



Formaldehyde

Key Points



Formaldehyde

- Known to be a human carcinogen
- Chemical widely used to make building materials
- Found in pressed wood products, cigarette smoke
- Used as a preservative in labs and mortuaries
- Previously listed as reasonably anticipated to be a human carcinogen

Report on Carcinogens Status

Known to be a human carcinogen

What is formaldehyde?

(Pronounced *for`mal de hide*)

Formaldehyde is a colorless, flammable, strong-smelling chemical widely used by industry to make home building products. It is a colorless gas at room temperature, or available as a liquid called formalin.

How is formaldehyde used?

Formaldehyde is widely used to manufacture building materials and household products. Most formaldehyde produced in the United States is for the manufacture of resins, such as urea-formaldehyde, used to make the adhesives for pressed wood products, such as particleboard, furniture, paneling, cabinets, and other products. Formaldehyde is also commonly used as a preservative in medical laboratories, mortuaries, and consumer products, including some hair smoothing and straightening products. It is also a by-product of automobile combustion and is produced in small amounts by most living organisms, including humans.

How are people exposed to formaldehyde?

People are exposed to formaldehyde in the workplace and in their home environment, but the highest levels are found in work settings where formaldehyde is used or produced. Exposure to formaldehyde can occur in numerous industries and professions, such as manufacturers of formaldehyde and formaldehyde-based resins, woodworking, and furniture making. Morticians and laboratory workers may also be exposed to formaldehyde.

The general population is exposed to formaldehyde by breathing contaminated indoor or outdoor air and from tobacco smoke. Automobile and other combustion sources, such as woodstoves, incinerators, refineries, forest fires, and fumes released from new construction or home-finishing products, are some of the major sources of airborne formaldehyde. Other consumer goods, including some hair smoothing and straightening products used in salons, cleaning agents, glues, and adhesives, may contain formaldehyde. Formaldehyde levels can be higher in indoor air than in outdoor air.



The Report on Carcinogens, Twelfth Edition, is prepared by the National Toxicology Program, an interagency group coordinated by the U.S. Department of Health and Human Services. The report identifies agents, substances, mixtures, or exposures in two categories: *known to be a human carcinogen* and *reasonably anticipated to be a human carcinogen*. **The full Report on Carcinogens is available at <http://ntp.niehs.nih.gov/go/roc12>.**



What evidence is there that formaldehyde causes cancer?

Human Studies

Studies of workers exposed to high levels of formaldehyde, such as industrial workers and embalmers, found that formaldehyde causes myeloid leukemia, and rare cancers including sinonasal and nasopharyngeal cancer.

Animal Studies

In laboratory animal studies, formaldehyde caused cancer primarily in the animal's nasal cavity.

Mechanistic Studies

The mechanisms by which formaldehyde causes cancer are not completely understood; however, formaldehyde clearly causes genetic damage in the nasal sinus of animals. Less is known about how it causes myeloid leukemia.

How can I prevent exposure to this substance?

Use lower-emitting pressed wood products, such as those that are labeled CARB (California Air Resources Board) Phase 1 or Phase 2 compliant, or made with ULEF (ultra-low-emitting formaldehyde) or NAF (no-added formaldehyde) resins. Ask manufacturers about products.

Increase ventilation, particularly after bringing new sources of formaldehyde into the home. Open windows and use fans to bring in fresh air.

Use air conditioning and dehumidifiers to maintain moderate temperature and reduce humidity levels.

Employers who use formaldehyde in their workplaces must follow the requirements in the Occupational Safety and Health Administration standard on formaldehyde.

Where do I go for more information?

National Toxicology Program
<http://ntp.niehs.nih.gov/go/roc12candidates>

Agency for Toxic Substances and Disease Registry
<http://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=39>

National Cancer Institute
<http://www.cancer.gov/cancertopics/factsheet/Risk/formaldehyde>

National Institute for Occupational Safety and Health
<http://www.cdc.gov/niosh/topics/formaldehyde/>

Occupational Safety and Health Administration
http://63.234.227.130/OshDoc/data_General_Facts/formaldehyde-factsheet.pdf

http://www.osha.gov/SLTC/formaldehyde/hazard_alert.html