

Recognizing the Risk of Per- and Polyfluoroalkyl Substances (PFAS) in the Environment

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Per- and polyfluoroalkyl substances (PFAS) have been widely used since the 1940s in various industrial applications, in part due to their unique surfactant properties. Their value in coatings and surface protectant formulations is due to their water- and oil-repelling nature, as well as their resistance to heat and chemical agents.

If a prospective acquisition involves a facility that uses or produces PFAS (or was historically involved in such use or production), the risk the new owner may face may be prohibitively high.

PFAS is an emerging chemical concern in the United States owing to its potential for serious risk to human health and the environment. As of the publication of this article, there are no federal maximum contaminant levels (MCLs) for PFAS in drinking water. However, PFAS is currently under aggressive regulatory scrutiny, and activities are underway to establish enforceable federal standards and clean-up guidelines. The 2016 perfluorooctanoic acid (PFOA) & perfluorooctane sulfonate (PFOS) Drinking Water Health Advisories Fact Sheet, created by the United States Environmental Protection Agency (USEPA), notes that some states have adopted the USEPA lifetime health advisory (LHA) of 70 parts per trillion (ppt) for PFOA and PFOS. Others have established state-level drinking water standards of equal or more stringent value. Some states have established even lower PFOA and PFOS standards. For example, the state of New Jersey's Site Remediation Reform Act establishes maximum contaminant levels (MCLs) of 14 ppt for PFOA and 13 ppt for PFOS.

Despite the dangers posed by these materials, PFAS can be easily overlooked during an environmental due diligence process performed to evaluate potential environmental risks associated with the acquisition of a property, as these substances are not listed as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substance. If a prospective acquisition involves a facility that uses or produces PFAS (or was historically involved in such use or production), the risk of acquiring the property could be prohibitively high.

As such, it is prudent to understand this emerging and potentially overlooked risk when performing environmental due diligence. The key is understanding its potential for environmental impact, not only on the property, but to adjacent properties.

What are Polyfluoroalkyl Substances?

PFAS are a group of almost 5,000 types of man-made chemicals, including PFOA and PFOS. Both chemicals are persistent in the environment and in the human body, which means they do not break down and can accumulate over time. Exposure to PFAS can lead to adverse human health effects, which are discussed later in this article.

PFOA has been used in the production of the chemical polytetrafluoroethylene (PTFE), best known by the commercial name Teflon,[™] which was first synthesized in 1938 by DuPont and came into widespread use in the 1960s. PFOA has been used in waterproof textiles, electrical wire casing, and many other products.

PFOS has also been used in the production of everyday household items. One of the most well-known products that contained PFOS was 3M's line of Scotchgard[™] stain repellants. PFOS also has been used in pesticides, surface coatings for carpets, furniture, waterproof apparel, and paper goods. Additionally, PFAS have been used in aqueous film forming foam (AFFF), which was developed in the late 1960s to extinguish petroleum fires.

Potential for Environmental Impact

PFAS contamination may come from a wide range of sources. The source of these chemicals include landfills, where certain types of refuse can break down and leach into the environment. Other indirect sources can impact the environment when precursor chemicals break down to form PFOA and PFOS. The USEPA concludes that both PFOA and PFOS are persistent in the environment and in the human body (Federal Register / Vol. 81, No. 101). PFAS also have been found in plants, such as strawberries and lettuce, and a variety of terrestrial and aquatic animals.



According to a 2020 online article from Noah Systems, PFASs are mobile in soil, can leach into groundwater, and travel large distances away from the source. PFASs have been found in landfills and wastewater treatment plants, and remote areas, such as the ocean and the Arctic.

According to a 2016 USEPA memorandum, from the USEPA, PFAS has contaminated drinking water in the United States, and these chemical compounds can cause adverse health effects when persons are exposed to them. According to information from the Food and Water Watch website; as of 2016, PFAS had been detected in 194 of 4,864 surveyed public water supplies in the United States, potentially exposing 16.5 million people in 33 states.

Exposure to PFAS

PFOA and PFOS have been the most studied of the PFAS chemicals in terms of their health impacts on humans. Humans are exposed to PFAS from many sources, including food (both homegrown and store-bought), food packaging, and drinking water. An online ECORI News article, published on July 27, 2020, estimates that over 98 percent of the U.S. population had detectable levels of PFAS in their blood. Some evidence indicates that even very low levels of PFAS exposure may not be completely safe for human health.

Per- and polyfluoroalkyl substances are common drinking water contaminants of concern due to mounting evidence implicating adverse health outcomes associated with exposure, including reduced kidney function, metabolic syndrome, thyroid disruption, and adverse pregnancy outcomes (Toxicology, Volume 443, October 2020, 15256). Human exposure to PFAS has also been associated with adverse effects on the immune, endocrine, metabolic, and reproductive systems (including fertility and pregnancy outcomes), and increased risk for cancer.

