

Frequently Asked Questions: Formaldehyde in Flooring and Other Home Products

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This factsheet was created to answer families' common questions about formaldehyde in flooring and other household products, air testing in the home, tips to reduce formaldehyde exposures, and discussion of possible health effects in children.

Q1: What is Formaldehyde?

A: Formaldehyde is a chemical that is used in many household products and is one of the most common indoor air pollutants. It can be found in hundreds of household materials, home furnishings, "permanent press" clothing, personal care products (like cosmetics) and building materials (e.g., laminate flooring, walls, cabinets, composite wood products, carpet). It is found in smoke from cigarettes and other tobacco products, gas stoves, and open fireplaces. Outdoors, it can be found in smog.

Q2: How can formaldehyde affect my child's health?

A: Children are more affected by some environmental hazards, such as formaldehyde, because they are smaller compared with adults, and also their bodies are still developing. Crawling or playing on the floor or ground may bring them closer to sources of formaldehyde.¹

Formaldehyde can slowly evaporate out of the building materials or other products that are made with it. This is called *off-gassing*, which produces very low levels of formaldehyde in the air. Low levels can cause scratchy or watery eyes, irritated throat, runny nose, and irritated skin. Some people exposed to low levels of formaldehyde may have neurologic effects, including deficit in short-term memory. People with asthma may have trouble breathing (or wheeze) when they breathe in formaldehyde. People exposed to high levels of formaldehyde for a long time can develop inflammation and irritation of the throat and the lungs. This type of exposure would most likely occur on the job and not at home from furniture or wood for the floor. Exposure to higher levels of formaldehyde over many years can increase the risk of nasopharyngeal cancer.²

Q3: Should my child be tested?

A: No. Testing blood or urine does not tell your doctor how much formaldehyde has gotten into your child or what the potential health effects may be. If you are concerned about possible exposure to formaldehyde, the best step is to reduce the source of exposure and discuss any symptoms with your doctor.

Q4: I am concerned that I was exposed to formaldehyde in my home while I was pregnant. Should I or my baby be tested?

A: No. Formaldehyde is metabolized (broken down) in the lungs and passed out in breath and urine, so there is limited exposure to the fetus. Formaldehyde levels typically seen in homes are much lower than levels seen in workplaces that use formaldehyde. Formaldehyde exposure at both workplace and typical household levels has not been linked to birth defects.² The best strategy during pregnancy is to reduce exposure as much as possible through fresh air supply and ventilation, and the other steps discussed on in Q5 of this factsheet. You should also stay current with routine OBGYN appointments, and continue healthy choices during pregnancy such as eating healthy foods and avoiding cigarette smoke.

Q5: What are recommendations to reduce exposure to formaldehyde?

A: There are many ways to reduce exposure. Usually removing the source is the first step to decrease exposure. Additional options include:

- During installation of a product that contains formaldehyde, and even shortly thereafter, increase ventilation in your home by opening windows and circulating air. Frequent ventilation of the home is an effective way to reduce the levels of many indoor air pollutants, including formaldehyde. (Although if your child has asthma, if outdoor air pollution or pollen are triggers, be aware that this might also increase those exposures).
- Try to keep temperature and humidity as low as possible because release of formaldehyde from products such as flooring increases with higher temperature and humidity.
- Let new products *off-gas* somewhere outside of your living space before bringing them inside.
- Use products that are labeled as “urea formaldehyde” free.
- Do not smoke, especially indoors because the smoke contains formaldehyde.
- Wash permanent-press curtains and clothing (such as “wrinkle free shirts”) before using them.
- For more information, refer to the CDC website on formaldehyde: <http://www.cdc.gov/nceh/formaldehyde/> or the EPA website on formaldehyde: <http://www2.epa.gov/formaldehyde>

Q6: Should I buy an air filter?

A: Air Purifiers with HEPA filters are designed to remove particles such as dust and allergens from the air, but not gasses and chemical vapors like formaldehyde. Not all air purifiers with charcoal filters will remove formaldehyde from the air. Check with the manufacturer to learn if the charcoal filter used by the air purifier removes formaldehyde from the air (change filters regularly, according to manufacturer’s instructions). Air purifiers should not be used as a substitute for reducing/eliminating sources of exposure and getting fresh air into the home.³

Q7: Should I conduct indoor air testing?

