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Who is dumping PFAS? Nobody Really Knows

The urgent need for EPA to add currently used PFAS to its Toxic Release Inventory

By Sonya Lunder, Senior Toxics Policy Advisor

Sierra Club National
2101 Webster St, Suite 1300
Oakland, CA 94612
(415) 977-5500

Sierra Club Legislative
50 F St NW, Eighth Floor
Washington, DC 20001
(202) 547-1141

sierraclub.org
facebook.com/SierraClub
twitter.com/SierraClub



One of the top priorities for Biden’s EPA is addressing the crisis caused by the ongoing uses of toxic per- and poly- fluoroalkyl substances, or PFAS chemicals. The reckless use of PFAS has caused extensive pollution of American lands and water sources. Chemical producers 3M, DuPont, and Chemours have set aside \$4 billion to settle their anticipated legal liabilities resulting from historic production of PFAS. To date, the EPA has been slow to restrict the ongoing production, use, and disposal of PFAS chemicals. Now, EPA Administrator Michael Regan has pledged to use “every tool in the toolbox” to identify and control sources of PFAS pollution.

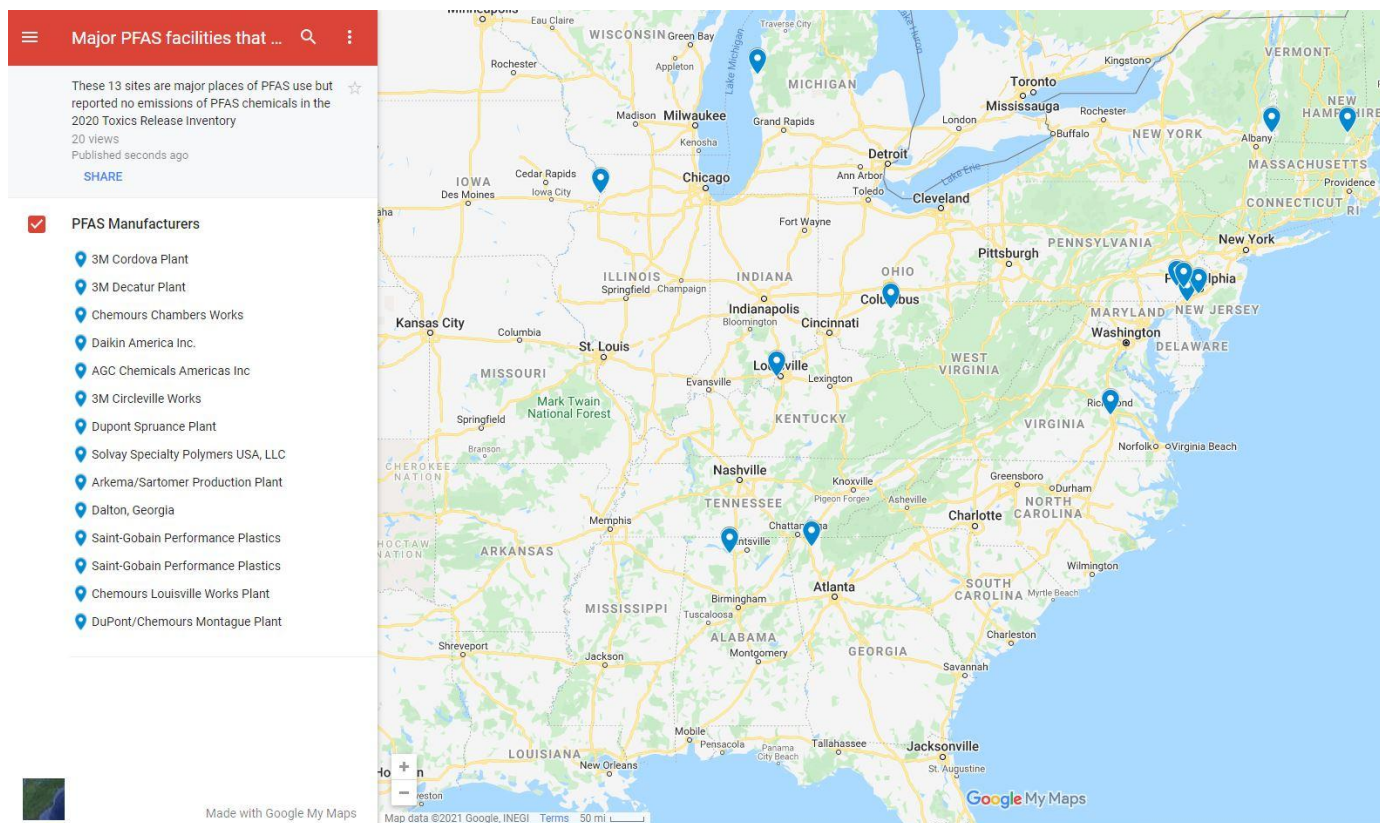
Given this intense focus on PFAS regulation, you’d think we’d have a better handle on the industries that are making and using the chemicals, and the places where PFAS is released into air, waterways, or landfills. Our first look at data reported to the Environmental Protection Agency in its 2020 Toxics Release Inventory (TRI) finds serious shortcomings in the current rules. The agency must take several key steps to improve its TRI rules or it will miss all the critical places where PFAS is made and used in its reporting process. Congress charged the EPA with reviewing and expanding its rules for PFAS reporting by the end of 2021. This task is a critical step in moving forward with the Administration’s efforts to identify and ultimately control PFAS pollution.

