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Document Processing Center (7407)
Office of Toxic Substances
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
Attn: TSCA Section 8(e) Coordinator

Dear Section 8(e) Docket Coordinator:

Re: TSCA 8(e) Supplemental Notice on Sulfonate-based Fluorochemicals

With this letter, 3M is providing final reports and other supplemental information related to previous TSCA Section 8(e) notifications. Many of the enclosed items are analytical reports providing blood serum and liver levels of test materials for which the in-life report referring to administered doses has already been submitted to the 8(e) docket. In other cases where the 8(e) notification consisted of preliminary data, we are submitting a final study report.

All of the enclosed items are already in EPA's possession and available in TSCA Docket AR-226. We believe, however, that placing these items in the 8(e) docket may allow for more convenient access to information directly related to previous 8(e) notifications by 3M.

The table below lists the enclosed items and references the study or data which already has been the subject of an 8(e) notification by 3M:

Attached Submission	Related Study/Data Already Filed Under 8(e)
1. Amended Analytical Study, 2(N-Ethylperfluorooctane sulfonamido)-ethanol in Two Generation Rat Reproduction, Determination of the Presence and Concentration of PFOS, M556, PFOSAA, and PFOSA in the Liver and PFOS, M556, PFOSAA, PFOSA and EtFOSE-OH in the Sera of Crl:CDBR VAF/Plus Rats Exposed to EtFOSE-OH, 3M Reference No. T-6316.5, Analytical Report TOX-013, LRN-U2095, June 11, 2001.	Combined Oral (Gavage) Fertility, Developmental and Perinatal/Postnatal Reproduction Toxicity Study of N-EtFOSE in Rats, 3M Reference No. T-6316.5, June 30, 1999, full report submitted February 15, 2000 to supplement earlier filing

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Attached Submission	Related Study/Data Already Filed Under 8(e)
2. Analytical Laboratory Report, Determination of the Presence and Concentration of Potassium Perfluorooctanesulfonate (CAS Number: 2759-39-3) in the Serum and Liver of Sprague-Dawley® Rats Exposed to PFOS via Gavage, Laboratory Report No. U2006, Requestor Project No. 3M TOX 6295.9, October 27, 1999. 3. Report Amendment 1, Combined Oral (Gavage) Fertility, Developmental and Perinatal/Postnatal Reproduction Toxicity Study of PFOS in Rats, Argus Research Laboratories, Inc., Protocol 418-008, Sponsor's Study No. 6295.9, April 13, 2000.	Combined Oral (Gavage) Fertility, Developmental and Perinatal/Postnatal Reproduction Toxicity Study of PFOS in Rats, Argus Research Laboratories, Inc., Sponsor's Study No. 6295.9, June 10, 1999, full report submitted February 15, 2000 supplementing earlier filing
4. Analytical Report, Determination of the Presence and Concentration of Perfluorooctanesulfonate, Perfluorooctanesulfonylamide, M556, and M570 in the Liver and Sera Samples, 3M Environmental Laboratory Ref. No. U2636, TOX-028, February 23, 2001	13-Week Dietary Study of N-Methyl Perfluorooctanesulfonamido Ethanol (N-MeFOSE) in Rats, 3M Ref. No. T-6314.1, Covance Study No. 6329-225, dated June 30, 2000, Section 8(e) filing July 24, 2000
5. Analytical Laboratory Report, Determination of the Concentration of PFOS, PFOSA, PFOSAA, and EtFOSE-OH in the Sera and Liver of Crl:CDBR VAF/Plus Rats Exposed to N-EtFOSE, 3M Environmental Laboratory Report No. TOX-098, Laboratory Request No. U2402, 3M Ref. No. T-6316.7, February 6, 2001.	Final Report, Oral (Gavage) Developmental Toxicity Study of 2(N-Ethylperfluorooctanesulfonamido)-ethanol in Rats, 3M Reference No. T-6316.7, December 17, 1998, submitted to Section 8(e) docket per letter of August 21, 2000
6. Analytical Laboratory Report on the Determination of the Presence and Concentration of Potassium Perfluorooctanesulfonate (PFOS) or another metabolite of 2(N-ethylperfluorooctanesulfonamido)-ethanol (N-EtFOSE) in Liver and Serum Specimens, 3M Environmental Laboratory Report No. TOX-097, Laboratory Request No. U2452, 3M Ref. No. T-6316.8, February 8, 2001	Final Report, Oral (Stomach Tube) Developmental Toxicity Study of N-EtFOSE in Rabbits, 3M Reference No. T-6316.8, January 11, 1999, submitted to Section 8(e) docket per letter of August 21, 2000
7. Final Report, Alexander, B., Mortality Studies of Workers Employed at the 3M Decatur Facility, University of Minnesota, April 26, 2001.	Preliminary data submitted to Section 8(e) docket in letter of December 15, 2000

Attached Submission	Related Study/Data Already Filed Under 8(e)
8. Final Report, Acute Oral Toxicity Screen with T-3290CoC in Albino Rats, Safety Evaluation Laboratory, Riker Laboratories, Inc., Project No. 0882AR0362, 3M Reference No. T-3290 (40 % K^+PFOSAA in 3 % EtOH, 17 % IPA and 40 % H_20, L-6778, F-6873, Lot 501), November 5, 1982 *[Bibliography entry in Docket AR-226, final report was to be moved to TSCA 8(e) docket]*	Acute Oral Toxicity Screen with T-3290CoC in Albino Rats, Safety Evaluation Laboratory, Riker Laboratories, Inc., Project No. 0882AR0362, 3M Reference No. T-3290 (40 % K^+PFOSAA in 3 % EtOH, 17 % IPA and 40 % H_20, L-6778, F-6873, Lot 501), November 5, 1982, submitted to Section 8(e) docket in August 21, 2000 self-audit letter (which erroneously refers to rabbits rather than rats)
9. Giesy, J.P., and K. Kannan, Accumulation of Perfluorooctanesulfonate and Related Fluorochemicals in Fish Tissue, Michigan State University, June 20, 2001. 10. Giesy, J.P., and K. Kannan, Accumulation of Perfluorooctanesulfonate and Related Fluorochemicals in Mink and River Otters, Michigan State University, June 20, 2001. 11. Giesy, J.P., and K. Kannan, Perfluorooctanesulfonate and Related Fluorochemicals in Oyster, Crassostrea Virginica, From the Gulf of Mexico and Chesapeake Bay, Michigan State University, June 20, 2001. 12. Giesy, J.P. and K. Kannan, Perfluorooctanesulfonate and Related Fluorochemicals in Fish-Eating Water Birds, Michigan State University, June 20, 2001. 13. Giesy, J.P. and K. Kannan, Accumulation of Perfluorooctanesulfonate and Related Fluorochemicals in Marine Mammals, Michigan State University, June 20, 2001.	Preliminary data submitted to Section 8(e) docket May 26, 1999

If you have any questions about this submission, please contact me at (651)737-4795.

