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# C0AR0 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: #0419030

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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 1, 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 C0AR0

Overview

This data package consisted of four (4) Field Reagent Blanks (FRBs), two (2) rinsate blanks 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. Less significant data quality outliers resulting in estimation of sample results were identified including, but not limited to, Matrix Spike/Matrix Spike Duplicate recovery as detailed below.

Minor Problem

Percent recoveries and Relative Percent Differences (RPDs) for target analytes in the Low Level Matrix Spike/ Low Level Matrix Spike Duplicate (LLMS/LLMSD) analyses of sample C0AR0 were within control limits except for perfluorooctanoic acid (PFOA). The detected concentration for PFOA in spiked sample C0AR0 is estimated and has been qualified "J".

Notes

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

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).

Region 3 policy requires an FRB for each sample to evaluate contamination during field operations. This SDG contains five ground water samples of which two share the same sampling location, date and time. There is an FRB per sample location. No data were qualified based on this finding.

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

Percent recoveries for target analytes in the Low Level Control Sample (LLCS) analysis were within control limits. No field sample data were qualified based on LCS accuracy.

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 was evaluated by the reviewer and 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.: 320-48796-1
SDG No.:
Client Sample ID: C0ARO Lab Sample ID: 320-48796-1
Matrix: Water Lab File ID: 2019.04.04_537AA_016.d
Analysis Method: 537 DW Date Collected: 03/27/2019 12:29
Extraction Method: 537 DW Date Extracted: 04/02/2019 17:08
Sample wt/vol: 280.2(mL) Date Analyzed: 04/04/2019 20:55
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.: 286192 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	5.2		1.8	0.85
335-67-1	Perfluorooctanoic acid	6.0	J	5.4	2.4
375-95-1	Perfluorononanoic acid	1.2	J	1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.57
375-85-9	Perfluoroheptanoic acid	2.6	J	2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.71

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	103		70-130

DV
4/30/19

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AR1
Lab Sample ID: 320-48796-2
Matrix: Water
Lab File ID: 2019.04.04_537AA_019.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:10
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 284.5(mL)
Date Analyzed: 04/04/2019 21:23
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.: 286192
Units: ng/L

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

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.: 320-48796-1
SDG No.:
Client Sample ID: C0AR2
Lab Sample ID: 320-48796-3
Matrix: Water
Lab File ID: 2019.04.04_537AA_020.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:15
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 285.4(mL)
Date Analyzed: 04/04/2019 21:33
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.: 286192
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	50		1.8	0.83
335-67-1	Perfluorooctanoic acid	72		5.3	2.4
375-95-1	Perfluorononanoic acid	9.1		1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	3.8		1.8	0.56
375-85-9	Perfluoroheptanoic acid	24		2.6	1.1
375-73-5	Perfluorobutanesulfonic acid	55		1.8	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AR8
Lab Sample ID: 320-48796-4
Matrix: Water
Lab File ID: 2019.04.04_537AA_021.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 09:30
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 282.9(mL)
Date Analyzed: 04/04/2019 21:42
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.: 286192
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	2.6		1.8	0.84
335-67-1	Perfluorooctanoic acid	7.7		5.3	2.4
375-95-1	Perfluorononanoic acid	2.5		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	3.8		1.8	0.57
375-85-9	Perfluoroheptanoic acid	3.8		2.7	1.1
375-73-5	Perfluorobutanesulfonic acid	3.1		1.8	0.71

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.: 320-48796-1
SDG No.:
Client Sample ID: C0AS7
Lab Sample ID: 320-48796-5
Matrix: Water
Lab File ID: 2019.04.04_537AA_022.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 12:34
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 277.1(mL)
Date Analyzed: 04/04/2019 21:51
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.: 286192
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	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AW2 Lab Sample ID: 320-48796-6
Matrix: Water Lab File ID: 2019.04.04_537AA_023.d
Analysis Method: 537 DW Date Collected: 03/27/2019 09:35
Extraction Method: 537 DW Date Extracted: 04/02/2019 17:08
Sample wt/vol: 283.9(mL) Date Analyzed: 04/04/2019 22:01
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.: 286192 Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	103		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AW9
Lab Sample ID: 320-48796-7
Matrix: Water
Lab File ID: 2019.04.04_537AA_026.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:20
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 277.8(mL)
Date Analyzed: 04/04/2019 22:29
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.: 286190
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	98		70-130
STL00996	13C2 PFDA	101		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AX0
Lab Sample ID: 320-48796-8
Matrix: Water
Lab File ID: 2019.04.04_537AA_027.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:15
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 278.2(mL)
Date Analyzed: 04/04/2019 22:39
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.: 286190
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	102		70-130
STL00996	13C2 PFDA	105		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AX7
Lab Sample ID: 320-48796-9
Matrix: Water
Lab File ID: 2019.04.04_537AA_028.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 16:58
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 275.4(mL)
Date Analyzed: 04/04/2019 22:48
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.: 286190
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	2.5
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	100		70-130
STL00996	13C2 PFDA	103		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AX8
Lab Sample ID: 320-48796-10
Matrix: Water
Lab File ID: 2019.04.04_537AA_029.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 12:45
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 278.4(mL)
Date Analyzed: 04/04/2019 22:58
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.: 286190
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	99		70-130
STL00996	13C2 PFDA	106		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AY0
Lab Sample ID: 320-48796-11
Matrix: Water
Lab File ID: 2019.04.04_537AA_030.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:15
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 276(mL)
Date Analyzed: 04/04/2019 23:07
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.: 286190
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	47		1.8	0.86
335-67-1	Perfluorooctanoic acid	63		5.4	2.4
375-95-1	Perfluorononanoic acid	8.1		1.8	0.43
355-46-4	Perfluorohexanesulfonic acid	3.5		1.8	0.58
375-85-9	Perfluoroheptanoic acid	23		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	51		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	107		70-130

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Job Number: 320-48796-1

Job Description: DAS R35542, SDG C0AR0

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
04/05/2019

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Qualifiers

LCMS

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.
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
320-48796-1

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 2.3° C.

Receipt Exceptions

The following sample was listed on the Chain of Custody (COC) as having two containers; however, one container was received: C0AW2 (320-48796-6).

LCMS
Method(s) 537 DW: The matrix spike (MS) recovery for preparation batch 320-285773 and analytical batch 320-286192 was outside control limits for Perfluorooctanoic acid. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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

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

Detection Summary

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR0

Job ID: 320-48796-1

Client Sample ID: C0AR0 — Lab Sample ID: 320-48796-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	5.2		1.8	0.85	ng/L	1		537 DW	Total/NA
Perfluorooctanoic acid	6.0		5.4	2.4	ng/L	1		537 DW	Total/NA
Perfluorononanoic acid	1.2	J	1.8	0.42	ng/L	1		537 DW	Total/NA
Perfluoroheptanoic acid	2.6	J	2.7	1.2	ng/L	1		537 DW	Total/NA

Client Sample ID: C0AR1 — Lab Sample ID: 320-48796-2

No Detections.

Client Sample ID: C0AR2 — Lab Sample ID: 320-48796-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	50		1.8	0.83	ng/L	1		537 DW	Total/NA
Perfluorooctanoic acid	72		5.3	2.4	ng/L	1		537 DW	Total/NA
Perfluorononanoic acid	9.1		1.8	0.41	ng/L	1		537 DW	Total/NA
Perfluorohexanesulfonic acid	3.8		1.8	0.56	ng/L	1		537 DW	Total/NA
Perfluoroheptanoic acid	24		2.6	1.1	ng/L	1		537 DW	Total/NA
Perfluorobutanesulfonic acid	55		1.8	0.70	ng/L	1		537 DW	Total/NA

Client Sample ID: C0AR8 — Lab Sample ID: 320-48796-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	2.6		1.8	0.84	ng/L	1		537 DW	Total/NA
Perfluorooctanoic acid	7.7		5.3	2.4	ng/L	1		537 DW	Total/NA
Perfluorononanoic acid	2.5		1.8	0.42	ng/L	1		537 DW	Total/NA
Perfluorohexanesulfonic acid	3.8		1.8	0.57	ng/L	1		537 DW	Total/NA
Perfluoroheptanoic acid	3.8		2.7	1.1	ng/L	1		537 DW	Total/NA
Perfluorobutanesulfonic acid	3.1		1.8	0.71	ng/L	1		537 DW	Total/NA

Client Sample ID: C0AS7 — Lab Sample ID: 320-48796-5

No Detections.

Client Sample ID: C0AW2 — Lab Sample ID: 320-48796-6

No Detections.

Client Sample ID: C0AW9 — Lab Sample ID: 320-48796-7

No Detections.

Client Sample ID: C0AX0 — Lab Sample ID: 320-48796-8

No Detections.

Client Sample ID: C0AX7 — Lab Sample ID: 320-48796-9

No Detections.

Client Sample ID: C0AX8 — Lab Sample ID: 320-48796-10

No Detections.

Client Sample ID: C0AY0 — Lab Sample ID: 320-48796-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid	47		1.8	0.86	ng/L	1		537 DW	Total/NA
Perfluorooctanoic acid	63		5.4	2.4	ng/L	1		537 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR0

Job ID: 320-48796-1

Client Sample ID: C0AY0 (Continued) — Lab Sample ID: 320-48796-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorononanoic acid	8.1		1.8	0.43	ng/L	1		537 DW	Total/NA
Perfluorohexanesulfonic acid	3.5		1.8	0.58	ng/L	1		537 DW	Total/NA
Perfluoroheptanoic acid	23		2.7	1.2	ng/L	1		537 DW	Total/NA
Perfluorobutanesulfonic acid	51		1.8	0.72	ng/L	1		537 DW	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: C0AR0
Lab Sample ID: 320-48796-1
Date Collected: 03/27/19 12:29
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	**5.2**		1.8	0.85	ng/L		04/02/19 17:08	04/04/19 20:55	1
Perfluorooctanoic acid	**6.0**		5.4	2.4	ng/L		04/02/19 17:08	04/04/19 20:55	1
Perfluorononanoic acid	**1.2**	J	1.8	0.42	ng/L		04/02/19 17:08	04/04/19 20:55	1
Perfluorohexanesulfonic acid	ND		1.8	0.57	ng/L		04/02/19 17:08	04/04/19 20:55	1
Perfluoroheptanoic acid	**2.6**	J	2.7	1.2	ng/L		04/02/19 17:08	04/04/19 20:55	1
Perfluorobutanesulfonic acid	ND		1.8	0.71	ng/L		04/02/19 17:08	04/04/19 20:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*95*		*70 - 130*	*04/02/19 17:08*	*04/04/19 20:55*	*1*
13C2 PFDA	*103*		*70 - 130*	*04/02/19 17:08*	*04/04/19 20:55*	*1*

Client Sample ID: C0AR1
Lab Sample ID: 320-48796-2
Date Collected: 03/27/19 11:10
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	ND		1.8	0.83	ng/L		04/02/19 17:08	04/04/19 21:23	1
Perfluorooctanoic acid	ND		5.3	2.4	ng/L		04/02/19 17:08	04/04/19 21:23	1
Perfluorononanoic acid	ND		1.8	0.41	ng/L		04/02/19 17:08	04/04/19 21:23	1
Perfluorohexanesulfonic acid	ND		1.8	0.56	ng/L		04/02/19 17:08	04/04/19 21:23	1
Perfluoroheptanoic acid	ND		2.6	1.1	ng/L		04/02/19 17:08	04/04/19 21:23	1
Perfluorobutanesulfonic acid	ND		1.8	0.70	ng/L		04/02/19 17:08	04/04/19 21:23	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*04/02/19 17:08*	*04/04/19 21:23*	*1*
13C2 PFDA	*106*		*70 - 130*	*04/02/19 17:08*	*04/04/19 21:23*	*1*

Client Sample ID: C0AR2
Lab Sample ID: 320-48796-3
Date Collected: 03/27/19 11:15
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	**50**		1.8	0.83	ng/L		04/02/19 17:08	04/04/19 21:33	1
Perfluorooctanoic acid	**72**		5.3	2.4	ng/L		04/02/19 17:08	04/04/19 21:33	1
Perfluorononanoic acid	**9.1**		1.8	0.41	ng/L		04/02/19 17:08	04/04/19 21:33	1
Perfluorohexanesulfonic acid	**3.8**		1.8	0.56	ng/L		04/02/19 17:08	04/04/19 21:33	1
Perfluoroheptanoic acid	**24**		2.6	1.1	ng/L		04/02/19 17:08	04/04/19 21:33	1
Perfluorobutanesulfonic acid	**55**		1.8	0.70	ng/L		04/02/19 17:08	04/04/19 21:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*04/02/19 17:08*	*04/04/19 21:33*	*1*
13C2 PFDA	*107*		*70 - 130*	*04/02/19 17:08*	*04/04/19 21:33*	*1*

Client Sample ID: C0AR8
Lab Sample ID: 320-48796-4
Date Collected: 03/27/19 09:30
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	**2.6**		1.8	0.84	ng/L		04/02/19 17:08	04/04/19 21:42	1

Client Sample ID: C0AR8
Lab Sample ID: 320-48796-4
Date Collected: 03/27/19 09:30
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	**7.7**		5.3	2.4	ng/L		04/02/19 17:08	04/04/19 21:42	1
Perfluorononanoic acid	**2.5**		1.8	0.42	ng/L		04/02/19 17:08	04/04/19 21:42	1
Perfluorohexanesulfonic acid	**3.8**		1.8	0.57	ng/L		04/02/19 17:08	04/04/19 21:42	1
Perfluoroheptanoic acid	**3.8**		2.7	1.1	ng/L		04/02/19 17:08	04/04/19 21:42	1
Perfluorobutanesulfonic acid	**3.1**		1.8	0.71	ng/L		04/02/19 17:08	04/04/19 21:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*91*		*70 - 130*	*04/02/19 17:08*	*04/04/19 21:42*	*1*
13C2 PFDA	*105*		*70 - 130*	*04/02/19 17:08*	*04/04/19 21:42*	*1*

Client Sample ID: C0AS7
Lab Sample ID: 320-48796-5
Date Collected: 03/27/19 12:34
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		04/02/19 17:08	04/04/19 21:51	1
Perfluorooctanoic acid	ND		5.4	2.4	ng/L		04/02/19 17:08	04/04/19 21:51	1
Perfluorononanoic acid	ND		1.8	0.42	ng/L		04/02/19 17:08	04/04/19 21:51	1
Perfluorohexanesulfonic acid	ND		1.8	0.58	ng/L		04/02/19 17:08	04/04/19 21:51	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/02/19 17:08	04/04/19 21:51	1
Perfluorobutanesulfonic acid	ND		1.8	0.72	ng/L		04/02/19 17:08	04/04/19 21:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*04/02/19 17:08*	*04/04/19 21:51*	*1*
13C2 PFDA	*101*		*70 - 130*	*04/02/19 17:08*	*04/04/19 21:51*	*1*

Client Sample ID: C0AW2
Lab Sample ID: 320-48796-6
Date Collected: 03/27/19 09:35
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	0.84	ng/L		04/02/19 17:08	04/04/19 22:01	1
Perfluorooctanoic acid	ND		5.3	2.4	ng/L		04/02/19 17:08	04/04/19 22:01	1
Perfluorononanoic acid	ND		1.8	0.41	ng/L		04/02/19 17:08	04/04/19 22:01	1
Perfluorohexanesulfonic acid	ND		1.8	0.56	ng/L		04/02/19 17:08	04/04/19 22:01	1
Perfluoroheptanoic acid	ND		2.6	1.1	ng/L		04/02/19 17:08	04/04/19 22:01	1
Perfluorobutanesulfonic acid	ND		1.8	0.70	ng/L		04/02/19 17:08	04/04/19 22:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:01*	*1*
13C2 PFDA	*103*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:01*	*1*

Client Sample ID: C0AW9
Lab Sample ID: 320-48796-7
Date Collected: 03/27/19 11:20
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		04/02/19 17:08	04/04/19 22:29	1
Perfluorooctanoic acid	ND		5.4	2.4	ng/L		04/02/19 17:08	04/04/19 22:29	1

Client Sample ID: C0AW9
Lab Sample ID: 320-48796-7
Date Collected: 03/27/19 11:20
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		04/02/19 17:08	04/04/19 22:29	1
Perfluorohexanesulfonic acid	ND		1.8	0.58	ng/L		04/02/19 17:08	04/04/19 22:29	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/02/19 17:08	04/04/19 22:29	1
Perfluorobutanesulfonic acid	ND		1.8	0.72	ng/L		04/02/19 17:08	04/04/19 22:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:29*	*1*
13C2 PFDA	*101*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:29*	*1*

Client Sample ID: C0AX0
Lab Sample ID: 320-48796-8
Date Collected: 03/27/19 11:15
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	0.85	ng/L		04/02/19 17:08	04/04/19 22:39	1
Perfluorooctanoic acid	ND		5.4	2.4	ng/L		04/02/19 17:08	04/04/19 22:39	1
Perfluorononanoic acid	ND		1.8	0.42	ng/L		04/02/19 17:08	04/04/19 22:39	1
Perfluorohexanesulfonic acid	ND		1.8	0.58	ng/L		04/02/19 17:08	04/04/19 22:39	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/02/19 17:08	04/04/19 22:39	1
Perfluorobutanesulfonic acid	ND		1.8	0.72	ng/L		04/02/19 17:08	04/04/19 22:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:39*	*1*
13C2 PFDA	*105*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:39*	*1*

Client Sample ID: C0AX7
Lab Sample ID: 320-48796-9
Date Collected: 03/27/19 16:58
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		04/02/19 17:08	04/04/19 22:48	1
Perfluorooctanoic acid	ND		5.4	2.5	ng/L		04/02/19 17:08	04/04/19 22:48	1
Perfluorononanoic acid	ND		1.8	0.43	ng/L		04/02/19 17:08	04/04/19 22:48	1
Perfluorohexanesulfonic acid	ND		1.8	0.58	ng/L		04/02/19 17:08	04/04/19 22:48	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/02/19 17:08	04/04/19 22:48	1
Perfluorobutanesulfonic acid	ND		1.8	0.73	ng/L		04/02/19 17:08	04/04/19 22:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*100*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:48*	*1*
13C2 PFDA	*103*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:48*	*1*

Client Sample ID: C0AX8
Lab Sample ID: 320-48796-10
Date Collected: 03/27/19 12:45
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		04/02/19 17:08	04/04/19 22:58	1
Perfluorooctanoic acid	ND		5.4	2.4	ng/L		04/02/19 17:08	04/04/19 22:58	1
Perfluorononanoic acid	ND		1.8	0.42	ng/L		04/02/19 17:08	04/04/19 22:58	1

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR0

Client Sample ID: C0AX8
Lab Sample ID: 320-48796-10

Date Collected: 03/27/19 12:45
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
Perfluorohexanesulfonic acid	ND		1.8	0.57	ng/L		04/02/19 17:08	04/04/19 22:58	1
Perfluoroheptanoic acid	ND		2.7	1.2	ng/L		04/02/19 17:08	04/04/19 22:58	1
Perfluorobutanesulfonic acid	ND		1.8	0.72	ng/L		04/02/19 17:08	04/04/19 22:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*99*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:58*	*1*
13C2 PFDA	*106*		*70 - 130*	*04/02/19 17:08*	*04/04/19 22:58*	*1*

Client Sample ID: C0AY0
Lab Sample ID: 320-48796-11

Date Collected: 03/27/19 11:15
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	**47**		1.8	0.86	ng/L		04/02/19 17:08	04/04/19 23:07	1
Perfluorooctanoic acid	**63**		5.4	2.4	ng/L		04/02/19 17:08	04/04/19 23:07	1
Perfluorononanoic acid	**8.1**		1.8	0.43	ng/L		04/02/19 17:08	04/04/19 23:07	1
Perfluorohexanesulfonic acid	**3.5**		1.8	0.58	ng/L		04/02/19 17:08	04/04/19 23:07	1
Perfluoroheptanoic acid	**23**		2.7	1.2	ng/L		04/02/19 17:08	04/04/19 23:07	1
Perfluorobutanesulfonic acid	**51**		1.8	0.72	ng/L		04/02/19 17:08	04/04/19 23:07	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*88*		*70 - 130*	*04/02/19 17:08*	*04/04/19 23:07*	*1*
13C2 PFDA	*107*		*70 - 130*	*04/02/19 17:08*	*04/04/19 23:07*	*1*

Default Detection Limits

Client: Weston Solutions, Inc.
Job ID: 320-48796-1
Project/Site: DAS R35542, SDG C0AR0

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 C0AR0

Job ID: 320-48796-1

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)**						
320-48796-1	C0AR0	95	103						
320-48796-1 LMS	C0AR0	96	98						
320-48796-1 LMSD	C0AR0	97	106						
320-48796-2	C0AR1	98	106						
320-48796-3	C0AR2	91	107						
320-48796-4	C0AR8	91	105						
320-48796-5	C0AS7	98	101						
320-48796-6	C0AW2	94	103						
320-48796-7	C0AW9	98	101						
320-48796-8	C0AX0	102	105						
320-48796-9	C0AX7	100	103						
320-48796-10	C0AX8	99	106						
320-48796-11	C0AY0	88	107						
LLCS 320-285773/2-A	Lab Control Sample	98	102						
MB 320-285773/1-A	Method Blank	98	101						

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA

QC Sample Results

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR0

Job ID: 320-48796-1

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

Lab Sample ID: MB 320-285773/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 286192 — **Prep Batch: 285773**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid	ND		2.0	0.95	ng/L		04/02/19 17:08	04/04/19 20:36	1
Perfluorooctanoic acid	ND		6.0	2.7	ng/L		04/02/19 17:08	04/04/19 20:36	1
Perfluorononanoic acid	ND		2.0	0.47	ng/L		04/02/19 17:08	04/04/19 20:36	1
Perfluorohexanesulfonic acid	ND		2.0	0.64	ng/L		04/02/19 17:08	04/04/19 20:36	1
Perfluoroheptanoic acid	ND		3.0	1.3	ng/L		04/02/19 17:08	04/04/19 20:36	1
Perfluorobutanesulfonic acid	ND		2.0	0.80	ng/L		04/02/19 17:08	04/04/19 20:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*04/02/19 17:08*	*04/04/19 20:36*	*1*
13C2 PFDA	*101*		*70 - 130*	*04/02/19 17:08*	*04/04/19 20:36*	*1*

Lab Sample ID: LLCS 320-285773/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 286192 — **Prep Batch: 285773**

Analyte	Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid	3.71	3.52		ng/L		95	50 - 150
Perfluorooctanoic acid	4.00	3.69	J	ng/L		92	50 - 150
Perfluorononanoic acid	4.00	4.17		ng/L		104	50 - 150
Perfluorohexanesulfonic acid	3.64	3.56		ng/L		98	50 - 150
Perfluoroheptanoic acid	4.00	3.80		ng/L		95	50 - 150
Perfluorobutanesulfonic acid	3.54	3.35		ng/L		95	50 - 150

Surrogate	*LLCS %Recovery*	*LLCS Qualifier*	*Limits*
13C2 PFHxA	*98*		*70 - 130*
13C2 PFDA	*102*		*70 - 130*

Lab Sample ID: 320-48796-1 LMS — **Client Sample ID: C0AR0**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 286192 — **Prep Batch: 285773**

Analyte	Sample Result	Sample Qualifier	Spike Added	LMS Result	LMS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid	5.2		3.29	8.83		ng/L		110	50 - 150
Perfluorooctanoic acid	6.0		3.55	11.4	F1	ng/L		152	50 - 150
Perfluorononanoic acid	1.2	J	3.55	4.52		ng/L		94	50 - 150
Perfluorohexanesulfonic acid	ND		3.23	3.20		ng/L		99	50 - 150
Perfluoroheptanoic acid	2.6	J	3.55	6.56		ng/L		112	50 - 150
Perfluorobutanesulfonic acid	ND		3.14	3.46		ng/L		110	50 - 150

Surrogate	*LMS %Recovery*	*LMS Qualifier*	*Limits*
13C2 PFHxA	*96*		*70 - 130*
13C2 PFDA	*98*		*70 - 130*

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

Lab Sample ID: 320-48796-1 LMSD | **Client Sample ID: C0AR0**
Matrix: Water | **Prep Type: Total/NA**
Analysis Batch: 286192 | **Prep Batch: 285773**

Analyte	Sample Result	Sample Qualifier	Spike Added	LMSD Result	LMSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid	5.2		3.20	7.50		ng/L		71	50 - 150	16	50
Perfluorooctanoic acid	6.0		3.45	8.79		ng/L		80	50 - 150	26	50
Perfluorononanoic acid	1.2	J	3.45	4.49		ng/L		96	50 - 150	1	50
Perfluorohexanesulfonic acid	ND		3.14	2.94		ng/L		94	50 - 150	9	50
Perfluoroheptanoic acid	2.6	J	3.45	5.57		ng/L		87	50 - 150	16	50
Perfluorobutanesulfonic acid	ND		3.05	2.88		ng/L		94	50 - 150	18	50

Surrogate	*LMSD %Recovery*	*LMSD Qualifier*	*Limits*
13C2 PFHxA	*97*		*70 - 130*
13C2 PFDA	*106*		*70 - 130*

QC Association Summary

Client: Weston Solutions, Inc.
Project/Site: DAS R35542, SDG C0AR0

Job ID: 320-48796-1

LCMS

Prep Batch: 285773

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48796-1	C0AR0	Total/NA	Water	537 DW	
320-48796-2	C0AR1	Total/NA	Water	537 DW	
320-48796-3	C0AR2	Total/NA	Water	537 DW	
320-48796-4	C0AR8	Total/NA	Water	537 DW	
320-48796-5	C0AS7	Total/NA	Water	537 DW	
320-48796-6	C0AW2	Total/NA	Water	537 DW	
320-48796-7	C0AW9	Total/NA	Water	537 DW	
320-48796-8	C0AX0	Total/NA	Water	537 DW	
320-48796-9	C0AX7	Total/NA	Water	537 DW	
320-48796-10	C0AX8	Total/NA	Water	537 DW	
320-48796-11	C0AY0	Total/NA	Water	537 DW	
MB 320-285773/1-A	Method Blank	Total/NA	Water	537 DW	
LLCS 320-285773/2-A	Lab Control Sample	Total/NA	Water	537 DW	
320-48796-1 LMS	C0AR0	Total/NA	Water	537 DW	
320-48796-1 LMSD	C0AR0	Total/NA	Water	537 DW	

Analysis Batch: 286190

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48796-7	C0AW9	Total/NA	Water	537 DW	285773
320-48796-8	C0AX0	Total/NA	Water	537 DW	285773
320-48796-9	C0AX7	Total/NA	Water	537 DW	285773
320-48796-10	C0AX8	Total/NA	Water	537 DW	285773
320-48796-11	C0AY0	Total/NA	Water	537 DW	285773

Analysis Batch: 286192

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48796-1	C0AR0	Total/NA	Water	537 DW	285773
320-48796-2	C0AR1	Total/NA	Water	537 DW	285773
320-48796-3	C0AR2	Total/NA	Water	537 DW	285773
320-48796-4	C0AR8	Total/NA	Water	537 DW	285773
320-48796-5	C0AS7	Total/NA	Water	537 DW	285773
320-48796-6	C0AW2	Total/NA	Water	537 DW	285773
MB 320-285773/1-A	Method Blank	Total/NA	Water	537 DW	285773
LLCS 320-285773/2-A	Lab Control Sample	Total/NA	Water	537 DW	285773
320-48796-1 LMS	C0AR0	Total/NA	Water	537 DW	285773
320-48796-1 LMSD	C0AR0	Total/NA	Water	537 DW	285773

Client Sample ID: C0AR0 — Lab Sample ID: 320-48796-1

Date Collected: 03/27/19 12:29 — **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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286192	04/04/19 20:55	JRB	TAL SAC

Client Sample ID: C0AR1 — Lab Sample ID: 320-48796-2

Date Collected: 03/27/19 11:10 — **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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286192	04/04/19 21:23	JRB	TAL SAC

Client Sample ID: C0AR2 — Lab Sample ID: 320-48796-3

Date Collected: 03/27/19 11:15 — **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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286192	04/04/19 21:33	JRB	TAL SAC

Client Sample ID: C0AR8 — Lab Sample ID: 320-48796-4

Date Collected: 03/27/19 09:30 — **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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286192	04/04/19 21:42	JRB	TAL SAC

Client Sample ID: C0AS7 — Lab Sample ID: 320-48796-5

Date Collected: 03/27/19 12:34 — **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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286192	04/04/19 21:51	JRB	TAL SAC

Client Sample ID: C0AW2 — Lab Sample ID: 320-48796-6

Date Collected: 03/27/19 09:35 — **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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286192	04/04/19 22:01	JRB	TAL SAC

Client Sample ID: C0AW9
Lab Sample ID: 320-48796-7
Date Collected: 03/27/19 11:20
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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286190	04/04/19 22:29	JRB	TAL SAC

Client Sample ID: C0AX0
Lab Sample ID: 320-48796-8
Date Collected: 03/27/19 11:15
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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286190	04/04/19 22:39	JRB	TAL SAC

Client Sample ID: C0AX7
Lab Sample ID: 320-48796-9
Date Collected: 03/27/19 16:58
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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286190	04/04/19 22:48	JRB	TAL SAC

Client Sample ID: C0AX8
Lab Sample ID: 320-48796-10
Date Collected: 03/27/19 12:45
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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286190	04/04/19 22:58	JRB	TAL SAC

Client Sample ID: C0AY0
Lab Sample ID: 320-48796-11
Date Collected: 03/27/19 11:15
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			285773	04/02/19 17:08	DTH	TAL SAC
Total/NA	Analysis	537 DW		1	286190	04/04/19 23:07	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: 320-48796-1
Project/Site: DAS R35542, SDG C0AR0

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 C0AR0

Job ID: 320-48796-1

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 C0AR0

Job ID: 320-48796-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-48796-1	C0AR0	Water	03/27/19 12:29	03/29/19 09:25
320-48796-2	C0AR1	Water	03/27/19 11:10	03/29/19 09:25
320-48796-3	C0AR2	Water	03/27/19 11:15	03/29/19 09:25
320-48796-4	C0AR8	Water	03/27/19 09:30	03/29/19 09:25
320-48796-5	C0AS7	Water	03/27/19 12:34	03/29/19 09:25
320-48796-6	C0AW2	Water	03/27/19 09:35	03/29/19 09:25
320-48796-7	C0AW9	Water	03/27/19 11:20	03/29/19 09:25
320-48796-8	C0AX0	Water	03/27/19 11:15	03/29/19 09:25
320-48796-9	C0AX7	Water	03/27/19 16:58	03/29/19 09:25
320-48796-10	C0AX8	Water	03/27/19 12:45	03/29/19 09:25
320-48796-11	C0AY0	Water	03/27/19 11:15	03/29/19 09:25

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48796-1

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.: 320-48796-1

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.: 320-48796-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286190

Lab Sample ID: 320-48796-7 Client Sample ID: C0AW9

Date Analyzed: 04/04/19 22:29 Lab File ID: 2019.04.04_537AA_026.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 13:41

Lab Sample ID: 320-48796-8 Client Sample ID: C0AX0

Date Analyzed: 04/04/19 22:39 Lab File ID: 2019.04.04_537AA_027.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 13:41
Perfluorooctanoic acid		Invalid Compound ID		04/05/19 13:41

Lab Sample ID: 320-48796-9 Client Sample ID: C0AX7

Date Analyzed: 04/04/19 22:48 Lab File ID: 2019.04.04_537AA_028.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 13:41

Lab Sample ID: 320-48796-10 Client Sample ID: C0AX8

Date Analyzed: 04/04/19 22:58 Lab File ID: 2019.04.04_537AA_029.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 13:41
Perfluorooctanoic acid		Invalid Compound ID		04/05/19 13:41

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48796-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286190

Lab Sample ID: 320-48796-11 Client Sample ID: C0AY0

Date Analyzed: 04/04/19 23:07 Lab File ID: 2019.04.04_537AA_030.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 13:43
Perfluorohexanesulfonic acid	2.80	Baseline		04/05/19 13:42
Perfluorooctanoic acid	3.18	Isomers		04/05/19 13:43

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48796-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286192

Lab Sample ID: MB 320-285773/1-A Client Sample ID:

Date Analyzed: 04/04/19 20:36 Lab File ID: 2019.04.04_537AA_014.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 13:30

Lab Sample ID: LLCS 320-285773/2-A Client Sample ID:

Date Analyzed: 04/04/19 20:45 Lab File ID: 2019.04.04_537AA_015.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 13:31
Perfluorohexanesulfonic acid	2.78	Baseline		04/05/19 13:31
Perfluorooctanoic acid	3.16	Baseline		04/05/19 13:31
Perfluorooctanesulfonic acid	3.53	Baseline		04/05/19 13:31

Lab Sample ID: 320-48796-1 Client Sample ID: C0AR0

Date Analyzed: 04/04/19 20:55 Lab File ID: 2019.04.04_537AA_016.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 13:32
Perfluorooctanoic acid	3.18	Isomers		04/05/19 13:32
Perfluorooctanesulfonic acid	3.42	Isomers		04/05/19 13:33
Perfluorohexanesulfonic acid		Invalid Compound ID		04/05/19 13:32

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48796-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286192

Lab Sample ID: 320-48796-1 LMS Client Sample ID: C0AR0 LMS

Date Analyzed: 04/04/19 21:04 Lab File ID: 2019.04.04_537AA_017.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 13:34
Perfluorohexanesulfonic acid	2.78	Baseline		04/05/19 13:33
Perfluorooctanoic acid	3.18	Isomers		04/05/19 13:34
Perfluorooctanesulfonic acid	3.55	Isomers		04/05/19 13:34

Lab Sample ID: 320-48796-1 LMSD Client Sample ID: C0AR0 LMSD

Date Analyzed: 04/04/19 21:14 Lab File ID: 2019.04.04_537AA_018.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 13:35
Perfluorohexanesulfonic acid	2.78	Baseline		04/05/19 13:35
Perfluorooctanoic acid	3.18	Isomers		04/05/19 13:36
Perfluorooctanesulfonic acid	3.53	Isomers		04/05/19 13:36

Lab Sample ID: 320-48796-2 Client Sample ID: C0AR1

Date Analyzed: 04/04/19 21:23 Lab File ID: 2019.04.04_537AA_019.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid		Invalid Compound ID	Ex. 4 CBI	04/05/19 13:36
Perfluoroheptanoic acid		Invalid Compound ID		04/05/19 13:37
Perfluorohexanesulfonic acid		Invalid Compound ID		04/05/19 13:37
Perfluorooctanoic acid		Invalid Compound ID		04/05/19 13:37

537 DW

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: Eurofins TestAmerica, Sacram Job No.: 320-48796-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 286192

Lab Sample ID: 320-48796-3 Client Sample ID: C0AR2

Date Analyzed: 04/04/19 21:33 Lab File ID: 2019.04.04_537AA_020.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 13:38
Perfluorohexanesulfonic acid	2.78	Isomers		04/05/19 13:37
Perfluorooctanoic acid	3.18	Isomers		04/05/19 13:38

Lab Sample ID: 320-48796-4 Client Sample ID: C0AR8

Date Analyzed: 04/04/19 21:42 Lab File ID: 2019.04.04_537AA_021.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 13:39
Perfluorohexanesulfonic acid	2.78	Baseline		04/05/19 13:38
Perfluorooctanoic acid	3.18	Isomers		04/05/19 13:39
Perfluorooctanesulfonic acid	3.42	Isomers		04/05/19 13:39

Lab Sample ID: 320-48796-5 Client Sample ID: C0AS7

Date Analyzed: 04/04/19 21:51 Lab File ID: 2019.04.04_537AA_022.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 13:40
Perfluorooctanoic acid		Invalid Compound ID		04/05/19 13:40

Lab Sample ID: 320-48796-6 Client Sample ID: C0AW2

Date Analyzed: 04/04/19 22:01 Lab File ID: 2019.04.04_537AA_023.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorononanoic acid		Invalid Compound ID	Ex. 4 CBI	04/05/19 13:40
Perfluorooctanesulfonic acid		Invalid Compound ID		04/05/19 13:40
Perfluorooctanoic acid		Invalid Compound ID		04/05/19 13:40

537 DW

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

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.: 320-48796-1

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.: 320-48796-1

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.: 320-48796-1

SDG No.:

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.: 320-48796-1

SDG No.:

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.: 320-48796-1

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.: 320-48796-1

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.: 320-48796-1

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.: 320-48796-1

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.: 320-48796-1

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.: 320-48796-1

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
LC537LSP_00001	05/01/19	11/01/18	Methanol, Lot 090285	250 mL	LC537HSP_00001	5 mL	N-ethylperfluorooctanesulfonamidoacetic acid	0.002 ug/mL
							N-methylperfluorooctanesulfonamidoacetic acid	0.002 ug/mL
							Perfluorobutane Sulfonate DNU	0.001768 ug/mL
							Perfluorobutanesulfonic acid	0.001768 ug/mL
							Perfluorodecanoic acid	0.002 ug/mL
							Perfluorododecanoic acid	0.002 ug/mL
							Perfluoroheptanoic acid	0.002 ug/mL
							Perfluorohexanoic acid	0.002 ug/mL

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexane Sulfonate DNU	0.00182 ug/mL
							Perfluorohexanesulfonic acid	0.00182 ug/mL
							Perfluorononanoic acid	0.002 ug/mL
							Perfluorooctanoic acid	0.002002 ug/mL
							Perfluorooctanesulfonic acid	0.001856 ug/mL
							Perfluorotetradecanoic acid	0.002 ug/mL
							Perfluorotridecanoic acid	0.002 ug/mL
							Perfluoroundecanoic acid	0.002 ug/mL
.LC537HSP_00001	05/01/19	11/01/18	Methanol, Lot 090285	250 mL	LCbr-NEtFOSAA_00001	500 uL	N-ethylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCbr-NMeFOSAA_00001	500 uL	N-methylperfluorooctanesulfonamidoacetic acid	0.1 ug/mL
					LCPFBS_00009	500 uL	Perfluorobutane Sulfonate DNU	0.0884 ug/mL
							Perfluorobutanesulfonic acid	0.0884 ug/mL
					LCPFDA_00008	500 uL	Perfluorodecanoic acid	0.1 ug/mL
					LCPFDoA_00008	500 uL	Perfluorododecanoic acid	0.1 ug/mL
					LCPFHpA_00011	500 uL	Perfluoroheptanoic acid	0.1 ug/mL
					LCPFHxA_00010	500 uL	Perfluorohexanoic acid	0.1 ug/mL
					LCPFHxS-br_00006	500 uL	Perfluorohexane Sulfonate DNU	0.091 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
					LCPFNA_00010	500 uL	Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid	0.1001 ug/mL
					LCPFOA_00011	500 uL	Perfluorooctanoic acid	0.1001 ug/mL
					LCPFOS-br_00007	500 uL	Perfluorooctanesulfonic acid	0.0928 ug/mL
					LCPFTeDA_00008	500 uL	Perfluorotetradecanoic acid	0.1 ug/mL
					LCPFTrDA_00008	500 uL	Perfluorotridecanoic acid	0.1 ug/mL
					LCPFUdA_00008	500 uL	Perfluoroundecanoic acid	0.1 ug/mL
..LCbr-NEtFOSAA_00001	01/17/23	WELLINGTON, Lot brNEtFOSAA0118			(Purchased Reagent)		N-ethylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118			(Purchased Reagent)		N-methylperfluorooctanesulfonamidoacetic acid	50 ug/mL
..LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutane Sulfonate DNU	44.2 ug/mL
							Perfluorobutanesulfonic acid	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid	50 ug/mL
..LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexane Sulfonate DNU	45.5 ug/mL
							Perfluorohexanesulfonic acid	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid	50 ug/mL
							Perfluorooctanoic acid	0.05 ug/mL
..LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid	50 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid	46.4 ug/mL
..LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Reagent

LCbr-NEtFOSAA_00001

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NEtFOSAA

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

PRODUCT CODE:	br-NEtFOSAA
LOT NUMBER:	brNEtFOSAA0118
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-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.

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:

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 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

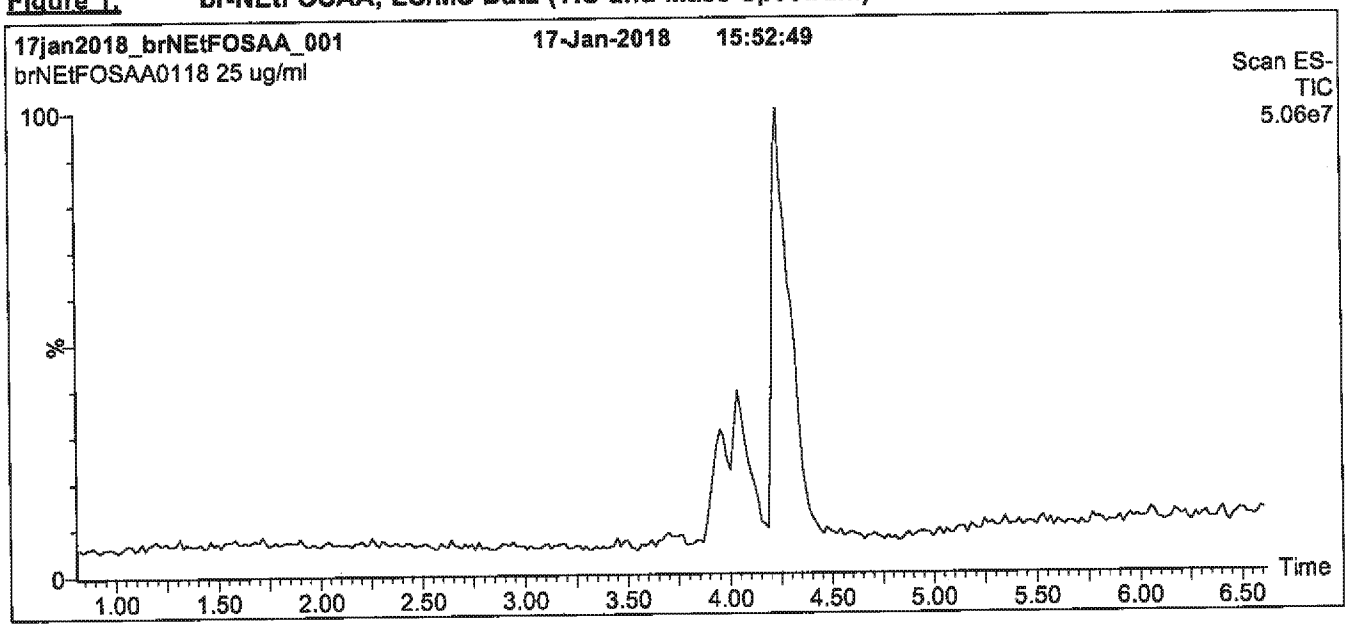
Table A: **br-NEtFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

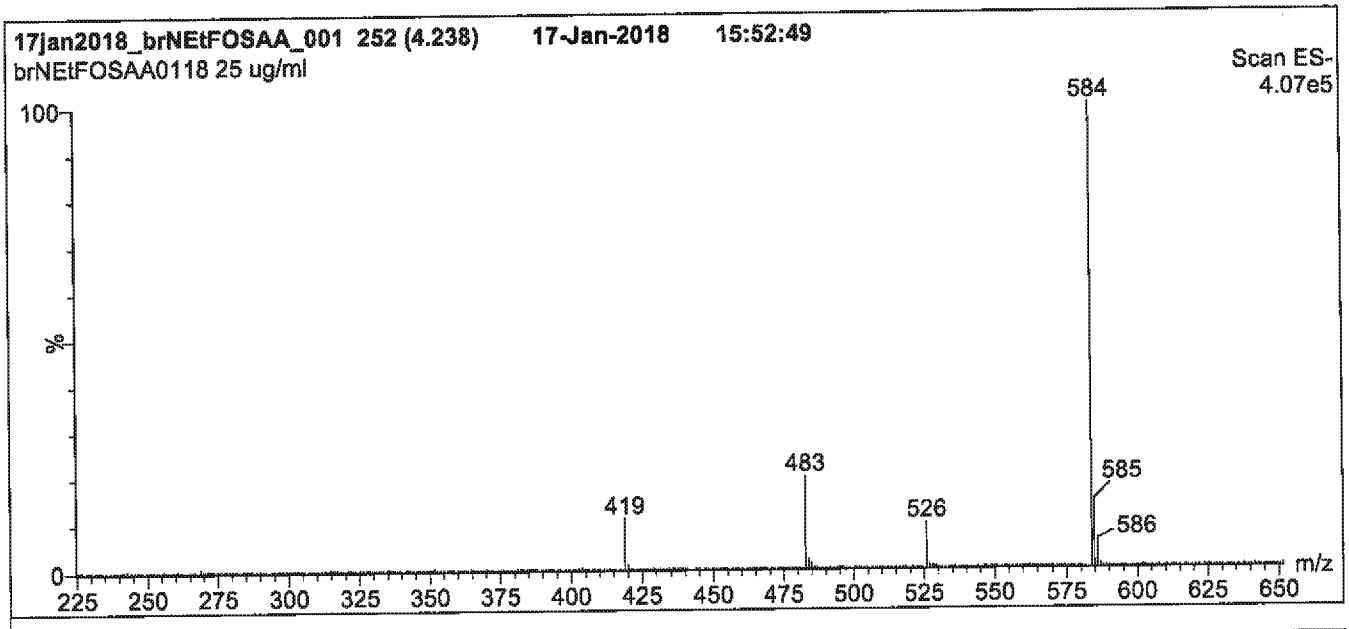
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(C_2H_5)CH_2CO_2H$	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	2.3
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic 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:** 03/22/2018 (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: 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

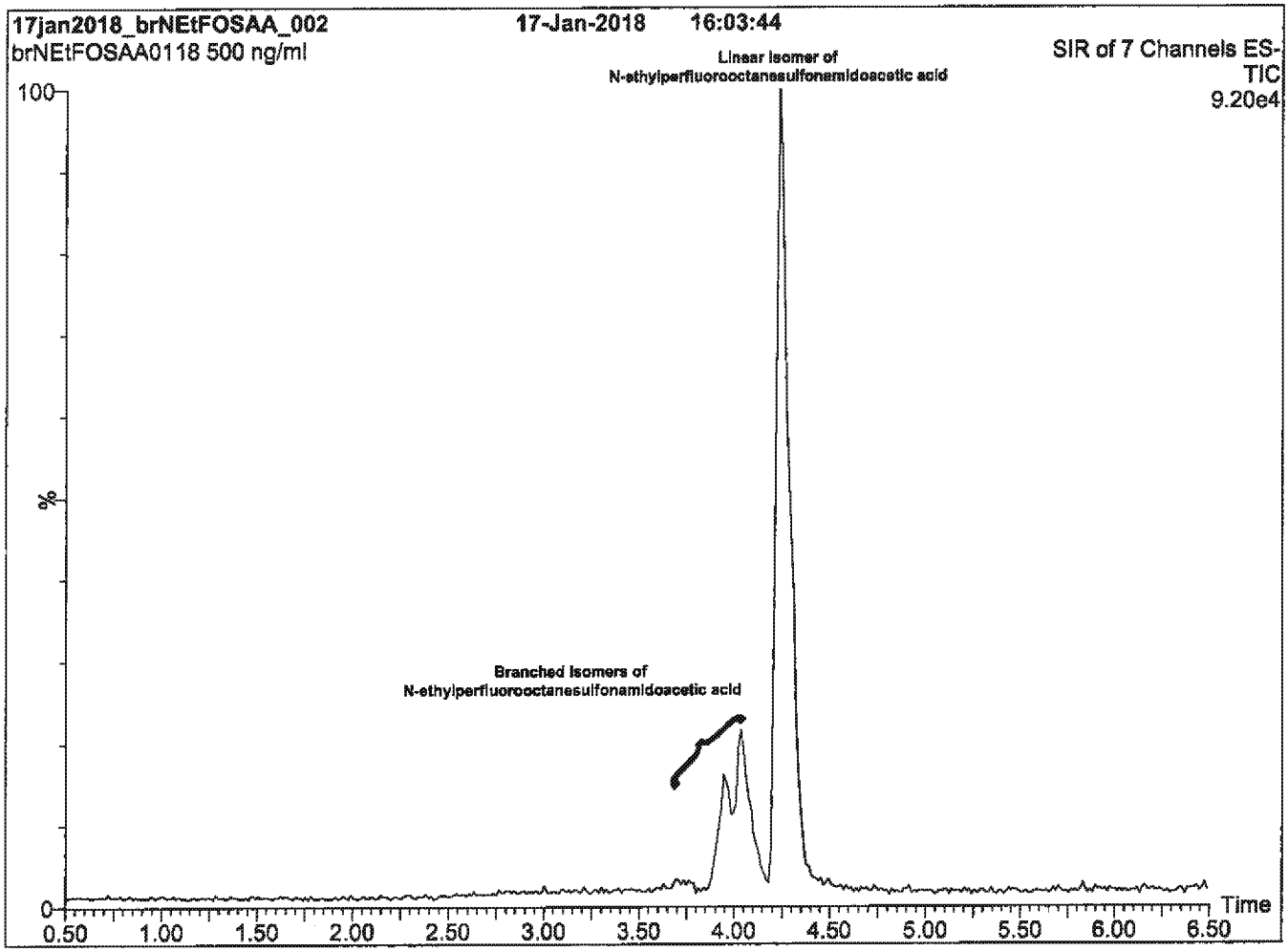
Flow: 300 µl/min

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-NEtFOSAA; 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

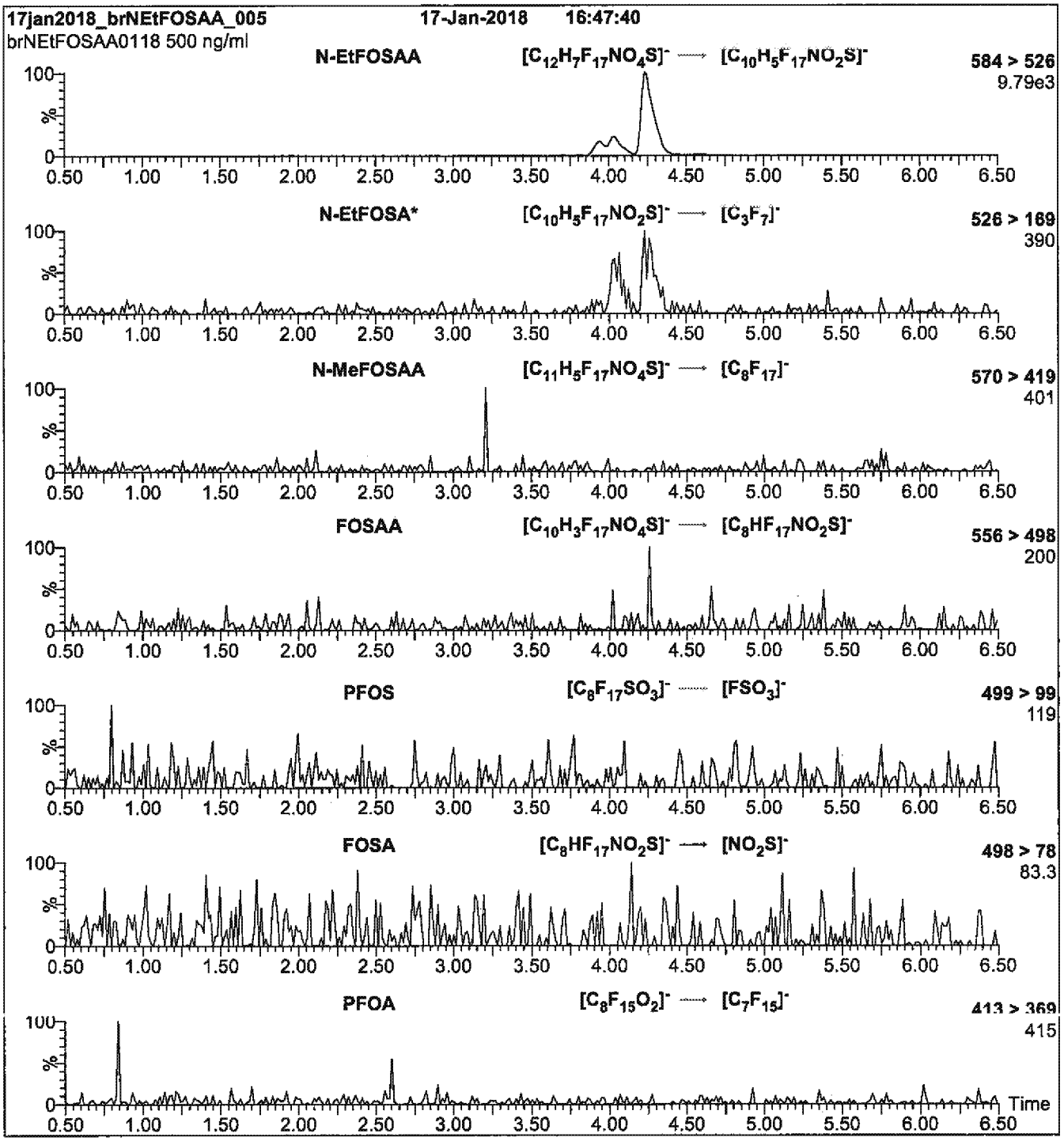
Flow: 300 µl/min

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-NEtFOSAA; LC/MS/MS Data (Selected MRM Transitions)**



*Note: N-EtFOSA 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

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.

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:

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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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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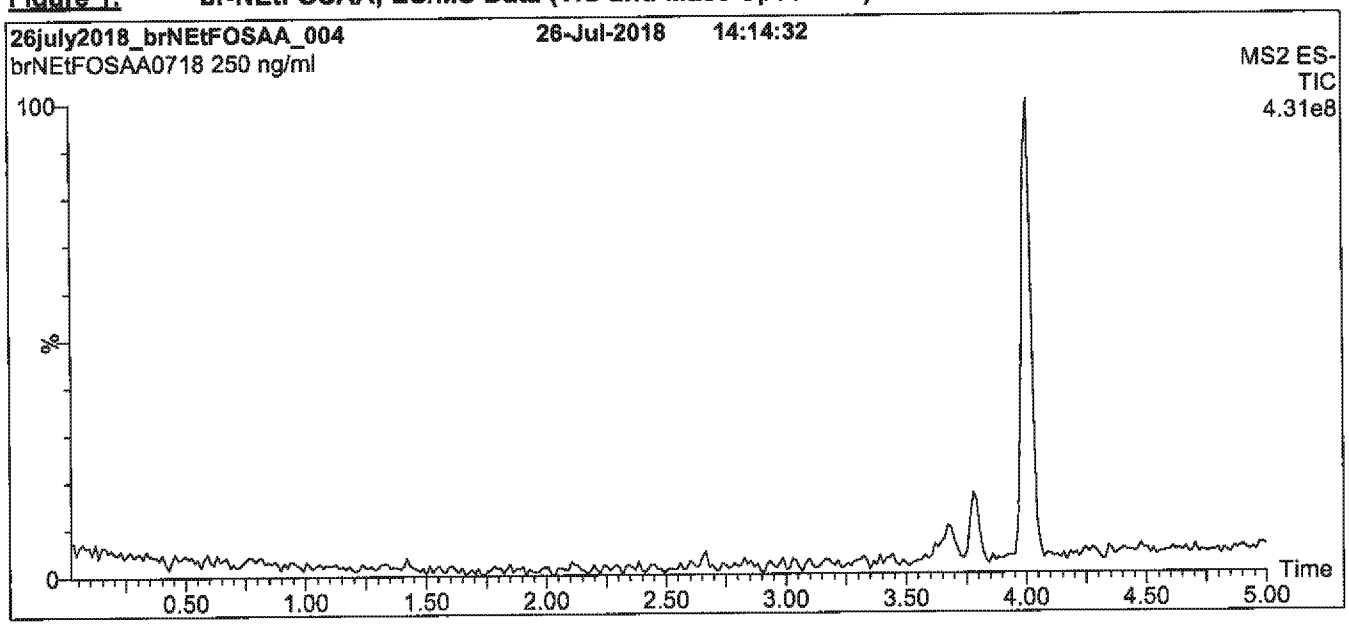
Table A: **br-NEtFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

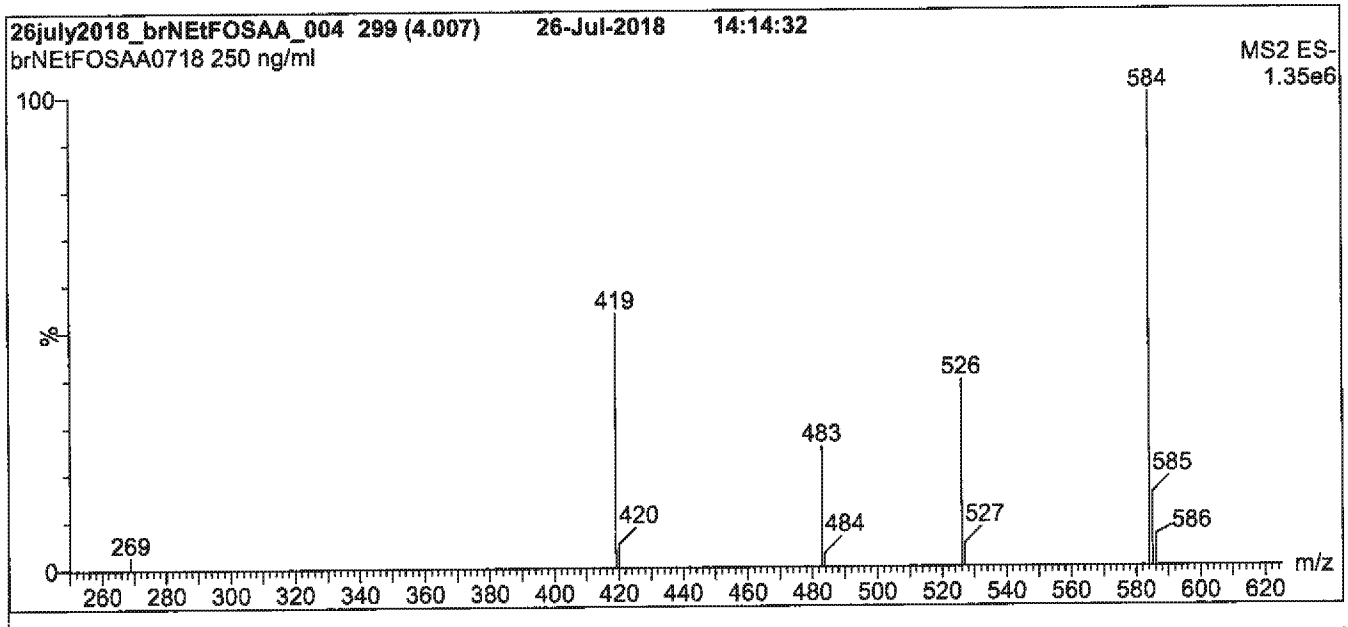
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(C_2H_5)CH_2CO_2H$	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(C_2H_5)CH_2CO_2H$	2.3
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic 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

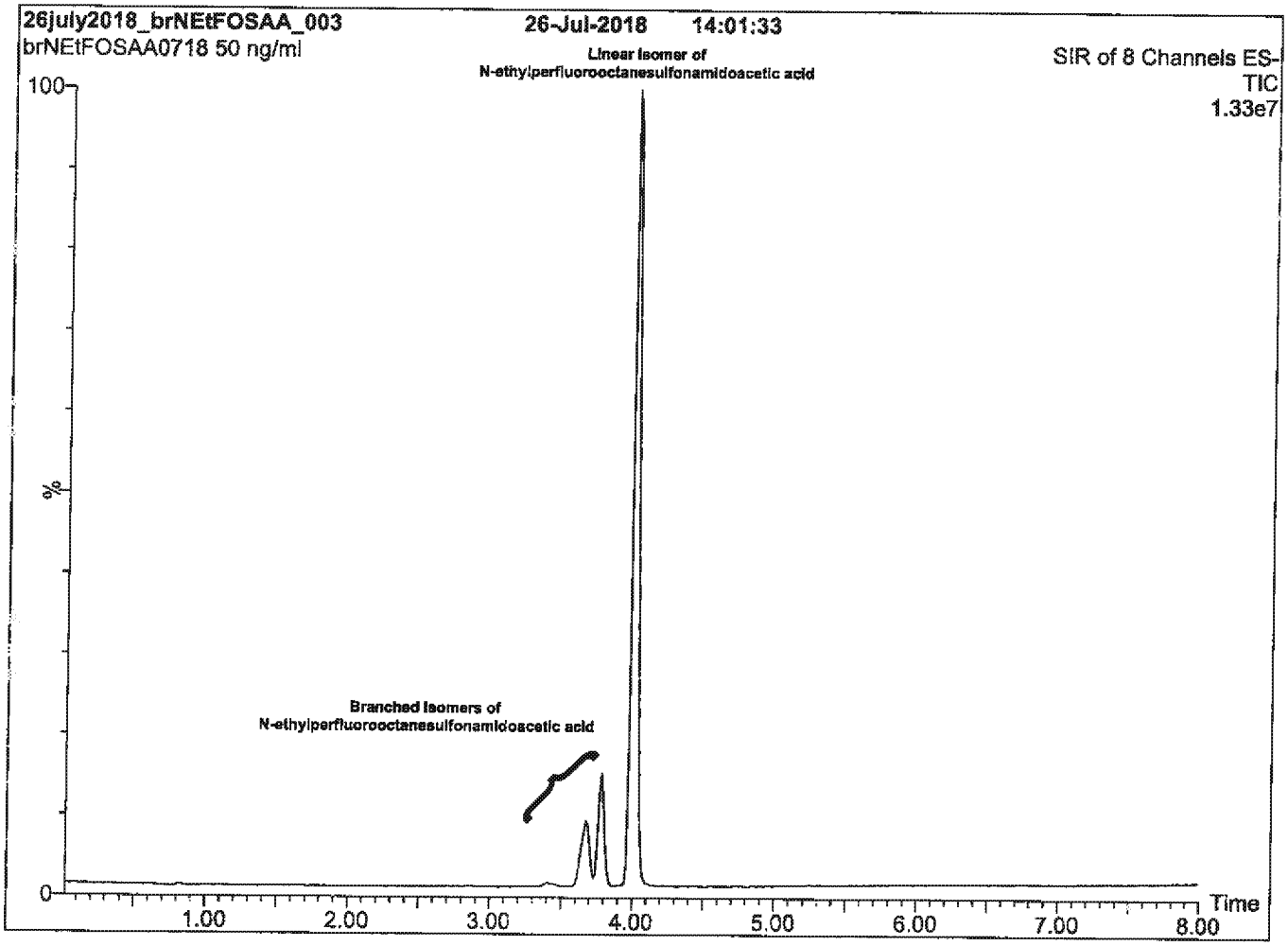
Flow: 300 µl/min

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

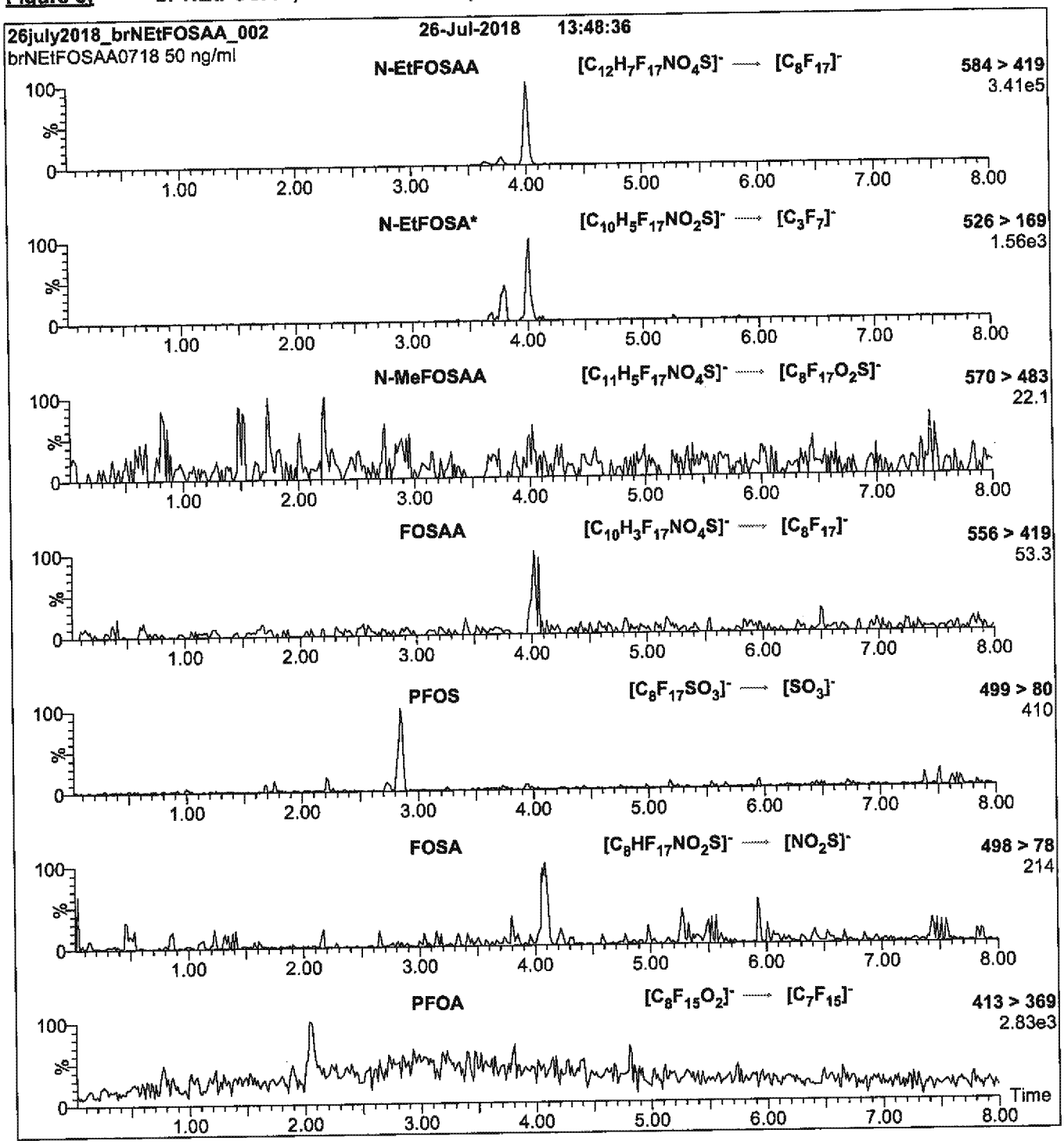
Flow: 300 µl/min

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_00001

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.

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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, 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:

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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:

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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:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED

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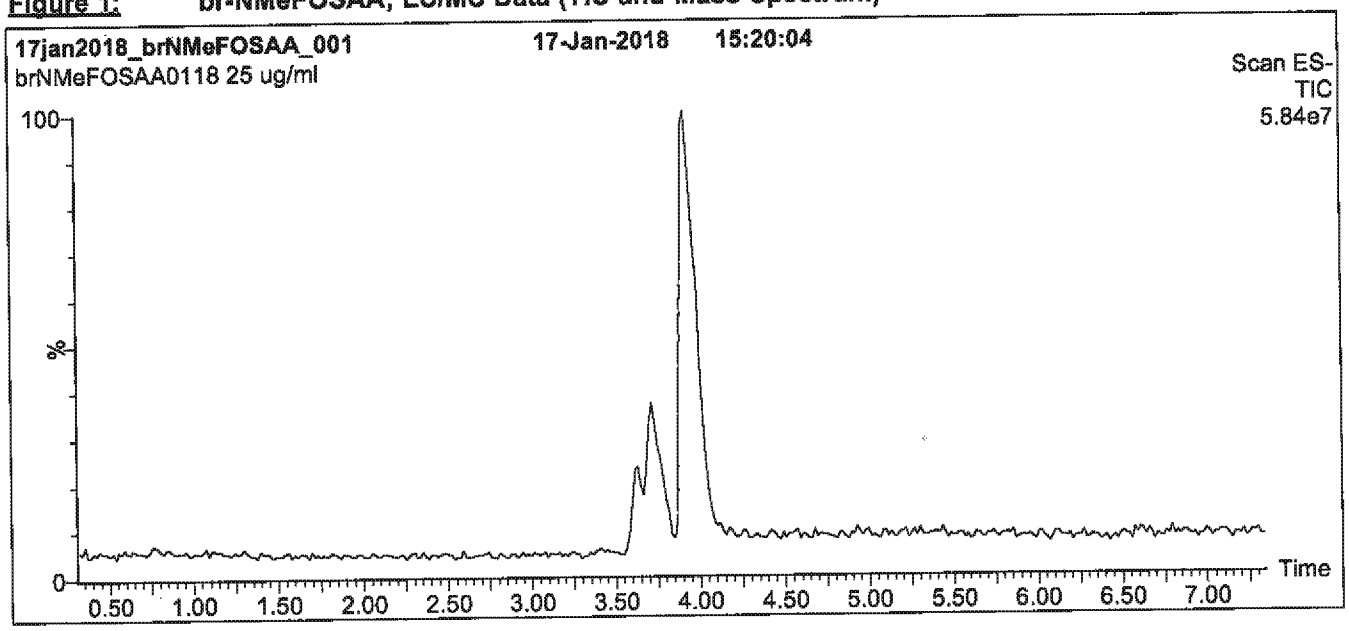
Table A: **br-NMeFOSAA; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

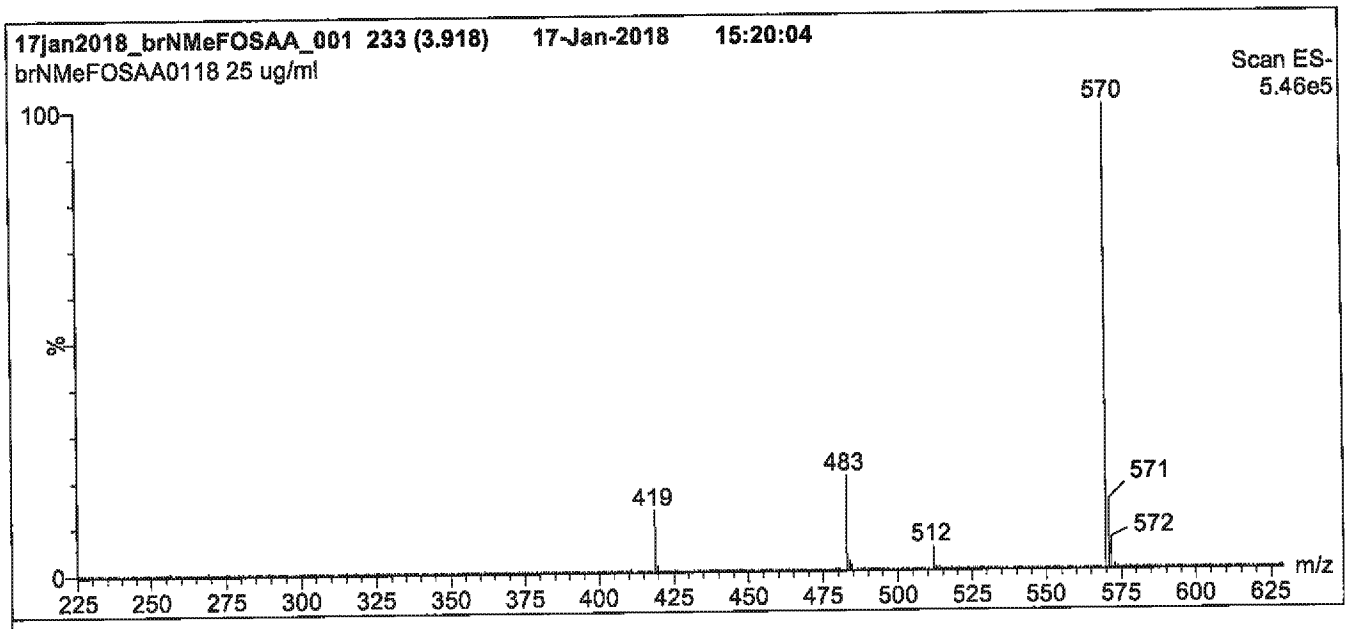
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	N-methylperfluoro-1-octanesulfonamidoacetic acid	$CF_3(CF_2)_7SO_2N(CH_3)CH_2CO_2H$	76.0
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$	0.7
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic 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

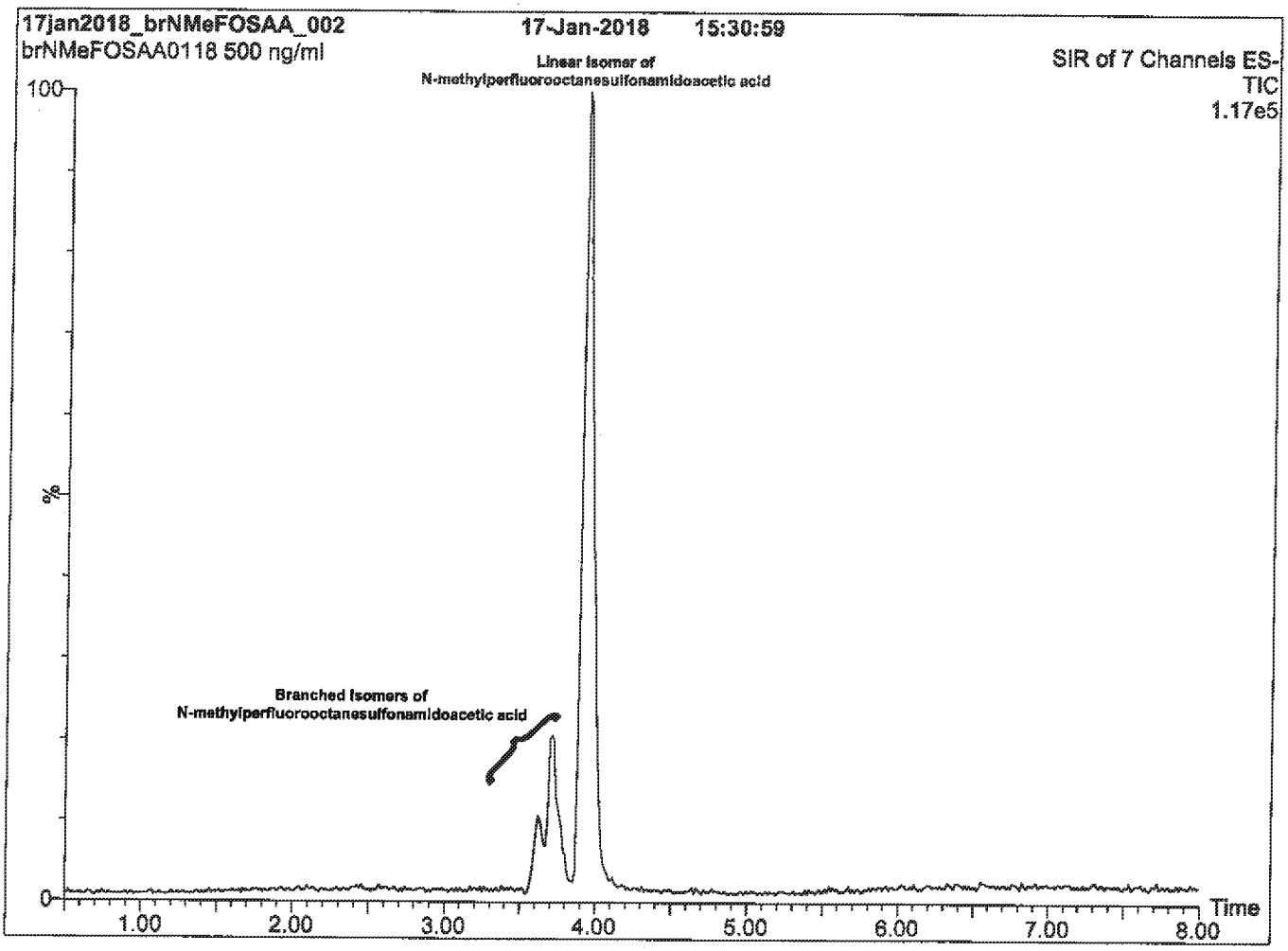
Flow: 300 µl/min

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

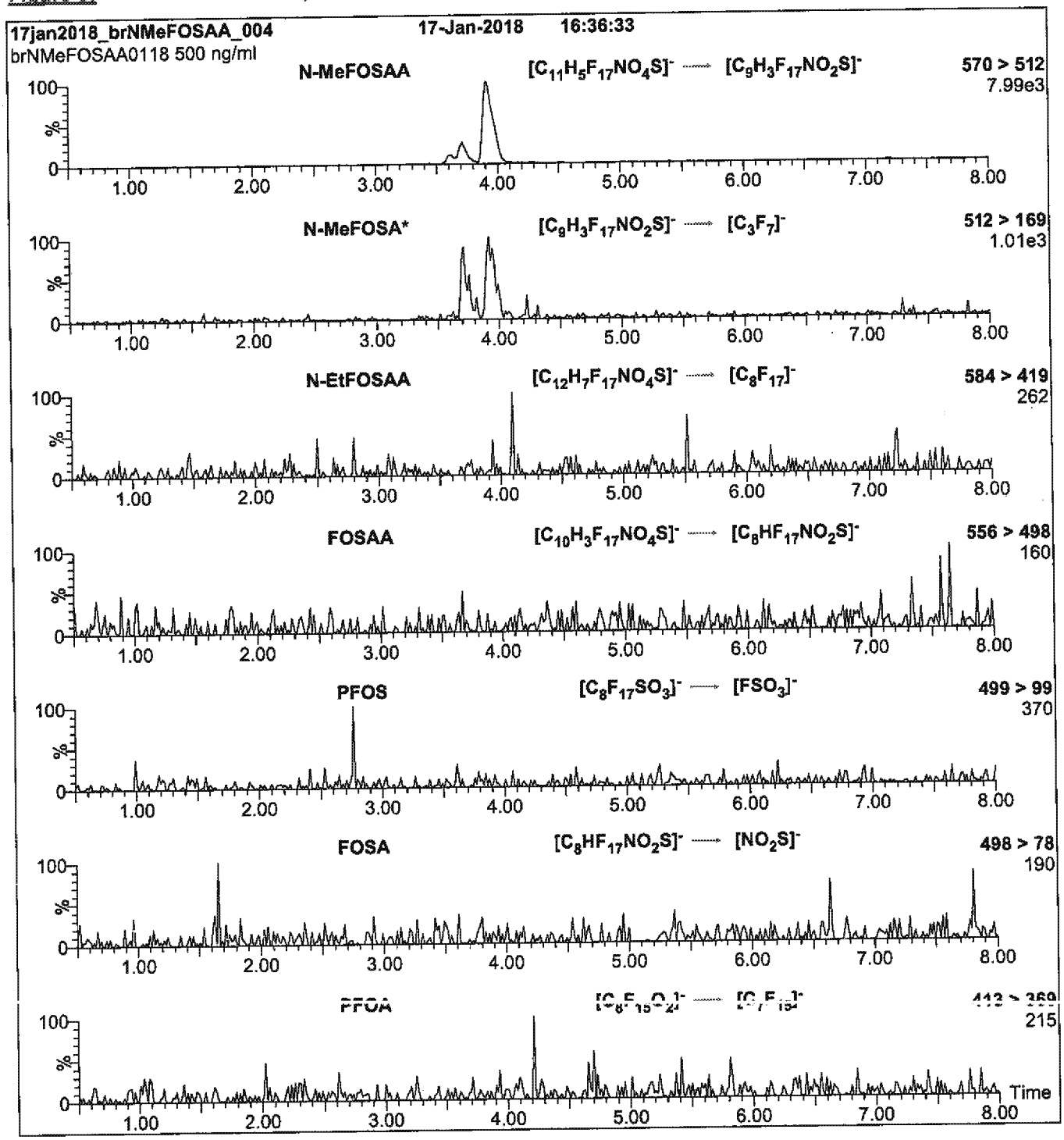
Flow: 300 µl/min

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

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.

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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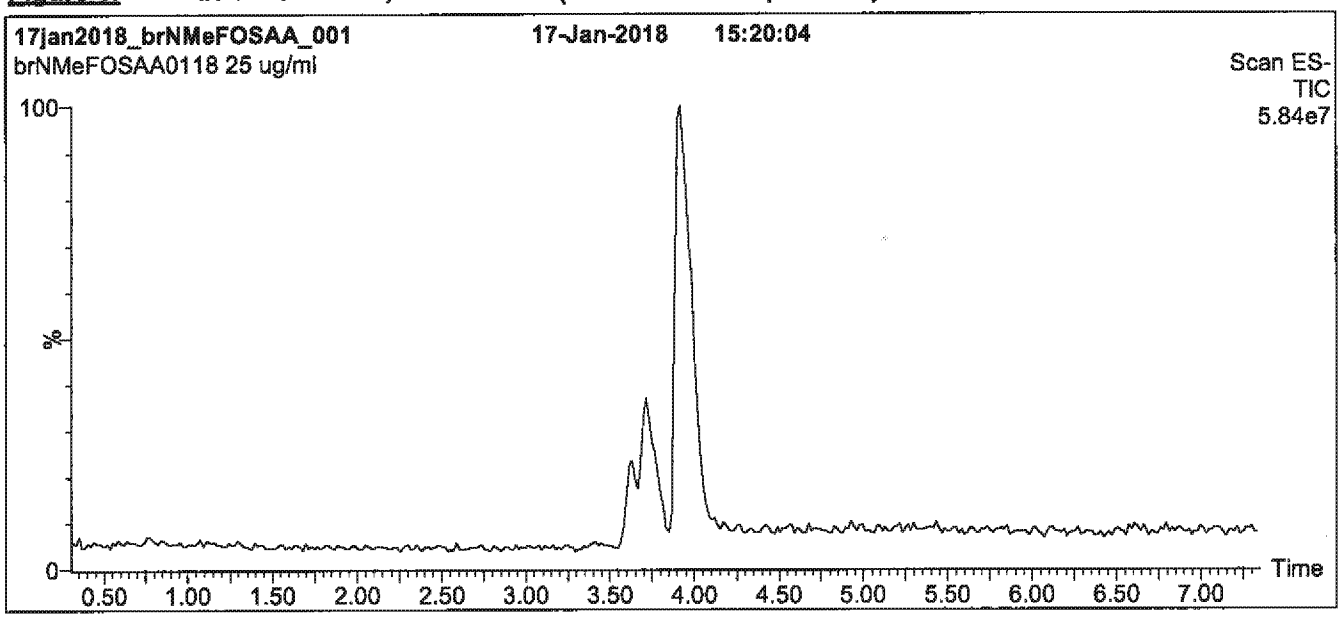
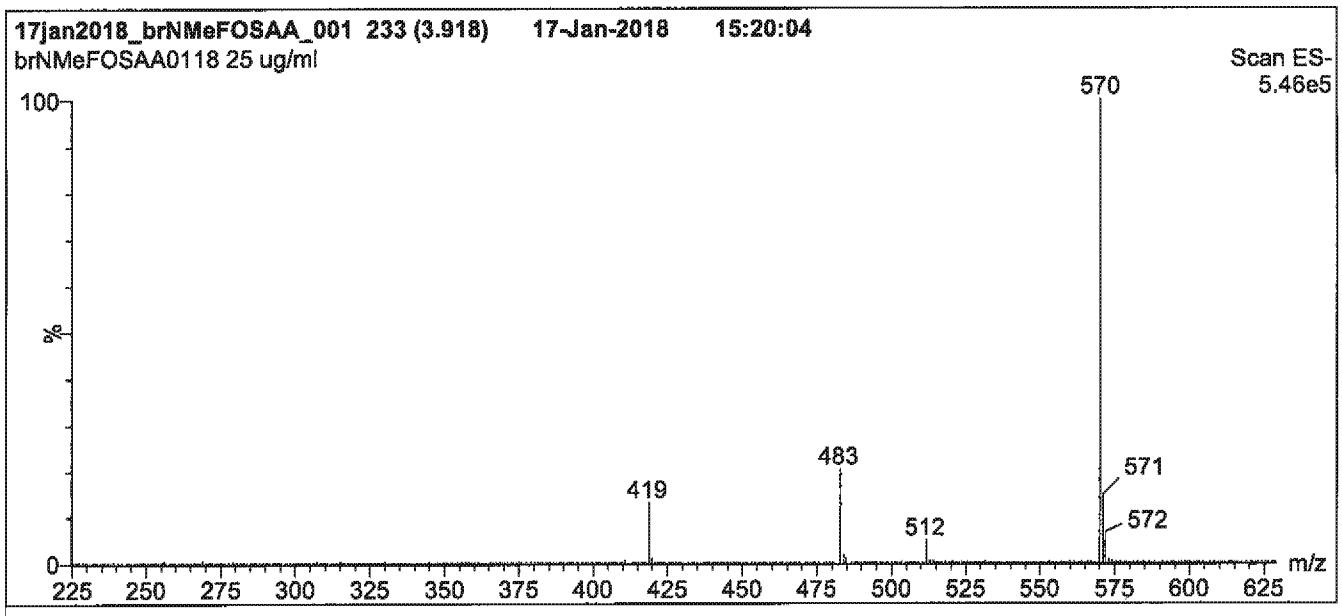
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_3CF(CF_3)(CF_2)_2SO_2N(CH_3)CH_2CO_2H$	0.7
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic acid	$CF_3(CF_2)_2CF(CF_3)(CF_2)_3SO_2N(CH_3)CH_2CO_2H$	2.0
4	N-methylperfluoro-5-methylheptanesulfonamidoacetic acid	$CF_3CF_2CF(CF_3)(CF_2)_4SO_2N(CH_3)CH_2CO_2H$	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

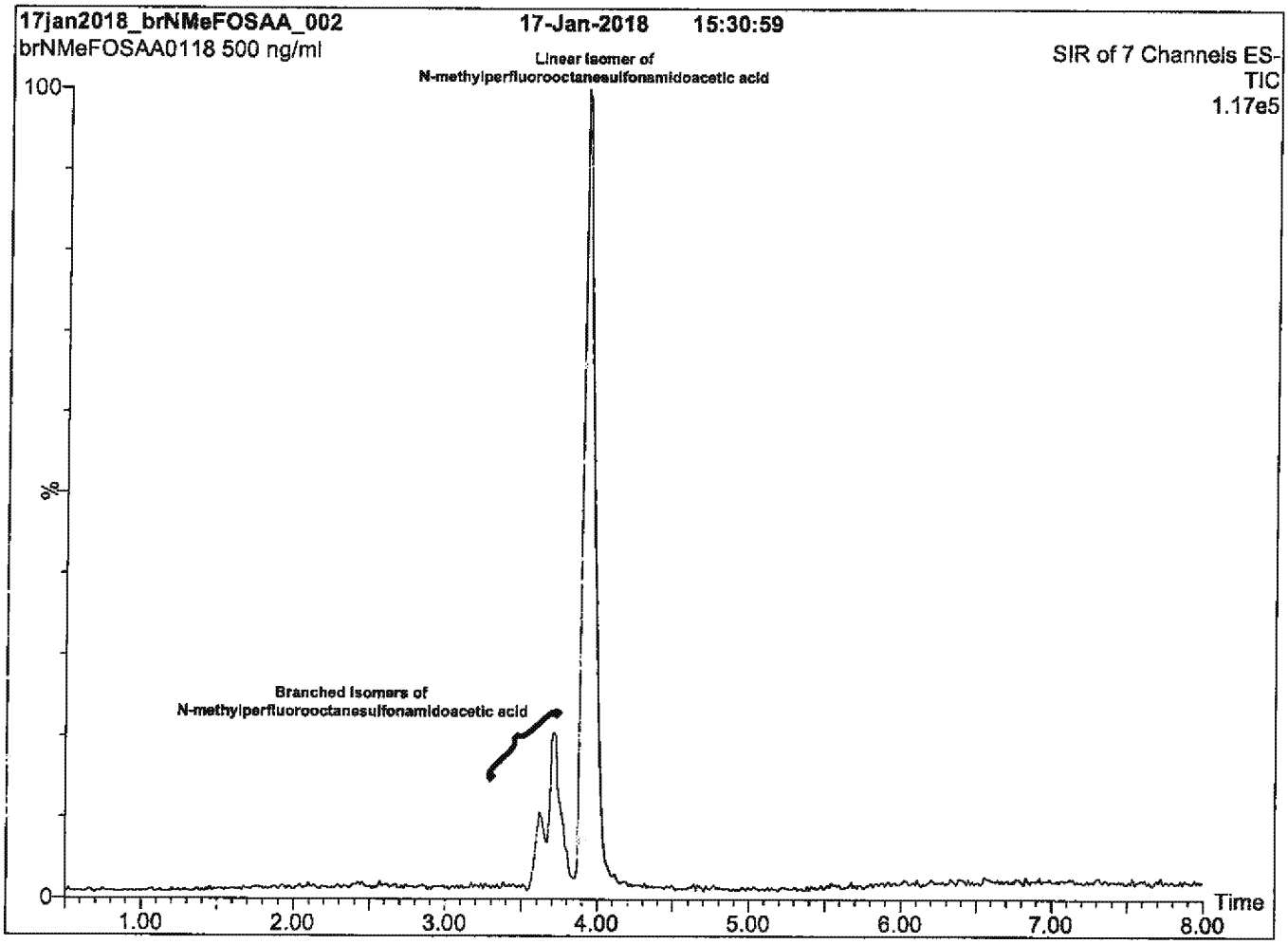
Flow: 300 µl/min

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

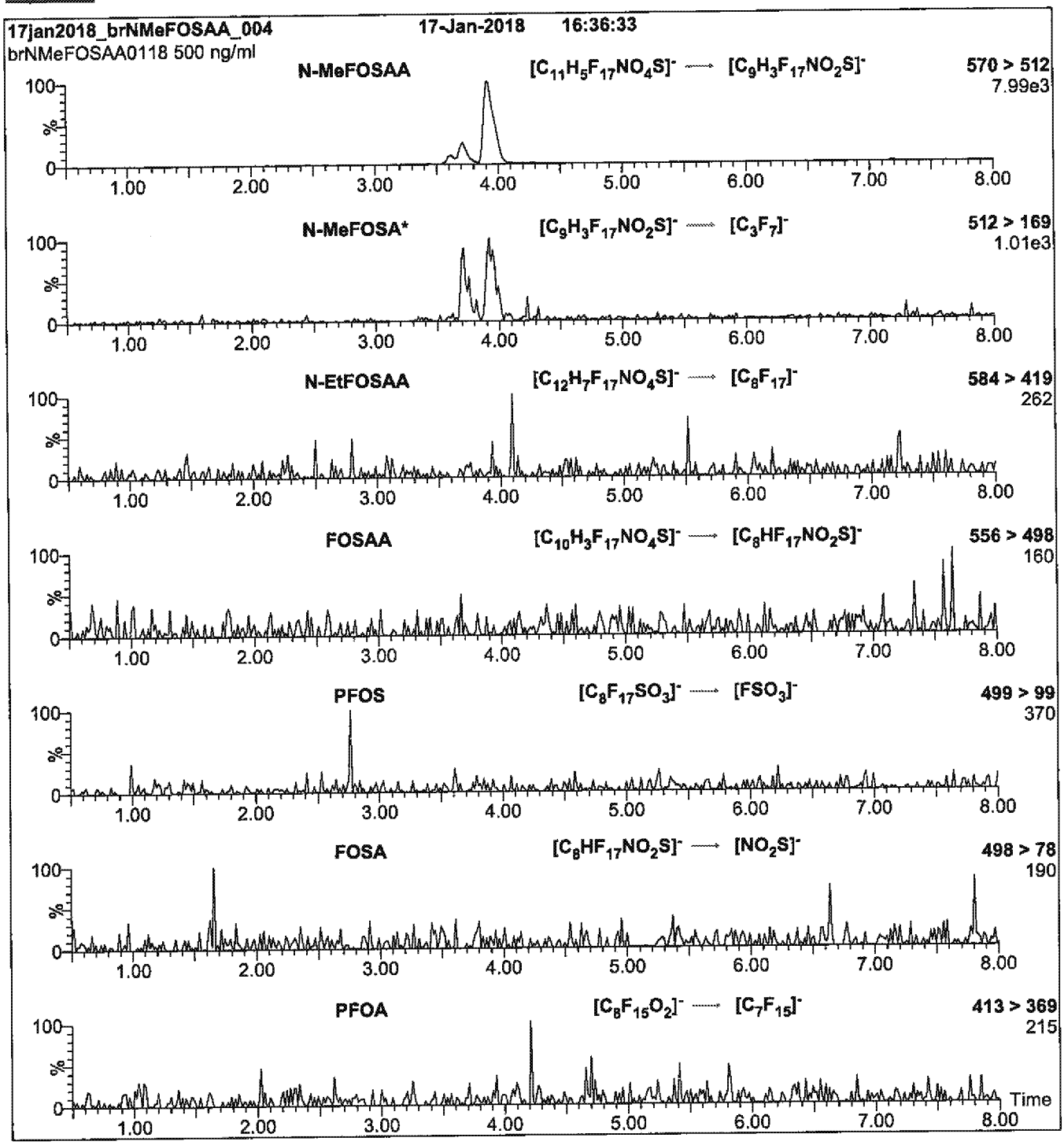
Flow: 300 µl/min

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

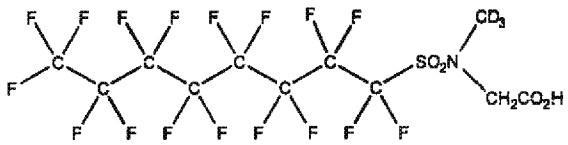
WELLINGTON LABORATORIES

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

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:

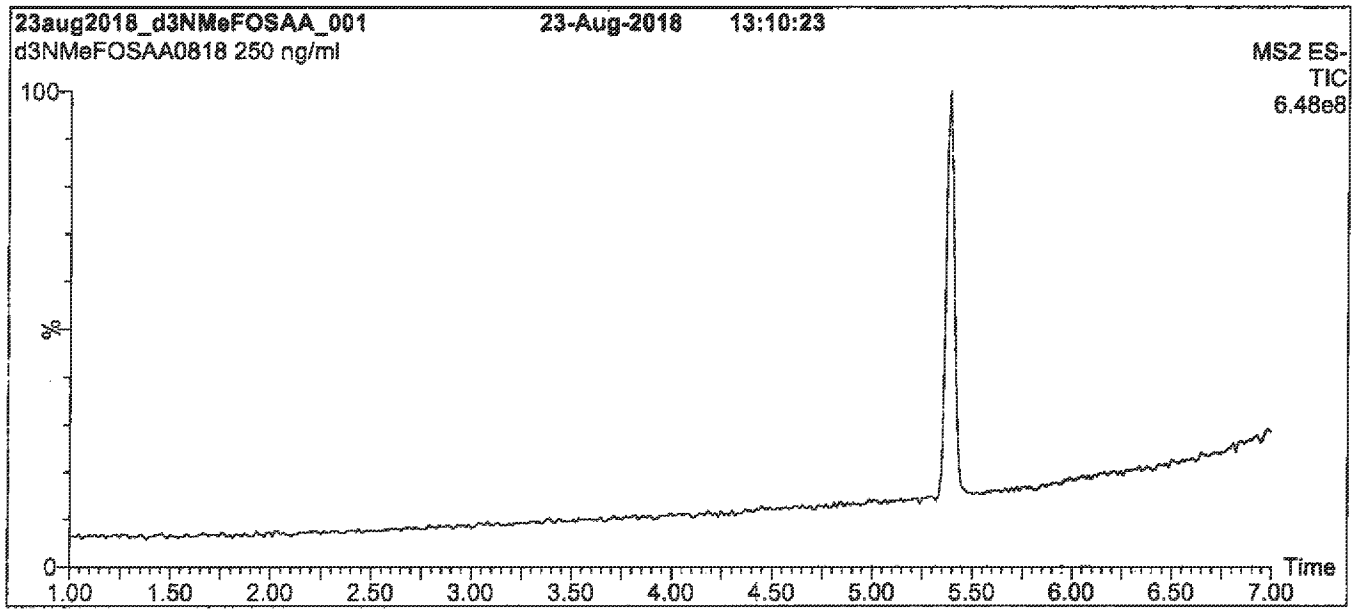
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

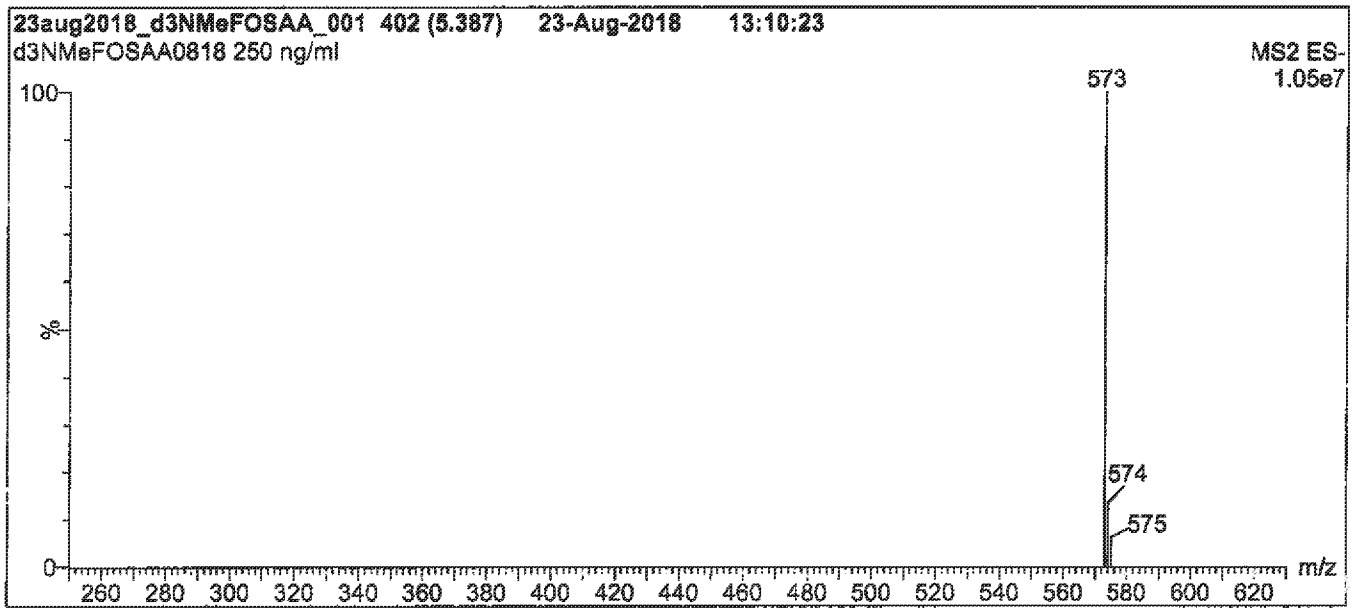
QUALITY MANAGEMENT:

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).

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: d3-N-MeFOSAA; 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

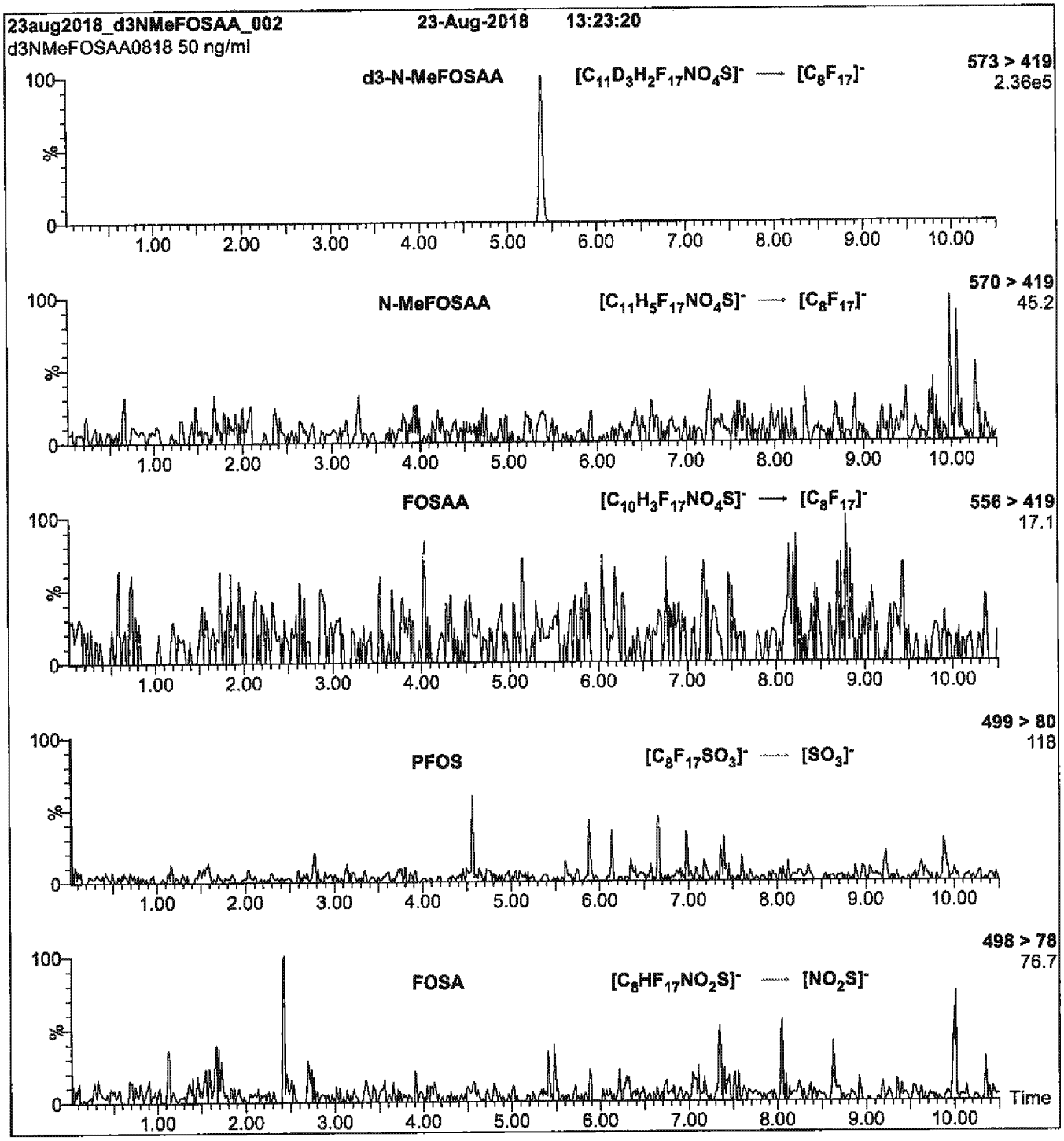
Flow: 300 µl/min

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: **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

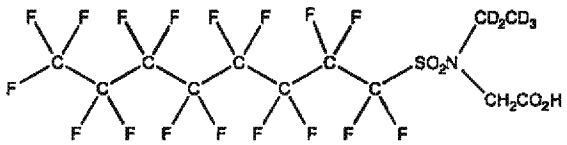
WELLINGTON LABORATORIES

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:

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HANDLING:

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SYNTHESIS / CHARACTERIZATION:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

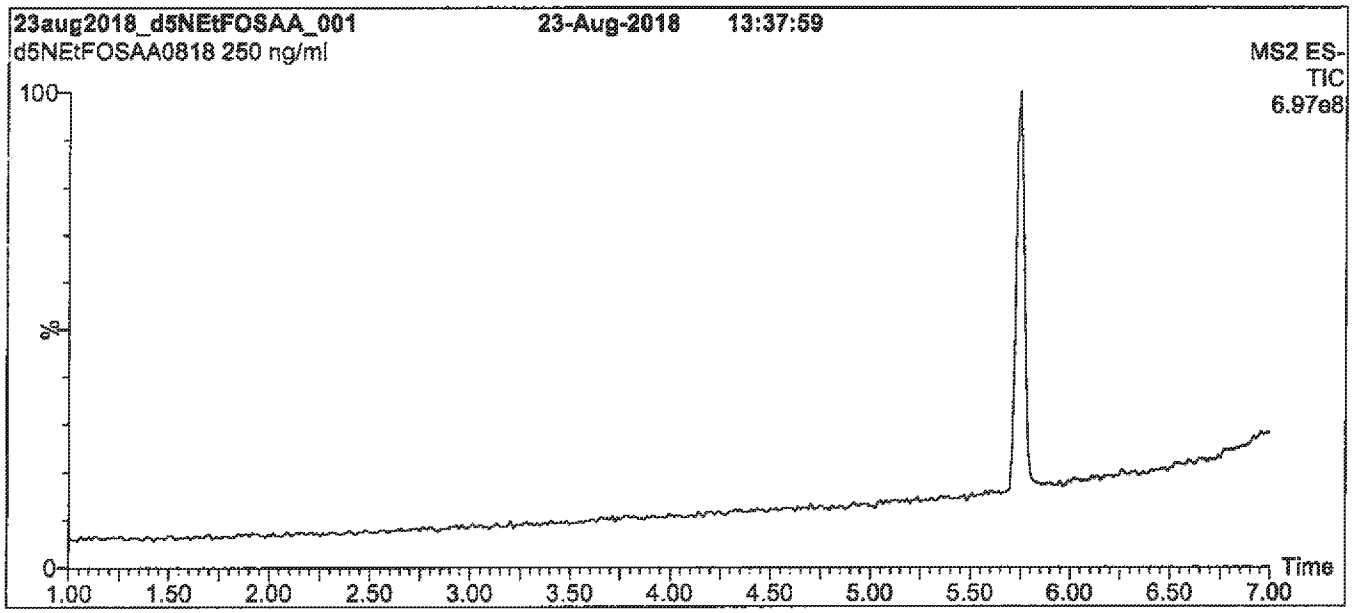
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

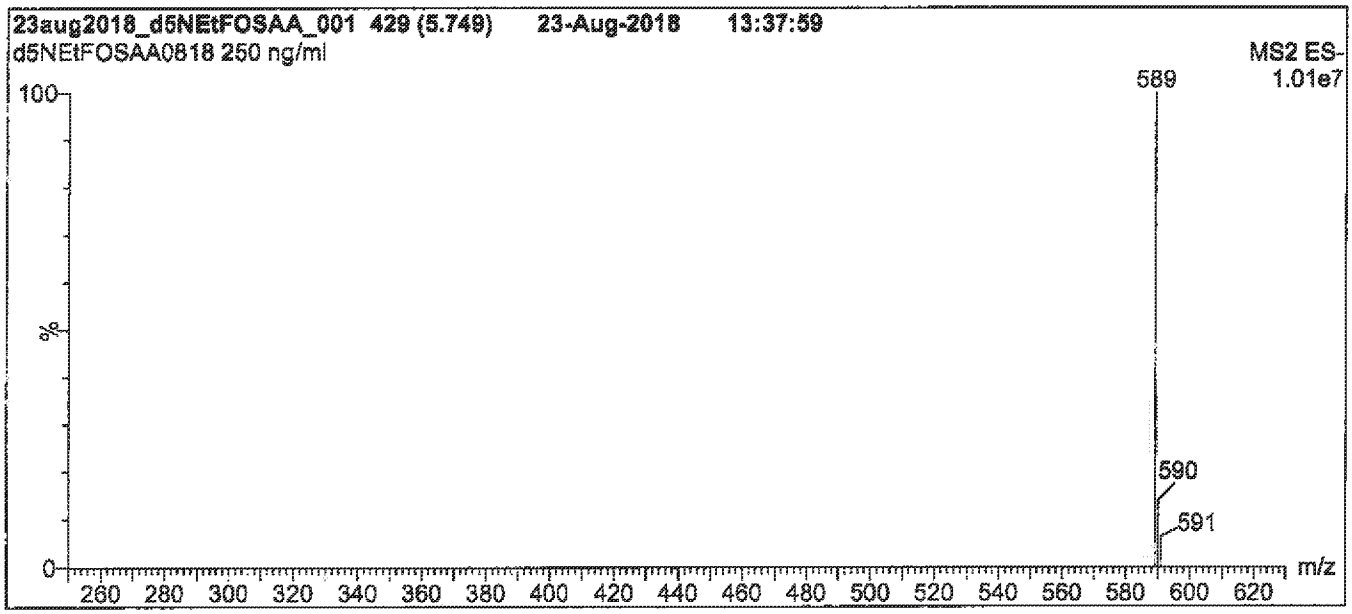
CALA

ANAB 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

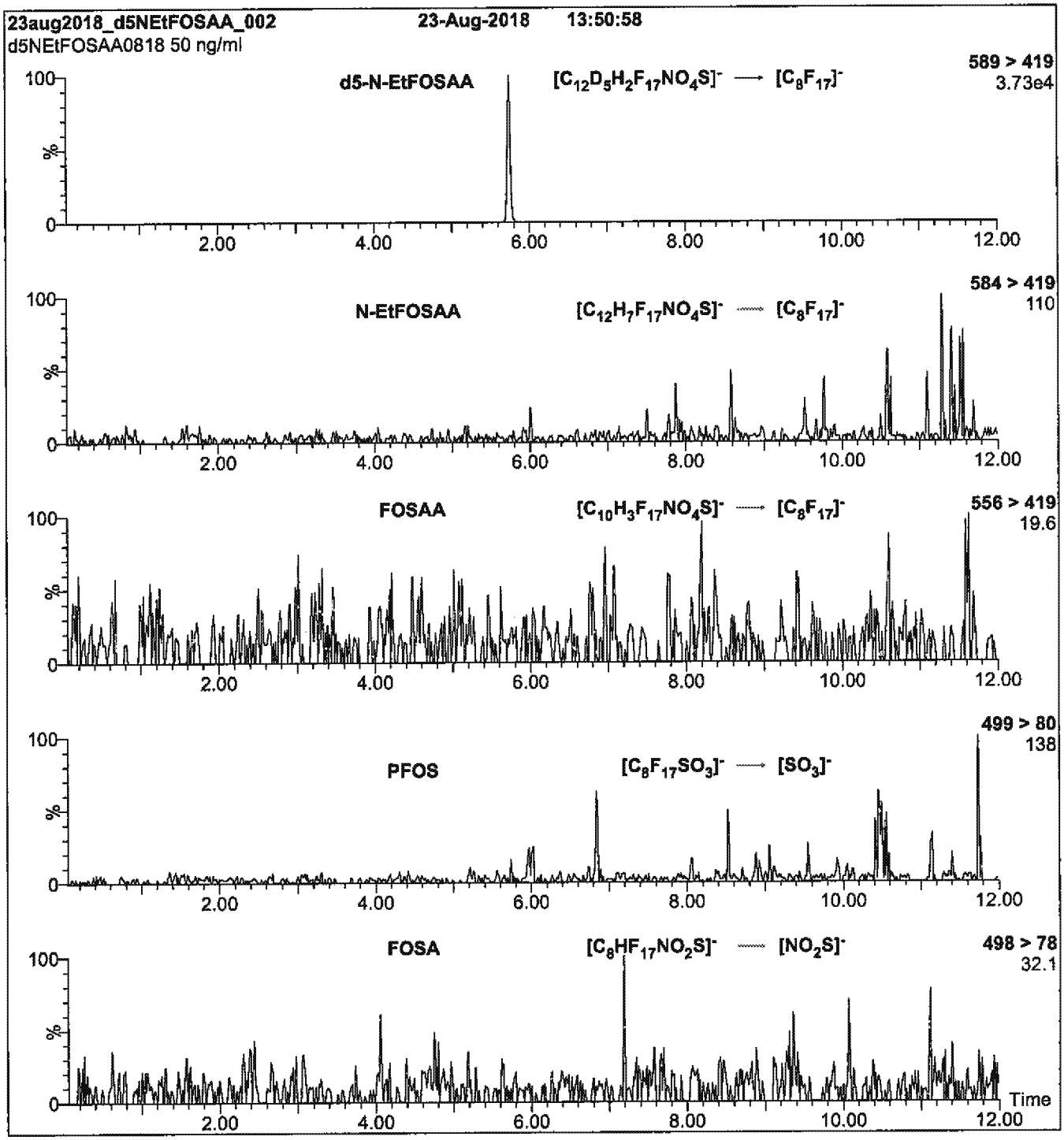
Flow: 300 µl/min

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

LCM2PFOA_00015

WELLINGTON LABORATORIES

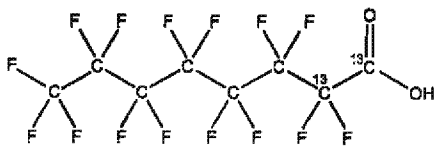
CERTIFICATE OF ANALYSIS DOCUMENTATION

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%
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

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-[$^{13}C_1$]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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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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

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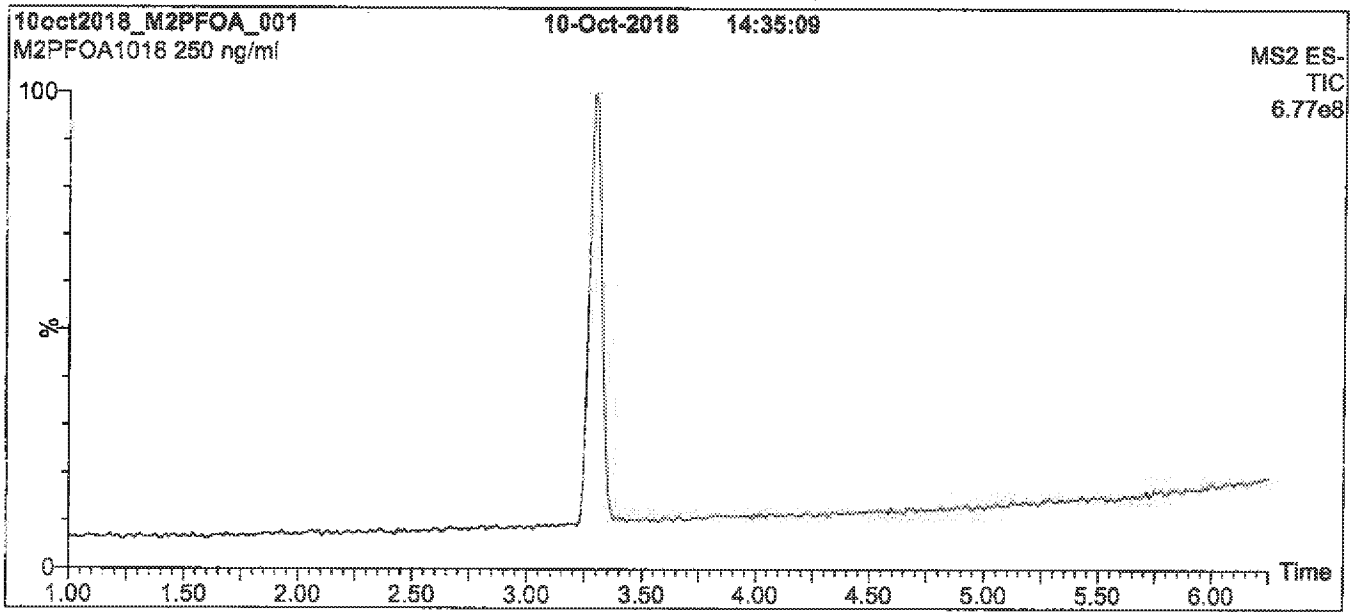
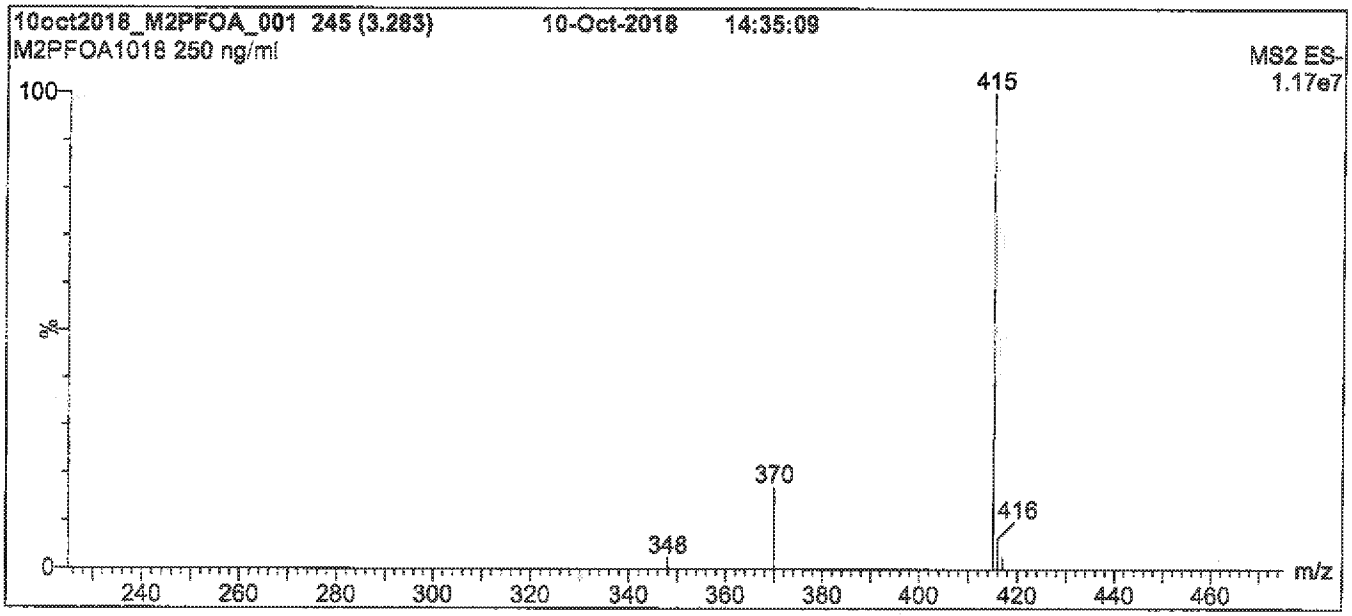
Figure 1: **M2PFOA; LC/MS Data (TIC and Mass Spectrum)**





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

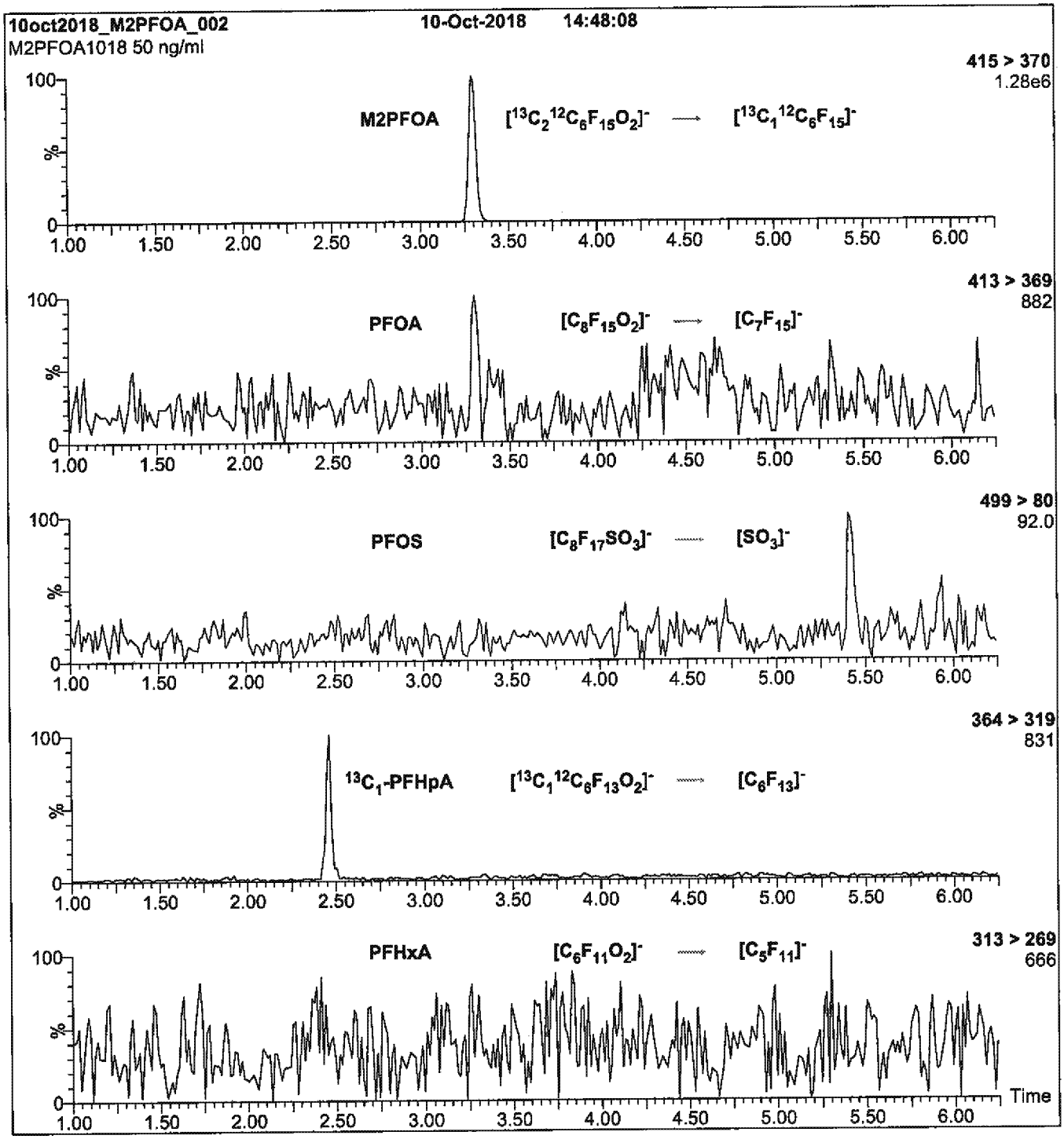
Flow: 300 µl/min

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

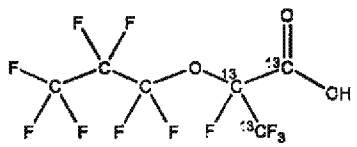
WELLINGTON LABORATORIES

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:

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:

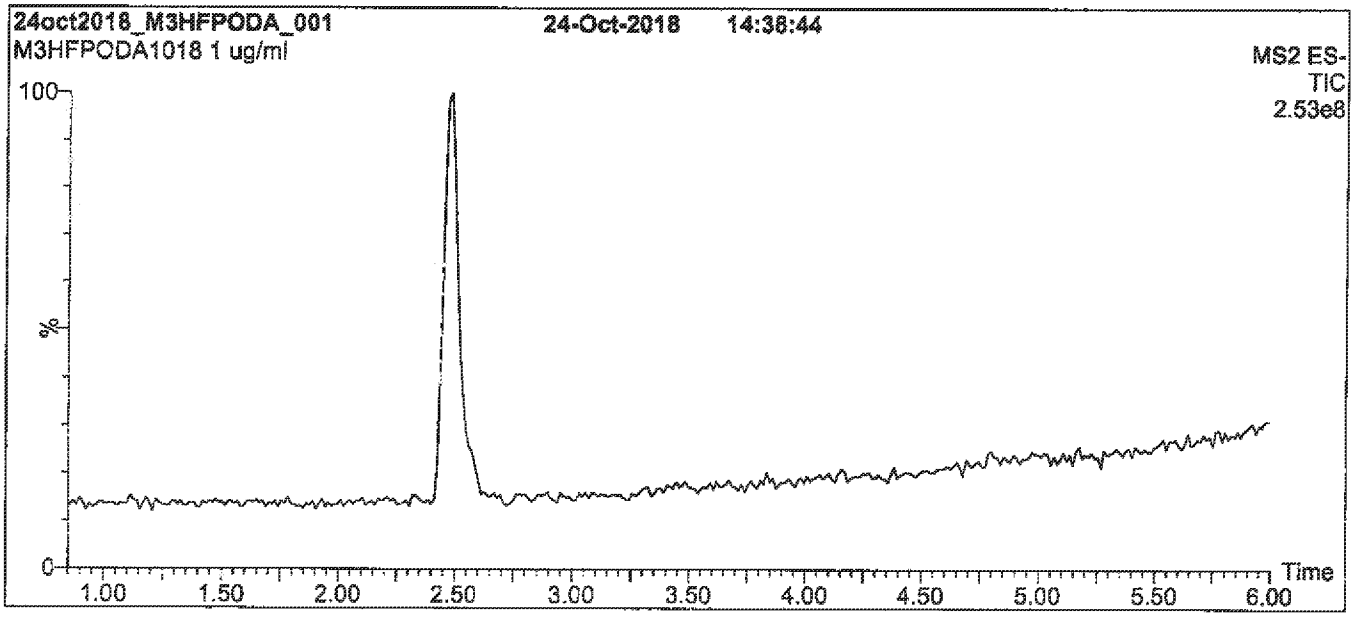
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

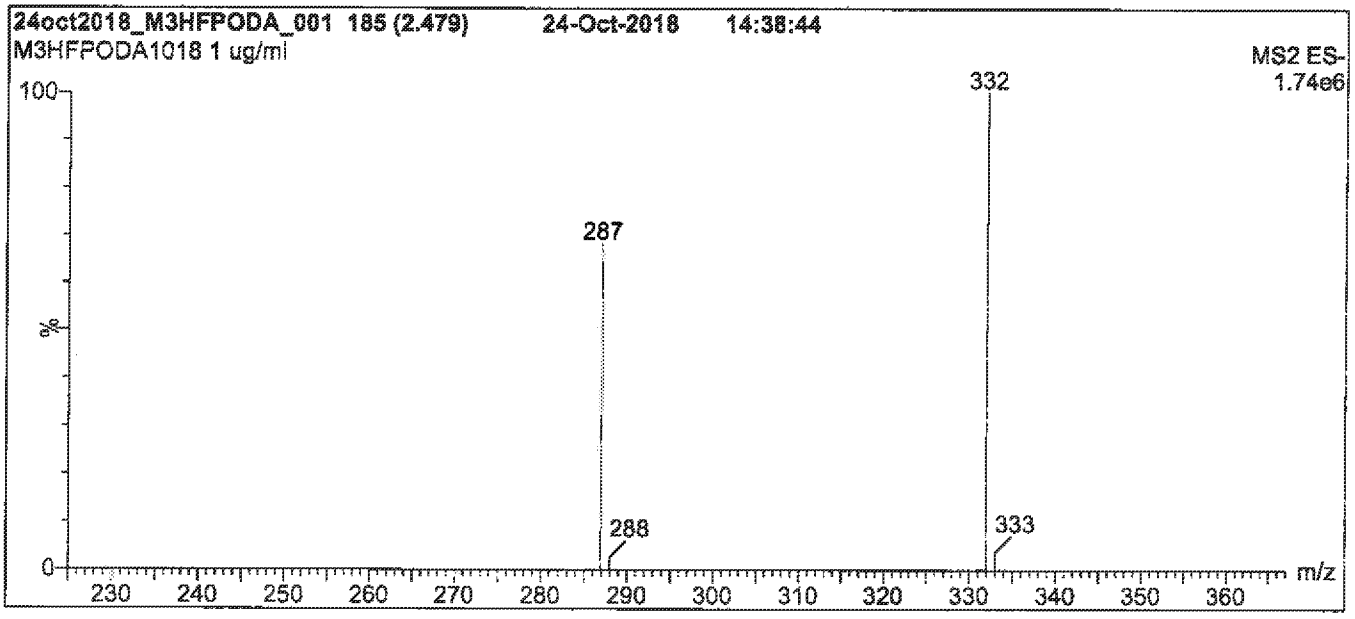
CALA

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: **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

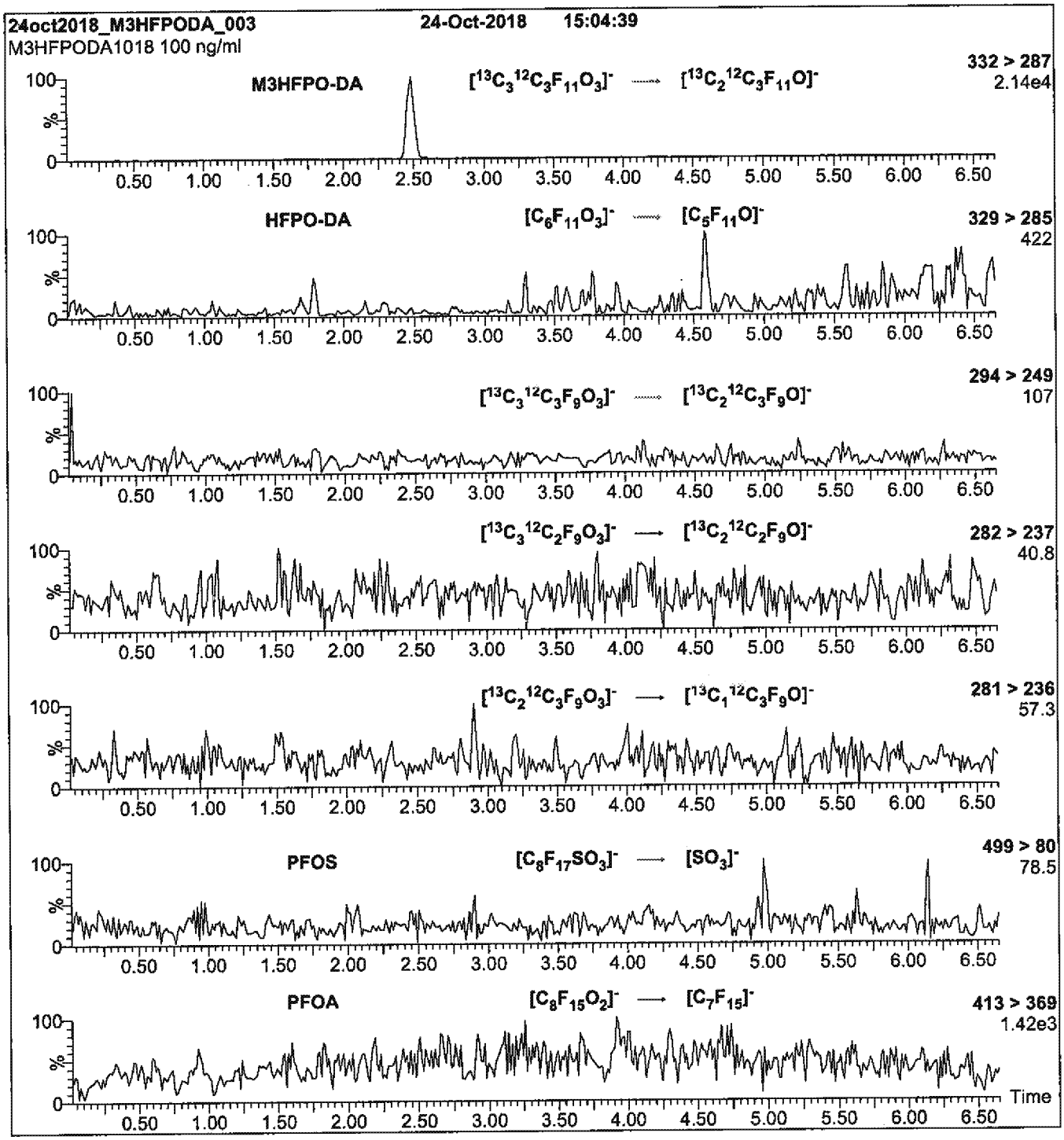
Flow: 300 µl/min

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

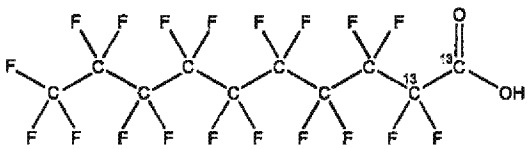
LCMPFDA_00024

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

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:

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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:

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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:

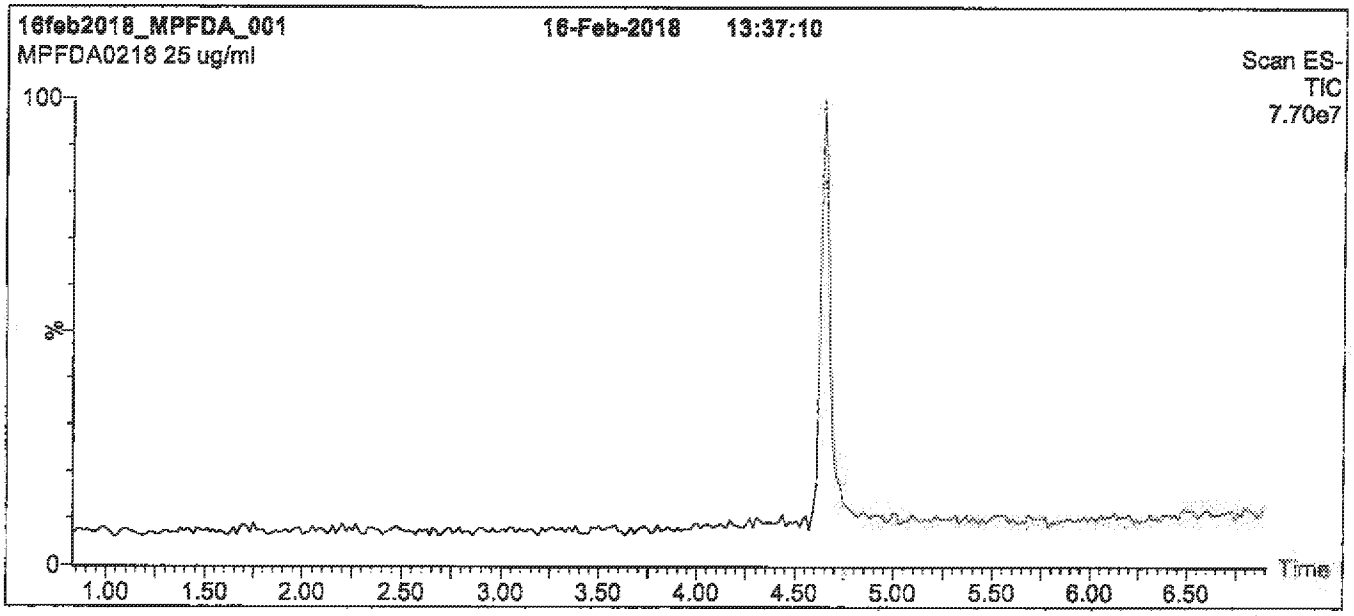
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

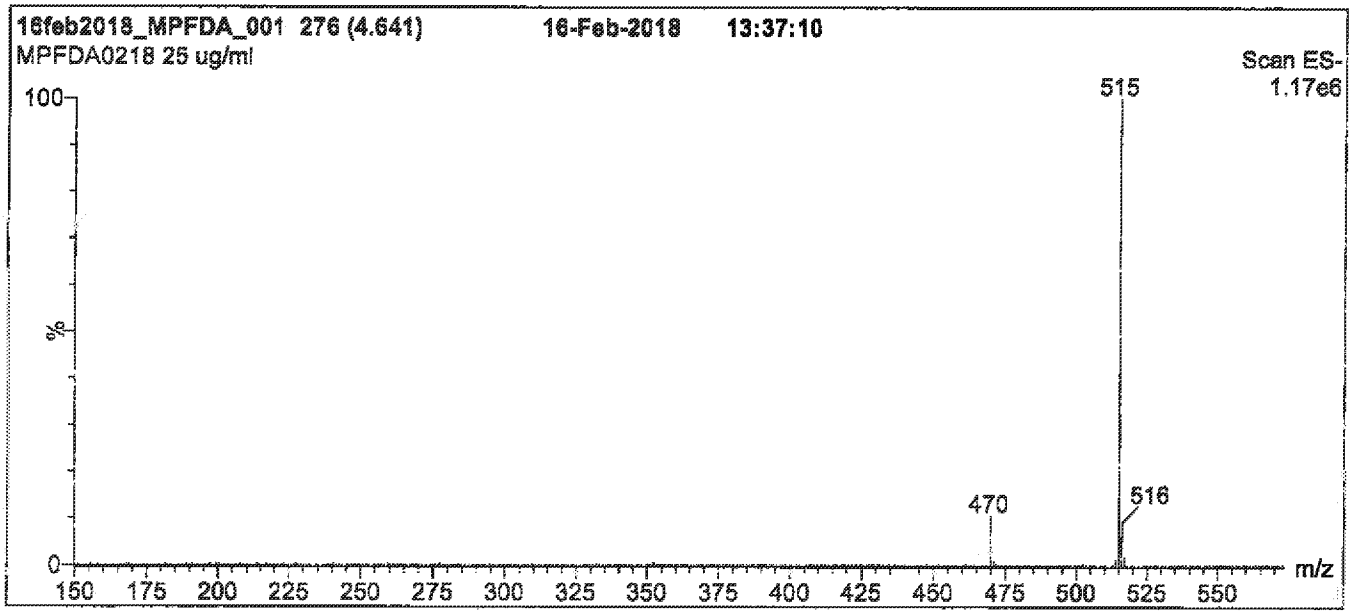
CALA

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: **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

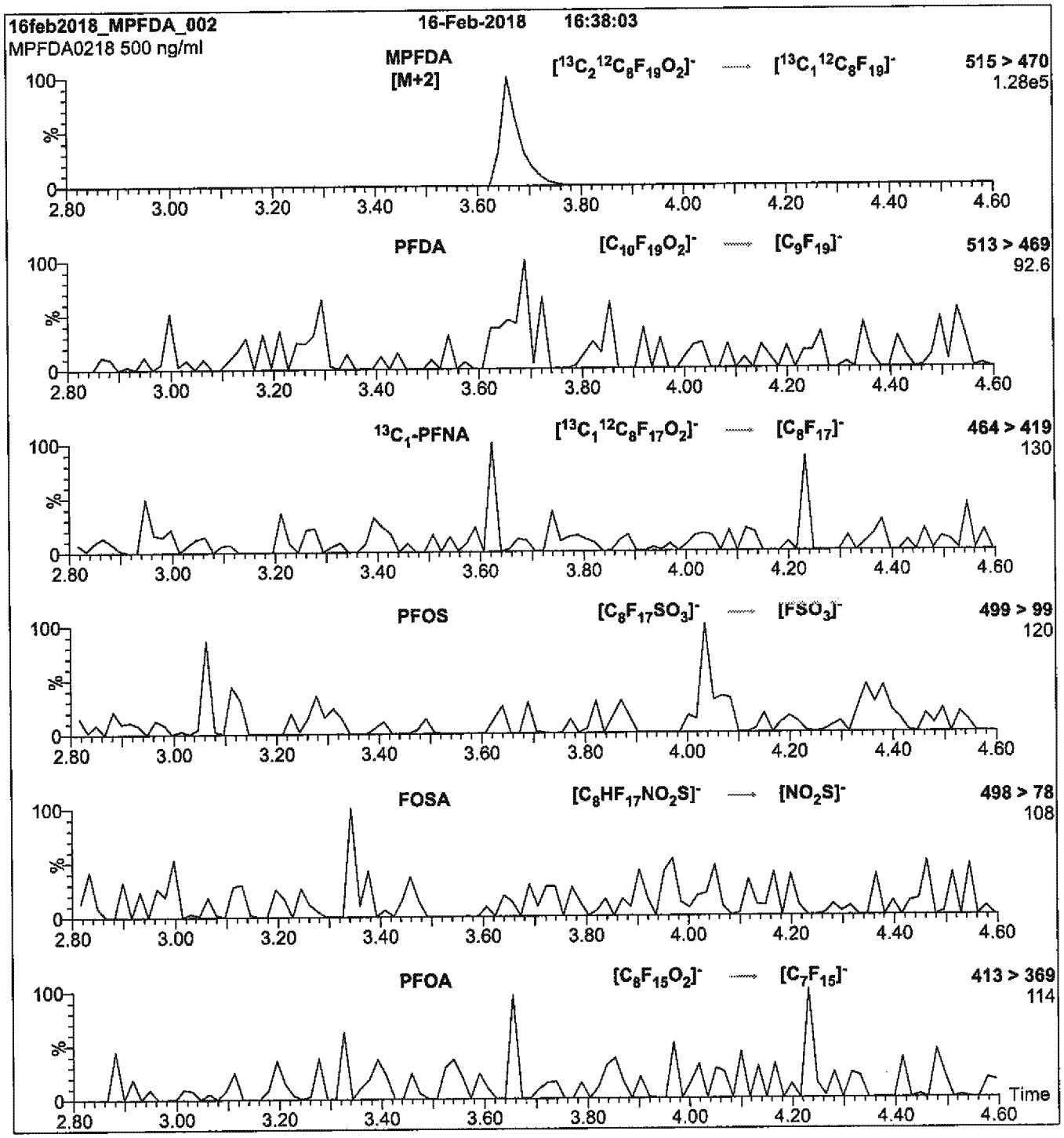
Flow: 300 µl/min

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

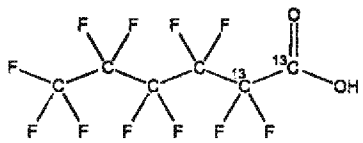
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

INTENDED USE:

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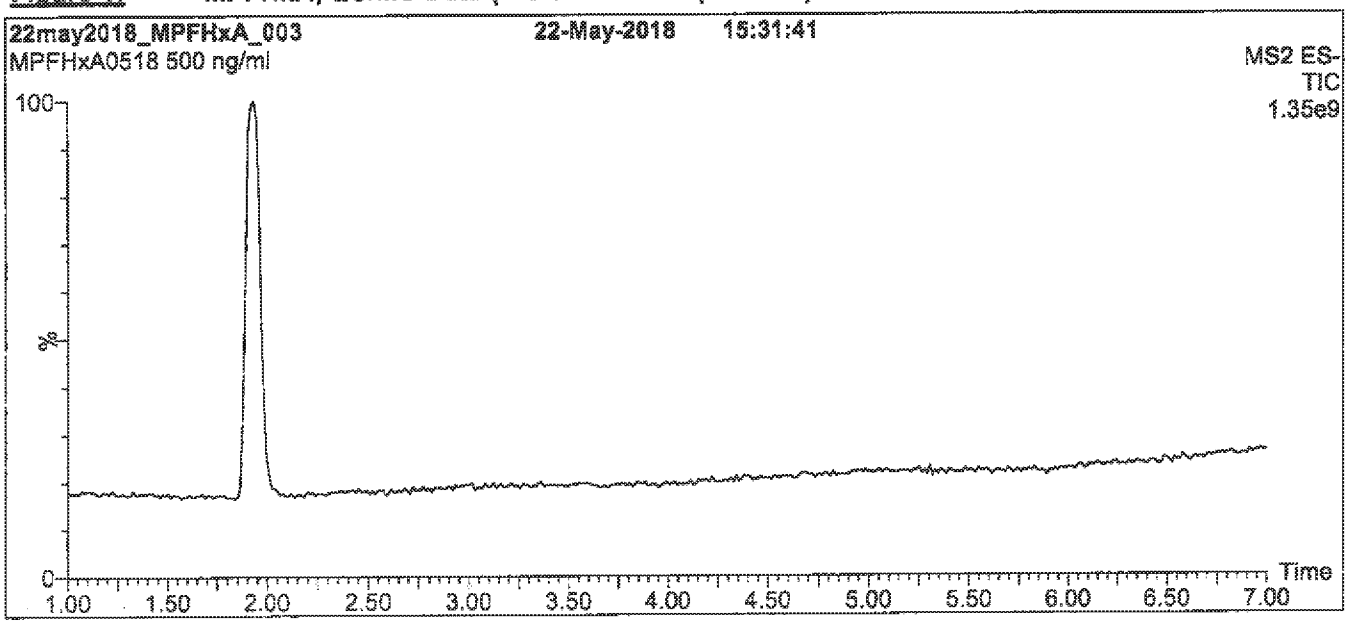
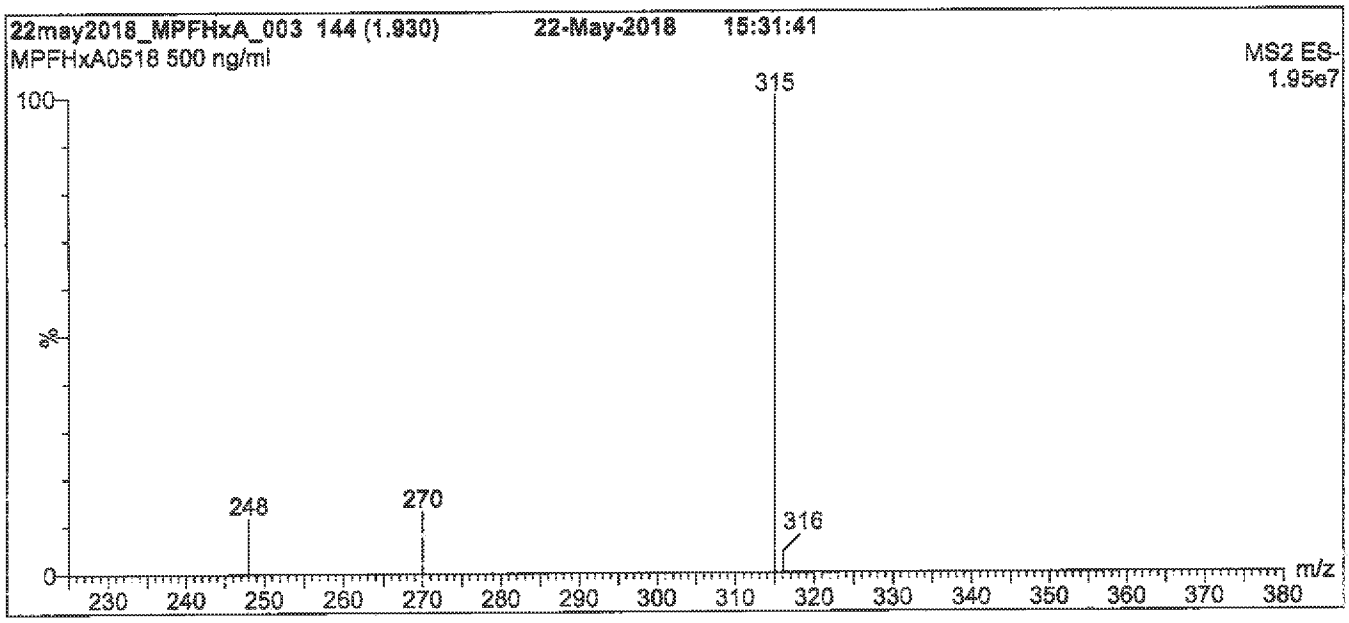
CALA

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: **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

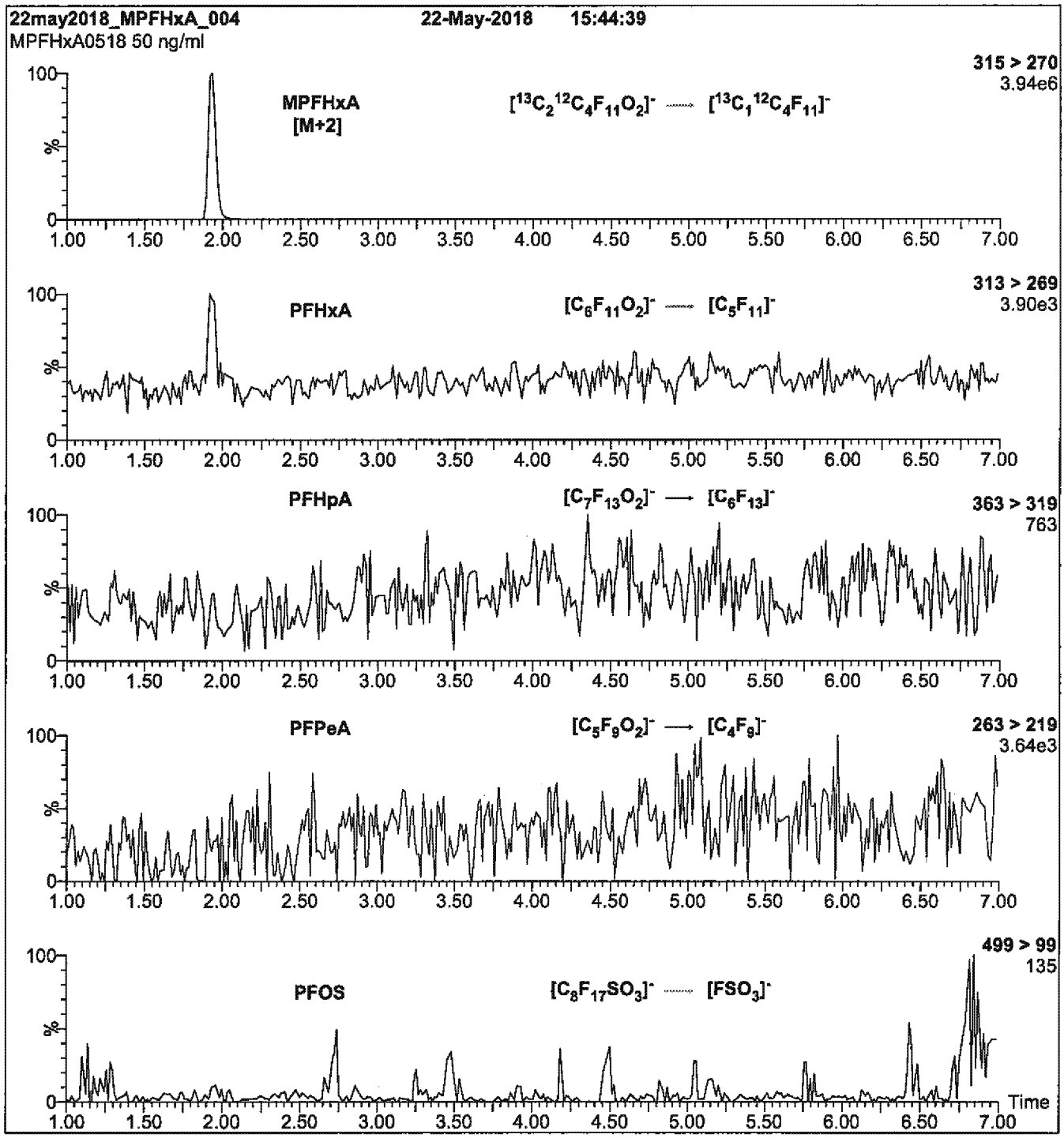
Flow: 300 µl/min

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

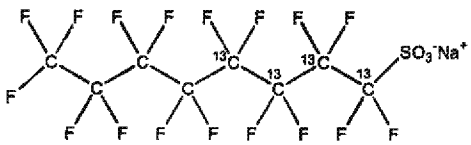
WELLINGTON LABORATORIES

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) **SOLVENT(S):** Methanol

47.8 ± 2.4 µg/ml (MPFOS anion)

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 09/14/2018 (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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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:

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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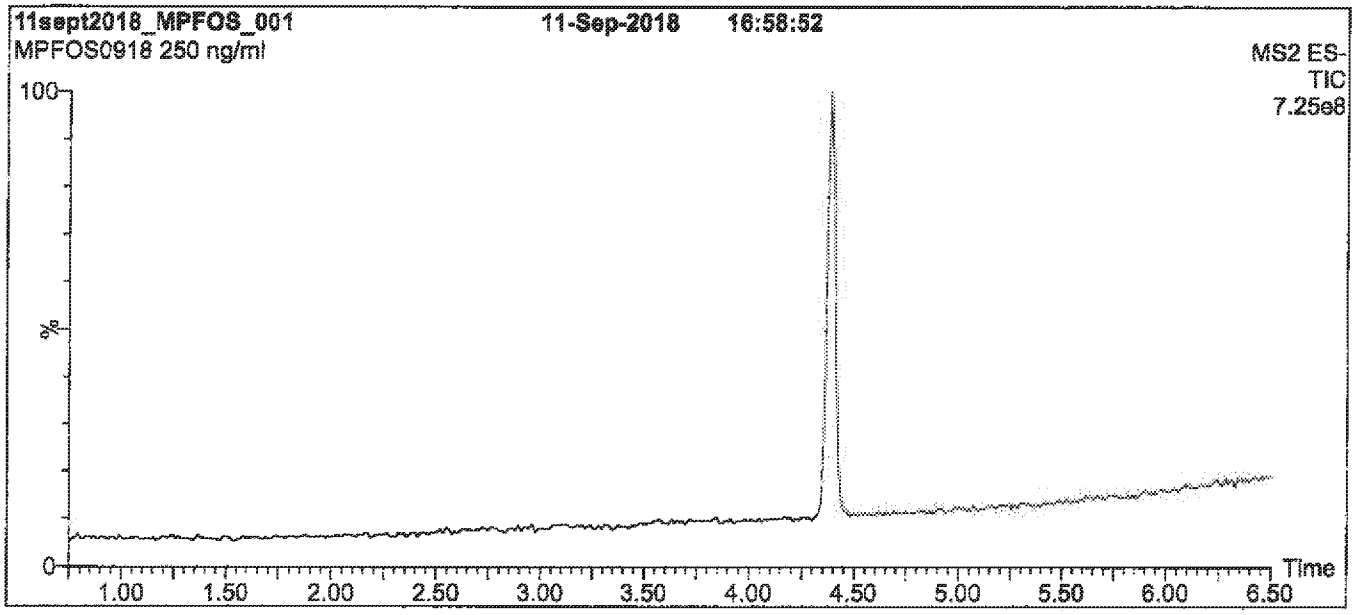
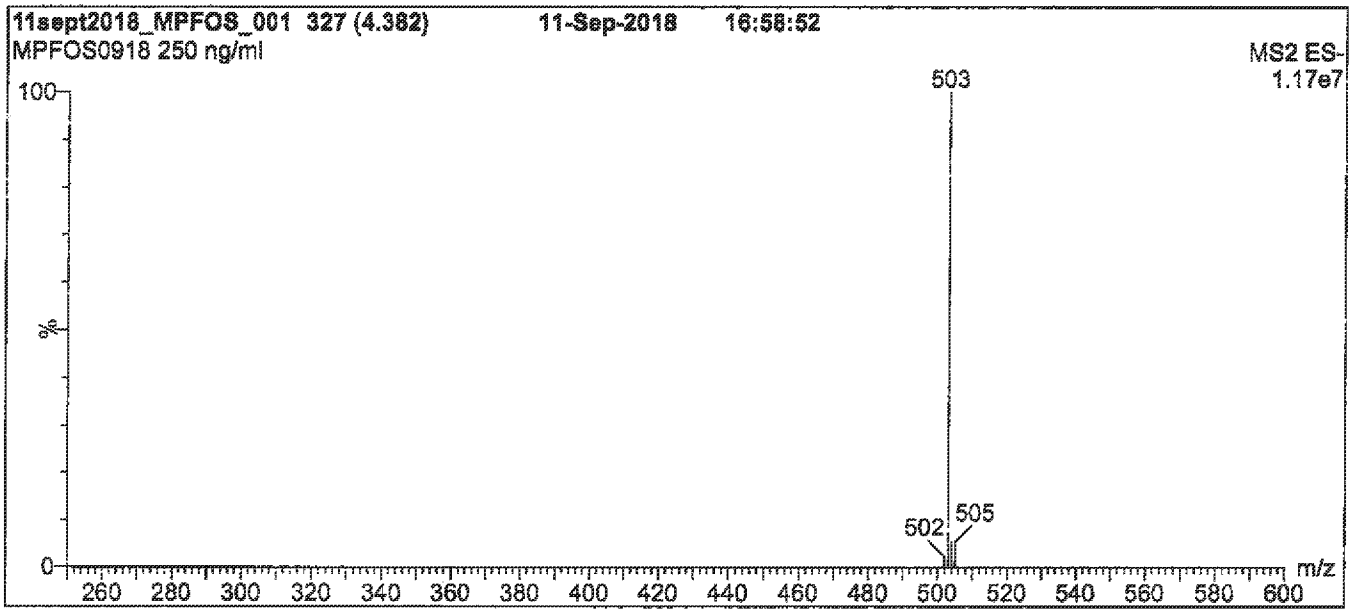
Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)





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

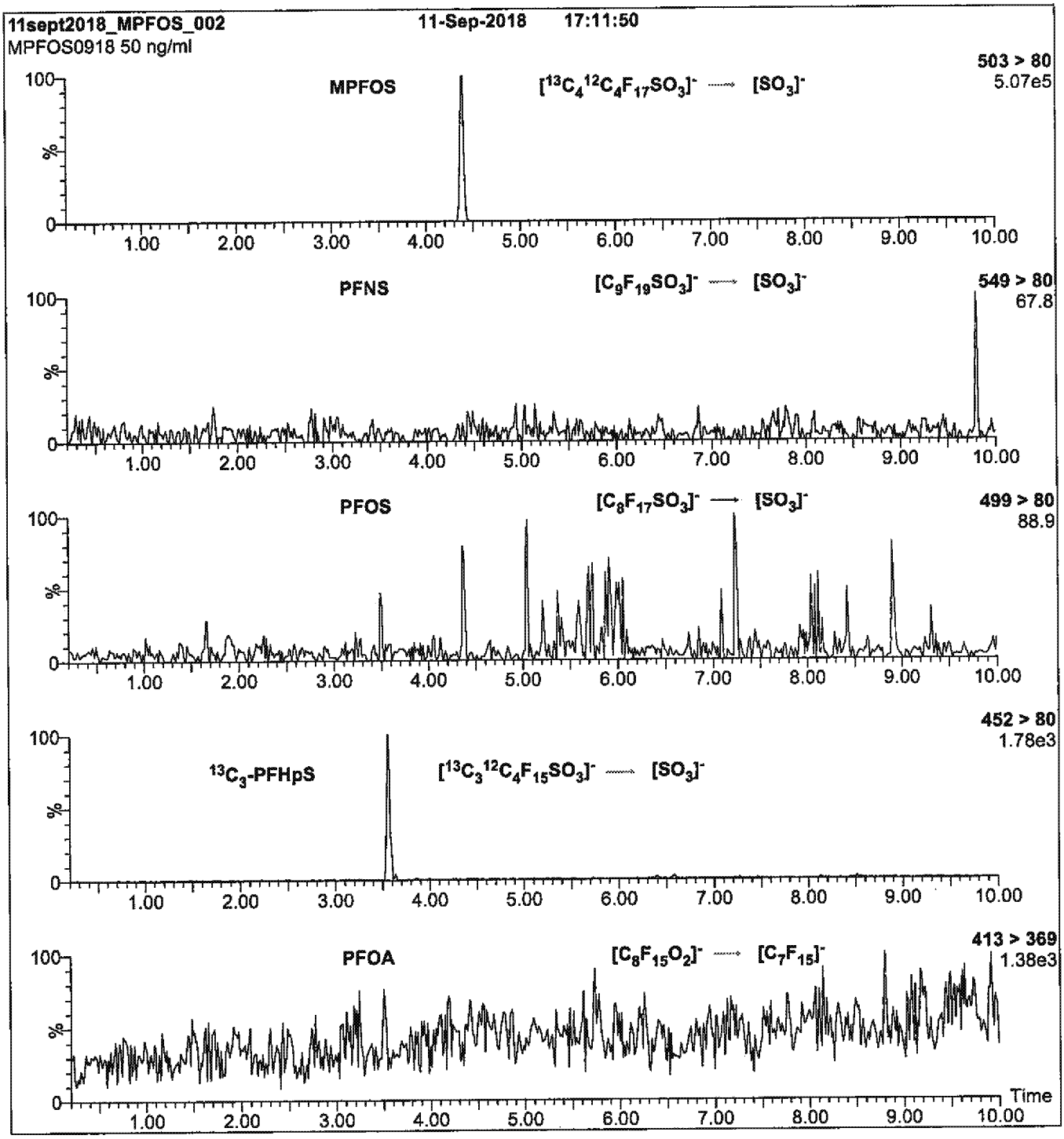
Flow: 300 µl/min

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

Rec: 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

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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	$CF_3C(CF_3)(CF_3)CF_2CF_2SO_3^-K^+$	0.2	
7	Other Unidentified Isomers		0.5	

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

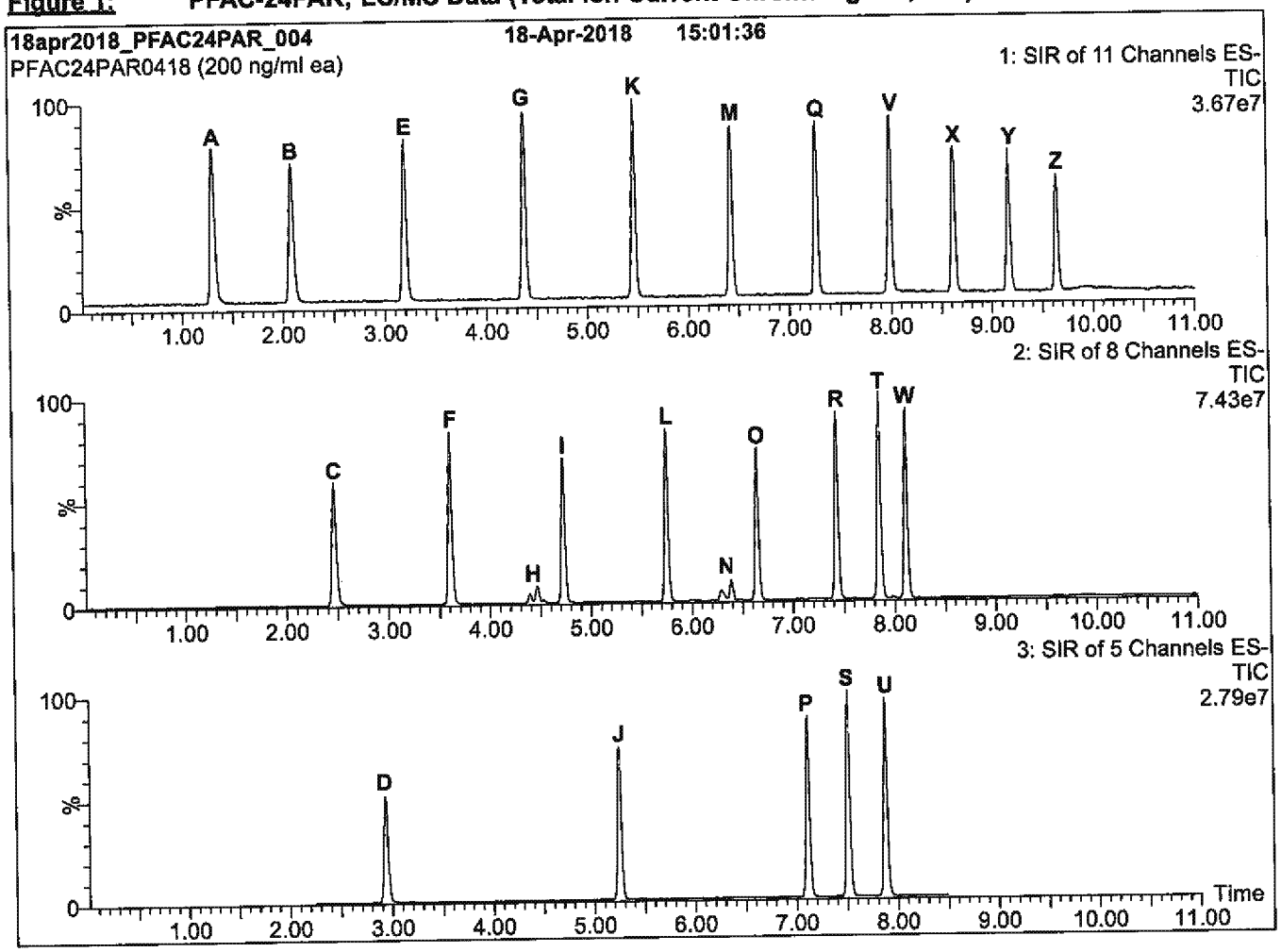
Table C: **PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

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

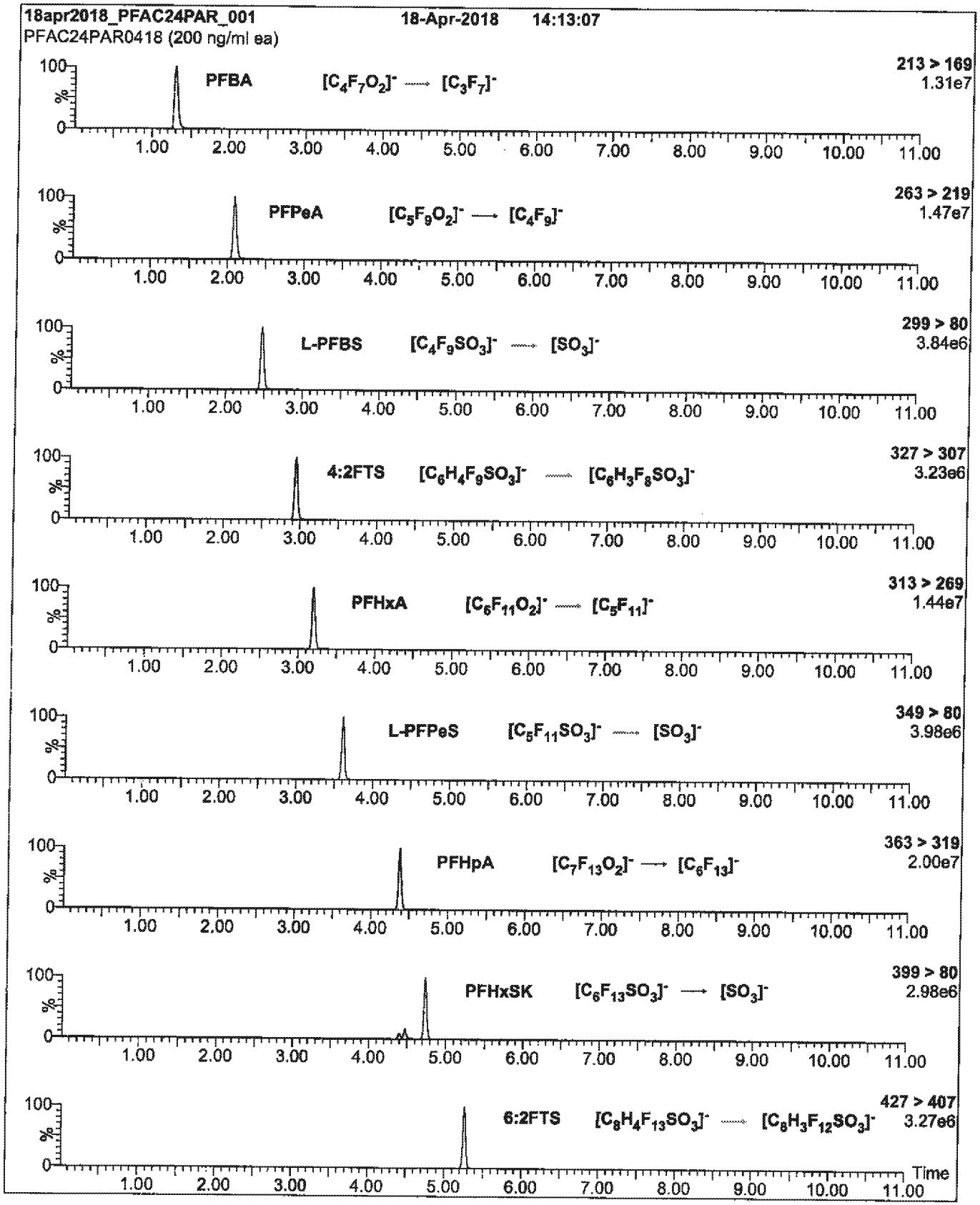
Flow: 300 µl/min

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)**



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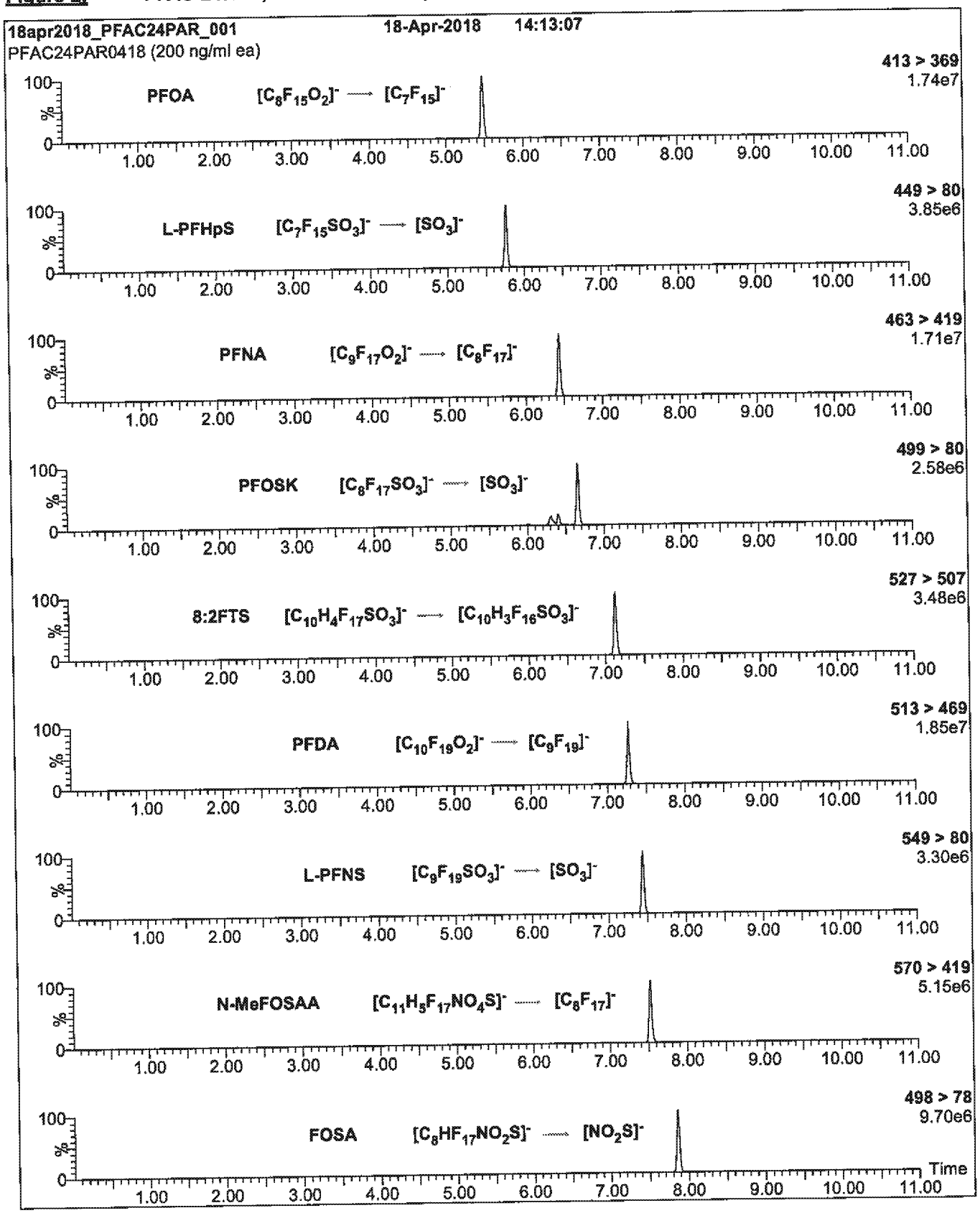

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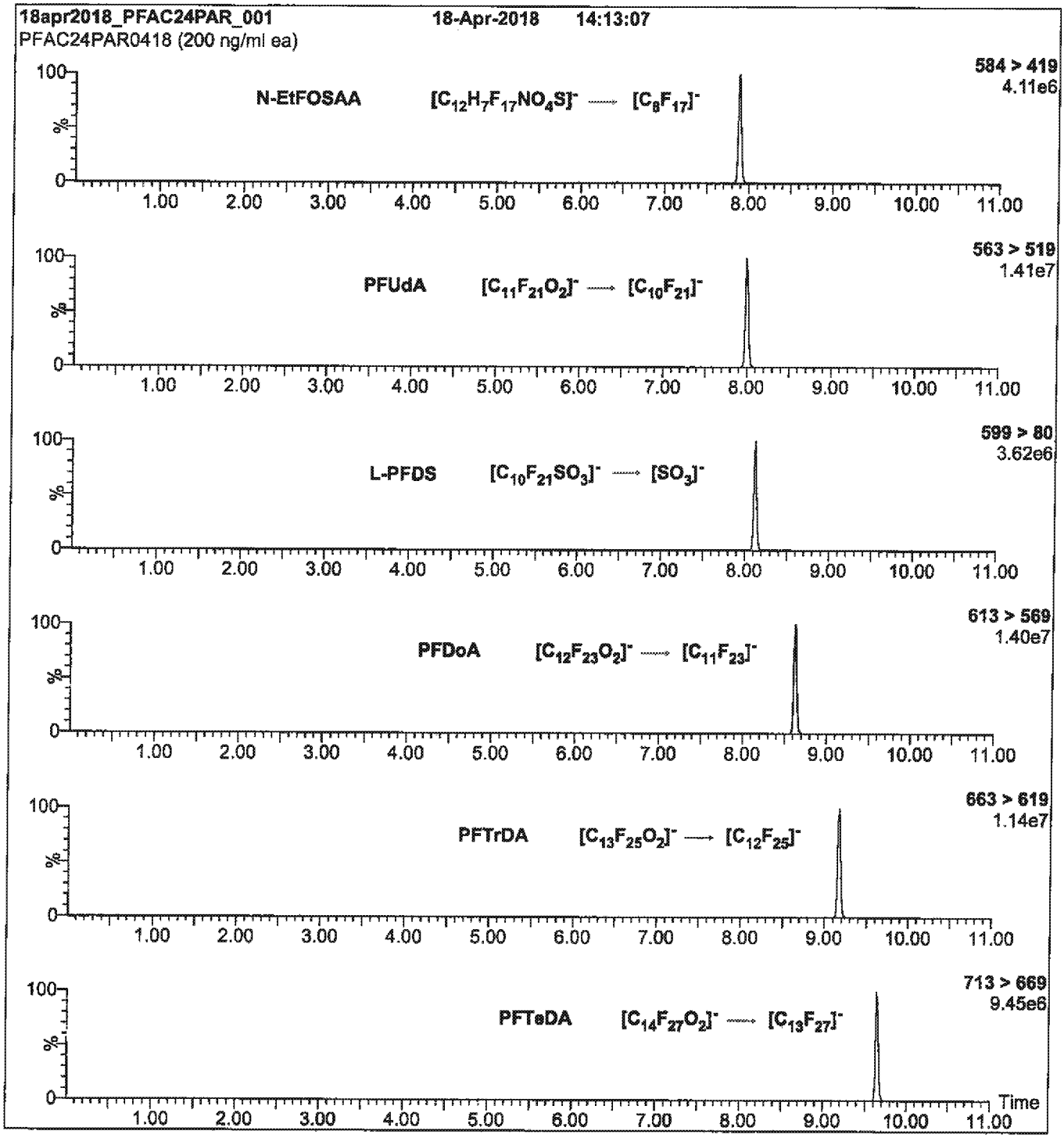


Conditions for Figure 2:

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

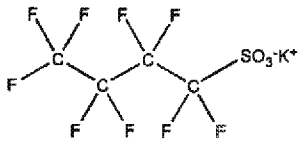
LCPFBS_00009

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
COMPOUND: Potassium perfluoro-1-butanesulfonate
LOT NUMBER: LPFBS0917

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) 09/21/2017
EXPIRY DATE: (mm/dd/yyyy) 09/21/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 09/22/2017 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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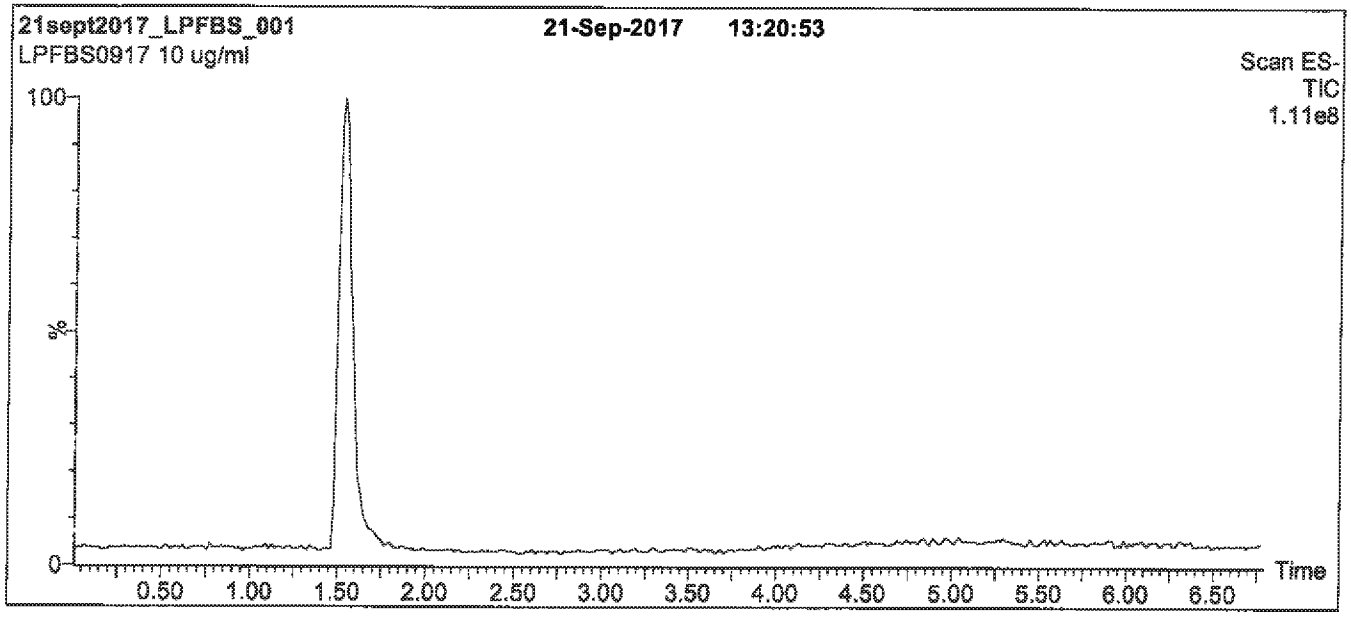
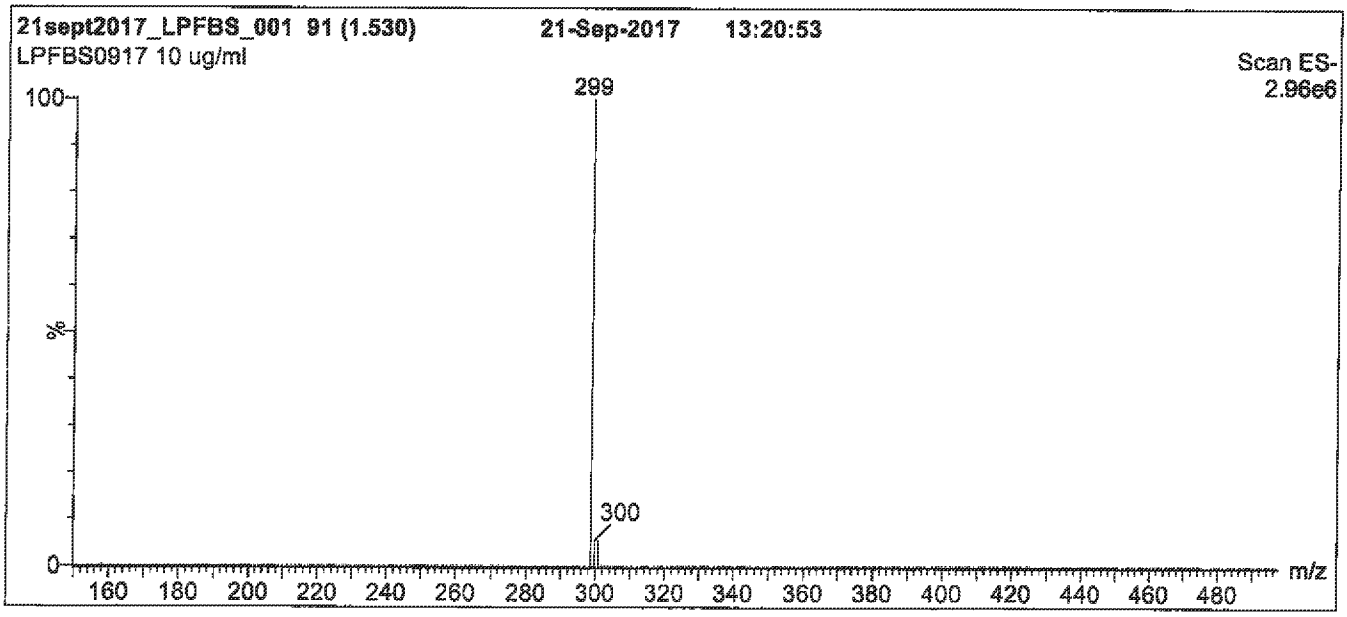
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: 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

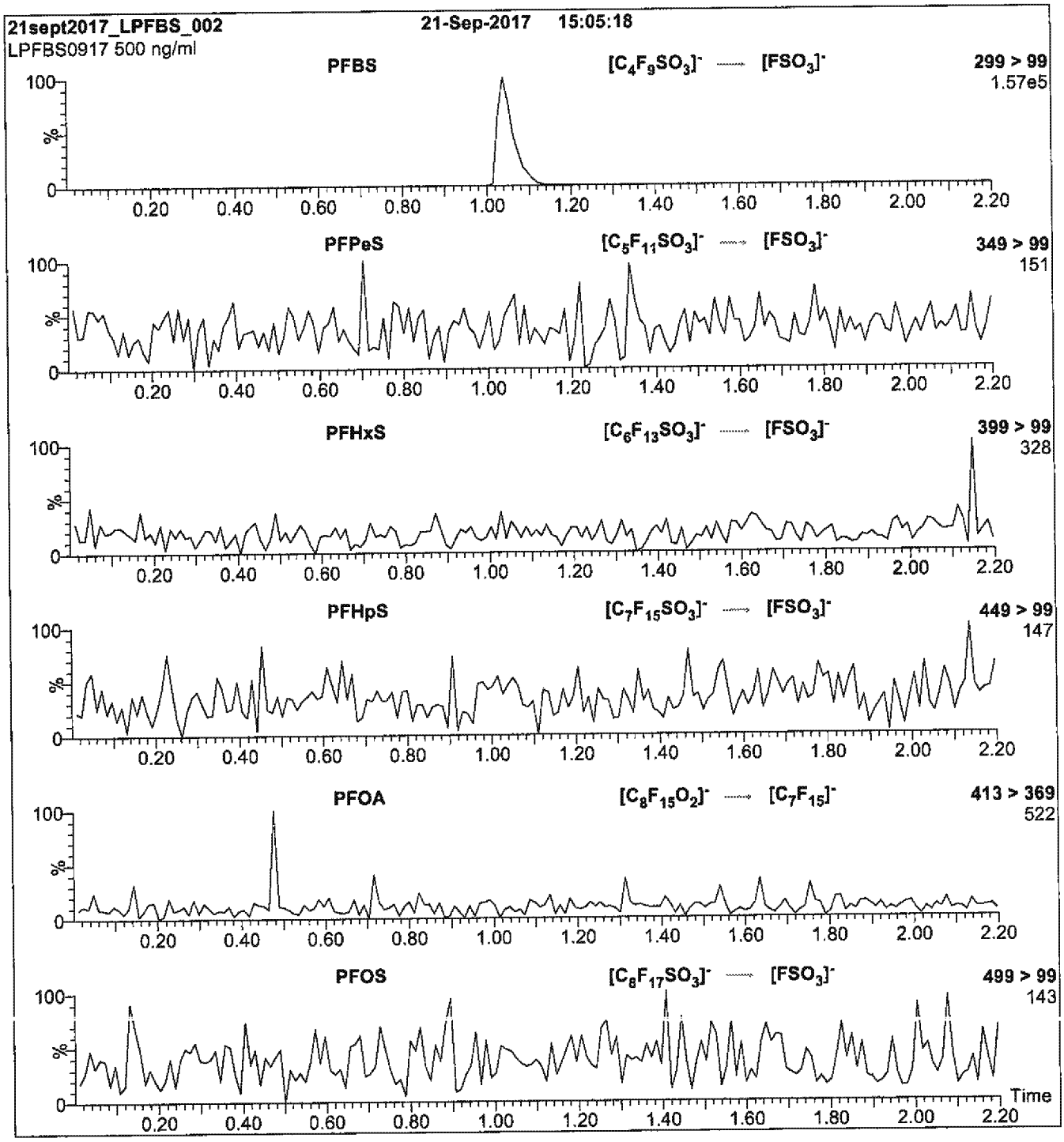
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFBS)

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) = 25

Reagent

LCPFBSA_00005

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

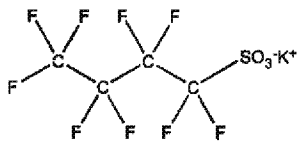
PRODUCT CODE: L-PFBS

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)

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:

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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 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:

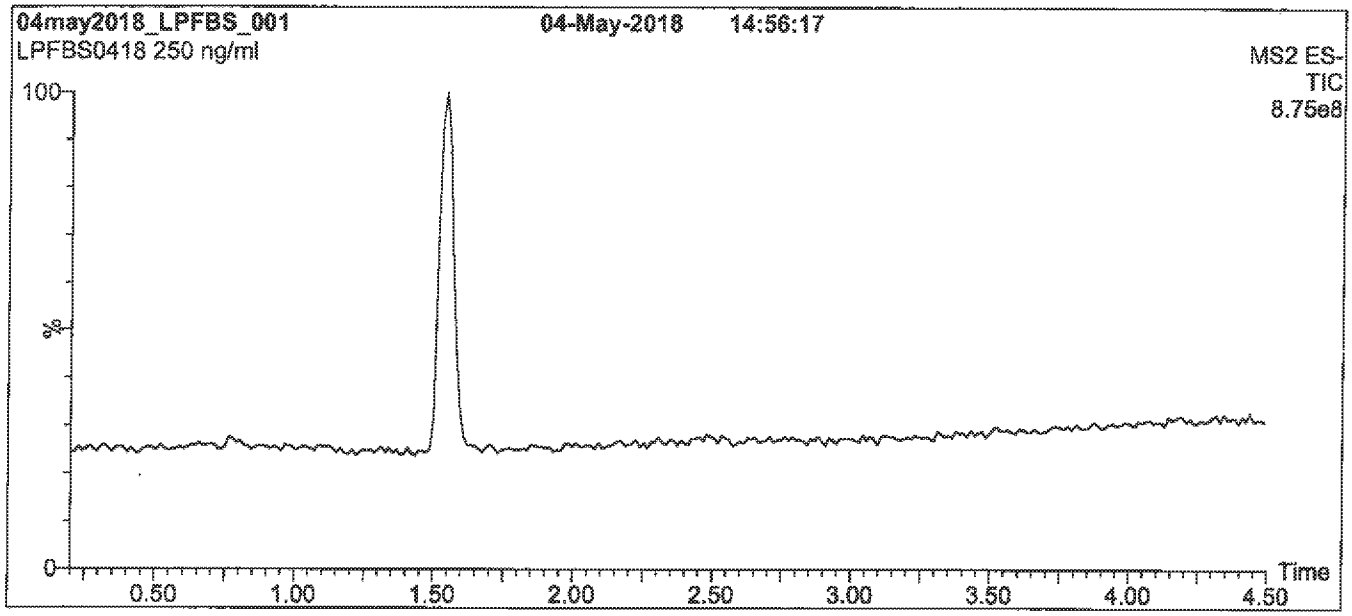
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

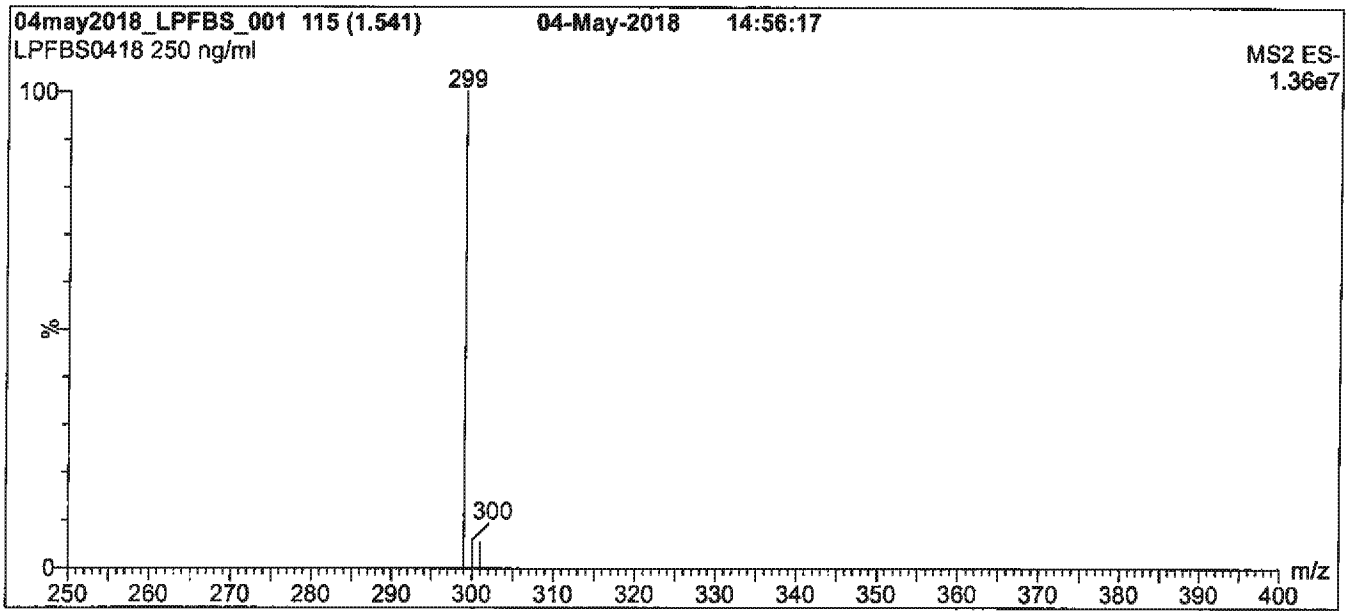
CALA

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: **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

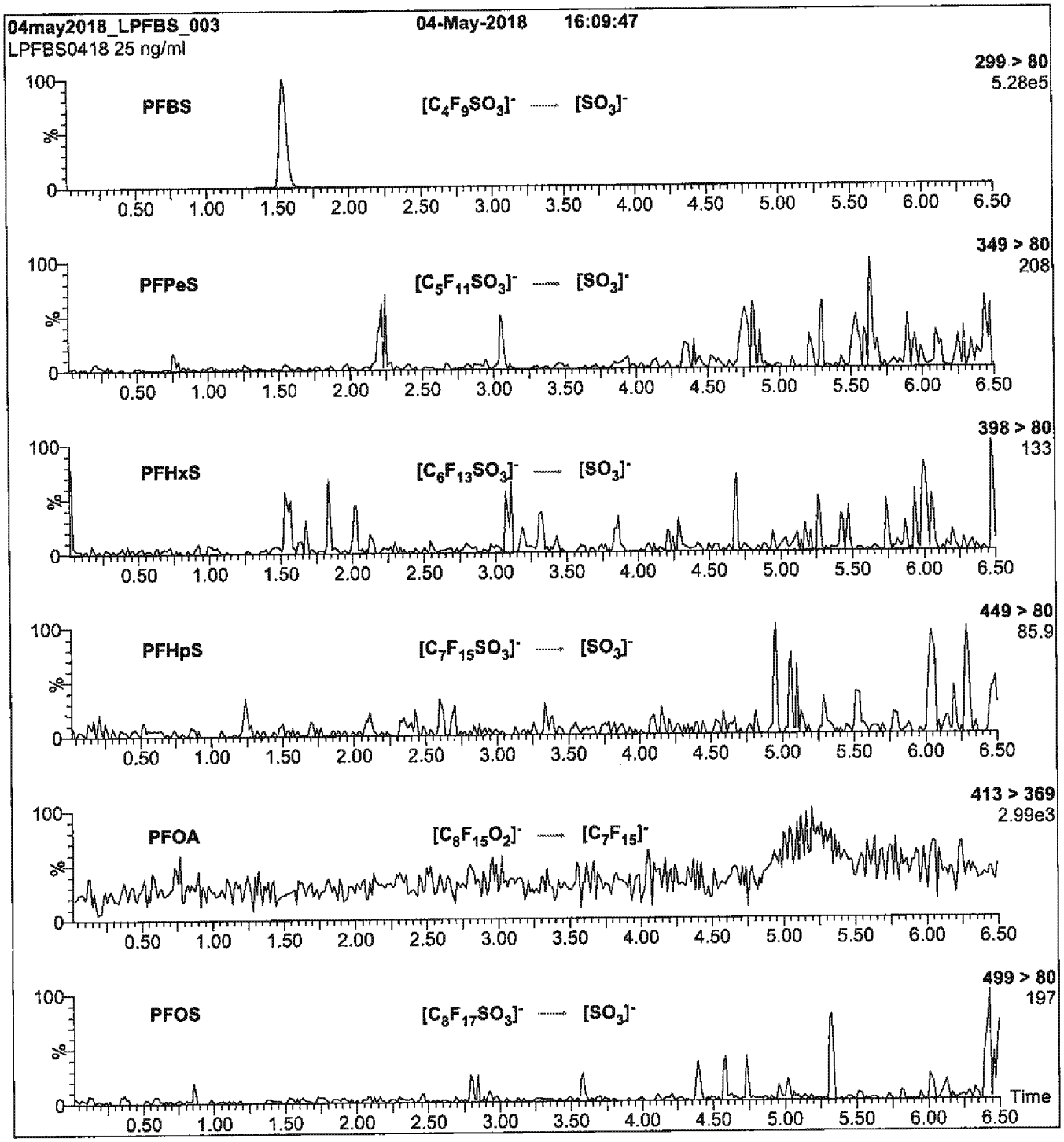
Flow: 300 µl/min

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

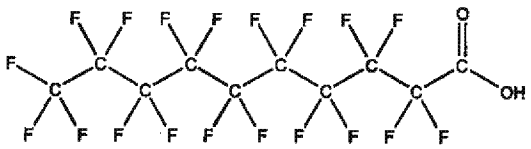
LCPFDA_00008

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDA
LOT NUMBER: PFDA0517
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) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
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:** 05/30/2017 (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:

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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:

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

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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:

