

RiskTopics

Forever chemicals and general business awareness

PFAS (perfluoroalkyl and polyfluoroalkyl substances) are referred to as “forever chemicals.” Businesses handling, using, manufacturing, or distributing these forever chemicals should consider planning for possible exposure scenarios related to workers, consumers and the environment.



Introduction

PFAS is a term used to describe a family of thousands of man-made chemicals, including PFOA, PFOS and GenX. PFAS are used to make fluoropolymer coatings as well as products that resist heat, oil, stains, grease and water. Since the 1940s, PFAS have been manufactured and broadly used in many industries for many applications including firefighting foams, food packaging, commercial household products, chrome plating, textiles, cosmetics and electronics.

PFAS are often referred to as “forever chemicals” because they are chemically stable and therefore may not break down in the environment for hundreds and possibly thousands of years. These compounds are also known to bioaccumulate and persist in the human body and could potentially cause health problems.



Discussion

Considering the diverse types and applications of PFAS chemicals, they are likely to find their way into any business in some form and at some level. As noted in Scientific American, “Of the more than 9,000 known PFAS compounds, 600 are currently used in the U.S. in countless products, including firefighting foam, cookware, cosmetics, carpet treatments, and even dental floss.”¹

Workers and consumers

Workers and consumers could be exposed to PFAS chemicals through inhalation, ingestion and absorption of substances containing PFAS through various pathways including production and waste streams. For instance, workers may be exposed to substances during manufacturing activities such as handling or working with materials containing PFAS such as chemicals, packaging, powders, coatings and spray applications. Consumers may experience low-level exposure through PFAS-coated cookware, food containers and clothing, PFAS-contaminated groundwater, or food grown with soil and water contaminated with PFAS.

When ingested or absorbed, PFAS can accumulate and stay in the human body for long periods leading to adverse health effects. The United States Environmental Protection Agency has reported that research involving PFOA (perfluorooctanoic acid) and PFOS (perfluorooctane sulfonate) in laboratory animals has shown these chemicals may affect reproduction, human development, liver, thyroid, kidneys, immunological systems and may cause cancerous tumors. In addition, human studies may indicate a range of potential adverse health effects including increased cholesterol levels, low infant birth weight, compromised immune systems, increases in cancer, and adverse thyroid hormone levels.

Environment

General waste from businesses and consumers finds its way to landfills. Where the waste contains PFAS chemicals or products containing PFAS chemicals, the PFAS chemicals may eventually enter the environment (including groundwater) and subsequently impact both humans, ecosystems and the food chain.

One pathway for PFAS to reach the environment is through firefighting foams. While PFAS is not an ingredient in all firefighting foams, all firefighting foams are likely to have environmental impacts. As such, consider managing all firefighting foams as discussed in this document.

Several current standards provide guidance for selecting, applying and maintaining firefighting foam systems. These include:

- NFPA 1, Fire Code
- NFPA 11, Standard for Low-, Medium-, and High-Expansion Foam
- NFPA 13, Standard for the Installation of Sprinkler Systems
- NFPA 16, Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems
- NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
- NFPA 30, Flammable and Combustible Liquids Code
- NFPA 409, Standard on Aircraft Hangars

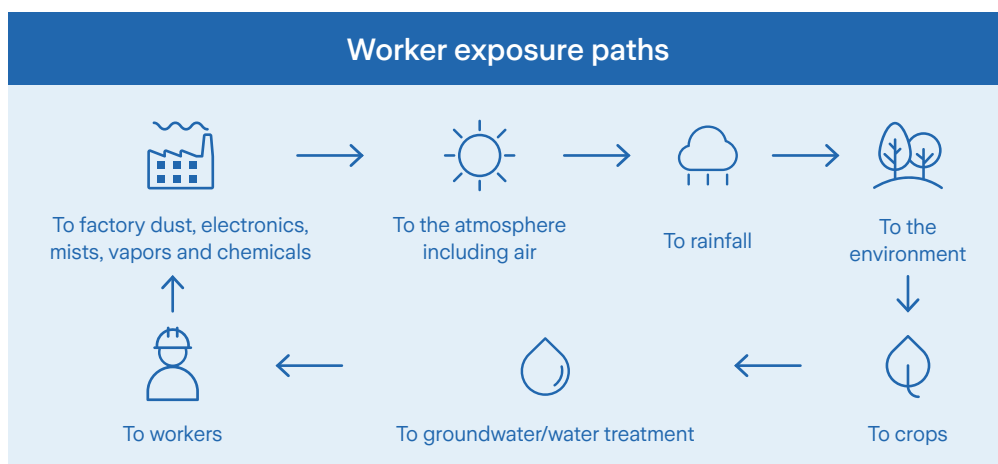
A common firefighting foam that includes PFAS chemicals is Aqueous Film-Forming Foam (AFFF). AFFF has become a standard for fighting petroleum-based fires and its use may contaminate groundwater as rainwater transports AFFF into the ground and nearby streams. Heavier concentrations of PFAS in drinking water are often found in communities located near military bases and airport facilities where AFFF may be released during manual firefighting, fuel spill-blanketing operations, fixed foam fire protection system releases, training exercises and foam system testing.

