FORMALDEHYDE IN THE HOME — FREQUENTLY ASKED QUESTIONS

WHAT IS FORMALDEHYDE?

Formaldehyde is a colorless gas that has a distinct, pungent smell. Small amounts of formaldehyde are naturally produced by plants, animals, and humans. Many common building, personal care, and household products also release formaldehyde and that is why it is found in the air of nearly every home in the United States. At typical concentrations found in homes, it is not noticeable. In higher concentrations it can cause eye, nose, and throat irritation. In very high concentrations it can cause headaches, dizziness, and nausea.

WHAT CAUSES FORMALDEHYDE TO BE PRESENT IN THE HOME?

Formaldehyde is used in many household products and building materials, especially those containing urea-formaldehyde resin, which is used in a number of adhesives, binders, and finishing materials. Materials such as insulation, composite wood products (such as cabinets, flooring, furniture, and plywood), engineered wood products, glues, adhesives and paints contain formaldehyde. Formaldehyde is also a preservative in products such as antiseptics, medicines, and cosmetics, and is also found in tobacco smoke, combustion products from gas stoves, kerosene space heaters, and fireplaces.

The release of formaldehyde into the air is called off-gassing and may occur for weeks to months. Once formaldehyde is released into the air, it is gradually broken down, or can dissipate through normal air exchange between the inside of homes and outdoors. If the home's air exchange is low, there can be a gradual build-up of airborne formaldehyde over time.

WHAT IS AN ACCEPTABLE LEVEL OF FORMALDEHYDE IN A HOME?

There is no universally accepted exposure limit for formaldehyde in residential environments. However, according to the U.S. Environmental Protection Agency's (EPA) recent study of formaldehyde, normal indoor levels can range from 0.020 to 0.100 part per million (ppm). The World Health Organization (WHO) has endorsed an indoor air quality guideline of 0.081 ppm as being protective against sensory irritation and long-term health effects for the entire population. (NOTE: "ppm" stands for "part per million," which is a common way of expressing very small concentrations of gaseous materials.)

WHAT ARE THE HEALTH EFFECTS OF FORMALDEHYDE?

Most people don't have any health problems from exposure to the small amounts of formaldehyde typically found in homes. Exposure to levels of formaldehyde that are above 0.150 to 0.350 ppm may cause low-level irritation to your eyes, nose, throat, or airways. In higher concentrations (generally above 0.50 ppm), exposure can cause headaches, dizziness and nausea. At even higher levels (approximately 1.0 ppm), formaldehyde exposure can cause shortness of breath and wheezing.

Exposure to formaldehyde over many years in workplaces (i.e., 15 to 20 years), at concentrations that are many times greater than those found in typical residences, has been linked to nose and throat cancers in workers. Formaldehyde exposure from new products or new construction in the home would generally be much lower and would last for far less time than the high concentration, long duration exposures linked to cancer.

ARE CHILDREN AND THE ELDERLY MORE SENSITIVE TO FORMALDEHYDE?

Discussions with clinicians and a detailed review of the medical literature shows that children and elderly persons are not especially sensitive to formaldehyde at levels typically found in homes.

HOW CAN I BE EXPOSED TO FORMALDEHYDE?

The primary way you may be exposed to formaldehyde is through the normal inhalation of air that contains formaldehyde. Since it is known that there are many sources of formaldehyde that can be present in homes, you want to minimize your potential contact with elevated concentrations of formaldehyde, which will help control potential exposures.

WHAT CAN BE DONE TO REDUCE FORMALDEHYDE CONCENTRATIONS IN HOMES?

Steps can be taken to limit exposure from formaldehyde that is released from various sources. This can include increasing the supply of fresh air to flush out formaldehyde and other chemicals from the home, maintaining the temperature and humidity to levels of approximately 72 °F and below 60% relative humidity (since the amount of formaldehyde released goes up with increases in air temperature and humidity). When new products are purchased that contain formaldehyde, allow them to off-gas for a period of time before bringing them into the home or increase the ventilation by use of window fans or exhaust fans to promote off-gassing. Finally, eliminate non-vented combustion sources from indoors, including smoking, since tobacco smoke contains formaldehyde.

To effectively reduce any potential exposures from high concentrations of formaldehyde in the air, the following measures are recommended:

- Refrain from using areas that have elevated concentrations of formaldehyde.
- Isolate the formaldehyde by restricting air transfer from affected areas to the rest of the home:
  - Close the doors between the affected area and the rest of the home.
  - Eliminate direct pathways that may exist with the HVAC system (i.e., block return air from affected areas).
- Employ supplementary ventilation exhaust systems to increase the air exchange rate from the affected area to the outdoors. Open windows in the affected area if possible.
- Use of specialized air cleaners can also be quite effective in reducing exposures.

IF FORMALDEHYDE IS PRESENT IN PART OF A HOME, WILL IT GET "STUCK" IN HOUSEHOLD ITEMS, SUCH AS CARPETS, UPHOLSTERY, OR DRAPES?

Although formaldehyde can be absorbed into porous materials, such as couches, carpets, or drapes, it generally will not remain "stuck" there. Instead, the formaldehyde will be released back into the surrounding air once the source of formaldehyde emissions has been remediated or corrected. The same ventilation steps that can be used to reduce formaldehyde in the indoor air will also work to remove formaldehyde from the household items. Because formaldehyde is naturally released from surfaces and porous furnishings once the level in the surrounding air is lowered, there is no need to clean or replace household items in affected areas after the source of formaldehyde emissions has been dealt with and the area has been properly ventilated for an appropriate amount of time.