

# SAFER CHEMICALS PROCUREMENT TOOLKIT



## Introduction

This Safer Chemistry Toolkit is designed to provide basic knowledge about hazardous chemicals, coupled with procurement strategies intended to drive the use of safer chemicals, and reduce hazardous substance use in products, and the supply chains that produce them.

We have developed the guidance in this toolkit to help purchasers and suppliers at any point on the maturity curve to develop both strategy and contracting suggestions, as well as support for buy-in and change management.

Our focus is on enabling procurement professionals to take action and add their voice to the growing pressure to transition to more benign chemistries and materials. We have tried wherever possible to identify accessible steps that purchasers can take immediately, as well as longer term strategies.

Our guidance here is intended to help procurement organizations align their own safer chemicals requirements with others' wherever possible - to aggregate spend to send a clear demand signal to suppliers, to justify the expense and complexity of changing their products or production processes.

Continuous improvement is always a cornerstone of sustainable procurement strategy. Because purchasing is a cyclical activity, your approach can move from modest to mighty over time, as you engage with suppliers, identify alternatives and bring end users along the learning curve.

We encourage you to act now, at whatever level you can, and then to implement more advanced strategies over time – using increasingly rigorous eco-labels and certifications, for example, addressing additional chemicals of concern, or establishing more comprehensive transparency and reduction requirements for your suppliers.

Thank you to the Forsythia and Passport Foundations for their support of the development of this Toolkit and accompanying Safer Chemicals program implementation.



## WHY IT MATTERS

### *Harm from hazardous chemicals and the case for safer materials*

Chemicals are everywhere, from the food we eat, to the clothes we wear, to the air we breathe. Hazardous chemicals – substances that are dangerous to people, wildlife, and the environment at any stage of their life cycle – are also, unfortunately, ubiquitous.

The chemical industry converts raw materials such as oil, gas, minerals, and metals into useful materials and products via a series of chemical reactions, and also produces a vast array of chemicals for use in the manufacturing sector. These manufacturing chemicals may be added to a material during production to enhance its properties (e.g., flame retardants, preservatives etc.), or may be used in manufacturing processes, where they are mostly consumed and rarely end up in products except as contaminants or by-products. (Catalysts, acids & bases, lubricants etc.).

### **Hazardous Chemicals Impacts**

Some chemicals, such as hydrogen, occur in nature, whereas others, such as di(2-ethylhexyl) phthalate (DEHP), are man-made. Some chemicals, such as water, are inherently safe, but some chemicals, such as mercury and perfluorooctanoic acid, (PFOA) are intrinsically hazardous. Hazardous chemicals create risk to human and animal health, the environment and property; and although some hazardous chemicals are regulated, many are not.<sup>1</sup>

Because a wide array of chemicals, including those harmful to health and the environment, have specific properties that make them useful in aspects of product design and functioning, the market is inundated with products that contain hazardous chemicals or are manufactured using hazardous chemicals, or both. This means that humans and the environment are constantly exposed to these hazardous substances. Countless negative impacts on human health and the environment have been documented, and vulnerable groups suffer disproportionate impacts from chemical exposure. Children, workers, women, indigenous people, and the poor are all particularly vulnerable to hazardous chemical impacts, due to biological, occupational, economic and geographic factors.

### **Lack of Testing**

Despite the known harmful impacts of many chemicals, the vast majority of chemicals in commerce have simply not been studied for safety by any government agency in the United States. The Environmental Protection Agency (EPA) is required by law to test tens of thousands of unregulated chemicals currently on market. However, at the current rate of testing and funding, it would take the agency centuries to finish the review year (PBS 2016), and roughly 2,000 new chemicals are introduced each year. Under US law, untested chemicals are allowed to remain on the market until and unless testing reveals significant potential for harm – and even then, industry pushback on regulators' findings can prevent action for many more years. Given the lack of safety and environmental data for tens of thousands of chemicals, a precautionary approach that looks to use only substances proven safer is desirable.

## Barriers to recycling and circular economy

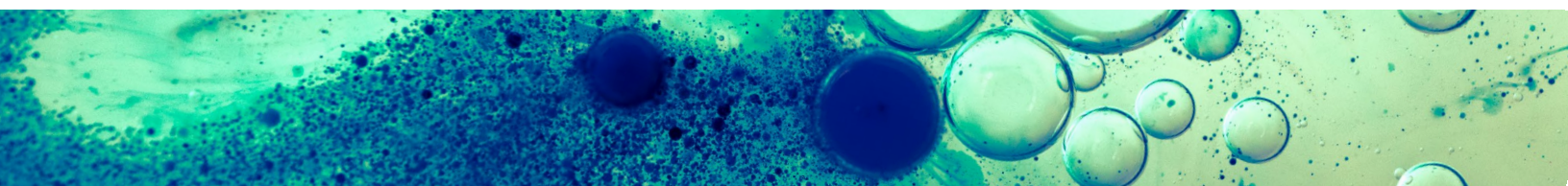
Specifications for more environmentally friendly products often include recycled materials, in order to minimize waste and reduce greenhouse gas emissions. However, recycled materials, especially plastics, often contain hazardous chemicals, including legacy chemicals that are recognized as harmful and no longer used, or volatile substances that do not meet current emissions requirements based on updated understanding of health and environmental impacts. These chemicals, previously considered necessary but now substituted with lower-hazard alternatives, reduce the net benefit of recycling, and the possibility of a truly circular economy. Removing chemical roadblocks and implementing safer chemistry is paramount to enable a circular economy.

## Availability of Alternatives

The vast majority of hazardous chemicals exposure and injury is unnecessary. Safer alternatives are available for many hazardous substances currently in use, and methodologies for developing safer chemistries are well advanced. What is lacking is the motivation and the will to enact necessary changes that may involve costs for research, alternatives testing, closer scrutiny of production settings and tighter controls on waste management.

By requesting, preferring, and eventually requiring the use of safer chemistry, and by making informed purchasing choices focused on products with safer ingredients, the procurement community can help to drive changes at the scale and scope needed to vastly reduce the use of hazardous chemicals. If we do that, our water will be safer, the air will be cleaner, and the products that we use will be produced without causing illness and injury to workers or end users.

<sup>1</sup> For more on specific chemicals of concern, their uses, impacts and current regulatory status, see the Chemicals of Concern Factsheet in this Toolkit





# IMPACTS ALONG THE VALUE CHAIN

Chemicals can cause harm at all stages of the product life cycle, including extraction, manufacturing, transport, use and disposal. In fact, some hazardous chemicals may cause their greatest harm during mining or manufacturing. Various schemes have been developed to address these problems, including onsite audits, tracking of chemical use, and certification, but enforcement is sometimes difficult. As a result of these multiple opportunities for harm, and frequent lack of oversight, addressing supply chain chemical use can be challenging for sustainable purchasing programs.

## Extraction phase

In some cases, the mining and processing of raw materials uses toxic substances that can injure workers and devastate the environment. For example, much of the gold mined in the world is extracted using a mercury process to separate gold from ore. In many instances, workers have no protection from mercury exposure, and mercury runs off from mines into the environment, contaminates water supplies, and injures wildlife and humans. Gold is used in many electronic products that purchasers may procure.

## Manufacturing phase

### Process Chemicals

Many manufacturing processes use toxic chemicals that are not present in finished products. In these cases, factory workers suffer the greatest health risks, often in countries with inadequate worker protection laws. For example, most leather tanning uses chromium III, which oxidizes to form chromium VI, a carcinogen. While the finished leather does not usually contain significant levels of chromium VI, the workers who treat the leather can be heavily exposed. Another example is the electronics industry, where hazardous solvents are used for cleaning and degreasing. While they are generally not present in finished products, exposure to workers is common, with debilitating effects.

## Production releases

Chemical pollution from production facilities is not well regulated in many regions. Worst affected are fenceline communities, those that are near manufacturing sites where hazardous and persistent chemicals are used and disposed - even where use has been discontinued. For example, PCBs formerly used to manufacture electric capacitors still pollute the [Hudson river to unsafe levels](#) despite years of remediation efforts by GE. They continue to contaminate fish to levels that make them unsafe for local residents to catch and eat. In Louisiana, residents that live along the "chemical corridor" between Baton Rouge and New Orleans-an area sadly nicknamed "Cancer Alley"- are exposed to multiple pollutants released from fossil fuel and chemical industries. The result is high rates of cancers in those communities, [up to 50 times the national average](#).

The discharge of untreated textile effluent makes up approximately 80% of the emissions generated by the textile industry ([Wang 2016](#)). The large volume of non-biodegradable organic compounds makes many water bodies receiving effluent uninhabitable for wildlife ([Lellis et al 2019](#)). Some textile dyes act as toxic, carcinogenic and mutagenic agents that persist as environmental pollutants and cross entire food chains. In developing countries, it is common practice to use wastewater as irrigation for agricultural crops, potentially exposing humans and livestock who ingest contaminated food crops.

Environmental justice efforts lay bare the disproportionate impact of these sorts of releases on poor communities and communities of color. These community health and well-being impacts are highly relevant to procurement professionals whose organizations have committed to equity, even if the harm occurs far from their company premises.

## Use Phase

### Hazardous chemicals in finished materials or products

Sustainable purchasing programs are better able to limit the use of certain chemicals at the use phase, that is, when they are actually present in the product. Numerous certifications have been established for this purpose (see Guidance on various product categories)[[LINK to Certs and Ecolabels document](#)] Some hazardous chemicals are intentionally added to products because they provide specific benefits. For example, polyfluorinated alkyl substances (PFAS) protect against stains on carpets and furniture, BPA resins are used in food and beverage can linings to protect food and increase shelf-life, and phthalates provide flexibility to plastics.