Sincerely,

Georjean Adams

Georjean Adams
Manager, 3M Corporate Product Responsibility

Enclosures

MR 51678 8EHQ-80-373

ACCUMULATION OF PERFLUOROOCTANESULFONATE AND RELATED FLUOROCHEMICALS IN FISH TISSUES

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Prepared for: 3M
St. Paul, MN
June 20, 2001

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SUMMARY

This report is a compilation of results of a monitoring survey of perfluorooctanesulfonate (PFOS), perfluorooctanesulfonamide (FOSA), perfluorooctanoic acid (PFOA) and perfluorohexanesulfonate (PFHS) in fish tissues from the US and certain European countries. The greatest concentration of PFOS found in fish was 923 ng/g, wet wt, in the muscle of fish from Scheldtz River Estuary in Belgium. The highest concentration of PFOS in Great Lakes fish was 297 ng/g, wet wt, in the muscle of carp from Saginaw bay, Michigan. Muscle tissues of fish from several inland lakes of Michigan did not contain detectable concentrations of PFOS. Similarly, fish from the North Pacific Ocean and Antarctic fish did not contain any of the fluorochemicals analyzed. FOSA, PFOA and PFHS were rarely found in fish.

INTRODUCTION

This report is a compilation of results of a monitoring survey of perfluorooctanesulfonate (PFOS), perfluorooctanesulfonamide (FOSA), perfluorooctanoic acid (PFOA) and perfluorohexanesulfonate (PFHS) in fish tissues from the US and certain European countries.

MATERIALS AND METHODS

Fish tissues were collected from various locations (Table 1 for details) and stored at -20°C until analysis.

Analysis

Details of the analytical procedures have been outlined in standard operating procedures for the analysis of fluorochemicals in tissues which are stated below.

Preparatory Methods. ETS-8-6.0, "Extraction of Potassium Perfluorooctanesulfonate or other Fluorochemical Compounds from Liver for Analysis using HPLC-Electrospray/Mass Spectrometry". 3M Environmental Laboratory, St. Paul, MN.The analytical wok was generated by the 3M Environmental Laboratory. (Refer to Reference (1) for the specific reports.)

An ion-pairing reagent was added to the sample and the analyte ion pair was partitioned into methyl-*tert*-butyl ether (MtBE). The extract was transferred to a centrifuge tube and put onto a nitrogen evaporator until dry. Each extract was reconstituted in 1.0 mL of methanol, and then filtered through a 3 cc plastic syringe attached to a 0.2 µm nylon filter into glass autovials.

Analytical Methods. ETS-8-7.0, "Analysis of Potassium Perfluorooctanesulfonate or other Fluorochemicals in Liver Extracts Using HPLC-Electrospray/Mass Spectrometry". 3M Environmental Laboratory, St. Paul, MN.

The analyses were performed using HPLC-ES/MS/MS by monitoring a single product

ion selected from a primary ion characteristic of a particular fluorochemical. For example, molecular ion 499, selected as the primary ion for PFOS ($C_8F_{17}SO_3$-) analysis, was fragmented further to produce ion 99 (FSO_3-). The characteristic product ion 99 was monitored for quantitative analysis.

Analytical Equipment

The following are representative of the actual settings used during the analytical phase of this study.

Liquid Chromatograph: Hewlett-Packard® Series 1100 Liquid Chromatograph system Analytical column: Keystone® Betasil™ C_{18} 2x50 mm (5 µm) Column temperature: Ambient;

Mobile phase components:

Component A: 2mM ammonium acetate

Component B: methanol

Flow rate: 300 µL/min

Injection volume: 10 µL

Solvent Gradient: 16.0 minutes

Time (minutes)	%B
0.0	10%
1.0	10%
6.0	90%
11.0	100%
13.0	10%

Mass Spectrometer: Micromass® API/Mass Spectrometer Quattro II™ Triple Quadrupole system

Software: Mass Lynx™ 3.4

Cone Voltage: 30–60 V

Collision Gas Energy: 25–45 eV

Mode: Electrospray Negative

Source Block Temperature: 150°C ±10°C

Electrode: Z-spray

Analysis Type: Multiple Reaction Monitoring (MRM)

Target Ions Monitored in 3M Laboratory Analyses

Target Analyte	Primary Ion (AMU)	Product Ion (AMU)
PFOS	499	80, 99
FOSA	498	78
PFOA	413	169
PFHS	399	99
THPFOS[1]	427	80

[1] THPOS, Tetra-hydro perfluorooctanesulfonate, is used as a surrogate to monitor for gross instrument failure.

Data Quality Objectives and Data Integrity

The following data quality objectives were indicated in the method performance section of ETS-8-7.0, Analysis of Potassium Perfluorooctanesulfonate or Other Fluorochemicals in Liver Extracts Using HPLC-Electrospray/Mass Spectrometry:

Linearity: The coefficient of determination (r^2) equal to or greater than 0.980.
Limits of Quantitation (LOQ): The LOQ is equal to the lowest acceptable standard in the calibration curve.
Acceptable Spike Recoveries: Matrix spikes prepared in rabbit liver must be recovered at 70–130% for the analytical run to be valid.
Blanks: Matrix or surrogate matrix blanks must have a peak area ≤ ½ the peak area of the lowest acceptable standard (LOQ).

