

Why the U.S. Is Losing the Fight to Ban Toxic Chemicals

From a powerful chemical industry that helped write the toxic substances law to an underfunded EPA lacking in resolve, the flaws in the American chemical regulatory apparatus run deep.

by [Neil Bedi](#), [Sharon Lerner](#) and [Kathleen McGrory](#) Dec. 14, 2022, 7 a.m. EST

ProPublica is a nonprofit newsroom that investigates abuses of power. Sign up to receive [our biggest stories](#) as soon as they're published.

When ProPublica published stories this fall cataloging [new evidence that American chemical workers are being exposed to asbestos](#), readers reacted with surprise over the most simple fact: Asbestos, the killer mineral whose dangers have been known for over a century, is still legal?

Asbestos is only one of many toxic substances that are linked to problems like cancers, genetic mutations and fetal harm and that other countries have banned, but the United States has not. That includes substances like hexabromocyclododecane, a flame retardant used in some building materials that can damage fetal development and disrupt thyroid hormones, and trichloroethylene, a toxic industrial degreaser that has contaminated communities, including a whole neighborhood that [suffered a string of tragic pediatric cancer cases](#).

Michal Freedhoff, the head of chemical regulation at the Environmental Protection Agency, concedes to decades of regulatory inaction. She says a chronic lack of funding and staffing, plus [roadblocks created by the Trump administration](#), have hamstrung the agency in recent years. Still, Freedhoff believes in the regulatory system's ability to protect the public from dangerous substances and says the EPA is "moving as quickly as we can to put protections into place that have been desperately needed."

But the flaws of the American chemical regulatory apparatus run deeper than funding or the decisions of the last presidential administration. ProPublica spoke with environmental experts around the world and

delved into a half century of legislation, lawsuits, EPA documents, oral histories, chemical databases and global regulatory records to construct a blueprint of a failed system. This is how the U.S. became a global laggard in chemical regulation.

1. The Chemical Industry Helped Write the Toxic Substances Law

The Toxic Substances Control Act authorizes the EPA to ban or restrict the use of chemicals that pose serious health risks. But industry magnates were so intimately involved in the drafting of the original 1976 bill that the EPA's first assistant administrator for its chemical division [joked the law was "written by industry"](#) and should have been named after the DuPont executive who went over the text line by line.

The resulting statute allowed more than 60,000 chemicals to stay on the market without a review of their health risks. It even required the EPA, a public health agency, to always choose regulations that were the "least burdensome" to companies. These two words would doom American chemical regulation for decades.

In 1989, the EPA announced after 10 years and millions of dollars of work that it was banning asbestos. Companies that used asbestos sued the EPA, and in 1991, a federal court ruled that despite all of the work it had done, the EPA did not sufficiently prove that a ban was the least burdensome option. The rule was overturned.

It wasn't until 2016 that Congress amended the law to cut the "least burdensome" language. The bill was hailed as an extraordinary compromise

between health-focused lawmakers and the chemical industry. It created a schedule where a small list of high-priority chemicals would be reviewed every few years; in 2016, the first 10 were selected, including asbestos. The EPA would then have about three years to assess the chemicals and another two years to finalize regulations on them.



Credit: Simon Bailly, special to ProPublica

Behind the scenes, though, the bill text began not as a reformative measure, but as a company-friendly statute that would help industry avoid some regulations. Many public health advocates and several progressive lawmakers did not support it. Then-Sen. Barbara Boxer, D-Calif., announced at one point that in the metadata of a draft of the bill she had received, [the American Chemistry Council, an industry lobbying group, was listed as the document's originator](#). "Maybe I am old fashioned," Boxer said, "but I do not believe that a regulated industry should be so intimately involved in writing a bill that regulates them." (The ACC and a congressional sponsor of the bill denied her claim.)

