



**ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM**

Interim Technical Memorandum: Comparing DEC cleanup levels for Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) to EPA’s Health Advisory Levels.

Date: August 25, 2016

Purpose: This document was prepared by the Alaska Department of Environmental Conservation (DEC) to provide cleanup levels for PFOS and PFOA in soil and groundwater. It also provides a general understanding on the EPA lifetime health advisory levels and how it differs from the groundwater cleanup levels.

ADEC cleanup levels for PFOS and PFOA in soil and groundwater:

These are the proposed PFOS and PFOA levels in soil and groundwater for regulation after incorporating public comments.

	Soil				Groundwater
	Arctic Zone (mg/kg)	Under 40” Zone (mg/kg)	Over 40” Zone (mg/kg)	MTGW (mg/kg)	(µg/L)
PFOS	2.2	1.6	1.3	0.0030	0.4
PFOA	2.2	1.6	1.3	0.0017	0.4

mg/kg – milligrams per kilogram

µg/L – micrograms per liter

The groundwater cleanup levels for PFOS and PFOA were developed using the same method used to calculate cleanup levels for all other chemicals listed in Table C. The cleanup levels assume a residential property use and are designed to be protective of a child using the groundwater as a domestic water source. The Table C cleanup level therefore assumes a child’s body weight of 15 kilograms and a daily drinking water intake rate of 0.78 liters. The complete exposure pathways used in the calculated groundwater cleanup level include the use of groundwater as drinking water, dermal contact with the water, and the inhalation of volatile chemicals from the water during typical household usage.

EPA lifetime health advisory levels for PFOS and PFOA for public water systems:

EPA’s lifetime health advisory (HA) levels for public drinking water systems are:

$$\text{PFOS} = 0.07 \text{ } \mu\text{g/L}$$

$$\text{PFOA} = 0.07 \text{ } \mu\text{g/L}$$

The HA recommends that if both compounds are present then the sum of concentrations for both compounds needs to be less than or equal to 0.07 µg/L.

The EPA HA lifetime levels assume an adult body weight of 80 kilograms and a daily drinking water intake rate of 4.32 liters for a nursing mother. This ratio is roughly equivalent to the child-based values used by DEC. In addition, each HA level incorporates a relative source contribution (RSC) that assumes 20% of the exposure is from drinking contaminated water and the remaining 80% is from exposure to PFOS and PFOA from other sources. The RSC is used to capture other pathways beyond the consumption of the water as a drinking source, such as consuming contaminated food, contact with household products, and occupational exposure. Because of the RSC, the resulting HA level includes a five-fold reduction to account for these other exposures.

Why doesn't DEC apply the HA instead of the risk-based calculated level?

DEC calculates cleanup levels for soil and groundwater for all compounds using approximately the same set of equations, input parameters, and exposure factors. This approach accounts for exposure only to contaminants released in soil or groundwater at the site as opposed to the HA, which accounts for other exposures in addition to drinking the water, as described above.

Although not yet adopted into regulation, new language in 18 AAC 75.345 allows the department to consider an EPA HA in setting a cleanup level on a site-specific basis if determined appropriate. Alternatively, other exposures routes or receptors that are not captured in the default cleanup levels could also be assessed and accounted for in a site-specific risk assessment.

For more information or additional questions, please contact Ted Wu, DEC Risk Assessor, at ted.wu@alaska.gov or 907-451-2269.

For more information about EPA's Health Advisories, see: <https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>