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**MODELING OF INDOOR/OUTDOOR FUNGI
RELATIONSHIPS IN FORTY-FOUR HOMES**

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THESIS

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for the degree of Master of Science in Public Health Sciences
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MASTER

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LIST OF ABBREVIATIONS

CFU/m ³	Colony Forming Units per cubic meter
CMB	Chemical Mass Balance
GNB	Genus Number Balance
ug/m ³	micrograms per cubic meter
MPH	miles per hour
VOC	Volatile Organic Compound

SUMMARY

From April through October 1994, a study was conducted in the Moline, Illinois - Bettendorf, Iowa area to measure bioaerosol concentrations in 44 homes housing a total of 54 asthmatic individuals. Air was sampled 3 to 10 times at each home over a period of seven months. A total of 852 pairs of individual samples were collected indoors at up to three locations (basement, kitchen, bedroom, or living room) and outside within two meters of each house. Air sampling was carried out with calibrated single stage Andersen samplers operated for 33 to 133 seconds, sampling a total volume of air of 0.025 to 0.100 m³. Air impacted on sterilized malt agar filled plates which were incubated at 32° C for 2 to 3 days and counted for total viable fungi and 34 specific genera using a 30-300x microscope. Indoor/outdoor temperature and humidity, noticeable odors, running fans, and open windows were noted during sampling as well as the extent of the previous year's flooding, house characteristics, and other factors pertaining to flood cleanup.

To answer the question of whether or not an individual room's total fungi concentration differed from the overall indoor average, total fungi concentrations for each room were compared to their corresponding indoor total fungi averages in the same house for all locations for the same day by analyzing the differences for each sample using a univariate procedure. The analysis

SUMMARY (continued)

showed that only 38 out of the 131 rooms analyzed were significantly different. And of those 38 rooms, only 14 had significantly higher total fungi concentrations than the indoor total fungi average while 24 had significantly lower concentrations. The remainder of the rooms displayed no significant difference at $p < 0.1$.

In a similar fashion, outdoor and indoor concentrations for total fungi and the 34 specific genera were analyzed to determine whether or not indoor and outdoor fungi levels significantly differed from one another. The procedure was conducted on all of the sampled rooms as well as an overall analysis on each home as a single site. As with the room comparisons, the majority of the differences (60 rooms) were not significant. Those that were significant represent 68 rooms with a greater outdoor than indoor concentration and only three rooms with greater indoor fungi levels.

Two models were used to assess the effect of outdoor concentration on indoor levels. The first was a comparison of the indoor total fungi concentration for an individual room and the corresponding outdoor total fungi concentration. When the comparison was carried out over all sampling periods, a total fungi number balance equation of the following form was used to evaluate the data: $C_{in} = C_{out} * P_o + S/kq$ where C_{in} is the indoor total fungi concentration, C_{out} is the outdoor total fungi concentration, P_o is the fraction of outdoor fungi penetrating the building envelope (and varies between zero and one) and S/kq is the indoor source emission rate

SUMMARY (continued)

divided by the effective ventilation rate. The slope (P_o) of the C_{in} vs. C_{out} relationship is the fraction of outdoor fungi which penetrates into the building's interior provided that the emission and effective ventilation rates are constant. Approximately 25% of the indoor locations conformed to the assumptions of the model (i.e. had "good" indoor versus outdoor total fungi concentration relationship), and for this group, 90% of the values for P_o were within the range of zero and one. A total of 92 rooms (72%) had penetrations within the required range of zero to one.

An alternate approach was a novel application of receptor modeling based on speciated genus number balances of the form: $y_i = \beta z_i + E$ where y_i is the measured indoor concentration vector for genus i at the receptor site, z_i is the measured outdoor ratio of genus i to the total fungi concentration, β is the estimate of the total outdoor fungi contribution to the inside concentration and E is the residual which is the difference between the measured and predicted concentrations. An independent number balance was written for each genera type. This led to 34 equations for each indoor sample. Each of these equations contained β which was determined by multivariate regression. The penetration then became $\beta/C_{total\ outdoor\ fungi}$. This method was applied to 852 pairs of indoor and outdoor fungi samples. Approximately 90% of the penetration values were within the zero to one range with an average penetration of 0.37 and a standard deviation equal to 0.26. These results indicate that the receptor model approach is likely to be quite useful in determining the contribution of outdoor air to indoor fungi concentrations. Also, through the

SUMMARY (continued)

calculation of the genera residuals, the receptor model has proven useful in creating a source "fingerprint" containing genera which may compose a potential indoor source.

I. INTRODUCTION

Bioaerosols are recognized as a potential health concern among asthmatic and healthy adults as well as children. There have been several published studies which have researched the effects of bioaerosols on human populations. Bioaerosols and fungi in particular have been known to cause extrinsic allergic alveolitis, humidifier fever, and hypersensitivity pneumonitis and are a major source of infection and illness in immunocompromised individuals (Terho, 1985; Burge, 1990; Licorish, 1985; Vartivarian, 1993). Other studies have researched the prevalence of both viable and nonviable fungi concentrations indoors and outdoors (Kodama and McGee, 1986; Kozak et al., 1979; Nussbaum, 1991; DeKoster and Thorne, 1995; Curtis, 1993; Pearce et al., 1995). Kodama and McGee observed that air conditioning plays a role in the reduction of certain genera indoors while elevating others such as *Aspergillus* and *Penicillium*. Pearce et al has shown that the extent of flooding in a home has a strong correlation with elevated fungi concentrations. DeKoster and Thorne found that the presence of plants and an unfinished basement as well as the lack of central air conditioning and decreased use of air conditioning were significantly associated with increased indoor fungi concentrations. This study will expand on these conclusions and look at other parameters associated with 44 homes in the Quad Cities vicinity some of which were affected by the 1993 Mississippi River flood.

II. RATIONALE FOR RESEARCH

Bioaerosols are steadily being recognized as a major allergen source in healthy and asthmatic persons. Several studies have been conducted which have looked at the indoor and outdoor bioaerosol concentrations of homes containing healthy and asthmatic individuals (Terho, 1985; Burr et al., 1988; Dales, 1991). There have been relatively few studies which have researched the parameters which affect indoor bioaerosol concentrations. Of these studies, parameters have been isolated which display significant differences between homes with and without certain characteristics (DeKoster and Thorne, 1995; Kodama and McGee, 1986; Kozak et al., 1979; Pearce et al., 1995). None, however, have used the data to generate a predictive model to estimate the outdoor penetration thereby isolating possible indoor sources and classifying them according to specific genera.

Dockery and Spengler (Dockery and Spengler, 1981) developed two indoor models based on respirable annual particle and sulfate concentrations. Air conditioning had the only significant interaction effect. The outdoor penetration was a linear model based on whether or not the home was fully air conditioned. Terms for the outdoor concentration, the number of cigarettes smoked per day, and the interactions between air conditioning and the outdoor concentration and air conditioning and the number of cigarettes were added to the model. The resulting model was significant and showed that full air conditioning reduced penetration by 39% and increased the respirable particle concentration due to smoking by 1.23 ug/m^3 . A similar model was used for

sulfates except the type of cooking fuel was added as well as the interaction term between air conditioning and the fuel. The coefficients of the resulting model were significant and showed that smoking a pack of cigarettes in a fully air conditioned home increased the indoor respirable particulate concentration by approximately 42 ug/m^3 .

Sexton et al modeled the personal respirable particulate exposure of 48 nonsmoking volunteers. It was found that the time weighted indoor concentration was negatively correlated with personal exposure and accounted for only 16% of the variance, and the contribution from other microenvironments were added to the model. The best three variable model accounted for 51% of the variance with 81 ug/m^3 accounting for second hand smoke exposure, 45 ug/m^3 accounting for exposure to particulates at work, and 92 ug/m^3 accounting for particulate exposure in transit. The intercept of 5 ug/m^3 accounted for exposure in public places, outdoors, and other microenvironments (Sexton et al., 1984).

A rationale similar to those applied in the above studies to estimate personal particulate exposure will be applied to this research. Two models will be employed to estimate the fractional outdoor total fungi penetration. The first will compare the total indoor fungi concentration for a particular room to its corresponding outdoor total fungi concentration. The second is a speciated genus number balance receptor model which will compare the genus vector concentration to its corresponding outdoor genus fraction of the total outdoor fungi. By generalizing the data to obtain an estimation of the total outdoor penetration, it is expected that the outdoor air bioaerosol contribution could be removed which would isolate the indoor air's total fungi contribution and aid in the estimation of personal bioaerosol exposure.

III. BIOAEROSOL HEALTH STUDIES

Strachan et al (Strachan et al., 1990) isolated approximately 50 genera of fungi in the homes of 1000 seven year old children using a six stage Andersen 1 ACFM viable particle sampler during October 1987 through March 1988. Data was collected from three rooms in each home during four visits, and the children in each home underwent pulmonary function tests during the first part of 1987. The results show that total airborne mold concentrations ranged from 0 to 41000 CFU/m³. Mycelia sterilia concentrations were elevated in the homes of children with wheeze and exercise induced bronchoconstriction. A significant correlation between children with wheeze and the presence of mold existed with an odds ratio for this relationship of 3.70.

Brunekreef et al (Brunekreef et al., 1989) examined the relationship between home dampness and respiratory disease symptoms in 4625 eight to twelve year old children living in six United States cities. Home dampness and the presence of mold was determined through a questionnaire. Pulmonary function tests were performed on all of the participants in the cohort. The odds ratios for home dampness and mold ranged from 1.23 to 2.16 and 1.27 to 2.12, respectively after adjusting for maternal smoking, age, gender, city of residence, and parental education.

Hasnain et al (Hasnain et al., 1985) studied the relationship between acute asthma attacks and spore concentrations. A Burkard volumetric spore trap was used to sample at three different

localities in the Auckland region of New Zealand over a 12 month period from September 1979 to August 1980. A significant correlation existed between mean monthly basidiospores and hospital visits with acute asthmatic attacks. Burr et al. (Burr et al., 1991) compared 72 asthmatic patients between 15 and 60 years old with 72 controls matched for age and sex. Cases and controls attended a clinic where they answered questionnaires, took skin prick tests, and drew blood for immunological assay of IgE and specific IgE RAST. Scrapings were taken from the homes reporting visible mold and cultured on cornmeal agar at room temperature. *Penicillium* was the predominant mold found in homes followed by *Cladosporium*. A positive IgE RAST to mold was more common among cases than controls.

Licorish et al (Licorish et al., 1985) studied the effects *Alternaria* and *Penicillium* have on known asthmatics. Fifty southern California homes were sampled using Andersen samplers in undisturbed outdoors, disturbed outdoors, and indoor settings. Outdoor ranges were 177-1589 and 424-5791 counts and indoor ranges were 200-1389 and 753-73345 counts for *Alternaria* and *Penicillium*, respectively. Seven known asthmatics were exposed to the extracts and spores of *Alternaria* and *Penicillium* at doses which were within the measured home concentrations. Patients suffered immediate asthma symptoms when exposed to both whole spores and their extracts while delayed type asthma was provoked only after exposure to whole spores.

Dales et al (Dales et al., 1991) studied bioaerosol health effects on 13495 Canadian children with and without mold and dampness in their homes. Mold was reported in 32.4%, flooding in 24.1%, and moisture in 14.1% of the homes. Prevalence of respiratory symptoms were strongly correlated with damp and moldy homes. Odds ratios were 1.32 for bronchitis and

1.89 for cough for children living in damp and moldy conditions. Table I summarizes the results of all of the above studies.

TABLE I
BIOAEROSOL HEALTH STUDIES

Study	Study Population	Sampling Description	Results
Strachan et al., 1990	1000 seven year old children	<p>Sampled home's interior 4 times between October 1987 and March 1988</p> <p>Children underwent pulmonary function tests</p>	<p>Total airborne mold concentrations ranged 0-41000 CFU/m³</p> <p>Presence of mold and children with wheeze were significantly correlated with odds ratio of 3.70</p>
Brunekreef et al., 1989	4625 eight to twelve year old children in six US cities	<p>Questionnaires determined presence of home dampness and mold</p> <p>Pulmonary function tests were performed on all children</p>	<p>Odds ratios for dampness and mold ranged 1.23-2.16 and 1.27-2.12 respectively</p> <p>Study adjusted for maternal smoking, age, gender, city of residence, and parental education</p>
Hasnain et al., 1985	3 locations in the Auckland region of New Zealand	<p>Burkard spore traps were used over 09/79-08/80</p> <p>Hospital visits of acute asthma sufferers recorded from 01/79-12/80</p>	<p>Significant correlation between mean monthly basidiospore concentrations and visits to hospital</p> <p>Total fungal spore counts ranged from 2000-3000 spores/m³ in October 1979 at each site</p>

TABLE I
BIOAEROSOL HEALTH STUDIES

Burr et al, 1988	72 asthmatic patients 15-60 years old paired with 72 controls matched for age and sex	<p>Patients underwent skin tests and immunological assay of IgE and IgE RAST blood tests</p> <p>Scrapings were taken from homes with visible mold</p>	<p>Positive IgE RAST to mold more common among asthmatics</p> <p>Penicillium and Cladosporium predominant genera found in homes</p>
Dales et al., 1991	13495 Canadian children with and without mold and dampness in the home	Questionnaires were used to collect data on the presence of mold and dampness in the home, children's health, and house characteristics	<p>Mold reported in 32.4%, flooding in 24.1%, and moisture in 14.1% of the homes</p> <p>Prevalence of respiratory symptoms strongly correlated with damp and moldy homes</p> <p>Odds ratios were 1.32 for bronchitis and 1.89 for cough for children living in damp and moldy conditions</p>

IV. BIOAEROSOL MEASUREMENT STUDIES

A. Spore and Pollen Measurement Studies

The data evaluated in this study were limited to viable fungi. This review also covers measurements of pollen and spores which were collected using techniques without growth media although it is recognized that the measurements are ordinarily not comparable. Anderson (Anderson, 1985) collected pollen and spores 25 meters above ground using a Burkard seven day volumetric sampler with a flow rate of 0.6 m^3 per hour on the roof of Providence Hospital in Anchorage, Alaska. Exposed strips coated with petroleum jelly were cut into one day strips, mounted on slide, stained with Calberla's solution and analyzed under 200 magnification microscope. Fungal spores exceeded 500 spores/m^3 on four out of 69 sampling days in 1982 and eight out 88 sampling days in 1983. Seasonal peaks were seen at 783 spores/m^3 in early August 1982 and 810 spores/m^3 in late August 1983. McLean et al measured the concentrations of pollen and spores in San Luis Obispo, California in 1986 through 1988 using a Rotorod sampler which collected samples every 10 minutes for 20 seconds over a 24 hour period. Samples were collected on two rods coated with silicon grease for one to two 24 hour periods per week. *Cladosporium* peaked at 400 spores/m^3 in May while peaks in *Alternaria* were seen February 1986 (40 spores/m^3), July 1987 (176 spores/m^3), and April 1988 (99 spores/m^3). Basidiospores peaked in February 1986 (37 spores/m^3), February 1987 (209 spores/m^3), and January 1988 (220 spores/m^3) (McLean et al., 1991). Buck and Levetin (Buck and Levetin, 1985) measured the concentrations of spores and pollen in a subalpine environment in Colorado between June and late

July through mid August during 1981 through 1983. Samples were collected using a Rotorod sampler placed in an open meadow for a total of 159 days during June and July of 1981, 1982 and 1983. The silicon greased rods were stained with Calberla's solution and examined microscopically. *Alternaria* had maximum concentrations of 45.3 spores/m³ in 1982 and 16.8 spores/m³ in 1983. *Helminthosporium* had peak concentrations of 217.8 spores/m³ both in 1982 and 1983. *Cladosporium* peaked at 499.2 spores/m³ in 1982 and 479.1 spores/m³ in 1983.