Freedhoff, who was previously a lead Senate negotiator for the new chemicals bill, said that when the bill was finally signed into law a year later, it went from being a piece of legislation that was mostly supported by Republicans to one with wide bipartisan support. Both the ACC and health advocacy organizations were at the final signing ceremony, she added.

Some experts point out though, that during the legislative process, the chemical industry prevented the inclusion of some stronger regulations and collected several key wins, including the federal preemption of state-level

chemical regulations. In the years before the amendment passed, progressive states like California and Vermont had stopped waiting for the EPA to regulate chemicals and started imposing their own restrictions. Under the new law, federal restrictions would overrule those state-level statutes in certain cases, creating a simpler regulatory structure that was easier for companies to comply with.

2. Following Early Failures, the EPA Lost Its Resolve

When the EPA failed to ban asbestos in 1991, some experts say the agency could have tried again. In the court's decision, the judge did provide a road map for future bans, which would require the agency to do an analysis of other regulatory options, like import limits or warning labels, to prove they wouldn't be adequate. "That to me is so telling," said Eve Gartner, an environmental attorney who worked on the 1991 case and is now a managing attorney at Earthjustice. The EPA "clearly could have taken the steps it needed to ban asbestos in the '90s."

But EPA officials froze, believing it would be [nearly impossible to prove a chemical should be banned](#) under the "least burdensome" constraints. Many of the most dangerous substances, which faced bans in other countries, remained on the market for decades.

Among them was trichloroethylene, or TCE, a clear, colorless liquid with a sweet odor that resembles chloroform. Its chemical properties make it suited for a number of tasks, and it was used as everything from an anesthetic used during childbirth to a solvent used in the production of decaf coffee to, most commonly, a degreaser for cleaning machinery in factories. But its properties also made it toxic and carcinogenic to humans. Because of the health effects, the Food and Drug Administration banned the use of TCE in medicines, anesthetics and food products in 1977. The European Union placed TCE under its highest level of restriction almost 10 years ago. But the EPA never banned its use in workplaces and industrial factories, including some plants that let TCE leak into the environment.

In 2014, Kari Rhinehart, a nurse from Franklin, Indiana, was at work when she got a call about her daughter, Emma Grace Findley. Doctors had found signs of swelling during the 13-year-old's annual eye exam and said she needed further testing. She was taken to the same emergency room where Rhinehart worked and prepped for an MRI. When a tech returned to inject more dye, Rhinehart, who held her daughter's hand as she lay inside the machine, started sobbing silently. She knew that Emma Grace had a brain tumor. It turned out to be glioblastoma multiforme, a rare cancer mostly seen in adults over 50. Only three months after the diagnosis, a week before Christmas, Emma Grace died at home in her mother's arms.

After WTHR, a local news station, discovered that [many children in the community were developing abnormal cancers](#), Rhinehart learned that sites near her home were polluted with TCE. Even though they had been investigated by EPA, government-ordered tests showed they were still contaminating the air and groundwater. Parents [demanded government action](#). Authorities reopened an investigation and ordered [new cleanup efforts](#), including the replacement of thousands of feet of sewer lines. (Because the causes of most pediatric cancers haven't been scientifically proven, no direct link has been established between the childhood cancer cases and TCE.)

After the "least burdensome" language was removed from the law in 2016, the EPA named TCE as one of its 10 high-priority chemicals and tried to propose a ban on high-risk uses that year. But the agency under Trump shelved the proposal following industry complaints and decided to reassess the risk of the chemical. Then, in 2021, the Biden EPA restarted the effort after finding that the previous administration had ignored ways the public could be exposed to chemicals like TCE. "It would have been a disservice to the people that we are charged with protecting" to not take the time to fix those issues before moving forward, said Freedhoff.

In July, the agency published a draft version of a new assessment, which found that 52 of 54 uses of TCE present an unreasonable risk to human health. The EPA still needs to finalize that

assessment before it can start the yearslong process of writing a regulation.

Asked about the delays, Rhinehart said, "How does the EPA say with a straight face their job is to protect human health?"

