

Executive Summary

The Threat of Landfill Leachate to Drinking Water in the Hudson and Mohawk Rivers

A project of the Hudson and Mohawk Rivers Leachate Collaborative:

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A set of regulatory gaps allow the Hudson and Mohawk Rivers to be routinely polluted by landfill leachate – the toxic liquid that is created as water percolates through landfills. We call this problem the “Leachate Loophole.”

By mapping available data, and detailing how regulations are failing to protect rivers and drinking water sources from leachate pollution, we hope to assist communities in achieving solutions. The release of this report coincides with the 50th anniversary of the Safe Drinking Water Act, with the goal of helping this legislation fulfill its promise.

Modern landfills must take extensive measures to contain liquid waste, or leachate, in order to protect surrounding groundwater and streams from the highly concentrated contaminants it contains – toxic chemicals such as PFAS and 1,4-dioxane. Yet once this leachate is collected, it is typically sent to municipal wastewater treatment plants (WWTPs) that are not equipped to remove such chemicals.

WWTPs are designed to treat sewage, not the harmful substances present in leachate. They are not required to remove such contaminants, even where they discharge into drinking water supplies. Instead, the contaminants pass through WWTPs and into rivers and other bodies of water. The communities that utilize the river water for drinking must assume the cost of removing harmful chemicals to make the water safe for consumption. In some cases, operators of drinking water plants are unaware that WWTPs are accepting and discharging leachate nearby.

Members of the public need information about the handling of leachate – from landfills to sewage treatment plants to rivers and drinking water sources – in order to identify the risks and call for alternatives and solutions. Only a well informed public can close the Leachate Loophole, which persists because of inadequate environmental laws covering solid waste, surface water and drinking water.

Following are some of the key findings detailed in this report:

- **Because of the Leachate Loophole, about 89 million gallons of landfill leachate were discharged into the Mohawk River and Hudson River Estuary each year from 2019-2023.** That volume is enough to fill about 12,400 average size tanker trucks.
- This liquid waste was brought to WWTPs from 24 landfills across New York and out of state.

- Within the study area, landfill leachate was discharged from six wastewater treatment plants in the Mohawk River and eight in the Hudson River. 14 drinking water intakes are located in this study area.
- The practice of disposing landfill leachate at WWTPs began more than 40 years ago, on the assumption that polluting substances break down in the environment over time. Many of these petroleum-based, synthetic chemicals persist in the environment with new ones being made almost everyday. Regulations have not kept pace.
- Research has found that many emerging contaminants can affect living beings in barely detectable concentrations. Dilution does not eliminate their harmful effects.
- Testing of landfill leachate by the New York State Department of Environmental Conservation has documented levels of PFAS “forever chemicals” as high as 5,440.35 ppt, such as at the Dunn Landfill, that delivers 22,000 Gallons Per Day (GPD) of its leachate to the Albany County North WWTP that discharges into the Hudson River.
- Regulators are aware of unsafe chemicals in leachate, but they aren’t applying that knowledge to stop landfill pollution from flowing through WWTPs into drinking water supplies. Laws and regulations meant to protect the environment from leachate pollution are falling short.
- This lack of regulation – that the “Leachate Loophole” exposes – is increasing water pollution and shifting the cost of remediation to drinking water suppliers in our study area.

Mapping the data

This report focuses on portions of the Mohawk and Hudson that are used as drinking water supplies: the Mohawk east of Schenectady, the Hudson near the mouth of the Mohawk River, and the Hudson River from New Baltimore to Poughkeepsie. Our geographical focus also includes the section of the Hudson River Estuary between Troy and New Baltimore. Even though drinking water isn’t drawn directly from this area, the waters are all connected. In the project area, 14 drinking water intakes draw water from the Hudson and Mohawk rivers, the Great Flats Aquifer (a groundwater source directly connected to the Mohawk River), or groundwater directly connected to Hudson River surface water. These waters serve as the sole, primary sources of drinking water for more than 259,000 people,

including groups that disproportionately experience environmental harms. These waters provide a partial source of drinking water for 109,000 others, served by public water supplies that blend this water into their systems.

Explore the data by visiting www.leachateloophole.org

Why leachate presents a risk

Landfill leachate is a complex and variable mix that may contain heavy metals, pesticides, and organic compounds. In this context, “organic” does not mean naturally occurring, but rather that the chemical has a carbon-based structure. The organic compounds in landfill leachate are synthetic chemicals used in industrial processes, manufacturing, and consumer goods, especially plastics.

