

TITLE: Test Methods for Quantifying Offgassing of Building Materials and Furnishings: An Architectural Perspective

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ABSTRACT

Building materials and furnishings are known sources of indoor air contaminants. Many IAQ problems have been attributed to the VOC emissions from such sources. Architects (and other design professionals) have begun considering means to reduce indoor air levels of such emissions through a variety of methods.

Potentially useful mitigation measures include careful product selection based on knowledge of product performance, pre-treatment prior to use in the building, changes in installation procedures, changes in ventilation system operating procedures, the use of air cleaning technology, and treatment in-situ through the bake-out process.

The ability to assess the need for such mitigation measures and to adopt measures which can effectively reduce airborne levels can be enhanced by using reliable product emissions data. However, several technical problems must be addressed before such reliable data will become available for such uses. These include improvement of emissions testing procedures, of VOC sampling and analytical methods, and of understanding of the emissions process.

Once these technical problems have been overcome, standardization of testing procedures and reporting of results will allow effective action by design professionals based on emissions data. However, such action will be limited until a fuller understanding of the adverse effects of indoor air contaminants is developed. More fundamental problems regarding assessment of the health and physiological effects of exposure to the complex mixtures of VOC found in indoor air will have to be overcome before significant changes in construction materials and building design can be instituted to control indoor air levels of specific contaminants.

For presentation at ASHRAE Winter Meeting 1990, Seminar on Test Methods for Quantifying Offgassing of Construction Materials and Furnishings

Test Methods for Quantifying Offgassing of Building Materials and Furnishings:
An Architectural Perspective

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Building materials and furnishings are known sources of indoor air contaminants. Many IAQ problems have been attributed to the VOC emissions from such sources. Architects (and other design professionals) have begun considering means to reduce indoor air levels of such emissions through a variety of methods.

We have been recommending that architects and owners require product manufacturers to submit information on their products prior to preparation of the bid documents. This allows the materials chosen and specified to reflect the information obtained in this fashion. It allows the design professional as well as the owner to evaluate mitigation options and select those required for satisfactory product performance and indoor air quality.

Potentially useful mitigation measures include the following:

- * careful product selection based on knowledge of product performance,
- * pre-treatment prior to use in the building,
- * changes in installation procedures,
- * changes in ventilation system operating procedures,
- * the use of air cleaning technology, and
- * treatment in-situ through the bake-out process.

The information we recommend be required in the submittal includes the following:

- * Identification of all steps taken by the manufacturer to improve the products performance with respect to indoor air quality.
- * Identification of all materials and products incorporated into the manufacturer's product. These materials should be listed by content or proportion of the final product.
- * Description of all testing to determine material content of the final product and the results of that testing.
- * Description of all testing to determine emissions from the final product, and the complete results of that testing.
- * Identification of all carcinogens, teratogens, or mutagens contained in the product.

To be useful, tests must enable adequate assessment of the products to assist architects (and other design professionals) to evaluate and select from the mitigation options listed above. Some of the requirements which require particular attention are the following:

- * The product specimen or sample submitted for testing must represent the product which will be shipped to the building/construction site.
- * When received for testing, it must be in the condition in which it will arrive at the construction site.
- * The test period or periods must characterize emissions of newly installed products as well as products which have aged in the building.
- * The impact of environmental conditions within the range which will be encountered in the building should be evaluated. Low or high temperatures or relative humidities which might occur during unoccupied periods should be considered and included where applicable.

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GRAPHICS: GRAPH 1

TEST METHODS FOR QUANTIFYING OFFGASSING
OF BUILDING MATERIALS & FURNISHINGS:
AN ARCHITECTURAL PERSPECTIVE

ASHRAE WINTER MEETING '90
ATLANTA, GEORGIA
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