The data reported in the EPA’s 2020 Toxics Release Inventory data gives the public its first-ever look at some of the [industries releasing toxic per- and poly-fluoroalkyl substances](#) or “PFAS” chemicals in the United States. Only 38 industries reported releasing PFAS into the air, water, landfills, deep wells, and incinerators in communities across the country¹— out of an estimated 74,000 industrial sites the EPA says “[may be handling](#)” PFAS. Due to weakness in the current TRI rules, nearly every industry that currently produces or uses PFAS was able to conceal that from the public, and they may be able to keep this information from scientists and regulators for years to come.

Unfortunately, the 2020 TRI doesn’t include [any](#) reporting from some of the most notorious PFAS production and pollution sites. EPA’s recent [Multi-Industry PFAS Study](#) identifies a number of industries that use and discharge PFAS chemicals. Only 3 specific facilities in these industries reported any emissions of TRI-listed PFAS in 2020. We identified 13 PFAS hotspots reporting zero emissions of PFAS in 2020, including 3M facilities in Illinois and Alabama, Chemours sites in New Jersey and Kentucky, DuPont sites in Ohio and Virginia, Saint-Gobain Chemicals in New Hampshire and New York. Not a single federal facility reported PFAS emissions, nor any metal platers, carpet and textile producers or paper mills.

¹ Eleven more facilities reported releases of [chemicals that meet the technical definition of PFAS](#) but weren’t officially identified as PFAS by the EPA

Major PFAS facilities that reported no emissions of TRI-reportable PFAS in 2020



View the map online [here](#).

Gaps in the EPA's Toxics Release Inventory for PFAS

The major gaps in reporting result from deliberate carve-outs in the current rules. The 2020 TRI limits reporting to facilities that manufacture, process or otherwise use more than 100 pounds of an individual listed PFAS chemical per year. Additionally, companies do not have to inventory the PFAS they use or produce if they are less than 1 percent of a mixture of chemicals. This is known as the “de-minimis concentration exemption” (The rules set a lower level of 0.1 percent for one chemical PFOA, which is identified as a carcinogen). Further, the EPA currently allows an alternative method of reporting that lets companies provide even less detail about the specific chemicals and releases. Eight facilities appear to have [taken advantage of this loophole](#). These loopholes are inappropriate for chemicals as persistent, mobile and toxic as PFAS. They could be closed by the EPA, or by Congress. An amendment in the House version of this year’s military spending bill proposes to fix aspects of the first two loopholes mentioned. Another big problem is the wildly incomplete list of PFAS in the Toxics Release Inventory. Nearly every chemical listed in 2020 has already been phased out of commerce, namely PFOS, PFOA, and products

that break down into those chemicals. The 2020 TRI reports include just three PFAS chemicals in current production and use. One 3M facility in Cottage Grove Minnesota reported releases of PFHxS, which is widely used in firefighting foam, fabric treatments, industrial processing, and consumer products; and two GenX compounds, used to make PFAS-based polymers like Teflon, which were reported to have been released from a Chemours production site in North Carolina and West Virginia. Numerous unusual PFAS chemicals have been detected in surface and drinking water downstream from the Chemours Fayetteville site, including some which were [measured in blood of those people living nearby](#).