## Disposal Phase

### End of product life

The problematic chemicals included in many products can continue to cause harm after those products are discarded. Certain hazardous chemicals must be handled through a complex and costly system of hazardous waste regulation in most developed countries - systems that are often lacking in poorer countries. Even waste that does not require such handling can contaminate the environment and impact community health and the environment. Water soluble chemicals can leach out of products in landfills and enter groundwater. Persistent chemicals such as PFAS are intentionally added to textiles and food packaging, and continue to build up in the environment. PFAS and certain halogenated flame retardants can render some products unrecyclable. Incinerating waste can release toxic incineration byproducts into the air.

## Landfills and Incinerators

More than a third of local soil contaminants come from poorly managed municipal and industrial waste ([EEA](#)). Landfills have negative impacts on soil, air, water and natural life, with most of the hazardous chemicals being released into the local environment through leachate generated during decomposition of the waste ([Iravanian and Ravari 2020](#)).

Landfill leachates and polluted air from incinerators disproportionately impact nearby communities, which are statistically poorer and more likely to be people of color. These communities have higher rates of certain diseases than the norm. For example, eye irritation, from toxic landfill gasses, and body weaknesses were identified in a greater number of the population who lived close to a landfill in a [South African study](#)

Because hazardous chemicals have impacts and cause harm throughout their lifecycle, the best approach to reducing such harm is to restrict and eliminate the use of such substances in the products we purchase, to prevent this chain of devastating consequences.

# Cleaning Products & Disinfectants

## [MODEL SPECIFICATIONS »](#)

### Product Subcategories Covered

- General purpose cleaners - glass, restroom, multipurpose cleaners, cleaner/degreasers
- Disinfectants and sanitizers
- Floor products - finishes, strippers, neutral cleaners
- Carpet and upholstery cleaners
- Laundry detergents
- Specialty cleaners - metal, stone, wood, tile, grill, oven, abrasive cleaners
- Furniture polish
- Odor control products



### Issues and Impacts

**Many certified products:** Third-party certifications are well established for institutional cleaning products, with hundreds of certified products available. While some specialized products carry a higher price point, cost surveys of institutional products have shown little if any price difference between certified and non-certified products.

**Worker exposure:** Custodial workers face the highest exposures, with risks of skin or eye damage, asthma, organ damage, central nervous system effects, and endocrine effects, particularly when personal protective equipment is not used properly. Building occupants may also experience reduced indoor air quality.

**Environmental impacts:** Some cleaning products may have downstream impacts on aquatic life, for example, by causing direct mortality or disrupting hormone balances.

**Dilution control:** Concentrated products are less expensive and carry much lower climate impacts due to reduced transportation requirements. However, concentrates pose higher acute hazards such as skin and eye damage, particularly during mixing. Improper dilution can also cause unnecessarily high chemical use and greater risk to building occupants. Dilution control systems minimize these problems.

**Excessive use of disinfectants:** Disinfectants are more hazardous than most cleaning, and are often overused or used incorrectly. General purpose cleaners are safer and can remove most germs from surfaces.

**Floor strippers:** also top the list for worker and occupant hazards. Strippers are needed for old-style VCT (vinyl composition tile) flooring, but not for many newer types, which do not require floor finishes or strippers.

### Chemicals of Concern

**Glycol ethers** are found in many cleaning products, especially floor strippers and degreasers, and have skin, eye, organ, and central nervous system effects

**Alkylphenol ethoxylates**, which includes nonylphenol ethoxylates, are found in various products, especially laundry detergents. They can have reproductive, developmental, and endocrine effects, and also are highly toxic to aquatic life.

**Sodium hypochlorite (chlorine bleach)** poses skin and eye hazards, as well as causing asthma.

**Quaternary ammonium compounds** commonly found in disinfectants can cause asthma, skin and eye hazards from concentrated products, and also may have downstream effects on aquatic life.

**1-4 dioxane** is a carcinogen and hormone disruptor that is an impurity in some cleaning products, particularly in aerosols.

**Fragrances** are often proprietary chemicals with unknown hazards, and may cause adverse reactions in some people. Some fragrances are stabilized with phthalates, which are hormone disruptors.

## SPLC Recommendations

**Certifications for cleaning products:** Require Green Seal, EPA Safer Choice or UL Ecologo certification, which all prohibit certain hazardous chemicals, prohibit animal testing, limit toxicity and environmental impacts, require product performance testing as part of the criteria, and have rigorous and frequently updated criteria.

**Disinfectants and sanitizers** must be EPA registered. Disinfectants are not covered by the above certifications, although a few safer products have been identified by the US EPA's Design for the Environment Program. For general custodial use, specify disinfectants that have the following active ingredients: Hydrogen peroxide, lactic acid, citric acid, caprylic acid, ethanol, isopropanol, thymol, or hypochlorous acid. Avoid devices that make disinfectant claims unless they come with prepackaged capsules or packets that are EPA registered.

**Dilution systems and concentrates:** Specify the purchase of concentrated products for multipurpose cleaners, neutral floor cleaners, window cleaners, disinfectants and restroom cleaners. Require that these products be in spill-resistant packaging designed for use in dilution/portion control systems. Packaging must not allow for access or exposure to the concentrated product after opening a cap or lid, or before or while connecting to the dispensing system, and must contain a backflow prevention system that meets current American Society of Sanitary Engineering (ASSE) 1055 standard.

**Engage with architects or maintenance staff** the next time they order flooring. Choosing flooring materials that do not require floor finishes and strippers means lower maintenance costs and lower hazards.

## SPLC Category Guidance

Check our [category guidance on cleaning and disinfection](#) for model contract language used by other purchasers, case studies, trainings and other resources

## Resources

- [Plastic & Health: The Hidden Costs of a Plastic Planet](#). 2019.
- [Green Seal](#): Listings of Green Seal certified products, by product type.
- [US EPA Safer Choice](#): Listings of Safer Choice labeled products, by company or product type.
- [UL Ecologo](#): The SPOT online tool provides multiple ways to search for certified products.
- [Design for the Environment list](#) of safer disinfectant products.



# Food

## Product Subcategories Covered

- Institutional foods and beverages

## Issues and Impacts

**Food systems are vast and complex** and impact many environmental and human health issues besides chemical exposure, for example, nutrition, farmworker equity, water use, energy use, climate change, soil erosion, and deforestation. Reducing and transforming agricultural chemical use is a good first step, but menu changes, behavior change and broader policies are also essential. More than any other category, an integrated approach is essential for food procurement efforts.

**Farm workers** bear the brunt of health impacts from excessive or inappropriate pesticide use since their exposure is direct and frequent.

**Fertilizer pollution:** Nitrogen and phosphorus pollution can come from excessive chemical fertilizer use, and can also originate from concentrated animal feeding operations (CAFOs), where the manure of tens of thousands of animals become harmful pollutants instead of beneficial plant nutrients. Excessive fertilizers in runoff create algal blooms, remove oxygen from the water and ultimately kill aquatic life.

**Many certifications, but only a few common ones.** Due to the complexity of food systems, it is usually not feasible to require specific farming practices in bidding documents, therefore certifications are especially important to food procurement. There are at least 19 third-party food certifications in the US, but most are relatively rare in the marketplace. USDA Organic, Rainforest Alliance Certified, and Fair Trade Certified are the most commonly available and recognized food certifications addressing agricultural chemicals, although Fair Trade is more oriented to farmer welfare than chemical use restrictions.

**Buying locally produced food** reduces the pollution and climate impact of transportation, and also supports local economies. Specifying locally produced food is more feasible for some products than others, and is not always possible when supply chains are not transparent.



**Genetically modified organisms (GMOs)** come in many forms. Some have actually helped reduce pesticide use for certain crops by introducing disease and pest resistance. However, the predominant GMOs in agriculture today are designed to make crops herbicide resistant, allowing even greater herbicide use and potential harm to living things. GMO-free food labeling may therefore be beneficial for some crops (such as corn and soy), but not for others.

**Plant-forward diets** are widely recommended for reducing the climate impacts of meat and dairy production. Promoting institutional menu changes is one way to move food procurement in the right direction.

**Specialized food restrictions** exist for certain institutions like hospitals and correctional facilities. Precut and/or prepackaged foods may be required for these users, and prisons have special packaging requirements for safety reasons. In these situations, obtaining certified foods may become more challenging.

**Certified foods, such as USDA Organic, usually cost more** than uncertified foods. The average difference is 7.5%, but there is wide variation between product categories. Increased costs can be accommodated through cost savings in other areas, for example, reducing meat or processed food purchases.

## Chemicals of Concern

**High risk pesticides.** “Pesticides” include any chemicals used to kill living organisms: Insecticides, herbicides, rodenticides, fungicides, and more. Their toxicity to humans and the environment varies widely. Older classes of insecticides like carbamates and organophosphates (for example, chlorpyrifos), along with soil fumigants such as methyl iodide, are among the most dangerous for farm workers. Risks to consumers eating treated food are lower but occasionally significant, and not fully understood. Some newer classes of pesticides, such as neonicotinoids and pyrethroids, are less toxic to humans but pose risks to pollinators or aquatic animals.

**Chemical fertilizers** increase production but also pollute waterways, causing algae blooms, killing fish and causing “dead zones” in marine areas, for example, the Gulf of Mexico. Together with certain pesticides, chemical fertilizers can also effectively sterilize soils by killing microorganisms and reducing organic matter.

**Antibiotic use for meat** production is sometimes used to encourage faster growth of animals, rather than to treat diseases. More antibiotics are used for animals than for humans in the US. Antibiotic overuse promotes antibiotic-resistant microbes that pose serious human health threats.

## SPLC Recommendations

**Get to know your chefs.** Understanding the needs and constraints of food services is critical to moving food purchases in a sustainable direction. Work with food service staff in your organization to collect data on current purchases, and identify opportunities for promoting plant-forward menus, and local or certified produce.

