

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

A project of the Hudson and Mohawk Rivers Leachate Collaborative: Jen Epstein, Data Analyst; Rebecca Martin, Project Manager; Leah Rae, Communications Manager; Captain John Lipscomb, Technical Advisor; Pace Environmental Litigation Clinic Inc., Legal Research; Good Work Institute, Fiscal Sponsor.

Introduction/Problem Background

The Hudson and Mohawk Rivers are primary drinking water sources for more than 200,000 people, including groups that disproportionately experience environmental harms. Potentially hazardous or toxic compounds from landfills threaten these drinking water sources and communities because the municipal wastewater treatment plants (WWTPs) that discharge to these rivers handle the disposal of leachate from solid waste landfills. As municipal WWTPs are not required to monitor all contaminants and are not equipped to filter harmful substances found in leachate, some pollutants flow through municipal WWTPs into rivers. This project will deliver resources that summarize flows of landfill leachate into Hudson and Mohawk River drinking water supplies via municipal wastewater treatment plants.

Leachate is the liquid that results from decomposition within, and rainfall percolating through, a landfill. Leachate accumulates pollutants from the waste materials. Some landfills drain leachate in perforated pipes, and some pretreat leachate, but advanced treatment to remove broad classes of harmful contaminants is not required. In some cases, landfill leachate is trucked to municipal WWTPs for disposal. The majority of leachate contaminants pass through the WWTPs and are

discharged into surface waters, simply in more dilute concentrations. This effluent may contain potentially hazardous or toxic compounds, such as heavy metals or emerging chemical pollutants that persist in the Hudson and Mohawk Rivers.

For example, the Albany North WWTP is not equipped to filter out certain per- and polyfluoroalkyl substances (PFAS), which have been associated with cancer, birth defects, thyroid disruption, and other health problems. In 2022, Dunn Landfill reported PFOA concentrations in leachate shipped to Albany North WWTP between 20-240 parts per trillion (ppt). As municipal WWTPs are not equipped to remove these contaminants, the majority of the PFOA would have passed through the WWTP and been discharged into the Hudson River. Moreover, WWTPs like Albany North are not required to monitor contaminants like PFOA, as such very little is known about the types of pollutants which enter the Hudson and Mohawk Rivers through landfill leachate.

Under the Clean Water Act, WWTP permits, issued by NYS with Environmental Protection Agency (EPA) approval, are supposed to be the ultimate backstop for enforcing leachate limits. But regulatory loopholes allow pollutants to pass through municipal WWTPs into drinking water sources with minimal oversight. This project will illuminate these regulatory gaps and review the different types of pollutants in landfill leachate and recommend that the New York Department of Environmental Conservation should regulate major classes of leachate pollutants to prevent them from entering drinking water sources and aquatic habitats in the first place.

Project Purpose

The purpose of this project is to analyze landfill leachate disposal through municipal wastewater treatment plants in the parts of the Hudson River and Mohawk River that are used as drinking water supplies.

The project will address the following questions:

- Which municipal wastewater treatment plants are receiving leachate, and what are the leachate volumes?
- What are the types and volumes of solid wastes generating this leachate?
- How are these municipal wastewater treatment plants and the discharge volumes distributed in the region?
 - What is the proximity of these discharges to surface drinking water supplies?
 - What is the proximity of these discharges to Potential Environmental Justice Areas?
- What are the main types of potentially harmful chemicals in these flows?
- What pollutants in landfill leachate are being monitored at the landfills, the municipal wastewater treatment plants, or the drinking water treatment plants?
- What pollutants are required to be removed at the landfills, the municipal wastewater treatment plants, or the drinking water treatment plants?

Anticipated Outcomes

We will produce materials that can:

- Explain the connections between solid waste and drinking water quality;
- Explain the regulatory loopholes that exist in the management of landfill leachate, wastewater, and drinking water;
- Show how landfill leachate moves from landfills to surface water, via municipal wastewater treatment plants.

Timeline and methods

1. **Research:** Compile facility lists and submit Freedom of Information Law/Act document requests;
2. **Partnership development:** Meet with advocates, including indigenous and environmental justice leaders, who are working on issues of drinking water protection in the study area, to listen to concerns and identify common goals;
3. **Data analysis:** Create database, perform data analysis, and summarize results;
4. **Synthesis:** Interpret findings and create materials to share results (e.g., StoryMap, issue brief); and
5. **Outreach:** Collaborate with partners to create events that share results.

