

Most People Are Now Flame Retardant

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STORY AT-A-GLANCE

- › In the mid-1970s, government entities started requiring manufacturers to treat certain household items with flame-retardant chemicals called organophosphates, but these were found to be carcinogenic
- › Two commonly used organophosphates, TDCIPP and TPHP, have shown up in Americans' urine; Levels of TDCIPP were 17 times higher in adults in 2015 than it was in 2002
- › Fertility problems, hormonal changes, problems with thyroid regulation and neurological disorders are serious problems caused by flame-retardant exposure, and children are among those at greatest risk

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In 1973, the U.S. government passed a law requiring that all children's sleepwear must be fire resistant. Legislators may have believed they were preserving public health, believing such laws help keep citizens safe. But, to borrow a phrase, the medicine is sometimes worse than the disease.

Here's why – Fewer than five years later, scientists discovered that the chemical used to make those flame-retardant fabrics – brominated Tris – was responsible for rising incidences of cancer. Brominated Tris was then banned in kids' pajamas.

By 1977, other chemicals were being used to render such articles as baby toys, clothing, carpeting, sofas, draperies and even crib mattresses flame resistant. Growing

realization that the chemicals were causing even more health problems led to widespread concern. Consumer Reports noted:

"In 2004, such concerns led to one of the most commonly used flame-retardant mixtures, called pentaBDE, being voluntarily phased out after it was linked to health problems and was detected in alarming levels in people's bodies. Many manufacturers began to use organophosphates in their place."¹

But a comprehensive study led by Duke University² revealed that two flame-retardant chemicals in a class called **organophosphates** are showing up in peoples' urine. Worse, the two most commonly used organophosphates, TDCIPP and TPHP, have risen steadily in urine samples collected between 2002 and 2015.

Experts say the reason this is an issue is because these substances cause not just cancer, but fertility problems, hormonal changes, thyroid regulation, neurological disorders and endocrine disruption.

Exposure to Flame-Retardant Chemicals Can Occur Several Ways

One reason organophosphates are so insidious is because they can be breathed in, swallowed and absorbed through your skin, and accumulate in your fatty tissue.³ They also **leach into the environment**. Consumer Reports stated:

"More than 90% of the 857 adults and children in the Duke-led study had two commonly used organophosphates, TDCIPP and TPHP, in their urine. On average, the levels of one of the chemicals, TDCIPP, were 17 times higher in adults in 2015 than they were in 2002."⁴

Organophosphates are used as both flame retardants and pesticides, although different organophosphates are typically used for each purpose. They do, however, share structural similarities. According to National Geographic:

"Organophosphates attack the nervous system in the same way as nerve agents like sarin ... [and] are so toxic to humans that the U.S. Environmental Protection

*Agency (EPA) has taken steps to limit their availability to the public."*⁵

Why Are Toxic Flame Retardants Still Being Used?

Heather M. Stapleton, associate professor of environmental ethics and sustainable environmental management at Duke University and one of the study authors, noted:

*"We know from animal testing that there are a variety of toxic outcomes associated with exposure to these chemicals at high concentrations ... It's a very controversial topic. We're using large volumes of these chemicals in furniture, yet the data suggesting they're effective in preventing fires is minimal to none."*⁶

Robin Dodson, an air pollution researcher at the Silent Spring Institute in Newton, Massachusetts, said "We've known that TDCIPP is a bad actor for a long time, yet it continues to be used."⁷

More than a few scientists as well as consumer groups think the public is being exposed to toxic flame-retardant chemicals unnecessarily, and wonder if the benefits outweigh the risks, and, more specifically, if there are any benefits at all.

Science Times notes that many are **incorrectly tested for safety**, and likely don't provide fire security benefits as many might expect.⁸ Increasing numbers of state legislators are taking action against flame retardants.

For instance, Washington state lawmakers have already prohibited the use of certain flame-retardant chemicals (including **polybrominated diphenyl ethers, or PBDEs**) in children's products and furniture, but manufacturers simply replaced them with even more toxic alternatives.

How Do Organophosphate Chemicals Harm People and Animals?

Age and exposure are mitigating factors in the risks posed by organophosphates, as younger, weaker people aren't able to eliminate the toxins from their systems. In addition, as noted by the Environmental Working Group (EWG):⁹

"Flame retardants can build up more in the bodies of younger children than in older kids or adults because they breathe in more air and are exposed to more dust particles relative to their body weight than adults.

The chemicals, widely used to treat upholstered furniture and even cushioning in baby products, can escape and accumulate in household air, and in dust on floors where toddlers and babies play. Children's frequent hand-to-mouth activity can also increase their exposure."

Needless to say, bioaccumulation of flame retardants can have serious health consequences over the course of a lifetime, although health problems may not be readily attributable to day-to-day chemical exposure.

As mentioned, human and animal studies have linked organophosphate flame retardants to cancer, hormonal changes and problems with fertility.¹⁰

What You Can Do

You can do everything possible to rid your home of furniture, mattresses, clothing, food containers and other items that may contain flame-retardant chemicals, but given their widespread use, this is difficult and may be impractical.

Further, if you ever step out of the house, personal and environmental hazards will likely be out there, somewhere. There are steps you can take to limit your exposure, however:

- **Get rid of the dust** — Dodson and a research team from George Washington University conducted a study¹¹ on household dust and found 45 potentially harmful toxins, including flame-retardant chemicals.

Because people in the U.S. are indoors, including in schools, offices, gyms and cars around 90% of the time:

*"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, touch contaminated surfaces, and accidentally transfer them to our food or mouth with our dusty hands. And some of these chemicals can contribute to health problems."¹²

Keep dust swept, dusted and vacuumed as much as possible, and maybe even invest in a quality [air purifying system](#).

- **Check the tag on new furniture** – In 2015, California instituted a law saying all new upholstered furniture must have a label telling consumers whether it's been treated with flame-retardant chemicals

In other states, if there's no label, ask salespersons what they know about where upholstered pieces came from and how they were manufactured. If you're interested in obtaining information about upholstered articles of furniture, you can send a sample of the polyurethane foam to Duke University for free testing.¹³

- **Check all baby products** – While some states have precipitated the removal of certain toxic flame-retardant chemicals in things like baby clothing, bedding, car seats and toys, many manufactures haven't gotten the memo. EWG noted:

"In 2003, EWG analyzed breast milk samples from 20 first-time mothers to measure concentrations of brominated flame retardants known as PBDEs. We detected these chemicals in every study participant.

This and other studies pushed the (EPA) and manufacturers to phase out use of PBDEs. But chemical companies substituted Tris for PBDEs, and Americans' exposures to these replacement chemicals has increased dramatically."¹⁴

- **Get involved, show you're informed and support efforts to reduce toxic chemicals** – While [flame-retardant chemicals](#) can do cumulative damage in your body, ridding

them from your home and environment has been shown to dissipate them over time. In fact, 10 years after PBDEs were banned, research showed a nearly 40% decline in such chemicals in women's breast milk.¹⁵

Sources and References

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