



IAQ/ODORS/FORMALDEHYDE

RESIDENTIAL & COMMERCIAL PROPERTIES

Eleven Important Formaldehyde Facts

1. **Formaldehyde** is a chemical used in resins, adhesives and binders during manufacturing of many composite wood products (CWPs) found in the home environment including laminate flooring, cabinetry, shelving, furniture, paneling, doors, etc.
2. Formaldehyde gas is known to be **released (off-gas)** from the CWPs after manufacturing and installation. Formaldehyde off-gasing is highest when CWPs are new then decrease overtime but tend to increase with increasing temperature and humidity.
3. Formaldehyde gas (as a source for **poor IAQ/occupant complaints**) is also found in tobacco smoke, auto exhaust, gasoline/propane combustion byproducts, wood burning stoves/fireplaces as well as permanent press clothing/linens, paints/coatings, carpeting, draperies, insulation, air fresheners, household cleaning products, disinfectants, personal care products, etc.
4. In general, the larger the surface area of the products used, the greater amount of formaldehyde which can be released. Carpeting or gypsum board can absorb/trap formaldehyde released from other products and later release it into the indoor air.
5. Formaldehyde is a colorless gas with a **strong pungent odor** and can cause eye, nose, and upper respiratory tract irritation in low airborne concentrations (100-500 ppb). Formaldehyde is also listed as a known human carcinogen.
6. There is significant **individual susceptibility** (i.e., variability of response during inhalation) from formaldehyde exposure. The reported odor threshold ranges from 50-100 ppb. Children, the elderly and individuals with lung diseases such as asthma, bronchitis or allergies are the most sensitive.
7. Formaldehyde gas is also found in very low levels in the outdoor air. Reportedly, levels of 0.2-0.6 ppb have been found in rural areas and 1.0-20 ppb in urban areas. In general, outdoor levels are well below indoors. AET's experience during IAQ sampling indicates formaldehyde is present in every home (normally below 30-40 ppb).
8. There are **no** federal or state regulatory limits for formaldehyde levels in homes or other residential environments. OSHA has established a PEL of 750 ppb (as 8-hour TWA exposure) and ceiling standard of 2000 ppb for occupational settings. NIOSH has established a REL of 16 ppb (as 10-hour TWA) and a 15 minute ceiling limit of 100 ppb. The World Health Organization (WHO) has set a 30 minute limit of 80 ppb.
9. The State of California has established the **first (and only)** regulatory performance standard for the limit for formaldehyde emissions from CWPs sold/used in the State to protect public health. This regulation is enforced by the California Air Resources Board (CARB) and established formaldehyde emission limits for specific CWPs and also mandates labeling of these products as CARB compliant. THE EPA is developing a similar national regulation.
10. Thousands of FEMA travel trailers and mobile homes used for temporary housing following Hurricane Katrina were auctioned off as scrap (not fit for human habitation). Average formaldehyde levels in one CDC study on these units were estimated at 77 ppb and the CDC concluded formaldehyde levels could affect human health and recommended the relocation of the temporary housing occupants. Occupant complaints included headaches, nosebleeds and breathing difficulties. A Class Action Suit recently awarded **42.6 million dollars** to the FEMA complaints.
11. **Formaldehyde controls** start with product selection such as using CARB Phase 2 compliant CWPs. Once purchased, new products should be allowed to air out before installing them. Once installed, ventilating the source by opening windows, using exhaust fans or HVAC operation will help dilute the airborne formaldehyde level. Use dehumidifiers to reduce humidity in your home to 40-50%.

About our organization: AET has over 30 years of environmental contracting/consulting experience assisting our clients in facility planning, design, construction, renovation, restoration, remodeling and maintenance issues. Real life solutions and cost savings recommendations including prevention of future complaints is AET's objective in every IAQ investigation. Make AET your first point of contact for your environmental contracting/consulting needs. Call us now at 610-891-0114 or 1-800-9696-AET.

Want to learn more Proactive Controls!!! Email Alan Sutherland, CIH, CHMM at a.sutherland@aetinc.biz. We provide nationwide services; phone consultations are free. Check out the full range of environmental contracting/consulting services we provide at our website at www.aetinc.biz.