3. Chemicals Are Considered Innocent Until Proven Guilty

For decades, the EU and the United States followed the same "risk-based" approach to regulation, which puts the burden on government officials to prove that a chemical poses unreasonable health risks before restricting it. The process can take years while evidence of public harm continues to mount.



Credit: Simon Bailly, special to ProPublica

In 2007, the EU switched to a more "hazard-based" approach, which puts the burden on chemical companies to prove that their products are safe when evidence shows a chemical can cause significant harm like cancer or reproductive damage. [Named REACH \(Registration, Evaluation, Authorisation and Restriction of Chemicals\)](#), the new system started by requiring the registration of every chemical that is imported or manufactured at a volume of more than 1 metric ton annually. Under a "no data, no market" policy, companies would be required to submit toxicological studies on those chemicals. And if those studies or other scientific research showed that a chemical could significantly harm human health, it could be prioritized for regulation.

Some experts say REACH isn't perfect and there are ways for companies to subvert science or mislead regulators. For example, because the EU receives large amounts of information on thousands of chemicals, companies have been able to submit improper data or conduct inadequate testing without their actions being noticed for some time.

Nonetheless, the new system has fundamentally changed regulation in Europe. Under this approach, the EU has successfully banned or restricted more than a thousand chemicals.

While the Europeans discussed a hazard-based approach, the United States Congress was doing the same. Then-Sen. Frank Lautenberg, a New Jersey Democrat, introduced the [Kid Safe Chemicals Act](#) in 2005, which would require companies to reassess the safety of their chemicals every three years. The bill also required the EPA to assess 300 chemicals by 2010, and thousands more by 2020. Lobbyists and industry-friendly lawmakers were quick to fight back. They argued that this approach would ruin innovation in the United States and only a risk-based one was acceptable.

"Over and over again, we've seen this fail," said Anna Lennquist, a senior toxicologist at ChemSec, an international nonprofit that works on chemical safety. "For the most harmful substances, the only way to ensure there is no risk from them is to ban them. That's one main difference between the U.S. and EU."

Neither the 2005 bill nor similar efforts over the years gained traction. Lautenberg died in 2013 before any reform passed in Congress. The

2016 law, a bill that maintained the risk-based approach with some improvements, was named after him.

Experts say a risk-based reform was likely the only type that could have passed in the U.S. legislature. The chemical industry has spent millions of dollars lobbying lawmakers to support its fight against stronger restrictions. The ACC alone has been one of the top lobbying organizations in the country in recent years.

Asked if the EPA needed a new stronger law to better regulate chemicals, Freedhoff said no and argued that the 2016 law "hasn't been given half of a chance to succeed" because of a lack of funding and resources.

4. The EPA Mostly Regulates Chemicals One by One

Six years after the reform led the EPA to create a priority system to keep chemical regulations moving, the agency is behind on all such rules. So far, it has only proposed one ban, on asbestos, and the agency told ProPublica it would still be almost a year before that is finalized. In June, [Freedhoff testified](#) to the Senate Environment and Public Works committee: "I think we can all recognize that the law is not yet working as everyone had hoped." Speaking about the chemicals the agency selected in 2016 to be a priority, Freedhoff admitted that, without additional resources, the EPA would "not get more than a handful of those rules on the books before 2025 or beyond."

The 10 Top-Priority Chemicals Pending Regulation

The first batch of chemicals chosen by the EPA for regulatory review, along with the agency's latest actions on each one. The final rules are due between 2022 and early 2023, and the agency has said it will be late on all of them.

