



April 2023

# PERSISTENT CHEMICALS

## Actions Needed to Improve DOD's Ability to Prevent the Procurement of Items Containing PFAS

Accessible Version

# GAO Highlights

Highlights of [GAO-23-105982](#), a report to congressional committees

## Why GAO Did This Study

PFAS are a large group of chemicals that are widely used in consumer products because of their heat and stain resistant properties. PFAS may cause adverse health effects at certain levels. Congress has identified 11 categories of items for potential procurement restrictions. Starting April 2023, DOD was prohibited from procuring items in four categories if they contain certain PFAS.

The National Defense Authorization Act for Fiscal Year 2022 includes a provision for GAO to review DOD's procurement of items containing PFAS. This report evaluates (1) information available to DOD regarding PFAS in items and the extent to which the April 2023 prohibition aligns with this information; and (2) the extent to which DOD has developed an approach to implement the April 2023 prohibition on items containing PFAS.

GAO reviewed PFAS detection methods, labeling standards, and statutes; assessed DOD procurement practices and guidelines; and interviewed officials from DOD, other federal agencies, labeling organizations, industry associations, and environmental advocacy groups.

## What GAO Recommends

GAO is making a matter for congressional consideration to align the item categories specified in the April 2023 prohibition with EPA information. GAO is also making two recommendations to DOD to develop an approach for applying the April 2023 prohibition to the military exchanges and to update its sustainable procurement guidance. DOD concurred with the recommendations.

View [GAO-23-105982](#). For more information, contact Elizabeth Field at (202) 512-2775 or [FieldE1@gao.gov](mailto:FieldE1@gao.gov).

April 2023

## PERSISTENT CHEMICALS

### Actions Needed to Improve DOD's Ability to Prevent the Procurement of Items Containing PFAS

## What GAO Found

The Department of Defense (DOD) faces challenges implementing statutory prohibitions on procurement of items containing per- and polyfluoroalkyl substances (PFAS). Specifically, there is limited information on PFAS in items because there is no federal law requiring items to be labeled as containing PFAS and there are no Environmental Protection Agency (EPA)-validated methods to detect PFAS in products. EPA has created a list of recommended third-party standards and ecolabels that addresses the presence of PFAS in some items. GAO's analysis of 11 item categories found that EPA information on PFAS exists for four. Two of these four categories relate to the statutory prohibition for DOD that goes into effect April 2023. For the seven other item categories, there are no EPA-recommended third-party standards or ecolabels.

#### Environmental Protection Agency (EPA) Information on the Presence of Per- and Polyfluoroalkyl Substances (PFAS) in Item Categories

PFAS prohibition	Item category	Information on presence of PFAS
Beginning April 2023	Non-stick cookware	No
Beginning April 2023	Non-stick cooking utensils	No
Beginning April 2023	Upholstered furniture	Yes
Beginning April 2023	Carpets and Rugs	Yes
	Furniture waxes	No
	Car window treatments	No
	Shoes	No
	Clothing	No
	Cleaning products	Yes
	Floor waxes	Yes
	Car wax	No

Source: GAO analysis of EPA information. | GAO-23-105982

In addition, the April 2023 prohibition does not allow two PFAS to be present at any level. However, EPA officials noted that several of the third-party standards or ecolabels allow for PFAS to be present at low levels, for example, by exposure to environmental sources of PFAS during the manufacturing process. As a result, DOD does not have all the information needed to fully implement prohibitions.

DOD has taken some steps to implement the April 2023 prohibition, including updating procurement policy for contracting officers and guidance for procurement of goods by government purchase cards. However, DOD has not assessed how to prevent military exchanges from procuring and reselling certain goods that could contain PFAS. Further, DOD has not updated its sustainable procurement guidance to reflect statutory prohibitions. As a result, DOD is at risk of continuing to procure items that contain certain statutorily prohibited PFAS.

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**Abbreviations**

DASD(E&ER)	Deputy Assistant Secretary of Defense for Environment and Energy Resilience
DFARS	Defense Federal Acquisition Regulation Supplement
DOD	Department of Defense
EPA	Environmental Protection Agency
FAR	Federal Acquisition Regulation
FDA	Food and Drug Administration
GenX	hexafluoropropylene oxide dimer acid and its ammonium salt
MRE	Meals Ready-to-Eat
NDA	National Defense Authorization Act
OASD(A)	Office of the Assistant Secretary of Defense for Acquisition
OUSD(P&R)	Office of the Under Secretary of Defense for Personnel and Readiness
PFAS	per- and polyfluoroalkyl substances
PFBS	perfluorobutane sulfonic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexane sulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctane sulfonate
USD(A&S)	Under Secretary of Defense for Acquisition and Sustainment

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April 26, 2023

The Honorable Jack Reed  
Chairman  
The Honorable Roger Wicker  
Ranking Member  
Committee on Armed Services  
United States Senate

The Honorable Mike Rogers  
Chairman  
The Honorable Adam Smith  
Ranking Member  
Committee on Armed Services  
House of Representatives

A large group of chemicals—called per- and polyfluoroalkyl substances (PFAS)—are widely used in consumer products, manufacturing, and fire safety because of their heat, water, and stain resistant properties.<sup>1</sup> There are thousands of different PFAS, some of which have been more widely used and studied than others. However, some types of PFAS may be linked to human health risks. According to the Environmental Protection Agency (EPA), current scientific research suggests that exposure to high levels of certain PFAS may lead to adverse health outcomes, but it is unclear what health effects are associated with low levels of exposure to PFAS over long periods of time.<sup>2</sup> Federal statutes and agencies address

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<sup>1</sup>Definitions of PFAS vary widely. The Organization for Economic Co-operation and Development’s list of PFAS—one of the broadest—includes more than 4,700 chemicals consisting of a fully or partly fluorine-carbon bond. The Organization for Economic Co-operation and Development is an international organization that works in part on establishing evidence-based international standards. Other lists of PFAS include up to 12,034 chemicals. However, according to EPA documentation, approximately 1,500 PFAS are known to have ever been in commerce in the U.S., and fewer than 700 are known to have been commercially active within the last decade.

<sup>2</sup>See, Environmental Protection Agency (EPA), *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, available at <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>.

PFAS in many contexts, such as its use in certain products.<sup>3</sup> In addition, some international bodies and U.S. states have laws that address PFAS in products.<sup>4</sup>

In recent years, Congress has included provisions regarding the Department of Defense's (DOD) procurement of items containing PFAS in the annual National Defense Authorization Act (NDAA).

- Section 329 of the NDAA for Fiscal Year 2020 (MRE packaging prohibition) prohibited PFAS in the packaging of meals ready-to-eat (MRE).<sup>5</sup> DOD developed a new PFAS detection method to implement this prohibition, and this effort is ongoing.<sup>6</sup>
- Section 333 of the William M. (Mac) Thornberry NDAA for Fiscal Year 2021 (April 2023 prohibition) prohibits DOD from procuring items in four categories if they contain perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), which are two PFAS.<sup>7</sup> These four categories include non-stick cookware, non-stick cooking utensils for use in galleys or dining facilities, upholstered furniture, and carpets and rugs that have been treated with stain resistant coatings. This prohibition took effect on April 1, 2023.

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<sup>3</sup>We have previously reported that people are exposed to PFAS primarily through the environment, such as by ingesting contaminated food and drinking water, breathing PFAS-contaminated air, and coming into contact with contaminated soil. Water may become contaminated by PFAS as a result of chemical releases into the air, surface water, or groundwater, from locations such as manufacturing sites, landfills, aviation fire training areas, or wastewater treatment facilities. EPA has released health advisory levels for two types of PFAS (perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA)) in drinking water. See GAO, *Persistent Chemicals: EPA Should Use New Data to Analyze the Demographics of Communities with PFAS in Their Drinking Water*, [GAO-22-105135](#) (Washington, D.C.: Sept. 30, 2022).

<sup>4</sup>For example, both the European Union and Canada regulate PFAS. The European Union's Chemicals Agency regulates chemicals through the Registration, Evaluation, Authorisation and Restriction of Chemicals regulation. In January 2023, a broad PFAS restriction proposal was submitted to this agency from five European Union states. Similarly, Canada's Regulations Amending the Prohibition of Certain Toxic Substances Regulations, 2012, as amended, prohibits the manufacture, use, sale, or import and certain toxic substances or products containing the substances, including PFOS and PFOA, members of the larger PFAS chemical group. Domestically, a number of states including California, Maine, Connecticut, Minnesota, New York, Vermont, and Washington have enacted state laws restricting PFAS in food packaging.

<sup>5</sup>Pub. L. No. 116-92, § 329 (2019).

<sup>6</sup>See appendix I for more information on this issue.

<sup>7</sup>Pub. L. No. 116-283, § 333 (2021).

