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NEW SECTION: News about the Environment

A Solution to the Particleboard Problem?

By Katherine Salant

Saturday, May 31, 2008; Page F09

Particleboard has made veneered wood furniture, cabinetry and hardwood wall paneling affordable, although it's probably almost invisible in your home. Nonetheless, it's still a subject of controversy because of its health and environmental effects.

Particleboard may be encased in the upscale wood veneer finish of your kitchen cabinets and bedroom set. It is likely that it is the backing of the hardwood paneling in your home office or family room.

Particleboard is made with 100 percent recycled materials. The tiny wood chunks and sawdust that go into it are usually reclaimed waste from sawmills and lumber yards. Some manufacturers are now using wood that would otherwise end up in a landfill.

However, particleboard isn't part of the green-building pantheon. That's because of the resin glue that binds the wood fibers and provides structural strength. It contains formaldehyde, which emits gases into the air from the finished boards. At surprisingly low levels, these formaldehyde emissions produce a pungent odor, and they can pose a health risk.

For decades, formaldehyde emissions have been known to cause eye, nose and respiratory irritations in sensitive people. More recently, the [World Health](#)

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Organization classified formaldehyde, which is used in many other building and consumer products, as a carcinogen.

However, unlike dioxin, a man-made chemical that is harmful in any amount, formaldehyde can be found in every living organism, including humans. Every breath we exhale contains a trace amount.

Wood is another natural emitter of formaldehyde. A room with solid wood furniture will have trace amounts of formaldehyde in the air.

Clearly, formaldehyde emission in these minute amounts is safe. The question vexing experts for more than 20 years is how far you can go beyond "minute." Particleboard inevitably becomes part of such discussions because it is one of the primary sources of indoor formaldehyde emissions.

How much formaldehyde are we talking about? Though the amounts are very small, we are exquisitely sensitive beings, said Marilyn Black, an environmental chemist and founder of the Greenguard Environmental Institute, a nonprofit group that tests and certifies formaldehyde emission levels in more than two dozen building-product and furnishing categories.

Some people may be affected by emission levels as low as 0.03 parts per million, but most become aware of the odor and experience nose and throat irritation at 0.1 to 0.2 parts per million. Above 0.3 parts per million, almost everyone will notice their eyes watering and nose and throat becoming irritated, Black said.

On average, formaldehyde emission from particleboard is about 0.2 parts per million.

So what level of emissions is considered healthy? For the general population, many health experts have advocated an exposure rate below 0.1 parts per million. Greenguard is more conservative. Products that it certifies emit formaldehyde at levels below 0.05 parts per million, the standard for the state of Washington and the background level typically found in homes and offices, Black said.

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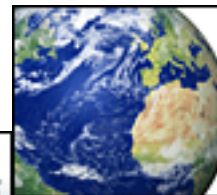
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NEW SECTION: News about the Environment

Page 2 of 2 < [Back](#)

A Solution to the Particleboard Problem?

Companies in the particleboard industry have disputed the need for reducing emissions to these levels. They say that they have voluntarily reduced formaldehyde emissions from their products by 80 percent in 20 years; that the cancer connection is still a matter of some debate; and that formaldehyde emissions from all products decrease over time, with the most emissions in the first months after manufacture.

The particleboard industry could bring its formaldehyde emissions down to Greenguard's standard if it used a different glue, phenol formaldehyde resin. Emissions from particleboard made with it are so low that some green rating systems give points to home builders who use it.

The industry has resisted this for cost reasons. It continues to use urea formaldehyde resins, even though these account for all the formaldehyde emissions problems associated with particleboard. These cost half as much as phenolic resins.

In dollar amounts, however, the difference between the two resins is negligible, and the cost of urea formaldehyde resin itself is low. Particleboard made with phenolic resin would cost slightly more because the curing time is longer, which reduces production rates.

After years of acrimony, the two sides of the emissions issue have

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converged, courtesy of the California Air Resources Board. After numerous hearings and testimony from all parties, CARB set an emissions standard for particleboard, effective Jan. 1, 2009. Particleboard and finished goods containing it that are sold or supplied to California must meet an emission standard of 0.18 parts per million. Because this is an upper limit, the average emission will be less; CARB estimates that it will be 0.15 parts per million.

On Jan. 1, 2011, the standard will be lowered to 0.09 parts per million. CARB estimates that the average emission will be close to 0.06 parts per million.

This is good news for all U.S. residents concerned about these emissions. The California market is so large that every manufacturer of finished goods containing particleboard and every particleboard manufacturer probably will aim to meet the CARB standards.

For more information on CARB and its formaldehyde rulings, see <http://www.arb.ca.gov/toxics/compwood/factsheet.pdf>.

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