



Toxicity Triggers

Identifying Toxins in the Design of a Typical House

The Structure

Architects and engineers are pivotal in designing a structure that supports chemical safety and healthy air quality. Key factors include temperature and humidity control. There are several independent third party auditing bodies, such as LEED, who rate new structures on green materials and air quality.

Product	Problem	Chemicals to Avoid	Alternative
Heating and cooling	Combustion exposure from gas furnace; filtration issues with central air units; mold growth in HVAC systems	Nitrogen oxide Carbon monoxide Mycotoxins from mold (such as Tricothecene).	Radiators provide the cleanest source of heat; water heaters
Lumber (MDF, particle board, solid wood)	Lumber is often treated with chemical preservatives. MDF or particle board also contains adhesives and resins that emit dangerous vocs.	Chromated copper arsenate, or CCA formaldehyde VOCs	Sustainably harvested lumber from managed forests; avoid pressed woods, MDF, or particle board. Pressure-treated wood is better than wood treated with preservatives
Insulation	Brominated flame retardants; Fiberglass; Petroleum-based materials	Hydrochlorofluorocarbons Hexabromocyclododecane formaldehyde VOCs	Recycled cotton Cellulose Insulation impregnated with borates instead of fiberglass.
Caulks and sealants	Latex-based caulks and sealants.	Formaldehyde Asbestos VOCs	Water and Silicone-based

The Interior

Interior Designers have a direct influence on the quality of materials used to enhance the interior space of a home.

Product	Problem	Chemicals to Avoid	Alternative
Paint and wall treatments	acrylic-based paint lead-based paint	Formaldehyde Acetone VOCs Lead (old paint)	low or no-VOC water-based paints, food-based paints
Carpet	Brominated flame retardants, stain protectors, moth proofing, adhesives.	PBDEs, Formaldehyde Toluene, Benzene, Styrene, Acetone, VOCs	Carpet or area rugs made from natural fibers, such as wool, sisal, cotton, or jute
Flooring (Floor refinishing)	Treated wood, MDF or particle board, vinyl flooring polyurethane finishing treatments	Chromated Copper Arsenate, or CCA Formaldehyde Polyvinyl Chloride (PVC), VOCs	Sustainably harvested and untreated hardwood, cork, ceramic, terra cotta or porcelain flooring, bamboo, natural linoleum from linseed oil
Cabinets	Treated wood, MDF or particle board, finishing treatments	Formaldehyde, VOCs	Sustainably harvested and untreated solid wood cabinets, stainless steel cabinets water-based stains
Countertops	Treated wood, granite, chemical finishes and stains	Formaldehyde, Radon VOCs	Sustainably harvested and untreated hardwood, bamboo, natural linoleum from linseed oil, natural quartz, marble, recycled glass & oyster shells

The Fixtures

Industrial Engineers must consider the application and environment in which their products will be used at home.

Product	Problem	Chemicals to Avoid	Alternative
Gas stove	Combustion exposure from gas stove	Nitrogen Dioxide, Carbon Monoxide, Methane	Electric stove with proper grounding and electricity filters
Washer Dryer	Fumes from washers and dryers, solvents from fabric softeners, dryer sheets, and detergents	Chloroform, Phenols	Energy-efficient front-loading washing machines in ventilated places, line drying, non-toxic detergents
Electronics	Flame retardants in circuit boards, plastics	PBDEs, Pthalates, PVC Antimony, Beryllium	HP, Sony Ericsson, Nokia and other brands attempting to reduce hazardous chemicals in electronics, , proper electricity grounding and/or filters
Television	flame retardants, plastics	PBDEs, Pthalates, PVC Lead, Mercury, Cadmium	Brands attempting to reduce hazardous chemicals in electronics, proper electricity grounding and/or filters
Microwaves	Radiation exposure, loss of nutrients in food	Microwaves	Electric Stove

The Stuff

Product and Fashion Designers are not automatically linked to creating a healthy home but they have a considerable influence given their products usually come in direct contact with people and have a direct link to indoor air quality.

Product	Problem	Chemicals to Avoid	Alternative
Upholstery	Polyurethane foam, synthetic textiles. brominated flame retardants, treated wood	Polyurethane, PBDEs Boric Acid, Formaldehyde Pesticides, Pfoa PVC	Upholstery with natural fill, natural textiles, wool as fire barrier, and sustainably-harvested untreated wood.
Mattress	Polyurethane foam, synthetic textiles. brominated flame retardants, treated wood	Polyurethane, PBDEs Boric Acid, Formaldehyde Pesticides	Natural or organic cotton mattress with natural latex, organic cotton ticking, wool as fire barrier, and sustainably-harvested untreated wood.
Bed frames	Treated wood	Formaldehyde	Brass Bed
Bed linens	Synthetic textiles, synthetic dyes, finishing treatments (anti-wrinkle, anti-static, stain resistance)	Azo dyes, Pfoa, Pesticides Heavy metals, PVC	Organic or natural cotton sheets or silk sheets, natural or no dyes, without finishing treatments
Furniture	Treated wood, plastics	Formaldehyde, wood preservatives, oil-based stains	Sustainably-harvested untreated wood, no plastics, water-based stains
Cooking pots and pans	Non-stick pans	Polytetrafluoroethylene (PTFE)	Stainless steel pots and pans, cast iron, ceramic pots, heat-safe glass
Tupperware and other plastics	Plastics	Pthalates, BPA	Pyrex glass, ceramics, cellophane
Clothing	Synthetic textiles, synthetic dyes, finishing treatments (anti-wrinkle, anti-static, stain resistance)	Azo dyes, Pfoa Pesticides, Heavy metals	Organic or natural cotton, silk, linen, natural wool natural or no dyes, without finishing treatments

The Exterior

Product and Fashion Designers are not automatically linked to creating a healthy home but they have a considerable influence given their products usually come in direct contact with people and have a direct link to indoor air quality.

Product	Problem	Chemicals to Avoid	Alternative
Lawn Care	Chemical petroleum-based lawn care treatments	Pesticides, Insecticides, Herbicides, Fungicides	Natural lawn care, integrated pesticide management
Pest Control	Chemical petroleum-based pest control treatments	Pesticides, such as Boric Acid, Diazinon	Integrated pest management