

U.S. Military Says National Security Depends on ‘Forever Chemicals’

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The Department of Defense relies on hundreds, if not thousands, of weapons and products such as uniforms, batteries, and microelectronics that contain PFAS, a family of chemicals linked to serious health conditions.

Now, as regulators propose restrictions on their use or manufacturing, Pentagon officials have told Congress that eliminating the chemicals would undermine military readiness.

PFAS, known as “forever chemicals” because they don’t break down in the environment and can build up in the human body, have been associated with such health problems as cancer. In July, a [new federal study](#) showed a direct link between testicular cancer and PFOS, a PFAS chemical that has been [found in the blood of thousands](#) of military personnel.

Congress has pressured the Defense Department to clean up U.S. military sites and take health concerns more seriously. Under the fiscal 2023 James M. Inhofe National Defense Authorization Act, the Pentagon was required to assess the ubiquity of per- and polyfluoroalkyl substances, or PFAS, in products and equipment used by the military.

In a report delivered to Congress in August, Defense Department officials pushed back against health concerns raised by environmental groups and regulators. “DoD is reliant on the critically important chemical and physical properties of PFAS to provide required performance for the technologies and consumable items and articles which enable military readiness and sustainment,” the authors said.

Further, they wrote: “Losing access to PFAS due to overly broad regulations or severe market contractions would greatly impact national security and DoD’s ability to fulfill its mission.”

[According to the report](#), most major weapons systems, their components, microelectronic chips, lithium-ion batteries, and other products contain PFAS chemicals. These include helicopters, airplanes, submarines, missiles, torpedoes, tanks, and assault vehicles; munitions; semiconductors and microelectronics; and metalworking, cooling, and fire suppression systems — the latter

especially aboard Navy ships.

PFAS are also present in textiles such as uniforms, footwear, tents, and duffel bags, for which the chemicals help repel water and oil and increase durability, as well as nuclear, chemical, and biological warfare protective gear, the report says.

The Pentagon's report to Congress was released last month by the American Chemistry Council.

Defending a Tradition of Defense

Military officials' defense of PFAS use comes as concerns mount over the health risks associated with the chemicals. Beyond cancer, some types of PFAS have been linked to low birth weight, developmental delays in children, thyroid dysfunction, and reduced response to immunizations. Health concerns grew with the release of the study definitively linking testicular cancer in military firefighters to a foam retardant containing PFAS.

But that wasn't the first time U.S. military officials were warned about the potential health threat. In the 1970s, Air Force researchers found that firefighting foam containing PFAS was poisonous to fish and, by the 1980s, to mice.

In 1991, the U.S. Army Corps of Engineers told Fort Carson, Colorado, to stop using firefighting retardants containing PFAS because they were "considered hazardous material in a number of states."

The Environmental Protection Agency has struggled to determine whether there are acceptable levels of PFAS in drinking water supplies, given the existence of hundreds of varieties of these chemicals. But in March, the EPA did propose federal limits on the levels of PFAS in drinking water supplies.

The regulation would dramatically reduce limits on six types of the chemicals, with caps on the most common compounds, known as PFOA and PFOS, at 4 parts per trillion. Currently, the Defense Department's threshold for drinking water is 70 parts per trillion based on a 2016 EPA advisory. As part of a widespread testing program, if levels are found on installations or in communities above that amount, the military furnishes alternative drinking water supplies.

The Defense Department has used PFAS-laced firefighting foam along with other products containing the chemicals [for more than a half-century](#), leading to the contamination of at least 359 military sites or nearby communities, with an additional 248 under investigation, according to the department.

In its report, however, the Department of Defense did not address the health concerns and noted that there is "no consensus definition of PFAS as a chemical class." Further, it said that the broad term, which addresses thousands of man-made chemical chains, "does not inform whether a compound is harmful or not."

Researchers with the Environmental Working Group, an advocacy group that focuses on PFAS

contamination nationwide, said the report lacked acknowledgment of the health risks or concerns posed by PFAS and ignored the availability of PFAS-free replacements for material, tents, and duffel bags.

The military report also did not address possible solutions or research on non-PFAS alternatives or address replacement costs, noted EWG's Jared Hayes, a senior policy analyst, and David Andrews, a senior scientist.

"It's kind of like that report you turn in at school," Andrews said, "when you get a comment back that you did the minimum amount possible."

Andrews added that the report fell short in effort and scope.

