

DISEASE BY A THOUSAND CUTS:

How a daily barrage of chemicals in our food makes us more likely to get sick over time

Near-constant exposure to chemicals in food is taking a toll on Americans' health at all stages of development. Where is the FDA?

From the first cup of coffee to the last late-night snack, Americans are exposed to hundreds or even thousands of chemicals in their food every day. These chemicals enter our diet as ingredients, additives and colors or from leaching from processing equipment and packaging. Some are harmless, but many are toxic, linked to serious health problems, including cancer.

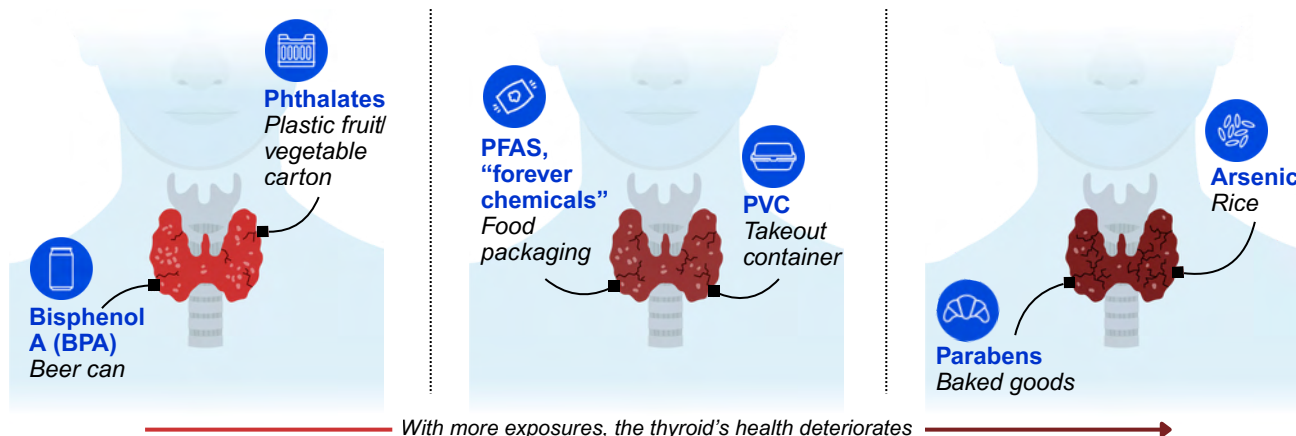
While we tend to think about the risks of one chemical at a time — BPA in our water bottles, PFAS in our cookware, methylene chloride in our decaf coffee — the realities of our modern, industrialized food system demand that we broaden our focus. With the average American facing hundreds of food-related chemical exposures a day, several of these chemicals can affect the same organs or bodily systems. Although the effect of each exposure might be small, the collective impact of many — whether over the short- or long-term — wages a war of attrition against our health.

How the cumulative effects of chemicals in food can damage our health over time

This thyroid example shows how the combined impacts of many everyday chemical exposures can harm a vital organ's ability to function. The thyroid regulates brain function, metabolism, circulation and overall development. Exposure to toxic chemicals like those below has been linked to major health harms, including weight gain, high blood-pressure, mental illness, cancer and infertility.

Example exposures

With possible food-related source



When two or more toxic chemicals act on the same organ or system — such as the brain, liver or immune system — their health effects grow. It is this combined harm, better known as cumulative effects, that deserves more of our attention. In some cases, the harm is more than just additive — it's amplified. In other words, exposure to multiple chemicals that cause the same harm can make their overall damage greater than we might expect from each one alone. In the math of cumulative effects, 1 + 1 can sometimes equal more than 2.

While it might be tempting to assume it takes years for the effects of chemical exposures through food to yield a diagnosis, this isn't always the case. Depending on a person's exposure level — which will be effectively higher when there are exposures to multiple chemicals that cause the same harm — and frequency, both short- and long-term damage to an organ or system are possible. Whether sooner or later, exposure to multiple chemicals that cause the same harm can more readily lead to the onset of chronic illnesses such as cancer, diabetes and obesity. It's disease by a thousand cuts.

