

# Emerging Contaminates

## *What are emerging contaminants?*

Emerging contaminants, or contaminants of emerging concern, can refer to many different kinds of chemicals, including medicines, personal care or household cleaning products, lawn care and agricultural products, among others. One of the ways they end up in our waterways is through wastewater treatment plant discharges. These facilities were not designed to remove them.

## *What is the problem with emerging contaminants?*

These chemicals make it into our nation's lakes and rivers and have a detrimental effect on fish and other aquatic species. They have also been shown to bioaccumulate up the food web - putting even non-aquatic species at risk when they eat contaminated fish. The USGS monitors and assesses these dangerous chemicals from their source all the way through the food web (USGS).



*A recent study found PFAS in all fish tested in both the Rouge and Huron rivers*

## *Examples of emerging contaminants:*

**PER AND POLYFLUOROALKYL SUBSTANCES (PFAS)** are a group of manufactured chemicals that have been used in consumer products since the 1940s. Known as “forever” chemicals because they do not break down in nature, they are widely used in firefighting equipment, non-stick pans, food wrappers, raincoats, carpet and industrial uses due to their ability to dissolve in both oil and water. There are over 4,700 PFAS compounds. PFAs are highly toxic to humans and some forms bioaccumulate in our bodies. PFAS exposure may increase the incidence of thyroid disease, decrease fertility in women, cause developmental issues in infants and older children, and increase blood pressure and cholesterol levels. They have also been linked to increased risks of kidney and testicular cancer. (EPA)

**MICROPLASTICS** are small plastic pieces less than five millimeters long which can be harmful to our ocean and aquatic life. Microplastics come from a variety of sources, including from larger plastic debris that degrades into smaller and smaller pieces, to lentil sized primary microplastics known as “nurdles” that are produced by the petrochemical industry to be used in the production of bags and other single-use plastic packaging. In addition, microbeads, a type of microplastic, are very tiny pieces of manufactured polyethylene plastic that are added as exfoliants to health and beauty products, such as some cleansers and toothpastes. These tiny particles easily pass-through water filtration systems and end up in the ocean and Great Lakes, posing a threat to aquatic life and drinking water sources. (NOAA)

**POLYCYCLIC AROMATIC HYDROCARBONS (PAHS)** are a class of chemicals that occur naturally in coal, crude oil, and gasoline. They also are produced when coal, oil, gas, wood, garbage, and tobacco are burned. PAHs generated from these sources can bind to or form small particles in the air. Several of the PAHs and some specific mixtures of PAHs are considered to be cancer-causing chemicals (EPA).

**1,4-DIOXANE** is a synthetic industrial chemical that mixes completely in water. It persists for a very long time in the environment and is associated with many health risks. Manufacturers often use it as a solvent to create other chemicals like those found in cosmetics, detergents, shampoos, paint strippers, glues, pesticides, medicines and foods. It is also used in the manufacturing of pharmaceuticals and is a byproduct in the production of certain plastic containers. The EPA suspects 1,4-dioxane may cause cancer when people are exposed to it through air, water, or by skin contact over time. Short-term exposure effects include eye and nose irritation. Other long-term exposure effects may include liver and kidney damage (HRWC).

### *How does Friends of the Rouge help?*

Friends of the Rouge seeks to stay informed on the most up-to-date research on emerging contaminants so that we can protect our program participants from potential exposure, educate the general public about the issue, and examine the effect on aquatic life and the watershed. Wayne State University published a [report](#) in 2021 showing a multitude of synthetic sweeteners, pharmaceuticals, stimulants, pesticides, and chemicals such as PFAS at the mouth of the Rouge River. The likely source is the Detroit wastewater treatment plant. Since no drinking water is obtained from the Rouge River, exposure to emerging contaminants for humans is mainly through recreation—paddling and fishing.

PFAS is of particular concern as recent testing in Michigan has found hotspots around the state and in the Rouge River. Paddlers and anglers are at risk for PFAS exposure if they come into contact with PFAS foam or consume contaminated fish. Testing by Michigan's Department of Environment, Great Lakes, and Energy (EGLE) has found contaminated fish in the Lower branch and Main stem, leading to a fish consumption advisory in the summer of 2022 for sunfish in the Lower branch and downstream all the way to the Detroit River. Friends of the Rouge has partnered with the [Ecology Center](#) and Wayne State University's Healthy Urban Waters to collect and test more fish for PFAS in the Rouge River. The results will be used to guide the development and distribution of educational information and materials. We are working with the Department of Health and Human Services on the distribution of pamphlets and posting of signage at locations frequented by anglers.

### *What can you do to mitigate problems caused by emerging contaminants?*

Michigan has been a national leader in response to PFAS, setting limits for PFAS in drinking water in 2014 for two PFAS compounds and expanding that to seven PFAS compounds in 2020. A map of contaminated sites can be found here: [MPART](#).

Officials can mitigate problems with emerging contaminants like PFAS by focusing on preventing new production and spread of these products and allocating funding to identify and treat areas of contamination. Legislation is needed to ban the production and use of any PFAS. Guidelines for new state and municipal purchases should prohibit PFAS containing products. Funding is needed for contaminated sites and for upgrades to water treatment plants to adequately remove these chemicals as well as for research on contamination and remediation. And industry needs to be made accountable for cleaning up contaminated sites they are responsible for causing.

Examples of plastic pollution reduction efforts include installing water fountains for reusable bottle refills and banning single-use plastics such as plastic grocery bags, styrofoam, and drinking straws.

In addition, regulators are taking the first step towards quantifying the risk to people's health—measuring exposure. In July 2022, the California State Water Resources Control Board, a branch of the state's environmental protection agency, will become the world's first regulatory authority to announce standard methods for quantifying microplastic concentrations in drinking water, with the aim of monitoring water over the next four years and publicly reporting the results.

Support for state regulations against these contaminants and/or polluter-pay legislation should be considered. Funneling funding towards clean-up efforts and source detection will organize efforts around this growing problem. Stringent drinking water regulations will ensure the health of your constituents that call our state home.

Any standards should be cumulative and be re-evaluated periodically (for example, every two years) since there are so many different compounds and this is a compounding issue threatening human health.