Exposure to these chemicals – through air, water, soils, and home or work environments – contributes to a wide range of diseases and health harms, including cancer, immune problems, and developmental effects due to their interference with a wide range of biological systems and processes. The burden of exposure to toxic chemicals is not something individuals can control, and it is not distributed evenly. Women, and especially Black and Hispanic women, have higher levels of toxic chemicals in their bodies compared to other groups, and these exposures are compounded by other economic and social stressors to increase health impacts. The effects of emerging contaminants on pregnant and breastfeeding women are passed along to fetuses and infants, who are especially susceptible to harm from chemical pollution because they are still developing.

Toxic chemicals are ubiquitous in the waste already present in landfills, so they will be present in leachate for the foreseeable future. And with increasing petrochemical production, we can expect them to continue being introduced into landfills in the years to come.

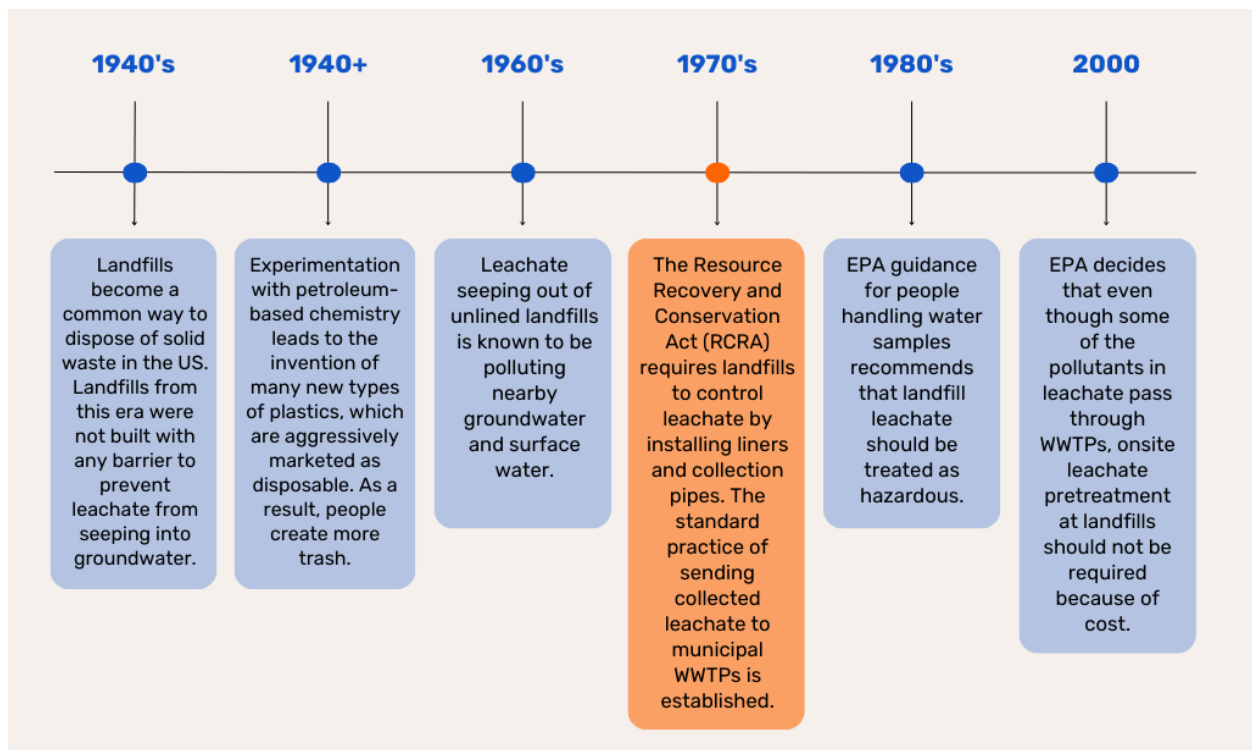
The historical context

By the 1960s it had become clear that leachate was seeping out of unlined landfills and polluting nearby groundwater and surface water. In 1976, Congress passed the Resource Recovery and Conservation Act (RCRA), to address the nation’s growing volume of municipal and industrial waste.

Subsequent regulations required landfills to control leachate by installing impermeable liners and collection pipes but it took the US Environmental Protection Agency (EPA) thirty years to land on a collection strategy that decently captured

corrosive leachate. Once leachate collection was under control, the question of what to do with it needed to be addressed. Historical documents show that the answer was taken for granted from the beginning: send it to municipal WWTPs, which had been a common way for industry to dispose of their waste for more than a half a century.

This was the start of a convenient, reciprocal relationship between landfills and WWTPs. Plant operators saw it as part of their public duty to accept leachate. In turn, landfills accept sludge – the solids that remain at the end of the sewage treatment process – from WWTPs.