Guidance

Where a business handles, uses, manufactures or distributes PFAS chemicals or products containing PFAS chemicals, consider actions to assess and mitigate possible exposure scenarios related to workers, consumers and the environment.

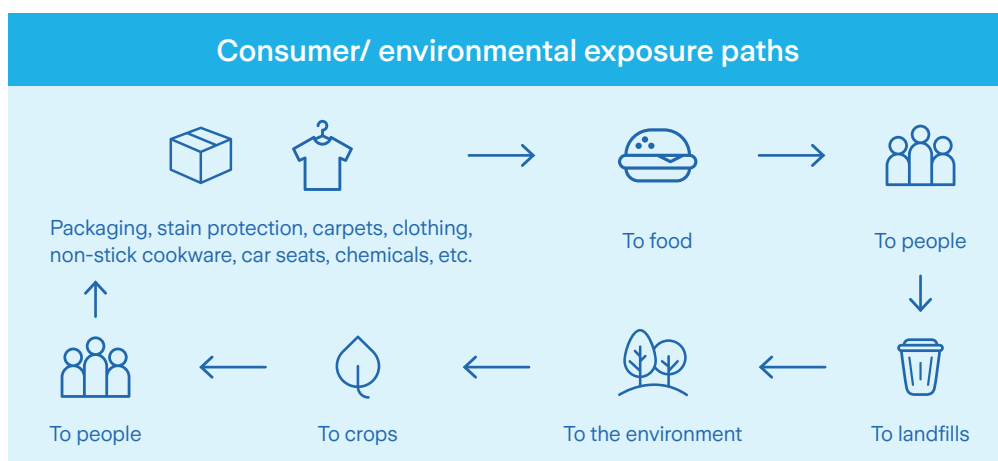
Workers

In some cases, workers may be exposed through direct or indirect contact with the PFAS-containing substances. Inhalation exposures may be prevented through local exhaust systems that adequately filter air and through the use of respirators. Absorption through the skin and eye exposures can be prevented by wearing protective gloves and safety glasses. Contaminated clothing should be removed immediately, and exposed skin should be rinsed and then washed with water and soap. Ingestion exposures may be prevented by not permitting workers to eat, drink or smoke while working near PFAS.



Consumers

Evaluate where the use of PFAS can be omitted from products and packaging. Identify safe alternatives to using products and packaging that contain PFAS by engaging with product experts during the design/redesign phases. Verify alternative substances are known to be safe and will not cause future exposures.



Environment

Once again, evaluate where the use of PFAS can be omitted from products and packaging. This may help eliminate PFAS from waste stream materials that are discarded in landfills. Consider that there is always the potential for chemicals to escape landfills into the environment and especially streams and groundwater.

Also, evaluate any onsite firefighting foam systems. This may include manual firefighting systems as well as fixed fire protection systems. Consider the following:

- Verify that features such as dikes, curbs, drains, catch tanks or remote impounding areas are provided to contain any discharge from manual or fixed firefighting foam systems.
- Firefighting foam systems need a periodic inspection, testing and maintenance plan for measures to capture and contain any firefighting foam release during these activities.
- Develop and maintain records of PFAS use and storage on your site(s) and investigate how rainwater runoff may have transported PFAS beyond your site(s).
- Where AFFF is not mandated by law, such as at airports, consider the use of non-PFAS firefighting foams or other options to firefighting foam, which may involve water without any firefighting additive. Fixed foam-water systems are commonly used to protect flammable liquids storage rooms or buildings. When firefighting foam is used, the common practice is to contain any released flammable liquids and firefighting foam within the room or building. Where firefighting foam is eliminated, there may be a need for floors to be pitched to drains that terminate at a remote impounding point of sufficient capacity.
- If you are planning construction on a site where PFAS has been released, be aware that many landfills are now requiring testing for PFAS and are refusing to accept fill that tests positive for the chemicals.