**Develop an overall food policy and plan.** Establish a working group to incorporate climate impact, nutritional goals, sustainable food production, social equity and local needs into an overall policy for your organization. Make connections with existing food procurement, green purchasing, climate action and food/wellness policies.

**Prioritize your efforts** based on spend data for different food items and also based on opportunities available in your locality. For example, you may find that it is simpler to specify locally produced, organically certified dairy products than to specify local vegetables.

**Use third-party certifications.** Specify certified products in bid solicitations, starting with priority product categories. USDA Organic, Rainforest Alliance, and Food Alliance Certified directly address agricultural chemical use. Consider applying other third-party certifications to address seafood, sustainable meat production, and animal welfare issues, including Fair Trade Certified, Marine Stewardship Council, American Grassfed, Animal Welfare Approved by AGW, and Certified Humane Raised and Handled.

## SPLC Category Guidance

SPLC’s [Sustainable Procurement Resources for Food Services, Food and Beverages](#) offer in-depth information on contract language, strategies, case studies, trainings, community discussions and other resources.

## Resources

- [A Municipal Guide to Climate-Friendly Food Purchasing](#), 2017. Responsible Purchasing Network.
- [Center for Good Food Purchasing](#) offers independent analysis of institutions’ purchasing data, and uses its “Good Food Purchasing Standards” as criteria for the progra

# Food Service Ware

## [MODEL SPECIFICATIONS »](#)

### Product Subcategories Covered

- Single-use bags
- Plastic wrap, paper wrappers
- Disposable plates and bowls
- Cold and hot cups, cup lids
- To-go containers,
- Disposable cutlery, stir sticks, straws



### Issues and Impacts

**Differences in local recycling/composting systems:** Local waste handling systems vary widely, and this must be considered in purchasing decisions. Many localities still lack municipal composting, for example, which means compostability is not an important factor. While many plastic foodware products are theoretically recyclable, contamination with leftover food can render them unacceptable by recyclers.

**Cost impacts:** PFAS-treated molded fiber containers are sometimes cheaper than lined containers, and there may be minor price differences in other foodware between certified and uncertified products. If water or grease resistance is not important, unlined containers can save money.

**Plastic pollution:** Single-use plastic bags and foodware are the largest component of municipal waste (32%). Marine plastic

pollution has impacted at least 267 species worldwide, including 86% of all sea turtle species, 44% of all seabird species and 43% of all marine mammal species. Plastic pollution threatens food safety and quality, human health, coastal tourism, and contributes to climate change.

**Human health hazards:** 90% of plastics are produced from fossil fuels, and plastics production can harm human health at every step of production. Harmful chemicals can leach out of some plastics into food.

**Contamination of recycling and composting streams:** Contamination of recycled plastics can make them unacceptable for use, increasing the amount of waste going to landfill. Contamination of compost with chemicals such as PFAS can transmit the chemicals to soils.

### Chemicals of Concern

**Fluorinated chemicals:** Per- and poly-fluoroalkyl substances (PFAS) is a family of chemicals representing thousands of compounds. Some are very persistent in the environment and are linked to health impacts in women's reproduction and child development, hormone effects, and increased risk of cancer. PFAS is commonly added to food takeout containers made of molded fiber (typically bagasse, wheat fiber or wood pulp) to impart grease and water resistance.

**Styrene:** Styrene (used to manufacture polystyrene) is a carcinogen, and may be transferred to food from polystyrene. Styrofoam is a form of polystyrene, is not typically accepted in community recycling, and often breaks down in the environment to pollute waterways. Styrofoam cups and containers (resin #6) are popular due to their low cost, waterproof properties, and effectiveness as heat insulators.

**BPA:** Polycarbonate plastic (resin #7) is composed of bisphenol-A (BPA) molecules. BPA can leach from plastic containers, and is known to be a hormone disruptor with developmental toxicity.

**Plasticizers:** Some plastics, particularly PVC or vinyl (resin #3), require plasticizer chemicals to make them flexible. Phthalates are common plasticizers that are hormone disruptors and can harm the reproductive and nervous systems, especially in children.

**Chlorinated organic compounds:** Bleaching of paper pulp with chlorine or chlorine derivatives produces chlorinated organic compounds, including chloroform, a known carcinogen.

## SPLC Recommendations

**Convert to reusable foodware.** Completely replacing disposable foodware with durable, reusable, foodware made of stainless steel, aluminum, ceramics or glass is the safest and most sustainable approach. However, this conversion requires up-front investment (in dishwashing and storage), changes in business processes, and consumer education. For certain situations, like large events, reusables may not be practical. Review the specific needs for foodware with buyers and tailor the bid to minimize disposables.

**Specify BPI or CMA certified compostable foodware.** Until the conversion to reusable foodware is complete, safer disposable foodware may be needed. Both BPI (Biodegradable Products Institute) and CMA (Compost Manufacturers Alliance) certifications prohibit PFAS use and ensure that containers are truly compostable. Each certification also features lists of compliant products.

**Specify GreenScreen Certified foodware.** This is a new certification for all varieties of disposable foodware that prohibits PFAS and thousands of other chemicals of concern. Note that GreenScreen Certified does not certify compostability.

**Specify chlorine-free bleaching for paper products.** If available, specify unbleached paper or paper bleached without chlorine or chlorine derivatives.

## SPLC Category Guidance

SPLC's [Recommendations for Sustainable Food Service Ware](#) offer in-depth information on performance criteria, pricing, model contract language used by other purchasers, case studies, and other resources.

## Resources

- [GreenScreen Certified foodware](#)
- [BPI Certified foodware](#)
- [CMA Certified foodware](#)



[MODEL SPECIFICATIONS »](#)

## Product Subcategories Covered

- Institutional carpet: Broadloom carpet, carpet tiles, area rugs
- Furniture: Upholstered and un-upholstered seating, desks, tables, workstations and systems furniture, storage
- Resilient flooring

## Issues and Impacts

**Important and complicated products.** Both flooring and furniture contain long lists of chemical ingredients, many of them hazardous and avoidable. Because they affect indoor air quality, furnishings are especially important for sustainable purchasing efforts: According to the US EPA, [indoor air quality can be two to five times worse than outdoor air quality](#). The availability of protective certifications and certified products has lagged behind our knowledge of these hazards, particularly with regard to fluorinated chemicals. Therefore, at this time the best purchasing specifications involve a combination of existing certifications and other requirements. Recyclability of carpets adds another complication, since carpet manufacturers (rightfully) avoid recycling materials containing chemicals like flame retardants or PFAS. For these reasons, safer product lists are especially helpful for purchasers.

## Chemicals of Concern

**Formaldehyde** is an example of a harmful volatile organic compound (VOC) that is known to cause cancer, yet is still often used in adhesives found in wood furniture.

**Fluorinated chemicals:** Per- and poly-fluoroalkyl substances (PFAS) is a family of chemicals representing thousands of compounds. Some are very persistent in the environment and are linked to health impacts in women's reproduction and child development, hormone effects, and increased risk of cancer. PFAS is sometimes used as a surface treatment for carpets and upholstered furniture to increase stain, oil, and water resistance. Fluorinated chemicals have been found to migrate out of products and get into our air, dust, water and bodies.

**Antimicrobial chemicals** are sometimes added to furniture and promoted as protecting human health, however, these benefits are not supported by research. Antimicrobials may have adverse effects on beneficial microorganisms and other living things.



**Low VOCs is not enough.** Volatile organic compounds (VOCs), which escape from furniture and flooring into the air, are the most well known health issues associated with furnishings. Requiring low- and no-VOC certifications is a big step toward safer products, but given the many other hazardous chemicals involved, more restrictions are needed.

**Carpet tiles are superior to broadloom (rolled) carpet** for most situations. Repair is much simpler, involving the replacement of individual tiles, thus dramatically reducing waste (and hazardous ingredients) going to the landfill. Purchasers may need to accommodate certain special needs for broadloom products, for example, in historical buildings or on stairways.

For example, the antimicrobial chemical **triclosan** is commonly added to many consumer products, and easily absorbed through the skin at levels that can affect microbes in the body. Research has shown that long-term exposure may affect hormones, promote cancer, promote the development of antibiotic-resistant bacteria, and harm aquatic life.

**Flame retardants** are sometimes used in large quantities in upholstered furniture - up to 15% of foam cushions. Halogenated flame retardants have been linked to cancer and other serious diseases, yet government studies show that these chemicals do not provide added fire safety benefits in furniture. Flame retardants escape out of furniture and get into our air, dust, and our bodies, and are very persistent in the environment.

**Vinyl, or polyvinyl chloride (PVC)**, is used in plastic parts of furniture and at times in fabric. PVC often includes harmful chemical additives like lead, flame retardants, or phthalates. Every stage in PVC manufacture and use involves health and environmental hazards.

## SPLC Recommendations

**Use third-party certifications.** [Cradle-to-Cradle's](#) (C2C) new v. 4.0 certification covers a full range of environmental issues and offers rigorous chemical restrictions, when products become available. Until then, check Cradle-to-Cradle v. 3.1 carpet and furniture products ("Gold" or "Platinum" level) or [BIFMA Level 3 standard for furniture](#). Another broad and rigorous certification is the [Living Product Challenge \(LPC\)](#) for furniture and carpet products. LPC's Declare label and the new [Green Screen Certified](#) certification also include rigorous chemical restrictions, but do not address other environmental issues; if using Declare, check the boxes for "Red List Free" and "Third Party Verified." The [NSF/ANSI 140 Sustainability Assessment](#) is a broad-based, widely used standard for carpet only, however it is less stringent. Specify no PFAS or halogenated flame retardants separately if using C2C 3.1, BIFMA, or NSF certifications.

