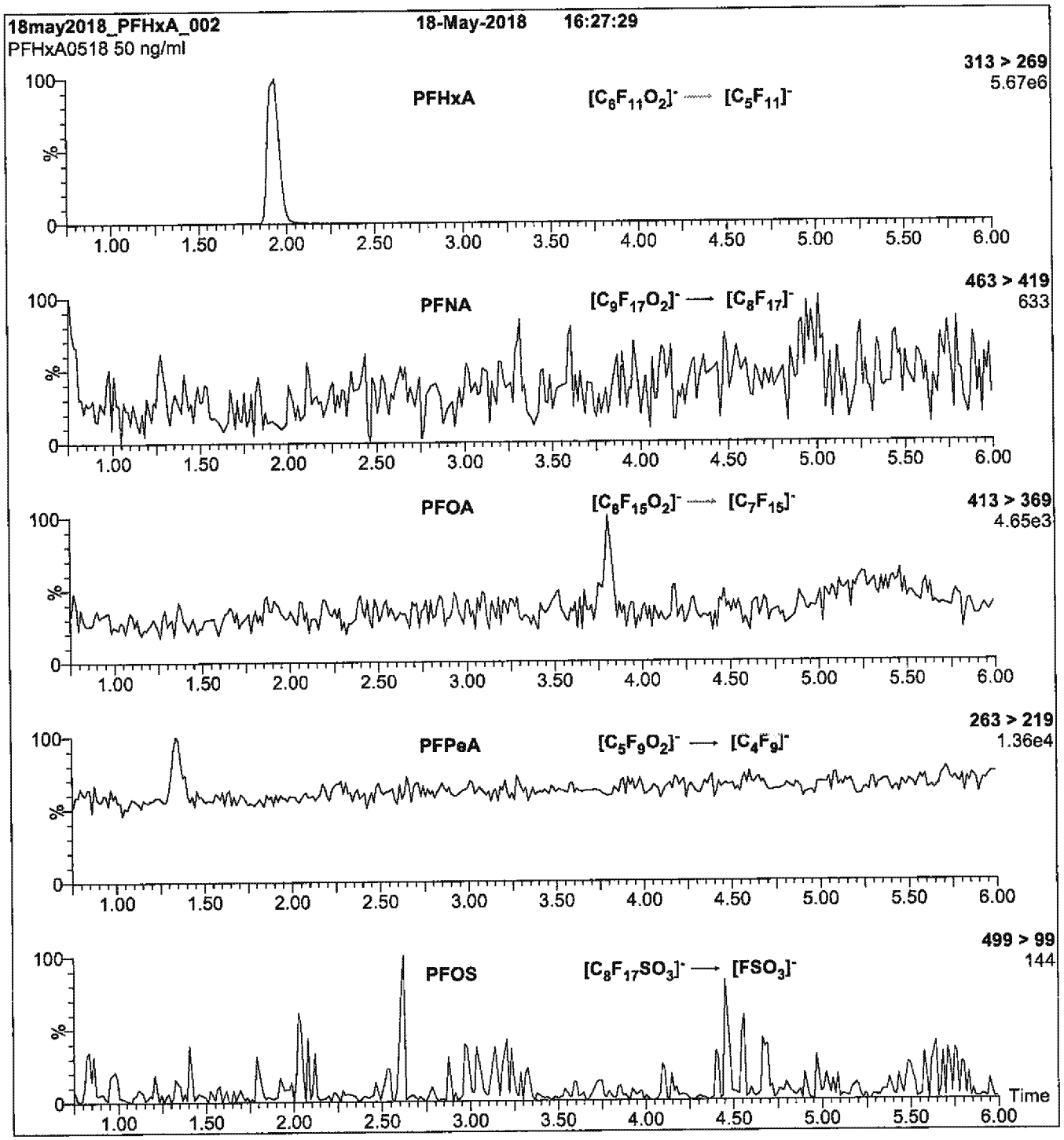
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: On-column (PFHxA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 8

Reagent

LCPFHxS-br_00009

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK1018
CONCENTRATION:	50.0 ± 2.5 µg/ml (total potassium salt)
	45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	10/01/2018
LAST TESTED: (mm/dd/yyyy)	10/02/2018
EXPIRY DATE: (mm/dd/yyyy)	10/02/2023
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate 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 ^{19}F-NMR
Figure 1: LC/MS Data (TIC 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.
- Contains ~ 0.3% of perfluoro-n-hexanoic acid and ~ 0.15% of perfluoro-1-pentanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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

INTENDED USE:

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

HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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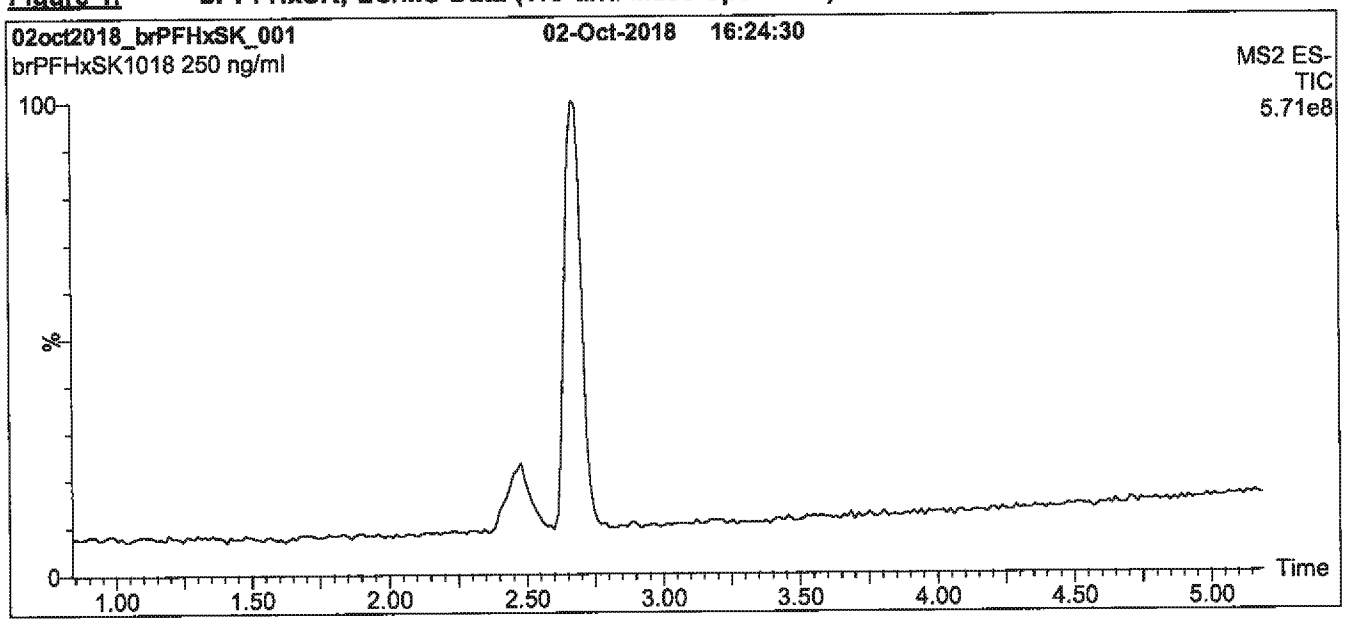
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

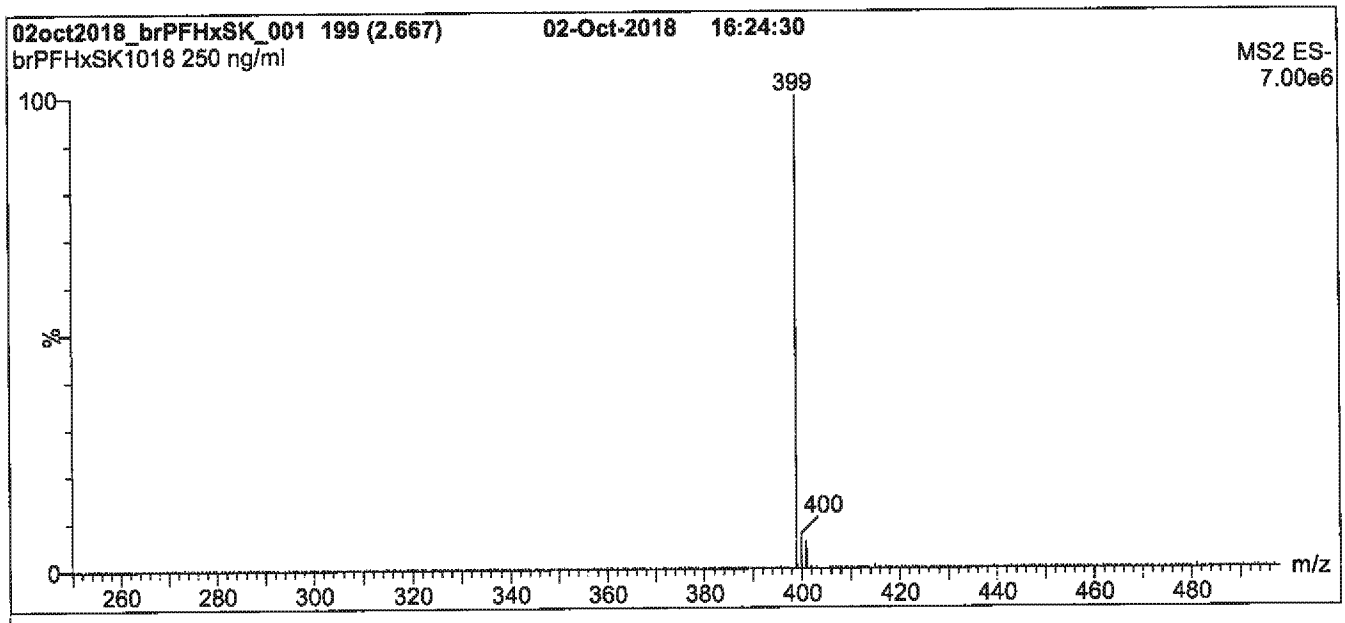
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)(CF_3)CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Certified By: Ex. 4 CBI **Date:** 10/05/2018 (mm/dd/yyyy)

Figure 1: **br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min. Hold for 2 min
before returning to initial conditions in 0.75 min.
Time: 12 min

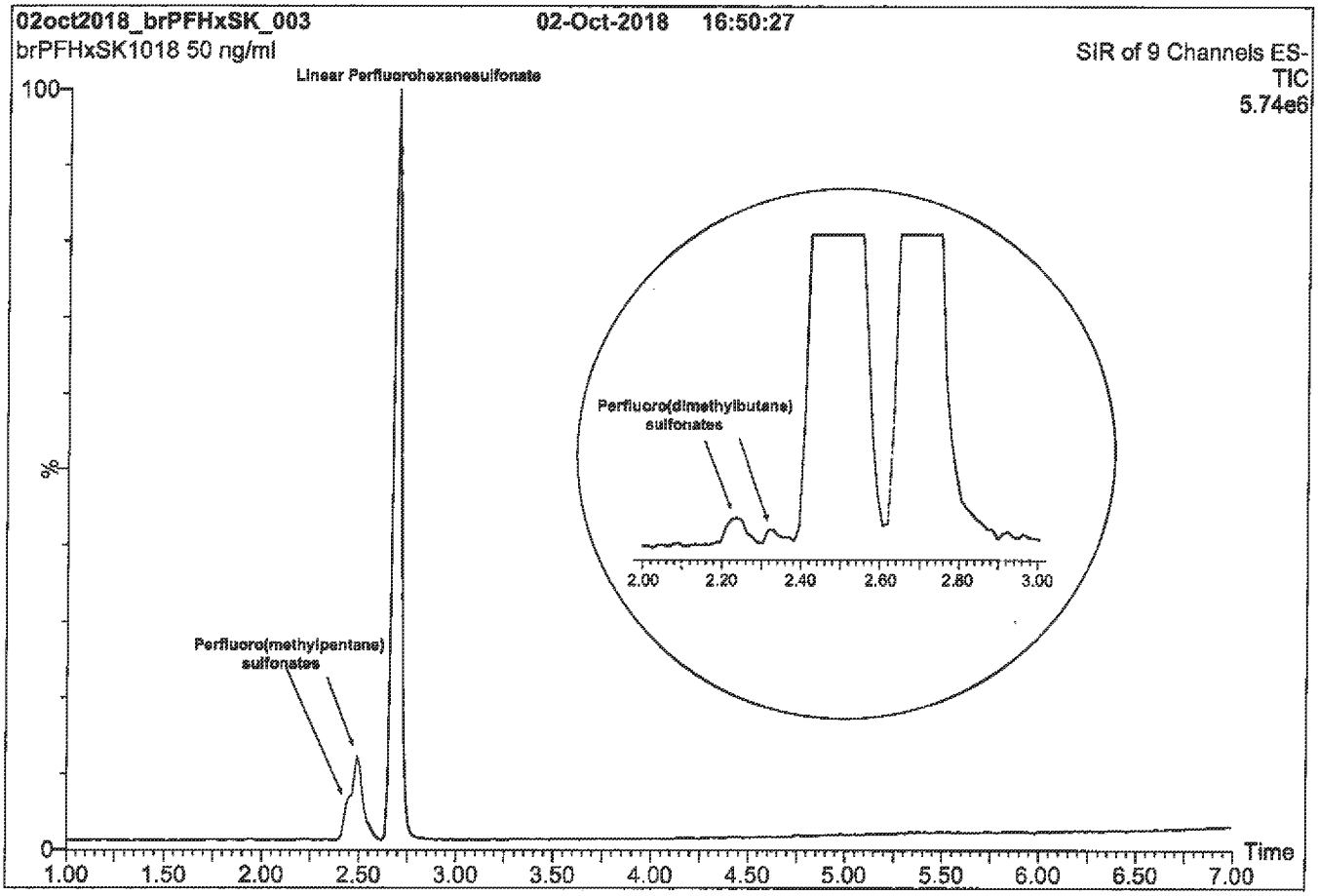
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 10.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Figure 2: **br-PFHxSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min. Hold for 2 min
before returning to initial conditions in 0.75 min.
Time: 12 min

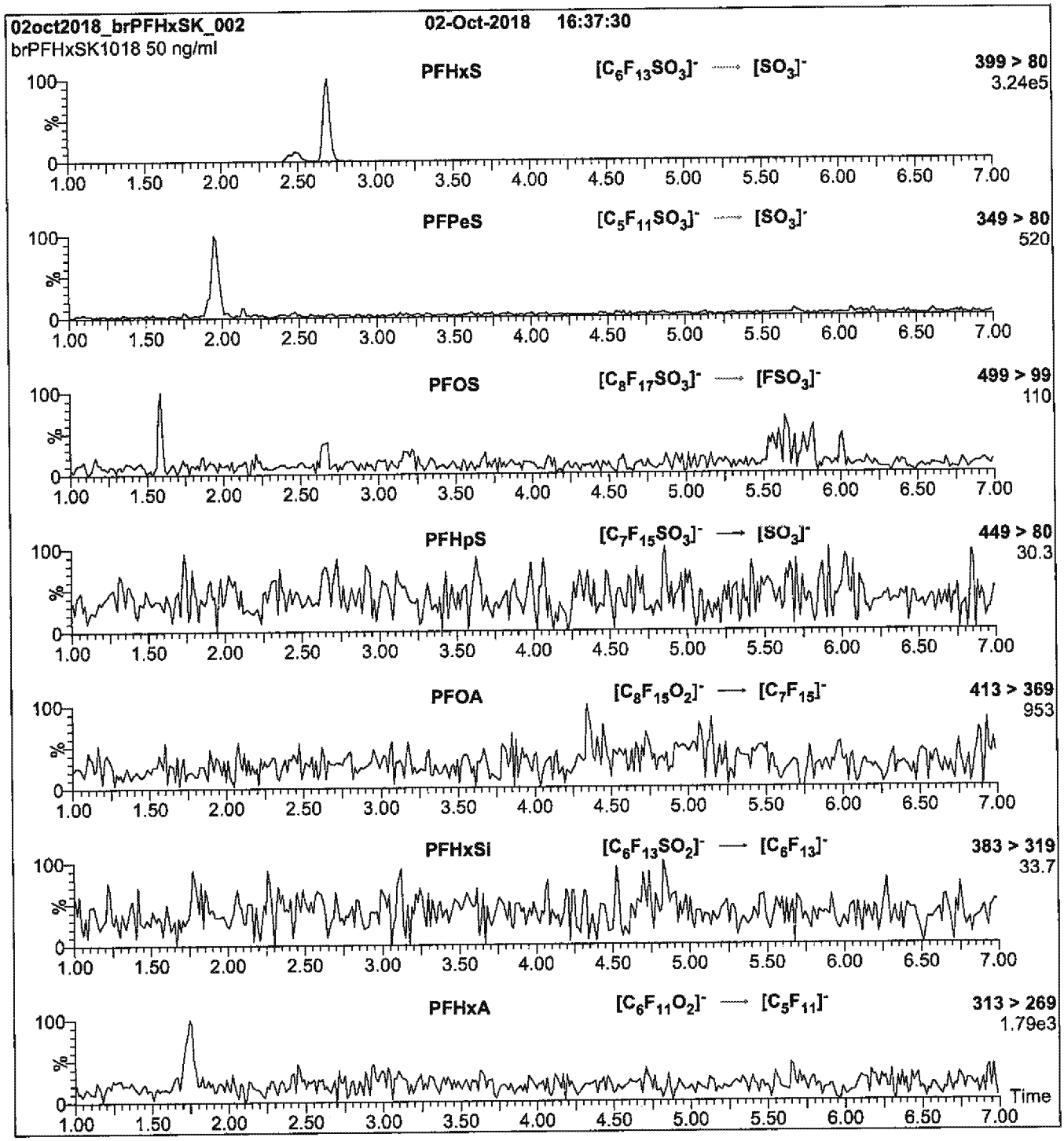
Flow: 300 µl/min

MS Parameters

Experiment: SIR (9 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = variable (2 - 6)
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

Figure 3: **br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: On-column (br-PFHxSK)

Mobile phase: Same as Figures 1 and 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 2.87e-3
Collision Energy (eV) = 42

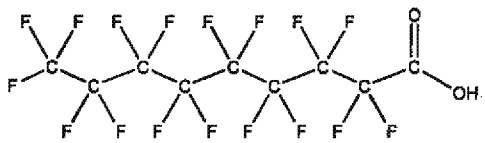
Reagent

LCPFNA_00012

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA
LOT NUMBER: PFNA0218
COMPOUND: Perfluoro-n-nonanoic acid
STRUCTURE:
CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
MOLECULAR WEIGHT: 464.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/16/2018
EXPIRY DATE: (mm/dd/yyyy) 02/16/2023
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 ~ 0.2% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

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Certified By Ex. 4 CBI **Date:** 02/20/2018 (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

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UNCERTAINTY:

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

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

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CALA

ANAB

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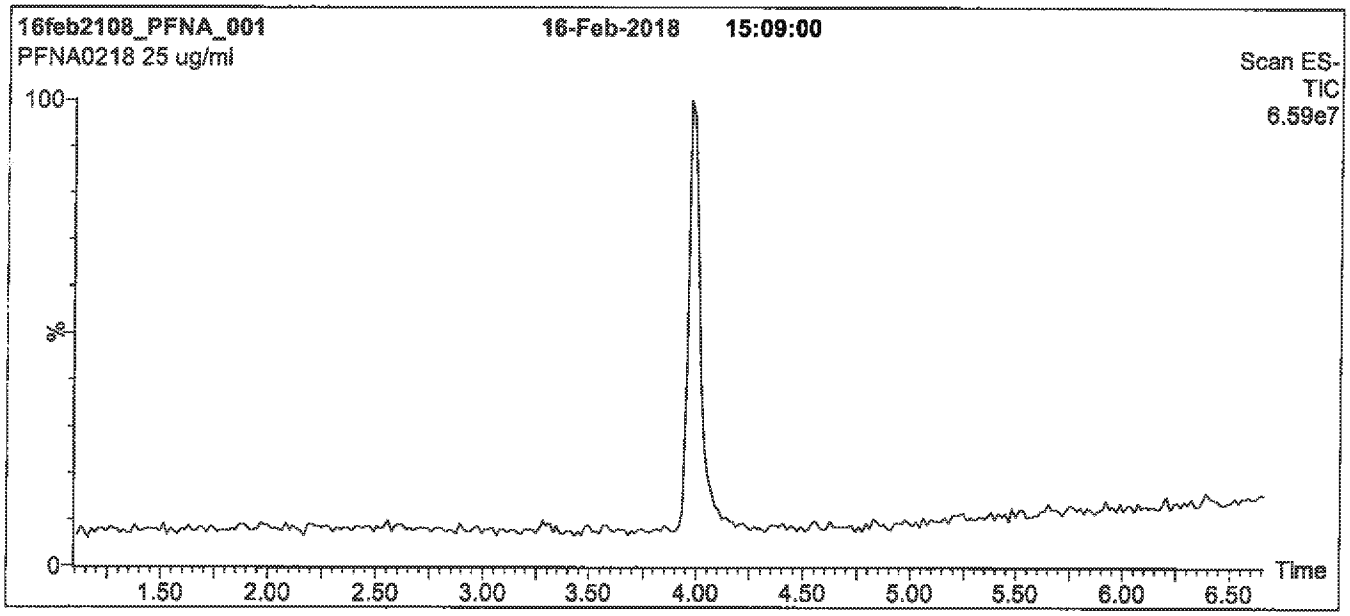
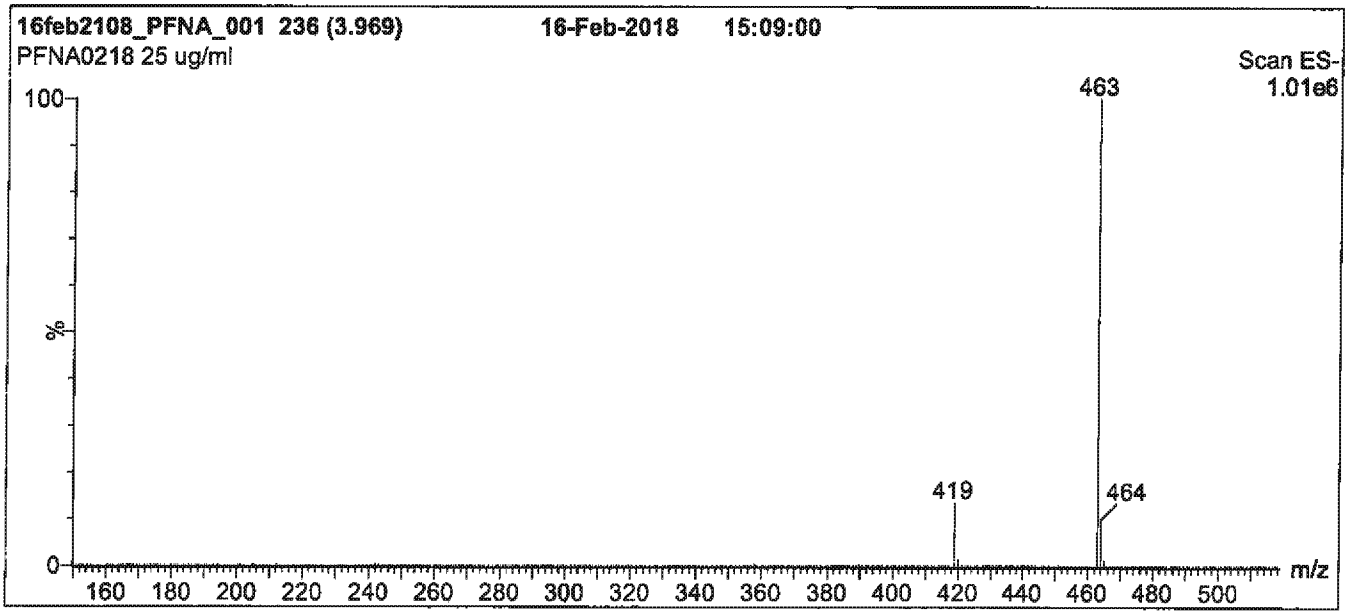
Figure 1: **PFNA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
MS: **Micromass Quattro *micro* API MS**

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

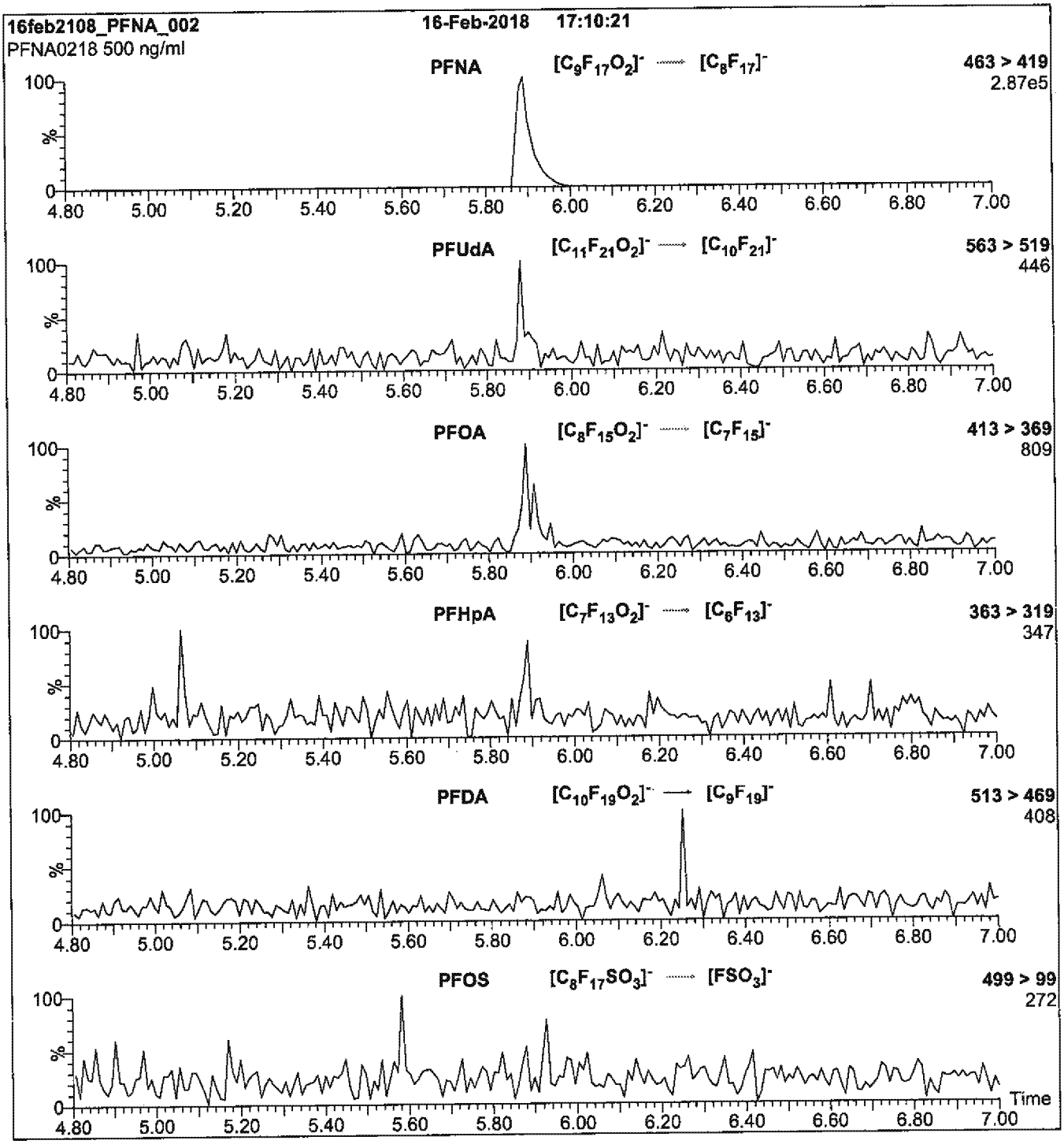
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFNA)

Mobile phase: isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 11

Reagent

LCPFOA_00014

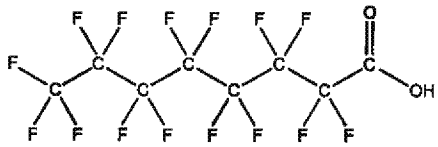
1416058
ID: LCPFOA_00014
Exp:08/23/23 Prpd:CBW Opn:10/29/18
PF-n-octanoic acid

R: 10/29/18 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
LOT NUMBER: PFOA0818
COMPOUND: Perfluoro-n-octanoic acid
STRUCTURE:
CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{16}O_2$
MOLECULAR WEIGHT: 414.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/23/2018
EXPIRY DATE: (mm/dd/yyyy) 08/23/2023
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: Ex. 4 CBI **Date:** 08/24/2018 (mm/dd/yyyy)

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QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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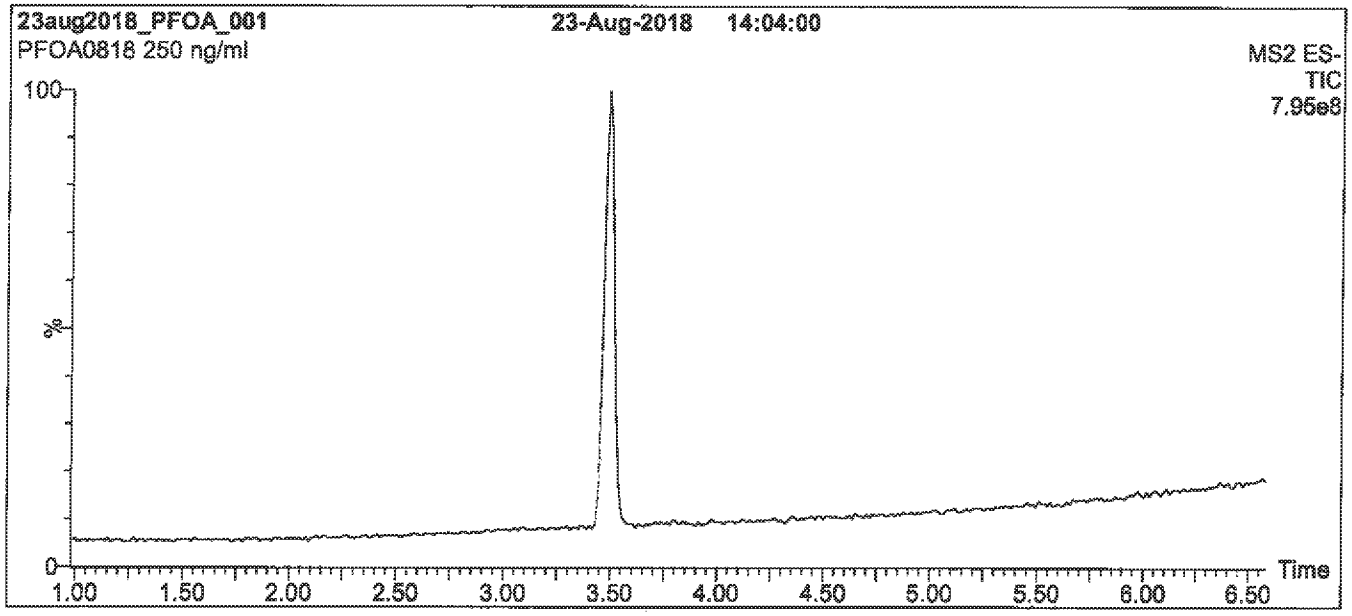
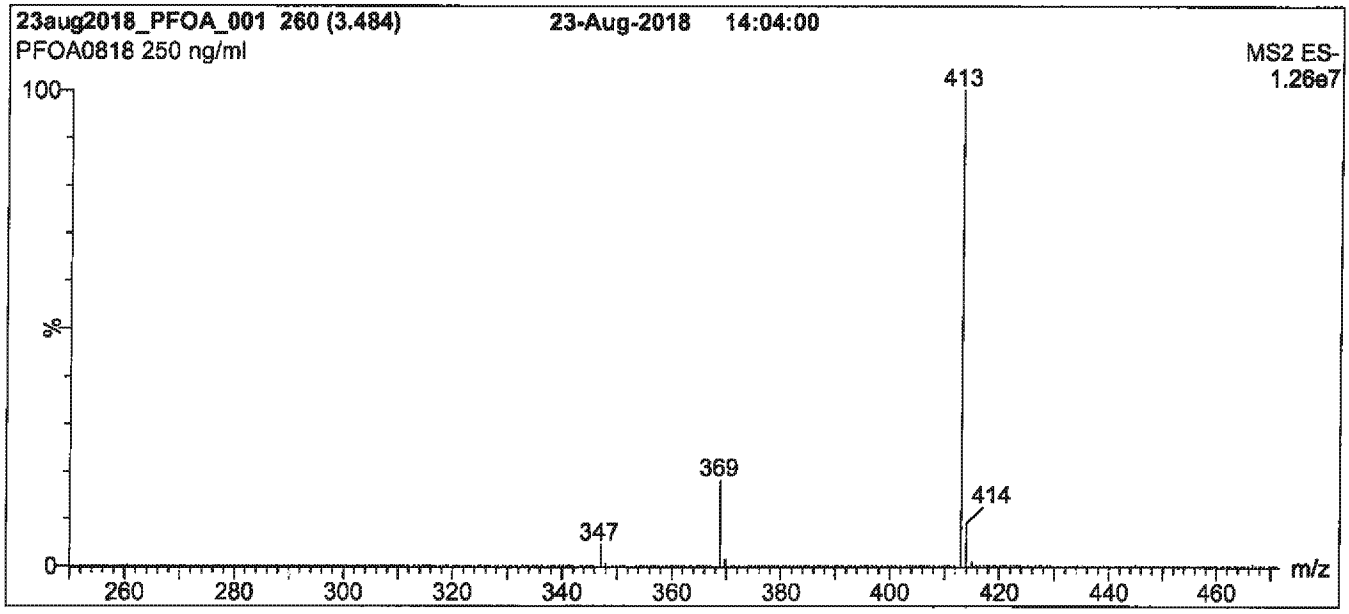
Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

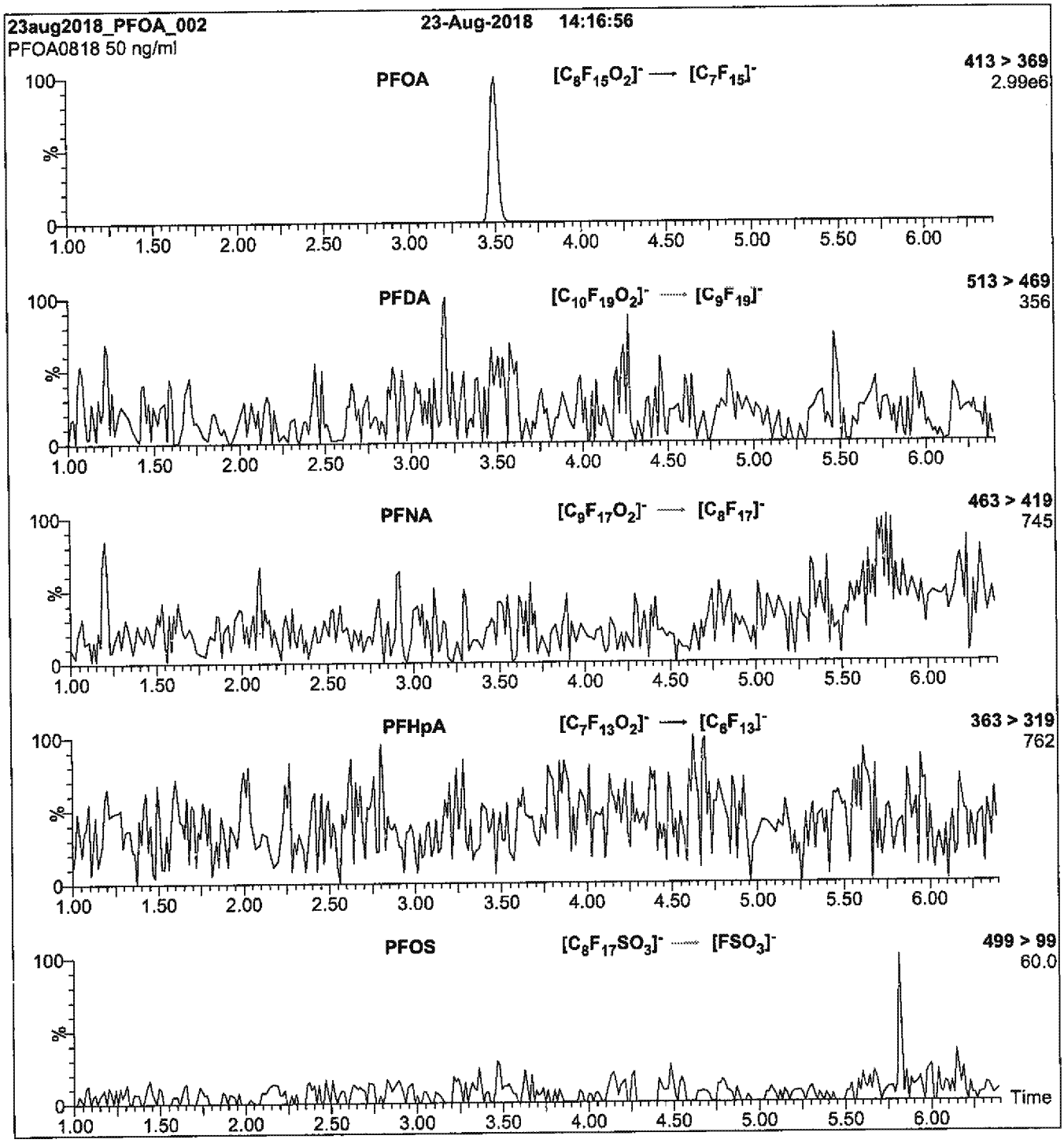
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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



Conditions for Figure 2:

Injection: On-column (PFOA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.45e-3
Collision Energy (eV) = 8

Reagent

LCPFOS-br_00009

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK0418
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	04/09/2018
LAST TESTED: (mm/dd/yyyy)	04/18/2018
EXPIRY DATE: (mm/dd/yyyy)	04/18/2023
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate 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 ^{19}F-NMR
Figure 1: LC/MS Data (TIC 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.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

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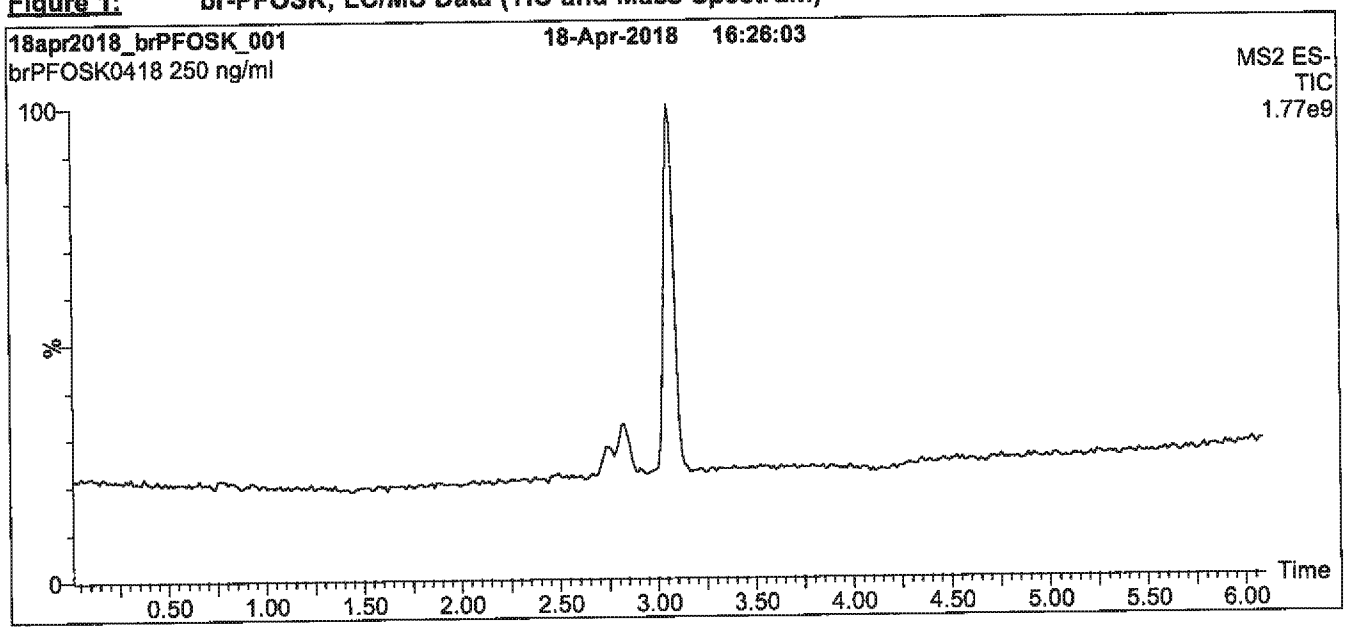
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

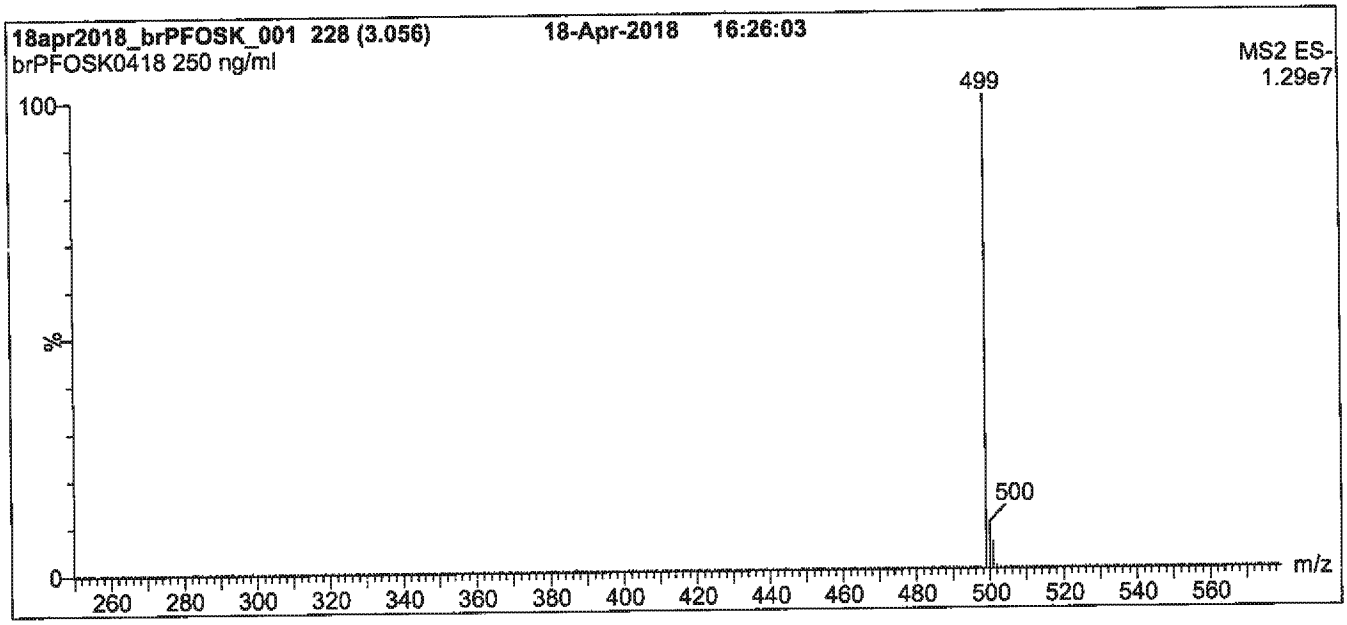
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3C(CF_3)(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2C(CF_3)(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF(CF_3)CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: Ex. 4 CBI **Date:** 04/23/2018 (mm/dd/yyyy)

Figure 1: **br-PFOSK; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7 min and hold for 3 min.
Return to initial conditions over 0.75 min.
Time: 12 min

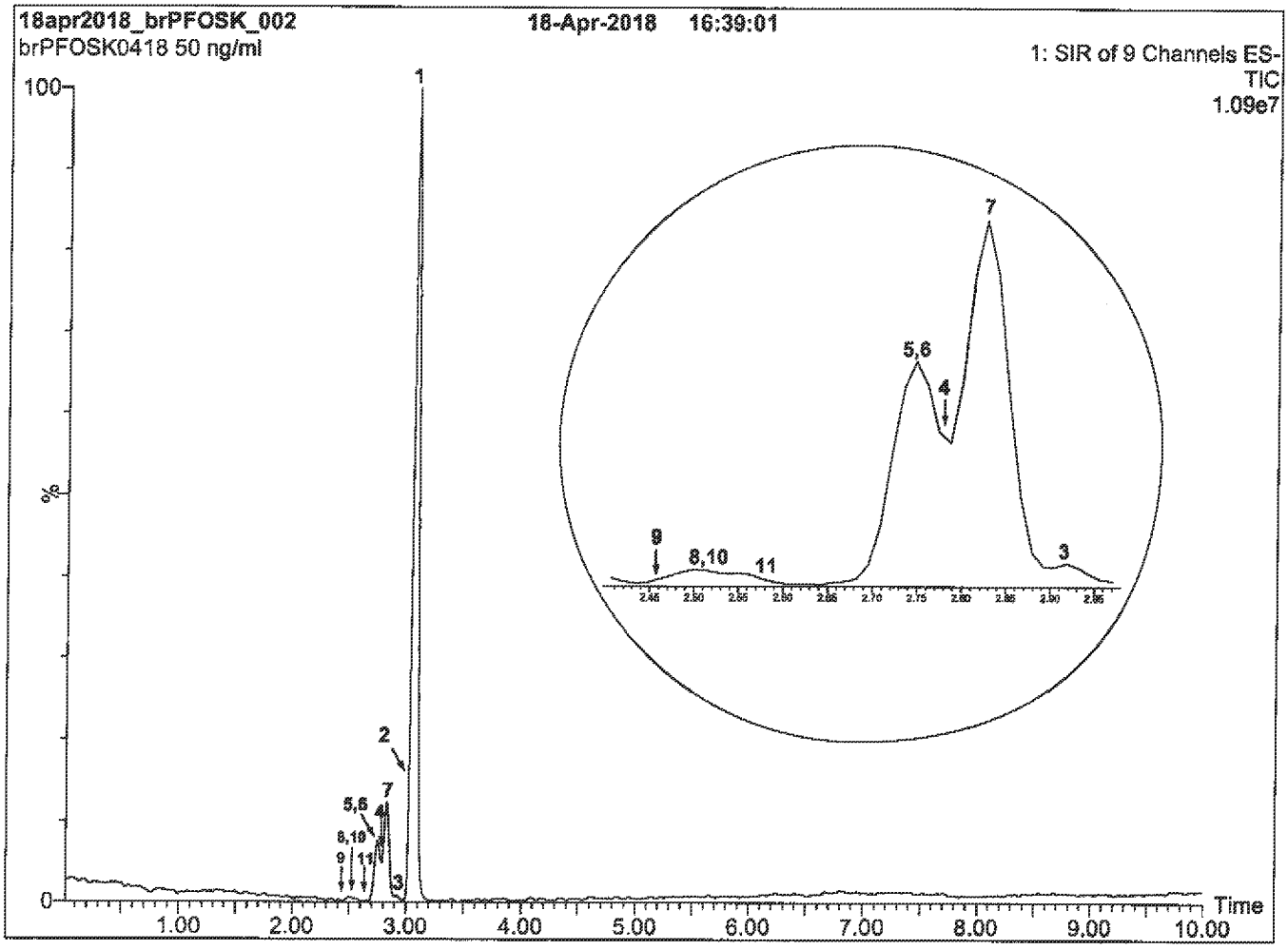
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFOSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18} (1.7 µm, 2.1 x 100 mm)

Injection: 50 ng/ml of br-PFOSK

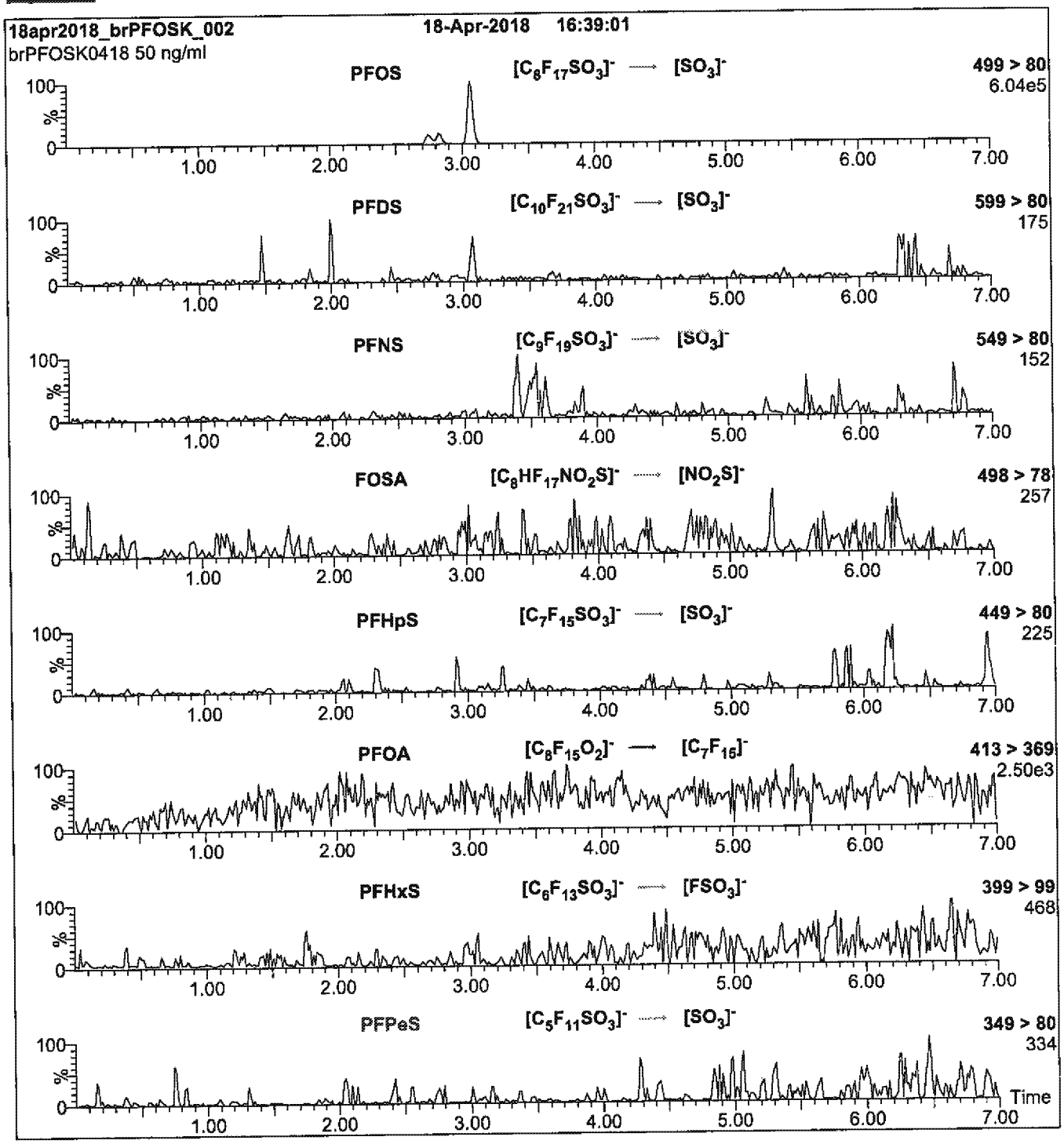
Mobile Phase: Gradient
60% (80:20 MeOH:ACN) / 40% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7 min and hold for 3 min.
Return to initial conditions over 0.75 min.
Time: 12 min

Flow: 300 µl/min

MS Conditions:

SIR (ES^-)
Source = 150 °C
Desolvation = 500 °C
Cone Voltage = 2 - 20V (variable)

Figure 3: **br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 3:

Injection: On-column (br-PFOSK)

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.47e-3
Collision Energy (eV) = 64

Reagent

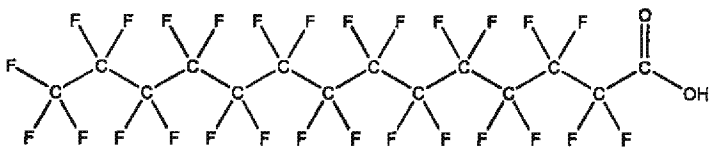
LCPFTeDA_00012

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA0818
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/23/2018
EXPIRY DATE: (mm/dd/yyyy) 08/23/2023
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 ~ 0.3% of PFDoA ($C_{12}HF_{23}O_2$), ~ 0.1% of PFTrDA ($C_{13}HF_{25}O_2$), and ~ 0.1% of PFPeDA ($C_{15}HF_{29}O_2$).

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Certified By: Ex. 4 CBI **Date:** 09/05/2018 (mm/dd/yyyy)

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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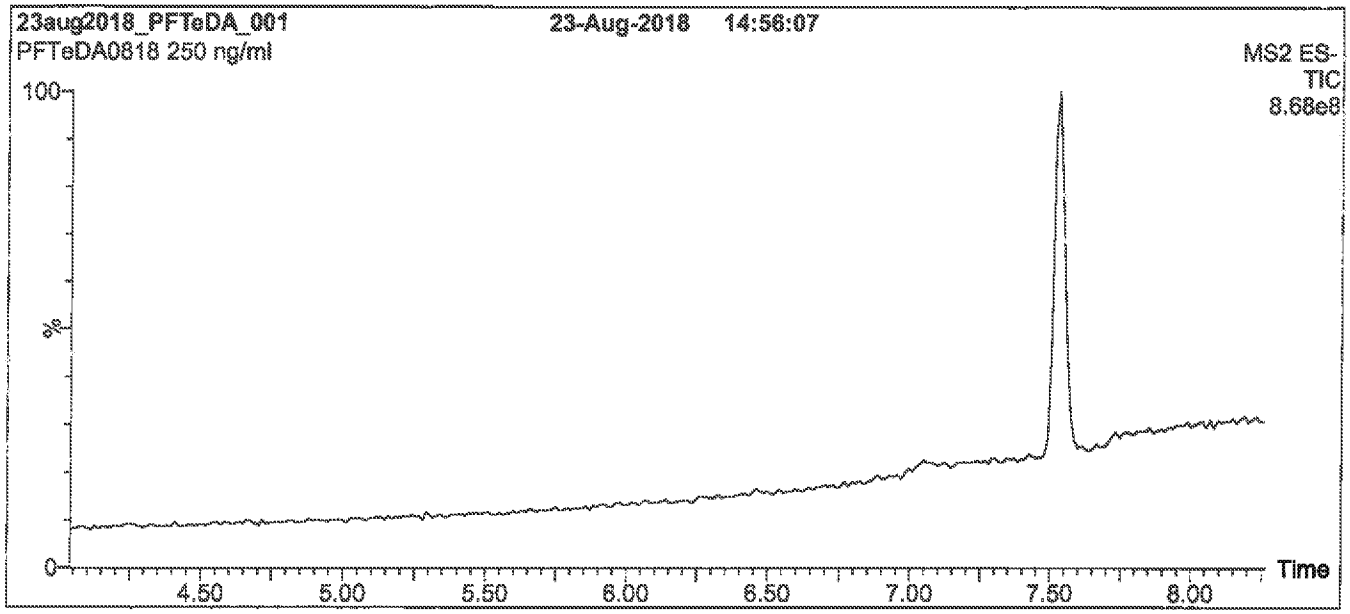
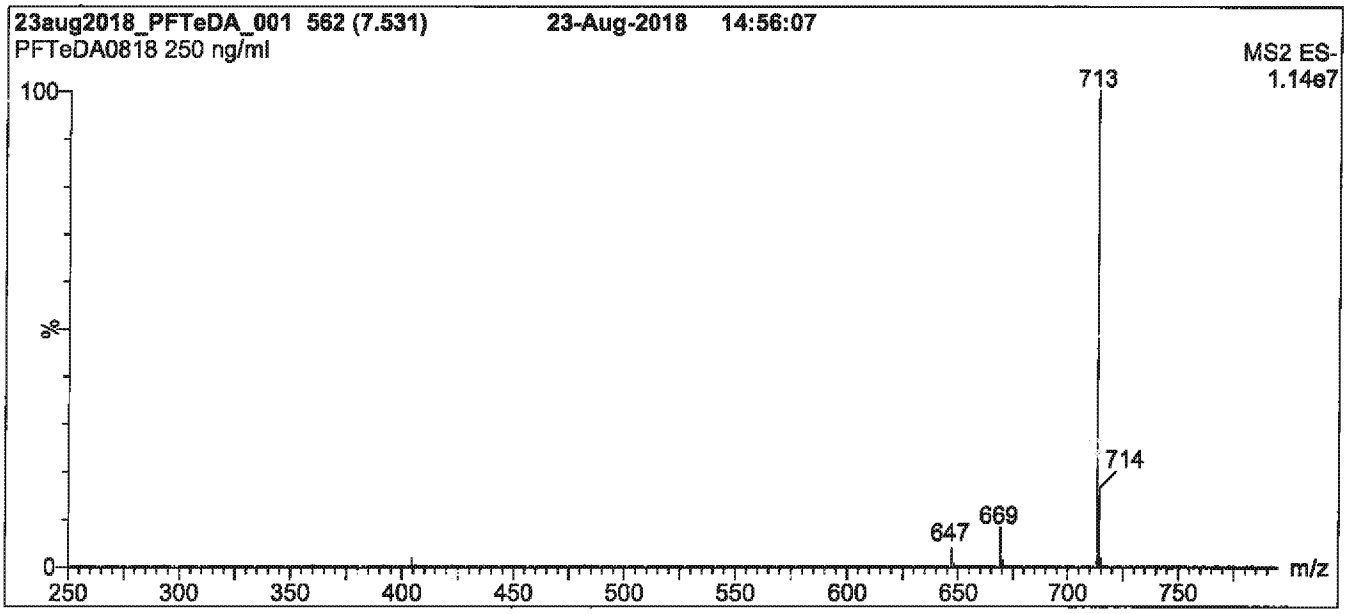
Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min before returning to initial conditions in 0.75 min.
Time: 12 min

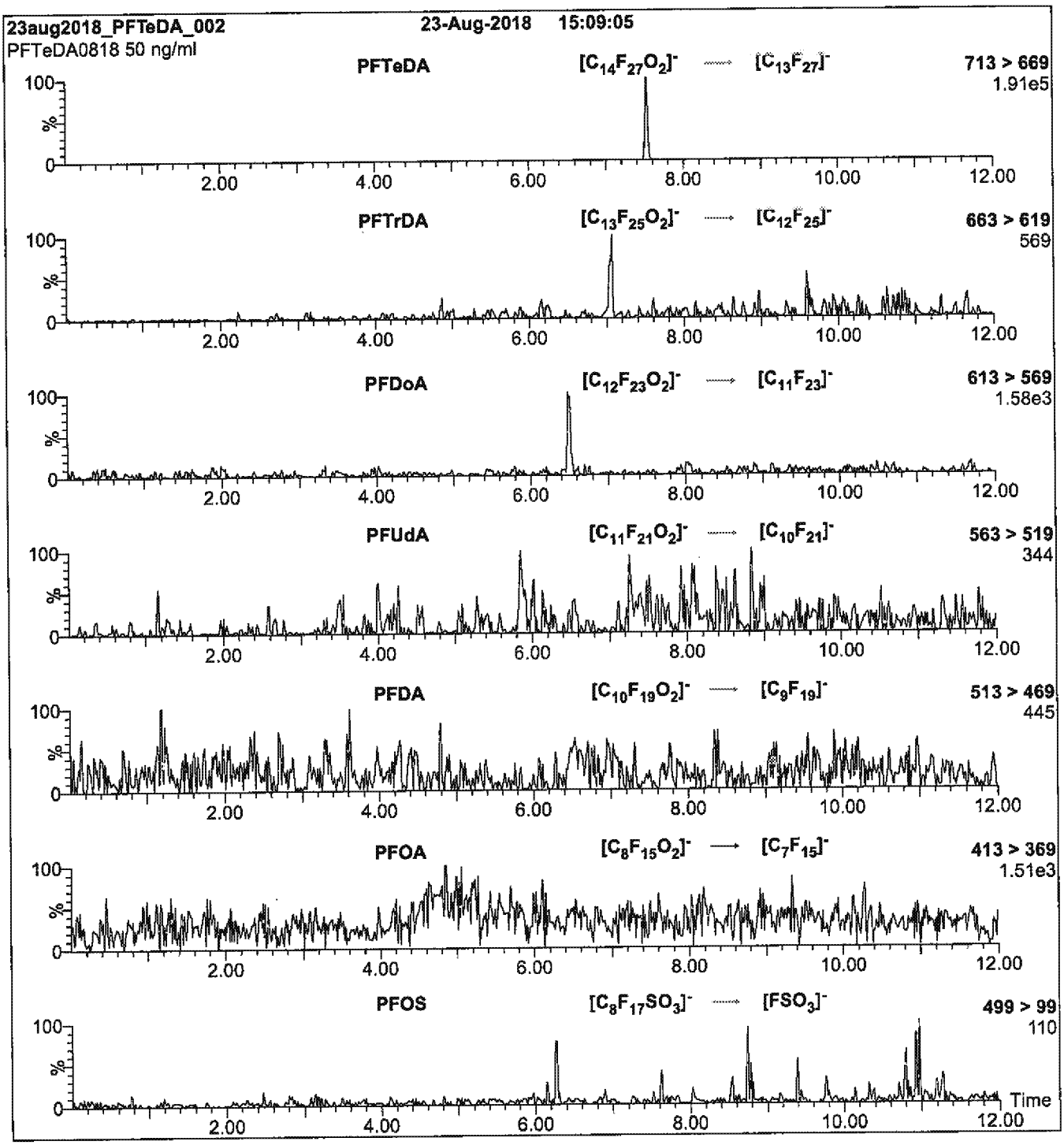
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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



Conditions for Figure 2:

Injection: On-column (PFTeDA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.45e-3
Collision Energy (eV) = 12

Reagent

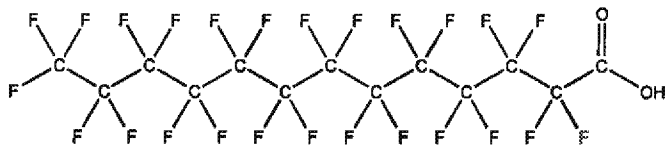
LCPFTrDA_00012

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTrDA
LOT NUMBER: PFTrDA0218
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE:
CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
MOLECULAR WEIGHT: 664.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 02/16/2018
EXPIRY DATE: (mm/dd/yyyy) 02/16/2023
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 ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

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Certified By: Ex. 4 CBI **Date:** 02/20/2018 (mm/dd/yyyy)

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

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

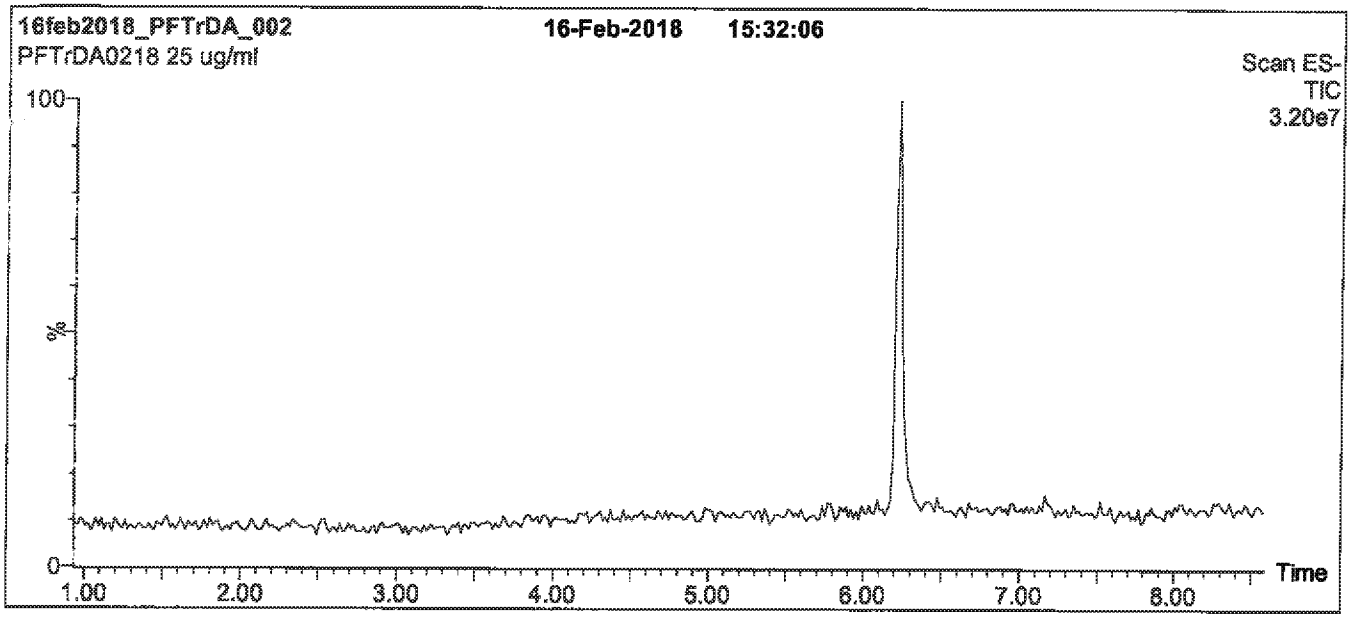
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

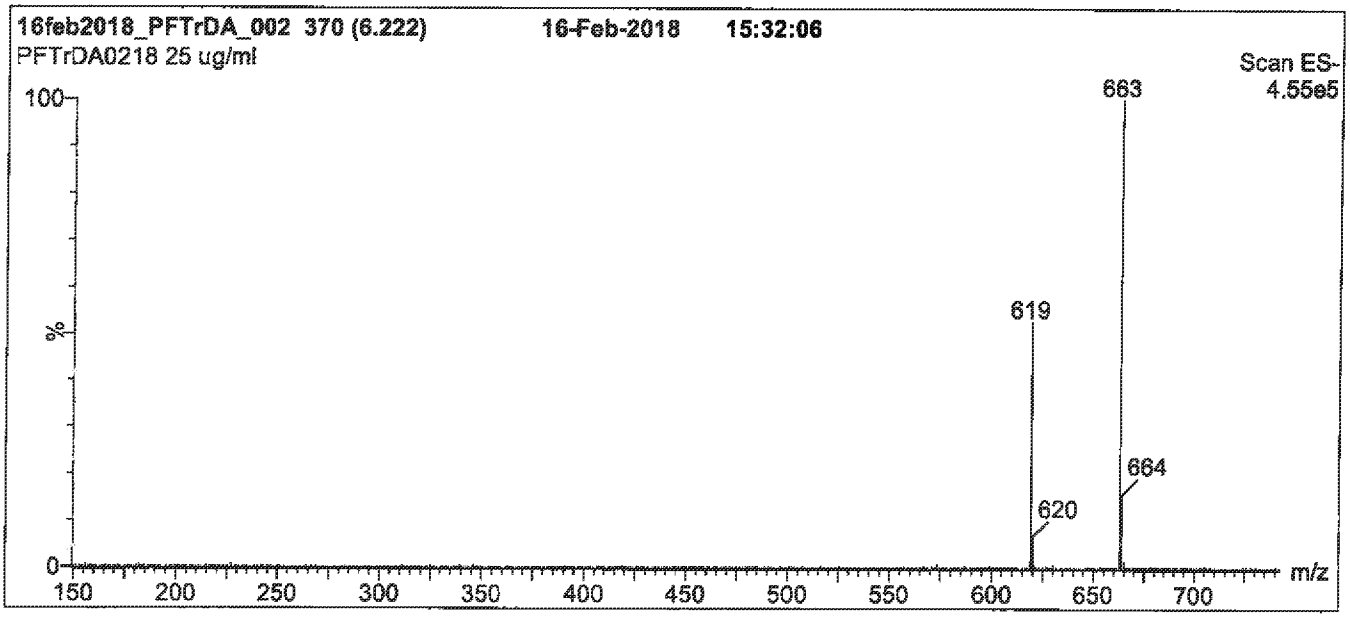
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
Time: 10 min

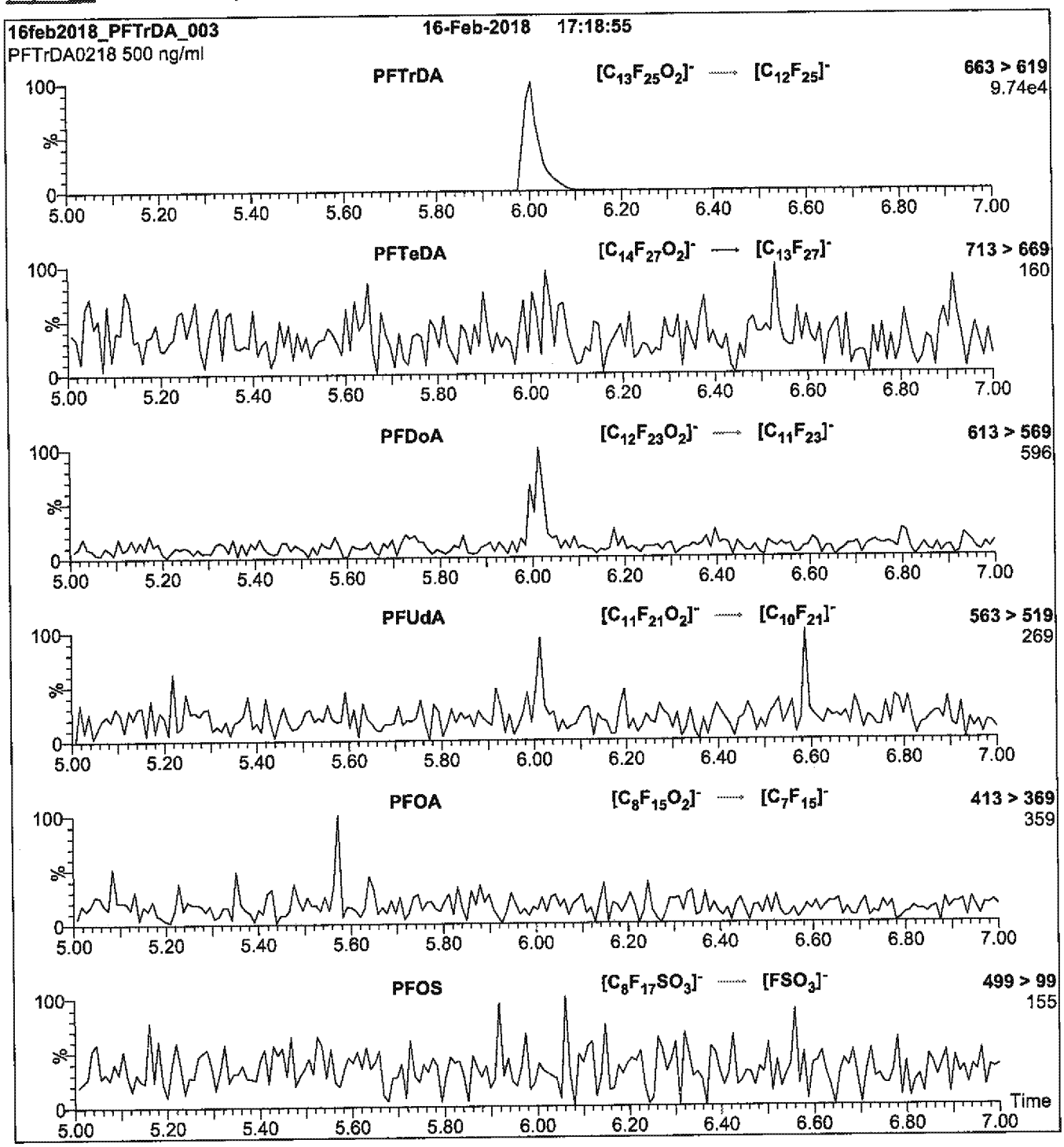
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml PFTrDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 15

Reagent

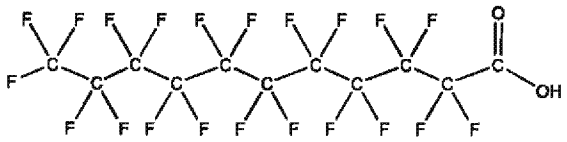
LCPFUdA_00012

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA
LOT NUMBER: PFUdA0818
COMPOUND: Perfluoro-n-undecanoic acid

STRUCTURE:
CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
MOLECULAR WEIGHT: 564.09
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/23/2018
EXPIRY DATE: (mm/dd/yyyy) 08/23/2023
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: Ex. 4 CBI **Date:** 08/24/2018 (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

INTENDED USE:

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

HANDLING:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \ldots x_n$ on which it depends is:

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

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

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

TRACEABILITY:

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

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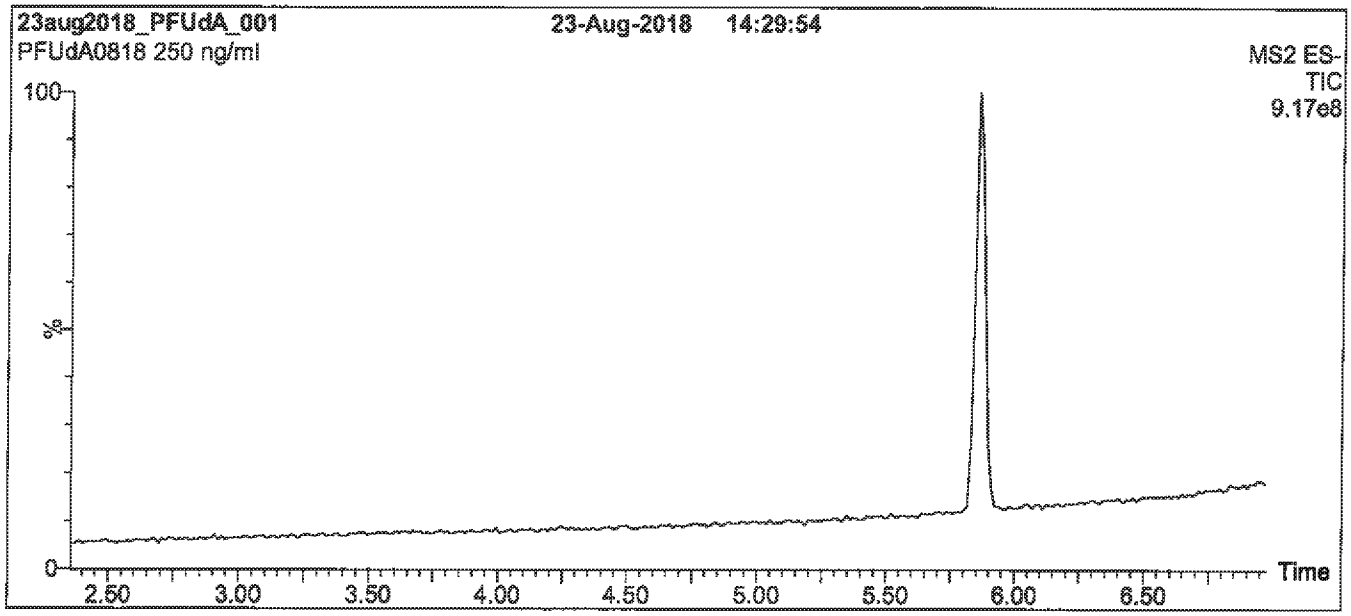
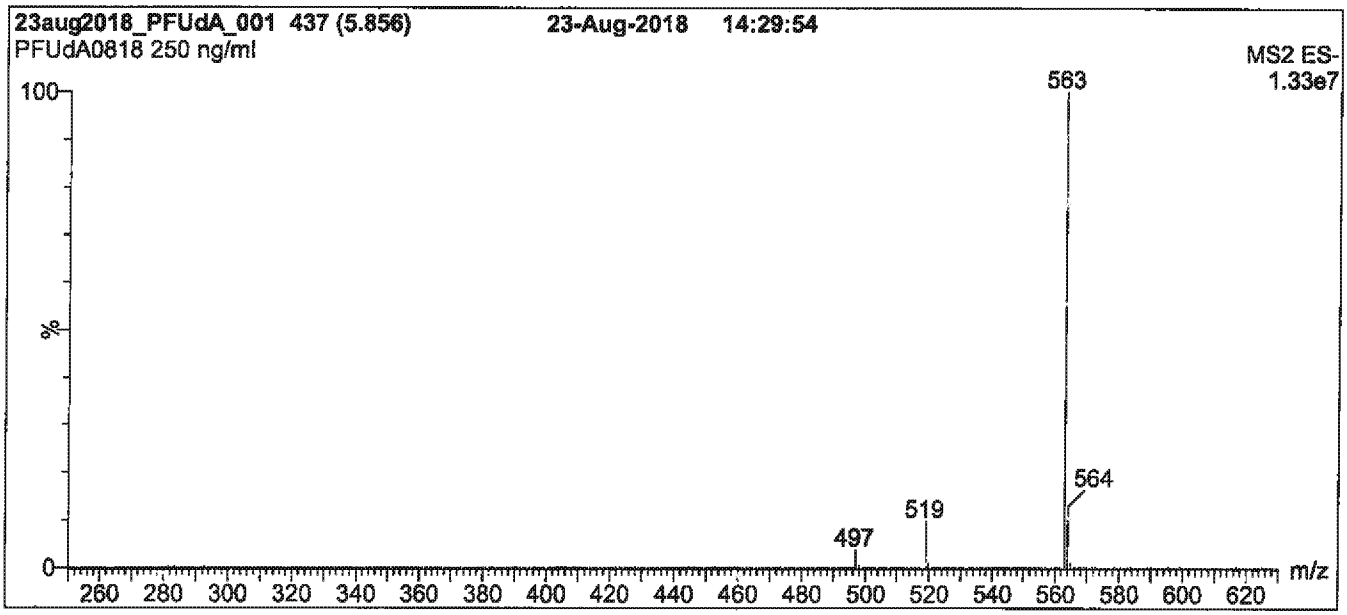
CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 8 min and hold for 2 min before returning to initial conditions in 0.75 min.
Time: 12 min

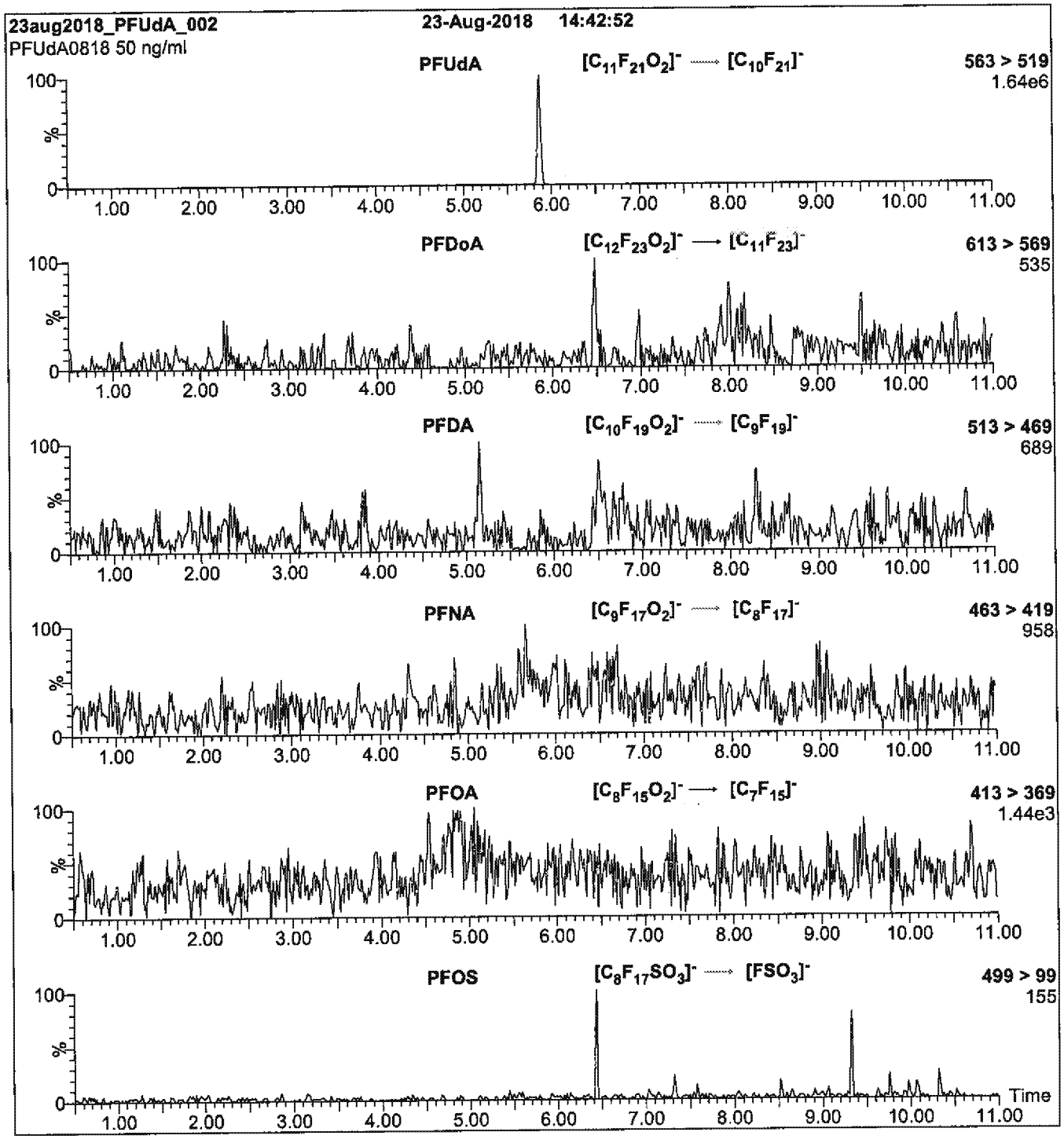
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 1000

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



Conditions for Figure 2:

Injection: On-column (PFUdA)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.45e-3
Collision Energy (eV) = 12

Method 537

Perfluorinated Alkyl Acids (LC/MS) by Method 537

FORM II
LCMS SURROGATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
C0AR3	320-48799-1	91	105
C0AR4	320-48799-2	87	112
C0AR4 DL	320-48799-2 DL	96	108
C0AR6	320-48799-3	90	113
C0AR7	320-48799-4	90	111
C0AS2	320-48799-5	89	106
C0AW3	320-48799-6	93	104
C0AW4	320-48799-7	98	106
C0AW6	320-48799-8	95	102
C0AW7	320-48799-9	93	101
C0AW8	320-48799-10	86	105
	MB 320-285793/1-A	90	102
	LCS 320-285793/2-A	88	102
	LCSD 320-285793/3-A	90	106

	QC LIMITS
PFHxA = 13C2 PFHxA	70-130
PFDA = 13C2 PFDA	70-130

Column to be used to flag recovery values

FORM II 537 DW

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2019.04.04_537AA_045.d

Lab ID: LCS 320-285793/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid	186	175	94	70-130	
Perfluorooctanoic acid	200	194	97	70-130	
Perfluorononanoic acid	200	192	96	70-130	
Perfluorohexanesulfonic acid	182	178	98	70-130	
Perfluoroheptanoic acid	200	201	101	70-130	
Perfluorobutanesulfonic acid	177	144	82	70-130	

Column to be used to flag recovery and RPD values

FORM III 537 DW

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2019.04.04_537AA_046.d

Lab ID: LCSD 320-285793/3-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid	186	178	96	2	30	70-130	
Perfluorooctanoic acid	200	202	101	4	30	70-130	
Perfluorononanoic acid	200	197	98	2	30	70-130	
Perfluorohexanesulfonic acid	182	178	98	0	30	70-130	
Perfluoroheptanoic acid	200	196	98	3	30	70-130	
Perfluorobutanesulfonic acid	177	137	77	5	30	70-130	

Column to be used to flag recovery and RPD values

FORM III 537 DW

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab File ID: 2019.04.04_537AA_044.d Lab Sample ID: MB 320-285793/1-A

Matrix: Water Date Extracted: 04/03/2019 06:57

Instrument ID: A8_N Date Analyzed: 04/05/2019 01:20

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-285793/2-A	2019.04.04_537AA_045.d	04/05/2019 01:29
	LCSD 320-285793/3-A	2019.04.04_537AA_046.d	04/05/2019 01:39
C0AR3	320-48799-1	2019.04.04_537AA_047.d	04/05/2019 01:48
C0AR4	320-48799-2	2019.04.04_537AA_048.d	04/05/2019 01:57
C0AR6	320-48799-3	2019.04.04_537AA_049.d	04/05/2019 02:07
C0AR7	320-48799-4	2019.04.04_537AA_050.d	04/05/2019 02:16
C0AS2	320-48799-5	2019.04.04_537AA_051.d	04/05/2019 02:26
C0AW3	320-48799-6	2019.04.04_537AA_052.d	04/05/2019 02:35
C0AW4	320-48799-7	2019.04.04_537AA_053.d	04/05/2019 02:45
C0AW6	320-48799-8	2019.04.04_537AA_056.d	04/05/2019 03:13
C0AW7	320-48799-9	2019.04.04_537AA_057.d	04/05/2019 03:23
C0AW8	320-48799-10	2019.04.04_537AA_058.d	04/05/2019 03:32
C0AR4 DL	320-48799-2 DL	2019.04.05_537.1A_009.d	04/05/2019 12:42

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Calibration Start Date: 04/04/2019 15:14

GC Column: GeminiC18 3x100 ID: 3(mm) Calibration End Date: 04/04/2019 16:11

Calibration ID: 44584

		13PFOA		PFOS		d3NMFOS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		3230125	3.19	3241981	3.56	509057	4.09
UPPER LIMIT		4845188	3.69	4862972	4.06	763586	4.59
LOWER LIMIT		1615063	2.69	1620991	3.06	254529	3.59
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCVL 320-286141/10		3347956	3.20	3378268	3.56	542383	4.09
ICV 320-286141/12		3235073	3.20	3261224	3.55	504834	4.09
CCV 320-286196/38 CCVIS		3027142	3.18	2916059	3.55		
MB 320-285793/1-A		2941350	3.16	2985047	3.55		
LCS 320-285793/2-A		2926055	3.17	2933796	3.54		
LCSD 320-285793/3-A		2916034	3.17	2961044	3.54		
320-48799-1	C0AR3	3055206	3.16	3007287	3.53		
320-48799-2	C0AR4	2740959	3.18	2973268	3.55		
320-48799-3	C0AR6	2870142	3.16	3032835	3.53		
320-48799-4	C0AR7	3017417	3.18	3179811	3.55		
320-48799-5	C0AS2	2929570	3.18	3054106	3.55		
320-48799-6	C0AW3	2933594	3.17	2941812	3.55		
320-48799-7	C0AW4	2977075	3.17	2997666	3.54		
CCV 320-286196/50 CCVIS		2846737	3.16	2728038	3.54		
CCV 320-286198/50 CCVIS		2846737	3.16	2728038	3.54		
320-48799-8	C0AW6	3015673	3.16	3097921	3.55		
320-48799-9	C0AW7	2964534	3.16	2999972	3.53		
320-48799-10	C0AW8	2932932	3.18	2951270	3.54		
CCV 320-286198/55 CCVIS		2999911	3.16	2867733	3.53		
CCVL 320-286320/1		3095391	3.17	2995972	3.55		
CCV 320-286320/2 CCVIS		2963596	3.16	2818015	3.53		
320-48799-2 DL	C0AR4 DL	3059589	3.18	2981430	3.55		
CCV 320-286320/7 CCVIS		2944377	3.17	2697291	3.54		

13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS
d3NMFOS = d3-NMeFOSAA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 DW

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Sample No.: CCV 320-286196/38 Date Analyzed: 04/05/2019 01:01

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.04_537AA_04 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3027142	3.18	2916059	3.55		
UPPER LIMIT		4237999	3.68	4082483	4.05		
LOWER LIMIT		2118999	2.68	2041241	3.05		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-285793/1-A		2941350	3.16	2985047	3.55		
LCS 320-285793/2-A		2926055	3.17	2933796	3.54		
LCSD 320-285793/3-A		2916034	3.17	2961044	3.54		
320-48799-1	C0AR3	3055206	3.16	3007287	3.53		
320-48799-2	C0AR4	2740959	3.18	2973268	3.55		
320-48799-3	C0AR6	2870142	3.16	3032835	3.53		
320-48799-4	C0AR7	3017417	3.18	3179811	3.55		
320-48799-5	C0AS2	2929570	3.18	3054106	3.55		
320-48799-6	C0AW3	2933594	3.17	2941812	3.55		
320-48799-7	C0AW4	2977075	3.17	2997666	3.54		

13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 DW

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Sample No.: CCV 320-286196/50 Date Analyzed: 04/05/2019 02:54

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.04_537AA_05 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2846737	3.16	2728038	3.54		
UPPER LIMIT		3985432	3.66	3819253	4.04		
LOWER LIMIT		1992716	2.66	1909627	3.04		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-285793/1-A		2941350	3.16	2985047	3.55		
LCS 320-285793/2-A		2926055	3.17	2933796	3.54		
LCSD 320-285793/3-A		2916034	3.17	2961044	3.54		
320-48799-1	C0AR3	3055206	3.16	3007287	3.53		
320-48799-2	C0AR4	2740959	3.18	2973268	3.55		
320-48799-3	C0AR6	2870142	3.16	3032835	3.53		
320-48799-4	C0AR7	3017417	3.18	3179811	3.55		
320-48799-5	C0AS2	2929570	3.18	3054106	3.55		
320-48799-6	C0AW3	2933594	3.17	2941812	3.55		
320-48799-7	C0AW4	2977075	3.17	2997666	3.54		

13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 DW

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Sample No.: CCV 320-286198/50 Date Analyzed: 04/05/2019 02:54

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.04_537AA_05 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2846737	3.16	2728038	3.54		
UPPER LIMIT		3985432	3.66	3819253	4.04		
LOWER LIMIT		1992716	2.66	1909627	3.04		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-48799-8	C0AW6	3015673	3.16	3097921	3.55		
320-48799-9	C0AW7	2964534	3.16	2999972	3.53		
320-48799-10	C0AW8	2932932	3.18	2951270	3.54		

13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 DW

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Sample No.: CCV 320-286198/55 Date Analyzed: 04/05/2019 03:42

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.04_537AA_05 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2999911	3.16	2867733	3.53		
UPPER LIMIT		4199875	3.66	4014826	4.03		
LOWER LIMIT		2099938	2.66	2007413	3.03		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-48799-8	C0AW6	3015673	3.16	3097921	3.55		
320-48799-9	C0AW7	2964534	3.16	2999972	3.53		
320-48799-10	C0AW8	2932932	3.18	2951270	3.54		

13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 DW

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Sample No.: CCV 320-286320/2 Date Analyzed: 04/05/2019 12:04

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.05_537.1A_0 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2963596	3.16	2818015	3.53		
UPPER LIMIT		4149034	3.66	3945221	4.03		
LOWER LIMIT		2074517	2.66	1972611	3.03		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-48799-2 DL	C0AR4 DL	3059589	3.18	2981430	3.55		

13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 DW

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Sample No.: CCV 320-286320/7 Date Analyzed: 04/05/2019 12:51

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.05_537.1A_0 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2944377	3.17	2697291	3.54		
UPPER LIMIT		4122128	3.67	3776207	4.04		
LOWER LIMIT		2061064	2.67	1888104	3.04		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-48799-2 DL	C0AR4 DL	3059589	3.18	2981430	3.55		

13PFOA = 13C2 PFOA
PFOS = 13C4 PFOS

Area Limit = 70%-140% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 DW

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR3
Lab Sample ID: 320-48799-1
Matrix: Water
Lab File ID: 2019.04.04_537AA_047.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 09:55
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 285.2(mL)
Date Analyzed: 04/05/2019 01:48
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	6.4		1.8	0.83
335-67-1	Perfluorooctanoic acid	9.2		5.3	2.4
375-95-1	Perfluorononanoic acid	1.6	J	1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.56
375-85-9	Perfluoroheptanoic acid	5.9		2.6	1.1
375-73-5	Perfluorobutanesulfonic acid	3.5		1.8	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	105		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d
Lims ID: 320-48799-A-1-A
Client ID: C0AR3
Sample Type: Client
Inject. Date: 05-Apr-2019 01:48:29 ALS Bottle#: 32 Worklist Smp#: 43
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:18:14
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.976	0.016	1.000	146718	0.0987	Target=1.41	110	
298.90 > 99.00	1.976	1.976	0.0	0.992	101847		1.44(0.00-0.00)	33.9	
13 Perfluorohexanoic acid									M
313.00 > 269.00	2.347	2.347	0.0	0.743	273312	0.2010	Target=10.46	19.8	M
313.00 > 119.00	2.347	2.347	0.0	0.743	25537		10.70(0.00-0.00)	19.3	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3241341	2.28		6323	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.473	0.001	1.000	5856	0.0177		1.1	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	141235	2.21		539	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.757	2.757	0.0	1.000	217168	0.1677	Target=2.41	14.2	M
363.00 > 169.00	2.757	2.757	0.0	1.000	88329		2.46(0.00-0.00)	136	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.778	0.0	1.000	27892	0.0155	Target=2.91	4.8	M
399.00 > 99.00	2.778	2.778	0.0	1.000	10260		2.72(0.00-0.00)	3.6	M
24 DONA									
377.00 > 251.00	2.799	2.799	0.0	1.000	3151	0.000893	Target=1.54	3.9	
377.00 > 85.00	2.757	2.799	-0.042	0.985	3036		1.04(0.00-0.00)	50.1	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.177	-0.019		3055206	2.50		8482	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.158	3.177	-0.019	1.000	326975	0.2637	Target=1.70	29.5	M
413.00 > 169.00	3.158	3.177	-0.019	1.000	187743		1.74(0.00-0.00)	242	M
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.549	-0.015		3007287	2.39		2188	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	42273	0.0468	Target=3.78	10.9	
463.00 > 169.00	3.549	3.549	0.0	1.000	9660		4.38(0.00-0.00)	46.7	
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.534	3.564	-0.030	1.000	242726	0.1826	Target=4.63	94.5	M
499.00 > 99.00	3.534	3.564	-0.030	1.000	39599		6.13(0.00-0.00)	26.7	M
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.735	3.735	0.0	1.000	2972	0.001390		5.1	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.892	3.892	0.0	1.000	9188	0.0129	Target=4.93	2.3	
513.00 > 169.00	3.892	3.892	0.0	1.000	1445		6.36(0.00-0.00)	4.3	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.911	0.0	1.000	1984449	2.61		8904	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.070	0.0		558601	2.50		2449	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.086	4.070	0.016	1.004	1841	0.008801		16.8	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.231	4.214	0.017	1.039	510692	2.24		288	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.231	4.231	0.0	1.000	5139	0.0253		19.3	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.349	4.349	0.0	1.000	3671	0.001369		19.1	

QC Flag Legend

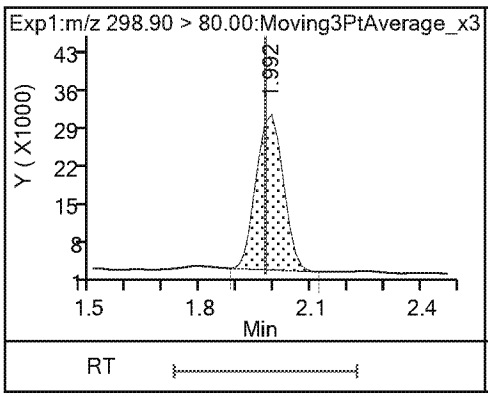
Review Flags

M - Manually Integrated

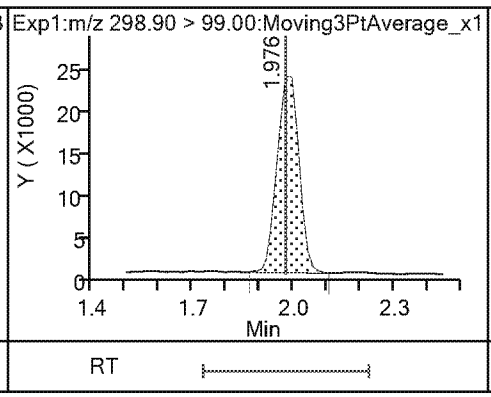
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d				
Injection Date:	05-Apr-2019 01:48:29	Instrument ID:	A8_N		
Lims ID:	320-48799-A-1-A	Lab Sample ID:	320-48799-1		
Client ID:	C0AR3				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	43
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

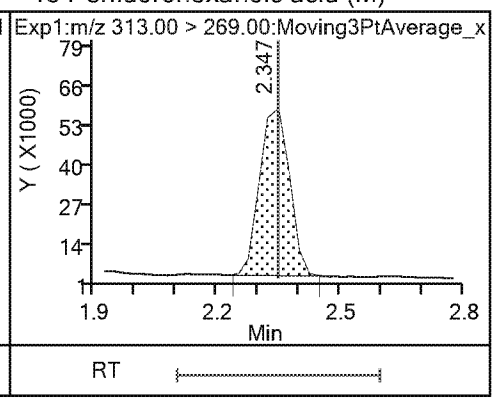
1 Perfluorobutanesulfonic acid



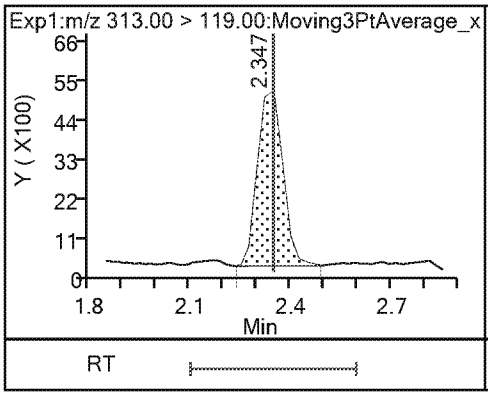
1 Perfluorobutanesulfonic acid



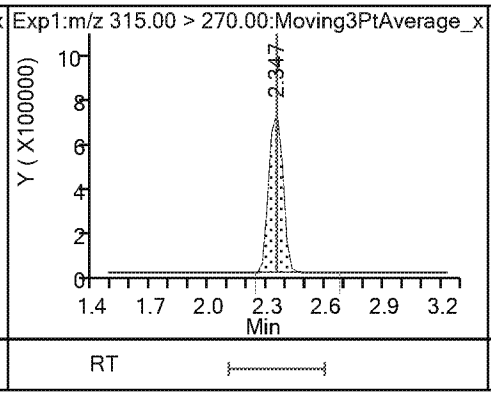
13 Perfluorohexanoic acid (M)



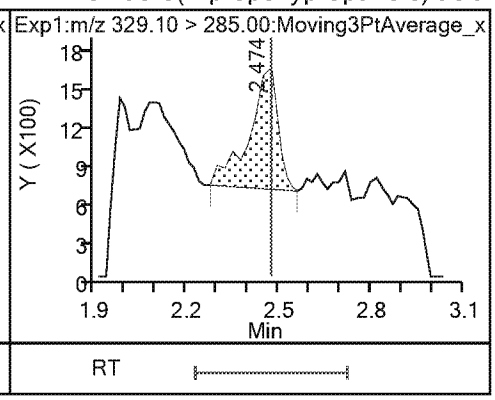
13 Perfluorohexanoic acid



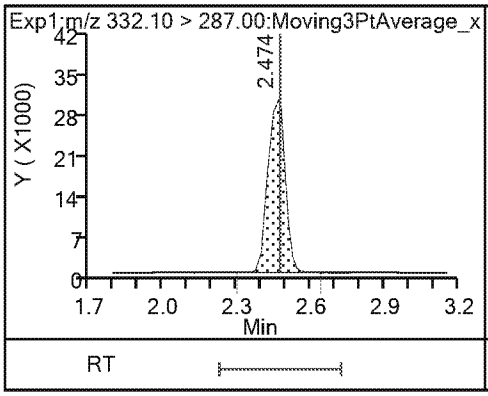
$ 2 13C2 PFHxA



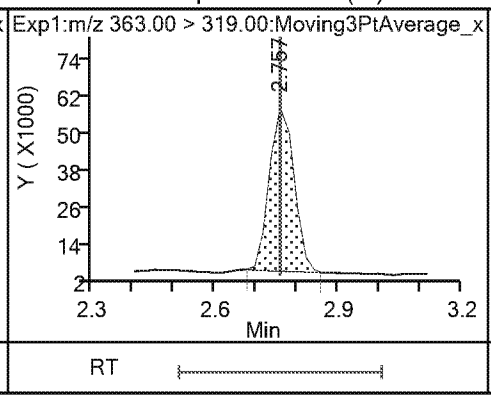
22 Perfluoro(2-propoxypropanoic) acid



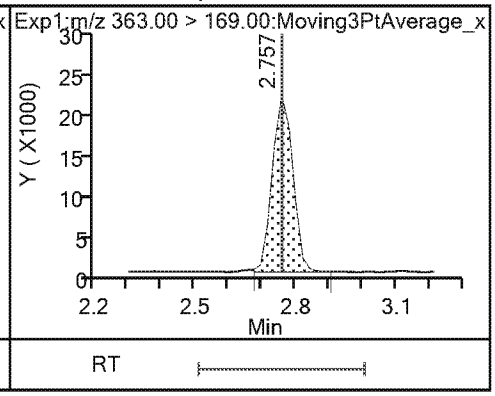
$ 25 13C3 HFPO-DA



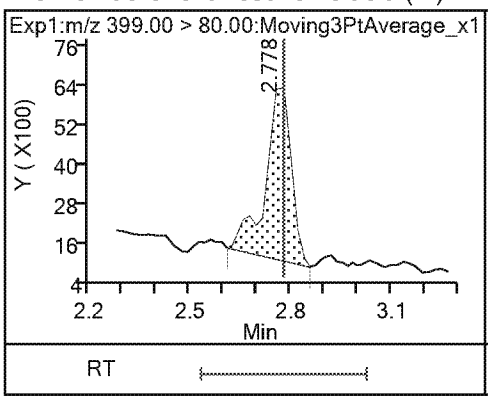
4 Perfluoroheptanoic acid (M)



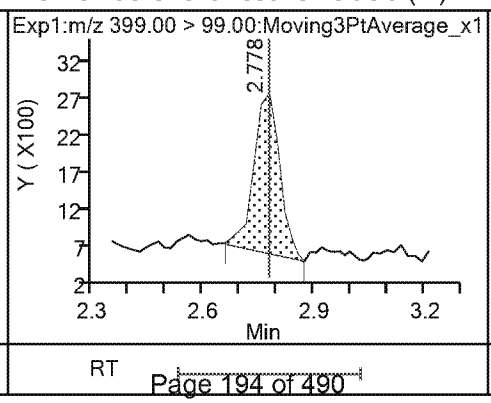
4 Perfluoroheptanoic acid



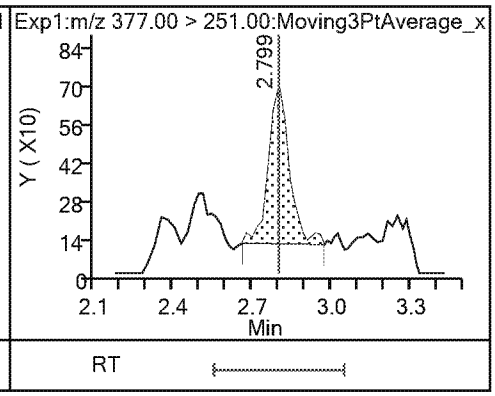
3 Perfluorohexanesulfonic acid (M)



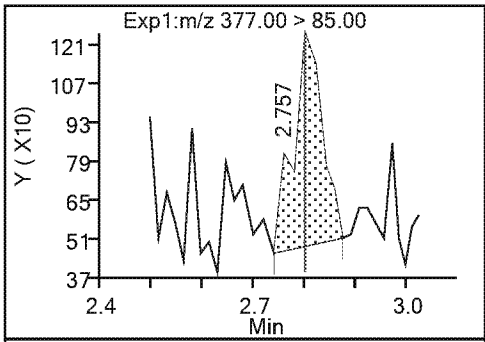
3 Perfluorohexanesulfonic acid (M)



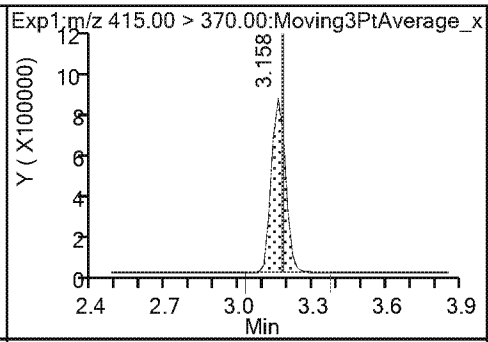
24 DONA



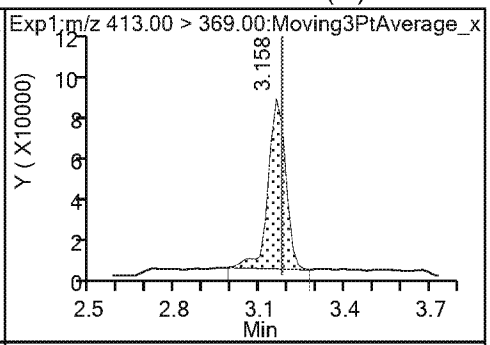
24 DONA



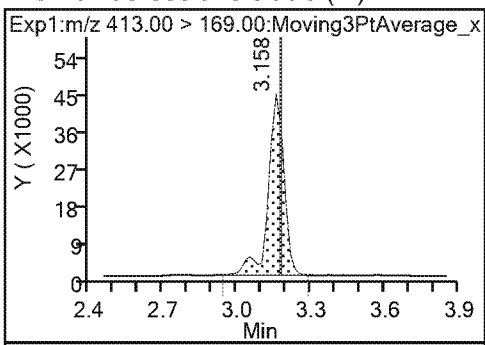
* 5 13C2 PFOA



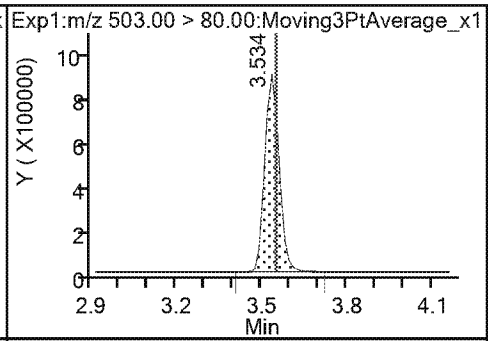
6 Perfluorooctanoic acid (M)



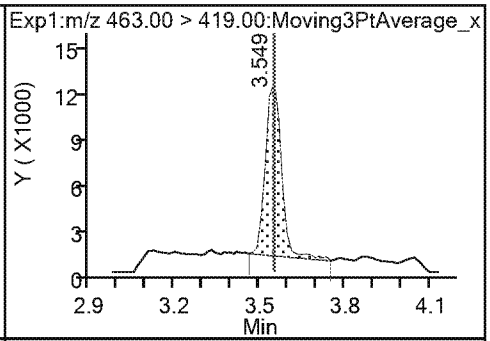
6 Perfluorooctanoic acid (M)



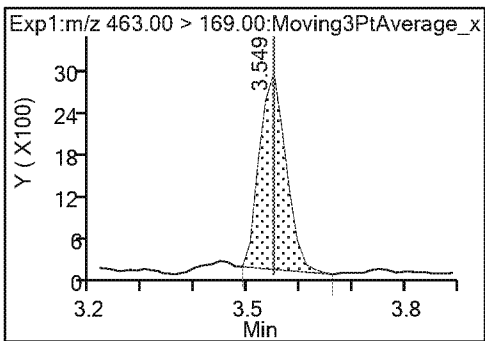
* 7 13C4 PFOS



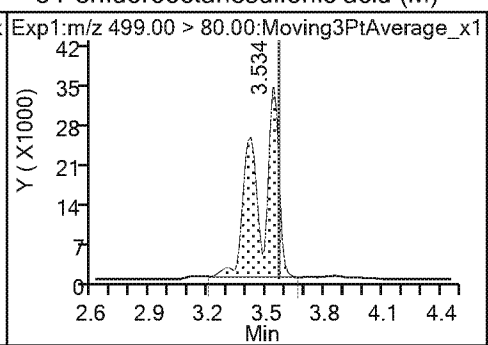
9 Perfluorononanoic acid



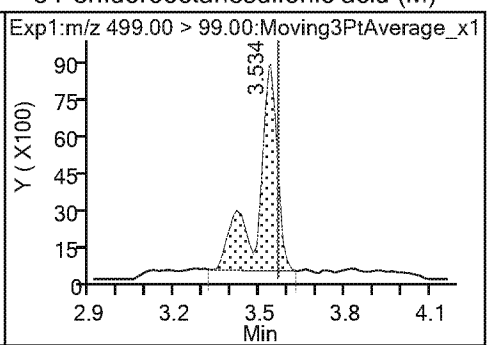
9 Perfluorononanoic acid



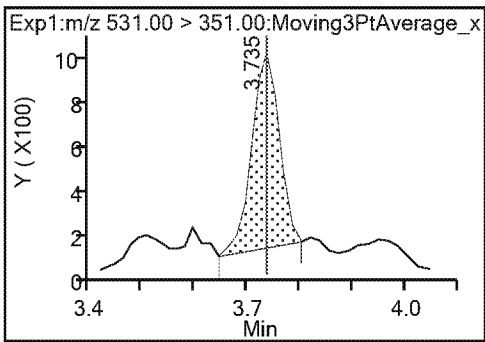
8 Perfluorooctanesulfonic acid (M)



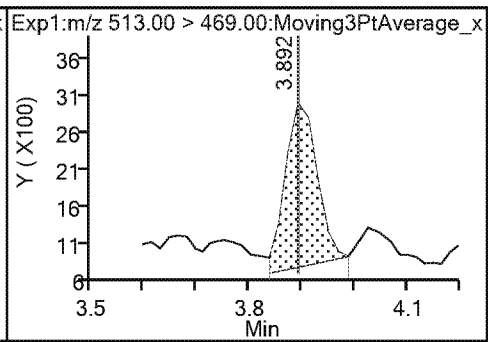
8 Perfluorooctanesulfonic acid (M)



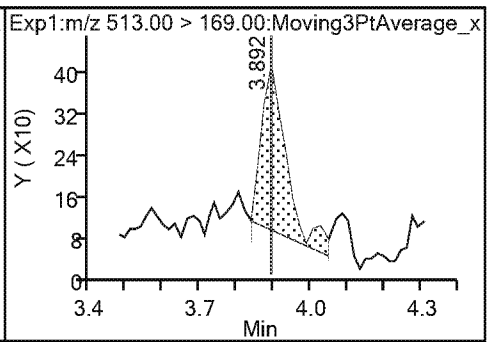
23 9-Chlorohexadecafluoro-3-oxanonane



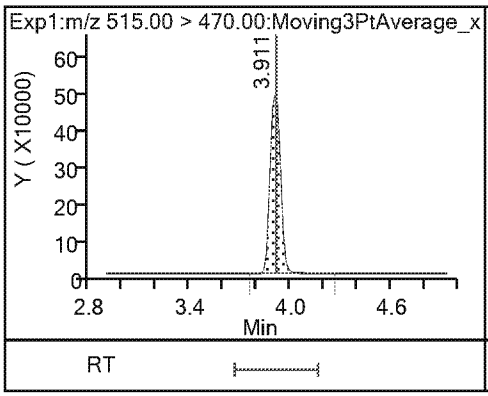
14 Perfluorodecanoic acid



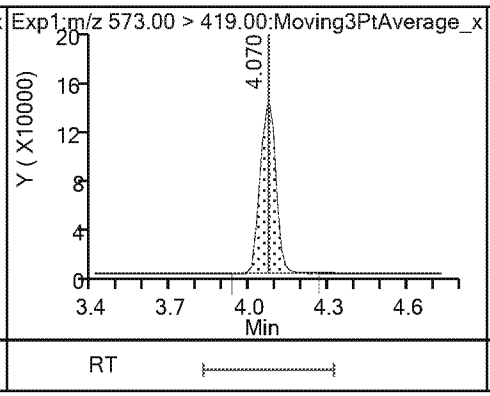
14 Perfluorodecanoic acid



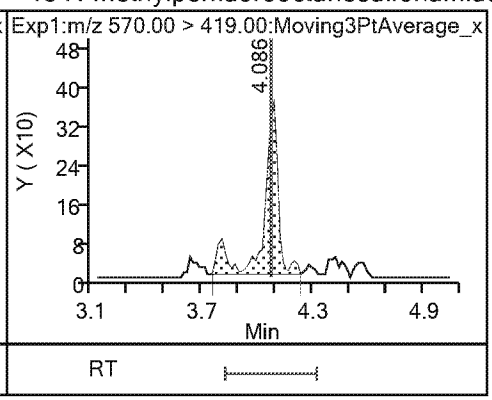
$ 10 13C2 PFDA



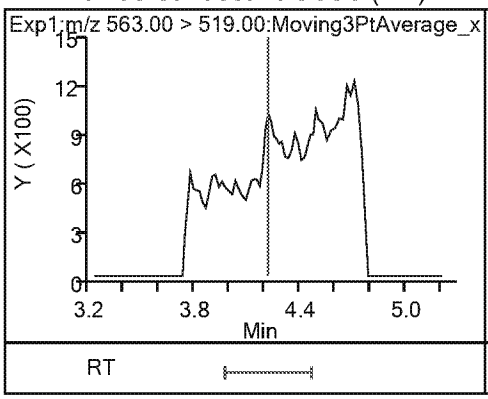
* 12 d3-NMeFOSAA



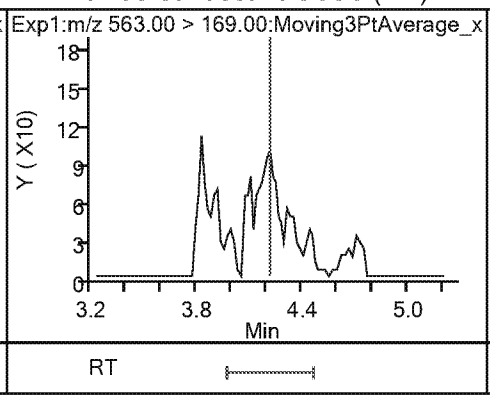
15 N-methylperfluorooctanesulfonamido



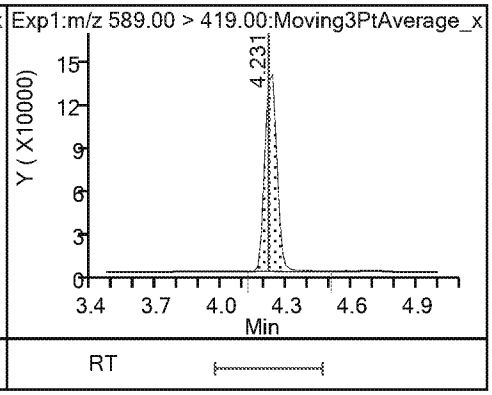
17 Perfluoroundecanoic acid (ND)



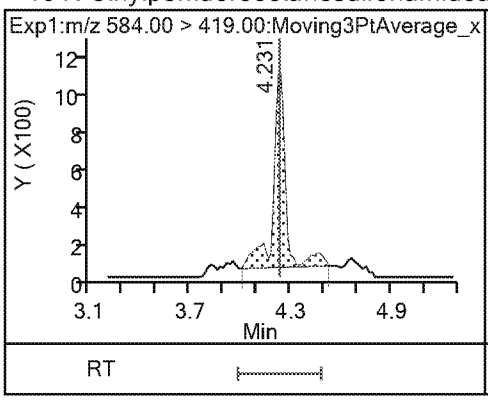
17 Perfluoroundecanoic acid (ND)



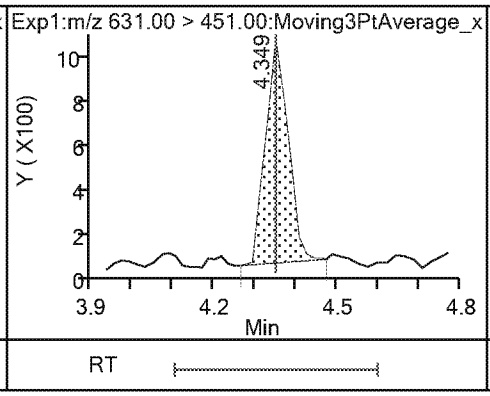
$ 11 d5-NEtFOSAA



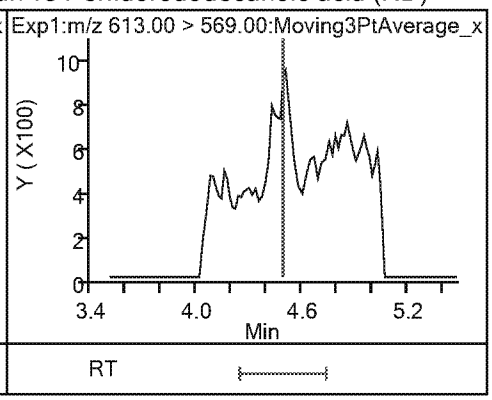
16 N-ethylperfluorooctanesulfonamidoa



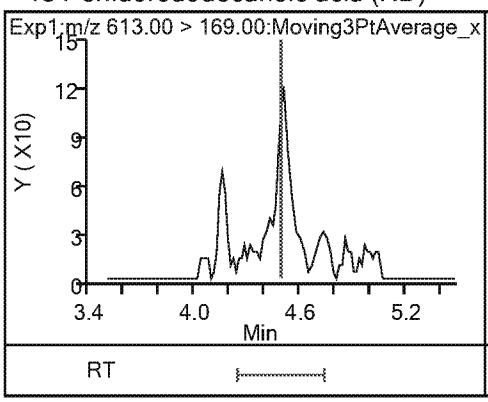
21 11-Chloroeicosafluoro-3-oxaundecan



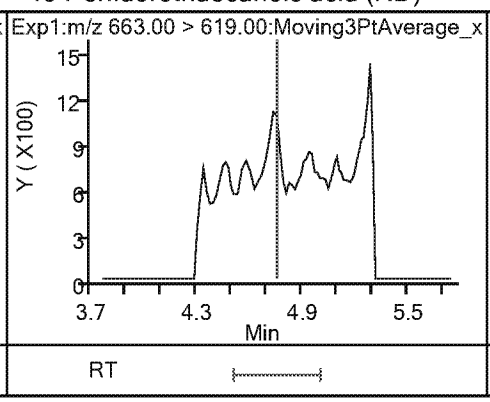
18 Perfluorododecanoic acid (ND)



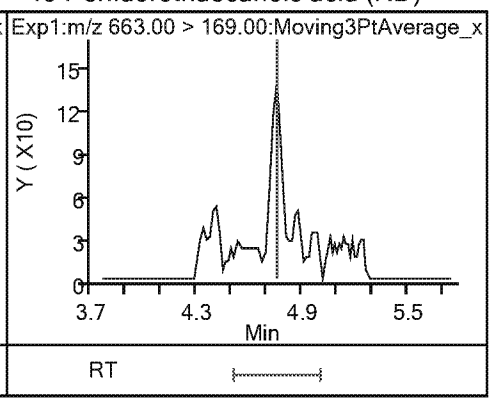
18 Perfluorododecanoic acid (ND)



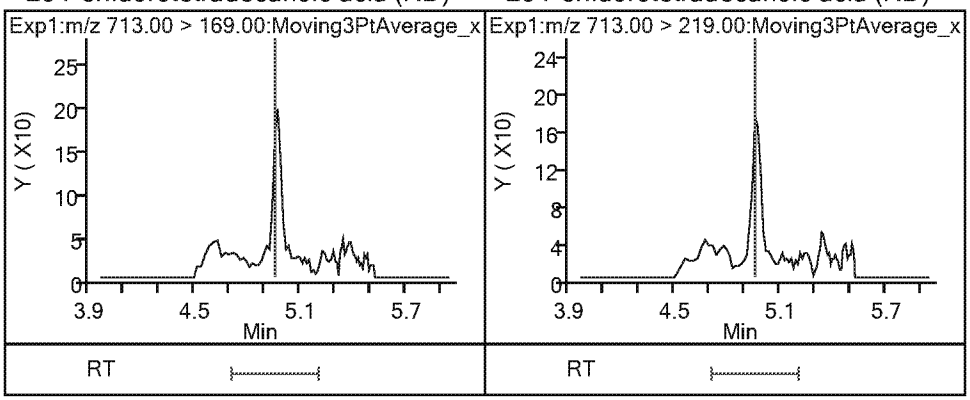
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d
Lims ID: 320-48799-A-1-A
Client ID: C0AR3
Sample Type: Client
Inject. Date: 05-Apr-2019 01:48:29 ALS Bottle#: 32 Worklist Smp#: 43
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:18:14

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.28	91.01
$ 25 13C3 HFPO-DA	2.50	2.21	88.30
$ 10 13C2 PFDA	2.50	2.61	104.60
$ 11 d5-NEtFOSAA	2.50	2.24	89.45

Eurofins TestAmerica, Sacramento

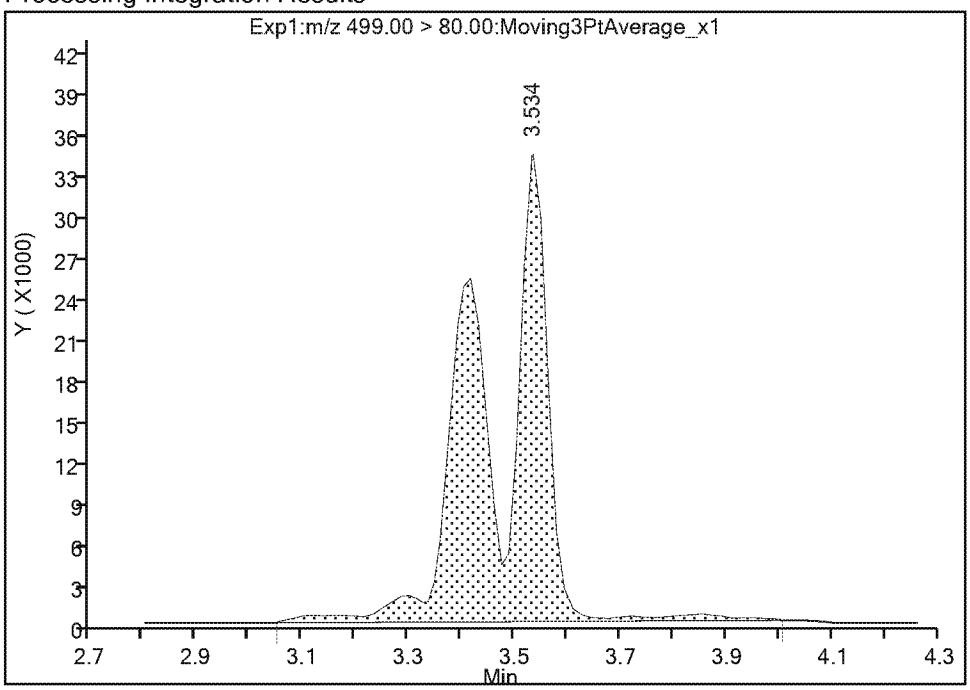
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d				
Injection Date:	05-Apr-2019 01:48:29	Instrument ID:	A8_N		
Lims ID:	320-48799-A-1-A	Lab Sample ID:	320-48799-1		
Client ID:	C0AR3				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	43
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 1

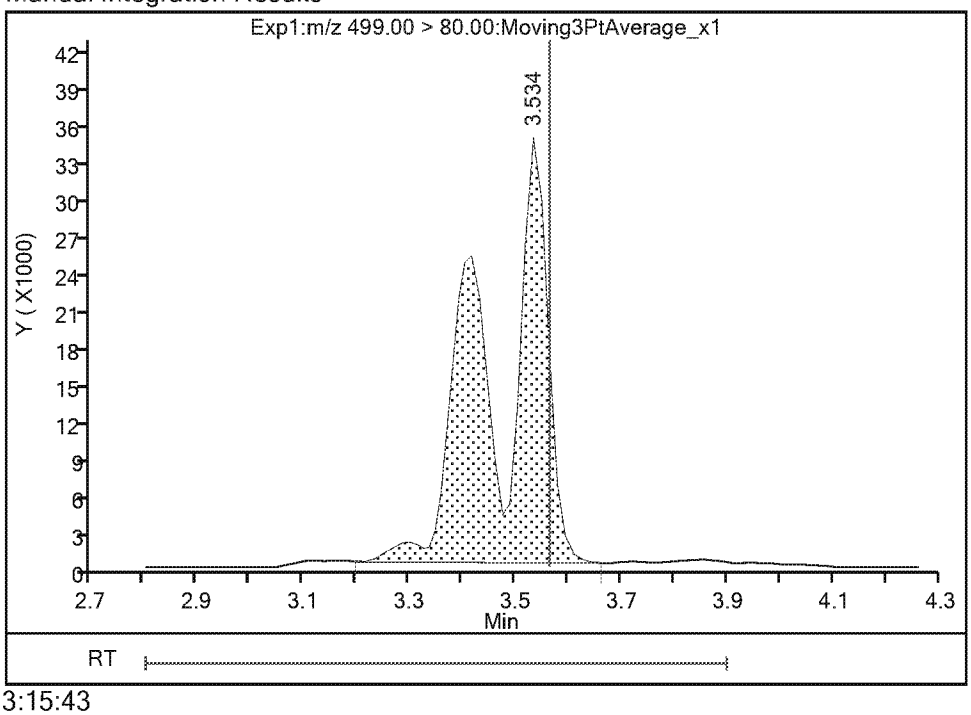
Processing Integration Results

RT: 3.53
Area: 258779
Amount: 0.194693
Amount Units: ng/ml



Manual Integration Results

RT: 3.53
Area: 242726
Amount: 0.182616
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:15:43
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

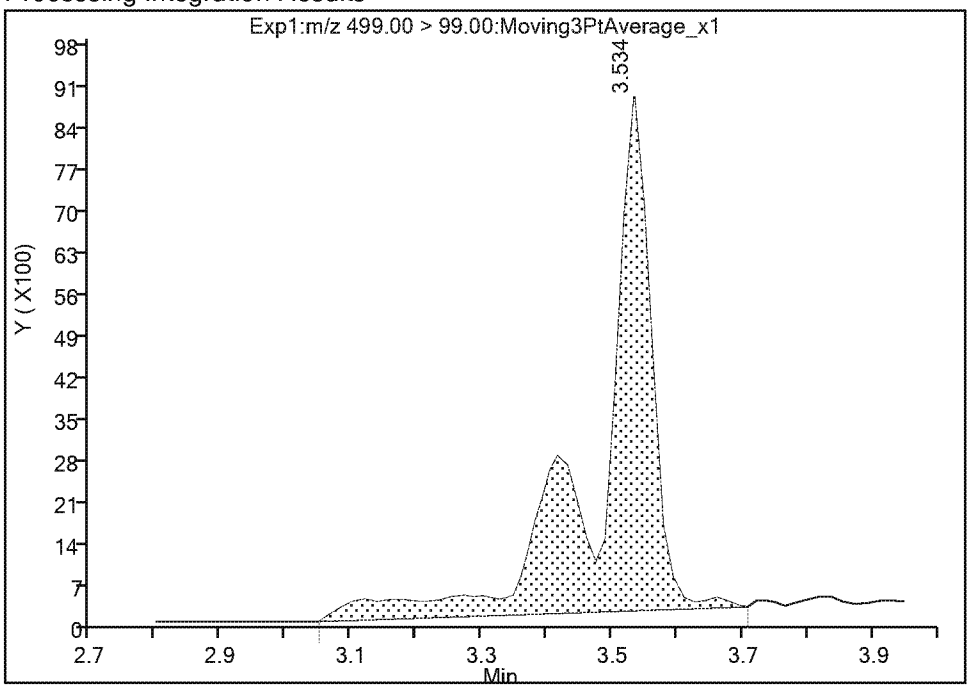
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d				
Injection Date:	05-Apr-2019 01:48:29	Instrument ID:	A8_N		
Lims ID:	320-48799-A-1-A	Lab Sample ID:	320-48799-1		
Client ID:	C0AR3				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	43
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

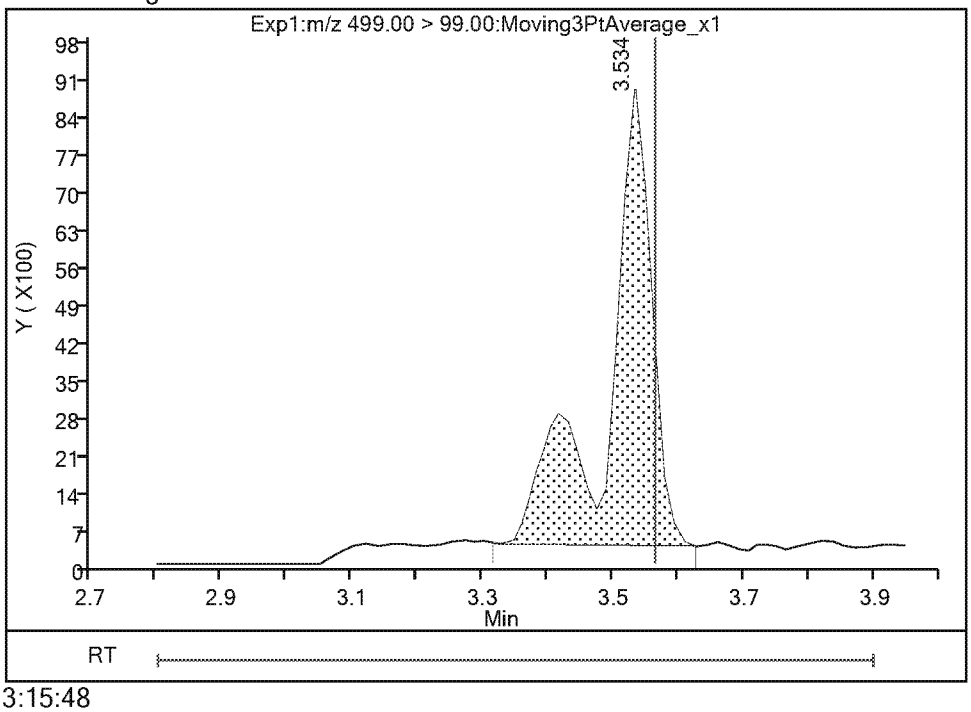
Processing Integration Results

RT: 3.53
Area: 48293
Amount: 0.194693
Amount Units: ng/ml



Manual Integration Results

RT: 3.53
Area: 39599
Amount: 0.182616
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:15:48
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

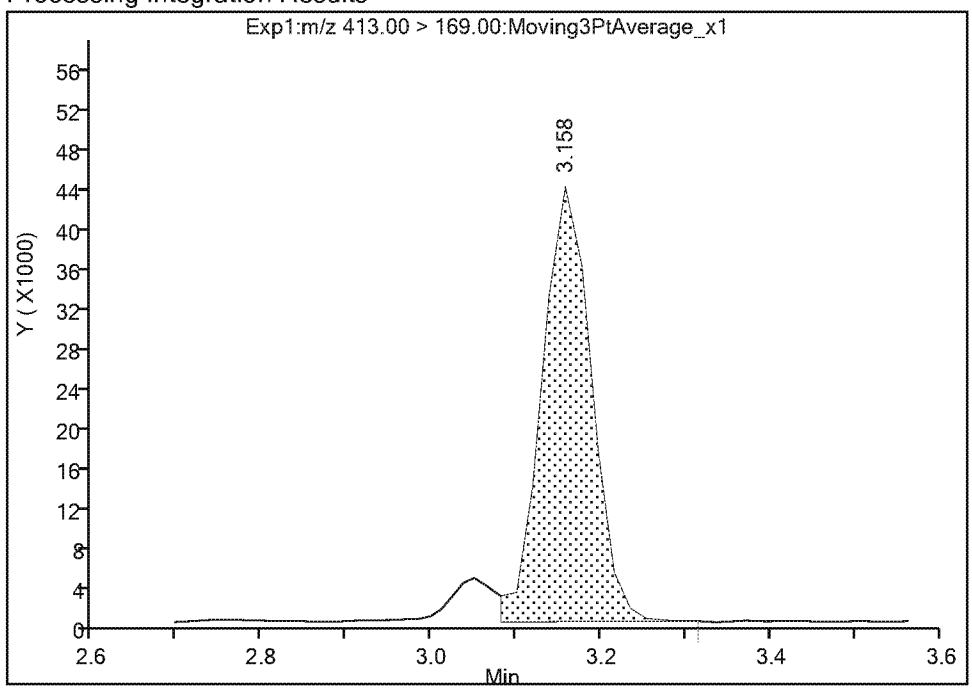
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d				
Injection Date:	05-Apr-2019 01:48:29	Instrument ID:	A8_N		
Lims ID:	320-48799-A-1-A	Lab Sample ID:	320-48799-1		
Client ID:	C0AR3				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	43
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

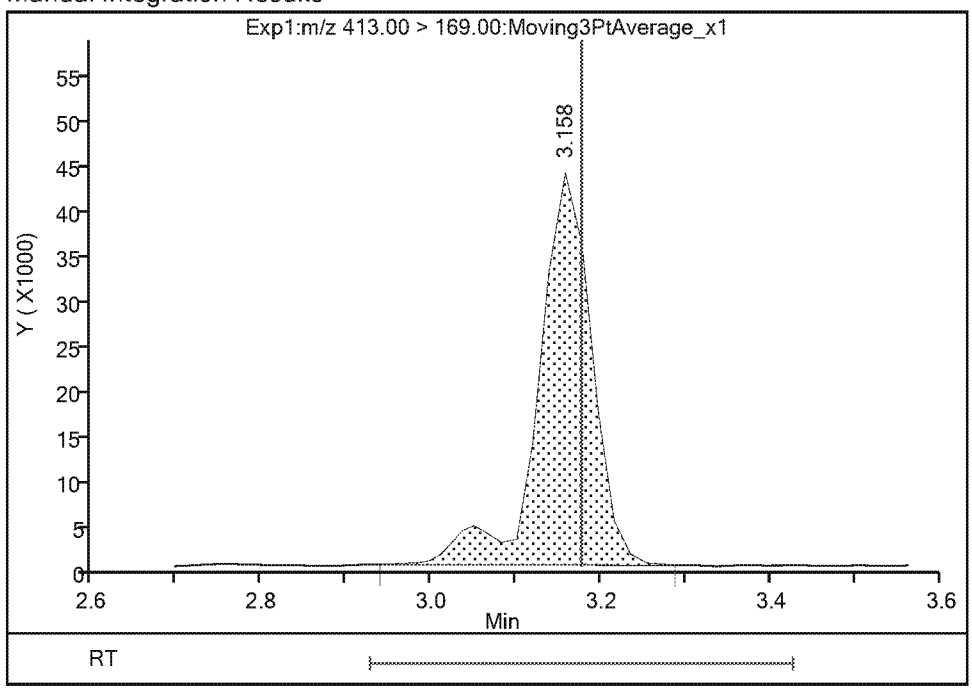
Processing Integration Results

RT: 3.16
Area: 174042
Amount: 0.259841
Amount Units: ng/ml



Manual Integration Results

RT: 3.16
Area: 187743
Amount: 0.263747
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:15:19
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

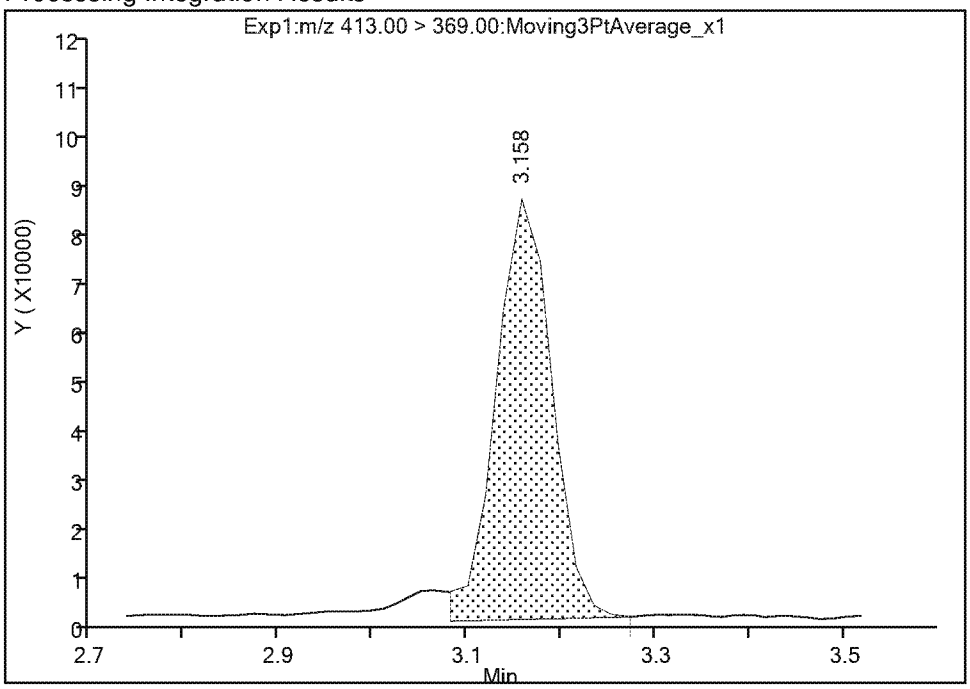
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d				
Injection Date:	05-Apr-2019 01:48:29	Instrument ID:	A8_N		
Lims ID:	320-48799-A-1-A	Lab Sample ID:	320-48799-1		
Client ID:	C0AR3				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	43
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

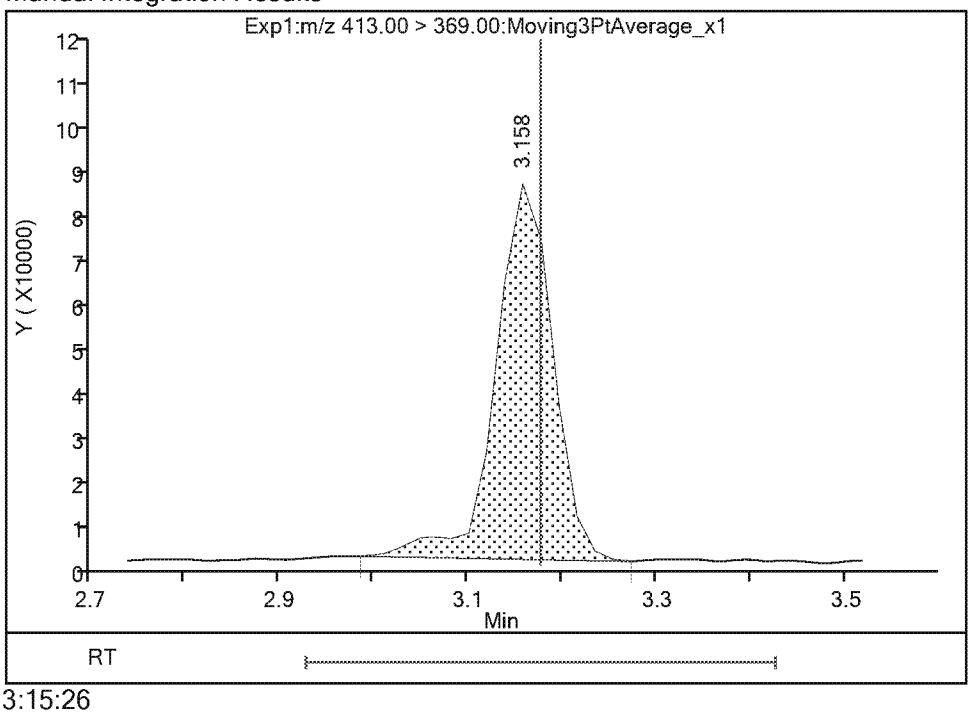
Processing Integration Results

RT: 3.16
Area: 322133
Amount: 0.259841
Amount Units: ng/ml



Manual Integration Results

RT: 3.16
Area: 326975
Amount: 0.263747
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:15:26
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

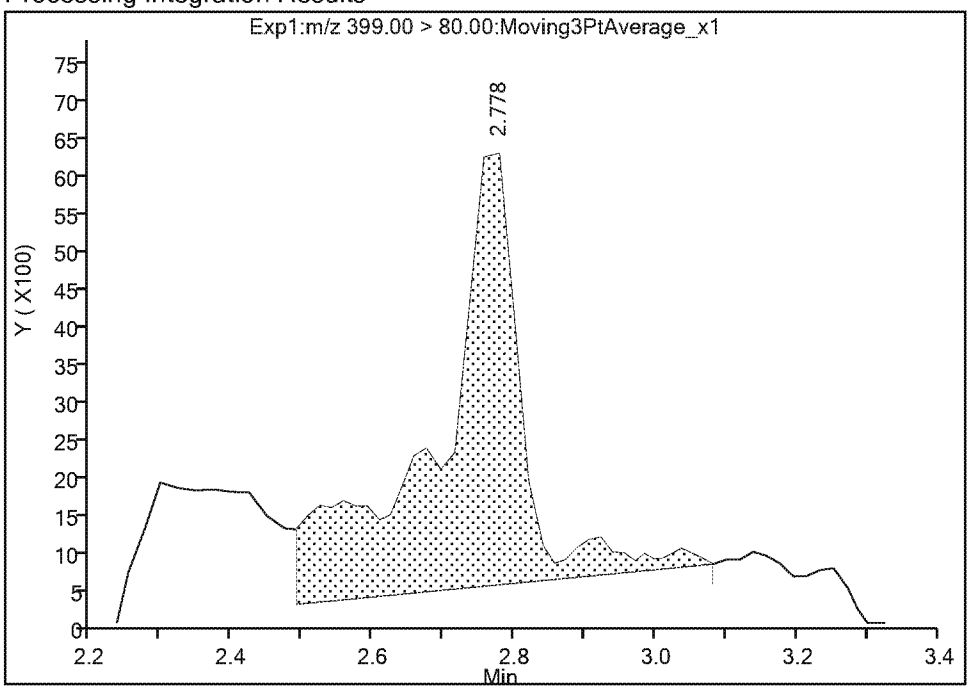
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d				
Injection Date:	05-Apr-2019 01:48:29	Instrument ID:	A8_N		
Lims ID:	320-48799-A-1-A	Lab Sample ID:	320-48799-1		
Client ID:	C0AR3				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	43
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

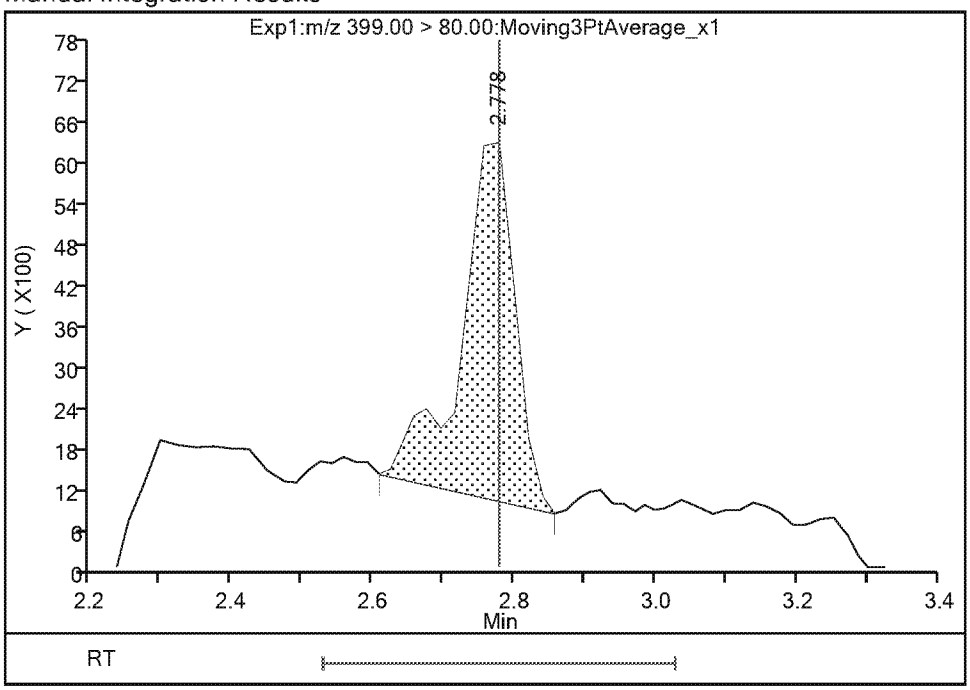
Processing Integration Results

RT: 2.78
Area: 48817
Amount: 0.027075
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 27892
Amount: 0.015469
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:14:44
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

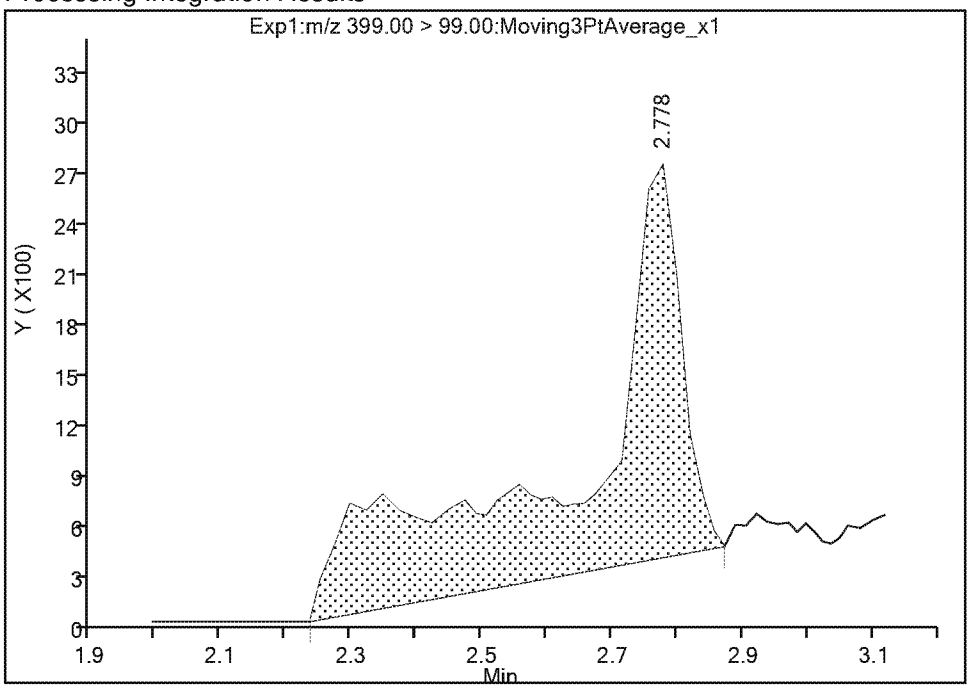
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d				
Injection Date:	05-Apr-2019 01:48:29	Instrument ID:	A8_N		
Lims ID:	320-48799-A-1-A	Lab Sample ID:	320-48799-1		
Client ID:	C0AR3				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	43
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

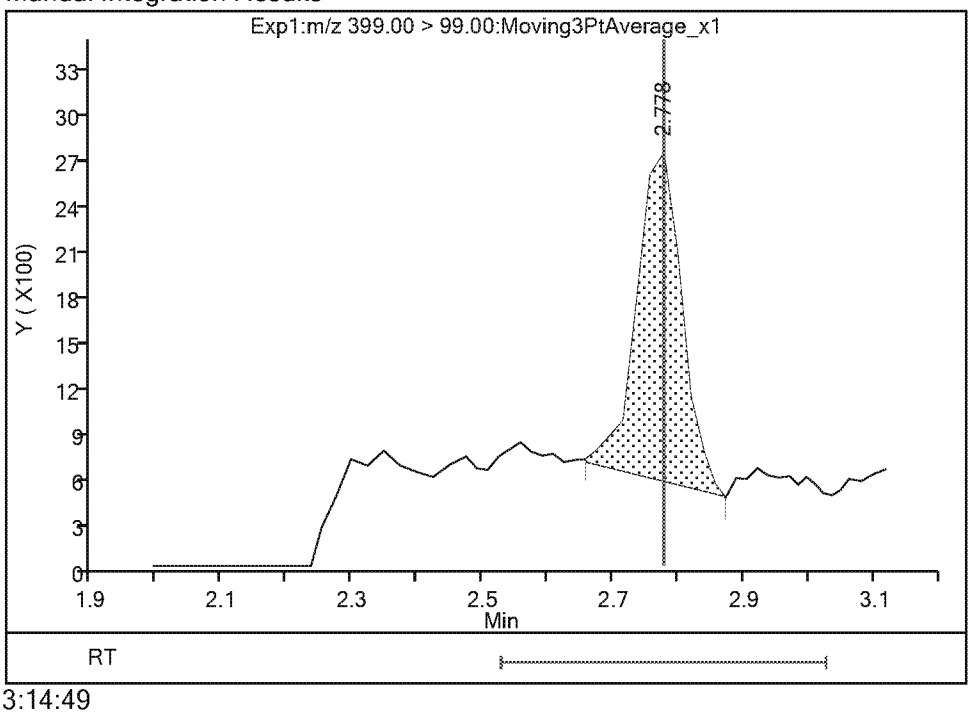
Processing Integration Results

RT: 2.78
Area: 25296
Amount: 0.027075
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 10260
Amount: 0.015469
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:14:49
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

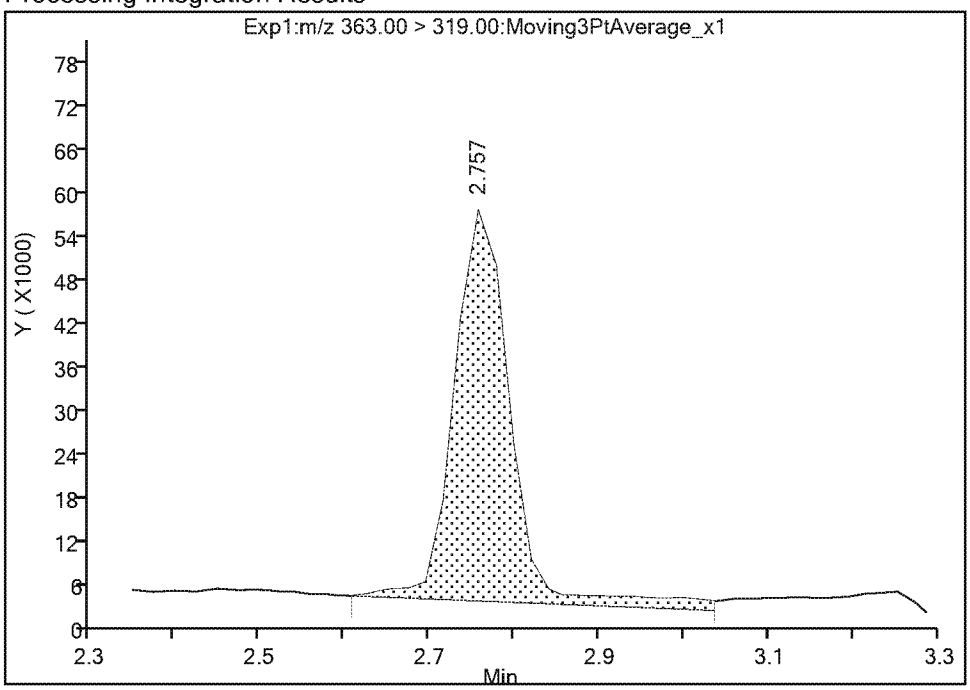
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_047.d				
Injection Date:	05-Apr-2019 01:48:29	Instrument ID:	A8_N		
Lims ID:	320-48799-A-1-A	Lab Sample ID:	320-48799-1		
Client ID:	C0AR3				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	32	Worklist Smp#:	43
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

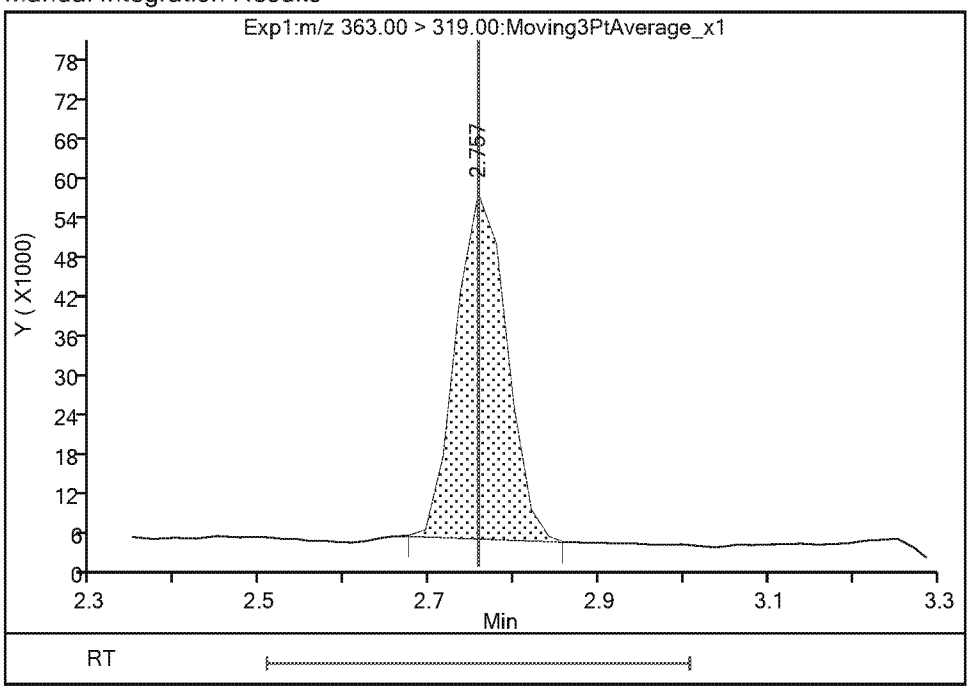
Processing Integration Results

RT: 2.76
Area: 248558
Amount: 0.191905
Amount Units: ng/ml



Manual Integration Results

RT: 2.76
Area: 217168
Amount: 0.167670
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:15:00
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR4
Lab Sample ID: 320-48799-2
Matrix: Water
Lab File ID: 2019.04.04_537AA_048.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:00
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 283.9(mL)
Date Analyzed: 04/05/2019 01:57
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	190		1.8	0.84
375-95-1	Perfluorononanoic acid	290		1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	2.7		1.8	0.56
375-73-5	Perfluorobutanesulfonic acid	3.2		1.8	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	87		70-130
STL00996	13C2 PFDA	112		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_048.d
Lims ID: 320-48799-A-2-A
Client ID: C0AR4
Sample Type: Client
Inject. Date: 05-Apr-2019 01:57:58 ALS Bottle#: 33 Worklist Smp#: 44
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:19:35
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.993	1.976	0.017	1.000	133825	0.0911	Target=1.41	131	
298.90 > 99.00	1.993	1.976	0.017	1.000	90451		1.48(0.00-0.00)	24.4	
13 Perfluorohexanoic acid									E
313.00 > 269.00	2.348	2.347	0.001	0.737	12234529	10.0	Target=10.46	788	E
313.00 > 119.00	2.348	2.347	0.001	0.737	1141077		10.72(0.00-0.00)	1009	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	2790555	2.18		5335	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.399	2.473	-0.074	0.969	2908	0.009806		0.3	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	153582	2.68		509	
4 Perfluoroheptanoic acid									E
363.00 > 319.00	2.779	2.757	0.022	1.000	15440089	13.3	Target=2.41	817	E
363.00 > 169.00	2.779	2.757	0.022	1.000	6607406		2.34(0.00-0.00)	5276	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.779	2.778	0.001	1.000	134559	0.0755	Target=2.91	31.3	M
399.00 > 99.00	2.779	2.778	0.001	1.000	40253		3.34(0.00-0.00)	11.6	M
* 5 13C2 PFOA									
415.00 > 370.00	3.184	3.177	0.007		2740959	2.50		7020	
6 Perfluorooctanoic acid									EM
413.00 > 369.00	3.184	3.177	0.007	1.000	17649411	15.9	Target=1.70	1342	E
413.00 > 169.00	3.184	3.177	0.007	1.000	10414705		1.69(0.00-0.00)	4994	M
* 7 13C4 PFOS									
503.00 > 80.00	3.546	3.549	-0.003		2973268	2.39		2268	
9 Perfluorononanoic acid									
463.00 > 419.00	3.561	3.549	0.012	1.000	6689682	8.26	Target=3.78	1182	
463.00 > 169.00	3.561	3.549	0.012	1.000	1702217		3.93(0.00-0.00)	2176	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.561	3.564	-0.003	1.004	6908592	5.26	Target=4.63	1966	
499.00 > 99.00	3.546	3.564	-0.018	1.000	1177445		5.87(0.00-0.00)	576	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.909	3.892	0.017	1.000	369686	0.5764	Target=4.93	93.1	
513.00 > 169.00	3.909	3.892	0.017	1.000	67190		5.50(0.00-0.00)	147	
$ 10 13C2 PFDA									
515.00 > 470.00	3.928	3.911	0.017	1.000	1913623	2.81		9133	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.090	4.070	0.020		555486	2.50		1638	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.154	4.214	-0.060	1.000	4173	0.008562	Target=4.73	0.7	
563.00 > 169.00	4.138	4.214	-0.076	0.996	3034		1.38(0.00-0.00)	24.1	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.234	4.214	0.020	1.035	511980	2.25		354	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

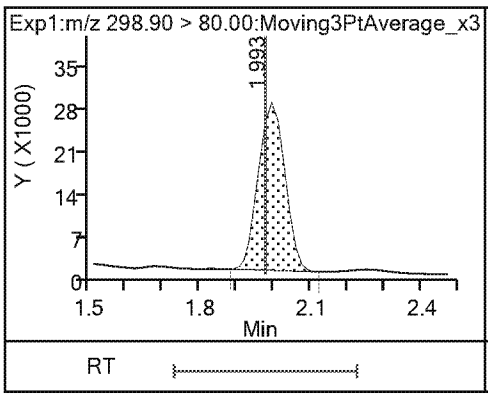
Review Flags

M - Manually Integrated

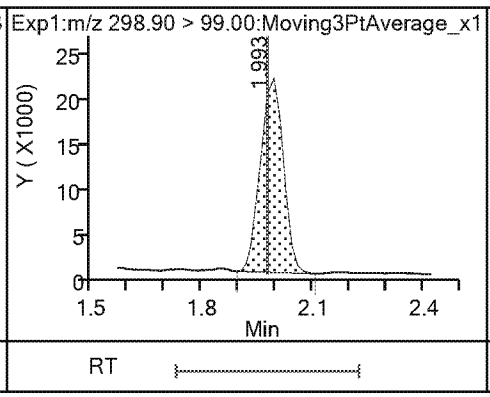
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_048.d				
Injection Date:	05-Apr-2019 01:57:58	Instrument ID:	A8_N		
Lims ID:	320-48799-A-2-A	Lab Sample ID:	320-48799-2		
Client ID:	C0AR4				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	44
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

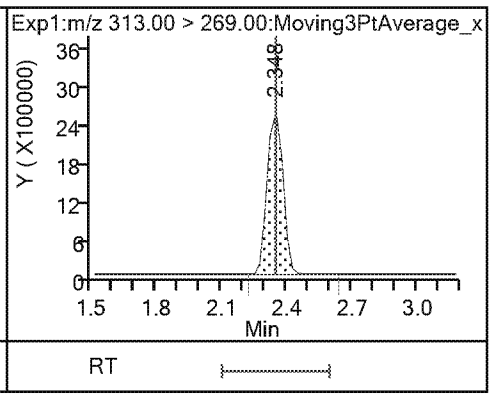
1 Perfluorobutanesulfonic acid



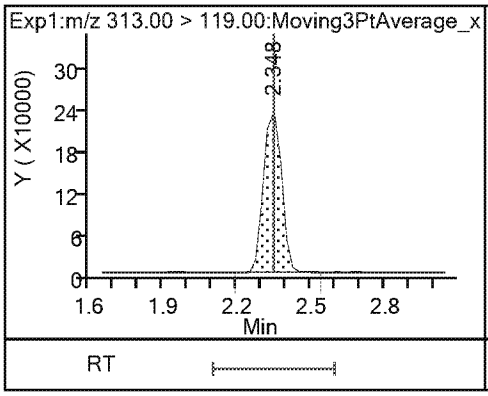
1 Perfluorobutanesulfonic acid



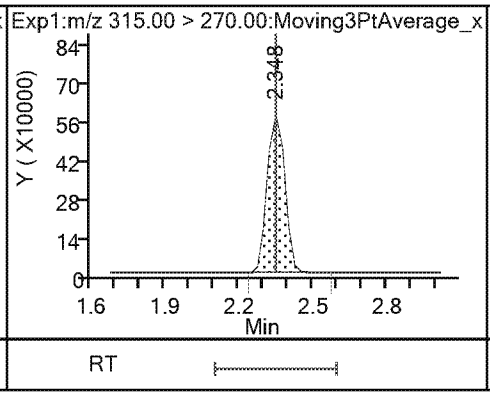
13 Perfluorohexanoic acid



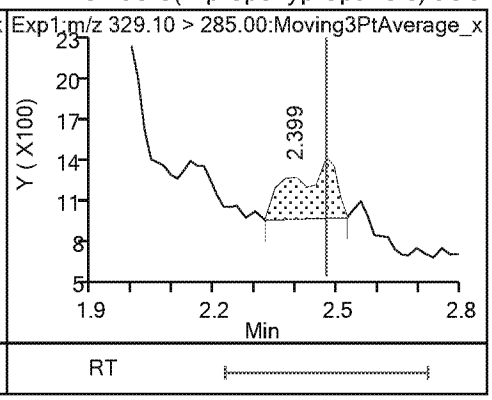
13 Perfluorohexanoic acid



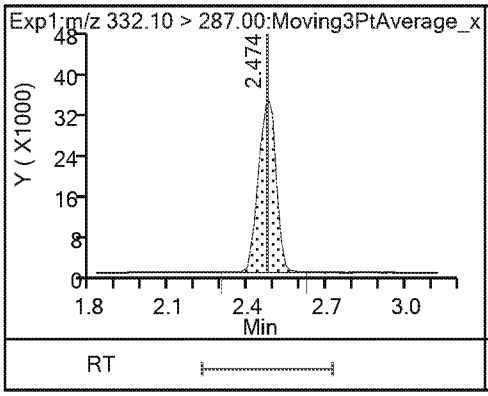
$ 2 13C2 PFHxA



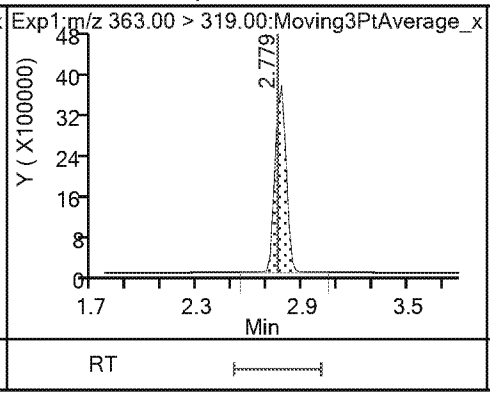
22 Perfluoro(2-propoxypropanoic) acid



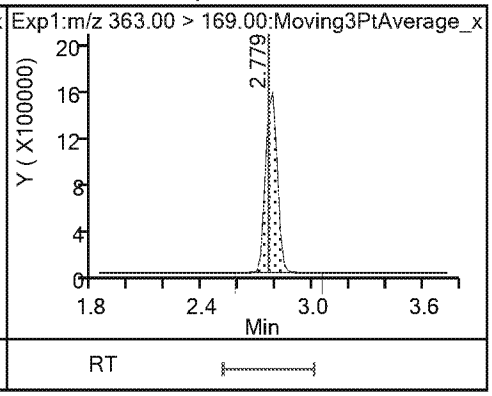
$ 25 13C3 HFPO-DA



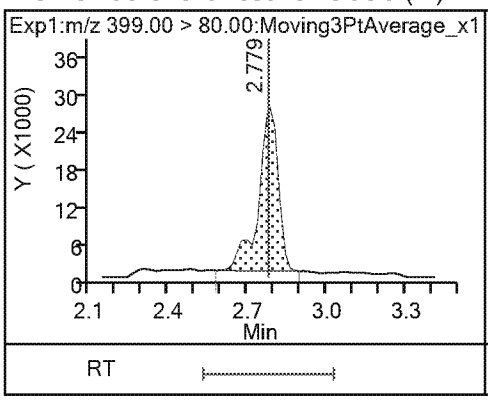
4 Perfluoroheptanoic acid



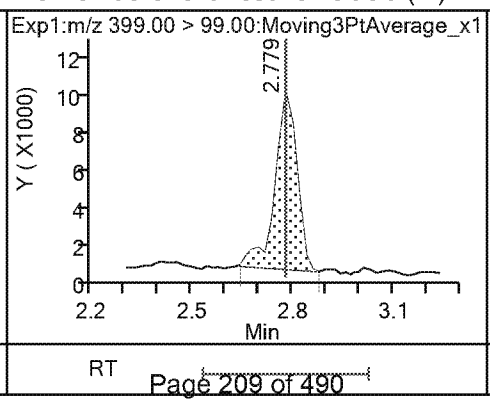
4 Perfluoroheptanoic acid



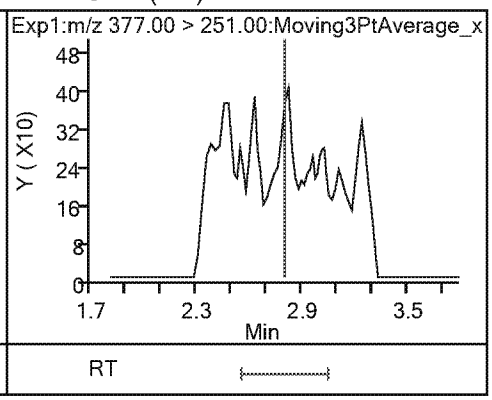
3 Perfluorohexanesulfonic acid (M)



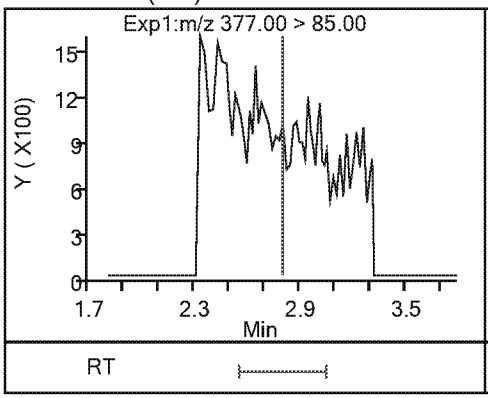
3 Perfluorohexanesulfonic acid (M)