Nussbaum (Nussbaum, 1991) studied the daily variations of viable fungi at different locations on the Tuscarawas Campus of Kent State University during June 1988. Samples were taken at five sites (open lawn, pine grove, sycamore grove, arborvitae windbreak, and parking lot) four times a day at weekly intervals on June 1, 8, 16, 24, and 30, 1988. Fungi were collected using gravitational sedimentation onto agar filled Petri dishes which were then incubated at 23° C for six days and counted. The largest overall count occurred on the open lawn area during the morning sampling, while the parking lot had a significantly lower count than all other sites. *Cladosporium* was the dominant genus recovered from the five sites and accounted for 67.2% of the total fungi. *Mycelia sterilia* was the second largest genus comprising 16.3% of the total with *Alternaria* being the third constituting 6.5% of the total fungi concentration. The remaining 10% contained *Epicrocium*, *Penicillium*, *Drechslera*, *Aureobasidium*, *Linodochium*, and *Geotrichum*. All sites except for the parking lot showed diurnal variation. The unshaded lawn's spore production peaked during morning, the shaded lawn peaked during midday due to the slower

evaporation of morning dew, the pine grove and arborvitae peaked at midday as well as the sycamore grove. All sites except the parking lot experienced increased production at night.

B. Indoor/Outdoor Bioaerosol Studies

More recently, studies have been conducted which have researched the relationship between indoor and outdoor concentrations. Pearce et al. (Pearce et al., 1995) looked at a total of eight homes in southern Minnesota which had suffered some degree of flood damage during the Mississippi River flood of 1993. Samples were collected using single stage Andersen samplers at a rate of 28.3 L/min with 100 mm Petri dishes filled with 35 mL of Inhibitory Mold Agar. Plates were incubated for 72 hours at 25° C before counting and up to seven days before classifying colonies into genera. The majority of bioaerosols found in two homes which had individual rooms sampled were generated by excess moisture in the basement, wet walls, and furniture. Home A had indoor fungi concentrations which ranged from 282 to 171000 colony forming units (CFU) per m³ with the basement having the greatest concentration. Outdoor levels ranged between 110-3955 CFU/m³ with the greatest concentration occurring at the end of July 1994. Home B's interior concentrations ranged from 494-85000 CFU/m³ with the basement containing the largest concentration while the outdoor levels ranged from 88-6038 CFU/m³ with the maximum concentration occurring in October 1994. The other six homes studied were sampled in the basement and on the first floor. Increased concentrations were associated with disturbing surfaces such as carpeting in both the basement and first floor of each home.

Kozak et al (Kozak et al., 1979) measured the indoor mold concentrations in 68 homes of allergic patients in southern California. Samples were collected using 6-stage Andersen samplers with culture plates filled with Sabouraud's media at all stages for a total of 3 minutes and a volume of 0.083 m^3 air. The mean total spore concentration was 809 CFU/m^3 with *Cladosporium*, *Penicillium*, *Alternaria*, *Streptomyces*, *Epicoccum*, *Aspergillus*, *Drechslera*, and *Cephalosporium* being predominant. No statistical significance was observed between the relationship of viable fungi in homes with less than 10 plants to homes with more than 10 plants. Statistical differences were associated with central electrostatic filtration, good dust control, good outdoor shading, organic debris such as leaves and grass clippings, and the amount of landscaping performed on the home.

Kodama and McGee (Kodama and McGee, 1986) researched the effects air conditioning has on indoor spore concentrations in homes in Honolulu, Hawaii. Samples were collected using two stage Andersen samplers at a flow rate of $1 \text{ ft}^3/\text{min}$ for 15 minutes. Twenty five milliliters of Count Media and Sabouraud's Media were used for bacteria and fungi, respectively. Bacterial plates were incubated for 2 days at 37°C and fungi plates were incubated for 4 days at 25°C . Mean fungi concentrations were $114.3 \pm 47.4 \text{ CFU/m}^3$ for outdoors, $88.6 \pm 58.1 \text{ CFU/m}^3$ for air conditioned residences, and $128.2 \pm 61.3 \text{ CFU/m}^3$ for naturally ventilated homes. *Cladosporium*, *Aspergillus*, and *Streptomyces* were the three most prevalent genera found in both of the indoor environments and outside air. The results showed that there was a decrease in indoor over outdoor concentrations in homes which used air conditioning for comfort purposes.

There was, however, an increase in the indoor concentration of *Aspergillus* when compared to outdoor levels. Naturally ventilated homes showed no differences between indoor and outdoor concentrations.

DeKoster and Thorne (DeKoster and Thorne, 1995) in 1995 studied fungal and bacterial concentrations in homes in the Midwest. The homes were divided into three categories of no indoor air problems (noncomplaint), noncomplaint homes with allergy sufferers (intervention), and complaint or "sick" homes (complaint). Basement, main floor, and outdoor viable fungi concentrations were measured over nine months in 1991. Samples were collected with a 2-stage Andersen sampler for a three minute period at a flow of 28.3 L/min. Malt extract agar was used to culture viable fungi while trypticase soy agar was used to grow mesophilic bacteria. Spores were collected using Burkard samplers with a flow of 10 L/min for five minutes. The main floor had an overall mean concentration of 1200 CFU/m³ while the basement's overall mean was 1290 CFU/m³. Outdoor mean concentrations peaked in September at 8650 CFU/m³, and 80% of the total viable fungi was respirable. The predominant genus was *Cladosporium* followed by *Penicillium*. Elevated levels of fungi were associated with the presence of pets, the lack of use of air conditioning, and having an unfinished basement.

Macher et al (Macher et al., 1991) studied the bacterial and fungi concentrations associated with a new apartment prior to and during occupation. Air samples were collected with a single stage, 400 hole impactor outdoors and at two locations in the kitchen, living room, bedroom, and bathroom for ten minutes. Fungi were captured on malt extract agar and bacteria

were captured on tryptic soy agar. Sampling was conducted one day before the apartment was occupied and then at three month intervals for a duration of two years. Indoor concentrations averaged 182 CFU/m³ in the bathroom, 246 CFU/m³ in the kitchen and bedroom, and 248 CFU/m³ in the living room. Average outdoor fungi concentrations peaked in March (539 CFU/m³), while maximum indoor concentrations were observed in December (351 CFU/m³).

Li and Kendrick (Li and Kendrick, 1995) researched the indoor and outdoor concentrations of 15 houses in Kitchener-Waterloo, Ontario, Canada. Twelve residences housed persons sensitive to mold spores. Samples were taken once a month at each residence between 1:00 PM and 9:30 PM over the period of December 1991 through September 1993. Nonviable fungi were collected using Samplair-MK1 and MK2 particle sampler for a period of ten minutes with an air flow ranging from 9.0 to 15.5 L/m. The predominant genus was *Cladosporium* (895 spores/m³) followed by *Aspergillus/Penicillium* (457 spores/m³) and *Leptosphaeria* (182 spores/m³). Both indoor and outdoor concentrations followed similar periodicities for *Cladosporium*, *Alternaria*, and *Epiccocum*. Indoor *Aspergillus/Penicillium* concentrations did not coincide with outdoor concentrations, but peaked indoors in January, April, and September and generally had higher indoor concentrations than outdoor. The other less dominant genera showed both indoor and outdoor concentrations which coincided with one another.

Solomon (Solomon, 1975) reported data collected from the sampling of indoor and outdoor viable fungi concentration from series of midwestern homes during freezing and frost free periods. The interiors and exteriors of 26 homes were sampled during May through August.

Air samples were collected with a 6-stage Andersen sampler with flow rate of 1 ft³/min onto plates containing 28 mL of potato dextrose agar. *Cladosporium* was the dominant genus both indoors and outdoors with excessive concentrations of *Penicillium* and *Aspergillus* present primarily indoors. Average indoor fungi concentrations were approximately 25% of those seen outside. During winter, 80 homes were sampled with the predominant genera being *Penicillium*, *Aspergillus*, pigmented yeasts, and miscellaneous filamentous genera. Mean indoor concentrations were 1000 CFU/m³ while the outdoor levels never exceeded 230 CFU/m³.

Li et al (Li et al., 1995) studied the indoor and outdoor bioaerosol concentrations in the homes of 46 asthmatic, 20 atopic, and 26 nonatopic children in Taipei, Taiwan. Viable fungi were sampled using single stage Andersen samplers with a flow of 28.3 L/min for a duration of 30 seconds to 3 minutes onto a plate containing malt extract agar as the culture media in the living room, bedroom, and outside of the homes. Median total fungi concentrations in asthmatic, atopic, and control groups were 525, 468, and 700 CFU/m³ in the living rooms, 653, 426, and 525 CFU/m³ in the bedrooms, and 525, 490, and 562 CFU/m³ outdoors with *Cladosporium*, *Aspergillus*, *Penicillium*, and Yeast being the predominant genera found both in and outside. The relationship between indoor and outdoor concentrations were significantly correlated for total fungi and the four dominant genera. The living room and bedroom concentrations in the asthmatic and control homes were significantly higher than the atopic homes.

Olonitola et al (Olonitola et al., 1994) studied the effects fungal spores have on asthmatic patients in Zaria, Nigeria. With five housing asthmatics, seven homes located near irrigation

farms were sampled. Fungi were collected by exposing plates filled with Sabouraud's dextrose agar for 15 minutes on the subjects' bed pillows and on raised platforms at the farms. The plates were incubated for 3 to 10 days at 27° C to obtain satisfactory growth. A total of 2,160 fungal colonies were identified and comprised 21 genera. The predominant indoor genera were *Penicillium*, *Aspergillus*, *Rhizopus*, *Saccharomyces*, *Mucor*, and *Curvularia*. The highest counts were observed on the farms, and greater counts were observed in the asthmatics' homes than in the controls'. A positive correlation of 0.389 was observed between outdoor and indoor fungal counts. Table II summarizes the results obtained for the bioaerosol measurement studies cited here.

In general, the majority of the work in bioaerosol research has been to monitor the seasonal fluctuations in the fungi and pollen dispersion patterns and establish a range of concentrations which have been seen to affect asthmatic individuals. Later studies such as DeKoster and Thorne have begun researching possible indoor sources and the means to isolate them. None, however, have used modeling techniques to characterize a source or attempt to remove the outdoor fungi contribution to isolate a potential indoor source.

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
Anderson, 1985	<p>Sampled in Alaska</p> <p>Use Burkard seven day volumetric pollen and spore sampler located on the roof of Providence Hospital in Anchorage approximately 25 m above the ground with a flow rate of 0.6 m³ per hour</p> <p>Strips coated with petroleum jelly stained with Calberla's solution and analyzed under 200 magnification microscope</p>	<p>Fungal spores exceeded 500 spores/m³ 4 out of 69 sampling days in 1982 and 8 out of 88 sampling days in 1988</p> <p>Seasonal peaks occurred at 783 spores/m³ in early August 1982 and 810 spores/m³ in late August 1983</p>

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results	
McLean et al., 1989	Pollen and spores in San Luis Obispo, California 1986-1988	Genus	Peak
		Cladosporium	400 spores/m ³ (All years sampled)
		Alternaria	40 spores/m ³ (1986) 176 spores/m ³ (1987) 99 spores/m ³ (1988)
		Basidiospores	37 spores/m ³ (1986) 209 spores/m ³ (1987) 220 spores/m ³ (1988)
	Rotorod sampler used to collect pollen and spores for 20 seconds every 10 minutes over 24 hour period		
	Samples collected on silicone greased rods for one to two 24 hour periods per week		

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results	
Buck and Levetin, 1985	Pollen and spores in subalpine environment in Colorado between June and mid August 1981-1983	Genus Alternaria	Peak 45.3 spores/m ³ (1982) 16.8 spores/m ³ (1983)
	Rotorod sampler placed in an open meadow used to collect pollen and spores for total of 159 days scattered throughout June-July 1981, 1982, 1983	Helmintho-sporium Cladosporium	217.8 spores/m ³ (All years sampled) 499.2 spores/m ³ (1982) 479.1 spores/m ³ (1983)
	3,283 L air sampled each day		
	Silicone greased rods stained with Calberla's stain and examined microscopically for pollen and spores		

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
Nussbaum, 1991	<p>Sampled five sites four times a day weekly during June 1988 on Tuscarawas Campus, Kent State University</p> <p>Viable fungi were collected with gravitational sedimentation onto agar filled Petri dishes</p> <p>Fungi colonies analyzed after incubation period of 6 days at 23° C</p>	<p>Cladosporium was the dominant genus comprising 67.2% of the total fungi with Mycelia sterilia comprising 16.3 and Alternaria comprising 6.5%</p> <p>The largest count occurred on the open lawn during the morning while the parking lot had a significantly lower count than the other measured sites</p> <p>All sites experienced increased spore production at night except the parking lot</p>

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
Pearce et al., 1995	<p>Studied the indoor/outdoor viable fungi concentrations of 8 flood damaged homes in southern Minnesota</p> <p>Two of eight homes had individual rooms sampled</p> <p>Remaining six homes were sampled in basement and on first floor</p> <p>All air samples were collected with Andersen single stage sampler at a rate of 28.3 L/min with 100 mm Petri dishes filled with 35 mL of Inhibitory Mold Agar</p> <p>Plates incubated at 25°C for 72 days before counting and up to 7 days before classifying colonies into genera</p>	<p>Home A had indoor concentrations ranging from 282-171000 CFU/m³ with the basement having the greatest average concentration</p> <p>Outdoor levels ranged from 110-3955 CFU/m³ with the peak occurring at the end of July 1994</p> <p>Home B had indoor concentrations ranging from 494-85000 CFU/m³ with the basement having the greatest concentration</p> <p>Outdoor levels ranged from 88-6038 CFU/m³ with the peak occurring in October 1994</p> <p>Increased concentrations in the remaining six homes were associated with disturbing surfaces in both the basement and on the first floor</p>