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CALA

ANAB ACCREDITED

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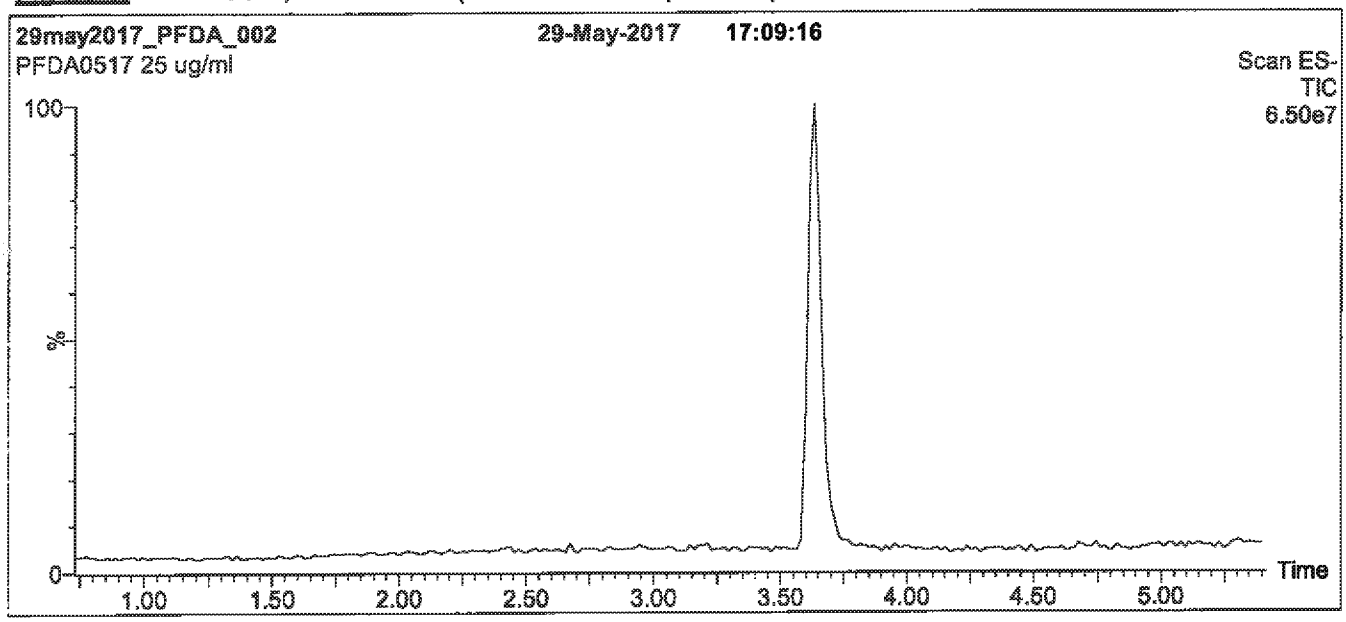
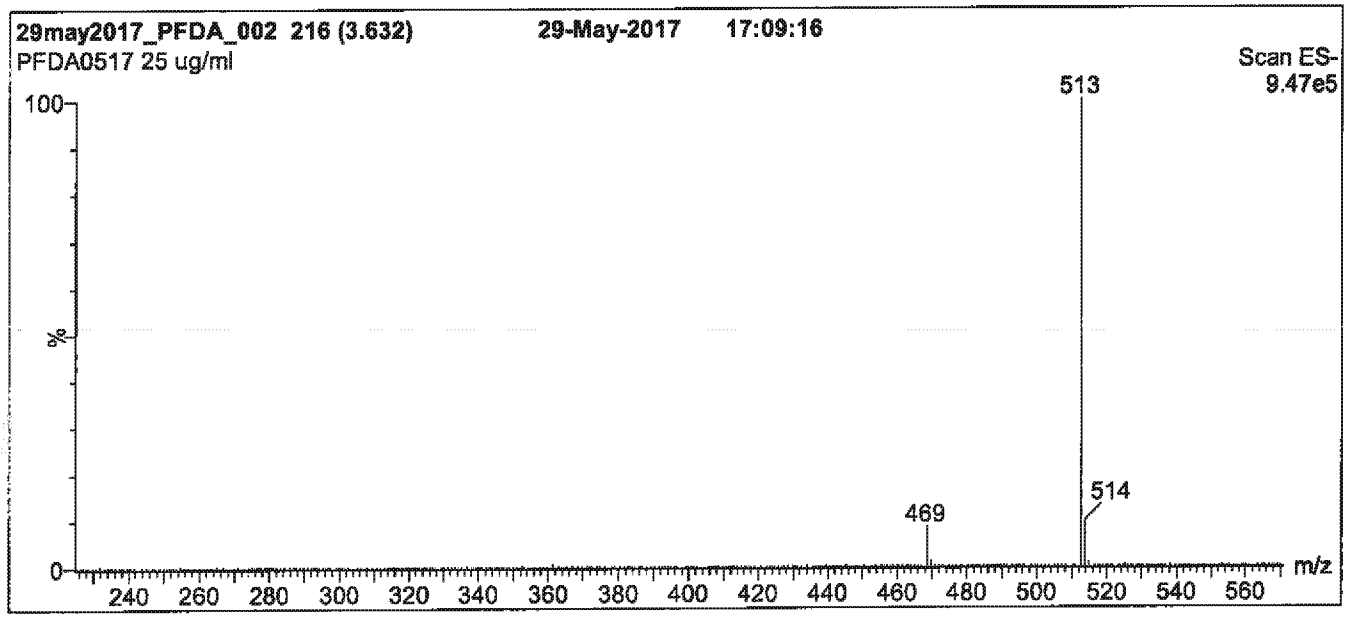
Figure 1: **PFDA; LC/MS Data (TIC and Mass Spectrum)**





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: 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
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

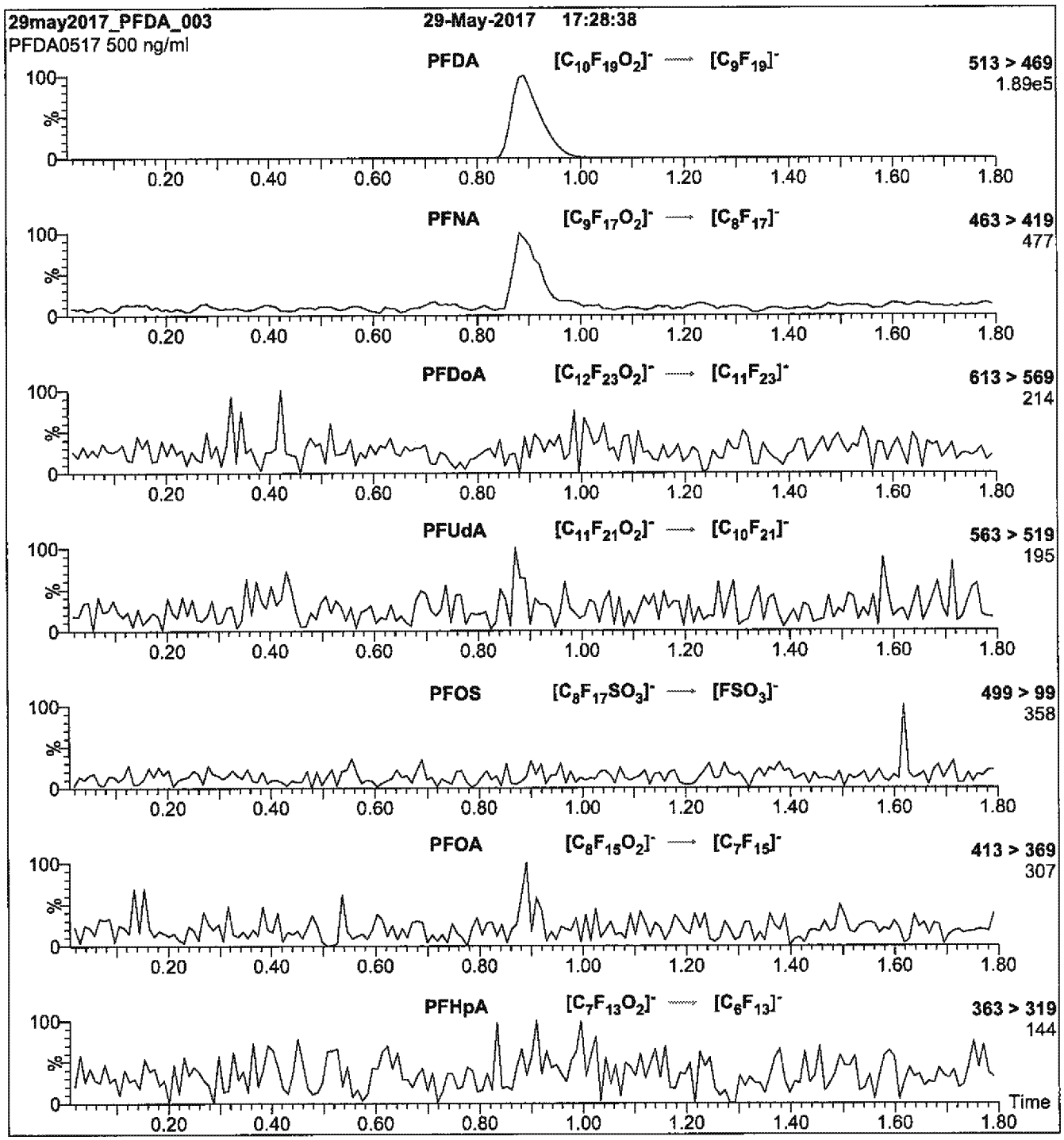
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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) = 3.20e-3
Collision Energy (eV) = 13

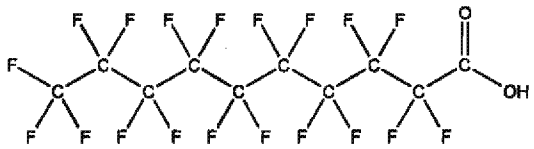
Reagent

LCPFDA_00012

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)

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CALA

ANAB ACCREDITED

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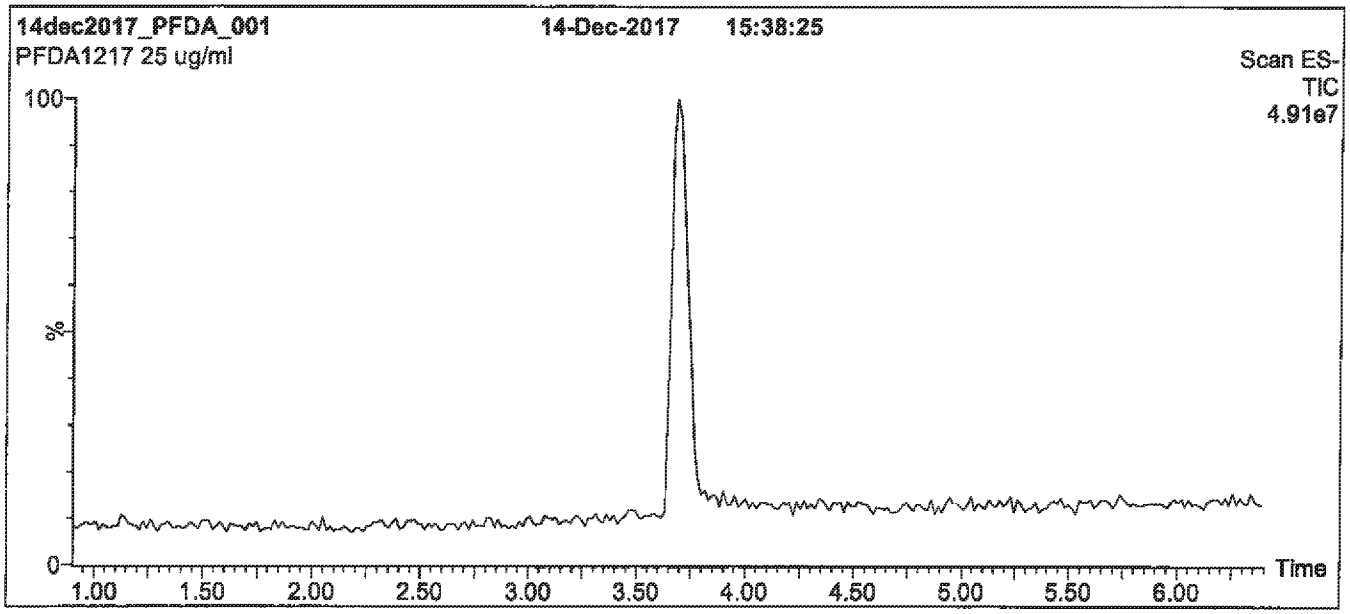
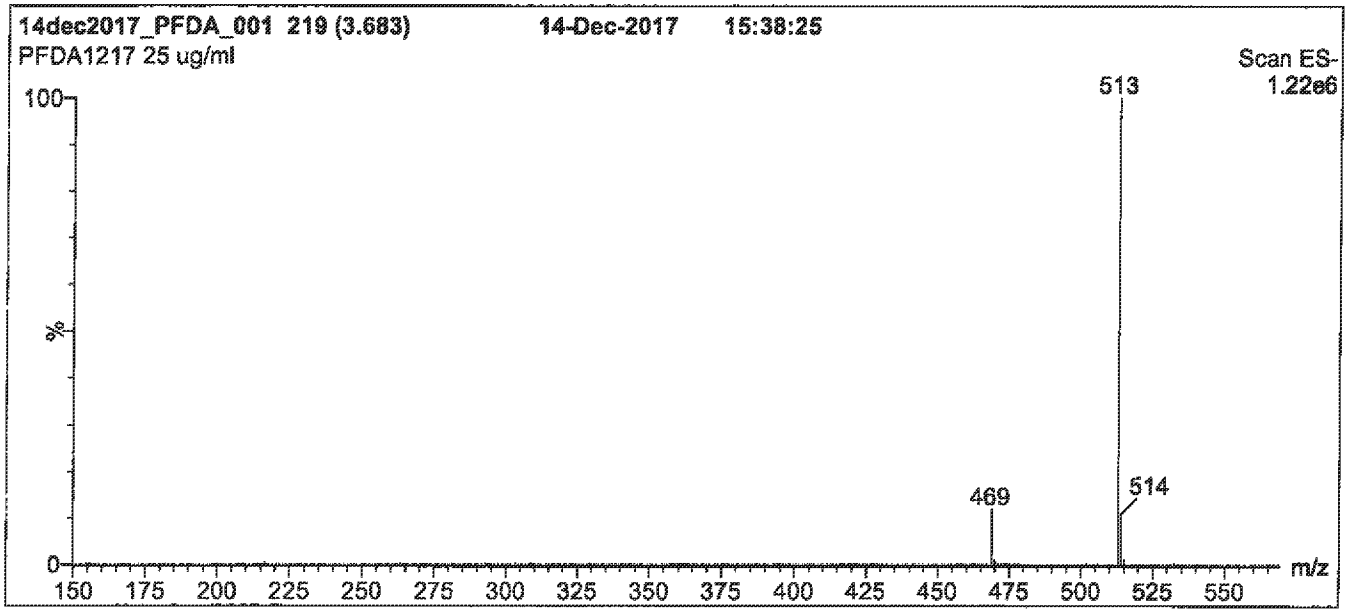




Conditions for Figure 1:

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

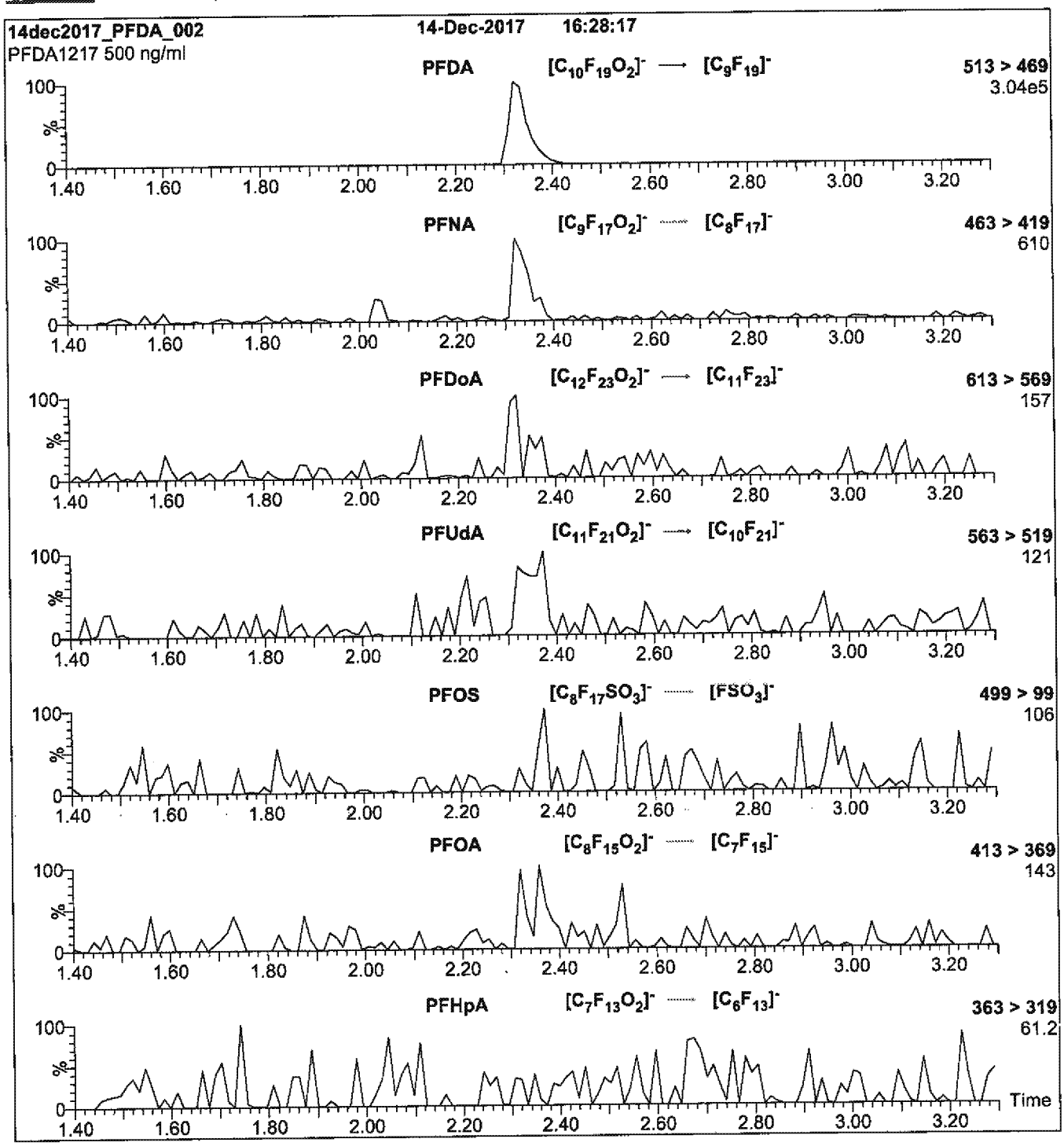
Flow: 300 µl/min

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

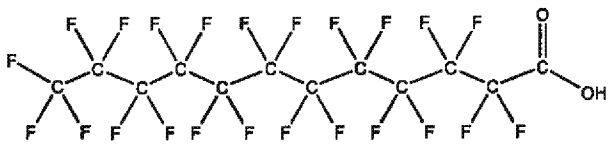
LCPFDoA_00008

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFDoA
LOT NUMBER: PFDoA0517
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) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 05/30/2017 (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

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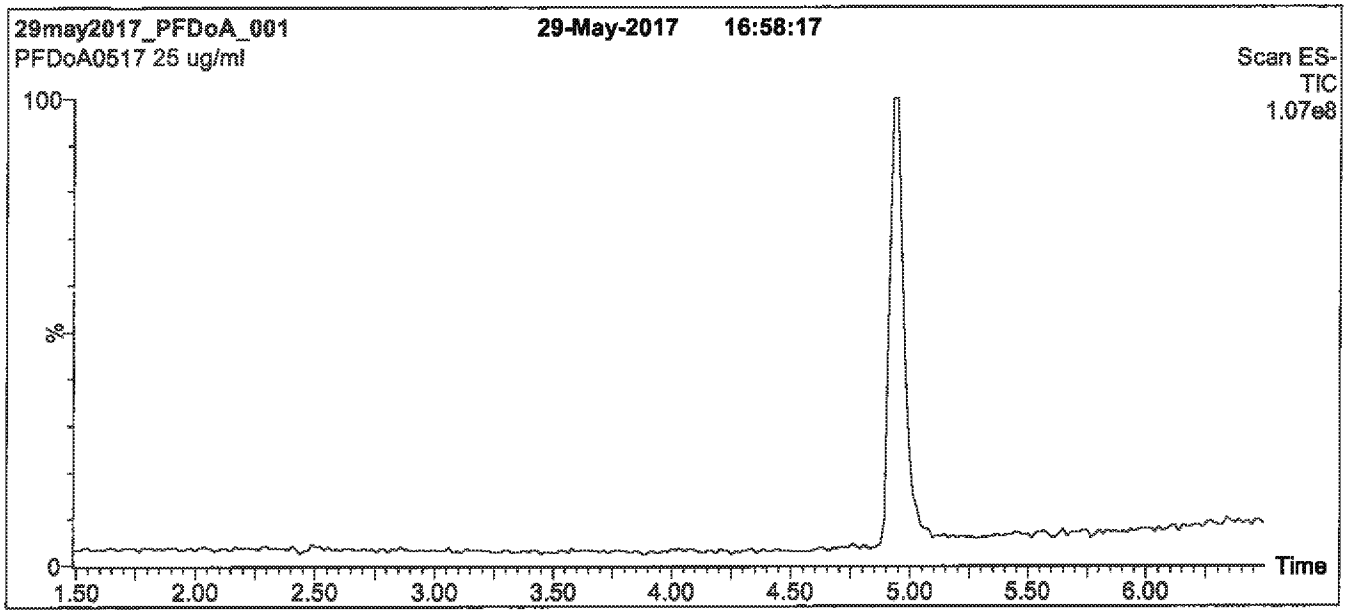
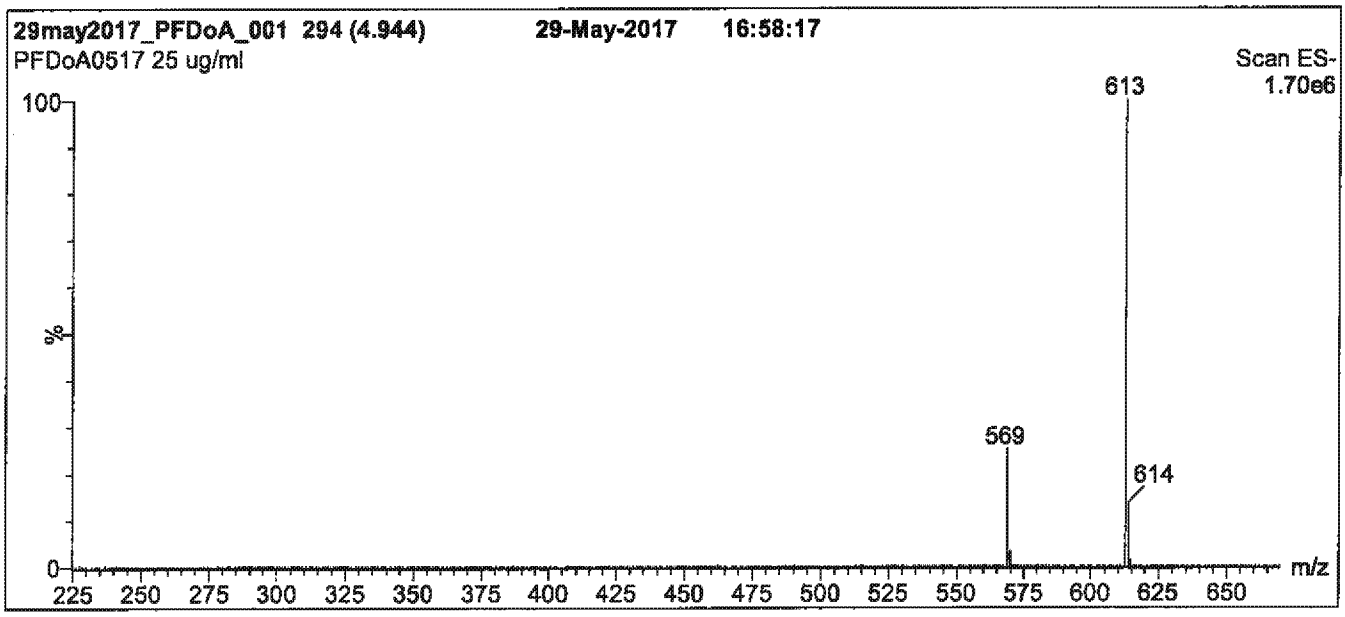
Figure 1: PFDoA; LC/MS Data (TIC and Mass Spectrum)





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: 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
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

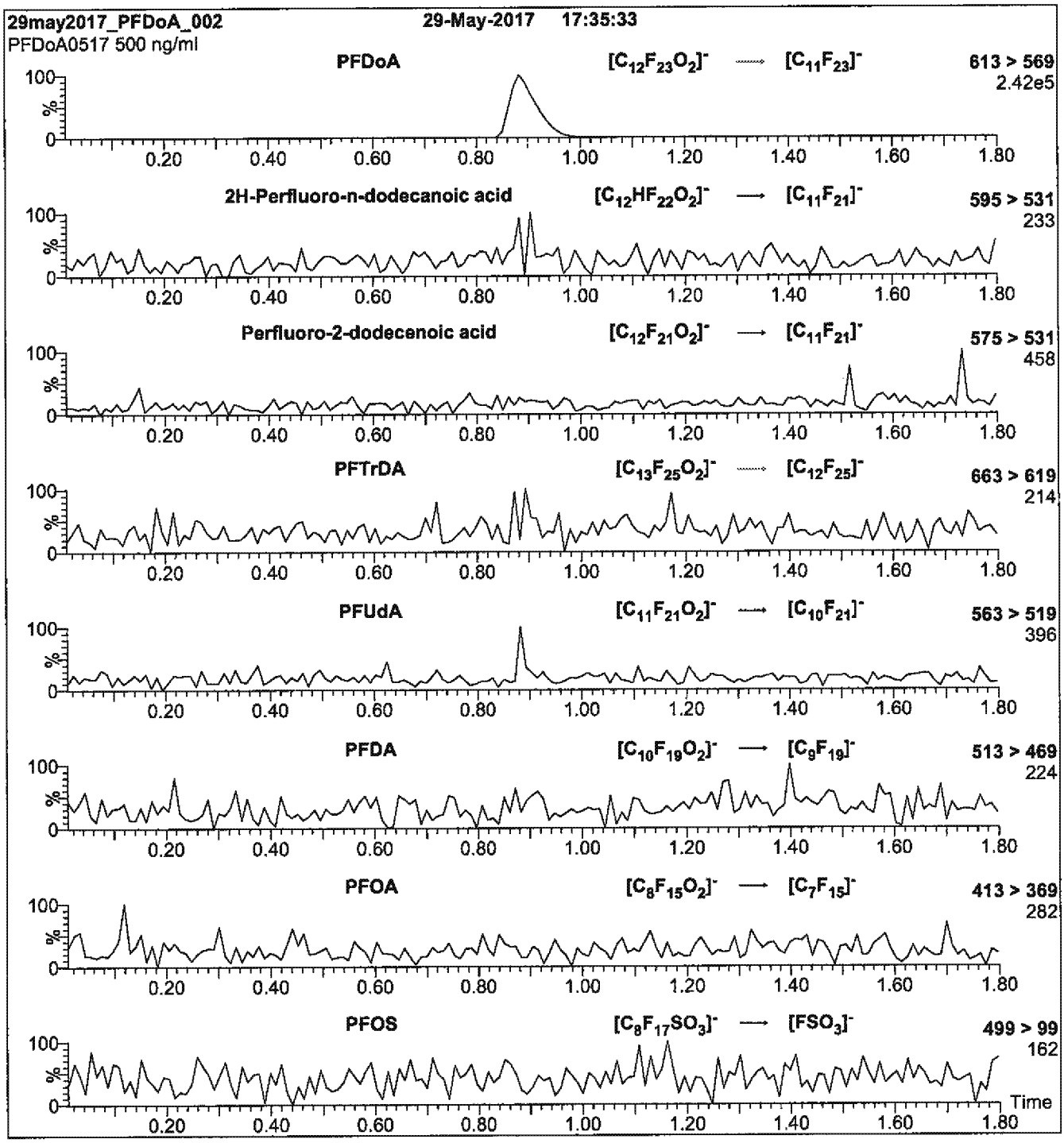
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

LCPFDoA_00012

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

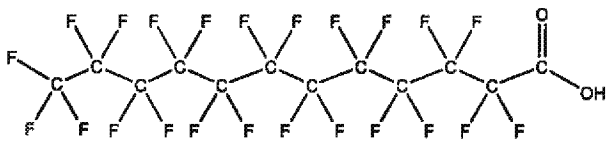
R: 10/29/18

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

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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 ACCREDITED

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

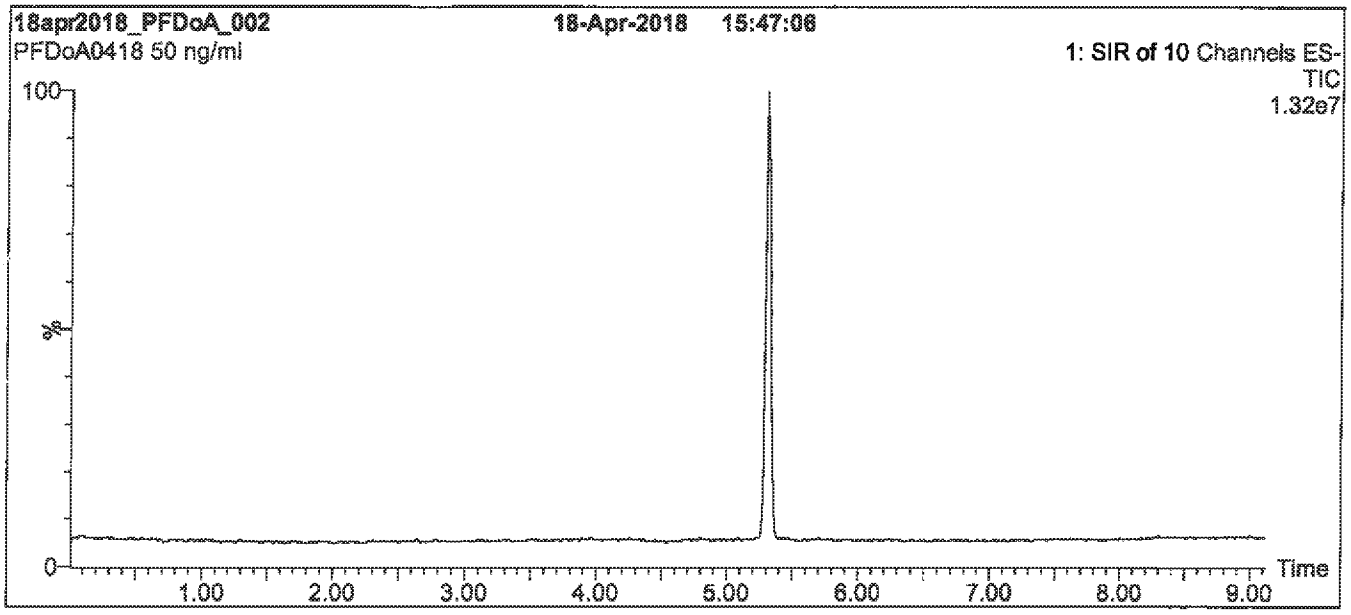
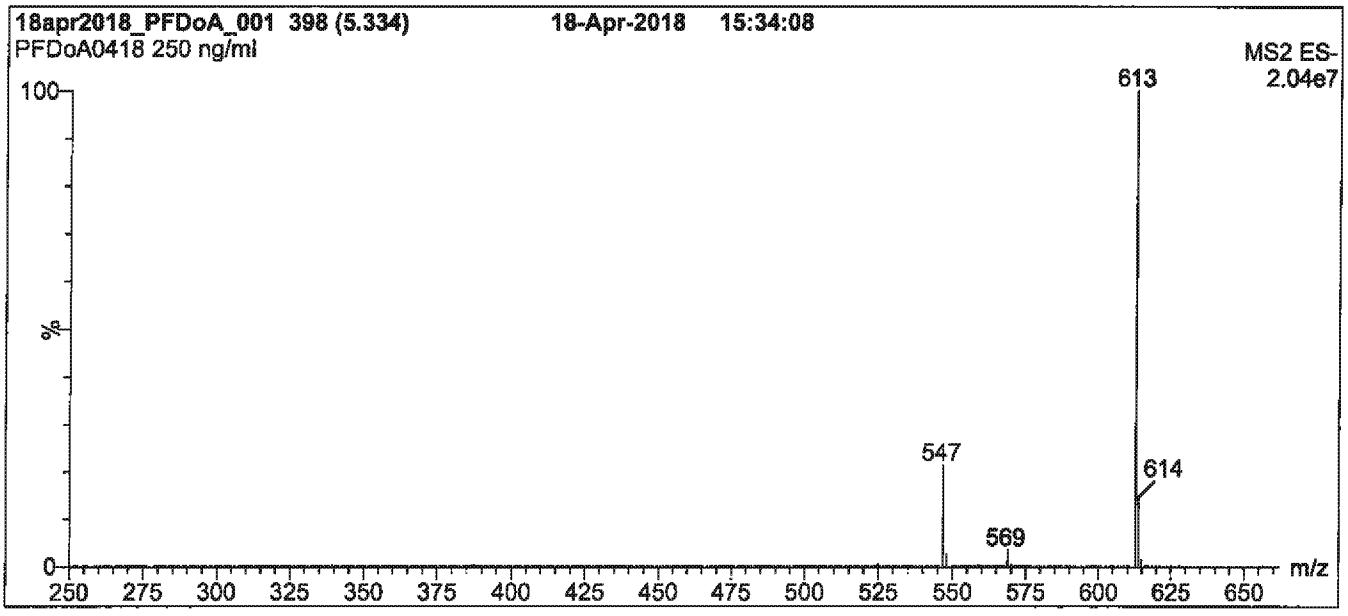


Figure 2: **PFDoA; LC/MS Data (Mass Spectrum)**



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

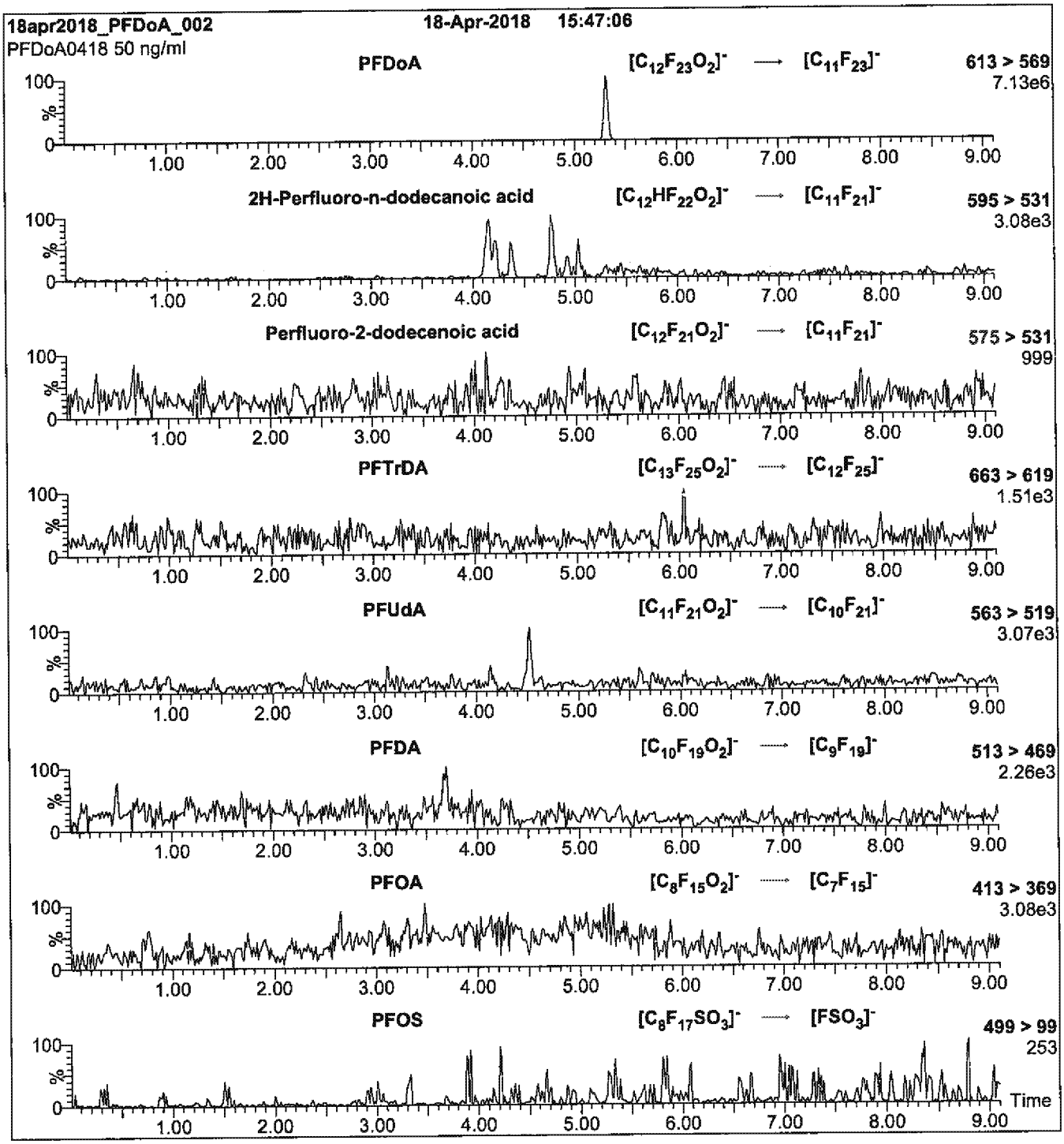
Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7 min and hold for
3 min before returning to initial conditions in 0.75 min.
Time: 12 min

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

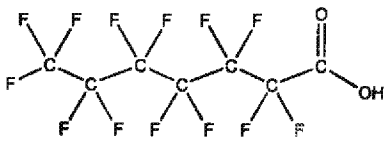
LCPFHpA_00011

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHpA
LOT NUMBER: PFHpA0917
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) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
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.

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Certified By: Ex. 4 CBI **Date:** 09/29/2017 (mm/dd/yyyy)

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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CALA

ANAB

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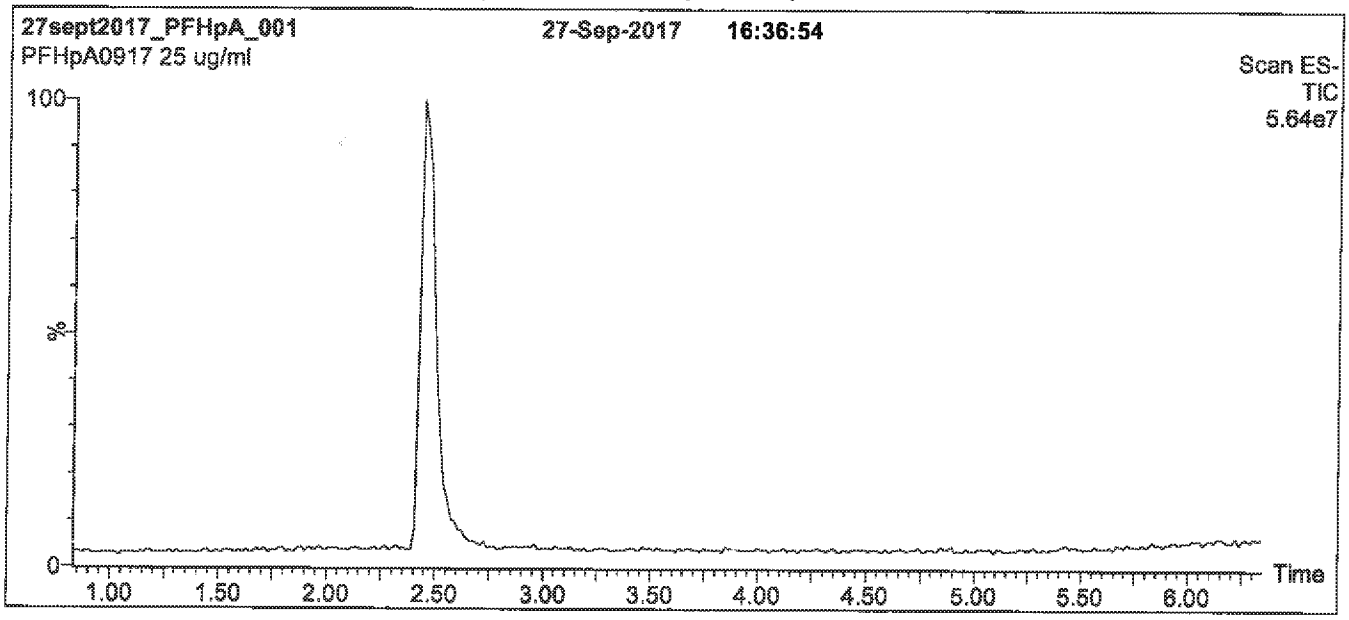
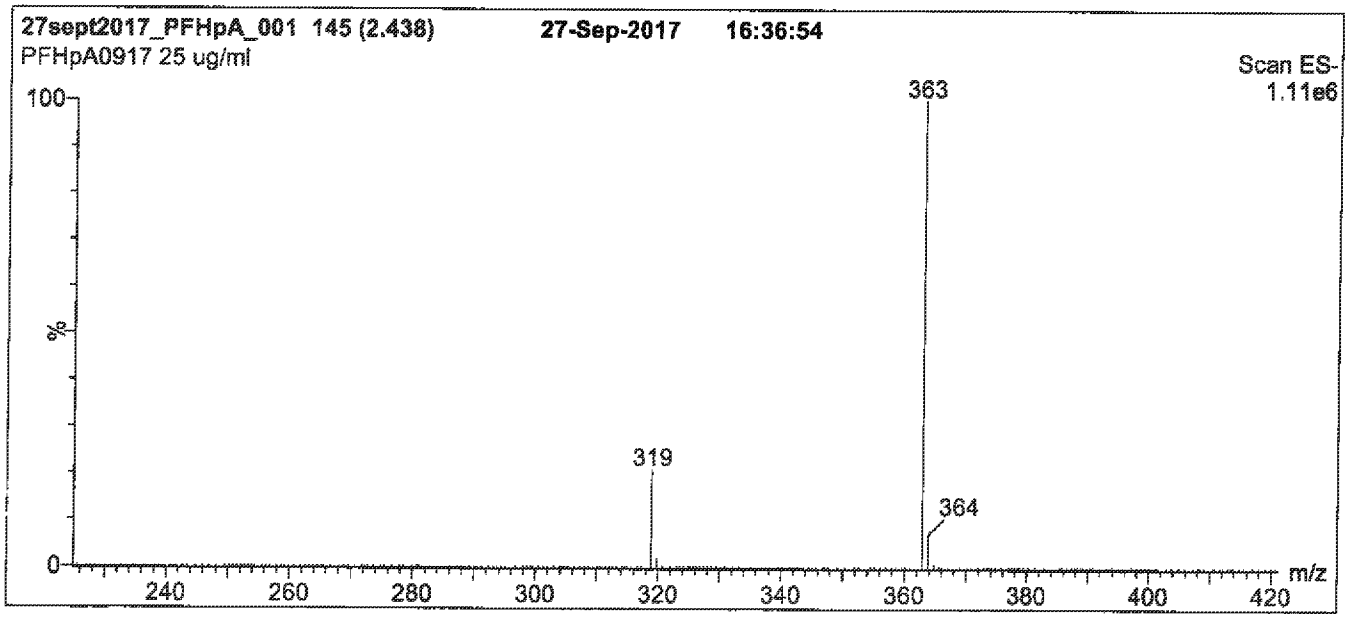
Figure 1: PFHpA; LC/MS Data (TIC and Mass Spectrum)





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

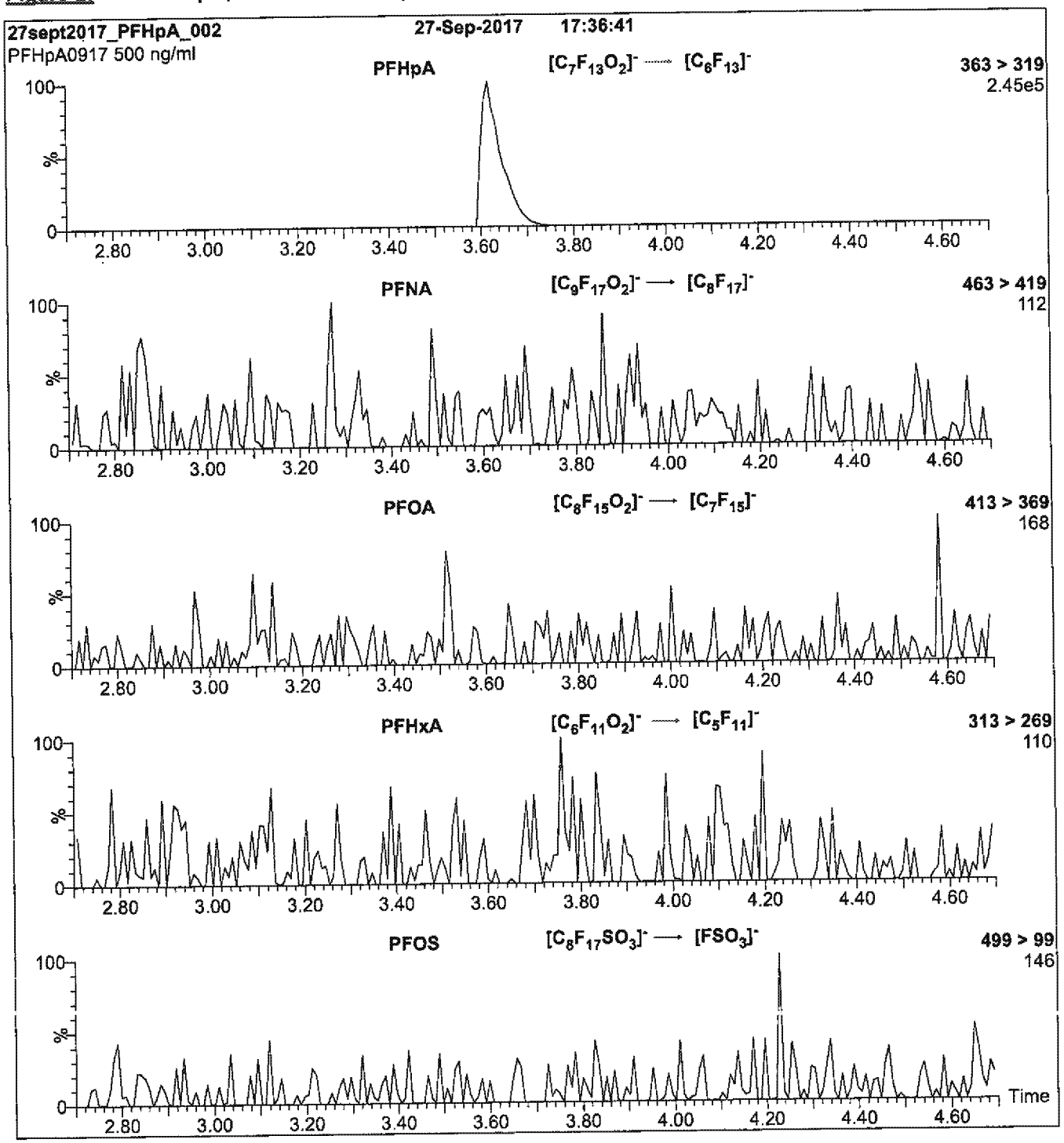
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 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: **PFHpA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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) = 11

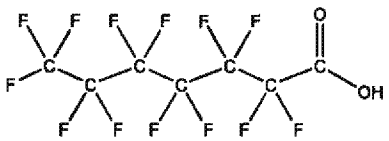
Reagent

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.

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Certified By: Ex. 4 CBI **Date:** 07/18/2018 (mm/dd/yyyy)

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

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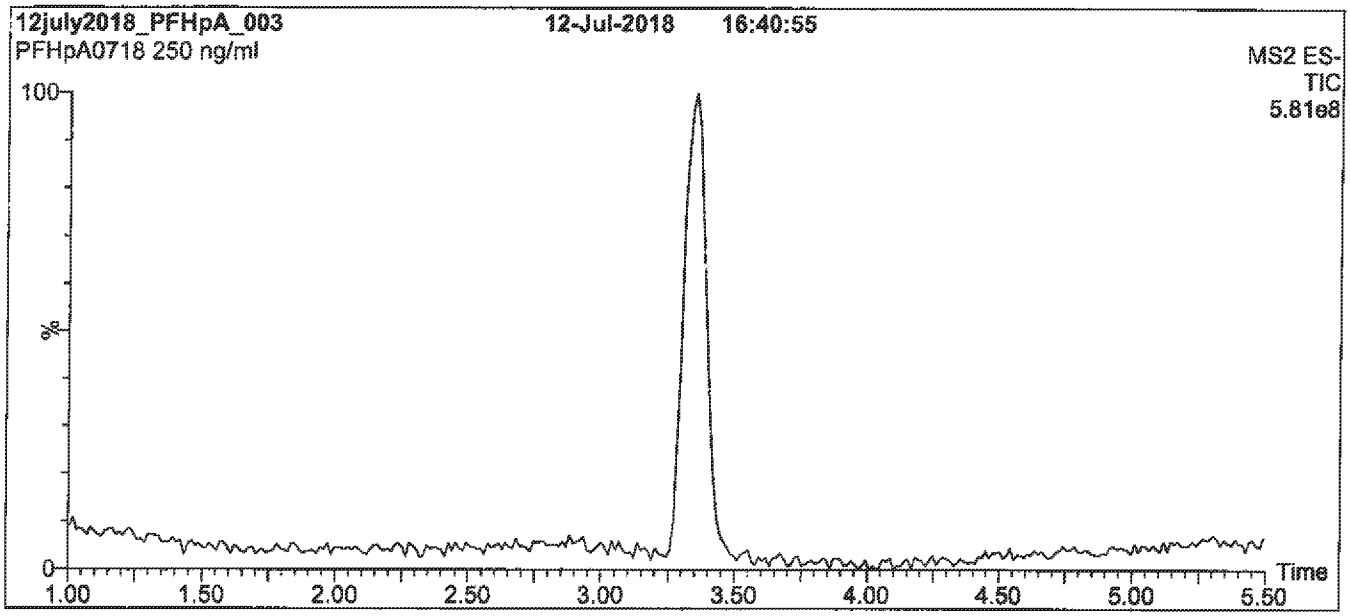
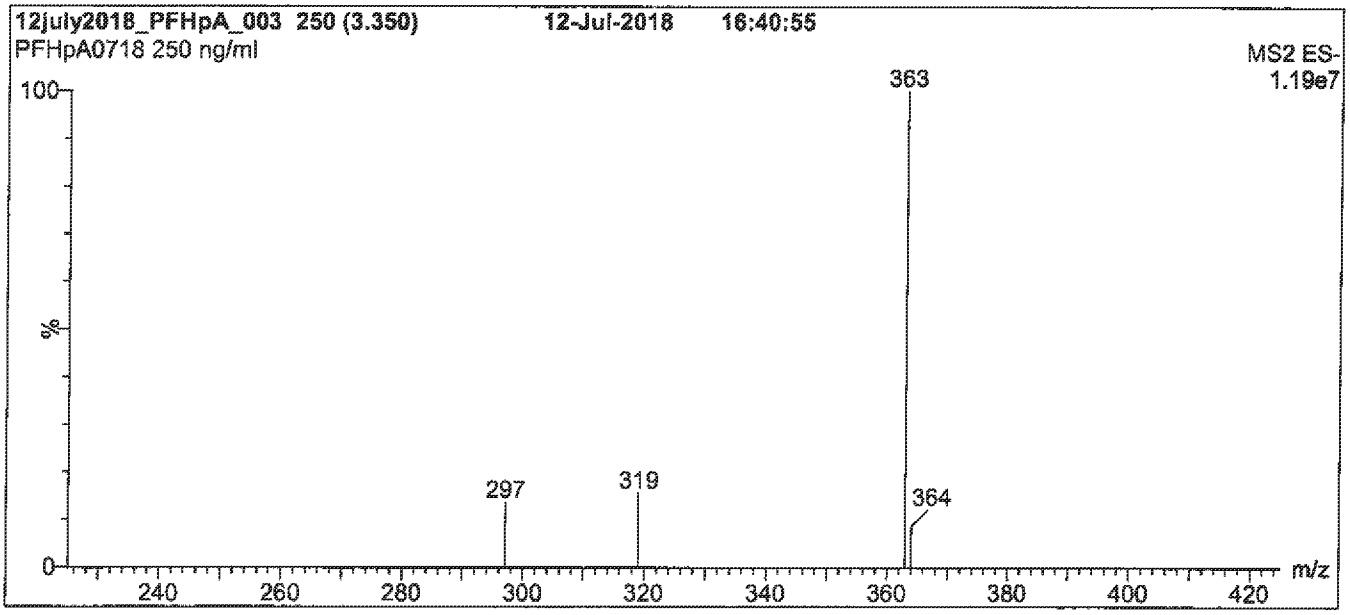
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

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

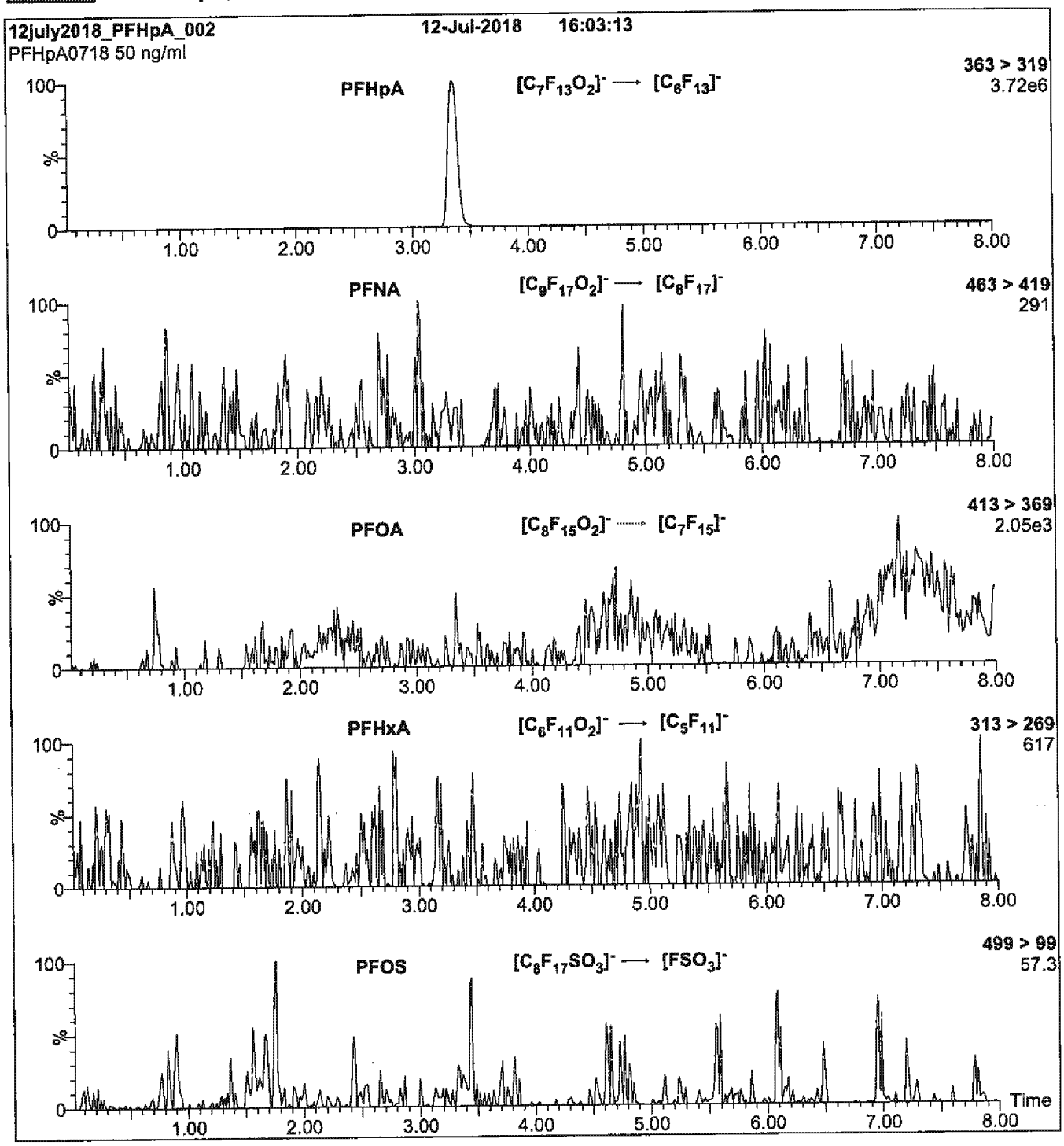
Flow: 300 µl/min

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_00010

WELLINGTON LABORATORIES

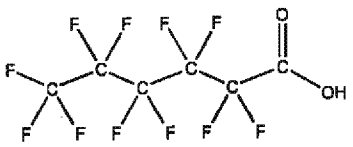
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA0917

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: $C_8HF_{11}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 314.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
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 ~ 1.0% of branched isomers.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 11/01/2017 (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.

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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:

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:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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ANAB ACCREDITED

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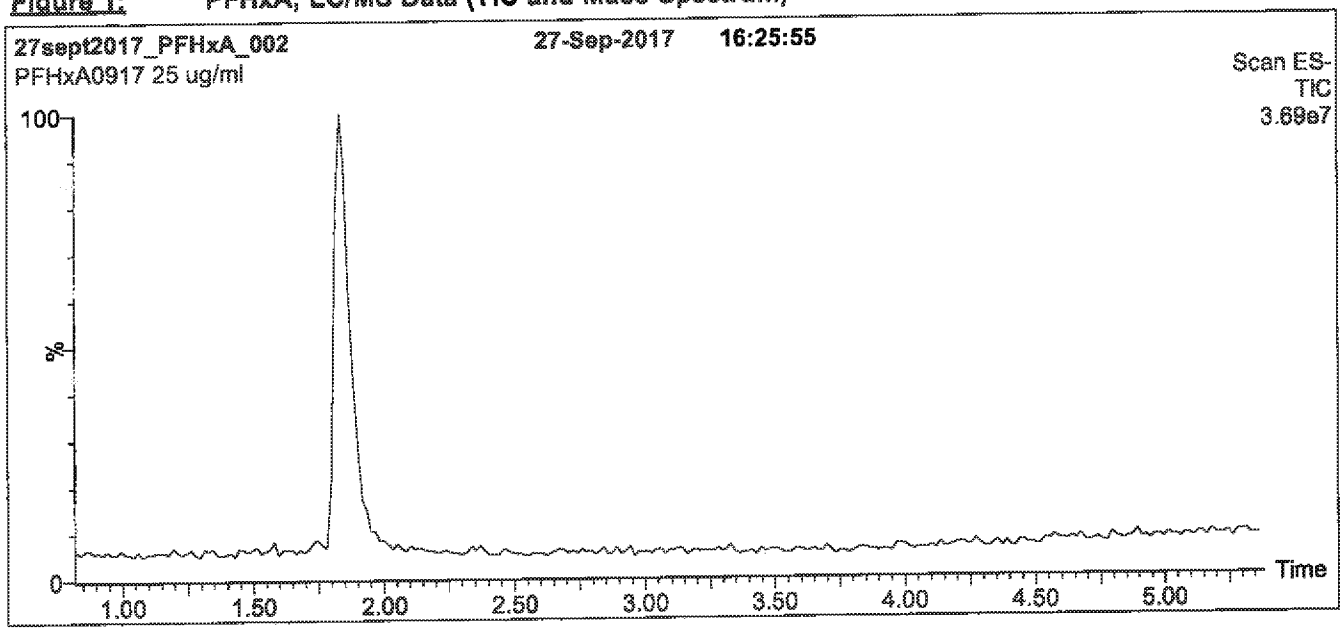
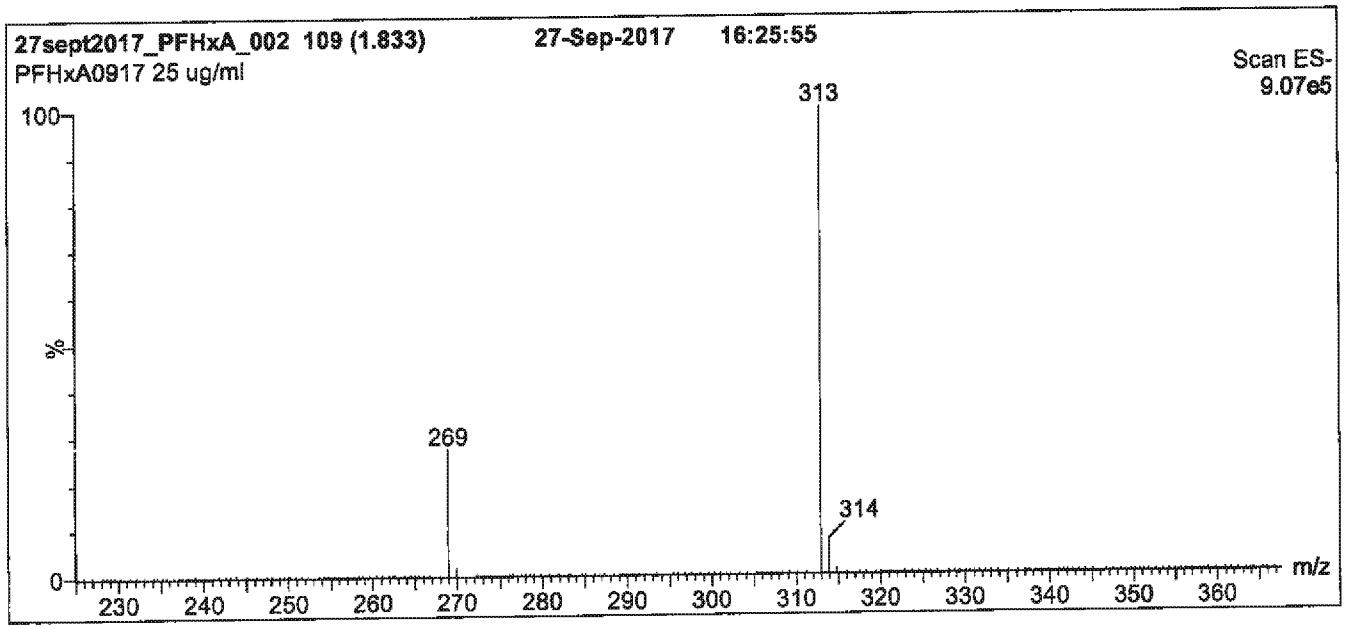
Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: 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

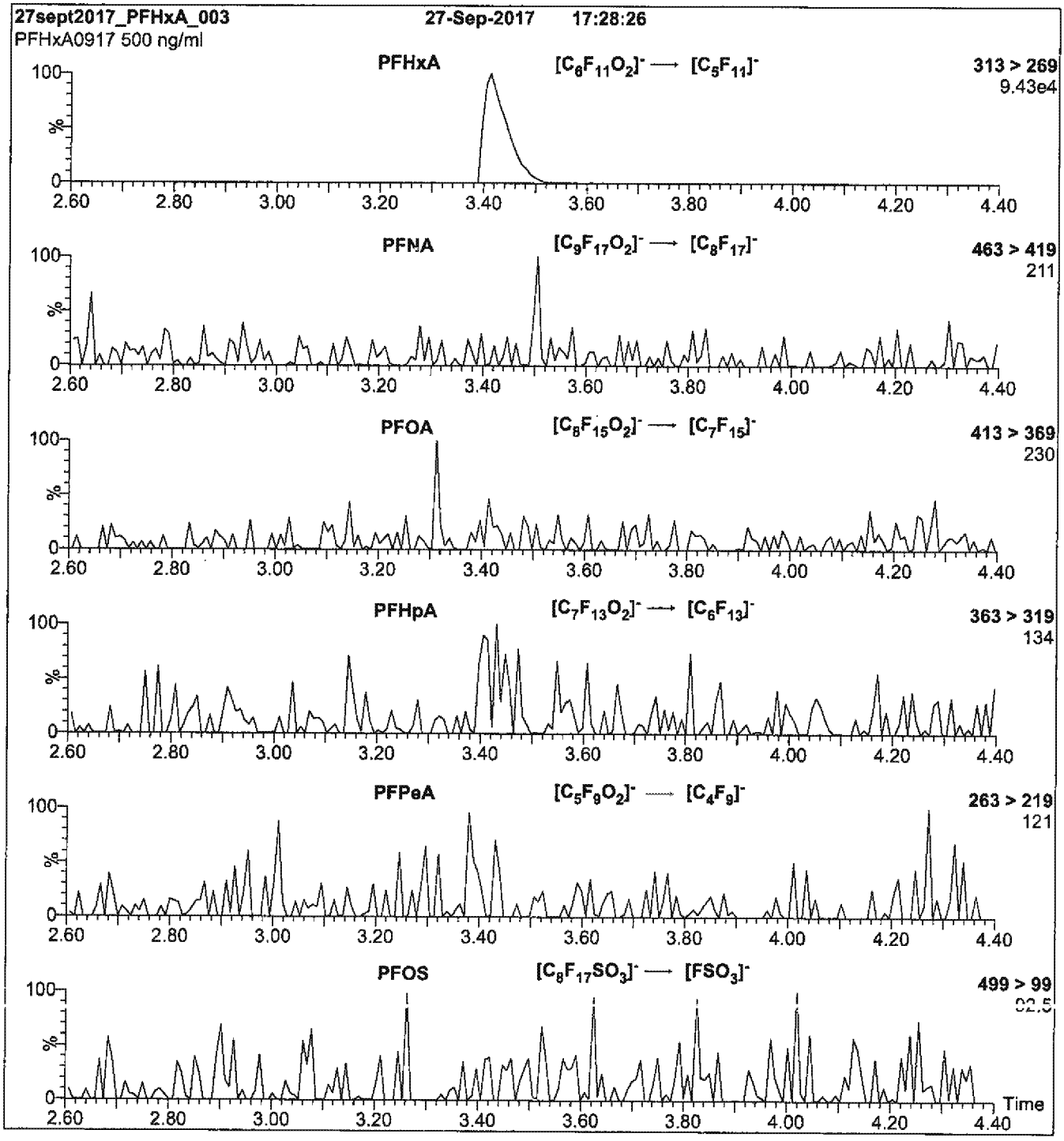
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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) = 3.46e-3
Collision Energy (eV) = 10

Reagent

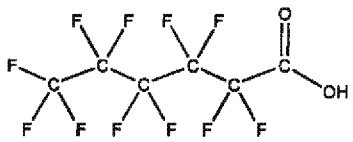
LCPFHxA_00012

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
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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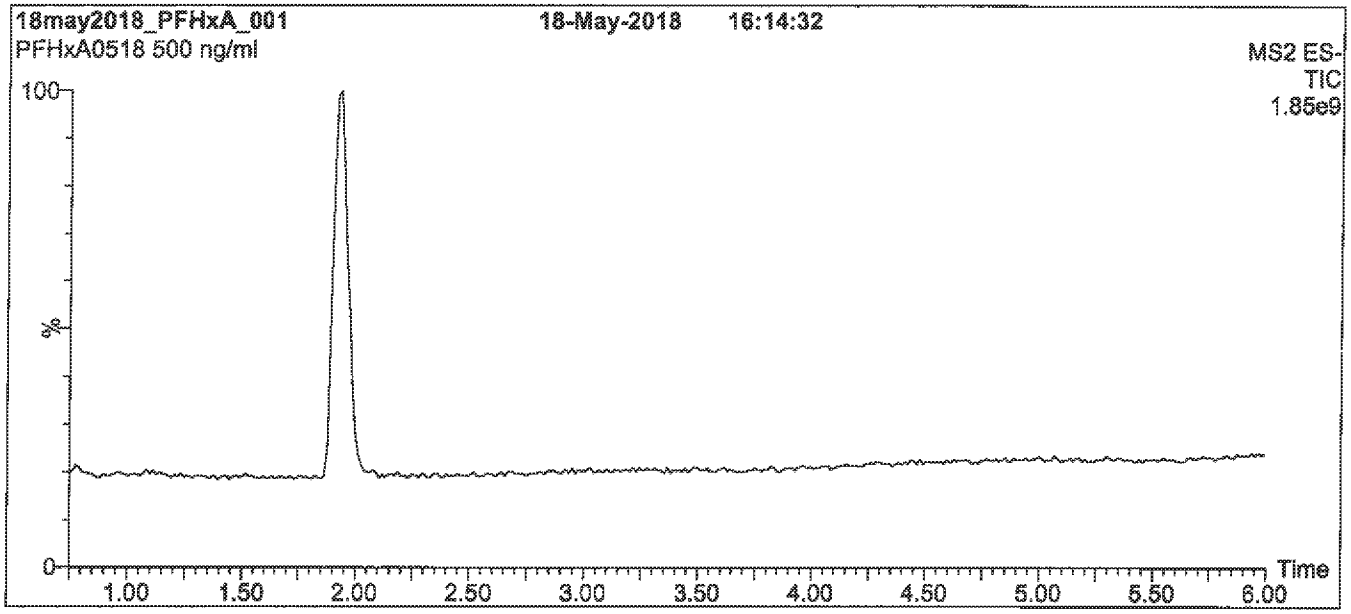
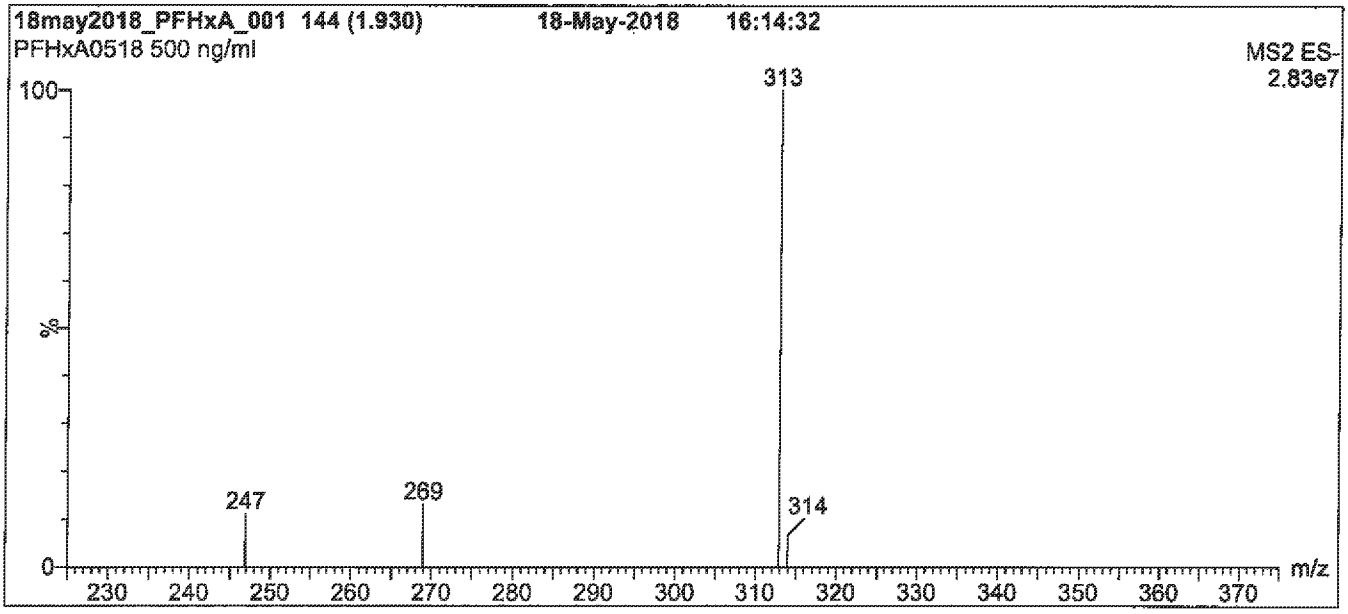
Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)





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

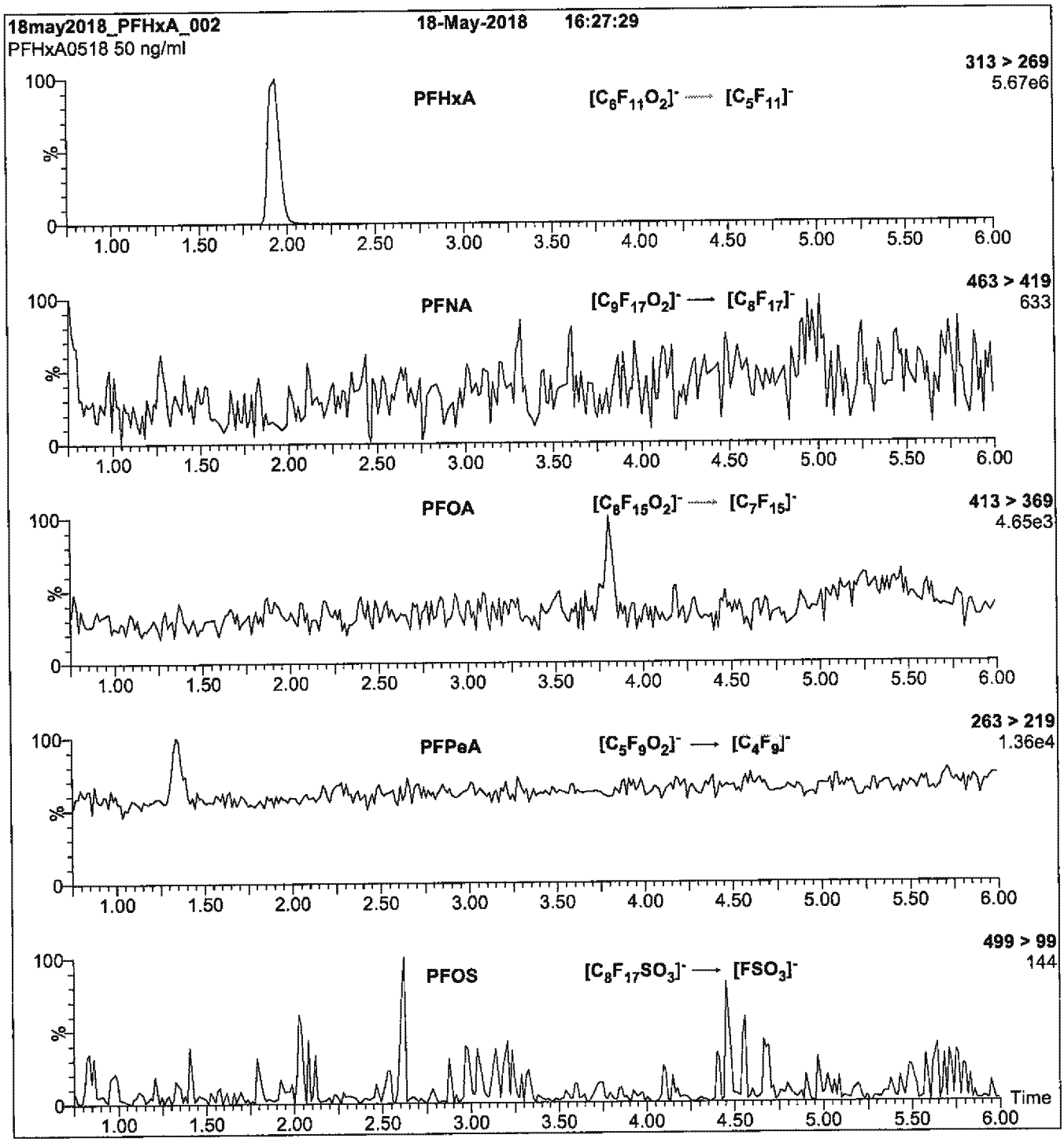
Flow: 300 µl/min

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_00006

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFHxSK
LOT NUMBER:	brPFHxSK0117
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)	01/03/2017
LAST TESTED: (mm/dd/yyyy)	01/04/2017
EXPIRY DATE: (mm/dd/yyyy)	01/04/2022
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 ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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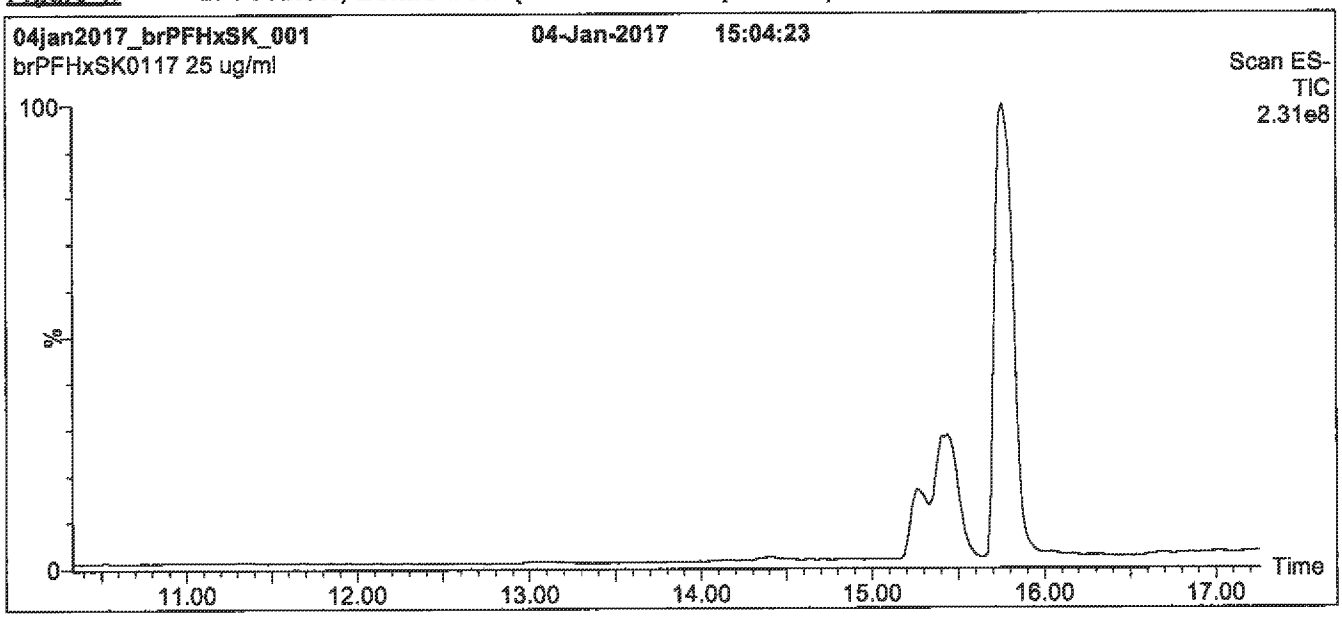
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

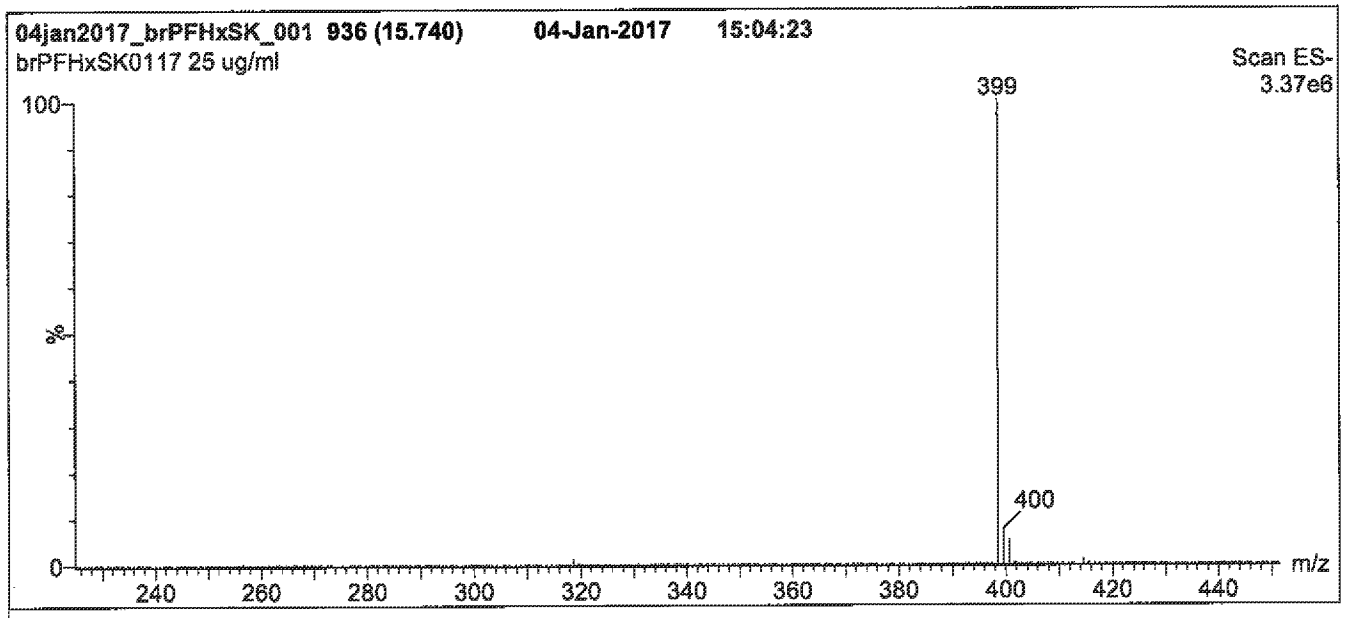
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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	$CF_3C(CF_3)_2CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

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

Certified By: Ex. 4 CBI Date: 01/20/2017 (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: 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: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

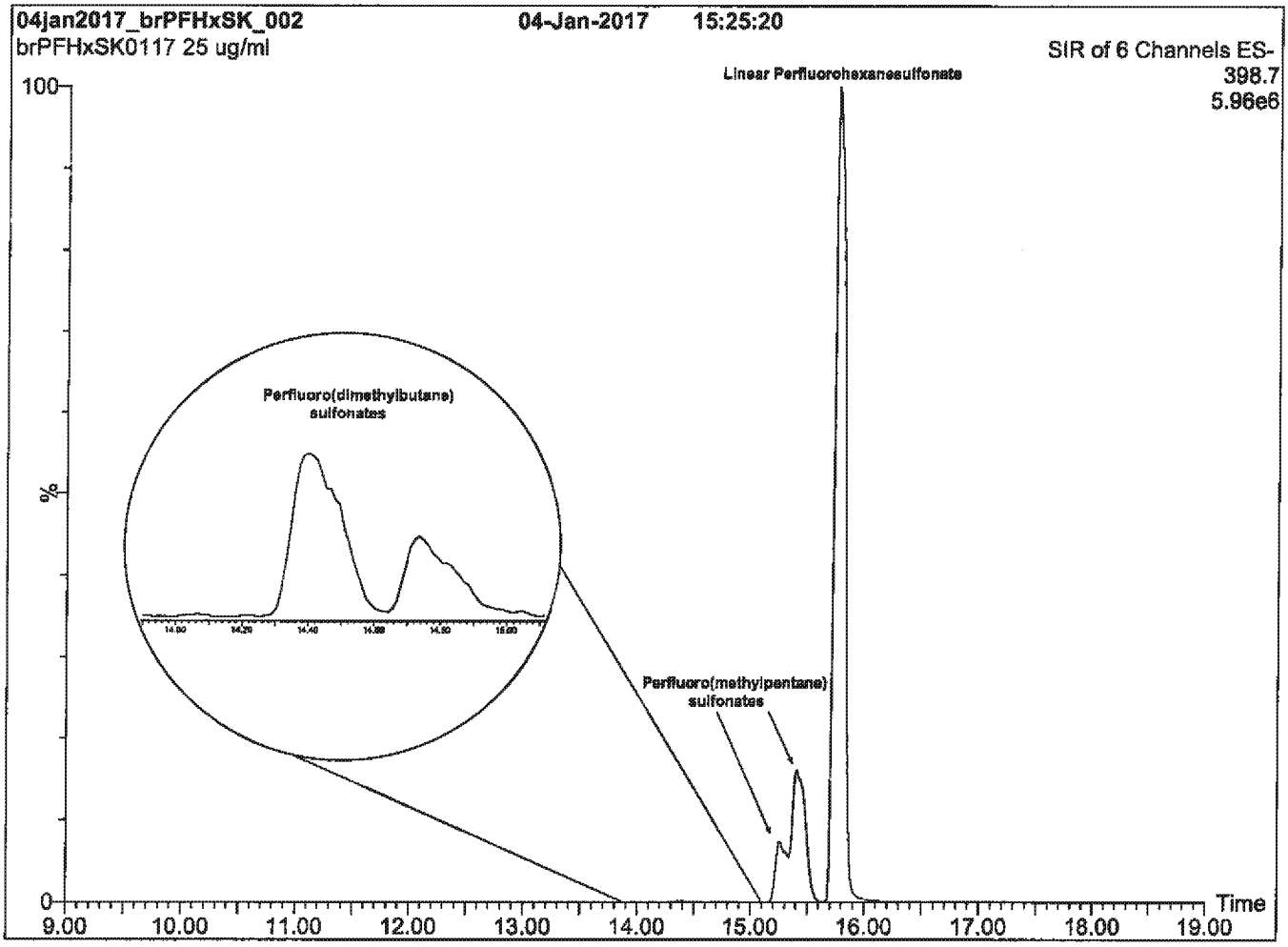
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFHxSK; 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: 20% (80:20 MeOH:ACN) / 80% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 50% organic over 14 min. Ramp to 90% organic over 3 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 20 min

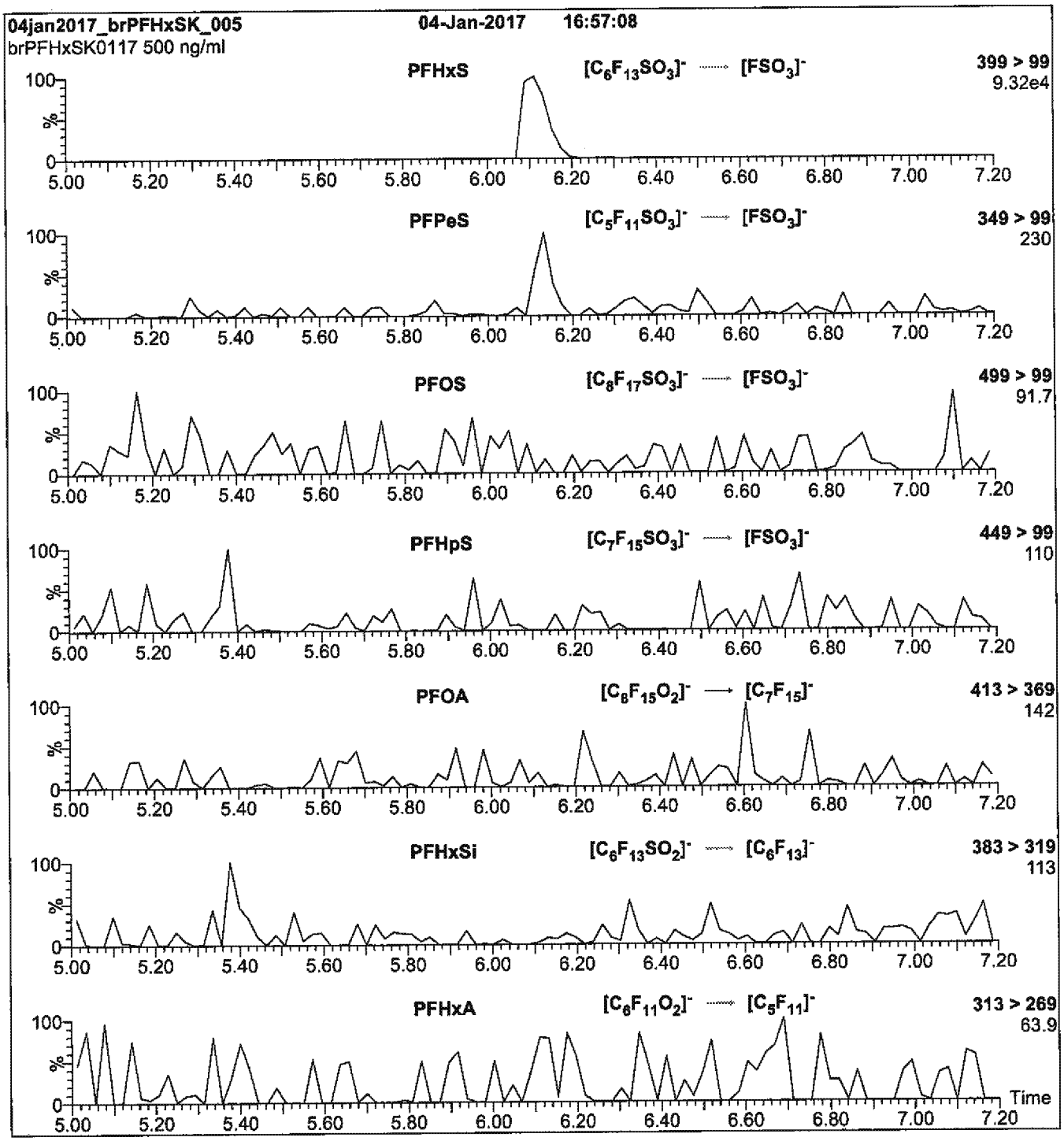
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-62)
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 3:

Injection: Direct loop injection
10 µl (500 ng/ml br-PFHxSK)

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) = 30

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:

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:

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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:

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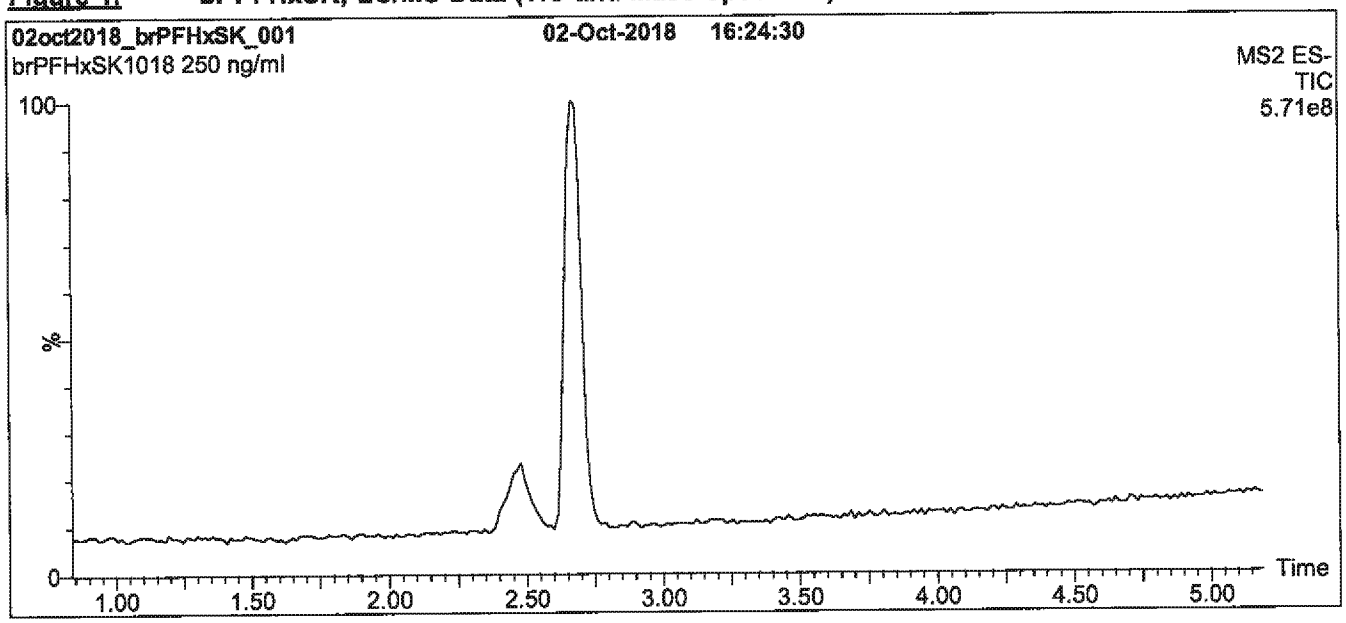
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

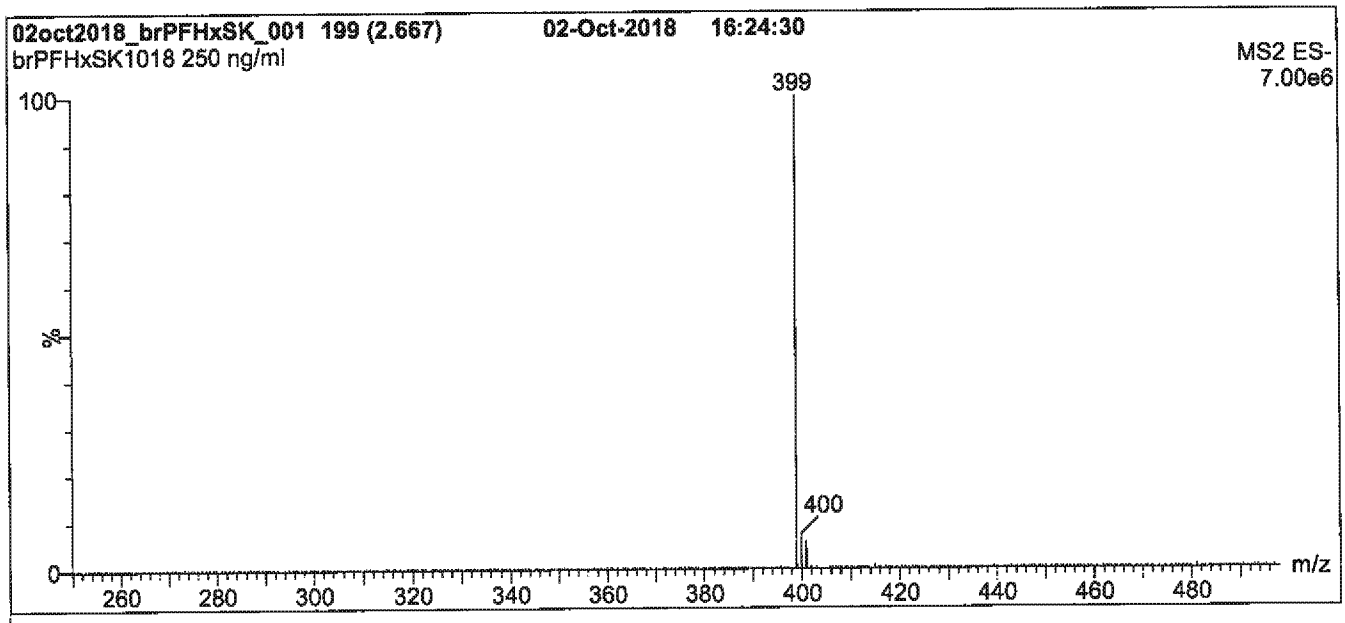
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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	$CF_3C(CF_3)_2CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

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

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

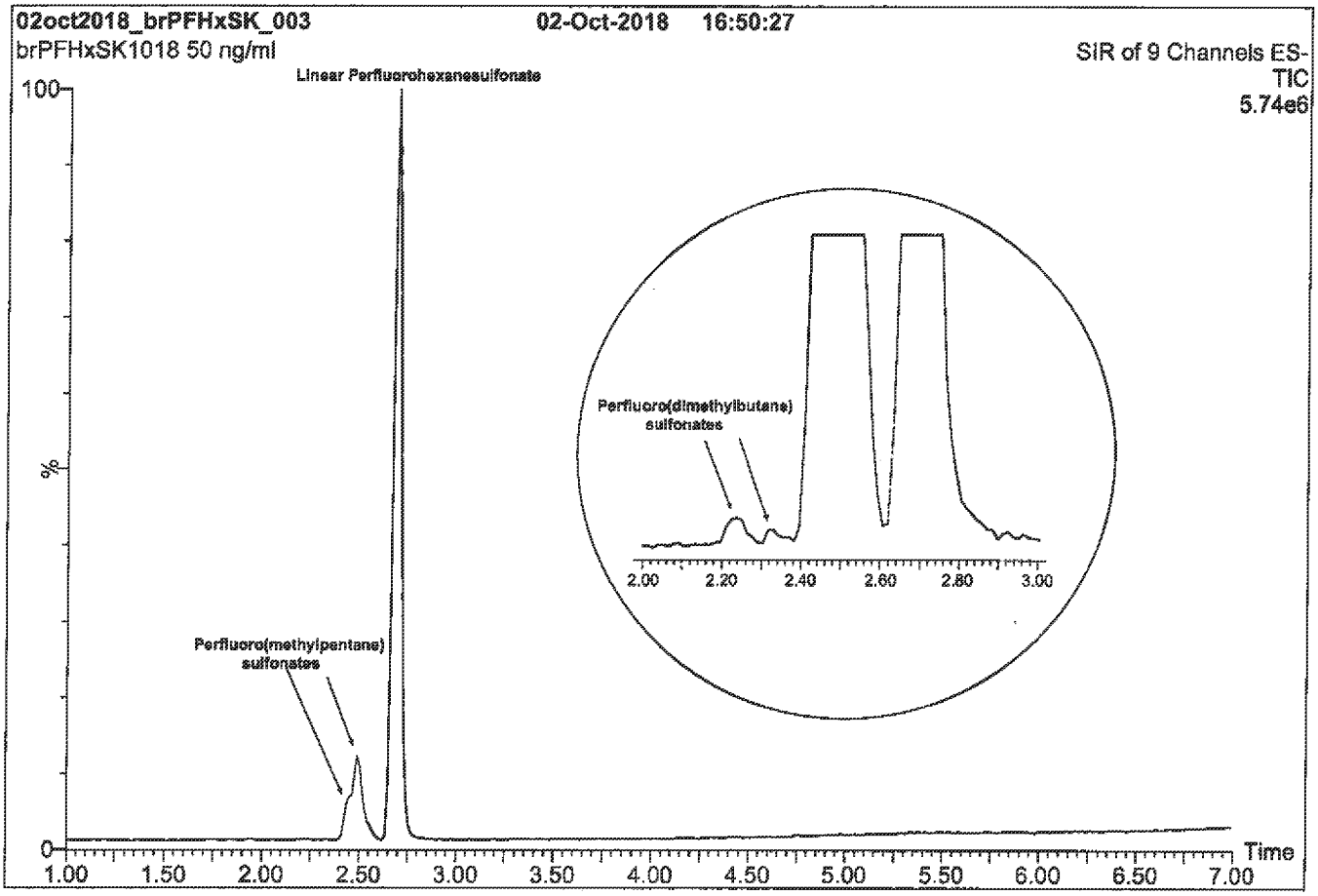
Flow: 300 µl/min

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

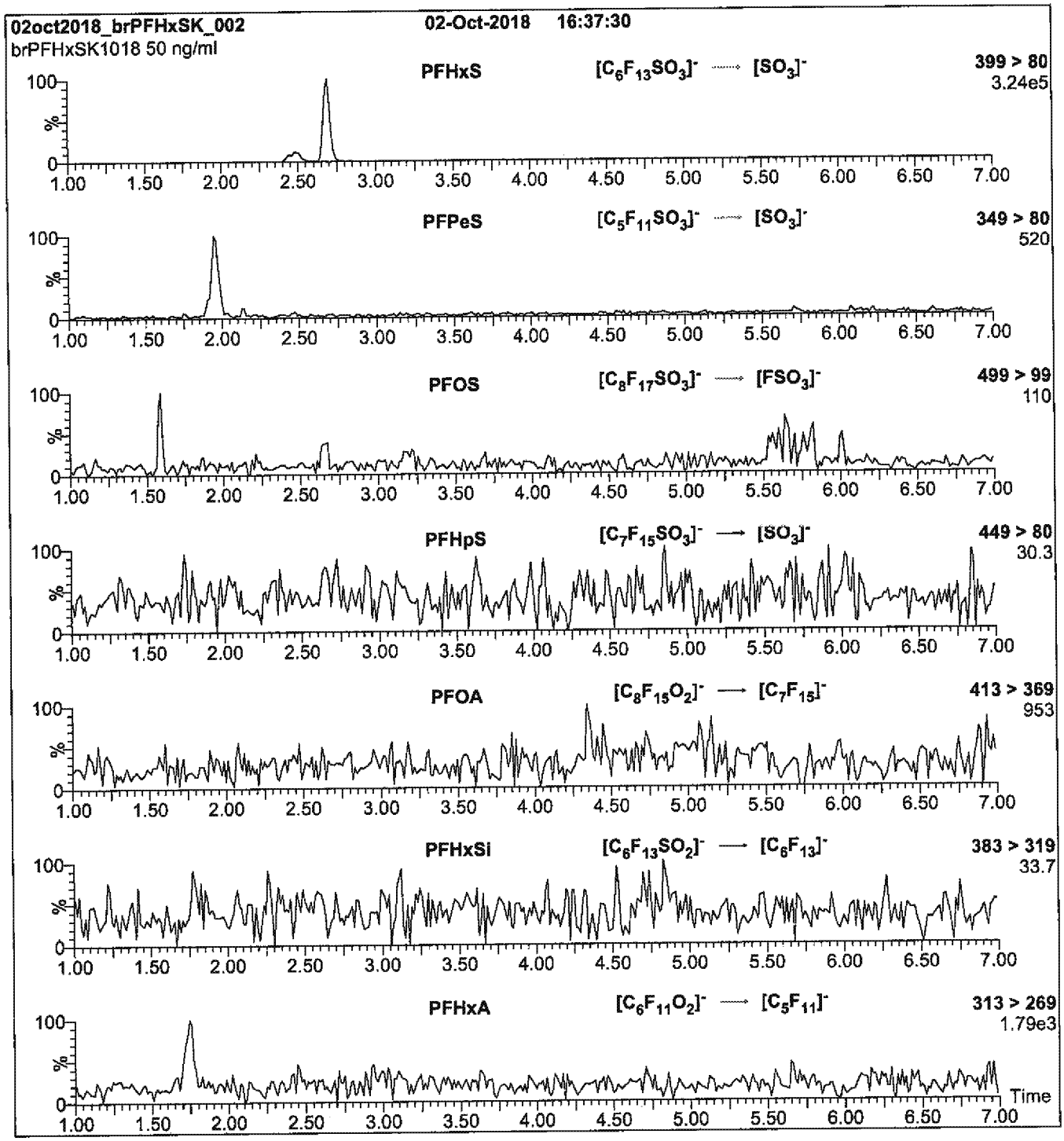
Flow: 300 µl/min

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

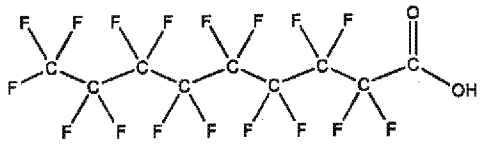
Reagent

LCPFNA_00010

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA
LOT NUMBER: PFNA0717
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) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
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 ~ 0.1% 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:** 07/24/2017 (mm/dd/yyyy)

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INTENDED USE:

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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:

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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:

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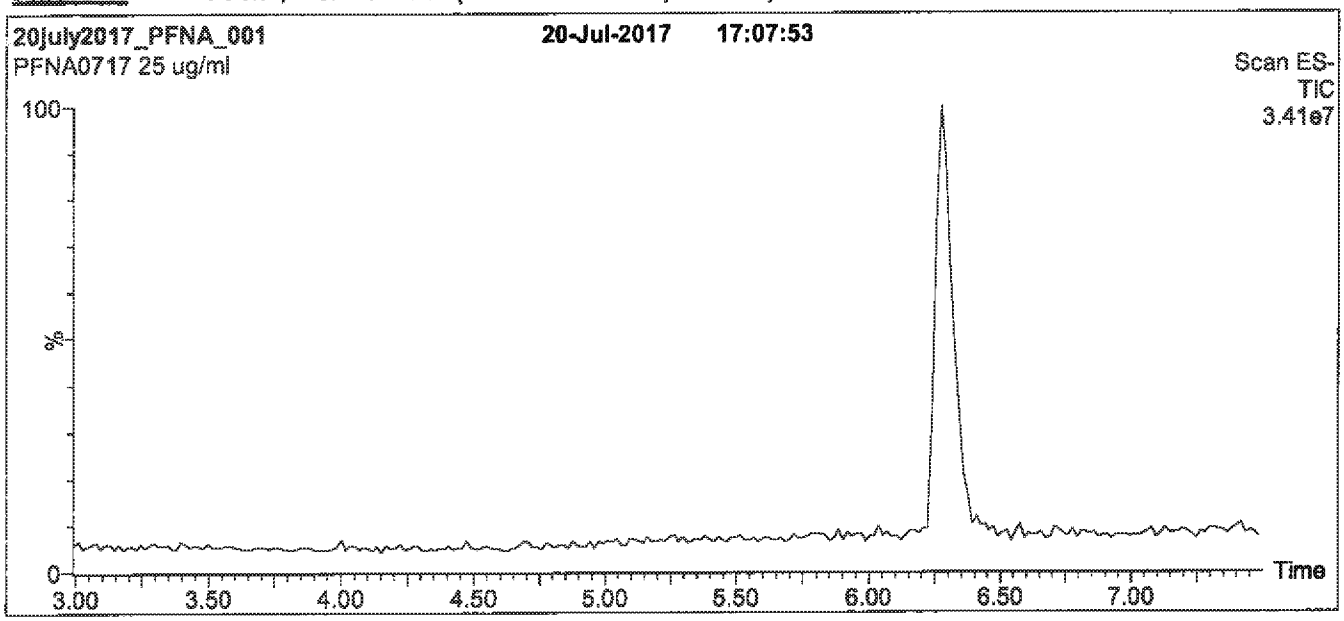
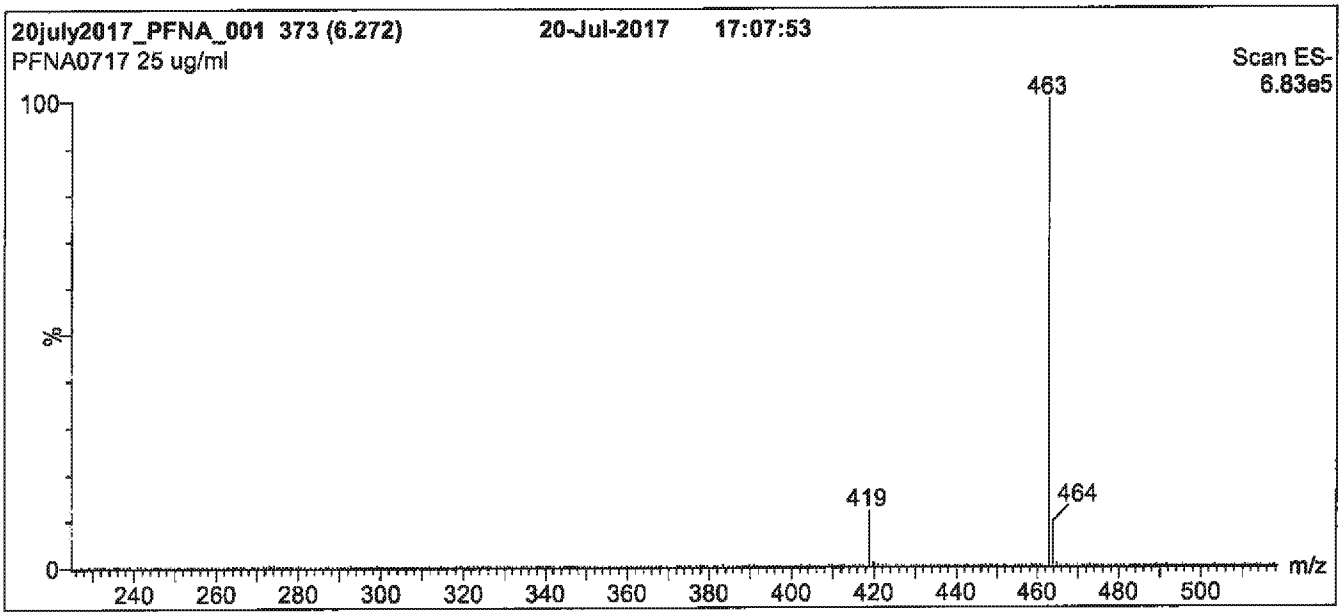
Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)





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)
Hold for 1 min. Ramp to 90% organic over 7 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

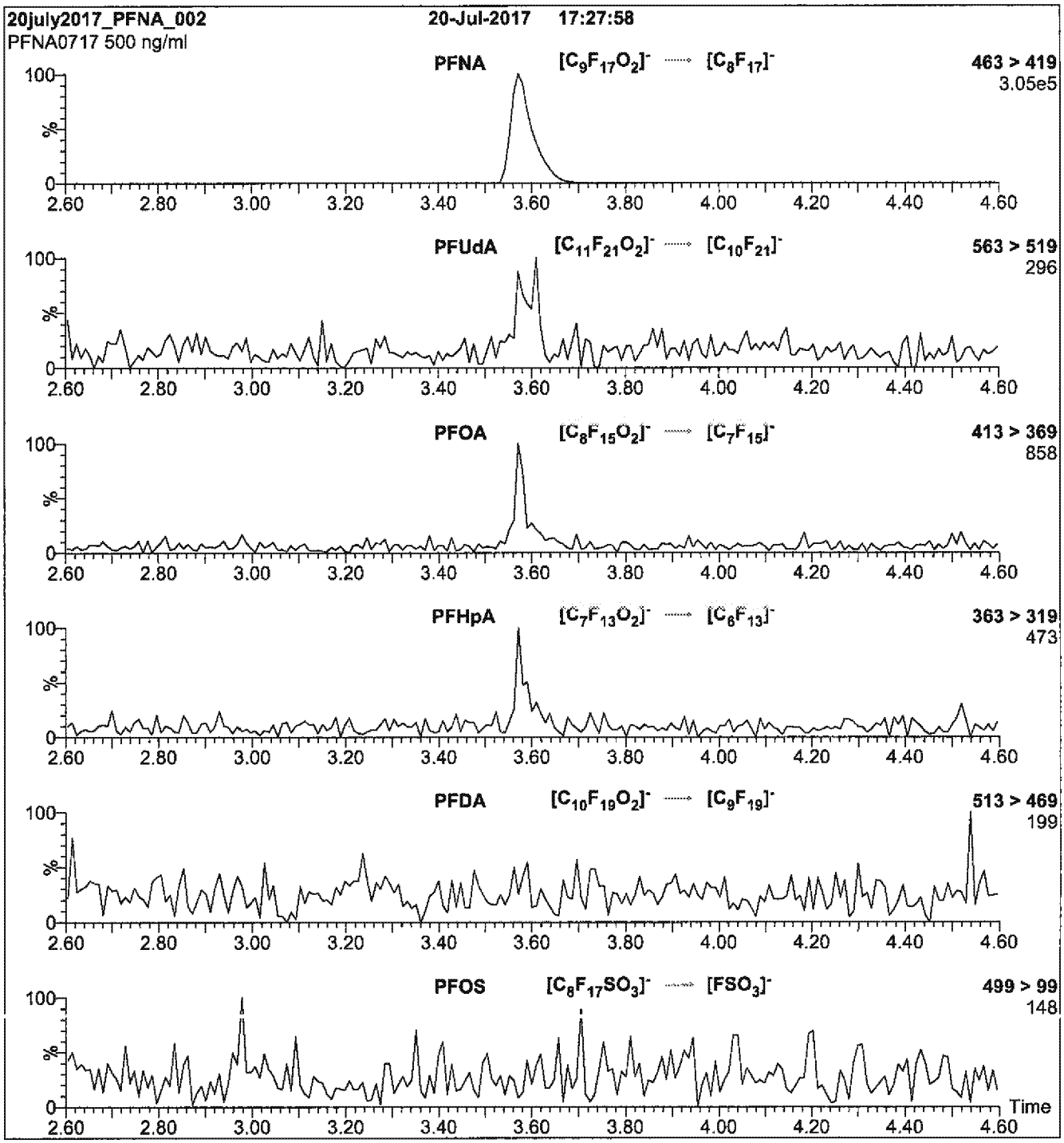
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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) = 3.50e-3
Collision Energy (eV) = 11

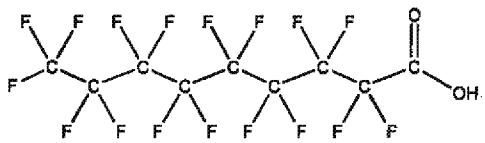
Reagent

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)

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

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ANAB

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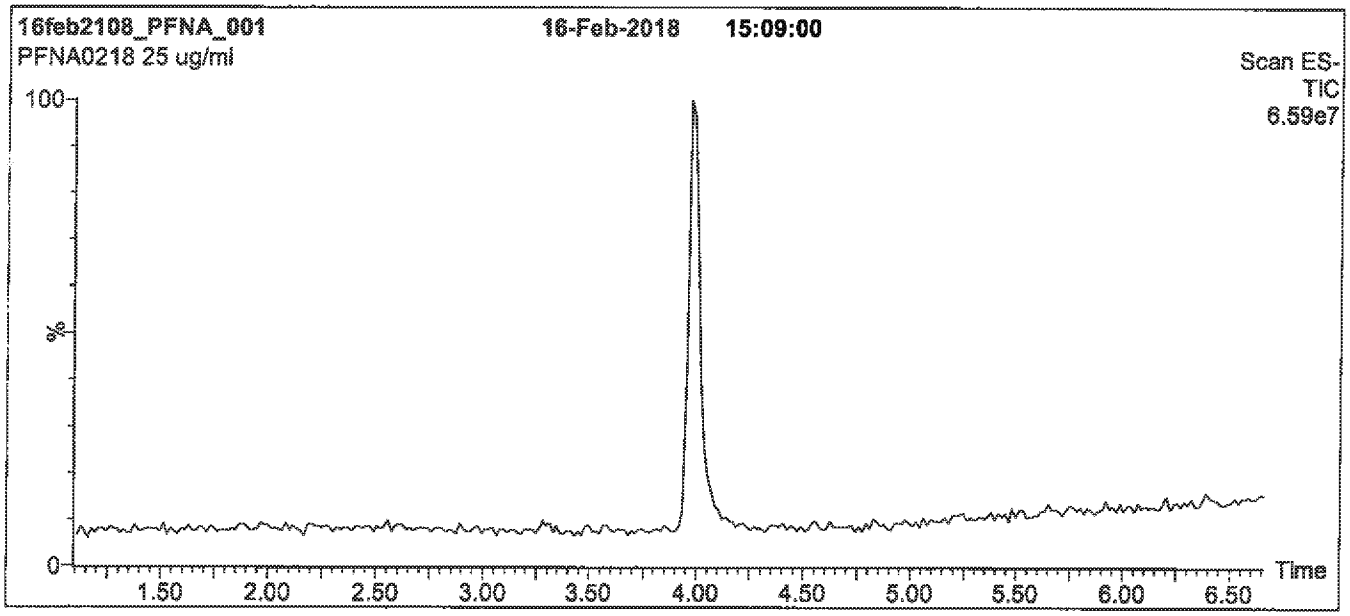
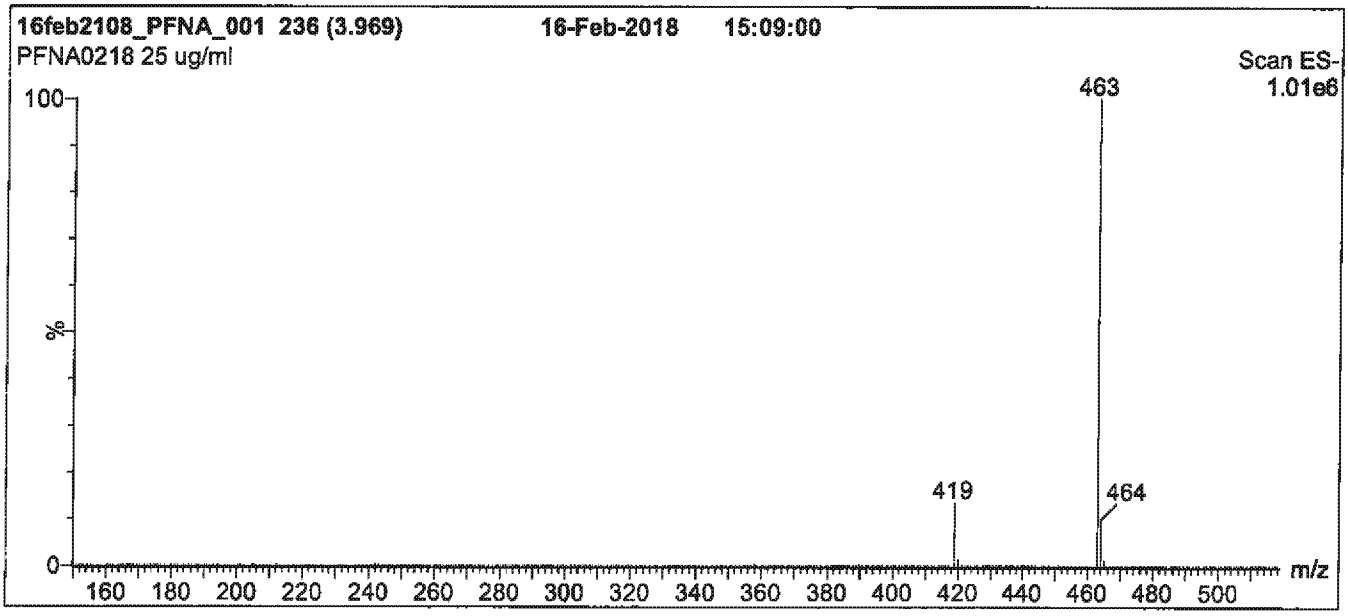
Figure 1: **PFNA; LC/MS Data (TIC and Mass Spectrum)**





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

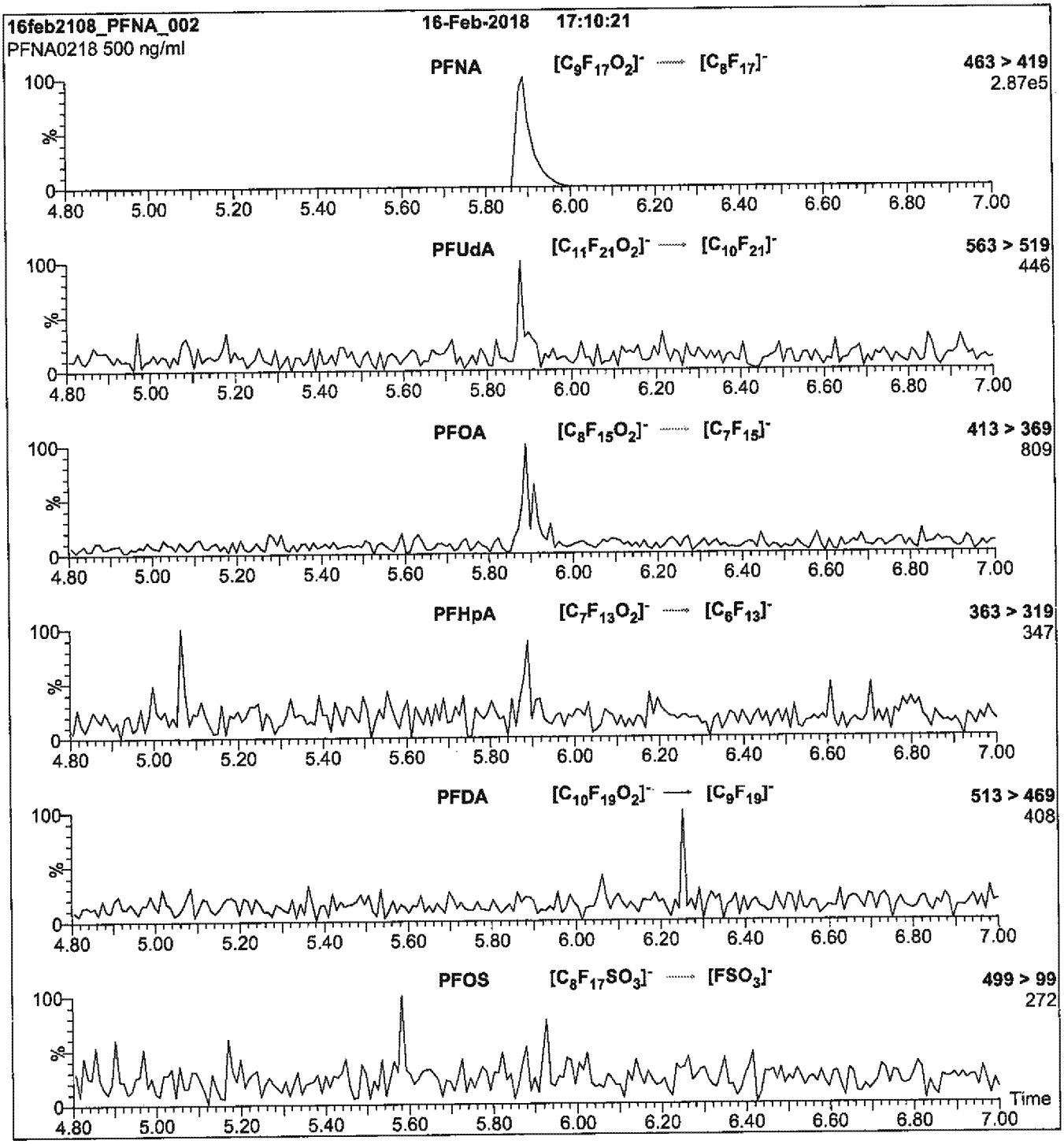
Flow: 300 µl/min

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

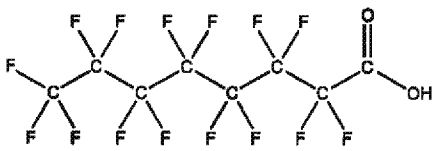
LCPFOA_00011

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
LOT NUMBER: PFOA0917
COMPOUND: Perfluoro-n-octanoic acid

STRUCTURE:
CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
MOLECULAR WEIGHT: 414.07
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol, Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 09/28/2017 (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.

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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:

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:

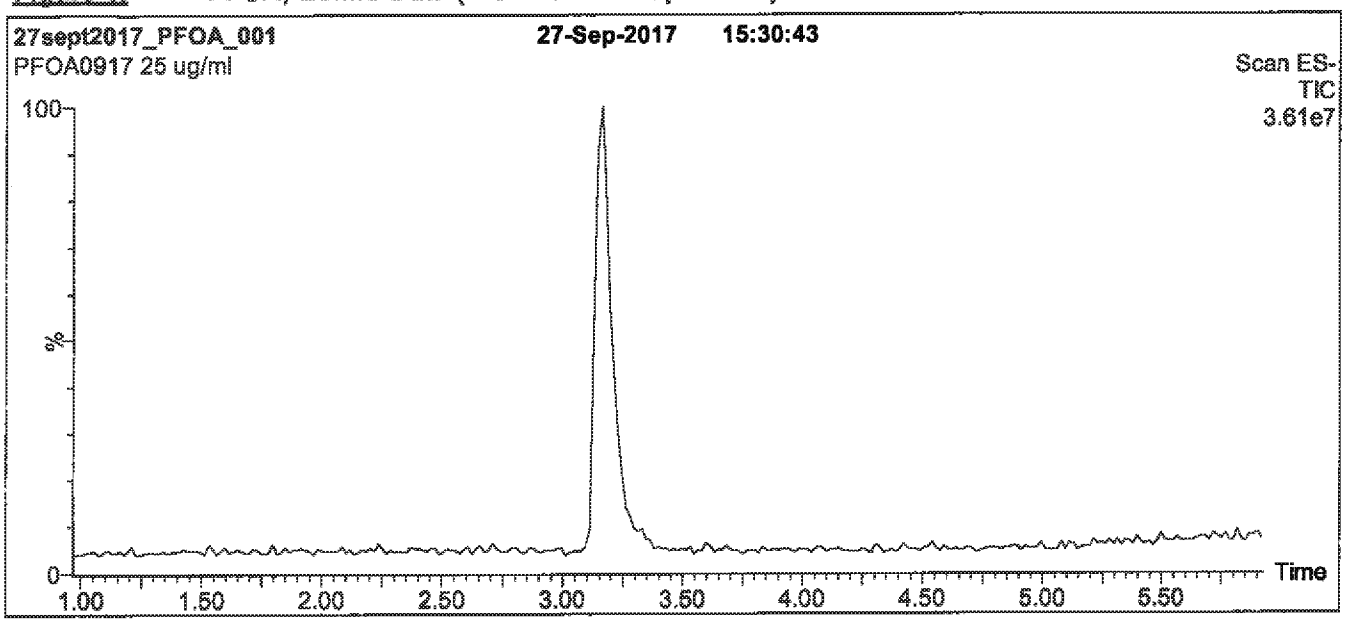
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

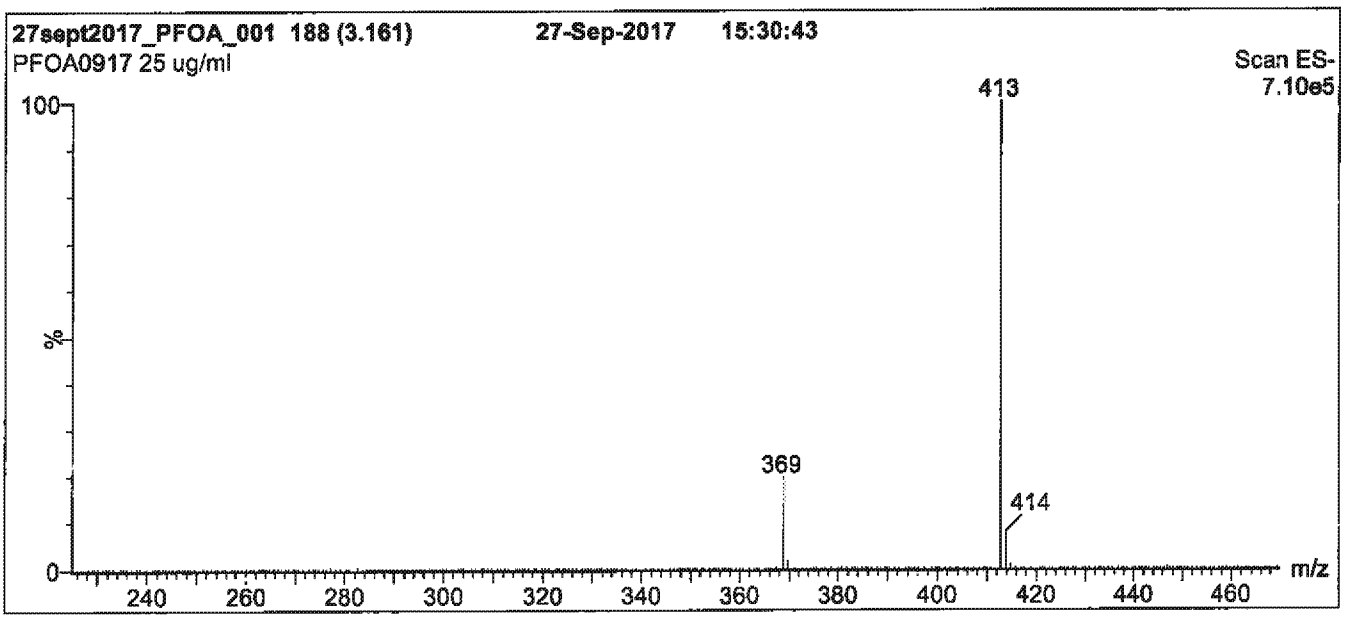
CALA

ANAB

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: **PFOA; 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

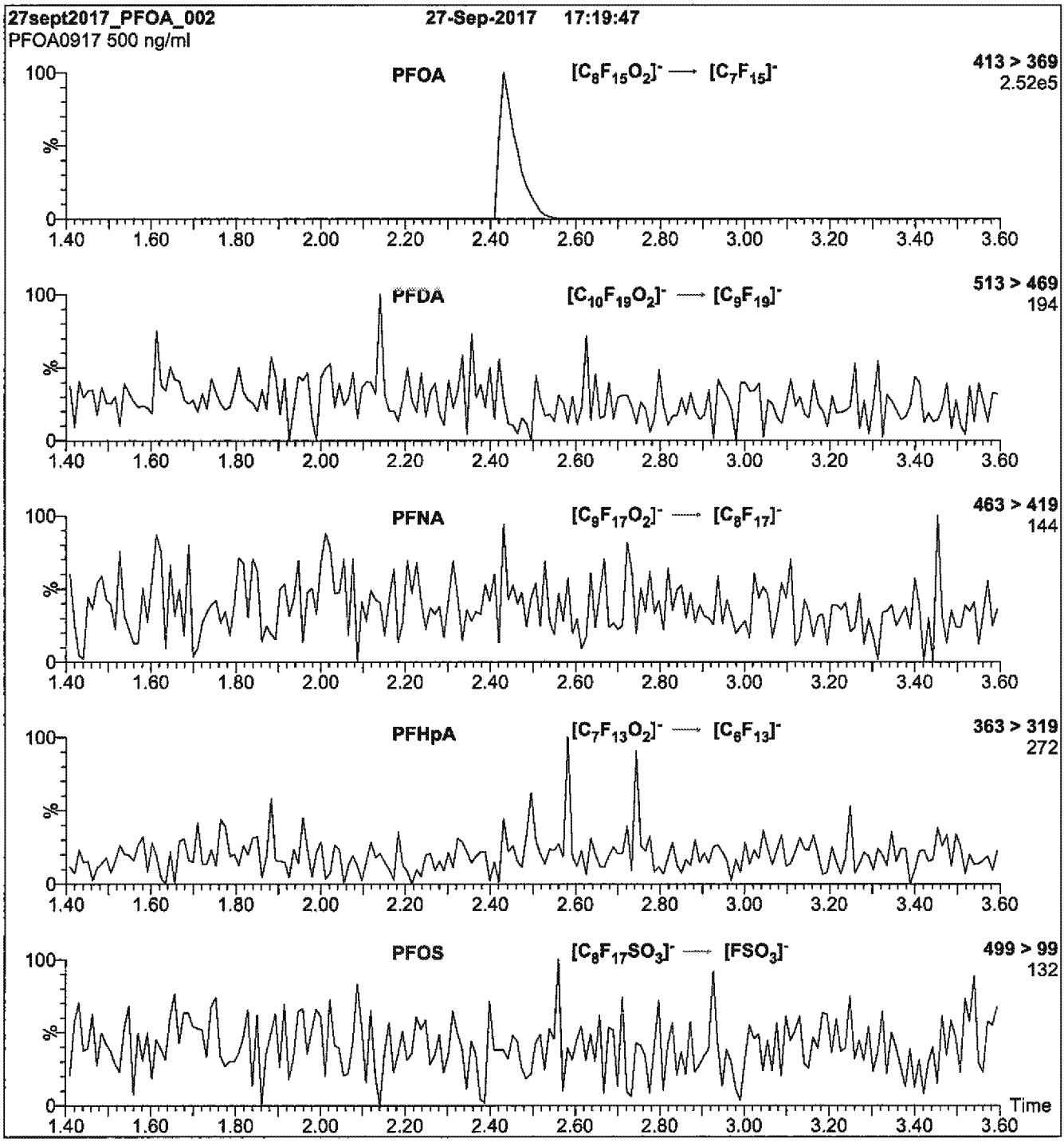
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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) = 3.46e-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

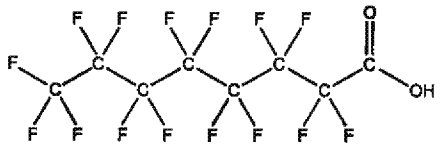
R: 10/29/18 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid
LOT NUMBER: PFOA0818

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.

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:

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HANDLING:

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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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ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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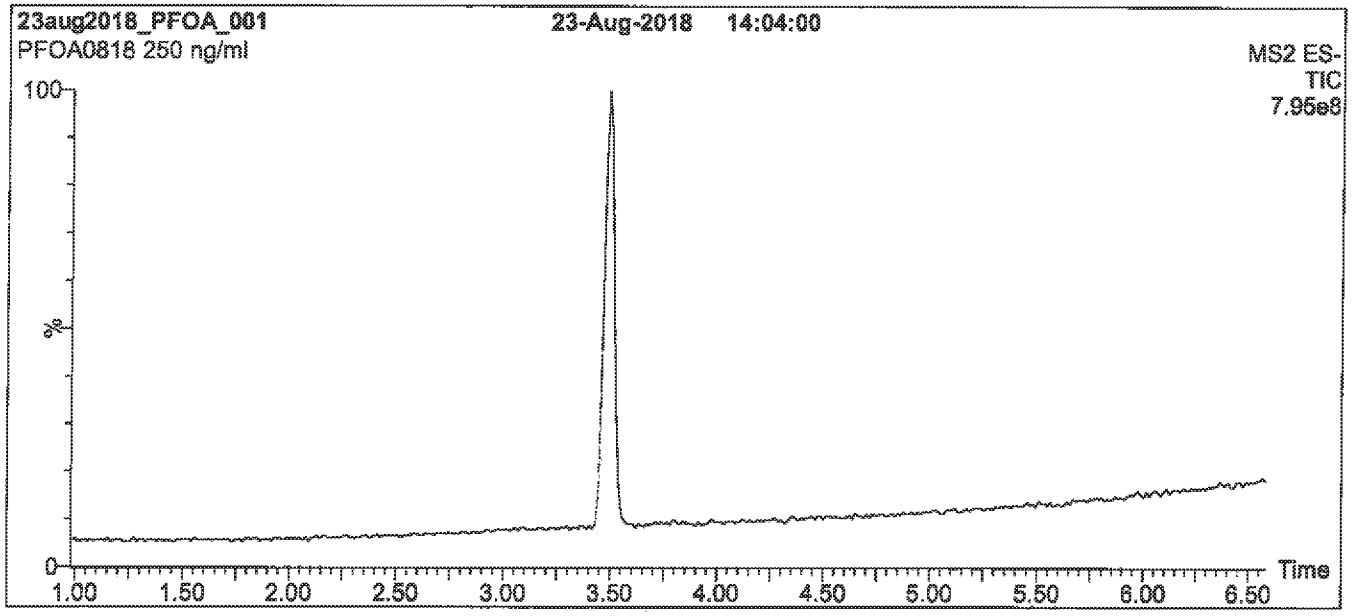
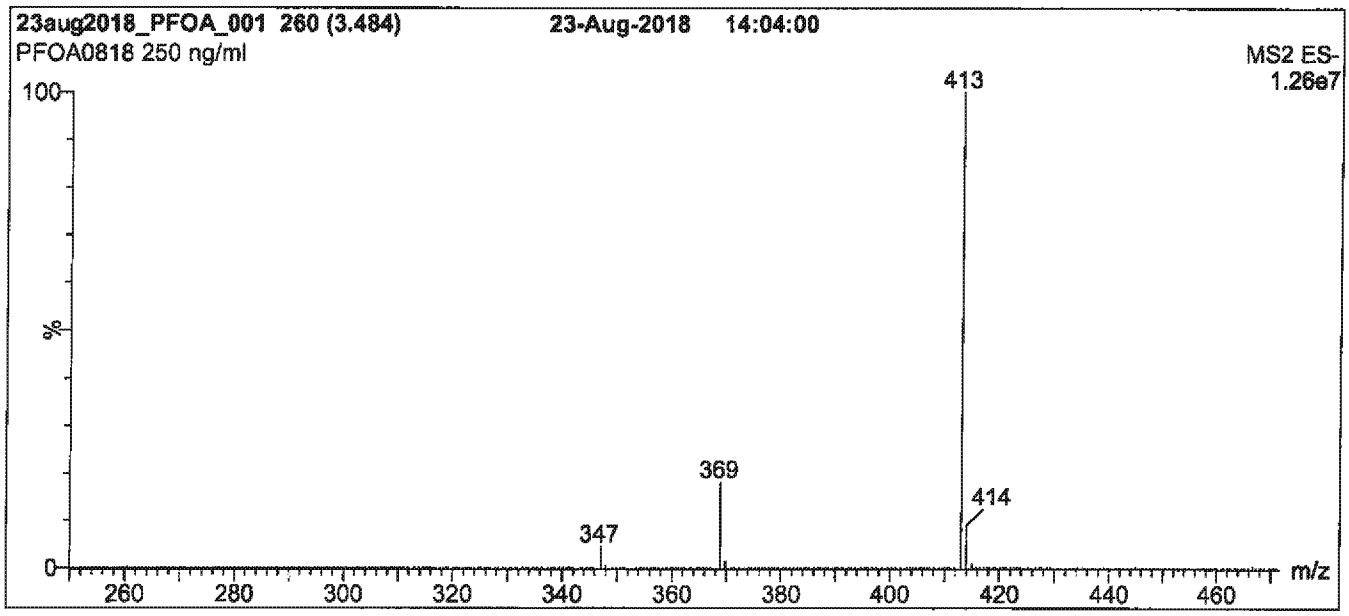
Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)





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

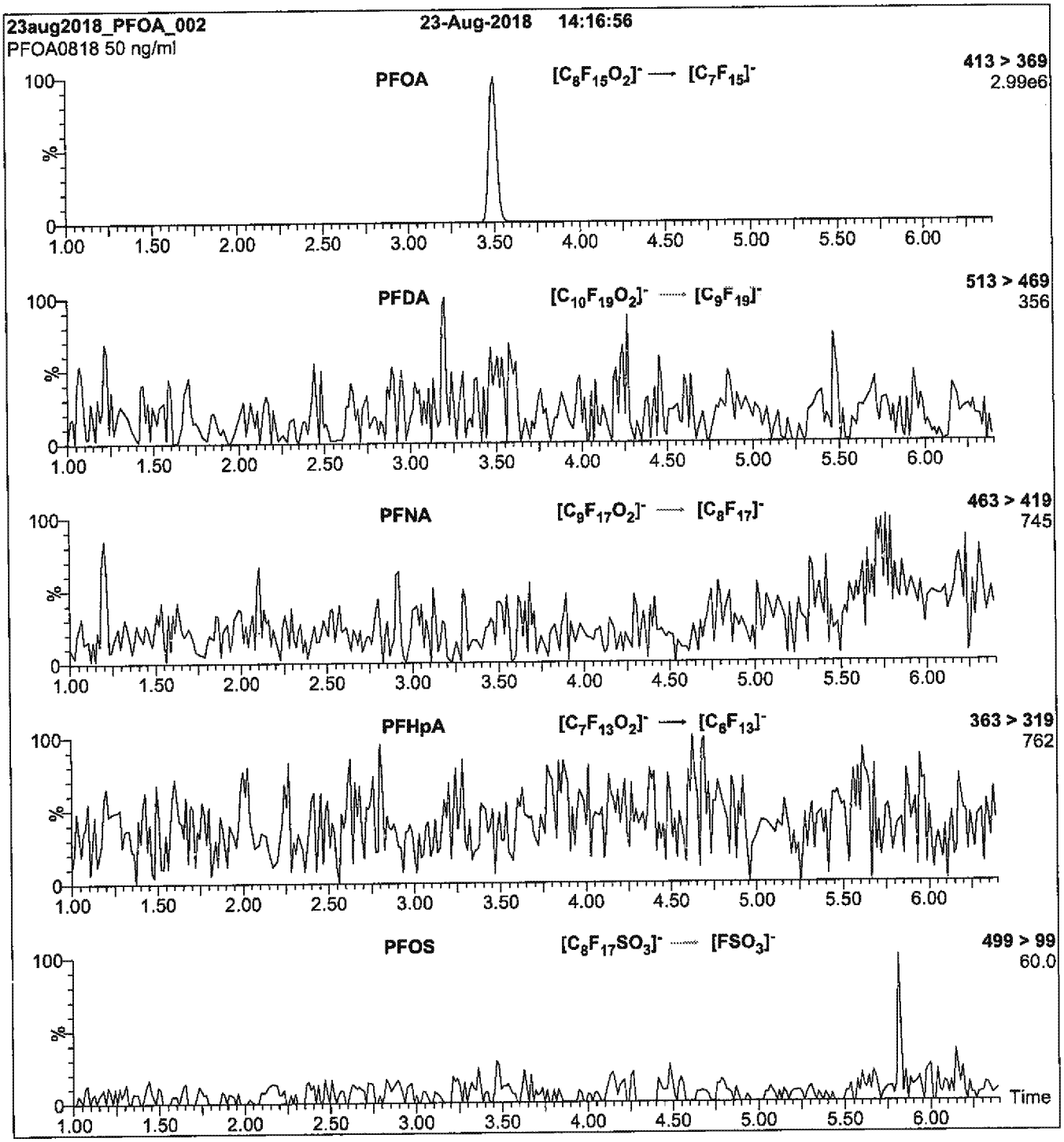
Flow: 300 µl/min

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_00007

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK0117
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)	01/09/2017
LAST TESTED: (mm/dd/yyyy)	01/12/2017
EXPIRY DATE: (mm/dd/yyyy)	01/12/2022
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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CALA

ANAB

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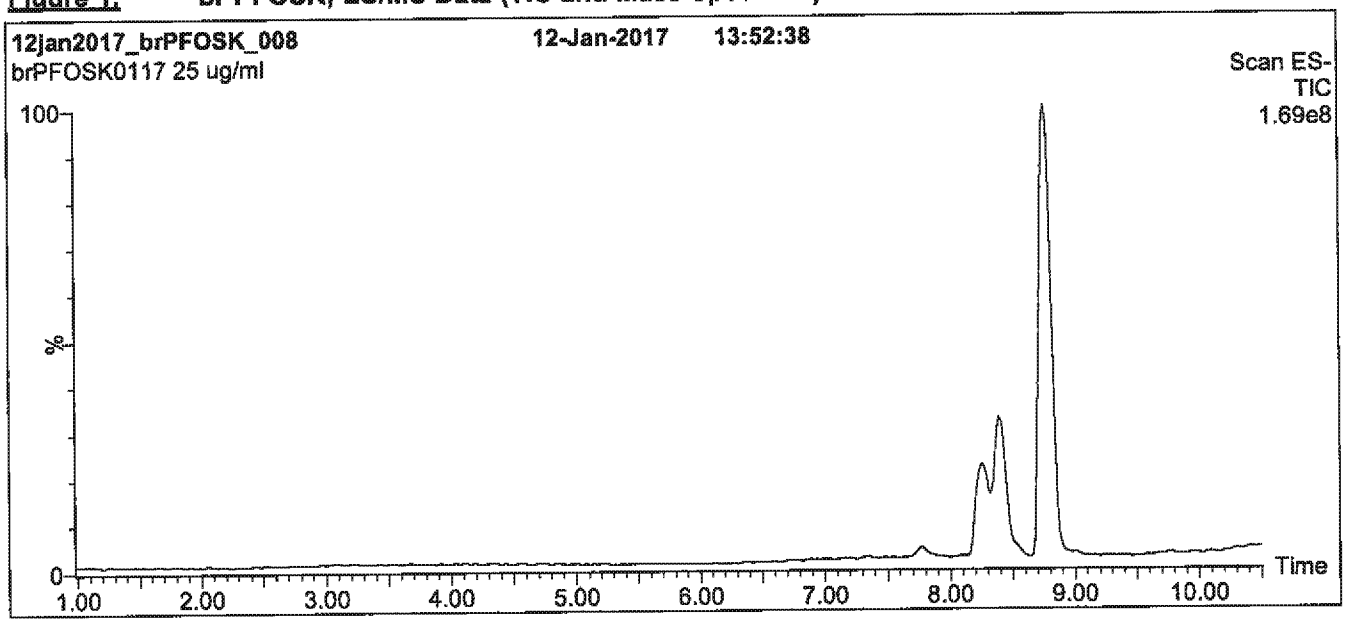
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

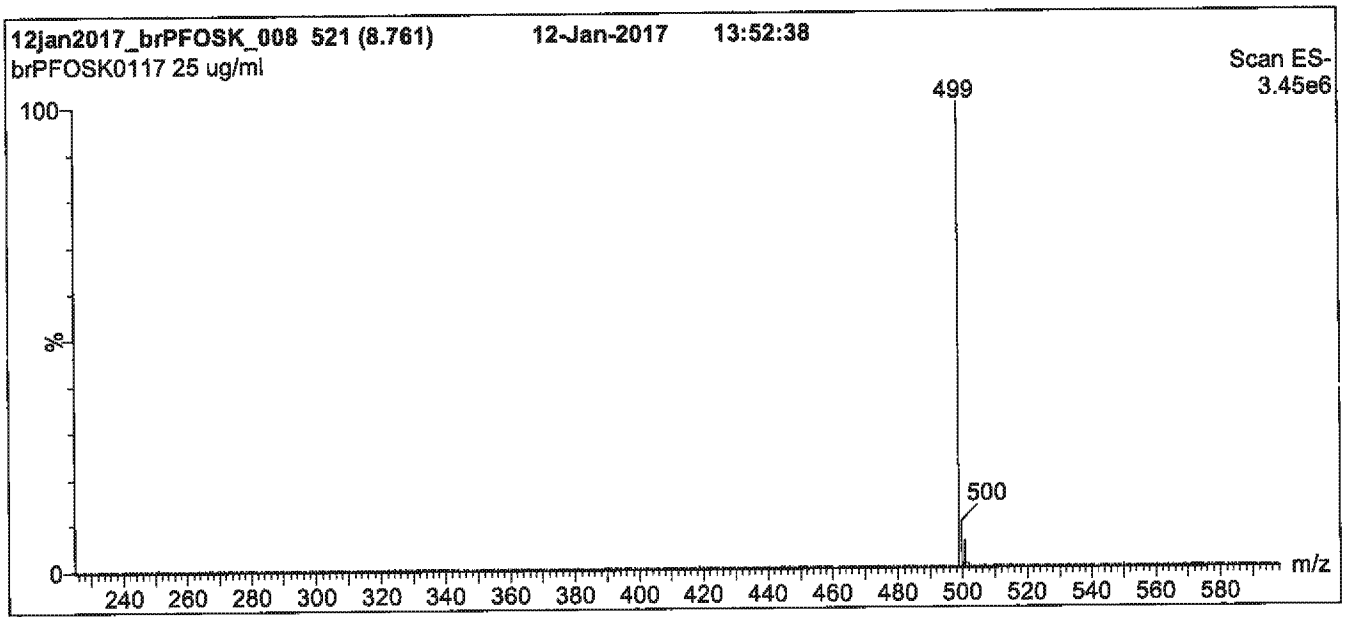
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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	$CF_3C(CF_3)_2CF_2CF_2CF_2CF_2SO_3^-K^+$	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. Isomers are labelled in Figure 2.
** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: Ex. 4 CBI **Date:** 01/20/2017 (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: **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: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

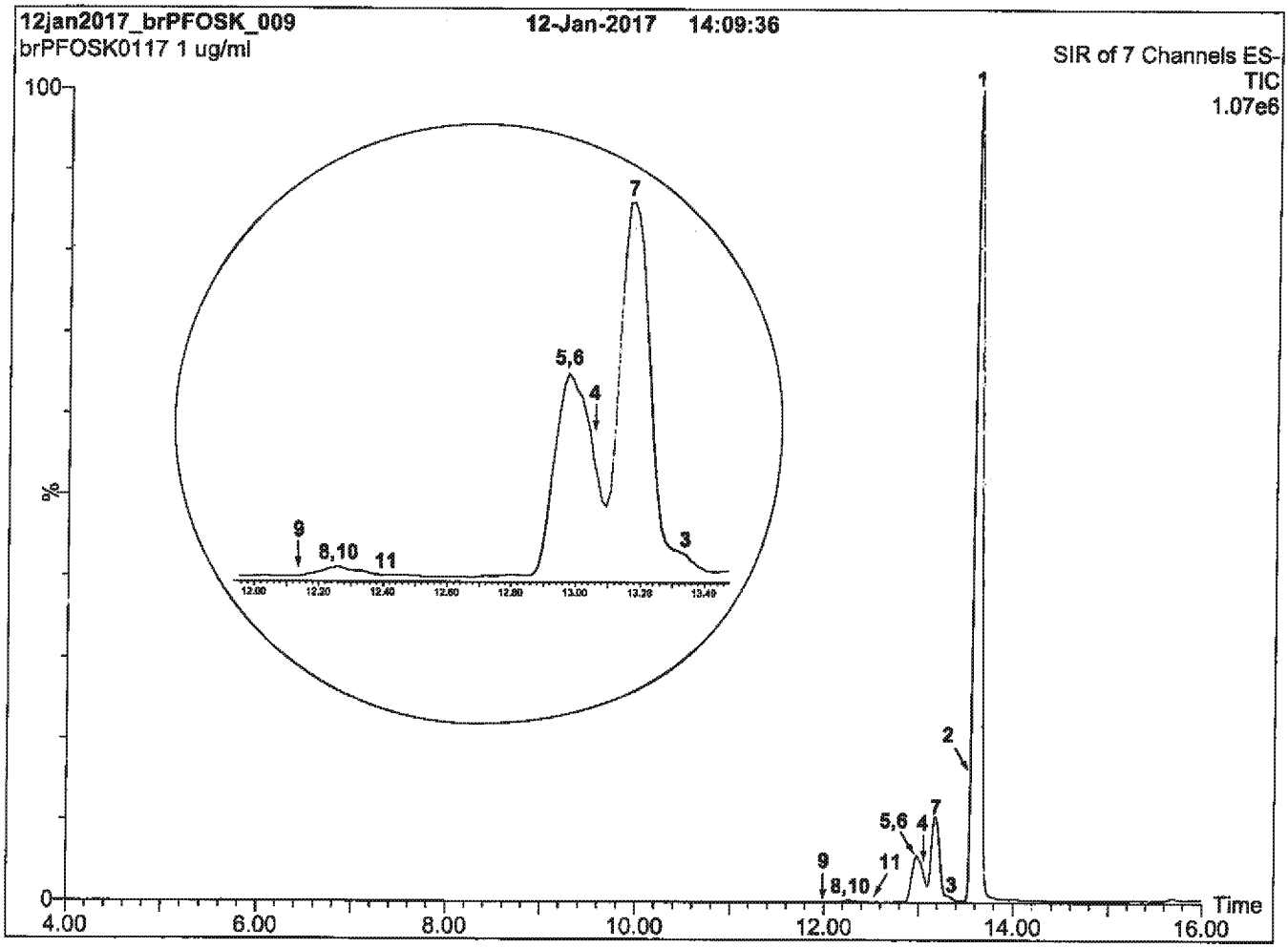
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
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: Micromass Quattro *micro* API MS

Chromatographic Conditions:

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

Injection: 1.0 µg/ml of br-PFOSK

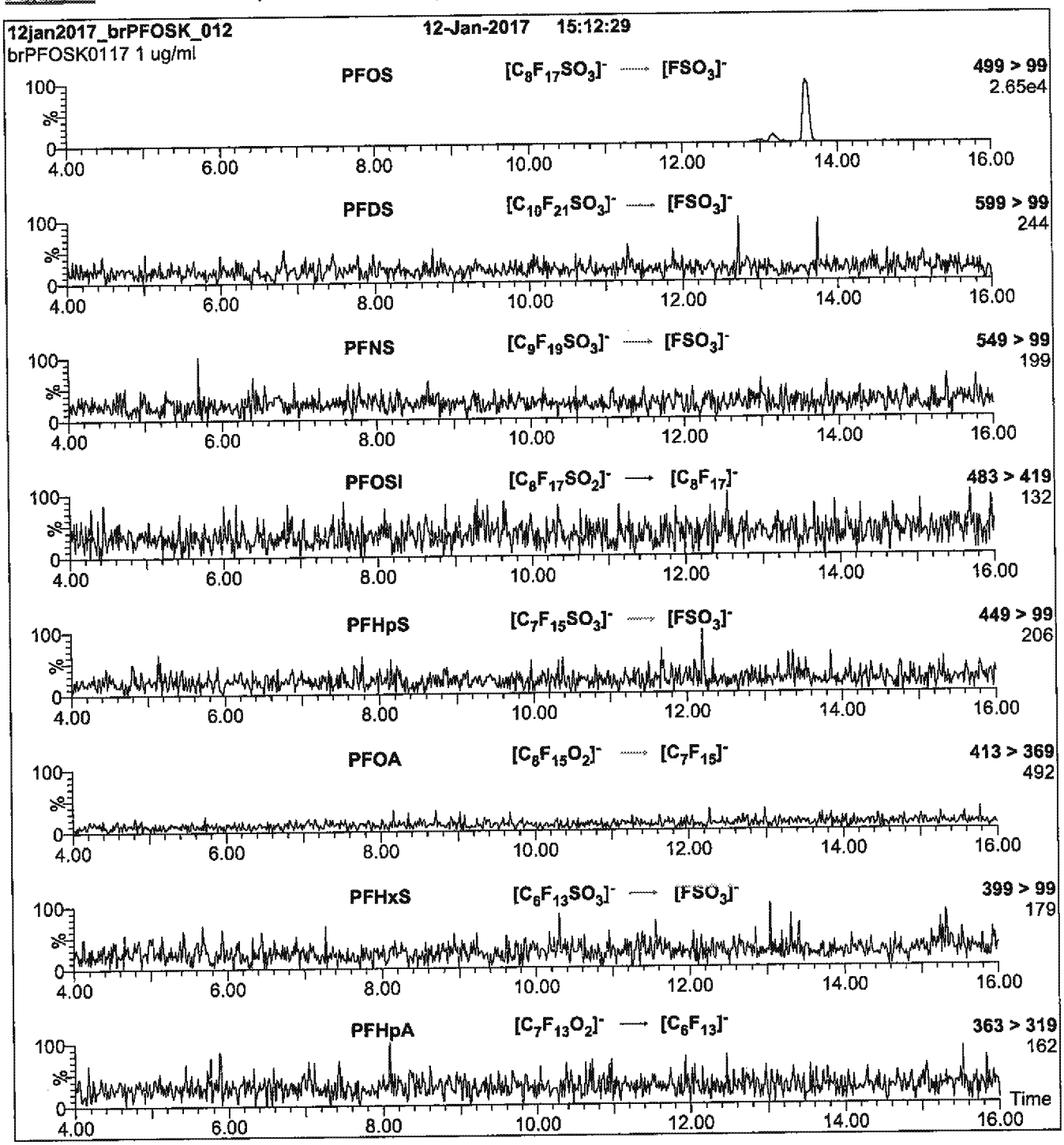
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/min

MS Conditions:

SIR (ES^-)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

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



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11-50 (variable)

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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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

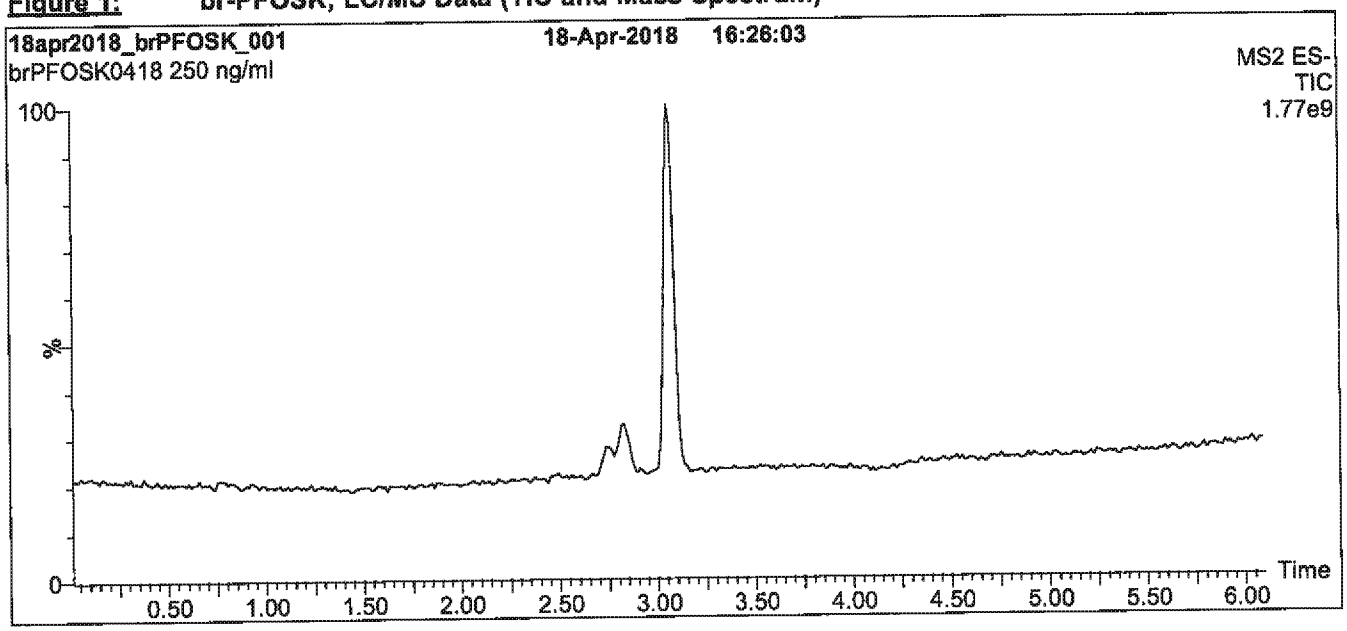
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

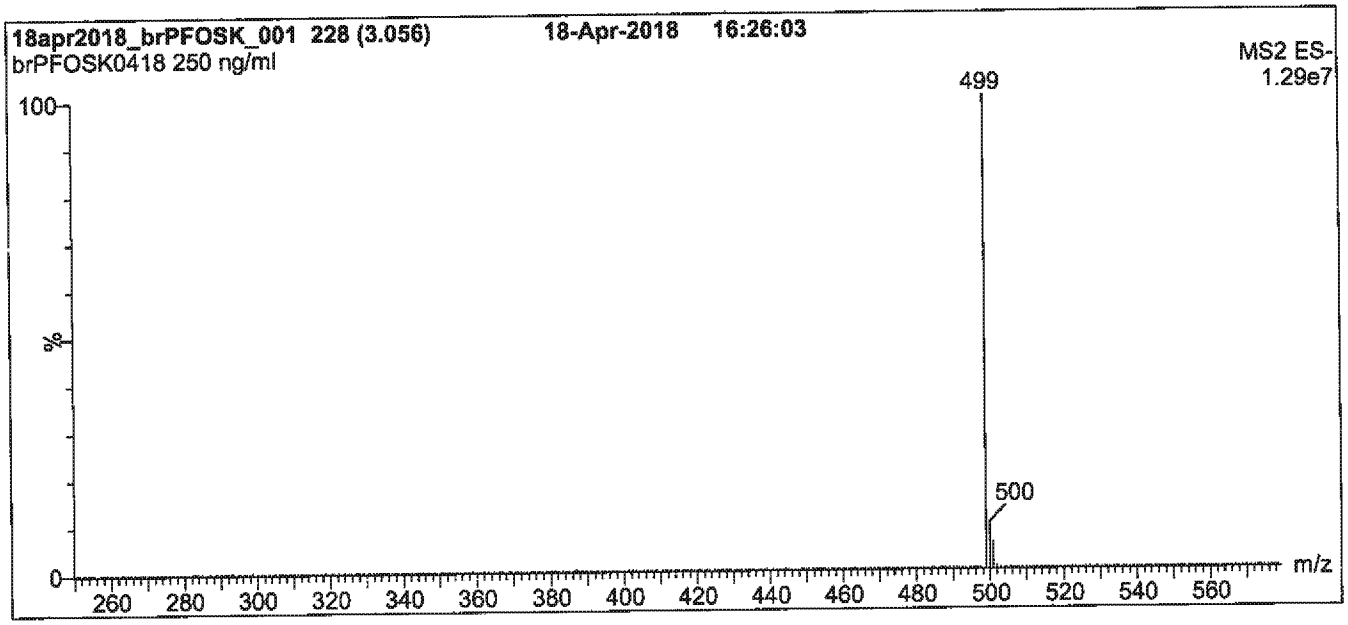
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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

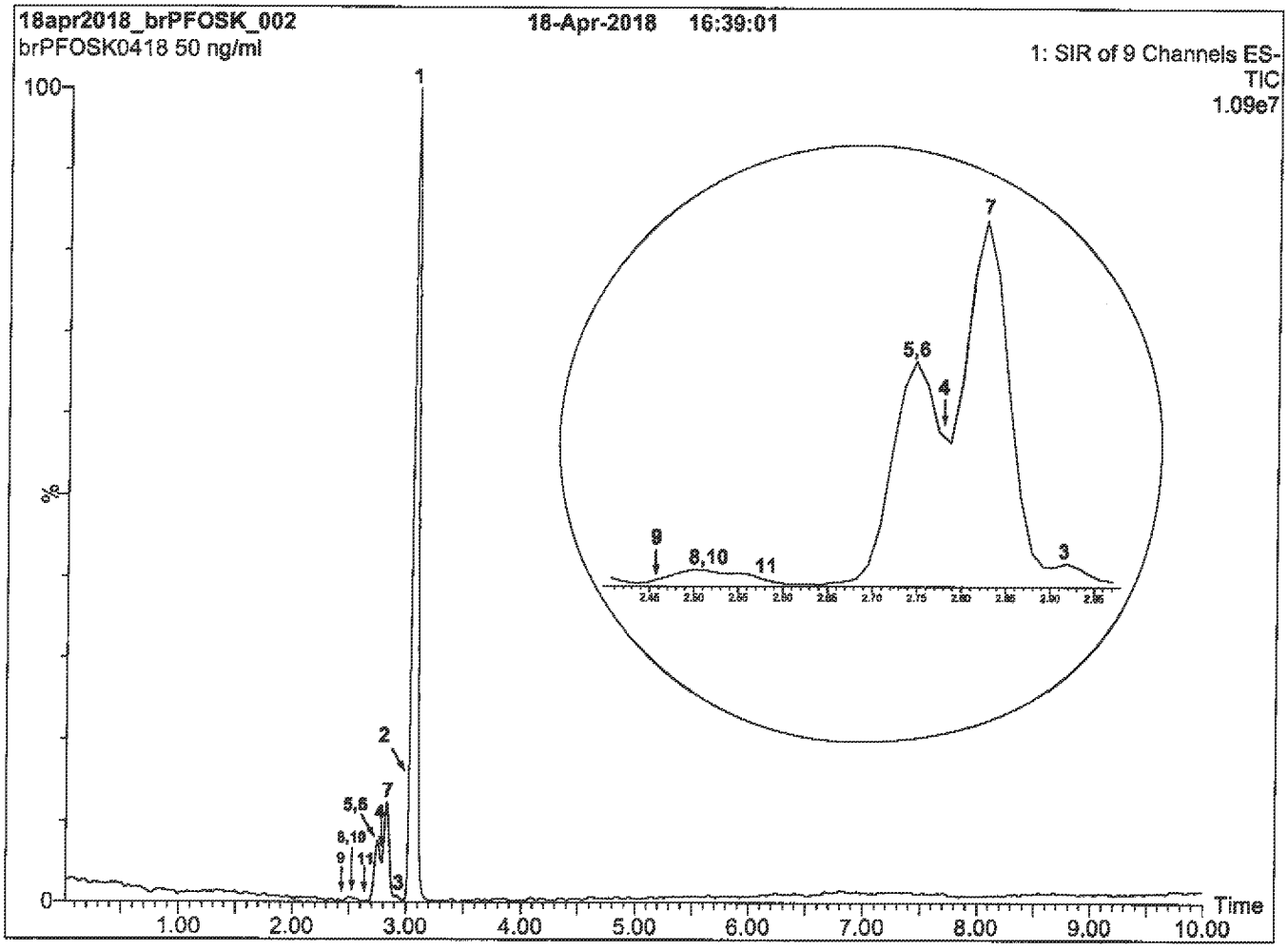
Flow: 300 µl/min

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

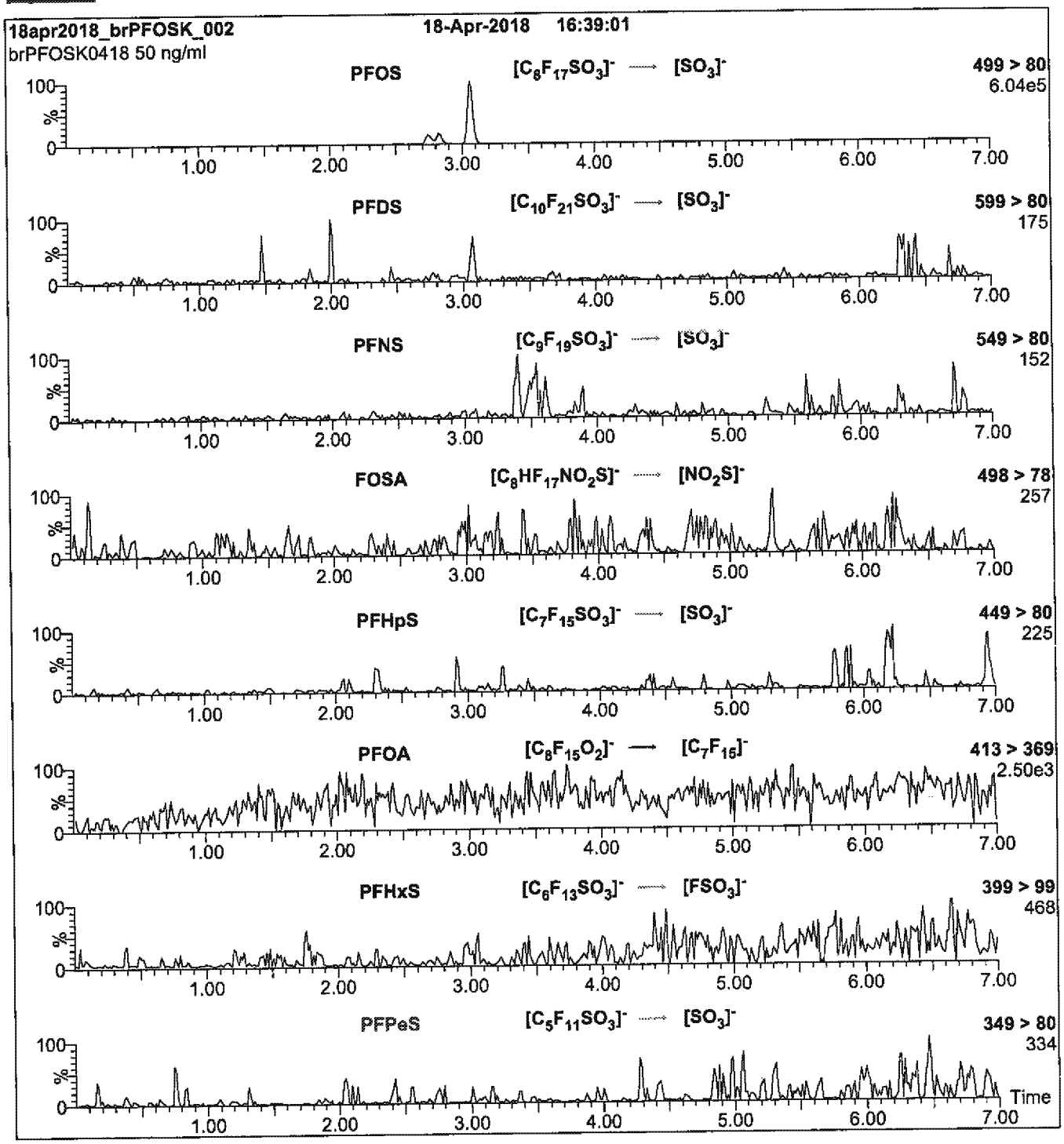
Mobile Phase: Gradient
60% (80:20 MeOH:ACN) / 40% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 85% organic over 7 min and hold for 3 min.
Return to initial conditions over 0.75 min.
Time: 12 min

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

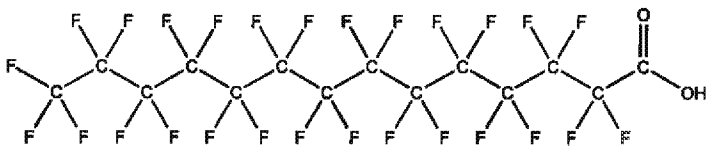
LCPFTeDA_00008

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA0916
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) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
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 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

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Certified By: Ex. 4 CBI **Date:** 10/05/2016 (mm/dd/yyyy)

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INTENDED USE:

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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.

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 NIST and/or NRC traceable external weights. All volumetric glassware used is 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:

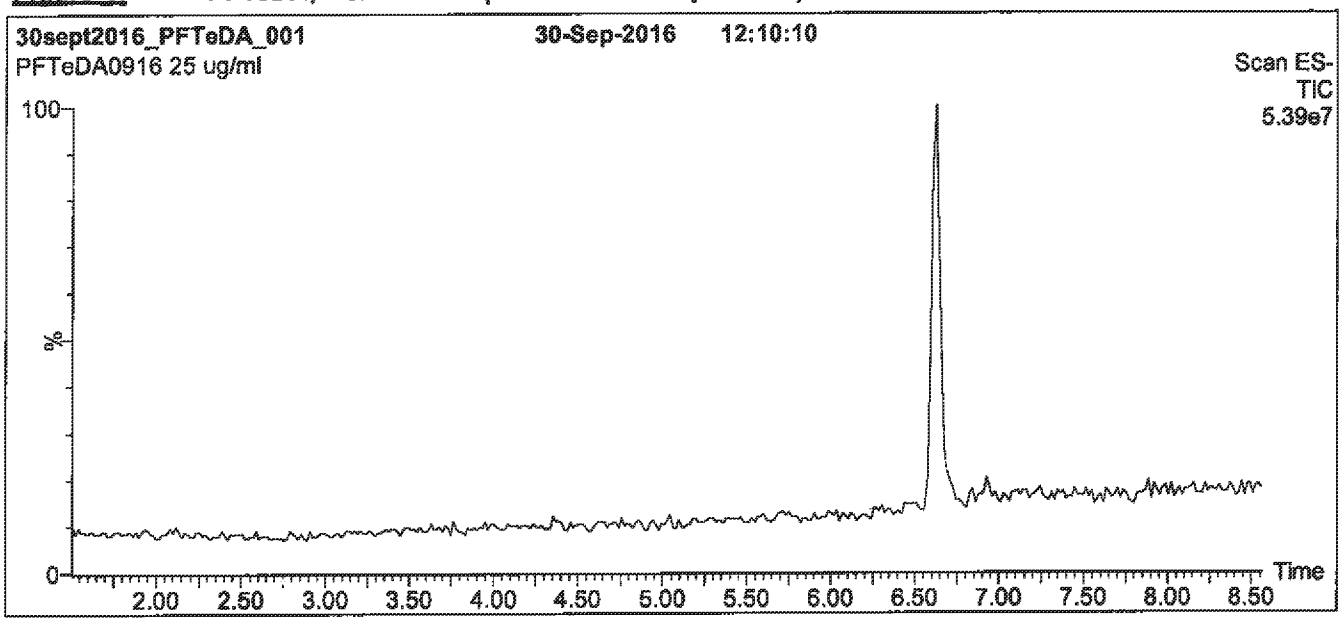
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

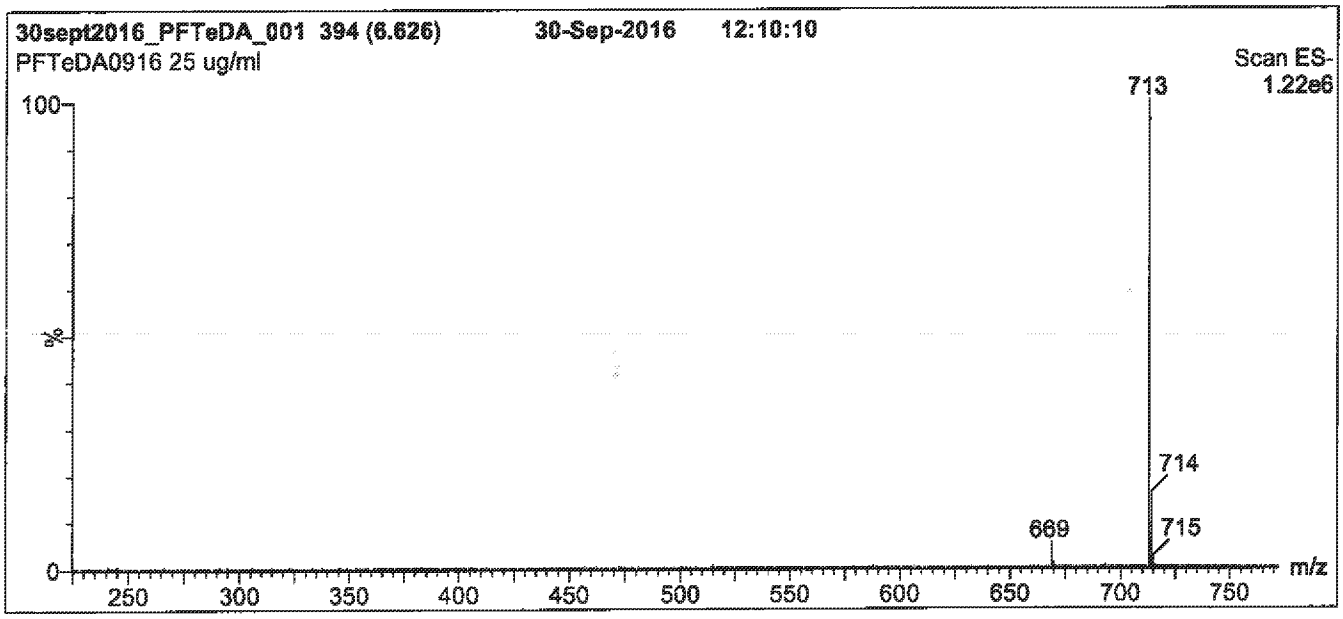
CALA

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: PFTeDA; 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: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

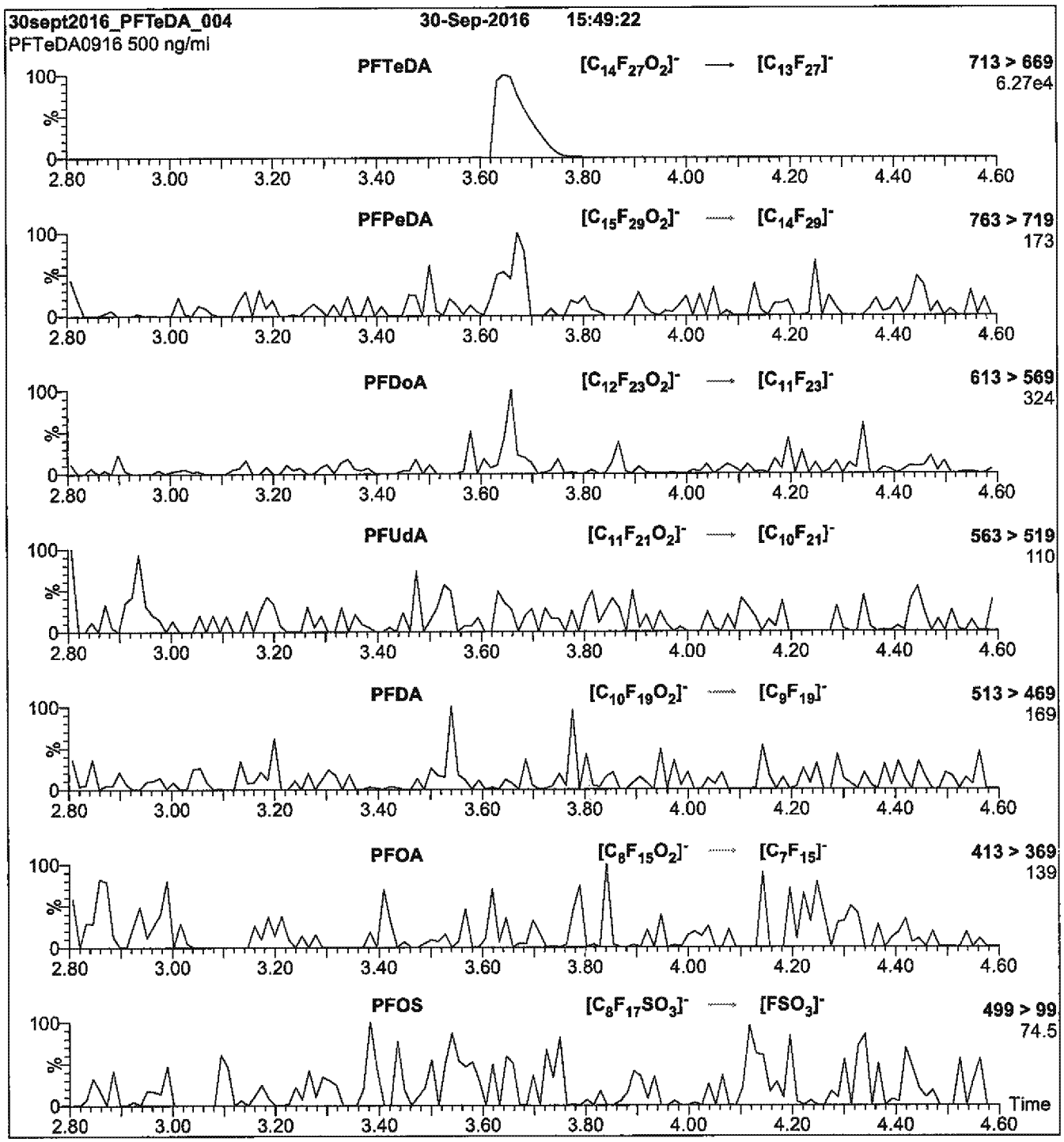
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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) = 3.20e-3
Collision Energy (eV) = 14

Reagent

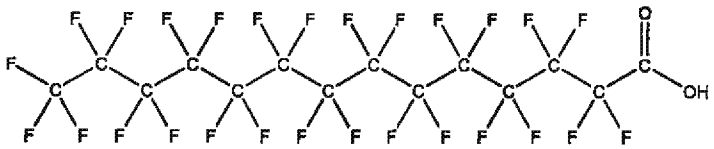
LCPFTeDA_00012

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 ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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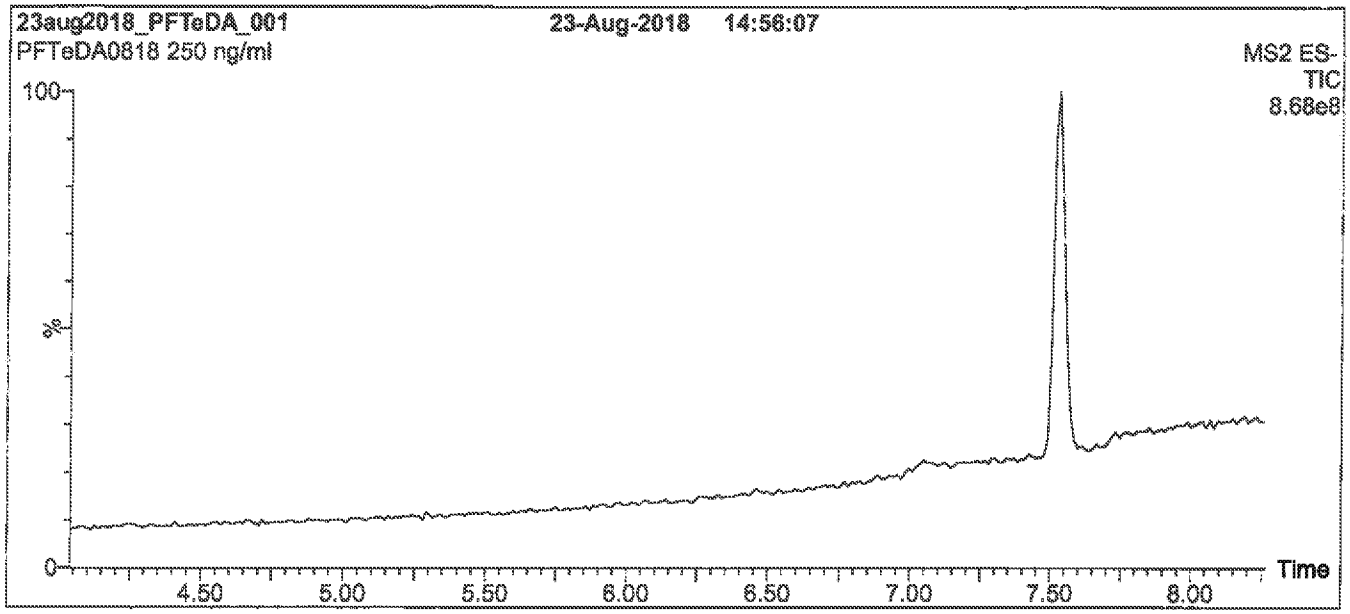
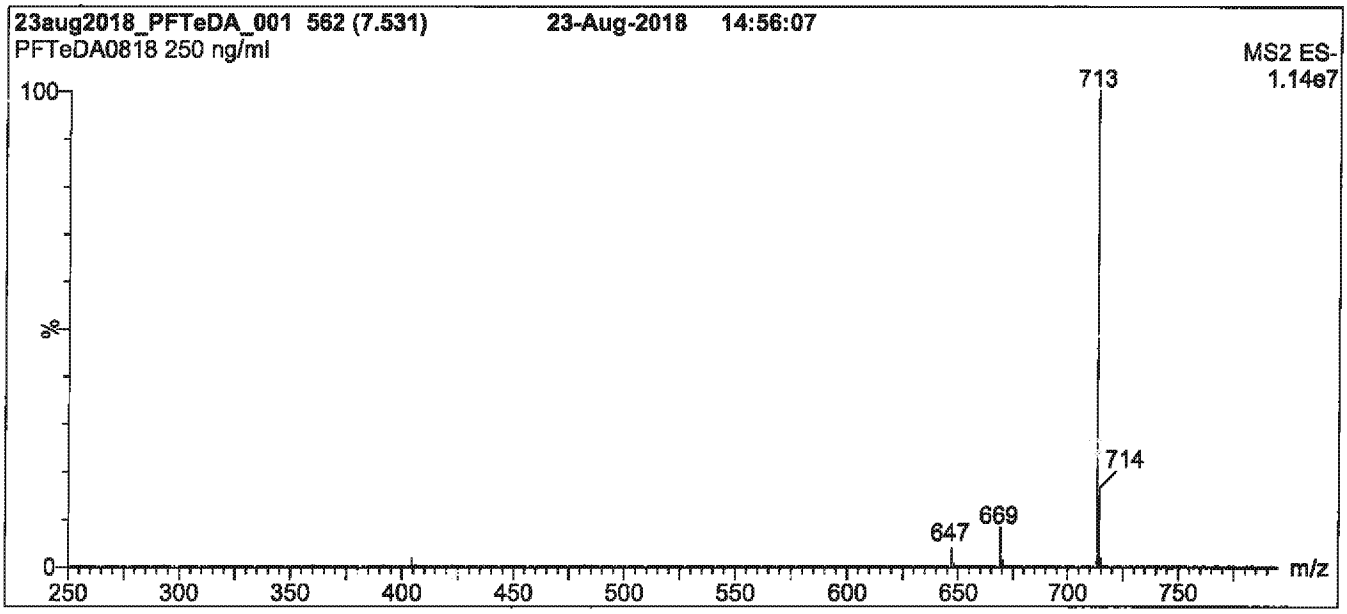
Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)





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

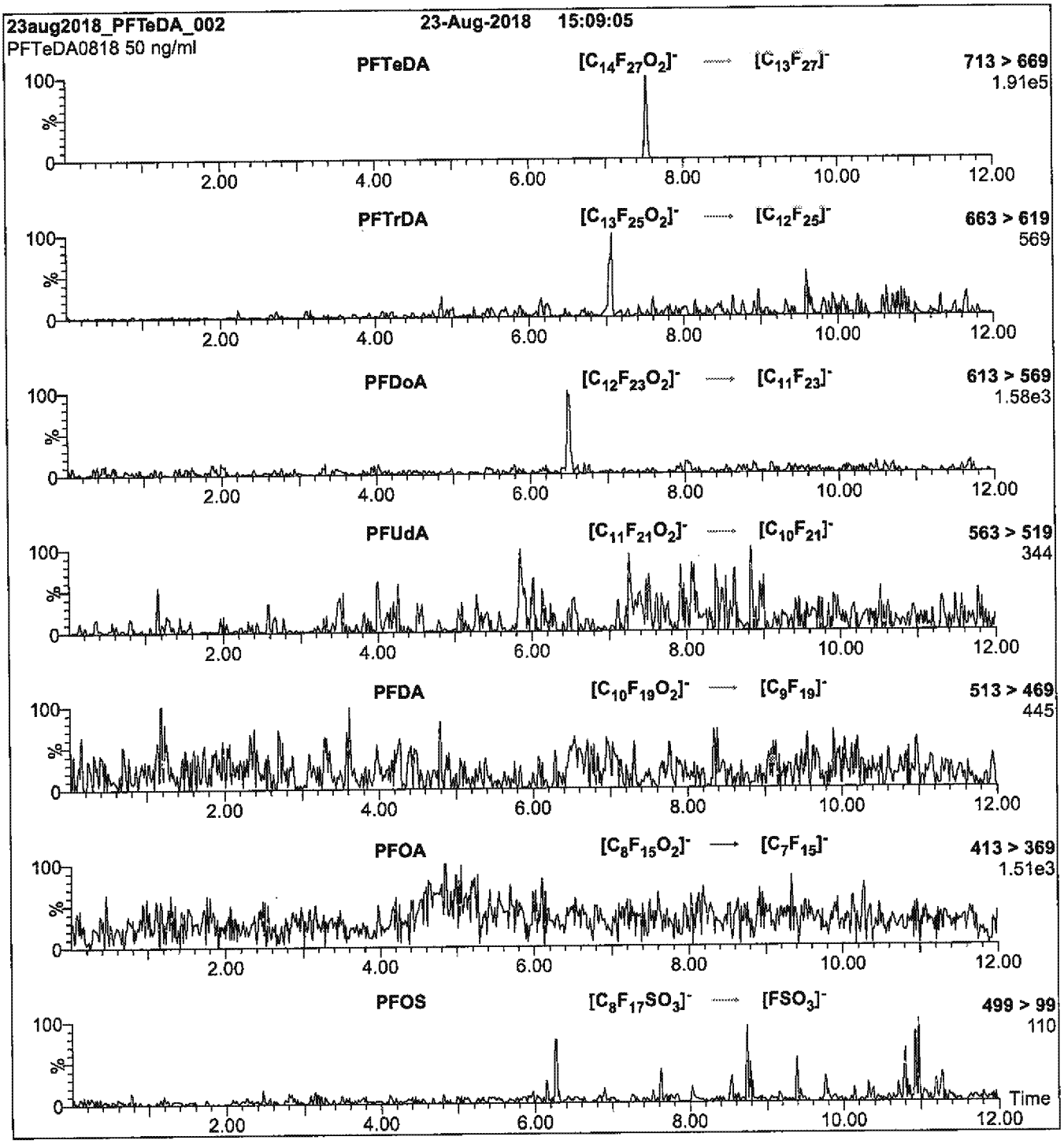
Flow: 300 µl/min

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

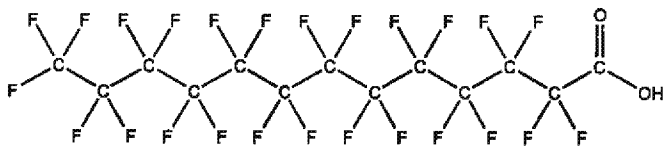
LCPFTrDA_00008

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTrDA
LOT NUMBER: PFTrDA0517
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) 05/02/2017
EXPIRY DATE: (mm/dd/yyyy) 05/02/2022
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 ~ 0.1% of PFUdA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: Ex. 4 CBI **Date:** 05/04/2017 (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

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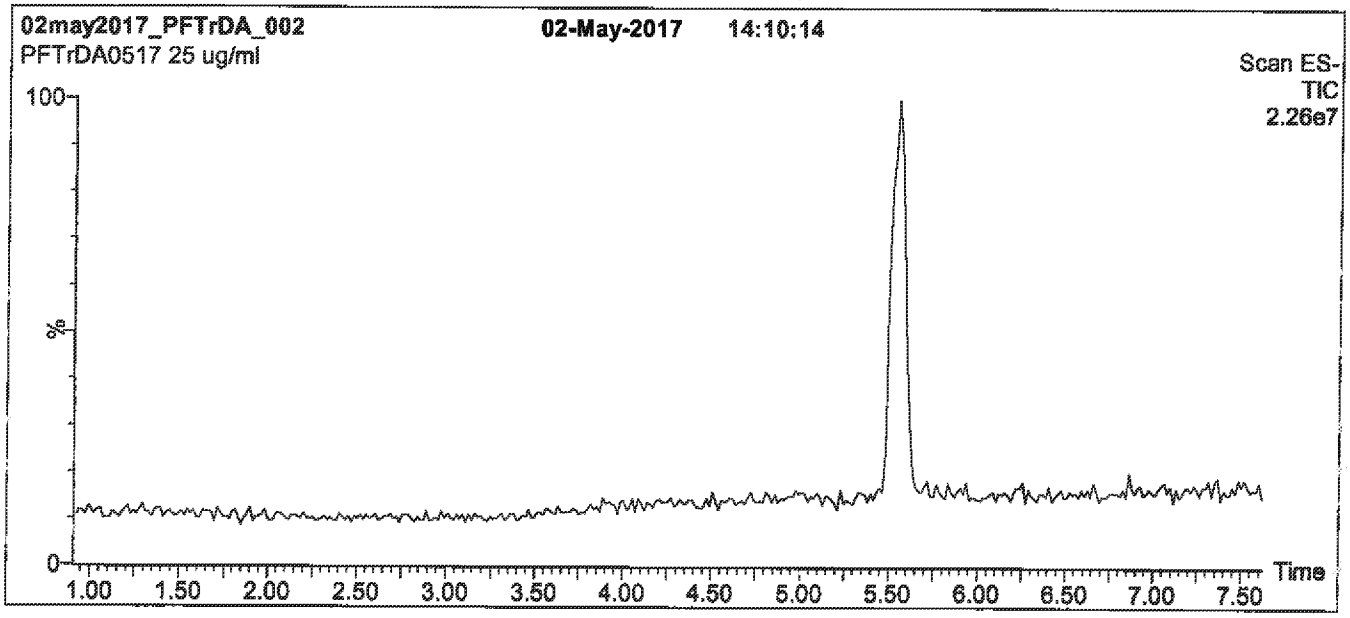
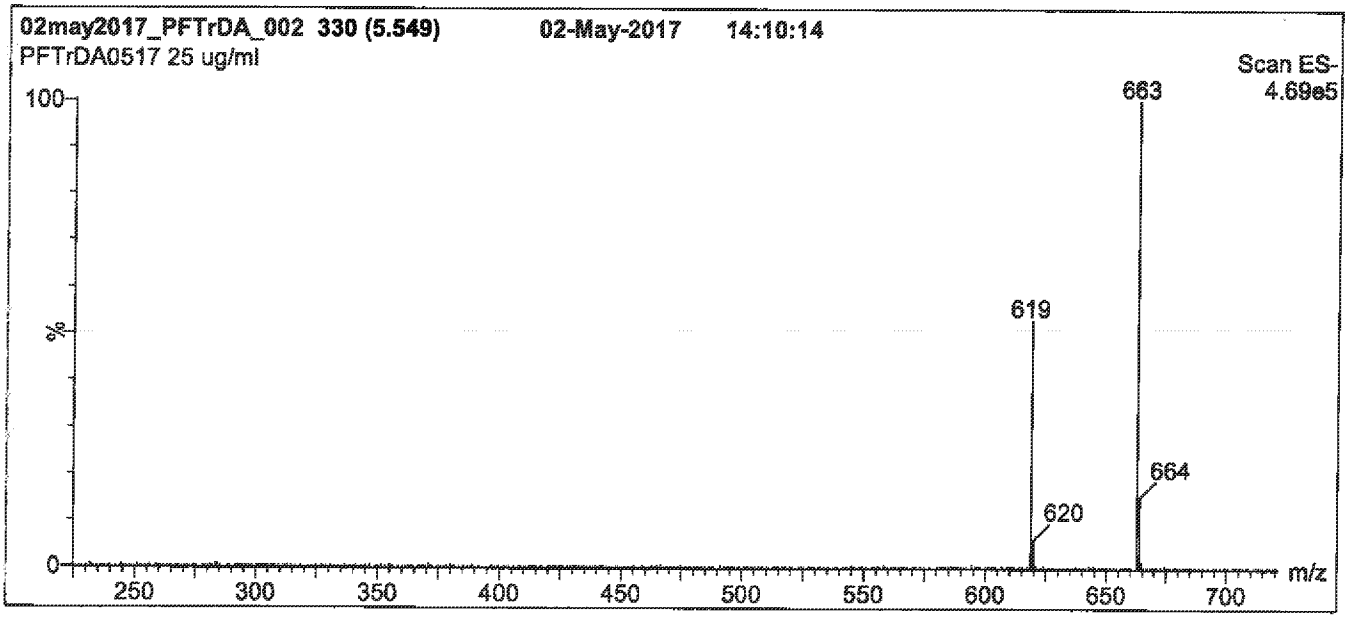
Figure 1: PFTrDA; LC/MS Data (TIC and Mass Spectrum)





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: 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 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

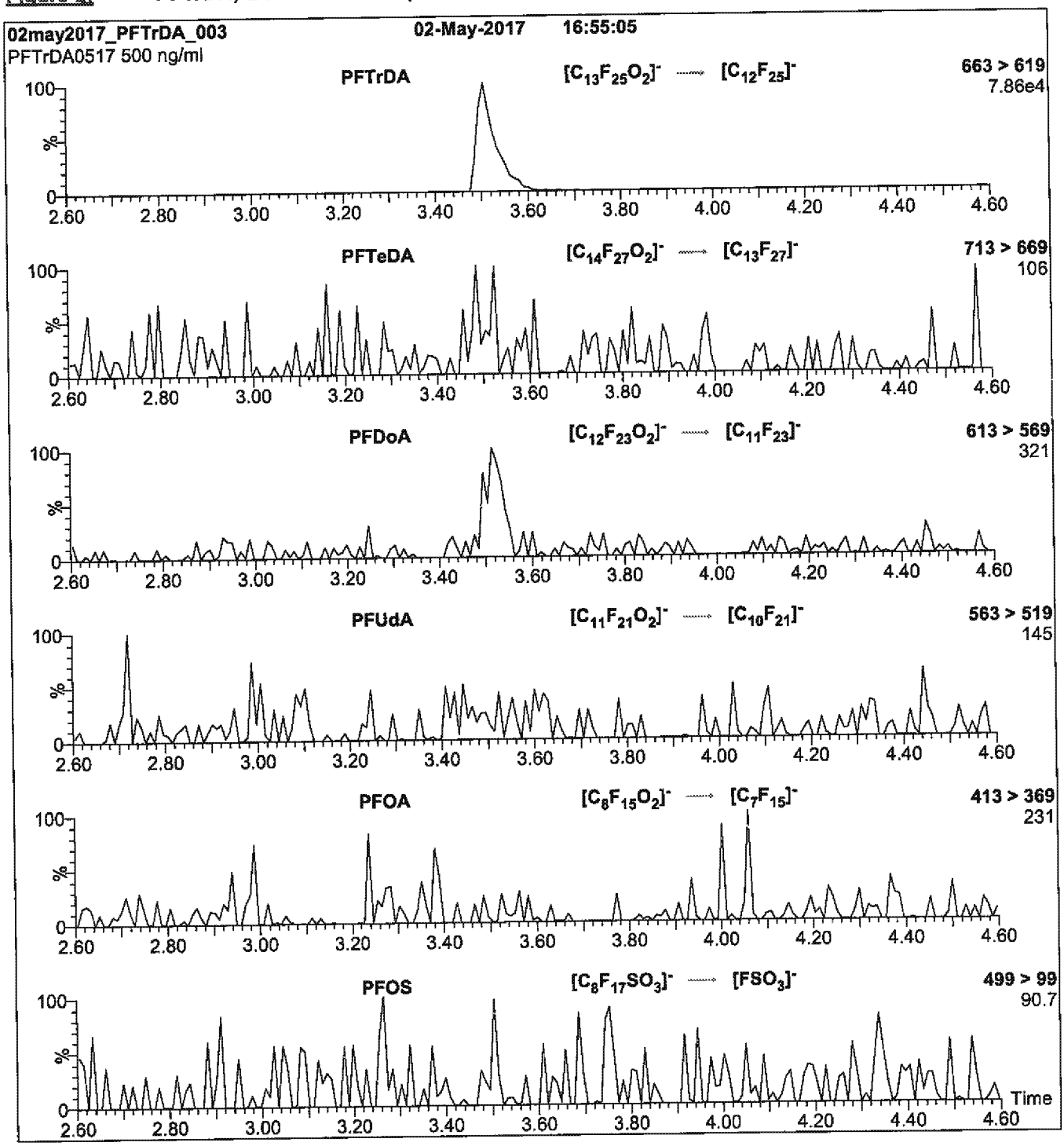
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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) = 3.17e-3
Collision Energy (eV) = 15

Reagent

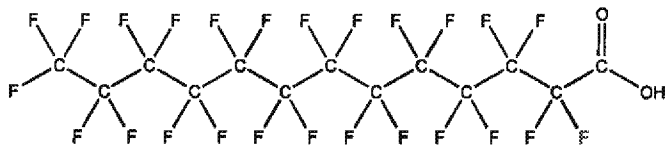
LCPFTrDA_00012

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 ($C_{14}HF_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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:

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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

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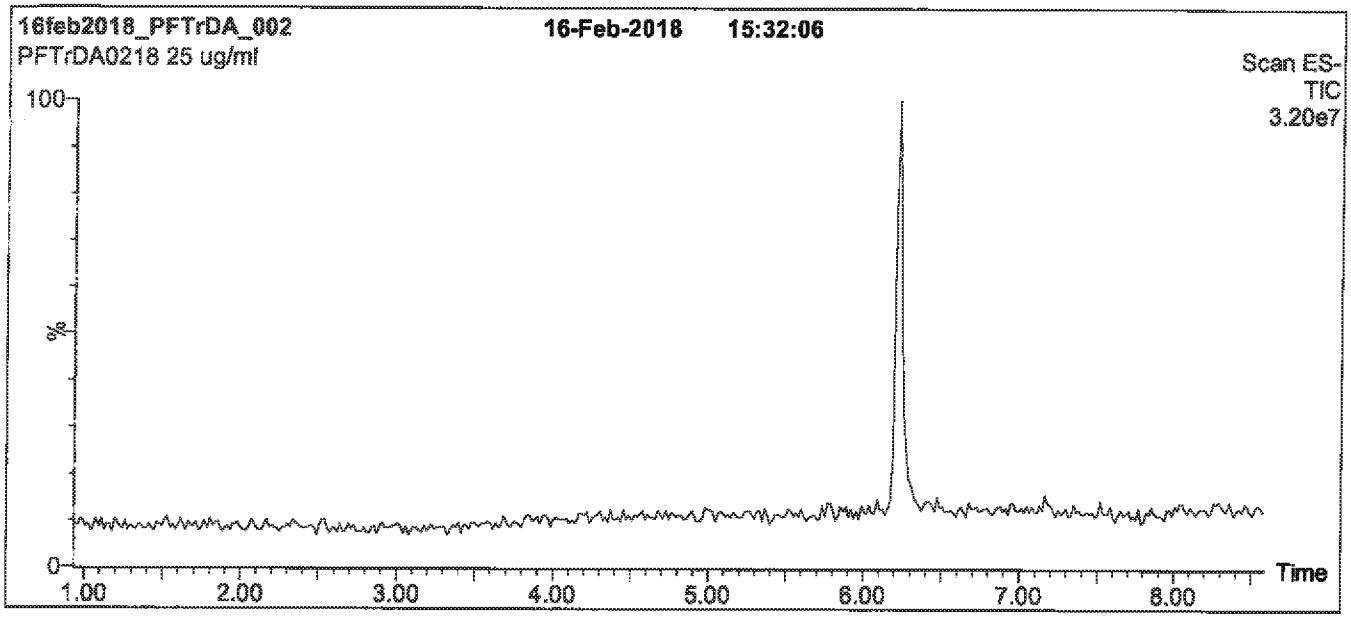
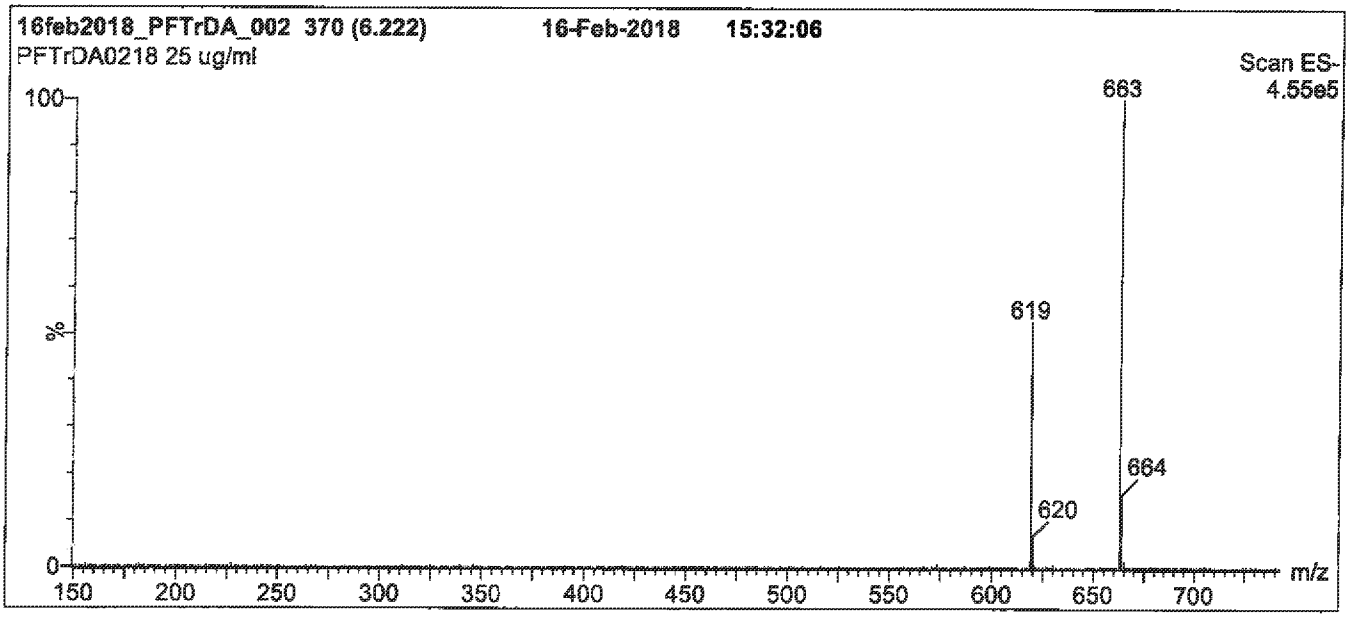
Figure 1: PFTrDA; LC/MS Data (TIC and Mass Spectrum)





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

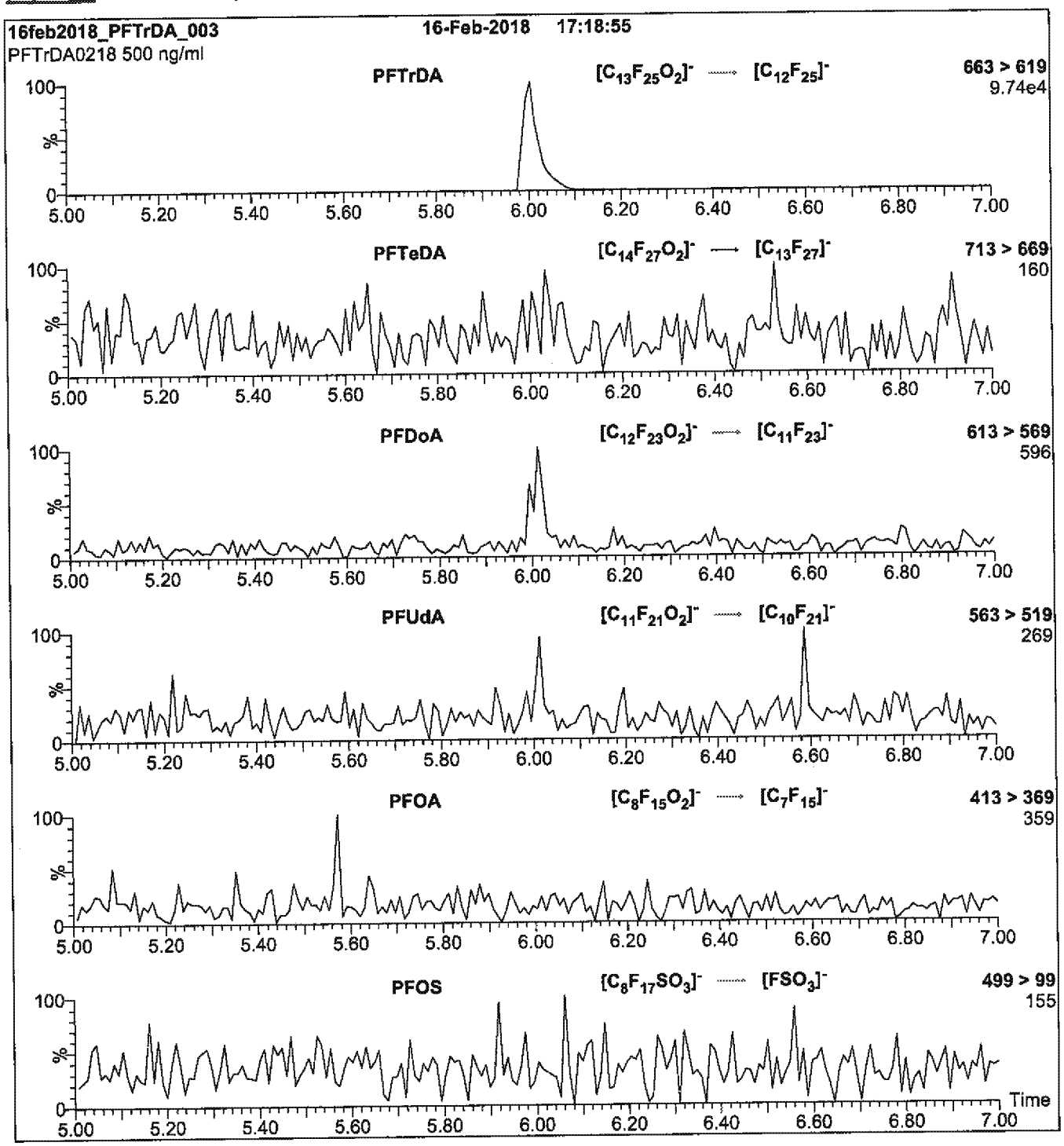
Flow: 300 µl/min

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

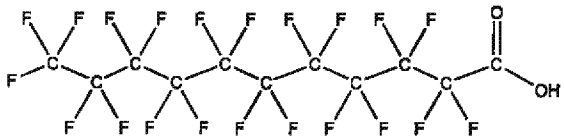
LCPFUdA_00008

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA
LOT NUMBER: PFUdA1016
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) 10/18/2016
EXPIRY DATE: (mm/dd/yyyy) 10/18/2021
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 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:** 10/19/2016 (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

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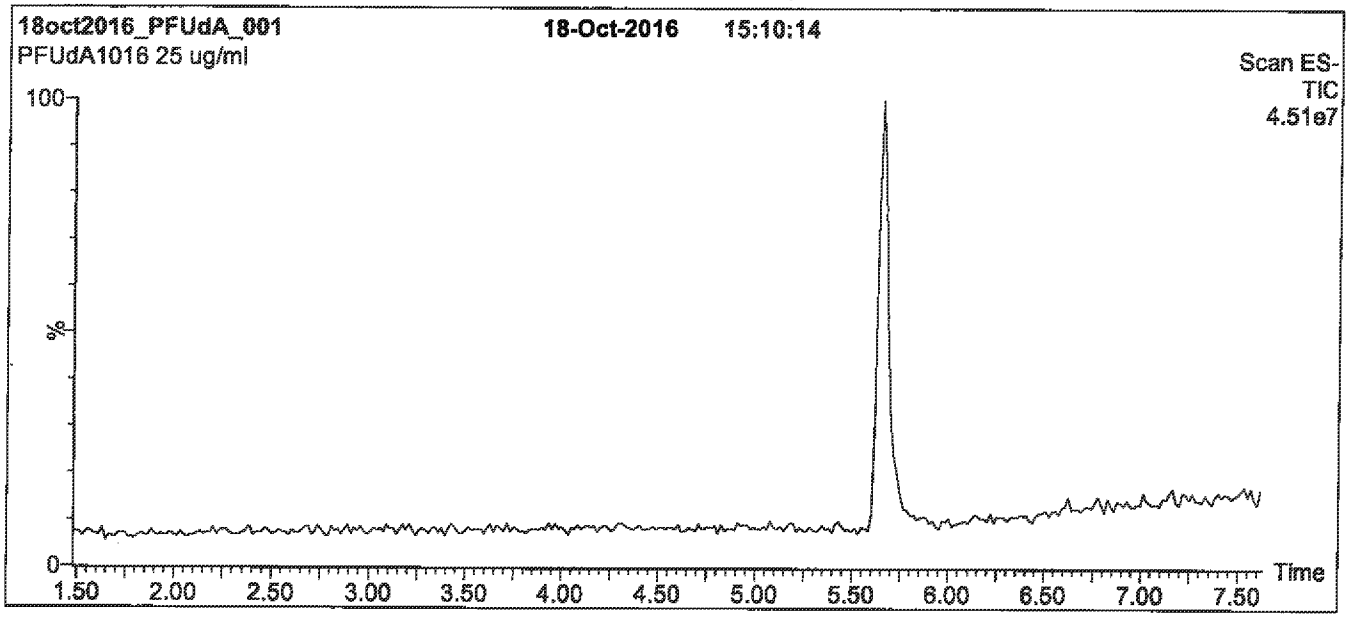
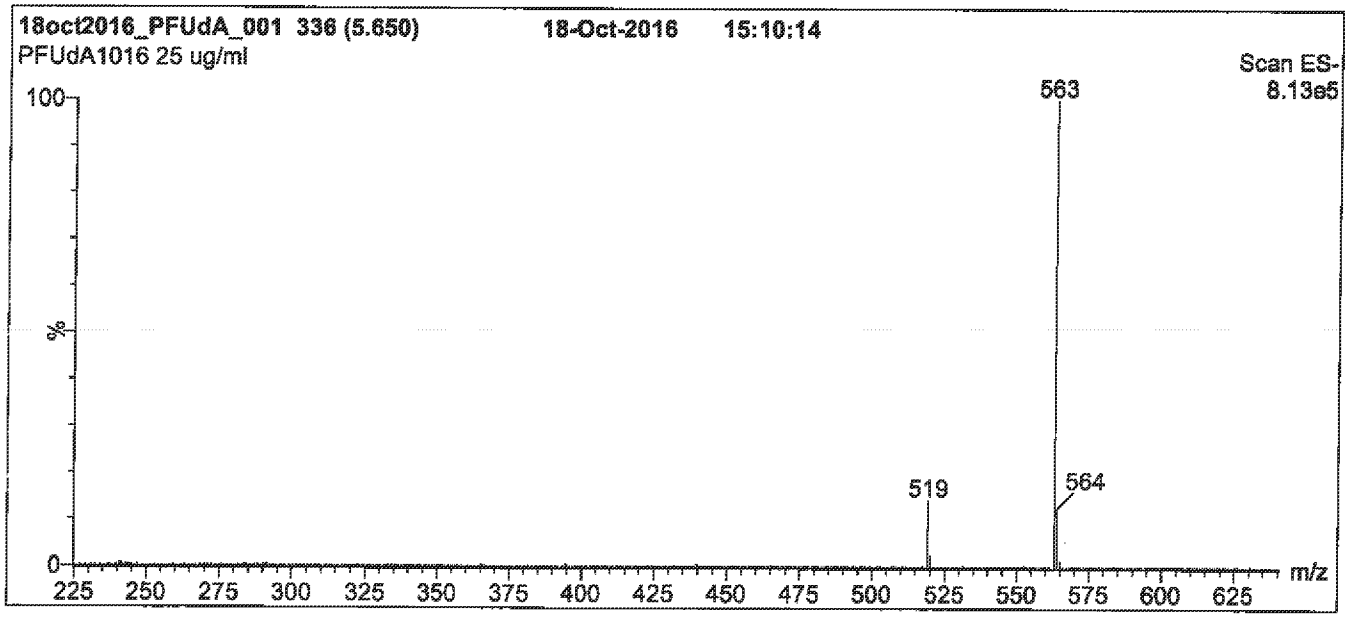
Figure 1: **PFUdA; LC/MS Data (TIC and Mass Spectrum)**





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

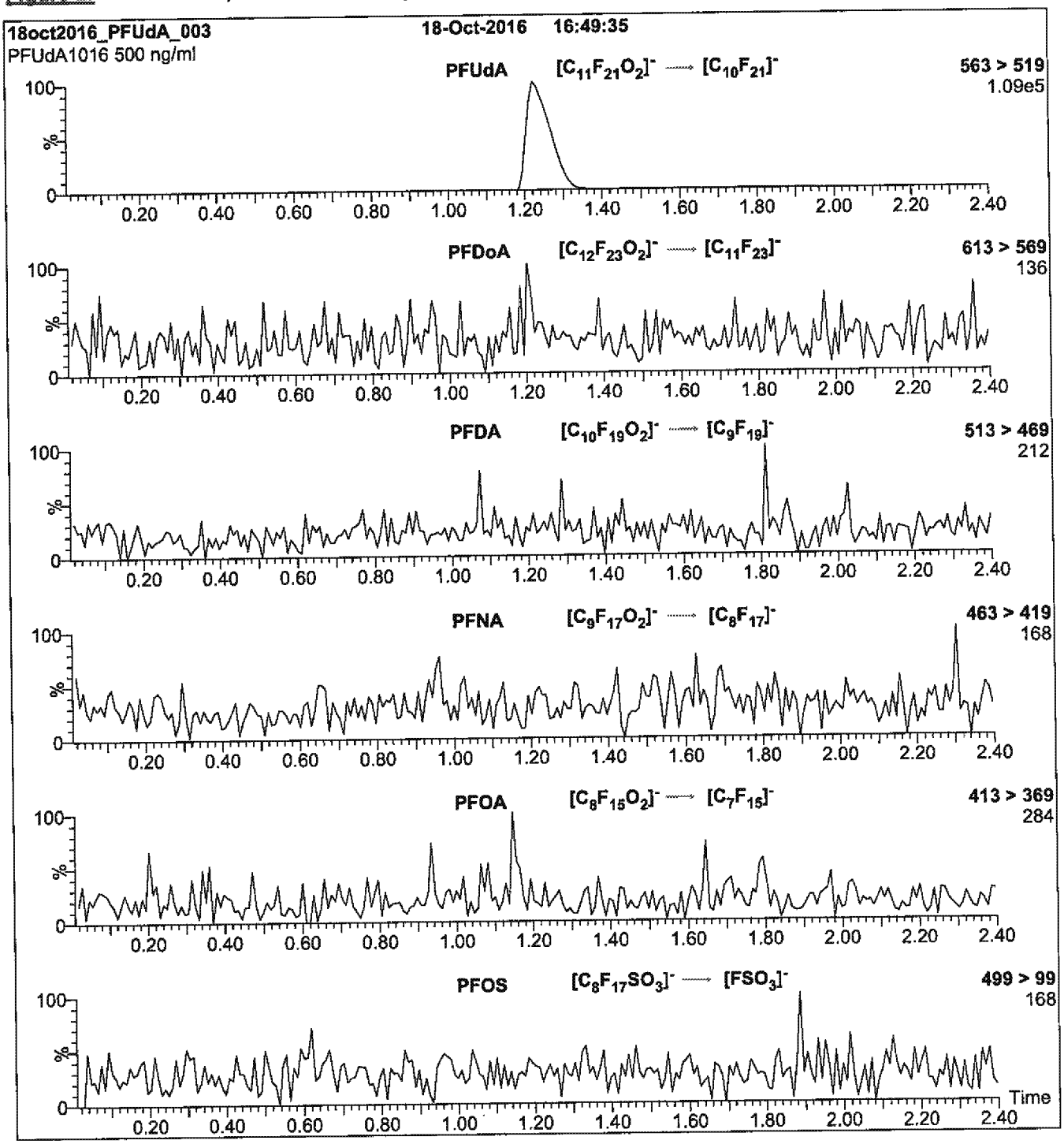
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

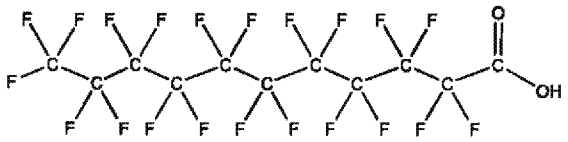
LCPFUdA_00012

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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.