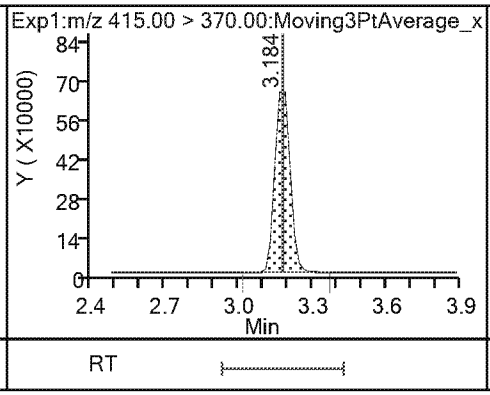
24 DONA (ND)



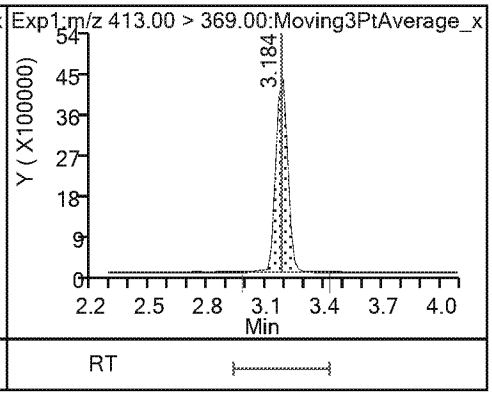
24 DONA (ND)



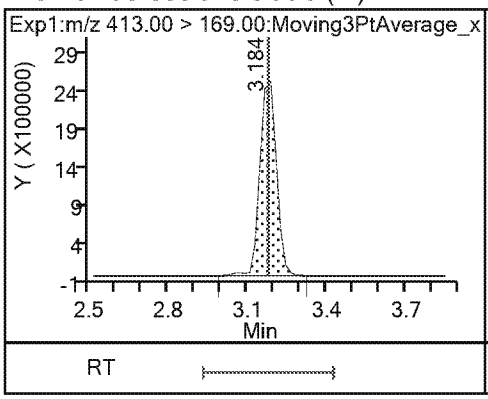
* 5 13C2 PFOA



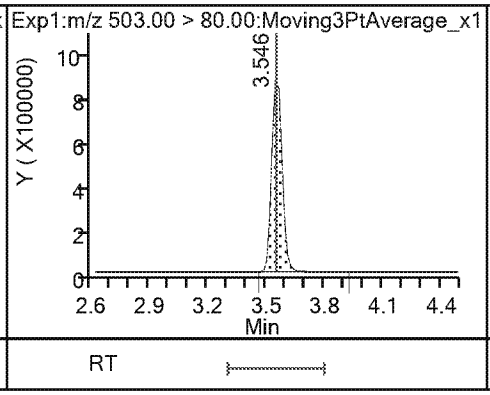
6 Perfluorooctanoic acid



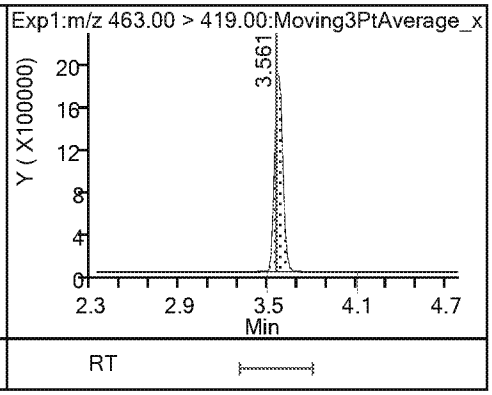
6 Perfluorooctanoic acid (M)



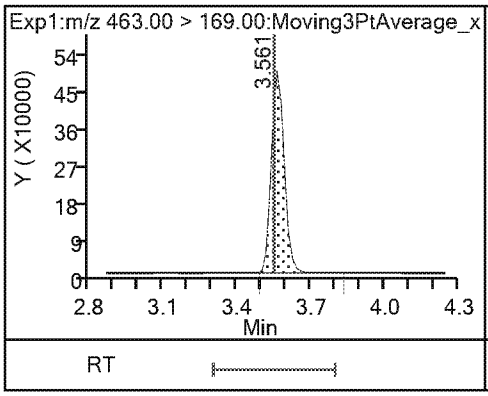
* 7 13C4 PFOS



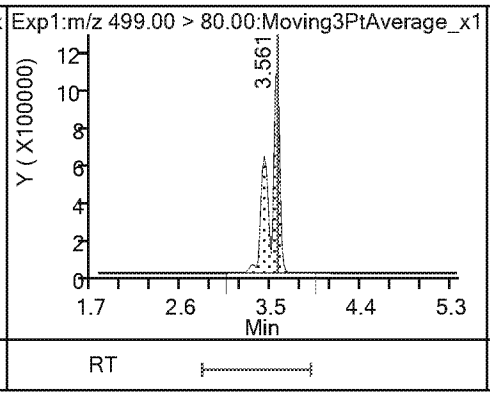
9 Perfluorononanoic acid



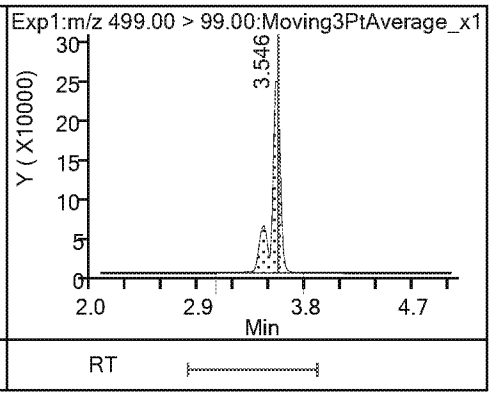
9 Perfluorononanoic acid



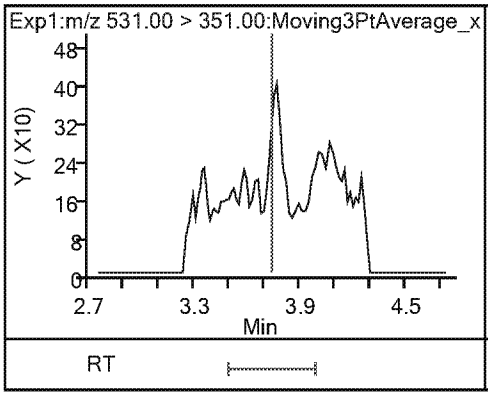
8 Perfluorooctanesulfonic acid



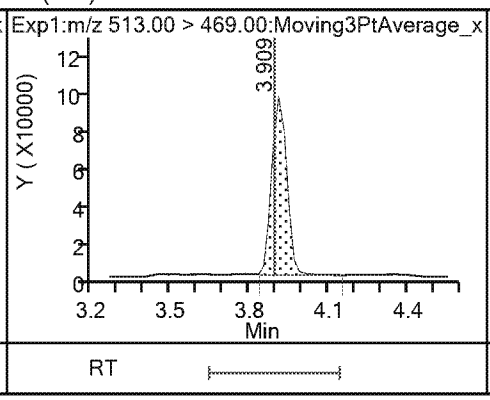
8 Perfluorooctanesulfonic acid



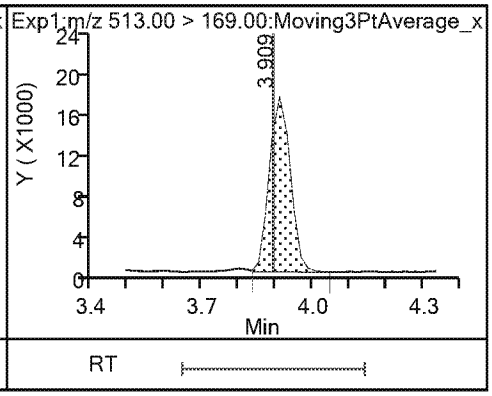
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



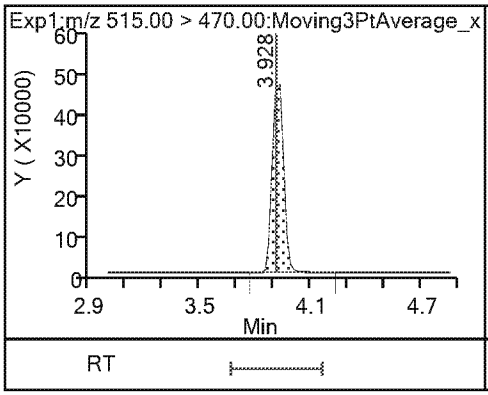
14 Perfluorodecanoic acid



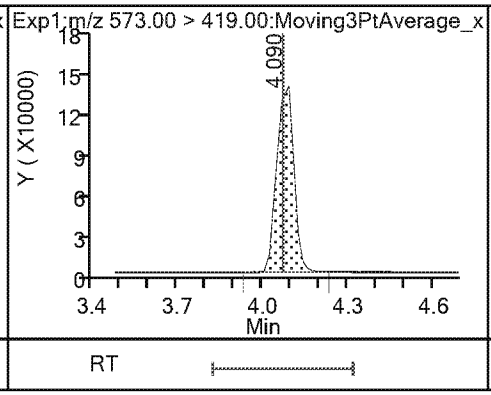
14 Perfluorodecanoic acid



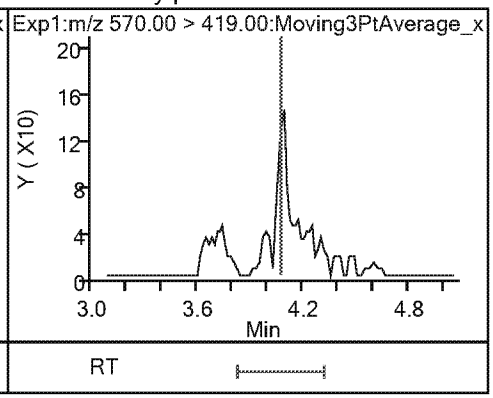
$ 10 13C2 PFDA



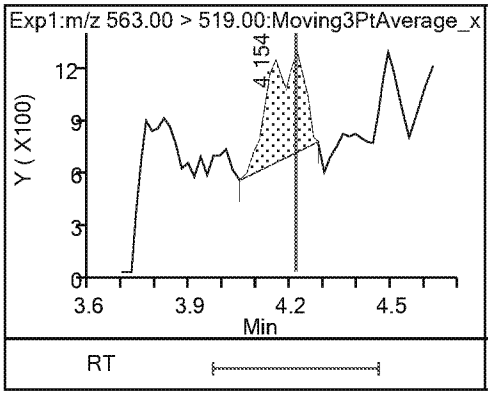
* 12 d3-NMeFOSAA



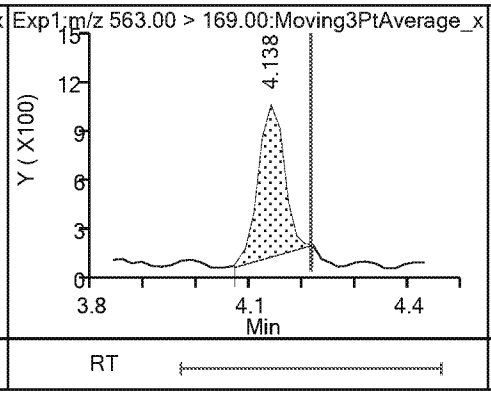
15 N-methylperfluorooctanesulfonamido (ND)



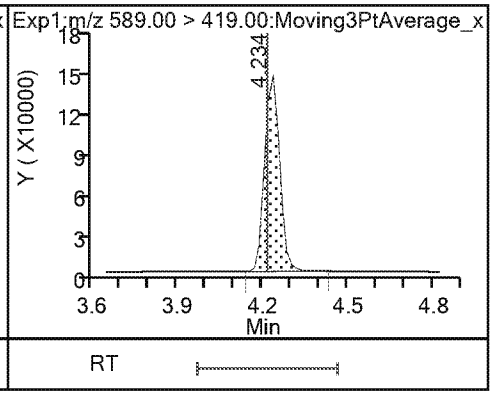
17 Perfluoroundecanoic acid



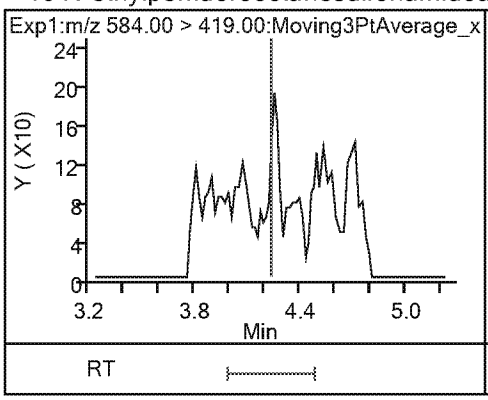
17 Perfluoroundecanoic acid



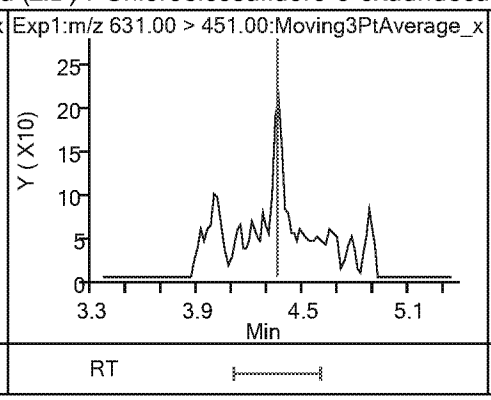
$ 11 d5-NEtFOSAA



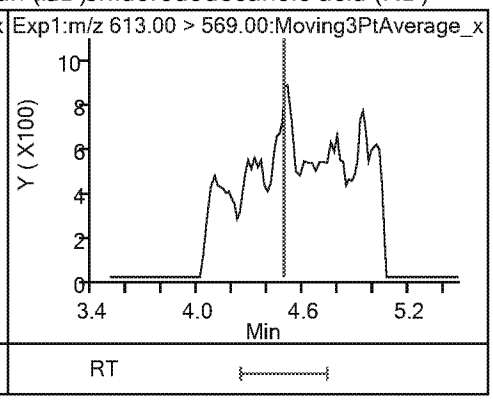
16 N-ethylperfluorooctanesulfonamidoa (ND)



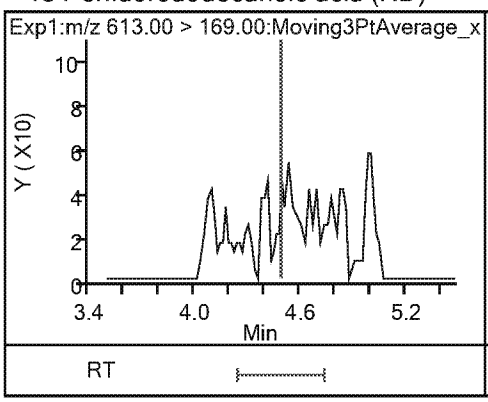
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



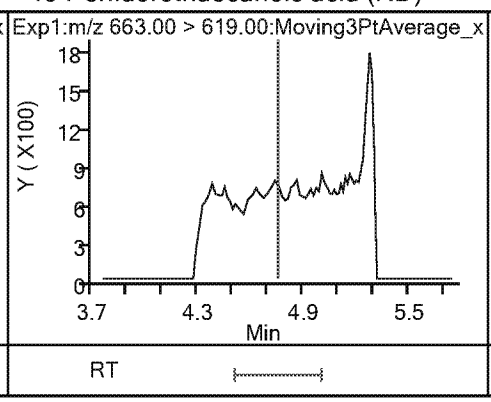
18 Perfluorododecanoic acid (ND)



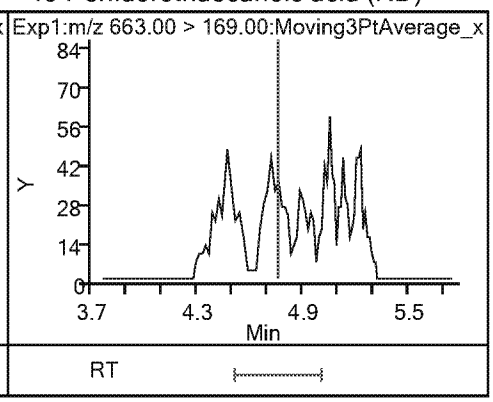
18 Perfluorododecanoic acid (ND)



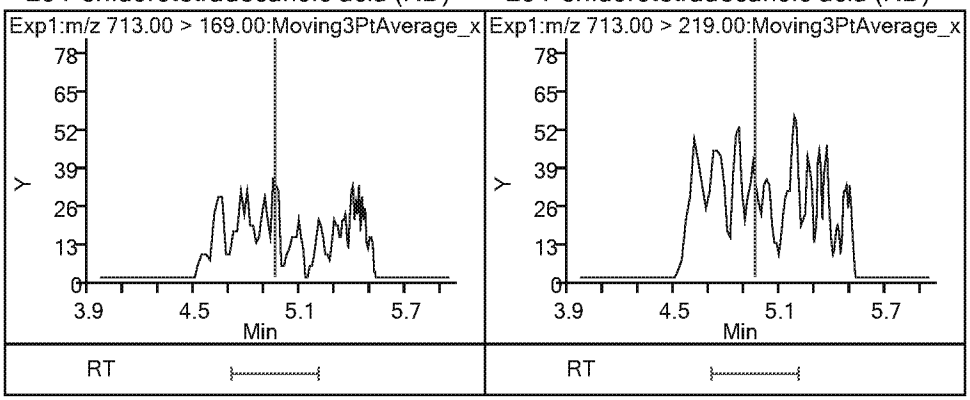
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_048.d
Lims ID: 320-48799-A-2-A
Client ID: C0AR4
Sample Type: Client
Inject. Date: 05-Apr-2019 01:57:58 ALS Bottle#: 33 Worklist Smp#: 44
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:19:35

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.18	87.34
$ 25 13C3 HFPO-DA	2.50	2.68	107.02
$ 10 13C2 PFDA	2.50	2.81	112.43
$ 11 d5-NEtFOSAA	2.50	2.25	90.18

Eurofins TestAmerica, Sacramento

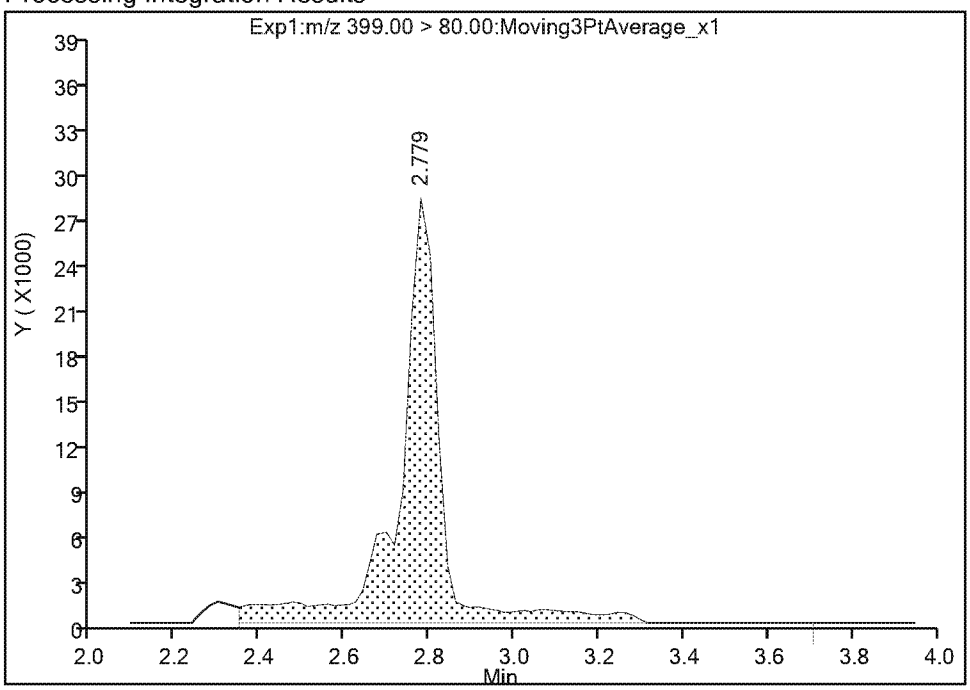
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_048.d				
Injection Date:	05-Apr-2019 01:57:58	Instrument ID:	A8_N		
Lims ID:	320-48799-A-2-A	Lab Sample ID:	320-48799-2		
Client ID:	C0AR4				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	44
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

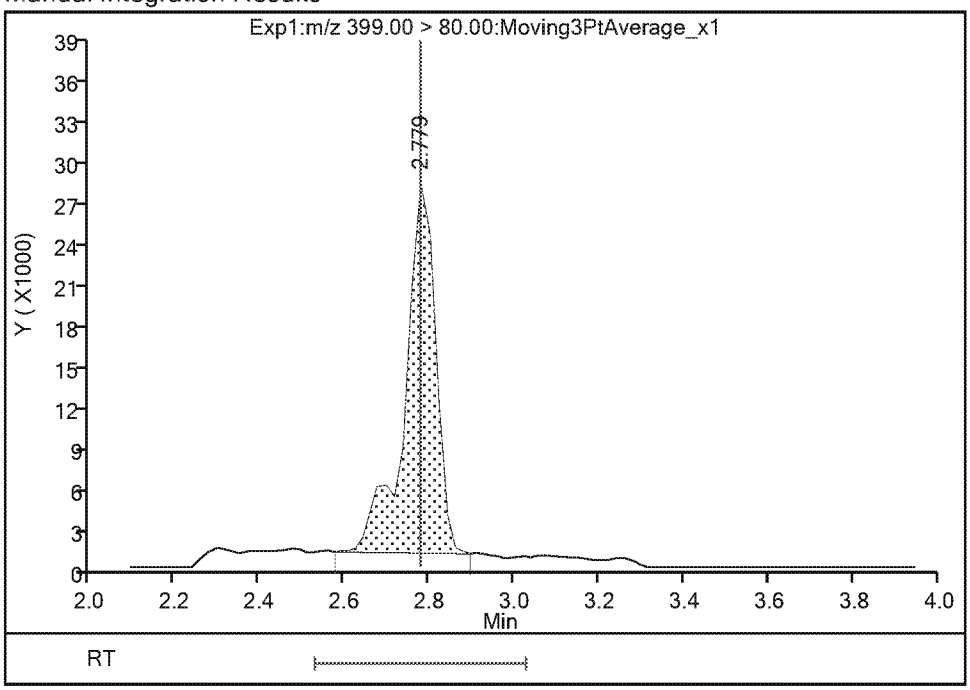
Processing Integration Results

RT: 2.78
Area: 187146
Amount: 0.104982
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 134559
Amount: 0.075483
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:18:48
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

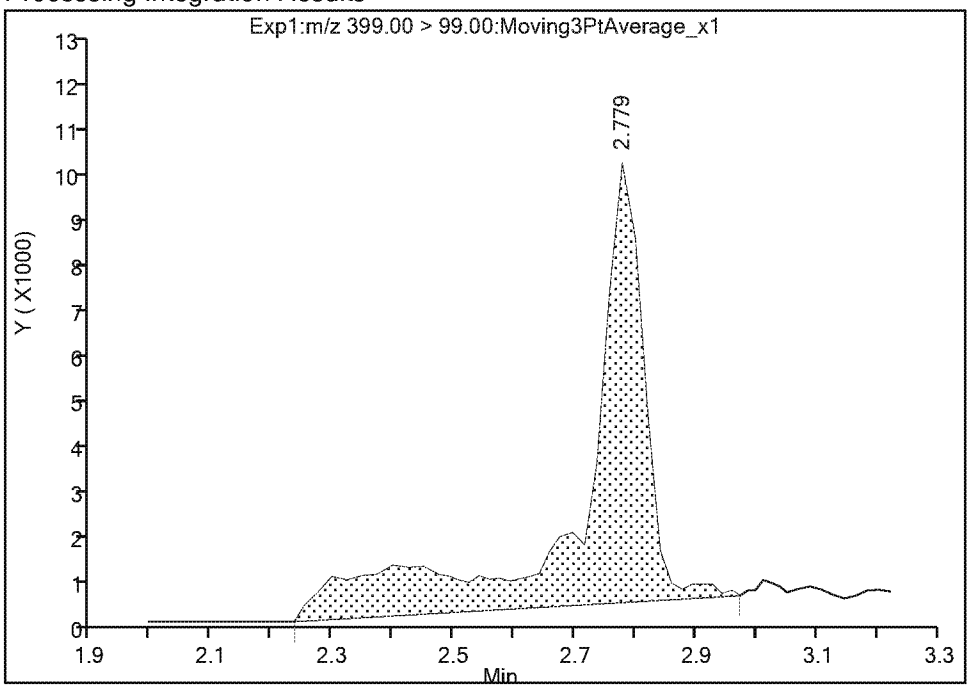
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_048.d				
Injection Date:	05-Apr-2019 01:57:58	Instrument ID:	A8_N		
Lims ID:	320-48799-A-2-A	Lab Sample ID:	320-48799-2		
Client ID:	C0AR4				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	33	Worklist Smp#:	44
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

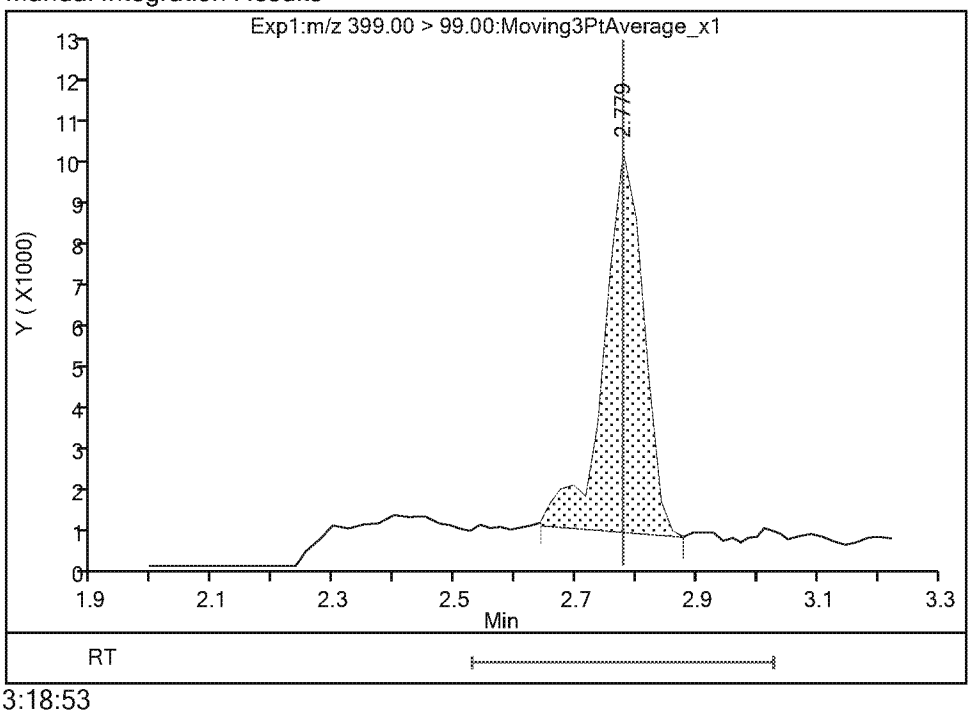
Processing Integration Results

RT: 2.78
Area: 65587
Amount: 0.104982
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 40253
Amount: 0.075483
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:18:53
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR4 DL
Lab Sample ID: 320-48799-2 DL
Matrix: Water
Lab File ID: 2019.04.05_537.1A_009.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:00
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 283.9(mL)
Date Analyzed: 04/05/2019 12:42
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 5
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286320
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid	610		26	12
375-85-9	Perfluoroheptanoic acid	510		13	5.7

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	108		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_009.d
Lims ID: 320-48799-A-2-A
Client ID: C0AR4
Sample Type: Client
Inject. Date: 05-Apr-2019 12:42:22 ALS Bottle#: 3 Worklist Smp#: 6
Injection Vol: 10.0 ul Dil. Factor: 5.0000
Sample Info: 320-48799-a-2-a 5X
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 14:38:31 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 14:40:21
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.976	1.976	0.0	1.000	33396	0.0227	Target=1.41	85.9	
298.90 > 99.00	1.976	1.976	0.0	1.000	24182		1.38(0.00-0.00)	8.5	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.348	2.347	0.001	0.739	2853548	2.10	Target=10.46	394	
313.00 > 119.00	2.348	2.347	0.001	0.739	286064		9.98(0.00-0.00)	358	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	681372	0.4776		2345	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	40267	0.6284		222	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.778	2.766	0.012	1.000	3749778	2.89	Target=2.41	350	
363.00 > 169.00	2.778	2.766	0.012	1.000	1566394		2.39(0.00-0.00)	2423	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.786	-0.008	1.000	30460	0.0170	Target=2.91	20.1	M
399.00 > 99.00	2.778	2.786	-0.008	1.000	11144		2.73(0.00-0.00)	4.0	M
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.169	0.008		3059589	2.50		8959	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.177	3.169	0.008	1.000	4274839	3.44	Target=1.70	526	
413.00 > 169.00	3.177	3.169	0.008	1.000	2340289		1.83(0.00-0.00)	2275	M
* 7 13C4 PFOS									
503.00 > 80.00	3.551	3.544	0.007		2981430	2.39		4178	
9 Perfluorononanoic acid									
463.00 > 419.00	3.565	3.558	0.007	1.000	1547513	1.71	Target=3.78	695	
463.00 > 169.00	3.565	3.558	0.007	1.000	389395		3.97(0.00-0.00)	2350	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.551	3.564	-0.013	1.000	1440988	1.09	Target=4.63	1537	
499.00 > 99.00	3.551	3.564	-0.013	1.000	253859		5.68(0.00-0.00)	186	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.915	3.906	0.009	1.000	78781	0.1100	Target=4.93	29.9	
513.00 > 169.00	3.915	3.906	0.009	1.000	15120		5.21(0.00-0.00)	51.8	
$ 10 13C2 PFDA									
515.00 > 470.00	3.915	3.906	0.009	1.000	411298	0.5412		3260	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.090	4.087	0.003		507682	2.50		2617	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.235	4.232	0.003	1.035	107245	0.5167		59.9	

QC Flag Legend

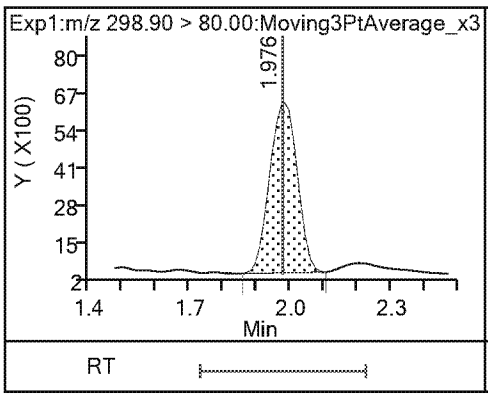
Review Flags

M - Manually Integrated

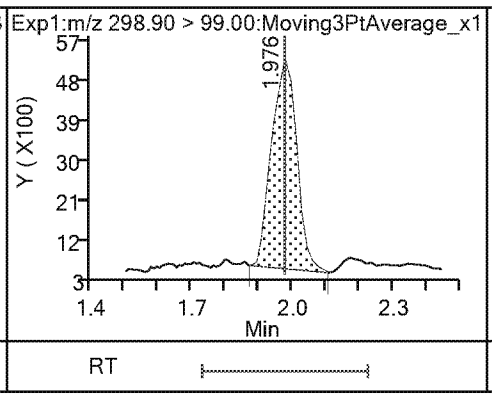
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_009.d				
Injection Date:	05-Apr-2019 12:42:22	Instrument ID:	A8_N		
Lims ID:	320-48799-A-2-A	Lab Sample ID:	320-48799-2		
Client ID:	C0AR4				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	6
Injection Vol:	10.0 ul	Dil. Factor:	5.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

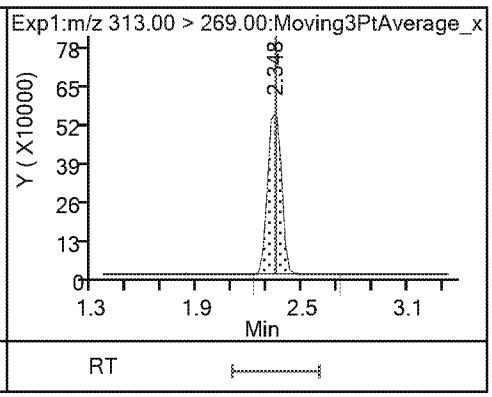
1 Perfluorobutanesulfonic acid



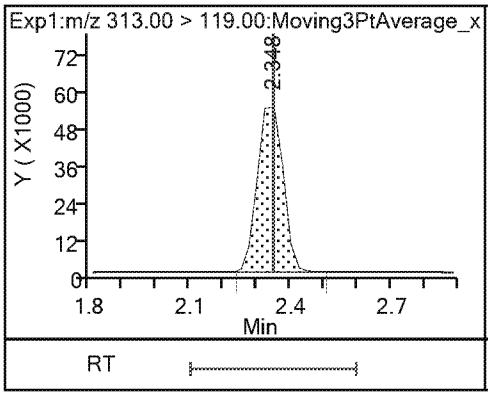
1 Perfluorobutanesulfonic acid



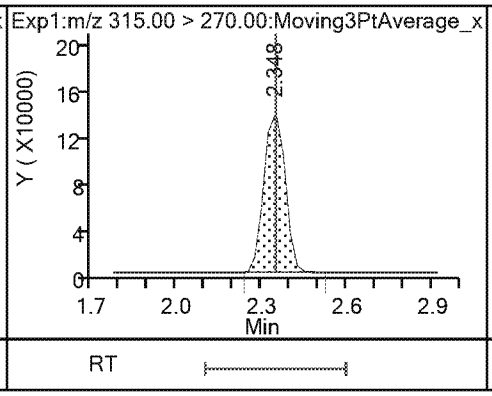
13 Perfluorohexanoic acid



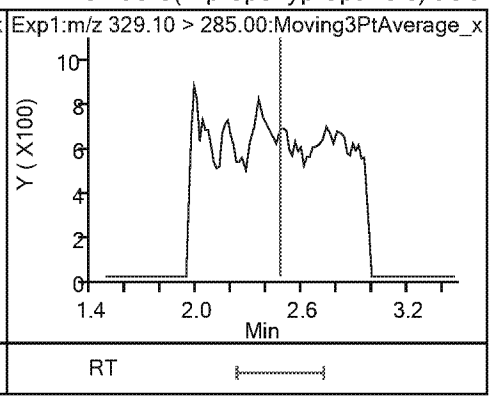
13 Perfluorohexanoic acid



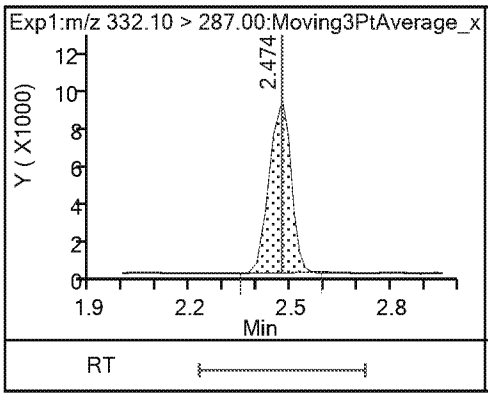
$ 2 13C2 PFHxA



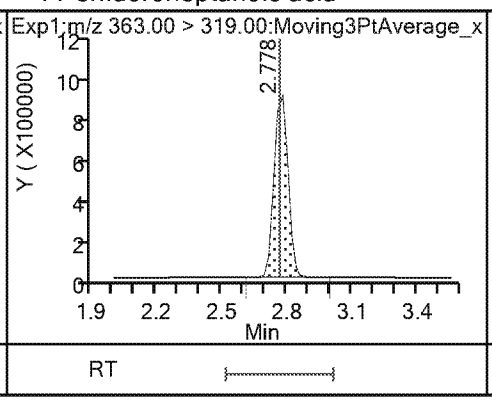
22 Perfluoro(2-propoxypropanoic) acid (ND)



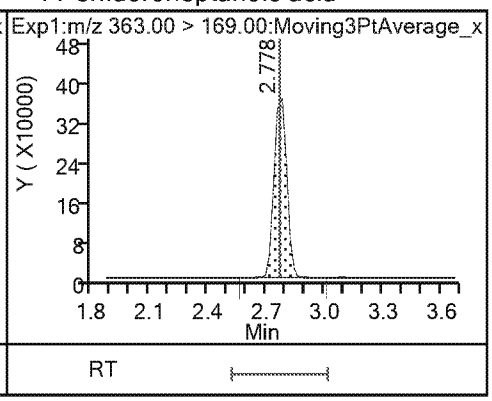
$ 25 13C3 HFPO-DA



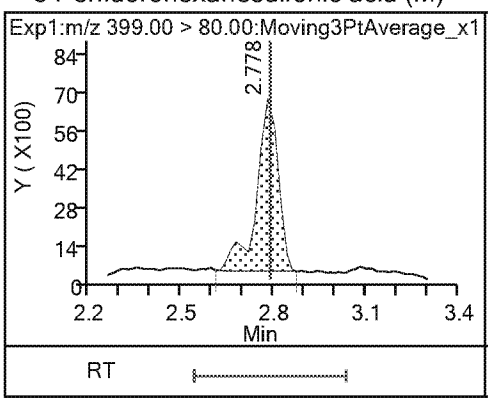
4 Perfluoroheptanoic acid



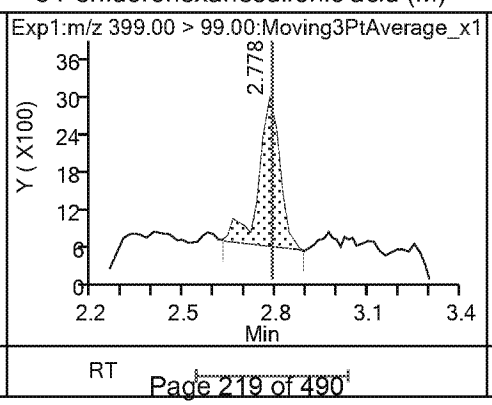
4 Perfluoroheptanoic acid



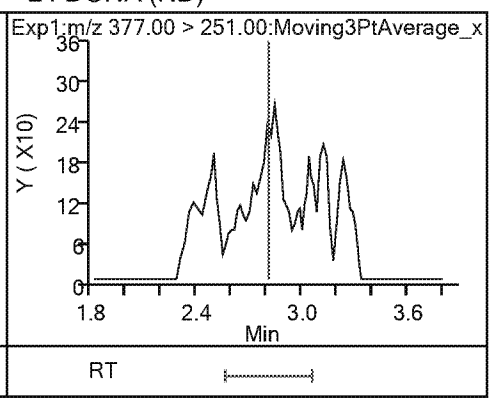
3 Perfluorohexanesulfonic acid (M)



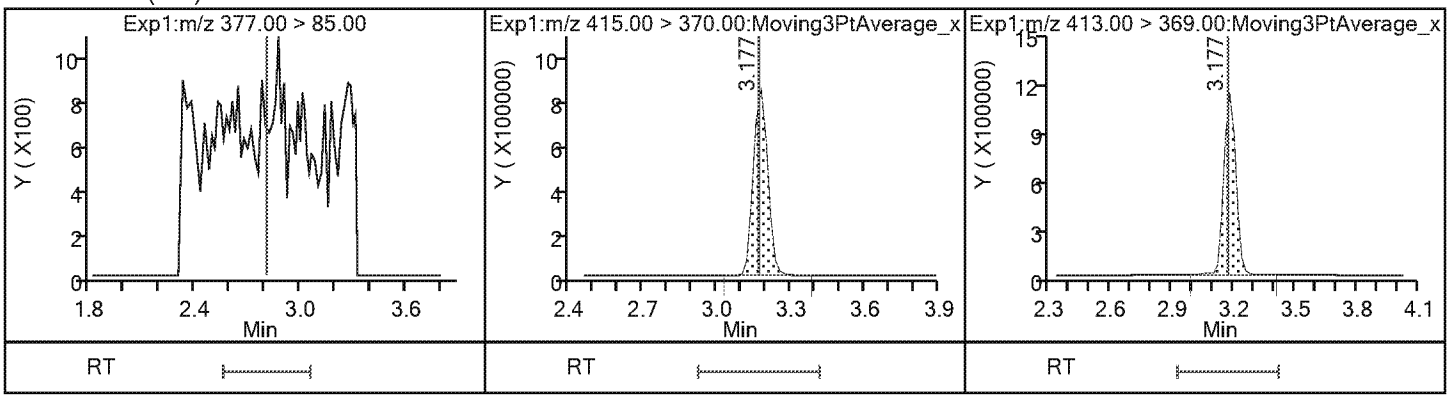
3 Perfluorohexanesulfonic acid (M)



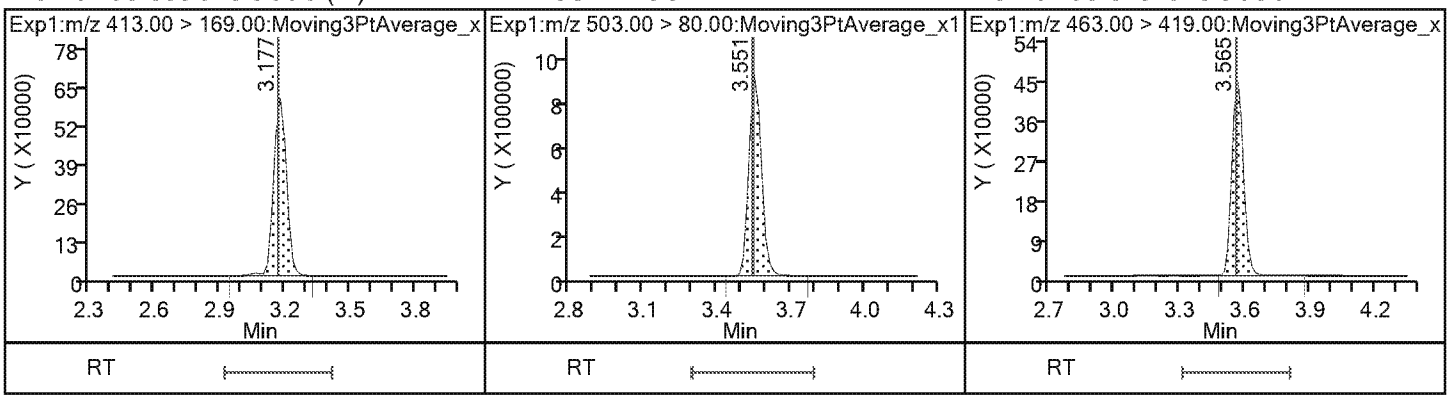
24 DONA (ND)



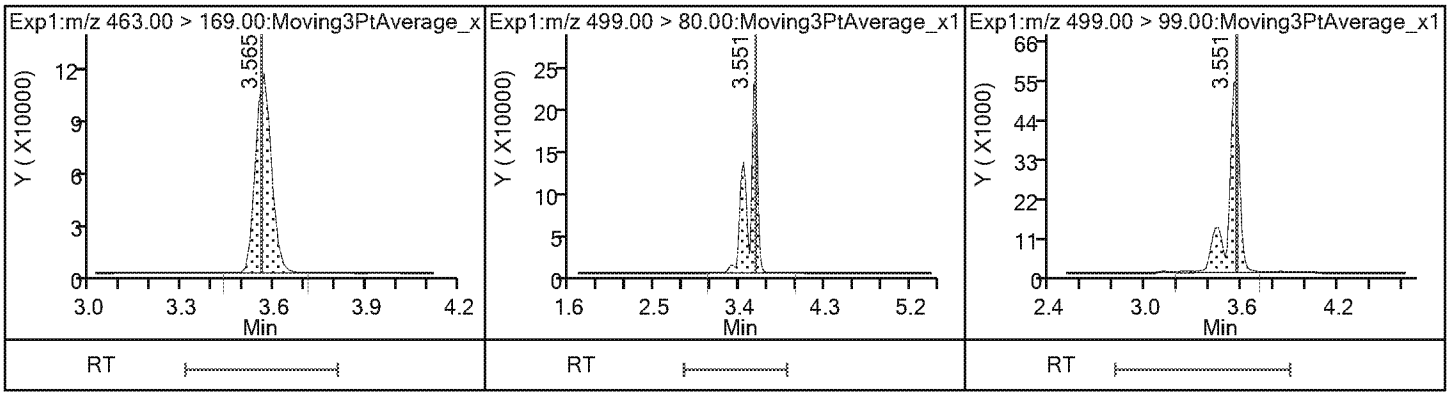
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid



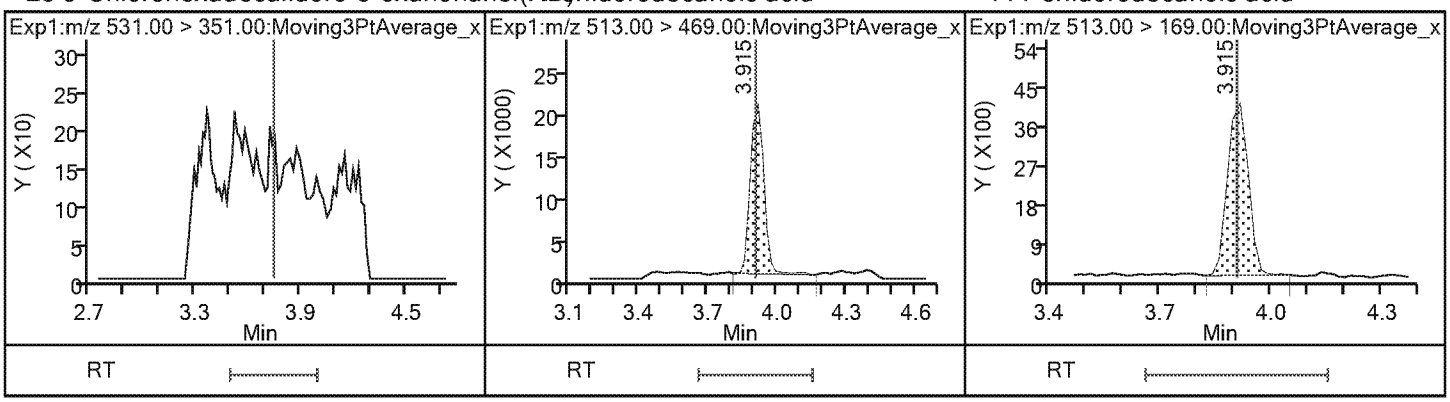
6 Perfluorooctanoic acid (M) * 7 13C4 PFOS 9 Perfluorononanoic acid



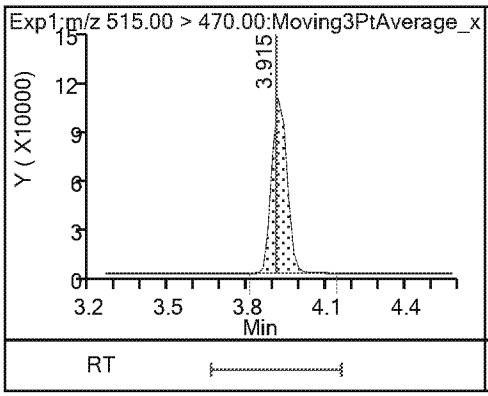
9 Perfluorononanoic acid 8 Perfluorooctanesulfonic acid 8 Perfluorooctanesulfonic acid



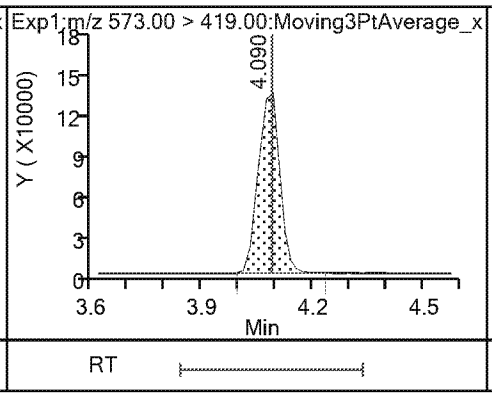
23 9-Chlorohexadecafluoro-3-oxanonane1(ND) 14 Perfluorodecanoic acid (M) 14 Perfluorodecanoic acid



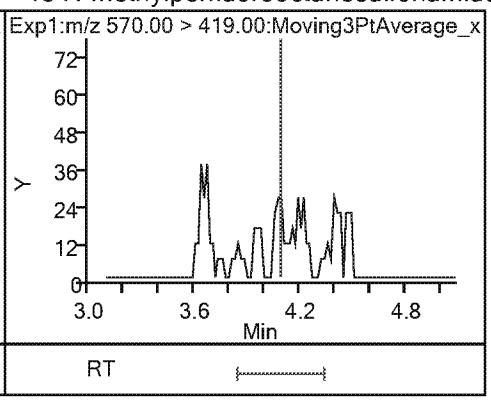
$ 10 13C2 PFDA



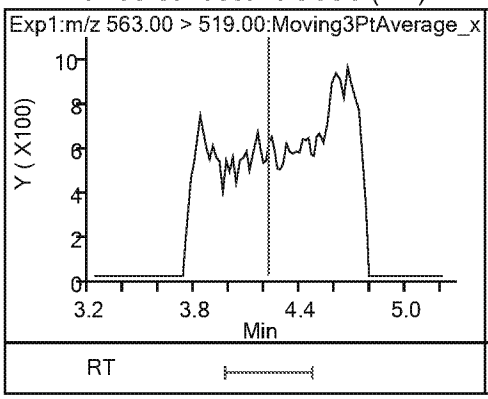
* 12 d3-NMeFOSAA



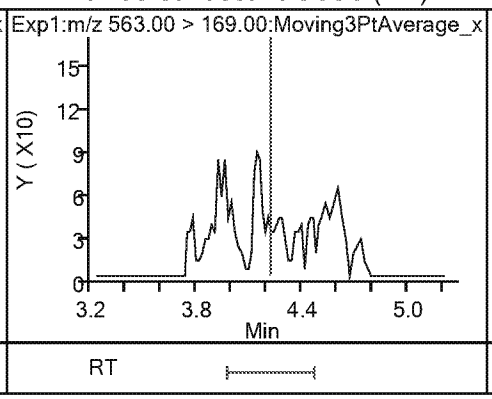
15 N-methylperfluorooctanesulfonamido (ND)



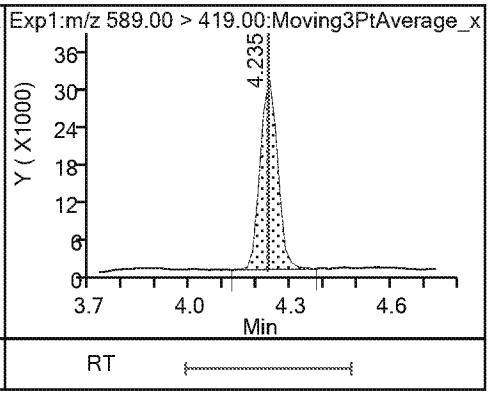
17 Perfluoroundecanoic acid (ND)



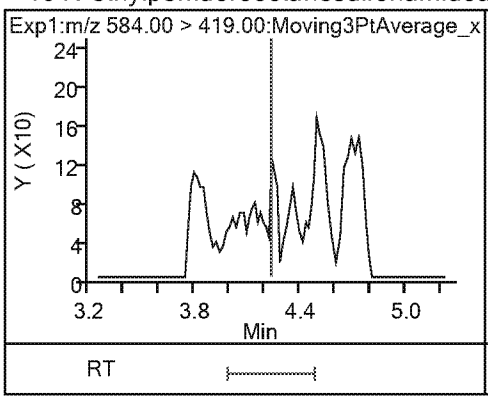
17 Perfluoroundecanoic acid (ND)



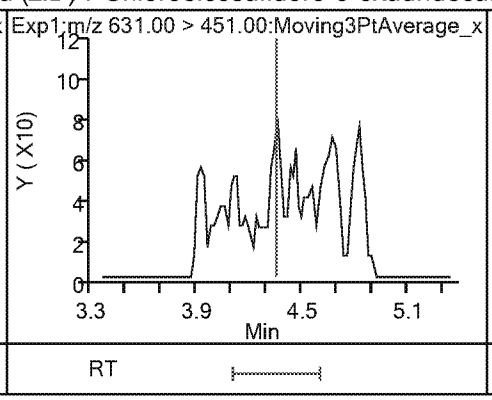
$ 11 d5-NEtFOSAA



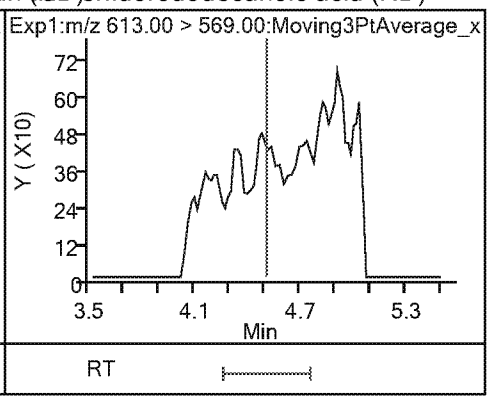
16 N-ethylperfluorooctanesulfonamidoa (ND)



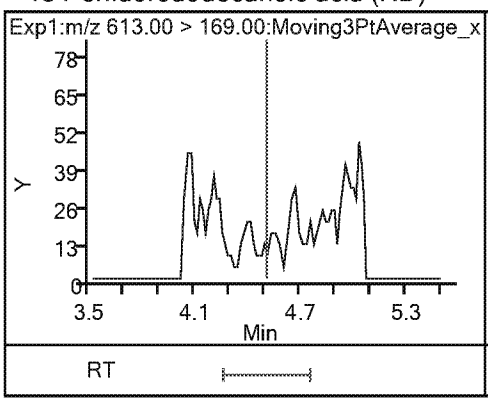
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



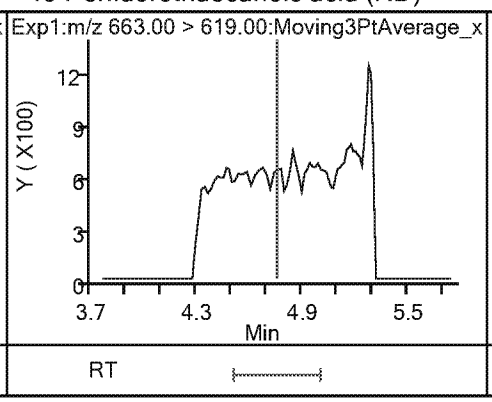
18 Perfluorododecanoic acid (ND)



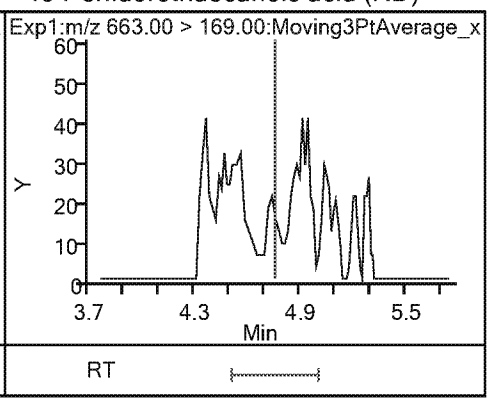
18 Perfluorododecanoic acid (ND)



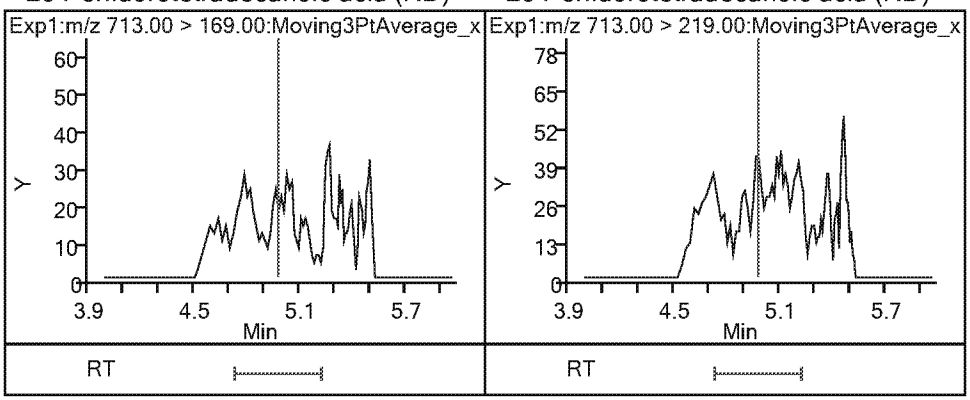
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_009.d				
Lims ID:	320-48799-A-2-A				
Client ID:	C0AR4				
Sample Type:	Client				
Inject. Date:	05-Apr-2019 12:42:22	ALS Bottle#:	3	Worklist Smp#:	6
Injection Vol:	10.0 ul	Dil. Factor:	5.0000		
Sample Info:	320-48799-a-2-a 5X				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		

Method:	\\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\537_A8_N.m		
Limit Group:	LC 537 ICAL		
Last Update:	05-Apr-2019 14:38:31	Calib Date:	04-Apr-2019 16:11:08
Integrator:	Picker		
Quant Method:	Internal Standard	Quant By:	Initial Calibration
Last ICal File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d		

Column 1 :		Det: EXP1	
Process Host:	CTX0314		

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 14:40:21

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	0.4776	95.52
$ 25 13C3 HFPO-DA	2.50	0.6284	125.69
$ 10 13C2 PFDA	2.50	0.5412	108.24
$ 11 d5-NEtFOSAA	2.50	0.5167	103.35

Eurofins TestAmerica, Sacramento

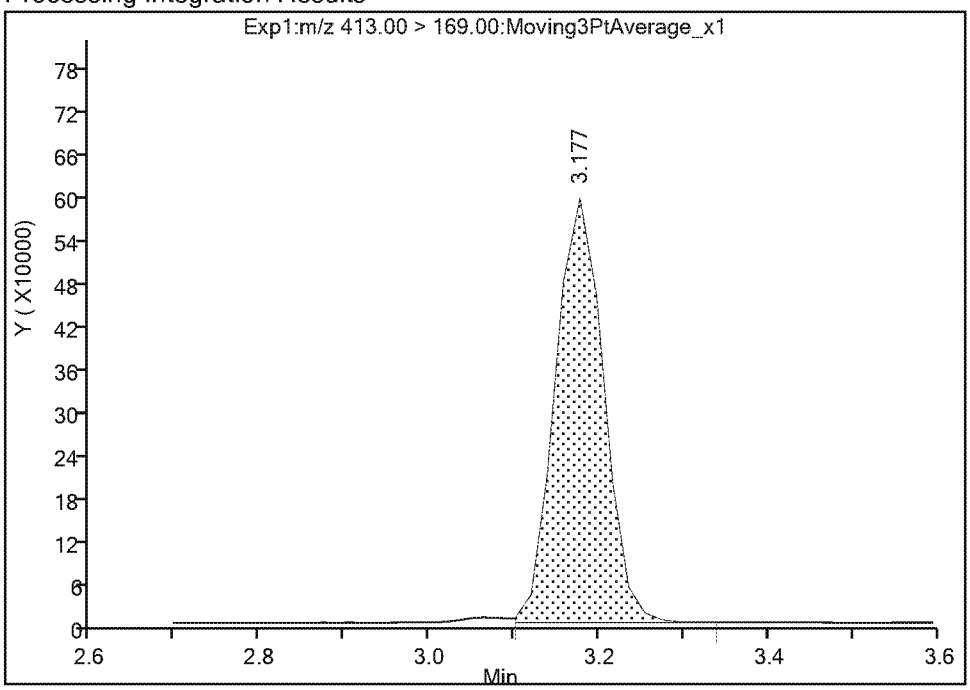
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_009.d				
Injection Date:	05-Apr-2019 12:42:22	Instrument ID:	A8_N		
Lims ID:	320-48799-A-2-A	Lab Sample ID:	320-48799-2		
Client ID:	C0AR4				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	6
Injection Vol:	10.0 ul	Dil. Factor:	5.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

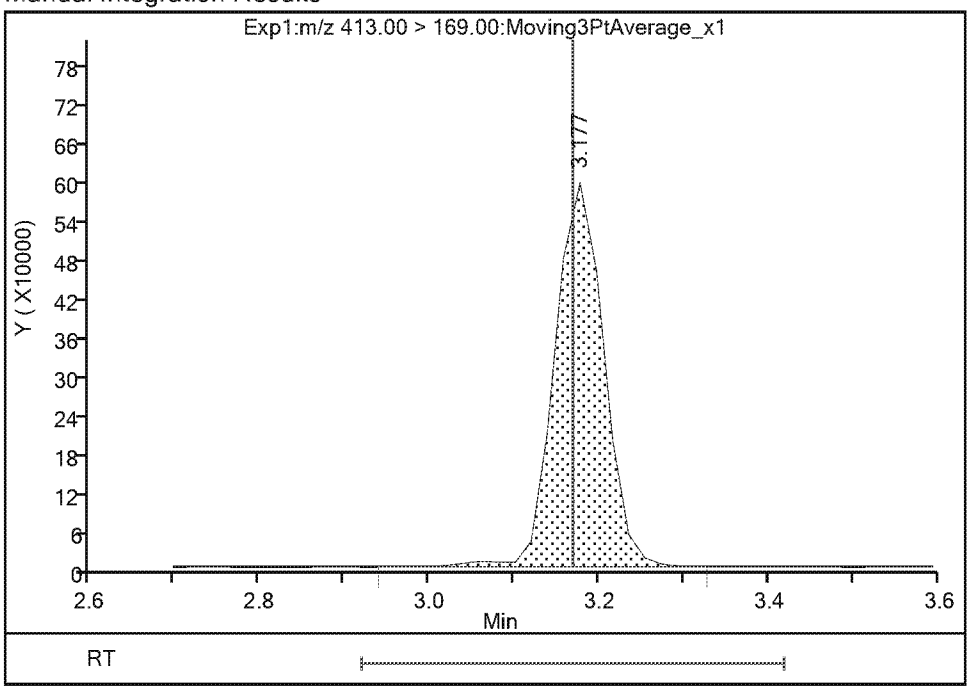
Processing Integration Results

RT: 3.18
Area: 2313204
Amount: 3.443262
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 2340289
Amount: 3.443262
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 14:35:22
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR6
Lab Sample ID: 320-48799-3
Matrix: Water
Lab File ID: 2019.04.04_537AA_049.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 12:10
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 280.4(mL)
Date Analyzed: 04/05/2019 02:07
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	25		1.8	0.85
335-67-1	Perfluorooctanoic acid	39		5.3	2.4
375-95-1	Perfluorononanoic acid	14		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	1.8		1.8	0.57
375-85-9	Perfluoroheptanoic acid	23		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	1.0	J	1.8	0.71

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	113		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d
Lims ID: 320-48799-A-3-A
Client ID: C0AR6
Sample Type: Client
Inject. Date: 05-Apr-2019 02:07:25 ALS Bottle#: 34 Worklist Smp#: 45
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:24:41
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.976	0.016	1.000	43798	0.0292	Target=1.41	41.6	
298.90 > 99.00	1.976	1.976	0.0	0.992	31914		1.37(0.00-0.00)	10.1	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.348	2.347	0.001	0.743	982091	0.7687	Target=10.46	60.1	
313.00 > 119.00	2.348	2.347	0.001	0.743	94703		10.37(0.00-0.00)	82.9	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	3012465	2.25		5872	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	160823	2.68		571	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.758	2.757	0.001	1.000	774299	0.6364	Target=2.41	44.7	M
363.00 > 169.00	2.758	2.757	0.001	1.000	326008		2.38(0.00-0.00)	555	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.778	0.0	1.000	93394	0.0514	Target=2.91	26.1	M
399.00 > 99.00	2.778	2.778	0.0	1.000	31240		2.99(0.00-0.00)	10.5	M
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.177	-0.019		2870142	2.50		7416	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.158	3.177	-0.019	1.000	1284201	1.10	Target=1.70	99.1	M
413.00 > 169.00	3.158	3.177	-0.019	1.000	748911		1.71(0.00-0.00)	897	M
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.549	-0.015		3032835	2.39		3002	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	325246	0.3834	Target=3.78	75.5	
463.00 > 169.00	3.549	3.549	0.0	1.000	84196		3.86(0.00-0.00)	236	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.416	3.564	-0.148	0.967	954317	0.7119	Target=4.63	435	M
499.00 > 99.00	3.534	3.564	-0.030	1.000	124188		7.68(0.00-0.00)	42.1	M
14 Perfluorodecanoic acid									
513.00 > 469.00	3.895	3.892	0.003	1.000	111705	0.1663	Target=4.93	26.6	
513.00 > 169.00	3.895	3.892	0.003	1.000	23764		4.70(0.00-0.00)	82.5	
$ 10 13C2 PFDA									
515.00 > 470.00	3.914	3.911	0.003	1.000	2022337	2.84		5909	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.073	4.070	0.003		654681	2.50		2042	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.217	4.214	0.003	1.035	777538	2.91		454	

QC Flag Legend

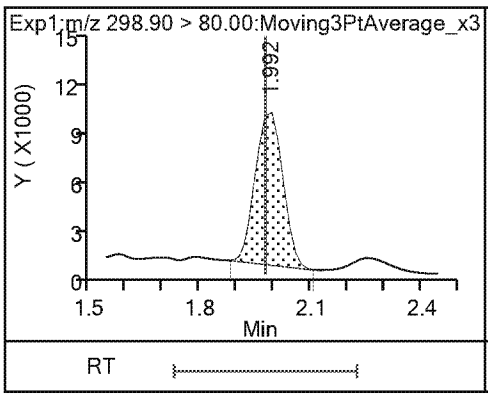
Review Flags

M - Manually Integrated

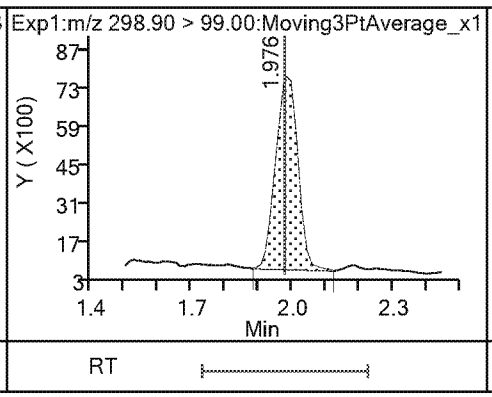
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d				
Injection Date:	05-Apr-2019 02:07:25	Instrument ID:	A8_N		
Lims ID:	320-48799-A-3-A	Lab Sample ID:	320-48799-3		
Client ID:	C0AR6				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	45
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

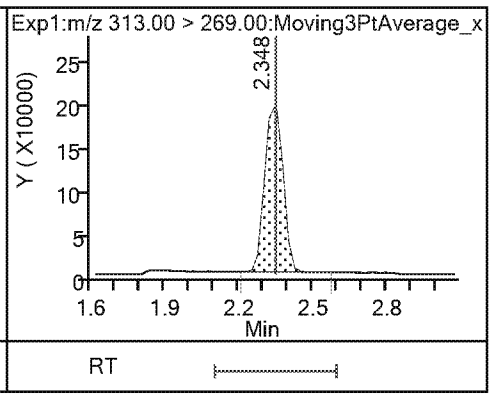
1 Perfluorobutanesulfonic acid



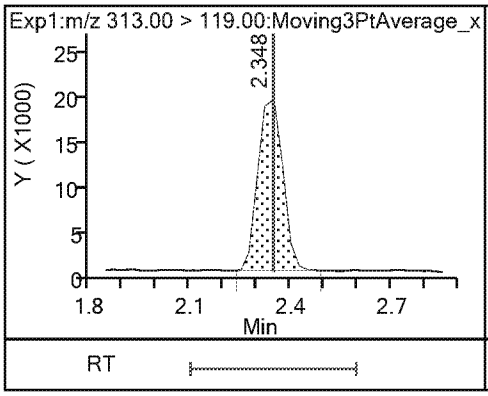
1 Perfluorobutanesulfonic acid



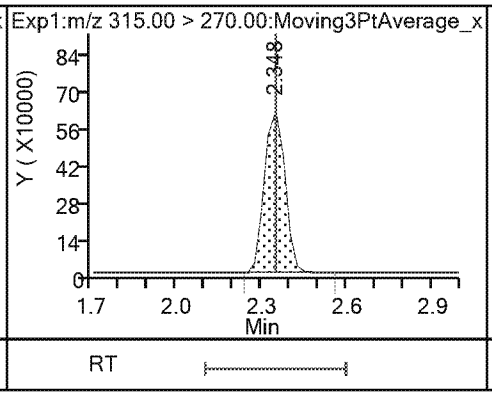
13 Perfluorohexanoic acid



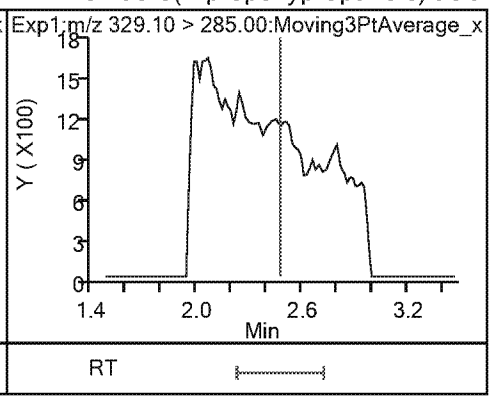
13 Perfluorohexanoic acid



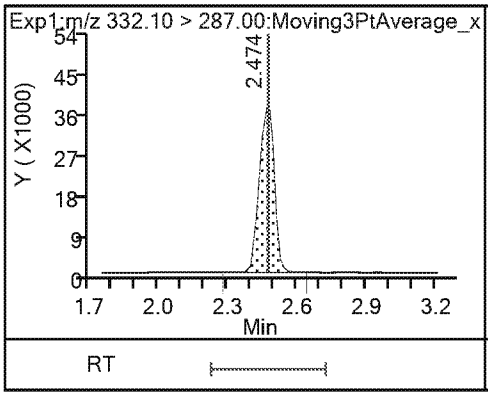
$ 2 13C2 PFHxA



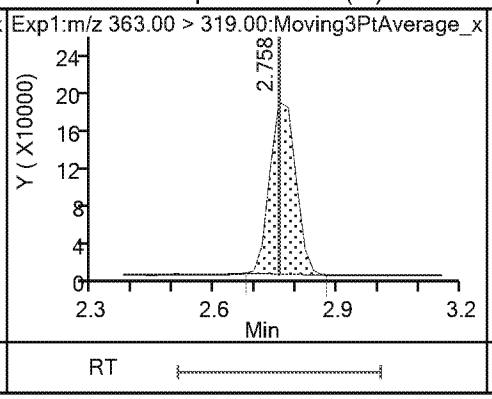
22 Perfluoro(2-propoxypropanoic) acid (ND)



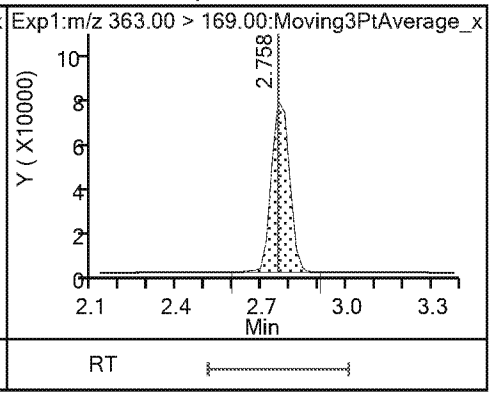
$ 25 13C3 HFPO-DA



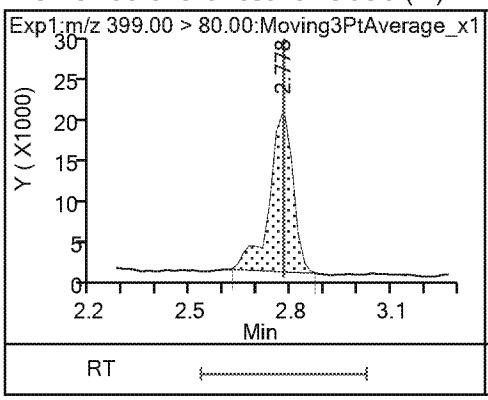
4 Perfluoroheptanoic acid (M)



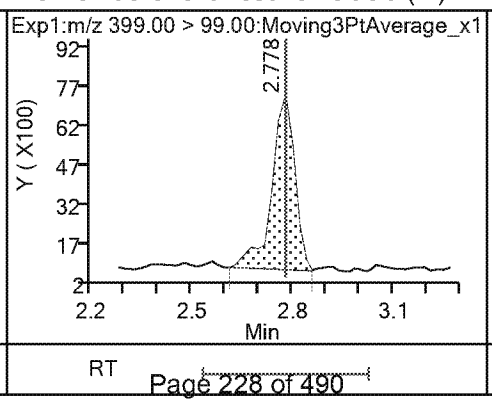
4 Perfluoroheptanoic acid



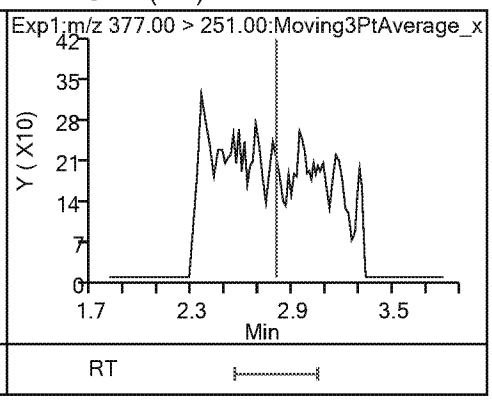
3 Perfluorohexanesulfonic acid (M)



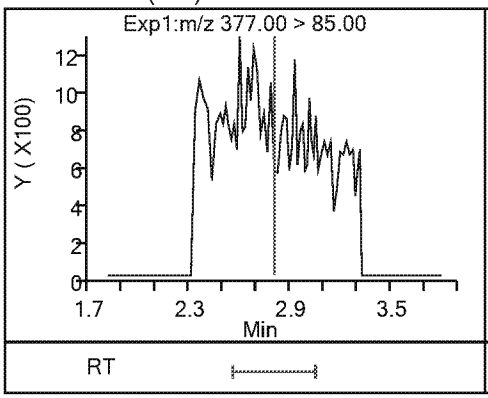
3 Perfluorohexanesulfonic acid (M)



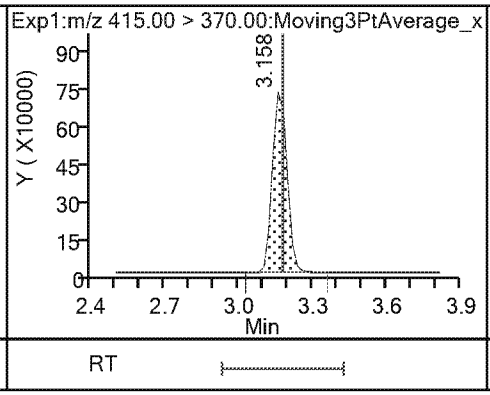
24 DONA (ND)



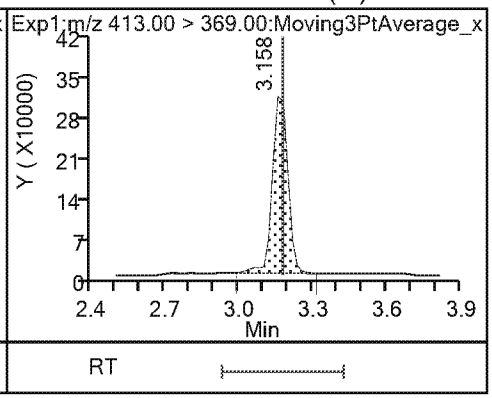
24 DONA (ND)



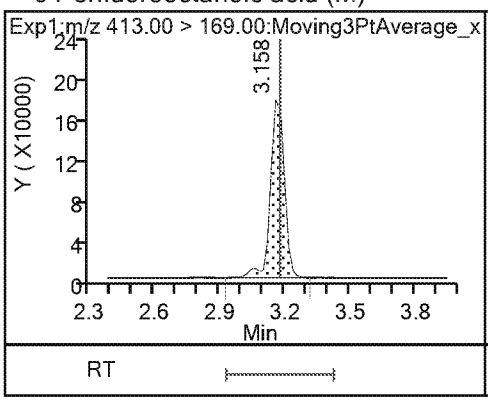
* 5 13C2 PFOA



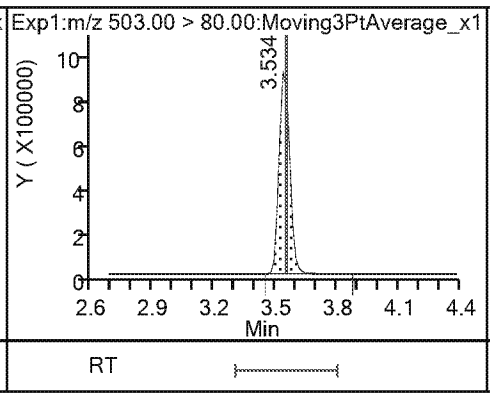
6 Perfluorooctanoic acid (M)



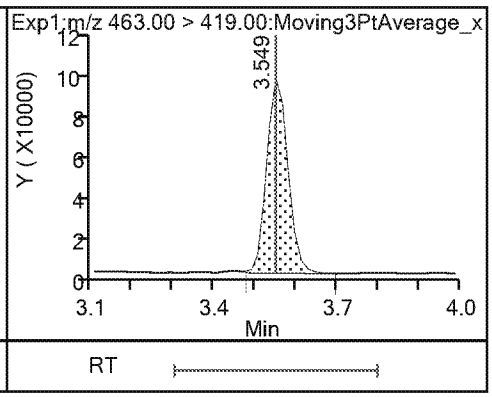
6 Perfluorooctanoic acid (M)



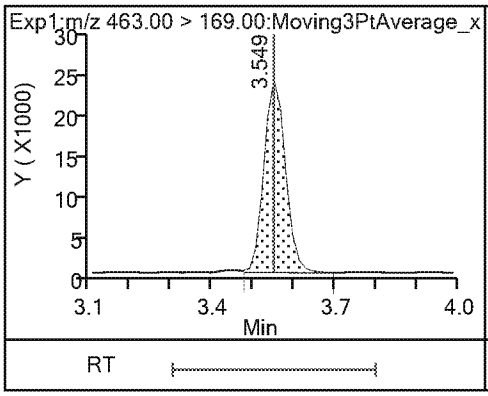
* 7 13C4 PFOS



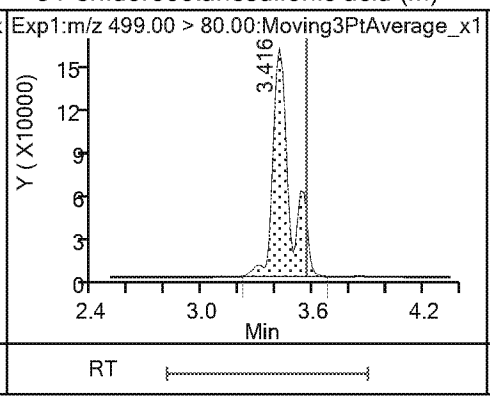
9 Perfluorononanoic acid



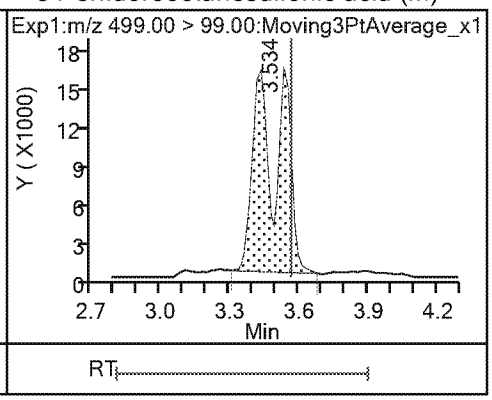
9 Perfluorononanoic acid



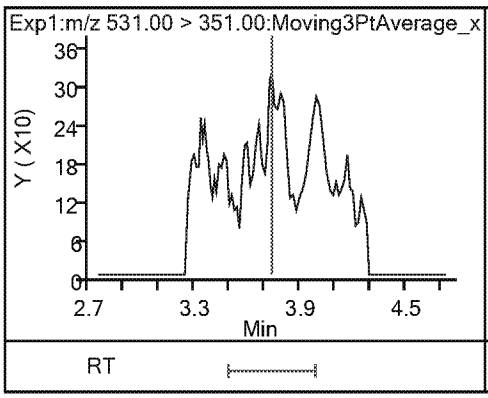
8 Perfluorooctanesulfonic acid (M)



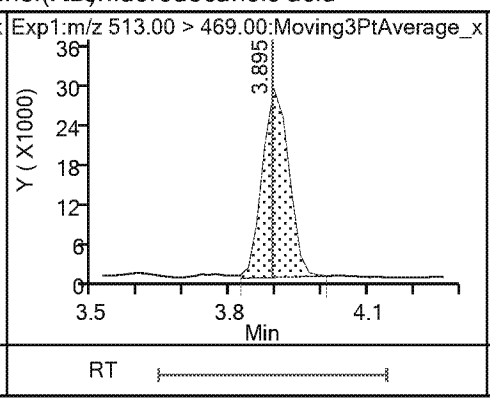
8 Perfluorooctanesulfonic acid (M)



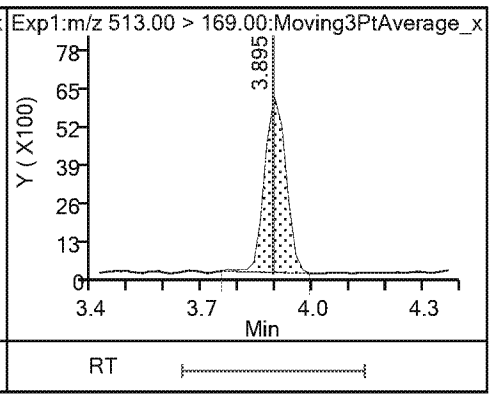
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



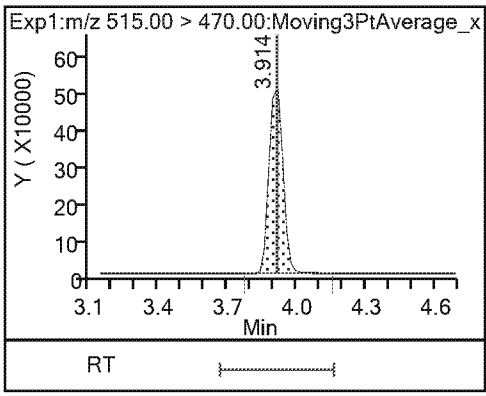
14 Perfluorodecanoic acid (M)



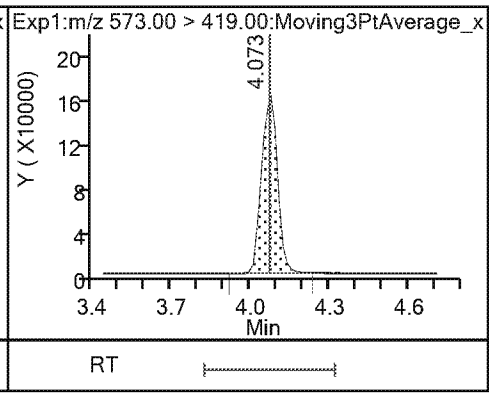
14 Perfluorodecanoic acid



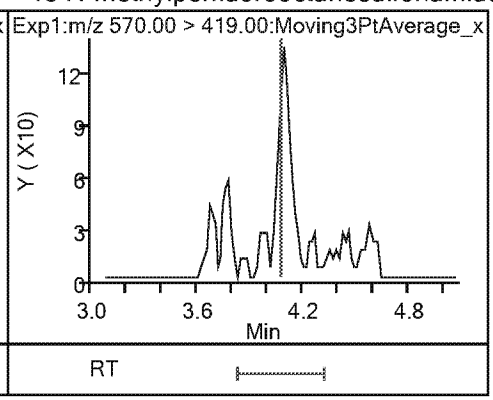
$ 10 13C2 PFDA



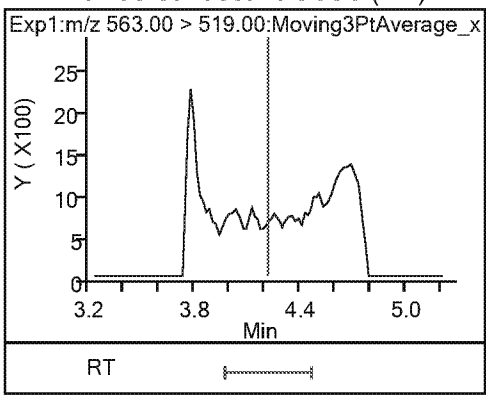
* 12 d3-NMeFOSAA



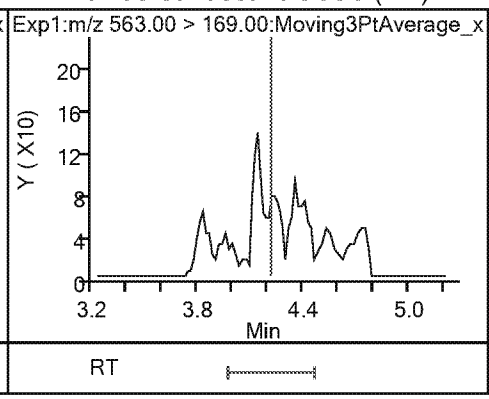
15 N-methylperfluorooctanesulfonamido (ND)



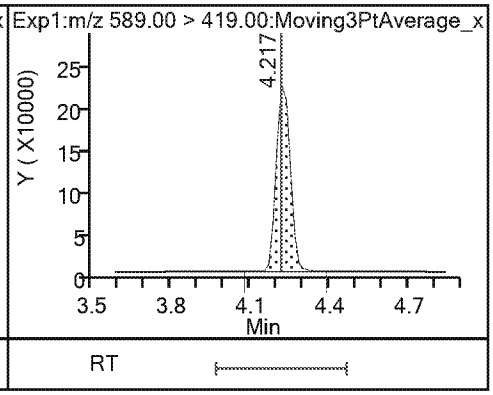
17 Perfluoroundecanoic acid (ND)



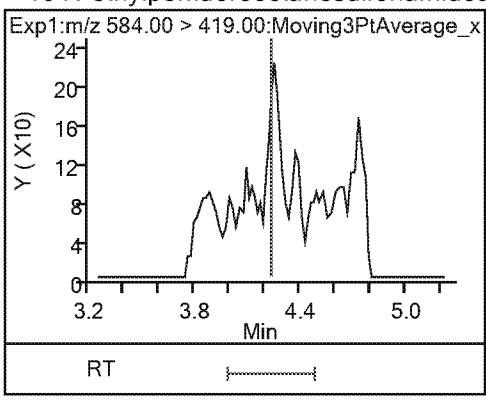
17 Perfluoroundecanoic acid (ND)



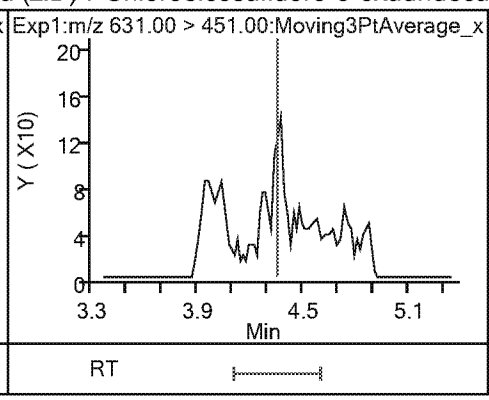
$ 11 d5-NEtFOSAA



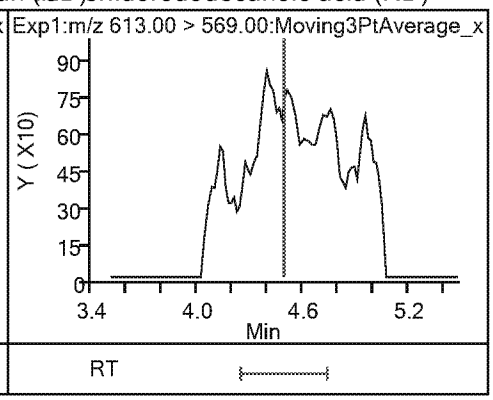
16 N-ethylperfluorooctanesulfonamidoa (ND)



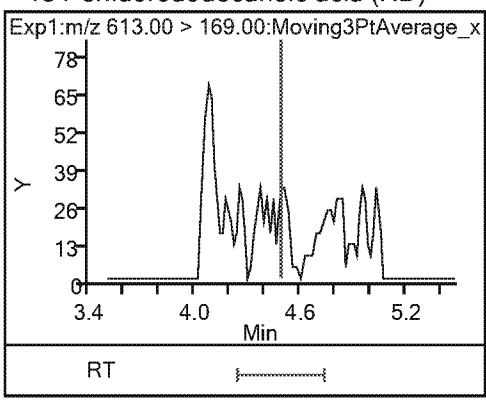
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



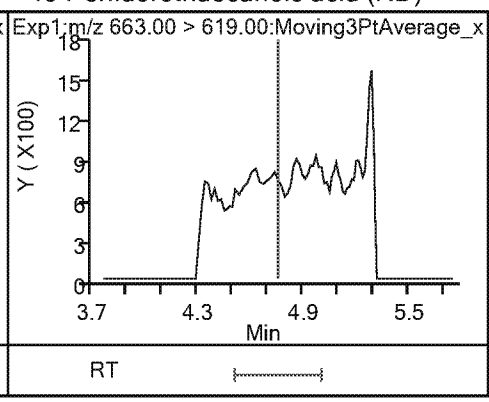
18 Perfluorododecanoic acid (ND)



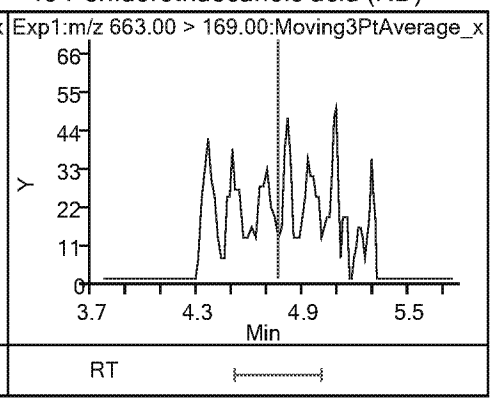
18 Perfluorododecanoic acid (ND)



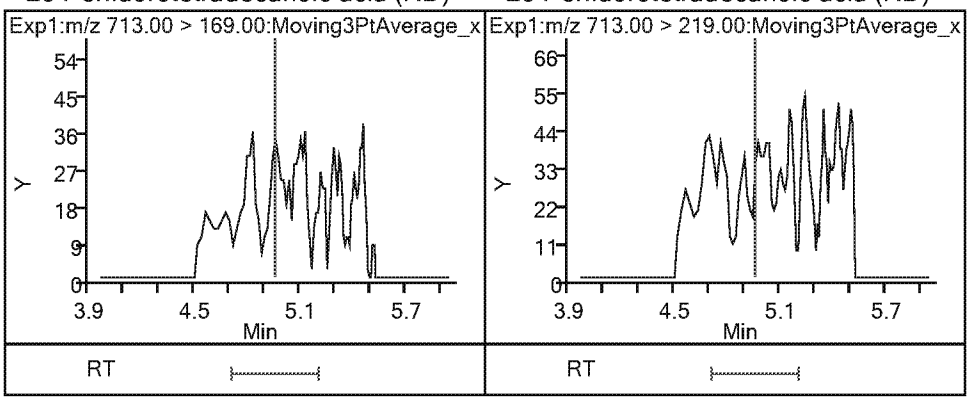
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d
Lims ID: 320-48799-A-3-A
Client ID: C0AR6
Sample Type: Client
Inject. Date: 05-Apr-2019 02:07:25 ALS Bottle#: 34 Worklist Smp#: 45
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:24:41

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.25	90.04
$ 25 13C3 HFPO-DA	2.50	2.68	107.02
$ 10 13C2 PFDA	2.50	2.84	113.47
$ 11 d5-NEtFOSAA	2.50	2.91	116.21

Eurofins TestAmerica, Sacramento

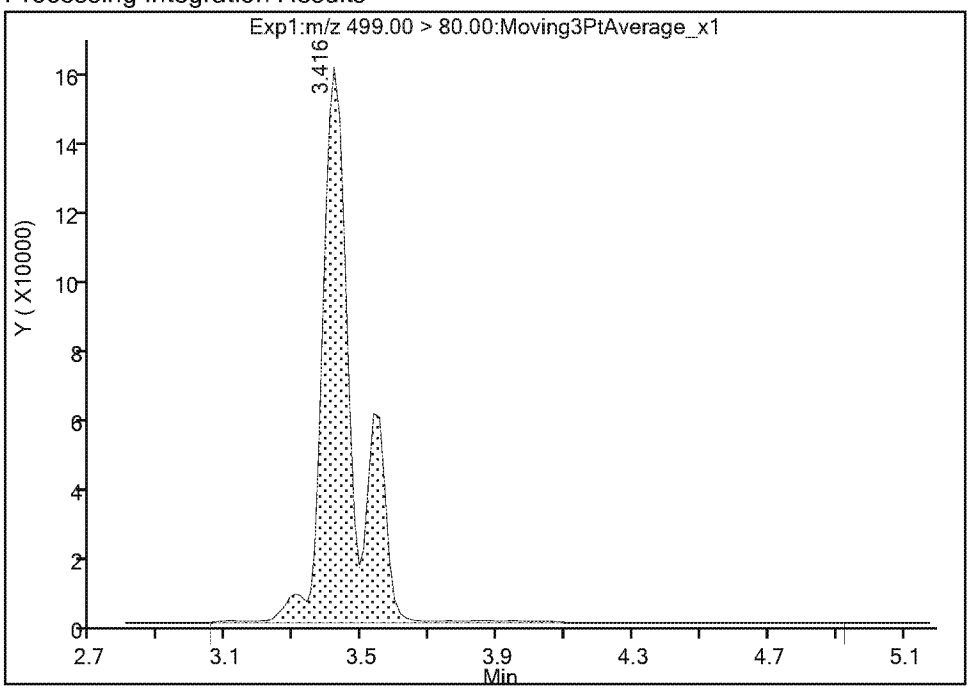
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d				
Injection Date:	05-Apr-2019 02:07:25	Instrument ID:	A8_N		
Lims ID:	320-48799-A-3-A	Lab Sample ID:	320-48799-3		
Client ID:	C0AR6				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	45
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 1

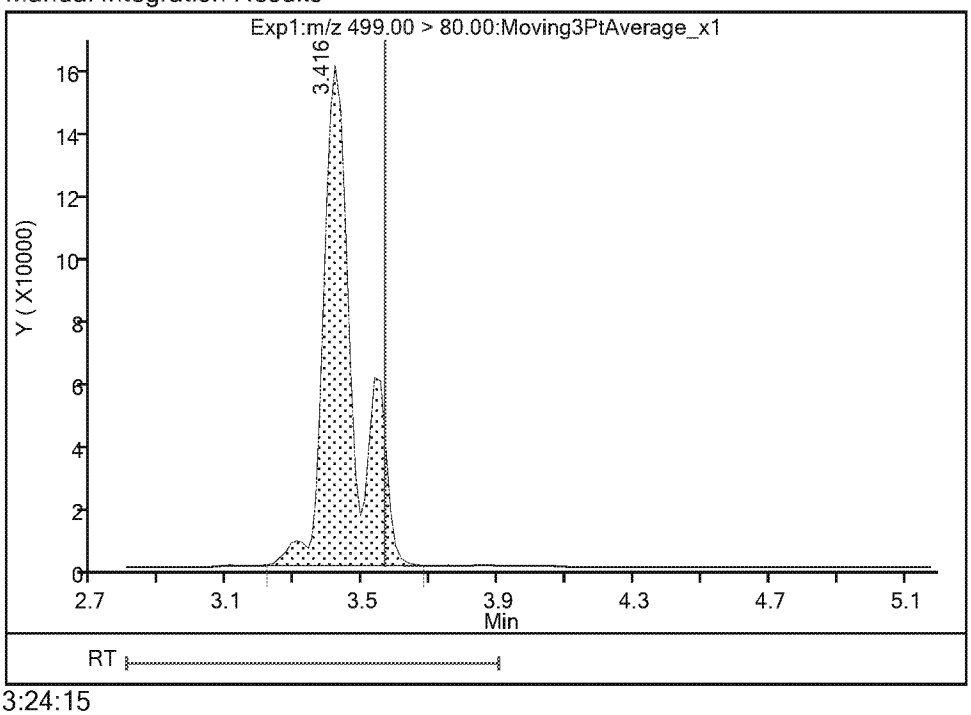
Processing Integration Results

RT: 3.42
Area: 976668
Amount: 0.728610
Amount Units: ng/ml



Manual Integration Results

RT: 3.42
Area: 954317
Amount: 0.711936
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:24:15
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

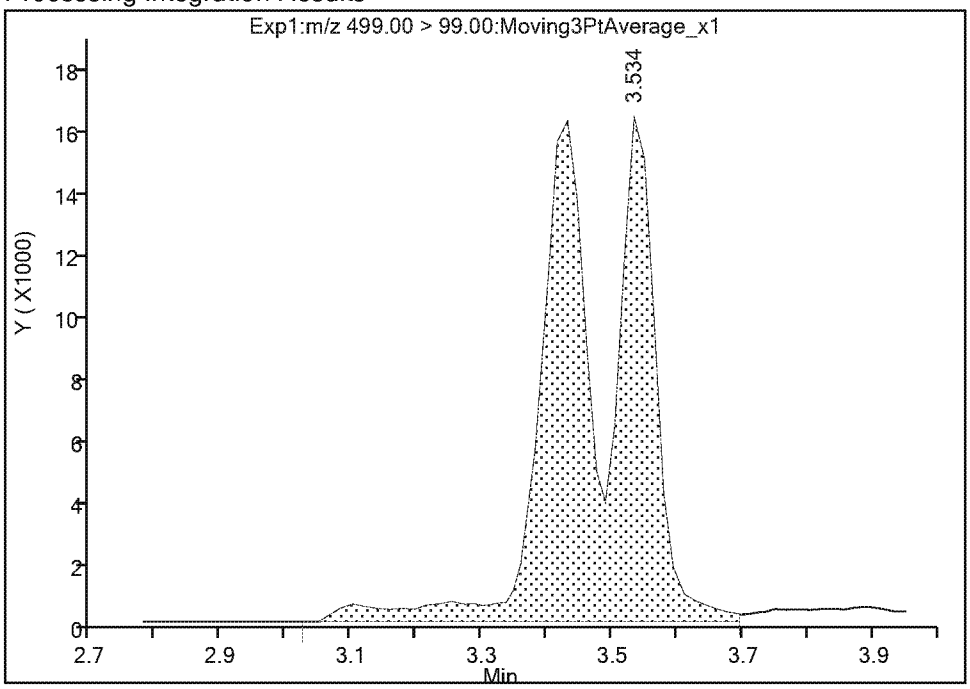
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d				
Injection Date:	05-Apr-2019 02:07:25	Instrument ID:	A8_N		
Lims ID:	320-48799-A-3-A	Lab Sample ID:	320-48799-3		
Client ID:	C0AR6				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	45
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

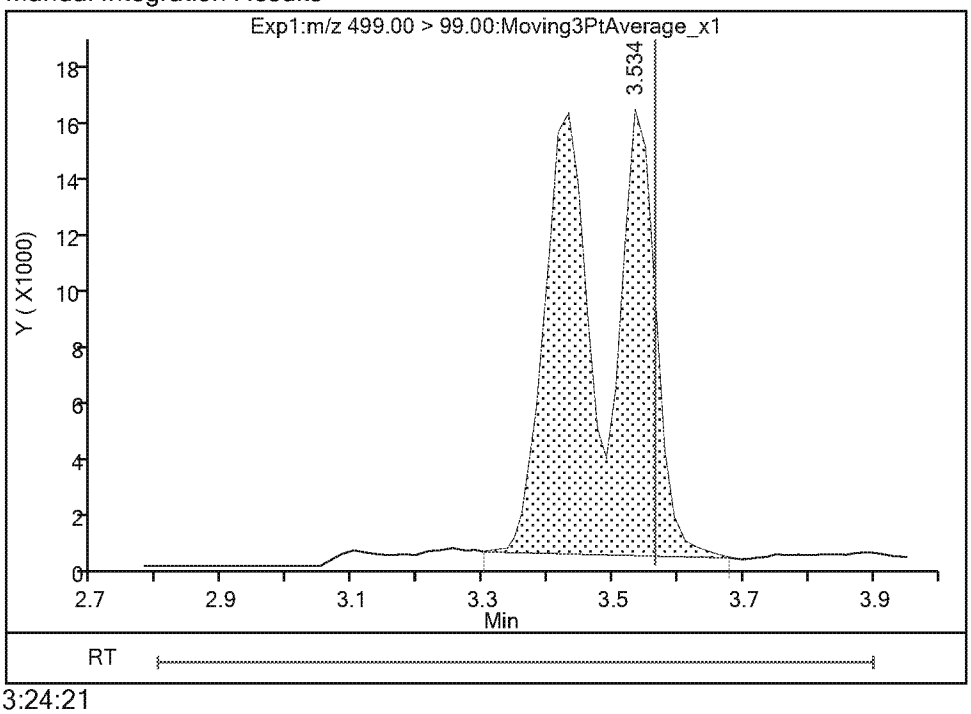
Processing Integration Results

RT: 3.53
Area: 139533
Amount: 0.728610
Amount Units: ng/ml



Manual Integration Results

RT: 3.53
Area: 124188
Amount: 0.711936
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:24:21
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

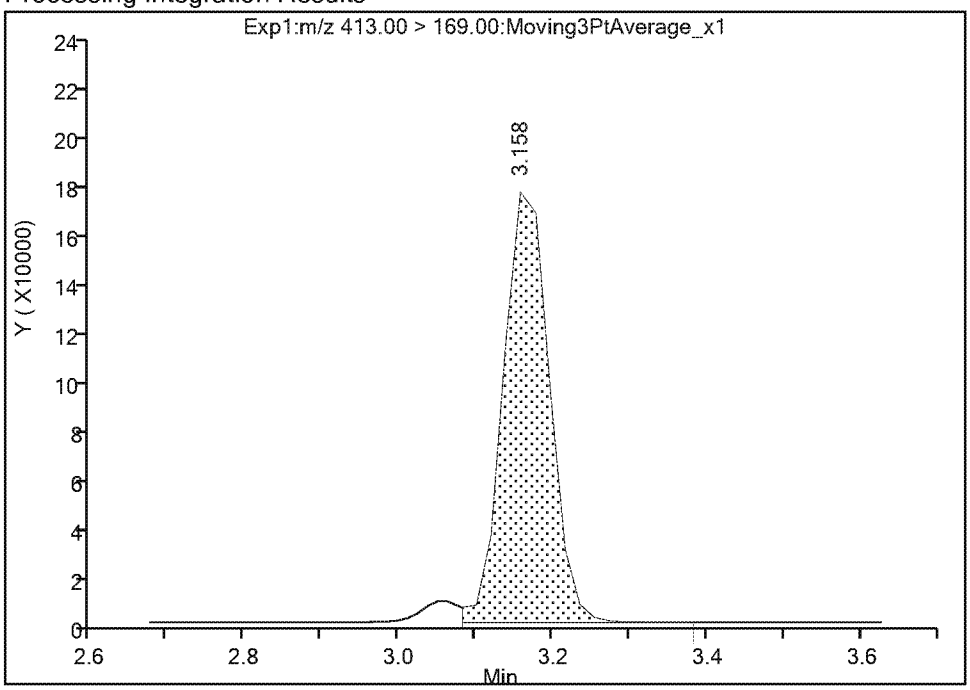
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d				
Injection Date:	05-Apr-2019 02:07:25	Instrument ID:	A8_N		
Lims ID:	320-48799-A-3-A	Lab Sample ID:	320-48799-3		
Client ID:	C0AR6				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	45
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

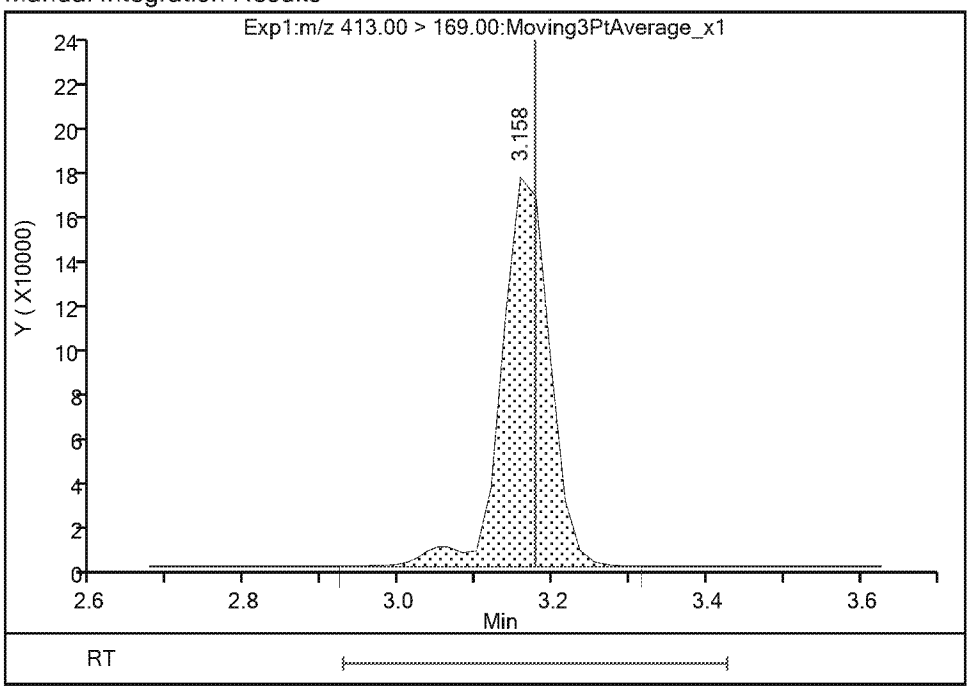
Processing Integration Results

RT: 3.16
Area: 719866
Amount: 1.090090
Amount Units: ng/ml



Manual Integration Results

RT: 3.16
Area: 748911
Amount: 1.102664
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:21:27
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

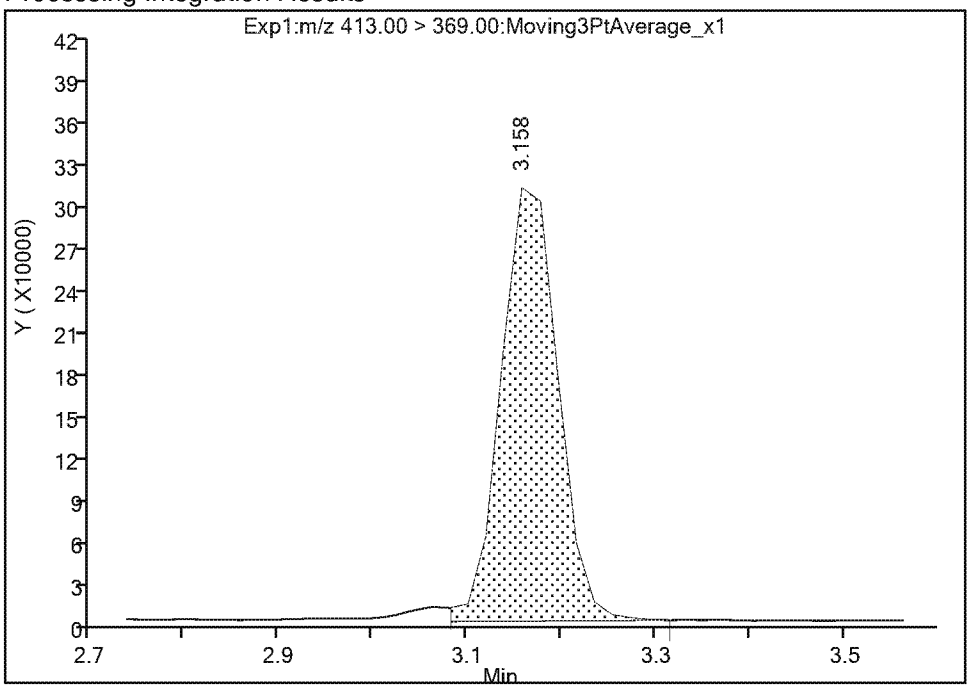
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d				
Injection Date:	05-Apr-2019 02:07:25	Instrument ID:	A8_N		
Lims ID:	320-48799-A-3-A	Lab Sample ID:	320-48799-3		
Client ID:	C0AR6				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	45
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

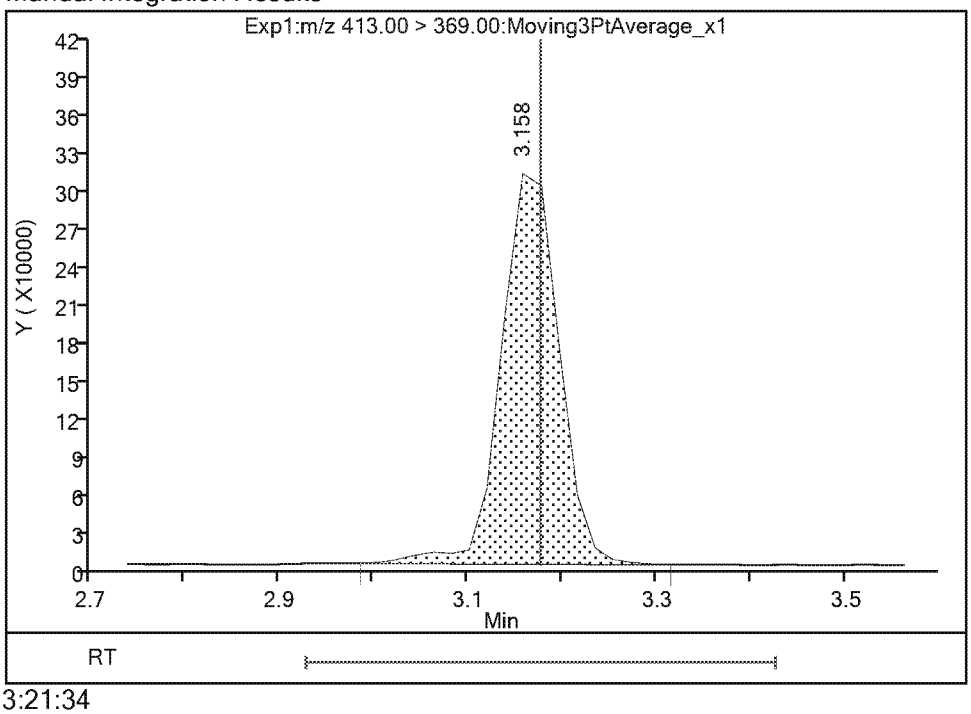
Processing Integration Results

RT: 3.16
Area: 1269557
Amount: 1.090090
Amount Units: ng/ml



Manual Integration Results

RT: 3.16
Area: 1284201
Amount: 1.102664
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 5-Apr-2019 13:21:34
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

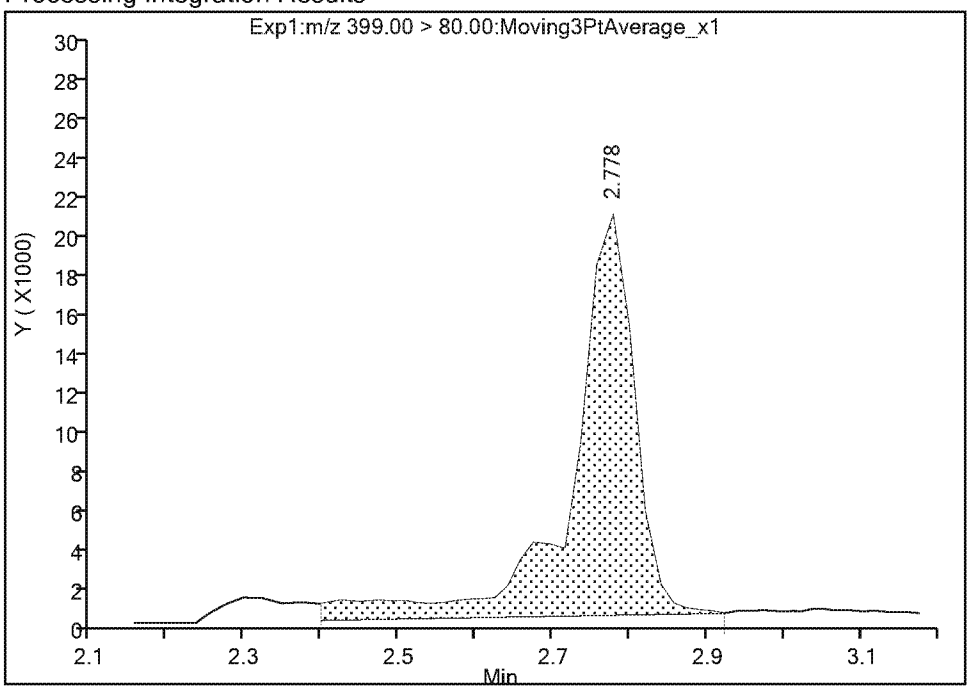
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d				
Injection Date:	05-Apr-2019 02:07:25	Instrument ID:	A8_N		
Lims ID:	320-48799-A-3-A	Lab Sample ID:	320-48799-3		
Client ID:	C0AR6				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	45
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

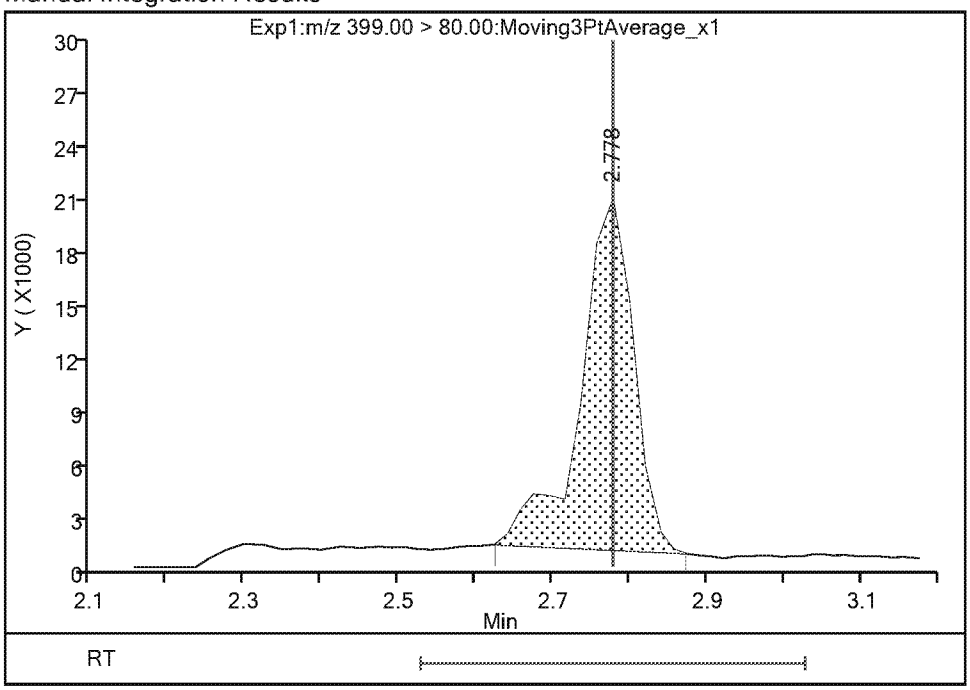
Processing Integration Results

RT: 2.78
Area: 115029
Amount: 0.063260
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 93394
Amount: 0.051362
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:20:53
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

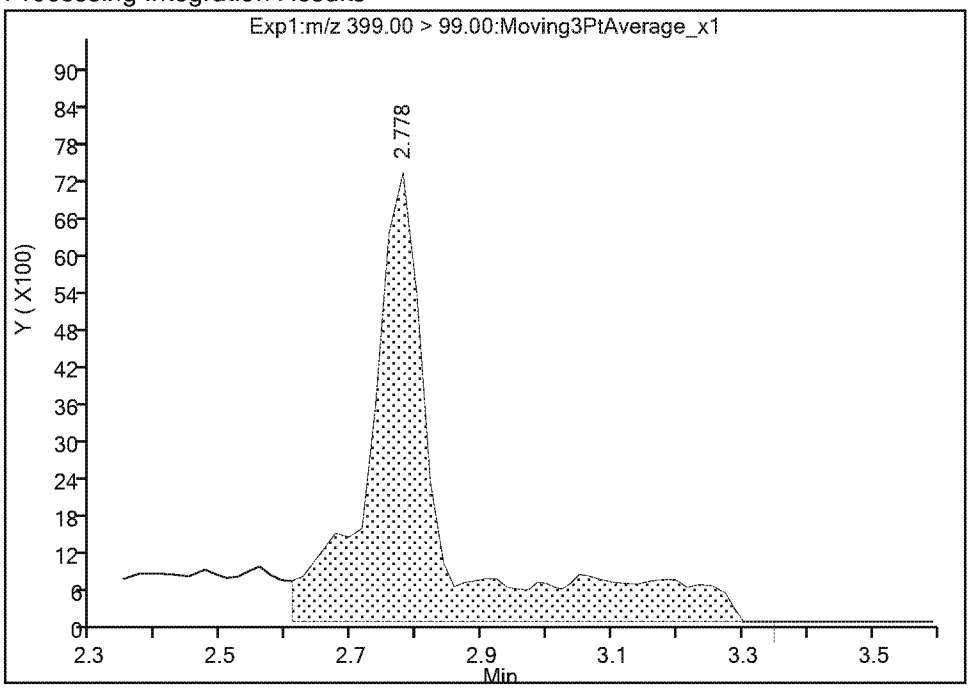
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d				
Injection Date:	05-Apr-2019 02:07:25	Instrument ID:	A8_N		
Lims ID:	320-48799-A-3-A	Lab Sample ID:	320-48799-3		
Client ID:	C0AR6				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	45
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

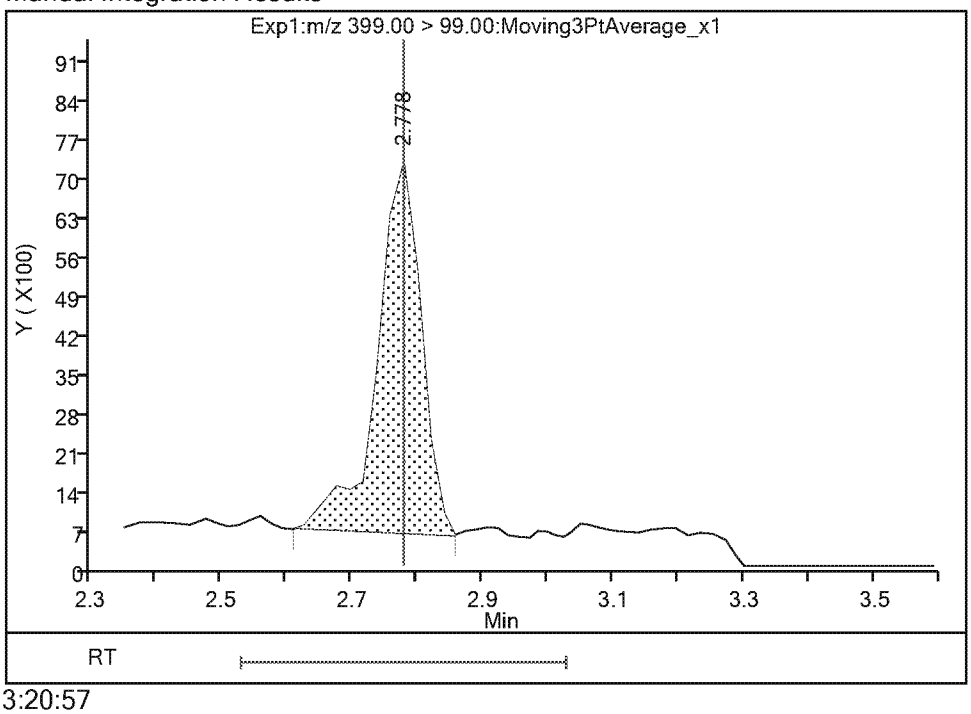
Processing Integration Results

RT: 2.78
Area: 56050
Amount: 0.063260
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 31240
Amount: 0.051362
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:20:57
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

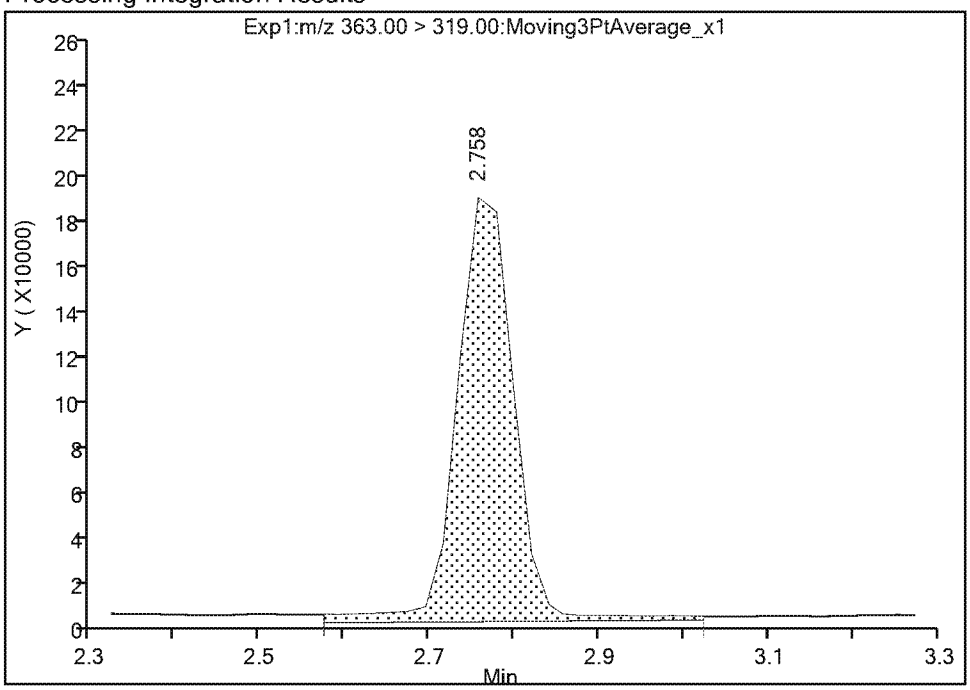
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_049.d				
Injection Date:	05-Apr-2019 02:07:25	Instrument ID:	A8_N		
Lims ID:	320-48799-A-3-A	Lab Sample ID:	320-48799-3		
Client ID:	C0AR6				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	34	Worklist Smp#:	45
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

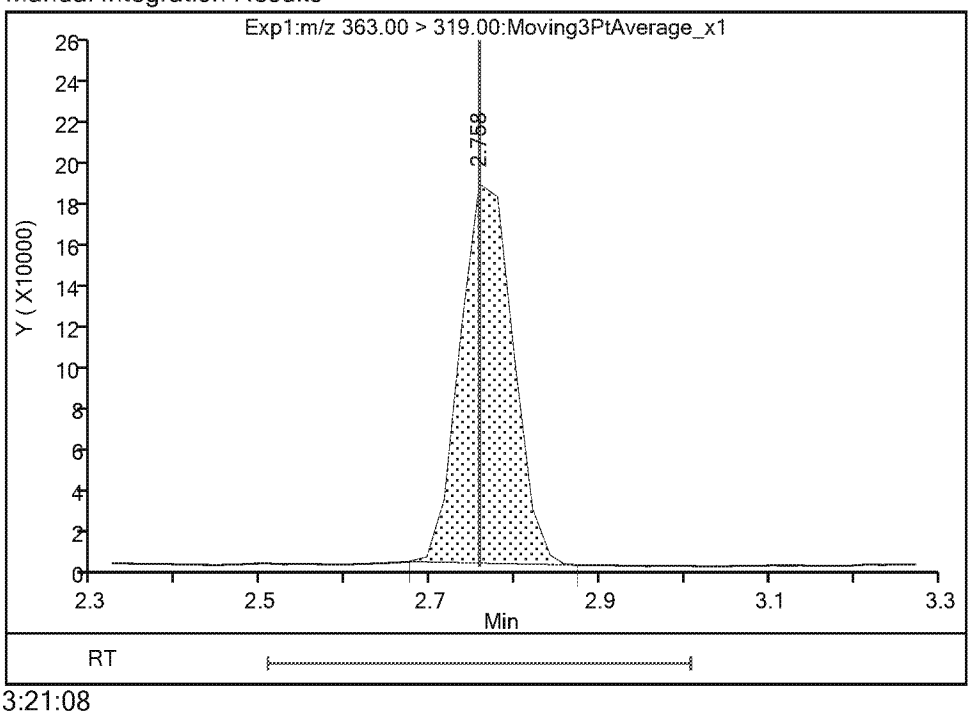
Processing Integration Results

RT: 2.76
Area: 854575
Amount: 0.702337
Amount Units: ng/ml



Manual Integration Results

RT: 2.76
Area: 774299
Amount: 0.636362
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:21:08
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AR7
Lab Sample ID: 320-48799-4
Matrix: Water
Lab File ID: 2019.04.04_537AA_050.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 12:50
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 283.3(mL)
Date Analyzed: 04/05/2019 02:16
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	13		1.8	0.84
335-67-1	Perfluorooctanoic acid	13		5.3	2.4
375-95-1	Perfluorononanoic acid	3.9		1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	3.0		1.8	0.56
375-85-9	Perfluoroheptanoic acid	5.5		2.6	1.1
375-73-5	Perfluorobutanesulfonic acid	2.6		1.8	0.71

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	111		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d
Lims ID: 320-48799-A-4-A
Client ID: C0AR7
Sample Type: Client
Inject. Date: 05-Apr-2019 02:16:54 ALS Bottle#: 35 Worklist Smp#: 46
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:26:11
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.976	0.016	1.000	116226	0.0740	Target=1.41	95.7	
298.90 > 99.00	1.992	1.976	0.016	1.000	76627		1.52(0.00-0.00)	24.1	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.739	296616	0.2208	Target=10.46	16.6	
313.00 > 119.00	2.347	2.347	0.0	0.739	27095		10.95(0.00-0.00)	26.4	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3152969	2.24		5749	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	180064	2.85		541	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.778	2.757	0.021	1.000	200686	0.1569	Target=2.41	11.5	M
363.00 > 169.00	2.778	2.757	0.021	1.000	84832		2.37(0.00-0.00)	118	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.778	0.0	1.000	162913	0.0855	Target=2.91	34.6	M
399.00 > 99.00	2.778	2.778	0.0	1.000	52208		3.12(0.00-0.00)	17.6	M
24 DONA									
377.00 > 251.00	2.819	2.799	0.020	1.000	1320	0.000379	Target=1.54	1.6	
377.00 > 85.00	2.737	2.799	-0.062	0.971	8049		0.16(0.00-0.00)	186	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.177	0.0		3017417	2.50		9926	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.177	3.177	0.0	1.000	444402	0.3630	Target=1.70	34.8	M
413.00 > 169.00	3.177	3.177	0.0	1.000	264031		1.68(0.00-0.00)	345	M
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.549	0.0		3179811	2.39		2665	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
9 Perfluorononanoic acid									
463.00 > 419.00	3.564	3.549	0.015	1.000	97613	0.1094	Target=3.78	22.3	
463.00 > 169.00	3.549	3.549	0.0	0.996	23391		4.17(0.00-0.00)	71.3	
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.431	3.564	-0.133	0.967	530376	0.3774	Target=4.63	157	M
499.00 > 99.00	3.549	3.564	-0.015	1.000	88637		5.98(0.00-0.00)	39.9	M
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.735	3.735	0.0	1.000	3047	0.001347		3.9	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.895	3.892	0.002	1.000	10412	0.0147	Target=4.93	1.8	
513.00 > 169.00	3.895	3.892	0.002	1.000	1533		6.79(0.00-0.00)	4.9	
$ 10 13C2 PFDA									
515.00 > 470.00	3.914	3.911	0.003	1.000	2088418	2.79		8617	
* 12 d3-NMeFOSAA									s
573.00 > 419.00	4.073	4.070	0.002		690521	2.50		2644	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.217	4.214	0.003	1.035	868769	3.08		540	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.351	4.349	0.002	1.000	2872	0.001013		25.1	

QC Flag Legend

Processing Flags

s - Failed ISTD Recovery Test

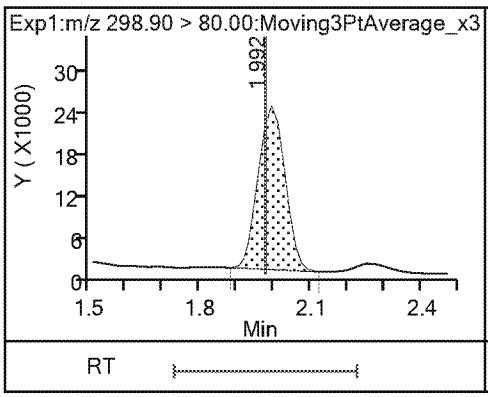
Review Flags

M - Manually Integrated

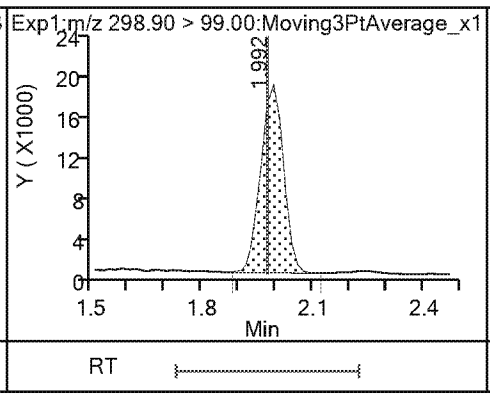
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d				
Injection Date:	05-Apr-2019 02:16:54	Instrument ID:	A8_N		
Lims ID:	320-48799-A-4-A	Lab Sample ID:	320-48799-4		
Client ID:	C0AR7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

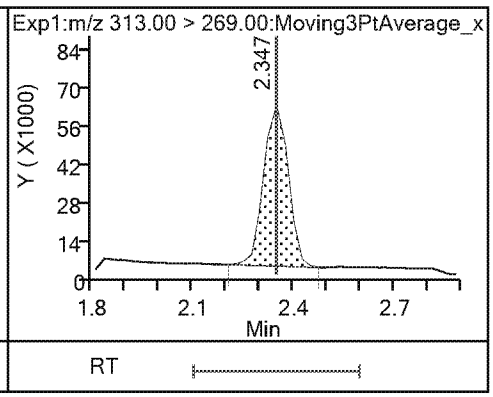
1 Perfluorobutanesulfonic acid



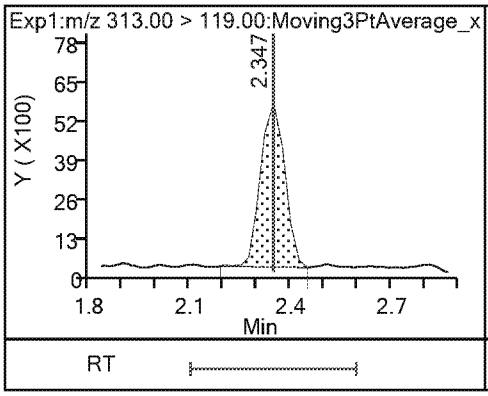
1 Perfluorobutanesulfonic acid



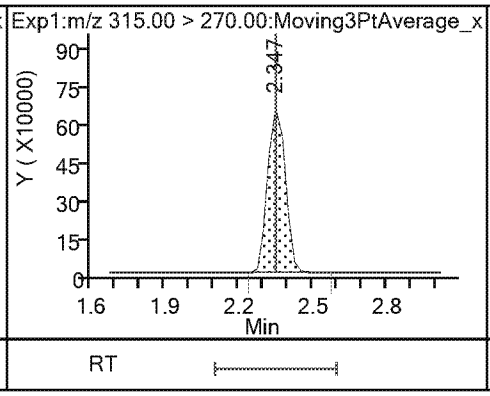
13 Perfluorohexanoic acid



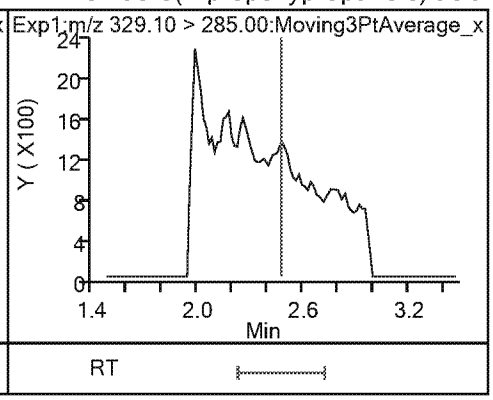
13 Perfluorohexanoic acid



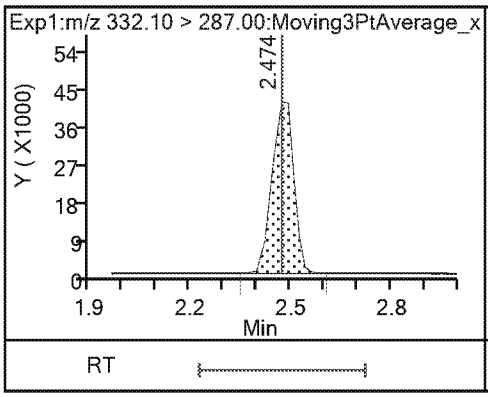
$ 2 13C2 PFHxA



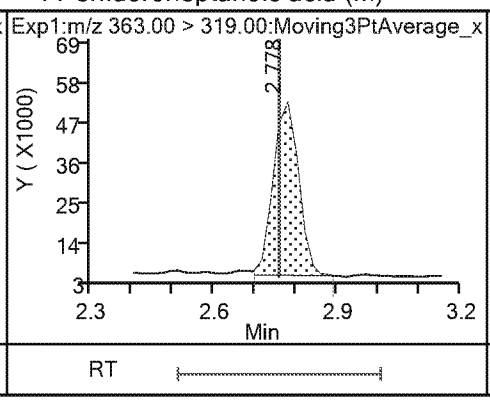
22 Perfluoro(2-propoxypropanoic) acid (ND)



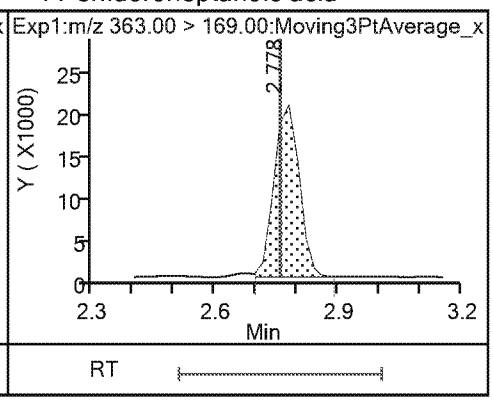
$ 25 13C3 HFPO-DA



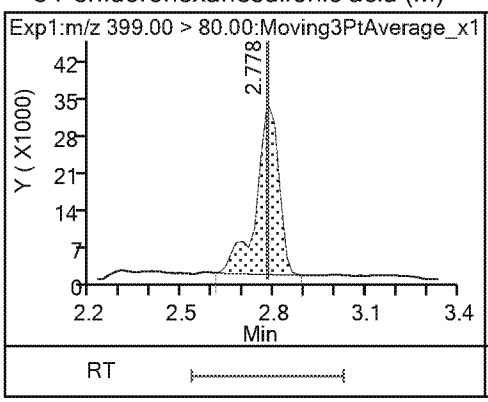
4 Perfluoroheptanoic acid (M)



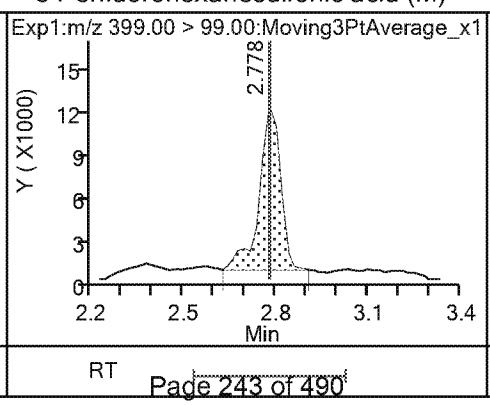
4 Perfluoroheptanoic acid



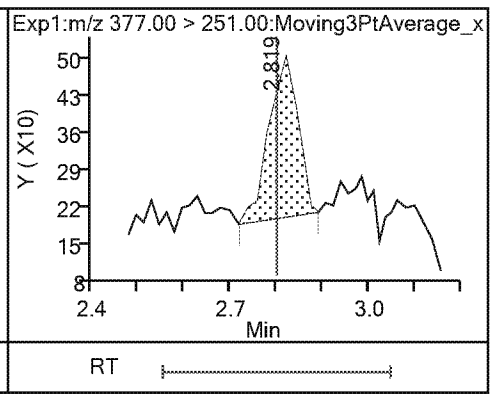
3 Perfluorohexanesulfonic acid (M)



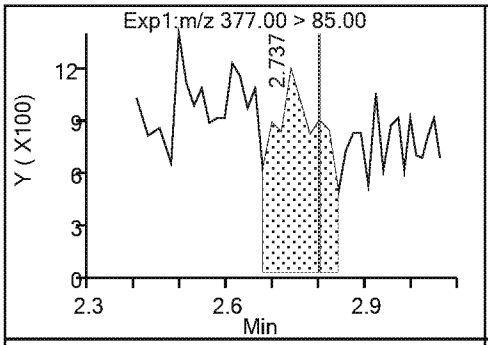
3 Perfluorohexanesulfonic acid (M)



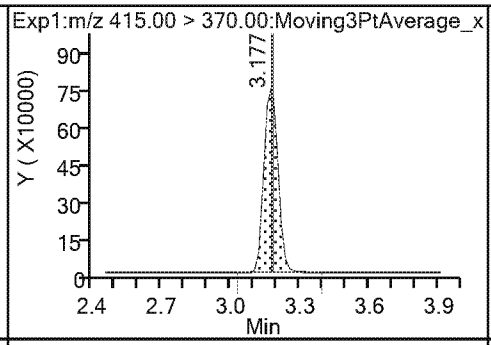
24 DONA



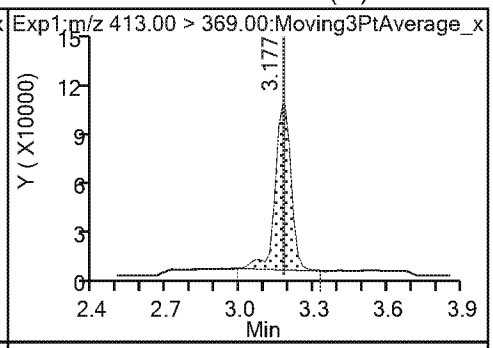
24 DONA



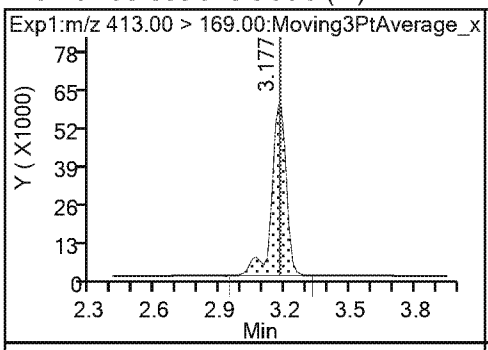
* 5 13C2 PFOA



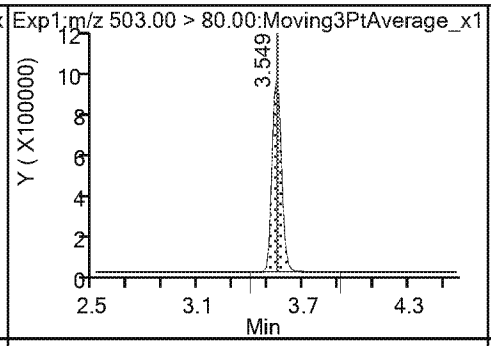
6 Perfluorooctanoic acid (M)



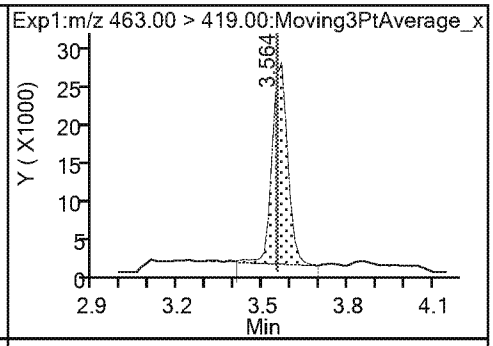
6 Perfluorooctanoic acid (M)



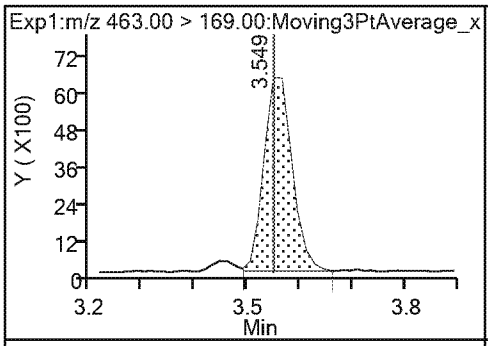
* 7 13C4 PFOS



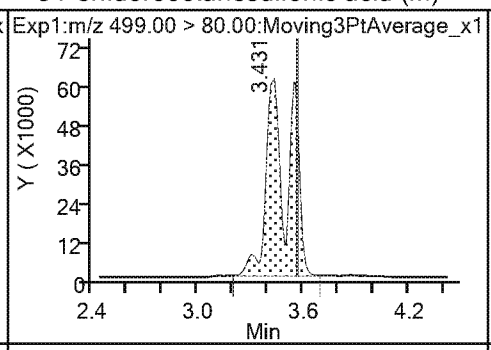
9 Perfluorononanoic acid



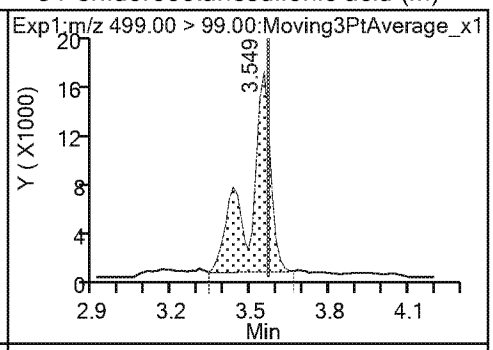
9 Perfluorononanoic acid



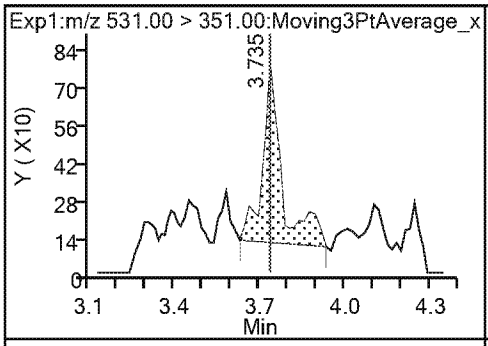
8 Perfluorooctanesulfonic acid (M)



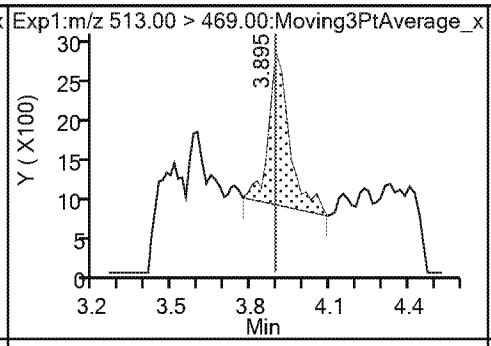
8 Perfluorooctanesulfonic acid (M)



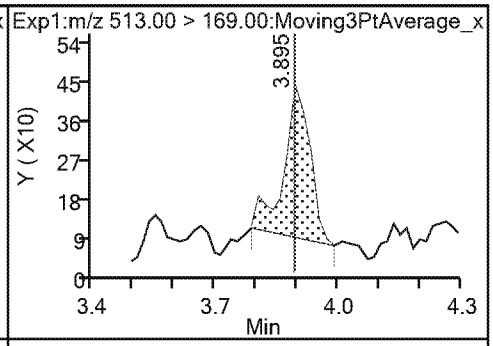
23 9-Chlorohexadecafluoro-3-oxanonane



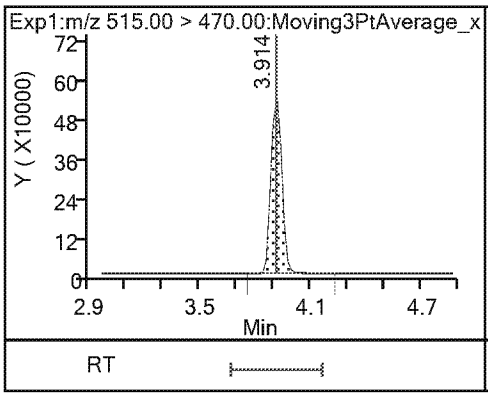
14 Perfluorodecanoic acid



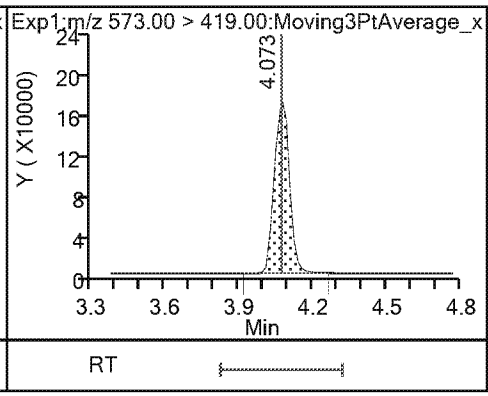
14 Perfluorodecanoic acid



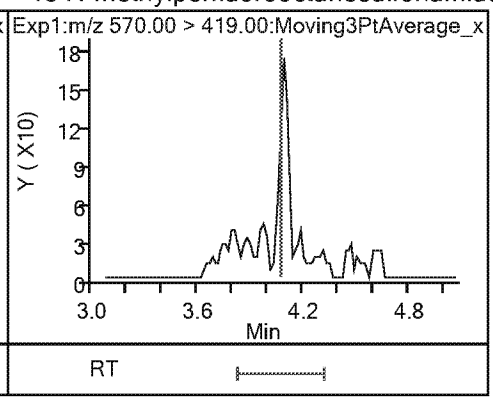
$ 10 13C2 PFDA



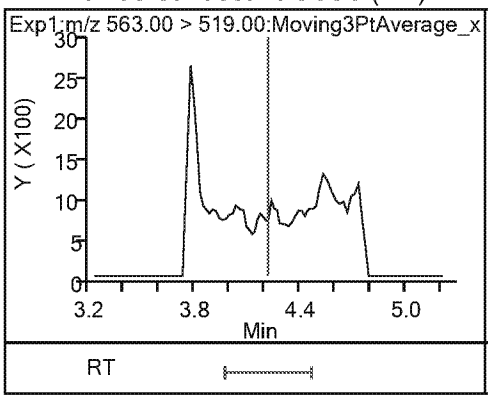
* 12 d3-NMeFOSAA



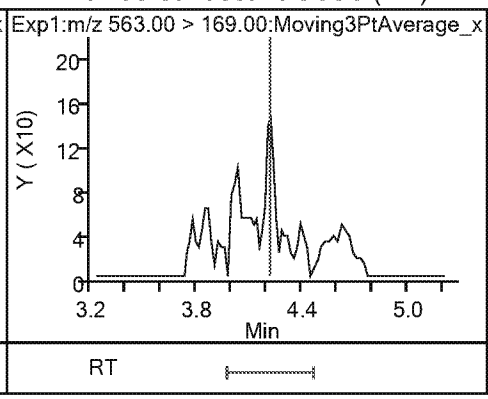
15 N-methylperfluorooctanesulfonamido (ND)



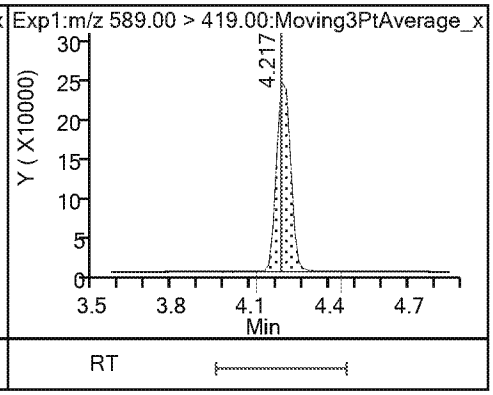
17 Perfluoroundecanoic acid (ND)



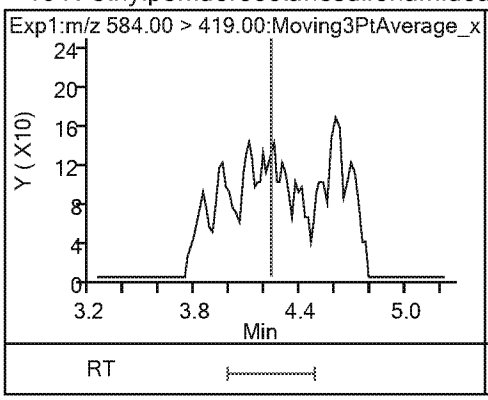
17 Perfluoroundecanoic acid (ND)



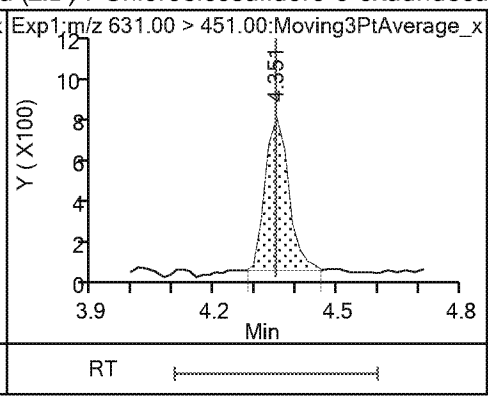
$ 11 d5-NEtFOSAA



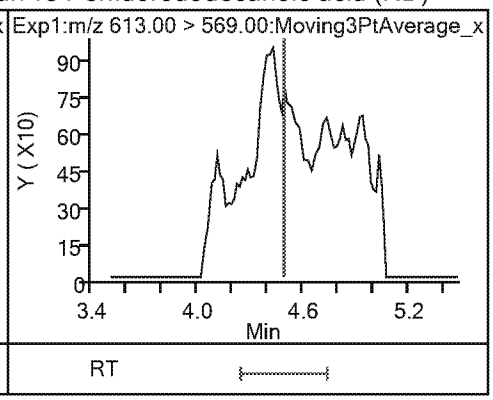
16 N-ethylperfluorooctanesulfonamidoa (ND)



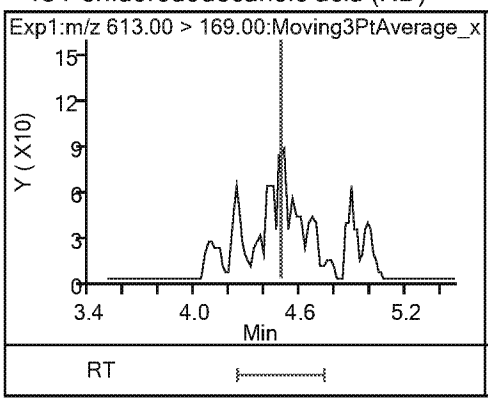
21 11-Chloroeicosafluoro-3-oxaundecan



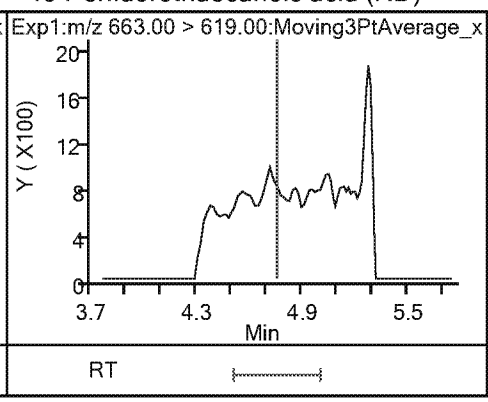
18 Perfluorododecanoic acid (ND)



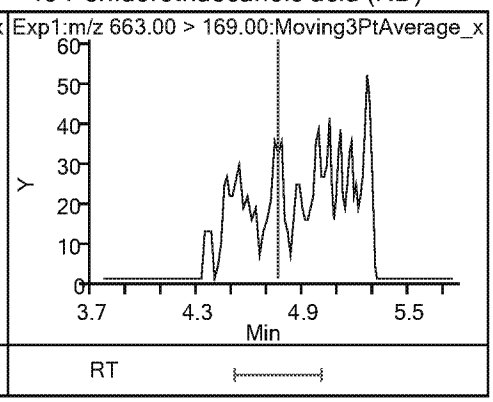
18 Perfluorododecanoic acid (ND)



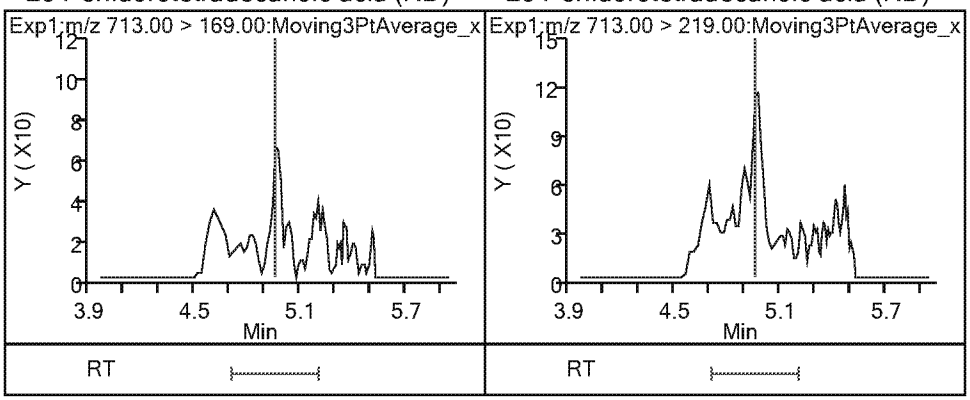
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d
Lims ID: 320-48799-A-4-A
Client ID: C0AR7
Sample Type: Client
Inject. Date: 05-Apr-2019 02:16:54 ALS Bottle#: 35 Worklist Smp#: 46
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-4-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:26:11

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.24	89.64
$ 25 13C3 HFPO-DA	2.50	2.85	113.98
$ 10 13C2 PFDA	2.50	2.79	111.45
$ 11 d5-NEtFOSAA	2.50	3.08	123.10

Eurofins TestAmerica, Sacramento

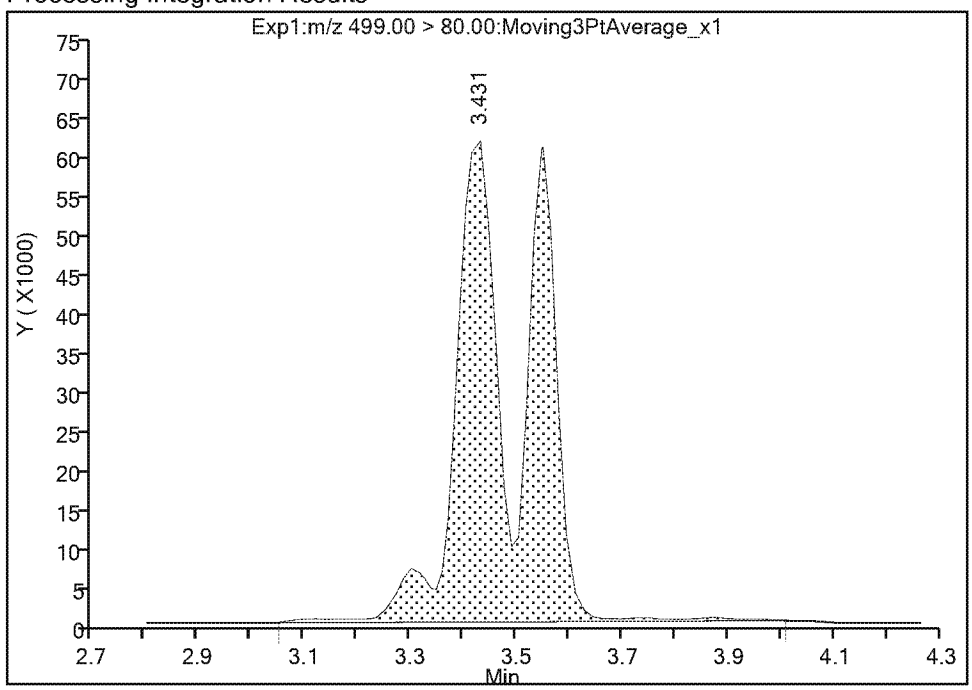
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d				
Injection Date:	05-Apr-2019 02:16:54	Instrument ID:	A8_N		
Lims ID:	320-48799-A-4-A	Lab Sample ID:	320-48799-4		
Client ID:	C0AR7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 1

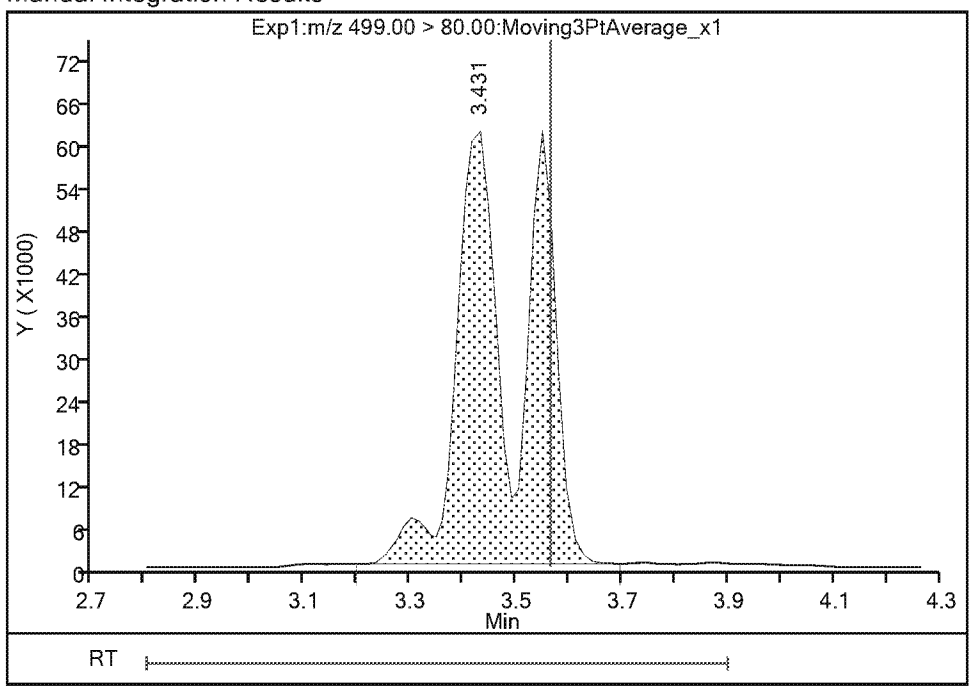
Processing Integration Results

RT: 3.43
Area: 545581
Amount: 0.388199
Amount Units: ng/ml



Manual Integration Results

RT: 3.43
Area: 530376
Amount: 0.377380
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:25:54
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

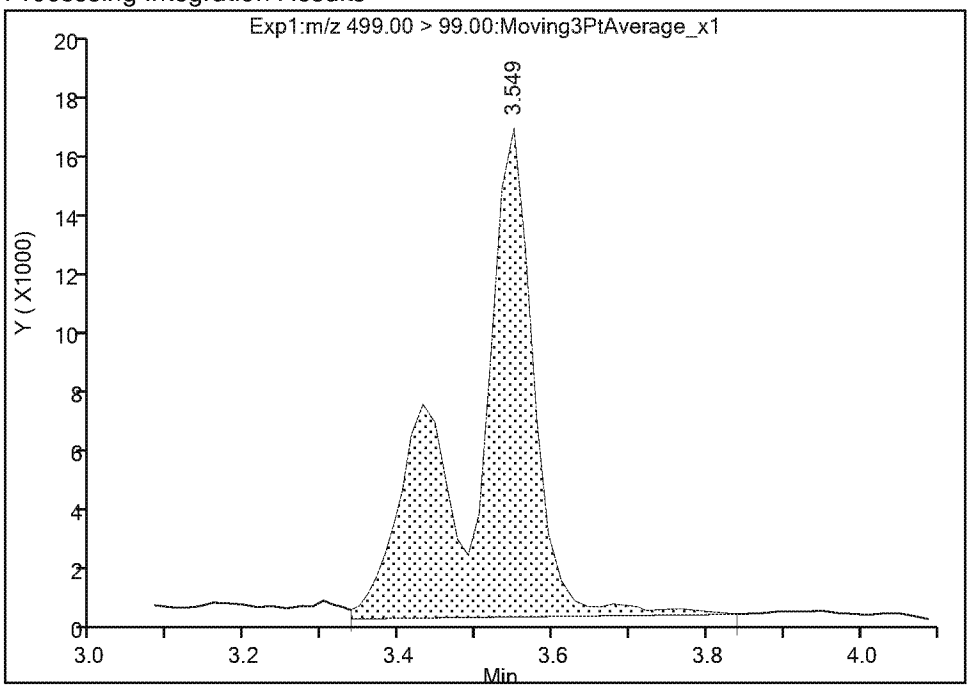
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d				
Injection Date:	05-Apr-2019 02:16:54	Instrument ID:	A8_N		
Lims ID:	320-48799-A-4-A	Lab Sample ID:	320-48799-4		
Client ID:	C0AR7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

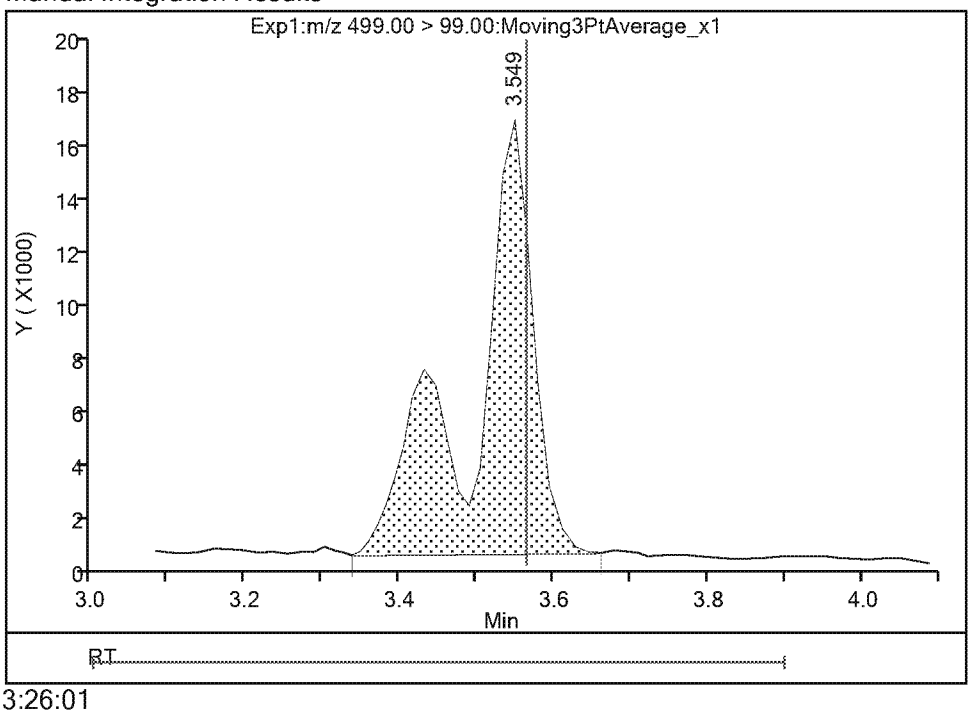
Processing Integration Results

RT: 3.55
Area: 95798
Amount: 0.388199
Amount Units: ng/ml



Manual Integration Results

RT: 3.55
Area: 88637
Amount: 0.377380
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:26:01
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

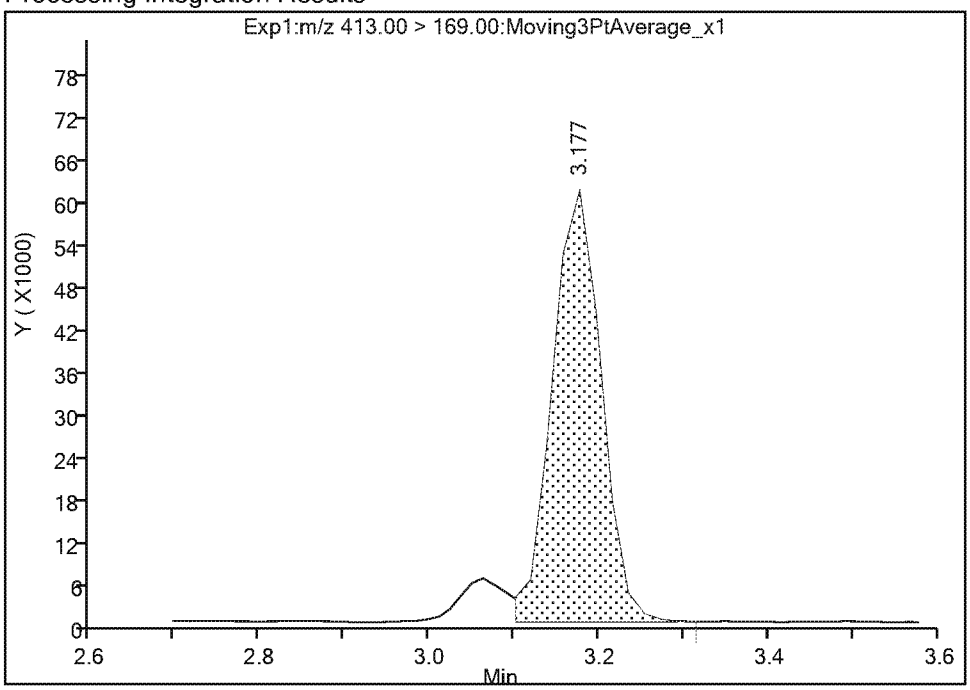
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d				
Injection Date:	05-Apr-2019 02:16:54	Instrument ID:	A8_N		
Lims ID:	320-48799-A-4-A	Lab Sample ID:	320-48799-4		
Client ID:	C0AR7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