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
Kozak et al., 1979	<p>Measured indoor mold concentrations of 68 homes of allergic patients in southern California</p> <p>Air samples collected with 6-stage Andersen sampler with culture plates filled with Sabouraud's media at all stages</p> <p>Three minute samples collected for total of 0.084 m³ air</p>	<p>Mean total spore concentrations was 809 CFU/m³ with Cladosporium, Penicillium, Alternaria, Streptomyces, Epiccocum, Aspergillus, Drechslera, and Cephalosporium being predominant</p> <p>Statistical differences were associated with central electrostatic filtration, good dust control, good outdoor shading, organic debris concentrations, and landscaping activity</p>

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
Kodama and McGee, 1986	<p>Measured indoor/outdoor viable fungi concentrations controlling for the effect of air conditioning in homes in Honolulu, Hawaii</p> <p>Two-stage Andersen samplers used to collect air samples with flow rate of 1 ft³/min for 15 min</p> <p>25 mL Plate Count Media used for bacteria and Sabouraud's Media used for fungi</p> <p>Bacteria incubated for 2 days at 37° C and fungi incubated for 4 days at 25° C</p>	<p>Mean fungi concentrations</p> <p>Air conditioned homes: 88.6 +/- 58.1 CFU/m³</p> <p>Naturally ventilated homes: 128.2 +/- 61.3 CFU/m³</p> <p>Outdoors: 114.3 +/- 47.4 CFU/m³</p> <p>Decrease in indoor over outdoor total fungi concentrations and a significant increase in indoor over outdoor <i>Aspergillus</i> concentrations in homes with air conditioning</p> <p>Naturally ventilated homes showed no difference between indoor and outdoor concentrations</p>

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
DeKoster and Thorne, 1995	<p>Sampled viable fungi and bacteria in 3 different categories of homes in the Midwest</p> <p>Basement, main floor, and outdoor viable fungi were monitored for nine months in 1991</p> <p>Viable fungi collected with 2 stage Andersen with flow of 28.3 L/min for 3 minutes</p> <p>Viable fungi collected on malt extract agar and trypticase soy agar for mesophilic bacteria</p> <p>Burkard samplers collected spores with flow of 10L/min for 5 minutes</p>	<p>Mean fungi concentrations Main Floor: 1200 CFU/m³ Basement: 1290 CFU/m³</p> <p>Outdoor mean concentrations peaked in September at 8650 CFU/m³</p> <p>80% of the total fungi were respirable</p> <p>Cladosporium was predominant genus followed by Penicillium</p> <p>Elevated levels were associated with the presence of pets, lack of use of air conditioning, and having an unfinished basement</p>

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
Macher et al., 1991	<p>Sampled fungi and bacteria in new apartment</p> <p>Sampled in kitchen, living room, bedroom, and bathroom once before occupation and at three month intervals thereafter for two years</p> <p>Ten minute air samples taken with single stage, 400 hole impactor</p> <p>Bacteria captured on tryptic soy agar and fungi captured on malt extract agar</p>	<p>Indoor Mean Fungi Concentrations</p> <p>Bathroom: 182 CFU/m³</p> <p>Kitchen and Bedroom: 246 CFU/m³</p> <p>Living Room: 248 CFU/m³</p> <p>Mean outdoor concentrations peaked in March (539 CFU/m³) and indoor concentrations peaked in December (351 CFU/m³)</p>

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
Li and Kendrick, 1995	<p>Measured indoor and outdoor fungi concentrations with Samplair-MK1 and MK2 particle sampler in 15 homes in Kitchener-Waterloo, Ontario once a month from December 1991 through September 1993</p> <p>12 residences housed mold sensitive individuals</p> <p>Air samples collected with Samplair-MK1 or MK2 particle sampler for 10 minutes per sample and drew from 9.0 to 15.5 L air/min.</p>	<p>Dominant species were Cladosporium (895 spores/m³), Aspergillus/Penicillium (457 spores/m³), and Leptoshpaeria (182 spores/m³)</p> <p>Cladosporium, Alternaria, Epiccocum, and less dominant genera had indoor/outdoor periodicities which coincided with one another</p> <p>Indoor Aspergillus/Pencillium concentrations was greater than outdoor levels, did not show similar indoor/outdoor periodicities as the other genera did and peaked indoors during January, April, and September</p>
Solomon, 1975	<p>26 midwestern homes were sampled May through August</p> <p>80 homes in the same area were sampled during the winter</p> <p>Air samples collected with 6-stage Andersen sampler with a flow rate of 1 ft³/min and using 28 mL of potato dextrose agar medium</p>	<p>Homes Sampled during Summer: Cladosporium was dominant genus in and outdoors</p> <p>Average Mean Indoor Fungi: concentrations were approximately 25% of those observed outdoors</p> <p>Homes Sampled during Winter: Penicillium, Aspergillus, pigmented yeasts, and miscellaneous filamentous genera were dominant</p> <p>Mean Fungi Concentrations Indoors: 1000 CFU/m³ Outdoors: 230 CFU/m³</p>

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
Li et al., 1995	<p>Measured indoor/outdoor bioaerosol concentrations in the homes of 46 asthmatic, 20 atopic, and 26 nonatopic children in Taipei, Taiwan</p> <p>A single stage Andersen sampler with flow of 28.3 L/min for a duration of 30 seconds to 3 minutes was used to measure the living room, bedroom, and outside of all homes</p> <p>Malt extract agar used as culture media</p>	<p>Median Total Fungi Concentrations</p> <p>Asthmatic Homes:</p> <p>Living Room: 525 CFU/m³</p> <p>Bedroom: 653 CFU/m³</p> <p>Outside: 525 CFU/m³</p> <p>Atopic Homes:</p> <p>Living Room: 468 CFU/m³</p> <p>Bedroom: 426 CFU/m³</p> <p>Outside: 490 CFU/m³</p> <p>Nonatopic Homes:</p> <p>Living Room: 700 CFU/m³</p> <p>Bedroom: 525 CFU/m³</p> <p>Outside: 562 CFU/m³</p> <p>Cladosporium, Aspergillus, Pencillium, and yeast were the dominant genera both inside and out for all homes</p> <p>Indoor and outdoor concentrations were significantly correlated for total fungi and the four dominant genera</p> <p>Living room and bedroom concentrations were significantly higher in asthmatic and control homes than in the atopic homes</p>

TABLE II
BIOAEROSOL MEASUREMENT STUDIES

Study	Sampling Description	Results
Olonitola et al., 1994	<p>Monitored indoor/outdoor spores of a total of 7 homes (5 housing asthmatics) located near irrigation farms in Zaria, Nigeria</p> <p>Samples collected by exposing plates with Sabouraud's dextrose agar for 15 minutes on subjects bed pillows and on raised platforms at the farms</p> <p>Plates incubated at 27° C for three to ten days for satisfactory growth</p>	<p>2160 fungal colonies were identified and comprised 21 genera</p> <p>Penicillium, Aspergillus, Rhizopus, Saccharomyces, Mucor, and Curvularia were the dominant genera</p> <p>Highest counts were observed on the farms and greater counts were observed in the asthmatics' homes rather than the controls'</p>

V. MATERIALS AND METHODS

A. Study Description

Viable fungi concentrations were measured both indoors and outdoors of 44 homes of 54 asthmatics which were selected from a health questionnaire. Ten of the homes were located on Campbell's Island which was flooded to some degree during 1993 by the Mississippi River. The island is located in the river due north of the city of East Moline, Illinois. Ten other homes were located in the Mississippi or Rock River valleys but were not flooded and were 200 meters or more from the shores of the rivers. Seven homes were located on hillsides facing the Mississippi or Rock Rivers while the other 20 homes were located on hills approximately 20 to 30 meters above the surfaces of the rivers. Questionnaires containing information about the extent of flooding, housing conditions, family members, pets, humidifier and air conditioning usage, and other factors pertaining to flood clean-up were completed by all participating homes. Household characteristics such as indoor/outdoor temperature, odors, the number of open windows, and air conditioning usage were collected during actual sampling. Daily meteorologic data were collected at the Quad Cities airport.

B. Viable Fungi Sampling and Culturing

A single stage Andersen sampler equipped with 400 jets able to efficiently collect particles greater than 8 μm was used to collect a total of 1129 individual samples. Each house was visited three to ten times over a period which lasted from the beginning of April through mid to late October 1994. Air was sampled using a calibrated pump for 33 to 133 seconds with a total collected volume of 0.025 m^3 to 0.100 m^3 . The media used to culture viable fungi colonies was predetermined by a study conducted by Curtis (1993) and consisted of 20 g/L agar, 20 g/L malt extract, 20 g/L dextrose, and 1 g/L meat peptone. The mixture was then adjusted to a pH of 4.5 to 5.0 with dilute hydrochloric acid and sterilized for 15 minutes at 15 psig and 135° C.

Four predetermined sampling locations were chosen to obtain representative viable fungi samples for each house. Indoor sites included the basement, kitchen, and bedroom of an asthmatic individual. If the house did not have a basement, then the sample was taken in the living room. If the asthmatic's bedroom was located in the basement, then the sample was collected in that bedroom, and another was taken in a bedroom on either the first or second floors or in the living room. The fourth sample was taken two meters outside of the home.

Samples were incubated at 32° C for 2 days unless there was insufficient growth at which point, they were incubated for an additional day. Viable fungi colonies were counted twice with a magnifying glass to obtain an average concentration in colony forming units per m^3 (CFU/ m^3). Plates containing 20 or more viable counts per plate were corrected using the “positive hole” correction method because the probability of a viable particle impinging on a “empty space” on the culture media decreases with increased sampling duration (Andersen, 1958). Individual

fungus colonies were further examined under a 30-300x magnification microscope in order to classify them into 34 individual genera. Fungus concentrations were calculated by dividing the total viable counts by the total volume of air which passed through the Andersen sampler (Curtis, 1993).

C. Data Analysis Methodology

1. Room Differences

In order to answer the question of whether or not an individual room's total fungi concentration differed from the total overall indoor fungi average, differences between the total fungi distributions of an individual room and its corresponding overall indoor house average were examined through univariate analysis. An individual room's total indoor fungi concentration was subtracted from its corresponding overall indoor house concentration for each sampling day. Three to ten independent values of this difference for each room were consequently determined for each home. These were then analyzed using PROC UNIVARIATE in SAS 6.07 to obtain probabilities from the student's t distribution, the nonparametric sign distribution, and the normal distribution. Any values with a p-value less than 0.1 (10% significance level) were initially considered significant although this level is not particularly stringent in revealing possible room differences. Thus, the results using the more stringent 5% significance level were compared to the 10% level to see if the number of significant differences changed when a narrower limit was placed on the results.

There are also limitations in using the univariate method to analyze the differences between room and average indoor total fungi concentrations. First, this method did not effectively control for multiple comparisons between rooms. Secondly, the univariate analysis did not take into account the possibility of autocorrelation which would constitute a relationship between the total fungi concentration and time. An alternate method which could have been used for this analysis was a one way ANOVA. However, to justify examining all the sampled rooms

in a particular house, it was more important to determine which rooms were not significantly different from the average indoor total fungi concentration. The univariate procedure, in this case, served as an adequate method to analyze the data.

2. Indoor/Outdoor Fungi Comparisons

To determine whether or not outdoor concentrations were different from their corresponding indoor levels, outdoor versus indoor total fungi and genera subcategory comparisons were performed using a method similar to that used to analyze the room differences. The indoor fungi concentration for each sample was subtracted from its corresponding outdoor level and the differences were analyzed using PROC UNIVARIATE from SAS 6.07 to obtain probabilities from the student's t distribution which is the paired t-test to test the differences against zero and the nonparametric sign distribution. Once again, any values with a p-value less than 0.1 were considered significant. This analysis was conducted on the 34 individual genera as well as total fungi for each room of each home and each house independently.

3. Modeling Methodology

Two models were utilized to give two separate estimates for the outdoor total fungi penetration into an individual room of a particular home. The first was a total fungi number balance model which compared the total indoor fungi concentration for a particular room to its corresponding total outdoor fungi concentration. When the comparison was carried out using all sampling periods, an equation of the following form was used to analyze the data:

$$V \frac{dC_i}{dt} = kqC_oP_o - kqC_i + S \quad (1)$$

where C_i and C_o are in the indoor and outdoor concentrations in CFU/m³, q is the volumetric flow rate of outdoor air into the room (m³/min), P_o is the fraction of outdoor total fungi concentration penetrating indoors which varies between zero and one, V is the indoor volume, k is the mixing factor, and S is the net indoor contaminant generation rate (CFU/min).

This leaves the concentration of the indoor environment dependent on the outside penetration, the indoor generation rate, and the flow from the outside into the home. For steady state conditions, equation 1 can be rearranged to

$$C_i = \frac{S}{kq} + C_o P_o \quad (2)$$

If S/kq is approximately constant for a given room, an estimate of P_o can be obtained from the slope of a plot of indoor versus outdoor concentration. The intercept is an estimate of S/kq .

An alternate method of analysis was the estimation of outdoor viable fungi penetration through the use of receptor modeling. In past studies, receptor modeling has been successfully used to estimate source contributions for particulate matter and volatile organic compounds (VOCs) by creating a chemical mass balance (CMB) (Scheff and Wadden, 1993; Kenski et al., 1995). With chemical mass balance receptor models, the chemical or elemental compositions of the various sources are used to determine the contribution from a particular source category such as automobiles. In general, the CMB receptor model takes the form of

$$Y = \beta Z + E \quad (3)$$

where Y is the vector of ambient pollution species, Z is the matrix of source pollutant species or the species "fingerprint", β is the contribution from the source to the VOC sample and E is the

error vector. Equation 3 represents a set of individual equations for each genus which contain β . β is determined by simultaneously solving the equation set (Kenski et al., 1995). Our analysis follows a similar approach except that the concentrations of the different genera and their relationship to the total fungi concentration were used instead of the chemical and elemental compositions. The genus number balance (GNB) receptor model took the form of:

$$y_i = \beta z_i + E \quad (4)$$

where y_i is the concentration of genus i measured indoors in CFU/m³, z_i is fraction of genus i to the total outdoor fungi concentration, β represents the total indoor fungi concentration contribution, and E represents the error in the model. In terms of vector notation, Equation 4 can be written as:

$$y = \beta z + E \quad (5)$$

where y and z are vectors of the genus concentration and fingerprint ratio for indoor and outdoor measurements respectively. This model consisted of using 34 simultaneous equations each representing a particular genus and solving for β by multivariate analysis for each indoor/outdoor sample pair. Fractional penetration for each sample is then determined from the following equation:

$$\text{Fractional Penetration} = \beta / C_o \quad (6)$$

where β is the outdoor penetration rate of total fungi in CFU/m³ and C_o is the total outdoor fungi concentration.

