CALIFORNIA
AIR RESOURCES BOARD

Formaldehyde

Many consumer products emit formaldehyde, which can cause cancer.

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CATEGORIES

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Formaldehyde is a common indoor air pollutant. It is a gas that can irritate a person's eyes, nose, throat, and lungs, or trigger an asthma attack, even at low concentrations. Prolonged exposure to formaldehyde can cause cancer.

About Formaldehyde

Formaldehyde is commonly found in the environment due to natural processes, like forest fires, and is released into the air via industrial emissions, incineration, and fuel combustion. It is also formed in the atmosphere from photo-oxidation of reactive organic gases. Formaldehyde is widely used in composite wood products that have resins containing formaldehyde, and is in building materials and insulation, glues, permanent press fabrics, paints, lacquers, and other coatings. Formaldehyde is also released into the air from formaldehyde-containing personal care products including some shampoos, soaps, hair care products, body washes, and nail polish. Moreover, many other consumer products also emit volatile organic chemicals (VOCs) that react with ozone in the air to produce formaldehyde. Some indoor air purifiers actually create ozone, which can lead to increased concentrations of formaldehyde and other indoor air pollutants.

Formaldehyde and Health

The risk formaldehyde poses to a person's health depends on the concentration of formaldehyde in the air, the length of time the person is exposed, and the person's individual sensitivity to formaldehyde. Children and the elderly may be more sensitive.

Formaldehyde has been identified as a toxic air contaminant, based on public exposure and its potential to cause cancer. The International Agency for Research on Cancer (IARC) has published a monograph on the carcinogenic risk from exposure to formaldehyde. The Agency for Toxic Substances & Disease Registry (ATSDR) at the CDC has also extensively profiled health effects from formaldehyde exposure.

What You Can Do

There are many steps you can take to reduce your exposure to formaldehyde indoors:

- Buy building materials and furniture that have little or no added formaldehyde.
  - Consider products made from solid wood, stainless steel, adobe, bricks, and tile.
  - Consider buying used or antique furniture, as formaldehyde emissions decrease as products age.
  - When purchasing consumer goods such as furniture, flooring, and cabinets that may contain composite wood products, buy items that are labeled as CARB Phase II compliant or TSCA Title VI compliant for formaldehyde emissions.
  - Consider flooring options such as natural linoleum, pre-finished solid and engineered wood, and U.S. made ceramic tile.
  - Consider installing "floating" flooring that doesn't use adhesives.
  - Only use wood stains and finishes that are Green Seal-11 certified.
  - Use formaldehyde-free insulation in the walls and ceiling of your home.
  - For central heating and air conditioning systems, use only synthetic filters made from materials such as polyester, polyolefin and other organic polymers.
  - If interested in carpet, look at those with Green Label Plus or GreenGuard low-VOC certification.
  - Choose no-VOC latex paints that are GreenGuard Gold Certified or Green Seal Certified.
- Be cautious about using products and sources of combustion pollutants (including cooking) that can release formaldehyde.
  - Gas or wood-burning stoves and kerosene heaters can emit formaldehyde; exhaust these directly to the outdoors and have them checked annually by a licensed HVAC professional to assure they are not leaking into indoor air.
  - Permanent press clothing, linens, and other textiles ("iron-free", "durable press", or "easy care finish") may be treated with a chemical that includes formaldehyde. Washing these before use removes most of the formaldehyde.
  - Do not smoke tobacco, marijuana or e-cigarettes indoors.
  - Common brands of glue products, caulks, adhesives, window glazing, latex paints and sealants contain formaldehyde. Ensure good ventilation when using these products indoors.
- Beware of personal care products, including cosmetics, soaps, shampoos, and body washes, that contain preservatives which release formaldehyde into the air. Check product labels for these compounds which can release formaldehyde:
  - DMDM hydantoin
  - Imidazolidinyl urea
  - Diazolidinyl urea
  - Quaternium-15
  - Bronopol (*2-bromo-2-nitropropane-1,3-diol*)
  - 5-Bromo-5-nitro-1,3-dioxane
  - Hydroxymethylglycinate
  - Formaldehyde

For additional information about sources of formaldehyde in the home and ways to protect your family, visit U.S. EPA's website or read the Update on Formaldehyde by the U.S. Consumer Product Safety Commission (2016). For information about CARB's regulatory efforts regarding formaldehyde, see CARB's Composite Wood Products Airborne Toxic Control Measure.

Home tests are available for measuring formaldehyde in indoor air, but will not identify the source of the formaldehyde. Environmental consulting firms can also test indoor air for a range of contaminants and provide information on likely sources of formaldehyde.

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