Summary of Quality Control Analyses Results

Linearity: The coefficient of determination (r^2) of the standard curve was >0.980.
Calibration Standards: Quantitation of the target analytes was based on a quadratic curve weighted 1/x of a single, opening or two bracketing unextracted curves for each group of samples. High or low points on the curve may have been deactivated to provide a better fit over the curve range most appropriate to the data. Low curve points with peak areas less than two times that of the extraction blanks were deactivated to disqualify a data range that may have been significantly affected by background levels of the analyte. Occasionally, a single mid-range curve point that was an obvious outlier may have been deactivated. Quantitation of each analyte was based on the response of one or more specific product ion(s) using the multiple reaction-monitoring mode of the instrument. Calibration standards were prepared to run, undiluted, approximately within the linear range of the instrument (approximately 0.5–1000 ng/g).

Limits of Quantitation (LOQ): The LOQ is equal to the lowest acceptable standard in the calibration curve (defined as a standard within ±30% of the theoretical value), and is at least two times the analyte peak area detected in the surrogate matrix blanks. Because low levels of the target analytes are ubiquitous in the laboratory, it is imperative that these criteria for LOQ determination be observed. The approximate LOQ for each analyte in each matrix is listed on the results summary table.

Blanks: All blanks were below the limit of quantitation for the compounds of interest, except for one water blank for PFHS and all caviar blanks for all compounds. These outliers will not adversely affect the outcome of this study. Given the nature of the samples encompassed by this study, the well-characterized matrix of rabbit liver was used as surrogate tissue for matrix blanks. These surrogate matrix blanks were ≤ ½ the level of the LOQ.

Precision, Instrumental: Instrumental precision was not specifically determined within the course of this study. In other, similar liver/tissue studies, instrumental precision has been determined to be better than 7% for all target analytes.

Matrix Spikes: At least one set of matrix spikes was prepared for each type of tissue from each type of animal; spikes were prepared at approximately 600 ng/g.

Recoveries of PFOS varied widely depending on the species and matrix. Therefore, adequate caution should be exercised in interpreting the results. Matrix spike recoveries are summarized in Appendix VII.

To verify the status of the extraction and analytical systems, matrix spikes were also prepared in a well-characterized surrogate matrix, rabbit liver. The matrix spike studies conducted in rabbit were all acceptable (+/-30%) for those analytical runs used when reporting data for samples and matrix spikes.

Demonstration of Specificity: Specificity for analyte identification was demonstrated by chromatographic retention time and mass spectral daughter ion characterization. Additional confirmatory tests were performed for PFOS. In the electrospray tandem mass spectrometry (ESMSMS) system, the 499 Da → 80 Da transition can provide a stronger signal than the 499 Da → 99 Da transition of the PFOS analysis. However, in the analysis of tissue samples collected from some species of animals, an unidentified interferent was present in the 499 Da → 80 Da transition. Although this interferent is rarely observed, to ensure complete selectivity, quantitation was based on the 499 Da → 99 Da transition.

To verify the identity of the detected analyte, in samples determined to contain PFOS at > 70 ng/g (liver or other tissue), at least 2 transitions were monitored and showed quantitative agreement to within +/-30%. Typically, 499>99 and 499>80 transitions were monitored. On the occasions that these two transitions differed by more than 30%, the sample was re-analyzed monitoring the 499>130 transition. This third transition showed quantitative agreement with the reported data from the 499>99 determination.

Statement of Data Quality

It is not possible to verify true recovery of endogenous analyte from tissues without radiolabelled reference material. The only measurement of accuracy available at this time, matrix spike studies, indicate that the data can be reported with a stated accuracy of either +/-30%, +/-50%. The recoveries fall below 50%, reported data should be considered semi-quantitative. Details of matrix spike recoveries are summarized in Appendix VII. The concentrations of PFOS, FOSA, PFOA and PFHS were not corrected for the recoveries of the surrogate standard or matrix spike recoveries. The concentrations reported were not corrected for purity of the PFOS standard. Also, no attempt was made to correct the fluorochemical concentrations for moisture content in relevant tissues such as liver.

RESULTS AND DISCUSSION

Concentrations of PFOS, FOSA, PFOA and PFHS in fish tissues are given in Appendices I to VI and the results are summarized in Table 1. PFOS was detected in liver and eggs

of fish from the Great Lakes. Concentrations were less than 400 ng/g, wet wt in the eggs of whitefish. Muscle tissues contained relatively less concentrations compared to those of liver or eggs. Among muscle tissues, carp from Saginaw Bay contained up to 297 ng/g, wet wt. Muscle tissues of fish from various inland lakes in Michigan did not contain quantifiable levels of PFOS. FOSA, PFOA and PFHS were rarely found in fish tissues.

Among fishes analyzed from European countries, muscle of a fish from Scheldtz estuary in Belgium contained up to 923 ng/g, wet wt. This is the highest concentration of PFOS found in fishes monitored. Salmon and other fishes from the Baltic Sea did not contain quantifiable concentrations of PFOS.

Among the samples from remote marine locations such as the North Pacific Ocean and the Antarctic Ocean, PFOS and other fluorochemicals were not detected.

REFERENCES

(1) 3M Environmental Laboratory, St. Paul, MN LIMs Report numbers; E00-1634, E00-1386, W3197, E00-2456, E00-2706, E01-0118.