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:

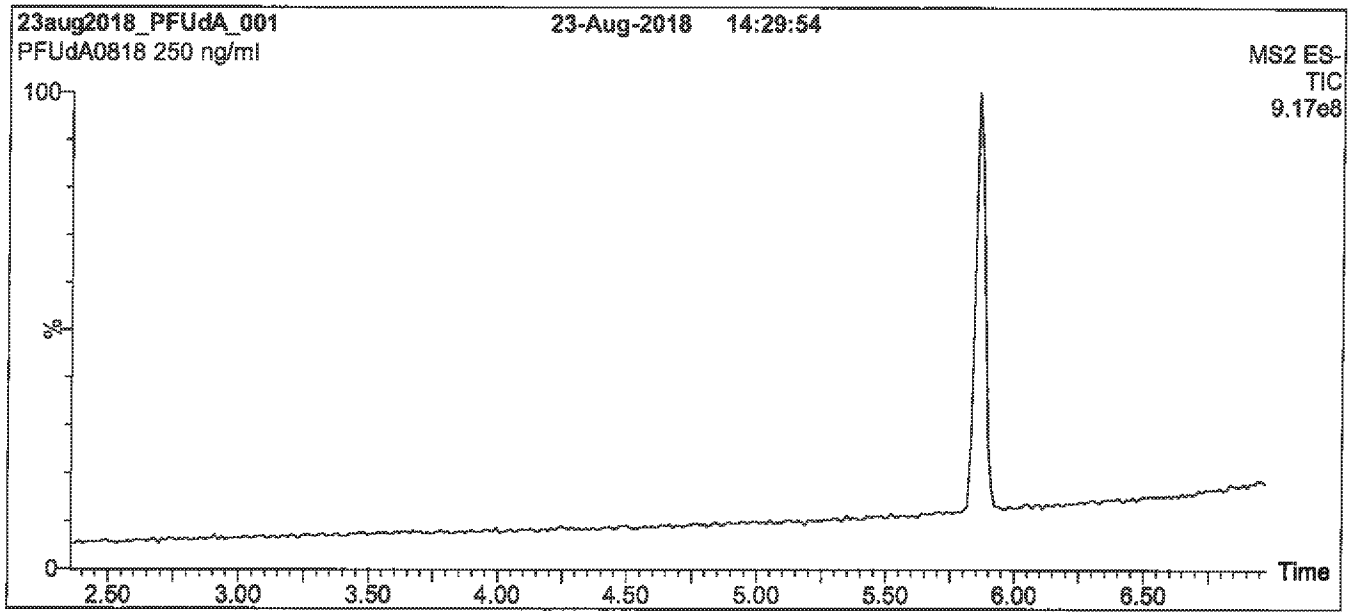
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

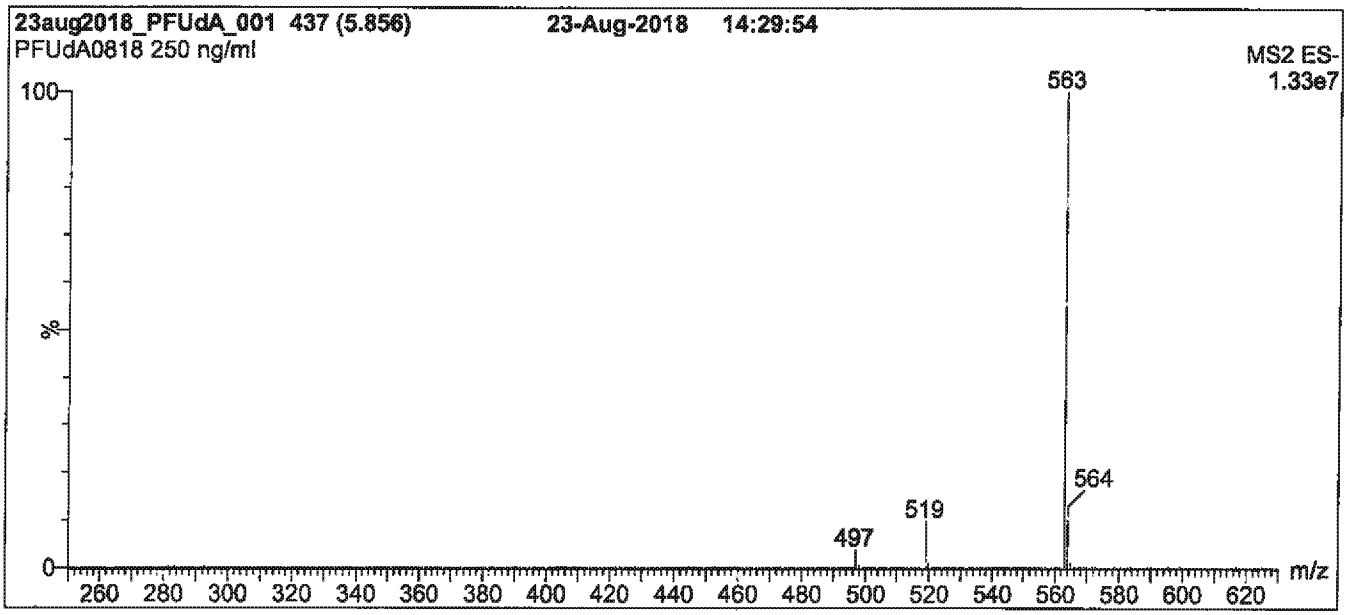
CALA

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: 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

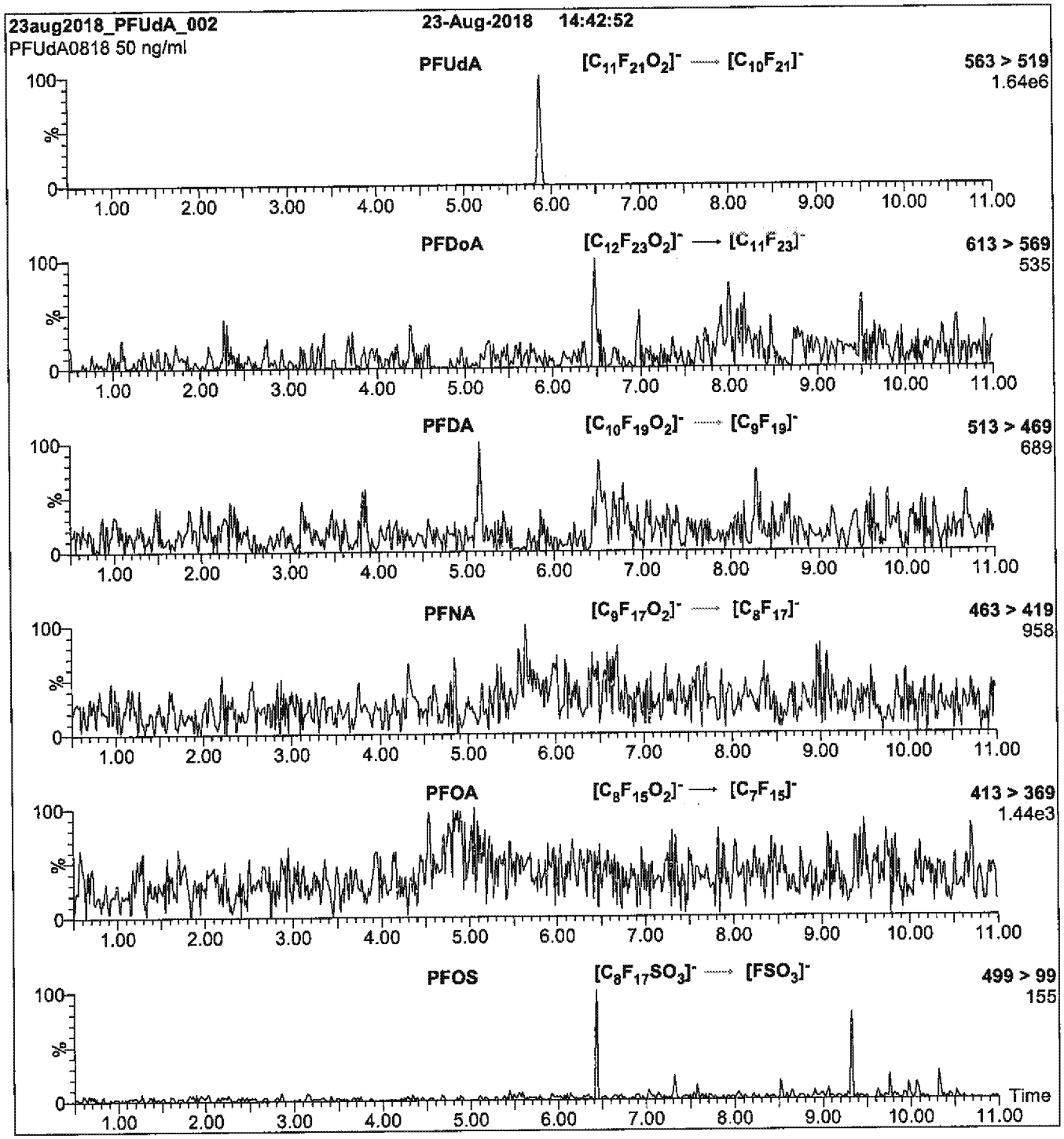
Flow: 300 µl/min

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.: 320-48796-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxA #	PFDA #
C0AR0	320-48796-1	95	103
C0AR1	320-48796-2	98	106
C0AR2	320-48796-3	91	107
C0AR8	320-48796-4	91	105
C0AS7	320-48796-5	98	101
C0AW2	320-48796-6	94	103
C0AW9	320-48796-7	98	101
C0AX0	320-48796-8	102	105
C0AX7	320-48796-9	100	103
C0AX8	320-48796-10	99	106
C0AY0	320-48796-11	88	107
	MB 320-285773/1-A	98	101
	LLCS 320-285773/2-A	98	102
C0AR0 LMS	320-48796-1 LMS	96	98
C0AR0 LMSD	320-48796-1 LMSD	97	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 LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2019.04.04_537AA_015.d

Lab ID: LLCS 320-285773/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LLCS CONCENTRATION (ng/L)	LLCS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid	3.71	3.52	95	50-150	
Perfluorooctanoic acid	4.00	3.69 J	92	50-150	
Perfluorononanoic acid	4.00	4.17	104	50-150	
Perfluorohexanesulfonic acid	3.64	3.56	98	50-150	
Perfluoroheptanoic acid	4.00	3.80	95	50-150	
Perfluorobutanesulfonic acid	3.54	3.35	95	50-150	

Column to be used to flag recovery and RPD values

FORM III 537 DW

FORM III
LCMS LOW LEVEL MATRIX SPIKE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2019.04.04_537AA_017.d

Lab ID: 320-48796-1 LMS Client ID: C0AR0 LMS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	LMS CONCENTRATION (ng/L)	LMS % REC	QC LIMITS REC	#
Perfluorooctanesulfonic acid	3.29	5.2	8.83	110	50-150	
Perfluorooctanoic acid	3.55	6.0	11.4	152	50-150	F1
Perfluorononanoic acid	3.55	1.2 J	4.52	94	50-150	
Perfluorohexanesulfonic acid	3.23	ND	3.20	99	50-150	
Perfluoroheptanoic acid	3.55	2.6 J	6.56	112	50-150	
Perfluorobutanesulfonic acid	3.14	ND	3.46	110	50-150	

Column to be used to flag recovery and RPD values

FORM III 537 DW

FORM III
LCMS LOW LEVEL MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 2019.04.04_537AA_018.d

Lab ID: 320-48796-1 LMSD Client ID: C0AR0 LMSD

COMPOUND	SPIKE ADDED (ng/L)	LMSD CONCENTRATION (ng/L)	LMSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanesulfonic acid	3.20	7.50	71	16	50	50-150	
Perfluorooctanoic acid	3.45	8.79	80	26	50	50-150	
Perfluorononanoic acid	3.45	4.49	96	1	50	50-150	
Perfluorohexanesulfonic acid	3.14	2.94	94	9	50	50-150	
Perfluoroheptanoic acid	3.45	5.57	87	16	50	50-150	
Perfluorobutanesulfonic acid	3.05	2.88	94	18	50	50-150	

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.: 320-48796-1

SDG No.:

Lab File ID: 2019.04.04_537AA_014.d Lab Sample ID: MB 320-285773/1-A

Matrix: Water Date Extracted: 04/02/2019 17:08

Instrument ID: A8_N Date Analyzed: 04/04/2019 20:36

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LLCS 320-285773/2-A	2019.04.04_537AA_015.d	04/04/2019 20:45
C0AR0	320-48796-1	2019.04.04_537AA_016.d	04/04/2019 20:55
C0AR0 LMS	320-48796-1 LMS	2019.04.04_537AA_017.d	04/04/2019 21:04
C0AR0 LMSD	320-48796-1 LMSD	2019.04.04_537AA_018.d	04/04/2019 21:14
C0AR1	320-48796-2	2019.04.04_537AA_019.d	04/04/2019 21:23
C0AR2	320-48796-3	2019.04.04_537AA_020.d	04/04/2019 21:33
C0AR8	320-48796-4	2019.04.04_537AA_021.d	04/04/2019 21:42
C0AS7	320-48796-5	2019.04.04_537AA_022.d	04/04/2019 21:51
C0AW2	320-48796-6	2019.04.04_537AA_023.d	04/04/2019 22:01
C0AW9	320-48796-7	2019.04.04_537AA_026.d	04/04/2019 22:29
C0AX0	320-48796-8	2019.04.04_537AA_027.d	04/04/2019 22:39
C0AX7	320-48796-9	2019.04.04_537AA_028.d	04/04/2019 22:48
C0AX8	320-48796-10	2019.04.04_537AA_029.d	04/04/2019 22:58
C0AY0	320-48796-11	2019.04.04_537AA_030.d	04/04/2019 23:07

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

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 320-286192/8 CCVIS		2912806	3.18	2777861	3.55		
MB 320-285773/1-A		2974168	3.18	3140400	3.55		
LLCS 320-285773/2-A		2954258	3.16	2882276	3.53		
320-48796-1	C0AR0	3080376	3.16	3030263	3.53		
320-48796-1 LMS	C0AR0 LMS	3033403	3.16	3048383	3.55		
320-48796-1 LMSD	C0AR0 LMSD	3034695	3.18	3134734	3.53		
320-48796-2	C0AR1	2948143	3.18	3033860	3.55		
320-48796-3	C0AR2	2923092	3.18	3070827	3.55		
320-48796-4	C0AR8	3156169	3.18	3184569	3.53		
320-48796-5	C0AS7	2977000	3.18	3091179	3.55		
320-48796-6	C0AW2	2987061	3.16	3029943	3.53		
CCV 320-286192/20 CCVIS		3008213	3.16	2867989	3.53		
CCV 320-286190/20 CCVIS		3008213	3.16	2867989	3.53		
320-48796-7	C0AW9	3028297	3.18	2983222	3.55		
320-48796-8	C0AX0	2974325	3.18	2976132	3.55		
320-48796-9	C0AX7	2994148	3.16	2983541	3.53		
320-48796-10	C0AX8	3021990	3.16	3075394	3.53		
320-48796-11	C0AY0	3027716	3.18	3140272	3.55		
CCV 320-286190/27 CCVIS		2778726	3.17	2722678	3.53		

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.: 320-48796-1

SDG No.:

Sample No.: CCV 320-286192/8 Date Analyzed: 04/04/2019 20:17

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.04_537AA_01 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2912806	3.18	2777861	3.55		
UPPER LIMIT		4077928	3.68	3889005	4.05		
LOWER LIMIT		2038964	2.68	1944503	3.05		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-285773/1-A		2974168	3.18	3140400	3.55		
LLCS 320-285773/2-A		2954258	3.16	2882276	3.53		
320-48796-1	C0AR0	3080376	3.16	3030263	3.53		
320-48796-1 LMS	C0AR0 LMS	3033403	3.16	3048383	3.55		
320-48796-1 LMSD	C0AR0 LMSD	3034695	3.18	3134734	3.53		
320-48796-2	C0AR1	2948143	3.18	3033860	3.55		
320-48796-3	C0AR2	2923092	3.18	3070827	3.55		
320-48796-4	C0AR8	3156169	3.18	3184569	3.53		
320-48796-5	C0AS7	2977000	3.18	3091179	3.55		
320-48796-6	C0AW2	2987061	3.16	3029943	3.53		

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.: 320-48796-1

SDG No.:

Sample No.: CCV 320-286190/20 Date Analyzed: 04/04/2019 22:10

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.04_537AA_02 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3008213	3.16	2867989	3.53		
UPPER LIMIT		4211498	3.66	4015185	4.03		
LOWER LIMIT		2105749	2.66	2007592	3.03		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-48796-7	C0AW9	3028297	3.18	2983222	3.55		
320-48796-8	C0AX0	2974325	3.18	2976132	3.55		
320-48796-9	C0AX7	2994148	3.16	2983541	3.53		
320-48796-10	C0AX8	3021990	3.16	3075394	3.53		
320-48796-11	C0AY0	3027716	3.18	3140272	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.: 320-48796-1

SDG No.:

Sample No.: CCV 320-286192/20 Date Analyzed: 04/04/2019 22:10

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.04_537AA_02 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3008213	3.16	2867989	3.53		
UPPER LIMIT		4211498	3.66	4015185	4.03		
LOWER LIMIT		2105749	2.66	2007592	3.03		
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-285773/1-A		2974168	3.18	3140400	3.55		
LLCS 320-285773/2-A		2954258	3.16	2882276	3.53		
320-48796-1	C0AR0	3080376	3.16	3030263	3.53		
320-48796-1 LMS	C0AR0 LMS	3033403	3.16	3048383	3.55		
320-48796-1 LMSD	C0AR0 LMSD	3034695	3.18	3134734	3.53		
320-48796-2	C0AR1	2948143	3.18	3033860	3.55		
320-48796-3	C0AR2	2923092	3.18	3070827	3.55		
320-48796-4	C0AR8	3156169	3.18	3184569	3.53		
320-48796-5	C0AS7	2977000	3.18	3091179	3.55		
320-48796-6	C0AW2	2987061	3.16	3029943	3.53		

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.: 320-48796-1

SDG No.:

Sample No.: CCV 320-286190/27 Date Analyzed: 04/04/2019 23:16

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2019.04.04_537AA_03 Heated Purge: (Y/N) N

Calibration ID: 44584

		13PFOA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		2778726	3.17	2722678	3.53		
UPPER LIMIT		3890216	3.67	3811749	4.03		
LOWER LIMIT		1945108	2.67	1905875	3.03		
LAB SAMPLE ID	CLIENT SAMPLE ID						
320-48796-7	C0AW9	3028297	3.18	2983222	3.55		
320-48796-8	C0AX0	2974325	3.18	2976132	3.55		
320-48796-9	C0AX7	2994148	3.16	2983541	3.53		
320-48796-10	C0AX8	3021990	3.16	3075394	3.53		
320-48796-11	C0AY0	3027716	3.18	3140272	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.: 320-48796-1
SDG No.:
Client Sample ID: C0AR0
Lab Sample ID: 320-48796-1
Matrix: Water
Lab File ID: 2019.04.04_537AA_016.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 12:29
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 280.2(mL)
Date Analyzed: 04/04/2019 20:55
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.: 286192
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	5.2		1.8	0.85
335-67-1	Perfluorooctanoic acid	6.0		5.4	2.4
375-95-1	Perfluorononanoic acid	1.2	J	1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	ND		1.8	0.57
375-85-9	Perfluoroheptanoic acid	2.6	J	2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	ND		1.8	0.71

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	95		70-130
STL00996	13C2 PFDA	103		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_016.d
Lims ID: 320-48796-A-1-A
Client ID: C0AR0
Sample Type: Client
Inject. Date: 04-Apr-2019 20:55:06 ALS Bottle#: 7 Worklist Smp#: 12
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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 Reviewe **Ex. 4 CBI** Date: 05-Apr-2019 13:33:31
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	23620	0.0158	Target=1.41	32.5	
298.90 > 99.00	1.976	1.976	0.0	1.000	16422		1.44(0.00-0.00)	6.6	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.322	2.322	0.0	0.735	113143	0.0825	Target=10.46	14.4	
313.00 > 119.00	2.322	2.322	0.0	0.735	10764		10.51(0.00-0.00)	9.4	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.322	0.025	1.000	3407216	2.37		5765	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	171080	2.65		805	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.757	2.757	0.0	1.000	93978	0.0720	Target=2.41	7.9	M
363.00 > 169.00	2.757	2.757	0.0	1.000	41274		2.28(0.00-0.00)	71.4	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.158	0.0		3080376	2.50		9117	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.177	3.158	0.019	1.006	210823	0.1687	Target=1.70	23.2	M
413.00 > 169.00	3.158	3.158	0.0	1.000	127811		1.65(0.00-0.00)	187	M
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.534	0.0		3030263	2.39		4282	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	30527	0.0335	Target=3.78	13.6	
463.00 > 169.00	3.549	3.549	0.0	1.000	6685		4.57(0.00-0.00)	36.6	
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.416	3.564	-0.148	0.967	195898	0.1463	Target=4.63	106	M
499.00 > 99.00	3.549	3.564	-0.015	1.004	29739		6.59(0.00-0.00)	18.2	M
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.892	0.019	1.000	1964441	2.57		7287	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		526229	2.50		2565	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.214	4.220	-0.006	1.035	498634	2.32		320	

QC Flag Legend

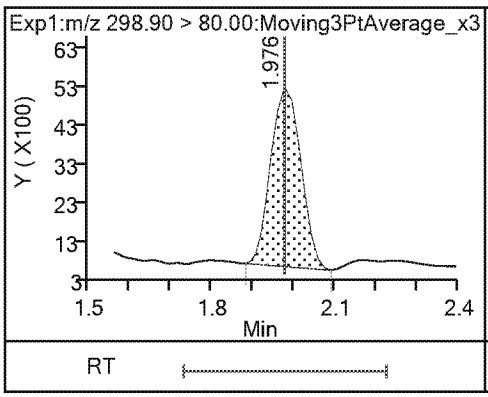
Review Flags

M - Manually Integrated

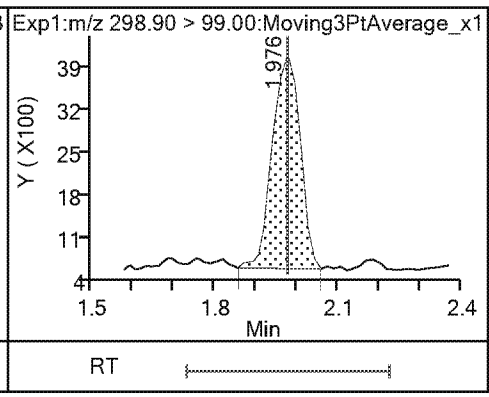
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_016.d				
Injection Date:	04-Apr-2019 20:55:06	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-A	Lab Sample ID:	320-48796-1		
Client ID:	C0AR0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	12
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

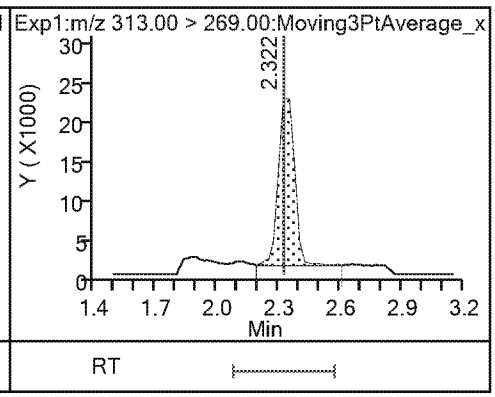
1 Perfluorobutanesulfonic acid



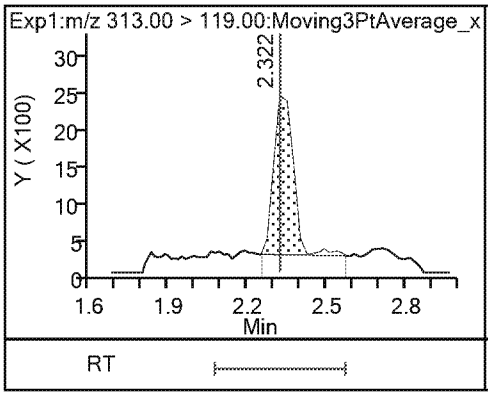
1 Perfluorobutanesulfonic acid



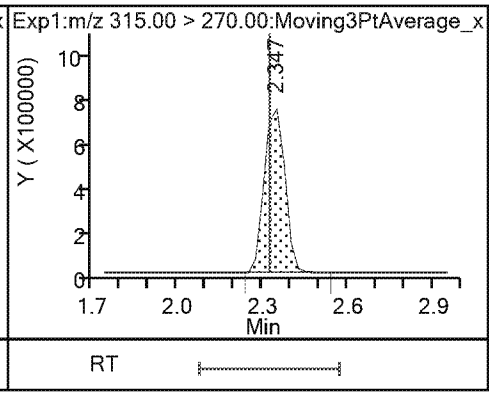
13 Perfluorohexanoic acid



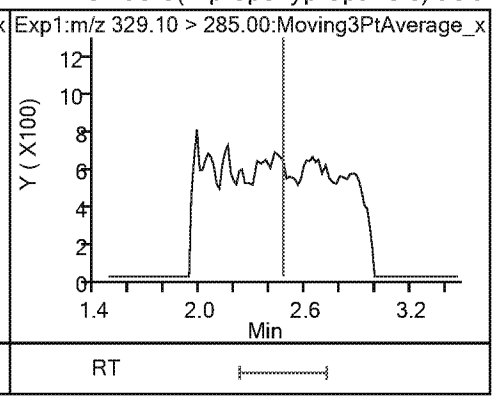
13 Perfluorohexanoic acid



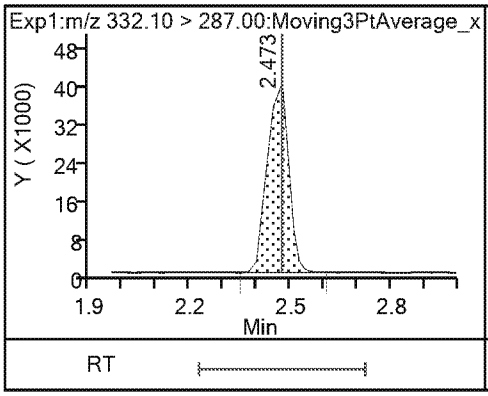
$ 2 13C2 PFHxA



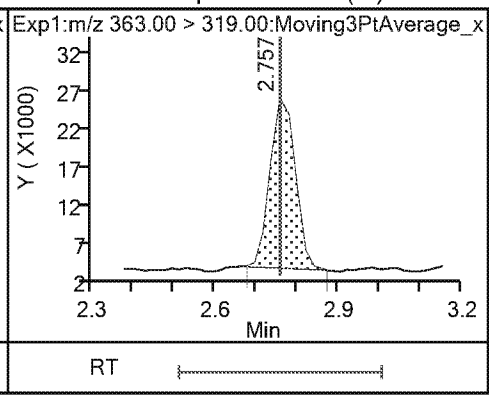
22 Perfluoro(2-propoxypropanoic) acid (ND)



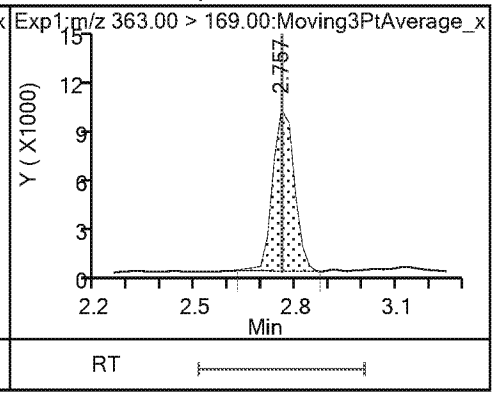
$ 25 13C3 HFPO-DA



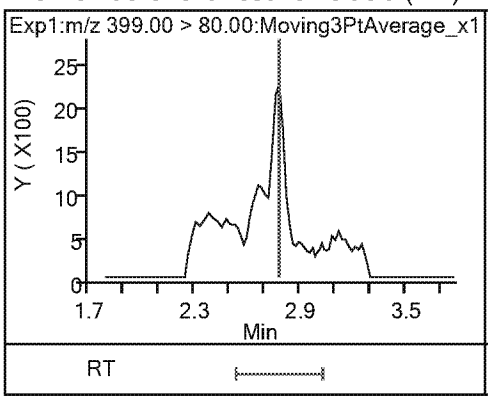
4 Perfluoroheptanoic acid (M)



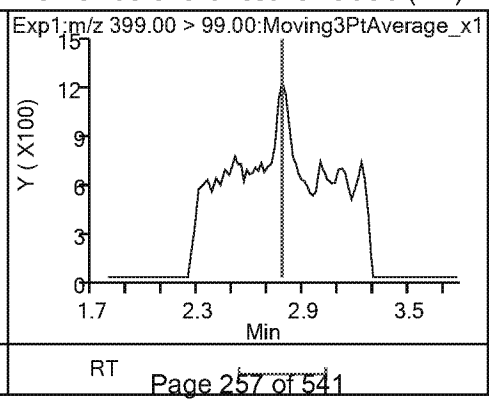
4 Perfluoroheptanoic acid



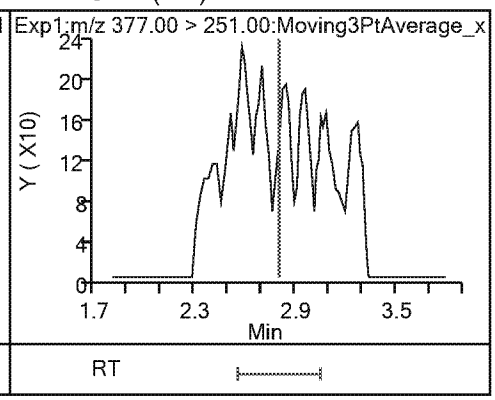
3 Perfluorohexanesulfonic acid (ND)



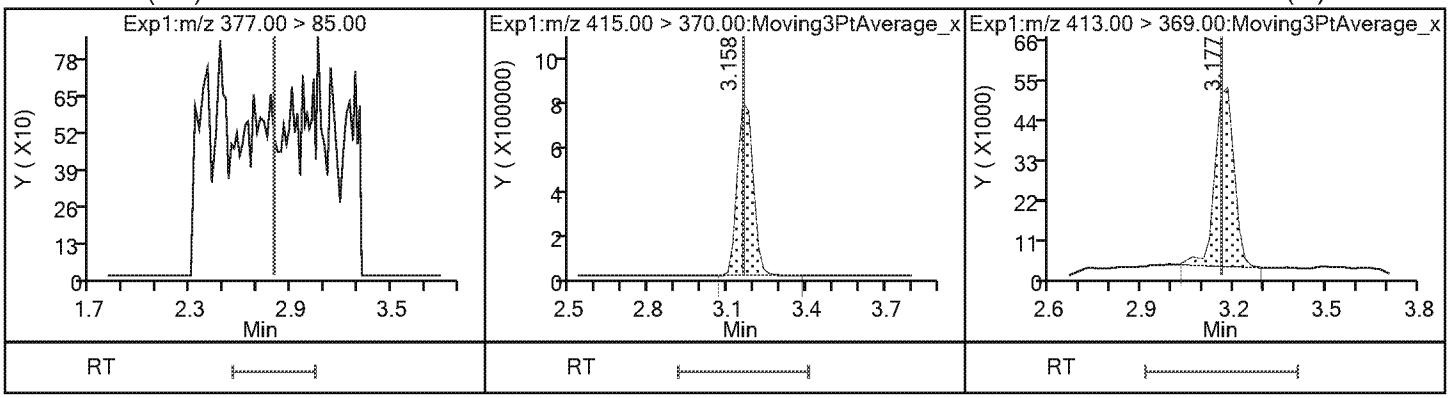
3 Perfluorohexanesulfonic acid (ND)



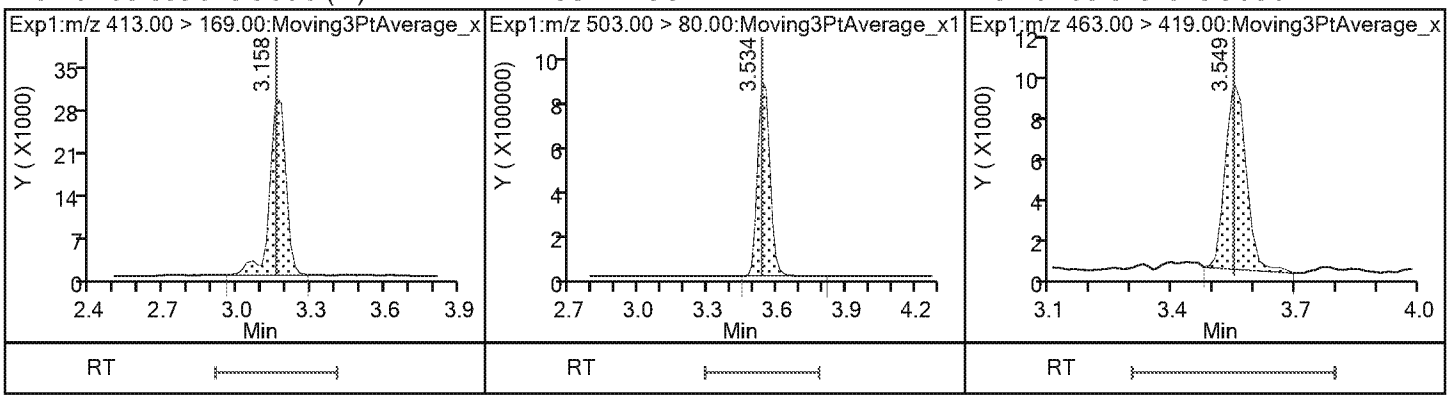
24 DONA (ND)



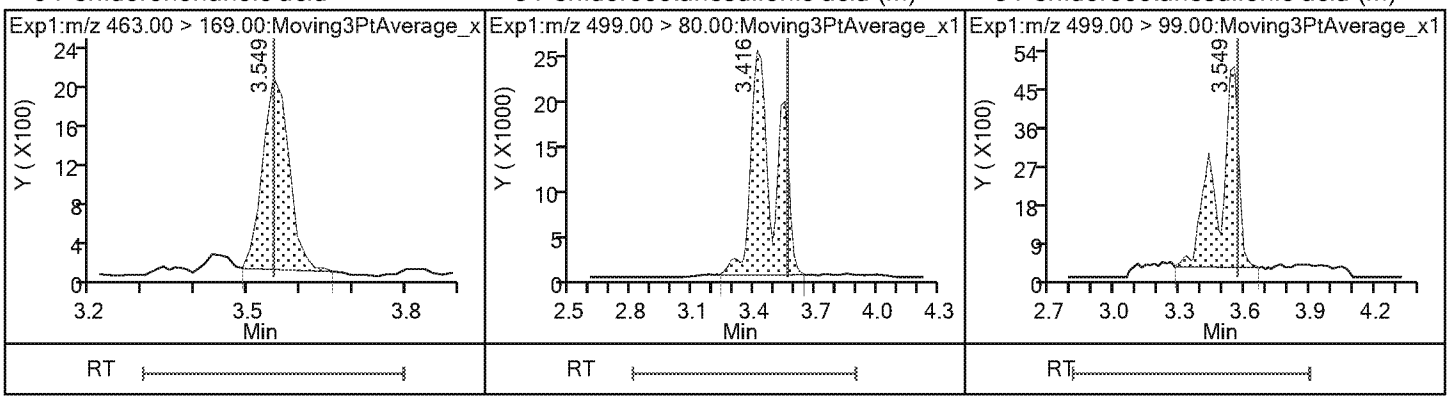
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid (M)



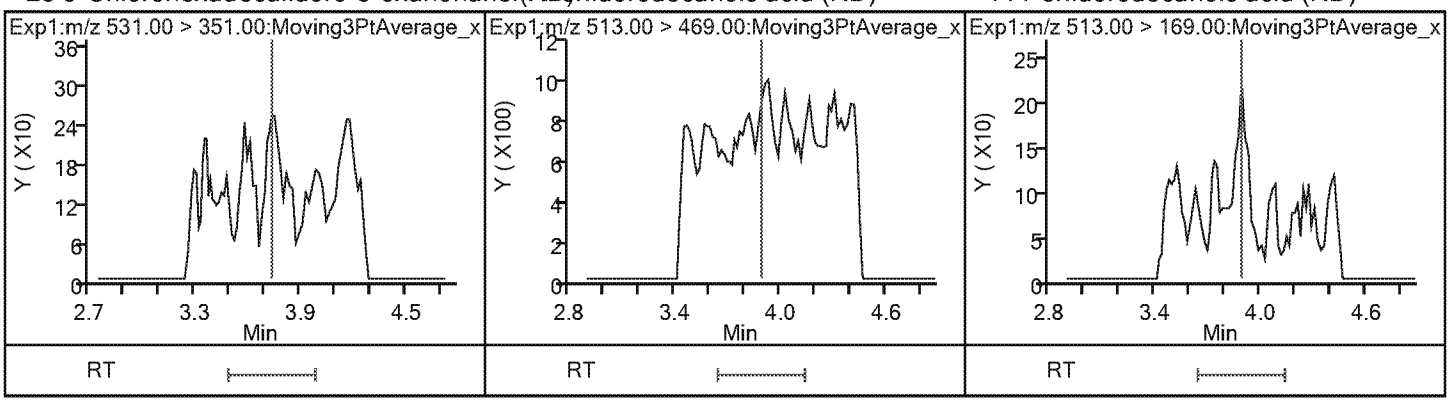
6 Perfluorooctanoic acid (M) * 7 13C4 PFOS 9 Perfluorononanoic acid



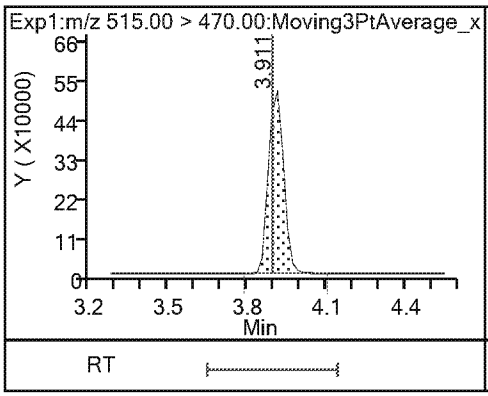
9 Perfluorononanoic acid 8 Perfluorooctanesulfonic acid (M) 8 Perfluorooctanesulfonic acid (M)



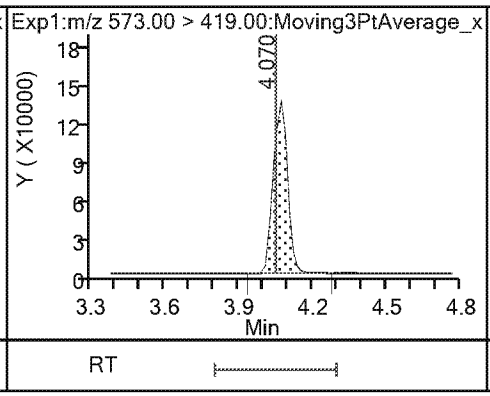
23 9-Chlorohexadecafluoro-3-oxanonane1 (ND) 14 Perfluorodecanoic acid (ND) 14 Perfluorodecanoic acid (ND)



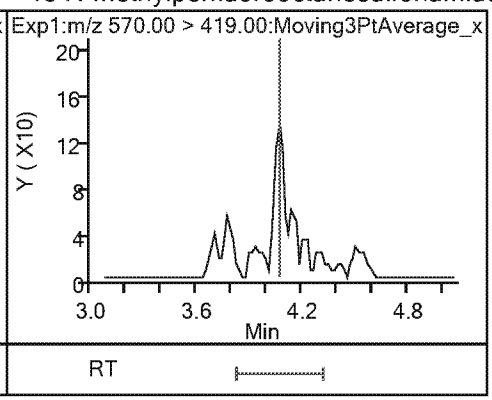
$ 10 13C2 PFDA



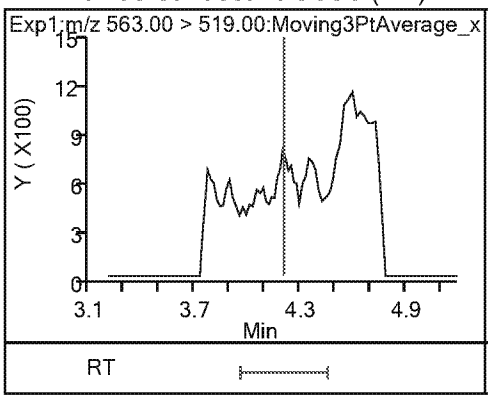
* 12 d3-NMeFOSAA



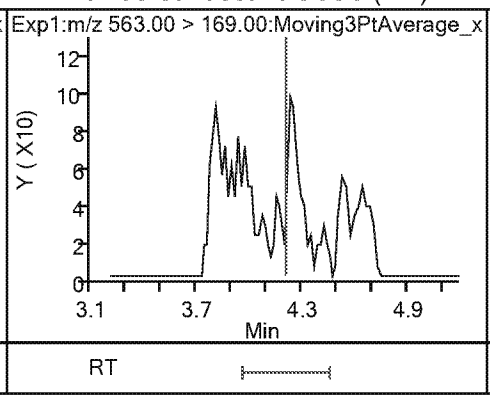
15 N-methylperfluorooctanesulfonamido (ND)



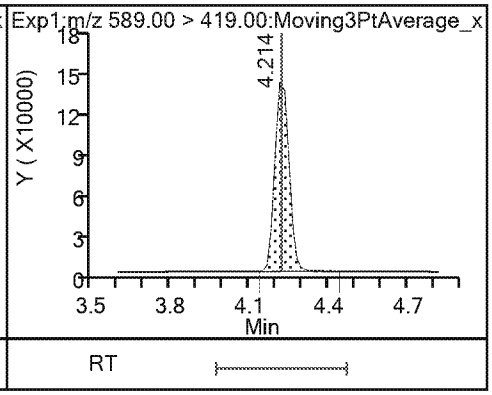
17 Perfluoroundecanoic acid (ND)



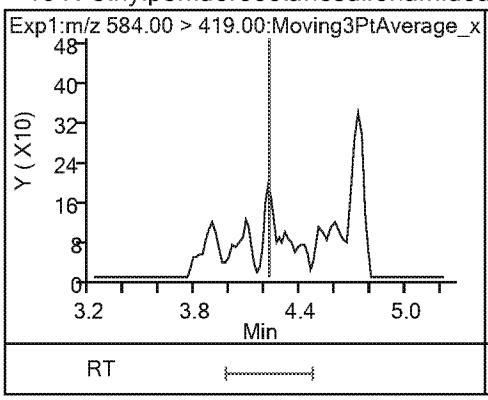
17 Perfluoroundecanoic acid (ND)



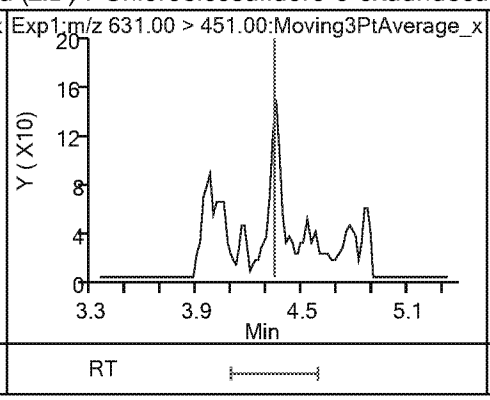
$ 11 d5-NEtFOSAA



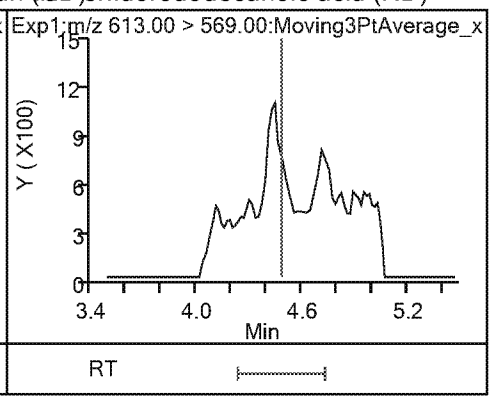
16 N-ethylperfluorooctanesulfonamidoa (ND)



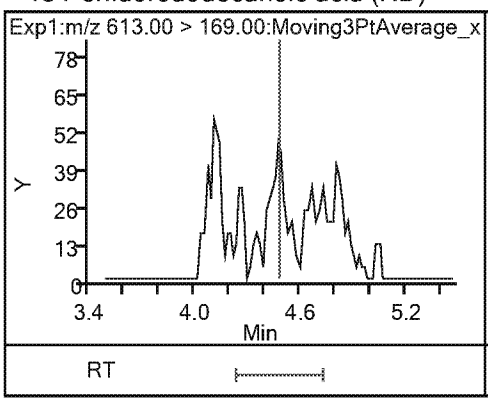
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



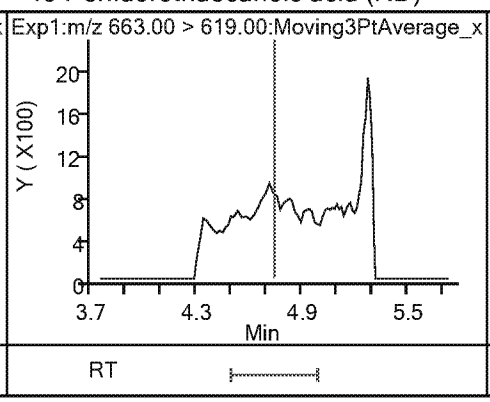
18 Perfluorododecanoic acid (ND)



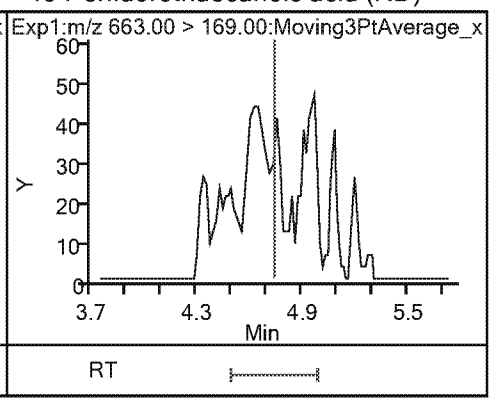
18 Perfluorododecanoic acid (ND)



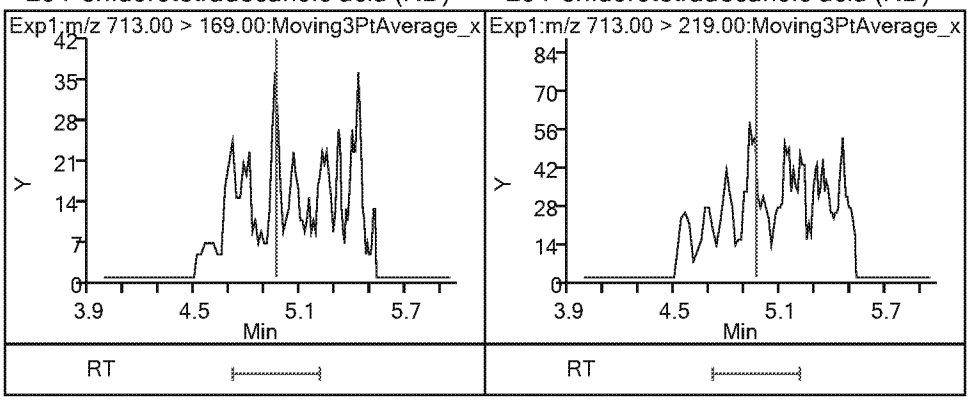
19 Perfluorotridecanoic acid (ND)



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_016.d
Lims ID: 320-48796-A-1-A
Client ID: C0AR0
Sample Type: Client
Inject. Date: 04-Apr-2019 20:55:06 ALS Bottle#: 7 Worklist Smp#: 12
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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 13:33:31

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.37	94.89
$ 25 13C3 HFPO-DA	2.50	2.65	106.08
$ 10 13C2 PFDA	2.50	2.57	102.69
$ 11 d5-NEtFOSAA	2.50	2.32	92.71

Eurofins TestAmerica, Sacramento

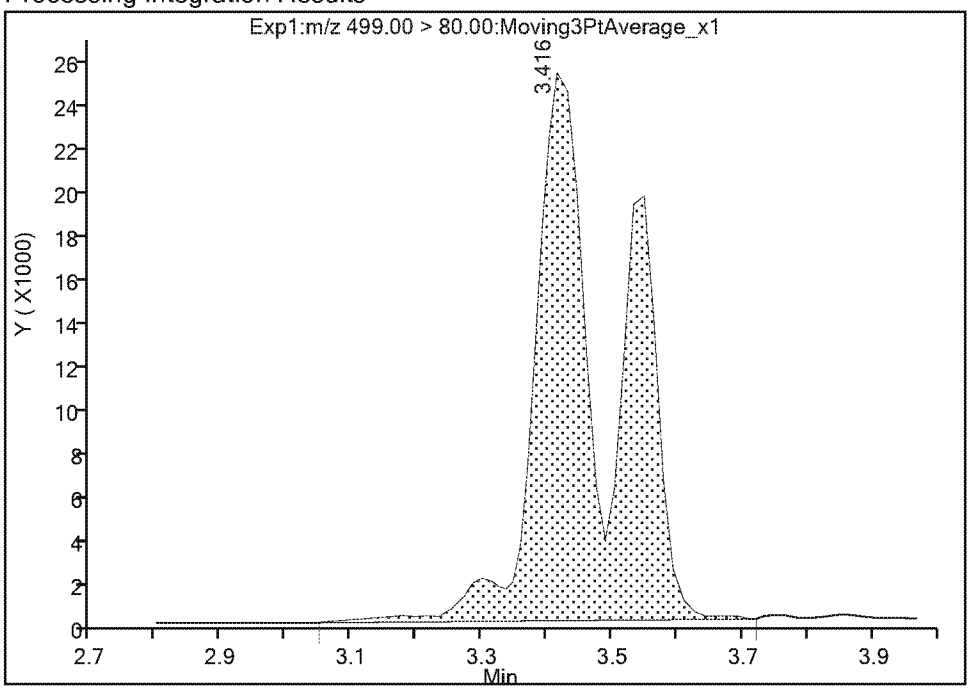
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_016.d				
Injection Date:	04-Apr-2019 20:55:06	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-A	Lab Sample ID:	320-48796-1		
Client ID:	C0AR0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	12
Injection Vol:	10.0 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

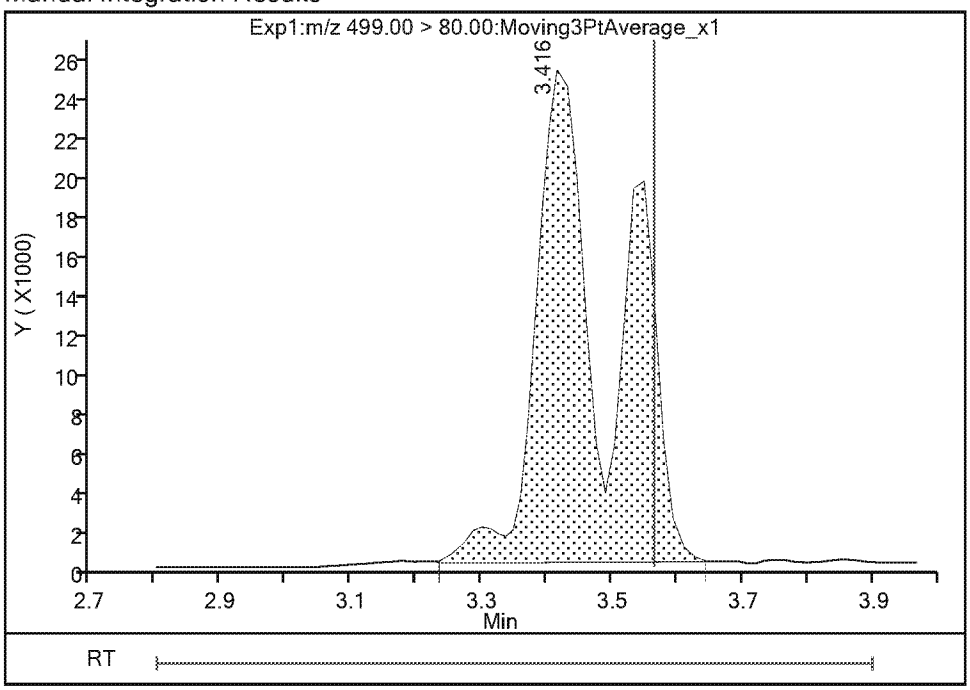
Processing Integration Results

RT: 3.42
Area: 201067
Amount: 0.150126
Amount Units: ng/ml



Manual Integration Results

RT: 3.42
Area: 195898
Amount: 0.146267
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:33:10
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

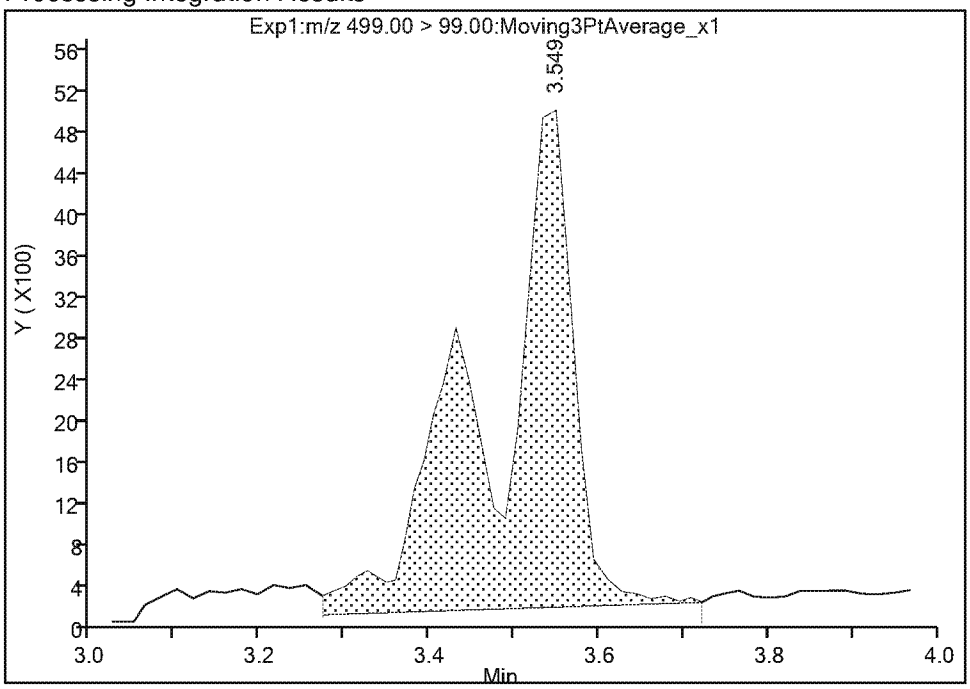
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_016.d				
Injection Date:	04-Apr-2019 20:55:06	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-A	Lab Sample ID:	320-48796-1		
Client ID:	C0AR0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	12
Injection Vol:	10.0 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

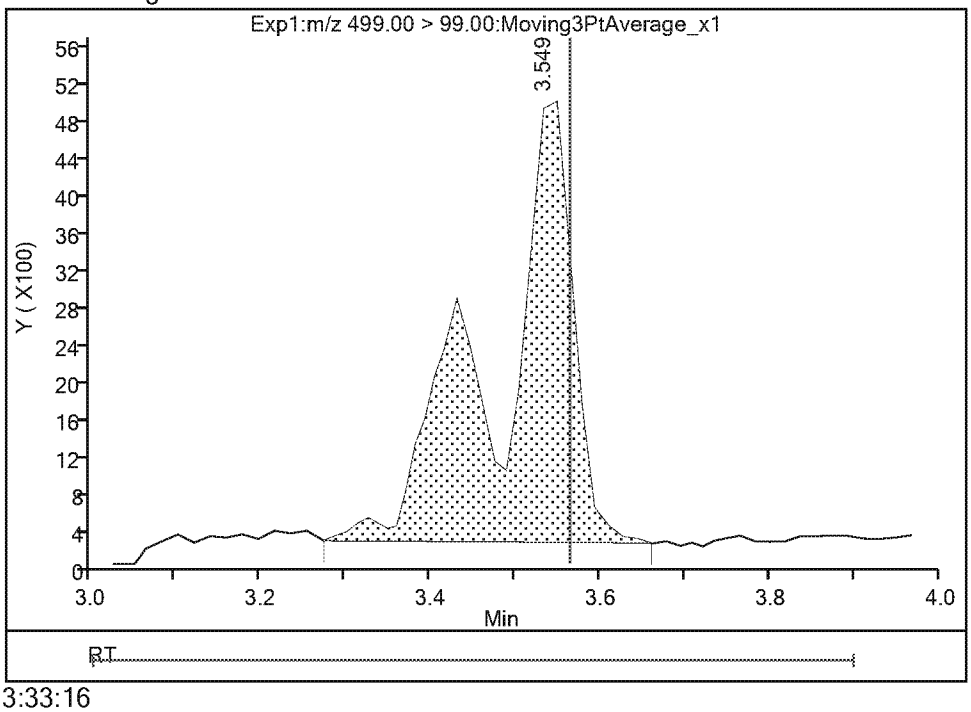
Processing Integration Results

RT: 3.55
Area: 32608
Amount: 0.150126
Amount Units: ng/ml



Manual Integration Results

RT: 3.55
Area: 29739
Amount: 0.146267
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:33:16
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

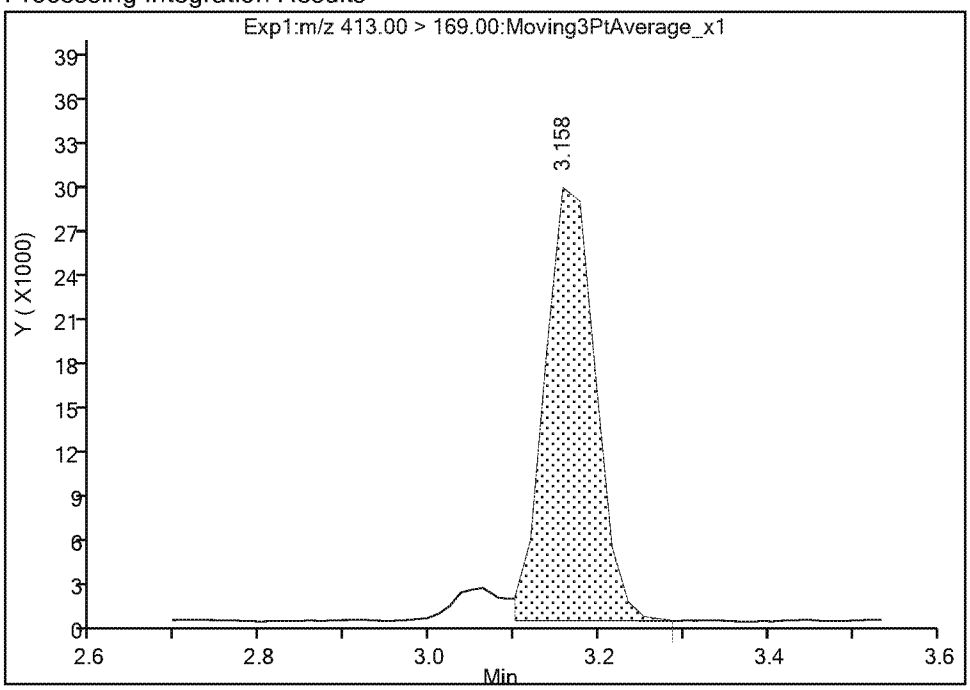
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_016.d				
Injection Date:	04-Apr-2019 20:55:06	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-A	Lab Sample ID:	320-48796-1		
Client ID:	C0AR0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	12
Injection Vol:	10.0 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

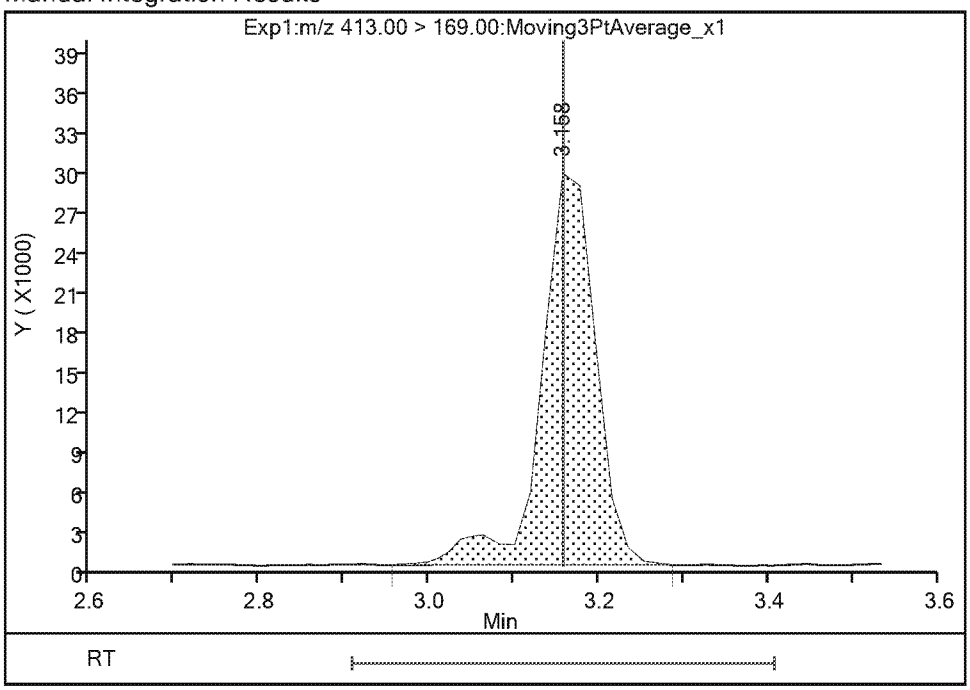
Processing Integration Results

RT: 3.16
Area: 118853
Amount: 0.165001
Amount Units: ng/ml



Manual Integration Results

RT: 3.16
Area: 127811
Amount: 0.168666
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:32:51
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

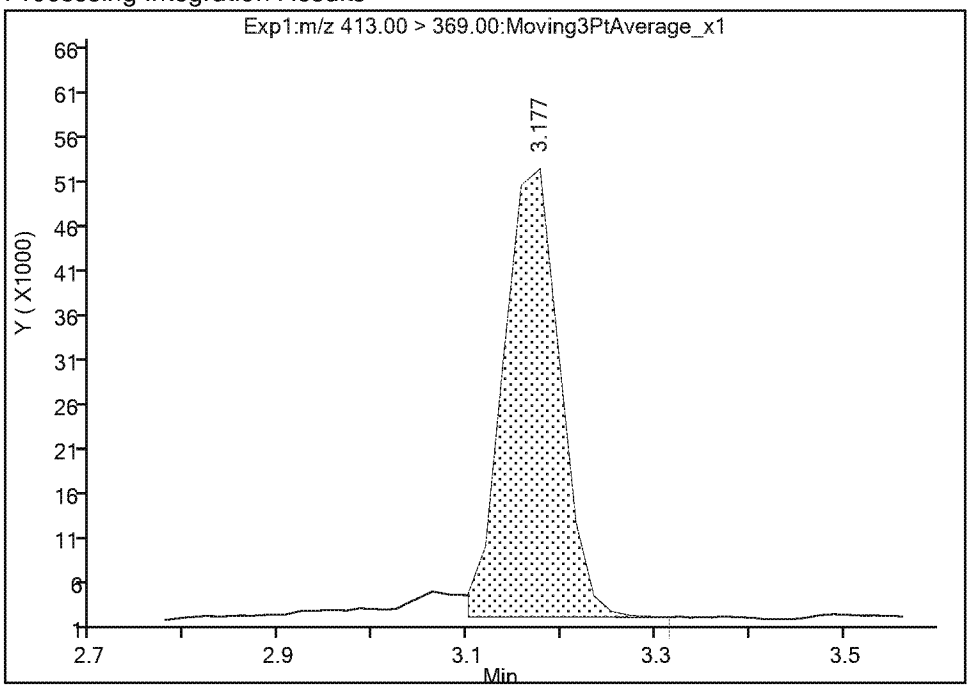
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_016.d				
Injection Date:	04-Apr-2019 20:55:06	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-A	Lab Sample ID:	320-48796-1		
Client ID:	C0AR0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	12
Injection Vol:	10.0 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

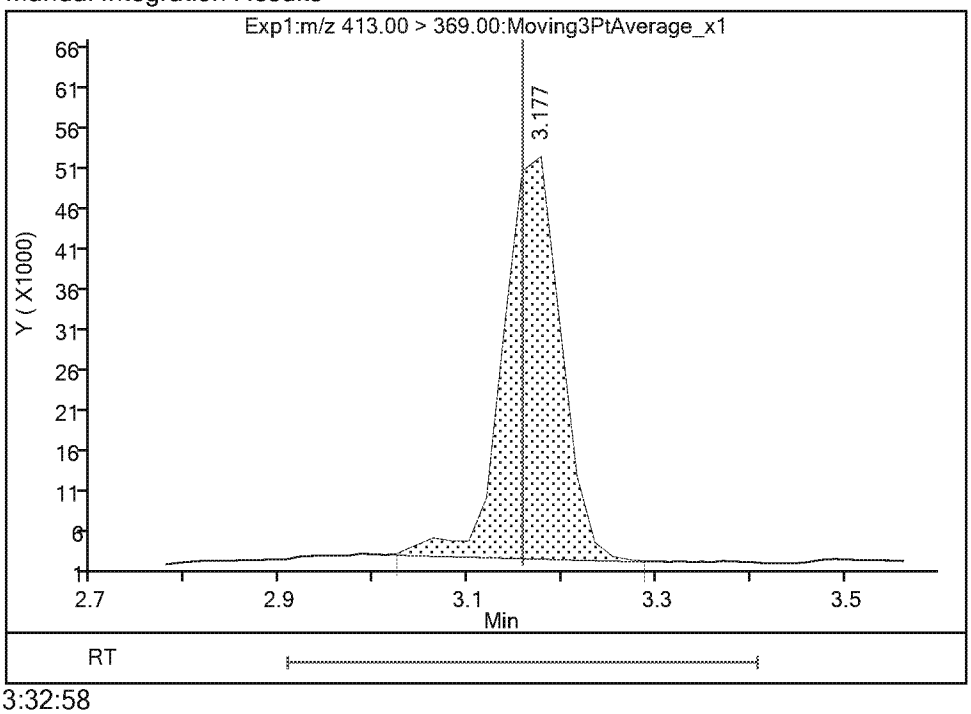
Processing Integration Results

RT: 3.18
Area: 206242
Amount: 0.165001
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 210823
Amount: 0.168666
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:32:58
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

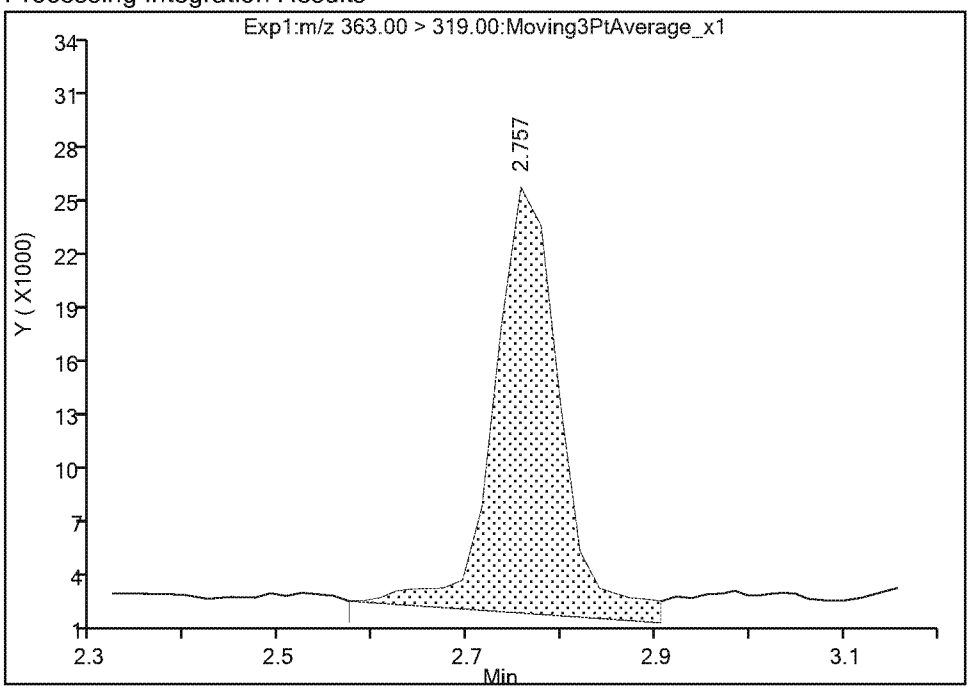
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_016.d				
Injection Date:	04-Apr-2019 20:55:06	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-A	Lab Sample ID:	320-48796-1		
Client ID:	C0AR0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	12
Injection Vol:	10.0 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

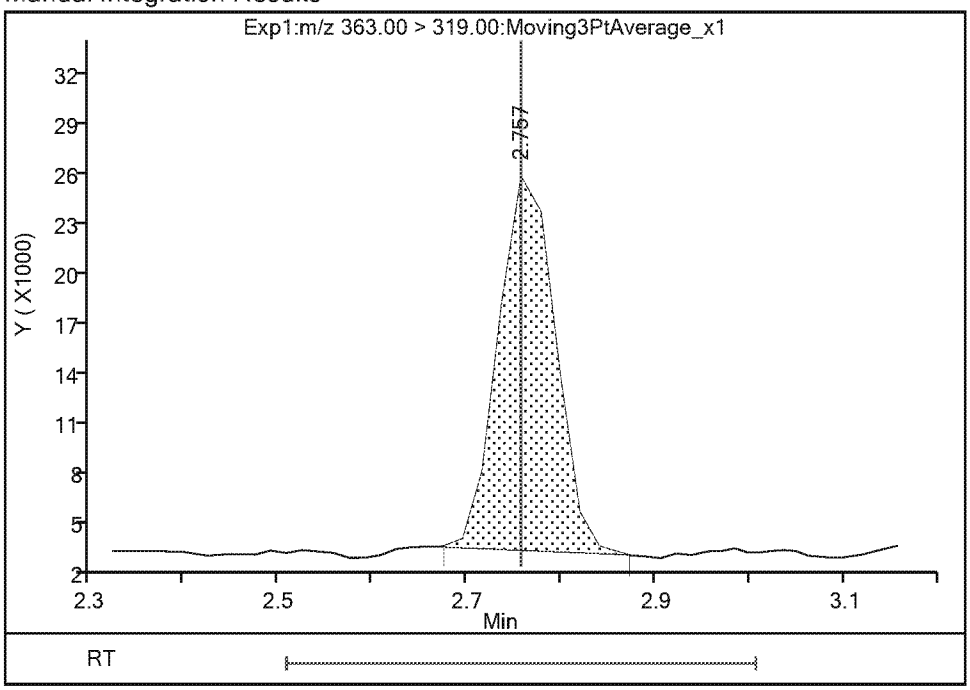
Processing Integration Results

RT: 2.76
Area: 113187
Amount: 0.086675
Amount Units: ng/ml



Manual Integration Results

RT: 2.76
Area: 93978
Amount: 0.071965
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:32:34
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AR1
Lab Sample ID: 320-48796-2
Matrix: Water
Lab File ID: 2019.04.04_537AA_019.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:10
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 284.5(mL)
Date Analyzed: 04/04/2019 21:23
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.: 286192
Units: ng/L

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

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_019.d
Lims ID: 320-48796-A-2-A
Client ID: C0AR1
Sample Type: Client
Inject. Date: 04-Apr-2019 21:23:32 ALS Bottle#: 10 Worklist Smp#: 15
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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

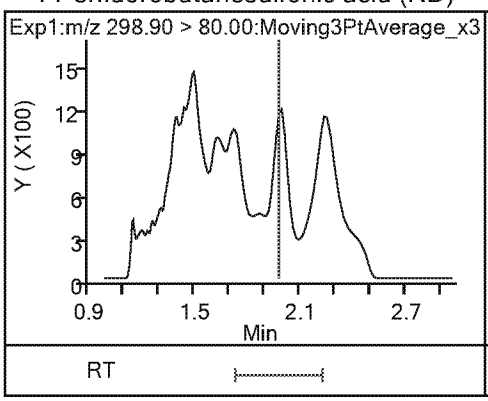
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:37:32
Ratio Calibration: None

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	2.322	0.026	1.000	3364212	2.45		7201	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.235	2.473	-0.238	0.904	1895	0.005941		1.1	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	161134	2.61		914	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.158	0.019		2948143	2.50		9285	
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.534	0.015		3033860	2.39		4522	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.892	0.019	1.000	1945806	2.66		7161	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		541179	2.50		2988	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.231	4.220	0.011	1.039	523728	2.37		367	

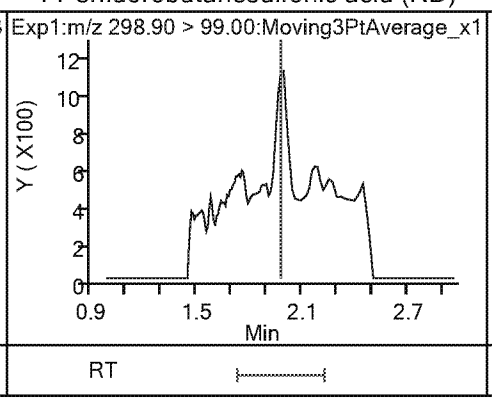
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_019.d				
Injection Date:	04-Apr-2019 21:23:32	Instrument ID:	A8_N		
Lims ID:	320-48796-A-2-A	Lab Sample ID:	320-48796-2		
Client ID:	C0AR1				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	10	Worklist Smp#:	15
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

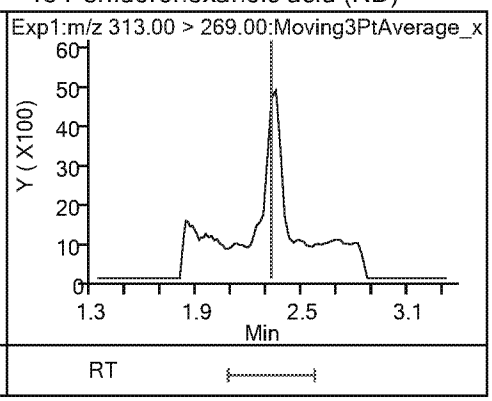
1 Perfluorobutanesulfonic acid (ND)



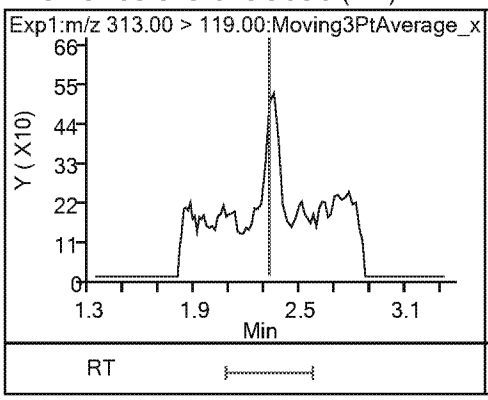
1 Perfluorobutanesulfonic acid (ND)



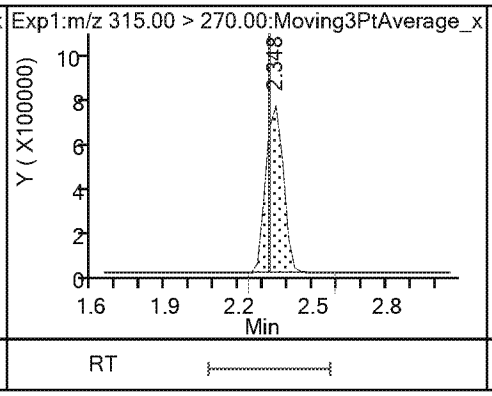
13 Perfluorohexanoic acid (ND)



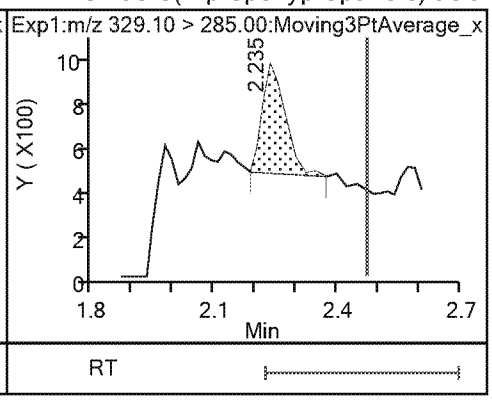
13 Perfluorohexanoic acid (ND)



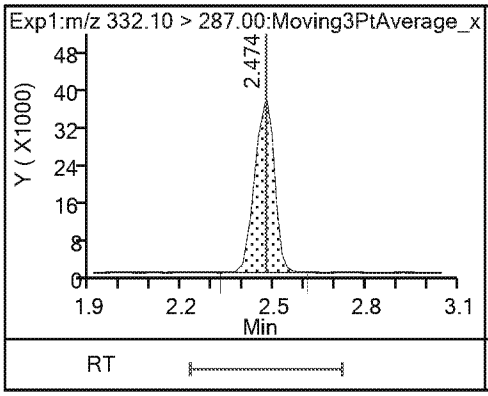
$ 2 13C2 PFHxA



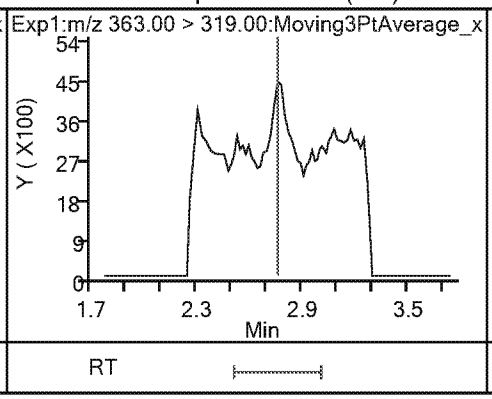
22 Perfluoro(2-propoxypropanoic) acid



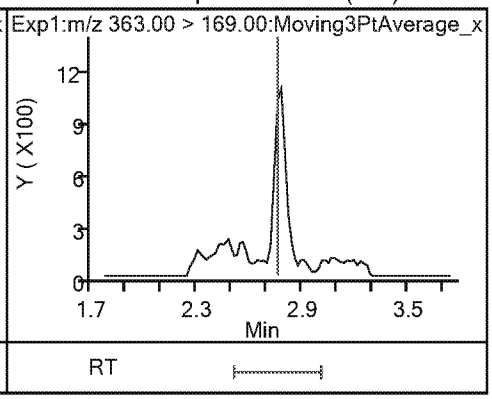
$ 25 13C3 HFPO-DA



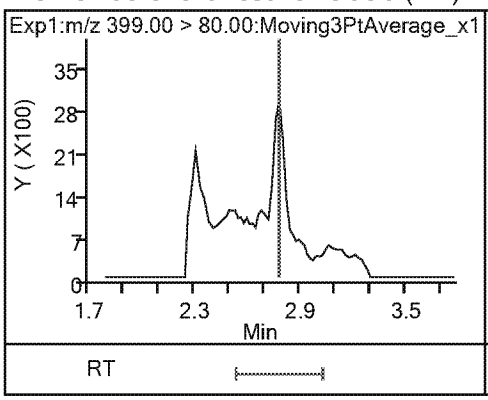
4 Perfluoroheptanoic acid (ND)



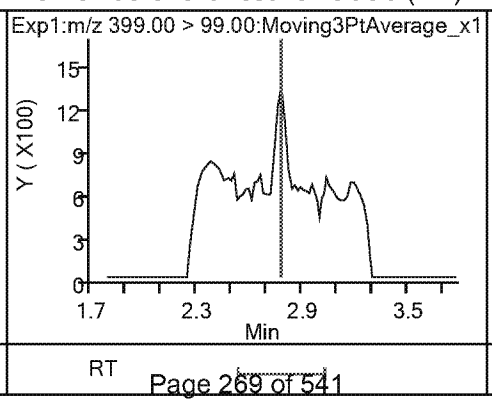
4 Perfluoroheptanoic acid (ND)



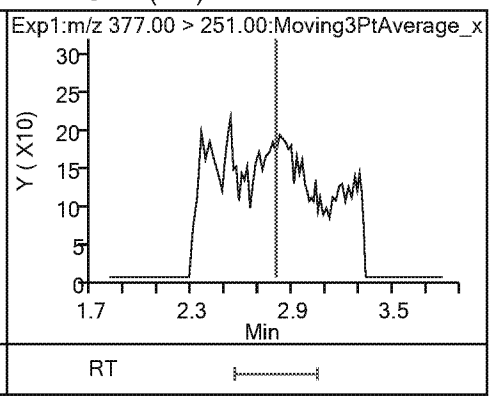
3 Perfluorohexanesulfonic acid (ND)



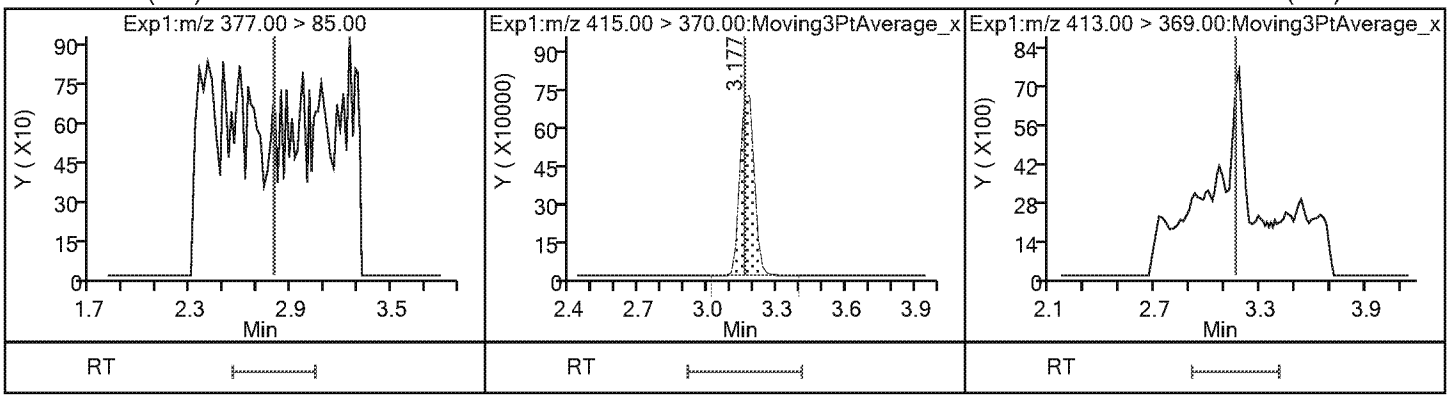
3 Perfluorohexanesulfonic acid (ND)



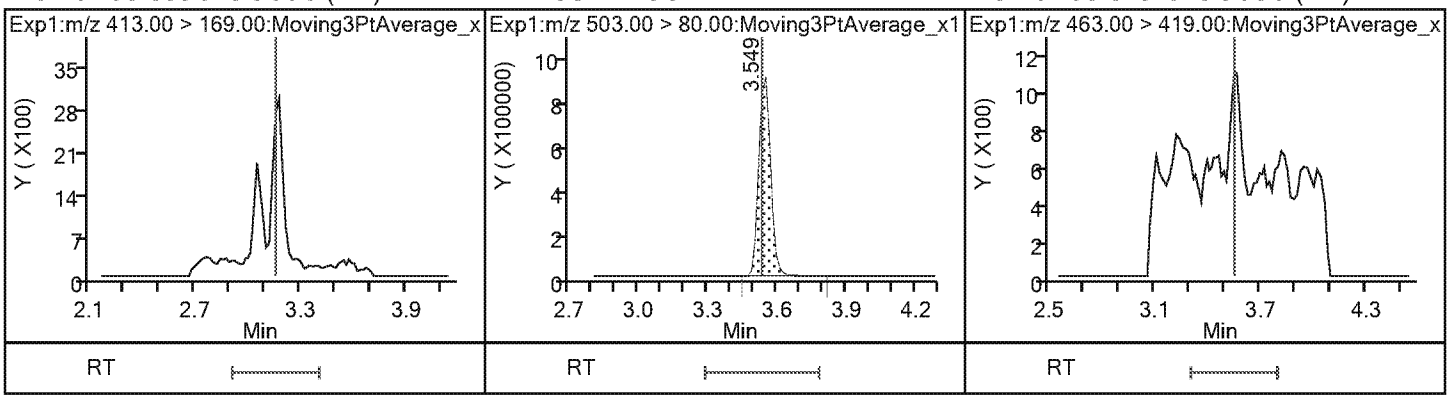
24 DONA (ND)



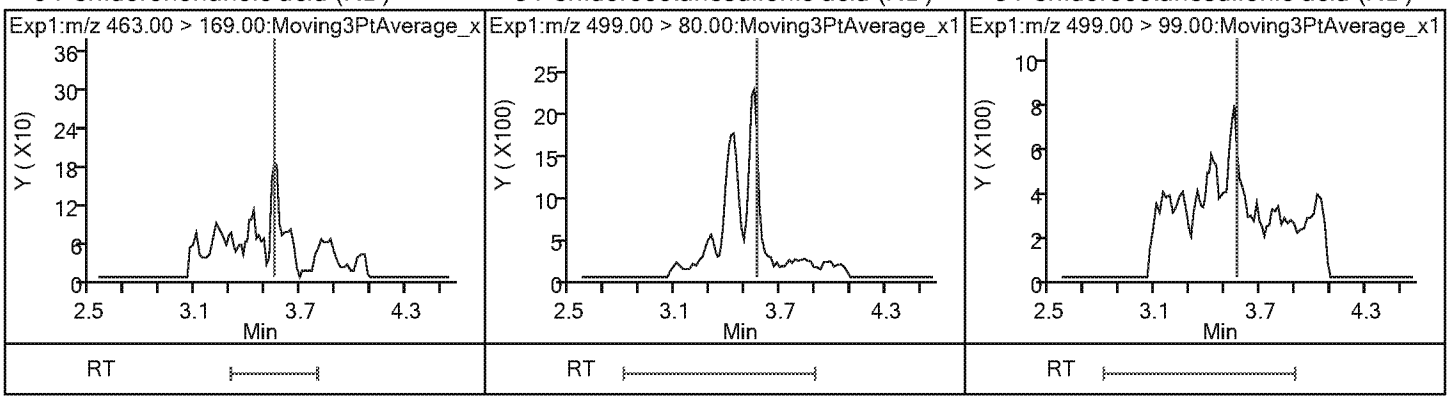
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid (ND)



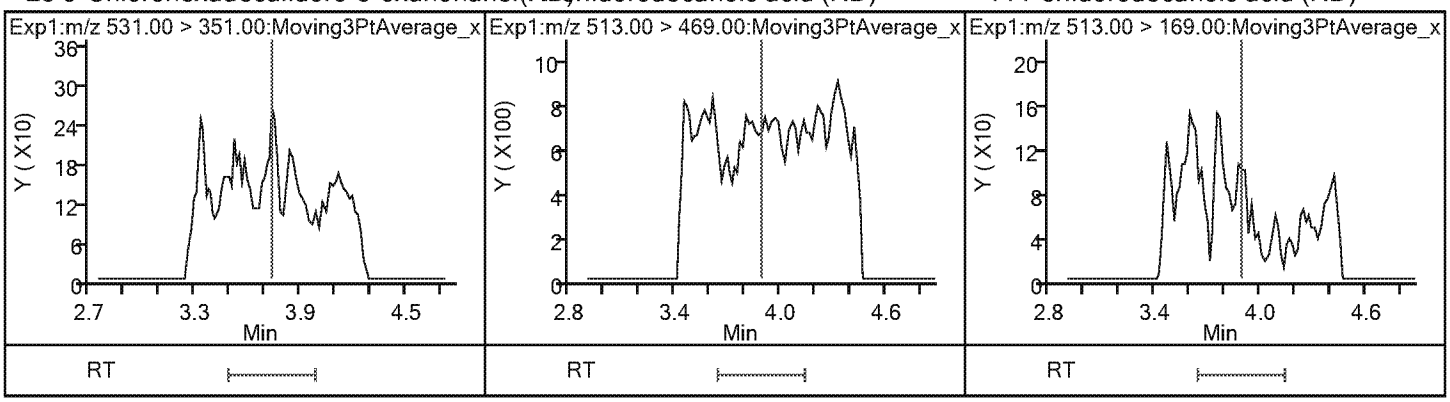
6 Perfluorooctanoic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



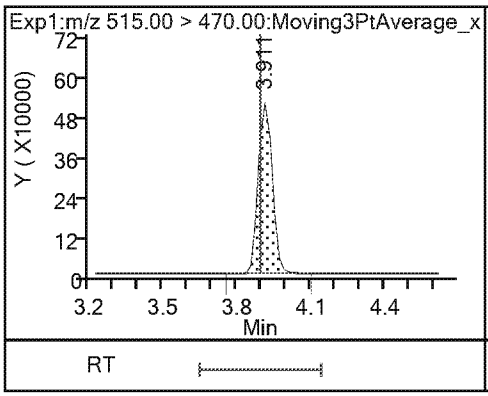
9 Perfluorononanoic acid (ND) 8 Perfluorooctanesulfonic acid (ND) 8 Perfluorooctanesulfonic acid (ND)



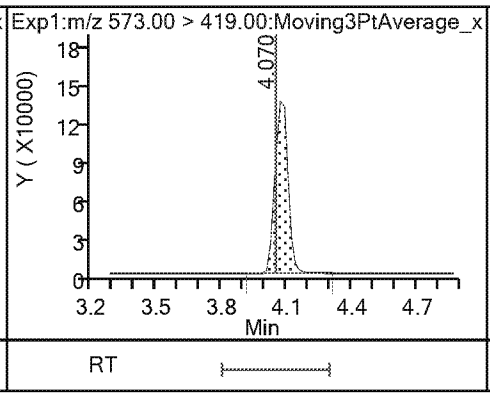
23 9-Chlorohexadecafluoro-3-oxanonane1(ND) 14 Perfluorodecanoic acid (ND) 14 Perfluorodecanoic acid (ND)



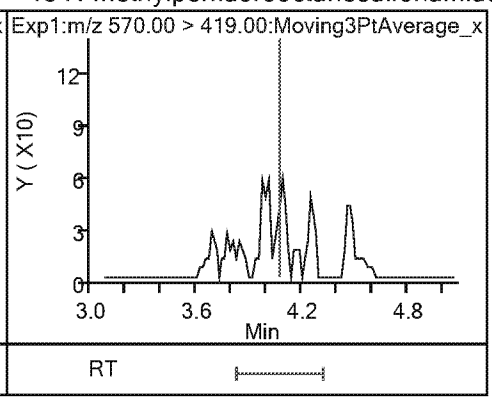
$ 10 13C2 PFDA



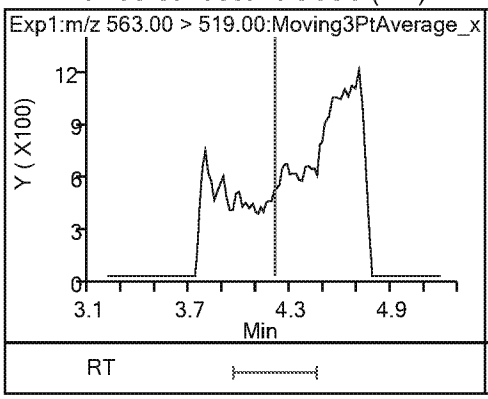
* 12 d3-NMeFOSAA



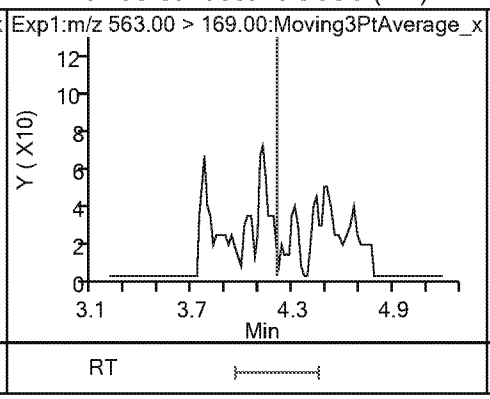
15 N-methylperfluorooctanesulfonamido (ND)



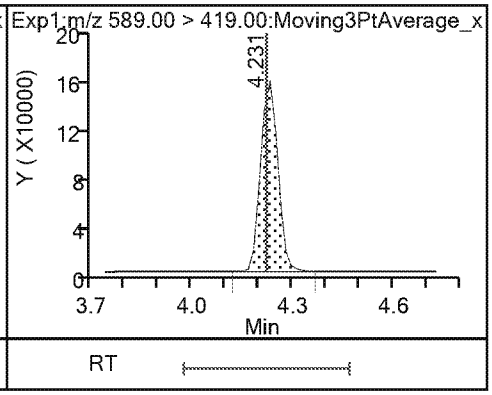
17 Perfluoroundecanoic acid (ND)



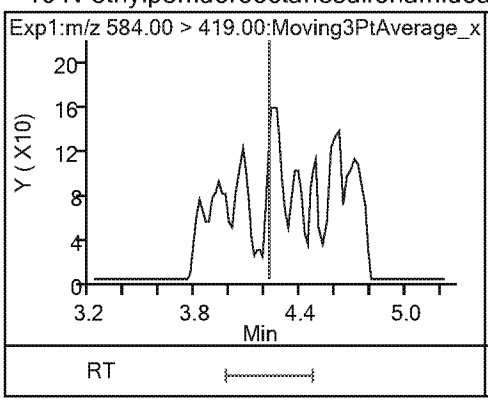
17 Perfluoroundecanoic acid (ND)



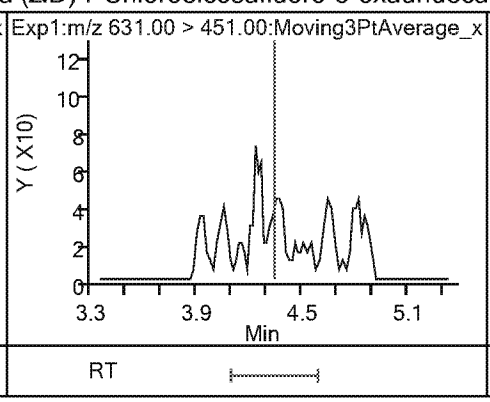
$ 11 d5-NEtFOSAA



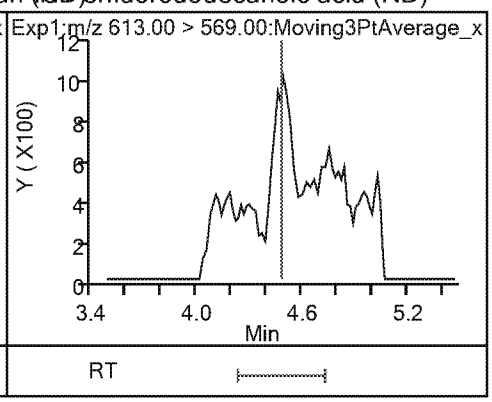
16 N-ethylperfluorooctanesulfonamidoa (ND)



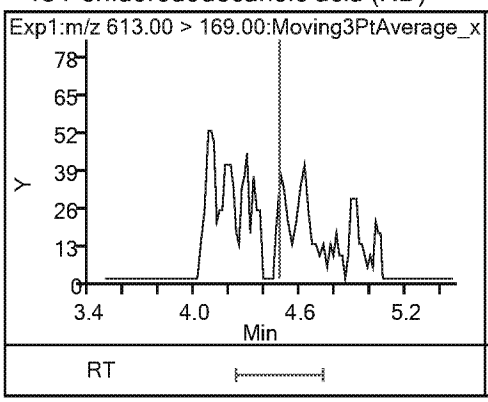
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



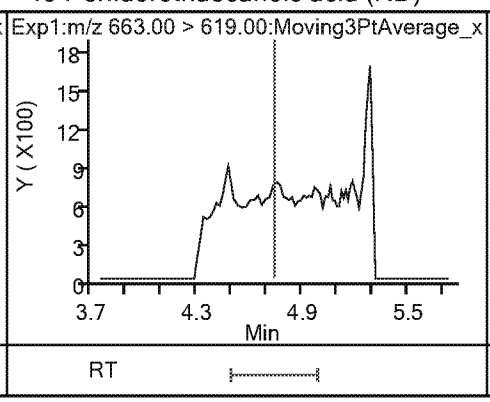
18 Perfluorododecanoic acid (ND)



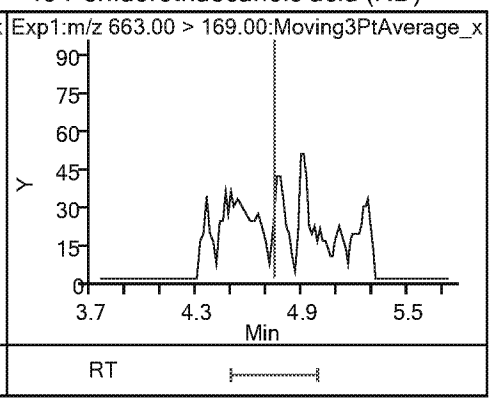
18 Perfluorododecanoic acid (ND)



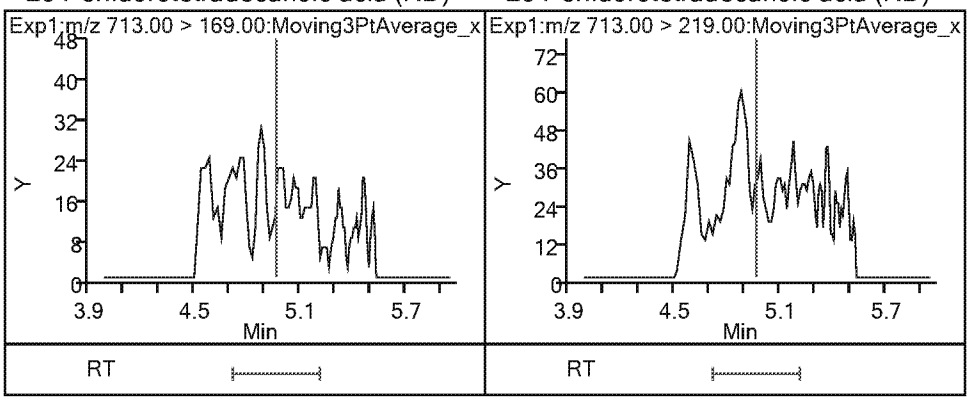
19 Perfluorotridecanoic acid (ND)



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_019.d
Lims ID: 320-48796-A-2-A
Client ID: C0AR1
Sample Type: Client
Inject. Date: 04-Apr-2019 21:23:32 ALS Bottle#: 10 Worklist Smp#: 15
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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 13:37:32

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.45	97.89
$ 25 13C3 HFPO-DA	2.50	2.61	104.39
$ 10 13C2 PFDA	2.50	2.66	106.28
$ 11 d5-NEtFOSAA	2.50	2.37	94.69

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AR2
Lab Sample ID: 320-48796-3
Matrix: Water
Lab File ID: 2019.04.04_537AA_020.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:15
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 285.4(mL)
Date Analyzed: 04/04/2019 21:33
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.: 286192
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	50		1.8	0.83
335-67-1	Perfluorooctanoic acid	72		5.3	2.4
375-95-1	Perfluorononanoic acid	9.1		1.8	0.41
355-46-4	Perfluorohexanesulfonic acid	3.8		1.8	0.56
375-85-9	Perfluoroheptanoic acid	24		2.6	1.1
375-73-5	Perfluorobutanesulfonic acid	55		1.8	0.70

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	91		70-130
STL00996	13C2 PFDA	107		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_020.d
Lims ID: 320-48796-A-3-A
Client ID: C0AR2
Sample Type: Client
Inject. Date: 04-Apr-2019 21:33:00 ALS Bottle#: 11 Worklist Smp#: 16
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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 13:38:44
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	1.976	0.016	1.000	2375794	1.57	Target=1.41	1460	
298.90 > 99.00	1.992	1.976	0.016	1.000	1580951		1.50(0.00-0.00)	496	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.322	0.025	0.739	1268872	0.9752	Target=10.46	92.6	
313.00 > 119.00	2.347	2.322	0.025	0.739	115350		11.00(0.00-0.00)	130	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.322	0.025	1.000	3086611	2.26		5631	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	150962	2.47		463	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.778	2.757	0.021	1.000	853236	0.6885	Target=2.41	46.9	M
363.00 > 169.00	2.778	2.757	0.021	1.000	350271		2.44(0.00-0.00)	254	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.778	0.0	1.000	200651	0.1090	Target=2.91	60.1	M
399.00 > 99.00	2.778	2.778	0.0	1.000	63402		3.16(0.00-0.00)	18.5	M
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.158	0.019		2923092	2.50		7431	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.177	3.158	0.019	1.000	2449923	2.07	Target=1.70	204	M
413.00 > 169.00	3.177	3.158	0.019	1.000	1444136		1.70(0.00-0.00)	1437	M
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.534	0.015		3070827	2.39		3296	
9 Perfluorononanoic acid									
463.00 > 419.00	3.563	3.549	0.014	1.000	223786	0.2590	Target=3.78	56.1	
463.00 > 169.00	3.563	3.549	0.014	1.000	57825		3.87(0.00-0.00)	97.5	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.549	3.564	-0.015	1.000	1950305	1.44	Target=4.63	1197	
499.00 > 99.00	3.549	3.564	-0.015	1.000	328240		5.94(0.00-0.00)	179	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.911	3.892	0.019	1.000	38948	0.0569	Target=4.93	10.1	
513.00 > 169.00	3.911	3.892	0.019	1.000	6961		5.60(0.00-0.00)	19.7	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.892	0.019	1.000	1934366	2.66		9413	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		511842	2.50		2035	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.236	4.220	0.016	1.041	476559	2.28		303	

QC Flag Legend

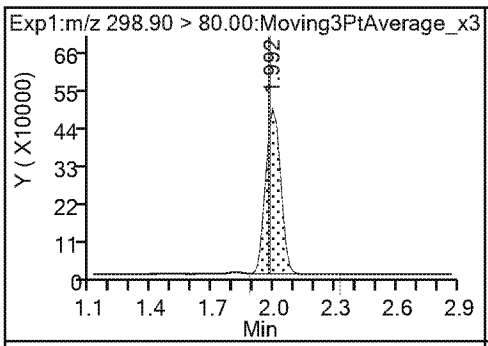
Review Flags

M - Manually Integrated

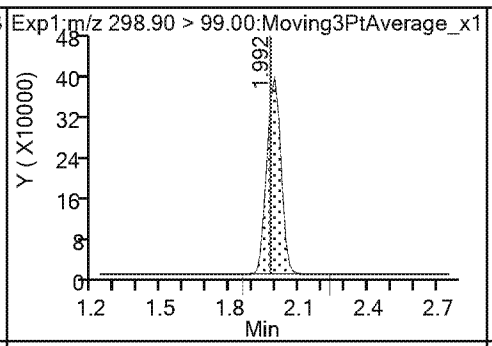
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_020.d				
Injection Date:	04-Apr-2019 21:33:00	Instrument ID:	A8_N		
Lims ID:	320-48796-A-3-A	Lab Sample ID:	320-48796-3		
Client ID:	C0AR2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	16
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

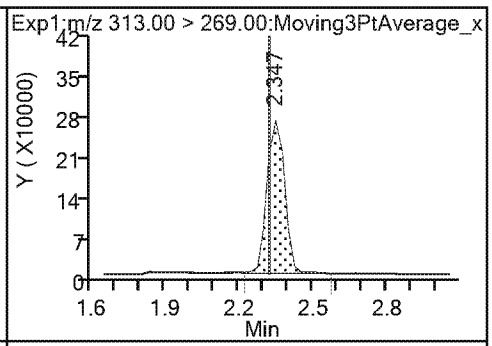
1 Perfluorobutanesulfonic acid



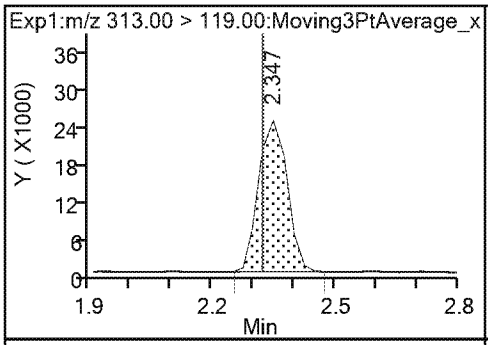
1 Perfluorobutanesulfonic acid



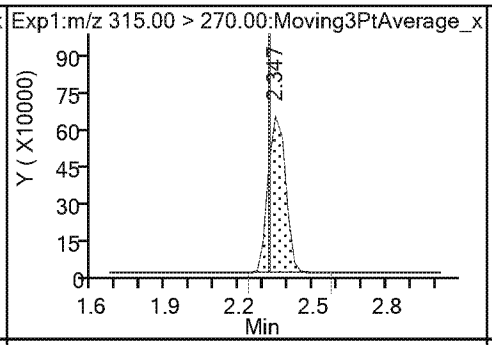
13 Perfluorohexanoic acid



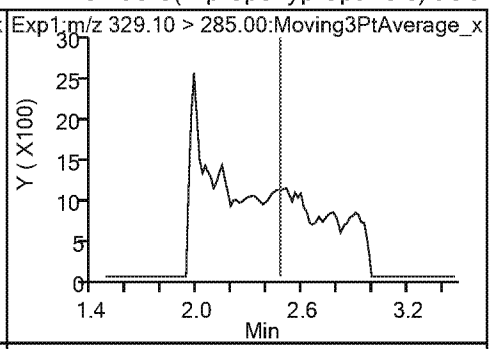
13 Perfluorohexanoic acid



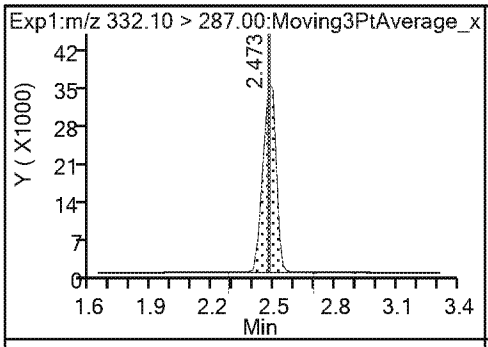
$ 2 13C2 PFHxA



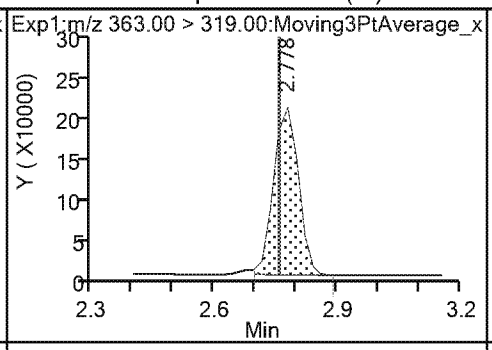
22 Perfluoro(2-propoxypropanoic) acid (ND)



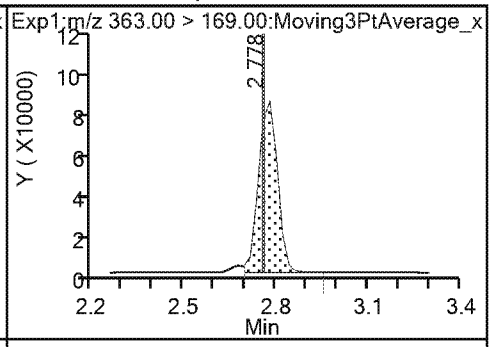
$ 25 13C3 HFPO-DA



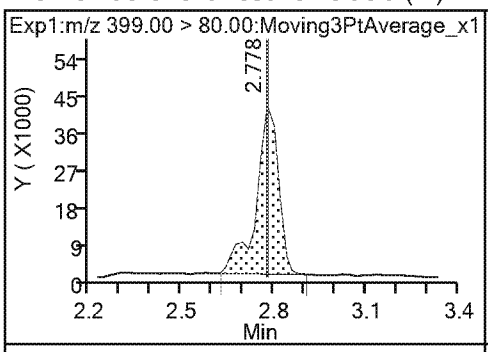
4 Perfluoroheptanoic acid (M)



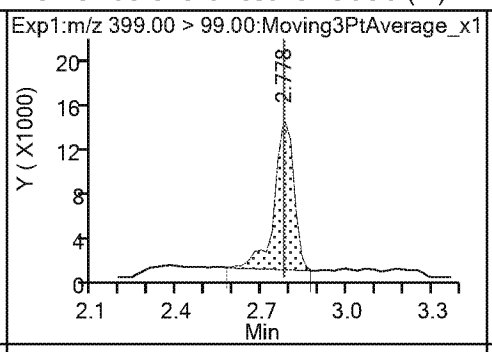
4 Perfluoroheptanoic acid



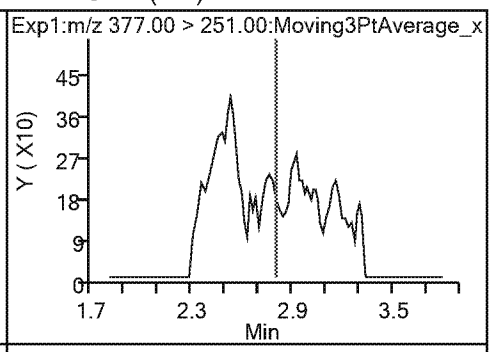
3 Perfluorohexanesulfonic acid (M)



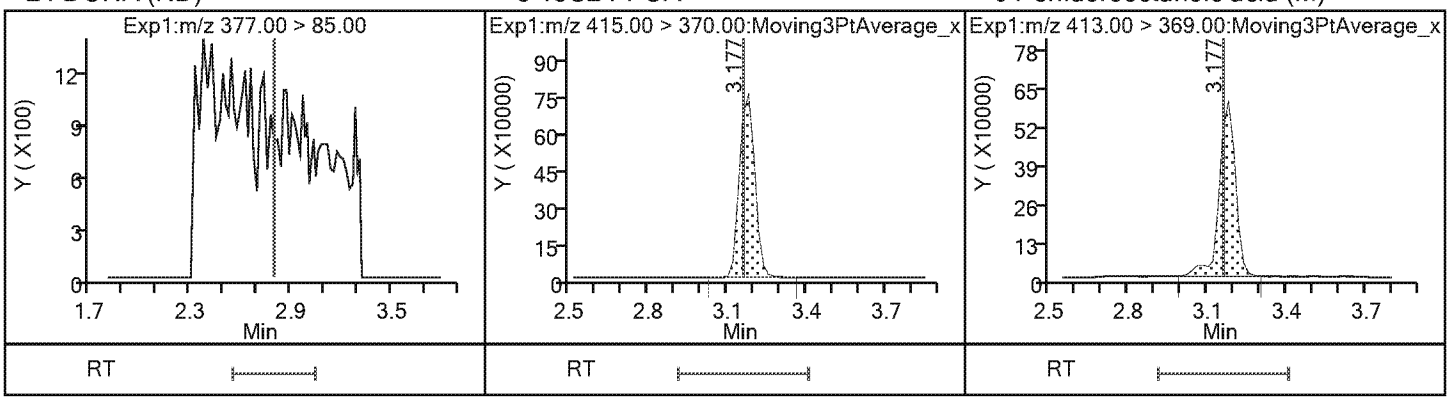
3 Perfluorohexanesulfonic acid (M)



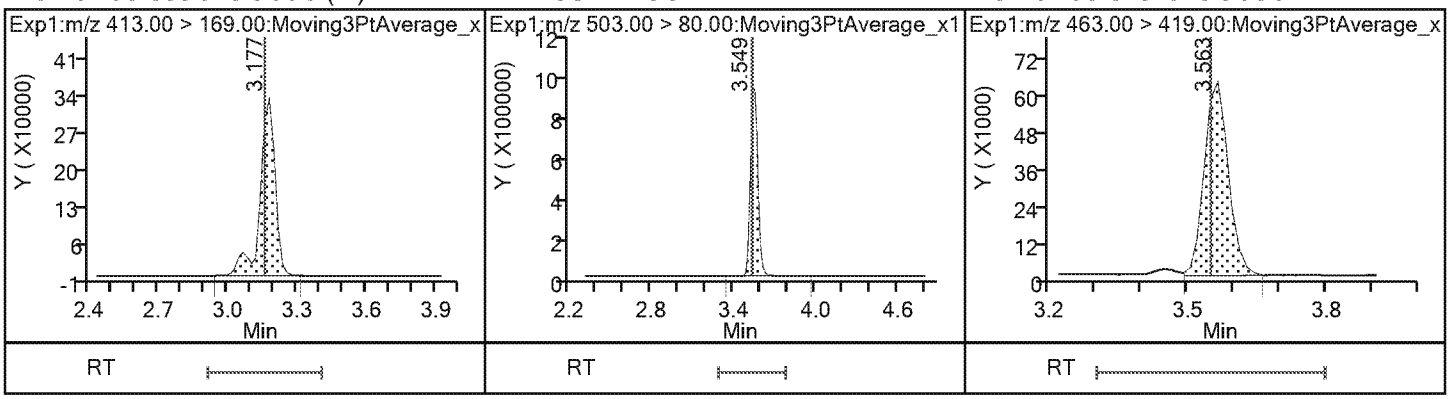
24 DONA (ND)



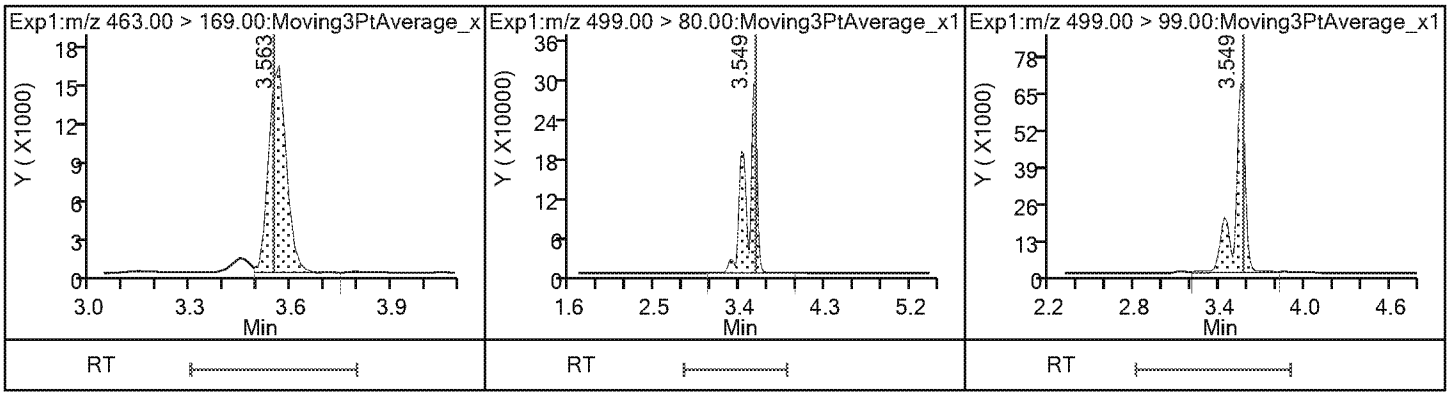
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid (M)



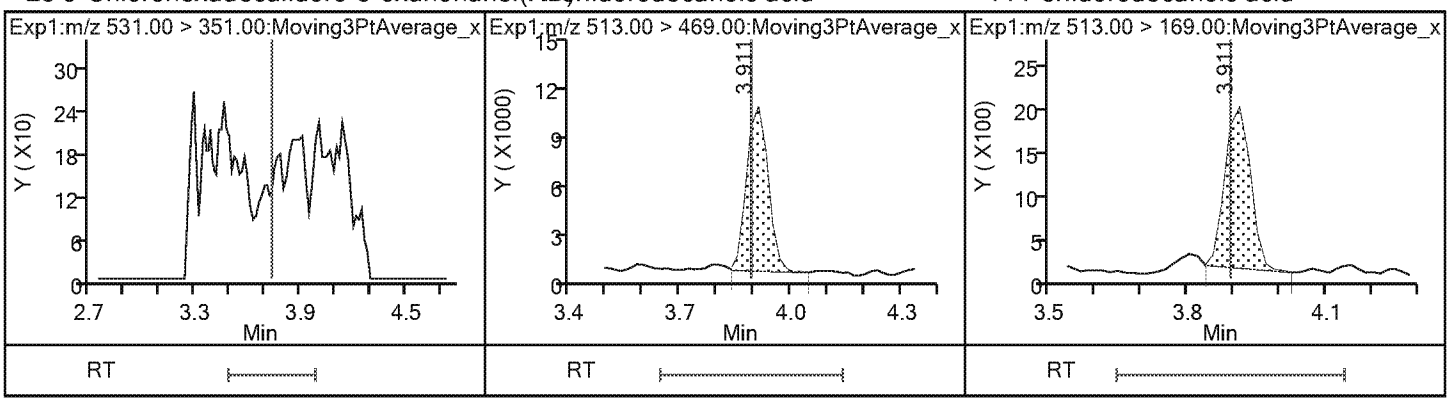
6 Perfluorooctanoic acid (M) * 7 13C4 PFOS 9 Perfluorononanoic acid



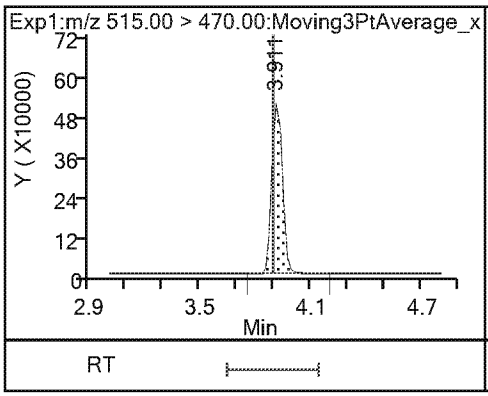
9 Perfluorononanoic acid 8 Perfluorooctanesulfonic acid 8 Perfluorooctanesulfonic acid



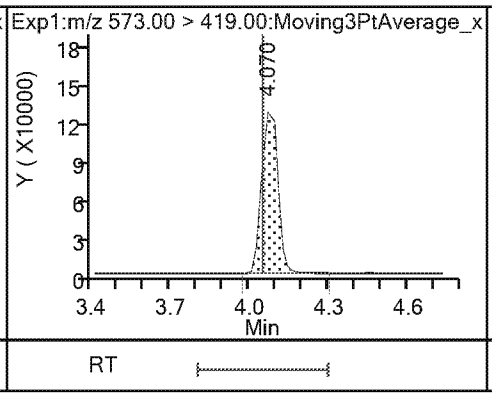
23 9-Chlorohexadecafluoro-3-oxanonane1(ND) 14 Perfluorodecanoic acid 14 Perfluorodecanoic acid



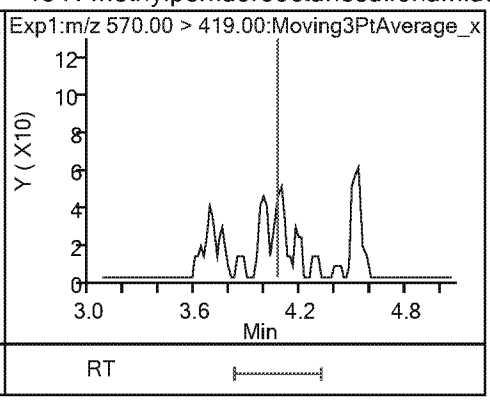
$ 10 13C2 PFDA



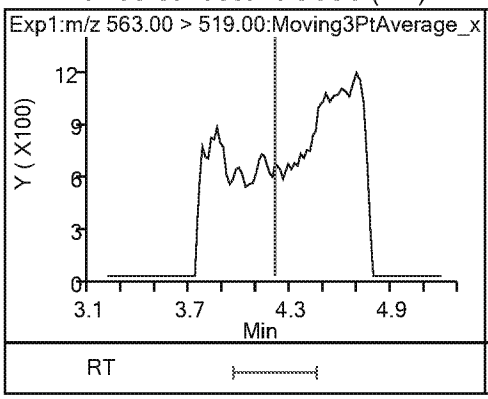
* 12 d3-NMeFOSAA



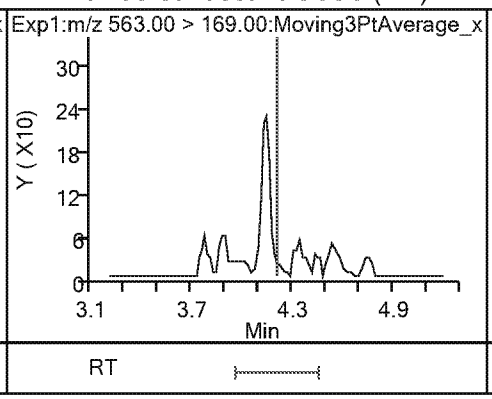
15 N-methylperfluorooctanesulfonamido (ND)



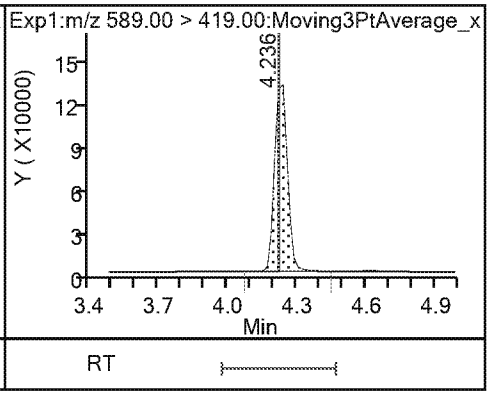
17 Perfluoroundecanoic acid (ND)



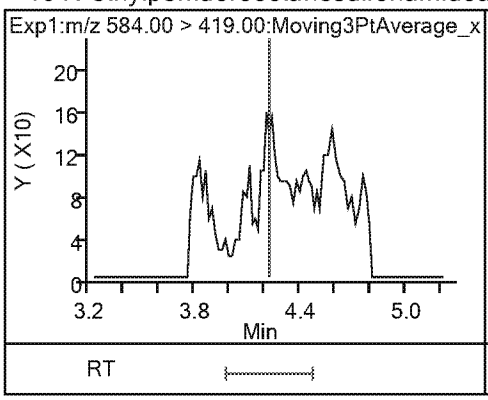
17 Perfluoroundecanoic acid (ND)



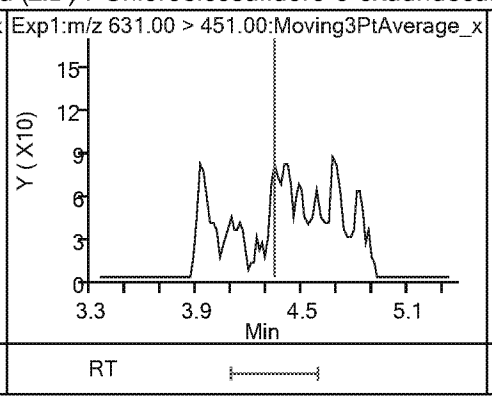
$ 11 d5-NEtFOSAA



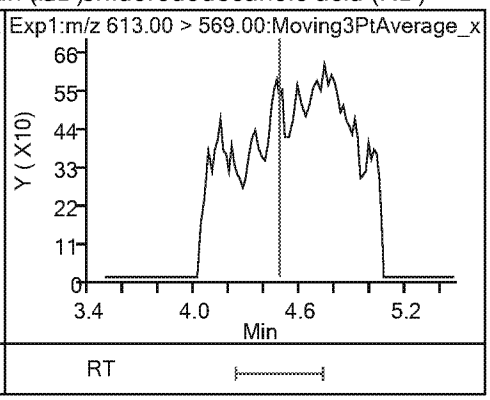
16 N-ethylperfluorooctanesulfonamidoa (ND)



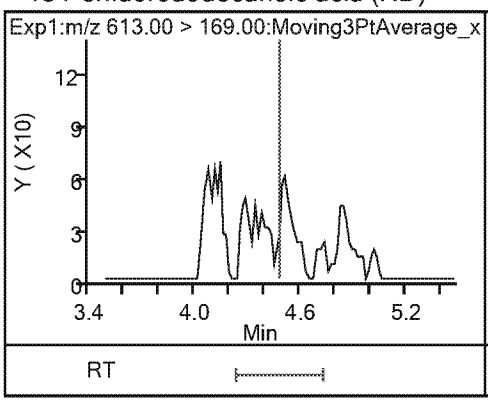
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



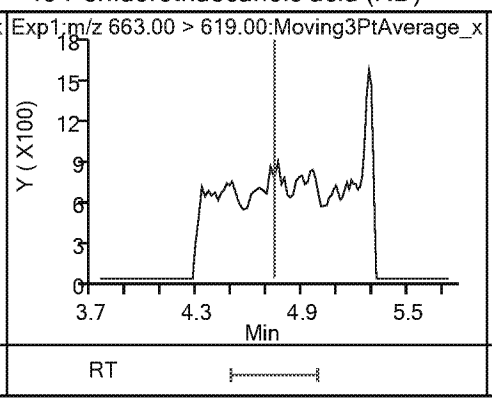
18 Perfluorododecanoic acid (ND)



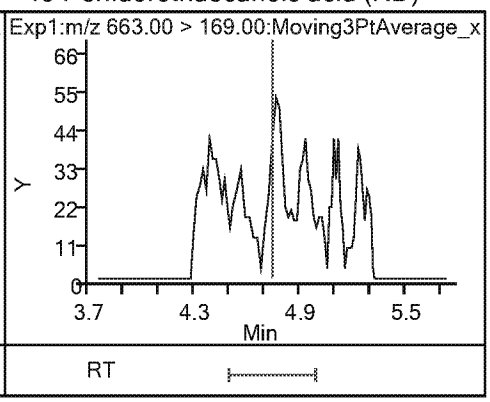
18 Perfluorododecanoic acid (ND)



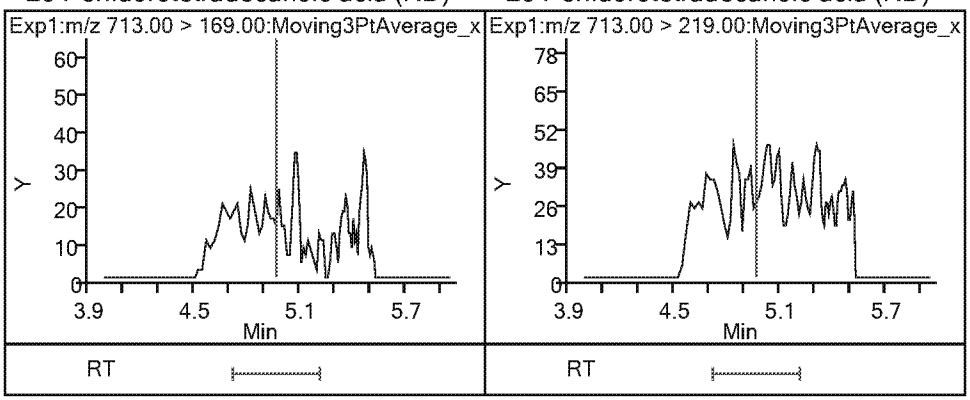
19 Perfluorotridecanoic acid (ND)



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_020.d
Lims ID: 320-48796-A-3-A
Client ID: C0AR2
Sample Type: Client
Inject. Date: 04-Apr-2019 21:33:00 ALS Bottle#: 11 Worklist Smp#: 16
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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 13:38:44

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.26	90.59
$ 25 13C3 HFPO-DA	2.50	2.47	98.64
$ 10 13C2 PFDA	2.50	2.66	106.56
$ 11 d5-NEtFOSAA	2.50	2.28	91.10

Eurofins TestAmerica, Sacramento

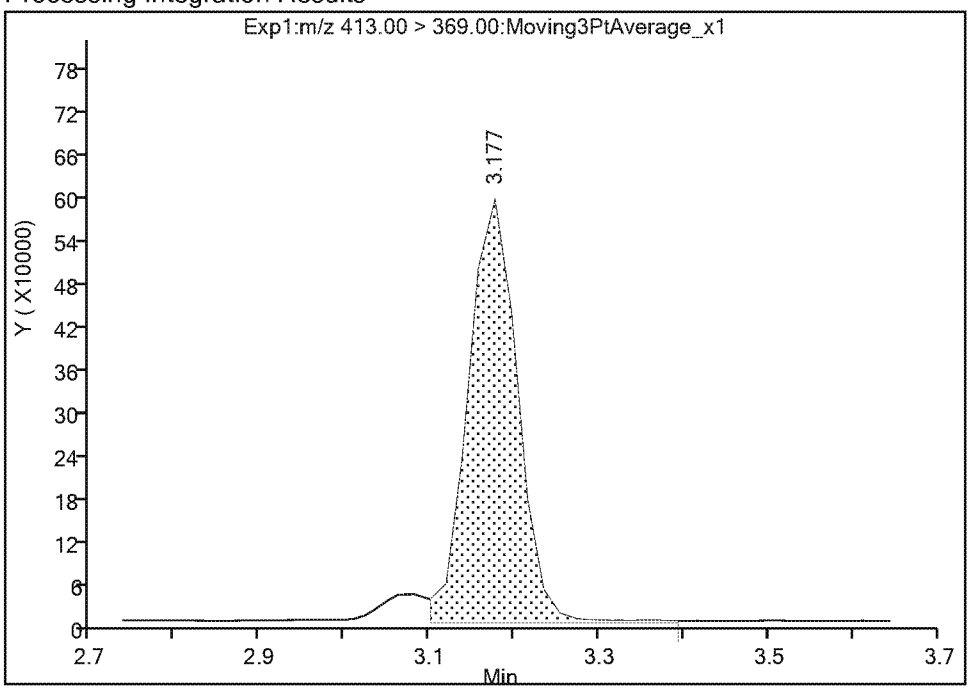
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_020.d				
Injection Date:	04-Apr-2019 21:33:00	Instrument ID:	A8_N		
Lims ID:	320-48796-A-3-A	Lab Sample ID:	320-48796-3		
Client ID:	C0AR2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	16
Injection Vol:	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

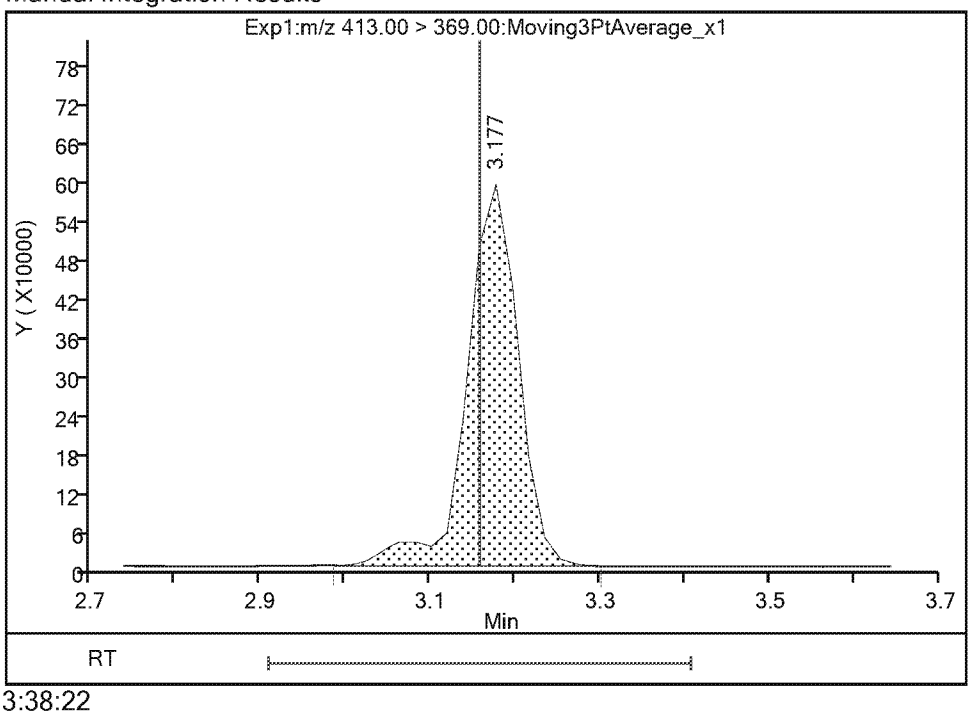
Processing Integration Results

RT: 3.18
Area: 2364200
Amount: 1.993220
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 2449923
Amount: 2.065491
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:38:22
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

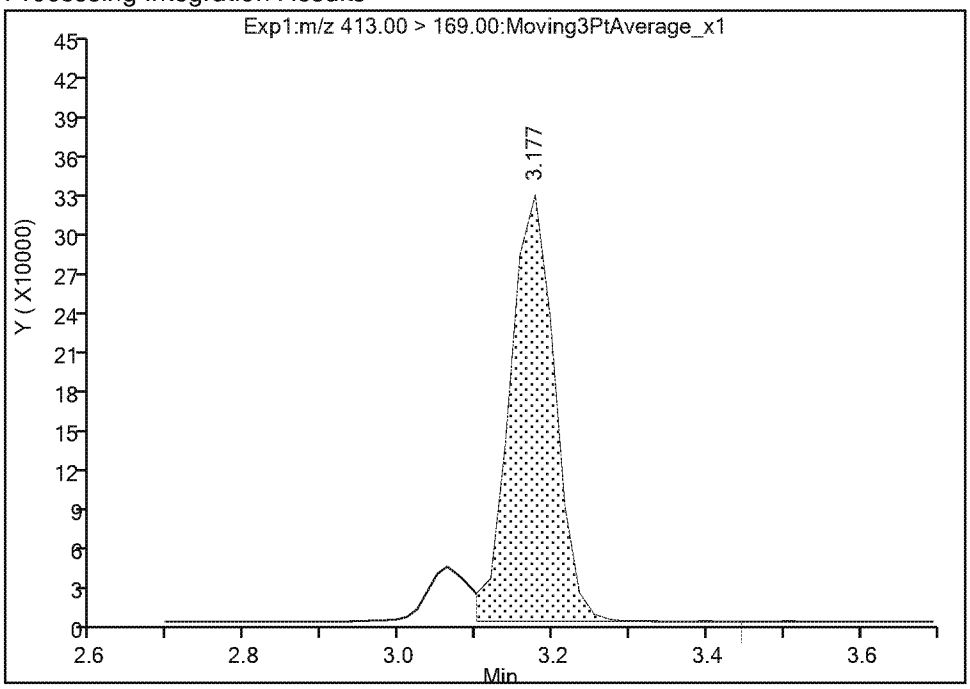
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_020.d				
Injection Date:	04-Apr-2019 21:33:00	Instrument ID:	A8_N		
Lims ID:	320-48796-A-3-A	Lab Sample ID:	320-48796-3		
Client ID:	C0AR2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	16
Injection Vol:	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

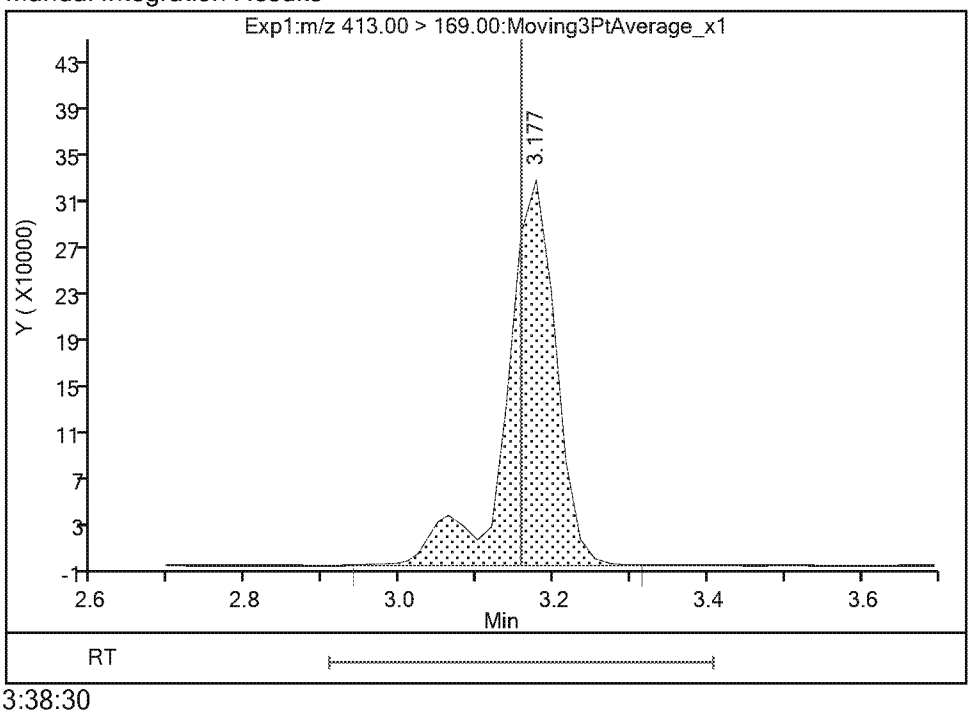
Processing Integration Results

RT: 3.18
Area: 1291798
Amount: 1.993220
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 1444136
Amount: 2.065491
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:38:30
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

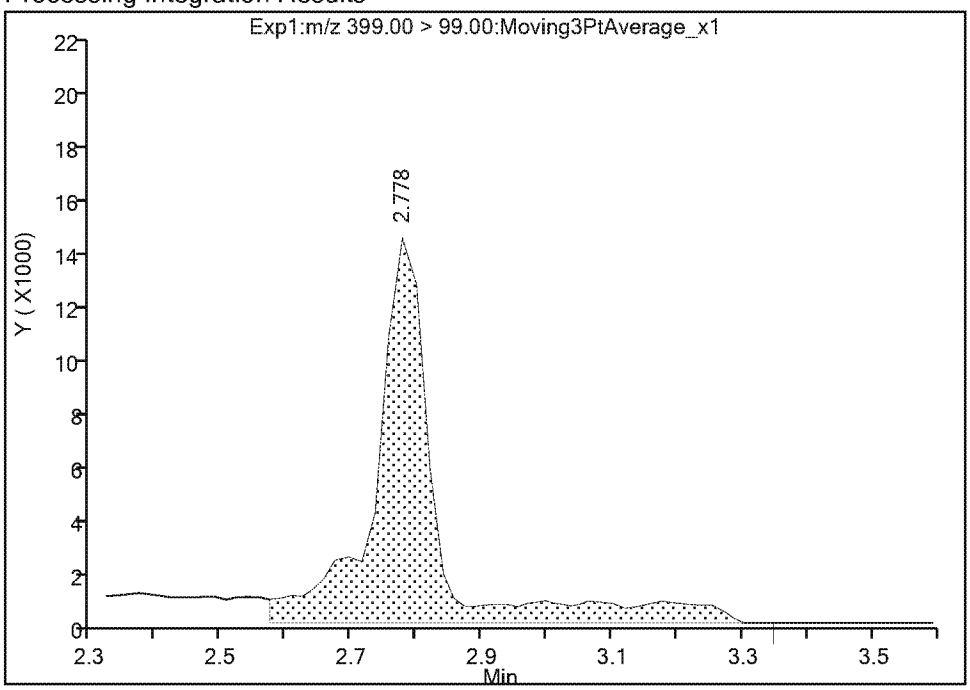
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_020.d				
Injection Date:	04-Apr-2019 21:33:00	Instrument ID:	A8_N		
Lims ID:	320-48796-A-3-A	Lab Sample ID:	320-48796-3		
Client ID:	C0AR2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	16
Injection Vol:	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

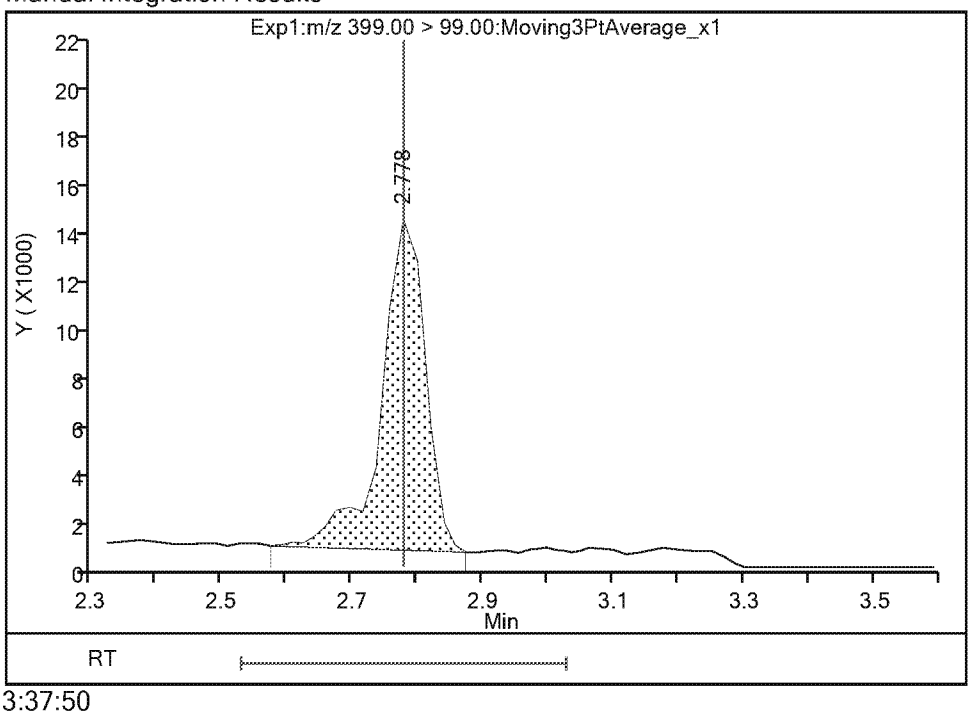
Processing Integration Results

RT: 2.78
Area: 92799
Amount: 0.125690
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 63402
Amount: 0.108982
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:37:50
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

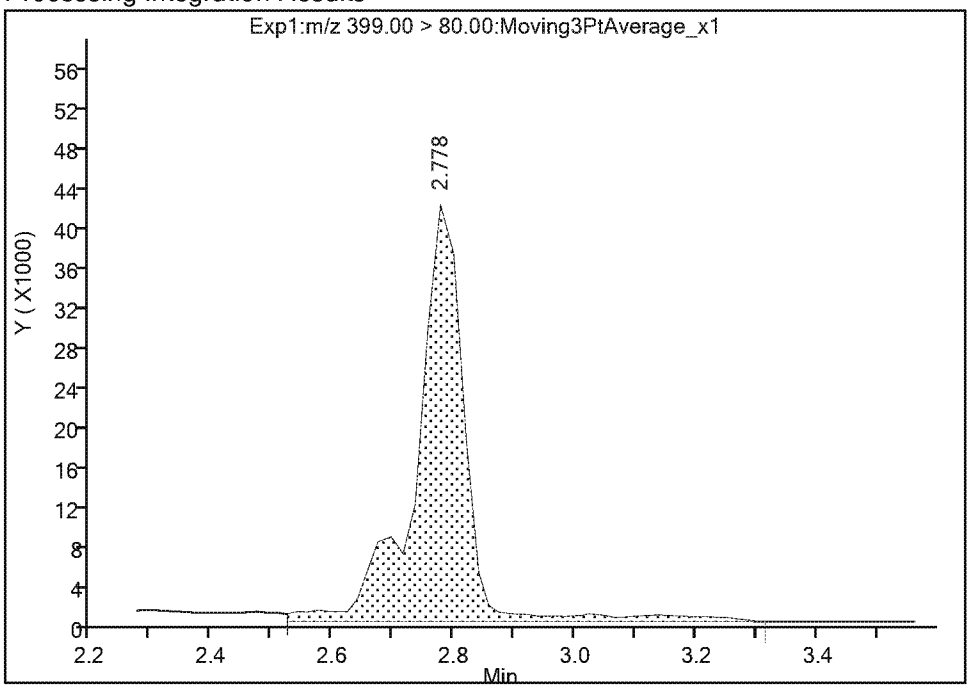
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_020.d				
Injection Date:	04-Apr-2019 21:33:00	Instrument ID:	A8_N		
Lims ID:	320-48796-A-3-A	Lab Sample ID:	320-48796-3		
Client ID:	C0AR2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	16
Injection Vol:	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

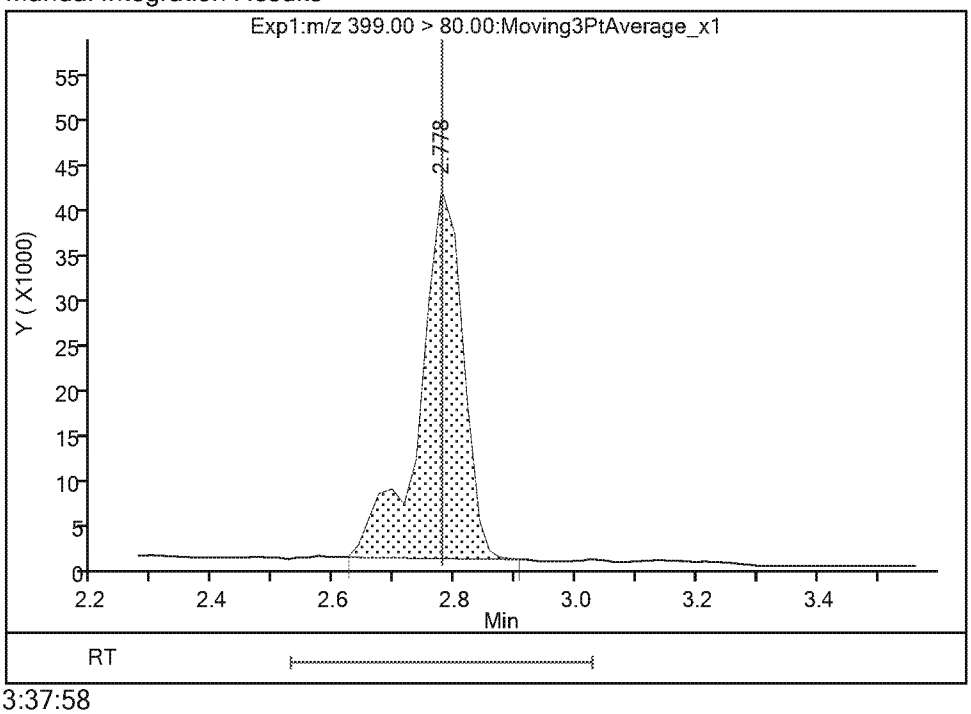
Processing Integration Results

RT: 2.78
Area: 231414
Amount: 0.125690
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 200651
Amount: 0.108982
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:37:58
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

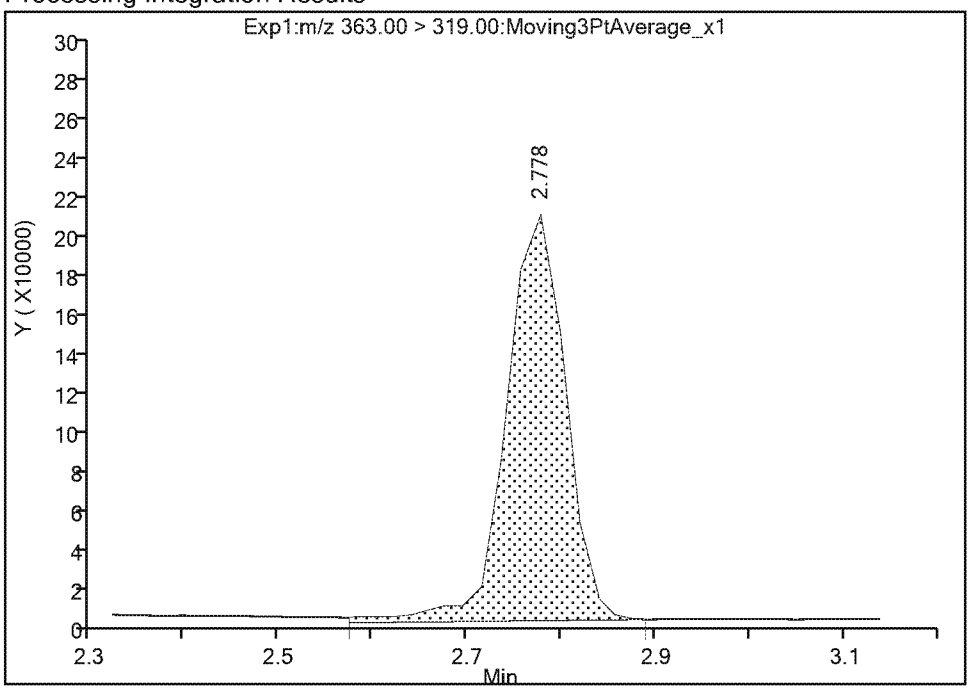
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_020.d				
Injection Date:	04-Apr-2019 21:33:00	Instrument ID:	A8_N		
Lims ID:	320-48796-A-3-A	Lab Sample ID:	320-48796-3		
Client ID:	C0AR2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	11	Worklist Smp#:	16
Injection Vol:	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

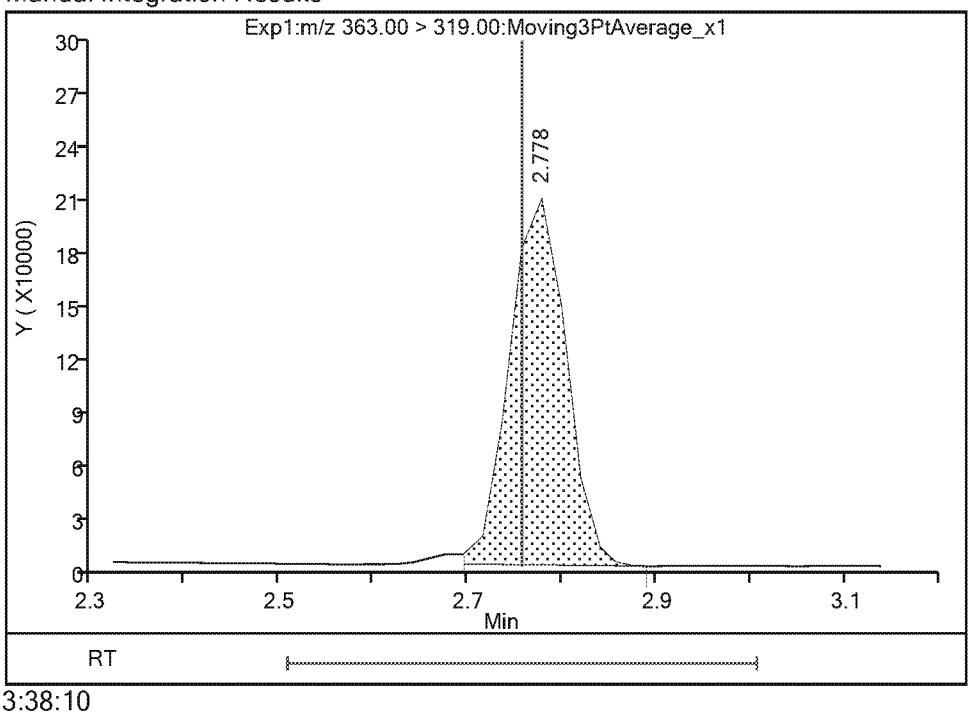
Processing Integration Results

RT: 2.78
Area: 899086
Amount: 0.725534
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 853236
Amount: 0.688534
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:38:10
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AR8
Lab Sample ID: 320-48796-4
Matrix: Water
Lab File ID: 2019.04.04_537AA_021.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 09:30
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 282.9(mL)
Date Analyzed: 04/04/2019 21:42
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.: 286192
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	2.6		1.8	0.84
335-67-1	Perfluorooctanoic acid	7.7		5.3	2.4
375-95-1	Perfluorononanoic acid	2.5		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	3.8		1.8	0.57
375-85-9	Perfluoroheptanoic acid	3.8		2.7	1.1
375-73-5	Perfluorobutanesulfonic acid	3.1		1.8	0.71

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_021.d
Lims ID: 320-48796-A-4-A
Client ID: C0AR8
Sample Type: Client
Inject. Date: 04-Apr-2019 21:42:30 ALS Bottle#: 12 Worklist Smp#: 17
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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 13:40:08
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	138899	0.0883	Target=1.41	210	
298.90 > 99.00	1.976	1.976	0.0	1.000	95350		1.46(0.00-0.00)	44.5	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.348	2.322	0.026	0.739	253541	0.1805	Target=10.46	28.5	
313.00 > 119.00	2.348	2.322	0.026	0.739	22883		11.08(0.00-0.00)	25.5	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.322	0.026	1.000	3360371	2.28		7725	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.473	0.001	1.000	1234	0.003614		0.5	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	169523	2.56		697	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.778	2.757	0.021	1.000	143938	0.1076	Target=2.41	10.1	M
363.00 > 169.00	2.757	2.757	0.0	0.993	55555		2.59(0.00-0.00)	84.2	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.778	0.0	1.000	203462	0.1066	Target=2.91	86.6	M
399.00 > 99.00	2.778	2.778	0.0	1.000	65457		3.11(0.00-0.00)	25.3	M
24 DONA									
377.00 > 251.00	2.819	2.798	0.021	1.000	5335	0.001464	Target=1.54	8.3	
377.00 > 85.00	2.819	2.798	0.021	1.000	5484		0.97(0.00-0.00)	196	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.158	0.019		3156169	2.50		8620	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.177	3.158	0.019	1.000	279275	0.2181	Target=1.70	26.7	M
413.00 > 169.00	3.177	3.158	0.019	1.000	187751		1.49(0.00-0.00)	200	M
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.534	0.0		3184569	2.39		3720	

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	66360	0.0711	Target=3.78	25.0	
463.00 > 169.00	3.549	3.549	0.0	1.000	16568		4.01(0.00-0.00)	80.2	
8 Perfluorooctanesulfonic acid									M
499.00 > 80.00	3.416	3.564	-0.148	0.967	105222	0.0748	Target=4.63	56.4	M
499.00 > 99.00	3.534	3.564	-0.030	1.000	16861		6.24(0.00-0.00)	8.1	M
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.735	3.735	0.0	1.000	3090	0.001364		7.1	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.892	0.019	1.000	2049292	2.61		7655	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		532846	2.50		2656	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.215	4.220	-0.005	1.035	520868	2.39		347	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.231	4.220	0.011	1.004	1290	0.006667		3.6	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.349	4.339	0.010	1.000	4018	0.001415		29.6	

QC Flag Legend

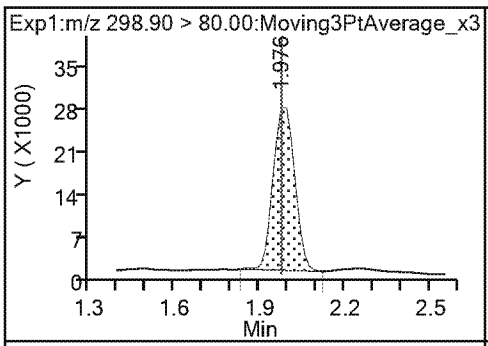
Review Flags

M - Manually Integrated

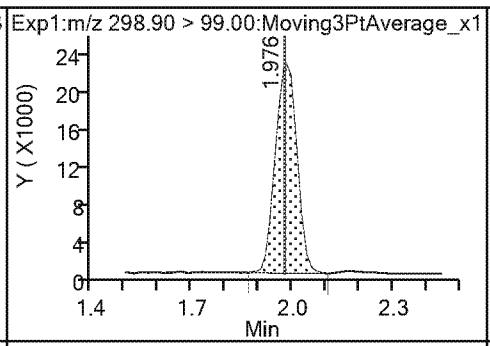
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_021.d				
Injection Date:	04-Apr-2019 21:42:30	Instrument ID:	A8_N		
Lims ID:	320-48796-A-4-A	Lab Sample ID:	320-48796-4		
Client ID:	C0AR8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

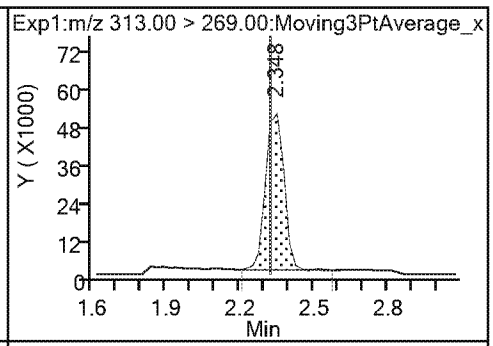
1 Perfluorobutanesulfonic acid



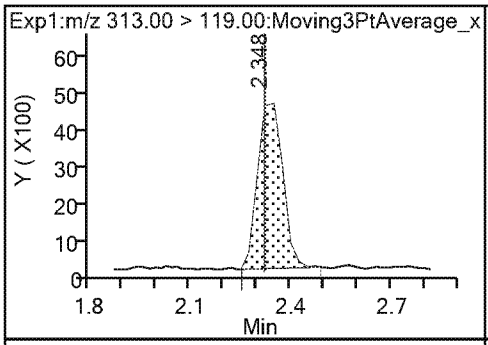
1 Perfluorobutanesulfonic acid



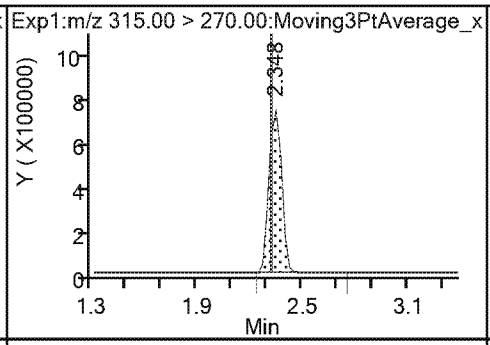
13 Perfluorohexanoic acid



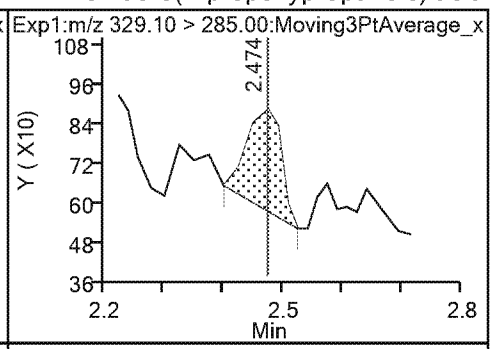
13 Perfluorohexanoic acid



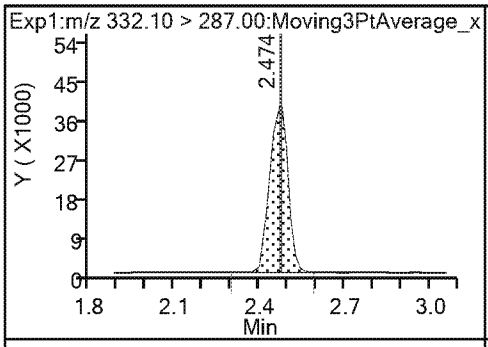
$ 2 13C2 PFHxA



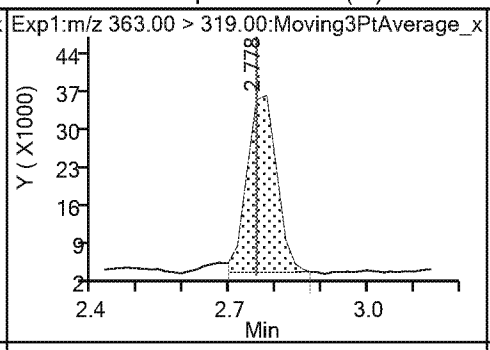
22 Perfluoro(2-propoxypropanoic) acid



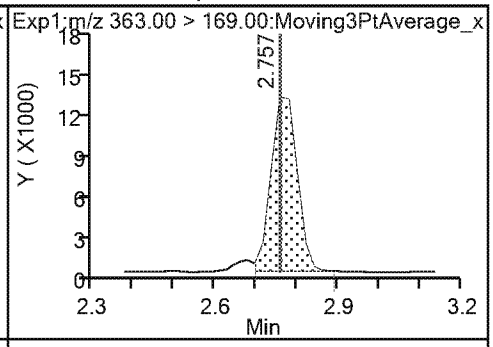
$ 25 13C3 HFPO-DA



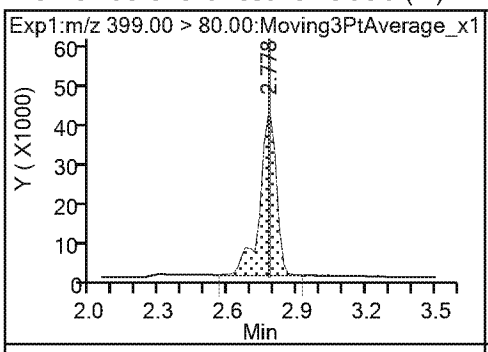
4 Perfluoroheptanoic acid (M)



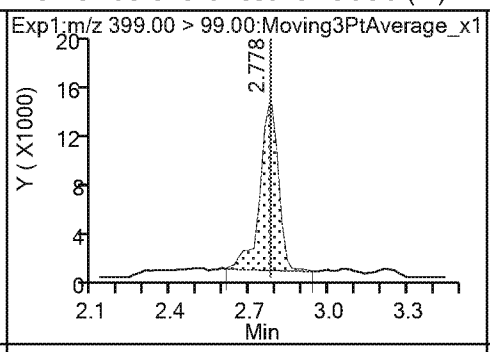
4 Perfluoroheptanoic acid



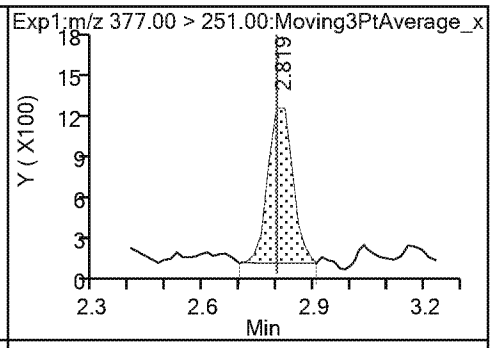
3 Perfluorohexanesulfonic acid (M)



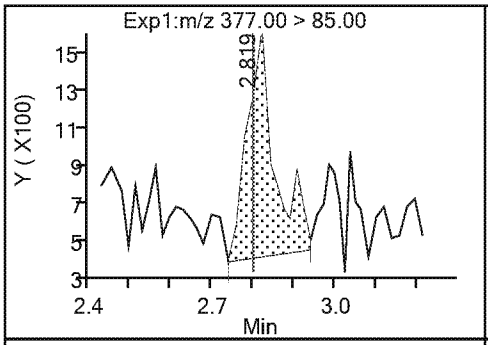
3 Perfluorohexanesulfonic acid (M)



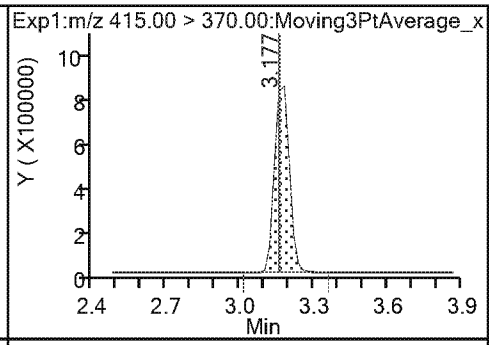
24 DONA



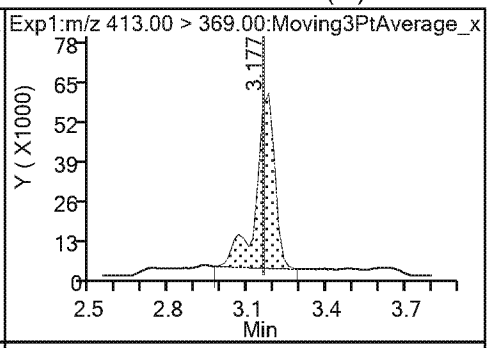
24 DONA



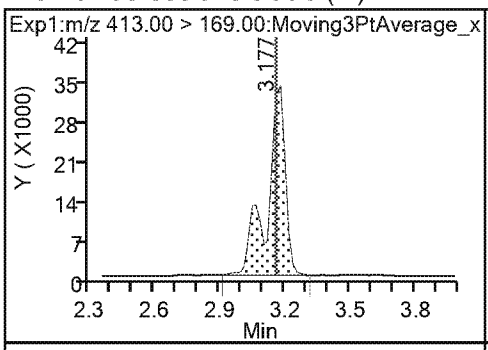
* 5 13C2 PFOA



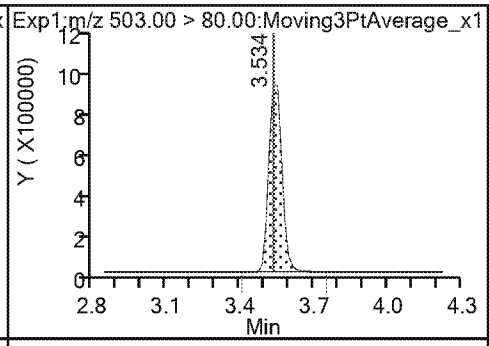
6 Perfluorooctanoic acid (M)



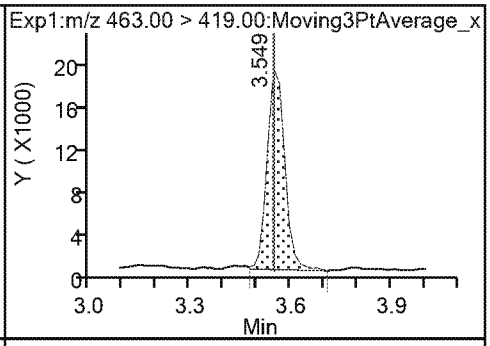
6 Perfluorooctanoic acid (M)



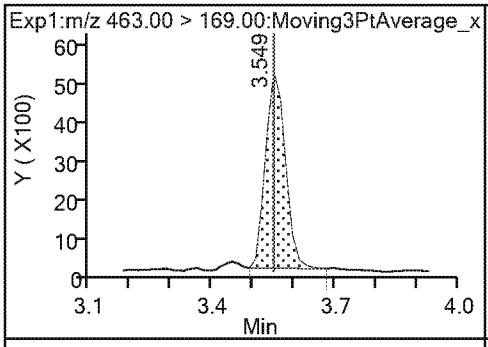
* 7 13C4 PFOS



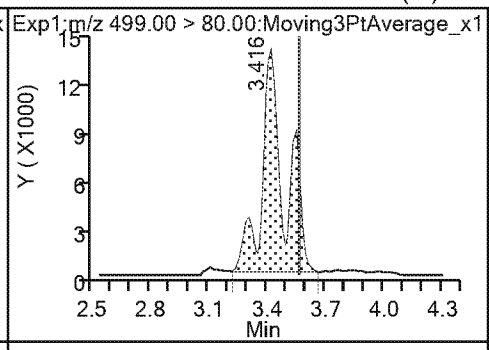
9 Perfluorononanoic acid



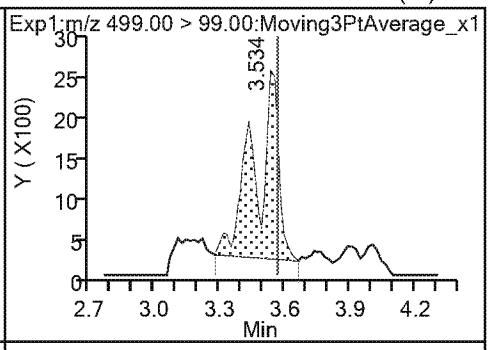
9 Perfluorononanoic acid



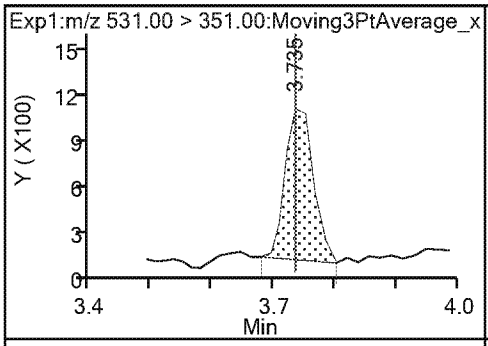
8 Perfluorooctanesulfonic acid (M)



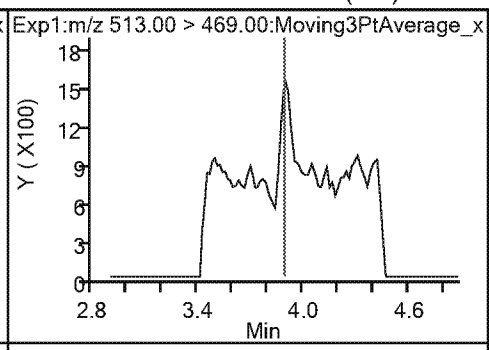
8 Perfluorooctanesulfonic acid (M)



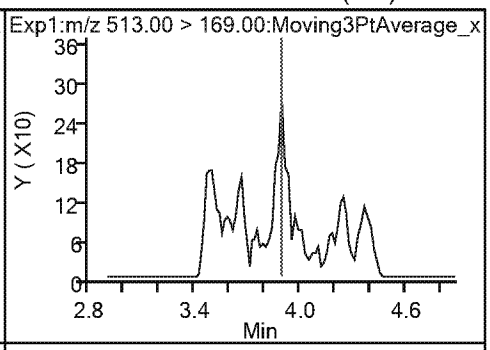
23 9-Chlorohexadecafluoro-3-oxanonane



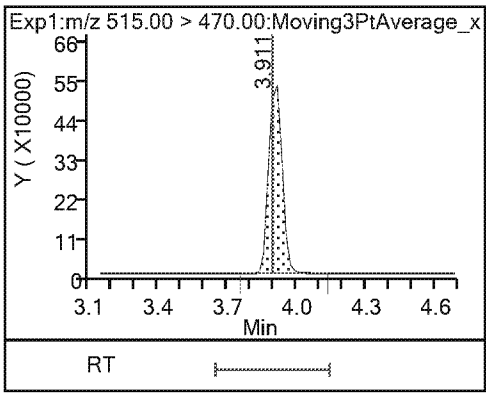
14 Perfluorodecanoic acid (ND)



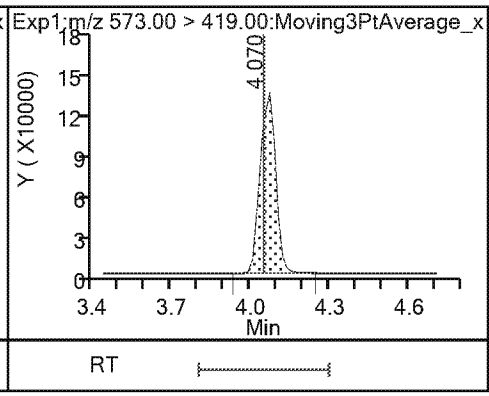
14 Perfluorodecanoic acid (ND)



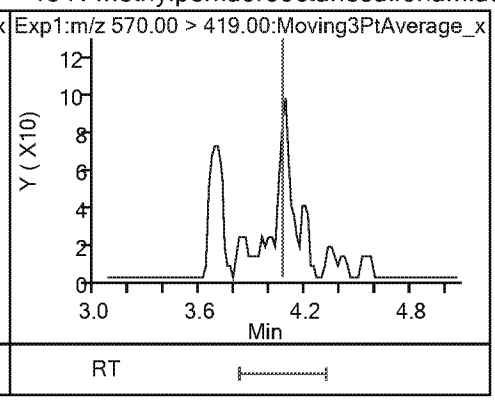
$ 10 13C2 PFDA



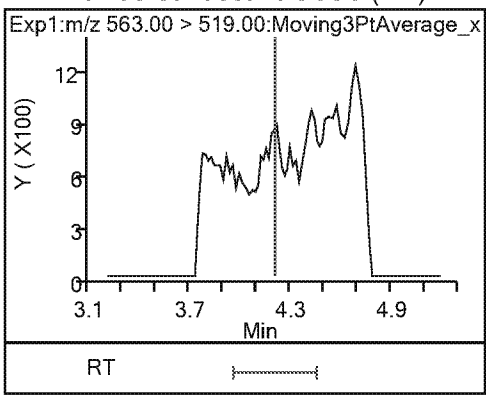
* 12 d3-NMeFOSAA



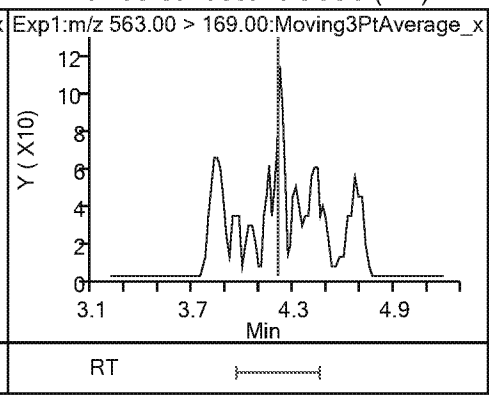
15 N-methylperfluorooctanesulfonamido (ND)



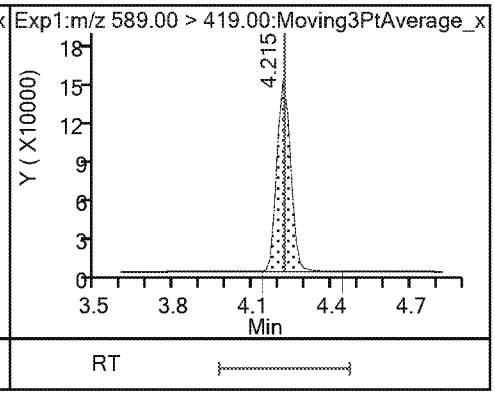
17 Perfluoroundecanoic acid (ND)