A: Testing indoor air is generally not needed. There are simple steps to reduce exposure (see Q5 above). Contact your regional pediatric environmental health specialist (www.PEHSU.net) for more information.

Q8: My family has already decided to have air testing done. What type of testing is best?

A: Indoor air testing for formaldehyde is not generally recommended. Most homes will have detectable levels of formaldehyde since it can be found in so many products. Also, formaldehyde levels can vary day to day. If formaldehyde is detected, the results will not specify the source of formaldehyde exposure nor be used by the doctor to predict health effects. However, if you chose to pursue testing in your home, it is important to choose a test and a company that are appropriate and certified.

For flooring sold by Lumbar Liquidators, the company is offering free indoor air testing through an independent certified lab. To request this testing (your flooring must be from the batches under question), refer to the Lumbar Liquidators website: <http://www.lumberliquidators.com/ll/testkit>

If you chose to use a different laboratory, it is important to make sure you chose the appropriate laboratory and test. The appropriate test is a “passive sampler” with good accuracy and a low limit of detection (≤ 20 -30 ppb) that will be sent back to a certified lab for analysis.⁴ The US Consumer Product Safety Commission (CPSC) has released guidelines to help families chose appropriate labs. See section “Consumer Sampling Kits” on page 9-10 for a list of certified lab qualifications:

http://www.cpsc.gov//PageFiles/121919/AN_UPDATE_ON_FORMALDEHYDE-update03102015.pdf

Q9: I had air testing done already. What do the results mean? How do the results relate to health?

A: It is important to note that no matter what the results are, simple steps to improve the quality of indoor air in your home is important for your family’s health. Fresh air supply and adequate ventilation (opening windows,

using fans), and wet dusting/wet mopping are effective ways to reduce the levels of many contaminants in your home. Refer to Q5 for more information.

Most homes in the United States have detectable levels of formaldehyde because it is commonly found in many materials. Formaldehyde test results cannot tell you where the formaldehyde is coming from, since many indoor products such as laminate flooring, pressed wood products, particle board, and cigarette smoke may contain formaldehyde. Although there is not a law to regulate the levels of formaldehyde in homes, there are guidelines suggested by health agencies that are set to protect public health.

Formaldehyde air testing results also cannot predict the risk of short or long term health effects in your children. In general, the most common symptoms seen with formaldehyde exposure are mild or moderate irritation of the nose, eyes, and throat. These depend on the sensitivity of the person but may occur at levels starting around 100 parts per billion (ppb).¹ **The most important intervention to protect your child's health is to reduce exposure to formaldehyde** (see Q5 above). Immediate medical concerns should be directed to your primary physician. The PEHSU network is available to answer more general questions about formaldehyde and health.

Figure 1 (on the next page) summarizes typical levels found in US homes, in context of known health based guidance levels.

Q10: Who can I contact if I have more questions or concerns?

A: If you live in NJ, NY, PR, or the USVI, contact the Region 2 PEHSU for questions regarding formaldehyde exposure or your testing results. Our toll free number is: 866-265-6201. If you live outside Region 2, find your local PEHSU contact information on: <http://www.pehsu.net/>

References:

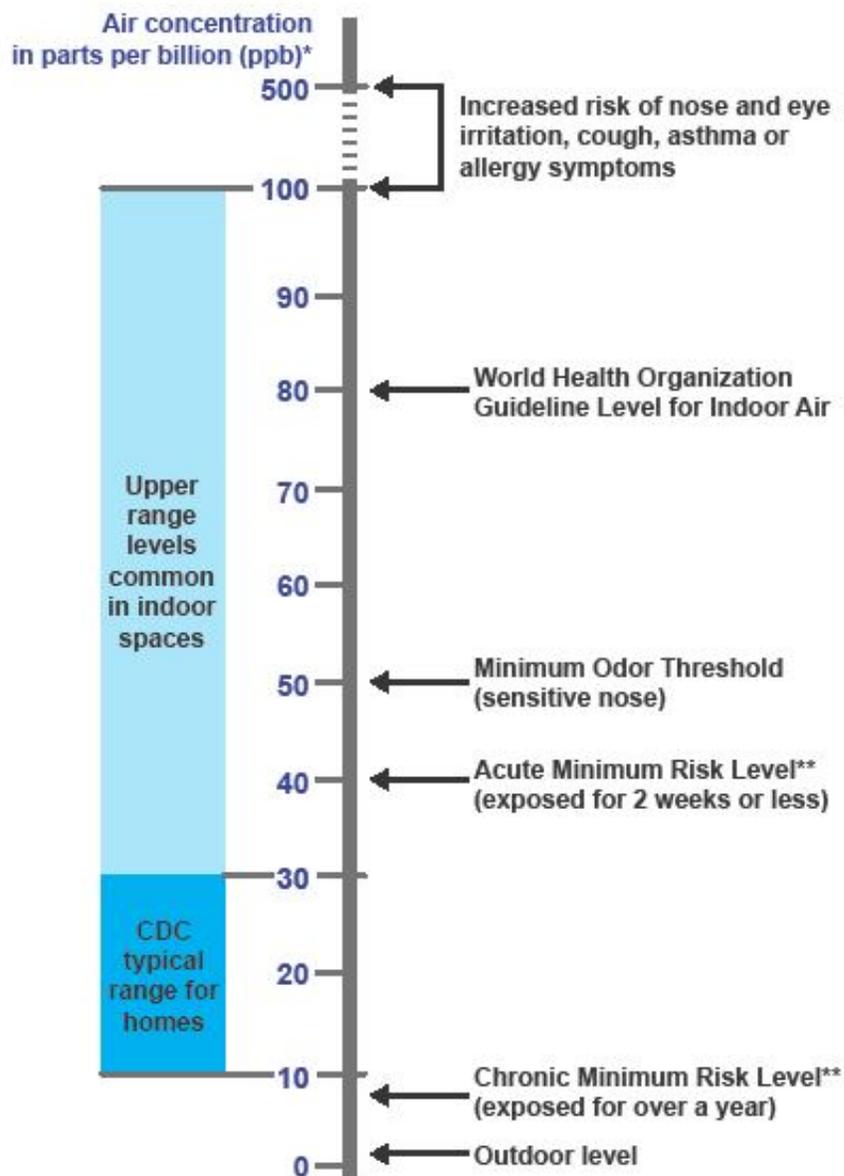
1. Etzel R and Balk S, eds. Pediatric Environmental Health, 3rd Edition.
2. Agency for Toxic Substances and Disease Registry (ATSDR). Toxicological Profile for Formaldehyde (Addendum, October 2010). Accessed on June 10, 2015: http://www.atsdr.cdc.gov/toxprofiles/formaldehyde_addendum.pdf
3. US Environmental Protection Agency (EPA). Residential Air Cleaners (Second Edition): A Summary of Available Information. Accessed on June 10, 2015: <http://www.epa.gov/iaq/pubs/residair.html>
4. US Consumer Product Safety Commission (CPSC): An Update on Formaldehyde. Accessed on June 10, 2015: http://www.cpsc.gov//PageFiles/121919/AN_UPDATE_ON_FORMALDEHYDE-update03102015.pdf
5. World Health Organization (WHO). WHO Selected pollutants: WHO guideline for indoor air quality. Accessed on June 10, 2015: <http://www.who.int/indoorair/publications/9789289002134/en/>

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Figure 1: Formaldehyde Level Summary^{1,5}



*ppb represents "parts per billion". One ppb means that there is one unit of formaldehyde for every 1,000,000,000 (billion) units of your air sample. If your test results do not say "parts per billion" or ppb, you will need to convert to use this chart. One common unit in lab reports is "parts per million" (ppm): 1 ppm = 1,000 ppb (so multiply your ppm result by 1,000 to get ppb). Another common unit is nanograms/liter (ng/L): 1 ppb = 1.25 ng/L (so divide your ng/L result by 1.25 to get ppb). When using this chart, all units should be in ppb.

**The Minimum Risk Level (or MRL) is the daily level of exposure to formaldehyde in the air that will not significantly increase the risk of health effects. The formaldehyde Acute MRL is set to protect from irritation to the nose and eyes for exposures less than 2 weeks. The formaldehyde Chronic MRL is set to protect people from mild damage to nasal passages for formaldehyde exposures of more than a year. These MRLs are set with a "safety factor" to protect sensitive people.