<p>Asbestos</p> <p>BAN PROPOSED IN APRIL 2022</p>  <p>Primarily used by the chemical industry as part of chlorine production. Some asbestos-containing products like vehicle brake blocks are also imported in small quantities.</p> <p>Asbestos can cause a number of cancers, including the aggressive cancer mesothelioma, and other health problems like asbestosis, which scars the lungs.</p>	<p>1-Bromopropane</p> <p>DRAFT RISK EVALUATION ISSUED IN JULY 2022</p> <p>Used in degreasers, spot cleaners for dry cleaning, spray adhesives and automobile-care products.</p> <p>It can be toxic to human development and can increase a person's chance of developing cancer.</p>	<p>Carbon Tetrachloride</p> <p>DRAFT RISK EVALUATION ISSUED IN AUG. 2022</p> <p>A raw material for producing refrigerants, agricultural products and other chemicals in industrial and laboratory settings.</p> <p>Health risks include possible damage to or cancer in the liver, and cancer of the adrenal gland or brain.</p>
<p>C.I. Pigment Violet 29 (PV29)</p> <p>FINAL RISK EVALUATION ISSUED IN SEPT. 2022</p> <p>Used in paints, coatings, plastics and rubber products in the automobile industry and in industrial carpeting and commercial printing. The coloring is also used in some consumer watercolors and paints.</p>  <p>The pigment can damage the lungs by increasing the number of cells there, a condition called alveolar hyperplasia.</p>	<p>Cyclic Aliphatic Bromide Cluster (HBCD)</p> <p>FINAL RISK EVALUATION ISSUED IN JUNE 2022</p> <p>A flame retardant used in insulation and other building materials. It also shows up inside some pastes, recycled plastics and automobile parts.</p> <p>Known to cause reproductive damage and developmental effects, and to disrupt the operation of the thyroid.</p> 	<p>1,4-Dioxane</p> <p>FINAL RISK EVALUATION ISSUED IN DEC. 2020</p> <p>Used in the production of other chemicals, as a laboratory chemical, and in some adhesives and sealants.</p> <p>Exposure can lead to vertigo, drowsiness and headaches. The chemical may also damage organs like the liver and kidneys.</p>
<p>Methylene Chloride</p> <p>FINAL RISK EVALUATION ISSUED IN NOV. 2022</p> <p>An ingredient in products like paint strippers, adhesives and degreasers.</p> <p>It can cause suffocation, coma and death. It has also been linked to neurotoxicity, damage to the liver, and cancer.</p>	<p>N-Methylpyrrolidone (NMP)</p> <p>DRAFT RISK EVALUATION ISSUED IN JULY 2022</p> <p>A solvent used in some paint strippers, adhesives and lubricants, and in industrial products used for cleaning metals, textiles and plastics.</p> <p>NMP can damage the reproductive system and affect fetal development.</p>	<p>Perchloroethylene</p> <p>DRAFT RISK EVALUATION ISSUED IN JUNE 2022</p>  <p>Mostly used in industrial settings as a metal degreaser. It's also used in dry cleaning.</p> <p>The colorless liquid can damage the nervous system and has been linked to cancer.</p>
<p>Trichloroethylene (TCE)</p> <p>DRAFT RISK EVALUATION ISSUED IN JULY 2022</p> <p>An organic chemical used mostly in industrial settings as a metal degreaser. It is also an ingredient in some cleaning, furniture-care and automotive-care products.</p> <p>It can damage the immune system, cause reproductive and developmental effects, and damage the heart, lungs, kidney and liver. It is also a carcinogen.</p>		

Source: EPA Credit: Icons from The Noun Project

Freedhoff told ProPublica the delays are not caused by a lack of commitment and the agency's entire staff is working to "make sure that people are protected from these dangers." But she pointed out that the chemical division's workload increased exponentially in 2016, and funding has mostly remained flat since then. "The fundamental truth is [the Toxic Substances law] has existed in its current form for almost six and a half years now and we still have the budget of the old broken law," she said. In the EPA's 2023 budget request, it asked for an additional \$63 million and 200 new employees to better handle the workload.