**If possible, use safer product lists** developed by Center for Environmental Health (CEH) ([carpet/flooring](#), [furniture](#)) or Health Care Without Harm ([carpet/flooring](#), [furniture](#)). GreenHealth ([carpet/flooring](#)) is a certification based on HCWH, and the product lists overlap.

**Consult end users before finalizing bid documents.** Show them the lists of safer products and ask if they meet their needs, for example, compatibility with existing designs, special contexts (like historic buildings), or special uses (like repairing existing carpet).

**Avoid products advertised as "antimicrobial", "antibacterial", "antiviral" or "anti-odor".** Despite marketing claims, the benefits are not supported by science.

**Upholstery complicates furniture decisions.** When furniture is listed as PFAS-free, it usually applies only to one kind of upholstery. If customizing upholstery, make sure to [check](#) that it is PFAS free also.

**Health Product Declarations provide transparency** on the health hazards of all ingredients, and push the industry in the right direction. Consider requiring [HPDs](#) for all purchases. Another alternative is requiring the [Declare label](#) with third-party certification.

**Give preference to manufacturers committed to "circularity."** This means that they provide take back programs, and that their products are made with safer materials and designed for disassembly/recycling.

## SPLC Category Guidance

SPLC's [Sustainable Procurement Resources for Furnishings](#) offer in-depth information on strategies, case studies, trainings, community discussions and other resources.

## Resources

### Carpet and Flooring

- San Francisco's [carpet regulation](#), easily adaptable as model language
- San Francisco's [SF Approved carpets and adhesives list](#) meets the HCWH and the CEH criteria, and provides extensive details on product lines.
- The [CEH Healthier Flooring Purchasing Guide](#) is a searchable database that contains carpet and flooring products that have been self-reported by the manufacturer as being compliant with Healthcare without Harm's (HCWH) [Healthy Flooring and Healthy Carpet criteria](#). The guide also lists whether the product is available on the [NASPO contract](#). (National Association of State Procurement Officials).
- HCWH provides a [similar list](#) that is no longer updated by manufacturers; [Greenhealth Approved](#) is a new certification using the same criteria that is updated, but may have fewer listed products. (Note: Always verify these claims with the manufacturer.)

### Furniture

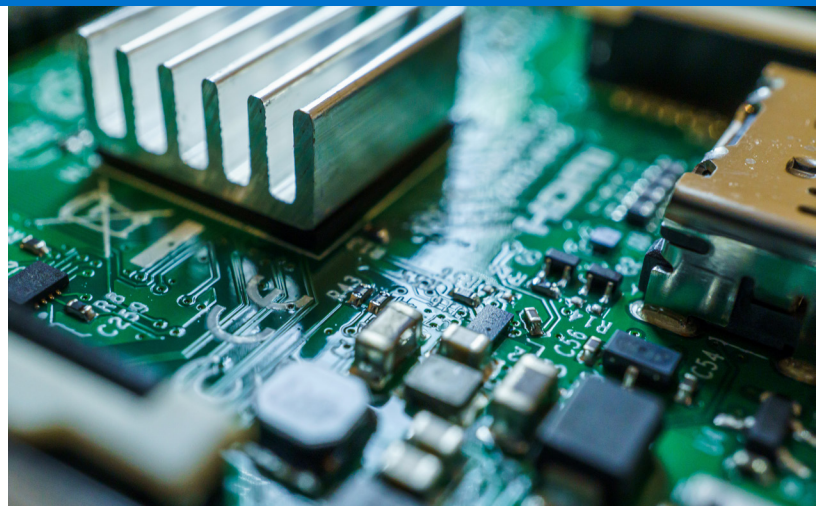
- San Francisco's [model language for upholstered furniture](#)
- San Francisco's [SF Approved furniture list](#) meets the HCWH and CEH criteria, and also contains information on compliant textiles for upholstery.
- The [CEH Healthier Furniture Purchasing Guide](#) is a searchable database using the same criteria as HCWH.
- HCWH provides a list of eligible furnishings and textiles [here](#). Click on a manufacturer name to see their product lists and accompanying eco labels.

# Information Technology Products

## [MODEL SPECIFICATIONS](#) »

### Product Subcategories Covered

- Computer - laptops, desktops, tablets
- Mobile phones
- Imaging equipment - printers, faxes, scanners, and multifunction devices
- Servers
- TVs and large digital displays
- Switching devices, networking hardware, and hardware components



### Issues and Impacts

**Progress in restricting chemicals.** Progress has been made in restricting hazardous chemicals from finished products via restricted substance lists and regulations such as the EU's Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS) regulations.

**Computers, imaging equipment and displays are the easiest subcategories** for purchasers, featuring a wide variety of certified brands. Certifications are still under development for switching and networking hardware. Addressing the environmental impacts of servers is more complex and requires attention to other factors such as equipment configurations, heating and cooling systems for server rooms, and server virtualization (use of cloud-based servers).

**Worker exposures.** Despite progress, numerous chemicals of concern are still associated with the production of electronic

hardware. Worker exposure in production facilities and resulting health issues are very common. For example, over 300 cases of cancer and other serious exposure-related illnesses in electronics industry workers were extensively documented in South Korea.

**Electronic waste.** E-waste volumes are surging globally - up 21% in the five years up to 2019 to 53.6 million metric tonnes. That is as much as 350 cruise ships placed end to end to form a line 125 km long. This growth is projected to continue, but only 17.4% of e-waste produced in 2019 reached formal management or recycling facilities. The rest was illegally dumped, overwhelmingly in low- or middle-income countries, where it is recycled by informal workers. These workers, aiming to recover valuable materials such as copper and gold, are at risk of exposure to over 1,000 harmful substances, including lead, mercury, nickel, and flame retardants.

### Chemicals of Concern

**Solvents:** Commonly used solvents in manufacturing include trichloroethylene, methylene chloride, perchloroethylene, trichloroethane, chloroform, toluene, acetone, glycol ethers, and xylene. The first four chemicals are carcinogens; toluene, acetone and xylene affect child development, and some glycol ethers cause organ toxicity and central nervous system effects.

**Acids and alkalis:** These broad groups of chemicals are used for electroplating, soldering, crystal polishing, and metal picking. They can cause serious burns if they come into contact with the eyes or skin. If vapors or mists are inhaled, they may burn the linings of the nose, mouth, throat, and lungs.

**Metals:** A wide variety of metals are used in IT equipment, including lead, cadmium, chromium and beryllium. Many are carcinogens and persistent bioaccumulative toxins that accumulate in animal tissues. Exposure occurs primarily through skin contact and inhalation of metal dusts and fumes.

**Plastic resins:** Inhalation or skin contact may occur when curing resins; cutting, heating, or stripping wires; or cutting, grinding or sawing a hardened product. Exposure to these substances may result in skin rashes and upper respiratory irritation. In some plastics, other toxic chemicals are used as stabilizers (such as lead) or plasticizers (such phthalates).

**Halogenated flame retardants:** Many kinds of flame retardants are used in plastic computer cases and on circuit boards - up to 25% by weight in cases. Flame retardants migrate out of electronics cases and into indoor dust, which is ingested by people and pets. Some of these chemicals are associated with lowered IQ in children, cancer, hormone disruption, and other serious health problems. Some flame retardants are also persistent bioaccumulative toxins that accumulate in the environment.

## SPLC Recommendations

**Procure certified products.** EPEAT and TCO cover thousands of products and include requirements that limit toxics, improve recyclability, reduce waste, improve energy efficiency, and improve worker safety. ENERGYSTAR qualified products listings may be useful for large digital displays or other categories not well covered by the other certifications. Each has a directory of certified products; EPEAT also provides details on specific voluntary criteria that have been met. If using EPEAT, select the highest rated products in a given category that meets your organization's needs. You may also require that the products you meet EPEAT voluntary criteria related to hazardous chemicals (as opposed to only meeting the baseline required criteria).

**Ask for a commitment to protect workers.** Consider granting additional points to brands and suppliers involved in the CEPN Toward Zero Exposure campaign. Participation ensures that the brand or manufacturer is committed to safer workplaces, safer processes, and the elimination of hazardous chemical exposures.

**Keep older products as long as possible.** Develop a system for repurposing, refurbishment, resale or donation of used equipment, either within your own organization or by contracting with an IT asset disposition firm.

**Push the envelope.** For organizations with less demanding computer needs, refurbished or remanufactured equipment reduces the waste impact. One example is Circular Computing, which remanufactures IT hardware for resale to large organizations. Another novel option is paying to be "waste neutral," for example, by participating in Closing the Loop, which uses a small fee on new mobile phone purchases to fund collection and safe recycling of phones in countries without sophisticated recycling infrastructure. Both programs ensure that devices are refurbished or recycled in controlled environments, parts and materials are reused to the extent possible, and hazardous materials are properly handled.

## SPLC Category Guidance

Check [SPLC's Sustainable Procurement Resources for Electronics/IT Hardware and Services](#) for model policies, strategies, case studies, and community discussions.