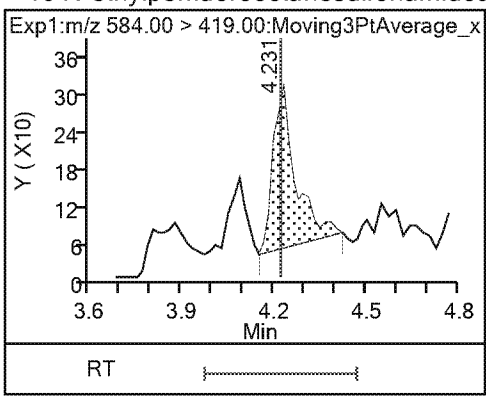
17 Perfluoroundecanoic acid (ND)



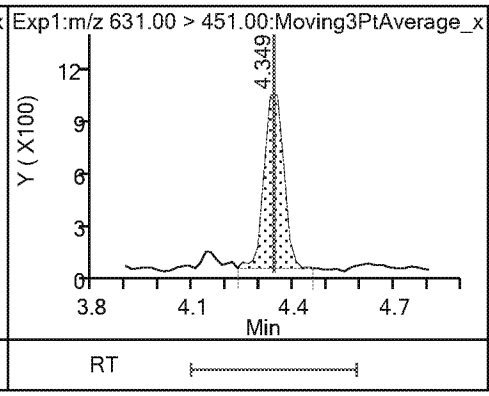
$ 11 d5-NEtFOSAA



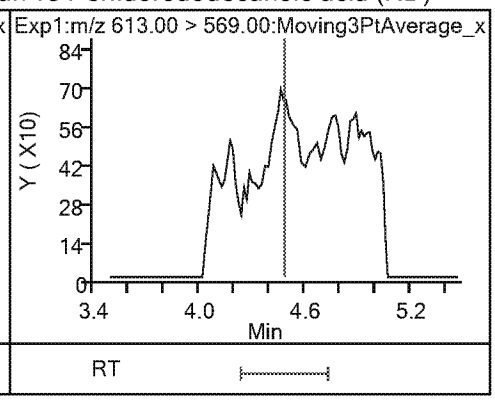
16 N-ethylperfluorooctanesulfonamidoa



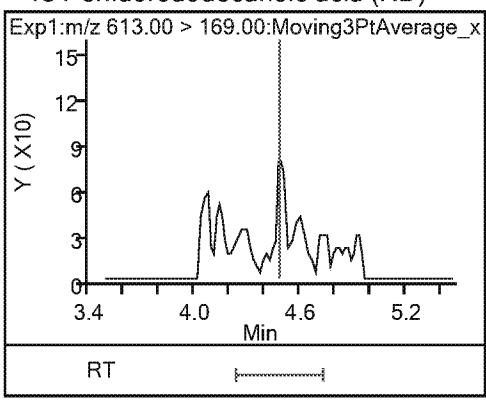
21 11-Chloroeicosafluoro-3-oxaundecan



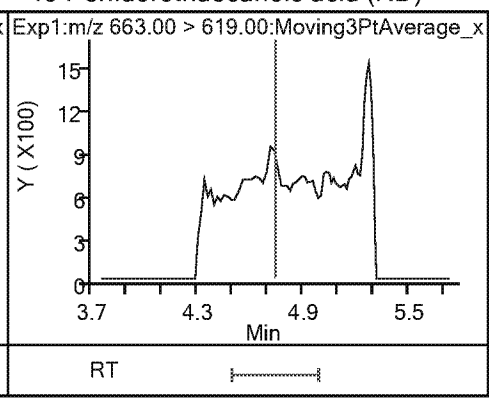
18 Perfluorododecanoic acid (ND)



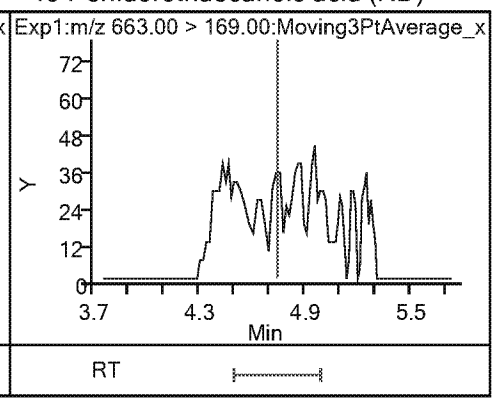
18 Perfluorododecanoic acid (ND)



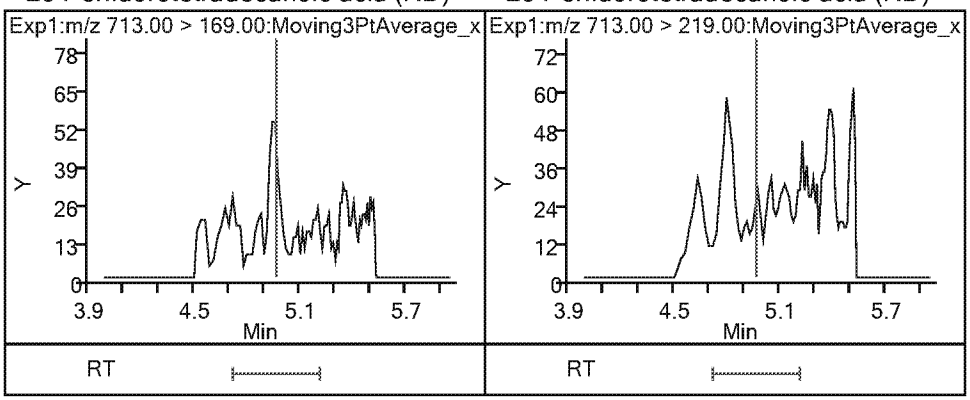
19 Perfluorotridecanoic acid (ND)



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_021.d
Lims ID: 320-48796-A-4-A
Client ID: C0AR8
Sample Type: Client
Inject. Date: 04-Apr-2019 21:42:30 ALS Bottle#: 12 Worklist Smp#: 17
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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 13:40:08

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.28	91.34
$ 25 13C3 HFPO-DA	2.50	2.56	102.59
$ 10 13C2 PFDA	2.50	2.61	104.56
$ 11 d5-NEtFOSAA	2.50	2.39	95.65

Eurofins TestAmerica, Sacramento

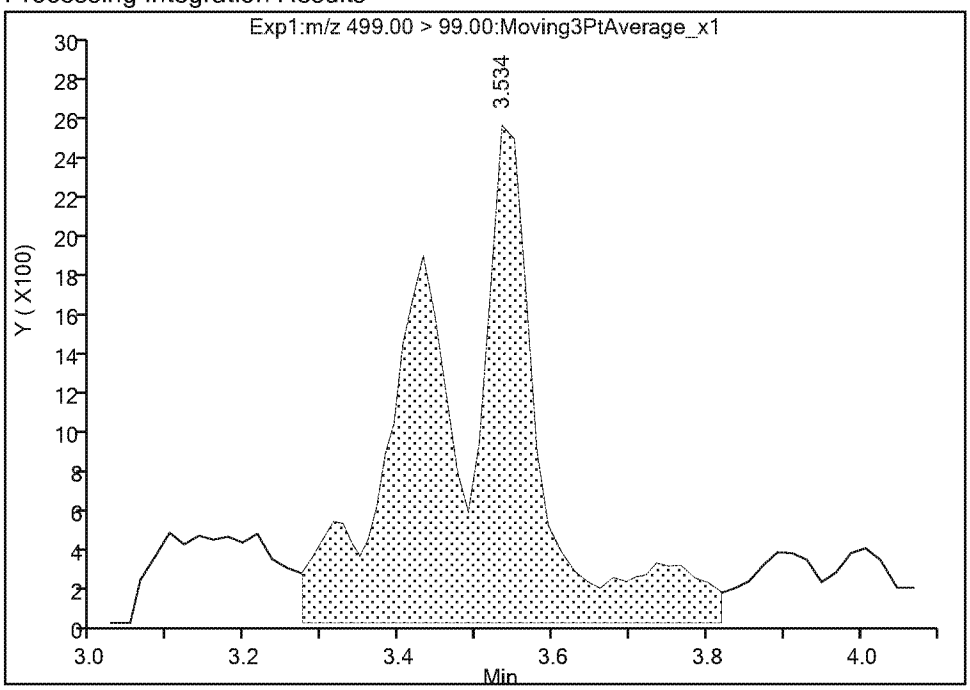
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_021.d				
Injection Date:	04-Apr-2019 21:42:30	Instrument ID:	A8_N		
Lims ID:	320-48796-A-4-A	Lab Sample ID:	320-48796-4		
Client ID:	C0AR8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection Vol:	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

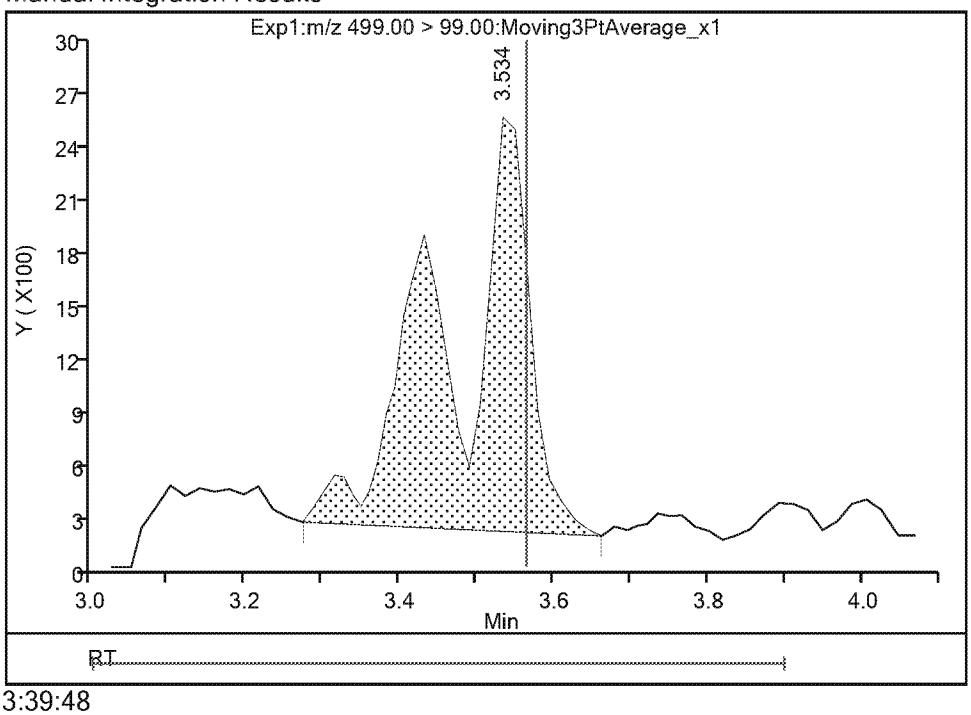
Processing Integration Results

RT: 3.53
Area: 24112
Amount: 0.077972
Amount Units: ng/ml



Manual Integration Results

RT: 3.53
Area: 16861
Amount: 0.074757
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:39:48
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

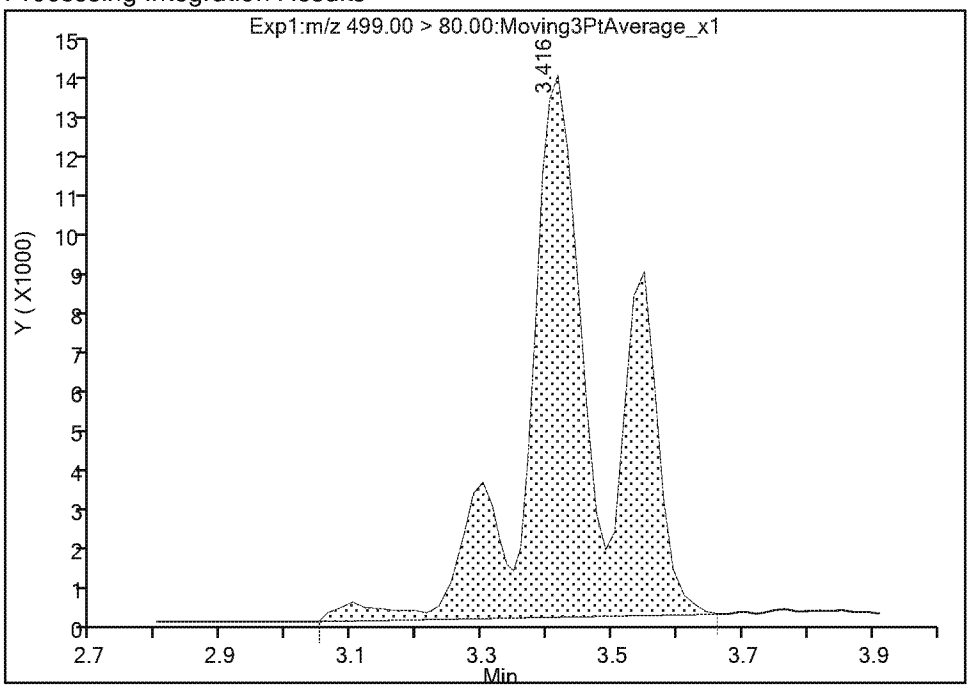
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_021.d				
Injection Date:	04-Apr-2019 21:42:30	Instrument ID:	A8_N		
Lims ID:	320-48796-A-4-A	Lab Sample ID:	320-48796-4		
Client ID:	C0AR8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection Vol:	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

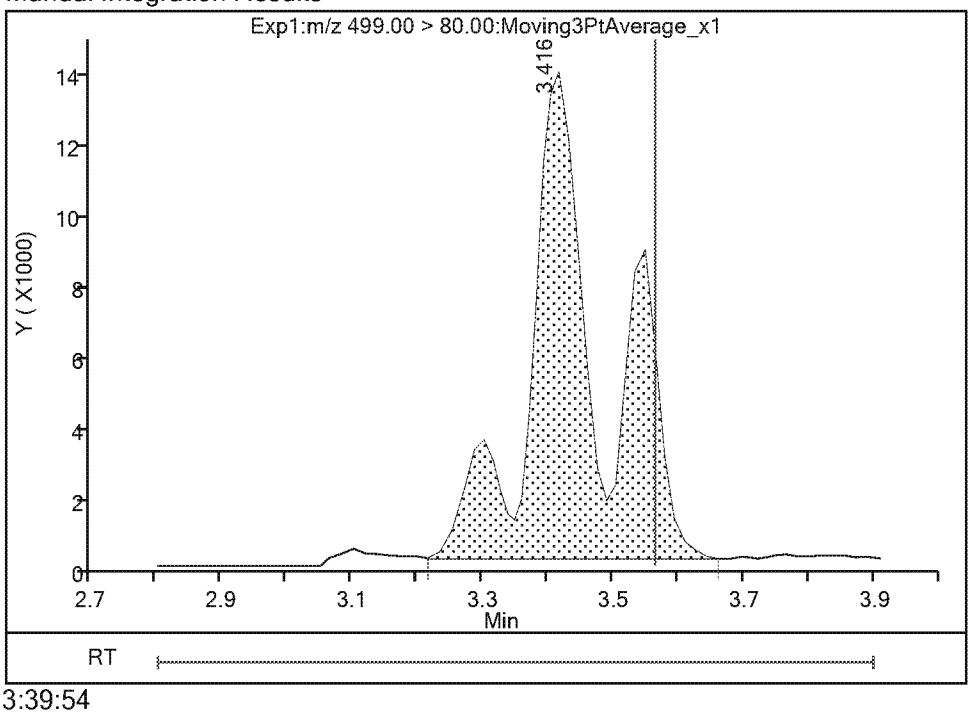
Processing Integration Results

RT: 3.42
Area: 109747
Amount: 0.077972
Amount Units: ng/ml



Manual Integration Results

RT: 3.42
Area: 105222
Amount: 0.074757
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:39:54
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

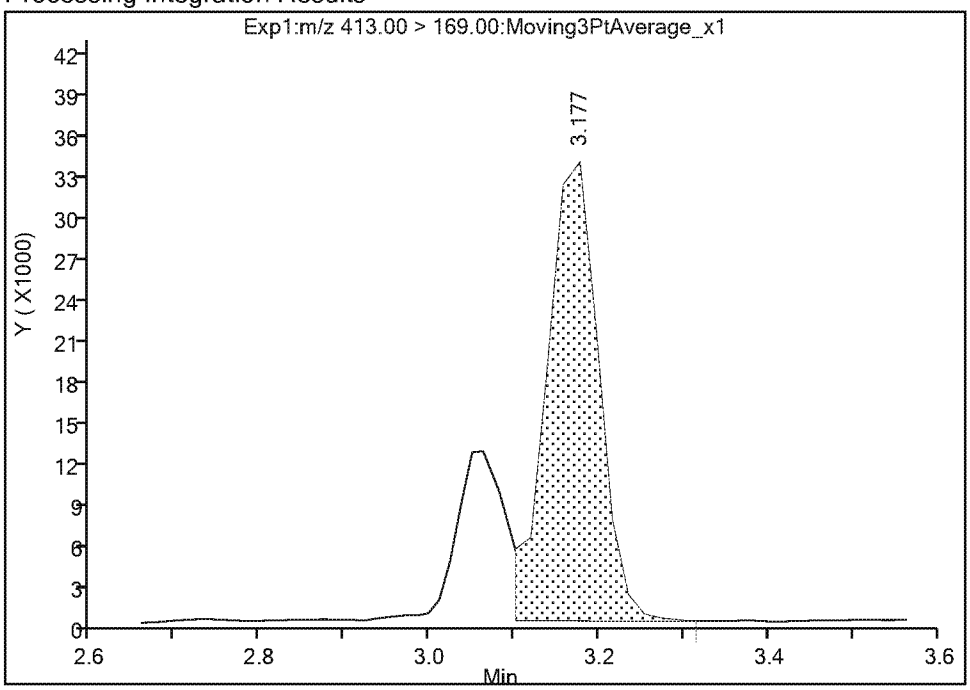
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_021.d				
Injection Date:	04-Apr-2019 21:42:30	Instrument ID:	A8_N		
Lims ID:	320-48796-A-4-A	Lab Sample ID:	320-48796-4		
Client ID:	C0AR8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection Vol:	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

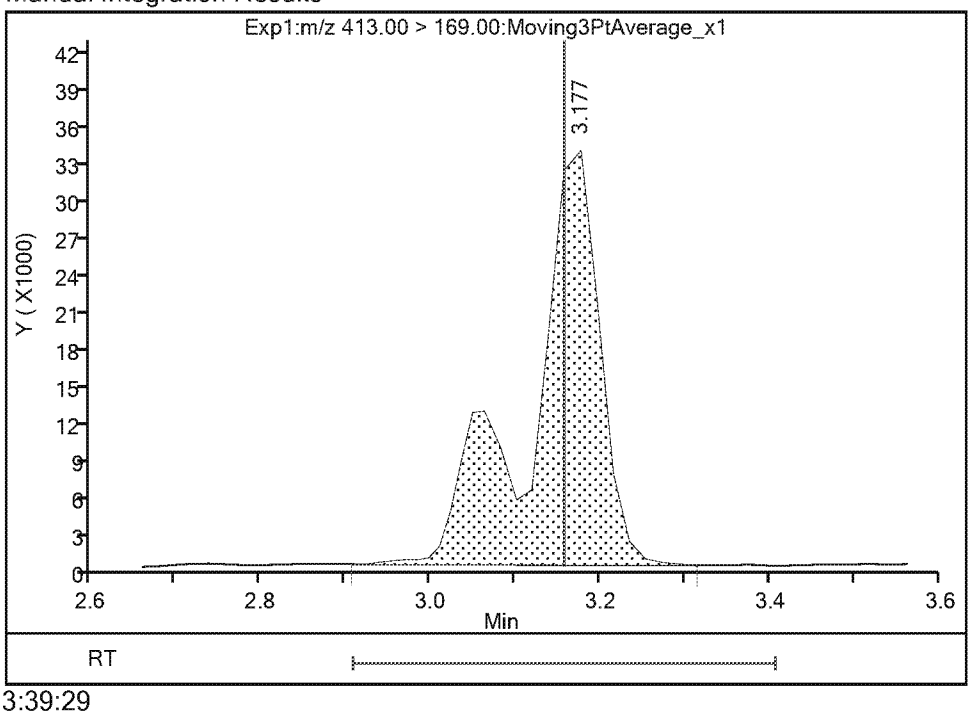
Processing Integration Results

RT: 3.18
Area: 140057
Amount: 0.195404
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 187751
Amount: 0.218065
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:39:29
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

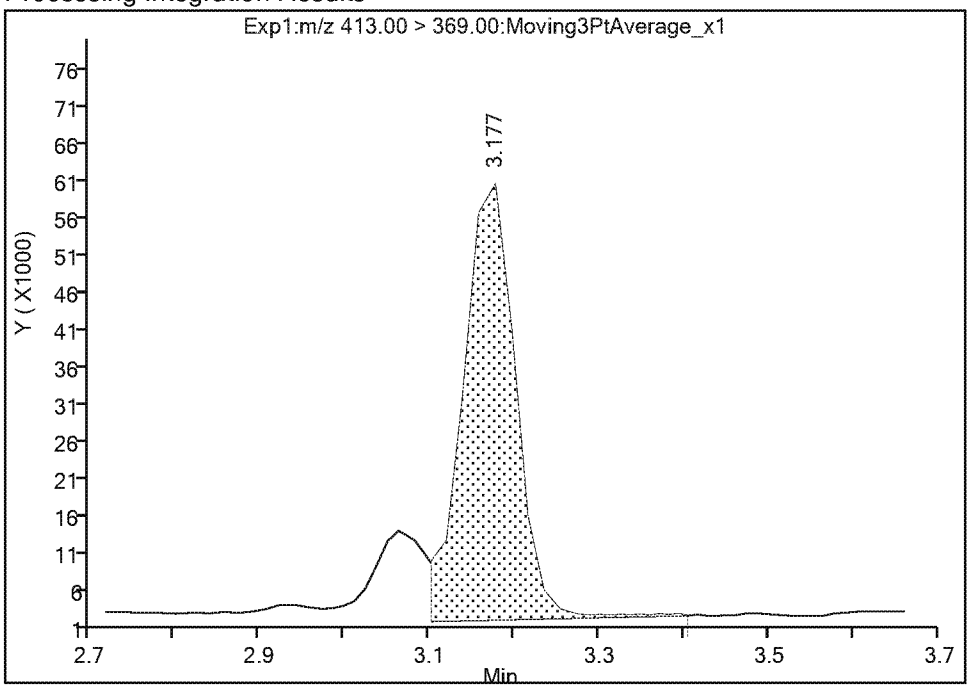
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_021.d				
Injection Date:	04-Apr-2019 21:42:30	Instrument ID:	A8_N		
Lims ID:	320-48796-A-4-A	Lab Sample ID:	320-48796-4		
Client ID:	C0AR8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection Vol:	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

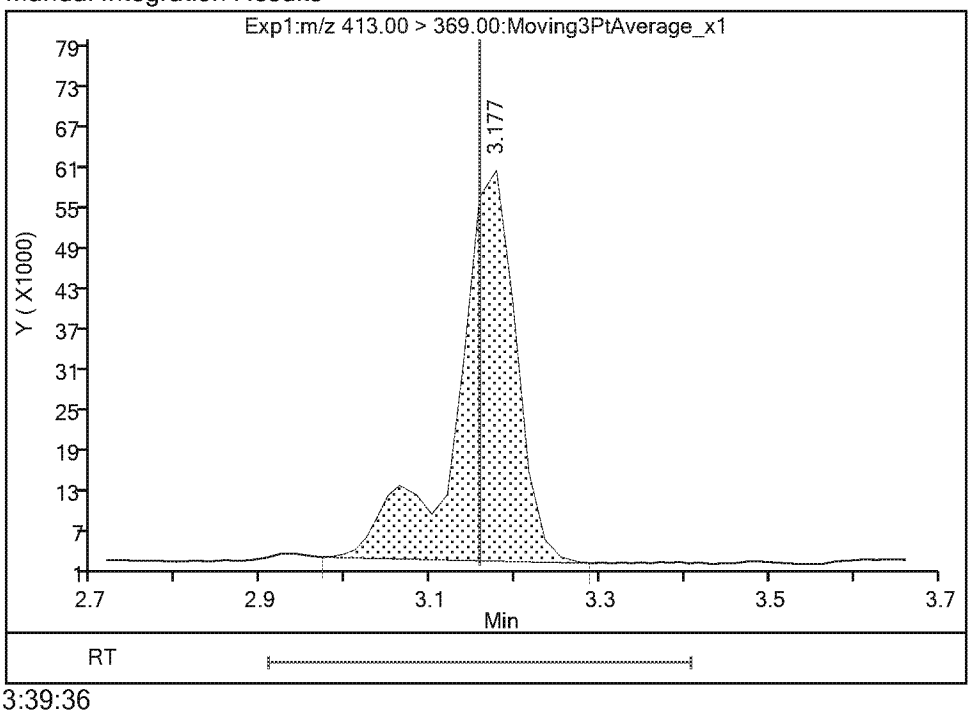
Processing Integration Results

RT: 3.18
Area: 250253
Amount: 0.195404
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 279275
Amount: 0.218065
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:39:36
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

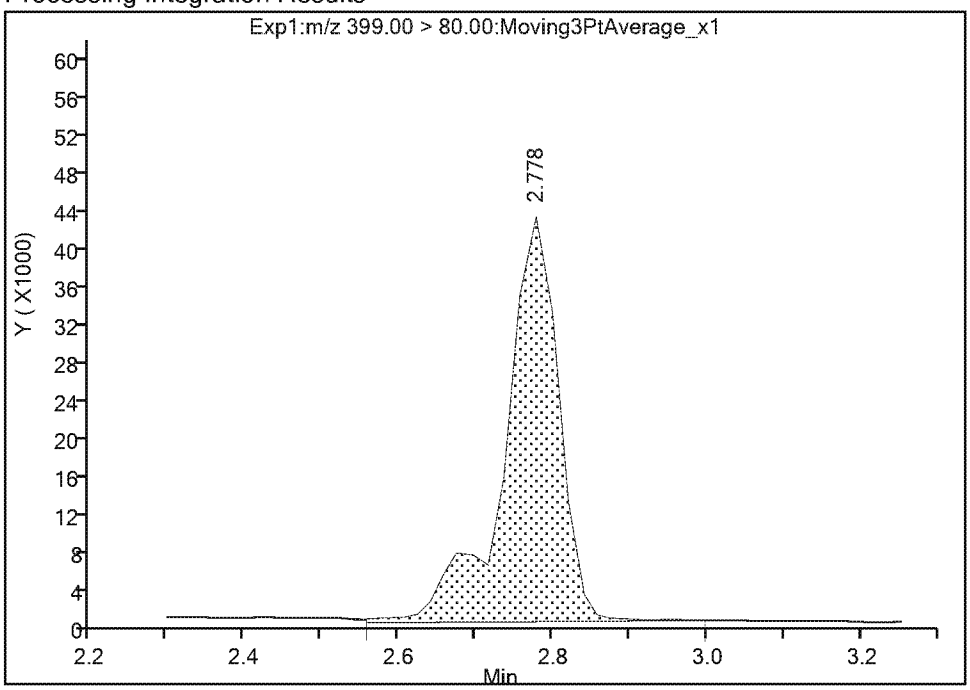
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_021.d				
Injection Date:	04-Apr-2019 21:42:30	Instrument ID:	A8_N		
Lims ID:	320-48796-A-4-A	Lab Sample ID:	320-48796-4		
Client ID:	C0AR8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection Vol:	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

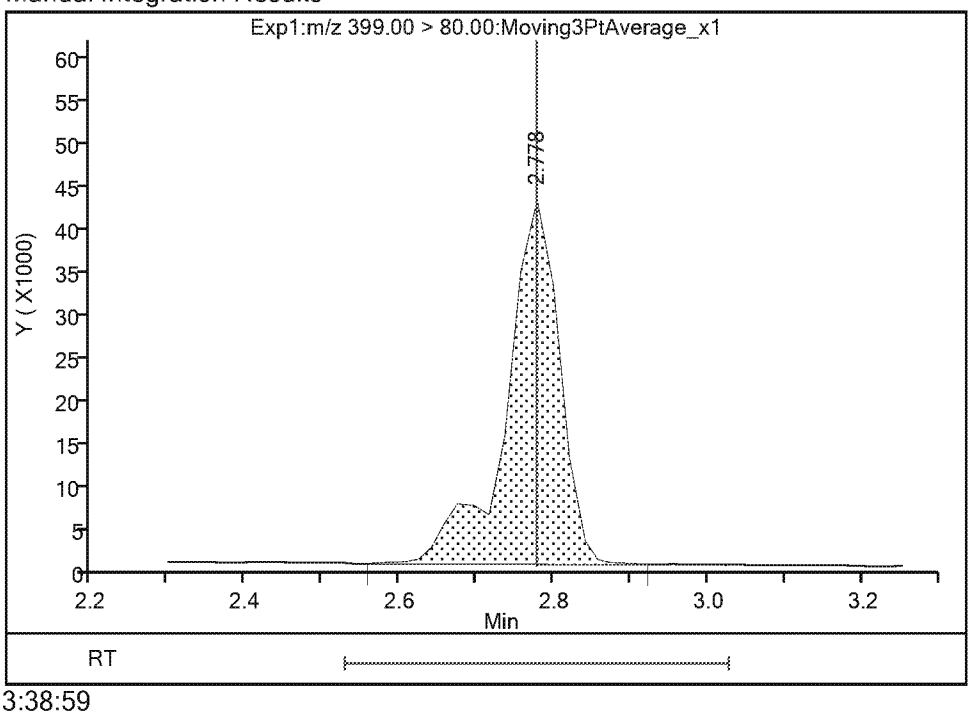
Processing Integration Results

RT: 2.78
Area: 207639
Amount: 0.108749
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 203462
Amount: 0.106562
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:38:59
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

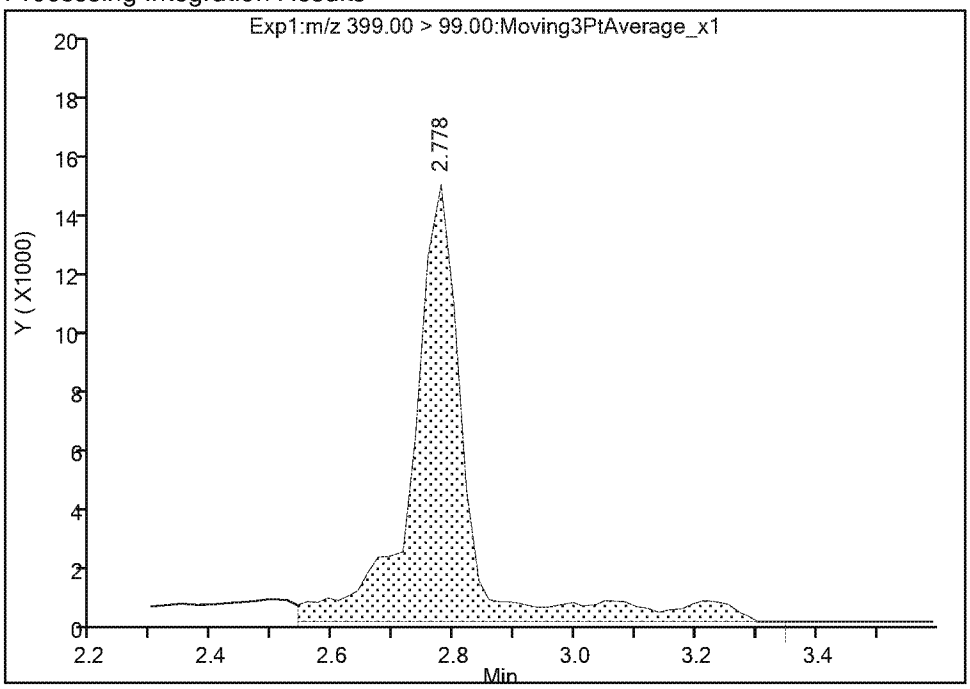
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_021.d				
Injection Date:	04-Apr-2019 21:42:30	Instrument ID:	A8_N		
Lims ID:	320-48796-A-4-A	Lab Sample ID:	320-48796-4		
Client ID:	C0AR8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection Vol:	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

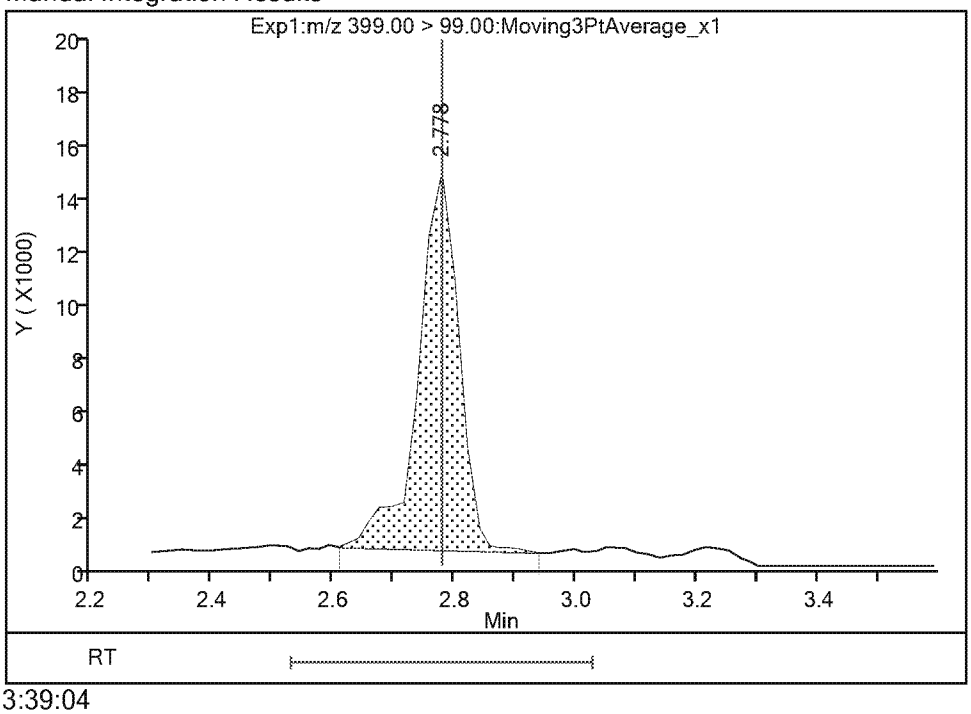
Processing Integration Results

RT: 2.78
Area: 90347
Amount: 0.108749
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 65457
Amount: 0.106562
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:39:04
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

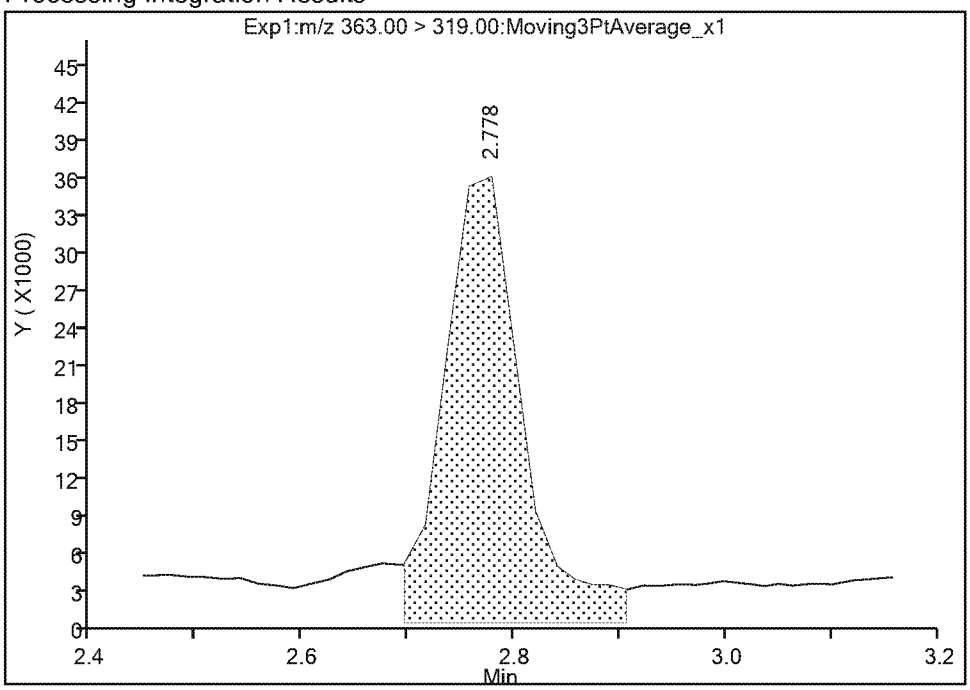
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_021.d				
Injection Date:	04-Apr-2019 21:42:30	Instrument ID:	A8_N		
Lims ID:	320-48796-A-4-A	Lab Sample ID:	320-48796-4		
Client ID:	C0AR8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	12	Worklist Smp#:	17
Injection Vol:	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

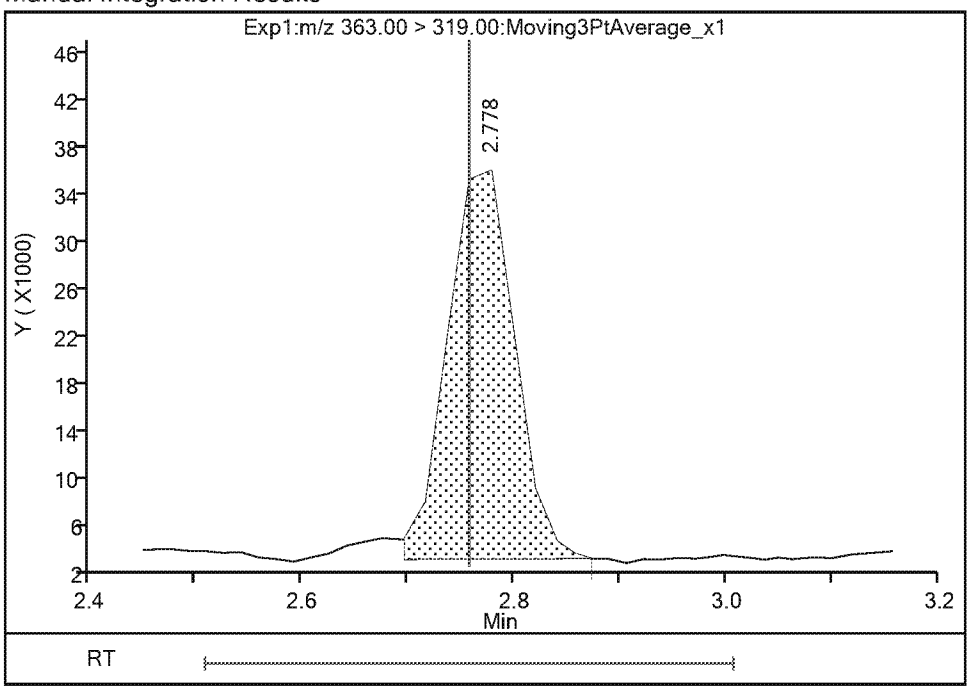
Processing Integration Results

RT: 2.78
Area: 181588
Amount: 0.135714
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 143938
Amount: 0.107576
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:39:15
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AS7
Lab Sample ID: 320-48796-5
Matrix: Water
Lab File ID: 2019.04.04_537AA_022.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 12:34
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 277.1(mL)
Date Analyzed: 04/04/2019 21:51
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.: 286192
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	101		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_022.d
Lims ID: 320-48796-A-5-A
Client ID: C0AS7
Sample Type: Client
Inject. Date: 04-Apr-2019 21:51:58 ALS Bottle#: 13 Worklist Smp#: 18
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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

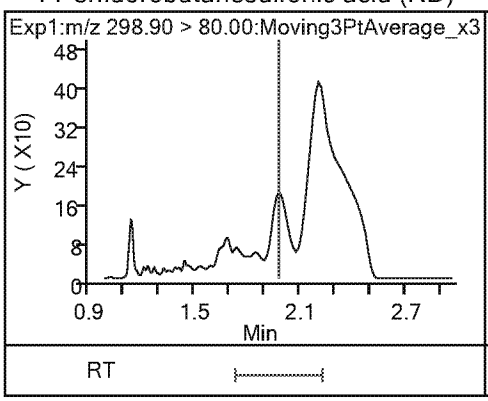
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:40:21
Ratio Calibration: None

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	2.322	0.026	1.000	3404036	2.45		6034	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.252	2.473	-0.221	0.910	755	0.002344		0.4	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	173359	2.78		1351	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.158	0.019		2977000	2.50		8221	
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.534	0.015		3091179	2.39		9568	
$ 10 13C2 PFDA									
515.00 > 470.00	3.914	3.892	0.022	1.000	1867221	2.53		6850	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.073	4.048	0.025		543026	2.50		2285	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.233	4.220	0.013	1.039	517665	2.33		315	

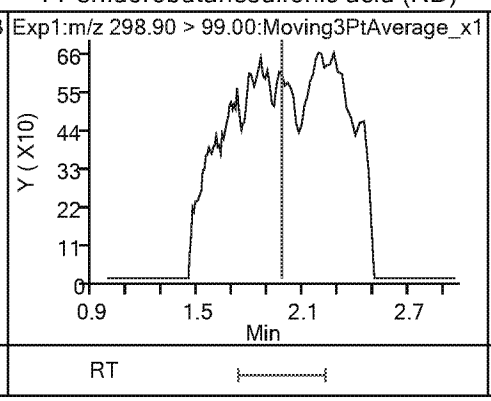
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_022.d				
Injection Date:	04-Apr-2019 21:51:58	Instrument ID:	A8_N		
Lims ID:	320-48796-A-5-A	Lab Sample ID:	320-48796-5		
Client ID:	C0AS7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	13	Worklist Smp#:	18
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

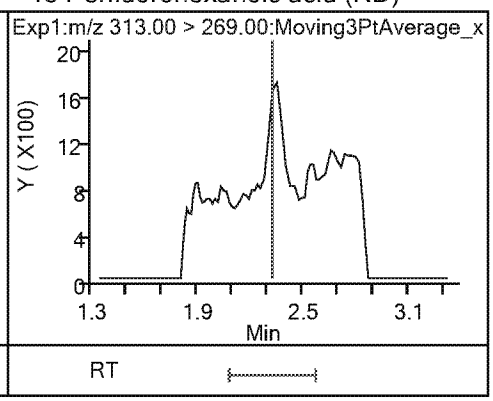
1 Perfluorobutanesulfonic acid (ND)



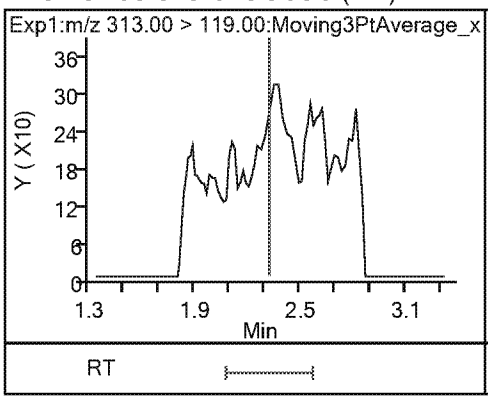
1 Perfluorobutanesulfonic acid (ND)



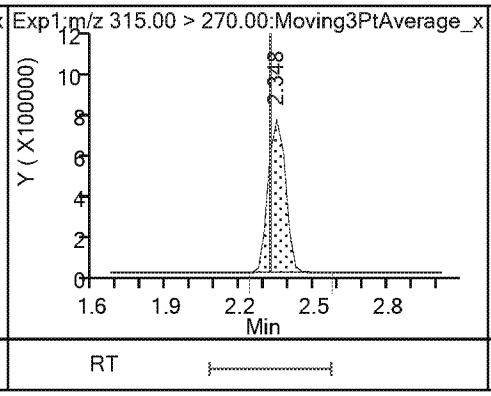
13 Perfluorohexanoic acid (ND)



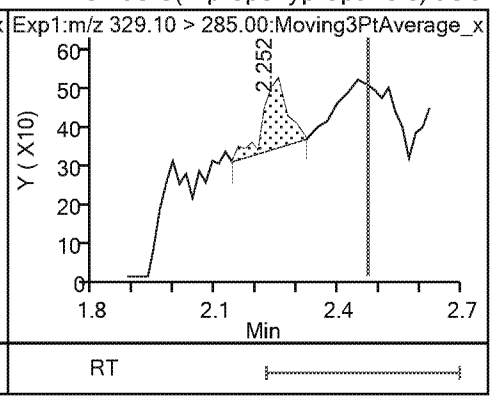
13 Perfluorohexanoic acid (ND)



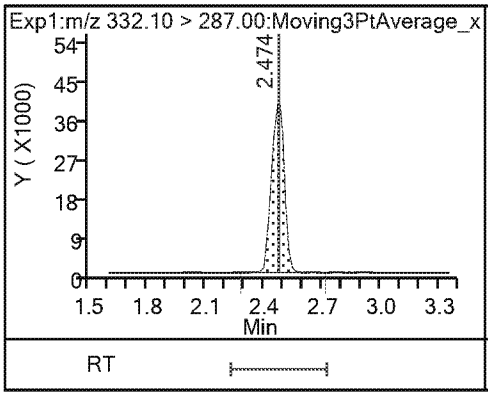
$ 2 13C2 PFHxA



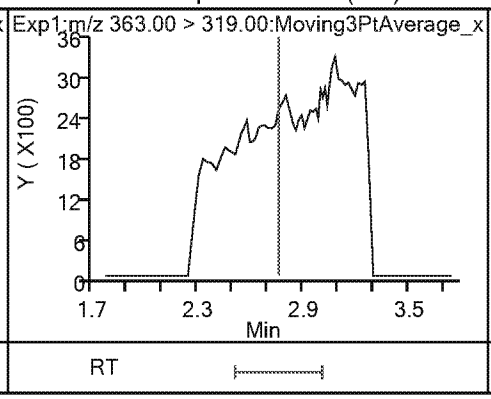
22 Perfluoro(2-propoxypropanoic) acid



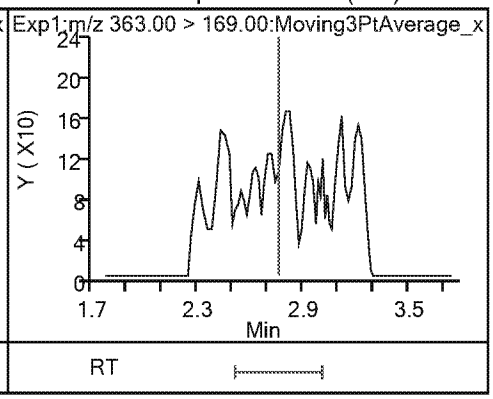
$ 25 13C3 HFPO-DA



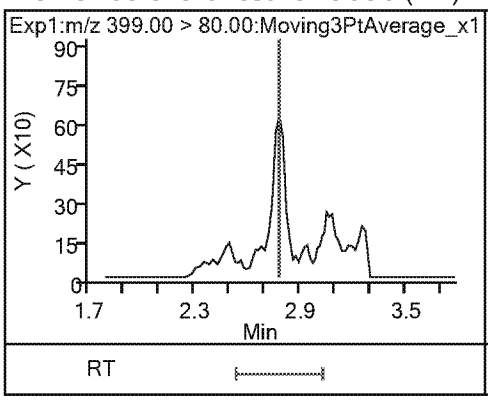
4 Perfluoroheptanoic acid (ND)



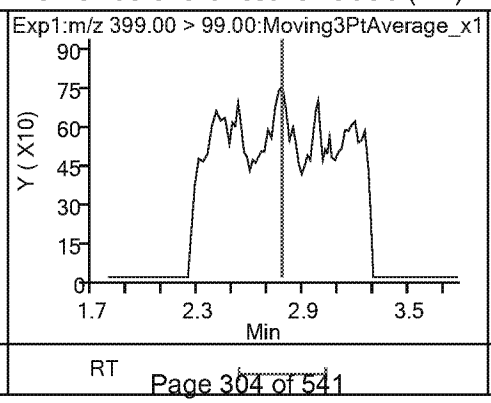
4 Perfluoroheptanoic acid (ND)



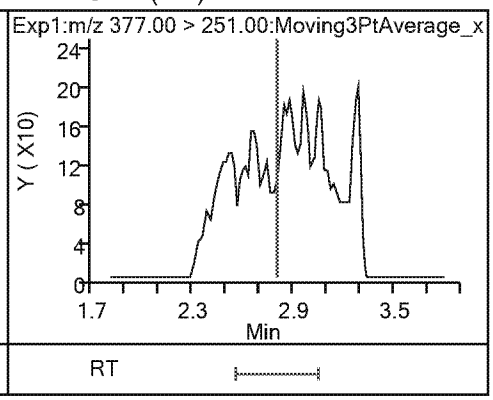
3 Perfluorohexanesulfonic acid (ND)



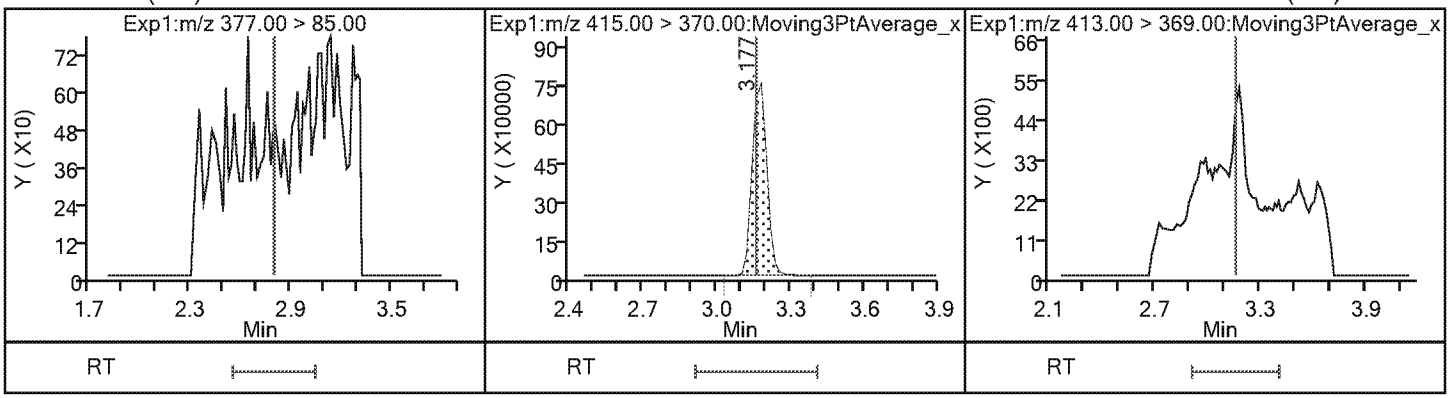
3 Perfluorohexanesulfonic acid (ND)



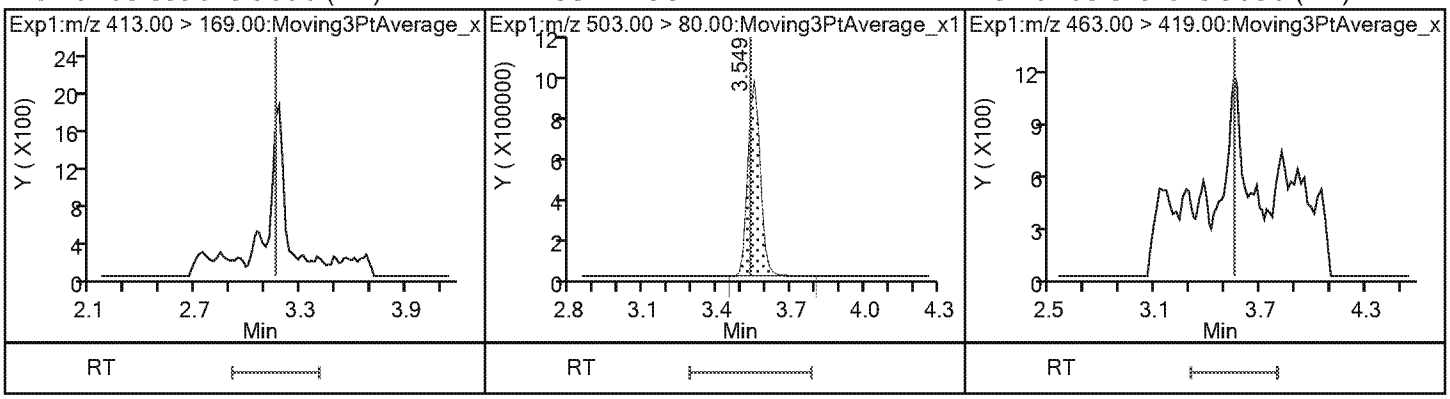
24 DONA (ND)



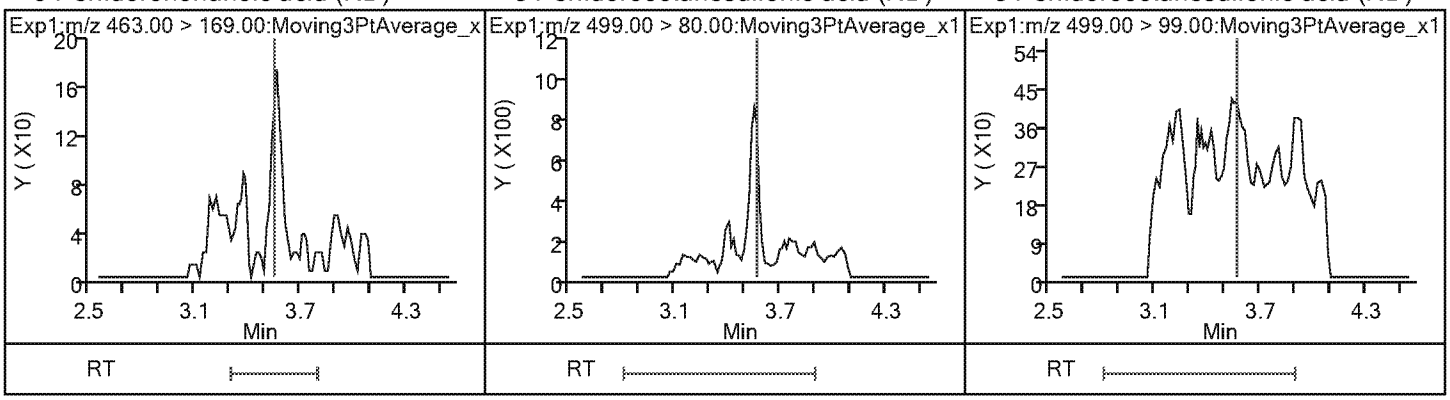
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid (ND)



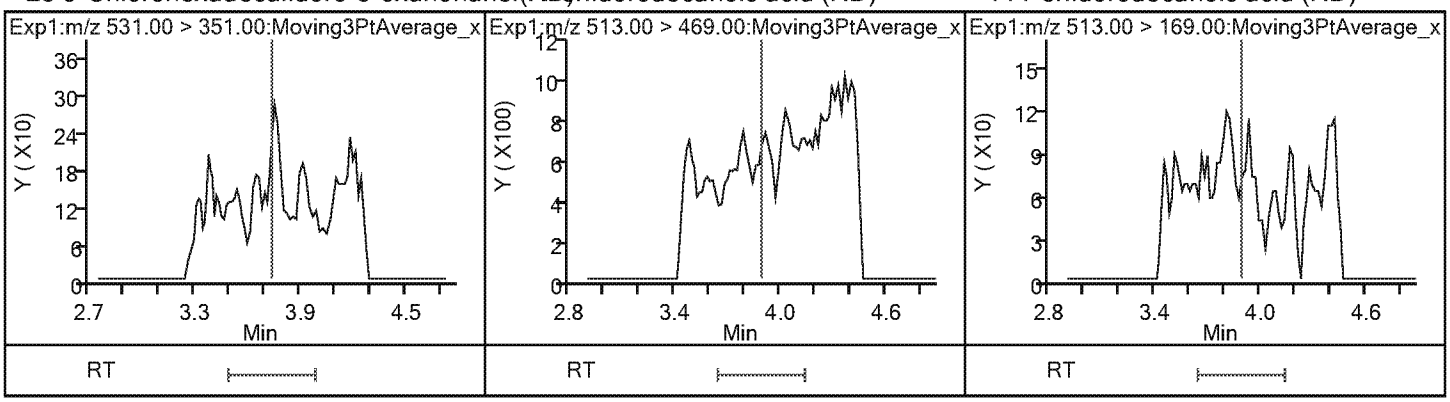
6 Perfluorooctanoic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



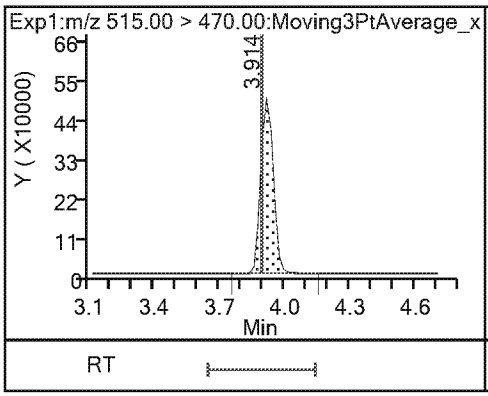
9 Perfluorononanoic acid (ND) 8 Perfluorooctanesulfonic acid (ND) 8 Perfluorooctanesulfonic acid (ND)



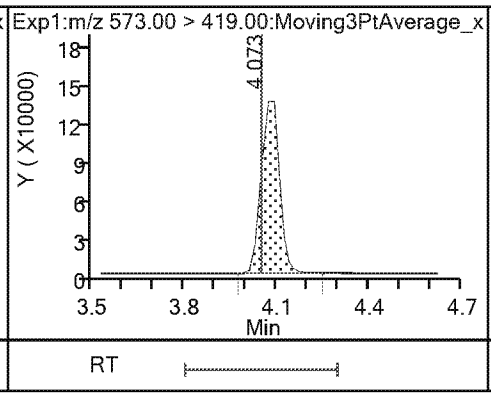
23 9-Chlorohexadecafluoro-3-oxanonane1(ND) 14 Perfluorodecanoic acid (ND) 14 Perfluorodecanoic acid (ND)



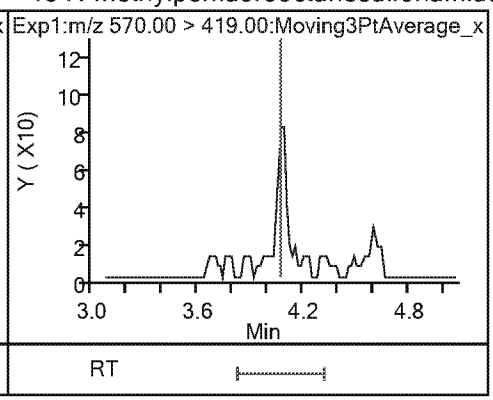
$ 10 13C2 PFDA



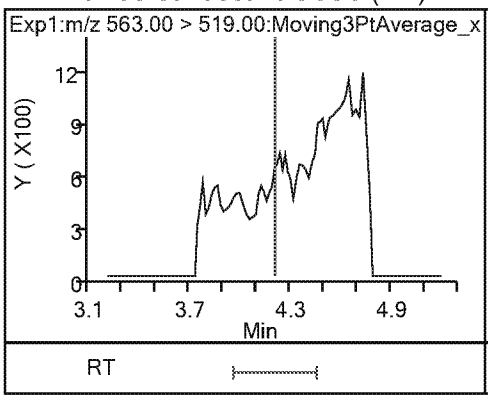
* 12 d3-NMeFOSAA



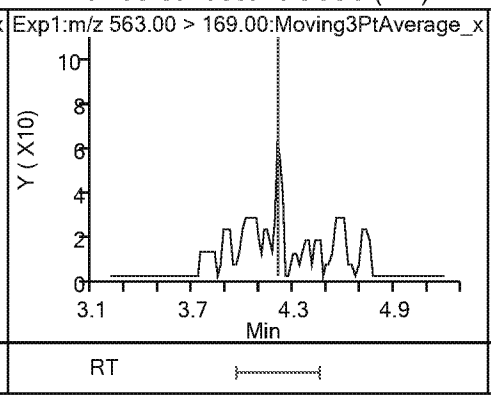
15 N-methylperfluorooctanesulfonamido (ND)



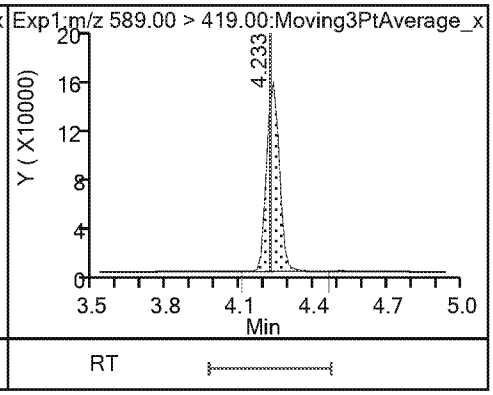
17 Perfluoroundecanoic acid (ND)



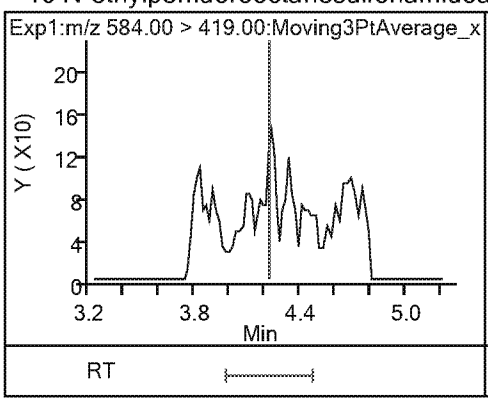
17 Perfluoroundecanoic acid (ND)



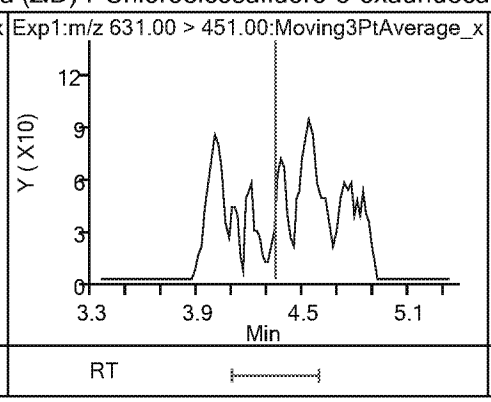
$ 11 d5-NEtFOSAA



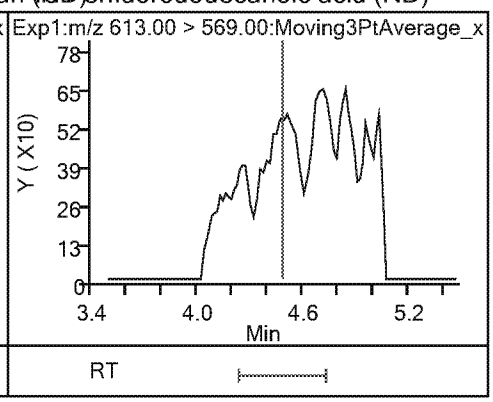
16 N-ethylperfluorooctanesulfonamidoa (ND)



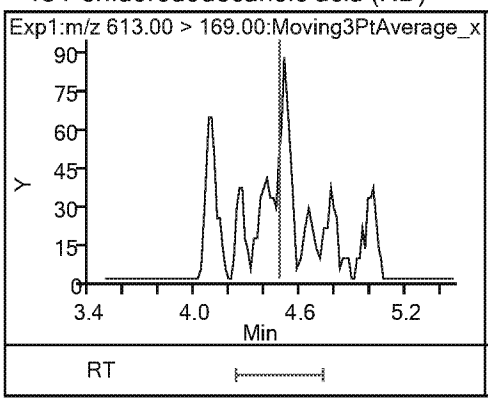
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



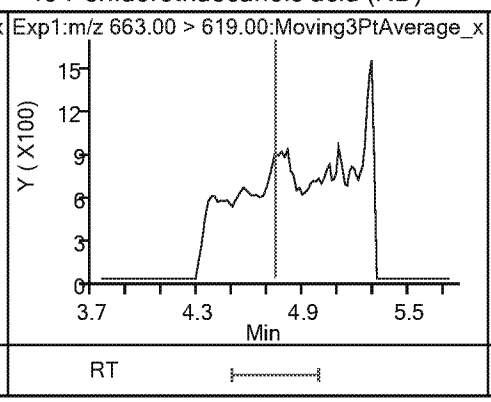
18 Perfluorododecanoic acid (ND)



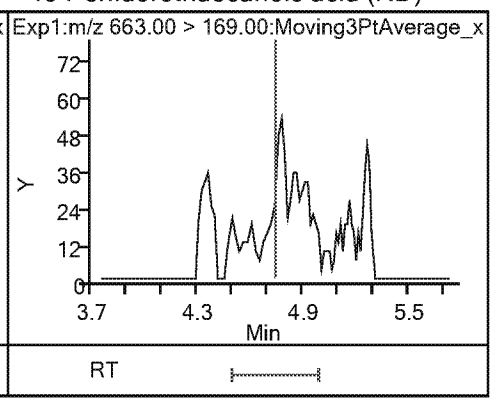
18 Perfluorododecanoic acid (ND)



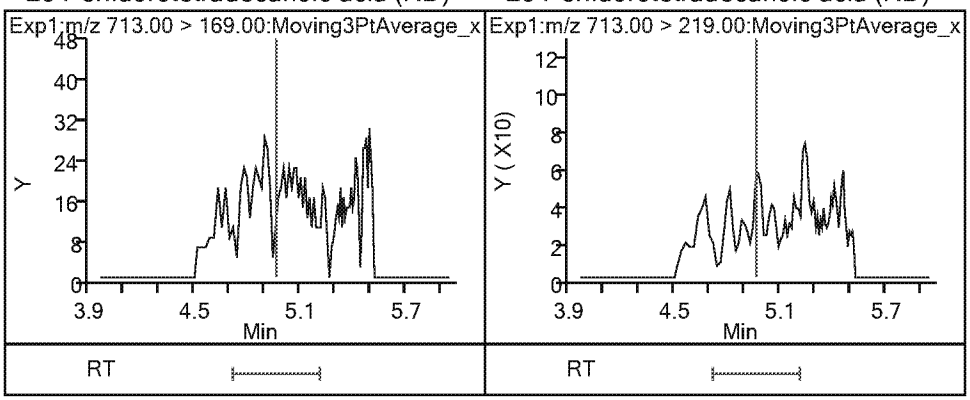
19 Perfluorotridecanoic acid (ND)



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_022.d
Lims ID: 320-48796-A-5-A
Client ID: C0AS7
Sample Type: Client
Inject. Date: 04-Apr-2019 21:51:58 ALS Bottle#: 13 Worklist Smp#: 18
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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 13:40:21

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.45	98.09
$ 25 13C3 HFPO-DA	2.50	2.78	111.23
$ 10 13C2 PFDA	2.50	2.53	101.00
$ 11 d5-NEtFOSAA	2.50	2.33	93.28

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AW2
Lab Sample ID: 320-48796-6
Matrix: Water
Lab File ID: 2019.04.04_537AA_023.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 09:35
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 283.9(mL)
Date Analyzed: 04/04/2019 22:01
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.: 286192
Units: ng/L

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

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		70-130
STL00996	13C2 PFDA	103		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_023.d
Lims ID: 320-48796-A-6-A
Client ID: C0AW2
Sample Type: Client
Inject. Date: 04-Apr-2019 22:01:27 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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

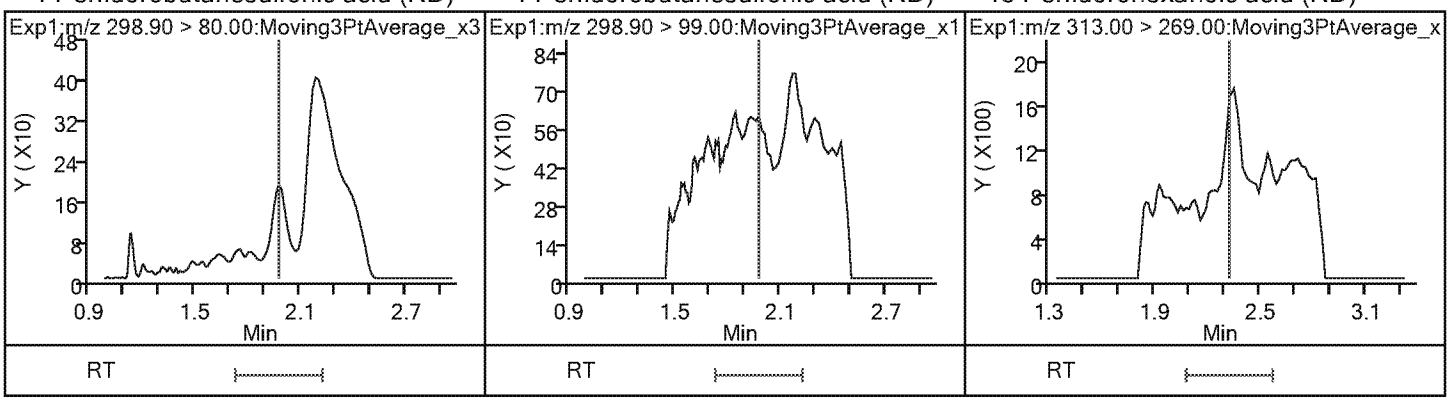
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:40:40
Ratio Calibration: None

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	2.322	0.025	1.000	3286687	2.36		7563	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	172552	2.76		1382	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.158	0.0		2987061	2.50		11639	
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.534	0.0		3029943	2.39		10904	
$ 10 13C2 PFDA									
515.00 > 470.00	3.892	3.892	0.0	1.000	1919094	2.59		11188	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		517081	2.50		2138	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.215	4.220	-0.005	1.035	528818	2.50		340	

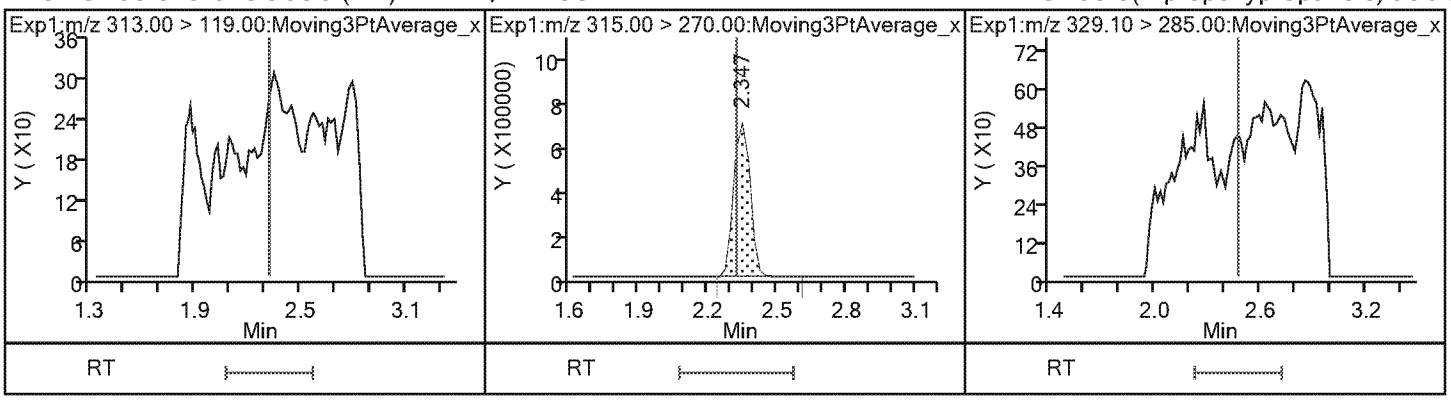
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_023.d				
Injection Date:	04-Apr-2019 22:01:27	Instrument ID:	A8_N		
Lims ID:	320-48796-A-6-A	Lab Sample ID:	320-48796-6		
Client ID:	C0AW2				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	14	Worklist Smp#:	19
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

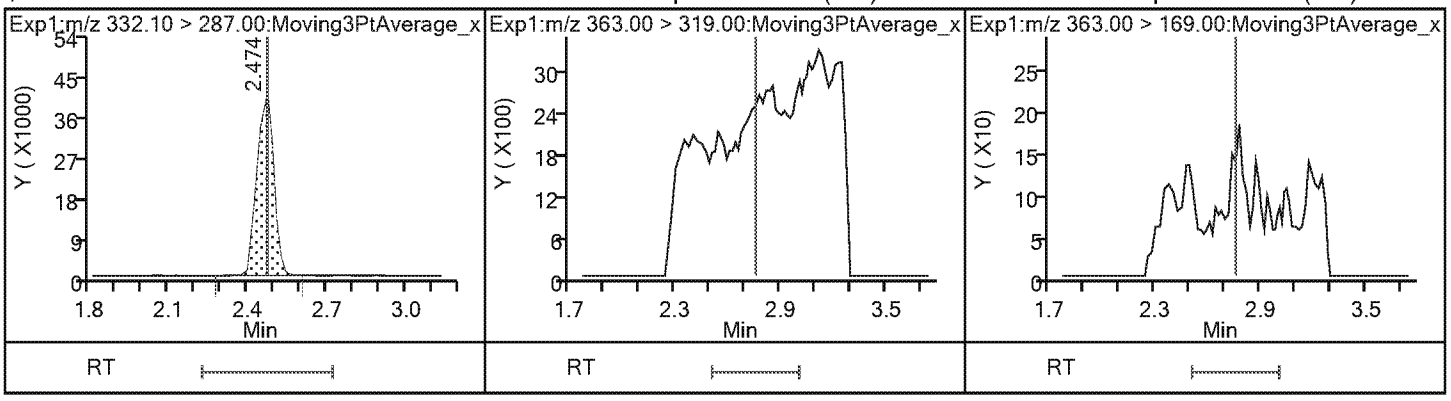
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | 13 Perfluorohexanoic acid (ND)



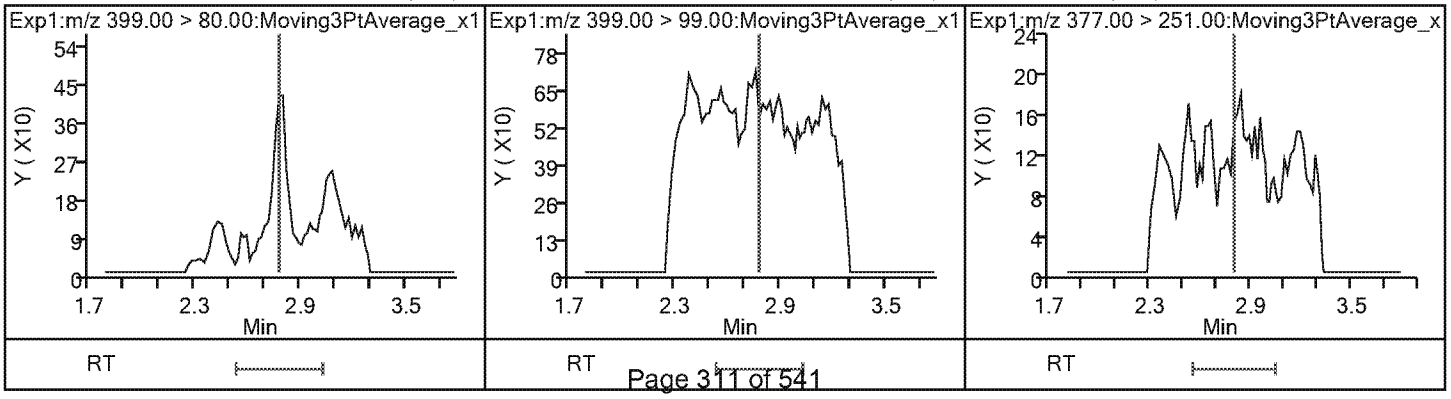
13 Perfluorohexanoic acid (ND) | $ 2 13C2 PFHxA | 22 Perfluoro(2-propoxypropanoic) acid (ND)



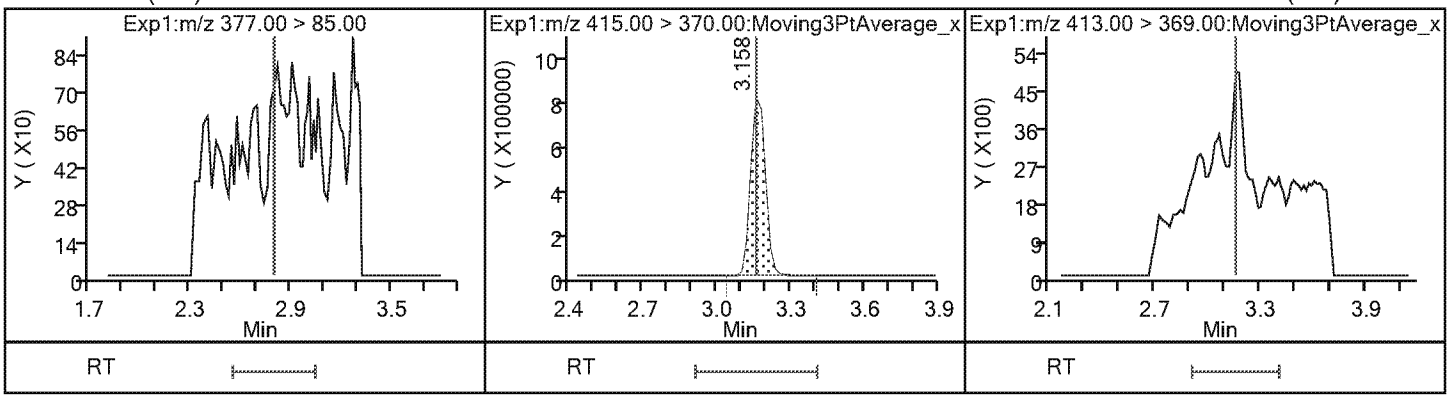
$ 25 13C3 HFPO-DA | 4 Perfluoroheptanoic acid (ND) | 4 Perfluoroheptanoic acid (ND)



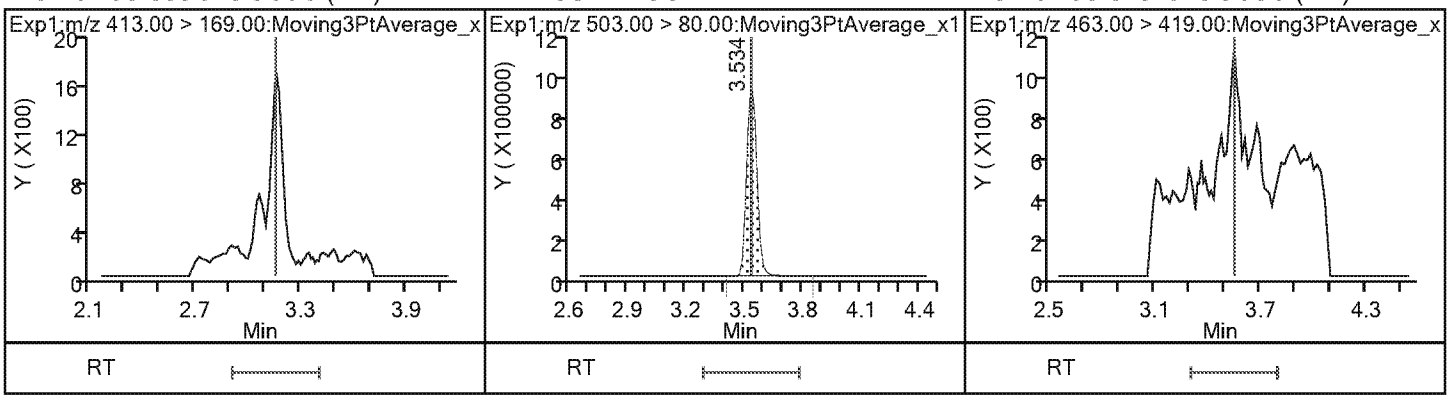
3 Perfluorohexanesulfonic acid (ND) | 3 Perfluorohexanesulfonic acid (ND) | 24 DONA (ND)



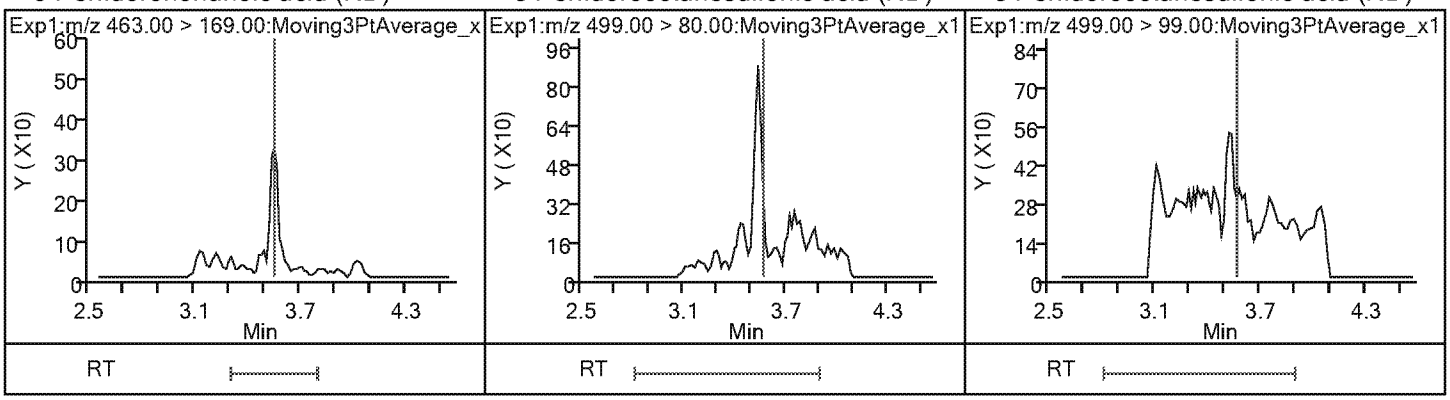
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid (ND)



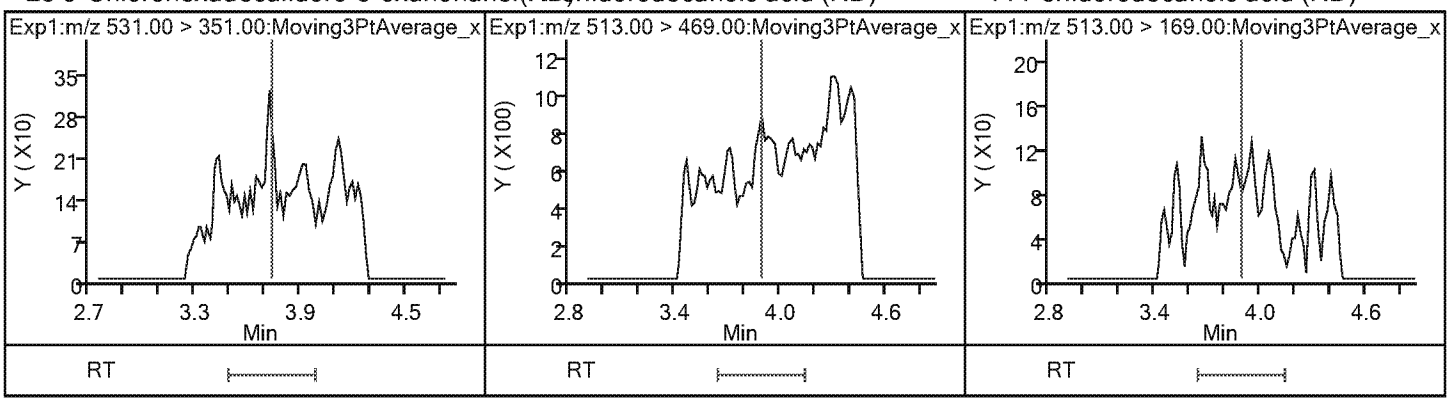
6 Perfluorooctanoic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



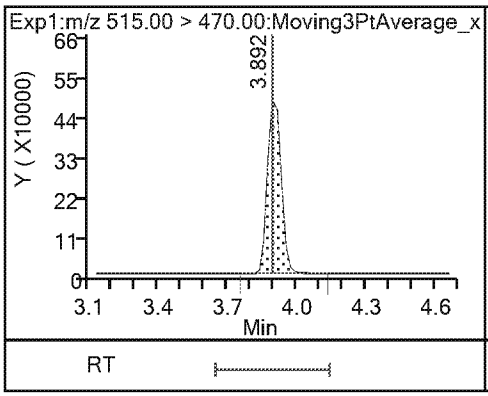
9 Perfluorononanoic acid (ND) 8 Perfluorooctanesulfonic acid (ND) 8 Perfluorooctanesulfonic acid (ND)



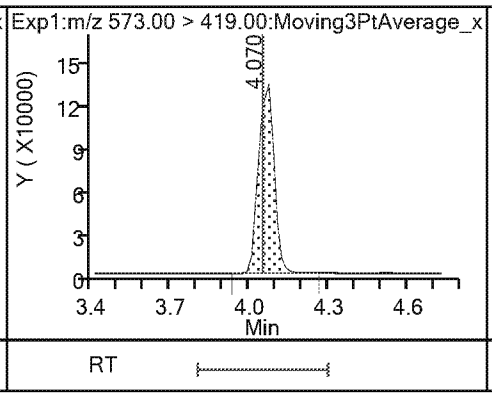
23 9-Chlorohexadecafluoro-3-oxanonane1(ND) 14 Perfluorodecanoic acid (ND) 14 Perfluorodecanoic acid (ND)



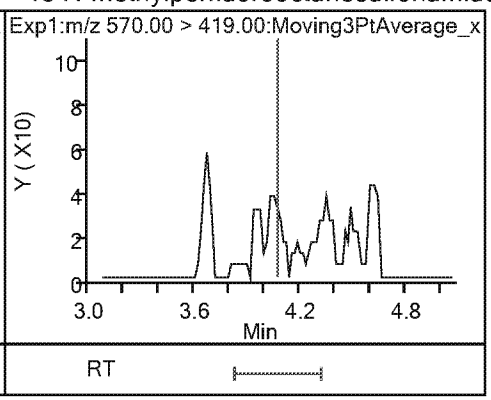
$ 10 13C2 PFDA



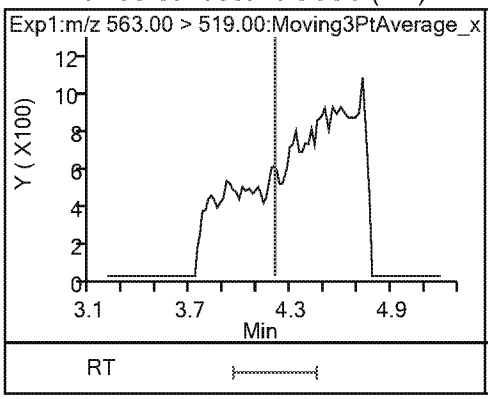
* 12 d3-NMeFOSAA



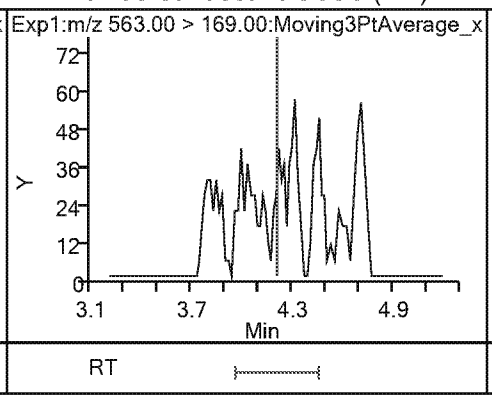
15 N-methylperfluorooctanesulfonamido (ND)



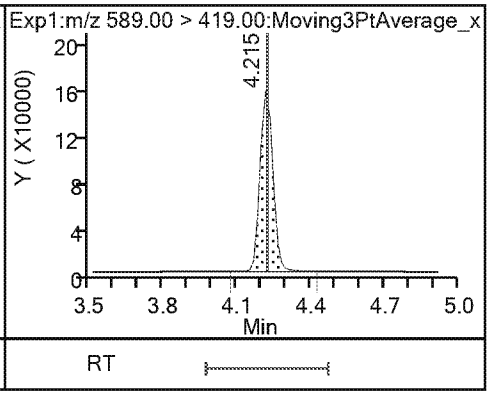
17 Perfluoroundecanoic acid (ND)



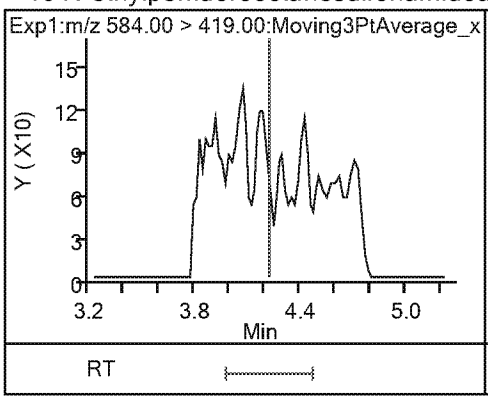
17 Perfluoroundecanoic acid (ND)



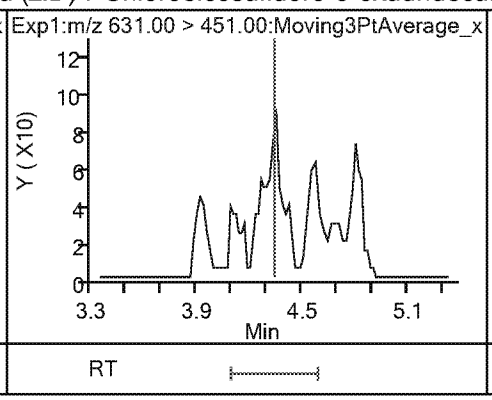
$ 11 d5-NEtFOSAA



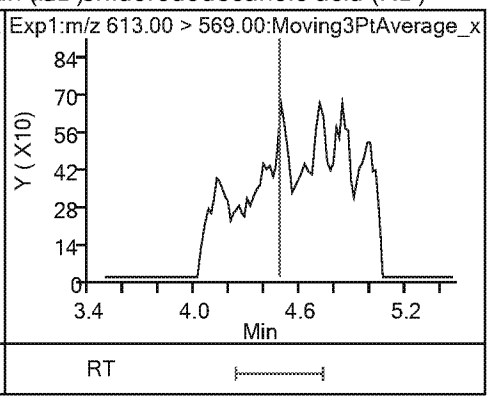
16 N-ethylperfluorooctanesulfonamidoa (ND)



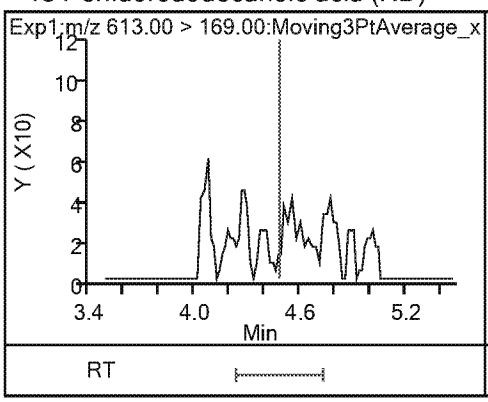
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



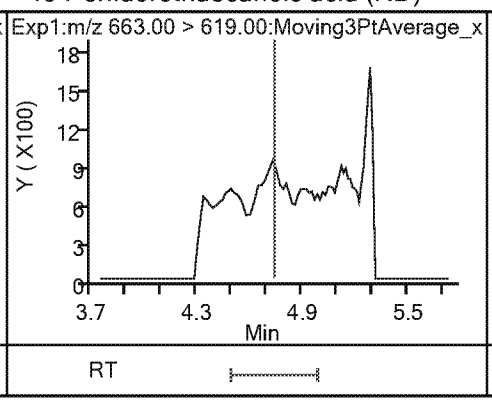
18 Perfluorododecanoic acid (ND)



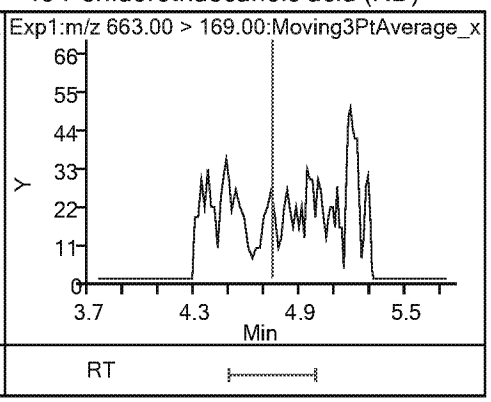
18 Perfluorododecanoic acid (ND)



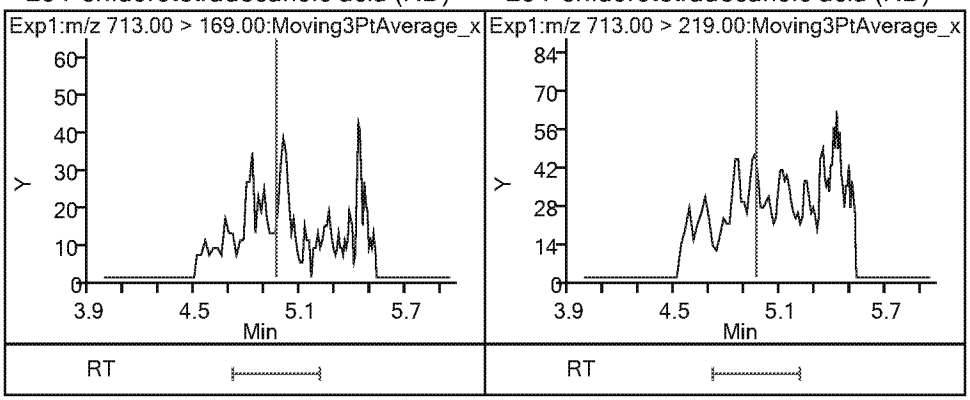
19 Perfluorotridecanoic acid (ND)



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_023.d
Lims ID: 320-48796-A-6-A
Client ID: C0AW2
Sample Type: Client
Inject. Date: 04-Apr-2019 22:01:27 ALS Bottle#: 14 Worklist Smp#: 19
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:44:02 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 13:40:40

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.36	94.39
$ 25 13C3 HFPO-DA	2.50	2.76	110.34
$ 10 13C2 PFDA	2.50	2.59	103.46
$ 11 d5-NEtFOSAA	2.50	2.50	100.07

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AW9
Lab Sample ID: 320-48796-7
Matrix: Water
Lab File ID: 2019.04.04_537AA_026.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:20
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 277.8(mL)
Date Analyzed: 04/04/2019 22:29
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.: 286190
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	98		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_026.d
Lims ID: 320-48796-A-7-A
Client ID: C0AW9
Sample Type: Client
Inject. Date: 04-Apr-2019 22:29:45 ALS Bottle#: 15 Worklist Smp#: 22
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:46:15 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

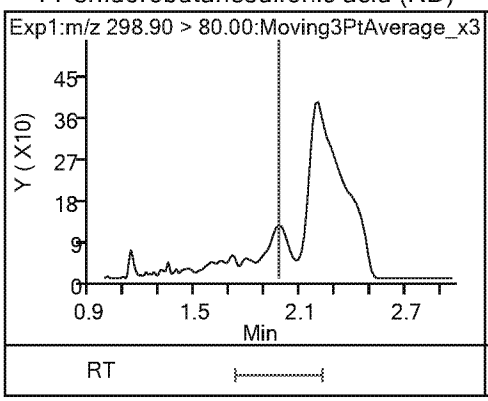
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:41:14
Ratio Calibration: None

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	2.322	0.025	1.000	3452130	2.44		6017	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	187334	2.95		1228	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.158	0.019		3028297	2.50		7496	
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.534	0.015		2983222	2.39		7365	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.892	0.019	1.000	1896317	2.52		6565	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		522586	2.50		2860	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.220	4.220	0.0	1.037	492143	2.30		281	

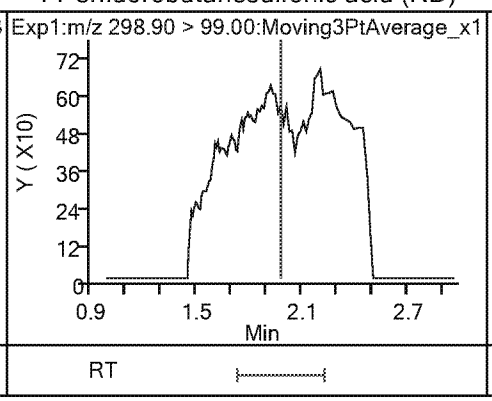
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_026.d				
Injection Date:	04-Apr-2019 22:29:45	Instrument ID:	A8_N		
Lims ID:	320-48796-A-7-A	Lab Sample ID:	320-48796-7		
Client ID:	C0AW9				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	22
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

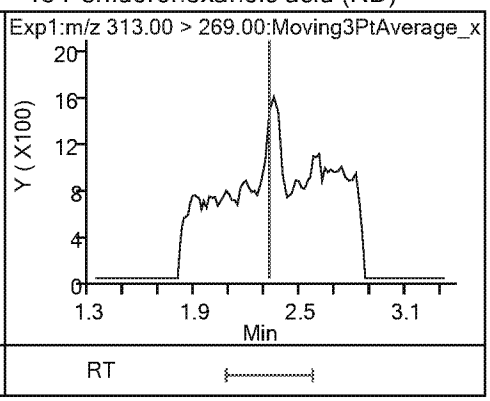
1 Perfluorobutanesulfonic acid (ND)



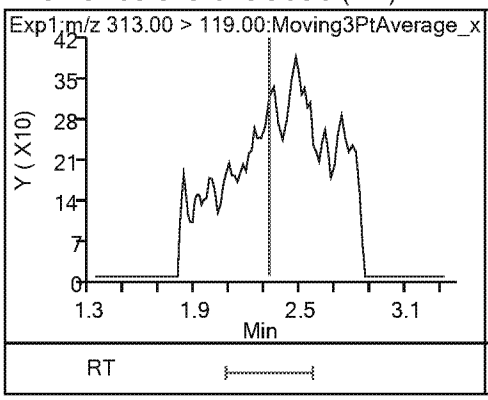
1 Perfluorobutanesulfonic acid (ND)



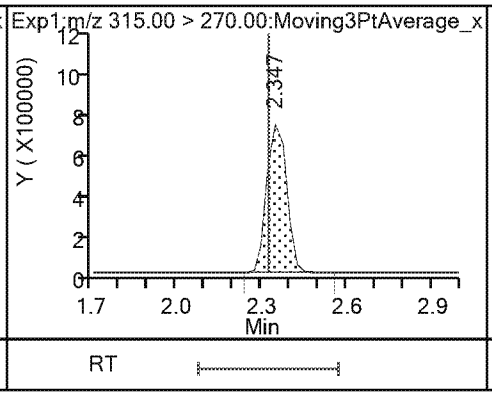
13 Perfluorohexanoic acid (ND)



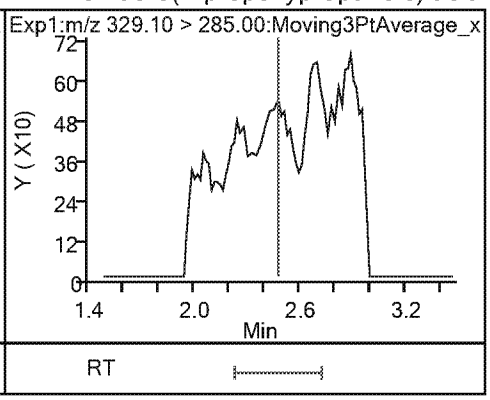
13 Perfluorohexanoic acid (ND)



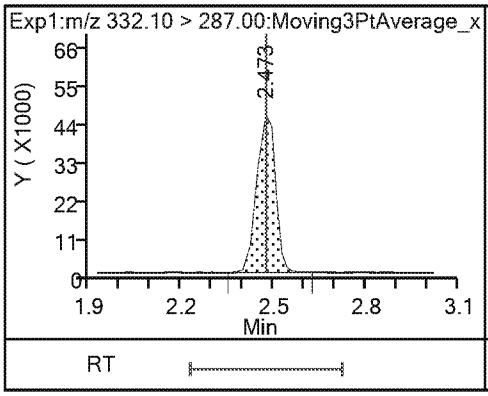
$ 2 13C2 PFHxA



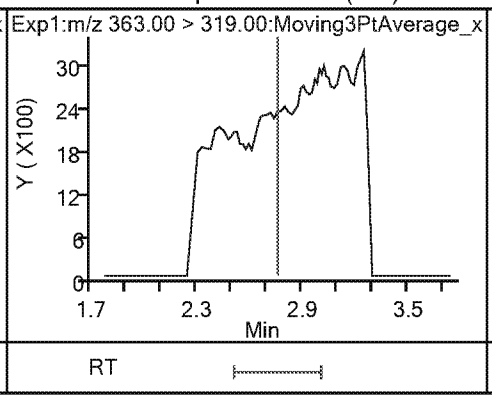
22 Perfluoro(2-propoxypropanoic) acid (ND)



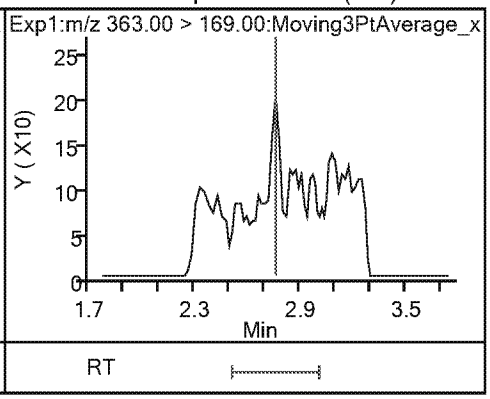
$ 25 13C3 HFPO-DA



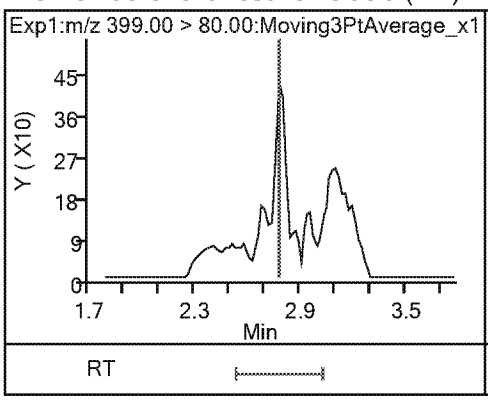
4 Perfluoroheptanoic acid (ND)



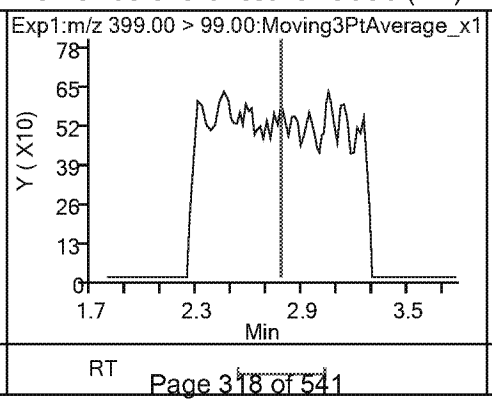
4 Perfluoroheptanoic acid (ND)



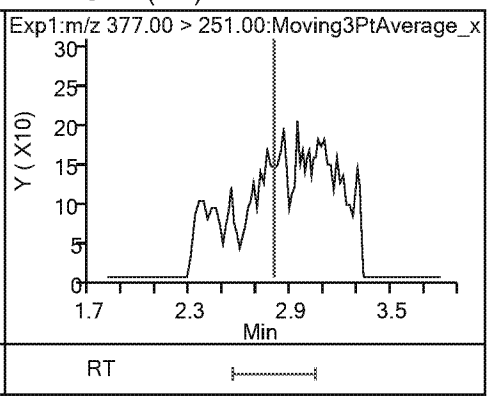
3 Perfluorohexanesulfonic acid (ND)



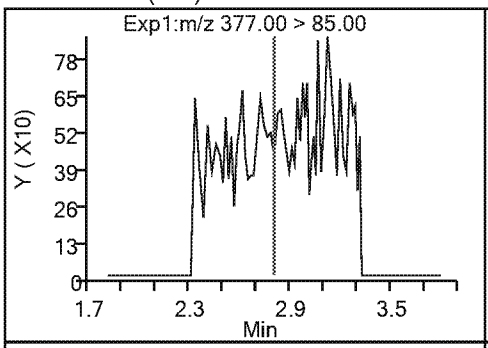
3 Perfluorohexanesulfonic acid (ND)



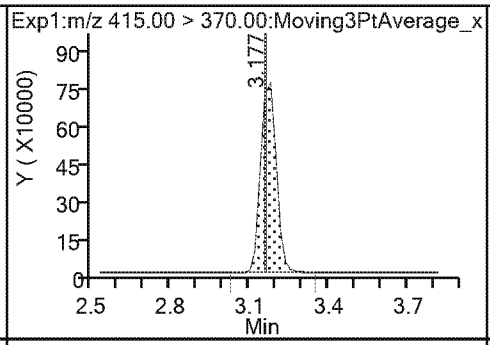
24 DONA (ND)



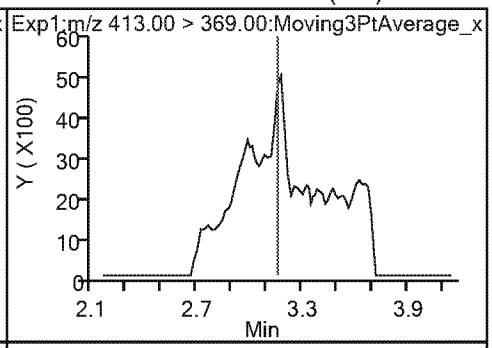
24 DONA (ND)



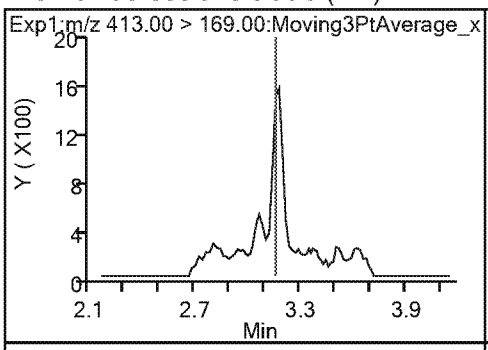
* 5 13C2 PFOA



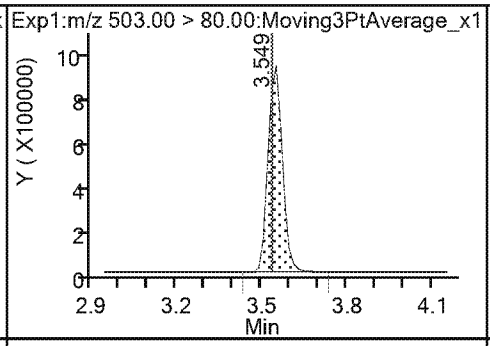
6 Perfluorooctanoic acid (ND)



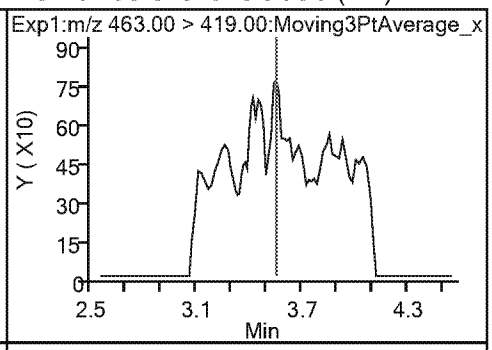
6 Perfluorooctanoic acid (ND)



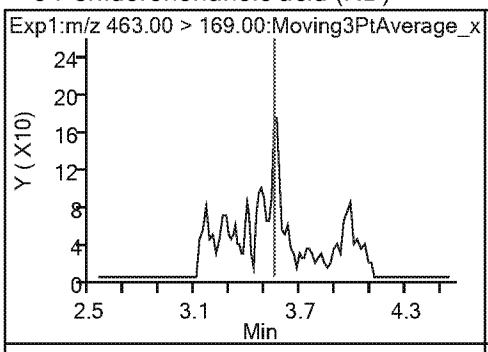
* 7 13C4 PFOS



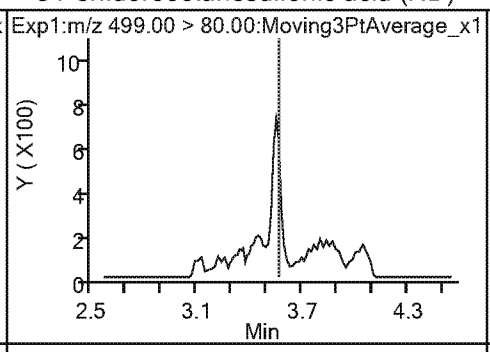
9 Perfluorononanoic acid (ND)



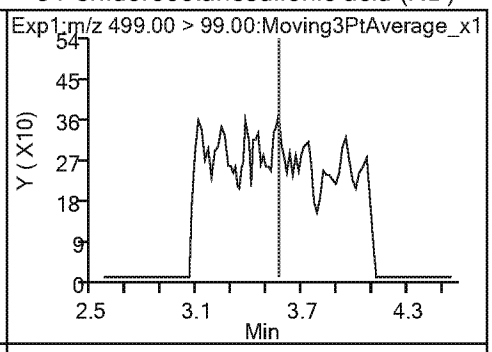
9 Perfluorononanoic acid (ND)



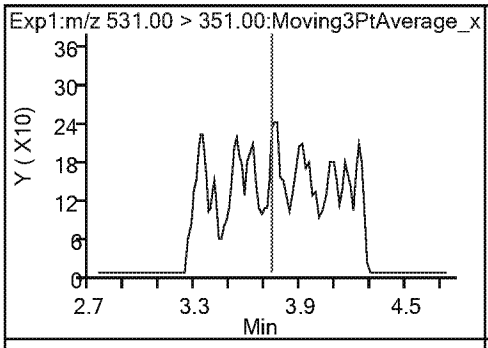
8 Perfluorooctanesulfonic acid (ND)



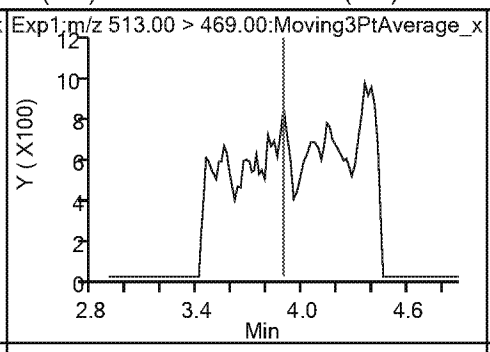
8 Perfluorooctanesulfonic acid (ND)



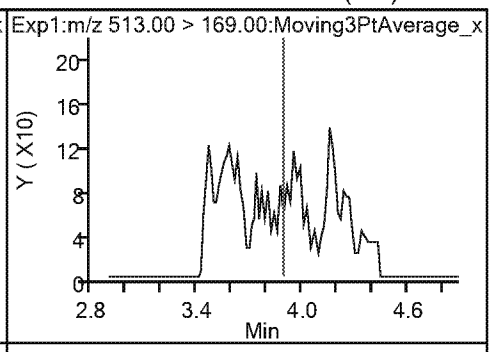
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



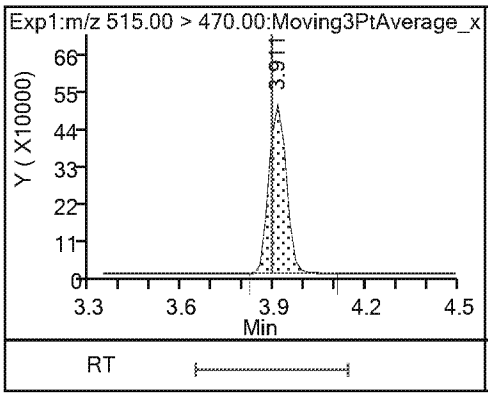
14 Perfluorodecanoic acid (ND)



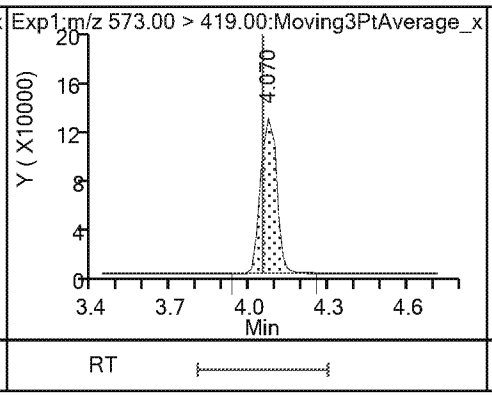
14 Perfluorodecanoic acid (ND)



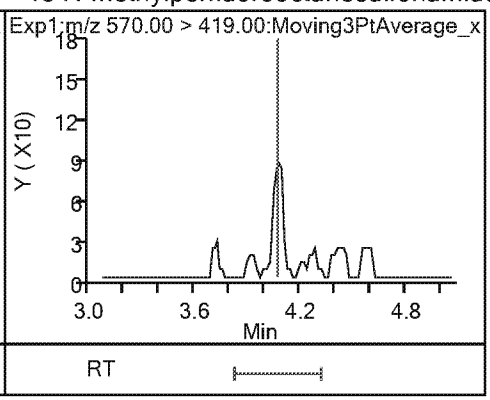
$ 10 13C2 PFDA



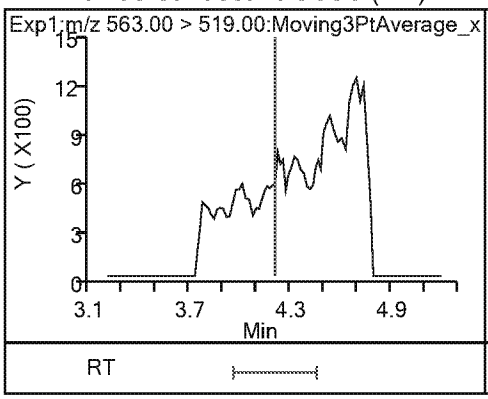
* 12 d3-NMeFOSAA



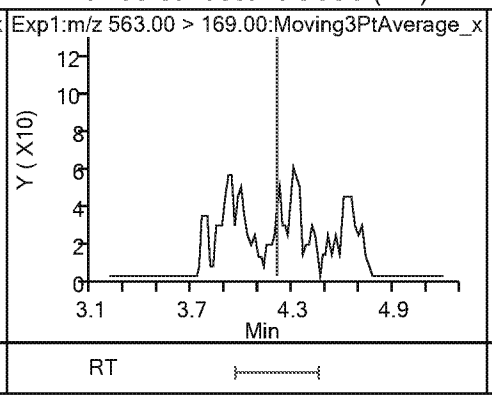
15 N-methylperfluorooctanesulfonamido (ND)



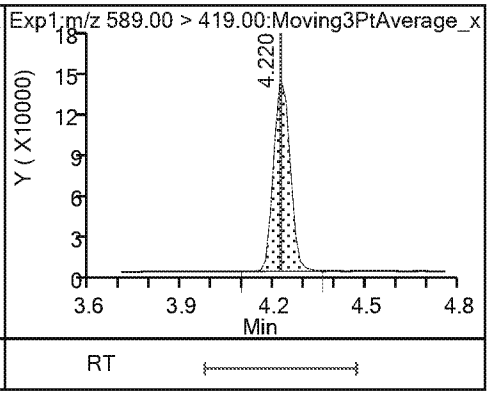
17 Perfluoroundecanoic acid (ND)



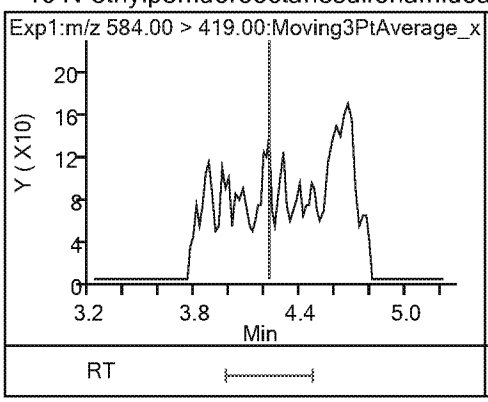
17 Perfluoroundecanoic acid (ND)



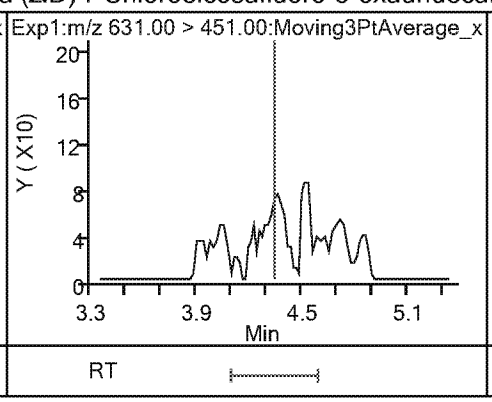
$ 11 d5-NEtFOSAA



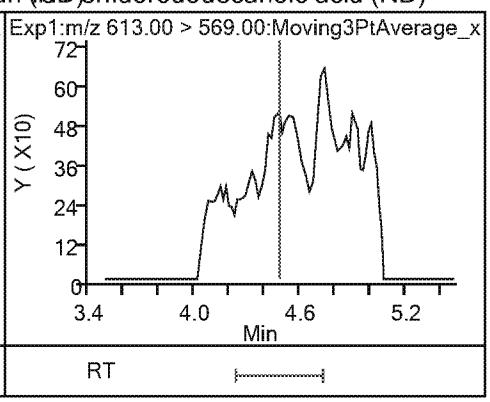
16 N-ethylperfluorooctanesulfonamidoa (ND)



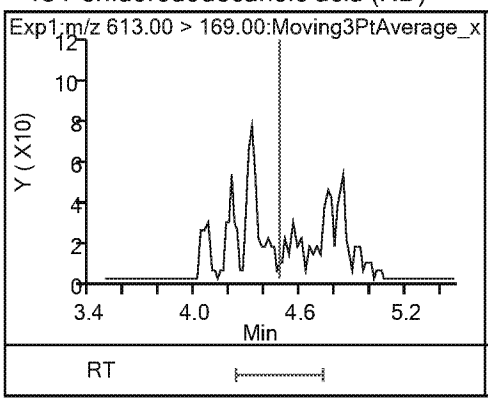
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



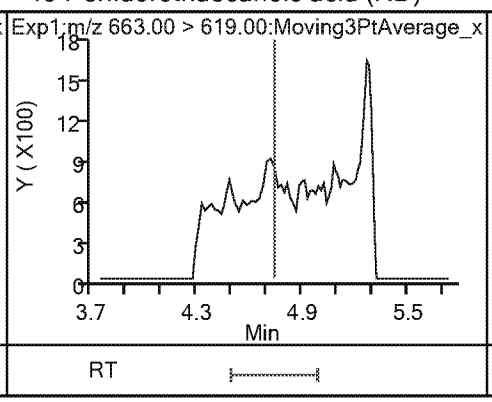
18 Perfluorododecanoic acid (ND)



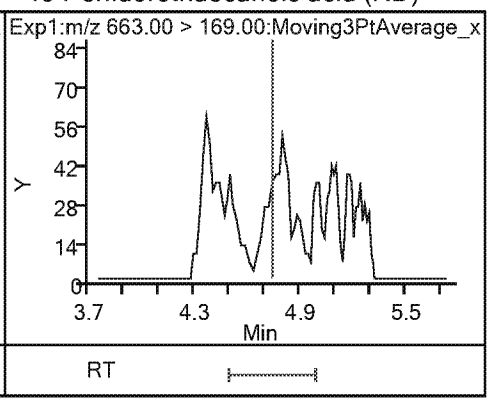
18 Perfluorododecanoic acid (ND)



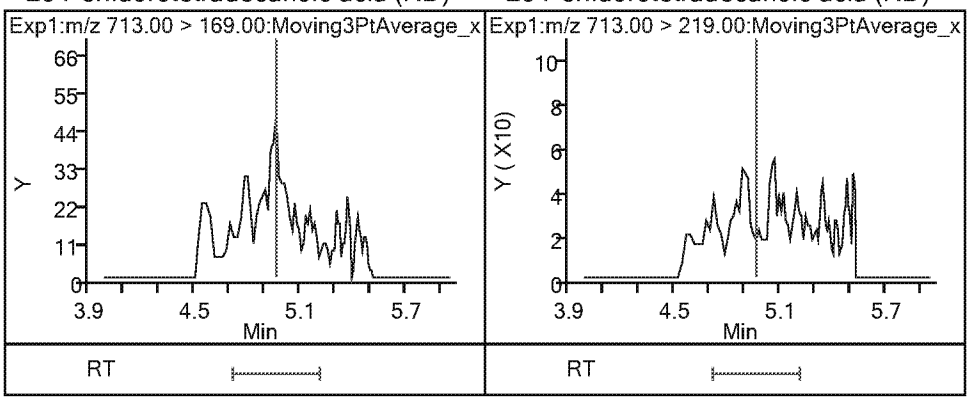
19 Perfluorotridecanoic acid (ND)



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_026.d				
Lims ID:	320-48796-A-7-A				
Client ID:	C0AW9				
Sample Type:	Client				
Inject. Date:	04-Apr-2019 22:29:45	ALS Bottle#:	15	Worklist Smp#:	22
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-48796-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 13:46:15	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 13:41:14

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.44	97.79
$ 25 13C3 HFPO-DA	2.50	2.95	118.16
$ 10 13C2 PFDA	2.50	2.52	100.84
$ 11 d5-NEtFOSAA	2.50	2.30	92.15

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AX0
Lab Sample ID: 320-48796-8
Matrix: Water
Lab File ID: 2019.04.04_537AA_027.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:15
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 278.2(mL)
Date Analyzed: 04/04/2019 22:39
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.: 286190
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	102		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_027.d
Lims ID: 320-48796-A-8-A
Client ID: C0AX0
Sample Type: Client
Inject. Date: 04-Apr-2019 22:39:10 ALS Bottle#: 16 Worklist Smp#: 23
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:46:15 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

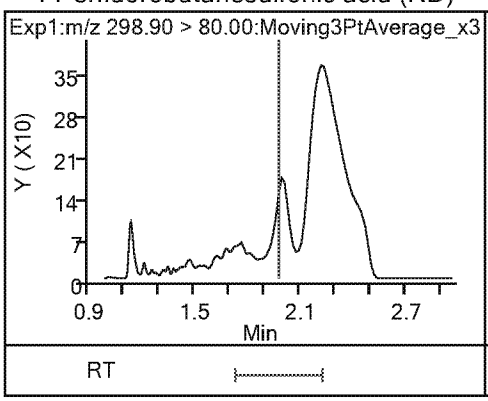
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:41:32
Ratio Calibration: None

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	2.322	0.025	1.000	3522764	2.54		6339	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	214862	3.45		1608	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.158	0.019		2974325	2.50		7396	
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.534	0.015		2976132	2.39		5875	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.892	0.019	1.000	1935129	2.62		8835	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		541951	2.50		2827	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.086	4.070	0.016	1.004	1671	0.008234		18.1	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.214	4.220	-0.006	1.035	510839	2.31		340	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.214	4.220	-0.006	1.000	3776	0.0192		9.0	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.348	4.339	0.009	1.000	1174	0.000442		10.5	

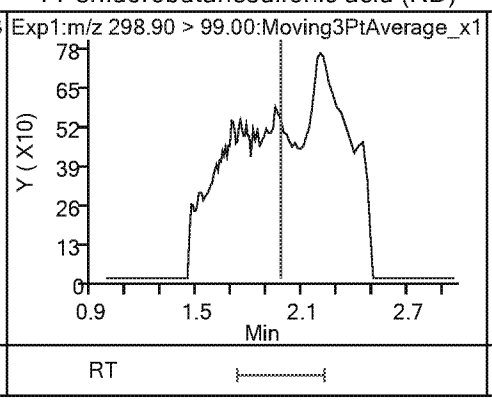
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_027.d				
Injection Date:	04-Apr-2019 22:39:10	Instrument ID:	A8_N		
Lims ID:	320-48796-A-8-A	Lab Sample ID:	320-48796-8		
Client ID:	C0AX0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	23
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

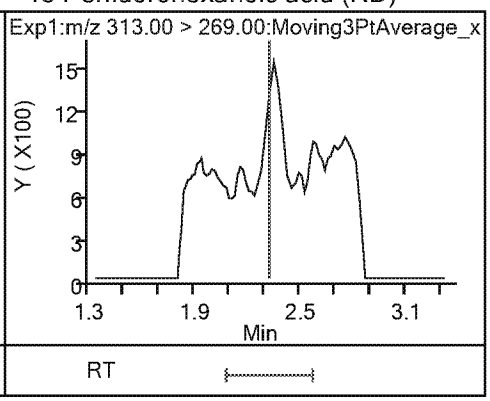
1 Perfluorobutanesulfonic acid (ND)



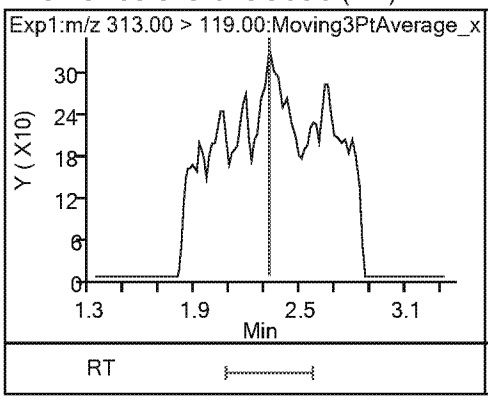
1 Perfluorobutanesulfonic acid (ND)



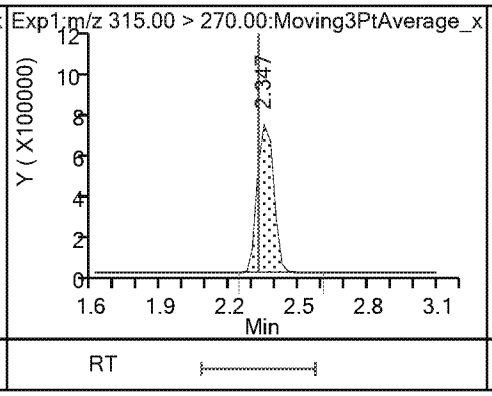
13 Perfluorohexanoic acid (ND)



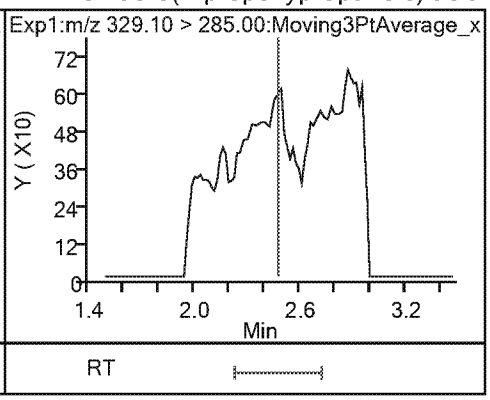
13 Perfluorohexanoic acid (ND)



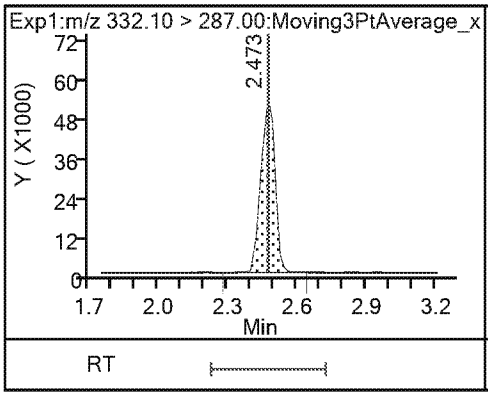
$ 2 13C2 PFHxA



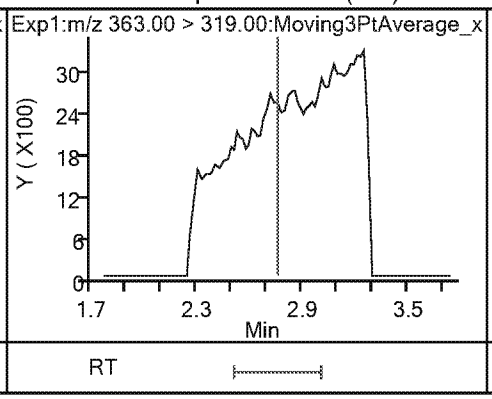
22 Perfluoro(2-propoxypropanoic) acid (ND)



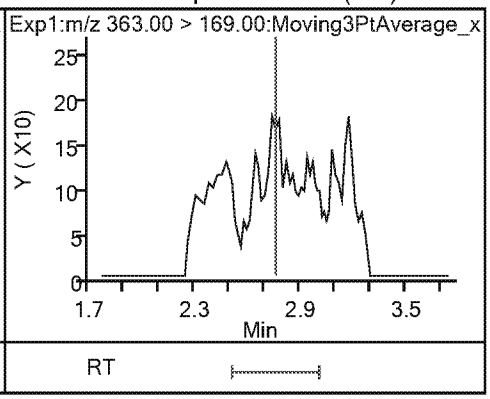
$ 25 13C3 HFPO-DA



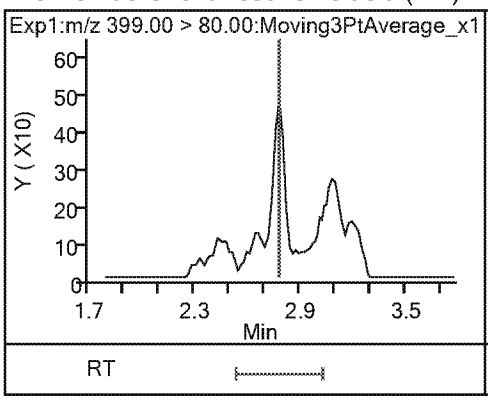
4 Perfluoroheptanoic acid (ND)



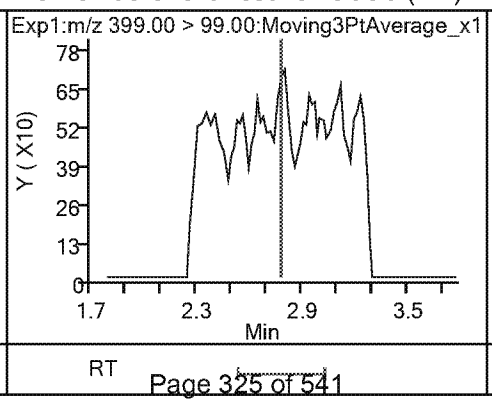
4 Perfluoroheptanoic acid (ND)



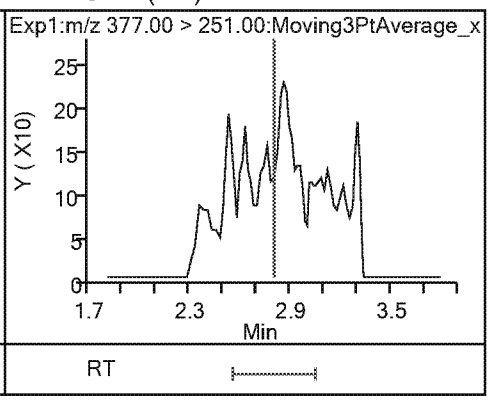
3 Perfluorohexanesulfonic acid (ND)



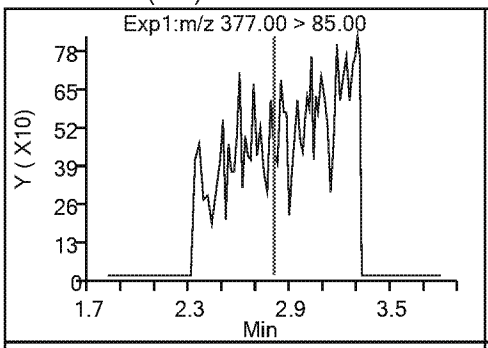
3 Perfluorohexanesulfonic acid (ND)



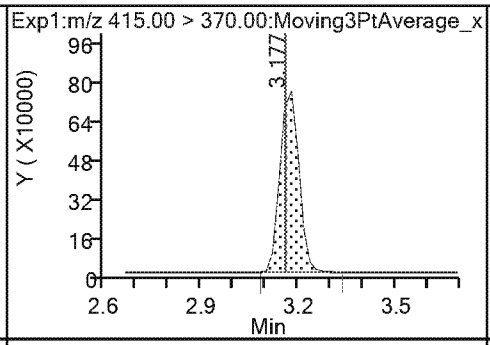
24 DONA (ND)



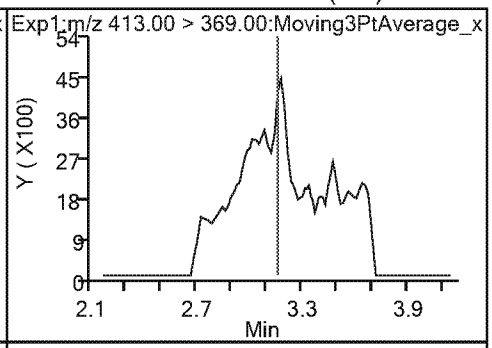
24 DONA (ND)



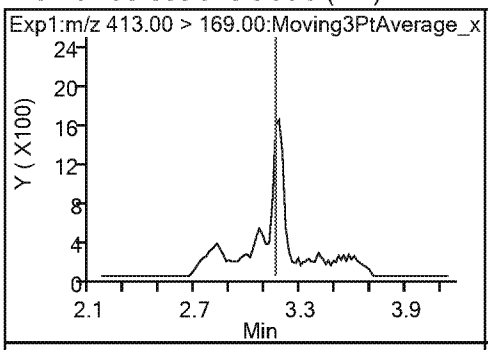
* 5 13C2 PFOA



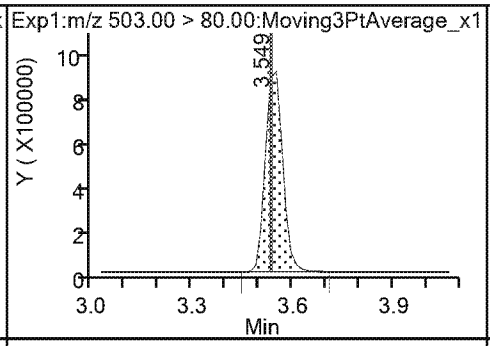
6 Perfluorooctanoic acid (ND)



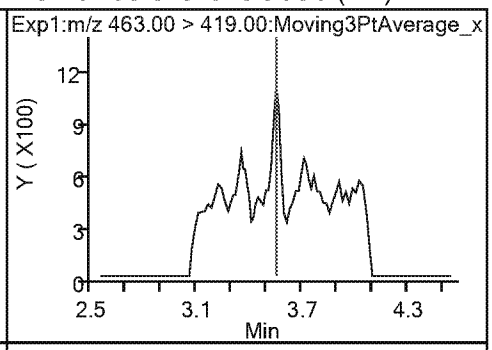
6 Perfluorooctanoic acid (ND)



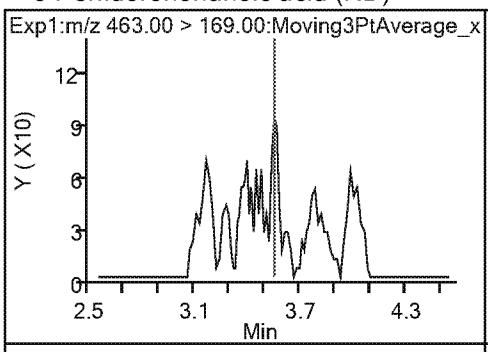
* 7 13C4 PFOS



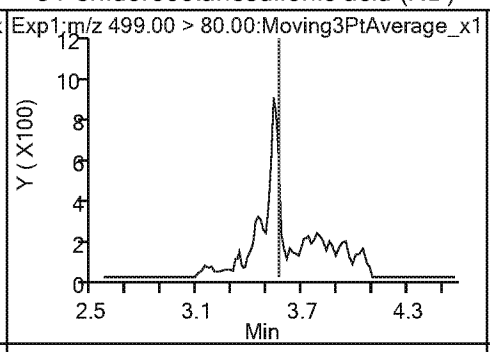
9 Perfluorononanoic acid (ND)



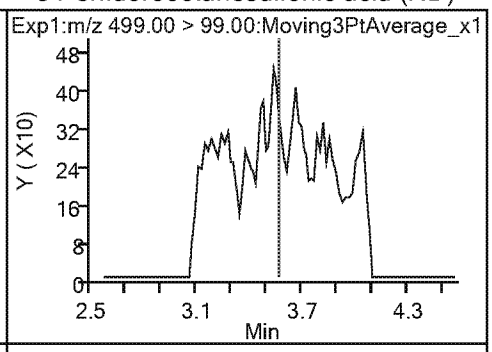
9 Perfluorononanoic acid (ND)



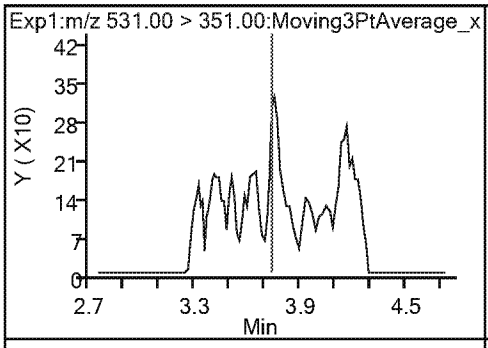
8 Perfluorooctanesulfonic acid (ND)



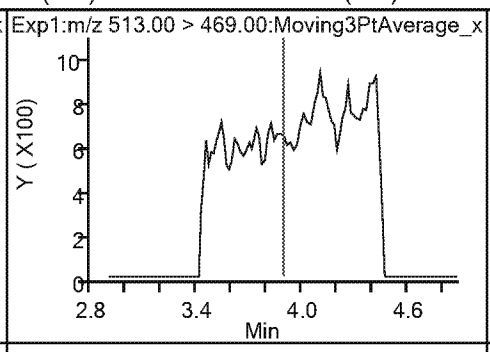
8 Perfluorooctanesulfonic acid (ND)



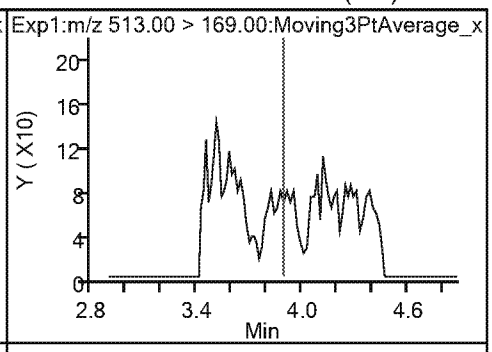
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



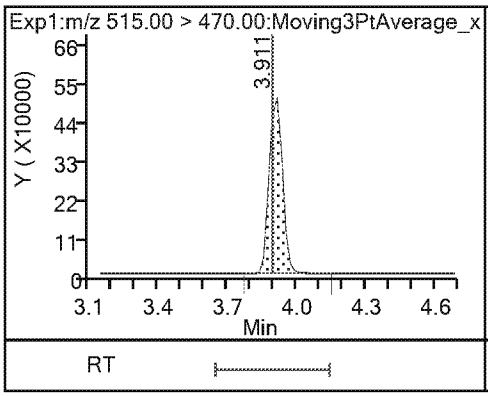
14 Perfluorodecanoic acid (ND)



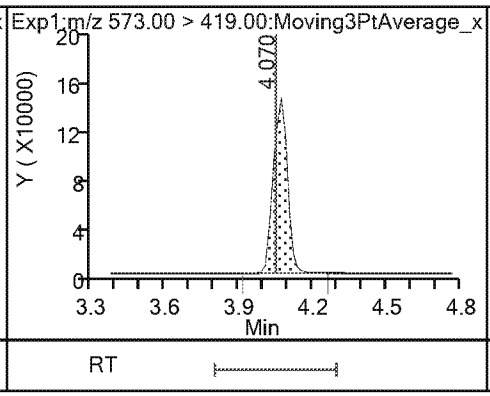
14 Perfluorodecanoic acid (ND)



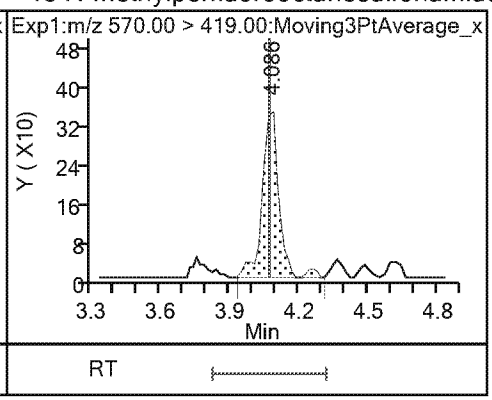
$ 10 13C2 PFDA



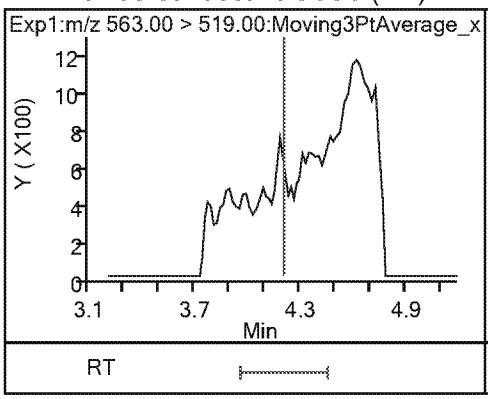
* 12 d3-NMeFOSAA



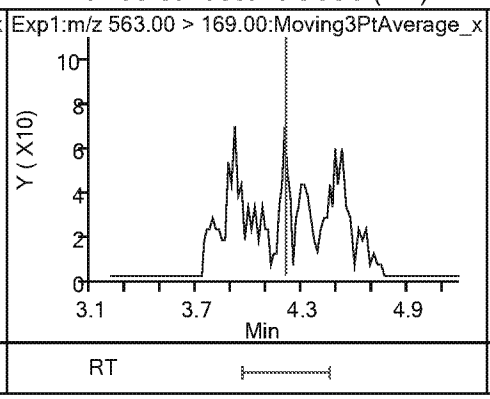
15 N-methylperfluorooctanesulfonamido



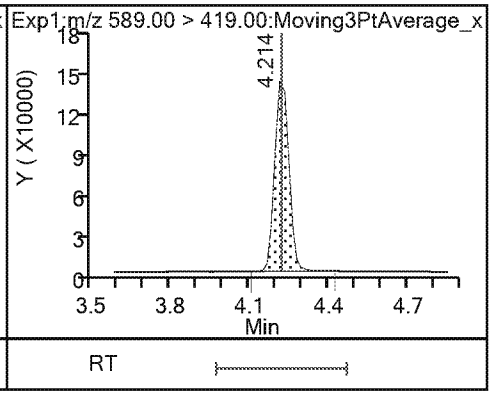
17 Perfluoroundecanoic acid (ND)



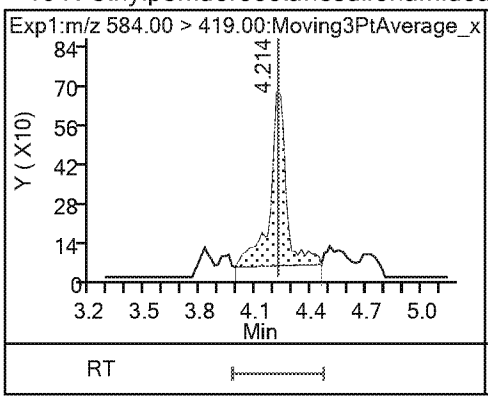
17 Perfluoroundecanoic acid (ND)



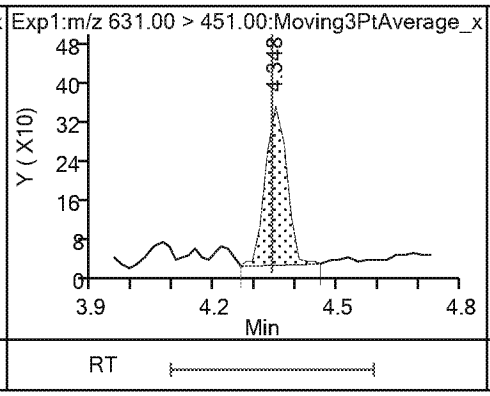
$ 11 d5-NEtFOSAA



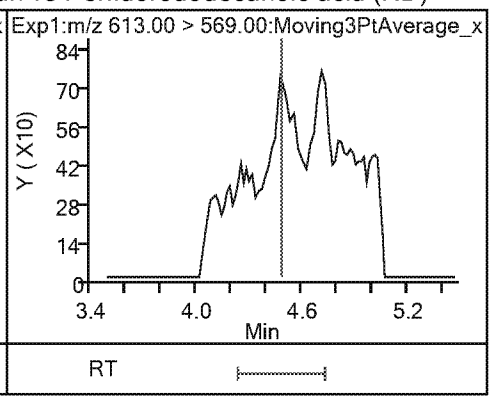
16 N-ethylperfluorooctanesulfonamidoa



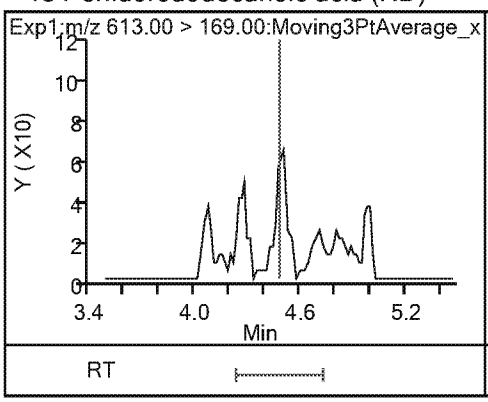
21 11-Chloroeicosafluoro-3-oxaundecan



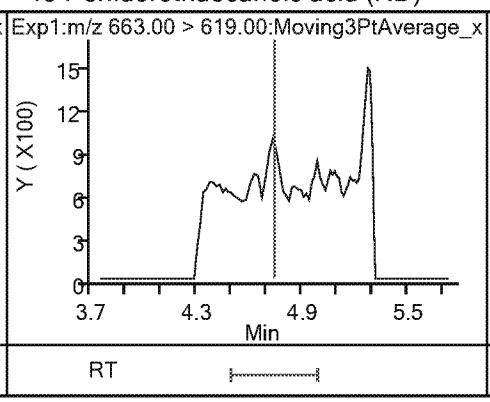
18 Perfluorododecanoic acid (ND)



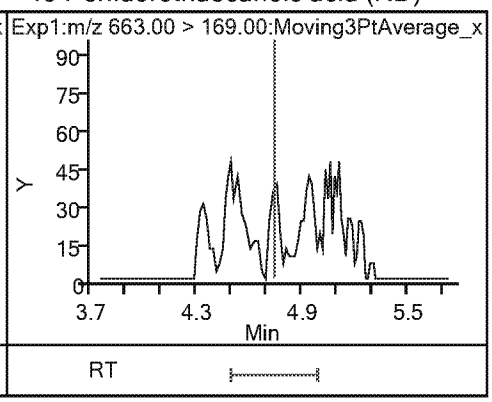
18 Perfluorododecanoic acid (ND)



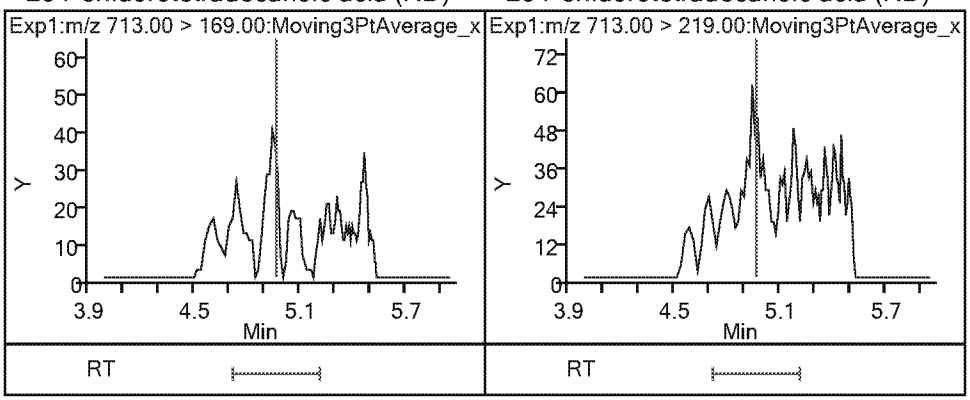
19 Perfluorotridecanoic acid (ND)



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_027.d
Lims ID: 320-48796-A-8-A
Client ID: C0AX0
Sample Type: Client
Inject. Date: 04-Apr-2019 22:39:10 ALS Bottle#: 16 Worklist Smp#: 23
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:46:15 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 13:41:32

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.54	101.61
$ 25 13C3 HFPO-DA	2.50	3.45	137.98
$ 10 13C2 PFDA	2.50	2.62	104.77
$ 11 d5-NEtFOSAA	2.50	2.31	92.23

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AX7
Lab Sample ID: 320-48796-9
Matrix: Water
Lab File ID: 2019.04.04_537AA_028.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 16:58
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 275.4(mL)
Date Analyzed: 04/04/2019 22:48
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.: 286190
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	2.5
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	100		70-130
STL00996	13C2 PFDA	103		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_028.d
Lims ID: 320-48796-A-9-A
Client ID: C0AX7
Sample Type: Client
Inject. Date: 04-Apr-2019 22:48:35 ALS Bottle#: 17 Worklist Smp#: 24
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:46:15 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

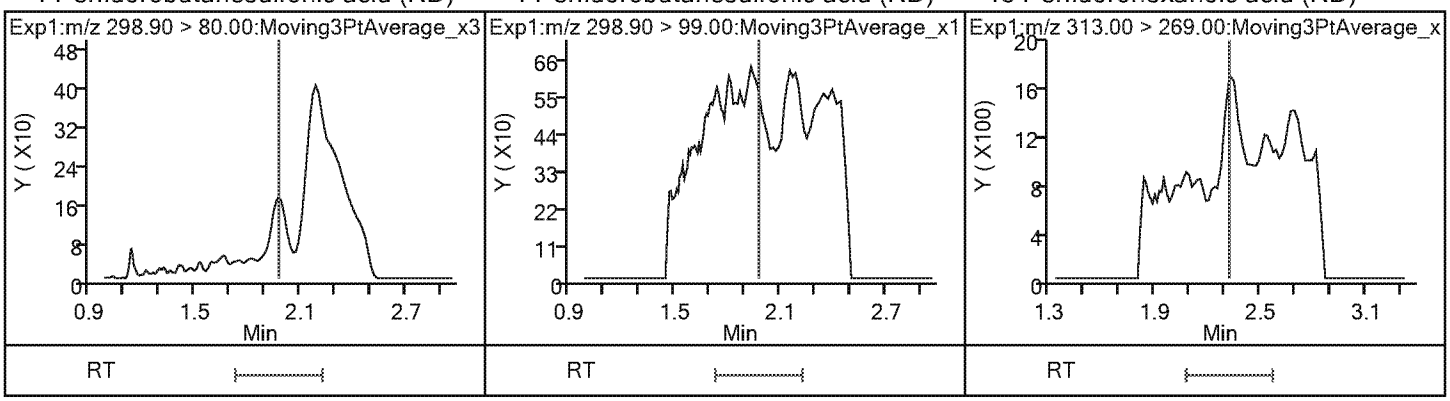
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:41:49
Ratio Calibration: None

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	2.322	0.0	1.000	3492759	2.50		6641	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.448	2.473	-0.025	1.000	159733	2.55		1091	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.158	0.0		2994148	2.50		11639	
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.534	0.0		2983541	2.39		7388	
$ 10 13C2 PFDA									
515.00 > 470.00	3.892	3.892	0.0	1.000	1911502	2.57		7262	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.048	4.048	0.0		534445	2.50		3033	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.215	4.220	-0.006	1.041	499419	2.29		294	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.330	4.339	-0.009	1.000	1618	0.000608		12.2	

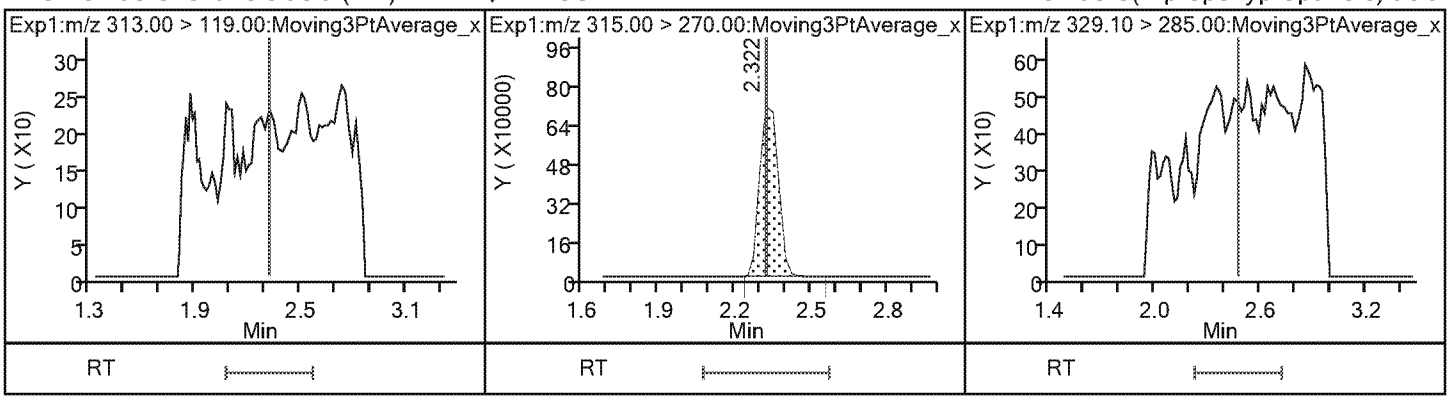
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_028.d				
Injection Date:	04-Apr-2019 22:48:35	Instrument ID:	A8_N		
Lims ID:	320-48796-A-9-A	Lab Sample ID:	320-48796-9		
Client ID:	C0AX7				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	24
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

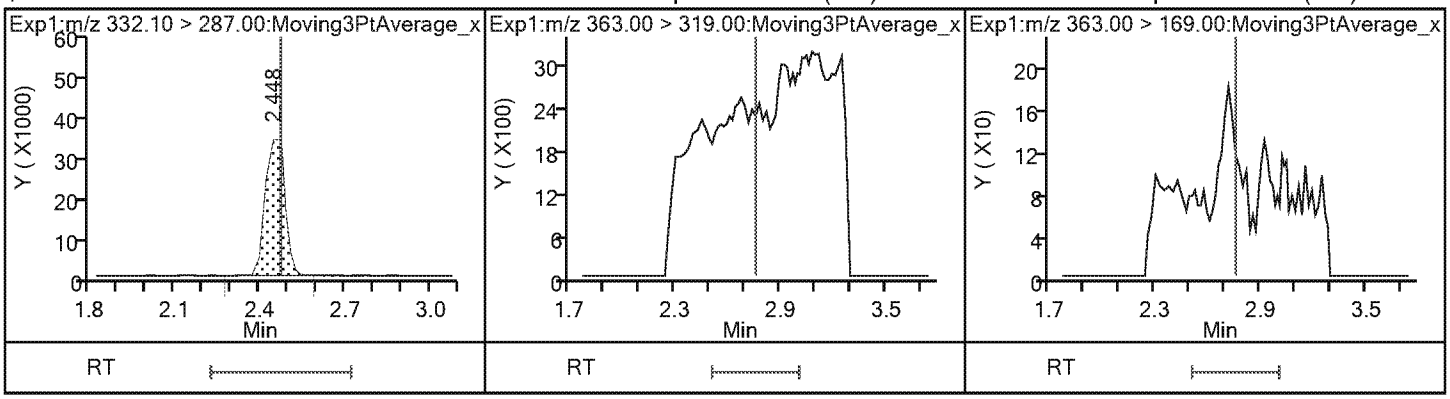
1 Perfluorobutanesulfonic acid (ND) | 1 Perfluorobutanesulfonic acid (ND) | 13 Perfluorohexanoic acid (ND)



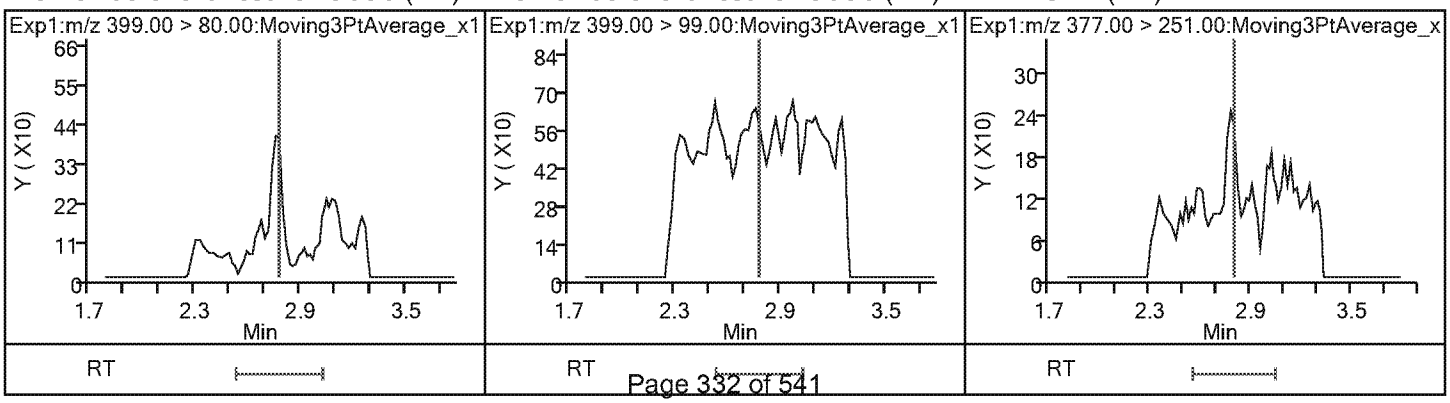
13 Perfluorohexanoic acid (ND) | $ 2 13C2 PFHxA | 22 Perfluoro(2-propoxypropanoic) acid (ND)



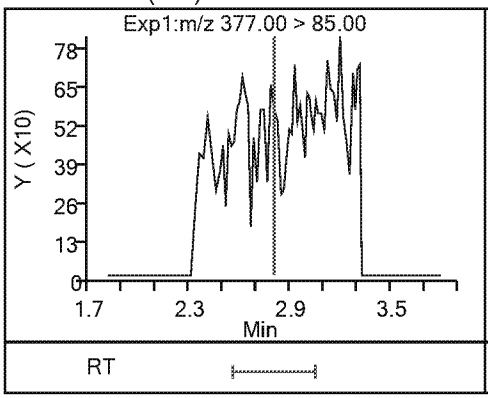
$ 25 13C3 HFPO-DA | 4 Perfluoroheptanoic acid (ND) | 4 Perfluoroheptanoic acid (ND)



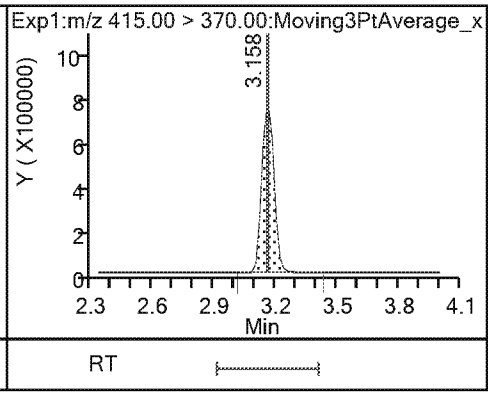
3 Perfluorohexanesulfonic acid (ND) | 3 Perfluorohexanesulfonic acid (ND) | 24 DONA (ND)



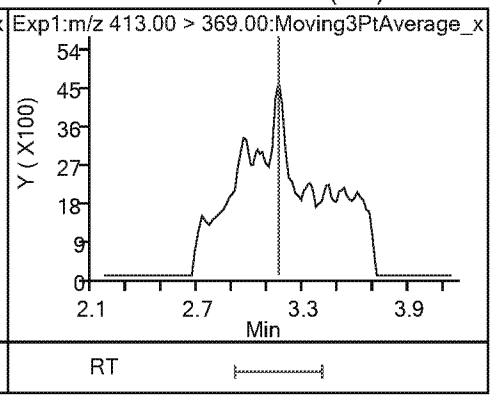
24 DONA (ND)



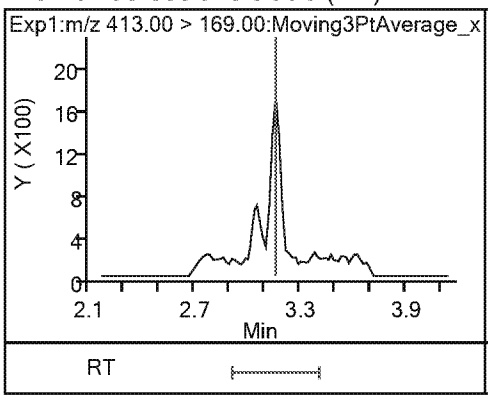
* 5 13C2 PFOA



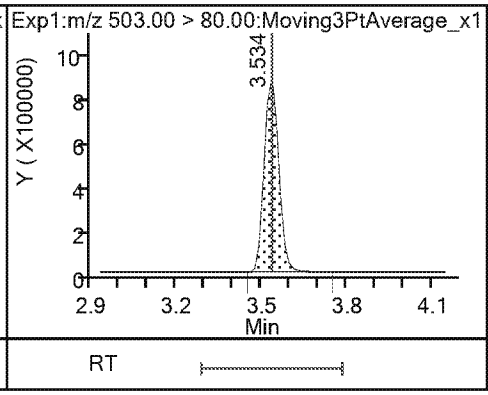
6 Perfluorooctanoic acid (ND)



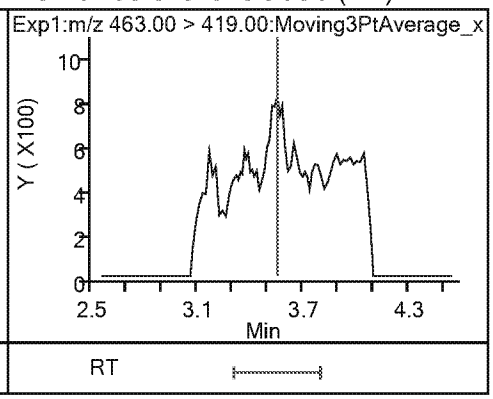
6 Perfluorooctanoic acid (ND)



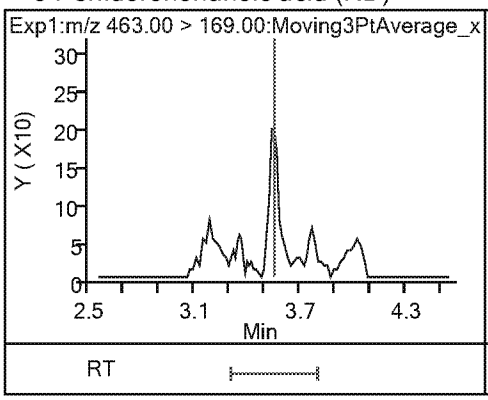
* 7 13C4 PFOS



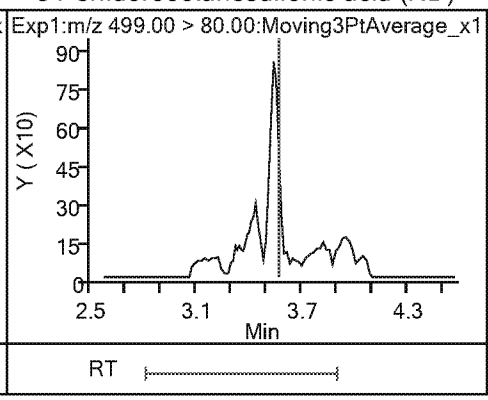
9 Perfluorononanoic acid (ND)



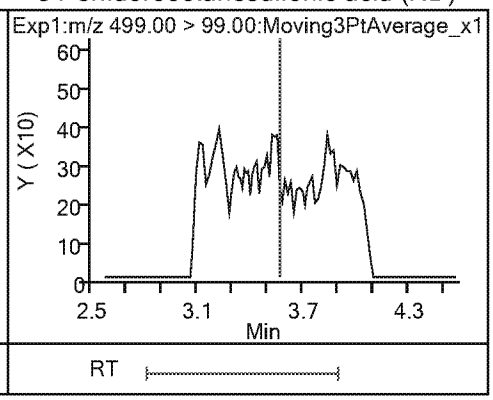
9 Perfluorononanoic acid (ND)



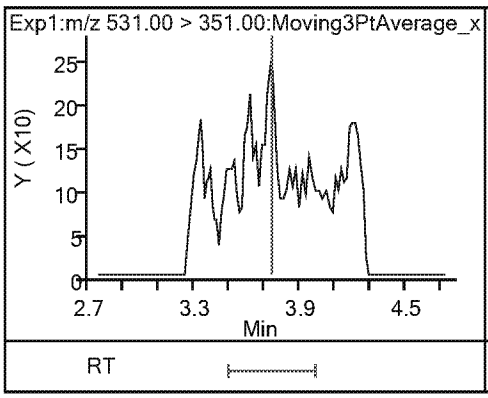
8 Perfluorooctanesulfonic acid (ND)



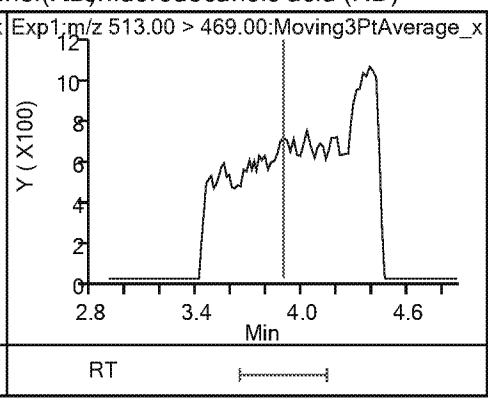
8 Perfluorooctanesulfonic acid (ND)



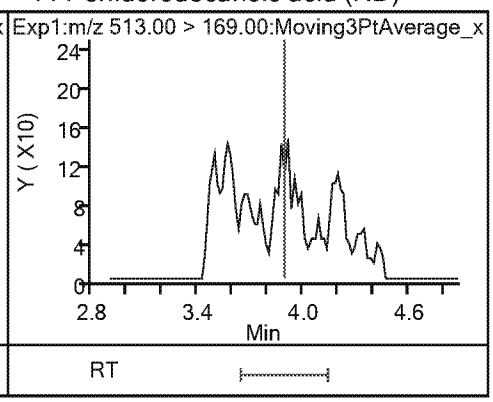
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



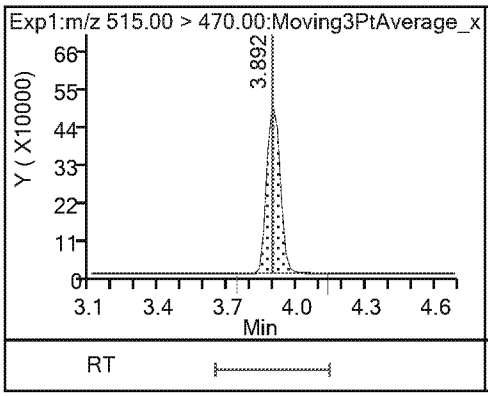
14 Perfluorodecanoic acid (ND)



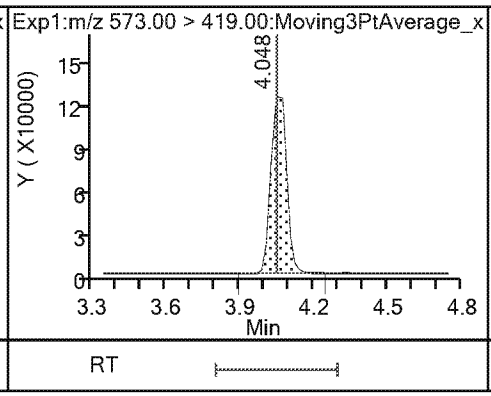
14 Perfluorodecanoic acid (ND)



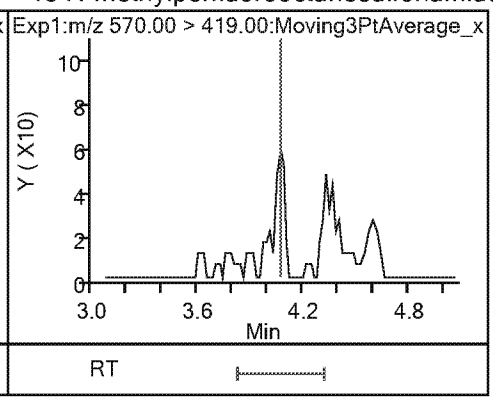
$ 10 13C2 PFDA



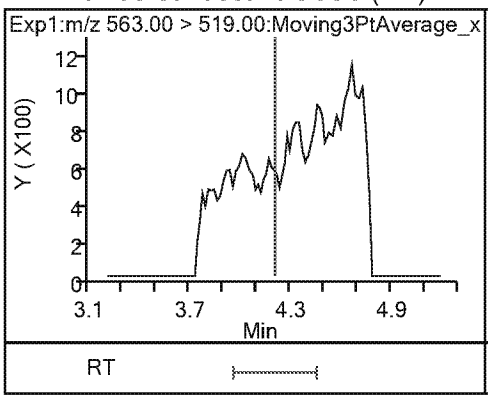
* 12 d3-NMeFOSAA



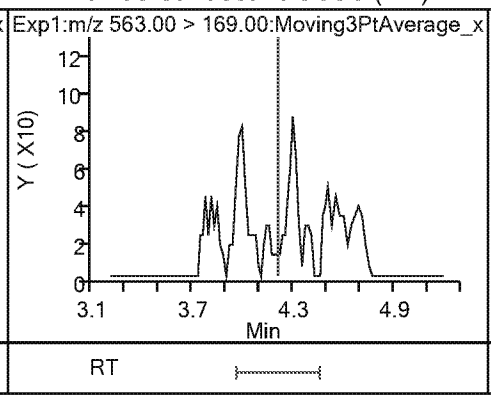
15 N-methylperfluorooctanesulfonamido (ND)



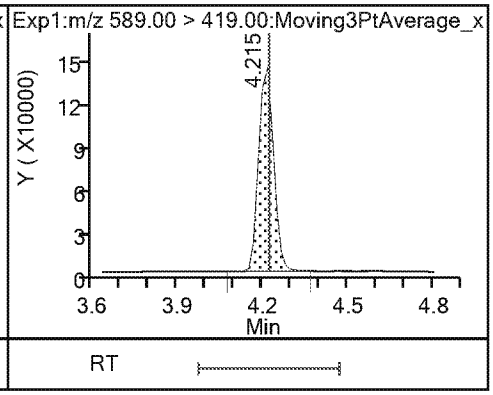
17 Perfluoroundecanoic acid (ND)



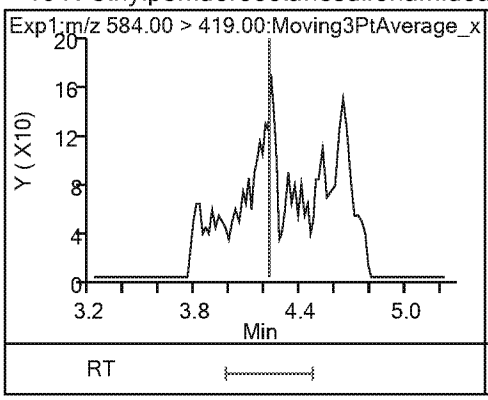
17 Perfluoroundecanoic acid (ND)



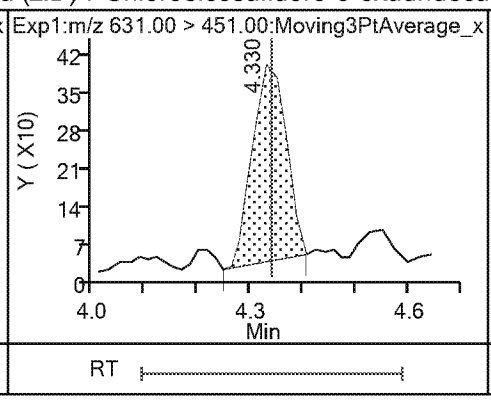
$ 11 d5-NEtFOSAA



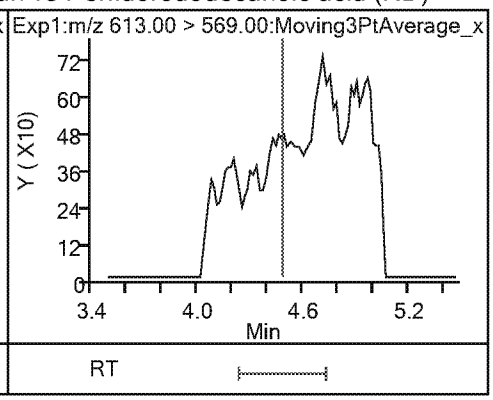
16 N-ethylperfluorooctanesulfonamidoa (ND)



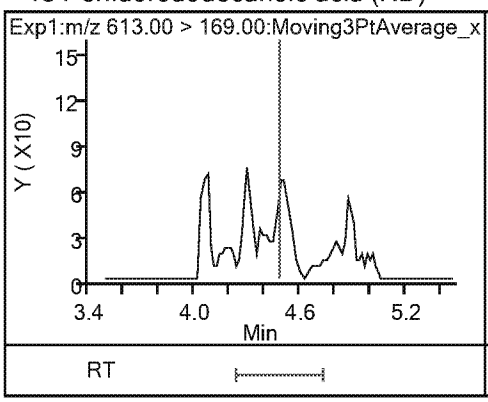
21 11-Chloroeicosafluoro-3-oxaundecan



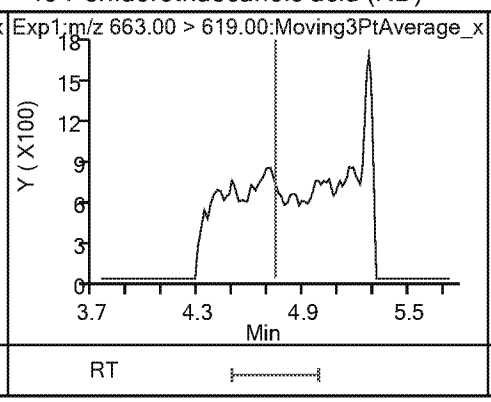
18 Perfluorododecanoic acid (ND)



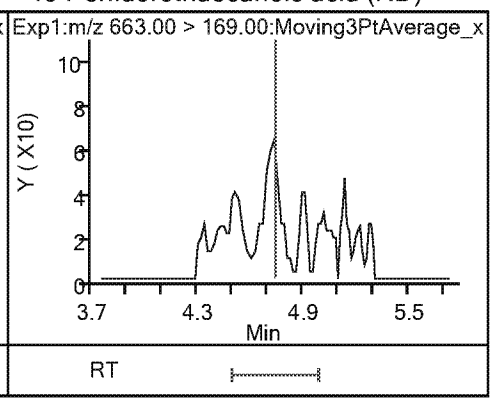
18 Perfluorododecanoic acid (ND)



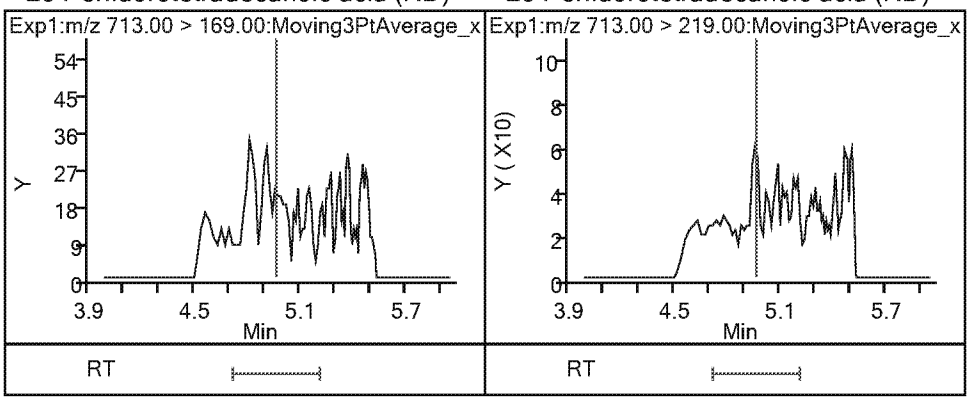
19 Perfluorotridecanoic acid (ND)



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_028.d
Lims ID: 320-48796-A-9-A
Client ID: C0AX7
Sample Type: Client
Inject. Date: 04-Apr-2019 22:48:35 ALS Bottle#: 17 Worklist Smp#: 24
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:46:15 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 13:41:49

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.50	100.07
$ 25 13C3 HFPO-DA	2.50	2.55	101.90
$ 10 13C2 PFDA	2.50	2.57	102.81
$ 11 d5-NEtFOSAA	2.50	2.29	91.43

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AX8
Lab Sample ID: 320-48796-10
Matrix: Water
Lab File ID: 2019.04.04_537AA_029.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 12:45
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 278.4(mL)
Date Analyzed: 04/04/2019 22:58
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.: 286190
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	99		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_029.d
Lims ID: 320-48796-A-10-A
Client ID: C0AX8
Sample Type: Client
Inject. Date: 04-Apr-2019 22:58:01 ALS Bottle#: 18 Worklist Smp#: 25
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-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 13:46:32 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

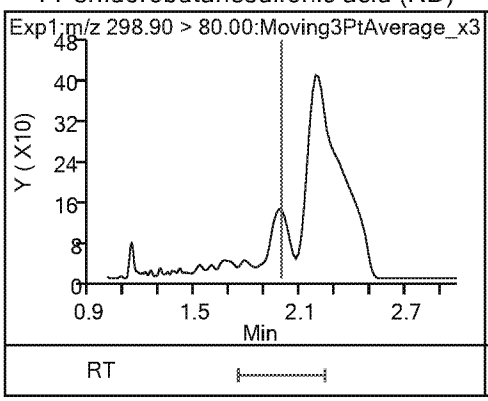
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:42:01
Ratio Calibration: None

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.347	0.001	1.000	3502011	2.49		6379	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	156770	2.48		1375	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.171	-0.013		3021990	2.50		8821	
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.531	0.003		3075394	2.39		6621	
$ 10 13C2 PFDA									
515.00 > 470.00	3.895	3.891	0.004	1.000	1998328	2.66		8830	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.051	4.069	-0.018		538724	2.50		2579	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.217	4.219	-0.002	1.041	525165	2.38		304	

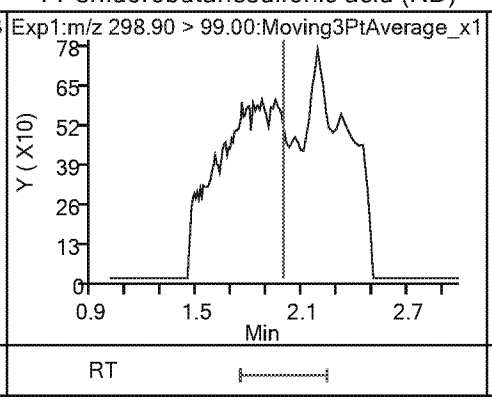
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_029.d				
Injection Date:	04-Apr-2019 22:58:01	Instrument ID:	A8_N		
Lims ID:	320-48796-A-10-A	Lab Sample ID:	320-48796-10		
Client ID:	C0AX8				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	18	Worklist Smp#:	25
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

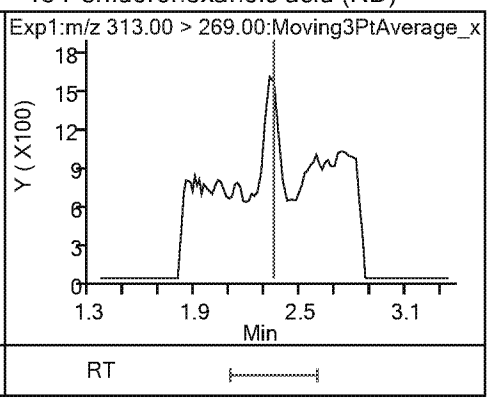
1 Perfluorobutanesulfonic acid (ND)



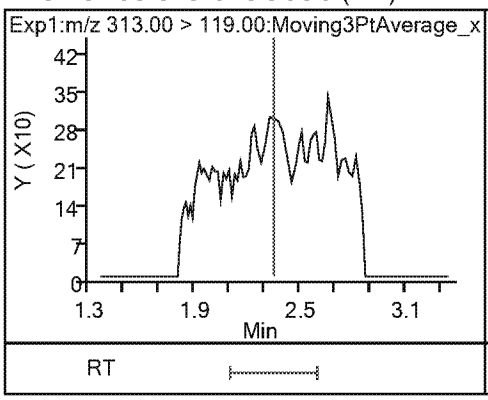
1 Perfluorobutanesulfonic acid (ND)



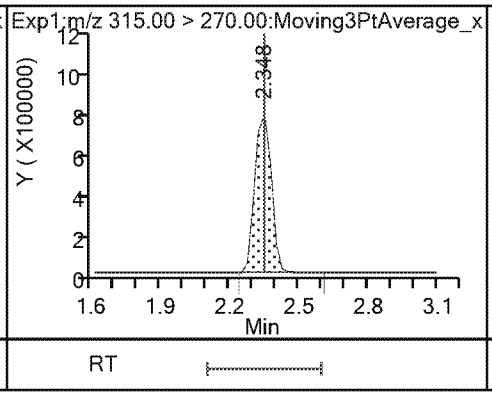
13 Perfluorohexanoic acid (ND)



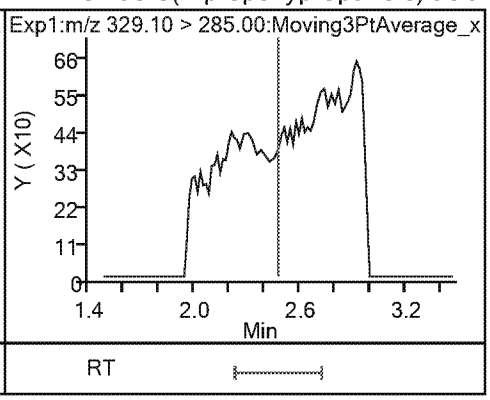
13 Perfluorohexanoic acid (ND)



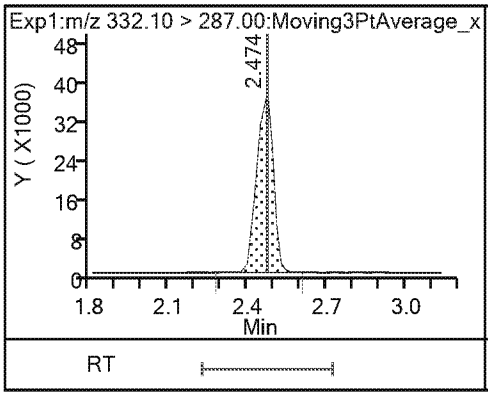
$ 2 13C2 PFHxA



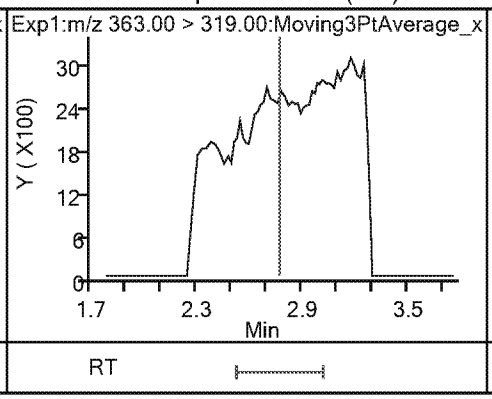
22 Perfluoro(2-propoxypropanoic) acid (ND)



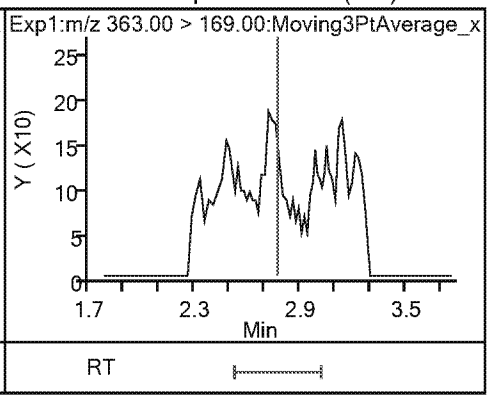
$ 25 13C3 HFPO-DA



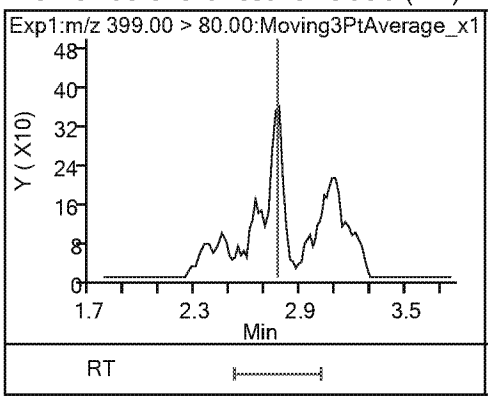
4 Perfluoroheptanoic acid (ND)



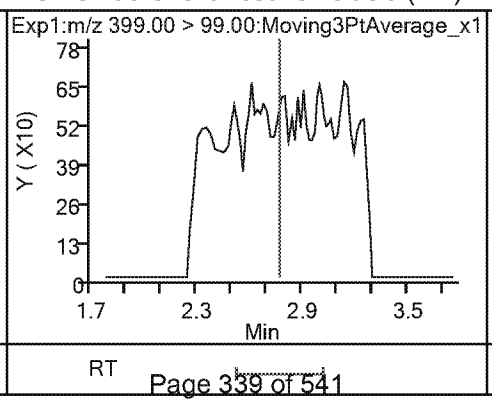
4 Perfluoroheptanoic acid (ND)



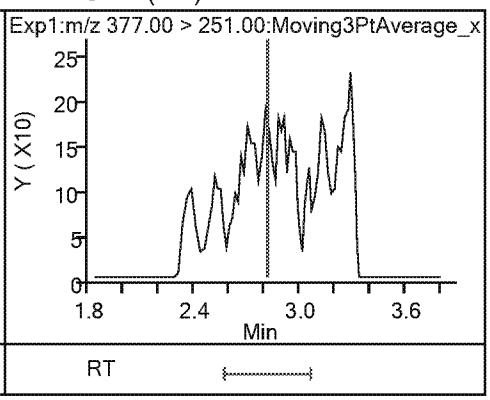
3 Perfluorohexanesulfonic acid (ND)



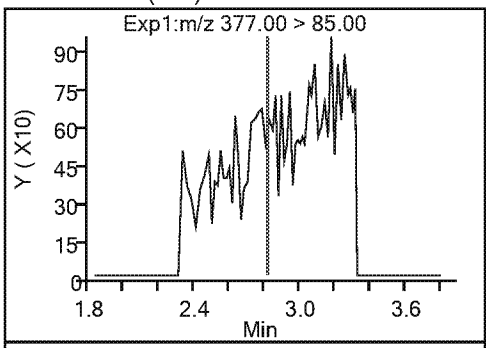
3 Perfluorohexanesulfonic acid (ND)



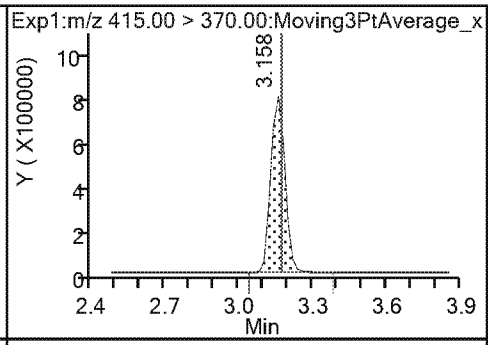
24 DONA (ND)



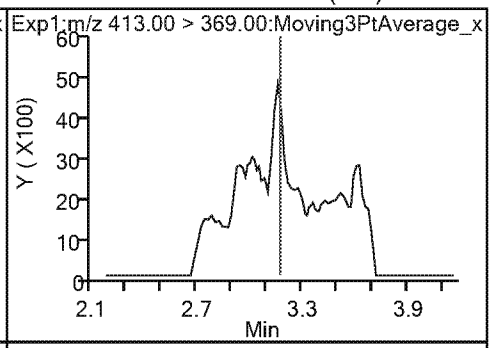
24 DONA (ND)



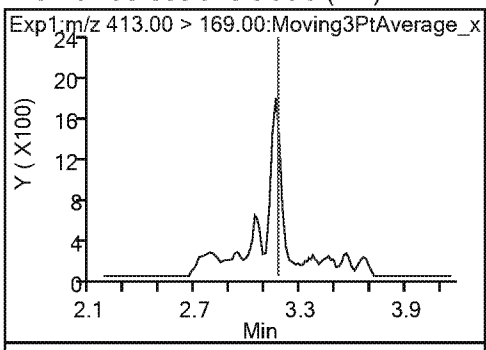
* 5 13C2 PFOA



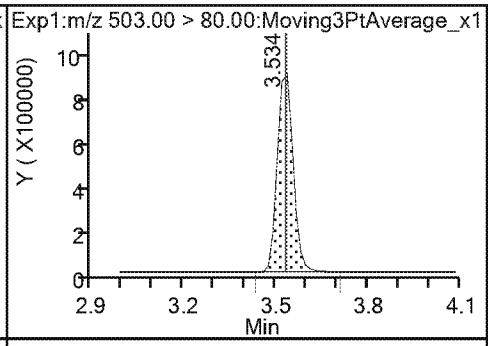
6 Perfluorooctanoic acid (ND)



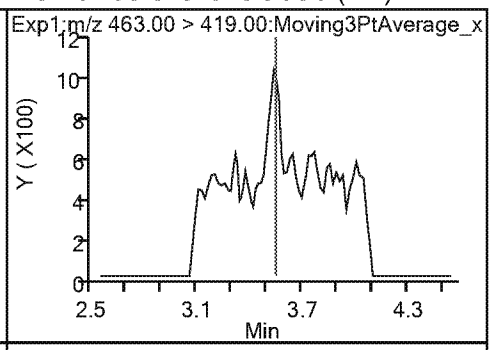
6 Perfluorooctanoic acid (ND)



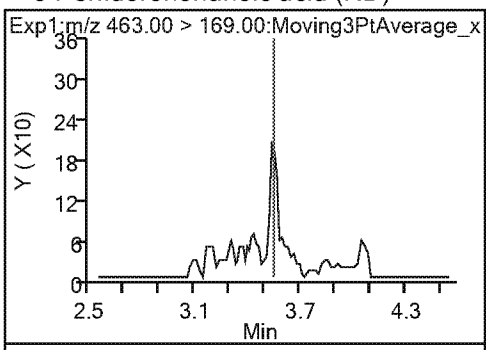
* 7 13C4 PFOS



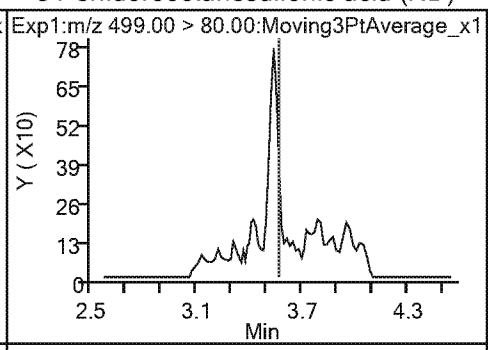
9 Perfluorononanoic acid (ND)



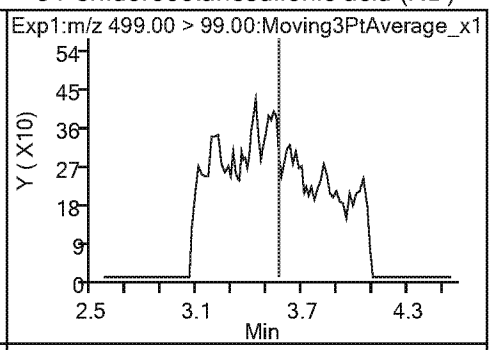
9 Perfluorononanoic acid (ND)



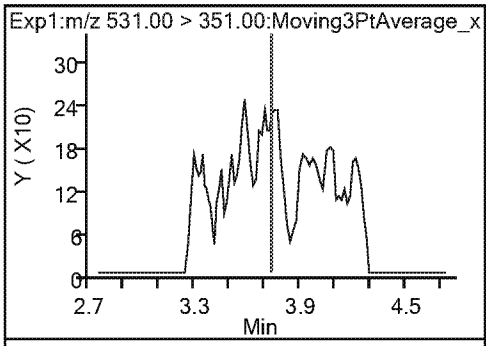
8 Perfluorooctanesulfonic acid (ND)



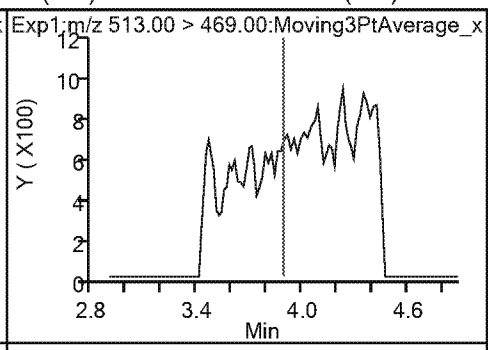
8 Perfluorooctanesulfonic acid (ND)



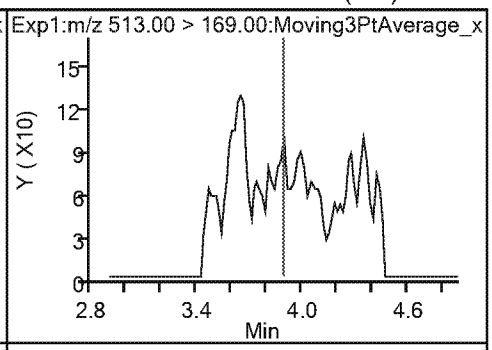
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



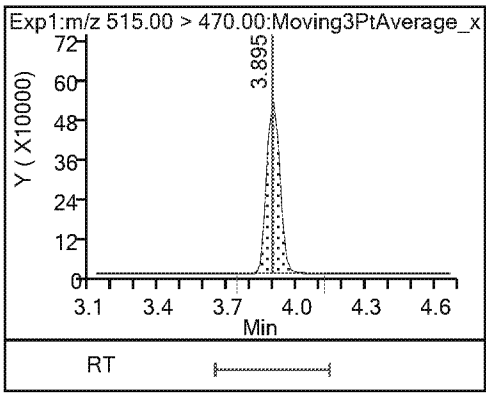
14 Perfluorodecanoic acid (ND)



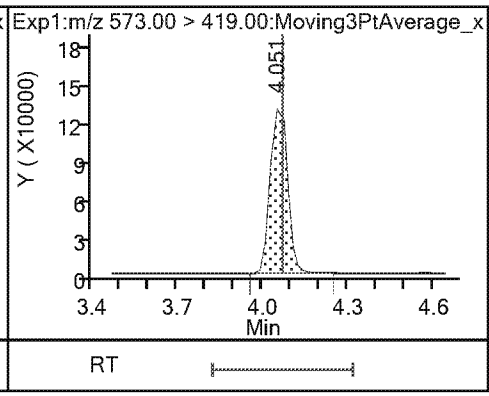
14 Perfluorodecanoic acid (ND)