- Section 347 of the NDAA for Fiscal Year 2022 (GAO provision) required GAO to conduct a study on DOD procurement of certain items containing certain PFAS.<sup>8</sup> Section 347 identified seven categories of items that we were to consider in the study: furniture waxes, floor waxes, car wax, car window treatments, cleaning products, shoes, and clothing. It also identified five PFAS in addition to the two (PFOS and PFOA) already identified in the April 2023 prohibition.<sup>9</sup>

This report in response to section 347 of the NDAA for Fiscal Year 2022 evaluates the (1) information available to DOD regarding PFAS in items and the extent to which the April 2023 prohibition aligns with this information; and (2) extent to which DOD has developed an approach to implement the April 2023 prohibition on items containing PFAS.

For objective one, we focused on information pertaining to the four categories of items specified in the April 2023 prohibition and the seven categories of items specified in the GAO provision for a total of 11 item categories. Similarly, we included the two PFAS identified in the April 2023 prohibition and the five additional PFAS specified in the GAO provision—for a total of seven types of PFAS. We examined EPA recommended third-party standards and ecolabels, applicable federal statutes and state PFAS laws, and PFAS detection methods.<sup>10</sup> We

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<sup>8</sup>National Defense Authorization Act for Fiscal Year 2022, Pub. L. No. 117-81, § 347 (2021).

<sup>9</sup>The additional PFAS identified are: perfluorononanoic acid (PFNA), perfluorohexanoic acid (PFHxA), perfluorohexane sulfonic acid (PFHxS), perfluorobutane sulfonic acid (PFBS), and hexafluoropropylene oxide dimer acid and its ammonium salt (GenX). In their bill for the fiscal year 2022 NDAA, the House of Representatives proposed an amendment to the April 2023 prohibition statute that would have, in part, broadened the definition of covered PFAS substances, effectively including these five named substances. H.R. 4350, 117<sup>th</sup> Cong. (2021). The Senate amendment to the House of Representative's bill contained no similar provision. Both chambers subsequently agreed to instead include a provision for GAO to perform the study specified in section 347 of the fiscal year 2022 NDAA. 167 Cong. Rec. H7265, H7275 (Dec. 7, 2021) (explanatory statement accompanying a proposed bill for the fiscal year 2022 NDAA).

<sup>10</sup>EPA's recommended third-party standards and ecolabels are part of the broader Environmentally Preferable Purchasing program and are required to be used within federal procurement to the maximum extent practicable. Pursuant to the purchasing program, a standard, often established by multi-stakeholder groups, sets specified levels of performance to claim that a product or service is "environmentally preferable." Ecolabels are marks placed on product packaging or in e-catalogs that can help consumers and institutional purchasers quickly and easily identify those products that meet specific environmental performance criteria and are therefore deemed "environmentally preferable."

reviewed EPA documentation to determine the relevance of the agency's recommended third-party standards and ecolabels to DOD. We also interviewed EPA officials.<sup>11</sup> We reviewed Food and Drug Administration (FDA) information regarding how FDA's Food Contact Notification process regulates PFAS in food contact items, and we interviewed FDA officials.

Also, we reviewed federal, state, and international laws to determine how different agencies regulate PFAS, and we interviewed officials from the City of San Francisco because the city has implemented prohibitions of PFAS in certain consumer products. We analyzed information from our prior work, federal agencies, and testing organizations to examine the availability of and challenges associated with detection methods for identifying PFAS in items. We also interviewed officials from the Office of the Deputy Assistant Secretary of Defense for Environment and Energy Resilience to understand what information was available to them to determine the presence of PFAS in items.

For objective two, we examined relevant statutes including the April 2023 prohibition and identified stakeholders responsible for its implementation. We also reviewed DOD guidance pertaining to federal sustainable procurement programs and interviewed officials from the Defense Pricing and Contracting Office within the Office of the Assistant Secretary of Defense for Acquisition to discuss how the April 2023 prohibition affects their procurement activities. We also interviewed officials from the Office of the Deputy Assistant Secretary of Defense for Environment and Energy Resilience, including members of DOD's PFAS Taskforce, to discuss the status of their implementation efforts, their process for coordinating implementation activities across the department, and the guidance and training provided to DOD procurement staff.

We conducted this performance audit from April 2022 to April 2023 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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<sup>11</sup>See appendix II for a full list of organizations we met with.



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## Background

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### PFAS Uses and Chemistry

PFAS are found in numerous products that are commonly used in industrial, military, and consumer applications. For example, PFAS can be found in food packaging, carpets, clothing, cleaning products, non-stick cookware, paints, varnishes, sealants, cosmetic products, and biosolids (such as fertilizer from wastewater treatment plants).<sup>12</sup> Since the 1960s, PFAS has been present in firefighting foams commonly used to suppress fires involving aircraft, and these foams continue to be used by DOD.<sup>13</sup> DOD officials told us that, while limiting the use of PFAS is a priority for the department, it remains necessary for certain mission-essential uses.

According to representatives of military equipment manufacturers, PFAS is used to provide military clothing with durability and water proofing, and to improve the wear- and fire-resistance of engine components and electrical wiring in military aircraft, among other uses. PFAS exposure can occur through occupational exposure, environmental contamination, consumer product use, and the consumption of food or drinking water.<sup>14</sup> Figure 1 provides examples of how PFAS can enter the environment.

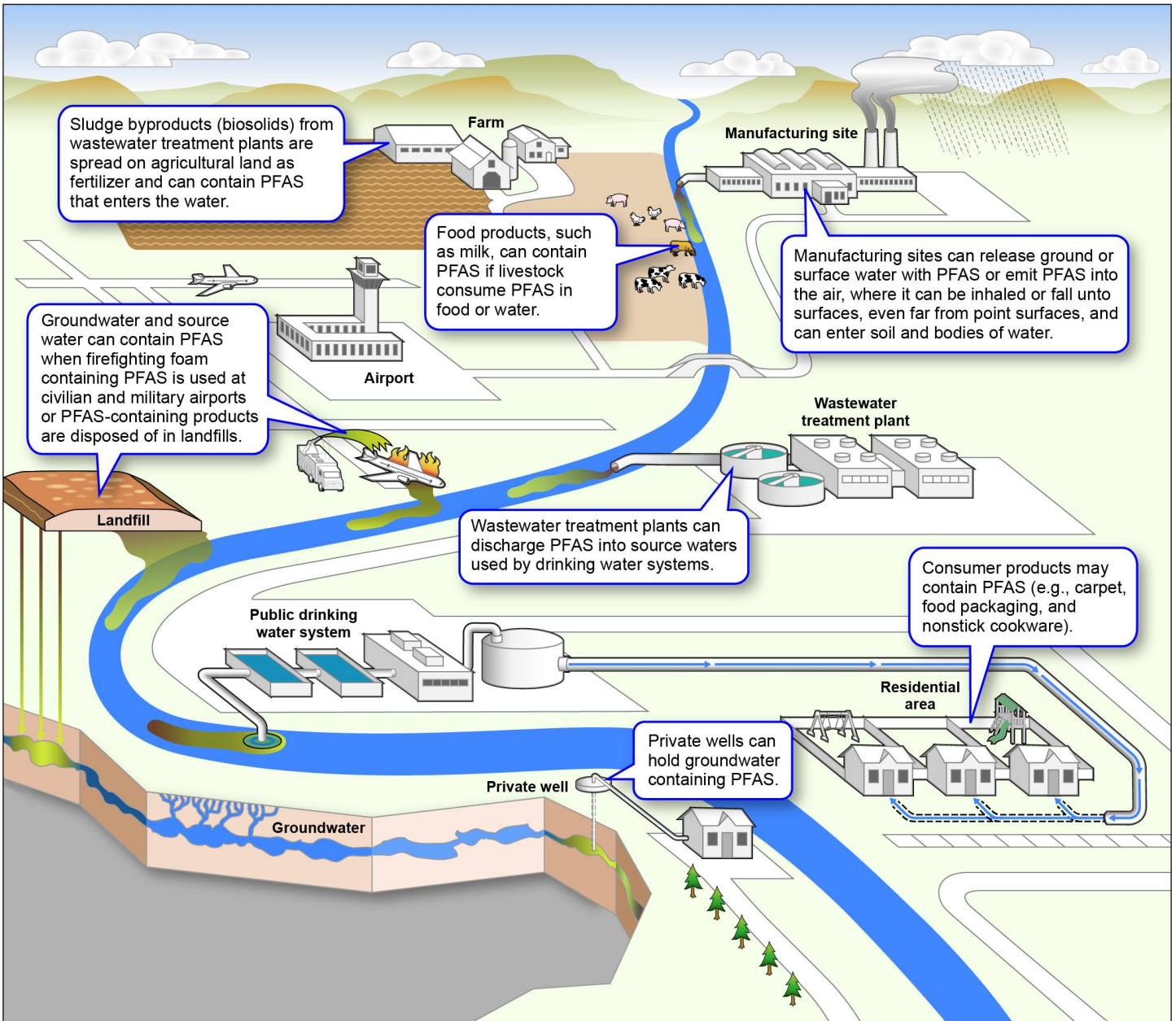
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<sup>12</sup>See EPA, *Our Current Understanding of the Human Health and Environmental Risks of PFAS*, available at <https://www.epa.gov/pfas/our-current-understanding-human-health-and-environmental-risks-pfas>.

