Questions on Formaldehyde
3/6/15
(Updated 2/10/16)

1. **Will EPA be regulating formaldehyde emissions from composite wood products?**
   A. Yes. Congress tasked the U.S. Environmental Protection Agency with developing regulations to implement the Formaldehyde Standards for Composite Wood Products Act, or Title VI of the Toxic Substances Control Act. On June 10, 2013, EPA proposed rules to implement national formaldehyde emissions standards for a range of composite wood products. These proposed regulations also contain testing and third-party certification requirements for hardwood plywood, particleboard, and medium-density fiberboard, as well as recordkeeping and labeling requirements.

2. **When will EPA's regulations be issued**?
   A. EPA anticipates finalizing these rules late this year. Until the rules are finalized, there are no national emissions standards in place for formaldehyde in composite wood products.

3. **Is EPA aware of the report by the U.S. Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR) that evaluated possible health effects from formaldehyde found in laminated flooring boards sold by Lumber Liquidators?**
   A. The U.S. Environmental Protection Agency (EPA) reviewed the report released by the U.S. Centers for Disease Control and Prevention (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR) that evaluated possible health effects from formaldehyde found in laminated flooring boards sold by Lumber Liquidators. EPA agrees with CDC/NCEH/ATSDR's conclusion that lowering formaldehyde levels in indoor air can improve the health of occupants. EPA also agrees with the CDC/NCEH/ATSDR recommendation that, if formaldehyde exposure is suspected or confirmed to occur in a home, then actions be taken to reduce formaldehyde levels. Such actions can include increasing air ventilation or choosing home products with low or no formaldehyde for future purchases.

   CDC/NCEH/ATSDR also recommends that residents should see a doctor trained in environmental medicine if they begin to experience symptoms or discomfort after the installation of new laminate flooring (or any product manufactured with formaldehyde) to determine if their symptoms are related to indoor air quality. More information on NCEH/ATSDR's report: http://www.cdc.gov/nceh/laminateflooring/default.html.

4. **When EPA's regulations are issued, will they address products like the laminate flooring featured in the 60 Minutes segment?**

   A. Under EPA's proposed regulations, laminate flooring that is a "laminated product" made by attaching a wood veneer with a formaldehyde-based resin to a composite wood platform would be subject to testing and certification, as would laminate flooring that is hardwood plywood. EPA received a large number of comments on this aspect of the proposed regulations, and EPA is carefully considering the comments in developing the final rule.

   Under the current California Air Resources Board (CARB) regulations, laminated products must be made with platforms that are certified to comply with the applicable emissions standard, but there is no formaldehyde emissions standard applicable to the laminated product itself.

5. **Should I be concerned about formaldehyde if I have laminate wood flooring in my home**?

   A. Not necessarily. Formaldehyde is present in many consumer products, including composite wood products used in flooring, cabinets and furniture; wood floor and wall finishes; and is produced by combustion sources such as gas stoves and wood burning fireplaces. Laminate wood flooring is likely to contain some formaldehyde. However, formaldehyde emissions from these products have been reduced 80-90% from levels in the 1980's and earlier due to mandatory formaldehyde emission standards in California (the CARB standards) and national voluntary formaldehyde emission standards (criteria established by the American National Standards Institute (ANSI)). In addition, formaldehyde emissions are highest when products are new and diminish over time so the longer a product has been in place, the lower the levels of formaldehyde likely to be emitted. Nevertheless, consumers should be aware that a number of studies have found elevated formaldehyde levels in homes and consumers should understand the steps they can take to reduce potential formaldehyde exposures in the home from all sources. (See CPSC booklet)

   At this time, EPA does not have specific information about the laminate wood flooring that was the subject of the recent 60 Minutes segment and is working with CARB and other agencies to better understand the scope of the issues discussed in the segment.

6. **I have laminate flooring made in China in my home. Are we safe to stay in our home?**

   A. Formaldehyde at certain exposures can cause eye, nose, and throat irritation, respiratory problems such as asthma, neurological impairment and, over time, increase the risk of developing some types of cancer.

If you or family members are experiencing symptoms that you believe may be related to products in your home, including laminate wood flooring, you should consult a physician and your state or local health department for assistance. You should also consider taking precautionary steps to minimize formaldehyde levels in the home (e.g., minimizing sources of formaldehyde, increasing ventilation, keeping temperature and humidity levels low and other steps outlined in the CPSC booklet).

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7. **Should I have the indoor air of my home tested for formaldehyde if I have laminate flooring? If so, how should I interpret the results?**
   A. While there are several options for testing the indoor air in your home for formaldehyde, all of them have some drawbacks, ranging from cost and unknown reliability of the tests to the difficulty of interpreting the test results and the inability of the tests to differentiate among the many potential sources of formaldehyde in the home. Should you decide to have indoor air testing performed, you should consult the CPSC booklet for guidance.

8. **Can EPA suggest a home test kit for formaldehyde that is affordable to the consumer and that will provide accurate results?**
   A. No, because EPA has not tested or verified the accuracy of home test kits for formaldehyde.

9. **How can I determine if the formaldehyde levels emitted from my laminate flooring product are acceptable or not? Should I have my laminate flooring product tested for formaldehyde emissions and where can I send a sample to have it tested? How should I interpret the results?**
   A. The formaldehyde emissions standards in TSCA Title VI (which are identical to the CARB standards) apply to unfinished composite wood panels. The standards are:

Formaldehyde emissions standards in TSCA Title VI for unfinished composite wood panels.