Table 1. Summary of concentrations (ng/g, wet wt or ng/mL) of PFOS, FOSA, PFOA and PFHS in fish tissues (Mean and Ranges)

Species	Tissue	Location	PFOS	FOSA	PFOA	PFHS
Yellowfin tuna (n=12)	Liver	North Pacific Ocean	<70	<19	<72	<17
Chinook salmon (n=6)	Liver	Great Lakes/inland lakes, Michigan	100 (32-173)	<19	<72	<17
Lake whitefish (n=5)	Liver	Great Lakes/ inland lakes, Michigan	67 (33-81)	<19	<72	<17
Brown trout (n=10)	Liver	Great Lakes/ inland lakes, Michigan	<17-26*	<19	<72	<17
Carp diet (n=4)	Wholefish	Saginaw Bay, Michigan	<17-28*	<19	<72	<17
Lake whitefish (n=2)	Eggs	Great Lakes/ inland lakes, Michigan	263 (145-381)	<19	<36	<34
Brown trout (n=3)	Eggs	Great Lakes/ inland lakes, Michigan	64 (49-75)	<19	<18	<34
Carp (n=10)	Muscle	Saginaw Bay, Michigan	124 (59-297)	<19	<36	<34
Chinook salmon (n=6)	Muscle	Great Lakes/ inland lakes, Michigan	107 (<7-189)	<19	<36	<34
Lake whitefish (n=5)	Muscle	Great Lakes/ inland lakes, Michigan	132 (97-168)	<19	<36	<34
Brown trout (n=10)	Muscle	Great Lakes/ inland lakes, Michigan	<7-46*	<19	<36	<34
Swordfish (n=5)	Liver	Mediterranean Sea	<7-13*	<38	<36	<7-10*
Bluefin tuna (n=8)	Liver	Mediterranean Sea	48 (<3.5-87)	<38	<36	<7
Bluefin tuna (n=6)	Blood	Mediterranean Sea	40 (27-52)	15 (13-19)	<2.5	<1
Swordfish (n=7)	Blood	Mediterranean Sea	10 (4-21)	16 (4-26)	<2.5	<1
Silverfish, krill and Trematomus (n=5)	Wholefish	Antarctica	<19	<75	<37	<19
Salmon (n=22)	Liver	Baltic Sea	<7.5	<19	<19	<7.5
Various species (n=26)	Muscle	Scheldtz estuary, Belgium	279 (<19-923)	40 (<3.7-122)	17 (<7.5-46)	10 (<3.7-20)
Various species (n=14)	Muscle, 1 liver	Poland	<19	<3.7	<7.5	<3.7
Various species (n=19)	Muscle, 4 liver	Czech republic	62 (<19-123)	<19	<19	<19
Various species (n=35)	Liver	Inland Lakes, Michigan	43 (<7.7-120)	<7.7	<8	<3.8
Various species (n=19)	Eggs	Inland Lakes, Michigan	69 (<7.7-222)	<7.7	<8	<3.8
Various species (n=5)	Testes	Inland Lakes, Michigan	<7.7	<7.7	<8	<3.8
Various species (n=25)	Muscle	Poland	<3.9 and X	<3.8	<8	<3.8

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Various species (n=103)	Muscle	Inland lakes, Michigan	<7.7 and X	<7.7	<8 and X	<3.8

*Only one or two samples above the limit of quantification – mean not calculated; Values below LOQ are denoted by '<'
Values below the detection limit were not included in the estimation of mean; X – detected, not quantified

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APPENDIX I

Concentrations of (ug/g, wet wt) fluorochemicals in fish

Species	Lab ID	Tissue	Location	PFOS	PFHS	PFOA	FOSA
Yellowfin tuna	TU25*	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU34*	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU41*	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU48*	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU49	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU54*	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU58	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU63*	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU66	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU84	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU88	Liver	North Pacific Ocean	<LOQ (0.00696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Yellowfin tuna	TU90	Liver	North Pacific Ocean	<LOQ (0.0696)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Chinook Salmon	1999030-01	Liver	Great Lakes, Michigan	0.109	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Chinook Salmon	1999030-02	Liver	Great Lakes, Michigan	0.169	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Chinook Salmon	1999030-02-01	Liver	Great Lakes, Michigan	0.032	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Chinook Salmon	1999030-02-04	Liver	Great Lakes, Michigan	0.126	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Chinook Salmon	1999030-03-01	Liver	Great Lakes, Michigan	0.173	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Chinook Salmon	1999030-03-04	Liver	Great Lakes, Michigan	0.041	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Lake whitefish	1999029-11	Liver	Great Lakes, Michigan	0.068	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Lake whitefish	1999029-12	Liver	Great Lakes, Michigan	0.081	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Lake whitefish	1999029-13	Liver	Great Lakes, Michigan	0.074	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)

Lake whitefish	1999029-14	Liver	Great Lakes, Michigan	0.033	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Lake whitefish	1999029-16	Liver	Great Lakes, Michigan	0.078	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-01	Liver	Great Lakes, Michigan	<LOQ (0.0174)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-02	Liver	Great Lakes, Michigan	<LOQ (0.0174)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-03	Liver	Great Lakes, Michigan	<LOQ (0.0174)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-04	Liver	Great Lakes, Michigan	<LOQ (0.0174)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-05	Liver	Great Lakes, Michigan	0.026	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-06	Liver	Great Lakes, Michigan	<LOQ (0.0174)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-07	Liver	Great Lakes, Michigan	<LOQ (0.0174)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-08	Liver	Great Lakes, Michigan	<LOQ (0.0174)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-09	Liver	Great Lakes, Michigan	<LOQ (0.0174)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Brown Trout	1999040-10	Liver	Great Lakes, Michigan	<LOQ (0.0174)	<LOQ (0.0171)	<LOQ (0.0719)	<LOQ (0.0188)
Carp	Diet 1 (Carp5) **	Whole	Saginaw Bay, MI	<LOQ (0.0174)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	Diet 2 (Carp6)	Whole	Saginaw Bay, MI	<LOQ (0.0174)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	Diet 3 (Carp4)	Whole	Saginaw Bay, MI	0.027	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	Diet 4 (Carp3)	Whole	Saginaw Bay, MI	0.028	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Lake Whitefish	1999029-13	Eggs	Great Lakes, MI	0.145	<LOQ (0.0342)	<LOQ (0.0180)	<LOQ (0.0188)
Lake Whitefish	1999029-14	Eggs	Great Lakes, MI	0.381	<LOQ (0.0342)	<LOQ (0.0180)	<LOQ (0.0188)
Brown Trout	1999040-01	Eggs	Great Lakes, MI	0.075	<LOQ (0.0342)	<LOQ (0.0180)	<LOQ (0.0188)
Brown Trout	1999040-04	Eggs	Great Lakes, MI	0.068	<LOQ (0.0342)	<LOQ (0.0180)	<LOQ (0.0188)
Brown Trout	1999040-06	Eggs	Great Lakes, MI	0.049	<LOQ (0.0342)	<LOQ (0.0180)	<LOQ (0.0188)