A key reason the system is moving so slowly is that the law requires that every chemical go through a yearslong process, and the underfunded EPA division must face industry resistance for each one. "The whole regulatory process is designed to be slow and to be slowed down by those opposed to regulation," said Joel Tickner, a professor of environmental health at University of Massachusetts, Lowell and a leading expert on chemical policy. "Frankly, unless EPA doubled their size, they can't do much with the resources they have."

Chemical company representatives and industry groups like the ACC have challenged the risk evaluations for [many of the first 10 chemicals](#) labeled as high priority. The organizations have submitted lengthy public comments accusing the EPA of conducting unscientific assessments and asked for extended time frames that further delayed regulation. When [the EPA updated some risk assessments](#) from the Trump administration to include risks from air and water exposure for chemicals like TCE, the industry groups were quick to challenge the agency with a 34-page rebuttal, accusing it of not following the letter of the law.

The industry has also vehemently argued against a full asbestos ban. Trade groups like the ACC insisted that workers were protected from the dangers of asbestos. Industry-friendly scientists wrote papers accusing the EPA of overestimating the substance's dangers. And 12 Republican attorneys general [wrote to the head](#)

[of the agency](#) questioning the EPA's legal authority to pursue the ban.

Even when the EPA used its new authority under the 2016 law to have companies [conduct toxicology tests of 11 prioritized chemicals](#), some industry organizations sued the agency in an attempt to invalidate the orders. One trade group sued over testing of 1,1,2-trichloroethane, a possible human carcinogen that is released in huge quantities by plants all across Louisiana's "Cancer Alley." In its complaint, the group argued the order was ["arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with the law."](#) The lawsuit is still ongoing. The testing for all of these chemicals was originally due to be done in December 2021. So far, testing has been completed on only one of the 11 chemicals.

"The conveyor belt is sort of stopping," said Robert Sussman, an attorney who served as a deputy administrator for the EPA during the Clinton administration. "The sobering reality is that [the Toxic Substances Control Act] was supposed to change that with the new law, but now when you take a step back, that was maybe unrealistic to expect."

Meanwhile, the EU has authored a new plan to regulate chemicals even faster by targeting large groups of dangerous substances that can cause cancers, genetic mutations, endocrine damage, immune system damage and more. If it's enacted, it would lead to [bans of another 5,000 chemicals by 2030](#), according to the European Environmental Bureau, a nongovernmental organization.

5. The EPA Employs Industry-Friendly Scientists as Regulators

The EPA has a long history of hiring scientists and top officials from the companies they are supposed to regulate, allowing industry to sway the agency's science from the inside.

For example, in 2010, the agency worked with a panel of scientists to evaluate the risks of hexavalent chromium, the chemical featured in the movie "Erin Brockovich." But [the Center for Public Integrity found](#) that several scientists on that panel had actually defended PG&E, the company that poisoned a community with the substance. Some of those scientists disagreed

with this characterization and one said he had gone through the EPA's conflict-of-interest vetting. In 2017, the EPA hired a new top official at its chemical division who had been an executive at the ACC for five years. The New York Times found that she helped direct much of the [Trump administration's decisions to deregulate chemicals](#).

And then there's Todd Stedeford. A lawyer and toxicologist, Stedeford has been hired by the EPA on three separate occasions. During his two most recent periods of employment at the agency — from 2011 to 2017 and from 2019 to 2021 — he was hired from corporate employers who use or manufacture chemicals the EPA regulates.

Before 2011, Stedeford worked for Albemarle Corp., which was among the largest makers of flame retardants in the world. The chemicals, which are added to furniture, electronics and other products to help prevent fires, have been associated with neurological harm, hormone disruption, and cancers. A [2012 investigation by the Chicago Tribune](#) revealed that Albemarle and two other large manufacturers founded, funded and controlled a front group that deceived the public about the safety and effectiveness of flame retardants used in furniture. Albemarle argued its products were safe, effective and extensively evaluated by government agencies. When Stedeford left the job defending flame retardants, he went on to head the EPA program that assessed the risks of chemicals including those same flame retardants, [the Tribune reported](#). In response, Stedeford told ProPublica that he had recused himself from work on flame retardants when he joined the agency.



