

Health Policy Brief:

# PFAS

Per- and polyfluoroalkyl Substances

# Per- and Polyfluoroalkyl Substances (PFAS)

## What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are a class of man-made chemicals that includes PFOA, PFOS, GenX, and many other chemicals. PFAS have been manufactured and used in a variety of industries around the globe, including in the United States since the 1940s.

## Where do they come from?

PFAS are man-made chemicals that are added to consumer products to make them non-stick, waterproof and stain resistant.

## Where are PFAS found?

PFAS can be found in any of the following substances and environments<sup>1</sup>:

- **Food** packaged in PFAS-containing materials, processed with equipment that used PFAS, or grown in PFAS-contaminated soil or water.
- **Commercial household products**, including stain- and water-repellent fabrics, nonstick products (e.g., Teflon), polishes, waxes, paints, cleaning products, and fire-fighting foams (a major source of groundwater contamination at airports and military bases where firefighting training occurs).
- **Workplace locations**, including production facilities or industries (e.g., firefighting foam, chrome plating, electronics manufacturing or oil recovery) that use PFAS.
- **Drinking water**, typically localized and associated with proximity to a specific facility (e.g., manufacturer, landfill, wastewater treatment plant, firefighter training facility).
- **Living organisms**, including fish, animals and humans, where PFAS have the ability to build up and persist over time.

## How are people exposed to PFAS?

People may be exposed to PFAS through drinking water that has been contaminated, PFAS production facilities, some carpets, leather and apparel, textiles, paper and packaging materials and nonstick cookware.

Individuals may also ingest PFAS through food in:

- Contaminated soil and water,
- Food packaging containing PFAS,
- Equipment which used PFAS during food processing.

## What are the health effects from exposure to PFAS?

PFAS are very persistent in the environment and in the human body – meaning they do not break down and can accumulate over time. There is evidence that exposure to PFAS can lead to adverse human health effects<sup>2</sup> such as:

- Reproductive and developmental impacts, liver and kidney damage, and immunological effects in lab animals
- Tumors in animals
- Increased cholesterol levels among exposed populations
- Low infant birth weights
- Effects on the immune system
- Thyroid hormone disruption (for PFOS)
- Cancer (for PFOA)





### Who is most at risk?

Because PFAS are “forever chemical,” it is likely that most people in the United States have been exposed to and have PFAS in their blood. However, workers involved in the making or processing of PFAS and PFAS-containing materials are more likely to be exposed than the general population.

Within Allegheny County, there have been three areas with reported high levels of PFAS in their groundwater: Coraopolis Borough<sup>3</sup>, Neville Township<sup>4</sup> and the Pittsburgh International Airport and nearby military bases.

### Are they especially unsafe for children?

PFAS exposure has been shown to cause growth and learning delays in infants and children.

### Are PFAS a carcinogen?

Though it has not been officially declared a carcinogen, several lab studies have designated PFOA as a possible carcinogen. Additionally, the Agency for Toxic Substances and Disease Registry of the Centers for Disease Control and Prevention states that PFAS cause increased risk of kidney and testicular cancer.<sup>5</sup>

### Is this disruptive to reproductive health?

PFAS exposure have been shown to target the ovaries. Studies suggest that PFAS exposures may represent major risks for women’s health.<sup>6</sup>

# CURRENT PFAS REGULATIONS

## Federal PFAS Laws

At the federal level, PFAS are addressed in the following ways<sup>7</sup>:

- PFAS are regulated under the *Safe Drinking Water Act* (SDWA) though there are currently no maximum contaminant levels (MCLs) for PFAS chemicals. The U.S. Environmental Protection Agency (EPA) is currently evaluating the need for an MCL for PFOA and PFOA and has issued a health advisory for both.
- In 2016, the EPA established a health advisory for PFAS and noted that the lifetime health advisory for PFAS of .07 micrograms per liter is protective of all consumers.
- The EPA is also considering adding PFAS as a priority under the *Toxic Substances Control Act* (TSCA).
- The Comprehensive Environmental Response, Compensation and Liability Act does not list PFAS as hazardous substances.
- The Clean Air Act does not require the phase-out of PFAS.