The World Health Organization's cancer research arm, the International Agency for Research on Cancer, classifies PFOA as a Group 2B carcinogen, or "possibly carcinogenic to humans." The USEPA suggests that there is evidence of carcinogenicity of PFOA in humans. Highly exposed humans were observed to have correlating increases in testicular and kidney cancer.

Clean-Up Standards for PFAS

There is no current enforceable federal standard for PFAS in drinking water. The USEPA has established a drinking water LHA level of 0.07 micrograms per liter (mg/L), or 70 parts per trillion (ppt), for PFOA and PFOS. Health advisories describe non-regulatory concentrations of drinking water contaminants at or below which adverse health effects are not anticipated to occur over specific exposure durations. The USEPA is currently working to establish an enforceable MCL for drinking water and develop guidance to address clean-up of PFOA and PFOS.

PFAS, including PFOA and PFOS, are not listed as CERCLA hazardous substances, but in some circumstances could be responded to as CERCLA pollutants or contaminants. The USEPA is beginning the necessary steps to propose designating PFOA and PFOS as "hazardous substances." CERCLA requires that response actions under the Superfund program protect public health and the environment.

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PFAS Concerns for Production and Manufacturing Facilities

Some facilities where PFAS may be of concern include:

- Textiles and leather, including factory- or consumer-applied coating to repel water, oil, and stains
- Paper products, including surface coatings to repel grease and moisture
- Chrome metal plating and etching, where PFAS were used as a wetting agent/fume suppressant for chrome
- Other metal plating, where PFAS were used in conjunction with copper, nickel, tin electroplating, and post-plating cleaning
- Wire manufacturing, where PFAS were used in coating and insulation wires

Due to the solubility and persistence of many PFAS, environmental release mechanisms associated with these facilities include air emission and dispersion, spills, and disposal of manufacturing wastes and wastewater.

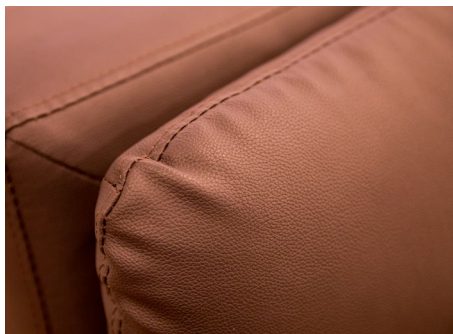
Some states have worked to develop enforceable and more stringent standards. An online 2020 JD SUPRA article indicates that states that have established screening levels to clean-up PFOA and PFOS contamination include California, Minnesota, Nevada, and Texas. Vermont's combined health advisory establishes a clean-up level for five PFAS compounds (PFOA, PFOS, PFHxS, PFHpA, and PFNA) is 20 ppt.



Environmental Due Diligence and Remediation

As mentioned earlier, PFAS are often overlooked during the due diligence process used to evaluate potential environmental risks associated with the acquisition of a property because it is not listed as a CERCLA hazardous substance. As a result, potential on-site environmental conditions associated with PFAS would not meet the definition of a Recognized Environmental Condition (REC) per the ASTM Standard for conducting Phase I Environmental Site Assessments (ESAs). With this, the potential severity of PFAS-related conditions may not be fully addressed in an ASTM-compliant Phase I ESA report. However, this does not preclude regulatory agencies from requiring investigation and/or remediation of a site impacted by PFAS.

Potential risks related to PFAS use or manufacturing at such facilities may include environmental contamination or degradation requiring costly and long-term remediation. As increased environmental sampling for PFAS occurs, additional PFAS manufacturing sources could emerge. PFAS contamination has the potential to cause workers compensation claims, as well as general liability claims from neighboring properties due to property damage from contamination and/or bodily injury from PFAS exposure. Consequently, an insurance company may elect to automatically exclude PFAS from coverage in environmental insurance policy. Sometimes an acquisition strategy includes purchasing environmental insurance and that, with the likely exclusion of PFAS from policy coverage, may hamper such a strategy.



Conclusion

PFAS carries known human and environmental risk factors and remains on the USEPA's radar, as well as in the national spotlight. The cost of attempting to remediate a property impacted by PFAS can be relatively high (or cost prohibitive) based on the existing standards, which call for extremely low cleanup levels in the parts per trillion range. Entities involved in the prospective acquisition of a facility or property that uses or produces PFAS should retain the services of an environmental consultant experienced in not only compliance with the ASTM standard, but with knowledge of emerging risks that may result in acquiring an asset with potential hazards significant cost to remediate.

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To understand more about how Chubb Global Risk Advisors' environmental due diligence services can help you assess the potential impact of PFAS on property you may wish to acquire, contact us today.

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