Credit: Simon Bailly, special to ProPublica

Then Stedeford left the EPA in 2017 and went to work for Japan Tobacco International, where [he defended the company's](#) “novel tobacco products,” such as vape pens and e-cigarettes. When he returned to the EPA in 2019, Stedeford became involved in a scientific project with a former Japan Tobacco colleague that looked into [how to evaluate the dangers of chemicals in e-cigarettes](#). Stedeford said that he was hired to advance “new approach methodologies” at the agency and that the project fell under that purview and there was nothing wrong with that.

Some close watchers of the agency say people like Stedeford epitomize the EPA's revolving-door problem. “He represents the sense that industry science is the best science, which is very much in line with regulators deferring to industry-funded studies showing there isn't cause for concern,” said Alissa Corder, an academic who wrote the book “Toxic Safety: Flame Retardants, Chemical Controversies, and Environmental Health.”

In response, Freedhoff said she didn't believe her current staff was “corrupt, or unduly responsive to industry” and that she has seen “the dedication and the commitment and the passion that the career staff here feel for the work that they've been charged with doing.” She declined to comment on Stedeford, who was last hired by the previous administration.

When he was hired again in 2019, Stedeford was in a pivotal position to influence how the new

chemical regulation law would be implemented. Whistleblowers have accused Stedeford of [changing the findings of health assessments](#) of new chemicals that were being evaluated before being allowed on the market, minimizing and sometimes deleting hazards listed in the documents, according to The Intercept. The EPA's Office of Inspector General is now investigating those claims. Stedeford declined to comment on the accusations.

During this stint at the EPA, Stedeford was also tasked with leading an effort to update the agency's approach to assessing polymers, chemicals that make up the vast majority of plastics. Polymers can cause "lung overload," a condition in which tiny particles accumulate in the lungs, potentially causing chronic lung diseases. The EPA had Stedeford work with companies that make these chemicals on a paper about lung toxicity and, in October 2020, Stedeford proposed a new policy based on their unpublished research.

The change was set to affect how dozens of new plastics were assessed, increasing the amount

of the polymers that it was considered safe to inhale, according to a complaint submitted by EPA scientists who opposed the policy. (Stedeford told ProPublica that he disagreed with those scientists and that he had told agency staffers they didn't need to use the new approach if they felt it was inappropriate in a particular case.) After the complaint was filed, the agency withdrew the policy.

Stedeford left the EPA again in 2021 to work for a law firm that represents chemical companies. Emails obtained by ProPublica show he continued to work with agency staff on the paper about lung overload. Stedeford said "there's nothing untoward about that" because he had "contributed scholarship" to the paper while at the agency. The EPA said "employees that worked on this paper did so with the full knowledge and support of their management at the time the work was occurring. Other co-authors on the paper include scientific experts from industry and NGOs."

Do You Work With These Hazardous Chemicals? Tell Us About It.

Asbestos and other dangerous materials can cause serious health effects — and the U.S. hasn't banned some substances like other countries have. Your input can help us report on the extent of this problem for American workers.

ProPublica is no longer taking submissions for this particular project, but you are welcome to contact us through [our general tip form](#).

Neil Bedi, Neil Bedi reported on the federal government for ProPublica in Washington, D.C.
[@_neilbedi](#)

Sharon Lerner, Sharon Lerner covers health and the environment. Previously, as an investigative reporter at The Intercept, she focused on failures of the environmental regulatory process as well as biosafety and pandemic profiteering. sharon.lerner@propublica.org, [@fastlerner](#), [Signal: 718-877-5236](tel:718-877-5236)

Kathleen McGrory: Kathleen McGrory was a reporter with ProPublica. kathleen.mcgrory@propublica.org [@kmcgrory](#)