THE STATE of ALASKA
GOVERNOR BILL WALKER

**Department of Environmental Conservation**
DIVISION OF SPILL PREVENTION AND RESPONSE

555 Cordova Street
Anchorage, AK 99501
Main: 907.269.3094
Main: 907.269.7648
www.dec.alaska.gov

August 11, 2017

Dear Government Officials and Fire, Health, Safety, and Environmental Professionals:

This communication is to alert you to the health risks posed by certain aqueous film forming foam (AFFF) fire suppressants manufactured prior to 2002 that contain per- and polyfluoroalkyl substances (PFAS) and to recommend you take action to remove these products from your fire suppression inventory, if necessary. These PFAS and precursor compounds include perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), which are suspected to adversely affect human health and are both difficult and costly to clean up in the environment after use.

The Department of Environmental Conservation (DEC) has established cleanup levels in regulation in 18 AAC 75 for PFOS and PFOA in contaminated soil and groundwater. Given that PFOS and PFOA-containing products are considered hazardous substances, DEC requires the release of these products, in any amount, to be reported immediately to the State. See the end of this letter for notification information.

In the last several years, DEC has identified a growing number of contaminated sites across the state where the use of certain formulas of AFFF during fire suppression and training has resulted in the release of PFAS, including PFOS and PFOA, into the groundwater. At some of these sites, the PFAS contamination has impacted community water supplies. In addition, workers who use AFFF are often exposed directly to these chemicals during fire suppression activities.

Although the human and environmental effects of these compounds continue to be studied and are yet to be fully understood, the extent of PFAS contamination and the potential effects of these compounds have become a significant matter of public health concern nationwide for military installations and communities where groundwater and municipal drinking water supplies have been contaminated. Sites and facilities where PFAS have been found or PFAS-based AFFF was used include fire department facilities, aircraft crash sites, water treatment systems and receiving water bodies, aircraft hangars, landfills, bulk fuel storage facilities, refineries, and oil and gas exploration operations.

DEC recommends that if you use AFFF in your operations or store these products for use in fire-suppression, you should review your inventory for AFFF products that were manufactured prior to 2002, as these stocks may likely contain PFAS. If you have such products, we strongly encourage you to remove them from use and replace them with more recently manufactured AFFF. AFFF that contains PFAS should be returned directly to the manufacturer or shipped out of state for disposal by a certified hazardous waste disposal company.

While the science surrounding these compounds is still evolving, DEC believes it is in the public's best interest to share with facility and vessel operators as much information as possible about these risks so former and current users of PFAS-based AFFF can take appropriate action to reduce risks to human health and the environment. For more information about the health risks, chemical structure, use and manufacturing history of specific formulas of AFFF, or how to dispose of products you may have in your inventory, please refer to the attached fact sheet.

If you have questions or concerns about whether a release at your facility or a site where AFFF was used may have resulted in contaminated soil or groundwater, please contact the DEC Contaminated Sites Program at (907) 465-5390. To report a new release or spill, contact the regional spill report line:

Southeast (Juneau) --- (907) 465-5340
Central (Anchorage) --- (907) 269-3063
Northern (Fairbanks) --- (907) 451-2121

For more information on disposal of PFAS-based AFFF, please contact the Statewide Hazardous Material Team Coordinator at (907) 269-4198.

Thank you for your attention and assistance in helping protect Alaskans' public health and environment.

Sincerely,

FOR

Kristin Ryan, Director
Division of Spill Prevention and Response

Attachment: FACT SHEET: Risks of Aqueous Film-Forming Foam (AFFF)

# ADEC DIVISION OF SPILL PREVENTION AND RESPONSE

# FACT SHEET: Risks of Aqueous Film Forming Foam (AFFF)

**August 2017**

## WHAT IS AFFF?

Aqueous Film Forming Foam (AFFF) is a fire suppressant used to extinguish flammable liquid fires such as fuel fires. AFFF is often used in shipboard and shore facility fire suppression systems, fire fighting vehicles, and at fire training facilities. AFFF is purchased as a concentrate, typically referred to as "3%" or "6%" (Type 3 or Type 6, respectively) depending on its mixture ratio with water.