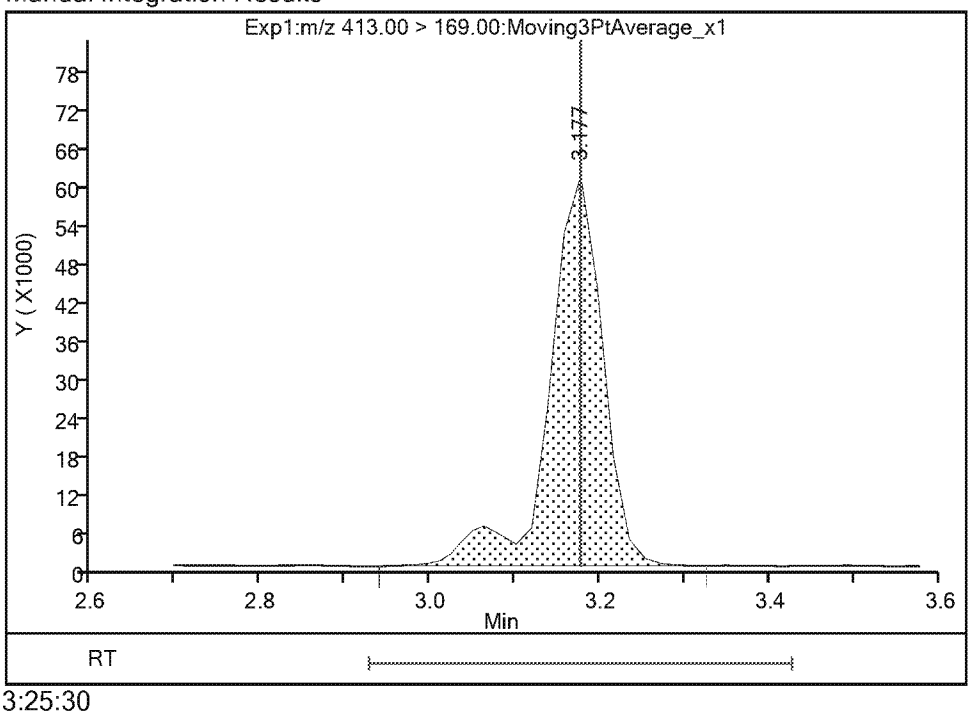
Processing Integration Results

RT: 3.18
Area: 240765
Amount: 0.383525
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 264031
Amount: 0.362956
Amount Units: ng/ml



Reviewer: Ex. 4 CBI, 05-Apr-2019 13:25:30
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

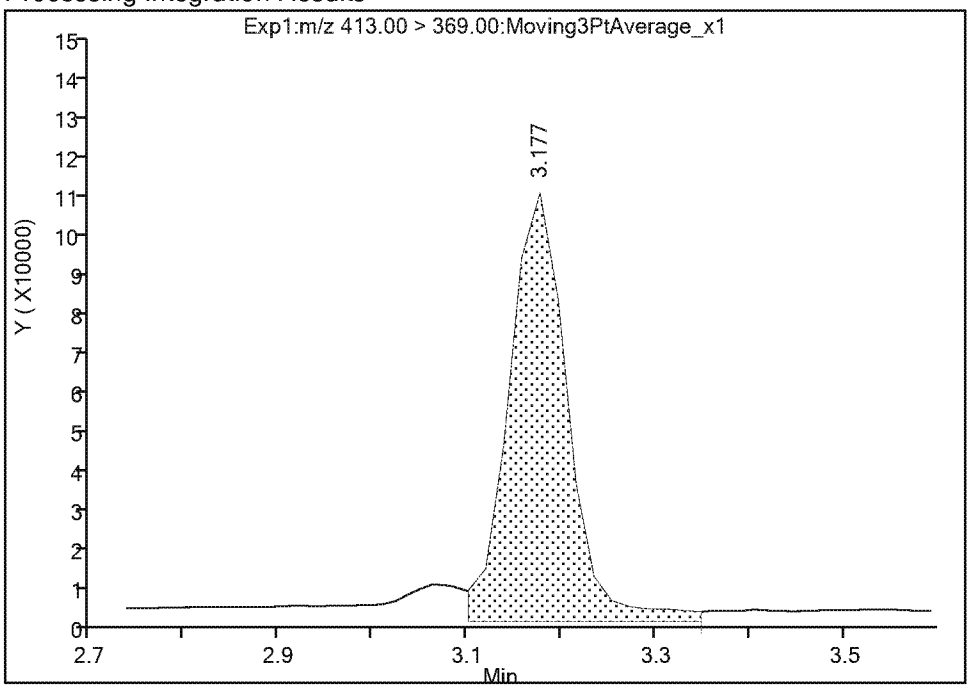
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d				
Injection Date:	05-Apr-2019 02:16:54	Instrument ID:	A8_N		
Lims ID:	320-48799-A-4-A	Lab Sample ID:	320-48799-4		
Client ID:	C0AR7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

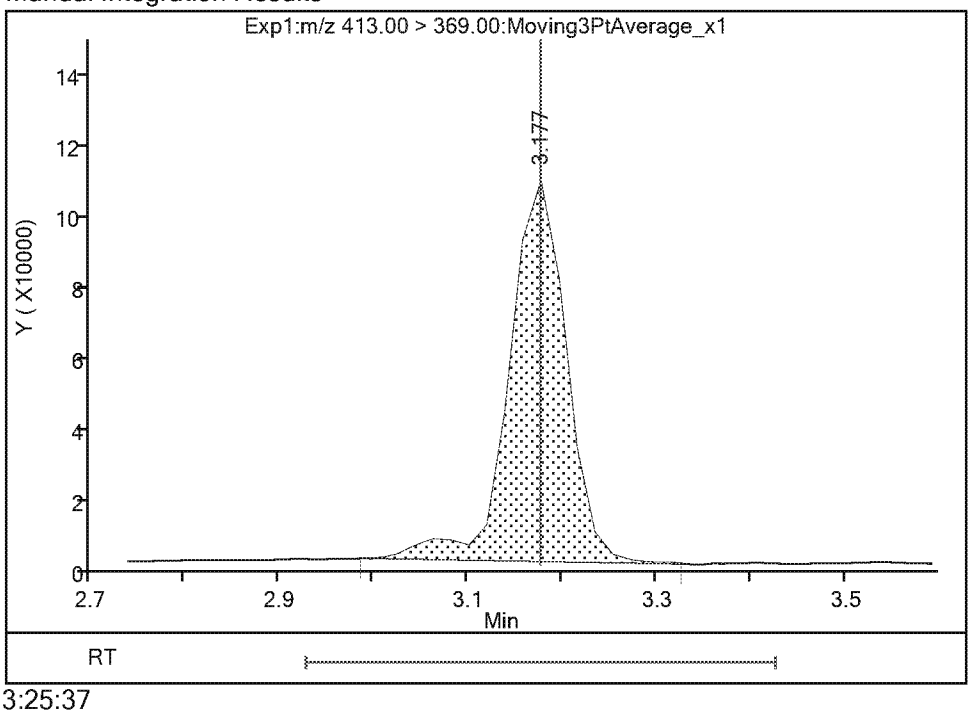
Processing Integration Results

RT: 3.18
Area: 469587
Amount: 0.383525
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 444402
Amount: 0.362956
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:25:37
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

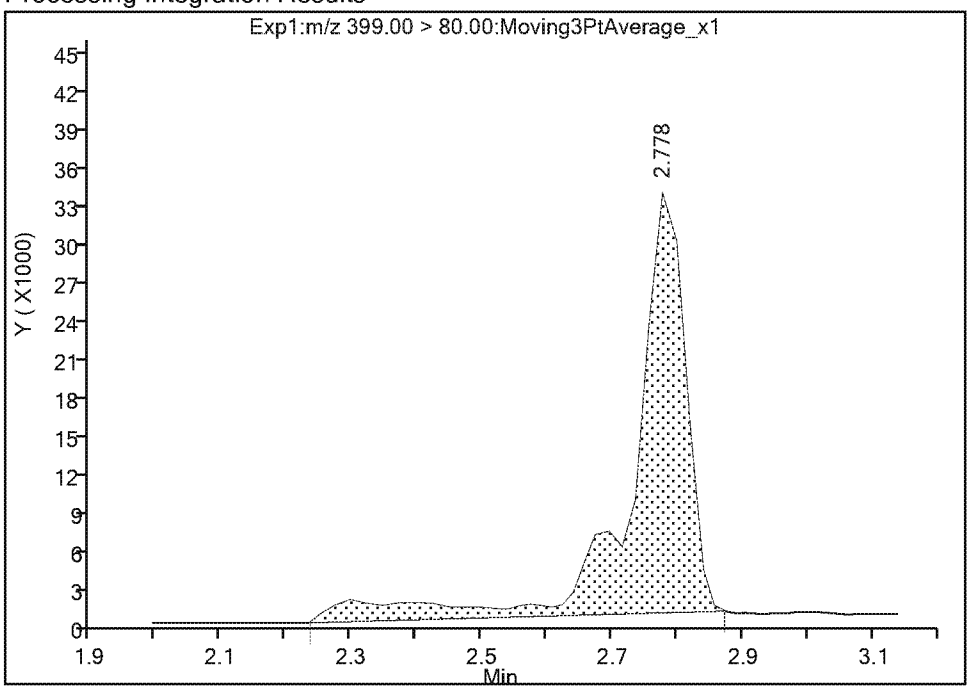
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d				
Injection Date:	05-Apr-2019 02:16:54	Instrument ID:	A8_N		
Lims ID:	320-48799-A-4-A	Lab Sample ID:	320-48799-4		
Client ID:	C0AR7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

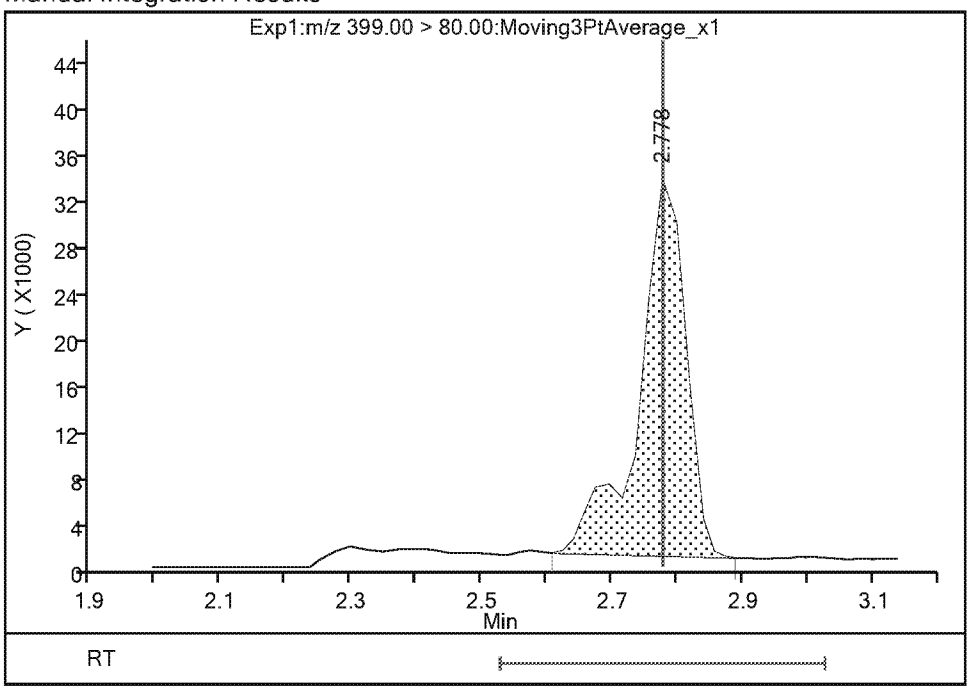
Processing Integration Results

RT: 2.78
Area: 189655
Amount: 0.099479
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 162913
Amount: 0.085452
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:24:55
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

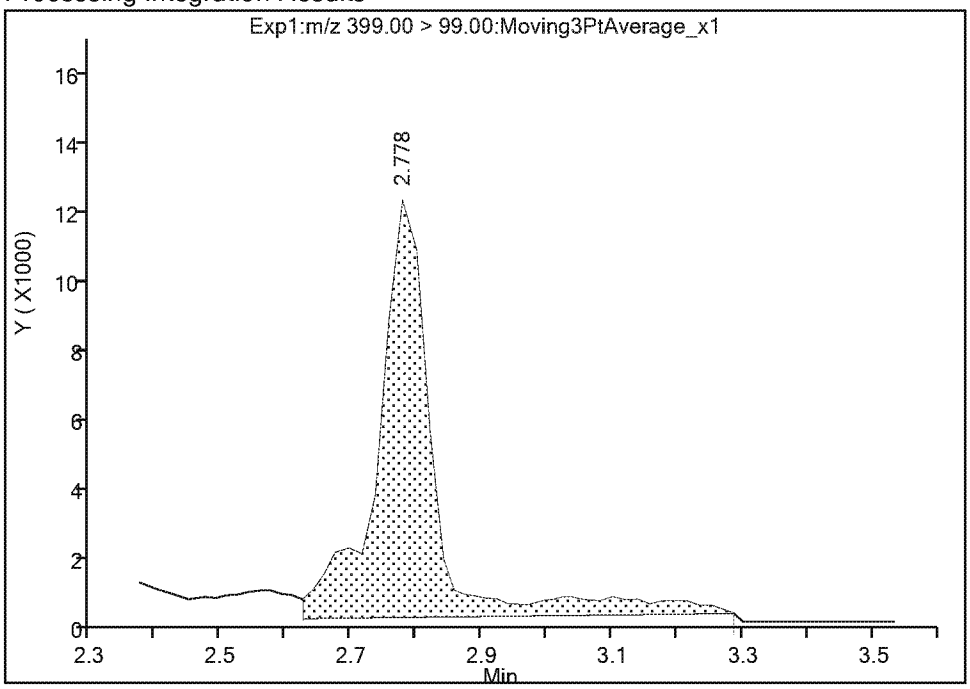
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d				
Injection Date:	05-Apr-2019 02:16:54	Instrument ID:	A8_N		
Lims ID:	320-48799-A-4-A	Lab Sample ID:	320-48799-4		
Client ID:	C0AR7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

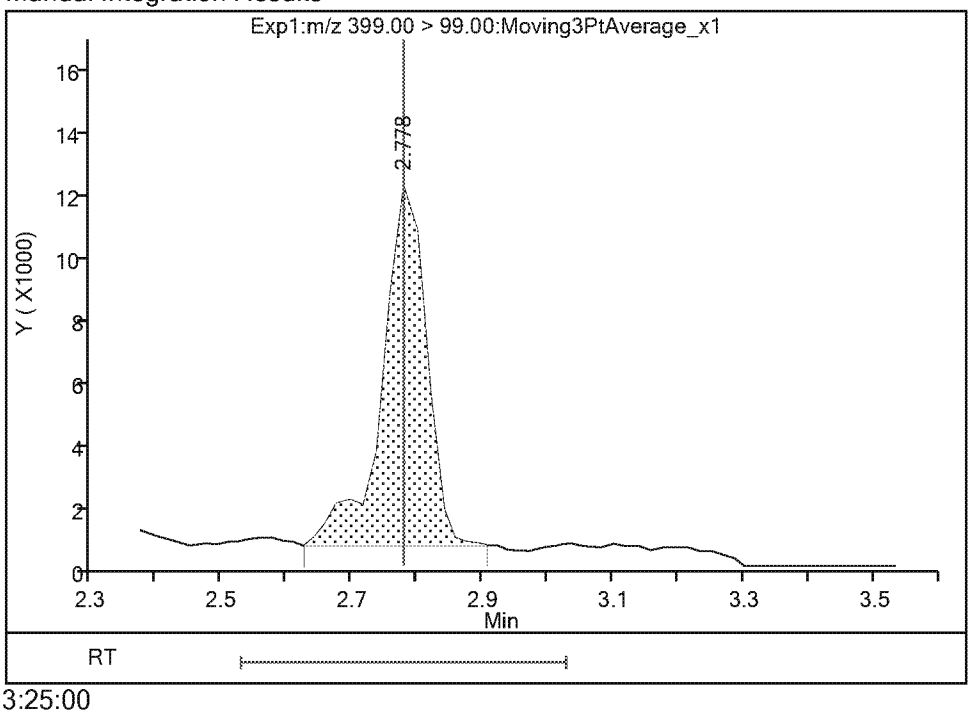
Processing Integration Results

RT: 2.78
Area: 68625
Amount: 0.099479
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 52208
Amount: 0.085452
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:25:00
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

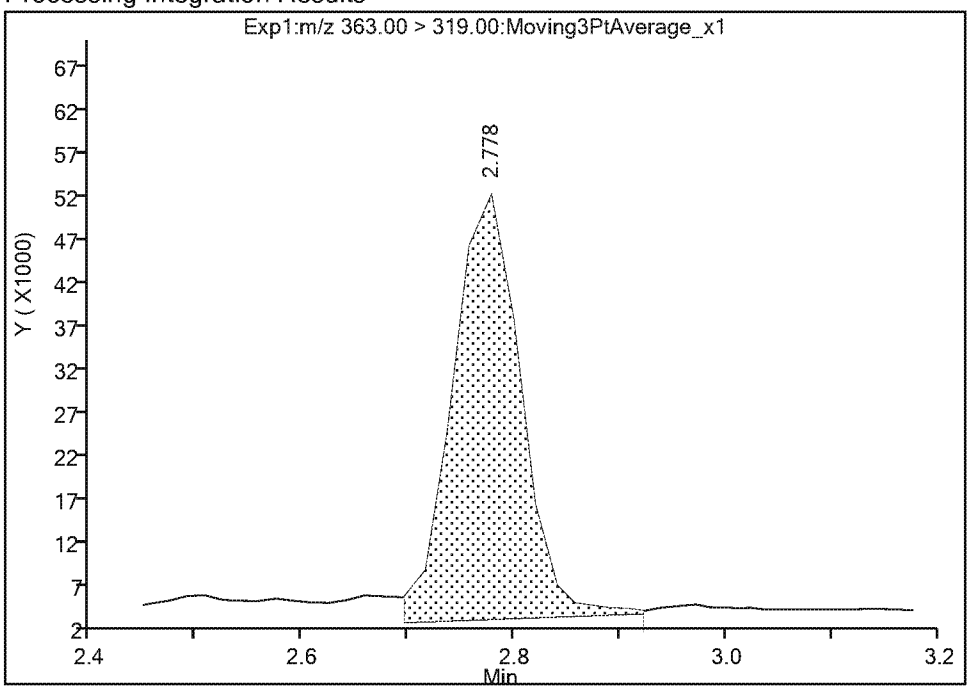
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_050.d				
Injection Date:	05-Apr-2019 02:16:54	Instrument ID:	A8_N		
Lims ID:	320-48799-A-4-A	Lab Sample ID:	320-48799-4		
Client ID:	C0AR7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	35	Worklist Smp#:	46
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

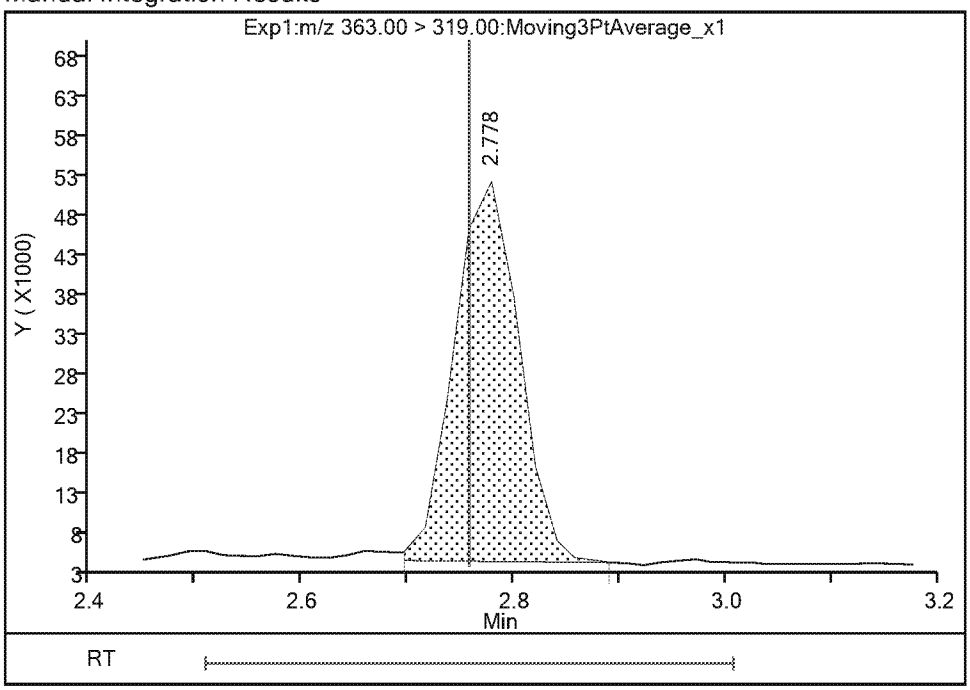
Processing Integration Results

RT: 2.78
Area: 218023
Amount: 0.170438
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 200686
Amount: 0.156885
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:25:12
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AS2
Lab Sample ID: 320-48799-5
Matrix: Water
Lab File ID: 2019.04.04_537AA_051.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:50
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 284.2(mL)
Date Analyzed: 04/05/2019 02:26
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	34		1.8	0.84
335-67-1	Perfluorooctanoic acid	34		5.3	2.4
375-95-1	Perfluorononanoic acid	9.5		1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	12		1.8	0.56
375-85-9	Perfluoroheptanoic acid	13		2.6	1.1
375-73-5	Perfluorobutanesulfonic acid	11		1.8	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	89		70-130
STL00996	13C2 PFDA	106		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_051.d
Lims ID: 320-48799-A-5-A
Client ID: C0AS2
Sample Type: Client
Inject. Date: 05-Apr-2019 02:26:21 ALS Bottle#: 36 Worklist Smp#: 47
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:27:53
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.993	1.976	0.017	1.000	450616	0.2985	Target=1.41	484	
298.90 > 99.00	1.993	1.976	0.017	1.000	302324		1.49(0.00-0.00)	109	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.348	2.347	0.001	0.739	621639	0.4767	Target=10.46	54.4	
313.00 > 119.00	2.348	2.347	0.001	0.739	56737		10.96(0.00-0.00)	57.5	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	3029290	2.22		6529	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.252	2.473	-0.221	0.910	3362	0.0106		1.2	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	151443	2.47		549	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.778	2.757	0.021	1.000	461421	0.3715	Target=2.41	30.0	M
363.00 > 169.00	2.778	2.757	0.021	1.000	186482		2.47(0.00-0.00)	213	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.778	0.0	1.000	626852	0.3423	Target=2.91	157	M
399.00 > 99.00	2.778	2.778	0.0	1.000	192381		3.26(0.00-0.00)	69.4	M
24 DONA									
377.00 > 251.00	2.820	2.799	0.021	1.000	1110	0.000328	Target=1.54	1.5	
377.00 > 85.00	2.820	2.799	0.021	1.000	2109		0.53(0.00-0.00)	73.3	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.177	0.0		2929570	2.50		10425	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.177	3.177	0.0	1.000	1153150	0.9701	Target=1.70	113	M
413.00 > 169.00	3.177	3.177	0.0	1.000	702282		1.64(0.00-0.00)	701	M
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.549	0.0		3054106	2.39		3718	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
9 Perfluorononanoic acid									
463.00 > 419.00	3.564	3.549	0.015	1.000	233324	0.2694	Target=3.78	73.8	
463.00 > 169.00	3.564	3.549	0.015	1.000	59663		3.91(0.00-0.00)	172	
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.417	3.564	-0.147	0.963	1320200	0.9780	Target=4.63	578	
499.00 > 99.00	3.549	3.564	-0.015	1.000	212196		6.22(0.00-0.00)	111	M
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.751	3.735	0.016	1.000	4579	0.002108		8.3	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.895	3.892	0.003	1.000	11731	0.0171	Target=4.93	2.8	
513.00 > 169.00	3.895	3.892	0.003	1.000	1740		6.74(0.00-0.00)	7.0	
$ 10 13C2 PFDA									
515.00 > 470.00	3.914	3.911	0.003	1.000	1922724	2.64		6269	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.073	4.070	0.003		588580	2.50		2802	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.233	4.214	0.019	1.039	543621	2.26		306	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.351	4.349	0.002	1.000	6755	0.002481		36.7	

QC Flag Legend

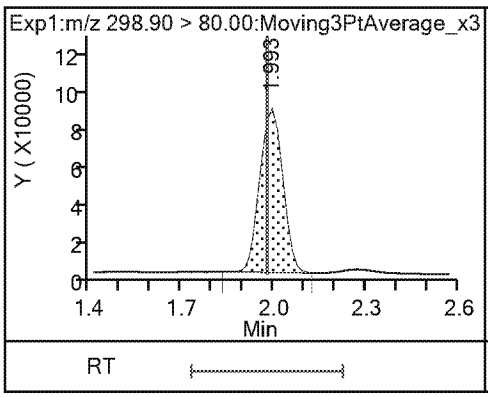
Review Flags

M - Manually Integrated

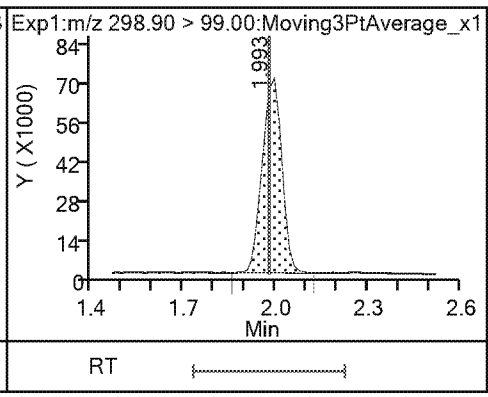
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_051.d				
Injection Date:	05-Apr-2019 02:26:21	Instrument ID:	A8_N		
Lims ID:	320-48799-A-5-A	Lab Sample ID:	320-48799-5		
Client ID:	C0AS2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	47
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

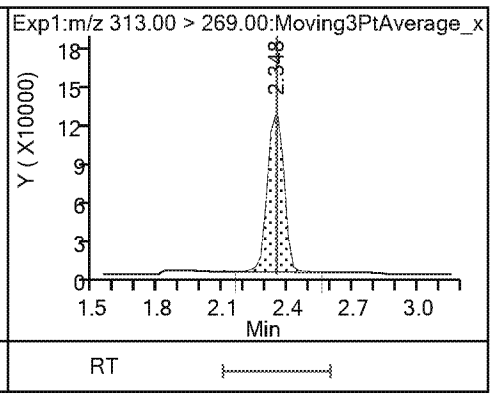
1 Perfluorobutanesulfonic acid



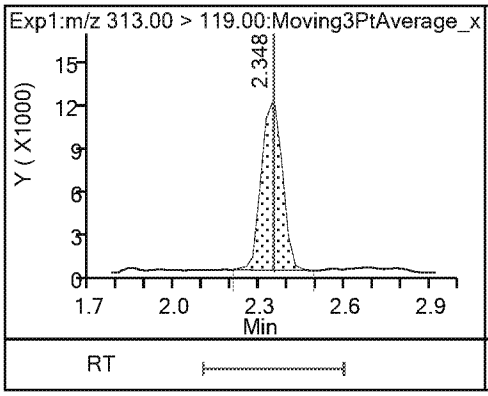
1 Perfluorobutanesulfonic acid



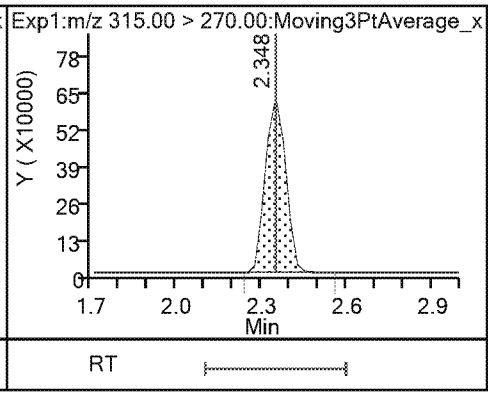
13 Perfluorohexanoic acid



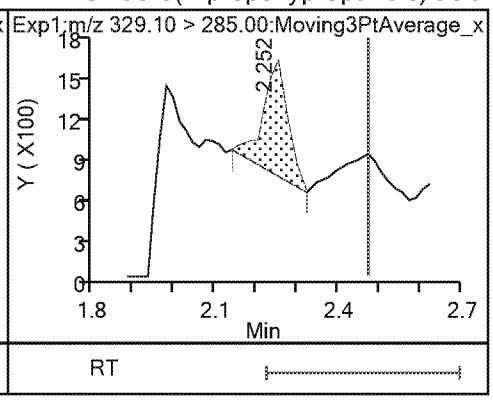
13 Perfluorohexanoic acid



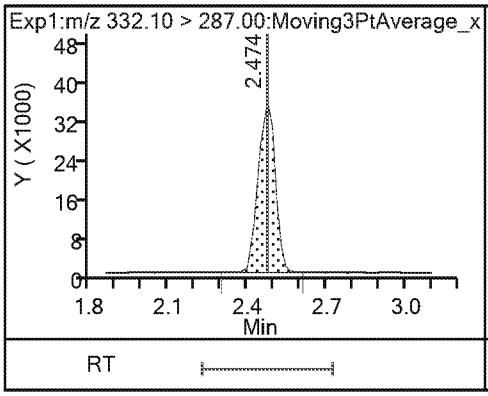
$ 2 13C2 PFHxA



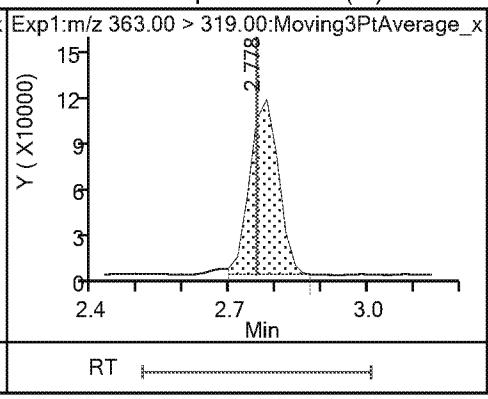
22 Perfluoro(2-propoxypropanoic) acid



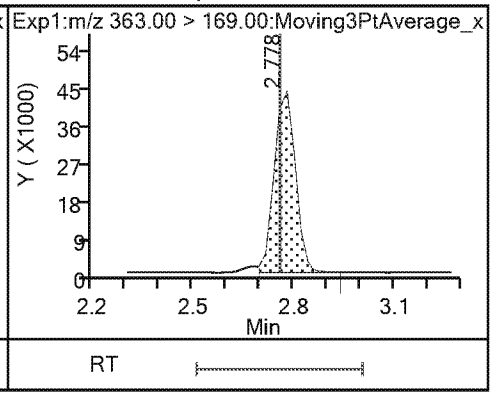
$ 25 13C3 HFPO-DA



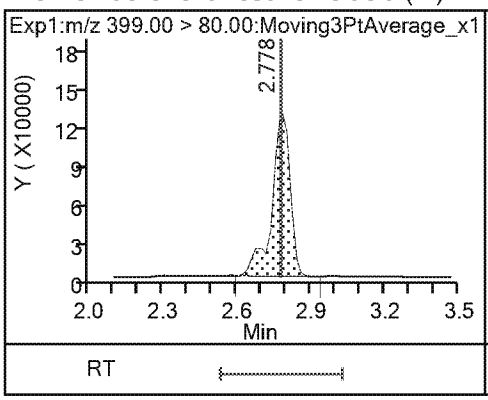
4 Perfluoroheptanoic acid (M)



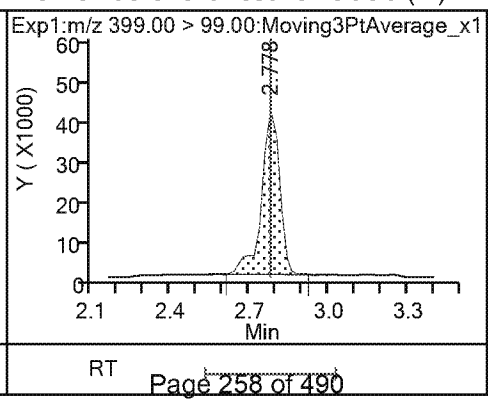
4 Perfluoroheptanoic acid



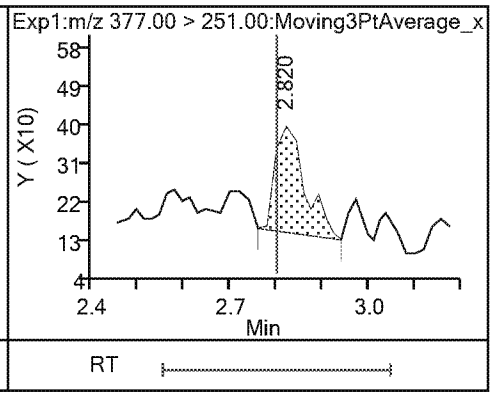
3 Perfluorohexanesulfonic acid (M)



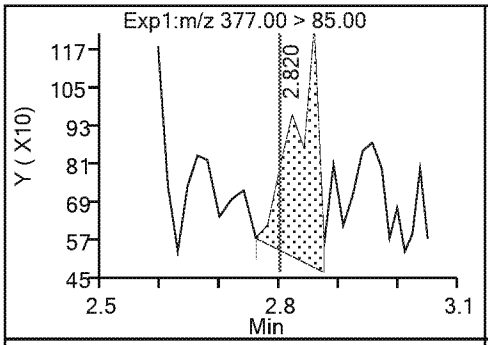
3 Perfluorohexanesulfonic acid (M)



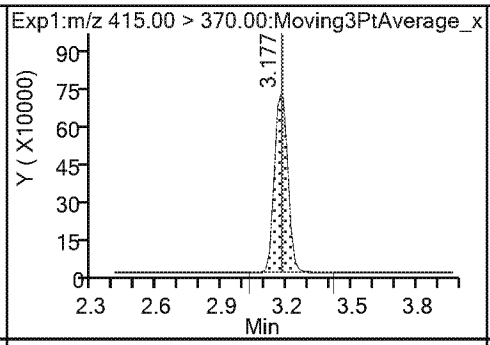
24 DONA



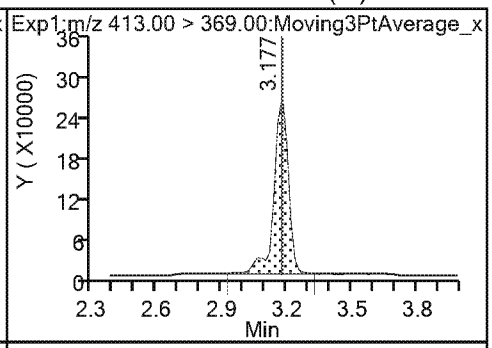
24 DONA



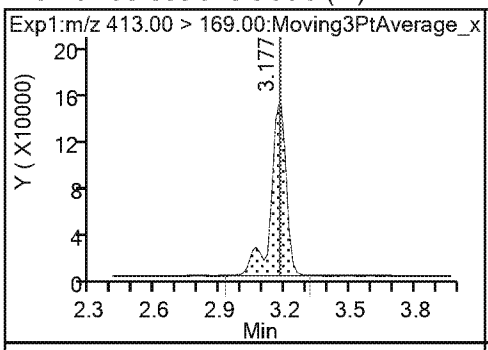
* 5 13C2 PFOA



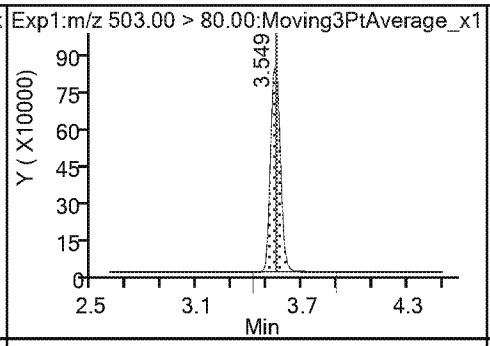
6 Perfluorooctanoic acid (M)



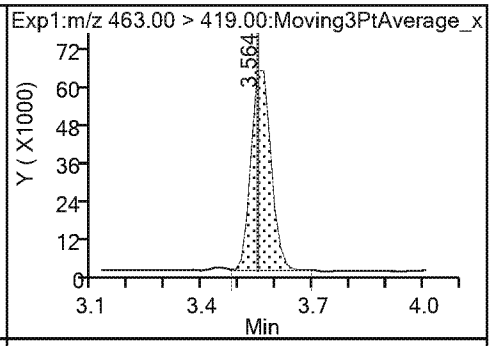
6 Perfluorooctanoic acid (M)



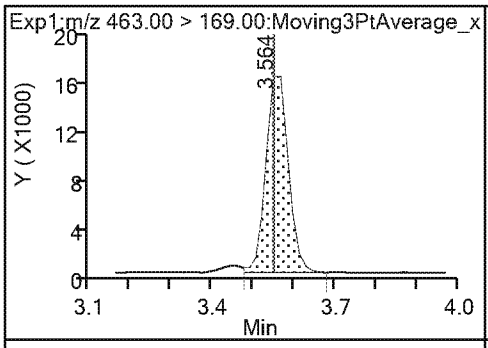
* 7 13C4 PFOS



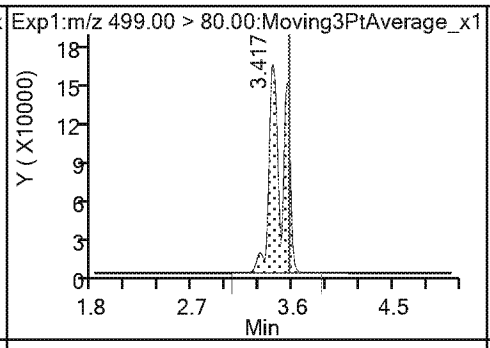
9 Perfluorononanoic acid



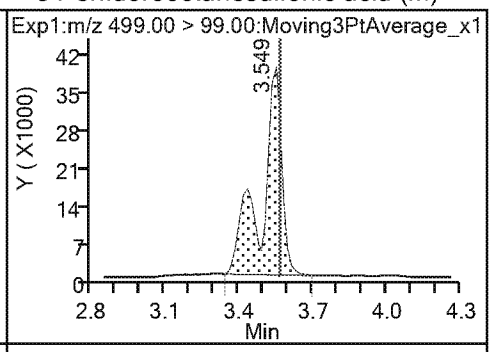
9 Perfluorononanoic acid



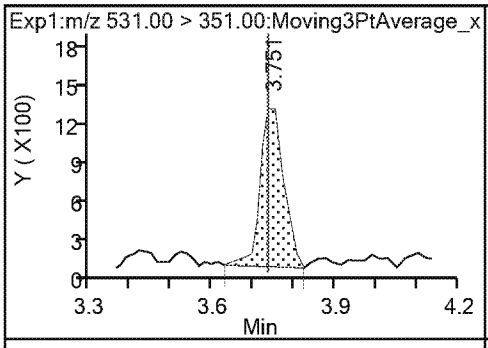
8 Perfluorooctanesulfonic acid



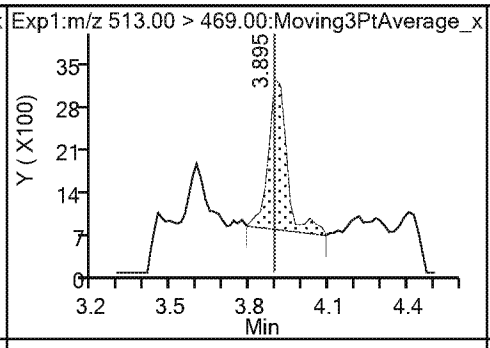
8 Perfluorooctanesulfonic acid (M)



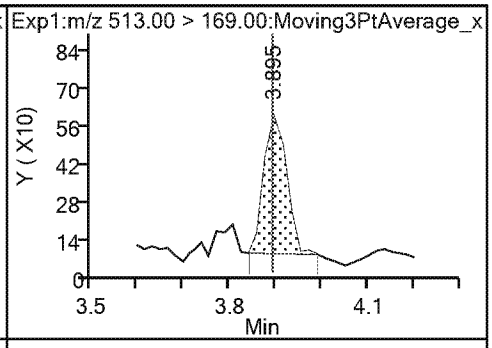
23 9-Chlorohexadecafluoro-3-oxanonane



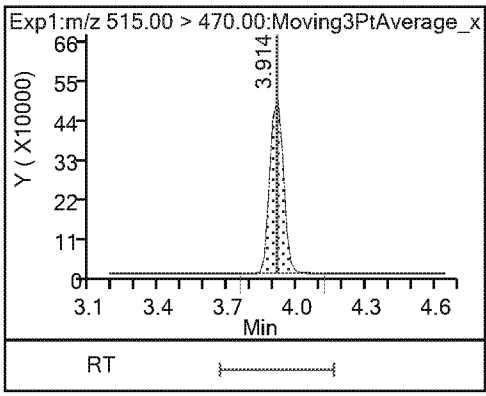
14 Perfluorodecanoic acid



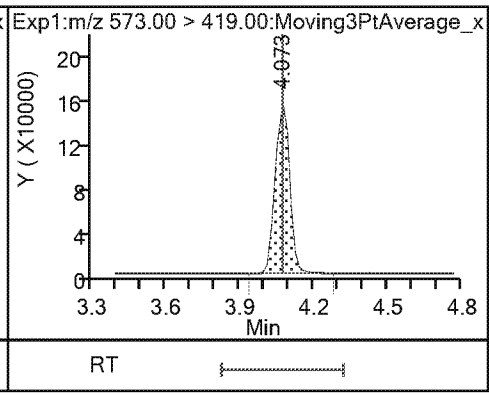
14 Perfluorodecanoic acid



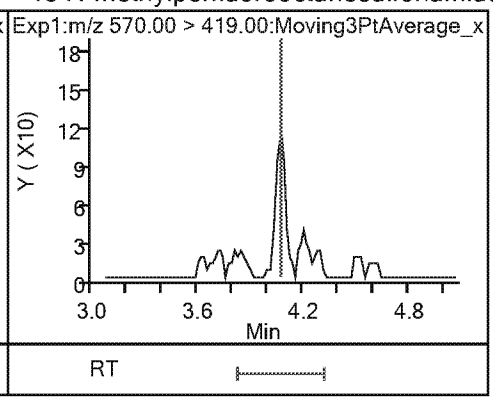
$ 10 13C2 PFDA



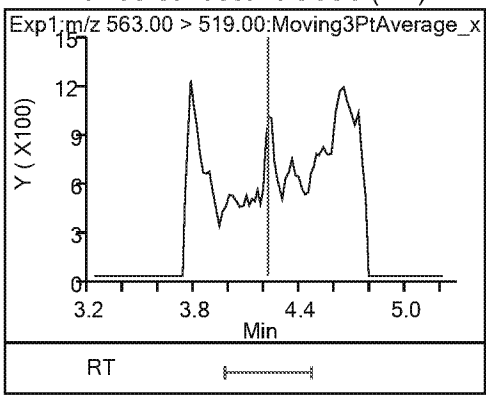
* 12 d3-NMeFOSAA



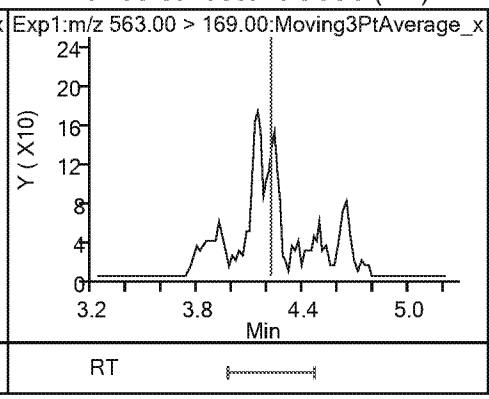
15 N-methylperfluorooctanesulfonamido (ND)



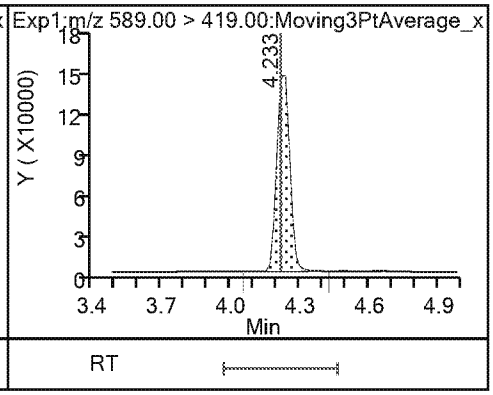
17 Perfluoroundecanoic acid (ND)



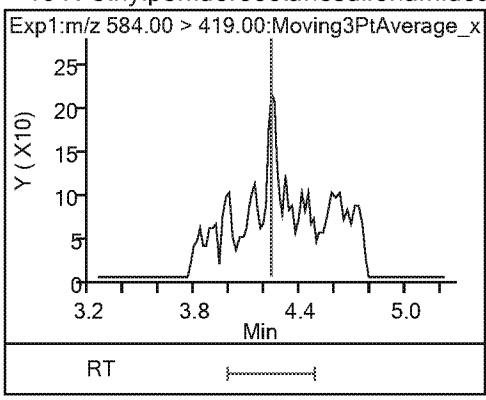
17 Perfluoroundecanoic acid (ND)



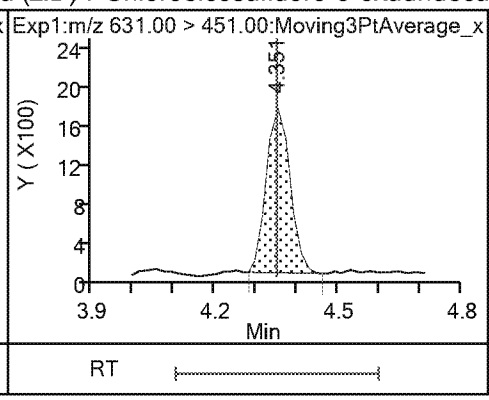
$ 11 d5-NEtFOSAA



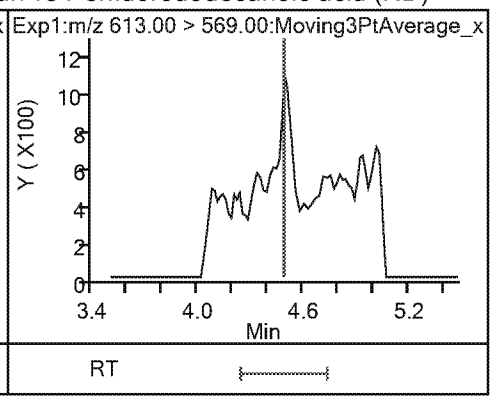
16 N-ethylperfluorooctanesulfonamidoa (ND)



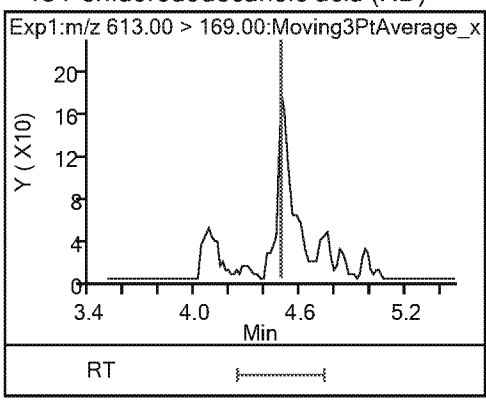
2 (ND) 11-Chloroeicosafluoro-3-oxaundecan



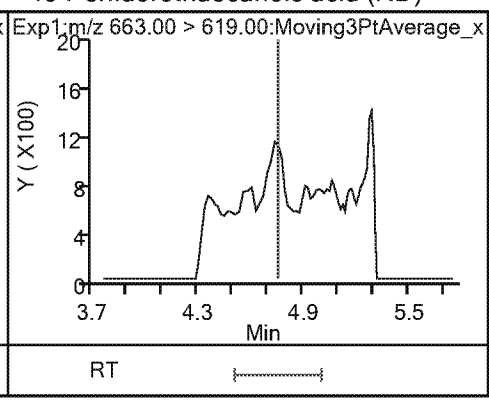
18 Perfluorododecanoic acid (ND)



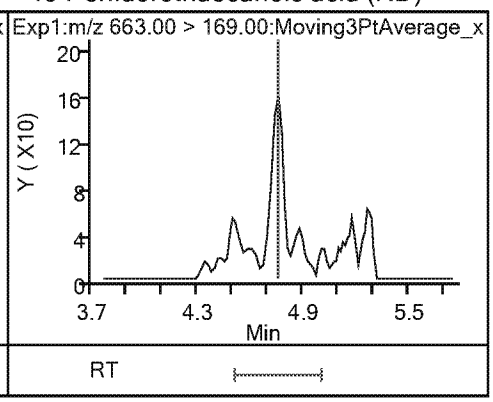
18 Perfluorododecanoic acid (ND)



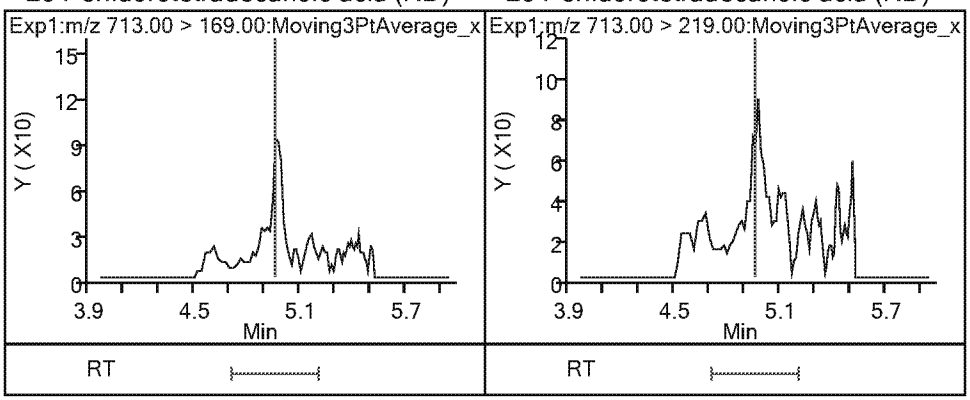
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_051.d
Lims ID: 320-48799-A-5-A
Client ID: C0AS2
Sample Type: Client
Inject. Date: 05-Apr-2019 02:26:21 ALS Bottle#: 36 Worklist Smp#: 47
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-5-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:27:53

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.22	88.71
$ 25 13C3 HFPO-DA	2.50	2.47	98.74
$ 10 13C2 PFDA	2.50	2.64	105.69
$ 11 d5-NEtFOSAA	2.50	2.26	90.37

Eurofins TestAmerica, Sacramento

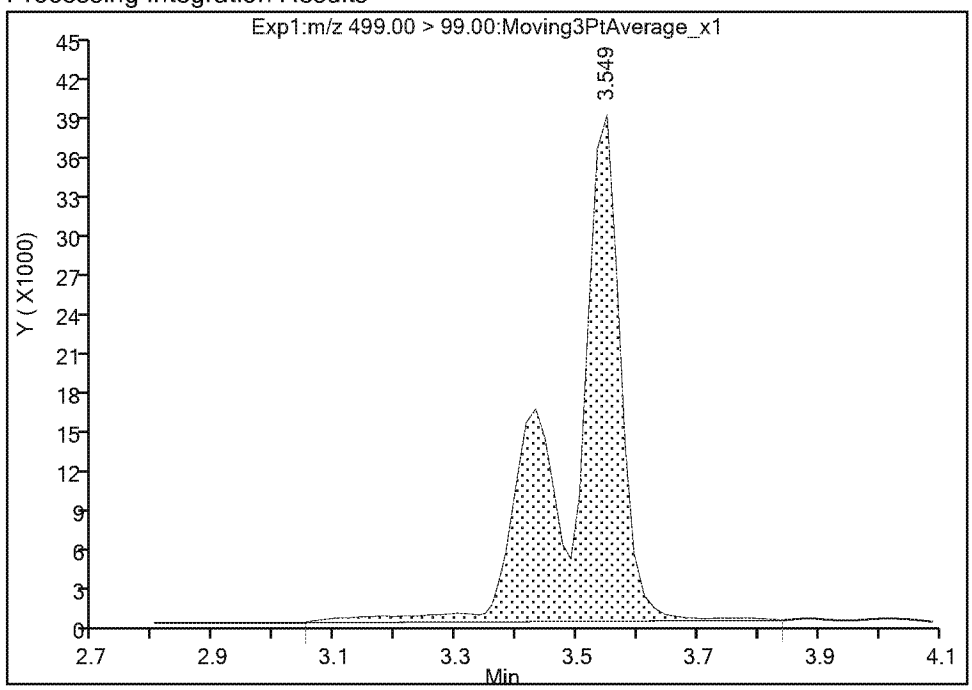
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_051.d				
Injection Date:	05-Apr-2019 02:26:21	Instrument ID:	A8_N		
Lims ID:	320-48799-A-5-A	Lab Sample ID:	320-48799-5		
Client ID:	C0AS2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	47
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

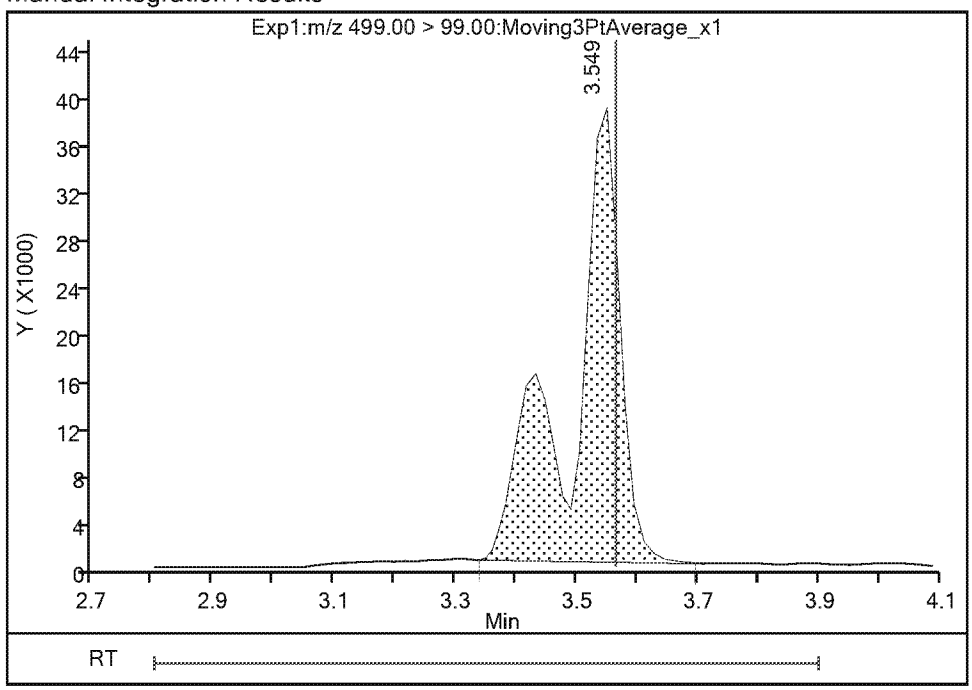
Processing Integration Results

RT: 3.55
Area: 226972
Amount: 0.978031
Amount Units: ng/ml



Manual Integration Results

RT: 3.55
Area: 212196
Amount: 0.978031
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:27:35
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

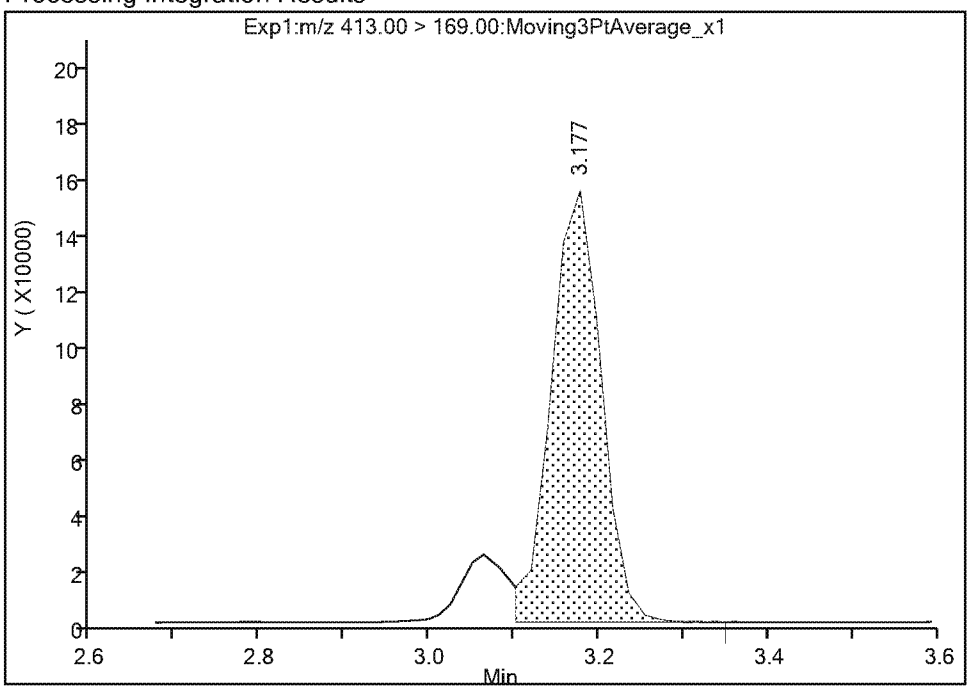
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_051.d				
Injection Date:	05-Apr-2019 02:26:21	Instrument ID:	A8_N		
Lims ID:	320-48799-A-5-A	Lab Sample ID:	320-48799-5		
Client ID:	C0AS2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	47
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

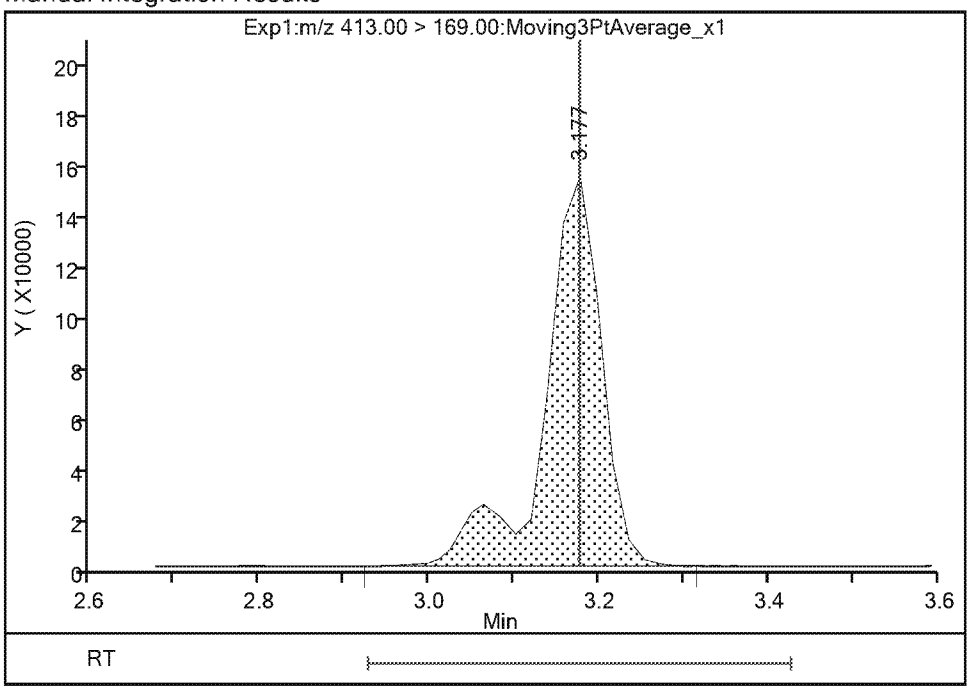
Processing Integration Results

RT: 3.18
Area: 614857
Amount: 0.896081
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 702282
Amount: 0.970053
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:27:15
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

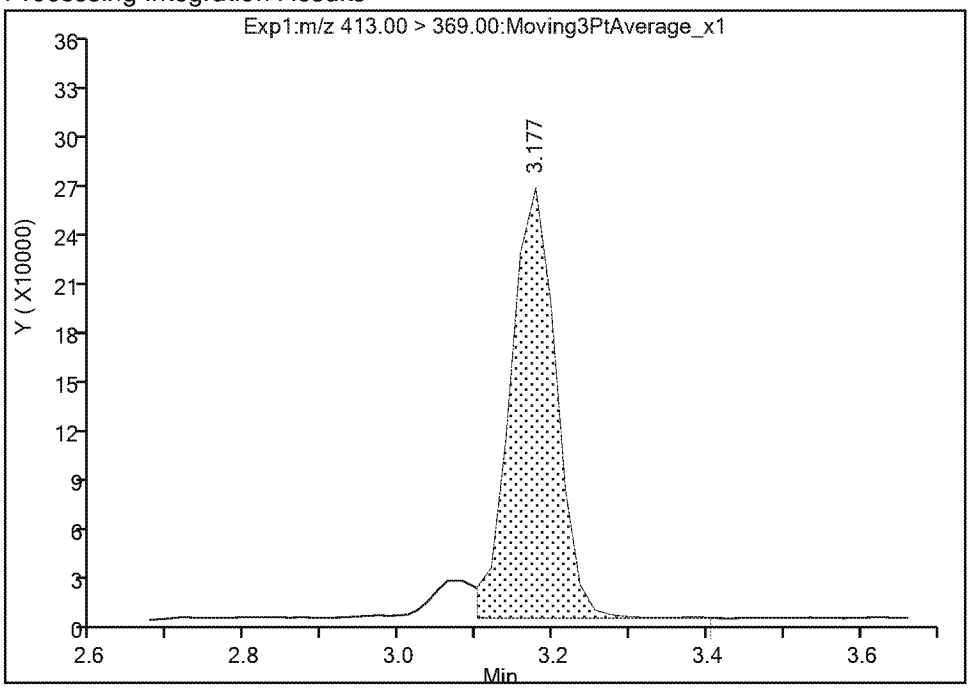
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_051.d				
Injection Date:	05-Apr-2019 02:26:21	Instrument ID:	A8_N		
Lims ID:	320-48799-A-5-A	Lab Sample ID:	320-48799-5		
Client ID:	C0AS2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	47
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

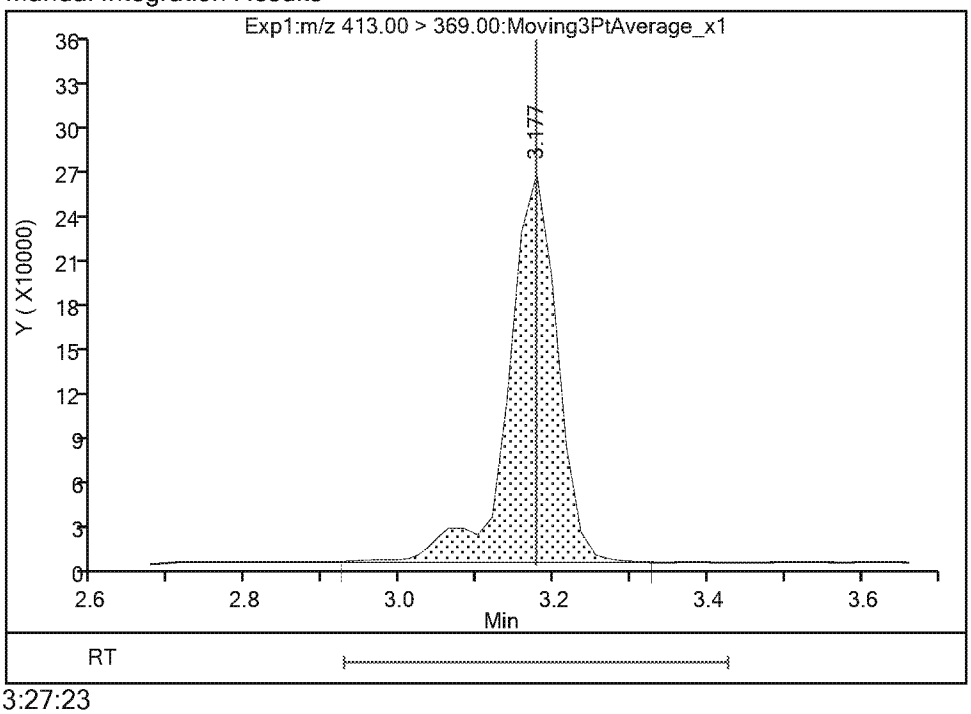
Processing Integration Results

RT: 3.18
Area: 1065216
Amount: 0.896081
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 1153150
Amount: 0.970053
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:27:23
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

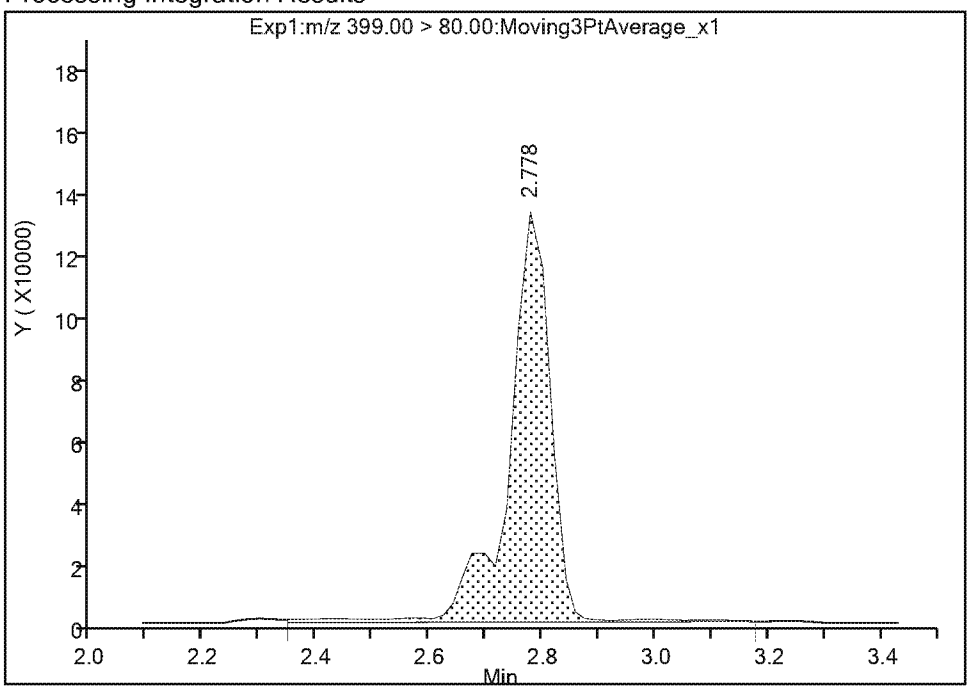
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_051.d				
Injection Date:	05-Apr-2019 02:26:21	Instrument ID:	A8_N		
Lims ID:	320-48799-A-5-A	Lab Sample ID:	320-48799-5		
Client ID:	C0AS2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	47
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

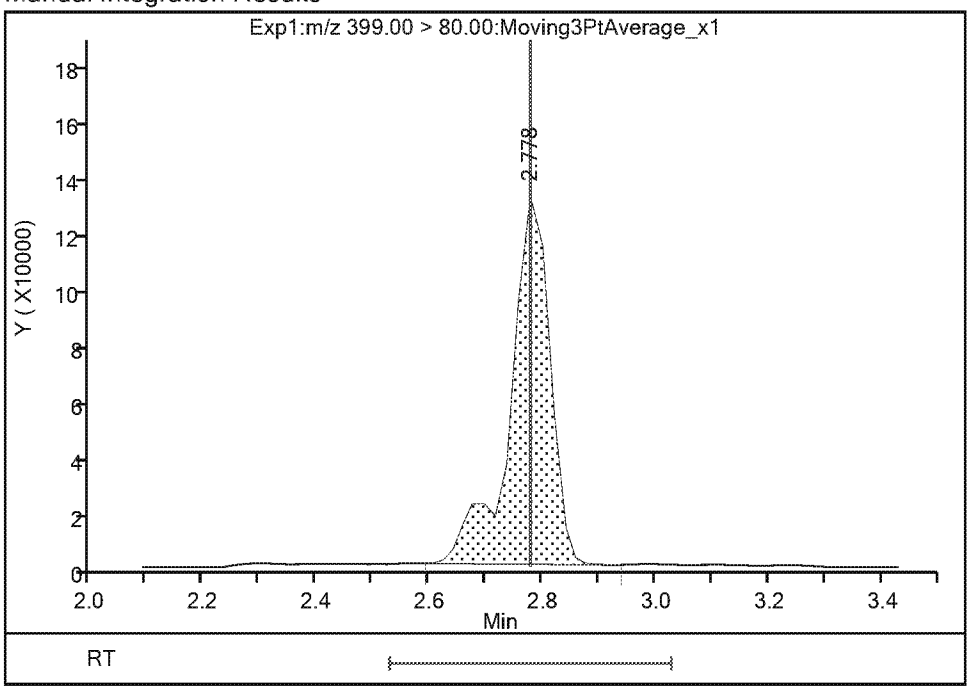
Processing Integration Results

RT: 2.78
Area: 659797
Amount: 0.360325
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 626852
Amount: 0.342333
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:26:41
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

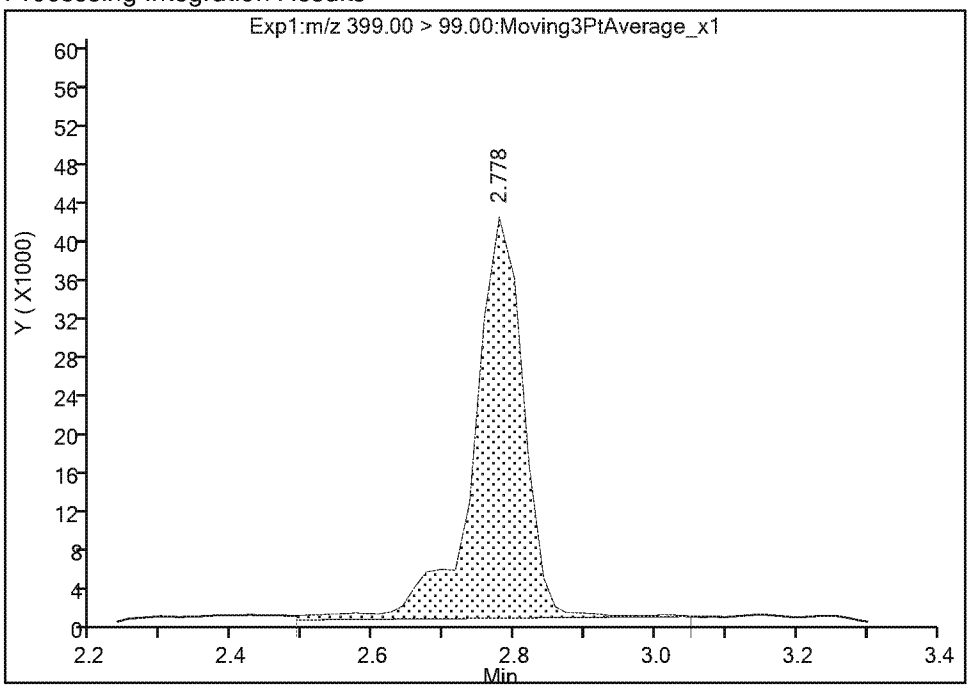
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_051.d				
Injection Date:	05-Apr-2019 02:26:21	Instrument ID:	A8_N		
Lims ID:	320-48799-A-5-A	Lab Sample ID:	320-48799-5		
Client ID:	C0AS2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	47
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

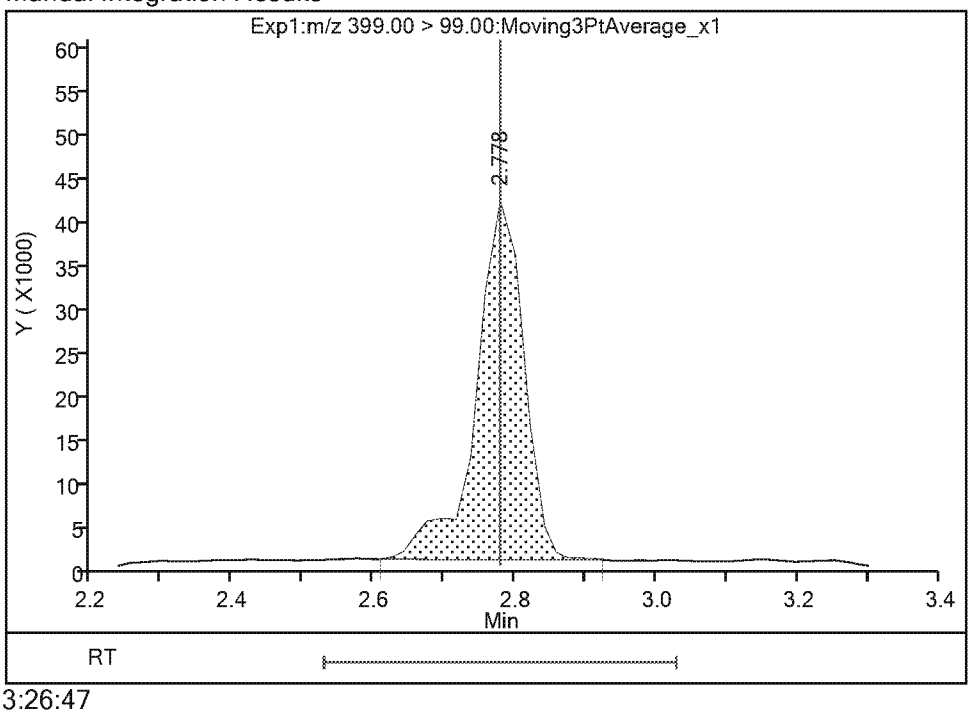
Processing Integration Results

RT: 2.78
Area: 203397
Amount: 0.360325
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 192381
Amount: 0.342333
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:26:47
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

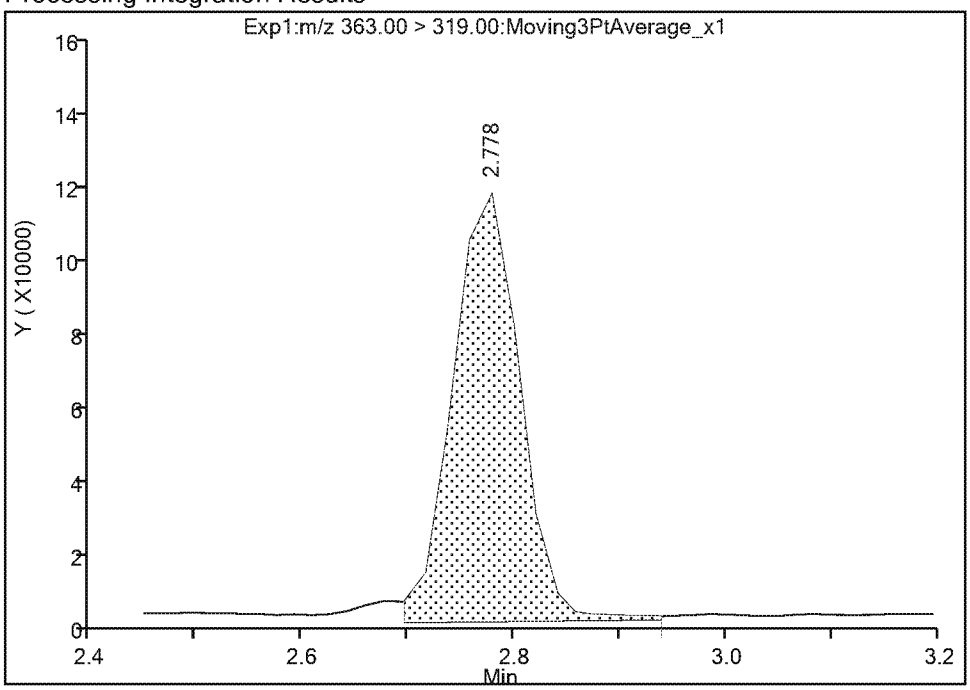
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_051.d				
Injection Date:	05-Apr-2019 02:26:21	Instrument ID:	A8_N		
Lims ID:	320-48799-A-5-A	Lab Sample ID:	320-48799-5		
Client ID:	C0AS2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	36	Worklist Smp#:	47
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

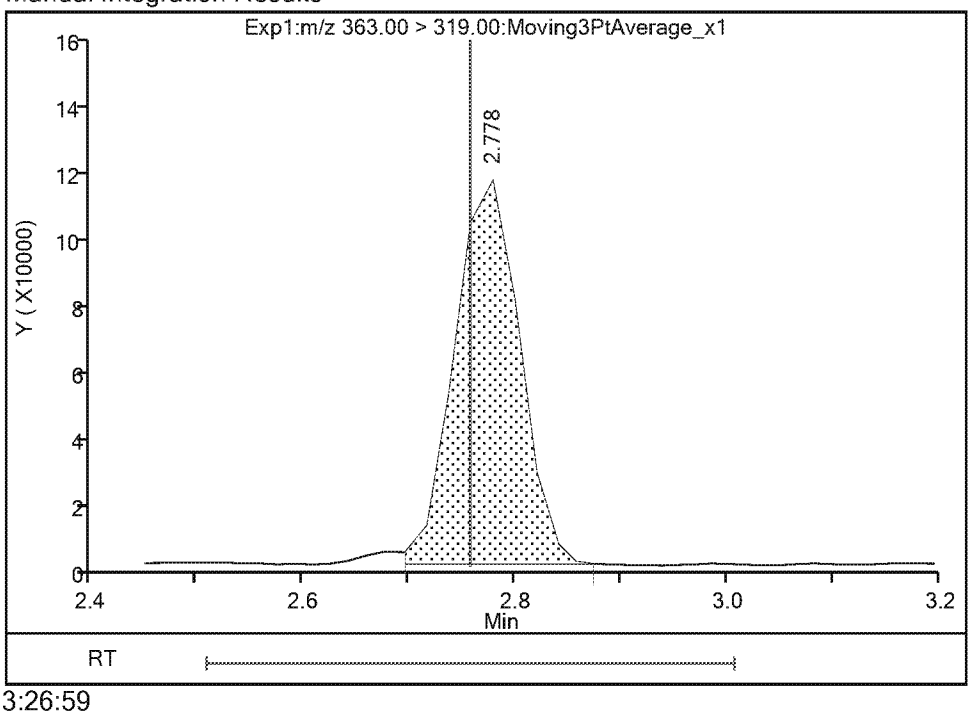
Processing Integration Results

RT: 2.78
Area: 485247
Amount: 0.390713
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 461421
Amount: 0.371529
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:26:59
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AW3
Lab Sample ID: 320-48799-6
Matrix: Water
Lab File ID: 2019.04.04_537AA_052.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 12:55
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 277.9(mL)
Date Analyzed: 04/05/2019 02:35
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.85
335-67-1	Perfluorooctanoic acid	ND		5.4	2.4
375-95-1	Perfluorononanoic acid	ND		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.58
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	104		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_052.d
Lims ID: 320-48799-A-6-A
Client ID: C0AW3
Sample Type: Client
Inject. Date: 05-Apr-2019 02:35:48 ALS Bottle#: 37 Worklist Smp#: 48
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-6-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

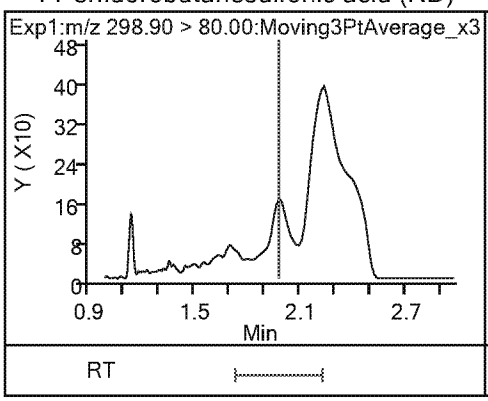
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:28:25
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	3180005	2.32		6785	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.717	2.473	0.244	1.098	847	0.002669		0.5	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	164070	2.67		969	
* 5 13C2 PFOA									
415.00 > 370.00	3.173	3.177	-0.004		2933594	2.50		7180	
* 7 13C4 PFOS									
503.00 > 80.00	3.545	3.549	-0.004		2941812	2.39		6986	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.733	3.735	-0.002	1.000	10918	0.005219		23.4	
$ 10 13C2 PFDA									
515.00 > 470.00	3.909	3.911	-0.002	1.000	1896654	2.60		10198	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.068	4.070	-0.002		515736	2.50		2198	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.219	4.214	0.005	1.000	3946	0.007565	Target=4.73	1.6	
563.00 > 169.00	4.219	4.214	0.005	1.000	1123		3.51(0.00-0.00)	9.1	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.219	4.214	0.005	1.037	506653	2.40		314	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.338	4.349	-0.011	1.000	15144	0.005775		146	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.736	4.753	-0.017	1.000	2710	0.006691	Target=2.87	0.9	
663.00 > 169.00	4.758	4.753	0.005	1.005	850		3.19(0.00-0.00)	10.1	

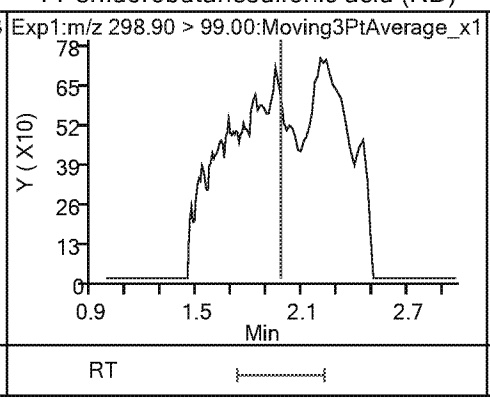
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_052.d				
Injection Date:	05-Apr-2019 02:35:48	Instrument ID:	A8_N		
Lims ID:	320-48799-A-6-A	Lab Sample ID:	320-48799-6		
Client ID:	C0AW3				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	37	Worklist Smp#:	48
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

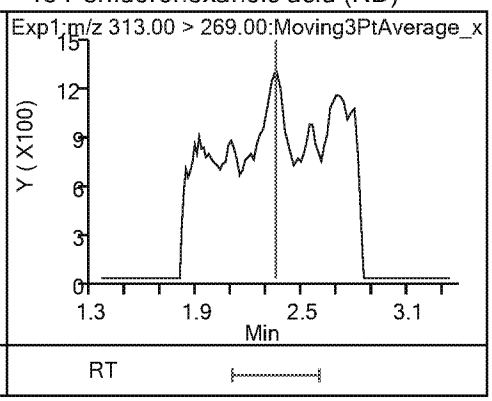
1 Perfluorobutanesulfonic acid (ND)



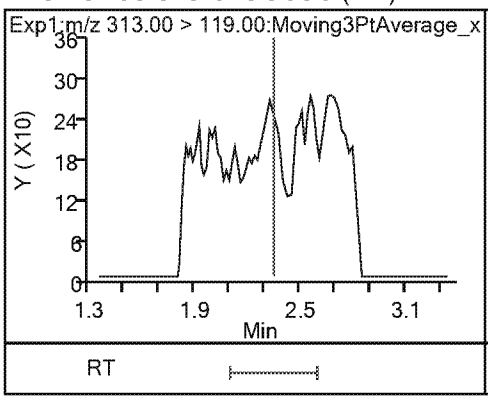
1 Perfluorobutanesulfonic acid (ND)



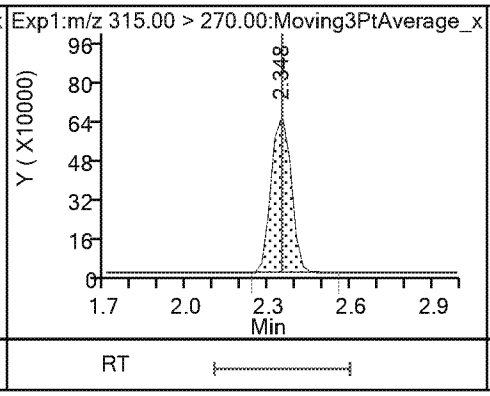
13 Perfluorohexanoic acid (ND)



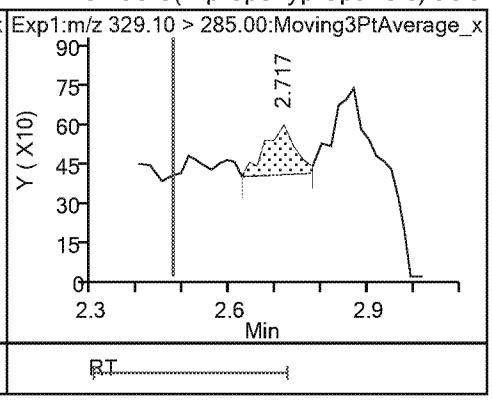
13 Perfluorohexanoic acid (ND)



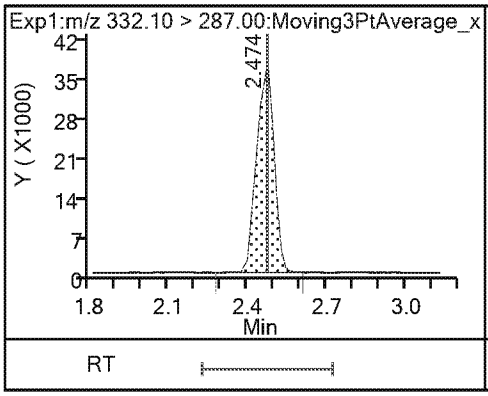
$ 2 13C2 PFHxA



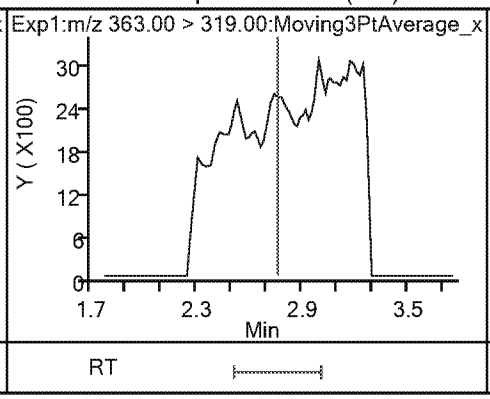
22 Perfluoro(2-propoxypropanoic) acid



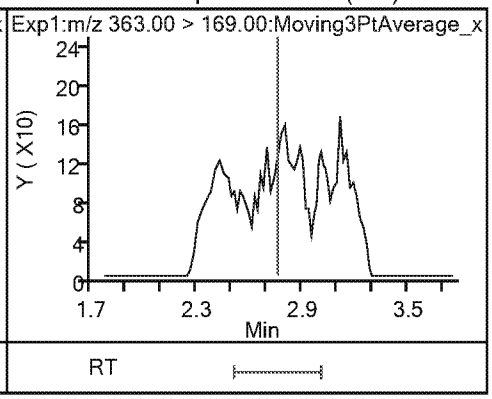
$ 25 13C3 HFPO-DA



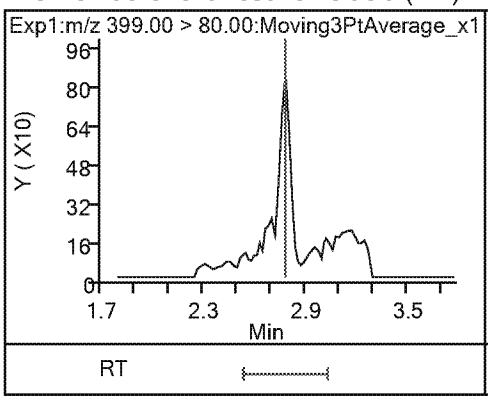
4 Perfluoroheptanoic acid (ND)



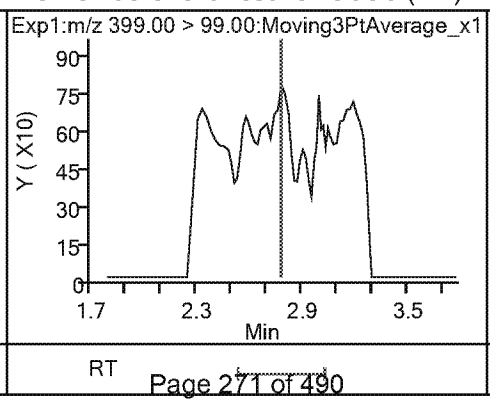
4 Perfluoroheptanoic acid (ND)



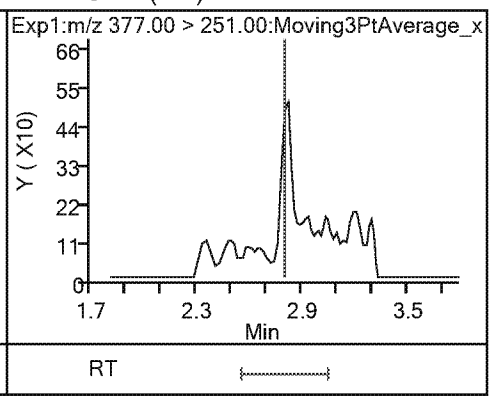
3 Perfluorohexanesulfonic acid (ND)



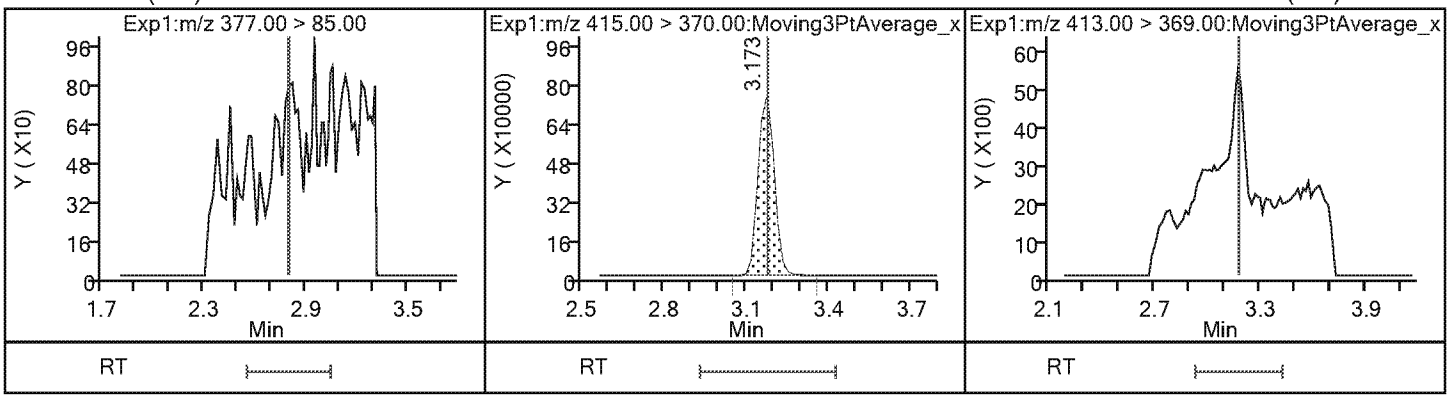
3 Perfluorohexanesulfonic acid (ND)



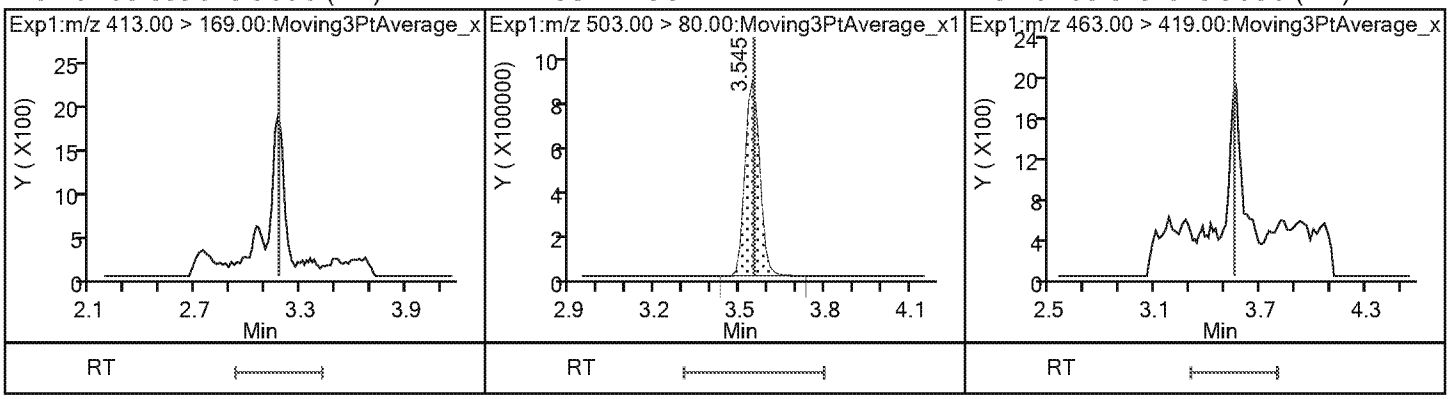
24 DONA (ND)



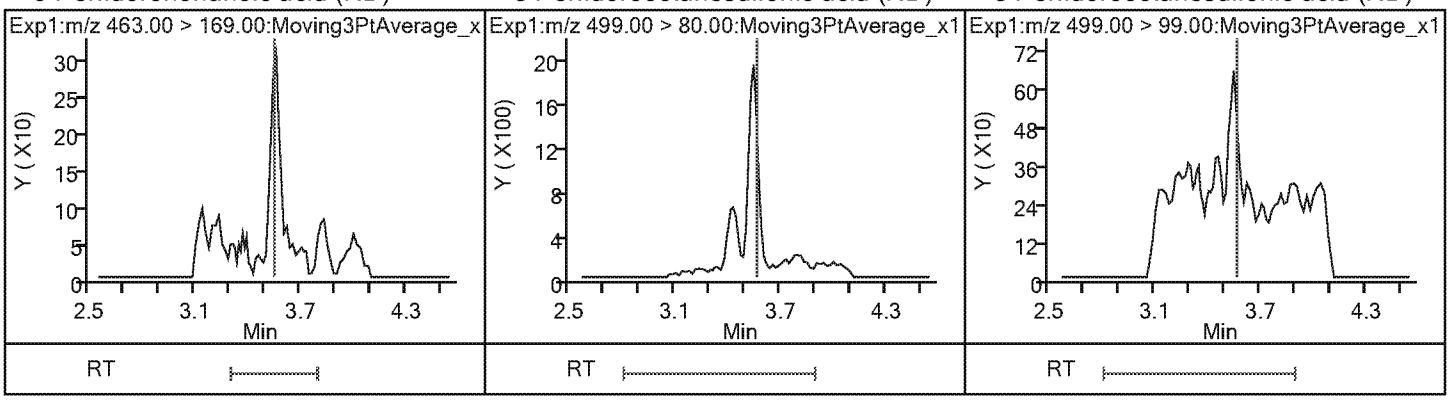
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid (ND)



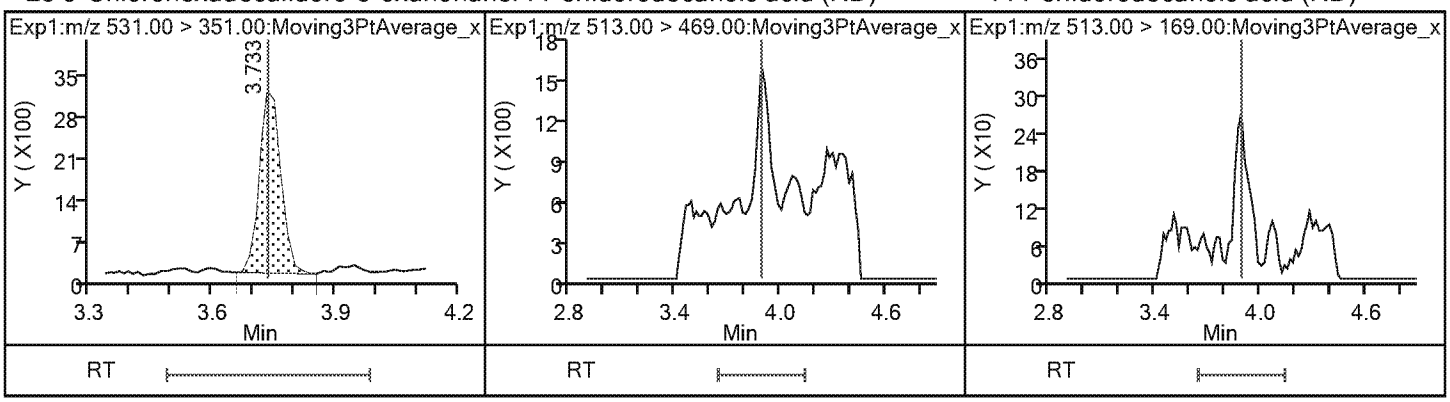
6 Perfluorooctanoic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



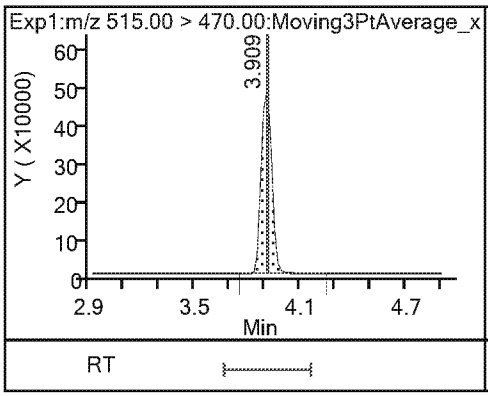
9 Perfluorononanoic acid (ND) 8 Perfluorooctanesulfonic acid (ND) 8 Perfluorooctanesulfonic acid (ND)



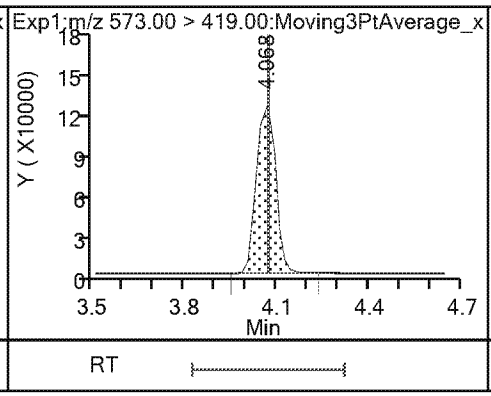
23 9-Chlorohexadecafluoro-3-oxanonane 14 Perfluorodecanoic acid (ND) 14 Perfluorodecanoic acid (ND)



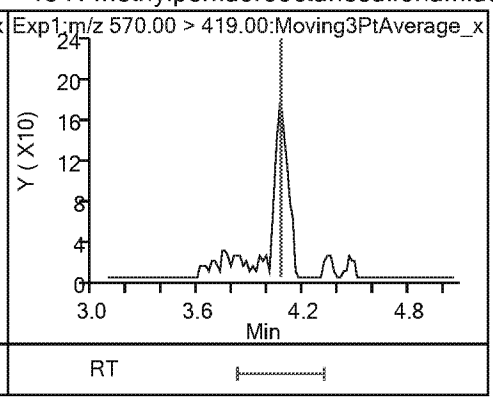
$ 10 13C2 PFDA



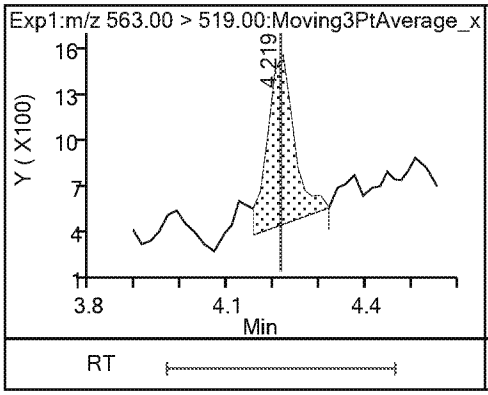
* 12 d3-NMeFOSAA



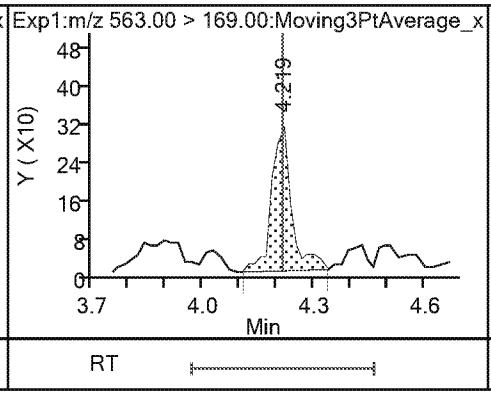
15 N-methylperfluorooctanesulfonamido (ND)



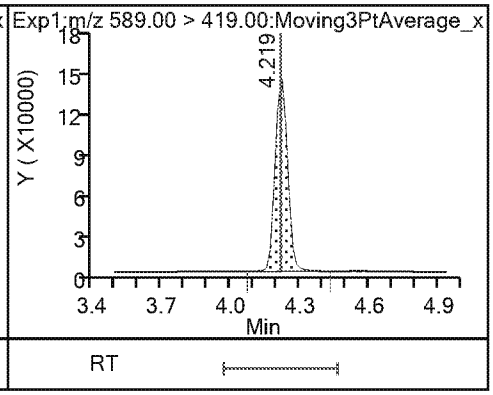
17 Perfluoroundecanoic acid



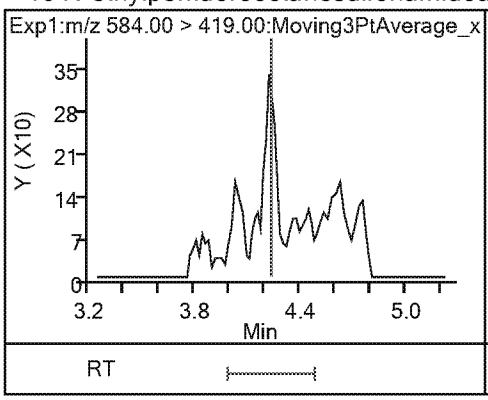
17 Perfluoroundecanoic acid



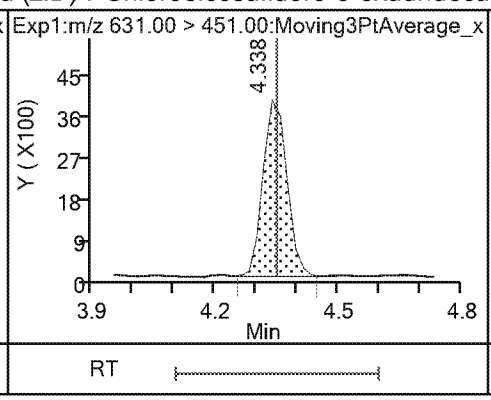
$ 11 d5-NEtFOSAA



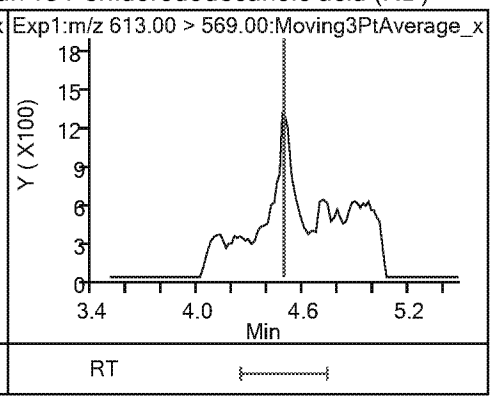
16 N-ethylperfluorooctanesulfonamidoa (ND)



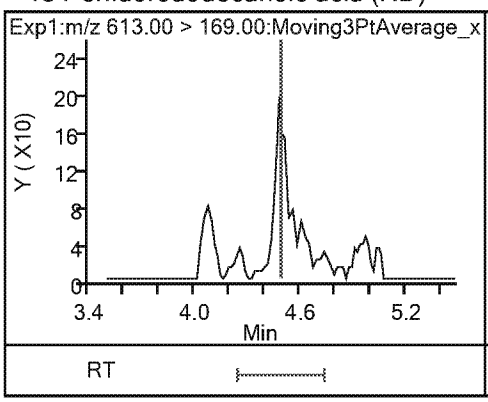
2 (ND) 11-Chloroeicosafluoro-3-oxaundecan



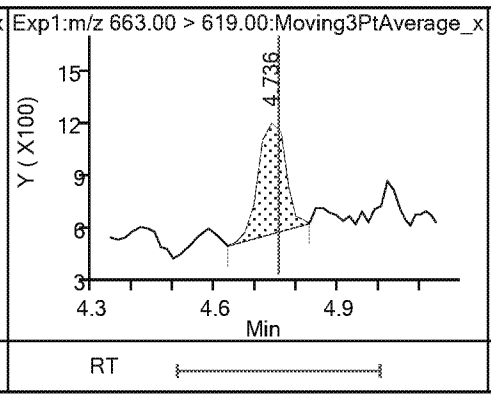
18 Perfluorododecanoic acid (ND)



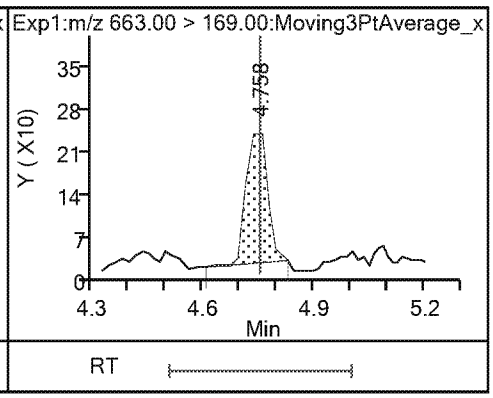
18 Perfluorododecanoic acid (ND)



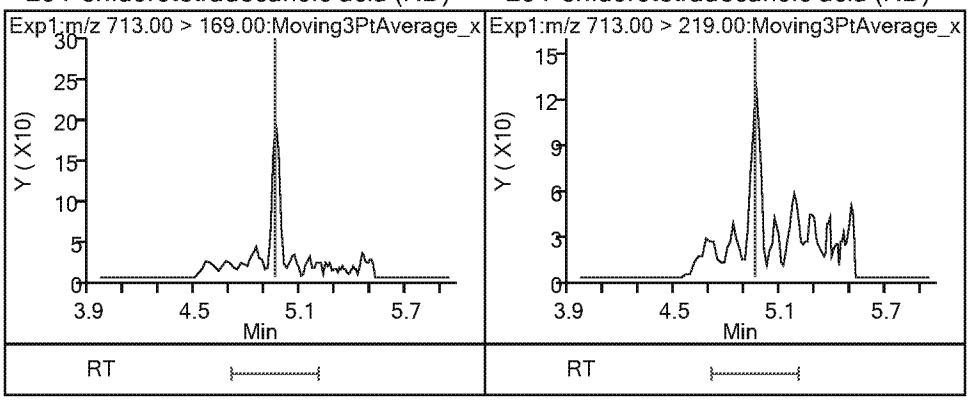
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_052.d				
Lims ID:	320-48799-A-6-A				
Client ID:	C0AW3				
Sample Type:	Client				
Inject. Date:	05-Apr-2019 02:35:48	ALS Bottle#:	37	Worklist Smp#:	48
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-48799-a-6-a				
Misc. Info.:	Plate: 1 Rack: 2				
Operator ID:	SACINSTLCMS01	Instrument ID:	A8_N		
Method:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m				
Limit Group:	LC 537 ICAL				
Last Update:	05-Apr-2019 13:29:45	Calib Date:	04-Apr-2019 16:11:08		
Integrator:	Picker				
Quant Method:	Internal Standard	Quant By:	Initial Calibration		
Last ICal File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d				
Column 1 :			Det: EXP1		
Process Host:	CTX0314				
First Level Reviewer:	Ex. 4 CBI	Date:	05-Apr-2019 13:28:25		

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.32	92.99
$ 25 13C3 HFPO-DA	2.50	2.67	106.82
$ 10 13C2 PFDA	2.50	2.60	104.11
$ 11 d5-NEtFOSAA	2.50	2.40	96.12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Client Sample ID: C0AW4 Lab Sample ID: 320-48799-7

Matrix: Water Lab File ID: 2019.04.04_537AA_053.d

Analysis Method: 537 DW Date Collected: 03/26/2019 12:15

Extraction Method: 537 DW Date Extracted: 04/03/2019 06:57

Sample wt/vol: 276.6(mL) Date Analyzed: 04/05/2019 02:45

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 10(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 286196 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.86
335-67-1	Perfluorooctanoic acid	ND		5.4	2.4
375-95-1	Perfluorononanoic acid	ND		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.58
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		70-130
STL00996	13C2 PFDA	106		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_053.d
Lims ID: 320-48799-A-7-A
Client ID: C0AW4
Sample Type: Client
Inject. Date: 05-Apr-2019 02:45:18 ALS Bottle#: 38 Worklist Smp#: 49
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

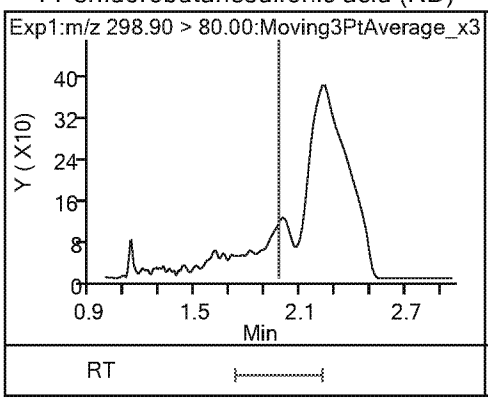
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:28:48
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.353	2.347	0.006	1.000	3386075	2.44		6777	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.479	2.473	0.006	1.000	172358	2.76		925	
* 5 13C2 PFOA									
415.00 > 370.00	3.166	3.177	-0.011		2977075	2.50		7627	
* 7 13C4 PFOS									
503.00 > 80.00	3.544	3.549	-0.005		2997666	2.39		7923	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.732	3.735	-0.003	1.000	1970	0.000924		3.1	
$ 10 13C2 PFDA									
515.00 > 470.00	3.907	3.911	-0.004	1.000	1966319	2.66		7274	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.066	4.070	-0.004		535781	2.50		2788	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.216	4.214	0.002	1.037	502128	2.29		300	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.350	4.349	0.001	1.000	1643	0.000615		8.3	

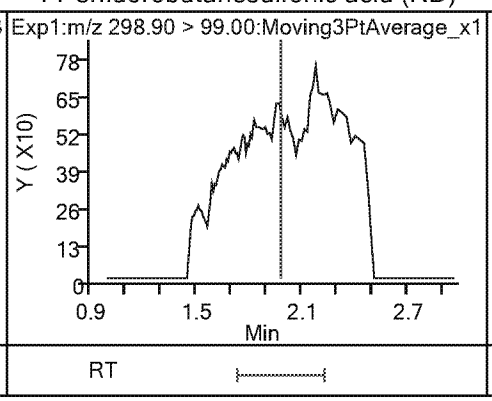
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_053.d				
Injection Date:	05-Apr-2019 02:45:18	Instrument ID:	A8_N		
Lims ID:	320-48799-A-7-A	Lab Sample ID:	320-48799-7		
Client ID:	C0AW4				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	38	Worklist Smp#:	49
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

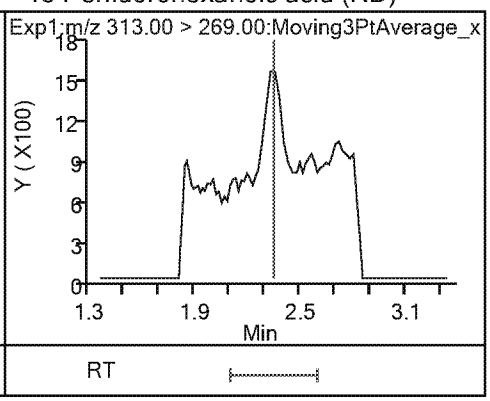
1 Perfluorobutanesulfonic acid (ND)



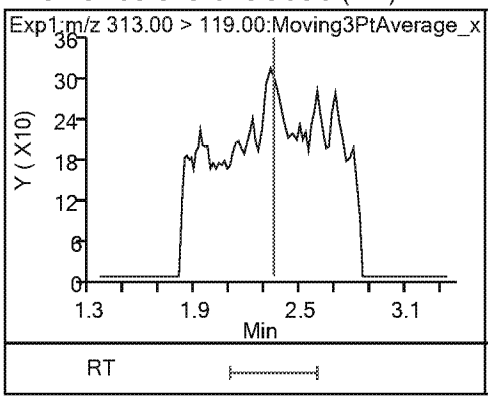
1 Perfluorobutanesulfonic acid (ND)



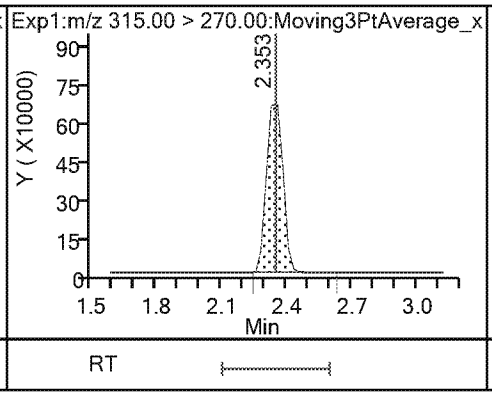
13 Perfluorohexanoic acid (ND)



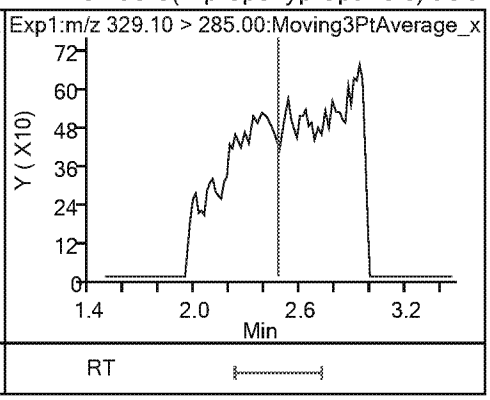
13 Perfluorohexanoic acid (ND)



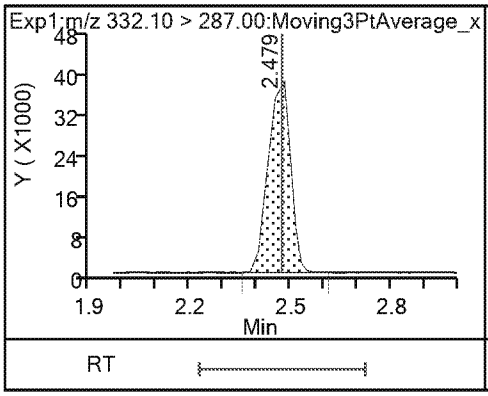
$ 2 13C2 PFHxA



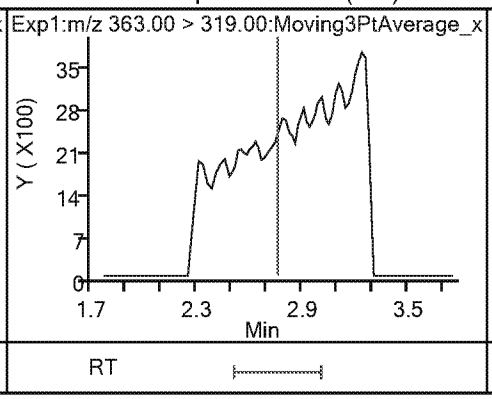
22 Perfluoro(2-propoxypropanoic) acid (ND)



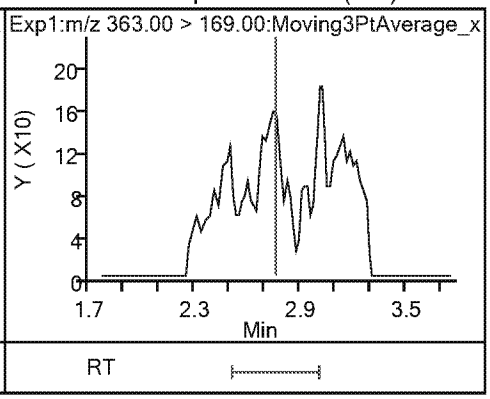
$ 25 13C3 HFPO-DA



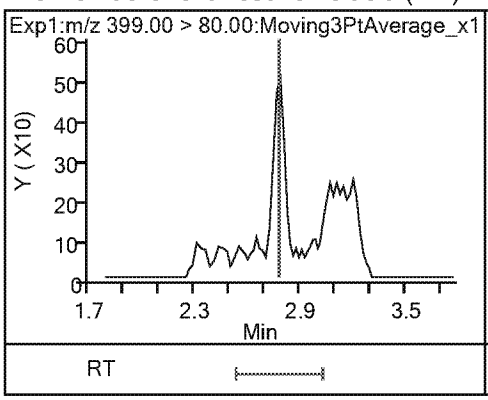
4 Perfluoroheptanoic acid (ND)



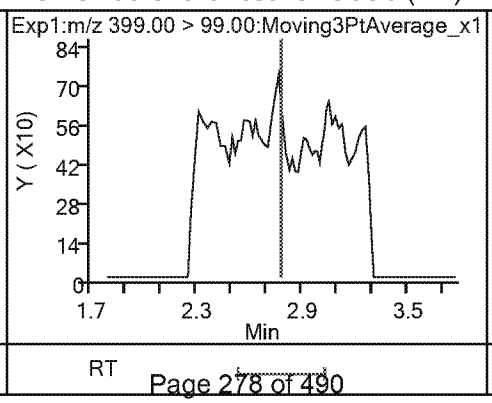
4 Perfluoroheptanoic acid (ND)



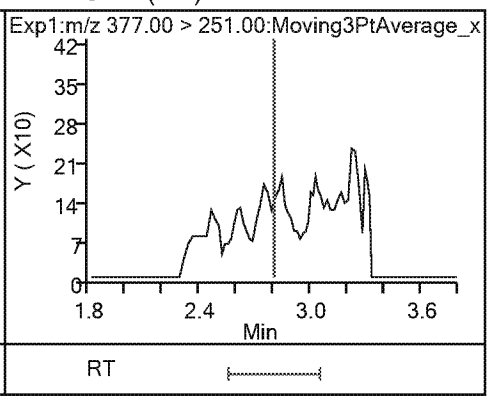
3 Perfluorohexanesulfonic acid (ND)



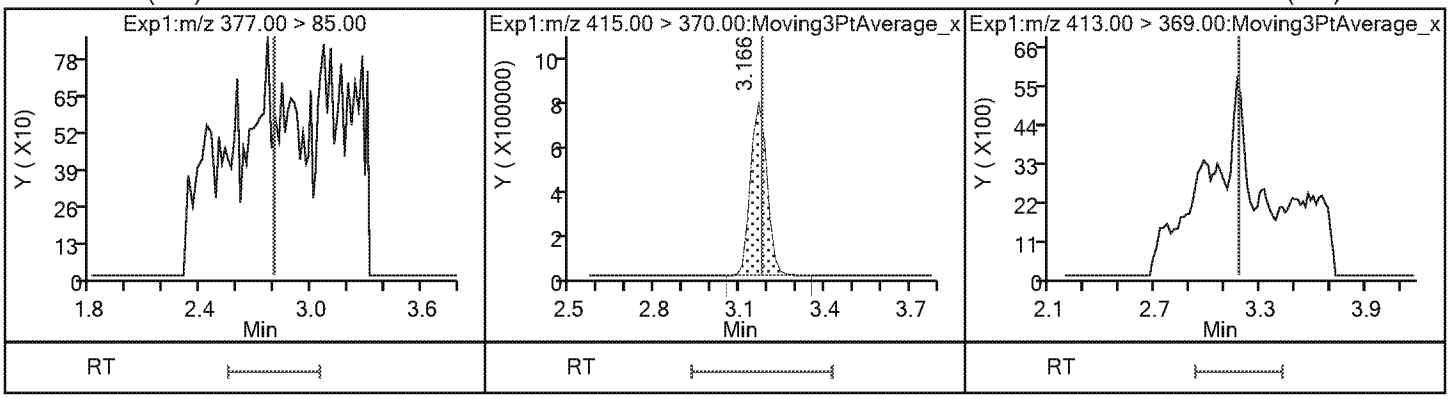
3 Perfluorohexanesulfonic acid (ND)



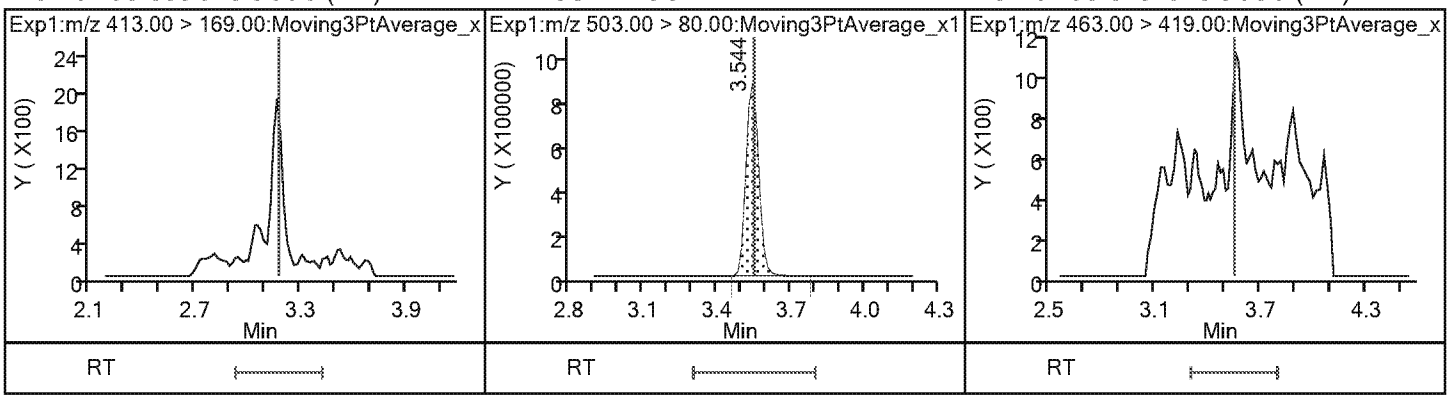
24 DONA (ND)



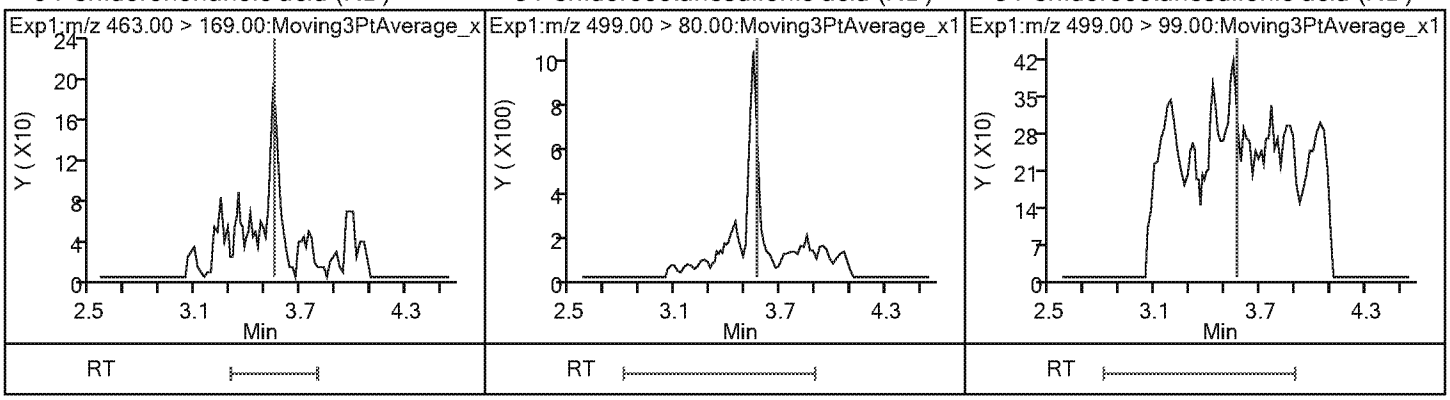
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid (ND)



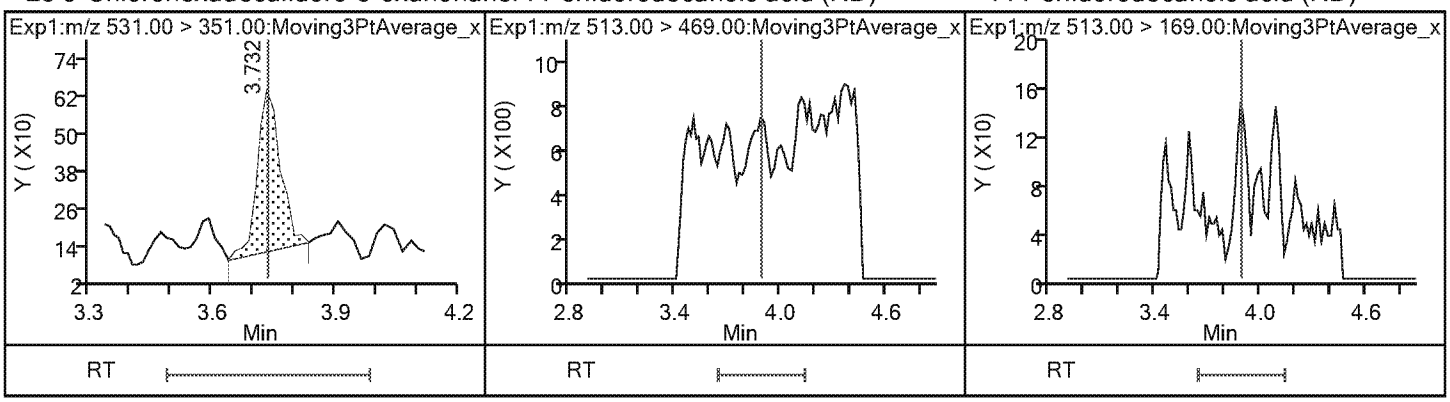
6 Perfluorooctanoic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



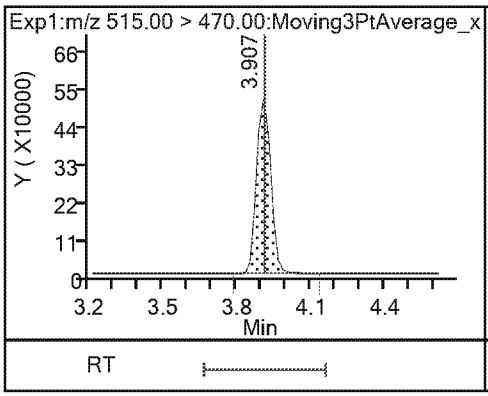
9 Perfluorononanoic acid (ND) 8 Perfluorooctanesulfonic acid (ND) 8 Perfluorooctanesulfonic acid (ND)



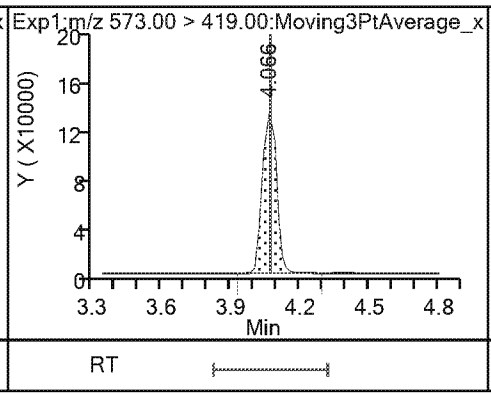
23 9-Chlorohexadecafluoro-3-oxanonane 14 Perfluorodecanoic acid (ND) 14 Perfluorodecanoic acid (ND)



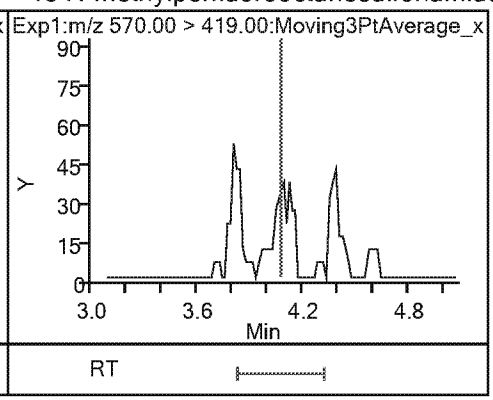
$ 10 13C2 PFDA



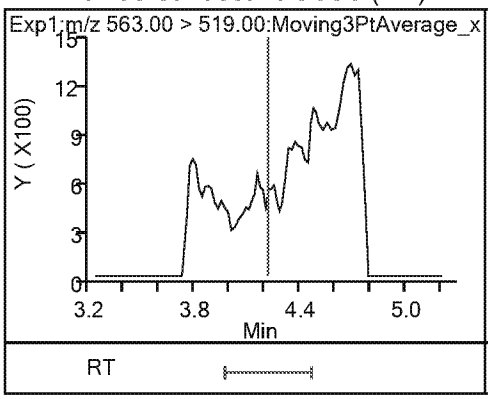
* 12 d3-NMeFOSAA



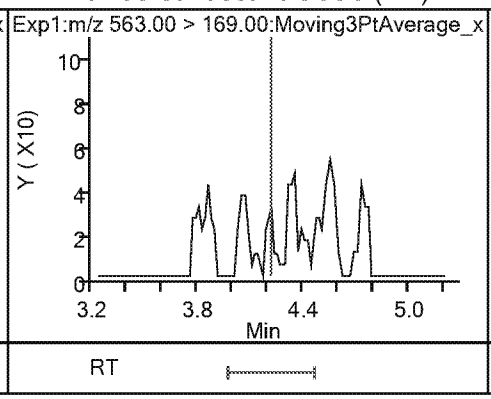
15 N-methylperfluorooctanesulfonamido (ND)



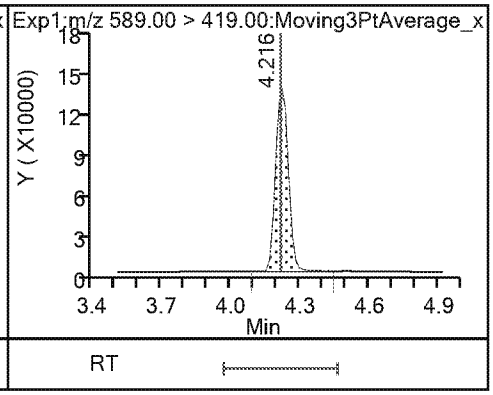
17 Perfluoroundecanoic acid (ND)



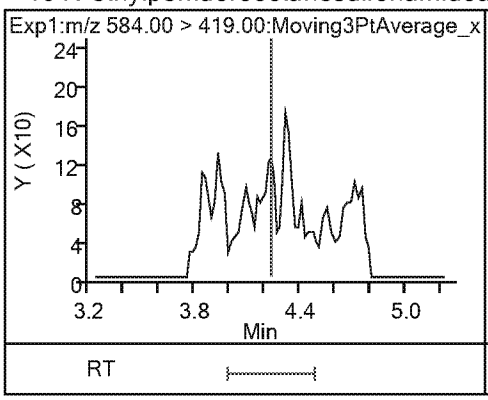
17 Perfluoroundecanoic acid (ND)



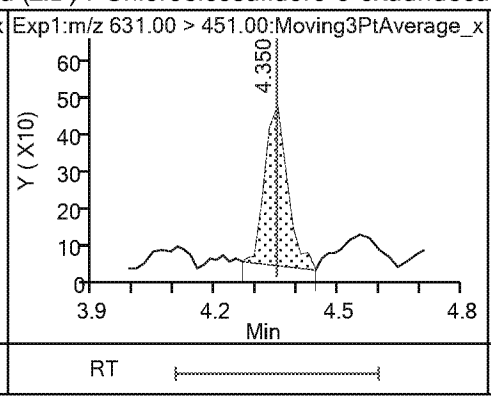
$ 11 d5-NEtFOSAA



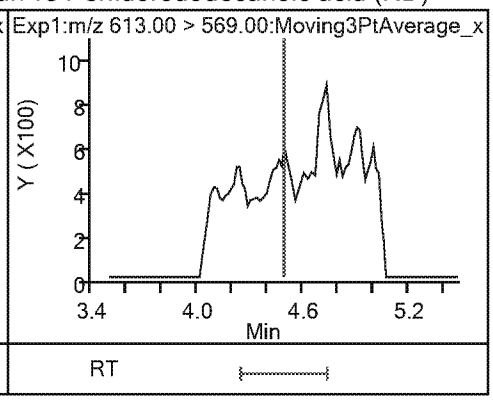
16 N-ethylperfluorooctanesulfonamidoa (ND)



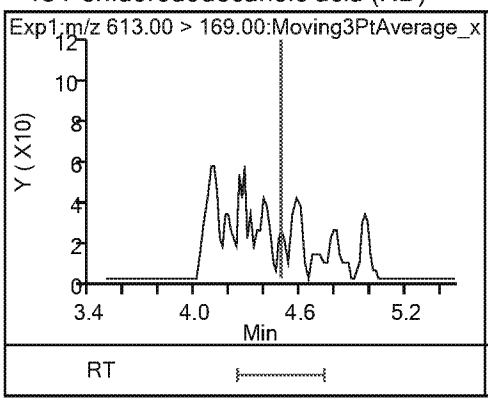
2 (ND) 11-Chloroeicosafluoro-3-oxaundecan



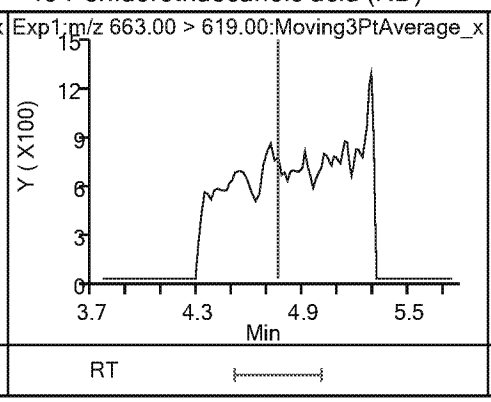
18 Perfluorododecanoic acid (ND)



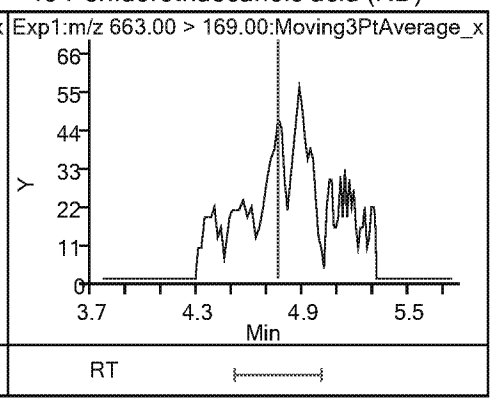
18 Perfluorododecanoic acid (ND)



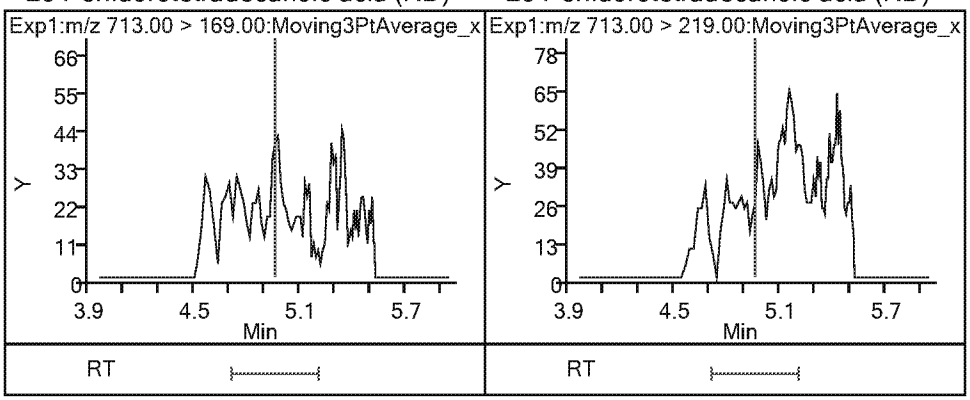
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_053.d
Lims ID: 320-48799-A-7-A
Client ID: C0AW4
Sample Type: Client
Inject. Date: 05-Apr-2019 02:45:18 ALS Bottle#: 38 Worklist Smp#: 49
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-7-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:28:48

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.44	97.57
$ 25 13C3 HFPO-DA	2.50	2.76	110.58
$ 10 13C2 PFDA	2.50	2.66	106.36
$ 11 d5-NEtFOSAA	2.50	2.29	91.70

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AW6
Lab Sample ID: 320-48799-8
Matrix: Water
Lab File ID: 2019.04.04_537AA_056.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:55
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 278.4(mL)
Date Analyzed: 04/05/2019 03:13
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286198
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.85
335-67-1	Perfluorooctanoic acid	ND		5.4	2.4
375-95-1	Perfluorononanoic acid	ND		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.57
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	102		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_056.d
Lims ID: 320-48799-A-8-A
Client ID: C0AW6
Sample Type: Client
Inject. Date: 05-Apr-2019 03:13:43 ALS Bottle#: 39 Worklist Smp#: 52
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:30:03 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

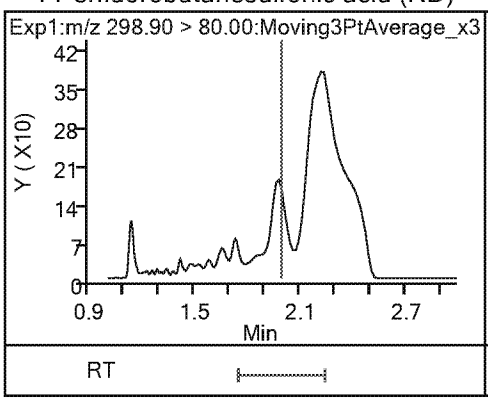
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:29:01
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3340867	2.38		5961	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.373	2.474	-0.102	0.959	2266	0.006945		0.4	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.474	-0.001	1.000	188065	2.98		1116	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.156	0.002		3015673	2.50		6362	
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.539	0.010		3097921	2.39		7957	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.899	0.012	1.000	1913891	2.55		8312	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.055	0.015		559287	2.50		2234	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.214	4.205	0.009	1.035	503455	2.20		283	

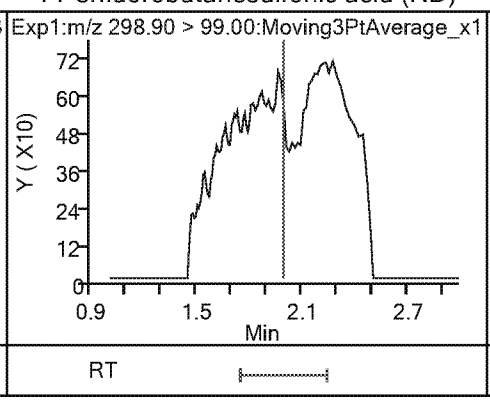
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_056.d				
Injection Date:	05-Apr-2019 03:13:43	Instrument ID:	A8_N		
Lims ID:	320-48799-A-8-A	Lab Sample ID:	320-48799-8		
Client ID:	C0AW6				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	39	Worklist Smp#:	52
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

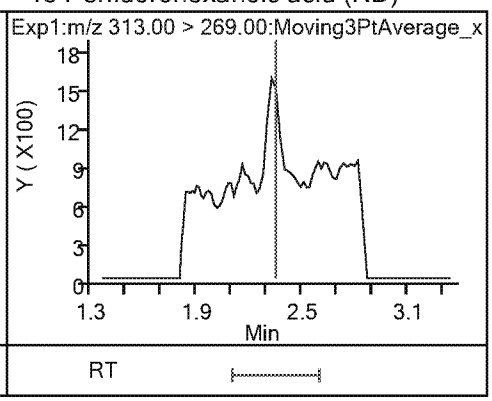
1 Perfluorobutanesulfonic acid (ND)



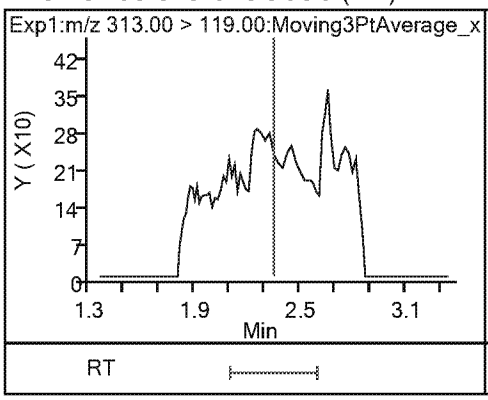
1 Perfluorobutanesulfonic acid (ND)



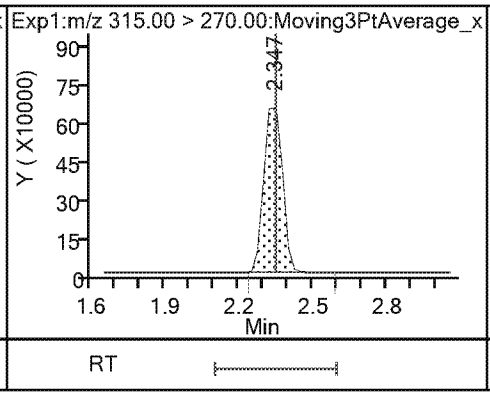
13 Perfluorohexanoic acid (ND)



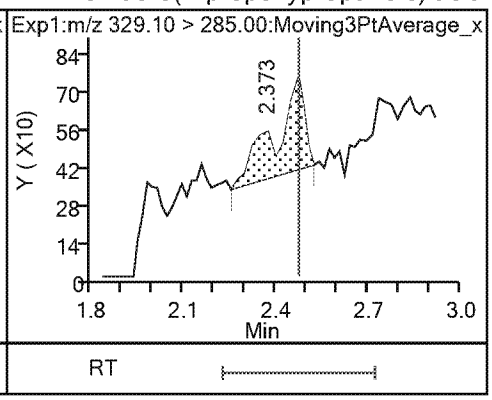
13 Perfluorohexanoic acid (ND)



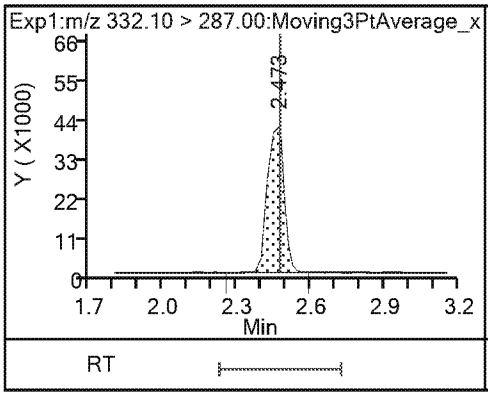
$ 2 13C2 PFHxA



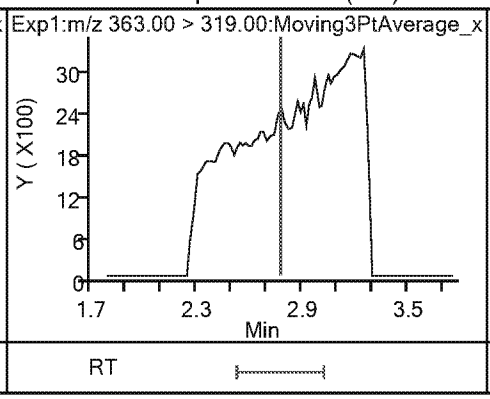
22 Perfluoro(2-propoxypropanoic) acid



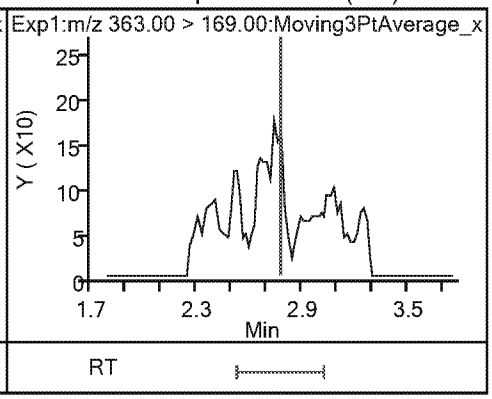
$ 25 13C3 HFPO-DA



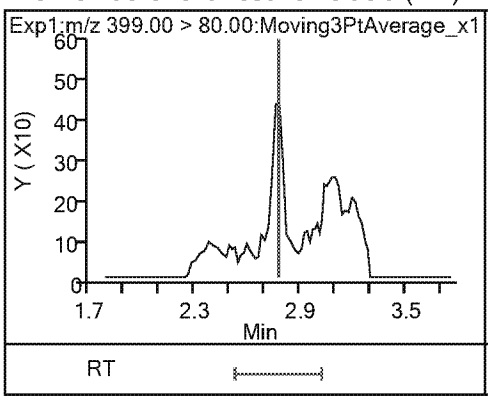
4 Perfluoroheptanoic acid (ND)



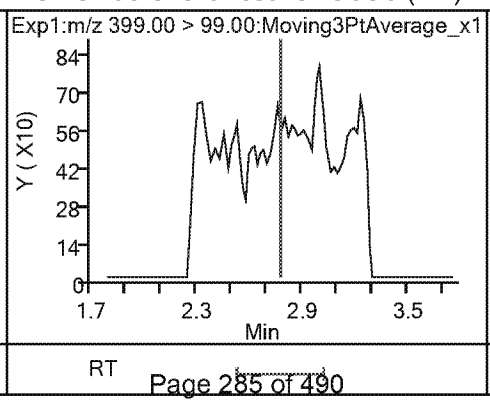
4 Perfluoroheptanoic acid (ND)



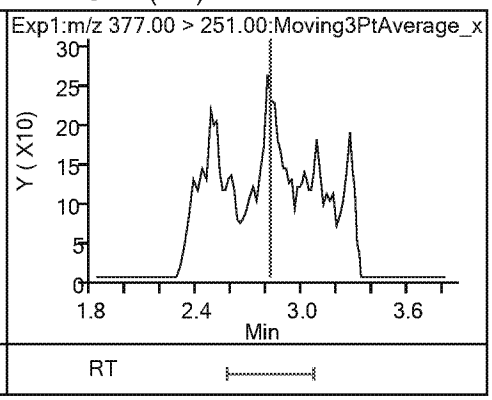
3 Perfluorohexanesulfonic acid (ND)



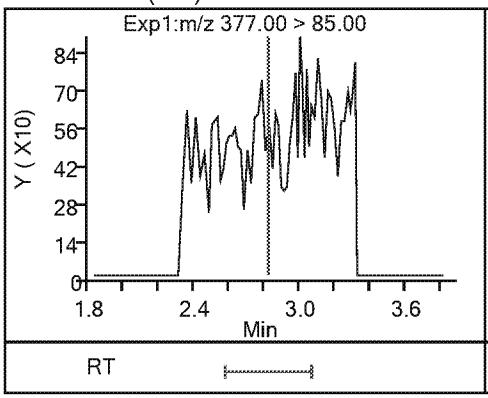
3 Perfluorohexanesulfonic acid (ND)



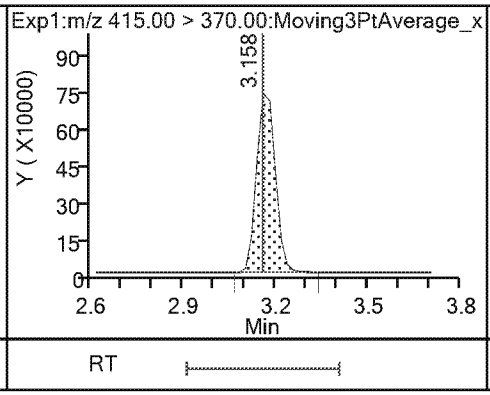
24 DONA (ND)



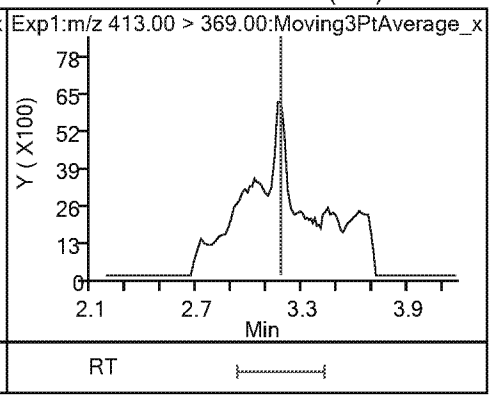
24 DONA (ND)



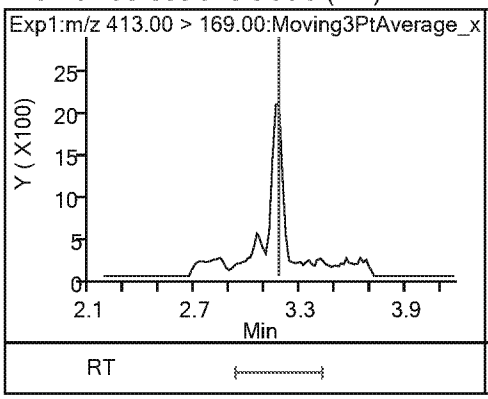
* 5 13C2 PFOA



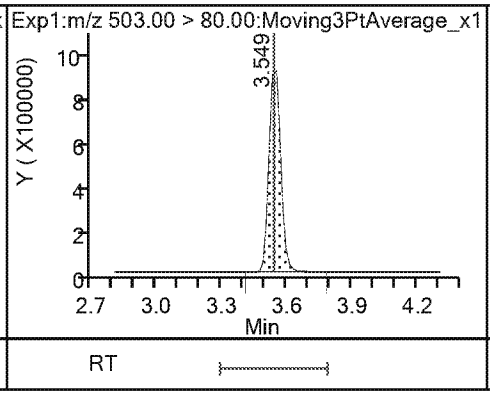
6 Perfluorooctanoic acid (ND)



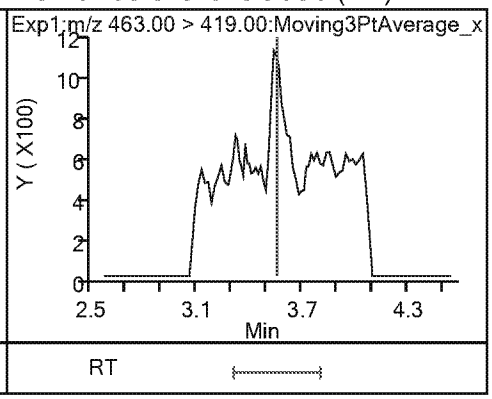
6 Perfluorooctanoic acid (ND)



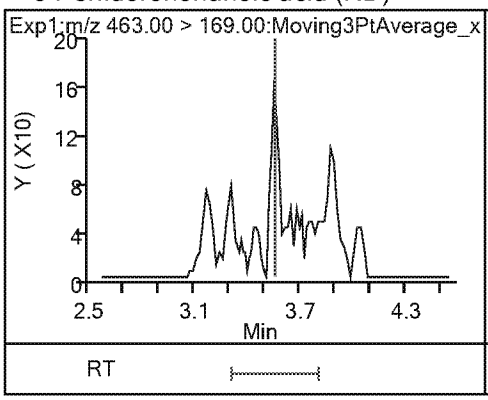
* 7 13C4 PFOS



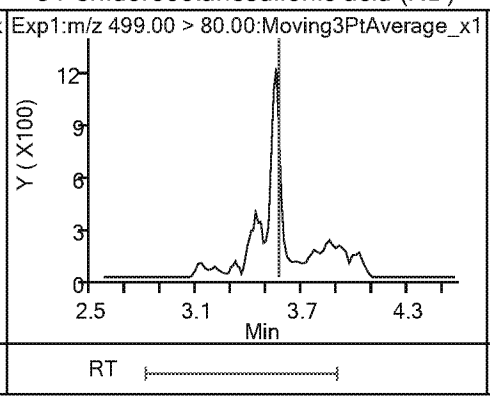
9 Perfluorononanoic acid (ND)



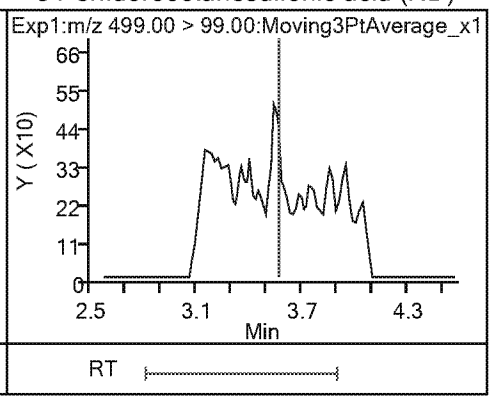
9 Perfluorononanoic acid (ND)



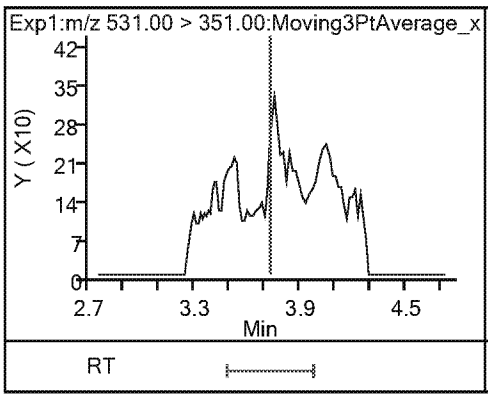
8 Perfluorooctanesulfonic acid (ND)



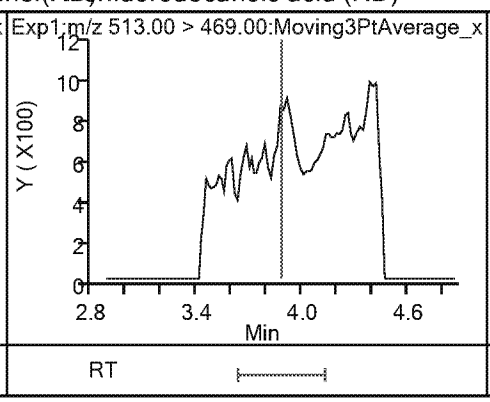
8 Perfluorooctanesulfonic acid (ND)



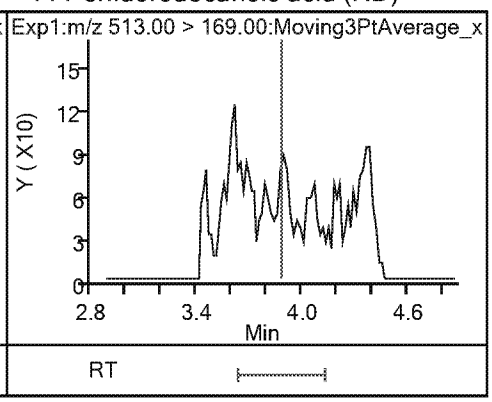
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



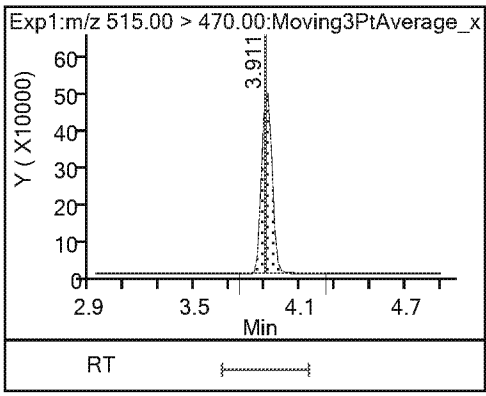
14 Perfluorodecanoic acid (ND)



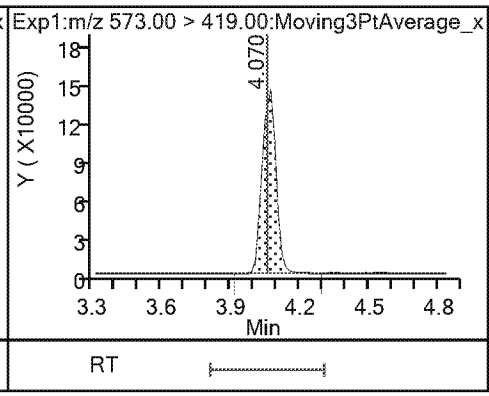
14 Perfluorodecanoic acid (ND)



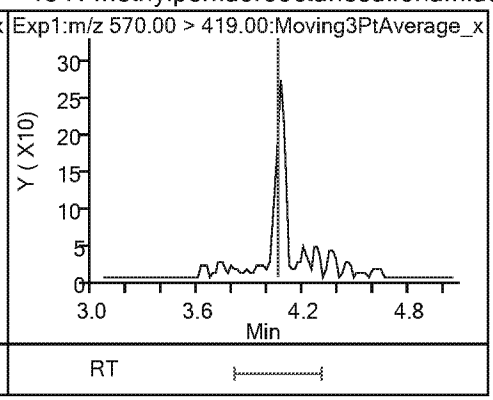
$ 10 13C2 PFDA



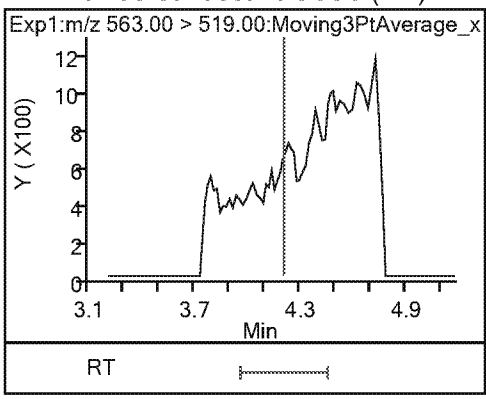
* 12 d3-NMeFOSAA



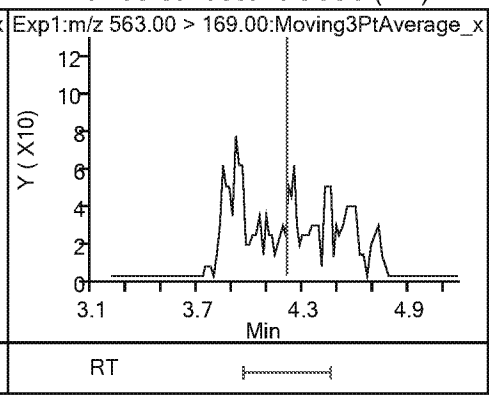
15 N-methylperfluorooctanesulfonamido (ND)



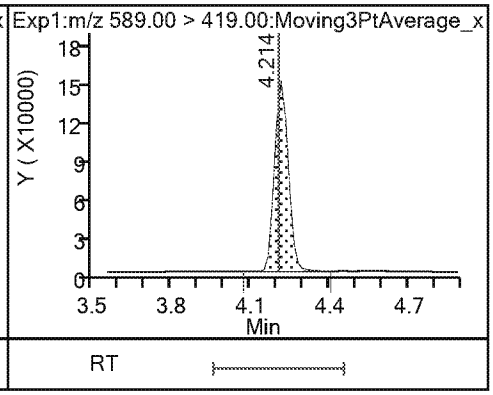
17 Perfluoroundecanoic acid (ND)



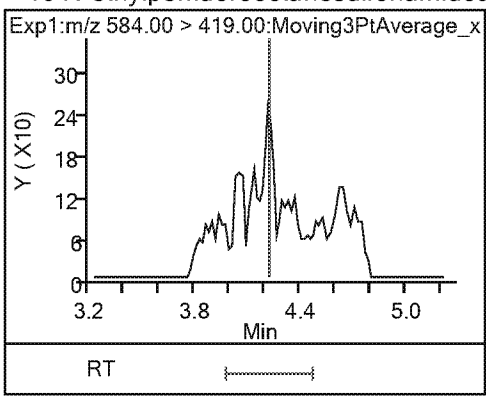
17 Perfluoroundecanoic acid (ND)



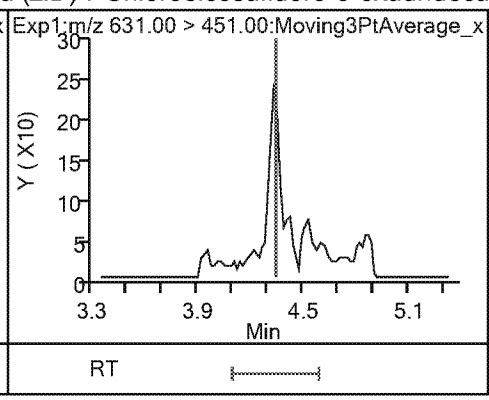
$ 11 d5-NEtFOSAA



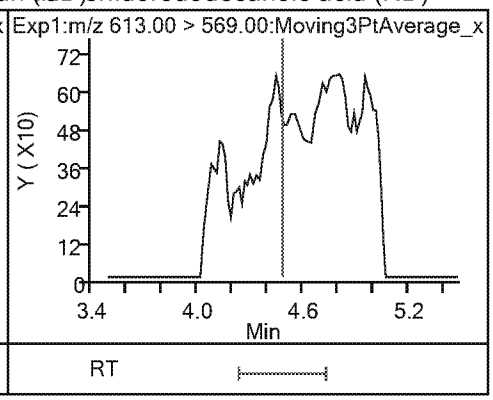
16 N-ethylperfluorooctanesulfonamidoa (ND)



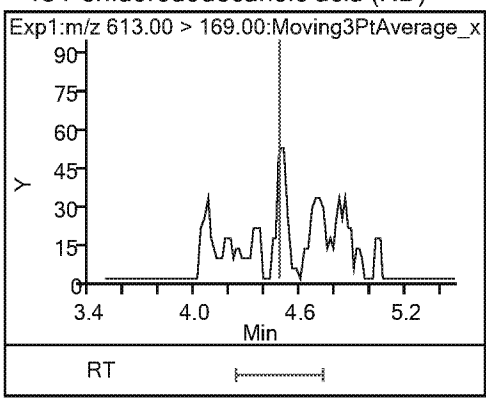
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



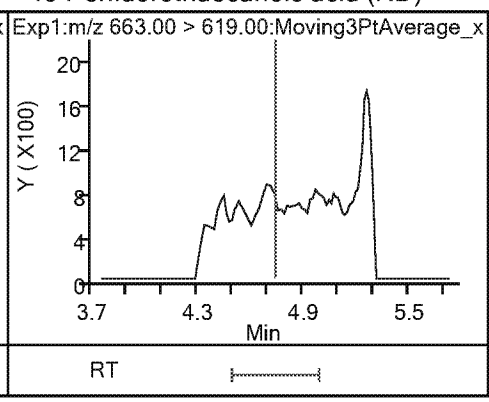
18 Perfluorododecanoic acid (ND)



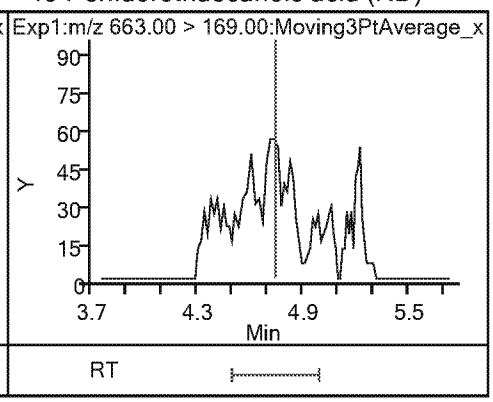
18 Perfluorododecanoic acid (ND)



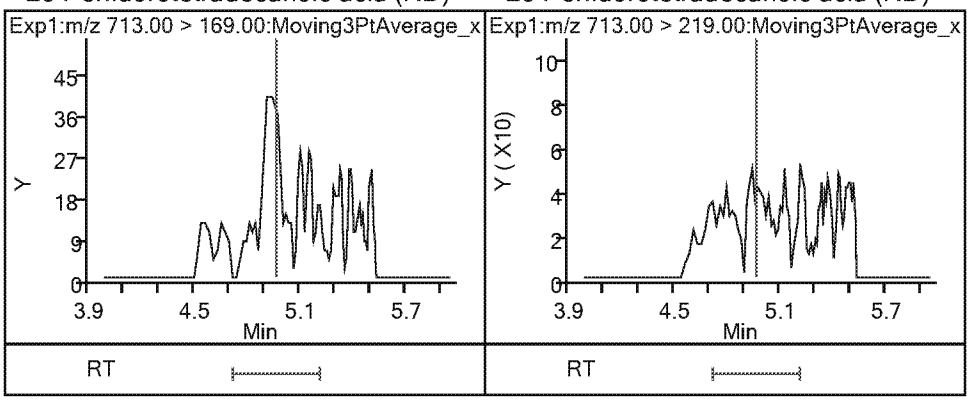
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_056.d
Lims ID: 320-48799-A-8-A
Client ID: C0AW6
Sample Type: Client
Inject. Date: 05-Apr-2019 03:13:43 ALS Bottle#: 39 Worklist Smp#: 52
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-8-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:30:03 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:29:01

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.38	95.04
$ 25 13C3 HFPO-DA	2.50	2.98	119.11
$ 10 13C2 PFDA	2.50	2.55	102.20
$ 11 d5-NEtFOSAA	2.50	2.20	88.08

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AW7
Lab Sample ID: 320-48799-9
Matrix: Water
Lab File ID: 2019.04.04_537AA_057.d
Analysis Method: 537 DW
Date Collected: 03/26/2019 14:05
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 275.1(mL)
Date Analyzed: 04/05/2019 03:23
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286198
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.86
335-67-1	Perfluorooctanoic acid	ND		5.5	2.5
375-95-1	Perfluorononanoic acid	ND		1.8	0.43
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.58
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.73

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	93		70-130
STL00996	13C2 PFDA	101		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_057.d
Lims ID: 320-48799-A-9-A
Client ID: C0AW7
Sample Type: Client
Inject. Date: 05-Apr-2019 03:23:12 ALS Bottle#: 40 Worklist Smp#: 53
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:46:32 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

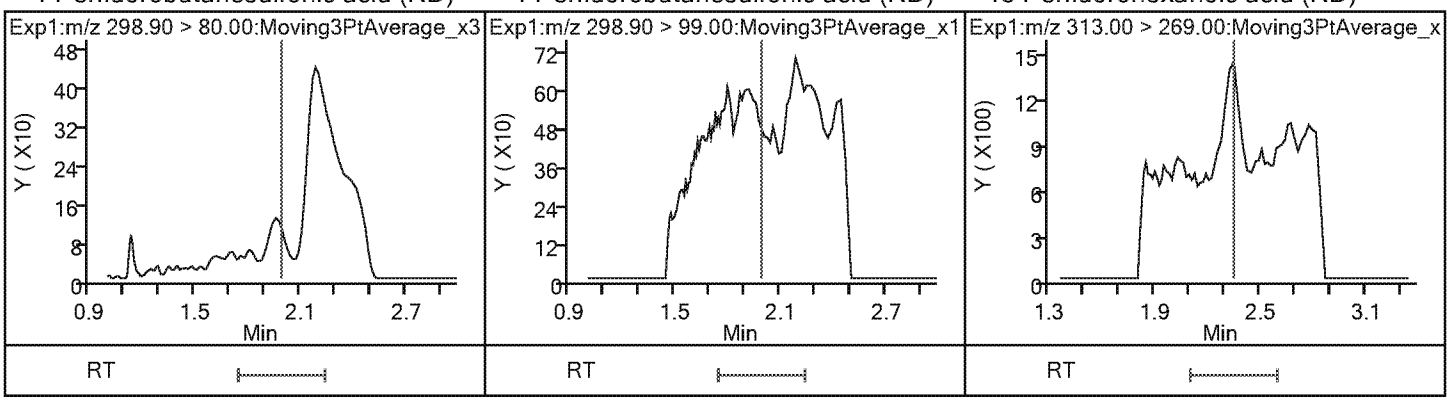
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:29:12
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.322	2.347	-0.025	1.000	3227795	2.34		5889	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	180232	2.90		1169	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.171	-0.013		2964534	2.50		7923	
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.531	0.003		2999972	2.39		6499	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.891	0.020	1.000	1868333	2.54		7985	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.069	0.001		546341	2.50		2690	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.214	4.219	-0.005	1.035	492542	2.21		281	

