



## **Per- and Polyfluoroalkyl Substances (PFAS) – Common Mistakes**

### **The term Perfluorinated Compounds (PFC)**

The use of non-specific acronyms, such as perfluorinated compounds (PFC) can lead to misunderstanding. The acronym “PFC” is poorly defined but typically refers to perfluoroalkyl acids (PFAA). PFCs do not include “polyfluorinated” substances which are increasingly recognised as important contaminants at many PFAS impacted sites. The term PFC should therefore be avoided.

### **Not determining branched and linear isomers of PFOS**

Branched and linear isomers of perfluorooctane sulfonic acid (PFOS) need to be determined. If these are not reported, the results might be underestimating PFOS concentrations by 20-30% depending on the original manufacturing process – whether electrochemical fluorination (ECF) or fluorotelomerisation. Telomer chemistry produces linear (straight-chain) PFAA isomers, whereas the ECF process produces a mixture of linear and branched chained isomers. The presence of linear and branched isomers are important because they also have implications for partitioning, transport and bioaccumulation.

### **Use of De-ionised which isn't PFAS-free**

Only use de-ionised water provided by your laboratory that they have assured as being PFAS-free. This will have been subjected to a large scale programme of testing to assure its quality.

### **Use of inappropriate decontamination procedures**

Field sampling equipment, including oil/water interface meters, trowels and other non-dedicated equipment used at the sampling location require cleaning. The detergents used in decontamination procedures should be reviewed to ensure fluorosurfactants are not listed in their ingredients. Use laboratory-certified PFAS-free water for the final rinse during decontamination of sampling equipment. Decontaminate larger equipment (for example, drilling rigs) with potable water using a high-pressure washer. To the extent practical, rinse parts of equipment coming into direct contact with samples with PFAS-free water. Heavy equipment is best cleaned within a decontamination facility or other means of containment. Potable water sources should be analysed in advance for PFAS. Wherever possible, rinse equipment with PFAS-free water immediately before use.

### **Glass bottles**

Only use high-density polyethylene (HDPE) or polypropylene containers with unlined plastic caps. We don't use glass because of the potential for analyte sorption – PFAS adsorbs strongly to glassware.

### **Don't forget Quality Control (QC) samples**

QC procedures are important for assessing sampling activities. QC samples include, but are not limited to, field blanks, trip blanks, duplicates and equipment rinse blanks. In some cases, it is impossible to eliminate materials that affect PFAS in samples. For example, these materials might be needed at sites where hazards warrant the use of specific PPE, where PFAS are the secondary or co-contaminant and the primary contaminant requires specific materials for proper sampling. When PFAS-containing equipment cannot be eliminated, increasing the



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equipment blank sample will more thoroughly document the PFAS concentrations. In these situations, a detailed Quality Assurance (QA)/QC program becomes even more important.

**Don't mix heavily contaminated samples with samples known to have lower concentrations**

The conceptual site model (CSM) or previous phases of investigation may indicate areas of high concentrations of PFAS, for which, single use, disposable equipment is recommended. If single use is not possible, take additional precautions such as implementing a greater frequency of decontamination blanks and not reusing equipment to sample potentially low PFAS contamination samples. High concentration samples should be segregated during transport to the laboratory.

All aqueous film-forming foam (AFFF) samples must be considered as having high concentrations. These samples should be segregated from other samples during sampling and transport to avoid cross-contamination. Samples that may contain high concentrations of PFAS should be clearly identified on the Chain of Custody form within the known hazard box or within myALS.