VI. RESULTS

Table III (Appendix) displays the average and range of measured indoor and outdoor fungi concentrations for every location sampled. At twenty three times during the seven month study, four samples were collected simultaneously in the same location to estimate the variance between the measurements. The coefficient of variation for these samples followed a normal distribution and had a mean of 12% . This value was assumed to be constant for all the samples taken during the study. It should also be noted that the average concentrations observed for this study are within the concentration ranges for other studies (Pearce et al., 1995; DeKoster and Thorne, 1995; Li et al., 1995; Licorish et al.,). Tables IV and V display the average differences between indoor and outdoor fungi concentrations for rooms and homes where there is no significant difference, where the indoor concentrations are significantly lower than outdoor levels, and indoor concentrations which are significantly higher than the outdoor fungi concentrations.

TABLE IV
SUMMARY OF AVERAGE INDOOR VERSUS OUTDOOR FUNGI
CONCENTRATION DIFFERENCES (CFU/m³) FOR ALL SAMPLED ROOMS

Genus	Average Differences for Rooms with No Significant Genera Differences	Average Differences for Rooms with Significantly Lower Indoor Concentrations	Average Differences for Rooms with Significantly Higher Indoor Concentrations
Total Fungi	-1120 (60)	-3380 (68)	8203 (3)
Alternaria	-127 (96)	-212 (33)	106 (2)
Aspergillus	-583 (70)	-1280 (61)	*
Acrostalgmus	-0.85 (131)	*	*
Botrytis	-19.7 (128)	-31.9 (2)	54.1 (1)
Cephalospora	-5.02 (128)	-38.8 (3)	*
Cladosporium	-205 (97)	-573 (34)	*
Curvularia	-12 (131)	*	*
Epicoccum	1.47 (130)	*	179 (1)
Fusarium	-6.48 (131)	*	*
Gliocladium	30.53 (121)	-33.7 (5)	248 (5)
Helminthosporium	-34.6 (122)	-133 (9)	*
Mucor	-9.72 (130)	*	328 (1)
Mycosporium	-7.95 (131)	*	*
Neurospora	-15.3 (131)	*	*
Unclassified	-7.62 (131)	*	*
Oidium	-3.34 (131)	*	*
Paecilomyces	-3.28 (131)	*	*
Papularia	0.92 (131)	*	*
Penicillium	-625 (102)	-1870 (20)	1420 (9)
Pilobolus	0.62 (131)	*	*
Phoma	-3.49 (131)	*	*
Podospharea	79.92 (129)	-46.6 (2)	*
Pseudopara	-7.96 (131)	*	*
Puccinia	-0.79 (131)	*	*
Pythium	40.93 (131)	*	*
Rhizopus	25.78 (130)	*	1980 (1)
Sclerotia	-2.15 (131)	*	*
Sepedonium	-0.52 (131)	*	*
Spongosora	-10.1 (131)	*	*
Stemphylium	-7.32 (131)	*	*
Systanus	-0.58 (131)	*	*
Ustilago	-39.6 (128)	-77.9 (2)	117 (1)
Verticillium	-10.9 (131)	*	*
yeasts	-30.4 (115)	-232 (12)	164 (4)

Total: 131 rooms

Numbers in parentheses are the number of rooms each average is based upon

* = no observations for this category

TABLE V
SUMMARY OF AVERAGE INDOOR VERSUS OUTDOOR FUNGI
CONCENTRATION DIFFERENCES (CFU/m³) FOR ALL HOMES

Genus	Average Differences for Homes with No Significant Genera Differences	Average Differences for Homes with Significantly Lower Indoor Concentrations	Average Differences for Homes with Significantly Higher Indoor Concentrations
Total Fungi	-280 (21)	-3870 (21)	10460 (2)
Alternaria	-119 (30)	-205 (12)	106 (2)
Aspergillus	-533 (19)	-1250 (25)	*
Acrostalgmus	-0.08 (44)	*	*
Botrytis	-20.1 (42)	-20.3 (1)	54.1 (1)
Cephalospora	2.68 (43)	-40.6 (1)	*
Cladosporium	-153 (27)	-532 (17)	*
Curvularia	-14.8 (44)	*	*
Epiccocum	2.28 (44)	*	*
Fusarium	-4.02 (44)	*	*
Gliocladium	100.6 (38)	-36.6 (1)	248 (5)
Helminthosporium	-40.3 (40)	-120 (4)	*
Mucor	9.07 (43)	*	328 (1)
Mycosporium	-7.93 (44)	*	*
Neurospora	-15.3 (44)	*	*
Unclassified	-8.74 (44)	*	*
Oidium	-3.33 (44)	*	*
Paecilomyces	-3.7 (44)	*	*
Papularia	0.19 (44)	*	*
Penicillium	-730 (32)	-709 (6)	1431 (6)
Pilobolus	3.02 (44)	*	*
Phoma	-3.95 (44)	*	*
Podospharea	267 (44)	*	*
Pseudopara	-8.49 (44)	*	*
Puccina	3.09 (44)	*	*
Pythium	47.1 (44)	*	*
Rhizopus	31.79 (43)	*	1980 (1)
Sclerotia	-2.27 (44)	*	*
Sepedonium	-0.35 (44)	*	*
Spongosora	-7.34 (44)	*	*
Stemphylium	-8.04 (44)	*	*
Systanus	-0.52 (44)	*	*
Ustilago	-41.8 (43)	-85.9 (1)	*
Verticillium	-11.5 (44)	*	*
yeasts	-16.5 (37)	-260 (5)	299 (2)

Total: 44 Homes

Numbers in parentheses are the number of homes each average is based upon

* = no observations for this category

VII. DISCUSSION AND ANALYSIS

A. Room and Home Differences

Ninety three out of 131 rooms did not exhibit any significant differences. Table VI gives the results of the comparison of the concentration of an individual room to its corresponding indoor total fungi concentration average through a univariate analysis. Significance was defined as any comparisons which had a p-value less than 0.1. Out of 131 rooms analyzed, 93 (71%) exhibited no significant difference when compared to their corresponding total indoor fungi averages. Fourteen rooms (11%) had significantly higher concentrations than the indoor average while 24 (18%) had significantly lower concentrations. Of the 14 rooms which were higher, eight were basements, one was a bedroom, and the other five were first and second floor bedrooms. A summary of these results are presented in Table VII.

TABLE VI
ROOMS WHICH SHOWED SIGNIFICANT DIFFERENCE IN TOTAL FUNGI BETWEEN
ROOM CONCENTRATION AND AVERAGE INDOOR CONCENTRATION (CFU/m³)*

House	Room	Mean Difference	Standard Deviation	Coefficient of Variation	Median Difference	
7	BASEMENT	596	913	153	209	**
10	BASEMENT	568	651	115	480	
14	1ST FL. BED	430	570	133	427	
15	1ST FL. BED	1149	1416	123	547	
21	BASEMENT	8482	11821	139	3873	**
24	KITCHEN	791	617	78	1053	**
26	BASEMENT	1452	1758	121	940	
29	BASEMENT	3153	1810	57	3100	**
33	BASEMENT	1937	1393	72	2347	
36	2ND FL. BED	560	141	25	507	**
39	BASEMENT	9200	10993	119	4447	
41	1ST FL. BED	583	362	62	613	**
42	BASEMENT	2897	3998	138	1097	**
43	2ND FL. BED	647	247	38	673	**
4	KITCHEN	-144	149	-103	-92	**
6	BASEMENT	-749	1234	-165	-320	**
7	KITCHEN	-598	425	-71	-658	**
14	BASEMENT	-497	355	-71	-505	**
15	BASEMENT	-1057	1083	-102	-747	**
17	BASEMENT	-491	580	-118	-267	**
18	KITCHEN	-318	436	-137	-207	
21	KITCHEN	-5729	6374	-111	-3160	
23	BASEMENT	-213	210	-98	-193	
24	BASEMENT	-1023	812	-79	-947	**
25	KITCHEN	-423	227	-54	-453	**
29	LIVING ROOM	-1377	925	-67	-1480	
29	KITCHEN	-1777	923	-52	-1620	**
30	LIVING ROOM	-759	1651	-218	-173	**
33	2ND FL. BED	-1923	1510	-79	-2373	
36	BASEMENT	-133	48	-36	-147	**
36	KITCHEN	-427	185	-43	-333	
38	KITCHEN	-319	239	-75	-253	**
39	KITCHEN	-4547	5048	-111	-1793	**
41	BASEMENT	-819	840	-103	-367	**
42	KITCHEN	-1840	2194	-119	-1247	
42	2ND FL. BED	-1827	2005	-110	-1413	
43	KITCHEN	-513	542	-106	-640	
45	BASEMENT	-387	253	-65	-453	**

* All differences are significant at $p < 0.1$

** Signifies comparisons significant at $p < 0.05$

- Shaded area represents rooms with concentrations

significantly greater than average indoor concentrations

- 93 rooms did not show a significant difference at $p < 0.1$

TABLE VII: SUMMARY OF COMPARISONS BETWEEN ROOM AND AVERAGE
 * INDOOR CONCENTRATIONS AT $p < 0.1$

131 comparisons were made covering 44 homes			
93 (71%) comparisons were not significant			
38 (29%) comparisons were significant			
Number of	Number of	Percent	Number of
Significant	Homes	of Total	Rooms with
Differences		Homes	Greater Indoor
			Concentrations
0	21	48	0
1	11	25	3
2	9	20	9
3	3	7	2
Of the 14 rooms greater than the indoor average concentration:			
Basement is greater 8 times (57%)			
Kitchen is greater 1 time (7%)			
First floor bedroom is greater 3 times (21%)			
Second floor bedroom is greater 2 times (14%)			

Of the 44 homes analyzed using this method, 21 showed no significant room differences which means that it did not make a difference which room was chosen in which to sample. This signifies that the analysis was unable to adequately discern possible indoor sources because the variability between the majority of the rooms and their corresponding overall indoor averages were similar.

Figure 1 shows the magnitude of the 38 significant differences. The most noticeable are basements and kitchens where the basements in homes 21 and 39 exceeded the average indoor

* Difference refers to the average total fungi room concentration minus the average indoor concentration for each date sampled by house
 132 comparisons were conducted over 44 homes each housing an asthmatic individual

Figure 1. Summary of 38 Significant Comparisons

fungi concentration by approximately 8000 to 9000 CFU/m³ while kitchens in the same homes are exceeded by approximately 4000 to 6000 CFU/m³ which is mainly due to the high concentrations of the basements. The remaining values all had absolute differences up to approximately 3000 CFU/m³.

At $p < 0.05$, 108 out of 131 rooms do not show significant differences while 8 rooms had significantly higher concentrations than the average and 15 rooms had significantly lower concentrations. Of the eight higher rooms, 4 were basements, 1 was a kitchen, and the remaining 3 were first and second floor bedrooms. This information is summarized in Table VIII.

TABLE VIII: SUMMARY OF COMPARISONS BETWEEN ROOM AND AVERAGE INDOOR CONCENTRATIONS AT $p < 0.05$

131 comparisons were made covering 44 homes			
108 (82%) comparisons were not significant			
23 (18%) comparisons were significant			
Number of	Number of	Percent	Number of
Significant	Homes	of Total	Rooms with
Differences		Homes	Greater Indoor
			Concentrations
0	26	59	0
1	13	30	3
2	5	11	5
3	0	0	0
Of the 8 rooms greater than the indoor average concentration:			
Basement is greater 4 times (50%)			
Kitchen is greater 1 time (12.5%)			
First floor bedroom is greater 1 time (12.5%)			
Second floor bedroom is greater 2 times (25%)			

When compared to the number of rooms significant at $p < 0.1$, there is an increase in the number of rooms whose concentrations were not significantly different from their corresponding indoor averages. The number of rooms with significantly higher concentrations were reduced to roughly half of the number seen at the 10% significance level. This shows that at a higher significance level it is even more difficult to isolate any particular room as the sole indoor source.

B. Indoor versus Outdoor Fungi Concentration Comparisons

Table IX displays the number of rooms which have specific indoor/outdoor genus concentration differences for each room by house and represents the results of a univariate analysis which examined the differences between indoor and outdoor fungi concentrations. Table X displays the frequency of homes which have specific genus differences for every house sampled based on the comparison of the average fungi concentration from all indoor sampling locations to the corresponding outdoor concentration by sampling day. Significance was defined as any comparison which had a p-value less than 0.1. As with the indoor room analysis of total fungi, few rooms had indoor concentrations which were greater than their corresponding outdoor averages. Approximately 50% of the rooms had significantly lower indoor total fungi concentrations than out, while 45% had no difference. Only, ten genera showed significantly higher concentrations indoors than out. Even these differences were only observed for a few homes, the maximum being 9 out of the 131 rooms for *Penicillium*. It was more common to see no difference between indoor and outdoor genera concentrations. Very few homes have significantly different indoor and outdoor fungi concentrations while the majority show that the indoor concentration is significantly less than the outdoor.

