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High Levels of Toxic Flame Retardants Found in Everyday Products Made from Black Plastic

Analysis by Dr. Joseph Mercola | November 21, 2024

STORY AT-A-GLANCE

- Recycled electronics, particularly black plastics, are being used in everyday items like toys and kitchen utensils, exposing consumers to toxic flame-retardant chemicals
- A study found 85% of tested black plastic products contained flame retardants, with concentrations up to 22,800 mg/kg, including banned substances like deca-BDE
- Improper recycling of electronic waste is causing flame retardants to appear in consumer goods, posing health risks, especially to children
- People with high levels of polybrominated diphenyl ethers (PBDEs) have a 300% higher risk of dying from cancer, according to a study published in JAMA Network Open
- To reduce exposure to flame retardants, check product labels, avoid polyurethane foam in children's products and clean your home regularly to remove contaminated dust

When you throw away an old or broken TV, do you ever wonder where it goes? Apparently, most electronics, particularly their plastic parts like the casing, are recycled and mixed with other plastics, and then reused.

However, did you know that these recycled plastics end up in everyday things that you come in close contact with, like your children's toys, food packaging or the utensils you use for cooking? If it's made with black plastic, then it's likely made from reused electronics.

But, beware — these black plastic products are typically loaded with toxic flame-retardant chemicals, which are linked to health issues, including infertility, developmental problems and cancer.

Study Confirms Presence of Flame Retardants in Toys and Kitchen Utensils

A recent study[1] led by scientists from the grassroots organization Toxic-Free Future and Vrije Universiteit Amsterdam sought to determine if flame-retardant chemicals that are specifically used for electric and electronics are ending up in items that do not require flame retardancy. Published in the Chemosphere journal, the study aimed to determine how recycling practices are bringing these toxic chemicals back into our environment. According to the study authors:

> *"Globally, a lack of transparency related to chemicals in products and limited restrictions on use of FRs in electronics have led to widespread use and dissemination of harmful FRs [flame retardants].*
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> *Despite the lack of transparency and restrictions, plastics from electronics are often recycled and can be incorporated in household items that do not require flame retardancy, resulting in potentially high and unnecessary exposure."*[2]

The researchers screened 203 consumer products for bromine, a chemical used in flame-retardant chemicals. The researchers specifically focused on products made with black plastics, as these were produced using old TV casings and electronic enclosures that intentionally use flame retardants to minimize the risk of accidents.

Hair accessories, food-contact products like takeout containers, kitchen utensils and children's toys were among the items tested. Those that were found to have 50 parts per million of bromine were then further studied to determine if they contain brominated flame retardants, organophosphate flame retardants and plastic polymers.

The results were concerning, as a whopping 85% of the items tested positive for these chemicals, with total concentrations ranging as high as 22,800 mg/kg.[3] The study authors reported:

> *"FRs detected include the restricted compound deca-BDE, which was used widely in electronics casings, as well as its replacements decabromodiphenyl ethane (DBDPE) and 2,4,6-Tris(2,4,6-tribromophenoxy)-1,3,5-triazine (TBPP-TAZ) along with associated compound 2,4,6-tribromophenol (2,4,6-TBP), recently detected in breast milk."*[4]

The Dangers of Recycling Electronics

According to the featured study, the reason why flame retardants are unexpectedly showing up in many consumer goods is because of the improper way these electronic wastes are recycled. The authors say that electronic waste recycling lacks "the necessary transparency and restrictions to ensure safety."

What's more, the researchers also found that styrene-based plastic, which is typically used in electronics, has higher levels of flame retardants than polypropylene and nylon — plastics that are not commonly used for these electronic products. This supports the researchers' theory that flame retardants are present because e-waste is being inappropriately recycled into household items.

They also noted that flame retardants have been detected in and near e-waste recycling facilities, not just in the U.S., but in other countries too, like Canada, Spain and China. Soil samples around e-waste sites in Vietnam and China also had detectable levels of flame retardants, proving that recycling electronics leads to human and environmental exposure.[5]

Heather Stapleton, a professor at Duke University, commented on these findings, saying, "While it's crucial to develop sustainable approaches when addressing our plastic waste stream, we should exert some caution and ensure we're not contributing to additional exposures to these hazardous chemicals in recycled materials."[6]

Young Children Are More Likely To Be Affected by Flame Retardants

Megan Liu, science and policy manager for Toxic-Free Future and the study's lead author, expresses her concern over their findings, especially since children's toys are among the products that tested positive for flame-retardant chemicals.

