



Formaldehyde Uses & Exposure Sources

What is Formaldehyde?

At room temperature, formaldehyde is a colorless, flammable gas that has a distinct pungent smell. Small amounts of formaldehyde are naturally produced by plants, animals, and humans. It is naturally produced in very small amounts in our bodies as a part of our normal, everyday metabolism and causes us no harm.

Formaldehyde is found in the air that we breathe at home and at work, in the food we eat, and in some products that we put on our skin. A major source of formaldehyde that we breathe every day is found in smog in the lower atmosphere. Formaldehyde can be released into the air (off-gas) from materials and products made with it.

What Levels of Formaldehyde are Present in Consumer Environments?

Formaldehyde is normally present at low levels, usually less than 30 parts per billion (ppb), in both outdoor and indoor air. The outdoor air in rural areas has lower concentrations while urban areas have higher concentrations (due to sources such as automobile exhaust). Residences or offices that contain products that release formaldehyde into the air can have levels greater than 30 ppb.

What are Major Sources of Indoor Formaldehyde Emissions in Buildings Today?

Measuring formaldehyde emissions from individual consumer products is difficult because a variety of products in the home can release formaldehyde or trap formaldehyde emitted from other sources. Products with greater emissions and larger surface areas in the home will most likely have a greater contribution to indoor air formaldehyde levels. Keep this in mind when prioritizing the different product types below. Also, not all brands within each product type contain formaldehyde.

Wood Floor Finishes – Wet commercial, base- and top-coat floor finishes.

- Emissions decrease 24 hours after application.
- Finishes are not typically available to the consumer, but they can be (re-) applied by commercial floor contractors at residences or factories.

Pressed-wood and Wood-based Products – Furniture, pressed-wood (i.e., hardwood plywood, particleboard, and medium-density fiberboard (MDF)) and wood-based products, especially those containing urea formaldehyde (UF) resins, may be a significant formaldehyde source.

- Formaldehyde emissions from pressed-wood products have been reduced 80-90% from levels in the 1980s and earlier due to mandatory formaldehyde emission standards in California and national voluntary formaldehyde emission standards.
- Emissions decrease 6-10 months after initial testing.

Wallpaper and Paints

- Moderate levels of formaldehyde initially following application.
- Levels formed during the curing process may be higher than after initial application.
- Emissions are sometimes still detectable 1-3 months following application.
- Some paints are now found with low-volatile organic compound (VOC) formulations.

Combustion – Cigarette, cigar and pipe smoke and the combustion of other materials, such as wood (fireplaces), kerosene, oil, natural gas, and gasoline, produce formaldehyde.

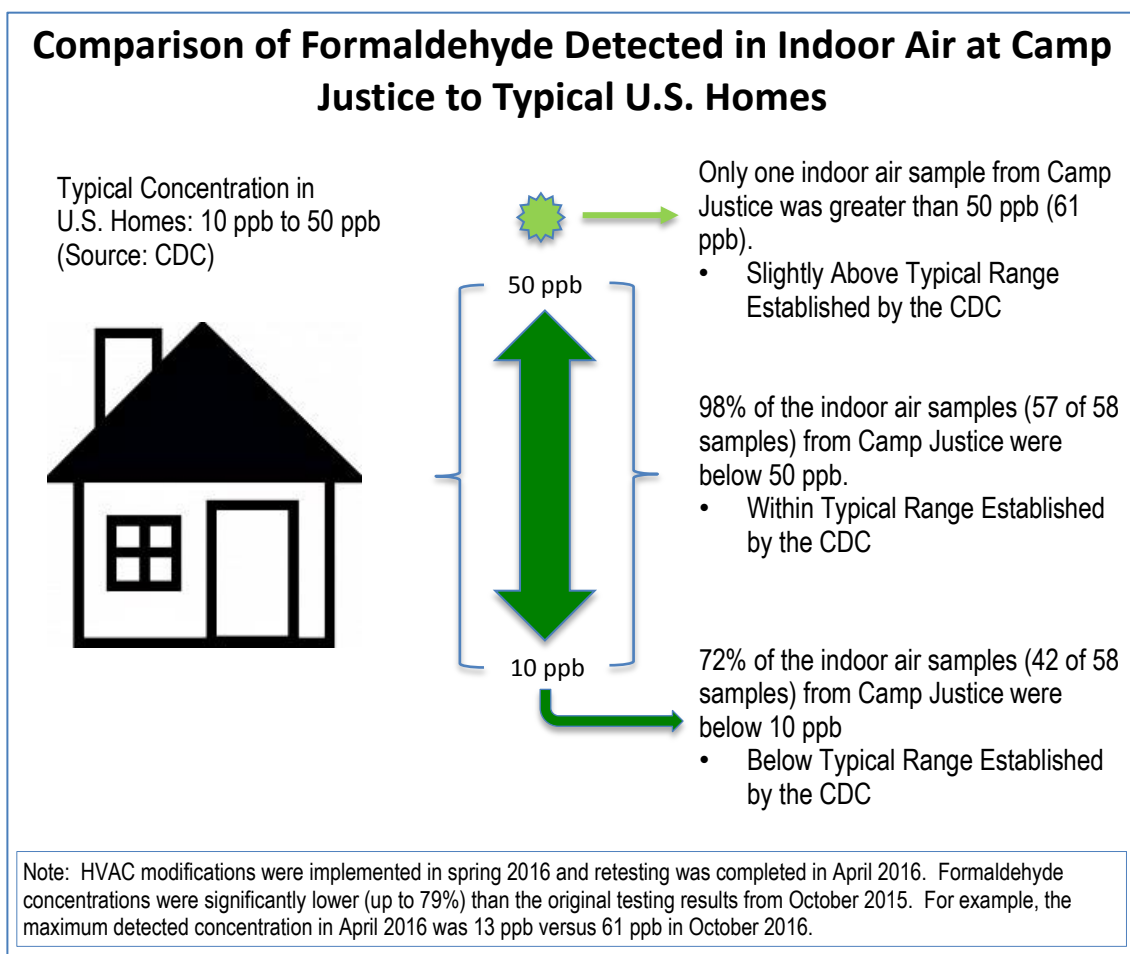
Other Materials – Formaldehyde can be created from the chemical reaction between ozone and other VOCs

during the use of personal computers, laser printers, and photocopiers.

Re-emitters – Because they are porous, products, such as carpets or gypsum board, do not contain significant amounts of formaldehyde when new. However, they may trap formaldehyde that is emitted into the air from other products and later release it into the indoor air.

House Products – Formaldehyde is found in many products used every day around the house, such as antiseptics, medicines, cosmetics, dish-washing liquids, fabric softeners, shoe-care agents, carpet cleaners, glues and adhesives, lacquers, latex paints, paper, plastics, pesticides, landscape and lawn products and some types of wood products. Some paper products, such as grocery bags and paper towels, give off small amounts of formaldehyde.

Industries – Formaldehyde is used in the production of fertilizer, paper, plywood, and UF resins and iron foundries. It is also used in the production of cosmetics and sugar, in well-drilling fluids, in agriculture as a preservative for grains and seed dressings, in the rubber industry in the production of latex, in leather tanning, in wood preservation, and in photographic film production. Formaldehyde is combined with methanol and buffers to make embalming fluid. Formaldehyde is also used in many hospitals and laboratories to preserve tissue specimens.



For more information, contact **Navy and Marine Corps Public Health Center**
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For ATSDR ToxFAQs™, visit www.atsdr.cdc.gov/toxFAQs

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