OUR TEAM

Jen Epstein, Data Analyst

Jen is a freshwater ecologist, geospatial scientist, and water quality advocate who combines data and policy analysis to untangle complex problems and achieve insights to help fix them. She is particularly interested in stormwater and wastewater management in towns and small cities, especially ways to restore ecosystems while reconnecting people with nature. Her past work includes building and managing Riverkeeper's community-based water quality monitoring program, mapping restoration outcomes at NYC Parks, and helping design and implement urban and brownfield restorations. A native of Poughkeepsie, Jen currently lives in Santa Cruz de la Sierra, Bolivia, with her husband and two kids. When she is not working, you can find her planning mountain or water adventures for her family, or reading science fiction.

Leah Rae, Communications Manager

Leah is a writer, editor, photographer and media strategist specializing in environmental advocacy campaigns. Her experience includes 10 years at Riverkeeper, where she was Associate Director of Communications and Marketing. Previously she was a Staff Writer at The Journal News / LoHud.com, where she developed a beat focused on cultural diversity and justice issues, and reported in depth on Latin American populations in the Hudson Valley, voting rights, Hudson River PCBs, municipal government, and urban planning. Leah is a Buffalo native and a graduate of the University of Toronto.

Rebecca Martin, Project Manager

Rebecca Martin has more than 20 years of experience building effective campaigns and projects through coalition-building and collaborative strategies with targeted communications in the mid-Hudson valley. As a skilled organizer, she launched KingstonCitizens.org to better understand the inner workings of local government. She served as Executive Director of the Kingston Land Trust. As Campaign Manager and Director of Community Partnerships for Hudson Riverkeeper, Rebecca built a geographic grassroots organizing platform, co-created the youth-led Water Justice Lab and helped to establish the Hudson 7, the first drinking water Intermunicipal council on the Hudson River. This council was formed by seven municipalities in Ulster and Dutchess Counties to protect the Hudson River as a drinking water source for more than 100,000 people.

FAQ: Studying the threat of landfill leachate – and its path to drinking water supplies in the Hudson and Mohawk Rivers

A new, independent project is looking into the pathways of “leachate” – the polluted liquid that percolates through landfills – as it moves through municipal wastewater treatment plants and into the Hudson and Mohawk Rivers. The Hudson and Mohawk each include areas used as drinking water sources. This research project will examine publicly available data and records to trace pathways of leachate into the two rivers, and illuminate regulatory gaps that are putting these vulnerable drinking water supplies at risk. Below are frequently asked questions about the project

Why does this issue matter?

The Hudson and Mohawk Rivers are primary drinking water sources for more than 200,000 people, including groups that disproportionately experience environmental harms. Potentially hazardous or toxic compounds from landfills threaten these drinking water sources and communities because the leachate – essentially garbage water from solid waste landfills -- is passed through municipal wastewater treatment plants into these rivers.

What exactly is leachate?

Leachate is the liquid that results from decomposition within, and rainfall percolating through, a landfill. Leachate accumulates pollutants from the waste materials. Some landfills drain leachate in perforated pipes, and some pretreat leachate, but advanced treatment to remove broad classes of harmful contaminants is not required and seldom performed. The liquid is typically trucked or piped for disposal.

How does leachate reach our rivers?

It is common practice to dispose of landfill leachate at municipal wastewater treatment plants (WWTPs), even though these facilities are not equipped to filter out, or even monitor, the harmful substances found in leachate. As a result, potentially hazardous or toxic compounds, such as emerging chemical pollutants, are simply diluted as they pass through municipal wastewater treatment plants into rivers. Because many of these chemicals break down extremely slowly, dilution does not diminish their harmful effects, and they persist in the water.

What are ‘emerging contaminants’?

“Emerging contaminants,” also called “contaminants of emerging concern,” are substances (including chemicals and microorganisms) that may be harmful to people or ecosystems, but are not regulated. Emerging contaminants come from many sources, including prescription drugs, personal care products, pesticides, and industrial processes. They are present in a multitude of everyday goods like clothing, furniture, and packaging.

The term itself reveals the problem: The threat of contamination is not limited to the chemicals we’re aware of today, or the ones in use currently. The U.S. Environmental Protection Agency (EPA) lists 86,000 unique chemicals used in manufacturing or processing, not including chemicals used in foods, drugs, and cosmetics. But our environmental laws are reactive, not proactive, so these chemicals become known as pollutants only if

adverse effects are shown. Within the scope of drinking water regulation, the EPA recognizes 66 individual chemicals plus 3 chemical groups that may require regulation.

How do these contaminants threaten public health?

Per- and polyfluoroalkyl substances (PFAS) are one example of an emerging contaminant that harms human health and the environment. PFAS have been found to be a highly persistent class of chemicals, which means that PFAS, as a class, inherently have both the potential and capacity to produce harm.