<sup>13</sup>On January 6, 2023, DOD issued a performance specification approving the use of PFAS-free firefighting foam, as required by section 322 of the NDAA for Fiscal Year 2020, Pub. L. No. 116-92, § 322 (2019). GAO has previously reported on challenges DOD has faced in transitioning away from PFAS-containing firefighting foams. See GAO, *Firefighting Foam Chemicals: DOD Is Investigating PFAS and Responding to Contamination, but Should Report More Cost Information*, [GAO-21-421](#) (Washington, D.C.: June 22, 2021).

<sup>14</sup>National Academy of Sciences, Engineering, and Medicine, *Guidance on PFAS Exposure, Testing, and Clinical Follow-Up*, (Washington, D.C.: The National Academies Press, 2022).

Figure 1: Examples of How Per- and Polyfluoroalkyl substances (PFAS) Enter the Environment



Source: GAO. | GAO-23-105982

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**Text of Figure 1: Examples of How Per- and Polyfluoroalkyl substances (PFAS) Enter the Environment**

- Sludge byproducts (biosolids) from wastewater treatment plants are spread on agricultural land as fertilizer and can contain PFAS that enters the water.
- Groundwater and source water can contain PFAS when firefighting foam containing PFAS is used at civilian and military airports or PFAS-containing products are disposed of in landfills.
- Food products, such as milk, can contain PFAS if livestock consume PFAS in food or water.
- Manufacturing sites can release ground or surface water with PFAS or emit PFAS into the air, where it can be inhaled or fall onto surfaces, even far from point surfaces, and can enter soil and bodies of water.
- Wastewater treatment plants can discharge PFAS into source waters used by drinking water systems.
- Consumer products may contain PFAS (e.g., carpet, food packaging, and nonstick cookware).
- Private wells can hold groundwater containing PFAS.

Source: GAO. | GAO-23-105982

PFAS have a carbon-fluorine bond—one of the strongest chemical bonds in nature—which causes them to persist in the environment for many years and break down slowly over time, leading to accumulation in the environment, water, and people.<sup>15</sup> According to EPA, there are thousands of different PFAS, some of which have been more widely used and studied than others.

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### Executive Actions to Limit Procurement of PFAS-Containing Products

In December 2021, the president signed Executive Order 14,057 *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability*, and issued an accompanying White House Memorandum.<sup>16</sup> The executive order required federal executive agencies to purchase, to the maximum extent practicable, sustainable products and services identified or recommended by EPA. The memorandum added that agencies should avoid the procurement of “PFAS-containing covered items” as defined in the April 2023 prohibition.

In October 2021, the White House Council on Environmental Quality established an Interagency Policy Committee to coordinate the Federal response to PFAS contamination, including PFAS in products. In August 2022, the Council on Environmental Quality issued implementing instructions for the executive order, which defined PFAS as substances containing fluorinated carbons, and stated that federal agencies should prioritize substitutes for products that contain PFAS and—to the maximum extent practicable—should avoid the procurement of any

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<sup>15</sup>PFAS are often categorized by their chemical structure, such as the length of their carbon chains—long-chain and short-chain. “Long-chain” PFAS have a greater number of carbon atoms linked in a chain. Specifically, there are six to eight carbon atoms depending on the specific type of PFAS. In contrast, “short-chain” PFAS contain fewer than this number of carbon atoms. Chain length is one of several factors that can affect PFAS behavior in the environment and both long- and short-chain PFAS can result from degradation of more complex PFAS molecules.

<sup>16</sup>Exec. Order No. 14,057, 86 Fed. Reg. 70,935 (Dec. 13, 2021) (signed Dec. 8, 2021); Executive Office of the President Memorandum M-22-06, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (Dec. 8, 2021).

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PFAS-containing covered items, consistent with the definition in the April 2023 prohibition.<sup>17</sup>

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## DOD Roles and Responsibilities

Several DOD officials and offices have roles and responsibilities related to the agency's procurement of products that might contain PFAS:

- *The Under Secretary of Defense for Acquisition and Sustainment (USD(A&S))* serves as the decision-making authority for sustainable procurement, including establishing program scope, goals, and priorities, and issuing and maintaining policy and guidance for sustainable procurement programs, including DOD Instruction 4105.72, *Procurement of Sustainable Goods and Services*.<sup>18</sup>
- *The Deputy Assistant Secretary of Defense for Environment and Energy Resilience (DASD(E&ER))* provides policy direction and program oversight for the department's environmental restoration, compliance, and clean-up activities as well as policy direction to operational energy and installation energy resilience. Under the direction of the USD(A&S), the DASD(E&ER) also promotes DOD sustainable procurement policies and programs, sharing best practices across DOD. For example, according to office officials, these responsibilities include supporting the Assistant Secretary of Defense for Energy, Installations, and Environment in executing the duties of the PFAS Task Force, which include coordinating the Department's PFAS initiatives.
- *The Defense Pricing and Contracting office*, located within the Office of the Assistant Secretary of Defense for Acquisition (OASD(A)), is responsible for pricing and contracting policy matters across DOD. The Defense Pricing and Contracting office executes statutes, executive orders, and policy through updating the Federal Acquisition Regulation (FAR) and Defense FAR Supplement (DFARS), and issuance of memorandums and guidance.

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<sup>17</sup>Council on Environmental Quality, *Implementing Instructions for Executive Order 14057: Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (August 2022).

<sup>18</sup>DOD Instruction (DODI) 4105.72, *Procurement of Sustainable Goods and Services* (Sept. 7, 2016) (incorporating Change 1, Aug. 31, 2018). The instruction establishes policy, assigns responsibilities, and prescribes procedures for the procurement of sustainable goods and services to reduce the impact of DOD activities on the environment, among other purposes.

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- *The Office of the Under Secretary of Defense for Personnel and Readiness (OUSD(P&R)) develops uniform policy and guidance to ensure the proper administration of exchange programs and monitor compliance.<sup>19</sup> Within OUSD(P&R), the Deputy Assistant Secretary of Defense for Military Community and Family Policy directs the Morale, Welfare, and Recreation and Resale Policy Office, which is directly responsible for oversight of the policies establishing and supporting Morale, Welfare, and Recreation and resale programs, which includes the military exchanges.<sup>20</sup>*

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## DOD Has Limited Information Available about Items Containing PFAS and the April 2023 Prohibition Does Not Completely Align with This Information

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### DOD Has Limited Information on PFAS in Items Due to Gaps in Regulation and Detection Methods

There is limited information available to DOD regarding the presence of PFAS in items because there is no federal law requiring items to be labeled as containing PFAS and there are few accepted methods to detect PFAS in items.

#### Regulation of PFAS in Products

Federal law requires the labeling of certain chemical substances in consumer items only in specific circumstances. For example, under the Federal Hazardous Substances Act, as amended, the Consumer Product Safety Commission requires precautionary labeling on hazardous household products to help consumers safely store and use those products and to give them information about immediate first aid steps to take if an accident happens.<sup>21</sup> The Consumer Product Safety Act, as amended, authorizes the Consumer Product Safety Commission to ban

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<sup>19</sup>DOD Instruction 1330.21, *Armed Services Exchange Regulations* (July 14, 2005).

<sup>20</sup>DOD operates about 240 commissaries and 2,500 exchange facilities worldwide, providing groceries and retail goods at reduced prices. The military exchanges provide goods and services similar to department or retail stores.

<sup>21</sup>Pub. L. No. 86-613 (1960); 15 U.S.C. § 1261 et seq.

certain products if the agency determines that the products are sufficiently dangerous or the nature of the hazard is such that precautionary labeling is not adequate to protect consumers.<sup>22</sup>

According to a Consumer Product Safety Commission official, the Federal Hazardous Substances Act does not require the disclosure or labeling of chemical substances, including PFAS that are used in the manufacturing of products. If a product containing PFAS is determined to be hazardous, the Consumer Product Safety Commission can require labeling or ban the use of the product. However, agency officials told us that such regulation generally occurs after a product has been on the market for a period of time and the safety concerns about the product are brought to the agency's attention. To date, the Consumer Product Safety Commission has not taken actions specific to PFAS-containing products.