Carp	B1N1	Muscle	Saginaw Bay, MI	0.101	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	B1N2	Muscle	Saginaw Bay, MI	0.078	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	B1N7	Muscle	Saginaw Bay, MI	0.091	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	B1N10	Muscle	Saginaw Bay, MI	0.088	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	B2N2	Muscle	Saginaw Bay, MI	0.105	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	B2N6	Muscle	Saginaw Bay, MI	0.089	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	B2N8	Muscle	Saginaw Bay, MI	0.059	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	B2N10	Muscle	Saginaw Bay, MI	0.084	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	Carp1*	Muscle	Saginaw Bay, MI	0.297	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Carp	Carp2*	Muscle	Saginaw Bay, MI	0.243	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Chinook Salmon	1999030-01	Muscle	Great Lakes, MI	0.189	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Chinook Salmon	1999030-02	Muscle	Great Lakes, MI	0.126	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Chinook Salmon	1999030-02-01	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Chinook Salmon	1999030-02-04	Muscle	Great Lakes, MI	0.113	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Chinook Salmon	1999030-03-01	Muscle	Great Lakes, MI	0.051	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Chinook Salmon	1999030-03-04	Muscle	Great Lakes, MI	0.057	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Lake Whitefish	1999029-11*	Muscle	Great Lakes, MI	0.168	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Lake Whitefish	1999029-12*	Muscle	Great Lakes, MI	0.130	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Lake Whitefish	1999029-13	Muscle	Great Lakes, MI	0.097	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Lake Whitefish	1999029-14	Muscle	Great Lakes, MI	0.098	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Lake Whitefish	1999029-16	Muscle	Great Lakes, MI	0.166	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-01	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-02 **	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-03	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-04	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-05	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-06	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-07	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-08	Muscle	Great Lakes, MI	0.046	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-09	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)
Brown trout	1999040-10	Muscle	Great Lakes, MI	<LOQ (0.00696)	<LOQ (0.0342)	<LOQ (0.0359)	<LOQ (0.0188)

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APPENDIX II

Concentrations of (ug/g, wet wt) fluorochemicals in fish

Species	Lab ID	Tissue	Location	PFOS	PFOA	FOSA	PFHS
Swordfish	S23 (23)	Liver	Mediterranean Sea	< LOQ (0.00696 ug/g)	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	0.010
Swordfish	S24 (24)	Liver	Mediterranean Sea	< LOQ (0.00696 ug/g)	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Swordfish	S25 (25)	Liver	Mediterranean Sea	0.008	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Swordfish	S32 (27)	Liver	Mediterranean Sea	< LOQ (0.00696 ug/g)	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Swordfish	S48 (26)	Liver	Mediterranean Sea	0.013	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Tunafish	T1 (33)	Liver	Mediterranean Sea	< LOQ (0.0347 ug/g)	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Tunafish	T1LF156 (35)	Liver	Mediterranean Sea	0.043	<LOQ (0.0718 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Tunafish	T2 (29)	Liver	Mediterranean Sea	0.087	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Tunafish	T15 (28)	Liver	Mediterranean Sea	0.057	<LOQ (0.0718 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Tunafish	T17 (31)	Liver	Mediterranean Sea	0.049	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Tunafish	T20 (32)	Liver	Mediterranean Sea	0.021	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Tunafish	T23 (30)	Liver	Mediterranean Sea	0.056	<LOQ (0.0359 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)
Tunafish	T25 (34)	Liver	Mediterranean Sea	0.025	<LOQ (0.0718 ug/g)	<LOQ (0.0376 ug/g)	< LOQ (0.00683 ug/g)

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APPENDIX III

Concentrations of (ng/mL) fluorochemicals in fish

Species	I.d.	Tissue	Location	PFOS	PFHS	PFOA	FOSA
Bluefin tuna	T15 (7)	Blood	Italian coast	0.037	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.013
Bluefin tuna	T02 (8)	Blood	Italian coast	0.052	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.013
Bluefin tuna	T17 (9)	Blood	Italian coast	0.035	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.013
Bluefin tuna	T23 (10)	Blood	Italian coast	0.051	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.019
Bluefin tuna	T25 (11)	Blood	Italian coast	0.027	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.014
Bluefin tuna	T20 (12)	Blood	Italian coast	0.036	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.017
Swordfish	S06 (13)	Blood	Italian coast	0.021	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.006
Swordfish	S08 (14)	Blood	Italian coast	0.006	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.011
Swordfish	S13 (15)	Blood	Italian coast	0.014	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.014
Swordfish	S18 (16)	Blood	Italian coast	0.008	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.025
Swordfish	S21 (17)	Blood	Italian coast	0.006	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.028
Swordfish	S36 (18)	Blood	Italian coast	0.013	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.004
Swordfish	S38 (19)	Blood	Italian coast	0.004	<LOQ (1.00 ng/mL)	<LOQ (2.50 ng/mL)	0.026