The conventional approach is to regulate chemical pollutants individually, according to where they occur and how people are exposed (e.g., drinking water, recreational contact). But this approach fails to adequately protect human health and the environment because the chemical industry routinely replaces old compounds with new ones that are just as toxic. The experience with perfluorooctanoic acid (PFOA) and GenX, two of thousands of PFAS, illustrates this issue. PFOA has been linked to adverse health effects including cancer in people and to reduced effectiveness of childhood vaccines at very low levels of exposure.¹ While the use of PFOA has been voluntarily phased out, in 2013, DuPont (now Chemours) introduced GenX as a replacement for PFOA.² In 2020, the EPA's toxicity assessments of GenX found similar adverse health effects to those from PFOA.³ While New York State currently regulates PFOA in drinking water, there is no such limit for GenX.

Why is this dumping even allowed? Shouldn't the Clean Water Act prevent these contaminants from reaching the river – and drinking water?

The Clean Water Act includes two methods for limiting contaminants in wastewater effluent: state surface water quality standards, and federal industrial effluent limits. WWTP permits, issued by New York State with EPA approval, act as the ultimate backstop for enforcing these limits.

NYS has surface water quality standards for hundreds of toxic contaminants. Federal industrial effluent limits cover nine chemicals for municipal landfills, plus five additional chemicals for hazardous waste landfills. One of our project goals is to closely examine WWTP permits and landfill monitoring reports to evaluate how well

these limits are being implemented. There's reason for concern: A preliminary review of such documents suggests that very few of these chemicals are restricted, or even monitored, at WWTP discharges.

The flaws in our environmental regulations, despite the evidence of the threats, point to a broader problem. In reality, land, air, and water are connected. Material – including man made chemicals – moves among these

¹ Philippe Grandjean and Richard Clapp, *Perfluorinated Alkyl Substances: Emerging Insights Into Health Risks*, SAGE JOURNALS, (June 17, 2015) <https://journals.sagepub.com/doi/abs/10.1177/1048291115590506>.

² BUSINESS & HUMAN RIGHTS RESOURCE CENTRE, *Dupont lawsuits (re PFOA pollution in USA)*, <https://www.business-humanrights.org/en/latest-news/dupont-lawsuits-re-pfoa-pollution-in-usa/> (Last visited Sept. 20, 2021).

³ ENVTL. PROT. AGENCY, *GenX Toxicity Assessments Documents*, <https://www.epa.gov/pfas/genx-toxicity-assessments-documents> (Last updated Apr. 8, 2021).

ecological systems and acts upon them in mixtures. Earth's ecological systems are complex, and our regulations assume the impossible task of compartmentalizing them, as if chemicals move individually within each one. Our regulatory systems are conservative, meticulous, and retroactive, and they do not address the patterns of consumption that are generating pollution.

Aren't drinking water operators testing for these chemicals?

Some of them are. But, as described above, our regulatory approach is not suited to the actual problem. Dealing with chemicals like PFAS at the drinking water treatment stage is costly, and doesn't prevent them from affecting wildlife or getting into the fish that people eat. A better approach would be to prevent emerging contaminants from entering the water in the first place.

How bad is this problem?

Our project will help explore that question. It's clear that the status quo is failing to address the risks.

What does this project intend to do about this problem?

These wastewater treatment facilities are an important route for the discharge of pollutants into the environment, yet this information is generally inaccessible to the public. In one estimate, landfills and municipal wastewater treatment plants make up one third of all facilities expected to discharge PFAS into water. By providing information, communities, advocates, and lawmakers will be more informed on the problems created by the discharge of pollutants into our waterways.

This project will describe how leachate moves from land to water in the Hudson and Mohawk River watersheds. It will review the different types of pollutants in landfill leachate and illuminate regulatory gaps to show why the New York Department of Environmental Conservation should regulate major classes of leachate pollutants to prevent them from entering drinking water sources and aquatic habitats in the first place.

Both EPA and NYS have declared their intentions to improve leachate regulations. We see these proceedings as an opportunity to steer the conversation toward building sustainable and equitable systems that will reduce the future threats posed by emerging contaminants, rather than continuing with conventional regulatory approaches. Importantly, this project will involve communities that are directly impacted by these decisions. This focus on the connection between solid waste and drinking water will show the need for a different approach.

Isn't the state considering new regulations on leachate?

Right now, New York State is planning to develop new leachate regulations through "rulemaking". While we applaud the state's efforts in regulating emerging contaminants, more needs to be done to protect human health and the environment. As the EPA does not currently regulate the thousands of different types of PFAS, New York State has the opportunity to fill this void by publishing strong regulations with community input and support.

What is rulemaking?

Rulemaking is the policy-making process for Executive and Independent agencies of the government. Agencies use this process to develop and issue Rules (also referred to as “regulations”).

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