When specifically looking at the homes themselves, only two demonstrated a significantly higher indoor total fungi concentration when compared to 42 which did not. Likewise, the majority of the individual indoor genera levels were not different from their corresponding outdoor concentrations. As with the individual rooms, the homes show a similar

TABLE IX
SUMMARY OF INDOOR/OUTDOOR FUNGI
CONCENTRATION DIFFERENCES FOR ALL ROOMS SAMPLED

Genus	Number of Rooms with No Significant Genera Differences	Number of Rooms with Significantly Lower Indoor Concentrations	Number of Rooms with Significantly Higher Indoor Concentrations
Total Fungi	60	68	3
Alternaria	96	33	2
Aspergillus	70	61	0
Acrostalgmus	131	0	0
Botrytis	128	2	1
Cephalospora	128	3	0
Cladosporium	97	34	0
Curvularia	131	0	0
Epiccocum	130	0	1
Fusarium	131	0	0
Gliocladium	121	5	5
Helminthosporium	122	9	0
Mucor	130	0	1
Mycosporium	131	0	0
Neurospora	131	0	0
Unclassified	131	0	0
Oidium	131	0	0
Paecilomyces	131	0	0
Papularia	131	0	0
Penicillium	102	20	9
Pilobolus	131	0	0
Phoma	131	0	0
Podospharea	129	2	0
Pseudopara	131	0	0
Puccina	131	0	0
Pythium	131	0	0
Rhizopus	130	0	1
Sclerotia	131	0	0
Sepedonium	131	0	0
Spongosora	131	0	0
Stemphylium	131	0	0
Systanus	131	0	0
Ustilago	128	2	1
Verticillium	131	0	0
yeasts	115	12	4

Total: 131 rooms

TABLE X
SUMMARY OF INDOOR/OUTDOOR FUNGI
CONCENTRATION DIFFERENCES FOR ALL HOMES

Genus	Number of Rooms with No Significant Genera Differences	Number of Rooms with Significantly Lower Indoor Concentrations	Number of Rooms with Significantly Higher Indoor Concentrations
Total Fungi	60	68	3
Alternaria	96	33	2
Aspergillus	70	61	0
Acrostalgnus	131	0	0
Botrytis	128	2	1
Cephalospora	128	3	0
Cladosporium	97	34	0
Curvularia	131	0	0
Epiccocum	130	0	1
Fusarium	131	0	0
Gliocladium	121	5	5
Helminthosporium	122	9	0
Mucor	130	0	1
Mycosporium	131	0	0
Neurospora	131	0	0
Unclassified	131	0	0
Oidium	131	0	0
Paecilomyces	131	0	0
Papularia	131	0	0
Penicillium	102	20	9
Pilobolus	131	0	0
Phoma	131	0	0
Podospharea	129	2	0
Pseudopara	131	0	0
Puccina	131	0	0
Pythium	131	0	0
Rhizopus	130	0	1
Sclerotia	131	0	0
Sepedonium	131	0	0
Spongosora	131	0	0
Stemphylium	131	0	0
Systanus	131	0	0
Ustilago	128	2	1
Verticillium	131	0	0
yeasts	115	12	4

Total: 44 homes

distribution where the majority do not have any significant indoor and outdoor genera differences while those that do show smaller concentrations indoors than out.

C. Total Fungi Number Balance Modeling Analysis

The total indoor fungi concentration was plotted against the total outdoor fungi concentration for each room sampled more than two times during the study to obtain the slope which from equation (2) is P_O . A total of 125 plots covering all sampled rooms from 42 homes were created. The relationships were divided into two categories: "good" and "others". "Good" relationships were based on whether or not the r^2 was greater than or equal to 0.6 and the absence of outliers which was determined by visual inspection of each plot. In addition to the above criteria, the penetration (P_O) had to fall within the physically reasonable range of zero to one. All of the rooms in four homes met this criteria and are presented in Figures 2 through 12. The "others" category was further broken down into "fair" and "poor" relationship categories. The majority of the rooms exhibited a "fair" relationship while approximately 27% and 18% of the rooms had good and poor relationships, respectively. Of the three different types of relationships seen in this analysis, rooms which had a good relationship generally showed penetrations which ranged between zero and one, while poor rooms mostly had penetrations that were either less than zero or greater than one. In this case, a poor relationship indicates that there is large variation in the outdoor measurements which make it difficult to characterize the air coming into the house primarily because the outdoor concentration depends on which side of the house the sample is collected. Rooms with fair relationships had penetrations which varied depending on outliers although the majority of these rooms had values within the physically reasonable range. Out of all 125 rooms analyzed, only 72% had fractional penetrations between zero and one. The penetration values obtained from this analysis are presented in Table XI.

Figure 2. Home #8 First Floor Bedroom

Figure 3. Home #8 Kitchen

Figure 4. Home #8 Living Room

Figure 5. Home #18 Second Floor Bedroom

Figure 6. Home #18 Kitchen

Figure 7. Home #18 Living Room

Figure 8. Home #20 Second Floor Bedroom

Figure 9. Home #20 Living Room

Figure 10. Home #32 Basement

Figure 11. Home #32 First Floor Bedroom

Figure 12. Home #32 Kitchen

TABLE XI
FRACTIONAL PENETRATIONS FROM TOTAL FUNGI NUMBER BALANCE MODEL

House	Basement	Living Room	Kitchen	1st Fl. Bed.	2nd Fl. Bed.
2		0.60	0.67	0.65	
3	0.08		0.04		0.05
4		0.29	0.26	0.25	
5	0.79		0.44	0.41	
6	0.16		0.19	-0.01 *	
7	0.19		0.22	0.50	
8		0.77	0.64	0.61	
9	0.02		-0.23 *	-0.10 *	
10	1.11 *		0.85	0.83	
11		0.37	0.44	0.45	
12	0.13		0.06		0.09
13	-0.45 *		0.82		0.52
14	0.14		0.34	0.46	
15	0.46		0.82	1.46 *	
17	0.13		0.07	0.64	
18		0.15	0.12		0.25
19	-0.02 *		0.01	0.00	
20		0.39			0.25
21	-4.30 *		1.12 *	1.38 *	
22	0.00	-0.01 *	0.05		
23	0.14		0.50		0.09
24	0.05		0.67		0.66
25	0.24	0.78	0.43		
26	-0.11 *		0.22	-0.48 *	
27	0.75	0.71	0.43		
28	0.09		0.05		0.06
29	-0.56 *	0.37	0.98		
30		0.05	-0.03 *	0.04	
31	0.61		1.55 *	-0.16 *	
32	0.26		0.47	0.52	
33	0.11		0.07		-0.33 *
34	-0.10 *		0.33		-0.29 *
36	0.01		0.01		0.01
38	0.08		0.05		0.03
39	0.31		0.28	0.40	
40	-0.02 *	0.00	-0.03 *		
41	0.00		0.24	0.18	
42	1.02 *		0.41		0.38
43	-0.07 *		-0.03 *		-0.06 *
44		-0.47 *	-0.42 *	-0.45 *	
45	-0.14 *		-0.11 *		-0.42 *
46	0.35		0.72	1.19 *	

Total = 125 rooms analyzed with number balance model

* = penetration value was greater than one or less than zero

Total of 33 rooms with penetrations outside of the zero to one range

One primary reason for the relative failure of this model to accurately estimate the outside penetration involves the limitations placed upon it. The major assumption is that both the emission and effective ventilation rates remain constant at the time of sampling. This study did not attempt to measure either rate. Overall, 25% of the rooms analyzed exhibited “good” indoor versus outdoor total fungi concentration relationships with 90% of these rooms exhibiting fractional penetrations between zero and one.

D. Genus Number Balance Receptor Model Analysis

Table XII shows the results of the genus number balance receptor model. Each indoor sample in all 44 homes was analyzed with this model. The individual genera concentrations were used to create 34 simultaneous equations which were solved using multivariate analysis to obtain β for each sample. A penetration rate (β) in CFU/m³ was obtained for each period per room per home (i.e., for each indoor/outdoor concentration pair). Fractional penetrations were calculated according to the method described in section V. A total of 852 individual fractional penetrations were obtained. No values of β in equation 4 were less than zero. As in the total fungi number balance method, fractional penetration values outside of the zero to one range did not make physical sense. When this restriction was applied, 90% (753) of the fractional penetration values satisfied the limitation and the average value for this subset was 0.37 with a standard deviation of 0.26. A 95% (two standard deviations) confidence interval based on the variation for all 852 fractional penetrations gave a value of plus or minus 10%. If this is applied to those values greater than one, only 18 fall within this range suggesting that the mean penetration would probably vary little from its reported value if they were included in its calculation. In this case, values greater than one suggest that either there may have been faulty indoor/outdoor measurements or the possibility that an indoor source exists.

A further analysis using a model with fractional penetration as the dependent variable was completed on those values which satisfied the range requirement to see whether or not penetration was affected in any way by certain housing and meteorological characteristics. Three variables collected during every sampling period were used: air conditioning, the difference in

TABLE XII
FRACTIONAL PENETRATIONS FROM GENUS NUMBER BALANCE RECEPTOR MODEL

House	Date	Basement	Living Room	Kitchen	1st Fl. Bed.	2nd Fl. Bed.
2	4/12/94		0.00	0.55	0.10	
	4/25/94		0.62	0.73	0.76	
	5/16/94		0.13	0.06	0.09	
	6/6/94		0.03	0.09	0.07	
	6/30/94		0.21	0.21	0.20	
	7/21/94		1.57 *	1.07 *	0.94	
	8/15/94		2.82 *	1.75 *	1.99 *	
	9/2/94		0.33	0.52	0.66	
	10/6/94		0.55	0.68	0.54	
3	4/11/94	1.11 *		34.65 *		0.01
	4/25/94	1.96 *		0.69		0.76
	5/17/94	1.95 *		1.01 *		0.36
	6/15/94	0.20		0.13		0.29
	7/13/94	2.39 *		2.02 *		3.12 *
	8/4/94	0.36		0.61		0.09
	8/30/94	0.39		0.44		0.36
	9/23/94	0.00		0.03		0.05
	10/13/94	0.19		0.42		0.28
4	4/16/94		0.12	0.04	0.12	
	4/30/94		1.00	0.55	2.18 *	
	5/14/94		0.69	0.42	0.44	
	6/28/94		0.92	0.31	0.82	
	7/16/94		0.18	0.10	0.09	
	8/13/94		0.55	0.54	0.51	
	9/3/94		1.04 *	0.75	0.63	
	10/8/94		0.67	0.60	0.74	
5	4/11/94	3.10 *		0.45	2.00 *	
	4/28/94	0.15		0.16	0.02	
	5/25/94	1.01 *		1.10 *	1.39 *	
	6/23/94	1.43 *		0.36	1.21 *	
	7/14/94	0.21		0.47	0.43	
	8/17/94	0.53		0.61	0.60	
	9/6/94	1.03 *		0.96	0.97	
	9/26/94	0.28		0.47	0.45	
	10/20/94	0.36		0.68	0.84	
6	4/18/94	0.30		0.33	0.00	
	5/10/94	1.41 *		0.61	0.27	
	5/26/94	0.58		0.90	0.29	
	6/15/94	0.27		0.65	0.60	
	7/13/94	0.91		3.03 *	9.56 *	
	8/9/94	0.06		0.46	0.23	
	8/31/94	0.21		0.13	0.20	
	9/21/94	0.12		0.23	0.19	
	10/11/94	0.11		0.17	0.17	

TABLE XII
FRACTIONAL PENETRATIONS FROM GENUS NUMBER BALANCE RECEPTOR MODEL

House	Date	Basement	Living Room	Kitchen	1st Fl. Bed.	2nd Fl. Bed.
7	4/12/94	21.29 *		0.50	0.43	
	5/16/94	0.24		0.60	0.48	
	6/8/94	0.26		0.04	0.42	
	6/27/94	0.33		0.20	0.56	
	7/19/94	0.64		0.16	0.10	
	8/12/94	0.46		0.35	0.17	
	9/2/94	0.09		0.13	0.45	
	10/4/94	0.43		0.34	0.65	
8	4/29/94		0.27	0.18	0.53	
	5/25/94		0.81	0.86	1.22 *	
	7/19/94		0.84	0.70	0.67	
	8/23/94		0.97	1.20 *	0.87	
	9/24/94		0.58	0.23	0.25	
	10/20/94		0.40	0.22	0.33	
9	4/13/94	0.49		0.06	0.11	
	5/10/94	0.80		0.32	0.44	
	6/7/94	0.08		0.03	0.02	
10	6/8/94	0.66		0.55	0.45	
	6/24/94	0.31		0.35	0.17	
	7/14/94	0.99		0.30	0.66	
	8/3/94	0.81		0.06	0.66	
	8/25/94	1.16 *		1.14 *	0.96	
	9/29/94	0.84		0.59	0.76	
	10/20/94	0.13		0.14	0.21	
11	5/23/94		1.11 *	0.10	0.95	
	6/7/94		0.11	0.21	0.12	
	6/25/94		0.33	0.82	0.64	
	7/11/94		0.21	0.21	0.20	
	8/1/94		1.21 *	1.13 *	0.99	
	8/22/94		0.20	0.74	0.57	
	9/20/94		0.50	0.50	0.76	
	10/10/94		1.09 *	0.43	1.25 *	
12	5/19/94	0.04		0.13		0.07
	6/9/94	0.05		0.07		0.07
	6/29/94	0.13		0.28		0.17
	7/21/94	0.07		0.02		0.03
	8/24/94	0.27		0.37		0.22
	9/14/94	0.14		0.20		0.19
	10/6/94	0.18		0.55		0.23
13	6/6/94	0.06		0.15		0.23
	6/20/94	1.18 *		0.42		0.01
	7/13/94	10.74 *		0.82		4.20 *
	8/5/94	4.17 *		0.54		0.97
	9/1/94	0.31		0.79		0.47
	10/6/94	0.21		0.52		0.31

TABLE XII
FRACTIONAL PENETRATIONS FROM GENUS NUMBER BALANCE RECEPTOR MODEL

House	Date	Basement	Living Room	Kitchen	1st Fl. Bed.	2nd Fl. Bed.
14	5/26/94	0.07		0.47	0.60	
	6/7/94	0.20		0.18	0.32	
	6/21/94	0.15		0.20	0.56	
	7/20/94	0.05		0.24	0.54	
	8/12/94	0.28		0.43	0.45	
	9/1/94	0.50		0.93	0.51	
	9/26/94	0.02		0.26	0.28	
	10/19/94	0.63		0.90	1.37 *	
15	5/26/94	0.10		0.07	0.16	
	6/23/94	0.61		0.92	1.07 *	
	7/14/94	0.03		0.07	0.11	
	8/2/94	0.29		0.80	0.56	
	8/22/94	0.33		1.69 *	1.75 *	
	9/21/94	0.50		0.57	1.18 *	
	10/10/94	0.32		0.78	1.11 *	
16	5/26/94	0.36	0.55	0.81		
17	5/28/94	0.34		0.26	0.34	
	6/13/94	0.06		0.23	0.14	
	7/6/94	0.18		0.18	0.37	
	7/27/94	0.55		0.57	0.51	
	8/18/94	0.09		0.28	0.24	
	9/23/94	0.27		0.62	0.26	
	10/18/94	0.55		0.97	1.04 *	
18	6/8/94		0.86	0.99		0.33
	6/27/94		0.18	0.16		0.33
	7/18/94		0.30	0.26		0.28
	8/19/94		0.30	0.23		0.28
	9/12/94		0.23	0.12		0.21
	10/10/94		0.10	0.25		0.65
19	6/10/94	0.29		0.02	0.26	
	7/8/94	0.36		0.31	0.47	
	8/3/94	0.00		0.04	0.01	
	8/24/94	0.03		0.06	0.06	
	9/12/94	0.06		0.11	0.06	
	10/5/94	0.24		0.56	0.07	
20	6/14/94		0.44			0.44
	7/6/94		0.37			0.27
	7/9/94		0.52			0.31
	8/31/94		0.48			0.47
	10/5/94		0.20			0.21
21	6/8/94	0.89		0.09	0.17	
	6/28/94	0.71		1.41 *	1.41 *	
	7/20/94	4.47 *		0.24	0.82	
	9/23/94	4.66 *		0.25	0.59	
	10/10/94	0.72		0.72	0.62	