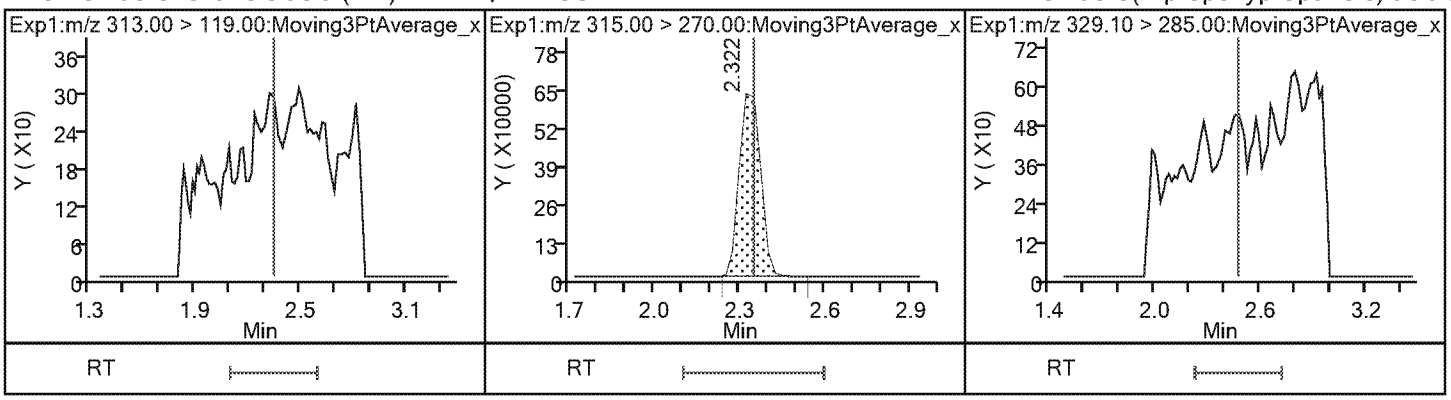
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_057.d				
Injection Date:	05-Apr-2019 03:23:12	Instrument ID:	A8_N		
Lims ID:	320-48799-A-9-A	Lab Sample ID:	320-48799-9		
Client ID:	C0AW7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	40	Worklist Smp#:	53
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

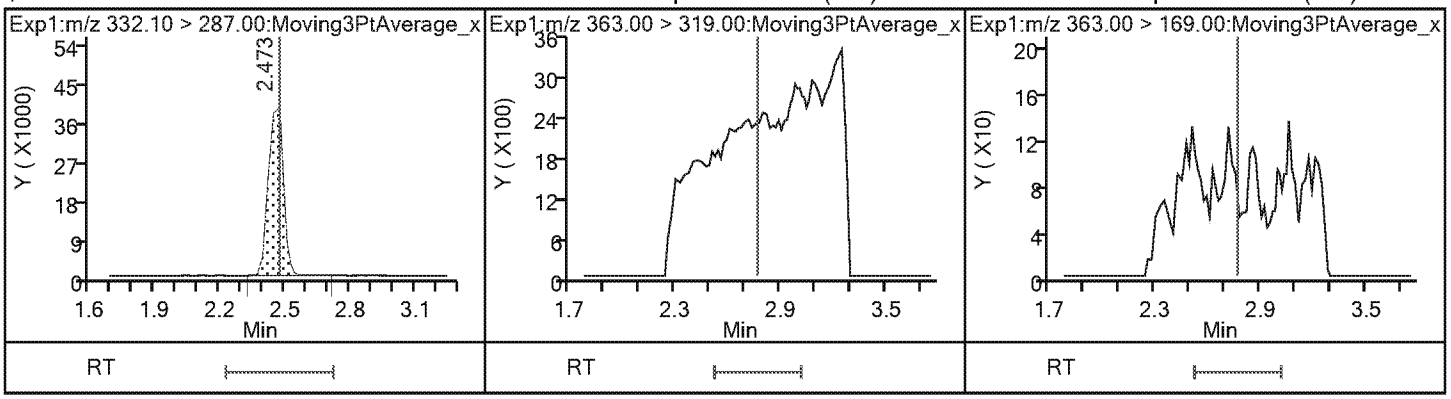
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | 13 Perfluorohexanoic acid (ND)



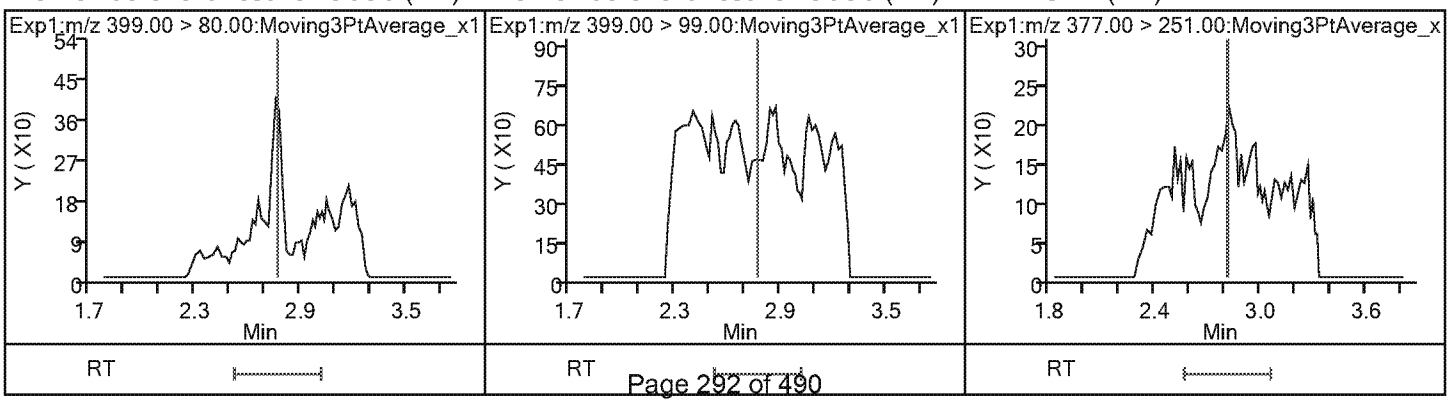
13 Perfluorohexanoic acid (ND) | $ 2 13C2 PFHxA | 22 Perfluoro(2-propoxypropanoic) acid (ND)



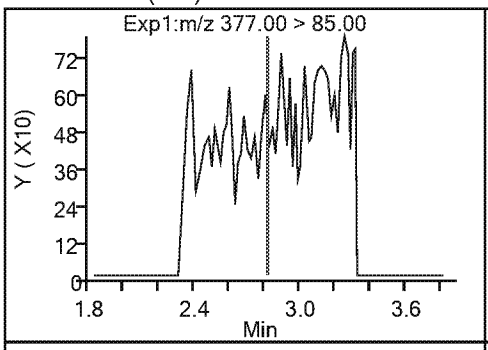
$ 25 13C3 HFPO-DA | 4 Perfluoroheptanoic acid (ND) | 4 Perfluoroheptanoic acid (ND)



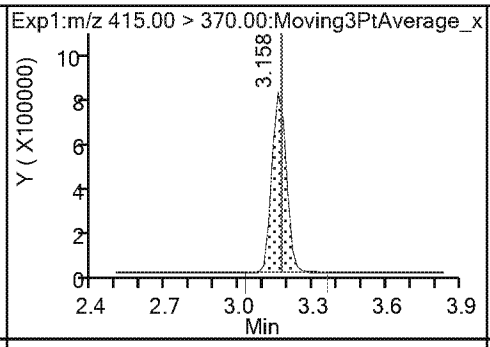
3 Perfluorohexanesulfonic acid (ND) | 3 Perfluorohexanesulfonic acid (ND) | 24 DONA (ND)



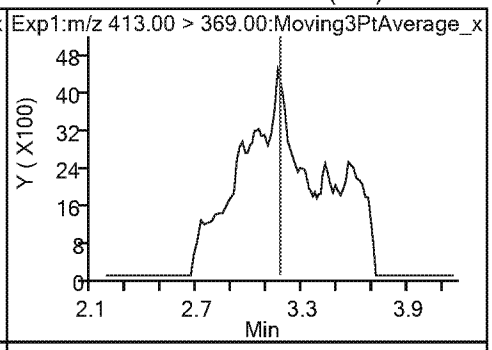
24 DONA (ND)



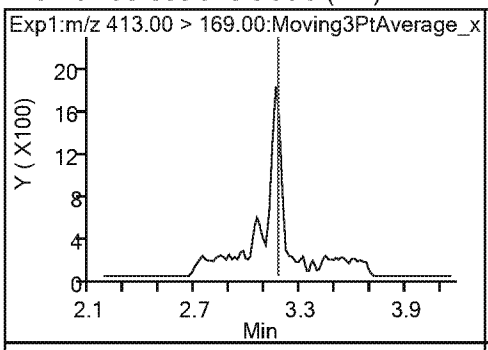
* 5 13C2 PFOA



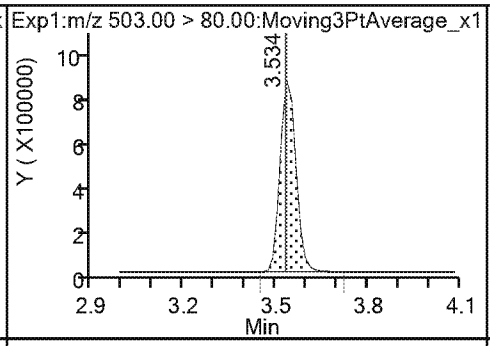
6 Perfluorooctanoic acid (ND)



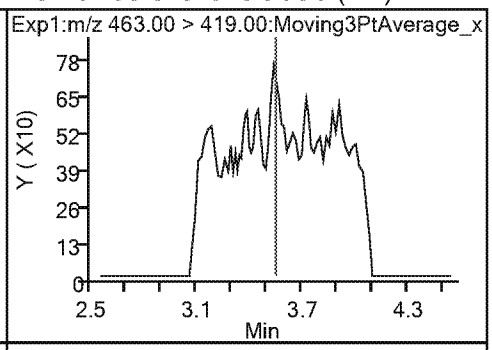
6 Perfluorooctanoic acid (ND)



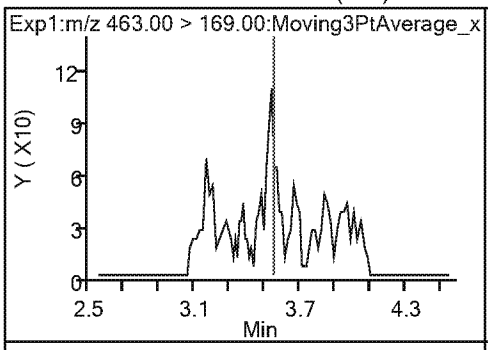
* 7 13C4 PFOS



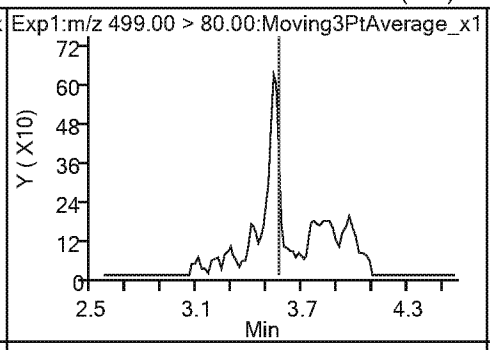
9 Perfluorononanoic acid (ND)



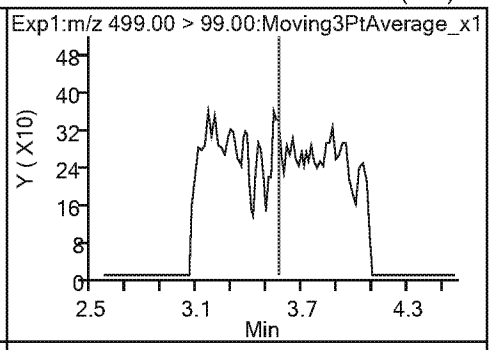
9 Perfluorononanoic acid (ND)



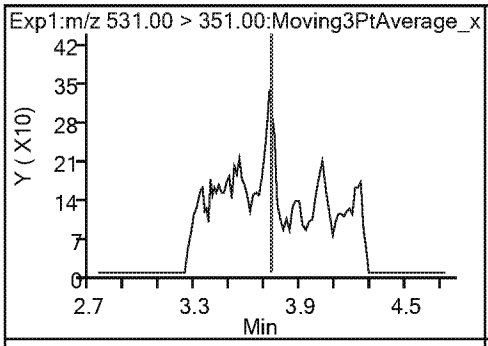
8 Perfluorooctanesulfonic acid (ND)



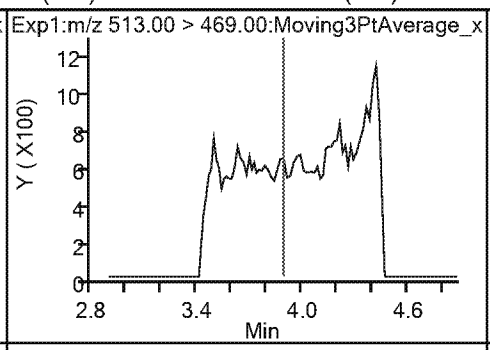
8 Perfluorooctanesulfonic acid (ND)



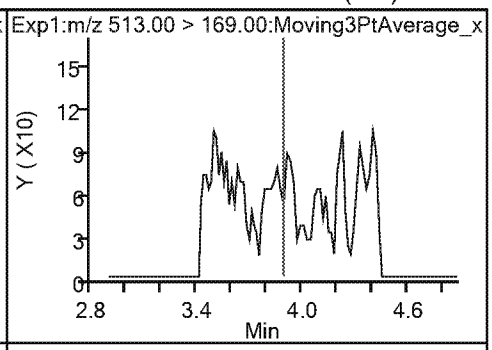
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



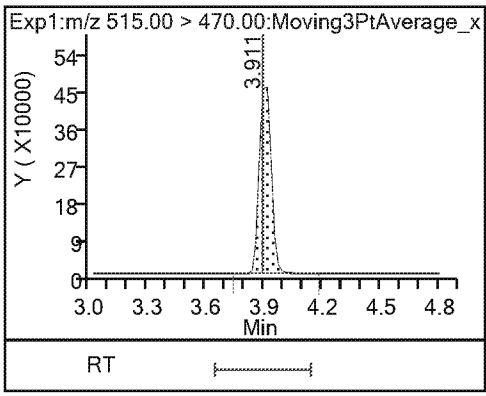
14 Perfluorodecanoic acid (ND)



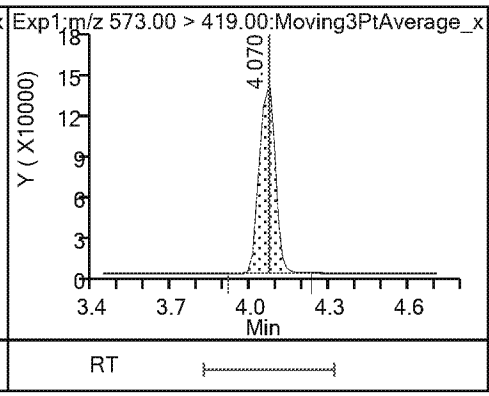
14 Perfluorodecanoic acid (ND)



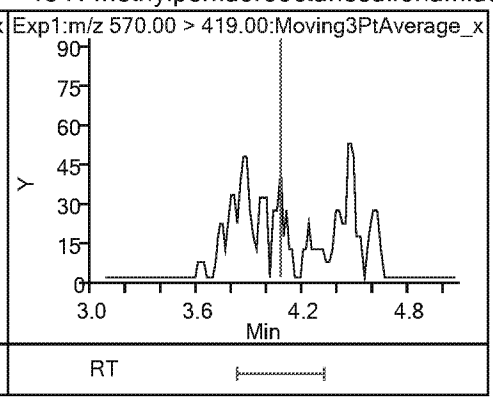
$ 10 13C2 PFDA



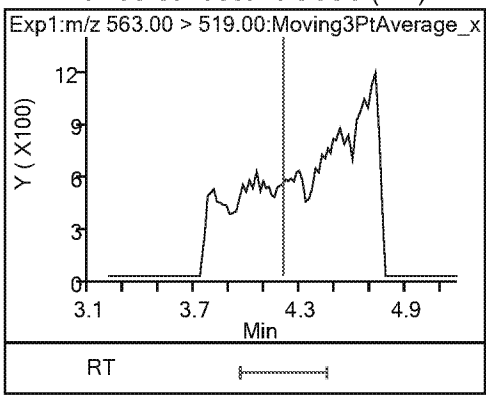
* 12 d3-NMeFOSAA



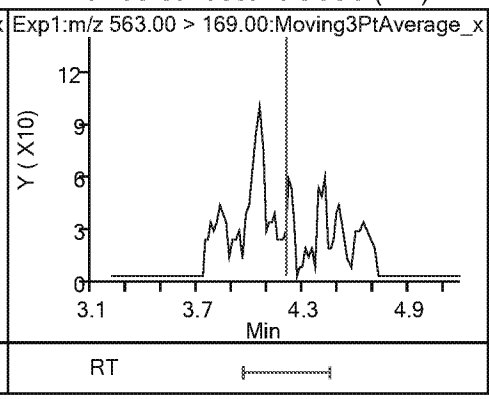
15 N-methylperfluorooctanesulfonamido (ND)



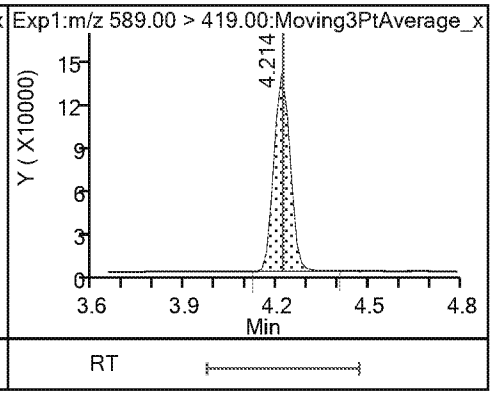
17 Perfluoroundecanoic acid (ND)



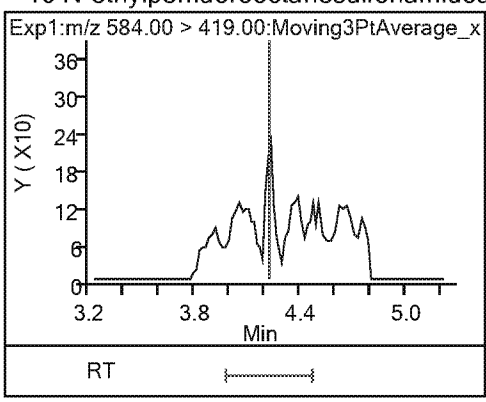
17 Perfluoroundecanoic acid (ND)



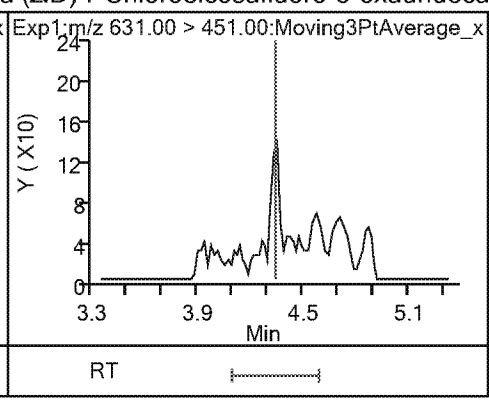
$ 11 d5-NEtFOSAA



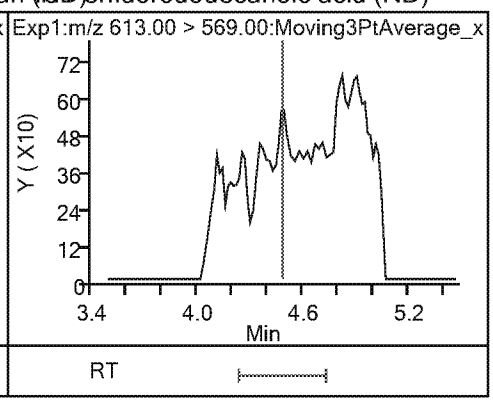
16 N-ethylperfluorooctanesulfonamidoa (ND)



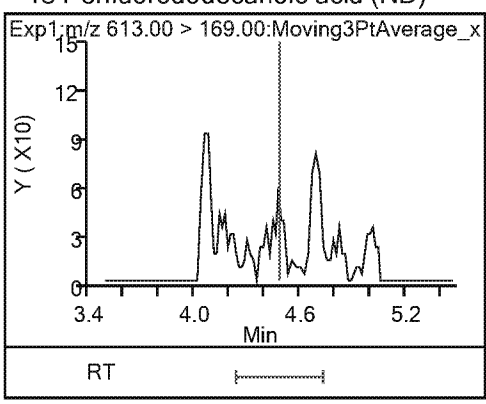
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



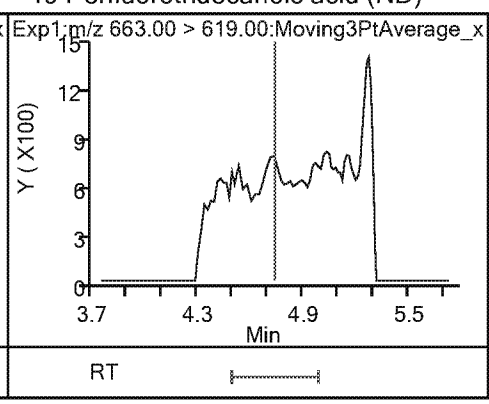
18 Perfluorododecanoic acid (ND)



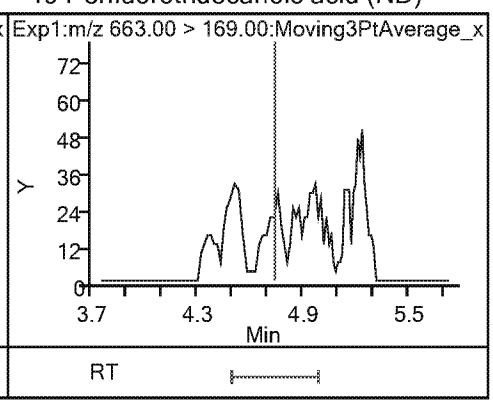
18 Perfluorododecanoic acid (ND)



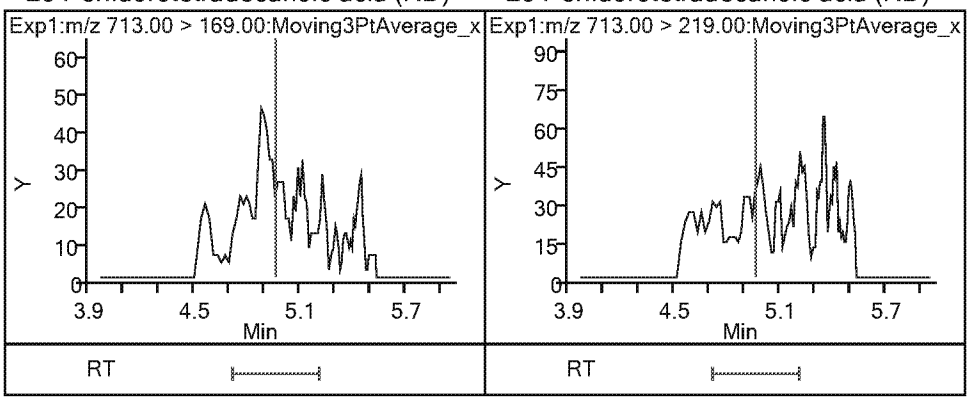
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_057.d
Lims ID: 320-48799-A-9-A
Client ID: C0AW7
Sample Type: Client
Inject. Date: 05-Apr-2019 03:23:12 ALS Bottle#: 40 Worklist Smp#: 53
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-9-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:46:32 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:29:12

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.34	93.41
$ 25 13C3 HFPO-DA	2.50	2.90	116.12
$ 10 13C2 PFDA	2.50	2.54	101.49
$ 11 d5-NEtFOSAA	2.50	2.21	88.21

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID: C0AW8
Lab Sample ID: 320-48799-10
Matrix: Water
Lab File ID: 2019.04.04_537AA_058.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 10:00
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 277.1(mL)
Date Analyzed: 04/05/2019 03:32
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286198
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		1.8	0.86
335-67-1	Perfluorooctanoic acid	ND		5.4	2.4
375-95-1	Perfluorononanoic acid	ND		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.58
375-85-9	Perfluoroheptanoic acid	ND		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	86		70-130
STL00996	13C2 PFDA	105		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_058.d
Lims ID: 320-48799-A-10-A
Client ID: C0AW8
Sample Type: Client
Inject. Date: 05-Apr-2019 03:32:41 ALS Bottle#: 41 Worklist Smp#: 54
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:30:03 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

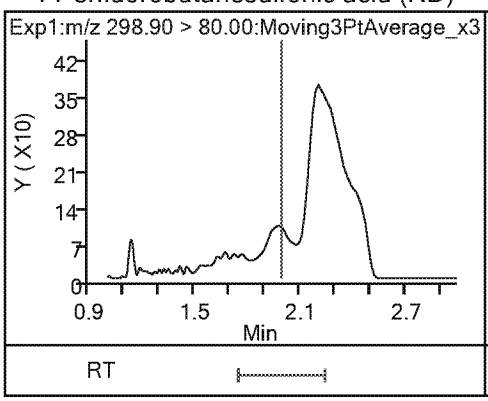
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:29:21
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	2928988	2.14		8279	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.474	0.0	1.000	161576	2.63		985	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.156	0.021		2932932	2.50		9026	
* 7 13C4 PFOS									
503.00 > 80.00	3.535	3.539	-0.004		2951270	2.39		13529	
$ 10 13C2 PFDA									
515.00 > 470.00	3.895	3.899	-0.004	1.000	1910911	2.62		7301	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.073	4.055	0.018		546814	2.50		3203	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.217	4.205	0.012	1.035	520179	2.33		308	

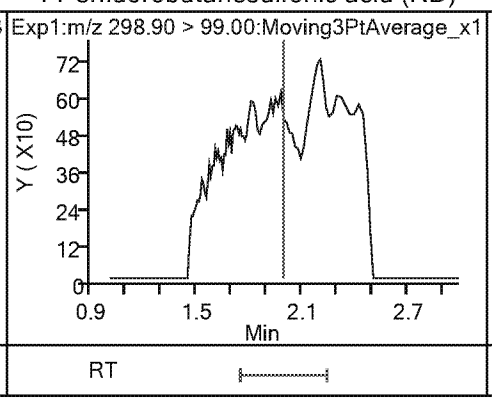
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_058.d				
Injection Date:	05-Apr-2019 03:32:41	Instrument ID:	A8_N		
Lims ID:	320-48799-A-10-A	Lab Sample ID:	320-48799-10		
Client ID:	C0AW8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	41	Worklist Smp#:	54
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

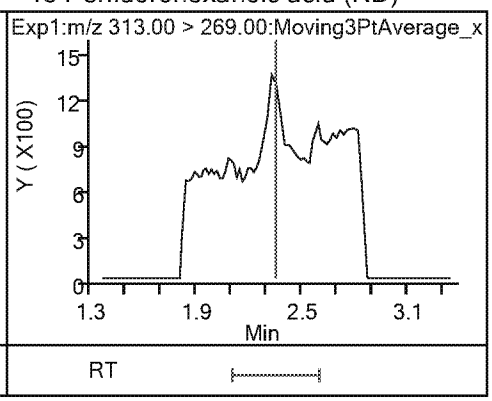
1 Perfluorobutanesulfonic acid (ND)



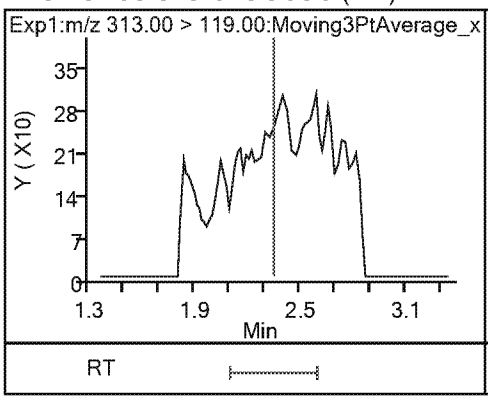
1 Perfluorobutanesulfonic acid (ND)



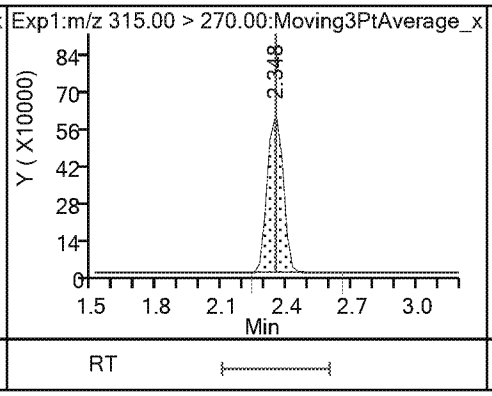
13 Perfluorohexanoic acid (ND)



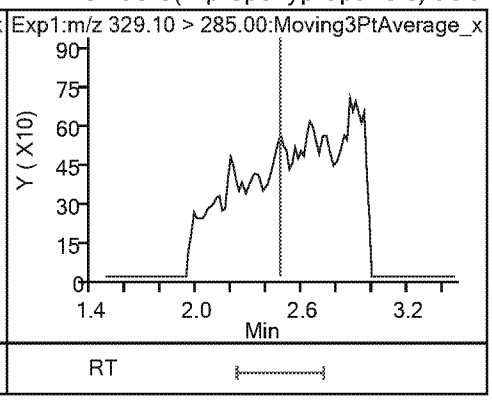
13 Perfluorohexanoic acid (ND)



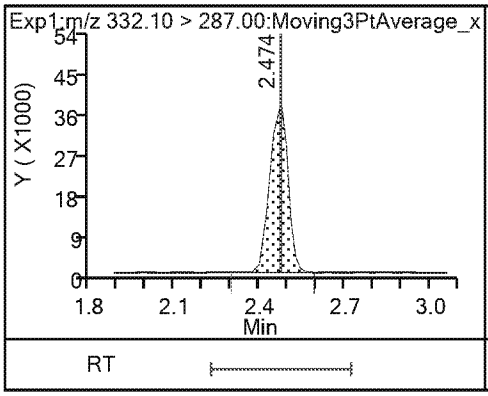
$ 2 13C2 PFHxA



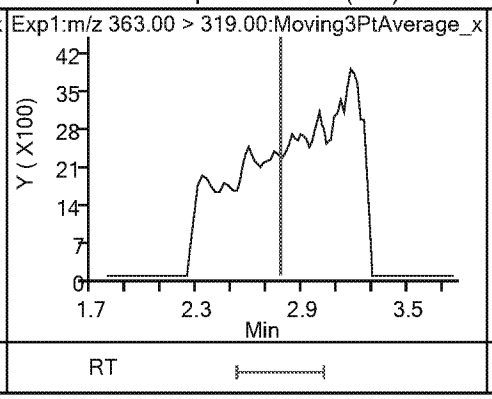
22 Perfluoro(2-propoxypropanoic) acid (ND)



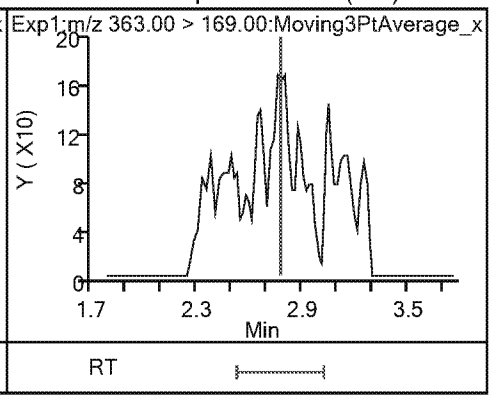
$ 25 13C3 HFPO-DA



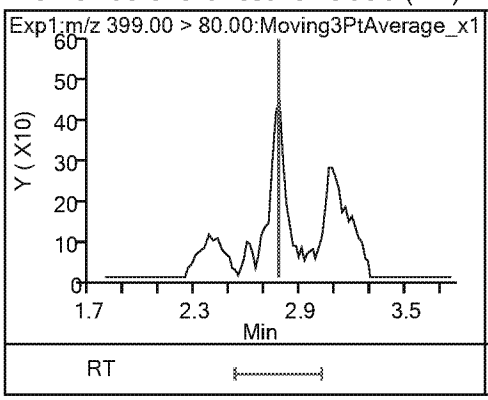
4 Perfluoroheptanoic acid (ND)



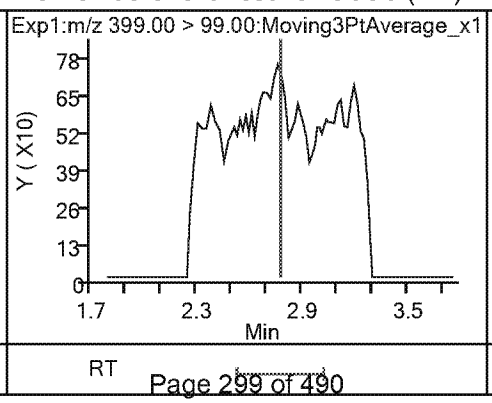
4 Perfluoroheptanoic acid (ND)



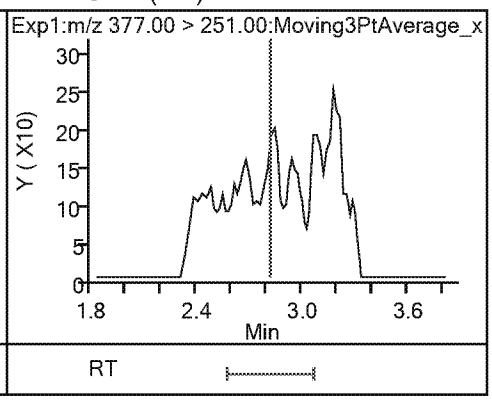
3 Perfluorohexanesulfonic acid (ND)



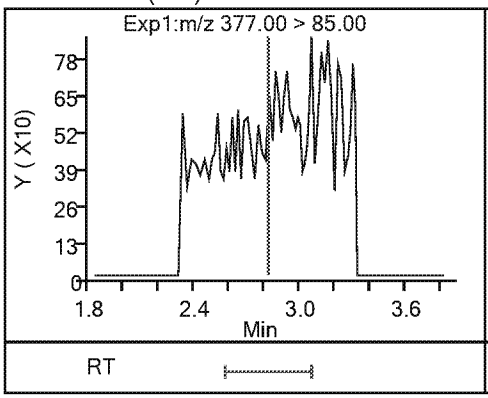
3 Perfluorohexanesulfonic acid (ND)



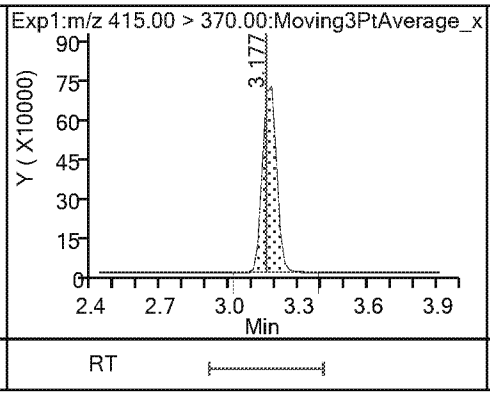
24 DONA (ND)



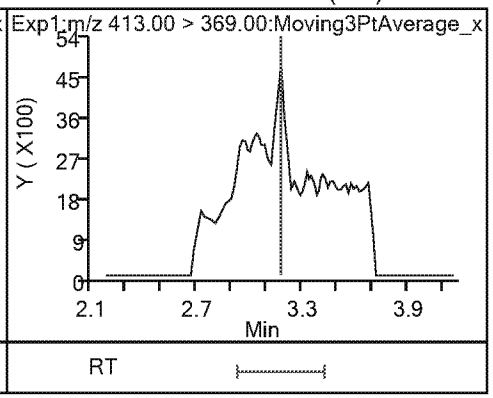
24 DONA (ND)



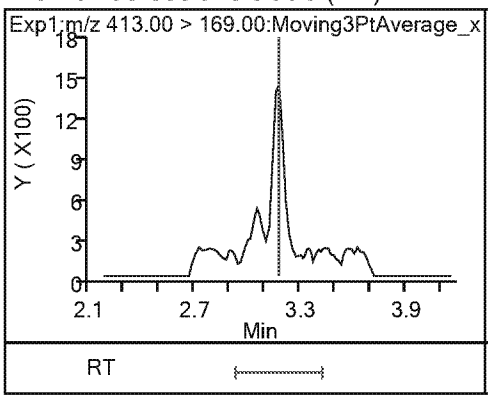
* 5 13C2 PFOA



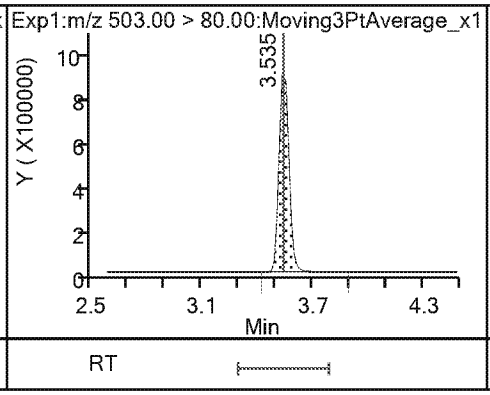
6 Perfluorooctanoic acid (ND)



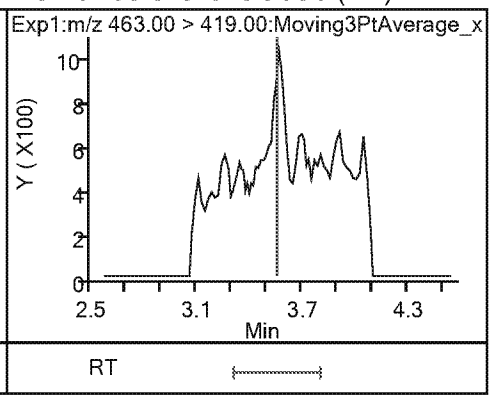
6 Perfluorooctanoic acid (ND)



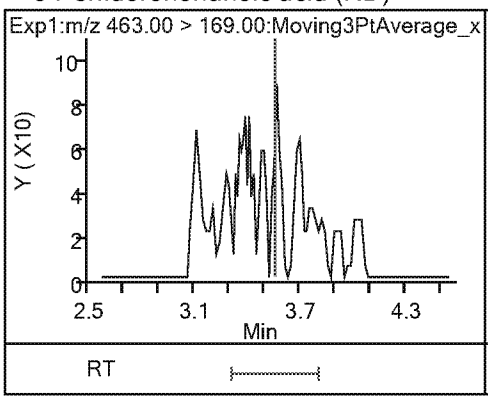
* 7 13C4 PFOS



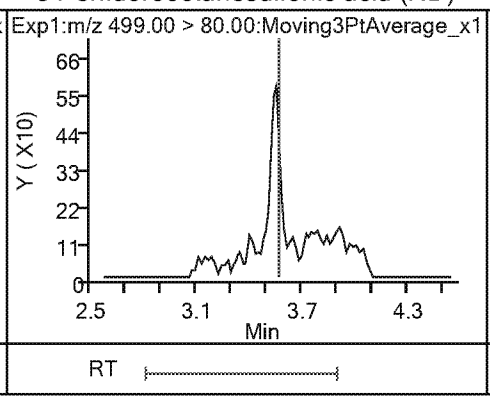
9 Perfluorononanoic acid (ND)



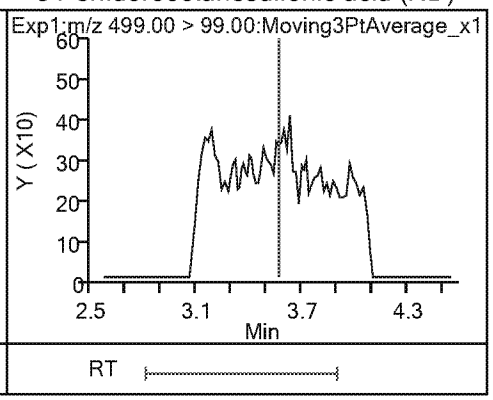
9 Perfluorononanoic acid (ND)



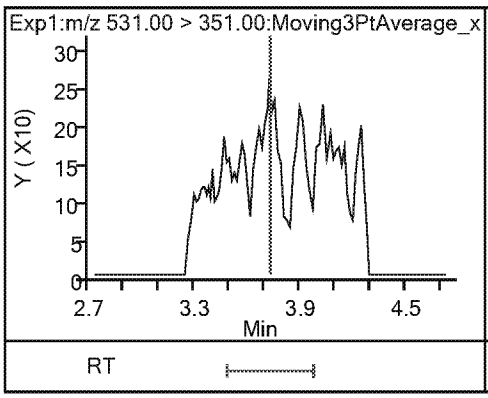
8 Perfluorooctanesulfonic acid (ND)



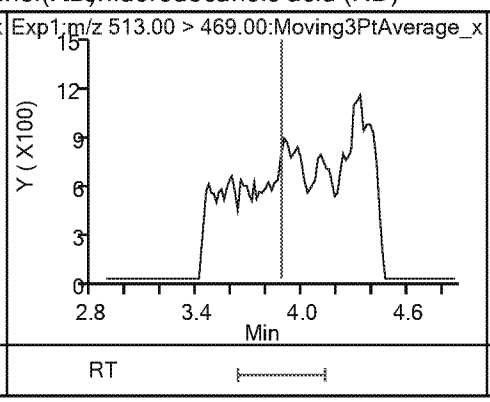
8 Perfluorooctanesulfonic acid (ND)



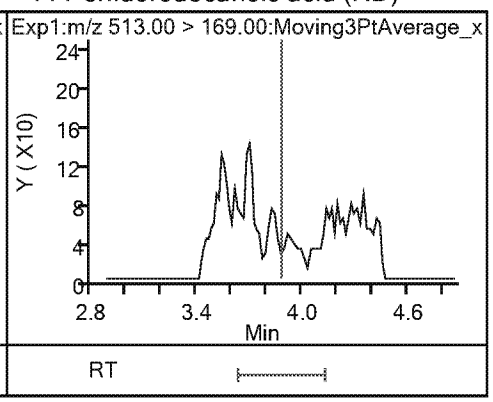
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



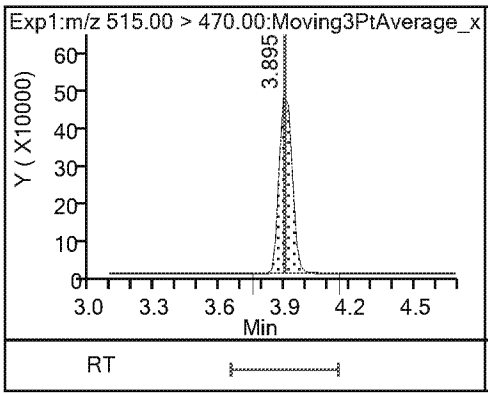
14 Perfluorodecanoic acid (ND)



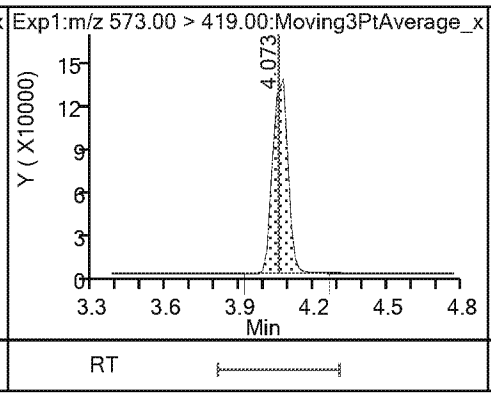
14 Perfluorodecanoic acid (ND)



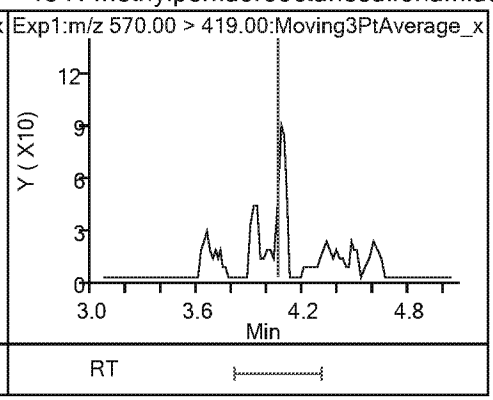
$ 10 13C2 PFDA



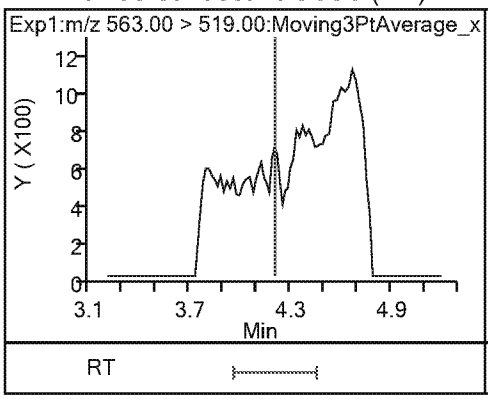
* 12 d3-NMeFOSAA



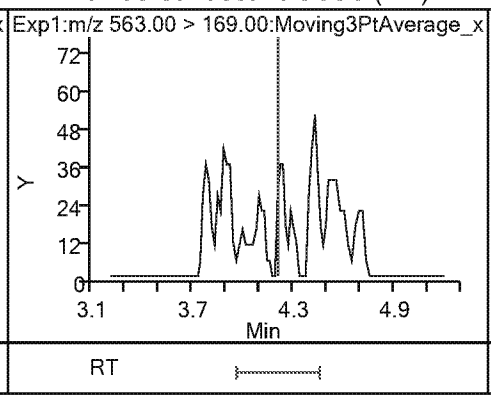
15 N-methylperfluorooctanesulfonamido (ND)



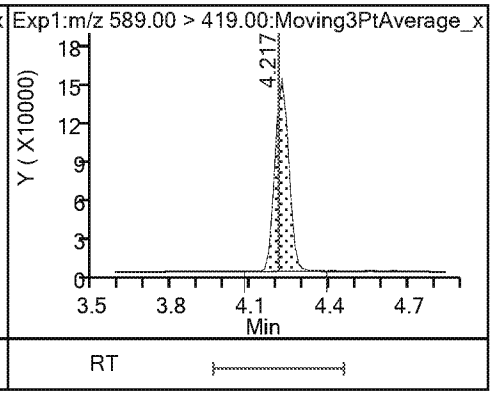
17 Perfluoroundecanoic acid (ND)



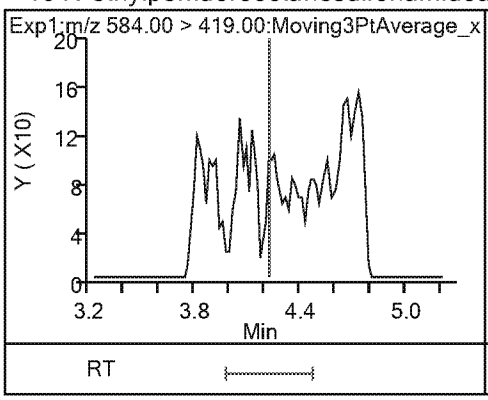
17 Perfluoroundecanoic acid (ND)



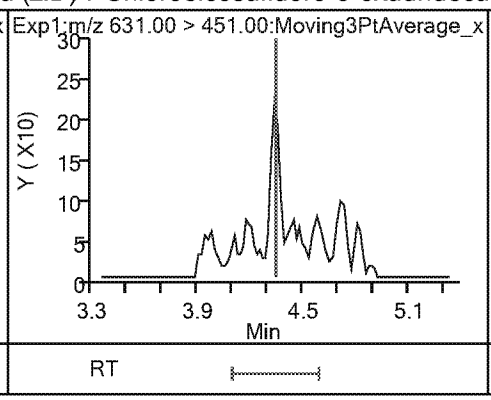
$ 11 d5-NEtFOSAA



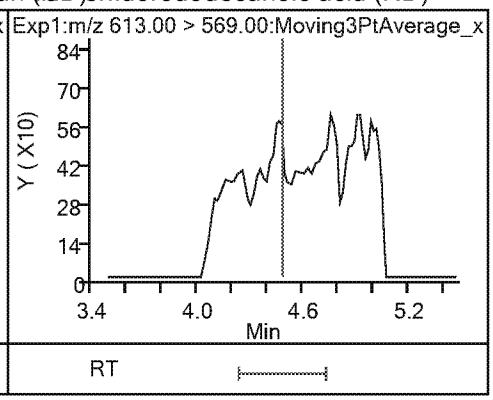
16 N-ethylperfluorooctanesulfonamidoa (ND)



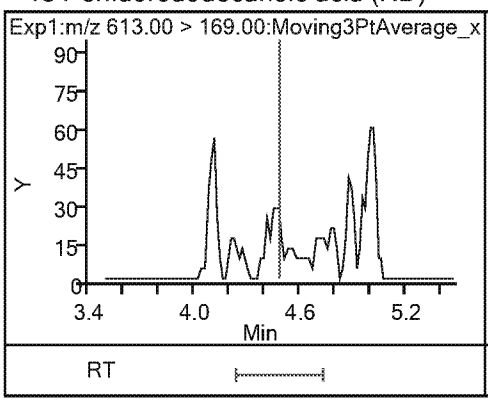
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



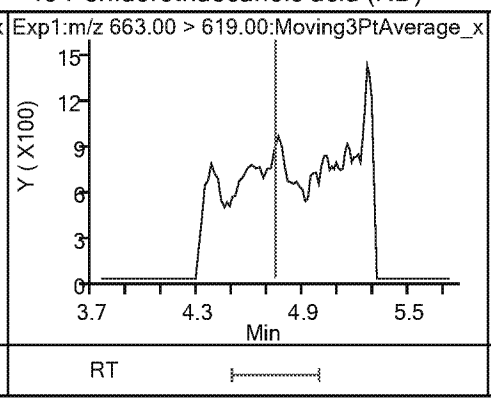
18 Perfluorododecanoic acid (ND)



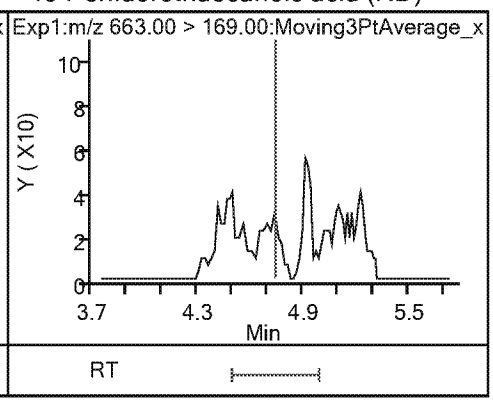
18 Perfluorododecanoic acid (ND)



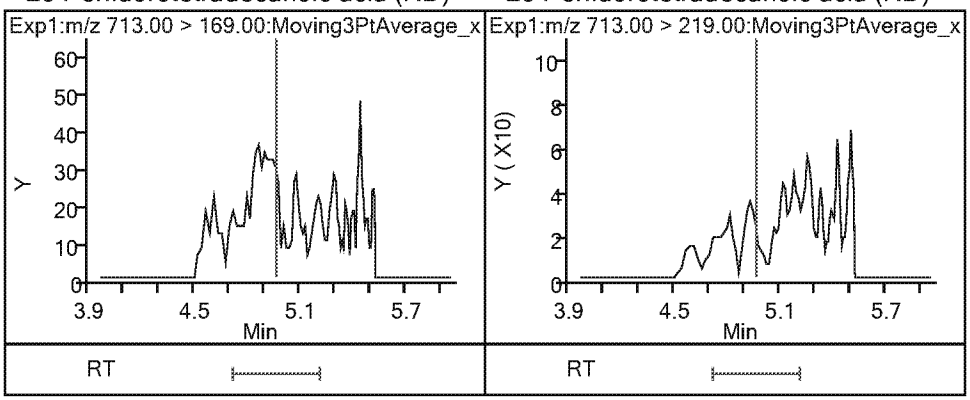
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_058.d
Lims ID: 320-48799-A-10-A
Client ID: C0AW8
Sample Type: Client
Inject. Date: 05-Apr-2019 03:32:41 ALS Bottle#: 41 Worklist Smp#: 54
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48799-a-10-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:30:03 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:29:21

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.14	85.67
$ 25 13C3 HFPO-DA	2.50	2.63	105.22
$ 10 13C2 PFDA	2.50	2.62	104.92
$ 11 d5-NEtFOSAA	2.50	2.33	93.08

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1 Analy Batch No.: 286141

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/04/2019 15:14 Calibration End Date: 04/04/2019 16:11 Calibration ID: 44584

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-286141/2	2019.04.04_537ICAL_003.d
Level 2	IC 320-286141/3	2019.04.04_537ICAL_004.d
Level 3	IC 320-286141/4	2019.04.04_537ICAL_005.d
Level 4	IC 320-286141/5	2019.04.04_537ICAL_006.d
Level 5	IC 320-286141/6	2019.04.04_537ICAL_007.d
Level 6	IC 320-286141/7	2019.04.04_537ICAL_008.d
Level 7	IC 320-286141/8	2019.04.04_537ICAL_009.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanesulfonic acid	1.1455 1.2424	1.1158 1.2378	1.1248	1.1805	1.2214	Ave		1.1812				4.5		30.0			
Perfluorohexanoic acid	1.2371 1.1176	1.0879 1.0876	1.0599	1.1073	1.0927	Ave		1.1129				5.2		30.0			
Perfluoroheptanoic acid	0.9742 1.0999	1.0562 1.0366	1.0309	1.1209	1.1002	Ave		1.0598				4.8		30.0			
Perfluorohexanesulfonic acid	1.4617 1.5204	1.3416 1.4665	1.3513	1.4123	1.4769	Ave		1.4329				4.7		30.0			
Perfluorooctanoic acid	0.9750 1.0460	1.0096 1.0131	1.0084	1.0411	1.0079	Ave		1.0144				2.3		30.0			
Perfluorooctanesulfonic acid	1.0954 1.0967	1.0625 1.0857	0.9806	1.0327	1.0408	Ave		1.0563				4.0		30.0			
Perfluorononanoic acid	0.6755 0.7740	0.7511 0.7302	0.7229	0.7540	0.7651	Ave		0.7390				4.5		30.0			
Perfluorodecanoic acid	0.5771 0.5993	0.5875 0.6033	0.5479	0.5900	0.5900	Ave		0.5850				3.1		30.0			
N-methylperfluorooctanesulfonamidoacetic acid	1.0197 0.9277	0.9715 0.9174	0.8925	0.9295	0.8950	Ave		0.9362				4.8		30.0			
Perfluoroundecanoic acid	0.4528 0.4459	0.4333 0.4591	0.4343	0.4398	0.4465	Ave		0.4445				2.1		30.0			
N-ethylperfluorooctanesulfonamidoacetic acid	1.1483 0.8748	0.8889 0.8519	0.8863	0.8187	0.8860	Ave		0.9078				12.0		30.0			
Perfluorododecanoic acid	0.4185 0.4655	0.4373 0.4687	0.4322	0.4418	0.4553	Ave		0.4456				4.1		30.0			
Perfluorotridecanoic acid	0.3520 0.3523	0.3709 0.3410	0.3287	0.3312	0.3399	Ave		0.3452				4.2		30.0			
Perfluorotetradecanoic acid	0.0917 0.0921	0.0832 0.0901	0.0877	0.0878	0.0889	Ave		0.0888				3.4		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1 Analy Batch No.: 286141

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/04/2019 15:14 Calibration End Date: 04/04/2019 16:11 Calibration ID: 44584

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2 PFHxA	1.1879 1.1947	1.1422 1.1207	1.1667	1.1935	1.1540	Ave		1.1657				2.4		30.0			
13C2 PFDA	0.6274 0.6177	0.6085 0.6494	0.6193	0.6227	0.6019	Ave		0.6210				2.4		30.0			
d5-NEtFOSAA	0.9519 1.0441	0.9957 1.0225	1.0447	1.0223	1.0728	Ave		1.0220				3.8		30.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1 Analy Batch No.: 286141

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/04/2019 15:14 Calibration End Date: 04/04/2019 16:11 Calibration ID: 44584

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-286141/2	2019.04.04_537ICAL_003.d
Level 2	IC 320-286141/3	2019.04.04_537ICAL_004.d
Level 3	IC 320-286141/4	2019.04.04_537ICAL_005.d
Level 4	IC 320-286141/5	2019.04.04_537ICAL_006.d
Level 5	IC 320-286141/6	2019.04.04_537ICAL_007.d
Level 6	IC 320-286141/7	2019.04.04_537ICAL_008.d
Level 7	IC 320-286141/8	2019.04.04_537ICAL_009.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanesulfonic acid	PFOS	Ave	34283 6676217	70736 14397998	365410	1363203	3776349	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
Perfluorohexanoic acid	13PF OA	Ave	39603 6570391	73839 13870209	366230	1365572	3660025	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid	13PF OA	Ave	31188 6466379	71686 13219525	356195	1382413	3685336	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid	PFOS	Ave	45033 8410185	87547 17559900	451894	1678854	4700666	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
Perfluorooctanoic acid	13PF OA	Ave	31214 6149648	68527 12919792	348416	1283975	3375931	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctanesulfonic acid	PFOS	Ave	34416 6186361	70706 13257205	334429	1251855	3378099	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid	13PF OA	Ave	21625 4550656	50983 9311450	249795	929844	2562840	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanoic acid	13PF OA	Ave	18475 3523695	39873 7693278	189332	727647	1976324	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-methylperfluorooctanesulfonamidoacetic acid	d3NMFOS	Ave	5346 849063	10728 1913012	46521	178574	453306	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid	13PF OA	Ave	14494 2621382	29412 5855184	150059	542352	1495680	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-ethylperfluorooctanesulfonamidoacetic acid	d3NMFOS	Ave	6020 800676	9816 1776540	46195	157284	448780	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid	13PF OA	Ave	13396 2736549	29680 5976840	149335	544869	1525011	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic acid	13PF OA	Ave	11270 2071195	25173 4348983	113579	408471	1138610	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid	13PF OA	Ave	2935 541723	5648 1148949	30288	108220	297747	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C2 PFHxA	13PF OA	Ave	3802843 3512098	3876289 3572961	4031385	3679673	3865341	2.50 2.50	2.50 2.50	2.50	2.50	2.50

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1 Analy Batch No.: 286141

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/04/2019 15:14 Calibration End Date: 04/04/2019 16:11 Calibration ID: 44584

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
13C2 PFDA	13PF OA	Ave	2008530 1815745	2065239 2070372	2139876	1919819	2016255	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d5-NEtFOSAA	d3NM FOS	Ave	499069 477831	549768 533085	544536	490987	543402	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:
Ave = Average ISTD

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1 Analy Batch No.: 286141

SDG No.:

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/04/2019 15:14 Calibration End Date: 04/04/2019 16:11 Calibration ID: 44584

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-286141/2	2019.04.04_537ICAL_003.d
Level 2	IC 320-286141/3	2019.04.04_537ICAL_004.d
Level 3	IC 320-286141/4	2019.04.04_537ICAL_005.d
Level 4	IC 320-286141/5	2019.04.04_537ICAL_006.d
Level 5	IC 320-286141/6	2019.04.04_537ICAL_007.d
Level 6	IC 320-286141/7	2019.04.04_537ICAL_008.d
Level 7	IC 320-286141/8	2019.04.04_537ICAL_009.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanesulfonic acid	-3.0 4.8	-5.5	-4.8	-0.1	3.4	5.2	50 30	30	30	30	30	30
Perfluorohexanoic acid	11.2 -2.3	-2.2	-4.8	-0.5	-1.8	0.4	50 30	30	30	30	30	30
Perfluoroheptanoic acid	-8.1 -2.2	-0.3	-2.7	5.8	3.8	3.8	50 30	30	30	30	30	30
Perfluorohexanesulfonic acid	2.0 2.3	-6.4	-5.7	-1.4	3.1	6.1	50 30	30	30	30	30	30
Perfluorooctanoic acid	-3.9 -0.1	-0.5	-0.6	2.6	-0.6	3.1	50 30	30	30	30	30	30
Perfluorooctanesulfonic acid	3.7 2.8	0.6	-7.2	-2.2	-1.5	3.8	50 30	30	30	30	30	30
Perfluorononanoic acid	-8.6 -1.2	1.6	-2.2	2.0	3.5	4.7	50 30	30	30	30	30	30
Perfluorodecanoic acid	-1.4 3.1	0.4	-6.3	0.9	0.9	2.4	50 30	30	30	30	30	30
N-methylperfluorooctanesulfonamidoacetic acid	8.9 -2.0	3.8	-4.7	-0.7	-4.4	-0.9	50 30	30	30	30	30	30
Perfluoroundecanoic acid	1.9 3.3	-2.5	-2.3	-1.1	0.5	0.3	50 30	30	30	30	30	30
N-ethylperfluorooctanesulfonamidoacetic acid	26.5 -6.2	-2.1	-2.4	-9.8	-2.4	-3.6	50 30	30	30	30	30	30
Perfluorododecanoic acid	-6.1 5.2	-1.9	-3.0	-0.8	2.2	4.5	50 30	30	30	30	30	30
Perfluorotridecanoic acid	2.0 -1.2	7.5	-4.8	-4.0	-1.5	2.1	50 30	30	30	30	30	30
Perfluorotetradecanoic acid	3.3 1.5	-6.3	-1.3	-1.2	0.1	3.8	50 30	30	30	30	30	30
13C2 PFHxA	1.9 -3.9	-2.0	0.1	2.4	-1.0	2.5	30 30	30	30	30	30	30

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1 Analy Batch No.: 286141

SDG No.:

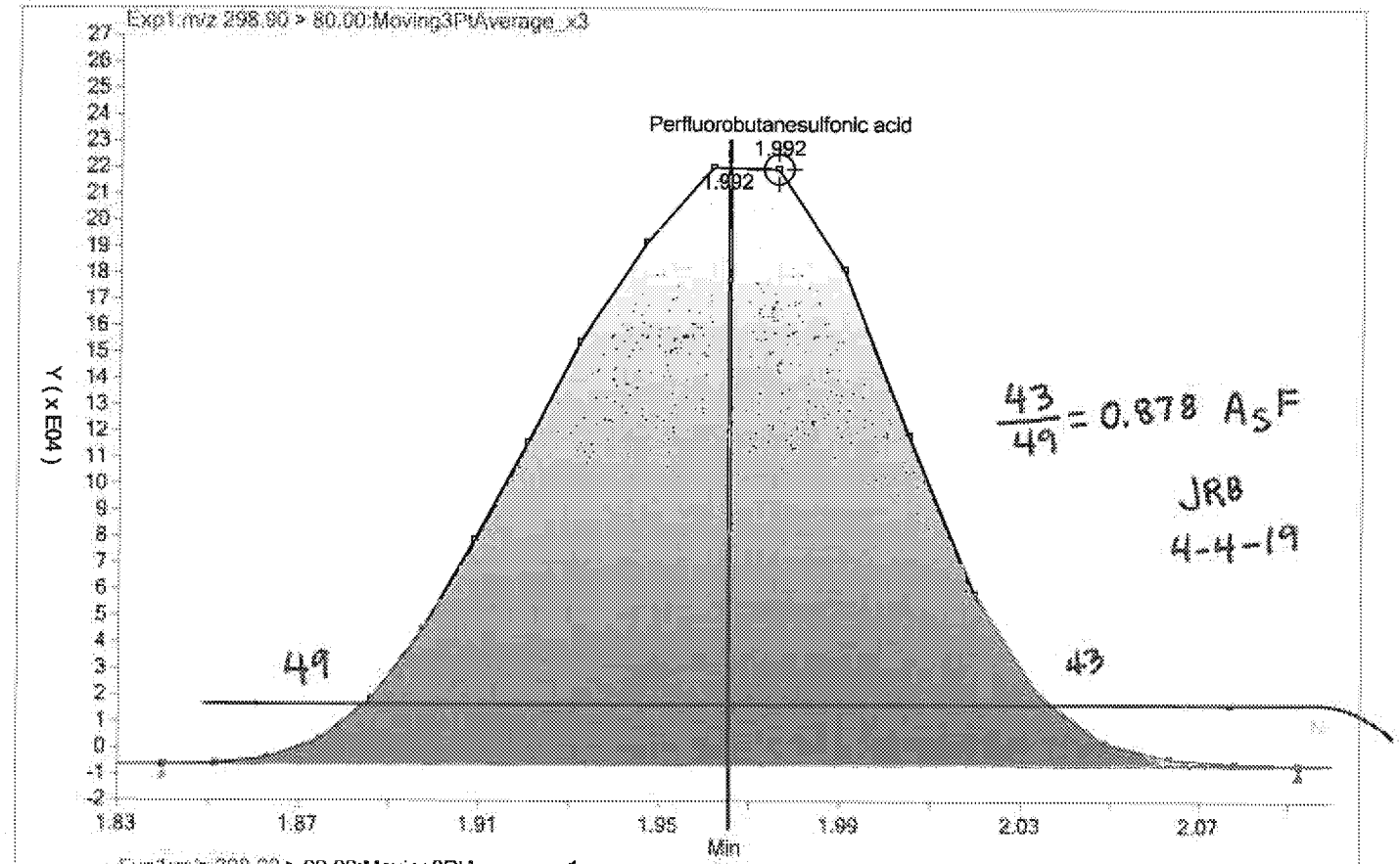
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

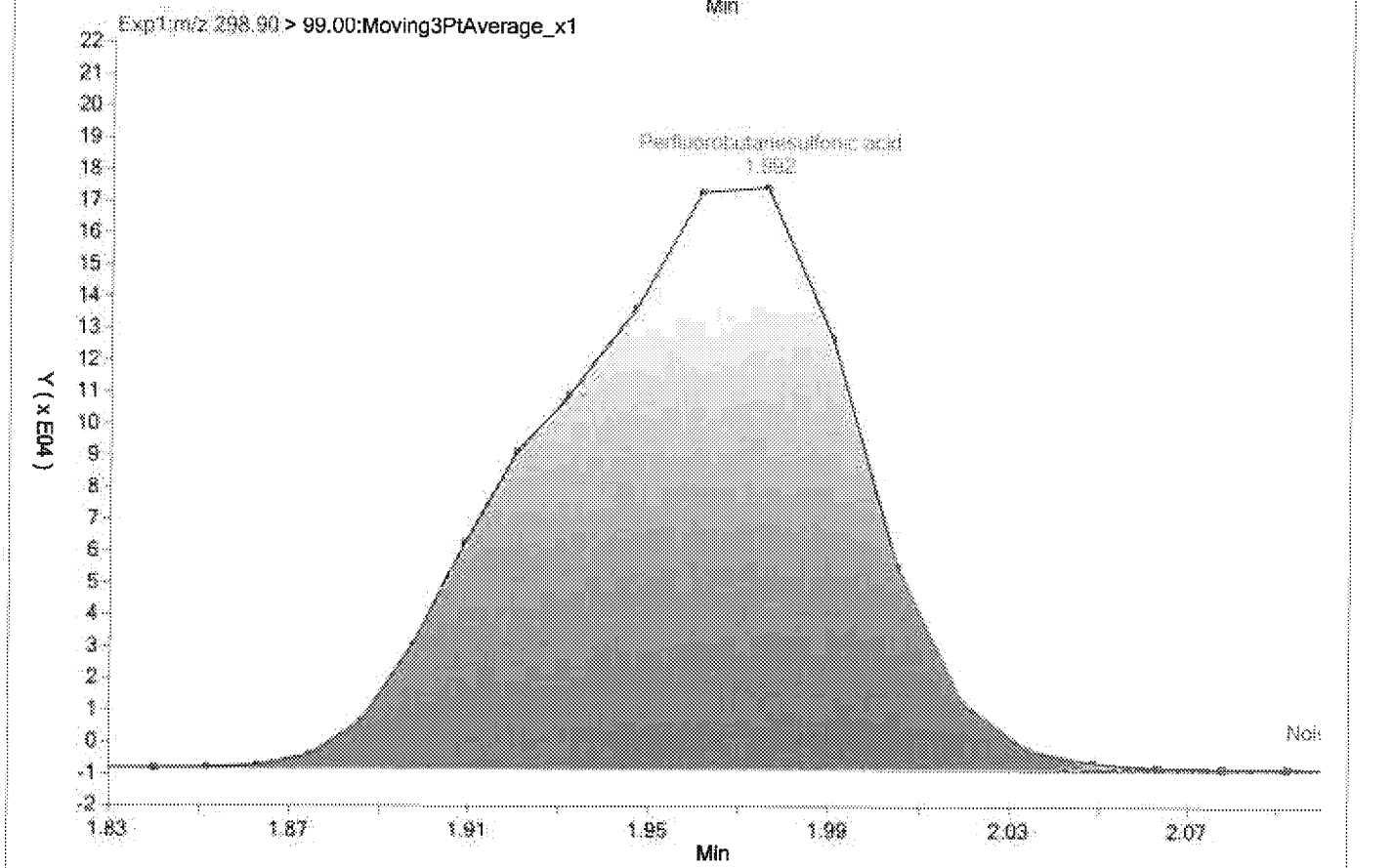
Calibration Start Date: 04/04/2019 15:14 Calibration End Date: 04/04/2019 16:11 Calibration ID: 44584

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
13C2 PFDA	1.0 4.6	-2.0	-0.3	0.3	-3.1	-0.5	30 30	30	30	30	30	30
d5-NEtFOSAA	-6.9 0.1	-2.6	2.2	0.0	5.0	2.2	30 30	30	30	30	30	30

Chromatogram

IC L4 EXP1





Chrom

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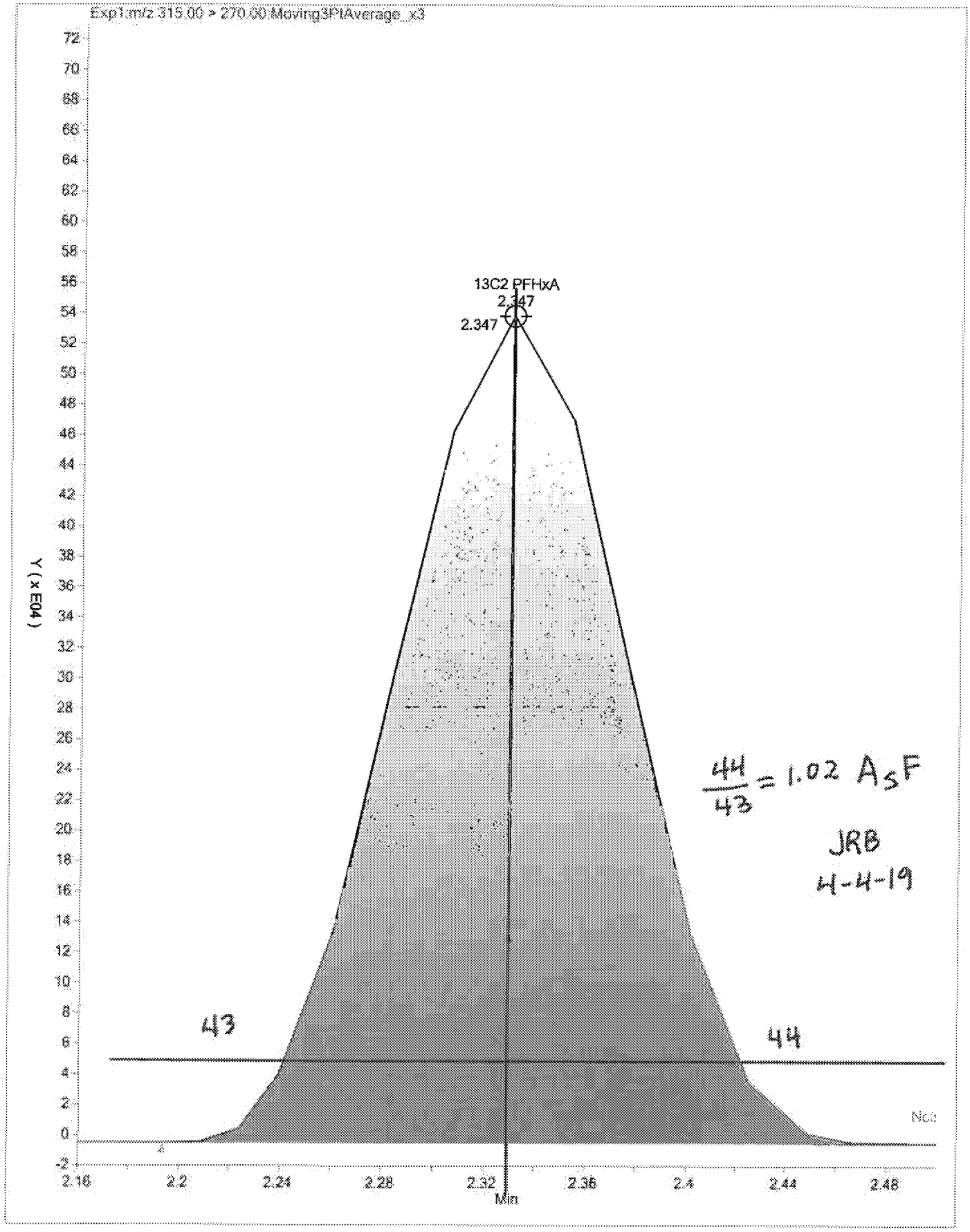
Chromatogram

IC L4 EXP1



Chrom

Printed: 4/4/2019 4:28:33 PM

Report Date: 04-Apr-2019 16:30:14 Chrom Revision: 2.3 24-Mar-2019 20:11:00 Page: 1

TestAmerica Laboratories
Istd/Surrogate Recovery Report

Worklist Name: 04APR2019_ICAL_537.1FULL Worklist Num: 74310
Instrument: A8_N Method: 537_A8_N
Batch Directory: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b
Limit Group: LC 537 ICAL
Analysis Type: SemiVOA
Inj Volume: 10.00 Inj Vol Units: ul

Lims Batch: 286141
CCV IS Mode: Select Ical Level, Cal Level: 3
Non-Cal IS Mode: Last Ccal Sample

$ 2 13C2 PFHxA
$ 25 13C3 HFPO-DA
$ 10 13C2 PFDA
$ 11 d5-NEtFOSAA

Lab ID Inj Date	$ 2	$ 25	$ 10	$ 11	* 5 13C2 PFOA	* 7 13C4 PFOS	* 12 d3-NMeFOSAA
IS Std					3470982 3.18	3333456 3.55	523350 4.09
# 1 RB 04-Apr-2019 15:04:54					3.18 3162121 91.1	3.56 3129834 93.9	4.09 447905 85.6
IS Std							
# 2 IC L1 04-Apr-2019 15:14:19	2.35 101.90	2.49 103.70	3.93 101.00	4.25 93.14	3.20 3201298> 100.0*	3.56 3236558> 100.0*	4.09 524272> 100.0*
# 3 IC L2 04-Apr-2019 15:23:44	2.35 97.99	2.49 98.82	3.93 98.00	4.25 97.43	3.18 3393730> 106.0*	3.56 3427796> 105.9*	4.09 552133> 105.3*
# 4 IC L3 04-Apr-2019 15:33:14	2.35 100.10	2.47 99.39	3.93 99.73	4.24 102.20	3.18 3455285> 107.9*	3.56 3513279> 108.5*	4.09 521234> 99.4*
# 5 IC L4 04-Apr-2019 15:42:43	2.35 102.40	2.47 109.10	3.92 100.30	4.23 100.00	3.18 3083165> 96.3*	3.55 3122011> 96.5*	4.09 480279> 91.6*
# 6 IC L5 04-Apr-2019 15:52:12	2.35 99.00	2.49 98.94	3.93 96.93	4.25 105.00	3.20 3349568> 104.6*	3.56 3343739> 103.3*	4.09 506515> 96.6*
# 7 IC L6 04-Apr-2019 16:01:40	2.35 102.50	2.47 96.37	3.93 99.47	4.24 102.20	3.19 2939637> 91.8*	3.57 2905553> 89.8*	4.09 457634> 87.3*
# 8 IC L7 04-Apr-2019 16:11:08	2.35 96.14	2.47 93.74	3.94 104.60	4.24 100.10	3.19 3188191> 99.6*	3.57 3144931> 97.2*	4.10 521333> 99.4*

13C2 PFOA

$$RPD = \frac{3456285 - 2939637}{\left(\frac{3456285 + 2939637}{2}\right)} \times 100 = 16.1$$

13C4 PFOS

$$RPD = \frac{3513279 - 2905553}{\left(\frac{3513279 + 2905553}{2}\right)} \times 100 = 18.9$$

d3-NMeFOSAA

$$RPD = \frac{552133 - 457634}{\left(\frac{552133 + 457634}{2}\right)} \times 100 = 18.7$$

JRB
4-4-19

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 04-Apr-2019 15:14:19 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: L1_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 04-Apr-2019 16:55:30 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0339

First Level Reviewer: Ex. 4 CBI Date: 04-Apr-2019 16:24:49
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.008	1.992	0.016	1.000	34283	0.0214	Target=1.00	204	
298.90 > 99.00	1.992	1.992	0.0	0.992	22650		1.51(0.00-0.00)	10.1	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.734	39603	0.0278	Target=1.00	10.2	
313.00 > 119.00	2.347	2.347	0.0	0.734	3841		10.31(0.00-0.00)	4.5	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3802843	2.55		5756	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.490	2.478	0.012	1.000	8850	0.0256		5.3	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.490	2.481	0.009	1.000	173799	2.59		1277	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.778	2.780	-0.002	1.000	31188	0.0230	Target=1.00	3.4	M
363.00 > 169.00	2.778	2.780	-0.002	1.000	14504		2.15(0.00-0.00)	26.4	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.798	2.792	0.006	1.000	45033	0.0232	Target=1.00	71.8	
399.00 > 99.00	2.798	2.792	0.006	1.000	13865		3.25(0.00-0.00)	5.2	M
24 DONA									
377.00 > 251.00	2.840	2.825	0.015	1.000	84245	0.0228	Target=1.00	184	
377.00 > 85.00	2.819	2.825	-0.006	0.993	54993		1.53(0.00-0.00)	5511	
* 5 13C2 PFOA									
415.00 > 370.00	3.196	3.186	0.010		3201298	2.50		10698	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.196	3.186	0.010	1.000	31214	0.0240	Target=1.00	3.9	
413.00 > 169.00	3.196	3.186	0.010	1.000	19438		1.61(0.00-0.00)	25.2	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.564	3.562	0.002		3236558	2.39		8026	
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.564	3.564	0.0	1.000	34416	0.0241	Target=1.00	116	
499.00 > 99.00	3.564	3.564	0.0	1.000	7797		4.41(0.00-0.00)	8.0	M
9 Perfluorononanoic acid									
463.00 > 419.00	3.578	3.577	0.001	1.000	21625	0.0229	Target=1.00	14.7	
463.00 > 169.00	3.578	3.577	0.001	1.000	6649		3.25(0.00-0.00)	58.7	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.769	3.755	0.014	1.000	52950	0.0230		109	
14 Perfluorodecanoic acid									M
513.00 > 469.00	3.915	3.915	0.0	1.000	18475	0.0247	Target=1.00	7.3	M
513.00 > 169.00	3.915	3.915	0.0	1.000	3120		5.92(0.00-0.00)	11.5	
$ 10 13C2 PFDA									
515.00 > 470.00	3.934	3.931	0.003	1.000	2008530	2.53		8101	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.090	4.091	-0.001		524272	2.50		2958	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.090	4.091	-0.001	1.000	5346	0.0272		75.2	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.234	4.236	-0.002	1.000	14494	0.0255	Target=1.00	6.8	
563.00 > 169.00	4.234	4.236	-0.002	1.000	2868		5.05(0.00-0.00)	31.0	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.250	4.243	0.007	1.039	499069	2.33		323	
16 N-ethylperfluorooctanesulfonamidoa									M
584.00 > 419.00	4.250	4.252	-0.002	1.000	6020	0.0316		18.2	M
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.375	4.369	0.006	1.000	66233	0.0230		453	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.508	4.508	0.0	1.000	13396	0.0235	Target=1.00	10.5	
613.00 > 169.00	4.508	4.508	0.0	1.000	3807		3.52(0.00-0.00)	37.5	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.777	4.772	0.005	1.000	11270	0.0255	Target=1.00	4.4	
663.00 > 169.00	4.777	4.772	0.005	1.000	3562		3.16(0.00-0.00)	33.8	
20 Perfluorotetradecanoic acid									M
713.00 > 169.00	4.989	4.985	0.004	1.000	2935	0.0258	Target=1.00	61.4	
713.00 > 219.00	4.989	4.985	0.004	1.000	2080		1.41(0.00-0.00)	19.2	M

QC Flag Legend

Review Flags

M - Manually Integrated

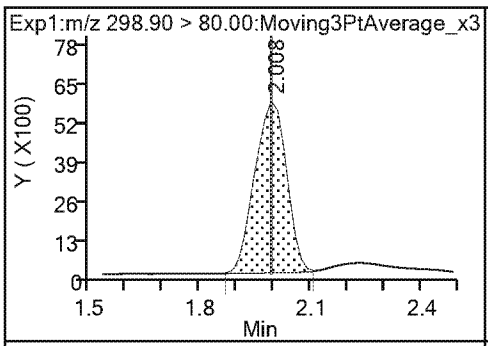
Reagents:

LC537_NC_L1_00004 Amount Added: 1.00 Units: mL

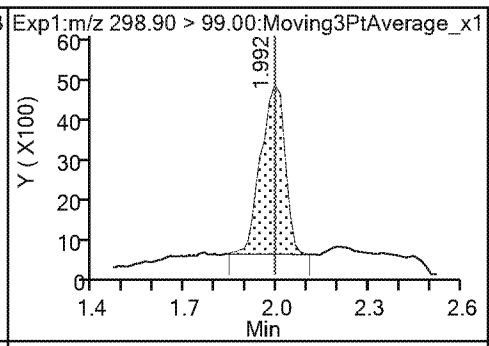
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d
Injection Date: 04-Apr-2019 15:14:19 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

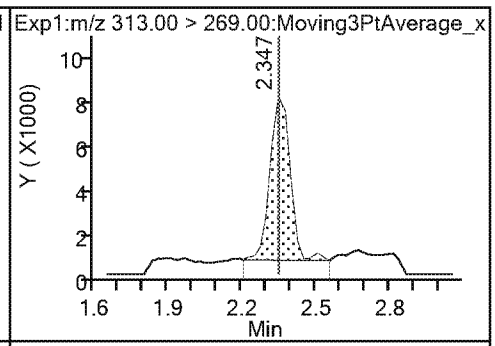
1 Perfluorobutanesulfonic acid



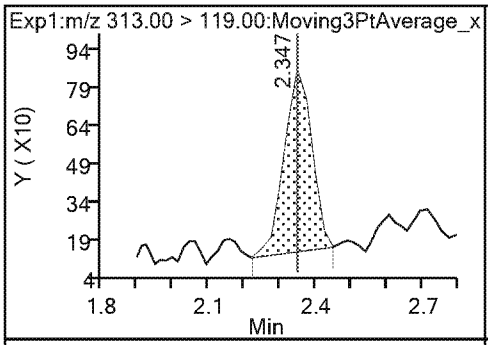
1 Perfluorobutanesulfonic acid



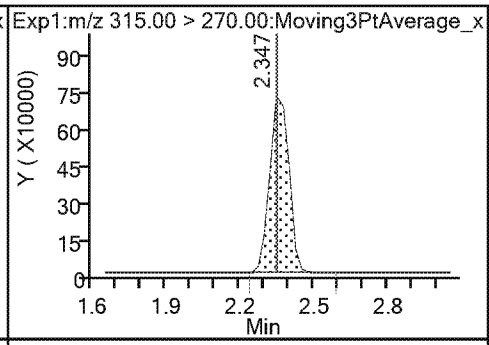
13 Perfluorohexanoic acid



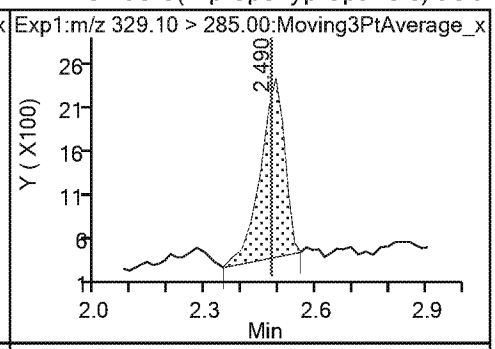
13 Perfluorohexanoic acid



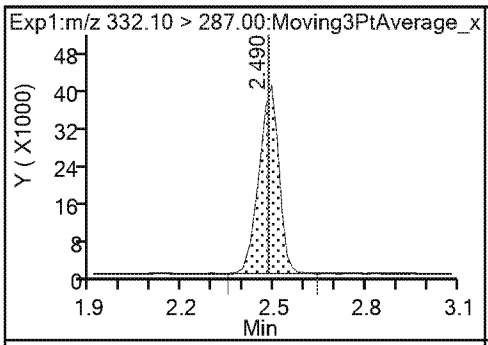
$ 2 13C2 PFHxA



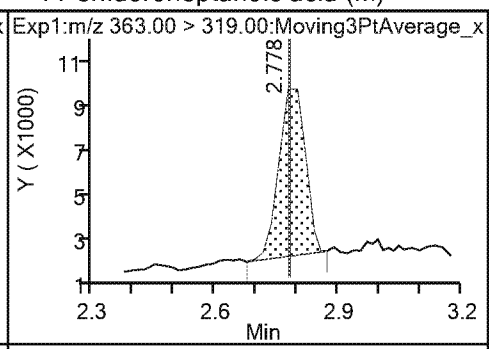
22 Perfluoro(2-propoxypropanoic) acid



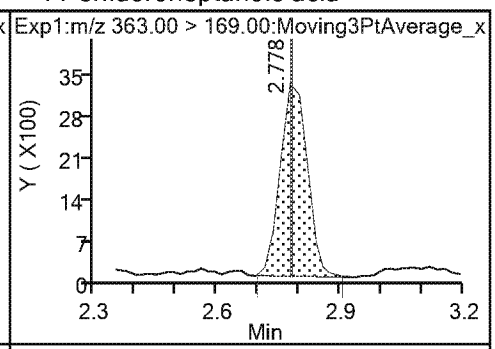
$ 25 13C3 HFPO-DA



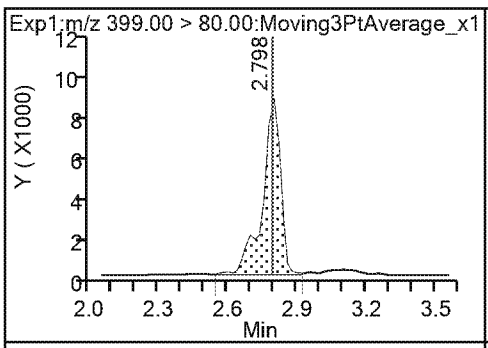
4 Perfluoroheptanoic acid (M)



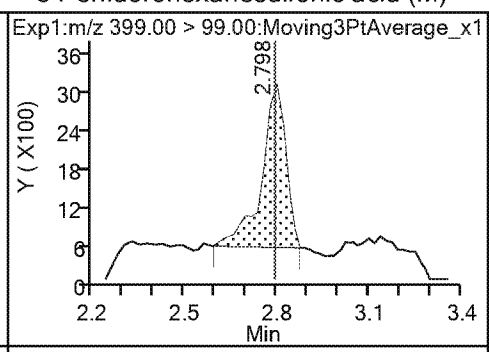
4 Perfluoroheptanoic acid



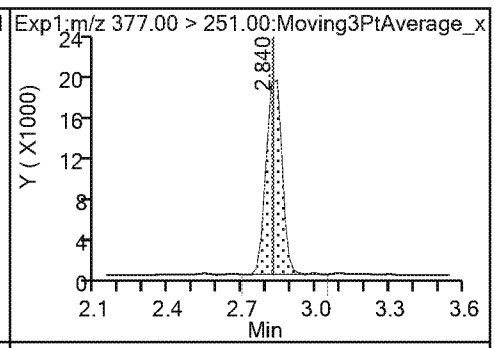
3 Perfluorohexanesulfonic acid



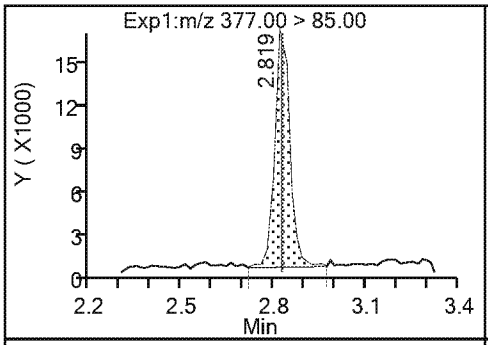
3 Perfluorohexanesulfonic acid (M)



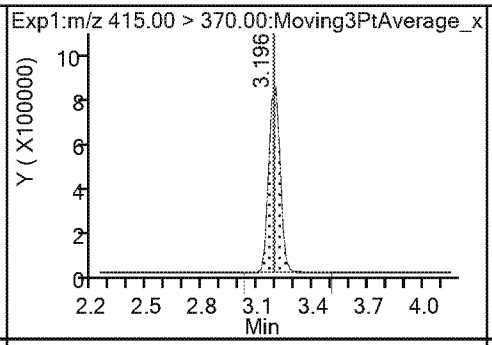
24 DONA



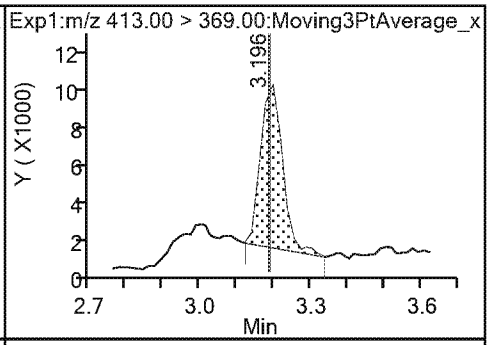
24 DONA



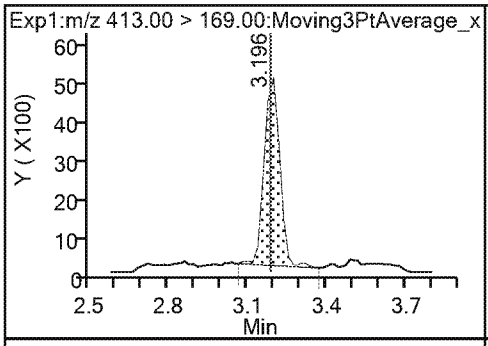
* 5 13C2 PFOA



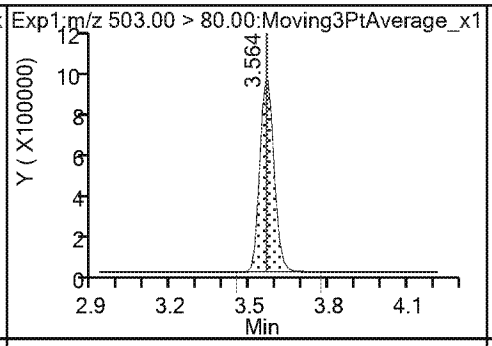
6 Perfluorooctanoic acid



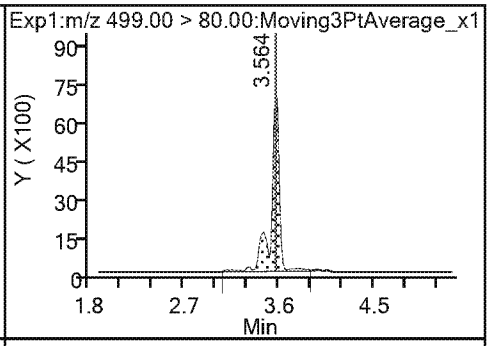
6 Perfluorooctanoic acid



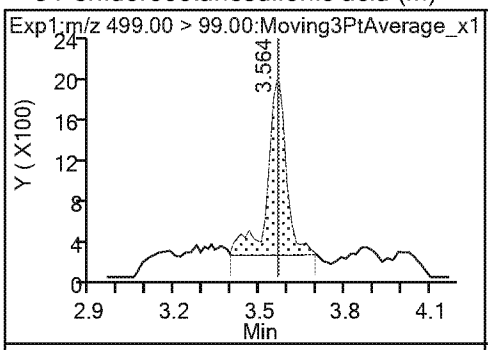
* 7 13C4 PFOS



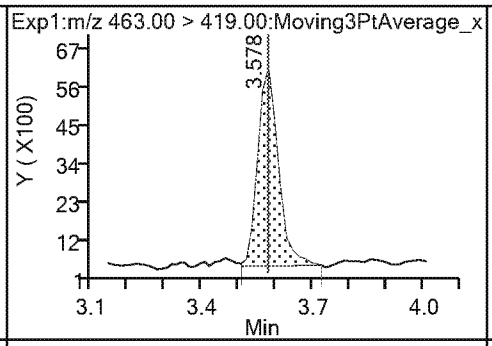
8 Perfluorooctanesulfonic acid



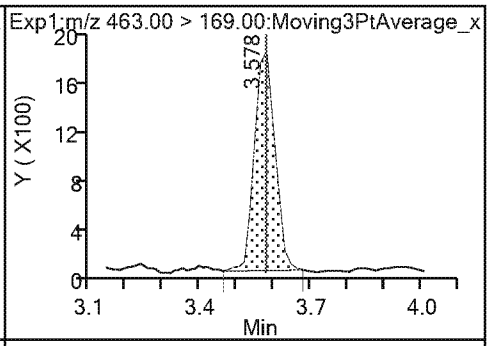
8 Perfluorooctanesulfonic acid (M)



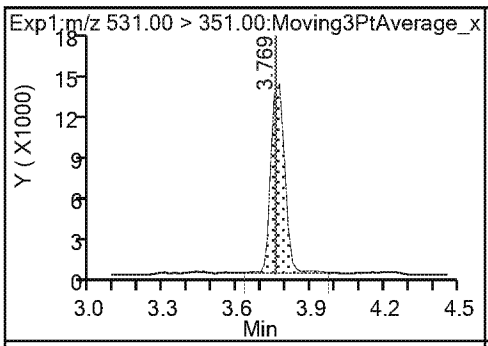
9 Perfluorononanoic acid



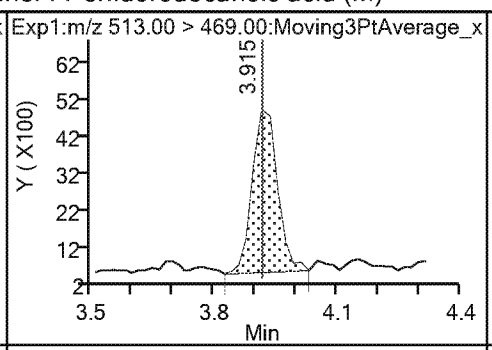
9 Perfluorononanoic acid



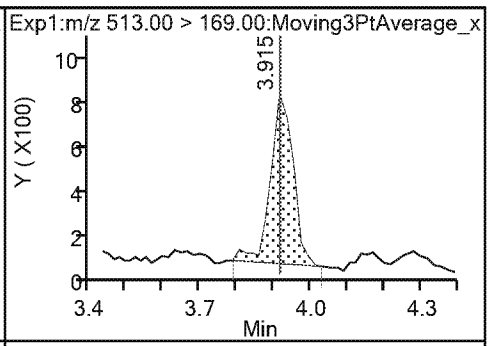
23 9-Chlorohexadecafluoro-3-oxanonane



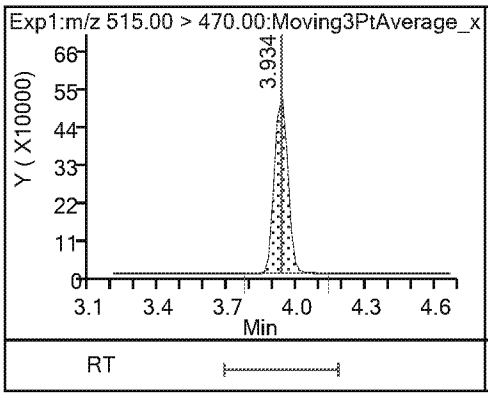
14 Perfluorodecanoic acid (M)



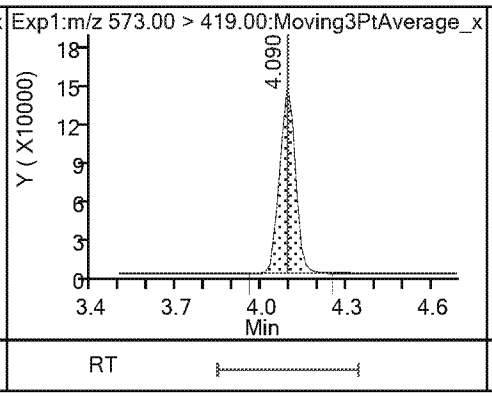
14 Perfluorodecanoic acid



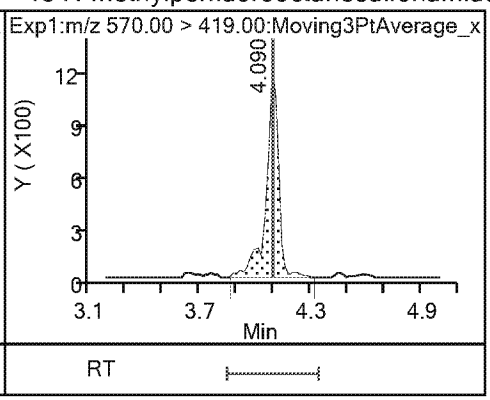
$ 10 13C2 PFDA



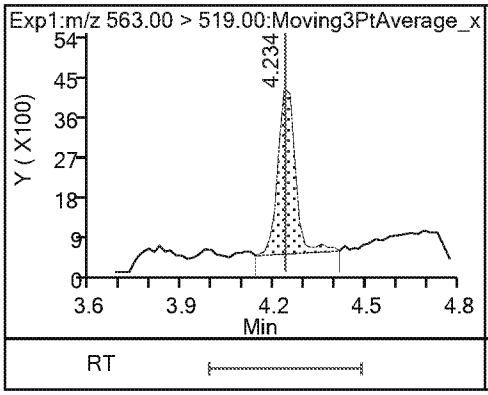
* 12 d3-NMeFOSAA



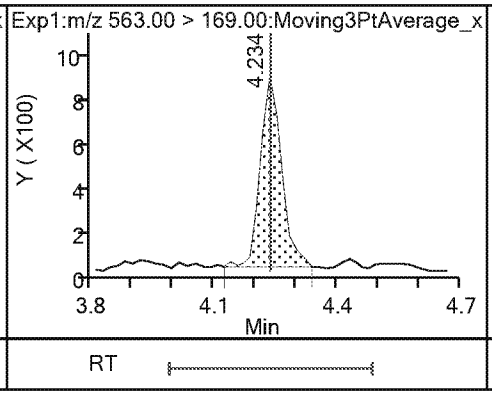
15 N-methylperfluorooctanesulfonamido



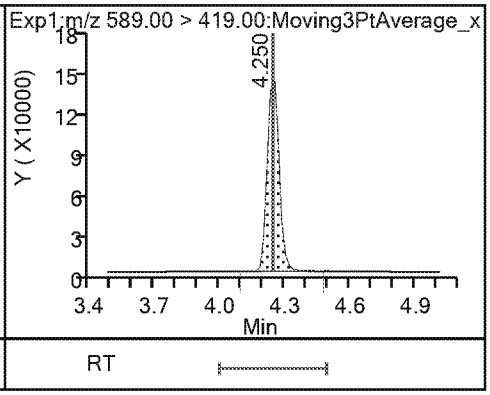
17 Perfluoroundecanoic acid



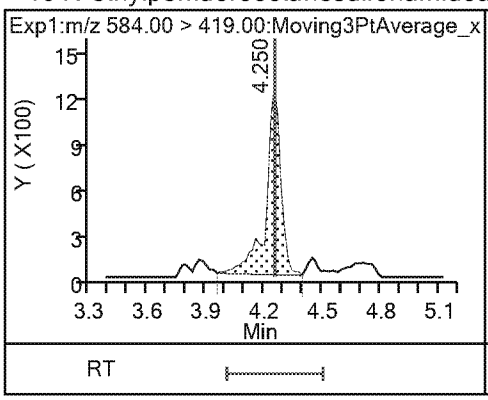
17 Perfluoroundecanoic acid



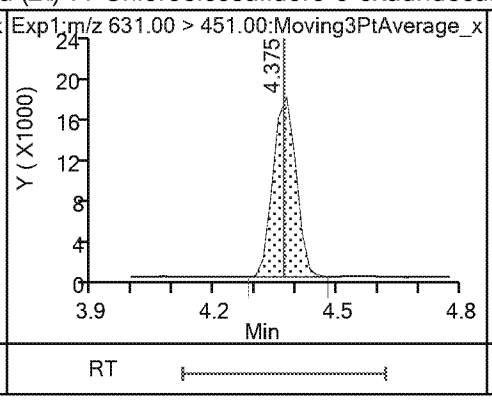
$ 11 d5-NEtFOSAA



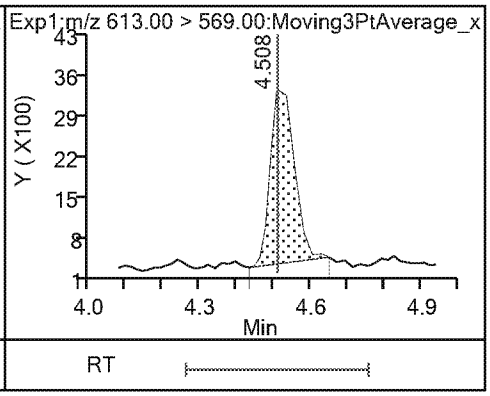
16 N-ethylperfluorooctanesulfonamidoa (2/1)



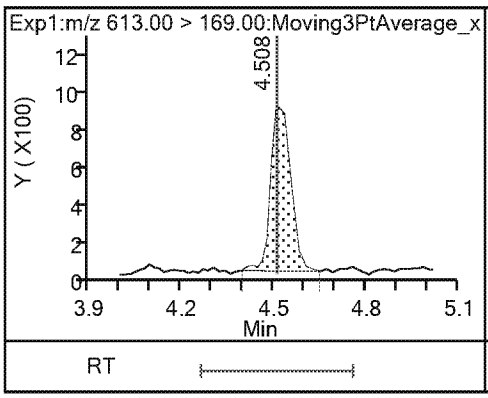
11-Chloroeicosafluoro-3-oxaundecan



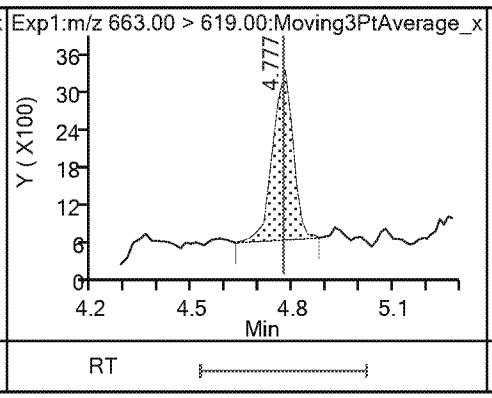
18 Perfluorododecanoic acid



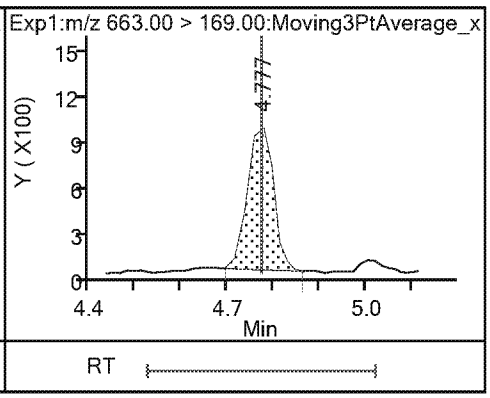
18 Perfluorododecanoic acid



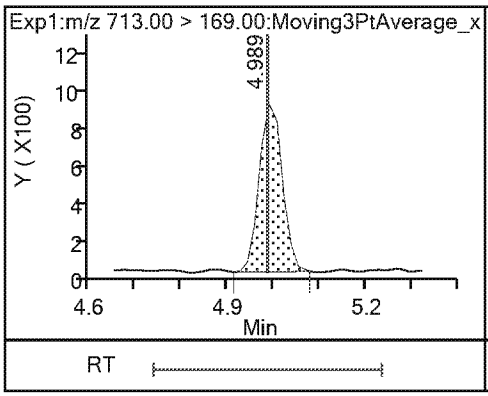
19 Perfluorotridecanoic acid



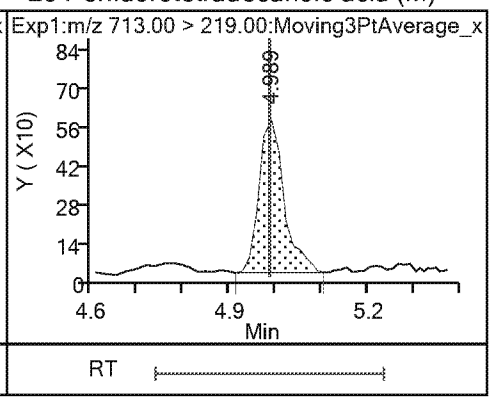
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid (M)



Eurofins TestAmerica, Sacramento

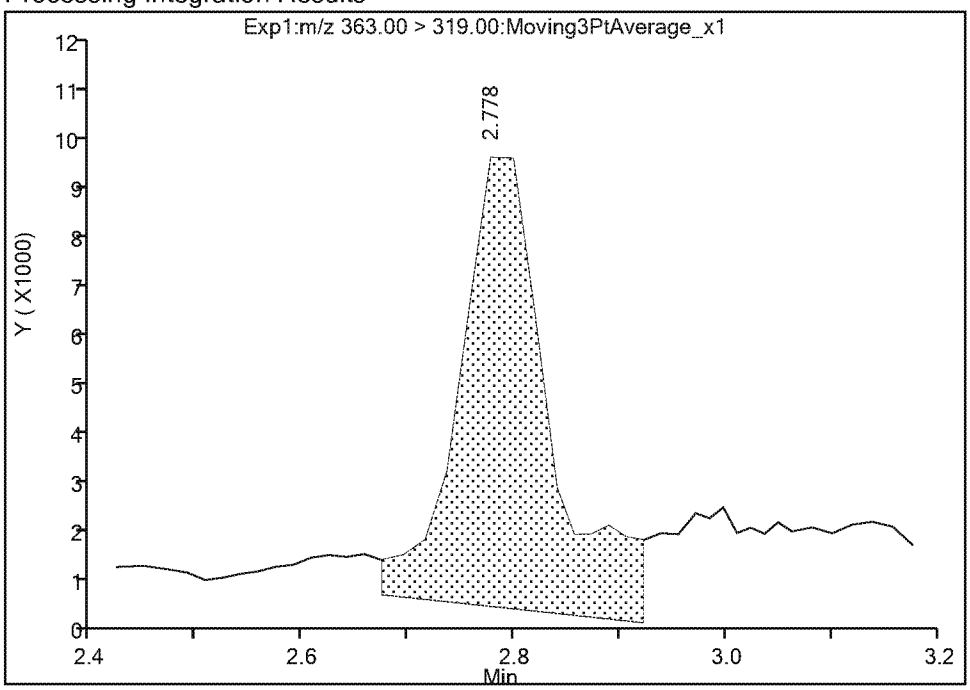
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

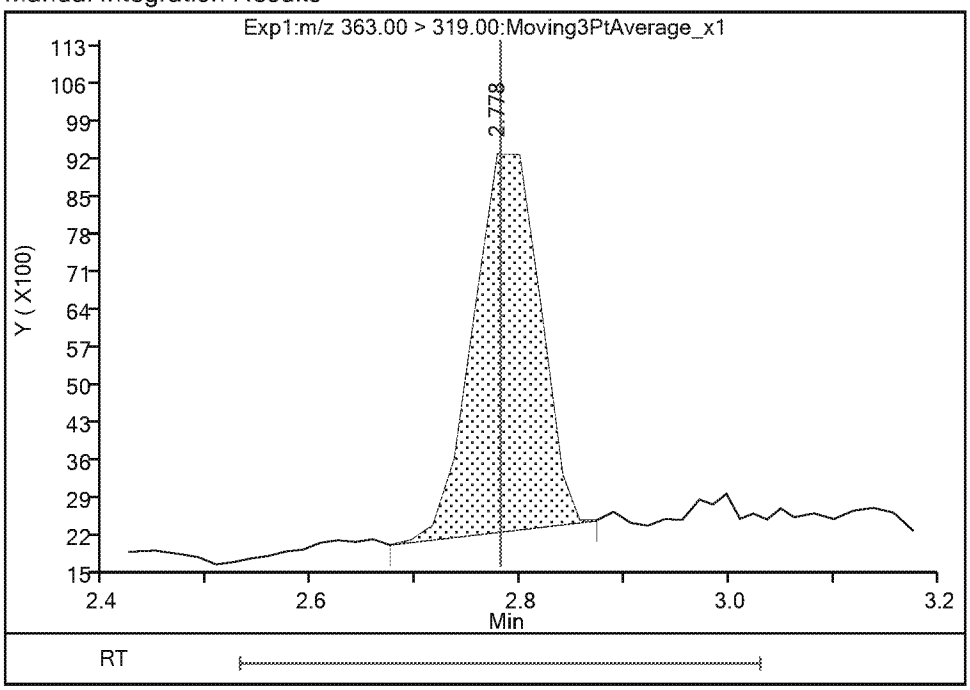
Processing Integration Results

RT: 2.78
Area: 48362
Amount: 0.030357
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 31188
Amount: 0.022981
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:23:40
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

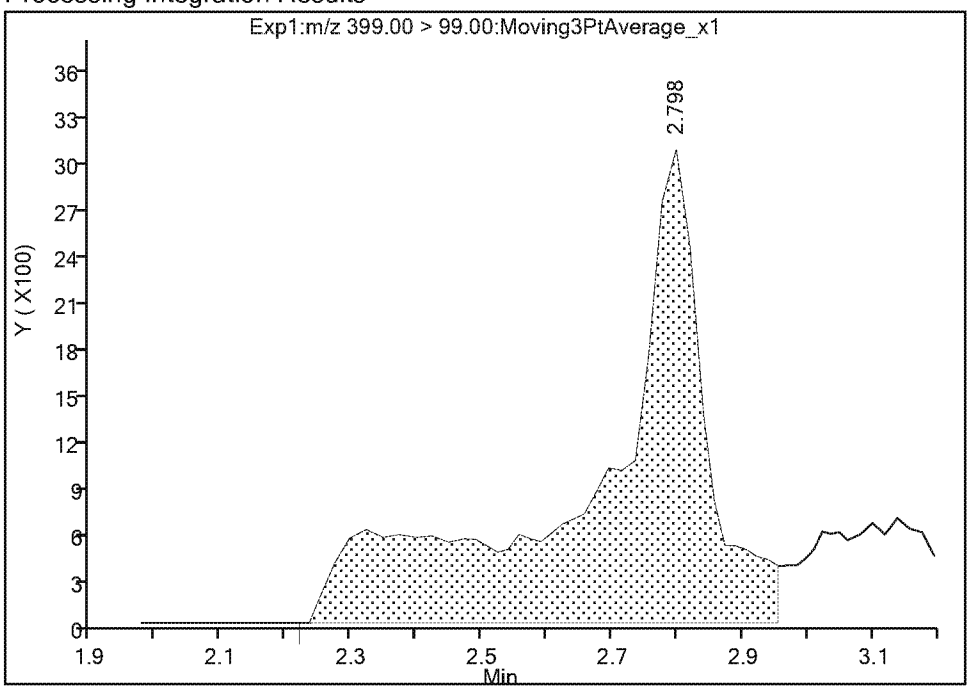
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

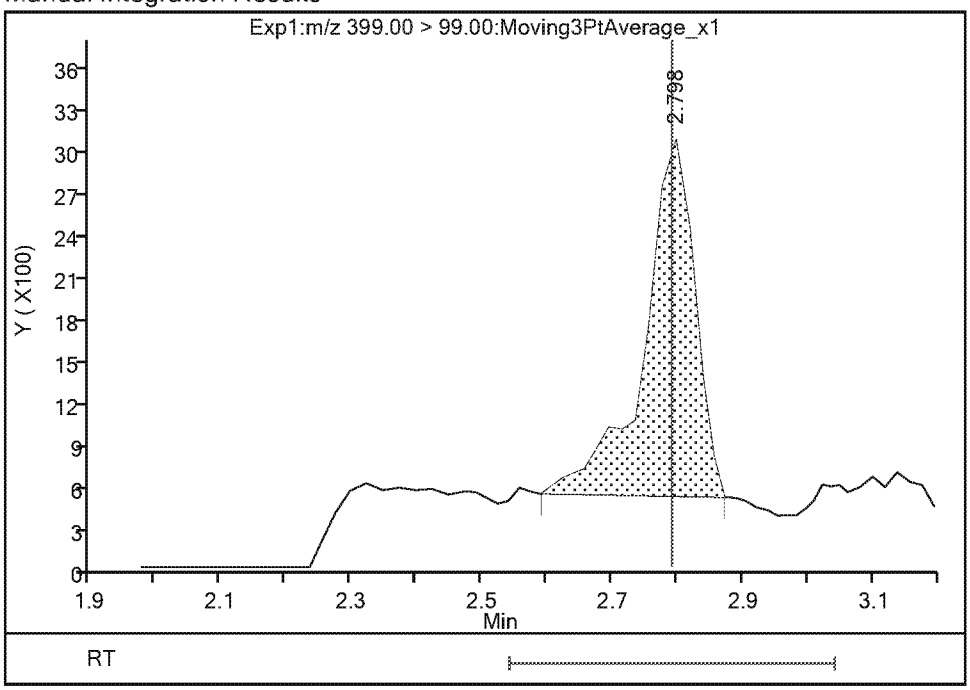
Processing Integration Results

RT: 2.80
Area: 35414
Amount: 0.023207
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 13865
Amount: 0.023207
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:23:32
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

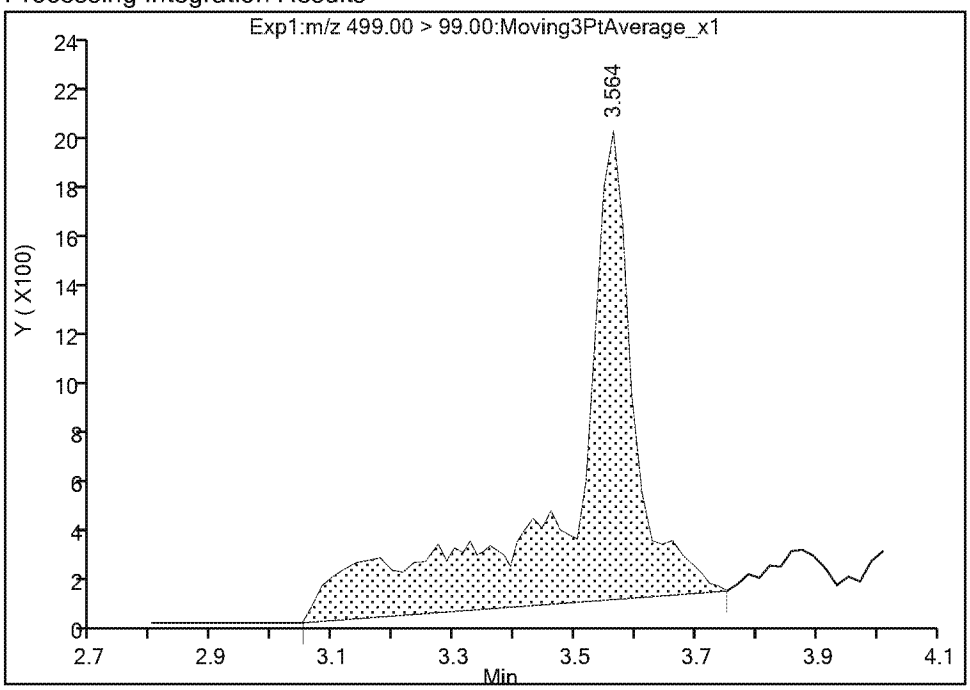
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

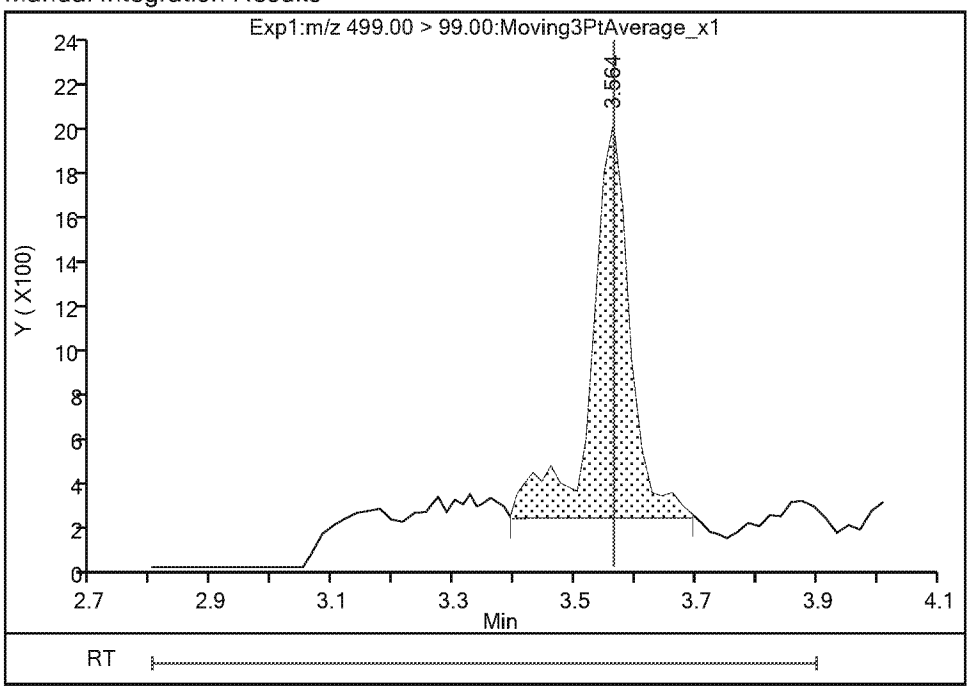
Processing Integration Results

RT: 3.56
Area: 14476
Amount: 0.024059
Amount Units: ng/ml



Manual Integration Results

RT: 3.56
Area: 7797
Amount: 0.024059
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:23:56
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

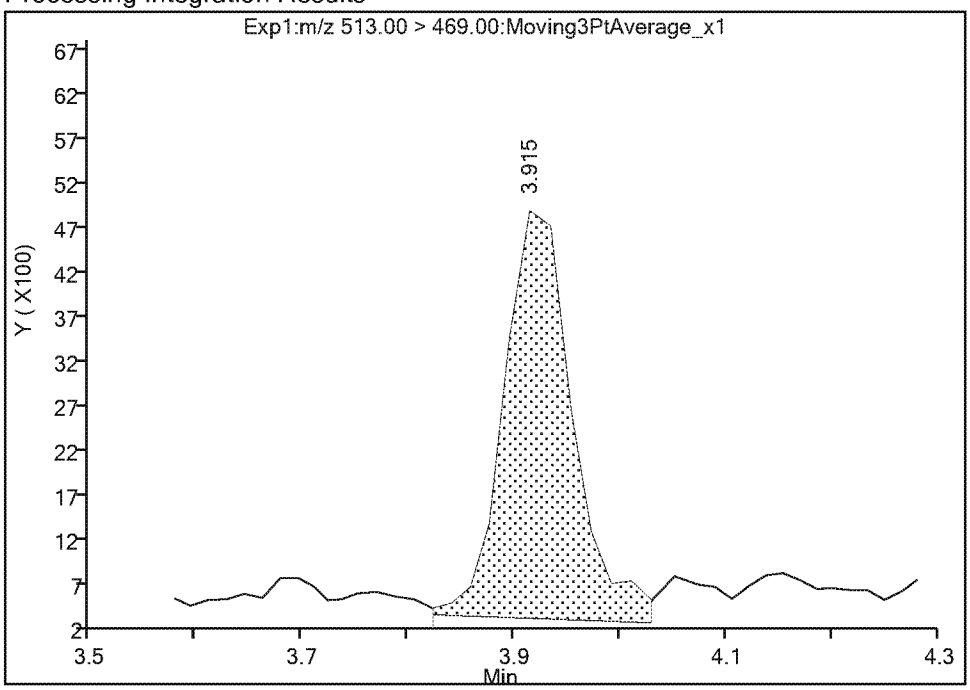
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

14 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 1

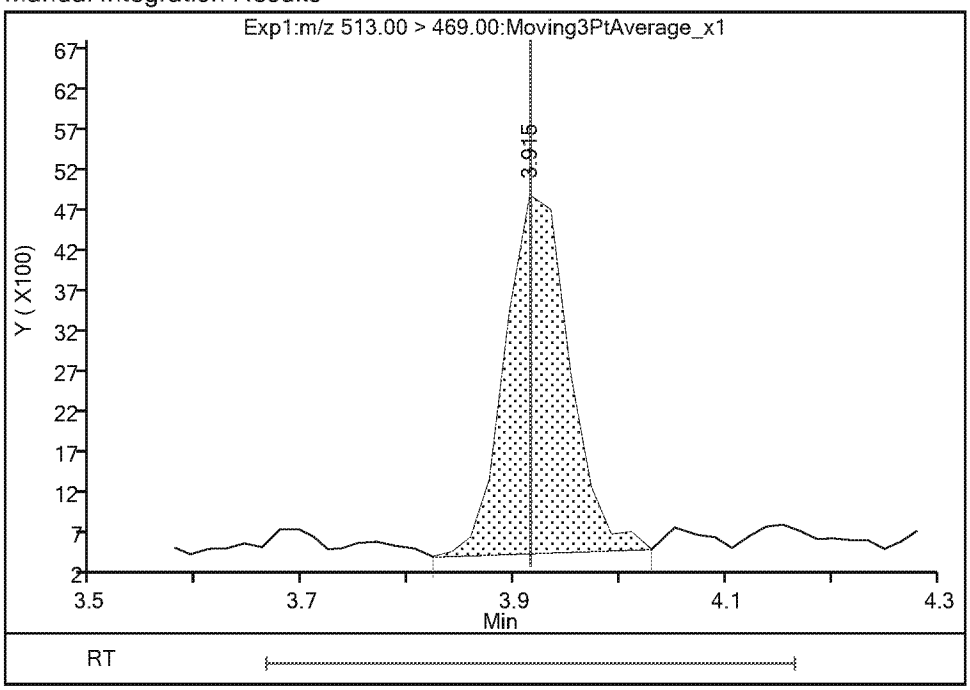
Processing Integration Results

RT: 3.91
Area: 20413
Amount: 0.026852
Amount Units: ng/ml



Manual Integration Results

RT: 3.91
Area: 18475
Amount: 0.024662
Amount Units: ng/ml



Reviewer: Ex. 4 CBI, 04-Apr-2019 16:24:12
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

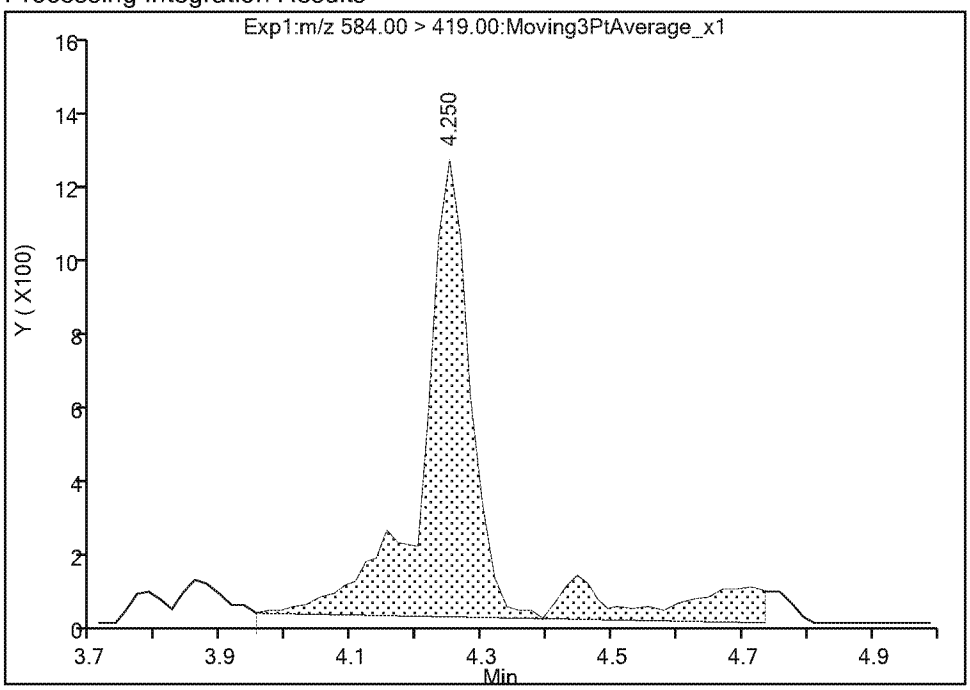
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

16 N-ethylperfluorooctanesulfonamidoacetic acid, CAS: 2991-50-6

Signal: 1

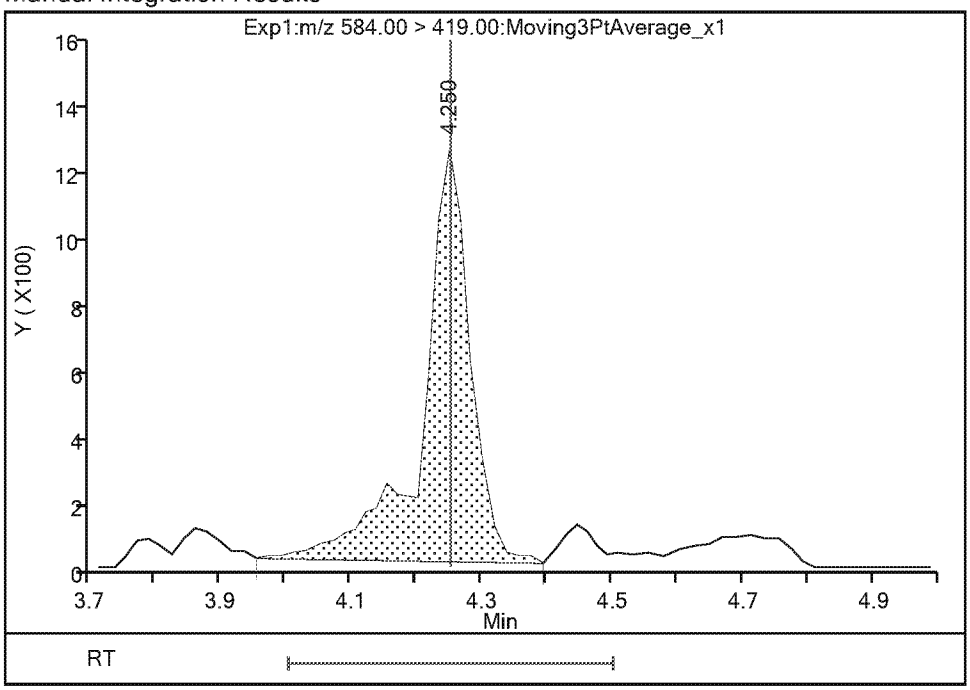
Processing Integration Results

RT: 4.25
Area: 7184
Amount: 0.036461
Amount Units: ng/ml



Manual Integration Results

RT: 4.25
Area: 6020
Amount: 0.031621
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:24:23
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

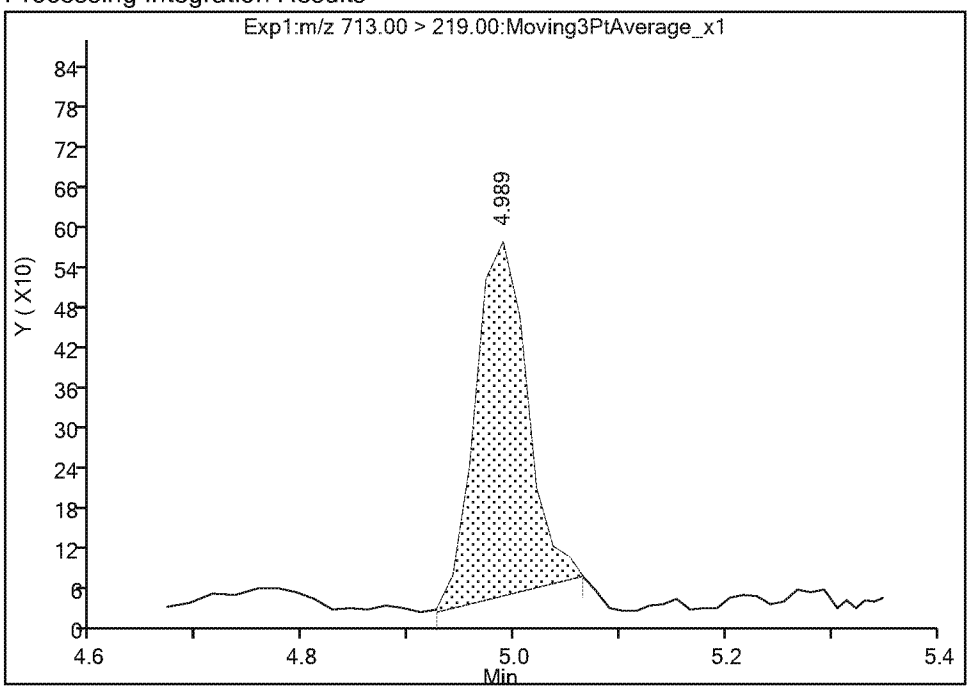
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

20 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 2

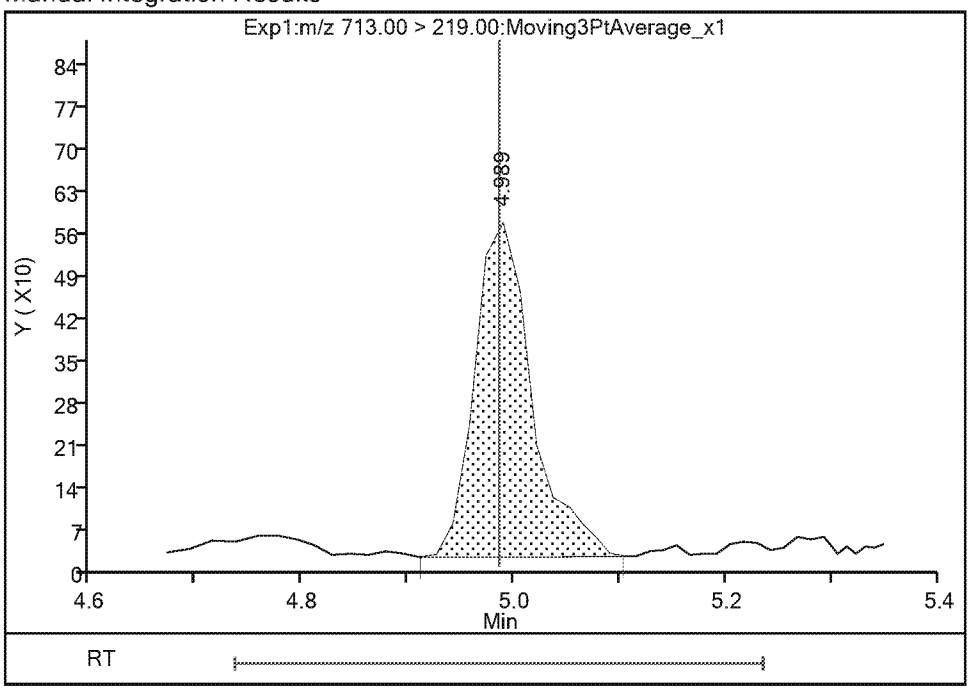
Processing Integration Results

RT: 4.99
Area: 1810
Amount: 0.025818
Amount Units: ng/ml



Manual Integration Results

RT: 4.99
Area: 2080
Amount: 0.025818
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:24:35
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_004.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 04-Apr-2019 15:23:44 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: L2_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 04-Apr-2019 16:55:32 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0339

First Level Reviewer: barnettj Date: 04-Apr-2019 16:25:50
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.992	0.0	1.000	70736	0.0418	Target=1.00	440	
298.90 > 99.00	1.992	1.992	0.0	1.000	49506		1.43(0.00-0.00)	21.9	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.348	2.347	0.001	0.739	73839	0.0489	Target=1.00	19.4	
313.00 > 119.00	2.348	2.347	0.001	0.739	8551		8.64(0.00-0.00)	10.8	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	3876289	2.45		7349	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.478	-0.004	0.993	18526	0.0505		9.7	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.491	2.481	0.010	1.000	175588	2.47		835	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.778	2.780	-0.002	1.000	71686	0.0498	Target=1.00	7.5	M
363.00 > 169.00	2.778	2.780	-0.002	1.000	32263		2.22(0.00-0.00)	68.9	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.799	2.792	0.007	1.000	87547	0.0426	Target=1.00	125	
399.00 > 99.00	2.799	2.792	0.007	1.000	26544		3.30(0.00-0.00)	10.0	M
24 DONA									
377.00 > 251.00	2.820	2.825	-0.005	1.000	179300	0.0458	Target=1.00	428	
377.00 > 85.00	2.820	2.825	-0.005	1.000	113300		1.58(0.00-0.00)	11329	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.186	-0.009		3393730	2.50		8200	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.177	3.186	-0.009	1.000	68527	0.0498	Target=1.00	8.1	
413.00 > 169.00	3.177	3.186	-0.009	1.000	38784		1.77(0.00-0.00)	55.1	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.564	3.562	0.002		3427796	2.39		8711	
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.564	3.564	0.0	1.000	70706	0.0467	Target=1.00	258	
499.00 > 99.00	3.564	3.564	0.0	1.000	15121		4.68(0.00-0.00)	15.1	M
9 Perfluorononanoic acid									
463.00 > 419.00	3.579	3.577	0.002	1.000	50983	0.0508	Target=1.00	32.0	
463.00 > 169.00	3.564	3.577	-0.013	0.996	14117		3.61(0.00-0.00)	115	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.751	3.755	-0.004	1.000	103961	0.0426		259	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.914	3.915	-0.001	1.000	39873	0.0502	Target=1.00	15.5	
513.00 > 169.00	3.914	3.915	-0.001	1.000	8640		4.61(0.00-0.00)	30.2	
$ 10 13C2 PFDA									
515.00 > 470.00	3.933	3.931	0.002	1.000	2065239	2.45		7207	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.089	4.091	-0.002		552133	2.50		4505	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.089	4.091	-0.002	1.000	10728	0.0519		178	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.233	4.236	-0.003	1.000	29412	0.0487	Target=1.00	14.5	
563.00 > 169.00	4.233	4.236	-0.003	1.000	6313		4.66(0.00-0.00)	92.6	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.249	4.243	0.006	1.039	549768	2.44		337	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.249	4.252	-0.003	1.000	9816	0.0490		21.9	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.370	4.369	0.001	1.000	142099	0.0465		1301	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.506	4.508	-0.002	1.000	29680	0.0491	Target=1.00	22.6	
613.00 > 169.00	4.506	4.508	-0.002	1.000	8265		3.59(0.00-0.00)	80.8	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.775	4.772	0.003	1.000	25173	0.0537	Target=1.00	10.2	
663.00 > 169.00	4.775	4.772	0.003	1.000	7558		3.33(0.00-0.00)	83.0	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.988	4.985	0.003	1.000	5648	0.0469	Target=1.00	134	
713.00 > 219.00	4.988	4.985	0.003	1.000	3944		1.43(0.00-0.00)	39.6	

QC Flag Legend

Review Flags

M - Manually Integrated

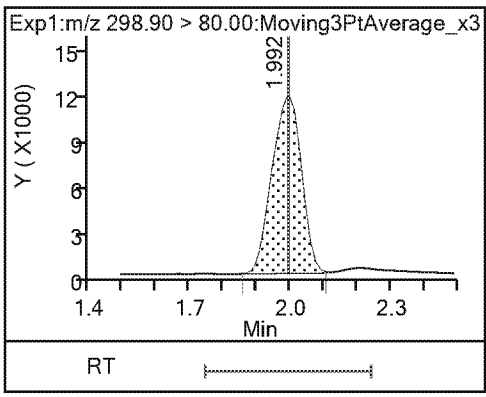
Reagents:

LC537_NC_L2_00004 Amount Added: 1.00 Units: mL

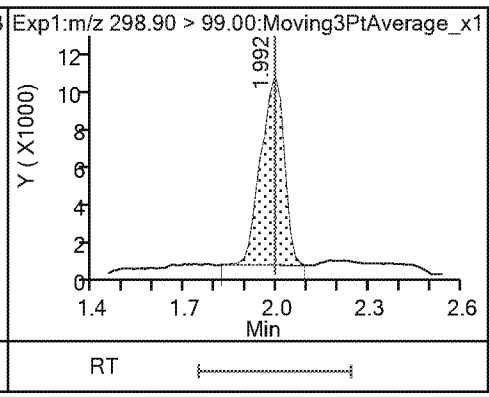
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_004.d
Injection Date: 04-Apr-2019 15:23:44 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 3
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

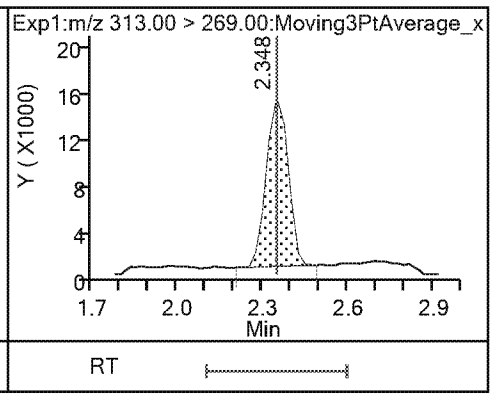
1 Perfluorobutanesulfonic acid



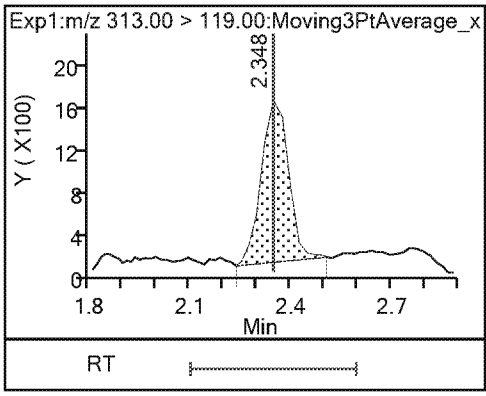
1 Perfluorobutanesulfonic acid



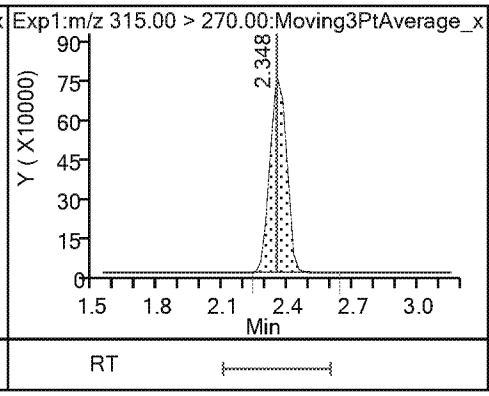
13 Perfluorohexanoic acid



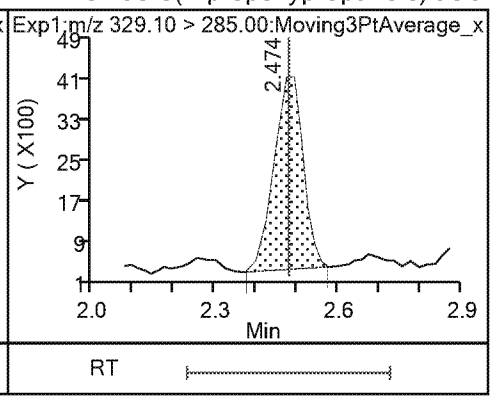
13 Perfluorohexanoic acid



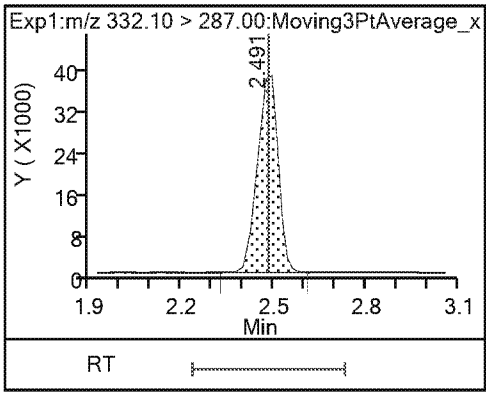
$ 2 13C2 PFHxA



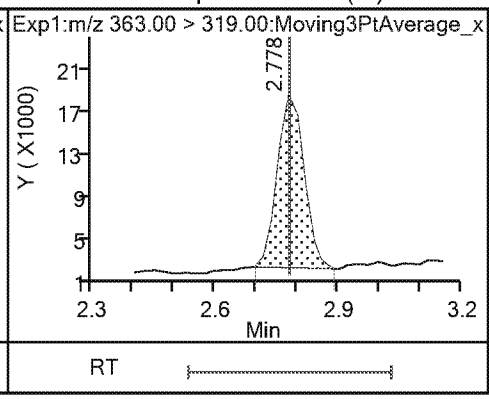
22 Perfluoro(2-propoxypropanoic) acid



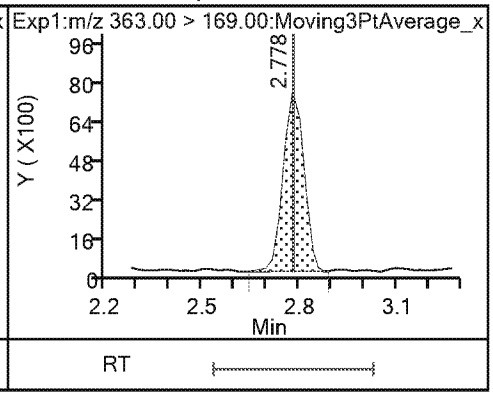
$ 25 13C3 HFPO-DA



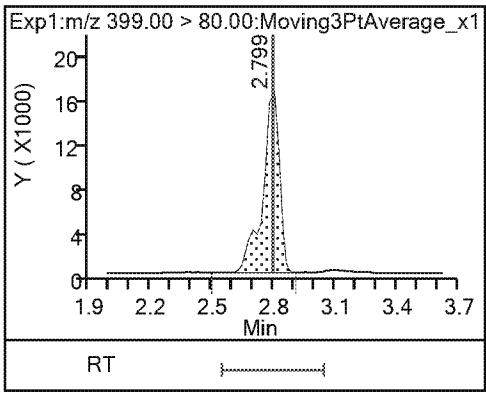
4 Perfluoroheptanoic acid (M)



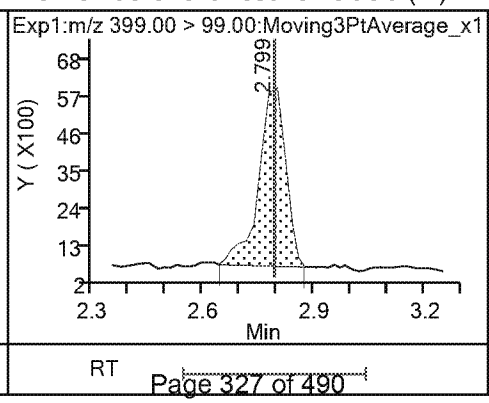
4 Perfluoroheptanoic acid



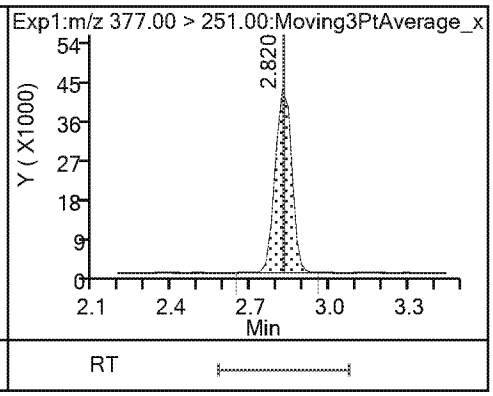
3 Perfluorohexanesulfonic acid



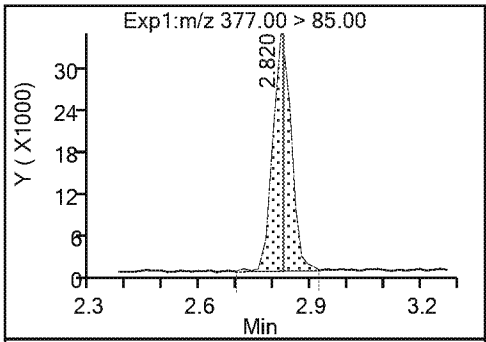
3 Perfluorohexanesulfonic acid (M)



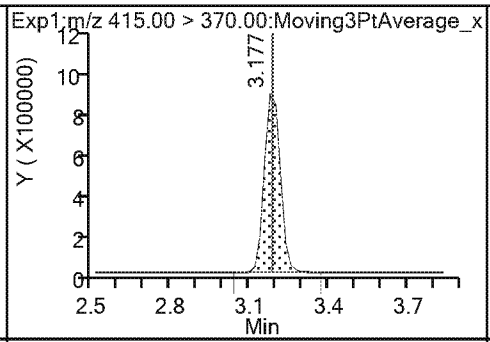
24 DONA



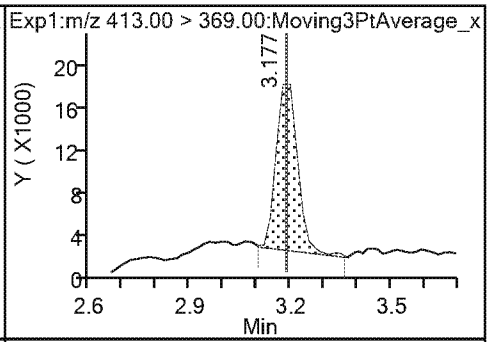
24 DONA



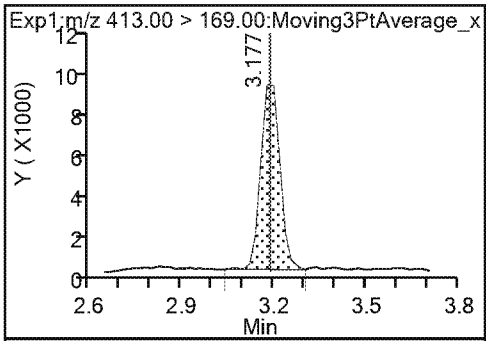
* 5 13C2 PFOA



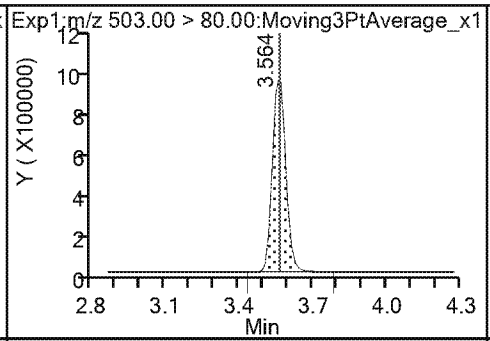
6 Perfluorooctanoic acid



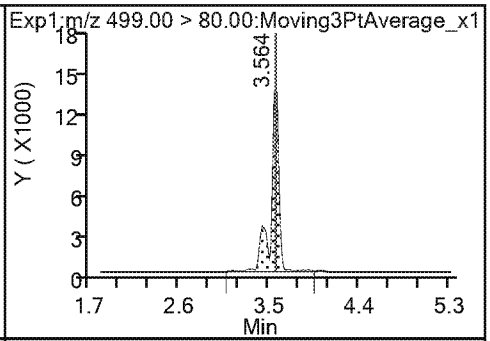
6 Perfluorooctanoic acid



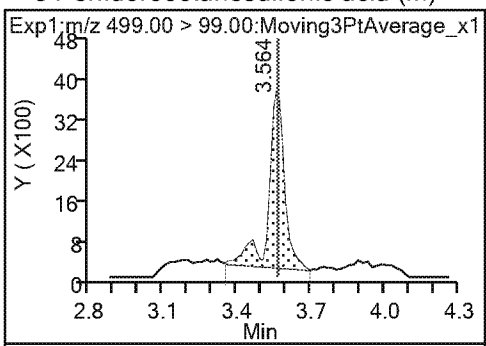
* 7 13C4 PFOS



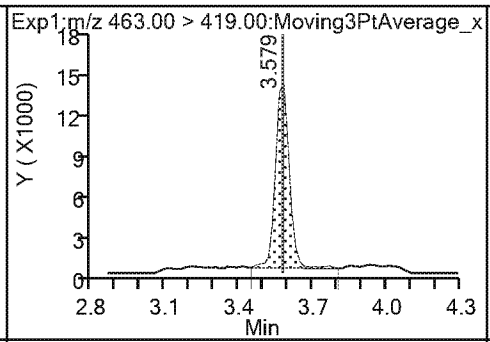
8 Perfluorooctanesulfonic acid



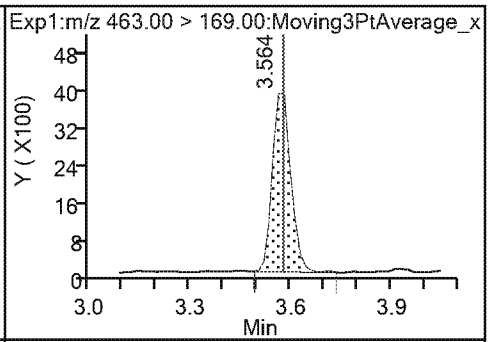
8 Perfluorooctanesulfonic acid (M)



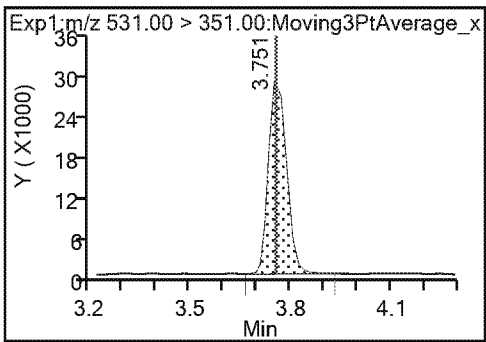
9 Perfluorononanoic acid



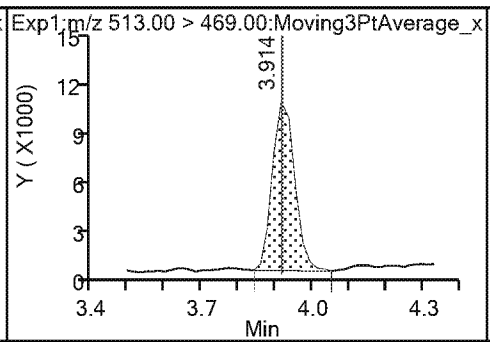
9 Perfluorononanoic acid



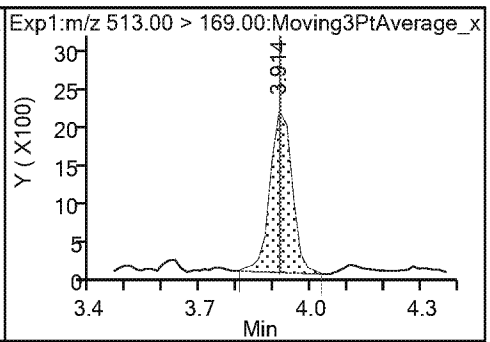
23 9-Chlorohexadecafluoro-3-oxanonane



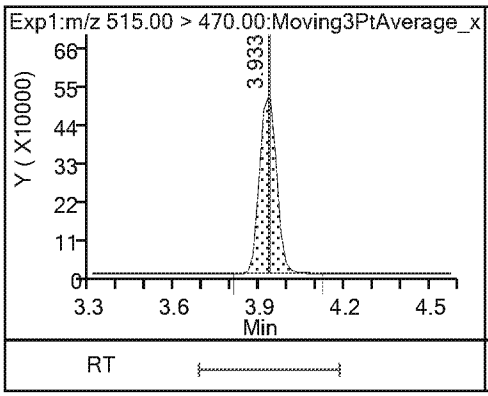
14 Perfluorodecanoic acid



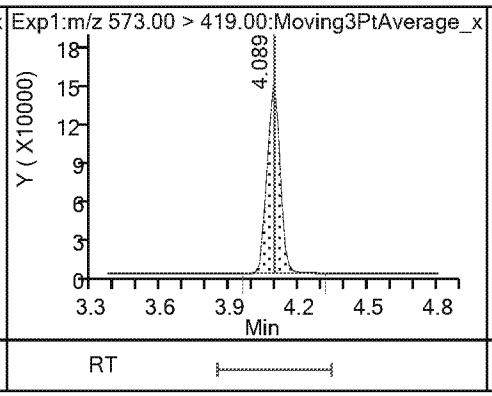
14 Perfluorodecanoic acid



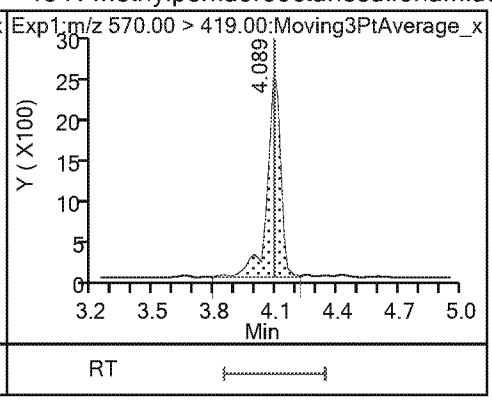
$ 10 13C2 PFDA



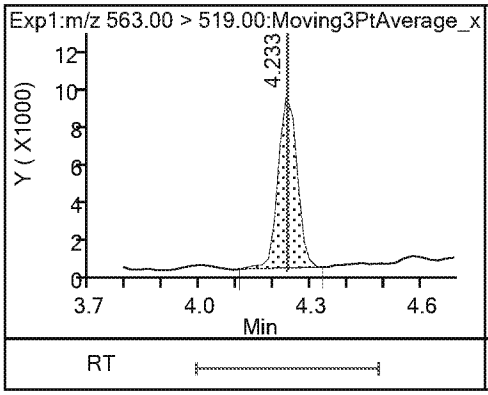
* 12 d3-NMeFOSAA



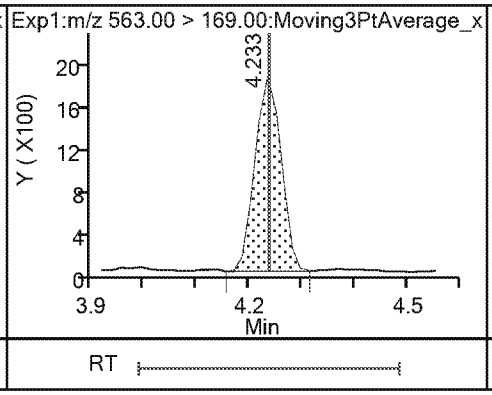
15 N-methylperfluorooctanesulfonamido



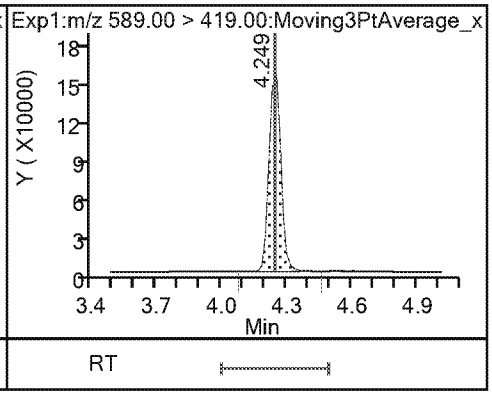
17 Perfluoroundecanoic acid



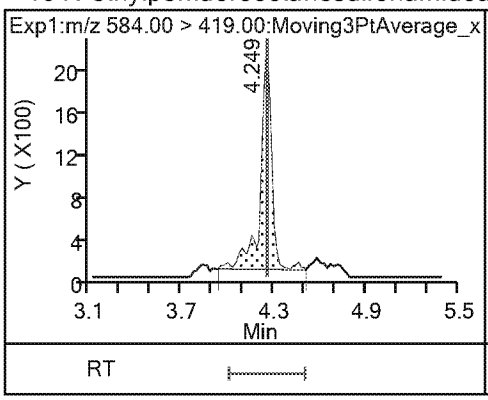
17 Perfluoroundecanoic acid



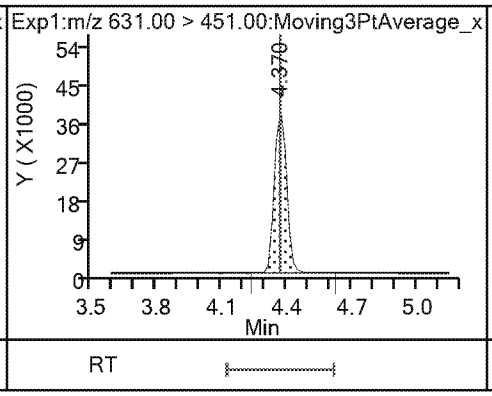
$ 11 d5-NEtFOSAA



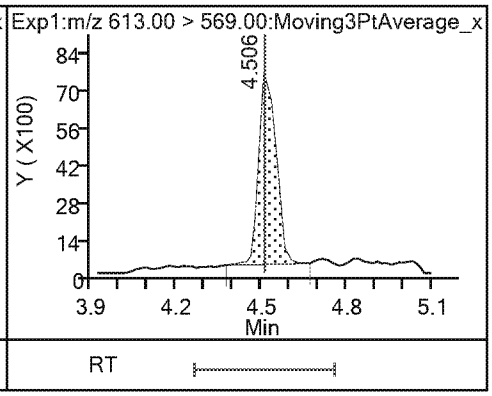
16 N-ethylperfluorooctanesulfonamidoa



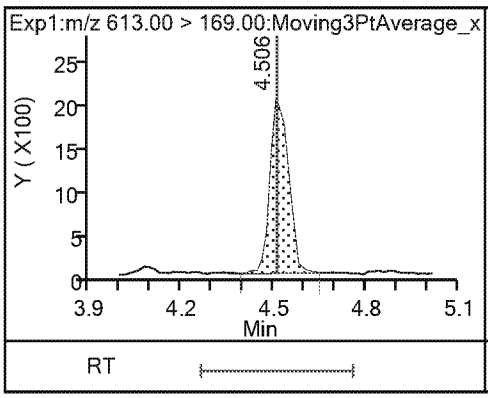
21 11-Chloroeicosafluoro-3-oxaundecan



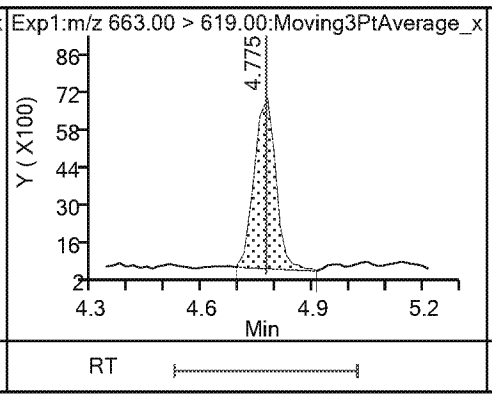
18 Perfluorododecanoic acid



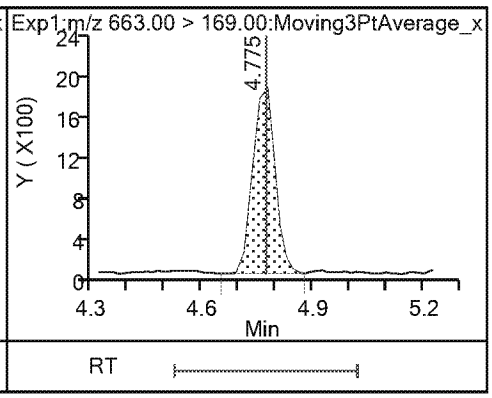
18 Perfluorododecanoic acid



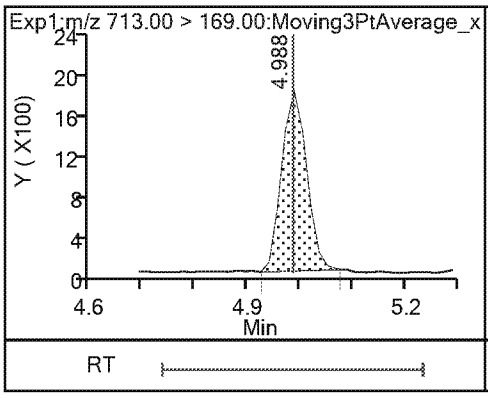
19 Perfluorotridecanoic acid



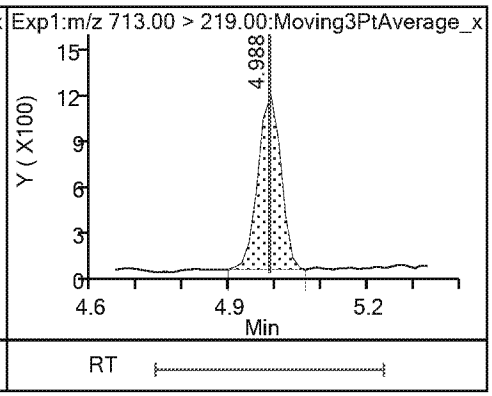
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento

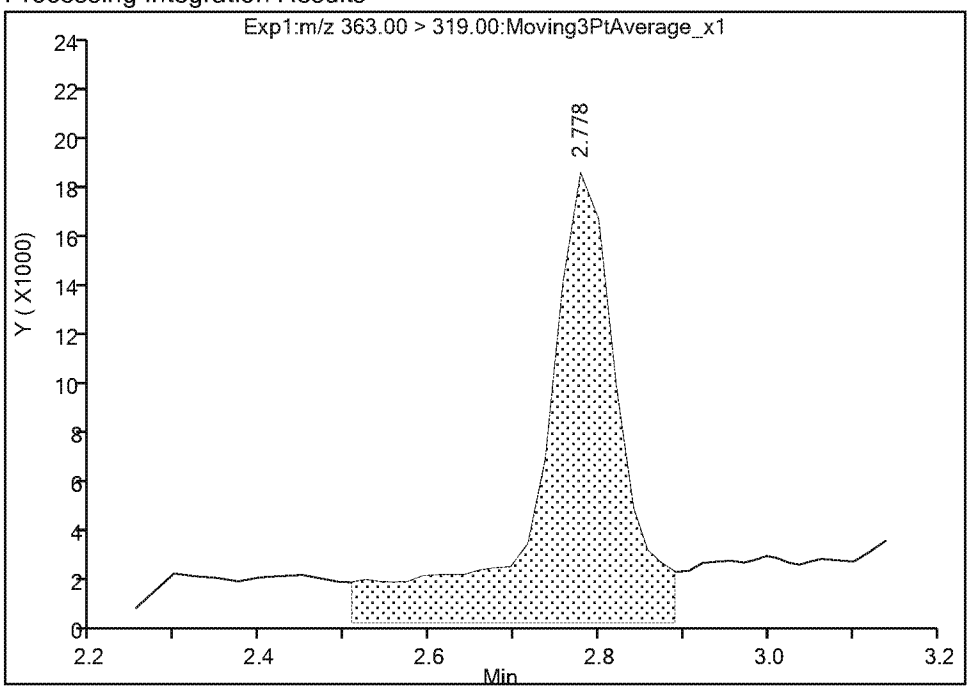
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_004.d				
Injection Date:	04-Apr-2019 15:23:44	Instrument ID:	A8_N		
Lims ID:	IC L2				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

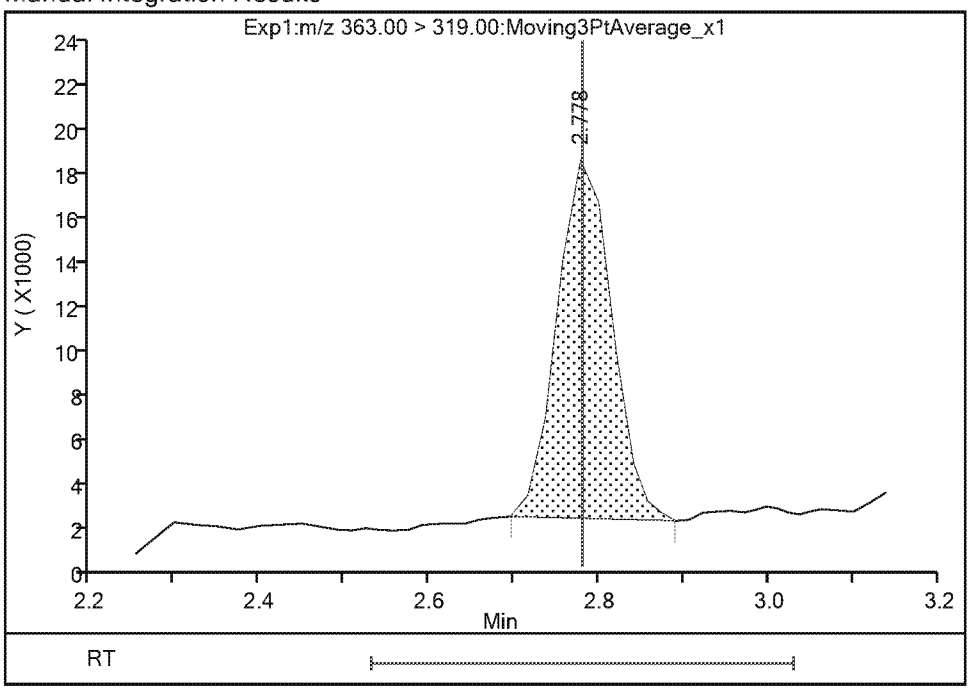
Processing Integration Results

RT: 2.78
Area: 118172
Amount: 0.074565
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 71686
Amount: 0.049826
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:25:14
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

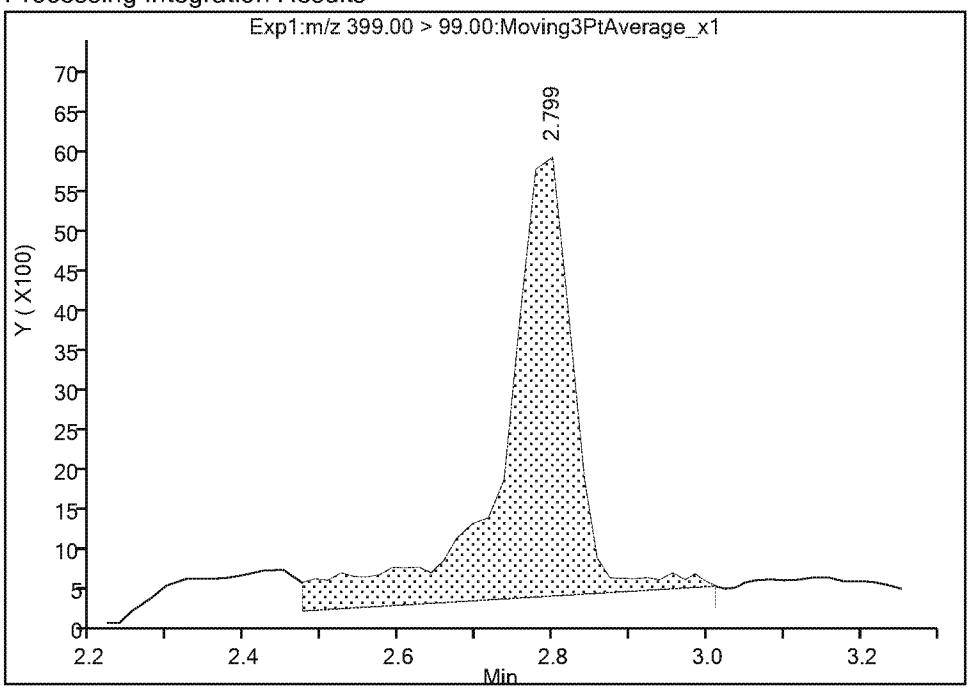
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_004.d				
Injection Date:	04-Apr-2019 15:23:44	Instrument ID:	A8_N		
Lims ID:	IC L2				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

