

**Characterization of a Wide Array of Fluorinated
Organic Compounds in Contaminated Soils**

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Herein we report the results of analyses on the concentrations of perfluorinated compounds (PFCs) and fluorotelomer alcohols (FTOHs) in soils from a site that has been impacted by human activities. Soil samples were collected from several locations that had been impacted and one 'background' field that had not been impacted. All samples were extracted and analyzed for perfluorocarboxylic acids ranging from C6 to C14 including C8 (PFOA), the 8:2 and 10:2 unsaturated acids, and the perfluorosulfonates C4, C6, C7 and C8 (PFOS) by liquid-chromatography, tandem mass spectrometry (LC/MS/MS); most of these analytes were quantified using a mass-labeled matrix internal standard of the same chemical species and the ¹³C₈-PFOA internal-standard recovery averaged about 90%. Samples also were extracted and analyzed for FTOHs (F(CF₂)_xC₂H₄OH) where x = 6, 8, 10, 12 and 14 perfluorinated carbons, the sec-FTOHs (F(CF₂)_yCH(CH₃)OH) where y = 7, 9, 11 and 13 perfluorinated carbons, and the 8:2 fluorotelomer acrylate by gas chromatography, mass spectrometry (GC/MS); these analytes were quantified using a ²H₂¹³C₂-10:2FTOH matrix internal standard and the ²H₂¹³C₂-8:2FTOH internal-standard recovery averaged about 110%. In the absence of authentic standards for the sec-FTOHs, they were quantified using their respective y-1 standard curves and their identity was confirmed by: 1) GC/MS, scan spectra, in positive chemical ionization mode, of the MTBE extract that contained the expected [M + 1]⁺ ion; 2) the ion corresponding to loss of m/z 38 (HF + H₂O) from the [M + 1]⁺ ion; and 3) by derivitization with trimethylsilylimidazole.

We will report absolute concentration ranges for the analytes as well as selected patterns between homologues, between the PFCs and FTOHs, and any correlations between target analytes and soil properties.