

Not Just Dirt: Toxic Chemicals in Indoor Dust

Issue Brief

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People in the United States spend [more than 90 percent](#) of their time indoors on average—in places like homes, schools, offices, gyms, and cars. These places are usually full of dust, which is more than just dirt. Household items like televisions, furniture, beauty products, cleaning products, and flooring materials shed chemicals that end up in the [air](#) and in the [dust on our floors](#). These chemicals can enter our bodies from air and dust when we breathe and touch contaminated surfaces, accidentally transferring them to our food or mouth with our dusty hands. And some of these chemicals can contribute to [health problems](#).

Because indoor dust contains chemicals from a wide variety of products, it is like a parking lot for chemicals in the home. Analysis of dust reveals a picture of the types and levels of chemicals present indoors. We can use this information to estimate our potential exposure—how much of each chemical might be entering our bodies.

Young children are at [higher risk for exposure](#) to chemicals in indoor dust because they come into much more contact with this dust when they crawl, play on the floor, and put their hands in their mouths. Children may also be more vulnerable to the effects of toxic chemicals because their brains and bodies are still developing.

In 2015, scientists from [George Washington University](#), the [Silent Spring Institute](#), [NRDC](#), [Harvard University](#), and the [University of California—San Francisco](#) embarked on the first study to comprehensively assess consumer product chemicals of concern in U.S. indoor dust, provide a picture of the toxic chemicals in the home, and estimate potential

exposures for children.

We compiled information from every published study since the year 2000 that analyzed current consumer product chemicals in U.S. indoor dust. We used that information to calculate average chemical levels and estimate how much enters our bodies. We also summarized health hazard information from government agencies and other expert bodies.

Explore our interactive graphic to find out more about the chemicals found in homes and the hazards they pose:

TOXIC CHEMICALS IN DUST = PUBLIC HEALTH THREATS

Our study found that U.S. indoor dust contains a wide variety of consumer product and building material chemicals that are linked to hazards for children's health. We identified 45 chemicals from five chemical classes that have been measured in U.S. indoor dust in three or more data sets. These commonly measured chemicals in the home are associated with health hazards such as cancer, endocrine/hormone disruption, and reproductive toxicity.

Some phthalates, fragrance, flame retardants, and phenols are consistently found in 90 percent or more of dust samples across multiple studies. [See a list of the top 10 chemicals found in dust.](#)

We found that many chemicals in dust had the potential to cause the same health harm, which is concerning because the impacts from multiple chemicals can add up. People are likely exposed to multiple chemicals at the same time

in dust, but most studies evaluate the health effects of only one chemical on its own. We need more research to understand how many chemicals from household products are entering our bodies and how being exposed to all of them affects our health.

CHEMICALS FOUND IN INDOOR DUST

The classes of chemicals in our study are commonly added to household products and building materials. Like a human family, chemical classes are groups of related chemicals.



Phthalates

Used to make plastic softer and more flexible, especially vinyl (PVC) materials such as vinyl flooring, vinyl blinds, and food packaging. They may also be found in personal care products and fragranced products.

Total number of chemicals from this class in our study: 8

Example chemicals: DEHP (di-2-ethylhexyl phthalate); BBzP (butyl benzyl phthalate)



Environmental Phenols

Used as preservatives in personal care products like shampoo, lotions, cosmetics, and as part of plastic materials such as reusable water bottles and in cleaning products like detergents.

Total number of chemicals from this class in our study: 10

Example chemicals: MeP (methyl paraben), BPA (bisphenol A)



Flame Retardants

Used in furniture, baby products, electronics,



and building insulation in order to meet flammability standards.

Total number of chemicals from this class in our study: 15

Example chemicals: TCEP (tris (2-chloroethyl) phosphate); BEH-TEBP (a tetrabromophthalate)

Fragrances



Used as scent in a wide variety of products including personal care products, cleaning products, perfumes, candles, and air fresheners.

Total number of chemicals from this class in our study: 1

Example chemicals: HHCB (Galaxolide)

Fluorinated Chemicals



Also known as PFCs or PFASs, these chemicals are used as stain- and water-repellent treatments for upholstery, carpets, clothes, and shoes; in nonstick cookware; and to make food papers like pizza boxes and popcorn bags grease-proof.

Total number of chemicals from this class in our study: 11

Example chemicals: PFOA (perfluorooctanoic acid); PFOS (perfluorooctane sulfonic acid)

THE ROLE OF PUBLIC POLICY

Current practices of using toxic and untested chemicals in consumer products and building materials result in these chemicals' widespread presence in the indoor environment and are inadequate to protect health.

Governments and companies should advance policies to

remove hazardous chemicals from products and replace them with safer alternatives. Some have already done so. For example, the [California Safer Consumer Products program](#) requires companies to carefully choose the safest alternative to toxic chemicals in order to avoid “regrettable substitution” replacement chemicals that are also harmful. [Washington State](#) requires reporting of hazardous chemicals in children’s products so that consumers can choose safer products.

At the national level, the U.S. Consumer Product Safety Commission (CPSC) has banned some phthalates from children’s products and child care articles and is proposing to ban additional phthalates. The U.S. Food and Drug Administration (FDA) is accepting public comments on a petition to ban all phthalates from food. [Learn more](#) about how to protect our families and children from toxic chemicals.

SIMPLE STEPS TO REDUCE YOUR EXPOSURE

Remove dust from your hands. Wash your hands and your children’s hands frequently, and always before eating. Use plain soap and water, avoiding fragranced and antibacterial soaps.

Keep household dust to a minimum. Dust with a damp cloth, regularly go over floors with a wet mop, and use a vacuum with a high-efficiency particulate air (HEPA) filter.

Use the Silent Spring [Detox Me app](#). This free smartphone app walks you through simple, research-based tips on how to reduce your exposure to potentially harmful chemicals where you live and work, and it keeps track of your progress.

Explore further resources to find safer products:

[Environmental Working Group Skin Deep](#)

[Healthy Babies, Bright Futures parents' resource](#)

Find out more:

[George Washington University Milken Institute School of Public Health](#)

[Silent Spring Institute](#)

[NRDC: Toxic Chemicals](#)



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