The Food, Drug, and Cosmetic Act of 1938, as amended, tightened controls over drugs and food, including protection against unlawful cosmetics, among other things—but does not require labeling of PFAS in food, drugs, or cosmetics.<sup>23</sup> However, through the FDA's Food Contact Substance Notification program, a manufacturer or supplier of a substance intended for use as a component of materials used in the manufacturing, packing, packaging, transporting, or holding of food must notify the FDA at least 120 days prior to the introduction of the substance into commerce.<sup>24</sup> The notification process is used to authorize the marketing of food contact substances except where an adequate assurance of safety is not determined. Currently, the FDA authorizes PFAS for use in contact with food within four application categories, including non-stick cookware coatings, and paper or paperboard food packaging as grease-proofing agents. Our analysis of the FDA's database of substances approved for food contact found that the seven PFAS in our review are not listed, and FDA officials told us that there is no permissible amount of any PFAS allowed as a direct additive in food.

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<sup>22</sup>Pub. L. No. 92-573, § 8 (1972); 15 U.S.C. § 2057.

<sup>23</sup>Pub. L. No. 75-717 (1938); 21 U.S.C. § 301 et seq.

<sup>24</sup>21 U.S.C. § 348(h). FDA officials told us that to determine the safety of exposure of chemicals like PFAS in food contact substances, the agency reviews information provided by manufacturers and suppliers. This information must be provided to FDA during a pre-market review process. This information includes (a) how the substance is manufactured, (b) ways it can migrate to food, (c) how much will migrate to food from the intended use so an exposure can be calculated, and (d) commensurate toxicological information to demonstrate that exposure in the diet will not result in harm to consumers. FDA also reviews new data that becomes available after the product has entered the market.

FDA officials we spoke with cited the lack of labeling of PFAS in food packaging materials as a key challenge to informing consumers of food packaging about the presence of PFAS in those products.

### Detection of PFAS in Products

While EPA-validated PFAS detection methods exist for water and soil, EPA officials told us the agency is not developing detection standards for consumer products. Detection methods for PFAS in consumer goods are generally limited to certain types of materials, such as cosmetics or films, and do not always identify specific types of PFAS.

Some researchers have developed and applied “total fluorine methods” to detect the presence of any PFAS and characterize unknown PFAS without a method to test for specific types of PFAS.<sup>25</sup> These methods can be used to determine if any PFAS are present in certain types of items. For example, the City of San Francisco, California collaborates with an independent laboratory to use total fluorine screening to identify PFAS-free alternatives to comply with the city’s prohibitions on the use of PFAS-containing food service ware, furniture, carpet, and firefighting foam.<sup>26</sup> City officials told us that the use of total fluorine detection methods helps identify the presence of fluorine in products that may require additional investigations to determine whether that fluorine can be attributed to PFAS or another compound containing fluorine.

We previously reported that total fluorine screening methods can quantify PFAS at concentrations (~ 1,000 parts per trillion) that would be unquantifiable by other methods.<sup>27</sup> However, total fluorine methods have not been standardized or validated by multiple laboratories as are EPA

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<sup>25</sup>Current methods for detecting PFAS can be classified as targeted, non-targeted, and total fluorine methods. Targeted methods are able to detect the PFAS that a researcher selects or “targets” during analysis. Non-targeted and total fluorine methods do not require a standard and are not able to definitively identify and quantify PFAS in a sample. GAO, *Persistent Chemicals: Technologies for PFAS Assessment, Detection, and Treatment*, [GAO-22-105088](#) (Washington, D.C.: July 2022).

<sup>26</sup>San Francisco Dept. of the Environment Regulation #SFE-20-03-PPO, *Precautionary Purchasing Ordinance: Furniture (Upholstered Seating)* (effective Jan. 1, 2021); and #SFE-2018-01-PPO/GBRCBO, *Adopting Approved Alternative Products for Sustainable Carpet for City Departments* (effective March 9, 2018). City of San Francisco officials told us they partner with the Peaslee Lab Group at the University of Notre Dame, which uses total fluorine screening to detect the presence of PFAS in products such as cosmetics, textiles, and food packaging by detecting the presence of a fluorinated carbon atom.

<sup>27</sup>[GAO-22-105088](#).



methods for soil and water, and they may have limited applicability to detecting specific types of PFAS in consumer goods. Specifically, EPA officials told us that total fluorine methods can be useful for detecting if any PFAS are present in a substance, but these methods would not be able to identify the presence of a specific type of PFAS.

DOD's Defense Logistics Agency worked with the U.S. Army Corps of Engineers and researchers at Oregon State University to develop new methods to detect PFAS in Meals Ready-to-Eat (MRE) food packaging and determine whether the packaging contained PFAS above detectable limits.<sup>28</sup> This effort, implemented to comply with the MRE packaging prohibition, is ongoing. The researchers were able to successfully detect PFAS in MRE packaging but have not been able to identify the source of the PFAS that they detected. U.S. Army Corps of Engineers officials told us that it would take significant adaptation to modify this novel detection method to apply to other consumer products. See appendix I for more information on the Defense Logistics Agency's study regarding PFAS detection in MREs.

Lastly, ASTM International, a global standards development organization, is in the early stages of developing a standard analytical framework for detecting PFAS in a wide variety of consumer goods.<sup>29</sup> As part of this effort, ASTM International will identify existing detection methodologies and determine their applicability to identifying PFAS in consumer and related products.<sup>30</sup> In an interview with us in October 2022, representatives from ASTM International told us it would take at least 12 to 18 months to complete this framework.

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<sup>28</sup>The Defense Logistics Agency is DOD's combat logistics support agency, managing the end-to-end global defense supply chain for five military services, 11 combatant commands, other federal, state, and local agencies and partner and allied nations. The agency contracts for a variety of materials and services to support these groups.

<sup>29</sup>ASTM International brings together public sector, private sector, non-governmental organization stakeholders to develop standards for publication.

<sup>30</sup>ASTM International's working group released a prospectus for its Standard Guide for Selecting Analytical Methods to Evaluate PFAS in Consumer and Related Products, which describes its scope as a discussion of the selection, application, interpretation, and limitations of available preparatory and analytical methods and techniques to identify and determine PFAS in different types of products and material media.

## EPA Information on PFAS in Items Is Available for Some of the Item Categories That Apply to DOD

Although there is limited information available regarding PFAS in many categories of items, EPA maintains a list of recommended third-party standards and ecolabels to help federal procurement officials meet various sustainability goals and requirements.

An EPA official told us the agency first created the list of recommended specifications, standards and ecolabels for federal purchasing in 2015, building upon earlier efforts by the General Services Administration and the Department of Energy to identify standards and ecolabels that could assist in meeting federal sustainability goals for procurement.<sup>31</sup> EPA officials told us they issued an additional list of recommended standards and ecolabels that specifically addressed PFAS in February 2022, and told us they have been updating this list—most recently in August 2022.<sup>32</sup> This list was developed to assist with the implementation of Executive Order 14,057, *Catalyzing Clean Energy Industries and Jobs through Federal Sustainability*.<sup>33</sup> The Executive Order directed that to the maximum extent practicable, federal agencies should purchase sustainable products and services identified or recommended by the EPA.

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<sup>31</sup>Pursuant to the purchasing program, a standard, often established by multi-stakeholder groups, sets specified levels of performance to claim that a product or service is “environmentally preferable.” Ecolabels are marks placed on product packaging or in e-catalogs that can help consumers and institutional purchasers quickly and easily identify those products that meet specific environmental performance criteria and are therefore deemed “environmentally preferable.”

<sup>32</sup>Environmental Protection Agency, *How EPA’s Recommended Standards and Ecolabels Address Per- and Polyfluoroalkyl Substances (PFAS)* August 2022, available at <https://www.epa.gov/greenerproducts/how-epas-recommended-standards-and-ecolabels-address-and-polyfluoroalkyl-substances>. EPA evaluates standards and ecolabels for inclusion in its list based on their multi-stakeholder developed framework, and the following eligibility criteria: 1) there must be a minimum of three conforming products from at least two different suppliers, 2) there must be a registry of all conforming products that has been updated in the previous 3 months. A third criteria will be required in December of 2023 stating that 3) the ecolabel or standard must demonstrate to EPA that it have a competent certification program. See Environmental Protection Agency, *Environmentally Preferable Purchasing Program Framework for the Assessment of Environmental Performance Standards and Ecolabels for Federal Purchasing* (Updated 2022), available at [https://www.epa.gov/system/files/documents/2022-02/updated-framework\\_020222.pdf](https://www.epa.gov/system/files/documents/2022-02/updated-framework_020222.pdf).

<sup>33</sup>Exec. Order No.14,057, *Catalyzing Clean Energy Industries and Jobs through Federal Sustainability*, (86 Fed. Reg. 70,935 (Dec. 13, 2021) signed Dec. 8, 2021).