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APPENDIX IV

Concentrations of (ug/g, wet wt) fluorochemicals in fish

Species	Lab ID	Tissue	Location	PFOS	FOSA	PFOA	PFHS
Trematomus pennelli	(40) BTN-1	Wholefish	Antarctica	< LOQ (0.0188 ug/g)	< LOQ (0.0750 ug/g)	< LOQ (0.0374 ug/g)	< LOQ (0.0188 ug/g)
Trematomus pennelli	(41) BTN-1	Wholefish	Antarctica	< LOQ (0.0188 ug/g)	< LOQ (0.0750 ug/g)	< LOQ (0.0374 ug/g)	< LOQ (0.0188 ug/g)
Silver fish	(42) Pa4	Wholefish	Antarctica	< LOQ (0.0188 ug/g)	< LOQ (0.0750 ug/g)	< LOQ (0.0374 ug/g)	< LOQ (0.0188 ug/g)
Silver fish	(43) Pa1	Wholefish	Antarctica	< LOQ (0.0188 ug/g)	< LOQ (0.0750 ug/g)	< LOQ (0.0374 ug/g)	< LOQ (0.0188 ug/g)
Krill	(44) KRL001	Wholebody	Antarctica	< LOQ (0.0188 ug/g)	< LOQ (0.0750 ug/g)	< LOQ (0.0374 ug/g)	< LOQ (0.0188 ug/g)
Salmon - Baltic/Finnish	(239) N14	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(240) N32	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(241) N16	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(242) N13	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(243) N11	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(244) N29	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(245) N9	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(246) N2	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(247) N20	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(248) N3	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon -	(249) N18	Liver	Baltic Sea, Finnish	<LOQ (0.00750	<LOQ (0.0188 ug/g)	<LOQ (0.0188	<LOQ (0.00750

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Baltic/Finnish			coast	ug/g)		ug/g)	ug/g)
Salmon - Baltic/Finnish	(250) N12	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(251) N5	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(252) MB985	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(253) KR2169	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(254) OV9582	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(255) OV9581	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(256) OV9596	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(257) KR2168	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(258) OV9698	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(259) MB9897	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)
Salmon - Baltic/Finnish	(260) KR2179	Liver	Baltic Sea, Finnish coast	<LOQ (0.00750 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.00750 ug/g)

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APPENDIX V

Concentrations of (ug/g, wet wt) fluorochemicals in fish

Group	Sample #	Tissue	Location	PFOS	FOSA	PFOA	PFHS
				ug/g	ug/g	ug/g	ug/g
Fish	(1) BW7-2	Muscle	Belgium	0.0505	0.0162	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(2) BW8-2	Muscle	Belgium	0.606	0.0435	<LOQ (0.00750 ug/g)	0.0205
Fish	(3) BW9-2	Muscle	Belgium	0.0879	0.0112	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(4) BW6-N2	Muscle	Belgium	0.206	0.00724	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(5) BW17-2	Muscle	Belgium	0.199	0.0463	<LOQ (0.00750 ug/g)	0.00831
Fish	(6) BW11	Muscle	Belgium	0.0399	0.0461	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(7) BW12	Muscle	Belgium	0.0612	0.0192	<LOQ (0.00750 ug/g)	0.00452
Fish	(8) BW13	Muscle	Belgium	0.0429	0.0494	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(9) BW16-2	Muscle	Belgium	0.923	0.0636	<LOQ (0.00750 ug/g)	0.00943
Fish	(10) BW15-2	Muscle	Belgium	0.347	0.0819	<LOQ (0.00750 ug/g)	0.00640
Fish	(11) BW18-2	Muscle	Belgium	0.420	0.0228	0.0145	<LOQ (0.00375 ug/g)
Fish	(12) BW22-2	Muscle	Belgium	0.268	0.0562	0.0142	0.0139
Fish	(13) BW19-2	Muscle	Belgium	0.467	0.0762	0.0127	0.0170
Fish	(14) BW24	Muscle	Belgium	0.0987	0.122	<LOQ (0.00750 ug/g)	0.00754
Fish	(15) BW23-3	Muscle	Belgium	0.529	0.0922	<LOQ (0.00750 ug/g)	0.00543
Fish	(16) BW19-1	Muscle	Belgium	0.327	0.0512	<LOQ (0.00750 ug/g)	0.0155
Fish	(17) BW20-2	Muscle	Belgium	0.285	0.0265	0.0461	0.00509
Fish	(18) BW21-2	Muscle	Belgium	0.134	0.0393	0.0186	0.0116
Fish	(19) CV22-2	Muscle	Belgium	<LOQ (0.0188 ug/g)	0.00944	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(20) CV25-2	Muscle	Belgium	<LOQ (0.0188 ug/g)	0.00827	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(21) CV13-2	Muscle	Belgium	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(22) CV3-2	Muscle	Belgium	<LOQ (0.0188 ug/g)	0.00528	0.00902	<LOQ (0.00375 ug/g)
Fish	(23) CV26-B2	Muscle	Belgium	0.637	0.0220	<LOQ (0.00750 ug/g)	0.00681
Fish	(24) CV12-2	Muscle	Belgium	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	0.00782	<LOQ (0.00375 ug/g)
Fish	(25) CV2-2	Muscle	Belgium	0.0845	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(26) CV26A2	Muscle	Belgium	0.0409	0.00683	0.0116	<LOQ (0.00375 ug/g)
Fish	(27) poland4	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)

Fish	(28) poland18	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(29) poland5	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(30) poland2	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(31) poland3	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(32) polandburbot	Liver	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(33) polandfluonder	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(34) polandpelceus	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(35) polandturbot	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(36) polandflounder	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(37) polandsmelt	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(38) polandpike	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(39) polandroach	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(40) polandperch	Muscle	Poland	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(41) BA-1	Muscle	Czech Republic	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(42) BA-2	Muscle	Czech Republic	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(43) P-1	Muscle	Czech Republic	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(44) C-3	Muscle	Czech Republic	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(45) C-4	Muscle	Czech Republic	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(46) BR-1	Muscle	Czech Republic	<LOQ (0.0188 ug/g)	<LOQ (0.00375 ug/g)	<LOQ (0.00750 ug/g)	<LOQ (0.00375 ug/g)
Fish	(47) BR-2	Muscle	Czech Republic	0.0223	< LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)
Fish	(52) polandburbot-13	Muscle	Czech Republic	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)	<LOQ (0.0188 ug/g)
Fish	(53) catfish	Muscle	Czech Republic	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)
Fish	(54)BR-3	Liver	Czech Republic	0.0255	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)
Fish	(55) CA-1M	Muscle	Czech Republic	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)
Fish	(56) CA-1L	Liver	Czech Republic	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)
Fish	(57) C-1M	Muscle	Czech Republic	0.123	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)
Fish	(58) C-1L	Liver	Czech Republic	0.0856	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)
Fish	(59) C-2M	Muscle	Czech Republic	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)
Fish	(60) C-2L	Liver	Czech Republic	0.0538	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)
Fish	(61) CA-2M	Muscle	Czech Republic	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)
Fish	(63) CA-3M	Muscle	Czech Republic	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0375 ug/g)	< LOQ (0.0188 ug/g)
Fish	(64) CA-3L	Liver	Czech Republic	< LOQ (0.0188 ug/g)	< LOQ (0.0188 ug/g)	< LOQ (0.0375 ug/g)	< LOQ (0.0188 ug/g)

