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note: stress - bake-out
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COOK AT 120 DEGREES FOR 3-5 DAYS?

NEW STUDY CASTS DOUBT ON "BUILDING

BAKE OUT" FOR REDUCING INDOOR POLLUTION

only products not a building - media misinterpreting

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Photography Available

Preliminary research findings have cast doubt on the effectiveness of "building bake-out" techniques proposed for reducing indoor air pollution problems in new and remodeled buildings.

Emission of volatile organic compounds from building products can be a major source of indoor air pollution in new and remodeled buildings. In an effort to drive out the harmful compounds before a building is occupied, builders have proposed "bake-out" techniques which involve raising building temperatures and increasing ventilation rates for several days.

But a Georgia Institute of Technology study of two products commonly used in new buildings found little change in the emission rates of pollutants after a bake-out.

"On the products we tested, we have not found a significant reason to do a bake-out," said Dr. Charlene Bayer, principal research scientist in Tech's Environmental Sciences and Technology Division. "The total counts of volatile organics have been about the same before and after bake out."

A research group headed by Bayer conducted four separate tests of modular office partitions and particleboard, using Georgia Tech's large environmental chamber. The products were aged for several days, then subjected to a bake-out for 3-5 days at temperatures ranging from 90 to 120 degrees Fahrenheit. Ventilation rates were set to change half of the chamber's air every hour -- an average rate for buildings.

Bayer cautioned that the results are preliminary, may not apply to other products used in buildings, and include only a limited number of ventilation rates and bake-out times. And because chemicals from building products may interact, their combined effects in a building environment must also be considered, she added.

Assessing the effectiveness of the technique is important because of pending legislation which may require bake-out, the cost to building operators -- and the potential impact on the health of building occupants.

Bayer - 3825

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Bayer believes building bake-out may fail because the temperatures that can be attained in buildings may not be high enough to drive out the volatile organic compounds.

"Although you are raising the temperature, you are really not raising it significantly from a chemical standpoint," she noted. "Going from 75 degrees to 100 degrees is really not much of a change."

In addition, some building products such as carpeting and wall coverings act as "sinks," readily absorbing the compounds driven off from the original sources. These products then can become secondary emitters, releasing the hazardous chemicals over a long period of time.

Building bake-out can be costly for several reasons: the increased energy required to raise the building temperature, the need to vacate the structure during the process, and possible damage that may result from the higher temperatures.

SO WHAT SHOULD YOU DO?

Until the effectiveness of building bake-out can be thoroughly evaluated, Bayer suggests new building components be aged before installation -- and that fresh air ventilation be maximized during the first several months a new or remodeled building is occupied.

Tech researchers found that emissions from modular office partitions declined by more than 50 percent after four months of aging, Bayer noted. Carpet, a common source of emissions, normally loses its odor after four weeks.

In new or remodeled buildings, however, six months is often required to eliminate the noticeable odor. During that time, Bayer suggests fresh air ventilation be increased to get the pollutants out of the building.

"In a new building or a building that has been remodeled, it is very important that you not use recirculated air because that concentrates the pollutants," she explained.

Bayer believes ventilation may prove to be the key to reducing emissions from building products. Evaporation of solvents from building products may reach equilibrium with the building air, with the rate of emission from the products related to the rate at which they are exhausted to the outside.

Increasing ventilation may upset that equilibrium, causing the objectionable chemicals to more quickly leave the building products and be exhausted from the building.

The results of this research work were presented to the Indoor Air Symposium at the American Chemical Society annual meeting September 14.

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