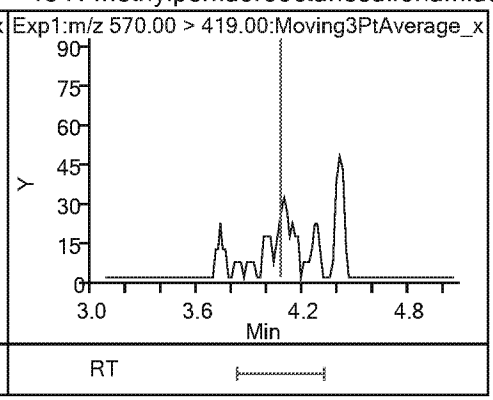
$ 10 13C2 PFDA



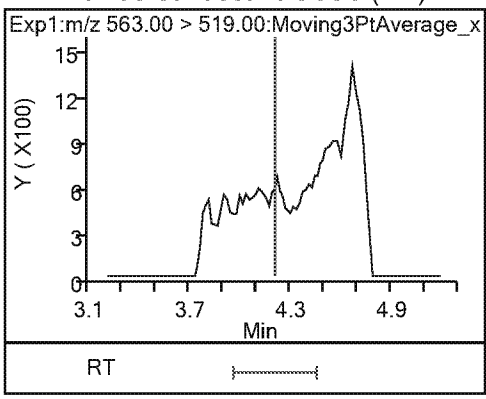
* 12 d3-NMeFOSAA



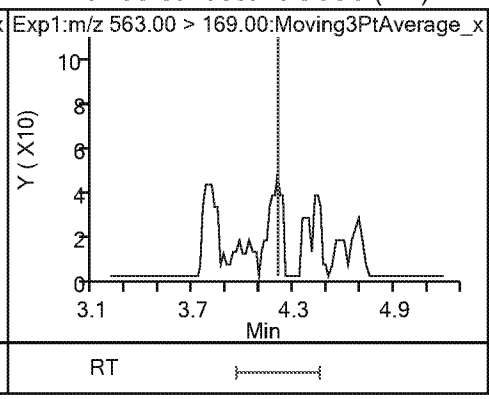
15 N-methylperfluorooctanesulfonamido (ND)



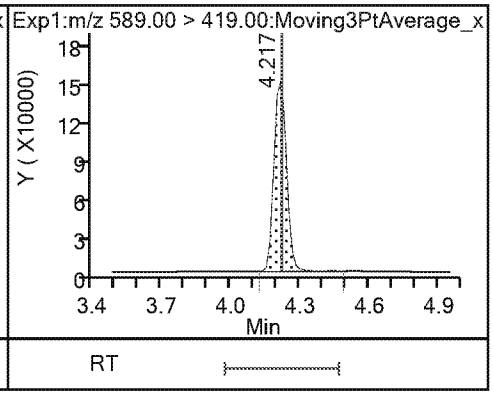
17 Perfluoroundecanoic acid (ND)



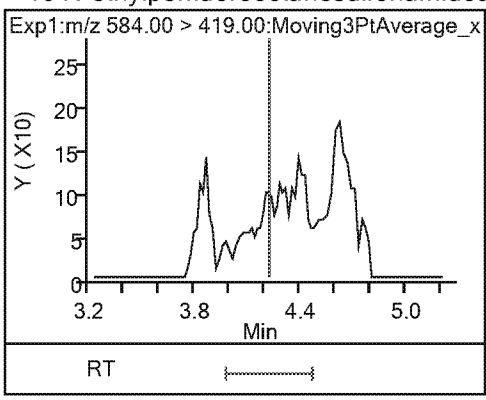
17 Perfluoroundecanoic acid (ND)



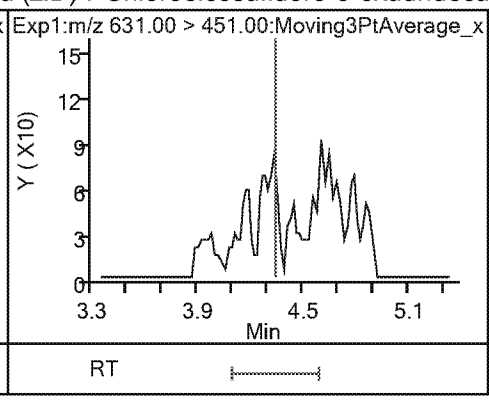
$ 11 d5-NEtFOSAA



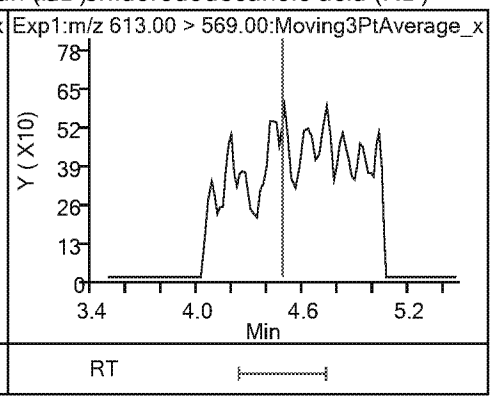
16 N-ethylperfluorooctanesulfonamidoa (ND)



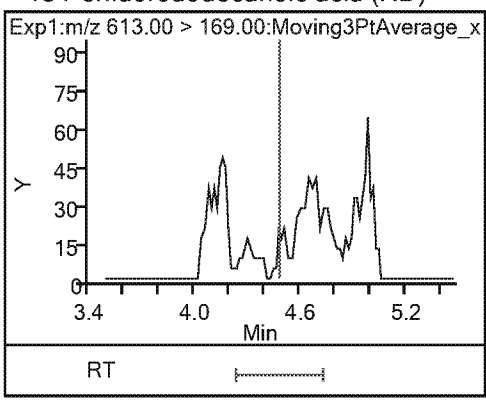
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



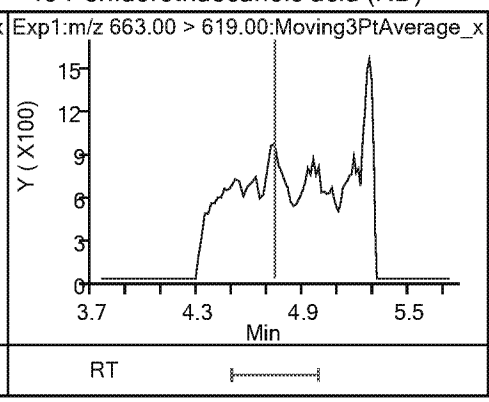
18 Perfluorododecanoic acid (ND)



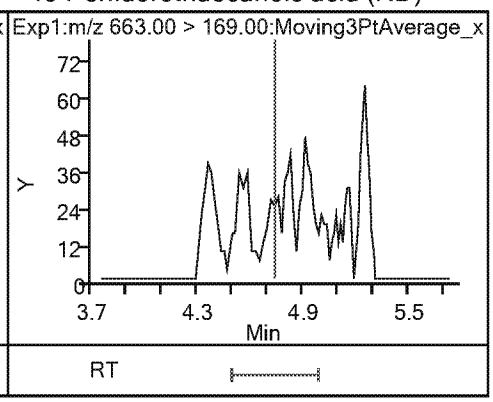
18 Perfluorododecanoic acid (ND)



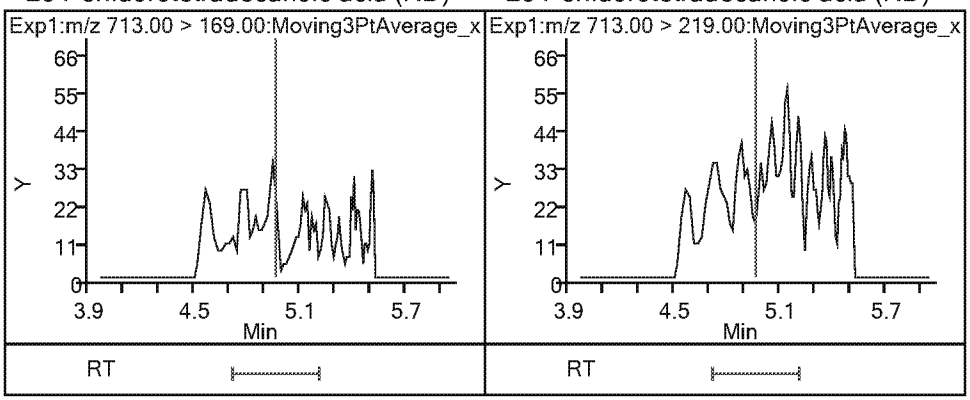
19 Perfluorotridecanoic acid (ND)



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_029.d				
Lims ID:	320-48796-A-10-A				
Client ID:	C0AX8				
Sample Type:	Client				
Inject. Date:	04-Apr-2019 22:58:01	ALS Bottle#:	18	Worklist Smp#:	25
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Sample Info:	320-48796-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 13:46:32	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 13:42:01

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.49	99.41
$ 25 13C3 HFPO-DA	2.50	2.48	99.09
$ 10 13C2 PFDA	2.50	2.66	106.48
$ 11 d5-NEtFOSAA	2.50	2.38	95.38

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AY0
Lab Sample ID: 320-48796-11
Matrix: Water
Lab File ID: 2019.04.04_537AA_030.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 11:15
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 276(mL)
Date Analyzed: 04/04/2019 23:07
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.: 286190
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	47		1.8	0.86
335-67-1	Perfluorooctanoic acid	63		5.4	2.4
375-95-1	Perfluorononanoic acid	8.1		1.8	0.43
355-46-4	Perfluorohexanesulfonic acid	3.5		1.8	0.58
375-85-9	Perfluoroheptanoic acid	23		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	51		1.8	0.72

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	88		70-130
STL00996	13C2 PFDA	107		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_030.d
Lims ID: 320-48796-A-11-A
Client ID: C0AY0
Sample Type: Client
Inject. Date: 04-Apr-2019 23:07:27 ALS Bottle#: 19 Worklist Smp#: 26
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-a-11-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 13:46:15 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 13:43:40
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	2186925	1.41	Target=1.41	1345	
298.90 > 99.00	1.992	1.976	0.016	1.000	1509624		1.45(0.00-0.00)	482	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.348	2.322	0.026	0.739	1169916	0.8680	Target=10.46	86.5	
313.00 > 119.00	2.348	2.322	0.026	0.739	105597		11.08(0.00-0.00)	105	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.322	0.026	1.000	3118412	2.21		4801	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.507	2.473	0.034	1.014	1290	0.003938		0.4	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	167126	2.64		567	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.778	2.757	0.021	1.000	820265	0.6391	Target=2.41	46.7	M
363.00 > 169.00	2.778	2.757	0.021	1.000	322429		2.54(0.00-0.00)	262	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.799	2.778	0.021	1.000	179336	0.0953	Target=2.91	54.0	M
399.00 > 99.00	2.778	2.778	0.0	0.993	58233		3.08(0.00-0.00)	18.3	M
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.158	0.019		3027716	2.50		7981	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.177	3.158	0.019	1.000	2122674	1.73	Target=1.70	188	M
413.00 > 169.00	3.177	3.158	0.019	1.000	1254824		1.69(0.00-0.00)	1258	M
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.534	0.015		3140272	2.39		3566	
9 Perfluorononanoic acid									
463.00 > 419.00	3.564	3.549	0.015	1.000	200968	0.2246	Target=3.78	53.7	
463.00 > 169.00	3.564	3.549	0.015	1.000	50085		4.01(0.00-0.00)	76.7	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.549	3.564	-0.015	1.000	1803876	1.30	Target=4.63	1021	
499.00 > 99.00	3.549	3.564	-0.015	1.000	308791		5.84(0.00-0.00)	177	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.892	3.892	0.0	1.000	42282	0.0597	Target=4.93	10.1	
513.00 > 169.00	3.892	3.892	0.0	1.000	8100		5.22(0.00-0.00)	24.6	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.892	0.019	1.000	2006467	2.67		8685	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		552429	2.50		2384	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.215	4.220	-0.005	1.035	511860	2.27		366	

QC Flag Legend

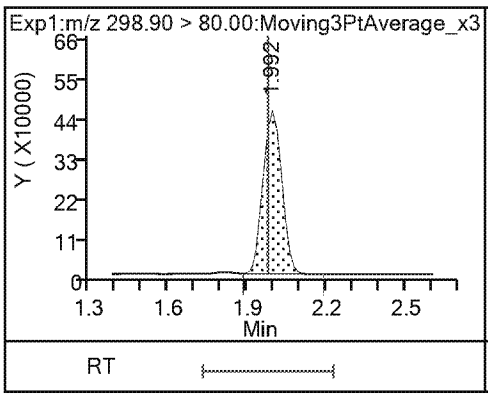
Review Flags

M - Manually Integrated

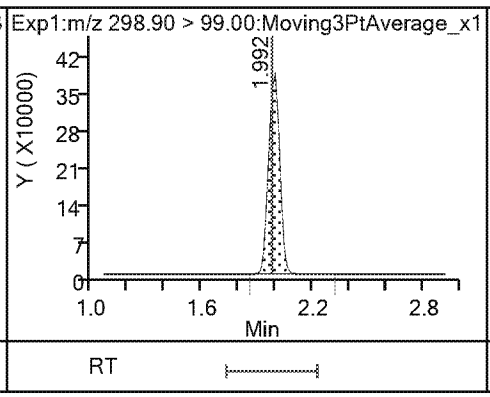
Eurofins TestAmerica, Sacramento

Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_030.d				
Injection Date:	04-Apr-2019 23:07:27	Instrument ID:	A8_N		
Lims ID:	320-48796-A-11-A	Lab Sample ID:	320-48796-11		
Client ID:	C0AY0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	26
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		

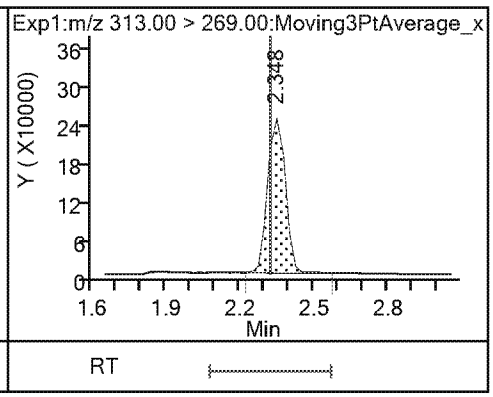
1 Perfluorobutanesulfonic acid



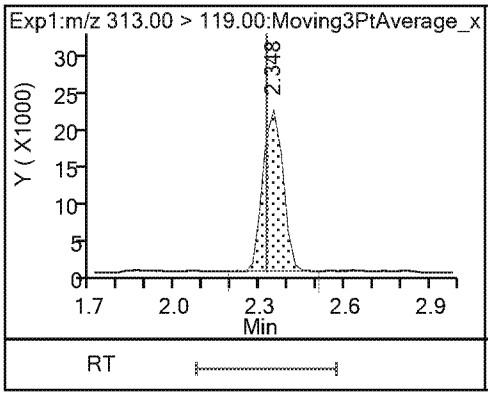
1 Perfluorobutanesulfonic acid



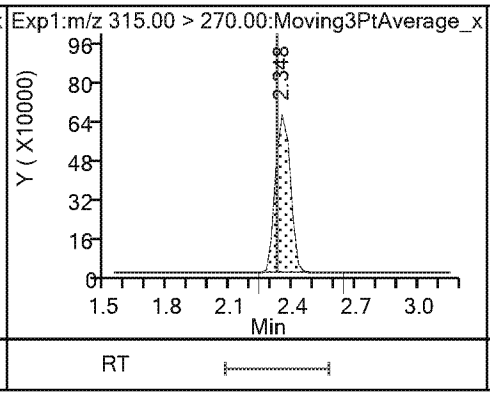
13 Perfluorohexanoic acid



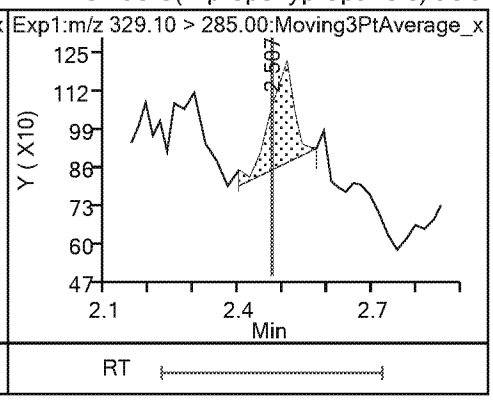
13 Perfluorohexanoic acid



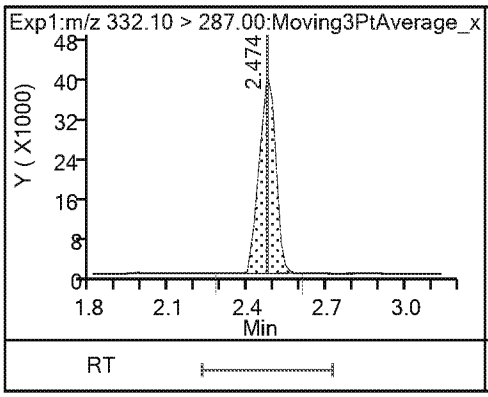
$ 2 13C2 PFHxA



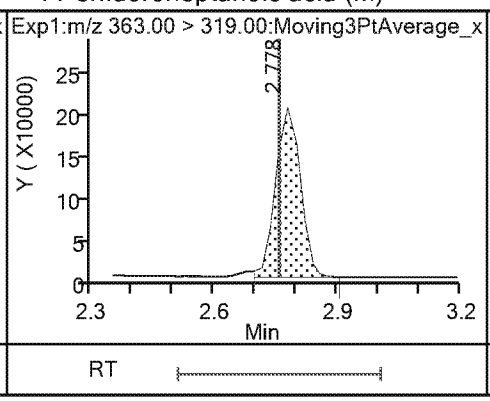
22 Perfluoro(2-propoxypropanoic) acid



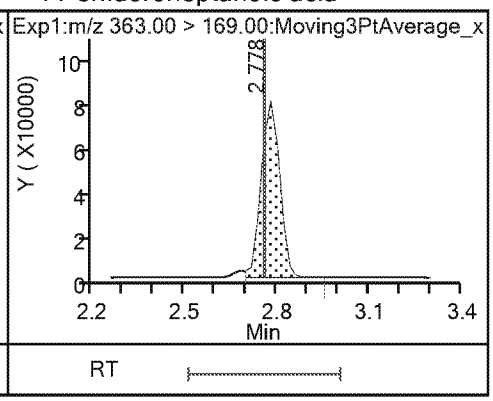
$ 25 13C3 HFPO-DA



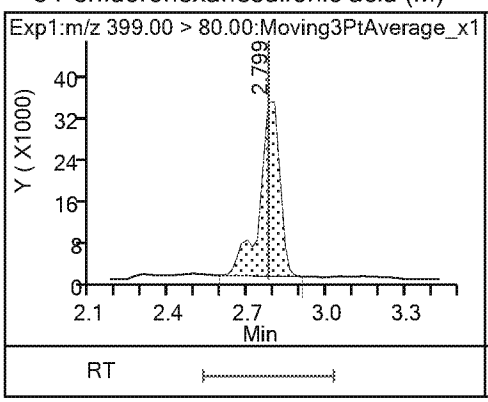
4 Perfluoroheptanoic acid (M)



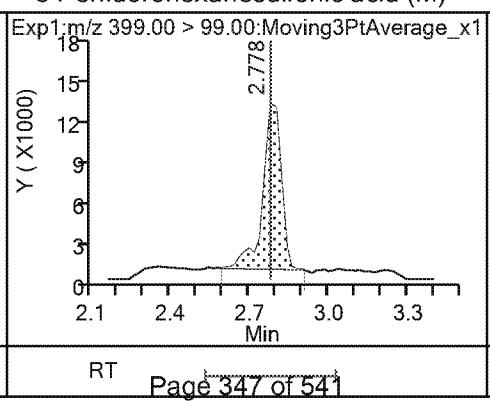
4 Perfluoroheptanoic acid



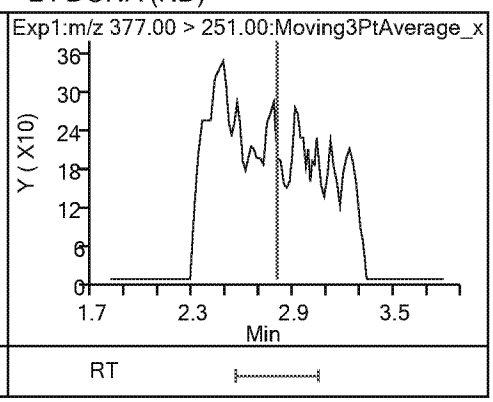
3 Perfluorohexanesulfonic acid (M)



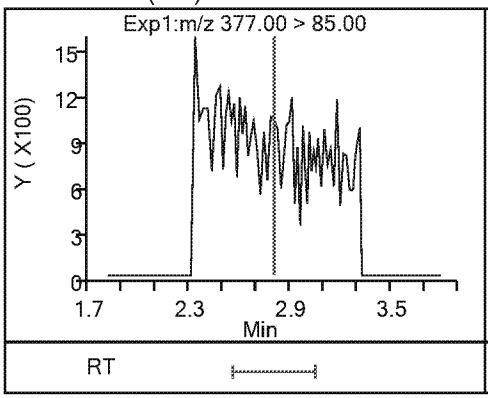
3 Perfluorohexanesulfonic acid (M)



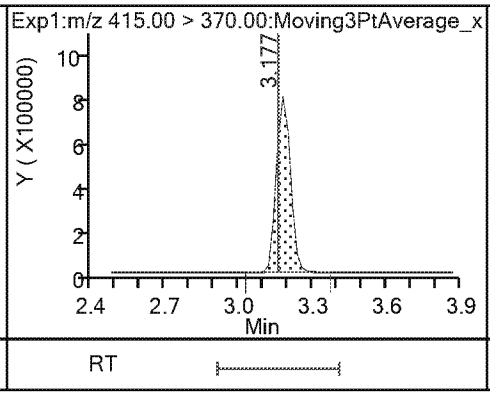
24 DONA (ND)



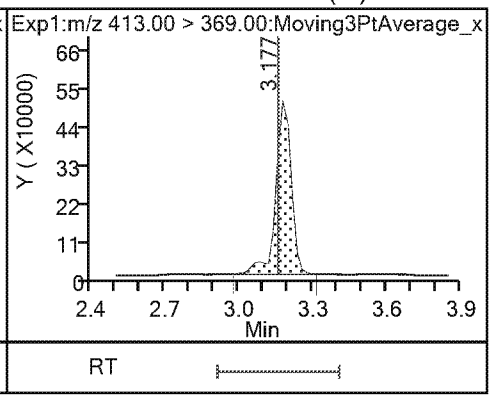
24 DONA (ND)



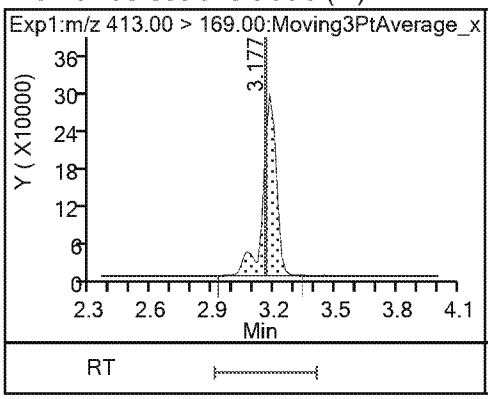
* 5 13C2 PFOA



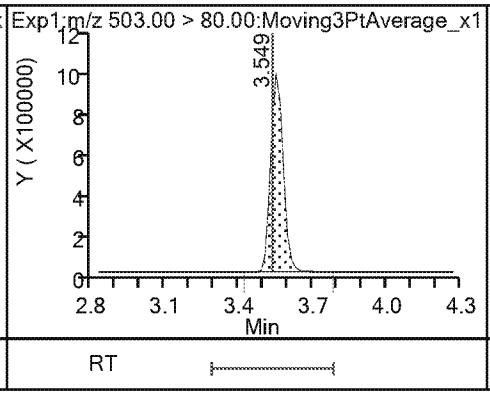
6 Perfluorooctanoic acid (M)



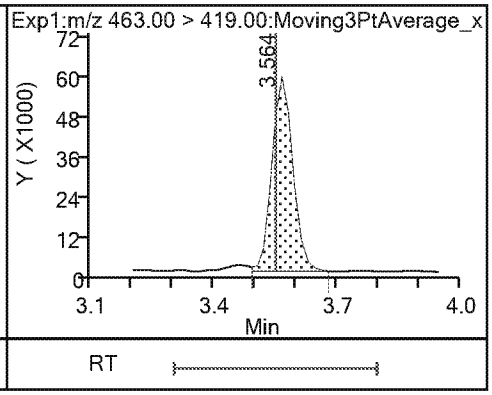
6 Perfluorooctanoic acid (M)



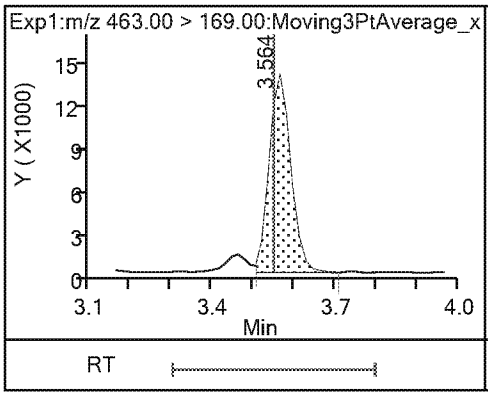
* 7 13C4 PFOS



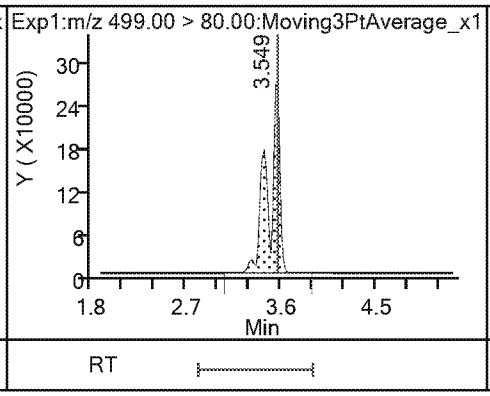
9 Perfluorononanoic acid



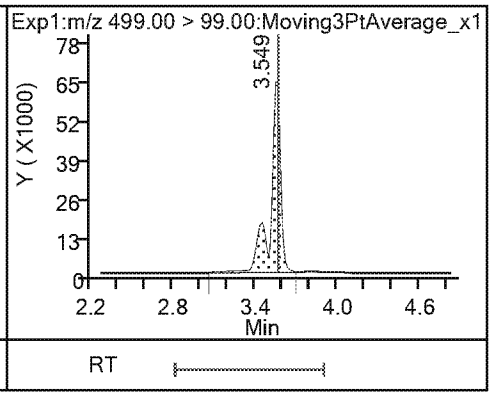
9 Perfluorononanoic acid



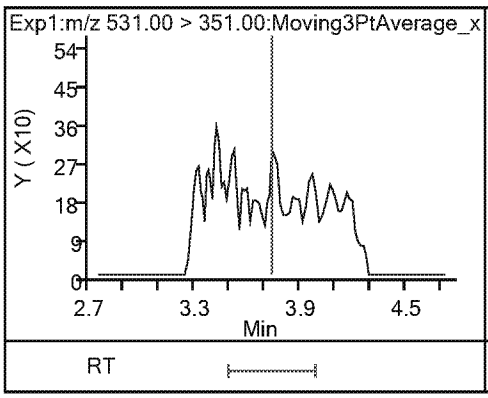
8 Perfluorooctanesulfonic acid



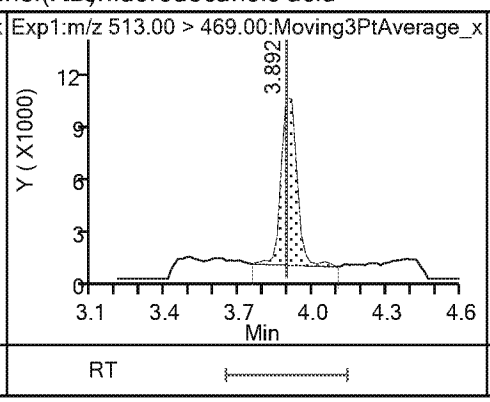
8 Perfluorooctanesulfonic acid



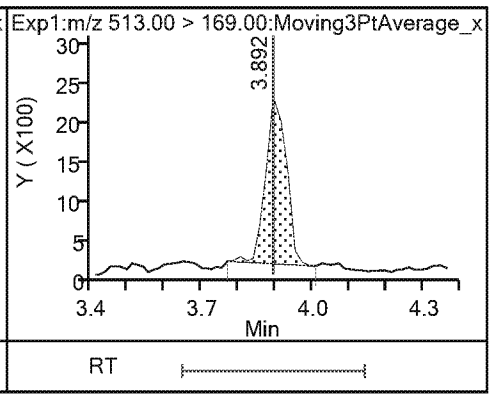
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



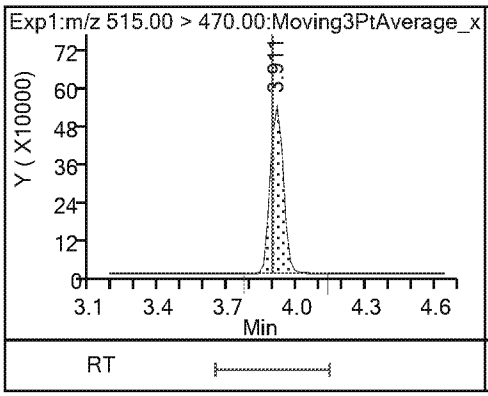
14 Perfluorodecanoic acid



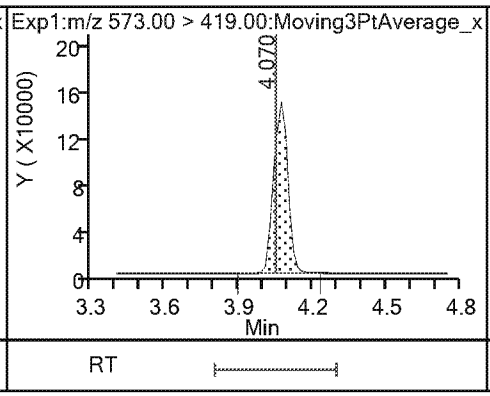
14 Perfluorodecanoic acid



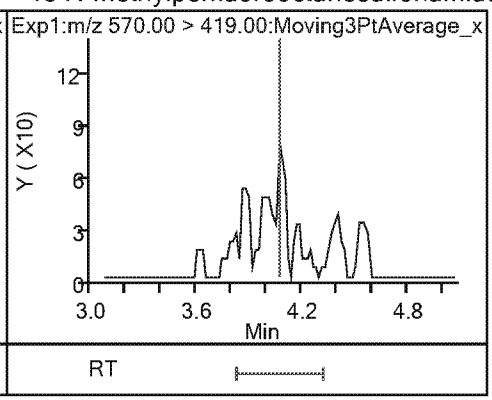
$ 10 13C2 PFDA



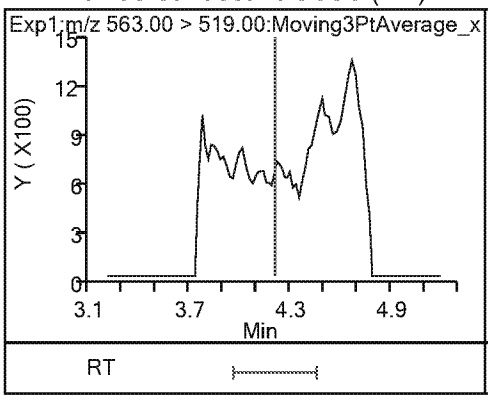
* 12 d3-NMeFOSAA



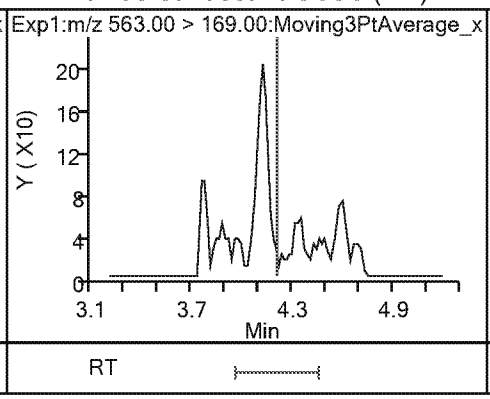
15 N-methylperfluorooctanesulfonamido (ND)



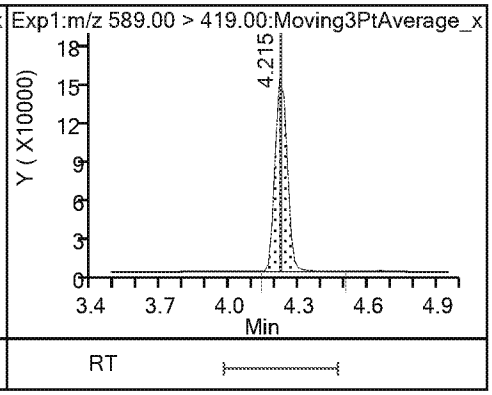
17 Perfluoroundecanoic acid (ND)



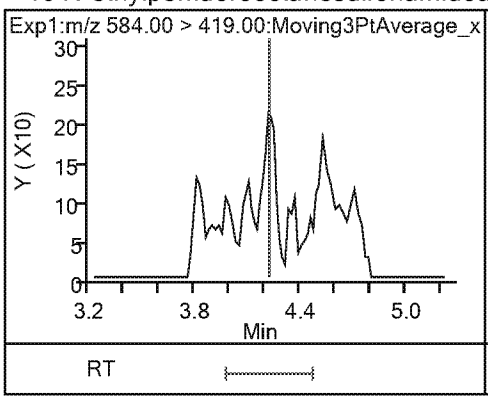
17 Perfluoroundecanoic acid (ND)



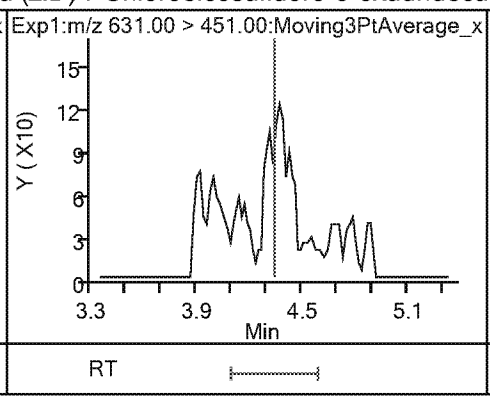
$ 11 d5-NEtFOSAA



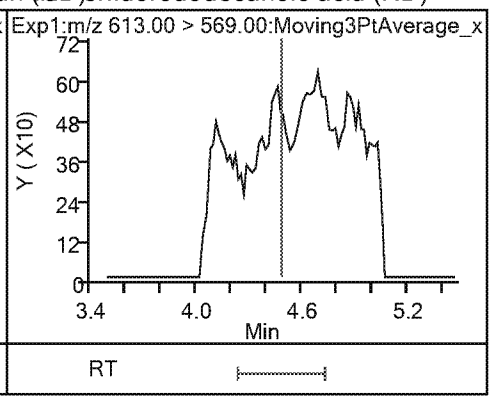
16 N-ethylperfluorooctanesulfonamidoa (ND)



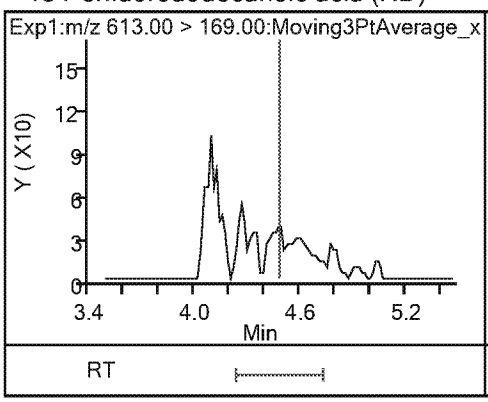
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



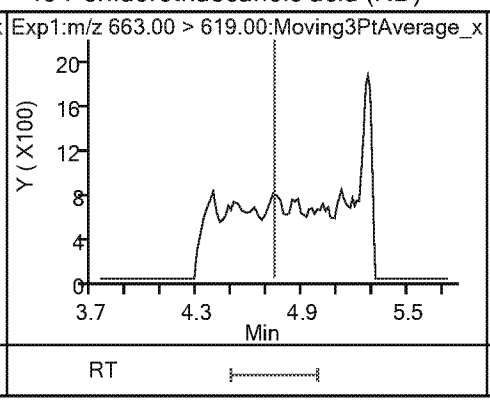
18 Perfluorododecanoic acid (ND)



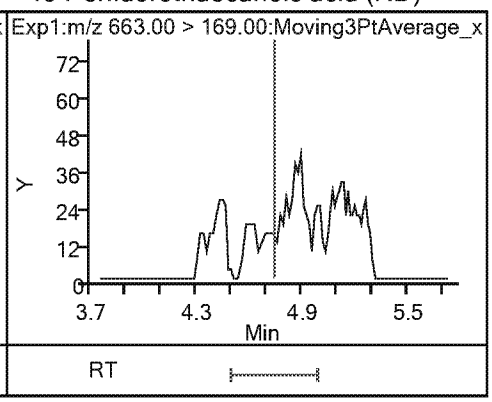
18 Perfluorododecanoic acid (ND)



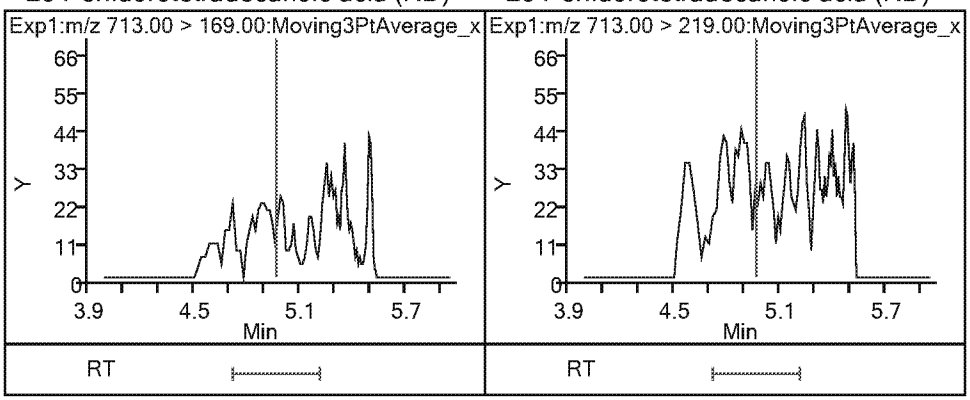
19 Perfluorotridecanoic acid (ND)



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_030.d
Lims ID: 320-48796-A-11-A
Client ID: C0AY0
Sample Type: Client
Inject. Date: 04-Apr-2019 23:07:27 ALS Bottle#: 19 Worklist Smp#: 26
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-a-11-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 13:46:15 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 13:43:40

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.21	88.36
$ 25 13C3 HFPO-DA	2.50	2.64	105.43
$ 10 13C2 PFDA	2.50	2.67	106.72
$ 11 d5-NEtFOSAA	2.50	2.27	90.66

Eurofins TestAmerica, Sacramento

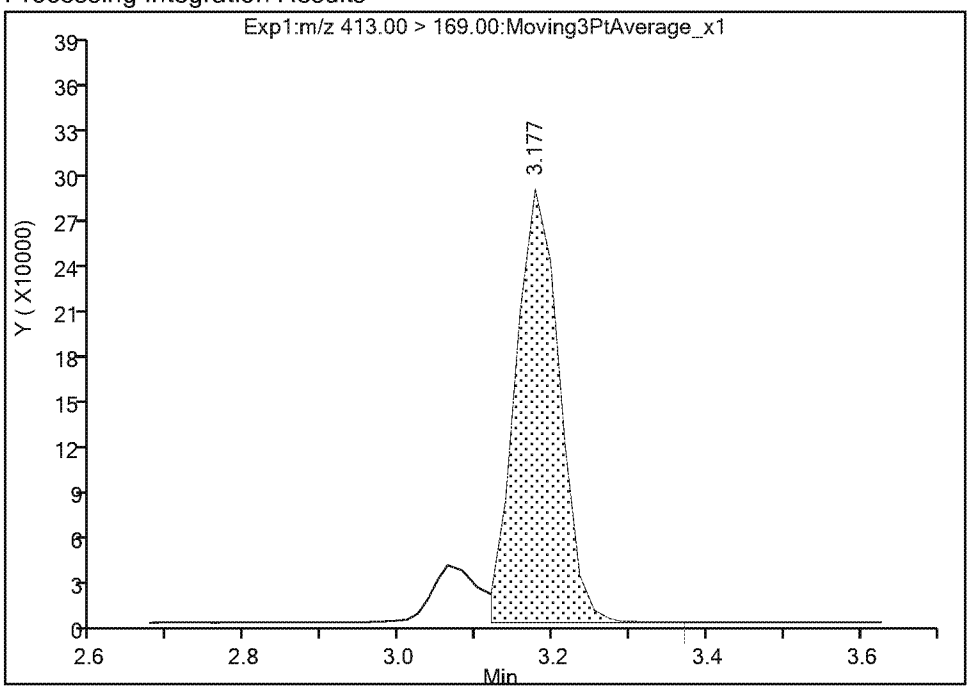
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_030.d				
Injection Date:	04-Apr-2019 23:07:27	Instrument ID:	A8_N		
Lims ID:	320-48796-A-11-A	Lab Sample ID:	320-48796-11		
Client ID:	C0AY0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	26
Injection Vol:	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

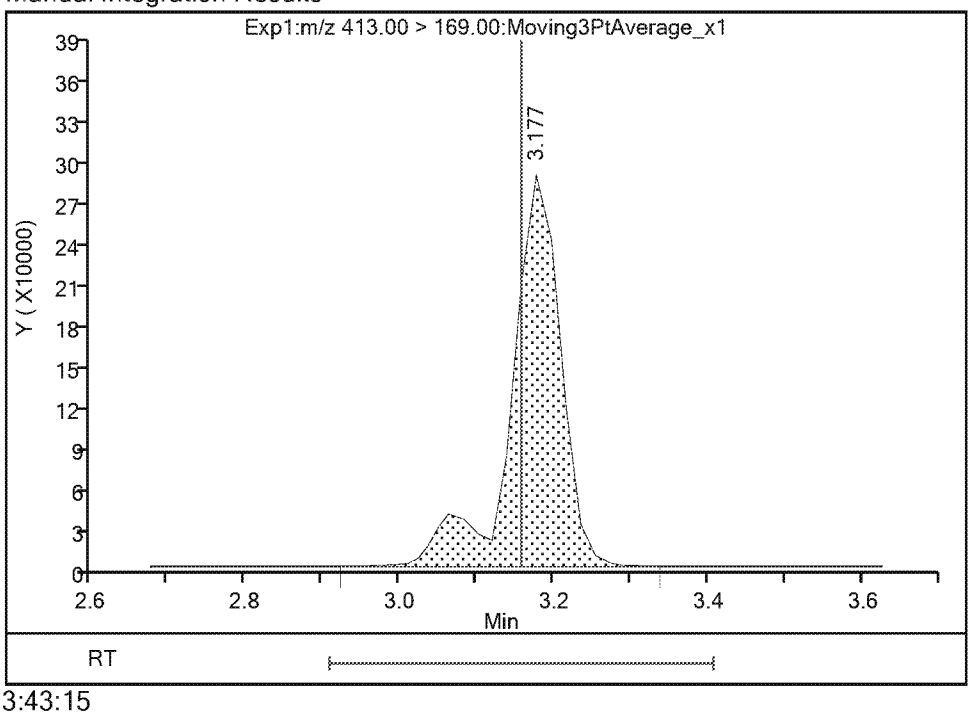
Processing Integration Results

RT: 3.18
Area: 1102103
Amount: 1.641270
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 1254824
Amount: 1.727753
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:43:15
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

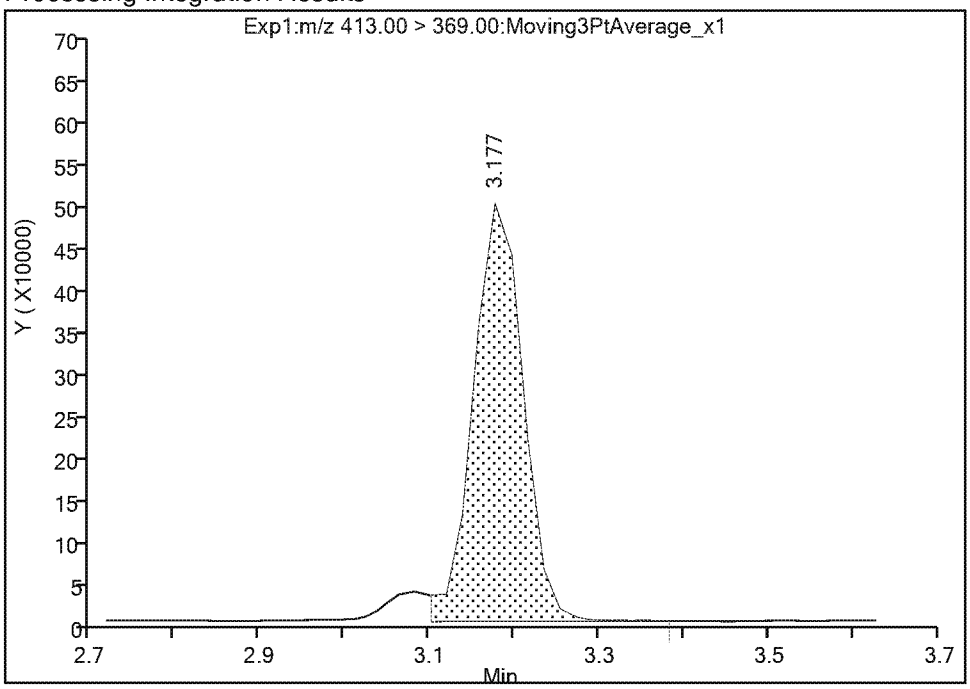
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_030.d				
Injection Date:	04-Apr-2019 23:07:27	Instrument ID:	A8_N		
Lims ID:	320-48796-A-11-A	Lab Sample ID:	320-48796-11		
Client ID:	C0AY0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	26
Injection Vol:	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

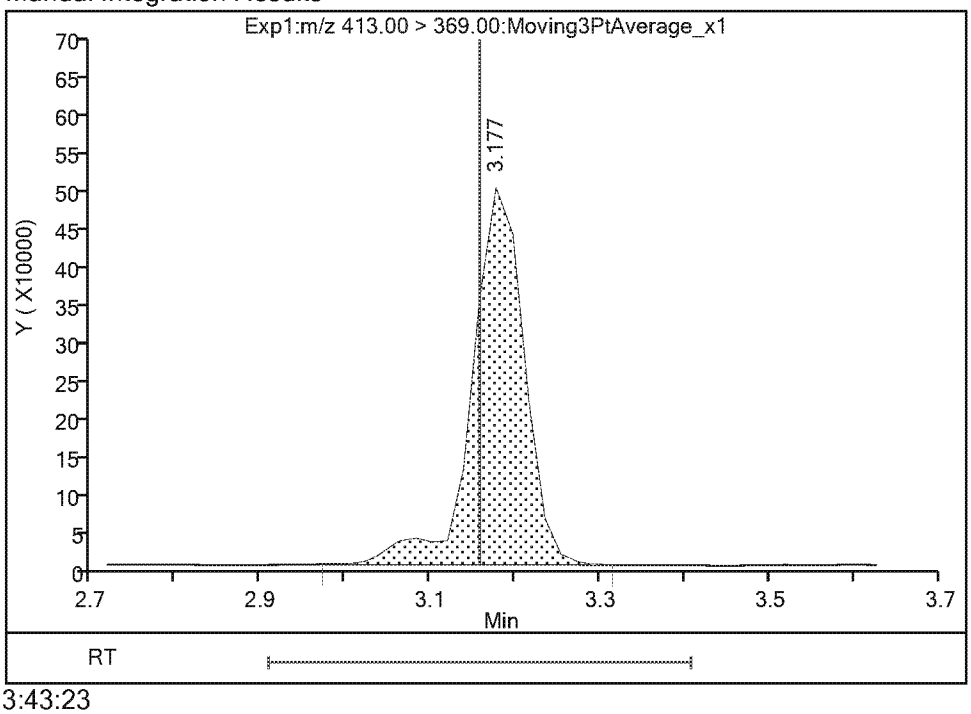
Processing Integration Results

RT: 3.18
Area: 2016424
Amount: 1.641270
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 2122674
Amount: 1.727753
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:43:23
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

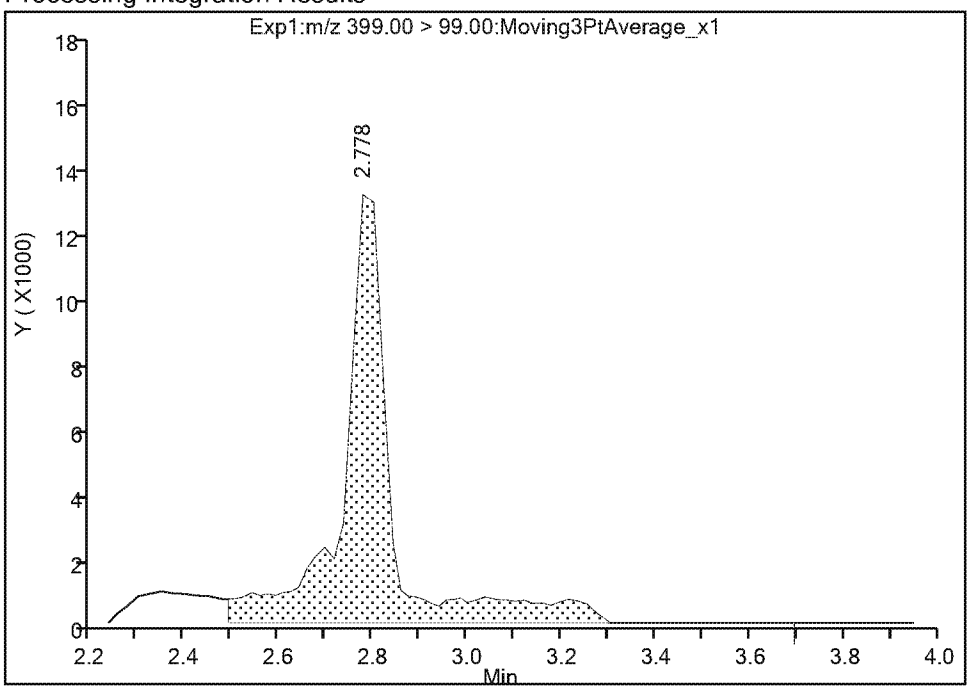
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_030.d				
Injection Date:	04-Apr-2019 23:07:27	Instrument ID:	A8_N		
Lims ID:	320-48796-A-11-A	Lab Sample ID:	320-48796-11		
Client ID:	C0AY0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	26
Injection Vol:	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

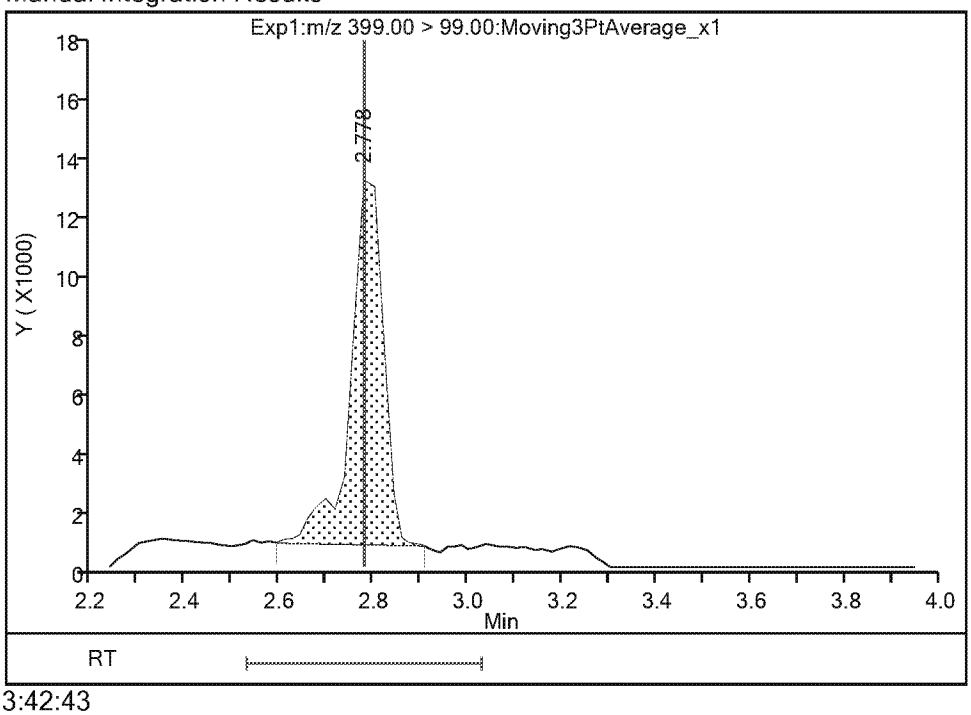
Processing Integration Results

RT: 2.78
Area: 91016
Amount: 0.107468
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 58233
Amount: 0.095251
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:42:43
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

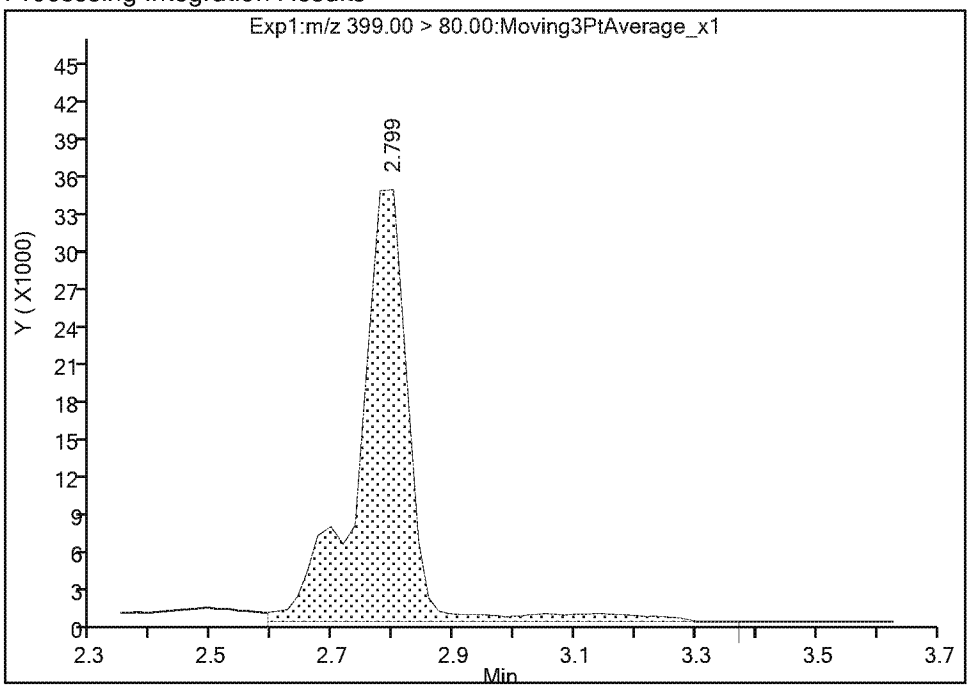
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_030.d				
Injection Date:	04-Apr-2019 23:07:27	Instrument ID:	A8_N		
Lims ID:	320-48796-A-11-A	Lab Sample ID:	320-48796-11		
Client ID:	C0AY0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	26
Injection Vol:	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

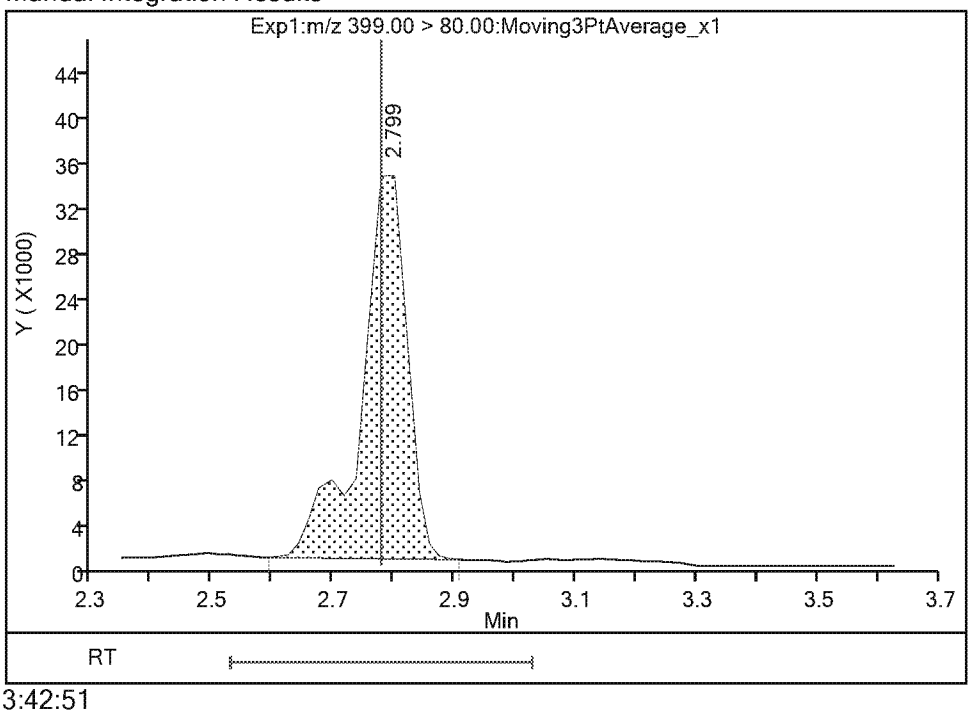
Processing Integration Results

RT: 2.80
Area: 202338
Amount: 0.107468
Amount Units: ng/ml



Manual Integration Results

RT: 2.80
Area: 179336
Amount: 0.095251
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:42:51
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

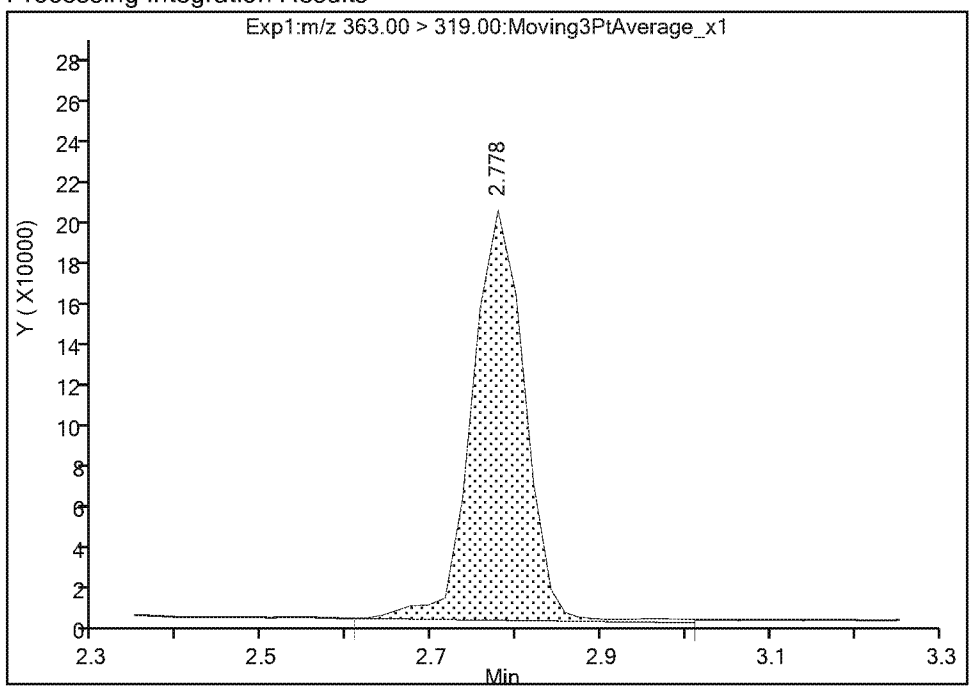
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_030.d				
Injection Date:	04-Apr-2019 23:07:27	Instrument ID:	A8_N		
Lims ID:	320-48796-A-11-A	Lab Sample ID:	320-48796-11		
Client ID:	C0AY0				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	19	Worklist Smp#:	26
Injection Vol:	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

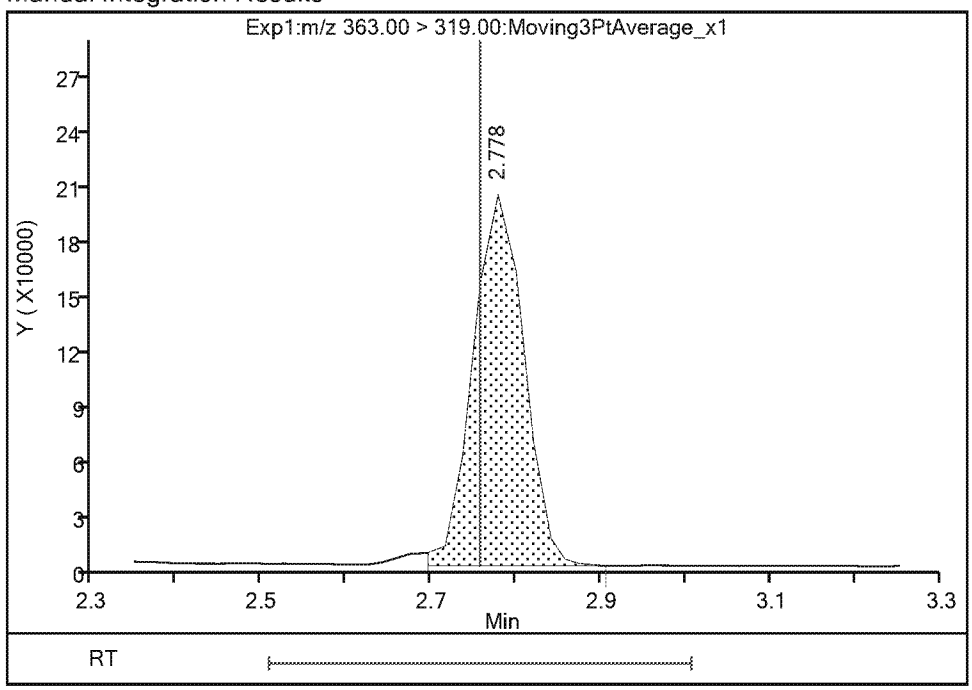
Processing Integration Results

RT: 2.78
Area: 850535
Amount: 0.662637
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 820265
Amount: 0.639055
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:43:00
Audit Action: Manually Integrated Audit Reason: Baseline

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1 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.: 320-48796-1 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.: 320-48796-1 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.: 320-48796-1 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.: 320-48796-1 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.: 320-48796-1 Analy Batch No.: 286141

SDG No.:

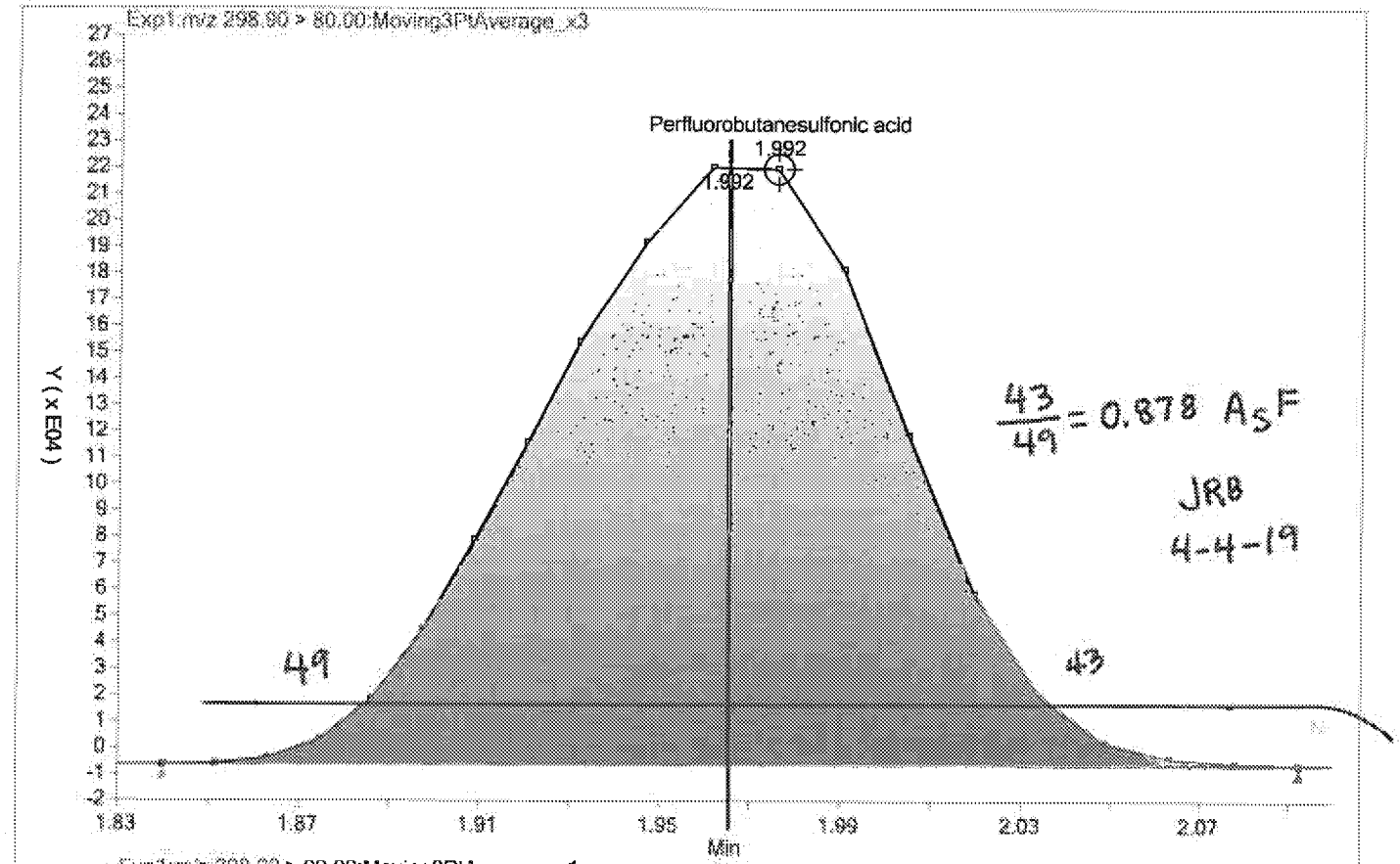
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

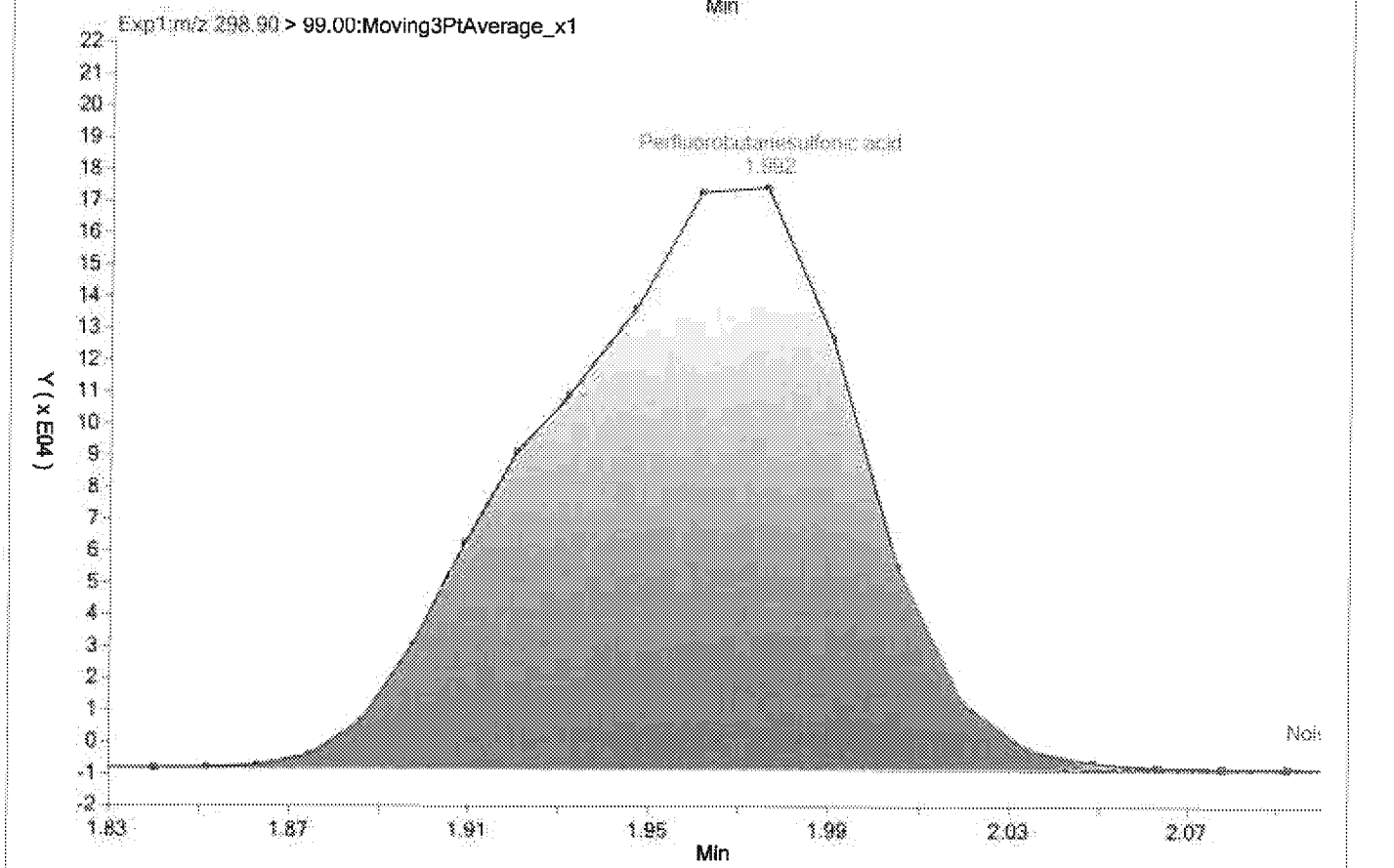
Calibration Start Date: 04/04/2019 15:14 Calibration End Date: 04/04/2019 16:11 Calibration ID: 44584

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



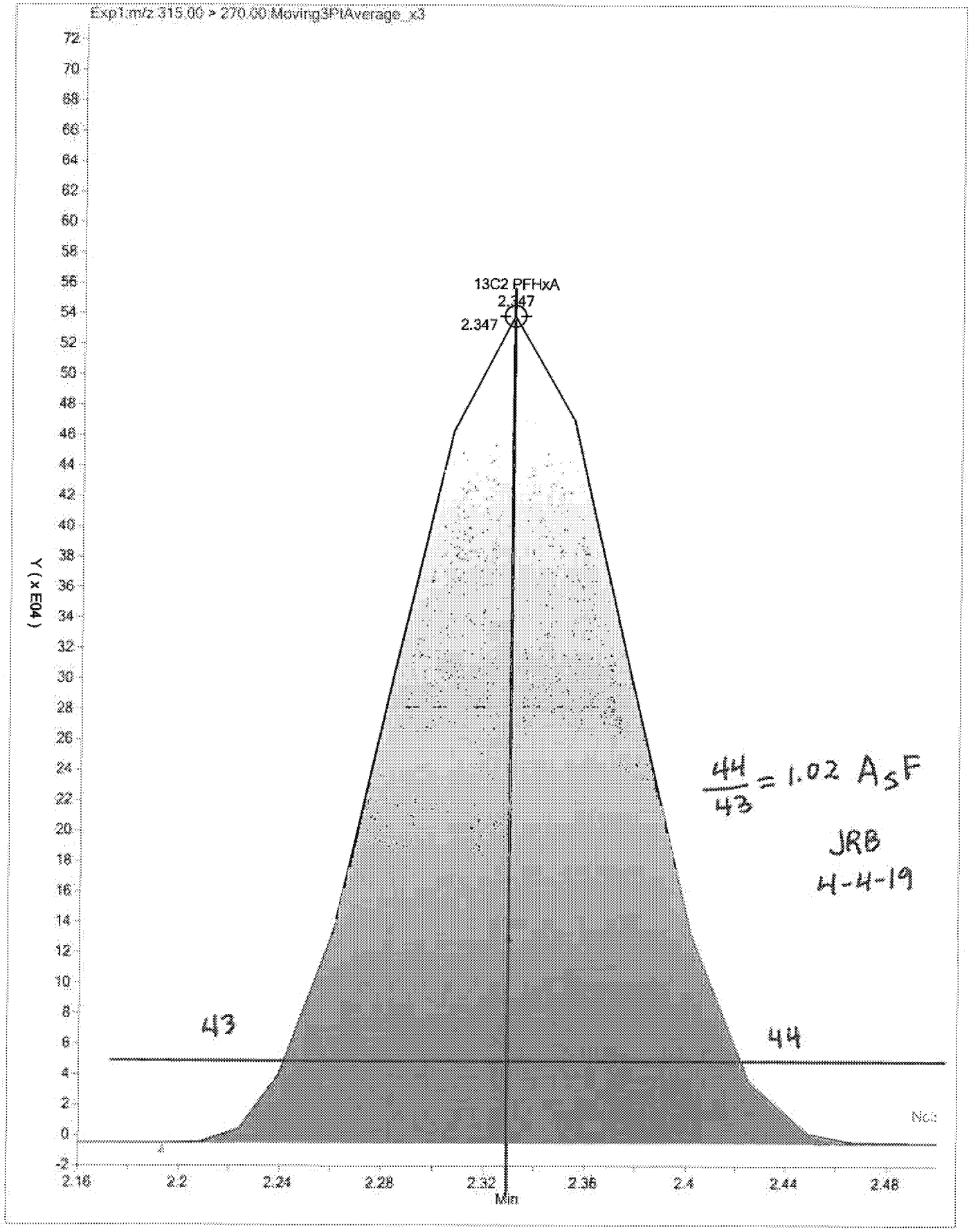


Chrom

Printed: 4/4/2019 4:27:50 PM

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

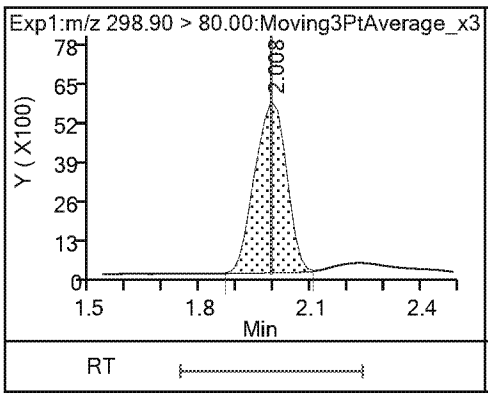
Reagents:

LC537_NC_L1_00004 Amount Added: 1.00 Units: mL

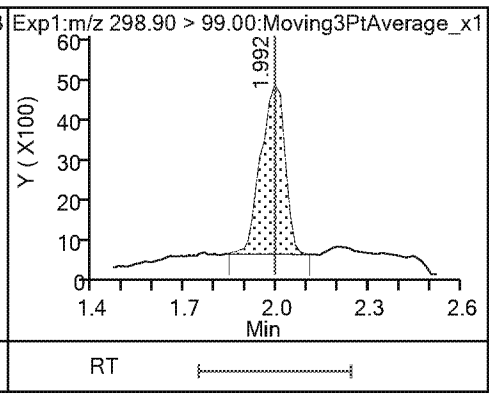
Eurofins TestAmerica, Sacramento

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

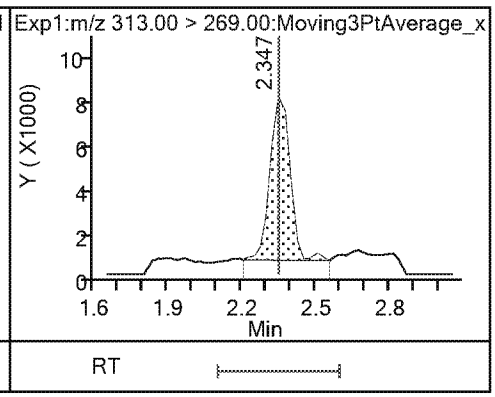
1 Perfluorobutanesulfonic acid



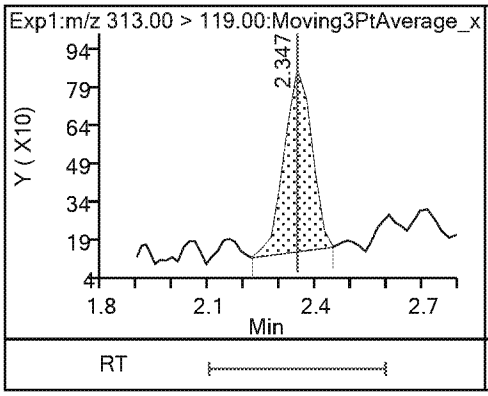
1 Perfluorobutanesulfonic acid



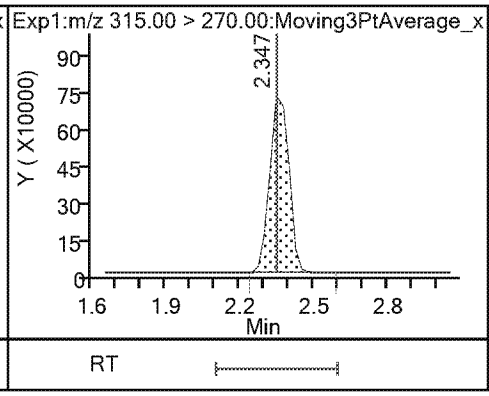
13 Perfluorohexanoic acid



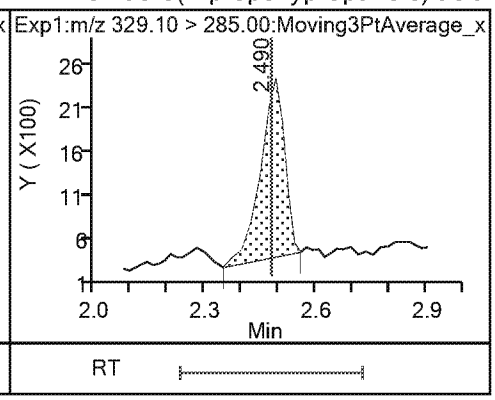
13 Perfluorohexanoic acid



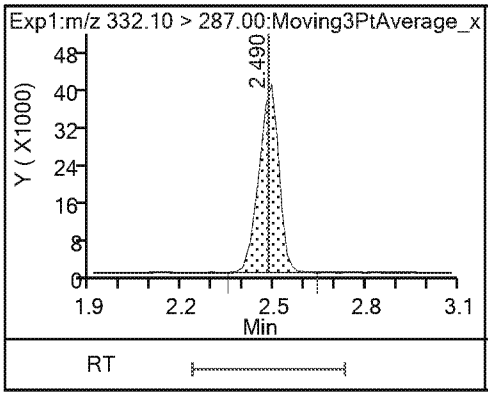
$ 2 13C2 PFHxA



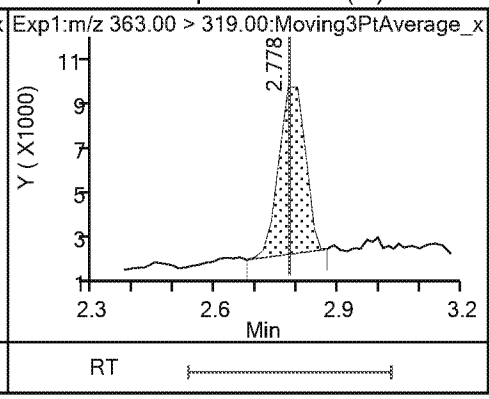
22 Perfluoro(2-propoxypropanoic) acid



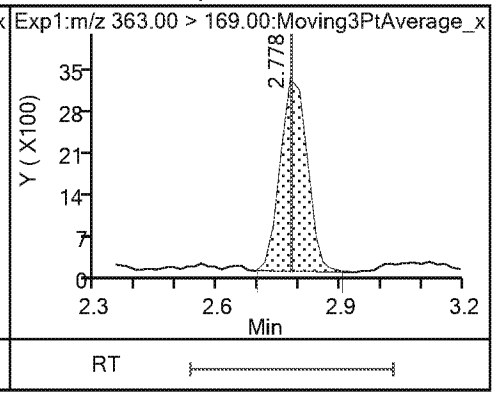
$ 25 13C3 HFPO-DA



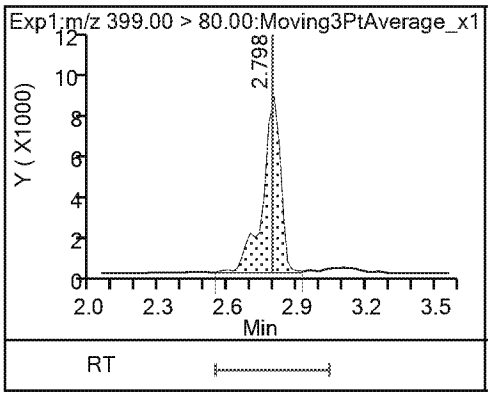
4 Perfluoroheptanoic acid (M)



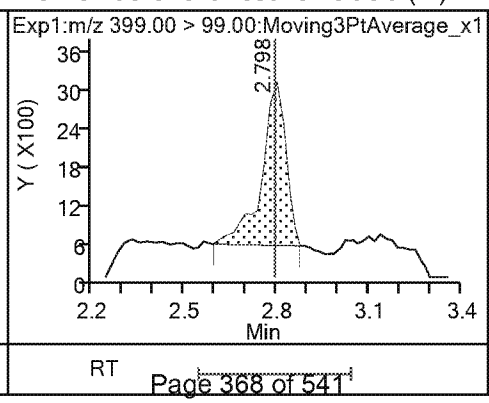
4 Perfluoroheptanoic acid



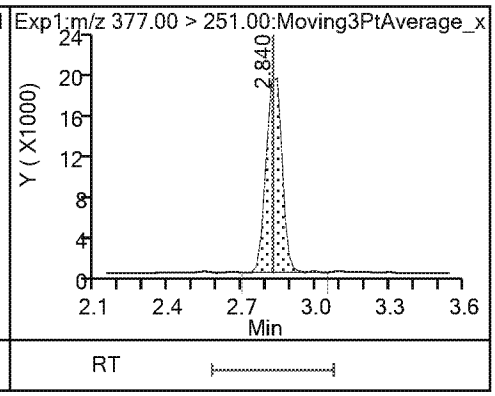
3 Perfluorohexanesulfonic acid



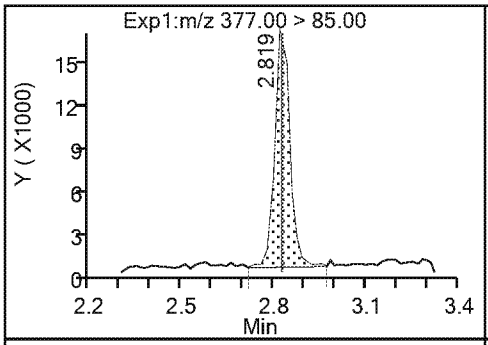
3 Perfluorohexanesulfonic acid (M)



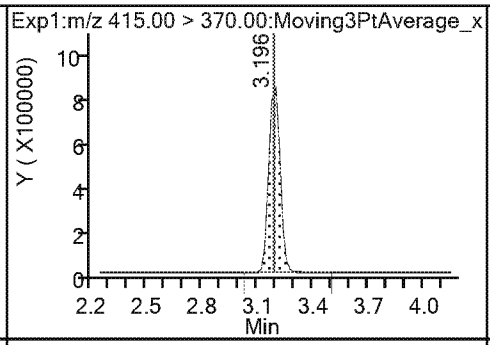
24 DONA



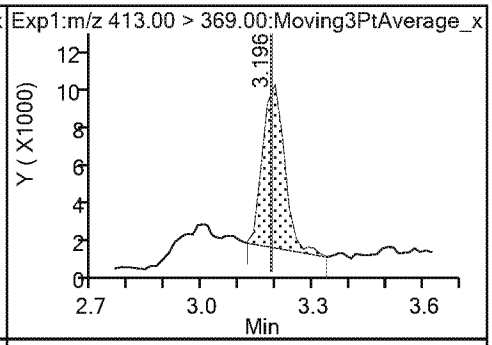
24 DONA



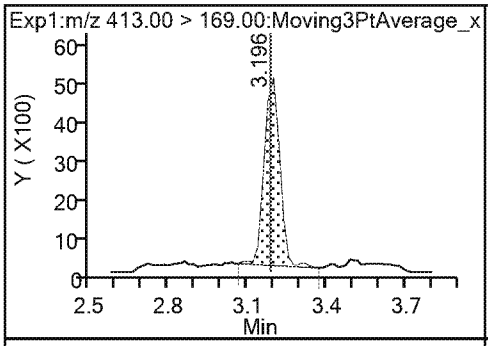
* 5 13C2 PFOA



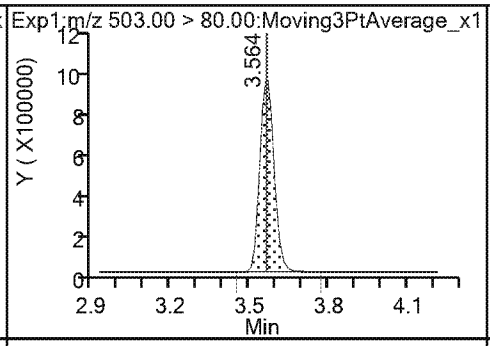
6 Perfluorooctanoic acid



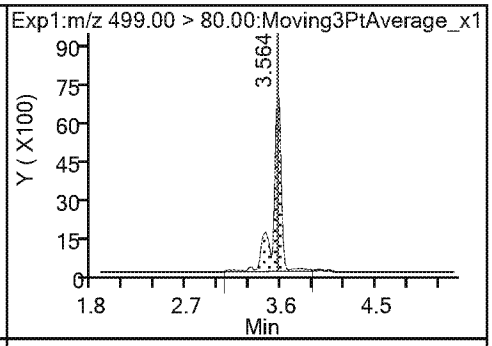
6 Perfluorooctanoic acid



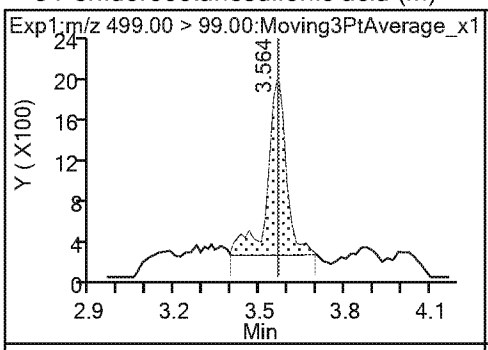
* 7 13C4 PFOS



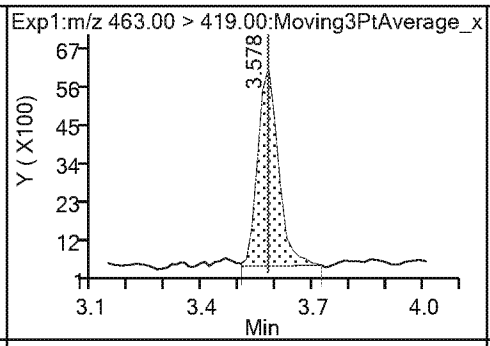
8 Perfluorooctanesulfonic acid



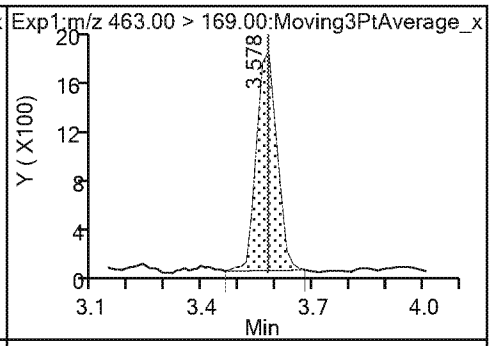
8 Perfluorooctanesulfonic acid (M)



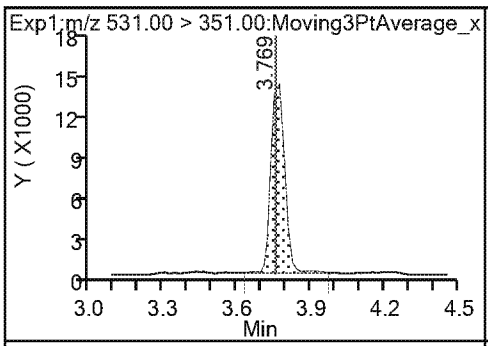
9 Perfluorononanoic acid



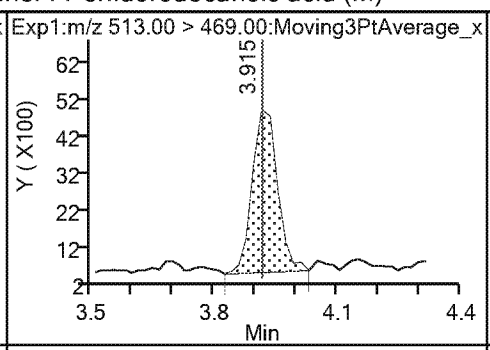
9 Perfluorononanoic acid



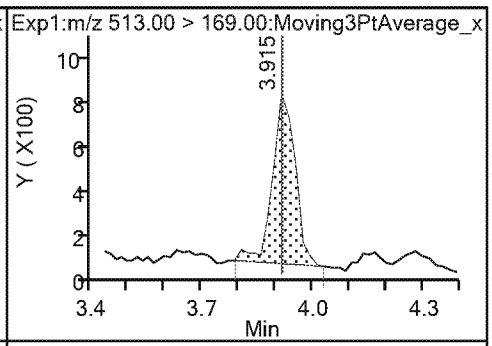
23 9-Chlorohexadecafluoro-3-oxanonane



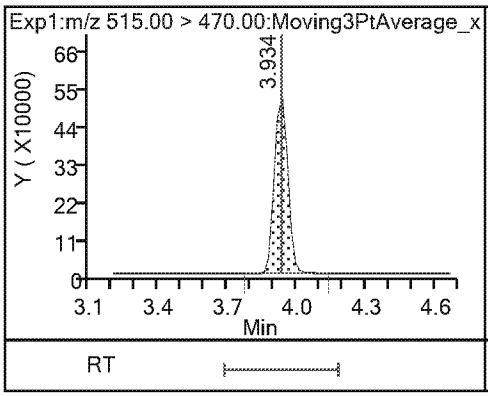
14 Perfluorodecanoic acid (M)



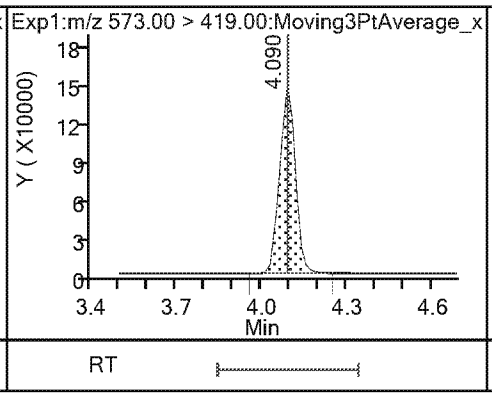
14 Perfluorodecanoic acid



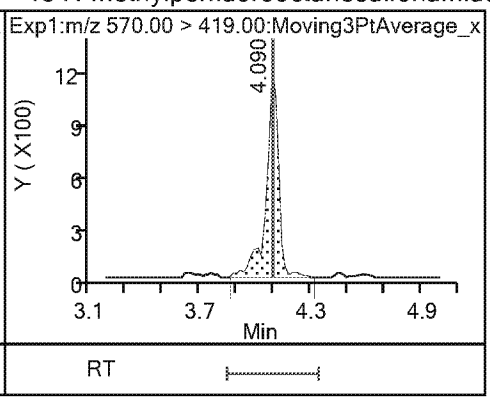
$ 10 13C2 PFDA



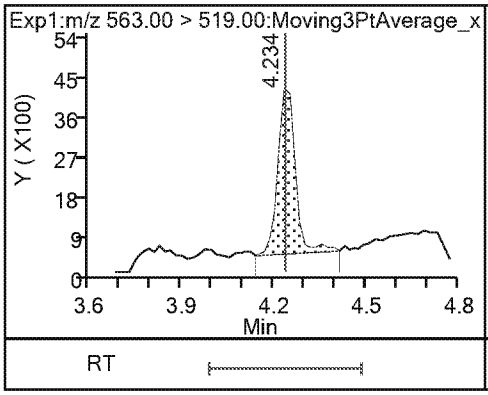
* 12 d3-NMeFOSAA



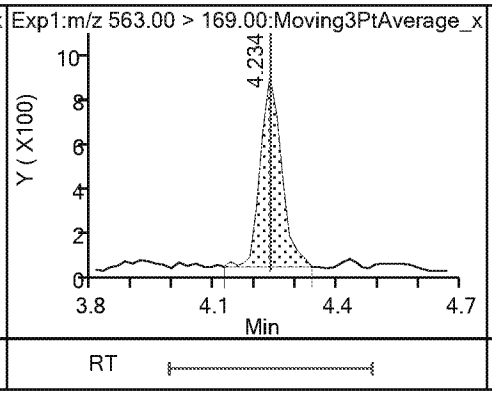
15 N-methylperfluorooctanesulfonamido



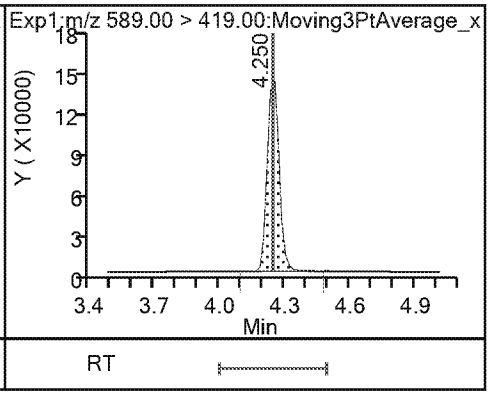
17 Perfluoroundecanoic acid



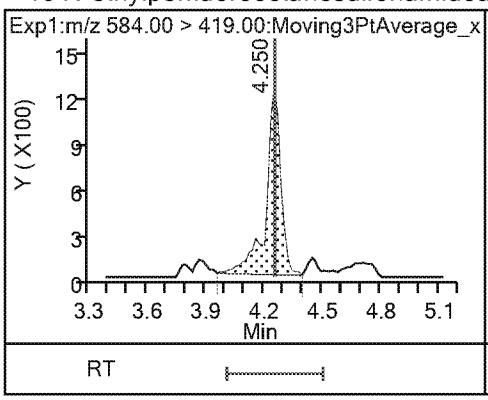
17 Perfluoroundecanoic acid



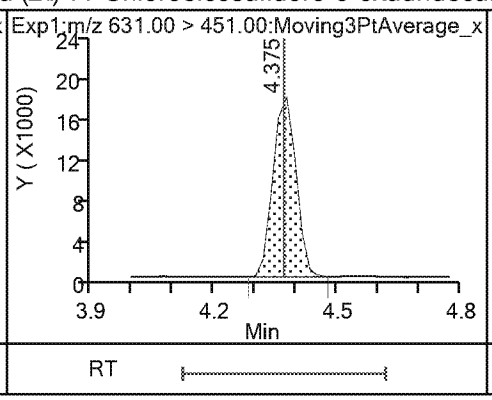
$ 11 d5-NEtFOSAA



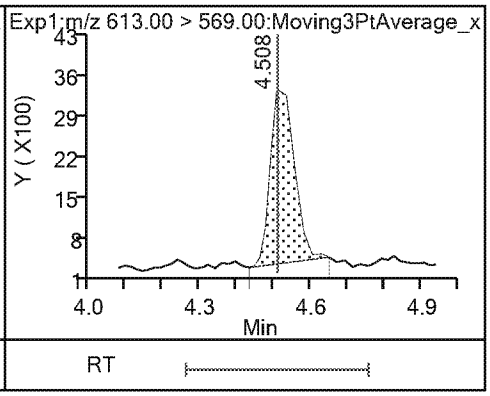
16 N-ethylperfluorooctanesulfonamidoa (2/1)



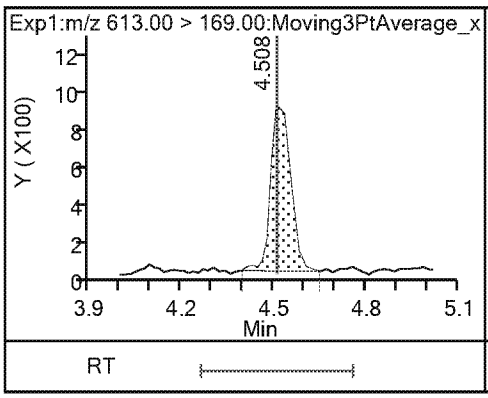
11-Chloroeicosafluoro-3-oxaundecan



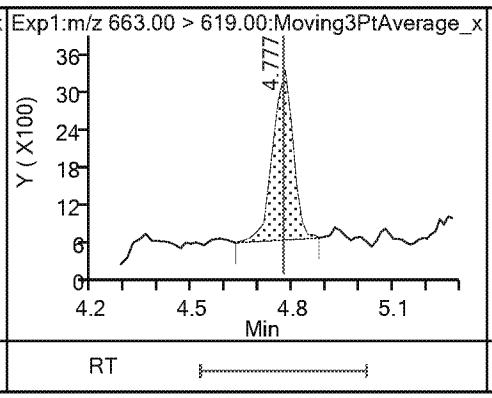
18 Perfluorododecanoic acid



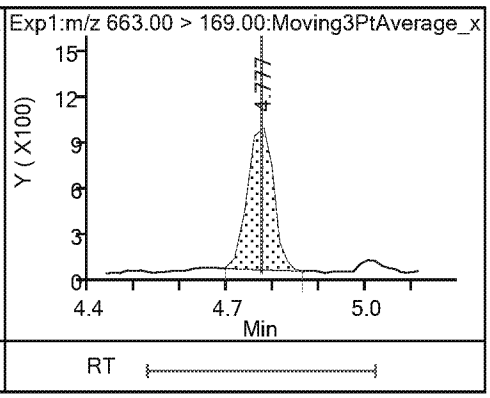
18 Perfluorododecanoic acid



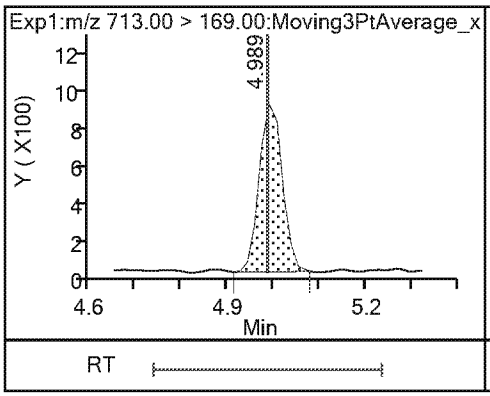
19 Perfluorotridecanoic acid



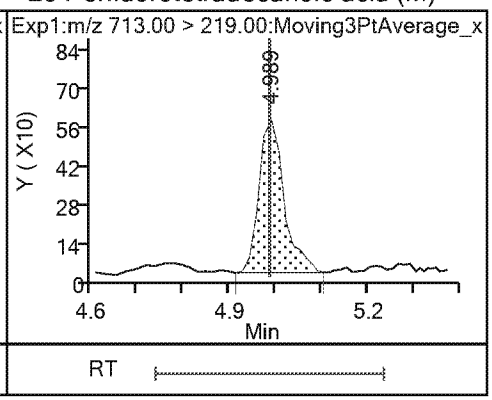
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid (M)



Eurofins TestAmerica, Sacramento

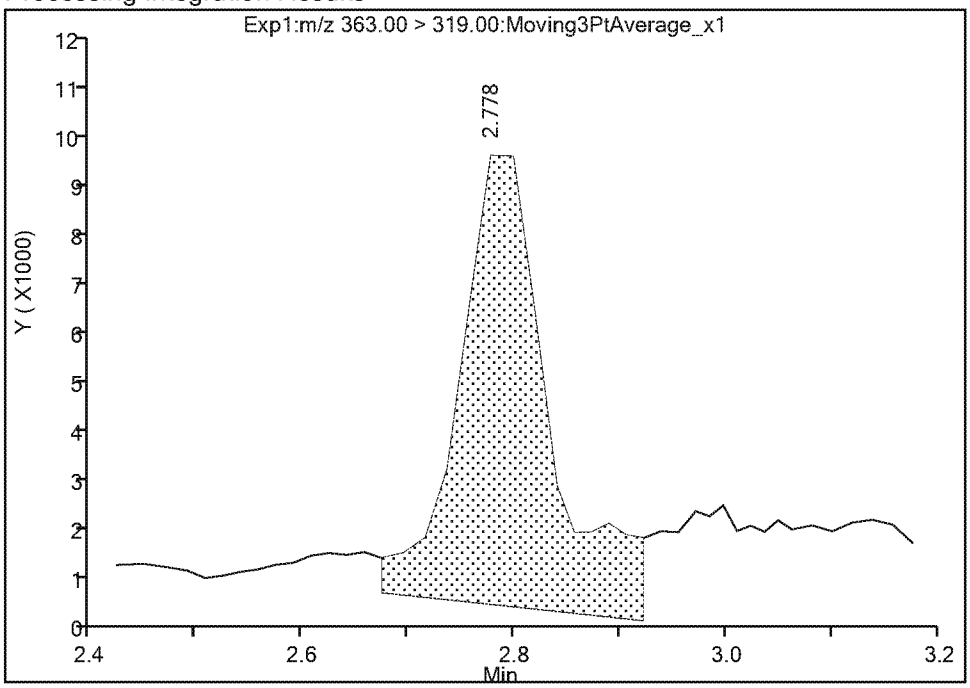
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

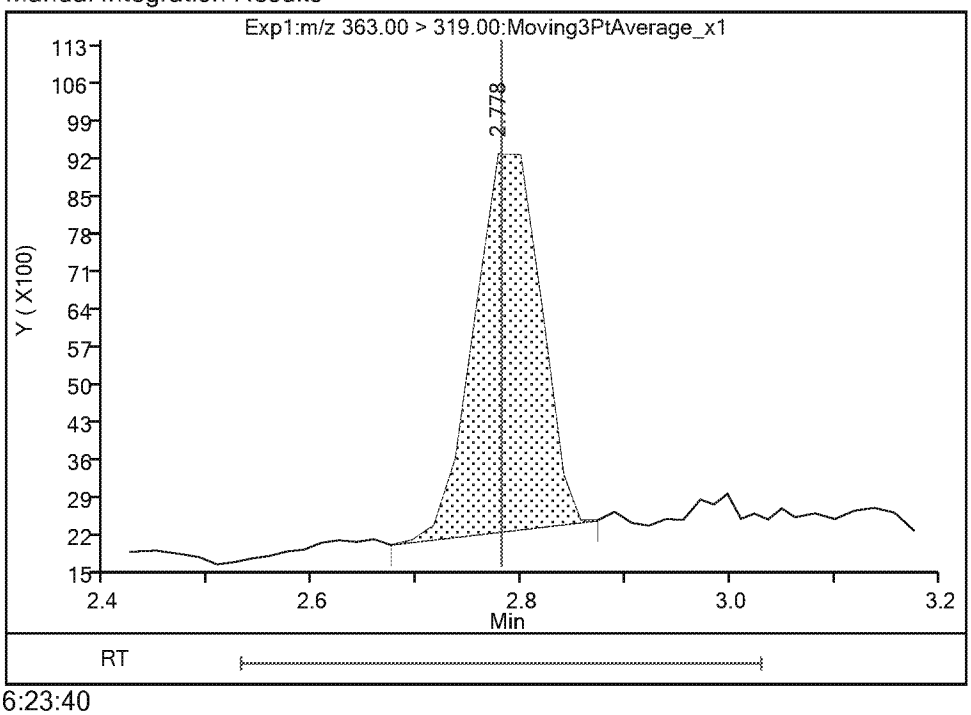
Processing Integration Results

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

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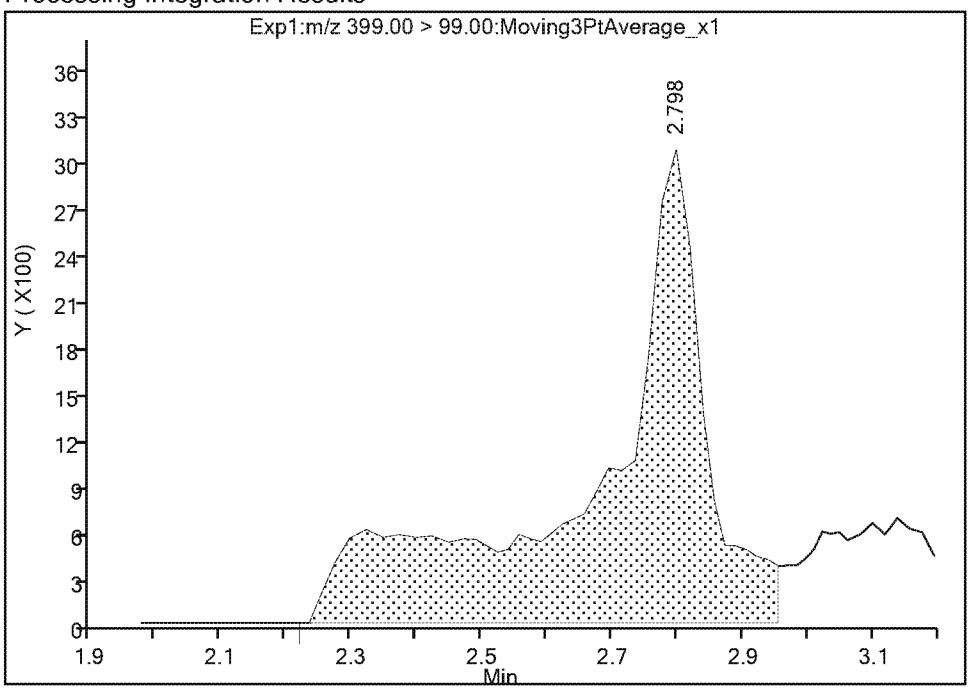
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

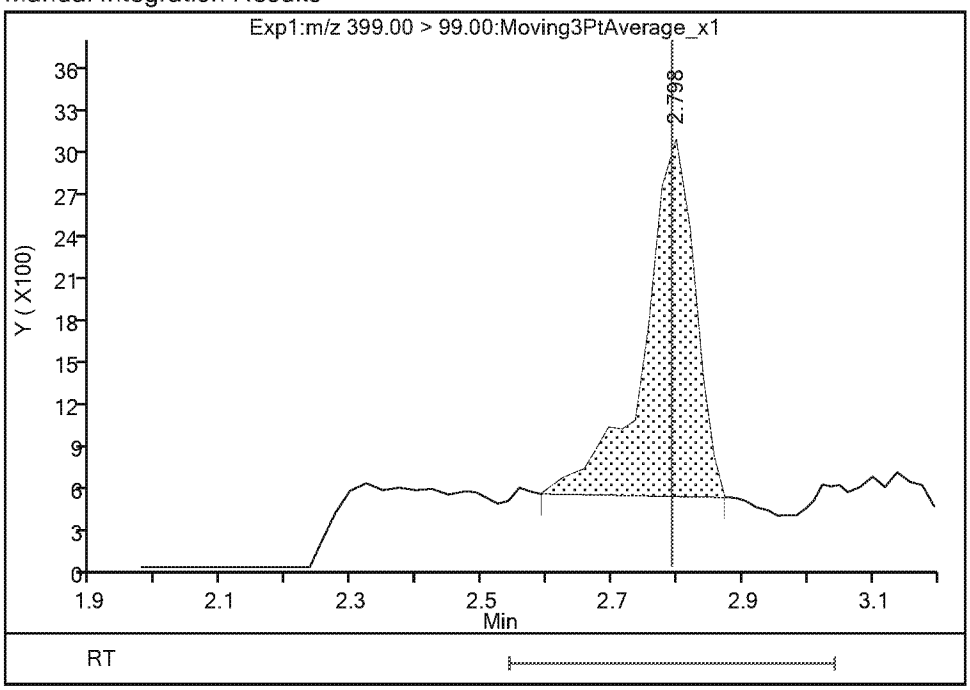
Processing Integration Results

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

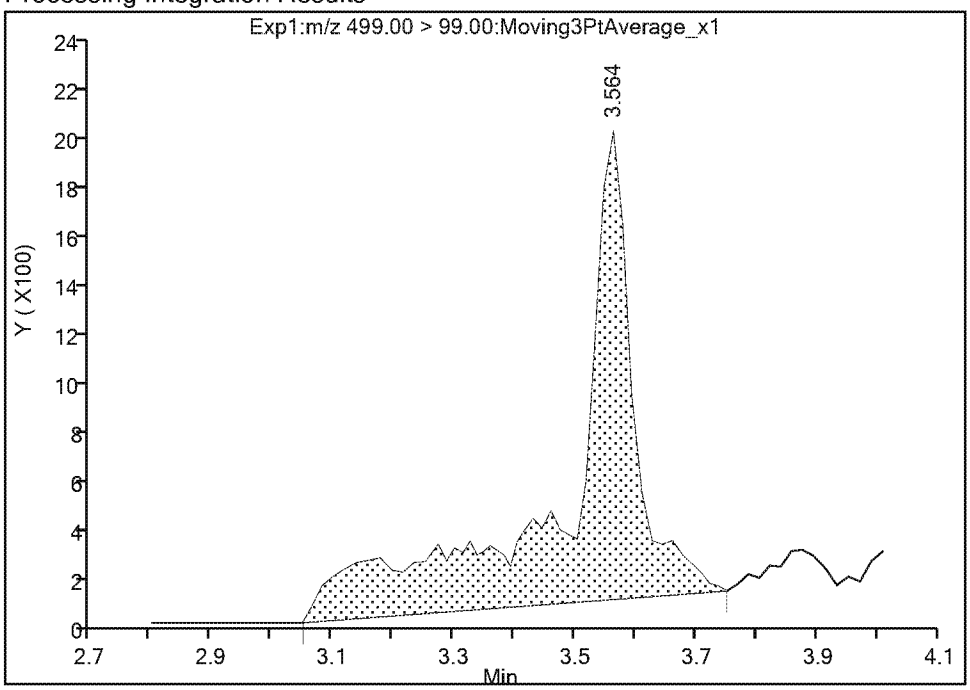
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

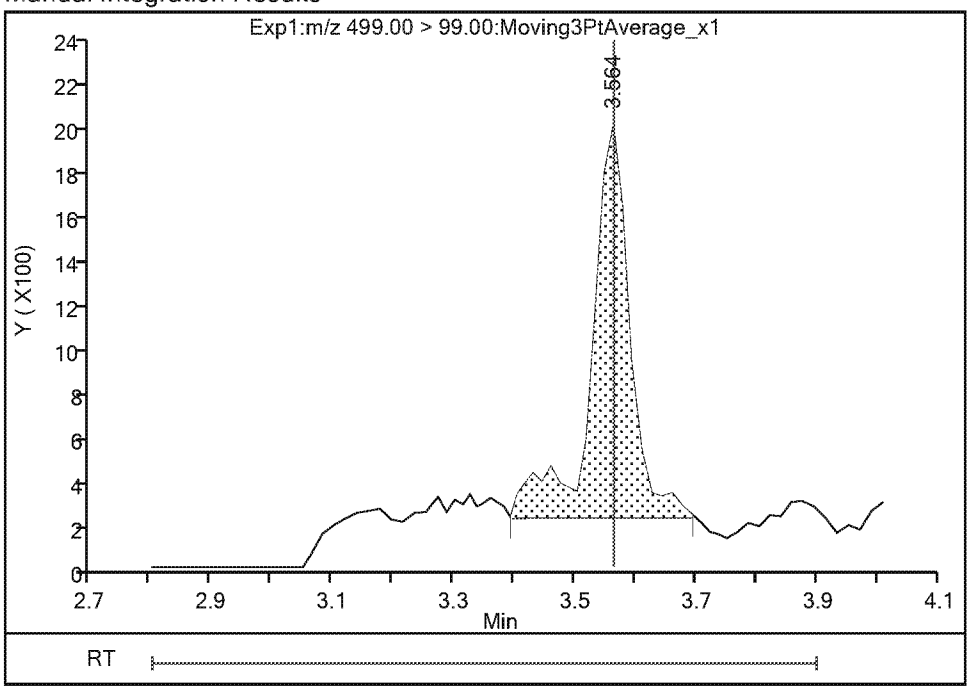
Processing Integration Results

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

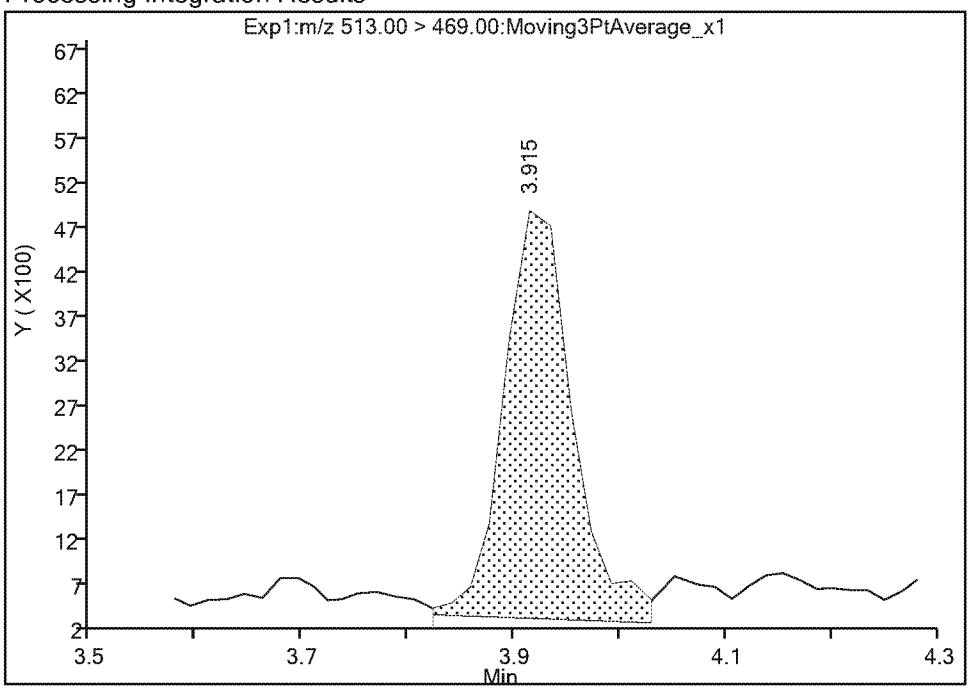
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

14 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 1

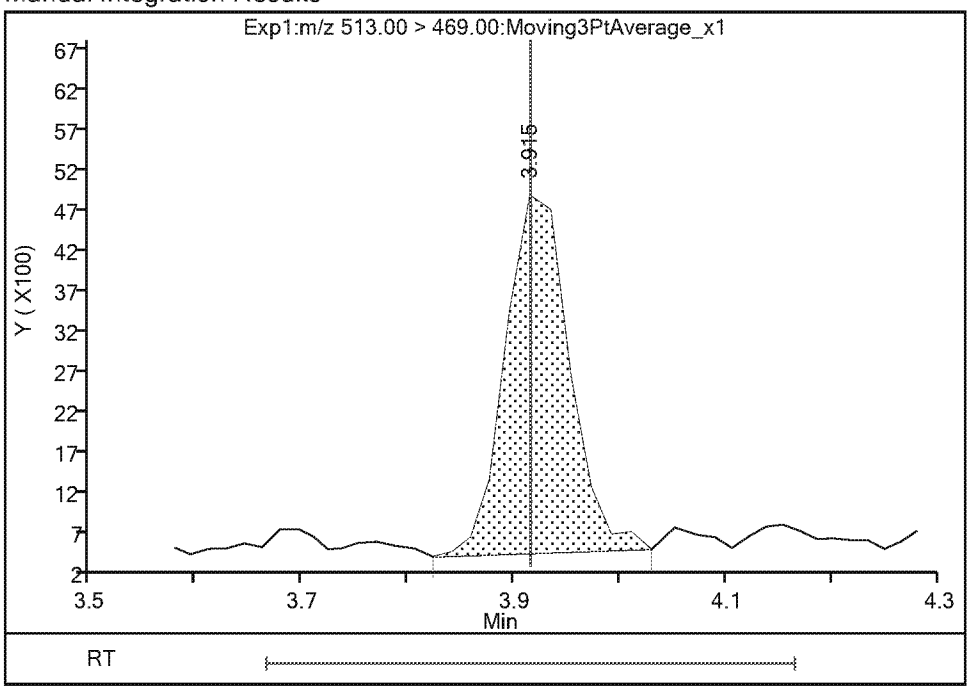
Processing Integration Results

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

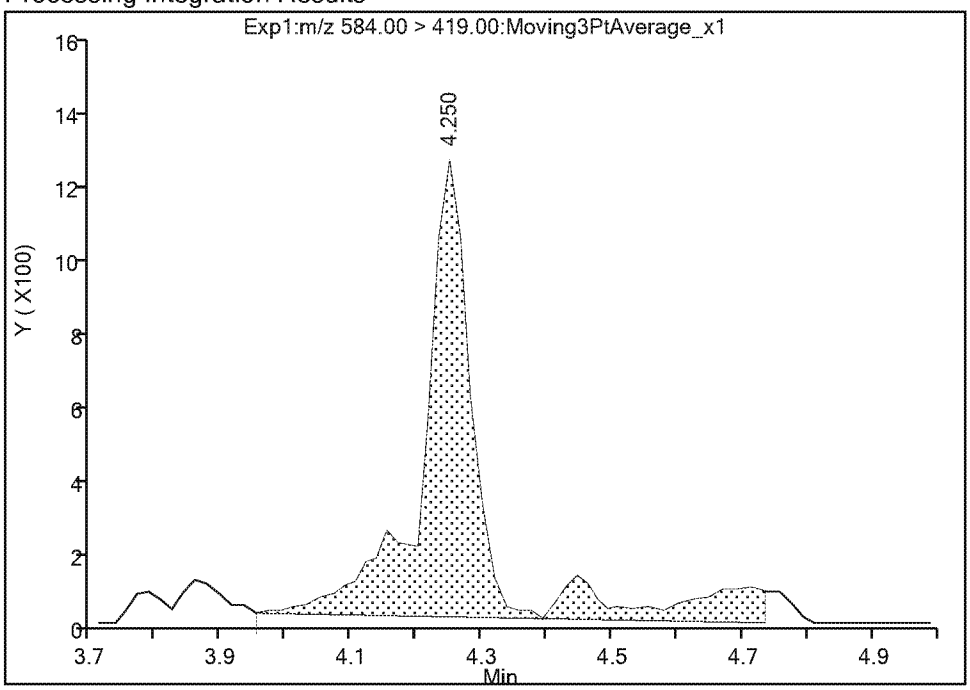
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

16 N-ethylperfluorooctanesulfonamidoacetic acid, CAS: 2991-50-6

Signal: 1

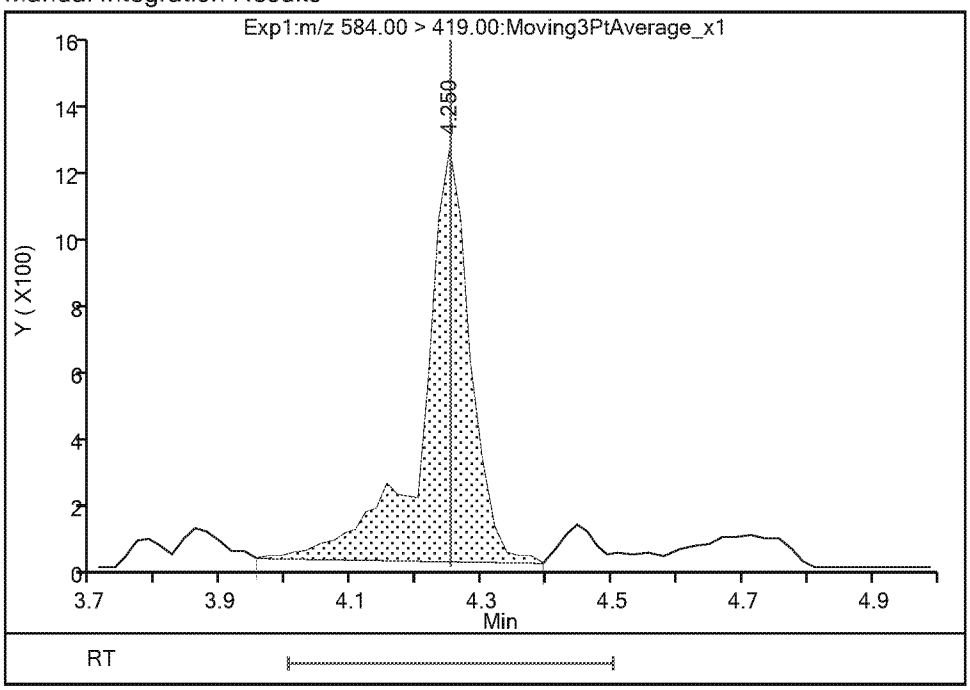
Processing Integration Results

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

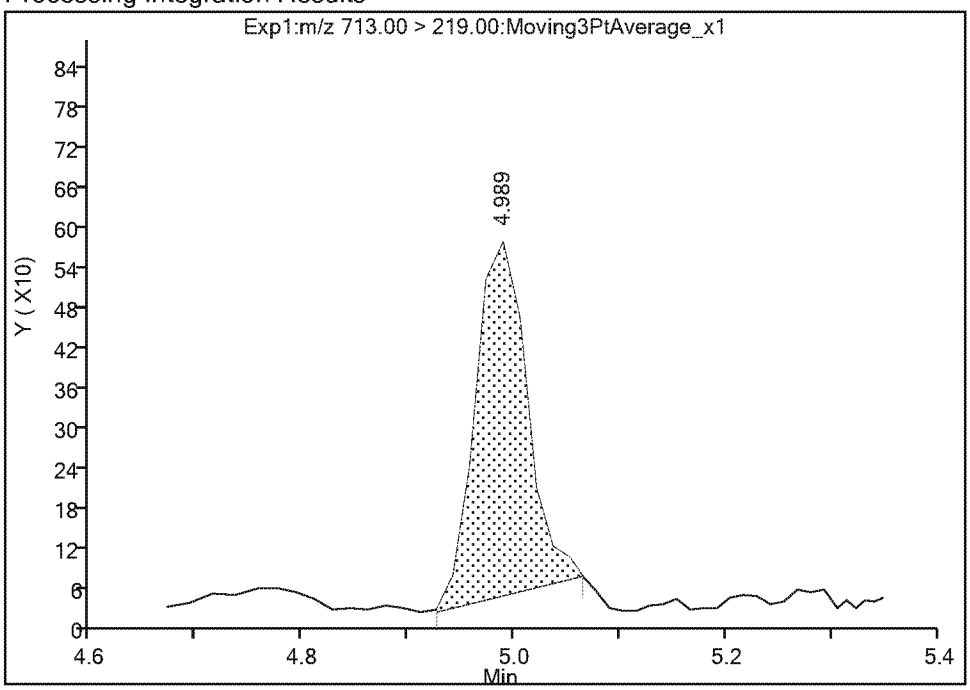
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_003.d				
Injection Date:	04-Apr-2019 15:14:19	Instrument ID:	A8_N		
Lims ID:	IC L1				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	1	Worklist Smp#:	2
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

20 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 2

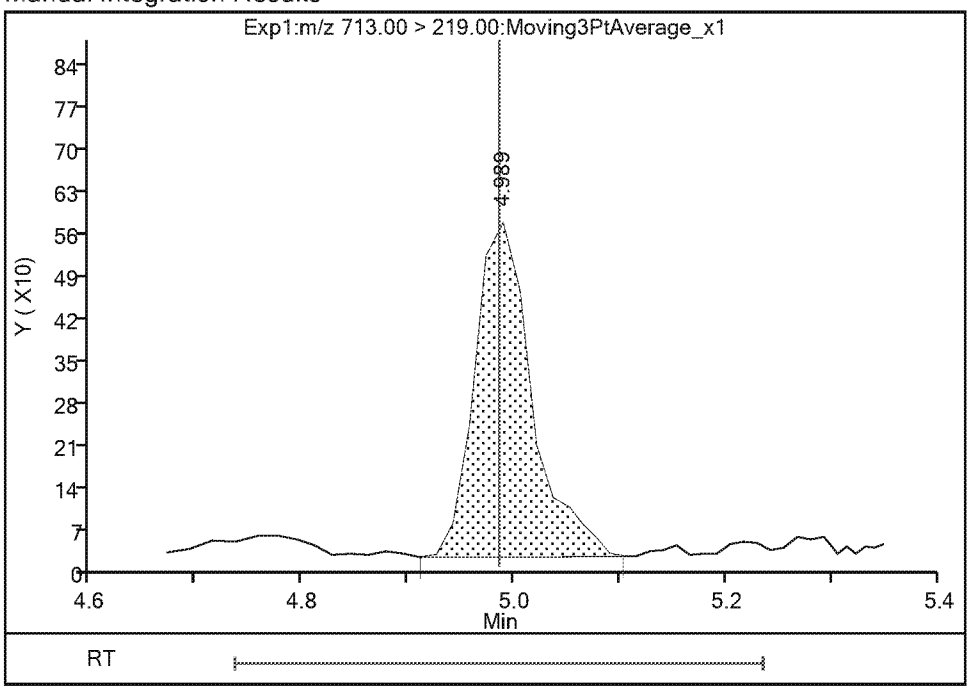
Processing Integration Results

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: Ex. 4 CBI 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

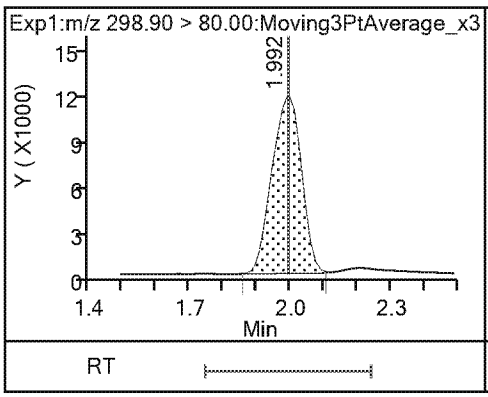
Reagents:

LC537_NC_L2_00004 Amount Added: 1.00 Units: mL

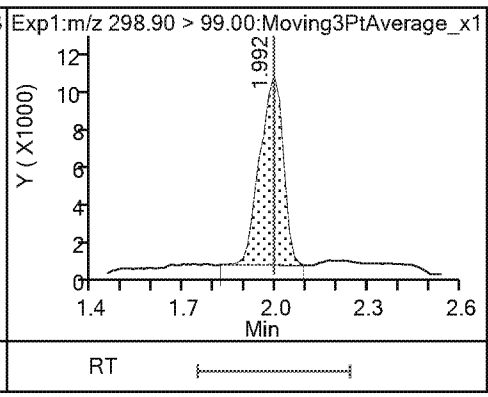
Eurofins TestAmerica, Sacramento

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

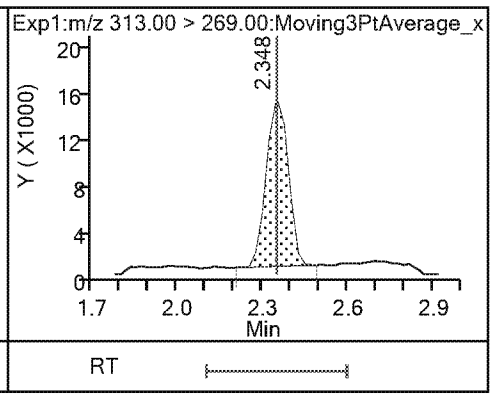
1 Perfluorobutanesulfonic acid



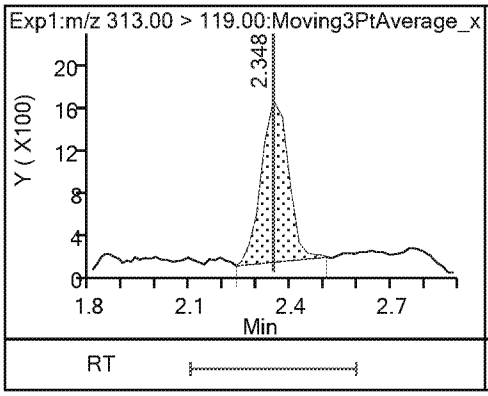
1 Perfluorobutanesulfonic acid



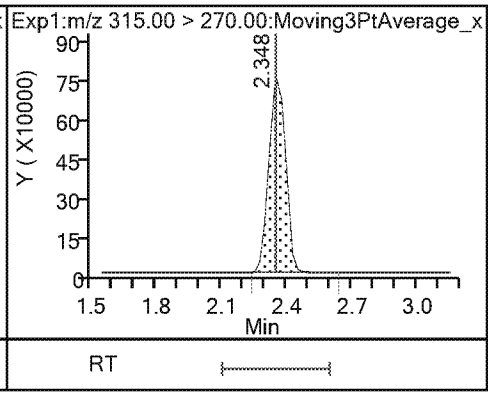
13 Perfluorohexanoic acid



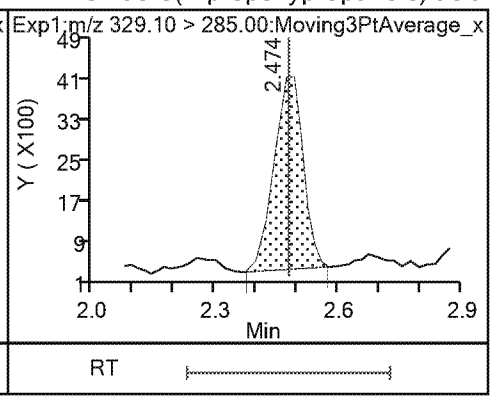
13 Perfluorohexanoic acid



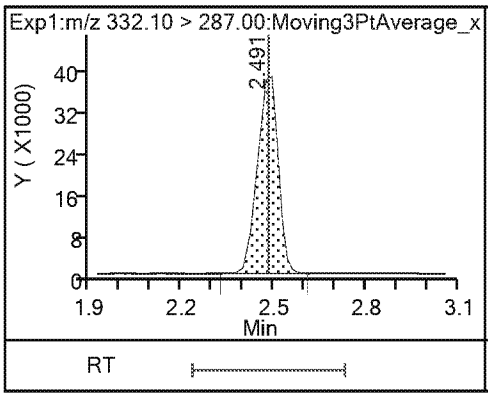
$ 2 13C2 PFHxA



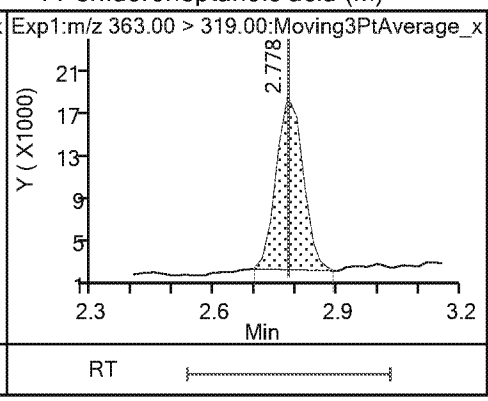
22 Perfluoro(2-propoxypropanoic) acid



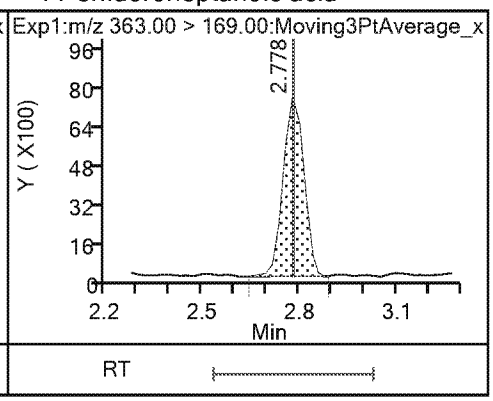
$ 25 13C3 HFPO-DA



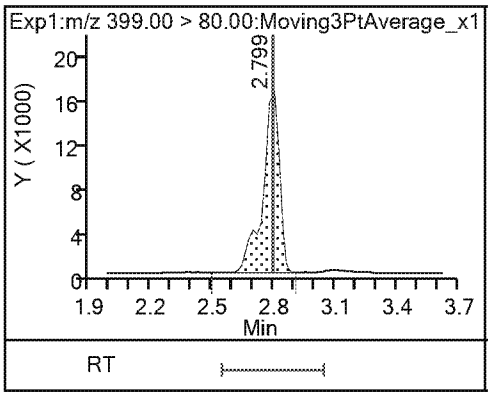
4 Perfluoroheptanoic acid (M)



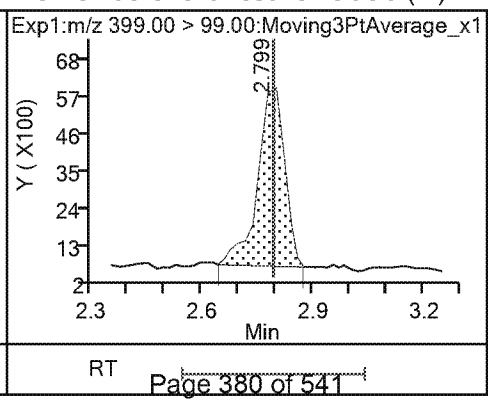
4 Perfluoroheptanoic acid



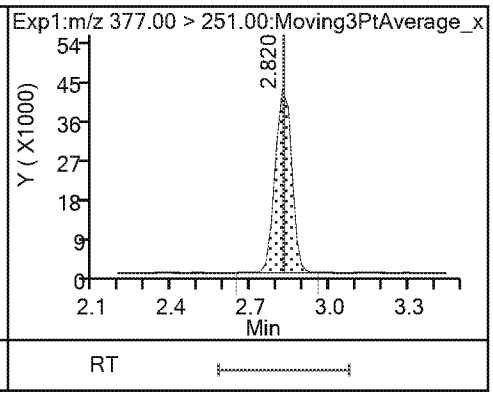
3 Perfluorohexanesulfonic acid



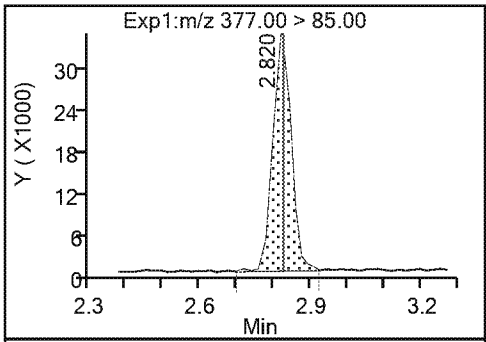
3 Perfluorohexanesulfonic acid (M)



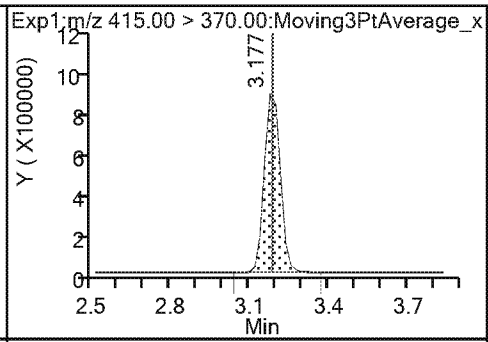
24 DONA



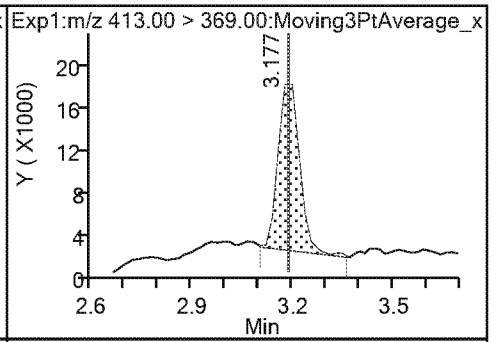
24 DONA



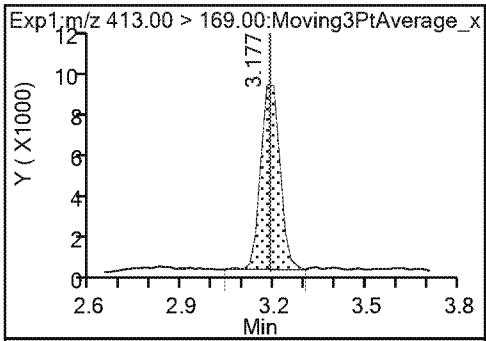
* 5 13C2 PFOA



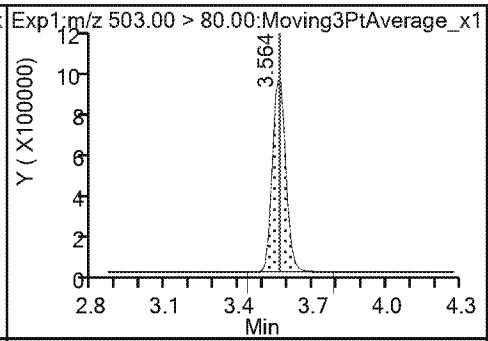
6 Perfluorooctanoic acid



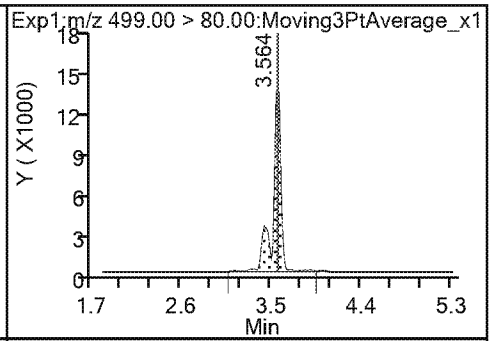
6 Perfluorooctanoic acid



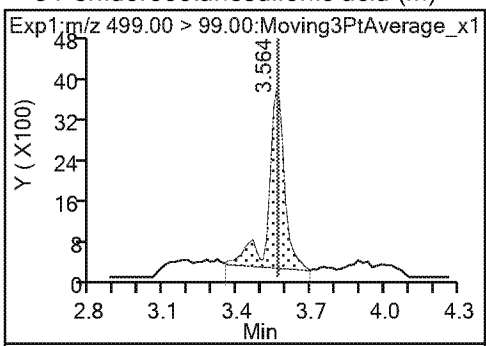
* 7 13C4 PFOS



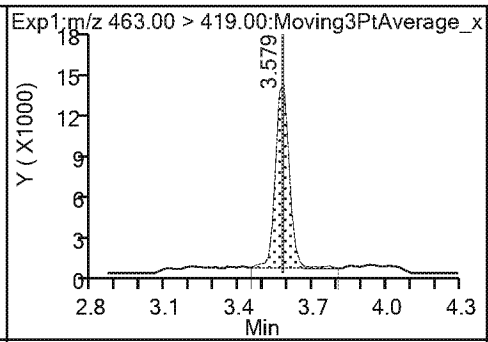
8 Perfluorooctanesulfonic acid



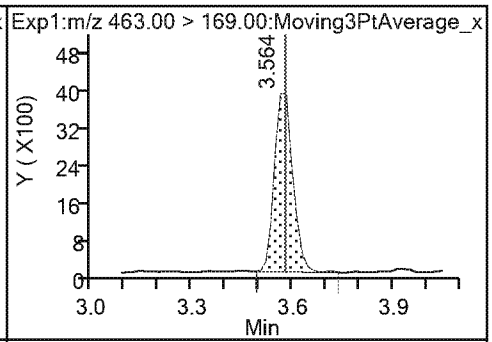
8 Perfluorooctanesulfonic acid (M)



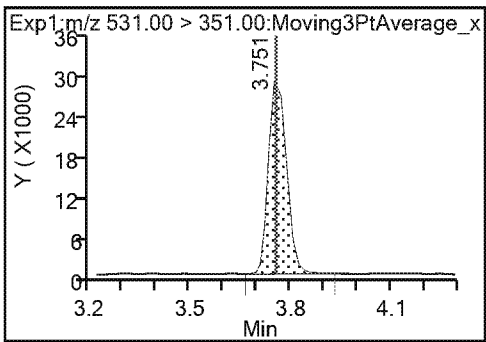
9 Perfluorononanoic acid



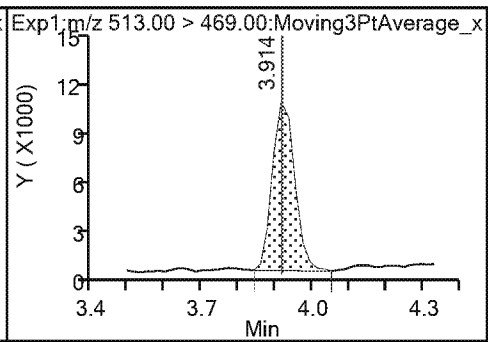
9 Perfluorononanoic acid



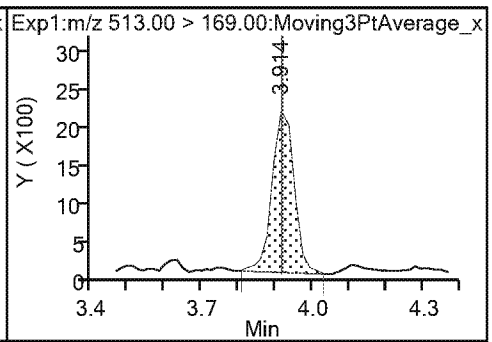
23 9-Chlorohexadecafluoro-3-oxanonane



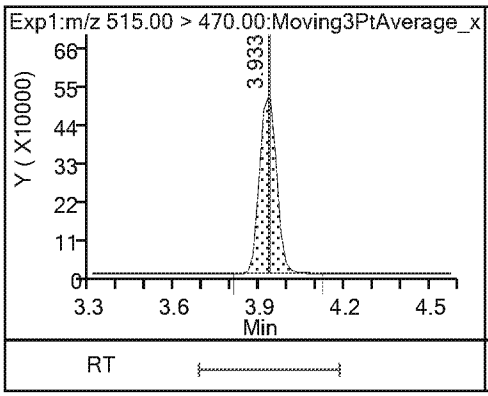
14 Perfluorodecanoic acid



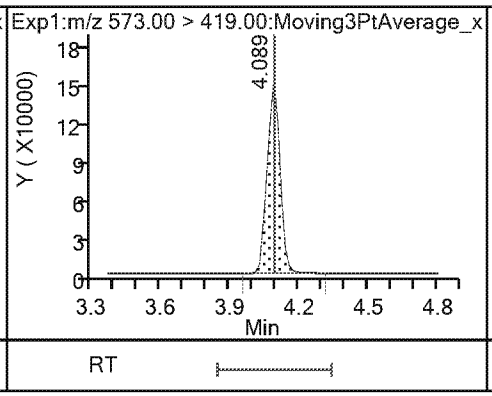
14 Perfluorodecanoic acid



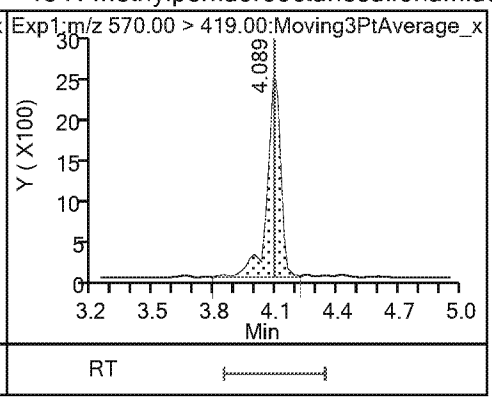
$ 10 13C2 PFDA



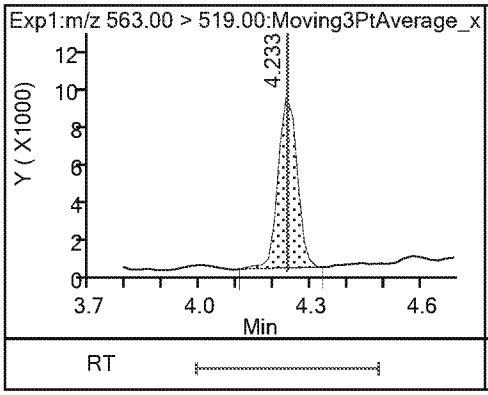
* 12 d3-NMeFOSAA



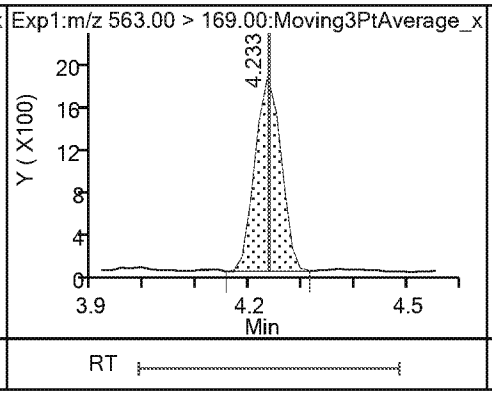
15 N-methylperfluorooctanesulfonamido



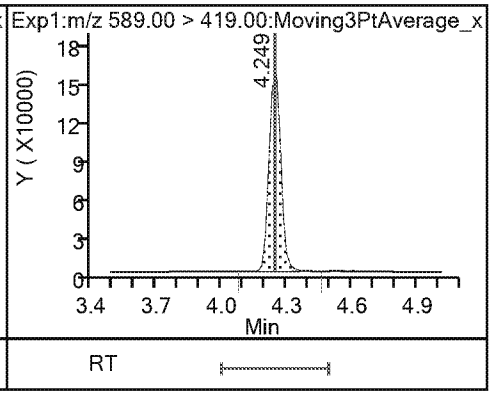
17 Perfluoroundecanoic acid



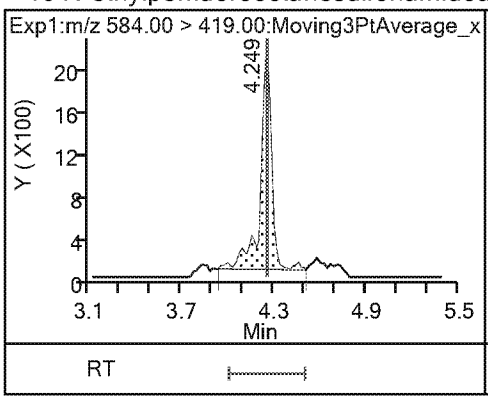
17 Perfluoroundecanoic acid



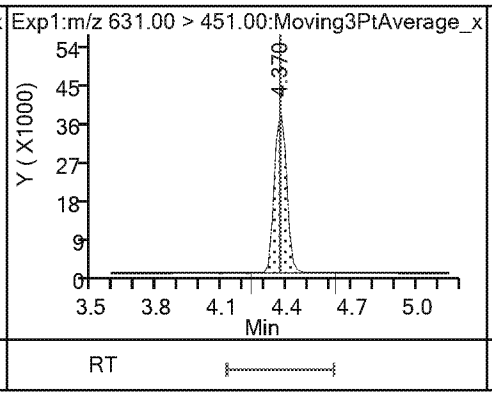
$ 11 d5-NEtFOSAA



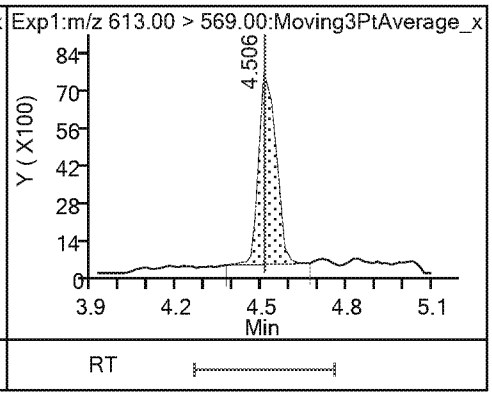
16 N-ethylperfluorooctanesulfonamidoa



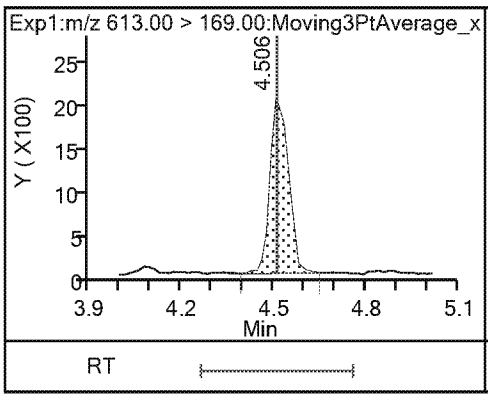
21 11-Chloroeicosafluoro-3-oxaundecan



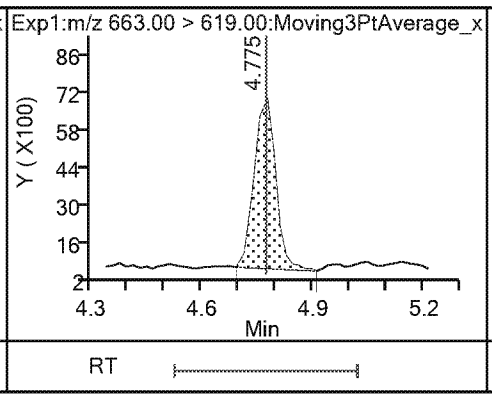
18 Perfluorododecanoic acid



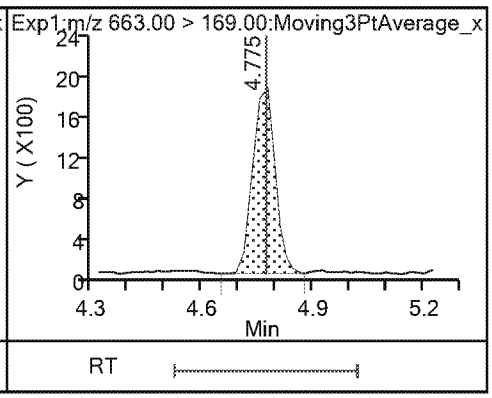
18 Perfluorododecanoic acid



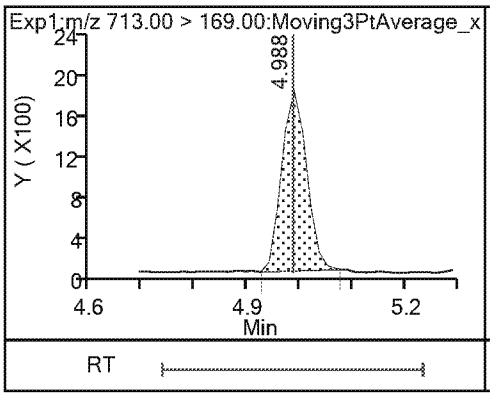
19 Perfluorotridecanoic acid



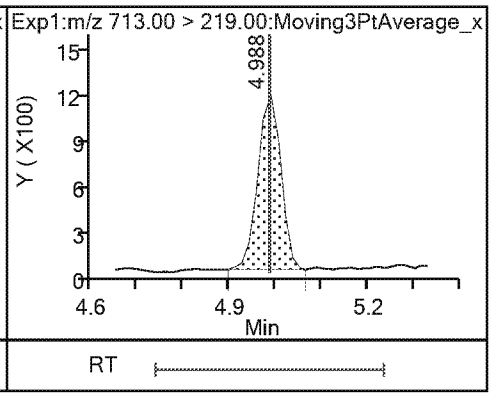
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento

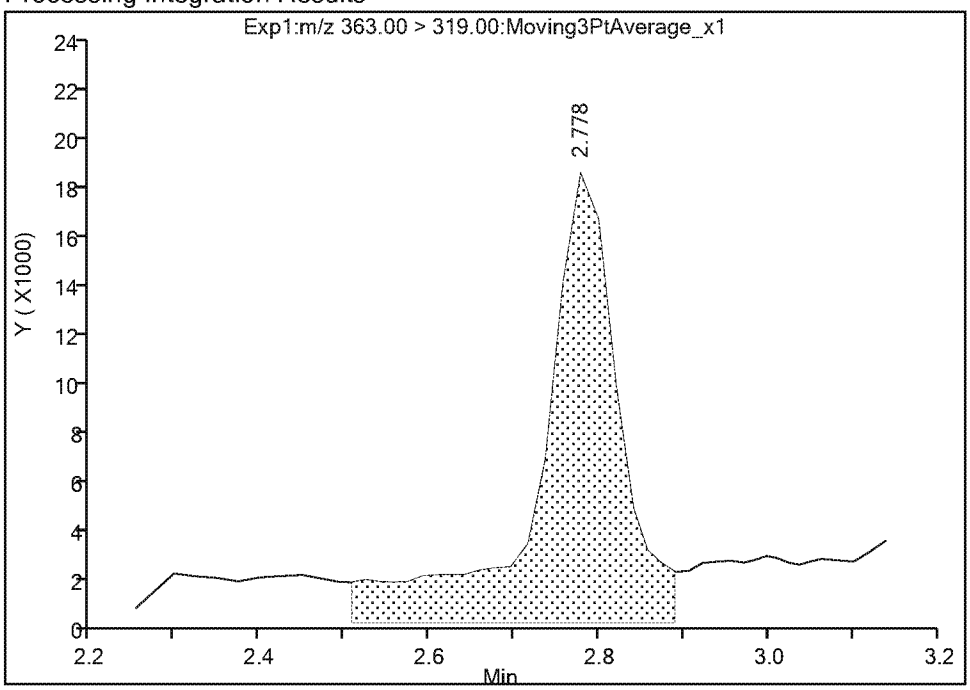
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_004.d				
Injection Date:	04-Apr-2019 15:23:44	Instrument ID:	A8_N		
Lims ID:	IC L2				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

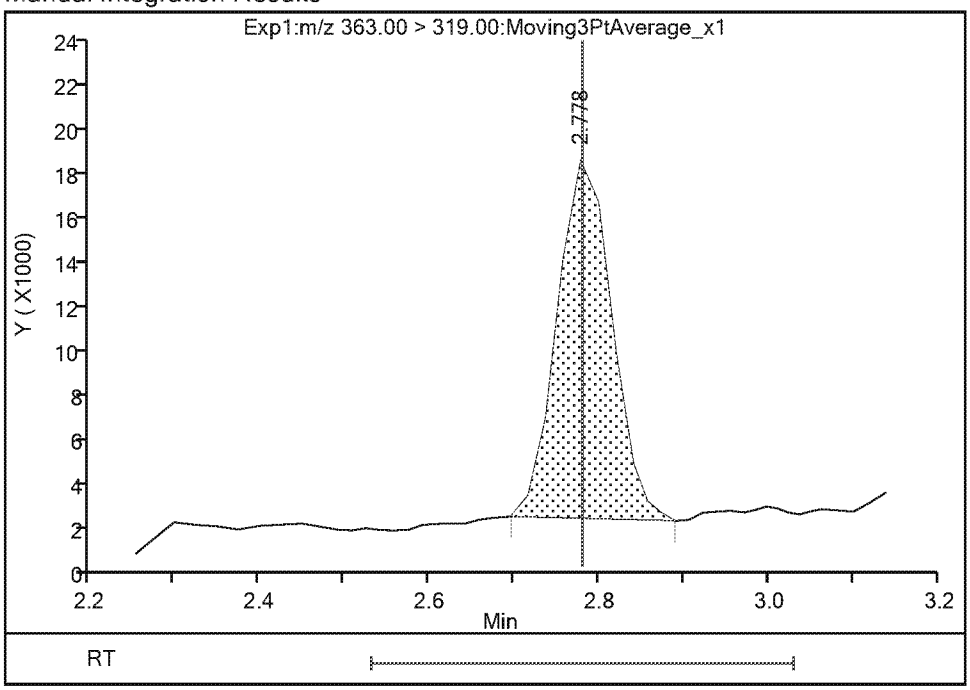
Processing Integration Results

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

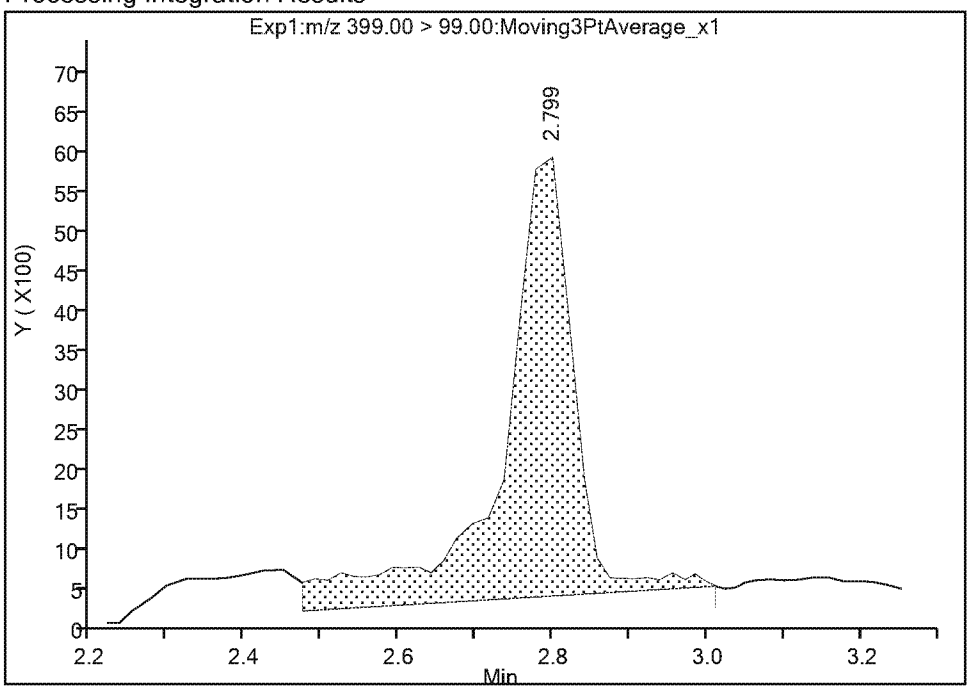
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_004.d				
Injection Date:	04-Apr-2019 15:23:44	Instrument ID:	A8_N		
Lims ID:	IC L2				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

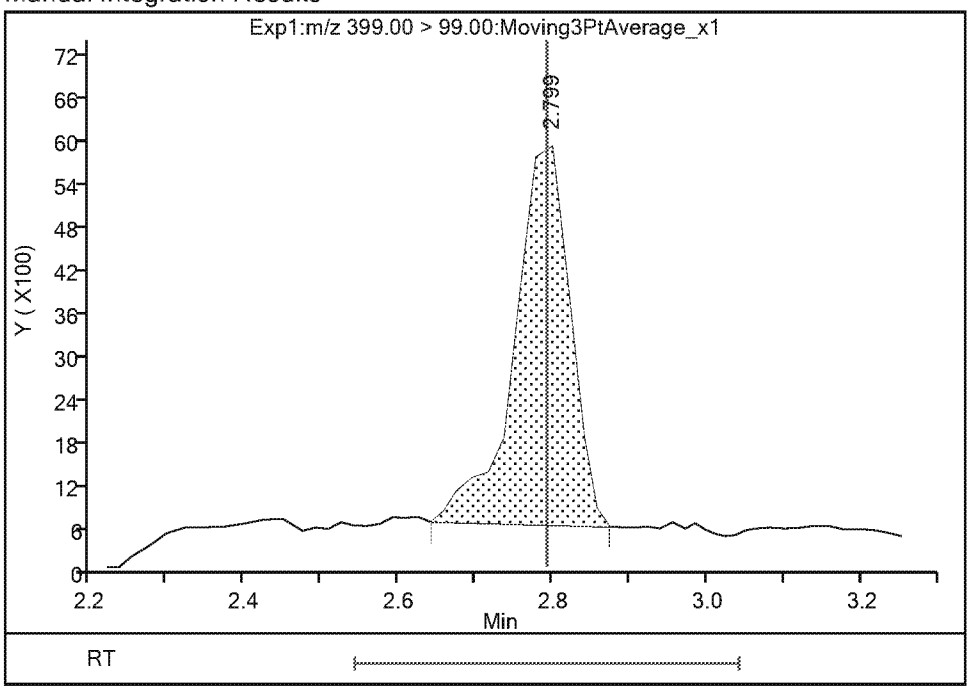
Processing Integration Results

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

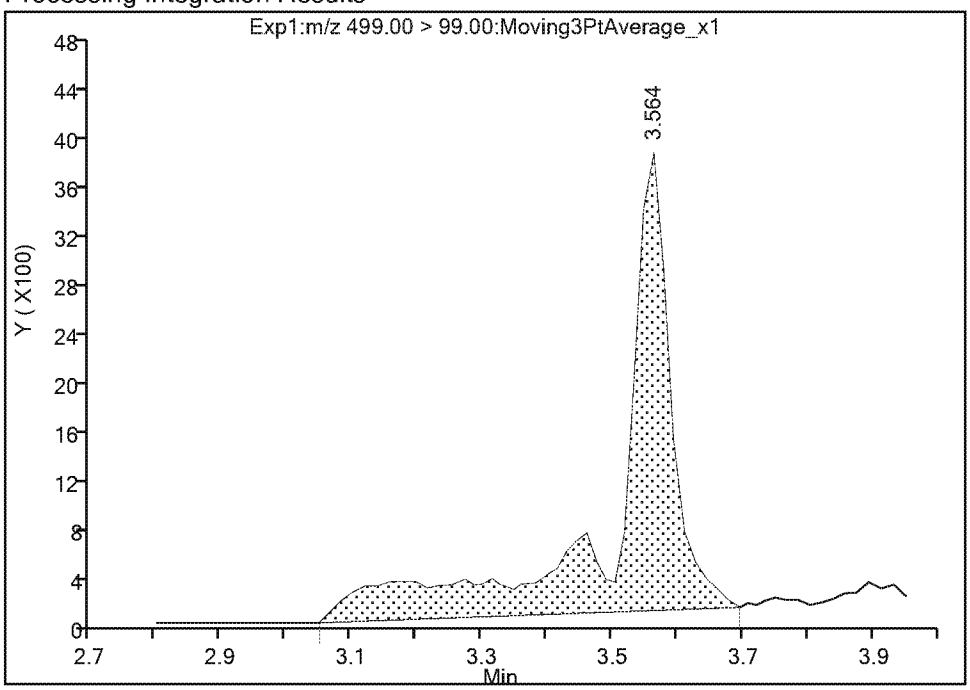
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_004.d				
Injection Date:	04-Apr-2019 15:23:44	Instrument ID:	A8_N		
Lims ID:	IC L2				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	3
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

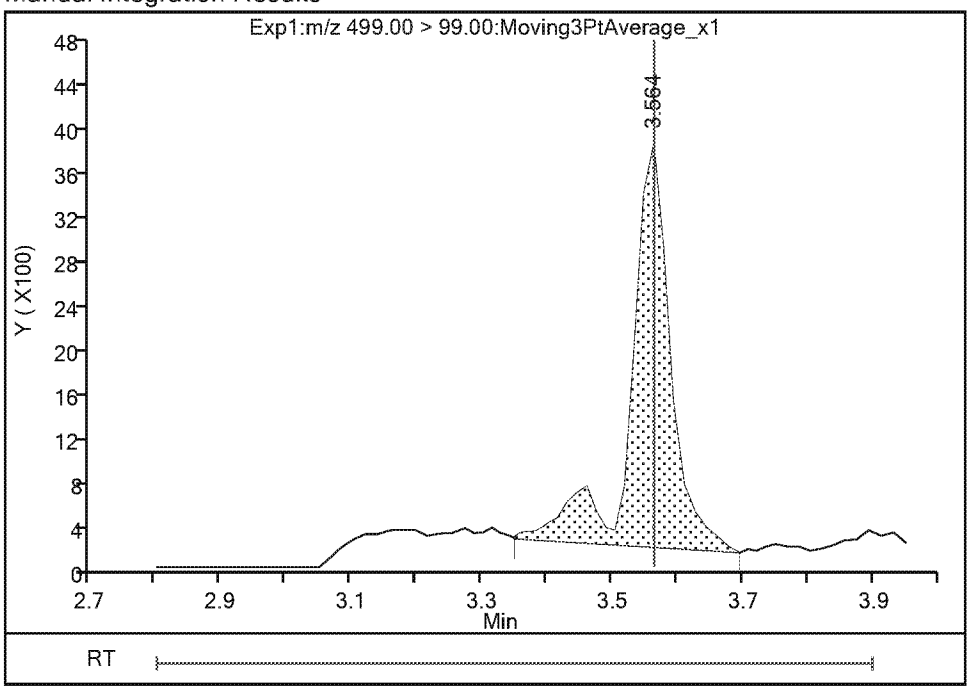
Processing Integration Results

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: Ex. 4 CBI 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

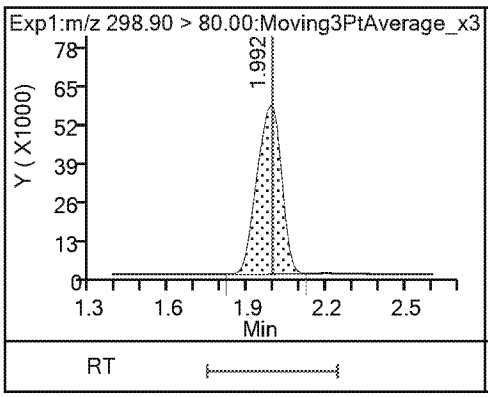
Reagents:

LC537_NC_L3_00004 Amount Added: 1.00 Units: mL

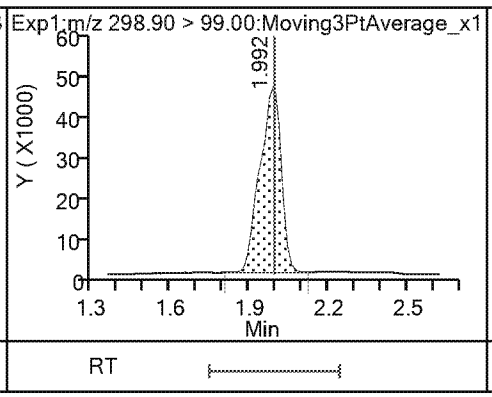
Eurofins TestAmerica, Sacramento

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

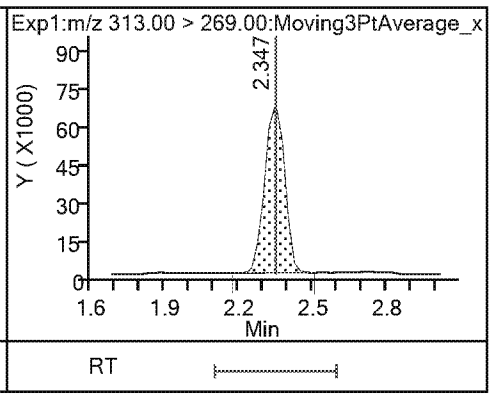
1 Perfluorobutanesulfonic acid



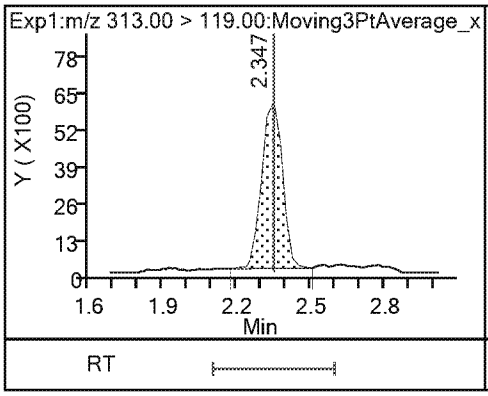
1 Perfluorobutanesulfonic acid



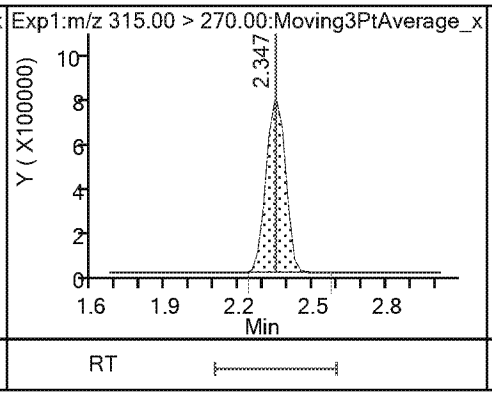
13 Perfluorohexanoic acid



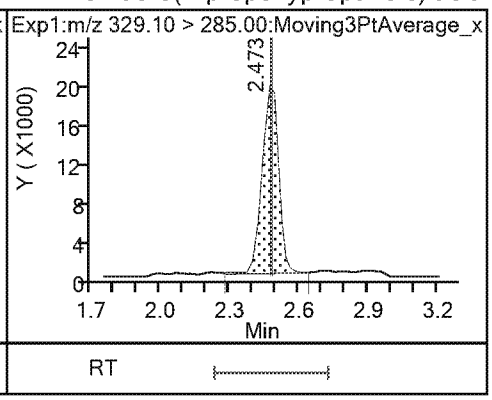
13 Perfluorohexanoic acid



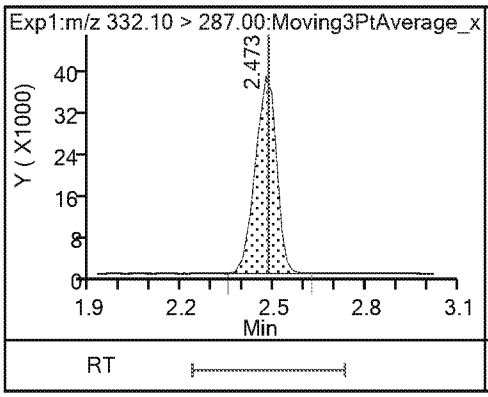
$ 2 13C2 PFHxA



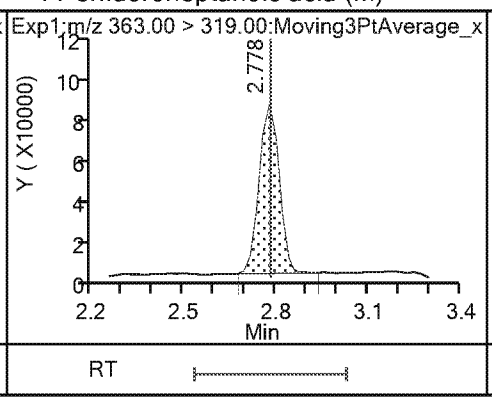
22 Perfluoro(2-propoxypropanoic) acid



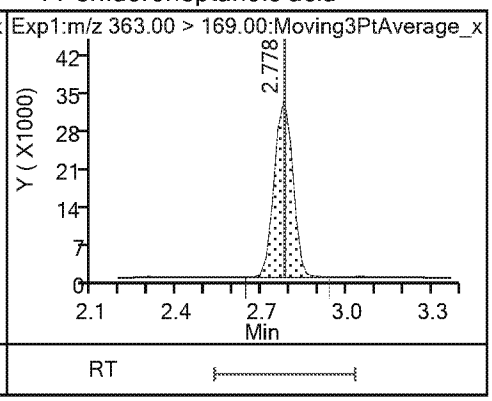
$ 25 13C3 HFPO-DA



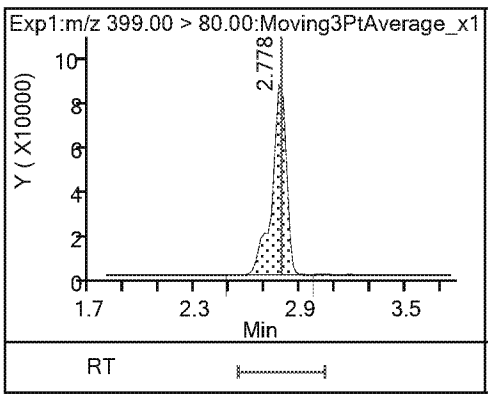
4 Perfluoroheptanoic acid (M)



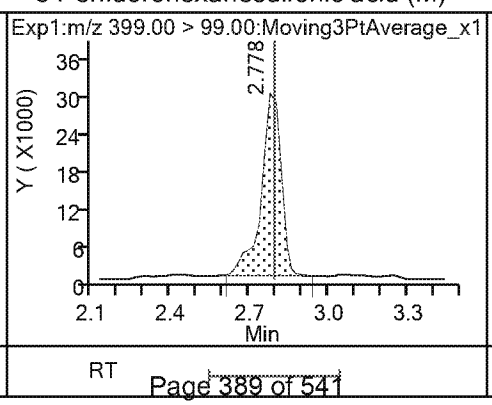
4 Perfluoroheptanoic acid



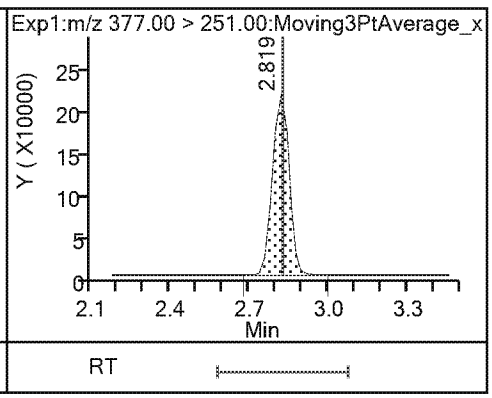
3 Perfluorohexanesulfonic acid



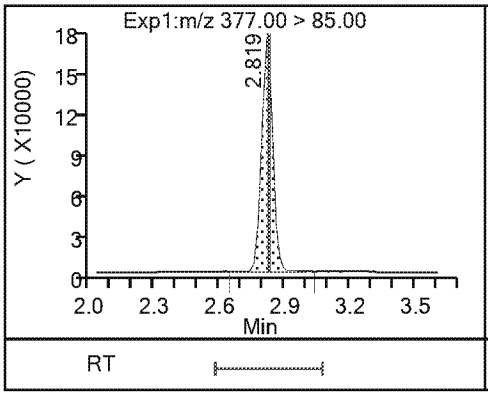
3 Perfluorohexanesulfonic acid (M)



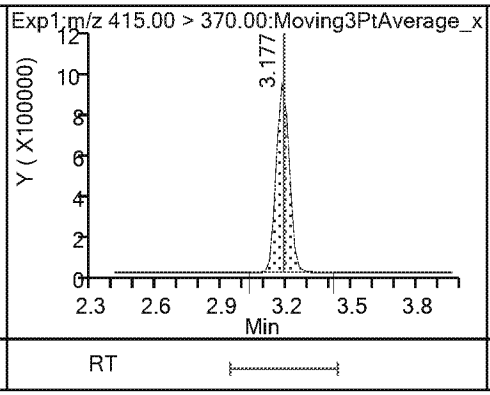
24 DONA



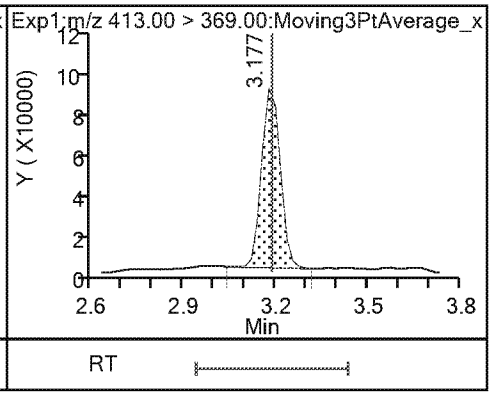
24 DONA



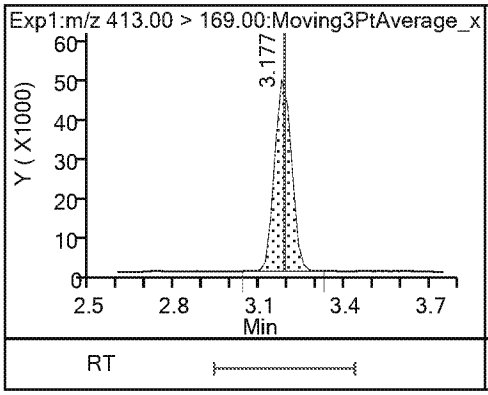
* 5 13C2 PFOA



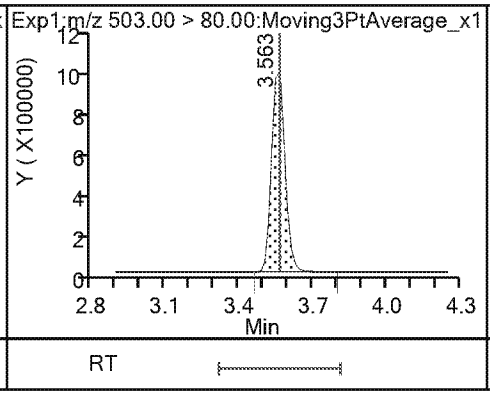
6 Perfluorooctanoic acid



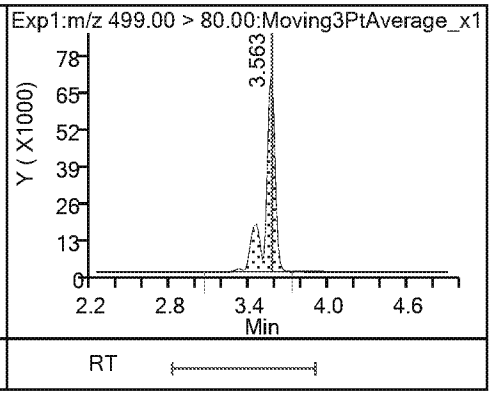
6 Perfluorooctanoic acid



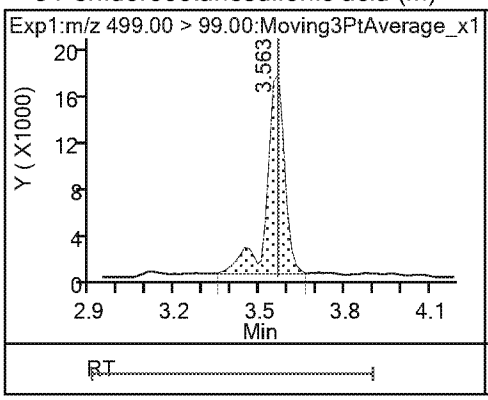
* 7 13C4 PFOS



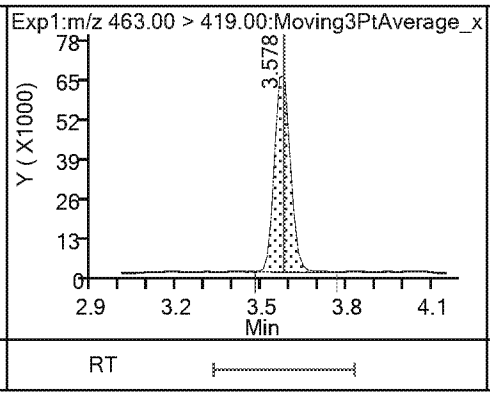
8 Perfluorooctanesulfonic acid



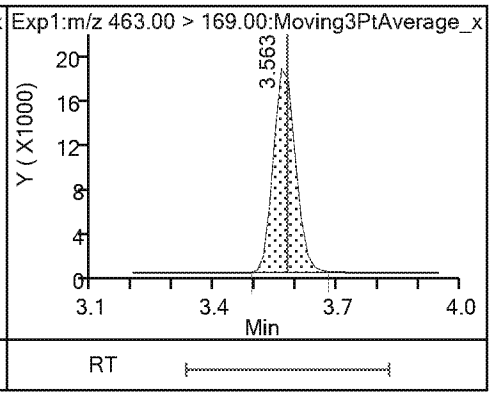
8 Perfluorooctanesulfonic acid (M)



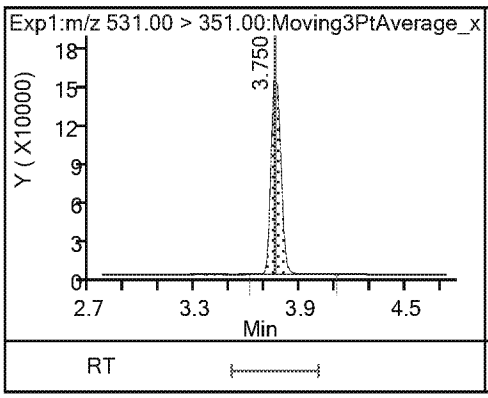
9 Perfluorononanoic acid



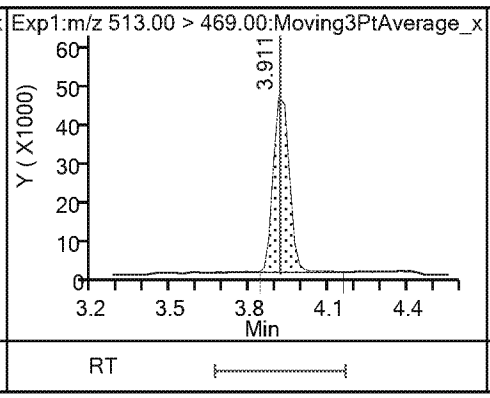
9 Perfluorononanoic acid



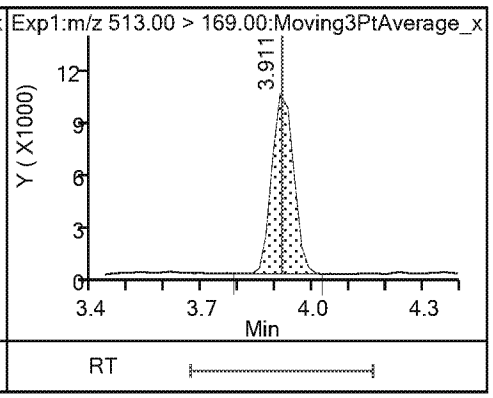
23 9-Chlorohexadecafluoro-3-oxanonane



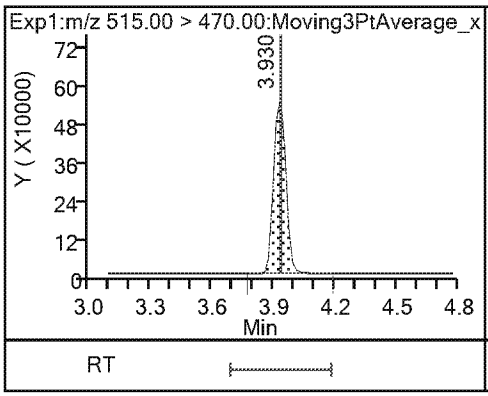
14 Perfluorodecanoic acid



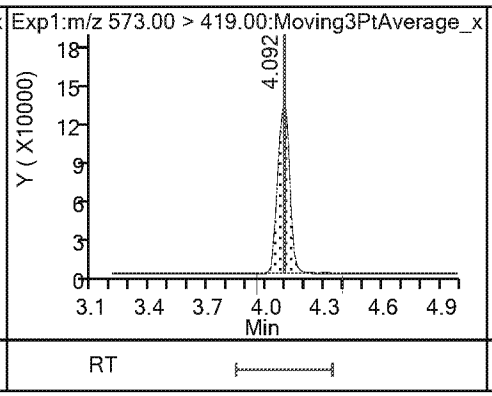
14 Perfluorodecanoic acid



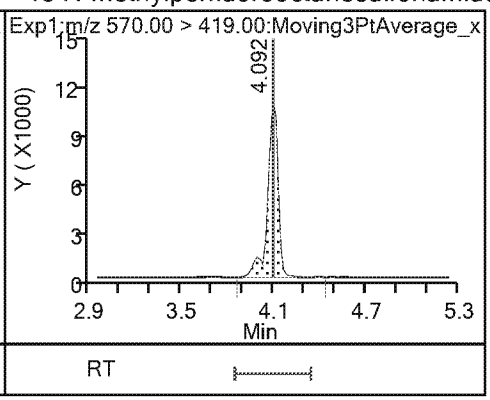
$ 10 13C2 PFDA



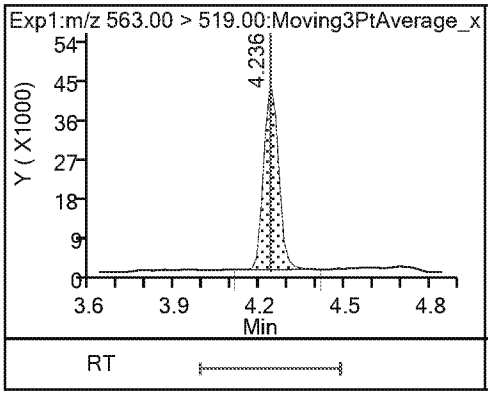
* 12 d3-NMeFOSAA



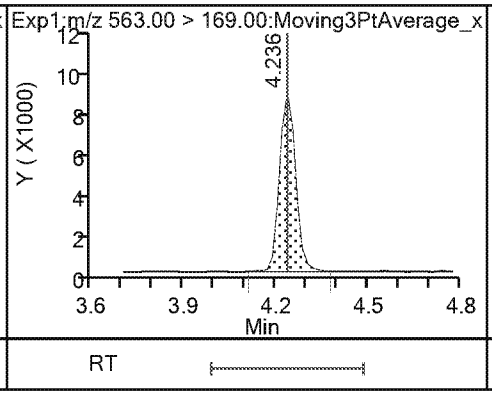
15 N-methylperfluorooctanesulfonamido



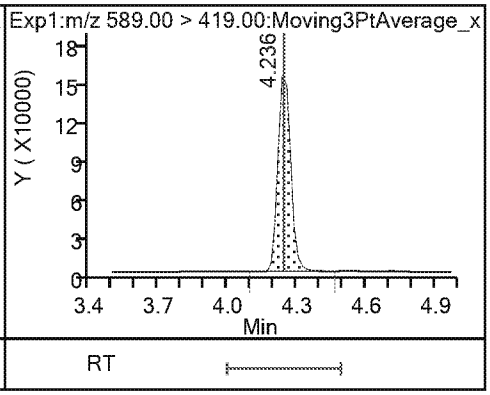
17 Perfluoroundecanoic acid



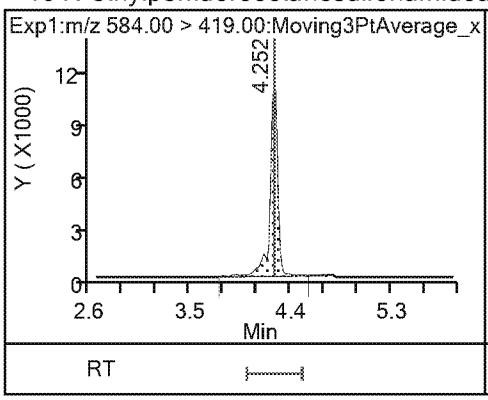
17 Perfluoroundecanoic acid



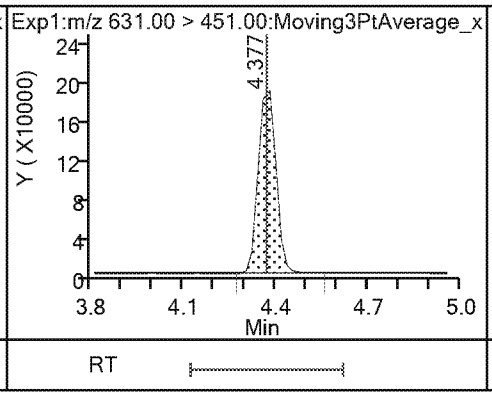
$ 11 d5-NEtFOSAA



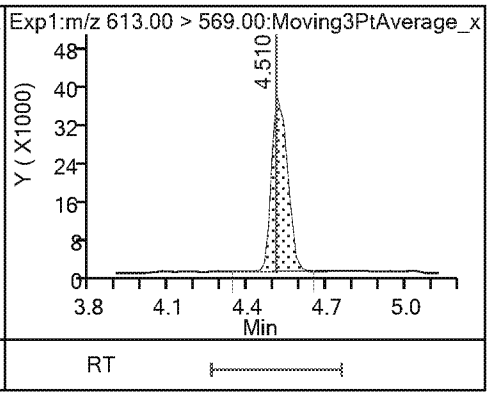
16 N-ethylperfluorooctanesulfonamidoa



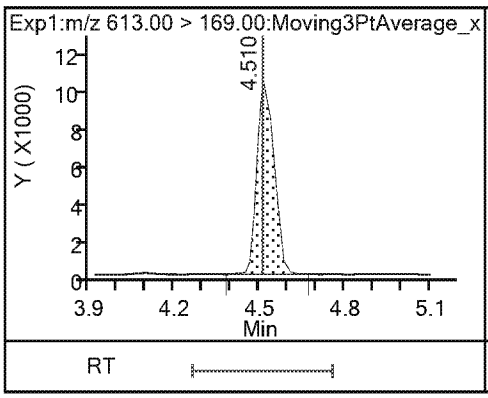
21 11-Chloroeicosafluoro-3-oxaundecan



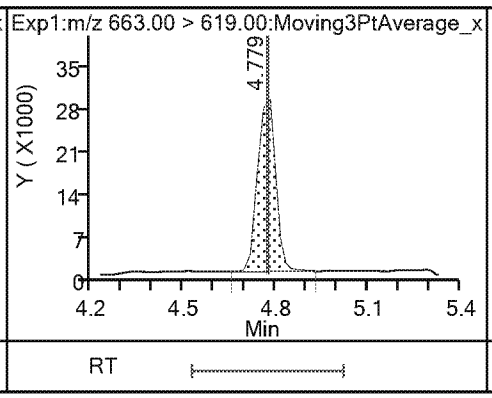
18 Perfluorododecanoic acid



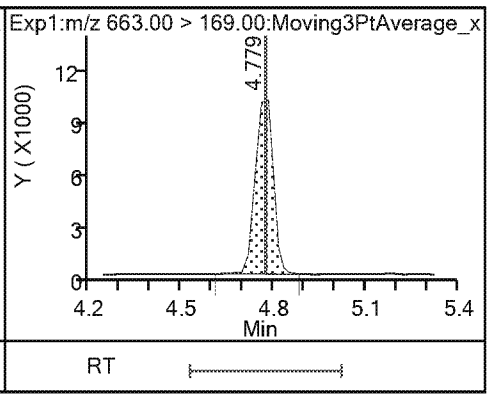
18 Perfluorododecanoic acid



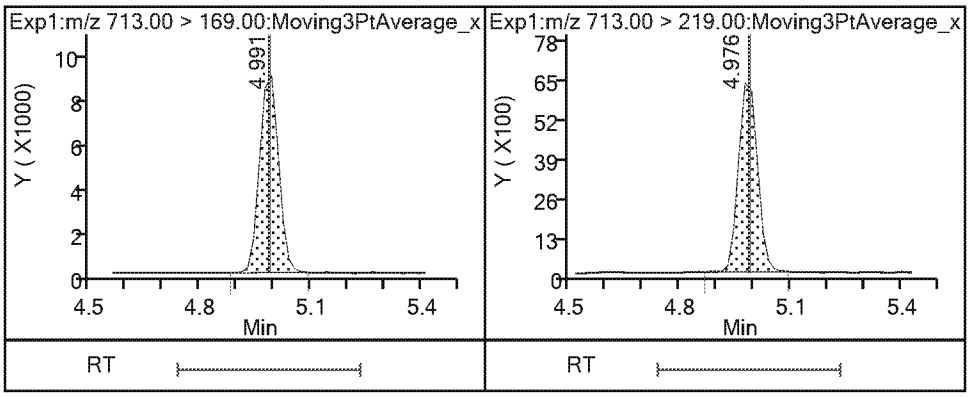
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid 20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento

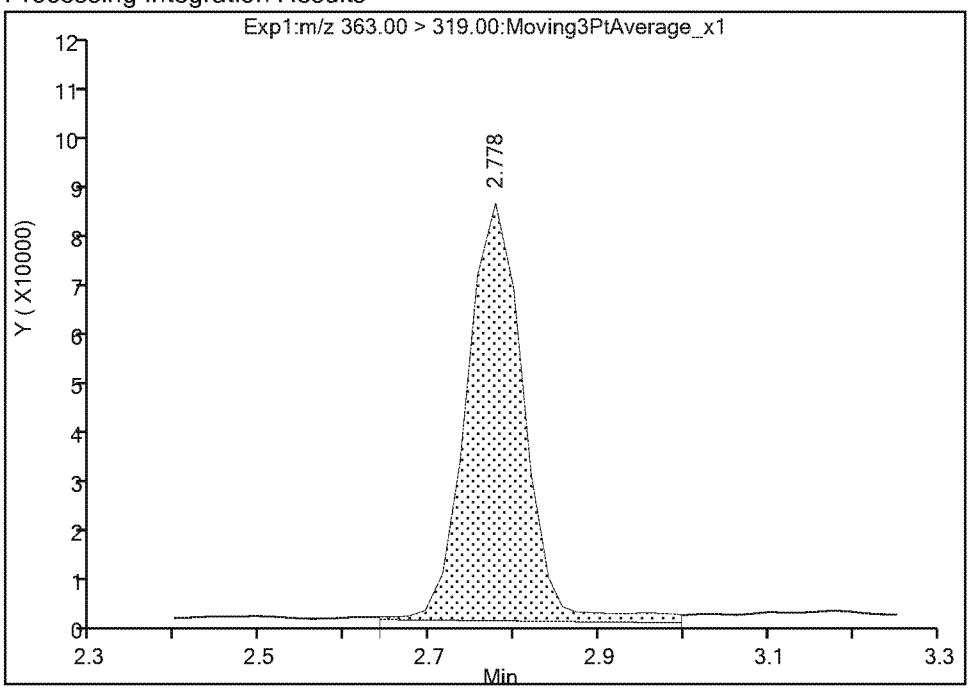
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_005.d				
Injection Date:	04-Apr-2019 15:33:14	Instrument ID:	A8_N		
Lims ID:	IC L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

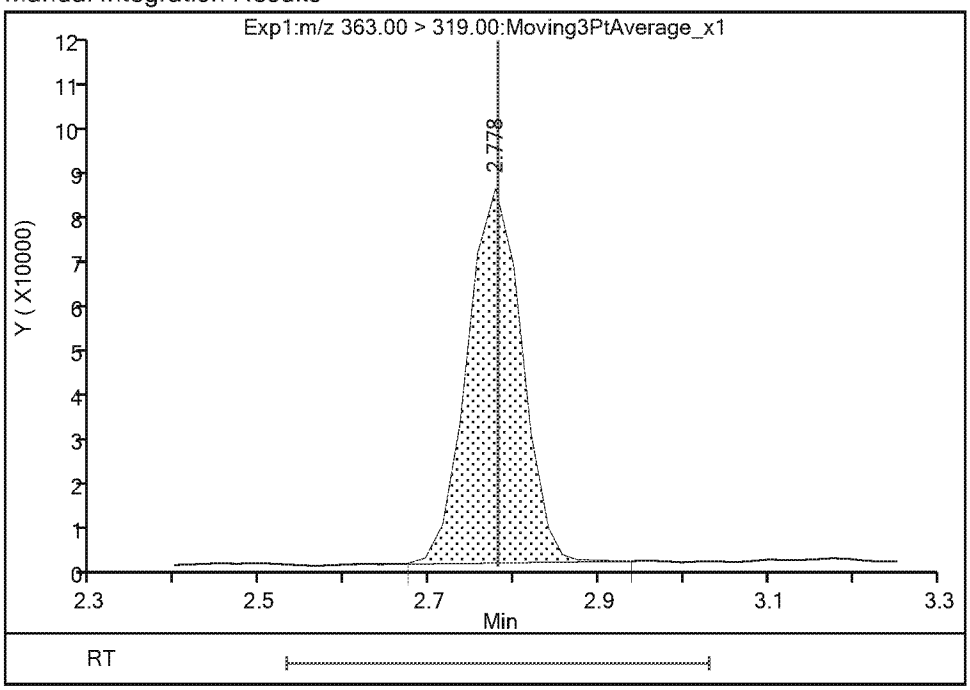
Processing Integration Results

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

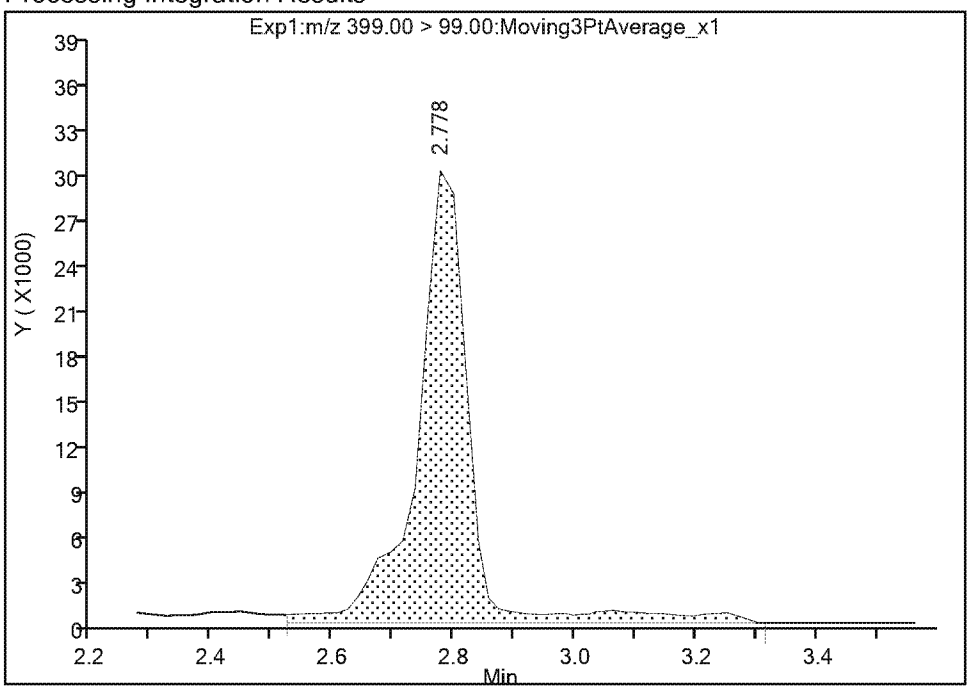
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_005.d				
Injection Date:	04-Apr-2019 15:33:14	Instrument ID:	A8_N		
Lims ID:	IC L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

