

**Department of Defense  
Remediation Plan for Cleanup of Water  
Impacted with Perfluorooctane Sulfonate or  
Perfluorooctanoic Acid**



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Office of the Under Secretary of Defense  
for Acquisition and Sustainment

The estimated cost of this report or study for the Department of Defense is approximately \$8,800 for the 2020 Fiscal Year. This includes \$6,000 in expenses and \$2,800 in DoD labor. Cost estimate generated on 2020May20 RefID: 4-2F64C77

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## **I. INTRODUCTION**

This report responds to section 345(a) and (b) of the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2020 (Public Law 116-92), which requests the Secretary of Defense submit a remediation plan for cleanup of all water at or adjacent to a military installation that is impacted with perfluorooctane sulfonate (PFOS) or perfluorooctanoic acid (PFOA) and conduct a study on all impacted water at military installations with PFOA or PFOS. The Department of Defense (DoD) addresses section 345(c) of the FY 2020 NDAA in the FY 2019 Defense Environmental Programs Annual Report to Congress at <http://www.denix.osd.mil/cleanup/>.

The DoD is proactively taking action to reduce the risks of PFOS and PFOA exposure to human health. DoD's cleanup program follows the federal cleanup law (the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), also known as "Superfund") to address the health risks associated with DoD releases of PFOS and PFOA, which are two chemicals in the larger class of per- and polyfluoroalkyl substances (PFAS). CERCLA provides a consistent national approach for addressing cleanup.

## **II. BACKGROUND**

PFAS is a national issue that requires national solutions. PFAS are found in everyday consumer items, from nonstick cookware to water-resistant clothing. They are also found in certain firefighting foam, known as aqueous film forming foam (AFFF). DoD is one of many users of AFFF, with other major users including commercial airports, the oil and gas industry, and local fire departments.

In May 2016, the U.S. Environmental Protection Agency (EPA) issued Safe Drinking Water Act (SDWA) lifetime Health Advisories (HA) recommending the individual or combined levels of PFOS and PFOA in drinking water be at or below 70 parts per trillion. While the HAs are only guidance under the SDWA and not a required or enforceable drinking water standard, DoD began taking actions to address impacted drinking water and developed strategies to proactively investigate and address DoD releases of PFOS and PFOA.

Additional information about DoD's efforts related to PFAS can be found at <https://www.defense.gov/pfas>.

## **III. REMEDIATION PLAN**

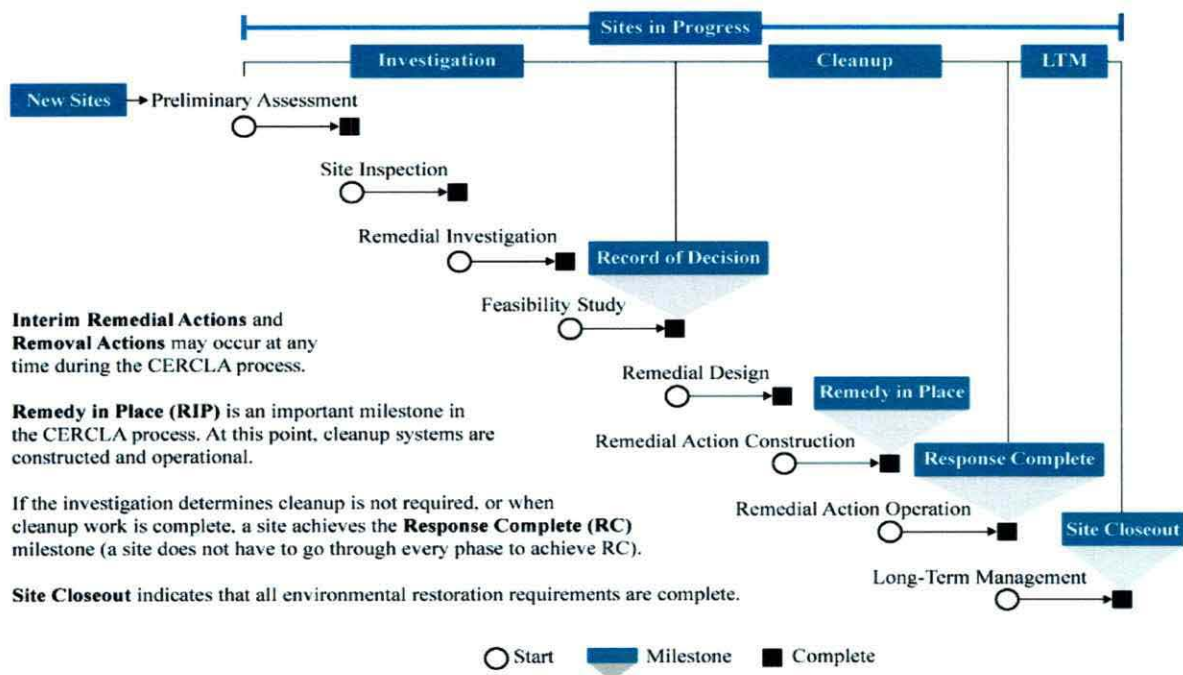
DoD conducts investigations and takes other actions under CERCLA at installations where there are known or suspected releases of PFOS or PFOA. DoD's plan for cleanup of water at or adjacent to military installations with PFOS or PFOA consists of following the CERCLA process to fully investigate releases, prioritize responses, and determine appropriate cleanup actions based on risks to human health and the environment. The Defense Environmental Restoration Program (DERP) (10 United States Code §§ 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:<sup>1</sup>