## Resources

- [San Francisco's Green Technology Purchasing Policy](#) - Includes language for purchasers.
- [EPEAT registered products](#) - Computers/laptops/monitors, imaging equipment, servers, mobile phones, TVs and large digital displays, photovoltaic modules, and networking equipment
- [TCO certified products](#) - Computers/laptops/monitors, imaging equipment, servers, mobile phones, data storage, projectors, headsets, networking equipment
- [ENERGYSTAR qualified products](#) - Do not include chemical restrictions, but helpful for cases where few products are certified by EPEAT or TCO (such as large digital displays).
- [CEPN Toward Zero Exposure](#) campaign identifies manufacturers committed to safer workplaces



# Architectural Paints and Coatings

## [MODEL SPECIFICATIONS »](#)

### Product Subcategories Covered

- Architectural paints and primers
- Paint thinners
- Stains, varnishes and sealers
- Specialty paints
- Paint strippers

### Issues and Impacts

**Diversity of paints and coatings.** There are many, many kinds of paints and coatings. The most familiar are architectural paints, which can be broadly separated into oil-based and water-based. While oil-based paints are somewhat more durable for certain applications, water-based paints are safer, easier to use and have much lower levels of VOCs. There are many architectural paints certified under the recommended certifications (below), which makes specification of safer products easier for purchasers. For specialty paints and high-performance industrial coatings – such as epoxy coatings, powder coatings, traffic paints and others – some certified products are available, but consultation with end users is essential.

### Chemicals of Concern

**Solvents:** A variety of solvents are used in paint products, including toluene, xylene, methyl isobutyl ketone, and glycol ethers. Some of these solvents can cause cancer, and many have effects on the central nervous system, liver and kidneys. Most of these chemicals are considered volatile organic compounds (VOCs), so purchasing low- or no-VOC paints will reduce – but not eliminate – the hazards.

**PFAS:** Per- and poly-fluoroalkyl substances (PFAS) is a family of chemicals representing thousands of compounds. Some are very persistent in the environment and are linked to health impacts in women's reproduction and child development, hormone effects, and increased risk of cancer. PFAS may be added to paints to improve flow, spread, and glossiness, and to decrease bubbling and peeling. They are also used in specialty paints to give stain-resistant, graffiti-proof, and water-repellent properties.

**Alkylphenol ethoxylates (APEs)** are surfactants found in some paints. APEs break down into alkylphenols, with the most common being nonylphenol and octylphenol. Alkylphenols and



**Volatile organic compounds (VOCs),** which escape from paint formulations as they cure, present the most well-known health issues associated with paints. Buying no- or low-VOC paint is a big step towards reducing hazards, however, many other additives and adjunct products also impact human health and the environment.

**Recycled paints** allow the reuse of excess paint products, save money, and reduce the need for hazardous waste disposal. However, by nature they contain higher VOCs and more hazardous ingredients, which will vary widely by batch.

some APEs are known hormone disruptors with reproductive and developmental effects, and are highly toxic to aquatic animals. The US EPA has initiated a voluntary phase-out of nonylphenol ethoxylates in detergents.

**Heavy metals,** including antimony and chromium, are sometimes found in paint pigments. Heavy metal exposures are associated with numerous health issues, including damage to the functioning of the brain, lungs, kidney, liver, blood composition and other important organs. Heavy metals are also persistent and accumulate in the environment.

**Methylene chloride** is a carcinogen and developmental toxicant, and can damage the liver and kidneys. It is also highly toxic in short-term exposures, and has resulted in the deaths of painters, leading the US EPA to ban its use in consumer (but not professional) products. Its primary use is in paint strippers.

**N-methylpyrrolidone (NMP)** is another chemical used in paint strippers. Although less acutely toxic than methylene chloride, it is still a developmental toxicant that is corrosive to the skin and eyes.

**Phthalates** are plasticizers added to increase the paint's flexibility. When the paint dries, phthalates can enter the air or stick to dust particles. One type of phthalate used in paint, dibutyl phthalate, or DBP, has developmental effects and causes hormone disruption in animal studies.

**Antimicrobials:** Antimicrobial chemicals are often added to paints and promoted as protecting human health, however, these benefits are not supported by research. To date, the [EPA](#) has not approved any public health claims by manufacturers of antimicrobial paints. Antimicrobials may have adverse effects on beneficial

microorganisms and other living things. For example, **quaternary ammonium compounds** (quats) are associated with asthma, reproductive and developmental effects, and impacts on aquatic life, and **nano-silver** is toxic to aquatic life. Some antimicrobials are associated with promoting antibiotic resistant germs - a long-term human health threat.

**Preservatives** are used to extend the shelf life of the product, and there are many compounds used for this purpose, some of them antimicrobials. Although present in very small quantities, some preservatives can release formaldehyde, a known carcinogen.

## SPLC Recommendations

**Consult your painters regarding performance issues** and needs, especially for specialty or high-performance industrial products. Durability is important for environmental reasons also - it results in less frequent painting, and therefore lower impacts in the long term.

**Buy certified paints** using credible, multi-attribute ecolabels that address toxicity and hazardous ingredients. These include [Green Seal GS-11](#), [MPI X-Green](#), and [Greenwise Gold](#). If no certified products are available in the desired product category, check the less stringent [Greenwise](#) (not gold) and MPI GPS-2, with [MPI](#) GPS-1 as the least protective alternative.

**Minimize VOCs.** If the above certifications are not available for a product category, buy products identified as "no-VOC" if possible, or "low-VOC" otherwise. Low/no VOC products can be identified through certification by one of the following single attribute ecolabels: [SCS Indoor Air Quality Advantage Gold Certification](#), and [UL GREENGUARD Gold](#).

**Prohibit methylene chloride and NMP in paint strippers.** Work with painters for find serviceable alternatives. Products containing methyl acetate or benzyl alcohol have shown some promise.

**Health Product Declarations** provide transparency on the health hazards of all ingredients, and push the industry in the right direction. Consider requiring [HPDs](#) for all paint purchases. Another alternative is requiring the [Declare label](#) with the third-party certification option.

**Avoid products advertised as "antimicrobial", "antibacterial", "antiviral" or "anti-odor".** Despite marketing claims, the benefits are not supported by science.

**If purchasing recycled paints, take special care.** Purchase only products certified to Green Seal GS 43 AND require that the paint has been tested for hazardous content (especially lead and other heavy metals). Recycled paint should only be used for exterior projects in non-sensitive locations, and workers should be provided with appropriate personal protective equipment.

## SPLC Category Guidance

SPLC's [Sustainable Procurement Resources for Paints and Coatings](#) offer in-depth information on performance criteria, case studies, and other resources.

## Resources

- [Home Free guidance](#) by the Healthy Building Network provides an easy "spectrum" of paint hazards
- [Green Seal](#) provides lists of GS-11 third-party certified products
- [Master Painters Institute](#) (MPI) provides extensive lists of MPI GPS-1, GPS-2, and XTreme Green third-party certified products
- [Greenwise](#) is a manufacturers organization that provides list of Greenwise and Greenwise Gold certified products
- [SCS Indoor Air Quality Advantage Gold](#) and [UL GREENGUARD Gold](#) are third-party certifications of low- and no-VOC products, but without limitations on ingredients
- [Health Product Declaration Collaborative](#) promotes transparency on chemical hazards in products through a third-party certified program.
- [Living Future Institute's Declare](#) label promotes transparency of product ingredients, with the option to declare the product "red-list free," (free of hazardous chemicals listed on the LFI's red list) and/or "third-party verified."

# QUICK SPECS: Safer Chemicals

- » [Cleaning products and disinfectants](#)
- » [Information technology products](#)
- » [Architectural paints and coatings](#)
- » [Furniture](#)
- » [Carpet](#)
- » [Resilient Flooring](#)
- » [Electronics equipment/IT](#)
- » [Food service ware](#)

## [SPLC Quick Spec – Cleaning products and disinfectants](#)

*These interim purchasing specifications represent SPLC's current "best available" recommendations, based on 1) rigorous coverage of multiple environmental and health concerns, including chemical ingredients, and 2) successful implementation by contracting agencies. The specifications were drawn from existing language created by various purchasing agencies and nonprofit groups, especially the Commonwealth of Massachusetts, Responsible Purchasing Network, Center for Environmental Health, City and County of San Francisco, and Healthcare Without Harm/Green Health Approved. They have been reviewed by SPLC's Safer Chemicals learning circle. We welcome additional comments and recommendations.*

**Cleaning products**, including, general purpose, glass, restroom, and multipurpose cleaners, cleaner/degreasers; floor finishes, strippers, and neutral cleaners; carpet and upholstery cleaners, laundry detergents, metal, stone, wood, tile, grill, oven, and abrasive cleaners, furniture polish, and odor control products

1. Products must not be in aerosol containers;
2. All concentrated cleaning chemicals must be in a spill-resistant package that prevents access to the undiluted chemical, and
3. Cleaning products must be certified at the time of bid by at least one of the following:
  - Cradle to Cradle Certified Gold level or higher, version 3.1 or later
  - Green Seal
  - Safer Choice
  - UL ECOLOGO

### **Disinfectants and sanitizers**

1. Products must not be in aerosol containers;
2. Concentrated products must be in a spill-resistant package that prevents access to the undiluted chemical;
3. Products must be registered by the US EPA;
4. Products may contain only the following active ingredients:
  - Hydrogen peroxide
  - Lactic acid
  - Caprylic acid
  - Citric acid
  - Thymol
  - Hypochlorous acid
  - Ethanol
  - Isopropanol

## [SPLC Quick Spec – Architectural Paints](#)

*These interim purchasing specifications represent SPLC's current "best available" recommendations, based on 1) rigorous coverage of multiple environmental and health concerns, including chemical ingredients, and 2) successful implementation by contracting agencies. The specifications were drawn from existing language created by various purchasing agencies and nonprofit groups, especially the Commonwealth of Massachusetts, Responsible Purchasing Network, Center for Environmental Health, City and County of San Francisco, and Healthcare Without Harm/Green Health Approved. They have been reviewed by SPLC's Safer Chemicals learning circle. We welcome additional comments and recommendations.*

**Interior latex wall and ceiling paints and primers**, including all paint and primer types designated as "Latex, Interior" by MPI except those designated as "Latex, Interior, High Performance Architectural" must be certified by one of the following:

- a. Cradle to Cradle Certified Gold level or higher, version 3.1 or later
- b. Greenwise Gold
- c. Master Painters Institute (MPI) Extreme Green (X-Green)

**Other architectural paints**, excluding specialty paints, shall be certified by one of the following:

- a. Cradle to Cradle (Silver)
- b. Green Seal (GS-11)
- c. Greenwise
- d. Master Painters Institute (MPI) Green Performance Standard (GPS-1 or GPS-2)

## [SPLC Quick Spec – Furniture](#)

*These interim purchasing specifications represent SPLC's current "best available" recommendations, based on 1) rigorous coverage of multiple environmental and health concerns, including chemical ingredients, and 2) successful implementation by contracting agencies. The specifications were drawn from existing language created by various purchasing agencies and nonprofit groups, especially the Commonwealth of Massachusetts, Responsible Purchasing Network, Center for Environmental Health, City and County of San Francisco, and Healthcare Without Harm/Green Health Approved. They have been reviewed by SPLC's Safer Chemicals learning circle. We welcome additional comments and recommendations.*

**Furniture**, including fabrics used for the upholstery and reupholstery, must meet the [most recent requirements](#) established by Health Care Without Harm/Green Health Approved.