PFOS = Perfluorooctanesulfonate FOSA = Perfluorooctanesulfonamide LOQ = Limit of quantitation -- values in parenthesis

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PFHS = Perfluorohexanesulfonate PFOA = Perfluorooctanoate

APPENDIX VI

Concentrations of (ug/g, wet wt) fluorochemicals in fish

Species	Sample id	Tissue	Location	PFOS	FOSA	PFOA	PFHS
Fish Liver	6B (2000021-17)	Liver	Michigan inland Lakes	0.0351	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	7B (2000021-14)	Liver	Michigan inland Lakes	0.0419	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	10B (2000021-18)	Liver	Michigan inland Lakes	0.0093	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	12B (2000021-19)	Liver	Michigan inland Lakes	0.0266	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	19B (2000021-16)	Liver	Michigan inland Lakes	0.0293	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	23B (2000021-20)	Liver	Michigan inland Lakes	0.0494	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	26B (2000047-15)	Liver	Michigan inland Lakes	0.0546	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	28B (2000047-16)	Liver	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	30B (2000047-17)	Liver	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	35B (2000104-20)	Liver	Michigan inland Lakes	0.0151	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	X
Fish Liver	37B (2000104-17)	Liver	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	45B (2000020-09)	Liver	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	58B (2000020-04)	Liver	Michigan inland Lakes	0.0333	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	59B (2000020-03)	Liver	Michigan inland Lakes	0.0115	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	60B (2000020-01)	Liver	Michigan inland Lakes	0.0068	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038

Fish Liver	61B (2000020-02)	Liver	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	67B (20000303-01)	Liver	Michigan inland Lakes	0.0518	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	75B (20000303-04)	Liver	Michigan inland Lakes	0.0859	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	76B (20000302-02)	Liver	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	79B (20000303-03)	Liver	Michigan inland Lakes	0.0174	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	83B (20000303-02)	Liver	Michigan inland Lakes	0.0951	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	88B (20000302-04)	Liver	Michigan inland Lakes	0.0918	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	90B (20000303-05)	Liver	Michigan inland Lakes	0.120	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	95B (20000302-05)	Liver	Michigan inland Lakes	0.0129	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Liver	105 (200003301-02)	Liver	Michigan inland Lakes	0.0200	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Liver	108 (20000301-04)	Liver	Michigan inland Lakes	0.0145	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Liver	112 (20000302-03)	Liver	Michigan inland Lakes	0.0144	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Liver	114 (20000301-05)	Liver	Michigan inland Lakes	0.0281	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Liver	116 (200003301-03)	Liver	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Liver	117 (200003301-01)	Liver	Michigan inland Lakes	0.0216	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Liver	119 (20000301-01)	Liver	Michigan inland Lakes	0.00837	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Liver	128 (2000071-03)	Liver	Michigan inland Lakes	0.114	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Liver	131 (2000071-04)	Liver	Michigan inland Lakes	0.0382	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)

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Fish Liver	132 (2000071-05)	Liver	Michigan inland Lakes	0.0555	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Liver	135 (2000071-07)	Liver	Michigan inland Lakes	0.113	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Eggs	4B (2000021-17)	Eggs	Michigan inland Lakes	0.0199	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	9B (2000021-18)	Eggs	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	18B (2000021-16)	Eggs	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	21B (2000021-20)	Eggs	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	24B (2000047-14)	Eggs	Michigan inland Lakes	0.0284	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	42B (2000020-05)	Eggs	Michigan inland Lakes	0.00789	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	50B (2000020-10)	Eggs	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Eggs	52B (2000020-07)	Eggs	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	55B (2000020-03)	Eggs	Michigan inland Lakes	0.0136	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	57B (2000020-06)	Eggs	Michigan inland Lakes	0.00898	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	70B (20000302-03)	Eggs	Michigan inland Lakes	0.222	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	78B (20000303-03)	Eggs	Michigan inland Lakes	0.126	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	81B (20000303-01)	Eggs	Michigan inland Lakes	0.127	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	92B (20000302-01)	Eggs	Michigan inland Lakes	0.142	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Eggs	106 (20000302-05)	Eggs	Michigan inland Lakes	0.0447	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Eggs	107 (20000302-02)	Eggs	Michigan inland Lakes	0.0747	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Eggs	124 (2000071-02)	Eggs	Michigan inland Lakes	0.0229	<LOQ (0.00765 ug/g)	0.0137	<LOQ (0.00750

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Fish Eggs	138 (2000071-09)	Eggs	Michigan inland Lakes	0.0271	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Eggs	141 (2000071-10)	Eggs	Michigan inland Lakes	0.0949	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Testes	74B (20000303-04)	Testes	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Testes	82B (20000303-02)	Testes	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Testes	85B (20000302-04)	Testes	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Testes	101 (200003301-02)	Testes	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Testes	109 (20000301-04)	Testes	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	1 (348)	Muscle	Poland	X	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	2 (374)	Muscle	Poland	X	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	3 (375)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	4 (373)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	5 (365)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	6 (349)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	7 (354)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	8 (355)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	9 (327)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	10 (329)	Muscle	Poland	X	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	11 (341)	Muscle	Poland	X	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)

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Fish Muscle	12 (2)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	13 (360/376)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	14 (377)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	15 (326)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	16 (1)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	17 (339)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	18 (340)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	19 (333)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	20 (336)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	21 (345)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	22 (330)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	23 (331)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	24 (332)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	25 (370)	Muscle	Poland	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	1B (2000021-01to03)	Muscle	Michigan inland Lakes	< LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	2B (2000021-07to10)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	3B (2000021-04to06)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	5B (2000021-17)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	8B (2000021-14)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038

