

Department of Defense  
Drinking Water Contamination Report to  
Congress



July 2019

Under Secretary of Defense for Acquisition and Sustainment

The estimated cost of this report or study for the Department of Defense is approximately \$9,920 in Fiscal Years 2018 - 2019. This includes \$3,000 in expenses and \$6,920 in DoD labor.  
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## **I. Introduction**

The Joint Explanatory Statement accompanying the Consolidated Appropriations Act, 2018 (Public Law 115-141, page 891) directs the Secretary of Defense to provide a quarterly report on the extent of per- and polyfluoroalkyl substances (PFAS) contamination in drinking water, plans for community notification, and procedures for timely remediation.

## **II. Background**

PFAS refers to the entire class of per - and polyfluoroalkyl substances, of which perfluorooctane sulfonate (PFOS) and perfluorooctanic acid (PFOA) are the most well-studied. These substances are ubiquitous in many industrial and consumer products because they increase a product's resistance to heat, stains, water, and grease. As such, they are not uniquely attributable to Department of Defense (DoD) activities. The Interstate Technology and Regulatory Council (ITRC) determined three to six percent of the total perfluorooctanyl chemicals produced were used in firefighting foam.<sup>1</sup> DoD is only one of many users of Aqueous Film Forming Foam (AFFF), with other major users including commercial airports, the oil and gas industry, and local fire departments. Perfluorooctanyl chemicals produced for purposes other than firefighting foam were used in the following industrial and consumer applications: approximately 41 percent for paper and packaging protectors; 36 percent for textiles, leather and carpet treatment, and fabric protection; and 19 percent for industrial surfactants, additives, and coatings. Perfluorooctanyl chemicals are used in electroplating and etching, household additives, insecticides, and other applications.

DoD's use of PFAS started in the 1970s, with the introduction of AFFF for aircraft fuel fire-fighting purposes. AFFF may contain PFOS and, in some formulations, PFOA. AFFF is mission-critical because it quickly extinguishes petroleum-based fires. AFFF containing PFOS, other than in potential trace amounts, is no longer manufactured or available for purchase in the United States, although legacy stocks of AFFF remain.

To prevent further releases into groundwater, the Department issued a policy in January 2016 requiring prevention of uncontrolled land-based AFFF releases during maintenance, testing, and training activities. Current DoD and Service policies prohibit using AFFF with PFOS for testing, maintenance, or training exercises with the exception of shipboard activities. AFFF is only used during emergency responses and each use is treated as a spill response with containment of the release to minimize environmental impact.

Each Military Department is taking actions to remove AFFF containing PFOS from local supply systems. DoD provided a detailed timeline and status on plans for replacing AFFF containing PFOA or PFOS at military installations to Congress in June of 2018, as required by

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<sup>1</sup> The ITRC analysis is based on a 3M July 7, 2000 letter to the U.S. Environmental Protection Agency Office of Prevention, Pesticides and Toxic Substances on 3M Phase-Out plan for perfluorooctane sulfonyl fluoride (POSF) based products. This analysis does not include PFOA produced by 3M or PFOS/PFOA or other PFAS production by other manufacturers.

section 1059 of the National Defense Authorization Act for Fiscal Year (FY) 2018 (Public Law 115-91).<sup>2</sup> To date, the Military Departments have removed AFFF with PFOS from warehouses and some mobile equipment. DoD is working to remove AFFF with PFOS from remaining mobile equipment and installed systems, such as fire suppression systems in hangers.

### **III. Extent of PFAS in Drinking Water from DoD Activities**

The Department is committed to addressing the health risk associated with DoD releases of PFOS and PFOA, and ensuring safe drinking water for people living and working on its installations and in the surrounding communities. The Department tested 63 drinking water systems for PFOS and PFOA in compliance with EPA's Safe Drinking Water Act (SDWA) 3<sup>rd</sup> Unregulated Contaminant Monitoring Rule (UCMR3).

On May 19, 2016, the EPA issued SDWA lifetime health advisories (LHA) recommending individual or combined levels of PFOS and PFOA concentrations in drinking water be below 70 parts per trillion (ppt). While the LHA is non-regulatory guidance under the SDWA and not a required or enforceable drinking water standard, DoD took proactive actions to address drinking water impacted by DoD releases. The Department tested all 524 DoD-operated drinking water systems worldwide between June 2016 and August 2017 to identify drinking water that exceeded EPA's LHA level for PFOS and PFOA. These tests determined that 24 DoD drinking water systems contained PFOS and/or PFOA above the EPA LHA levels. Subsequently (though not required by law or regulation) DoD has followed EPA LHA recommendations, to include providing consumers bottled water or additional water treatment.