**Documentation of compliance must include at least one of the following:**

Paper documentation or URL demonstrating that the product line is:

1. Certified under the GreenScreen Certified standard for Furniture and Fabrics Version 1 or higher at the Bronze level, and is listed on the GreenScreen Furniture and Fabric Certification list of certified products; OR
2. Certified by the BIFMA LEVEL program as meeting ANSI/BIFMA e3-2019 Furniture Sustainability Standard, as credit 7.4.4- Targeted Chemical Elimination; OR
3. Certified as meeting ANSI/BIFMA e3-2019 Furniture Sustainability Standard, as credit 7.4.4 Targeted Chemical Elimination, by a third-party certification body deemed acceptable by the [CONTRACTING AGENCY] OR
4. Certified as meeting the requirements in Section I above by a third-party certification body deemed acceptable by the San Francisco Department of the Environment; OR
5. Registered as meeting the above requirements by another organization deemed acceptable by the [CONTRACTING AGENCY].



## SPLC Quick Spec – Carpet

These interim purchasing specifications represent SPLC's current "best available" recommendations, based on 1) rigorous coverage of multiple environmental and health concerns, including chemical ingredients, and 2) successful implementation by contracting agencies. The specifications were drawn from existing language created by various purchasing agencies and nonprofit groups, especially the Commonwealth of Massachusetts, Responsible Purchasing Network, Center for Environmental Health, City and County of San Francisco, and Healthcare Without Harm/Green Health Approved. They have been reviewed by SPLC's Safer Chemicals learning circle. We welcome additional comments and recommendations.

**Carpet**, including commercial hard-backed carpet tile and broadloom carpet, must meet the following requirements:

1. **Prohibited products:** The following products are prohibited from purchase.
  - a. Broadloom carpets, unless their installation qualifies as a waived category under [CONTRACTING AGENCY WAIVER REQUIREMENTS];
  - b. Cushion-backed carpet tiles.
2. **Carpet tiles** shall:
  - a. Be commercial hard-backed carpet tiles;
  - b. Be Cradle to Cradle Certified™ (C2CC) Silver or higher under v3.1 or newer;
  - c. Meet Carpet and Rug Institute (CRI) Green Label Plus certification or other certifications of compliance with the California Department of Public Health Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, also known as CDPH/EHLB Standard Method v1.1 or California Specification 01350 (referred to herein as "VOC requirements");
  - d. Have an Environmental Product Declaration® (EPD) following a US or international carpet product category rule (PCR) that conforms to ISO 14025, 14040, 14044, and EN 15804 or ISO 21930 and has at least a cradle to gate scope;
  - e. Have a compliant Health Product Declaration® (HPD) with content characterized, screened, and inventoried to at least 1,000 ppm under v2.0 or newer; or a Living Building Challenge Compliant (LBCC) Declare SM label;
  - f. Contain no intentionally added:
  - g. Antimicrobials at or above 100 parts per million (ppm)
  - h. Flame retardant chemicals
  - i. PFASs, such as those commonly used as stain, water, or oil resistance treatments
  - j. Contain a minimum of 45% total recycled content, of which at least 10% shall be post-consumer;
  - k. Carpet yarn shall be:
    - i. Type 6 or 6,6 cationic nylon
    - ii. 100% solution-dyed
  - l. Carpet backing shall be free of:
    - i. Coal fly-ash
    - ii. Polyvinyl chloride (PVC)
    - iii. Polyurethane
    - iv. Synthetic styrene butadiene latex
3. **Carpet tile adhesives** shall meet:
  - a. CAI Green Label Plus certification
  - b. California Department of Public Health (CDPH) Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers (also known as CDPH/EHLB Standard Method v1.1 or California Specification 01350)
  - c. Carpet tile tape adhesives shall also have a Bronze level or higher Material Health Certificate (MHC) from Cradle to Cradle Products Innovation Institute (C2CPII) under v3.1 or newer;
  - d. Carpet tile wet adhesives shall also:
    - i. Have a Silver level or higher MHC from C2CPII under v3.1 or newer
    - ii. Meet South Coast Air Quality Management District (SCAQMD) Rule 1168 (2005) for wet adhesives (< 50g/l)

## SPLC Quick Spec – Resilient Flooring

*These interim purchasing specifications represent SPLC's current "best available" recommendations, based on 1) rigorous coverage of multiple environmental and health concerns, including chemical ingredients, and 2) successful implementation by contracting agencies. The specifications were drawn from existing language created by various purchasing agencies and nonprofit groups, especially the Commonwealth of Massachusetts, Responsible Purchasing Network, Center for Environmental Health, City and County of San Francisco, and Healthcare Without Harm/Green Health Approved. They have been reviewed by SPLC's Safer Chemicals learning circle. We welcome additional comments and recommendations.*

For resilient flooring, including its coatings and adhesives, products must meet the [most recent requirements](#) (Silver level or above) established by Health Care Without Harm/Green Health Approved.

**Documentation of compliance** must include at least one of the following:

1. Resilient flooring and/or adhesives are certified as meeting the requirements above by a third-party certification body deemed acceptable by [CONTRACTING AGENCY]; OR
2. Resilient flooring and/or adhesives are registered as meeting the above requirements by the [Center for Environmental Health, Health Care Without Harm/ Green Health Approved](#), or another organization deemed acceptable by the [CONTRACTING AGENCY].

## [SPLC Quick Spec – Electronic Equipment/IT](#)

*These interim purchasing specifications represent SPLC's current "best available" recommendations, based on 1) rigorous coverage of multiple environmental and health concerns, including chemical ingredients, and 2) successful implementation by contracting agencies. The specifications were drawn from existing language created by various purchasing agencies and nonprofit groups, especially the Commonwealth of Massachusetts, Responsible Purchasing Network, Center for Environmental Health, City and County of San Francisco, and Healthcare Without Harm/Green Health Approved. They have been reviewed by SPLC's Safer Chemicals learning circle. We welcome additional comments and recommendations.*

### Personal Computers

All desktops, laptops, tablets, workstations, thin clients and computer monitors are required to be registered in the EPEAT system at the time of purchase at Gold level or higher -OR- by TCO Certified. Preprogrammed, automated energy savings settings shall not be overridden by the department before distribution.

EPEAT for Personal Computers is a registry of products satisfying the IEEE 1680.1™ – 2018 Standard for Environmental and Social Responsibility Assessment of Computers and Displays. The EPEAT registration criteria and a database of all registered products are provided at <http://www.epeat.net>. TCO Certified is third-party certification for IT products; its criteria and list of certified products are provided at <https://tcocertified.com/>.

### Servers

Computer servers, with the exception of blades, purchased by [AGENCY] departments will be reviewed for compliance with this Policy during the [CHIEF INFORMATION OFFICER] Review process and any purchases are encouraged to be registered as Bronze level or higher in the EPEAT system at the time of purchase. EPEAT for Servers is a registry of products satisfying the NSF/ANSI 426 – 2017 Standard for Environmental Leadership and Corporate Responsibility Assessment of Server.

IT purchasers are encouraged to “right-size” their server specification in terms of memory and redundant power supplies, to review manufacturer data sheets of servers that meet the given need, and to choose models with high efficiency over a range of operating loads.

### Imaging Equipment

All imaging equipment purchased or leased by [AGENCY] departments, including copiers, digital duplicators, facsimile machines, multifunction devices, printers, mailing machines and scanners (as defined by the U.S. ENERGY STAR® Imaging Equipment Specification) are required to achieve Gold registration in the EPEAT system at the time of purchase. An exception is granted for cases where specialized finishing equipment is needed but is unavailable. In these cases, purchasers must be prepared to demonstrate due diligence in seeking compliant alternatives, and purchased equipment must meet the highest available EPEAT certification.

EPEAT for Imaging Equipment is a registry of products satisfying the IEEE 1680.2a™ – 2017 Standard for Environmental Assessment of Imaging Equipment.

## Televisions and Large Displays

All televisions or large displays purchased or leased by [AGENCY] departments are required to achieve at the time of purchase at least one of the following:

- Certification to TCO Certified
- Registration in the EPEAT system
- Qualified under the current version of Energy Star® Program Requirements for Televisions
- Qualified under the current version of Energy Star® Program Requirements for Displays

EPEAT for Televisions is a registry of products satisfying the IEEE 1680.3a™ - 2017 Standard for Environmental Assessment of Televisions.

