

## **FREQUENTLY ASKED QUESTIONS** **Aqueous Film Forming Foam** **Replacement and containment**

As of 13 April 2017

**Q. What is AFFF?**

**A.** Aqueous Film Forming Foam, or AFFF, is a fire-fighting agent used commercially and by the Department of Defense, including the Air Force. Most commonly used to combat petroleum fires in aircraft accidents, hangars and during live-fire training exercises, AFFF was found to contain perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) - two perfluorinated compounds that persist in the environment and are not known to degrade by any natural process. The Environmental Protection Agency has classified these compounds as emerging contaminants due to inconclusive human health risks and evolving regulatory standards.

**Q. Why didn't the Air Force immediately stop using AFFF after the health concerns regarding PFOS/PFOA came to light?**

**A.** It is imperative the Air Force maintain effective fire protection for people, critical assets and infrastructure; until November 2015 there was not a more environmentally responsible option available on the Department of Defense's qualified products list for firefighting agents. The Air Force balanced health concerns with the necessity of critical fire protection by limiting AFFF use to emergency responses only. The Air Force looks to the EPA for standards and guidance on environmental issues, and will continue to take proactive steps to protect communities from negative impacts from mission activities.

**Q. When did the Air Force begin eliminating PFOS-based AFFF?**

**A.** In March 2011, the Air Force Civil Engineer Center initiated an informal plan for Air Force fire chiefs to dispose of "excess" PFOS-based AFFF over a 10-year period. In November 2015, Naval Sea Systems Command (NAVSEA), the organization responsible for the military specification for Department of Defense firefighting foam, added new more environmentally responsible formulas to the qualified products list. The Air Force began replacing legacy AFFF stockpiles with a new formula in August 2016.

**Q. What type of replacement foam will be used and how effective is it?**

**A.** The Air Force awarded a \$6.2 million contract to ICL Performance Products for 418,000 gallons of Phos-Chek 3 percent, six carbon chain AFFF. Delivery began in August 2016 and all foam in fire vehicles and fire stations will be replaced by 2017. The new formula meets both MILSPEC requirements for firefighting, and the goals of the U.S. Environmental Protection Agency 2010/15 PFOA Stewardship Program.

**Q. Why did the Air Force disregard AFFF health concerns identified in an Air Force study?**

**A.** The Air Force did not conduct a health study on the impacts of AFFF. The 1981 study referenced was

not a study on AFFF, nor was the chemical studied used by the Air Force other than for the purpose of the study. The Air Force looks to the EPA for standards and guidance on environmental issues, and will continue to take proactive steps to protect communities from negative impacts from mission activities.

**Q. How is the new aqueous film forming foam (AFFF) different from the legacy AFFF?**

**A.** The legacy AFFF formula contains long-chain fluorosurfactants while the new formula contains shorter chain molecules. Data reviewed by the U.S. Environmental Protection Agency in 2009 suggests these lower-chain formulas are less toxic because the chemicals are cleared from the body faster and are not considered bio-accumulative or bio-persistent. The new formula meets both military specifications for firefighting, and the goals of the EPA's 2010/15 PFOA Stewardship Program.

**Q. When will legacy AFFF be out of the Air Force's inventory?**

**A.** The Air Force began replacing legacy AFFF in fire trucks and stockpiles in August 2016. AFCEC will replace a total of 418,000 gallons of the old AFFF formulation with foam that reduces PFOS exposure by 2017. AFFF contained in fire protection systems in hangars will be replaced in conjunction with hangar renovations. Unlike mobile fire trucks, AFFF in hangars are contained to a stationary location — a more controlled environment.

**Q. Why doesn't the Air Force just use PFOS/PFOA -free foam?**

**A.** AFFF agents that contain some form of PFOS/PFOA are the most effective foams currently available to fight flammable liquid fires in military, industrial, aviation and municipal arenas. They provide rapid extinguishment, burn-back resistance and protection against vapor release.

Foam manufacturers are transitioning to the use of more environmentally-responsible formulas that do not contain long-chain PFOS/PFOA. These short-chain formulas are low in toxicity and not considered bio-accumulative or bio-persistent.