TABLE XII
FRACTIONAL PENETRATIONS FROM GENUS NUMBER BALANCE RECEPTOR MODEL

House	Date	Basement	Living Room	Kitchen	1st Fl. Bed.	2nd Fl. Bed.
22	6/14/94	0.16	0.11	0.12		
	7/9/94	0.85	0.16	0.12		
	8/1/94	0.03	0.03	0.04		
	8/22/94	0.01	0.02	0.01		
	9/22/94	0.88	1.50 *	0.77		
	10/11/94	0.60	0.57	0.17		
23	6/11/94	0.11		0.47		0.44
	6/24/94	0.16		0.58		0.11
	7/15/94	0.53		0.66		0.84
	8/17/94	0.29		0.58		0.18
	9/6/94	0.24		0.59		0.27
	10/4/94	0.73		0.74		1.04 *
24	6/14/94	0.01		0.12		0.25
	7/7/94	0.13		0.38		0.77
	7/28/94	0.24		1.09 *		0.17
	8/17/94	0.23		0.69		0.54
	9/6/94	0.14		0.90		1.15 *
	9/27/94	0.15		0.39		0.24
	10/19/94	0.67		0.66		0.95
25	6/10/94	0.05	0.02	0.01		
	6/30/94	0.62	0.61	0.18		
	8/1/94	0.05	0.59	0.08		
	8/31/94	0.26	0.33	0.46		
	9/28/94	0.41	0.57	0.29		
26	7/1/94	0.03		0.04	0.02	
	7/21/94	5.35 *		0.74	3.06 *	
	8/12/94	0.72		0.12	1.31 *	
	9/1/94	0.93		0.77	0.65	
	9/14/94	0.26		0.38	0.16	
	10/5/94	1.14 *		0.96	0.80	
27	6/21/94	0.63	0.88	0.86		
	7/11/94	1.31 *	1.06 *	0.59		
	7/29/94	0.10	0.39	0.41		
	8/19/94	0.24	0.78	1.07 *		
	9/7/94	0.52	0.55	0.48		
	9/26/94	0.28	0.17	0.23		
	10/21/94	0.87	0.80	0.99		
28	6/11/94	0.04		0.31		0.10
	6/28/94	0.44		0.85		0.80
	7/21/94	0.38		0.41		0.12
	8/16/94	0.07		0.15		0.03
	9/10/94	0.07		0.04		0.08
	10/8/94	0.64		0.24		0.09

TABLE XII
FRACTIONAL PENETRATIONS FROM GENUS NUMBER BALANCE RECEPTOR MODEL

House	Date	Basement	Living Room	Kitchen	1st Fl. Bed.	2nd Fl. Bed.
29	6/24/94	0.74	0.44	0.75		
	7/14/94	2.52 *	0.37	0.17		
	8/2/94	0.94	0.34	0.50		
	8/11/94	0.34	0.57	0.55		
30	6/22/94		0.15	0.32	0.34	
	7/11/94		0.05	0.12	0.13	
	7/29/94		0.01	0.03	0.05	
	8/15/94		0.16	0.11	0.66	
	9/9/94		0.15	3.21 *	0.06	
	9/27/94		0.59	0.48	1.00	
	10/18/94		0.52	0.21	0.82	
31	6/24/94	0.47		0.35	0.78	
	7/12/94	0.34		1.38 *	2.40 *	
	8/2/94	0.58		1.46 *	2.57 *	
	8/22/94	1.08 *		0.88	0.66	
	9/6/94	0.42		1.02 *	0.35	
	9/27/94	0.18		0.64	0.30	
	10/18/94	0.22		0.46	0.93	
32	6/23/94	0.06		0.15	0.11	
	7/14/94	0.43		0.44	0.69	
	8/2/94	0.15		0.15	0.12	
	8/24/94	0.04		0.46	0.45	
	9/22/94	0.22		0.17	0.26	
	10/11/94	0.48		0.79	0.82	
33	6/27/94	1.40 *		1.53 *		0.69
	7/16/94	1.81 *		0.51		0.68
	8/12/94	1.15 *		0.08		0.62
	9/13/94	1.01 *		0.89		0.51
34	6/28/94	0.03		0.16		0.08
	7/27/94	0.81		0.95		0.64
	8/13/94	0.36		0.69		0.06
	9/1/94	0.71		0.57		0.49
	9/22/94	0.88		0.88		0.85
	10/10/94	0.40		0.10		0.68
36	7/20/94	0.66		0.63		0.80
	8/16/94	0.02		0.02		0.03
	9/12/94	0.19		0.15		0.21
37	6/30/94	0.19		0.16		0.03

TABLE XII
FRACTIONAL PENETRATIONS FROM GENUS NUMBER BALANCE RECEPTOR MODEL

House	Date	Basement	Living Room	Kitchen	1st Fl. Bed.	2nd Fl. Bed.
38	7/8/94	0.13		0.08		0.08
	7/29/94	0.34		0.39		0.97
	8/19/94	0.37		0.07		0.12
	9/7/94	0.04		0.05		0.12
	10/5/94	0.28		0.26		0.11
39	7/6/94	1.56 *		0.67	0.47	
	7/27/94	1.81 *		0.73	0.26	
	8/15/94	0.19		0.04	0.15	
	9/2/94	0.11		0.14	0.51	
	9/23/94	2.18 *		0.41	0.21	
	10/11/94	0.62		0.12	0.18	
40	7/7/94	0.01	0.01	0.01		
	7/30/94	0.05	0.12	0.02		
	8/20/94	0.22	0.26	0.18		
	9/8/94	0.26	0.41	0.30		
	10/22/94	0.34	0.15	0.37		
41	7/12/94	1.21 *		0.61	2.12 *	
	8/3/94	0.06		0.26	0.25	
	8/23/94	0.33		0.18	0.52	
	9/12/94	0.07		0.59	0.38	
	10/4/94	0.46		0.54	0.36	
	10/18/94	0.07		0.29	0.31	
42	7/7/94	2.08 *		0.22		0.60
	7/30/94	0.76		0.33		0.40
	8/19/94	2.48 *		0.74		0.96
	9/9/94	0.55		1.39 *		0.40
	9/28/94	0.42		0.56		0.57
	10/20/94	0.43		0.25		0.25
43	7/8/94	0.01		0.02		0.03
	7/28/94	0.21		0.62		0.74
	8/19/94	0.34		0.24		0.38
	9/8/94	0.43		0.19		0.40
	9/27/94	0.16		0.10		0.16
	10/20/94	1.52 *		0.67		1.26 *
44	7/19/94		0.05	0.08	0.07	
	8/11/94		0.06	0.02	0.13	
	9/1/94		0.48	0.29	0.77	
	9/21/94		1.08 *	1.00 *	1.11 *	
	10/12/94		1.13 *	1.22 *	0.80	
45	7/12/94	0.02		0.02		0.01
	8/4/94	0.07		0.22		0.05
	8/23/94	0.32		0.82		0.59
	9/13/94	0.16		0.18		0.20
	10/11/94	0.15		0.17		0.34
46	7/8/94	0.25		0.72	1.13 *	
	7/30/94	0.19		0.26	0.24	
	8/20/94	0.43		1.23 *	0.61	
	9/10/94	0.34		0.51	0.45	
	10/8/94	0.40		0.58	0.54	

Total = 852 samples analyzed

* = penetration value was greater than one or less than zero

Total of 99 penetrations were greater than one and none less than zero

outdoor temperature between the daily value and the lowest outdoor temperature recorded during the study, and wind speed. Air conditioning was recorded during sampling as a binary variable with zero and one representing no usage and usage, respectively. In conjunction with air conditioner usage, the difference in the daily outdoor temperature to the lowest recorded reading for all the sampling periods used in the model was the second term. Wind speed was used because it was assumed that increased wind speed would cause increased natural ventilation thereby increasing outdoor penetration (Wadden and Scheff, 1983). The final model took the form of

$$\text{fractional penetration} = \alpha_0 + \alpha_1 \cdot \text{A/C} + \alpha_2 \cdot \Delta T + \alpha_3 \cdot \text{wind speed} \quad (7)$$

where fractional penetration is the value obtained from the genus number balance receptor model and is within the zero to one range, A/C represents air conditioner usage, ΔT is the temperature difference and wind speed is the average value measured for the day in miles per hour (MPH). Alpha one through three are the coefficients for their corresponding variables. Alpha zero represents the variability not explained by the predictors in the model. Two separate sets of data were evaluated with the model. The first included sampling periods from only those homes where the penetration values for all rooms were between zero and one. The lowest outdoor temperature was 58° F. The second included all sampling periods for all sites where the penetration values were within the desired range regardless of whether other rooms in the house met this criteria. The lowest outdoor temperature was 35° F for this set. Table XIII shows the results of the modeling analysis.

TABLE XIII: RESULTS OF GENUS NUMBER BALANCE FRACTIONAL PENETRATION
MODELING

Penetration Model Results									
Homes with All Sampling Dates with Pen<1 (a)					All Sampling Dates with Pen<1 (b)				
Lowest T=58 F		n = 213			Lowest T=35 F		n = 741		
$r^2=0.0850$					$r^2=0.0574$				
Penetration Estimate					Penetration Estimate				
Intercept	39%		*		Intercept	44%		*	
Wind Speed	0.23%/MPH				Wind Speed	-0.19%/MPH			
A/C	-5.8%		*		A/C	-14%		*	
Delta T	-0.63%/° C		*		Delta T	-0.06%/° C			
* = significant parameter estimate with $p<0.1$									
(a) Includes data only from those homes where all sampling periods for all sites had penetrations within zero and one									
(b) Includes all sampling periods for all sites with penetrations between zero and one									

When air conditioning was on, P_O decreased as well as when ΔT increased. Both of these results seem physically reasonable. However, none of the three predictors used in the model strongly affected the fractional penetration and a large amount of the variability was still left unexplained. The variation in P_O was limited. Consequently larger changes which might reflect the sort of dependence on air conditioning and wind speed as observed by others, were not available to the exercise of Equation 7. The lack of a good measure for the influence of open windows on the penetration also may contribute to the variability in outdoor penetration. This analysis shows that when the temperature rises and the air conditioning is on, there is a reduction in the outdoor

penetration, but it is not a major one. Therefore, there must be some other source, mechanism or activity inside the house which accounts for the unexplained variation in the penetration.

Table XIV shows the genera residuals for the 748 samples which had fractional penetrations between zero and one as well as the 213 samples over a total of 13 homes which had penetration values within the required range for all rooms during all sampling periods. Table XV (Appendix) lists the average indoor and outdoor total fungi concentrations, the average total fungi residual, the average penetration, and the average residual for the 34 individual genera analyzed by the receptor model method for each room of each home. The total fungi residual is the difference between the indoor total fungi concentration and the receptor model coefficient. The calculations are restricted to penetration values which fall within zero and one. Only three rooms out of 131 analyzed had total fungi residuals less than zero. This indicates that the total fungi concentration was under-predicted for 98% of the rooms and there is a possibility that a potential indoor source exists. The residuals for the 34 genera were also calculated by subtracting the predicted value from the receptor model from the measured concentration for each genus. From this analysis, the majority of under-predicted genera (i.e. indicative of potential indoor sources) include *Aspergillus*, *Cladosporium*, *Penicillium* and yeasts, while *Alternaria*, *Cephalospora*, *Curvularia* are under-predicted less frequently. The genera residuals thus aid in providing a potential source "fingerprint". Table XVI shows the estimates of the overall "fingerprints" for each home and represents the average residuals for those genera which had positive values for all three rooms sampled. Overall home residuals were based on whether

TABLE XIV
SUMMARY OF GENERA RESIDUALS IN CFU/m³ FOR THE TWO
SETS OF DATA USED FOR THE PENETRATION PARAMETER MODEL

Genus Residual Summary for 753 Samples with Penetration between Zero and One			Genus Residual Summary for 213 Samples from 13 Homes with All Penetration Values between Zero and One		
Genus	Mean Residual	Range	Genus	Mean Residual	Range
Alternaria	0.75	-901 - 1097	Alternaria	13.5	-397 - 410
Aspergillus	65.20	-1700 - 2880	Aspergillus	66.9	-1700 - 1760
Acrostalgmus	0.82	-50.7 - 504	Acrostalgmus	0	-36.7 - 45.3
Botrytis	3.12	-253 - 452	Botrytis	1.85	-84.5 - 165
Cephalospora	3.68	-317 - 172	Cephalospora	3.35	-73.5 - 112
Cladosporium	97.90	-675 - 5150	Cladosporium	88.4	-675 - 808
Curvularia	1.21	-187 - 490	Curvularia	-1.03	-126 - 86.3
Epiccocum	3.75	-45.6 - 747	Epiccocum	0.57	-36.7 - 45.1
Fusarium	2.96	-174 - 452	Fusarium	4.66	-75.5 - 258
Gliocladium	27.60	-197 - 3595	Gliocladium	7.23	-56.3 - 255
Helminthosporium	-3.30	-361 - 1260	Helminthosporium	-1.42	-320 - 1260
Mucor	23.90	-566 - 2370	Mucor	6.46	-411 - 1170
Mycosporium	1.50	-315 - 127	Mycosporium	2.43	-45.7 - 87.2
Neurospora	0.06	-246 - 215	Neurospora	-0.47	-246 - 88.7
Unclassified	0.34	-46.6 - 197	Unclassified	0.31	-32.1 - 85.9
Oidium	0.79	-86.2 - 386	Oidium	1.81	-1.94 - 165
Paecilomyces	1.82	-431 - 496	Paecilomyces	2.54	-33.5 - 90.1
Papularia	1.35	-35.7 - 128	Papularia	1.76	0 - 45.3
Penicillium	153.00	-1120 - 3950	Penicillium	66.9	-1120 - 1260
Pilobolus	0.44	-41.1 - 103	Pilobolus	-0.14	-36.7 - 43.6
Phoma	-0.80	-72.1 - 82.4	Phoma	0.53	-44.2 - 80
Podospharea	83.50	-413 - 15059	Podospharea	-0.27	-381 - 408
Pseudopara	-0.74	-139 - 176	Pseudopara	-0.85	-139 - 176
Puccina	2.30	-126 - 909.47	Puccina	0.73	-25.7 - 84
Pythium	50.40	-700 - 3049	Pythium	55.7	-154 - 1390
Rhizopus	36.50	-870 - 3509	Rhizopus	31.3	-26 - 991
Sclerotia	-0.23	-75.5 - 88.4	Sclerotia	-0.55	-36.6 - 41.9
Sepedonium	-0.05	-82.9 - 91.6	Sepedonium	-0.02	-10.8 - 20
Spongosora	3.16	-466 - 491	Spongosora	0.58	-359 - 392
Stemphylium	-0.16	-116 - 89.1	Stemphylium	-0.07	-73.5 - 45.1
Systanus	0.06	-46.6 - 43.1	Systanus	0.33	-22.2 - 42.5
Ustilago	2.43	-448 - 2190	Ustilago	-2	-264 - 417
Verticillium	-0.33	-163 - 195	Verticillium	-0.48	-159 - 195
yeasts	41.30	-366 - 1840	yeasts	31.8	-336 - 683