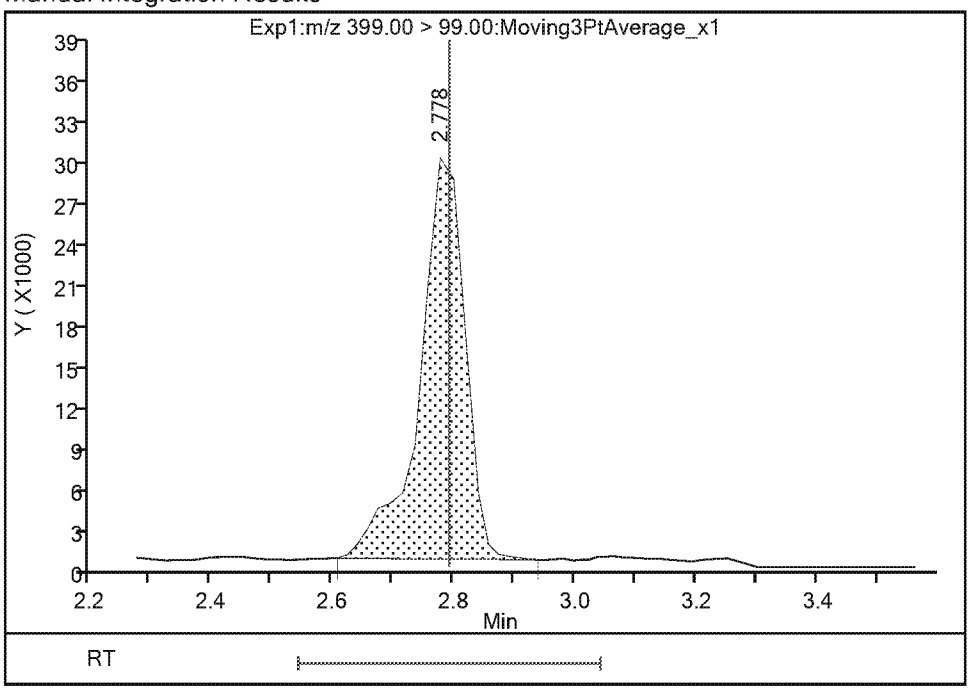
Processing Integration Results

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

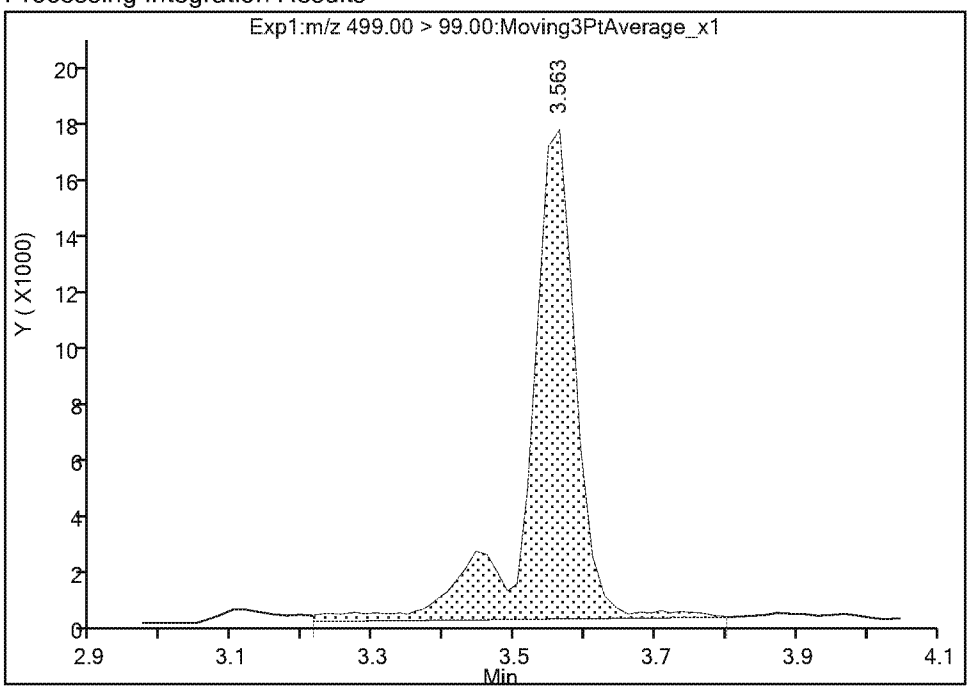
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_005.d				
Injection Date:	04-Apr-2019 15:33:14	Instrument ID:	A8_N		
Lims ID:	IC L3				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

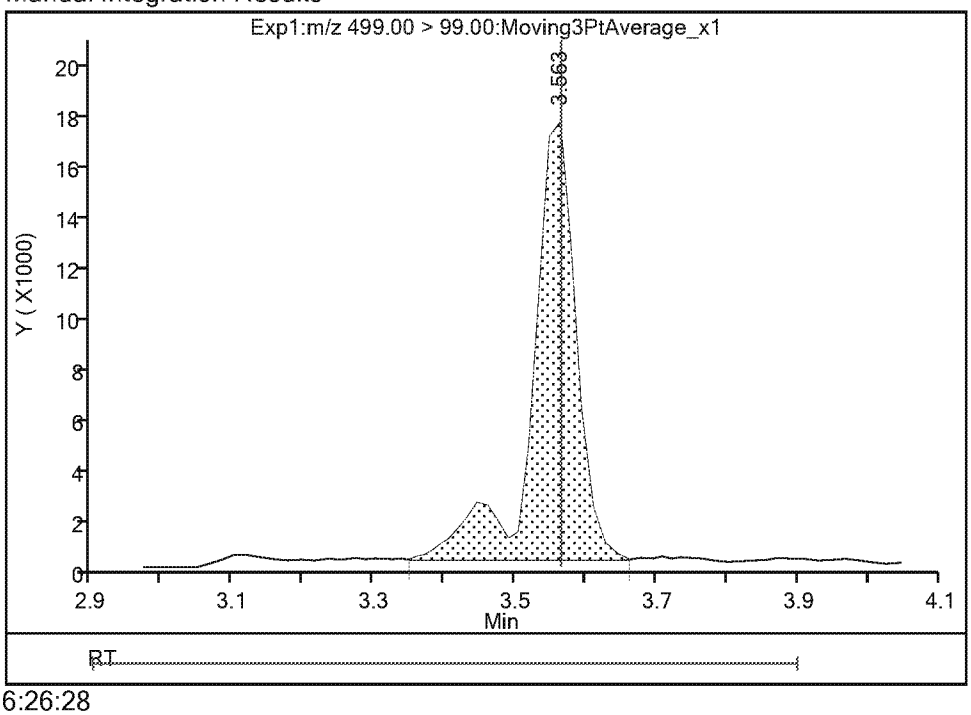
Processing Integration Results

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	

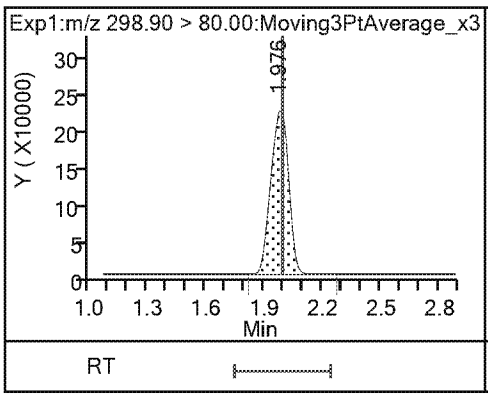
Reagents:

LC537_NC_L4_00003 Amount Added: 1.00 Units: mL

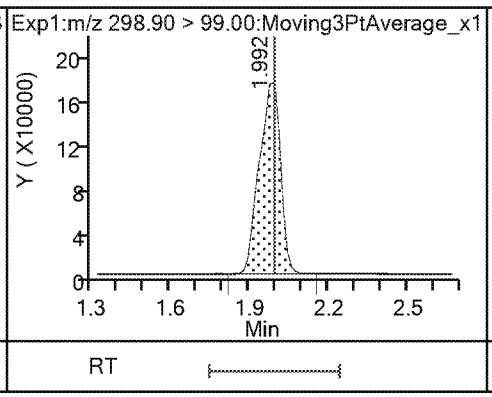
Eurofins TestAmerica, Sacramento

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

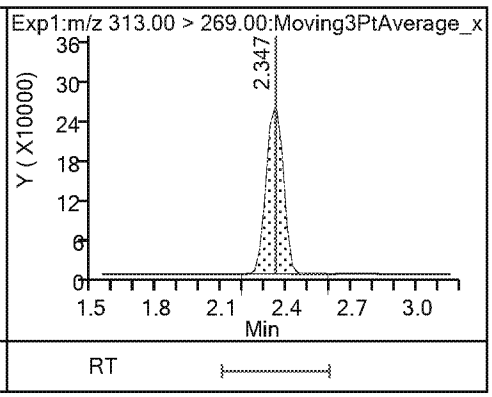
1 Perfluorobutanesulfonic acid



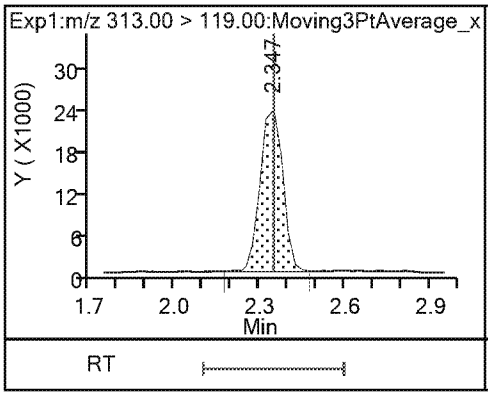
1 Perfluorobutanesulfonic acid



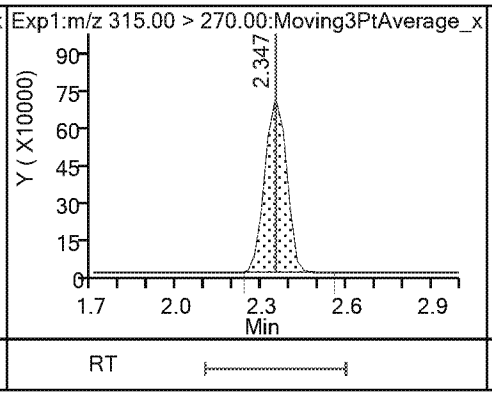
13 Perfluorohexanoic acid



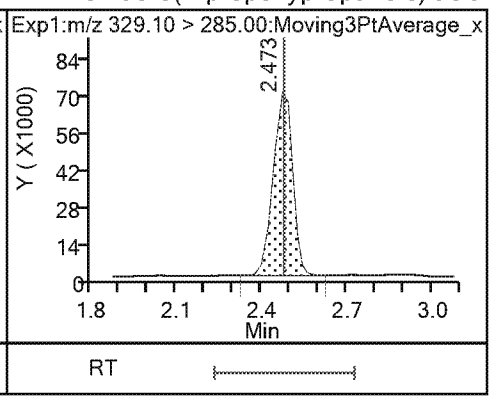
13 Perfluorohexanoic acid



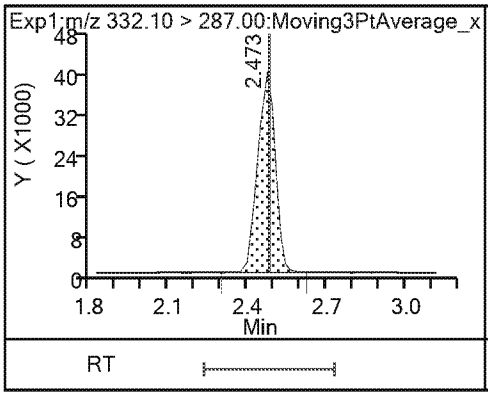
$ 2 13C2 PFHxA



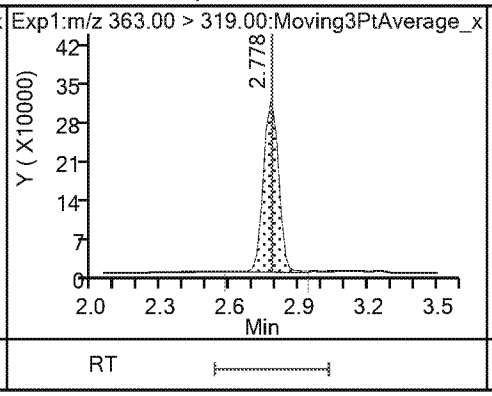
22 Perfluoro(2-propoxypropanoic) acid



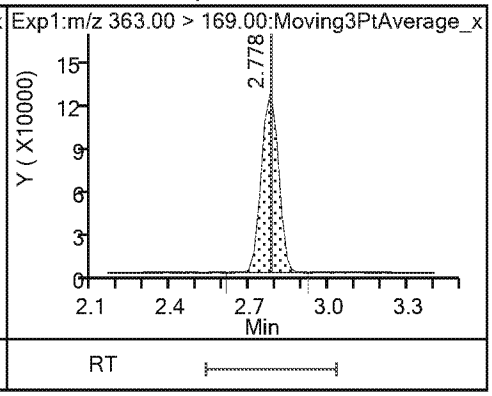
$ 25 13C3 HFPO-DA



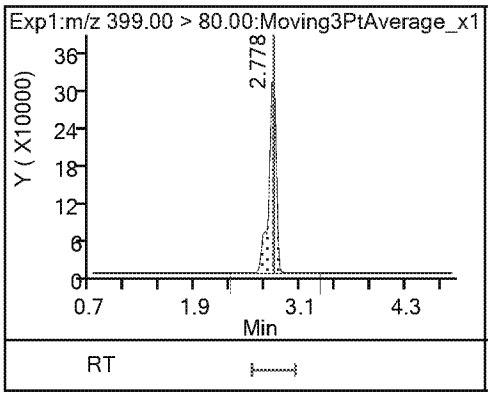
4 Perfluoroheptanoic acid



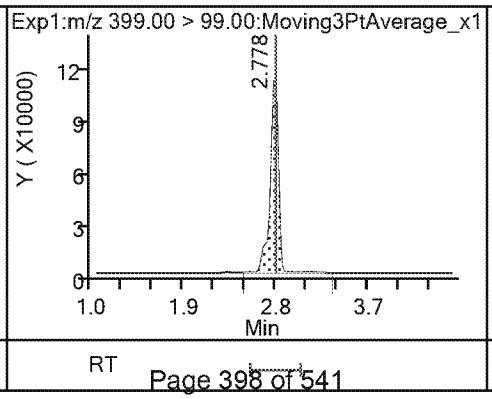
4 Perfluoroheptanoic acid



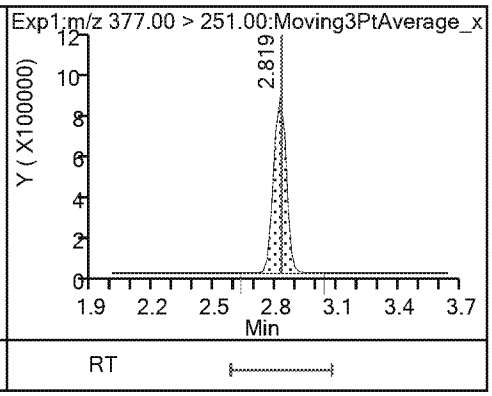
3 Perfluorohexanesulfonic acid



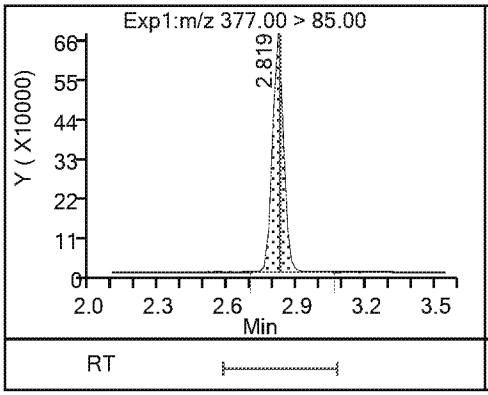
3 Perfluorohexanesulfonic acid



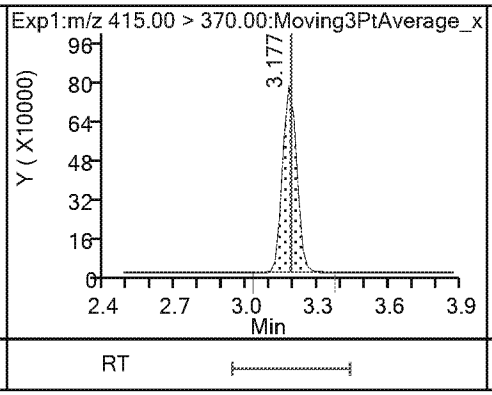
24 DONA



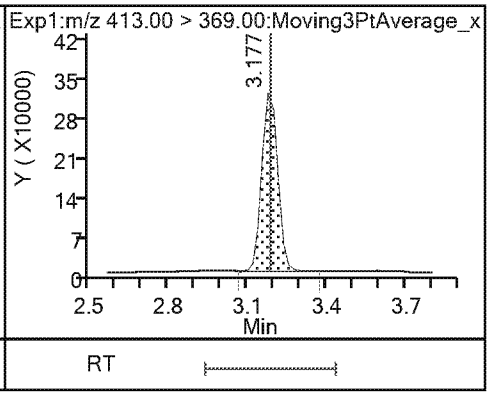
24 DONA



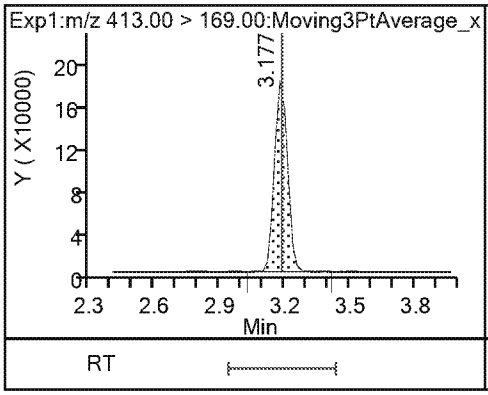
* 5 13C2 PFOA



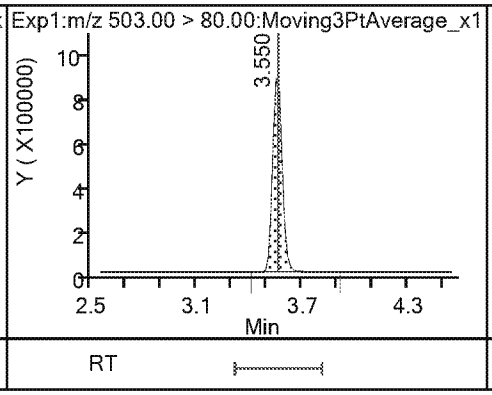
6 Perfluorooctanoic acid



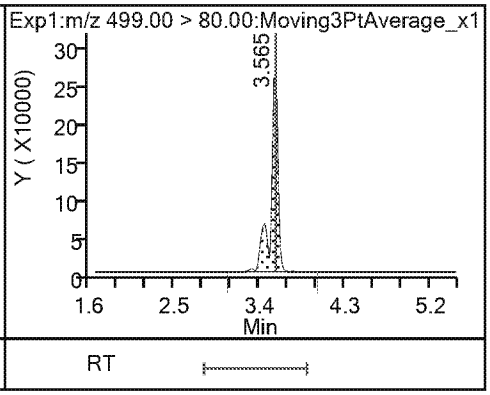
6 Perfluorooctanoic acid



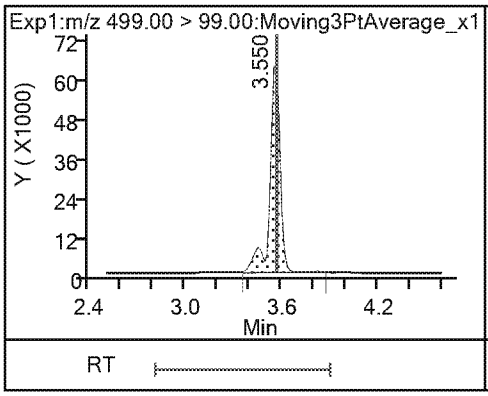
* 7 13C4 PFOS



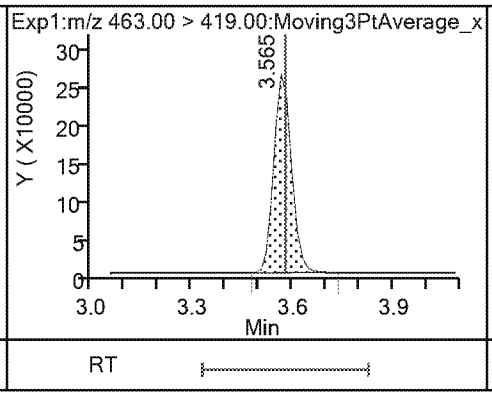
8 Perfluorooctanesulfonic acid



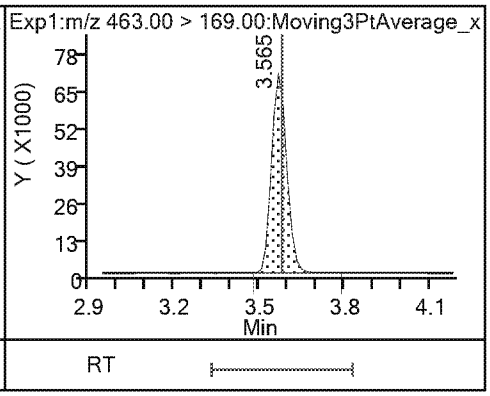
8 Perfluorooctanesulfonic acid



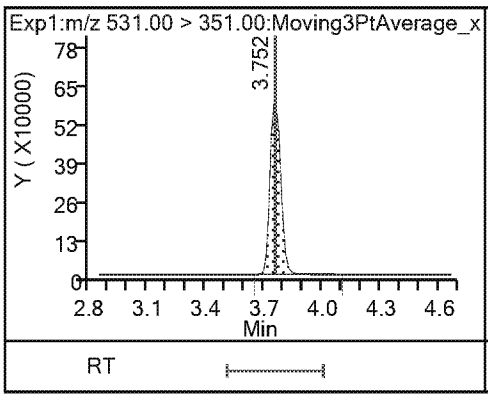
9 Perfluorononanoic acid



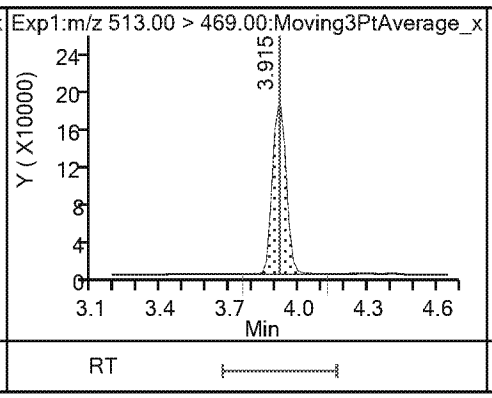
9 Perfluorononanoic acid



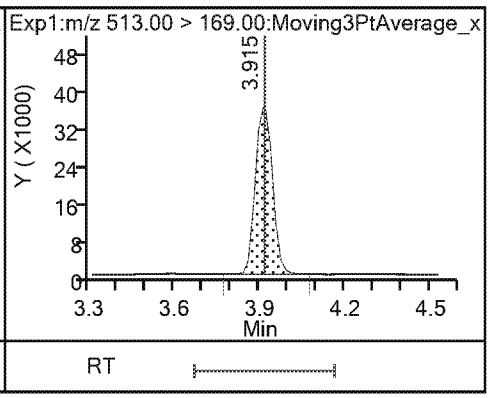
23 9-Chlorohexadecafluoro-3-oxanonane



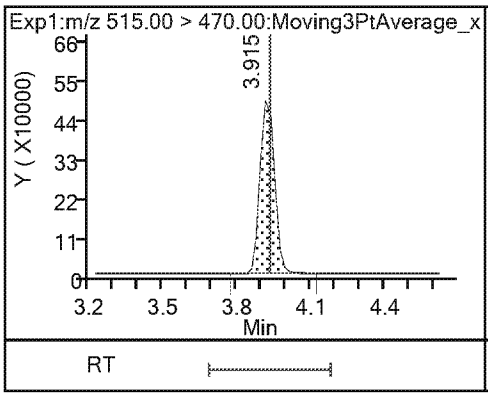
14 Perfluorodecanoic acid



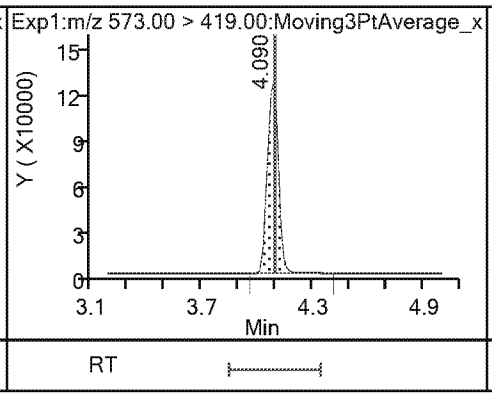
14 Perfluorodecanoic acid



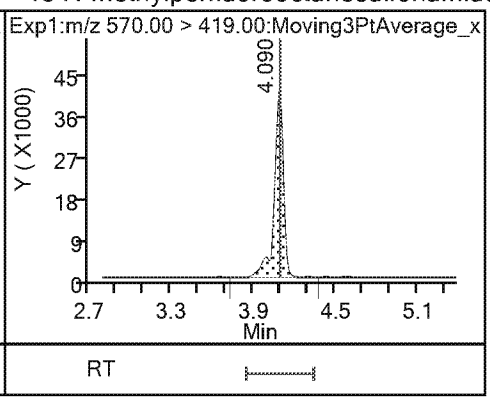
$ 10 13C2 PFDA



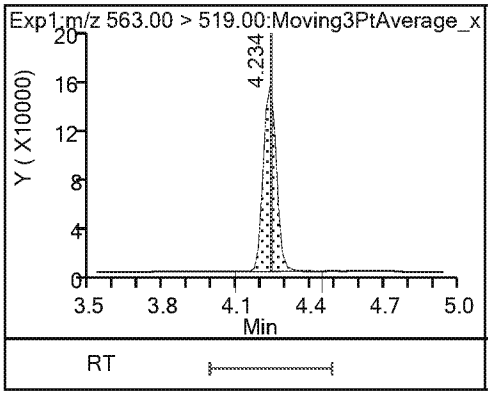
* 12 d3-NMeFOSAA



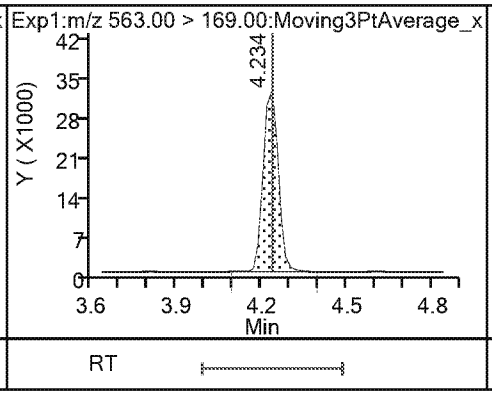
15 N-methylperfluorooctanesulfonamido



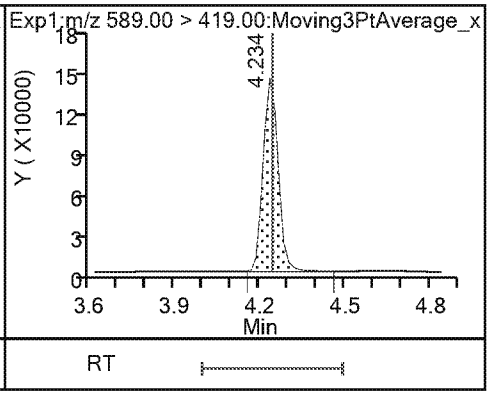
17 Perfluoroundecanoic acid



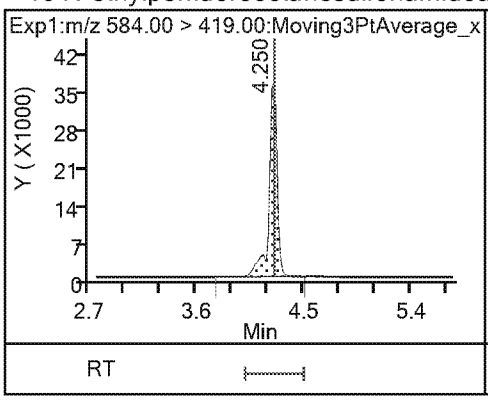
17 Perfluoroundecanoic acid



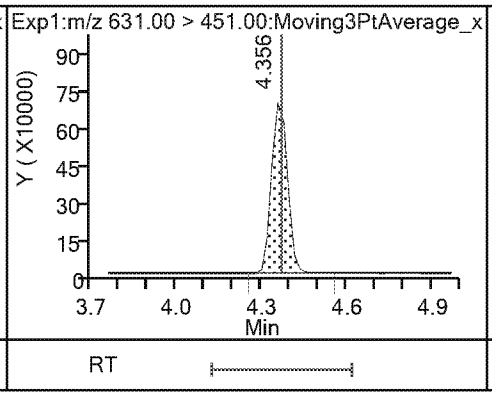
$ 11 d5-NEtFOSAA



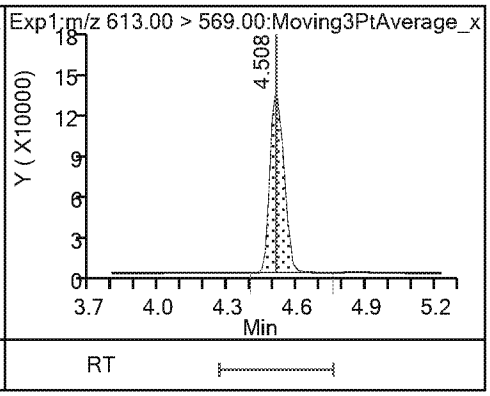
16 N-ethylperfluorooctanesulfonamidoa



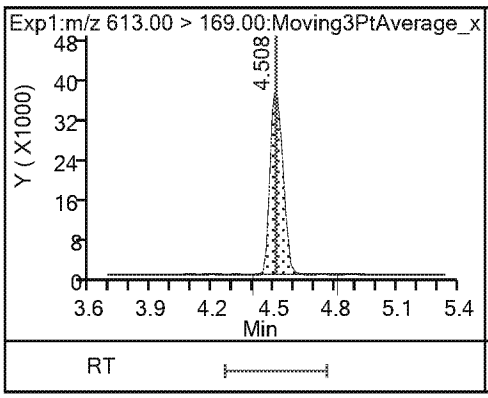
21 11-Chloroeicosafluoro-3-oxaundecan



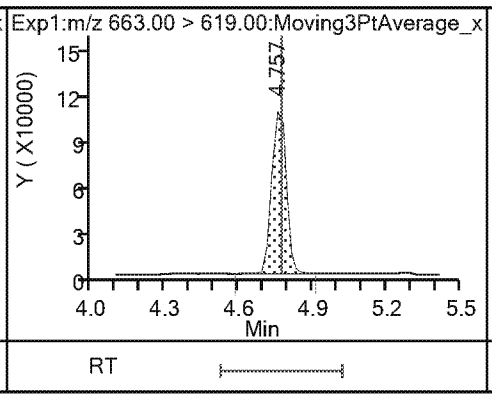
18 Perfluorododecanoic acid



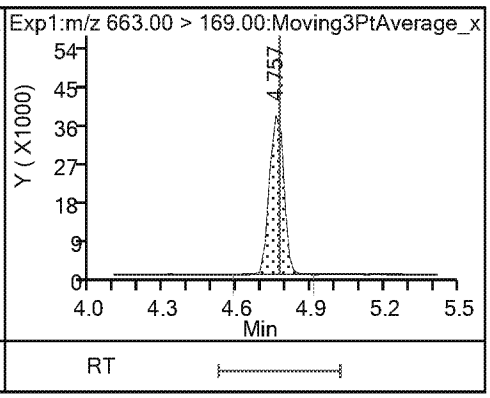
18 Perfluorododecanoic acid



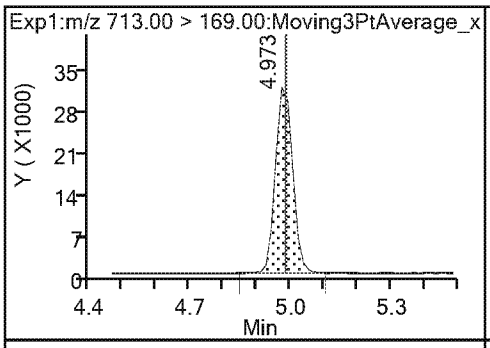
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid

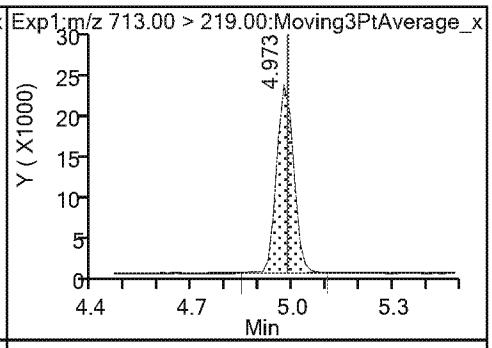


20 Perfluorotetradecanoic acid



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	

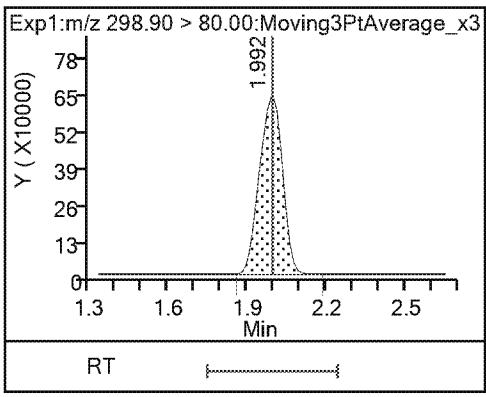
Reagents:

LC537_NC_L5_00003 Amount Added: 1.00 Units: mL

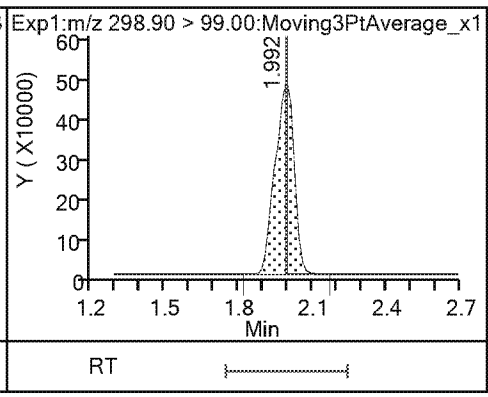
Eurofins TestAmerica, Sacramento

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

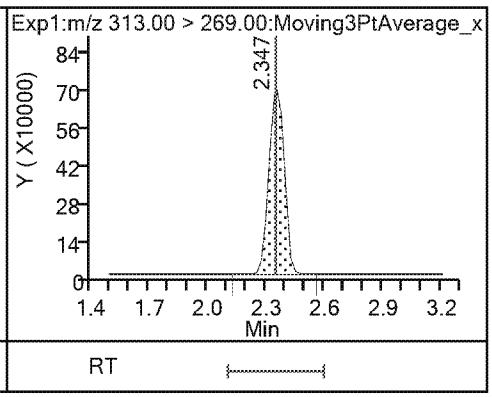
1 Perfluorobutanesulfonic acid



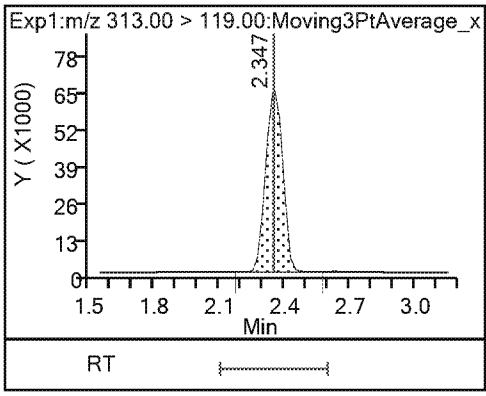
1 Perfluorobutanesulfonic acid



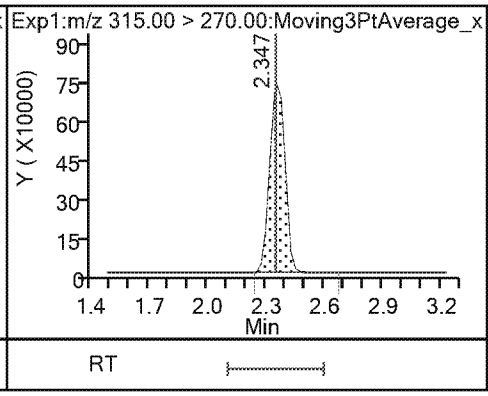
13 Perfluorohexanoic acid



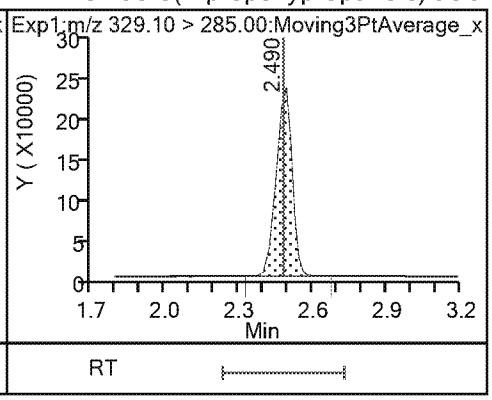
13 Perfluorohexanoic acid



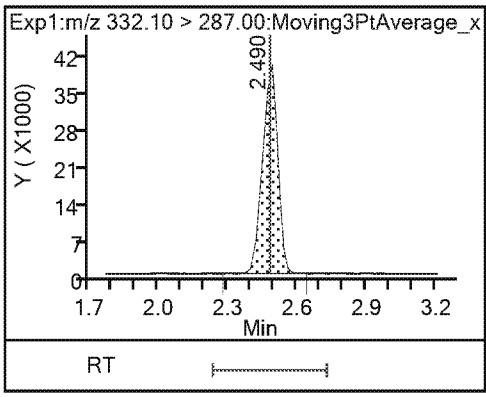
$ 2 13C2 PFHxA



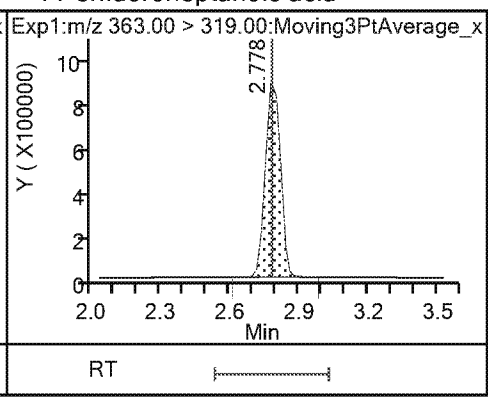
22 Perfluoro(2-propoxypropanoic) acid



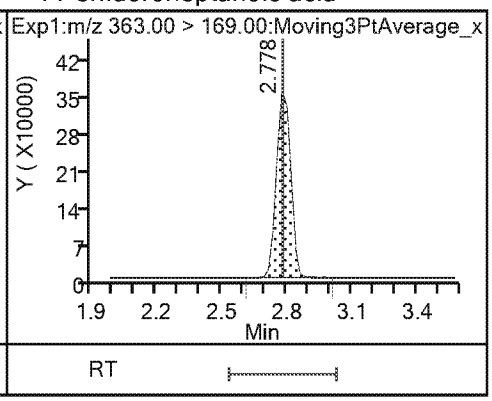
$ 25 13C3 HFPO-DA



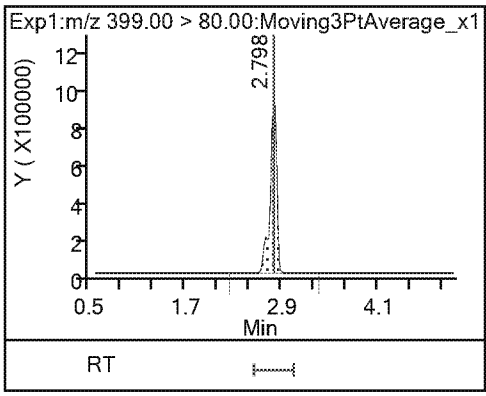
4 Perfluoroheptanoic acid



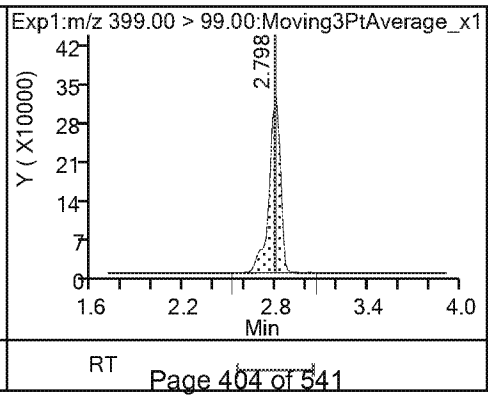
4 Perfluoroheptanoic acid



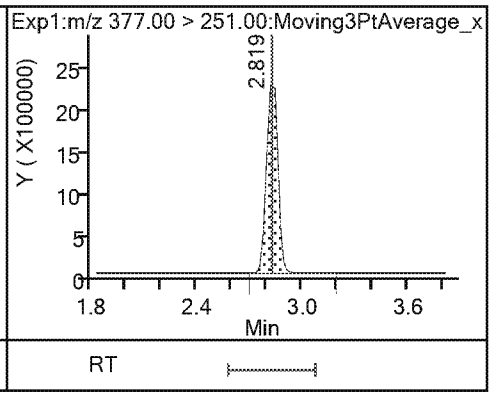
3 Perfluorohexanesulfonic acid



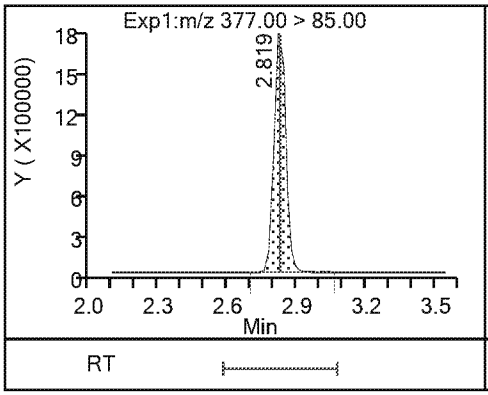
3 Perfluorohexanesulfonic acid



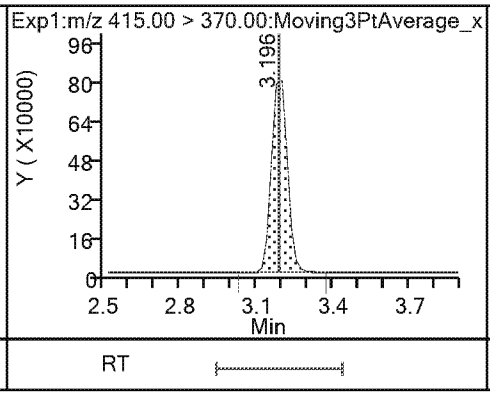
24 DONA



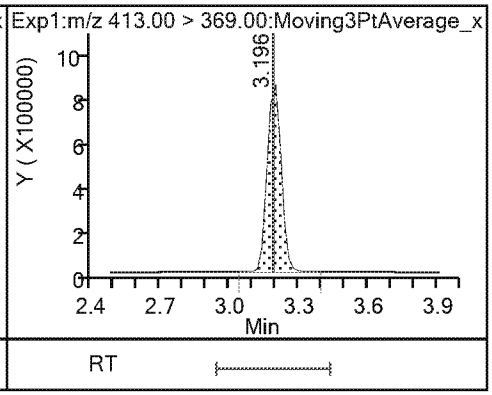
24 DONA



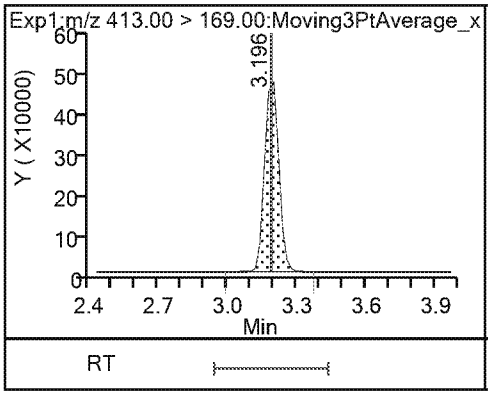
* 5 13C2 PFOA



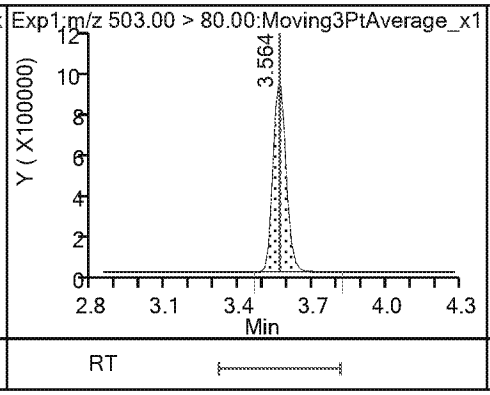
6 Perfluorooctanoic acid



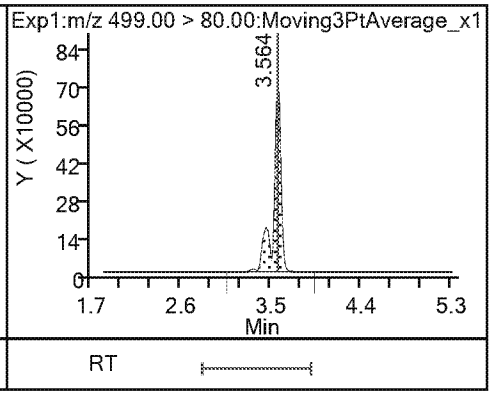
6 Perfluorooctanoic acid



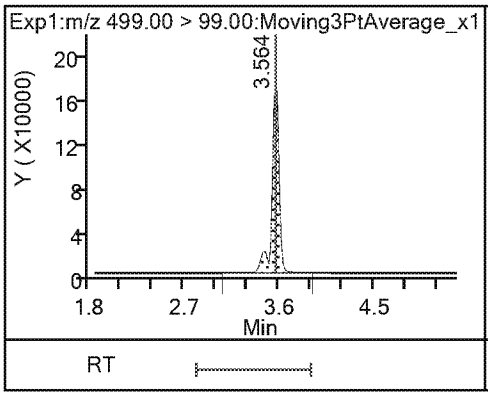
* 7 13C4 PFOS



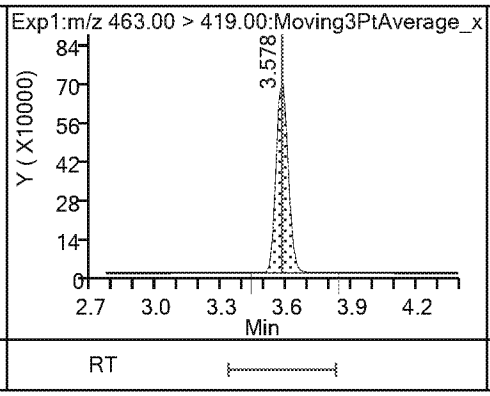
8 Perfluorooctanesulfonic acid



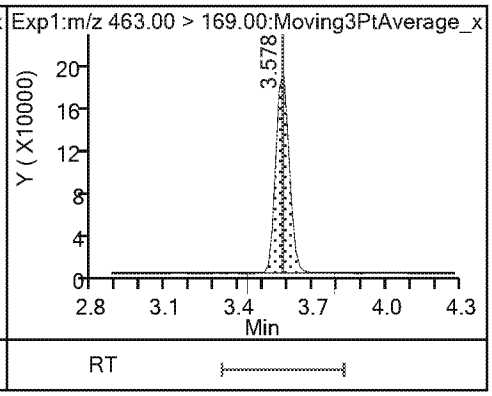
8 Perfluorooctanesulfonic acid



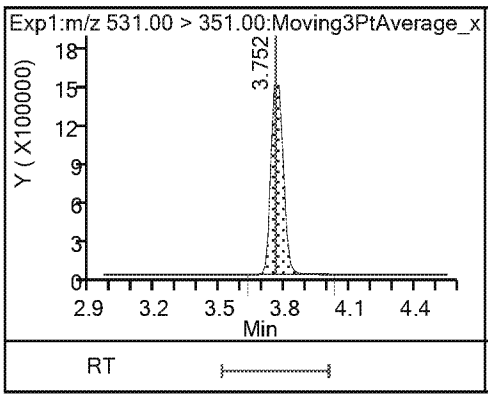
9 Perfluorononanoic acid



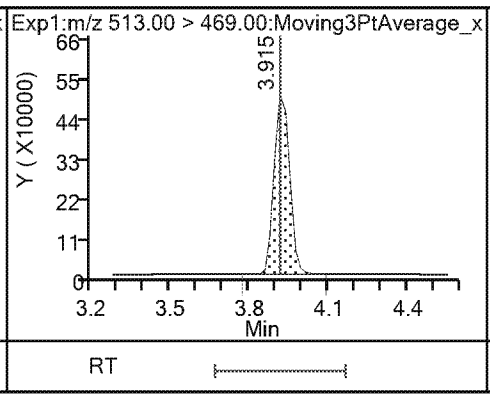
9 Perfluorononanoic acid



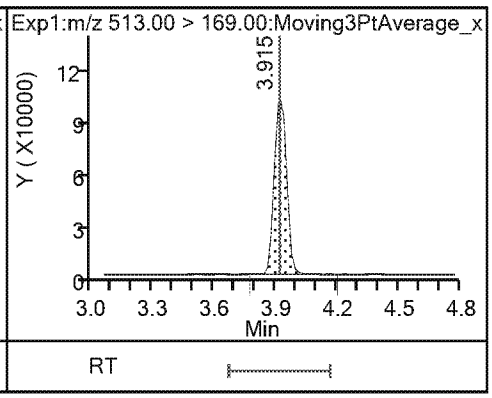
23 9-Chlorohexadecafluoro-3-oxanonane



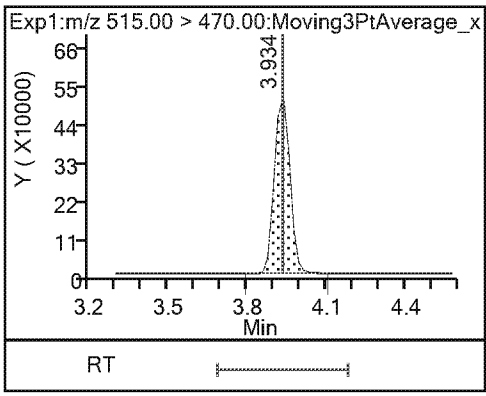
14 Perfluorodecanoic acid



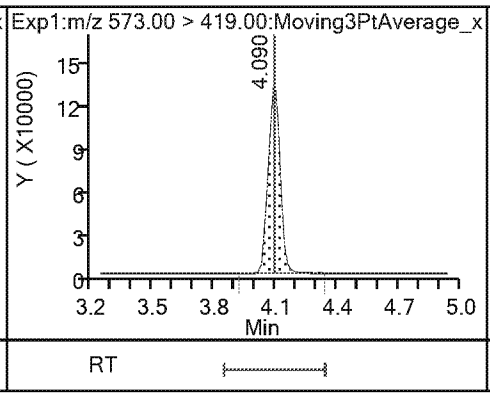
14 Perfluorodecanoic acid



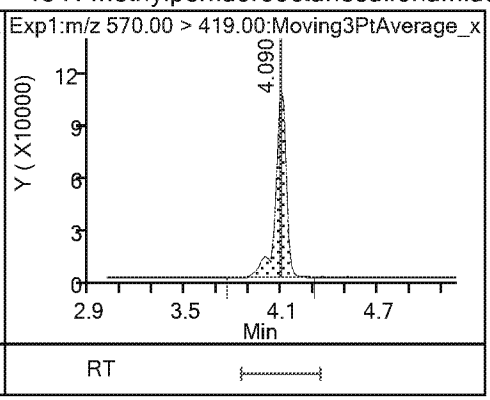
$ 10 13C2 PFDA



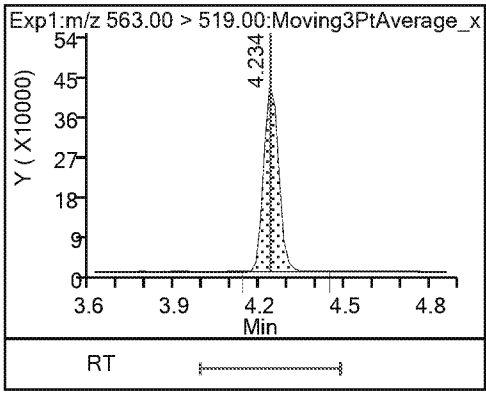
* 12 d3-NMeFOSAA



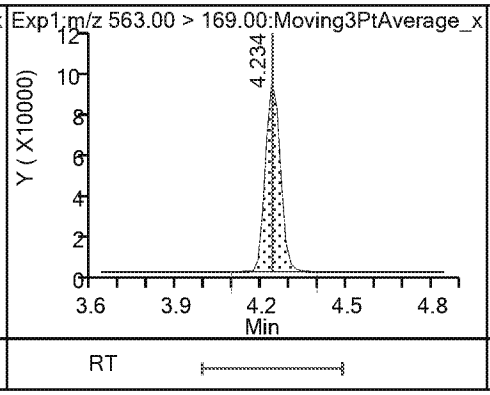
15 N-methylperfluorooctanesulfonamido



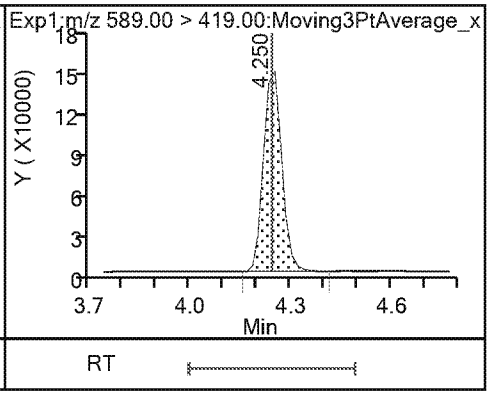
17 Perfluoroundecanoic acid



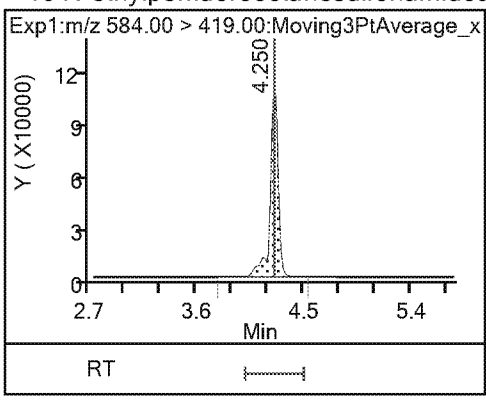
17 Perfluoroundecanoic acid



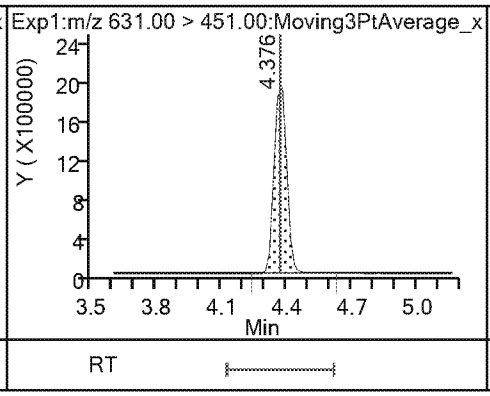
$ 11 d5-NEtFOSAA



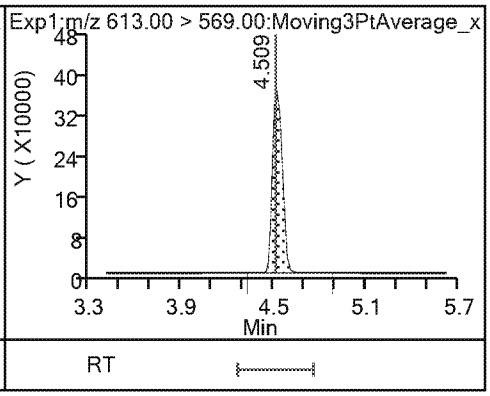
16 N-ethylperfluorooctanesulfonamidoa



21 11-Chloroeicosafluoro-3-oxaundecan



18 Perfluorododecanoic acid



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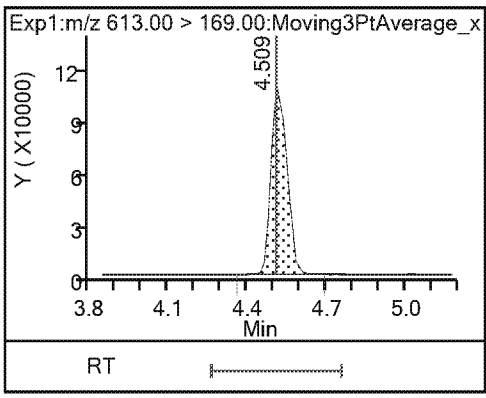
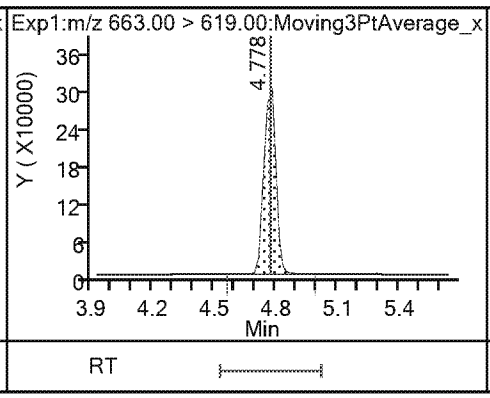
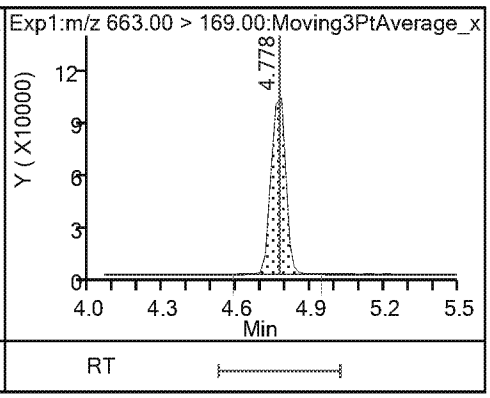


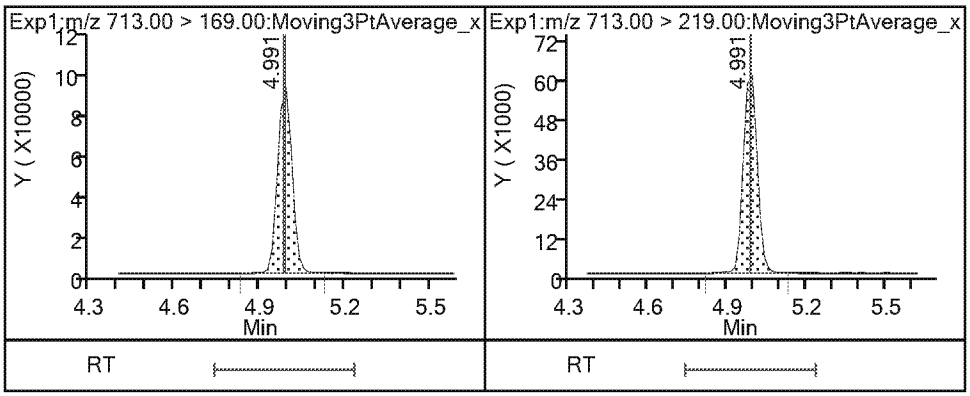
19 Perfluorotridecanoic acid



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_008.d
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	

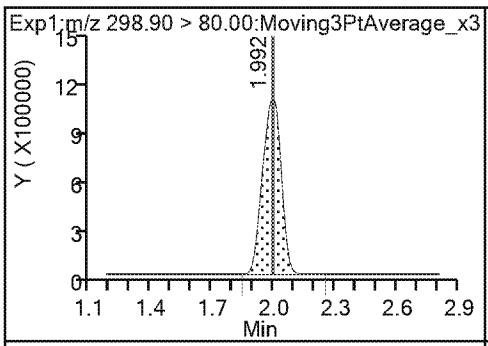
Reagents:

LC537_NC_L6_00003 Amount Added: 1.00 Units: mL

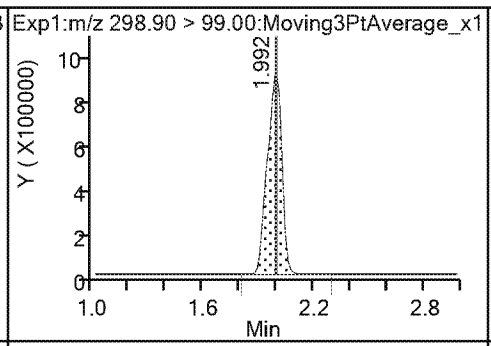
Eurofins TestAmerica, Sacramento

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

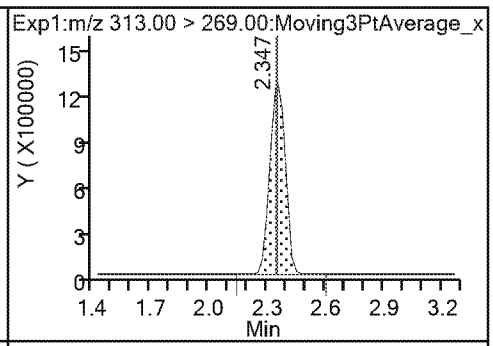
1 Perfluorobutanesulfonic acid



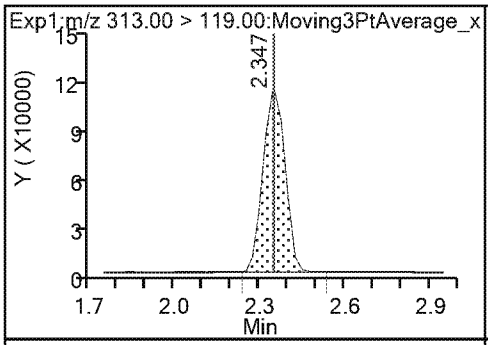
1 Perfluorobutanesulfonic acid



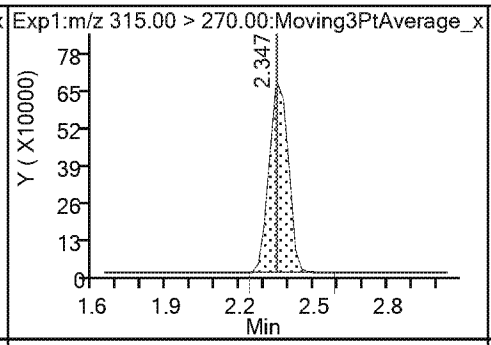
13 Perfluorohexanoic acid



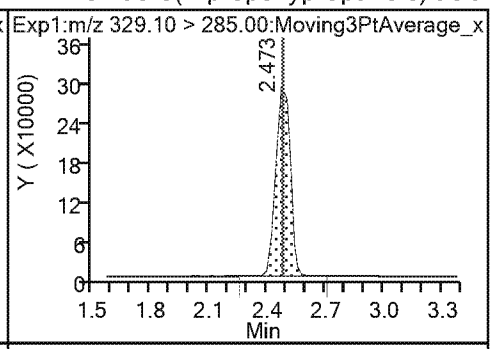
13 Perfluorohexanoic acid



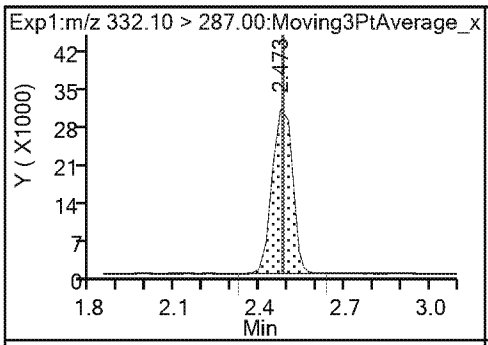
$ 2 13C2 PFHxA



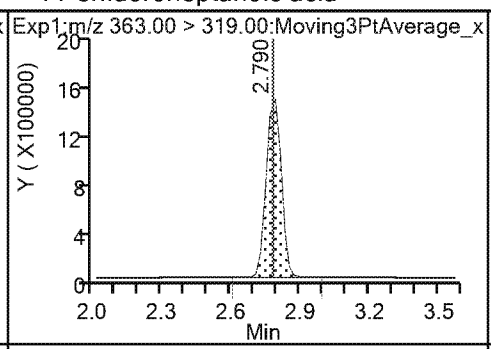
22 Perfluoro(2-propoxypropanoic) acid



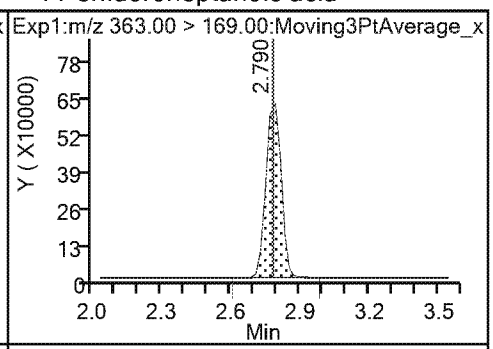
$ 25 13C3 HFPO-DA



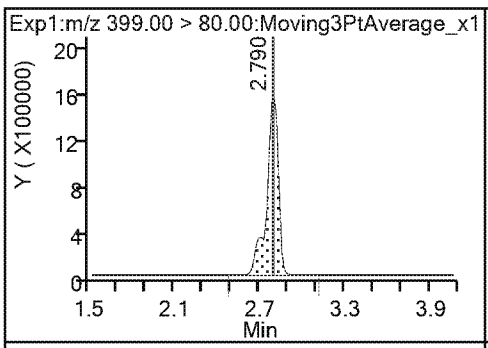
4 Perfluoroheptanoic acid



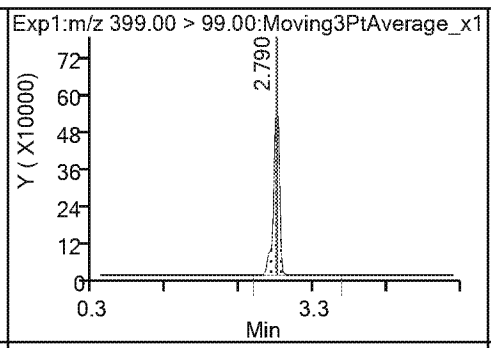
4 Perfluoroheptanoic acid



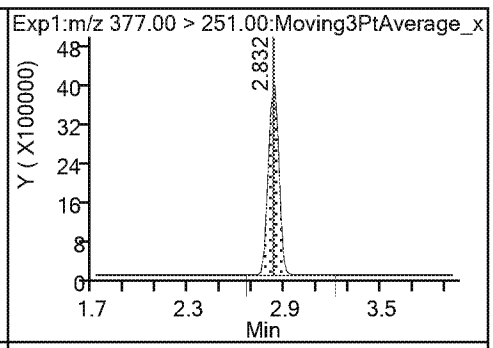
3 Perfluorohexanesulfonic acid



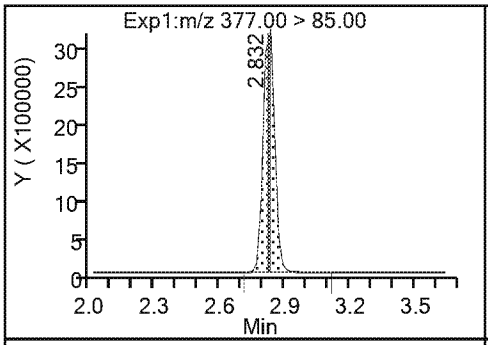
3 Perfluorohexanesulfonic acid



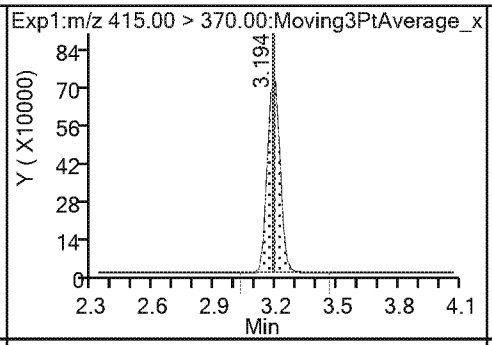
24 DONA



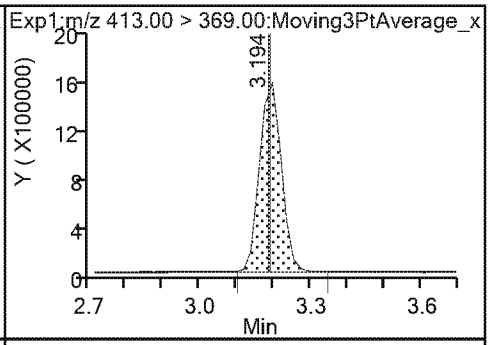
24 DONA



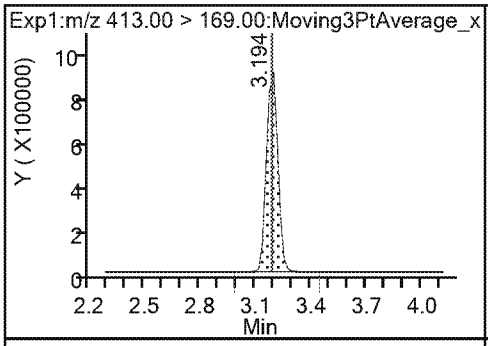
* 5 13C2 PFOA



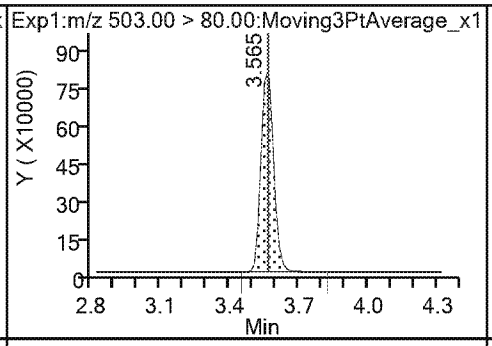
6 Perfluorooctanoic acid



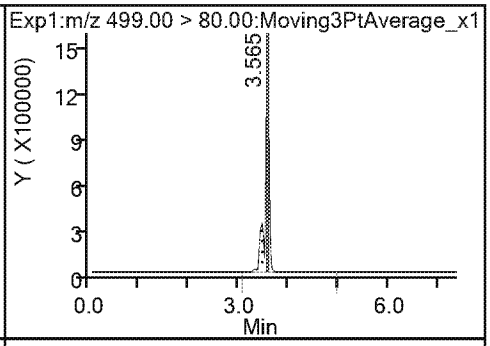
6 Perfluorooctanoic acid



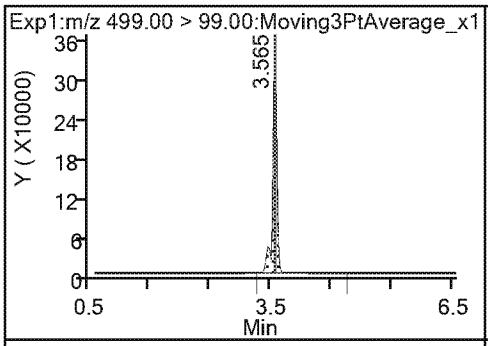
* 7 13C4 PFOS



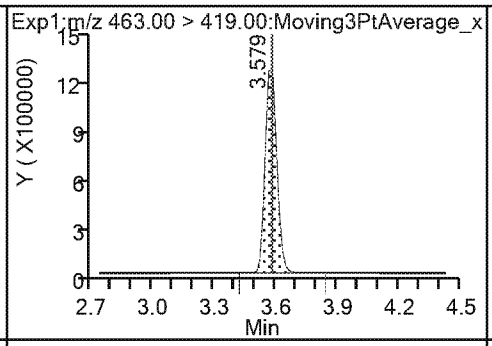
8 Perfluorooctanesulfonic acid



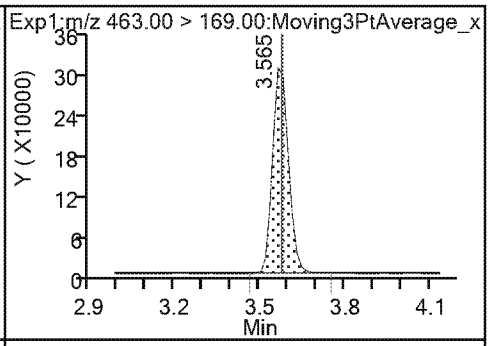
8 Perfluorooctanesulfonic acid



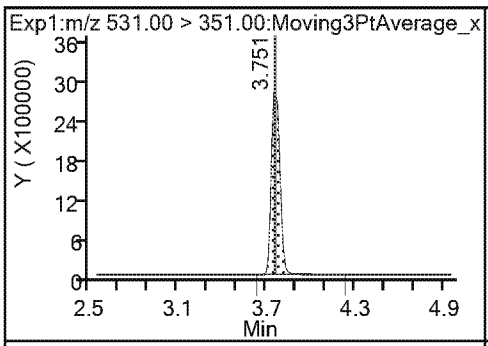
9 Perfluorononanoic acid



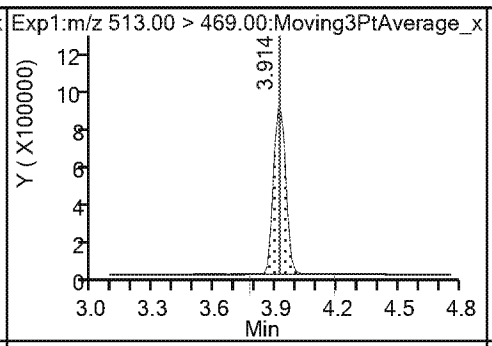
9 Perfluorononanoic acid



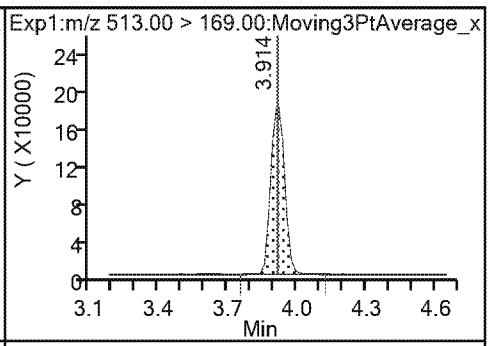
23 9-Chlorohexadecafluoro-3-oxanonane



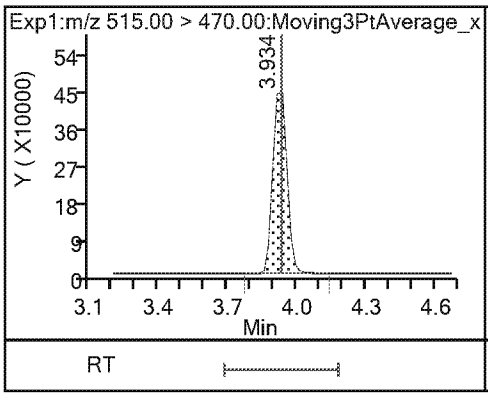
14 Perfluorodecanoic acid



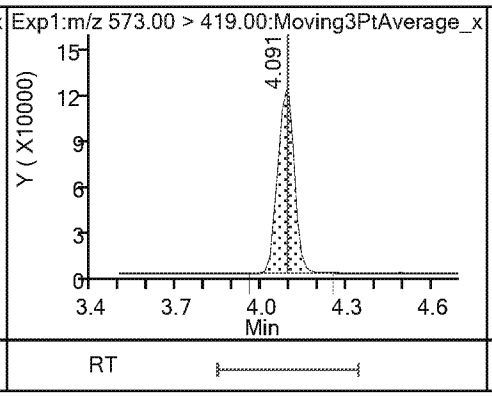
14 Perfluorodecanoic acid



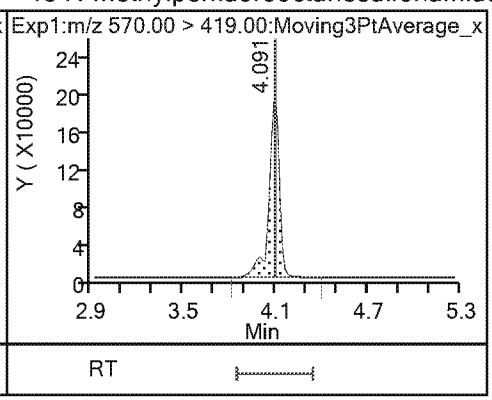
$ 10 13C2 PFDA



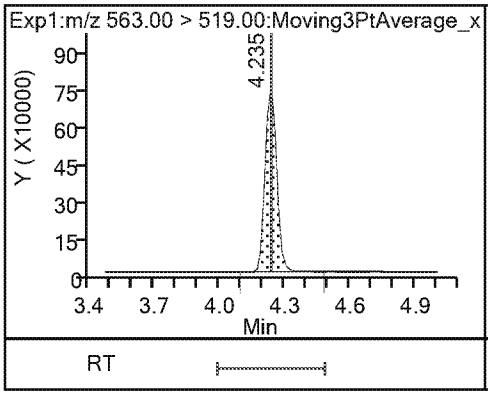
* 12 d3-NMeFOSAA



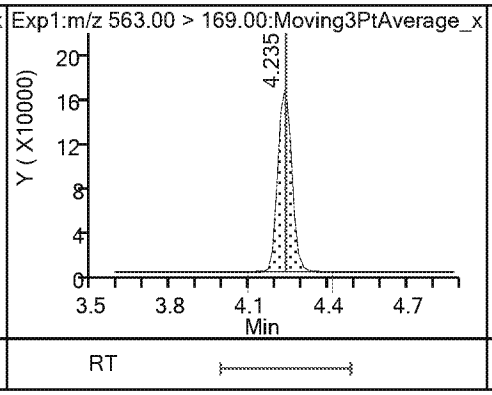
15 N-methylperfluorooctanesulfonamido



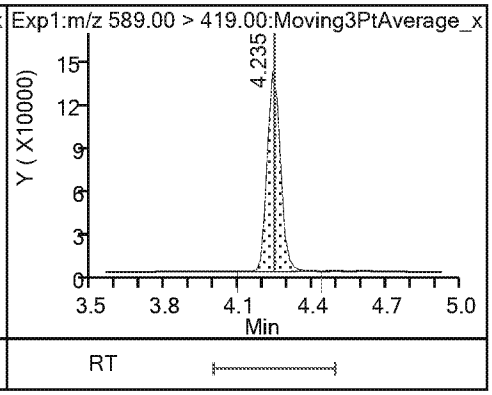
17 Perfluoroundecanoic acid



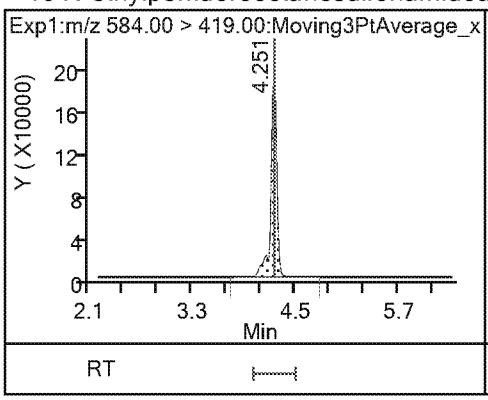
17 Perfluoroundecanoic acid



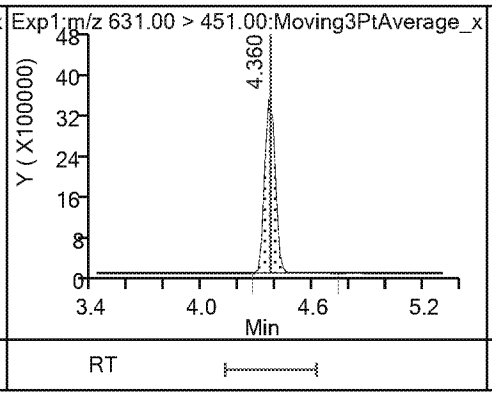
$ 11 d5-NEtFOSAA



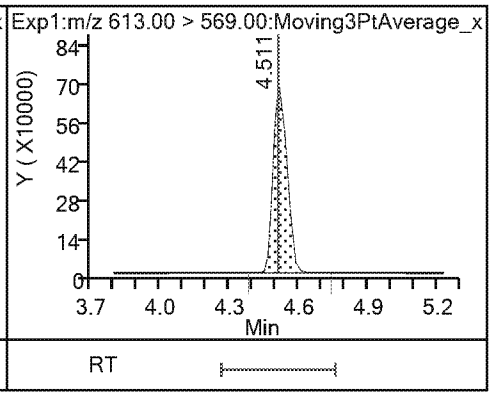
16 N-ethylperfluorooctanesulfonamidoa



21 11-Chloroeicosafluoro-3-oxaundecan



18 Perfluorododecanoic acid



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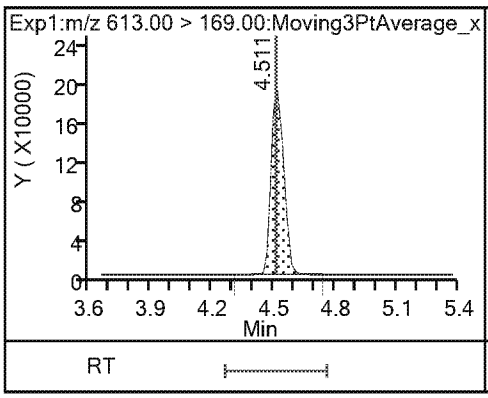
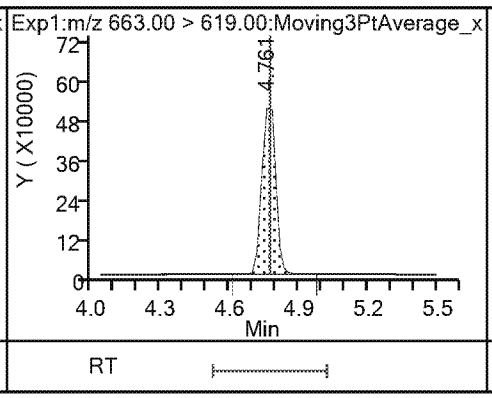
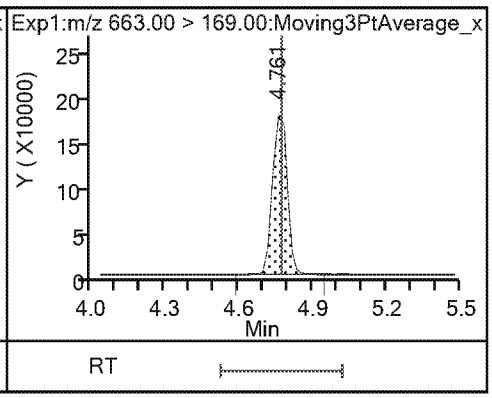


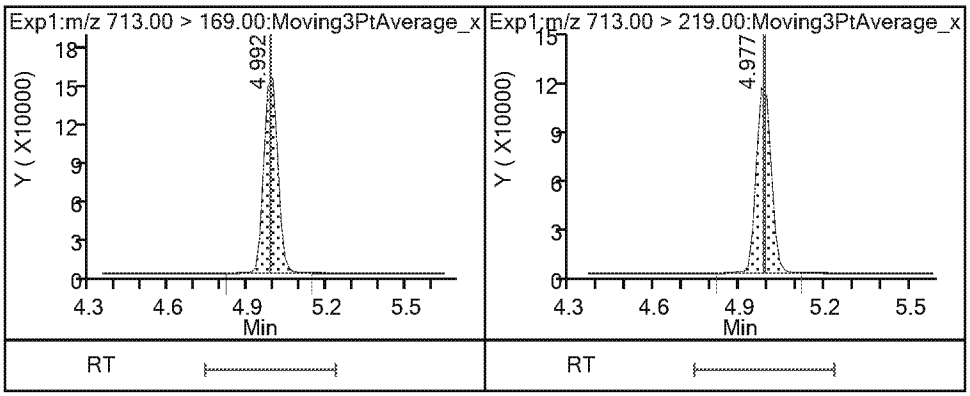
19 Perfluorotridecanoic acid



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	

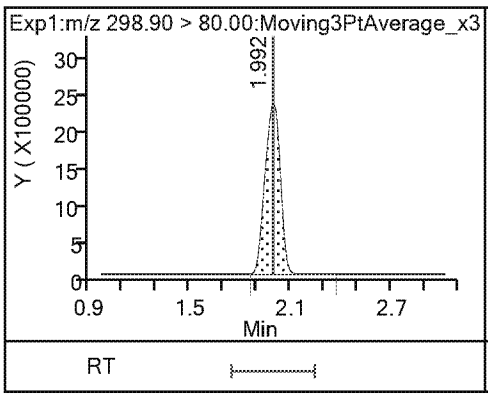
Reagents:

LC537_NC_L7_00003 Amount Added: 1.00 Units: mL

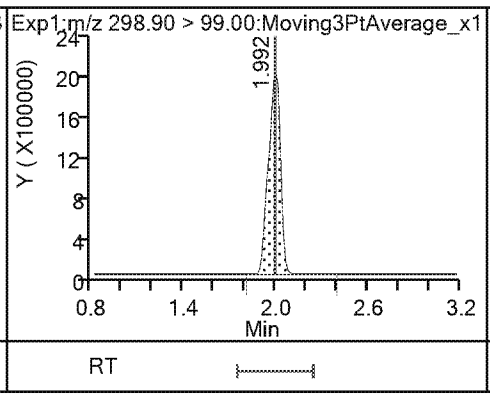
Eurofins TestAmerica, Sacramento

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

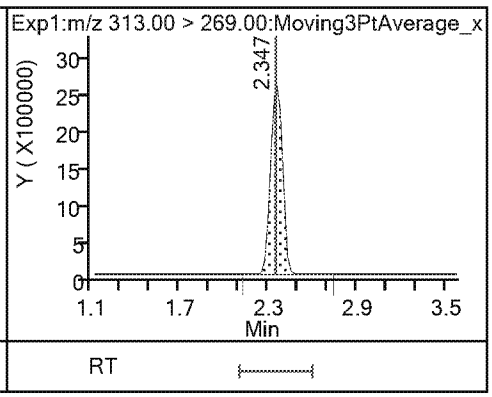
1 Perfluorobutanesulfonic acid



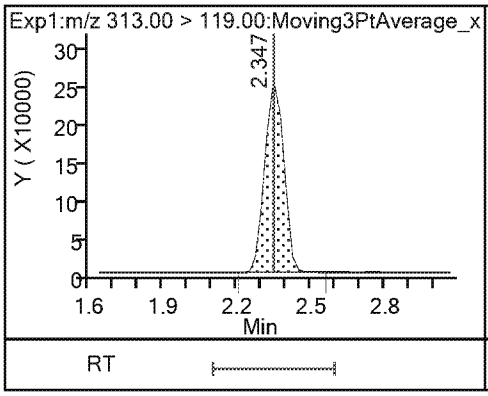
1 Perfluorobutanesulfonic acid



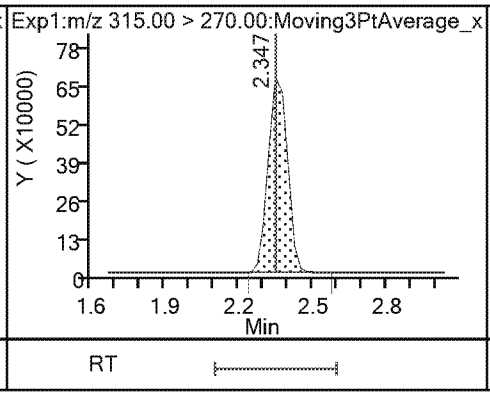
13 Perfluorohexanoic acid



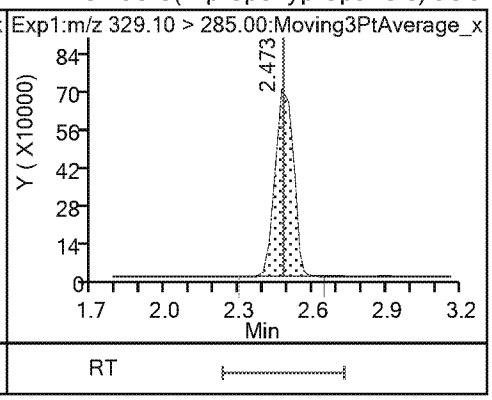
13 Perfluorohexanoic acid



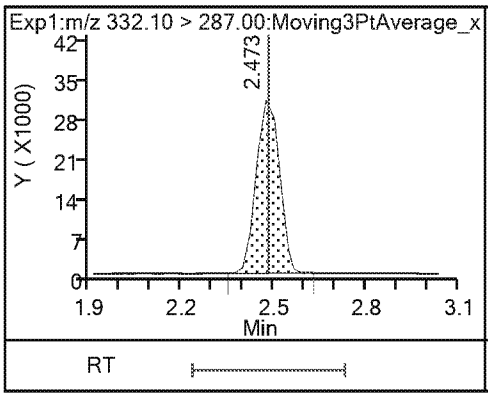
$ 2 13C2 PFHxA



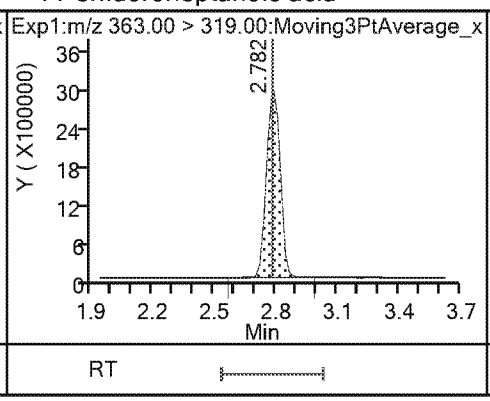
22 Perfluoro(2-propoxypropanoic) acid



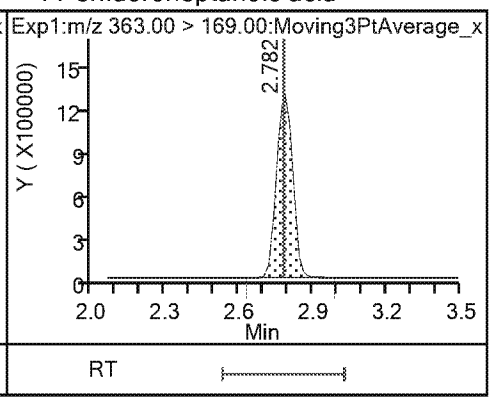
$ 25 13C3 HFPO-DA



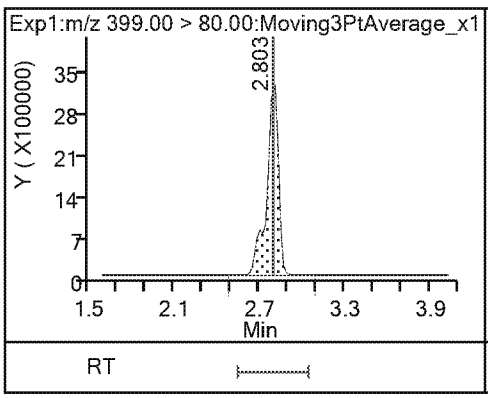
4 Perfluoroheptanoic acid



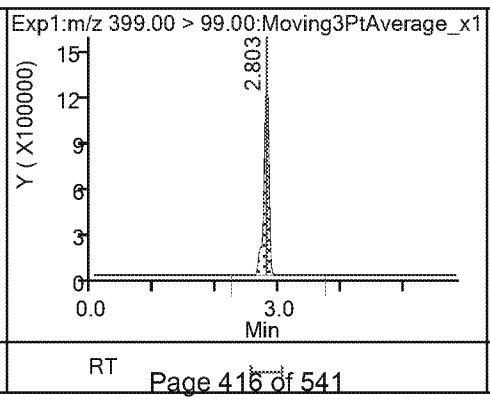
4 Perfluoroheptanoic acid



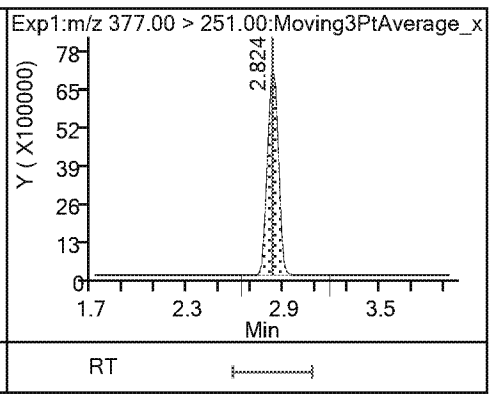
3 Perfluorohexanesulfonic acid



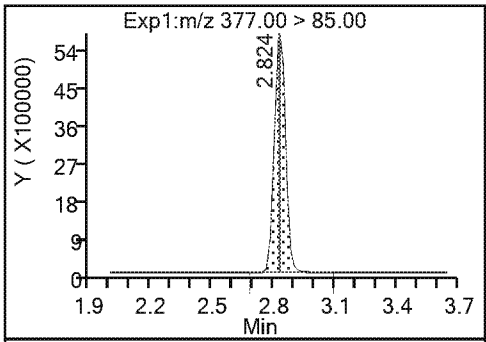
3 Perfluorohexanesulfonic acid



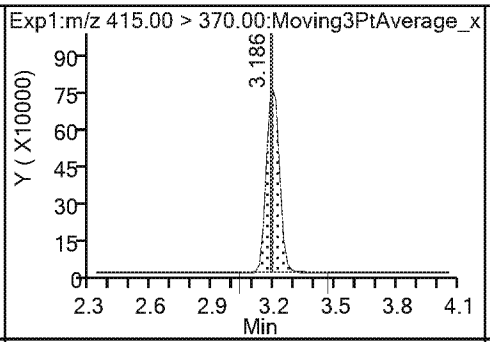
24 DONA



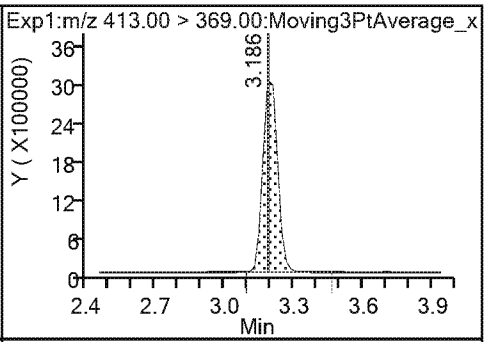
24 DONA



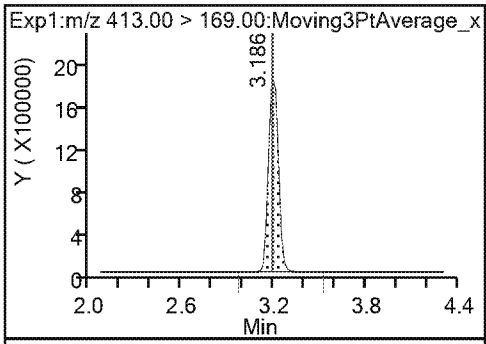
* 5 13C2 PFOA



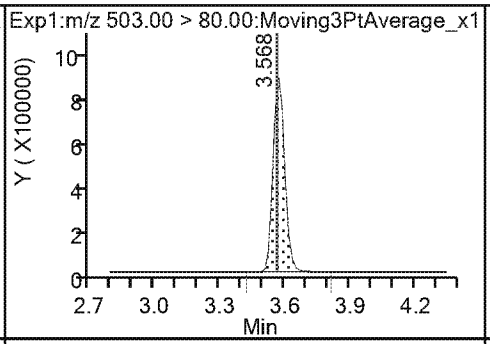
6 Perfluorooctanoic acid



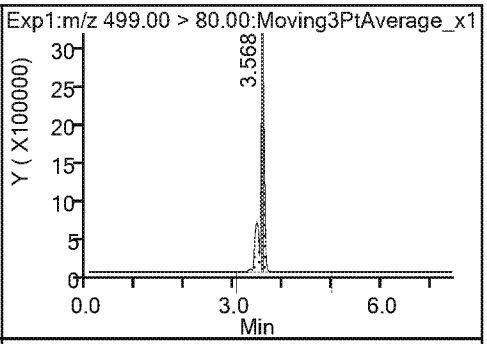
6 Perfluorooctanoic acid



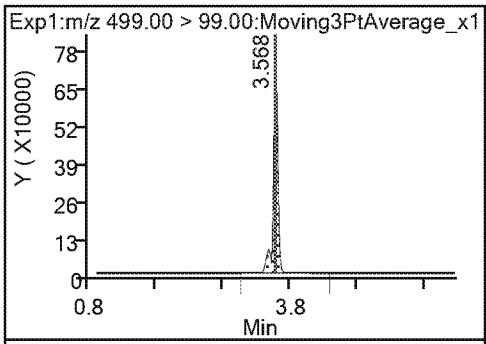
* 7 13C4 PFOS



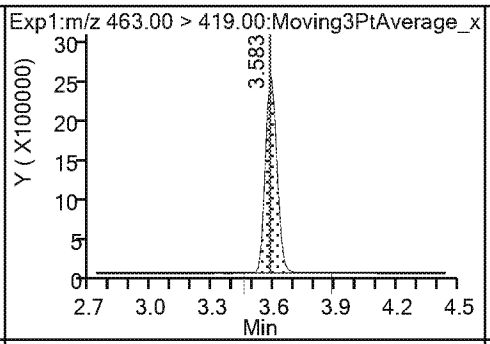
8 Perfluorooctanesulfonic acid



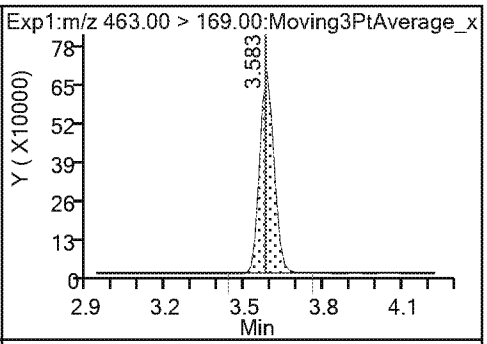
8 Perfluorooctanesulfonic acid



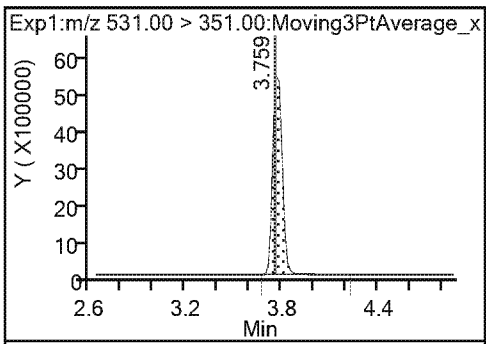
9 Perfluorononanoic acid



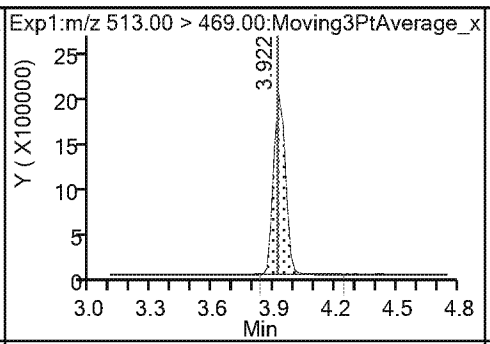
9 Perfluorononanoic acid



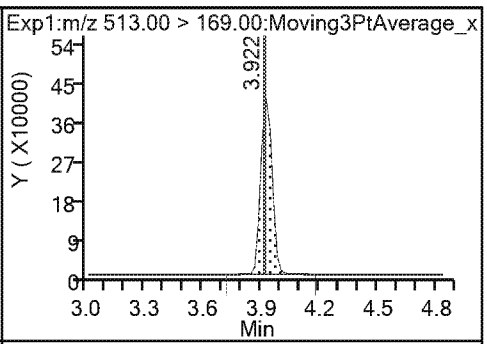
23 9-Chlorohexadecafluoro-3-oxanonane



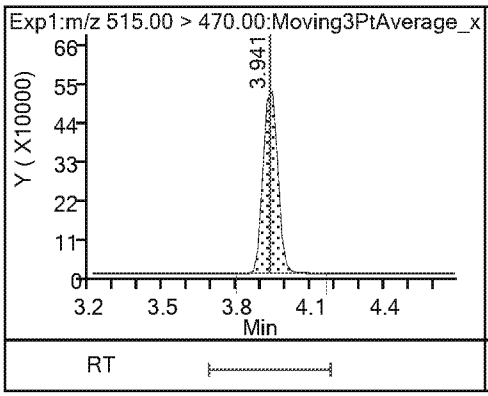
14 Perfluorodecanoic acid



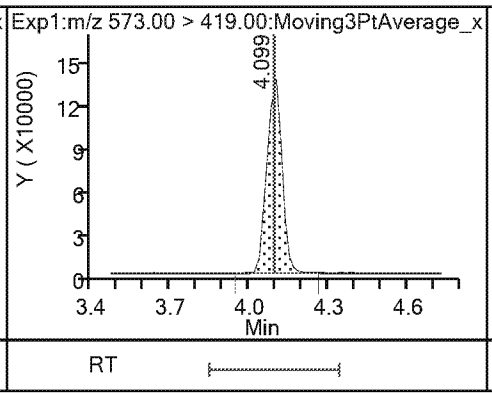
14 Perfluorodecanoic acid



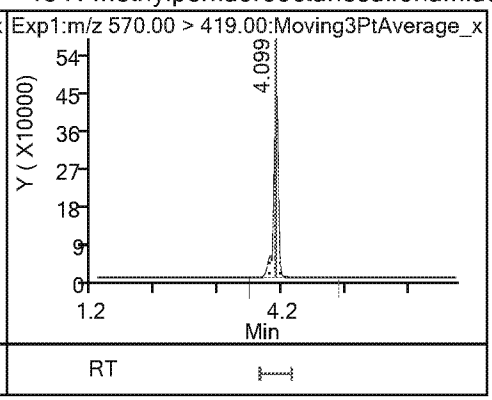
$ 10 13C2 PFDA



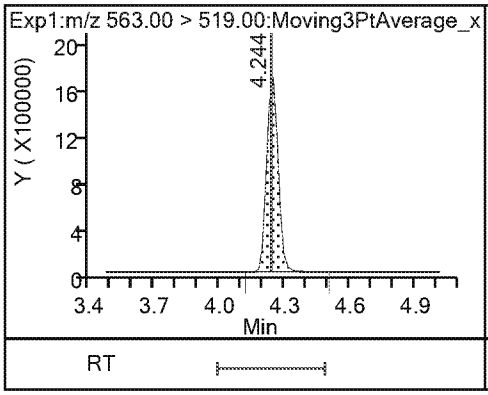
* 12 d3-NMeFOSAA



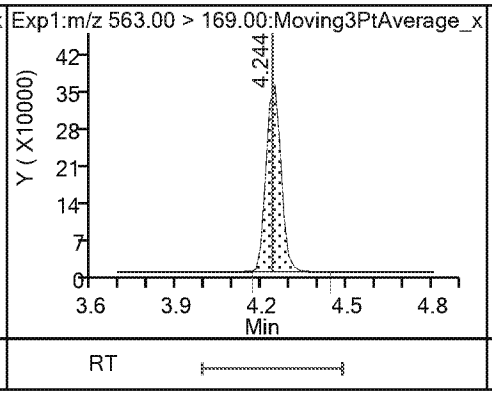
15 N-methylperfluorooctanesulfonamido



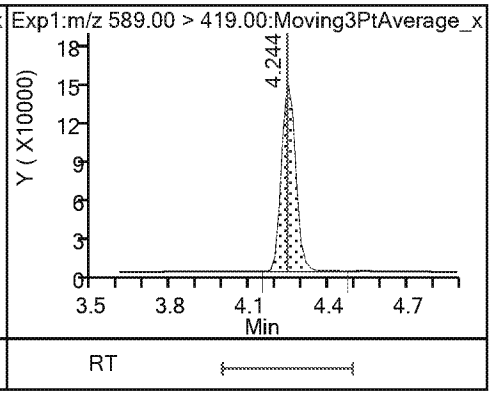
17 Perfluoroundecanoic acid



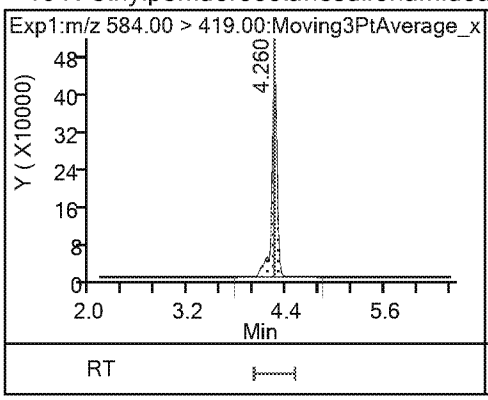
17 Perfluoroundecanoic acid



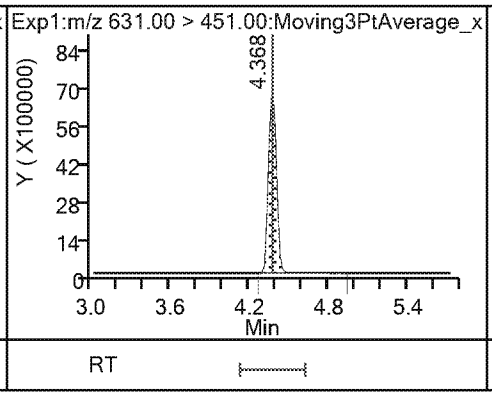
$ 11 d5-NEtFOSAA



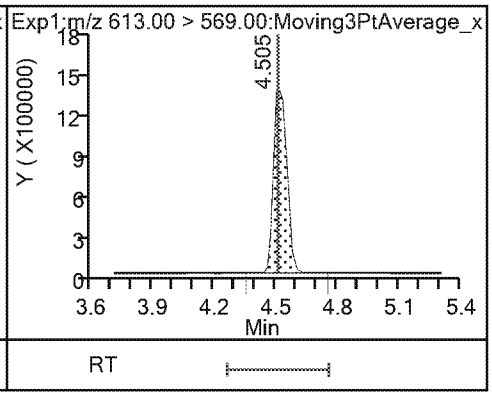
16 N-ethylperfluorooctanesulfonamidoa



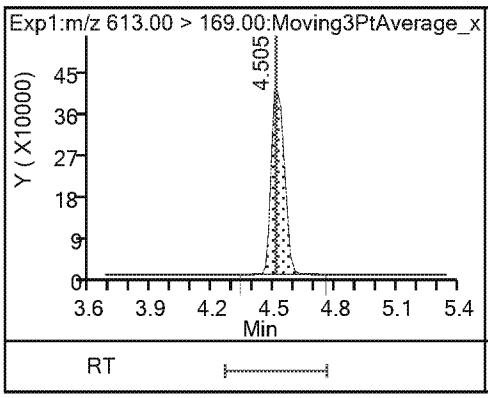
21 11-Chloroeicosafluoro-3-oxaundecan



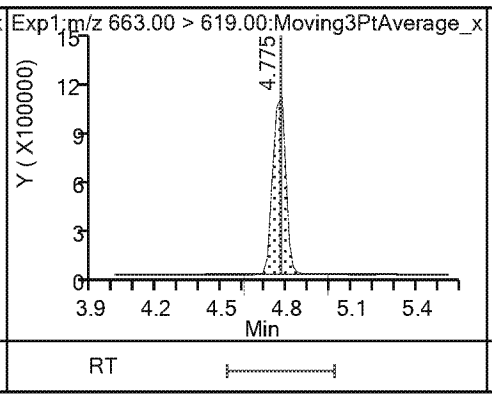
18 Perfluorododecanoic acid



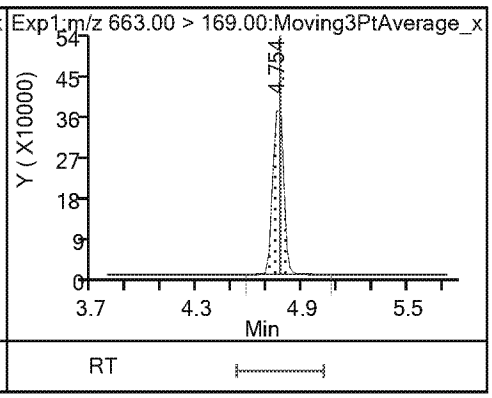
18 Perfluorododecanoic acid



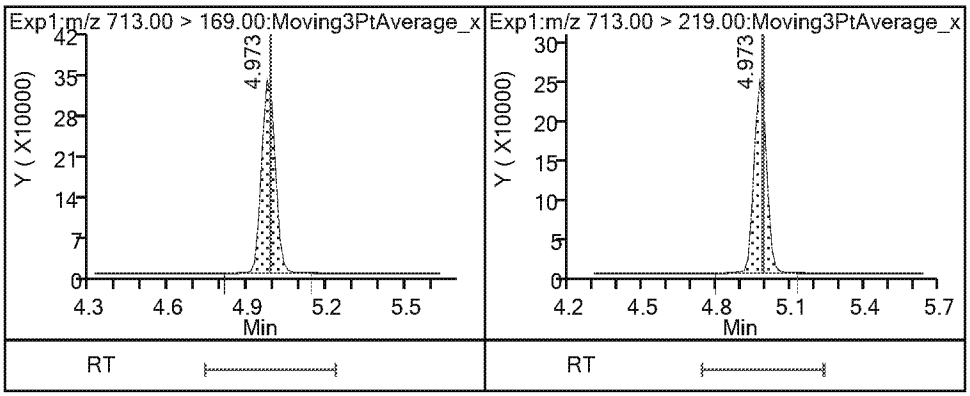
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid 20 Perfluorotetradecanoic acid



Calibration / Perfluorobutanesulfonic acid

Curve Type:	Average
Weighting:	Conc_Sq
Origin:	Force
Dependency:	Response
Calib Mode:	ISTD
Response Base:	AREA
RF Rounding:	0

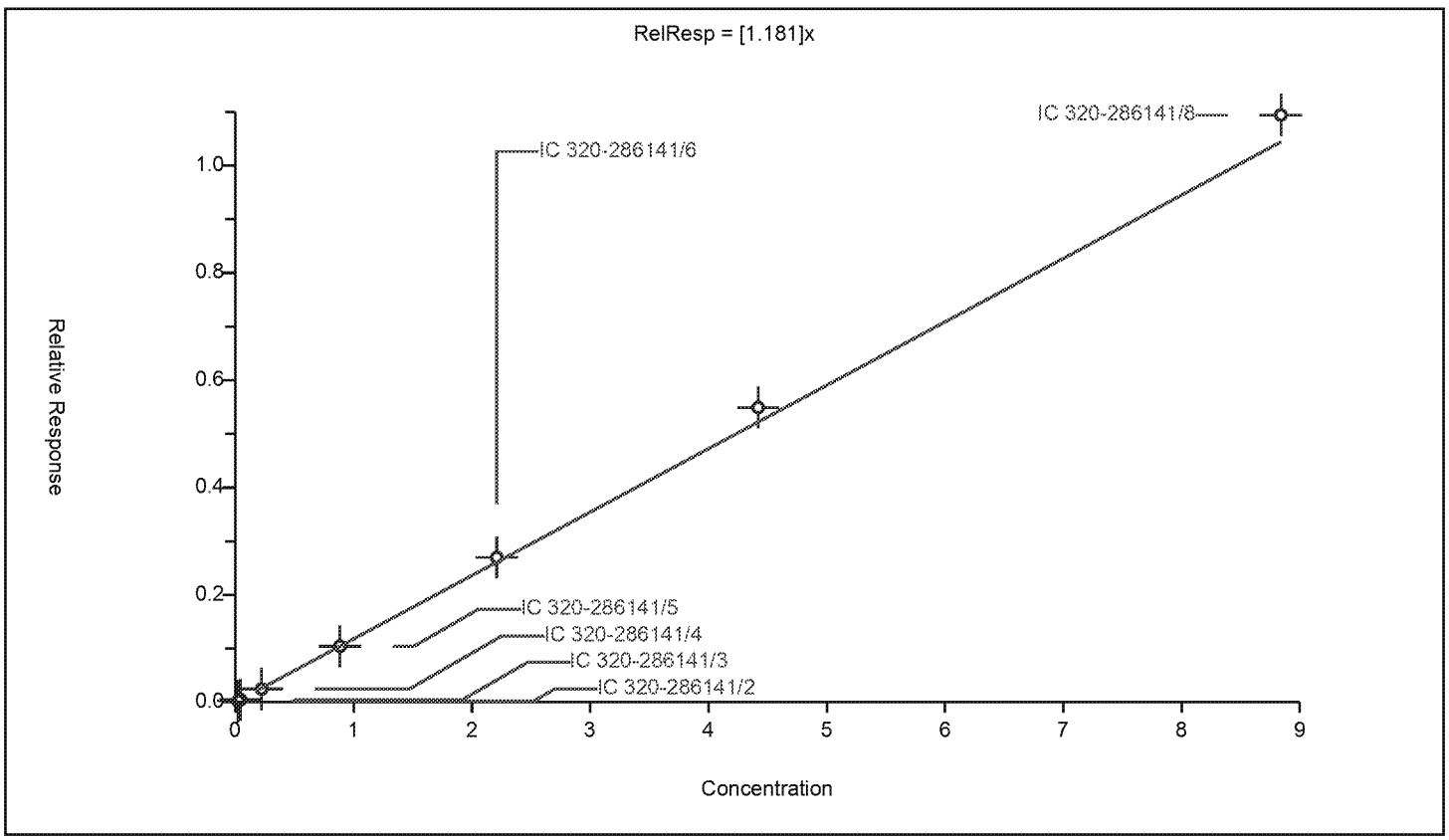
Curve Coefficients

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

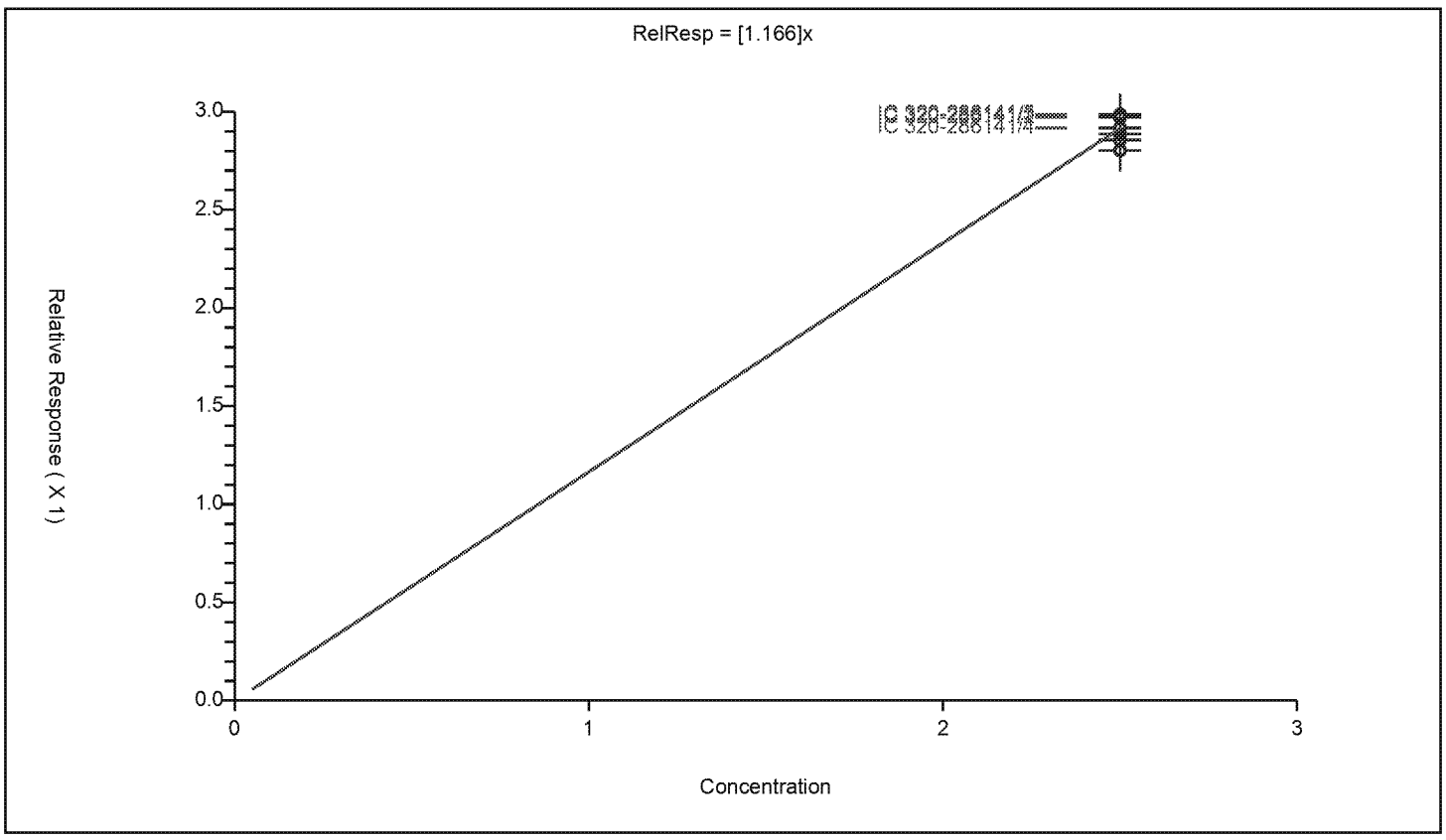
Curve Coefficients

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

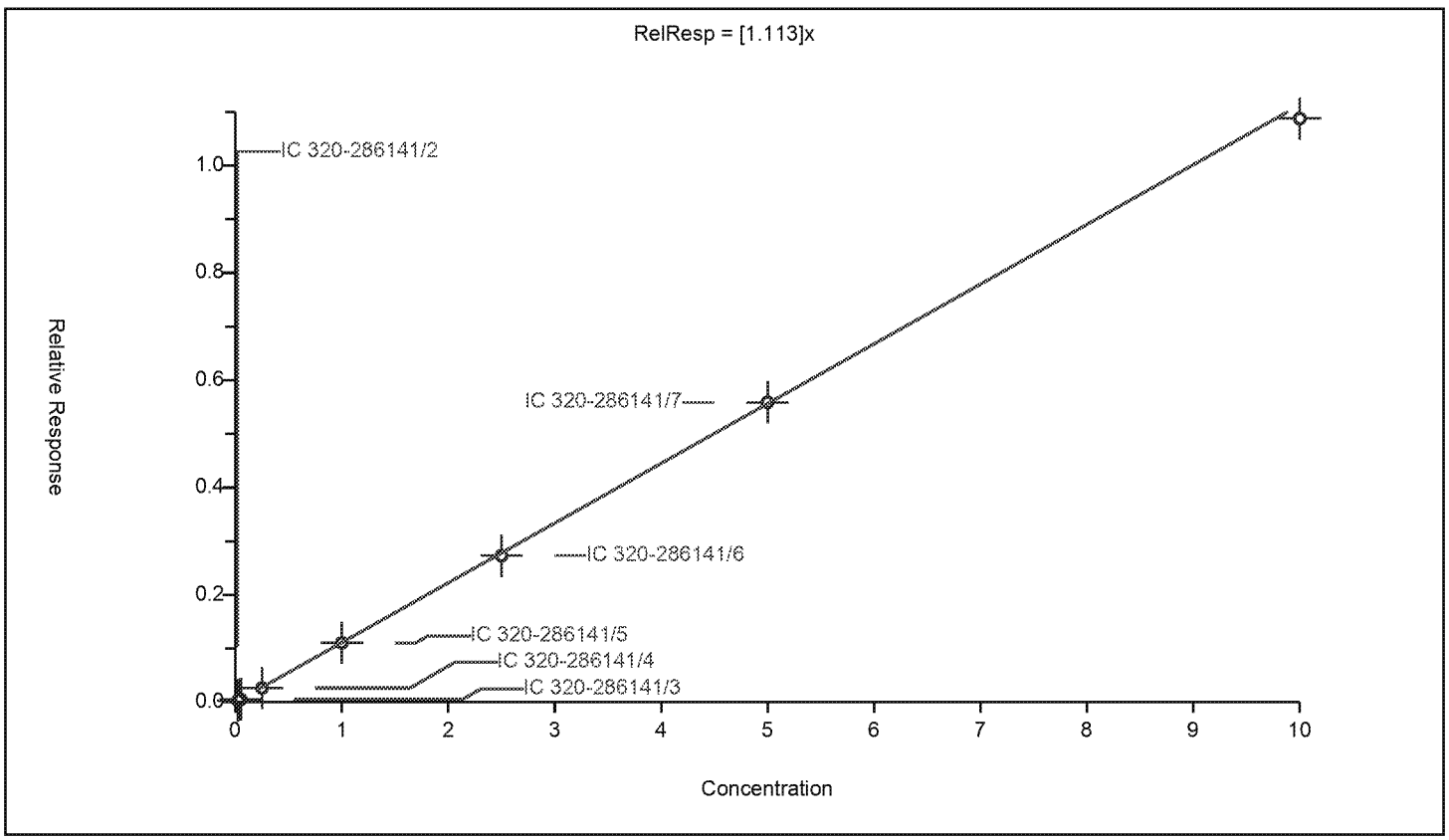
Curve Coefficients

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

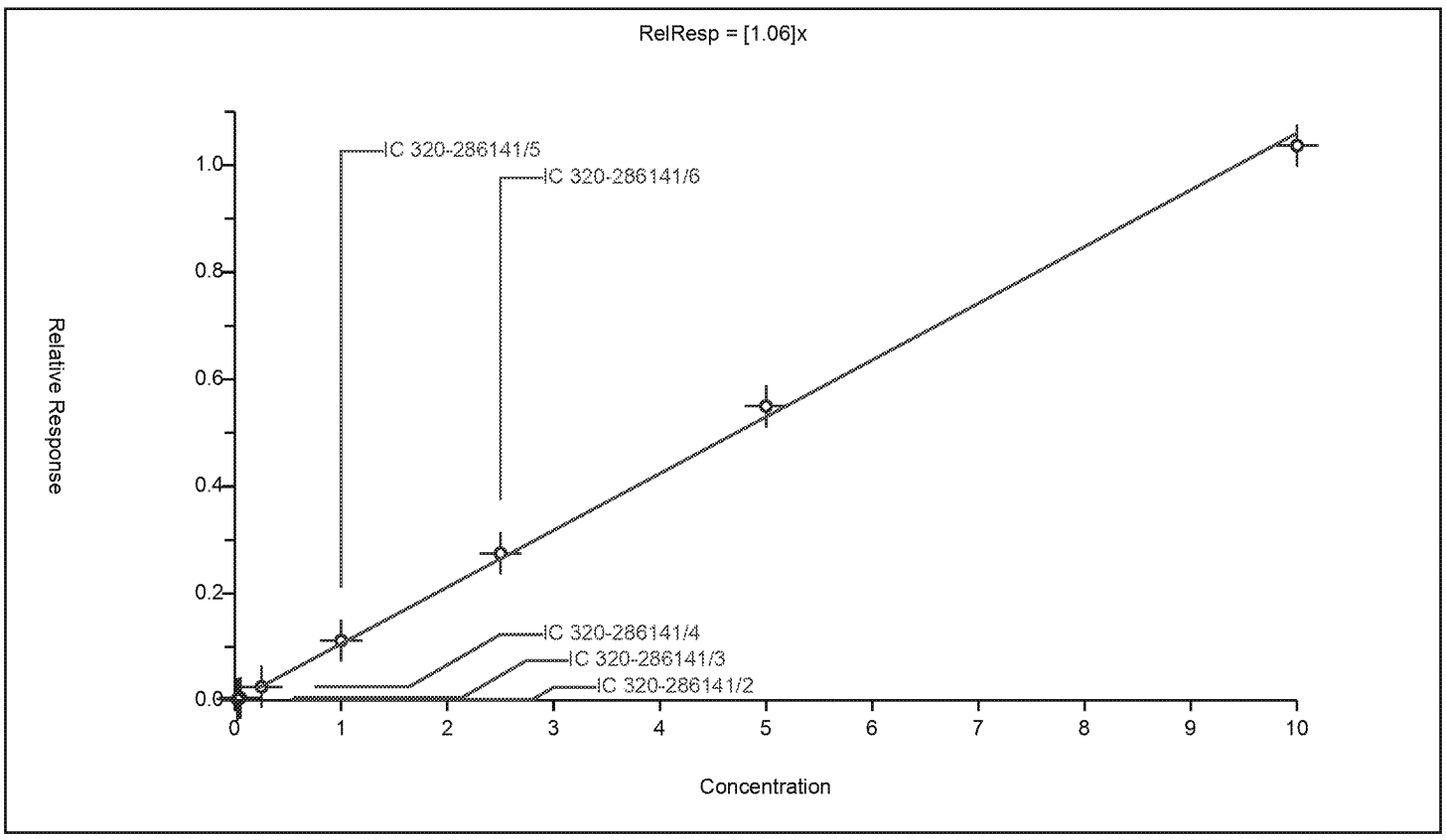
Curve Coefficients

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

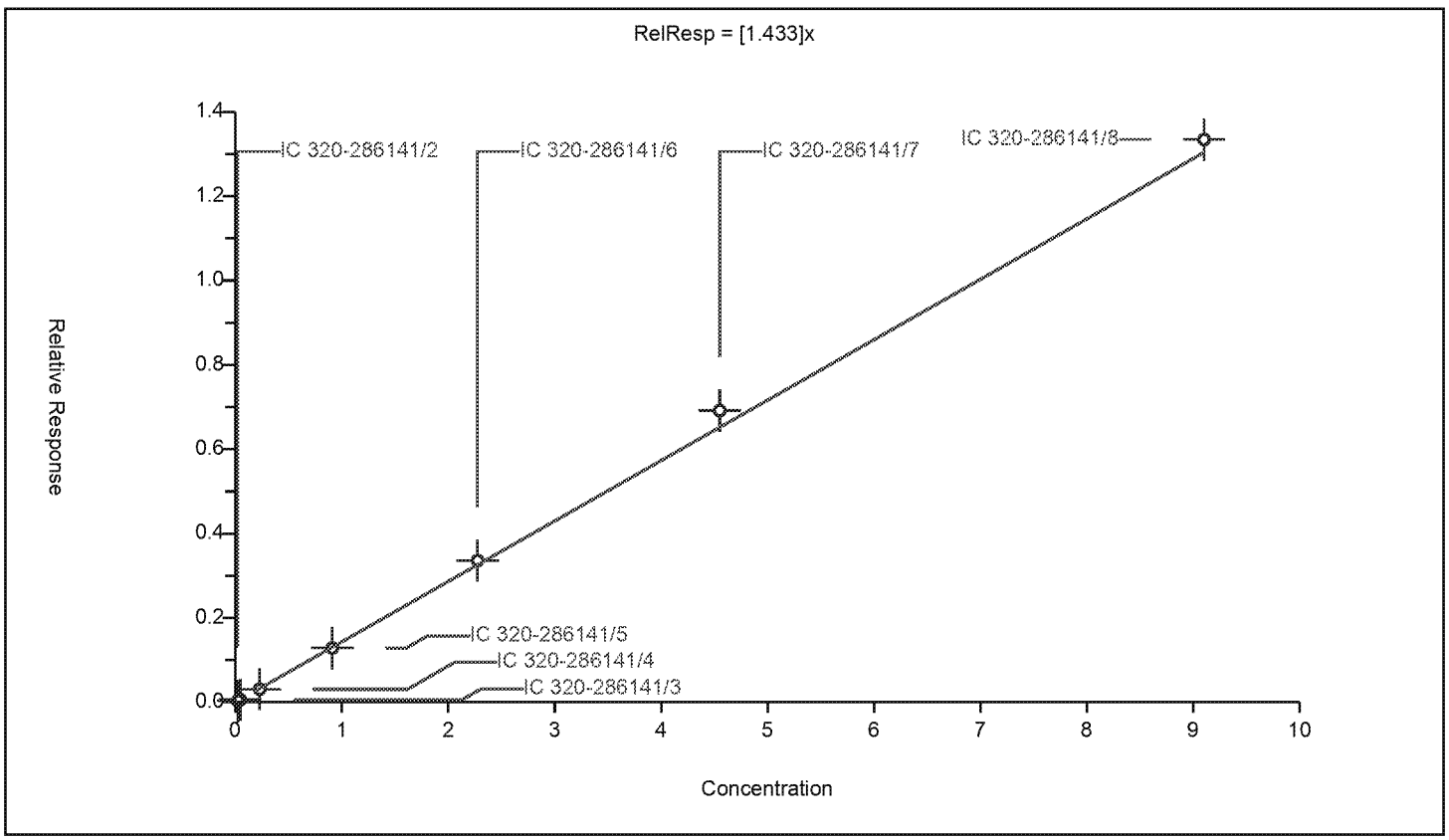
Curve Coefficients

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

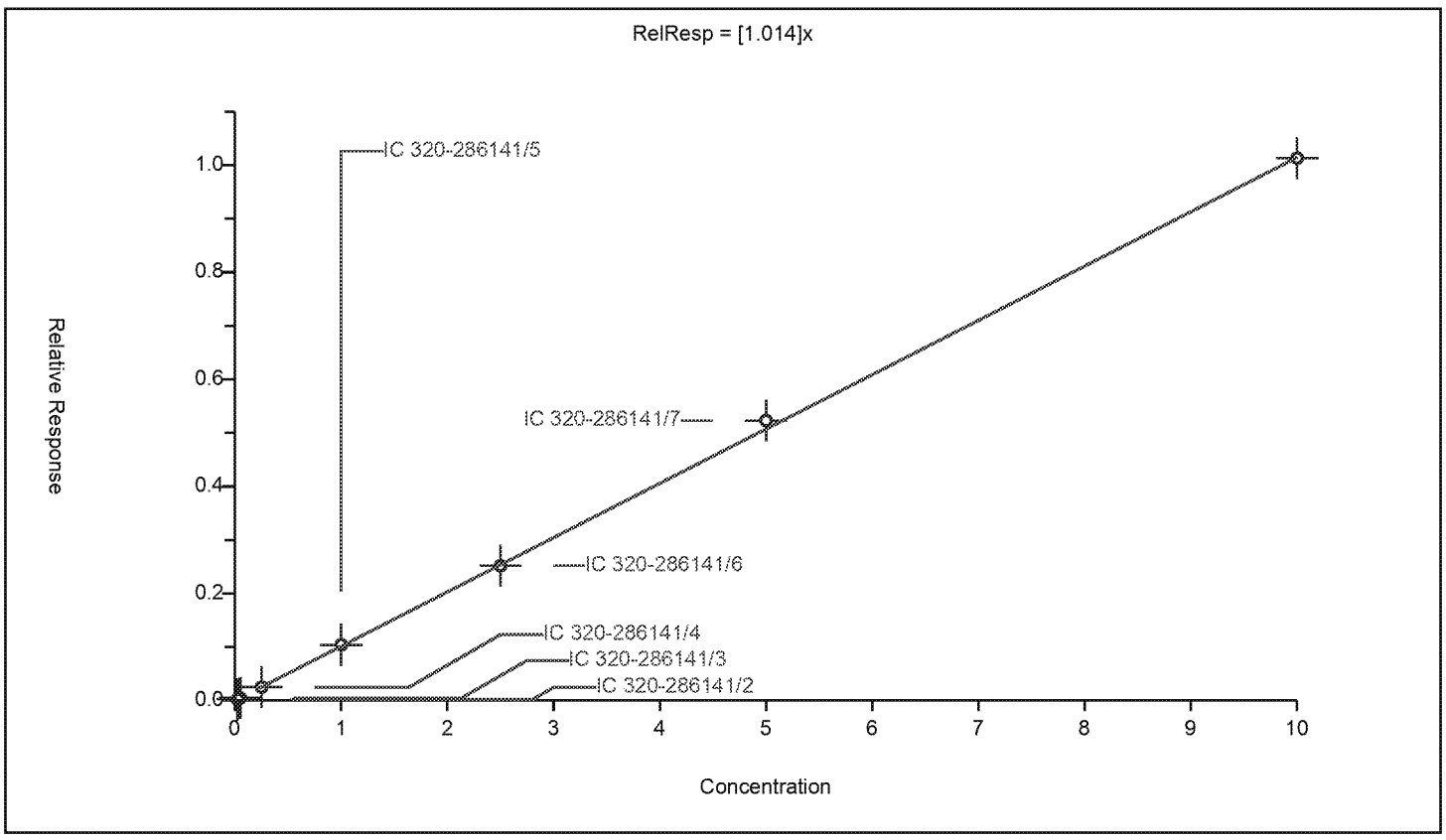
Curve Coefficients

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

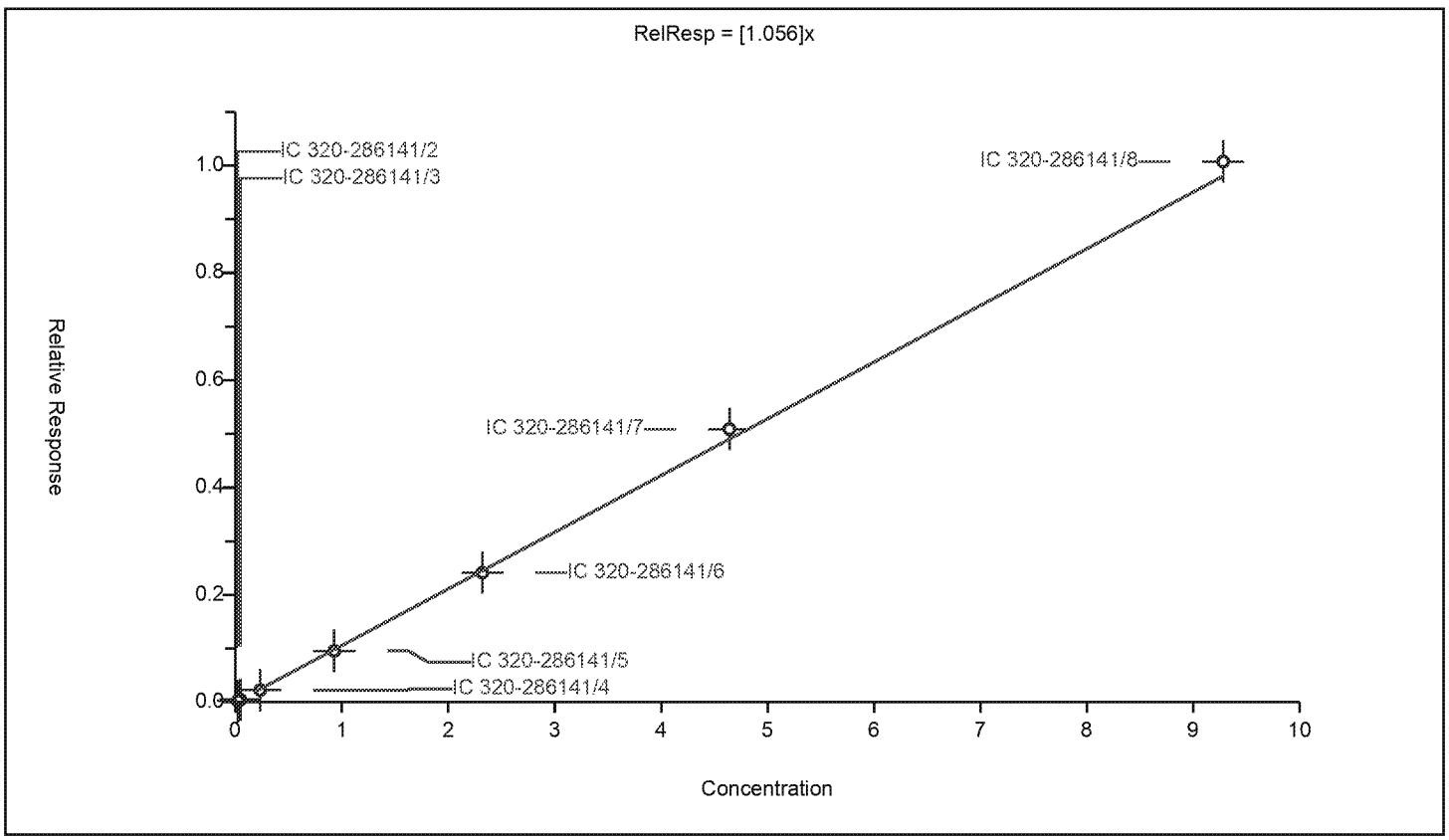
Curve Coefficients

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

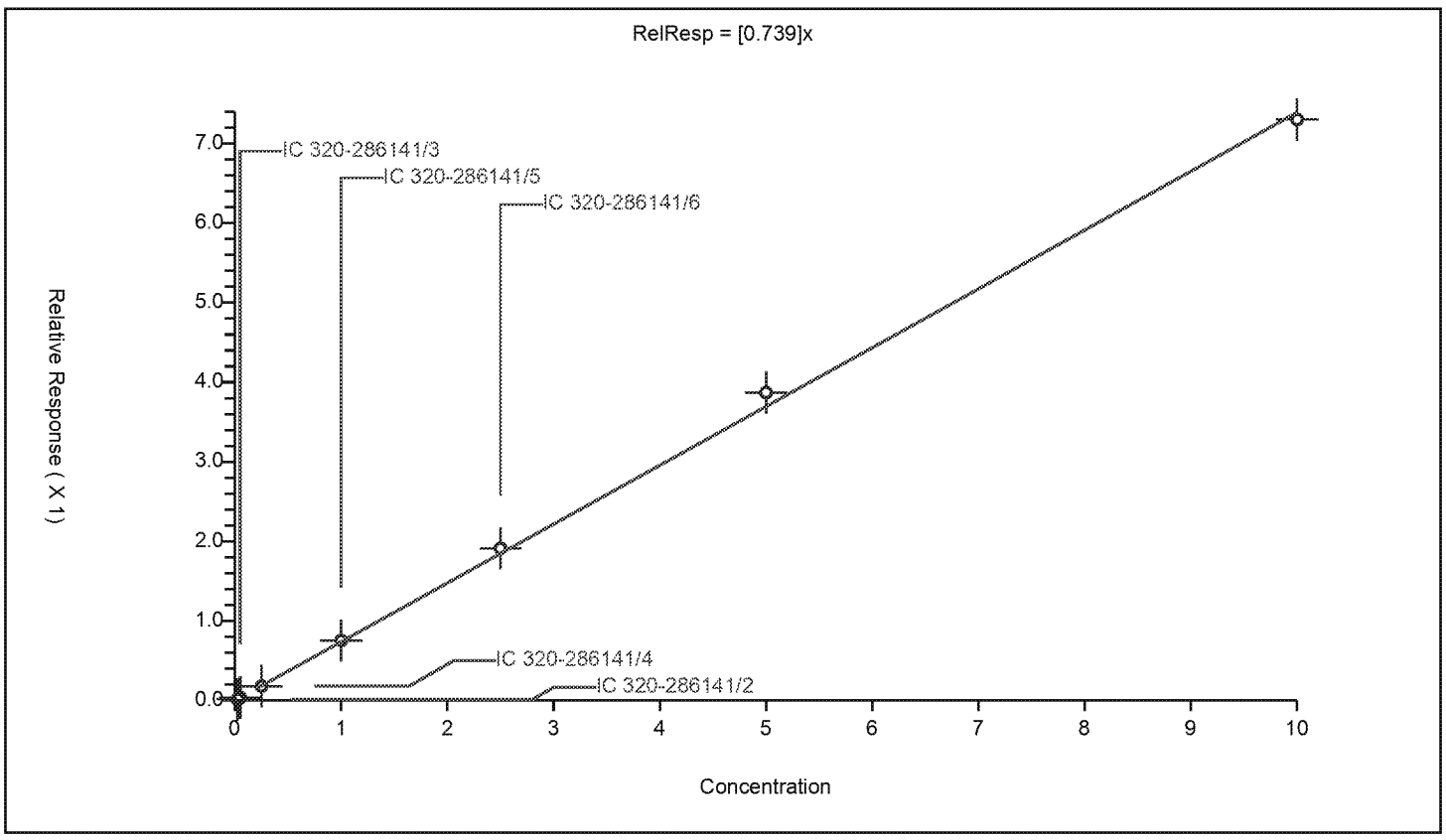
Curve Coefficients

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

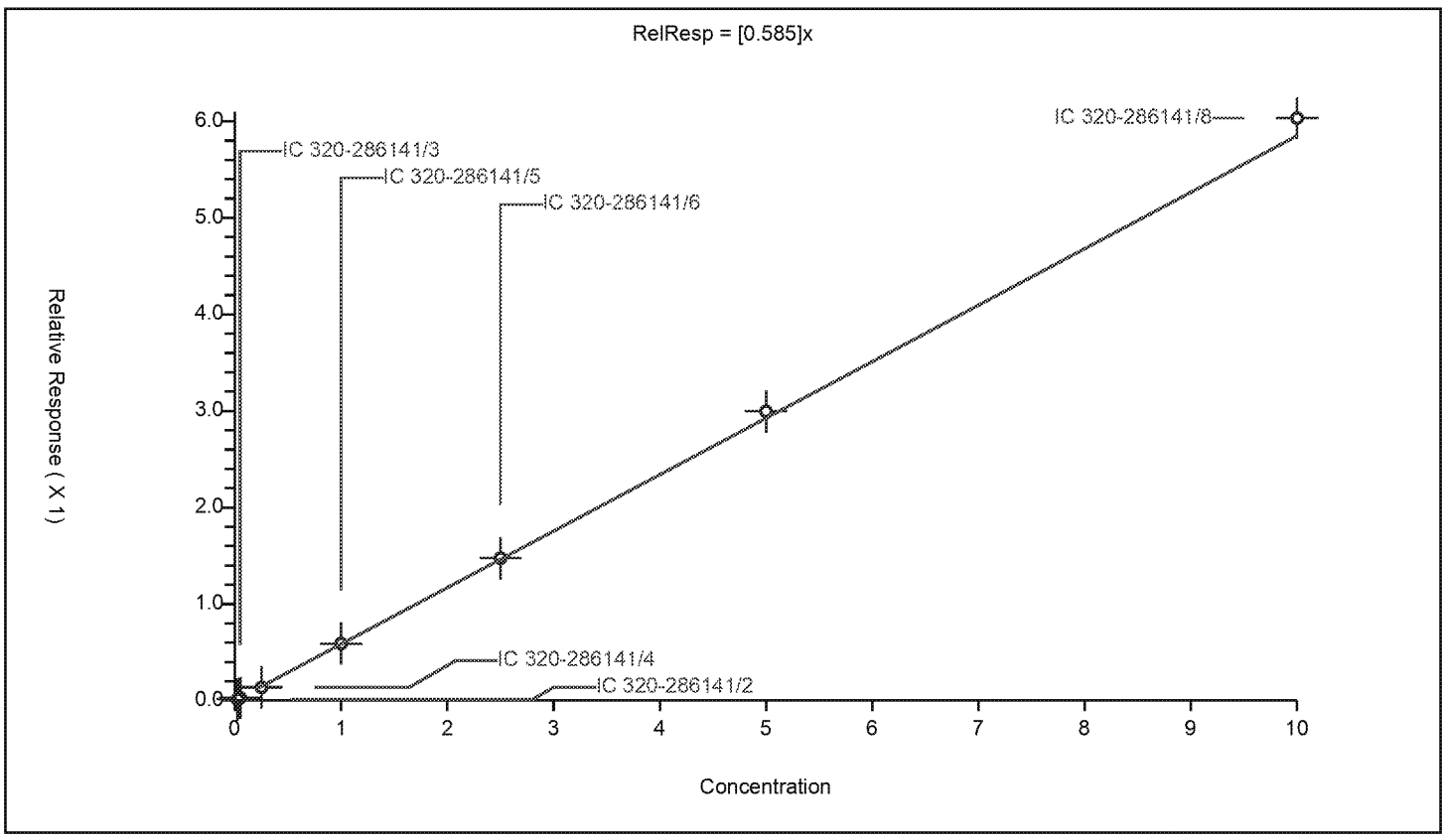
Curve Coefficients

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

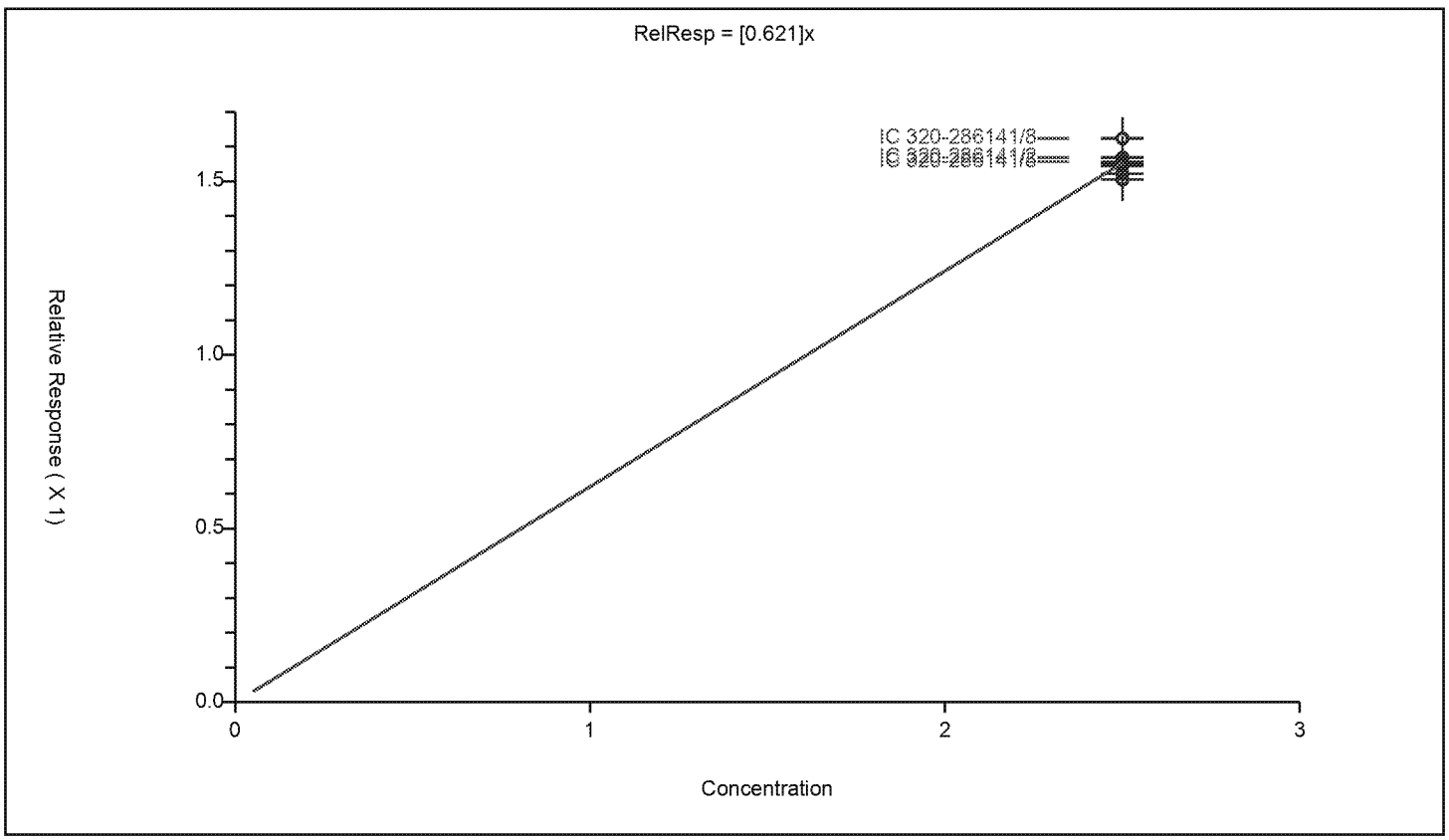
Curve Coefficients

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

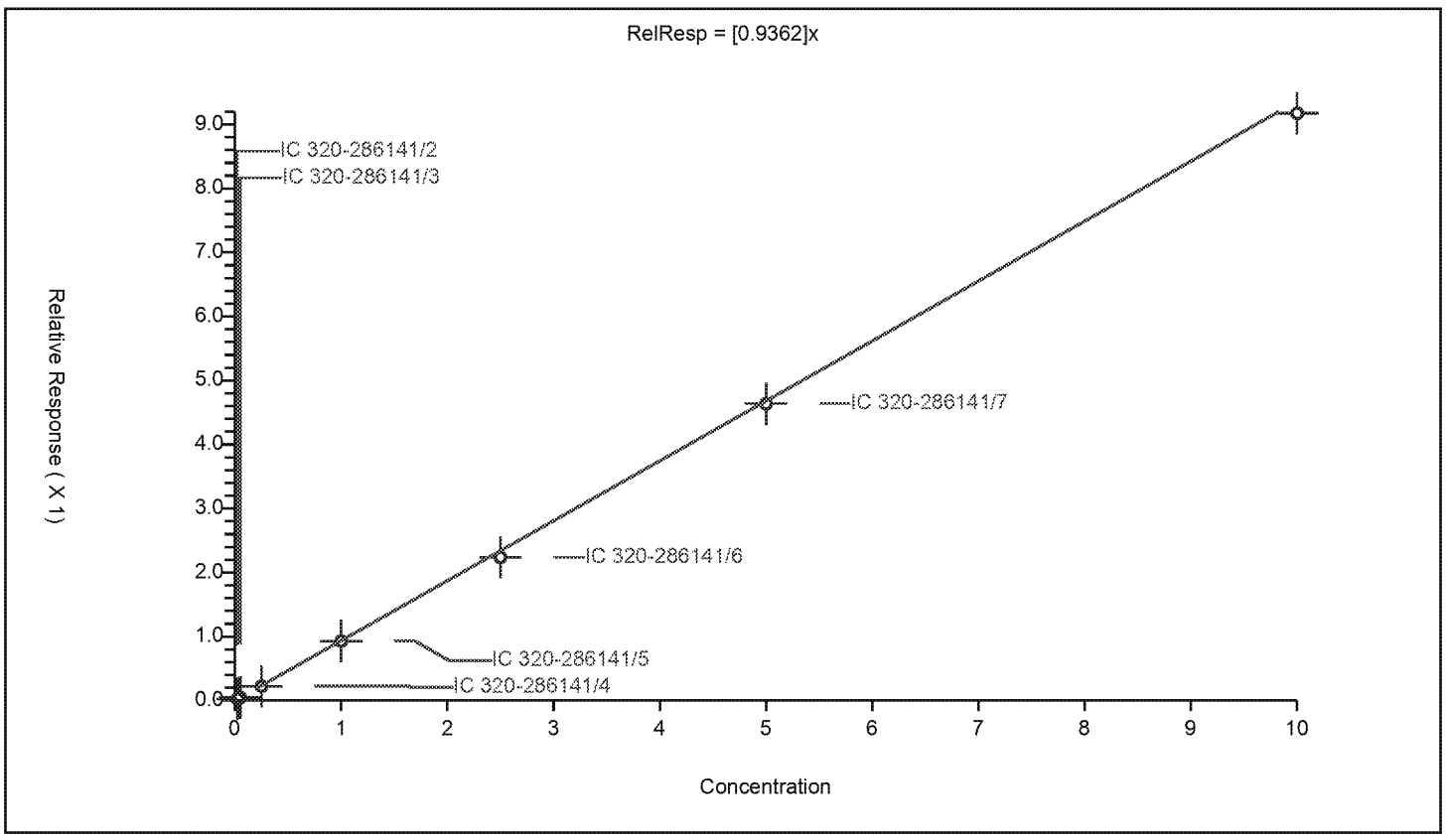
Curve Coefficients

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

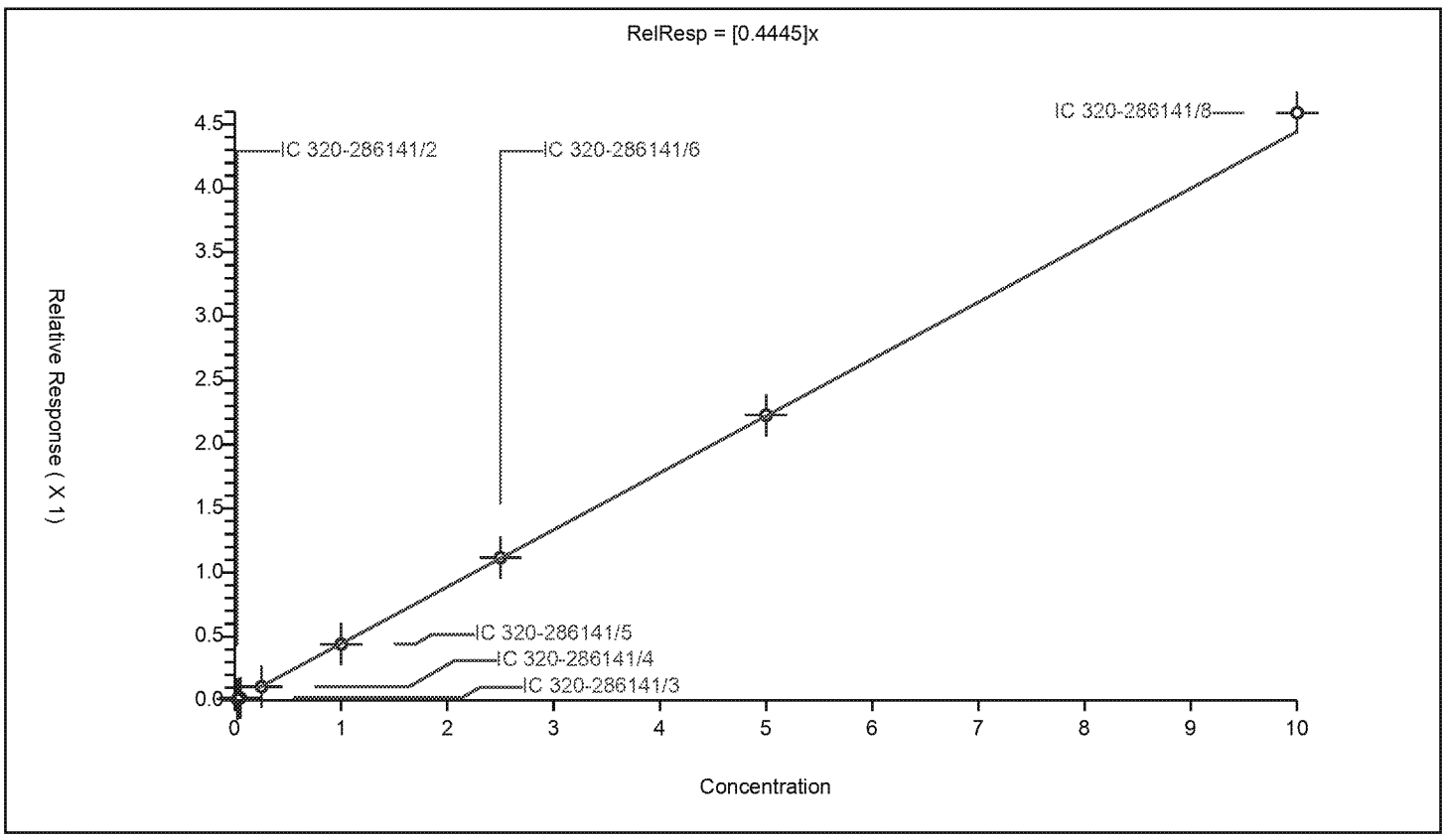
Curve Coefficients

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

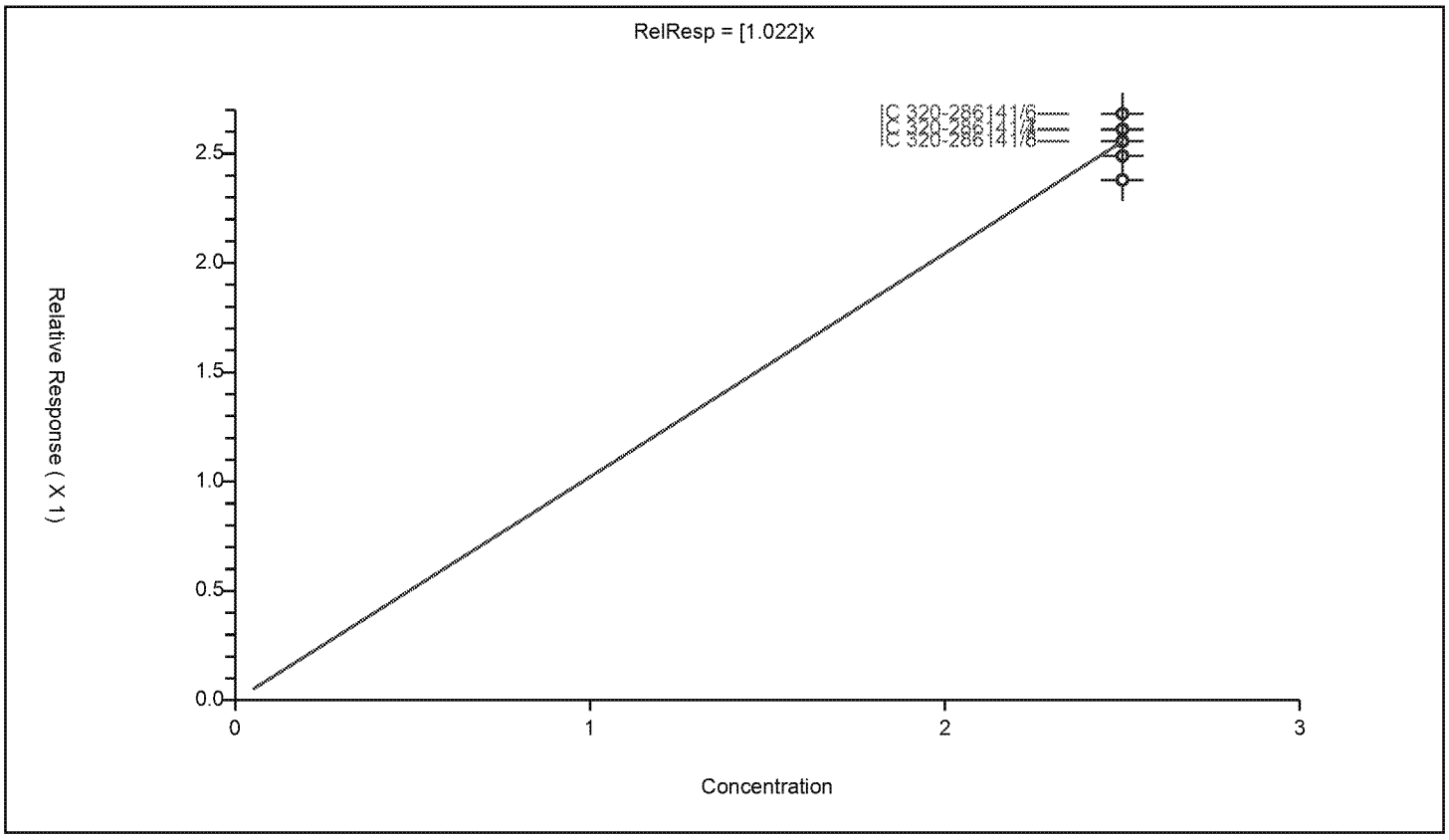
Curve Coefficients

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

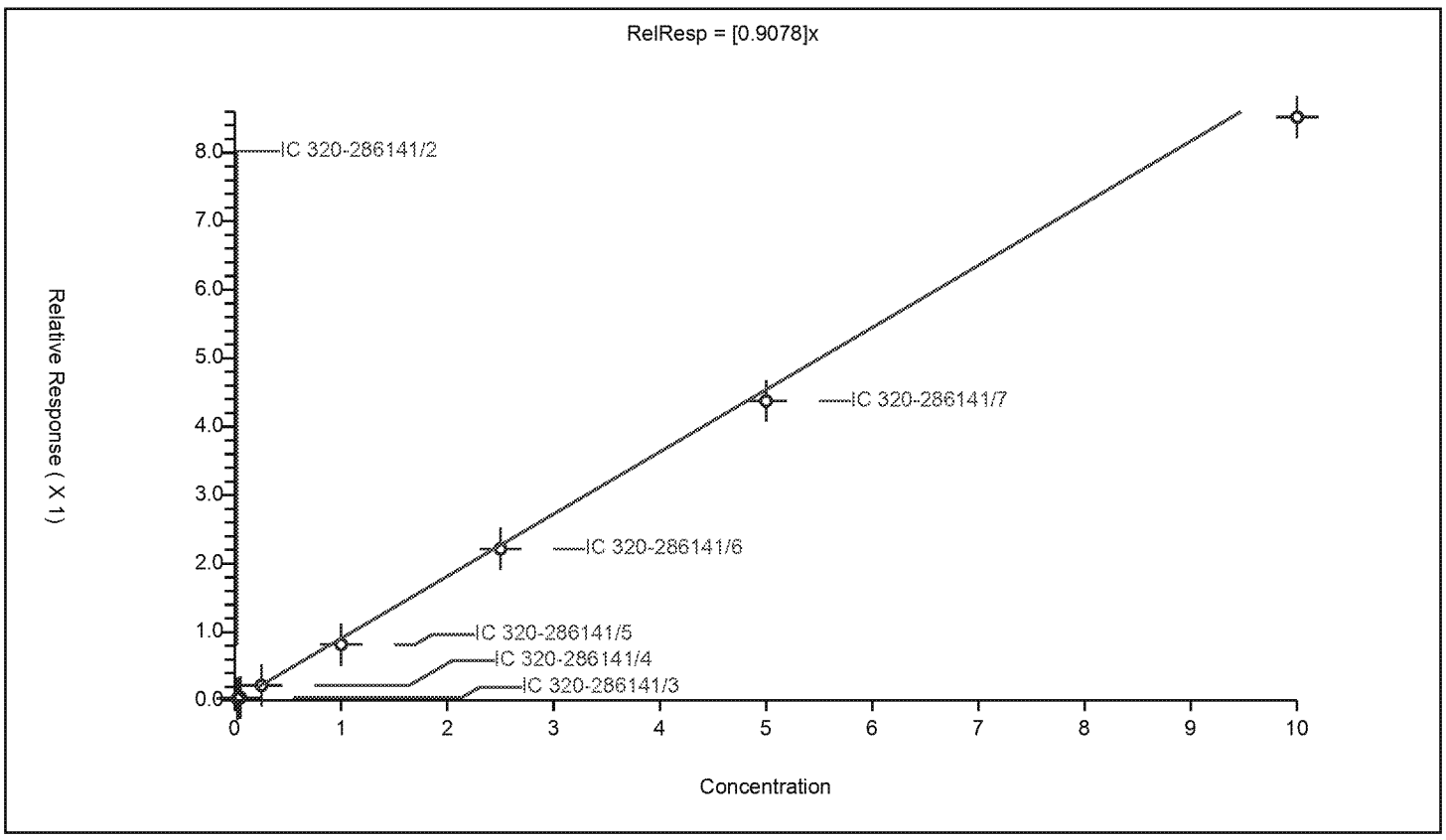
Curve Coefficients

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

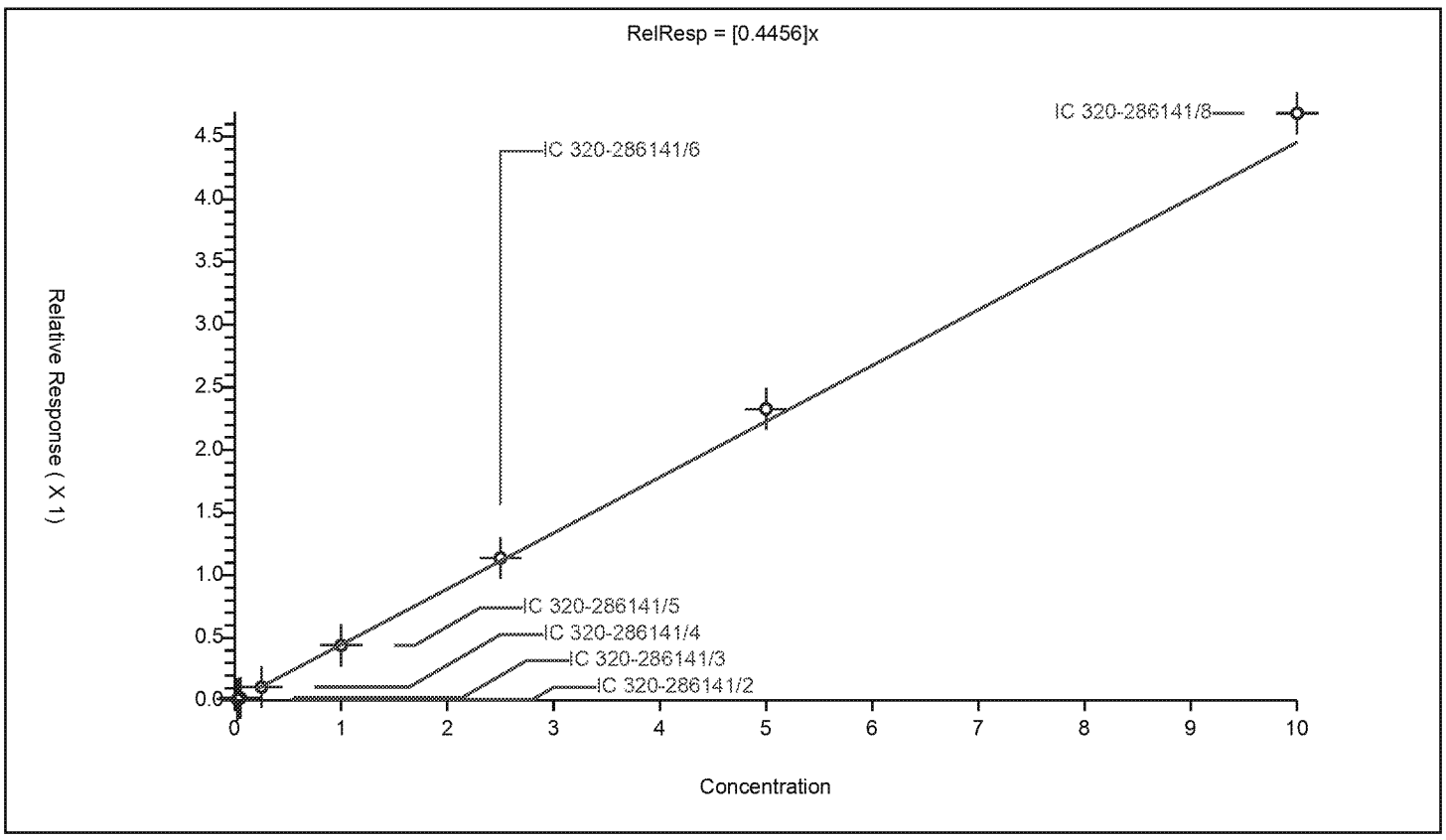
Curve Coefficients

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

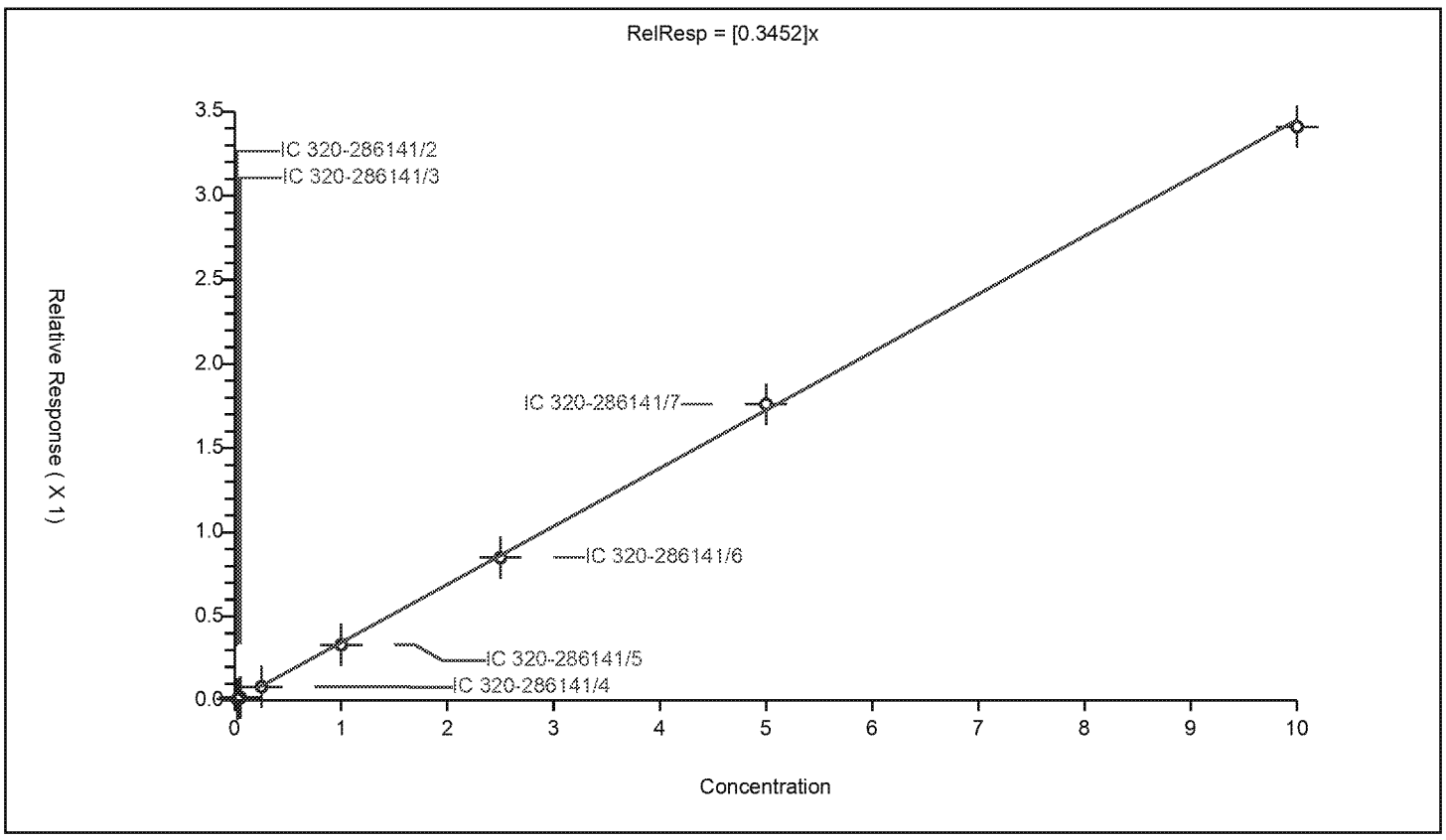
Curve Coefficients

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

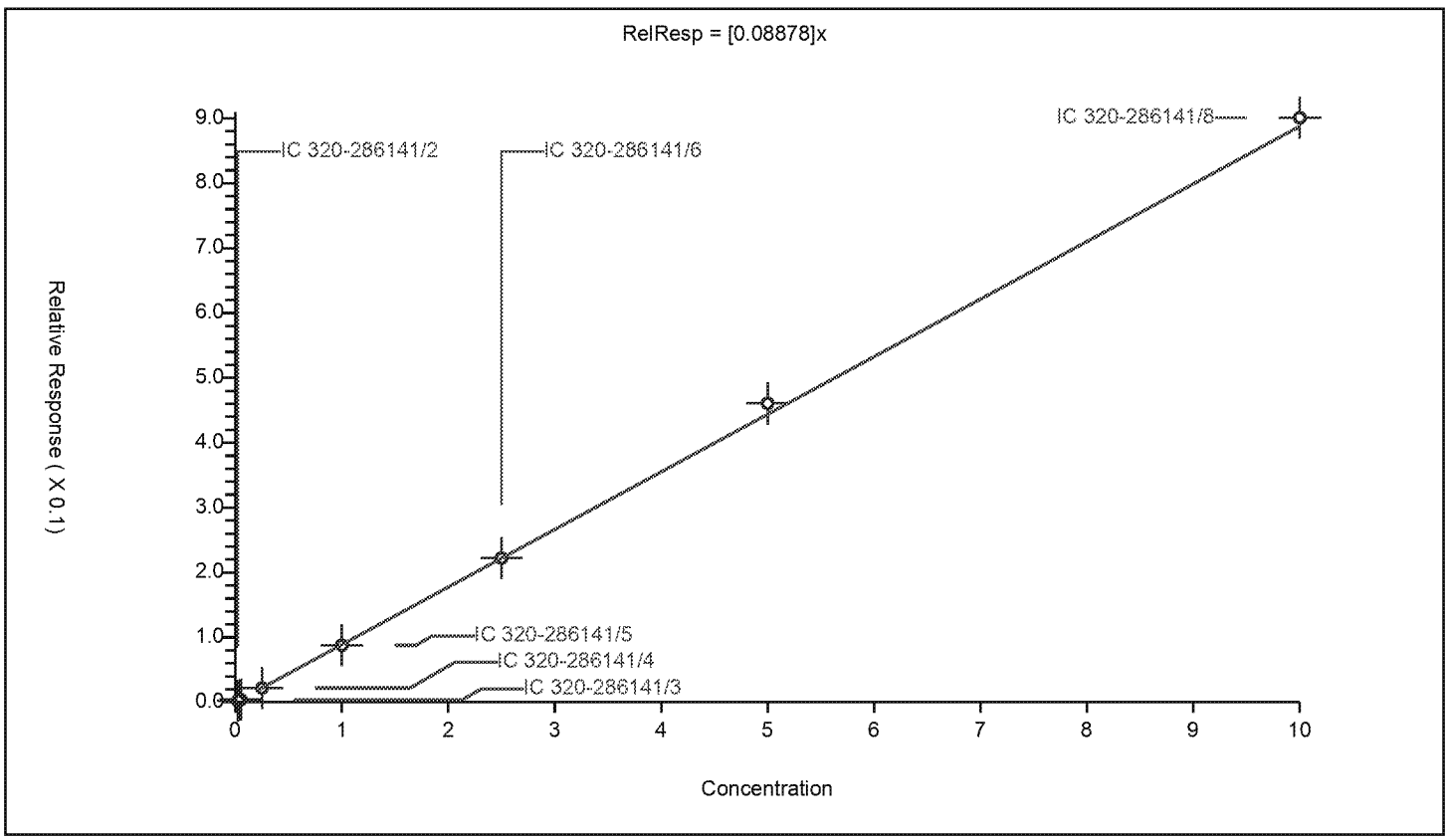
Curve Coefficients

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.: 320-48796-1

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

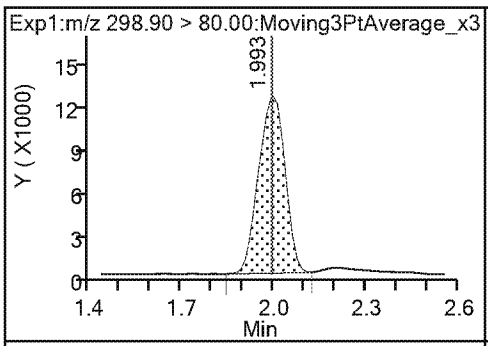
Reagents:

LC537_NC_L2_00004 Amount Added: 1.00 Units: mL

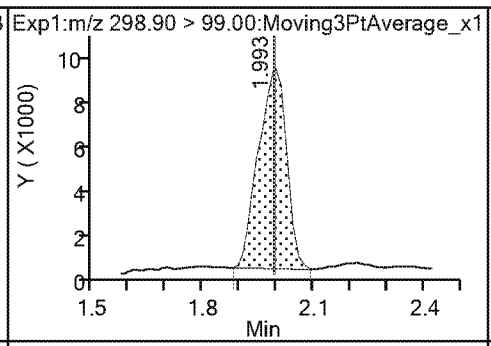
Eurofins TestAmerica, Sacramento

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

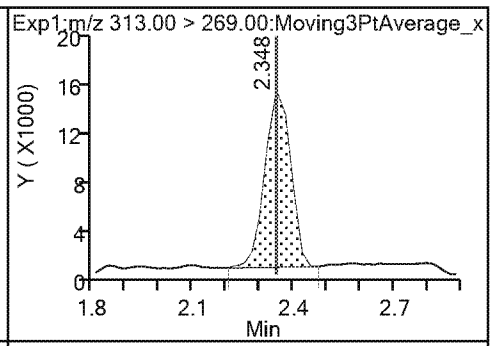
1 Perfluorobutanesulfonic acid



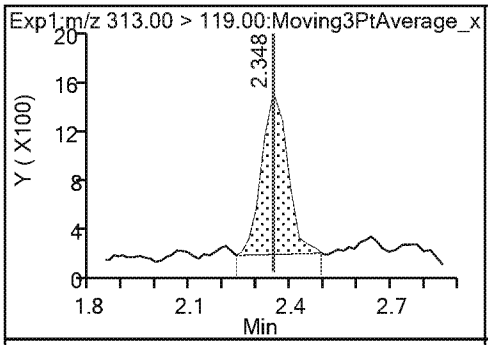
1 Perfluorobutanesulfonic acid



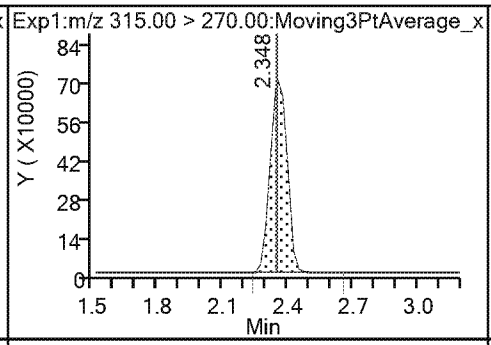
13 Perfluorohexanoic acid



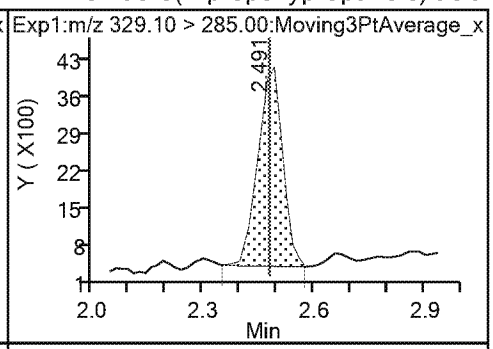
13 Perfluorohexanoic acid



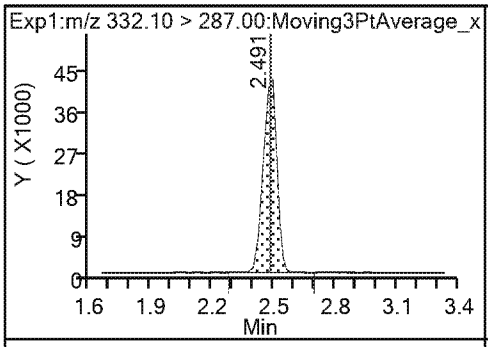
$ 2 13C2 PFHxA



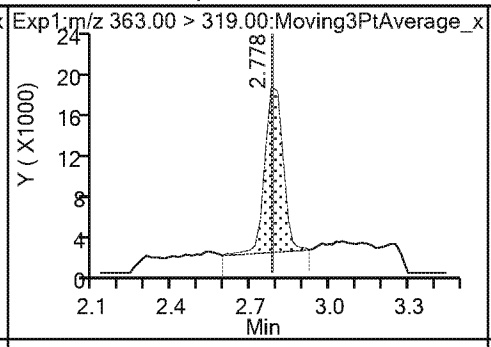
22 Perfluoro(2-propoxypropanoic) acid



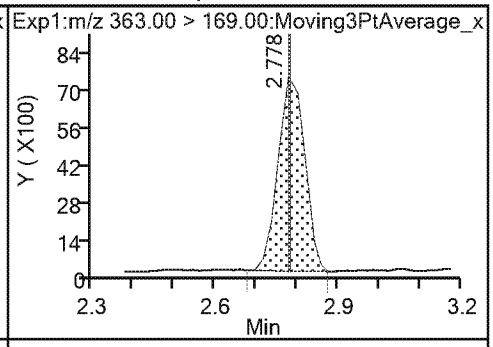
$ 25 13C3 HFPO-DA



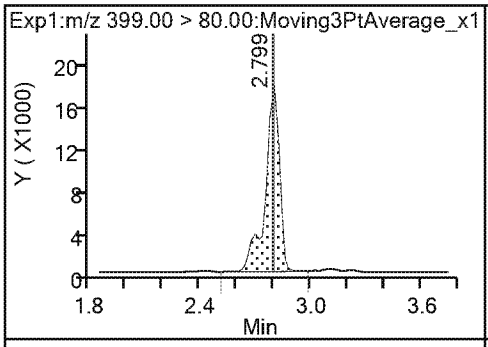
4 Perfluoroheptanoic acid



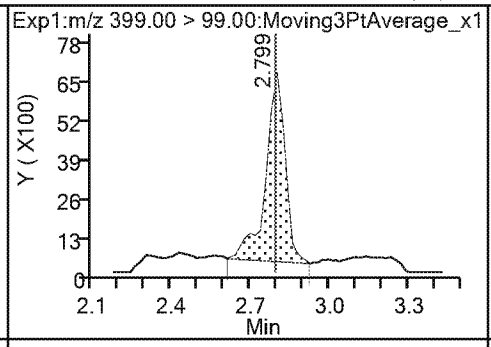
4 Perfluoroheptanoic acid



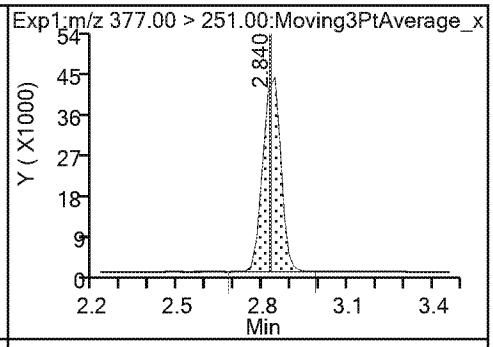
3 Perfluorohexanesulfonic acid



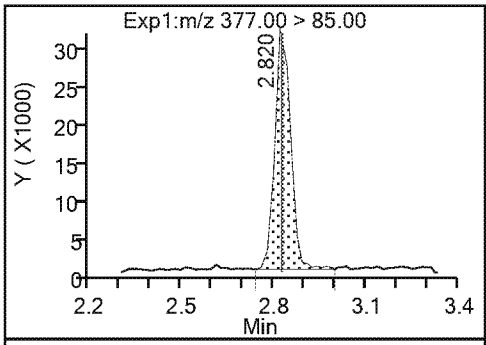
3 Perfluorohexanesulfonic acid (M)



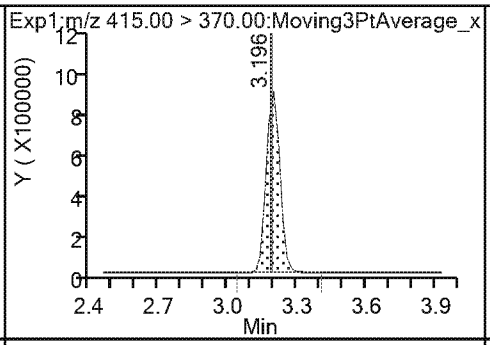
24 DONA



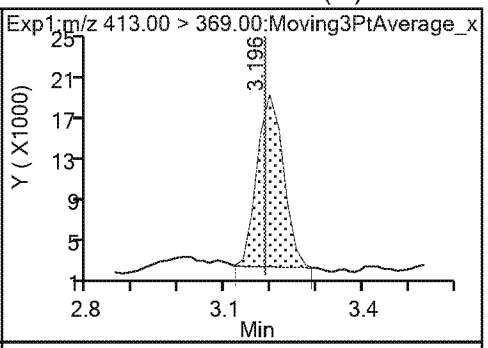
24 DONA



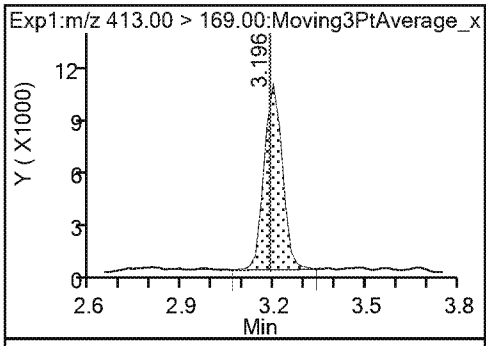
* 5 13C2 PFOA



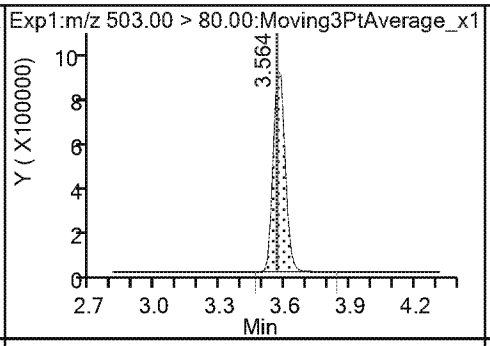
6 Perfluorooctanoic acid (M)



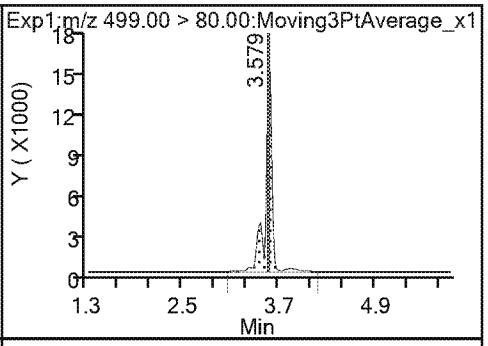
6 Perfluorooctanoic acid



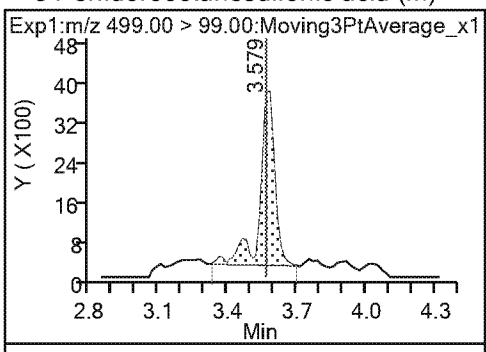
* 7 13C4 PFOS



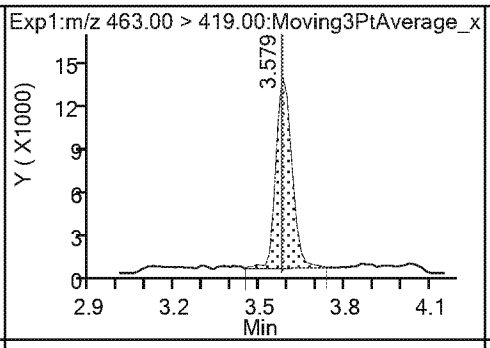
8 Perfluorooctanesulfonic acid



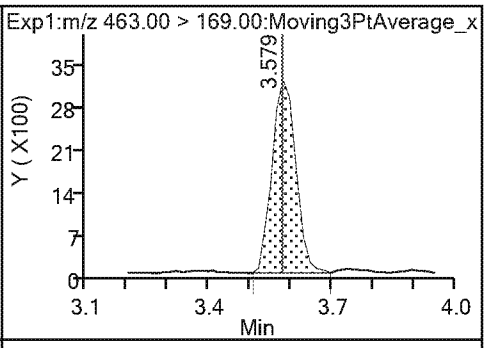
8 Perfluorooctanesulfonic acid (M)



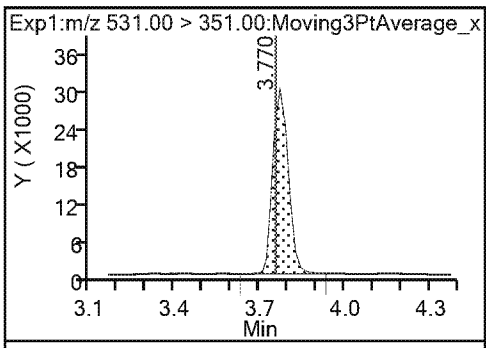
9 Perfluorononanoic acid



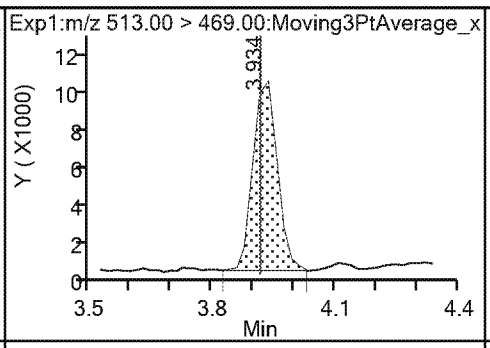
9 Perfluorononanoic acid



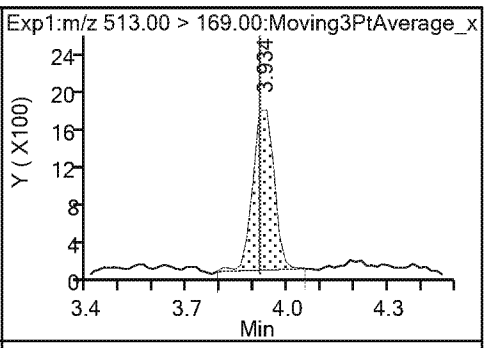
23 9-Chlorohexadecafluoro-3-oxanonane



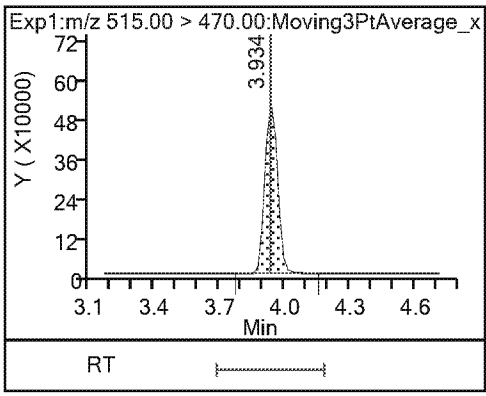
14 Perfluorodecanoic acid



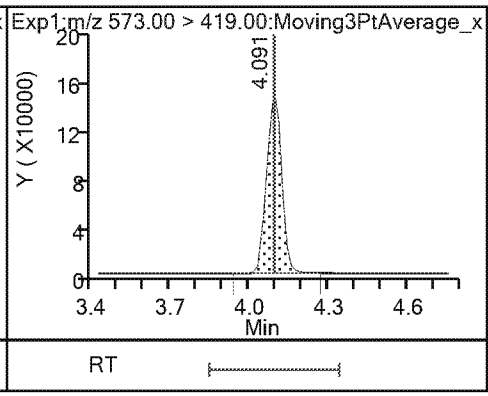
14 Perfluorodecanoic acid



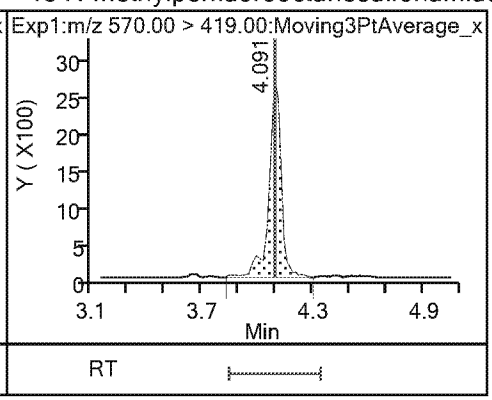
$ 10 13C2 PFDA



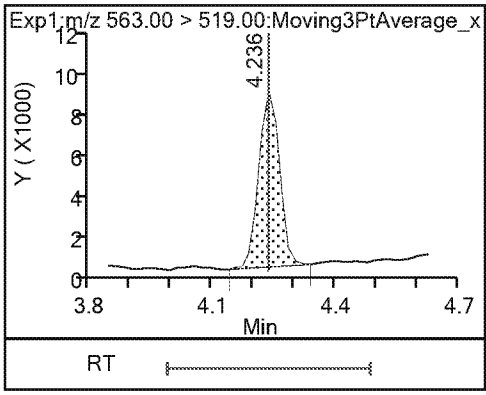
* 12 d3-NMeFOSAA



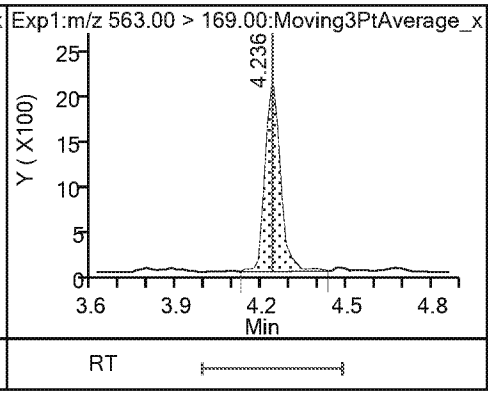
15 N-methylperfluorooctanesulfonamido



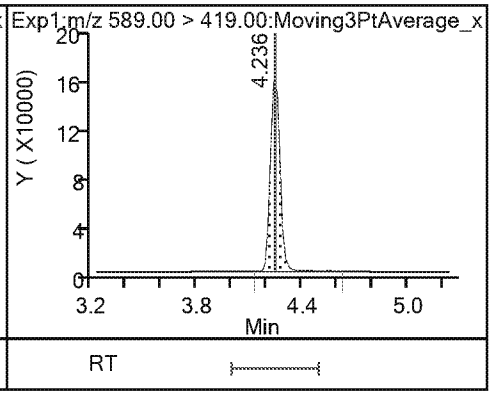
17 Perfluoroundecanoic acid



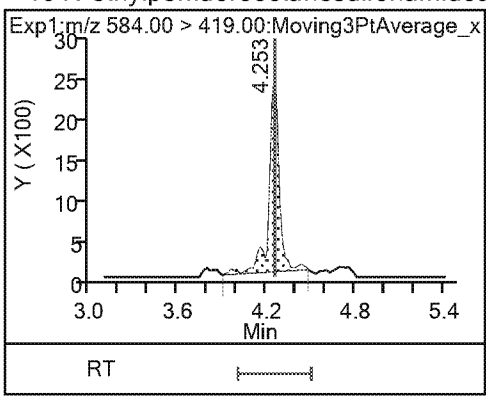
17 Perfluoroundecanoic acid



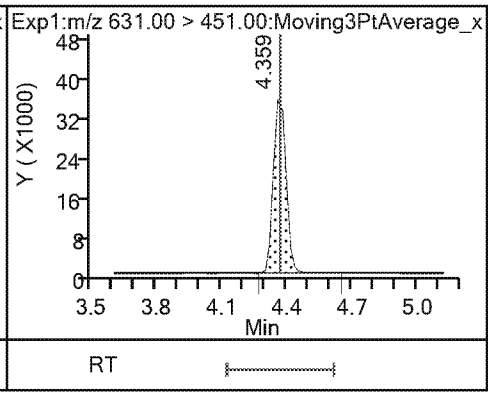
$ 11 d5-NEtFOSAA



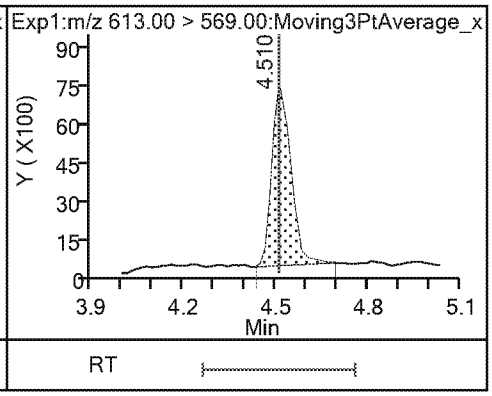
16 N-ethylperfluorooctanesulfonamidoa



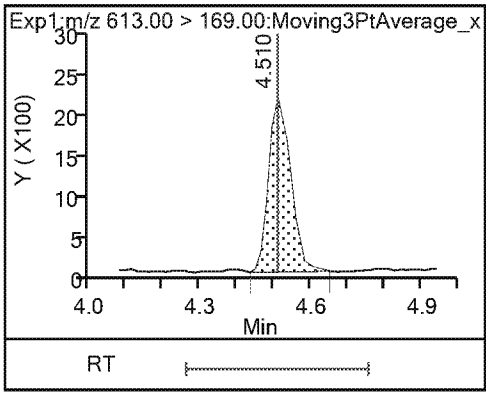
21 11-Chloroeicosafluoro-3-oxaundecan



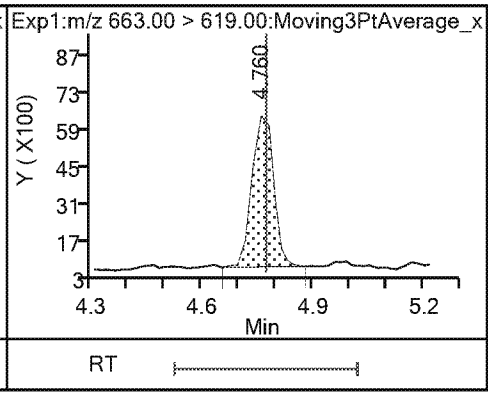
18 Perfluorododecanoic acid



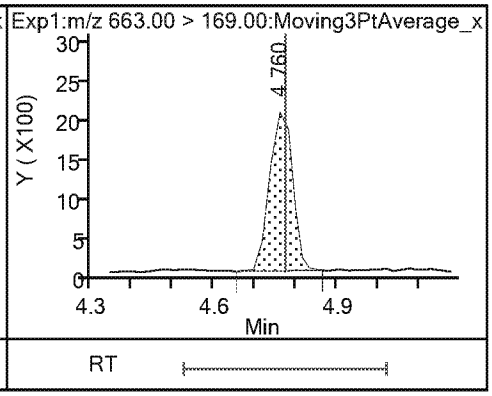
18 Perfluorododecanoic acid



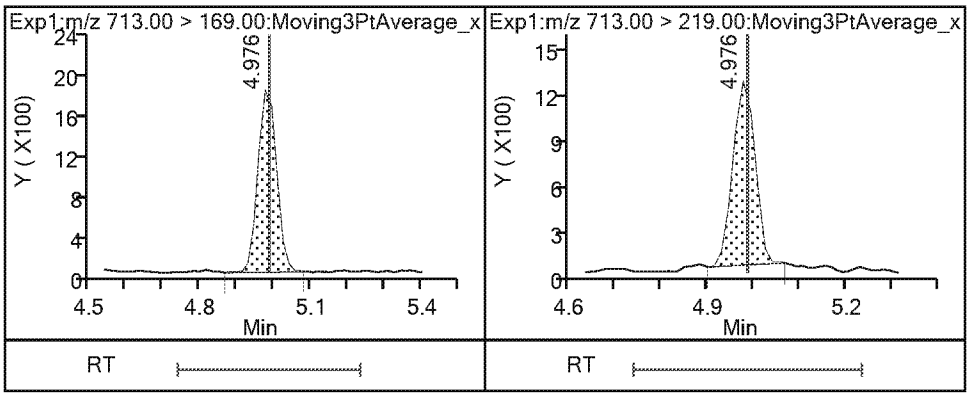
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid 20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento

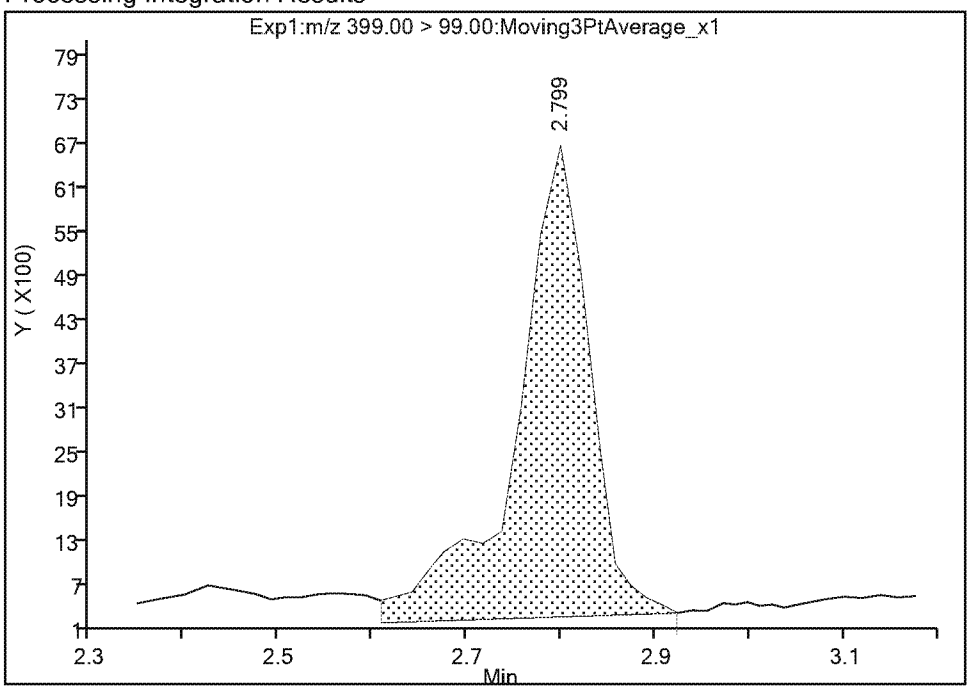
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_011.d				
Injection Date:	04-Apr-2019 16:29:59	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	10
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

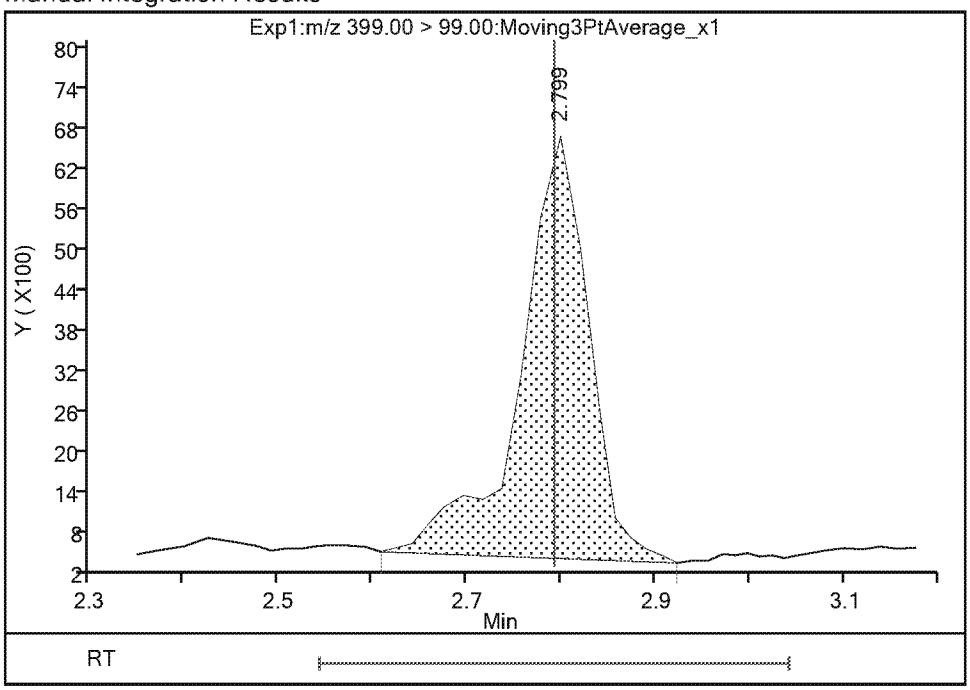
Processing Integration Results

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

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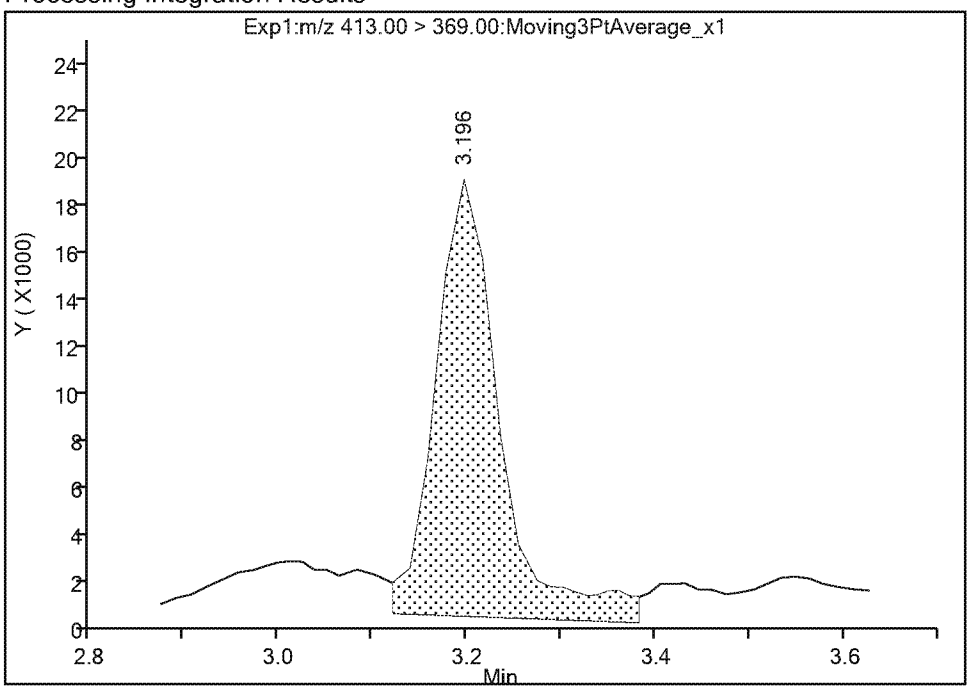
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	10
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

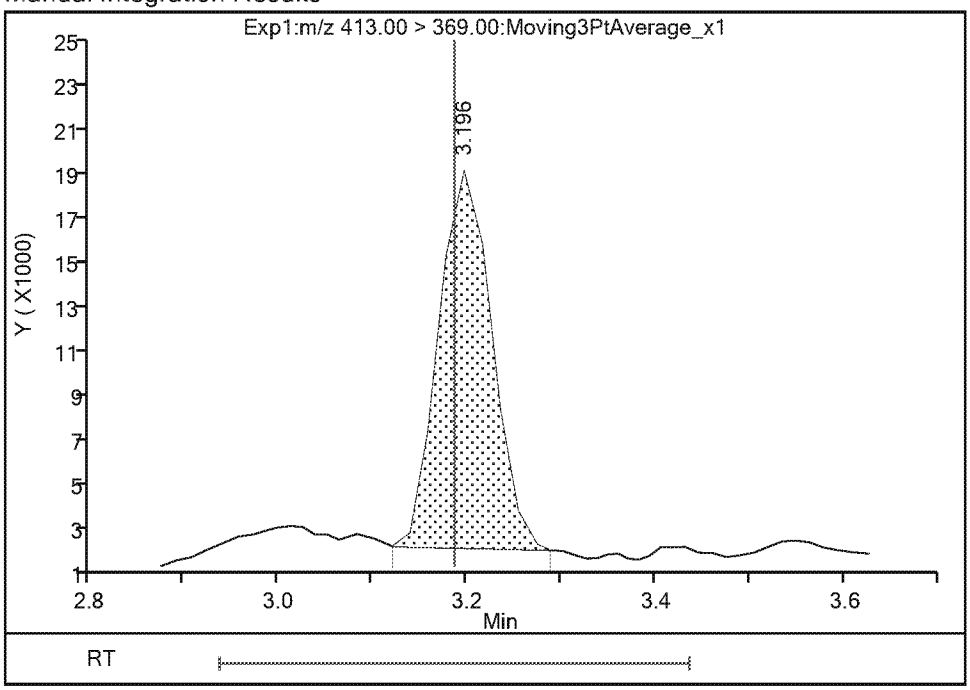
Processing Integration Results

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

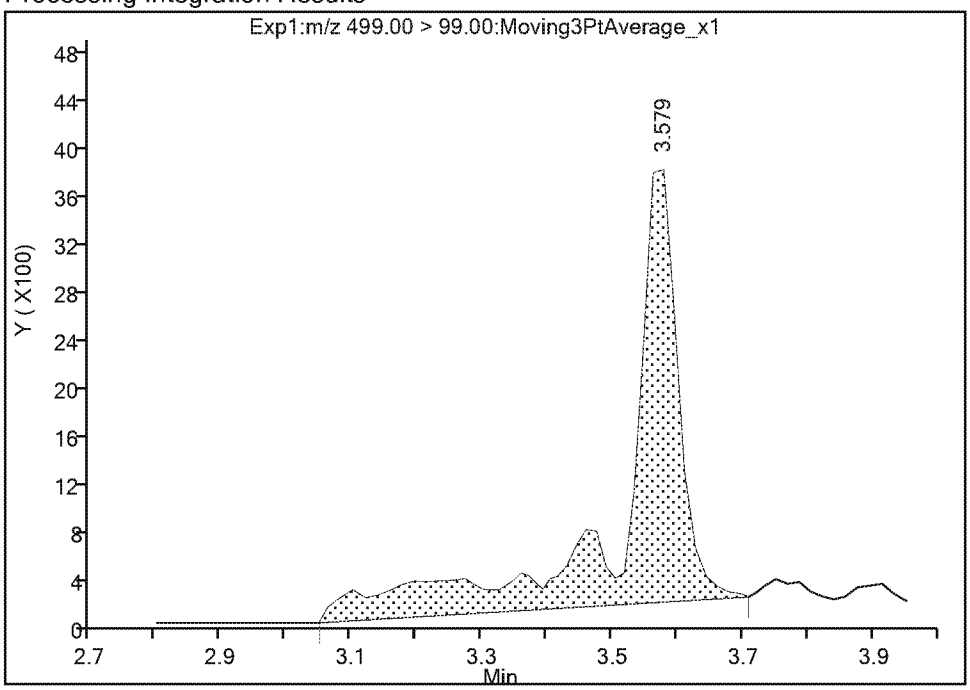
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74310.b\2019.04.04_537ICAL_011.d				
Injection Date:	04-Apr-2019 16:29:59	Instrument ID:	A8_N		
Lims ID:	CCVL				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	2	Worklist Smp#:	10
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

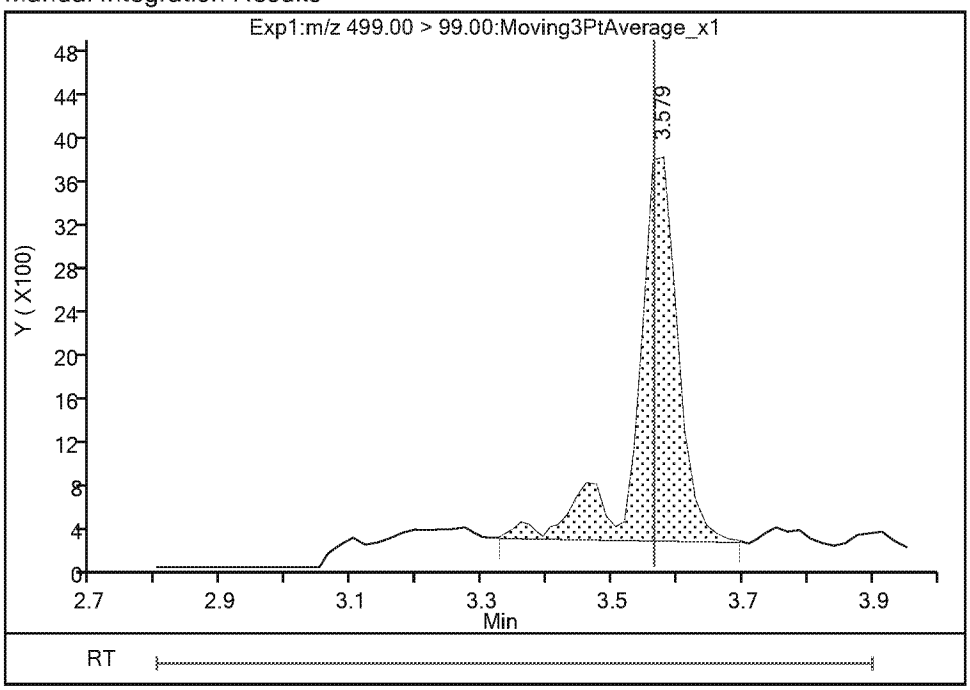
Processing Integration Results

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.: 320-48796-1

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

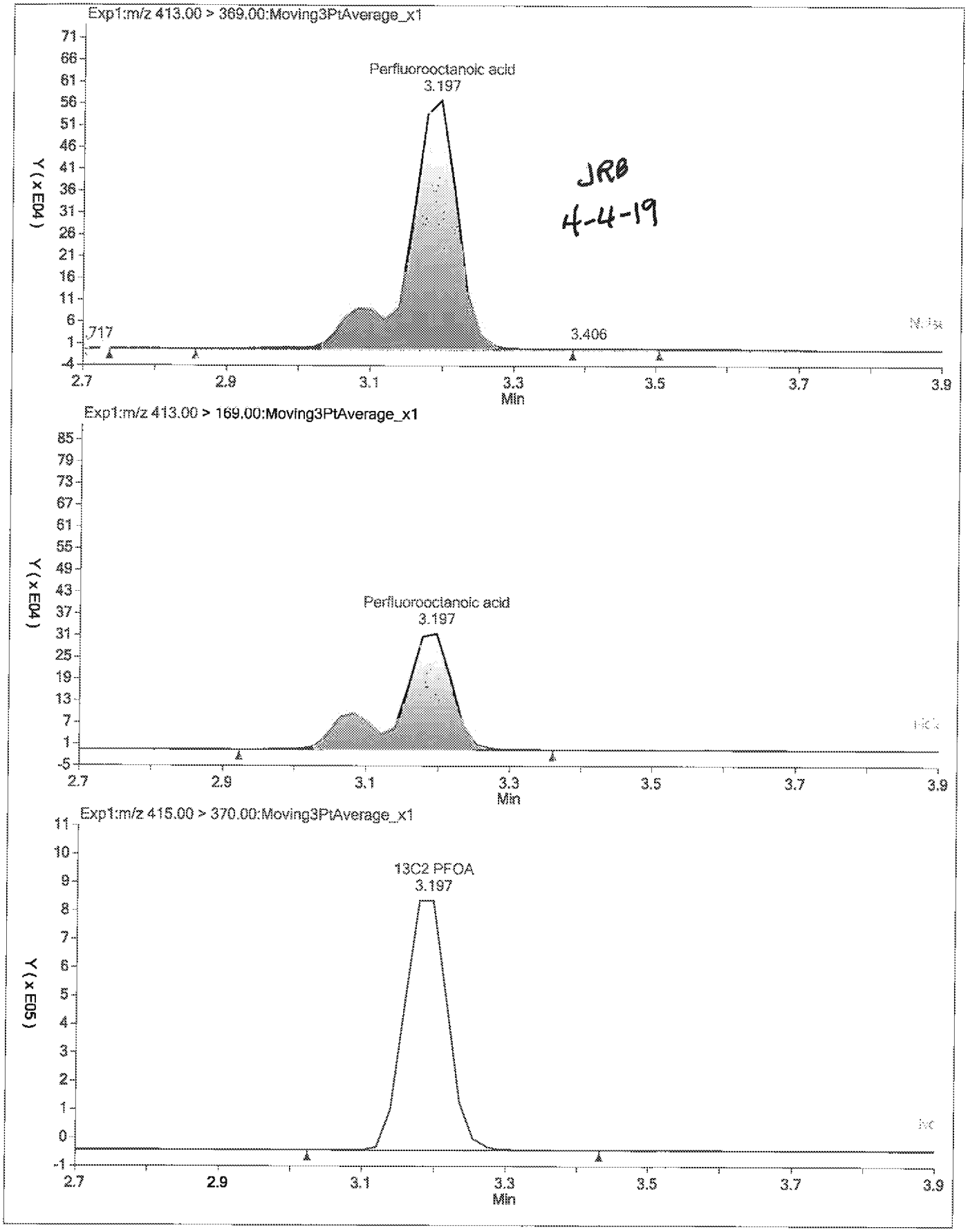
GC Column: GeminiC18 3x100 ID: 3.00(mm) Calib End Date: 04/04/2019 16:11

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	

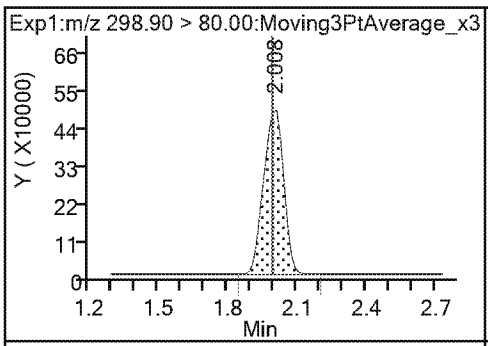
Reagents:

LC537_NC_ICV_00003 Amount Added: 1.00 Units: mL

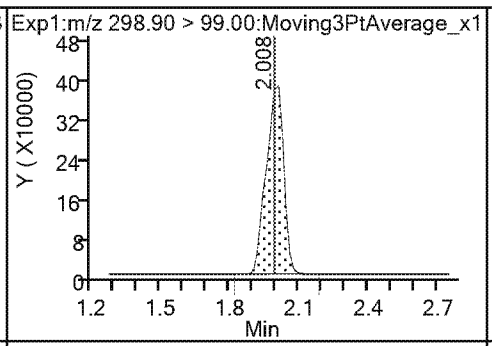
Eurofins TestAmerica, Sacramento

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

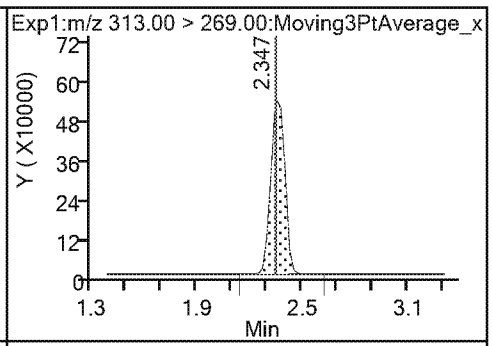
1 Perfluorobutanesulfonic acid



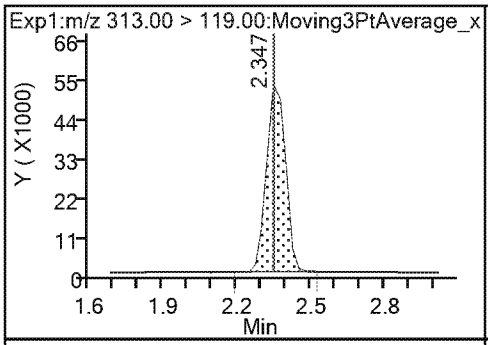
1 Perfluorobutanesulfonic acid



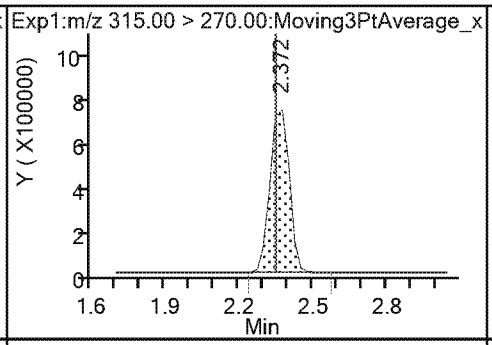
13 Perfluorohexanoic acid



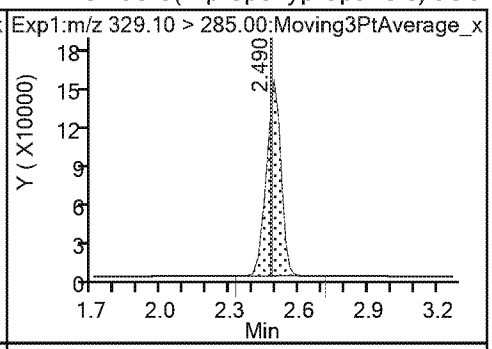
13 Perfluorohexanoic acid



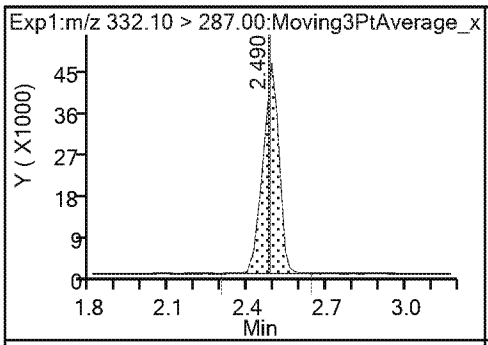
$ 2 13C2 PFHxA



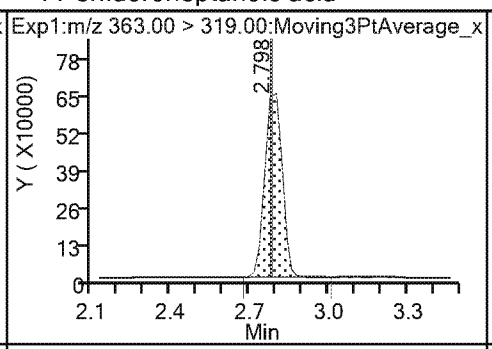
22 Perfluoro(2-propoxypropanoic) acid



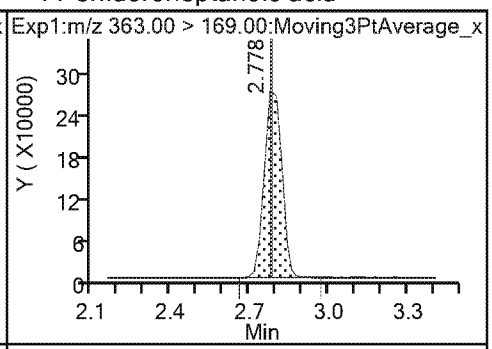
$ 25 13C3 HFPO-DA



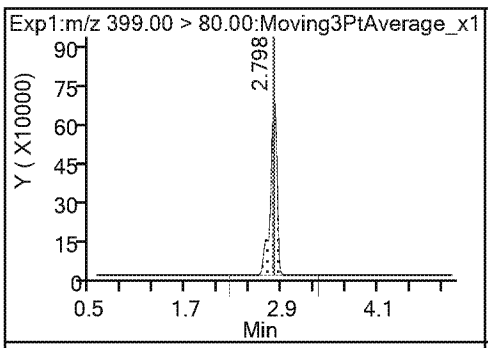
4 Perfluoroheptanoic acid



4 Perfluoroheptanoic acid



3 Perfluorohexanesulfonic acid



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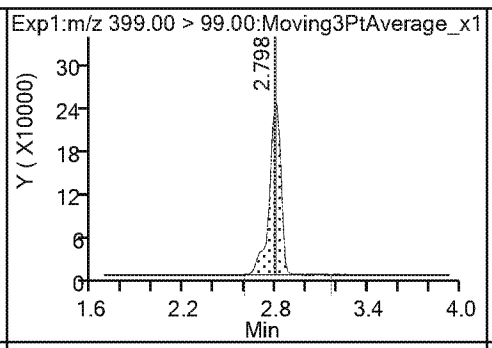
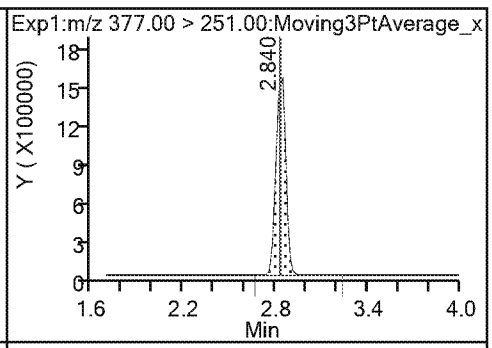
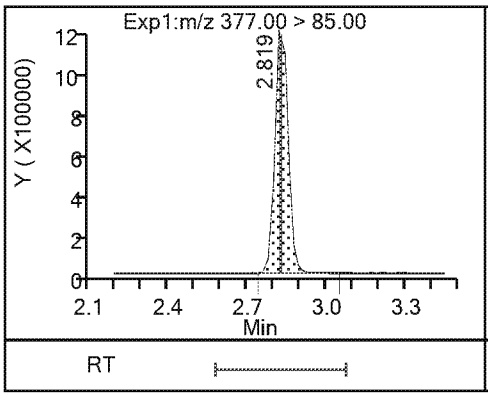


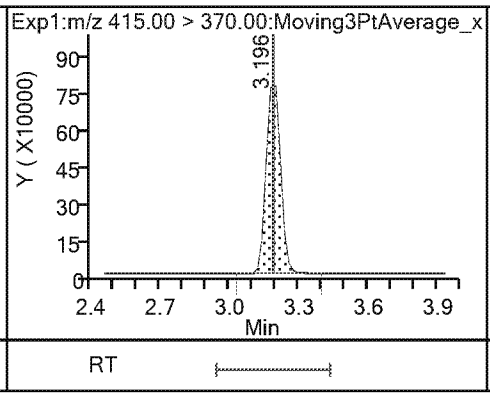
24 DONA



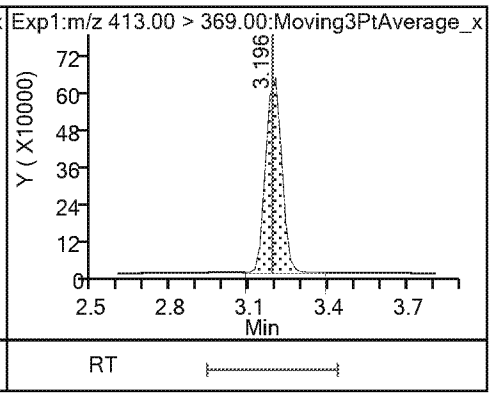
24 DONA



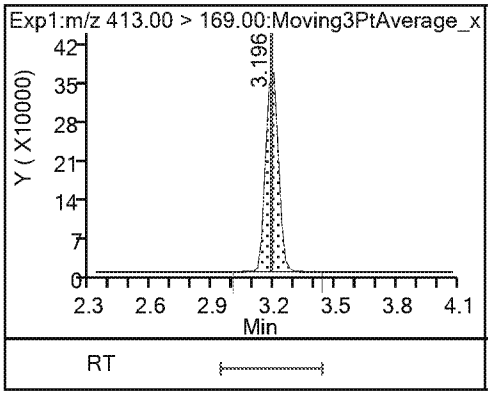
* 5 13C2 PFOA



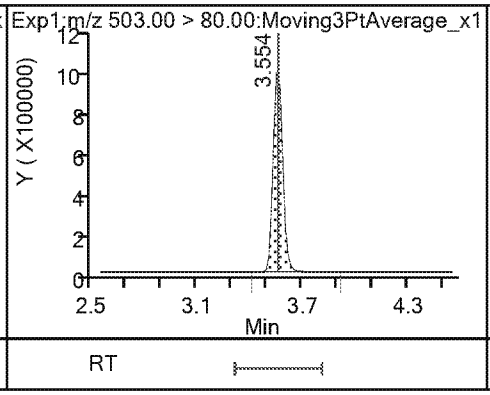
6 Perfluorooctanoic acid



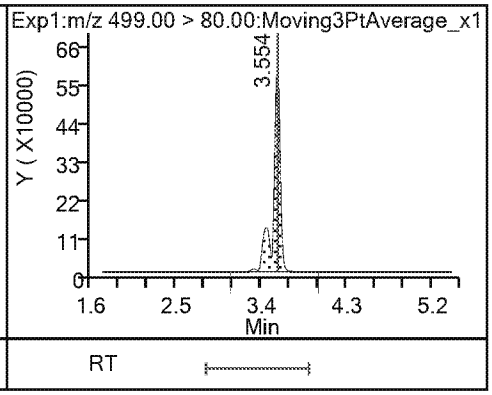
6 Perfluorooctanoic acid



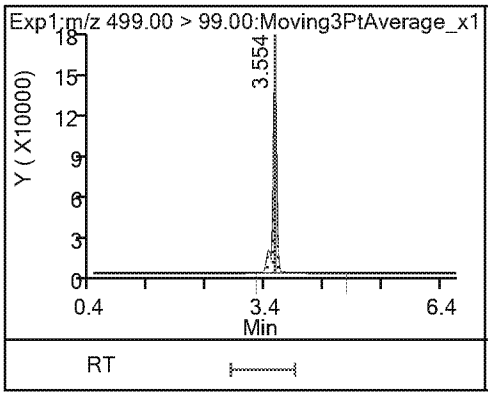
* 7 13C4 PFOS



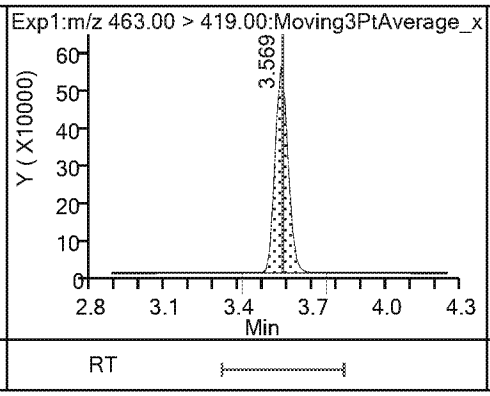
8 Perfluorooctanesulfonic acid



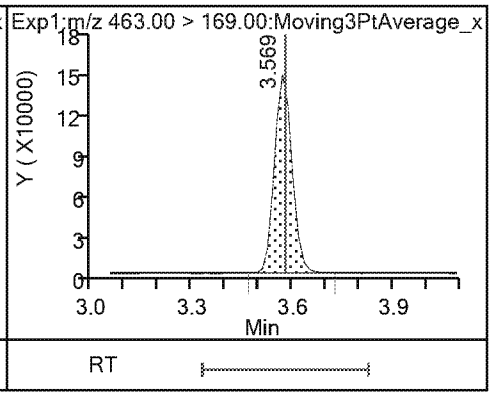
8 Perfluorooctanesulfonic acid



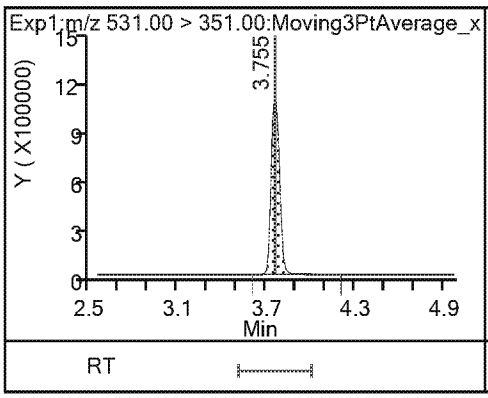
9 Perfluorononanoic acid



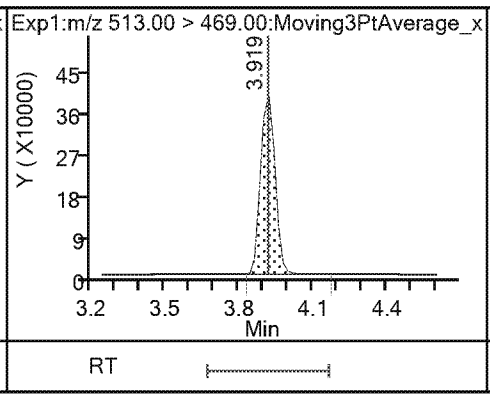
9 Perfluorononanoic acid



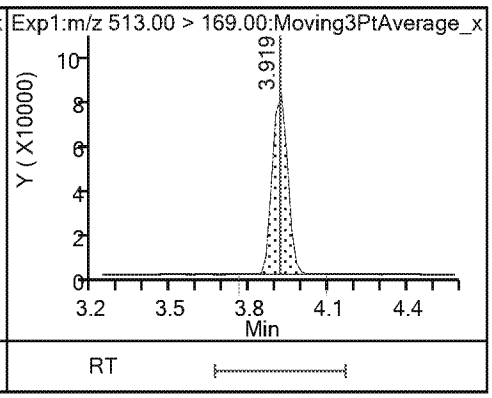
23 9-Chlorohexadecafluoro-3-oxanonane



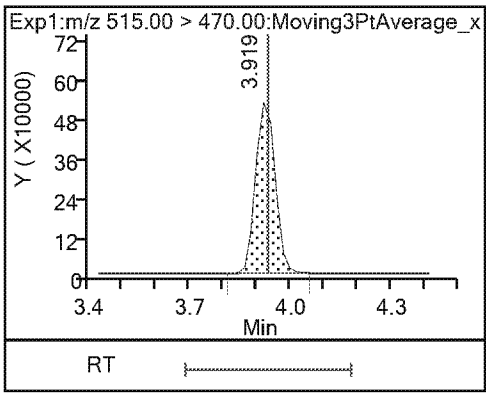
14 Perfluorodecanoic acid



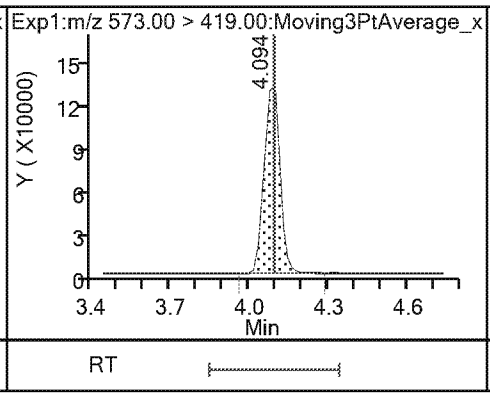
14 Perfluorodecanoic acid



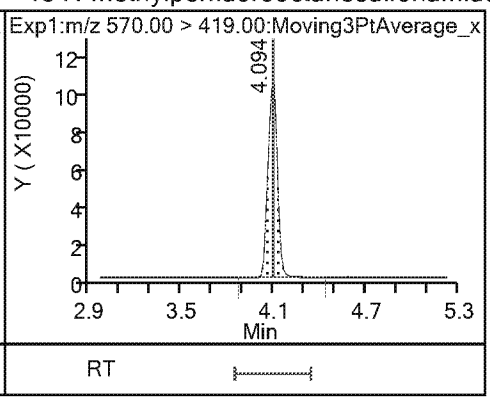
$ 10 13C2 PFDA



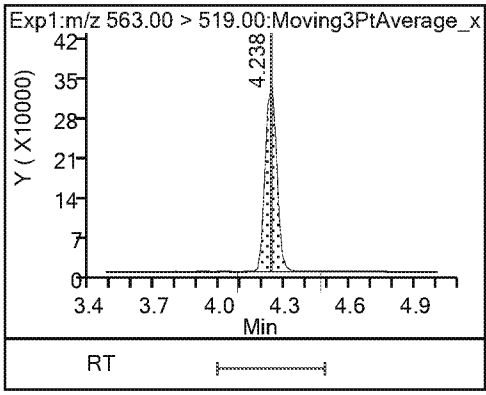
* 12 d3-NMeFOSAA



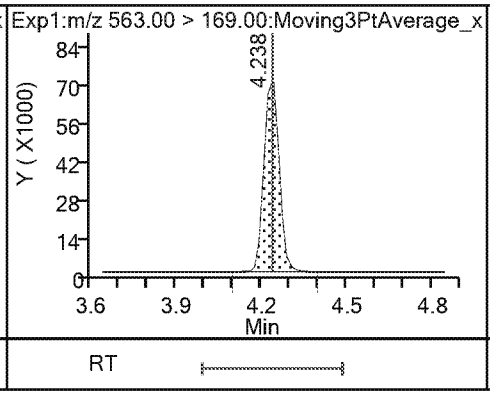
15 N-methylperfluorooctanesulfonamido



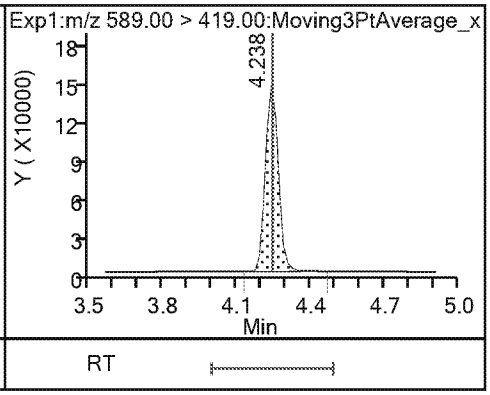
17 Perfluoroundecanoic acid



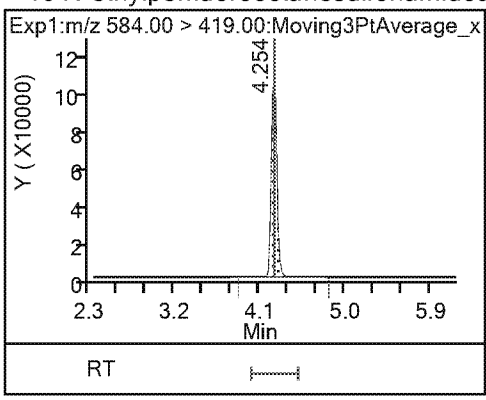
17 Perfluoroundecanoic acid



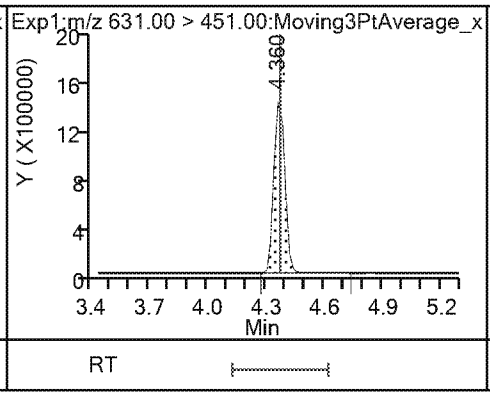
$ 11 d5-NEtFOSAA



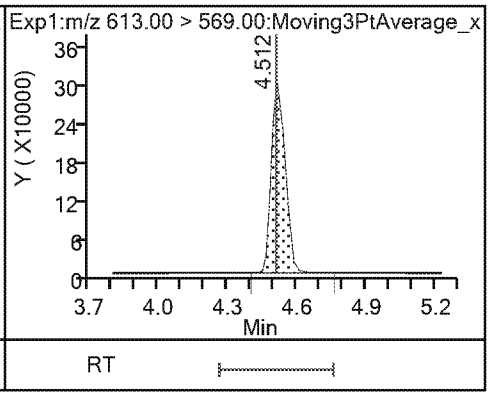
16 N-ethylperfluorooctanesulfonamidoa



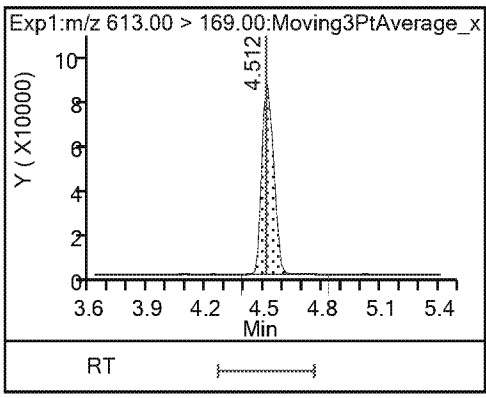
21 11-Chloroeicosafluoro-3-oxaundecan



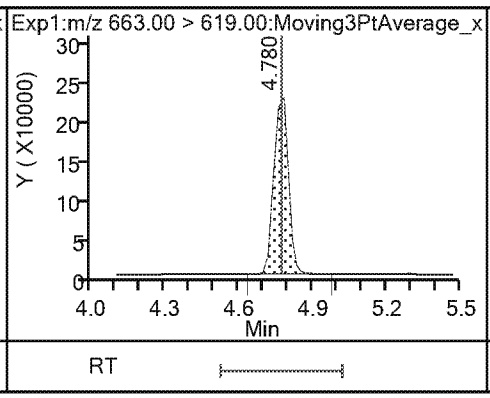
18 Perfluorododecanoic acid



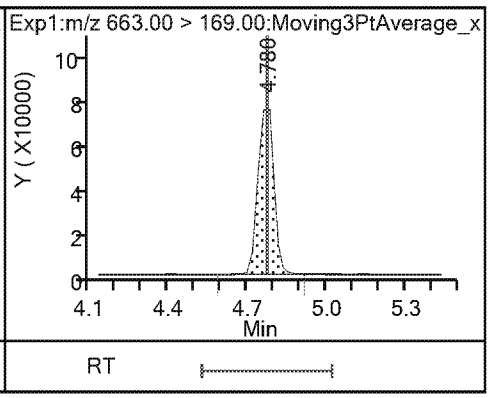
18 Perfluorododecanoic acid



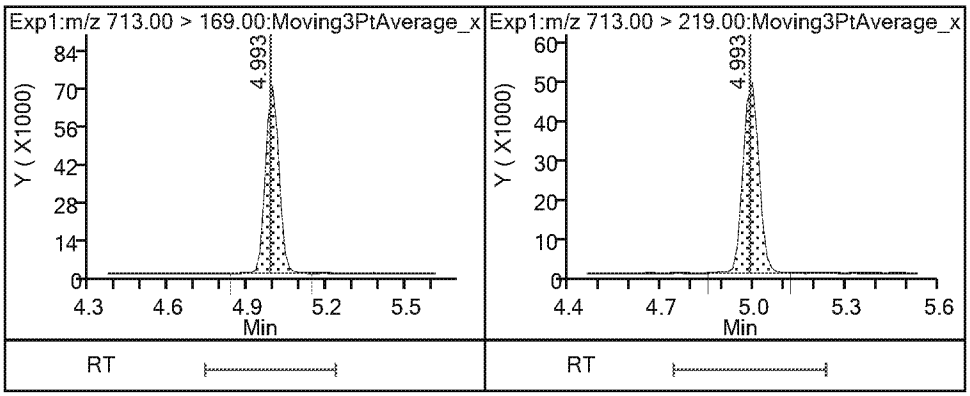
19 Perfluorotridecanoic acid



19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid 20 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

SDG No.:

Lab Sample ID: CCV 320-286192/8 Calibration Date: 04/04/2019 20:17

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_012.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	1.276		4.78	4.42	8.0	30.0
Perfluorohexanoic acid	Ave	1.113	1.093		4.91	5.00	-1.8	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2748		5.08	5.00	1.6	30.0
Perfluoroheptanoic acid	Ave	1.060	1.068		5.04	5.00	0.8	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.548		4.92	4.55	8.1	30.0
DONA	Ave	2.887	2.958		4.83	4.71	2.5	30.0
Perfluorooctanoic acid	Ave	1.014	1.041		5.13	5.00	2.6	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.079		4.74	4.64	2.1	30.0
Perfluorononanoic acid	Ave	0.7390	0.7410		5.01	5.00	0.3	30.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	Ave	1.700	1.842		5.05	4.66	8.4	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6009		5.14	5.00	2.7	30.0
N-methylperfluorooctanesulfo namidoacetic acid	Ave	0.9362	0.9363		5.00	5.00	0.0	30.0
N-ethylperfluorooctanesulfon amidoacetic acid	Ave	0.9078	0.8885		4.89	5.00	-2.1	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4400		4.95	5.00	-1.0	30.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	Ave	2.131	2.272		5.02	4.71	6.6	30.0
Perfluorododecanoic acid	Ave	0.4456	0.4088		4.59	5.00	-8.3	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3252		4.71	5.00	-5.8	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0868		4.89	5.00	-2.3	30.0
13C2 PFHxA	Ave	1.166	1.155		2.48	2.50	-0.9	30.0
13C3 HFPO-DA	Ave	0.0524	0.0555		2.65	2.50	6.0	30.0
13C2 PFDA	Ave	0.6210	0.6171		2.48	2.50	-0.6	30.0
d5-NEtFOSAA	Ave	1.022	1.064		2.60	2.50	4.1	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_012.d
Lims ID: CCV L6
Client ID:
Sample Type: CCVIS
Inject. Date: 04-Apr-2019 20:17:09 ALS Bottle#: 31 Worklist Smp#: 8
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 11:24:44 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 10:54:26
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	6555452	4.78	Target=1.41	40056	
298.90 > 99.00	1.976	1.976	0.0	1.000	4451289		1.47(0.00-0.00)	1946	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.323	2.323	0.0	0.731	6368637	4.91	Target=10.46	1473	
313.00 > 119.00	2.323	2.323	0.0	0.731	588772		10.82(0.00-0.00)	677	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.348	0.0	1.000	3364774	2.48		7687	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.474	2.474	0.0	1.000	1600717	5.08		781	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.474	0.0	1.000	161660	2.65		882	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.775	2.775	0.0	1.000	6223503	5.04	Target=2.41	579	
363.00 > 169.00	2.775	2.775	0.0	1.000	2569794		2.42(0.00-0.00)	3959	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.775	2.775	0.0	1.000	8189000	4.92	Target=2.91	3941	
399.00 > 99.00	2.775	2.775	0.0	1.000	2743121		2.99(0.00-0.00)	985	
24 DONA									
377.00 > 251.00	2.816	2.816	0.0	1.000	16231195	4.83	Target=1.54	11782	
377.00 > 85.00	2.816	2.816	0.0	1.000	10189358		1.59(0.00-0.00)	583590	
* 5 13C2 PFOA									
415.00 > 370.00	3.176	3.176	0.0		2912806	2.50		7173	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.176	3.176	0.0	1.000	6065429	5.13	Target=1.70	758	
413.00 > 169.00	3.176	3.176	0.0	1.000	3491110		1.74(0.00-0.00)	3089	

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	3.545	0.0		2777861	2.39		5870	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.545	3.564	-0.019	1.000	5818567	4.74	Target=4.63	3458	
499.00 > 99.00	3.545	3.564	-0.019	1.000	1223831		4.75(0.00-0.00)	1174	
9 Perfluorononanoic acid									
463.00 > 419.00	3.560	3.560	0.0	1.000	4316725	5.01	Target=3.78	2453	
463.00 > 169.00	3.545	3.560	-0.015	0.996	1107210		3.90(0.00-0.00)	5285	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.733	3.733	0.0	1.000	9976377	5.05		11203	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.890	3.890	0.0	1.000	3500591	5.14	Target=4.93	1385	
513.00 > 169.00	3.890	3.890	0.0	1.000	693138		5.05(0.00-0.00)	2147	
$ 10 13C2 PFDA									
515.00 > 470.00	3.909	3.909	0.0	1.000	1797566	2.48		9120	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.068	4.068	0.0		433692	2.50		2789	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.068	4.068	0.0	1.000	812108	5.00		1977	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.219	4.219	0.0	1.000	2563239	4.95	Target=4.73	1136	
563.00 > 169.00	4.219	4.219	0.0	1.000	555012		4.62(0.00-0.00)	3472	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.219	4.219	0.0	1.037	461408	2.60		330	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.219	4.219	0.0	1.000	770650	4.89		4429	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.338	4.338	0.0	1.000	12439415	5.02		13126	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.493	4.493	0.0	1.000	2381544	4.59	Target=3.49	1570	
613.00 > 169.00	4.493	4.493	0.0	1.000	679817		3.50(0.00-0.00)	4454	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.736	4.736	0.0	1.000	1894667	4.71	Target=2.87	625	
663.00 > 169.00	4.736	4.736	0.0	1.000	653996		2.90(0.00-0.00)	3727	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.958	4.958	0.0	1.000	505379	4.89	Target=1.40	3551	
713.00 > 219.00	4.958	4.958	0.0	1.000	361763		1.40(0.00-0.00)	2360	

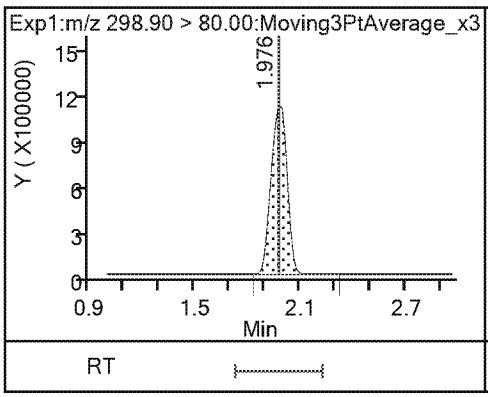
Reagents:

LC537_NC_L6_00003 Amount Added: 1.00 Units: mL

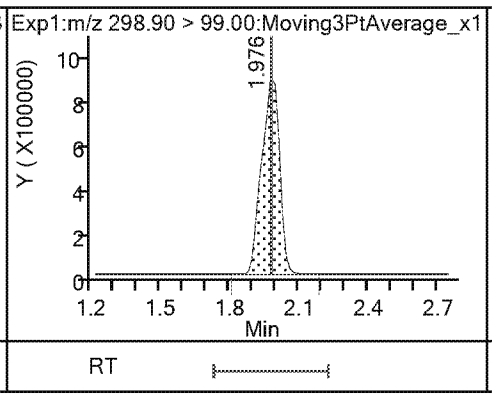
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_012.d
Injection Date: 04-Apr-2019 20:17:09 Instrument ID: A8_N
Lims ID: CCV L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 8
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

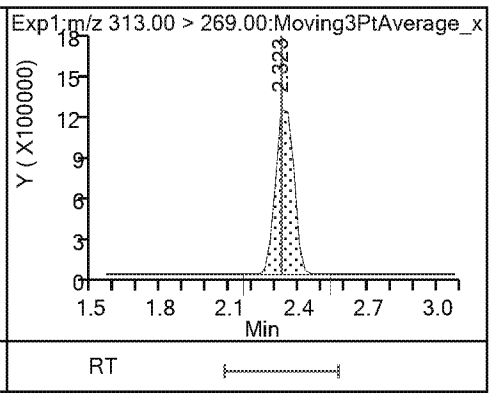
1 Perfluorobutanesulfonic acid



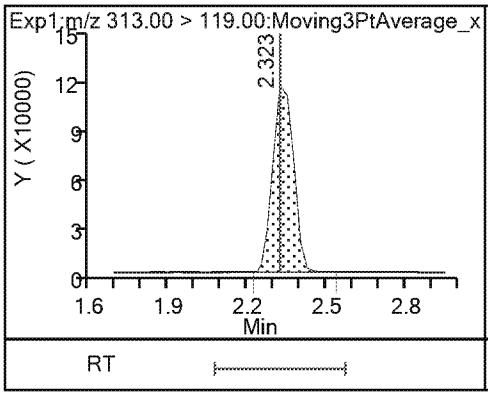
1 Perfluorobutanesulfonic acid



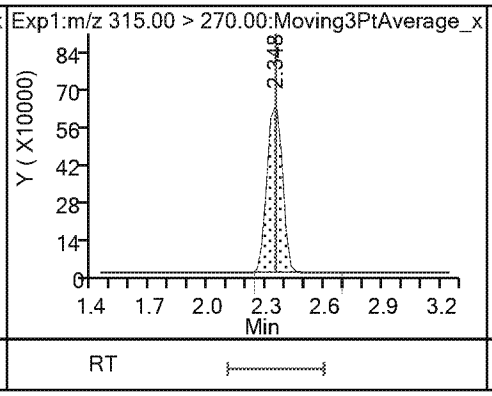
13 Perfluorohexanoic acid



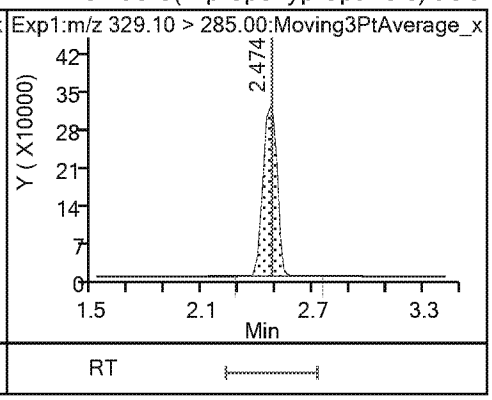
13 Perfluorohexanoic acid



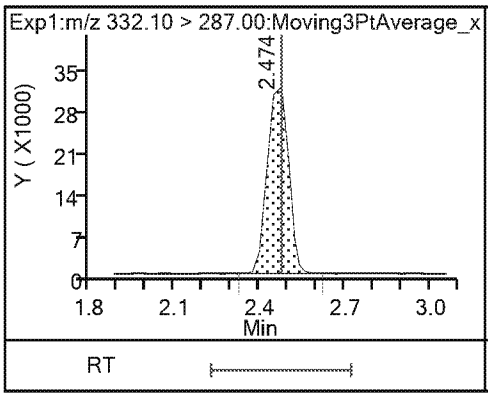
$ 2 13C2 PFHxA



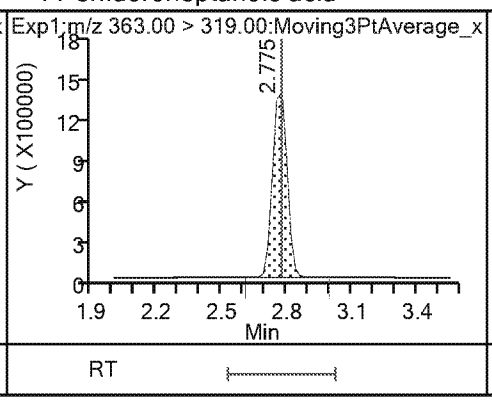
22 Perfluoro(2-propoxypropanoic) acid



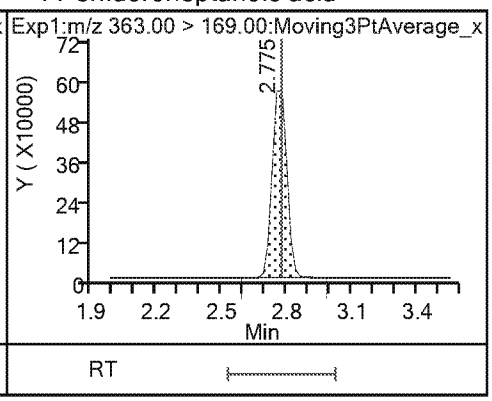
$ 25 13C3 HFPO-DA



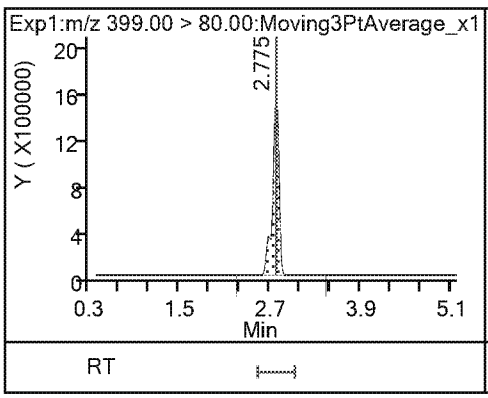
4 Perfluoroheptanoic acid



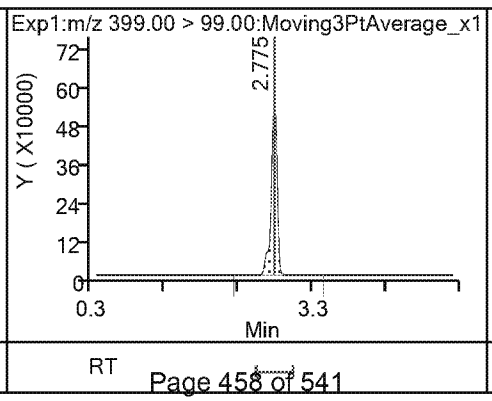
4 Perfluoroheptanoic acid



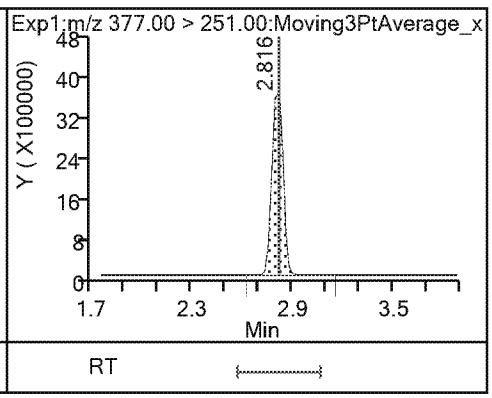
3 Perfluorohexanesulfonic acid



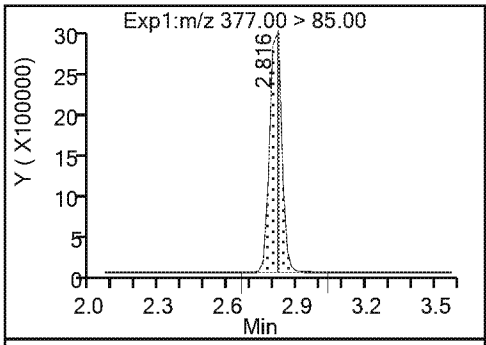
3 Perfluorohexanesulfonic acid



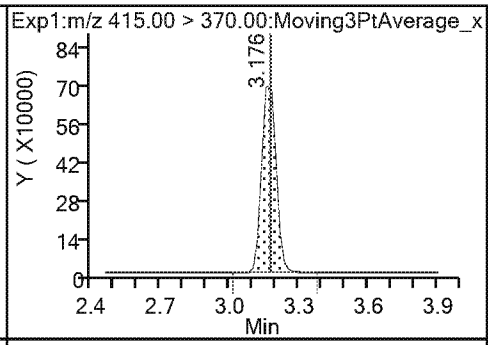
24 DONA



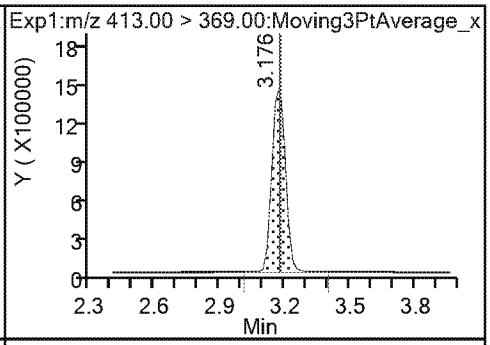
24 DONA



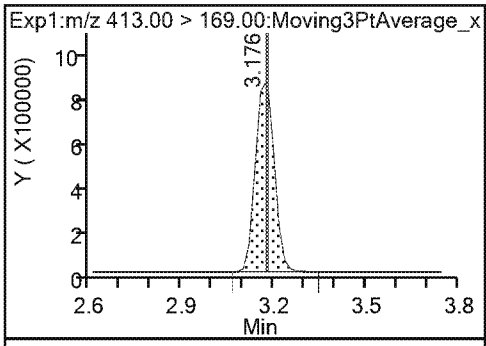
* 5 13C2 PFOA



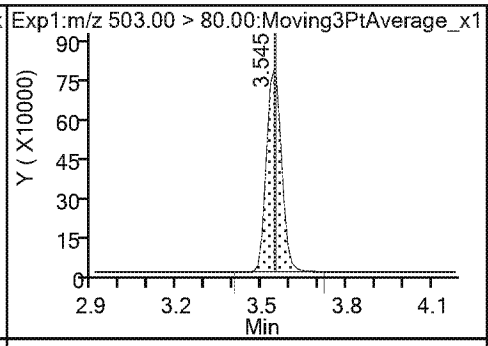
6 Perfluorooctanoic acid



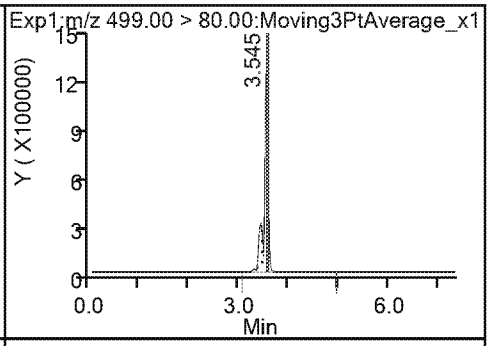
6 Perfluorooctanoic acid



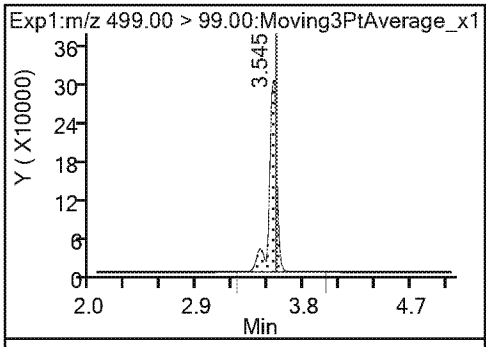
* 7 13C4 PFOS



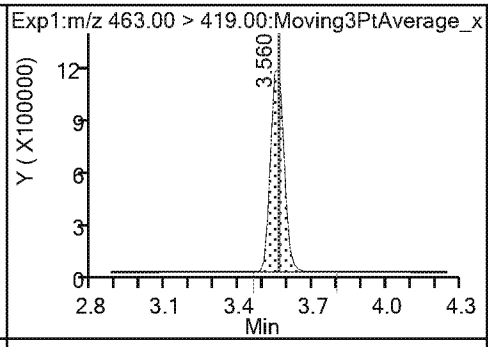
8 Perfluorooctanesulfonic acid



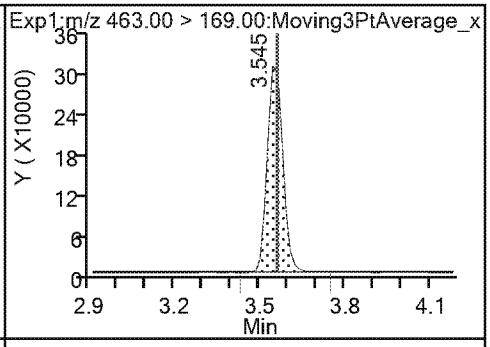
8 Perfluorooctanesulfonic acid



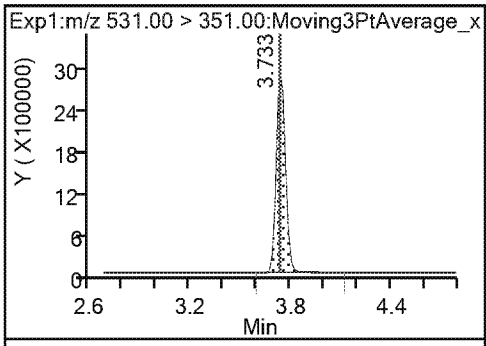
9 Perfluorononanoic acid



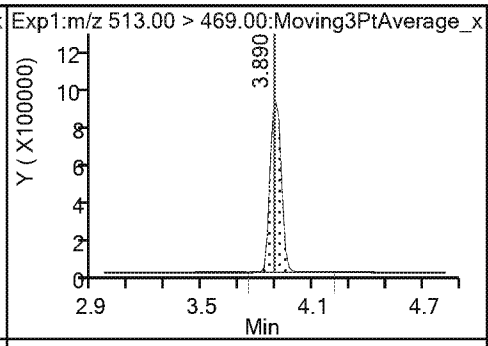
9 Perfluorononanoic acid



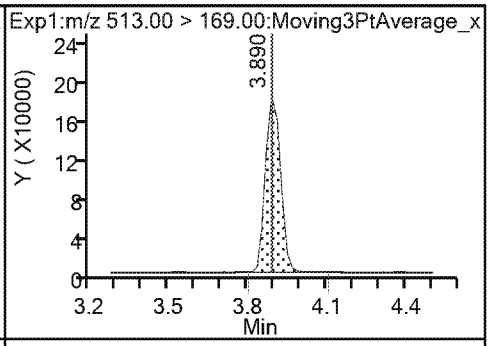
23 9-Chlorohexadecafluoro-3-oxanonane



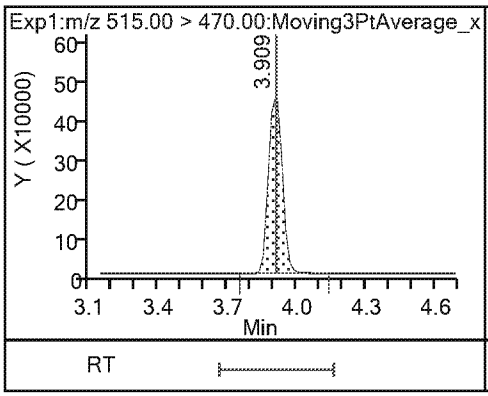
14 Perfluorodecanoic acid



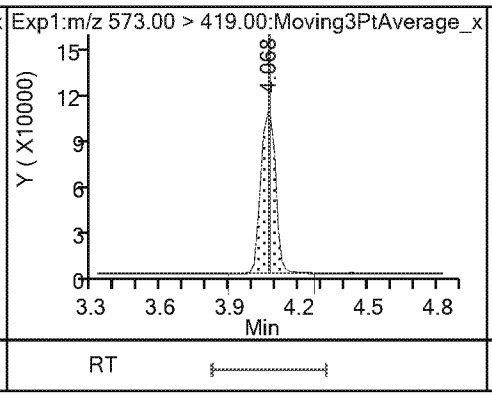
14 Perfluorodecanoic acid



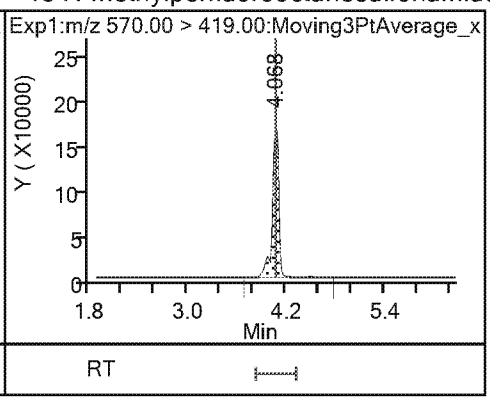
$ 10 13C2 PFDA



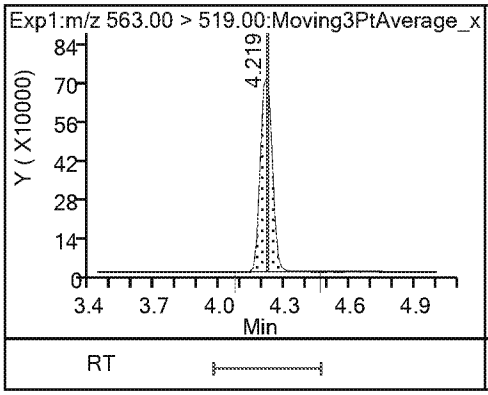
* 12 d3-NMeFOSAA



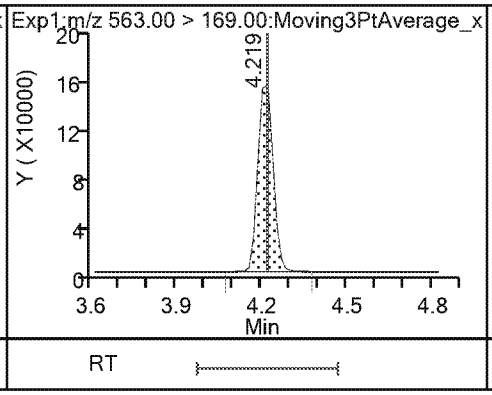
15 N-methylperfluorooctanesulfonamido



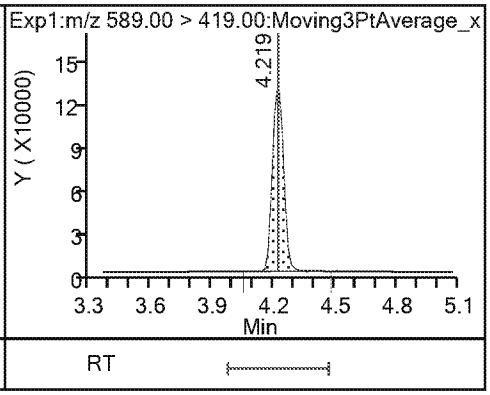
17 Perfluoroundecanoic acid



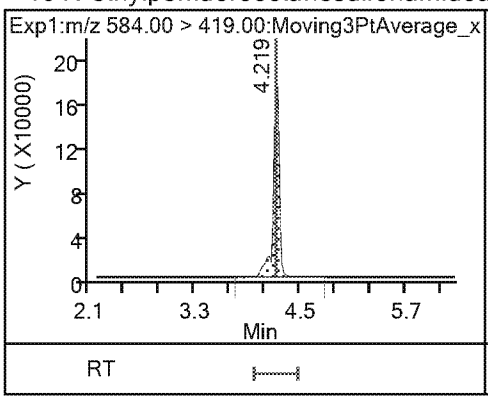
17 Perfluoroundecanoic acid



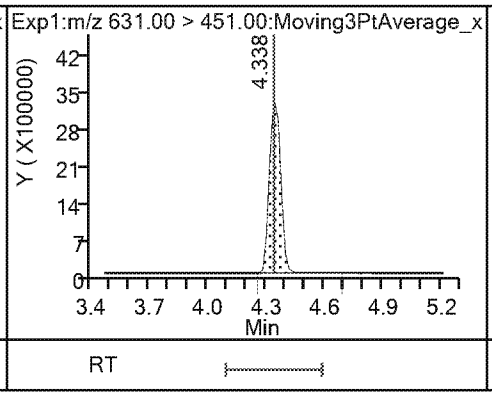
$ 11 d5-NEtFOSAA



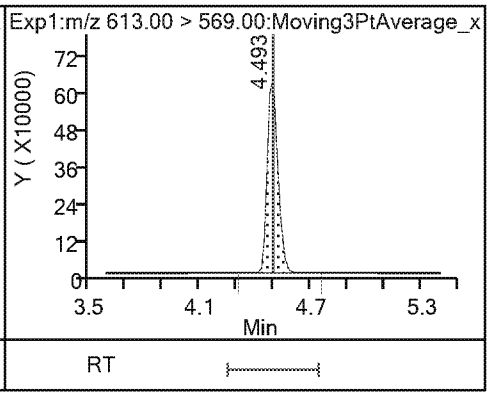
16 N-ethylperfluorooctanesulfonamidoa



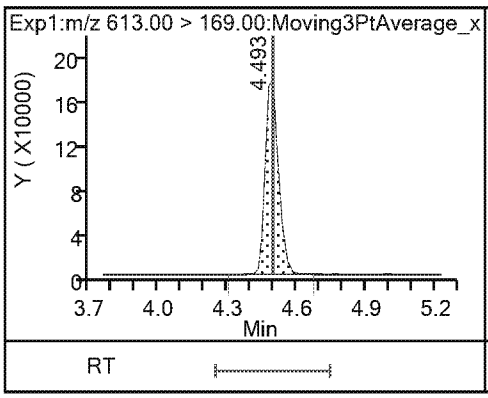
21 11-Chloroeicosafluoro-3-oxaundecan



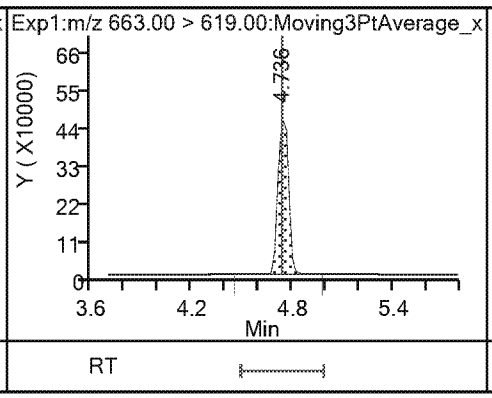
18 Perfluorododecanoic acid



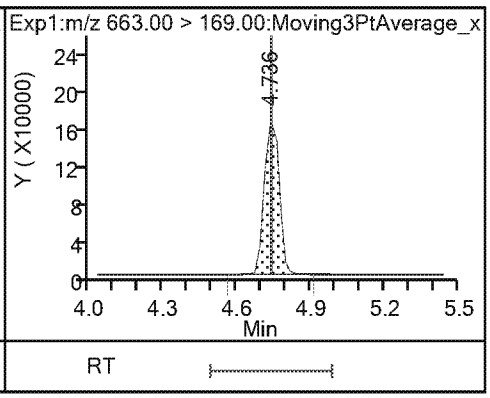
18 Perfluorododecanoic acid



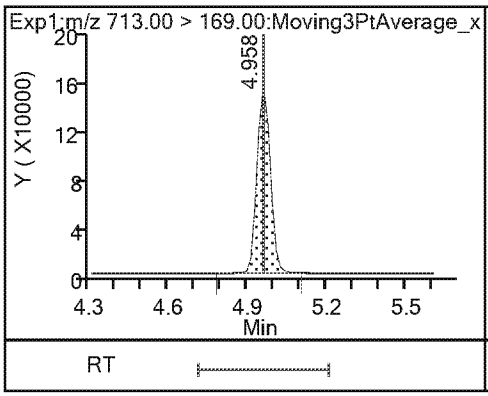
19 Perfluorotridecanoic acid



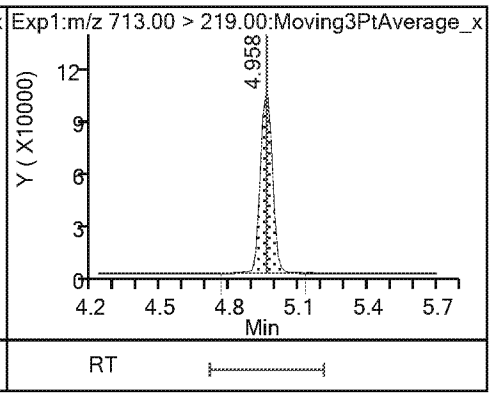
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

SDG No.:

Lab Sample ID: CCV 320-286190/20 Calibration Date: 04/04/2019 22:10

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_024.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	1.227		0.918	0.884	3.9	30.0
Perfluorohexanoic acid	Ave	1.113	1.060		0.952	1.00	-4.8	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2665		0.985	1.00	-1.5	30.0
Perfluoroheptanoic acid	Ave	1.060	1.066		1.01	1.00	0.6	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.452		0.922	0.910	1.3	30.0
DONA	Ave	2.887	2.946		0.961	0.942	2.1	30.0
Perfluorooctanoic acid	Ave	1.014	1.023		1.01	1.00	0.9	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.044		0.917	0.928	-1.1	30.0
Perfluorononanoic acid	Ave	0.7390	0.7228		0.978	1.00	-2.2	30.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	Ave	1.700	1.767		0.969	0.932	3.9	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6043		1.03	1.00	3.3	30.0
N-methylperfluorooctanesulfonamidoacetic acid	Ave	0.9362	0.9202		0.983	1.00	-1.7	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4316		0.971	1.00	-2.9	30.0
N-ethylperfluorooctanesulfonamidoacetic acid	Ave	0.9078	0.8858		0.976	1.00	-2.4	30.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	Ave	2.131	2.151		0.951	0.942	0.9	30.0
Perfluorododecanoic acid	Ave	0.4456	0.3980		0.893	1.00	-10.7	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3236		0.938	1.00	-6.2	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0837		0.942	1.00	-5.8	30.0
13C2 PFHxA	Ave	1.166	1.127		2.42	2.50	-3.3	30.0
13C3 HFPO-DA	Ave	0.0524	0.0530		2.53	2.50	1.3	30.0
13C2 PFDA	Ave	0.6210	0.6232		2.51	2.50	0.4	30.0
d5-NEtFOSAA	Ave	1.022	1.104		2.70	2.50	8.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

SDG No.:

Lab Sample ID: CCV 320-286192/20 Calibration Date: 04/04/2019 22:10

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_024.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	1.227		0.918	0.884	3.9	30.0
Perfluorohexanoic acid	Ave	1.113	1.060		0.952	1.00	-4.8	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2665		0.985	1.00	-1.5	30.0
Perfluoroheptanoic acid	Ave	1.060	1.066		1.01	1.00	0.6	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.452		0.922	0.910	1.3	30.0
DONA	Ave	2.887	2.946		0.961	0.942	2.1	30.0
Perfluorooctanoic acid	Ave	1.014	1.023		1.01	1.00	0.9	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.044		0.917	0.928	-1.1	30.0
Perfluorononanoic acid	Ave	0.7390	0.7228		0.978	1.00	-2.2	30.0
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonate	Ave	1.700	1.767		0.969	0.932	3.9	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6043		1.03	1.00	3.3	30.0
N-methylperfluorooctanesulfonamidoacetic acid	Ave	0.9362	0.9202		0.983	1.00	-1.7	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4316		0.971	1.00	-2.9	30.0
N-ethylperfluorooctanesulfonamidoacetic acid	Ave	0.9078	0.8858		0.976	1.00	-2.4	30.0
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	Ave	2.131	2.151		0.951	0.942	0.9	30.0
Perfluorododecanoic acid	Ave	0.4456	0.3980		0.893	1.00	-10.7	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3236		0.938	1.00	-6.2	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0837		0.942	1.00	-5.8	30.0
13C2 PFHxA	Ave	1.166	1.127		2.42	2.50	-3.3	30.0
13C3 HFPO-DA	Ave	0.0524	0.0530		2.53	2.50	1.3	30.0
13C2 PFDA	Ave	0.6210	0.6232		2.51	2.50	0.4	30.0
d5-NEtFOSAA	Ave	1.022	1.104		2.70	2.50	8.1	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_024.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 04-Apr-2019 22:10:56 ALS Bottle#: 30 Worklist Smp#: 20
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 13:46:15 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 13:41:00
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	1301380	0.9181	Target=1.41	9149	
298.90 > 99.00	1.976	1.976	0.0	1.000	863536		1.51(0.00-0.00)	459	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.322	2.322	0.0	0.735	1275121	0.9522	Target=10.46	333	
313.00 > 119.00	2.322	2.322	0.0	0.735	120901		10.55(0.00-0.00)	151	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.322	2.322	0.0	1.000	3390495	2.42		6233	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.473	2.473	0.0	1.000	320641	0.9852		153	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	159524	2.53		973	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.757	2.757	0.0	1.000	1283205	1.01	Target=2.41	127	
363.00 > 169.00	2.757	2.757	0.0	1.000	522016		2.46(0.00-0.00)	1091	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.778	2.778	0.0	1.000	1585706	0.9222	Target=2.91	1997	
399.00 > 99.00	2.778	2.778	0.0	1.000	565346		2.80(0.00-0.00)	237	
24 DONA									
377.00 > 251.00	2.798	2.798	0.0	1.000	3339393	0.9614	Target=1.54	4889	
377.00 > 85.00	2.798	2.798	0.0	1.000	2009919		1.66(0.00-0.00)	165318	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.158	0.0		3008213	2.50		8991	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.158	3.158	0.0	1.000	1231427	1.01	Target=1.70	160	
413.00 > 169.00	3.158	3.158	0.0	1.000	696085		1.77(0.00-0.00)	885	

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		2867989	2.39		10340	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	869673	0.9780	Target=3.78	503	
463.00 > 169.00	3.549	3.549	0.0	1.000	225319		3.86(0.00-0.00)	2242	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.534	3.564	-0.030	1.000	1162864	0.9174	Target=4.63	2348	
499.00 > 99.00	3.534	3.564	-0.030	1.000	258737		4.49(0.00-0.00)	359	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.735	3.735	0.0	1.000	1975720	0.9687		3296	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.892	3.892	0.0	1.000	727088	1.03	Target=4.93	328	
513.00 > 169.00	3.892	3.892	0.0	1.000	139702		5.20(0.00-0.00)	506	
$ 10 13C2 PFDA									
515.00 > 470.00	3.892	3.892	0.0	1.000	1874663	2.51		10267	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.048	4.048	0.0		446828	2.50		2243	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.070	4.070	0.0	1.005	164475	0.9830		1565	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.204	4.204	0.0	1.000	519381	0.9710	Target=4.73	250	
563.00 > 169.00	4.204	4.204	0.0	1.000	106130		4.89(0.00-0.00)	1015	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.220	4.220	0.0	1.043	493444	2.70		332	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.220	4.220	0.0	1.000	158326	0.9758		396	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.339	4.339	0.0	1.000	2430968	0.9508		5802	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.479	4.479	0.0	1.000	478919	0.8932	Target=3.49	382	
613.00 > 169.00	4.479	4.479	0.0	1.000	133467		3.59(0.00-0.00)	1758	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.738	4.738	0.0	1.000	389434	0.9377	Target=2.87	136	
663.00 > 169.00	4.738	4.738	0.0	1.000	128905		3.02(0.00-0.00)	1030	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.960	4.960	0.0	1.000	100661	0.9423	Target=1.40	1537	
713.00 > 219.00	4.944	4.960	-0.016	0.997	73316		1.37(0.00-0.00)	649	

Reagents:

LC537_NC_L4_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_024.d
Lims ID: CCV L4
Client ID:
Sample Type: CCVIS
Inject. Date: 04-Apr-2019 22:10:56 ALS Bottle#: 30 Worklist Smp#: 20
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 13:46:15 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 13:41:00
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	1301380	0.9181	Target=1.41	9149	
298.90 > 99.00	1.976	1.976	0.0	1.000	863536		1.51(0.00-0.00)	459	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.322	2.322	0.0	0.735	1275121	0.9522	Target=10.46	333	
313.00 > 119.00	2.322	2.322	0.0	0.735	120901		10.55(0.00-0.00)	151	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.322	2.322	0.0	1.000	3390495	2.42		6233	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.473	2.473	0.0	1.000	320641	0.9852		153	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	159524	2.53		973	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.757	2.757	0.0	1.000	1283205	1.01	Target=2.41	127	
363.00 > 169.00	2.757	2.757	0.0	1.000	522016		2.46(0.00-0.00)	1091	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.778	2.778	0.0	1.000	1585706	0.9222	Target=2.91	1997	
399.00 > 99.00	2.778	2.778	0.0	1.000	565346		2.80(0.00-0.00)	237	
24 DONA									
377.00 > 251.00	2.798	2.798	0.0	1.000	3339393	0.9614	Target=1.54	4889	
377.00 > 85.00	2.798	2.798	0.0	1.000	2009919		1.66(0.00-0.00)	165318	
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.158	0.0		3008213	2.50		8991	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.158	3.158	0.0	1.000	1231427	1.01	Target=1.70	160	
413.00 > 169.00	3.158	3.158	0.0	1.000	696085		1.77(0.00-0.00)	885	

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		2867989	2.39		10340	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	869673	0.9780	Target=3.78	503	
463.00 > 169.00	3.549	3.549	0.0	1.000	225319		3.86(0.00-0.00)	2242	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.534	3.564	-0.030	1.000	1162864	0.9174	Target=4.63	2348	
499.00 > 99.00	3.534	3.564	-0.030	1.000	258737		4.49(0.00-0.00)	359	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.735	3.735	0.0	1.000	1975720	0.9687		3296	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.892	3.892	0.0	1.000	727088	1.03	Target=4.93	328	
513.00 > 169.00	3.892	3.892	0.0	1.000	139702		5.20(0.00-0.00)	506	
$ 10 13C2 PFDA									
515.00 > 470.00	3.892	3.892	0.0	1.000	1874663	2.51		10267	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.048	4.048	0.0		446828	2.50		2243	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.070	4.070	0.0	1.005	164475	0.9830		1565	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.204	4.204	0.0	1.000	519381	0.9710	Target=4.73	250	
563.00 > 169.00	4.204	4.204	0.0	1.000	106130		4.89(0.00-0.00)	1015	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.220	4.220	0.0	1.043	493444	2.70		332	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.220	4.220	0.0	1.000	158326	0.9758		396	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.339	4.339	0.0	1.000	2430968	0.9508		5802	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.479	4.479	0.0	1.000	478919	0.8932	Target=3.49	382	
613.00 > 169.00	4.479	4.479	0.0	1.000	133467		3.59(0.00-0.00)	1758	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.738	4.738	0.0	1.000	389434	0.9377	Target=2.87	136	
663.00 > 169.00	4.738	4.738	0.0	1.000	128905		3.02(0.00-0.00)	1030	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.960	4.960	0.0	1.000	100661	0.9423	Target=1.40	1537	
713.00 > 219.00	4.944	4.960	-0.016	0.997	73316		1.37(0.00-0.00)	649	

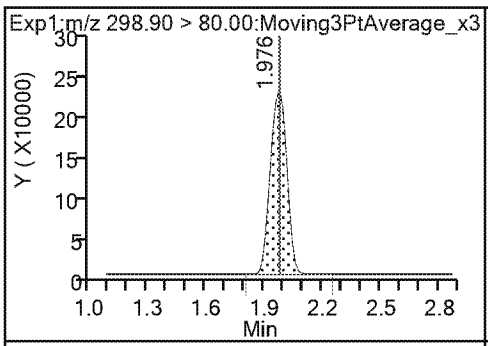
Reagents:

LC537_NC_L4_00003 Amount Added: 1.00 Units: mL

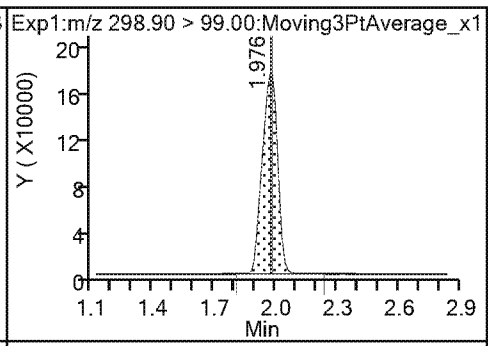
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_024.d
Injection Date: 04-Apr-2019 22:10:56 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 30 Worklist Smp#: 20
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

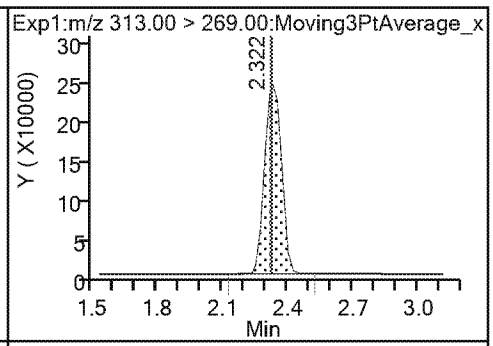
1 Perfluorobutanesulfonic acid



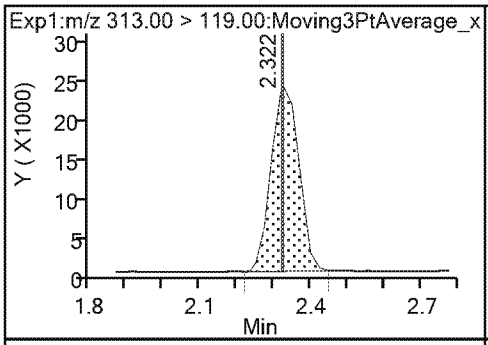
1 Perfluorobutanesulfonic acid



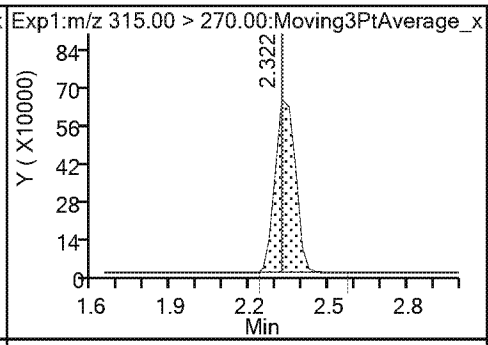
13 Perfluorohexanoic acid



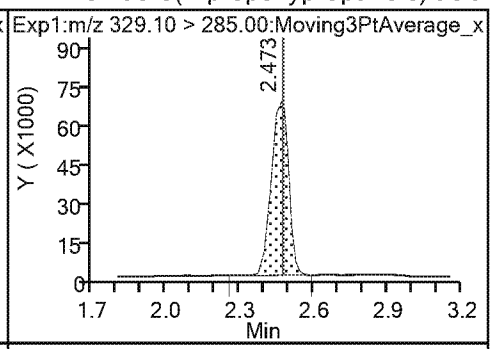
13 Perfluorohexanoic acid



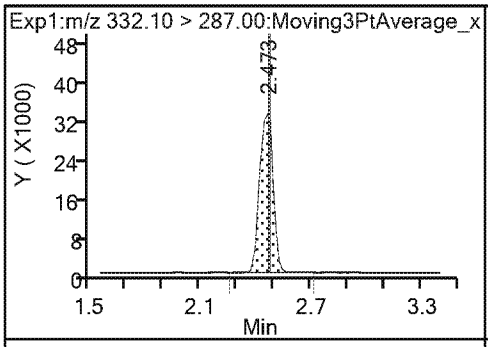
$ 2 13C2 PFHxA



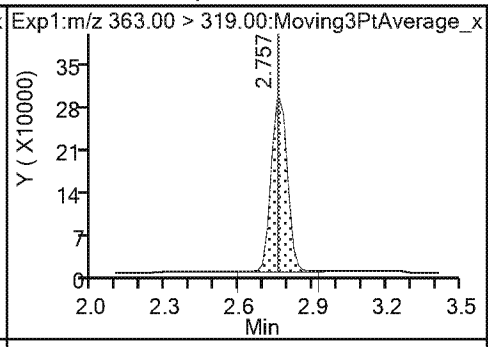
22 Perfluoro(2-propoxypropanoic) acid



$ 25 13C3 HFPO-DA



4 Perfluoroheptanoic acid



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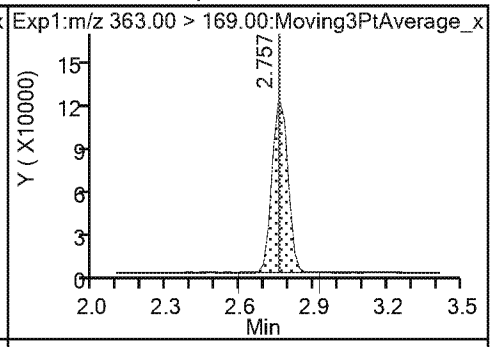
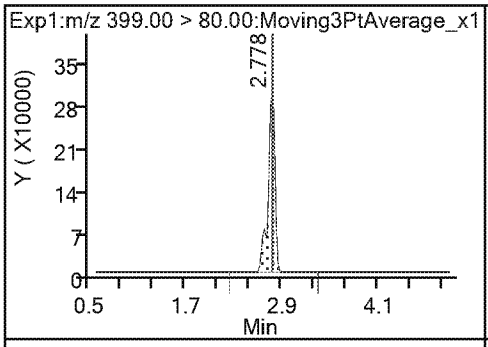
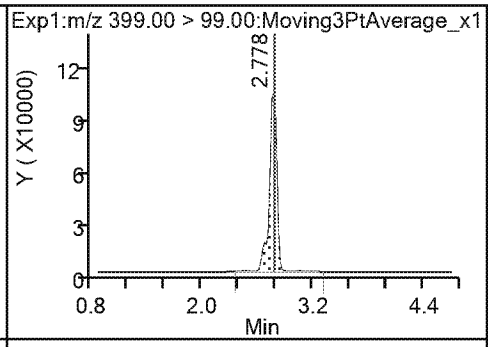


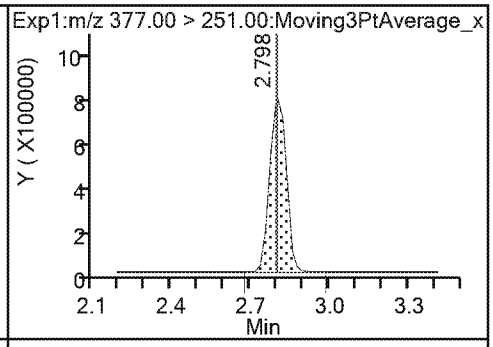
3 Perfluorohexanesulfonic acid



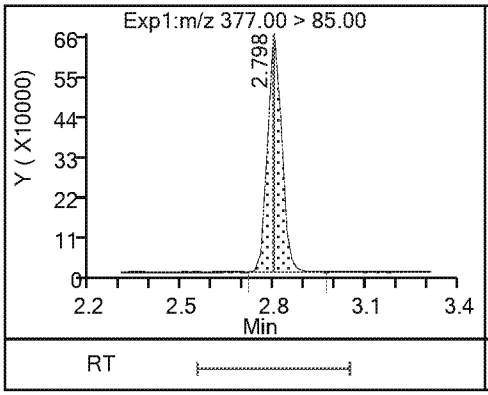
3 Perfluorohexanesulfonic acid



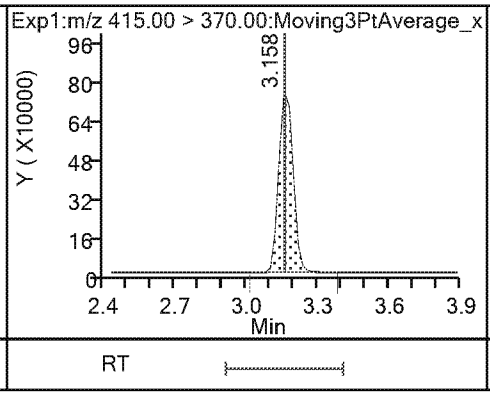
24 DONA



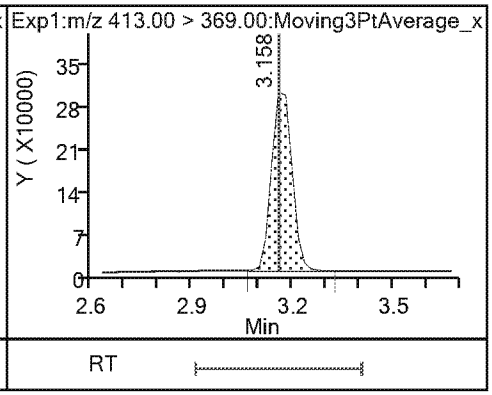
24 DONA



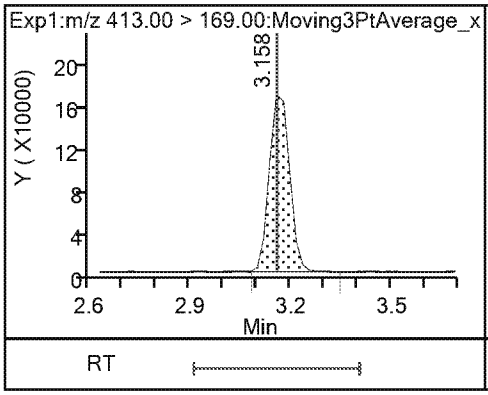
* 5 13C2 PFOA



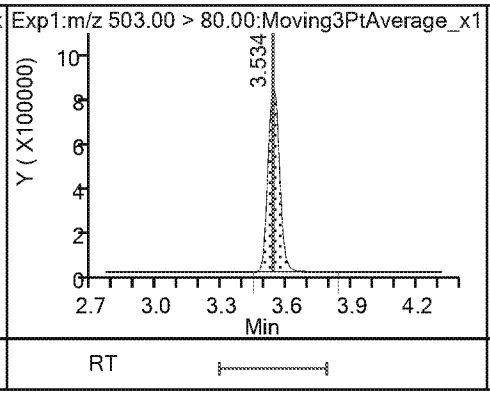
6 Perfluorooctanoic acid



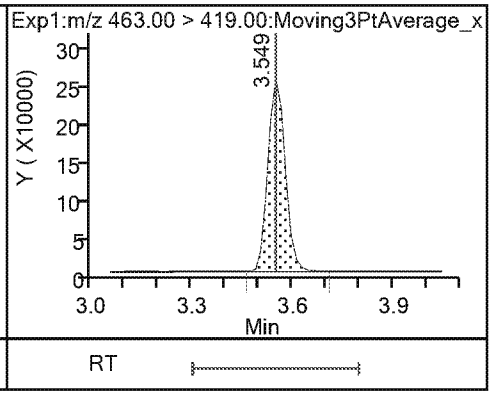
6 Perfluorooctanoic acid



* 7 13C4 PFOS



9 Perfluorononanoic acid



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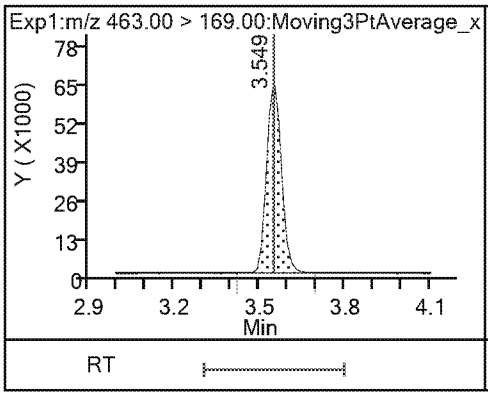
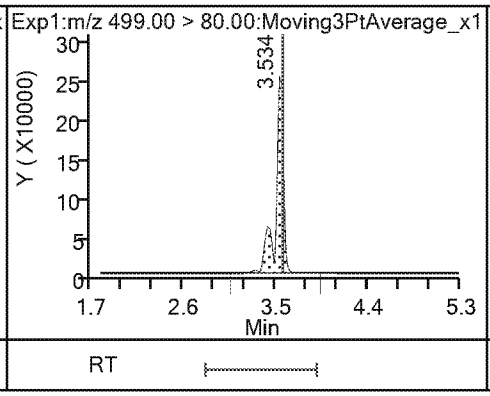


8 Perfluorooctanesulfonic acid



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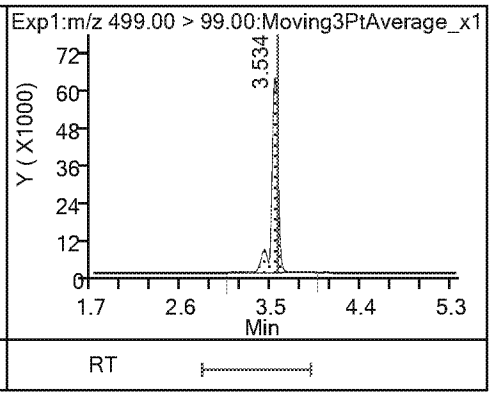
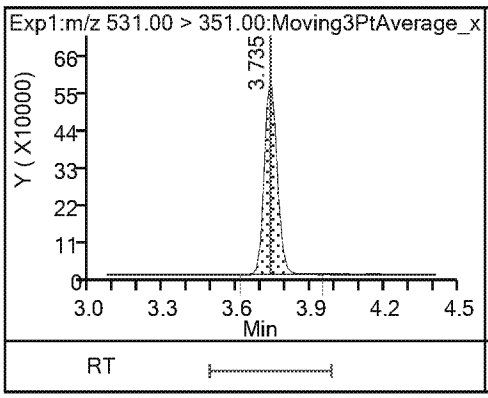
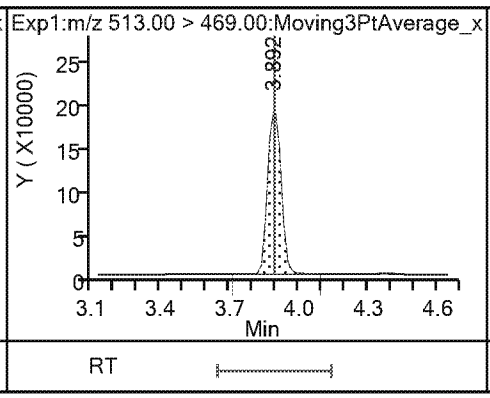


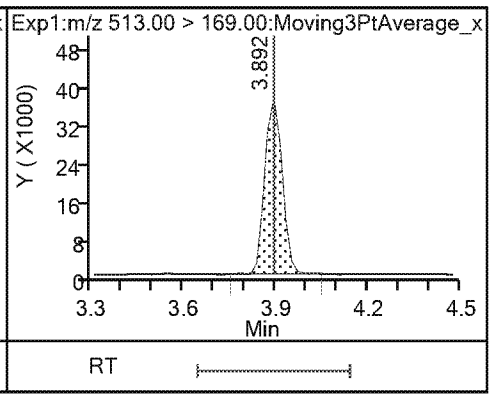
23 9-Chlorohexadecafluoro-3-oxanonane



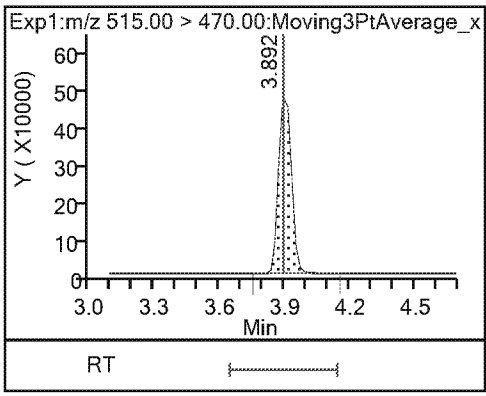
14 Perfluorodecanoic acid



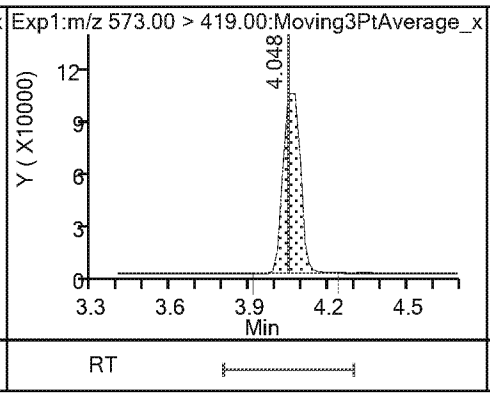
14 Perfluorodecanoic acid



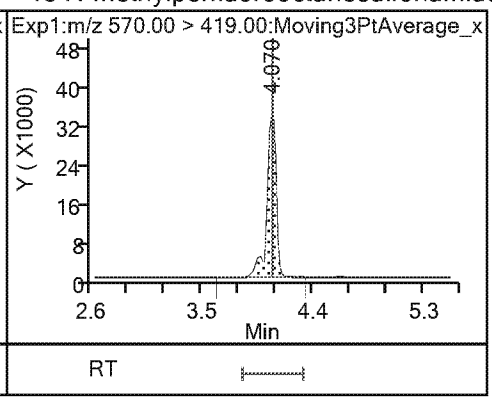
$ 10 13C2 PFDA



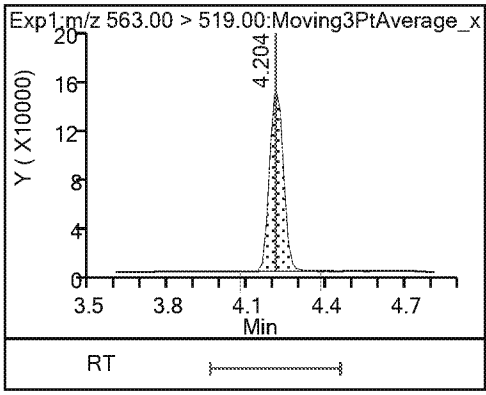
* 12 d3-NMeFOSAA



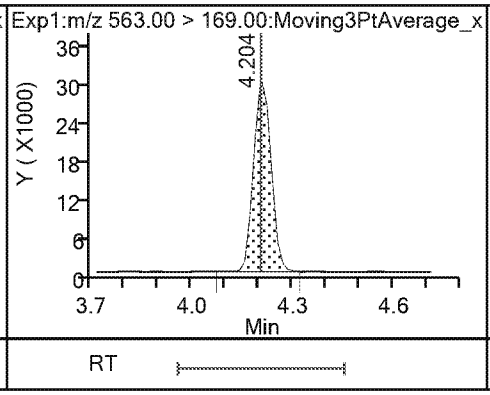
15 N-methylperfluorooctanesulfonamido



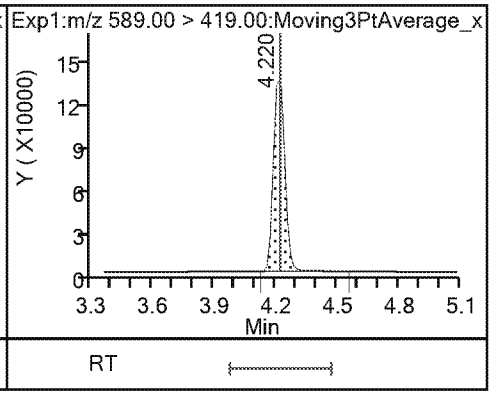
17 Perfluoroundecanoic acid



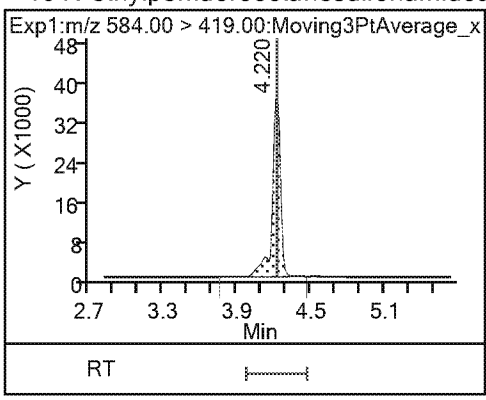
17 Perfluoroundecanoic acid



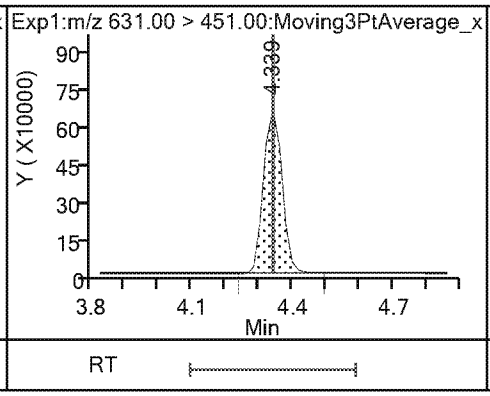
$ 11 d5-NEtFOSAA



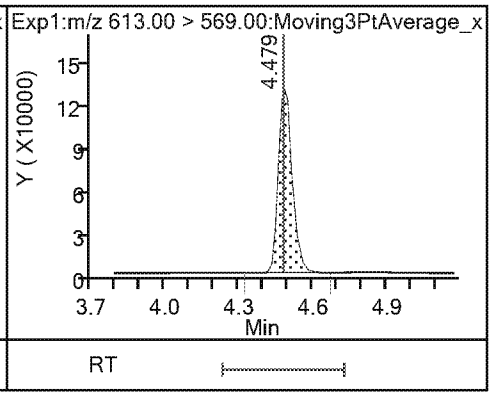
16 N-ethylperfluorooctanesulfonamidoa



21 11-Chloroeicosafluoro-3-oxaundecan



18 Perfluorododecanoic acid



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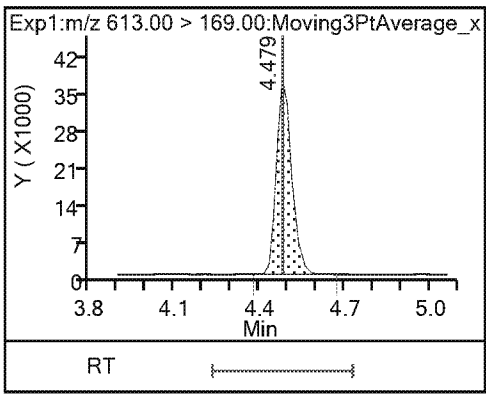
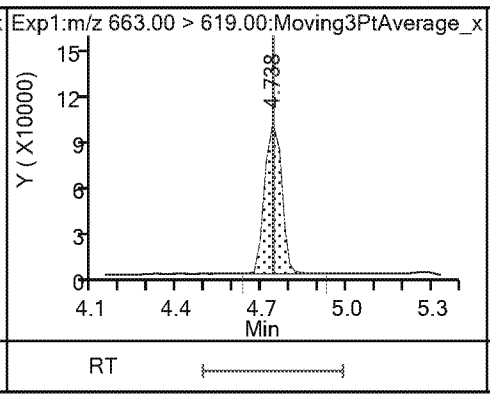
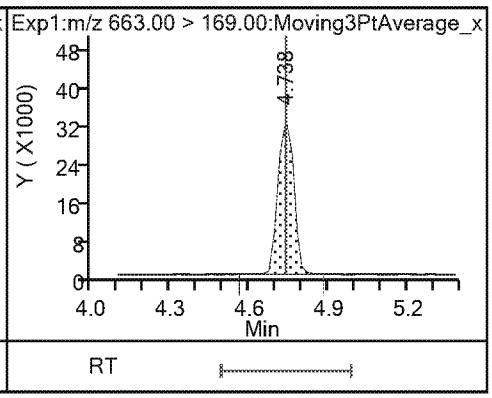


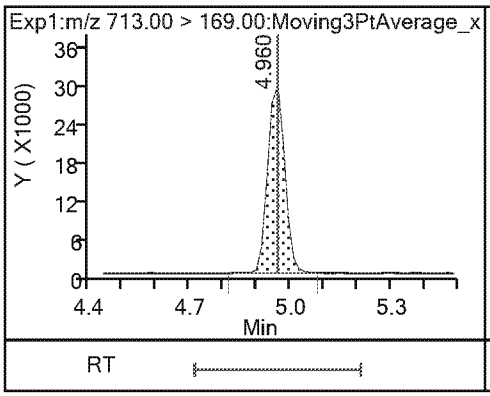
19 Perfluorotridecanoic acid



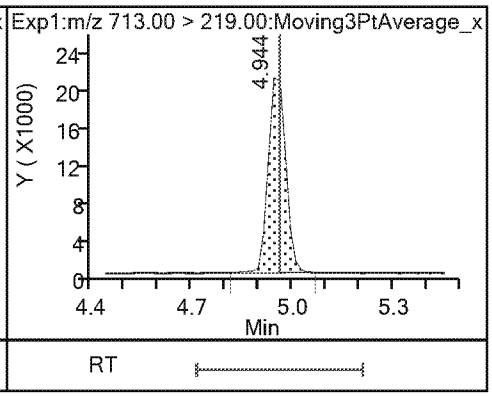
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



Eurofins TestAmerica, Sacramento

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Lims ID: CCV L4
Client ID:
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Injection Vol: 10.0 ul Dil. Factor: 1.0000
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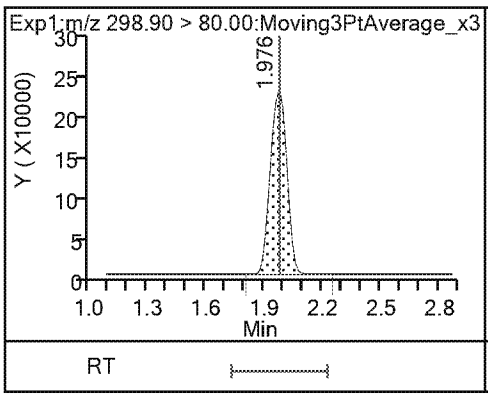
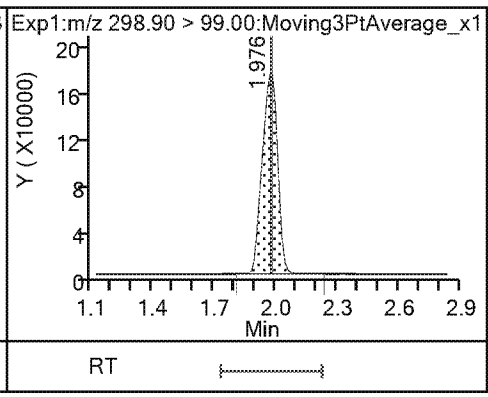
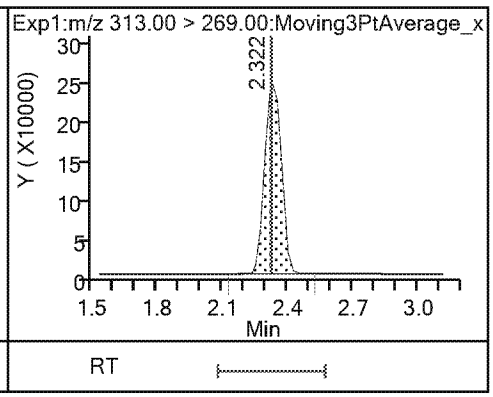
1 Perfluorobutanesulfonic acid



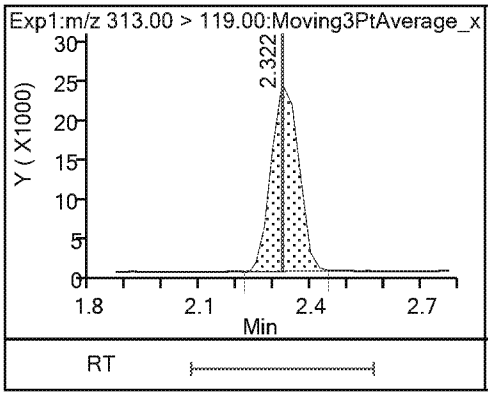
1 Perfluorobutanesulfonic acid



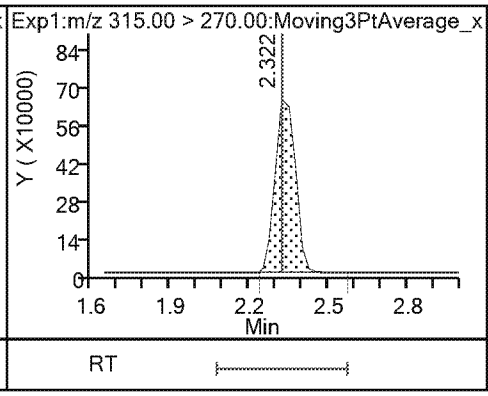
13 Perfluorohexanoic acid



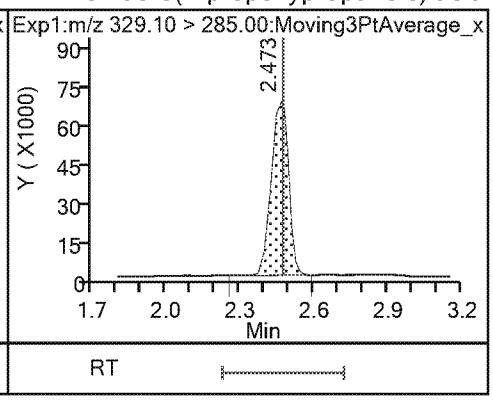
13 Perfluorohexanoic acid



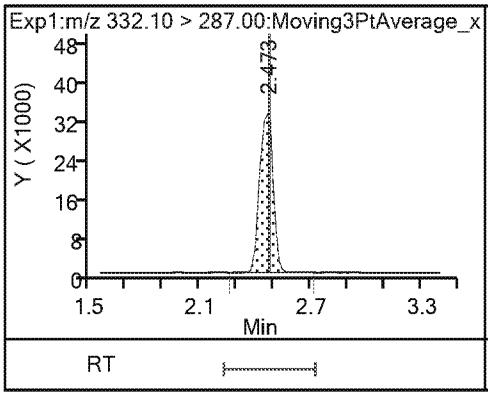
$ 2 13C2 PFHxA



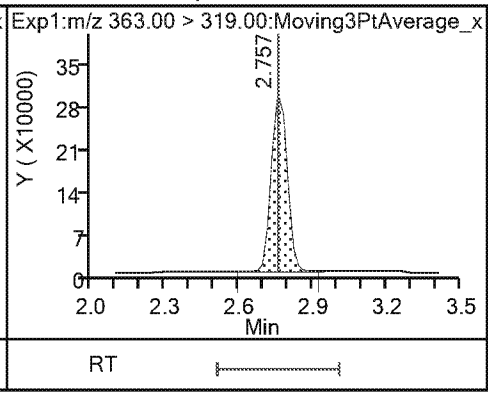
22 Perfluoro(2-propoxypropanoic) acid



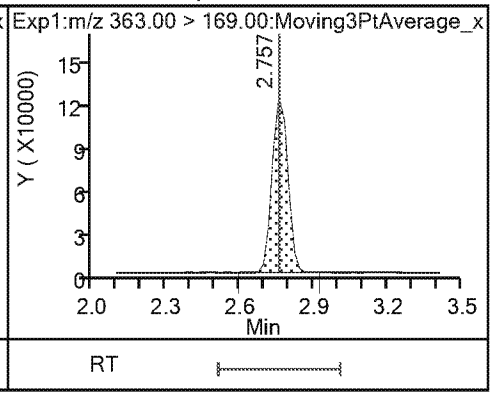
$ 25 13C3 HFPO-DA



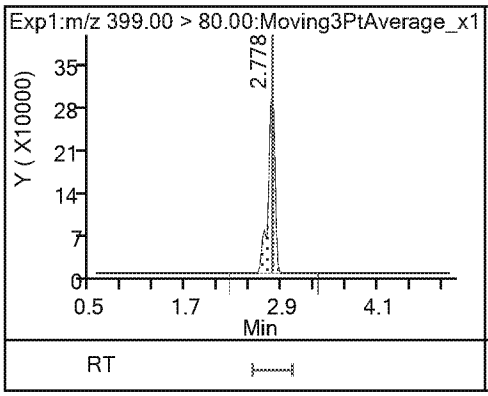
4 Perfluoroheptanoic acid



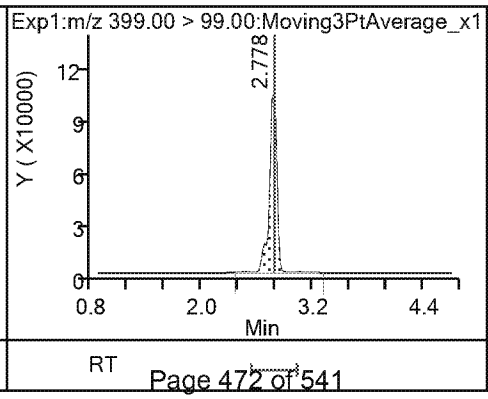
4 Perfluoroheptanoic acid



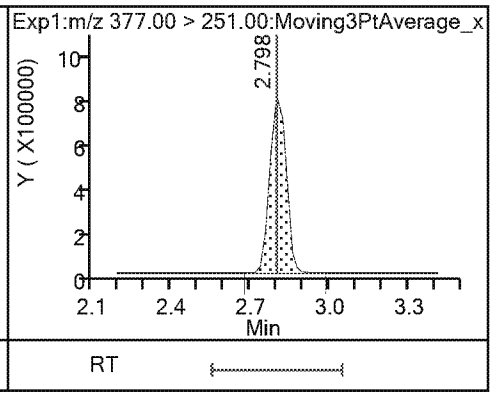
3 Perfluorohexanesulfonic acid



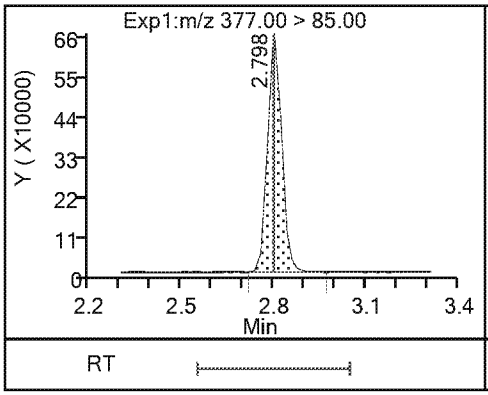
3 Perfluorohexanesulfonic acid



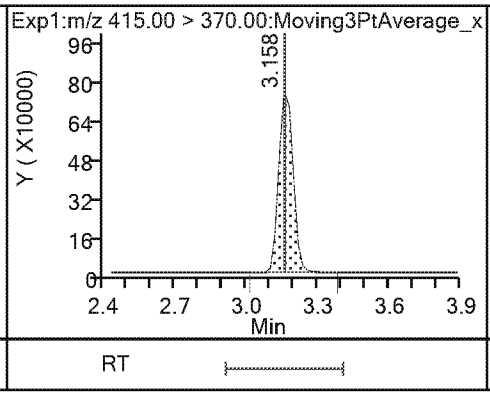
24 DONA



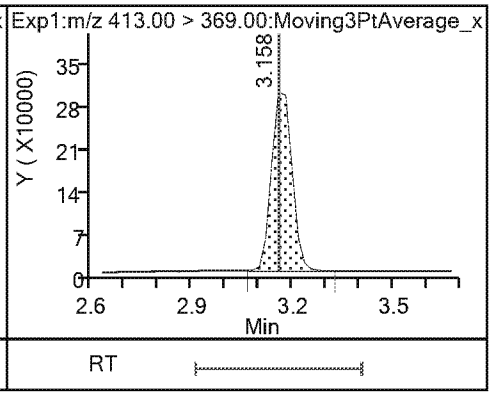
24 DONA



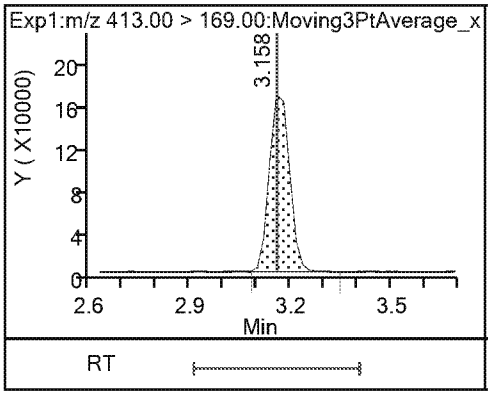
* 5 13C2 PFOA



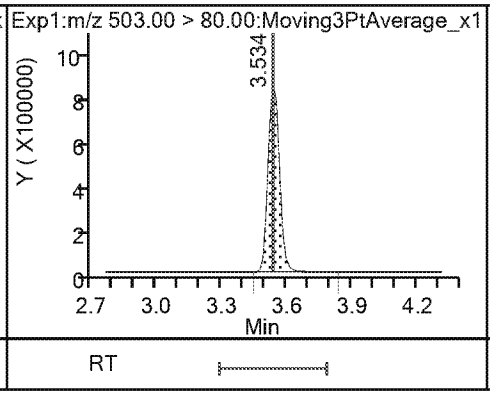
6 Perfluorooctanoic acid



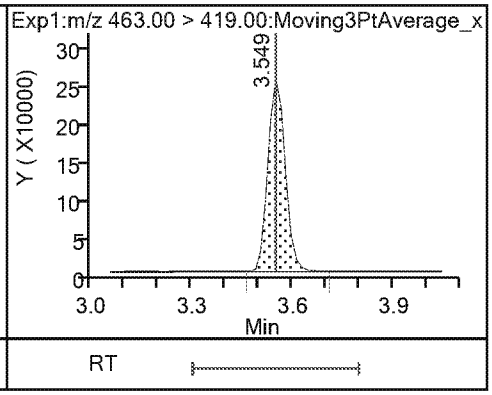
6 Perfluorooctanoic acid



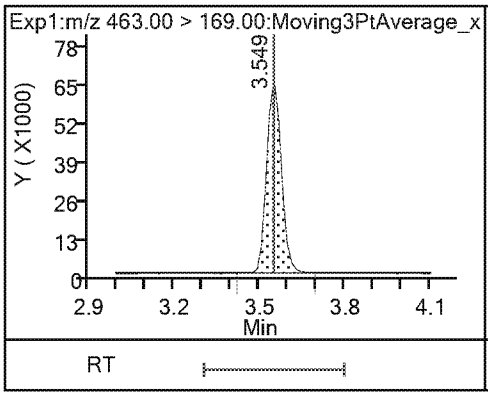
* 7 13C4 PFOS



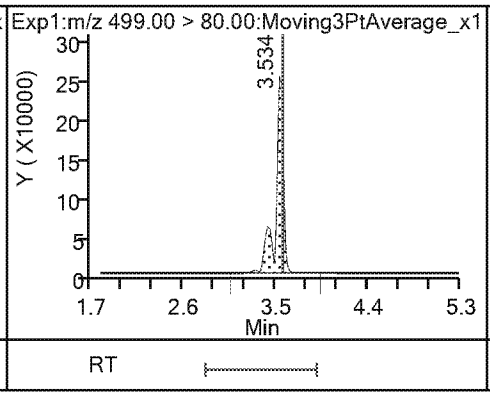
9 Perfluorononanoic acid



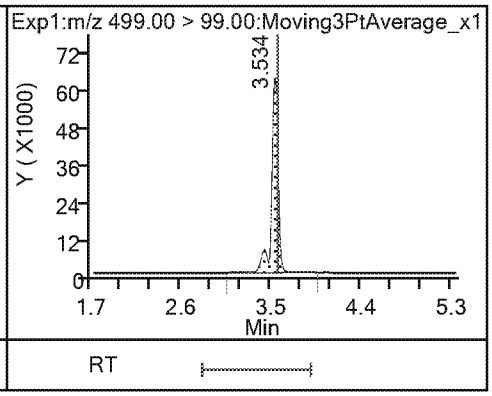
9 Perfluorononanoic acid



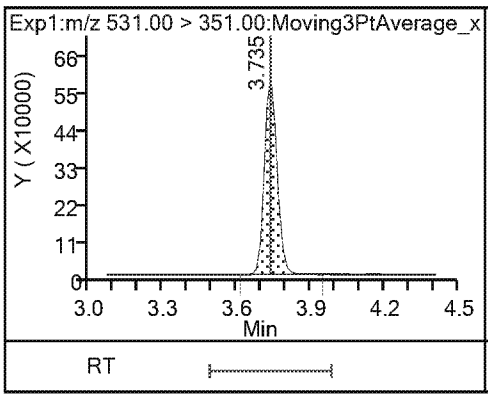
8 Perfluorooctanesulfonic acid



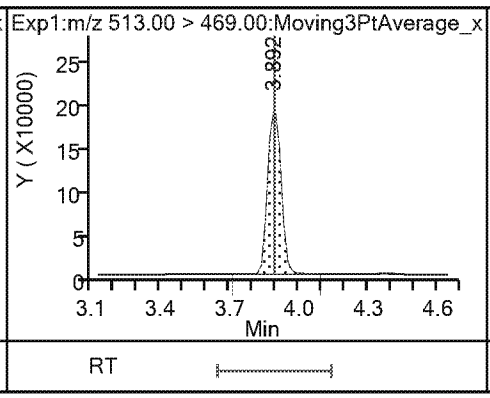
8 Perfluorooctanesulfonic acid



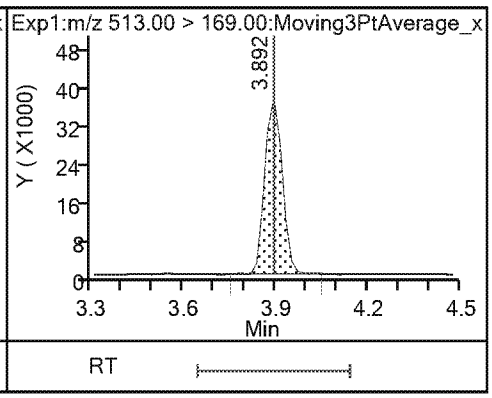
23 9-Chlorohexadecafluoro-3-oxanonane



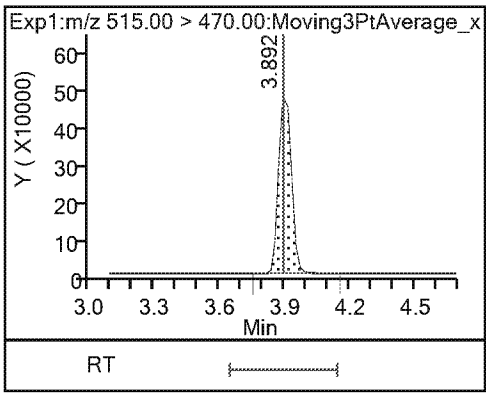
14 Perfluorodecanoic acid



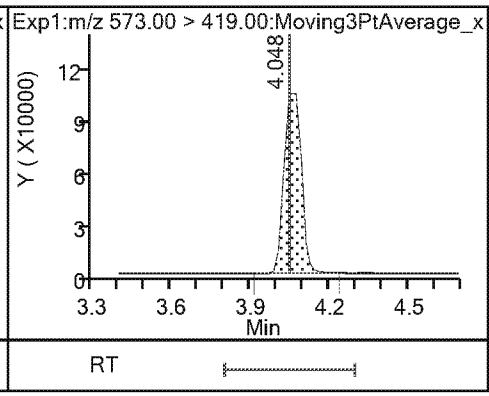
14 Perfluorodecanoic acid



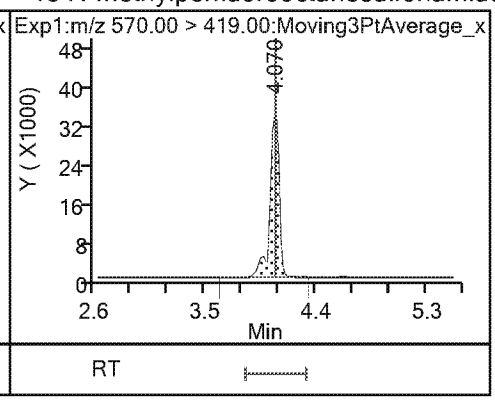
$ 10 13C2 PFDA



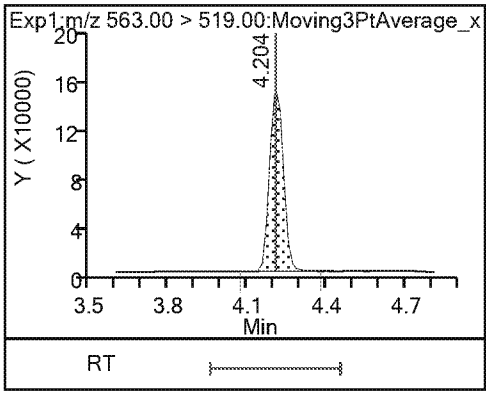
* 12 d3-NMeFOSAA



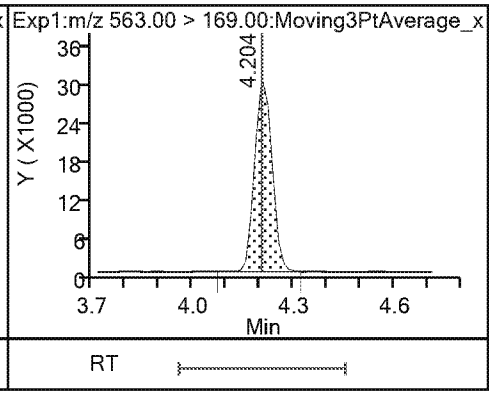
15 N-methylperfluorooctanesulfonamido



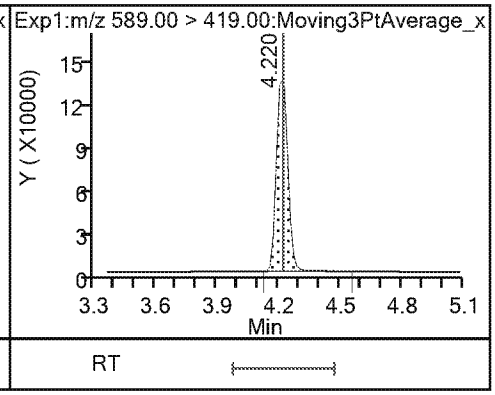
17 Perfluoroundecanoic acid



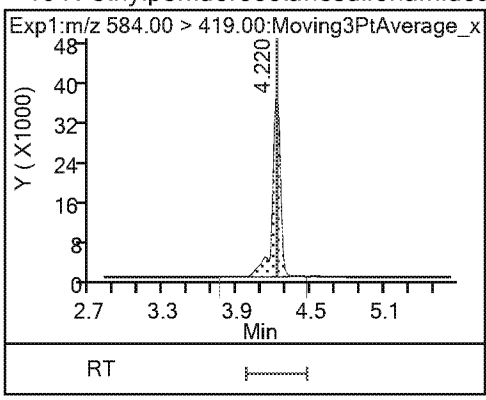
17 Perfluoroundecanoic acid



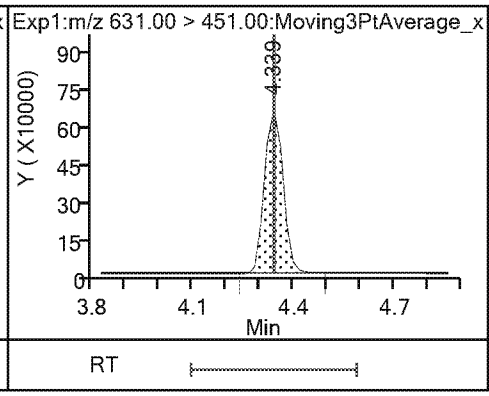
$ 11 d5-NEtFOSAA



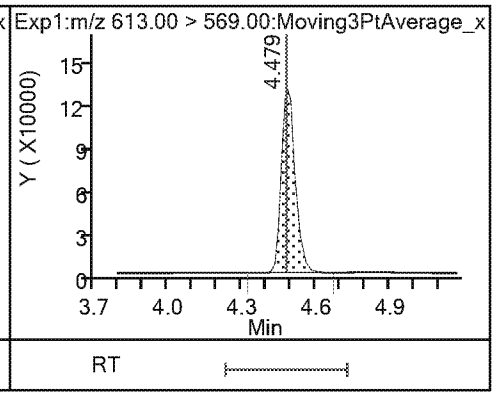
16 N-ethylperfluorooctanesulfonamidoa



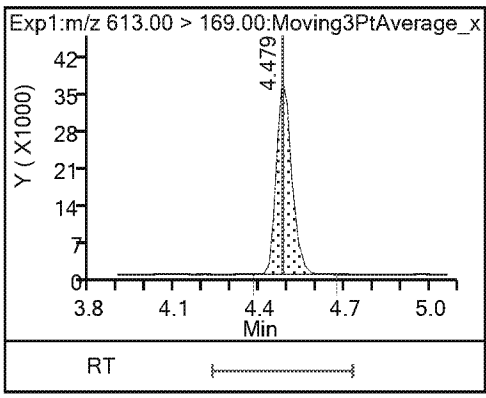
21 11-Chloroeicosafluoro-3-oxaundecan



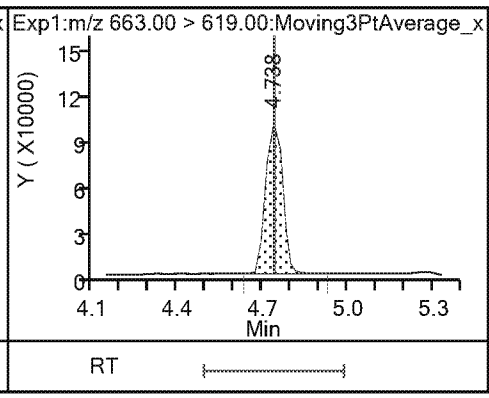
18 Perfluorododecanoic acid



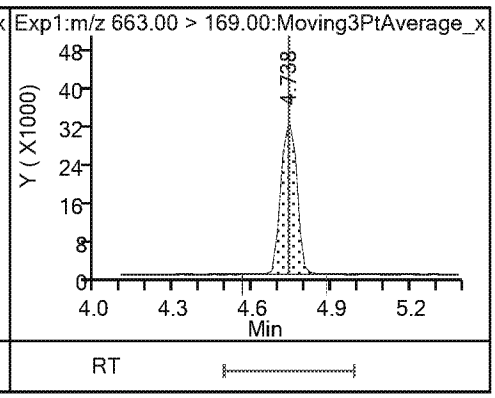
18 Perfluorododecanoic acid



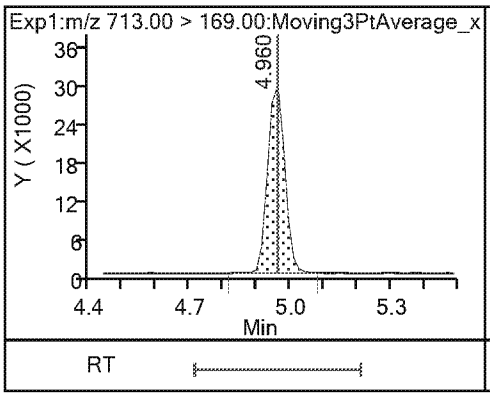
19 Perfluorotridecanoic acid



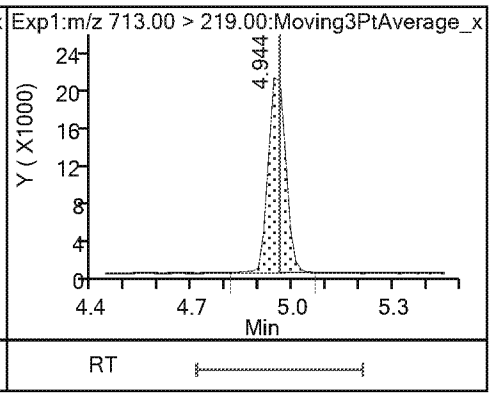
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

SDG No.:

Lab Sample ID: CCV 320-286190/27 Calibration Date: 04/04/2019 23:16

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_031.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	1.326		4.96	4.42	12.3	30.0
Perfluorohexanoic acid	Ave	1.113	1.149		5.16	5.00	3.2	30.0
Perfluoro(2-propoxypropanoic) acid	Ave	0.2705	0.2900		5.36	5.00	7.2	30.0
Perfluoroheptanoic acid	Ave	1.060	1.085		5.12	5.00	2.4	30.0
Perfluorohexanesulfonic acid	Ave	1.433	1.544		4.90	4.55	7.8	30.0
DONA	Ave	2.887	2.944		4.80	4.71	2.0	30.0
Perfluorooctanoic acid	Ave	1.014	1.087		5.36	5.00	7.2	30.0
Perfluorononanoic acid	Ave	0.7390	0.7584		5.13	5.00	2.6	30.0
Perfluorooctanesulfonic acid	Ave	1.056	1.118		4.91	4.64	5.8	30.0
9-Chlorohexadecafluoro-3-oxa nonane-1-sulfonate	Ave	1.700	1.890		5.18	4.66	11.2	30.0
Perfluorodecanoic acid	Ave	0.5850	0.6224		5.32	5.00	6.4	30.0
N-methylperfluorooctanesulfo namidoacetic acid	Ave	0.9362	0.8665		4.63	5.00	-7.4	30.0
Perfluoroundecanoic acid	Ave	0.4445	0.4831		5.43	5.00	8.7	30.0
N-ethylperfluorooctanesulfon amidoacetic acid	Ave	0.9078	0.8482		4.67	5.00	-6.6	30.0
11-Chloroeicosafluoro-3-oxau ndecane-1-sulfonate	Ave	2.131	2.232		4.94	4.71	4.8	30.0
Perfluorododecanoic acid	Ave	0.4456	0.4323		4.85	5.00	-3.0	30.0
Perfluorotridecanoic acid	Ave	0.3452	0.3424		4.96	5.00	-0.8	30.0
Perfluorotetradecanoic acid	Ave	0.0888	0.0906		5.10	5.00	2.0	30.0
13C2 PFHxA	Ave	1.166	1.207		2.59	2.50	3.6	30.0
13C3 HFPO-DA	Ave	0.0524	0.0589		2.81	2.50	12.6	30.0
13C2 PFDA	Ave	0.6210	0.6611		2.66	2.50	6.5	30.0
d5-NEtFOSAA	Ave	1.022	1.000		2.45	2.50	-2.2	30.0

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_031.d
Lims ID: CCV L6
Client ID:
Sample Type: CCVIS
Inject. Date: 04-Apr-2019 23:16:56 ALS Bottle#: 31 Worklist Smp#: 27
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 13:46:32 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 13:44:02
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	6677426	4.96	Target=1.41	37721	
298.90 > 99.00	1.992	1.992	0.0	1.000	4411749		1.51(0.00-0.00)	2053	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.347	0.0	0.740	6383817	5.16	Target=10.46	1705	
313.00 > 119.00	2.347	2.347	0.0	0.740	574422		11.11(0.00-0.00)	679	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.347	0.0	1.000	3354912	2.59		5849	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.473	2.473	0.0	1.000	1611531	5.36		789	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.473	2.473	0.0	1.000	163759	2.81		959	
4 Perfluoroheptanoic acid									
363.00 > 319.00	2.770	2.770	0.0	1.000	6028482	5.12	Target=2.41	598	
363.00 > 169.00	2.770	2.770	0.0	1.000	2504598		2.41(0.00-0.00)	4787	
3 Perfluorohexanesulfonic acid									
399.00 > 80.00	2.770	2.770	0.0	1.000	8003523	4.90	Target=2.91	3804	
399.00 > 99.00	2.770	2.770	0.0	1.000	2720105		2.94(0.00-0.00)	1121	
24 DONA									
377.00 > 251.00	2.811	2.811	0.0	1.000	15410565	4.80	Target=1.54	12930	
377.00 > 85.00	2.811	2.811	0.0	1.000	10002733		1.54(0.00-0.00)	774387	
* 5 13C2 PFOA									
415.00 > 370.00	3.171	3.171	0.0		2778726	2.50		9311	
6 Perfluorooctanoic acid									
413.00 > 369.00	3.171	3.171	0.0	1.000	6041829	5.36	Target=1.70	701	
413.00 > 169.00	3.171	3.171	0.0	1.000	3405528		1.77(0.00-0.00)	4296	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	S/N	Flags
* 7 13C4 PFOS									
503.00 > 80.00	3.531	3.531	0.0		2722678	2.39		7062	
9 Perfluorononanoic acid									
463.00 > 419.00	3.546	3.546	0.0	1.000	4214926	5.13	Target=3.78	2385	
463.00 > 169.00	3.546	3.546	0.0	1.000	1106018		3.81(0.00-0.00)	7297	
8 Perfluorooctanesulfonic acid									
499.00 > 80.00	3.546	3.564	-0.018	1.004	5909255	4.91	Target=4.63	2920	
499.00 > 99.00	3.531	3.564	-0.033	1.000	1241034		4.76(0.00-0.00)	1286	
23 9-Chlorohexadecafluoro-3-oxanonane									
531.00 > 351.00	3.734	3.734	0.0	1.000	10031034	5.18		10720	
14 Perfluorodecanoic acid									
513.00 > 469.00	3.891	3.891	0.0	1.000	3459146	5.32	Target=4.93	1428	
513.00 > 169.00	3.891	3.891	0.0	1.000	707878		4.89(0.00-0.00)	2209	
$ 10 13C2 PFDA									
515.00 > 470.00	3.891	3.891	0.0	1.000	1836996	2.66		8989	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.069	4.069	0.0		471668	2.50		2713	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.069	4.069	0.0	1.000	817402	4.63		1684	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.203	4.203	0.0	1.000	2684618	5.43	Target=4.73	1068	
563.00 > 169.00	4.203	4.203	0.0	1.000	547034		4.91(0.00-0.00)	5035	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.219	4.219	0.0	1.037	471495	2.45		302	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.219	4.219	0.0	1.000	800157	4.67		1196	
21 11-Chloroeicosafluoro-3-oxaundecan									
631.00 > 451.00	4.338	4.338	0.0	1.000	11978478	4.94		11086	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.478	4.478	0.0	1.000	2402270	4.85	Target=3.49	1422	
613.00 > 169.00	4.478	4.478	0.0	1.000	675374		3.56(0.00-0.00)	5885	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.737	4.737	0.0	1.000	1902932	4.96	Target=2.87	599	
663.00 > 169.00	4.737	4.737	0.0	1.000	642398		2.96(0.00-0.00)	2923	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.959	4.959	0.0	1.000	503388	5.10	Target=1.40	3133	
713.00 > 219.00	4.959	4.959	0.0	1.000	356593		1.41(0.00-0.00)	1996	

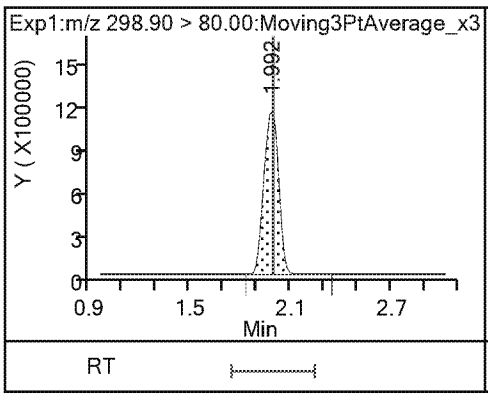
Reagents:

LC537_NC_L6_00003 Amount Added: 1.00 Units: mL

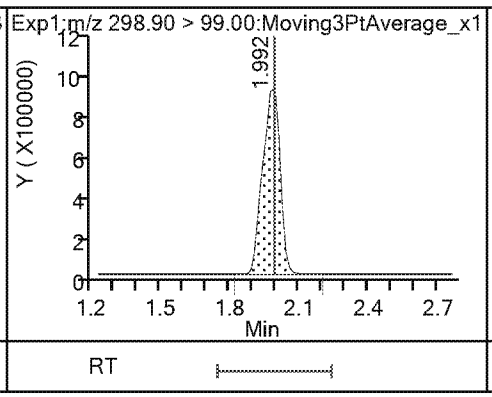
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_031.d
Injection Date: 04-Apr-2019 23:16:56 Instrument ID: A8_N
Lims ID: CCV L6
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 31 Worklist Smp#: 27
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

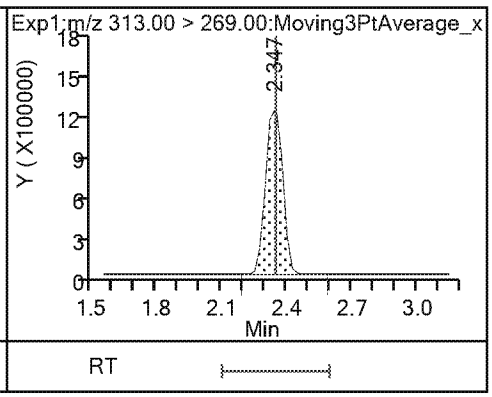
1 Perfluorobutanesulfonic acid



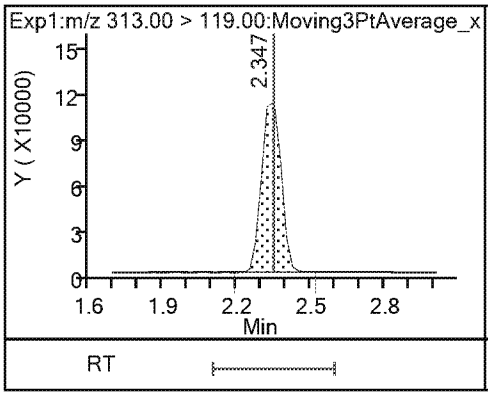
1 Perfluorobutanesulfonic acid



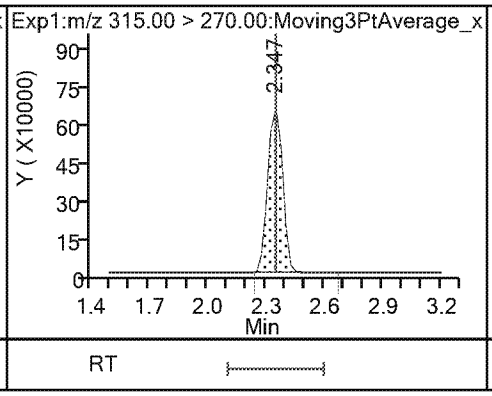
13 Perfluorohexanoic acid



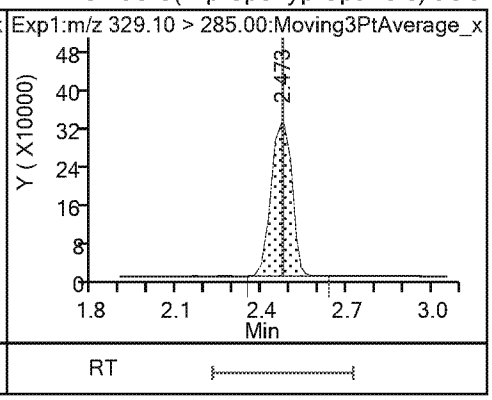
13 Perfluorohexanoic acid



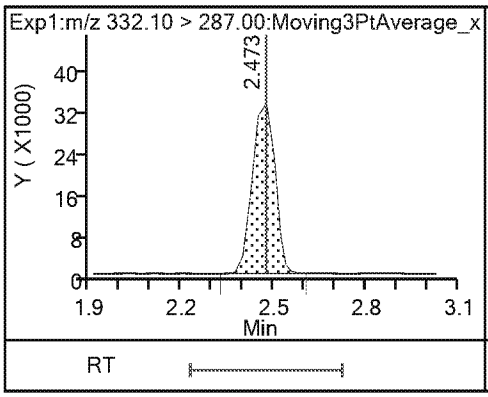
$ 2 13C2 PFHxA



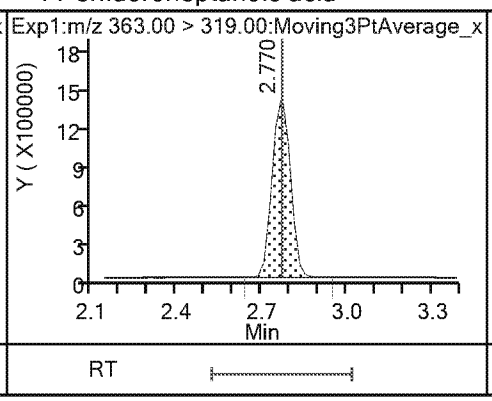
22 Perfluoro(2-propoxypropanoic) acid



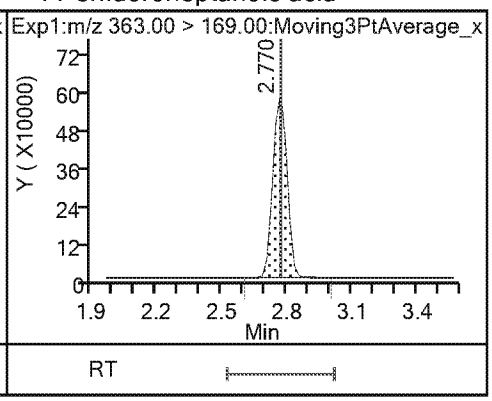
$ 25 13C3 HFPO-DA



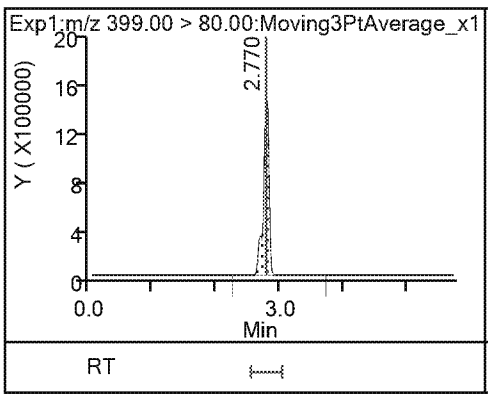
4 Perfluoroheptanoic acid



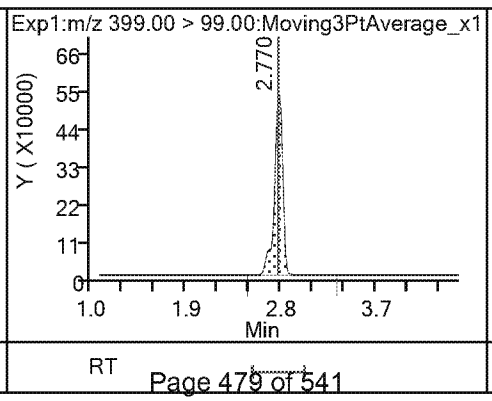
4 Perfluoroheptanoic acid



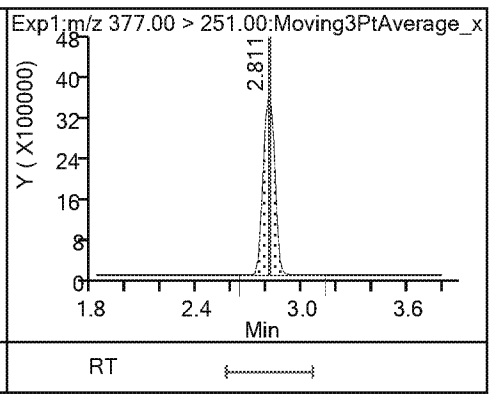
3 Perfluorohexanesulfonic acid



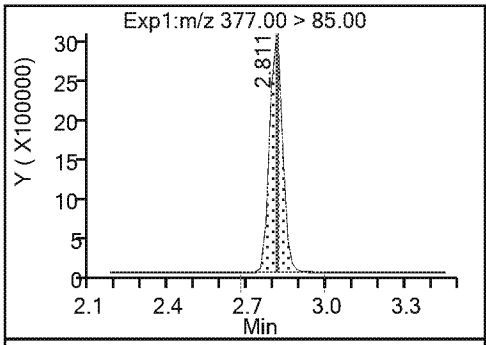
3 Perfluorohexanesulfonic acid



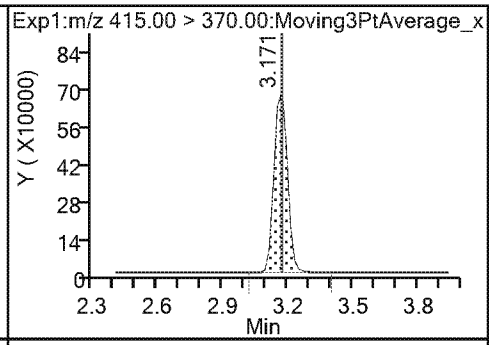
24 DONA



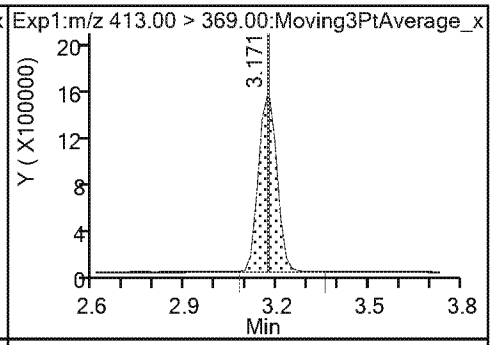
24 DONA



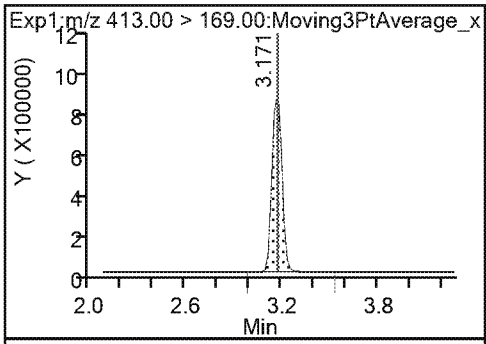
* 5 13C2 PFOA



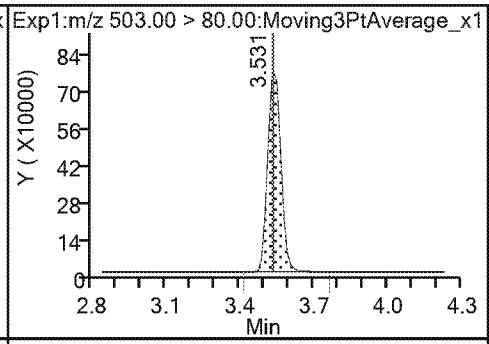
6 Perfluorooctanoic acid



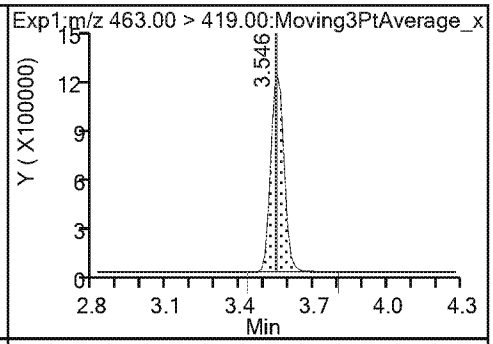
6 Perfluorooctanoic acid



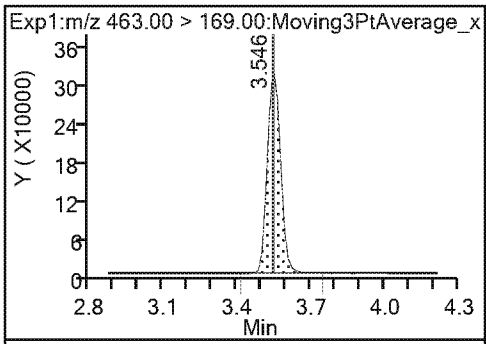
* 7 13C4 PFOS



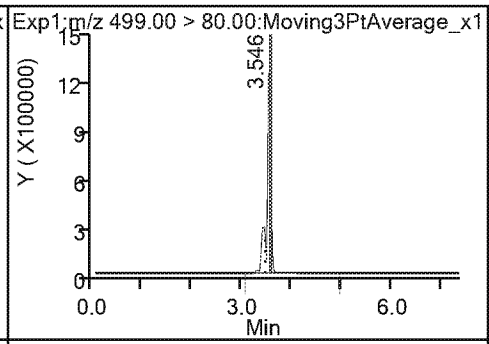
9 Perfluorononanoic acid



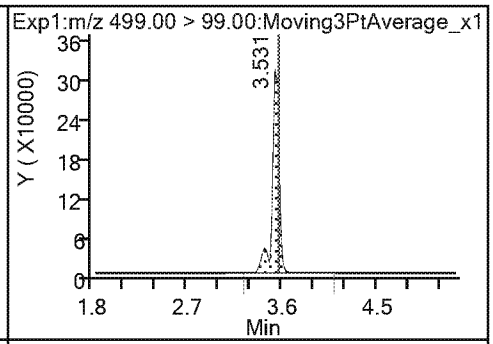
9 Perfluorononanoic acid



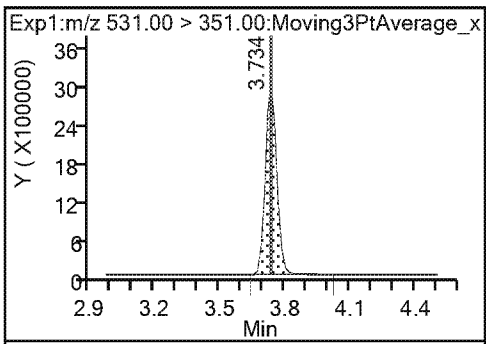
8 Perfluorooctanesulfonic acid



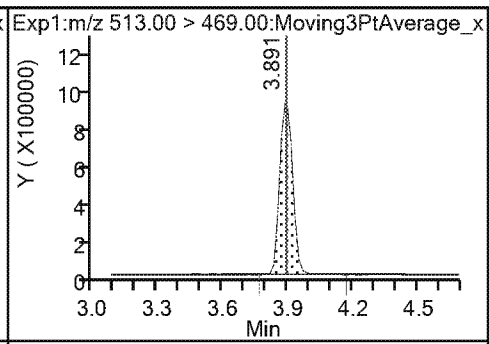
8 Perfluorooctanesulfonic acid



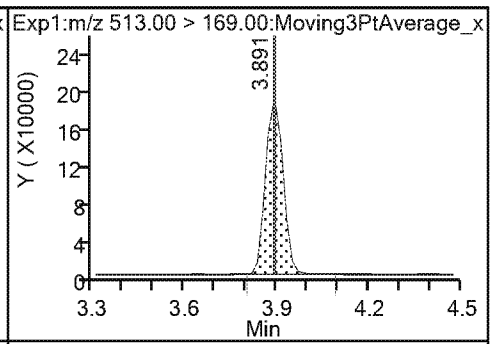
23 9-Chlorohexadecafluoro-3-oxanonane



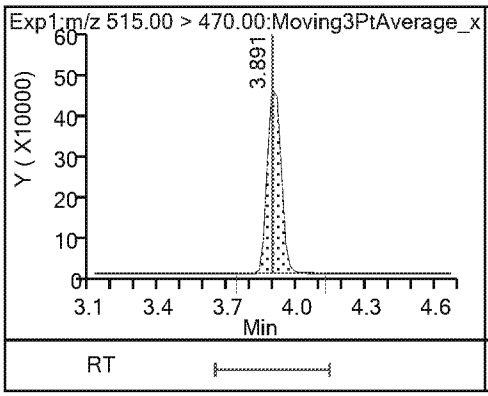
14 Perfluorodecanoic acid



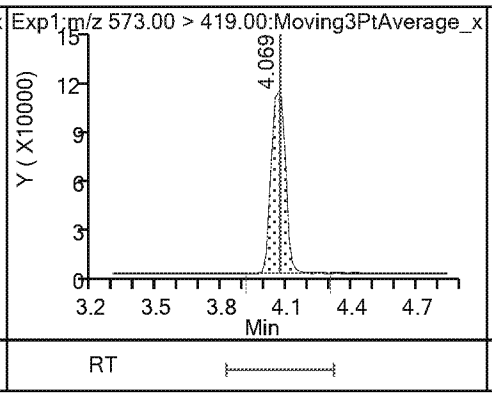
14 Perfluorodecanoic acid



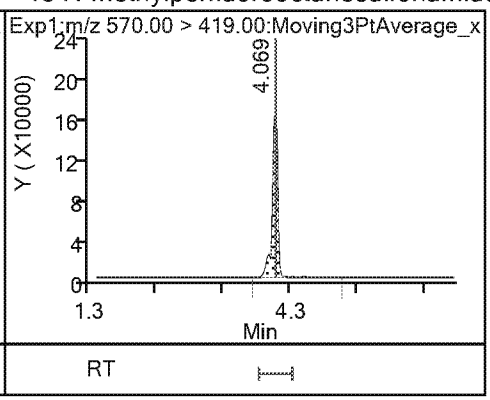
$ 10 13C2 PFDA



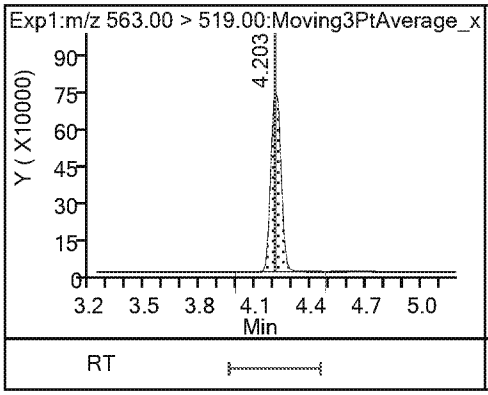
* 12 d3-NMeFOSAA



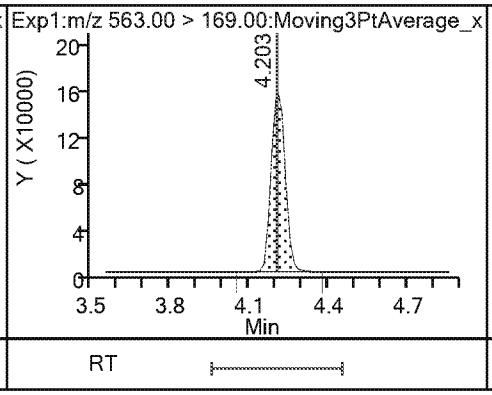
15 N-methylperfluorooctanesulfonamido



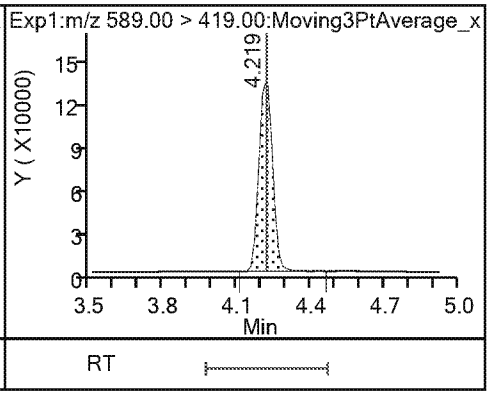
17 Perfluoroundecanoic acid



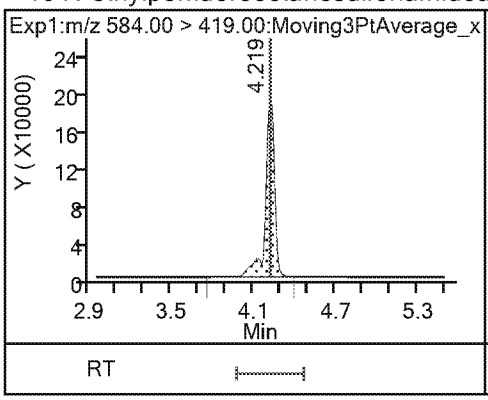
17 Perfluoroundecanoic acid



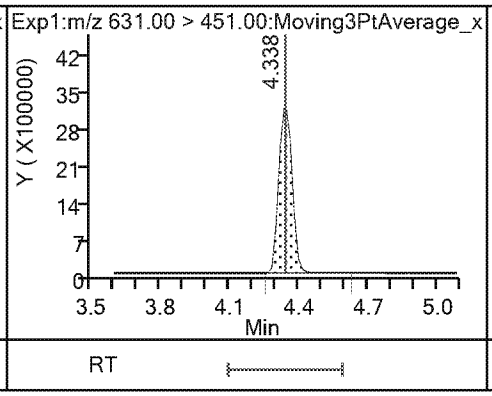
$ 11 d5-NEtFOSAA



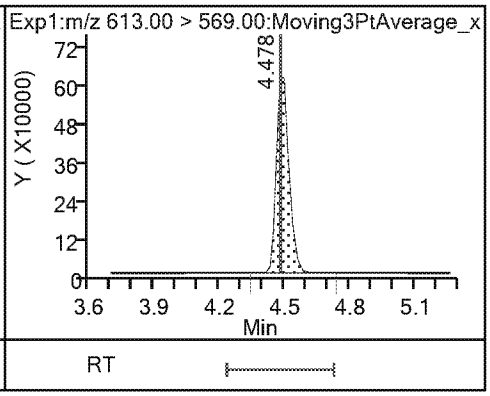
16 N-ethylperfluorooctanesulfonamidoa



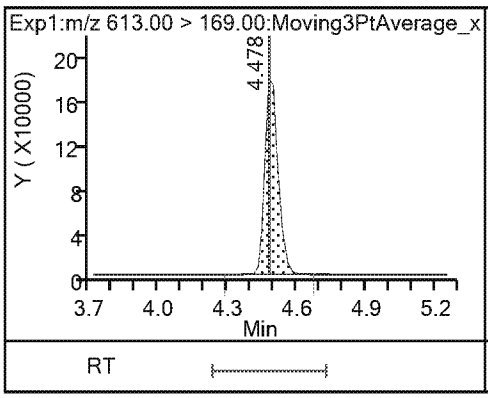
21 11-Chloroeicosafluoro-3-oxaundecan



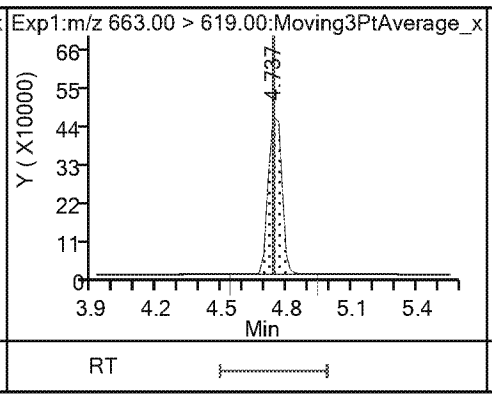
18 Perfluorododecanoic acid



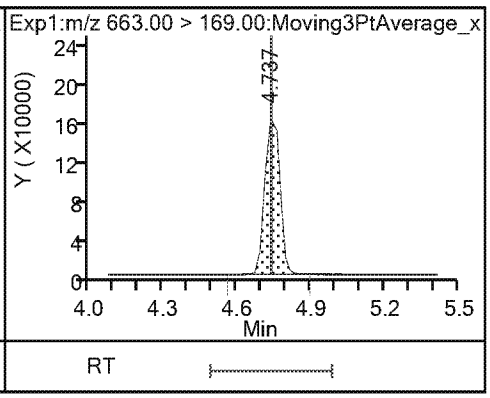
18 Perfluorododecanoic acid



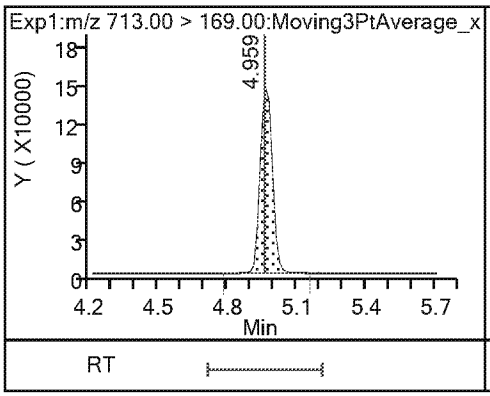
19 Perfluorotridecanoic acid



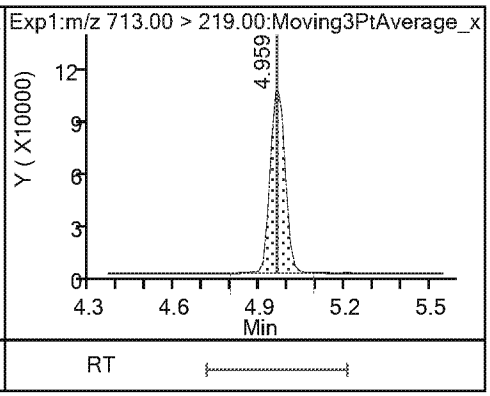
19 Perfluorotridecanoic acid



20 Perfluorotetradecanoic acid



20 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-285773/1-A
Matrix: Water
Lab File ID: 2019.04.04_537AA_014.d
Analysis Method: 537 DW
Date Collected:
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 250.00(mL)
Date Analyzed: 04/04/2019 20:36
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.: 286192
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	98		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_014.d
Lims ID: MB 320-285773/1-A
Client ID:
Sample Type: MB
Inject. Date: 04-Apr-2019 20:36:06 ALS Bottle#: 5 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-285773/1-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 13:44:02 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

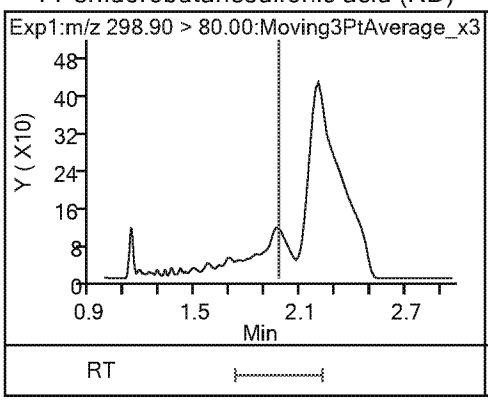
First Level Reviewer: Ex. 4 CBI Date: 05-Apr-2019 13:30:46
Ratio Calibration: None

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	2.322	0.026	1.000	3390824	2.45		6277	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	153600	2.47		952	
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.158	0.019		2974168	2.50		16169	
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.534	0.015		3140400	2.39		11553	
$ 10 13C2 PFDA									
515.00 > 470.00	3.914	3.892	0.022	1.000	1868281	2.53		6089	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.073	4.048	0.025		527640	2.50		2322	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.073	4.070	0.003	1.000	2449	0.0124		30.6	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.233	4.220	0.013	1.039	499121	2.31		276	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.233	4.220	0.013	1.000	1806	0.009426		6.0	

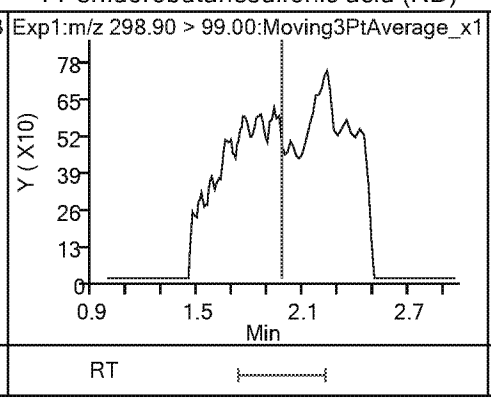
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_014.d
Injection Date: 04-Apr-2019 20:36:06 Instrument ID: A8_N
Lims ID: MB 320-285773/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 5 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

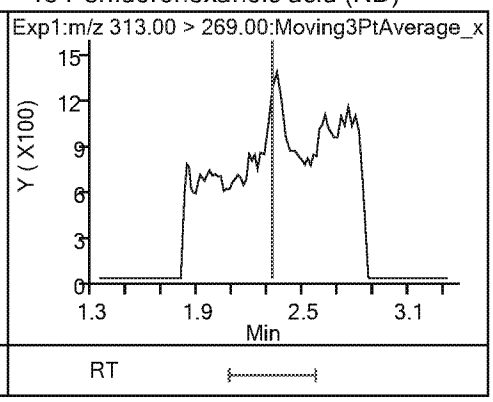
1 Perfluorobutanesulfonic acid (ND)



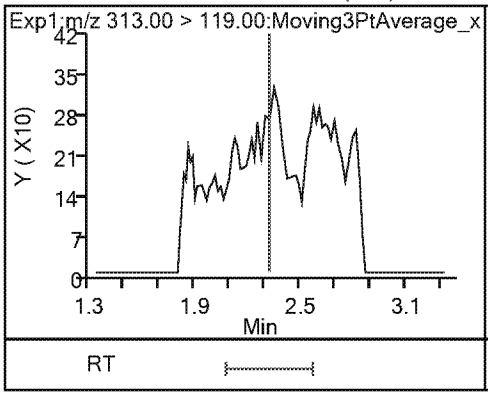
1 Perfluorobutanesulfonic acid (ND)



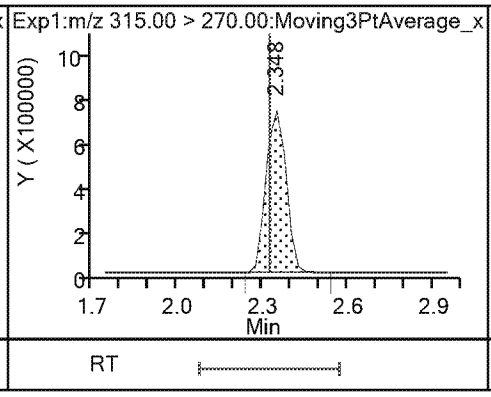
13 Perfluorohexanoic acid (ND)



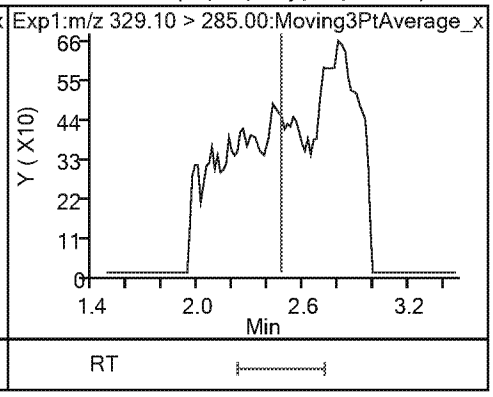
13 Perfluorohexanoic acid (ND)



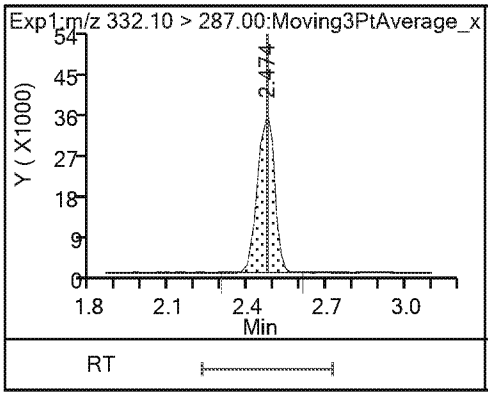
$ 2 13C2 PFHxA



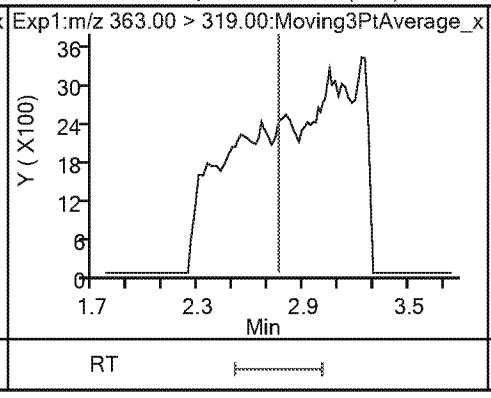
22 Perfluoro(2-propoxypropanoic) acid (ND)



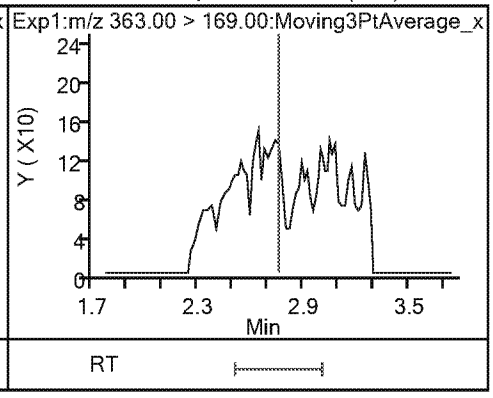
$ 25 13C3 HFPO-DA



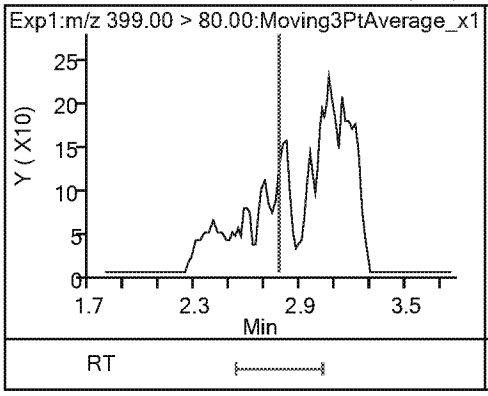
4 Perfluoroheptanoic acid (ND)



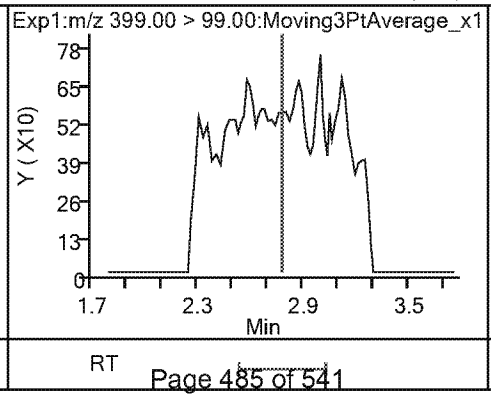
4 Perfluoroheptanoic acid (ND)



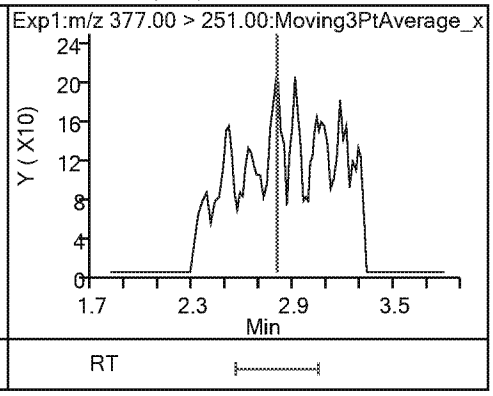
3 Perfluorohexanesulfonic acid (ND)



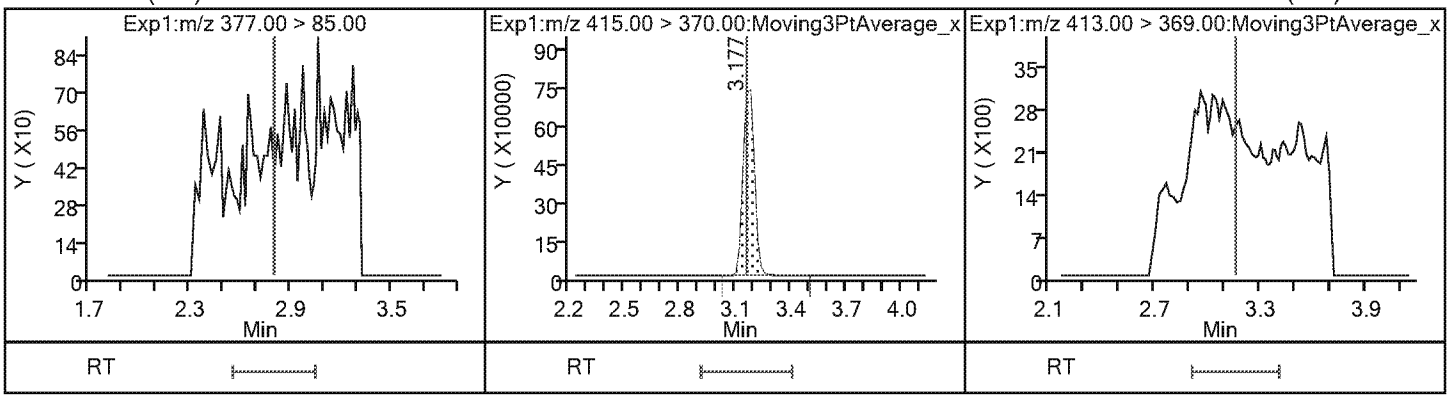
3 Perfluorohexanesulfonic acid (ND)



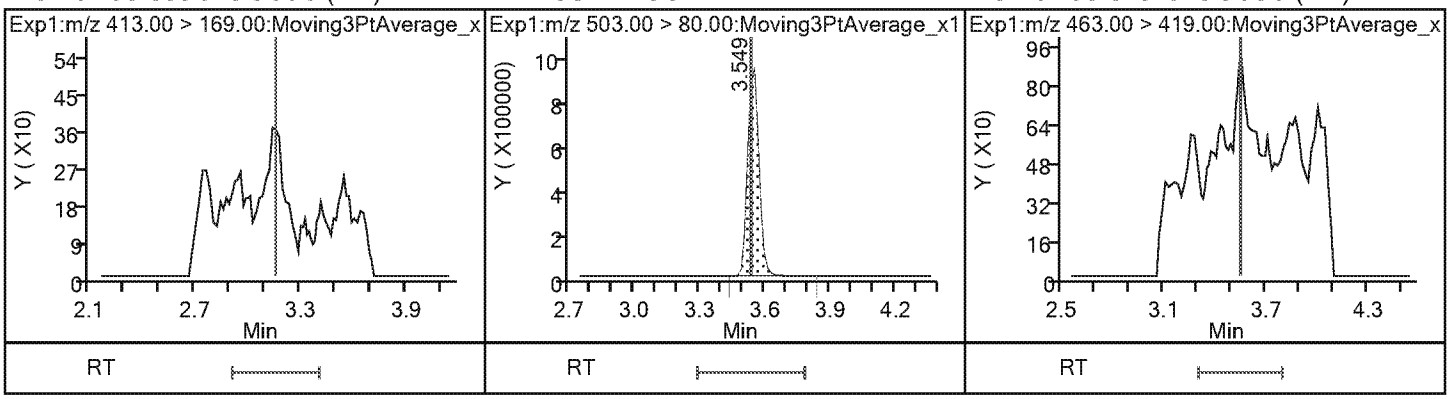
24 DONA (ND)



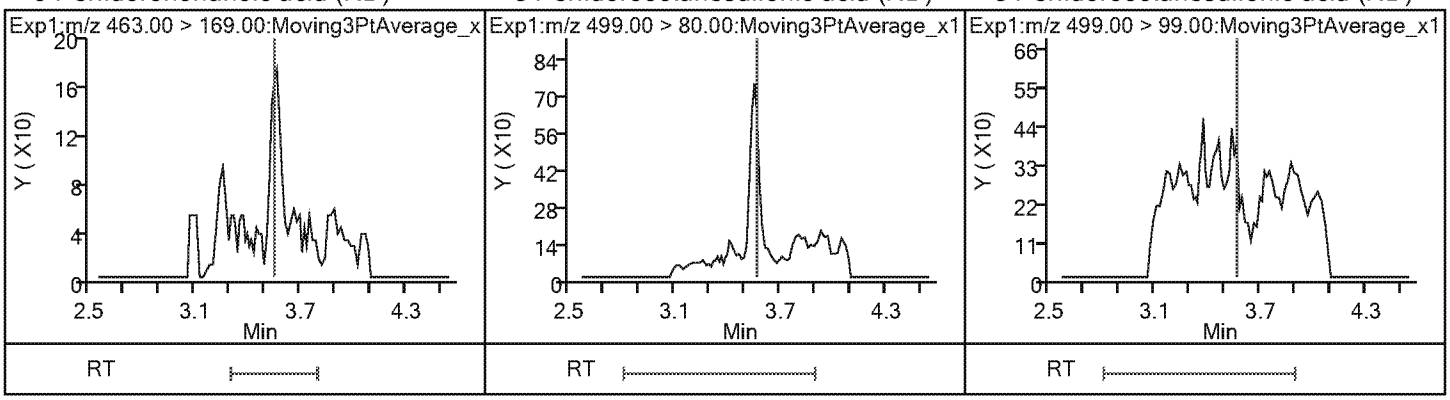
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid (ND)



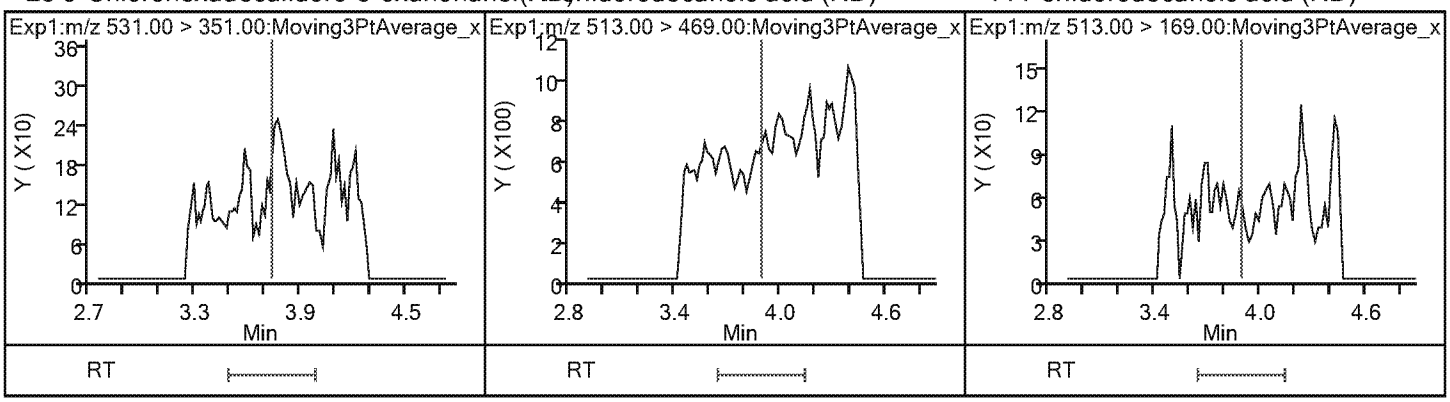
6 Perfluorooctanoic acid (ND) * 7 13C4 PFOS 9 Perfluorononanoic acid (ND)



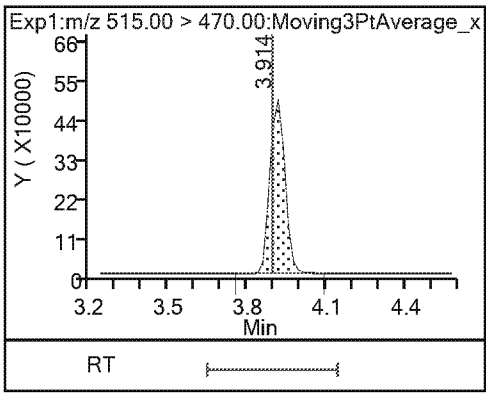
9 Perfluorononanoic acid (ND) 8 Perfluorooctanesulfonic acid (ND) 8 Perfluorooctanesulfonic acid (ND)



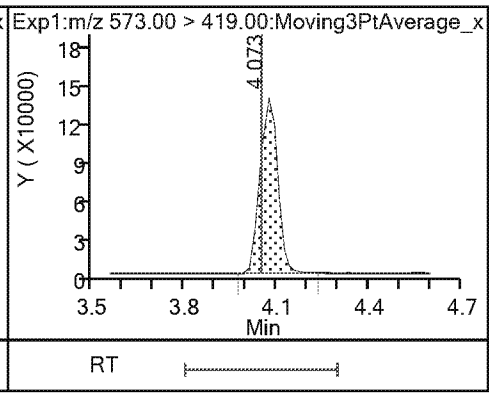
23 9-Chlorohexadecafluoro-3-oxanonane1(ND) 14 Perfluorodecanoic acid (ND) 14 Perfluorodecanoic acid (ND)



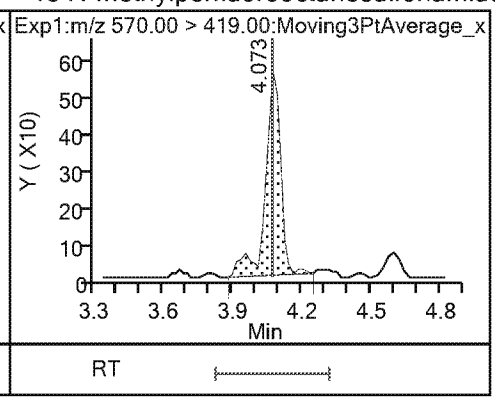
$ 10 13C2 PFDA



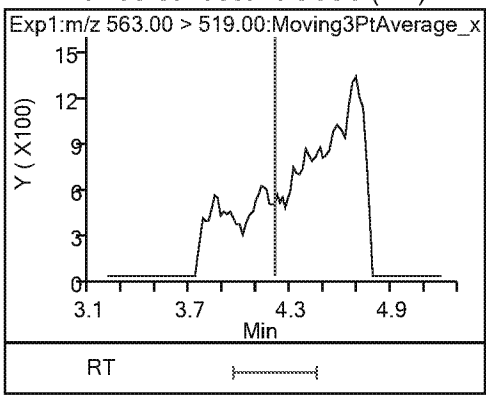
* 12 d3-NMeFOSAA



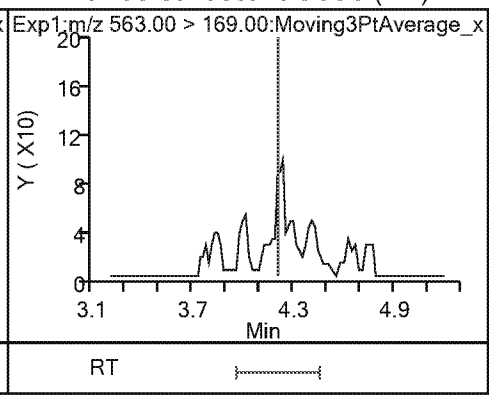
15 N-methylperfluorooctanesulfonamido



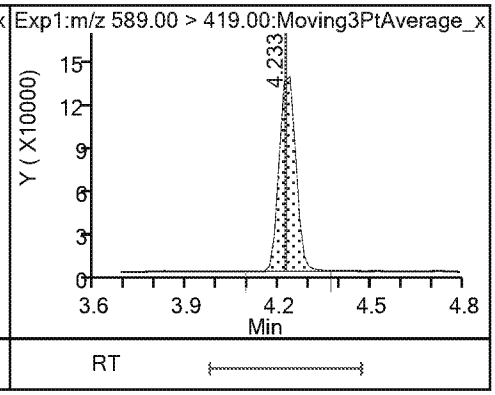
17 Perfluoroundecanoic acid (ND)



