

### PERFLUORINATED COMPOUNDS (PFCS)

People become contaminated with PFCs in numerous ways – from drinking water, food and food packaging, indoor air, carpet and furniture treatments, clothing, cosmetics, non-stick cookware and many other products. Some studies have shown that certain PFAS may affect the developing fetus and child, decrease fertility and interfere with the body's natural hormones, affect the immune system, and increase cancer risk. Forego materials treated with Teflon and Scotchguard, non-stick pans and utensils

### PHTHALATES

Phthalates can be found in everything from your shower curtain to your rubber duckie, from the plastic tube connecting you to a hospital IV to the plastic wrap around your sandwich. The endocrine disrupting nature of phthalates has implications for childhood and reproductive development, as well as cancer incidence. The European Union and over a dozen countries have banned the use of phthalates in children's products, but the U.S. (other than some states) is lagging behind on

taking action. Avoiding plastic and plasticizers limits exposure.

### POLYVINYL CHLORIDE (PVC)

PVC is one of the most used plastics in the world and a known human carcinogen. Like BPAs, PVC is used for everything from food packaging and children's toys to shower curtains and building materials. The manufacture and incineration of PVC creates and releases dioxins, which cause a wide range of health effects including cancer, birth defects, diabetes, learning and developmental delays, and immune system abnormalities.

### VOLATILE ORGANIC COMPOUNDS (VOCs)

VOCs are members of a large group of organic chemicals that can evaporate into the indoor air. Many paints, adhesives, and sealants contain VOC. Their health effects vary widely, from respiratory irritants to human carcinogens (such as formaldehyde). They are in many products in the built environment. Choose no VOC paints and other materials.

## What you can do.

Advocate for change. Inform yourself. Do research.

Take the precautionary principle: an action should not be taken if the consequences are uncertain and potentially dangerous. A burden of proof of no harm is required.

[www.toxicology.org](http://www.toxicology.org)  
[www.living-future.org](http://www.living-future.org)  
[www.turi.org](http://www.turi.org)  
[www.quartzproject.org](http://www.quartzproject.org)  
[www.ewg.org](http://www.ewg.org)

The Hitchcock Center's **Educating for a Healthy Material World** Program Initiative has been made possible by the Toxics Use Reduction Institute.



Hitchcock Center for the Environment [www.hitchcockcenter.org](http://www.hitchcockcenter.org)

THE LIVING  
BUILDING  
CHALLENGE



Hitchcock Center  
EDUCATION FOR A HEALTHY PLANET

Understanding  
**THE RED LIST**  
Building Without Toxins

# THE RED LIST

## Building a Healthier Material World

The Living Building Challenge Red List contains the worst in class materials prevalent in the building industry. The list was developed by the International Living Future Institute (ILFI) and represents over 800 chemicals that cannot be used in buildings constructed for LBC certification, like the Hitchcock Center, due to the high degree they:

- Pollute the environment
- Bio-accumulate up the food chain until they reach toxic concentrations
- Harm construction, factory workers, and frontline at-risk communities
- Create toxic homes and workplaces that cause a health exposure risk in indoor air quality

### ALKYLPHENOLS

Alkylphenols are a large family of organic compounds used in a wide variety of products, including cleaning products, beauty products, contraceptives, coatings, fragrances, thermoplastics, carbonless copy paper, and agrochemicals. Consult the Environmental Working Group: [www.ewg.com](http://www.ewg.com).

### ASBESTOS

Asbestos is a known human carcinogen, increasing risks of lung cancer, mesothelioma, and asbestosis. It is often found in wall insulation, vinyl floor coverings, paint compounds, roofing, heat-resistant fabrics, and automobile brakes.

### BISPHENOL A (BPA)

BPA is commonly used in food storage containers including food and beverage cans, lining in water pipes, hard plastic bottles, cosmetics, nail polishes, hairsprays, and sales receipts. BPA is associated with increased risk for cardiovascular disease, miscarriages, breast and prostate cancer, reproductive dysfunction, and neurological and behavioral disorders. To reduce exposure, invest in reusable glassware, purchase BPA-free plastic bottles, and avoid heating food in BPA containers (known to leach BPA into food).

### CADMIUM

Cadmium's major use is in batteries, especially rechargeable nickel-cadmium, NiCad, batteries. Cadmium is a carcinogen associated with lung cancer. Acute and long-term exposures can lead to lung and kidney damage, bone loss, and hypertension. In sufficient quantities, cadmium is lethal.

### HYDROCHLOROFUOROCARBONS (HCFCs)

HCFCs are potent ozone-depleting compounds. While less destructive than the now-banned chlorofluorocarbons, HCFCs are targeted for gradual phaseout by the US EPA, with a total ban going into effect in the year 2030.

### CHROMIUM VI

Used primarily for chrome plating of metals for decorative or protective finishes, making stainless steel, leather tanning, anti-corrosive agents for paints, and in textile dyes and pigments, long-term or high-level exposure through inhalation can cause nasal irritation and ulcers, breathing problems, and nasal and lung cancer in unprotected workers, among other illnesses.

### FORMALDEHYDE (ADDED)

Formaldehyde is widely used in building materials and household products. It is a known human carcinogen. Common health effects at low levels include irritation and sensitization and can trigger asthma. Long-term exposure is associated with nasal cancers and leukemia. Avoid pressed wood products that use glues containing formaldehyde. Look for products like varnishes, paints and adhesives that specify formaldehyde free.

### HALOGENATED FLAME RETARDANTS (HFRS)

HFRS are used in electronics, building insulation, polyurethane foam (furniture, pet beds, etc.) wire and cable. HFRs are persistent bioaccumulative toxins. HFRs do not bind in foam and can off-gas to settle in dust and then ingested through hand-to-mouth contact, posing high risk to infants

and pets. Look for flame retardant free labeling.

### LEAD (ADDED)

Lead exposure is damaging to virtually every organ and system in the human body, but is particularly damaging to the brain and central nervous system—profoundly so for young children and developing fetuses. Lead contamination especially in our drinking water is a critical concern.

### MERCURY

Mercury is commonly used in batteries, florescent lights, felt production, thermometers and barometers, even dental amalgams. Exposure can cause harm to the nervous, digestive, and immune systems, even death. Mercury enters the environment primarily from improper disposal (e.g. landfills, incineration). Mercury bioaccumulates in the environment, eventually reaching concentrations thousands of times more intense than ambient levels. Mercury commonly bioaccumulates in fish and can lead to high levels of mercury in humans. Choose electronics with a RoHS label.

### POLYCHLORINATED BIPHENYLS (PCBS)

PCB manufacturing in the United States stopped in 1977 but the compound is long-lasting in the environment (mostly in soils) around old manufacturing and disposal sites, in old electrical transformers and electrical devices, and in fish and their predators. They cause cancer in animals and are probable human carcinogens.