

Per- and Polyfluorinated Alkyl Substances (PFAS) Distribution Trends in Soil and Groundwater at Former Air Force Installations

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Background/Objectives. From the early 1970s until 2002, the U.S. Air Force used aqueous film forming foam (AFFF) containing perfluorooctane sulfonic acid (PFOS) and/or perfluorooctanoic acid (PFOA) for firefighting and firefighting training activities. Recently, investigation of AFFF areas have focused on fire training areas (FTAs). However, AFFF was also used at other areas within military installations, such as in and around aircraft hangars that had AFFF fire suppression systems, plane crash and fire emergency response sites, firefighting maintenance and equipment testing areas, and waste management or treatment facilities. As the investigation of PFOS and PFOA at Air Force installations is in its infancy, there is a need to understand which areas are most likely to contain PFOS and/or PFOA in groundwater above the U.S. Environmental Protection Agency (U.S. EPA) health advisories (HA) and in soil above anticipated future U.S. EPA regional screening levels. This data will aid future investigations of per- and polyfluoroalkyl substances at Air Force and other military facilities when focused or higher probability sampling may be necessary.

Approach/Activities. To date, over 500 groundwater and over 1000 soil samples have been collected and analyzed from 33 former Air Force installations. PFOS and PFOA frequency of detections are compared among several key investigated areas including FTAs, hangars, emergency response sites, and waste management sites.

Results/Lessons Learned. Analytical results to date suggest:

PFOA is found to exceed the HA twice as often as PFOS in groundwater at FTAs.

- Conversely, PFOS is found to exceed the HA twice as often as PFOA in groundwater at waste management areas (e.g. landfills, wastewater treatment plants).
- PFOS and PFOA are found at waste management facilities at a higher frequency than they are found at FTAs.
- PFOS and PFOA are detected more frequently in soil near hangars and other sites than FTAs.
- As the project continues, additional data from 14 additional former Air Force installations comprising over 3,000 additional data points will be added to the trend analysis prior to the conference.