Several organizations have criticized the health advisory of 0.07 micrograms per liter, noting that this is not a health-protective level of PFAS exposure.<sup>8</sup> Furthermore, various states across the country—most notably being Michigan—have recommended PFAS levels which vary by each chemical in the PFAS class.<sup>9</sup>

## State PFAS Laws<sup>10</sup>

Currently, there is no state maximum contaminant level (MCL) for PFOA and PFOS in drinking water. Pennsylvania can, however, set a maximum contaminant level for unregulated contaminants such as PFAS. In 2019, Governor Wolf convened a PFAS Action Team to identify and address contamination as well as establish a cleanup plan. The following is the list of steps which the Wolf administration has taken through this Action Team:

- Beginning the process of setting a Maximum Contaminant Level (MCL) for PFAS after the U.S. Environmental Protection Agency (EPA) did not commit to doing so in February 2019. This will mark the first time that the PA Department of Environmental Protection (DEP) has set an MCL, rather than adopting standards set by the federal government, as it has with all other regulated drinking water contaminants.
- Hiring toxicologists to move forward with setting a state limit for PFAS in drinking water.
- Taking steps to address remediation of the chemicals by working to change groundwater and soil remediation standards for three PFAS compounds.
- Taking steps to assist communities and private well owners if PFAS contamination is above the federal Environmental Protection Agency (EPA) Health Advisory Level (HAL) of 70 parts per trillion (ppt).
- Developing uniform, science-based operating procedures to guide the identification and assessment of commercial and industrial properties that have contaminated private and/or public drinking water sources.
- Approving more than \$20 million in grants to address PFAS groundwater contamination.
- Testing all water supplies at Pennsylvania Army National Guard facilities and state-owned homes for veterans for PFAS. While all sample results returned with non-detectable levels of PFAS, the water wells will continue to be monitored.
- Taking steps at the Horsham Air Guard Station to ensure adequate treatment of affected public drinking water supplies to the nearby Horsham Township in Montgomery County and Warminster and Warrington townships in Bucks County.

Starting as early as 2017, other states across the country began implementing legislation to address PFAS. Below



is a list of PFAS legislation in other states<sup>11</sup>:

- **California.** In 2019, California authorized the State Water Resources Control Board to order a public water system to monitor for PFAS. It requires community water systems and noncommunity water systems to report detections of PFAS.
- **Massachusetts.** In 2020, the Massachusetts Department of Environmental Protection established a Maximum Contaminant Level (MCL) of 20 ppt for the sum of six PFAS compounds. Public water supplies must now test for the following substances: PFOS, PFOA, PFHxS, PFNA, PFHpA, and PFDA. Commonwealth funds are available to assist suppliers with these new testing requirements.
- **New Hampshire.** In 2019, New Hampshire began prohibiting the use of foams containing perfluoroalkyl chemicals in fighting fires. The law requires manufacturers—or other persons which sell firefighting protective equipment—to provide a written notice to purchasers at the time of sale if the equipment contains PFAS chemicals.
- **Vermont.** In 2019, Vermont adopted a contaminant level for PFAS under the Agency of Natural Resources' Water Supply rule.

## State:

Pennsylvania can emulate the legislation passed in other states to work towards PFAS-safe communities. The following measures should be taken:

- Adopt an MCL reflective of the public health threat that 70 ppt poses according to research<sup>13</sup>, (consider those recommended MCLs per PFAS chemical developed by the Michigan PFAS Action Team or the Massachusetts Department of Environmental Protection).
- Require community water systems to report detections of PFAS.
- Prohibit the use of foams containing PFAS in fighting fires. Until this is enacted, entities that use firefighting foam should commit to using PFAS-free foam during all training exercises.

## Local PFAS Policy

Currently, there are no local laws in Allegheny County that address PFAS. While several cities and towns have expressed concerns about PFAS remediation, it has not typically been addressed at the local level.