Negative residual means that the genus is fully explained by the model

TABLE XVI
SUMMARY OF AVERAGE GENERA RESIDUALS FOR ALL HOMES USING SAMPLES WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	2	3	4	5	6	7	8	9	10
Number of Observations	31	22	22	25	24	32	16	9	19
Penetration	46%	35%	49%	40%	33%	34%	54%	26%	50%
Outdoor Measured Total Fungi Concentration	1741	5267	3222	2602	2515	2619	2544	563	3255
Indoor Measured Total Fungi Concentration	1212	1285	1568	1799	1047	1385	1961	239	2051
Total Fungi Residual	256	459	218	431	559	465	401	130	524
Genus									
Alternaria	14.4 (6%)		13.9 (6%)		33.2 (6%)				
Aspergillus	45.5 (18%)		68.1 (31%)						
Botrytis	19.4 (8%)						14.4 (4%)	18.3 (14%)	
Cephalospora					7.8 (1%)				7.95 (2%)
Cladosporium	58.3 (23%)	95.6 (21%)	74.3 (34%)		143 (26%)			50.3 (39%)	67.3 (13%)
Curvularia									
Epicoccum									
Fusarium			9.21 (4%)						
Gliocladium		19.8 (4%)					2.71 (1%)	12.8 (10%)	
Helminthosporium									
Mucor		47.6 (10%)		64.7 (15%)					102 (19%)
Mycosporium									
Neurospora									
Unclassified									
Oidium									
Paecilomyces									
Penicillium		92.9 (20%)		136 (32%)	294 (53%)	236 (51%)	56 (14%)	26.5 (20%)	
Podosphaera									17.9 (3%)
Puccinia									
Pythium									86.8 (17%)
Rhizopus									77.7 (15%)
Spongosora									
Ustilago	5.52 (2%)						59.4 (15%)		
Verticillium									
yeasts	38.5 (15%)		31.8 (15%)		68.5 (12%)	35.4 (8%)	28.5 (7%)		34 (6%)

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

Percentages represent fraction of individual genera to total fungi residual

^(a) Home 18 has a total fungi residual less than zero suggesting there are no indoor sources.

Therefore, residual values from home 18 were not used to calculate overall averages.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XVI
SUMMARY OF AVERAGE GENERA RESIDUALS FOR ALL HOMES USING SAMPLES WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	11	12	13	14	15	16	17	18 ^(a)	19
Number of Observations	19	24	17	23	16	3	20	18	21
Penetration	45%	17%	38%	38%	39%	57%	35%	34%	18%
Outdoor Measured Total Fungi Concentration	2546	4759	2942	2590	2011	750	3660	6512	4523
Indoor Measured Total Fungi Concentration	1651	1062	1955	1260	1430	517	1711	1560	653
Total Fungi Residual	516	371	859	304	1012	87	615	-39	219
Genus									
Alternaria		17.7 (5%)			106 (10%)		79.5 (13%)		
Aspergillus	299 (58%)			53.7 (18%)	632 (62%)			60.7*	23 (10%)
Botrytis		14.1 (4%)		21 (7%)			37 (6%)		
Cephalospora	14.1 (3%)							10.4*	
Cladosporium		76.4 (21%)	142 (17%)		32.2 (3%)		97 (16%)	53.5*	
Curvularia									10.8 (5%)
Epicoccum									
Fusarium	13.9 (3%)	6.15 (2%)							
Gliocladium		11.2 (3%)							
Helminthosporium	38.5 (7%)						16.3 (3%)		
Mucor			22.8 (3%)						4.84 (2%)
Mycosporium									
Neurospora									
Unclassified									
Oidium									
Paecilomyces									
Penicillium	141 (27%)	114 (31%)	245 (29%)	99.3 (33%)	118 (12%)				69.4 (32%)
Podosphaera									
Puccinia									
Pythium			360 (42%)				166 (27%)		
Rhizopus		81 (22%)							
Spongosora									
Ustilago		8.32 (2%)		44.6 (15%)					
Verticillium									6.94 (3%)
yeasts		29.7 (8%)	70.9 (8%)		44.7 (4%)		15 (2%)		56.4 (26%)

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

Percentages represent fraction of individual genera to total fungi residual

^(a) Home 18 has a total fungi residual less than zero suggesting there are no indoor sources.

Therefore, residual values from home 18 were not used to calculate overall averages.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XVI
SUMMARY OF AVERAGE GENERA RESIDUALS FOR ALL HOMES USING SAMPLES WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	20	21	22	23	24	25	26	27	28
Number of Observations	15	14	17	17	19	15	14	18	18
Penetration	36%	57%	27%	44%	40%	30%	47%	54%	27%
Outdoor Measured Total Fungi Concentration	4758	1745	12102	2318	3215	3246	3414	3055	6687
Indoor Measured Total Fungi Concentration	1965	7111	1629	1165	1710	1791	2141	2093	1642
Total Fungi Residual	271	6247	618	259	438	744	1010	554	589
Genus									
Alternaria	56.1 (21%)		47.1 (8%)						39.5 (7%)
Aspergillus			281 (45%)			162 (22%)			290 (49%)
Botrytis		78.2 (1%)			41.2 (9%)				
Cephalospora				13 (5%)				11.1 (2%)	
Cladosporium	56.1 (21%)	1300 (21%)	109 (18%)					73.9 (13%)	
Curvularia								14.1 (3%)	
Epicoccum									
Fusarium									
Gliocladium	12.8 (5%)	248 (4%)							
Helminthosporium						91 (12%)			
Mucor		208 (3%)					98.8 (10%)		
Mycosporium				16.2 (6%)					
Neurospora		15.3 (0%)							
Unclassified									
Oidium									
Paecilomyces				5.61 (2%)		17.5 (2%)			
Penicillium		320 (5%)	22.9 (4%)	142 (55%)	123 (28%)	185 (25%)	585 (58%)	199 (36%)	37.5 (6%)
Podospharea		3740 (60%)			15.4 (4%)	31.9 (4%)			
Puccinia									
Pythium									
Rhizopus									
Spongosora									
Ustilago						67.5 (9%)			
Verticillium									
yeasts	58.7 (22%)	337 (5%)	54.1 (9%)	44.2 (17%)	27.6 (6%)	48.1 (6%)	240 (24%)	18.9 (3%)	

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

Percentages represent fraction of individual genera to total fungi residual

^(a) Home 18 has a total fungi residual less than zero suggesting there are no indoor sources.

Therefore, residual values from home 18 were not used to calculate overall averages.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XVI
SUMMARY OF AVERAGE GENERA RESIDUALS FOR ALL HOMES USING SAMPLES WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	29	30	31	32	33	34	36	37	38
Number of Observations	11	20	15	18	7	18	9	3	21
Penetration	52%	30%	50%	33%	57%	52%	30%	13%	24%
Outdoor Measured Total Fungi Concentration	3145	5185	3435	3072	3549	2993	15120	1920	6543
Indoor Measured Total Fungi Concentration	3109	959	2196	1404	4166	1860	1960	1000	1057
Total Fungi Residual	1429	264	462	536	1952	573	898	757	155
Genus									
Alternaria						81.1 (14%)		129 (17%)	
Aspergillus						70.7 (12%)	260 (29%)	484 (64%)	
Botrytis			6.18 (1%)						
Cephalospora			14.7 (3%)						
Cladosporium	223 (16%)	24.4 (9%)		163 (30%)	382 (20%)	160 (28%)	270 (30%)	36.3 (5%)	120 (77%)
Curvularia			16.1 (3%)						
Epicoccum									
Fusarium									
Gliocladium									5.86 (4%)
Helminthosporium									14.2 (9%)
Mucor	162 (11%)		104 (23%)	30 (6%)	72.3 (4%)				
Mycosporium							14.2 (2%)		
Neurospora				8.3 (2%)					
Unclassified					37.6 (2%)				
Oidium									12.9 (8%)
Paecilomyces									
Penicillium	599 (42%)	43.4 (16%)	190 (41%)	82.3 (15%)	367 (19%)	107 (19%)	30 (3%)		
Podosphaera				39.9 (7%)	405 (21%)				
Puccinia					13 (1%)				
Pythium						154 (27%)			
Rhizopus					277 (14%)				
Spongosora									
Ustilago									
Verticillium		2.55 (1%)							
yeasts		55.5 (21%)		38.6 (7%)	256 (13%)		60.5 (7%)		

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

Percentages represent fraction of individual genera to total fungi residual

^(a) Home 18 has a total fungi residual less than zero suggesting there are no indoor sources.

Therefore, residual values from home 18 were not used to calculate overall averages.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XVI
SUMMARY OF AVERAGE GENERA RESIDUALS FOR ALL HOMES USING SAMPLES WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	39	40	41	42	43	44	45	46	Average
Number of Observations	15	15	22	15	16	18	30	26	753
Penetration	32%	18%	38%	50%	29%	28%	22%	43%	37%
Outdoor Measured Total Fungi Concentration	7611	13544	4356	3139	8695	5827	4216	3295	4337
Indoor Measured Total Fungi Concentration	3568	1600	1989	2371	2213	1969	1235	1745	1818
Total Fungi Residual	1236	448	649	840	636	681	384	391	708
Genus									
Alternaria									14.3 (2%)
Aspergillus					271 (43%)				68.3 (10%)
Botrytis			5.29 (1%)						5.93 (1%)
Cephalospora									1.6 (0.2%)
Cladosporium	191 (15%)	78.3 (17%)	152 (23%)			94.9 (14%)	95.7 (25%)		101 (14%)
Curvularia			34.8 (5%)						1.76 (0.3%)
Epiccocum					99.9 (16%)				2.32 (0.3%)
Fusarium			7.84 (1%)						0.86 (0.1%)
Gliocladium	59.3 (5%)	14.2 (3%)			7.43 (1%)				9.17 (1%)
Helminthosporium								33.5 (9%)	4.79 (1%)
Mucor		64.3 (14%)			41.6 (7%)	116 (17%)			26.5 (4%)
Mycosporium			8.29 (1%)						0.9 (0.1%)
Neurospora									0.55 (0.1%)
Unclassified	7.23 (1%)								1.04 (0.2%)
Oidium									0.3 (0.04%)
Paecilomyces									0.54 (0.1%)
Penicillium	657 (53%)	175 (39%)	362 (56%)	212 (25%)	202 (32%)	470 (69%)	98.5 (26%)		159 (22%)
Podosphaera				26.1 (3%)					99.4 (14%)
Puccinia									0.3 (0.04%)
Pythium	144 (12%)						79.7 (21%)		23 (3%)
Rhizopus				369 (44%)					18.7 (3%)
Spongosora							8.48 (2%)		0.2 (0.03%)
Ustilago									4.31 (1%)
Verticillium									0.22 (0.03%)
yeasts	163 (13%)		44.8 (7%)				98.6 (26%)	62.2 (16%)	47.9 (7%)

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

Percentages represent fraction of individual genera to total fungi residual

(a) Home 18 has a total fungi residual less than zero suggesting there are no indoor sources.

Therefore, residual values from home 18 were not used to calculate overall averages.

* Table reflects 852 comparisons with no penetration values <0 and 10% >1

* Table based on 753 penetration values between zero and one

* All values except Penetration and Number of Observations are in units of (CFU/m³)

or not a particular genus' average residual was under-predicted for all sampled rooms. Percentages of each residual were calculated by dividing the individual genus residual by the average total fungi residual for each home. In most homes overall, Cladosporium, Penicillium and yeasts were the predominant genera with Aspergillus, Alternaria, Botrytis, Gleocladium and Mucor occurring less frequently. In terms of overall percentages, Penicillium, Cladosporium, Podospharea, Aspergillus, and yeasts are the five highest genera. The average values for all homes are given in the last column of Table XVI.

Twenty homes in the study were divided into two separate categories of "dry" and "wet". Ten homes were classified as "dry" if they did not sustain major flood damage or did not flood at all. The remaining houses were considered "wet" if they suffered significant flood damage or routinely flooded during heavy rains. Tables XVII and XVIII show the average residuals for the fungi genera for "dry" and "wet" homes respectively. It should be noted that the genera listed are not exactly the same in the two tables. "Dry" homes had a greater percentage of Penicillium, Cladosporium and Pythium, while "wet" homes had a larger overall percentage of Aspergillus, Penicillium and Cladosporium. This suggests that Aspergillus may strongly contribute to the overall indoor total fungi concentration in homes which have sustained heavy flood damage or are regularly flood during a heavy rain.