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Fish Muscle	11B (2000021-18)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	13B (2000021-19)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	14B (2000021-13)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	15B (2000021-11)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	16B (2000021-15)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	17B (2000021-12)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	20B (2000021-16)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	22B (2000021-20)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	25B (2000047-14)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	27B (2000047-15)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	29B (2000047-16)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	31B (2000047-17)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	32B (2000104-19)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	33B (2000104-18)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	34B (2000104-20)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	36B (2000104-17)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	38B (2000020-10)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	39B (2000020-07)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)

Fish Muscle	48B (2000020-06)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	49B (2000020-08)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	51B (2000020-09)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	53B (2000020-05)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	54B (2000020-04)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	56B (2000020-03)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	62B (2000020-02)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	63B (2000020-01)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	64B (20000303-01)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	73B (20000303-04)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	77B (20000302-02)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	80B (20000303-03)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	84B (20000303-02)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	89B (20000302-04)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	91B (20000303-05)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	98B (20000302-05)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	104 (200003301-02)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	110 (20000301-04)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	111 (20000302-03)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750

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Fish Muscle	113 (20000301-05)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	115 (200003301-03)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	X	<LOQ (0.00750 ug/g)
Fish Muscle	118 (200003301-01)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	120 (20000301-01)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	121 (2000071-01)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	127 (2000071-02)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	129 (2000071-03)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	130 (2000071-04)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	133 (2000071-05)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	134 (2000071-06)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	136 (2000071-07)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	137 (2000071-08)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	139 (2000071-09)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	X	<LOQ (0.00750 ug/g)
Fish Muscle	140 (2000071-10)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	144 (1999029/F000190)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	X	<LOQ (0.00750 ug/g)
Fish Muscle	147 (1999029/F000192)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	148 (1999029-02/F000189)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	149 (1999029/F000188)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)

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Fish Muscle	150 (1999029-04/F000191)	Muscle	Michigan inland Lakes	<LOQ (0.00773 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.00803 ug/g)	<LOQ (0.00750 ug/g)
Fish Muscle	151 (1999006/2000-5052)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	152 (1999006/2000-5054)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	153 (1999006/2000-5048)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	154 (1999006/2000-5059)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	155 (1999006/2000-5046)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	156 (1999-040-4/F00366)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	157 (1999-040-9/F00371)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	158 (1999-040-6/F00368)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	159 (1999-040-5/F00367)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	160 (1999-040-7/F00369)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.00765 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	163 (1999001-07/F000173)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	164 (1999001-10/F000176)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	165 (1999001-05/F000171)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	166 (1999001-06/F000172)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	167 (1999001-02/F000168)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	168 (1999028-06-10/F000333)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	169 (1999028-06-10/F000335)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	170 (1999028-	Muscle	Michigan inland Lakes	X	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038

	07/F000332)						
Fish Muscle	171 (1999028-06-10/F000331)	Muscle	Michigan inland Lakes	X	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	172 (1999006/2000-5031)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	173 (1999006/2000-5043)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	174 (1999006/2000-5042)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	175 (1999006/2000-5024)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	176 (1999006/2000-5040)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	179 (F960510)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	182 (F960513)	Muscle	Michigan inland Lakes	X	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	183 (F960517)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	184 (F97012)	Muscle	Michigan inland Lakes	X	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	185 (F97022)	Muscle	Michigan inland Lakes	X	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	186 (F970298)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	187 (F970301)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	188 (F970303)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	189 (F970304)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	190 (F970306)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	191 (F970308)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	192 (F970317)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)

Fish Muscle	195 (F990284)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	196 (F990286)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	199 (F990287)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	200 (F990294)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	201 (F990295)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)
Fish Muscle	202 (F990296)	Muscle	Michigan inland Lakes	<LOQ (0.0039 ug/g)	<LOQ (0.0038 ug/g)	<LOQ (0.0201 ug/g)	<LOQ (0.0038 ug/g)

PFOS = Perfluorooctanesulfonate
PFHS = Perfluorohexanesulfonate
X = Detected, not quantified

FOSA = Perfluorooctanesulfonamide
PFOA = Perfluorooctanoate

LOQ = Limit of quantitation – values in parenthesis

APPENDIX VII

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Matrix spike and matrix spike duplicate recoveries (%) of fluorochemicals spiked to fish matrices

Matrix	PFOS (Mean +/- RSD or PRD)	FOSA (Mean +/- RSD or RPD)	PFOA (Mean +/- RSD or RPD)	PFHS (Mean +/- RSD or RPD)
Chinook salmon liver	230+/-24	47+/-26	121+/-17	114+/-4
Lake whitefish liver	334+/-10	70+/-8	139+/-9	63+/-18
Brown trout liver	135+/-5	82+/-3	124+/-6	83+/-4
Tuna liver	68	59	84	55
Bluefin tuna blood	42+/-23	131+/-29	48+/-8	52+/-3
Swordfish blood	67+/-12	112+/-21	66+/-8	67+/-10
Antarctic fish muscle	68+/-6	79+/-6	101+/-8	54+/-13
Salmon liver 1	63+/-46	19+/-27	41+/-67	16+/-71
Salmon liver 2	70+/-129	71+/-34	76+/-27	50+/-8
Fish muscle	115+/-6	82+/-14	116+/-11	83+/-9
Fish muscle	99+/-6	66+/-0	103+/-4	57+/-2
Fish liver	117+/-8	54+/-10	41+/-26	15+/-11
Fish liver	80+/-17	81+/-24	60+/-22	50+/-40
Fish muscle	50+/-16	59+/-9	59+/-17	45+/-23
Fish eggs	79+/-16	92+/-12	64+/-18	46+/-36
Fish testes	6+/-3	9+/-3	10+/-4	5+/-3

RPD= Relative percent difference; RSD= Relative standard deviation
PFOS = Perfluorooctanesulfonate FOSA = Perfluorooctanesulfonamide PFHS = Perfluorohexanesulfonate
PFOA = Perfluorooctanoate

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