How chemicals get into our diet and their growing health impacts

Some chemicals are directly added to our food and are usually listed on ingredient labels. Many others are hidden behind vague, catchall terms such as “artificial flavors,” while still more enter our diet in ways that don't appear on the label at all. For example, some chemicals get into food during production and processing while others are transferred from packaging made with chemical additives and synthetic materials, most commonly plastic. Since these chemicals are not deliberately added to food, they are not required to be listed on ingredient labels.

Many hazardous industrial chemicals that enter food through processing or packaging can cause the same type of harm, such as to the body's ability to grow and develop. Examples of these include bisphenols, phthalates and PFAS. These chemicals show up so frequently in our food that exposure is constant and nearly unavoidable. While our bodies eliminate many within a day or two, others remain for months or even years, becoming an ongoing source of cumulative harm.

Vulnerable groups such as children and pregnant women are especially sensitive to cumulative effects during critical windows of development. For these groups, exposure to

chemicals that affect the hormone system, also known as endocrine disruptors, can have especially lasting and detrimental effects that impede physical and mental development.

Although chemicals in food are our primary focus here, it's also critical to zoom out and place food within the larger exposure picture. We encounter chemicals not just in food but in the air, water, soil, products we use and more. Regardless of how a chemical enters the body, exposures through all these sources add to our overall chemical burden, making us more likely to get sick.

Everyday ways toxic chemicals can get into our bodies and contribute to lasting harm

Key chemical pathways and examples of common sources

Food



Ingredients



Production



Packaging

Air



Energy



Transportation

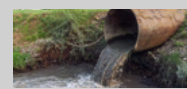


Industry

Water



Lead pipes



Industrial releases to water

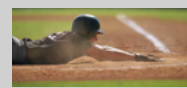


Agricultural and industrial runoff

Soil



Dust



Community spaces



Contaminated soils

Products



Household dust and product off-gassing



Personal care and cleaning products



Plastic products

For more information, please contact:

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Congress passed a law decades ago requiring the FDA to regulate chemicals based on their cumulative effects. Why doesn't the FDA enforce it?

Nearly seven decades ago, Congress mandated that the Food and Drug Administration (FDA) consider the cumulative effects of chemicals when regulating food products. The Food Additives Amendment of 1958 used a common-sense approach that's grounded in how real-world exposures happen — an approach that's arguably more relevant today than it was back then.

The FDA's obligation under the 1958 law applies broadly. It covers not only chemicals formally approved as food additives, but also those that have been self-designated as "generally recognized as safe," or GRAS, by manufacturers without FDA review, as well as industrial chemicals that migrate into food from processing equipment and packaging. The FDA cannot limit its cumulative effects analysis to one category of chemicals while ignoring the others. The legal standard is the same regardless of how a chemical enters the food supply.

The law appropriately applies to chemicals that cause the same type of harm as a group. Chemicals that share a similar chemical structure or have similar effects on the body are likely to cause the same type of harm. This is why attempts to replace one toxic chemical in a product



often result in the use of a "lookalike" chemical that can be just as — if not more — harmful.

Just one year after Congress enacted the Food Additives Amendment, the FDA swiftly adopted regulations for how to track cumulative effects to enforce the law. These regulations define key processes on accounting for cumulative effects, such as how to establish an acceptable daily amount for a group of related chemicals.

Sadly, that's where the FDA stopped for several decades. In June 2026, the agency took a first step by grouping a set of phthalates — chemicals commonly used in food packaging and processing equipment — for a joint safety review. These chemicals all harm the development of the male reproductive system and are found at especially high levels in highly processed foods. Although this is a step in the right direction, it is limited and long overdue. During this time, the FDA has approved many chemicals without considering their cumulative risks.

For decades, the FDA has neglected to protect Americans from the cumulative effects of chemicals in food

Despite a Congressional mandate requiring the FDA to regulate chemicals in food based on their cumulative health effects, the agency has taken no regulatory action in nearly seven decades.