## Exceptions

Exempt from the policies above are the following devices and equipment:

- Network infrastructure
- Appliances
- Blades

## IT Packaging

In ordering IT equipment of any kind, [AGENCY] staff shall ensure that:

1. The equipment is packaged using materials:
  - a. That contain the maximum available level of recycled content
  - b. That contain the maximum available level of recyclable content,
  - c. That are easily separable and minimize the use of foam.
2. Where feasible and available, the equipment should be ordered in bulk packaging as an alternative to single unit packaging in the primary ordering process. Bulk packaging should serve as primary packaging from the point of product assembly to delivery. Re-boxing of a finished product from single unit packaging to bulk packaging will not be considered an acceptable option. Bulk packaging should result in either reduced packaging weight, as compared on a per unit basis to the single unit packaging, or reduced packaging volume, as compared on a per unit volume basis to single unit packaging.

## [SPLC Quick Spec – Food Service Ware](#)

*These interim purchasing specifications represent SPLC's current "best available" recommendations, based on 1) rigorous coverage of multiple environmental and health concerns, including chemical ingredients, and 2) successful implementation by contracting agencies. The specifications were drawn from existing language created by various purchasing agencies and nonprofit groups, especially the Commonwealth of Massachusetts, Responsible Purchasing Network, Center for Environmental Health, City and County of San Francisco, and Healthcare Without Harm/Green Health Approved. They have been reviewed by SPLC's Safer Chemicals learning circle. We welcome additional comments and recommendations.*

*Note: This specification applies to areas with municipal composting facilities.*

### **Compostable Products**

- All compostable foodware must be certified by the Biodegradable Products Institute (BPI) except for napkins, stirrers, splash or cocktail sticks, toothpicks and utensils made entirely of natural fiber.
- All plastic products claiming to be compostable must be certified compostable by BPI proving that the finished product meets ASTM standards D6400 or D6868 of compostability. Compostable plastic products must be clearly labeled "compostable" in green color or within a green band in order to distinguish the product from conventional plastic. Cutlery must be embossed with the word "compostable" on each piece.

### **Compostable Or Recyclable Paper Products made from plant-based materials**

Compostable or recyclable foodware made from paper or other plant-based renewable materials must meet or exceed the following requirements:

- Soup containers: Minimum of 85% post-consumer recycled content
- Hot drink cups: PLA-Lined, maximum post-consumer recycled content preferred, with a minimum of 10% post-consumer recycled content
- Cup sleeves for hot drinks: Unbleached paper, minimum 100% post-consumer content
- Napkins must contain a minimum of 30% post-consumer recycled content (per EPA CPG) and either be certified by Green Seal, UL EcoLogo or FSC, or contain 100% total recycled content. Unbleached napkins preferred, maximum post-consumer recycled content preferred.





# APPENDIX: CHEMICALS OF CONCERN

## Uses and health + environmental impacts of key hazardous chemicals

We have listed some hazardous chemicals below by impact (PBTs, carcinogens, etc.) and others by the function they provide (toxic flame retardant, solvents, pesticides etc.). The reason for this is that many functional products may contain or impact multiple body systems - for example, flame retardants can contain carcinogens, mutagens, and endocrine disruptors. Because of this it's often easier and more straightforward to restrict or address a chemical class (PFAS) or functional group (solvents) rather than individual chemicals that fall within those classes or functional groups.

## Hazardous Chemicals by Impact

### Persistent, Bioaccumulative, and Toxic Substances (PBTs)

PBTs are very persistent, which means they don't break down easily in nature. Instead, they build up in the environment over time to levels that contaminate food and water sources. Worse still, these substances are bioaccumulative - meaning they increase in concentration in organisms as they move up the food chain. These chemicals can cause, and continue causing, harm to health and the environment over decades, and far beyond the site of their release. Avoiding the purchase, use, and release of PBTs, especially where alternative substances are available, can prevent similar decades-long contamination consequences from choices that we make today. Familiar examples of PBTs are

Well-known PBTs are DDT (Dichloro-diphenyl-trichloroethane), a pesticide which has endocrine disrupting effects (see below), and PCBs (polychlorinated biphenyls), used in cooling fluids for electrical equipment and machinery, and probable carcinogens. Both were banned for use in the United States and other jurisdictions in the 1970s. Yet despite being out of production and restricted from use for over 40 years, both DDT and PCBs are still present in the environment.

PBTs still in use currently include:

- **Mercury**, a PBT that is still in use in products and industrial processes, and is released from coal burning, can cause permanent damage to cognitive processing, memory, attention, language, fine motor skills, and visual-spatial skills in infants exposed in utero. Mercury can contaminate waterways in

residues from cleaning products that include chlorine bleach created through the mercury cell process. Mercury often accumulates in wild fish to dangerous levels, and thus can disproportionately impact poor communities whose members catch and eat fish as a cheap source of protein.

- **Poly- and perfluoroalkyl substances (PFAS)** PFAS are a highly visible class of PBTs found in food packaging, stain-resistant furniture, non-stick cookware, outdoor clothing, aerospace, and medical and automotive applications, to name a few. PFAS can leach from food packaging into food and are present in household dust (probably because they shed from treated furniture, other home textiles and carpeting). Industrial releases and the use of firefighting foam containing PFAS has contaminated drinking water sources across the U.S. PFAS are persistent in the environment and remain in the water and soil for long durations, eventually accumulating in plants and animals. Some bioaccumulate, resulting in a buildup of these hazardous chemicals connected to cancer, hormone disruption, liver and kidney toxicity, harm to the immune system, and reproductive and developmental toxicity. Nearly every U.S. resident has PFAS in their body – broad population sampling has discovered these chemicals in blood, breast milk, umbilical cord blood, amniotic fluid, placenta, and other tissues.

## Carcinogens

Carcinogens cause cancer. The list of carcinogens is extremely long. California's Safe Drinking Water and Toxic Enforcement Act of 1986 (Prop 65) updates and maintains a list of chemicals known to California to cause cancer or reproductive toxicity. Currently there are over 1000 chemicals on the list. A few commonly used substances are listed below:

- **Formaldehyde.** Formaldehyde is used in, and released from, furnishings and cabinets made of composite wood, building materials (carpets, plywood, paints, and adhesives), wrinkle-resistant clothing, household cleaners, cosmetics, glues, and tobacco smoke. Formaldehyde is a carcinogen and has been identified as a cause of leukemia and nose and throat cancer. Formaldehyde in indoor environments can trigger allergic responses, asthma, and nose, eyes and throat irritation.
- **Benzene.** Benzene is a colorless liquid that is present in crude oil and petroleum. It is an industrial chemical and mostly used as a building block, or intermediate, to manufacture chemicals such as dyes and pigments, with more complex structures. Workers in industries such as rubber, chemicals, paint, and petroleum may be exposed to much higher levels of benzene than people in other lines of work. More than half of all benzene production is processed into ethylbenzene, a precursor to styrene, which is used to make polymers and plastics such as polystyrene, a common food packaging and packaging material. Acute exposure to benzene affects the central nervous system, and exposure occurs through inhalation or absorption through the skin or digestive tract. Chronic exposure to benzene primarily occurs from working in industrial settings using benzene, but can also occur from using everyday products, and is linked to leukemia and other blood disorders.
- **Chromium VI (hexavalent chromium or "Hex chrome")** is one of the valence states of the metal chromium. Industrial processes that involve chromium can result in worker exposure to toxic hexavalent chromium. A major source of worker exposure to Cr(VI) occurs during welding on stainless steel and other alloy steels containing chromium metal. Cr(VI) compounds may also be used as pigments in dyes, paints, inks, and plastics, and as an anticorrosive agent added to paints, primers, and other surface coatings. Adverse health effects associated with Cr(VI) exposure include occupational asthma, eye, nose, skin and respiratory irritation, kidney and liver damage, pulmonary congestion and edema, upper abdominal pain, and respiratory cancer.
- **Styrene** is a monomer with a vinyl group that allows it to polymerize into products such as polystyrene, acrylonitrile butadiene styrene (ABS), rubber, and latex. These materials are used in rubber, plastic, insulation, fiberglass, pipes, food containers, and carpet backing. Workers are exposed to styrene via eye and skin ingestion and inhalation. The EPA has described styrene to be "a suspected toxin to the gastrointestinal tract, kidney, and respiratory system, among others".

- **Vinyl chloride** is the monomer that PVC or “vinyl” plastics are derived from. It is produced in massive quantities in the U.S. and China, and can also be formed in the environment when soil organisms break down chlorinated solvents. When released, vinyl chloride can enter the air and drinking water sources, and so it is commonly found near landfills. Because it is volatile, primary exposure is via inhalation, and mostly to workers, factory-adjacent fence-line communities, and communities that reside near landfills, rather than to end users. Acute exposure to vinyl chloride causes dizziness, nausea, visual disturbances, and headache. High levels of exposure cause cardiac arrhythmias, and even fatal respiratory failure. Vinyl chloride is a mutagen and a human carcinogen that causes brain and lung tumors, liver cancer, and malignant lymphatic tumors.

## Mutagens

A mutagen is a physical or chemical agent that permanently changes genetic material, usually DNA, in an organism and thus increases the frequency of mutations above the natural background level. Many mutations can cause cancer, and are therefore characterized as carcinogens, although not all are linked to cancer.

- **Sodium chromate** is used as a corrosion inhibitor in the petroleum industry and as a dyeing auxiliary in the textile industry. Sodium chromate is carcinogenic, corrosive and exposure may produce severe eye damage or blindness. Human exposure further encompasses impaired fertility, heritable genetic damage, and harm to unborn children.
- **Acrylamide** is a chemical that is used to manufacture many polymers, particularly polyacrylamide, which is then used as a thickening agent. Acrylamide can also arise from some cooked foods. Acrylamide is considered a potential occupational carcinogen by U.S. government agencies and classified as a Group 2A carcinogen by the International Agency for Research on Cancer (IARC). Acrylamide is absorbed by the skin and distributed throughout the body; the highest levels are found in the blood, non-exposed skin, kidneys, liver, testes, and spleen. Acrylamide has also been found to have neurotoxic effects in humans and animal studies show neurotoxic effects as well as mutations in sperm.
- Some **Polycyclic Aromatic Hydrocarbons (PAHs)** including anthracene are mutagens. PAHs are a class of chemicals that occur naturally in coal, crude oil, and gasoline, and are produced when coal, oil, gas, wood, garbage, and tobacco are burned. PAHs are also a component of coal tar and are used to make certain dyes.

