



FOREVER CHEMICALS: WHAT ARE THEY AND WHY ARE THEY HARMFUL?

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WHAT ARE FOREVER CHEMICALS (PFAS)?



Definition

PFAS are synthetic chemicals known as Per- and Polyfluoroalkyl Substances.



Nickname

"Forever chemicals" because they don't break down in the environment or the human body.



Widespread Use

Found in non-stick cookware, water-resistant clothing, firefighting foam, and food packaging.

PFAS are highly persistent synthetic chemicals with widespread use in consumer products, leading to their nickname as "forever chemicals".

MORE ABOUT PFAS



Man-made chemicals

PFAS are a group of synthetic compounds that are not found naturally in the environment.



Widespread use since the 1940s

These chemicals have been used in a variety of industries, including manufacturing, firefighting, and consumer products, for over 80 years.



Resistant to heat, water, and oil

The unique properties of PFAS make them useful for applications that require durable, non-stick, and water-repellent materials.

PFAS are a class of persistent and potentially hazardous chemicals that have been extensively used in various industries due to their unique properties, but their widespread use has led to growing concerns about their environmental and health impacts.

HISTORY OF PFAS

1930s

PFAS first developed, including perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS).

1940s

PFAS began being widely used in various products, such as non-stick cookware, stain-resistant fabrics, and firefighting foams.

1970s

PFAS contamination in the environment and in human blood was first detected, raising concerns about their persistence and potential health effects.

1990s

Regulatory efforts to limit the use of PFOA and PFOS began, with some manufacturers phasing out the production of these chemicals.

2000s

The U.S. Environmental Protection Agency (EPA) issued health advisories for PFOA and PFOS in drinking water, leading to increased monitoring and cleanup efforts.

2010s

Thousands of PFAS compounds were identified, and research on their health and environmental impacts continued to expand.

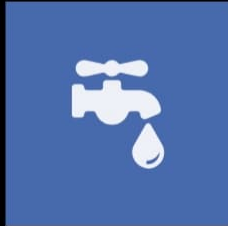
2020s

Regulations and policies to address PFAS contamination and exposure have been implemented in various countries and regions.

Present

Ongoing efforts to develop safer alternatives and to remediate PFAS-contaminated sites, as well as to understand the long-term effects of PFAS exposure.

PFAS EXPOSURE



Drinking Contaminated Water

PFAS can leach into groundwater and surface water, leading to contaminated drinking water supplies.



Consuming Contaminated Food

PFAS can accumulate in the food chain, including in fish, livestock, and produce grown in contaminated soil.



Using PFAS-Containing Products

Many consumer products, such as non-stick cookware, stain-resistant fabrics, and firefighting foams, can contain PFAS and release them during use.

Reducing PFAS exposure requires a multi-pronged approach, including addressing contaminated water sources, monitoring the food supply, and regulating the use of PFAS-containing products.



COMMON SOURCES OF FOREVER CHEMICALS

- PFAS are used for their resistance to heat, water, grease, and stains. They are found in:
 - Non-stick cookware (like Teflon)
 - Waterproof clothing
 - Firefighting foams
 - Food packaging (such as fast food wrappers, microwave popcorn bags)
 - Household products (stain-resistant carpets, water-repellent fabrics)

Potential PFAS Health Effects



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- Liver damage
- Increased risk of liver cancer*



- Cholesterol change (increases in LDL)
- Increased risk of developing ulcerative colitis
- Increased risk of obesity



- Renal hypertrophy (increased kidney size)
- Increased risk of kidney cancer



- Decreased antibody response to vaccine
- Decreases in birth weight, motor problems and decreased survival*



- Increased risk of thyroid disease**



- Decreased fertility**
- Pregnancy-induced hypertension (increased blood pressure) and/or pre-eclampsia**



- Increased risk of testicular cancer

*Seen in animal studies

** Possible effects that require more research

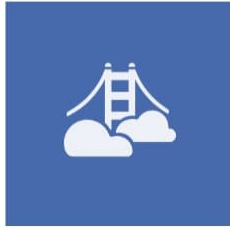
HEALTH IMPACTS OF PFAS

- Exposure to PFAS, a group of synthetic chemicals found in various consumer products and industrial applications, has been linked to a range of adverse health effects. Studies have shown that PFAS exposure can disrupt thyroid function, leading to thyroid disease, and can also cause damage to the liver. Additionally, certain types of cancer, such as kidney and testicular cancer, have been associated with PFAS exposure.

