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Laminate Flooring Formaldehyde Fact Sheet

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Laminate flooring from Lumber Liquidators that was manufactured in China prior to 2016 has been found to emit large quantities of formaldehyde gas, a potent irritant and known human carcinogen. The emission rates substantially exceed those allowed by the State of California.

Many people are now wondering if the laminate flooring in their home is the "bad stuff" ?

First of all, unless you are symptomatic (e.g., experiencing eye, nose, or respiratory irritation when you are at home, but not when you are away), you can relax, the formaldehyde concentrations are likely not so high as to warrant moving out of your home. If the formaldehyde concentrations in your home are high, you may want to implement corrective action (e.g., flooring removal/replacement) without undo delay since long-term (i.e., years) exposure to formaldehyde does pose a cancer risk.

The only way to be sure is to test the air in your home for formaldehyde.

While our firm does air sampling in homes, the cost for a Certified Industrial Hygienist to come and test the air is significant (i.e., + $1,500). So you may want to first test the air in your home yourself. If the concentrations you measure are high and litigation is anticipated, then you will want to have an independent third party expert come and re-test the air. First of all, note that many do-it-yourself test kits from hardware and building supply stores are not very accurate and should be avoided.

You can purchase the 571 Aldehyde/Formaldehyde samplers from Assay Technology (925-461-8880, https://www.assaytech.com) for $64 each (includes lab analyses), plus approximately $20.00 for the pre-paid return shipping box. So for about $148.00, you can measure the formaldehyde concentration at two locations in your home.

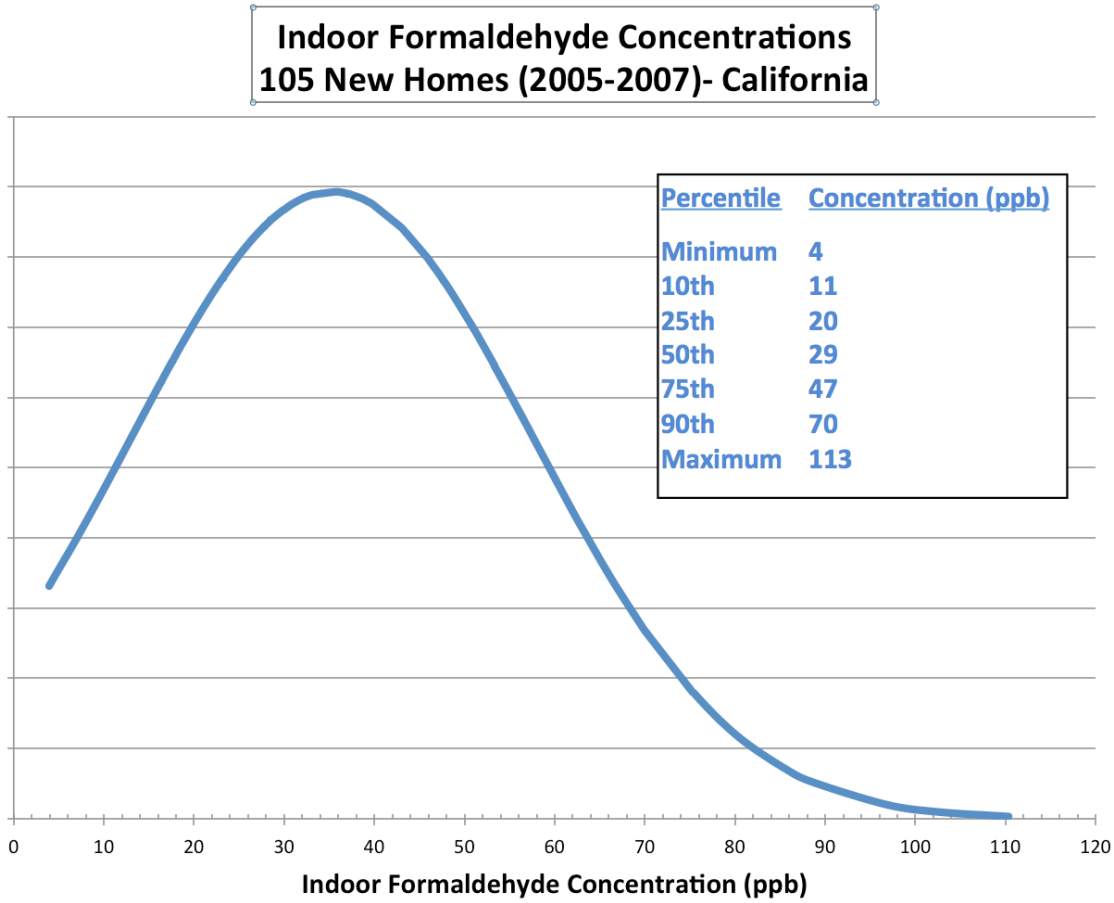
Passive formaldehyde sampler with fiberglass coated DNPH with HPLC analyses provides a reporting limit of 0.003 ppm (3 ppb, 4 $\mu g/m^3$) for a 24-hour sample.