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

In addition to the steps listed above, CERCLA can include short-term actions called removal or interim remedial actions, which are conducted to quickly address contaminants to prevent, minimize, or mitigate damage to the public health or welfare or to the environment. Removal actions can occur at any time during the CERCLA process. If there is drinking water exposure to PFOS/PFOA above EPA’s HAs on or off base resulting from DoD activities, the Department proactively initiates short-term actions (e.g., providing bottled water, point-of-use water filters) and long-term actions (e.g., municipal connections, filtration systems) so that no one – on or off base – is drinking water above EPA’s HAs. Typically, a removal action does not provide a final response action and the site will continue through the CERCLA remedial cleanup process following completion of the removal action.

Figure 1. CERCLA and DERP Phases and Milestones



<sup>1</sup> Sites do not have to progress through all CERCLA phases. For example, no further action may be required at the end of the PA/SI or RI/FS phases. In addition, some sites may not require a RA-O or LTM phase if response actions completed during the RD/RA-C phase are sufficient to clean up the sites.



DoD tailors the actual sequence, timing, and scope of cleanup actions to site-specific conditions. Additionally, the Department prioritizes resources and addresses sites where risk to human health is the highest. As DoD moves through the CERCLA process, the Department works in collaboration with regulatory agencies, communities, and facilities to ensure open and transparent information sharing. The following sections explain in more detail DoD's remediation plan for groundwater with PFOS/PFOA above the EPA HAs from DoD activities.

### **Preliminary Assessment/Site Inspection (Initial Study Phase)**

During the PA, DoD reviews existing information and may conduct site visits to identify locations where DoD activities may have caused a PFOS/PFOA release. This phase involves reviewing historic operations, documents, and maps located both on the installations and in the national archives, as well as interviewing Military Service members and civilians who have historic knowledge of the operations that may have contributed to a potential PFOS/PFOA release. Once completed, the PA identifies sites that may require a CERCLA response action and will continue in the CERCLA process.

The next step in the CERCLA process is to perform an SI on locations identified during the PA to confirm whether a PFOS/PFOA release occurred. The SI includes a site visit and typically involves sampling environmental media, such as soil or groundwater, and collecting and analyzing other data to determine the need for further action. DoD drafts the SI report, provides a copy to regulators, and makes it available to the public in the information repository located at or near the cleanup. A typical PA/SI takes approximately one to three years to complete.

Through December 31, 2019, DoD has completed PAs/SIs at 148 installations where we used or potentially released PFOS/PFOA. DoD anticipates that it will complete PAs/SIs at 96 percent of the installations where we used or potentially released PFOS/PFOA by the end of FY 2022.

Once the DoD Components have information from the PA/SI, they can make informed decisions on which sites need to move to the next phase (i.e., RI/FS phase). In October 2019, the Department issued clarifying technical guidance to the Military Departments to ensure consistent use of screening levels at DoD cleanup sites to determine if advancing to the RI phase is warranted. DoD is using the same screening criteria as EPA provided in its December 19, 2019, "Interim Recommendations for Addressing Groundwater Contaminated with PFOA and PFOS."

For sites moving to the RI phase, DoD uses the data gathered during the PA and SI to prioritize further action. The DoD follows the federal cleanup law, which includes prioritizing sites for cleanup using a risk-based process – essentially "worst first." One of the risk-based processes that DoD uses is the Relative Risk Site Evaluation (RRSE) framework for evaluating relative risk and sequencing the start of RIs for all cleanup sites, including PFAS sites. The Department developed the RRSE framework in consultation with regulators and community stakeholders to provide a consistent approach to prioritize known or suspected releases of hazardous substances and pollutants or contaminants, including PFOS/PFOA, for cleanup. The Department's focus is the health and safety of our men and women in uniform, their families, our civilian workforce, and the communities surrounding our installations. Therefore, DoD

prioritizes on a “worst first” basis, meaning DoD will address sites that pose a greater potential risk to human health and the environment before sites posing a lesser risk.