Problems with the 2020 TRI rules for PFAS

- Exemption for industries that manufacture, process or use less than 100 pounds of a listed PFAS chemical
- De-minimis exemption when PFAS make up less than 1 percent of a mixture
- Most reportable PFAS chemicals are no longer in use

In its 2020 NDAA, Congress also compelled the EPA to examine the hundreds to thousands of PFAS chemicals in active use. Congress set a two-year deadline for the EPA to review [all](#) other PFAS for [addition to the TRI list](#). It explicitly named a few dozen for careful review. This includes 13 individual chemicals, two groups, and all PFAS chemicals currently detectable in water or used to make fluoropolymers. Forty chemicals are presently identifiable using EPA validated methods for drinking water or wastewater.² The EPA is poised to make its determinations for expanding the TRI by the end of 2021, and companies will be required to follow the expanded list by 2023 or 2024 calendar year.

The EPA must dramatically expand its list of reportable PFAS chemicals. There are estimated to be hundreds or thousands of PFAS chemicals in use, but secrecy protections hinder scientists and regulator's ability to identify individual chemicals, study their impacts on people, or track contamination in the environment. The current system Congress and the EPA have enabled, of slowly listing chemicals of [known concern](#), puts regulators many years behind the industry in terms of learning the most basic information about chemical uses and release.

Due to their intense persistence, mobility, and harm to people and wildlife, the EPA must require all PFAS to be reported to its annual TRI and reduce reporting thresholds and de-minimis exemptions that allow companies to evade reporting.

² The EPA has validated methods for measuring PFAS in drinking water (Methods 533 and 537.1), and draft method for groundwater (Method 1633).

Major Industries Report Zero Releases of Listed Chemicals

The lack of reporting clearly hinders the EPA's ability to investigate and control PFAS pollution. For example the EPA has identified PFAS manufacturing and formulation sites as the highest concern for wastewater pollution. Only three of the [13 PFAS manufacturers and formulators identified by the EPA](#) have reported any emissions of TRI-listed PFAS to the environment. The EPA estimates this industry uses at least 118 different PFAS chemicals.

The EPA has announced a process to eventually regulate PFAS discharges into waterways from all 13 production and formulating sites, but implementation will take years. Even within this focused effort on regulating the most intense sources of industrial pollution, the EPA admits it doesn't have a comprehensive list of all manufacturing and formulating sites nor the types and quantities of PFAS they handle.

The EPA has also identified paper mills, furniture or carpet plants, metal plating, and oil and gas extraction sites as some of the other industries that "[may be handling](#)" PFAS. Not a single facility from any of these sectors reported PFAS releases in 2020.

Industrial Sectors That Reported No Emissions of TRI-listed PFAS Chemicals in 2020

Industry	Estimated number of facilities and reporting status
Paper industry*	In 2020, the EPA identified at least five US mills producing PFAS-treated paper for food packaging, the location of these mills is not known.
Textile industry*	EPA reports that most of the world's carpet production is centered around Dalton, Georgia. It estimates 150 carpet manufacturers are operating in the area. Major industry leaders Shaw and Gore have refused to provide the EPA with information about PFAS use and emissions.
Metal plating*	The EPA estimates 650 chromium electroplating facilities apply PFAS-based mist and fume suppressants.
Specialty plastics	There is no public inventory of the sites using PFAS for these specialty materials. Known users are Saint Gobain Performance Plastics in Merrimack, New Hampshire, and Hoosick Falls, New York.
Oil and gas industry	PFAS-based surfactants have been used in fracking, but trade secret protections hinder a full assessment of PFAS use.

*Information drawn from the EPA's [Multi-Industry Per and Polyfluoroalkyl Substances \(PFAS\) study](#), 2021 Preliminary Report.

A Constantly Shifting Landscape

In the early 2000s, once the phaseout of longer-chain chemicals -- including PFOS, PFOA, and their precursor compounds -- was inevitable, PFAS manufacturers invented newer PFAS chemicals with slightly different chemical structures. Common products like firefighting foam, waterproof jackets, floor and car waxes, paints, and after-market fabric stain treatments contain complex mixtures of individual PFAS chemicals. The details of the chemicals in the mixture can be kept highly confidential to protect manufacturers' trade secrets. Individual PFAS chemicals are virtually never identified on material safety data sheets, and they aren't listed on product labels or manufacturer websites. This means that downstream industrial users have little or no information about the types or amounts of PFAS chemicals that they are using or releasing into the environment as waste. Even the federal government doesn't have access to information about the types of chemicals that are used, and their quantities or locations of use.