What's more, flame retardants can leach into your saliva. Considering that children are more curious and are prone to putting things, including their toys, into their mouths, this then puts them at high risk of exposure.

> *"A product with one of the highest levels of flame retardants were black plastic pirate coin beads that kids wear — they resemble Mardi Gras beads but more for costume wear,"* Liu said.
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> *"That particular product had up to 22,800 parts per million of total flame retardants — that's almost 3% by weight. Kids will often play with toys multiple days in a row until they tire of them."*[7]

Flame retardants accumulate in your system; due to their still-developing bodies, children who are constantly exposed to these chemicals have a higher risk of suffering from the toxic effects. According to the National Institute of Environmental Health Sciences:[8]

> *"Children are more vulnerable to toxic effects because their brains and other organs are still developing. Hand-to-mouth behavior and play that is close to the floor increases the potential of children to come in contact with harmful chemicals. Several studies demonstrate that exposure is higher in children than adults."*

Phased-Out Flame Retardants Are Still Being Detected in Plastic Products

In a CNN article,[9] Linda Birnbaum, the former director of the National Institute for Environmental Health Sciences and the National Toxicology Program, comments on the study findings, saying that it's concerning to find chemicals that "aren't supposed to be used anymore" in the sampled products.

One of the phased-out flame retardants she is referring to is decabromodiphenyl ether (deca-BDE). This chemical was once widely used in electronic casings, however, the U.S. Environmental Agency (EPA) banned it in 2021 after being associated with a number of health issues.[10]

Yet, the authors of the featured study found that 70% of the samples they tested contained deca-BDEs. One product tested, a black plastic sushi tray, had 11,900 parts per million (ppm) of deca-BDE.[11,12] In some of the products tested, the levels of deca-BDEs were five to 1,200 times higher than the European Union's limit, which is 10 parts per million.

This is alarming, as flame retardants have been found to have neurotoxic, endocrine-disrupting, carcinogenic and adverse reproductive effects.[13] For example, recent animal studies conducted to assess deca-BDE's effects revealed that it causes developmental toxicity on embryos, cognitive impairment and reproductive issues.[14,15]

Flame Retardants Increase Your Risk of Cancer Mortality by 300%

In April 2024, a study published in JAMA Network Open[16] found that people with the highest levels of polybrominated diphenyl ethers (PBDEs) had a 300% higher risk of dying from cancer, as opposed to people with the lowest levels.

The researchers analyzed the blood levels of PBDEs of people who were participating in the National Health and Nutrition Examination Survey, between 2003 and 2004. They then compared the levels with death certificates, between 15 and 17 years later. According to the authors:

> *"As endocrine-disrupting chemicals, PBDEs and their metabolites can bind to hormone receptors (i.e., estrogen receptor), act as both agonists and antagonists, and then disrupt hormone homeostasis. This plays a role in the development and progression of endocrine tumors such as thyroid cancer.*
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> *Furthermore, a growing number of studies demonstrate that PBDEs could cause oxidative stress, DNA damage, and cell cycle dysregulation. All of these factors play a role in the development and progression of cancer."*[17]

A separate systematic review and meta-analysis came to the same conclusion. Published in Toxicology Letters,[18] the researchers evaluated 15 studies and assessed the risk of developing different types of cancer to the levels of flame retardants in the body.

They found that flame retardants in adipose tissue led to an increased risk of breast cancer. Meanwhile, high levels of BDE-28, another type of PBDE, elevates the risk of endocrine-related cancers.

Flame Retardants Are Everywhere, Not Just in Black Plastics

Flame-retardant chemicals were created in the 1970s, and were added to consumer products to inhibit, suppress or slow down the spread of fires.[19] Aside from electronics, they are used in various products, including sofas, chairs, carpet padding, yoga mats, and even baby car seats. Their purpose is to add an extra layer of protection.

But are flame retardants truly effective? Not quite — in fact, they only delay the spread of fire by mere seconds.[20] What's more, flame retardant-treated items, when they catch fire, produce more toxic smoke compared to non-treated items, putting you at an increased risk of asphyxiation.[21]

Since flame retardants are now ubiquitous, taking extra steps to reduce your exposure is essential. Below are some helpful tips from Toxic-Free Future to guide you:[22]

1. **Shop smart —** Check the label before buying any furniture and choose those that indicate no added flame retardants.
2. **Be careful when buying product made for children (like car seats, mattresses and comforters) —** Stay away from those that are labeled that they meet California TB 117 flammability standard, as they likely contain flame retardants in the foam.
3. **Don't buy children's products made with polyurethane foam.**
4. **Clean your home regularly —** Flame retardants leach out from products and linger in the dust in your home. Wash your hands regularly as well and teach your child to do this important habit.