Close all windows from the night before the start of the air test. The next day hang the samplers securely a minimum of 12 inches from any surfaces (e.g. hang from ceiling with a string fastened to the ceiling with a stick pin), flip open the sampler cap and sample for a 22-26 hour period while keeping all windows closed. To stop the sampling close the

sampler cap and fill out the Lab Request form noting the sampling start and stop date/times and requesting formaldehyde analyses and send back to the lab for analyses. The samplers are accurate and have a low detection limit (i.e., 3 ppb for a 24 hour sampling period). We note that in indoor spaces with low air speeds, such as spaces with little or no occupancy, no mechanical ventilation, and no open windows (e.g., basements, closets, closed rooms, nighttime conditions etc.), passive samplers, including the 571 Aldehyde/Formaldehyde sampler, can under-measure formaldehyde concentrations by 20%.

Once you have received the lab results, you are going to want to know if the formaldehyde concentrations represent a problem, as all homes have some formaldehyde in the air, primarily from composite wood products (e.g., flooring, cabinetry, furniture).

The following figure shows the distribution of formaldehyde concentrations in the indoor air of 105 new homes in California (2005-2007). This was a study that we conducted and the final report can be found at http://www.iee-sf.com/pdf/CEC-500-2009-085.pdf.



You can compare the formaldehyde concentrations you find in your home to those from those in this new home study. So if the indoor concentration is 75 ppb (i.e., 0.075 ppm), then your concentration is above the 90th percentile, which means that fewer than 10% of homes have concentrations at this concentration of higher.

The California EPA (OEHHA) recommends a concentration of no more than 7 ppb for long-term chronic exposure and 45 ppb for acute 1-hour exposures. These exposure guidelines were established for non-cancer irritant effects (e.g., eyes, nose, respiratory system) with

consideration for sensitive individuals as well as safety factors, such that no adverse effects are anticipated at concentrations below these guidelines. Note that more than 90% of new homes exceed the 7 ppb chronic exposure guideline, and 25% of new homes exceed the 45 ppb one hour exposure guideline.

Air samples such as these will tell you how much formaldehyde is in the air of your home, but will NOT tell you where the formaldehyde is coming from.

There are many indoor sources of formaldehyde, including composite wood products such as laminate flooring, particleboard, medium density fiberboard, plywood, as well as permanent press fabrics, paints and coatings, lacquer and finishes, glues, and some thermal insulation products.

If you suspect your laminate flooring is a large formaldehyde emitter, then you can get some information by placing one sampler in an empty room with the laminate flooring, but without any furniture or cabinetry or other contents. If the lab results indicate a high concentration in the room with just the flooring, then that is a pretty good indication that the flooring may be a significant emitter of formaldehyde.

Finally, if you want to "prove" that the laminate flooring is causing the formaldehyde concentration in your home to be unacceptably high, then you need to have the formaldehyde emission rates from the flooring measured at a laboratory.

We provide these emission rate tests, which can then be compared to the California Air Resources Board Phase 2 emission standards for laminate flooring to determine if the flooring exceeds the maximum permitted.

These tests consist of testing a 8 inch by 8 inch sample of the flooring in a stainless steel emission rate test chamber, see photo below on left.

We can also test *in situ* the emission rates from flooring and other materials using the Field Laboratory Emission Cell (FLEC), see photo above on right.