HEALTH RISKS OF PFAS

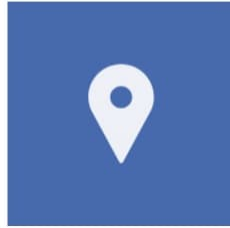
- **Bioaccumulation**
PFAS build up in our bodies over time, increasing health risks.
- **Cancer**
Increased risk of kidney and testicular cancers.
- **Liver Damage**
PFAS exposure can lead to liver damage.
- **Hormonal Disruptions**
PFAS can interfere with normal hormone function.
- **Immune System Impairments**
PFAS can weaken the immune system and increase susceptibility to infections.
- **Developmental Issues**
Exposure to PFAS during pregnancy can lead to developmental problems in children.
- **Environmental Contamination**
PFAS can contaminate water, soil, and wildlife, persisting in ecosystems for decades.

HEALTH EFFECTS OF PFAS ON CHILDREN



Thyroid Disruption

PFAS exposure can interfere with the normal functioning of the thyroid gland, leading to thyroid hormone imbalances and potential developmental issues.



Liver Damage

PFAS exposure can cause liver inflammation and impairment, potentially leading to liver disease and other complications.

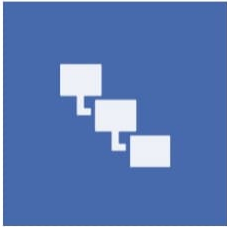


Developmental Delays

PFAS exposure during critical developmental stages can result in cognitive, behavioral, and physical developmental delays in children.

PFAS exposure poses significant health risks to children, underscoring the importance of minimizing exposure and implementing effective regulatory measures to protect this vulnerable population.

PFAS AND THE ENVIRONMENT



Contamination

Once PFAS enter water sources, they are extremely difficult to remove due to their persistence and chemical stability.



Wildlife Exposure

PFAS accumulate in animals, traveling up the food chain and contaminating ecosystems.



Global Problem

PFAS have been detected in soil, water, air, and even polar ice, demonstrating their widespread environmental distribution.



Comparison to Plastics

Similar to plastics, PFAS do not degrade easily, leading to long-term environmental pollution and contamination.

PFAS pose a significant threat to the environment, contaminating water, wildlife, and ecosystems on a global scale, with similarities to the persistent nature of plastic pollution.

ENVIRONMENTAL IMPACTS OF PFAS

- **Persistence in the Environment**

PFAS are highly stable and resistant to degradation, remaining in the environment for extended periods, even decades.

- **Bioaccumulation in the Food Chain**

PFAS can accumulate in the tissues of living organisms, magnifying in concentration as they move up the food chain, ultimately reaching humans through consumption of contaminated wildlife, crops, and livestock.

- **Soil Contamination**

PFAS can leach into and persist in soil, affecting soil health, fertility, and the ability to support plant life.

- **Water Contamination**

PFAS can contaminate surface and groundwater, leading to the pollution of drinking water sources and aquatic ecosystems.

- **Wildlife Impacts**

PFAS exposure can have adverse effects on the health and reproduction of wildlife, such as fish, birds, and other animals, disrupting their normal physiological functions.

ACTIONS PEOPLE CAN TAKE

- **Switch to PFAS-Free Products**

Replace cookware, personal care items, and clothing made with PFAS-containing materials.

- **Filter Drinking Water**

Install reverse osmosis or activated carbon filters to remove PFAS from your tap water.

- **Avoid PFAS-Containing Packaging**

Steer clear of fast food wrappers, microwave popcorn bags, and other food packaging that may contain PFAS.

- **Educate Others**

Spread awareness about the health and environmental risks of PFAS exposure in your community.

- **Advocate for Water Testing and Cleanup**

Urge your local government to test water sources and remediate PFAS contamination.

- **Push for PFAS-Free Products**

Encourage businesses to use PFAS-free packaging and products in their operations.

- **Support PFAS Regulations**

Advocate for legislation banning or regulating the use of PFAS chemicals.

- **Promote Environmental Justice**

Join campaigns that address the disproportionate impact of PFAS on vulnerable communities.

ACTIONS YOU CAN TAKE AT HOME



Avoid non-stick cookware
Instead, opt for stainless steel or cast iron cookware that do not contain PFAS coatings.



Avoid products with stain-resistant or water-repellent coatings
These types of coatings often contain PFAS that can be released into the environment.



Avoid food packaging made with PFAS
This includes fast food wrappers, microwave popcorn bags, and other disposable food containers.



Filter your drinking water
Use a water filter system that is designed to remove PFAS from your water supply.

By taking these actions at home, you can reduce your exposure to harmful forever chemicals and protect your health and the environment.

