Pat Quinn, Governor
Illinois Department of Public Health
Environmental Health
FACT SHEET

Flame Retardants

What are flame retardants?

Flame retardants are chemicals added to products to make them difficult to burn and help slow the spread of fire. There are many different types of flame retardants and they are grouped by their chemical structures and ingredients, such as bromine, chlorine, phosphorus and nitrogen. Common flame retardants include polybrominated diphenyl ethers (PBDEs), phosphate esters such as TDCP (Tris (1, 3-dichloro-2-propyl) phosphate) and TCEP (Tris (2-chloroethyl) phosphate), commonly referred to as "Tris."

In what products are flame retardants found?

Flame retardants can be found in a wide variety of products in homes, offices and commercial environments. Furnishings such as foam upholstery, mattresses, curtains and carpets, and electrical devices such as televisions, computers and telephones contain these chemicals. Flame retardants also are found in construction materials including electrical wires, cables, insulation materials, wood products and roofing materials, and in vehicle and airplane components.

How do flame retardants get into the environment?

Flame retardants can enter the environment during the chemical manufacturing process, during the wear and tear of flame retardant containing products, and after the disposal of these products. Once flame retardant chemicals have entered the indoor and outdoor environments they remain there for a long time by sticking to other particles like dust and soil. Even though many states have banned some flame retardants, they can still be present in older products.

How can I be exposed to flame retardants?

As some products containing flame retardants age and breakdown, they release tiny particles that stick to dust in homes and other indoor environments. The most common routes of exposure are from breathing in contaminated dust and through swallowing dust from hand-to-mouth contact. Individuals working in jobs that involve the manufacturing, recycling or repairing of flame retardant containing products are at an increased risk of exposure. Because flame retardants can last a long time in the outdoor environment, some foods like dairy, fish, and meat products may have increased amounts of these chemicals.

How can flame retardants affect my health?

There is limited data available regarding adverse health effects associated with flame retardants. Animal studies on PBDEs have shown that exposure during pregnancy and after birth have caused problems with brain development including problems with learning, memory and behavior in offspring of mice and rats. Animal studies also have shown that PBDEs can alter thyroid and other hormone levels. PBDEs may have the potential to cause cancer.

In animal studies, TDCP has been associated with tumors in the liver, kidneys, testes, and adrenal gland. TCEP produced tumors in the kidney, liver and stomach in studies performed on mice. There is not enough information available to determine with certainty whether or not these phosphate ester flame retardants produce cancer in humans.

How can I reduce my exposure?

Reducing your exposure to flame retardants starts with good housekeeping and maintenance of products that contain these chemicals. Household dust can contain high levels of flame retardants. A vacuum with a high efficiency particulate air filter (HEPA) is recommended to trap tiny particles that are small enough to enter the respiratory system. Frequent damp mopping of floors and dusting with a damp cloth will help to reduce contaminated dust from becoming airborne.

Hand-to-mouth activity can transfer flame retardants to your body. Because contaminated dust particles can remain on surfaces that you regularly touch, frequent handwashing is an effective way to reduce exposure to these chemicals. (Research showed that workers who washed their hands at least four times a day had a threefold reduction in the amount of flame retardant chemicals in their blood.) Children spend time close to the ground, have more hand-to-mouth activity, and ingest greater amounts of contaminants in relation to their smaller size. Children should regularly wash their hands, especially before they eat, to reduce their exposure to flame retardant chemicals.

Inspect upholstered furniture regularly and replace furniture with rips or tears that expose foam interiors. Do not reupholster furniture on your own without proper protection. When purchasing new furniture and other furnishings, buy items made with natural fibers like wool and cotton. These materials are more naturally flame retardant and require fewer additives to make them meet flammability standards.

Discontinue the use of damaged items that contain flame retardants. Dispose of large items such as furniture in a way that prevents their re-use. Do not place damaged furniture outside for pickup unless it has been made unusable.

Foods like dairy, fish, and meat products contain higher levels of some flame retardants than plants. Eat a diet high in fruits, vegetables, and whole grains to reduce the amounts of animal fats consumed. You can reduce the amount of these chemicals and your exposure by properly trimming the fat from meat and fish.

Is there a medical test to determine whether I have been exposed to flame retardant chemicals?

Some flame retardant chemicals can be measured in blood and urine, but this is not a routine test that can be performed in a doctor's office. However, you should see a physician if you believe that you have been exposed to high levels of these chemicals.

Where can I get more information?

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217-782-5830
TTY (hearing impaired use only) 800-547-0466

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