## Endocrine disrupting chemicals (EDCs)

Endocrine Disrupting Chemicals are chemicals that interfere with and mimic hormones in humans and other animals. EDCs are used to perform many different functions in products and processes. The endocrine (hormone) system controls metabolism and reproduction and other aspects of human growth. When the system is disturbed, it can cause a wide range of health disorders including cancers, type 2 diabetes, infertility, cognitive disorders (ADHD), childhood obesity, asthma, and more. Pregnant women and young children are particularly vulnerable to exposure to EDCs, given the importance of the endocrine system during key points of human development. There are many different EDCs – for example ChemSec, a Swedish NGO lists 32 EDCs on its Substitute it Now (SIN) list due to their endocrine activity.

### A few well-studied EDC's:

- **Bisphenols A, F, and S (BPA, BPF, and BPS)** are found in some plastic food and beverage containers (polycarbonates) and the linings of cans and jar lids. BPA/BPF/BPS are associated with reproductive, immune system, and neurological problems, as well as an increased likelihood of Alzheimer's, childhood asthma, metabolic disease, type 2 diabetes, and cardiovascular disease. They exhibit estrogen-mimicking, hormone-like properties and exposure to small amounts can cause harm to people. A 2007 research review published in *Reproductive Toxicology* found that BPA in the blood of women is linked to obesity, multiple miscarriages, polycystic ovarian syndrome (PCOS), endometrial hyperplasia, and other

issues. Most exposure to BPA is via food packaging materials, where the BPA leaches out of plastic water bottles or can linings.

BPA exposure, even in extremely small doses and exposure, can disrupt the body's natural hormones and cause serious health problems. There is particular concern with BPA exposure at critical developmental stages, such as during pregnancy and at puberty. Pregnant women, children, and teens may be most at risk from exposures to BPA.

- **Phthalates.** Phthalates are a group of man-made substances that are added to plastics to make them more flexible. They are used in thousands of product types and tens of millions of products. Phthalates are associated with damage to the liver, kidneys, lungs, and reproductive system. Like BPA, they are endocrine disrupting chemicals, and research has shown close associations between exposure to phthalates at an early age and problems with brain development, ADHD and similar behavioral problems, and reduced fertility later in life. Eight phthalates are banned by the US Consumer Product Safety Commission for use in children's toys and child care articles and the European Commission has limited the use of five phthalates in food contact materials made of plastic.
- **Parabens.** Parabens are common preservatives found in health and beauty products, such as lotions, shampoo and conditioners. Common exposure routes are from ingestion, swallowing and absorption through the skin. Parabens can disrupt hormones in the body and harm fertility and reproductive organs, affect birth outcomes, and increase the risk of cancer. Some can also cause skin irritation. Because they are used in everyday products, the general population is highly likely to be exposed.

## Reproductive Toxins

Reprotoxins may produce or increase an impairment of male or female reproductive functions or capacity and/or the incidence of adverse effects in progeny of those exposed. Some reprotoxins appear to produce their effects by disrupting the endocrine (hormone) system; others impact the reproductive system by different routes.

- **Carbon disulfide**, a building block chemical in the chemical industry and a solvent used in viscose rayon process has been linked to both acute and chronic forms of poisoning, with a diverse range of symptoms. It is a neurotoxin and reprotoxin and results in reduced male sex drive, male and female infertility, spontaneous abortion, growth retardation, menstrual disorders, and breast milk contamination.
- **Bisphenol A (BPA)** is an endocrine disruptor that negatively affects reproductive development. It is an estrogen mimicker (Xenoestrogen) and a likely androgen mimicker. It is used in the production of various plastic products.

## Other chemicals of concern

### Flame Retardants

Flame retardants are a large, diverse group of synthetic chemicals that are added to many consumer products and construction materials that are made from textiles, foam, plastics, and resins. They are used to i) inhibit materials and products from burning, and ii) to meet regulatory flammability standards. They may be added as a copolymer during polymerization, or during the molding or extrusion process, or during the finishing process, as in textiles.

Some flame retardants may cause cancer, some are endocrine disruptors, and some persist in the environment. Some are persistent organic pollutants, also known as "forever chemicals", which means that they do not break down in the environment. Most flame retardants are not chemically bound to the polymer that they are added to. That means that they can migrate out of the material or product and into the environment. Residues have been detected in humans and wildlife, with health concerns that are resulting in litigation.



Of particular concern are some halogenated compounds, some organophosphorous compounds and some compounds that contain both phosphorous and a halogen.

- **Halogenated flame retardants** include organochlorines, chlorinated paraffins, and organobromines such as decabromodiphenyl ether (decaBDE), decabromodiphenyl ethane, tetrabromobisphenol A (TBBPA), and hexabromocyclododecane (HBCD), to name a few.
- **Organophosphorous flame retardants** include triphenyl phosphate (TPP), bisphenol A diphenyl phosphate (BADP), tricresyl phosphate (TCP), and dimethyl methylphosphonate (DMMP) to name a few.
- **Mixed Flame Retardants** Some flame retardants contain both phosphorus and a halogen. This includes tris(2,3-dibromopropyl) phosphate (brominated tris) and chlorinated organophosphates such as tris(1,3-dichloro-2-propyl)phosphate (chlorinated tris or TDCPP).

Many organohalogen flame retardants have been banned or phased out, but many of their replacements have not been adequately tested and are likely to cause similar harm since their chemical structure is similar.

### Polyvinyl chloride (PVC)

PVC, often known simply as vinyl, is an illustrative example of how using hazardous substances can have ongoing environmental and health repercussions. Beyond the impacts of PVC's primary constituent chemical, vinyl chloride monomer - discussed above, the issues with PVC arise largely from hazardous substances that are added to the plastic during manufacturing to contribute specific properties - including lead and some phthalates. Rigid PVC is used to make pipes, doors, and window frames, whereas flexible PVC is used to cover wiring, amongst other uses. PVC is also used in medical equipment including blood bags, where it can leach toxic chemicals directly into the bloodstream of unknowing patients.

Issues with PVC include:

- The addition of endocrine disruptors such as phthalates - plasticizers that make PVC and other plastics more flexible. When PVC is used in plumbing, imitation leather, flooring (sheet vinyl flooring and vinyl composition tile), and applications where it replaces rubber, phthalates are added to improve functionality.
- Toxic Additives. Lead and lead compounds are sometimes added to PVC pipes where they act as a stabilizer during manufacturing. Over time, lead may leach out of PVC pipes into the surrounding water supply and affect whole communities. Lead is an extremely hazardous chemical. Acute exposure results in headaches, nausea, dizziness and chronic exposure damages the kidneys, brain, red blood cells. Lead is a carcinogen and no amount is considered safe.
- Carcinogens. Vinyl chloride, the monomer in PVC, has been linked to cancer. Vinyl chloride exposure is associated with an increased risk of liver cancer (hepatic angiosarcoma), brain and lung cancers, lymphoma, and leukemia. Vinyl chloride itself is not usually present in finished products, because it is polymerized to form PVC. But workers at facilities where vinyl chloride is produced or used are exposed to vinyl chloride, primarily through inhalation. High levels of vinyl chloride are found in air around factories that produce vinyl products. If a water supply is contaminated, vinyl chloride can enter household air when the water is used for showering, cooking, or laundry.
- Dioxins. These substances are not added to PVC but result as byproducts of burning PVC, Dioxins are a group of chemically-related compounds that are persistent environmental pollutants (POPs). They are highly toxic and can cause reproductive and developmental problems, damage the immune system, interfere with hormones and also cause cancer. Dioxins can be produced when siding or plumbing burns during house fires, but mostly result when waste containing PVC is incinerated. This affects communities that reside near incinerators, or landfills if fires break out, putting vulnerable communities at risk. Considering end of life options is very important before purchasing PVC products.

## Triclosan

An antimicrobial, and a pesticide, triclosan is found in many household products, including apparel, toys, kitchenware, hand sanitizers, and other personal care products. It prevents the growth of bacteria and mold and fights odor. Exposure to triclosan occurs through skin absorption and through ingestion when swallowed. When triclosan is released into the environment, additional exposure is possible through ingesting plants grown in soil treated with sewage sludge, or eating contaminated fish. Some short-term animal studies have shown that exposure to triclosan is associated with a decrease in the levels of thyroid hormones, and other research suggests that long term exposure to triclosan might prompt cancer cells (such as breast cancer) to grow, and make it easier for antibiotic-resistant bacteria to grow in people's nose or throat. Triclosan easily enters waterways in residues from personal care products, which poses a problem because it is toxic to fish. Minnesota banned triclosan in soaps and hand sanitizers in 2014, and the state of Washington has a current policy to ban triclosan in all cosmetics.

## Oxybenzone

A chemical found in some sunscreens that absorbs UV-A ultraviolet rays, offering protection to users. It is also added to plastics, toys, furniture finishes, and other products to limit UV degradation. Exposure is mostly via skin absorption. Oxybenzone causes allergic skin reactions and behaves like an endocrine disruptor in many studies. Exposure may increase the risk of breast cancer and endometriosis and the National Toxicology Program found equivocal evidence of carcinogenicity in rats after observing increases in thyroid tumors and uterine hyperplasia in females with high exposure to oxybenzone