Contaminant	Health Effect	Healthy Housing Principle	Common Source(s)	Exposure Route(s)	Control Strategy	Hazard	Hazard Level
PM 2.5	PM2.5 can reduce life expectancy and worsen heart and lung diseases	Keep it Contaminant-Free	Burning firewood and trash, residential wood smoke, tobacco smoke, marijuana smoke, wood stoves, fireplaces, fire pits	Inhalation	Avoid burning wood and trash indoors; use properly vented heating appliances; ensure good ventilation; use air purifiers with HEPA filters	Fine particles that can get deep into the lungs and bloodstream; top five indoor health hazards	High
VOCs	Headaches, dizziness, and eye irritation. Long-term VOC exposure may lead to liver, kidney, and nervous system damage, and some VOCs may cause cancer	Keep it Contaminant-Free	Paint, paint strippers, degreasers, aerosol sprays, air fresheners, cleaners, disinfectants, moth repellents, glues and adhesives, dry-cleaned clothing, perfumes, colognes, fragrances, stored chemicals	Inhalation, skin contact, ingestion (from dust)	Avoid purchasing high-VOC products; use safer alternatives; ventilate areas during and after use; store chemicals away from living spaces; keep containers sealed; look for third-party certifications (e.g., EPA Safer Choice, Green Seal)	Can be 3-5 times higher indoors than outdoors; can be 1000 times higher during renovations	Moderate to High
Third-hand smoke	Damages DNA and may cause cancer, asthma, and other respiratory problems, especially in children	Keep it Contaminant-Free	Residue from tobacco smoke that absorbs into surfaces (walls, ceilings, carpets, drapes, furniture, dust)	Inhalation of off-gassed residues, ingestion of dust, skin contact	Establish smoke-free policies in homes; smoke outdoors only; costly professional cleaning may be required for existing contamination; avoid renting or buying formerly smoked-in properties	Off-gasses from surfaces over time; cleanup costs are 3-6 times higher in smokers' homes	High
PFAs	Hormone disruption, thyroid disease, liver damage, reproductive toxicity, increased risk of cancer	Keep it Contaminant-Free	Non-stick cookware (e.g., Teflon), water-repellent fabrics, polishes, waxes, paints, cleaning products, sealants, coatings, some food packaging	Ingestion (food, water), inhalation, skin contact	Use alternatives like cast iron, glass, ceramic, or stainless steel cookware; avoid stain-resistant treatments on carpets and furniture; check for PFAS-free labels	Persistent pollutants that do not break down; found in 99% of humans tested	High
Formaldehyde	Headaches, dizziness, coughing, asthma, skin rashes, and cancer	Keep it Contaminant-Free	Composite wood products (plywood, particleboard), glues, paints, wrinkle-free fabrics, insulation, gas stoves, kerosene heaters, cigarette smoke	Inhalation of off-gassed fumes	Use products that meet TSCA Title VI formaldehyde standards; increase ventilation; control temperature and humidity; use air purifiers; avoid used or "new old stock" composite wood products	Off-gassing increases with heat and humidity; health effects can occur below odor threshold	High
Phthalates and bisphenols	One phthalate, DEHP, has been shown to cause liver cancer in mice and rats. Many of these chemicals are still being studied to learn their health impacts	Keep it Contaminant-Free	Shampoo, conditioner, toys, shower curtains, vinyl floors, food packaging, detergents, air fresheners, PVC pipes, water bottles, food storage containers, sports equipment, cash register receipts	Ingestion (food, water from containers), inhalation of dust, skin contact	Avoid plastic food containers and receipts where possible; choose products labeled phthalate-free or BPA-free; damp mop and vacuum with HEPA filter; wash hands frequently; use baby products filled with cotton, polyester, or wool instead of polyurethane foam	Found in urine of >95% of people tested; constant exposure from multiple sources	Moderate

Rationale for Hazard Level Classifications:

High: Assigned to contaminants where the document explicitly links them to serious, life-altering diseases like cancer, significant organ damage, or reduced life expectancy, and where exposure is common or the contaminants are persistent.

Moderate to High (VOCs): This range is used because health effects can range from temporary, moderate irritation to severe, long-term organ damage and cancer, heavily dependent on the specific VOC and exposure level.

Moderate (Phthalates and Bisphenols): Assigned because while there is evidence of harm (e.g., potential carcinogen in animals, hormone disruption), the document emphasizes that the full health impacts are still being studied, and the primary concern is widespread, constant, low-level exposure.

Credit: Kelly Cutchin