



Formaldehyde

What Is It?

Formaldehyde is a colorless, strong-smelling gas. It is widely used to manufacture building materials and numerous household products. Its most significant use in homes is as an adhesive resin in pressed wood products. There are two types of formaldehyde resins: urea formaldehyde (UF) and phenol formaldehyde (PF). Products made of urea formaldehyde can release formaldehyde gas; products made of phenol formaldehyde generally emit lower levels of the gas.

Where Is It Found?

Formaldehyde is an important industrial chemical used to make other chemicals, building materials, and household products. It is used in glues, wood products, preservatives, permanent press fabrics, paper product coatings, and certain insulation materials. Building products made with formaldehyde resins can "off-gas" (emit) formaldehyde gas. These products include particle board used as sub-flooring or shelving, fiberboard in cabinets and furniture, plywood wall panels, and foamed-in-place urea-formaldehyde insulation. Some sources that previously contained formaldehyde are either no longer used or have been reformulated to contain less formaldehyde. Incomplete combustion, cigarette smoking, and burning wood, kerosene, and natural gas also release formaldehyde.

What Are the Health Effects?

Formaldehyde is normally present at low levels, usually less than 0.06 ppm (parts per million), in both outdoor and indoor air. When present in the air at levels at or above 0.1 ppm, acute health effects can occur including watery eyes; burning sensations in the eyes, nose and throat; nausea; coughing; chest tightness; wheezing; skin rashes; and other irritating effects. Formaldehyde affects people in various ways. Some people are very sensitive to formaldehyde while others may have no noticeable reaction at the same level of exposure. Sensitive people can experience symptoms at levels below 0.1 ppm. The World Health Organization recommends that exposure should not exceed 0.05 ppm. Colds, flu, and allergies can cause symptoms similar to some of those produced by exposure to formaldehyde.

Formaldehyde has caused cancer in laboratory animals and may cause cancer in humans; there is no known threshold level below which there is no threat of cancer. The risk depends upon amount and duration of exposure.

What Are the Solutions?

Exposure to formaldehyde may be decreased by the following measures:

- Purchasing pressed wood products labeled as low-emitting or products made from phenol formaldehyde, such as oriented strand board or softwood plywood.
- Increasing ventilation after bringing new sources of formaldehyde into your home.
- Using alternate products such as lumber, metal, or solid wood furniture.
- Avoiding the use of foamed-in-place insulation containing formaldehyde, especially urea-formaldehyde foam insulation.
- Enclosing unfinished pressed-wood surfaces of furniture, cabinets, or shelving with laminate or water-based sealant.
- Washing durable-press fabrics before use.
- Ensuring combustion sources are properly adjusted.
- Avoiding smoking indoors.
- Maintaining moderate temperatures and low (30 to 50 percent) relative humidity levels.

How Can I Measure Formaldehyde Levels?

In cases where accuracy of results is important, only trained professionals should measure formaldehyde because of the difficulty of obtaining good data and interpreting the results. Do-it-yourself formaldehyde measuring devices are available. The results should be interpreted with caution, however, because weather conditions, ventilation rates, and other factors can affect the results. Such devices should be used according to the instructions.