



EnviroMail™ #106

March 2016

PFAS Naming Conventions, Extended Analysis Suite and Automated Summed PFAS Reporting

PFOS / PFAS TESTING SUITE EVOLUTION, REPORTING AND NAMING CONVENTIONS

PFOS, PFOA, and PFCs have been terminology used in recent years with a number of suites provided. Increasingly the science community are referring to these fluorosurfactant compounds as PFAS (Per- and polyfluoroalkylated substances) and asking for new chemicals to be added in the absence of Australian regulation (until now).

Over the years ALS has offered a variety of suites of PFAS compounds generally three, four or 20 PFAS analytes. After a comprehensive review of chemicals tested internationally and discussion with local experts, ALS has now validated (and accredited) a further extended list of PFAS chemicals in water with soil soon to follow.

The extended suite (ALS code EP231X) is now available at **no additional cost** to quoted rates for the former extended PFC suites (ALS code EP231PFC) **through simply requesting EP231X on COCs.**

OTHER ALS ENVIROMAILS ON PFAS

ALS has produced a series of Technical EnviroMails on PFAS over the years with hyperlinks following:

[EnviroMail 38 - PFOS and PFOA - June 2009](#)

[EnviroMail 67 - Testing-of-Extended-PFCs - March 2013](#)

[EnviroMail 86 - PFCs in Landfill leachate - February 2015](#)

[EnviroMail 94 - PFOS PFOA and why do my laboratory results not agree- August 2015](#)

METHOD AND LOR INFORMATION

ALS METHOD CODE

EP231-X

LIMITS OF REPORTING (LOR)

EP231-X: Water: 0.01 to 0.1 µg/L (see overleaf)

Method Reference: In house

WA INTERIM GUIDELINES ON THE ASSESSMENT AND MANAGEMENT OF PFAS

In February 2016, the WA Department of Environment Regulation released an interim Contaminated Sites guideline on the Assessment and management of PFAS including some very good guidance (see section 5.2 - link to the site follows)

<https://www.der.wa.gov.au/your-environment/contaminated-sites/61-contaminated-sites-guidelines>

'The potential for precursor transformation to PFOS and PFOA and other PFAS metabolites should be considered in the overall potential for environmental and human exposure and evaluation of risk to human health, the environment and environmental values when assessing site contamination caused by PFAS.'

In addition, calibration guidance is provided (see EnviroMail 94) *PFOS and PFAS commercial mixtures are generally made up of linear and branched isomers. The proportion of each isomer which occurs in environmental samples is affected by the original composition and subsequent transport and degradation and precursor transformation processes. Practitioners should ensure that the analytical laboratory uses a mixed linear/branched standard for calibration purposes and that the uncertainty in measurement is included in the laboratory reporting.*

Please contact ALS should uncertainty data be required. In addition, ALS use fully traceable standards prepared in accordance with ISO guide 34 in all ALS PFAS methods.

PFAS NAMING CONVENTION

Over time, as additional compounds were added to PFC/PFAS suites, laboratories each decided on their acronyms. During the recent review, ALS has decided to change some naming conventions to a more logical and sustainable approach which will include new compounds and group reporting. This is based upon an article 'by Buck *et al*'⁽¹⁾. ALS has adopted this logic naming convention with one alteration

As a result of the new naming convention and additional compounds and summations a new method code has been set up to avoid causing database issues with mapping of chemicals in customer databases. **Please be aware of these changes in naming and analyte reporting orders when reviewing long term data.**

Brisbane, Sydney, Melbourne (Springvale), Perth, Newcastle, Roma, Darwin, Adelaide, Townsville, Mackay, Gladstone, Wollongong, Nowra, Mudgee, Chinchilla, Emerald
Water Resources Group: Canberra, Bendigo, Geelong, Melbourne (Scoresby), Wangaratta, Traralgon

PFAS SUMMATION REPORTING CHANGES AND INCLUSIONS

With eight additional PFAS tested and a new ALS naming convention, ALS reports now include summations, new grouping plus minor LORs changes as follows (see below with key PFAS chemicals in **bold**).

