

## Understanding formaldehyde: mitigating risks for healthier indoor environments

"We only see what we know"



Formaldehyde, a colourless, pungent-smelling gas, is pervasive in various building materials, household products, and even cosmetics. Despite its wide usage, formaldehyde is a significant health concern due to its potential for causing respiratory issues and long-term effects such as cancer. This K-pill explores the sources, impacts, and strategies for reducing formaldehyde exposure, particularly in indoor environments.

### Sources of Formaldehyde in Indoor Environments

Formaldehyde is released into indoor air from products made with formaldehyde-based resins, including:

- **Building Materials:** Many common materials used in home construction and interior fittings, like particleboard, plywood, and fibreboard, contain formaldehyde-based resins. These resins can release formaldehyde gas into the air, especially when they are new or exposed to heat.
- **Household Products:** Things we often use for home improvement, such as glues, paints, and varnishes, can emit formaldehyde. These emissions can be particularly high when the products are freshly applied.

- **Furniture and Textiles:** Formaldehyde is also used in the manufacture of some furniture and fabrics. For example, upholstered furniture and fabrics treated to be wrinkle-resistant (often labelled as "permanent-press") can continue to release formaldehyde over time.
- **Indoor Smoking:** The act of smoking indoors can significantly increase the concentration of formaldehyde in the air. Tobacco smoke is a major source of indoor formaldehyde, adding to that emitted from other sources.

### Health Risks Associated with Formaldehyde

The presence of formaldehyde in indoor air has raised significant health concerns, prompting both individuals and health agencies to monitor and manage exposure levels. Understanding the health risks associated with formaldehyde involves examining the effects of both short-term and long-term exposure.

- **Short-Term Exposure:** Short-term exposure to formaldehyde can occur during activities like renovating a home or using products that emit formaldehyde. Even brief exposure can irritate the eyes, nose, and throat, and can cause coughing, wheezing, nausea, and skin irritation. These symptoms are typically temporary and often subside once the exposure stops.
- **Long-Term Exposure:** Long-term exposure to formaldehyde is more concerning due to its potential for causing more serious health issues. Chronic exposure can lead to persistent respiratory symptoms, severe allergic reactions, and has been linked to asthma in children. Crucially, formaldehyde is classified as a known human carcinogen by several health agencies. The International Agency for Research on Cancer (IARC), a part of the World Health Organization, has categorised formaldehyde as "carcinogenic to humans," highlighting its potential to cause cancers such as nasopharyngeal cancer and leukaemia, particularly myeloid leukaemia ([CancerZone](#)). Similarly, the U.S. National Toxicology Program ([NTP](#)) lists formaldehyde as a known human carcinogen, supporting this classification with evidence from human and animal studies that link exposure to a variety of cancers.

The distinction between short-term and long-term exposure highlights the importance of managing formaldehyde levels in indoor environments to protect health and improve air quality.

### Strategies for Reducing Exposure

There are several effective strategies that individuals can implement to reduce their exposure to formaldehyde in their living environments. Here's a breakdown of these strategies:

- **Enhanced Ventilation:** When using products that emit formaldehyde, such as paints or adhesives, increasing ventilation can help disperse the chemical and lower its concentration indoors. This can be as simple as opening windows and doors, or using exhaust fans to pull the air outside.

- **Safer Product Choices:** Opt for products specifically labelled as low-formaldehyde or formaldehyde-free. Many manufacturers now offer alternatives to traditional products that typically contain formaldehyde, such as certain types of wood products, glues, and fabrics. Checking labels for certifications can guide you to safer choices.
- **Regulating Home Environment:** Using air purifiers equipped with filters designed to capture formaldehyde can help reduce its levels indoors. Additionally, maintaining an optimal level of humidity in the home can prevent the excessive release of formaldehyde from materials. Typically, keeping indoor humidity levels between 30% and 50% is advised. This guidance aligns with general best practices for managing indoor air quality and minimising exposure to various indoor air pollutants ([PLOS](#)).

### EU Regulations and Recommendations on Formaldehyde Exposure

The European Union has established strict regulations to limit formaldehyde exposure, recognizing its carcinogenic and mutagenic properties. According to Commission Regulation (EU) 2023/1464, a maximum emission limit of 0.124 mg/m<sup>3</sup> is set for consumer products that can release formaldehyde into indoor environments. This regulation aims to control health risks associated with formaldehyde exposure, ensuring protection against sensory irritation and long-term health effects like nasopharyngeal cancer ([EUR-Lex](#)) ([EU Biz Hub](#)).

These measures demonstrate the EU's commitment to consumer safety and public health, providing guidelines for manufacturers to adapt their products and processes towards safer indoor environments.

### Conclusion

Understanding and managing formaldehyde exposure is essential for healthier indoor air quality. By being informed about the sources and risks of formaldehyde, and implementing practical mitigation strategies, individuals can significantly reduce their exposure to this harmful chemical. Furthermore, adhering to regulatory standards such as those set by the EU can help ensure a higher level of protection for all.