## WHAT ARE PFAS, PFOS, AND PFOA?

*Photo courtesy of FOAMTECH Antifire Company*

Per- and poly-fluoroalkyl substances (PFAS) are a large family of man-made chemicals that have been widely used in industry and consumer products since the 1950s. Perfluorooctane sulfonate (PFOS) is a long-chain PFAS found in legacy stocks of AFFF and as a breakdown product of precursor compounds. Perfluorooctanoic acid (PFOA) is also a long-chain PFAS. PFOA is not an intended ingredient in AFFF, but long-chain precursor fluorotelomer-based AFFF can break down to PFOA.

## WHAT HAPPENS WHEN PFAS GET INTO THE ENVIRONMENT?

Because of their stable chemical structure, PFAS are persistent in the environment and resists degradation. It is highly mobile in the environment and migrates rapidly to groundwater where it migrates further, both vertically and laterally through aquifers. PFAS tend to bioaccumulate in the food chain and have been found throughout the Arctic, in both mammals and other biota, and are suspected to have migrated there through oceanic currents and atmospheric deposition.

## WHAT ARE THE RISKS TO HUMAN HEALTH?

PFOS, PFOA, and other PFAS are toxic and found to be widespread at low levels in humans and the environment. They are the subject of increasing regulations worldwide. Some but not all studies on long-chain PFAS, including PFOA and PFOS, have shown a positive association between exposure and thyroid disease, high cholesterol, pregnancy-induced hypertension, gestational diabetes, and fetal growth retardation resulting in low birth weights. Studies have also shown a link to certain types of cancer, including bladder, kidney, and testicular cancer. PFOS and PFOA are suspected endocrine disruptors and are not metabolized or easily excreted, with an estimated average half-life in humans of 2.3 years for PFOA and 4.1-8.7 years for PFOS.

## WHAT REGULATIONS APPLY TO PFOS AND PFOA?

State regulation has identified PFOS and PFOA as hazardous substances. Any discharge of PFAS-based AFFF must be reported immediately to the State under 18 AAC 75. To report a new release or spill, contact:

**Southeast (Juneau) --- (907) 465-5340**
**Central (Anchorage) --- (907) 269-3063**
**Northern (Fairbanks) --- (907) 451-2121**

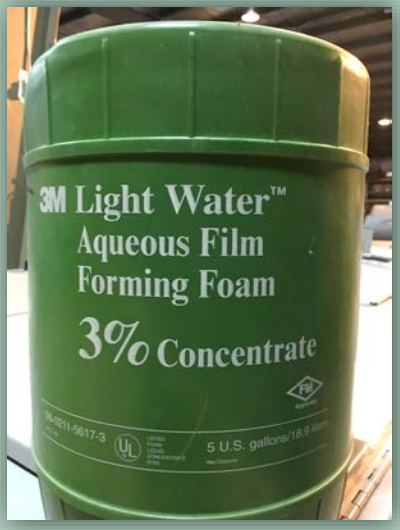
For contaminated soil and groundwater, DEC has established cleanup levels for PFOS and PFOA at 18 AAC 75.341 (soil) and 18 AAC 75.345 (groundwater). In addition, EPA has established a lifetime health advisory level for PFOS and PFOA – individually or combined – to protect people from PFOS and PFOA exposure in drinking water, particularly unborn babies and infants. PFOS and PFOA are not classified as hazardous wastes under the Resource Conservation and Recovery Act (RCRA); however, under the Toxic Substances Control Act, these compounds are regulated through Significant New Use Rules which give the EPA the authority to restrict the production and use of PFOS and PFOA containing products. AFFF constitutes a U.S. Occupational Safety and Health Administration hazardous material because of its physical hazards, such as skin and eye irritation. Discharge of wastewater and runoff containing AFFF on land, at sea, or to surface water bodies is also subject to regulation under the Clean Water Act.