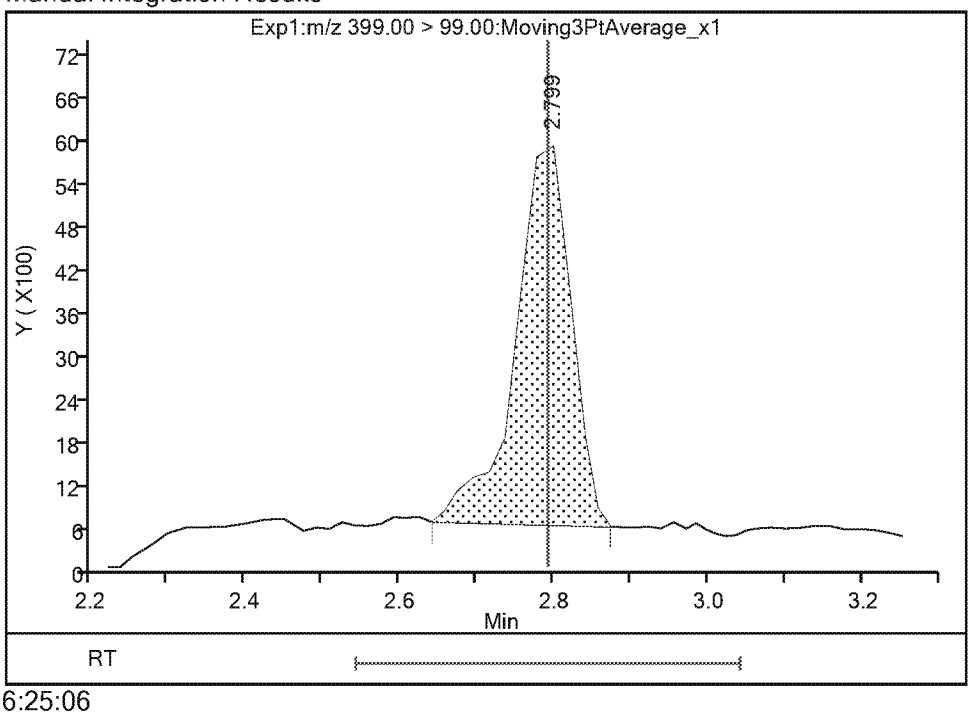
Processing Integration Results

RT: 2.80
Area: 35655
Amount: 0.042599
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 26544
Amount: 0.042599
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:25:06
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

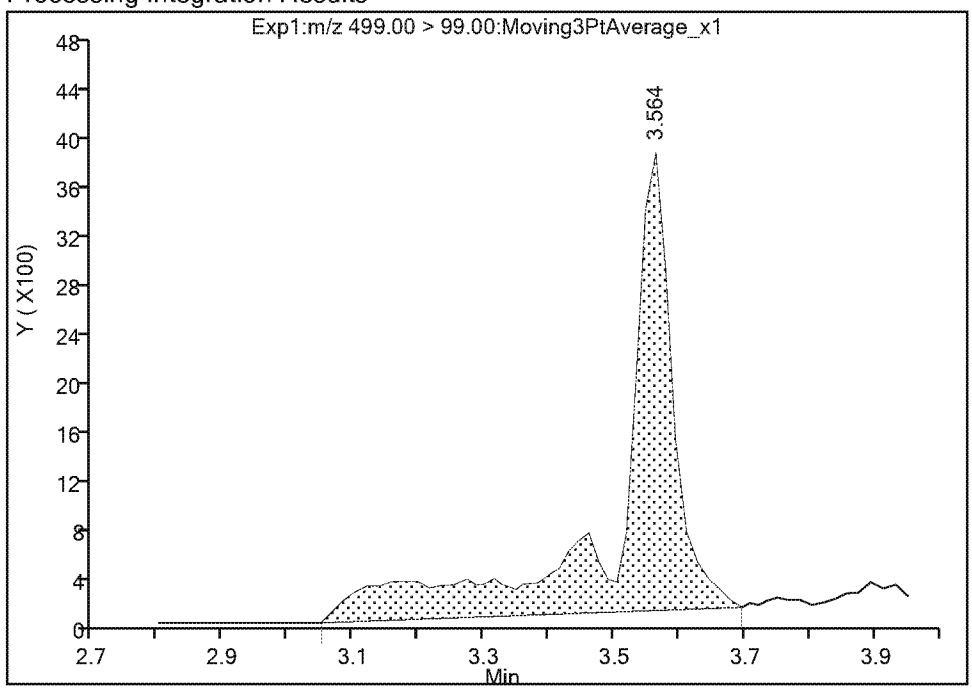
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_004.d				
Injection Date:	04-Apr-2019 15:23:44	Instrument ID:	A8_N		
Lims ID:	IC L2				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

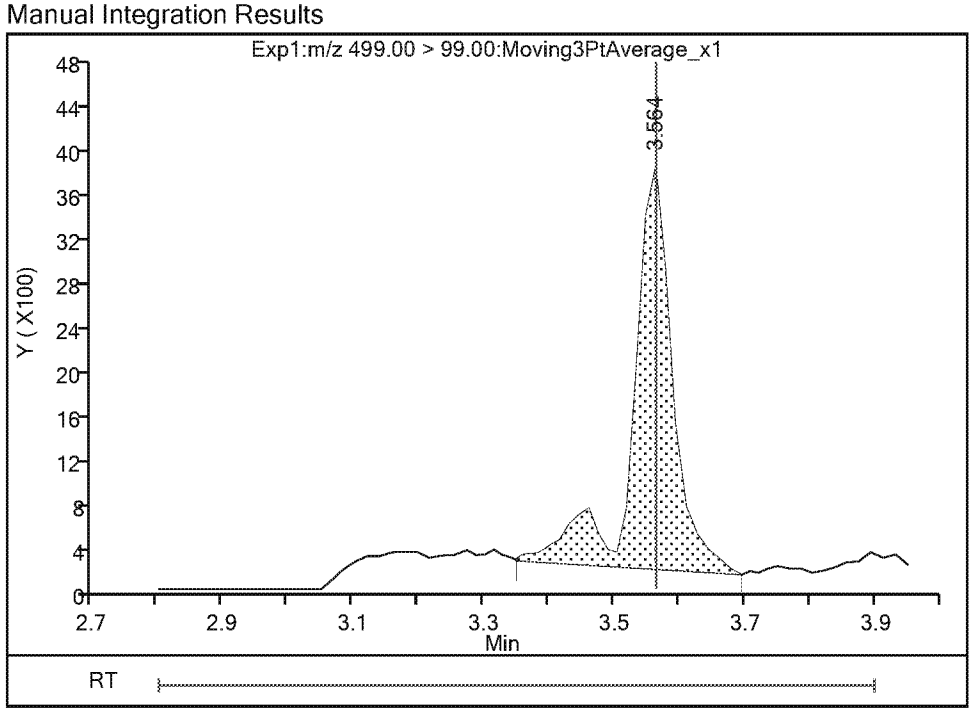
Processing Integration Results

RT: 3.56
Area: 21573
Amount: 0.046670
Amount Units: ng/ml



Manual Integration Results

RT: 3.56
Area: 15121
Amount: 0.046670
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:25:27
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_005.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 04-Apr-2019 15:33:14 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: L3_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 04-Apr-2019 16:55:34 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0339

First Level Reviewer: barnettj Date: 04-Apr-2019 16:26:49
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.992	0.0	1.000	365410	0.2105	Target=1.00	2183	
298.90 > 99.00	1.992	1.992	0.0	1.000	250250		1.46(0.00-0.00)	108	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.739	366230	0.2381	Target=1.00	94.7	
313.00 > 119.00	2.347	2.347	0.0	0.739	34034		10.76(0.00-0.00)	37.8	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	4031385	2.50		5923	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.473	2.478	-0.005	1.000	92927	0.2486		48.4	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.481	-0.008	1.000	179792	2.48		849	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.778	2.780	-0.002	1.000	356195	0.2432	Target=1.00	38.9	M
363.00 > 169.00	2.778	2.780	-0.002	1.000	146717		2.43(0.00-0.00)	351	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.792	-0.014	1.000	451894	0.2145	Target=1.00	600	
399.00 > 99.00	2.778	2.792	-0.014	1.000	149945		3.01(0.00-0.00)	53.0	M
24 DONA									
377.00 > 251.00	2.819	2.825	-0.006	1.000	921694	0.2310	Target=1.00	1691	
377.00 > 85.00	2.819	2.825	-0.006	1.000	571044		1.61(0.00-0.00)	86149	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.186	-0.009		3455285	2.50		8922	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.177	3.186	-0.009	1.000	348416	0.2485	Target=1.00	44.4	
413.00 > 169.00	3.177	3.186	-0.009	1.000	196093		1.78(0.00-0.00)	236	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.563	3.562	0.001		3513279	2.39		8608	
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.563	3.564	-0.001	1.000	334429	0.2154	Target=1.00	842	
499.00 > 99.00	3.563	3.564	-0.001	1.000	71669		4.67(0.00-0.00)	60.5	M
9 Perfluorononanoic acid									
463.00 > 419.00	3.578	3.577	0.001	1.000	249795	0.2446	Target=1.00	158	
463.00 > 169.00	3.563	3.577	-0.014	0.996	65860		3.79(0.00-0.00)	526	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.750	3.755	-0.005	1.000	561352	0.2247		1215	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.911	3.915	-0.004	1.000	189332	0.2342	Target=1.00	76.8	
513.00 > 169.00	3.911	3.915	-0.004	1.000	40144		4.72(0.00-0.00)	125	
$ 10 13C2 PFDA									
515.00 > 470.00	3.930	3.931	-0.001	1.000	2139876	2.49		8623	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.092	4.091	0.001		521234	2.50		5287	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.092	4.091	0.001	1.000	46521	0.2383		612	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.236	4.236	0.0	1.000	150059	0.2442	Target=1.00	67.0	
563.00 > 169.00	4.236	4.236	0.0	1.000	30703		4.89(0.00-0.00)	379	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.236	4.243	-0.007	1.035	544536	2.56		309	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.252	4.252	0.0	1.004	46195	0.2441		113	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.377	4.369	0.008	1.000	709990	0.2267		4131	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.510	4.508	0.002	1.000	149335	0.2425	Target=1.00	101	
613.00 > 169.00	4.510	4.508	0.002	1.000	41671		3.58(0.00-0.00)	539	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.779	4.772	0.007	1.000	113579	0.2381	Target=1.00	50.8	
663.00 > 169.00	4.779	4.772	0.007	1.000	38818		2.93(0.00-0.00)	542	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.991	4.985	0.006	1.000	30288	0.2469	Target=1.00	509	
713.00 > 219.00	4.976	4.985	-0.009	0.997	21732		1.39(0.00-0.00)	215	

QC Flag Legend

Review Flags

M - Manually Integrated

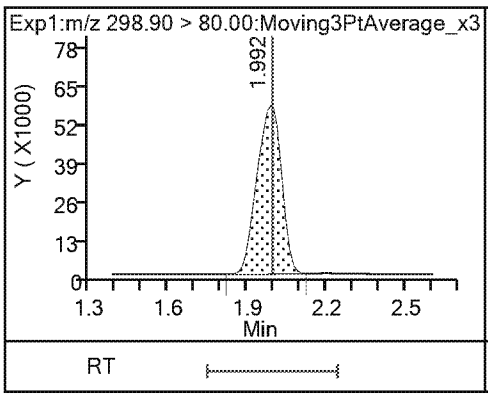
Reagents:

LC537_NC_L3_00004 Amount Added: 1.00 Units: mL

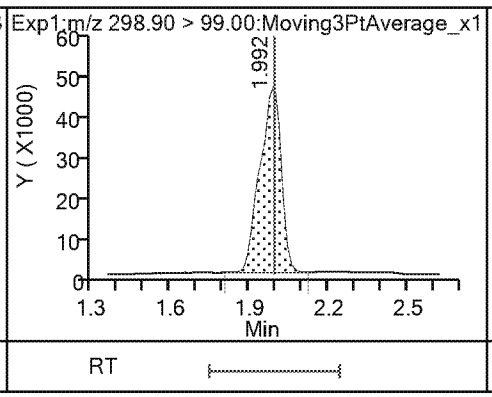
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_005.d
Injection Date: 04-Apr-2019 15:33:14 Instrument ID: A8_N
Lims ID: IC L3
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 3 Worklist Smp#: 4
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

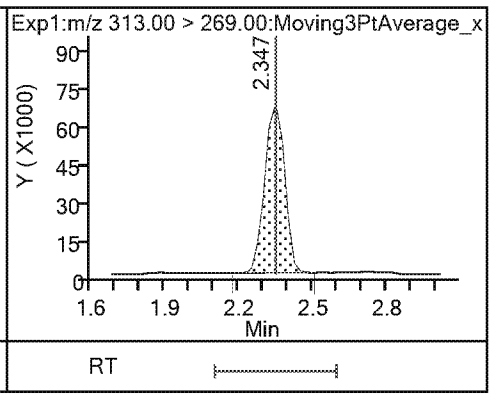
1 Perfluorobutanesulfonic acid



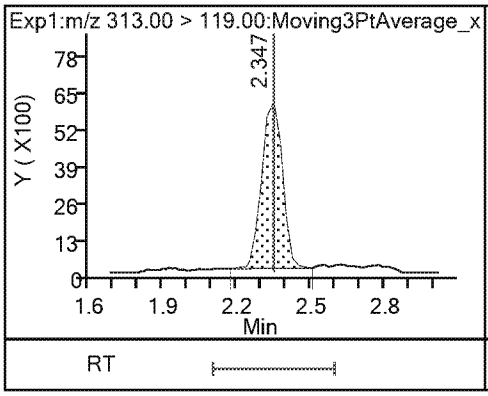
1 Perfluorobutanesulfonic acid



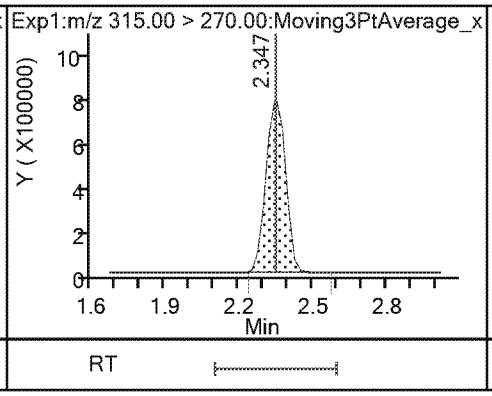
13 Perfluorohexanoic acid



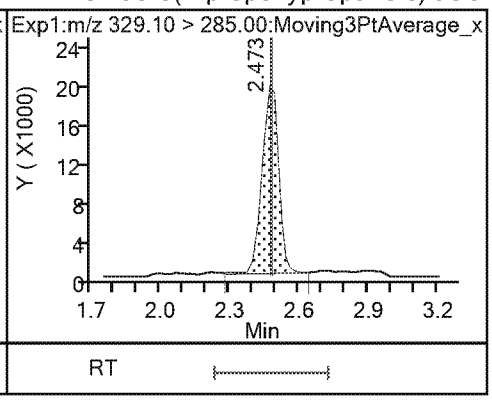
13 Perfluorohexanoic acid



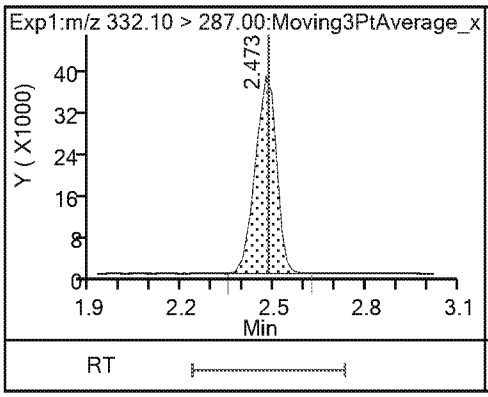
$ 2 13C2 PFHxA



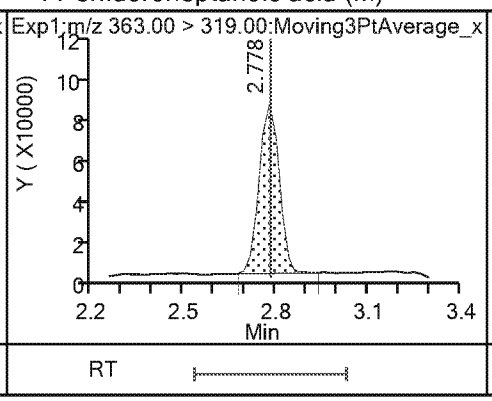
22 Perfluoro(2-propoxypropanoic) acid



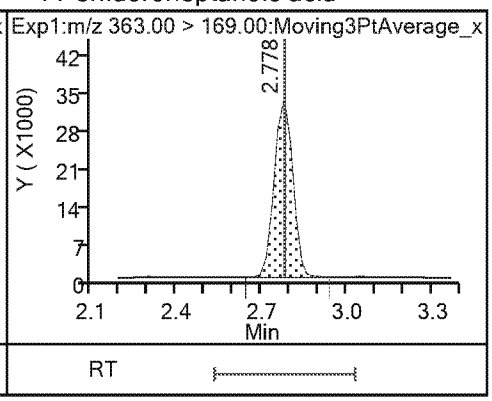
$ 25 13C3 HFPO-DA



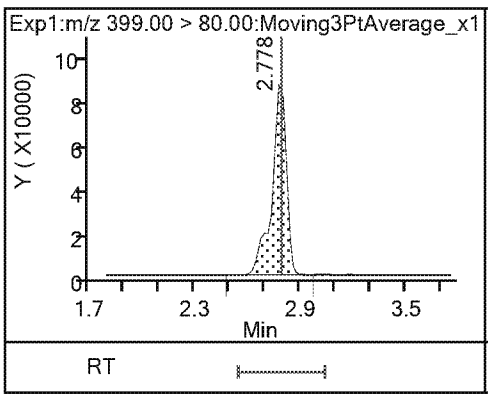
4 Perfluoroheptanoic acid (M)



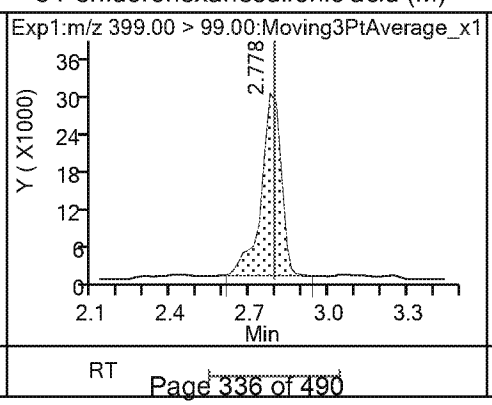
4 Perfluoroheptanoic acid



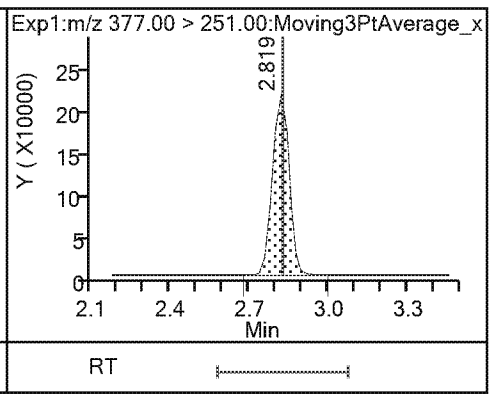
3 Perfluorohexanesulfonic acid



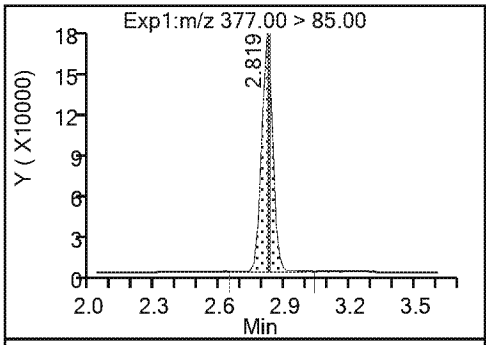
3 Perfluorohexanesulfonic acid (M)



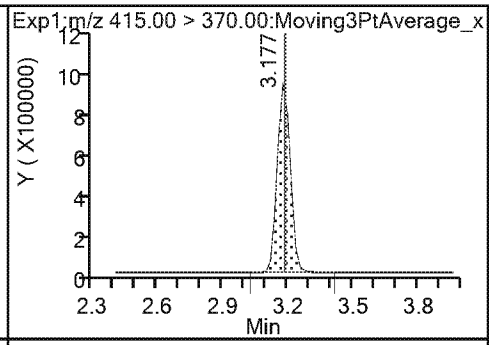
24 DONA



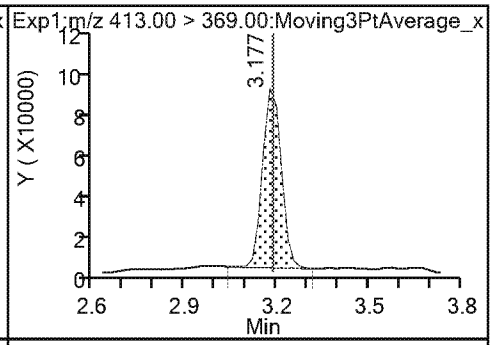
24 DONA



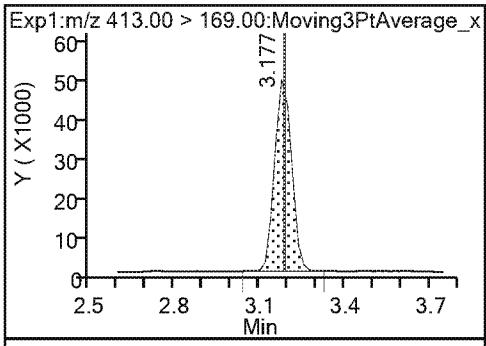
* 5 13C2 PFOA



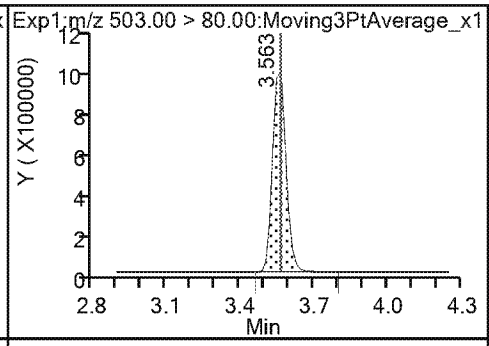
6 Perfluorooctanoic acid



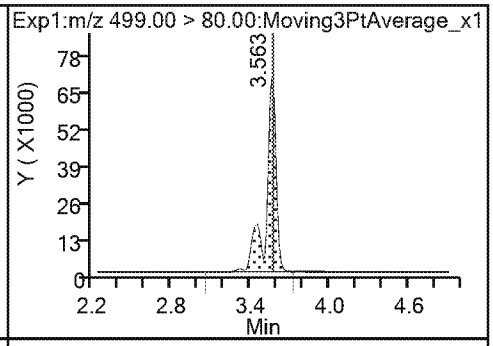
6 Perfluorooctanoic acid



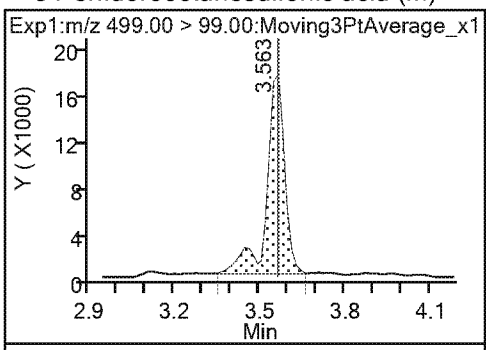
* 7 13C4 PFOS



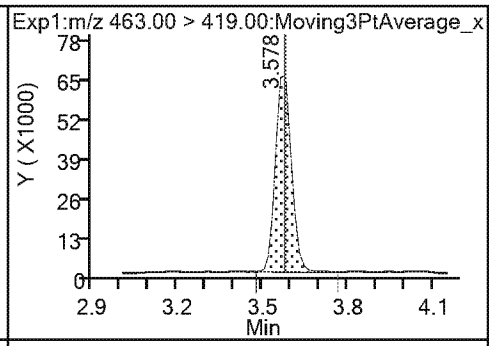
8 Perfluorooctanesulfonic acid



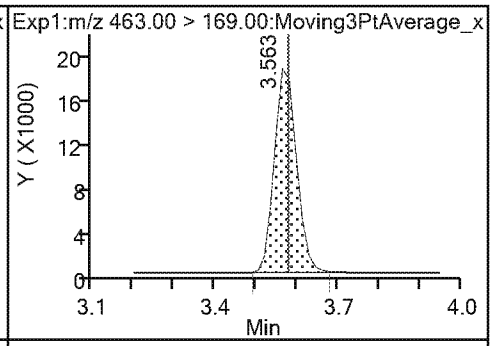
8 Perfluorooctanesulfonic acid (M)



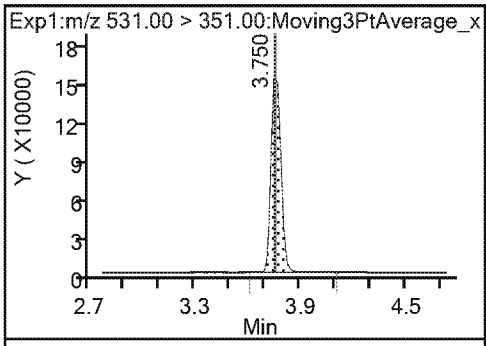
9 Perfluorononanoic acid



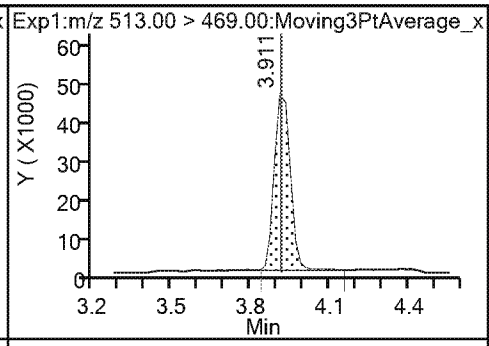
9 Perfluorononanoic acid



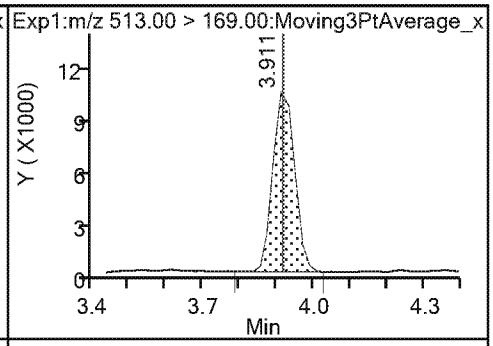
23 9-Chlorohexadecafluoro-3-oxanonane



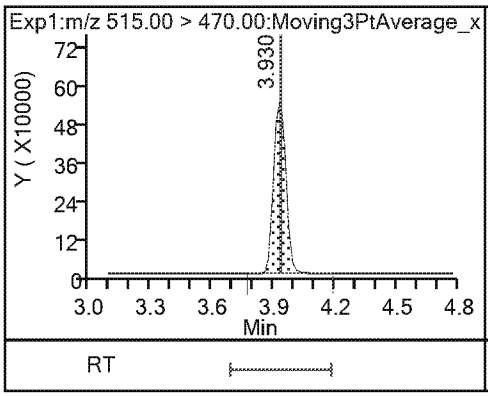
14 Perfluorodecanoic acid



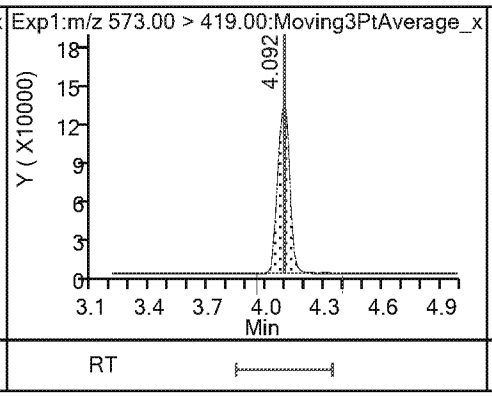
14 Perfluorodecanoic acid



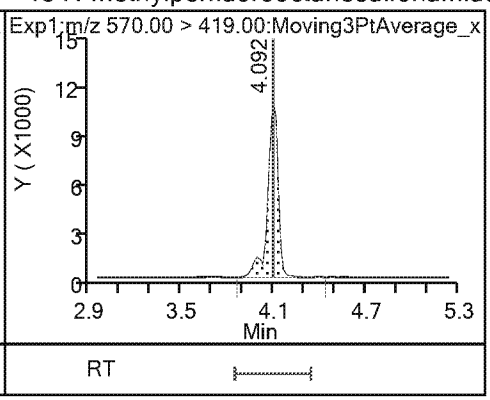
$ 10 13C2 PFDA



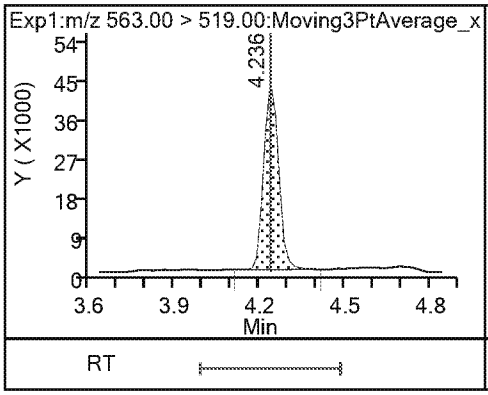
* 12 d3-NMeFOSAA



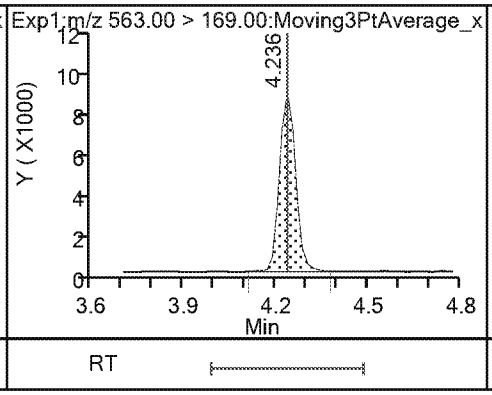
15 N-methylperfluorooctanesulfonamido



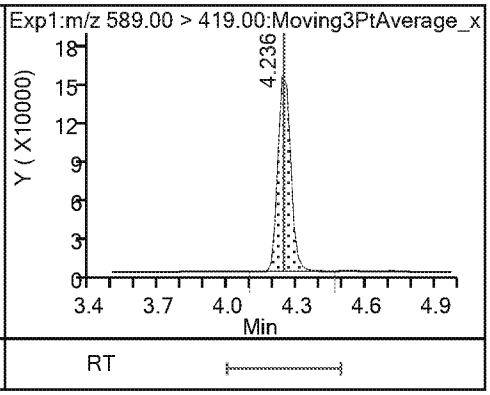
17 Perfluoroundecanoic acid



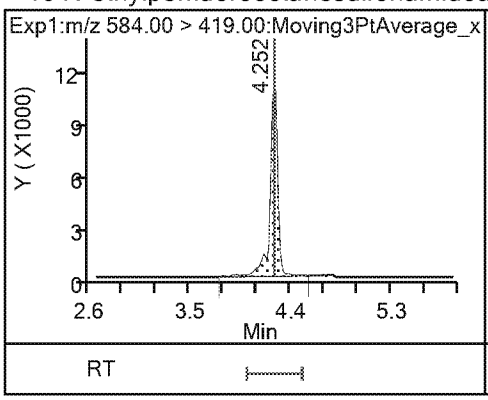
17 Perfluoroundecanoic acid



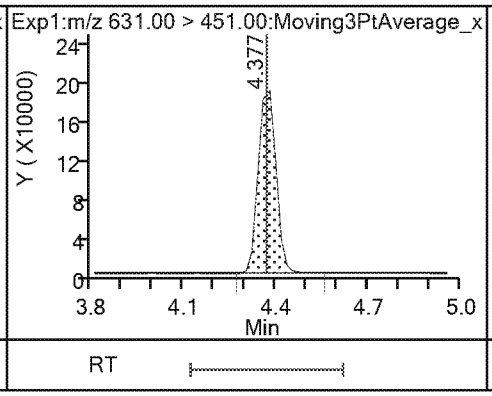
$ 11 d5-NEtFOSAA



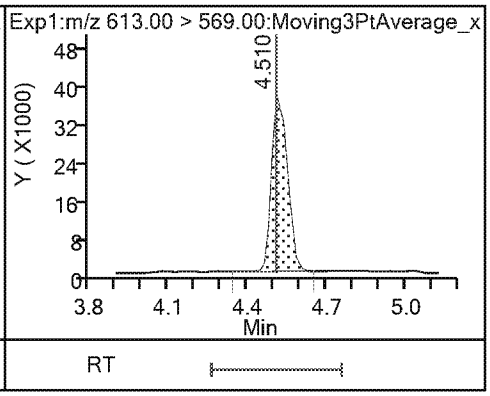
16 N-ethylperfluorooctanesulfonamidoa



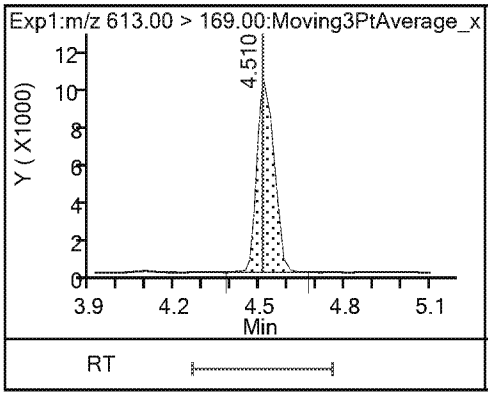
21 11-Chloroeicosafluoro-3-oxaundecan



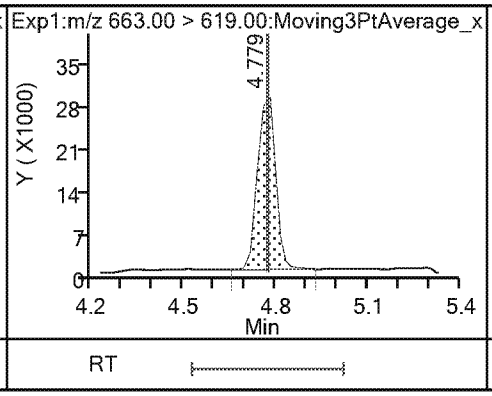
18 Perfluorododecanoic acid



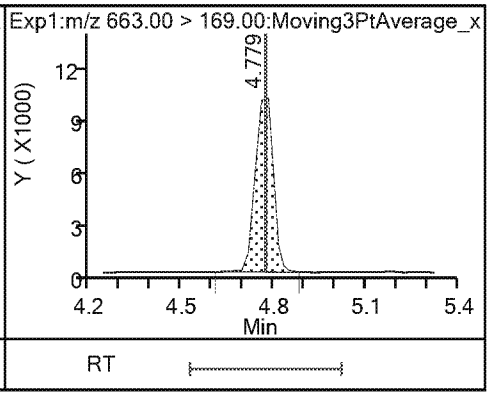
18 Perfluorododecanoic acid



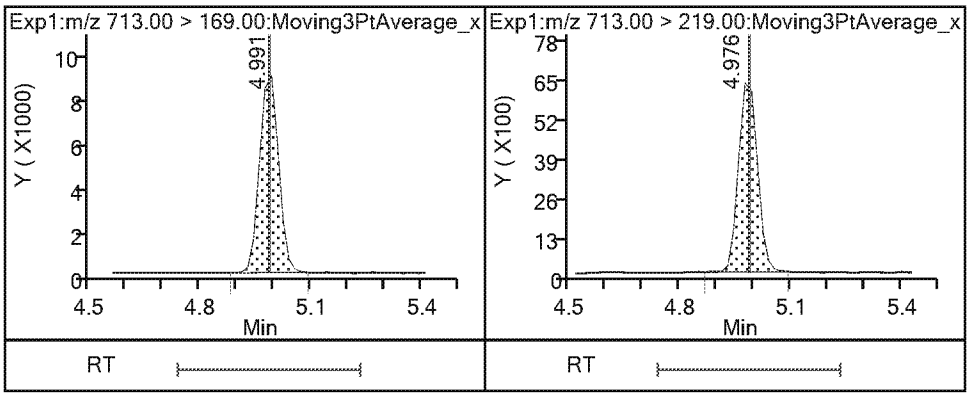
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid 20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento

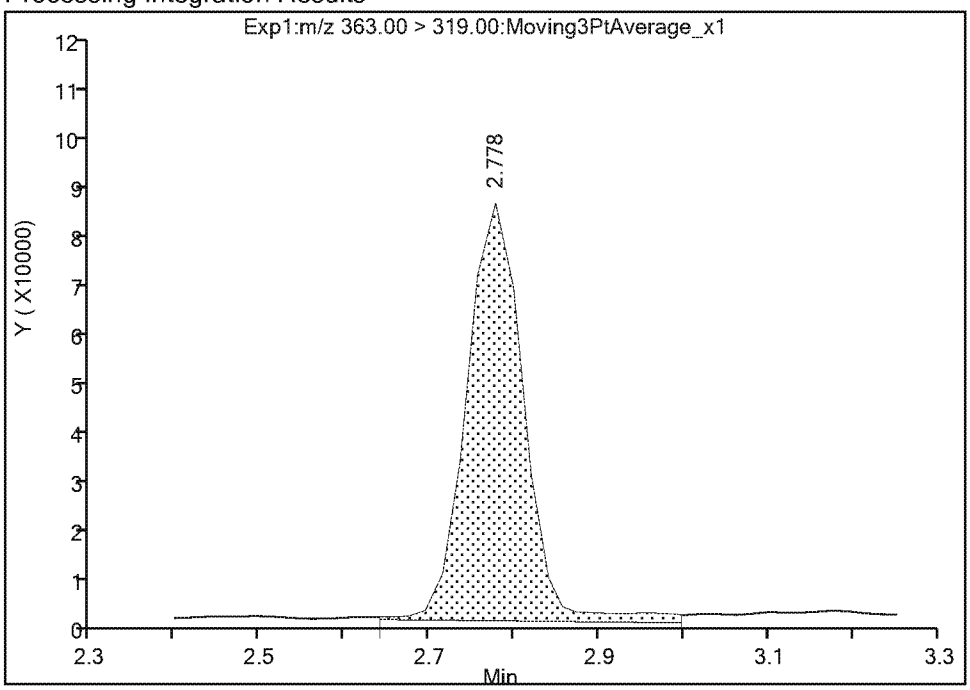
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_005.d				
Injection Date:	04-Apr-2019 15:33:14	Instrument ID:	A8_N		
Lims ID:	IC L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

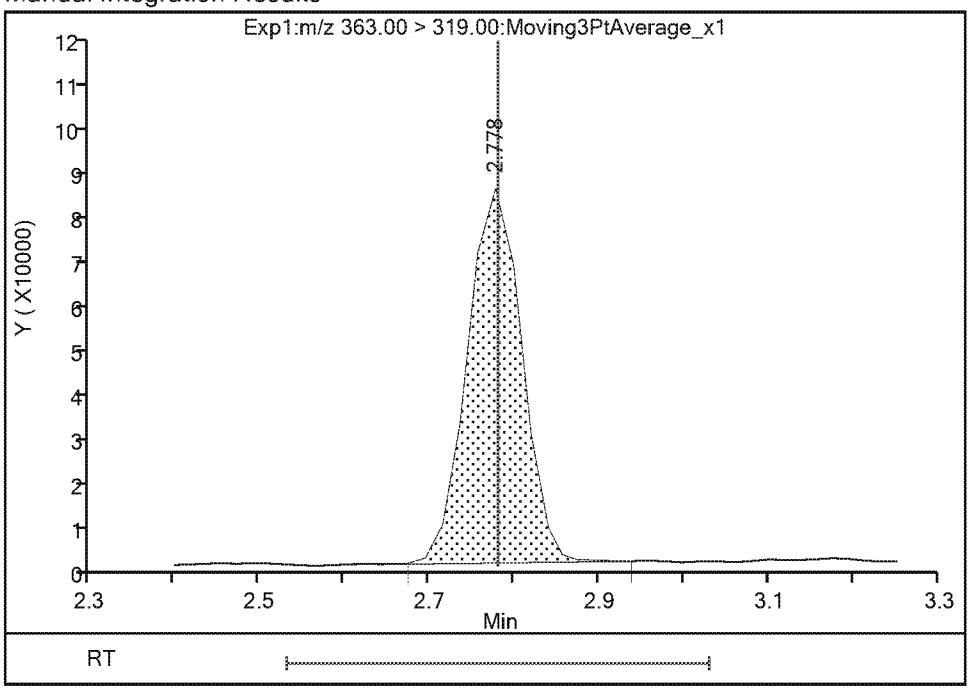
Processing Integration Results

RT: 2.78
Area: 379849
Amount: 0.256943
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 356195
Amount: 0.243166
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:26:15
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

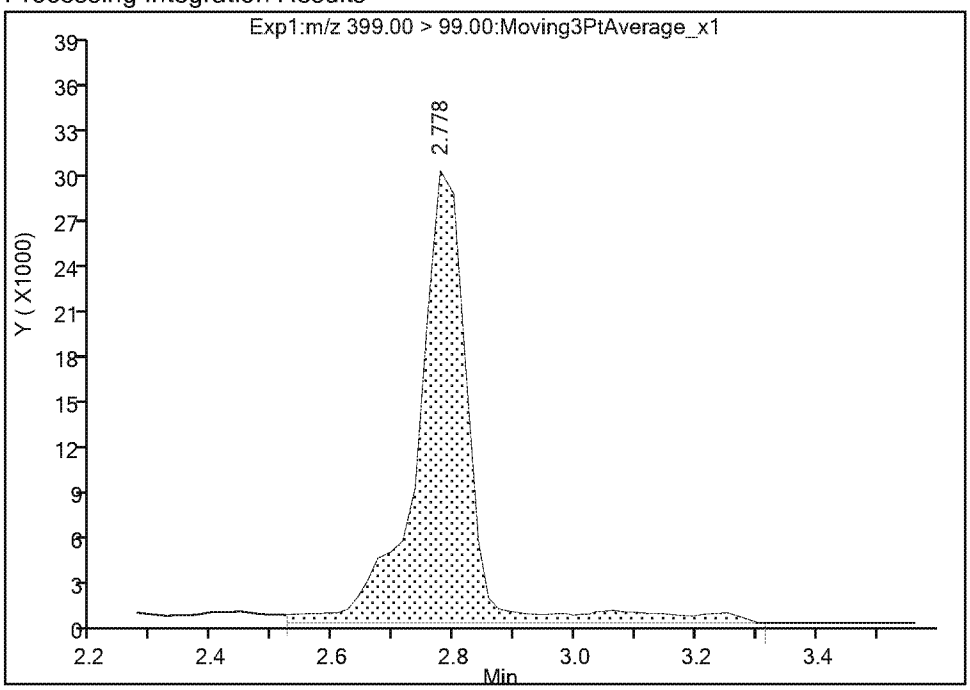
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_005.d				
Injection Date:	04-Apr-2019 15:33:14	Instrument ID:	A8_N		
Lims ID:	IC L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

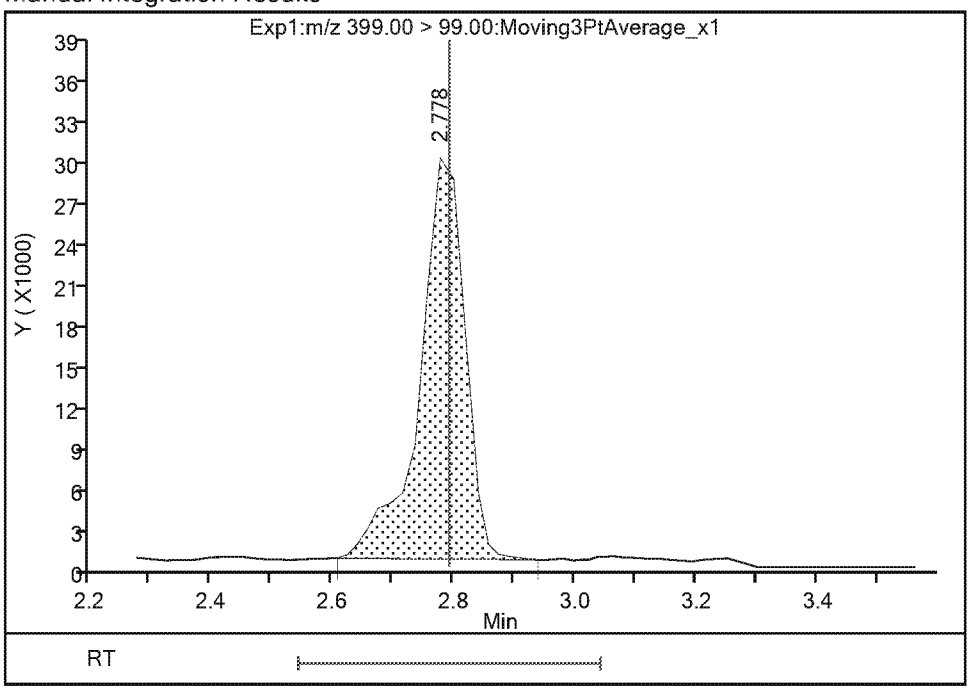
Processing Integration Results

RT: 2.78
Area: 175830
Amount: 0.214532
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 149945
Amount: 0.214532
Amount Units: ng/ml



Reviewer: Ex. 4 CBI, 04-Apr-2019 16:26:06
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

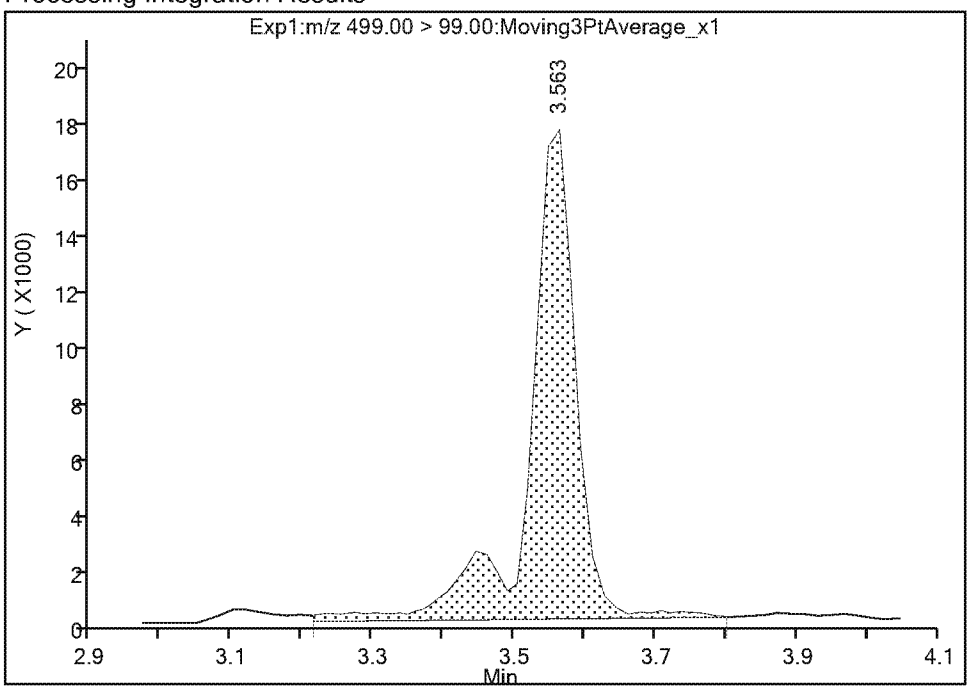
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_005.d				
Injection Date:	04-Apr-2019 15:33:14	Instrument ID:	A8_N		
Lims ID:	IC L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

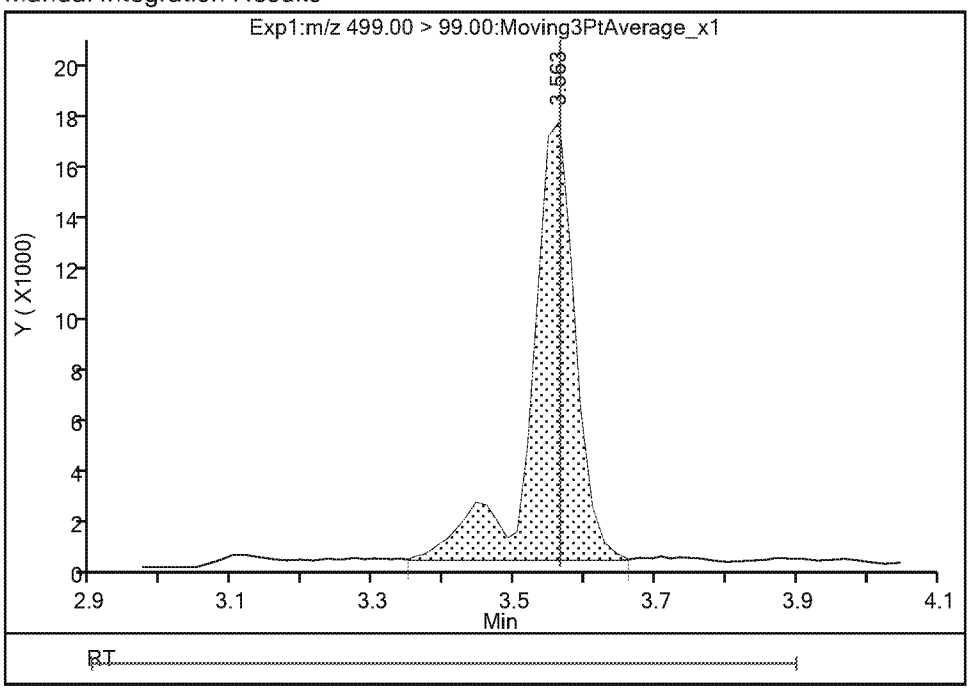
Processing Integration Results

RT: 3.56
Area: 77363
Amount: 0.215371
Amount Units: ng/ml



Manual Integration Results

RT: 3.56
Area: 71669
Amount: 0.215371
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:26:28
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_006.d
Lims ID: IC L4
Client ID:
Sample Type: ICISAV Calib Level: 4
Inject. Date: 04-Apr-2019 15:42:43 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: L4_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 04-Apr-2019 16:55:36 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0339

First Level Reviewer: Ex. 4 CBI Date: 04-Apr-2019 16:28:58
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.976	1.992	-0.016	1.000	1363203	0.8835	Target=1.00	7845	
298.90 > 99.00	1.992	1.992	0.0	1.008	933248		1.46(0.00-0.00)	403	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.739	1365572	0.99	Target=1.00	348	
313.00 > 119.00	2.347	2.347	0.0	0.739	127087		10.75(0.00-0.00)	153	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3679673	2.56		5904	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.473	2.478	-0.005	1.000	321670	0.9643		175	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.481	-0.008	1.000	176033	2.73		840	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.778	2.780	-0.002	1.000	1382413	1.06	Target=1.00	145	
363.00 > 169.00	2.778	2.780	-0.002	1.000	556614		2.48(0.00-0.00)	1044	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.778	2.792	-0.014	1.000	1678854	0.8969	Target=1.00	43948	
399.00 > 99.00	2.778	2.792	-0.014	1.000	585566		2.87(0.00-0.00)	203	
24 DONA									
377.00 > 251.00	2.819	2.825	-0.006	1.000	3537322	0.99	Target=1.00	6096	
377.00 > 85.00	2.819	2.825	-0.006	1.000	2123134		1.67(0.00-0.00)	225500	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.186	-0.009		3083165	2.50		7679	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.177	3.186	-0.009	1.000	1283975	1.03	Target=1.00	152	
413.00 > 169.00	3.177	3.186	-0.009	1.000	720080		1.78(0.00-0.00)	999	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.550	3.562	-0.012		3122011	2.39		12969	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.565	3.564	0.001	1.004	1251855	0.9072	Target=1.00	5434	
499.00 > 99.00	3.550	3.564	-0.014	1.000	265687		4.71(0.00-0.00)	263	
9 Perfluorononanoic acid									
463.00 > 419.00	3.565	3.577	-0.012	1.000	929844	1.02	Target=1.00	547	
463.00 > 169.00	3.565	3.577	-0.012	1.000	249000		3.73(0.00-0.00)	1720	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.752	3.755	-0.003	1.000	2112907	0.9517		4597	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.915	3.915	0.0	1.000	727647	1.01	Target=1.00	281	
513.00 > 169.00	3.915	3.915	0.0	1.000	146207		4.98(0.00-0.00)	542	
$ 10 13C2 PFDA									
515.00 > 470.00	3.915	3.931	-0.016	1.000	1919819	2.51		7649	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.090	4.091	-0.001		480279	2.50		4393	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.090	4.091	-0.001	1.000	178574	0.99		1829	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.234	4.236	-0.002	1.000	542352	0.9893	Target=1.00	263	
563.00 > 169.00	4.234	4.236	-0.002	1.000	114266		4.75(0.00-0.00)	1392	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.234	4.243	-0.009	1.035	490987	2.50		292	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.250	4.252	-0.002	1.004	157284	0.9018		363	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.356	4.369	-0.013	1.000	2602188	0.9350		6818	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.508	4.508	0.0	1.000	544869	0.99	Target=1.00	391	
613.00 > 169.00	4.508	4.508	0.0	1.000	154449		3.53(0.00-0.00)	2003	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.757	4.772	-0.015	1.000	408471	0.9596	Target=1.00	156	
663.00 > 169.00	4.757	4.772	-0.015	1.000	145846		2.80(0.00-0.00)	1270	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.973	4.985	-0.012	1.000	108220	0.9885	Target=1.00	1296	
713.00 > 219.00	4.973	4.985	-0.012	1.000	77630		1.39(0.00-0.00)	774	

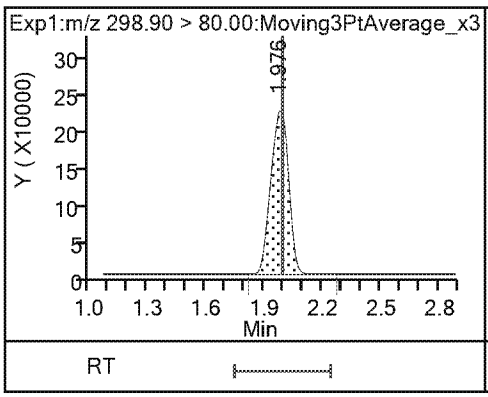
Reagents:

LC537_NC_L4_00003 Amount Added: 1.00 Units: mL

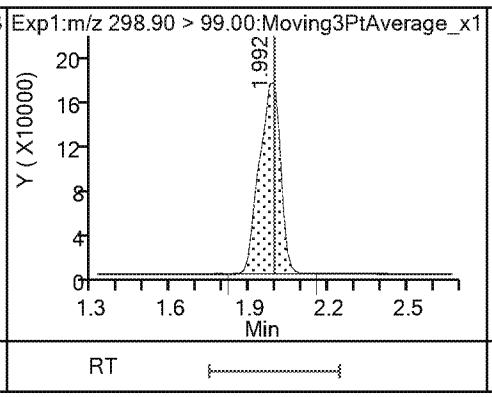
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_006.d
Injection Date: 04-Apr-2019 15:42:43 Instrument ID: A8_N
Lims ID: IC L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 5
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

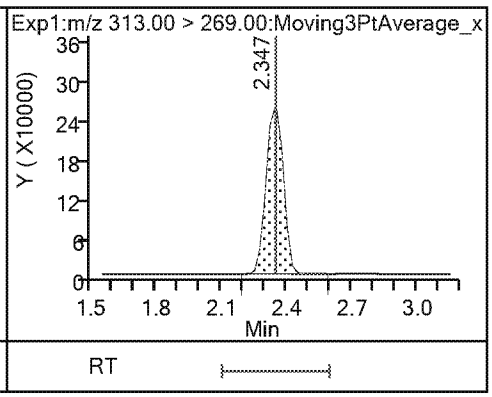
1 Perfluorobutanesulfonic acid



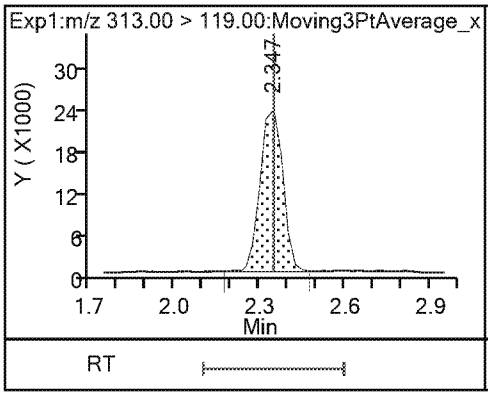
1 Perfluorobutanesulfonic acid



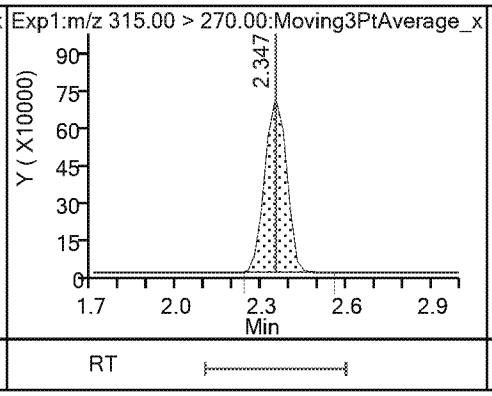
13 Perfluorohexanoic acid



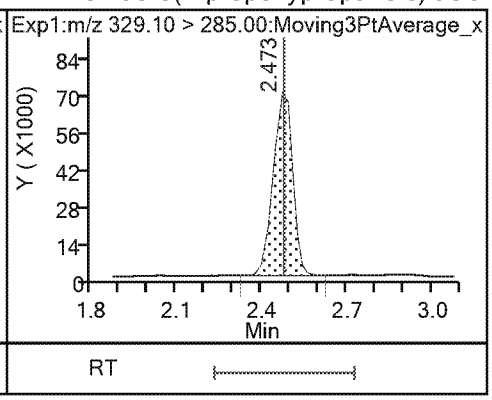
13 Perfluorohexanoic acid



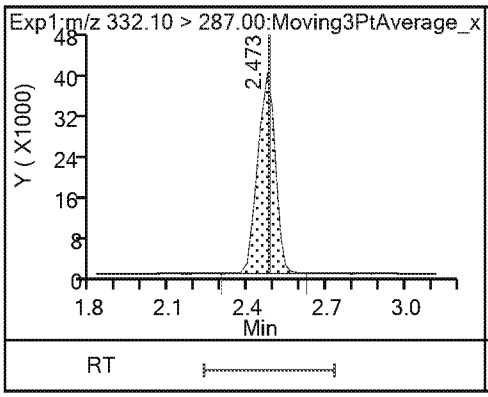
$ 2 13C2 PFHxA



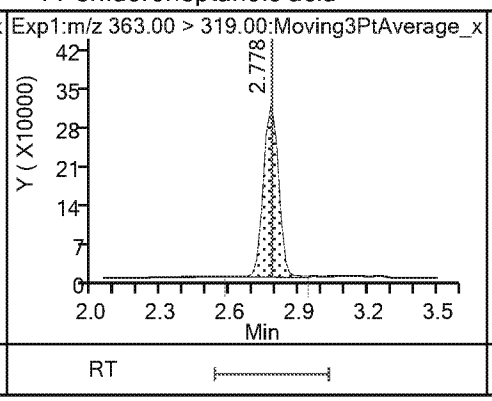
22 Perfluoro(2-propoxypropanoic) acid



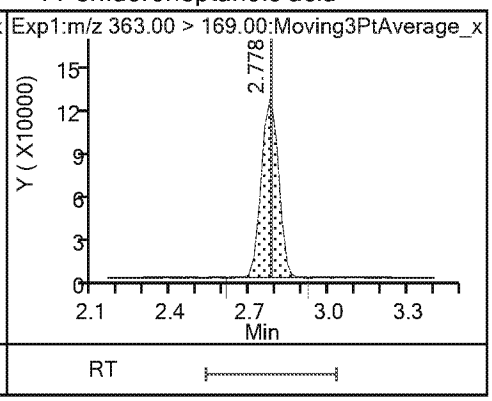
$ 25 13C3 HFPO-DA



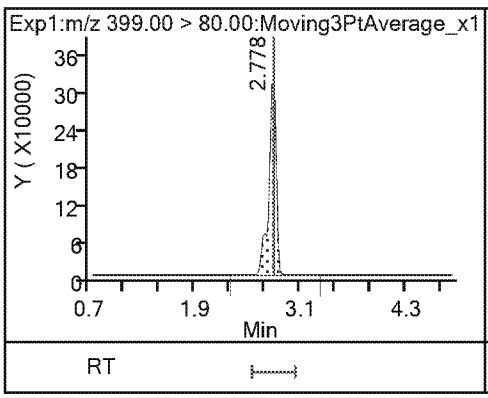
4 Perfluoroheptanoic acid



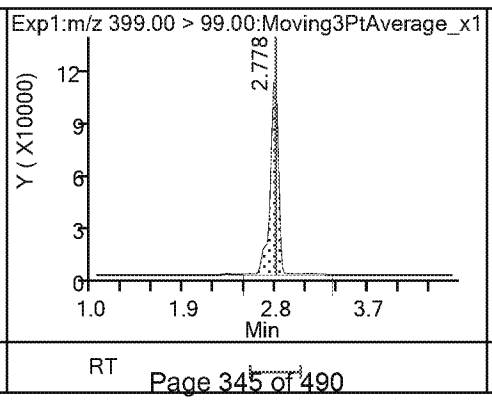
4 Perfluoroheptanoic acid



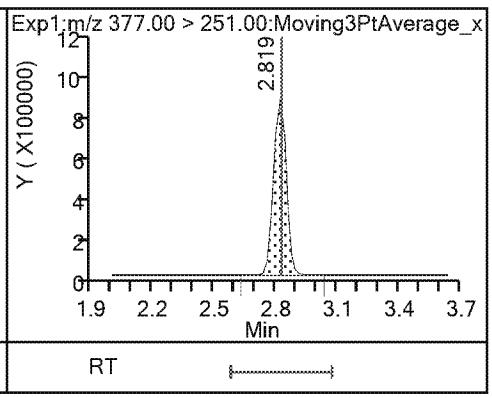
3 Perfluorohexanesulfonic acid



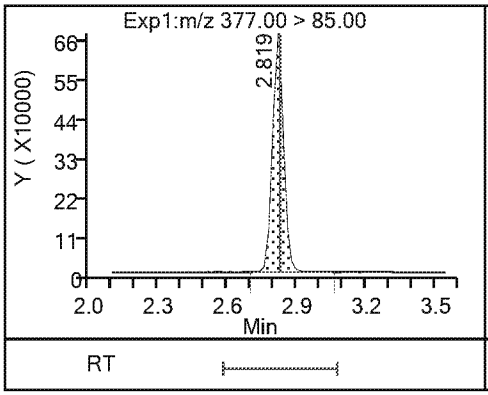
3 Perfluorohexanesulfonic acid



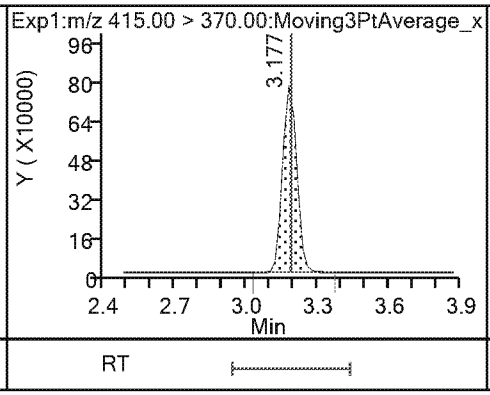
24 DONA



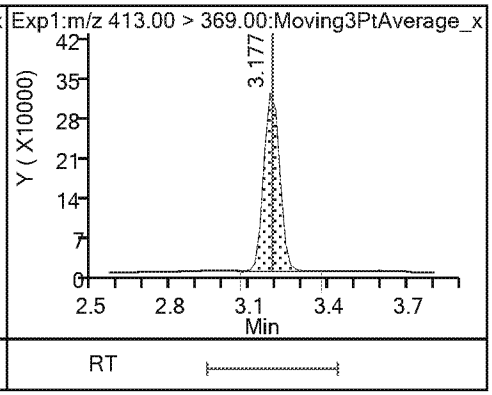
24 DONA



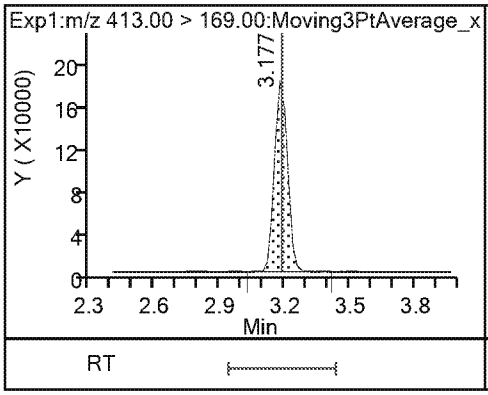
* 5 13C2 PFOA



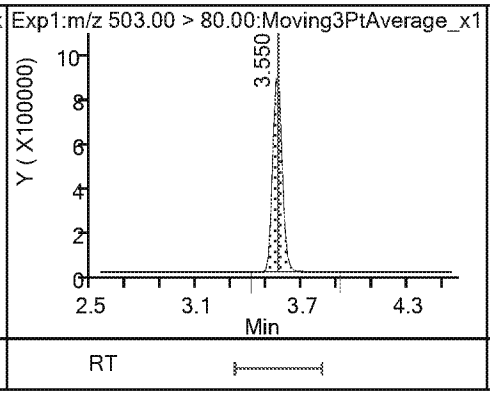
6 Perfluorooctanoic acid



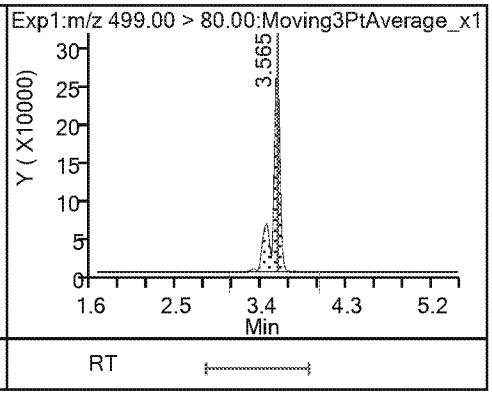
6 Perfluorooctanoic acid



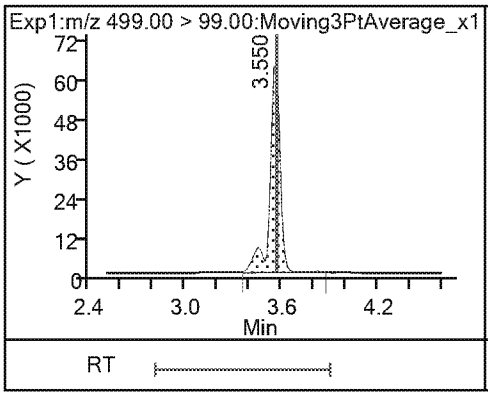
* 7 13C4 PFOS



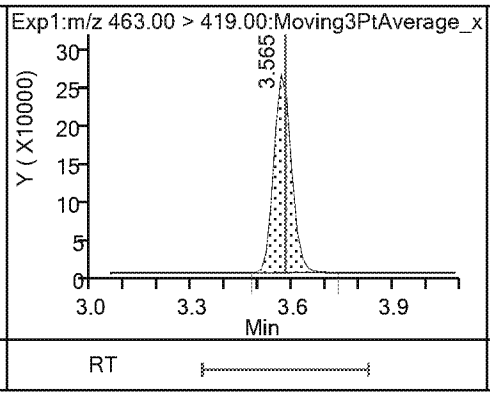
8 Perfluorooctanesulfonic acid



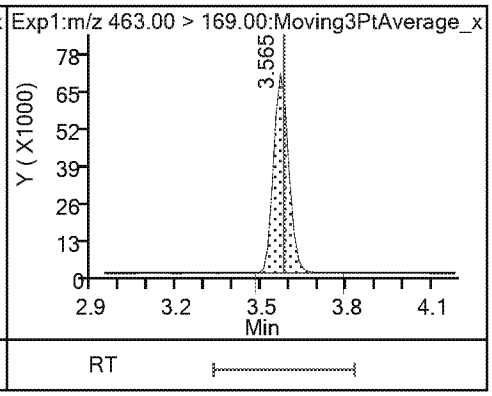
8 Perfluorooctanesulfonic acid



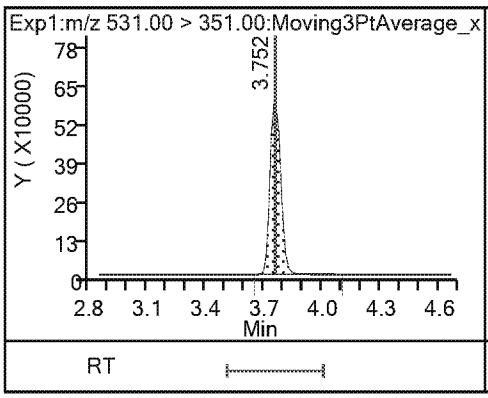
9 Perfluorononanoic acid



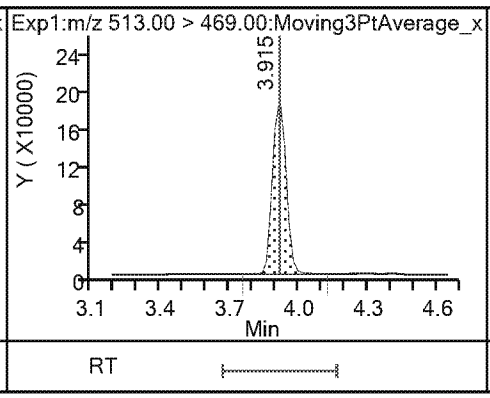
9 Perfluorononanoic acid



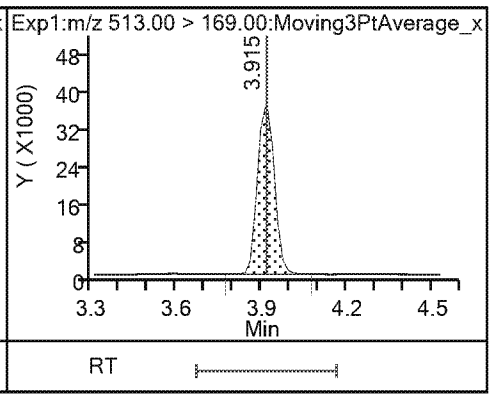
23 9-Chlorohexadecafluoro-3-oxanonane



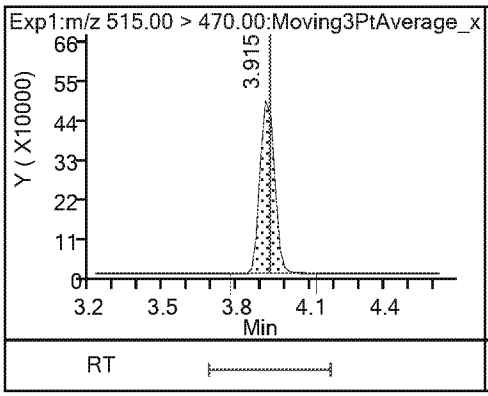
14 Perfluorodecanoic acid



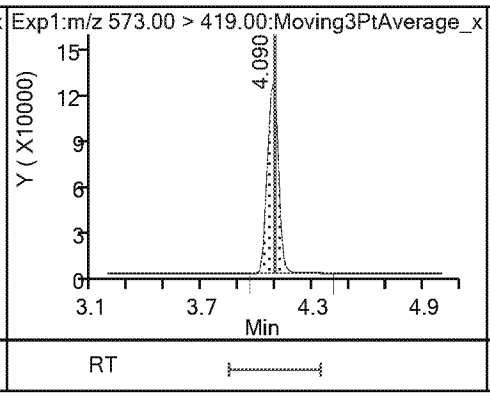
14 Perfluorodecanoic acid



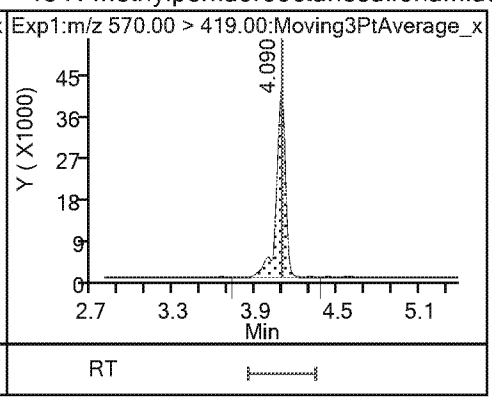
$ 10 13C2 PFDA



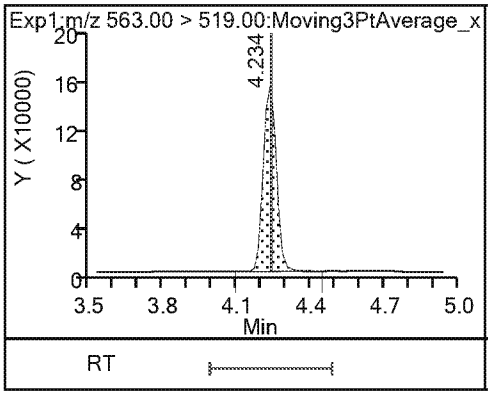
* 12 d3-NMeFOSAA



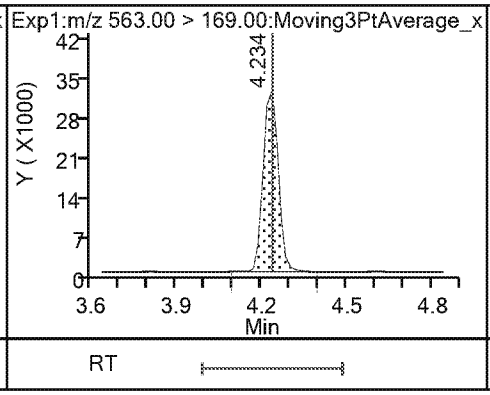
15 N-methylperfluorooctanesulfonamido



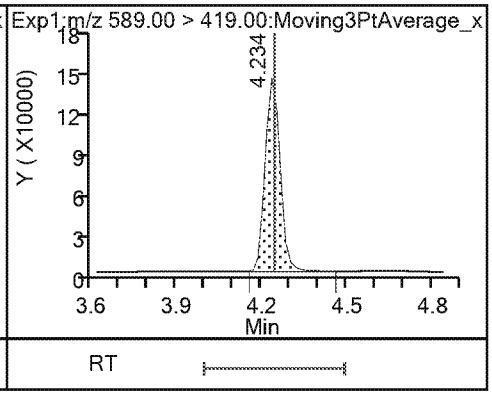
17 Perfluoroundecanoic acid



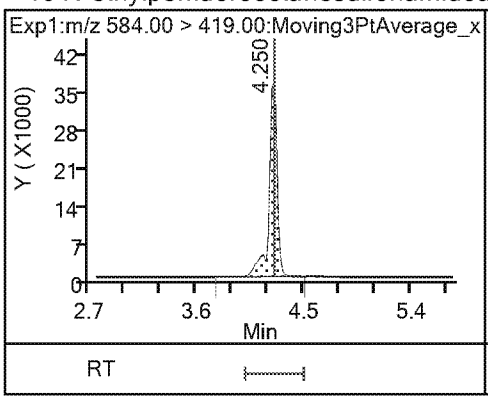
17 Perfluoroundecanoic acid



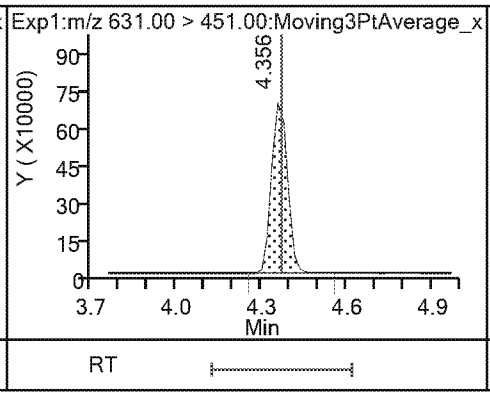
$ 11 d5-NEtFOSAA



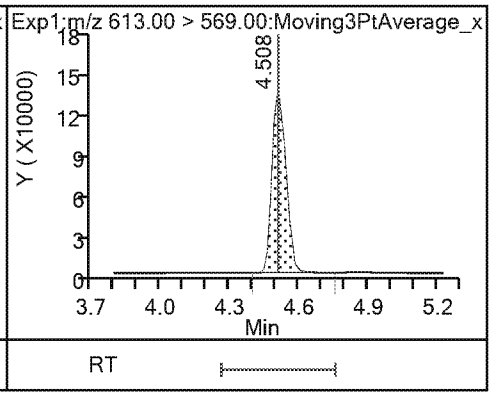
16 N-ethylperfluorooctanesulfonamidoa



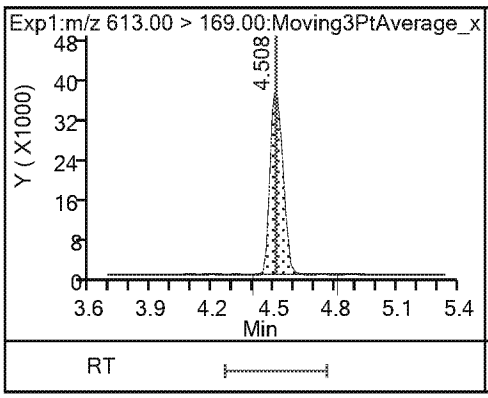
21 11-Chloroeicosafluoro-3-oxaundecan



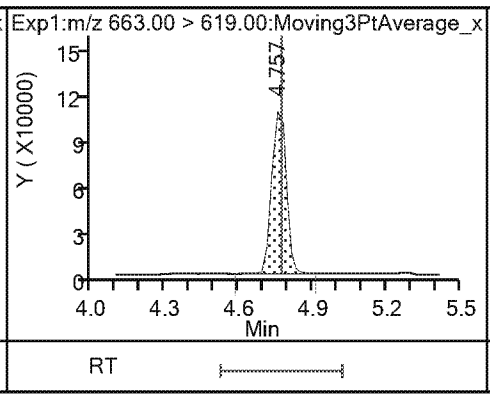
18 Perfluorododecanoic acid



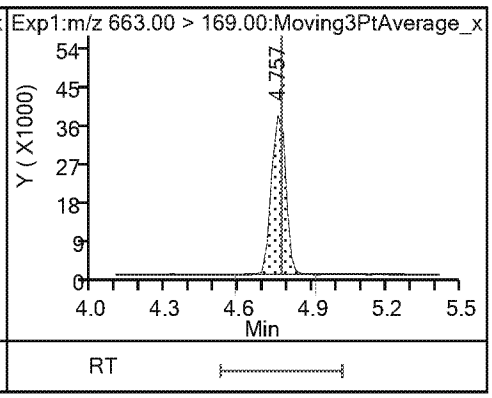
18 Perfluorododecanoic acid



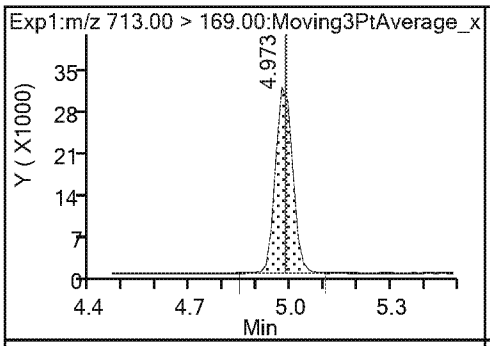
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid

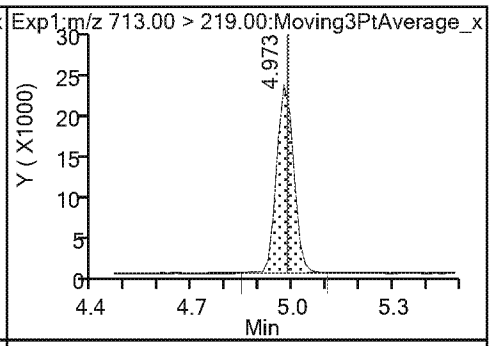


20 Perfluorotetradecanoic acid



RT

20 Perfluorotetradecanoic acid



RT

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_007.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 04-Apr-2019 15:52:12 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: L5_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 04-Apr-2019 16:55:37 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0339

First Level Reviewer: Ex. 4 CBI Date: 04-Apr-2019 16:29:28
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.992	0.0	1.000	3776349	2.29	Target=1.00	22354	
298.90 > 99.00	1.992	1.992	0.0	1.000	2533143		1.49(0.00-0.00)	1145	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.734	3660025	2.45	Target=1.00	926	
313.00 > 119.00	2.347	2.347	0.0	0.734	345240		10.60(0.00-0.00)	399	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3865341	2.47		6719	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.490	2.478	0.012	1.000	983748	2.71		587	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.490	2.481	0.009	1.000	173505	2.47		1212	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.778	2.780	-0.002	1.000	3685336	2.60	Target=1.00	372	
363.00 > 169.00	2.778	2.780	-0.002	1.000	1545418		2.38(0.00-0.00)	2931	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.798	2.792	0.006	1.000	4700666	2.34	Target=1.00	3388	
399.00 > 99.00	2.798	2.792	0.006	1.000	1564451		3.00(0.00-0.00)	562	
24 DONA									
377.00 > 251.00	2.819	2.825	-0.006	1.000	9636789	2.49	Target=1.00	11334	
377.00 > 85.00	2.819	2.825	-0.006	1.000	6001600		1.61(0.00-0.00)	889424	
* 5 13C2 PFOA									
415.00 > 370.00	3.196	3.186	0.010		3349568	2.50		7639	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.196	3.186	0.010	1.000	3375931	2.48	Target=1.00	408	
413.00 > 169.00	3.196	3.186	0.010	1.000	1960449		1.72(0.00-0.00)	1985	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.564	3.562	0.002		3343739	2.39		9322	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.564	3.564	0.0	1.000	3378099	2.29	Target=1.00	3412	
499.00 > 99.00	3.564	3.564	0.0	1.000	721941		4.68(0.00-0.00)	860	
9 Perfluorononanoic acid									
463.00 > 419.00	3.578	3.577	0.001	1.000	2562840	2.59	Target=1.00	1613	
463.00 > 169.00	3.578	3.577	0.001	1.000	689702		3.72(0.00-0.00)	4513	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.752	3.755	-0.003	1.000	5708869	2.40		6088	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.915	3.915	0.0	1.000	1976324	2.52	Target=1.00	773	
513.00 > 169.00	3.915	3.915	0.0	1.000	403080		4.90(0.00-0.00)	1594	
$ 10 13C2 PFDA									
515.00 > 470.00	3.934	3.931	0.003	1.000	2016255	2.42		6185	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.090	4.091	-0.001		506515	2.50		3776	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.090	4.091	-0.001	1.000	453306	2.39		2333	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.234	4.236	-0.002	1.000	1495680	2.51	Target=1.00	658	
563.00 > 169.00	4.234	4.236	-0.002	1.000	314031		4.76(0.00-0.00)	3283	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.250	4.243	0.007	1.039	543402	2.62		307	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.250	4.252	-0.002	1.000	448780	2.44		1170	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.376	4.369	0.007	1.000	7311295	2.45		10071	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.509	4.508	0.001	1.000	1525011	2.55	Target=1.00	1217	
613.00 > 169.00	4.509	4.508	0.001	1.000	428853		3.56(0.00-0.00)	3907	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.778	4.772	0.006	1.000	1138610	2.46	Target=1.00	445	
663.00 > 169.00	4.778	4.772	0.006	1.000	389256		2.93(0.00-0.00)	2428	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.991	4.985	0.006	1.000	297747	2.50	Target=1.00	2067	
713.00 > 219.00	4.991	4.985	0.006	1.000	214502		1.39(0.00-0.00)	1624	

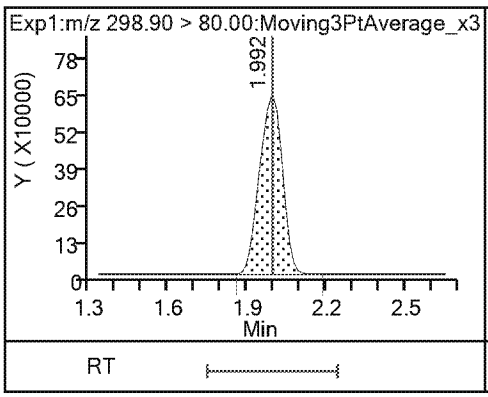
Reagents:

LC537_NC_L5_00003 Amount Added: 1.00 Units: mL

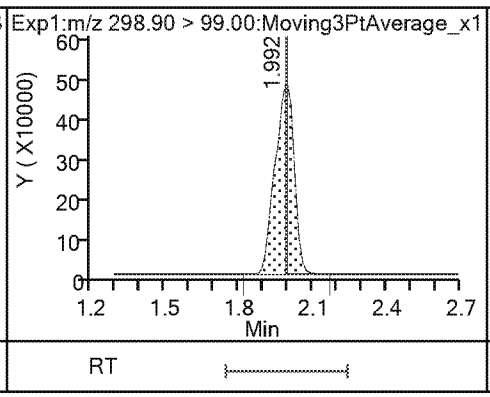
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_007.d
Injection Date: 04-Apr-2019 15:52:12 Instrument ID: A8_N
Lims ID: IC L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 6
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

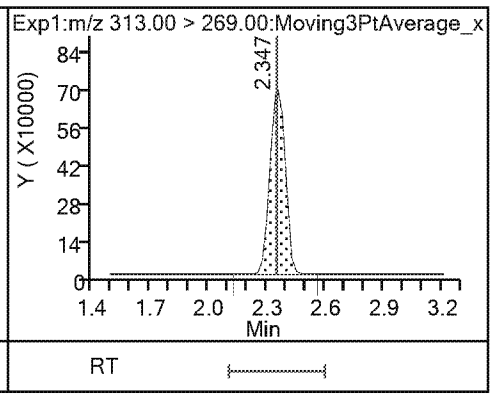
1 Perfluorobutanesulfonic acid



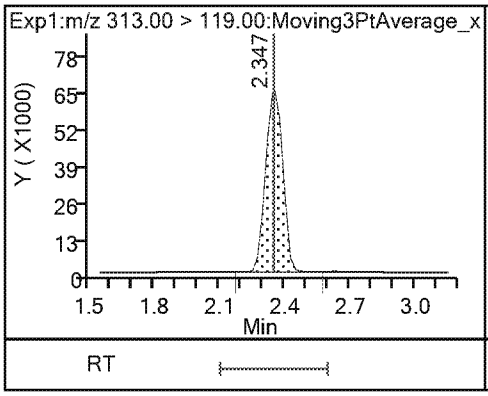
1 Perfluorobutanesulfonic acid



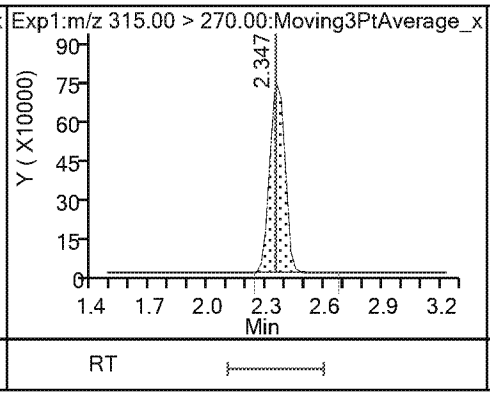
13 Perfluorohexanoic acid



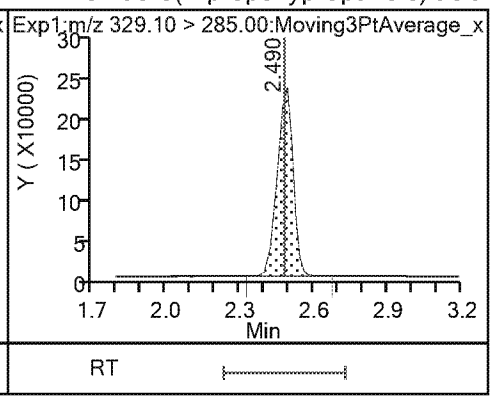
13 Perfluorohexanoic acid



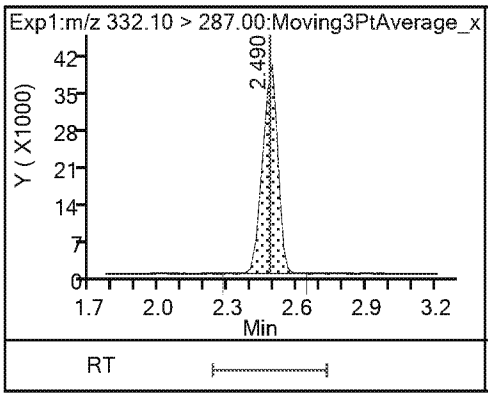
$ 2 13C2 PFHxA



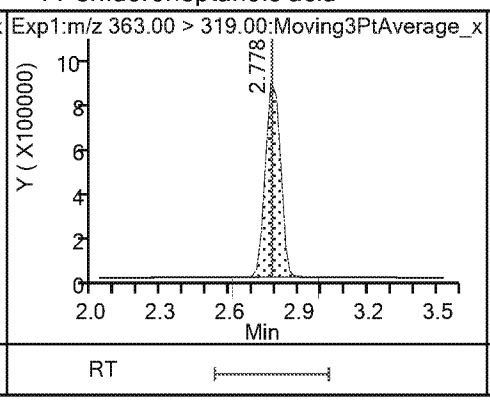
22 Perfluoro(2-propoxypropanoic) acid



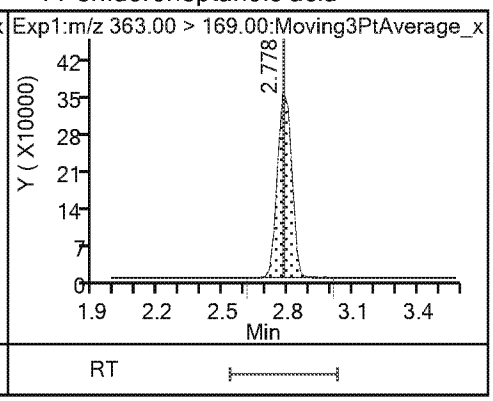
$ 25 13C3 HFPO-DA



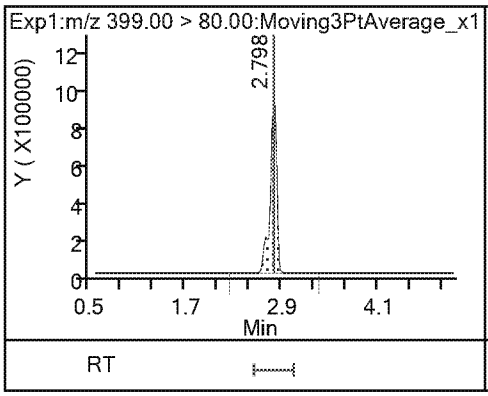
4 Perfluoroheptanoic acid



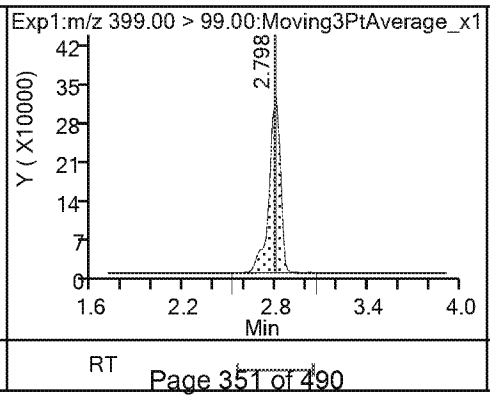
4 Perfluoroheptanoic acid



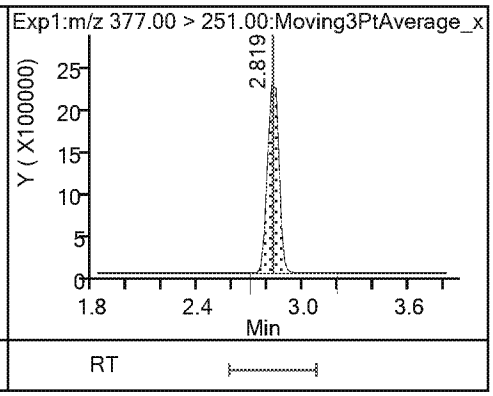
3 Perfluorohexanesulfonic acid



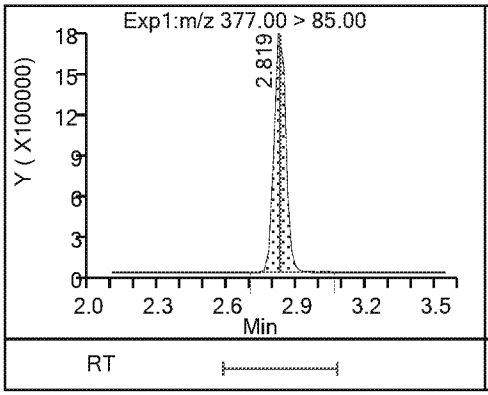
3 Perfluorohexanesulfonic acid



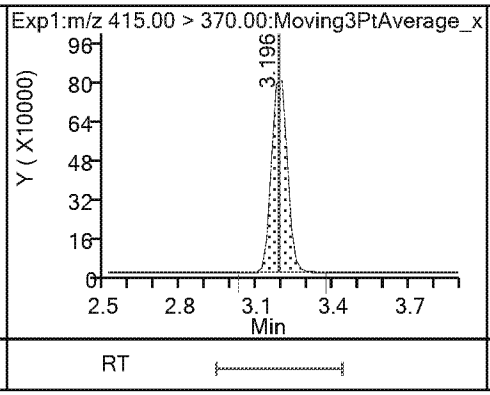
24 DONA



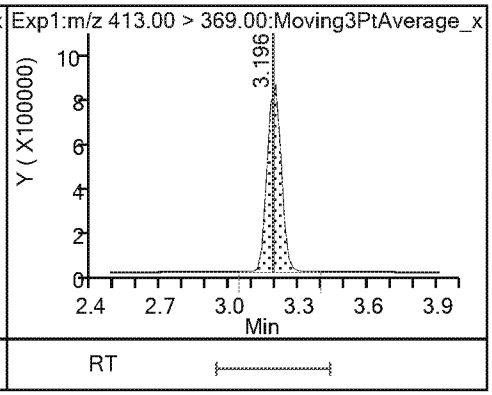
24 DONA



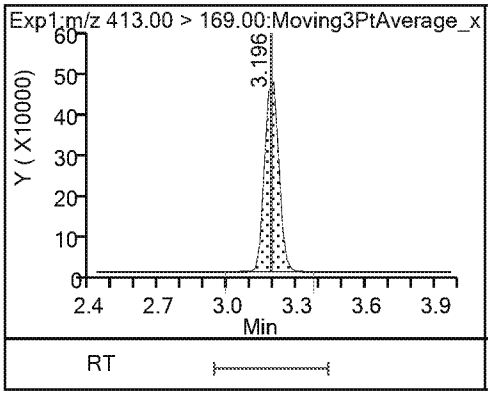
* 5 13C2 PFOA



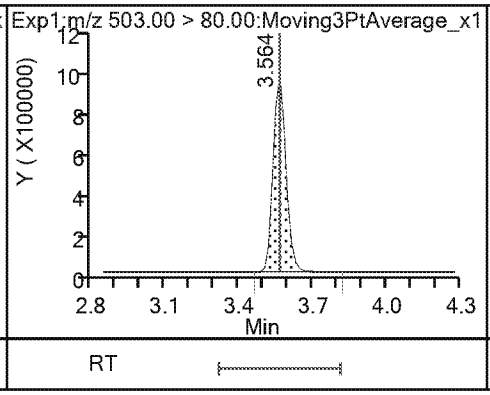
6 Perfluorooctanoic acid



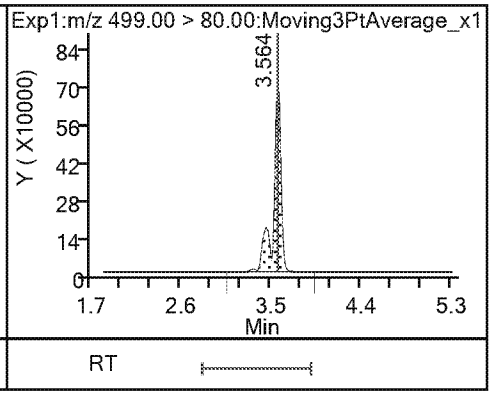
6 Perfluorooctanoic acid



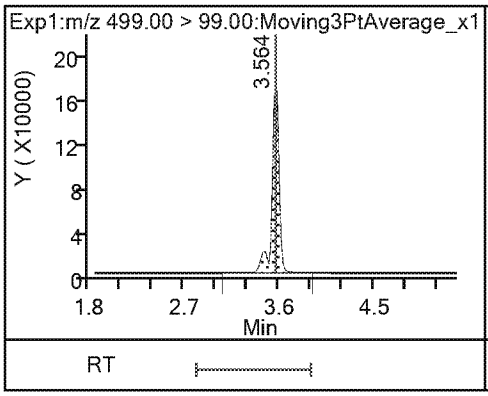
* 7 13C4 PFOS



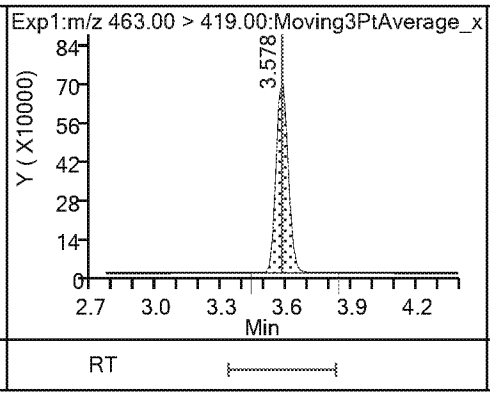
8 Perfluorooctanesulfonic acid



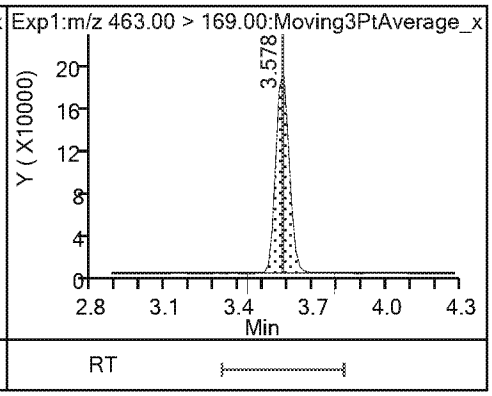
8 Perfluorooctanesulfonic acid



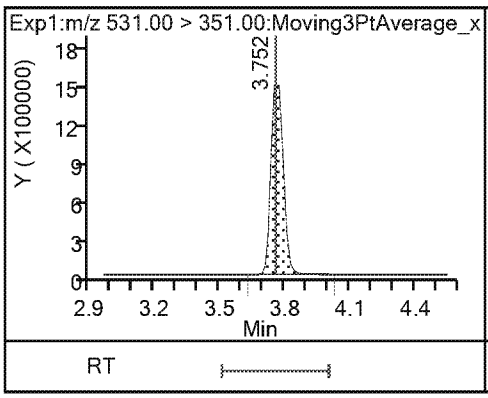
9 Perfluorononanoic acid



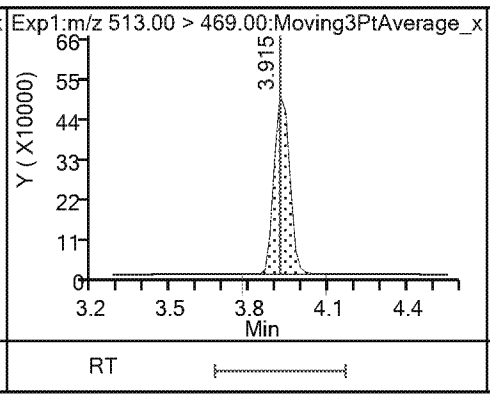
9 Perfluorononanoic acid



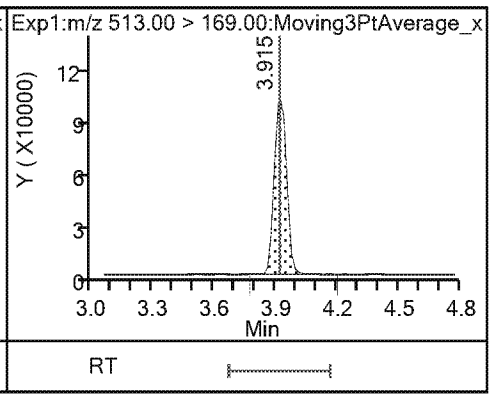
23 9-Chlorohexadecafluoro-3-oxanonane



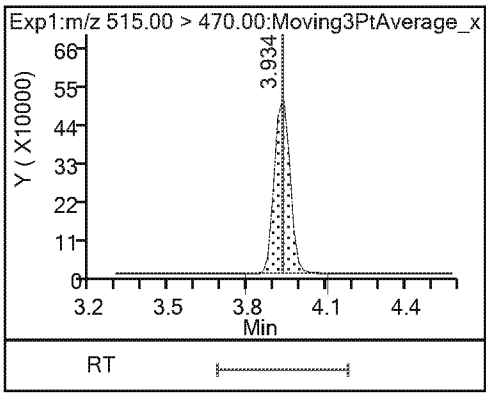
14 Perfluorodecanoic acid



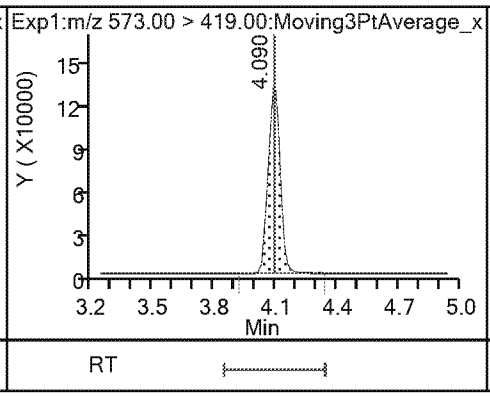
14 Perfluorodecanoic acid



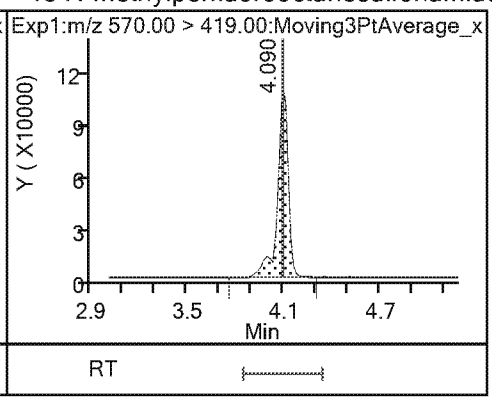
$ 10 13C2 PFDA



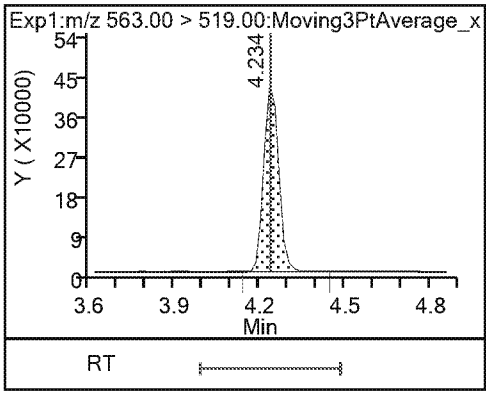
* 12 d3-NMeFOSAA



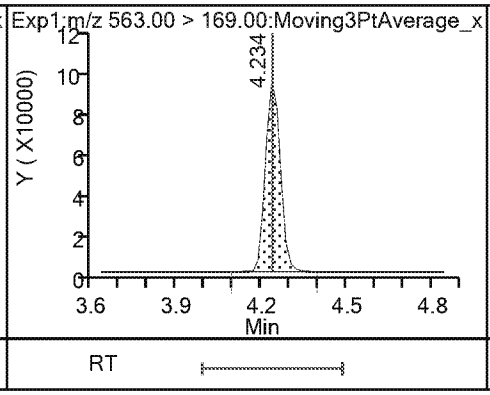
15 N-methylperfluorooctanesulfonamido



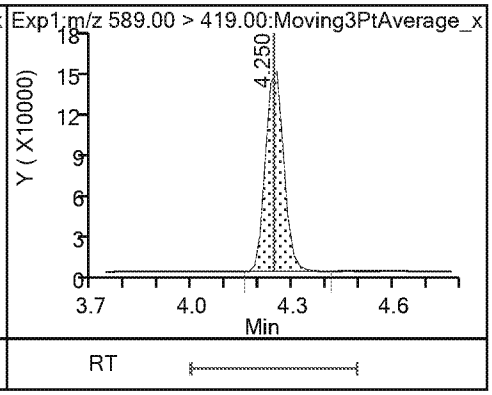
17 Perfluoroundecanoic acid



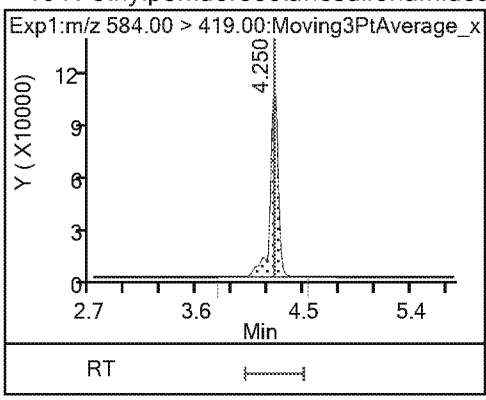
17 Perfluoroundecanoic acid



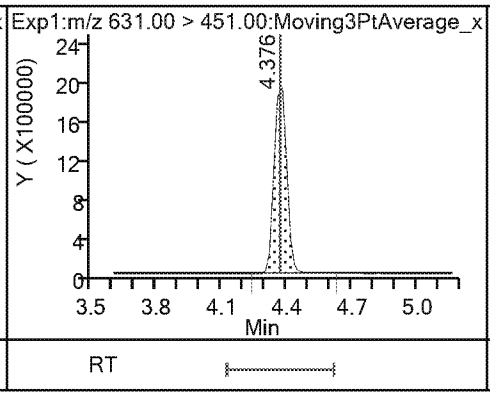
$ 11 d5-NEtFOSAA



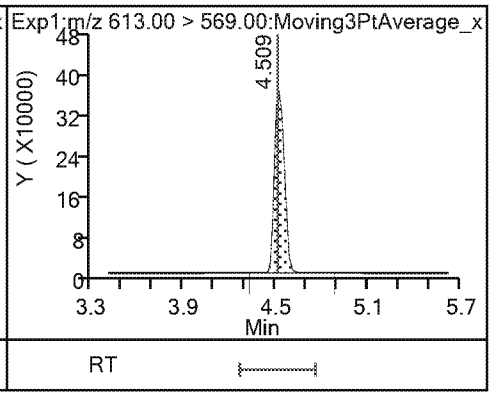
16 N-ethylperfluorooctanesulfonamidoa



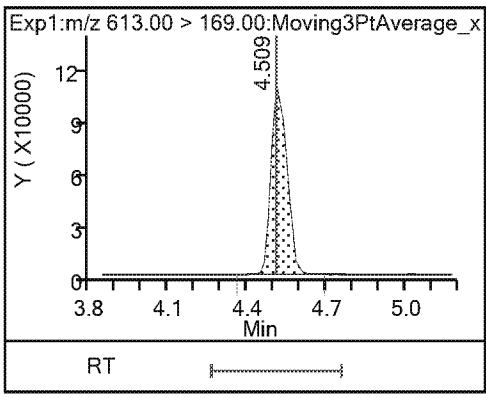
21 11-Chloroeicosafluoro-3-oxaundecan



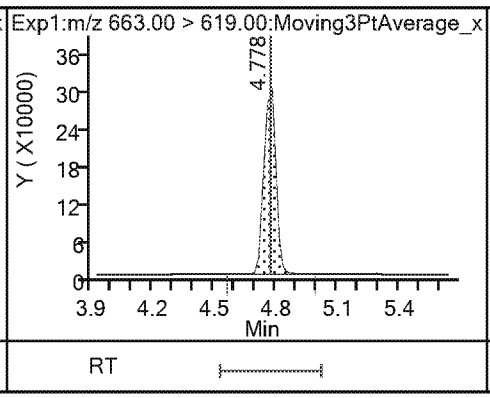
18 Perfluorododecanoic acid



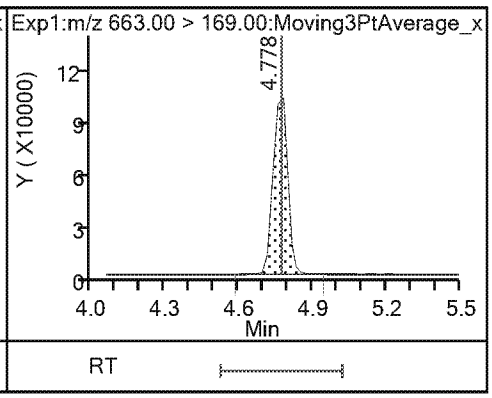
18 Perfluorododecanoic acid



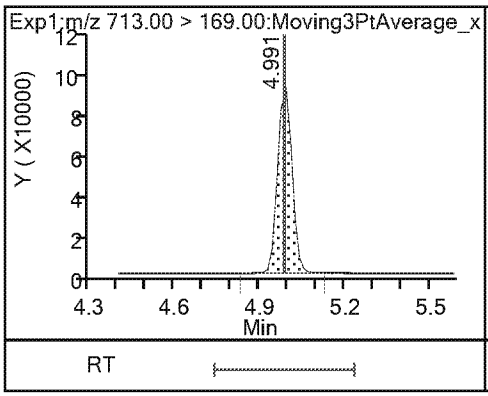
19 Perfluorotridecanoic acid



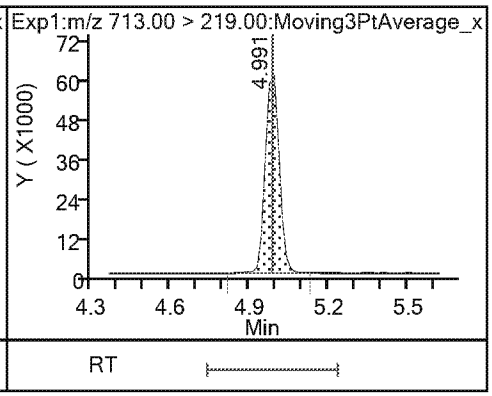
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

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Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 04-Apr-2019 16:01:40 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: L6_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 04-Apr-2019 16:55:39 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0339

First Level Reviewer: **Ex. 4 CBI** Date: 04-Apr-2019 16:29:50
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.992	0.0	1.000	6676217	4.65	Target=1.00	36107	
298.90 > 99.00	1.992	1.992	0.0	1.000	4609145		1.45(0.00-0.00)	2211	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.735	6570391	5.02	Target=1.00	1619	
313.00 > 119.00	2.347	2.347	0.0	0.735	598149		10.98(0.00-0.00)	719	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3512098	2.56		5264	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.473	2.478	-0.005	1.000	1435848	4.51		792	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.481	-0.008	1.000	148313	2.41		757	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.790	2.780	0.010	1.000	6466379	5.19	Target=1.00	639	
363.00 > 169.00	2.790	2.780	0.010	1.000	2764828		2.34(0.00-0.00)	4869	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.790	2.792	-0.002	1.000	8410185	4.83	Target=1.00	5573	
399.00 > 99.00	2.790	2.792	-0.002	1.000	2797868		3.01(0.00-0.00)	1185	
24 DONA									
377.00 > 251.00	2.832	2.825	0.007	1.000	16773676	4.94	Target=1.00	14238	
377.00 > 85.00	2.832	2.825	0.007	1.000	10948485		1.53(0.00-0.00)	1549852	
* 5 13C2 PFOA									
415.00 > 370.00	3.194	3.186	0.008		2939637	2.50		11910	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.194	3.186	0.008	1.000	6149648	5.16	Target=1.00	719	
413.00 > 169.00	3.194	3.186	0.008	1.000	3566513		1.72(0.00-0.00)	3932	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.565	3.562	0.003		2905553	2.39		8654	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.565	3.564	0.001	1.000	6186361	4.82	Target=1.00	3736	
499.00 > 99.00	3.565	3.564	0.001	1.000	1316094		4.70(0.00-0.00)	1253	
9 Perfluorononanoic acid									
463.00 > 419.00	3.579	3.577	0.002	1.000	4550656	5.24	Target=1.00	2650	
463.00 > 169.00	3.565	3.577	-0.012	0.996	1144302		3.98(0.00-0.00)	6910	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.751	3.755	-0.004	1.000	10431945	5.05		16508	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.914	3.915	-0.001	1.000	3523695	5.12	Target=1.00	1351	
513.00 > 169.00	3.914	3.915	-0.001	1.000	711450		4.95(0.00-0.00)	2641	
$ 10 13C2 PFDA									
515.00 > 470.00	3.934	3.931	0.003	1.000	1815745	2.49		6368	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.091	4.091	0.0		457634	2.50		3052	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.091	4.091	0.0	1.000	849063	4.95		3452	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.235	4.236	-0.001	1.000	2621382	5.02	Target=1.00	1174	
563.00 > 169.00	4.235	4.236	-0.001	1.000	582119		4.50(0.00-0.00)	4247	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.235	4.243	-0.008	1.035	477831	2.55		288	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.251	4.252	-0.001	1.004	800676	4.82		8869	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.360	4.369	-0.009	1.000	12854899	4.96		15055	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.511	4.508	0.003	1.000	2736549	5.22	Target=1.00	1681	
613.00 > 169.00	4.511	4.508	0.003	1.000	775700		3.53(0.00-0.00)	5056	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.761	4.772	-0.011	1.000	2071195	5.10	Target=1.00	737	
663.00 > 169.00	4.761	4.772	-0.011	1.000	700166		2.96(0.00-0.00)	3351	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.992	4.985	0.007	1.000	541723	5.19	Target=1.00	3108	
713.00 > 219.00	4.977	4.985	-0.008	0.997	385474		1.41(0.00-0.00)	1972	

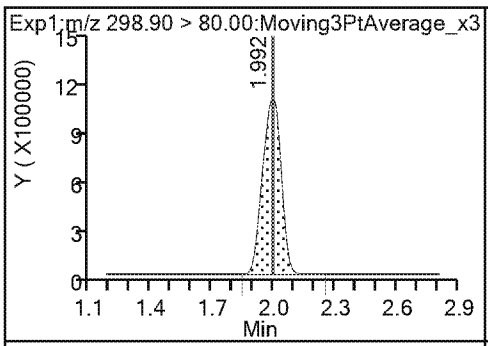
Reagents:

LC537_NC_L6_00003 Amount Added: 1.00 Units: mL

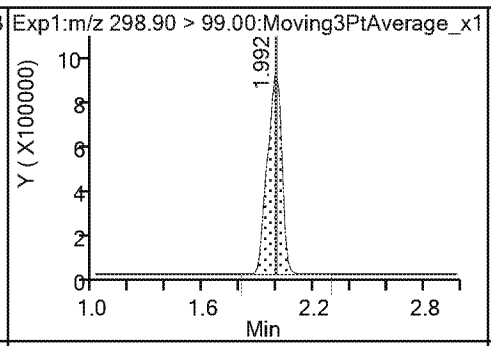
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_008.d
Injection Date: 04-Apr-2019 16:01:40 Instrument ID: A8_N
Lims ID: IC L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

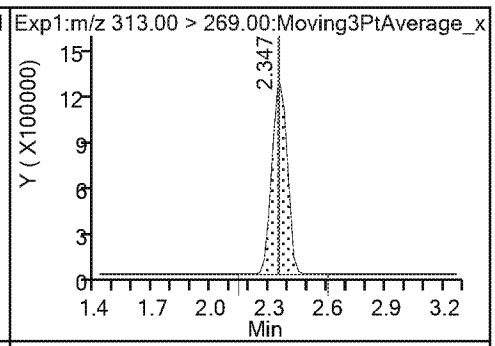
1 Perfluorobutanesulfonic acid



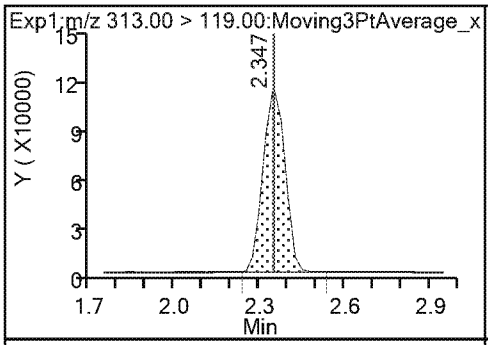
1 Perfluorobutanesulfonic acid



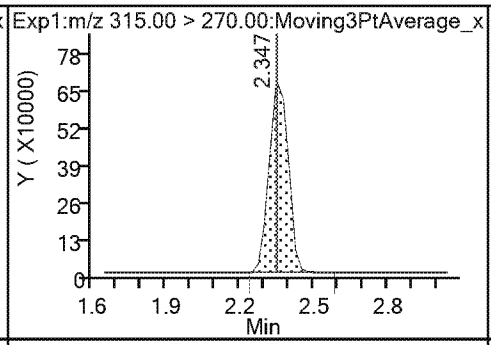
13 Perfluorohexanoic acid



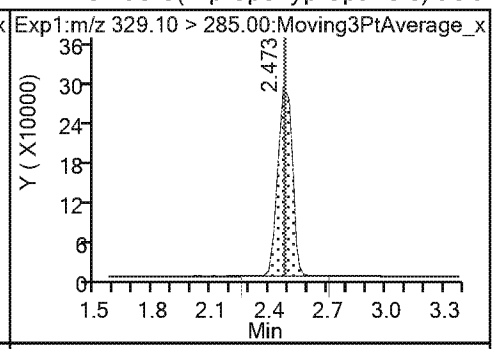
13 Perfluorohexanoic acid



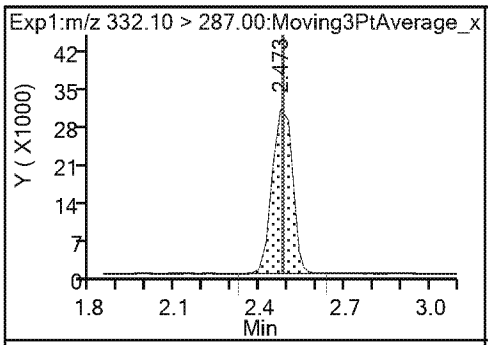
$ 2 13C2 PFHxA



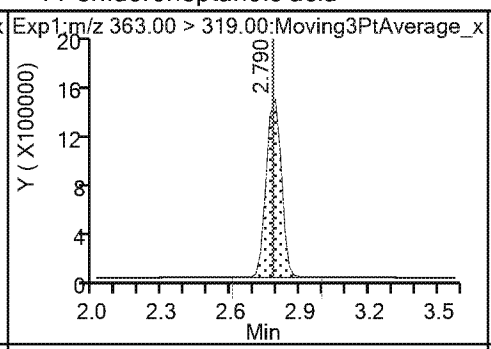
22 Perfluoro(2-propoxypropanoic) acid



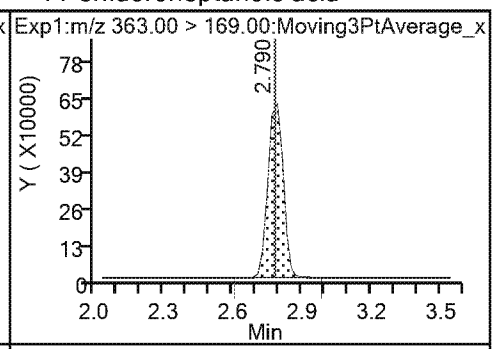
$ 25 13C3 HFPO-DA



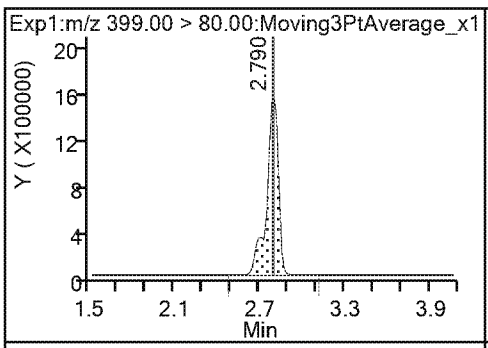
4 Perfluoroheptanoic acid



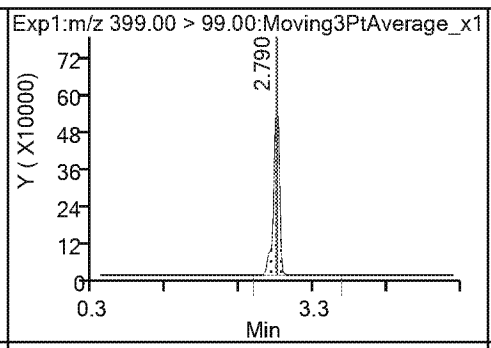
4 Perfluoroheptanoic acid



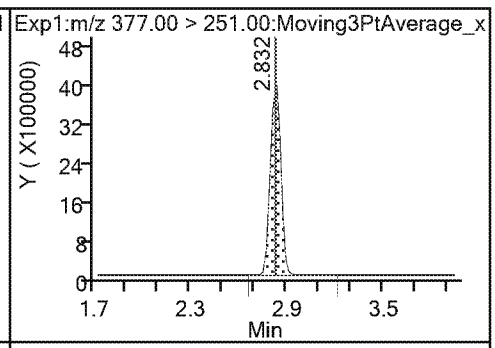
3 Perfluorohexanesulfonic acid



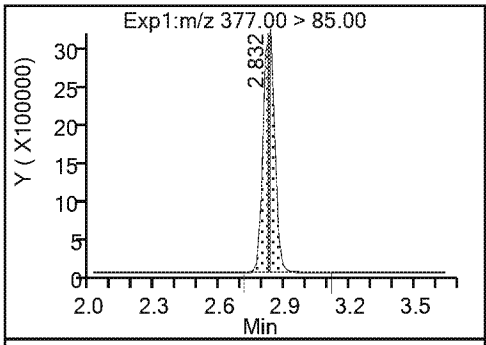
3 Perfluorohexanesulfonic acid



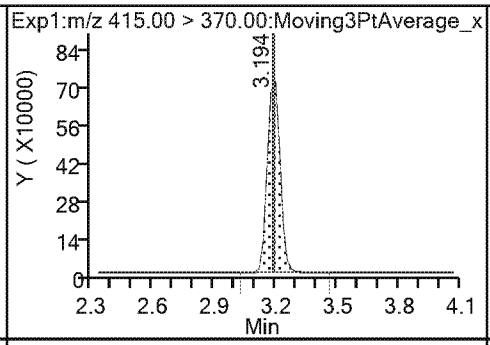
24 DONA



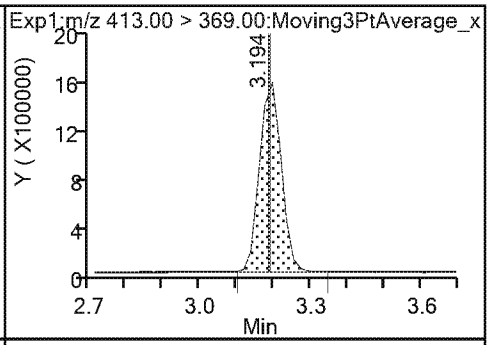
24 DONA



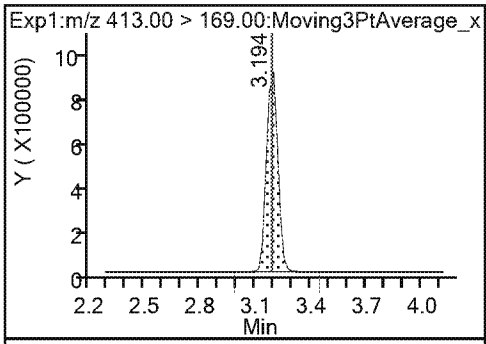
* 5 13C2 PFOA



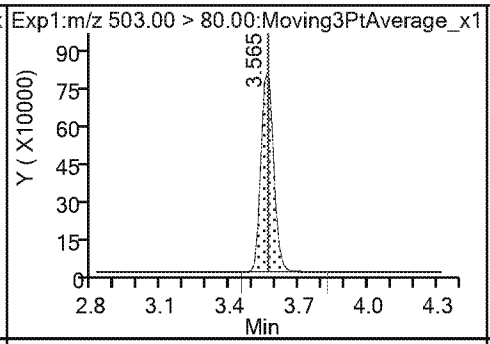
6 Perfluorooctanoic acid



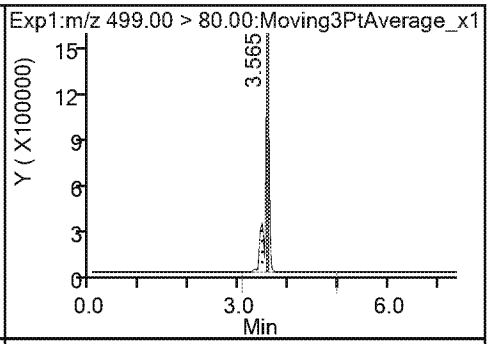
6 Perfluorooctanoic acid



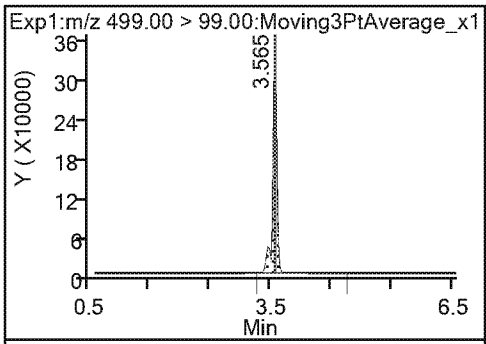
* 7 13C4 PFOS



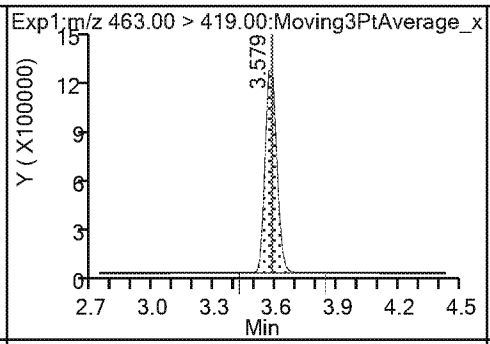
8 Perfluorooctanesulfonic acid



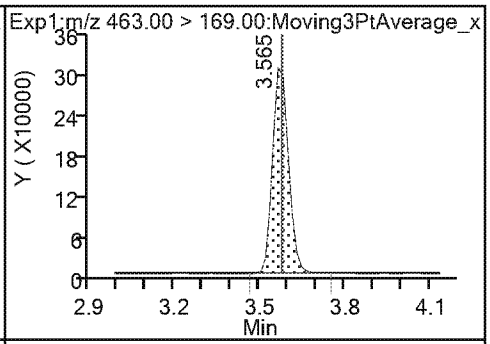
8 Perfluorooctanesulfonic acid



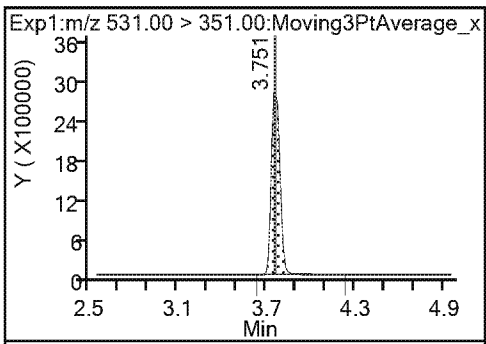
9 Perfluorononanoic acid



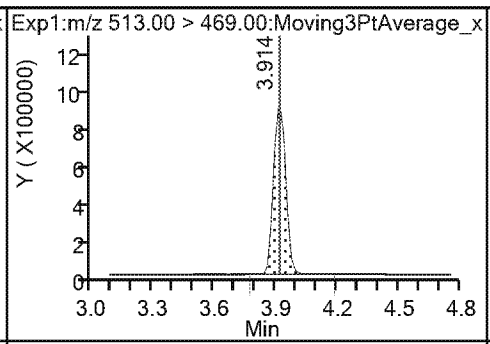
9 Perfluorononanoic acid



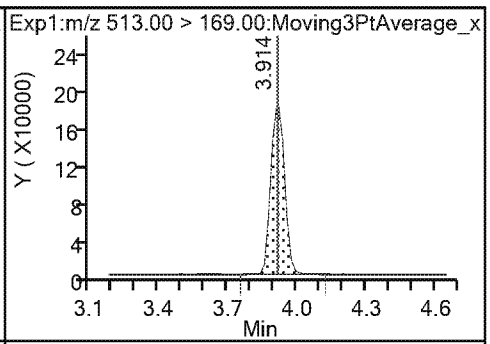
23 9-Chlorohexadecafluoro-3-oxanonane



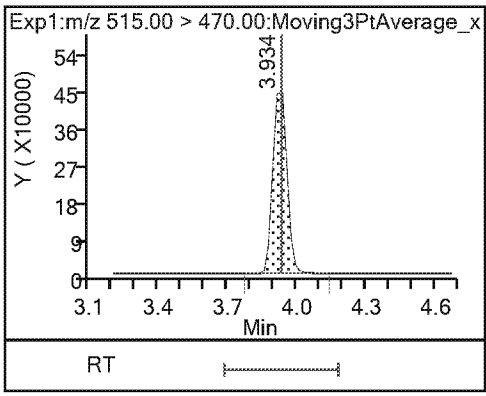
14 Perfluorodecanoic acid



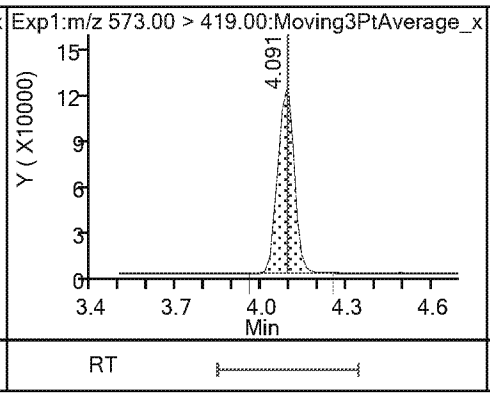
14 Perfluorodecanoic acid



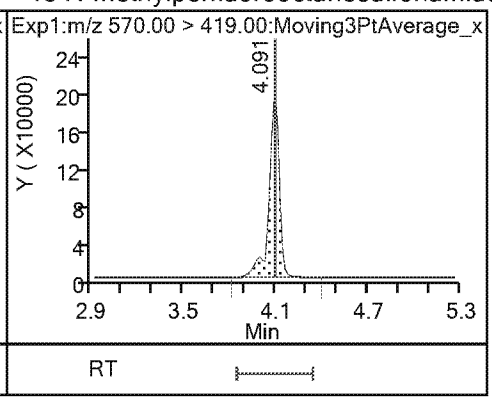
$ 10 13C2 PFDA



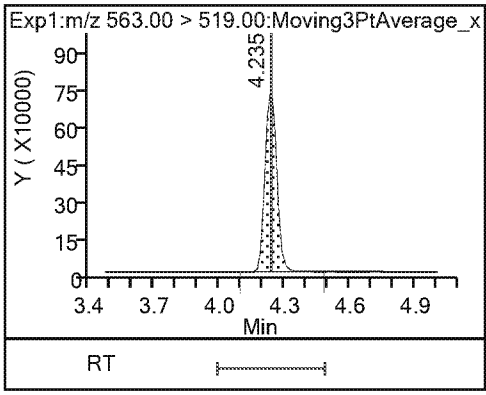
* 12 d3-NMeFOSAA



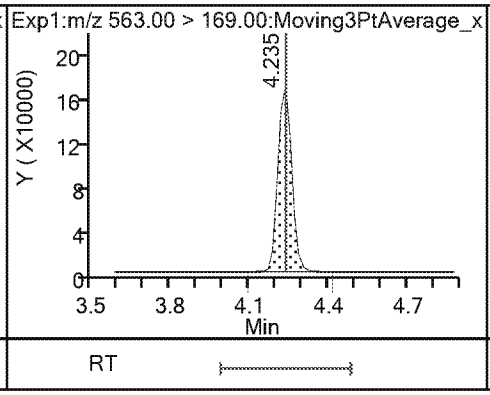
15 N-methylperfluorooctanesulfonamido



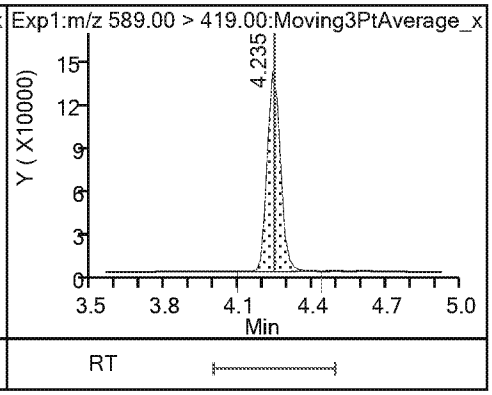
17 Perfluoroundecanoic acid



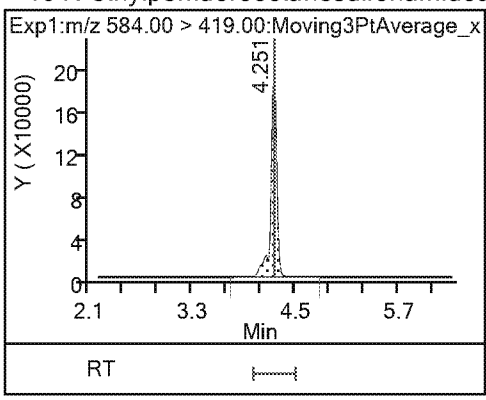
17 Perfluoroundecanoic acid



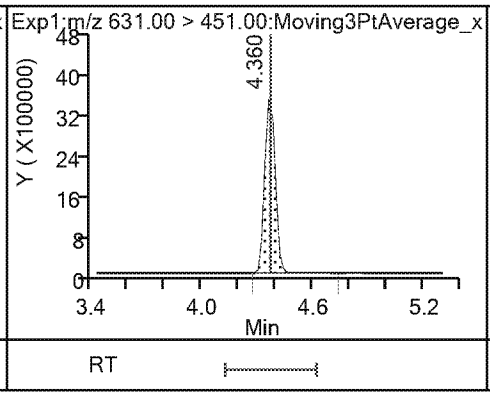
$ 11 d5-NEtFOSAA



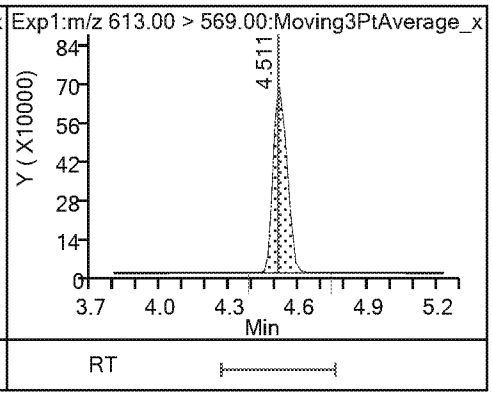
16 N-ethylperfluorooctanesulfonamidoa



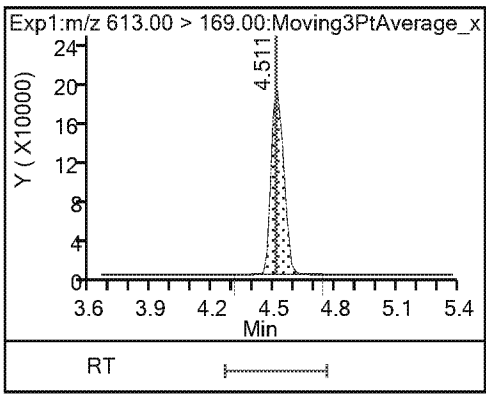
21 11-Chloroeicosafluoro-3-oxaundecan



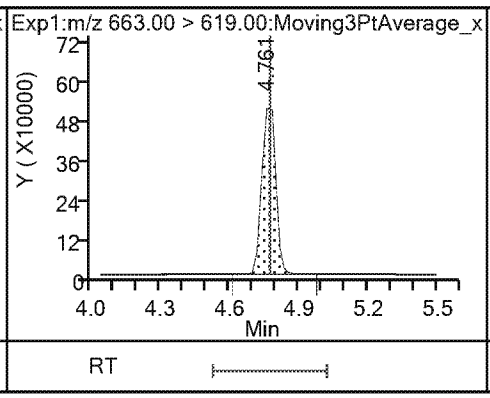
18 Perfluorododecanoic acid



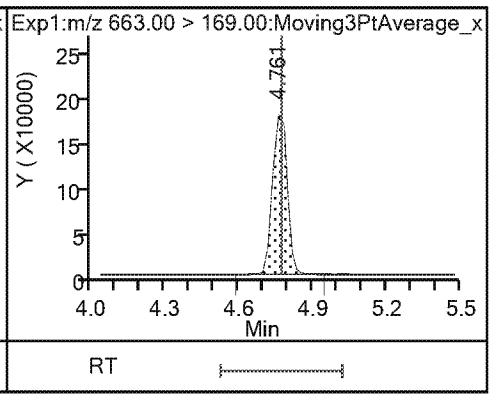
18 Perfluorododecanoic acid



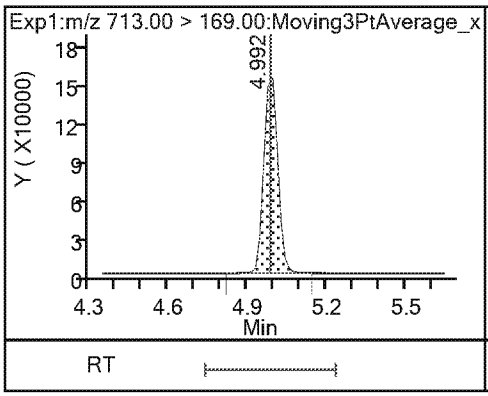
19 Perfluorotridecanoic acid



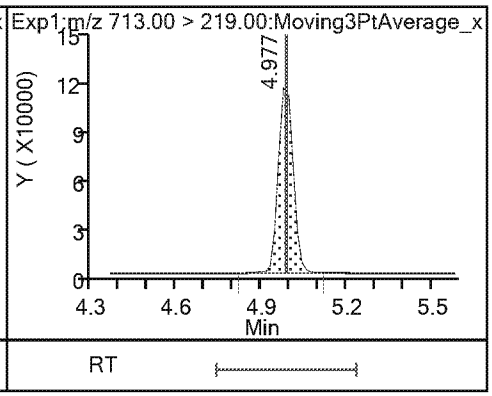
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d
Lims ID: IC L7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 04-Apr-2019 16:11:08 ALS Bottle#: 7 Worklist Smp#: 8
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: L7_537
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 04-Apr-2019 16:55:41 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0339

First Level Reviewer: Ex. 4 CBI Date: 04-Apr-2019 16:31:01
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.992	0.0	1.000	14397998	9.26	Target=1.00	72636	
298.90 > 99.00	1.992	1.992	0.0	1.000	10176582		1.41(0.00-0.00)	4987	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.737	13870209	9.77	Target=1.00	3914	
313.00 > 119.00	2.347	2.347	0.0	0.737	1325645		10.46(0.00-0.00)	1521	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3572961	2.40		5077	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.473	2.478	-0.005	1.000	3523651	10.2		1632	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.481	-0.008	1.000	156465	2.34		717	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.782	2.780	0.002	1.000	13219525	9.78	Target=1.00	1222	
363.00 > 169.00	2.782	2.780	0.002	1.000	5489907		2.41(0.00-0.00)	6621	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.803	2.792	0.011	1.000	17559900	9.31	Target=1.00	5588	
399.00 > 99.00	2.803	2.792	0.011	1.000	6025884		2.91(0.00-0.00)	1596	
24 DONA									
377.00 > 251.00	2.824	2.825	-0.001	1.000	31823463	8.64	Target=1.00	13107	
377.00 > 85.00	2.824	2.825	-0.001	1.000	20598782		1.54(0.00-0.00)	1438238	
* 5 13C2 PFOA									
415.00 > 370.00	3.186	3.186	0.0		3188191	2.50		10135	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.186	3.186	0.0	1.000	12919792	9.99	Target=1.00	1414	
413.00 > 169.00	3.186	3.186	0.0	1.000	7620812		1.70(0.00-0.00)	6956	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.568	3.562	0.006		3144931	2.39		9899	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.568	3.564	0.004	1.000	13257205	9.54	Target=1.00	3803	
499.00 > 99.00	3.568	3.564	0.004	1.000	2860922		4.63(0.00-0.00)	1838	
9 Perfluorononanoic acid									
463.00 > 419.00	3.583	3.577	0.006	1.000	9311450	9.88	Target=1.00	5319	
463.00 > 169.00	3.583	3.577	0.006	1.000	2460163		3.78(0.00-0.00)	8339	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.759	3.755	0.004	1.000	20803124	9.30		20009	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.922	3.915	0.007	1.000	7693278	10.3	Target=1.00	2924	
513.00 > 169.00	3.922	3.915	0.007	1.000	1559921		4.93(0.00-0.00)	4058	
$ 10 13C2 PFDA									
515.00 > 470.00	3.941	3.931	0.010	1.000	2070372	2.61		8282	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.099	4.091	0.008		521333	2.50		2204	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.099	4.091	0.008	1.000	1913012	9.80		36472	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.244	4.236	0.008	1.000	5855184	10.3	Target=1.00	2520	
563.00 > 169.00	4.244	4.236	0.008	1.000	1239174		4.73(0.00-0.00)	5125	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.244	4.243	0.001	1.035	533085	2.50		315	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.260	4.252	0.008	1.004	1776540	9.38		2140	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.368	4.369	-0.001	1.000	26084042	9.30		199576	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.505	4.508	-0.003	1.000	5976840	10.5	Target=1.00	2725	
613.00 > 169.00	4.505	4.508	-0.003	1.000	1714413		3.49(0.00-0.00)	8418	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.775	4.772	0.003	1.000	4348983	9.88	Target=1.00	1368	
663.00 > 169.00	4.754	4.772	-0.018	0.996	1514187		2.87(0.00-0.00)	5035	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.973	4.985	-0.012	1.000	1148949	10.1	Target=1.00	3715	
713.00 > 219.00	4.973	4.985	-0.012	1.000	817951		1.40(0.00-0.00)	2810	

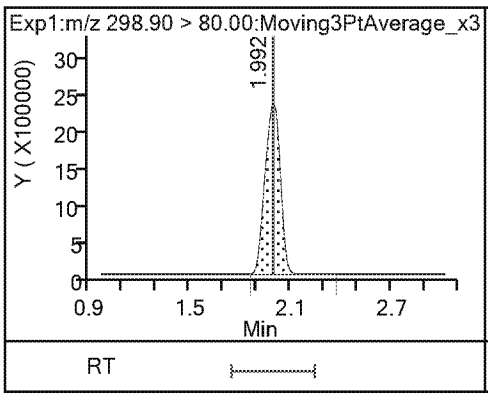
Reagents:

LC537_NC_L7_00003 Amount Added: 1.00 Units: mL

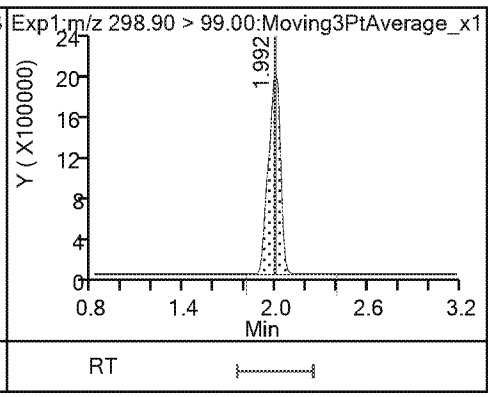
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d
Injection Date: 04-Apr-2019 16:11:08 Instrument ID: A8_N
Lims ID: IC L7
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 8
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

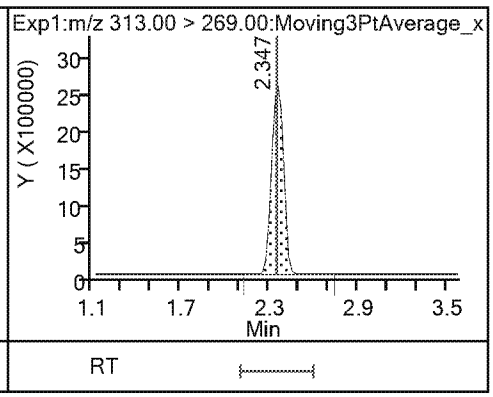
1 Perfluorobutanesulfonic acid



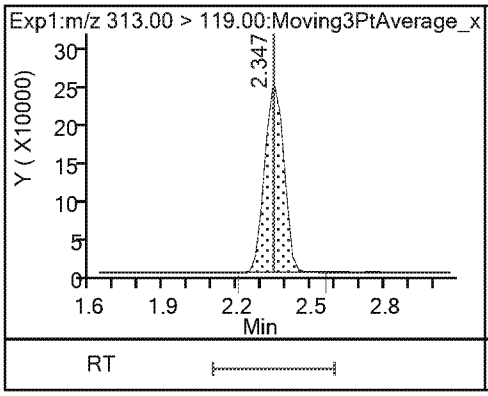
1 Perfluorobutanesulfonic acid



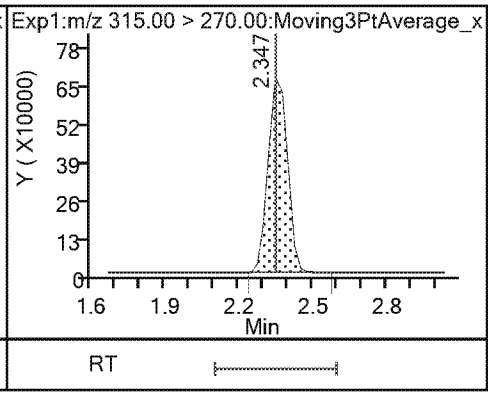
13 Perfluorohexanoic acid



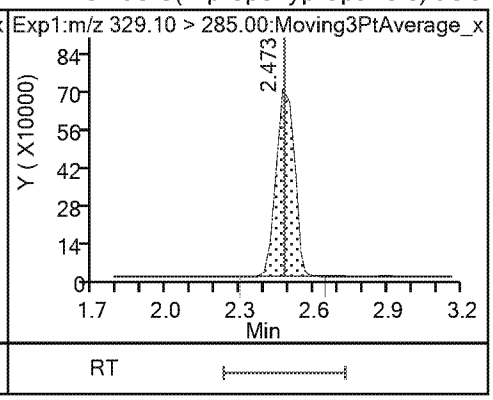
13 Perfluorohexanoic acid



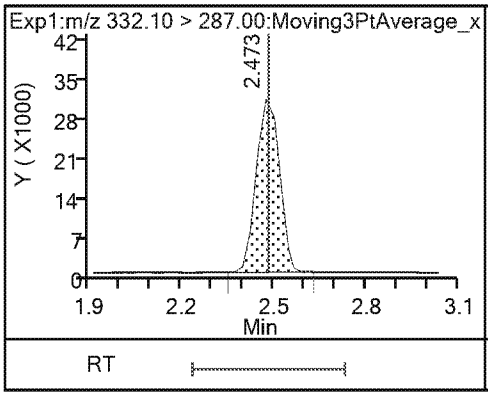
$ 2 13C2 PFHxA



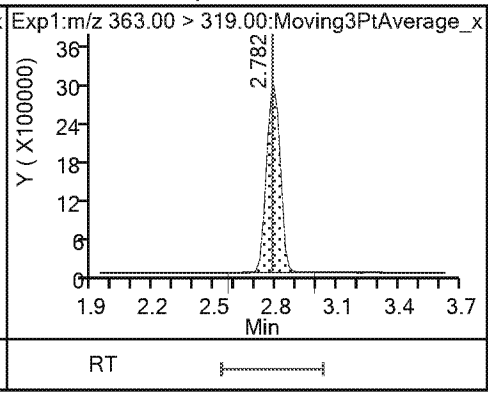
22 Perfluoro(2-propoxypropanoic) acid



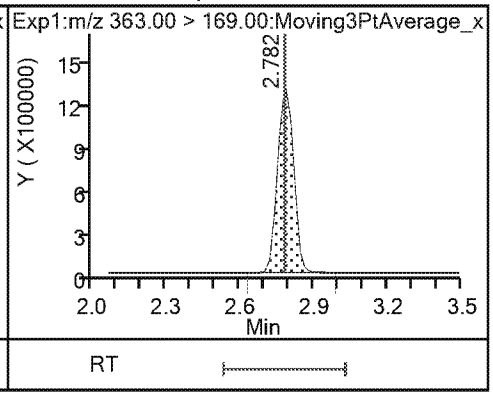
$ 25 13C3 HFPO-DA



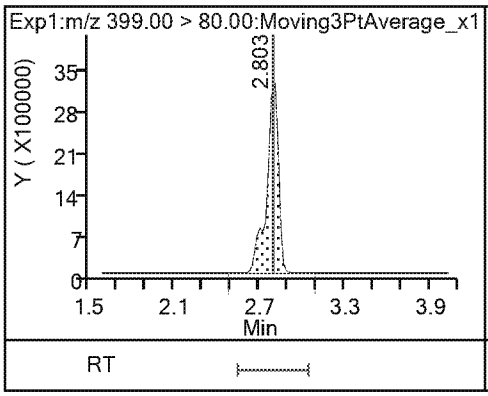
4 Perfluoroheptanoic acid



4 Perfluoroheptanoic acid



3 Perfluorohexanesulfonic acid



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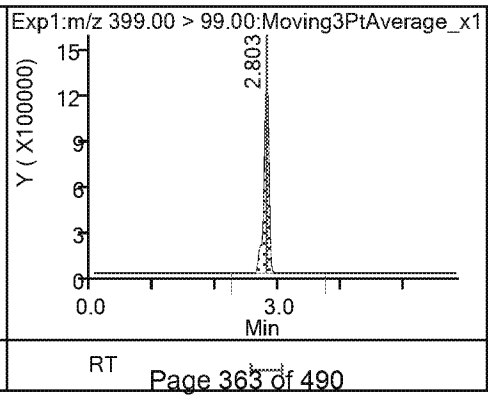
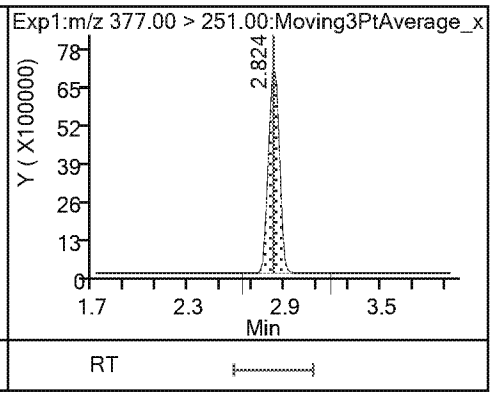
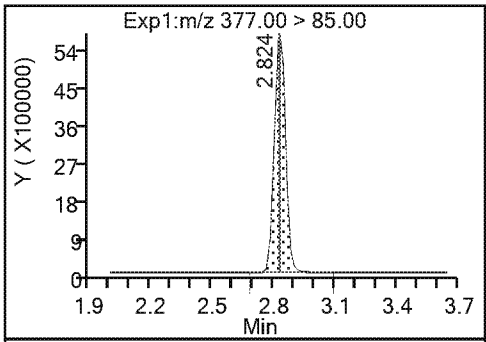


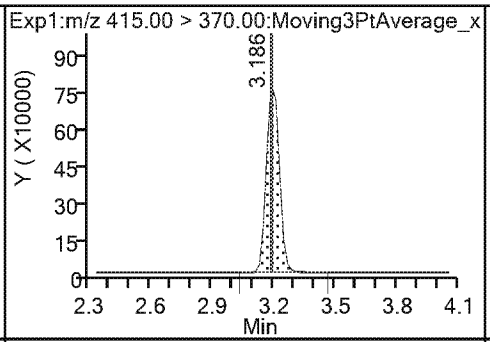
24 DONA



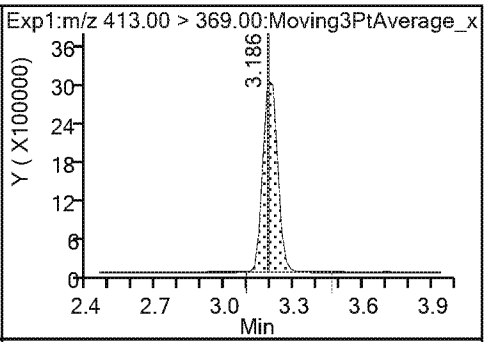
24 DONA



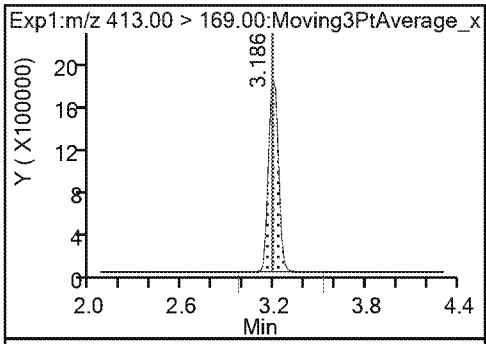
* 5 13C2 PFOA



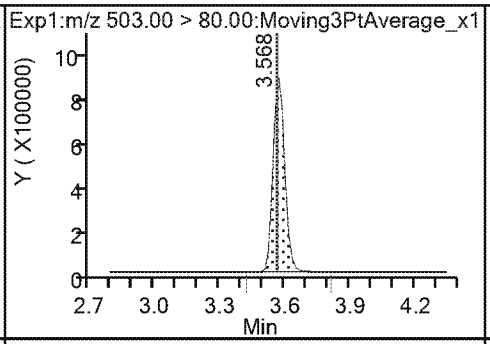
6 Perfluorooctanoic acid



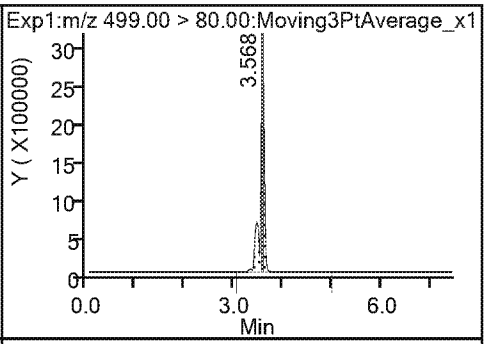
6 Perfluorooctanoic acid



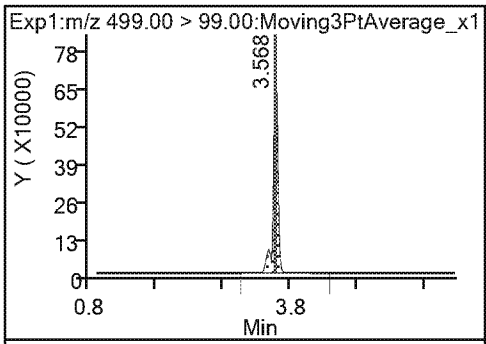
* 7 13C4 PFOS



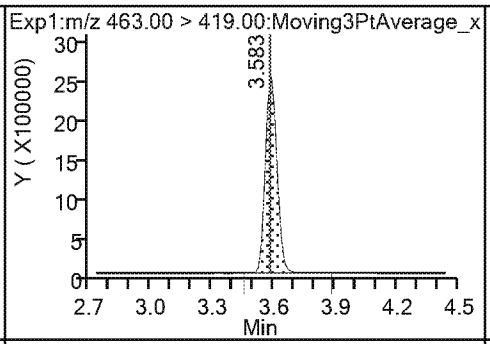
8 Perfluorooctanesulfonic acid



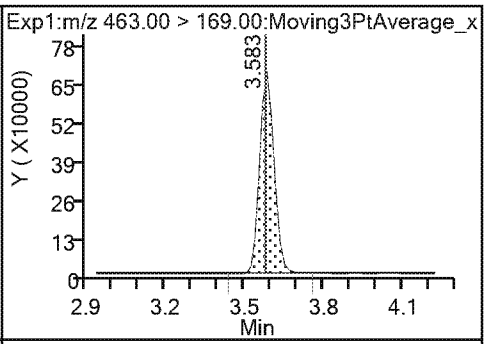
8 Perfluorooctanesulfonic acid



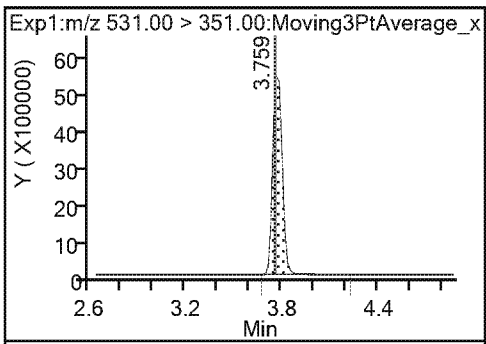
9 Perfluorononanoic acid



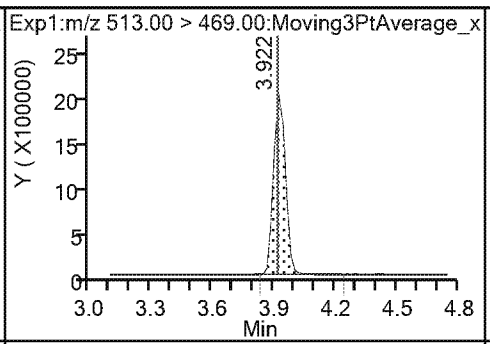
9 Perfluorononanoic acid



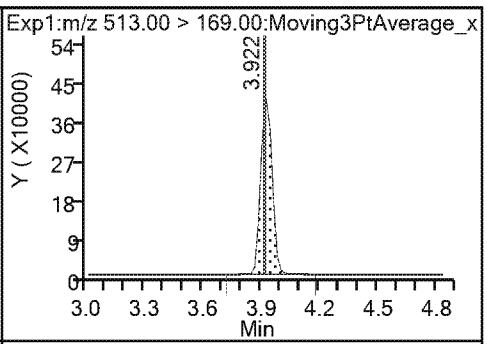
23 9-Chlorohexadecafluoro-3-oxanonane



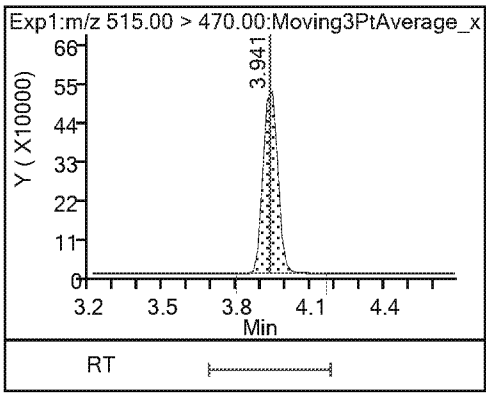
14 Perfluorodecanoic acid



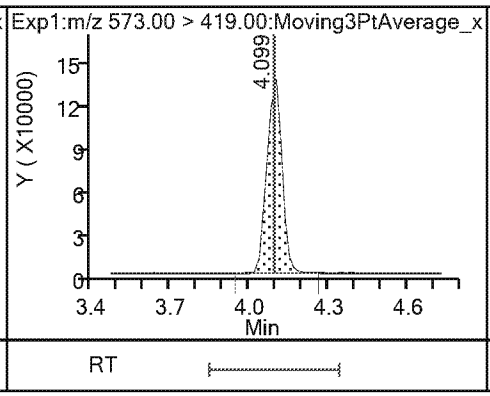
14 Perfluorodecanoic acid



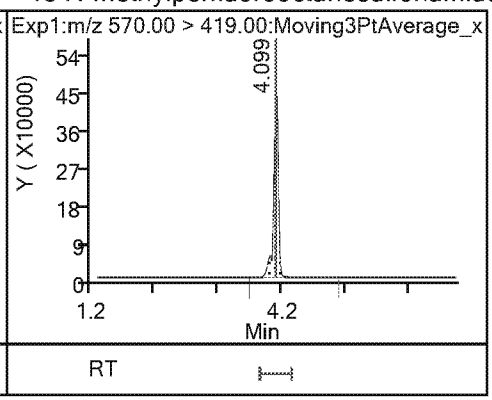
$ 10 13C2 PFDA



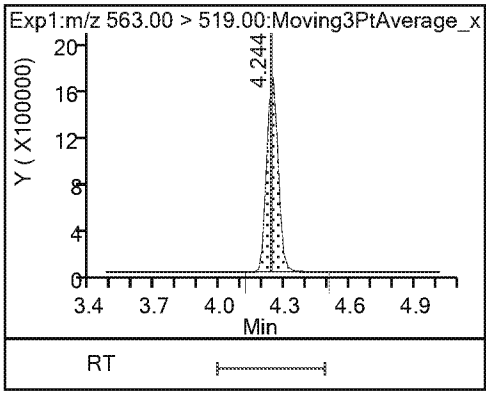
* 12 d3-NMeFOSAA



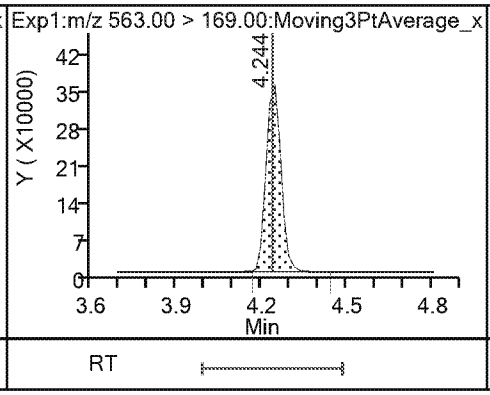
15 N-methylperfluorooctanesulfonamido



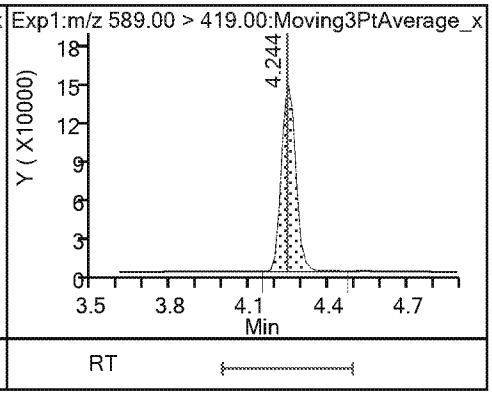
17 Perfluoroundecanoic acid



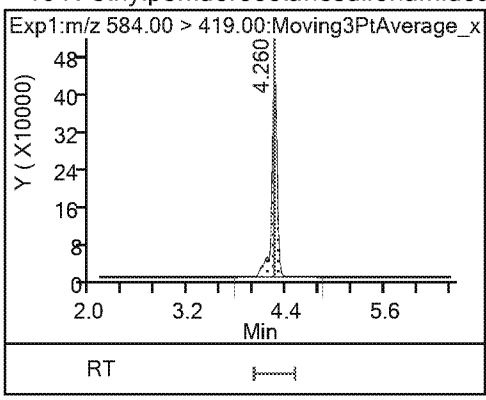
17 Perfluoroundecanoic acid



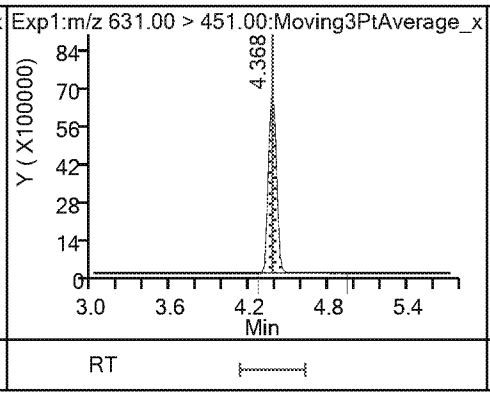
$ 11 d5-NEtFOSAA



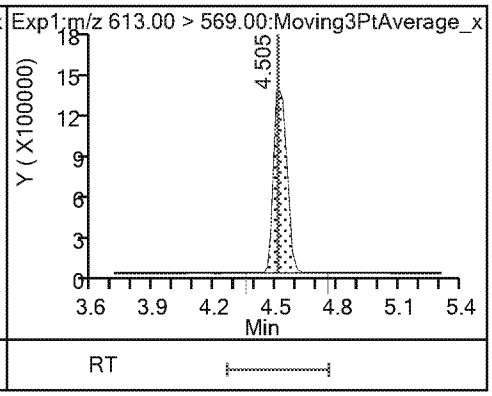
16 N-ethylperfluorooctanesulfonamidoa



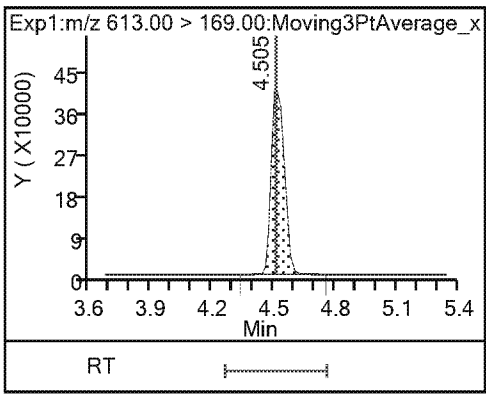
21 11-Chloroeicosafluoro-3-oxaundecan



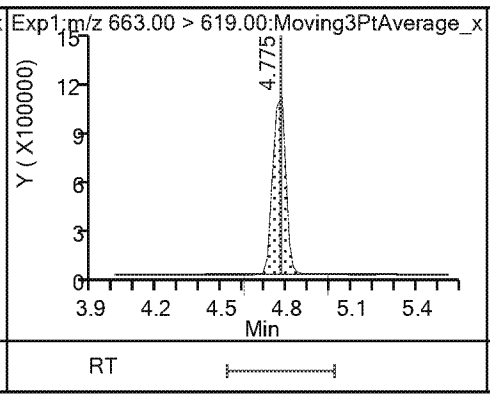
18 Perfluorododecanoic acid



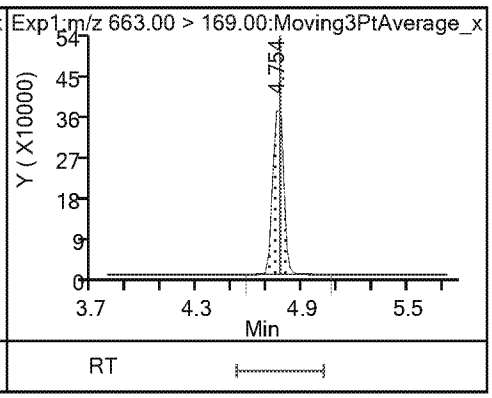
18 Perfluorododecanoic acid



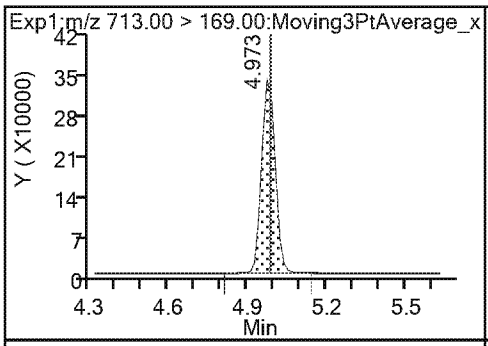
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid

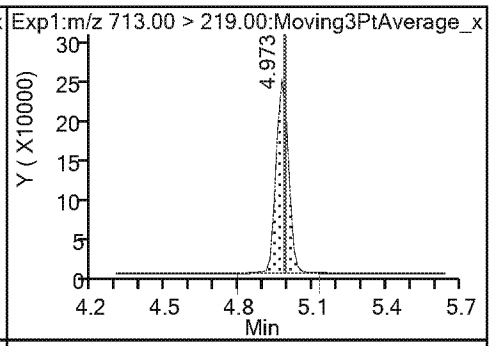


20 Perfluorotetradecanoic acid



RT

20 Perfluorotetradecanoic acid



RT

Calibration / Perfluorobutanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

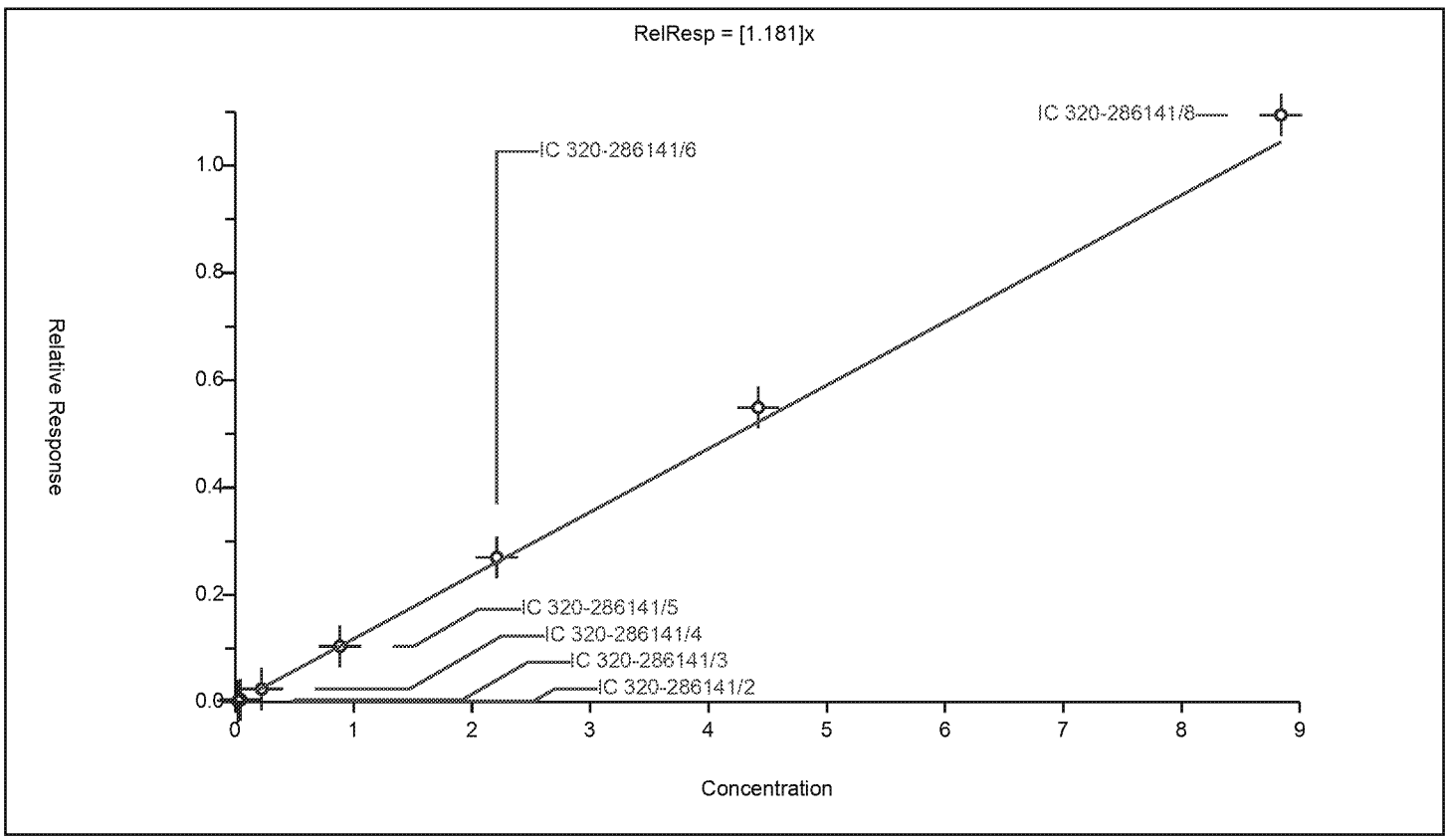
Curve Coefficients

Intercept:	0
Slope:	1.181

Error Coefficients

Standard Error:	6680000
Relative Standard Error:	4.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.0221	0.025316	2.39	3236558.0	1.145516	Y
2	IC 320-286141/3	0.0442	0.04932	2.39	3427796.0	1.115838	Y
3	IC 320-286141/4	0.221	0.24858	2.39	3513279.0	1.124795	Y
4	IC 320-286141/5	0.884	1.043576	2.39	3122011.0	1.180516	Y
5	IC 320-286141/6	2.21	2.699216	2.39	3343739.0	1.221365	Y
6	IC 320-286141/7	4.42	5.491608	2.39	2905553.0	1.242445	Y
7	IC 320-286141/8	8.84	10.941803	2.39	3144931.0	1.237761	Y



Calibration

/ 13C2 PFHxA

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

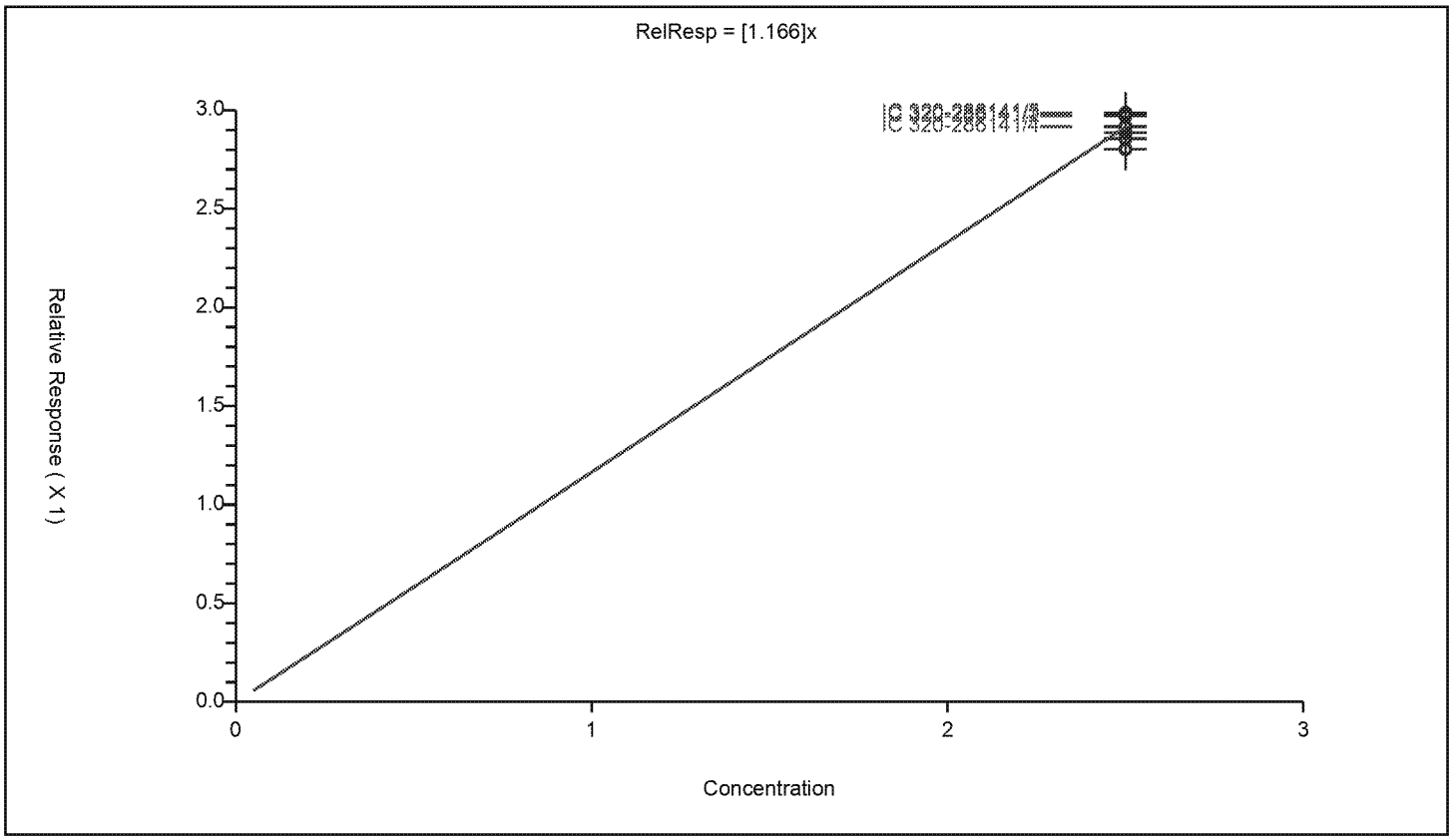
Curve Coefficients

Intercept:	0
Slope:	1.166

Error Coefficients

Standard Error:	4070000
Relative Standard Error:	2.4
Correlation Coefficient:	0.00000000000000000000
Coefficient of Determination (Adjusted):	0

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	2.5	2.969766	2.5	3201298.0	1.187907	Y
2	IC 320-286141/3	2.5	2.855478	2.5	3393730.0	1.142191	Y
3	IC 320-286141/4	2.5	2.916825	2.5	3455285.0	1.16673	Y
4	IC 320-286141/5	2.5	2.983682	2.5	3083165.0	1.193473	Y
5	IC 320-286141/6	2.5	2.884955	2.5	3349568.0	1.153982	Y
6	IC 320-286141/7	2.5	2.986847	2.5	2939637.0	1.194739	Y
7	IC 320-286141/8	2.5	2.801715	2.5	3188191.0	1.120686	Y



Calibration

/ Perfluorohexanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

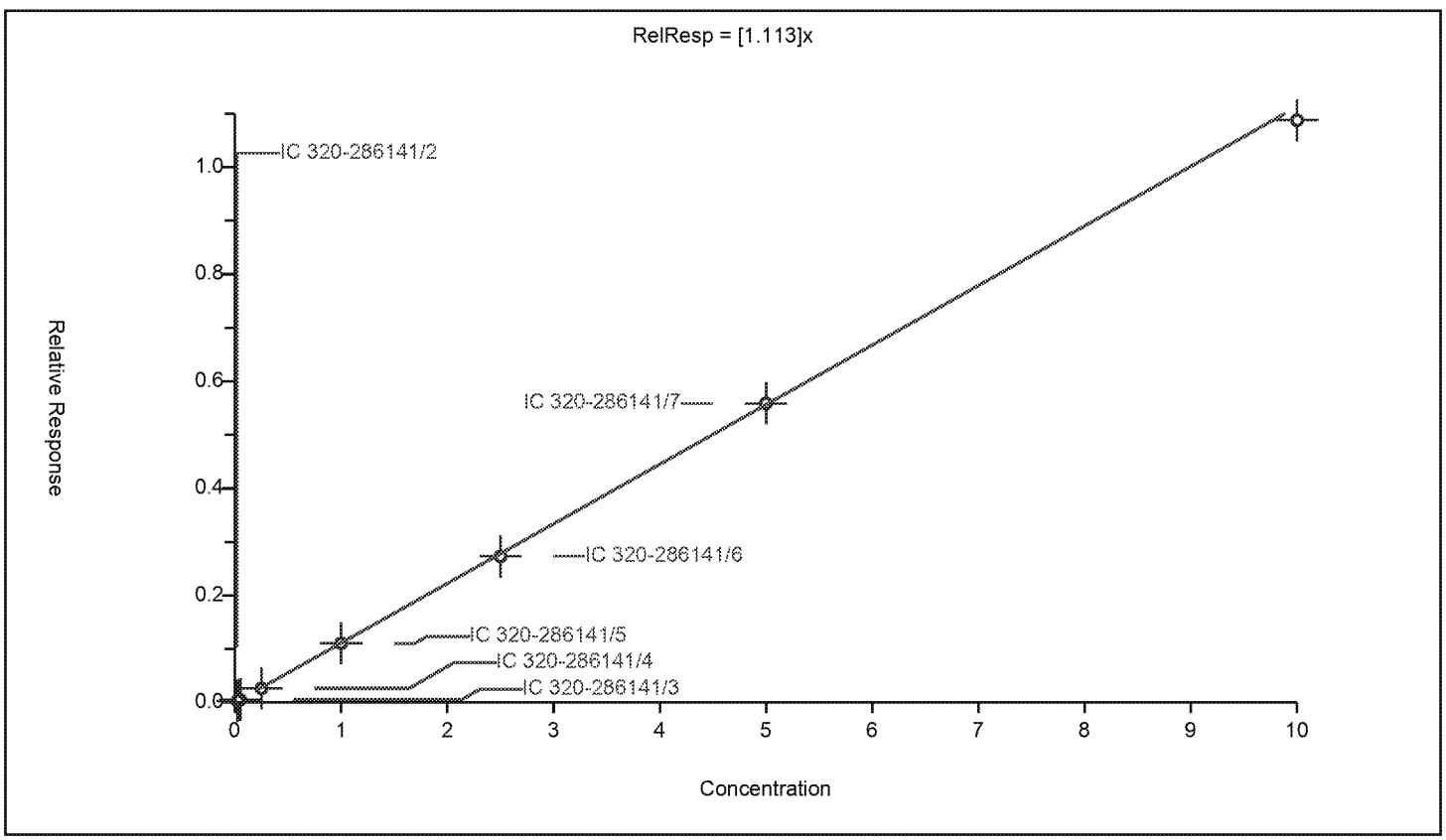
Curve Coefficients

Intercept:	0
Slope:	1.113

Error Coefficients

Standard Error:	6470000
Relative Standard Error:	5.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.030927	2.5	3201298.0	1.237092	Y
2	IC 320-286141/3	0.05	0.054394	2.5	3393730.0	1.087874	Y
3	IC 320-286141/4	0.25	0.264978	2.5	3455285.0	1.059913	Y
4	IC 320-286141/5	1.0	1.107281	2.5	3083165.0	1.107281	Y
5	IC 320-286141/6	2.5	2.731714	2.5	3349568.0	1.092686	Y
6	IC 320-286141/7	5.0	5.587757	2.5	2939637.0	1.117551	Y
7	IC 320-286141/8	10.0	10.876237	2.5	3188191.0	1.087624	Y



Calibration / Perfluoroheptanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

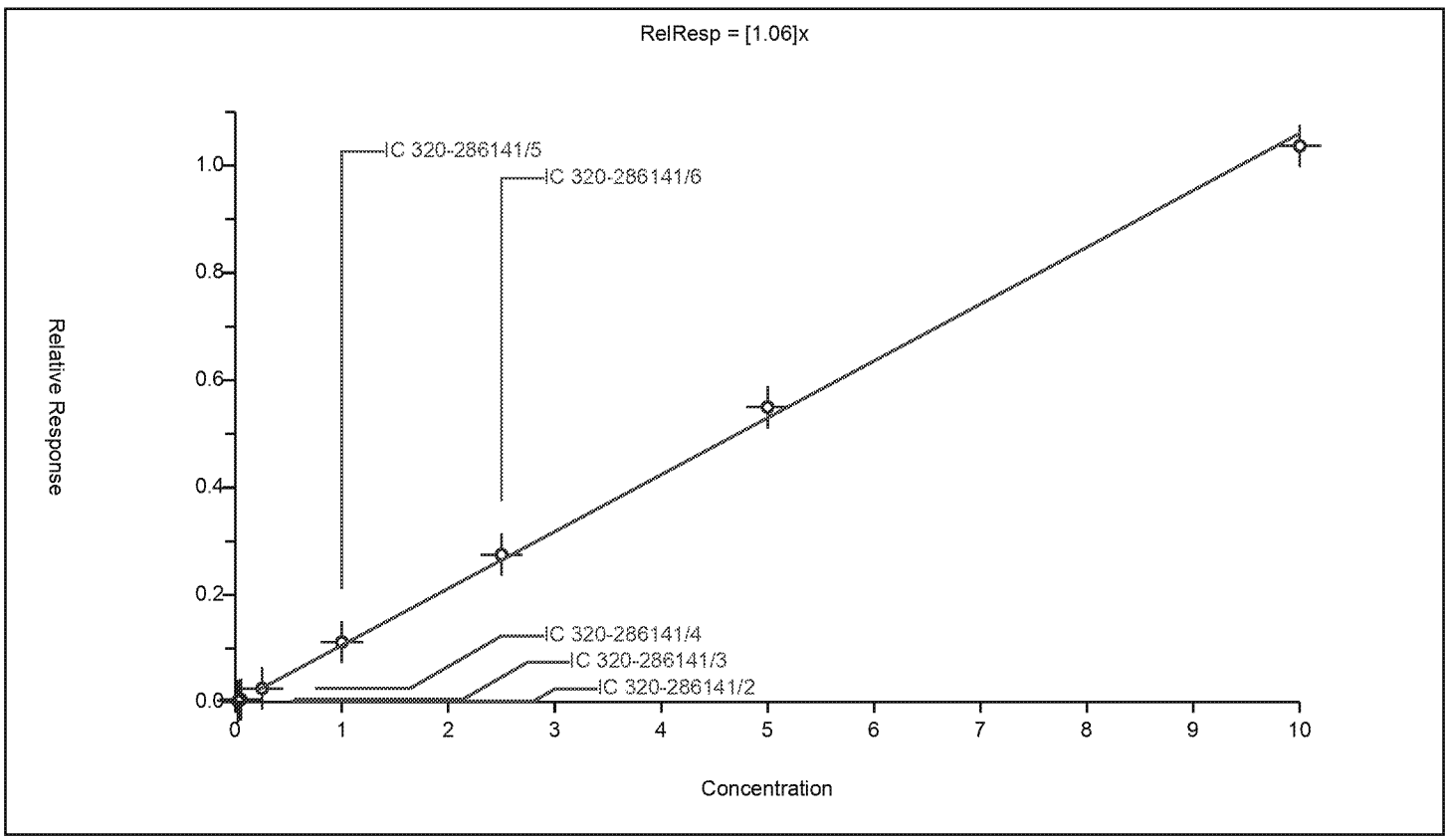
Curve Coefficients

Intercept:	0
Slope:	1.06

Error Coefficients

Standard Error:	6220000
Relative Standard Error:	4.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.024356	2.5	3201298.0	0.97423	Y
2	IC 320-286141/3	0.05	0.052808	2.5	3393730.0	1.056154	Y
3	IC 320-286141/4	0.25	0.257718	2.5	3455285.0	1.03087	Y
4	IC 320-286141/5	1.0	1.120937	2.5	3083165.0	1.120937	Y
5	IC 320-286141/6	2.5	2.750605	2.5	3349568.0	1.100242	Y
6	IC 320-286141/7	5.0	5.499301	2.5	2939637.0	1.09986	Y
7	IC 320-286141/8	10.0	10.366008	2.5	3188191.0	1.036601	Y



Calibration

/ Perfluorohexanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

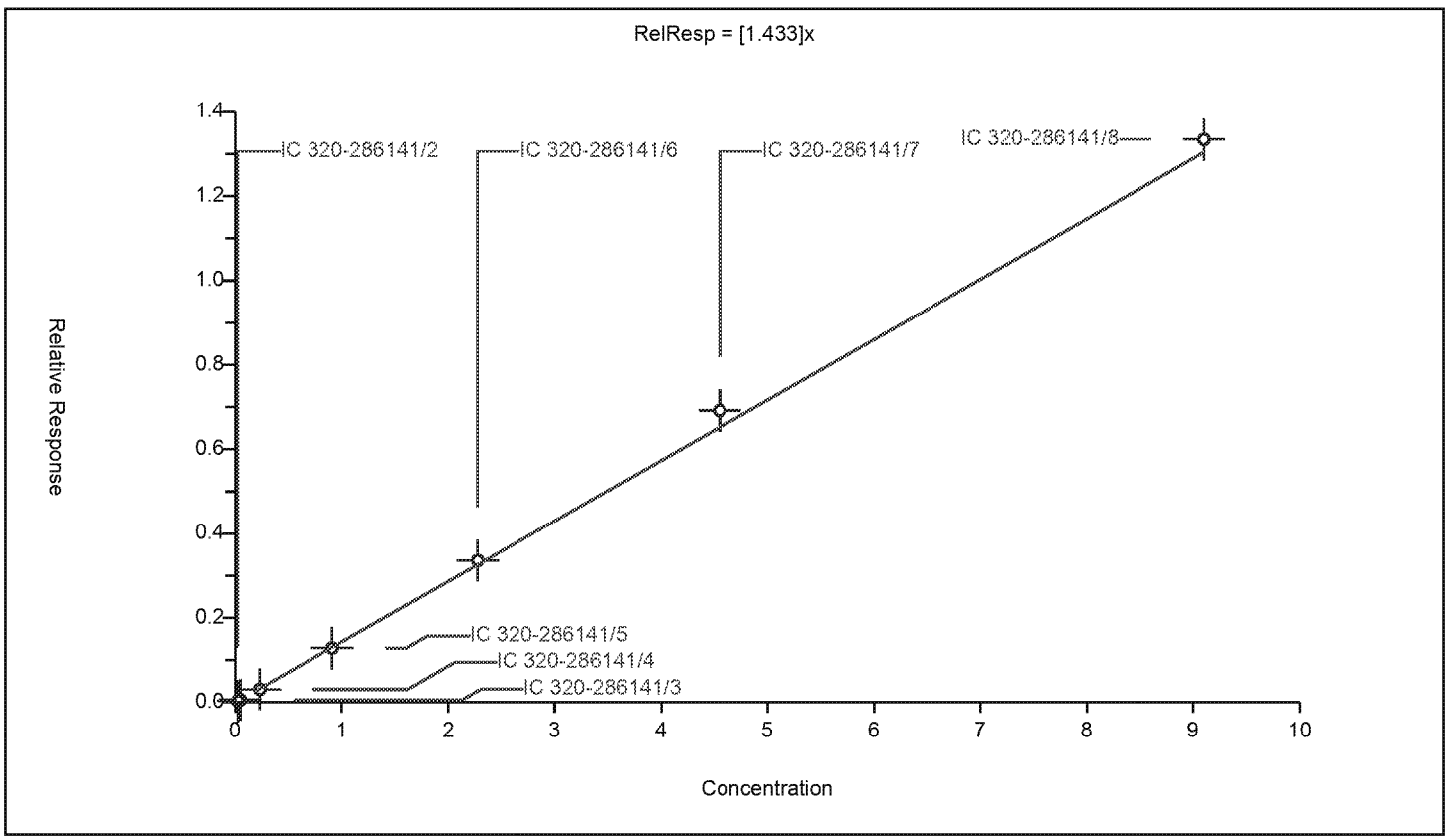
Curve Coefficients

Intercept:	0
Slope:	1.433

Error Coefficients

Standard Error:	8210000
Relative Standard Error:	4.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.02275	0.033254	2.39	3236558.0	1.461719	Y
2	IC 320-286141/3	0.0455	0.061041	2.39	3427796.0	1.341568	Y
3	IC 320-286141/4	0.2275	0.307413	2.39	3513279.0	1.351265	Y
4	IC 320-286141/5	0.91	1.285217	2.39	3122011.0	1.412326	Y
5	IC 320-286141/6	2.275	3.359889	2.39	3343739.0	1.476874	Y
6	IC 320-286141/7	4.55	6.917906	2.39	2905553.0	1.520419	Y
7	IC 320-286141/8	9.1	13.3447	2.39	3144931.0	1.466451	Y



Calibration

/ Perfluorooctanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

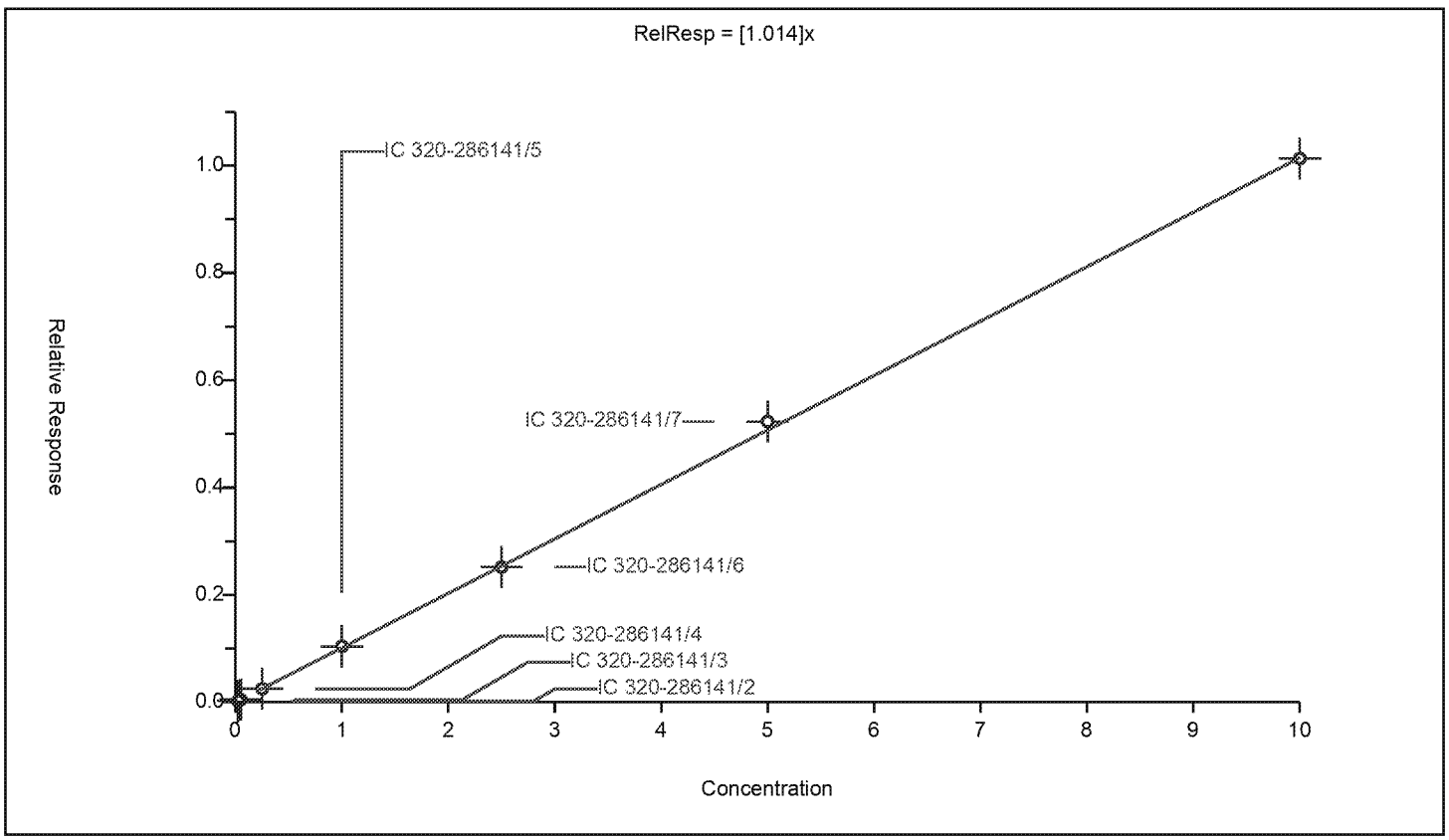
Curve Coefficients

Intercept:	0
Slope:	1.014

Error Coefficients

Standard Error:	6030000
Relative Standard Error:	2.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.024376	2.5	3201298.0	0.975042	Y
2	IC 320-286141/3	0.05	0.050481	2.5	3393730.0	1.009612	Y
3	IC 320-286141/4	0.25	0.252089	2.5	3455285.0	1.008357	Y
4	IC 320-286141/5	1.0	1.041118	2.5	3083165.0	1.041118	Y
5	IC 320-286141/6	2.5	2.519676	2.5	3349568.0	1.007871	Y
6	IC 320-286141/7	5.0	5.229938	2.5	2939637.0	1.045988	Y
7	IC 320-286141/8	10.0	10.130974	2.5	3188191.0	1.013097	Y



Calibration / Perfluorooctanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

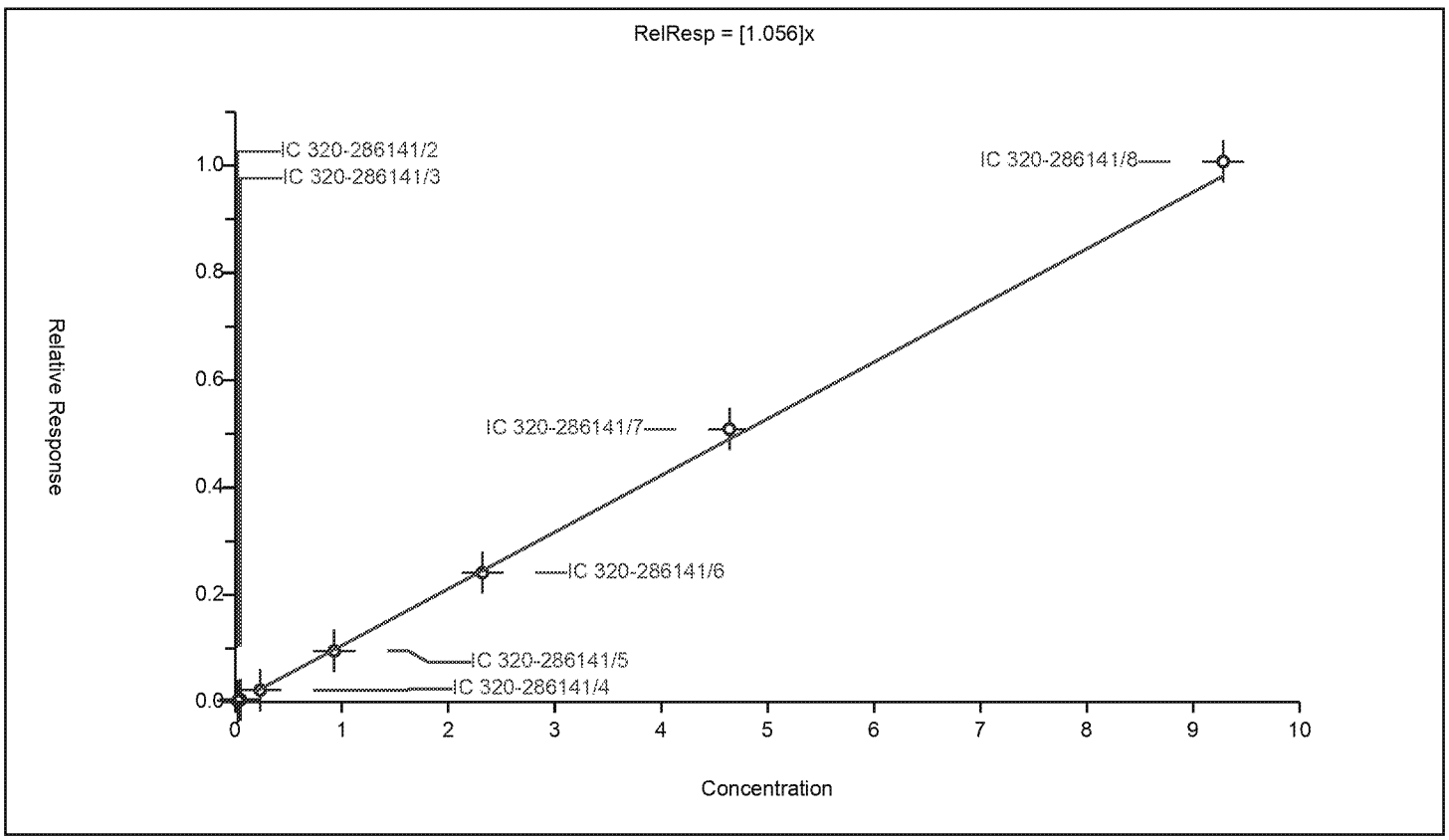
Curve Coefficients

Intercept:	0
Slope:	1.056

Error Coefficients

Standard Error:	6150000
Relative Standard Error:	4.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.0232	0.025414	2.39	3236558.0	1.095436	Y
2	IC 320-286141/3	0.0464	0.049299	2.39	3427796.0	1.062481	Y
3	IC 320-286141/4	0.232	0.227504	2.39	3513279.0	0.980621	Y
4	IC 320-286141/5	0.928	0.958335	2.39	3122011.0	1.032689	Y
5	IC 320-286141/6	2.32	2.414559	2.39	3343739.0	1.040758	Y
6	IC 320-286141/7	4.64	5.088671	2.39	2905553.0	1.096696	Y
7	IC 320-286141/8	9.28	10.074854	2.39	3144931.0	1.085652	Y



Calibration / Perfluorononanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

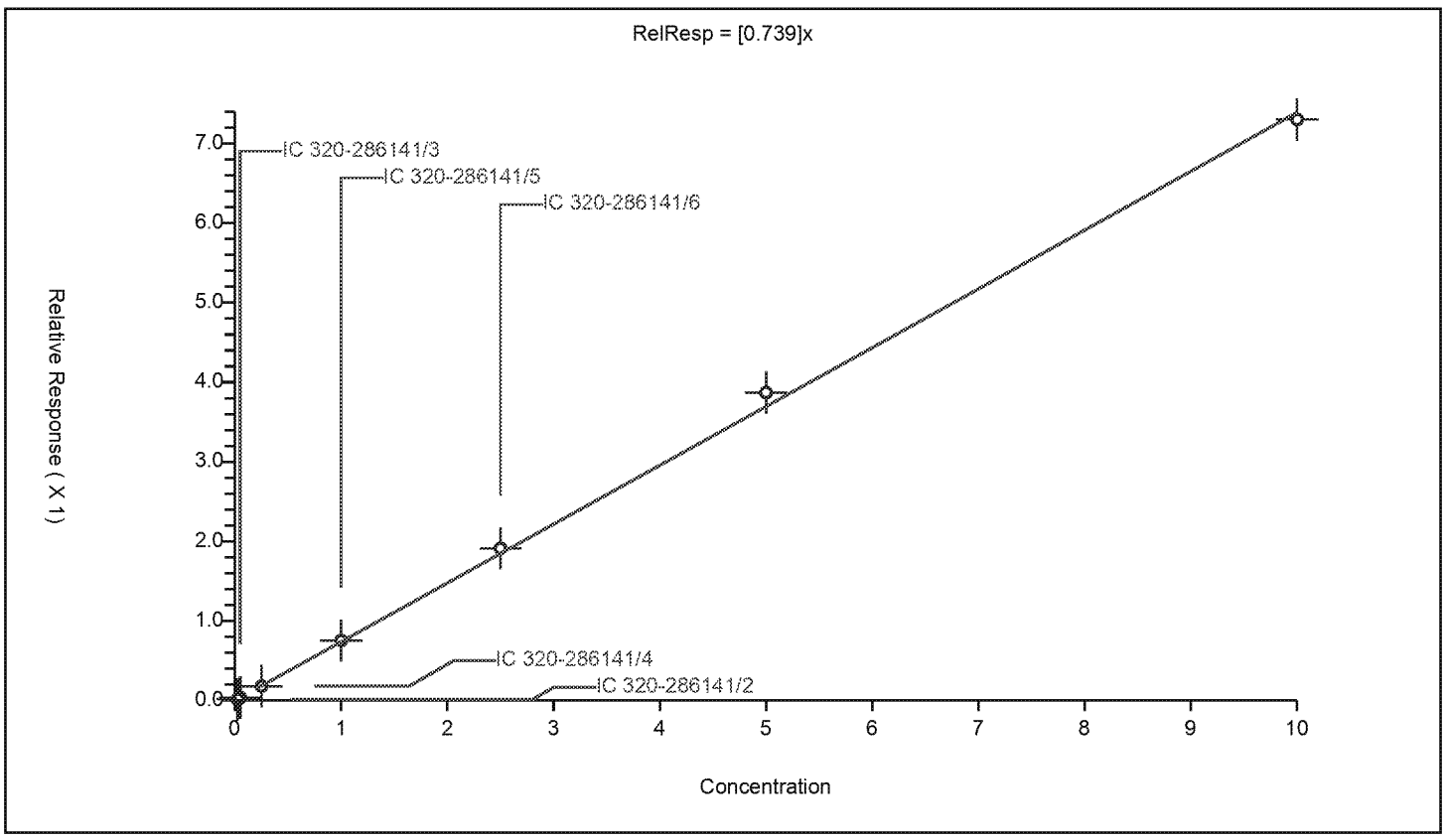
Curve Coefficients

Intercept:	0
Slope:	0.739

Error Coefficients

Standard Error:	4380000
Relative Standard Error:	4.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.016888	2.5	3201298.0	0.675507	Y
2	IC 320-286141/3	0.05	0.037557	2.5	3393730.0	0.751135	Y
3	IC 320-286141/4	0.25	0.180734	2.5	3455285.0	0.722936	Y
4	IC 320-286141/5	1.0	0.753969	2.5	3083165.0	0.753969	Y
5	IC 320-286141/6	2.5	1.912814	2.5	3349568.0	0.765126	Y
6	IC 320-286141/7	5.0	3.870083	2.5	2939637.0	0.774017	Y
7	IC 320-286141/8	10.0	7.301515	2.5	3188191.0	0.730152	Y



Calibration / Perfluorodecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

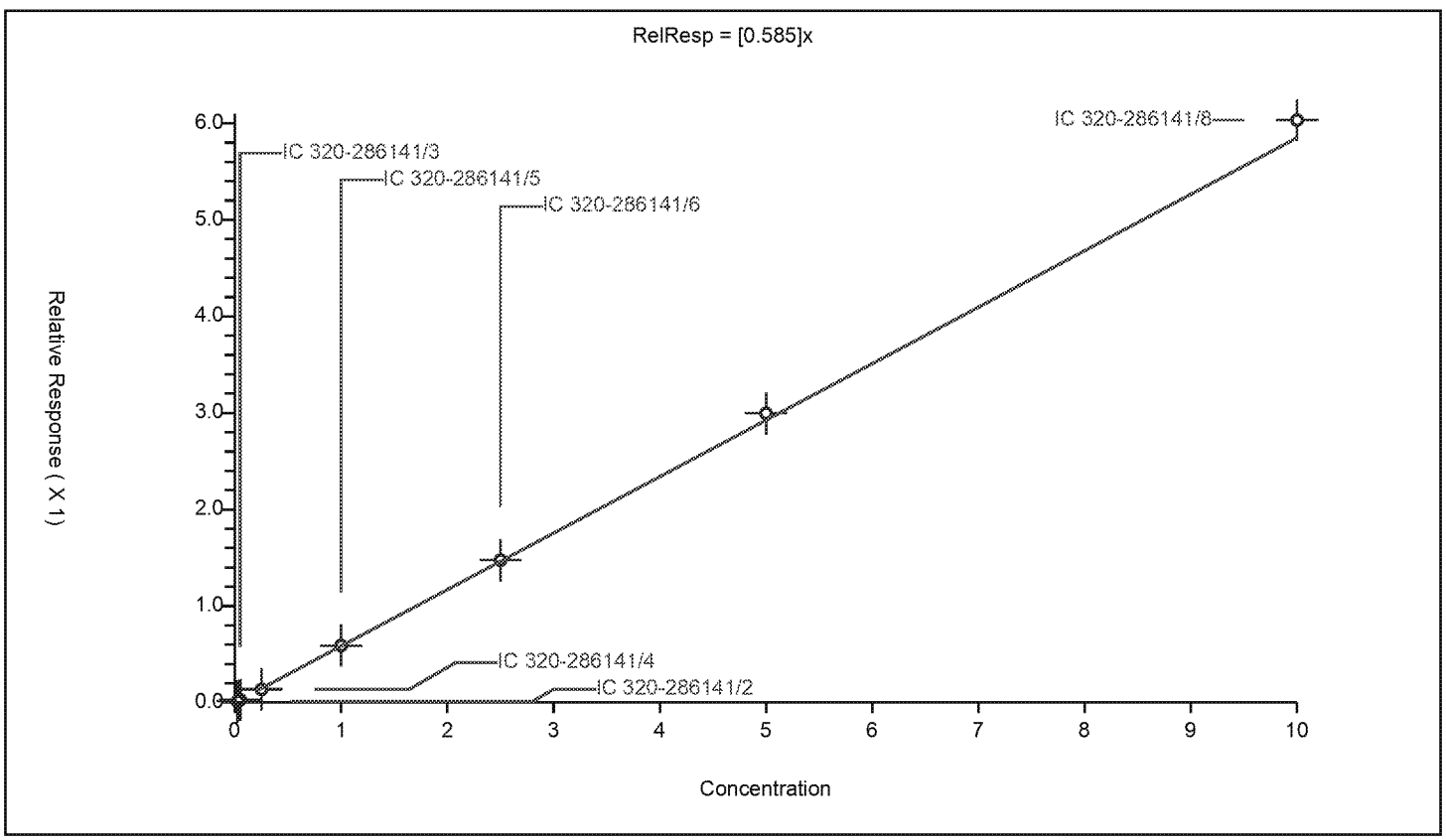
Curve Coefficients

Intercept:	0
Slope:	0.585

Error Coefficients

Standard Error:	3560000
Relative Standard Error:	3.1
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.014428	2.5	3201298.0	0.57711	Y
2	IC 320-286141/3	0.05	0.029373	2.5	3393730.0	0.587451	Y
3	IC 320-286141/4	0.25	0.136987	2.5	3455285.0	0.547949	Y
4	IC 320-286141/5	1.0	0.590016	2.5	3083165.0	0.590016	Y
5	IC 320-286141/6	2.5	1.475059	2.5	3349568.0	0.590024	Y
6	IC 320-286141/7	5.0	2.996709	2.5	2939637.0	0.599342	Y
7	IC 320-286141/8	10.0	6.032636	2.5	3188191.0	0.603264	Y



Calibration

/ 13C2 PFDA

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

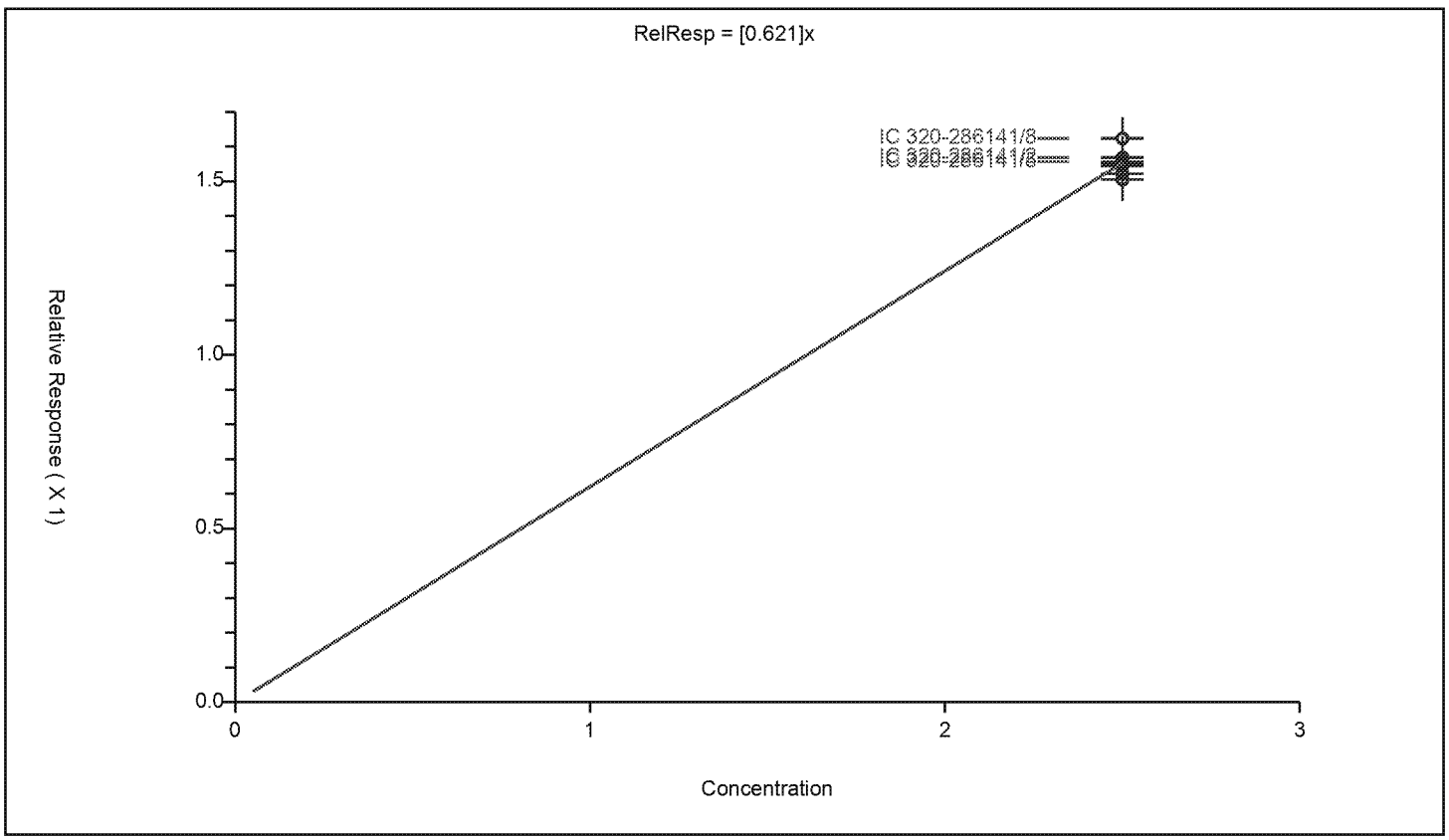
Curve Coefficients

Intercept:	0
Slope:	0.621

Error Coefficients

Standard Error:	2170000
Relative Standard Error:	2.4
Correlation Coefficient:	0.00000000000000000000
Coefficient of Determination (Adjusted):	0.000000000000000111

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	2.5	1.568528	2.5	3201298.0	0.627411	Y
2	IC 320-286141/3	2.5	1.521364	2.5	3393730.0	0.608545	Y
3	IC 320-286141/4	2.5	1.548263	2.5	3455285.0	0.619305	Y
4	IC 320-286141/5	2.5	1.556695	2.5	3083165.0	0.622678	Y
5	IC 320-286141/6	2.5	1.504862	2.5	3349568.0	0.601945	Y
6	IC 320-286141/7	2.5	1.544192	2.5	2939637.0	0.617677	Y
7	IC 320-286141/8	2.5	1.623469	2.5	3188191.0	0.649388	Y



Calibration / **N-methylperfluorooctanesulfonamidoacetic acid**

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

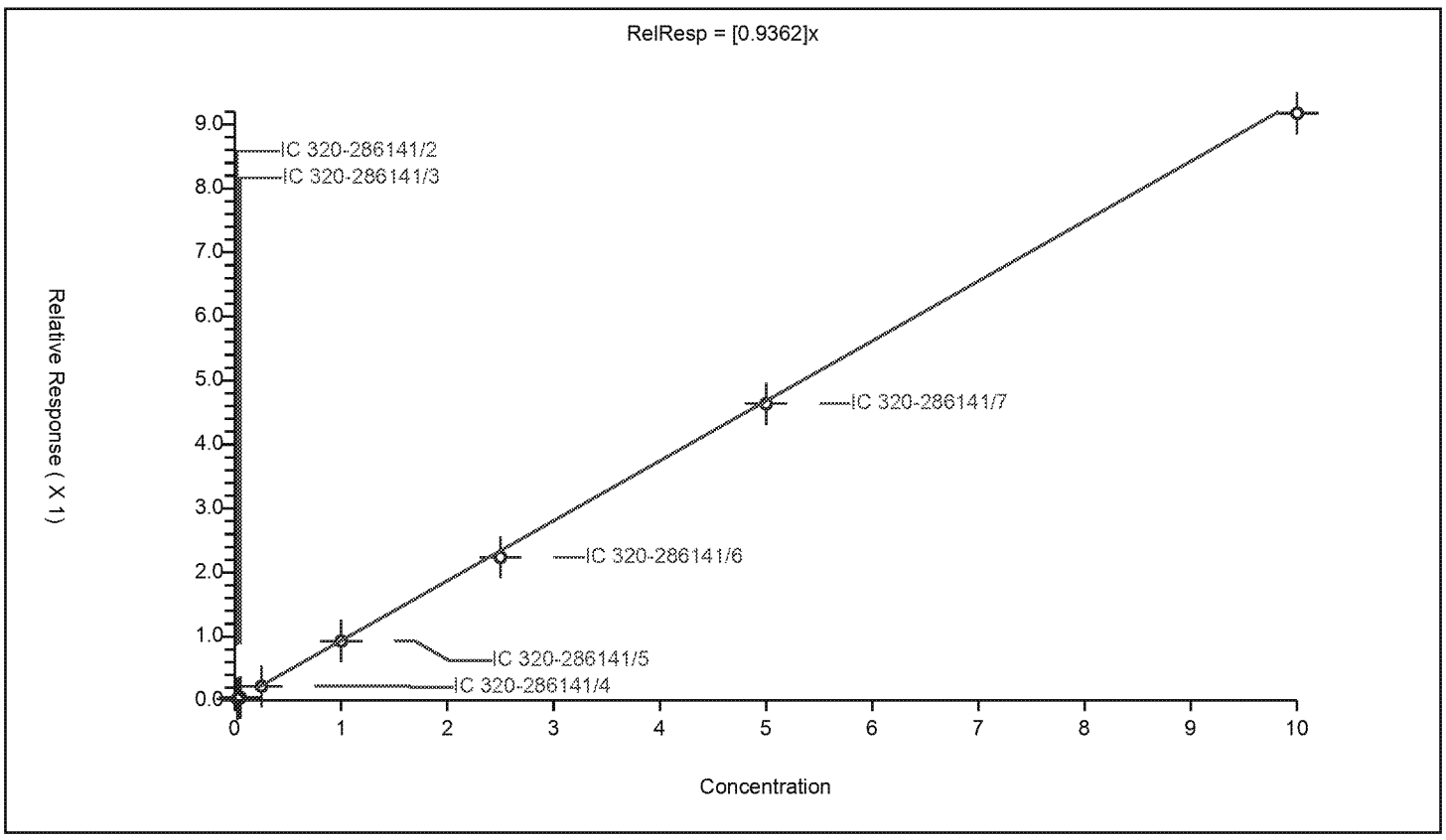
Curve Coefficients

Intercept:	0
Slope:	0.9362

Error Coefficients

Standard Error:	878000
Relative Standard Error:	4.8
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.025492	2.5	524272.0	1.0197	Y
2	IC 320-286141/3	0.05	0.048575	2.5	552133.0	0.971505	Y
3	IC 320-286141/4	0.25	0.223129	2.5	521234.0	0.892517	Y
4	IC 320-286141/5	1.0	0.929533	2.5	480279.0	0.929533	Y
5	IC 320-286141/6	2.5	2.237377	2.5	506515.0	0.894951	Y
6	IC 320-286141/7	5.0	4.63833	2.5	457634.0	0.927666	Y
7	IC 320-286141/8	10.0	9.173657	2.5	521333.0	0.917366	Y



Calibration / Perfluoroundecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

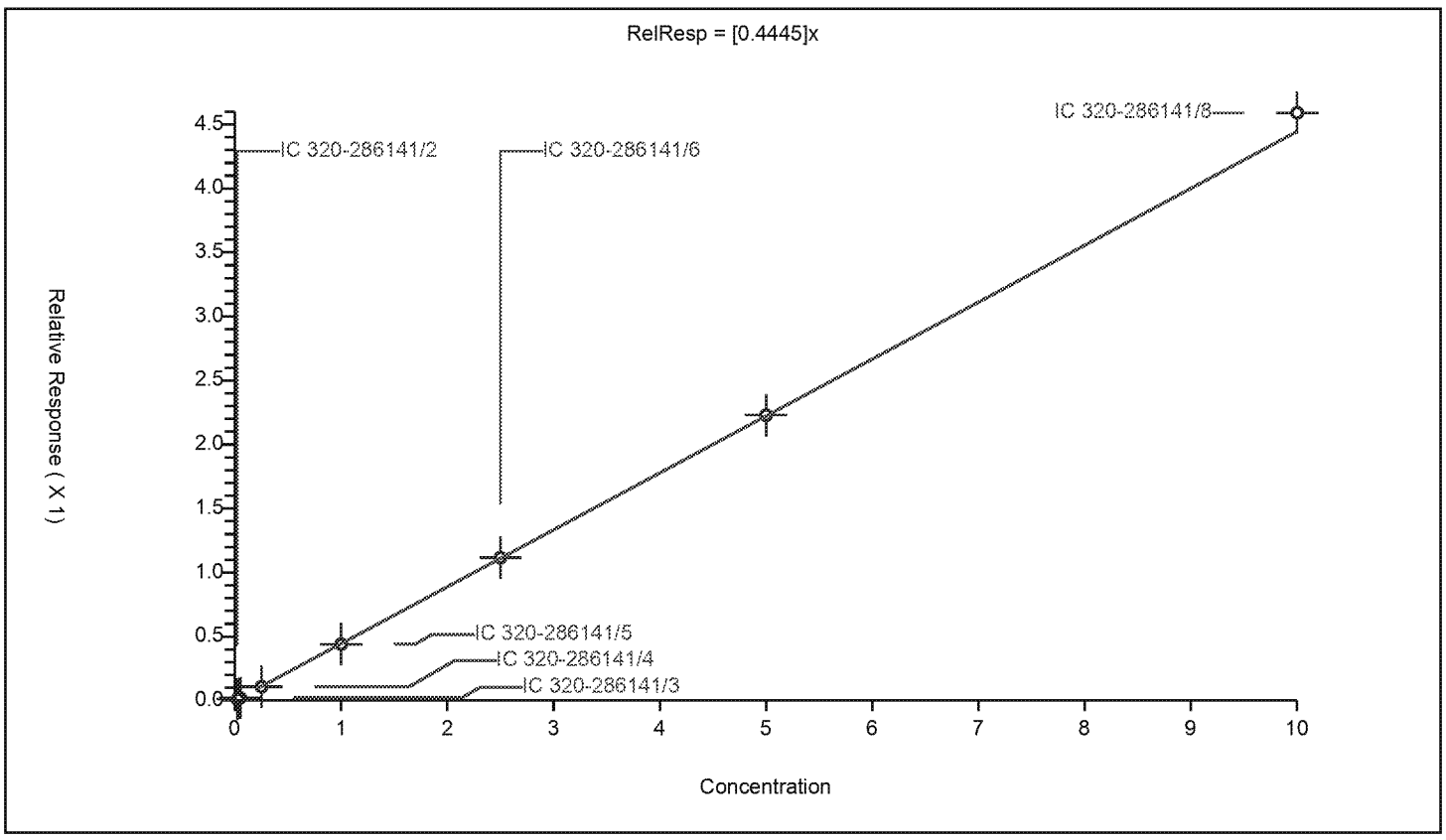
Curve Coefficients

Intercept:	0
Slope:	0.4445

Error Coefficients

Standard Error:	2700000
Relative Standard Error:	2.1
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.011319	2.5	3201298.0	0.452754	Y
2	IC 320-286141/3	0.05	0.021666	2.5	3393730.0	0.433329	Y
3	IC 320-286141/4	0.25	0.108572	2.5	3455285.0	0.434288	Y
4	IC 320-286141/5	1.0	0.439769	2.5	3083165.0	0.439769	Y
5	IC 320-286141/6	2.5	1.116323	2.5	3349568.0	0.446529	Y
6	IC 320-286141/7	5.0	2.229342	2.5	2939637.0	0.445868	Y
7	IC 320-286141/8	10.0	4.591306	2.5	3188191.0	0.459131	Y



Calibration / d5-NEtFOSAA

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

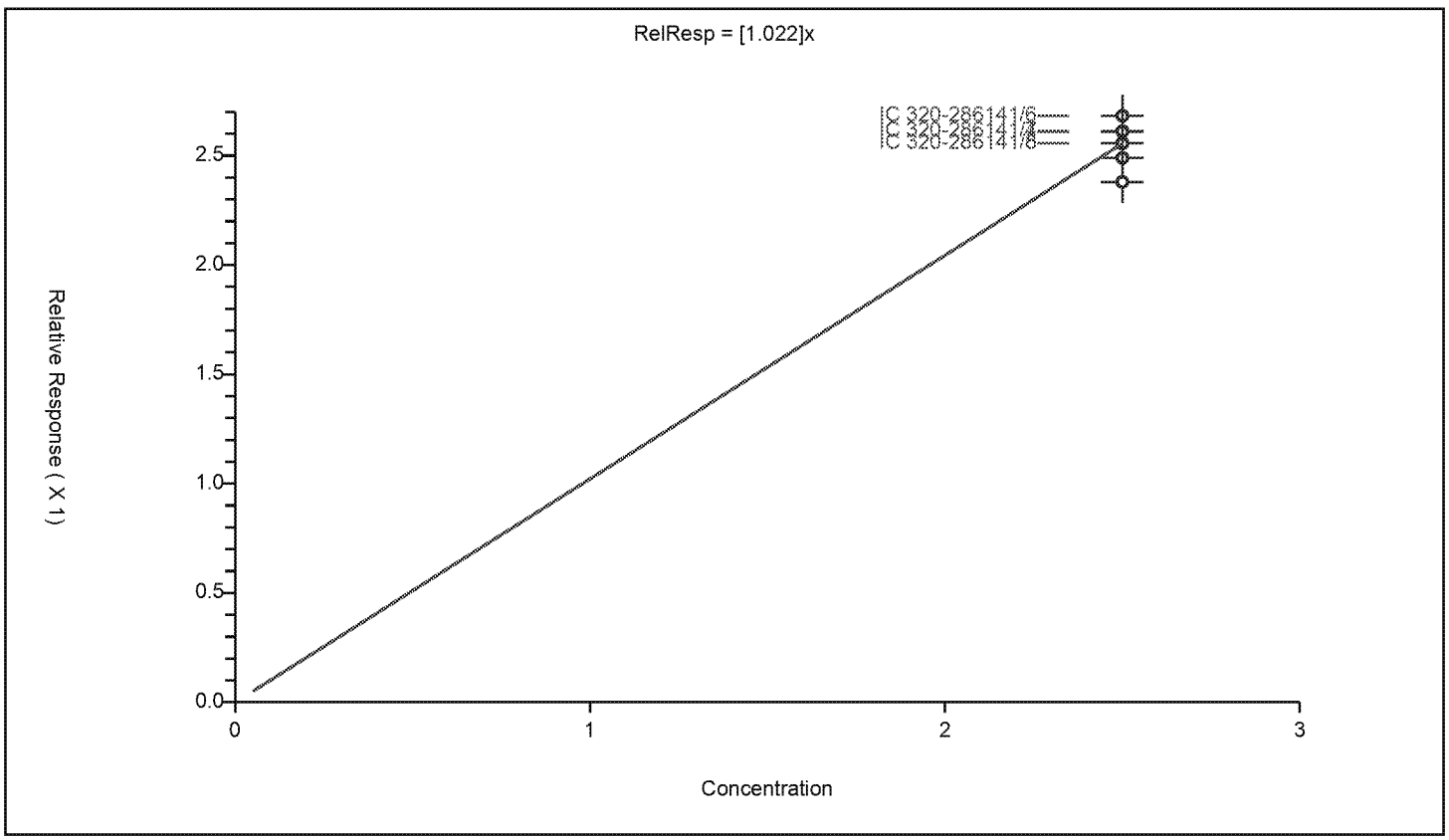
Curve Coefficients

Intercept:	0
Slope:	1.022

Error Coefficients

Standard Error:	562000
Relative Standard Error:	3.8
Correlation Coefficient:	NA
Coefficient of Determination (Adjusted):	0.000000000000000222

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	2.5	2.379819	2.5	524272.0	0.951928	Y
2	IC 320-286141/3	2.5	2.489292	2.5	552133.0	0.995717	Y
3	IC 320-286141/4	2.5	2.611764	2.5	521234.0	1.044705	Y
4	IC 320-286141/5	2.5	2.555738	2.5	480279.0	1.022295	Y
5	IC 320-286141/6	2.5	2.682063	2.5	506515.0	1.072825	Y
6	IC 320-286141/7	2.5	2.610334	2.5	457634.0	1.044134	Y
7	IC 320-286141/8	2.5	2.556356	2.5	521333.0	1.022542	Y



Calibration / **N-ethylperfluorooctanesulfonamidoacetic acid**

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

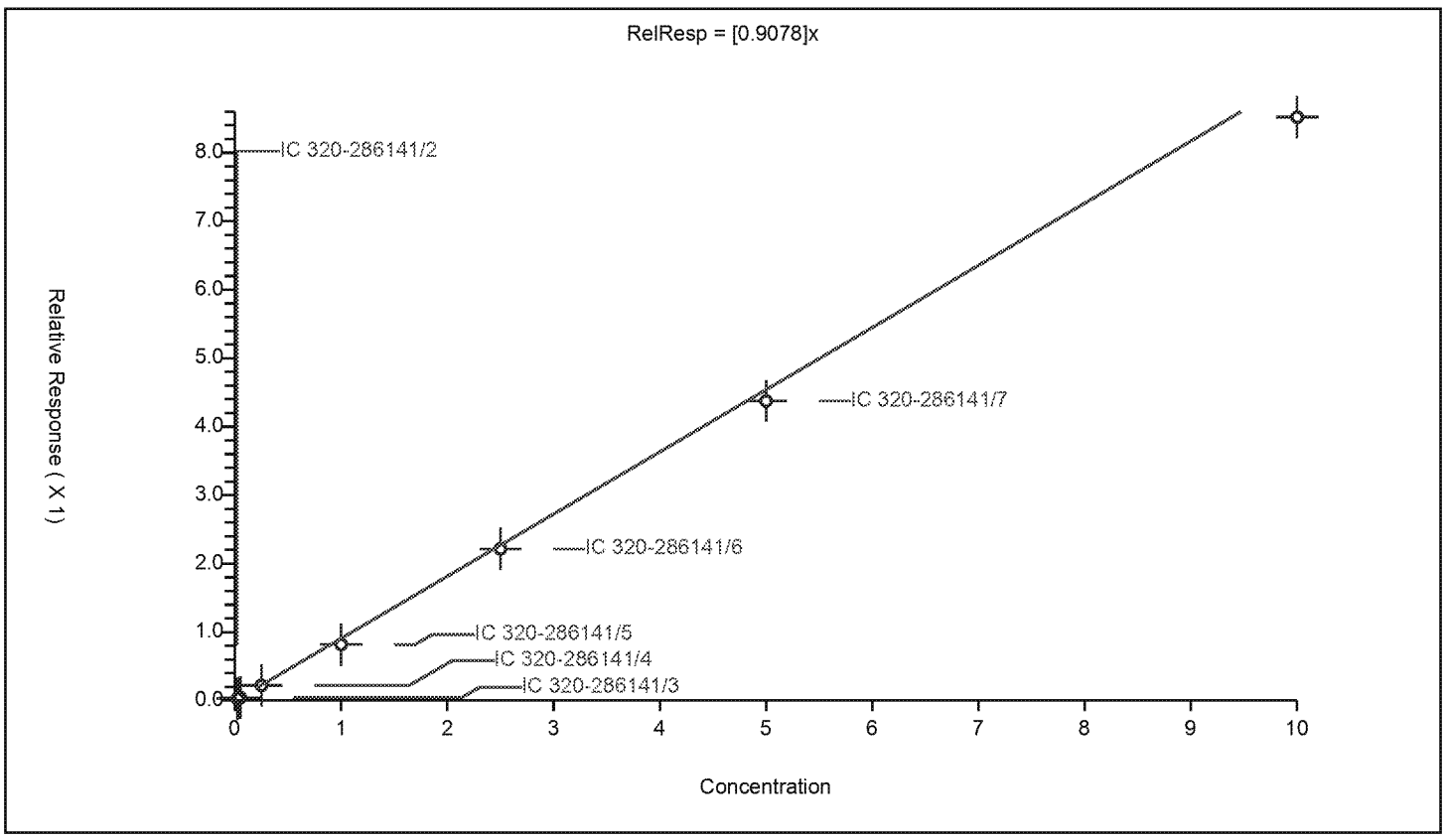
Curve Coefficients

Intercept:	0
Slope:	0.9078

Error Coefficients

Standard Error:	819000
Relative Standard Error:	12.0
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.980

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.028706	2.5	524272.0	1.148259	Y
2	IC 320-286141/3	0.05	0.044446	2.5	552133.0	0.888916	Y
3	IC 320-286141/4	0.25	0.221566	2.5	521234.0	0.886262	Y
4	IC 320-286141/5	1.0	0.818712	2.5	480279.0	0.818712	Y
5	IC 320-286141/6	2.5	2.215038	2.5	506515.0	0.886015	Y
6	IC 320-286141/7	5.0	4.373998	2.5	457634.0	0.8748	Y
7	IC 320-286141/8	10.0	8.519219	2.5	521333.0	0.851922	Y



Calibration / Perfluorododecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

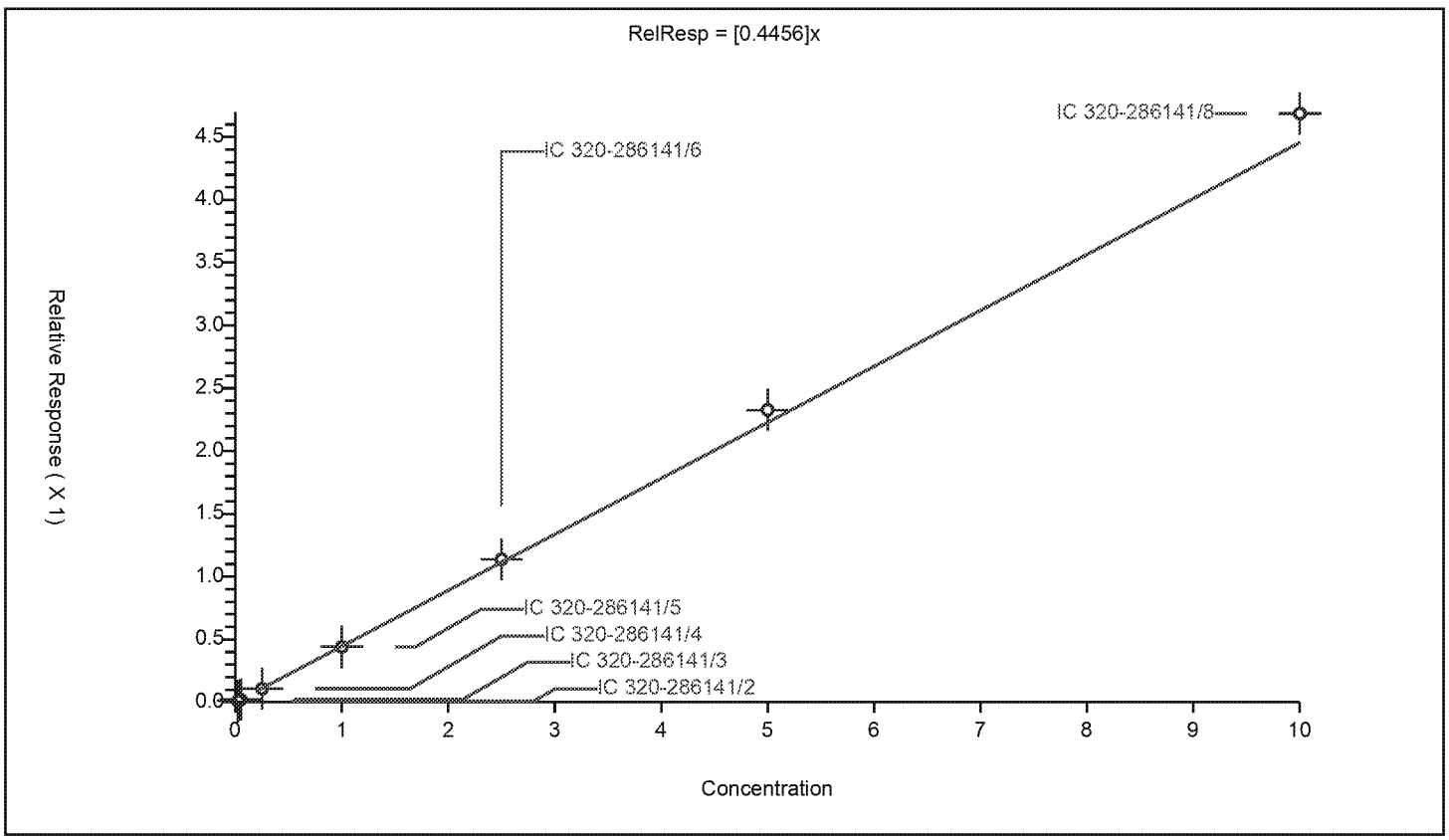
Curve Coefficients

Intercept:	0
Slope:	0.4456

Error Coefficients

Standard Error:	2760000
Relative Standard Error:	4.1
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.010461	2.5	3201298.0	0.418455	Y
2	IC 320-286141/3	0.05	0.021864	2.5	3393730.0	0.437277	Y
3	IC 320-286141/4	0.25	0.108048	2.5	3455285.0	0.432193	Y
4	IC 320-286141/5	1.0	0.44181	2.5	3083165.0	0.44181	Y
5	IC 320-286141/6	2.5	1.138215	2.5	3349568.0	0.455286	Y
6	IC 320-286141/7	5.0	2.327285	2.5	2939637.0	0.465457	Y
7	IC 320-286141/8	10.0	4.686702	2.5	3188191.0	0.46867	Y



Calibration

/ Perfluorotridecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

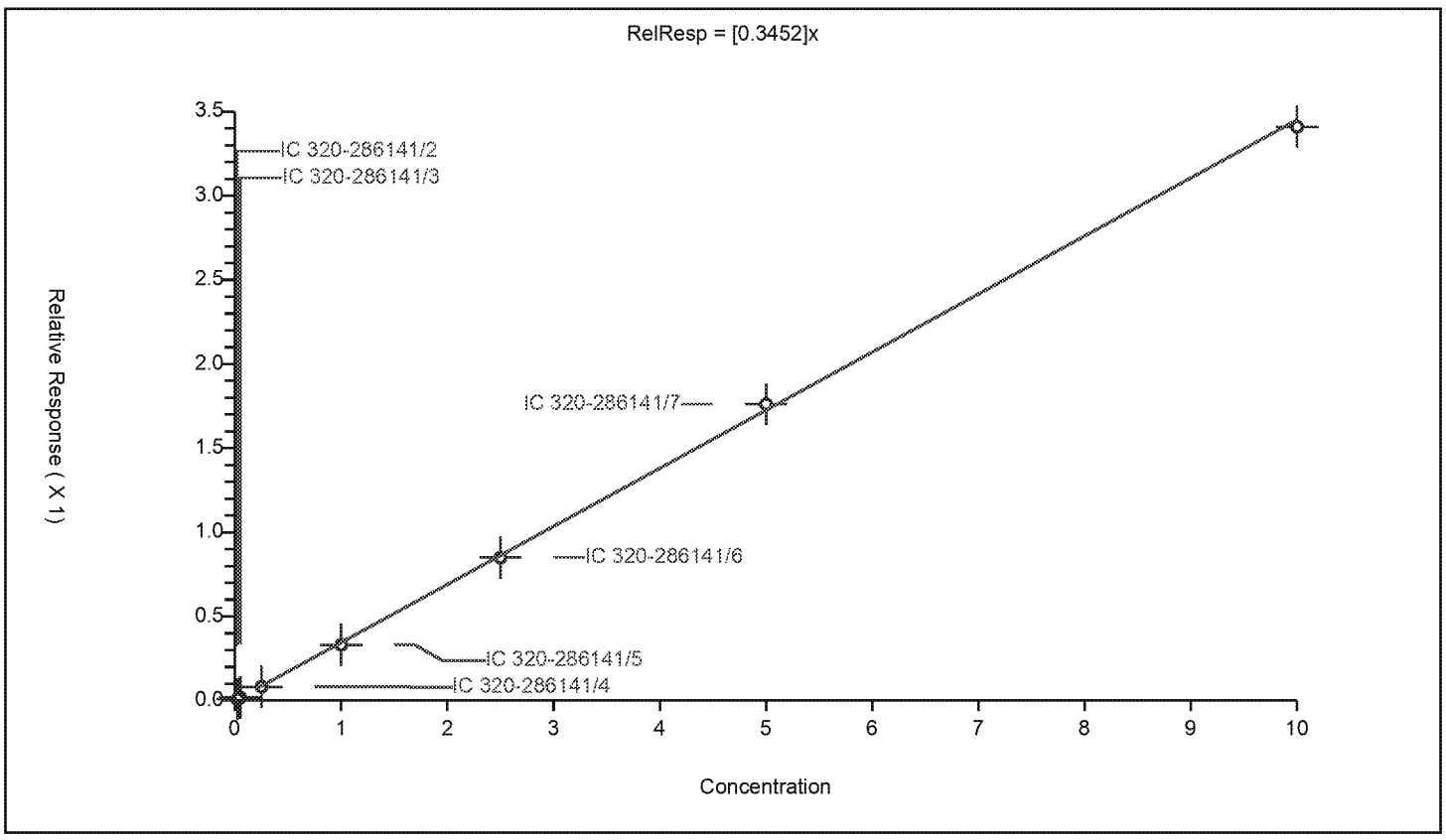
Curve Coefficients

Intercept:	0
Slope:	0.3452

Error Coefficients

Standard Error:	2030000
Relative Standard Error:	4.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.008801	2.5	3201298.0	0.352045	Y
2	IC 320-286141/3	0.05	0.018544	2.5	3393730.0	0.370875	Y
3	IC 320-286141/4	0.25	0.082178	2.5	3455285.0	0.328711	Y
4	IC 320-286141/5	1.0	0.331211	2.5	3083165.0	0.331211	Y
5	IC 320-286141/6	2.5	0.849819	2.5	3349568.0	0.339927	Y
6	IC 320-286141/7	5.0	1.761438	2.5	2939637.0	0.352288	Y
7	IC 320-286141/8	10.0	3.410228	2.5	3188191.0	0.341023	Y



Calibration / Perfluorotetradecanoic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

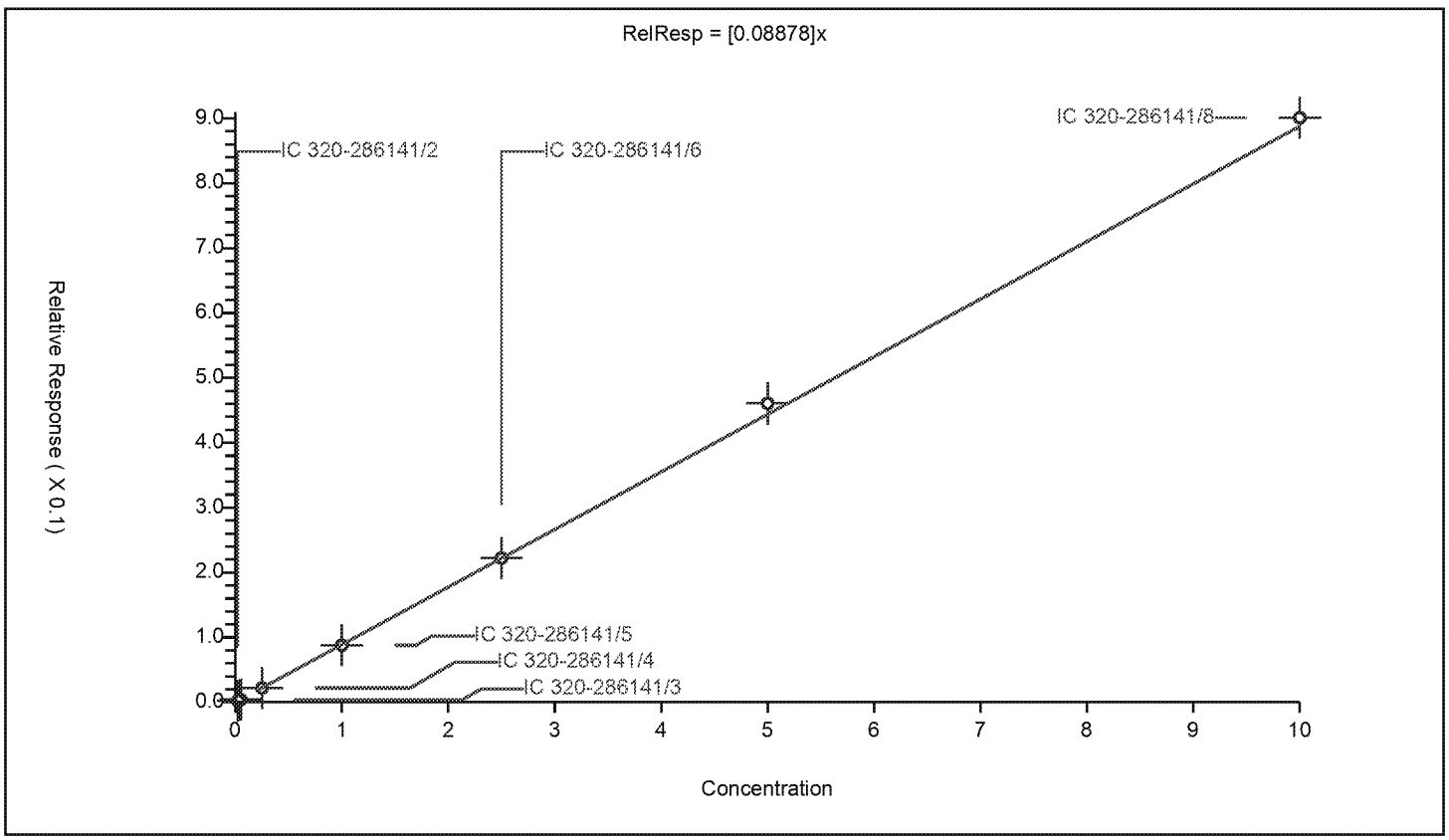
Curve Coefficients

Intercept:	0
Slope:	0.08878

Error Coefficients

Standard Error:	535000
Relative Standard Error:	3.4
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-286141/2	0.025	0.002292	2.5	3201298.0	0.091682	Y
2	IC 320-286141/3	0.05	0.004161	2.5	3393730.0	0.083212	Y
3	IC 320-286141/4	0.25	0.021914	2.5	3455285.0	0.087657	Y
4	IC 320-286141/5	1.0	0.087751	2.5	3083165.0	0.087751	Y
5	IC 320-286141/6	2.5	0.222228	2.5	3349568.0	0.088891	Y
6	IC 320-286141/7	5.0	0.460706	2.5	2939637.0	0.092141	Y
7	IC 320-286141/8	10.0	0.900941	2.5	3188191.0	0.090094	Y



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab Sample ID: CCVL 320-286141/10 Calibration Date: 04/04/2019 16:29

Instrument ID: A8_N Calib Start Date: 04/04/2019 15:14

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

Lab File ID: 2019.04.04_537ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid	Ave	1.181	1.111		0.0416	0.0442	-5.9	50.0
Perfluorohexanoic acid	Ave	1.113	1.130		0.0508	0.0500	1.5	50.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2518		0.0465	0.0500	-6.9	50.0
Perfluoroheptanoic acid	Ave	1.060	1.129		0.0532	0.0500	6.5	50.0
Perfluorohexanesulfonic acid	Ave	1.433	1.388		0.0441	0.0455	-3.1	50.0
DONA	Ave	2.887	2.959		0.0483	0.0471	2.5	50.0
Perfluorooctanoic acid	Ave	1.014	0.9819			0.0500	-3.2	50.0
Perfluorononanoic acid	Ave	0.7390	0.7663		0.0518	0.0500	3.7	50.0
Perfluorooctanesulfonic acid	Ave	1.056	1.109		0.0487	0.0464	5.0	50.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	Ave	1.700	1.646		0.0451	0.0466	-3.2	50.0
Perfluorodecanoic acid	Ave	0.5850	0.5948		0.0508	0.0500	1.7	50.0
N-methylperfluorooctanesulfonamidoacetic acid	Ave	0.9362	1.070		0.0571	0.0500	14.2	50.0
Perfluoroundecanoic acid	Ave	0.4445	0.4094		0.0460	0.0500	-7.9	50.0
N-ethylperfluorooctanesulfonamidoacetic acid	Ave	0.9078	0.9906		0.0546	0.0500	9.1	50.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	Ave	2.131	2.042		0.0451	0.0471	-4.2	50.0
Perfluorododecanoic acid	Ave	0.4456	0.4433		0.0497	0.0500	-0.5	50.0
Perfluorotridecanoic acid	Ave	0.3452	0.3407		0.0494	0.0500	-1.3	50.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0903		0.0509	0.0500	1.7	50.0
13C2 PFHxA	Ave	1.166	1.105		2.37	2.50	-5.2	30.0
13C3 HFPO-DA	Ave	0.0524	0.0564		2.69	2.50	7.6	30.0
13C2 PFDA	Ave	0.6210	0.5957		2.40	2.50	-4.1	30.0
d5-NEtFOSAA	Ave	1.022	1.022		2.50	2.50	0.0	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_011.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 04-Apr-2019 16:29:59 ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 04-Apr-2019 16:55:43 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0339

First Level Reviewer: Ex. 4 CBI Date: 04-Apr-2019 16:54:28
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.993	1.992	0.001	1.000	69433	0.0416	Target=1.41	384	
298.90 > 99.00	1.993	1.992	0.001	1.000	46369		1.50(0.00-0.00)	20.5	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.348	2.347	0.001	0.735	75664	0.0508	Target=10.46	21.1	
313.00 > 119.00	2.348	2.347	0.001	0.735	6960		10.87(0.00-0.00)	8.3	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	3700356	2.37		5433	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.491	2.478	0.013	1.000	16861	0.0465		9.7	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.491	2.481	0.010	1.000	188689	2.69		1139	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.778	2.780	-0.002	1.000	75567	0.0532	Target=2.41	7.3	
363.00 > 169.00	2.778	2.780	-0.002	1.000	32577		2.32(0.00-0.00)	70.6	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.799	2.792	0.007	1.000	89277	0.0441	Target=2.91	128	
399.00 > 99.00	2.799	2.792	0.007	1.000	31325		2.85(0.00-0.00)	13.5	M
24 DONA									
377.00 > 251.00	2.840	2.825	0.015	1.000	186665	0.0483	Target=1.54	374	
377.00 > 85.00	2.820	2.825	-0.005	0.993	107298		1.74(0.00-0.00)	7712	
* 5 13C2 PFOA									
415.00 > 370.00	3.196	3.186	0.010		3347956	2.50		8273	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.196	3.186	0.010	1.000	65747	0.0484	Target=1.70	8.6	M
413.00 > 169.00	3.196	3.186	0.010	1.000	40858		1.61(0.00-0.00)	58.9	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.564	3.562	0.002		3378268	2.39		10014	
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.579	3.564	0.015	1.004	72758	0.0487	Target=4.63	343	
499.00 > 99.00	3.579	3.564	0.015	1.004	15209		4.78(0.00-0.00)	13.7	M
9 Perfluorononanoic acid									
463.00 > 419.00	3.579	3.577	0.002	1.000	51312	0.0518	Target=3.78	30.1	
463.00 > 169.00	3.579	3.577	0.002	1.000	12516		4.10(0.00-0.00)	102	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.770	3.755	0.015	1.000	108414	0.0451		255	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.934	3.915	0.019	1.000	39830	0.0508	Target=4.93	15.2	
513.00 > 169.00	3.934	3.915	0.019	1.000	7368		5.41(0.00-0.00)	22.1	
$ 10 13C2 PFDA									
515.00 > 470.00	3.934	3.931	0.003	1.000	1994239	2.40		10675	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.091	4.091	0.0		542383	2.50		2955	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.091	4.091	0.0	1.000	11602	0.0571		166	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.236	4.236	0.0	1.000	27411	0.0460	Target=4.73	13.5	
563.00 > 169.00	4.236	4.236	0.0	1.000	7615		3.60(0.00-0.00)	91.7	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.236	4.243	-0.007	1.035	554511	2.50		356	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.253	4.252	0.0	1.004	10746	0.0546		29.9	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.359	4.369	-0.011	1.000	135927	0.0451		1196	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.510	4.508	0.002	1.000	29684	0.0497	Target=3.49	22.2	
613.00 > 169.00	4.510	4.508	0.002	1.000	8743		3.40(0.00-0.00)	92.9	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.760	4.772	-0.012	1.000	22812	0.0494	Target=2.87	9.5	
663.00 > 169.00	4.760	4.772	-0.012	1.000	7704		2.96(0.00-0.00)	77.0	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.976	4.985	-0.009	1.000	6046	0.0509	Target=1.40	103	
713.00 > 219.00	4.976	4.985	-0.009	1.000	3934		1.54(0.00-0.00)	40.0	

QC Flag Legend

Review Flags

M - Manually Integrated

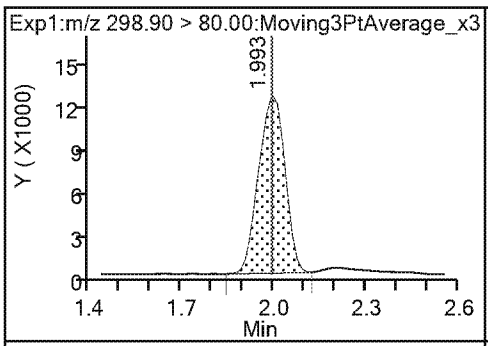
Reagents:

LC537_NC_L2_00004 Amount Added: 1.00 Units: mL

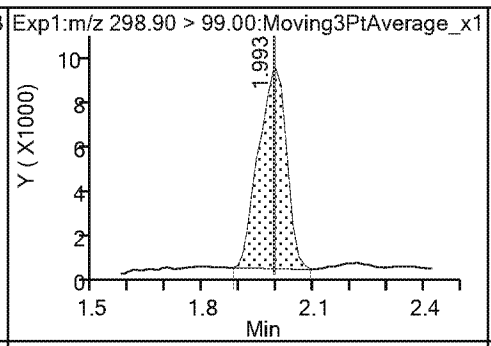
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_011.d
Injection Date: 04-Apr-2019 16:29:59 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

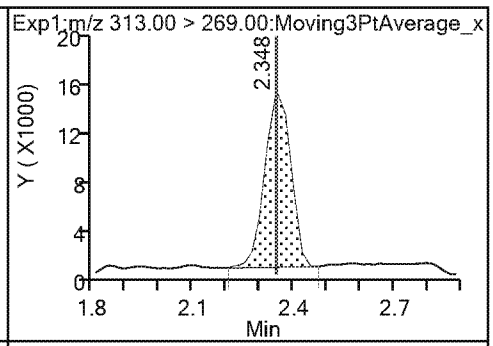
1 Perfluorobutanesulfonic acid



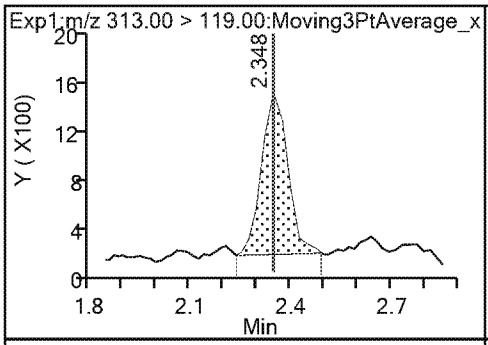
1 Perfluorobutanesulfonic acid



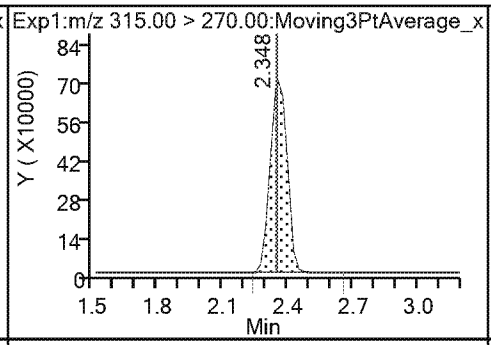
13 Perfluorohexanoic acid



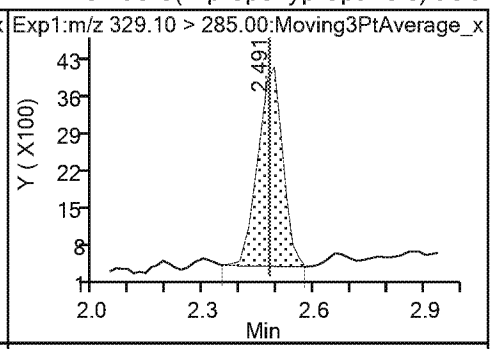
13 Perfluorohexanoic acid



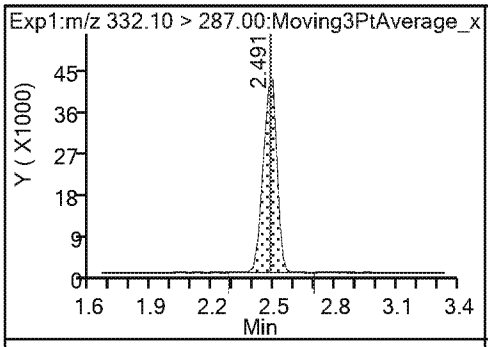
$ 2 13C2 PFHxA



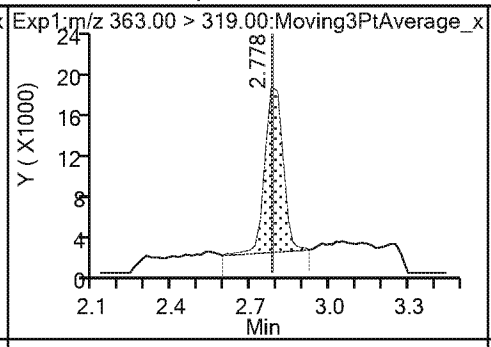
22 Perfluoro(2-propoxypropanoic) acid



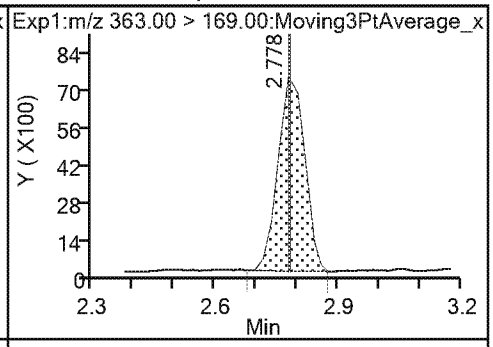
$ 25 13C3 HFPO-DA



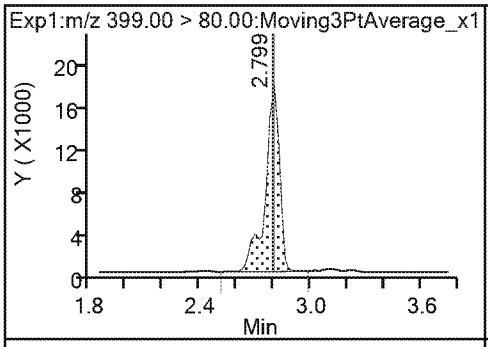
4 Perfluoroheptanoic acid



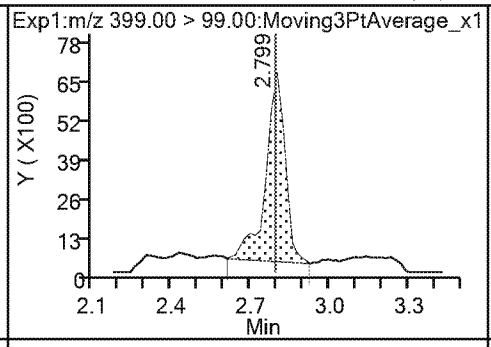
4 Perfluoroheptanoic acid



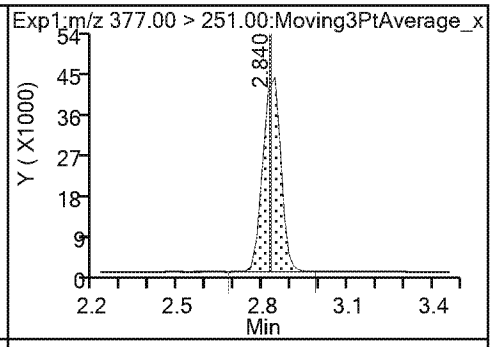
3 Perfluorohexanesulfonic acid



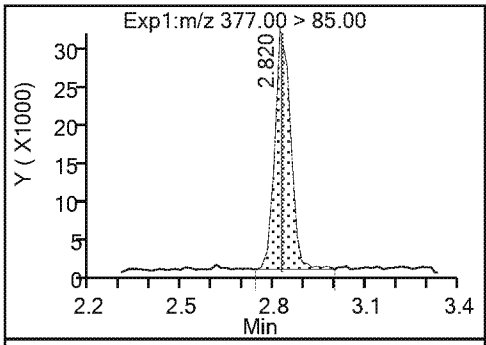
3 Perfluorohexanesulfonic acid (M)



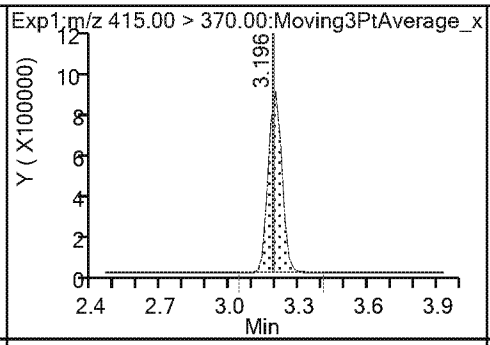
24 DONA



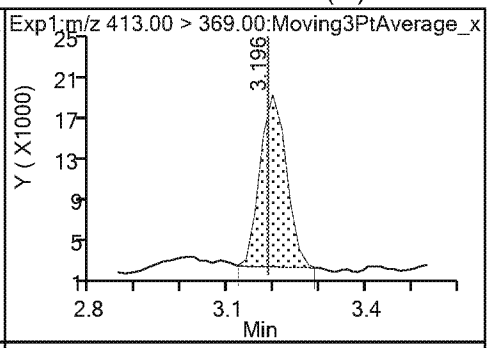
24 DONA



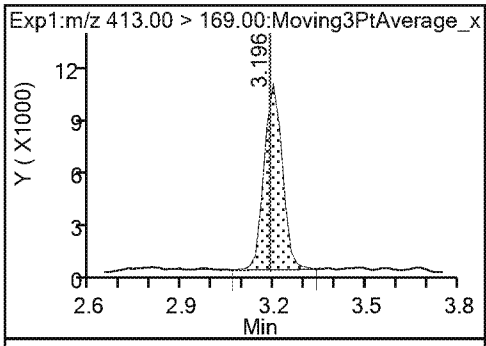
* 5 13C2 PFOA



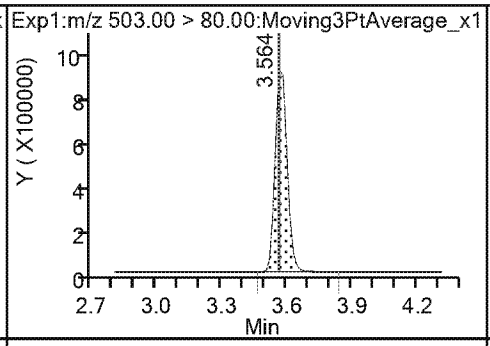
6 Perfluorooctanoic acid (M)



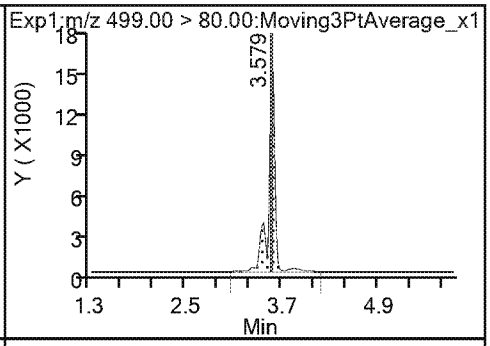
6 Perfluorooctanoic acid



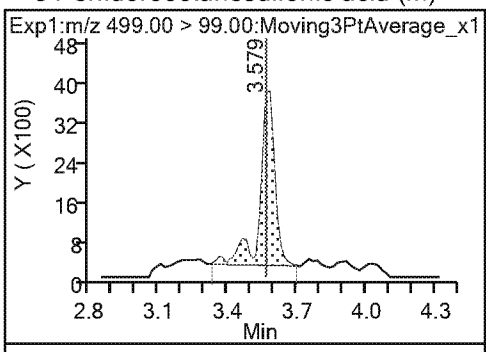
* 7 13C4 PFOS



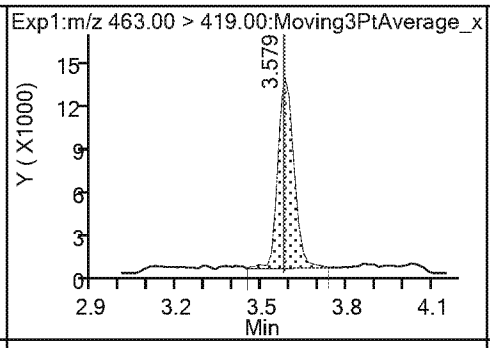
8 Perfluorooctanesulfonic acid



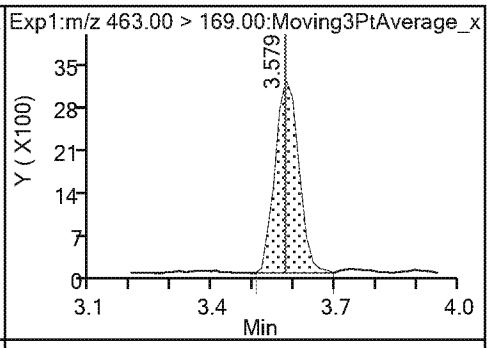
8 Perfluorooctanesulfonic acid (M)



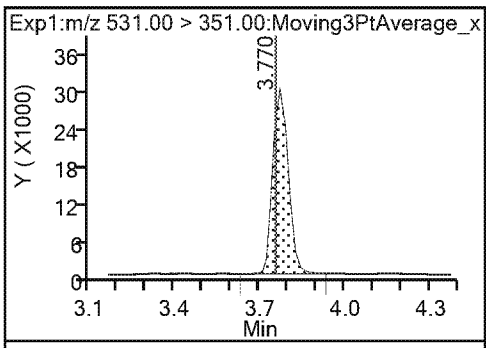
9 Perfluorononanoic acid



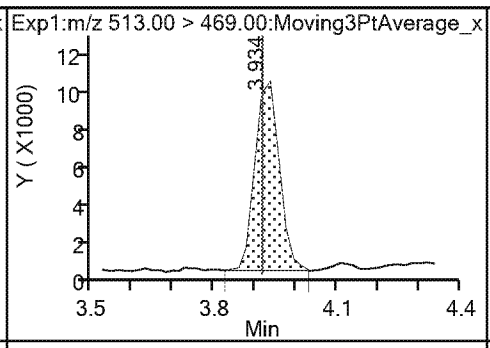
9 Perfluorononanoic acid



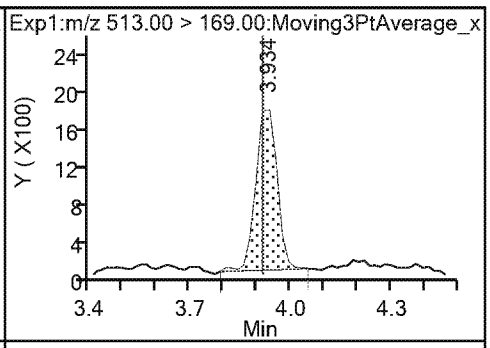
23 9-Chlorohexadecafluoro-3-oxanonane



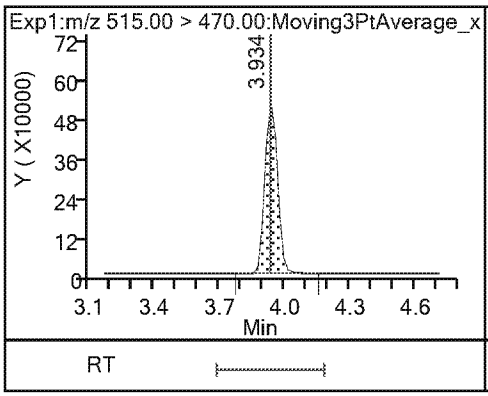
14 Perfluorodecanoic acid



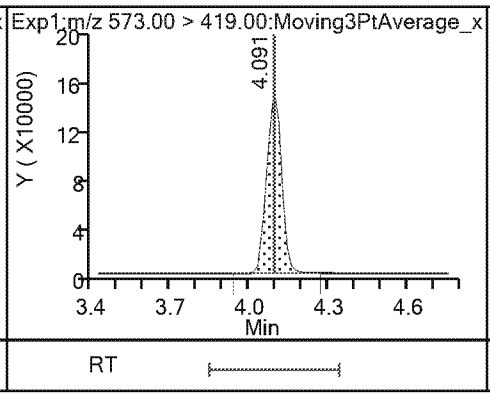
14 Perfluorodecanoic acid



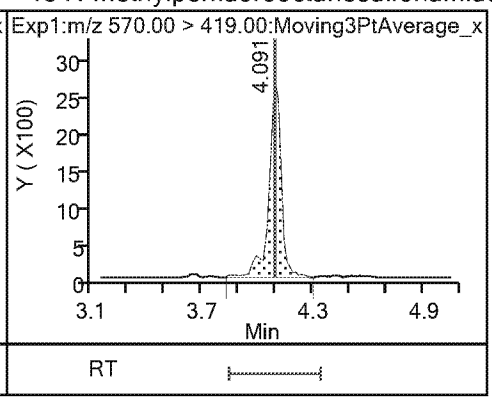
$ 10 13C2 PFDA



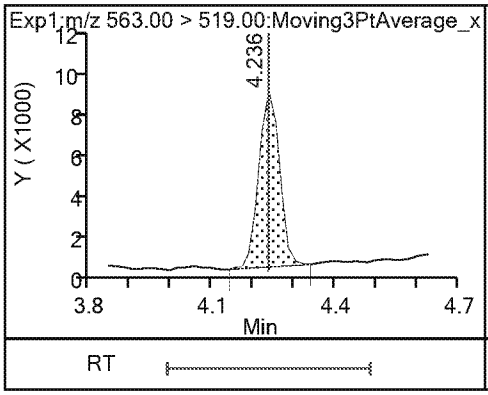
* 12 d3-NMeFOSAA



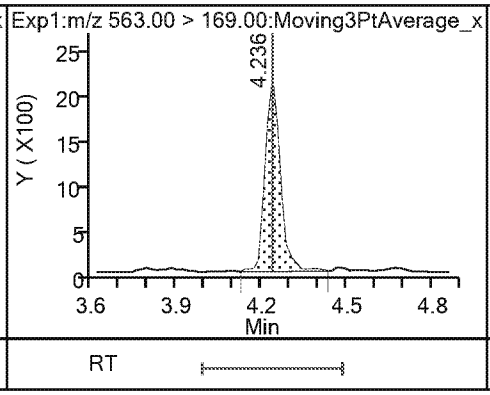
15 N-methylperfluorooctanesulfonamido



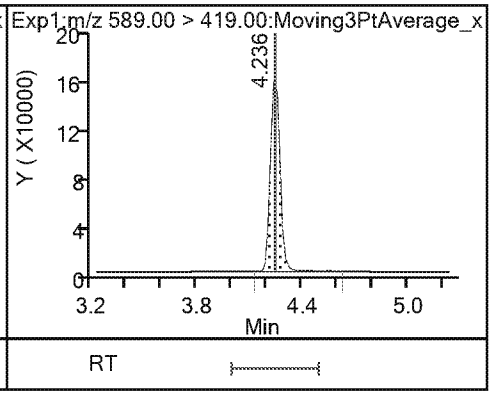
17 Perfluoroundecanoic acid



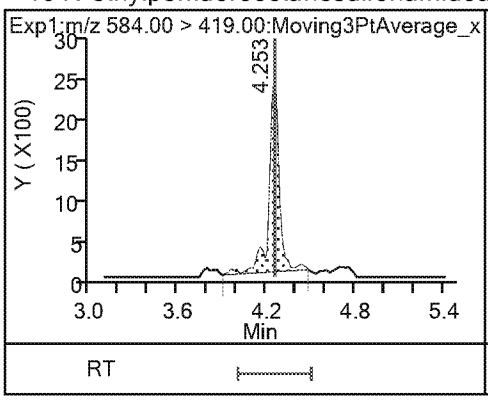
17 Perfluoroundecanoic acid



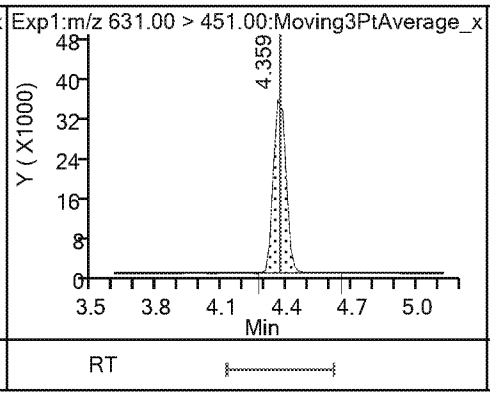
$ 11 d5-NEtFOSAA



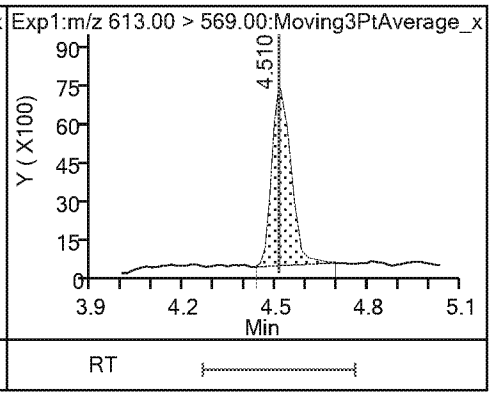
16 N-ethylperfluorooctanesulfonamidoa



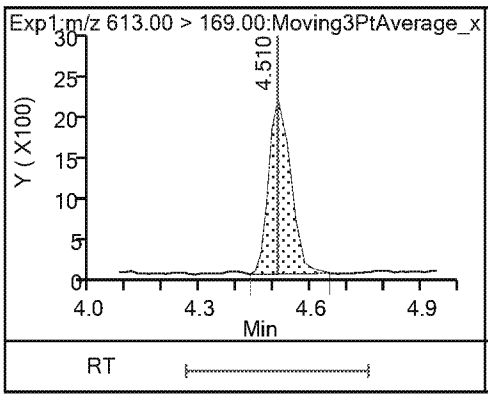
21 11-Chloroeicosafluoro-3-oxaundecan



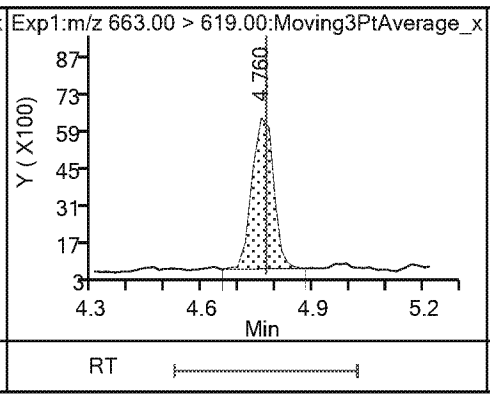
18 Perfluorododecanoic acid



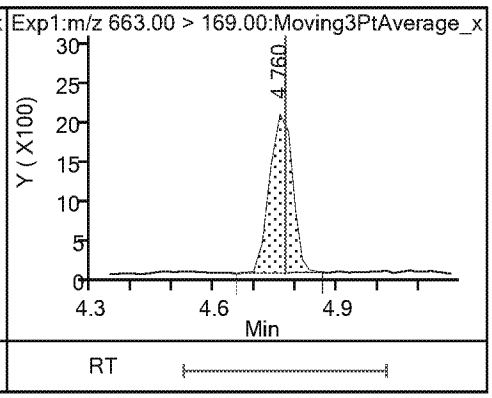
18 Perfluorododecanoic acid



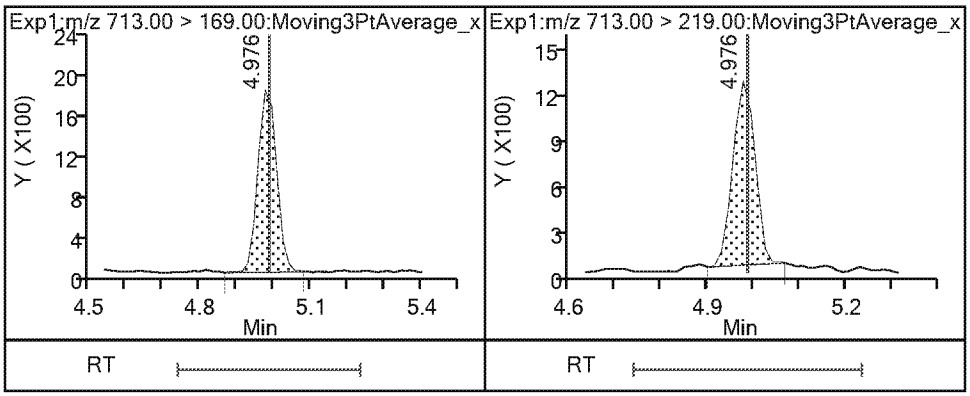
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid 20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento

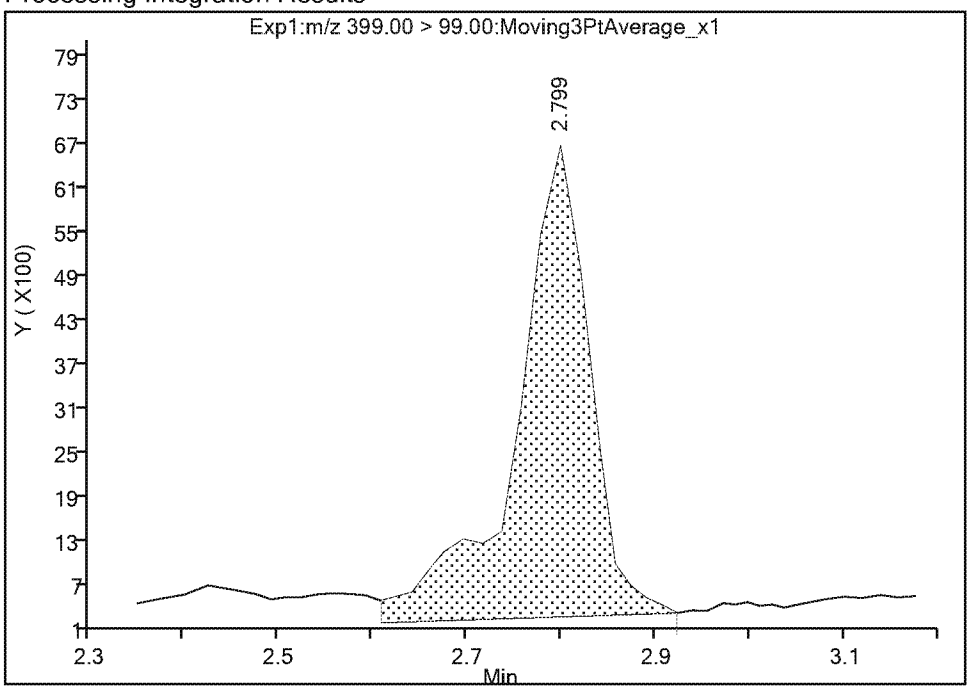
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_011.d				
Injection Date:	04-Apr-2019 16:29:59	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	10
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

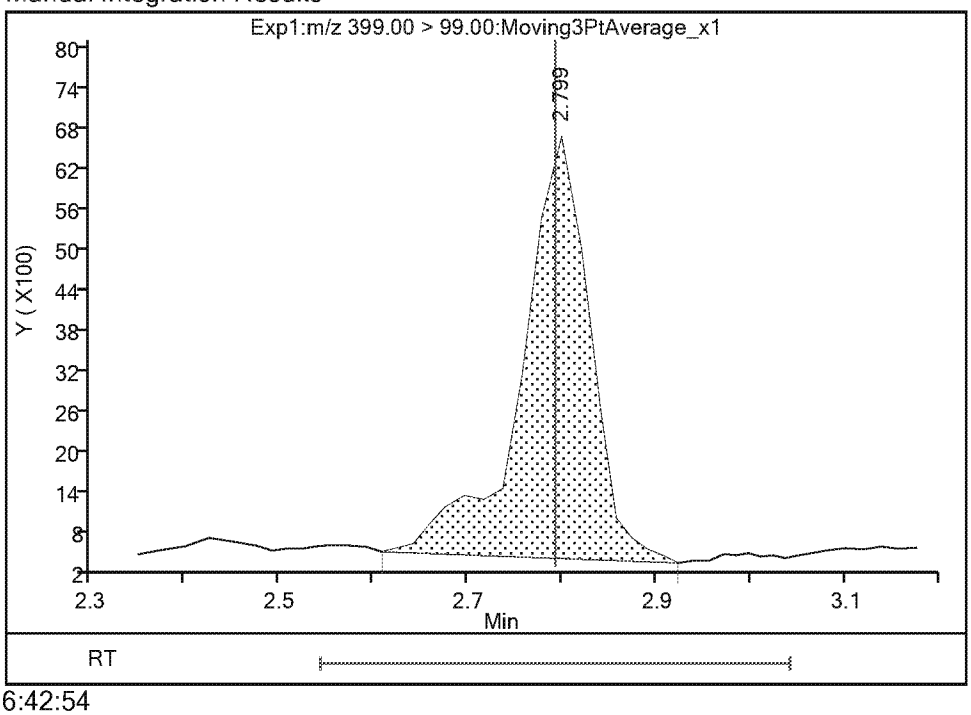
Processing Integration Results

RT: 2.80
Area: 34148
Amount: 0.044077
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 31325
Amount: 0.044077
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:42:54
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

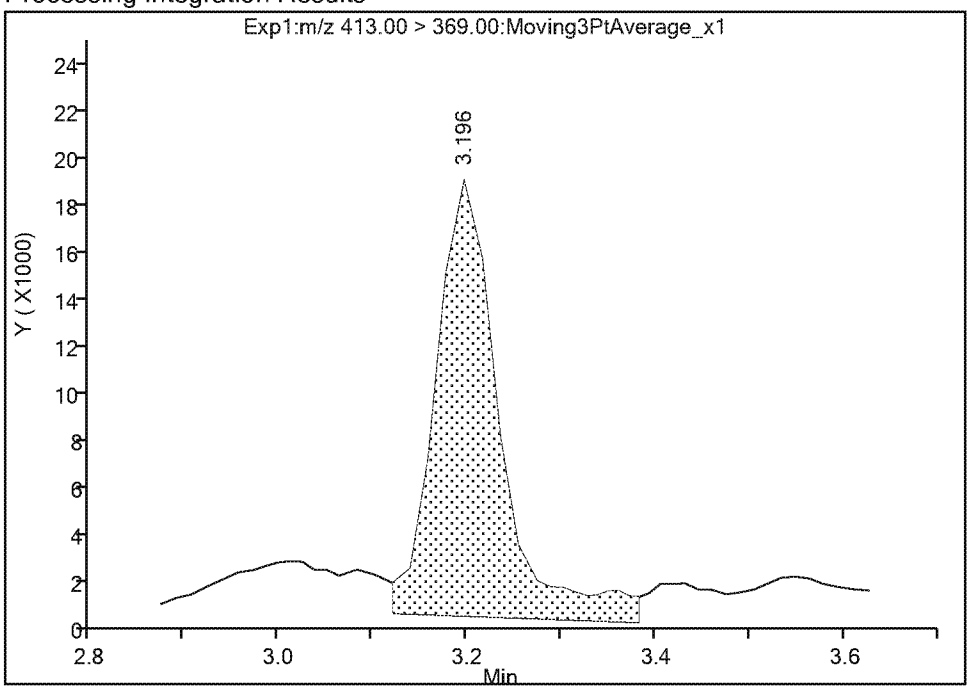
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_011.d				
Injection Date:	04-Apr-2019 16:29:59	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	10
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

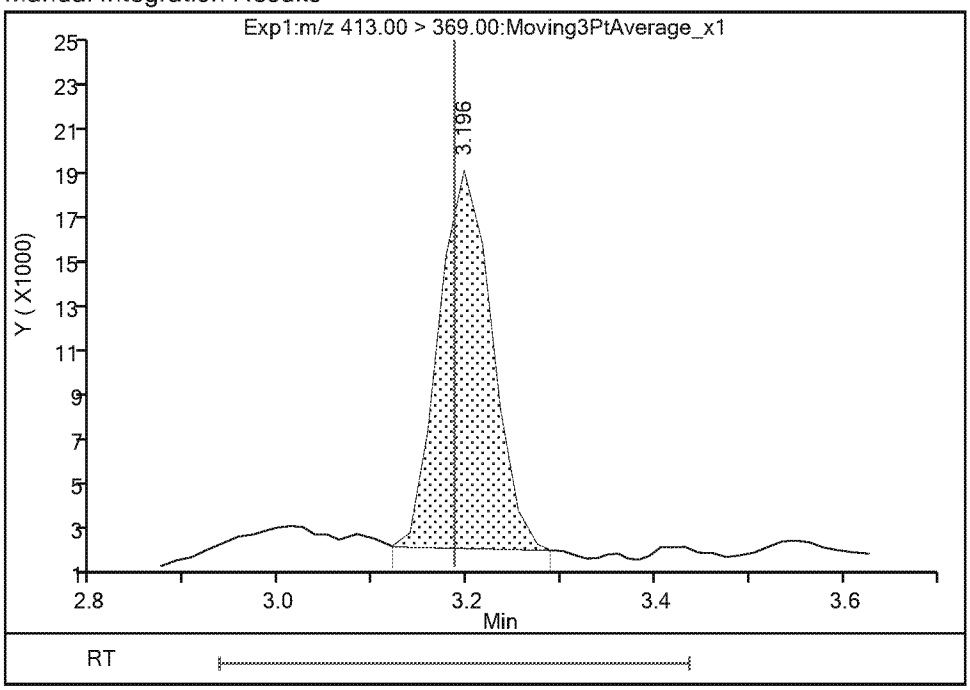
Processing Integration Results

RT: 3.20
Area: 85610
Amount: 0.063017
Amount Units: ng/ml



Manual Integration Results

RT: 3.20
Area: 65747
Amount: 0.048396
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:43:07
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

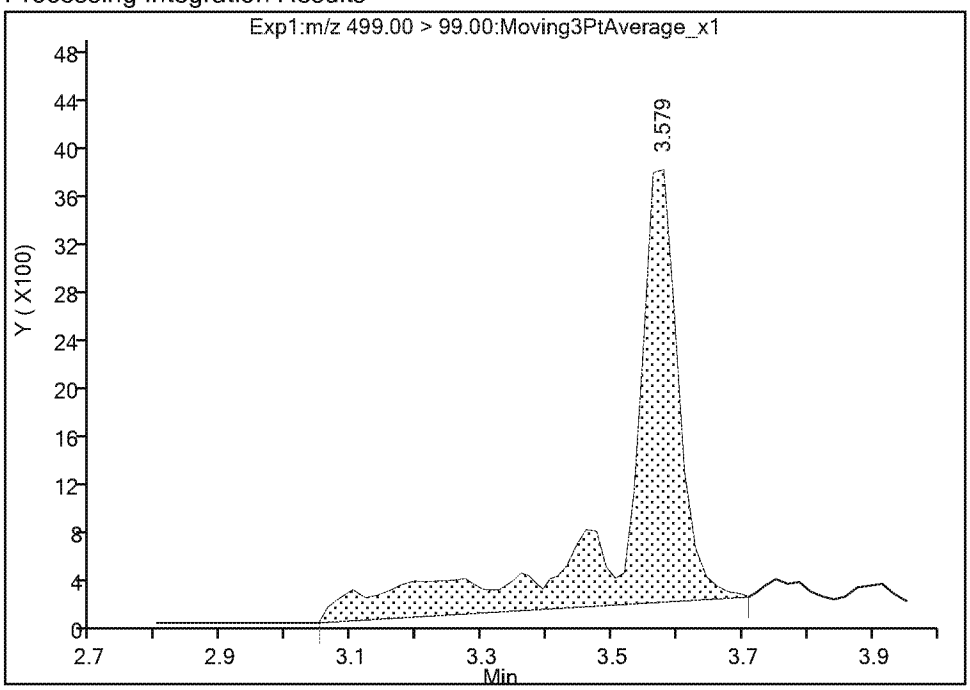
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_011.d				
Injection Date:	04-Apr-2019 16:29:59	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	10
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

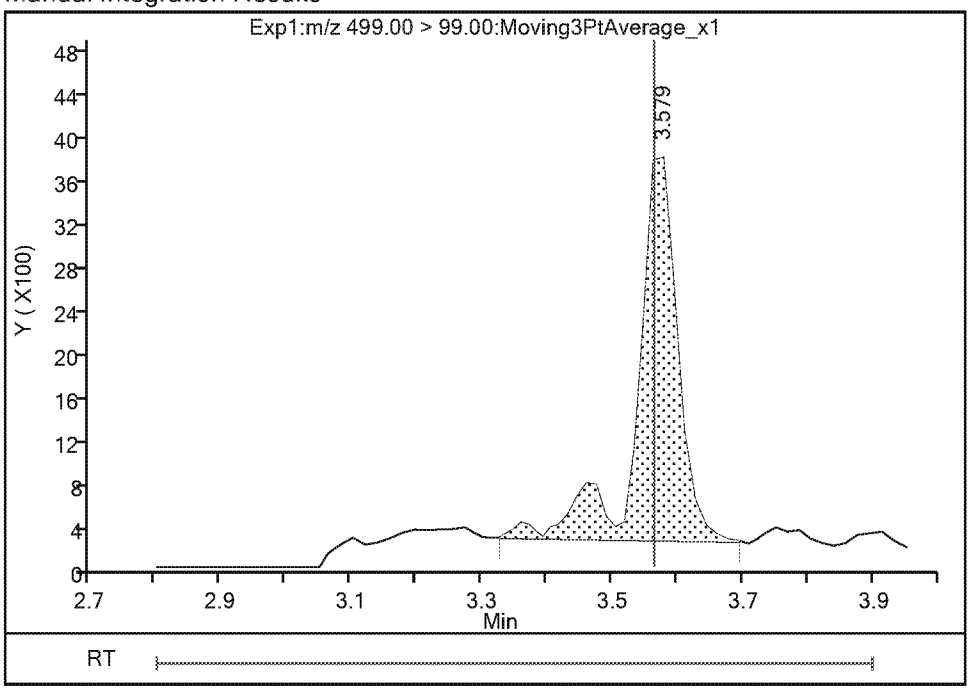
Processing Integration Results

RT: 3.58
Area: 21044
Amount: 0.048729
Amount Units: ng/ml



Manual Integration Results

RT: 3.58
Area: 15209
Amount: 0.048729
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 04-Apr-2019 16:43:20
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab Sample ID: ICV 320-286141/12 Calibration Date: 04/04/2019 16:48

Instrument ID: A8_N Calib Start Date: 04/04/2019 15:14

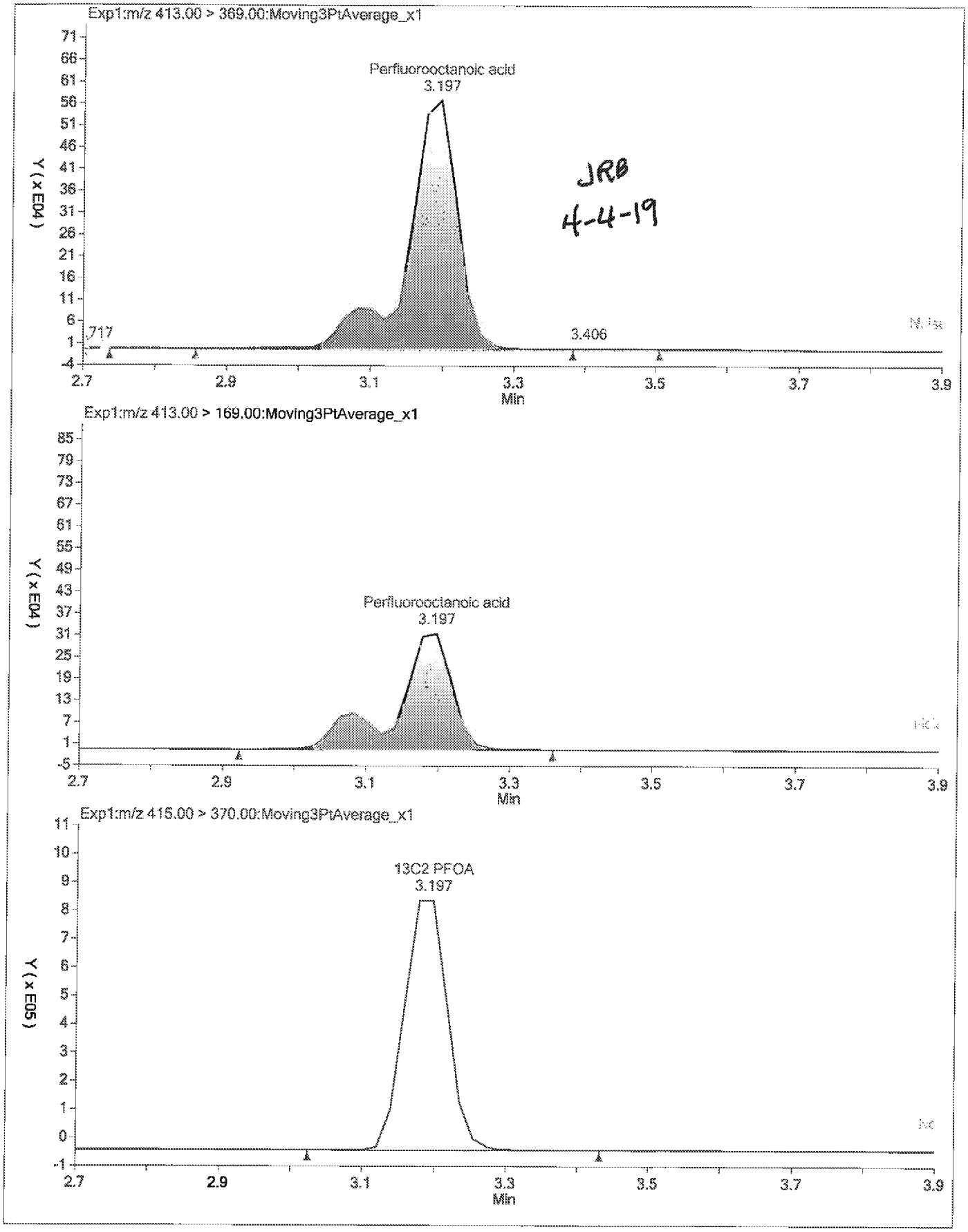
GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

Lab File ID: 2019.04.04_537ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid	Ave	1.181	1.175		1.76	1.77	-0.5	30.0
Perfluorohexanoic acid	Ave	1.113	1.104		1.98	2.00	-0.8	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2422		1.79	2.00	-10.5	30.0
Perfluoroheptanoic acid	Ave	1.060	1.110		2.10	2.00	4.8	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.435		1.83	1.82	0.2	30.0
DONA	Ave	2.887	2.584		1.69	1.88	-10.5	30.0
Perfluorooctanoic acid	Ave	1.014	1.021		2.01	2.00	0.7	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.082		1.90	1.85	2.4	30.0
Perfluorononanoic acid	Ave	0.7390	0.7516		2.03	2.00	1.7	30.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	Ave	1.700	1.517		1.66	1.86	-10.7	30.0
Perfluorodecanoic acid	Ave	0.5850	0.5958		2.04	2.00	1.8	30.0
N-methylperfluorooctanesulfo namidoacetic acid	Ave	0.9362	0.9635		2.06	2.00	2.9	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4548		2.05	2.00	2.3	30.0
N-ethylperfluorooctanesulfon amidoacetic acid	Ave	0.9078	0.9399		2.07	2.00	3.5	30.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	Ave	2.131	1.987		1.76	1.88	-6.7	30.0
Perfluorododecanoic acid	Ave	0.4456	0.4645		2.08	2.00	4.2	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3399		1.97	2.00	-1.5	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0908		2.05	2.00	2.3	30.0
13C2 PFHxA	Ave	1.166	1.133		2.43	2.50	-2.8	30.0
13C3 HFPO-DA	Ave	0.0524	0.0579		2.76	2.50	10.6	30.0
13C2 PFDA	Ave	0.6210	0.6330		2.55	2.50	1.9	30.0
d5-NEtFOSAA	Ave	1.022	1.015		2.48	2.50	-0.7	30.0

Chromatogram

TPFOA EXP1



Chrom

Printed: 4/4/2019 4:39:35 PM

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_013.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 04-Apr-2019 16:48:50 ALS Bottle#: 9 Worklist Smp#: 12
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: ICV
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist:

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 04-Apr-2019 17:04:16 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0339

First Level Reviewer: Ex. 4 CBI Date: 04-Apr-2019 17:03:53
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	2.008	1.992	0.016	1.000	2838977	1.76	Target=1.41	15010	
298.90 > 99.00	2.008	1.992	0.016	1.000	1958606		1.45(0.00-0.00)	905	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.734	2858326	1.98	Target=10.46	797	
313.00 > 119.00	2.347	2.347	0.0	0.734	274268		10.42(0.00-0.00)	399	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.372	2.347	0.025	1.000	3664104	2.43		5948	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.490	2.478	0.012	1.000	626709	1.79		412	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.490	2.481	0.009	1.000	187259	2.76		1253	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.798	2.780	0.018	1.000	2873367	2.10	Target=2.41	308	
363.00 > 169.00	2.778	2.780	-0.002	0.993	1220938		2.35(0.00-0.00)	2105	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.798	2.792	0.006	1.000	3571852	1.83	Target=2.91	3173	
399.00 > 99.00	2.798	2.792	0.006	1.000	1210644		2.95(0.00-0.00)	503	
24 DONA									
377.00 > 251.00	2.840	2.825	0.015	1.000	6299514	1.69	Target=1.54	9871	
377.00 > 85.00	2.819	2.825	-0.006	0.993	4063218		1.55(0.00-0.00)	399376	
* 5 13C2 PFOA									
415.00 > 370.00	3.196	3.186	0.010		3235073	2.50		8607	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.196	3.186	0.010	1.000	2643606	2.01	Target=1.70	317	
413.00 > 169.00	3.196	3.186	0.010	1.000	1508246		1.75(0.00-0.00)	1807	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.554	3.562	-0.008		3261224	2.39		5155	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.554	3.564	-0.010	1.000	2732920	1.90	Target=4.63	4587	
499.00 > 99.00	3.554	3.564	-0.010	1.000	593444		4.61(0.00-0.00)	473	
9 Perfluorononanoic acid									
463.00 > 419.00	3.569	3.577	-0.008	1.000	1945104	2.03	Target=3.78	1086	
463.00 > 169.00	3.569	3.577	-0.008	1.000	515703		3.77(0.00-0.00)	3024	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.755	3.755	0.0	1.000	3859116	1.66		7672	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.919	3.915	0.004	1.000	1541910	2.04	Target=4.93	610	
513.00 > 169.00	3.919	3.915	0.004	1.000	314723		4.90(0.00-0.00)	909	
$ 10 13C2 PFDA									
515.00 > 470.00	3.919	3.931	-0.012	1.000	2047628	2.55		5491	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.094	4.091	0.003		504834	2.50		2566	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.094	4.091	0.003	1.000	389140	2.06		2816	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.238	4.236	0.002	1.000	1177050	2.05	Target=4.73	611	
563.00 > 169.00	4.238	4.236	0.002	1.000	252408		4.66(0.00-0.00)	2945	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.238	4.243	-0.005	1.035	512298	2.48		347	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.254	4.252	0.002	1.004	379596	2.07		2934	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.360	4.369	-0.009	1.000	5108499	1.76		15011	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.512	4.508	0.004	1.000	1202200	2.08	Target=3.49	838	
613.00 > 169.00	4.512	4.508	0.004	1.000	346198		3.47(0.00-0.00)	3431	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.780	4.772	0.008	1.000	879782	1.97	Target=2.87	336	
663.00 > 169.00	4.780	4.772	0.008	1.000	304936		2.89(0.00-0.00)	1957	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.993	4.985	0.008	1.000	235108	2.05	Target=1.40	2008	
713.00 > 219.00	4.993	4.985	0.008	1.000	168162		1.40(0.00-0.00)	1148	

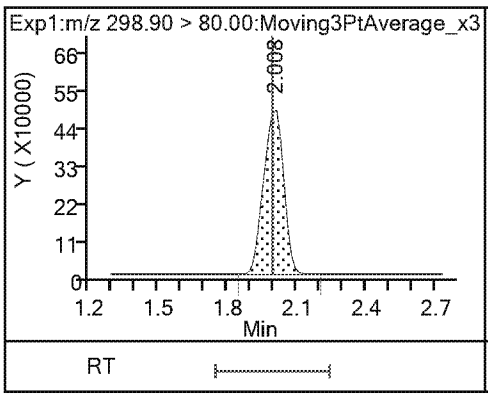
Reagents:

LC537_NC_ICV_00003 Amount Added: 1.00 Units: mL

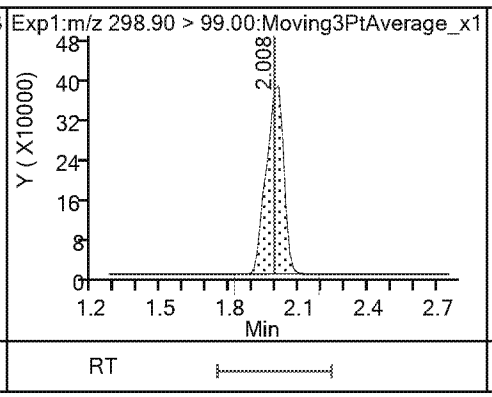
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_013.d
Injection Date: 04-Apr-2019 16:48:50 Instrument ID: A8_N
Lims ID: ICV
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 12
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

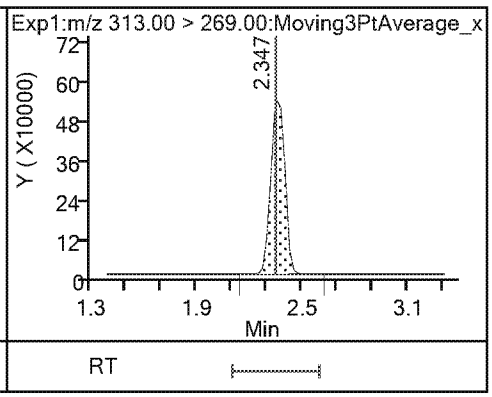
1 Perfluorobutanesulfonic acid



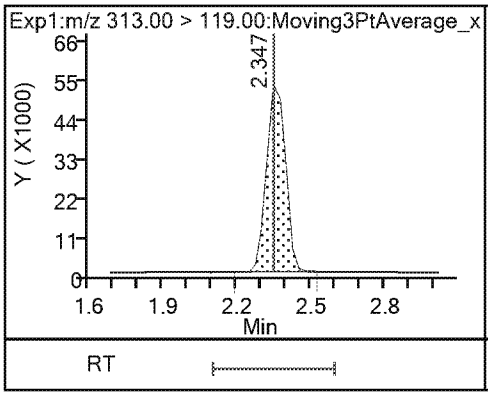
1 Perfluorobutanesulfonic acid



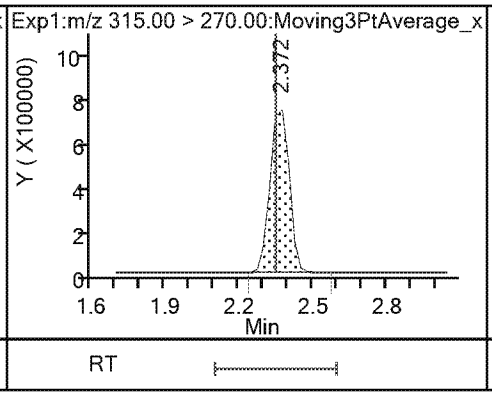
13 Perfluorohexanoic acid



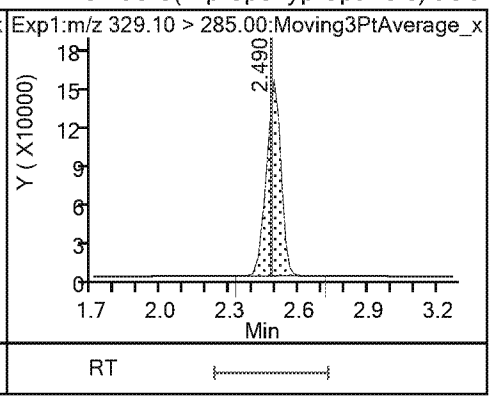
13 Perfluorohexanoic acid



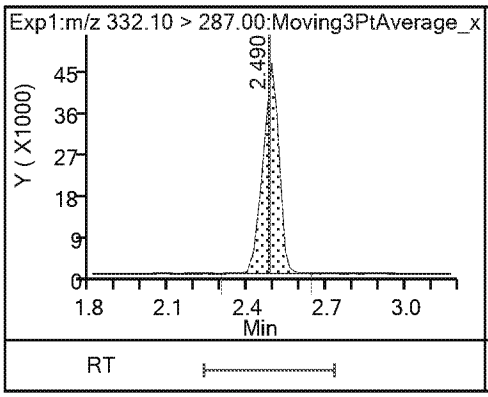
$ 2 13C2 PFHxA



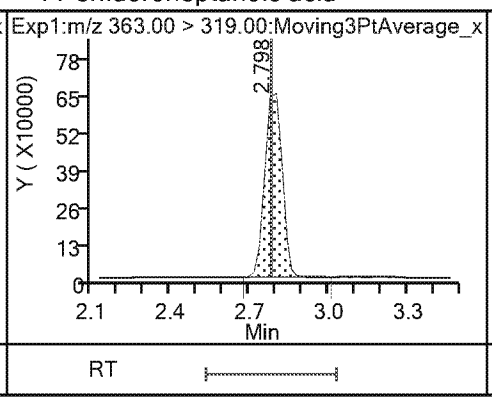
22 Perfluoro(2-propoxypropanoic) acid



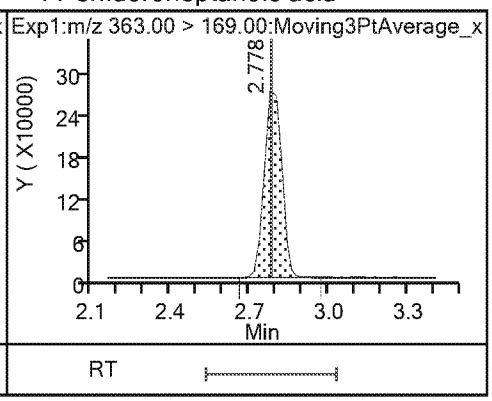
$ 25 13C3 HFPO-DA



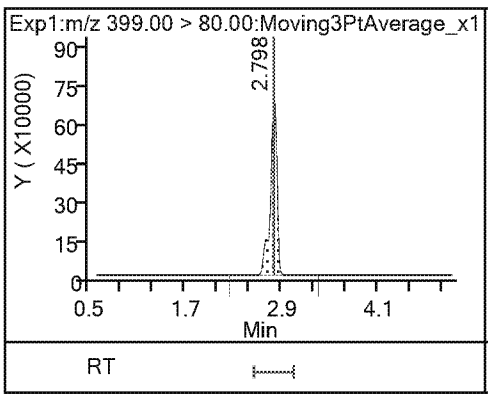
4 Perfluoroheptanoic acid



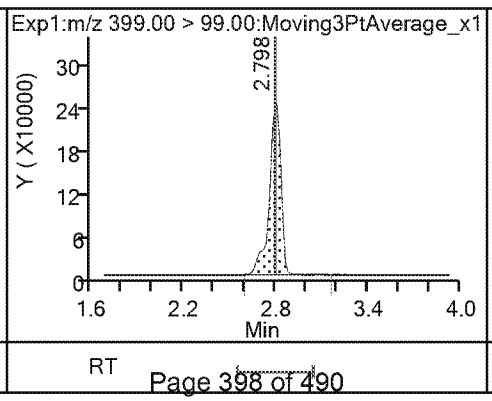
4 Perfluoroheptanoic acid



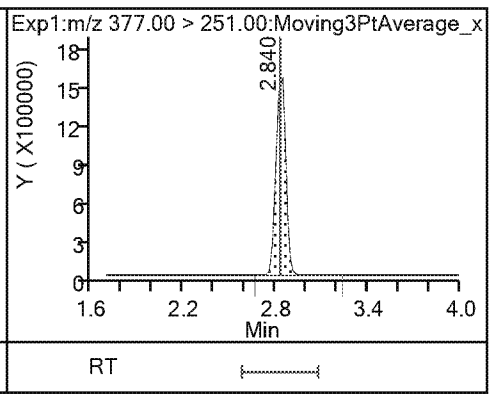
3 Perfluorohexanesulfonic acid



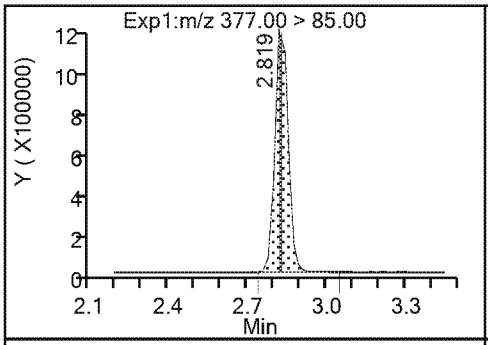
3 Perfluorohexanesulfonic acid



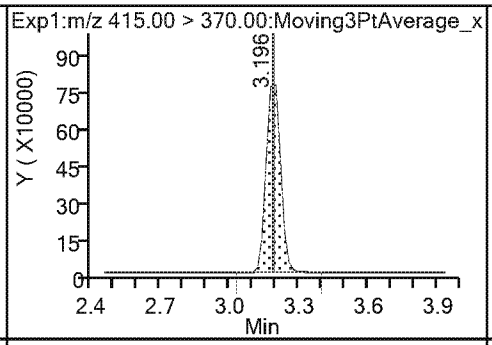
24 DONA



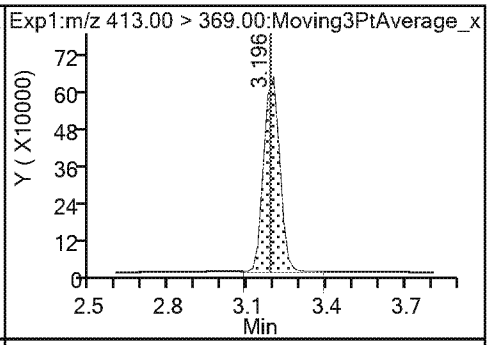
24 DONA



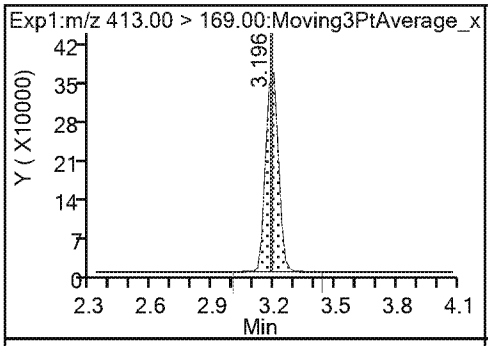
* 5 13C2 PFOA



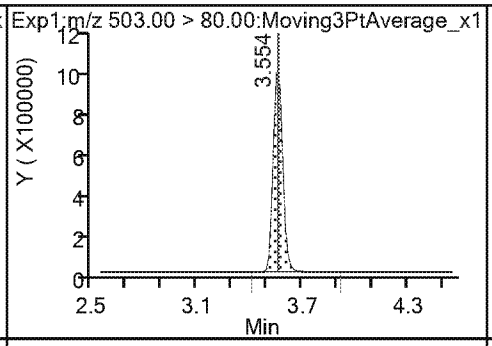
6 Perfluorooctanoic acid



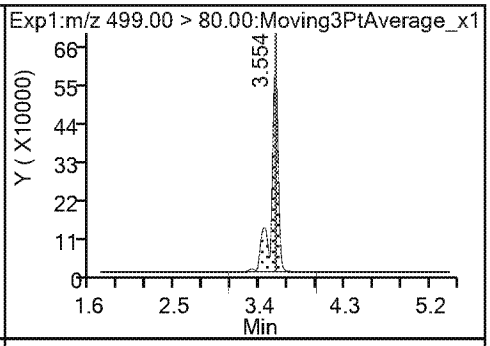
6 Perfluorooctanoic acid



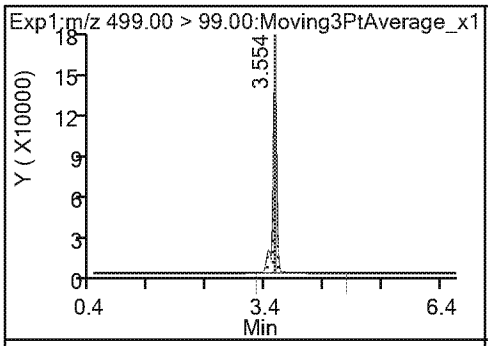
* 7 13C4 PFOS



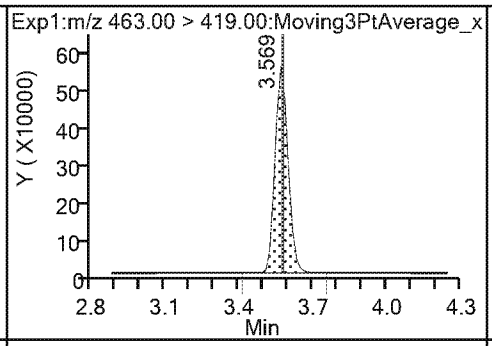
8 Perfluorooctanesulfonic acid



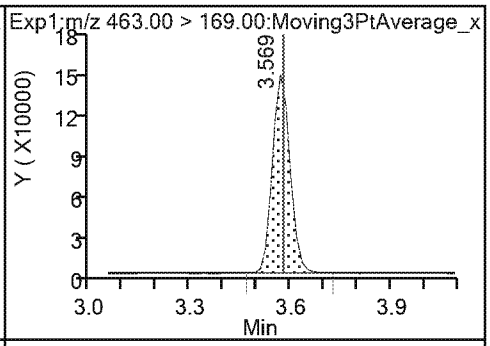
8 Perfluorooctanesulfonic acid



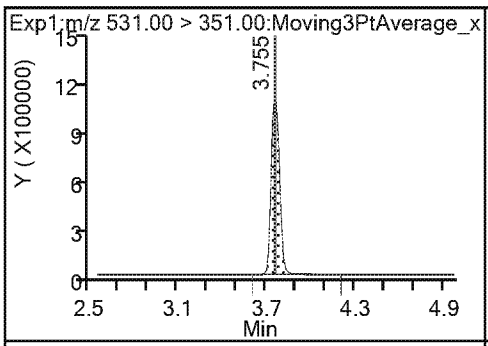
9 Perfluorononanoic acid



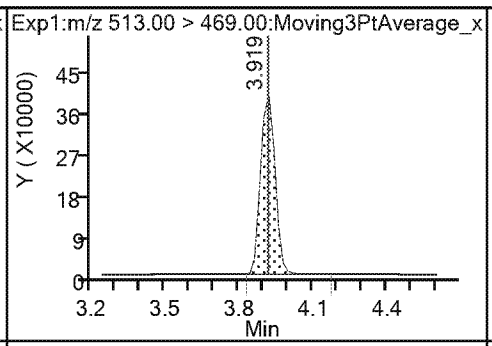
9 Perfluorononanoic acid



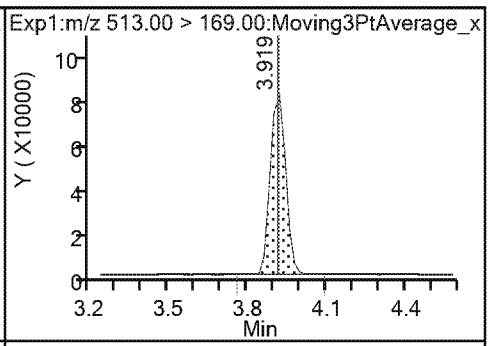
23 9-Chlorohexadecafluoro-3-oxanonane



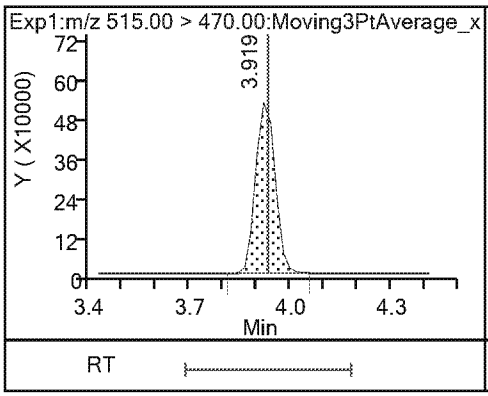
14 Perfluorodecanoic acid



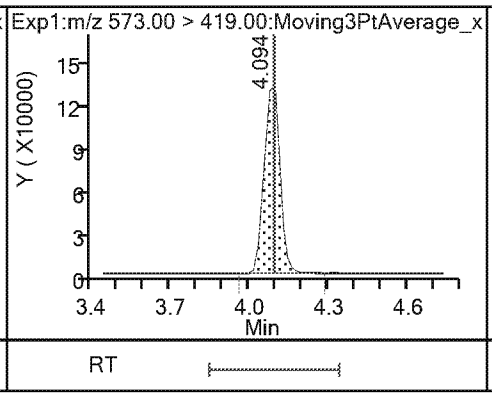
14 Perfluorodecanoic acid



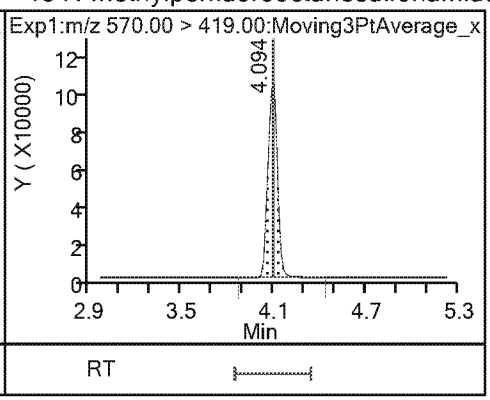
$ 10 13C2 PFDA



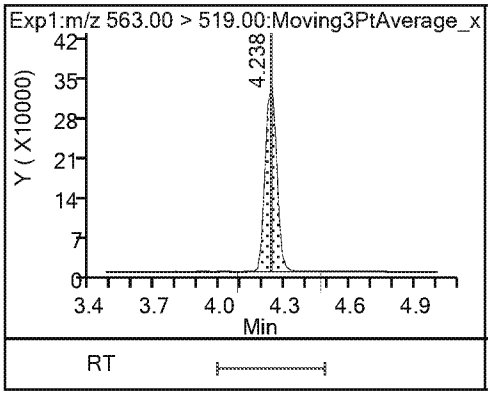
* 12 d3-NMeFOSAA



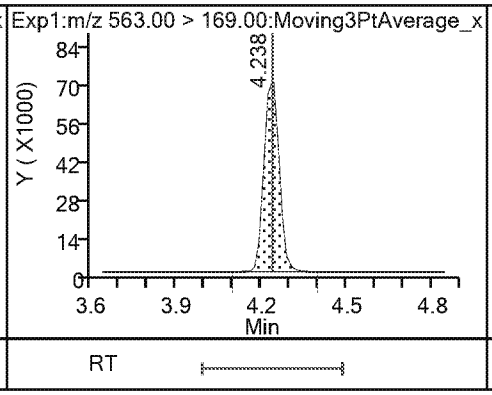
15 N-methylperfluorooctanesulfonamido



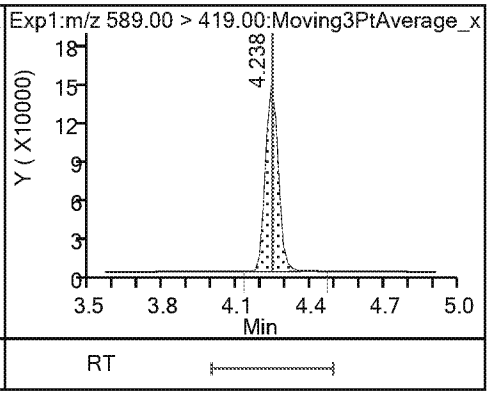
17 Perfluoroundecanoic acid



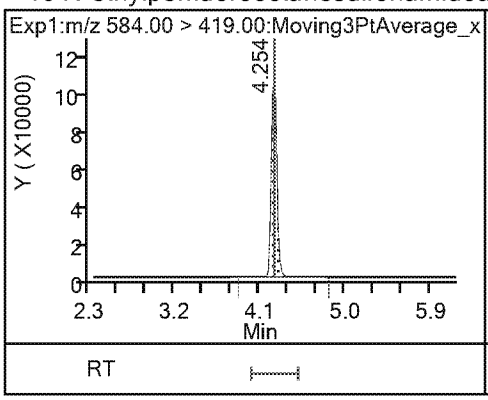
17 Perfluoroundecanoic acid



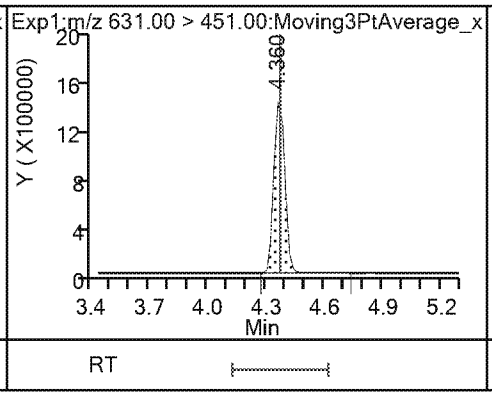
$ 11 d5-NEtFOSAA



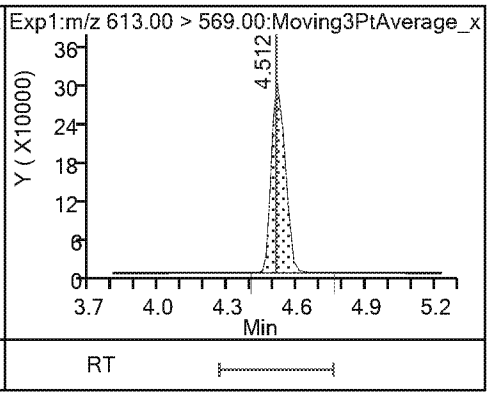
16 N-ethylperfluorooctanesulfonamidoa



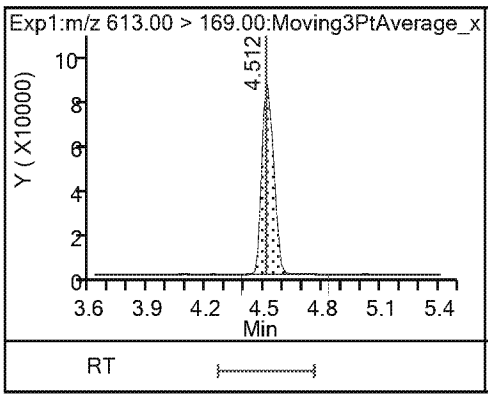
21 11-Chloroeicosafluoro-3-oxaundecan



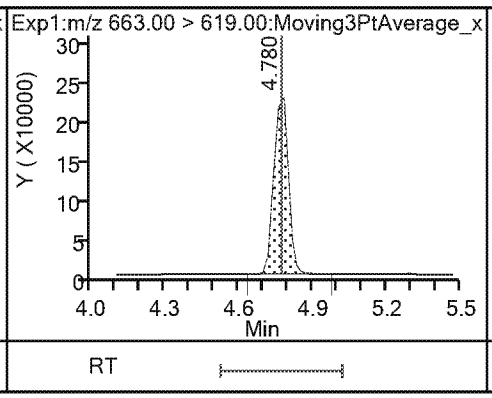
18 Perfluorododecanoic acid



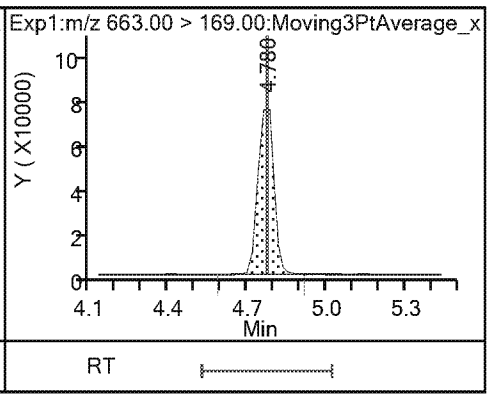
18 Perfluorododecanoic acid



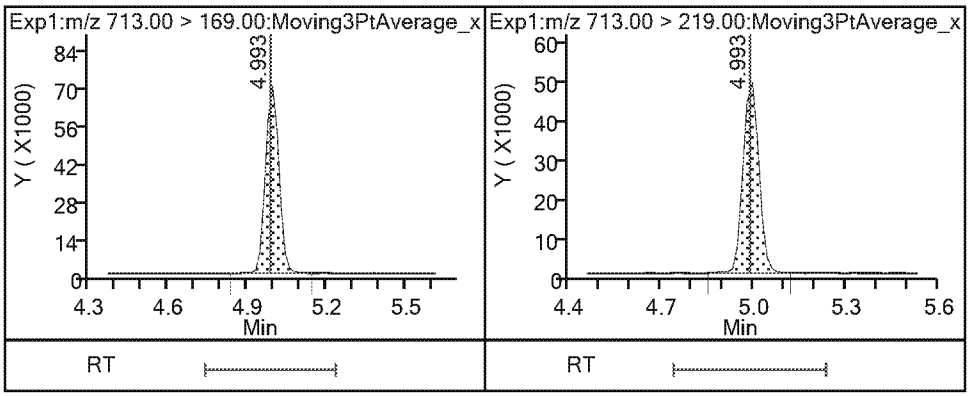
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid 20 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab Sample ID: CCV 320-286196/38 Calibration Date: 04/05/2019 01:01

Instrument ID: A8_N Calib Start Date: 04/04/2019 15:14

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

Lab File ID: 2019.04.04_537AA_042.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid	Ave	1.181	1.206		0.902	0.884	2.1	30.0
Perfluorohexanoic acid	Ave	1.113	1.079		0.970	1.00	-3.0	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2628		0.972	1.00	-2.8	30.0
Perfluoroheptanoic acid	Ave	1.060	1.062		1.00	1.00	0.2	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.427		0.906	0.910	-0.4	30.0
DONA	Ave	2.887	2.938		0.959	0.942	1.8	30.0
Perfluorooctanoic acid	Ave	1.014	0.9761		0.962	1.00	-3.8	30.0
Perfluorononanoic acid	Ave	0.7390	0.7287		0.986	1.00	-1.4	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.032		0.907	0.928	-2.3	30.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	Ave	1.700	1.724		0.945	0.932	1.4	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6042		1.03	1.00	3.3	30.0
N-methylperfluorooctanesulfonamidoacetic acid	Ave	0.9362	0.8948		0.956	1.00	-4.4	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4344		0.977	1.00	-2.3	30.0
N-ethylperfluorooctanesulfonamidoacetic acid	Ave	0.9078	0.8524		0.939	1.00	-6.1	30.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	Ave	2.131	2.113		0.934	0.942	-0.8	30.0
Perfluorododecanoic acid	Ave	0.4456	0.4084		0.916	1.00	-8.4	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3286		0.952	1.00	-4.8	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0839		0.946	1.00	-5.4	30.0
13C2 PFHxA	Ave	1.166	1.162		2.49	2.50	-0.3	30.0
13C3 HFPO-DA	Ave	0.0524	0.0574		2.74	2.50	9.7	30.0
13C2 PFDA	Ave	0.6210	0.6311		2.54	2.50	1.6	30.0
d5-NEtFOSAA	Ave	1.022	1.010		2.47	2.50	-1.2	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_042.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 05-Apr-2019 01:01:03 ALS Bottle#: 30 Worklist Smp#: 38
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:12:22
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.976	1.976	0.0	1.000	1300511	0.9024	Target=1.41	9083	
298.90 > 99.00	1.976	1.976	0.0	1.000	854175		1.52(0.00-0.00)	418	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.739	1307022	0.9700	Target=10.46	336	
313.00 > 119.00	2.322	2.347	-0.025	0.731	124772		10.48(0.00-0.00)	151	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3517893	2.49		5620	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.473	2.473	0.0	1.000	318188	0.9715		155	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	173875	2.74		958	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.757	2.757	0.0	1.000	1285608	1.00	Target=2.41	128	
363.00 > 169.00	2.757	2.757	0.0	1.000	534359		2.41(0.00-0.00)	1472	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.778	2.778	0.0	1.000	1584204	0.9061	Target=2.91	1268	
399.00 > 99.00	2.778	2.778	0.0	1.000	533672		2.97(0.00-0.00)	198	
24 DONA									
377.00 > 251.00	2.799	2.799	0.0	1.000	3351292	0.9588	Target=1.54	6667	
377.00 > 85.00	2.799	2.799	0.0	1.000	2031551		1.65(0.00-0.00)	159770	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.177	0.0		3027142	2.50		8281	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.177	3.177	0.0	1.000	1181877	0.9622	Target=1.70	142	
413.00 > 169.00	3.177	3.177	0.0	1.000	672929		1.76(0.00-0.00)	900	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.549	0.0		2916059	2.39		9487	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	882369	0.9861	Target=3.78	481	
463.00 > 169.00	3.549	3.549	0.0	1.000	232904		3.79(0.00-0.00)	2211	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.549	3.564	-0.015	1.000	1168825	0.9069	Target=4.63	3017	
499.00 > 99.00	3.549	3.564	-0.015	1.000	253994		4.60(0.00-0.00)	279	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.735	3.735	0.0	1.000	1960218	0.9453		3752	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.892	3.892	0.0	1.000	731569	1.03	Target=4.93	351	
513.00 > 169.00	3.892	3.892	0.0	1.000	134403		5.44(0.00-0.00)	490	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.911	0.0	1.000	1910406	2.54		7191	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.070	0.0		490697	2.50		2335	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.070	4.070	0.0	1.000	175631	0.9558		2451	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.214	4.214	0.0	1.000	525978	0.9772	Target=4.73	238	
563.00 > 169.00	4.214	4.214	0.0	1.000	112527		4.67(0.00-0.00)	1179	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.214	4.214	0.0	1.036	495437	2.47		315	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.231	4.231	0.0	1.004	167303	0.9389		393	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.349	4.349	0.0	1.000	2428210	0.9341		7379	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.488	4.488	0.0	1.000	494463	0.9164	Target=3.49	367	
613.00 > 169.00	4.488	4.488	0.0	1.000	138263		3.58(0.00-0.00)	1590	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.753	4.753	0.0	1.000	397911	0.9521	Target=2.87	135	
663.00 > 169.00	4.732	4.753	-0.021	0.995	134824		2.95(0.00-0.00)	1415	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.954	4.954	0.0	1.000	101644	0.9456	Target=1.40	1287	
713.00 > 219.00	4.954	4.954	0.0	1.000	74271		1.37(0.00-0.00)	699	

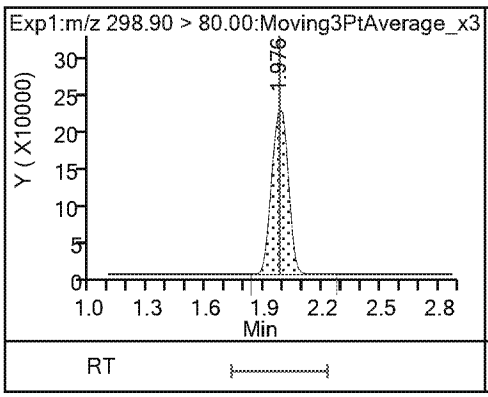
Reagents:

LC537_NC_L4_00003 Amount Added: 1.00 Units: mL

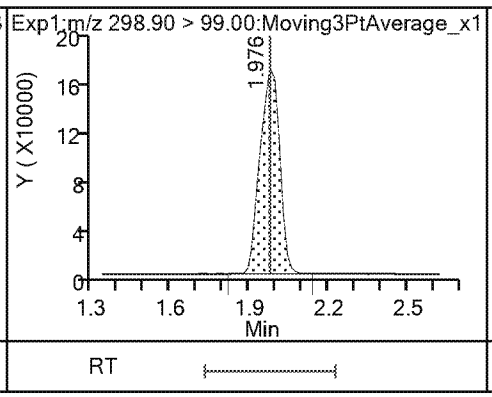
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_042.d
Injection Date: 05-Apr-2019 01:01:03 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 38
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