Scientists often stumble on PFAS pollution hotspots by accident or employ novel investigative techniques to do a scan for previously unidentified PFAS chemicals. Still, it is clear that there are a vast number of synthetic, fluorine-based chemicals that haven't been named or identified yet. When testing samples of soil, [sediment](#), sewage or "[biosolids](#)," chemists commonly identify a much greater amount of synthetic fluorine-based chemicals than the number of discrete PFAS chemicals that can be identified by current methods. That suggests the industry is making and using a lot of mystery chemicals that are turning up in [food packaging](#), firefighting turnout gear, and even [human blood](#) samples.

While the complexity of commercial PFAS mixtures poses a challenge to reporting, EPA could figure out some workarounds that allow for public disclosure and protect proprietary information. One workaround would be allowing reporting of "total PFAS," and another would be reporting sub-classes like "polyfluorinated alkyl polyamide," which is the only publicly reported information about the PFAS chemical mixture used in a type of fire fighting foam on military bases. Both of these options are preferable to secrecy, which is currently the norm.

Tracking Pollution Caused By PFAS-Based Firefighting Foams

The historic use of PFAS-based firefighting foams for training, fume suppression, and fire fighting has caused billions of dollars of damages to ground and surface waters across the United States, and people living on or near military bases. The use of PFAS in firefighting is the most common source of drinking water contamination in American water systems. Wastewater and storm outflows at military bases, airports, chemical plants, and oil refineries often contain measurable amounts of PFAS. Newer-generation PFAS are still widely employed in high-temperature industrial fires, fire training, and are used to blanket petroleum spills to lower ignition risks. A single firefighting incident can release

enough PFAS to pose a long-term threat to groundwater, surface water, fish, and any nearby drinking water sources.

TRI reporting is not well structured to track places where PFAS-based Aqueous Film Forming Foam (AFFF) is used. AFFF foams are complex mixtures of PFAS chemicals, with no transparency about the individual chemical components of the product or their concentrations. Industries using firefighting foams in 2020 would be classified under the TRI as “otherwise used,” thus be subject to both the de-minimis and 100 pound threshold exemption. The current TRI reporting system exempts reporting of less than 100 pounds over a year, meaning the use of 1,667 pounds of AFFF at a 6 percent concentrate or 3,333 pounds of AFFF sold at a 3 percent concentrate.

Industries that use PFAS-based firefighting foams

Industry	Reporting status for TRI in 2020
Airports	Airports are not currently required to report emissions to TRI.
Military/National Defense	No federal sites reported emissions of PFAS to the 2020 TRI.
Refineries, chemical plants, and petrochemical sites	None of these industries reported any discharge of PFAS chemicals from historic or present-day uses of AFFF.

In 2020, the PFAS chemicals used in modern “telomer-based” PFAS foams are not listed on the TRI, so only relatively massive releases of older PFOS-based foams would have triggered reporting. EPA should lower reporting limits to require reporting at sites where PFAS leaches into surface or wastewater. While airports are not presently subject to TRI, the EPA can and should also modify its rules to compel their inclusion in the TRI.

If current-use PFAS chemicals were added to the TRI list, AFFF producers will be required to notify customers when they purchase a product with PFAS. However, this won’t be retroactive, meaning firefighters and facility managers will not have similar information for all the content of products they currently hold on site. By requiring reporting of “total PFAS” or sub-classes of chemicals to the TRI, the EPA would enable the public to be notified when current AFFF stockpiles are used in firefighting, sent to landfills, or burned in waste incinerators, which will allow local and state governments to identify potential contamination hotspots in the future.

Conclusion - EPA has a unique opportunity to daylight sources of PFAS uses and potential contamination through stronger reporting rules in its Toxics Release Inventory. The potency and persistence of PFAS mean that they are more hazardous than many industrial chemicals. EPA must expand its list of reportable chemicals to include all PFAS, reduce the reporting threshold of 100 pounds and lower or eliminate the de-minimis exemption for PFAS in mixtures.