

Healthy Homes Grantees in Region IV, Southeast, Caribbean

Name of Grantee: Air Quality Sciences

Name of Project: Residential Urban Building Assessment and Survey Evaluation
(B.A.S.E.): Atlanta (RUBA)

Amount Awarded: \$ 210,299

Year of Grant: 2001

Contact Info:

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Project Partners:

Summary of Project Activities:

The objective of this project is to provide a database that can serve as an aid in interpreting mycological sampling data collected in homes. Air and dust sampling data collected in a random group of 50 homes (with no water damage or respiratory complaints associated with the residence) in the urban Atlanta metropolitan area in 2001/2002 will provide baseline information on what is the "normal and typical" mold content of homes. This "healthy home" mold database can then be used as a guide for interpreting similar data collected in chronically damp/water damaged homes in Atlanta and other similar climatic regions. This project will provide an important information gap in the currently existing knowledge base, e.g., realistic control data. This data will help the scientific and public health community better understand the role of the indoor environment, specifically moisture problems and resultant mold contamination, on these health concerns.

The association between conditions of chronic water damage/dampness in homes and the occurrence of allergic respiratory disease is well known (Dales 1991; Health Canada, 1995). Interior surfaces in chronically water damaged/damp homes are often colonized by fungi including various water-indicator species, including *Penicillium*, *Aspergillus*, *Chaetomium*, *Stachybotrys*, *Wallemia* species, etc. It is currently recognized that, in non-problem buildings, the mix of airborne fungi indoors should, in general, be similar to the mix of leaf-derived (phylloplane) fungi normally present in outdoor air (ISIAQ, 1996). Thus, fungi such as *Cladosporium*, *Alternaria*, and *Epicoccum* (CAE) would be expected to dominate the indoor air in non-problem, dry buildings.

A profile of fungi indoors that differs from that present outdoors or that is dominated by one or two water-indicator fungi is considered to be indicative of chronically wet or damp conditions in buildings. *Penicillium* and *Aspergillus* (PA) have been reported to be dominant in the air of buildings with water-damaged or moldy finishing materials and building components (Flannigan and Miller, 1994; ISIAQ, 1996).

The U.S. Environmental Protection Agency's (USEPA) Building Assessment and Survey Evaluation (BASE) study of 86 randomly selected, public and private office buildings in the United States has provided baseline environmental data on types and concentrations of fungi normally found in indoor air. Data collected in problem, water-

damaged office buildings can then be compared with the "control" BASE data to examine atypical conditions in water-damaged, commercial building environments. There is an absence of BASE-like data for residential environments.

The research project will develop a BASE-like pilot study on mycological parameters in randomly selected Atlanta metropolitan area, non-problem homes. The data set generated in the pilot study would provide investigators with BASE-like information on the normal diversity of fungi (e.g. *Penicillium*, *Aspergillus*, *Stachybotrys*, *Chaetomium*, *Cladosporium* species, etc.) found in the Atlanta metropolitan area. This pilot data set will be useful to investigators interpreting fungal exposure data in problem (e.g., asthmatic) homes. For example, the fungal sampling data set generated in this pilot study will provide information on the frequency of occurrence and concentration levels of fungi such as *Stachybotrys chartarum* and *Aspergillus fumigatus* in the air and in settled dusts in "healthy" non-problem urban homes.

Fifty participant (non-problem) homes will be selected through a mass mailing (5000 letters) directed at selected urban metro Atlanta zip codes (central city). The selection criteria will be single-family detached houses built since 1945 and located within census tracts listed as a "central city" location and with no known water-damage problem or associated respiratory complaints among occupants. Fifty participant homes will be randomly selected from those who meet the eligibility criteria and express a willingness to participate in the study. To assure that the sample is representative of the larger population of eligible houses, a sample of non-respondent houses will be contacted by phone and interviewed. This group will be compared to the sample group in terms of the selection criteria to determine if there are significant differences.

Product Outcomes/Outputs:

Following selection of the sample population of houses, two visits (one in heating season, and the second in the cooling season) will be made to each home enrolled. During the initial visit, an assessment of the building will be made to confirm the absence of visible water damage. Sampling will be conducted at each visit, as in the mold portion of the BASE study to allow the results of this study to be compared directly to the mold portion of the USEPA BASE study. Dust samples will be collected, and culturable mold populations will be analyzed from these samples. All culturable molds (rather than only the predominant types) from all samples will be enumerated and identified to the species level where possible. Quantitative results will be summarized with descriptive statistics. Qualitative results will be pooled and compared between seasons by Spearman's rank order statistic.