### **Remedial Investigation/Feasibility Study (Detailed Study)**

During the RI, DoD collects detailed information through field investigations to characterize site conditions. This information includes determining the nature and extent of the PFOS/PFOA (e.g., the PFOS/PFOA source, how widespread the PFOS/PFOA is); assessing actual and potential exposure pathways; and evaluating risks to human health (e.g., conducting a human health risk assessment). The RI/FS phase typically takes approximately three to six years to complete.

Under EPA’s longstanding risk assessment policies, the HA toxicity information is used to determine a site-specific risk-based cleanup level for groundwater that is a current or potential source of drinking water. Therefore DoD considers EPA’s HA toxicity information when assessing risk to human health under CERCLA during the RI. The FY 2020 NDAA and EPA’s December 19, 2019, “Interim Recommendations for Addressing Groundwater Contaminated with PFOA and PFOS” support this course of action. If PFOS/PFOA at the site is below the unacceptable risk level, no further work is required.

If PFOS/PFOA results in an unacceptable risk to human health and the environment based on EPA’s risk assessment policies, then DoD will conduct an FS. During the FS, DoD develops, screens, and evaluates remedial cleanup alternatives in detail; assesses the potential performance of each alternative to meet site-specific cleanup goals; and works with regulators to select a permanent solution that is protective of human health and the environment. All cleanup remedy evaluations must be based on an analysis using the nine criteria found in the CERCLA regulations (i.e., National Oil and Hazardous Substances Pollution Contingency Plan (NCP)).<sup>2</sup>

CERCLA also requires a proposed plan, which summarizes the RI/FS, provides a brief description of the cleanup alternatives evaluated; provides a discussion of the rationale that supports the preferred cleanup alternative; and summarizes any formal comments received from supporting agencies. Following the completion of the proposed plan, and the opportunity for public comment, DoD selects the remedy in a decision document. In the decision document, DoD identifies the final selected cleanup remedy and the cleanup level it is working to achieve, and considers public comments and community concerns. DoD provides the decision document to regulators for review. For sites on the National Priorities List, regulatory concurrence on the decision document is required.

### **Remedial Design/Remedial Action – Construction/Remedial Action – Operation (Cleanup)**

During the Cleanup phase, DoD develops the design plans and specifications of the selected cleanup remedy in the decision document, which regulators review, and constructs or implements the selected cleanup remedy. DoD documents that it has constructed and installed

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<sup>2</sup> The NCP nine criteria include: overall protection of human health and the environment; compliance with applicable or relevant and appropriate standards; long-term effectiveness and permanence; reduction of toxicity, mobility or volume; short-term effectiveness; implementability; cost; state acceptance; and community acceptance.

the remedy and provides this to the regulators. The RD/RA-C process typically takes approximately two to four years to complete.

After constructing the remedy, DoD operates, maintains, and monitors the cleanup system and site until it achieves the cleanup level(s) in the decision document. The RA-O phase may also include implementation, management, and maintenance of Land Use Controls (LUCs), and can take anywhere from 1 to 30 or more years to complete, or in some cases it can last in perpetuity. During this time, DoD optimizes the systems, ensures the systems are operating properly, performs sampling to monitor progress, and verifies the site is protective of human health and the environment.

The Department measures cleanup progress against the Response Complete milestone, which occurs when cleanup activities are complete and DoD has documented this determination and sought regulatory agreement (although DoD or a subsequent landowner may continue to monitor the site).

### **Long-term Management**

Following achievement of the Response Complete milestone, DoD may be required to monitor long-term protectiveness of the remedy during the LTM phase. The LTM phase is required when the cleanup levels do not allow unrestricted use of the property. Actions during this phase may involve monitoring site conditions, implementing and managing LUCs, and performing five-year reviews. DoD closes out a site only when there is no future environmental liability at the site (i.e., when cleanup goals have been achieved that allow for unlimited use and unrestricted exposure). However, not all sites can achieve unlimited use and unrestricted exposure and may remain in LTM for perpetuity.

### **Budget Amount**

DoD's President's Budget request for FY 2021 includes funding to address PFOS and PFOA investigations and response actions in water at or adjacent to military installations. More detailed information about DoD's environmental budget and priorities is available in the FY 2019 Defense Environmental Programs Annual Report to Congress at <http://www.denix.osd.mil/cleanup/>.

## **IV. 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 Department has already identified drinking water above the EPA PFOS and PFOA HAs from DoD activities and has responded quickly with short- and long-term actions to ensure that no one is drinking water above the EPA HA levels. DoD's remediation plan for PFOS/PFOA is to continue following CERCLA. DoD will continue to address the effects of its PFOS/PFOA releases to ensure that it protects the health and safety of its DoD and Guard personnel, their families, and the communities in which they serve.