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Our analysis of EPA's list found that, for the 11 item categories included in our review, information regarding PFAS exists for four as shown in Table 1.<sup>34</sup> Specifically, EPA-recommended third-party standards and ecolabels include information on the presence of PFAS in upholstered furniture, carpets and rugs, floor waxes, and cleaning products. However, seven of the 11 item categories are not covered by EPA's list—including non-stick cookware, non-stick cooking utensils, furniture waxes, car window treatments, car waxes, shoes, and clothing.<sup>35</sup>

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<sup>34</sup>We included the four item categories and two types of PFAS specified in the April 2023 prohibition, as well as the seven item categories and five additional types of PFAS identified in the GAO provision.

<sup>35</sup>EPA officials told us that EPA has plans to expand the list with additional product categories in 2023, and therefore may have additional information to provide in the remaining item categories in the future.

**Table 1: Extent That Environmental Protection Agency (EPA) Recommended Third-Party Standards and Ecolabels Contain Information for Congressionally Identified Item Categories**

National Defense Authorization Act (NDAA)	Congressional item category	PFOS	PFOA	PFNA	PFHxA	PFHxS	PFBS	GenX
<b>Section 333</b> of the NDAA for Fiscal Year 2021 (April 2023 Prohibition)	Non-stick cookware <sup>a</sup>	-	-					
	Non-stick cooking utensils for use in galleys or dining facilities	-	-					
	Upholstered furniture	✓ Yes	✓ Yes					
	Carpets and Rugs treated with stain-resistant coatings	✓ Yes	✓ Yes					
				<b>Not addressed in the April 2023 prohibition</b>				
<b>Section 347</b> of the NDAA for Fiscal Year 2022 (GAO provision)	Furniture waxes	No	No	No	No	No	No	No
	Car window treatments	No	No	No	No	No	No	No
	Shoes	No	No	No	No	No	No	No
	Clothing	No	No	No	No	No	No	No
	Car wax	No	No	No	No	No	No	No
	Cleaning products	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✓ Yes
	Floor waxes	✓ Yes	✓ Yes	No	No	No	No	No

Legend:

- = at least one EPA recommended third-party standard or ecolabel addresses this PFAS
- = no EPA recommended third-party standard or ecolabel addresses this PFAS
- GenX = hexafluoropropylene oxide dimer acid and its ammonium salt
- PFBS = perfluorobutane sulfonic acid
- PFHxA = perfluorohexanoic acid
- PFHxS = perfluorohexane sulfonic acid
- PFNA = perfluorononanoic acid
- PFOA = perfluorooctanoic acid
- PFOS = perfluorooctane sulfonate

Source: GAO analysis of labeling and standards information from the Environmental Protection Agency (EPA), selected environmental advocacy groups, and selected industry groups | GAO-23-105982

<sup>a</sup>The FDA’s Food Contact Substance Notification program authorizes the use of food contact substances, including PFAS for use in non-stick cookware coatings. However, these authorizations do not generally result in a requirement for consumer labeling.

Our analysis of EPA-recommended third-party standards and ecolabels found variation among the criteria used by the standards and ecolabels when certifying if items are free of added PFAS. Some ecolabels address all seven PFAS included in our review, as measured by the presence of a carbon-fluorine bond, while other ecolabels address only selected types of PFAS, such as PFOA or PFOS, from the certified items.<sup>36</sup> For example, EPA’s recommended third-party standards and ecolabels include six

<sup>36</sup>An EPA official defined certified items as products that meet an ecolabel’s or standard’s criteria for environmental performance and public health.

standards or ecolabels that apply to upholstered furniture. Of these six standards and ecolabels, four apply to all PFAS included in our review, and two are specific to only one PFAS.

Furthermore, EPA officials emphasized that their list of recommended third-party standards and ecolabels certify that products are free of intentionally added PFAS, but not completely PFAS-free.<sup>37</sup> EPA officials told us that this is in part due to difficulties in preventing low levels of PFAS from being added to products during the manufacturing process. For example, a representative at an environmental advocacy group we met with noted that because items such as cleaning products use municipal water during the manufacturing process, they can contain PFAS even if no PFAS are intentionally added to the product. This is due to the prevalence of PFAS in municipal water supplies, according to the representative. Officials at EPA and two industry groups told us that raw materials, particularly recycled materials, can also be a way that PFAS can be introduced to a product, as it is difficult for manufacturers to have full visibility over their supply chains. Similarly, representatives from standards and ecolabels organizations told us that due to the prevalence of PFAS in the environment it is difficult to prevent PFAS from entering products. One labeling organization said they did not believe it was feasible to control for the presence of PFAS below 100 parts per million, to certify a product as being completely PFAS free.

As such, a majority of EPA-recommended third-party standards and ecolabels rely on manufacturer declarations to identify the presence of intentionally added PFAS in items. Officials from EPA, in addition to a representative from an environmental advocacy group, told us that eliminating PFAS from the manufacturing supply chain is seen as technically difficult at this time. Also, our recent work has highlighted the general difficulties in detecting most types of PFAS, and specifically in materials other than water.<sup>38</sup> Therefore, according to representatives from two environmental advocacy groups, the main goal in developing policy regarding PFAS in products should be to reduce intentionally added

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<sup>37</sup>“Intentionally added” means a chemical in a product that serves an intended function in the product component. This definition appears in several state laws prohibiting the use of PFAS substances. Products may have PFAS unintentionally added through the manufacturing or distribution process. For example, it is possible that coatings or lubricants used on manufacturing equipment or in factories can contain PFAS, which then transfers to the products made in such facilities. In such cases, the level of PFAS that is transferred to the product is low, but detectable.

<sup>38</sup>[GAO-22-105088](#).

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PFAS before addressing PFAS that may be present at levels below allowed levels.

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## The April 2023 Prohibition Does Not Completely Align with Available Information

As noted above, we determined that, for some of the categories covered by the statutory prohibition, there are no EPA-recommended third-party standards or ecolabels. Specifically, two of the four item categories identified in the April 2023 prohibition and five of the seven item categories identified in the GAO provision as being considered for future prohibitions do not have corresponding categories in EPA's list.<sup>39</sup> Further, DOD cannot meet the requirements of the April 2023 prohibition, which prohibits DOD from procuring certain items if they contain any PFOS or PFOA, by using the EPA-recommended third-party standards and ecolabels. This is because some standards and ecolabels allow for PFOS or PFOA to be present below certain levels—for example, through unintentional additions via the environment or water supply.

Standards for Internal Control in the Federal Government states that quality information—which is current, complete, and accessible—is vital for organizations to achieve objectives.<sup>40</sup> More than half of the item categories that Congress has either placed procurement prohibitions on or considered for future prohibitions do not align with how EPA organizes its list of recommended third-party standards and ecolabels. As a result, DOD does not have all the information it needs to fully comply with the prohibition.

In addition, the April 2023 prohibition, as written, states that DOD may not procure any covered (i.e., specified) item that contains PFOS or PFOA. DOD officials told us that they could be viewed as not fully implementing the April 2023 prohibition on procurement of certain items containing PFOS and PFOA, because information on items that are completely free of those substances is unavailable. As such, the department faces difficulty identifying products without any PFOS or PFOA. A July 2022 Statement of Administration Policy regarding a bill for the fiscal year 2023

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<sup>39</sup>EPA officials told us that EPA is planning to expand the list of recommended third-party standards and ecolabels, and that the expansion will likely include clothing and shoes. The officials added that this information is expected by fall of 2023.

<sup>40</sup>GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: Sept. 10, 2014).

NDAAs expressed concern about a proposed provision that would restrict DOD from procuring a wide range of items that may contain PFAS, causing operational strain.<sup>41</sup> If statutorily prohibited items were aligned with EPA's list of standards and ecolabels specific to PFAS and addressed the presence of PFAS below levels in existing criteria, it would facilitate DOD implementation of the prohibition, particularly on items for which information exists.

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## DOD Has Taken Some Steps, but Has Not Developed a Comprehensive Approach to Implement the April 2023 Prohibition

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### DOD Has Updated Some Policies to Implement the April 2023 Prohibition

DOD has coordinated with other agencies and taken some steps to update procurement policies as part of its approach to implement the April 2023 prohibition on procuring items with PFOS and PFOA.

### DOD Participated in an Interagency Policy Committee

According to DOD officials, DOD has participated in an interagency policy committee on PFAS led by the White House Council on Environmental Quality. Specifically, the interagency policy committee has a standing subcommittee that is focused on coordinating federal efforts to reduce PFAS in products and procurement. According to White House officials, meetings on products and procurement take place monthly. DOD officials stated that part of these discussions involves coordinating with federal partners on several efforts that could alleviate DOD's PFAS labeling challenges.