The Defense Department announced this year it would stop buying firefighting foam containing PFAS by year's end and phase it out altogether in 2024. It stopped using the foam for training in 2020, by order of Congress.

The report noted, however, that while new Navy ships are being designed with alternative fire suppression systems such as water mists, "limited use of [PFAS-containing systems] remains for those spaces where the alternatives are not appropriate," such as existing ships where there is no alternative foam that could be swapped into current systems.

According to the report, "the safety and survivability of naval ships and crew" from fires on ships depends on current PFAS-based firefighting foams and their use will continue until a capable alternative is found.

Pervasive Yet Elusive

Commercially, PFAS chemicals are used in food packaging, nonstick cookware, stain repellents, cosmetics, and other consumer products.

The fiscal 2023 National Defense Authorization Act also required the Defense Department to identify consumer products containing PFAS and stop purchasing them, including nonstick cookware and utensils in dining facilities and ship galleys as well as stain-repellent upholstered furniture, carpeting, and rugs.

But in a briefing to Congress in August accompanying the report on essential uses, Pentagon officials said they couldn't comply with the law's deadline of April 1, 2023, because manufacturers don't usually disclose the levels of PFAS in their products and no federal laws require them to do so.

Come January 1, however, makers of these chemicals and products containing them [will be required](#) to identify these chemicals and notify "downstream" manufacturers of other products of the levels of PFAS contained in such products and ingredients, even in low concentrations, according to a federal rule published October 31 by the EPA.

This would include household items like shampoo, dental floss, and food containers.

Officials reiterated that the Defense Department is committed to phasing out nonessential and noncritical products containing PFAS, including those named above as well as food packaging and personal protective firefighting equipment.

And it is “developing an approach” to remove items containing PFAS from military stores, known as exchanges, also required by the fiscal 2023 NDAA.

Risk-Benefit Assessments

In terms of “mission critical PFAS uses,” however, the Pentagon said the chemicals provide “significant benefits to the framework of U.S. critical infrastructure and national and economic security.”

Andrews of EWG noted that the industry is stepping up production of the chemicals due to market demand and added that the federal government has not proposed banning PFAS chemicals, as the Defense Department alluded to when it emphasized the critical role these substances play in national security and warned against “overly broad regulations.”

“The statements are completely unsubstantiated, and it’s almost a fear-mongering statement,” Andrews said. “I think the statement is really going beyond anything that’s even being considered in the regulatory space.”

“There haven’t been realistic proposals policy-wise of a complete ban on PFAS,” his colleague Hayes added. “What people have been pushing for and talking about are certain categories of products where there are viable alternatives, where there is a PFAS-free option. But to ban it outright? I haven’t really seen that as a realistic policy proposal.”

Kevin Fay, executive director of the Sustainable PFAS Action Network, a coalition of corporations, industry advocates, and researchers who support the use and management of PFAS compounds, said the Defense Department has a point and it is up to federal regulators to “responsibly manage” these chemicals and their use to strike a balance among environmental, health, and industrial needs.

“The U.S. Department of Defense’s report on critical PFAS uses is crystal clear: regulating PFAS through a one-size fits all approach will gravely harm national security and economic competitiveness,” Fay wrote in an email to KFF Health News.

Adding that not all PFAS compounds are the same and arguing that not all are harmful to human health, Fay said risk-based categorization and control is vital to the continued use of the chemicals.

But, he added, in locations where the chemicals pose a risk to human health, the government should act.

“The federal government should implement plans to identify and remediate contaminated sites, properly identify risk profiles of the many types of PFAS compounds, and encourage innovation by clearing the regulatory path for viable alternatives to specific dangerous compounds,” Fay wrote.

Assessments are completed or underway at 714 active and former military installations, National Guard facilities, and other former defense sites to determine the extent of contamination in groundwater, soil, and the water supply to these locations and nearby communities.

Last year, the Pentagon issued a temporary moratorium on burning materials containing PFAS. [Studies have shown](#) that the practice can release toxic gases. But on July 11, the Defense Department [lifted the moratorium](#) on incineration, along with interim guidance on PFAS disposal.

Military personnel who were exposed to PFAS — including through firefighting foam — say they live in fear that they or their family members will develop cancer as a result of their service.

“I’ve got more of some of those materials in my system than 90-plus percent of those on the planet. This is bad. It doesn’t go away,” said Christian Jacobs, who served in the Army for four years and worked as a civilian Defense Department firefighter for nearly three decades. “It keeps me up at night.”

KFF Health News visual reporter Hannah Norman contributed to this report.

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