Hardwood plywood	0.05 parts per million (ppm)
Particleboard	0.09 ppm
Medium-density fiberboard	0.11 ppm
Thin medium-density fiberboard	0.13 ppm

These emissions standards are not directly applicable to finished products, such as the laminate wood flooring in your home. It is important to know that test results

for product emissions cannot, without significant additional calculations, be used to predict the indoor air concentrations of formaldehyde in your home. Also note that these standards have not yet been finalized through regulation. EPA anticipates finalizing these rules late this year.

However, the standards can provide a benchmark for evaluating formaldehyde emissions from a product and a sample of your laminate wood flooring can be tested. The most common test requires a special testing chamber and there are a limited number of firms that are able to perform this test. If you wish to have a sample of your floor tested, you can contact a laboratory that has experience in this type of testing. The laboratories that participate in California's third-party certification program are capable of performing these tests, although other laboratories may also have this experience. Note that many of these laboratories do not typically offer testing services for individual homeowners and this type of testing is expensive. The list of California laboratories can be found here: http://www.arb.ca.gov/toxics/compwood/listoftpcs.htm

For a discussion of testing the indoor air of your home for formaldehyde, see Q&A's #7 and #15).

10. **Is EPA investigating the sale of the laminate wood flooring as featured in the 60 Minutes segment?**
    A. Because national formaldehyde emissions standards will not take effect until after EPA issues its final implementing regulations, EPA is not yet doing any enforcement investigations relating to the formaldehyde emissions standards for composite wood products.

11. **Does the formaldehyde dissipate over time?**
    A. Yes, typically emissions from composite wood products decrease over time.

12. **Are there long term effects from formaldehyde exposure over time?**
    A. At certain exposures, formaldehyde can cause a variety of adverse health effects, including eye, nose, and throat irritation, as well as other respiratory symptoms. The National Toxicology Program recently classified formaldehyde as a known human carcinogen.

13. **How do I know if the wood products I'm buying are safe? Do I need to be concerned about formaldehyde in a Chinese-made "all wood" cabinet that claims to be CARB phase 2 compliant?**
    A. Until the national formaldehyde emission standards for composite wood products take effect, EPA recommends that consumers look for products that are labeled or stamped in compliance with California Air Resources Board Air Toxics Control Measure (CARB ATCM) criteria or meet American National Standards Institute (ANSI) standards.

- Particleboard should conform to ANSI A208.1-2009 (label designated "-F18" or "-F09" (Grade D2) or "-F20," "-F18", or "-F09" (Grade D3)) or the CARB ATCM.
- MDF should conform to ANSI A208.2-2009 (label designated with "-F21" or "-F11" for MDF > 8 mm thickness; "-F21"or "-F13" for MDF ≤ 8 mm thickness) or the CARB ACTM.
- Hardwood plywood should conform to ANSI/HPVA HP-1-2009 or the CARB ATCM.

14. **Lumber Liquidators is providing test kits for formaldehyde in indoor air to customers who purchased their laminate flooring. In a letter to some of those customers, Lumber Liquidators references a draft EPA toxicological review on formaldehyde to support Lumber Liquidator's conclusion that the formaldehyde levels in those consumer's homes were similar to typical levels in other U.S. homes. Does EPA support Lumber Liquidator's testing program and conclusions?**

A. EPA has not taken a position on the Lumber Liquidators testing program but cautions the public that air testing may not provide useful information due to the uncertainties of home air testing, the lack of widely accepted health based standards for formaldehyde levels in indoor air to compare test results, and because air testing does not provide information on specific sources of formaldehyde, such as laminate flooring.

The "normal indoor air" levels cited in the Lumber Liquidators' letter to its customers originate from a paper published in 2010 entitled *Formaldehyde in the Indoor Environment*, by Dr. Tunga Salthammer. This document is one of many studies referenced in EPA's external draft document, *Toxicological Review of Formaldehyde Inhalation Toxicity: In Support of Summary Information on the Integrated Risk Information System (IRIS)*. This draft toxicologial review does not represent a conclusion by the Agency on the safety of formaldehyde levels in homes. An electronic copy of the Salthammer study is available from the U.S. National Library of Medicine at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2855181/

15. **I had my home's indoor air tested for formaldehyde and I received a lab report on the results. What level is considered safe? Has EPA established a safe level for formaldehyde in indoor air?**

A. EPA has not established a safe level of formaldehyde for indoor air. There are a wide range of known or suspected potential health effects from formaldehyde exposure but the levels at which these effects may cause symptoms or disease in individuals depends on many factors, including the type of health effect and individual susceptibility. A number of guideline levels have been established by a variety of organizations, although none have been adopted by EPA. For a table of some of the current guidelines for formaldehyde, see Lawrence Berkeley National

Laboratory's Indoor Air Quality Scientific Findings Resource Bank:
http://www.iaqscience.lbl.gov/voc-intro.html

Since formaldehyde is present in most indoor environments, many organizations, including EPA, advise that formaldehyde levels be kept as low as reasonably achievable. In practice this means being aware of potential formaldehyde sources in the home and taking steps to reduce them, increasing ventilation if strong formaldehyde sources are present, and keeping temperature and humidity levels low, as this reduces formaldehyde emissions from some products (e.g., composite wood).

Additional Information

California Air Resources Board (CARB) Questions and Answers

http://www.arb.ca.gov/html/fact_sheets/composite_wood_flooring_faq.pdf

Center for Disease Control and Prevention's "Formaldehyde and Your Health"
http://www.cdc.gov/nceh/formaldehyde/

Consumer Product Safety Commission's "An Update on Formaldehyde"
http://www.cpsc.gov//PageFiles/121919/AN_UPDATE_ON_FORMALDEHYDE-update03102015.pdf