### DOD Updated the Defense Federal Acquisition Regulation Supplement

In September 2022, the Under Secretary of Defense for Acquisition and Sustainment issued a class deviation to prohibit the procurement of

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<sup>41</sup>Executive Office of the President, *Statement of Administration Policy H.R. 7900 – National Defense Authorization Act for Fiscal Year 2023* (July 12, 2022). A Statement of Administration Policy expresses the administration's views on proposed legislation.

certain items containing PFAS.<sup>42</sup> Effective April 1, 2023, procurement of such items were prohibited under the Defense Federal Acquisition Regulation Supplement (DFARS).<sup>43</sup> However, the class deviation issued in September 2022 and updated in December 2022 issued the prohibition in advance to capture open solicitations that were to be awarded on or after April 1, 2023. DOD officials told us this DFARS deviation is their key approach to compliance with the April 2023 prohibition. They also noted it is unusual for DOD to issue a DFARS deviation prior to the effective date of a new DFARS provision, which highlights its importance.

### DOD Updated Government Purchase Card Policy

Government purchase cards can be used to acquire and pay for services and supplies, and are the preferred method to purchase and pay for micro-purchases.<sup>44</sup> According to DOD officials, the DFARS class deviation prohibiting the procurement of certain items containing PFAS does not cover government purchase card procurements. When we asked DOD officials about how the department would ensure that government purchase cards are not used to procure covered items prohibited under the April 2023 prohibition, they initially cited challenges to doing so before they stated that it is unlikely government purchase cards would be used to procure such items.

For example, in terms of challenges, DOD officials stated that government purchase card transactional data generally do not identify specific items purchased, such as non-stick cookware, non-stick cooking utensils, upholstered furniture, carpets, or rugs. As a result, government

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<sup>42</sup>Under Secretary of Defense (Acquisition & Sustainment) Memorandum, *Class Deviation-Prohibition on Procurement of Certain Items Containing Perfluorooctane Sulfonate or Perfluorooctanoic Acid* (Dec. 23, 2022) (revising and superseding Class Deviation 2022-00010 issued on September 23, 2022). The class deviation prevails until 48 C.F.R. Part 252, § 223-7997 implementing the April 2023 restriction becomes effective in DFARS.

<sup>43</sup>The Federal Acquisition Regulation System is established for the codification and publication of uniform policies and procedures for acquisition by all executive agencies. The system consists of the Federal Acquisition Regulation (FAR), which is the primary document, and agency acquisition regulations that implement or supplement the FAR. The DFARS serves as DOD's supplemental acquisition regulation.

<sup>44</sup>A government purchase card is similar in nature to a commercial credit card; however, purchase card procurements are required to comply with applicable acquisition regulations. A micro-purchase is an acquisition of supplies or services using simplified acquisition procedures and where the aggregate amount does not exceed the micro-purchase threshold. The micro-purchase threshold generally means \$10,000. Other micro-purchase thresholds are established for different types of goods and services.



purchase cardholders would be required to retain itemized receipts of all purchases to be reviewed by agency officials to ensure compliance with the April 2023 prohibition. DOD officials stated these reviews would be onerous, given the frequency of purchases made with government purchase cards at varying locations and for various purposes.

In addition, DOD officials told us that it is unlikely that government purchase cards would be used to procure items covered under the April 2023 prohibition due to the nature of the items and the manner in which such items are procured by DOD contracting activities. Specifically, DOD officials stated that installed carpeting purchases made using a government purchase card are subject to spending limits for construction or services, and are substantially lower than the commonly used purchase card spending limit. According to DOD officials, any purchases above these limits are required to be placed on contract, covered by the DFARS class deviation prohibiting the procurement of certain items containing PFAS.

However, after we continued to raise questions about their approach to implement the April 2023 prohibition for government purchase cards, DOD officials stated that they planned to update the department's government purchase card policy prior to the April 1, 2023 deadline. On March 22, 2023, the Under Secretary of Defense (Acquisition & Sustainment) issued a memorandum specifying that the procurement prohibition for certain items containing PFAS outlined in the class deviation issued in December 2022 also applies to DOD's government purchase card policy. The memorandum noted that this policy change will assist the department in implementing the April 2023 prohibition.<sup>45</sup>

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## DOD's Approach to Implement the April 2023 Prohibition Is Not Comprehensive

### DOD's Approach Does Not Include Military Exchange Procurements

We found that DOD has not developed an approach to implement the April 2023 prohibition for military exchange procurements of items for

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<sup>45</sup>Under Secretary of Defense (Acquisition & Sustainment) Memorandum, *Governmentwide Commercial Purchase Card Prohibited Purchases (GPC 2023-03)* (Mar. 22, 2023).

resale.<sup>46</sup> In our initial meetings with DOD officials, they told us they believed the April 2023 prohibition applied to military exchange procurements for resale, but had not yet determined whether guidance was necessary to implement the prohibition for military exchanges.

Further, in January 2023, DOD officials stated that they believed it was unlikely that military exchanges would sell upholstered furniture or area rugs subject to the April 2023 prohibition, noting that industry in the United States has largely moved away from the use of PFOS and PFOA in their manufacturing processes. However, military exchanges procure and resell goods from companies that have items imported from outside the United States. DOD officials confirmed that upholstered furniture and area rugs could be sold in military exchanges, including those manufactured outside of the United States, posing a risk that DOD could procure prohibited items containing PFOS or PFOA for resale at military exchanges. While DOD officials stated, in response to our questions, that they will assess the actions that can be taken to prevent the procurement of these products, they have not provided details on what their evaluation entails or when they anticipate completing it.

Principles established in federal internal control standards state that agencies should evaluate whether a risk-based approach is appropriately designed by considering whether it is consistent with expectations for the defined objectives, and that if the approach is not consistent with expectations, agencies should revise the approach to achieve consistency.<sup>47</sup> The April 2023 prohibition explicitly prohibits DOD from procuring non-stick cookware, non-stick cooking utensils, upholstered furniture, carpets, and rugs containing PFOS or PFOA, beginning April 1, 2023.

DOD's approach to implement the April 2023 prohibition includes procurement pursuant to the DFARS class deviation prohibiting the procurement of certain items containing PFAS, and an updated

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<sup>46</sup>The three military exchanges—the Army and Air Force Exchange Service, Navy Exchange Service Command, and Marine Corps Exchange—provide goods and services to authorized customers similar to department or retail stores. The exchanges are financially self-supporting and do not receive appropriated amounts for operations. Provisions in the FAR and DFARS apply only to acquisitions using appropriated amounts; therefore the provisions do not apply to military exchange procurements. See DOD Directive 4105.67, *Nonappropriated Fund (NAF) Procurement Policy and Procedure*, § 3(i)(1) (Feb. 26, 2014) (incorporating Change 2, Dec. 1, 2017).

<sup>47</sup>[GAO-14-704G](#).

government purchase card policy to avoid the procurement of PFAS-containing items. However, the approach does not include military exchange resale procurements. Developing an approach to address military exchange resale procurements would help DOD ensure the department's procurements comply with prohibition on PFAS-containing items.

#### DOD Has Not Updated Sustainable Procurement Guidance to Implement Applicable PFAS Policies and Legislation

In addition, DOD has not updated its sustainable procurement guidance, DOD Instruction 4105.72, *Procurement of Sustainable Goods and Services*, to implement applicable PFAS policies and legislation.<sup>48</sup> DOD Instruction 4105.72 establishes policy, assigns responsibilities, and prescribes procedures for DOD's procurement of sustainable goods and services. Specifically, the guidance directs DOD to give preference to the procurement of sustainable goods and services unless the good or service cannot be acquired within reasonable price, performance, and availability standards. If any of these determinations are made, the good may be deemed as unsuitable for use. These suitability determinations ensure that DOD can comply with sustainable procurement guidance, while also procuring goods as necessary that enable DOD to fulfill its mission.

DOD has not updated the guidance to implement applicable federal sustainability policies and legislation, such as Executive Order 14,057, Executive Office of the President Memorandum M-22-06, or the April 2023 prohibition.<sup>49</sup> Specifically, our analysis found that there are no references to Executive Order 14,057, Executive Office of the President Memorandum M-22-06, or the April 2023 prohibition throughout DOD Instruction 4105.72. Instead, DOD Instruction 4105.72 implements a 2015

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<sup>48</sup>DODI 4105.72, *Procurement of Sustainable Goods and Services* (Sept. 7, 2016) (incorporating Change 1, Aug. 31, 2018).