In adults, one of the best ways to counteract the effects of flame retardants is to supplement with progesterone. This is because flame retardants are endocrine-disrupting chemicals that mimic or interfere with the action of estrogen in your body. Using a natural anti-estrogen compound like progesterone helps mitigate the side effects of estrogen. However, I recommend using transmucosal progesterone with vitamin E — follow the guidelines below.

How to Use Progesterone

Before you consider using progesterone, it is important to understand that it is not a magic bullet, and that you get the most benefit by implementing a Bioenergetic diet approach that allows you to effectively burn glucose as your primary fuel without backing up electrons in your mitochondria that reduces your energy production. My new book, "Your Guide to Cellular Health: Unlocking the Science of Longevity and Joy," covers this process in great detail.

Once you have dialed in your diet, an effective strategy that can help counteract estrogen excess is to take transmucosal progesterone (i.e., applied to your gums, not oral or transdermal), which is a natural estrogen antagonist. Progesterone is one of only four hormones I believe many adults can benefit from. (The other three are thyroid hormone T3, DHEA and pregnenolone.)

I do not recommend transdermal progesterone, as your skin expresses high levels of 5-alpha reductase enzyme, which causes a significant portion of the progesterone you're taking to be irreversibly converted primarily into allopregnanolone and cannot be converted back into progesterone.

Ideal Way to Administer Progesterone

Please note that when progesterone is used transmucosally on your gums as I advise, the FDA believes that somehow converts it into a drug and prohibits any company from advising that on its label. This is why companies like Health Natura promotes their progesterone products as "topical."

However, please understand that it is perfectly legal for any physician to recommend an off-label indication for a drug to their patient. In this case, progesterone is a natural hormone and not a drug and is very safe even in high doses. This is unlike synthetic progesterone called progestins that are used by drug companies, but frequently, and incorrectly, referred.

Dr. Ray Peat has done the seminal work in progesterone and probably was the world's greatest expert on progesterone. He wrote his Ph.D. on estrogen in 1982 and spent most of his professional career documenting the need to counteract the dangers of excess estrogen with low LA diets and transmucosal progesterone supplementation.

He determined that most solvents do not dissolve progesterone well and discovered that vitamin E is the best solvent to optimally provide progesterone in your tissue. Vitamin E also protects you against damage from LA. You just need to be very careful about which vitamin E you use as most supplemental vitamin E on the market is worse than worthless and will cause you harm not benefit.

It is imperative to avoid using any synthetic vitamin E (alpha tocopherol acetate — the acetate indicates that it's synthetic). Natural vitamin E will be labeled "d alpha tocopherol." This is the pure D isomer, which is what your body can use.

There are also other vitamin E isomers, and you want the complete spectrum of tocopherols and tocotrienols, specifically the beta, gamma, and delta types, in the effective D isomer. As an example of an ideal vitamin E, you can look at the label on our vitamin E in our store. You can use any brand that has a similar label.

You can purchase pharmaceutical grade bioidentical progesterone as Progesterone Powder, Bioidentical Micronized Powder, 10 grams for about $40 on many online stores like Amazon. That is nearly a year's supply, depending on the dose you choose.

However, you will need to purchase some small stainless steel measuring spoons as you will need a 1/64 tsp, which is 25 mg and a 1/32 tsp, which is 50 mg. A normal dose is typically 25-50 mg and is taken 30 minutes before bed, as it has an anti-cortisol function and will increase GABA levels for a good night's sleep.

Unfortunately, this vendor frequently runs out of product, and if that's the case, then you can use **Simply Progesterone by Health Natura**. It's premixed with vitamin E and MCT oil. Again, while Health Natura states that its product is for "topical use only," I recommend applying it transmucosally, by rubbing it on your gums.

If you are a menstruating woman, you should take the progesterone during the luteal phase or the last half of your cycle, which can be determined by starting 10 days after the first day of your period and stopping the progesterone when your period starts.

If you are a male or non-menstruating woman, you can take the progesterone every day for four to six months and then cycle off for one week. The best time of day to take progesterone is 30 minutes before bed as it has an anti-cortisol function and will increase GABA levels for a good night's sleep.

This is what I have been personally doing for over a year with very good results. I am a physician so do not have any problems doing this. If you aren't a physician, you should consult one before using this therapy, as transmucosal progesterone therapy requires a doctor's prescription.

Sources and References

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