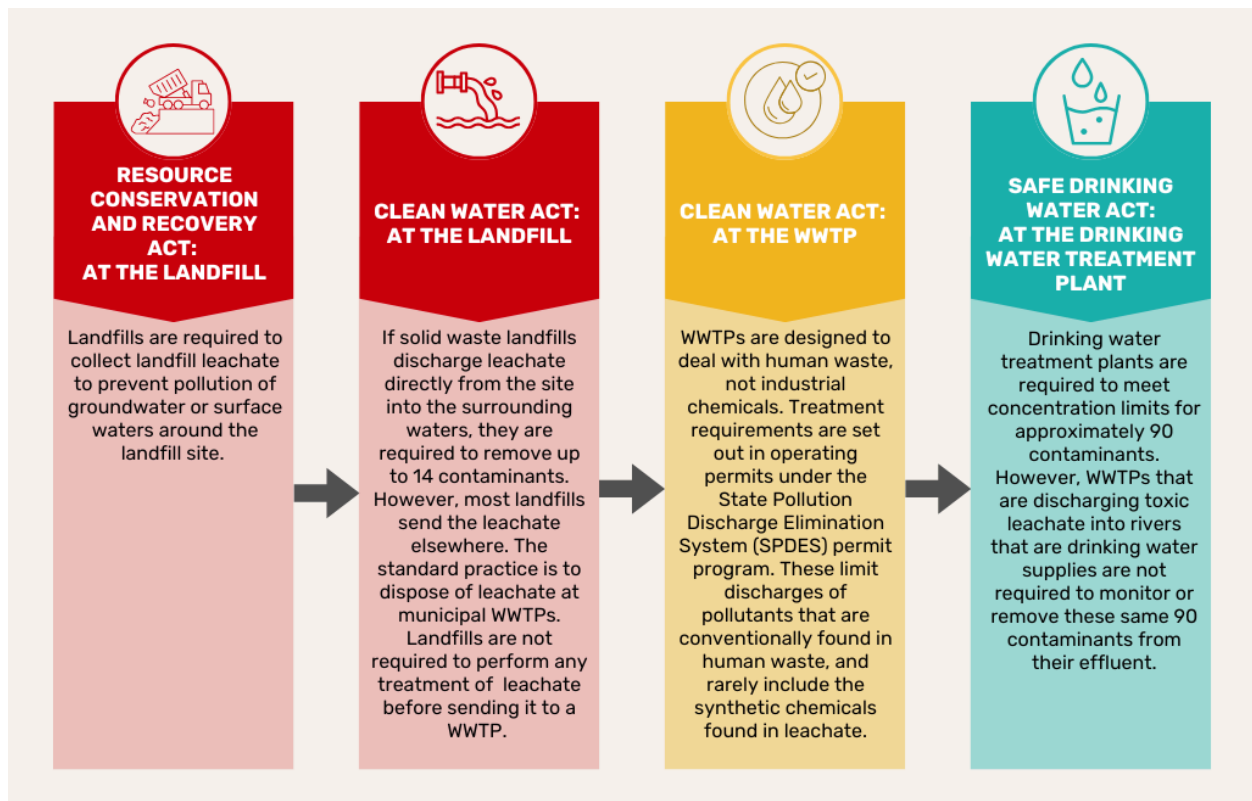
How the Leachate Loophole works

One of the assumptions underpinning U.S. pollution regulations is that polluting substances break down in the environment over time. This is rooted in a scientific understanding of water pollution that dates back to the 1930s, before synthetic chemical production boomed. EPA lists 86,000 unique chemicals that are used in manufacturing or processing in the U.S., not including chemicals used in foods, drugs and cosmetics, with more added almost every day. This includes many synthetic chemicals that belong to a category called “emerging contaminants” – substances that are potentially harmful to people or ecosystems, but are not

regulated.

Because many emerging contaminants break down extremely slowly, they persist in the water much longer than the conventional pollutants that our environmental regulations are designed to handle. What's more, these substances can affect living beings in barely detectable concentrations, so dilution does not eliminate their harmful effects. Emerging contaminants have changed how we should look at water pollution, but our regulatory system has not kept pace.

Various regulations are meant to control the potential harms from highly contaminated leachate and protect waters that are essential to communities and ecosystems. But the rules fall short – every step of the way.



What's ahead: NYS considers new rules

In early 2023, New York State DEC announced it was considering new regulations for onsite treatment and disposal of leachate at landfills.

Now that we understand why this practice is harmful, there is no time to sit back and wait for DEC's announcement. We must demand that they open the proposed Rulemaking as soon as possible, and provide a 90-day public comment period.