Additional considerations

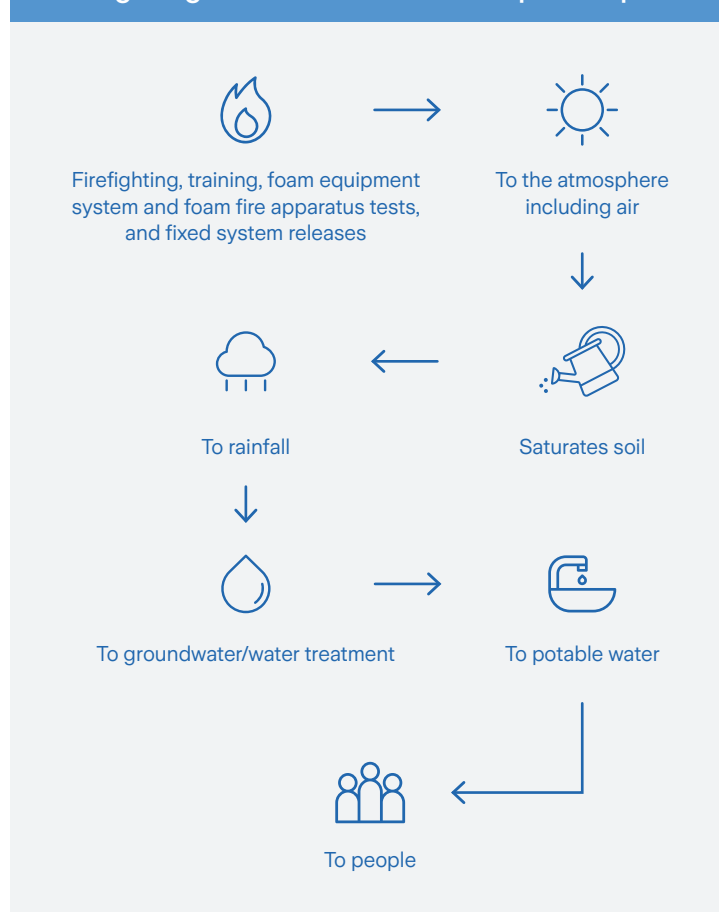
Consider planning for possible exposure scenarios relating to workers, consumers and the environment. During this planning process, companies should consider what business and social risks may apply. With expanding regulatory oversight on PFAS products, it is important to understand how regulations may affect your company's business model. Retain legal counsel and risk management advice to best navigate through a potentially difficult planning process.

Understanding to what extent you may have PFAS substances in your stream of commerce – including raw materials, supply chain risks, storage, distribution, and disposal through an inventory of PFAS – will provide you an overview of possible exposures. Receipt and review of Safety Data Sheets can be cross-referenced against the EPA's PFAS chemical list.

Once it is known where and how the company may be exposed to PFAS, preparations for needed actions can be made.

Consider supply chain risks and how you will operate in the event that certain components become unavailable or certain products can no longer be sold. Companies should anticipate possible PFAS reporting requirements through regulators and business consequences of reactions by customers or the public. Companies should be aware of the increasing prevalence of claims arising out of PFAS exposures or contamination. Develop a communication plan to inform key customers, consumers, suppliers, and other key stakeholders in advance disclosures. Ensure that your company has identified who will respond to PFAS inquiries.

Firefighting foam environmental exposure paths



Conclusion

“Forever chemicals” are finding their way into many businesses. Consider taking the time to evaluate if PFAS chemicals are present in your operations. If so, consider planning for possible exposure scenarios related to workers, consumers and the environment. Evaluate where PFAS can be omitted from products and packaging. Where firefighting foam systems are in use, evaluate the features provided for foam containment and consider options to eliminate the use of PFAS-containing foam. Finally, anticipate possible PFAS reporting requirements that could be imposed by local, state and federal regulators and consider the business consequences of customer or public reaction.



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