- **Swedish 11 plus 8:2 FTS** (drinking water quality guidance ⁽²⁾): Sum of PFBS, PFHXS, PFOS, PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFNA, PFDA and 6:2-FTS plus 8:2 FTS.
- **Total PFAS**: Sum of all positive detects at or above the LOR

Matrix / Method:		waters - Standard Level
TEST PARAMETER	CAS No.	EP231X (LOR in µg/L)
Perfluoroalkane Sulfonic Acids		
Perfluorobutane sulfonic acid (PFBS)	375-73-5	0.02
Perfluoropentane sulfonic acid (PFPeS)	2706-91-4	0.02
Perfluorohexane sulfonic acid (PFHxS)	355-46-4	0.02
Perfluoroheptane sulfonic acid (PFHpS)	375-92-8	0.02
Perfluorooctane sulfonic acid (PFOS)	1763-23-1	0.01
Perfluorodecane sulfonic acid (PFDS)	67906-42-7	0.05
Perfluoroalkane Carboxylic Acids		
Perfluorobutanoic acid (PFBA)	375-22-4	0.1
Perfluoropentanoic acid (PFPeA)	2706-90-3	0.02
Perfluorohexanoic acid (PFHxA)	307-24-4	0.02
Perfluoroheptanoic acid (PFHpA)	375-85-9	0.02
Perfluorooctanoic acid (PFOA)	335-67-1	0.02
Perfluorononanoic acid (PFNA)	375-95-1	0.02
Perfluorodecanoic acid (PFDA)	335-76-2	0.02
Perfluoroundecanoic acid (PFUnDA)	2058-94-8	0.05
Perfluorododecanoic acid (PFDoDA)	307-55-1	0.05
Perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.05
Perfluorotetradecanoic acid (PFTeDA)	376-06-7	0.05
Perfluoroalkyl Sulfonamides		
Perfluorooctane sulfonamide (FOSA)	754-91-6	0.02
N-Methyl perfluorooctane sulfonamide (MeFOSA)	31506-32-8	0.05
N-Ethyl perfluorooctane sulfonamide (EtFOSA)	4151-50-2	0.05
N-Methyl perfluorooctane sulfonamidoethanol (MeFOSE)	24448-09-7	0.05
N-Ethyl perfluorooctane sulfonamidoethanol (EtFOSE)	1691-99-2	0.05
N-Methyl perfluorooctane sulfonamidoacetic acid (MeFOSAA)	2355-31-9	0.02
N-Ethyl perfluorooctane sulfonamidoacetic acid (EtFOSAA)	2991-50-6	0.02
(n:2) Fluorotelomer Sulfonic Acids		
4:2 Fluorotelomer sulfonic acid (4:2 FTS)	757124-72-4	0.05
6:2 Fluorotelomer sulfonic acid (6:2 FTS)	27619-97-2	0.05
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	39108-34-4	0.05
10:2 Fluorotelomer sulfonic acid (10:2 FTS)	120226-60-0	0.05
Sums		
Sum of positive PFAS detections ≥ LOR	-	0.01
Sum of PFAS (Swedish 11) plus 8:2 FTS	-	0.01

SAMPLING CONSIDERATIONS,

The West Australia DER has indicated a preference for Plastic containers albeit also allows glass (minus Teflon liner). ALS deems glass jars (with liner removal) or plastic 150ml containers appropriate for soil, sediment and biota matrices (ASTM method indicates glass or plastic as suitable). ALS will move to 100% plastic containers in due course to facilitate regulator desires however this will mean an additional container will need to be taken in the field should other determinations be required.

REFERENCES

1. Buck, R. C.; Franklin, J.; Berger, U.; Conder, J. M.; Cousins, I. T.; De Voogt, P.; Jensen, A. A.; Kannan, K.; Mabury, S. A.; van Leeuwen, S. P. J. *Perfluoroalkyl and polyfluoroalkyl substances in the environment: terminology, classification, and origins. Integrated Environmental Assessment and Management* 2011, 7, 513-541.
2. <http://www.livsmedelverket.se/livsmedel-och-innehall/oonskade-amnen/miljogifter/pfas-poly-och-perfluorerade-alkylsubstanser/riskhantering-pfaa-i-dricksvatten/>

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