Formaldehyde in Air

MAY 2024

Formaldehyde is a colorless, strong-smelling chemical that is a gas at room temperature. Most people can smell formaldehyde in the air at levels between 600 – 1200 micrograms per meter cubed (µg/m^3). Formaldehyde exposure may cause subtle, temporary effects to breathing rates and can be irritating to the eyes and nose at levels close, or even below levels where people can smell it. In Minnesota, outdoor background levels of formaldehyde average about 2 µg/m^3. In general, Minnesotans are not likely to experience harmful health effects from the levels of formaldehyde found in the outdoor environment. Mention lung

How can you be exposed to Formaldehyde in air?

Formaldehyde is used in a variety of industrial processes and products and is emitted by certain industries and manufacturers. Formaldehyde is also used in the production of adhesives, bonding agents, and solvents and is commonly found in consumer products, including:

- glues and adhesives
- foam insulation
- some synthetic fabrics (permanent press)
- some cosmetics and personal care products
- pressed-wood products, such as particleboard, plywood, and fiberboard
- cigarette/tobacco smoke

Formaldehyde is also a byproduct of combustion. Vehicle exhaust is a common source of formaldehyde in the air, and it can also be produced when burning natural gas, kerosine, gasoline, wood, and tobacco. Formaldehyde also occurs naturally in the environment and is produced in small amounts in the human body.

MDH Health-Based Values (HBV)

Duration of Exposure	2024 HBV (µg/m^3)	Health Endpoint
Acute (24 hours or less)	50	Eye Irritation
Short-term (>24 hrs-30 days)	7	Respiratory
Subchronic (>30 days-~8 years)	7 (defaults to short-term HBV*)	Respiratory
Chronic (>~8 years-lifetime)	7 (defaults to short-term HBV*)	Respiratory
Cancer (lifetime)	Not derived	--

*When a subchronic/chronic HBV is greater than a short-term HBV, subchronic/chronic HBV default to the more health protective short-term HBV

The Minnesota Department of Health (MDH) uses HBVs to protect people's health from contaminants in air. The HBVs are levels in air that are likely to pose little or no risk to human health over a period of time. They are developed to protect the most vulnerable (e.g., most sensitive or most highly exposed) to the potentially harmful effects of a contaminant.

Breathing an amount formaldehyde that is above the HBV does not mean health effects will occur; however, the risk for health effects can increase as the level of exposure and/or time of exposure increases. When HBVs are exceeded, MDH recommends taking steps to reduce or avoid exposures.

Potential Health Concerns from Breathing Formaldehyde

Most exposures to airborne formaldehyde are in low amounts and are not likely to result in negative health effects. You are more likely to experience health effects from breathing formaldehyde if you have been exposed to high levels of formaldehyde over a long time. Your age, body size, lifestyle, and current health status may also influence any effect formaldehyde could have on your health.

Most human and animal studies show irritation to the eyes, nose, and respiratory tract in short or longer exposure periods. Temporary, subtle effects to breathing rate have also been shown in longer than 24-hour exposures; however, the risk to respiratory function is likely very low for most people.

More information

Formaldehyde HBV technical information can be found on the MDH Air Guidance Values (https://www.health.state.mn.us/communities/environment/risk/guidance/air/table.html) webpage.

Contact information:

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