The Military Departments also sampled private drinking water wells in instances of a suspected or known DoD release that migrated off-base. As of August 2017, DoD tested 2,445 off-base public and private drinking water systems. Of those tested, 564 public or private drinking water systems tested above the EPA LHA level. This information was provided in the March 2018 briefing to Congress.<sup>3</sup>

### **IV. Prompt Community Notification of Impacted Drinking Water**

For drinking water systems on and off installations that test above the EPA LHA level, DoD followed EPA's health advisory recommended actions to provide prompt notification and ensure no consumption of drinking water with PFOS and/or PFOA above the LHA level. DoD worked in concert with regulatory agencies, communities, and base personnel, to provide open and transparent information sharing. When PFOS and PFOA in drinking water were detected above EPA LHA levels, DoD used a proactive outreach strategy to promptly notify potentially affected consumers.

Outreach efforts included the following:

- Communicating to affected communities/consumers

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<sup>2</sup> <https://www.denix.osd.mil/derp/home/documents/alternatives-to-aqueous-film-forming-foam-report-to-congress/>

<sup>3</sup> <https://www.denix.osd.mil/derp/home/documents/pfos-pfoa-briefing-to-the-hasc/>

- Partnering with local regulatory and governmental organizations
- Hosting public meetings
- Alerting and engaging local media
- Messaging through community social media
- Updating community leaders.

## **V. Procedures for Timely Remediation**

DoD is committed to addressing on-base releases and off-base migration of PFOS and PFOA under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). The Defense Environmental Restoration Program (DERP) (10 U.S.C. §§ 2700-2711) provides authorities to DoD to perform and fund these actions, and requires they be carried out in accordance with CERCLA. As shown in the Figure below, the steps in the CERCLA process include the following:

- Preliminary Assessment (PA)
- Site Inspection (SI)
- Remedial Investigation (RI) / Feasibility Study (FS)
- Remedial Design / Remedial Action – Construction
- Remedial Action – Operation (RA-O)
- Long-term Management (LTM)

CERCLA can also include short-term actions, called Removal or Interim Actions, to quickly address contaminants. These short-term actions can occur at any time during the CERCLA process.