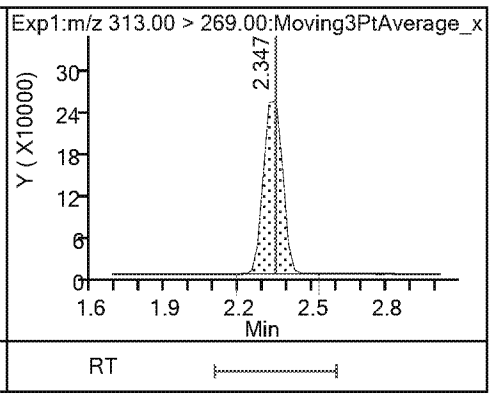
1 Perfluorobutanesulfonic acid



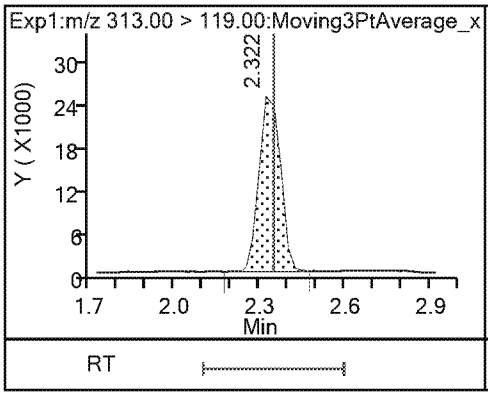
1 Perfluorobutanesulfonic acid



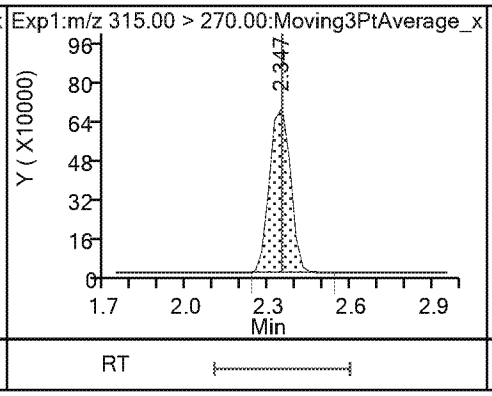
13 Perfluorohexanoic acid



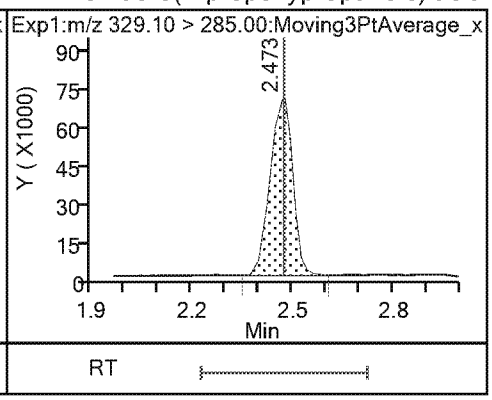
13 Perfluorohexanoic acid



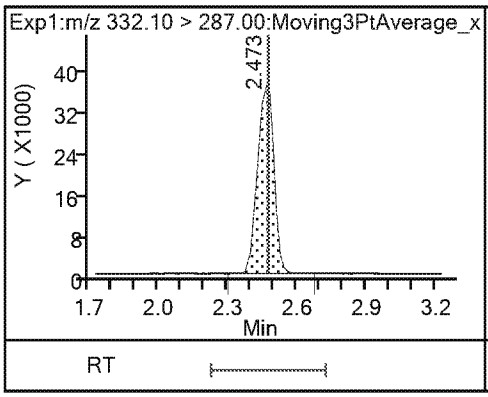
$ 2 13C2 PFHxA



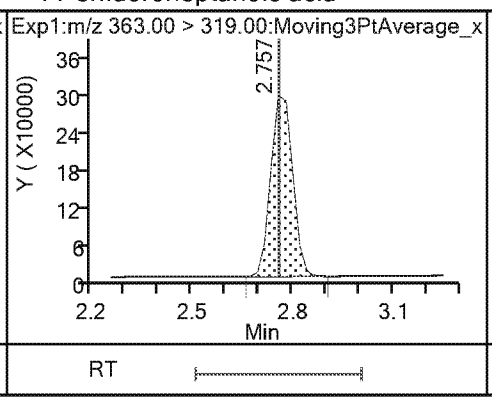
22 Perfluoro(2-propoxypropanoic) acid



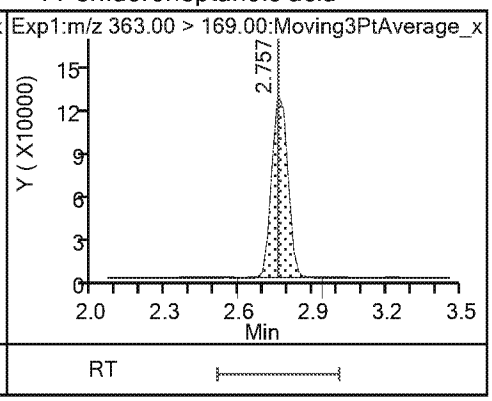
$ 25 13C3 HFPO-DA



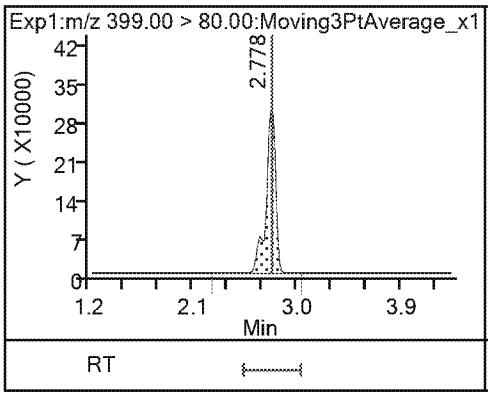
4 Perfluoroheptanoic acid



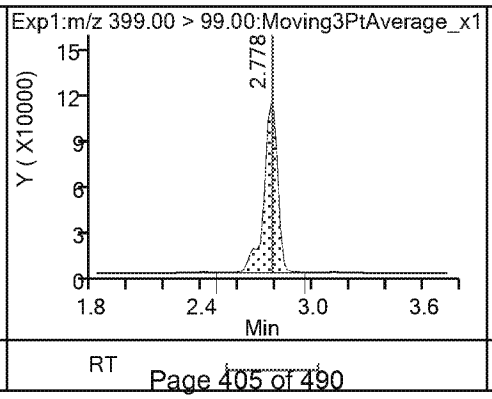
4 Perfluoroheptanoic acid



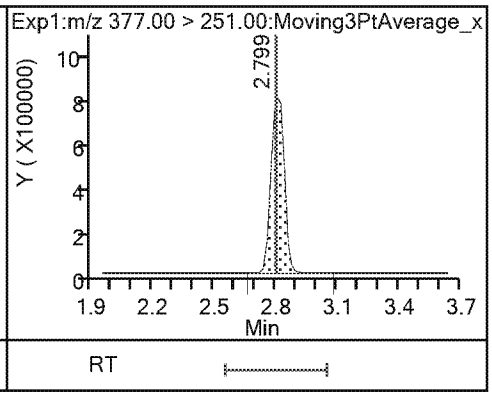
3 Perfluorohexanesulfonic acid



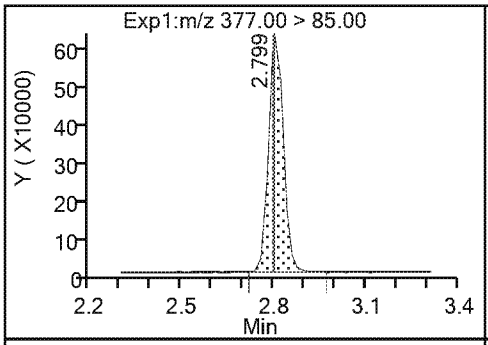
3 Perfluorohexanesulfonic acid



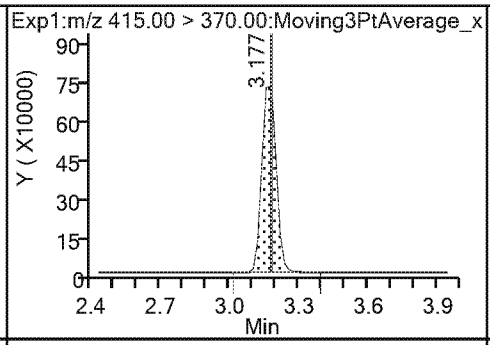
24 DONA



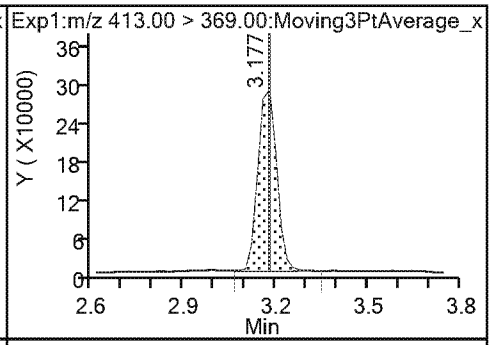
24 DONA



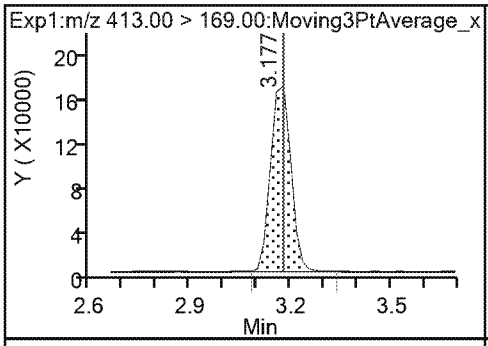
* 5 13C2 PFOA



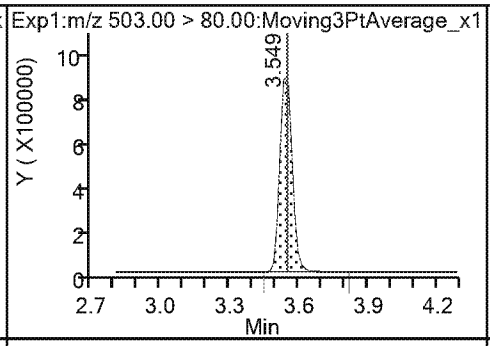
6 Perfluorooctanoic acid



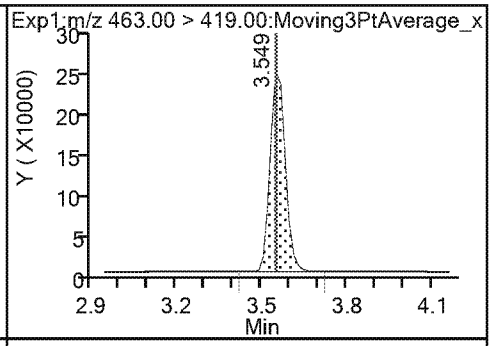
6 Perfluorooctanoic acid



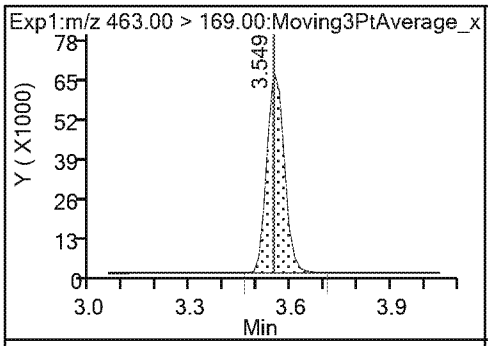
* 7 13C4 PFOS



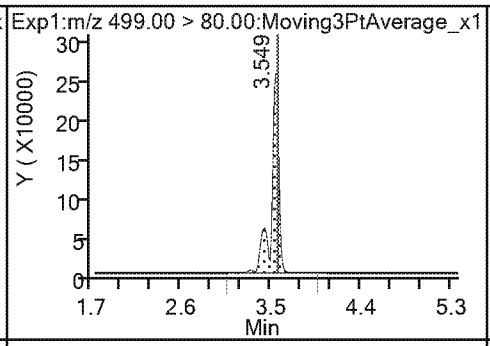
9 Perfluorononanoic acid



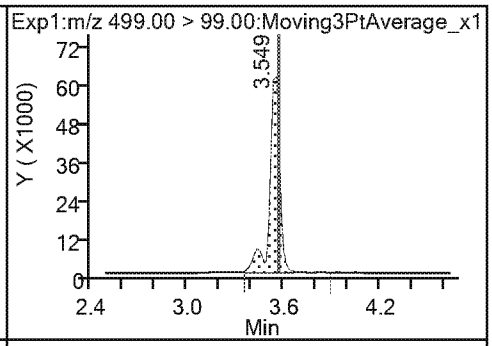
9 Perfluorononanoic acid



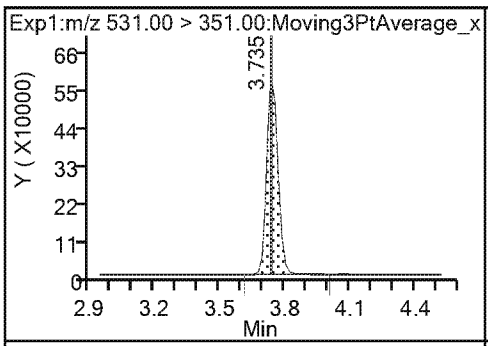
8 Perfluorooctanesulfonic acid



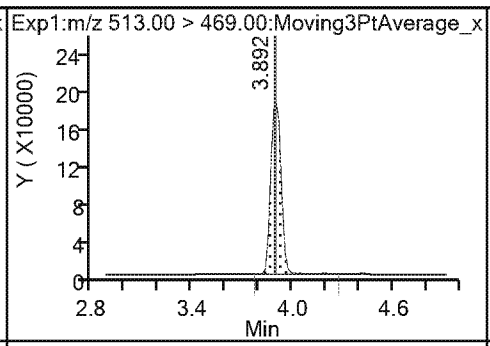
8 Perfluorooctanesulfonic acid



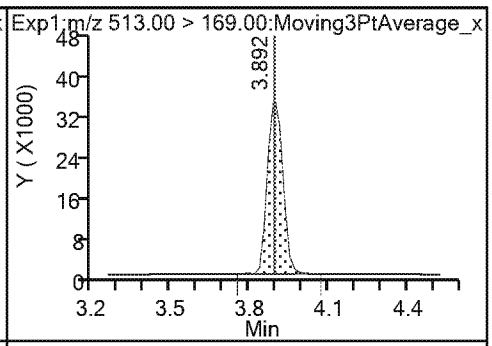
23 9-Chlorohexadecafluoro-3-oxanonane



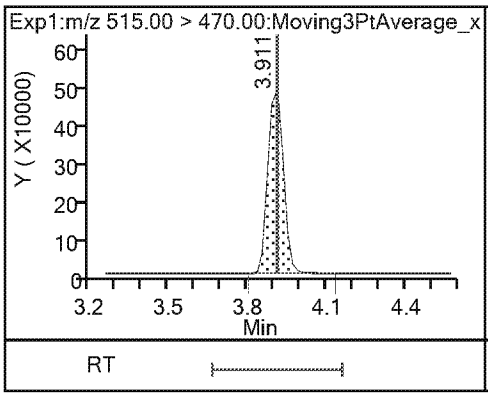
14 Perfluorodecanoic acid



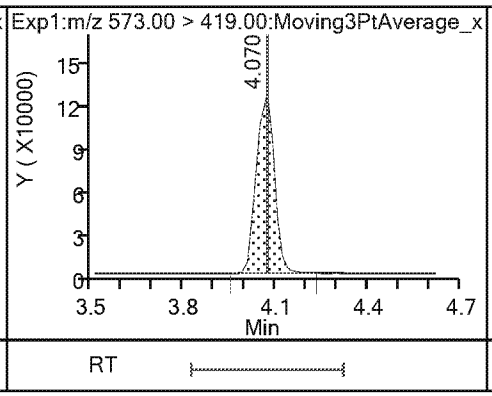
14 Perfluorodecanoic acid



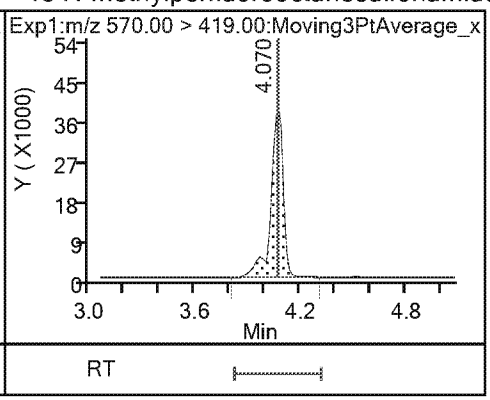
$ 10 13C2 PFDA



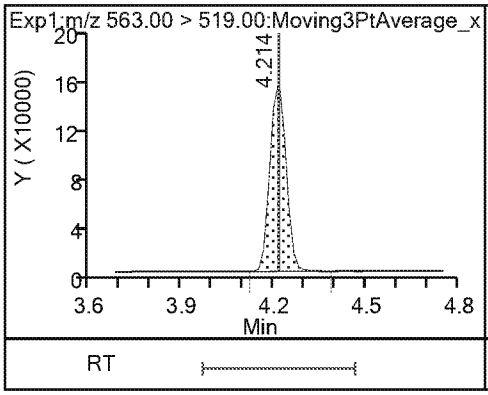
* 12 d3-NMeFOSAA



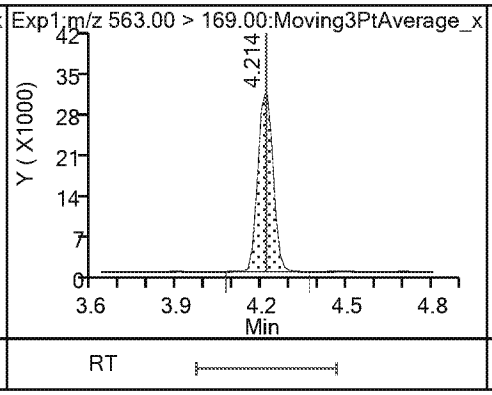
15 N-methylperfluorooctanesulfonamido



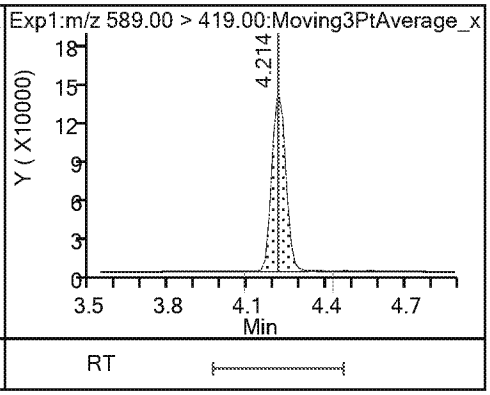
17 Perfluoroundecanoic acid



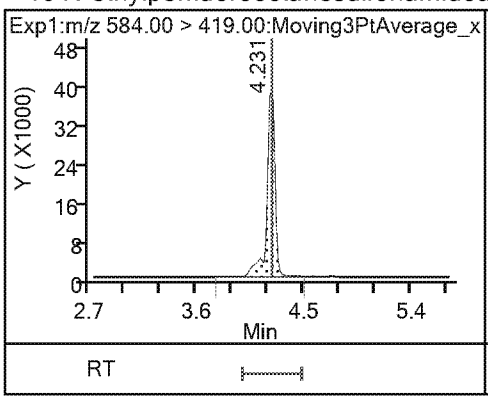
17 Perfluoroundecanoic acid



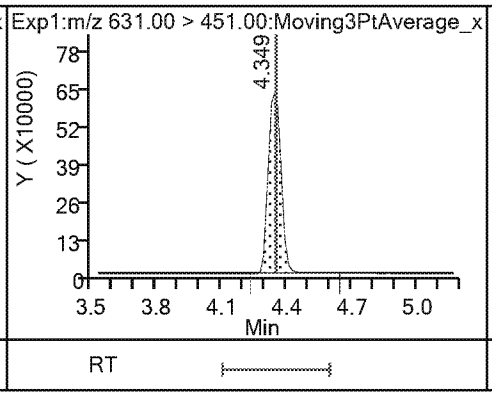
$ 11 d5-NEtFOSAA



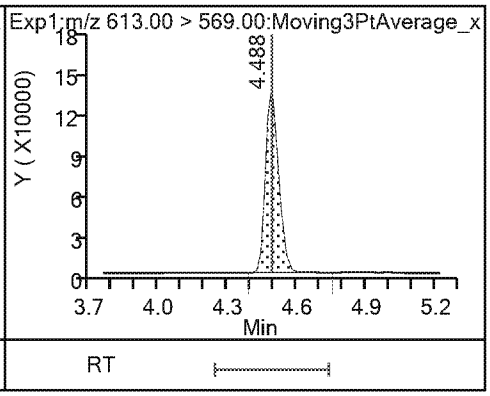
16 N-ethylperfluorooctanesulfonamidoa



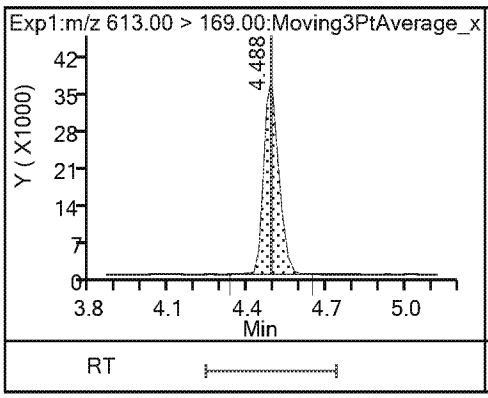
21 11-Chloroeicosafluoro-3-oxaundecan



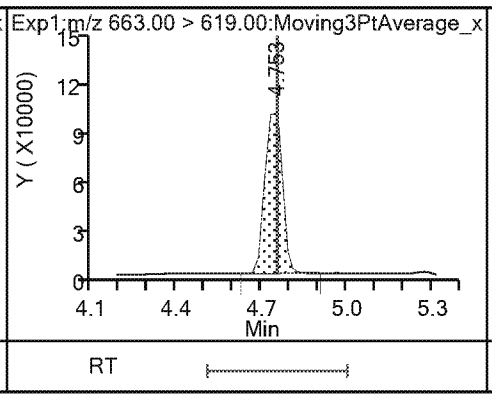
18 Perfluorododecanoic acid



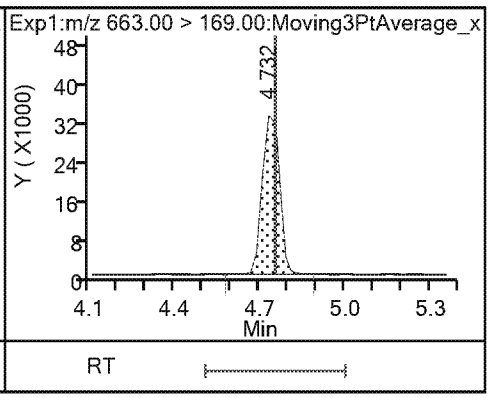
18 Perfluorododecanoic acid



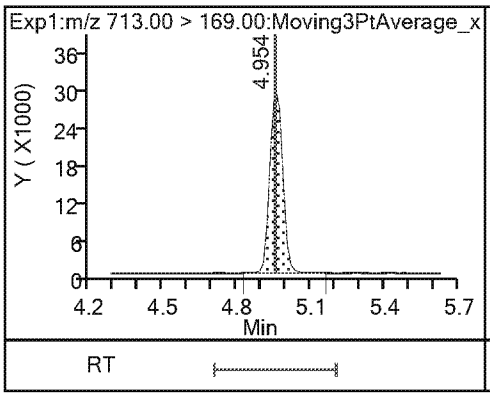
19 Perfluorotridecanoic acid



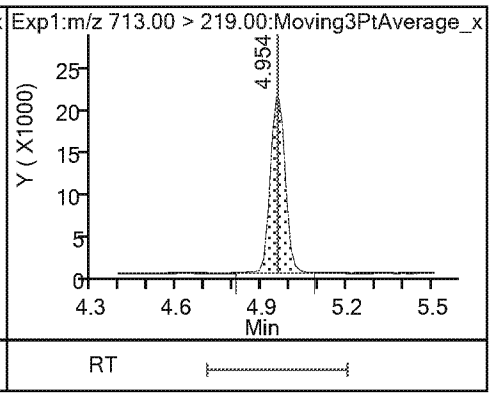
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab Sample ID: CCV 320-286196/50 Calibration Date: 04/05/2019 02:54

Instrument ID: A8_N Calib Start Date: 04/04/2019 15:14

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

Lab File ID: 2019.04.04_537AA_054.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid	Ave	1.181	1.290		4.83	4.42	9.2	30.0
Perfluorohexanoic acid	Ave	1.113	1.131		5.08	5.00	1.6	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2827		5.23	5.00	4.5	30.0
Perfluoroheptanoic acid	Ave	1.060	1.085		5.12	5.00	2.3	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.512		4.80	4.55	5.5	30.0
DONA	Ave	2.887	2.863		4.67	4.71	-0.8	30.0
Perfluorooctanoic acid	Ave	1.014	1.028		5.06	5.00	1.3	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.116		4.90	4.64	5.7	30.0
Perfluorononanoic acid	Ave	0.7390	0.7369		4.99	5.00	-0.3	30.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	Ave	1.700	1.866		5.12	4.66	9.8	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6214		5.31	5.00	6.2	30.0
N-methylperfluorooctanesulfonamidoacetic acid	Ave	0.9362	0.8925		4.77	5.00	-4.7	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4641		5.22	5.00	4.4	30.0
N-ethylperfluorooctanesulfonamidoacetic acid	Ave	0.9078	0.8385		4.62	5.00	-7.6	30.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	Ave	2.131	2.253		4.98	4.71	5.8	30.0
Perfluorododecanoic acid	Ave	0.4456	0.4402		4.94	5.00	-1.2	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3475		5.03	5.00	0.7	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0914		5.15	5.00	3.0	30.0
13C2 PFHxA	Ave	1.166	1.174		2.52	2.50	0.7	30.0
13C3 HFPO-DA	Ave	0.0524	0.0571		2.72	2.50	9.0	30.0
13C2 PFDA	Ave	0.6210	0.6550		2.64	2.50	5.5	30.0
d5-NEtFOSAA	Ave	1.022	0.9771		2.39	2.50	-4.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab Sample ID: CCV 320-286198/50 Calibration Date: 04/05/2019 02:54

Instrument ID: A8_N Calib Start Date: 04/04/2019 15:14

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

Lab File ID: 2019.04.04_537AA_054.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid	Ave	1.181	1.290		4.83	4.42	9.2	30.0
Perfluorohexanoic acid	Ave	1.113	1.131		5.08	5.00	1.6	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2827		5.23	5.00	4.5	30.0
Perfluoroheptanoic acid	Ave	1.060	1.085		5.12	5.00	2.3	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.512		4.80	4.55	5.5	30.0
DONA	Ave	2.887	2.863		4.67	4.71	-0.8	30.0
Perfluorooctanoic acid	Ave	1.014	1.028		5.06	5.00	1.3	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.116		4.90	4.64	5.7	30.0
Perfluorononanoic acid	Ave	0.7390	0.7369		4.99	5.00	-0.3	30.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	Ave	1.700	1.866		5.12	4.66	9.8	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6214		5.31	5.00	6.2	30.0
N-methylperfluorooctanesulfonamidoacetic acid	Ave	0.9362	0.8925		4.77	5.00	-4.7	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4641		5.22	5.00	4.4	30.0
N-ethylperfluorooctanesulfonamidoacetic acid	Ave	0.9078	0.8385		4.62	5.00	-7.6	30.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	Ave	2.131	2.253		4.98	4.71	5.8	30.0
Perfluorododecanoic acid	Ave	0.4456	0.4402		4.94	5.00	-1.2	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3475		5.03	5.00	0.7	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0914		5.15	5.00	3.0	30.0
13C2 PFHxA	Ave	1.166	1.174		2.52	2.50	0.7	30.0
13C3 HFPO-DA	Ave	0.0524	0.0571		2.72	2.50	9.0	30.0
13C2 PFDA	Ave	0.6210	0.6550		2.64	2.50	5.5	30.0
d5-NEtFOSAA	Ave	1.022	0.9771		2.39	2.50	-4.4	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_054.d
Lims ID: CCV L6
Client ID:
Sample Type: CCVIS
Inject. Date: 05-Apr-2019 02:54:47 ALS Bottle#: 31 Worklist Smp#: 50
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L6
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:30:03 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:12:44
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.992	0.0	1.000	6505736	4.83	Target=1.41	40808	
298.90 > 99.00	1.976	1.992	-0.016	0.992	4300061		1.51(0.00-0.00)	2197	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.744	6439719	5.08	Target=10.46	1627	
313.00 > 119.00	2.347	2.347	0.0	0.744	584584		11.02(0.00-0.00)	717	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3341594	2.52		5434	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.474	0.0	1.000	1609767	5.23		808	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.474	0.0	1.000	162449	2.72		911	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.774	2.774	0.0	1.000	6174944	5.12	Target=2.41	629	
363.00 > 169.00	2.774	2.774	0.0	1.000	2575296		2.40(0.00-0.00)	4199	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.774	2.774	0.0	1.000	7850676	4.80	Target=2.91	3763	
399.00 > 99.00	2.774	2.774	0.0	1.000	2657798		2.95(0.00-0.00)	1052	
24 DONA									
377.00 > 251.00	2.815	2.815	0.0	1.000	15355470	4.67	Target=1.54	9942	
377.00 > 85.00	2.815	2.815	0.0	1.000	9896636		1.55(0.00-0.00)	951525	
* 5 13C2 PFOA									
415.00 > 370.00	3.156	3.156	0.0		2846737	2.50		6269	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.175	3.175	0.0	1.006	5850097	5.06	Target=1.70	693	
413.00 > 169.00	3.156	3.175	-0.019	1.000	3350052		1.75(0.00-0.00)	3132	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.539	3.539	0.0		2728038	2.39		10316	
9 Perfluorononanoic acid									
463.00 > 419.00	3.553	3.553	0.0	1.000	4195266	4.99	Target=3.78	2127	
463.00 > 169.00	3.539	3.553	-0.014	0.996	1080202		3.88(0.00-0.00)	5676	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.539	3.564	-0.025	1.000	5911364	4.90	Target=4.63	3120	
499.00 > 99.00	3.539	3.564	-0.025	1.000	1247015		4.74(0.00-0.00)	1044	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.726	3.726	0.0	1.000	9924376	5.12		10663	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.880	3.880	0.0	1.000	3537693	5.31	Target=4.93	1282	
513.00 > 169.00	3.880	3.880	0.0	1.000	702448		5.04(0.00-0.00)	2335	
$ 10 13C2 PFDA									
515.00 > 470.00	3.899	3.899	0.0	1.000	1864517	2.64		7376	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.055	4.055	0.0		481326	2.50		3121	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.055	4.055	0.0	1.000	859128	4.77		2575	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.205	4.205	0.0	1.000	2642382	5.22	Target=4.73	1135	
563.00 > 169.00	4.205	4.205	0.0	1.000	534126		4.95(0.00-0.00)	4313	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.205	4.205	0.0	1.037	470311	2.39		268	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.221	4.221	0.0	1.004	807226	4.62		2044	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.341	4.341	0.0	1.000	12114022	4.98		14706	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.480	4.480	0.0	1.000	2506218	4.94	Target=3.49	1423	
613.00 > 169.00	4.480	4.480	0.0	1.000	678736		3.69(0.00-0.00)	4266	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.739	4.739	0.0	1.000	1978205	5.03	Target=2.87	626	
663.00 > 169.00	4.739	4.739	0.0	1.000	698354		2.83(0.00-0.00)	3887	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.961	4.961	0.0	1.000	520358	5.15	Target=1.40	2803	
713.00 > 219.00	4.961	4.961	0.0	1.000	370714		1.40(0.00-0.00)	2120	

Reagents:

LC537_NC_L6_00003 Amount Added: 1.00 Units: mL

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_054.d
Lims ID: CCV L6
Client ID:
Sample Type: CCVIS
Inject. Date: 05-Apr-2019 02:54:47 ALS Bottle#: 31 Worklist Smp#: 50
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L6
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:30:03 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:12:44
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.992	1.992	0.0	1.000	6505736	4.83	Target=1.41	40808	
298.90 > 99.00	1.976	1.992	-0.016	0.992	4300061		1.51(0.00-0.00)	2197	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.744	6439719	5.08	Target=10.46	1627	
313.00 > 119.00	2.347	2.347	0.0	0.744	584584		11.02(0.00-0.00)	717	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3341594	2.52		5434	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.474	0.0	1.000	1609767	5.23		808	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.474	0.0	1.000	162449	2.72		911	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.774	2.774	0.0	1.000	6174944	5.12	Target=2.41	629	
363.00 > 169.00	2.774	2.774	0.0	1.000	2575296		2.40(0.00-0.00)	4199	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.774	2.774	0.0	1.000	7850676	4.80	Target=2.91	3763	
399.00 > 99.00	2.774	2.774	0.0	1.000	2657798		2.95(0.00-0.00)	1052	
24 DONA									
377.00 > 251.00	2.815	2.815	0.0	1.000	15355470	4.67	Target=1.54	9942	
377.00 > 85.00	2.815	2.815	0.0	1.000	9896636		1.55(0.00-0.00)	951525	
* 5 13C2 PFOA									
415.00 > 370.00	3.156	3.156	0.0		2846737	2.50		6269	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.175	3.175	0.0	1.006	5850097	5.06	Target=1.70	693	
413.00 > 169.00	3.156	3.175	-0.019	1.000	3350052		1.75(0.00-0.00)	3132	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.539	3.539	0.0		2728038	2.39		10316	
9 Perfluorononanoic acid									
463.00 > 419.00	3.553	3.553	0.0	1.000	4195266	4.99	Target=3.78	2127	
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499.00 > 99.00	3.539	3.564	-0.025	1.000	1247015		4.74(0.00-0.00)	1044	
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613.00 > 169.00	4.480	4.480	0.0	1.000	678736		3.69(0.00-0.00)	4266	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.739	4.739	0.0	1.000	1978205	5.03	Target=2.87	626	
663.00 > 169.00	4.739	4.739	0.0	1.000	698354		2.83(0.00-0.00)	3887	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.961	4.961	0.0	1.000	520358	5.15	Target=1.40	2803	
713.00 > 219.00	4.961	4.961	0.0	1.000	370714		1.40(0.00-0.00)	2120	

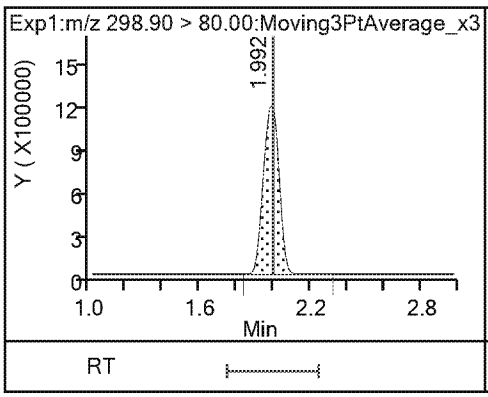
Reagents:

LC537_NC_L6_00003 Amount Added: 1.00 Units: mL

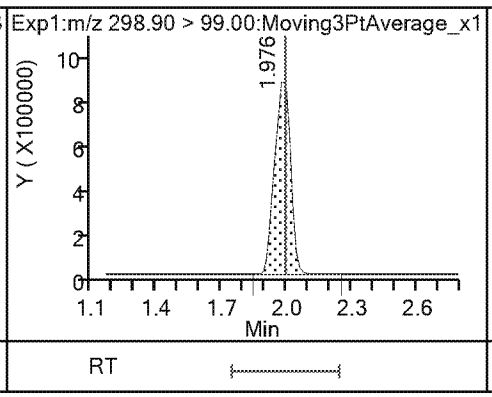
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_054.d
Injection Date: 05-Apr-2019 02:54:47 Instrument ID: A8_N
Lims ID: CCV L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 50
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

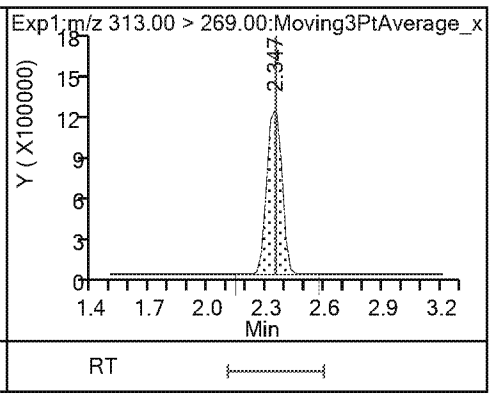
1 Perfluorobutanesulfonic acid



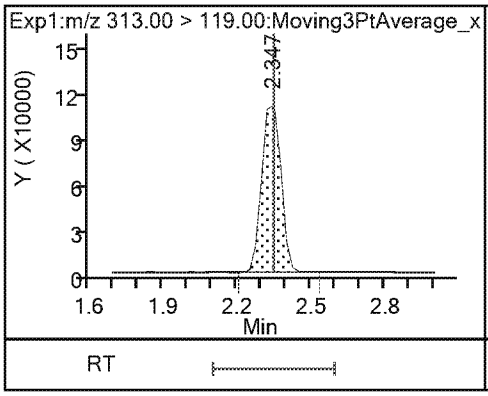
1 Perfluorobutanesulfonic acid



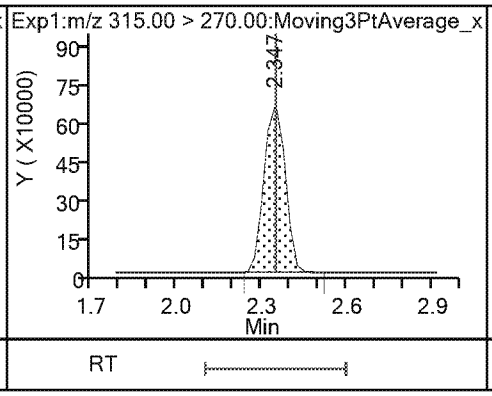
13 Perfluorohexanoic acid



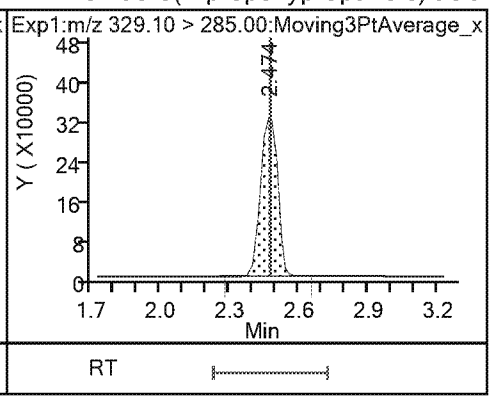
13 Perfluorohexanoic acid



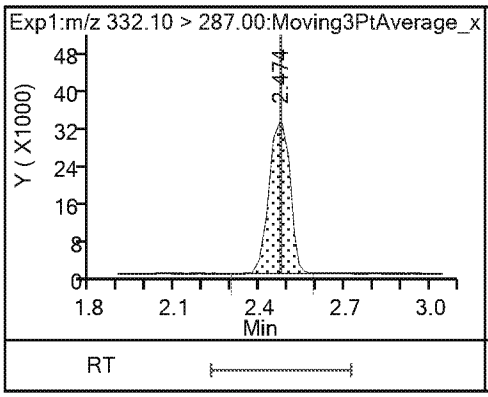
$ 2 13C2 PFHxA



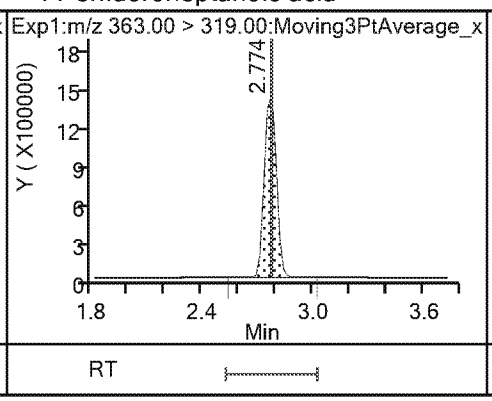
22 Perfluoro(2-propoxypropanoic) acid



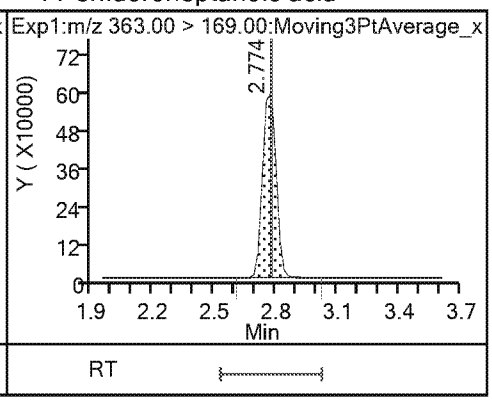
$ 25 13C3 HFPO-DA



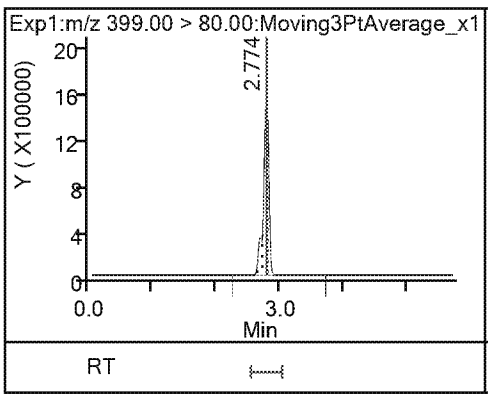
4 Perfluoroheptanoic acid



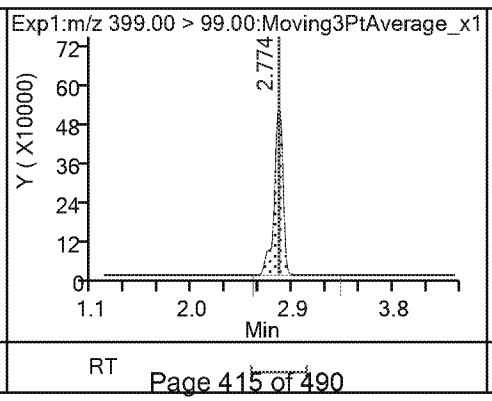
4 Perfluoroheptanoic acid



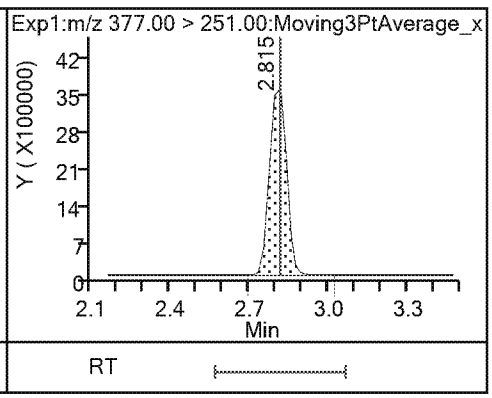
3 Perfluorohexanesulfonic acid



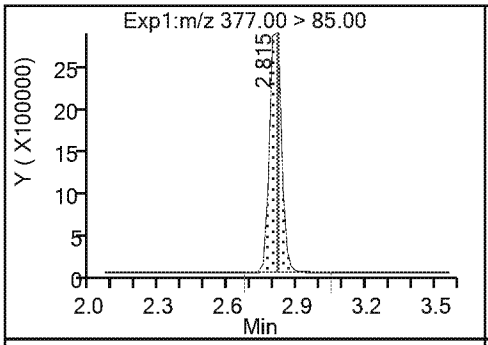
3 Perfluorohexanesulfonic acid



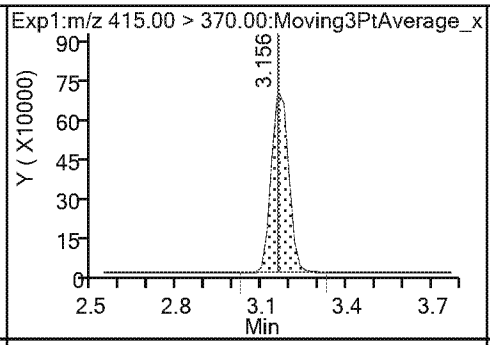
24 DONA



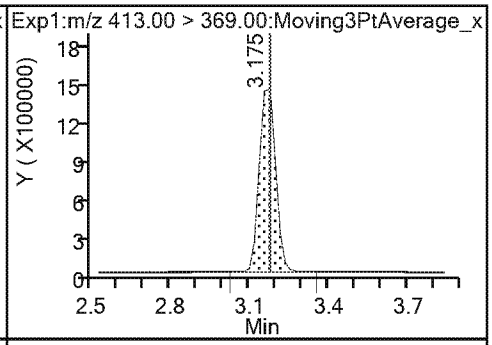
24 DONA



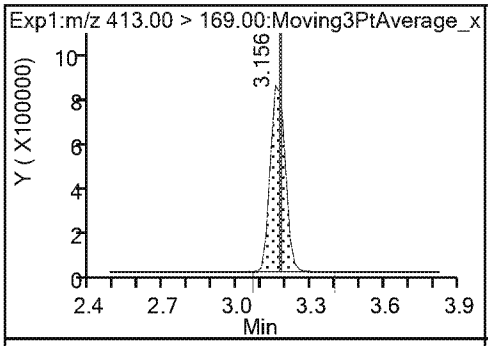
* 5 13C2 PFOA



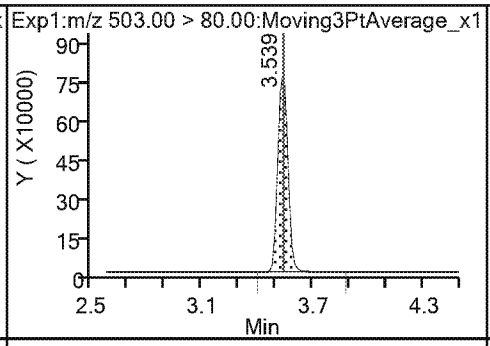
6 Perfluorooctanoic acid



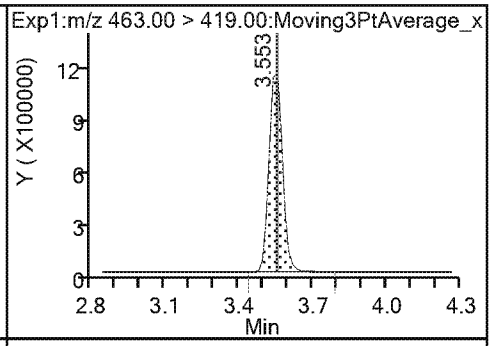
6 Perfluorooctanoic acid



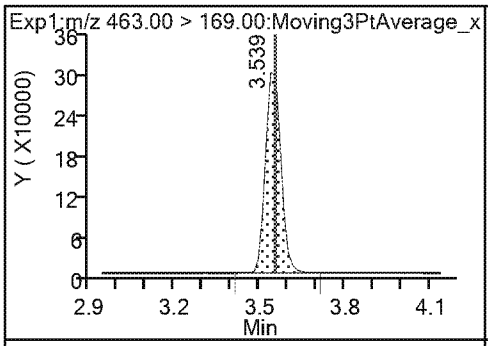
* 7 13C4 PFOS



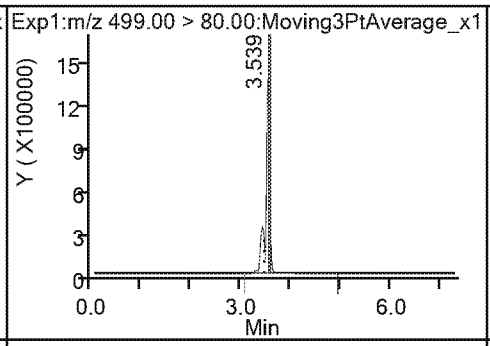
9 Perfluorononanoic acid



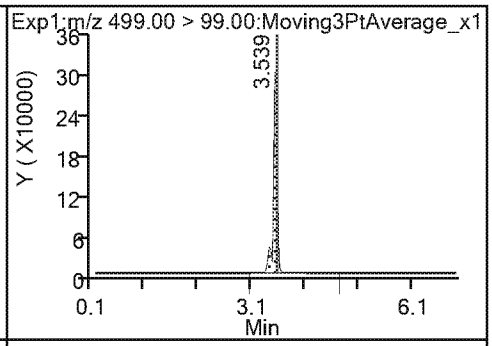
9 Perfluorononanoic acid



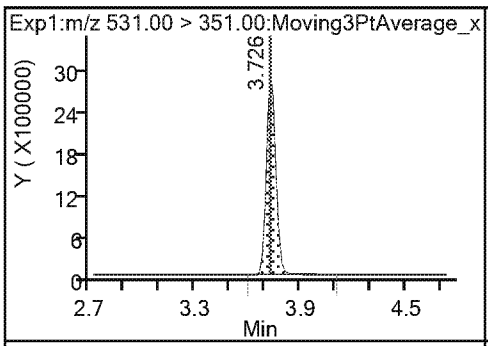
8 Perfluorooctanesulfonic acid



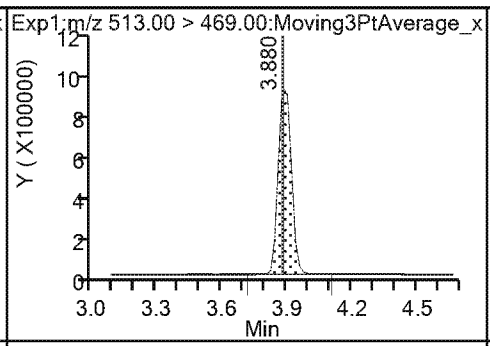
8 Perfluorooctanesulfonic acid



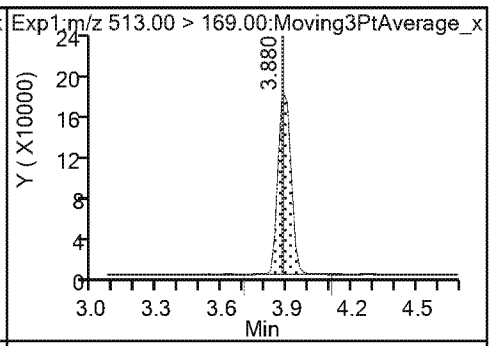
23 9-Chlorohexadecafluoro-3-oxanonane



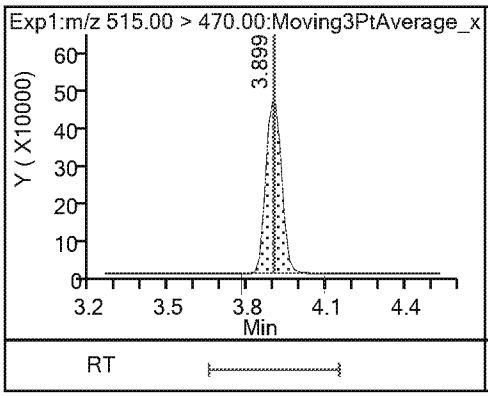
14 Perfluorodecanoic acid



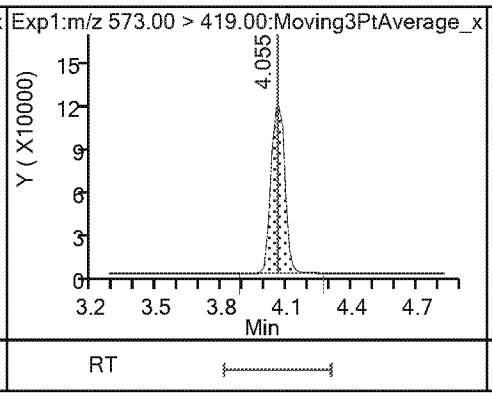
14 Perfluorodecanoic acid



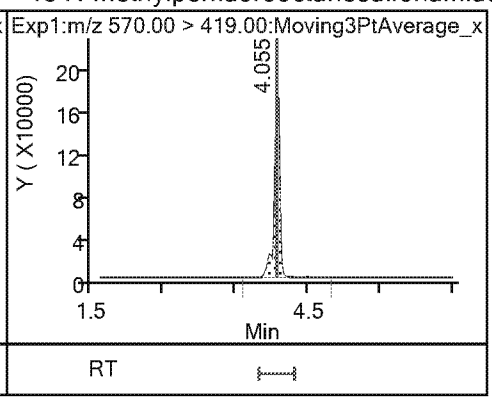
$ 10 13C2 PFDA



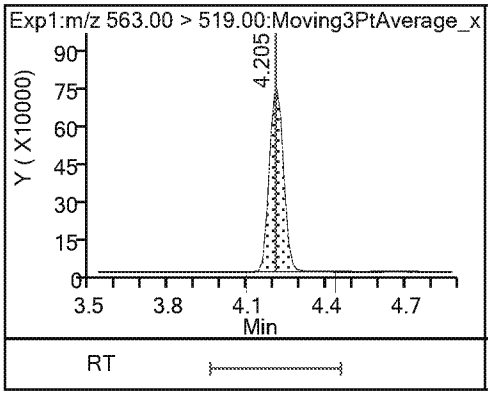
* 12 d3-NMeFOSAA



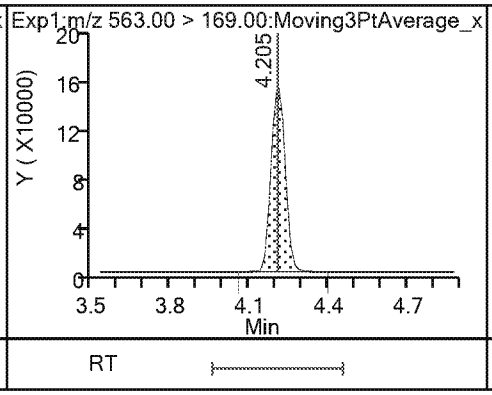
15 N-methylperfluorooctanesulfonamido



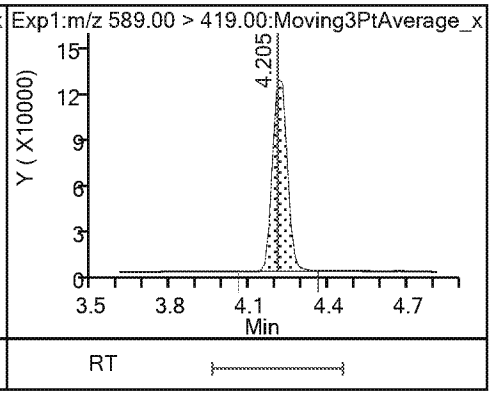
17 Perfluoroundecanoic acid



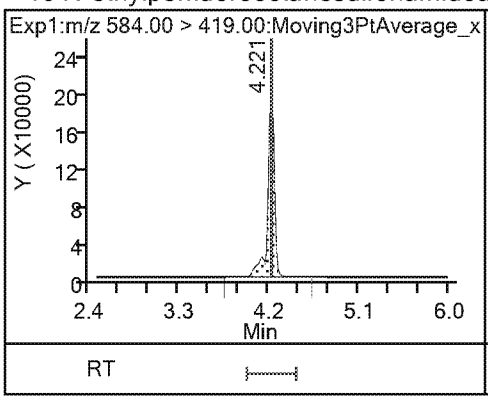
17 Perfluoroundecanoic acid



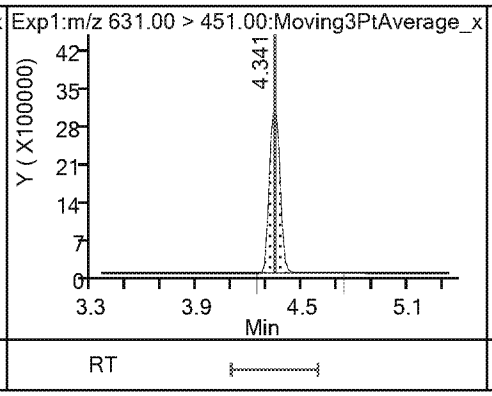
$ 11 d5-NEtFOSAA



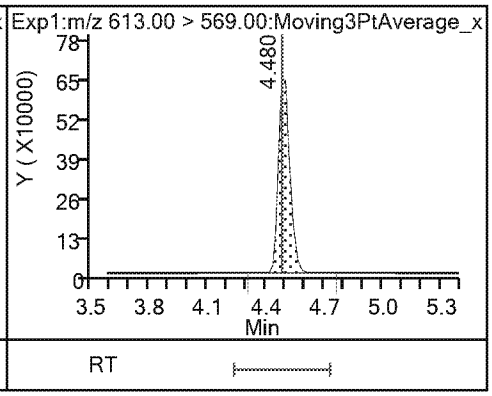
16 N-ethylperfluorooctanesulfonamidoa



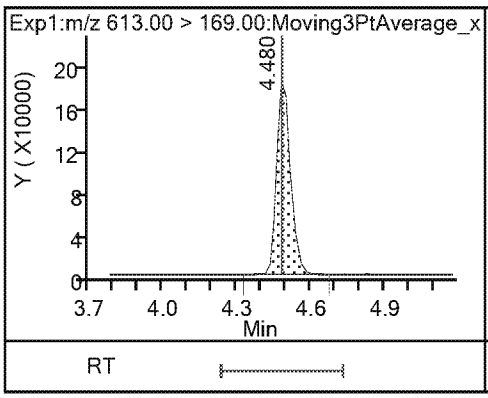
21 11-Chloroeicosafluoro-3-oxaundecan



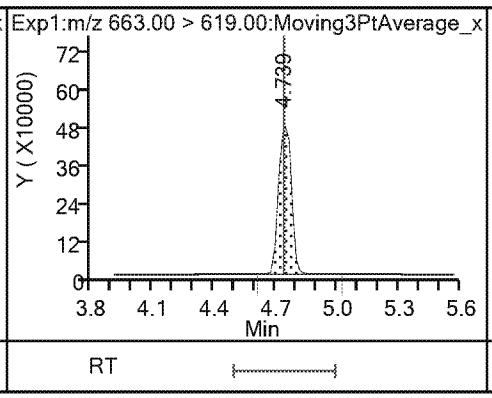
18 Perfluorododecanoic acid



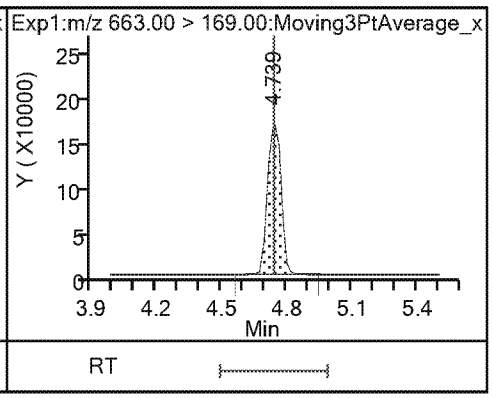
18 Perfluorododecanoic acid



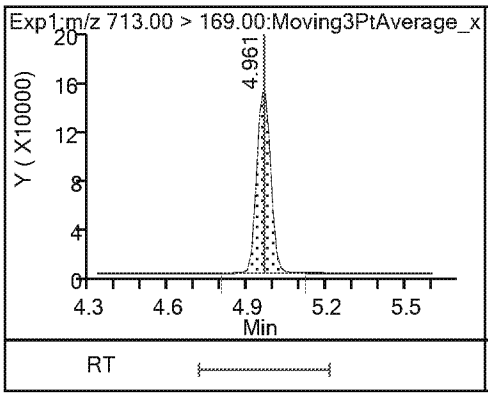
19 Perfluorotridecanoic acid



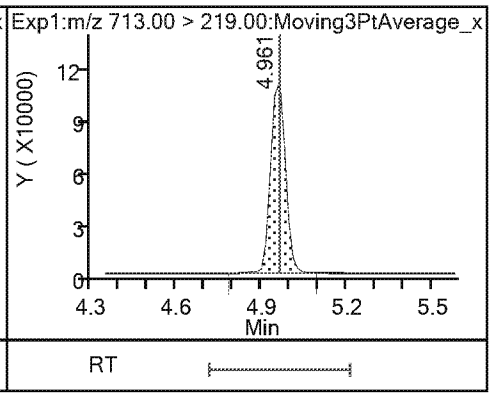
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento

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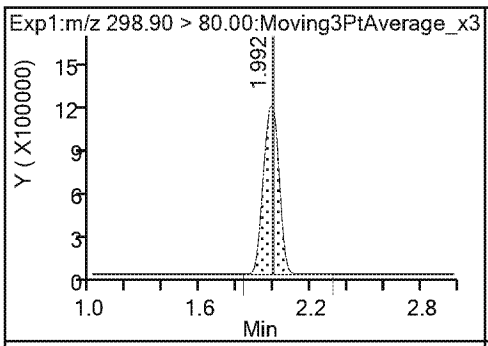
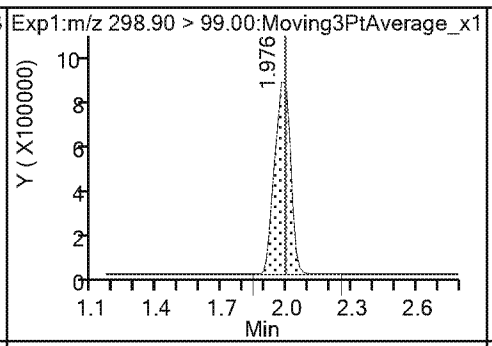
Injection Date: 05-Apr-2019 02:54:47 Instrument ID: A8_N
Lims ID: CCV L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 50
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

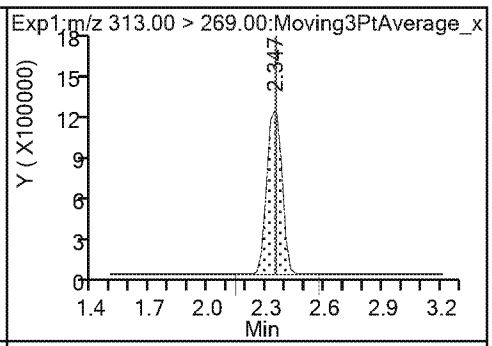
1 Perfluorobutanesulfonic acid



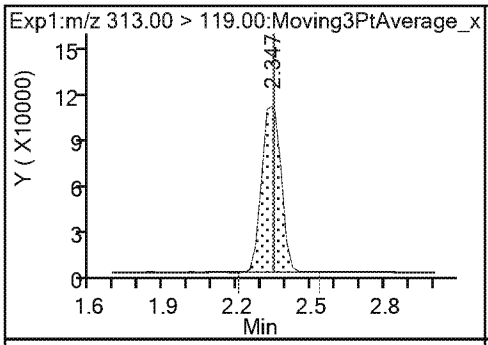
1 Perfluorobutanesulfonic acid



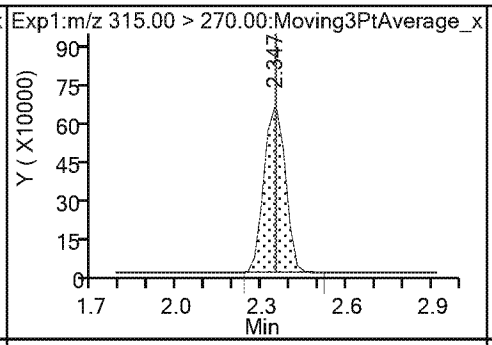
13 Perfluorohexanoic acid



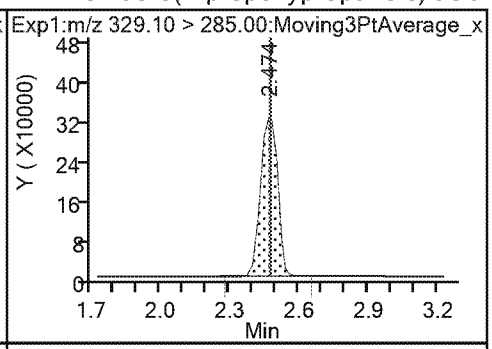
13 Perfluorohexanoic acid



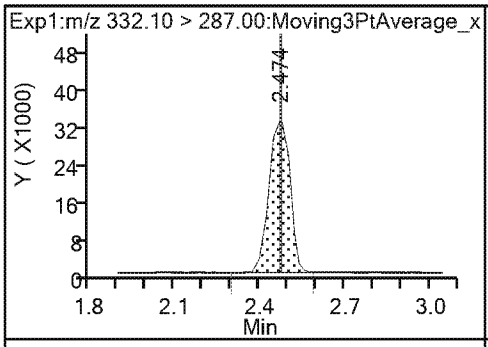
$ 2 13C2 PFHxA



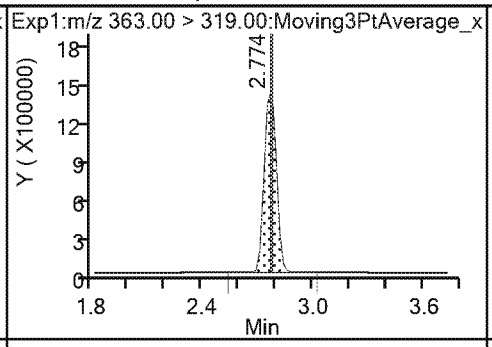
22 Perfluoro(2-propoxypropanoic) acid



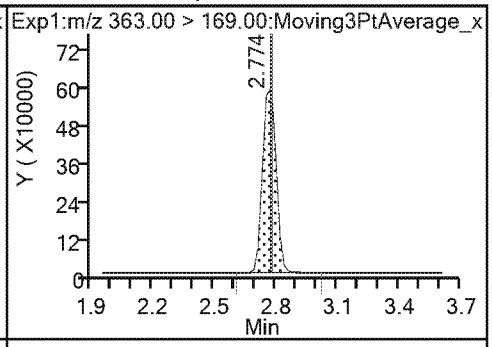
$ 25 13C3 HFPO-DA



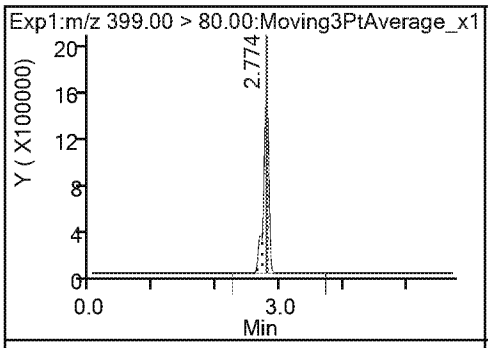
4 Perfluoroheptanoic acid



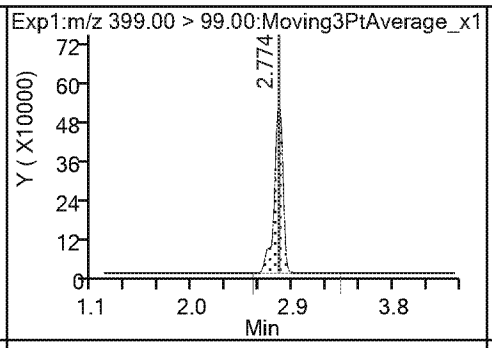
4 Perfluoroheptanoic acid



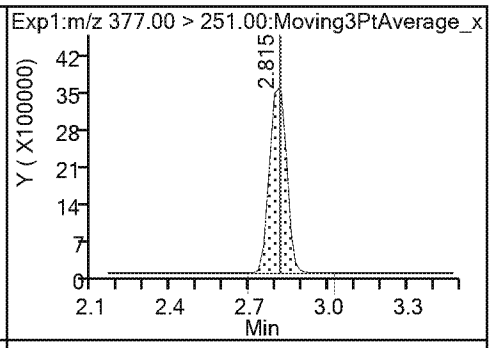
3 Perfluorohexanesulfonic acid



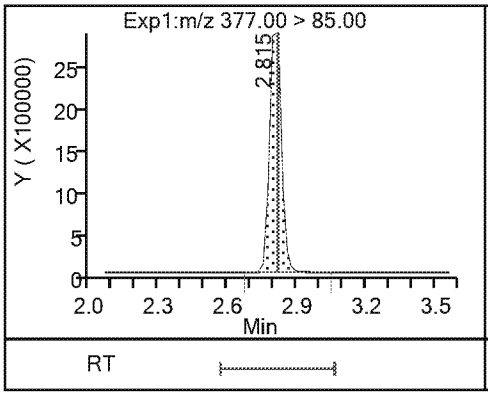
3 Perfluorohexanesulfonic acid



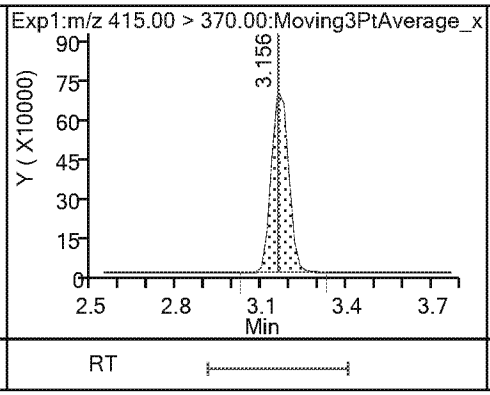
24 DONA



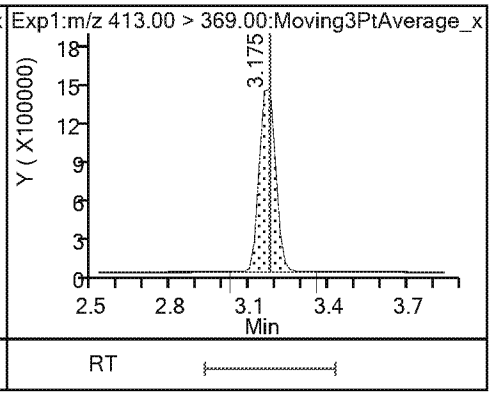
24 DONA



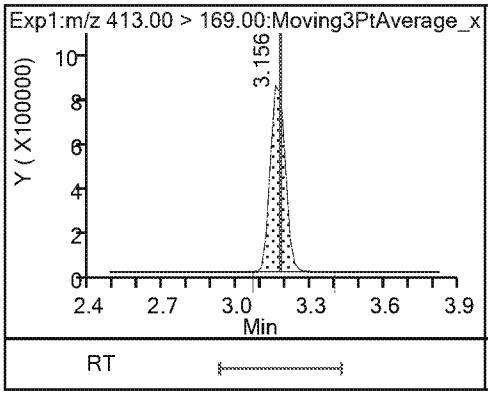
* 5 13C2 PFOA



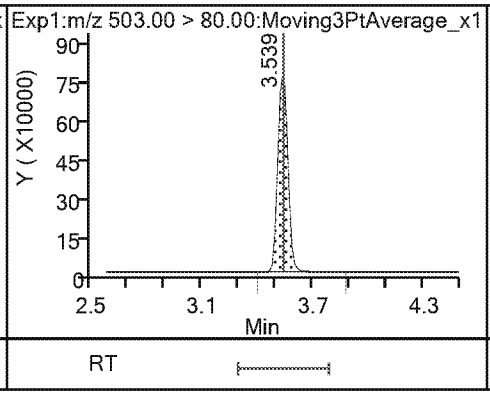
6 Perfluorooctanoic acid



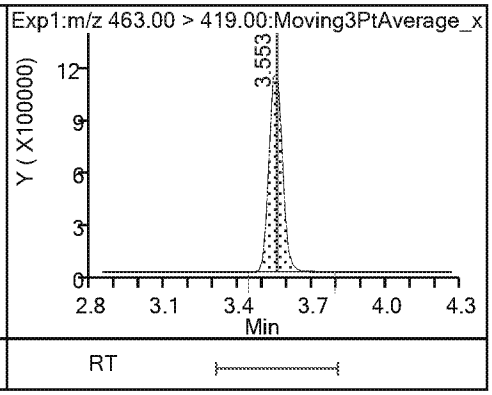
6 Perfluorooctanoic acid



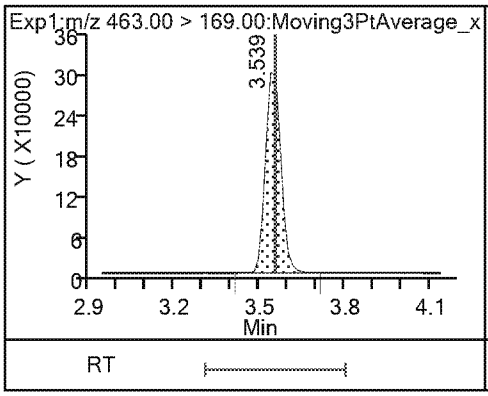
* 7 13C4 PFOS



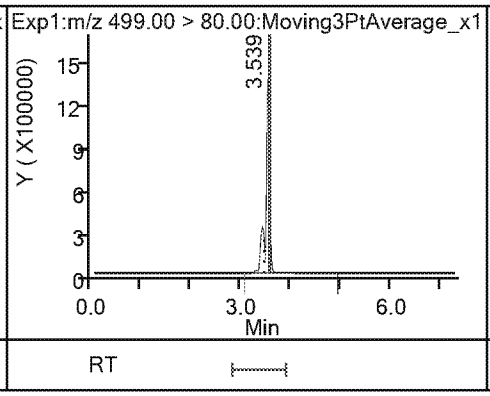
9 Perfluorononanoic acid



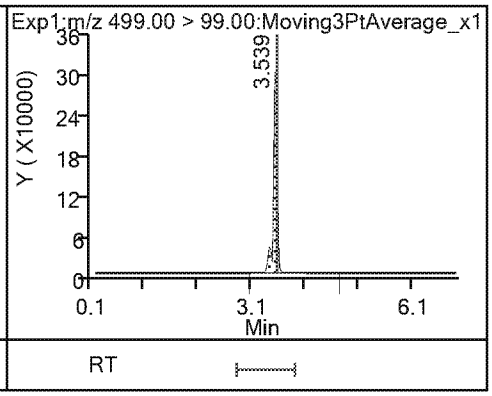
9 Perfluorononanoic acid



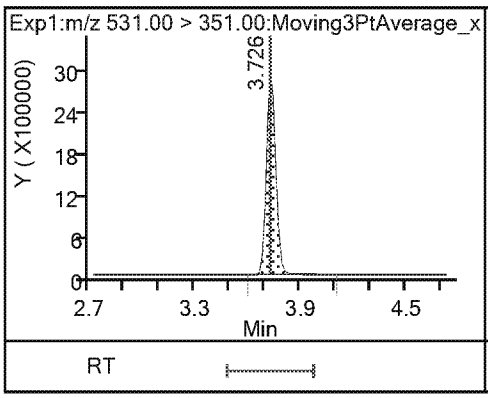
8 Perfluorooctanesulfonic acid



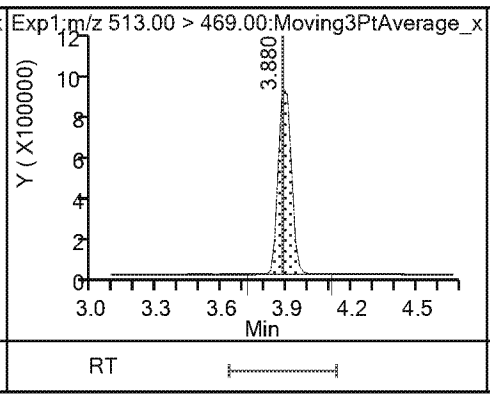
8 Perfluorooctanesulfonic acid



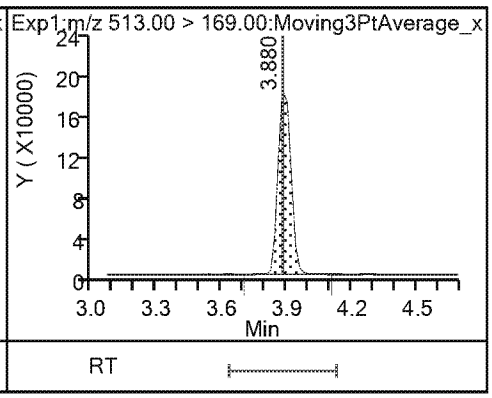
23 9-Chlorohexadecafluoro-3-oxanonane



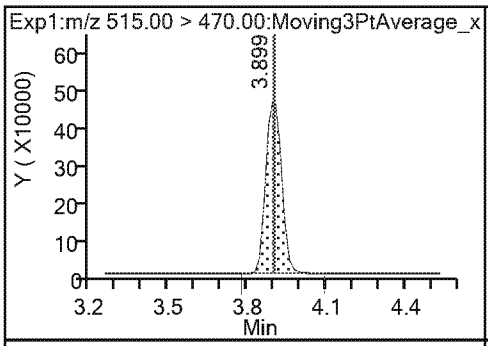
14 Perfluorodecanoic acid



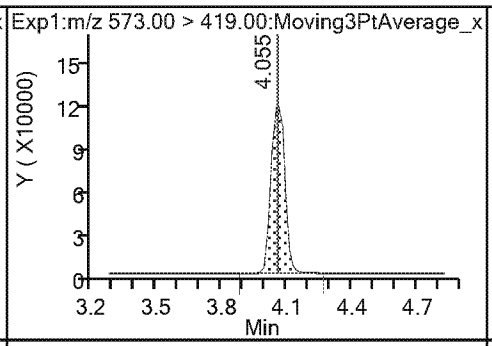
14 Perfluorodecanoic acid



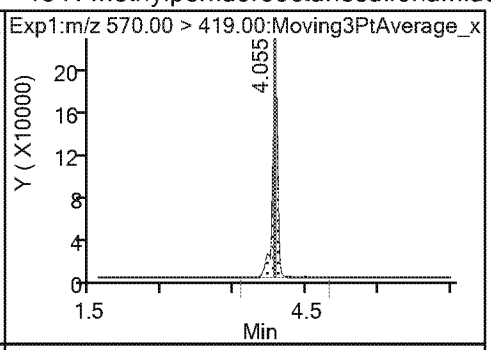
$ 10 13C2 PFDA



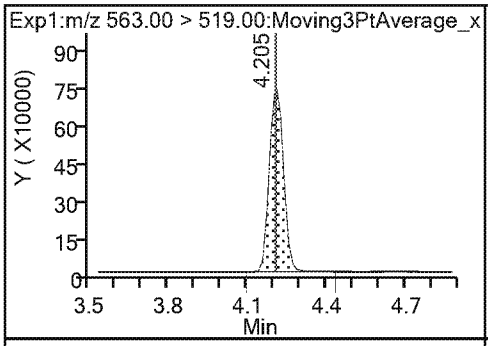
* 12 d3-NMeFOSAA



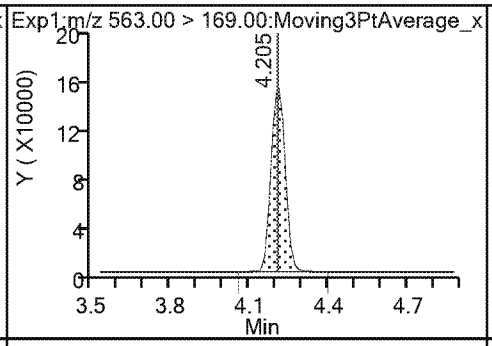
15 N-methylperfluorooctanesulfonamido



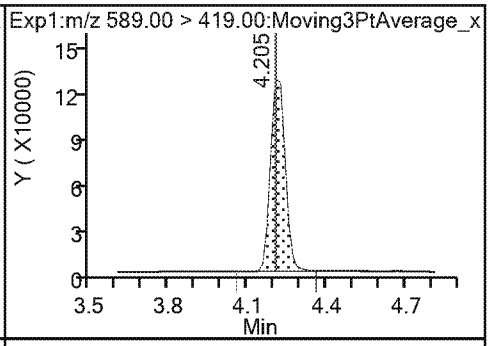
17 Perfluoroundecanoic acid



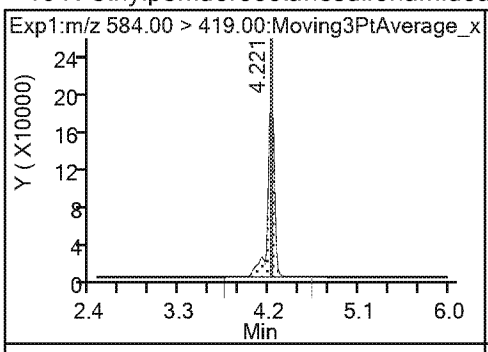
17 Perfluoroundecanoic acid



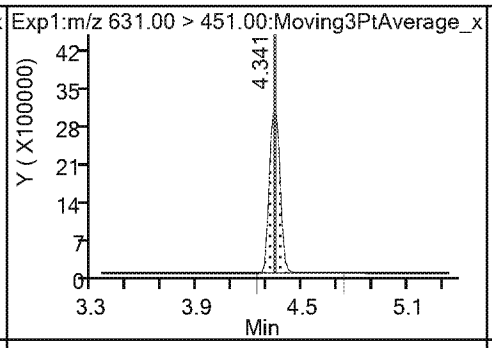
$ 11 d5-NEtFOSAA



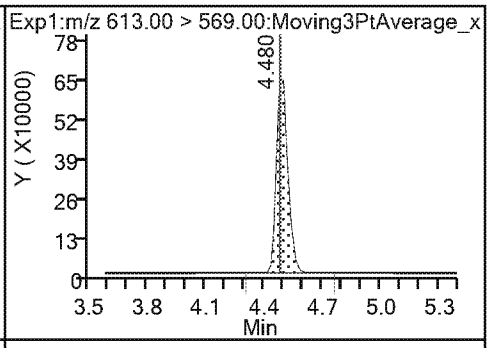
16 N-ethylperfluorooctanesulfonamidoa



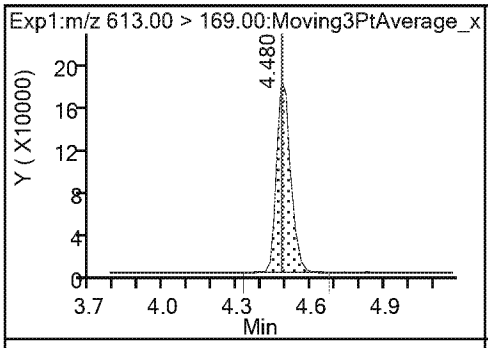
21 11-Chloroeicosafluoro-3-oxaundecan



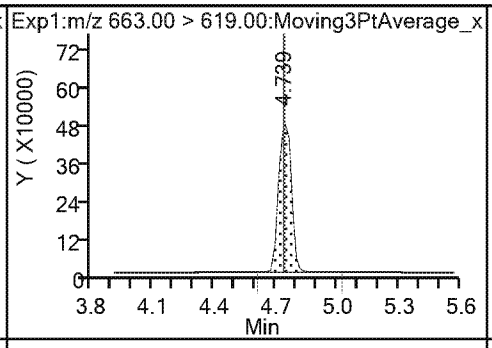
18 Perfluorododecanoic acid



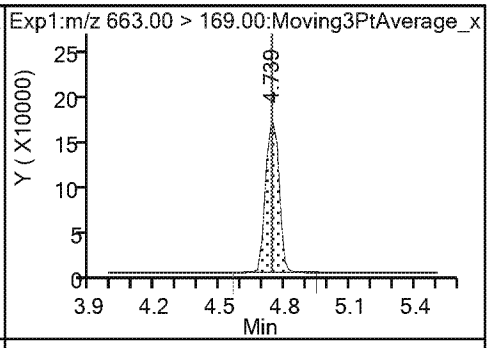
18 Perfluorododecanoic acid



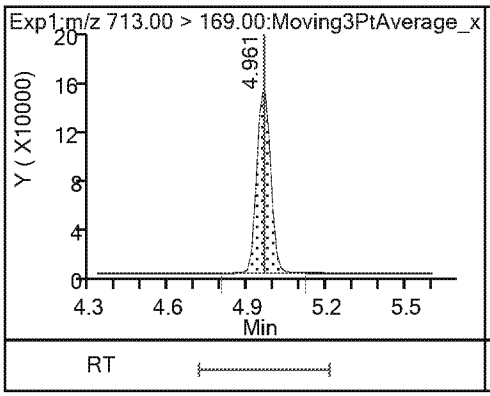
19 Perfluorotridecanoic acid



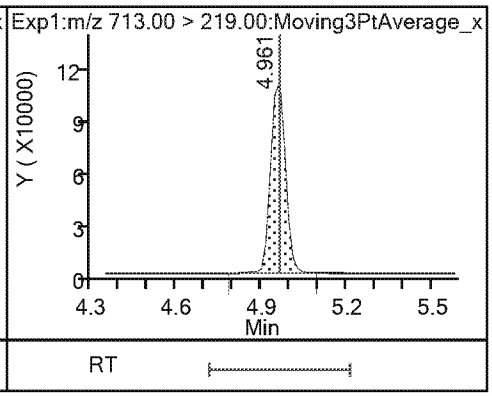
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab Sample ID: CCV 320-286198/55 Calibration Date: 04/05/2019 03:42

Instrument ID: A8_N Calib Start Date: 04/04/2019 15:14

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

Lab File ID: 2019.04.04_537AA_059.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid	Ave	1.181	1.214		0.908	0.884	2.7	30.0
Perfluorohexanoic acid	Ave	1.113	1.054		0.948	1.00	-5.2	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2635		0.974	1.00	-2.6	30.0
Perfluoroheptanoic acid	Ave	1.060	1.098		1.04	1.00	3.6	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.466		0.931	0.910	2.3	30.0
DONA	Ave	2.887	2.902		0.947	0.942	0.5	30.0
Perfluorooctanoic acid	Ave	1.014	1.006		0.992	1.00	-0.8	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.041		0.914	0.928	-1.5	30.0
Perfluorononanoic acid	Ave	0.7390	0.7216		0.976	1.00	-2.4	30.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	Ave	1.700	1.763		0.967	0.932	3.7	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6054		1.03	1.00	3.5	30.0
N-methylperfluorooctanesulfonamidoacetic acid	Ave	0.9362	0.8702		0.929	1.00	-7.1	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4517		1.02	1.00	1.6	30.0
N-ethylperfluorooctanesulfonamidoacetic acid	Ave	0.9078	0.8176		0.901	1.00	-9.9	30.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	Ave	2.131	2.138		0.945	0.942	0.3	30.0
Perfluorododecanoic acid	Ave	0.4456	0.4022		0.903	1.00	-9.7	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3322		0.963	1.00	-3.7	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0850		0.958	1.00	-4.2	30.0
13C2 PFHxA	Ave	1.166	1.100		2.36	2.50	-5.6	30.0
13C3 HFPO-DA	Ave	0.0524	0.0548		2.62	2.50	4.6	30.0
13C2 PFDA	Ave	0.6210	0.6379		2.57	2.50	2.7	30.0
d5-NEtFOSAA	Ave	1.022	1.032		2.52	2.50	1.0	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_059.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 05-Apr-2019 03:42:10 ALS Bottle#: 30 Worklist Smp#: 55
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:30:12 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:13:03
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.976	1.976	0.0	1.000	1287178	0.9082	Target=1.41	8963	
298.90 > 99.00	1.976	1.976	0.0	1.000	866702		1.49(0.00-0.00)	430	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.743	1265343	0.9475	Target=10.46	325	
313.00 > 119.00	2.347	2.347	0.0	0.743	123273		10.26(0.00-0.00)	140	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3300389	2.36		4878	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.474	0.0	1.000	316193	0.9742		160	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.474	0.0	1.000	164325	2.62		907	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.757	2.757	0.0	1.000	1317515	1.04	Target=2.41	129	
363.00 > 169.00	2.757	2.757	0.0	1.000	545232		2.42(0.00-0.00)	1296	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.778	2.778	0.0	1.000	1600709	0.9310	Target=2.91	1777	
399.00 > 99.00	2.778	2.778	0.0	1.000	534976		2.99(0.00-0.00)	225	
24 DONA									
377.00 > 251.00	2.799	2.799	0.0	1.000	3280873	0.9472	Target=1.54	5384	
377.00 > 85.00	2.799	2.799	0.0	1.000	2046194		1.60(0.00-0.00)	155172	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.158	0.0		2999911	2.50		8008	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.177	3.177	0.0	1.006	1207499	0.99	Target=1.70	145	
413.00 > 169.00	3.158	3.177	-0.019	1.000	683709		1.77(0.00-0.00)	835	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.534	0.0		2867733	2.39		9717	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	865852	0.9764	Target=3.78	500	
463.00 > 169.00	3.549	3.549	0.0	1.000	225093		3.85(0.00-0.00)	1919	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.534	3.564	-0.030	1.000	1158979	0.9144	Target=4.63	1319	
499.00 > 99.00	3.534	3.564	-0.030	1.000	254213		4.56(0.00-0.00)	276	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.735	3.735	0.0	1.000	1971423	0.9667		3295	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.895	3.895	0.0	1.000	726488	1.03	Target=4.93	305	
513.00 > 169.00	3.895	3.895	0.0	1.000	140636		5.17(0.00-0.00)	556	
$ 10 13C2 PFDA									
515.00 > 470.00	3.895	3.895	0.0	1.000	1913693	2.57		7663	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.073	4.073	0.0		476367	2.50		2526	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.073	4.073	0.0	1.000	165808	0.9295		1811	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.201	4.201	0.0	1.000	542016	1.02	Target=4.73	255	
563.00 > 169.00	4.201	4.201	0.0	1.000	107913		5.02(0.00-0.00)	1372	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.217	4.217	0.0	1.035	491702	2.52		320	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.217	4.217	0.0	1.000	155799	0.9006		380	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.332	4.332	0.0	1.000	2416512	0.9452		7213	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.476	4.476	0.0	1.000	482574	0.9025	Target=3.49	311	
613.00 > 169.00	4.476	4.476	0.0	1.000	135117		3.57(0.00-0.00)	1417	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.734	4.734	0.0	1.000	398647	0.9625	Target=2.87	138	
663.00 > 169.00	4.734	4.734	0.0	1.000	131190		3.04(0.00-0.00)	1238	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.956	4.956	0.0	1.000	102007	0.9576	Target=1.40	1357	
713.00 > 219.00	4.956	4.956	0.0	1.000	73149		1.39(0.00-0.00)	786	

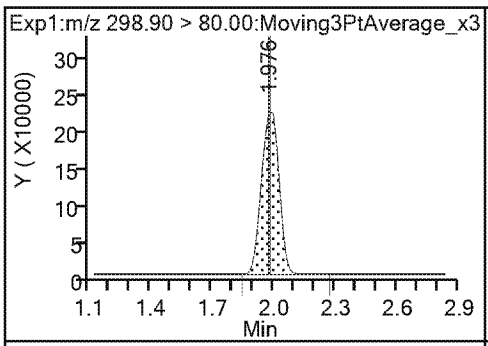
Reagents:

LC537_NC_L4_00003 Amount Added: 1.00 Units: mL

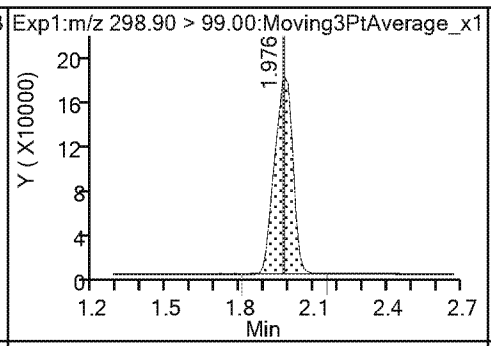
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_059.d
Injection Date: 05-Apr-2019 03:42:10 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 55
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

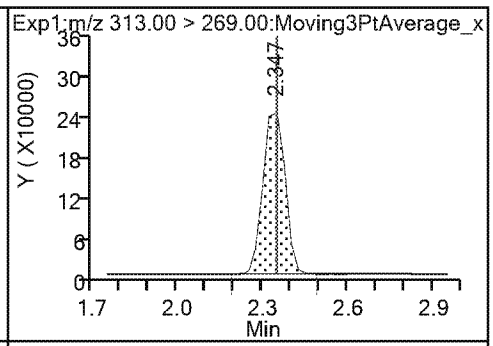
1 Perfluorobutanesulfonic acid



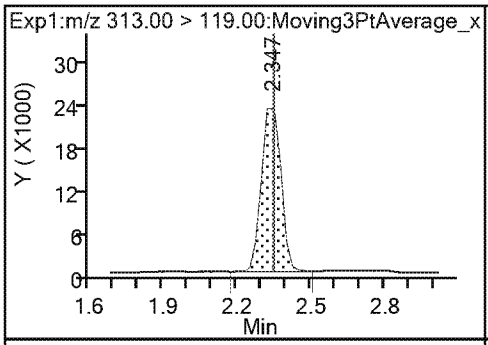
1 Perfluorobutanesulfonic acid



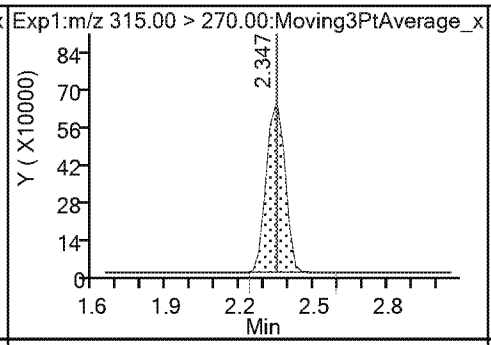
13 Perfluorohexanoic acid



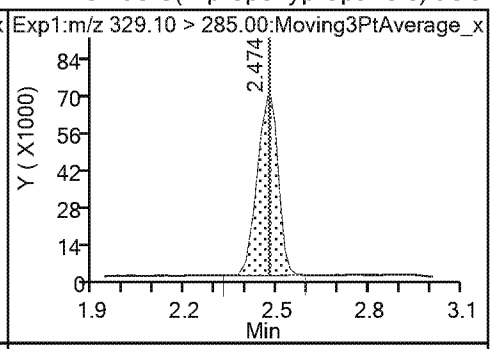
13 Perfluorohexanoic acid



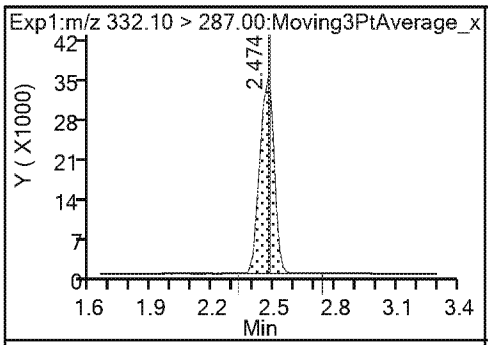
$ 2 13C2 PFHxA



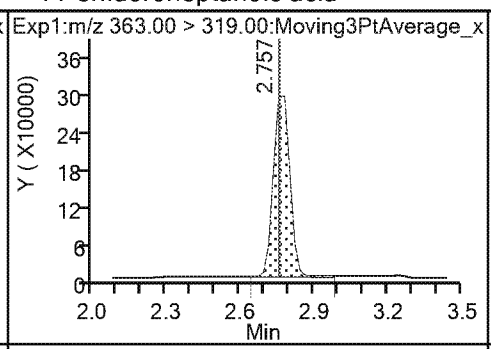
22 Perfluoro(2-propoxypropanoic) acid



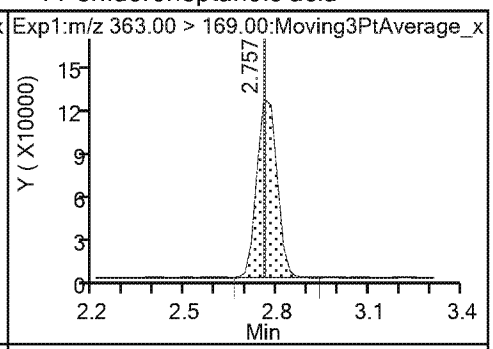
$ 25 13C3 HFPO-DA



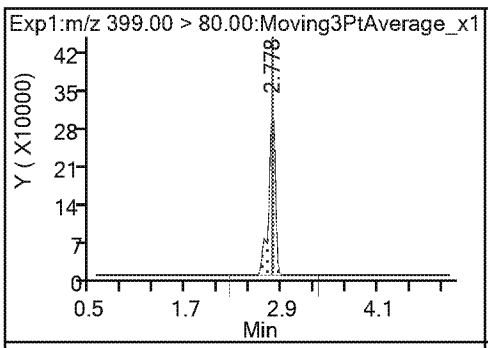
4 Perfluoroheptanoic acid



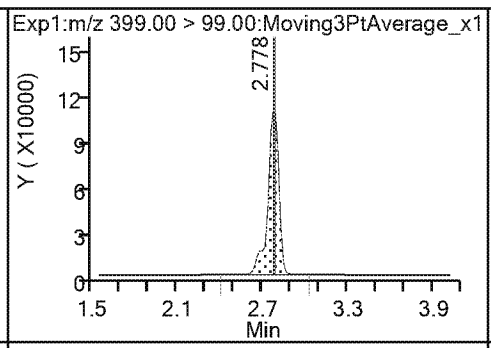
4 Perfluoroheptanoic acid



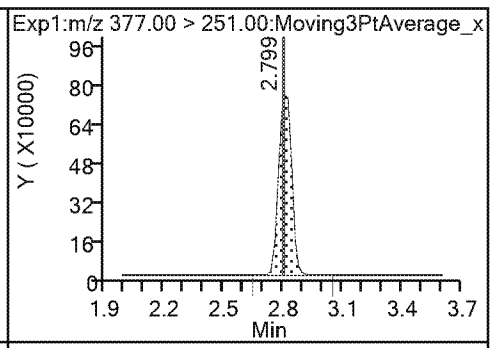
3 Perfluorohexanesulfonic acid



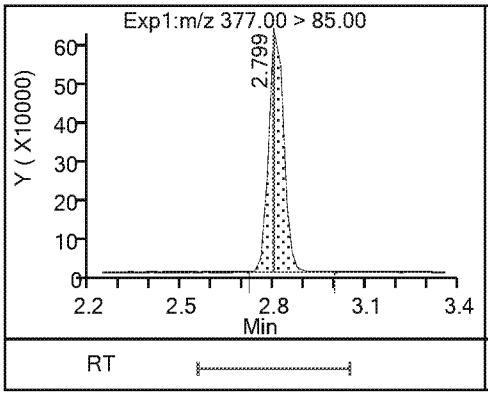
3 Perfluorohexanesulfonic acid



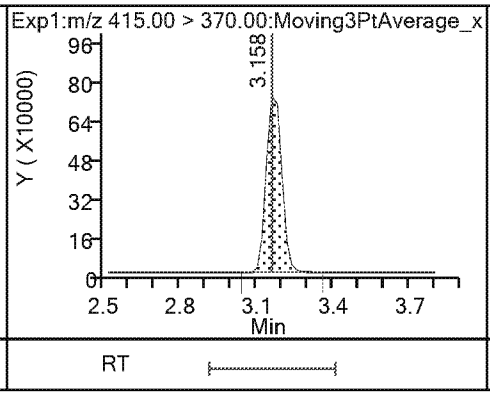
24 DONA



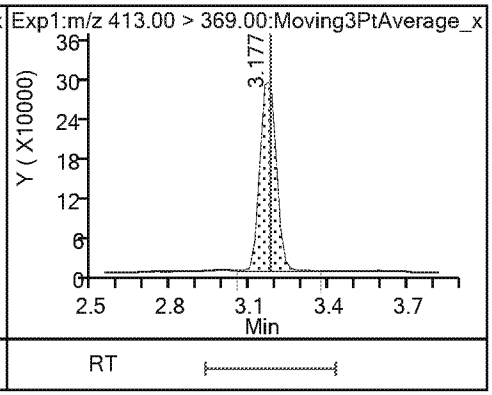
24 DONA



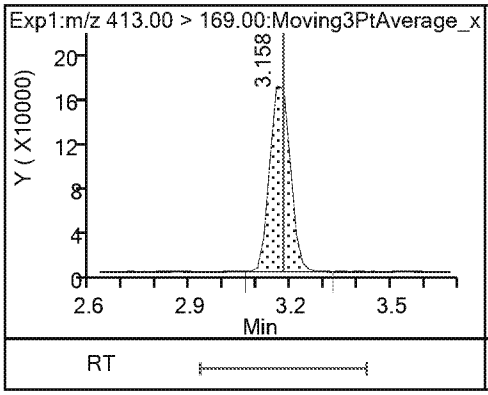
* 5 13C2 PFOA



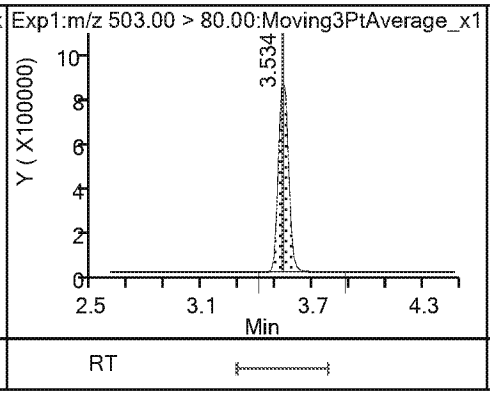
6 Perfluorooctanoic acid



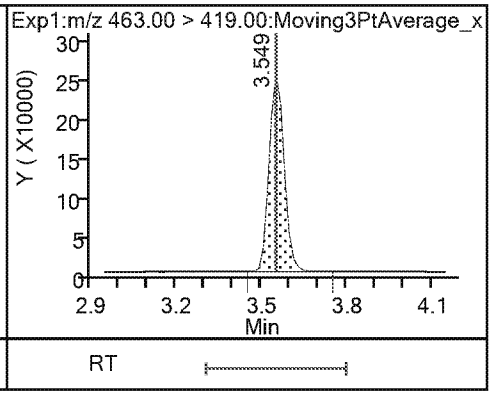
6 Perfluorooctanoic acid



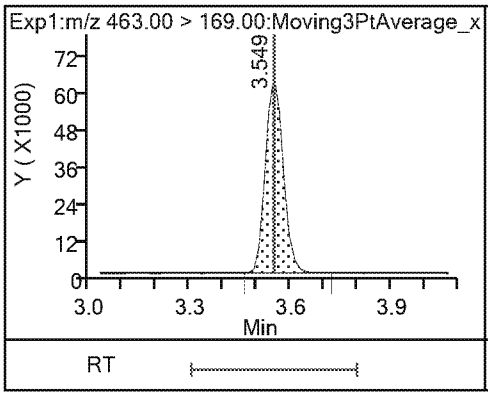
* 7 13C4 PFOS



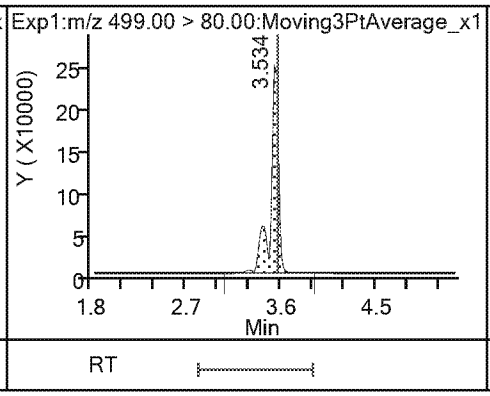
9 Perfluorononanoic acid



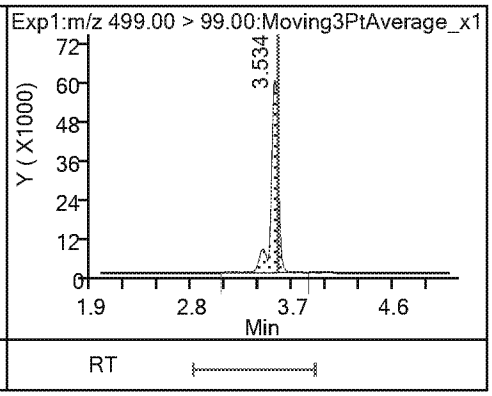
9 Perfluorononanoic acid



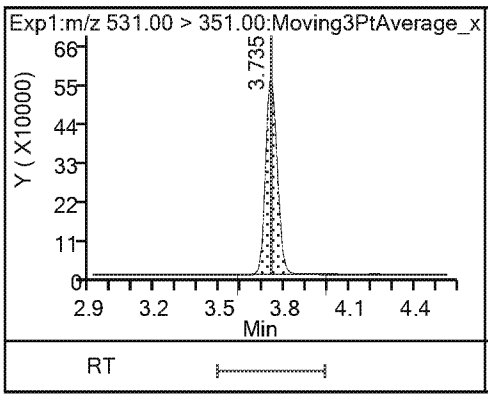
8 Perfluorooctanesulfonic acid



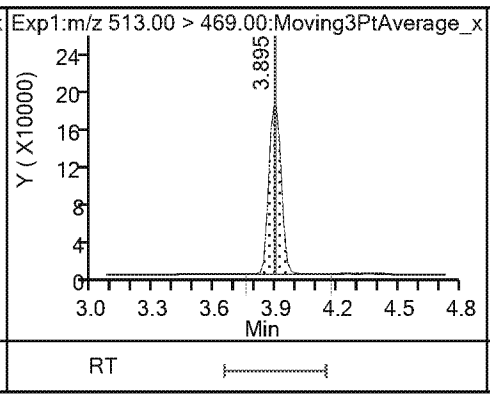
8 Perfluorooctanesulfonic acid



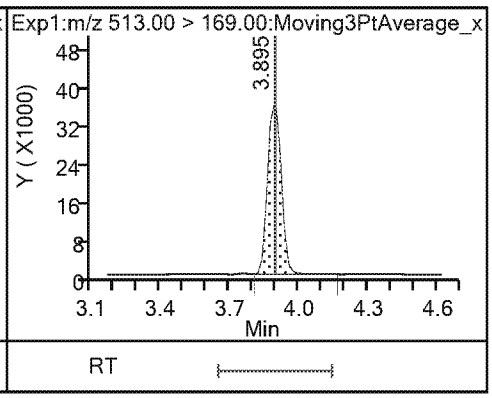
23 9-Chlorohexadecafluoro-3-oxanonane



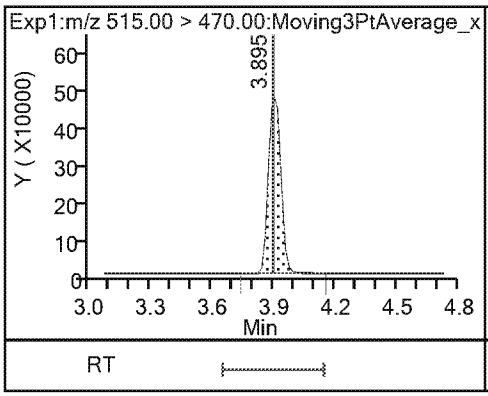
14 Perfluorodecanoic acid



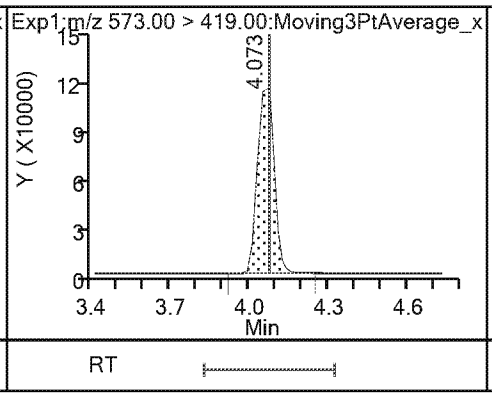
14 Perfluorodecanoic acid



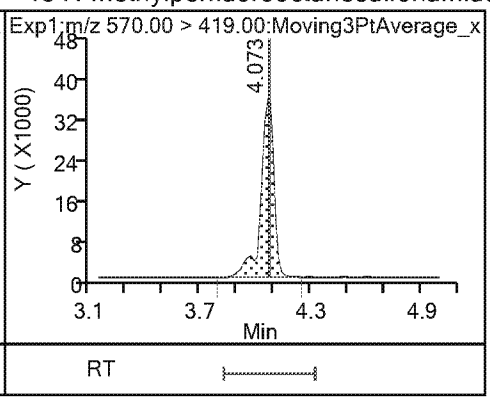
$ 10 13C2 PFDA



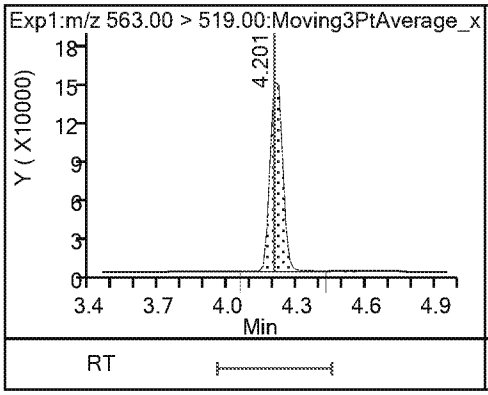
* 12 d3-NMeFOSAA



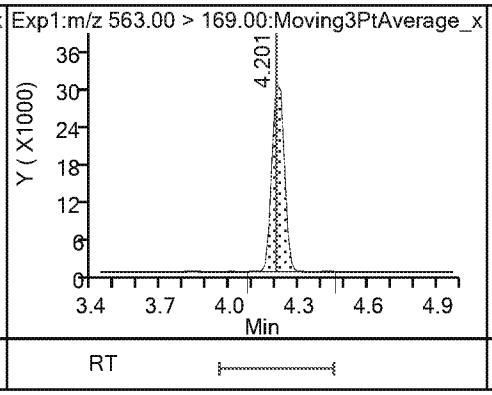
15 N-methylperfluorooctanesulfonamido



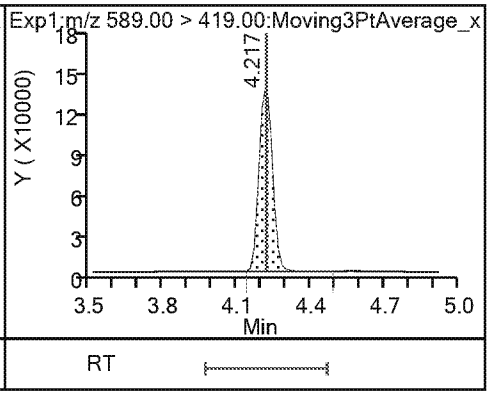
17 Perfluoroundecanoic acid



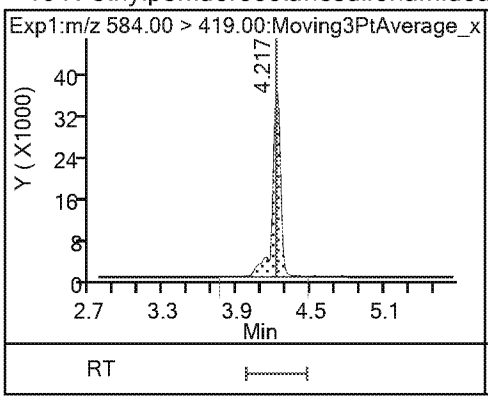
17 Perfluoroundecanoic acid



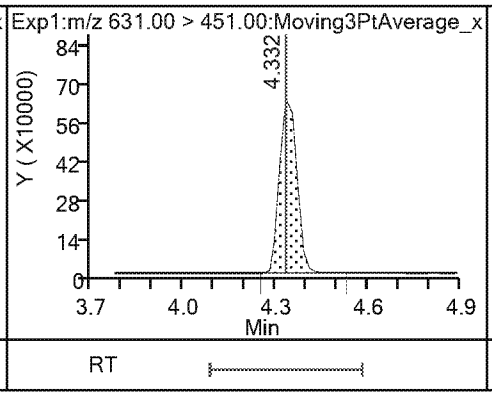
$ 11 d5-NEtFOSAA



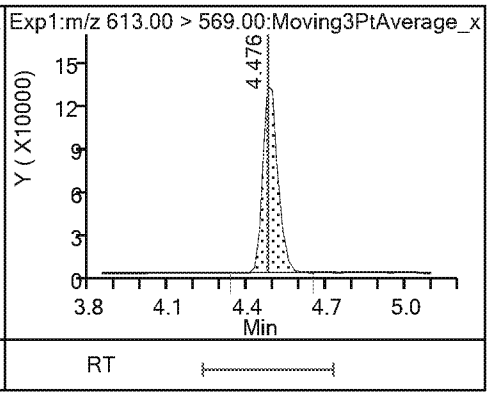
16 N-ethylperfluorooctanesulfonamidoa



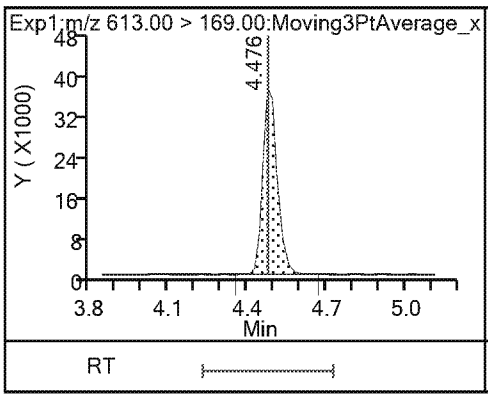
21 11-Chloroeicosafluoro-3-oxaundecan



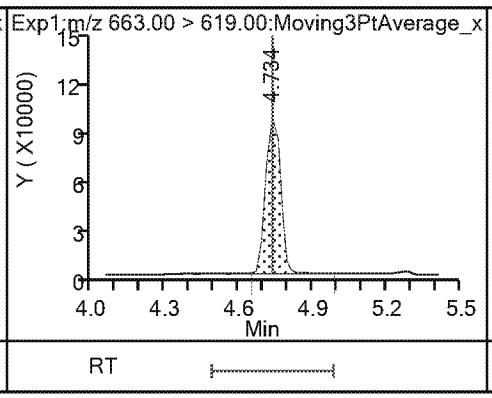
18 Perfluorododecanoic acid



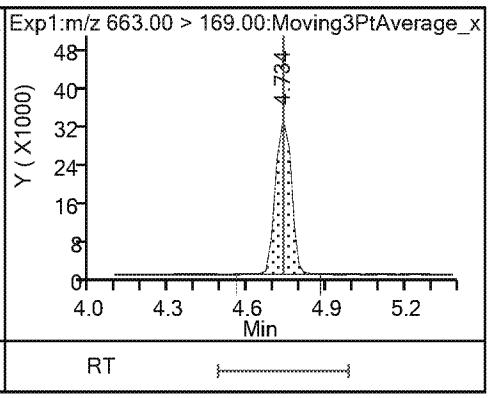
18 Perfluorododecanoic acid



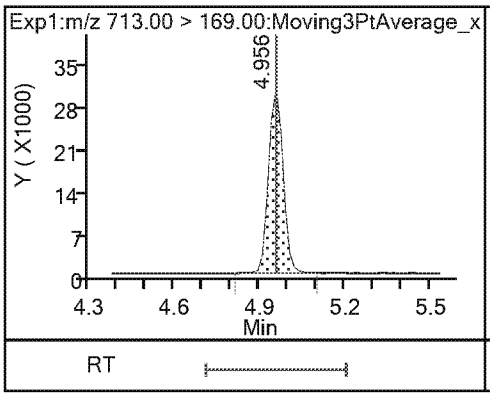
19 Perfluorotridecanoic acid



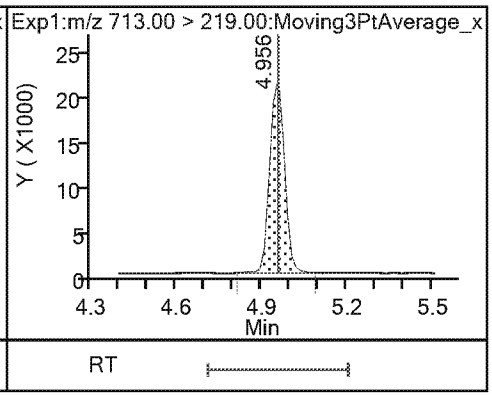
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab Sample ID: CCVL 320-286320/1 Calibration Date: 04/05/2019 11:55

Instrument ID: A8_N Calib Start Date: 04/04/2019 15:14

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

Lab File ID: 2019.04.05_537.1A_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid	Ave	1.181	1.165		0.0436	0.0442	-1.4	50.0
Perfluorohexanoic acid	Ave	1.113	1.077		0.0484	0.0500	-3.2	50.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2925		0.0541	0.0500	8.1	50.0
Perfluoroheptanoic acid	Ave	1.060	1.009		0.0476	0.0500	-4.8	50.0
Perfluorohexanesulfonic acid	Ave	1.433	1.356		0.0431	0.0455	-5.4	50.0
DONA	Ave	2.887	2.687		0.0438	0.0471	-6.9	50.0
Perfluorooctanoic acid	Ave	1.014	0.9495			0.0500	-6.4	50.0
Perfluorooctanesulfonic acid	Ave	1.056	1.101		0.0484	0.0464	4.3	50.0
Perfluorononanoic acid	Ave	0.7390	0.7067		0.0478	0.0500	-4.4	50.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	Ave	1.700	1.634		0.0448	0.0466	-3.8	50.0
Perfluorodecanoic acid	Ave	0.5850	0.5990		0.0512	0.0500	2.4	50.0
N-methylperfluorooctanesulfonamidoacetic acid	Ave	0.9362	0.9375		0.0501	0.0500	0.1	50.0
Perfluoroundecanoic acid	Ave	0.4445	0.4386		0.0493	0.0500	-1.3	50.0
N-ethylperfluorooctanesulfonamidoacetic acid	Ave	0.9078	0.9788		0.0539	0.0500	7.8	50.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	Ave	2.131	2.073		0.0458	0.0471	-2.7	50.0
Perfluorododecanoic acid	Ave	0.4456	0.4322		0.0485	0.0500	-3.0	50.0
Perfluorotridecanoic acid	Ave	0.3452	0.3587		0.0520	0.0500	3.9	50.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0908		0.0512	0.0500	2.3	50.0
13C2 PFHxA	Ave	1.166	1.145		2.46	2.50	-1.7	30.0
13C3 HFPO-DA	Ave	0.0524	0.0560		2.67	2.50	7.0	30.0
13C2 PFDA	Ave	0.6210	0.6441		2.59	2.50	3.7	30.0
d5-NEtFOSAA	Ave	1.022	1.097		2.68	2.50	7.3	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_004.d
Lims ID: CCVL
Client ID:
Sample Type: CCVL
Inject. Date: 05-Apr-2019 11:55:04 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCVL
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 14:38:23 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 14:29:42
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.977	1.976	0.001	1.000	64535	0.0436	Target=1.41	333	
298.90 > 99.00	1.977	1.976	0.001	1.000	43381		1.49(0.00-0.00)	18.5	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.348	2.347	0.001	0.740	66666	0.0484	Target=10.46	17.0	
313.00 > 119.00	2.323	2.347	-0.024	0.732	6267		10.64(0.00-0.00)	7.4	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	3545075	2.46		5858	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.473	0.001	1.000	18105	0.0541		9.5	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	173379	2.67		985	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.779	2.766	0.013	1.000	62489	0.0476	Target=2.41	6.7	M
363.00 > 169.00	2.779	2.766	0.013	1.000	28216		2.21(0.00-0.00)	70.3	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.779	2.786	-0.007	1.000	77346	0.0431	Target=2.91	77.8	M
399.00 > 99.00	2.779	2.786	-0.007	1.000	26292		2.94(0.00-0.00)	9.2	M
24 DONA									
377.00 > 251.00	2.820	2.807	0.013	1.000	156695	0.0438	Target=1.54	383	
377.00 > 85.00	2.820	2.807	0.013	1.000	100894		1.55(0.00-0.00)	6928	
* 5 13C2 PFOA									
415.00 > 370.00	3.174	3.169	0.005		3095391	2.50		7924	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.174	3.169	0.005	1.000	58784	0.0468	Target=1.70	7.9	M
413.00 > 169.00	3.174	3.169	0.005	1.000	35742		1.64(0.00-0.00)	53.7	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.545	3.544	0.001		2995972	2.39		8003	
9 Perfluorononanoic acid									
463.00 > 419.00	3.560	3.558	0.002	1.000	43751	0.0478	Target=3.78	25.2	
463.00 > 169.00	3.560	3.558	0.002	1.000	11079		3.95(0.00-0.00)	94.2	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.545	3.564	-0.019	1.000	64067	0.0484	Target=4.63	199	
499.00 > 99.00	3.545	3.564	-0.019	1.000	14446		4.43(0.00-0.00)	12.4	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.749	3.747	0.002	1.000	95462	0.0448		216	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.909	3.906	0.003	1.000	37081	0.0512	Target=4.93	17.7	
513.00 > 169.00	3.909	3.906	0.003	1.000	7673		4.83(0.00-0.00)	21.7	
$ 10 13C2 PFDA									
515.00 > 470.00	3.909	3.906	0.003	1.000	1993701	2.59		9631	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.068	4.087	-0.019		486052	2.50		2929	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.090	4.087	0.003	1.005	9113	0.0501		141	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.219	4.216	0.003	1.000	27152	0.0493	Target=4.73	13.3	
563.00 > 169.00	4.219	4.216	0.003	1.000	6032		4.50(0.00-0.00)	92.2	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.235	4.232	0.003	1.041	533151	2.68		296	
16 N-ethylperfluorooctanesulfonamidoa									M
584.00 > 419.00	4.235	4.232	0.003	1.000	9515	0.0539		33.2	M
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.357	4.350	0.007	1.000	122373	0.0458		1165	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.493	4.505	-0.012	1.000	26755	0.0485	Target=3.49	17.9	
613.00 > 169.00	4.493	4.505	-0.012	1.000	7077		3.78(0.00-0.00)	76.6	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.758	4.755	0.003	1.000	22208	0.0520	Target=2.87	8.3	
663.00 > 169.00	4.758	4.755	0.003	1.000	7229		3.07(0.00-0.00)	78.6	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.990	4.971	0.019	1.000	5623	0.0512	Target=1.40	132	
713.00 > 219.00	4.974	4.971	0.003	0.997	3984		1.41(0.00-0.00)	52.0	

QC Flag Legend

Review Flags

M - Manually Integrated

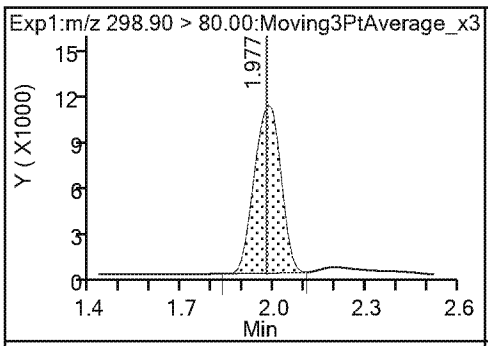
Reagents:

LC537_NC_L2_00004 Amount Added: 1.00 Units: mL

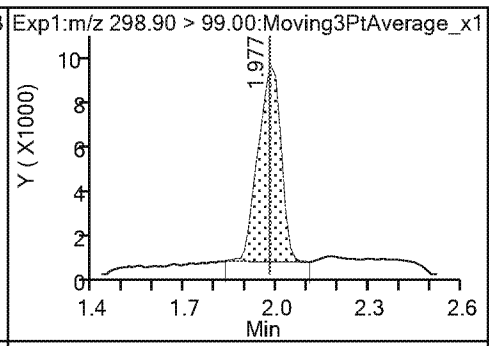
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_004.d
Injection Date: 05-Apr-2019 11:55:04 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 2 Worklist Smp#: 1
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

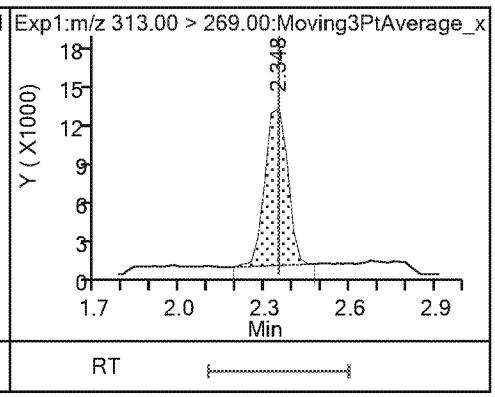
1 Perfluorobutanesulfonic acid



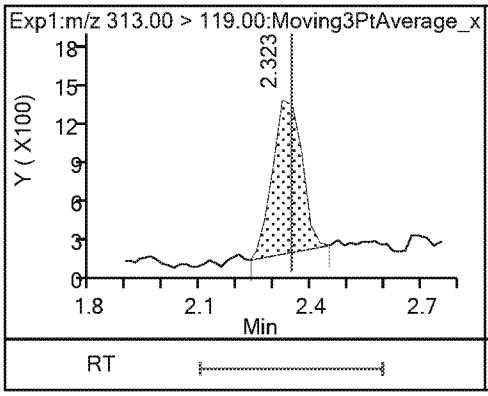
1 Perfluorobutanesulfonic acid



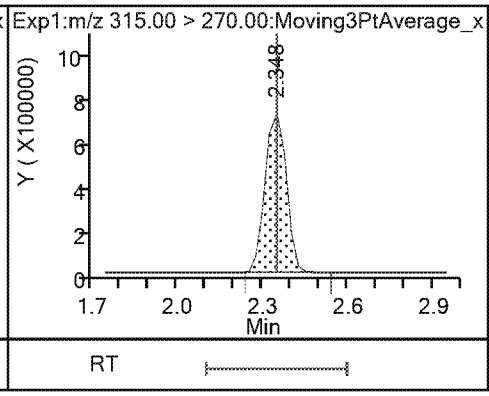
13 Perfluorohexanoic acid



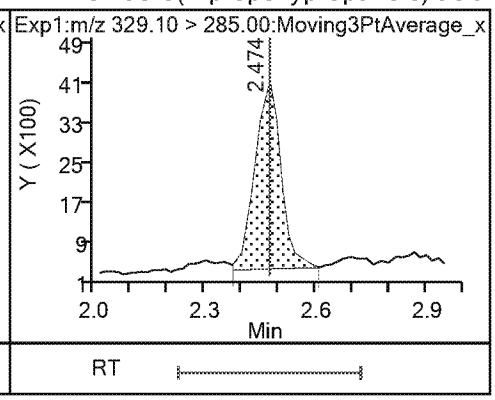
13 Perfluorohexanoic acid



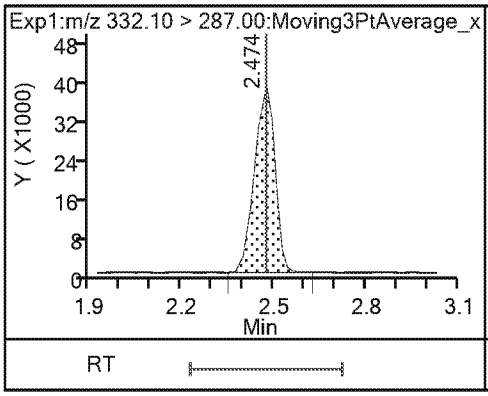
$ 2 13C2 PFHxA



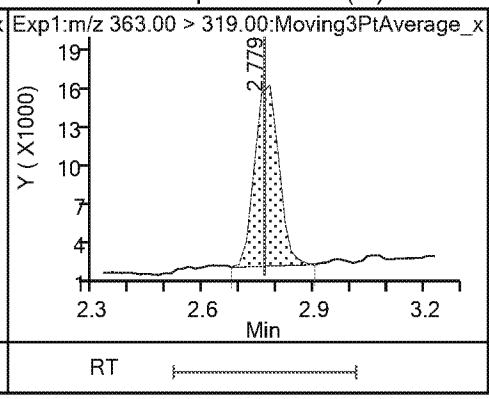
22 Perfluoro(2-propoxypropanoic) acid



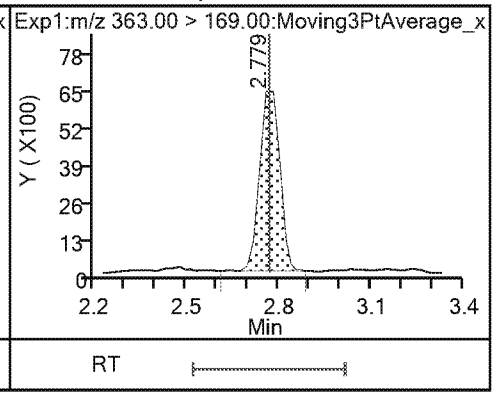
$ 25 13C3 HFPO-DA



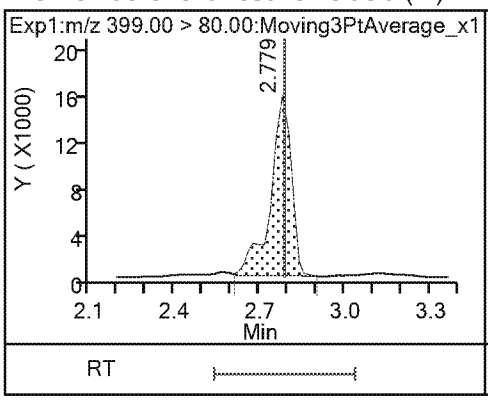
4 Perfluoroheptanoic acid (M)



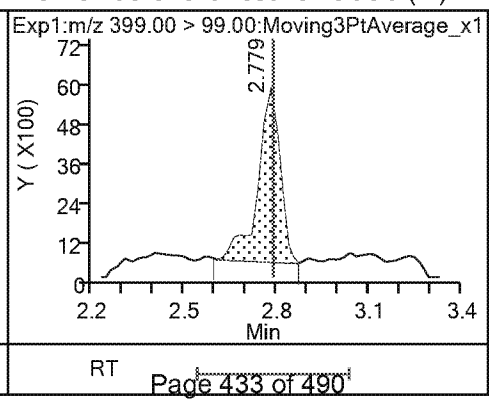
4 Perfluoroheptanoic acid



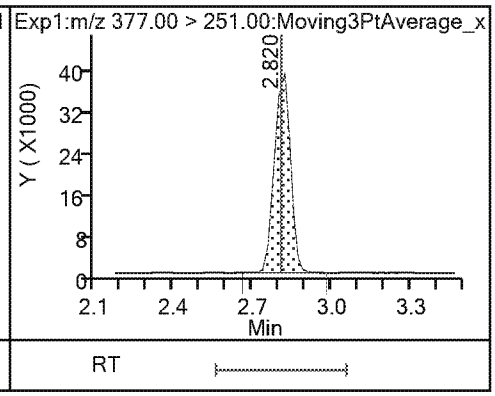
3 Perfluorohexanesulfonic acid (M)



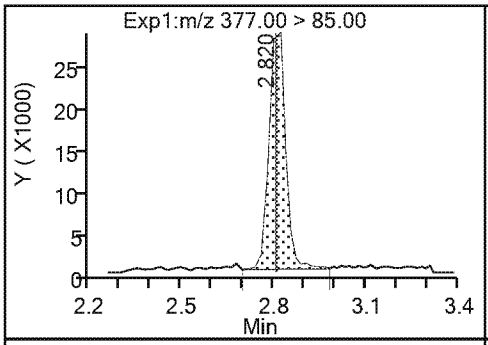
3 Perfluorohexanesulfonic acid (M)



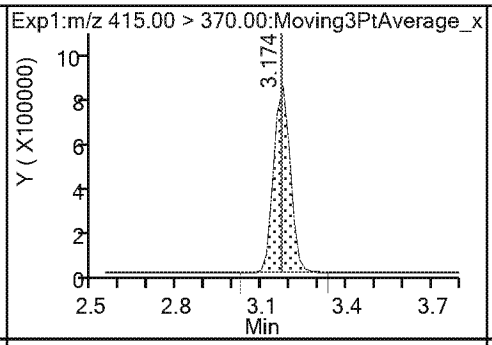
24 DONA



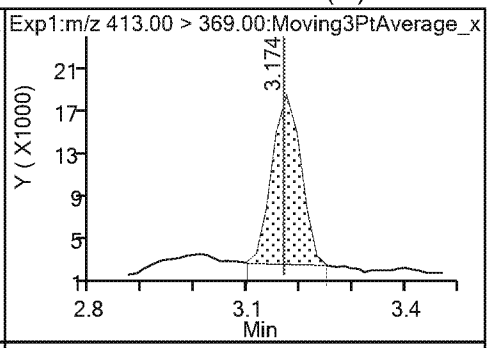
24 DONA



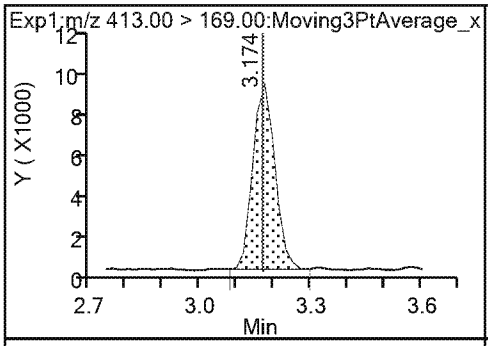
* 5 13C2 PFOA



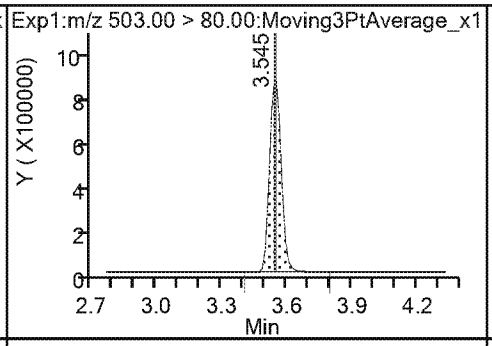
6 Perfluorooctanoic acid (M)



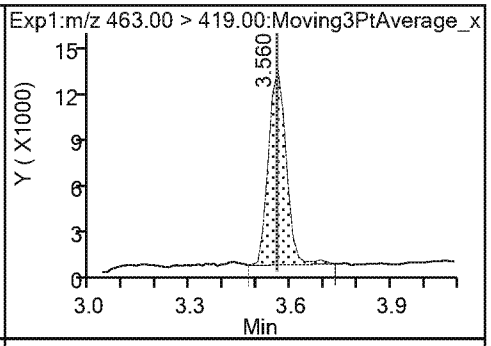
6 Perfluorooctanoic acid



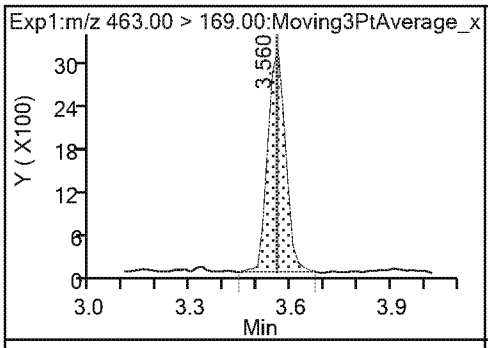
* 7 13C4 PFOS



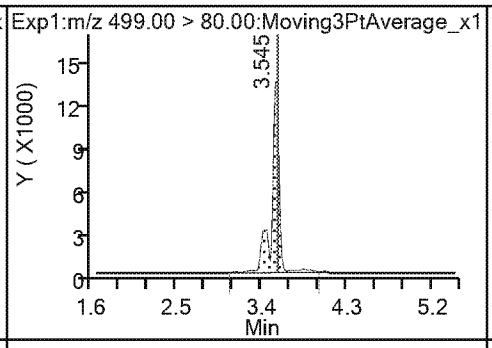
9 Perfluorononanoic acid



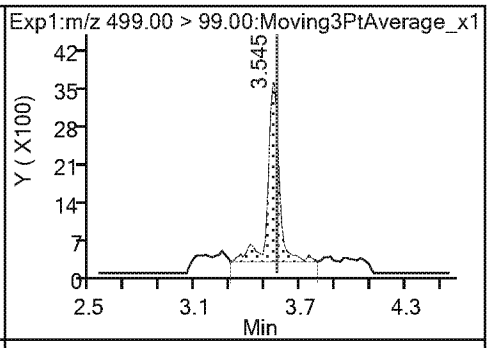
9 Perfluorononanoic acid



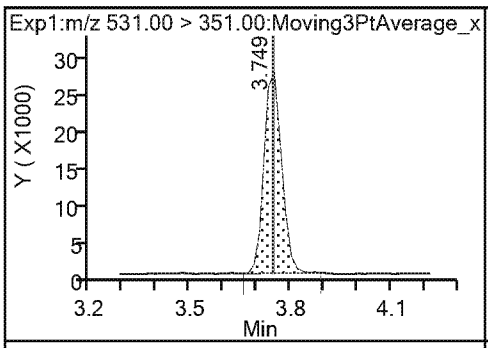
8 Perfluorooctanesulfonic acid



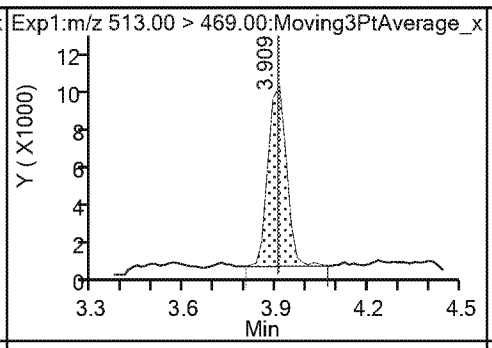
8 Perfluorooctanesulfonic acid



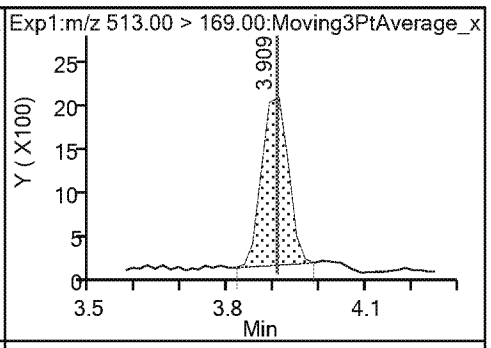
23 9-Chlorohexadecafluoro-3-oxanonane



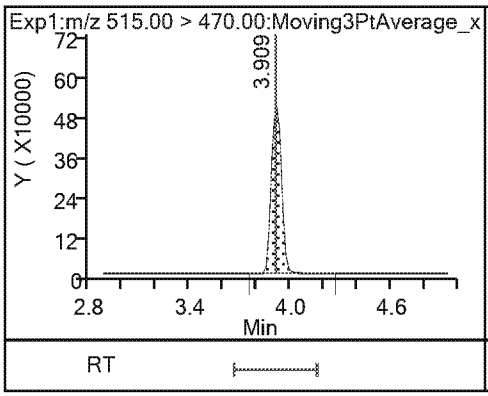
14 Perfluorodecanoic acid



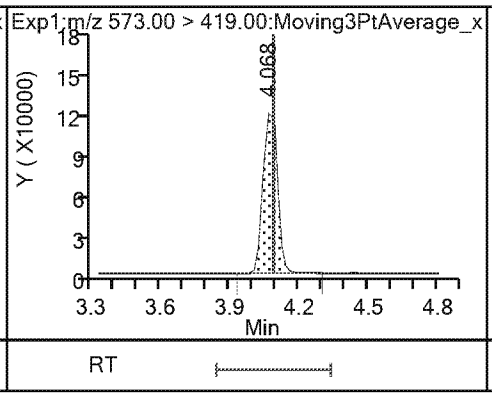
14 Perfluorodecanoic acid



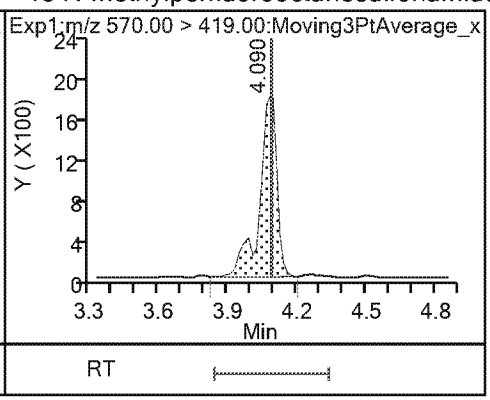
$ 10 13C2 PFDA



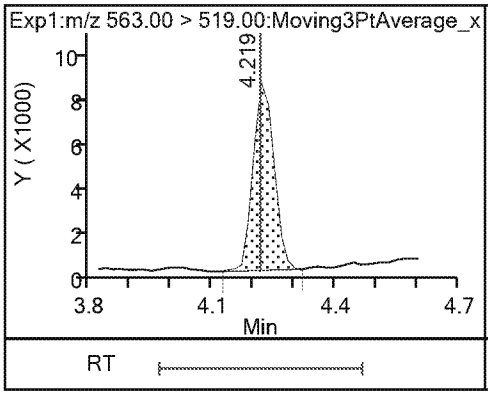
* 12 d3-NMeFOSAA



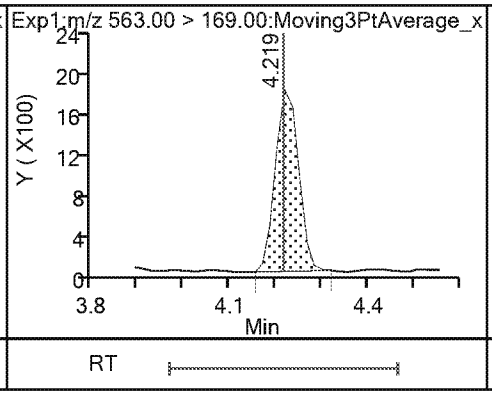
15 N-methylperfluorooctanesulfonamido



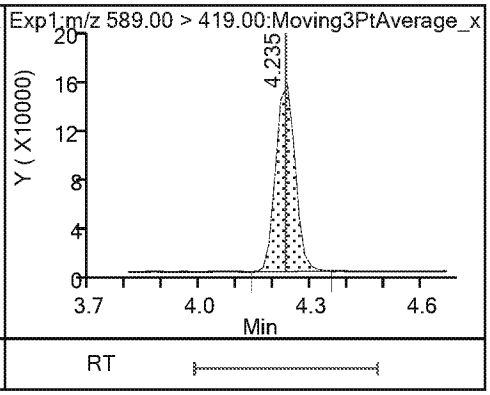
17 Perfluoroundecanoic acid



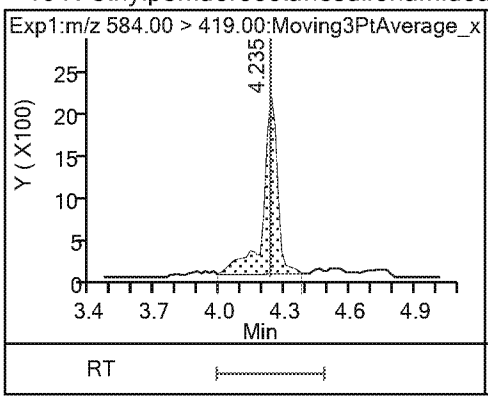
17 Perfluoroundecanoic acid



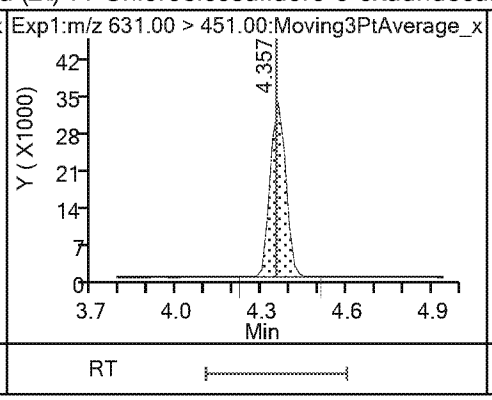
$ 11 d5-NEtFOSAA



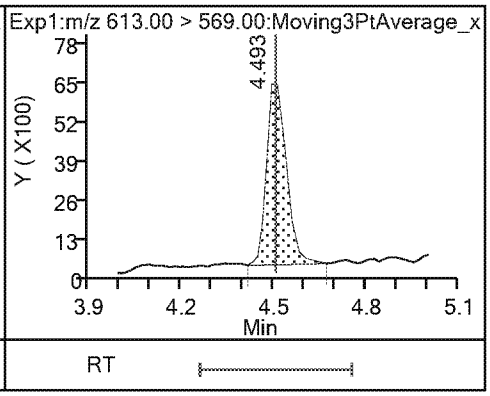
16 N-ethylperfluorooctanesulfonamidoa (2/1)



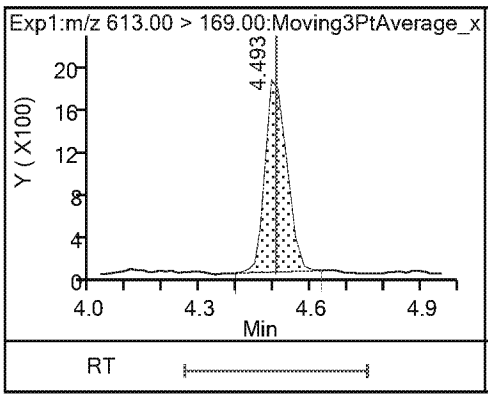
11-Chloroeicosafluoro-3-oxaundecan



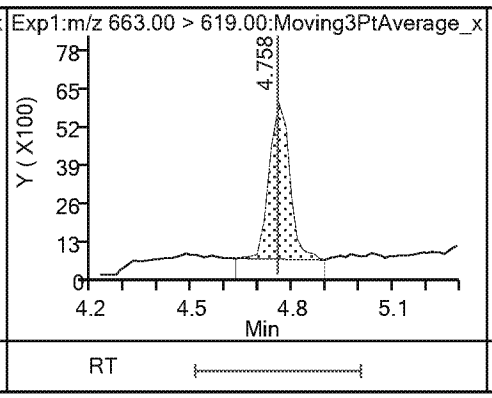
18 Perfluorododecanoic acid



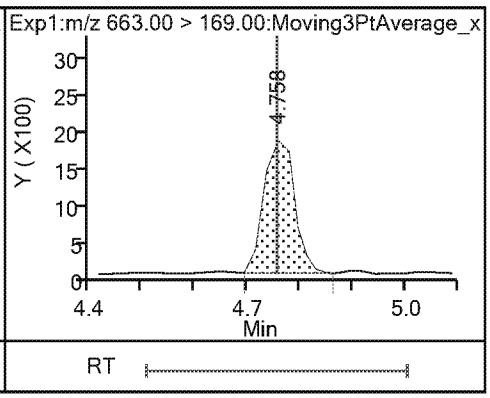
18 Perfluorododecanoic acid



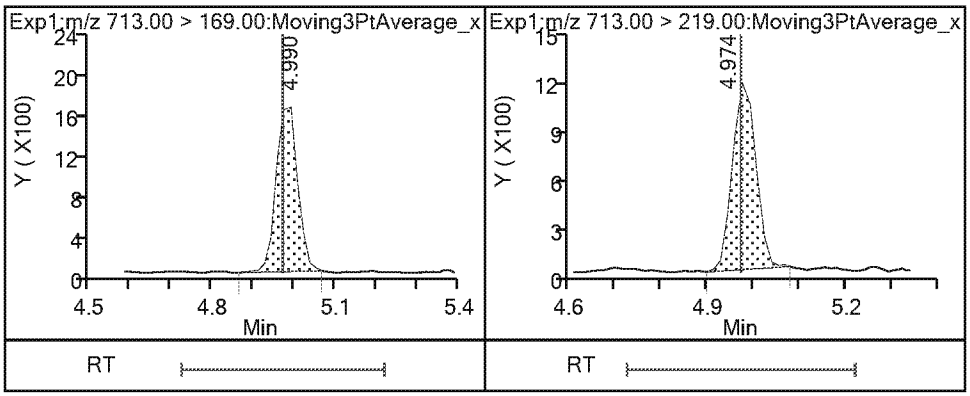
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid 20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento

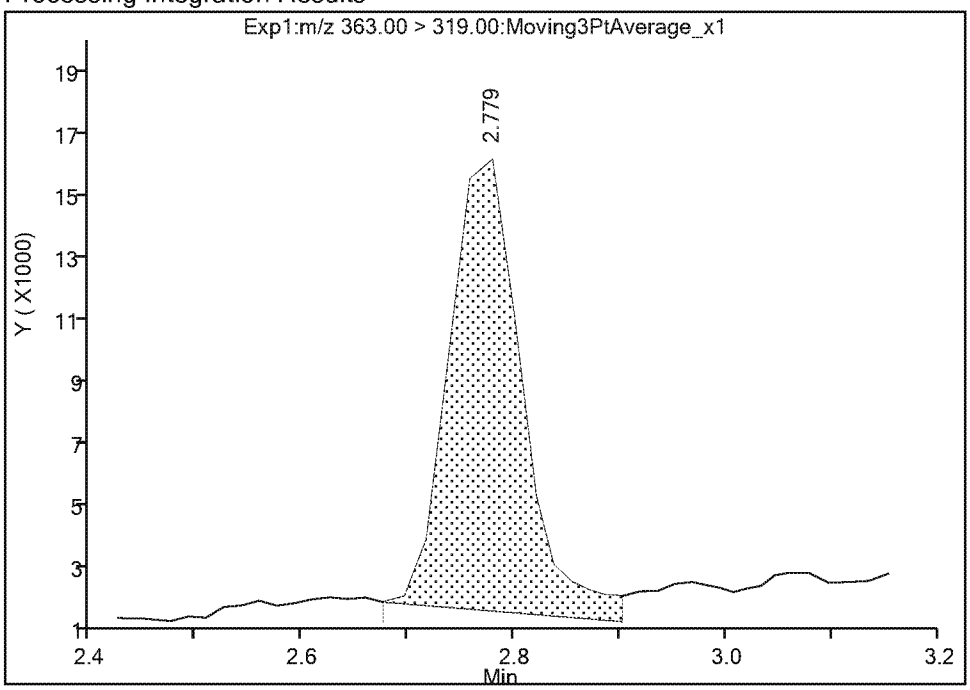
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_004.d				
Injection Date:	05-Apr-2019 11:55:04	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	1
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

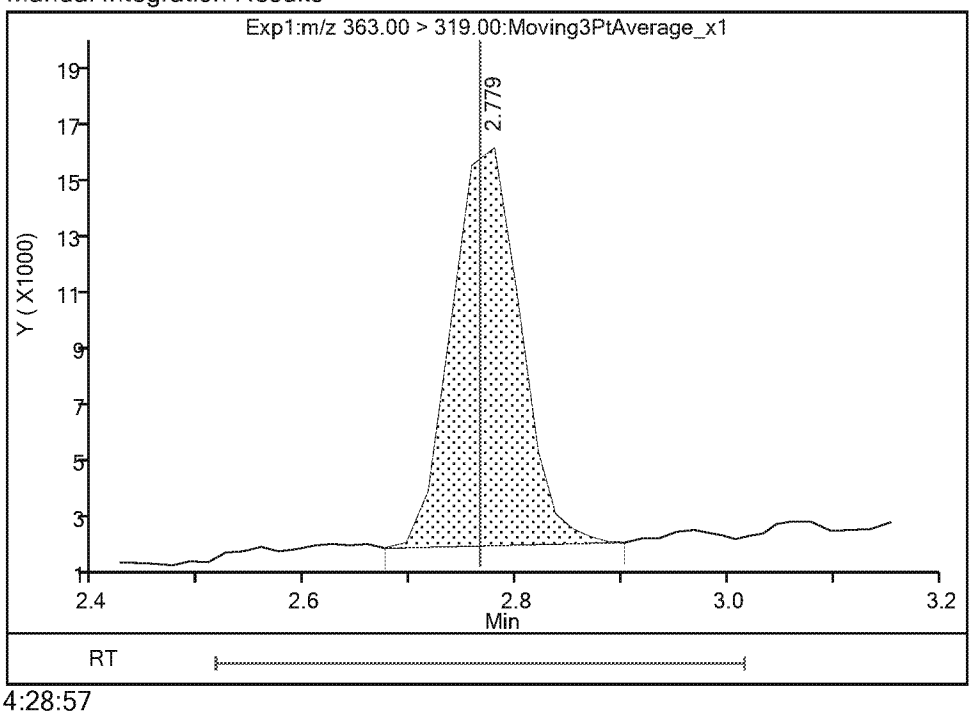
Processing Integration Results

RT: 2.78
Area: 68046
Amount: 0.051854
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 62489
Amount: 0.047620
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 14:28:57
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

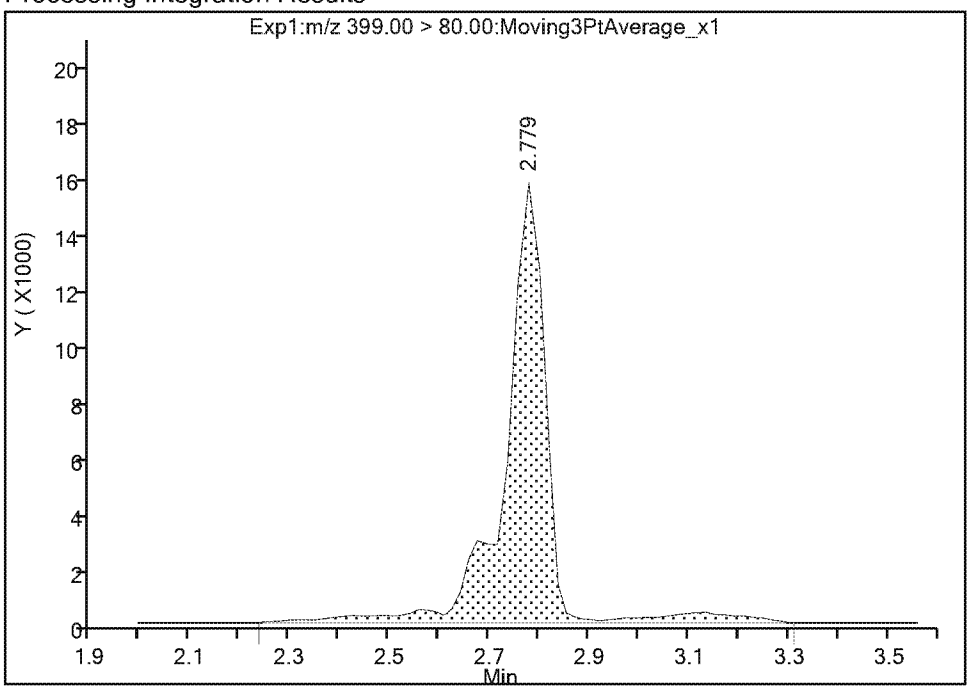
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_004.d				
Injection Date:	05-Apr-2019 11:55:04	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	1
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

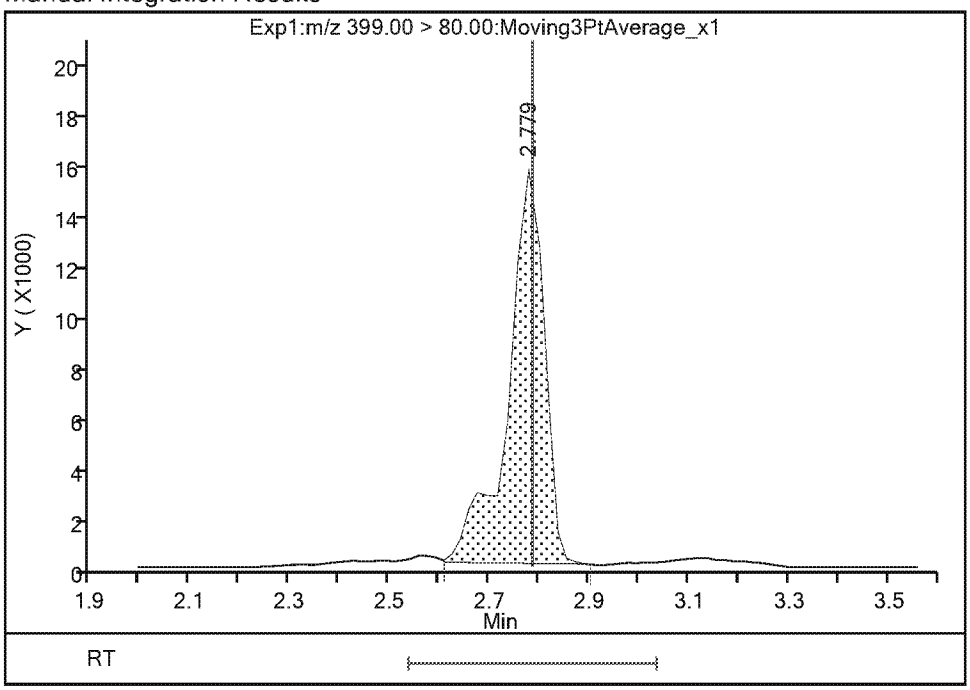
Processing Integration Results

RT: 2.78
Area: 88750
Amount: 0.049408
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 77346
Amount: 0.043059
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 14:28:42
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

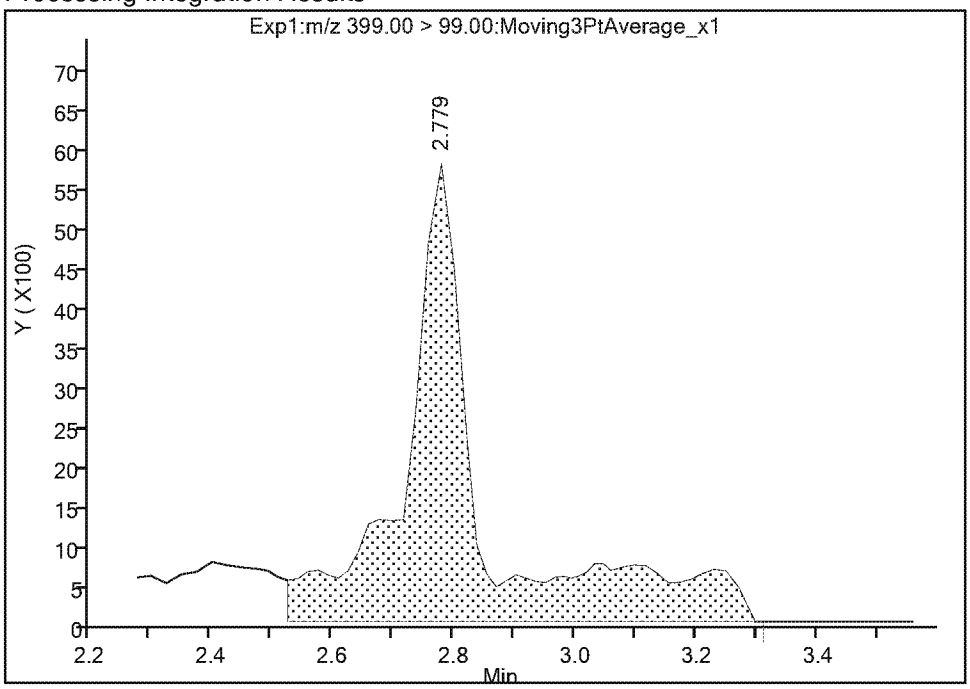
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_004.d				
Injection Date:	05-Apr-2019 11:55:04	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	1
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

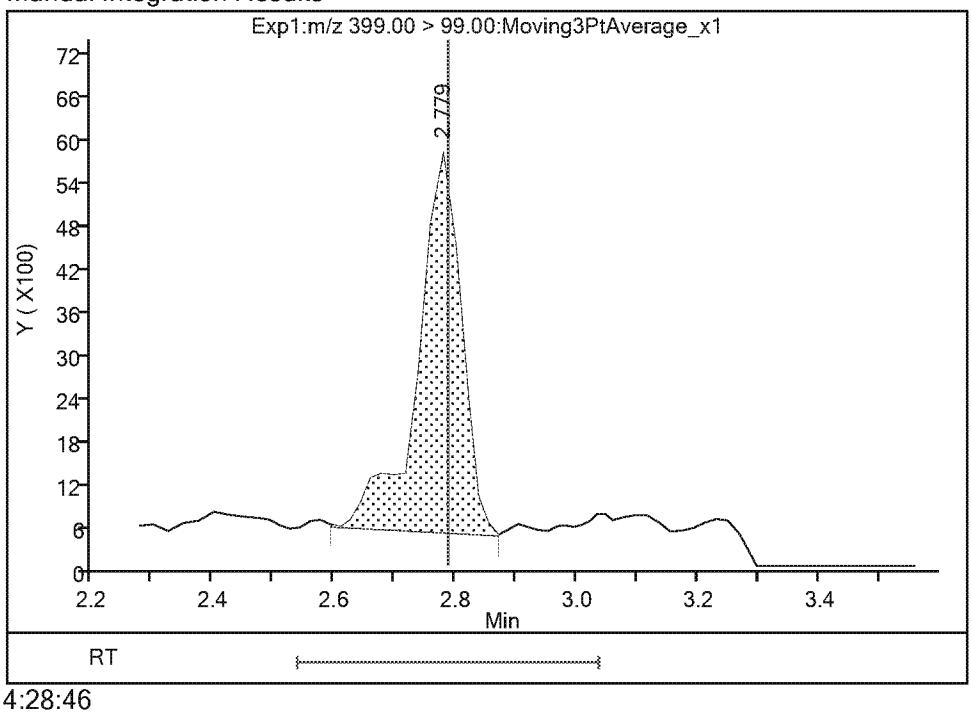
Processing Integration Results

RT: 2.78
Area: 50945
Amount: 0.049408
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 26292
Amount: 0.043059
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 14:28:46
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

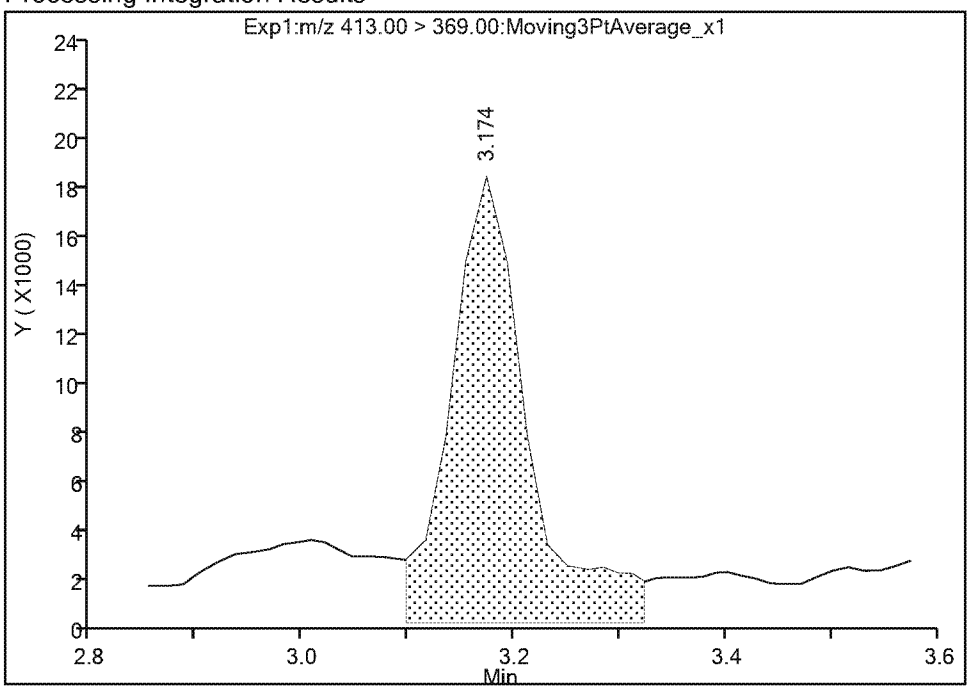
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_004.d				
Injection Date:	05-Apr-2019 11:55:04	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	1
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

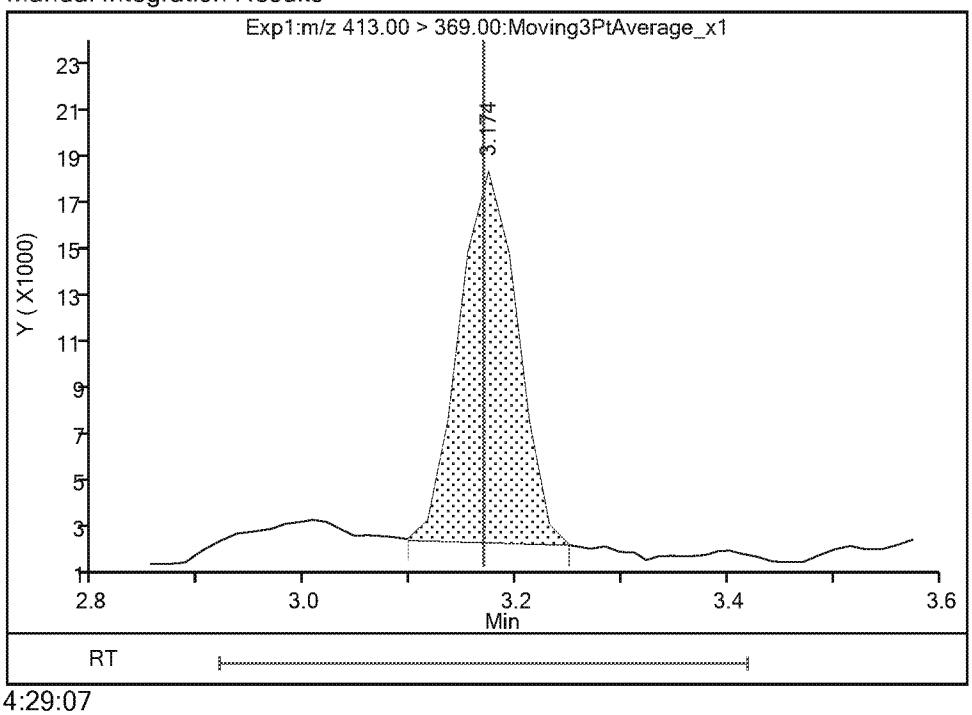
Processing Integration Results

RT: 3.17
Area: 89208
Amount: 0.071023
Amount Units: ng/ml



Manual Integration Results

RT: 3.17
Area: 58784
Amount: 0.046801
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 14:29:07
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

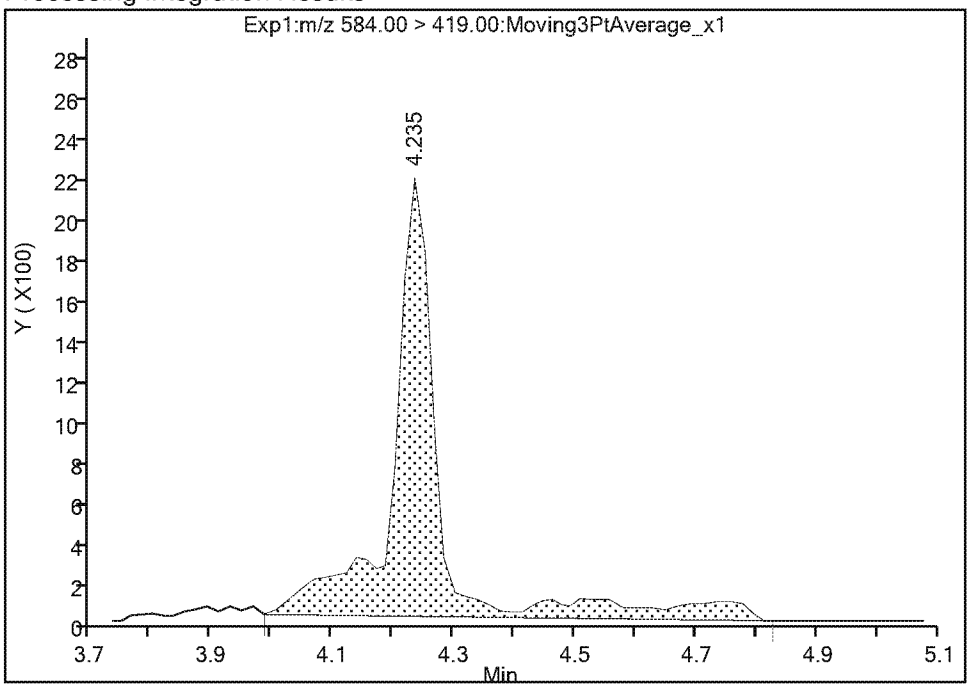
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_004.d				
Injection Date:	05-Apr-2019 11:55:04	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	1
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

16 N-ethylperfluorooctanesulfonamidoacetic acid, CAS: 2991-50-6

Signal: 1

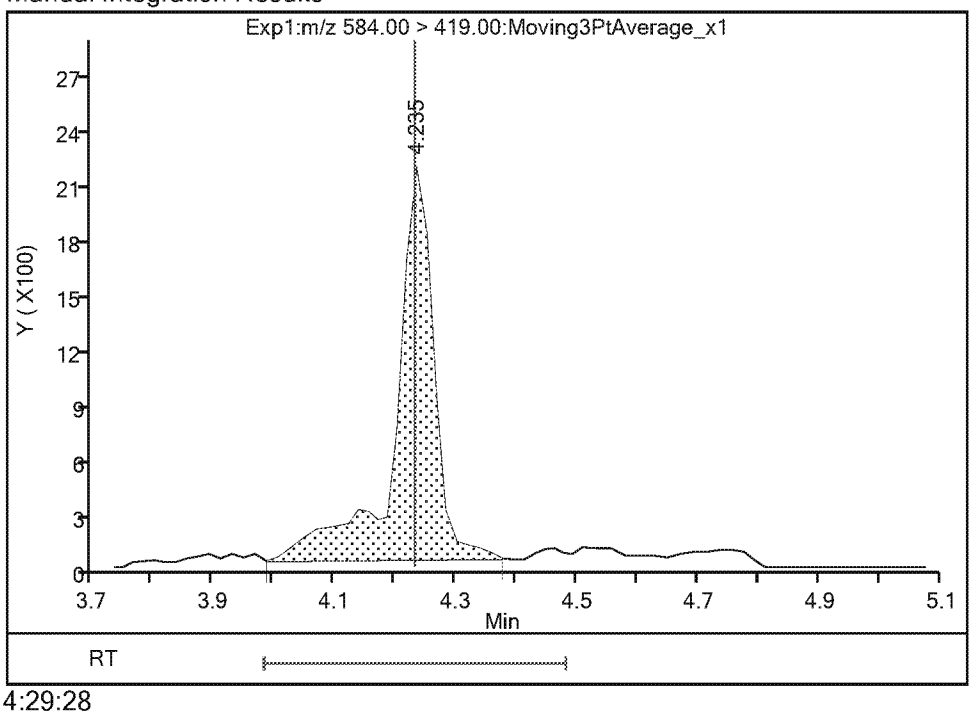
Processing Integration Results

RT: 4.23
Area: 11448
Amount: 0.064860
Amount Units: ng/ml



Manual Integration Results

RT: 4.23
Area: 9515
Amount: 0.053908
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 14:29:28
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab Sample ID: CCV 320-286320/2 Calibration Date: 04/05/2019 12:04

