

### **Environmental and Sustainable Technology Evaluations (ESTE): Verification of Microbial Resistant Building Materials**

#### **Impact Statement**

Many of the finished interior surfaces of homes and buildings are composed of materials that are prone to mold growth. These surfaces include gypsum board, wood flooring, insulation, and components of the heating and air conditioning system. As an example, the United States produces an estimated 30 million tons of gypsum board annually. Demand for gypsum products in the U.S., Canada and Mexico will continue to grow. Currently, each year, 3 - 5 million tons of gypsum board ends up as scrap material and disposed of in landfills with much of this scrap the result of moisture and mold problems. Mold, being ubiquitous, can be found in any non-sterile environment, while upwards of 40% of all homes in North America contain fungal growth on many different building components.

The goal of this project is to develop a testing protocol and use it to test the performance of mold resistant building products. The information collected using this protocol is intended to be used by building professionals and the consumer public, enabling them to make informed decisions about the use of different building products, while simultaneously lowering the amount of scrap material that needs to be landfilled.

#### **Background**

Building materials often become wet, resulting in mold growth that leads to health and productivity impacts, as well as liability and lawsuits. The rapid growth and dispersion of mold can induce allergy and asthma episodes, and sometimes produce severe illnesses including pulmonary, immunologic, neurological and oncogenic disorders.

Removal of growth substrates from building materials, or the incorporation of antimicrobial agents in the manufacturing of building products may prevent mold growth and the spread of biological contaminants. There are several building products readily available that can reduce mold growth in the indoor environment. However, there is no nationally accepted testing and verification program to guide consumers and building professionals on how to select or specify the best building products for their needs. To help fill this need, EPA started an ESTE project to verify the performance of microbial resistant building products. EPA has contracted with RTI International to develop the protocol and perform the testing needed to verify these products.

#### **ETV Program**

The [ETV Program](http://www.epa.gov/etv) operates as a public-private partnership mainly through cooperative agreements between EPA and private nonprofit testing and evaluation organizations. These ETV verification organizations work with EPA technology experts to create efficient and quality-assured testing procedures that verify the performance of innovative technologies. ETV operates six centers which cover a broad range of environmental technology categories. Vendors and others in the private sector, as well as federal, state and local government agencies, cost-share with EPA to complete priority ETV protocols and verifications. In 2005, a new element of ETV was initiated, Environmental and Sustainable Technology Evaluations (ESTE), in which the most important technology categories for meeting EPA needs are verified through contracts with verification organizations. As an Agency priority, EPA has developed an ESTE project to verify the performance of microbial resistant building products. See <http://www.epa.gov/etv/este.html> for more information.

## Objectives

The objective of this verification project is to evaluate various microbial resistant building products that are currently being marketed. Manufacturers have come up with different methods of controlling or eliminating microbial growth on these products, including removing microbial growth substrates and adding antimicrobial compounds to the products. The evaluation of building products will include the following:

- Ability of various building products to support fungal (mold) growth
- Resistance to moisture uptake
- Volatile organic compound (VOC) emissions
- Sustainability criteria.

## Status

The test/quality assurance plan (T/QAP) has been written for verification of microbial resistant gypsum wallboard. This plan covers the test methods and the quality assurance processes for testing these products. It was developed based on input provided by RTI, EPA, stakeholders, and vendors. This T/QAP will be posted on the ETV Web site and may be used to verify gypsum products in the future. EPA plans to estimate reductions in solid waste due to the measured microbial resistance of the wallboard.

Microbial resistant flooring, duct liners, and insulation materials have also been targeted for verification under this project. Stakeholder and vendor groups have been formed to provide insight and review during the development of the T/QAPS for these products. Stage 3 (testing and verification) funding is in place and product testing is scheduled to begin in Fall 2008. Initial products to be tested are Armaflex duct liner (Armacell), Lonwood Dakota flooring (Lonseal, Inc.), and Premium Plus insulation (Amerrock Products, LP). The T/QAP for wallboard will be modified to test these products. Testing is planned to be completed by the end of 2008 with verification reports finalized by Spring 2009.

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