



## FORMALDEHYDE & HOME FURNISHINGS CONSUMER FACT SHEET



Formaldehyde is a simple but important organic compound that occurs naturally in the environment, in food and in our bodies. Formaldehyde does not accumulate in the environment, because it is broken down within a few hours by sunlight or by bacteria in soil or water. The human body also breaks down formaldehyde quickly as part of normal cell metabolism.

Formaldehyde is also manmade for use in a variety of industrial applications. It has very potent antibacterial and antifungal properties, making it a frequent ingredient in household cleaners. It is also used in permanent-press fabrics, paper product coatings, insulation and glues. For decades, formaldehyde has been an important ingredient in the adhesives used in pressed wood products, including particleboard, plywood and fiberboard used for household furniture.

Products made with formaldehyde can release the chemical into the air in a process called “off-gassing.” It is a colorless, strong-smelling gas at room temperature. It is one chemical in a large family of chemical compounds called volatile organic compounds, or VOCs. The term volatile means that it vaporizes or becomes a gas at room temperature. Formaldehyde is also released into the air by cars, cigarettes and burning wood, kerosene or natural gas.

### *Q. How is formaldehyde in furniture regulated?*

Formaldehyde is an important ingredient in the adhesives used to make composite wood products, including particleboard, plywood and fiberboard. The formaldehyde links with other ingredients to form a strong bond that cures quickly. Because of formaldehyde’s antibacterial and antifungal properties, the resulting boards naturally resist mold and mildew. These boards are used to produce strong, versatile components for furniture, as well as cabinets, flooring, millwork, countertops and doors.

In 2007, the California Air Resources Board (CARB), a department of the California Environmental Protection Agency, voted to implement limits for formaldehyde emitted from composite wood products. When the final limits were fully in place in 2012, the regulation became the toughest production standard in the world for formaldehyde emissions from composite wood products.

As a result of these limits, new “ultra low-emitting” formaldehyde (ULEF) and no-added formaldehyde (NAF) resins now dominate composite wood product production. Since 2012, it is estimated that the emissions from composite wood products have been reduced by 80 to 90 percent from levels in the 1980s, according to the U.S. Consumer Product Safety Commission (CPSC).

### *Q. What are the major sources of indoor formaldehyde emissions in homes today?*

A variety of products release formaldehyde into a typical home. Commercial wood floor finishes may emit high levels of formaldehyde. Emissions from these finishes decrease 24 hours after application. Wallpaper and paints emit moderate levels of formaldehyde following initial application. Emissions can sometimes still be detectable one to three months after application.

Pressed-wood products also can be a significant source of formaldehyde emissions, especially furnishings and cabinets not manufactured using the newer, low-emitting resins.

During the 1970s, urea-formaldehyde foam insulation was used in many homes. Few homes use this type of insulation today, and even older homes with UFF insulation are not likely to have high formaldehyde emission levels now.

Cigarette smoking and use of fuel-burning appliances, such as gas stoves, wood-burning stoves and kerosene heaters, are the most substantial contributors to indoor formaldehyde emissions.

### **Q. *What level of formaldehyde exposure is considered unhealthy?***

According to the U.S. CPSC, formaldehyde is normally present at low levels (less than 0.03 parts per million) in both indoor and outdoor air.

The typical level of formaldehyde inside a conventional home is about 0.05 ppm. (CARB Indoor Air Quality Guideline, September 1991.)

The typical level of formaldehyde inside a mobile home is about 0.07 to 0.08 ppm.

The California Air Resources Board recommends a “target level” of no more than 0.05 ppm for indoor air. CARB suggests taking action to reduce exposure if indoor air emission levels are above 0.10 ppm.

Since 2011, CARB has limited formaldehyde emissions from raw wood panels to 0.09 ppm for particleboard and .11 ppm for fiberboard (MDF).

Based on laboratory tests of residential furniture conducted by Underwriters Laboratory (UL), when raw composite wood panels are manufactured into finished furniture – which typically includes the addition of a wood veneer or laminate to all exterior surfaces – the formaldehyde emissions are reduced by approximately 80 percent.

A UL chamber test designed to measure the formaldehyde emissions from new bedroom furniture (a bed plus several storage pieces) in an 11 by 14 room found a predicted exposure rate of 0.05 ppm.

According to the U.S. Department of Health and Human Services, exposure at 0.1 to 0.5 ppm may result in nasal and eye irritation and increased risk of asthma and or allergies.

Average exposure for workers in industries that make or use formaldehyde, such as cabinet-making, is 0.45 ppm.

In testing conducted by the U.S. Department of Health & Human Services in 2007, formaldehyde levels inside closed, unoccupied temporary housing trailers similar to those used by FEMA after Hurricane Katrina averaged 1.04 ppm. Simply opening the windows reduced formaldehyde levels to an average of 0.09 ppm.

### **Q. *What are the potential health impacts of exposure to formaldehyde?***

Exposure at low to moderate levels of formaldehyde in the air, even for short periods of time, can cause temporary burning or itching of the eyes or nose, a sore or burning throat, or headaches.

Breathing high levels of formaldehyde can cause chest tightness and coughing or wheezing. High levels also may worsen asthma symptoms.

The elderly, young children and those with health conditions such as asthma may be especially sensitive, even at low to moderate levels of exposure.

Long-term exposure to high levels of formaldehyde has been associated with cancer in humans and laboratory animals.

### **Q. *How can I reduce my exposure?***

For most people, a low level exposure to formaldehyde will not produce any adverse health effects. For sensitive people, however, you may want to reduce your exposure by taking these steps:

- When purchasing new cabinets or furniture, select those that contain a high percentage of panel surface and edges that are laminated or coated.
- Avoid high household temperatures.
- Keep humidity down by using exhaust fans where moisture is generated; using dehumidifiers; reducing moisture in crawlspaces or basements; and, not using a humidifier or other products to add moisture to already humid air.
- If installing wood floors or refinishing floors, do not use “acid-cured” finishes, which are formaldehyde-based.
- If remodeling or initiating a do-it-yourself project, use only wood products labeled or stamped as being CARB-compliant.
- Air out new carpet, new furniture, new draperies and other permanent press textiles in a ventilated area for several days before bringing them into your home.
- Exhaust all combustion appliances directly to the outdoors; have them checked annually by a professional.
- Keep fresh outdoor air circulating when applying fingernail polish or other cosmetic products containing formaldehyde; wash permanent press clothing, sheets and other fabrics before using.
- Do not allow smoking in your home.

*Updated August 2017*