# Policy Recommendations

## Federal:

- Determine a federal MCL that is health-protective and lower than the current recommended level of 70 parts per trillion (ppt) (consider those recommended MCLs per PFAS chemical developed by the Michigan PFAS Action Team or Massachusetts Department of Environmental Protection)<sup>14</sup>.
- Add PFAS as a priority under the Toxic Substances Control Act.

# Endnotes

1. United States Environmental Protection Agency (December 2020) *Basic Information on PFAS* <https://www.epa.gov/pfas/basic-information-pfas>
2. Agency for Toxic Substances and Disease Registry (June 2020) *Per- and Polyfluoroalkyl Substances (PFAS) and Your Health* <https://www.atsdr.cdc.gov/pfas/health-effects/exposure.html>
3. Public Source (December 2019). *Coraopolis drinking water shows PFAS contamination among highest in PA, but below federal advisory* <https://www.publicsource.org/coraopolis-drinking-water-shows-pfas-contamination-among-highest-in-pa-but-below-federal-advisory/#:~:text=Coraopolis%20showed%20the%20highest%20level%20of%20contamination%20in,kidney%20systems%20and%202%2C000%20ppt%20for%20chronic%20impacts.>
4. Public Source (November 2019). *Neville Island residents could have been drinking PFAS-contaminated water for a month, township officials say* <https://www.publicsource.org/neville-island-residents-could-have-been-drinking-pfas-contaminated-water-for-a-month-township-officials-say/>
5. Ibid ii
6. Ding N, Harlow SD, Randolph Jr JF, Loch-Caruso R, Park SK (Sept-Oct 2020). Perfluoroalkyl and polyfluoroalkyl substances (PFAS) and their effects on the ovary. Human Reproduction Update. Volume 26, Issue 5, Pages 724–752. <https://doi.org/10.1093/humupd/dmaa018>
7. Ibid i
8. Natural Resources Defense Council (April 2019) *EPA Yet Again Fails to Set Health-Protective Levels for PFAS* <https://www.nrdc.org/experts/anna-reade/epa-yet-again-fails-set-health-protective-levels-pfas>
9. Department of Environment, Great Lakes, and Energy (2020) *PFAS MCLs and Drinking Water* [https://www.michigan.gov/pfasresponse/0,9038,7-365-95571\\_99970---,00.html](https://www.michigan.gov/pfasresponse/0,9038,7-365-95571_99970---,00.html)
10. Commonwealth of Pennsylvania (December 2019) *Wolf Administration Continues to Address PFAS Contamination, Announces First Round of Statewide Sampling Results* <https://www.governor.pa.gov/newsroom/wolf-administration-continues-to-address-pfas-contamination-announces-first-round-of-statewide-sampling-results/>
11. Ibid ix
12. National Conference of State Legislatures (March 2020) *Per- and polyfluoroalkyl Substances (PFAS) State Legislation* <https://www.ncsl.org/research/environment-and-natural-resources/per-and-polyfluoroalkyl-substances-pfas-state-laws.aspx#2019>
13. Cordner A, De La Rosa VY, Schaidler LA, Rudel RA, Richter L, Brown P. Guideline levels for PFOA and PFOS in drinking water: the role of scientific uncertainty, risk assessment decisions, and social factors. J Expo Sci Environ Epidemiol. 2019 Mar;29(2):157-171. doi: 10.1038/s41370-018-0099-9. Epub 2019 Jan 8. Erratum in: J Expo Sci Environ Epidemiol. 2019 Mar 29; Erratum in: J Expo Sci Environ Epidemiol. 2020 May;30(3):585-586. PMID: 30622333; PMCID: PMC6455940.
14. Massachusetts Department of Environmental Protection (September 2020). Final PFAS Maximum Contaminant Level (MCL) and Updates. [https://www.mass.gov/doc/final-pfas-maximum-contaminant-level-mcl-and-updates/download#:~:text=The%20MCL%20is%2020%20parts,and%20perfluorodecanoic%20acid%20\(PFDA\).](https://www.mass.gov/doc/final-pfas-maximum-contaminant-level-mcl-and-updates/download#:~:text=The%20MCL%20is%2020%20parts,and%20perfluorodecanoic%20acid%20(PFDA).)