Instrument ID: A8_N Calib Start Date: 04/04/2019 15:14

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

Lab File ID: 2019.04.05_537.1A_005.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid	Ave	1.181	1.256		0.940	0.884	6.3	30.0
Perfluorohexanoic acid	Ave	1.113	1.072		0.963	1.00	-3.7	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2911		1.08	1.00	7.6	30.0
Perfluoroheptanoic acid	Ave	1.060	1.071		1.01	1.00	1.1	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.474		0.936	0.910	2.9	30.0
DONA	Ave	2.887	3.010		0.982	0.942	4.3	30.0
Perfluorooctanoic acid	Ave	1.014	1.049		1.03	1.00	3.4	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.064		0.935	0.928	0.8	30.0
Perfluorononanoic acid	Ave	0.7390	0.7581		1.03	1.00	2.6	30.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	Ave	1.700	1.849		1.01	0.932	8.8	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6144		1.05	1.00	5.0	30.0
N-methylperfluorooctanesulfonamidoacetic acid	Ave	0.9362	0.8781		0.938	1.00	-6.2	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4502		1.01	1.00	1.3	30.0
N-ethylperfluorooctanesulfonamidoacetic acid	Ave	0.9078	0.8298		0.914	1.00	-8.6	30.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	Ave	2.131	2.287		1.01	0.942	7.4	30.0
Perfluorododecanoic acid	Ave	0.4456	0.4381		0.983	1.00	-1.7	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3406		0.987	1.00	-1.3	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0891		1.00	1.00	0.4	30.0
13C2 PFHxA	Ave	1.166	1.116		2.39	2.50	-4.2	30.0
13C3 HFPO-DA	Ave	0.0524	0.0639		3.05	2.50	22.1	30.0
13C2 PFDA	Ave	0.6210	0.6356		2.56	2.50	2.4	30.0
d5-NEtFOSAA	Ave	1.022	1.012		2.48	2.50	-1.0	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_005.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 05-Apr-2019 12:04:30 ALS Bottle#: 4 Worklist Smp#: 2
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L4
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 14:38:25 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 14:20:19
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.976	1.976	0.0	1.000	1308973	0.9399	Target=1.41	6594	
298.90 > 99.00	1.976	1.976	0.0	1.000	867315		1.51(0.00-0.00)	383	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.743	1270787	0.9633	Target=10.46	326	
313.00 > 119.00	2.347	2.347	0.0	0.743	117357		10.83(0.00-0.00)	149	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3308124	2.39		5398	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.474	0.0	1.000	345133	1.08		182	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.474	0.0	1.000	189469	3.05		1368	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.757	2.757	0.0	1.000	1269955	1.01	Target=2.41	138	
363.00 > 169.00	2.757	2.757	0.0	1.000	527243		2.41(0.00-0.00)	1353	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.778	2.778	0.0	1.000	1581437	0.9360	Target=2.91	1697	
399.00 > 99.00	2.778	2.778	0.0	1.000	547647		2.89(0.00-0.00)	222	
24 DONA									
377.00 > 251.00	2.799	2.799	0.0	1.000	3361675	0.9824	Target=1.54	5156	
377.00 > 85.00	2.799	2.799	0.0	1.000	2004293		1.68(0.00-0.00)	213600	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.158	0.0		2963596	2.50		8330	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.158	3.158	0.0	1.000	1243140	1.03	Target=1.70	158	
413.00 > 169.00	3.158	3.158	0.0	1.000	700820		1.77(0.00-0.00)	917	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.534	0.0		2818015	2.39		7130	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	898717	1.03	Target=3.78	556	
463.00 > 169.00	3.549	3.549	0.0	1.000	230743		3.89(0.00-0.00)	1465	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.534	3.564	-0.030	1.000	1164753	0.9352	Target=4.63	1947	
499.00 > 99.00	3.534	3.564	-0.030	1.000	255620		4.56(0.00-0.00)	274	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.735	3.735	0.0	1.000	2031887	1.01		3367	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.894	3.894	0.0	1.000	728280	1.05	Target=4.93	350	
513.00 > 169.00	3.894	3.894	0.0	1.000	139016		5.24(0.00-0.00)	518	
$ 10 13C2 PFDA									
515.00 > 470.00	3.914	3.914	0.0	1.000	1883747	2.56		6637	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.072	4.072	0.0		509126	2.50		2046	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.072	4.072	0.0	1.000	178832	0.9380		1994	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.217	4.217	0.0	1.000	533676	1.01	Target=4.73	252	
563.00 > 169.00	4.217	4.217	0.0	1.000	116885		4.57(0.00-0.00)	1299	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.217	4.217	0.0	1.035	515150	2.48		323	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.233	4.233	0.0	1.004	168990	0.9140		929	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.351	4.351	0.0	1.000	2540454	1.01		13063	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.491	4.491	0.0	1.000	519382	0.9833	Target=3.49	367	
613.00 > 169.00	4.491	4.491	0.0	1.000	145159		3.58(0.00-0.00)	1910	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.756	4.756	0.0	1.000	403766	0.9868	Target=2.87	152	
663.00 > 169.00	4.756	4.756	0.0	1.000	137783		2.93(0.00-0.00)	1624	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.972	4.972	0.0	1.000	105637	1.00	Target=1.40	1638	
713.00 > 219.00	4.972	4.972	0.0	1.000	77948		1.36(0.00-0.00)	786	

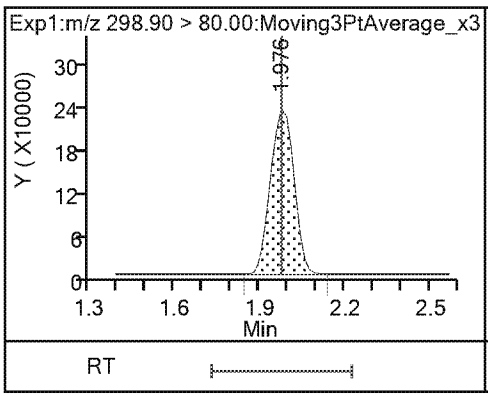
Reagents:

LC537_NC_L4_00003 Amount Added: 1.00 Units: mL

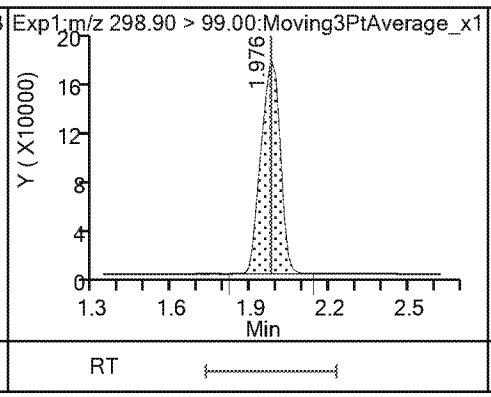
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_005.d
Injection Date: 05-Apr-2019 12:04:30 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 4 Worklist Smp#: 2
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

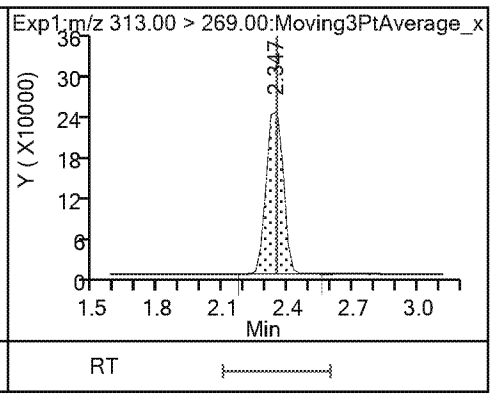
1 Perfluorobutanesulfonic acid



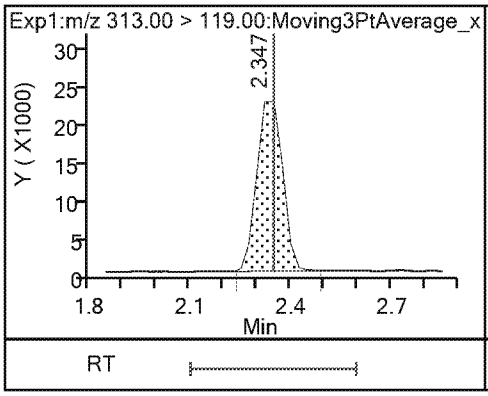
1 Perfluorobutanesulfonic acid



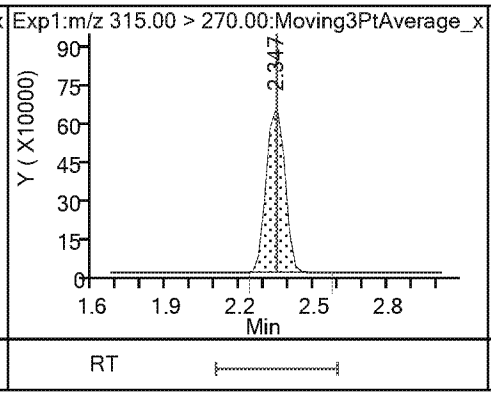
13 Perfluorohexanoic acid



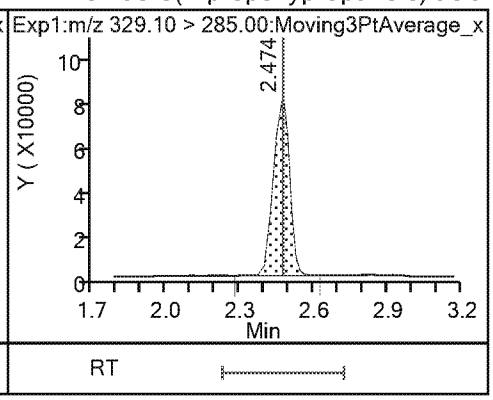
13 Perfluorohexanoic acid



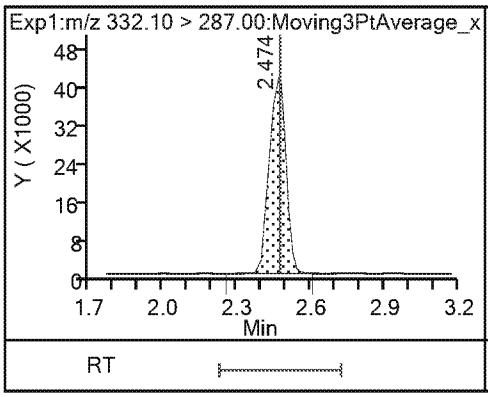
$ 2 13C2 PFHxA



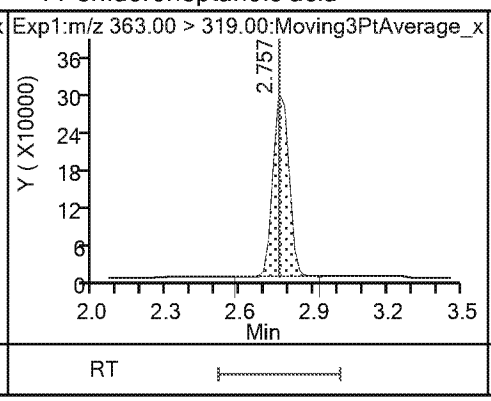
22 Perfluoro(2-propoxypropanoic) acid



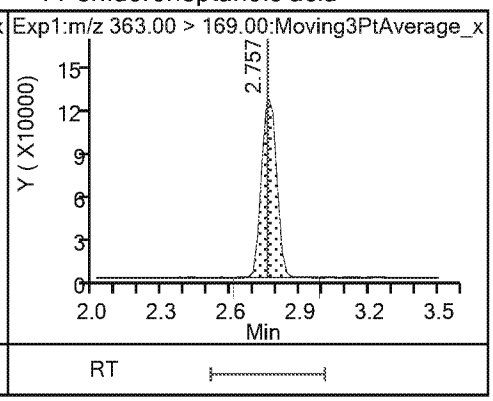
$ 25 13C3 HFPO-DA



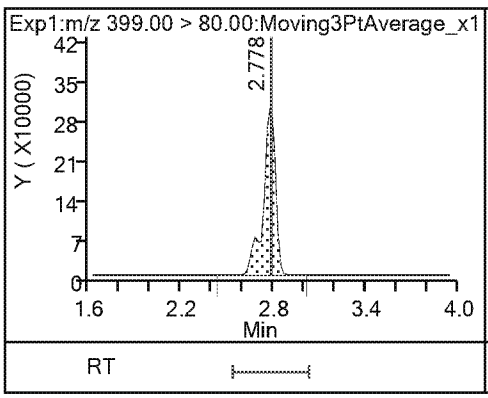
4 Perfluoroheptanoic acid



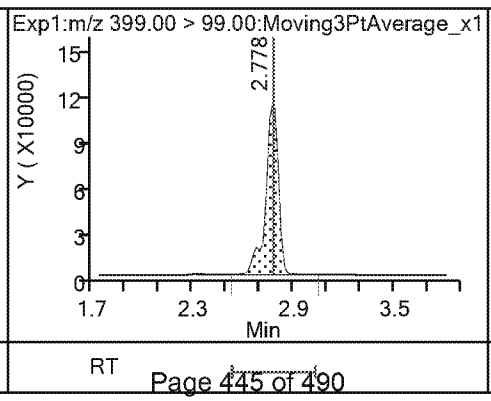
4 Perfluoroheptanoic acid



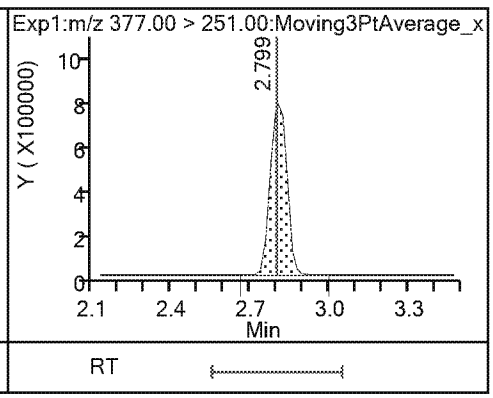
3 Perfluorohexanesulfonic acid



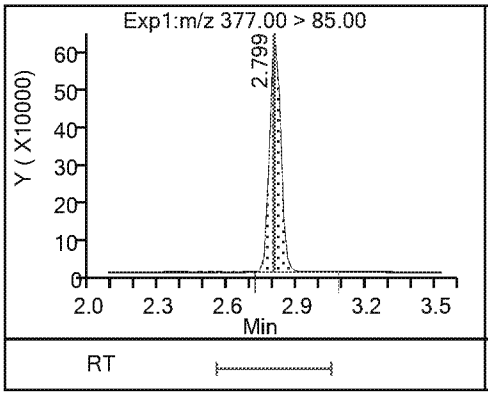
3 Perfluorohexanesulfonic acid



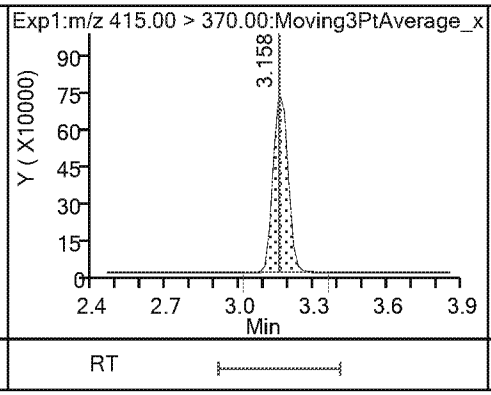
24 DONA



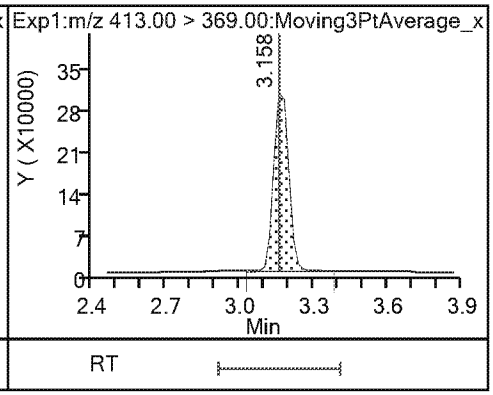
24 DONA



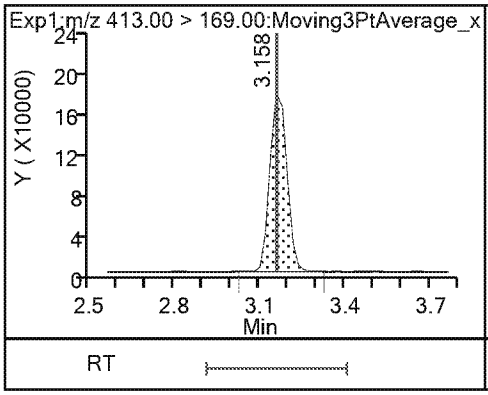
* 5 13C2 PFOA



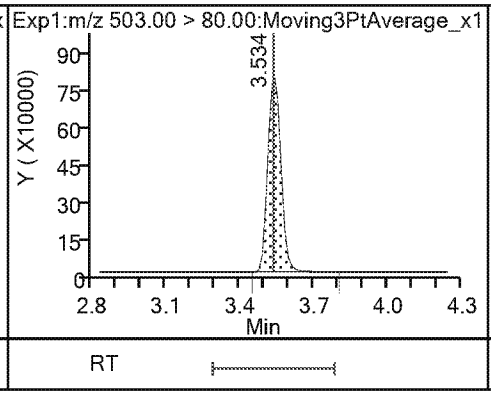
6 Perfluorooctanoic acid



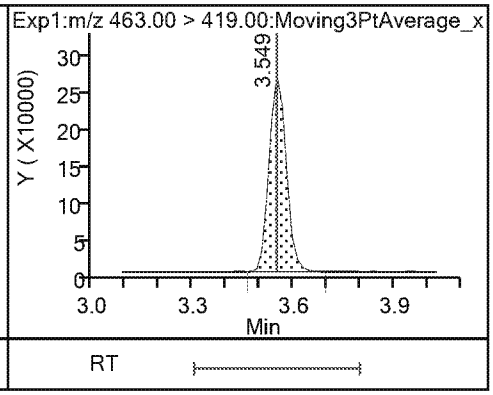
6 Perfluorooctanoic acid



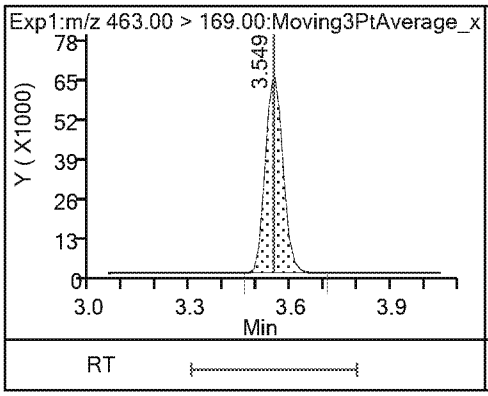
* 7 13C4 PFOS



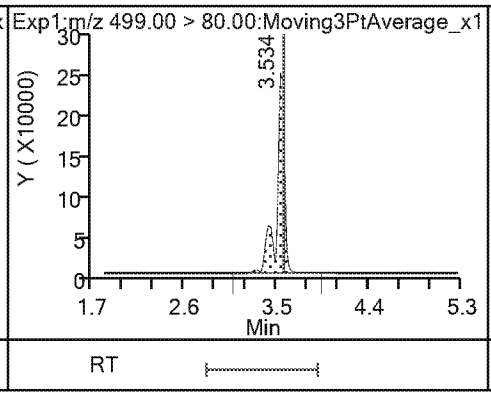
9 Perfluorononanoic acid



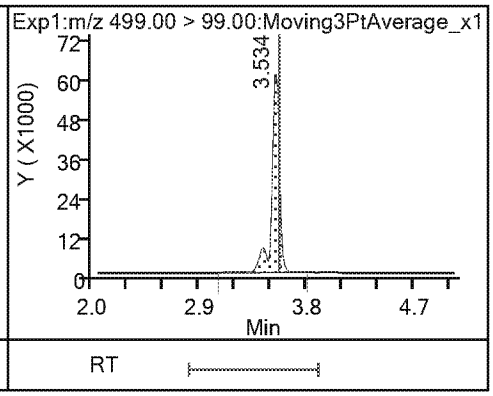
9 Perfluorononanoic acid



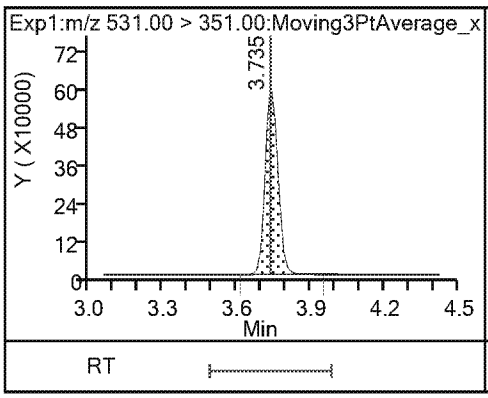
8 Perfluorooctanesulfonic acid



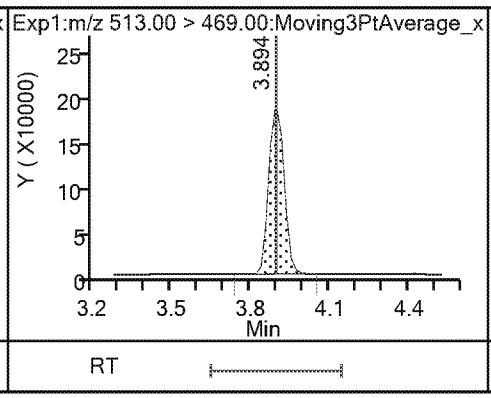
8 Perfluorooctanesulfonic acid



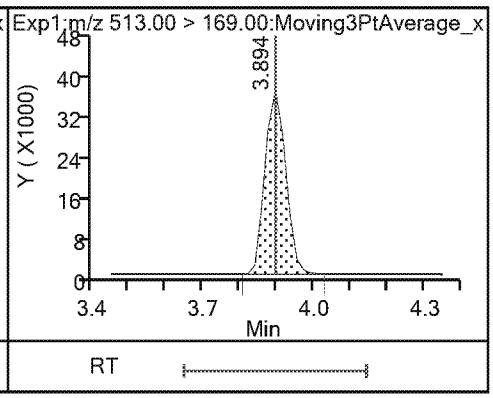
23 9-Chlorohexadecafluoro-3-oxanonane



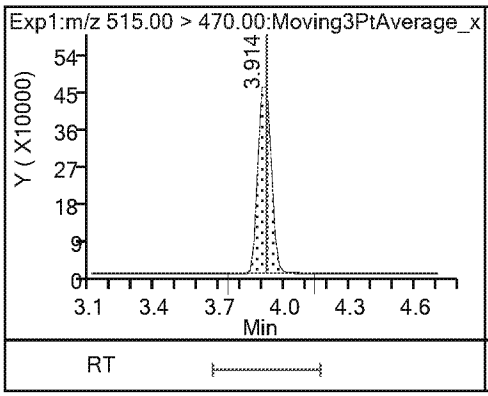
14 Perfluorodecanoic acid



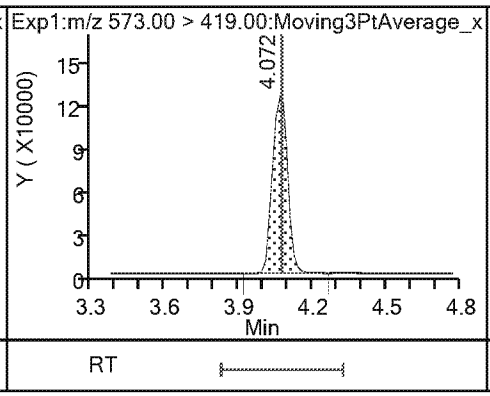
14 Perfluorodecanoic acid



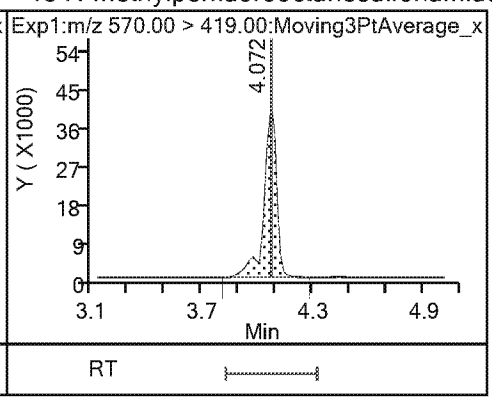
$ 10 13C2 PFDA



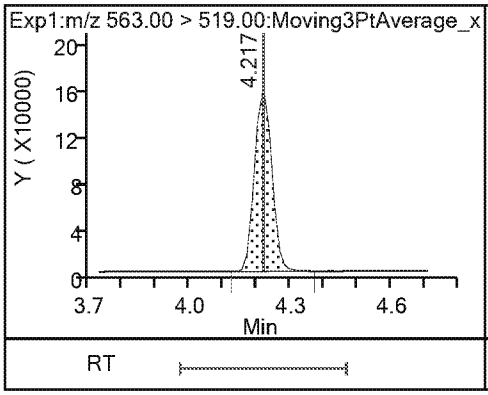
* 12 d3-NMeFOSAA



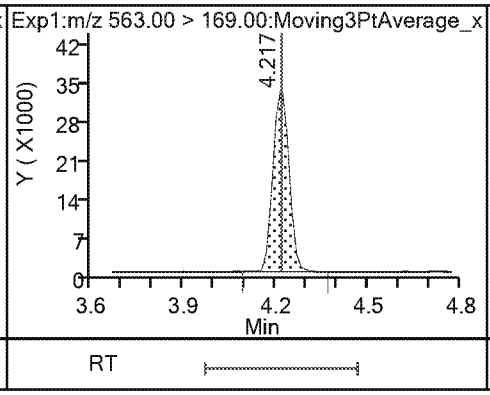
15 N-methylperfluorooctanesulfonamido



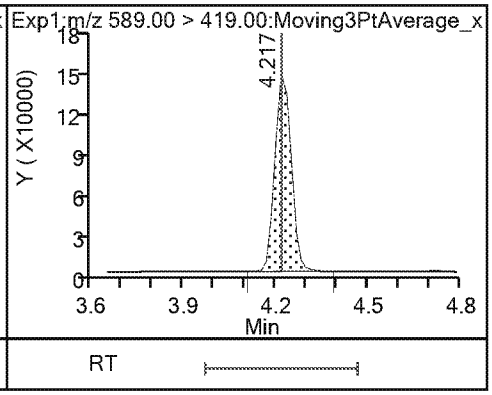
17 Perfluoroundecanoic acid



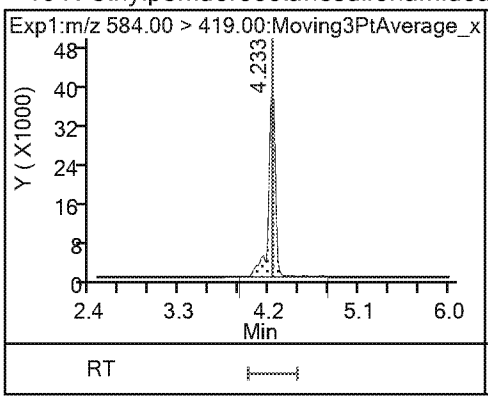
17 Perfluoroundecanoic acid



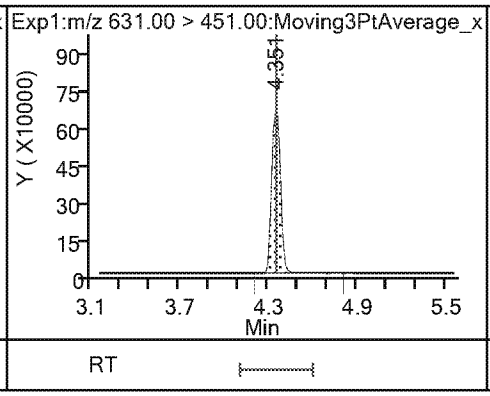
$ 11 d5-NEtFOSAA



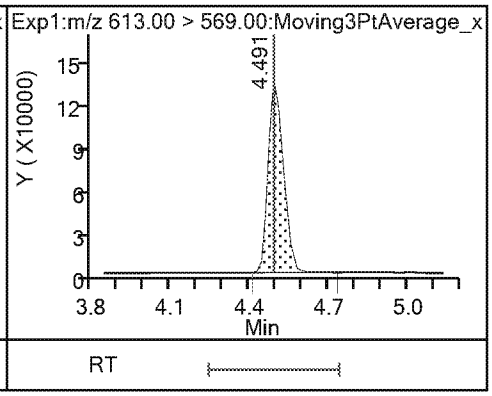
16 N-ethylperfluorooctanesulfonamidoa



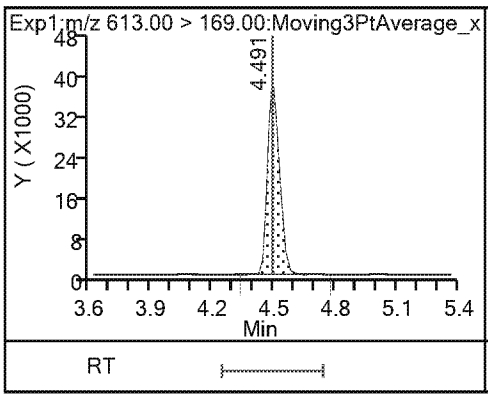
21 11-Chloroeicosafluoro-3-oxaundecan



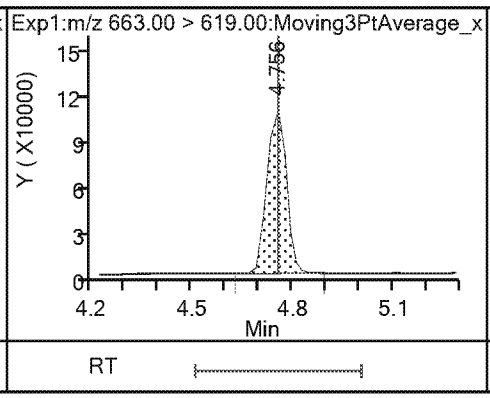
18 Perfluorododecanoic acid



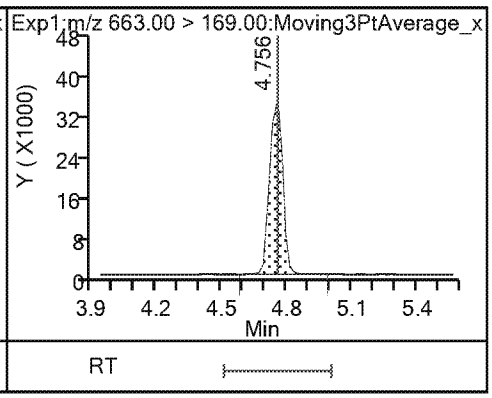
18 Perfluorododecanoic acid



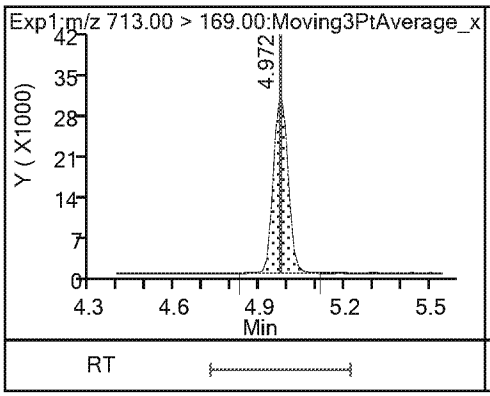
19 Perfluorotridecanoic acid



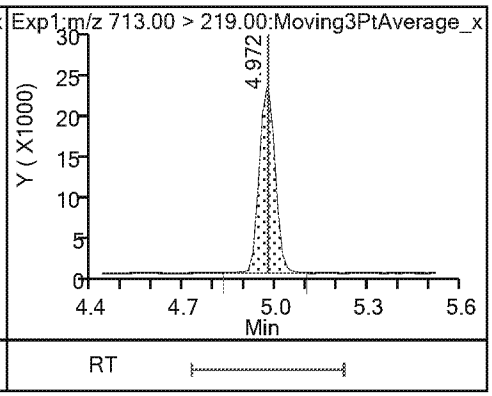
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Lab Sample ID: CCV 320-286320/7 Calibration Date: 04/05/2019 12:51

Instrument ID: A8_N Calib Start Date: 04/04/2019 15:14

GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

Lab File ID: 2019.04.05_537.1A_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanesulfonic acid	Ave	1.181	1.320		4.94	4.42	11.7	30.0
Perfluorohexanoic acid	Ave	1.113	1.110		4.99	5.00	-0.3	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2695		4.98	5.00	-0.4	30.0
Perfluoroheptanoic acid	Ave	1.060	1.079		5.09	5.00	1.8	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.553		4.93	4.55	8.4	30.0
DONA	Ave	2.887	2.840		4.63	4.71	-1.6	30.0
Perfluorooctanoic acid	Ave	1.014	1.024		5.05	5.00	0.9	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.110		4.87	4.64	5.1	30.0
Perfluorononanoic acid	Ave	0.7390	0.7374		4.99	5.00	-0.2	30.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	Ave	1.700	1.855		5.08	4.66	9.1	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6364		5.44	5.00	8.8	30.0
N-methylperfluorooctanesulfo namidoacetic acid	Ave	0.9362	0.9744		5.20	5.00	4.1	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4739		5.33	5.00	6.6	30.0
N-ethylperfluorooctanesulfon amidoacetic acid	Ave	0.9078	0.9311		5.13	5.00	2.6	30.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	Ave	2.131	2.288		5.06	4.71	7.4	30.0
Perfluorododecanoic acid	Ave	0.4456	0.4599		5.16	5.00	3.2	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3336		4.83	5.00	-3.4	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0878		4.95	5.00	-1.1	30.0
13C2 PFHxA	Ave	1.166	1.131		2.43	2.50	-2.9	30.0
13C3 HFPO-DA	Ave	0.0524	0.0628		3.00	2.50	19.9	30.0
13C2 PFDA	Ave	0.6210	0.6451		2.60	2.50	3.9	30.0
d5-NEtFOSAA	Ave	1.022	1.121		2.74	2.50	9.6	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_010.d
Lims ID: CCV L6
Client ID:
Sample Type: CCVIS
Inject. Date: 05-Apr-2019 12:51:52 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: CCV L6
Misc. Info.: Plate: 1 Rack: 1
Operator ID: SACINSTLCMS01 Instrument ID: A8_N
Sublist: chrom-537_A8_N*sub13

Method: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 14:38:31 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 14:31:23
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.976	1.976	0.0	1.000	6584249	4.94	Target=1.41	29681	
298.90 > 99.00	1.976	1.976	0.0	1.000	4420341		1.49(0.00-0.00)	1820	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.741	6534705	4.99	Target=10.46	1473	
313.00 > 119.00	2.322	2.347	-0.025	0.733	584892		11.17(0.00-0.00)	741	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3330962	2.43		5619	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.473	2.473	0.0	1.000	1586875	4.98		785	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	184877	3.00		1005	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.766	2.766	0.0	1.000	6353275	5.09	Target=2.41	722	
363.00 > 169.00	2.766	2.766	0.0	1.000	2640191		2.41(0.00-0.00)	5099	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.786	2.786	0.0	1.000	7976011	4.93	Target=2.91	3443	
399.00 > 99.00	2.766	2.786	-0.020	0.993	2720265		2.93(0.00-0.00)	906	
24 DONA									
377.00 > 251.00	2.807	2.807	0.0	1.000	15756076	4.63	Target=1.54	12337	
377.00 > 85.00	2.807	2.807	0.0	1.000	10175056		1.55(0.00-0.00)	1100252	
* 5 13C2 PFOA									
415.00 > 370.00	3.169	3.169	0.0		2944377	2.50		8591	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.169	3.169	0.0	1.000	6027828	5.05	Target=1.70	735	
413.00 > 169.00	3.169	3.169	0.0	1.000	3432524		1.76(0.00-0.00)	3090	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.544	3.544	0.0		2697291	2.39		8925	
9 Perfluorononanoic acid									
463.00 > 419.00	3.558	3.558	0.0	1.000	4342370	4.99	Target=3.78	2595	
463.00 > 169.00	3.558	3.558	0.0	1.000	1108862		3.92(0.00-0.00)	6728	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.544	3.564	-0.020	1.000	5810979	4.87	Target=4.63	2810	
499.00 > 99.00	3.544	3.564	-0.020	1.000	1228477		4.73(0.00-0.00)	995	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.747	3.747	0.0	1.000	9753280	5.08		14807	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.906	3.906	0.0	1.000	3747328	5.44	Target=4.93	1638	
513.00 > 169.00	3.906	3.906	0.0	1.000	717073		5.23(0.00-0.00)	2538	
$ 10 13C2 PFDA									
515.00 > 470.00	3.906	3.906	0.0	1.000	1899296	2.60		9900	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.087	4.087	0.0		456255	2.50		2418	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.087	4.087	0.0	1.000	889180	5.20		2385	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.216	4.216	0.0	1.000	2790843	5.33	Target=4.73	1229	
563.00 > 169.00	4.216	4.216	0.0	1.000	558612		5.00(0.00-0.00)	3107	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.232	4.232	0.0	1.035	511275	2.74		328	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.232	4.232	0.0	1.000	849629	5.13		1613	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.350	4.350	0.0	1.000	12163397	5.06		16830	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.505	4.505	0.0	1.000	2708428	5.16	Target=3.49	1455	
613.00 > 169.00	4.490	4.505	-0.015	0.997	735574		3.68(0.00-0.00)	5590	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.755	4.755	0.0	1.000	1964432	4.83	Target=2.87	711	
663.00 > 169.00	4.755	4.755	0.0	1.000	675750		2.91(0.00-0.00)	3801	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.971	4.971	0.0	1.000	517185	4.95	Target=1.40	3048	
713.00 > 219.00	4.971	4.971	0.0	1.000	367101		1.41(0.00-0.00)	2677	

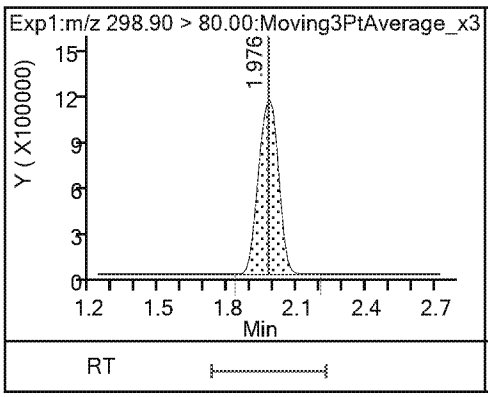
Reagents:

LC537_NC_L6_00003 Amount Added: 1.00 Units: mL

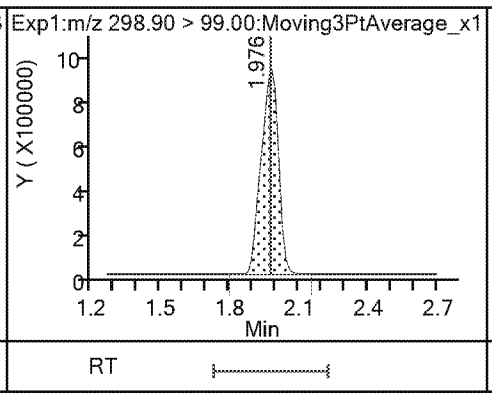
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190405-74345.b\2019.04.05_537.1A_010.d
Injection Date: 05-Apr-2019 12:51:52 Instrument ID: A8_N
Lims ID: CCV L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 7
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

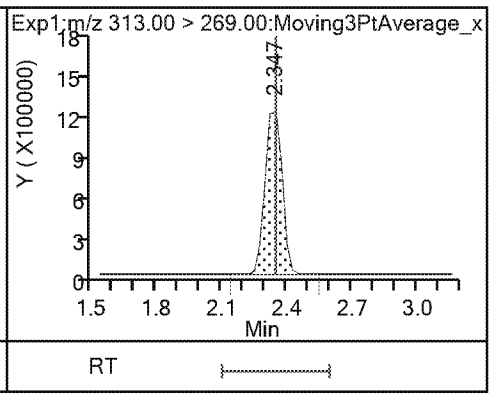
1 Perfluorobutanesulfonic acid



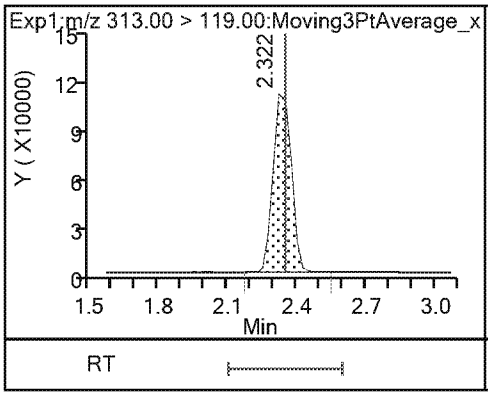
1 Perfluorobutanesulfonic acid



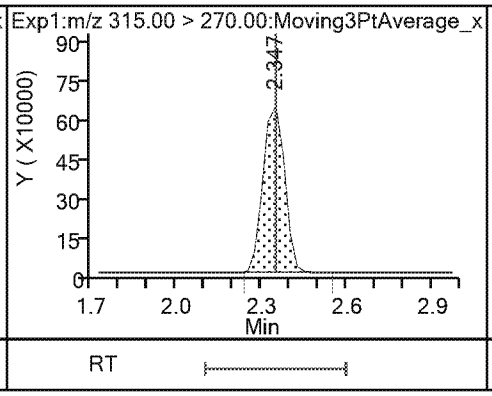
13 Perfluorohexanoic acid



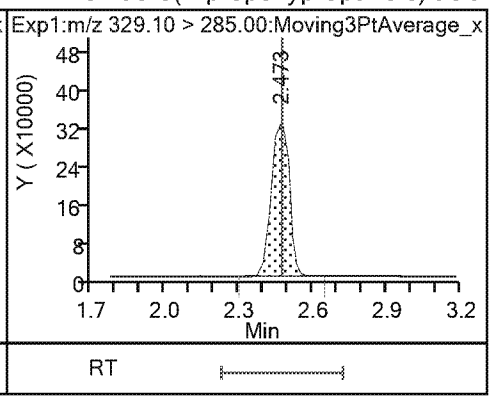
13 Perfluorohexanoic acid



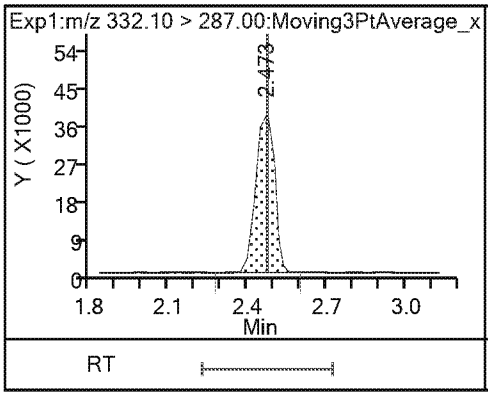
$ 2 13C2 PFHxA



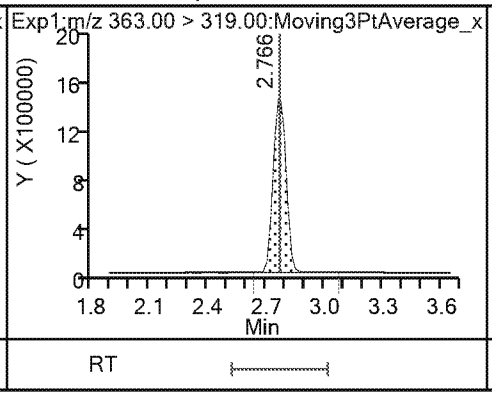
22 Perfluoro(2-propoxypropanoic) acid



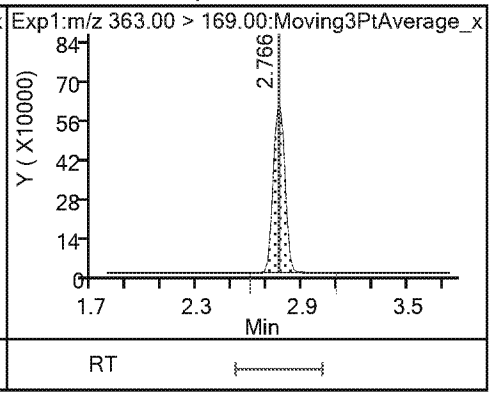
$ 25 13C3 HFPO-DA



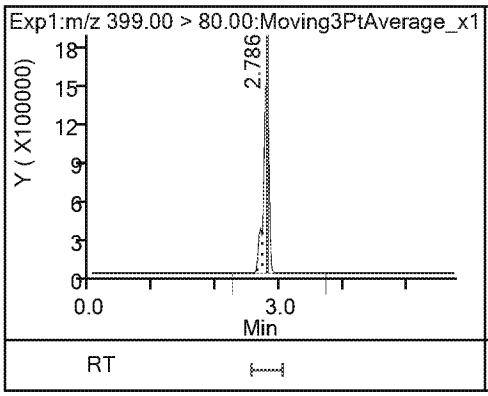
4 Perfluoroheptanoic acid



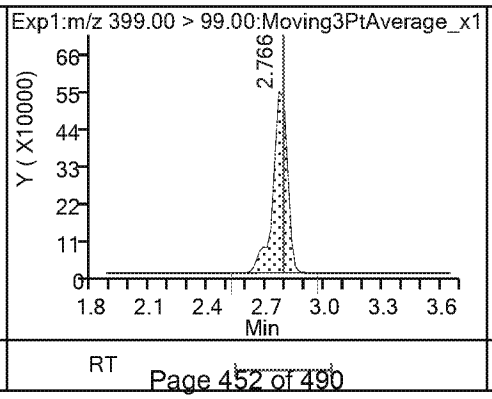
4 Perfluoroheptanoic acid



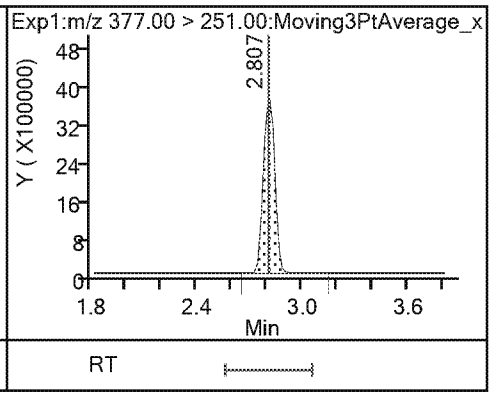
3 Perfluorohexanesulfonic acid



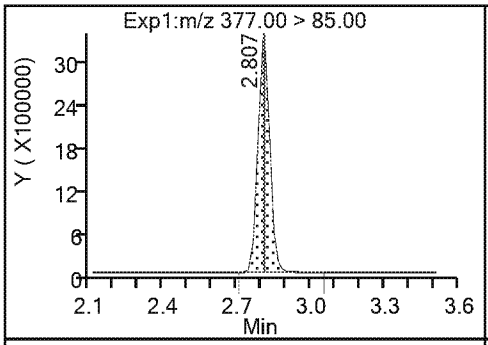
3 Perfluorohexanesulfonic acid



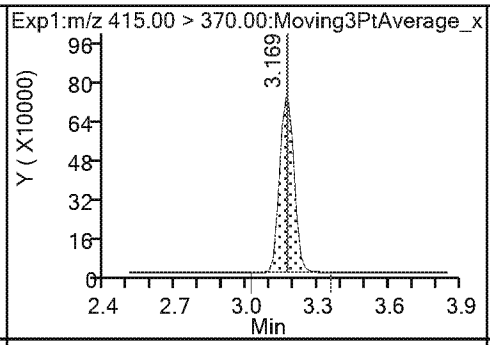
24 DONA



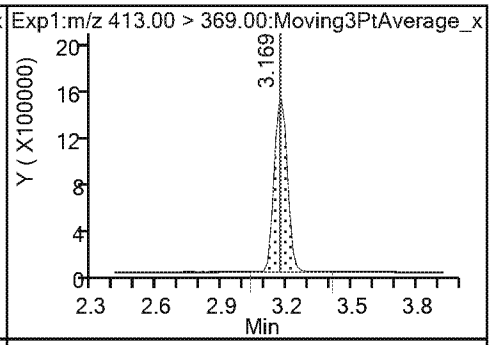
24 DONA



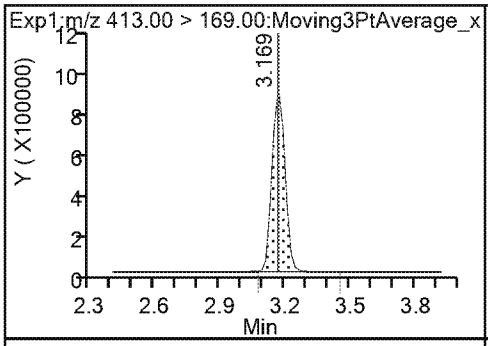
* 5 13C2 PFOA



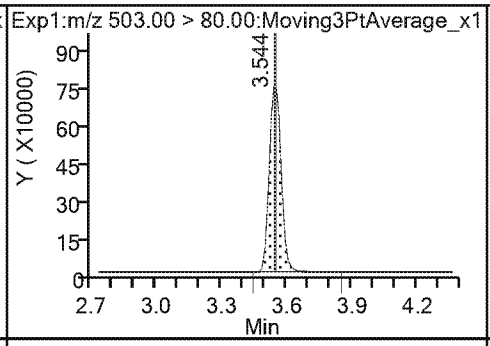
6 Perfluorooctanoic acid



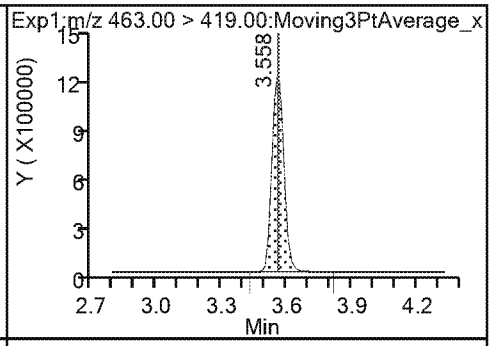
6 Perfluorooctanoic acid



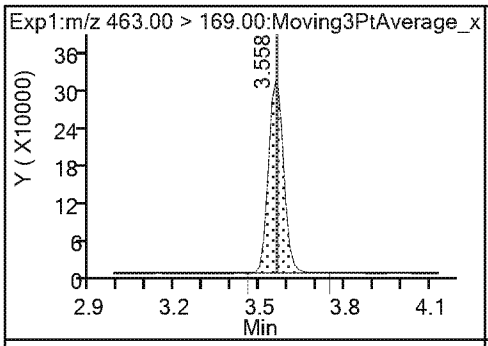
* 7 13C4 PFOS



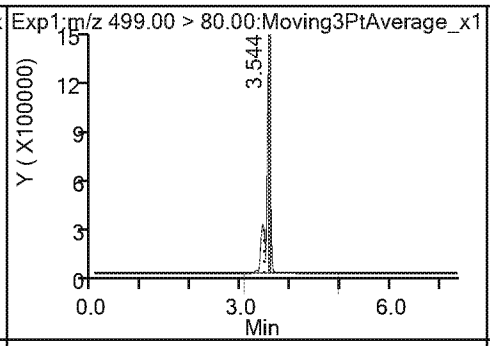
9 Perfluorononanoic acid



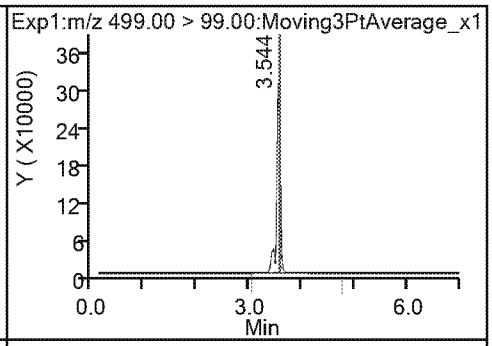
9 Perfluorononanoic acid



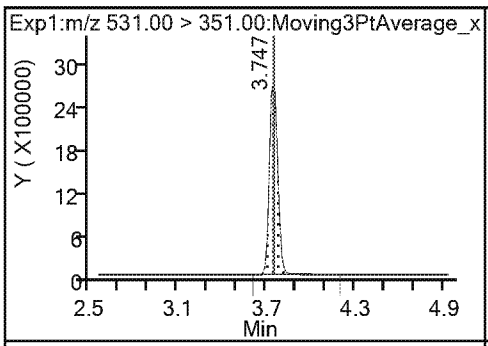
8 Perfluorooctanesulfonic acid



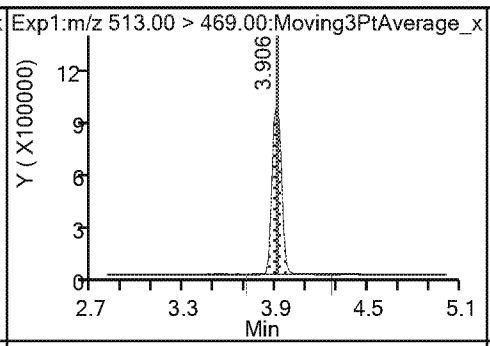
8 Perfluorooctanesulfonic acid



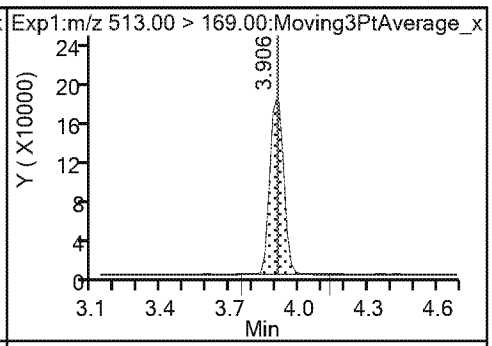
23 9-Chlorohexadecafluoro-3-oxanonane



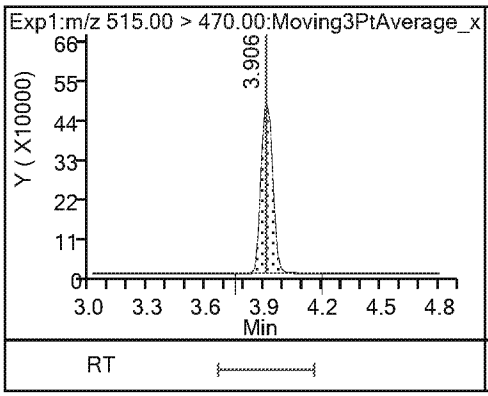
14 Perfluorodecanoic acid



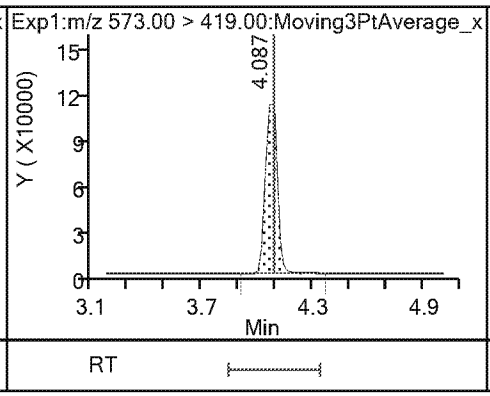
14 Perfluorodecanoic acid



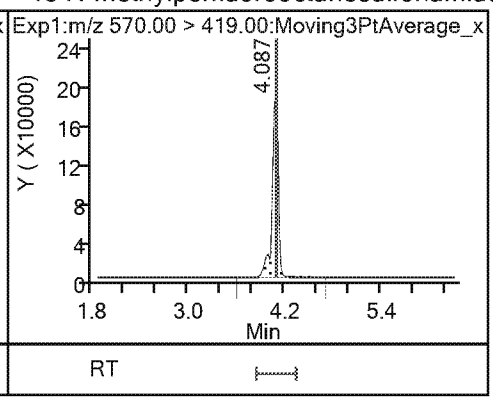
$ 10 13C2 PFDA



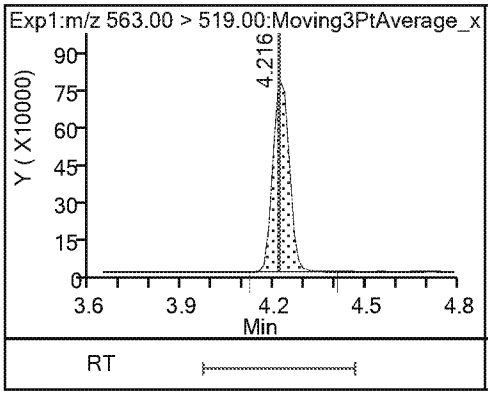
* 12 d3-NMeFOSAA



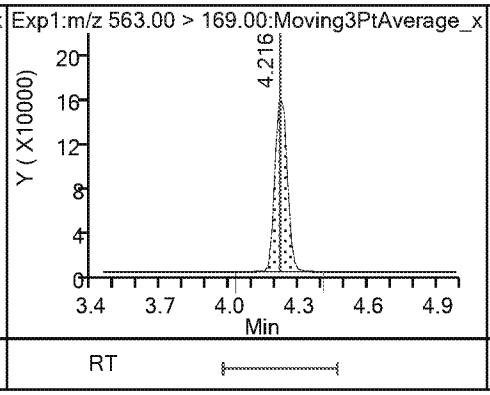
15 N-methylperfluorooctanesulfonamido



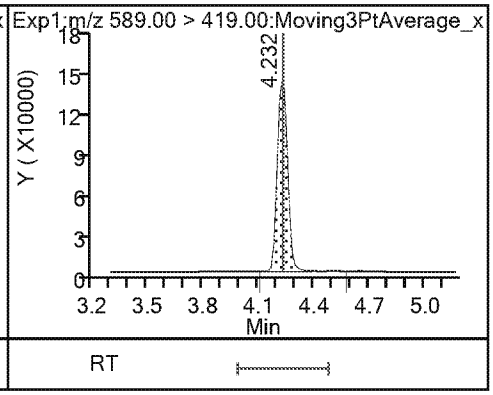
17 Perfluoroundecanoic acid



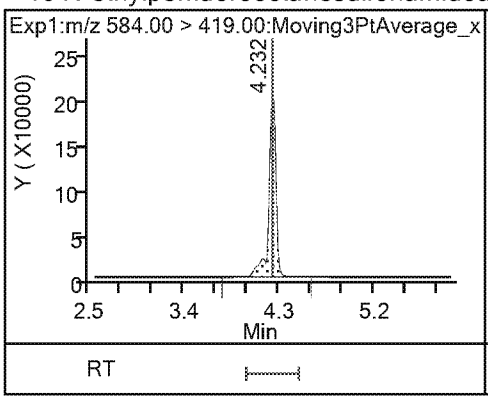
17 Perfluoroundecanoic acid



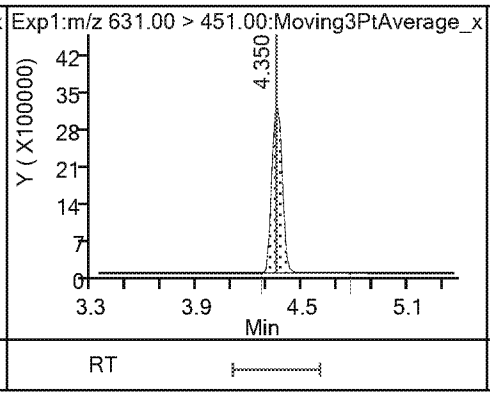
$ 11 d5-NEtFOSAA



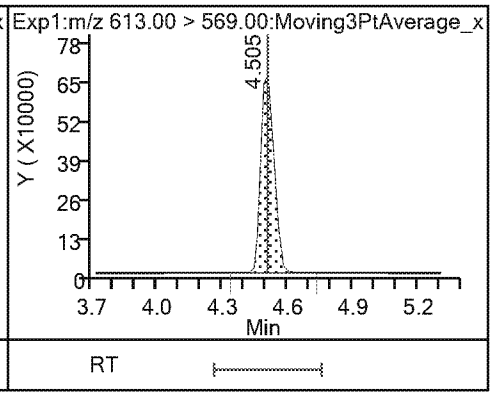
16 N-ethylperfluorooctanesulfonamidoa



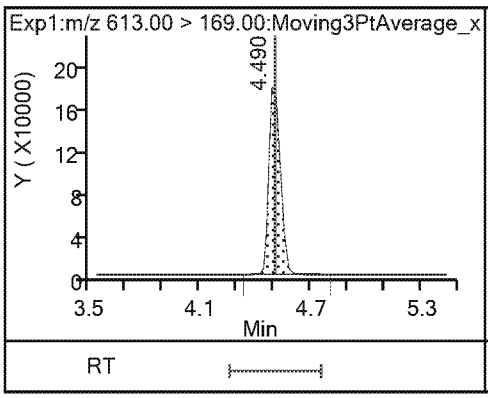
21 11-Chloroeicosafluoro-3-oxaundecan



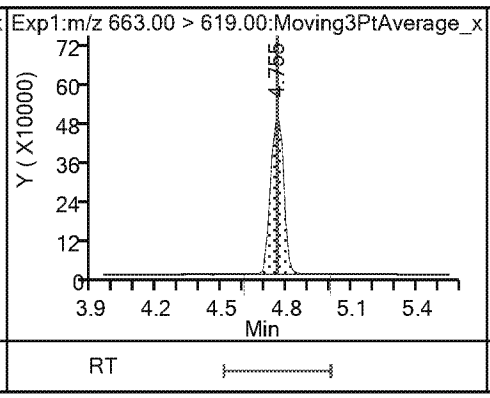
18 Perfluorododecanoic acid



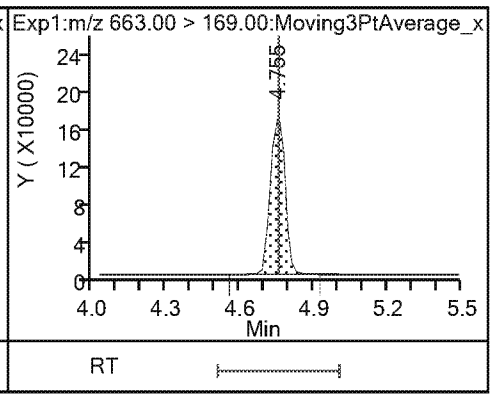
18 Perfluorododecanoic acid



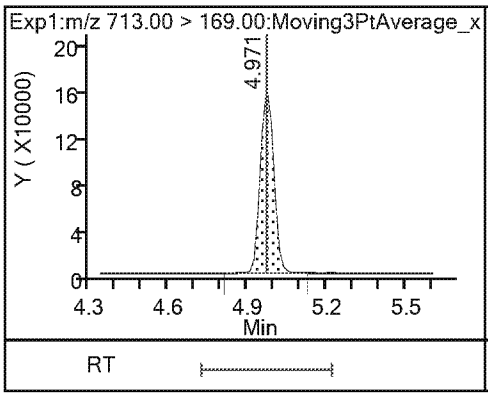
19 Perfluorotridecanoic acid



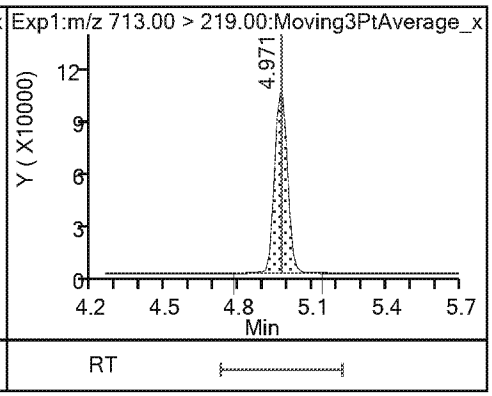
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-285793/1-A
Matrix: Water
Lab File ID: 2019.04.04_537AA_044.d
Analysis Method: 537 DW
Date Collected:
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 250(mL)
Date Analyzed: 04/05/2019 01:20
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	ND		2.0	0.95
335-67-1	Perfluorooctanoic acid	ND		6.0	2.7
375-95-1	Perfluorononanoic acid	ND		2.0	0.47
355-46-4	Perfluorohexanesulfonic acid	ND		2.0	0.64
375-85-9	Perfluoroheptanoic acid	ND		3.0	1.3
375-73-5	Perfluorobutanesulfonic acid	ND		2.0	0.80

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	102		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_044.d
Lims ID: MB 320-285793/1-A
Client ID:
Sample Type: MB
Inject. Date: 05-Apr-2019 01:20:02 ALS Bottle#: 29 Worklist Smp#: 40
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-285793/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

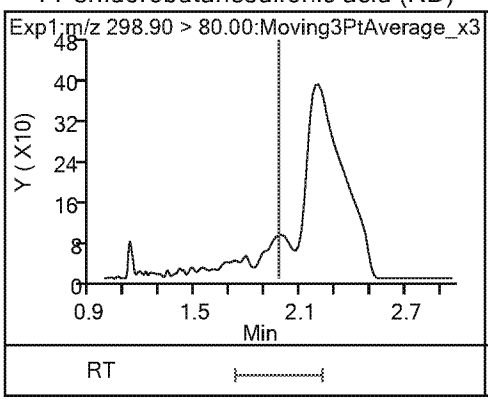
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 09:44:08
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3086696	2.25		6538	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	178077	2.89		935	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.177	-0.019		2941350	2.50		7407	
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.549	0.0		2985047	2.39		7193	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.911	0.0	1.000	1871406	2.56		8169	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.070	0.0		548975	2.50		5196	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.214	4.214	0.0	1.035	496087	2.21		294	

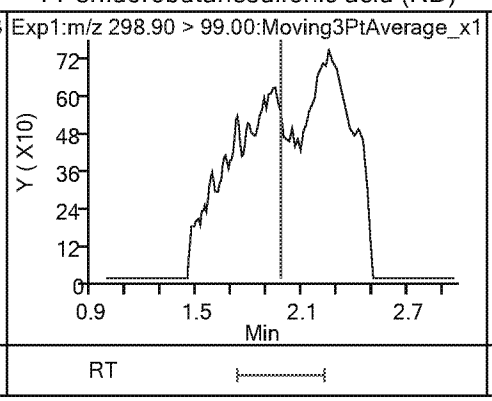
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_044.d
Injection Date: 05-Apr-2019 01:20:02 Instrument ID: A8_N
Lims ID: MB 320-285793/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 40
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

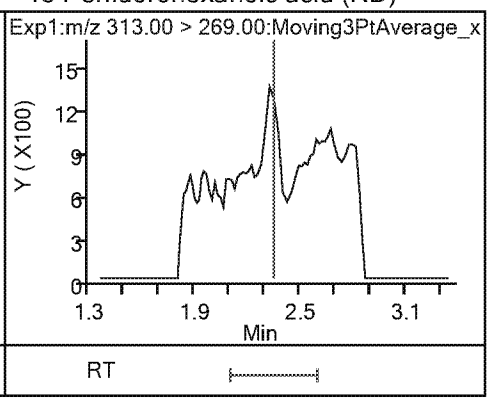
1 Perfluorobutanesulfonic acid (ND)



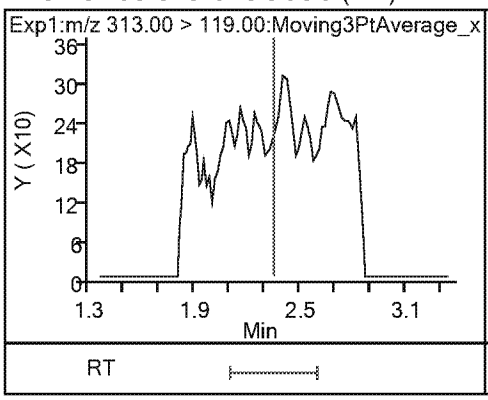
1 Perfluorobutanesulfonic acid (ND)



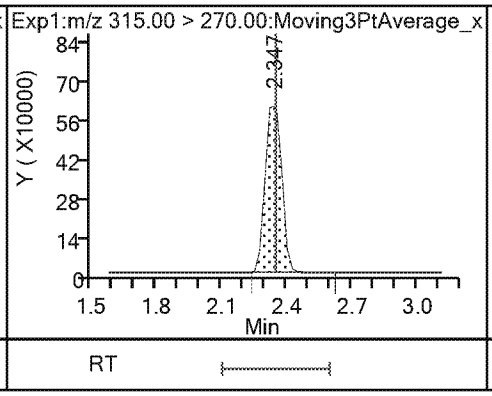
13 Perfluorohexanoic acid (ND)



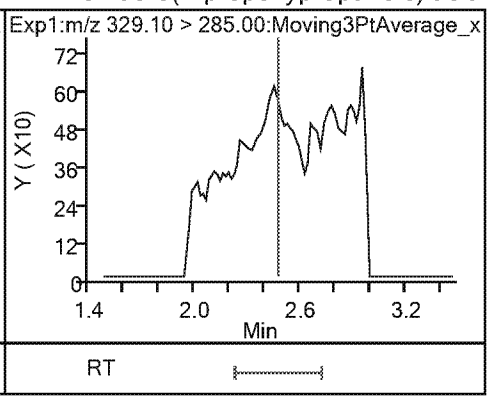
13 Perfluorohexanoic acid (ND)



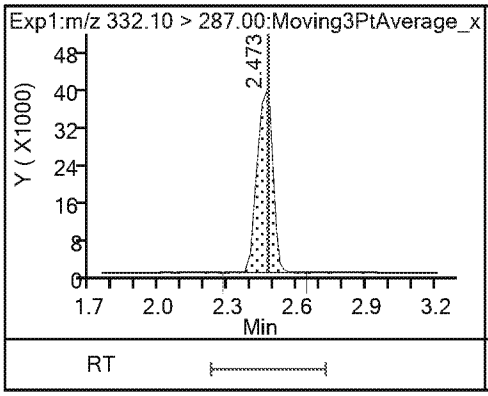
$ 2 13C2 PFHxA



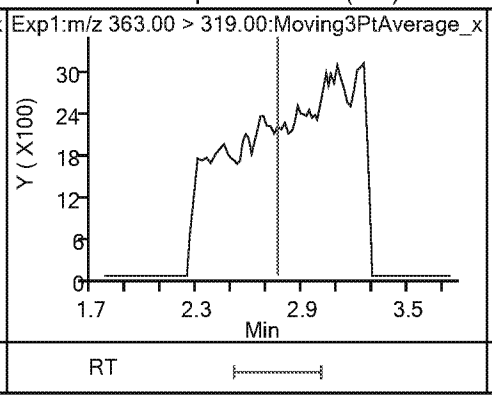
22 Perfluoro(2-propoxypropanoic) acid (ND)



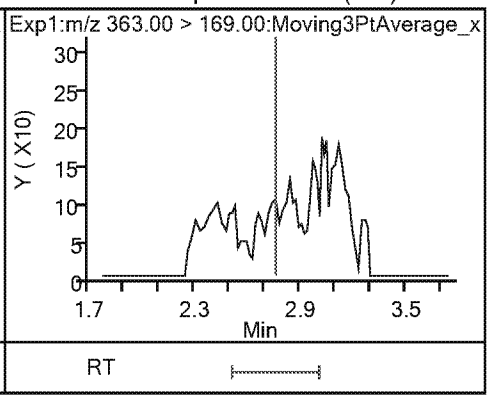
$ 25 13C3 HFPO-DA



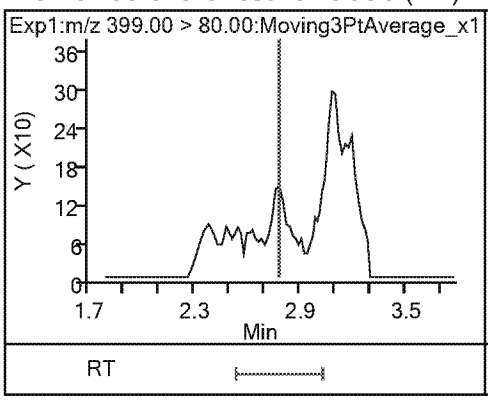
4 Perfluoroheptanoic acid (ND)



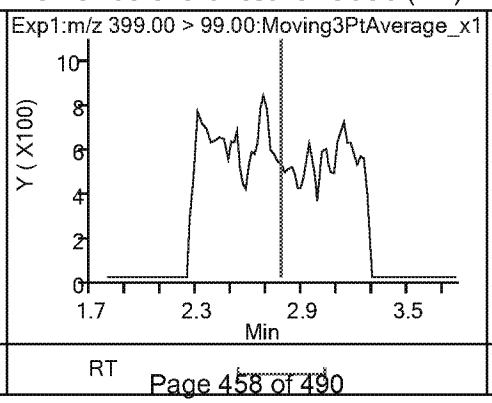
4 Perfluoroheptanoic acid (ND)



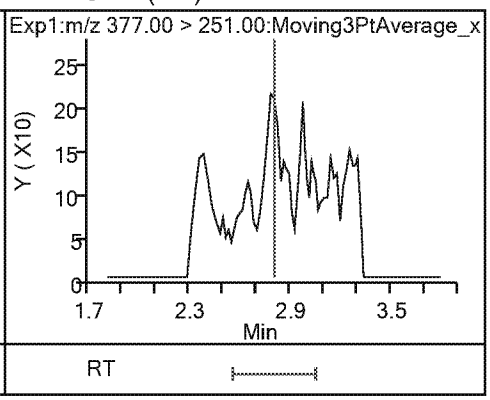
3 Perfluorohexanesulfonic acid (ND)



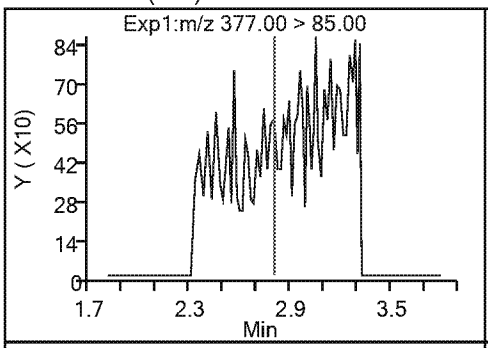
3 Perfluorohexanesulfonic acid (ND)



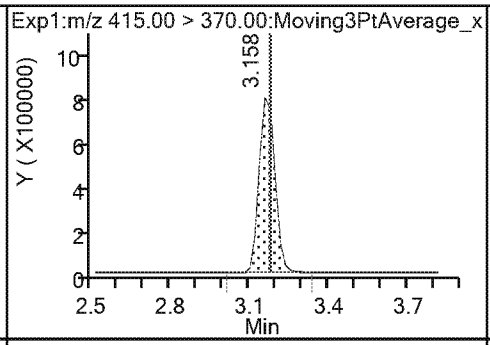
24 DONA (ND)



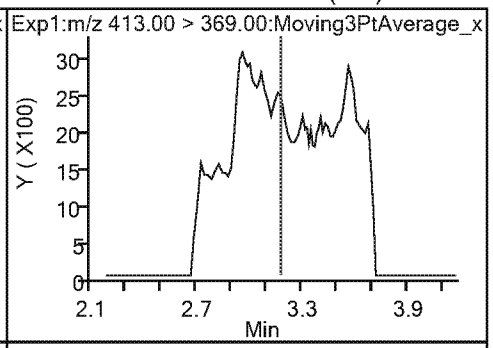
24 DONA (ND)



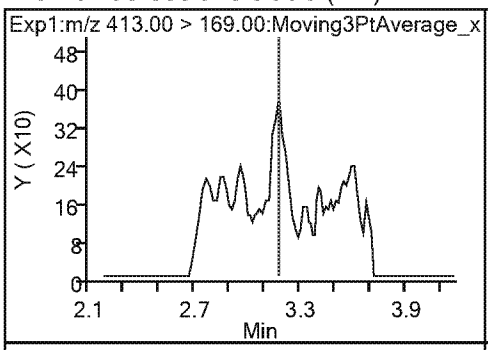
* 5 13C2 PFOA



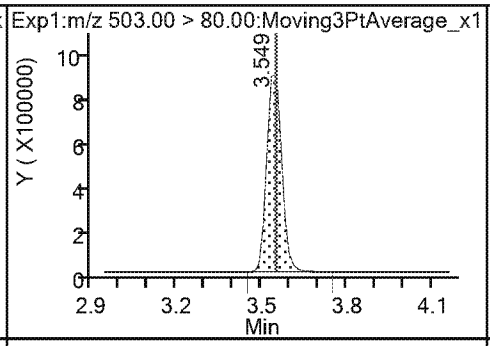
6 Perfluorooctanoic acid (ND)



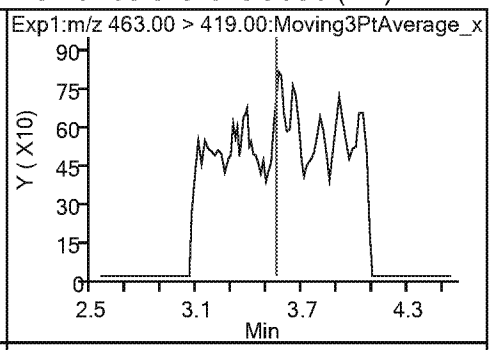
6 Perfluorooctanoic acid (ND)



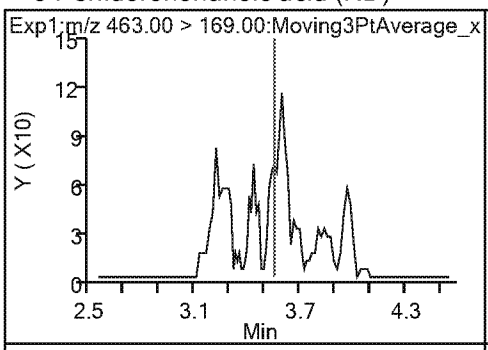
* 7 13C4 PFOS



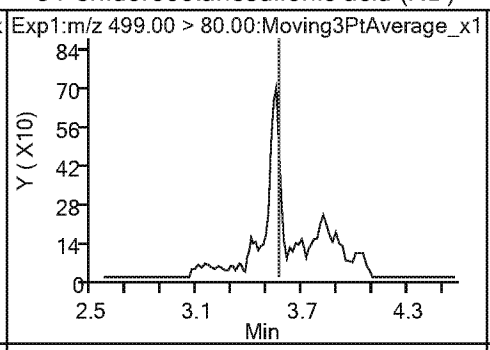
9 Perfluorononanoic acid (ND)



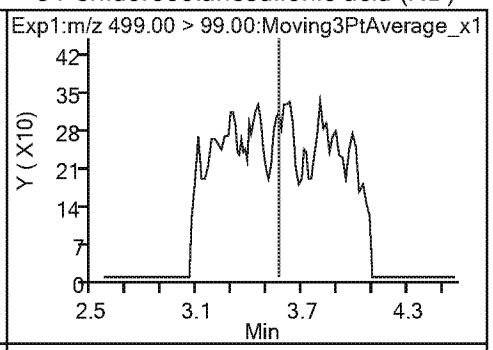
9 Perfluorononanoic acid (ND)



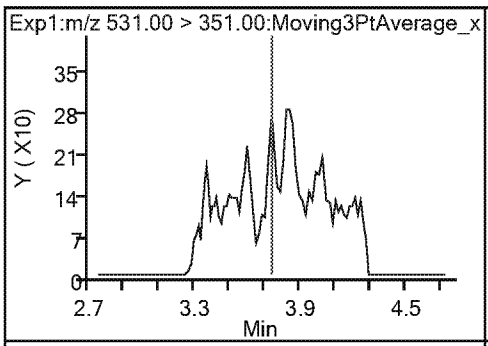
8 Perfluorooctanesulfonic acid (ND)



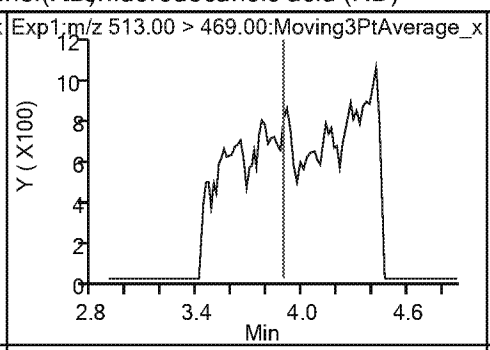
8 Perfluorooctanesulfonic acid (ND)



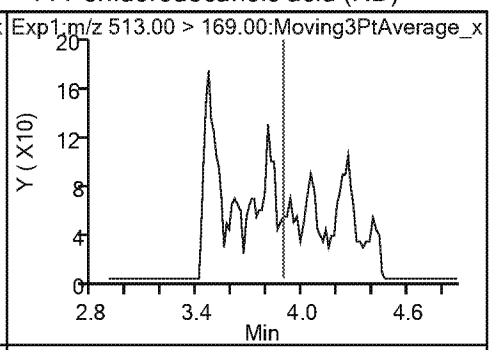
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



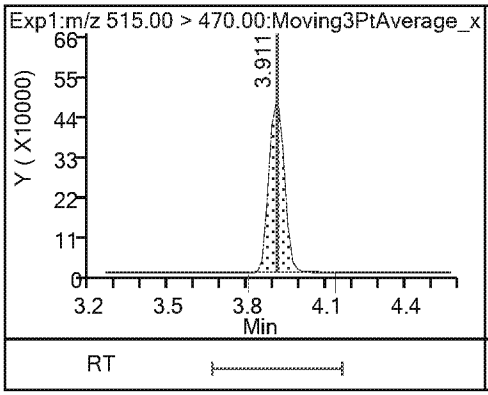
14 Perfluorodecanoic acid (ND)



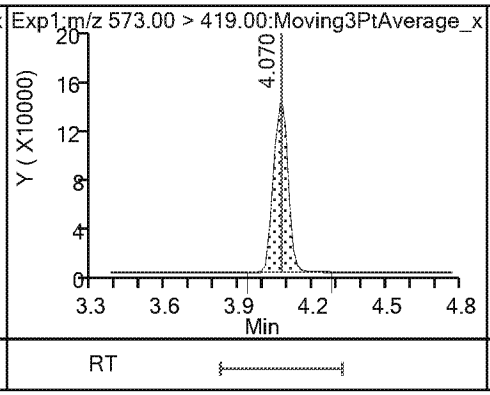
14 Perfluorodecanoic acid (ND)



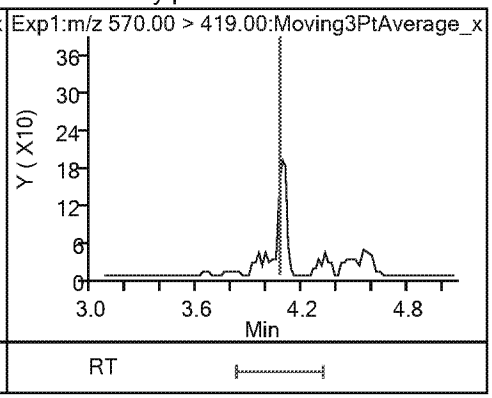
$ 10 13C2 PFDA



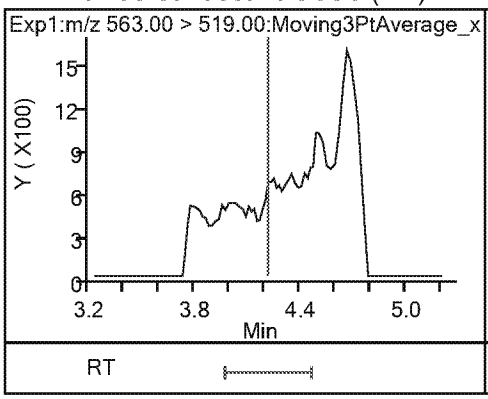
* 12 d3-NMeFOSAA



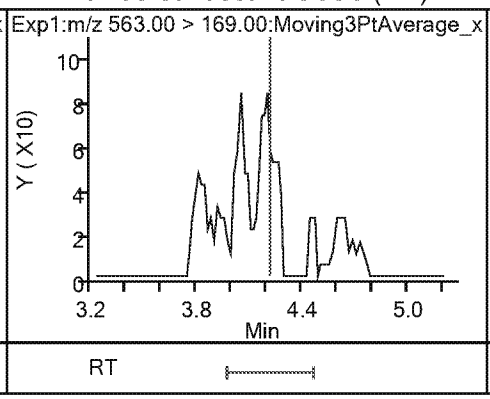
15 N-methylperfluorooctanesulfonamido (ND)



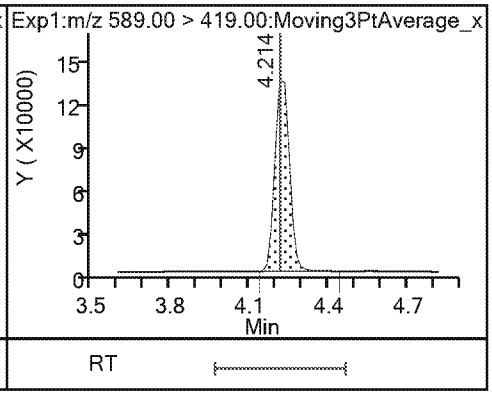
17 Perfluoroundecanoic acid (ND)



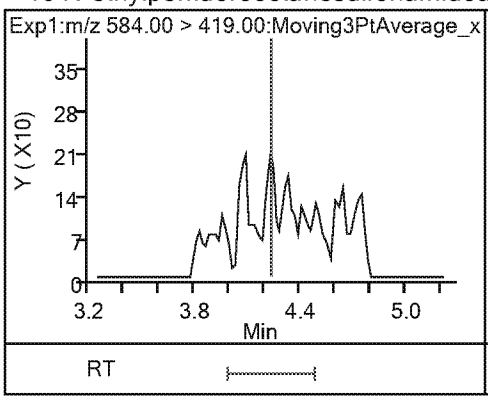
17 Perfluoroundecanoic acid (ND)



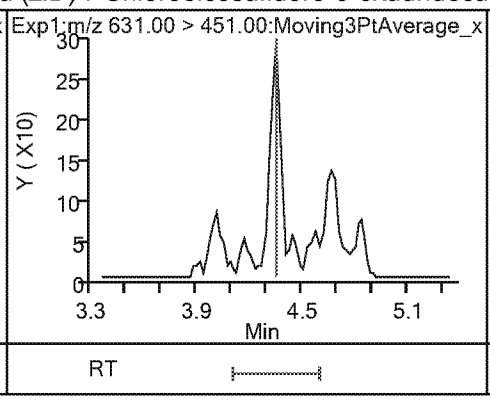
$ 11 d5-NEtFOSAA



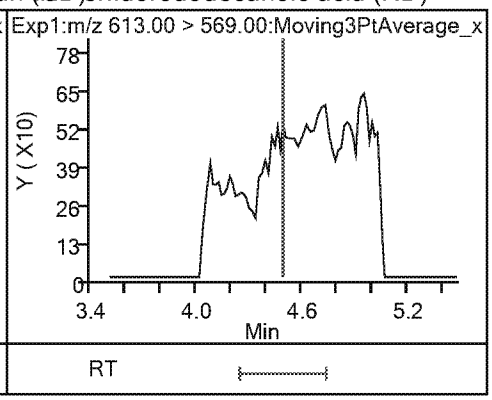
16 N-ethylperfluorooctanesulfonamidoa (ND)



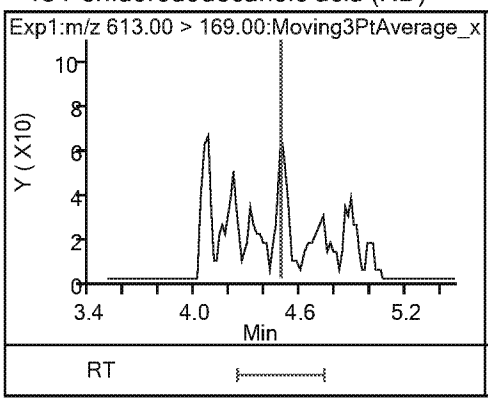
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



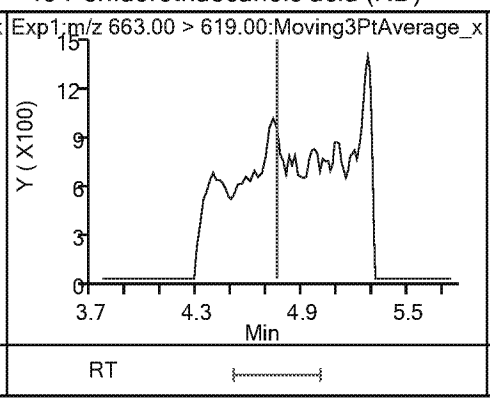
18 Perfluorododecanoic acid (ND)



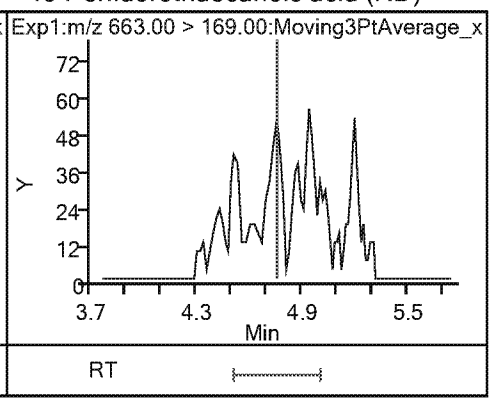
18 Perfluorododecanoic acid (ND)



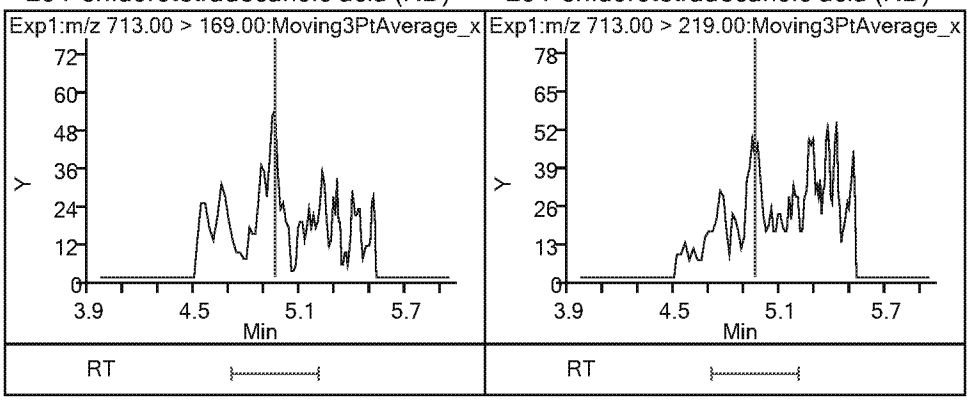
19 Perfluorotridecanoic acid (ND)



19 Perfluorotridecanoic acid (ND)



20 Perfluorotetradecanoic acid (ND) 20 Perfluorotetradecanoic acid (ND)



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_044.d
Lims ID: MB 320-285793/1-A
Client ID:
Sample Type: MB
Inject. Date: 05-Apr-2019 01:20:02 ALS Bottle#: 29 Worklist Smp#: 40
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-285793/1-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 09:44:08

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.25	90.03
$ 25 13C3 HFPO-DA	2.50	2.89	115.64
$ 10 13C2 PFDA	2.50	2.56	102.46
$ 11 d5-NEtFOSAA	2.50	2.21	88.42

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCS 320-285793/2-A
Matrix: Water
Lab File ID: 2019.04.04_537AA_045.d
Analysis Method: 537 DW
Date Collected:
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 250(mL)
Date Analyzed: 04/05/2019 01:29
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	175		2.0	0.95
335-67-1	Perfluorooctanoic acid	194		6.0	2.7
375-95-1	Perfluorononanoic acid	192		2.0	0.47
355-46-4	Perfluorohexanesulfonic acid	178		2.0	0.64
375-85-9	Perfluoroheptanoic acid	201		3.0	1.3
375-73-5	Perfluorobutanesulfonic acid	144		2.0	0.80

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	102		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_045.d
Lims ID: LCS 320-285793/2-A
Client ID:
Sample Type: LCS
Inject. Date: 05-Apr-2019 01:29:32 ALS Bottle#: 30 Worklist Smp#: 41
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-285793/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:13:27
Ratio Calibration: None

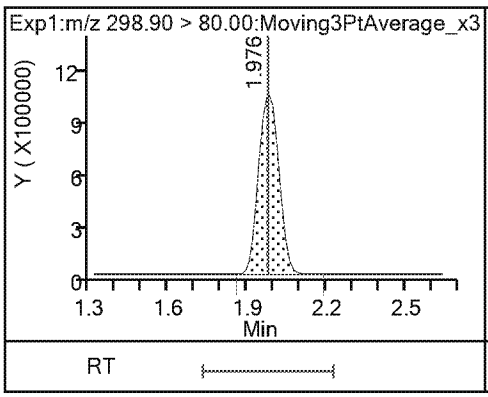
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.976	1.976	0.0	1.000	5229141	3.61	Target=1.41	30471	
298.90 > 99.00	1.976	1.976	0.0	1.000	3533270		1.48(0.00-0.00)	1749	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.741	5782486	4.44	Target=10.46	1420	
313.00 > 119.00	2.347	2.347	0.0	0.741	539661		10.72(0.00-0.00)	534	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3009031	2.21		5696	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.473	0.001	1.000	1421723	4.49		726	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	179961	2.94		1151	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.761	2.757	0.004	1.000	6247220	5.04	Target=2.41	656	
363.00 > 169.00	2.761	2.757	0.004	1.000	2461226		2.54(0.00-0.00)	5256	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.782	2.778	0.004	1.000	7805864	4.44	Target=2.91	4198	
399.00 > 99.00	2.782	2.778	0.004	1.000	2650817		2.94(0.00-0.00)	1328	
24 DONA									
377.00 > 251.00	2.803	2.799	0.004	1.000	15209024	4.50	Target=1.54	15629	
377.00 > 85.00	2.803	2.799	0.004	1.000	9515868		1.60(0.00-0.00)	1040165	
* 5 13C2 PFOA									
415.00 > 370.00	3.168	3.177	-0.009		2926055	2.50		10963	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.168	3.177	-0.009	1.000	5760679	4.85	Target=1.70	698	
413.00 > 169.00	3.168	3.177	-0.009	1.000	3326638		1.73(0.00-0.00)	3041	
* 7 13C4 PFOS									
503.00 > 80.00	3.537	3.549	-0.012		2933796	2.39		11507	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
9 Perfluorononanoic acid									
463.00 > 419.00	3.552	3.549	0.003	1.000	4150835	4.80	Target=3.78	2071	
463.00 > 169.00	3.537	3.549	-0.012	0.996	1043981		3.98(0.00-0.00)	5384	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.537	3.564	-0.027	1.000	5658182	4.36	Target=4.63	3002	
499.00 > 99.00	3.537	3.564	-0.027	1.000	1206178		4.69(0.00-0.00)	982	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.725	3.735	-0.010	1.000	9351872	4.48		8312	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.878	3.892	-0.014	1.000	3452730	5.04	Target=4.93	1371	
513.00 > 169.00	3.878	3.892	-0.014	1.000	682732		5.06(0.00-0.00)	2044	
$ 10 13C2 PFDA									
515.00 > 470.00	3.897	3.911	-0.014	1.000	1856354	2.55		7063	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.053	4.070	-0.017		565424	2.50		2748	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.053	4.070	-0.017	1.000	824566	3.89		2358	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.204	4.214	-0.010	1.000	2570056	4.94	Target=4.73	1030	
563.00 > 169.00	4.204	4.214	-0.010	1.000	527039		4.88(0.00-0.00)	3947	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.204	4.214	-0.010	1.037	496868	2.15		291	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.220	4.231	-0.011	1.004	806541	3.93		2612	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.339	4.349	-0.010	1.000	11504286	4.40		14333	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.479	4.488	-0.009	1.000	2283231	4.38	Target=3.49	1214	
613.00 > 169.00	4.479	4.488	-0.009	1.000	635592		3.59(0.00-0.00)	5675	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.737	4.753	-0.016	1.000	1936132	4.79	Target=2.87	605	
663.00 > 169.00	4.737	4.753	-0.016	1.000	636856		3.04(0.00-0.00)	2787	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.960	4.954	0.006	1.000	498374	4.80	Target=1.40	2810	
713.00 > 219.00	4.960	4.954	0.006	1.000	351092		1.42(0.00-0.00)	2177	

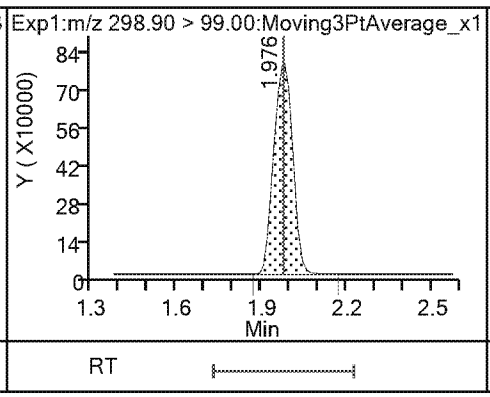
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_045.d
Injection Date: 05-Apr-2019 01:29:32 Instrument ID: A8_N
Lims ID: LCS 320-285793/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 41
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

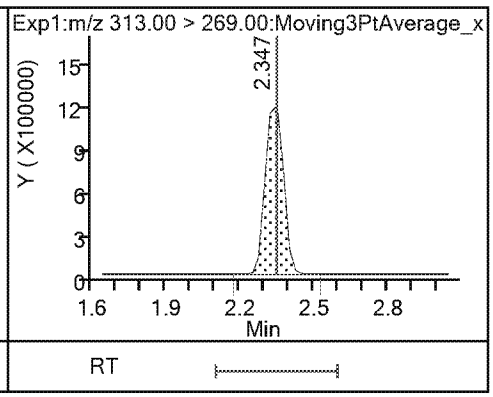
1 Perfluorobutanesulfonic acid



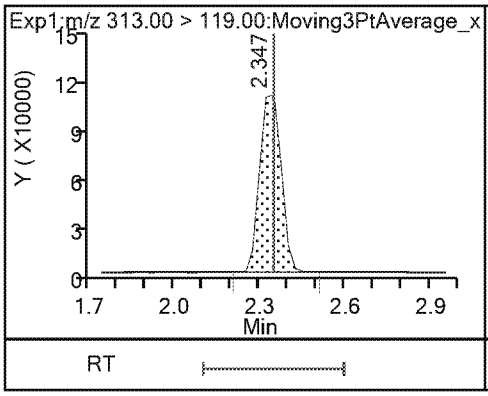
1 Perfluorobutanesulfonic acid



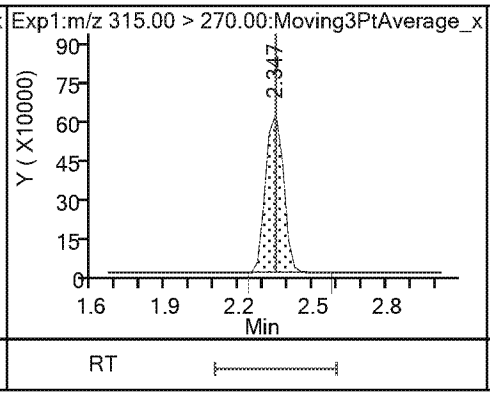
13 Perfluorohexanoic acid



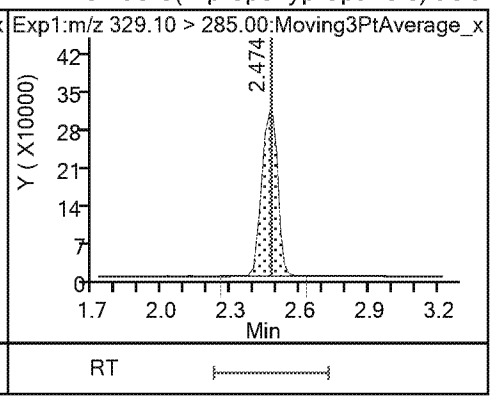
13 Perfluorohexanoic acid



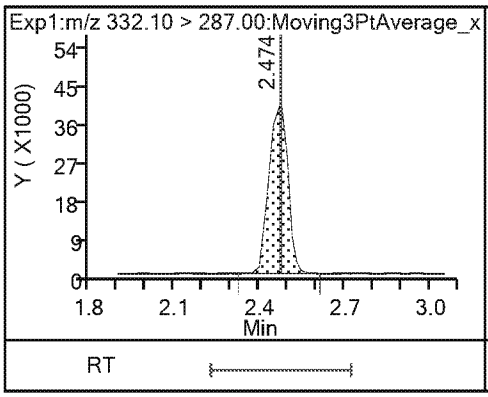
$ 2 13C2 PFHxA



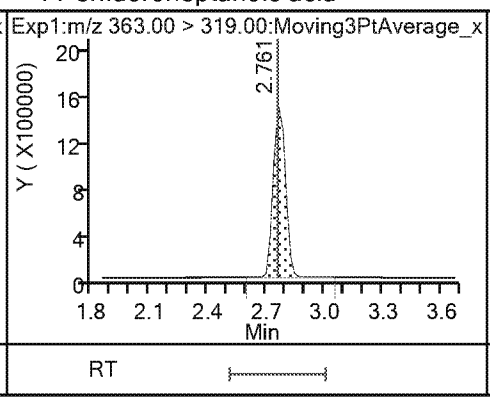
22 Perfluoro(2-propoxypropanoic) acid



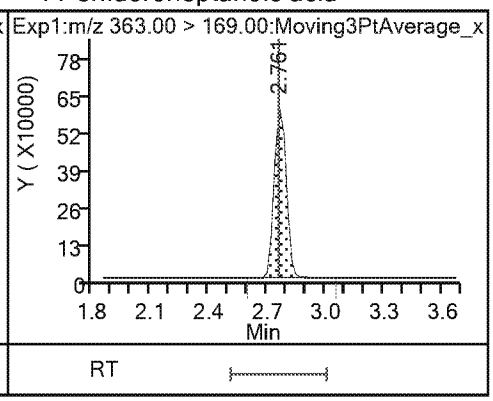
$ 25 13C3 HFPO-DA



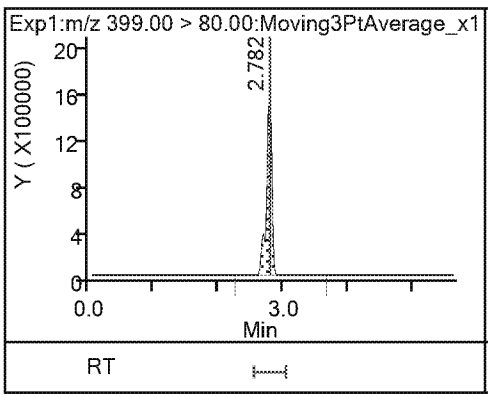
4 Perfluoroheptanoic acid



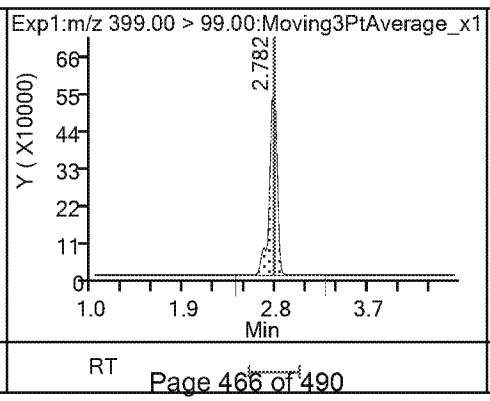
4 Perfluoroheptanoic acid



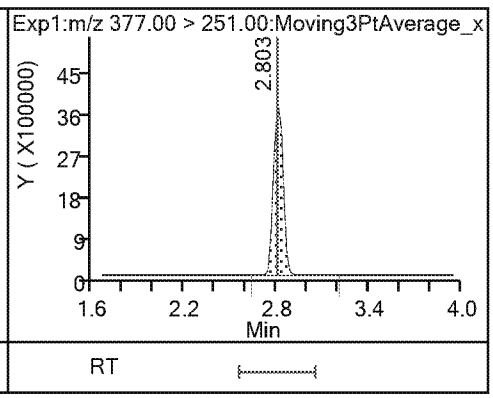
3 Perfluorohexanesulfonic acid



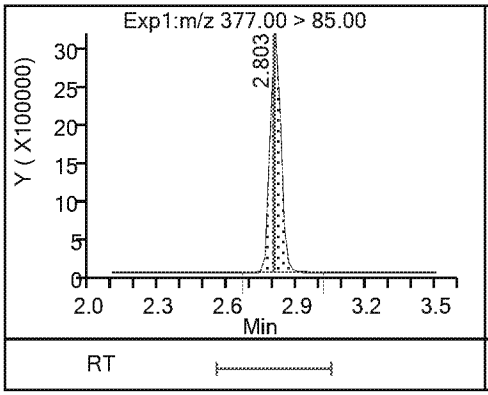
3 Perfluorohexanesulfonic acid



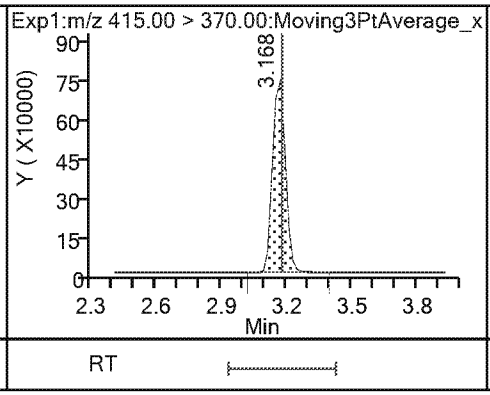
24 DONA



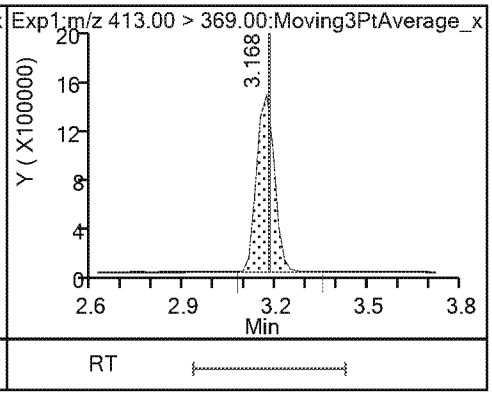
24 DONA



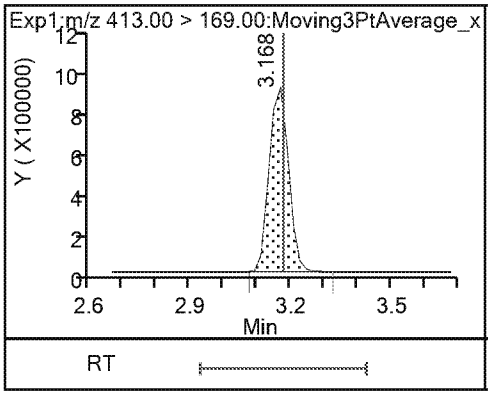
* 5 13C2 PFOA



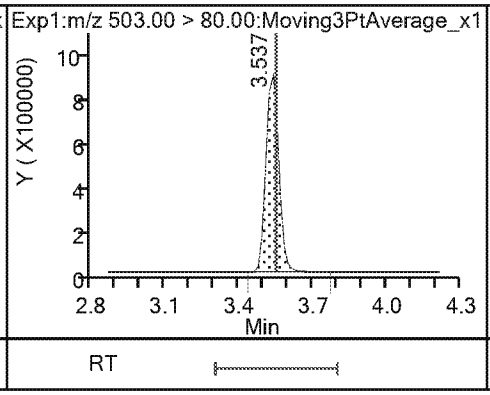
6 Perfluorooctanoic acid



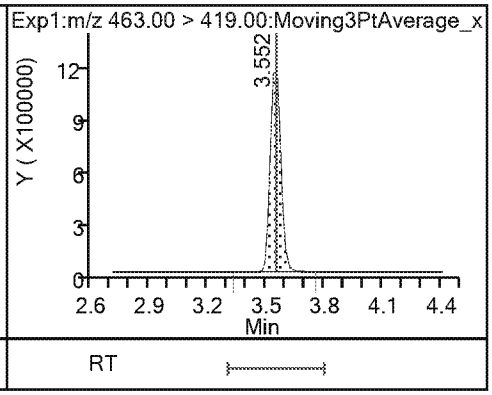
6 Perfluorooctanoic acid



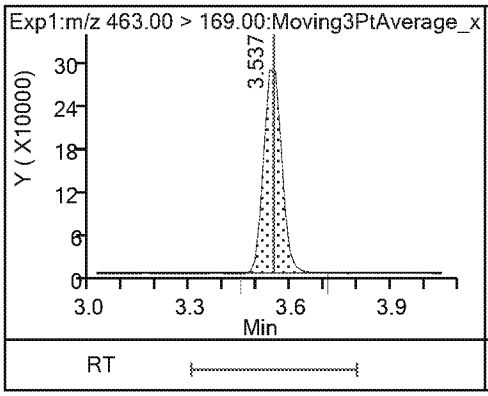
* 7 13C4 PFOS



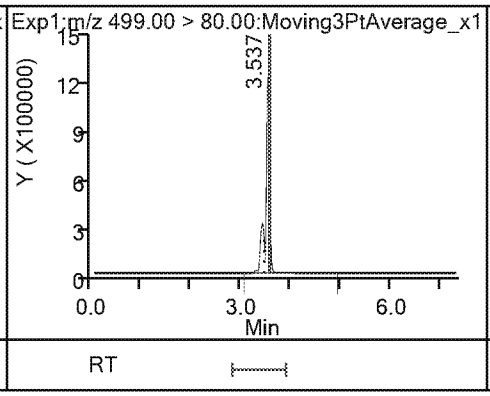
9 Perfluorononanoic acid



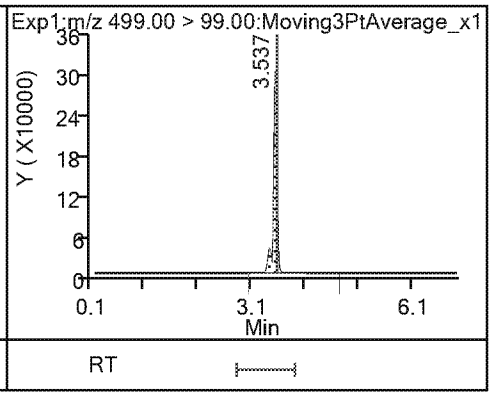
9 Perfluorononanoic acid



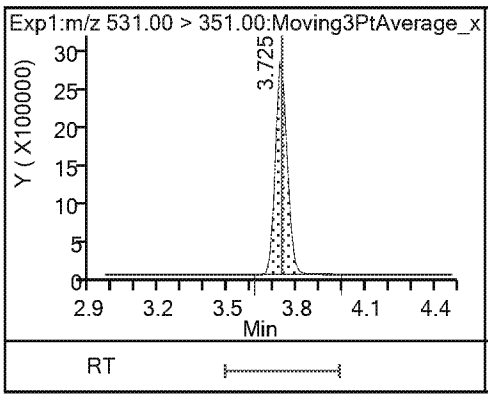
8 Perfluorooctanesulfonic acid



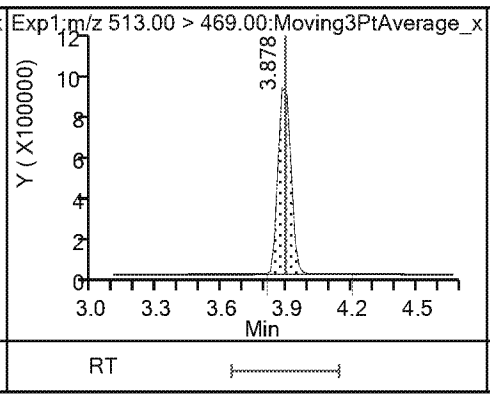
8 Perfluorooctanesulfonic acid



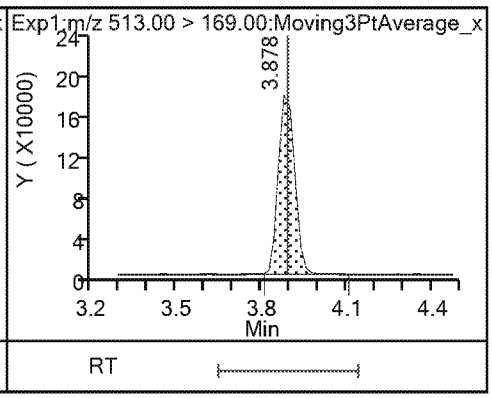
23 9-Chlorohexadecafluoro-3-oxanonane



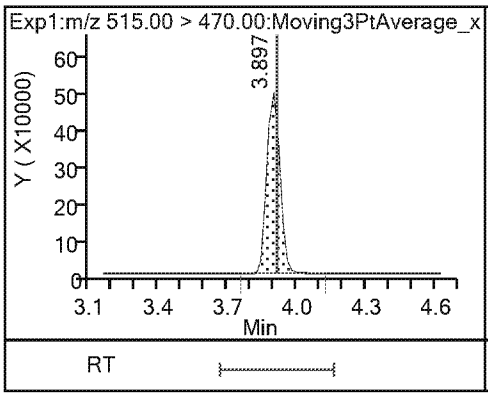
14 Perfluorodecanoic acid



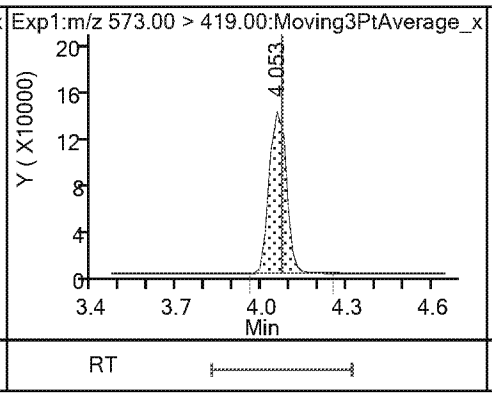
14 Perfluorodecanoic acid



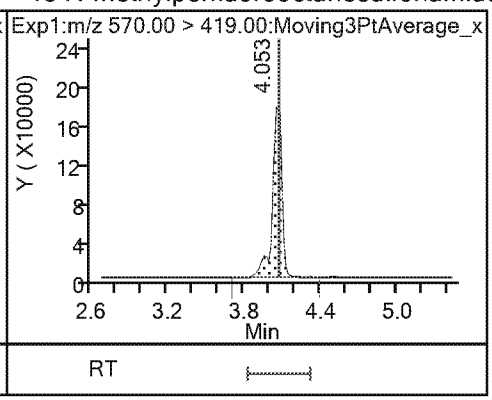
$ 10 13C2 PFDA



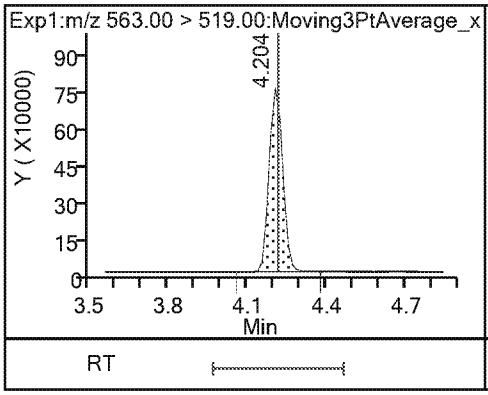
* 12 d3-NMeFOSAA



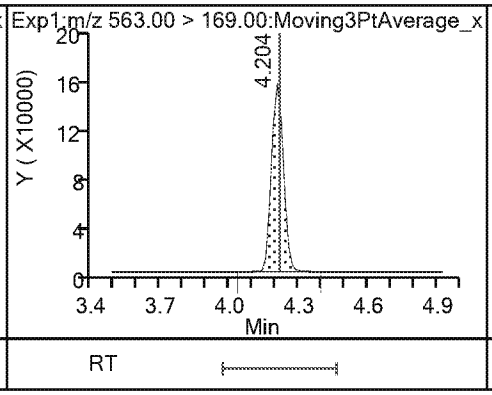
15 N-methylperfluorooctanesulfonamido



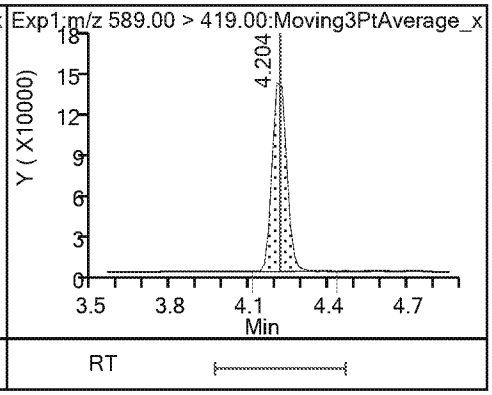
17 Perfluoroundecanoic acid



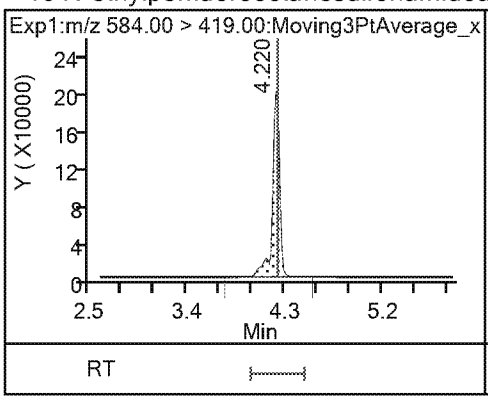
17 Perfluoroundecanoic acid



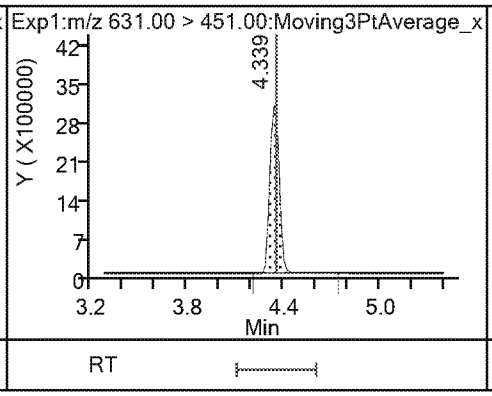
$ 11 d5-NEtFOSAA



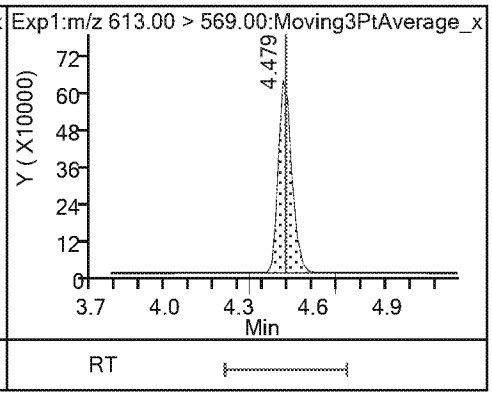
16 N-ethylperfluorooctanesulfonamidoa



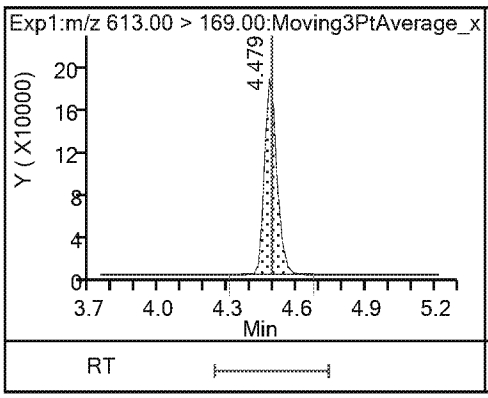
21 11-Chloroeicosafluoro-3-oxaundecan



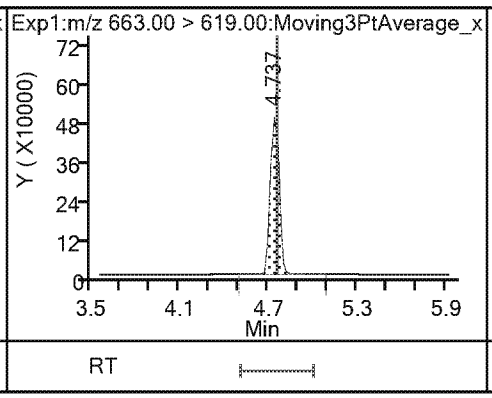
18 Perfluorododecanoic acid



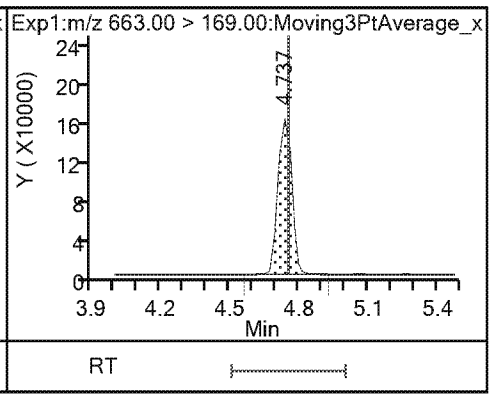
18 Perfluorododecanoic acid



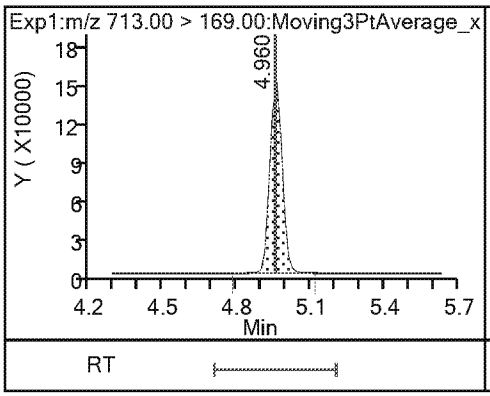
19 Perfluorotridecanoic acid



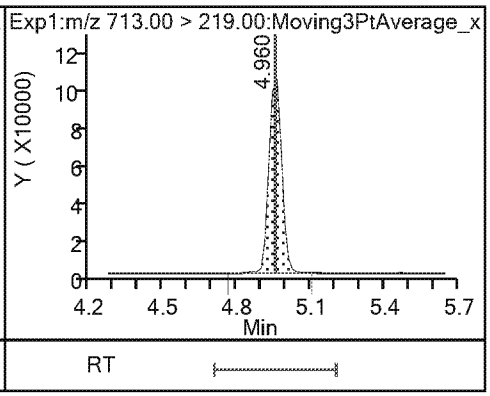
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_045.d
Lims ID: LCS 320-285793/2-A
Client ID:
Sample Type: LCS
Inject. Date: 05-Apr-2019 01:29:32 ALS Bottle#: 30 Worklist Smp#: 41
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-285793/2-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:13:27

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.21	88.22
$ 25 13C3 HFPO-DA	2.50	2.94	117.47
$ 10 13C2 PFDA	2.50	2.55	102.16
$ 11 d5-NEtFOSAA	2.50	2.15	85.98

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48799-1
SDG No.:
Client Sample ID:
Lab Sample ID: LCSD 320-285793/3-A
Matrix: Water
Lab File ID: 2019.04.04_537AA_046.d
Analysis Method: 537 DW
Date Collected:
Extraction Method: 537 DW
Date Extracted: 04/03/2019 06:57
Sample wt/vol: 250(mL)
Date Analyzed: 04/05/2019 01:39
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 10(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 286196
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	178		2.0	0.95
335-67-1	Perfluorooctanoic acid	202		6.0	2.7
375-95-1	Perfluorononanoic acid	197		2.0	0.47
355-46-4	Perfluorohexanesulfonic acid	178		2.0	0.64
375-85-9	Perfluoroheptanoic acid	196		3.0	1.3
375-73-5	Perfluorobutanesulfonic acid	137		2.0	0.80

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		70-130
STL00996	13C2 PFDA	106		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_046.d
Lims ID: LCSD 320-285793/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 05-Apr-2019 01:39:01 ALS Bottle#: 31 Worklist Smp#: 42
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-285793/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:14:10
Ratio Calibration: None

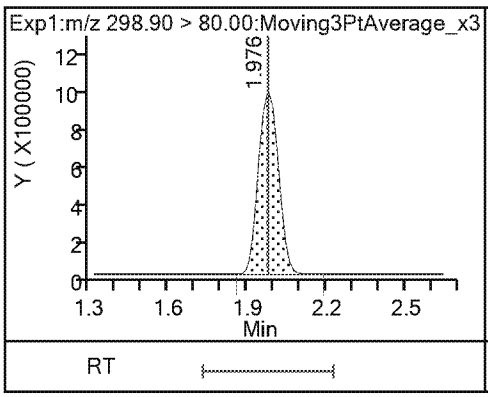
Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
1 Perfluorobutanesulfonic acid									
298.90 > 80.00	1.976	1.976	0.0	1.000	5012623	3.43	Target=1.41	27838	
298.90 > 99.00	1.976	1.976	0.0	1.000	3452391		1.45(0.00-0.00)	1774	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.322	2.347	-0.025	0.733	5613841	4.32	Target=10.46	1399	
313.00 > 119.00	2.322	2.347	-0.025	0.733	524436		10.70(0.00-0.00)	577	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	3047784	2.24		5828	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.473	0.001	1.000	1417868	4.49		714	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	166688	2.73		962	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.762	2.757	0.005	1.000	6060460	4.90	Target=2.41	629	
363.00 > 169.00	2.762	2.757	0.005	1.000	2519207		2.41(0.00-0.00)	4760	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.762	2.778	-0.016	1.000	7917749	4.46	Target=2.91	4948	
399.00 > 99.00	2.762	2.778	-0.016	1.000	2681800		2.95(0.00-0.00)	985	
24 DONA									
377.00 > 251.00	2.803	2.799	0.004	1.000	15376798	4.57	Target=1.54	12745	
377.00 > 85.00	2.803	2.799	0.004	1.000	9597144		1.60(0.00-0.00)	1092780	
* 5 13C2 PFOA									
415.00 > 370.00	3.168	3.177	-0.009		2916034	2.50		5408	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.168	3.177	-0.009	1.000	5985942	5.06	Target=1.70	785	
413.00 > 169.00	3.168	3.177	-0.009	1.000	3330034		1.80(0.00-0.00)	3130	
* 7 13C4 PFOS									
503.00 > 80.00	3.535	3.549	-0.014		2961044	2.39		10351	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	4239821	4.92	Target=3.78	2528	
463.00 > 169.00	3.549	3.549	0.0	1.000	1075748		3.94(0.00-0.00)	4192	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.535	3.564	-0.029	1.000	5815861	4.44	Target=4.63	2797	
499.00 > 99.00	3.535	3.564	-0.029	1.000	1216829		4.78(0.00-0.00)	1030	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.735	3.735	0.0	1.000	9712174	4.61		12972	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.895	3.892	0.003	1.000	3434604	5.03	Target=4.93	1323	
513.00 > 169.00	3.895	3.892	0.003	1.000	710415		4.83(0.00-0.00)	2151	
$ 10 13C2 PFDA									
515.00 > 470.00	3.895	3.911	-0.016	1.000	1926695	2.66		7771	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.073	4.070	0.003		540297	2.50		2585	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.073	4.070	0.003	1.000	859489	4.25		18797	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.217	4.214	0.003	1.000	2717162	5.24	Target=4.73	1168	
563.00 > 169.00	4.217	4.214	0.003	1.000	528668		5.14(0.00-0.00)	2825	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.217	4.214	0.003	1.035	497661	2.25		323	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.217	4.231	-0.014	1.000	803742	4.10		1465	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.333	4.349	-0.016	1.000	12097089	4.58		18201	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.491	4.488	0.003	1.000	2445332	4.70	Target=3.49	1329	
613.00 > 169.00	4.476	4.488	-0.012	0.997	649885		3.76(0.00-0.00)	3572	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.734	4.753	-0.019	1.000	1980616	4.92	Target=2.87	624	
663.00 > 169.00	4.734	4.753	-0.019	1.000	667961		2.97(0.00-0.00)	2999	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.957	4.954	0.003	1.000	507317	4.90	Target=1.40	2825	
713.00 > 219.00	4.941	4.954	-0.013	0.997	362147		1.40(0.00-0.00)	1859	

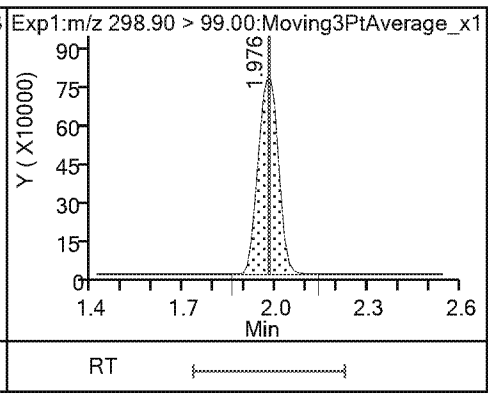
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_046.d
Injection Date: 05-Apr-2019 01:39:01 Instrument ID: A8_N
Lims ID: LCSD 320-285793/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 42
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

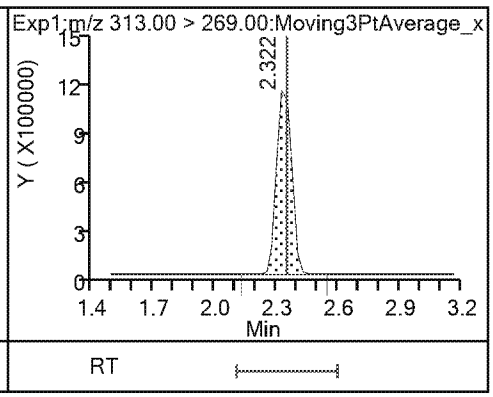
1 Perfluorobutanesulfonic acid



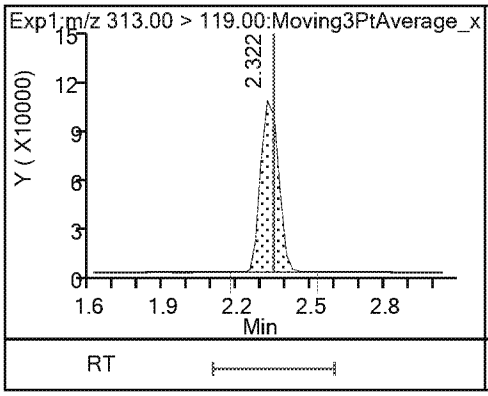
1 Perfluorobutanesulfonic acid



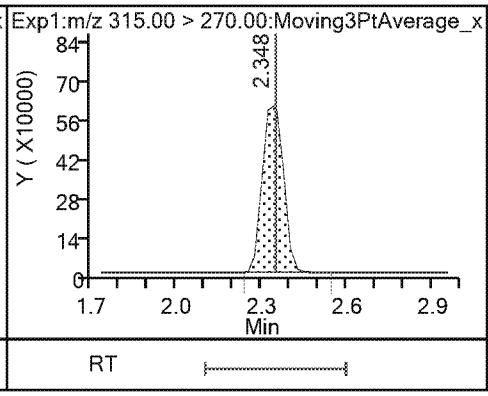
13 Perfluorohexanoic acid



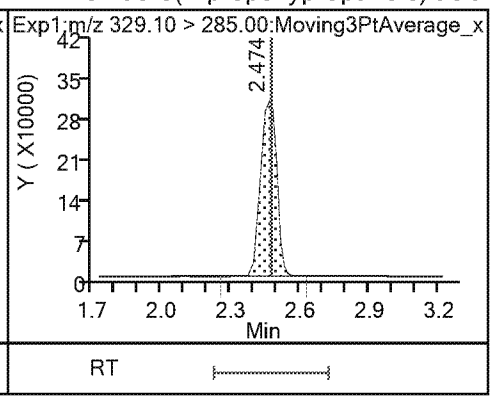
13 Perfluorohexanoic acid



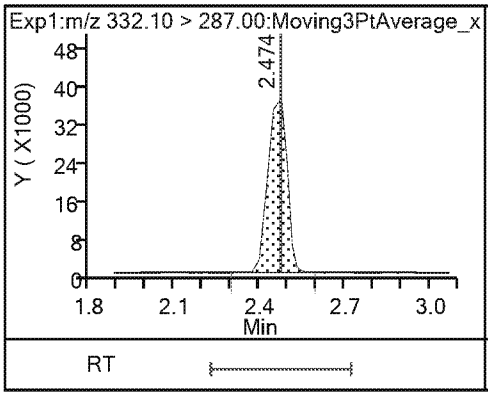
$ 2 13C2 PFHxA



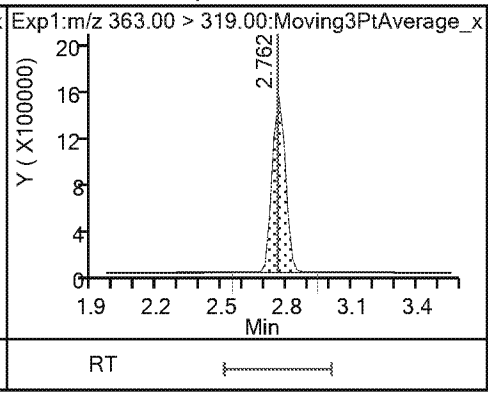
22 Perfluoro(2-propoxypropanoic) acid



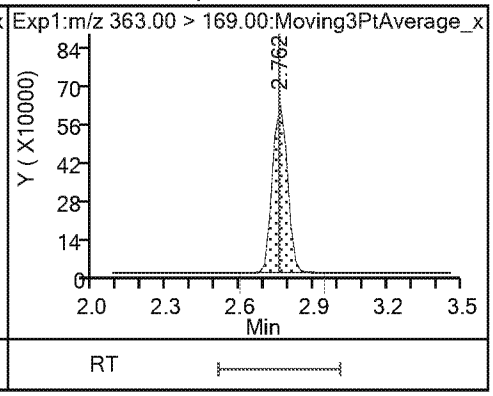
$ 25 13C3 HFPO-DA



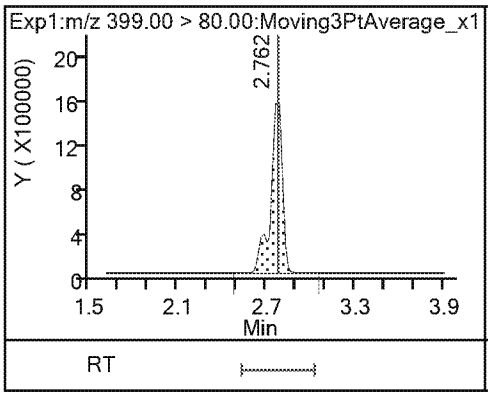
4 Perfluoroheptanoic acid



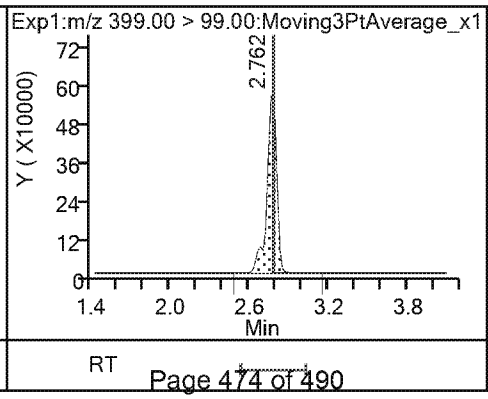
4 Perfluoroheptanoic acid



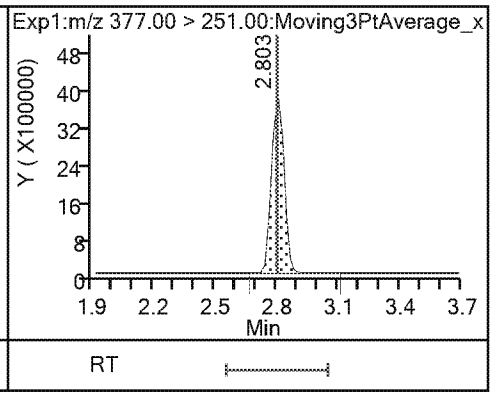
3 Perfluorohexanesulfonic acid



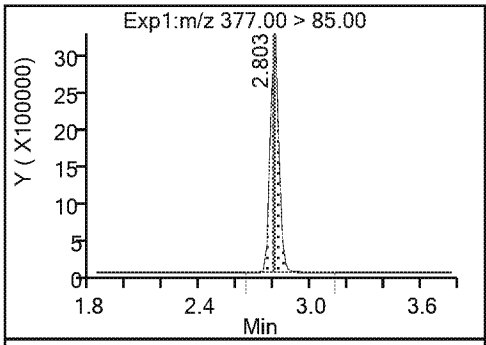
3 Perfluorohexanesulfonic acid



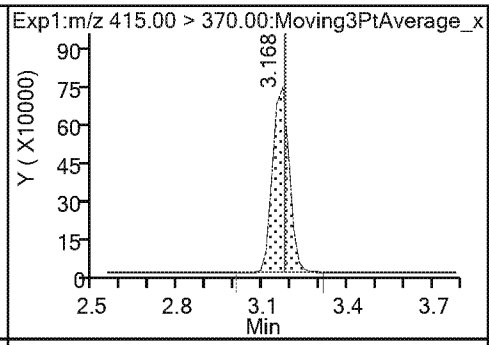
24 DONA



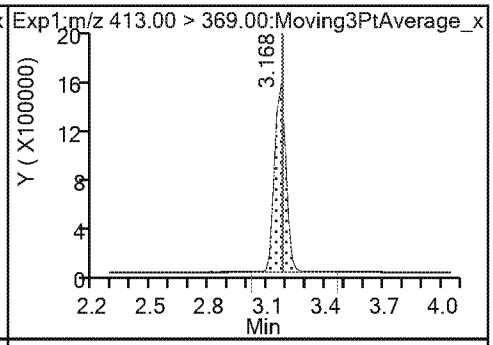
24 DONA



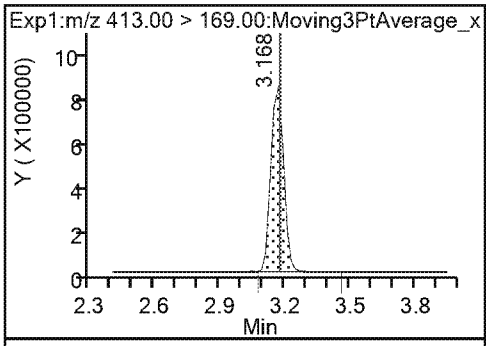
* 5 13C2 PFOA



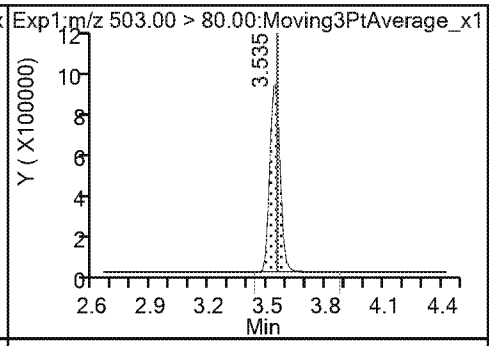
6 Perfluorooctanoic acid



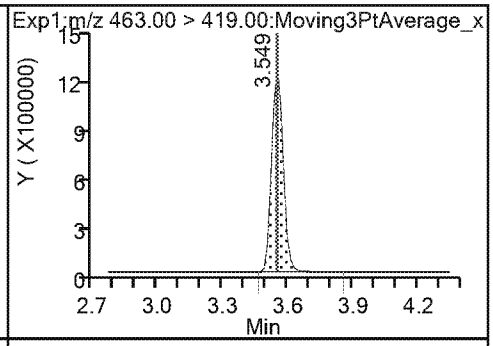
6 Perfluorooctanoic acid



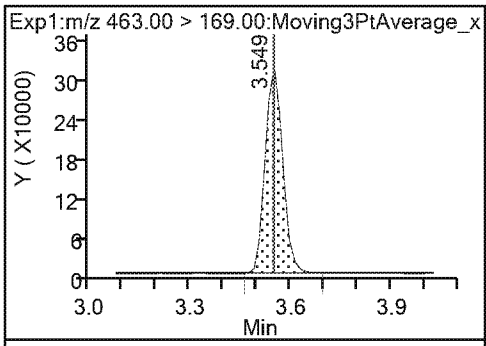
* 7 13C4 PFOS



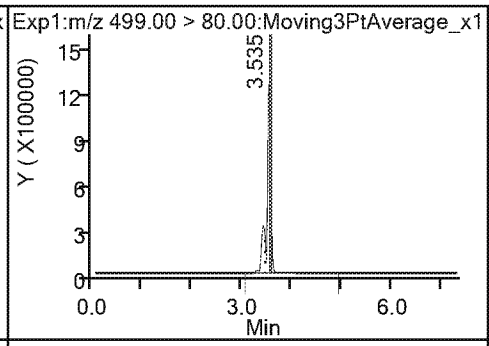
9 Perfluorononanoic acid



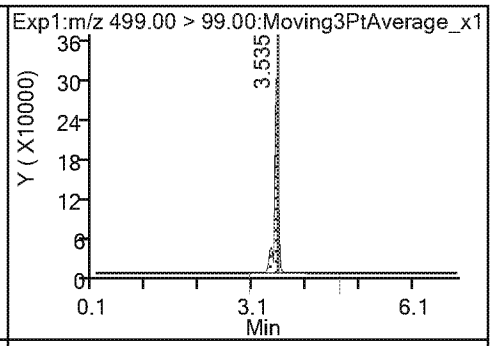
9 Perfluorononanoic acid



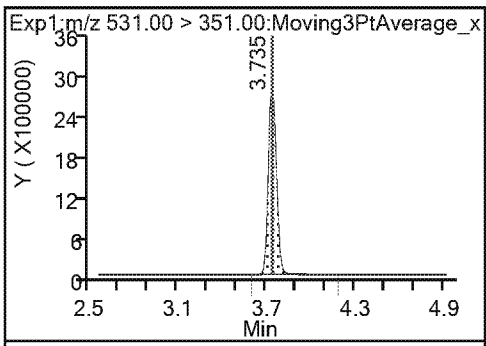
8 Perfluorooctanesulfonic acid



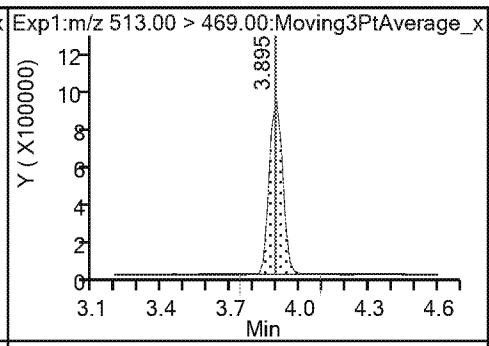
8 Perfluorooctanesulfonic acid



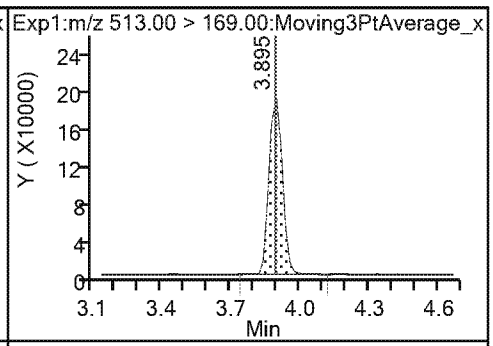
23 9-Chlorohexadecafluoro-3-oxanonane



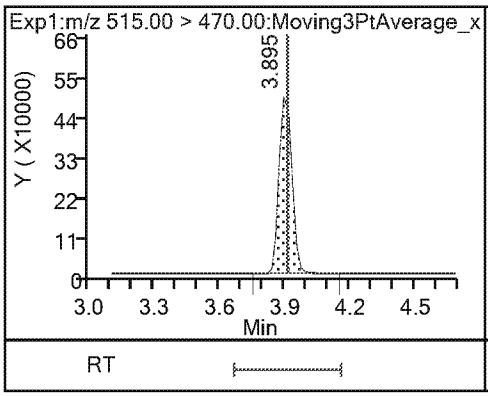
14 Perfluorodecanoic acid



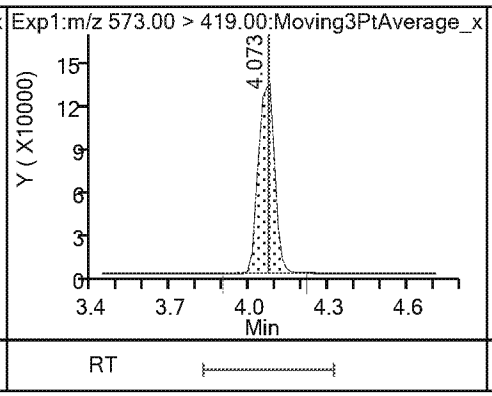
14 Perfluorodecanoic acid



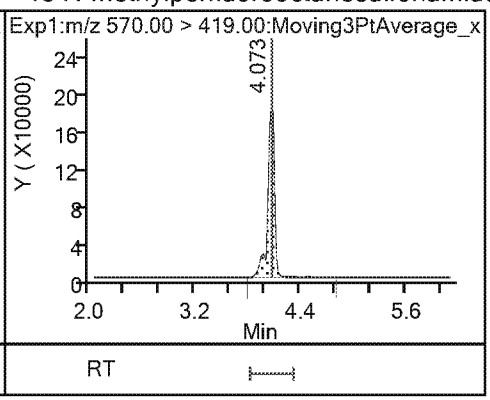
$ 10 13C2 PFDA



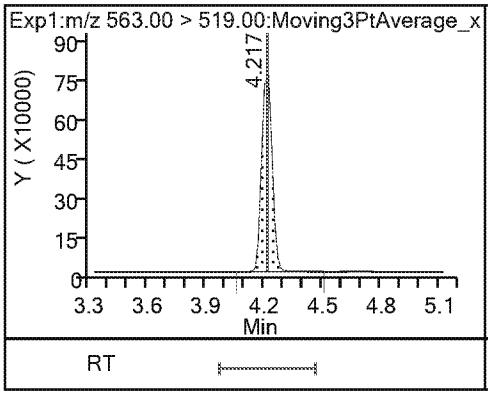
* 12 d3-NMeFOSAA



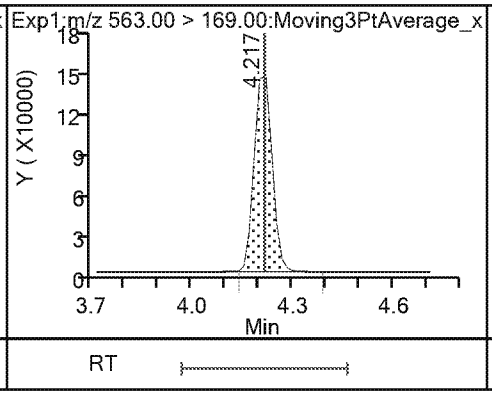
15 N-methylperfluorooctanesulfonamido



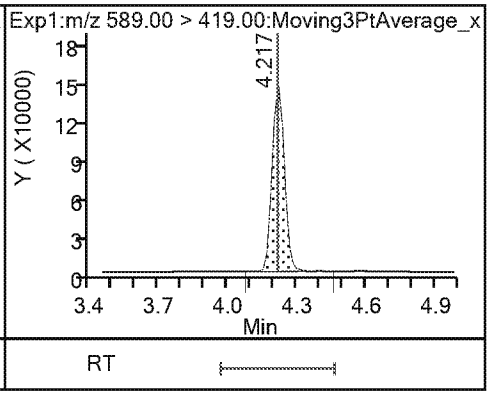
17 Perfluoroundecanoic acid



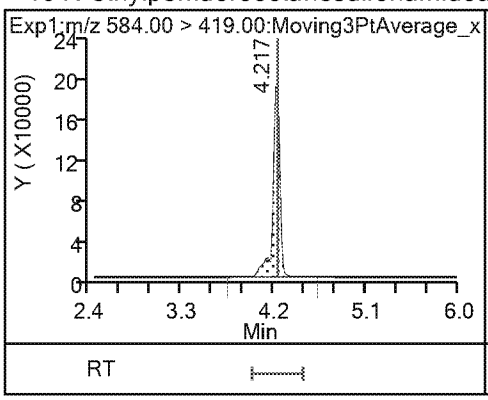
17 Perfluoroundecanoic acid



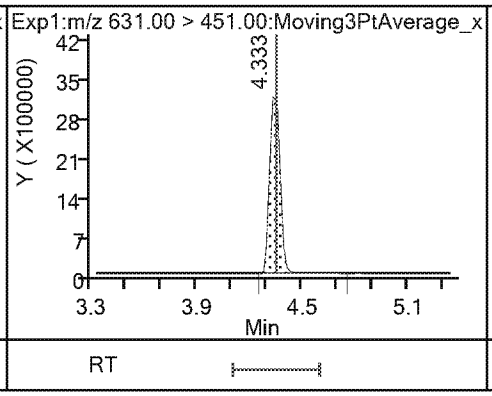
$ 11 d5-NEtFOSAA



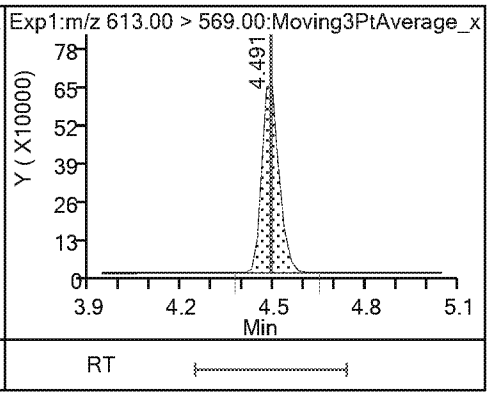
16 N-ethylperfluorooctanesulfonamidoa



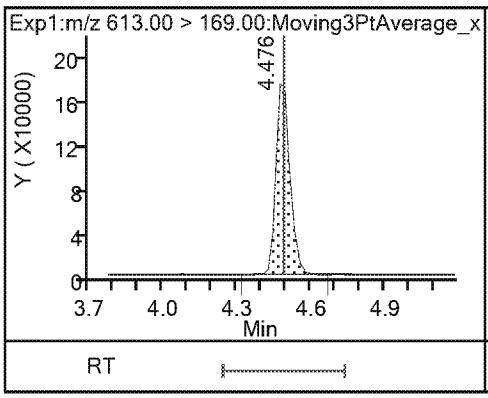
21 11-Chloroeicosafluoro-3-oxaundecan



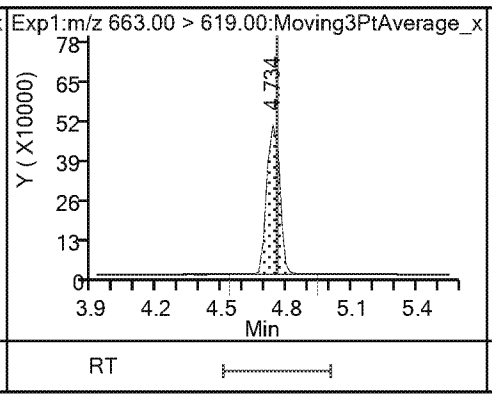
18 Perfluorododecanoic acid



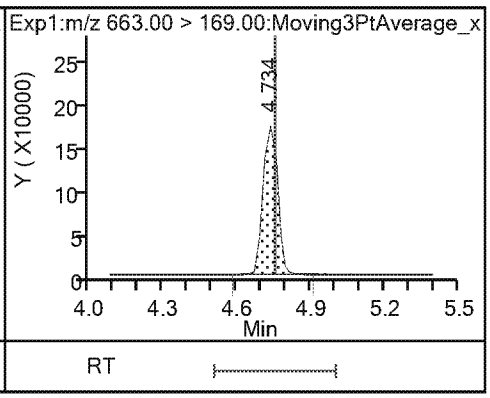
18 Perfluorododecanoic acid



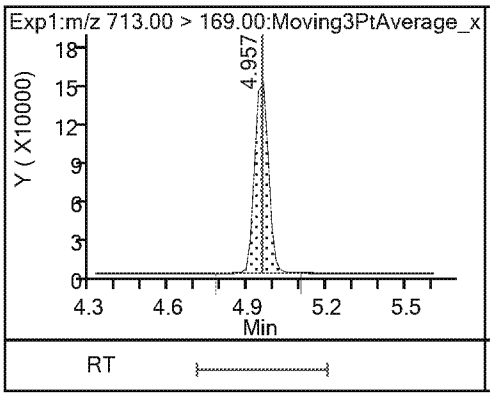
19 Perfluorotridecanoic acid



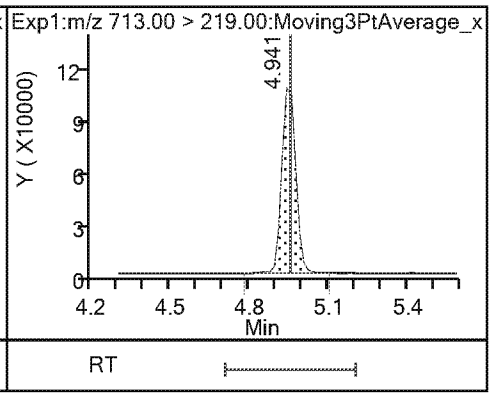
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento
Recovery Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_046.d
Lims ID: LCSD 320-285793/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 05-Apr-2019 01:39:01 ALS Bottle#: 31 Worklist Smp#: 42
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: lcsd 320-285793/3-a
Misc. Info.: Plate: 1 Rack: 2
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\537_A8_N.m
Limit Group: LC 537 ICAL
Last Update: 05-Apr-2019 13:29:45 Calib Date: 04-Apr-2019 16:11:08
Integrator: Picker
Quant Method: Internal Standard Quant By: Initial Calibration
Last ICal File: \\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_009.d

Column 1 : Det: EXP1
Process Host: CTX0314

First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:14:10

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.24	89.66
$ 25 13C3 HFPO-DA	2.50	2.73	109.18
$ 10 13C2 PFDA	2.50	2.66	106.40
$ 11 d5-NEtFOSAA	2.50	2.25	90.12

LCMS ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Start Date: 04/04/2019 15:14

Analysis Batch Number: 286141 End Date: 04/04/2019 16:48

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-286141/2		04/04/2019 15:14	1	2019.04.04_537ICAL_003.d	GeminiC18 3x100 3(mm)
IC 320-286141/3		04/04/2019 15:23	1	2019.04.04_537ICAL_004.d	GeminiC18 3x100 3(mm)
IC 320-286141/4		04/04/2019 15:33	1	2019.04.04_537ICAL_005.d	GeminiC18 3x100 3(mm)
IC 320-286141/5 ICISAV		04/04/2019 15:42	1	2019.04.04_537ICAL_006.d	GeminiC18 3x100 3(mm)
IC 320-286141/6		04/04/2019 15:52	1	2019.04.04_537ICAL_007.d	GeminiC18 3x100 3(mm)
IC 320-286141/7		04/04/2019 16:01	1	2019.04.04_537ICAL_008.d	GeminiC18 3x100 3(mm)
IC 320-286141/8		04/04/2019 16:11	1	2019.04.04_537ICAL_009.d	GeminiC18 3x100 3(mm)
ZZZZZ		04/04/2019 16:20	1		GeminiC18 3x100 3(mm)
CCVL 320-286141/10		04/04/2019 16:29	1	2019.04.04_537ICAL_011.d	GeminiC18 3x100 3(mm)
ICB 320-286141/11		04/04/2019 16:39	1		GeminiC18 3x100 3(mm)
ICV 320-286141/12		04/04/2019 16:48	1	2019.04.04_537ICAL_013.d	GeminiC18 3x100 3(mm)

537 DW

LCMS ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Start Date: 04/05/2019 01:01

Analysis Batch Number: 286196 End Date: 04/05/2019 02:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-286196/38 CCVIS		04/05/2019 01:01	1	2019.04.04_537A A_042.d	GeminiC18 3x100 3(mm)
ZZZZZ		04/05/2019 01:10	1		GeminiC18 3x100 3(mm)
MB 320-285793/1-A		04/05/2019 01:20	1	2019.04.04_537A A_044.d	GeminiC18 3x100 3(mm)
LCS 320-285793/2-A		04/05/2019 01:29	1	2019.04.04_537A A_045.d	GeminiC18 3x100 3(mm)
LCSD 320-285793/3-A		04/05/2019 01:39	1	2019.04.04_537A A_046.d	GeminiC18 3x100 3(mm)
320-48799-1		04/05/2019 01:48	1	2019.04.04_537A A_047.d	GeminiC18 3x100 3(mm)
320-48799-2		04/05/2019 01:57	1	2019.04.04_537A A_048.d	GeminiC18 3x100 3(mm)
320-48799-3		04/05/2019 02:07	1	2019.04.04_537A A_049.d	GeminiC18 3x100 3(mm)
320-48799-4		04/05/2019 02:16	1	2019.04.04_537A A_050.d	GeminiC18 3x100 3(mm)
320-48799-5		04/05/2019 02:26	1	2019.04.04_537A A_051.d	GeminiC18 3x100 3(mm)
320-48799-6		04/05/2019 02:35	1	2019.04.04_537A A_052.d	GeminiC18 3x100 3(mm)
320-48799-7		04/05/2019 02:45	1	2019.04.04_537A A_053.d	GeminiC18 3x100 3(mm)
CCV 320-286196/50 CCVIS		04/05/2019 02:54	1	2019.04.04_537A A_054.d	GeminiC18 3x100 3(mm)

537 DW

LCMS ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Start Date: 04/05/2019 02:54

Analysis Batch Number: 286198 End Date: 04/05/2019 03:42

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-286198/50 CCVIS		04/05/2019 02:54	1	2019.04.04_537A A_054.d	GeminiC18 3x100 3(mm)
ZZZZZ		04/05/2019 03:04	1		GeminiC18 3x100 3(mm)
320-48799-8		04/05/2019 03:13	1	2019.04.04_537A A_056.d	GeminiC18 3x100 3(mm)
320-48799-9		04/05/2019 03:23	1	2019.04.04_537A A_057.d	GeminiC18 3x100 3(mm)
320-48799-10		04/05/2019 03:32	1	2019.04.04_537A A_058.d	GeminiC18 3x100 3(mm)
CCV 320-286198/55 CCVIS		04/05/2019 03:42	1	2019.04.04_537A A_059.d	GeminiC18 3x100 3(mm)

537 DW

LCMS ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48799-1

SDG No.:

Instrument ID: A8_N Start Date: 04/05/2019 11:55

Analysis Batch Number: 286320 End Date: 04/05/2019 12:51

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-286320/1		04/05/2019 11:55	1	2019.04.05_537.1A_004.d	GeminiC18 3x100 3(mm)
CCV 320-286320/2 CCVIS		04/05/2019 12:04	1	2019.04.05_537.1A_005.d	GeminiC18 3x100 3(mm)
ZZZZZ		04/05/2019 12:13	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/05/2019 12:23	1		GeminiC18 3x100 3(mm)
ZZZZZ		04/05/2019 12:32	1		GeminiC18 3x100 3(mm)
320-48799-2 DL		04/05/2019 12:42	5	2019.04.05_537.1A_009.d	GeminiC18 3x100 3(mm)
CCV 320-286320/7 CCVIS		04/05/2019 12:51	1	2019.04.05_537.1A_010.d	GeminiC18 3x100 3(mm)

537 DW

LCMS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-48799-1

SDG No.:

Batch Number: 285793 Batch Start Date: 04/03/19 06:57 Batch Analyst: Ex. 4 CBI

Batch Method: 537 DW Batch End Date: 04/03/19 12:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00100
MB 320-285793/1		537 DW, 537 DW				250 mL	10.00 mL	7.0 SU	500 uL
LCS 320-285793/2		537 DW, 537 DW				250 mL	10.00 mL	7.0 SU	500 uL
LCSD 320-285793/3		537 DW, 537 DW				250 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-1	C0AR3	537 DW, 537 DW	T	313.59 g	28.43 g	285.2 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-2	C0AR4	537 DW, 537 DW	T	312.13 g	28.22 g	283.9 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-3	C0AR6	537 DW, 537 DW	T	308.14 g	27.75 g	280.4 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-4	C0AR7	537 DW, 537 DW	T	311.64 g	28.33 g	283.3 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-5	C0AS2	537 DW, 537 DW	T	311.96 g	27.78 g	284.2 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-6	C0AW3	537 DW, 537 DW	T	305.87 g	27.93 g	277.9 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-7	C0AW4	537 DW, 537 DW	T	304.28 g	27.68 g	276.6 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-8	C0AW6	537 DW, 537 DW	T	306.36 g	27.98 g	278.4 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-9	C0AW7	537 DW, 537 DW	T	302.82 g	27.73 g	275.1 mL	10.00 mL	7.0 SU	500 uL
320-48799-A-10	C0AW8	537 DW, 537 DW	T	304.78 g	27.67 g	277.1 mL	10.00 mL	7.0 SU	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00101	LC537HSP 00002	AnalysisComment			
MB 320-285793/1		537 DW, 537 DW		500 uL		Chlorine ND			
LCS 320-285793/2		537 DW, 537 DW		500 uL	500 uL	Chlorine ND			
LCSD 320-285793/3		537 DW, 537 DW		500 uL	500 uL	Chlorine ND			
320-48799-A-1	C0AR3	537 DW, 537 DW	T	500 uL		Chlorine ND			
320-48799-A-2	C0AR4	537 DW, 537 DW	T	500 uL		Chlorine ND			
320-48799-A-3	C0AR6	537 DW, 537 DW	T	500 uL		Chlorine ND			
320-48799-A-4	C0AR7	537 DW, 537 DW	T	500 uL		Chlorine ND			

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-48799-1

SDG No.:

Batch Number: 285793 Batch Start Date: 04/03/19 06:57 Batch Analyst: Ex. 4 CBI

Batch Method: 537 DW Batch End Date: 04/03/19 12:30

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00101	LC537HSP 00002	AnalysisComment			
320-48799-A-5	C0AS2	537 DW, 537 DW	T	500 uL		Chlorine ND			
320-48799-A-6	C0AW3	537 DW, 537 DW	T	500 uL		Chlorine ND			
320-48799-A-7	C0AW4	537 DW, 537 DW	T	500 uL		Chlorine ND			
320-48799-A-8	C0AW6	537 DW, 537 DW	T	500 uL		Chlorine ND			
320-48799-A-9	C0AW7	537 DW, 537 DW	T	500 uL		Chlorine ND			
320-48799-A-10	C0AW8	537 DW, 537 DW	T	500 uL		Chlorine ND			

Batch Notes	
Analyst ID - Aliquot Step	HJA
Batch Comment	TA labels match client IDs HJA 4-03-19
Analyst ID - Final Volume Step	HJA
Internal Standard ID#	1539785
Manifold ID	P,Y
Methanol ID	1551798
pH Indicator ID	4718
Pipette ID	I46370G
Analyst ID - IS Reagent Drop	HJA
Analyst ID - IS Reagent Drop Witness	JM
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	MYV
Analyst ID - TA Reagent Drop	HJA
Analyst ID - TA Reagent Drop Witness	MYV
SPE Cartridge Lot ID	6429887-09
Trizma ID	SLBR5241V
Reagent Water ID	4/02/19

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-48799-1

SDG No.:

Batch Number: 285793 Batch Start Date: 04/03/19 06:57 Batch Analyst: Ex. 4 CBI

Batch Method: 537 DW Batch End Date: 04/03/19 12:30

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID 537

Analyst (Print Name) Ex. 4 CBI

Reagent ID L537-VC-10-00003

Date 4/5/19

Job #	Sample #	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
320-48799	2	10,000	60	700	3
					4/5/19

Comments:

Shipping and Receiving Documents

USEPA CLP COC (LAB COPY)

CHAIN OF CUSTODY RECORD

No: 3-032819-113753-0027

DateShipped: 3/28/2019
CarrierName: FedEx
AirbillNo: 774821754515

DAS #: R35542
Cooler #: 2

Lab: TestAmerica Laboratories, Inc. - Sacremento
Lab Contact: Ex. 4 CBI
Lab Phone: 916-374-4383

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
RE-BDE-SIGW-08	C0AR3	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2169 (Trizma), 2170 (Trizma) (2)	RE-BDE-SIGW-08	03/27/2019 09:55	
RE-BDE-SIGW-06	C0AR4	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2171 (Trizma), 2172 (Trizma) (2)	RE-BDE-SIGW-06	03/26/2019 14:00	
RE-BDE-SIGW-04	C0AR6	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2175 (Trizma), 2176 (Trizma) (2)	RE-BDE-SIGW-04	03/26/2019 12:10	
RE-BDE-SIGW-03	C0AR7	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2177 (Trizma), 2178 (Trizma) (2)	RE-BDE-SIGW-03	03/26/2019 12:50	
RE-BDE-SIGW-05	C0AS2	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2187 (Trizma), 2188 (Trizma) (2)	RE-BDE-SIGW-05	03/26/2019 14:50	
RE-BDE-SIGW-03-FRB	C0AW3	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2230 (Trizma) (1)	RE- BDE-SIGW-03-FRB	03/26/2019 12:55	
RE-BDE-SIGW-04-FRB	C0AW4	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2232 (Trizma) (1)	RE- BDE-SIGW-04-FRB	03/26/2019 12:15	

Special Instructions:

Shipment for Case Complete? Y

Samples Transferred From Chain of Custody #

Analysis Key

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
samples for analysis	Ex. 4 CBI	03/20/19 17:00	Ex. 4 CBI AWSAC	3/29/19 925	good 32°C

320-48799 Chain of Custody

USEPA CLP COC (LAB COPY)

DateShipped: 3/28/2019
CarrierName: FedEx
AirbillNo: 774821754515

CHAIN OF CUSTODY RECORD

DAS #: R35542
Cooler #: 2

No: 3-032819-113753-0027

Lab: TestAmerica Laboratories, Inc. - Sacramento
Lab Contact: Ex. 4 CBI
Lab Phone: 916-374-4383

Sample Identifier	CLP Sample No.	Matrix/Sampler	Coll. Method	Analysis/Turnaround (Days)	Tag/Preservative/Bottles	Location	Collection Date/Time	For Lab Use Only
RE-BDE-SIGW-05-FRB	C0AW6	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2236 (Trizma) (1)	RE- BDE-SIGW-05-FRB	03/26/2019 14:55	
RE-BDE-SIGW-06-FRB	C0AW7	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2238 (Trizma) (1)	RE- BDE-SIGW-06-FRB	03/26/2019 14:05	
RE-BDE-SIGW-08-FRB	C0AW8	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2240 (Trizma) (1)	RE- BDE-SIGW-08-FRB	03/27/2019 10:00	

Special Instructions:

Shipment for Case Complete? Y

Samples Transferred From Chain of Custody #

Analysis Key

Items/Reason	Relinquished by (Signature and Organization)	Date/Time	Received by (Signature and Organization)	Date/Time	Sample Condition Upon Receipt
Samples for analysis	Ex. 4 CBI	03/28/17 17:00	Ex. 4 CBI Musac	3/29/19 9:25	Good

Login Sample Receipt Checklist

Client: Weston Solutions, Inc.

Job Number: 320-48799-1

Login Number: 48799
List Number: 1
Creator: Ex. 4 CBI

List Source: Eurofins TestAmerica, Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	SEAL
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	