## HOW DO I DETERMINE IF I HAVE PFOS-BASED AFFF?

Due to their long shelf lives, legacy AFFF (including PFOS-based AFFF concentrate) may still be present in your inventory. Common product names or attributes include:

- 3M Light Water AFFF (PFOS-based)
- Long-chain PFAS containing C-8, 10, 12, or greater fluorochemicals

If the product name and/or purchase date cannot be determined, a sample can be sent to an analytical laboratory to determine the presence or absence of PFOS, using EPA Method 537. Users are advised to compare sampling costs and disposal costs, as it may be more cost-effective to properly dispose of limited quantities of unknown PFOS material rather than pay for sampling and analysis.




## HOW DO I DISPOSE OF PFOS-BASED AFFF?

AFFF must be disposed of properly. Although it is not characteristic for hazardous waste, nor is it listed as a regulated hazardous waste under RCRA, DEC recommends that it be solidified and shipped to a non-hazardous waste landfill out of state that will accept this waste, or thermally destructed at a RCRA Part B Subpart O incineration facility. Alternatively, it may be returned to the manufacturer if available. When shipping PFOS-containing AFFF out of state, use a licensed waste transportation and disposal company. AFFF may not be disposed of at sea, or through septic, stormwater, or municipal sewer systems.

## CAN STOCKPILES OF PFOS-BASED AFFF CONTINUE TO BE USED?

DEC strongly discourages the use of PFOS and long-chain PFAS AFFF, due to the risks posed to human health and the environment. We recommend these products be removed from use and properly disposed.

## WHAT IS THE MANUFACTURING HISTORY OF AFFF?

Prior to 2002, many fluorosurfactants used in AFFF were PFOS-based, which resulted in AFFF that contained PFOS or PFOS precursor compounds. During that time, AFFFs based on long-chain fluorotelomers were also available. After 3M, Inc.'s announcement to phase out manufacturing of PFOS-based products in 2000, the primary supply of AFFF became fluorotelomer-based. Over the last several years, manufacturers of fluorotelomer AFFF have been replacing long-chain fluorosurfactants with short-chain fluorosurfactants. The PFAS in current fluorotelomer-based AFFF are shorter chain molecules and are suspected to be less bioaccumulative and toxic. Telomer-based AFFF does not contain PFOS, but may contain trace amounts of PFOA.

## WHAT ABOUT HISTORIC USES AND RELEASES OF PFOS-BASED AFFF?

Throughout Alaska, DEC has identified PFOS and PFOA contamination that is above cleanup levels and associated with releases of AFFF. Releases may have occurred at live firefighting training locations, AFFF storage tanks and transport lines, accident/emergency response sites, and near facilities (e.g., aircraft hangars) with AFFF fire suppression systems. The locations of these activities have confirmed or suspected soil and groundwater contamination.

If you or your agency would like to conduct groundwater sampling for these chemicals or if your records indicate your facility may have experienced AFFF leaks, spills, or releases to the environment, please contact the DEC Contaminated Sites Program at (907) 465-5390.


**References**

- Fire Fighting Foam Coalition Fact Sheet on AFFF Firefighting Agents (2017): http://www.fffc.org/images/AFFFfactsheet17.pdf
- EPA 2016 Health Effects Support Document for Perfluorooctanoic Acid: https://www.epa.gov/sites/production/files/2016-05/documents/pfoa_hesd_final_508.pdf
- EPA 2016 Health Effects Support Document for Perfluorooctane Sulfonate: https://www.epa.gov/sites/production/files/2016-05/documents/pfos_hesd_final_508.pdf
- EPA Fact Sheet --- PFOA and PFOS Drinking Water Health Advisories (May 2016): https://www.epa.gov/sites/production/files/2016-06/documents/drinkingwaterhealthadvisories_pfoa_pfos_updated_5.31.16.pdf



## DIVISION OF SPILL PREVENTION AND RESPONSE

**Juneau:** (907) 465-5250 **Anchorage:** (907) 269-7557 **Fairbanks:** (907) 451-2107

**http://dec.alaska.gov/spar**