Perfluorinated compounds (PFCs) are a class of synthetic compounds that are highly chemically stable, resist degradation, and are persistent in the environment. They can be found in a wide variety of consumer and industrial products, and can bioaccumulate in the body. PFCs are particularly problematic because they are highly mobile in the environment and can be found in all media (groundwater, surface water, sediment, soil, and air). Long-chain PFCs such as PFOS and PFOA are used in a variety of consumer and industrial products, including firefighting foam, stain repellent substances, and many other applications.

Recent studies have shown that PFCs are detected in human serum, urine, and breast milk. They persist in the environment for long periods of time, up to 20 years, and can be transported long distances. PFCs are bioaccumulative, meaning they can build up in the food chain, and are toxic to both humans and the environment. They can cause a variety of health effects, including developmental problems, immune system effects, and even cancer.

The USEPA recommends a residential soil screening level of 6 mg/kg for PFOS and 100 mg/kg for PFOA. At Site A, the PFOS noncancer hazard quotient (HQ) is 0.4 for both groundwater detections and at Site B the HQ for PFOS in groundwater is 0.69. The apparent noncancer toxicity of PFOS and PFOA is 0.69 and 0.39 respectively.

The California Department of Toxic Substances Control (DTSC) recommends a tapwater short-term exposure provisional health advisory (PHA) levels of 0.2 µg/L for PFOS and 0.4 µg/L for PFOA. A recent study found that perfluorohexanesulfonate (PFHxS) is much more persistent than PFOS and PFOA, with elimination half-lives of 12.7 years. This means that PFHxS may continue to bioaccumulate in the environment and may be a continuing source of contamination.

Several studies have shown that PFOS and PFOA are present in all media (groundwater, surface water, sediment, soil, and air). The USEPA and DTSC have established site-specific action levels for PFOS and PFOA in soil, sediment, and groundwater at California hazardous waste sites. These action levels are based on the potential for human health and ecological risk assessments.

In the context of the California Firefighter Occupational Exposure Project (FOX), epidemiologists have found that firefighters are at increased risk for cancer. However, this study did not find an association between firefighting and cancer. The FOX study is ongoing and will continue to collect data on firefighter exposure to PFCs and other chemicals.

One study found that Perfluorooctanesulfonate (PFOS) and Perfluorooctanoic acid (PFOA) were detected in human serum at levels that were higher than the levels detected in the general population. The authors suggested that this could be due to occupational exposure to PFCs in the workplace.

In conclusion, PFCs are a serious environmental and public health concern. Continued research is needed to fully understand the risks associated with PFC exposure and to develop effective strategies for reducing exposure and mitigating the effects of PFC contamination.