

## Healthy Homes Grantees in Region VII, Great Plains

**Name of Grantee:** St. Louis University, School of Public Health  
**Name of Project:** A Field Study on the Growth and Removal of Microorganisms and Allergens on Carpet Abstract  
**Amount Awarded:** \$ 530, 000  
**Year of Grant:** 2006  
**Contact info:**  
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**Project Partners:** Applied Sciences,

### Summary of Project Activities:

Carpets have long been known to be a reservoir for the growth and accumulation of microorganisms and allergens, however, the effects of carpet fiber composition, construction, and carpet wear on dust mites and fungal growth have not been fully explored. Recent investigations have identified high surface area and the absence of a fluorocarbon coating as significant factors in the retention of dust mite and cat allergen on carpet. Although several investigators have studied the effects of acaricides and fungi on contaminated carpets a systematic approach to finding the best field combination of cleaning and chemical use has not been established.

The purpose of this research is to follow-up a funded HUD project entitled “The Growth and Removal of Microorganisms and Allergens from Carpet” awarded in November 2002, with a field study. This field study was proposed as a follow-up to this laboratory study but was not conducted because of budget cuts. This field study will evaluate and validate laboratory studies on the most efficacious biocides and cleaning agents for eradication of dust mites, fungi, and their allergens on carpet. Two different techniques, evaluated in the laboratory, will be evaluated in actual residential settings. One-hundred and twenty housing units will be chosen for evaluation of each of two cleaning techniques plus one control where no specific treatment is given (minimal cleaning). This experimental design should provide sufficient statistical power to find differences among these techniques if they exist.

Two disparate geographic areas will be selected for the study to produce results with applicability to both inland, Midwestern climates, and humid coastal areas. St. Louis, MO. and Christchurch, New Zealand will be the sites for the study. The techniques will be based on findings developed in the laboratory from a previous HUD funded study on cleaning techniques and efficacy of biocides and acaricides. A dry vacuuming plus acaricide/biocide/allergen denature product, a dry vacuuming plus dry-steam injection extraction, and minimal dry vacuuming (control) will be performed. We hypothesize that the two cleaning techniques, 1) dry vacuuming plus acaricide/biocide/allergen denature product and, 2) a dry vacuuming plus dry-steam injection extraction will have a significant reduction in the dust mite population, mite allergen, fungi level, and maintain these lower levels for a longer period of time

compared to the minimal dry vacuum alone. We also hypothesize that the biocide/acaricide application will demonstrate a longer period of sustained microbe and allergen reduction since a small residual of this application should be resident in the carpet over time. However, an important outcome of this project might be to show that physical cleaning methods can work just as well as chemical agents that would pose some minimal risk of human toxicity. The HUD policy objective of this study is to identify an efficacious cleaning and biocidal regimen that can be used to control some of the allergens in carpet that are known to trigger asthma. This fits the broad HUD goal of developing the most promising, cost-effective methods for mitigating housing conditions that threaten health.

**Partner Organizations:**

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**Product Outcomes/Outputs:**

To identify an efficacious cleaning and biocidal regimen that can be used to control some of the allergens in carpet that are known to trigger asthma.