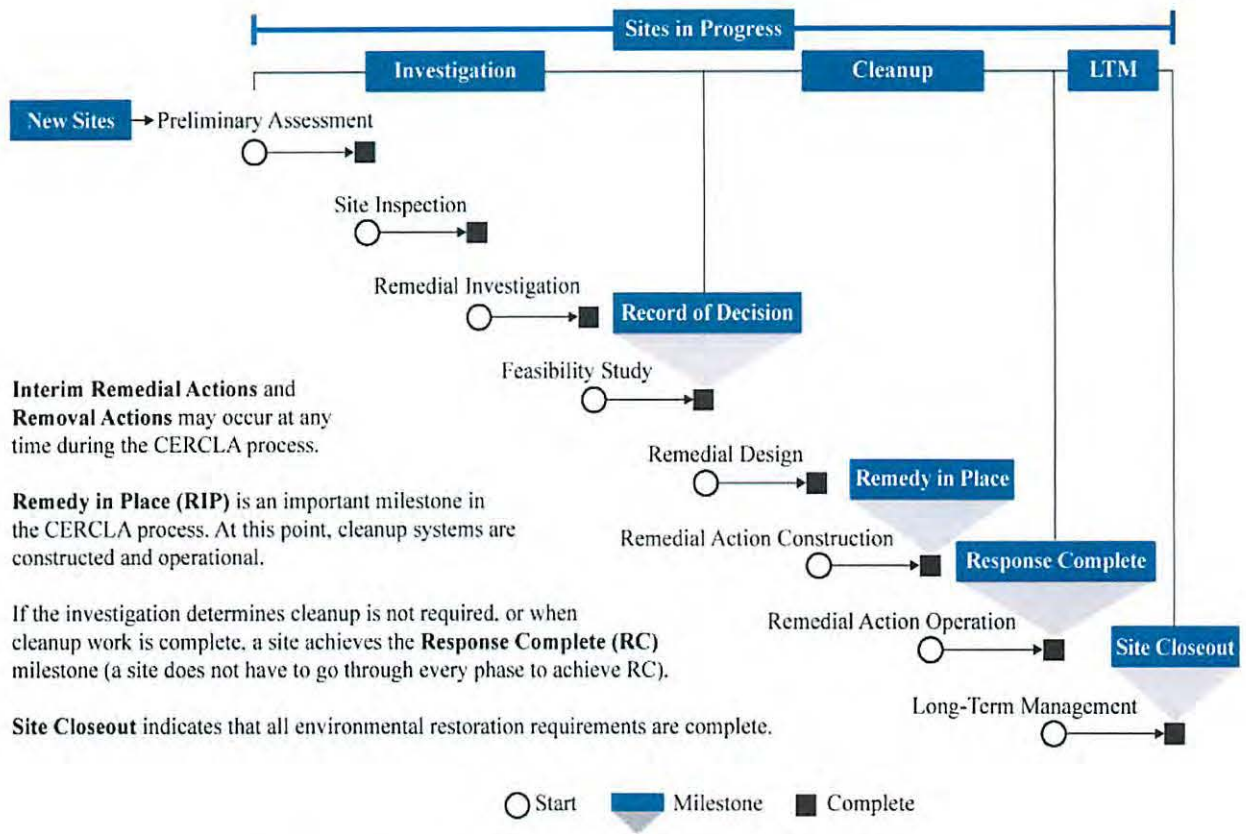


Figure 1: CERCLA and DERP Phases and Milestones

DoD has identified 401 active and former (Base Realignment and Closure) installations with at least one area where there is a known or suspected release of PFOS or PFOA. These include sites that DoD is currently addressing as part of its DERP, and new areas not currently included in the DERP such as airplane crash sites and aircraft hangar suppression systems.

Following the identification of known or suspected sites, DoD then determined whether there was exposure through drinking water. In cases where drinking water exposure was determined, the priority has been to quickly provide solutions to prevent further exposure.

DoD is following the CERCLA process to fully investigate releases, prioritize responses, and determine appropriate cleanup actions based on risk. Site prioritization of “worst first” means the DoD Components will address sites that pose a greater potential risk to human health or the environment before sites posing a lesser risk. Currently, the DoD Components are conducting PA/SIs to collect information to make decisions about the need for and the timing of response actions. DoD anticipates completion by the end of FY 2020, at which time they will start RIs as warranted.

During the RI, DoD collects detailed information to characterize site conditions, determine the nature and extent of contamination, and evaluate site-specific risks to human health and the environment. Although the EPA LHA level is only guidance under the SDWA

and is not an enforceable drinking water standard, DoD considers the EPA's LHA toxicity information when assessing risk to human health under CERCLA. Under the EPA's longstanding risk assessment policies, the LHA toxicity information is used to determine a site-specific risk-based cleanup level for groundwater used as drinking water.

Following the RI, DoD will evaluate multiple cleanup alternatives during the FS. After analysis, DoD will develop a proposed plan, and subsequently finalize the remedy in a decision document. The process from PA to beginning actual cleanup can be a multi-year effort.

At the number and location of sites identified, DoD is currently determining the nature and extent of releases, as well as potential cleanup costs. A clear determination of regulatory cleanup standards for PFOS and PFOA will also be required for accurate planning and budgeting of DoD responsibilities. Due to funding appropriated to the Environmental Restoration Account and Base Realignment and Closure (BRAC) account for FY 2018 and 2019, the Army and Navy have addressed these emerging requirements without diverting funds from cleanup for non-PFOS/PFOA sites. Air Force BRAC, however, has diverted \$66.6 million from originally planned non-PFOS/PFOA cleanup projects to PFOS/PFOA efforts. As DoD moves through the CERCLA process, the Department will work in collaboration with regulatory agencies and communities, and will continue to facilitate open and transparent information sharing.

## **VI. Conclusion**

DoD is proactively taking action to reduce the risks of PFOS and PFOA to human health. The Department is committed to mitigating PFOS and PFOA in the drinking water it supplies, as well as addressing releases to the environment resulting from DoD activities. The DoD Components have already addressed identified sites to ensure that no one is drinking water above the EPA LHA level from DoD activities. DoD follows the federal cleanup law (CERCLA, aka Superfund) and uses the standard risk-based cleanup approach that is based on science and applies universally to everyone and every chemical. Following the CERCLA process, DoD is addressing its cleanup responsibility and providing timely notification to affected communities.

The CERCLA process uses a holistic approach and considers risk from all contaminants across all media. Although this holistic approach is the most efficient and effective way to cleanup sites and protect human health, it means we do not track individual chemicals or funding by chemical. Additionally, due to the timelines associated with the CERCLA cleanup process, quarterly reporting will not likely reflect significant milestone progress. DoD recommends annual reporting to best provide summaries of progress.