<sup>49</sup>Executive Office of the President Memorandum M-22-06, *Catalyzing Clean Energy Industries and Jobs Through Federal Sustainability* (Dec. 8, 2021). M-22-06 provides direction for agency compliance with Executive Order 14,057 of the same title. Exec. Order No. 14,057, 86 Fed. Reg. 70,935, 70,937 (Dec. 13, 2021) (signed Dec. 8, 2021); and Pub. L. No. 116-283, § 333.

executive order, among other statutes and regulations, promoting federal sustainability policies that do not directly address PFAS.<sup>50</sup>

Section 208 of Executive Order 14,057 directs that agencies, among other things, shall support resilient supply chains and incentivize markets for sustainable products, and to the maximum extent practicable, purchase sustainable products and services identified or recommended by the EPA. In addition, Executive Office of the President Memorandum M-22-06 states that, consistent with Section 208, agencies should prioritize substitutes for products that contain PFAS, and should avoid the procurement of PFAS-containing covered items defined in the April 2023 prohibition.

DOD officials stated that items manufactured without PFAS are sustainable goods and that the existing DOD Instruction 4105.72 is applicable to PFAS procurements if the items manufactured without PFAS meet the definition for sustainable procurement outlined in the instruction.<sup>51</sup> However, despite the instruction's applicability, DOD officials told us they had not considered how the procedures or framework established in DOD Instruction 4105.72, such as the sustainable procurement program working group, could be used for the coordination or implementation of DOD's PFAS procurement efforts. They also stated, in response to our questions about the DOD Instruction, that such guidance is typically updated at least every 5 years and takes approximately 12 to 18 months to complete.

Until DOD has updated sustainable procurement guidance to address the prohibition on the procurement of items containing PFAS, procurement officers will not have all the tools needed to effectively implement and apply all applicable policies and legal requirements in procurement, including conducting suitability determinations of alternatives to PFAS-containing items. Further, a long delay in updating the guidance may

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<sup>50</sup>Exec. Order No. 13,693, *Planning for Federal Sustainability in the Next Decade*, 80 Fed. Reg. 15,871 (Mar. 25, 2015) (signed Mar. 19, 2015).

<sup>51</sup>DODI 4105.72 defines sustainable procurement as that which uses sustainable environmental practices, including but not limited to, acquisition of EPA-designated recycled content products, environmentally sustainable electronics products, environmentally preferable goods and services, ENERGY STAR® and Federal Energy Management Program-designated energy-efficient products, water-efficient products, U.S. Department of Agriculture-designated biobased products, alternative fuels and alternative fuel vehicles, non-ozone depleting substances, low or non-toxic substances or products containing low or non-toxic constituents, renewable energy sources, and sustainable building materials.

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result in the continued purchase of products containing statutorily prohibited types of PFAS, and service members and employees cannot be assured that items they purchase will not contain those PFAS.

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## Conclusions

In recent years, Congress has given increased attention to PFAS and their potential to pose both environmental and human health risks. One action that Congress has taken in response to this concern is to prohibit DOD's procurement of some PFAS-containing items. However, until recently, DOD officials took few steps to implement these prohibitions, in part because there is limited information available about the presence of PFAS in some items.

Our analysis shows a lack of complete information on the presence of PFAS in the item categories subject to the April 2023 prohibition. For example, of the four categories of items covered in the April 2023 prohibition, there is no EPA information on items completely free of PFAS. Specifically, several EPA-recommended third-party standards and ecolabels allow the presence of PFAS below certain levels—such as by unintentional additions to the manufacturing process via the environment or water supply. By aligning its prohibition with the standards and information currently available from the EPA, Congress would ensure that DOD is not held accountable for implementing something that, based on current science and research, is not feasible.

At the same time, DOD could do more to fully implement the prohibition that took effect in April 2023. Specifically, while the department has taken some steps, such as issuing a DFARS class deviation memorandum to prohibit the procurement of certain items containing PFAS prior to the effective date of the April 2023 statutory prohibition, it has not developed an approach to prevent military exchanges from procuring and reselling certain prohibited items, namely upholstered furniture and area rugs. As a result, service members and their families cannot be assured that when they purchase these items from military exchanges, they do not contain prohibited PFAS.

We also found that DOD has delayed updating key guidance governing sustainable procurement. Although the April 2023 prohibition was enacted January 1, 2021, DOD only recently—December 2022—stated that it would review and update the guidance over the next year and a half. As a result, DOD lost an opportunity to prepare more fully for the April 2023

prohibition. Until DODI 4105.72 is updated, procurement officials will not have all the tools needed to effectively implement applicable federal sustainability procurement policies, increasing the risk of the department continuing to purchase products containing statutorily prohibited types of PFAS.

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## Matter for Congressional Consideration

Congress should consider clarifying its direction to DOD regarding current and future prohibitions on the procurement of items containing PFAS, specifically by aligning the item categories specified in the prohibitions with EPA's list of recommended third-party standards and ecolabels specific to PFAS and addressing the presence of PFAS below levels in existing PFAS criteria. (Matter for Consideration 1)

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## Recommendations for Executive Action

We are making two recommendations to DOD:

The Secretary of Defense should ensure that the Under Secretary of Defense for Acquisition and Sustainment, in conjunction with the Office of the Under Secretary of Defense for Personnel and Readiness, develops an approach to implement the April 2023 prohibition for military exchange resale procurements. (Recommendation 1)

The Secretary of Defense should ensure that the Under Secretary of Defense for Acquisition and Sustainment updates DOD Instruction 4105.72 and includes procedures in the update that are specifically targeted to implement the provisions of Executive Order 14,057 with respect to limiting procurement of items containing PFAS. (Recommendation 2)

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## Agency Comments

We provided a draft of this report to DOD, EPA, FDA, the General Services Administration, the Consumer Product Safety Commission, and the White House Council for Environmental Quality for comment. DOD provided comments, which are reproduced in Appendix III. In its comments, DOD concurred with both of our recommendations and described ongoing and planned actions to address them. DOD provided

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technical comments on the report which were incorporated as appropriate. EPA, FDA and the White House Council for Environmental Quality also provided technical comments, which we incorporated in the report where appropriate.

We are sending copies of this report to the appropriate congressional committees, the Secretary of Defense, and other interested parties. In addition, the report is available at no charge on the GAO website at <https://www.gao.gov>.

If you or your staff have any questions about this report, please contact me at (202) 512-2775 or [FieldE1@gao.gov](mailto:FieldE1@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made key contributions to this report are listed in appendix IV.



Elizabeth A. Field  
Director, Defense Capabilities and Management

## Appendix I: Department of Defense Study on PFAS in Meals Ready-to-Eat Packaging

The Department of Defense (DOD) authorized efforts to identify per- and polyfluoroalkyl substances (PFAS) in Meals Ready-to-Eat (MRE) Packaging in response to Section 329 of the National Defense Authorization Act for Fiscal Year 2020 (MRE packaging prohibition).<sup>1</sup> Section 329 mandated that the Director of the Defense Logistics Agency ensure that any food contact substances used to assemble and package MREs did not contain any PFAS by October 1, 2021.

To meet this mandate, a Defense Logistics Agency official said that the agency first asked vendors to confirm with their subcontractors that assembled MREs and their various components that their products did not contain intentionally added PFAS. The Defense Logistics Agency then partnered with a team from the U.S. Army Corps of Engineers' Research, Development, and Engineering Center and Oregon State University to develop a novel detection methodology to extract and analyze packaging materials used to assemble MREs and confirm the presence and concentration of detected PFAS.

The teams tested film samples for volatile and non-volatile PFAS, as well as total fluorine.<sup>2</sup> According to the study, the team did not detect volatile PFAS in any of the three MRE film samples; however, non-volatile PFAS were detected at some level in all three of the samples. The researchers hypothesized that the detected PFAS resulted from contamination through the manufacturing process of MREs. The team's next step is to investigate how PFAS contamination occurs during the manufacturing process.

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<sup>1</sup>National Defense Authorization Act for Fiscal Year 2020, Pub. L. No. 116-92, § 329 (2019).

<sup>2</sup>Volatile PFAS in samples were analyzed using gas chromatography mass spectrometry using nine targeted compounds. Non-volatile PFAS in samples were analyzed using both liquid chromatography quadrupole mass spectrometry and high-resolution mass spectrometry using liquid chromatography quadrupole time-of-flight. Total fluorine in samples were analyzed using particle induced gamma ray emission spectroscopy.



This study and its results illustrated several challenges to PFAS detection:<sup>3</sup>

- **Cost:** The first phase of this study cost \$750,000. According to a Defense Logistics Agency official, the second phase to identify the origins of PFAS contamination in MRE manufacturing plants will cost \$3 million.
- **Varying Guidance:** The MRE packaging prohibition required the Defense Logistics Agency to ensure that MRE packaging is completely “PFAS-free,” whereas EPA advisories for PFAS in drinking water, under the Safe Drinking Water Act, have suggested PFAS levels that are above zero.<sup>4</sup> This meant that the researchers had to push their limits of detection to the lowest reasonable limits to return results that were as close to “PFAS-free” as scientifically possible.
- **Limited Applicability of Existing Standards:** There are no existing EPA-approved standards that could apply to the effort to detect PFAS in MRE packaging. DOD officials stated that while the researchers on this study leveraged some information on detection methods for PFAS in textiles, it would be very difficult to adapt these methods to detect PFAS in other materials.
- **Lack of Analytical Standards and Methods:** The laboratory and sample blanks used in this study contained trace amounts of PFAS.<sup>5</sup> The researchers tested their samples for PFAS at the lowest analytical limit possible. However, at these levels, U.S. Army Corps of Engineers and Oregon State University officials say there were no sample blanks they could use that were truly “PFAS-free.”