**Q. How is the AF disposing of AFFF?**

**A.** The process for AFFF disposal is to drain and collect the legacy AFFF from our fire vehicles then triple rinse the vehicle foam tanks and collect the effluent. The legacy AFFF and effluent will then be sent to an authorized disposal facility for incineration. The incineration disposal method is the most environmentally safe way to eliminate the health and environmental risks associated with AFFF.

**Q. At one time, there was no reason to believe that legacy PFOS-based firefighting foam was not safe. What is the Air Force doing to ensure history isn't repeated?**

**A.** The Air Force is taking steps to guard against future PFC contamination by replacing legacy AFFF stockpiles with a foam that reduces PFOS/PFOA exposure, Phos-Chek 3 percent, six carbon chain AFFF. The Air Force is taking additional steps to reduce or eliminate unnecessary foam releases by:

- Retrofitting all fire vehicles with a switch mechanism to test functionality without discharging AFFF into the environment.

- Standardizing hangar systems and replacing systems containing the old formulation in conjunction with building renovations.
- Conducting fire training exercises in double-lined pits to prevent soil and groundwater contamination.
- Treating any uncontained releases of AFFF as hazardous-material spill and requiring immediate cleanup.

**Q. What are holding ponds and tanks in fire training areas used for? What's the difference?**

**A.** Tanks and ponds collect burn pit effluent (foam, fuel, etc.) so it doesn't get in storm water drains. For example, retention ponds are placed at the bottom of a slope from a burn pit to catch runoff. Ponds are equipped with a double, high-density Polyethylene liner and are designed for the required operating volume, plus rainfall from a 10-year-rain event. Ponds also have leak-monitoring stations.

**Q. How does the Air Force empty/dispose of AFFF-containing runoff in holding ponds, tanks and other containment methods in training areas?**

**A.** The Air Force negotiates with the local waste water treatment plant to determine what they will receive from burn pits. Although there are only six fire training locations with active (until July 2015 directive suspended training) Jet Propellant-8 fuel-burning pits, most fire training areas and former fire training areas used to train with AFFF. Those locations have a potential for residual PFOA and PFOS contamination from over the years.

**Q. What protocols does the Air Force follow for uncontained AFFF releases?**

**A.** The Air Force treats AFFF releases as a hazardous material release, which requires immediate action. Installations are required to establish response procedures in accordance with National Fire Protection Standard 472. This standard defines hazardous material response requirements.

**Q. What about risks of trucks leaking AFFF?**

**A.** The Air Force's exceptional vehicular maintenance program ensures truck systems operate properly and malfunctions are quickly identified and fixed. Due to proactive maintenance, foam line leaks seldom occur, and even those rare occurrences have a second line of protection from drip pans under the vehicles to prevent ground contamination.

**Q. When will the new AFFF be ready to use?**

**A.** As of October 2016, Phos-Chek 3 has been delivered to all but one installation. Of the 180 global locations requiring the AFFF change out, the Air Force will complete all but four by 2017. Thule Air Base, Greenland; Wake Island and Eareckson Air Station and King Salmon Air Force Base in Alaska, are remote locations that would cost nearly \$100,000 each to airlift the new foam. The Air Force will complete those locations, weather permitting, in spring 2017.

**Q. How will the Air Force respond to AFFF releases once trucks are equipped with the new AFFF?**

**A.** The Air Force will continue to treat all AFFF release as a hazardous material release. Although environmentally preferable, six-carbon chain foams, like Phos-Chek 3 percent, still contain trace amounts of PFOA. The Air Force discontinued regular fire truck system tests in July 2015 and will not resume foam-discharge tests, even with the new foam product.

The Air Force is retrofitting all fire trucks with an Eco-Logic system that supports fire protection training needs and is environmentally friendly. The new system bypasses the tank containing AFFF and, instead, flows water through the extinguishing system and the cart, gathering data readings and discharging water from the vehicle's turret. Retrofitting 806 fire trucks will take 15 months and will be complete by January 2018.