ALTERNATIVES TO COMMON PLASTIC ITEMS



Glass Food Containers

Glass or ceramic food storage containers with airtight lids to store leftovers, pack lunches, and reduce plastic waste.



Reusable Silicone Bags

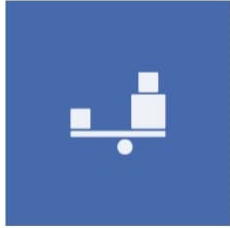
Reusable silicone bags that are leak-proof, dishwasher-safe, and can replace single-use plastic bags for storing food, snacks, and more.



Bamboo Utensils

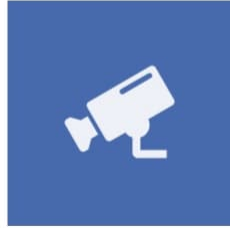
Durable and renewable bamboo utensils, such as forks, spoons, and knives, that can replace disposable plastic utensils.

LOCAL PFAS ACTION IN PENNSYLVANIA AND PITTSBURGH



Pennsylvania DEP Regulations

In 2024, the Pennsylvania DEP introduced new regulations limiting six types of PFAS in drinking water to protect residents, aligning with EPA standards.



PWSA Monitoring

The Pittsburgh Water and Sewer Authority (PWSA) has been testing for PFAS since 2018 and monitors 29 different types of PFAS quarterly. As of 2024, PWSA has not exceeded federal limits, ensuring safe drinking water for Pittsburgh residents.



PFAS Hotspots in Pennsylvania

19% of water systems in PA tested show levels above EPA standards, with contamination linked to industrial and military activities.

Pennsylvania and Pittsburgh are taking proactive steps to address PFAS contamination, with the DEP implementing regulations, PWSA monitoring water quality, and efforts to identify and address PFAS hotspots across the state.

LEGISLATION AND POLICY PROPOSALS TO BAN PFAS IN PA

- **State Senate Action**

State Senator Katie Muth is spearheading legislative efforts to ban PFAS in industrial applications and consumer goods across Pennsylvania. New legislation targets products like cosmetics, food packaging, textiles, and firefighting foam.

- **House Bill 2238**

Introduced by Representative Greg Scott, this bill would ban PFAS in a broad range of products by 2027 and cover new products by 2033. Targeted products include artificial turf, cookware, carpeting, and infant products.

- **Get Involved**

Sign petitions in support of these bills through environmental groups like Clean Water Action and local organizations. Advocate for stronger enforcement and push for local legislators to prioritize PFAS bans.

HOUSE BILL 2238: BANNING PFAS IN PRODUCTS

Broad Product Ban

This bill would ban PFAS in a wide range of products by 2027.

New Products Covered

The bill would also cover new products containing PFAS by 2033.

Targeted Products

Products targeted include artificial turf, cookware, carpeting, and infant products.

Legislative Sponsor

The bill was introduced by Representative Greg Scott in the Pennsylvania House.

Get Involved

Support the bill by signing petitions through environmental groups and advocating with local legislators.

THE PLASTICS COLLABORATIVE

Plastics Collaborative

The Plastics Collaborative (PC) is a coalition of community leaders, businesses, concerned citizens, and policymakers committed to reducing and eventually eliminating single-use plastics in Pittsburgh and surrounding regions.

Vision Statement

A Pittsburgh free from the burden of single-use plastics, where all communities thrive in a clean, healthy, and equitable environment, and future generations inherit a planet sustained by responsible practices and innovative solutions.

Mission Statement

To reduce and eliminate single-use plastics in our community, we strive to create sustainable and equitable solutions, fostering a culture of environmental stewardship through education, advocacy, and inclusive partnerships.



CONNECTION TO THE PLASTICS COLLABORATIVE



Reducing Single-Use Plastics

PFAS are often used in single-use plastics like food packaging. Efforts to reduce plastics will help reduce PFAS.



Environmental Focus

Like the mission of the Plastics Collaborative, addressing PFAS contamination ties into reducing environmental waste and promoting sustainability.



Health Impact

Both PFAS and plastics contribute to long-term environmental health issues. The Plastics Collaborative's efforts indirectly address PFAS by targeting harmful plastic use.

By addressing single-use plastics, the Plastics Collaborative's work can have a positive impact on reducing PFAS exposure and improving overall environmental and public health.



DOT: Do One Thing

- Now that you've learned about the dangers of PFAS, we're asking each of you to commit to **one action** that will reduce your exposure and help protect our environment:
 - **Replace** one common PFAS product at home (such as non-stick cookware or food packaging).
 - **Advocate** by signing a petition for stronger regulations to ban PFAS in consumer goods.
 - **Join/Support** an organization working to make a difference.