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<sup>3</sup>Previous GAO work has identified similar challenges associated with developing and applying detection methods for PFAS, including the cost of detection, differences in guidance on PFAS detection, limited applicability of existing standards, and a lack of analytical standards and methods. GAO, *Persistent Chemicals: Technologies for PFAS Assessment, Detection, and Treatment*, [GAO-22-105088](#) (Washington, D.C.: July 2022).

<sup>4</sup>Pursuant to the Safe Drinking Water Act, EPA is authorized to issue Health Advisories for drinking water contaminants not subject to the National Primary Drinking Water Regulation (42 U.S.C. § 300g-1). 42 U.S.C. § 300f et seq. Health Advisories describe information about the health effects, analytical methodologies, and treatment technologies associated with a contaminant. They are not legally enforceable federal standards, however. EPA’s most recent Health Advisory concerning PFAS was issued in June 2022. EPA, *Lifetime Drinking Water Health Advisories for Four Perfluoroalkyl Substances*, 87 Fed. Reg. 36,848 (June 21, 2022).

<sup>5</sup>According to members of the research team, “sample blanks” are mediums, such as copy paper, that can serve as a blank background to test samples against to determine if they contain PFAS.


# Appendix II: Organizations Interviewed during the Course of GAO's Work

**Table 2: Organizations Interviewed during the Course of GAO's Work**

<b>Organization type</b>	<b>Organization name</b>
<b>Department of Defense components</b>	Office of the Deputy Assistant Secretary of Defense for Environment and Energy Resilience
	Defense Pricing and Contracting Office
	Defense Logistics Agency
	U.S. Army Corps of Engineers
<b>Other federal agencies and organizations</b>	Environmental Protection Agency
	Health and Human Services – Food and Drug Administration
	General Services Administration
	Consumer Product Safety Commission
	White House Council on Environmental Quality
<b>Research university</b>	Oregon State University
<b>Environmental advocacy groups</b>	Environmental Working Group
	Union of Concerned Scientists
	Natural Resources Defense Council
	Safer States
	Ecology Center
<b>Manufacturers and industry associations</b>	U.S. Chamber of Commerce
	W.L. Gore & Associates
	Chemours
	Daikin America
	National Council of Textile Organizations
	American Apparel and Footwear Association
	Fluid Sealing Association
	National Association of Manufacturers
	American Chemistry Council
<b>Labeling and standards development organizations</b>	ASTM International
	UL Standards
	Cradle to Cradle Products Innovation Institute, Inc.
	Green Seal
<b>City government</b>	City of San Francisco, Environment Department

Source: GAO | GAO-23-105982

## Appendix III: Comments from the Department of Defense

 <small>ENERGY, INSTALLATIONS, AND ENVIRONMENT</small>	<b>ASSISTANT SECRETARY OF DEFENSE</b> 3400 DEFENSE PENTAGON WASHINGTON, DC 20301-3400	April 4, 2023
<p>Ms. Elizabeth Field Director Defense Capabilities and Management Directorate U.S. Government Accountability Office 441 G Street, NW Washington, DC 20548</p>		
<p>Dear Ms. Field:</p>		
<p>This is the Department of Defense (DoD) response to the U.S. Government Accountability Office (GAO) Draft Report, GAO-23-105982, "PERSISTENT CHEMICALS: Actions Needed to Improve DOD's Ability to Prevent the Procurement of Items Containing PFAS," dated March 6, 2023 (GAO Code 105982).</p>		
<p>The Department concurs with Recommendation 1 and with Recommendation 2. Enclosed are the Department's responses to each recommendation.</p>		
<p>The Department appreciates the opportunity to review and comment on the draft report. If you have any questions, please contact the primary action officer, Ms. Alexandria Long, at 703-571-9061 or via email at <a href="mailto:Alexandria.d.long.civ@mail.mil">Alexandria.d.long.civ@mail.mil</a>.</p>		
<p style="text-align: right;">Sincerely,</p>		
<p style="text-align: right;">OWENS.BREND AN.M.10304518 44</p> <p style="text-align: right;"><small>Digitally signed by OWENS BRENDAN M.1030 451844 Date: 2023.04.04 12:58:28 -0400</small></p>		
<p style="text-align: right;">Brendan M. Owens</p>		
<p>Enclosure: As stated</p>		

Enclosure 1

**GAO DRAFT REPORT DATED MARCH 6, 2023  
GAO-23-105982 (GAO CODE 105982)**

**“PERSISTENT CHEMICALS: ACTIONS NEEDED TO IMPROVE DOD’S ABILITY  
TO PREVENT THE PROCUREMENT OF ITEMS CONTAINING PFAS”**

**DEPARTMENT OF DEFENSE COMMENTS  
TO THE GAO RECOMMENDATION**

**RECOMMENDATION 1:** The Secretary of Defense should ensure that the Office of the Under Secretary of Defense for Acquisition and Sustainment, in conjunction with the Office of the Under Secretary of Defense for Personnel and Readiness, develops an approach to implement the April 2023 prohibition for military exchange resale procurements.

**DoD RESPONSE:** DoD concurs with this recommendation and has developed an approach to implement the April 2023 prohibition of procuring certain items containing PFOS and PFOA for military exchange resale procurements. DoD will communicate the prohibition to military exchanges within the next 30 days and formally incorporate the prohibition in policy as part of the current update of DoD Instruction 4105.67 NAF Procurement Policy and Procedures.

**RECOMMENDATION 2:** The Secretary of Defense should ensure that the Office of the Under Secretary of Defense for Acquisition and Sustainment updates DOD Instruction 4105.72 and includes procedures in the update that are specifically targeted to implement the provisions of Executive Order 14,057 with respect to limiting procurement of items containing PFAS.

**DoD RESPONSE:** DoD concurs with this recommendation. Based on required DoD Issuance Policy updates, and the increased attention to sustainable purchasing, the Department will be updating DODI 4105.72. The Department will consider a variety of new requirements, procedures, and other policy actions that should be included in the DoDI 4105.72. These include provisions in E.O. 14057 in general, and specifically prioritizing substitutes for products that contain PFAS and to the maximum extent practicable, avoiding the procurement of PFAS-containing covered items. Typically, it takes the 12-18 months to issue a DoD Instruction.

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## Appendix III: Comments from the Department of Defense

April 4, 2023

Ms. Elizabeth Field

Director

Defense Capabilities and Management Directorate

U.S. Government Accountability Office 441 G Street, NW

Washington, DC 20548

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This is the Department of Defense (DoD) response to the U.S. Government Accountability Office (GAO) Draft Report, GAO-23-105982, "PERSISTENT CHEMICALS: Actions Needed to Improve DOD's Ability to Prevent the Procurement of Items Containing PFAS," dated March 6, 2023 (GAO Code 105982).

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Enclosed are the Department's responses to each recommendation.

The Department appreciates the opportunity to review and comment on the draft report. If you have any questions, please contact the primary action officer, Ms. Alexandria Long, at 703-571-9061 or via email at [Alexandria.d.long.civ@mail.mil](mailto:Alexandria.d.long.civ@mail.mil).

Sincerely,

Digitally signed by OWENS.BRENDAN.M.1030

Brendan M. Owens

Enclosure:

As stated

Enclosure 1

GAO DRAFT REPORT DATED MARCH 6, 2023 GAO-23-105982  
(GAO CODE 105982) “PERSISTENT CHEMICALS: ACTIONS  
NEEDED TO IMPROVE DOD’S ABILITY TO PREVENT THE  
PROCUREMENT OF ITEMS CONTAINING PFAS” DEPARTMENT  
OF DEFENSE COMMENTS TO THE GAO RECOMMENDATION

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## Appendix IV: GAO Contact and Staff Acknowledgments

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### GAO Contact

Elizabeth A. Field, (202) 512-2775 or [FieldE1@gao.gov](mailto:FieldE1@gao.gov)

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### Staff Acknowledgments

In addition to the contact named above, Richard Geiger (Assistant Director), Foster Kerrison (Analyst-in-Charge), Parker Hallof, David Jones, Nacole King, Felicia Lopez, Tim Moss, Richard Powelson, Carl Ramirez, Jacqueline Shaib, Ashni Verma, and Tatiana Winger made key contributions to this report.

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