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In the world of chemicals and the environment, scientists and regulators often appear to be playing catch-up. Chemicals that are heralded as the panaceas of modern civilization one day turn out to be a bit more than what people bargained for the next. It is instructional to look at a few examples, and see how we might be able to stop this trend.

In my childhood, it was the pesticide DDT (dichloro-diphenyl-trichloroethane). We won the war against many mosquito-borne diseases in the 1940s, thanks to the widespread use of DDT—only to find in the 1960s that it was interfering with the egg production capabilities of raptors and other birds. As a result, we almost lost our national symbol, the bald eagle. DDT was banned by a nascent US Environmental Protection Agency in 1972, but legacy concentrations of DDT and its daughter compounds, DDD and DDE, are still commonly found in the environment.

Next, it was PCBs – polychlorinated biphenyls. This group of compounds is known for their chemical stability and low flammability, making them ideal for use in a diverse array of items such as electrical insulators, capacitors, and home appliances such as televisions and refrigerators. The National Oceanic and Atmospheric Administration (NOAA) estimates that 1.5 billion pounds of PCBs were manufactured from the 1920s on. Then, in the 1970s, it was discovered that PCBs might be responsible for a host of potentially detrimental human health effects, including neurological impairment of developing fetuses, hormone disruption and different types of cancers. At that time, manufacturing was immediately halted and the substances banned.

And today, it is PFAS. Myriad per- and polyfluoroalkyl compounds have been used in a variety of industrial applications, but chiefly, in non-stick coatings designed to make our lives easier and better. However, evidence of adverse health effects—cancer and thyroid complications, in particular—from exposure to PFAS is mounting. PFAS residues can now be found in environmental media all over the world, and their presence in drinking water systems is particularly troubling. But on both the state and federal level, regulators are taking actions to get ahead of the curve with respect to ensuring public and environmental protections.

The latest news is encouraging. It was reported last week that USEPA is asking the public for input on potentially adding certain PFAS compounds to the list of chemicals that companies are required to report to the agency as part of the Toxics Release Inventory (TRI). This action supports the agency's February 2019 PFAS Action Plan, which describes EPA's long- and short-term actions to address PFAS.

EPA's TRI is an important tool that provides the public with information about the use of certain chemicals by tracking their management and associated activities. U.S. facilities in different industry sectors must report annually how much of each chemical is released to the environment and/or managed through recycling, energy recovery, and treatment. TRI helps support informed decision-making by companies, government agencies, non-governmental organizations and the public. Currently, no PFAS chemicals are included on the list of chemicals required to report to TRI.

This most recent move by the EPA, coupled with similar actions happening now in several states, may lead to stricter national standards that require more stringent drinking water treatment of PFAS—or at least better monitoring and handling of the chemicals before they reach water supplies in the first place. And perhaps this time, with knowledge of some of those previous “miracle chemicals” that didn't quite pan out, we can be more proactive in dealing with industrial chemicals in the environment, instead of being as reactive as we've had to have been in the past.

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