1958

Congress passes and President Dwight D. Eisenhower signs the Food Additives Amendment



1959 - present

No known enforcement action taken



1959

The FDA adopts regulations to track cumulative effects and protect Americans



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We have strong scientific evidence, laws and rules on how to keep our food safe. We need the FDA to do its job.

With mounting evidence on the health harms of cumulative effects and a clear legal mandate for action, the FDA must get off the sidelines and implement the law to protect our health. Given the agency's decades of inaction, it's clear that only overwhelming outrage from the American people can change the status quo. This is why the most important step Americans can take to move the needle is to demand FDA action on cumulative effects. We invite you to urge the FDA to protect us from toxic chemicals by participating in action alerts at [EDF.org](https://www.edf.org) and [ConsumerReports.org](https://www.consumerreports.org).

Even as we urge the FDA to do its job, there are concrete steps individuals can take to reduce their risk, many of which are already recommended by physicians. These steps include:

- **Choosing fresh, unpackaged foods over packaged and processed alternatives where possible**, limiting consumption of highly processed foods
- **Buying organic** when possible
- **Washing fruits and vegetables thoroughly** before consuming them
- **Parboiling rice in water for 5 minutes before pouring out the water**, replacing with fresh water and then cooking until completion
- **Avoiding microwaving food in plastic** and instead using glass, ceramic or stainless-steel storage containers

In such a complex, interconnected world, there is only so much that we as individuals can do to reduce our exposure to chemicals in food and their cumulative effects on our health. Americans shouldn't need a doctoral degree in chemistry or a second job as a health and safety inspector to know whether their food is safe. It is the FDA's legal responsibility to provide the comprehensive protection we all deserve. Let's hold them to it.

Resources

Food Additives Amendment of 1958, Pub. L. No. 85-929, 72 Stat. 1784 (1958). Available from: <https://www.govinfo.gov/content/pkg/STATUTE-72/pdf/STATUTE-72-Pg1784.pdf>.

Tolerances for Related Food Additives, 21 C.F.R. § 170.18 (2006). Available from: <https://www.ecfr.gov/current/title-21/chapter-I/subchapter-B/part-170/subpart-A/section-170.18>.

Chronic Hazard Advisory Panel. 2014. Report to the U.S. Consumer Product Safety Commission by the Chronic Hazard Advisory Panel on Phthalates and Phthalate Alternatives. Bethesda (MD): U.S. Consumer Product Safety Commission. Available from: https://www.cpsc.gov/s3fs-public/CHAP-REPORT-With-Appendices-%2528With-Header%2529_0.pdf.

National Research Council. 2009. Science and Decisions: Advancing Risk Assessment. Washington (DC): The National Academies Press. Available from: <https://nap.nationalacademies.org/catalog/12209/science-and-decisions-advancing-risk-assessment>.

Food and Drug Administration. 2026. FDA Review of Select Ortho-Phthalates Food Contact Substances as Chemically or Pharmacologically Related (CFR) Substances. Silver Spring (MD): U.S. Food and Drug Administration. Available from: <https://www.fda.gov/food/food-additives-petitions/ortho-phthalates>.

National Research Council. 2008. Phthalates and Cumulative Risk Assessment: The Tasks Ahead. Washington (DC): The National Academies Press. Available from: <https://nap.nationalacademies.org/catalog/12528/phthalates-and-cumulative-risk-assessment-the-tasks-ahead>.

Landrigan PJ, Fuller R, Acosta NJR, Adeyi O, Arnold R, Basu NN, Baldé AB, Bertollini R, Bose-O'Reilly S, Boufford JL, et al. 2018. The Lancet Commission on pollution and health. Lancet. 391(10119):462–512. Available from: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32345-0/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32345-0/fulltext).

Woodruff TJ. 2024. Health effects of fossil fuel-derived endocrine disruptors. N Engl J Med. 390(10):922–933. Available from: <https://www.nejm.org/doi/full/10.1056/NEJMra2300483>.

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