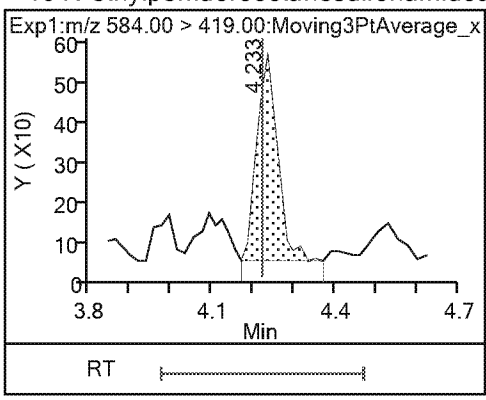
17 Perfluoroundecanoic acid (ND)



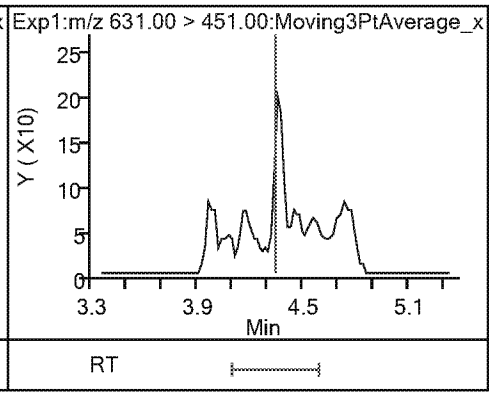
$ 11 d5-NEtFOSAA



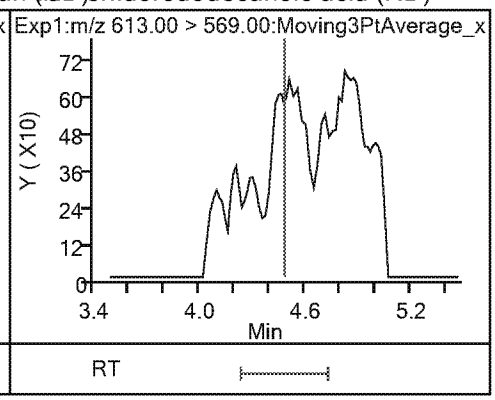
16 N-ethylperfluorooctanesulfonamidoa



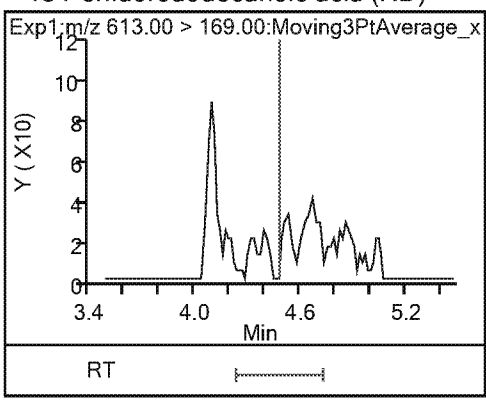
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



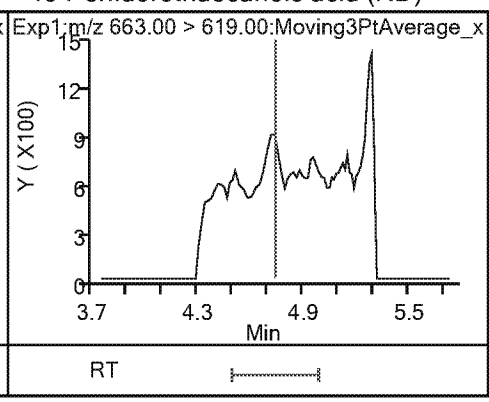
18 Perfluorododecanoic acid (ND)



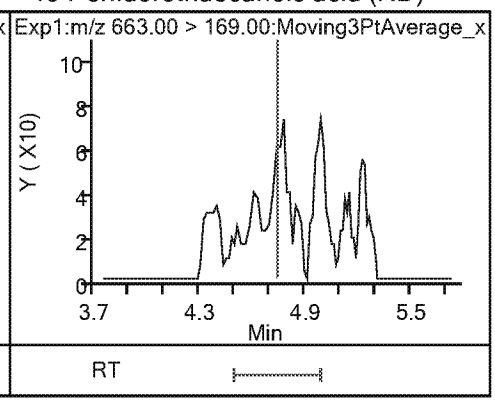
18 Perfluorododecanoic acid (ND)



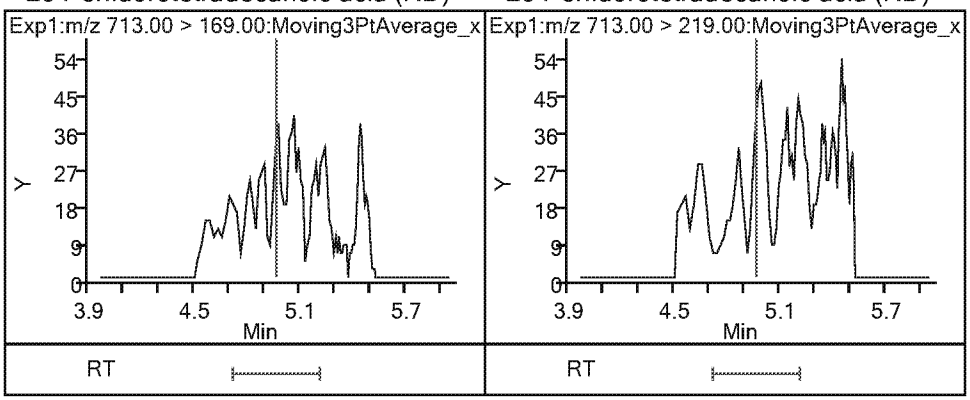
19 Perfluorotridecanoic acid (ND)



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_014.d
Lims ID: MB 320-285773/1-A
Client ID:
Sample Type: MB
Inject. Date: 04-Apr-2019 20:36:06 ALS Bottle#: 5 Worklist Smp#: 10
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-285773/1-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 13:44:02 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 13:30:46

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.45	97.81
$ 25 13C3 HFPO-DA	2.50	2.47	98.64
$ 10 13C2 PFDA	2.50	2.53	101.16
$ 11 d5-NEtFOSAA	2.50	2.31	92.56

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID:
Lab Sample ID: LLCS 320-285773/2-A
Matrix: Water
Lab File ID: 2019.04.04_537AA_015.d
Analysis Method: 537 DW
Date Collected:
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 250.00(mL)
Date Analyzed: 04/04/2019 20:45
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.: 286192
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	3.52		2.0	0.95
335-67-1	Perfluorooctanoic acid	3.69	J	6.0	2.7
375-95-1	Perfluorononanoic acid	4.17		2.0	0.47
355-46-4	Perfluorohexanesulfonic acid	3.56		2.0	0.64
375-85-9	Perfluoroheptanoic acid	3.80		3.0	1.3
375-73-5	Perfluorobutanesulfonic acid	3.35		2.0	0.80

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	98		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_015.d
Lims ID: LLCS 320-285773/2-A
Client ID:
Sample Type: LLCS
Inject. Date: 04-Apr-2019 20:45:35 ALS Bottle#: 6 Worklist Smp#: 11
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: llcs 320-285773/2-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 13:44:02 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 13:31:56
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	119297	0.0837	Target=1.41	726	
298.90 > 99.00	1.976	1.976	0.0	1.000	81118		1.47(0.00-0.00)	42.8	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.322	2.322	0.0	0.735	130188	0.0990	Target=10.46	35.9	
313.00 > 119.00	2.322	2.322	0.0	0.735	12721		10.23(0.00-0.00)	12.8	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.348	2.322	0.026	1.000	3371847	2.45		6463	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	170438	2.75		1126	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.757	2.757	0.0	1.000	118988	0.0950	Target=2.41	12.5	M
363.00 > 169.00	2.757	2.757	0.0	1.000	49030		2.43(0.00-0.00)	140	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.778	0.0	1.000	153977	0.0891	Target=2.91	269	M
399.00 > 99.00	2.778	2.778	0.0	1.000	52612		2.93(0.00-0.00)	19.6	M
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.158	0.0		2954258	2.50		8800	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.158	3.158	0.0	1.000	110552	0.0922	Target=1.70	14.4	M
413.00 > 169.00	3.158	3.158	0.0	1.000	62490		1.77(0.00-0.00)	95.9	
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.534	0.0		2882276	2.39		10289	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	90969	0.1042	Target=3.78	62.1	
463.00 > 169.00	3.549	3.549	0.0	1.000	22622		4.02(0.00-0.00)	213	

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	3.534	3.564	-0.030	1.000	112090	0.0880	Target=4.63	1809	
499.00 > 99.00	3.534	3.564	-0.030	1.000	26327		4.26(0.00-0.00)	26.3	M
14 Perfluorodecanoic acid									
513.00 > 469.00	3.895	3.892	0.003	1.000	71275	0.1031	Target=4.93	30.3	
513.00 > 169.00	3.895	3.892	0.003	1.000	14259		5.00(0.00-0.00)	67.3	
$ 10 13C2 PFDA									
515.00 > 470.00	3.895	3.892	0.003	1.000	1874605	2.55		7333	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.073	4.048	0.025		530045	2.50		3767	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.073	4.070	0.003	1.000	17113	0.0862		262	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.217	4.204	0.013	1.000	50774	0.0967	Target=4.73	23.1	
563.00 > 169.00	4.217	4.204	0.013	1.000	9086		5.59(0.00-0.00)	110	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.217	4.220	-0.003	1.035	503761	2.32		310	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.233	4.220	0.013	1.004	17177	0.0892		56.3	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.491	4.479	0.012	1.000	49023	0.0931	Target=3.49	35.9	
613.00 > 169.00	4.491	4.479	0.012	1.000	13258		3.70(0.00-0.00)	148	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.756	4.738	0.018	1.000	38799	0.0951	Target=2.87	15.2	
663.00 > 169.00	4.756	4.738	0.018	1.000	13713		2.83(0.00-0.00)	163	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.972	4.960	0.012	1.000	9743	0.0929	Target=1.40	180	
713.00 > 219.00	4.972	4.960	0.012	1.000	7586		1.28(0.00-0.00)	91.1	

QC Flag Legend

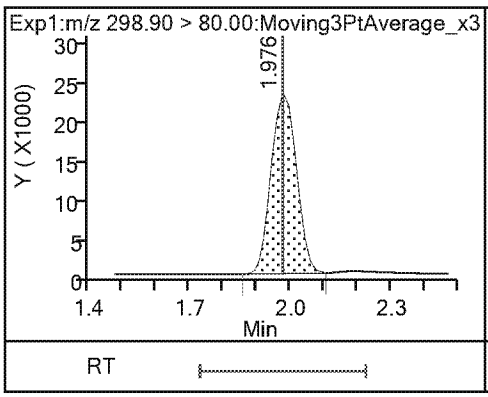
Review Flags

M - Manually Integrated

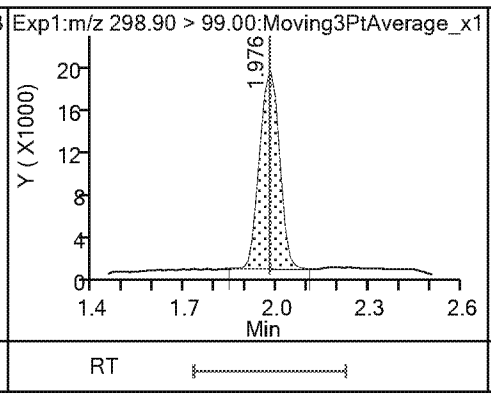
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_015.d
Injection Date: 04-Apr-2019 20:45:35 Instrument ID: A8_N
Lims ID: LLCS 320-285773/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 6 Worklist Smp#: 11
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

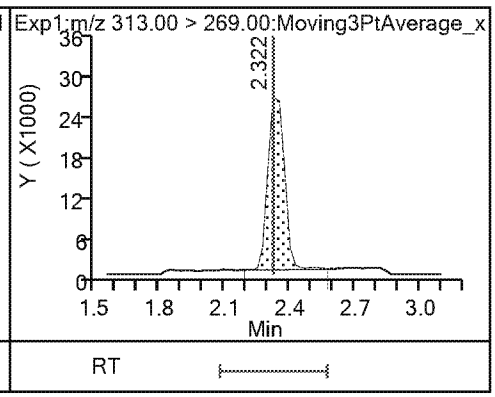
1 Perfluorobutanesulfonic acid



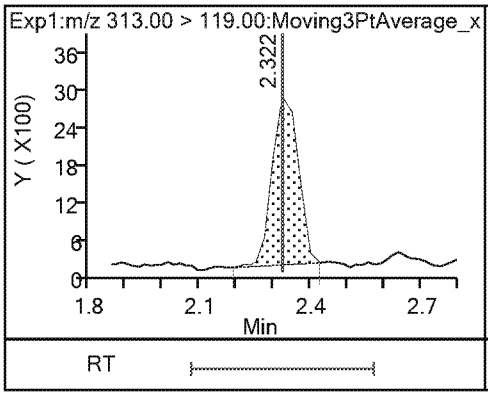
1 Perfluorobutanesulfonic acid



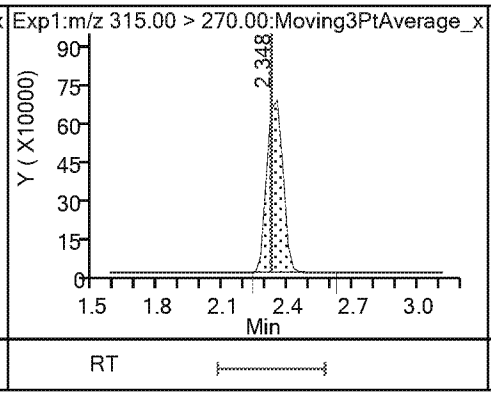
13 Perfluorohexanoic acid



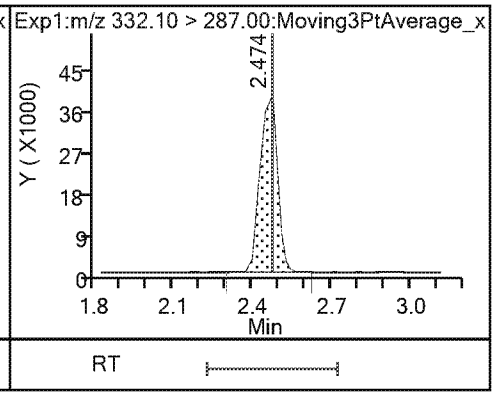
13 Perfluorohexanoic acid



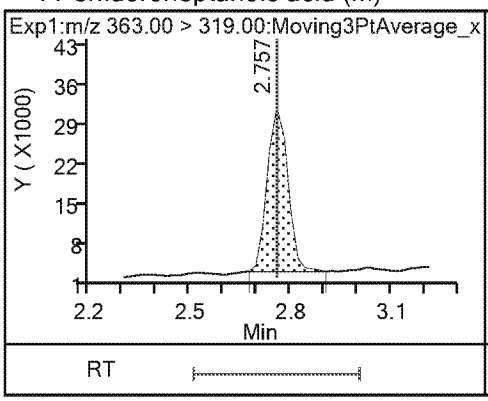
$ 2 13C2 PFHxA



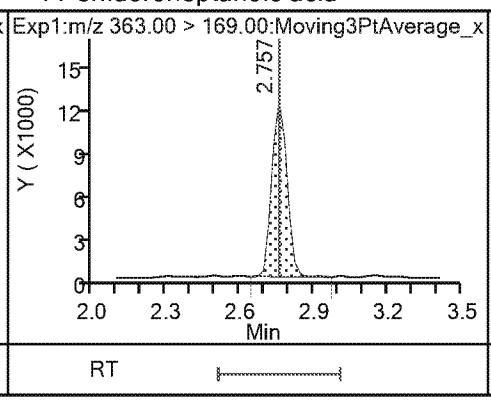
$ 25 13C3 HFPO-DA



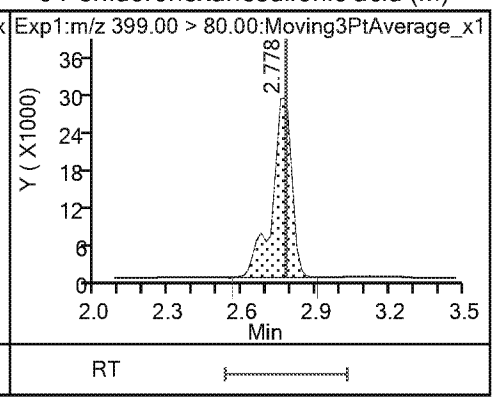
4 Perfluoroheptanoic acid (M)



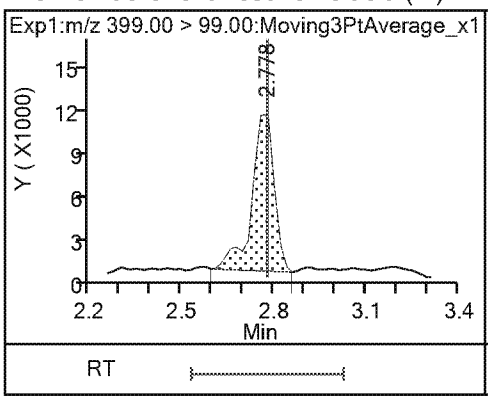
4 Perfluoroheptanoic acid



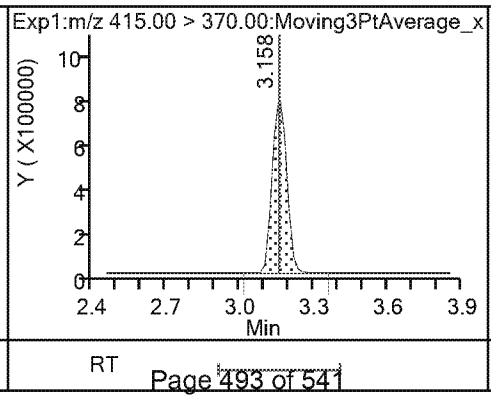
3 Perfluorohexanesulfonic acid (M)



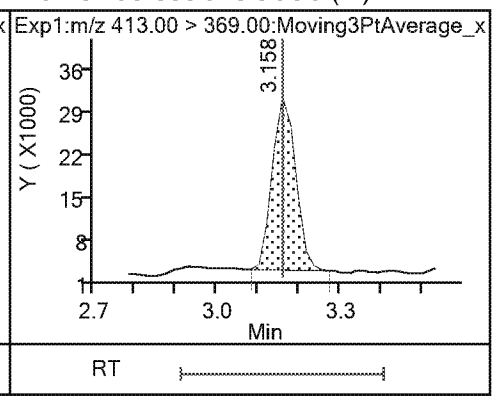
3 Perfluorohexanesulfonic acid (M)



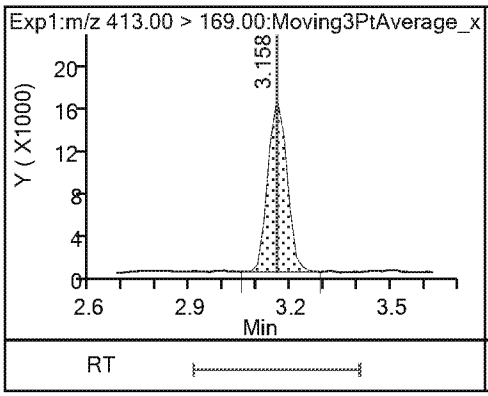
* 5 13C2 PFOA



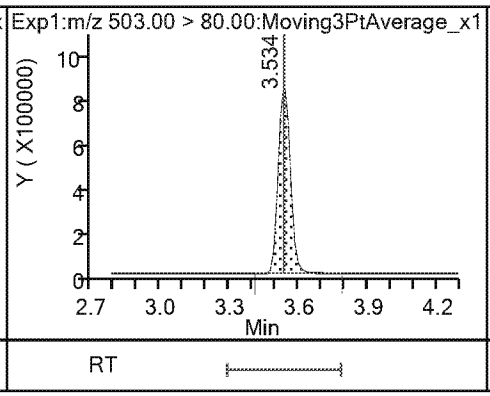
6 Perfluorooctanoic acid (M)



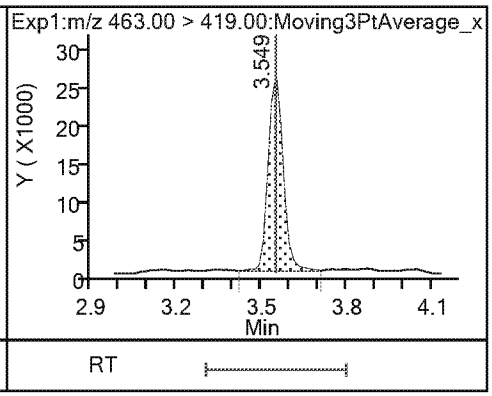
6 Perfluorooctanoic acid



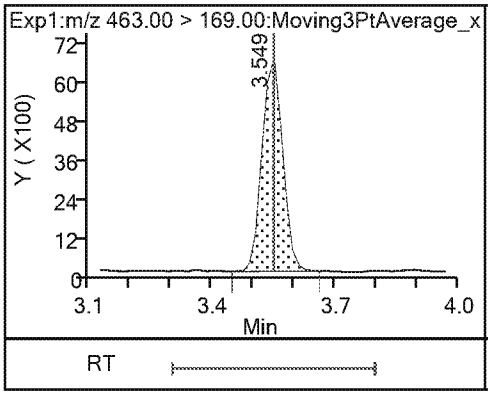
* 7 13C4 PFOS



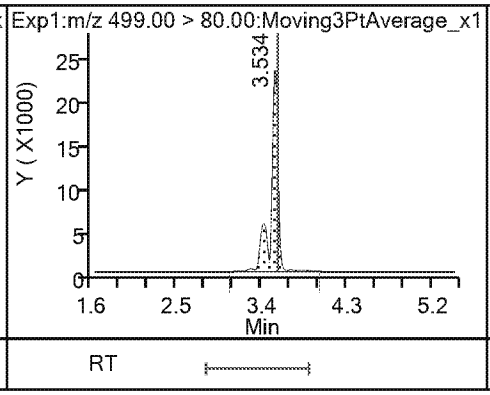
9 Perfluorononanoic acid



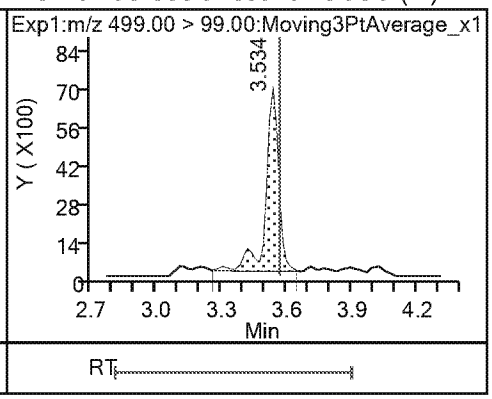
9 Perfluorononanoic acid



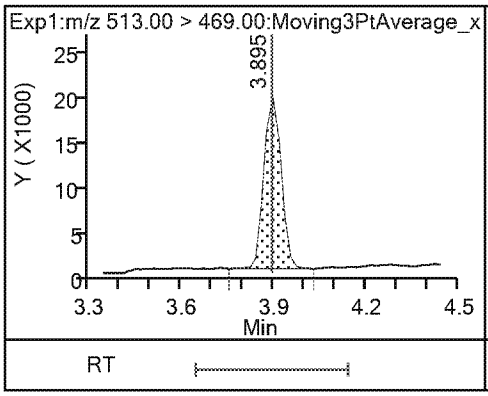
8 Perfluorooctanesulfonic acid



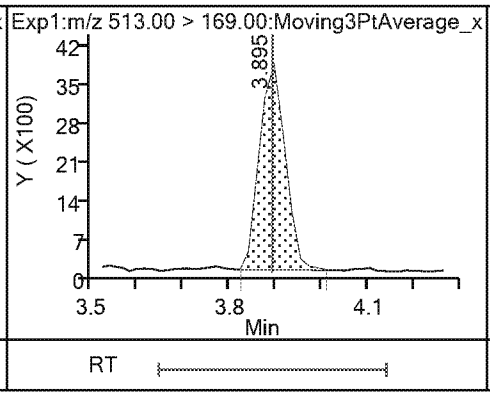
8 Perfluorooctanesulfonic acid (M)



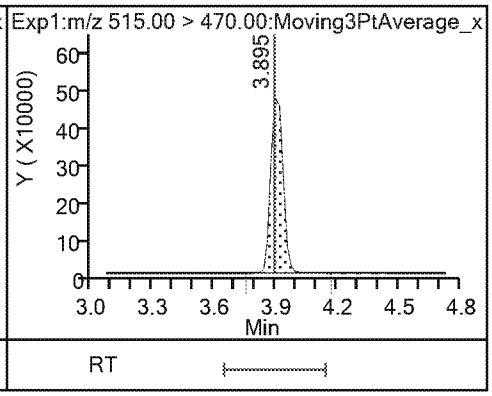
14 Perfluorodecanoic acid



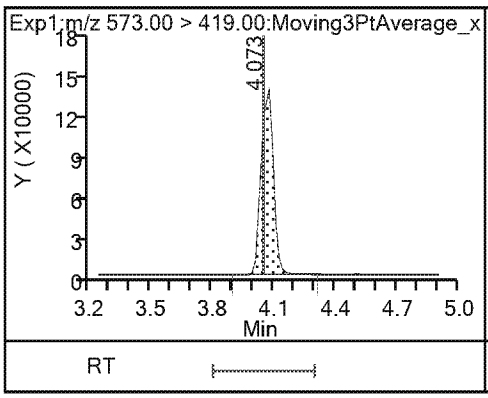
14 Perfluorodecanoic acid



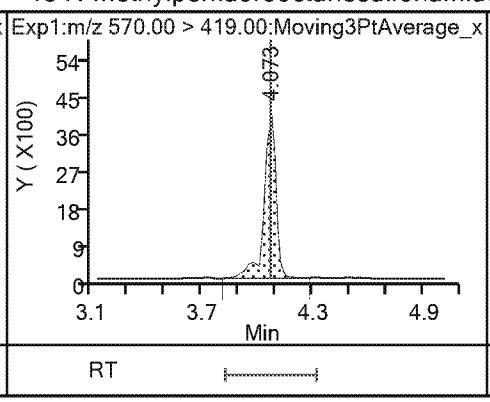
$ 10 13C2 PFDA



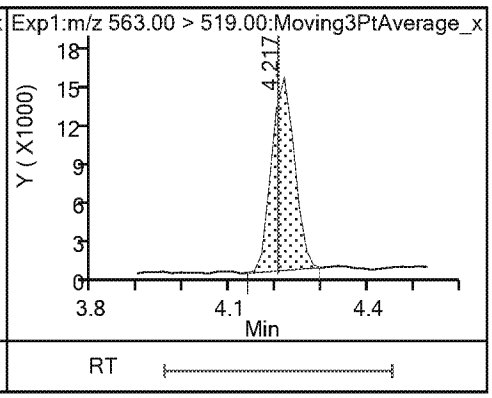
* 12 d3-NMeFOSAA



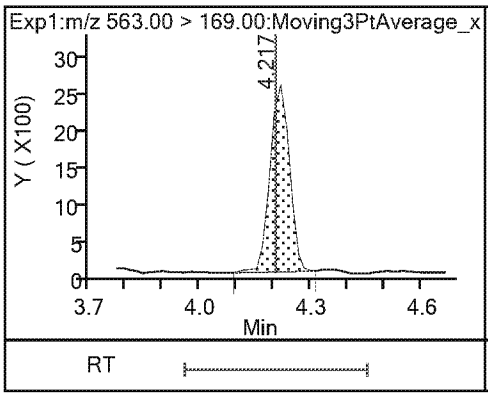
15 N-methylperfluorooctanesulfonamido



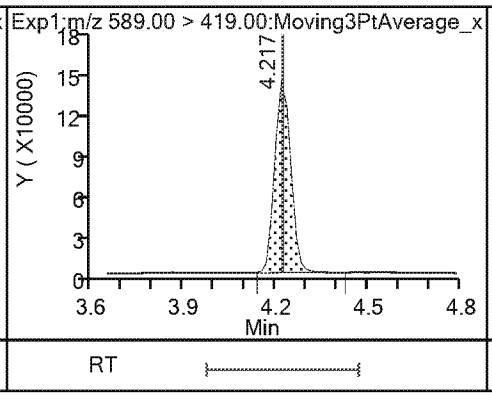
17 Perfluoroundecanoic acid



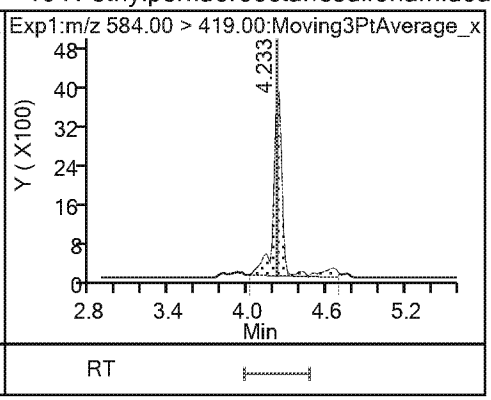
17 Perfluoroundecanoic acid



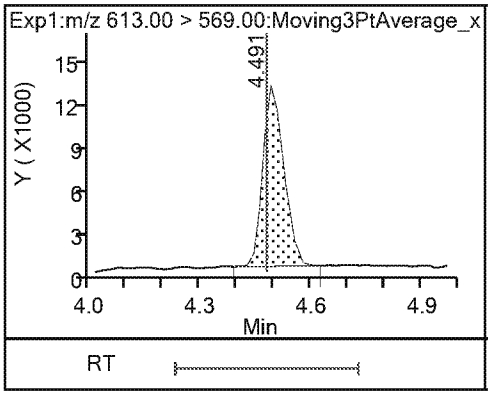
$ 11 d5-NEtFOSAA



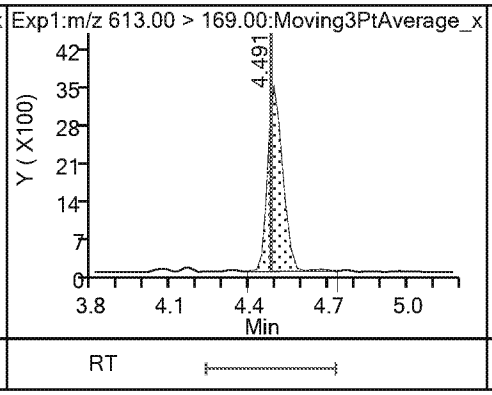
16 N-ethylperfluorooctanesulfonamidoa



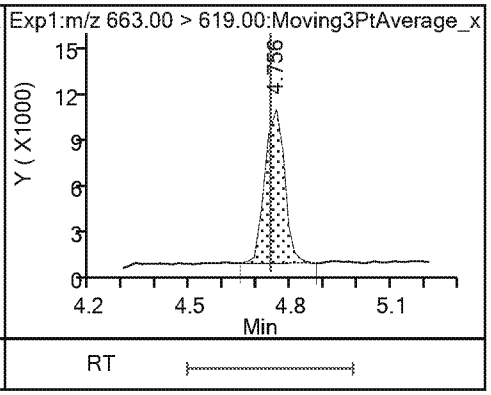
18 Perfluorododecanoic acid



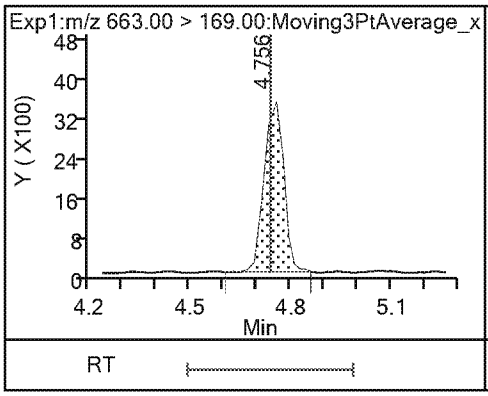
18 Perfluorododecanoic acid



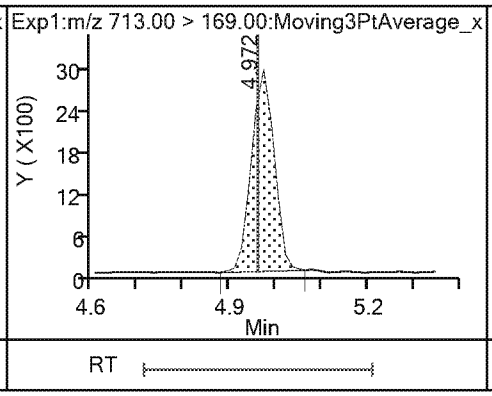
19 Perfluorotridecanoic acid



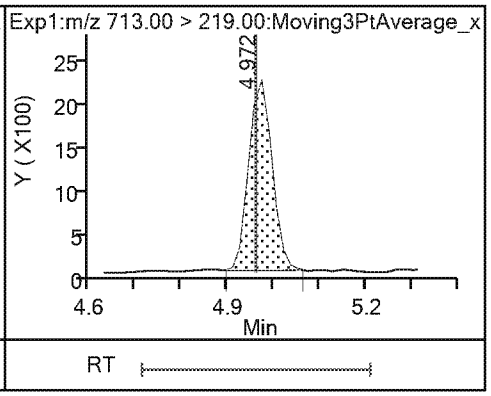
19 Perfluorotridecanoic acid



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_015.d
Lims ID: LLCS 320-285773/2-A
Client ID:
Sample Type: LLCS
Inject. Date: 04-Apr-2019 20:45:35 ALS Bottle#: 6 Worklist Smp#: 11
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: llcs 320-285773/2-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 13:44:02 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 13:31:56

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.45	97.91
$ 25 13C3 HFPO-DA	2.50	2.75	110.19
$ 10 13C2 PFDA	2.50	2.55	102.18
$ 11 d5-NEtFOSAA	2.50	2.32	92.99

Eurofins TestAmerica, Sacramento

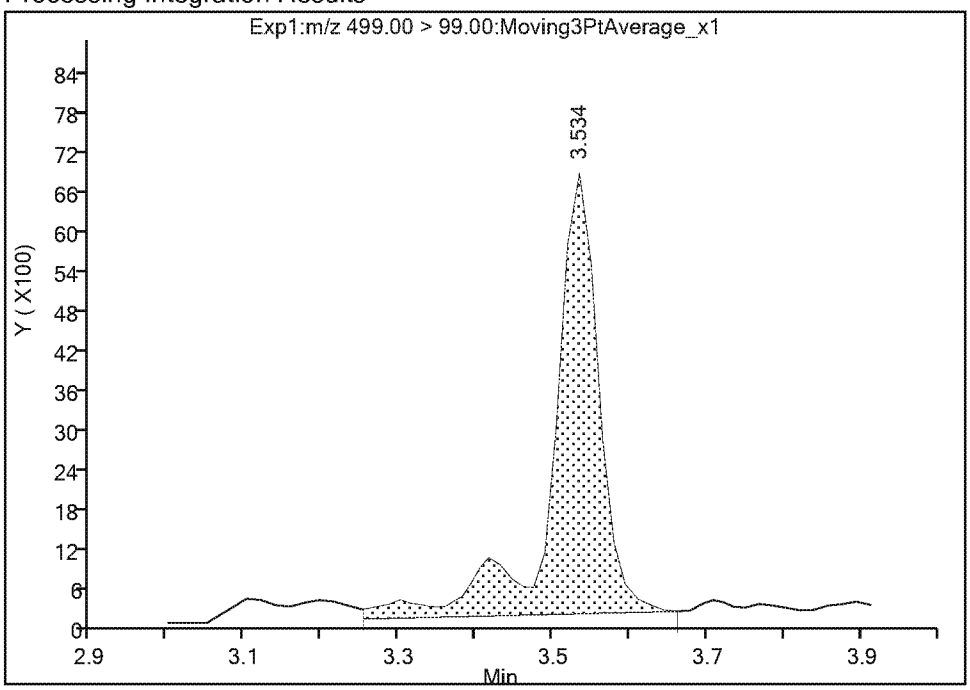
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_015.d				
Injection Date:	04-Apr-2019 20:45:35	Instrument ID:	A8_N		
Lims ID:	LLCS 320-285773/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	11
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

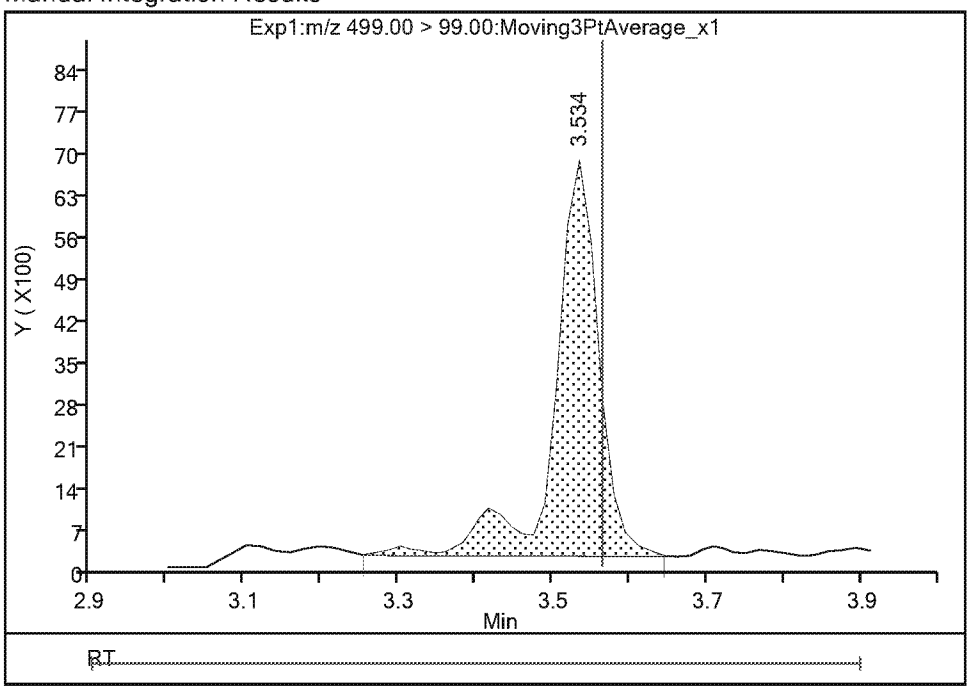
Processing Integration Results

RT: 3.53
Area: 27996
Amount: 0.087989
Amount Units: ng/ml



Manual Integration Results

RT: 3.53
Area: 26327
Amount: 0.087989
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:31:43
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

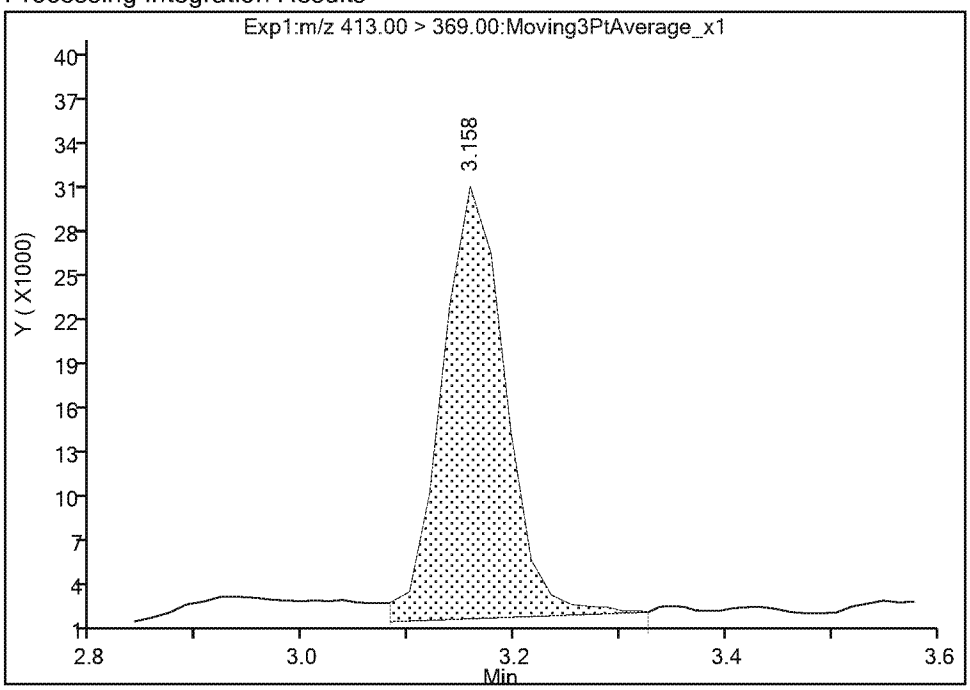
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_015.d				
Injection Date:	04-Apr-2019 20:45:35	Instrument ID:	A8_N		
Lims ID:	LLCS 320-285773/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	11
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

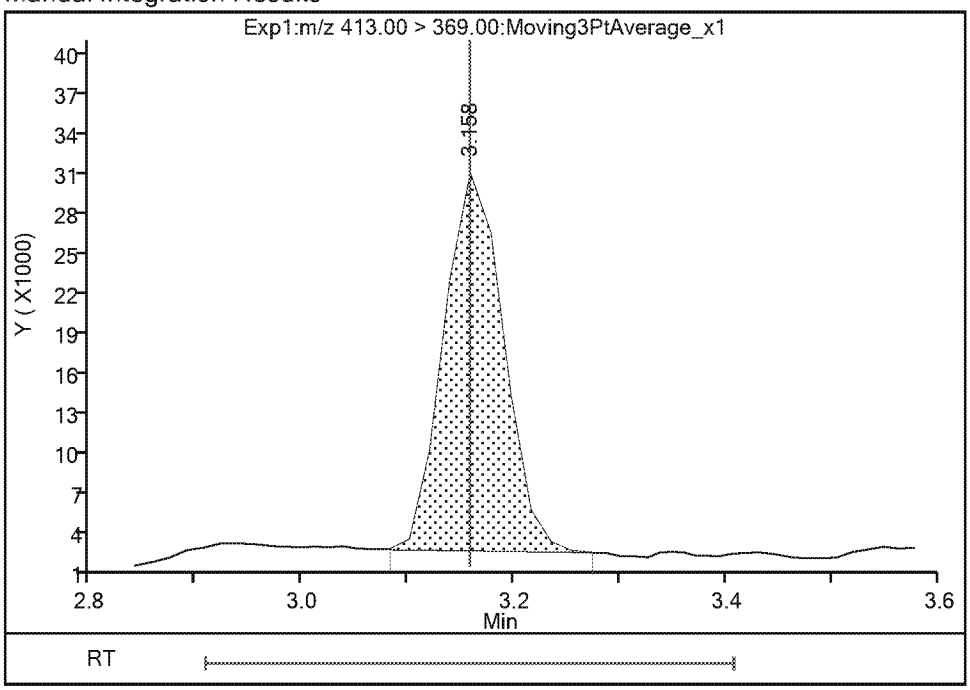
Processing Integration Results

RT: 3.16
Area: 121105
Amount: 0.101025
Amount Units: ng/ml



Manual Integration Results

RT: 3.16
Area: 110552
Amount: 0.092221
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:31:33
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

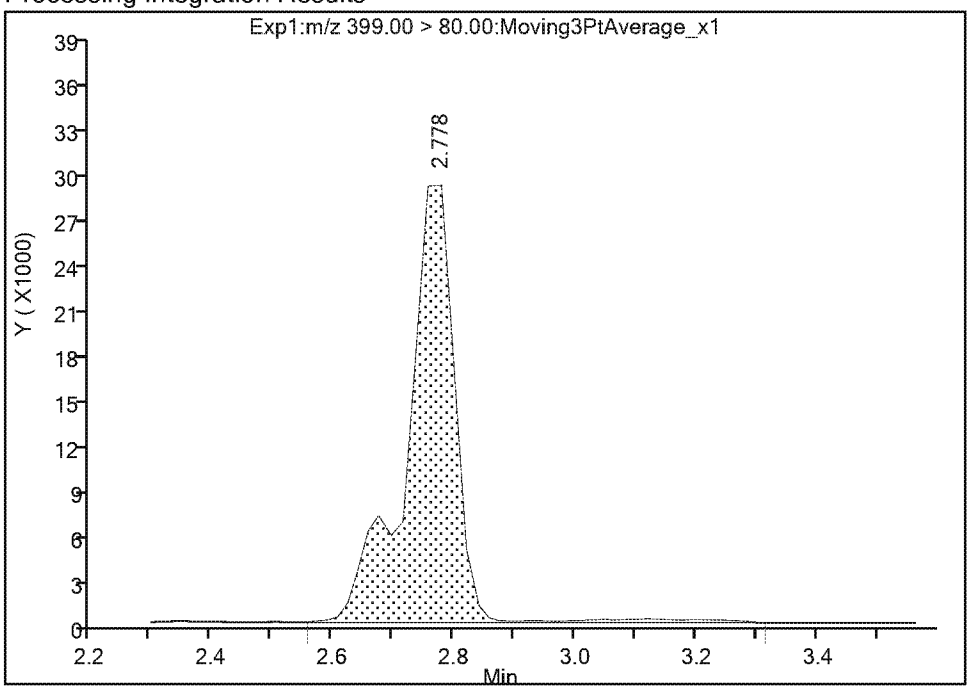
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_015.d				
Injection Date:	04-Apr-2019 20:45:35	Instrument ID:	A8_N		
Lims ID:	LLCS 320-285773/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	11
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

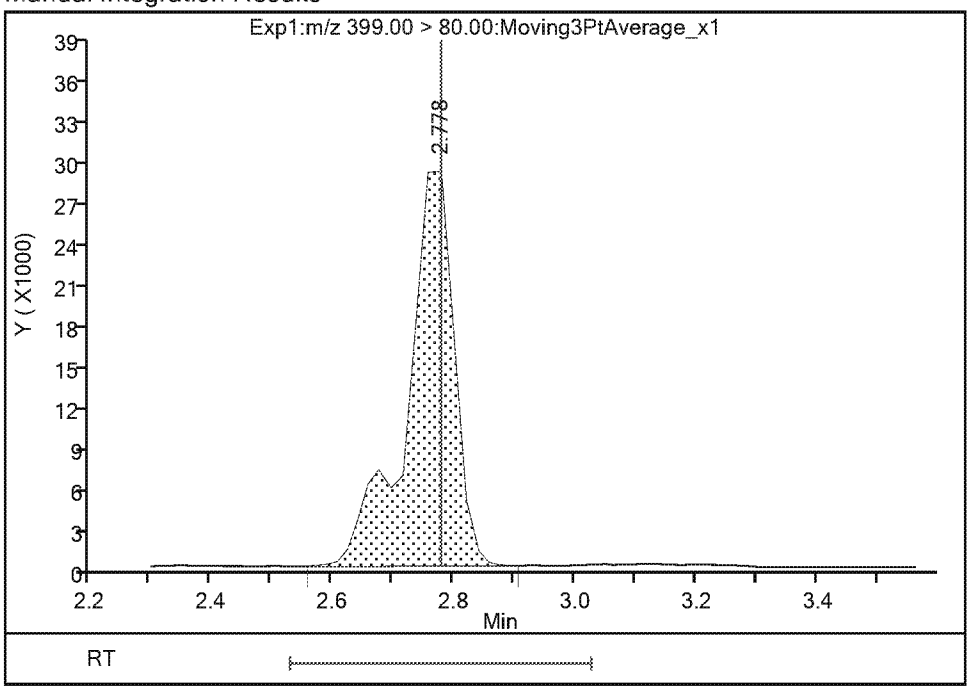
Processing Integration Results

RT: 2.78
Area: 157405
Amount: 0.091086
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 153977
Amount: 0.089102
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:31:06
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

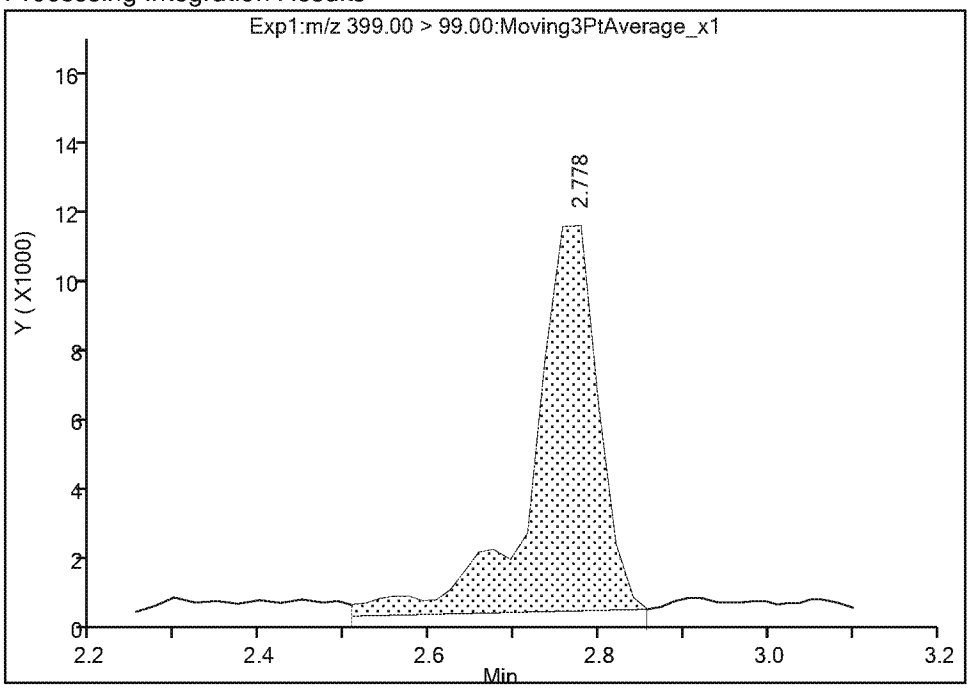
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_015.d				
Injection Date:	04-Apr-2019 20:45:35	Instrument ID:	A8_N		
Lims ID:	LLCS 320-285773/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	11
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

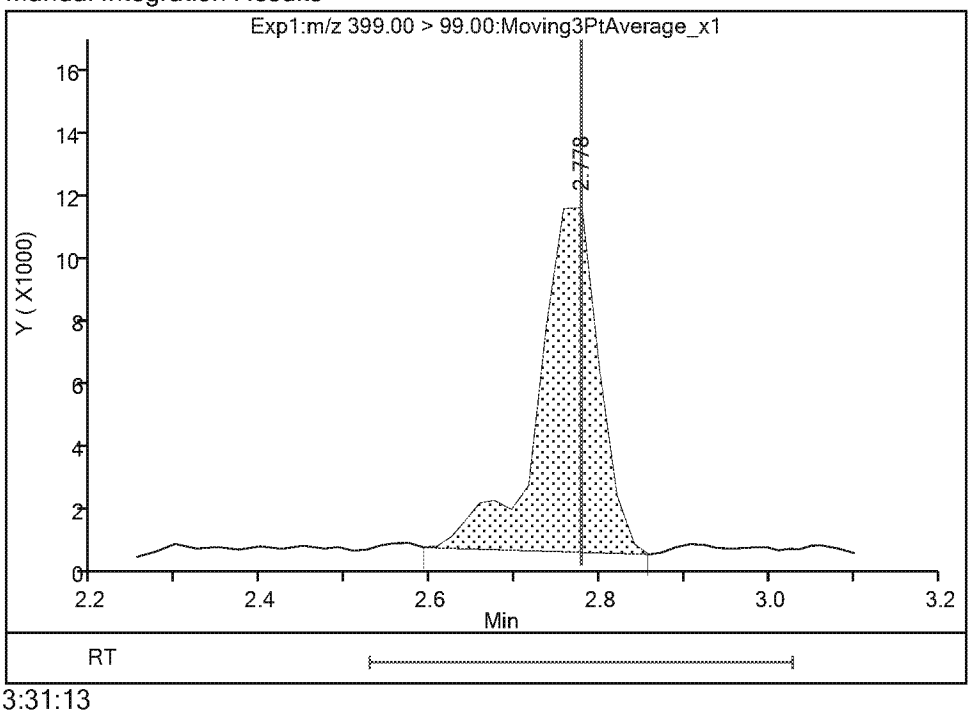
Processing Integration Results

RT: 2.78
Area: 57704
Amount: 0.091086
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 52612
Amount: 0.089102
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:31:13
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

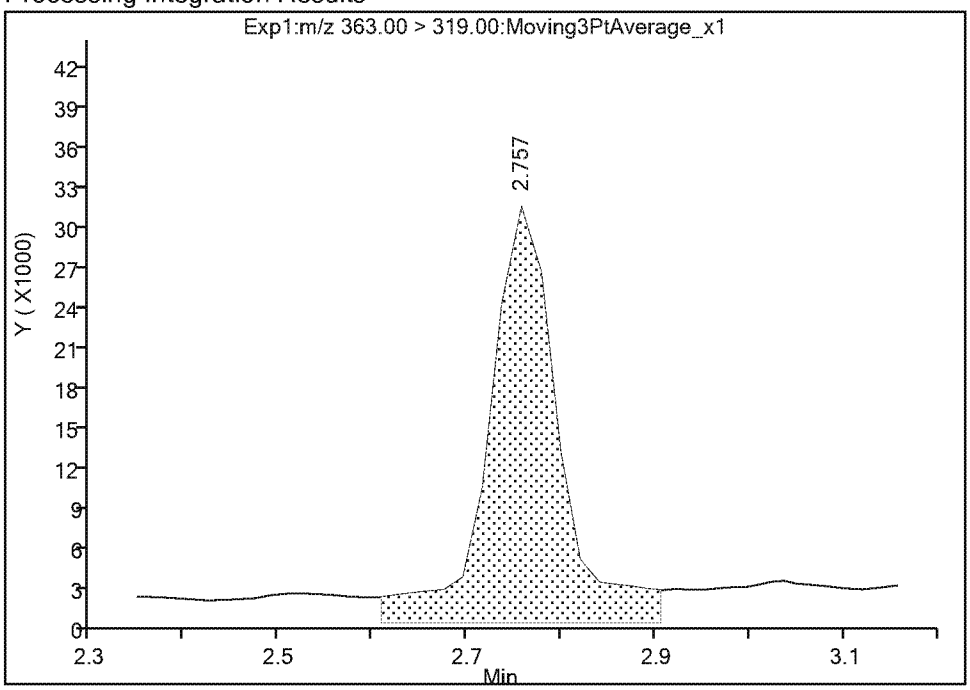
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_015.d				
Injection Date:	04-Apr-2019 20:45:35	Instrument ID:	A8_N		
Lims ID:	LLCS 320-285773/2-A				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	11
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

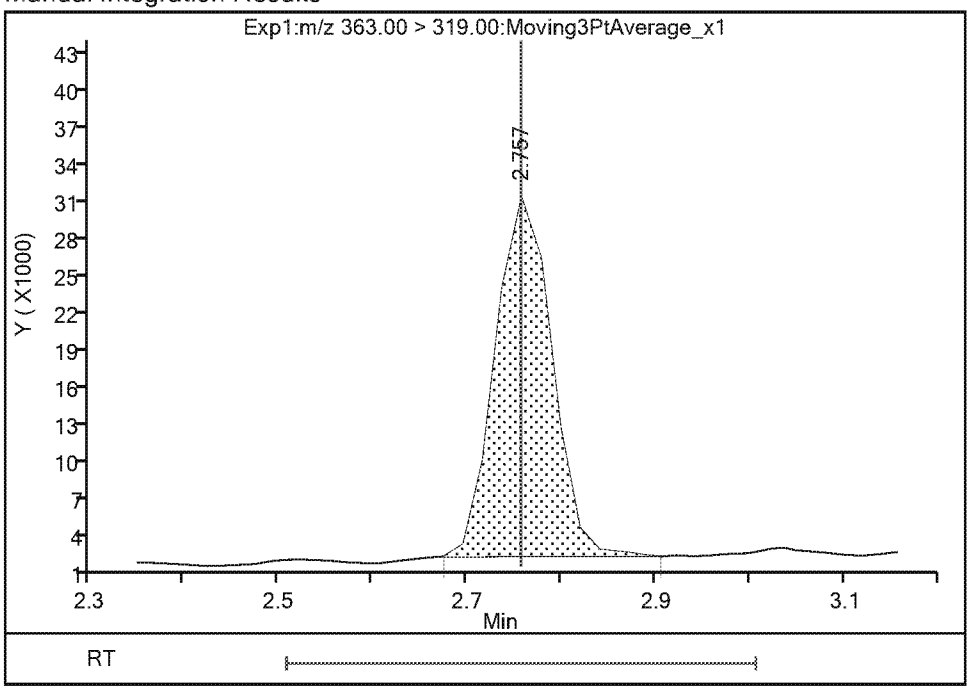
Processing Integration Results

RT: 2.76
Area: 161228
Amount: 0.128733
Amount Units: ng/ml



Manual Integration Results

RT: 2.76
Area: 118988
Amount: 0.095007
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:31:21
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AR0 LMS
Lab Sample ID: 320-48796-1 LMS
Matrix: Water
Lab File ID: 2019.04.04_537AA_017.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 12:29
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 281.8(mL)
Date Analyzed: 04/04/2019 21:04
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.: 286192
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	8.83		1.8	0.84
335-67-1	Perfluorooctanoic acid	11.4		5.3	2.4
375-95-1	Perfluorononanoic acid	4.52		1.8	0.42
355-46-4	Perfluorohexanesulfonic acid	3.20		1.8	0.57
375-85-9	Perfluoroheptanoic acid	6.56		2.7	1.2
375-73-5	Perfluorobutanesulfonic acid	3.46		1.8	0.71

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	96		70-130
STL00996	13C2 PFDA	98		70-130

Eurofins TestAmerica, Sacramento
Target Compound Quantitation Report

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_017.d
Lims ID: 320-48796-A-1-B LMS
Client ID:
Sample Type: LMS
Inject. Date: 04-Apr-2019 21:04:36 ALS Bottle#: 8 Worklist Smp#: 13
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-a-1-b lms
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 13:44:02 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 13:35:09
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	146905	0.0975	Target=1.41	190	
298.90 > 99.00	1.976	1.976	0.0	0.992	99151		1.48(0.00-0.00)	44.3	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.322	0.025	0.743	276376	0.2047	Target=10.46	33.5	
313.00 > 119.00	2.347	2.322	0.025	0.743	24738		11.17(0.00-0.00)	26.0	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.322	0.025	1.000	3407891	2.41		7046	
22 Perfluoro(2-propoxypropanoic) acid									
329.10 > 285.00	2.274	2.473	-0.199	0.919	446	0.001359		0.2	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	154482	2.43		709	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.757	2.757	0.0	1.000	237637	0.1848	Target=2.41	18.0	M
363.00 > 169.00	2.757	2.757	0.0	1.000	104990		2.26(0.00-0.00)	177	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.778	0.0	1.000	165020	0.0903	Target=2.91	55.8	M
399.00 > 99.00	2.778	2.778	0.0	1.000	52910		3.12(0.00-0.00)	20.1	M
* 5 13C2 PFOA									
415.00 > 370.00	3.158	3.158	0.0		3033403	2.50		10559	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.177	3.158	0.019	1.006	395953	0.3217	Target=1.70	45.3	M
413.00 > 169.00	3.177	3.158	0.019	1.006	228013		1.74(0.00-0.00)	295	M
* 7 13C4 PFOS									
503.00 > 80.00	3.549	3.534	0.015		3048383	2.39		3412	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	114128	0.1273	Target=3.78	45.5	
463.00 > 169.00	3.549	3.549	0.0	1.000	31108		3.67(0.00-0.00)	152	

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	3.549	3.564	-0.015	1.000	335367	0.2489	Target=4.63	176	M
499.00 > 99.00	3.549	3.564	-0.015	1.000	58791		5.70(0.00-0.00)	43.1	M
14 Perfluorodecanoic acid									
513.00 > 469.00	3.892	3.892	0.0	1.000	74126	0.1044	Target=4.93	22.9	
513.00 > 169.00	3.892	3.892	0.0	1.000	13076		5.67(0.00-0.00)	40.0	
$ 10 13C2 PFDA									
515.00 > 470.00	3.911	3.892	0.019	1.000	1854164	2.46		8676	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		536376	2.50		2321	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.070	4.070	0.0	1.000	17550	0.0874		159	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.214	4.204	0.010	1.000	50644	0.0939	Target=4.73	21.5	
563.00 > 169.00	4.214	4.204	0.010	1.000	11407		4.44(0.00-0.00)	155	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.214	4.220	-0.006	1.035	496213	2.26		287	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.231	4.220	0.011	1.004	16861	0.0866		51.7	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.488	4.479	0.009	1.000	50229	0.0929	Target=3.49	31.6	
613.00 > 169.00	4.488	4.479	0.009	1.000	12863		3.90(0.00-0.00)	173	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.753	4.738	0.015	1.000	37764	0.0902	Target=2.87	13.6	
663.00 > 169.00	4.753	4.738	0.015	1.000	12775		2.96(0.00-0.00)	130	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.969	4.960	0.009	1.000	9891	0.0918	Target=1.40	170	
713.00 > 219.00	4.969	4.960	0.009	1.000	6786		1.46(0.00-0.00)	81.9	

QC Flag Legend

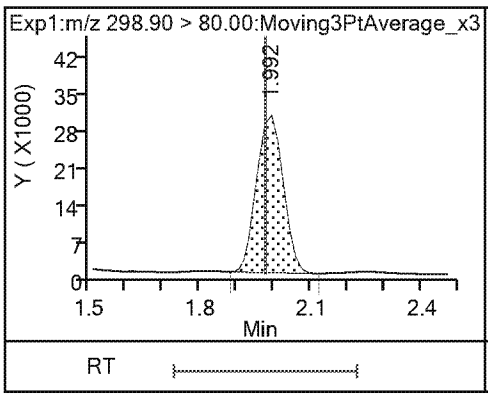
Review Flags

M - Manually Integrated

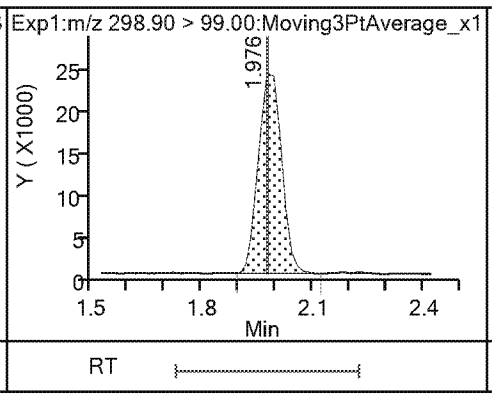
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_017.d
Injection Date: 04-Apr-2019 21:04:36 Instrument ID: A8_N
Lims ID: 320-48796-A-1-B LMS
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 8 Worklist Smp#: 13
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

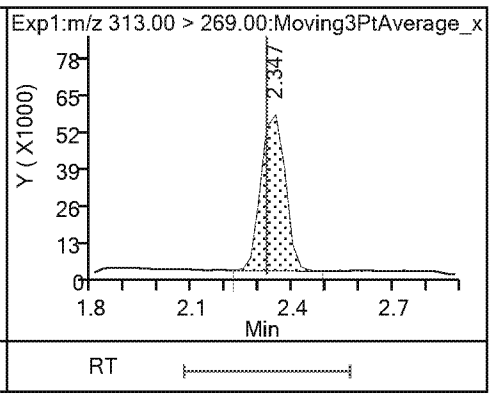
1 Perfluorobutanesulfonic acid



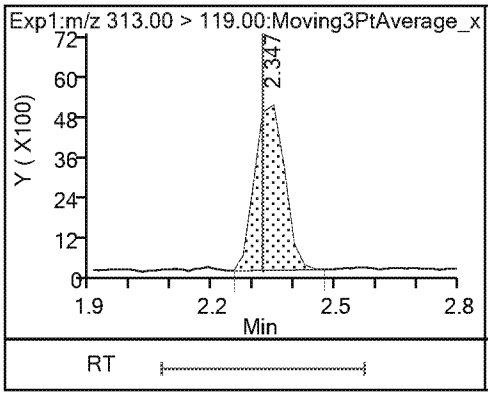
1 Perfluorobutanesulfonic acid



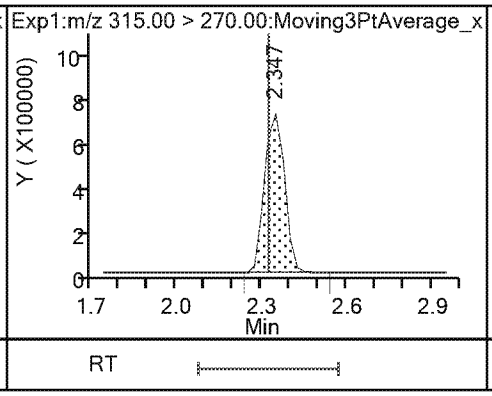
13 Perfluorohexanoic acid



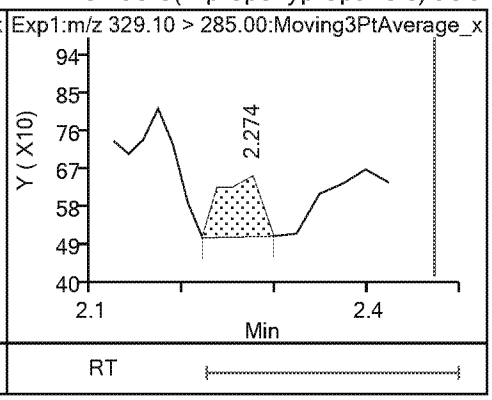
13 Perfluorohexanoic acid



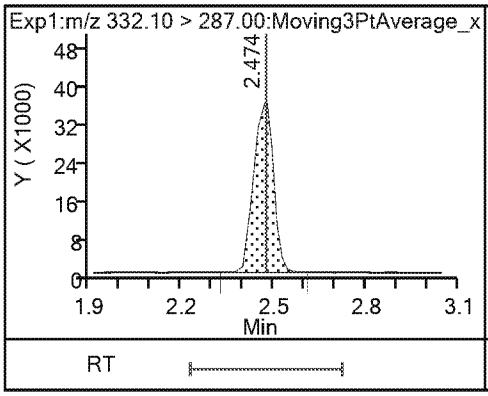
$ 2 13C2 PFHxA



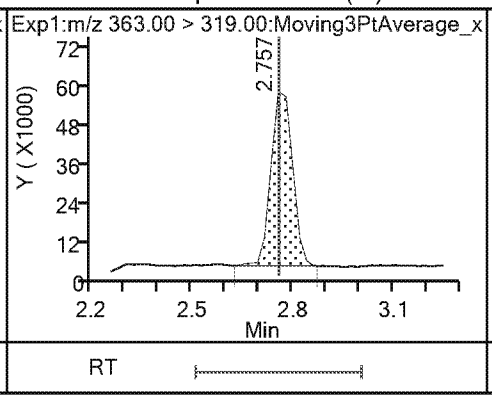
22 Perfluoro(2-propoxypropanoic) acid



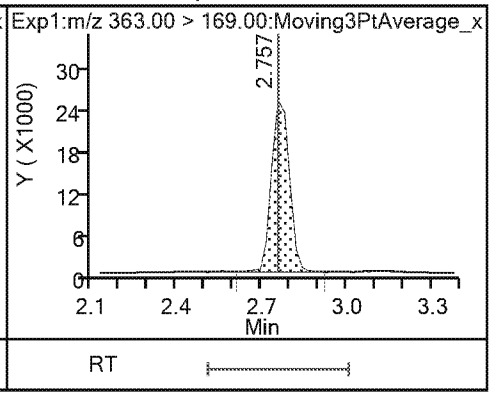
$ 25 13C3 HFPO-DA



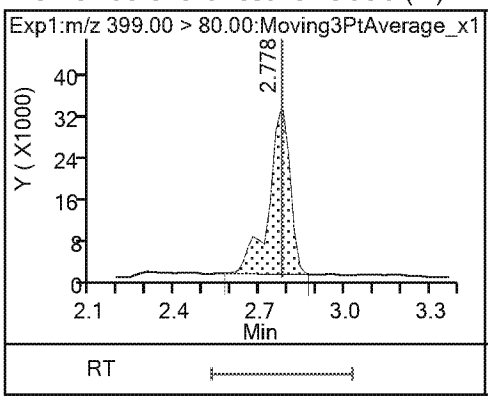
4 Perfluoroheptanoic acid (M)



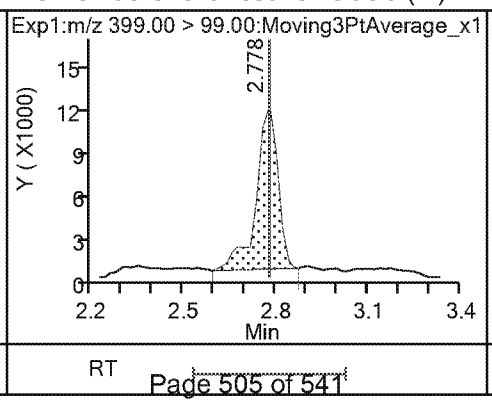
4 Perfluoroheptanoic acid



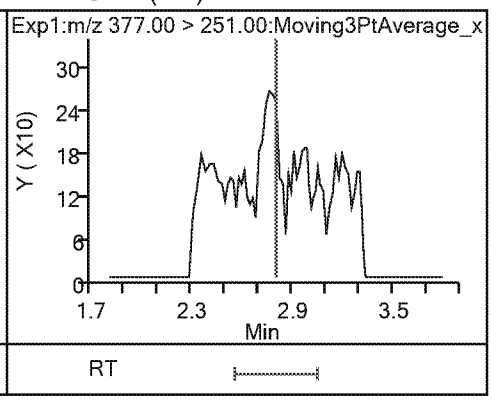
3 Perfluorohexanesulfonic acid (M)



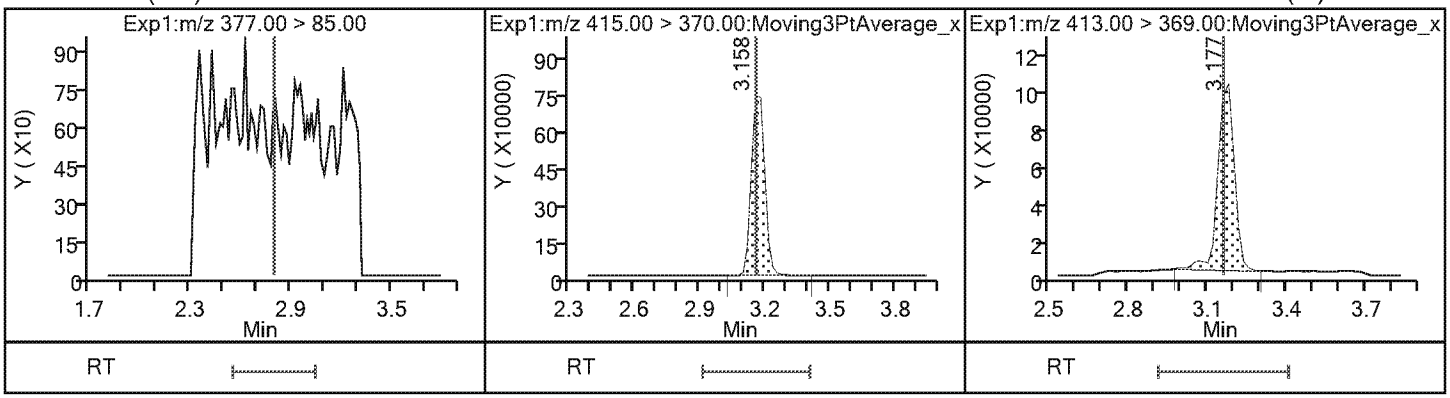
3 Perfluorohexanesulfonic acid (M)



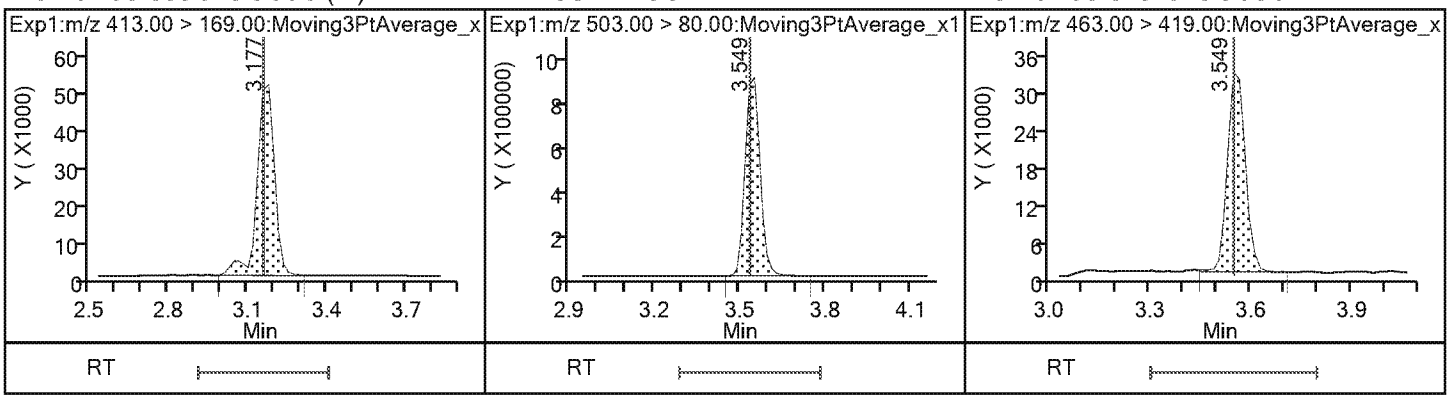
24 DONA (ND)



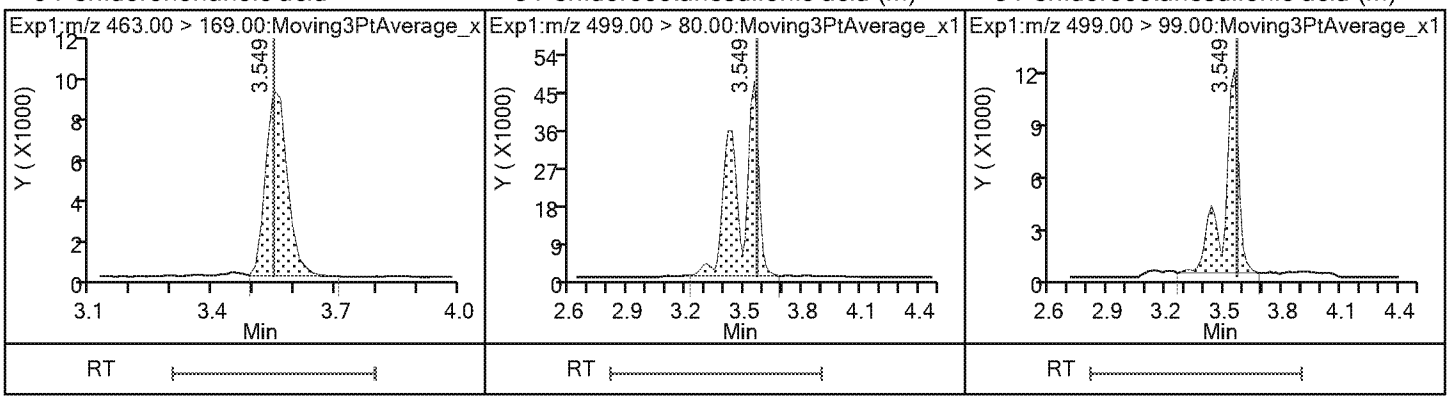
24 DONA (ND) * 5 13C2 PFOA 6 Perfluorooctanoic acid (M)



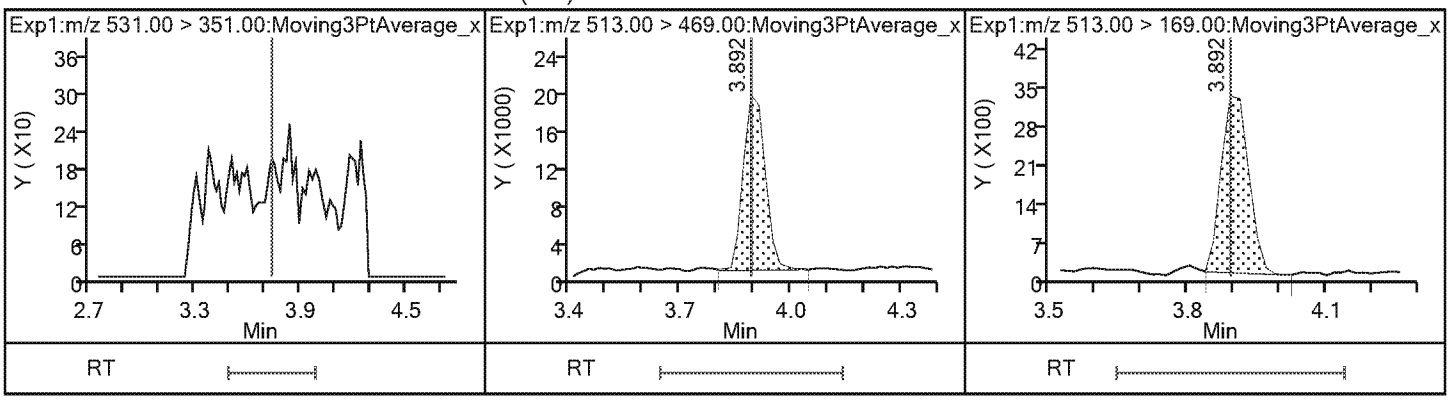
6 Perfluorooctanoic acid (M) * 7 13C4 PFOS 9 Perfluorononanoic acid



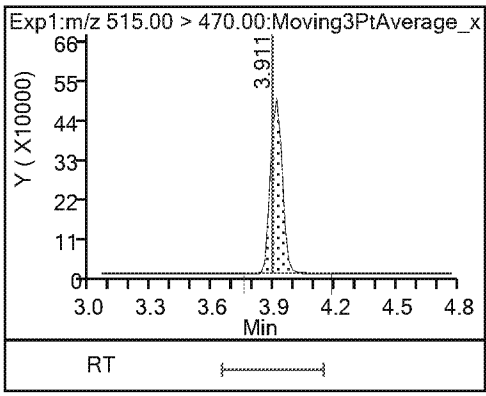
9 Perfluorononanoic acid 8 Perfluorooctanesulfonic acid (M) 8 Perfluorooctanesulfonic acid (M)



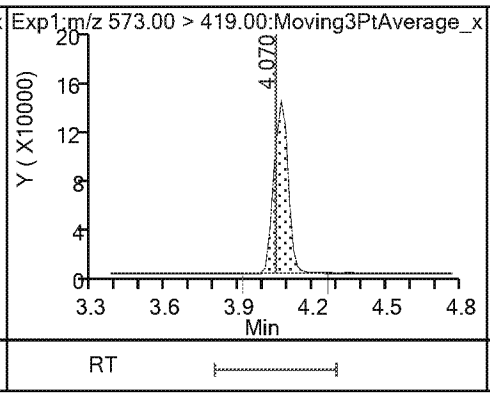
23 9-Chlorohexadecafluoro-3-oxanonane1(ND) 14 Perfluorodecanoic acid 14 Perfluorodecanoic acid



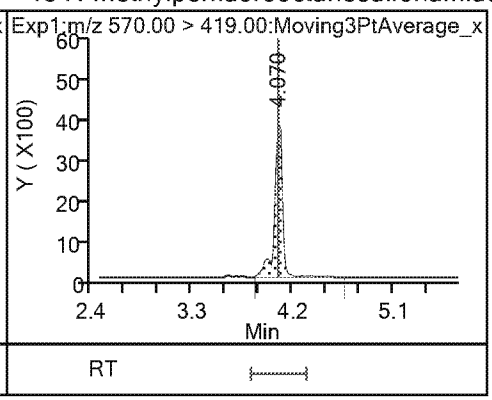
$ 10 13C2 PFDA



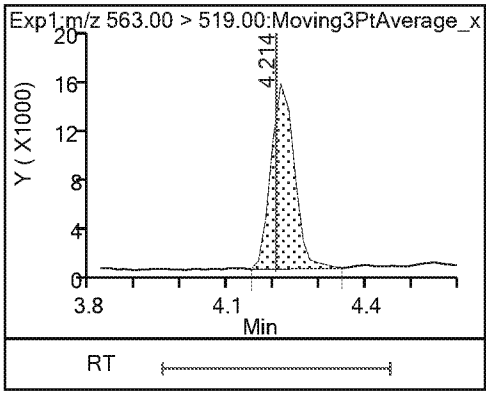
* 12 d3-NMeFOSAA



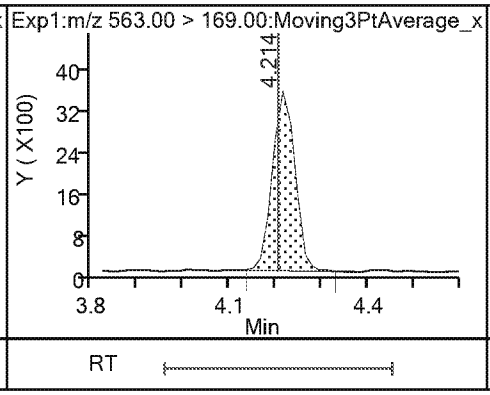
15 N-methylperfluorooctanesulfonamido



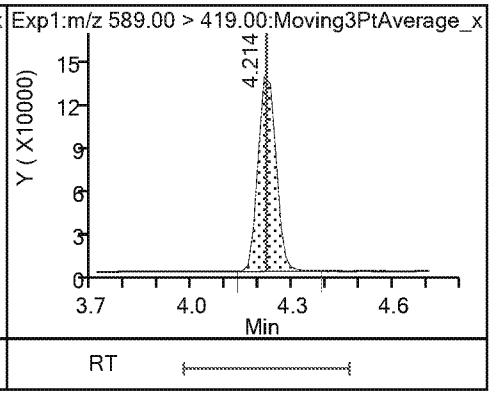
17 Perfluoroundecanoic acid



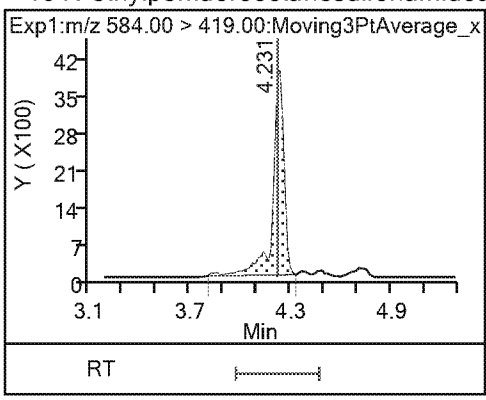
17 Perfluoroundecanoic acid



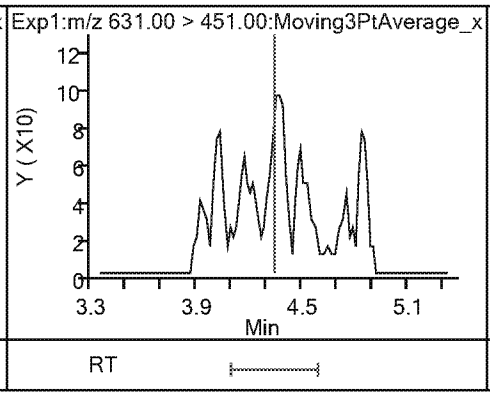
$ 11 d5-NEtFOSAA



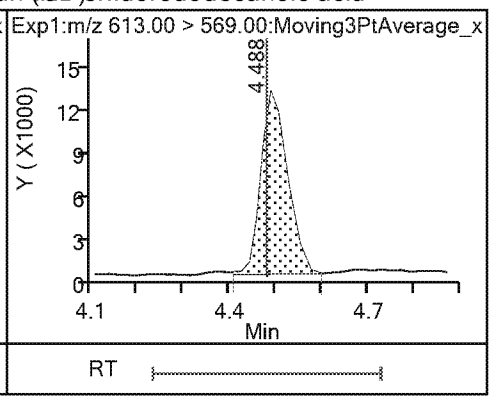
16 N-ethylperfluorooctanesulfonamidoa



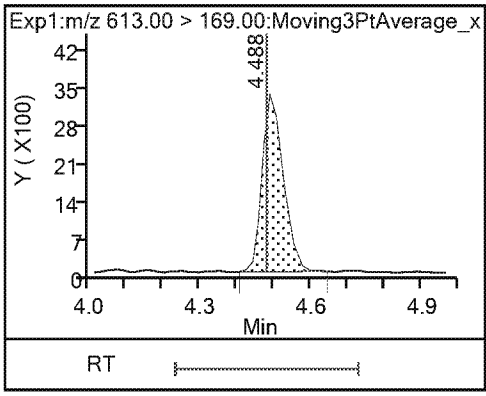
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



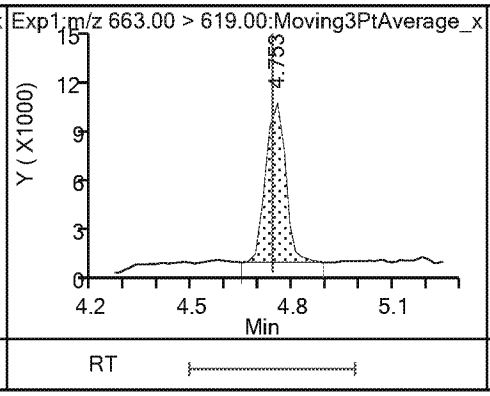
18 Perfluorododecanoic acid



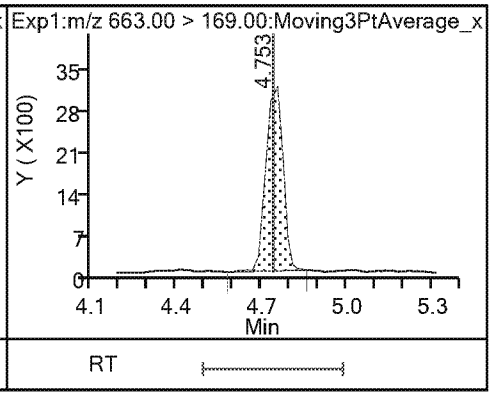
18 Perfluorododecanoic acid



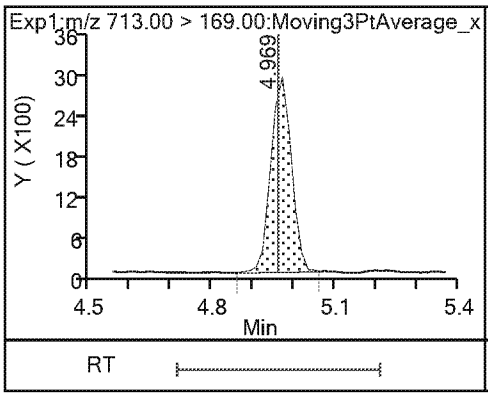
19 Perfluorotridecanoic acid



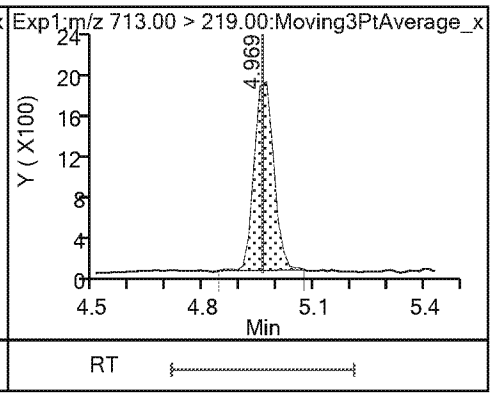
19 Perfluorotridecanoic acid



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_017.d
Lims ID: 320-48796-A-1-B LMS
Client ID:
Sample Type: LMS
Inject. Date: 04-Apr-2019 21:04:36 ALS Bottle#: 8 Worklist Smp#: 13
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-a-1-b lms
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 13:44:02 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 13:35:09

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.41	96.38
$ 25 13C3 HFPO-DA	2.50	2.43	97.27
$ 10 13C2 PFDA	2.50	2.46	98.43
$ 11 d5-NEtFOSAA	2.50	2.26	90.52

Eurofins TestAmerica, Sacramento

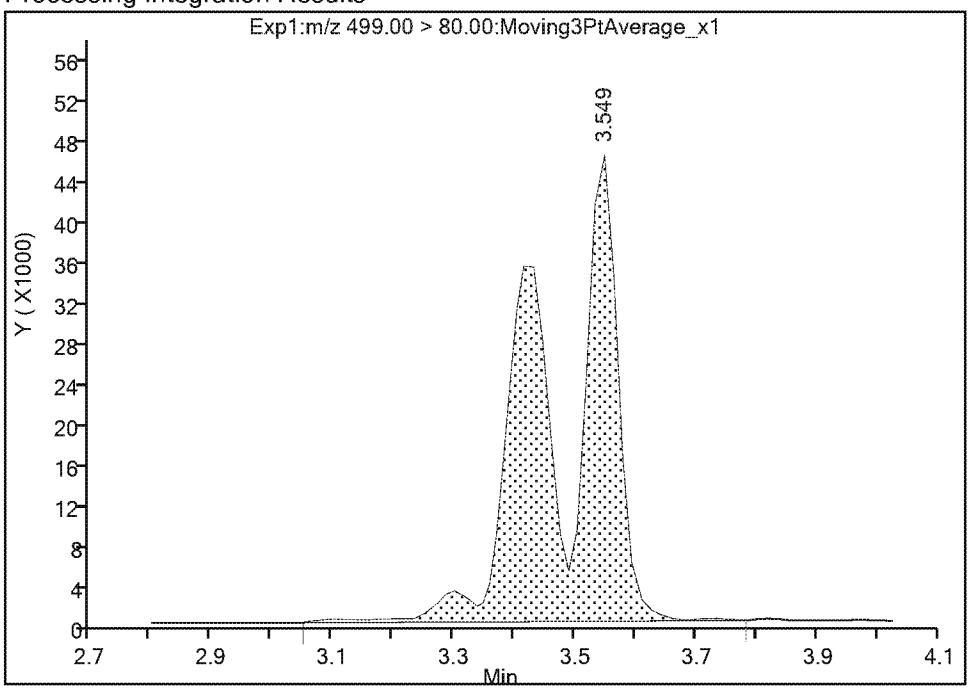
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_017.d				
Injection Date:	04-Apr-2019 21:04:36	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-B LMS				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	13
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 1

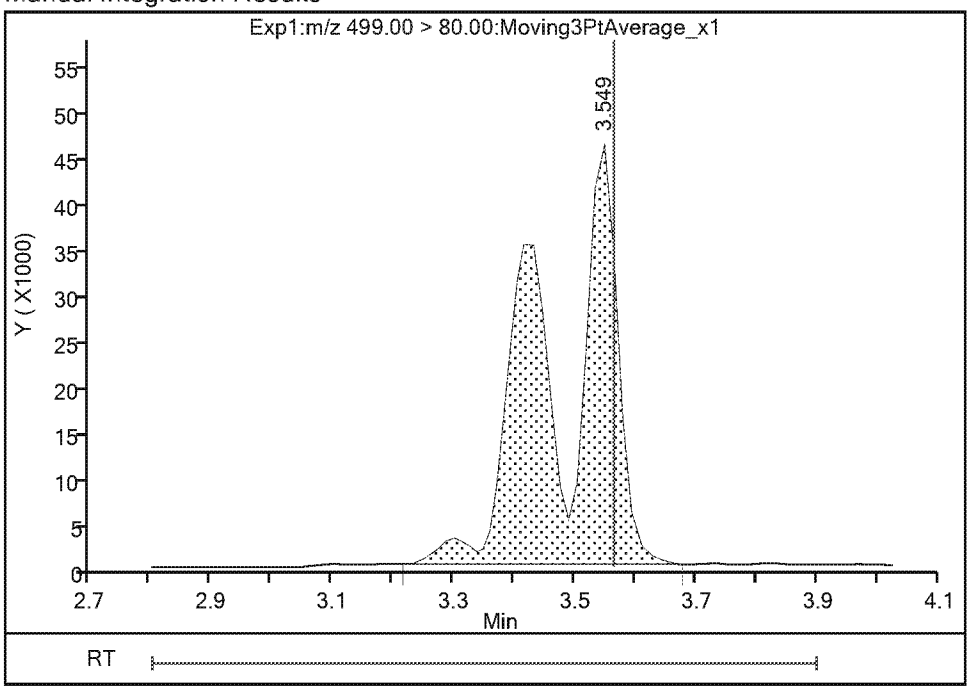
Processing Integration Results

RT: 3.55
Area: 342618
Amount: 0.254295
Amount Units: ng/ml



Manual Integration Results

RT: 3.55
Area: 335367
Amount: 0.248913
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:34:46
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

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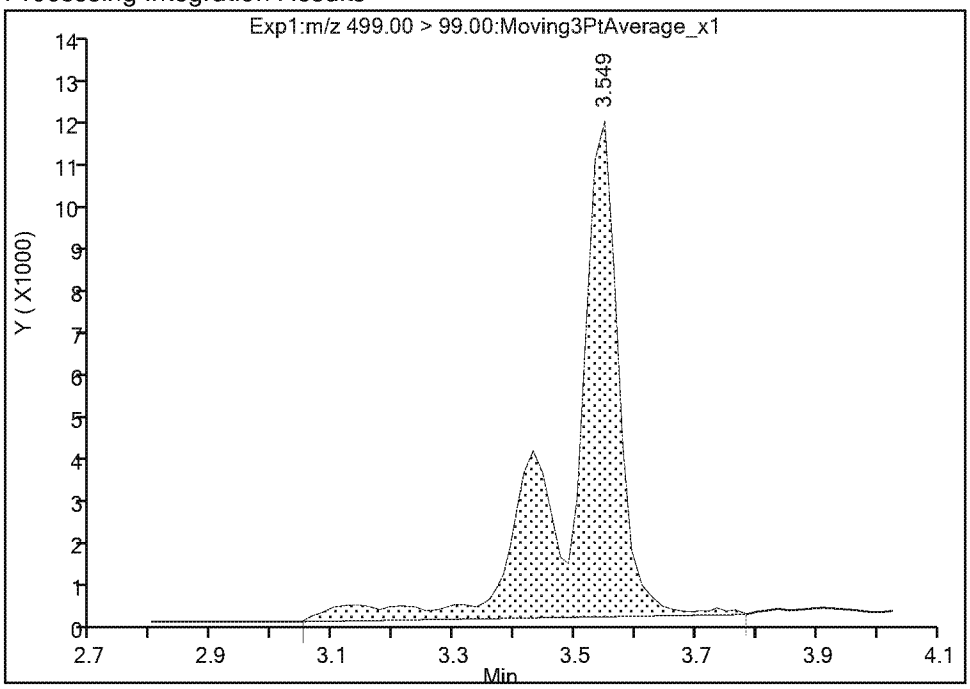
Injection Date:	04-Apr-2019 21:04:36	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-B LMS				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	13
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

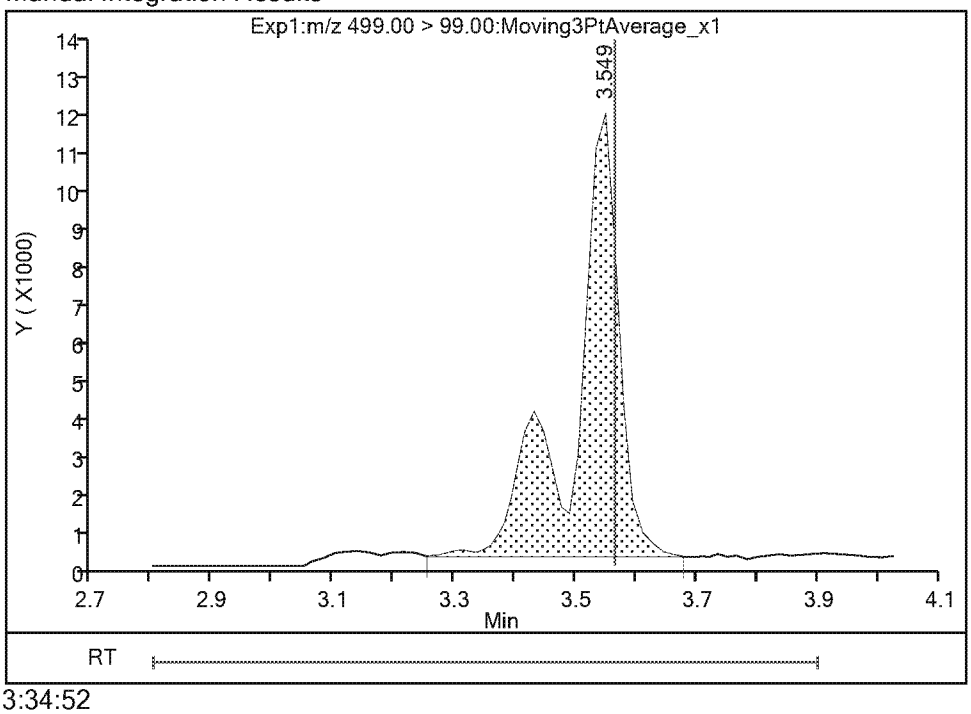
Processing Integration Results

RT: 3.55
Area: 66211
Amount: 0.254295
Amount Units: ng/ml



Manual Integration Results

RT: 3.55
Area: 58791
Amount: 0.248913
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:34:52
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

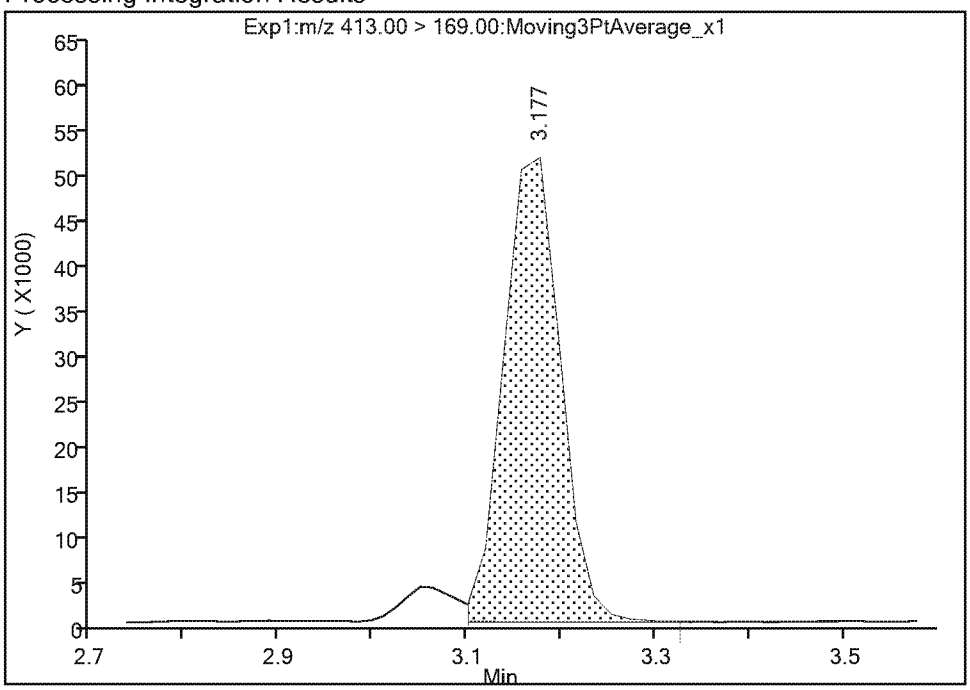
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_017.d				
Injection Date:	04-Apr-2019 21:04:36	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-B LMS				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	13
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

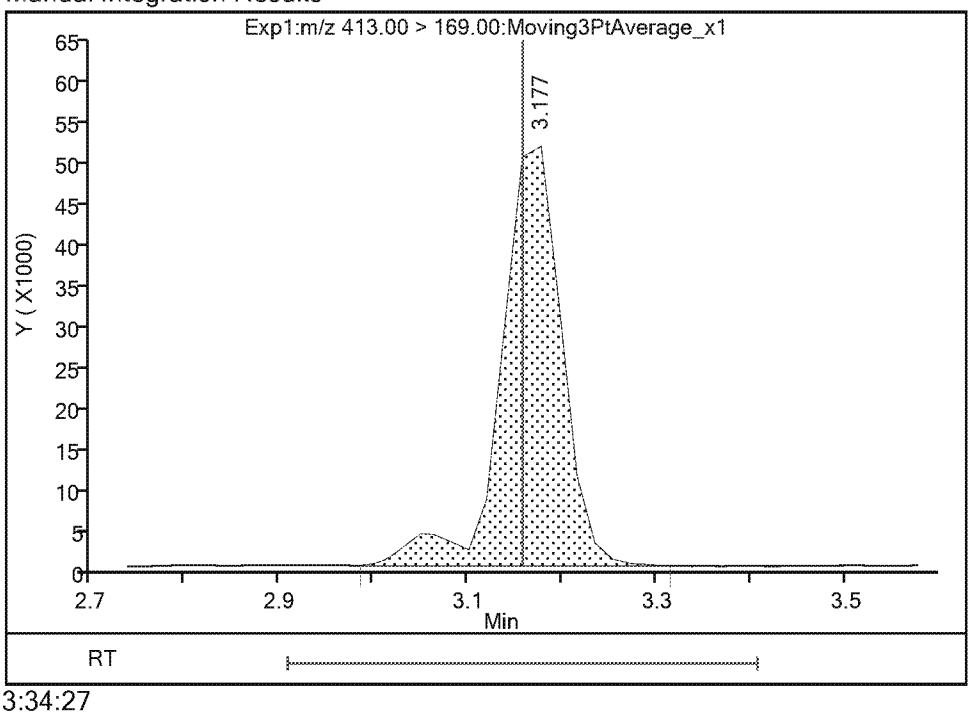
Processing Integration Results

RT: 3.18
Area: 212853
Amount: 0.318037
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 228013
Amount: 0.321682
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:34:27
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

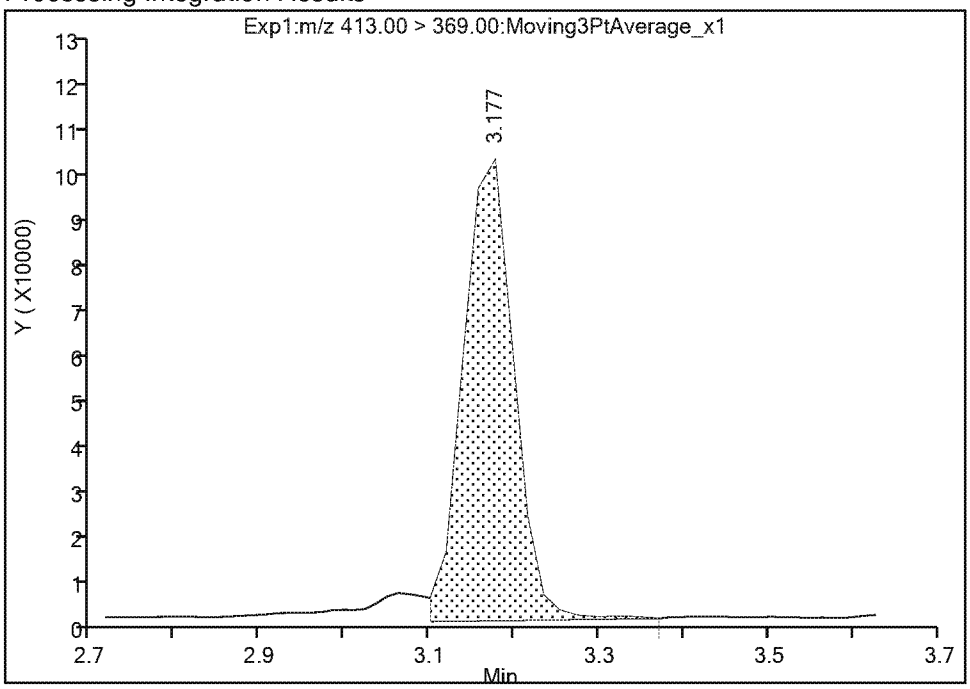
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_017.d				
Injection Date:	04-Apr-2019 21:04:36	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-B LMS				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	13
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

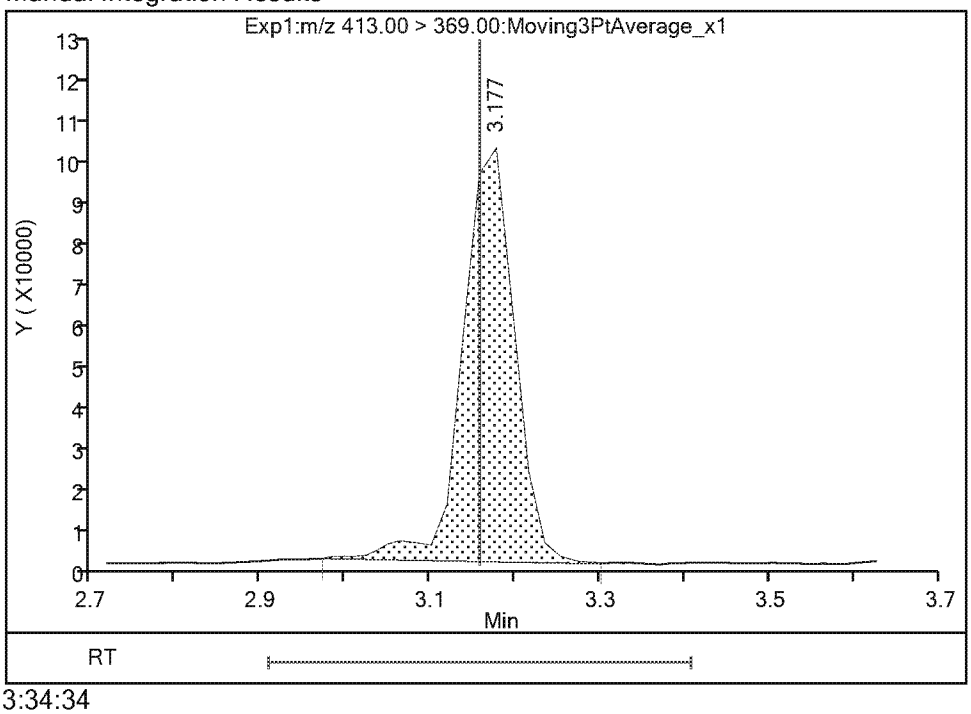
Processing Integration Results

RT: 3.18
Area: 391466
Amount: 0.318037
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 395953
Amount: 0.321682
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:34:34
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

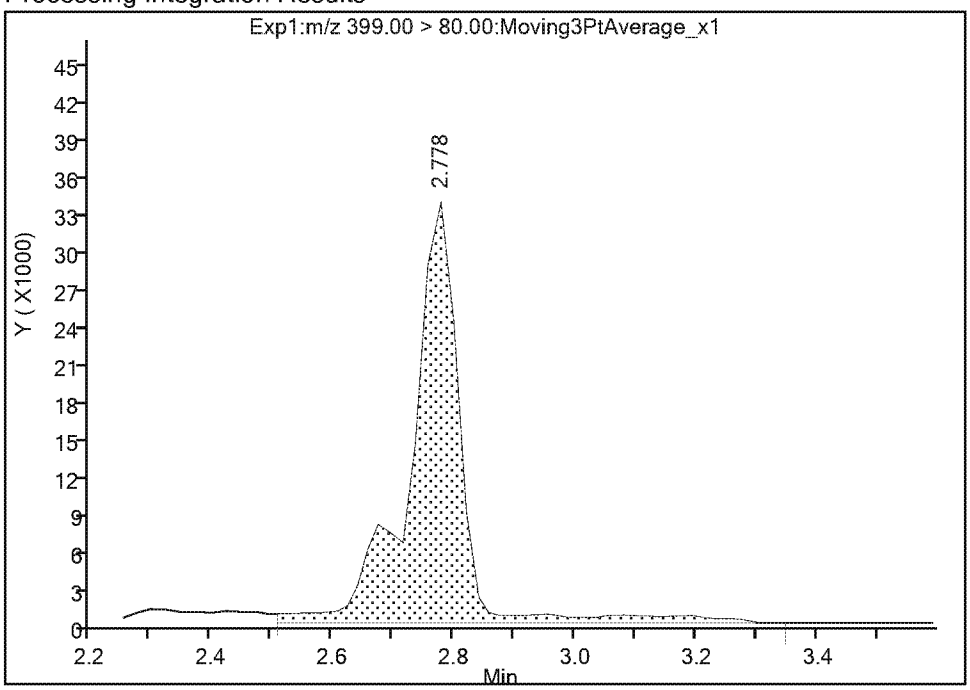
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_017.d				
Injection Date:	04-Apr-2019 21:04:36	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-B LMS				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	13
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

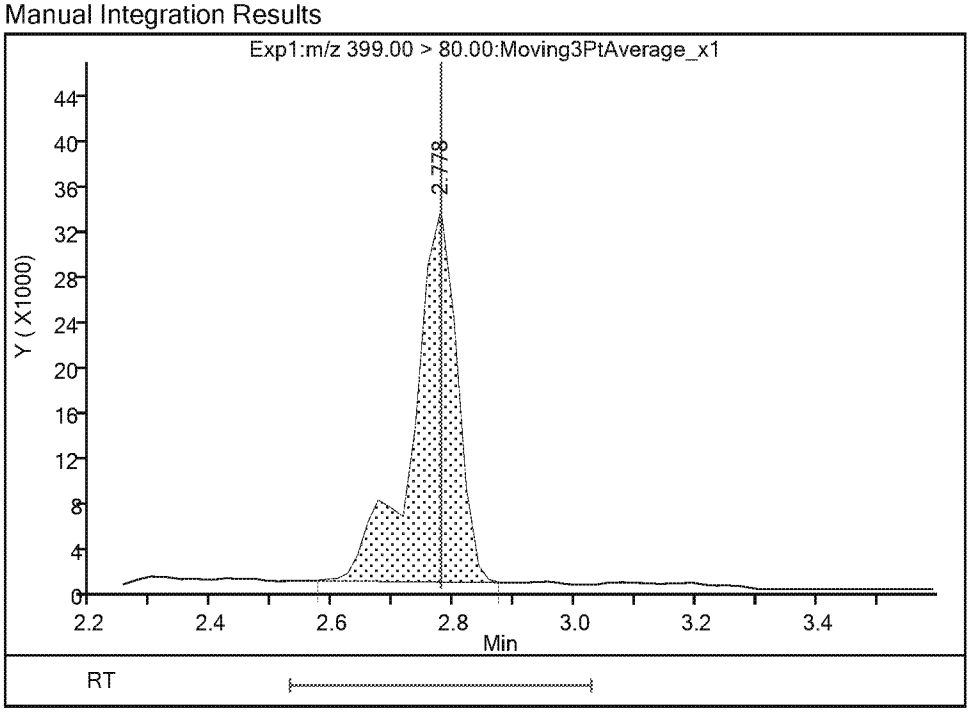
Processing Integration Results

RT: 2.78
Area: 190858
Amount: 0.104426
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 165020
Amount: 0.090289
Amount Units: ng/ml



Reviewer: Ex. 4 CBI, 05-Apr-2019 13:33:52
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

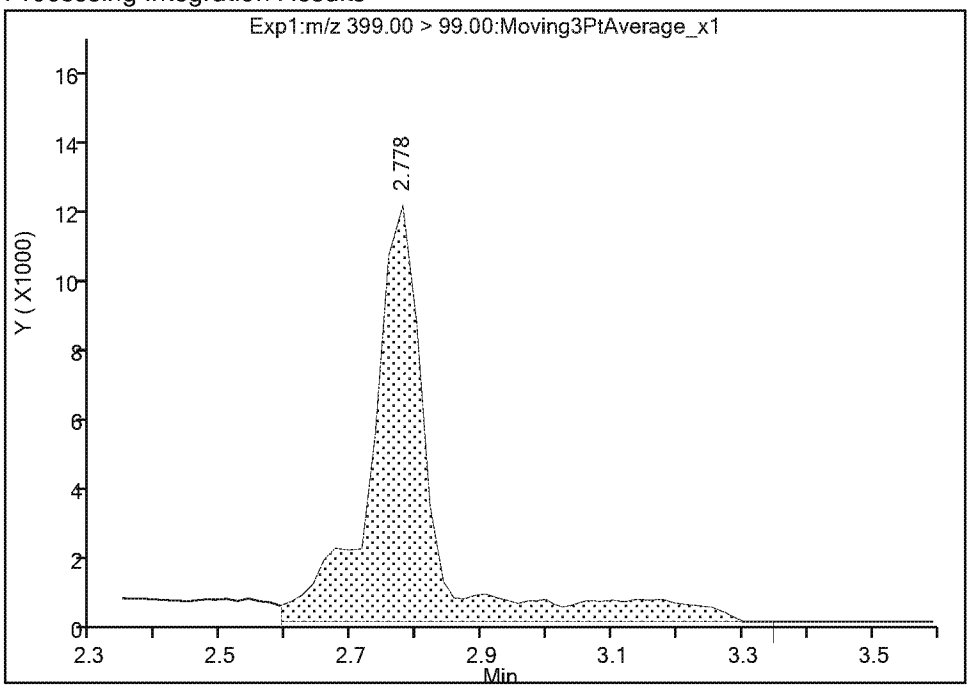
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_017.d				
Injection Date:	04-Apr-2019 21:04:36	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-B LMS				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	13
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

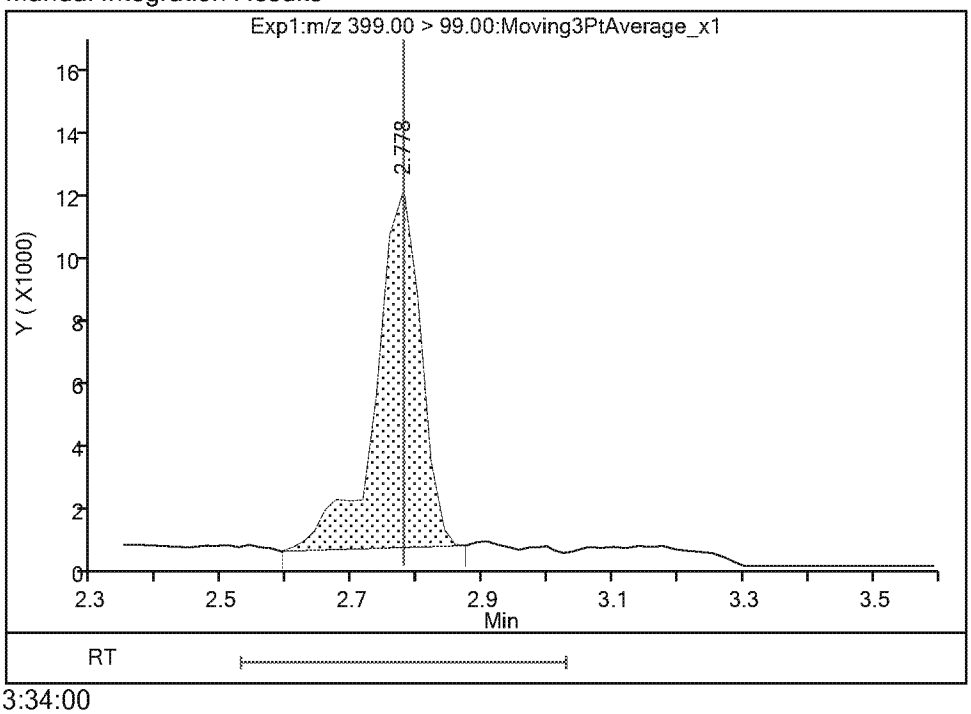
Processing Integration Results

RT: 2.78
Area: 75449
Amount: 0.104426
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 52910
Amount: 0.090289
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:34:00
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

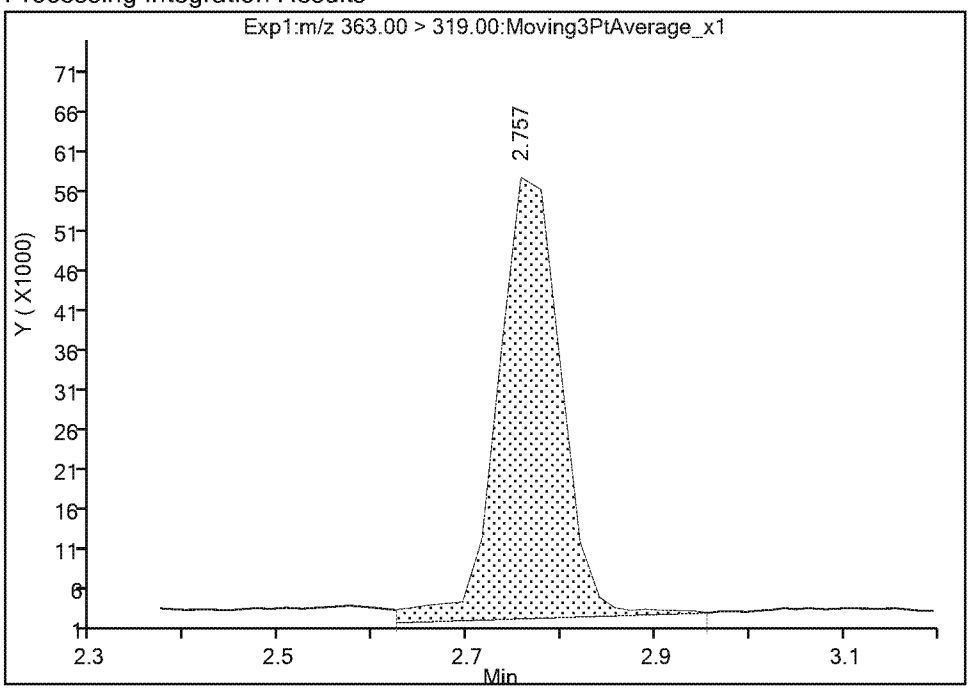
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_017.d				
Injection Date:	04-Apr-2019 21:04:36	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-B LMS				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	8	Worklist Smp#:	13
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

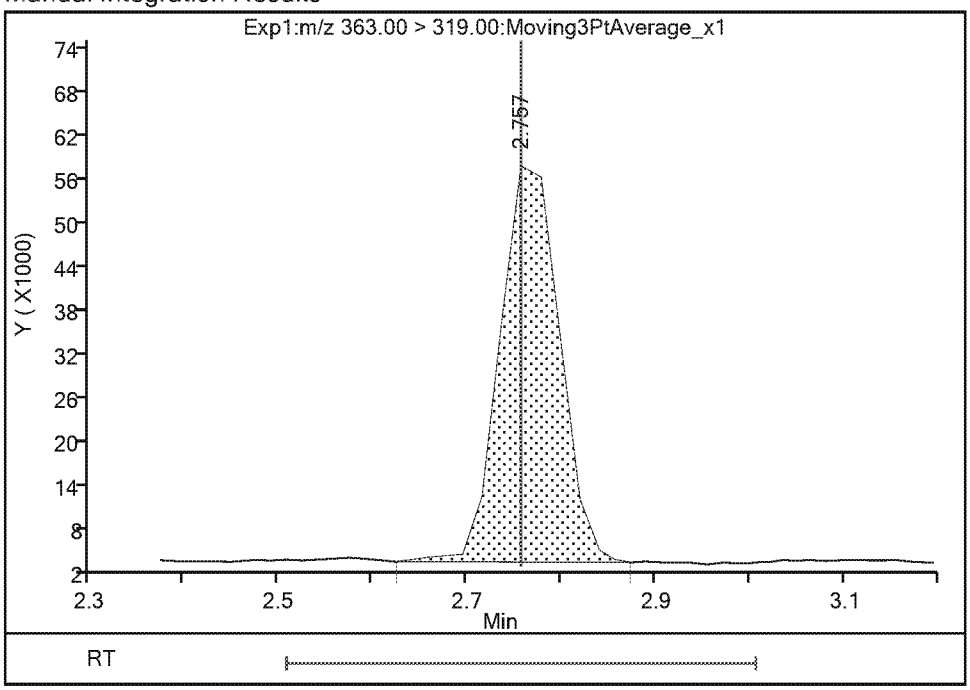
Processing Integration Results

RT: 2.76
Area: 256106
Amount: 0.199154
Amount Units: ng/ml



Manual Integration Results

RT: 2.76
Area: 237637
Amount: 0.184792
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:34:11
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins TestAmerica, Sacramento
Job No.: 320-48796-1
SDG No.:
Client Sample ID: C0AR0 LMSD
Lab Sample ID: 320-48796-1 LMSD
Matrix: Water
Lab File ID: 2019.04.04_537AA_018.d
Analysis Method: 537 DW
Date Collected: 03/27/2019 12:29
Extraction Method: 537 DW
Date Extracted: 04/02/2019 17:08
Sample wt/vol: 289.8(mL)
Date Analyzed: 04/04/2019 21:14
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.: 286192
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid	7.50		1.7	0.82
335-67-1	Perfluorooctanoic acid	8.79		5.2	2.3
375-95-1	Perfluorononanoic acid	4.49		1.7	0.41
355-46-4	Perfluorohexanesulfonic acid	2.94		1.7	0.55
375-85-9	Perfluoroheptanoic acid	5.57		2.6	1.1
375-73-5	Perfluorobutanesulfonic acid	2.88		1.7	0.69

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL00993	13C2 PFHxA	97		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_018.d
Lims ID: 320-48796-A-1-C LMSD
Client ID:
Sample Type: LMSD
Inject. Date: 04-Apr-2019 21:14:05 ALS Bottle#: 9 Worklist Smp#: 14
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-a-1-c lmsd
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 13:44:02 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 13:36:46
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	129192	0.0834	Target=1.41	192	
298.90 > 99.00	1.992	1.976	0.016	1.000	87973		1.47(0.00-0.00)	38.3	
13 Perfluorohexanoic acid									
313.00 > 269.00	2.347	2.322	0.025	0.739	226380	0.1676	Target=10.46	33.8	
313.00 > 119.00	2.347	2.322	0.025	0.739	20520		11.03(0.00-0.00)	23.1	
$ 2 13C2 PFHxA									
315.00 > 270.00	2.347	2.322	0.025	1.000	3446092	2.44		5702	
$ 25 13C3 HFPO-DA									
332.10 > 287.00	2.474	2.473	0.001	1.000	175329	2.76		843	
4 Perfluoroheptanoic acid									M
363.00 > 319.00	2.778	2.757	0.021	1.000	207716	0.1615	Target=2.41	17.2	M
363.00 > 169.00	2.778	2.757	0.021	1.000	89476		2.32(0.00-0.00)	165	
3 Perfluorohexanesulfonic acid									M
399.00 > 80.00	2.778	2.778	0.0	1.000	159983	0.0851	Target=2.91	75.2	M
399.00 > 99.00	2.778	2.778	0.0	1.000	57982		2.76(0.00-0.00)	20.4	M
* 5 13C2 PFOA									
415.00 > 370.00	3.177	3.158	0.019		3034695	2.50		9781	
6 Perfluorooctanoic acid									M
413.00 > 369.00	3.177	3.158	0.019	1.000	313791	0.2548	Target=1.70	37.2	M
413.00 > 169.00	3.177	3.158	0.019	1.000	187178		1.68(0.00-0.00)	265	M
* 7 13C4 PFOS									
503.00 > 80.00	3.534	3.534	0.0		3134734	2.39		4499	
9 Perfluorononanoic acid									
463.00 > 419.00	3.549	3.549	0.0	1.000	116781	0.1302	Target=3.78	52.9	
463.00 > 169.00	3.549	3.549	0.0	1.000	26339		4.43(0.00-0.00)	203	

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	3.534	3.564	-0.030	1.000	300970	0.2172	Target=4.63	174	M
499.00 > 99.00	3.534	3.564	-0.030	1.000	52175		5.77(0.00-0.00)	36.2	M
14 Perfluorodecanoic acid									
513.00 > 469.00	3.892	3.892	0.0	1.000	74938	0.1055	Target=4.93	27.6	
513.00 > 169.00	3.892	3.892	0.0	1.000	13882		5.40(0.00-0.00)	61.5	
$ 10 13C2 PFDA									
515.00 > 470.00	3.892	3.892	0.0	1.000	1999253	2.65		8140	
* 12 d3-NMeFOSAA									
573.00 > 419.00	4.070	4.048	0.022		522026	2.50		3404	
15 N-methylperfluorooctanesulfonamido									
570.00 > 419.00	4.070	4.070	0.0	1.000	16822	0.0861		192	
17 Perfluoroundecanoic acid									
563.00 > 519.00	4.215	4.204	0.011	1.000	57817	0.1071	Target=4.73	24.9	
563.00 > 169.00	4.215	4.204	0.011	1.000	11573		5.00(0.00-0.00)	99.9	
$ 11 d5-NEtFOSAA									
589.00 > 419.00	4.215	4.220	-0.005	1.035	507685	2.38		333	
16 N-ethylperfluorooctanesulfonamidoa									
584.00 > 419.00	4.231	4.220	0.011	1.004	20885	0.1102		43.8	
18 Perfluorododecanoic acid									
613.00 > 569.00	4.489	4.479	0.010	1.000	57508	0.1063	Target=3.49	32.1	
613.00 > 169.00	4.489	4.479	0.010	1.000	12642		4.55(0.00-0.00)	159	
19 Perfluorotridecanoic acid									
663.00 > 619.00	4.753	4.738	0.015	1.000	40313	0.0962	Target=2.87	12.5	
663.00 > 169.00	4.753	4.738	0.015	1.000	14401		2.80(0.00-0.00)	188	
20 Perfluorotetradecanoic acid									
713.00 > 169.00	4.970	4.960	0.010	1.000	9955	0.0924	Target=1.40	201	
713.00 > 219.00	4.954	4.960	-0.006	0.997	7141		1.39(0.00-0.00)	72.8	

QC Flag Legend

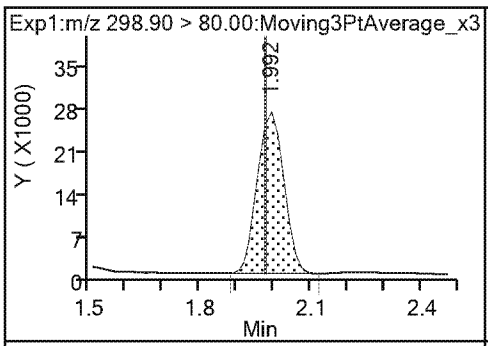
Review Flags

M - Manually Integrated

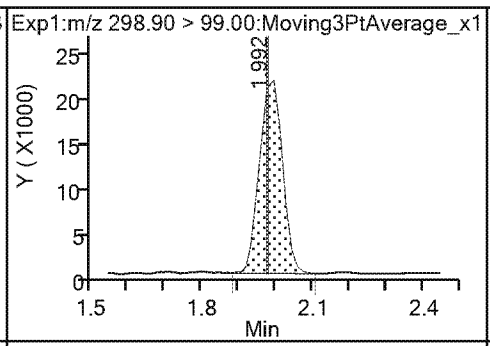
Eurofins TestAmerica, Sacramento

Data File: \\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_018.d
Injection Date: 04-Apr-2019 21:14:05 Instrument ID: A8_N
Lims ID: 320-48796-A-1-C LMSD
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 14
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Method: 537_A8_N Limit Group: LC 537 ICAL

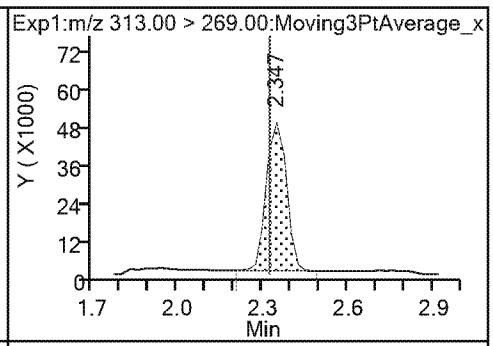
1 Perfluorobutanesulfonic acid



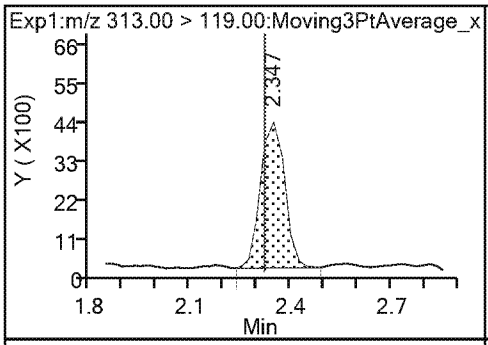
1 Perfluorobutanesulfonic acid



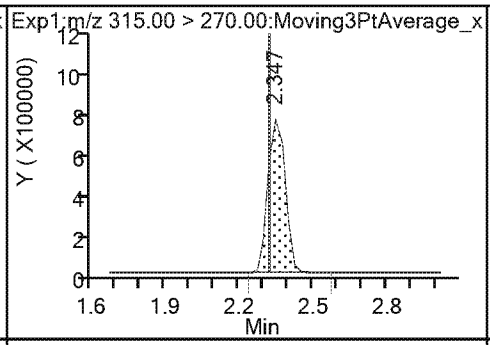
13 Perfluorohexanoic acid



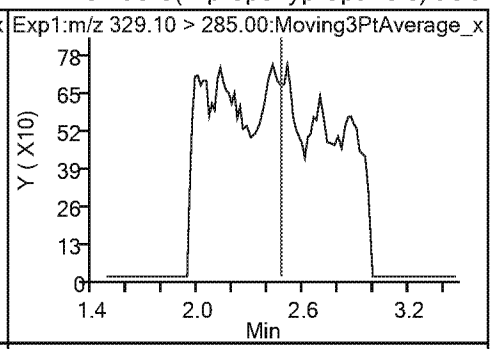
13 Perfluorohexanoic acid



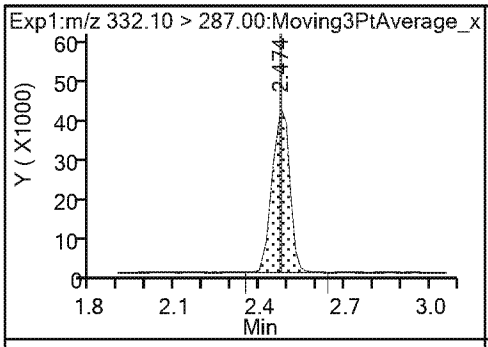
$ 2 13C2 PFHxA



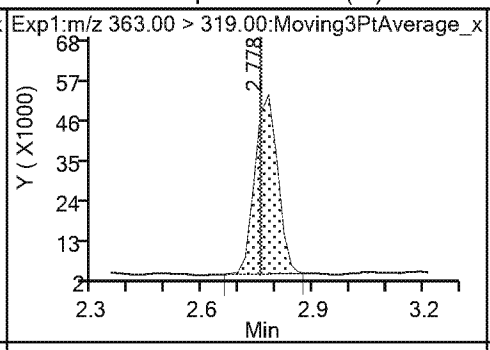
22 Perfluoro(2-propoxypropanoic) acid (ND)



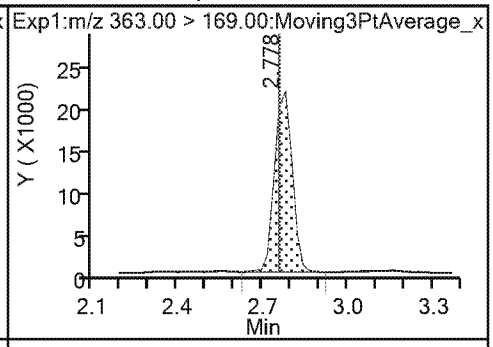
$ 25 13C3 HFPO-DA



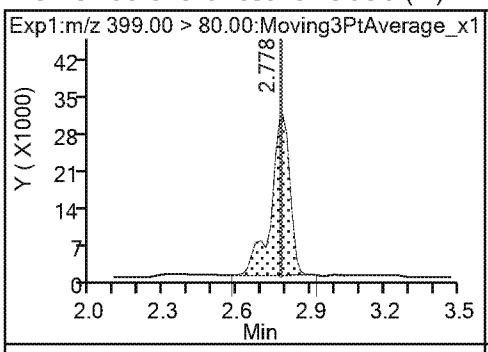
4 Perfluoroheptanoic acid (M)



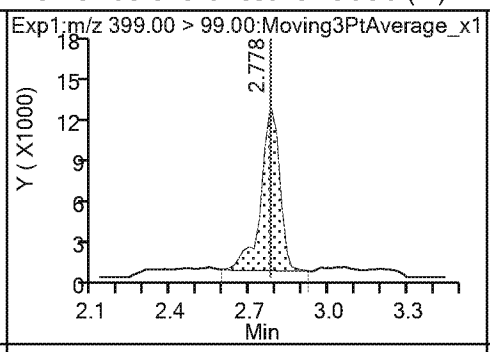
4 Perfluoroheptanoic acid



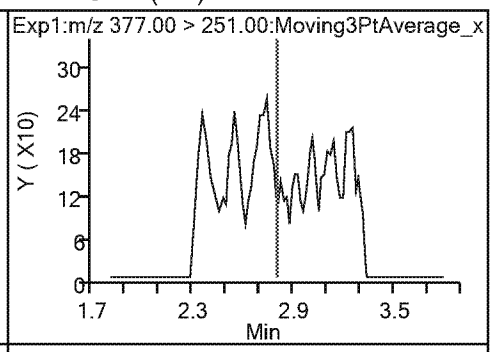
3 Perfluorohexanesulfonic acid (M)



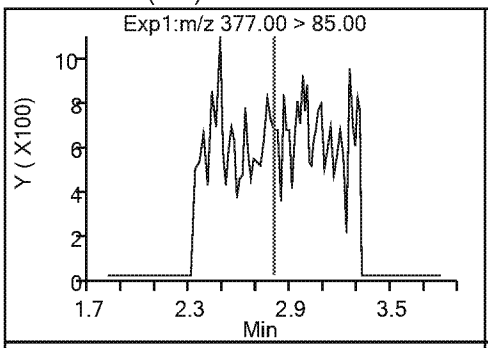
3 Perfluorohexanesulfonic acid (M)



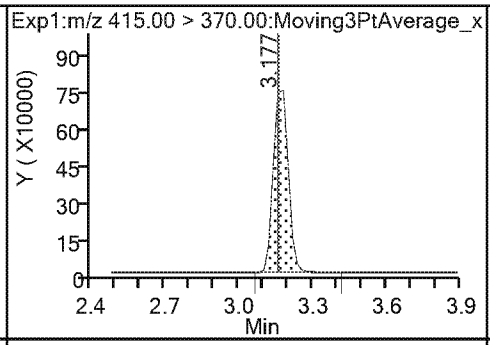
24 DONA (ND)



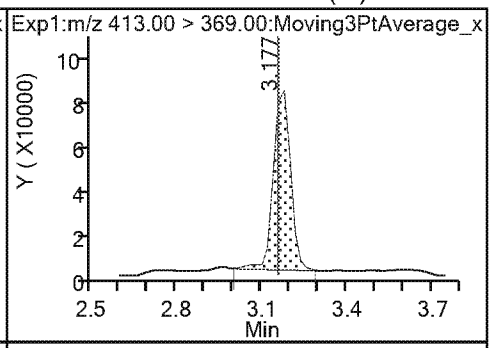
24 DONA (ND)



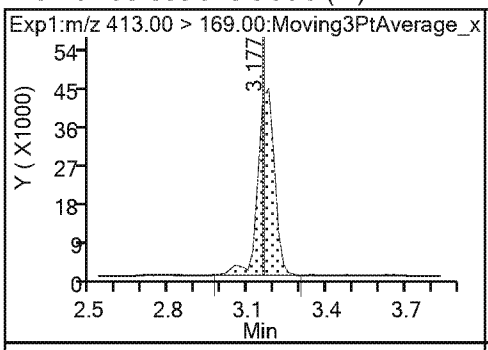
* 5 13C2 PFOA



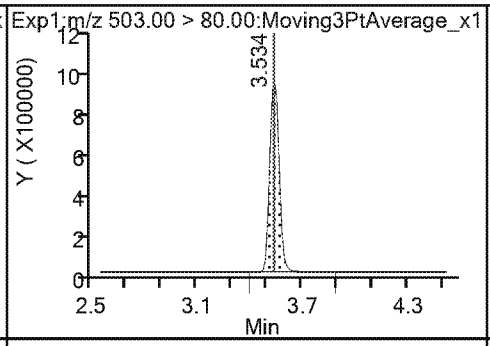
6 Perfluorooctanoic acid (M)



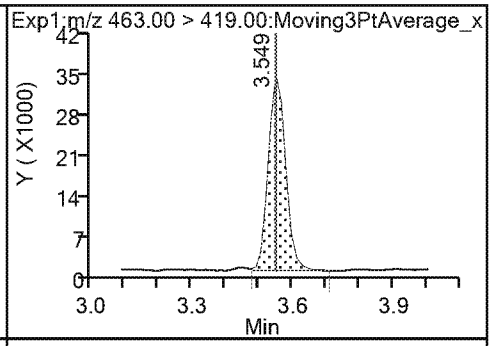
6 Perfluorooctanoic acid (M)



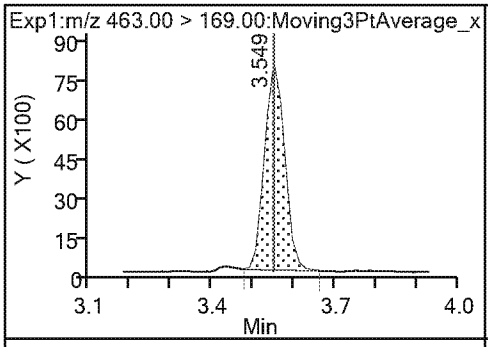
* 7 13C4 PFOS



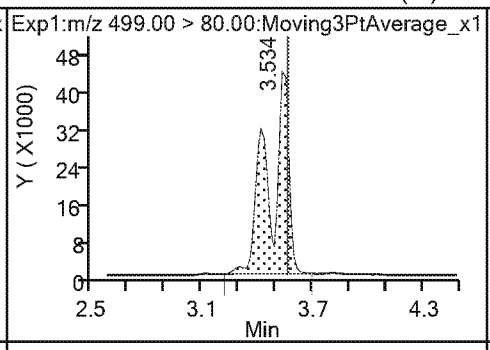
9 Perfluorononanoic acid



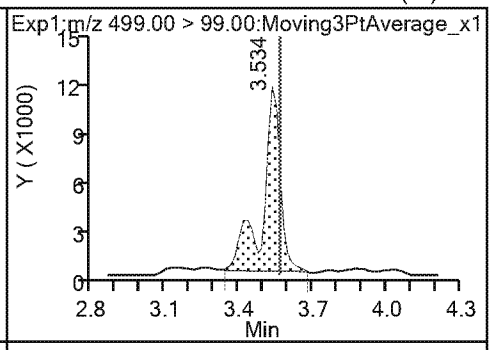
9 Perfluorononanoic acid



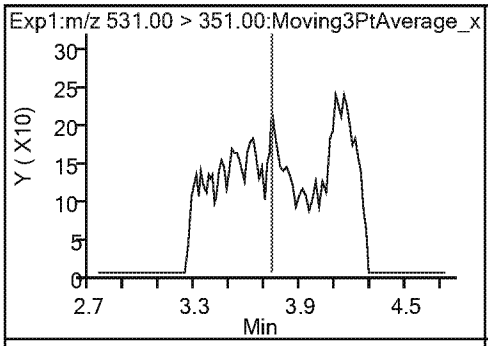
8 Perfluorooctanesulfonic acid (M)



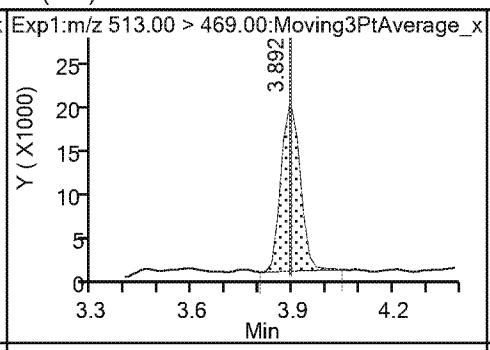
8 Perfluorooctanesulfonic acid (M)



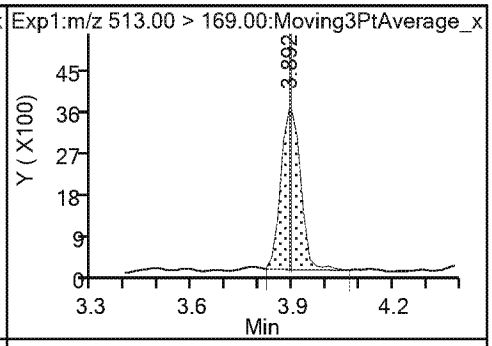
23 9-Chlorohexadecafluoro-3-oxanonane1(ND)



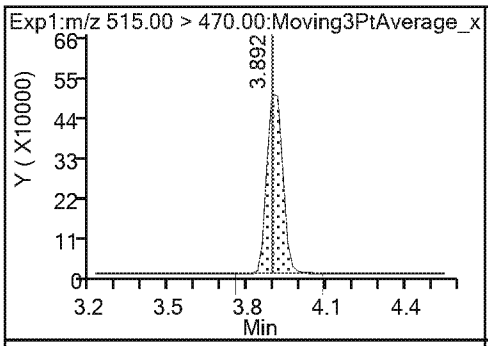
14 Perfluorodecanoic acid



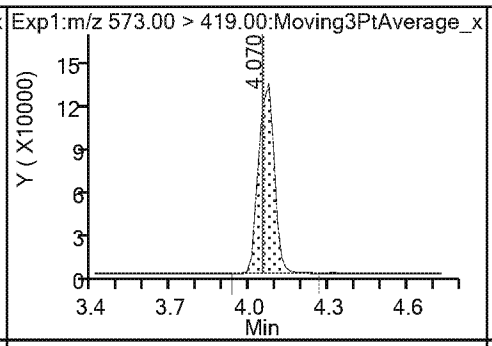
14 Perfluorodecanoic acid



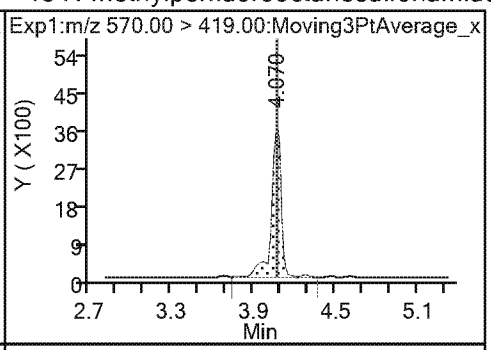
$ 10 13C2 PFDA



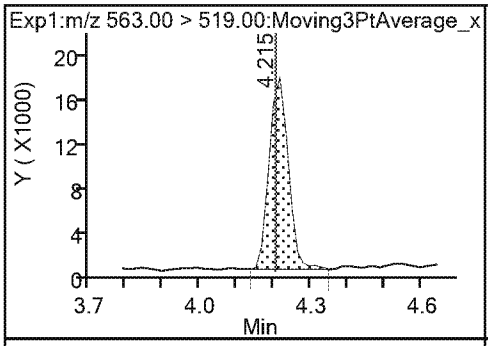
* 12 d3-NMeFOSAA



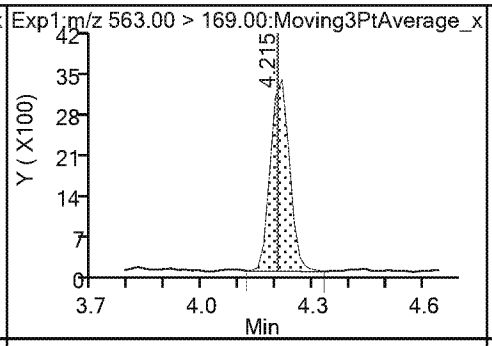
15 N-methylperfluorooctanesulfonamido



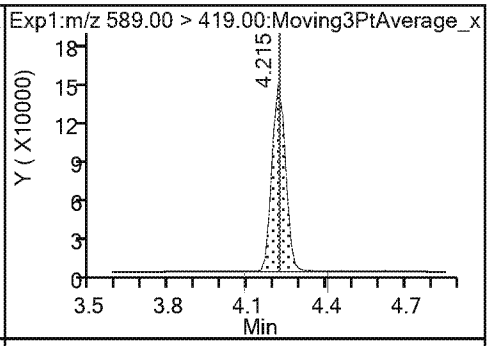
17 Perfluoroundecanoic acid



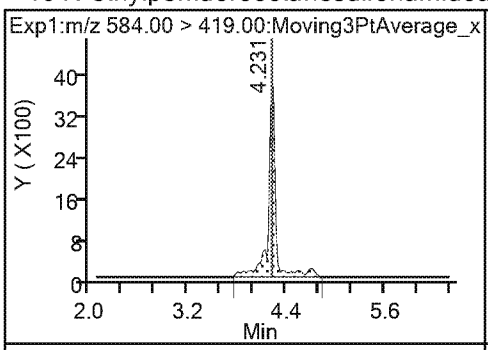
17 Perfluoroundecanoic acid



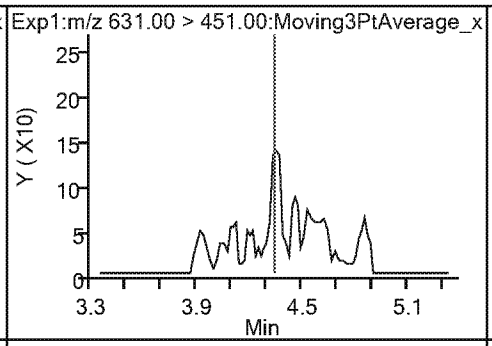
$ 11 d5-NEtFOSAA



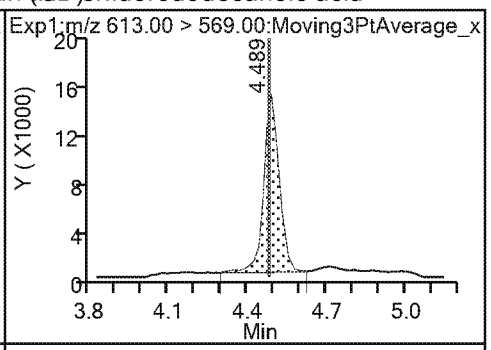
16 N-ethylperfluorooctanesulfonamidoa



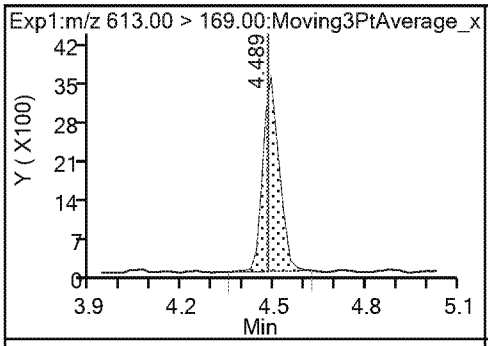
21 11-Chloroeicosafluoro-3-oxaundecan (ND)



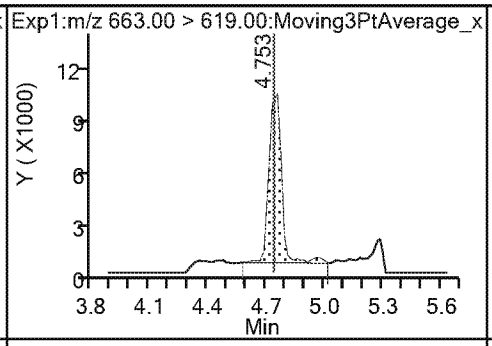
(ND)erfluorododecanoic acid



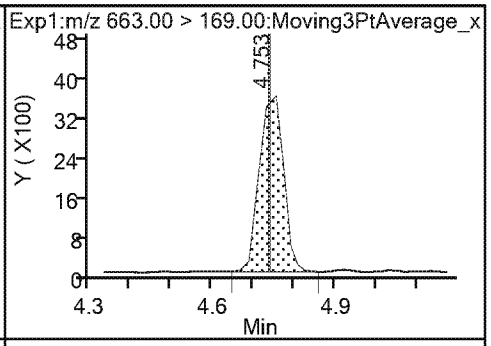
18 Perfluorododecanoic acid



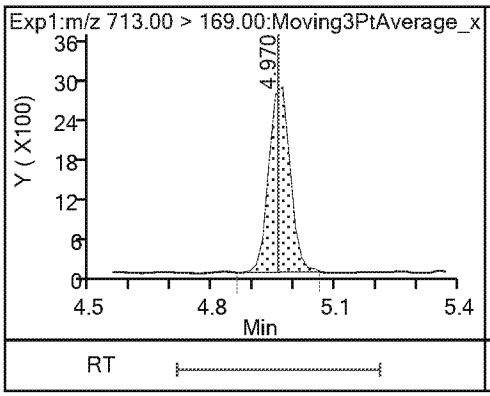
19 Perfluorotridecanoic acid



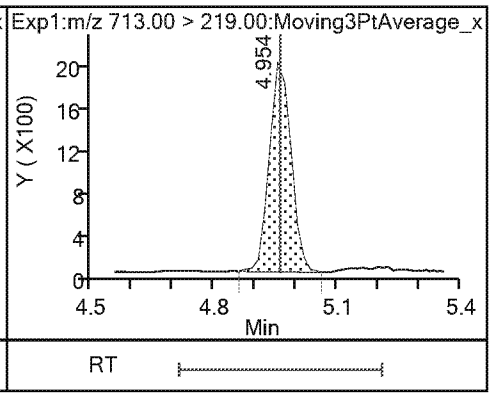
19 Perfluorotridecanoic acid



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_018.d
Lims ID: 320-48796-A-1-C LMSD
Client ID:
Sample Type: LMSD
Inject. Date: 04-Apr-2019 21:14:05 ALS Bottle#: 9 Worklist Smp#: 14
Injection Vol: 10.0 ul Dil. Factor: 1.0000
Sample Info: 320-48796-a-1-c lmsd
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 13:44:02 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 13:36:46

Compound	Amount Added	Amount Recovered	% Rec.
$ 2 13C2 PFHxA	2.50	2.44	97.42
$ 25 13C3 HFPO-DA	2.50	2.76	110.35
$ 10 13C2 PFDA	2.50	2.65	106.09
$ 11 d5-NEtFOSAA	2.50	2.38	95.16

Eurofins TestAmerica, Sacramento

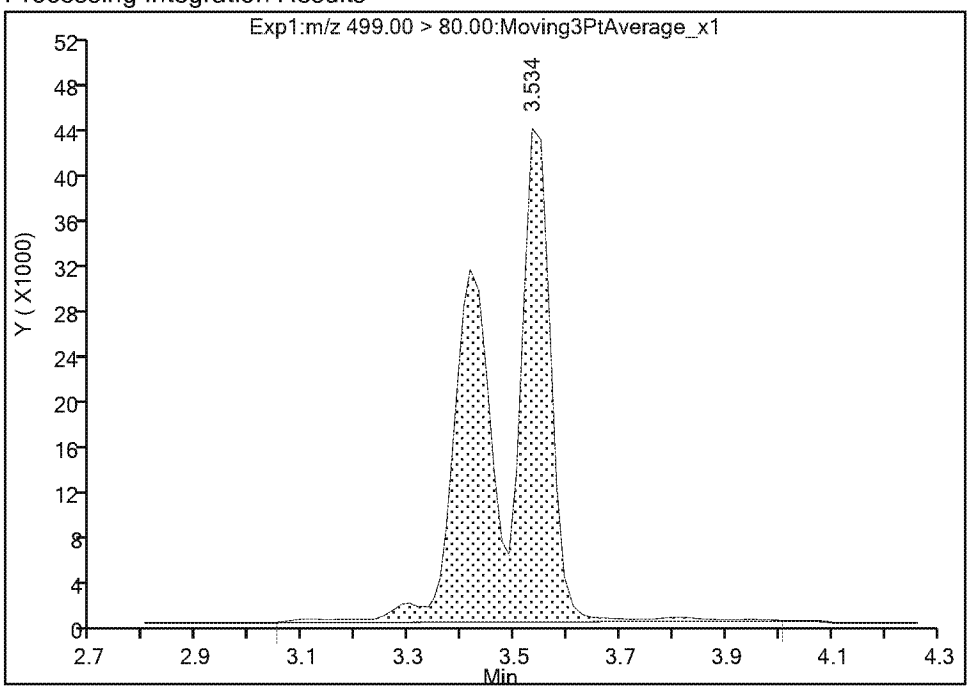
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_018.d				
Injection Date:	04-Apr-2019 21:14:05	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-C LMSD				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	14
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 1

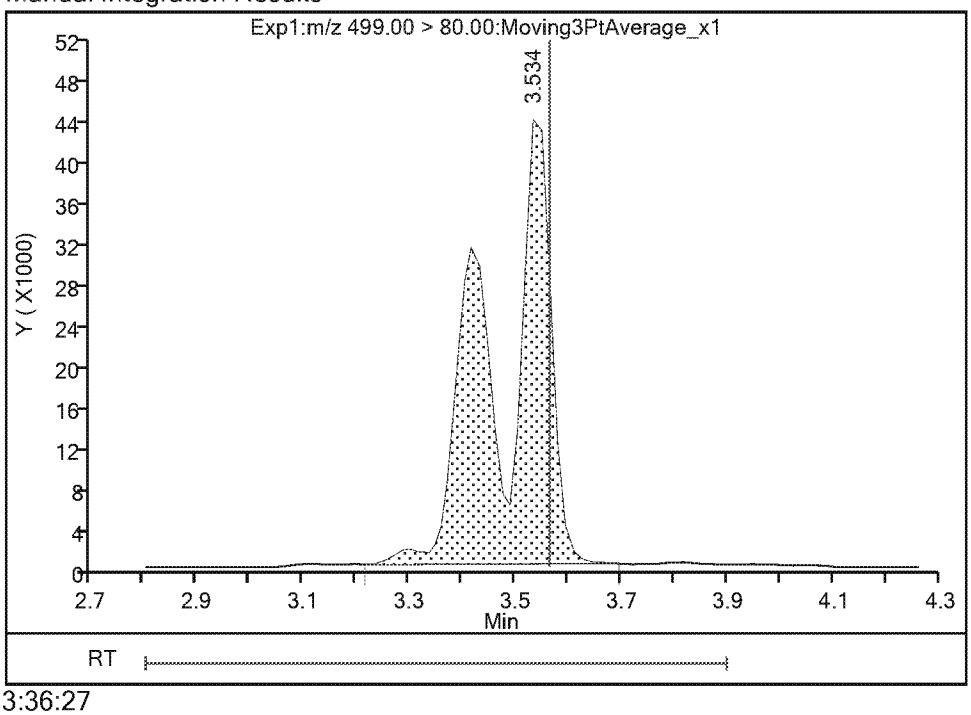
Processing Integration Results

RT: 3.53
Area: 311533
Amount: 0.224854
Amount Units: ng/ml



Manual Integration Results

RT: 3.53
Area: 300970
Amount: 0.217230
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:36:27
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

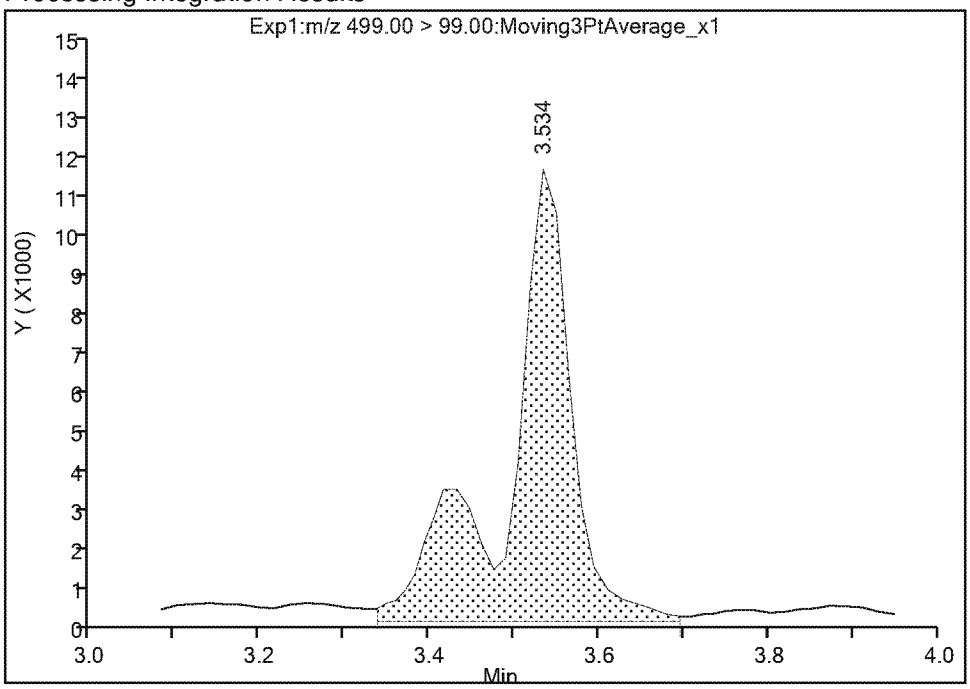
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_018.d				
Injection Date:	04-Apr-2019 21:14:05	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-C LMSD				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	14
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

8 Perfluorooctanesulfonic acid, CAS: 1763-23-1

Signal: 2

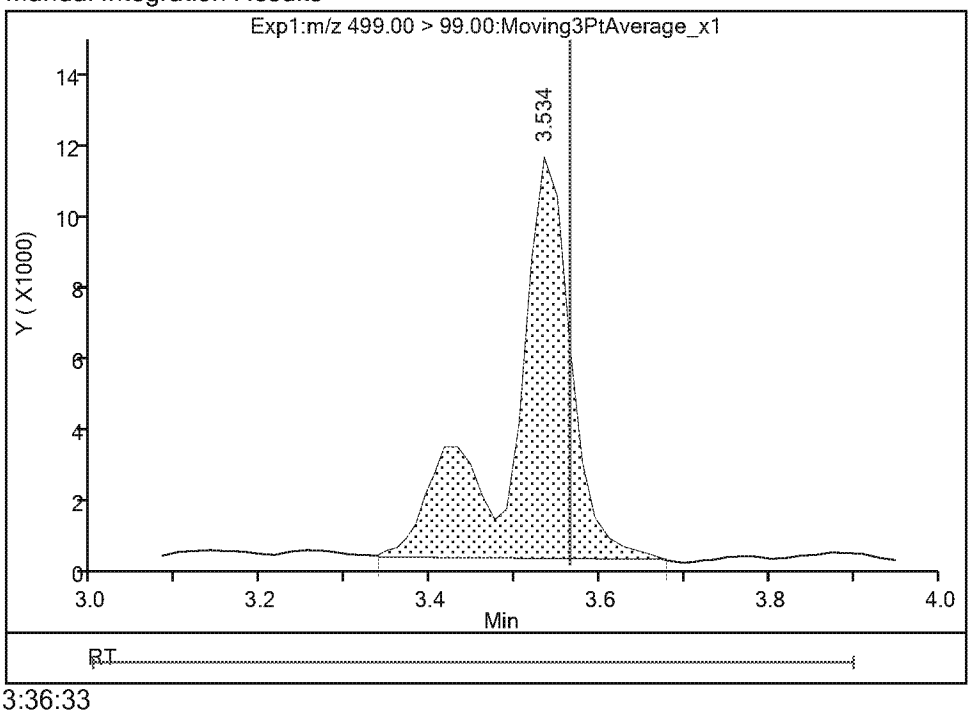
Processing Integration Results

RT: 3.53
Area: 57075
Amount: 0.224854
Amount Units: ng/ml



Manual Integration Results

RT: 3.53
Area: 52175
Amount: 0.217230
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:36:33
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

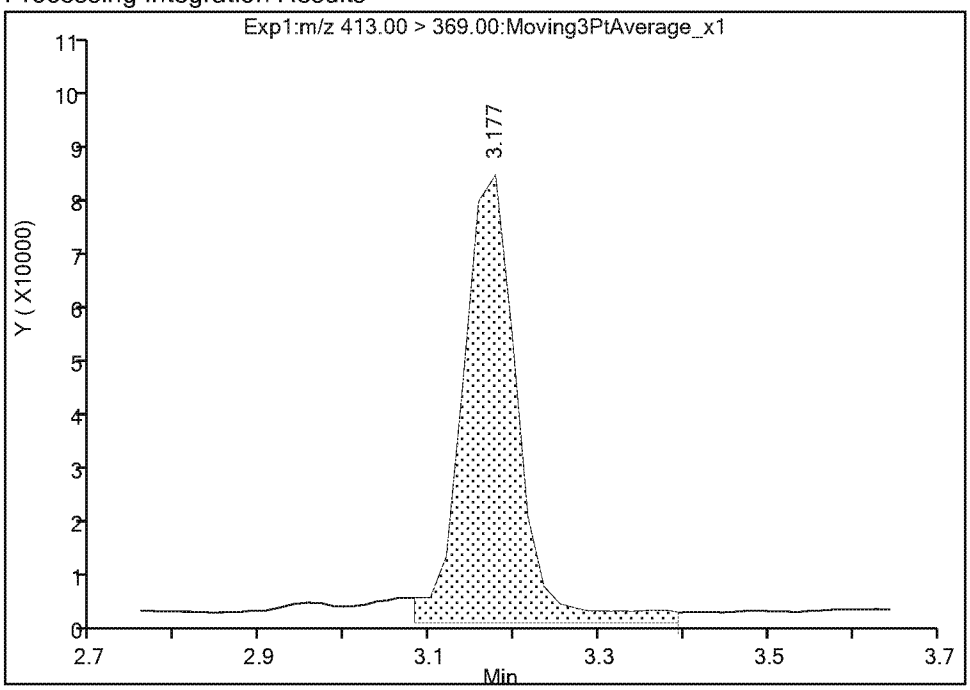
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_018.d				
Injection Date:	04-Apr-2019 21:14:05	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-C LMSD				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	14
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

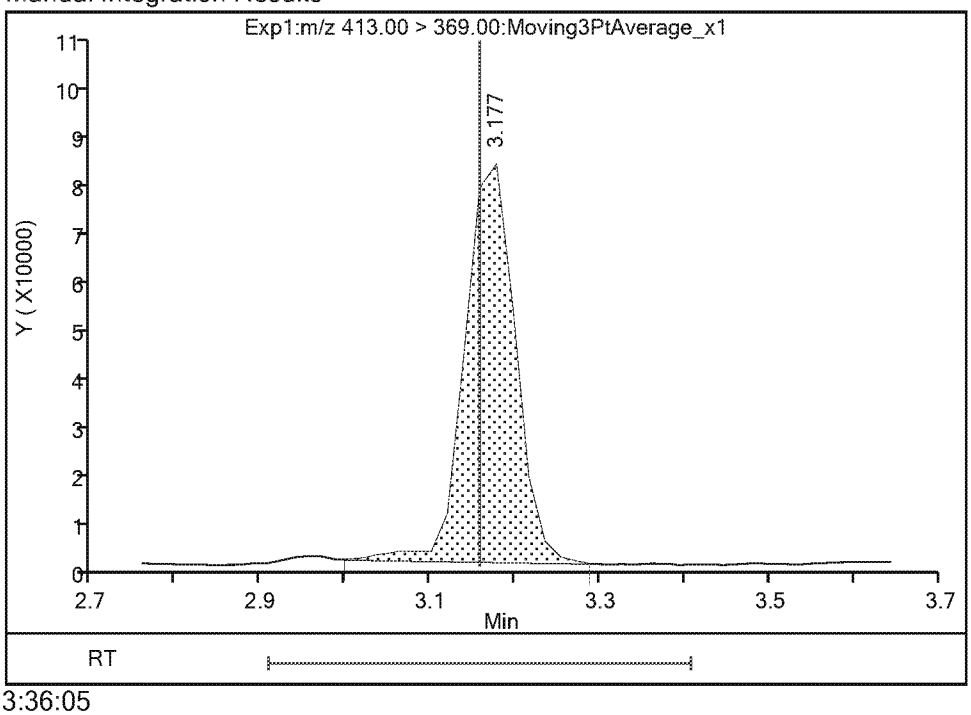
Processing Integration Results

RT: 3.18
Area: 348654
Amount: 0.283135
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 313791
Amount: 0.254823
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:36:05
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

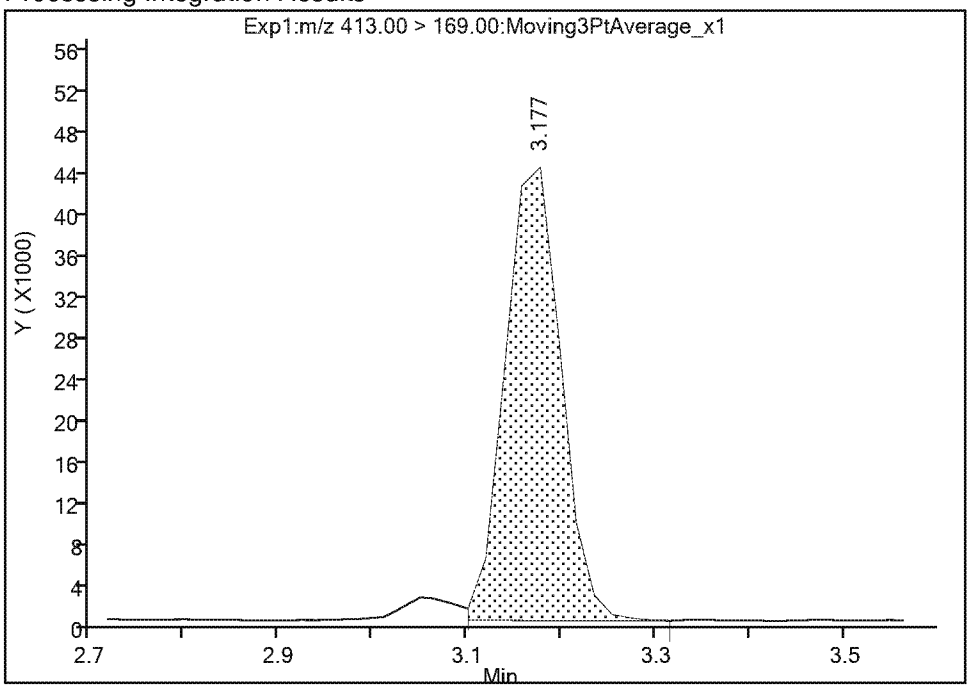
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_018.d				
Injection Date:	04-Apr-2019 21:14:05	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-C LMSD				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	14
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

6 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

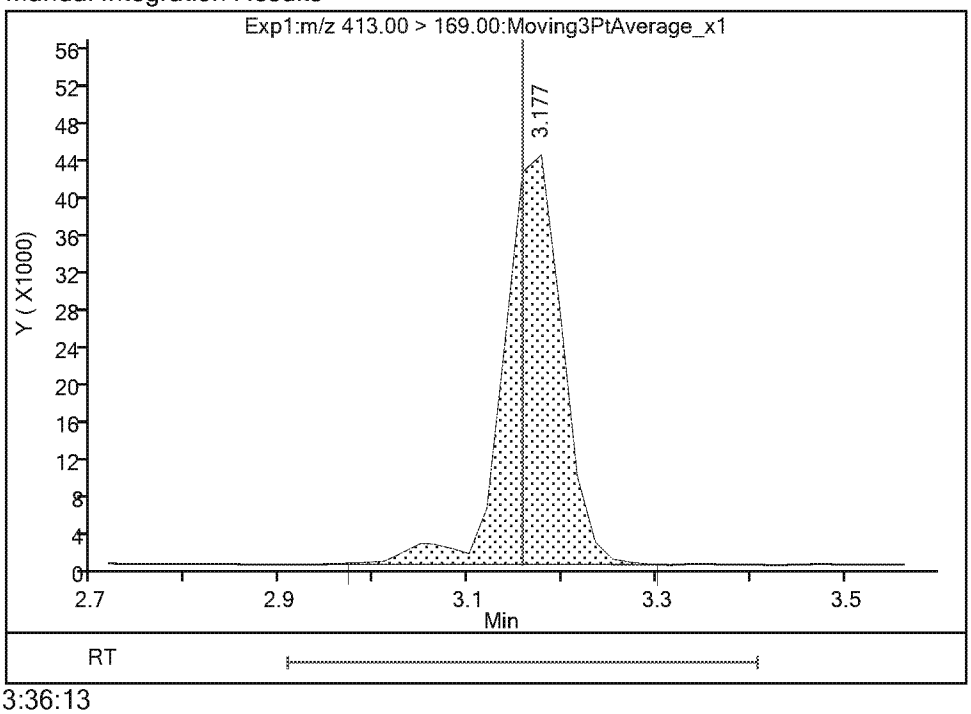
Processing Integration Results

RT: 3.18
Area: 178879
Amount: 0.283135
Amount Units: ng/ml



Manual Integration Results

RT: 3.18
Area: 187178
Amount: 0.254823
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:36:13
Audit Action: Manually Integrated Audit Reason: Isomers

Eurofins TestAmerica, Sacramento

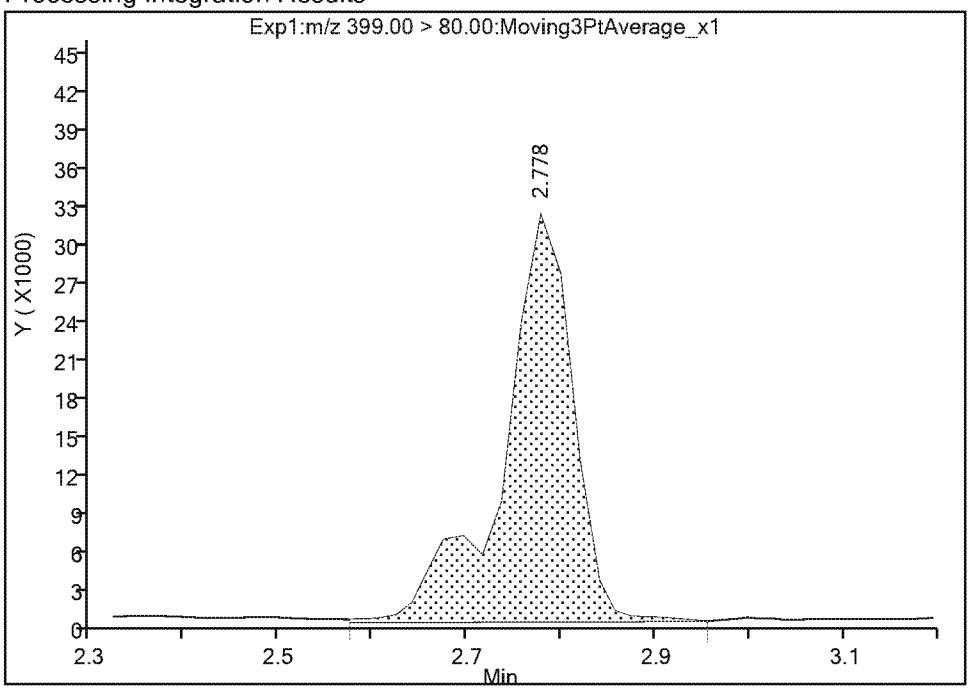
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_018.d				
Injection Date:	04-Apr-2019 21:14:05	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-C LMSD				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	14
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 1

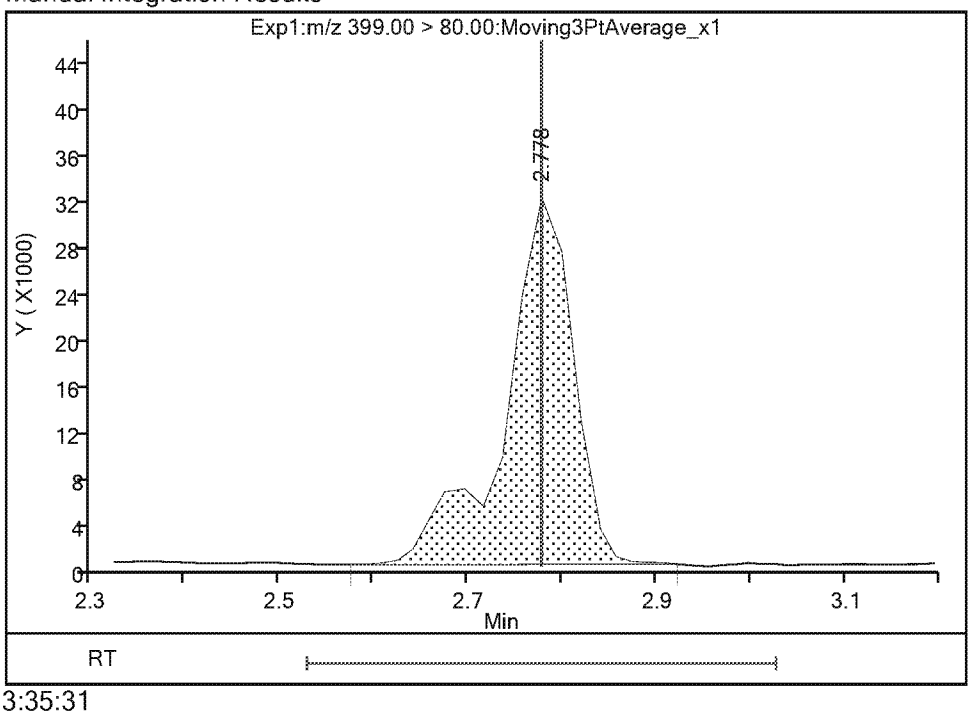
Processing Integration Results

RT: 2.78
Area: 164932
Amount: 0.087755
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 159983
Amount: 0.085122
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:35:31
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

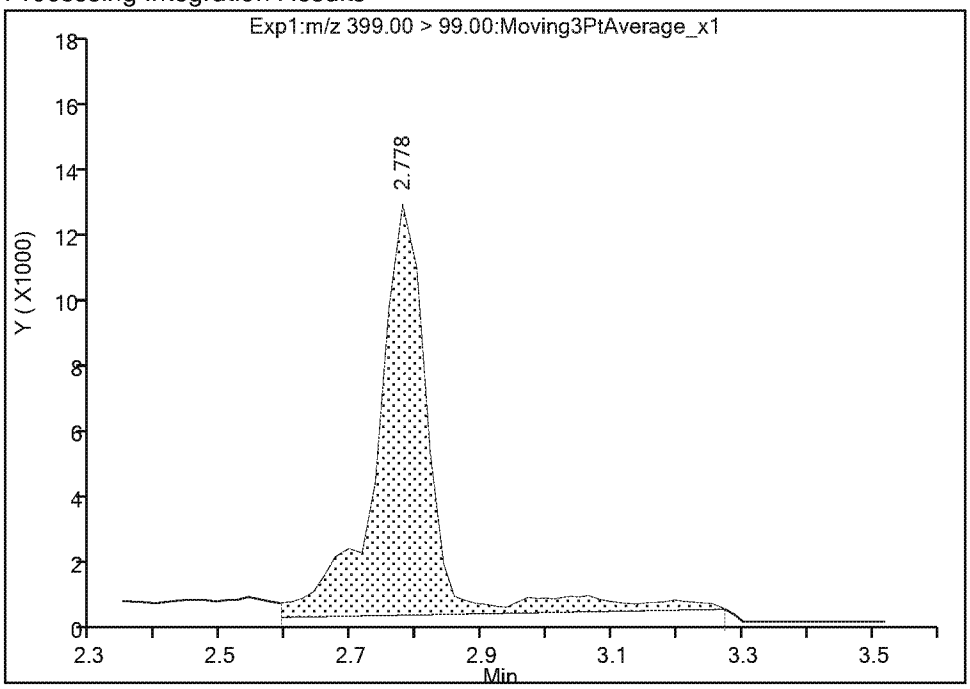
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_018.d				
Injection Date:	04-Apr-2019 21:14:05	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-C LMSD				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	14
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

3 Perfluorohexanesulfonic acid, CAS: 355-46-4

Signal: 2

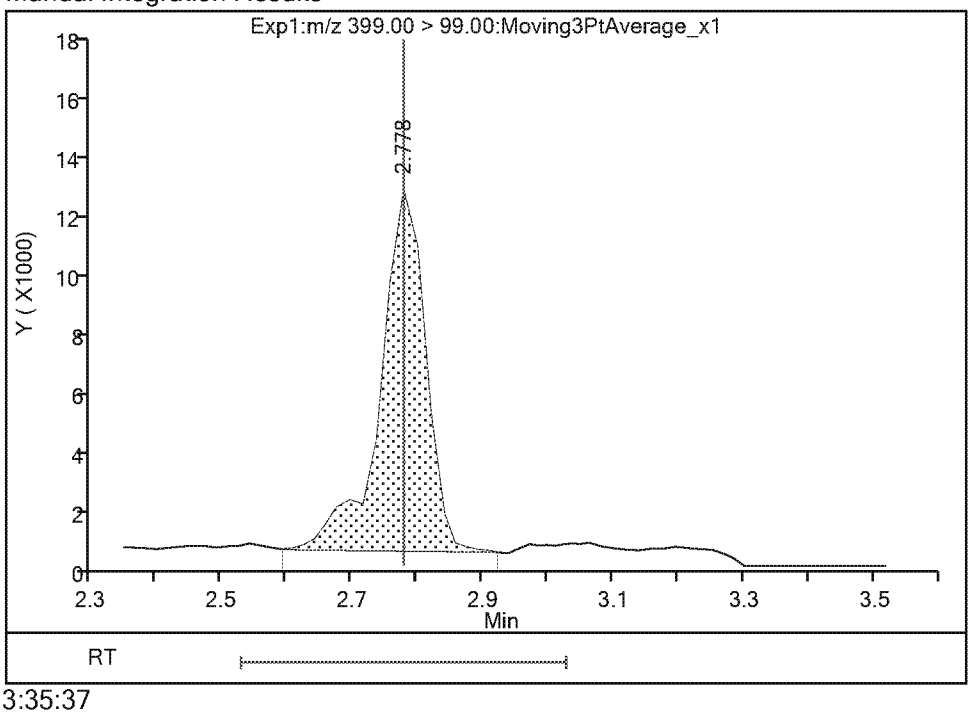
Processing Integration Results

RT: 2.78
Area: 70156
Amount: 0.087755
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 57982
Amount: 0.085122
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:35:37
Audit Action: Manually Integrated Audit Reason: Baseline

Eurofins TestAmerica, Sacramento

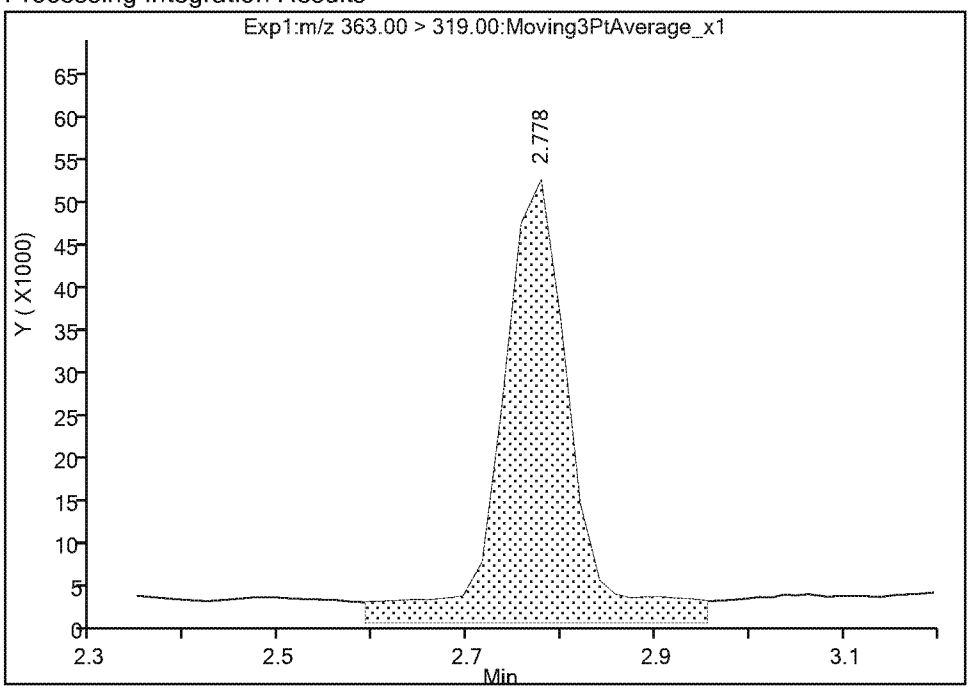
Data File:	\\chromna\Sacramento\ChromData\A8_N\20190404-74319.b\2019.04.04_537AA_018.d				
Injection Date:	04-Apr-2019 21:14:05	Instrument ID:	A8_N		
Lims ID:	320-48796-A-1-C LMSD				
Client ID:					
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9	Worklist Smp#:	14
Injection Vol:	10.0 ul	Dil. Factor:	1.0000		
Method:	537_A8_N	Limit Group:	LC 537 ICAL		
Column:		Detector	EXP1		

4 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

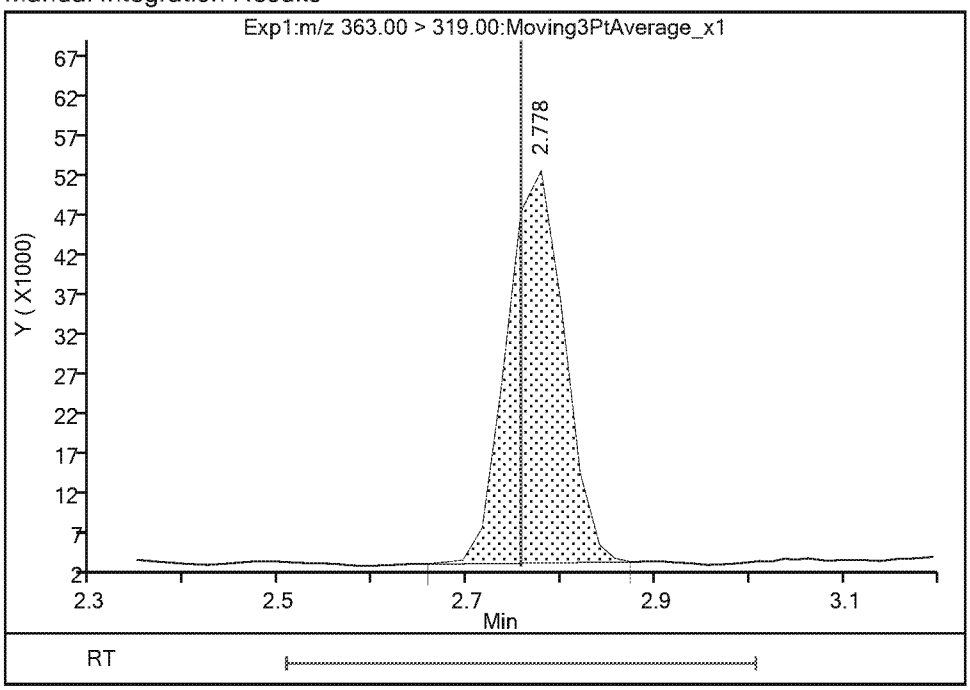
Processing Integration Results

RT: 2.78
Area: 268002
Amount: 0.208316
Amount Units: ng/ml



Manual Integration Results

RT: 2.78
Area: 207716
Amount: 0.161456
Amount Units: ng/ml



Reviewer: Ex. 4 CBI 05-Apr-2019 13:35:47
Audit Action: Manually Integrated Audit Reason: Baseline

LCMS ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

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.: 320-48796-1

SDG No.:

Instrument ID: A8_N Start Date: 04/04/2019 22:10

Analysis Batch Number: 286190 End Date: 04/04/2019 23:16

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-286190/20 CCVIS		04/04/2019 22:10	1	2019.04.04_537A A_024.d	GeminiC18 3x100 3(mm)
ZZZZZ		04/04/2019 22:20	1		GeminiC18 3x100 3(mm)
320-48796-7		04/04/2019 22:29	1	2019.04.04_537A A_026.d	GeminiC18 3x100 3(mm)
320-48796-8		04/04/2019 22:39	1	2019.04.04_537A A_027.d	GeminiC18 3x100 3(mm)
320-48796-9		04/04/2019 22:48	1	2019.04.04_537A A_028.d	GeminiC18 3x100 3(mm)
320-48796-10		04/04/2019 22:58	1	2019.04.04_537A A_029.d	GeminiC18 3x100 3(mm)
320-48796-11		04/04/2019 23:07	1	2019.04.04_537A A_030.d	GeminiC18 3x100 3(mm)
CCV 320-286190/27 CCVIS		04/04/2019 23:16	1	2019.04.04_537A A_031.d	GeminiC18 3x100 3(mm)

537 DW

LCMS ANALYSIS RUN LOG

Lab Name: Eurofins TestAmerica, Sacramento Job No.: 320-48796-1

SDG No.:

Instrument ID: A8_N Start Date: 04/04/2019 20:17

Analysis Batch Number: 286192 End Date: 04/04/2019 22:10

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-286192/8 CCVIS		04/04/2019 20:17	1	2019.04.04_537A A_012.d	GeminiC18 3x100 3(mm)
ZZZZZ		04/04/2019 20:26	1		GeminiC18 3x100 3(mm)
MB 320-285773/1-A		04/04/2019 20:36	1	2019.04.04_537A A_014.d	GeminiC18 3x100 3(mm)
LLCS 320-285773/2-A		04/04/2019 20:45	1	2019.04.04_537A A_015.d	GeminiC18 3x100 3(mm)
320-48796-1		04/04/2019 20:55	1	2019.04.04_537A A_016.d	GeminiC18 3x100 3(mm)
320-48796-1 LMS		04/04/2019 21:04	1	2019.04.04_537A A_017.d	GeminiC18 3x100 3(mm)
320-48796-1 LMSD		04/04/2019 21:14	1	2019.04.04_537A A_018.d	GeminiC18 3x100 3(mm)
320-48796-2		04/04/2019 21:23	1	2019.04.04_537A A_019.d	GeminiC18 3x100 3(mm)
320-48796-3		04/04/2019 21:33	1	2019.04.04_537A A_020.d	GeminiC18 3x100 3(mm)
320-48796-4		04/04/2019 21:42	1	2019.04.04_537A A_021.d	GeminiC18 3x100 3(mm)
320-48796-5		04/04/2019 21:51	1	2019.04.04_537A A_022.d	GeminiC18 3x100 3(mm)
320-48796-6		04/04/2019 22:01	1	2019.04.04_537A A_023.d	GeminiC18 3x100 3(mm)
CCV 320-286192/20 CCVIS		04/04/2019 22:10	1	2019.04.04_537A A_024.d	GeminiC18 3x100 3(mm)

537 DW

LCMS BATCH WORKSHEET

Lab Name: Eurofins TestAmerica, Sacramen Job No.: 320-48796-1

SDG No.:

Batch Number: 285773 Batch Start Date: 04/02/19 17:08 Batch Analyst: Ex. 4 CBI

Batch Method: 537 DW Batch End Date: 04/02/19 20:28

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	ReceivedpH	LC537-IS 00100
MB 320-285773/1		537 DW, 537 DW				250.00 mL	10.00 mL	7 SU	500 uL
LLCS 320-285773/2		537 DW, 537 DW				250.00 mL	10.00 mL	7 SU	500 uL
320-48796-A-1	C0AR0	537 DW, 537 DW	T	308.38 g	28.21 g	280.2 mL	10.00 mL	7 SU	500 uL
320-48796-A-1 LMS	C0AR0	537 DW, 537 DW	T	309.96 g	28.17 g	281.8 mL	10.00 mL	7 SU	500 uL
320-48796-A-1 LMSD	C0AR0	537 DW, 537 DW	T	318.30 g	28.47 g	289.8 mL	10.00 mL	7 SU	500 uL
320-48796-A-2	C0AR1	537 DW, 537 DW	T	312.75 g	28.25 g	284.5 mL	10.00 mL	7 SU	500 uL
320-48796-A-3	C0AR2	537 DW, 537 DW	T	314.53 g	29.14 g	285.4 mL	10.00 mL	7 SU	500 uL
320-48796-A-4	C0AR8	537 DW, 537 DW	T	311.14 g	28.29 g	282.9 mL	10.00 mL	7 SU	500 uL
320-48796-A-5	C0AS7	537 DW, 537 DW	T	304.72 g	27.65 g	277.1 mL	10.00 mL	7 SU	500 uL
320-48796-A-6	C0AW2	537 DW, 537 DW	T	311.79 g	27.86 g	283.9 mL	10.00 mL	7 SU	500 uL
320-48796-A-7	C0AW9	537 DW, 537 DW	T	305.85 g	28.05 g	277.8 mL	10.00 mL	7 SU	500 uL
320-48796-A-8	C0AX0	537 DW, 537 DW	T	305.87 g	27.72 g	278.2 mL	10.00 mL	7 SU	500 uL
320-48796-A-9	C0AX7	537 DW, 537 DW	T	303.47 g	28.07 g	275.4 mL	10.00 mL	7 SU	500 uL
320-48796-A-10	C0AX8	537 DW, 537 DW	T	306.63 g	28.25 g	278.4 mL	10.00 mL	7 SU	500 uL
320-48796-A-11	C0AY0	537 DW, 537 DW	T	304.27 g	28.30 g	276 mL	10.00 mL	7 SU	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00101	LC537LSP 00001	AnalysisComment			
MB 320-285773/1		537 DW, 537 DW		500 uL		Chlorine: ND			
LLCS 320-285773/2		537 DW, 537 DW		500 uL	500 uL	Chlorine: ND			
320-48796-A-1	C0AR0	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-1 LMS	C0AR0	537 DW, 537 DW	T	500 uL	500 uL	Chlorine: ND			
320-48796-A-1 LMSD	C0AR0	537 DW, 537 DW	T	500 uL	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.: 320-48796-1

SDG No.:

Batch Number: 285773 Batch Start Date: 04/02/19 17:08 Batch Analyst: Ex. 4 CBI

Batch Method: 537 DW Batch End Date: 04/02/19 20:28

Lab Sample ID	Client Sample ID	Method Chain	Basis	LC537-SU 00101	LC537LSP 00001	AnalysisComment			
320-48796-A-2	C0AR1	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-3	C0AR2	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-4	C0AR8	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-5	C0AS7	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-6	C0AW2	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-7	C0AW9	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-8	C0AX0	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-9	C0AX7	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-10	C0AX8	537 DW, 537 DW	T	500 uL		Chlorine: ND			
320-48796-A-11	C0AY0	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.: 320-48796-1

SDG No.:

Batch Number: 285773 Batch Start Date: 04/02/19 17:08 Batch Analyst: Ex. 4 CBI

Batch Method: 537 DW Batch End Date: 04/02/19 20:28

Batch Notes	
Analyst ID - Aliquot Step	DTH
Batch Comment	TA labels match client IDs JER
Analyst ID - Final Volume Step	DTH
Internal Standard ID#	1539785
Manifold ID	AC, Q
Methanol ID	1555474
pH Indicator ID	4718
Pipette ID	I46370G
Analyst ID - IS Reagent Drop	DTH
Analyst ID - IS Reagent Drop Witness	JER
Analyst ID - SU Reagent Drop	DTH
Analyst ID - SU Reagent Drop Witness	JER
Analyst ID - TA Reagent Drop	DTH
Analyst ID - TA Reagent Drop Witness	JER
SPE Cartridge Lot ID	6429887-08
Trizma ID	SLBR5241V
Reagent Water ID	4/01/19

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.

Shipping and Receiving Documents

USEPA CLP COC (LAB COPY)

DateShipped: 3/28/2019
CarrierName: FedEx
AirbillNo: 774821765497

CHAIN OF CUSTODY RECORD

DAS #: R35542
Cooler #: 3

No: 3-032819-132754-0028

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-14	C0AR0	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2163 (Trizma), 2164 (Trizma), 2270 (Trizma), 2271 (Trizma), 2272 (Trizma), 2273 (Trizma) (6)	RE-BDE-SIGW-14	03/27/2019 12:29	
RE-BDE-SIGW-15	C0AR1	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2165 (Trizma), 2166 (Trizma) (2)	RE-BDE-SIGW-15	03/27/2019 11:10	
RE-BDE-SIGW-13	C0AR2	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2167 (Trizma), 2168 (Trizma) (2)	RE-BDE-SIGW-13	03/27/2019 11:15	
RE-BDE-SIGW-19	C0AR8	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2179 (Trizma), 2180 (Trizma) (2)	RE-BDE-SIGW-19	03/27/2019 09:30	
RE-BDE-SIGW-14-FRB	C0AS7	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2198 (Trizma) (1)	RE- BDE-SIGW-14-FRB	03/27/2019 12:34	
RE-BDE-SIGW-19-FRB	C0AW2	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2228 (Trizma), 2275 (Trizma) (2)	RE- BDE-SIGW-19-FRB	03/27/2019 09:35	
RE-BDE-SIGW-13-FRB	C0AW9	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2242 (Trizma) (1)	RE- BDE-SIGW-13-FRB	03/27/2019 11:20	

Sample(s) to be used for Lab QC: RE-BDE-SIGW-14 Tag 2270, RE-BDE-SIGW-14 Tag 2271, RE-BDE-SIGW-14 Tag 2272, RE-BDE-SIGW-14 Tag 2273

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	03/28/19 17:00	Ex. 4 CBI	3/28/19 925	Good 2.3°C

320-48798 Chain of Custody

USEPA CLP COC (LAB COPY)

DateShipped: 3/28/2019
CarrierName: FedEx
AirbillNo: 774821765497

CHAIN OF CUSTODY RECORD

DAS #: R35542
Cooler #: 3

No: 3-032819-132754-0028

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-15-FRB	C0AX0	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2244 (Trizma) (1)	RE- BDE-SIGW-15-FRB	03/27/2019 11:15	
RE-BDE-RB-032619	C0AX7	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2259 (Trizma), 2274 (Trizma) (2)	RE-BDE-RB-032619	03/26/2019 16:58	
RE-BDE-RB-032719	C0AX8	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2260 (Trizma), 2261 (Trizma) (2)	RE-BDE-RB-032719	03/27/2019 12:45	
RE-BDE-SIGW-13D	C0AY0	Ground Water/ START-MANERI	Grab	Perfluorinated Compounds (PFCS)(21)	2268 (Trizma), 2269 (Trizma) (2)	RE-BDE-SIGW-13D	03/27/2019 11:15	

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	3/20/19 925	Good

Login Sample Receipt Checklist

Client: Weston Solutions, Inc.

Job Number: 320-48796-1

Login Number: 48796

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Ex. 4 CBI

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.	False	Refer to Job Narrative for details.
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	