TABLE XVII
SUMMARY OF GENERA RESIDUALS FOR HOMES CHARACTERIZED AS "DRY"

House	5	6	8	10	13	14	17	27	43	44	Average
Number of Observations	25	24	16	19	17	23	20	18	16	18	196
Penetration	40%	33%	54%	50%	38%	38%	35%	54%	29%	28%	40%
Outdoor Measured Total Fungi Concentration	2602	2515	2544	3255	2942	2590	3660	3055	8695	5827	3769
Indoor Measured Total Fungi Concentration	1799	1047	1961	2051	1955	1260	1711	2093	2213	1969	1806
Total Fungi Residual	431	559	401	524	859	304	615	554	636	681	556
Genus											
Alternaria		33.2 (6%)					79.5 (13%)				11.3 (2%)
Aspergillus						53.7 (18%)			271 (43%)		32.5 (6%)
Botrytis			14.4 (4%)			21 (7%)	37 (6%)				9.07 (2%)
Cephalospora		7.8 (1%)		7.95 (2%)				11.1 (2%)			2.68 (0.5%)
Cladosporium		143 (26%)		67.3 (13%)	142 (17%)		97 (16%)	73.9 (13%)		94.9 (14%)	66.8 (12%)
Curvularia								14.1 (3%)			1.41 (0.3%)
Epicoccum									99.9 (16%)		9.99 (2%)
Gliocladium			2.71 (1%)						7.43 (1%)		2.29 (0.4%)
Helminthosporium		12.5 (2%)					16.3 (3%)				2.88 (1%)
Mucor	64.7 (15%)			102 (19%)	22.8 (3%)				41.6 (7%)	116 (17%)	34.7 (6%)
Penicillium	136 (32%)	294 (53%)	56 (14%)		245 (29%)	99.3 (33%)		199 (36%)	202 (32%)	470 (69%)	173 (31%)
Podosphaera				17.9 (3%)							1.79 (0.3%)
Pythium				86.8 (17%)	360 (42%)		166 (27%)				61.3 (11%)
Rhizopus				77.7 (15%)							7.77 (1%)
Ustilago			59.4 (15%)			44.6 (15%)					10.4 (2%)
yeasts		68.5 (12%)	28.5 (7%)	34 (6%)	70.9 (8%)		15 (2%)	18.9 (3%)			23.6 (4%)

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

Percentages represent fraction of individual genera to total fungi residual

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 196 penetration values between zero and one

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XVIII
SUMMARY OF GENERA RESIDUALS FOR HOMES CHARACTERIZED AS "WET"

House	2	3	4	7	9	12	15	22	25	28	Average
Number of Observations	31	22	22	32	9	24	16	17	15	18	206
Penetration	46%	35%	49%	34%	26%	17%	39%	27%	30%	27%	33%
Outdoor Measured Total Fungi Concentration	1741	5267	3222	2619	563	4759	2011	12102	3246	6687	4222
Indoor Measured Total Fungi Concentration	1212	1285	1568	1385	239	1062	1430	1629	1791	1642	1324
Total Fungi Residual	256	459	218	465	130	371	933	618	744	589	478
Genus											
Alternaria	14.4 (6%)		13.9 (6%)			17.7 (5%)	106 (11%)	47.1 (8%)		39.5 (7%)	23.9 (5%)
Aspergillus	45.5 (18%)		68.1 (31%)				632 (68%)	281 (45%)	162 (22%)	290 (49%)	148 (31%)
Botrytis	19.4 (8%)				18.3 (14%)	14.1 (4%)					5.18 (1%)
Cladosporium	58.3 (23%)	95.6 (21%)	74.3 (34%)		50.3 (39%)	76.4 (21%)	32.2 (3%)	109 (18%)			49.6 (10%)
Fusarium			9.21 (4%)			6.15 (2%)					1.54 (0.3%)
Gliocladium		19.8 (4%)			12.8 (10%)	11.2 (3%)					4.38 (1%)
Helminthosporium									91 (12%)		9.1 (2%)
Mucor		47.6 (10%)									4.76 (1%)
Paecilomyces									17.5 (2%)		1.75 (0.4%)
Penicillium		92.9 (20%)		236 (51%)	26.5 (20%)	114 (31%)	118 (13%)	22.9 (4%)	185 (25%)	37.5 (6%)	83.3 (17%)
Podospharea									31.9 (4%)		3.19 (1%)
Rhizopus						81 (22%)					8.1 (2%)
Ustilago	5.52 (2%)					8.32 (2%)			67.5 (9%)		8.13 (2%)
yeasts	38.5 (15%)		31.8 (15%)	35.4 (8%)		29.7 (8%)	44.7 (5%)	54.1 (9%)	48.1 (6%)		28.2 (6%)

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

Percentages represent fraction of individual genera to total fungi residual

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 196 penetration values between zero and one

* All values except Penetration and Number of Observations are in units of (CFU/m³)

VII. CONCLUSIONS

The room difference analysis showed that for approximately 50% of the homes at $p < 0.1$ and 60% at $P < 0.05$ there was no one room which was different from any other room. From this, one can conclude that a representative sample can be collected from any typical living area within a house. The genus number balance receptor model is a better estimator of the outdoor total fungi penetration than the total fungi number balance method due to the limitations placed on the latter. The parameter modeling of the penetration values from the receptor model show that air conditioning and the change in outdoor temperature slightly reduce the outdoor penetration but still leaves much of the variability unexplained thereby suggesting the presence of a potential indoor source. The receptor model has an extra advantage in that one can determine those genera which may compose a possible indoor source by examining the residuals. When examining the overall home average genera residuals, Table XVI shows that the majority of the indoor sources were composed of Cladosporium, Penicillium, and yeasts, while Penicillium, Cladosporium, and Podosphaera had the highest overall percentages.

APPENDIX

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus										
			Total Fungi	Alternaria	Aspergillus	Acrostalgnus	Botrytis	Cephalospora	Cladosporium	Curvularia	Epiccocum	Fusarium	Gliocladium
2	Living Room	Average	1130	39	425	0	8	4	188	0	0	8	3
		Range	70-4440	0-160	0-1831	0-0	0-46	0-43	0-824	0-0	0-0	0-92	0-42
	Kitchen	Average	1659	21	748	0	24	24	224	6	0	3	1
		Range	140-3840	0-89	0-2485	0-0	0-178	0-267	0-1068	0-45	0-0	0-44	0-10
	1st Fl. Bed	Average	1547	29	531	5	33	10	283	0	0	0	3
		Range	220-3880	0-160	63-1794	0-45	0-90	0-90	0-902	0-0	0-0	0-0	0-21
	Outside	Average	2513	78	1202	4	19	31	256	12	4	35	4
		Range	180-5640	0-511	0-3412	0-44	0-140	0-95	30-592	0-94	0-44	0-184	0-42
3	Basement	Average	1368	35	314	0	16	0	119	0	0	0	33
		Range	220-4600	0-221	0-1843	0-0	0-153	0-0	0-658	0-0	0-0	0-0	0-176
	Kitchen	Average	1646	39	396	0	11	6	253	0	0	0	6
		Range	170-5860	0-336	0-2978	0-0	0-84	0-45	10-961	0-0	0-0	0-0	0-43
	2nd Fl. Bed	Average	1437	42	157	0	4	23	253	0	0	19	5
		Range	60-5920	0-169	0-477	0-0	0-40	0-85	0-853	0-0	0-0	0-85	0-42
	Outside	Average	4549	127	932	0	48	0	1919	5	0	0	1
		Range	120-23360	0-960	0-5043	0-0	0-168	0-0	0-14914	0-46	0-0	0-0	0-10
4	Living Room	Average	1820	63	858	0	32	16	281	0	5	12	9
		Range	130-3840	0-218	0-2975	0-0	0-90	0-90	0-904	0-0	0-44	0-84	0-45
	Kitchen	Average	1460	75	587	0	11	0	157	0	5	5	4
		Range	30-3000	0-300	0-1617	0-0	0-60	0-0	0-728	0-0	0-41	0-43	0-30
	1st Fl. Bed	Average	1531	49	808	0	3	15	208	0	0	11	1
		Range	120-3500	0-263	0-2662	0-0	0-20	0-42	0-966	0-0	0-0	0-85	0-10
	Outside	Average	3085	135	1241	0	97	0	287	6	0	7	23
		Range	80-9360	0-529	40-3223	0-0	0-367	0-0	0-899	0-44	0-0	0-53	0-85
5	Basement	Average	2245	12	536	0	84	4	264	0	0	0	377
		Range	300-5600	0-95	0-2330	0-0	0-914	0-47	0-1049	0-0	0-0	0-0	0-1812
	Kitchen	Average	1428	4	713	4	67	8	145	4	0	0	14
		Range	220-3040	0-44	0-2115	0-44	0-792	0-99	0-516	0-43	0-0	0-0	0-47
	1st Fl. Bed	Average	2011	31	1037	0	110	5	245	5	0	4	15
		Range	170-3360	0-146	0-1962	0-0	0-989	0-44	0-621	0-44	0-0	0-40	0-51
	Outside	Average	2812	78	1383	0	88	10	394	26	0	7	19
		Range	50-5640	0-495	10-2962	0-0	0-640	0-46	0-1088	0-92	0-0	0-49	0-93
6	Basement	Average	712	70	142	0	2	9	130	0	0	0	39
		Range	230-1520	0-338	0-507	0-0	0-21	0-42	0-464	0-0	0-0	0-0	0-296
	Kitchen	Average	1568	52	185	0	11	5	334	0	5	0	1
		Range	80-3960	0-109	0-814	0-0	0-43	0-45	0-1016	0-0	0-41	0-0	0-10
	1st Fl. Bed	Average	2103	97	185	0	16	14	225	5	0	5	22
		Range	10-10680	0-253	0-842	0-0	0-100	0-84	0-633	0-42	0-0	0-42	0-164
	Outside	Average	2340	150	1260	0	53	17	318	22	0	15	14
		Range	120-7200	0-377	20-5015	0-0	0-227	0-149	0-953	0-149	0-0	0-91	0-45

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											
			Helminthosporium	Mucor	Mycosporium	Neurospora	Not Classified	Oidium	Paecilomyces	Papularia	Penicillium	Pilobolus	Phoma	Podosphearea
2	Living Room	Average	72	6	8	14	0	0	0	0	271	0	1	14
		Range	0-440	0-41	0-92	0-92	0-0	0-0	0-0	0-0	10-1373	0-0	0-10	0-130
	Kitchen	Average	112	34	0	7	1	0	3	3	316	0	3	0
		Range	0-361	0-207	0-0	0-44	0-10	0-0	0-43	0-44	10-1050	0-0	0-42	0-0
	1st Fl. Bed	Average	93	36	5	0	1	0	55	0	217	0	0	10
		Range	0-531	0-180	0-43	0-0	0-10	0-0	0-496	0-0	21-677	0-0	0-0	0-44
	Outside	Average	209	6	4	4	11	11	0	4	518	0	0	4
		Range	0-691	0-74	0-46	0-42	0-47	0-126	0-0	0-46	0-1198	0-0	0-0	0-47
3	Basement	Average	8	56	0	4	2	0	1	0	455	8	5	0
		Range	0-88	0-501	0-0	0-21	0-11	0-0	0-11	0-0	0-4048	0-46	0-63	0-0
	Kitchen	Average	14	39	0	4	0	0	0	0	689	0	0	42
		Range	0-173	0-208	0-0	0-21	0-0	0-0	0-0	0-0	0-3264	0-0	0-0	0-505
	2nd Fl. Bed	Average	9	62	0	9	0	0	0	0	756	0	5	76
		Range	0-84	0-509	0-0	0-42	0-0	0-0	0-0	0-0	0-5061	0-0	0-43	0-683
	Outside	Average	85	2	0	19	0	0	0	5	465	0	6	5
		Range	0-640	0-20	0-0	0-76	0-0	0-0	0-0	0-46	20-1598	0-0	0-50	0-46
4	Living Room	Average	96	1	6	12	0	0	9	0	264	5	11	17
		Range	0-723	0-10	0-45	0-50	0-0	0-0	0-44	0-0	10-975	0-42	0-90	0-90
	Kitchen	Average	10	0	5	1	0	0	7	0	273	5	0	0
		Range	0-83	0-0	0-44	0-10	0-0	0-0	0-43	0-0	0-744	0-44	0-0	0-0
	1st Fl. Bed	Average	69	1	5	9	3	0	0	0	136	0	0	16
		Range	0-383	0-10	0-43	0-74	0-25	0-0	0-0	0-0	0-379	0-0	0-0	0-85
	Outside	Average	61	410	0	22	0	0	3	0	550	0	0	27
		Range	0-308	0-3226	0-0	0-155	0-0	0-0	0-21	0-0	0-3014	0-0	0-0	0-88
5	Basement	Average	41	17	0	5	6	0	0	11	500	0	0	138
		Range	0-332	0-52	0-0	0-43	0-43	0-0	0-0	0-128	62-1916	0-0	0-0	0-1122
	Kitchen	Average	21	97	0	1	0	4	0	0	207	0	4	32
		Range	0-86	0-316	0-0	0-10	0-0	0-44	0-0	0-0	21-687	0-0	0-43	0-173
	1st Fl. Bed	Average	63	34	0	4	0	0	5	5	295	0	0	15
		Range	0-303	0-155	0-0	0-38	0-0	0-0	0-44	0-43	20-692	0-0	0-0	0-88
	Outside	Average	143	0	0	5	6	0	0	0	396	5	0	25
		Range	0-355	0-0	0-0	0-49	0-44	0-0	0-0	0-0	0-1484	0-44	0-0	0-177
6	Basement	Average	9	0	4	3	0	0	1	0	231	0	4	4
		Range	0-42	0-0	0-40	0-31	0-0	0-0	0-10	0-0	10-920	0-0	0-40	0-40
	Kitchen	Average	14	5	5	0	0	0	0	0	783	0	0	0
		Range	0-43	0-43	0-44	0-0	0-0	0-0	0-0	0-0	0-3187	0-0	0-0	0-0
	1st Fl. Bed	Average	23	8	5	7	0	0	0	0	1415	0	0	9
		Range	0-127	0-73	0-42	0-67	0-0	0-0	0-0	0-0	0-9639	0-0	0-0	0-43
	Outside	Average	26	0	5	6	10	0	0	10	305	0	0	0
		Range	0-183	0-0	0-42	0-30	0-50	0-0	0-0	0-91	0-1051	0-0	0-0	0-0

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											yeasts ¹
			Pseudopara	Puccinia	Pythium	Rhizopus	Sclerotia	Sepedonium	Spongosora	Stemphylium	Systanus	Ustilago	Verticillium	
2	Living Room	Average	3	0	0	0	0	0	0	4	0	10	9	39
		Range	0-40	0-0	0-0	0-0	0-0	0-0	0-0	0-44	0-0	0-80	0-88	0-173
	Kitchen	Average	3	14	3	0	9	0	31	0	0	11	6	44
		Range	0-45	0-86	0-45	0-0	0-88	0-0	0-471	0-0	0-0	0-89	0-42	0-171
	1st Fl. Bed	Average	0	4	129	0	0	0	10	0	0	4	7	81
		Range	0-0	0-40	0-707	0-0	0-0	0-0	0-88	0-0	0-0	0-40	0-42	0-298
	Outside	Average	0	11	7	39	4	1	7	0	0	7	3	20
		Range	0-0	0-84	0-87	0-468	0-47	0-12	0-47	0-0	0-0	0-46	0-32	0-92
3	Basement	Average	0	0	0	276	0	7	11	0	0	0	6	13
		Range	0-0	0-0	0-0	0-2017	0-0	0-88	0-132	0-0	0-0	0-0	0-32	0-88
	Kitchen	Average	0	0	4	57	0	0	8	0	0	28	4	19
		Range	0-0	0-0	0-48	0-563	0-0	0-0	0-96	0-0	0-0	0-288	0-43	0-87
	2nd Fl. Bed	Average	0	0	0	0	0	0	0	0	0	0	0	16
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-80
	Outside	Average	0	0	0	9	0	0	11	11	0	10	6	885
		Range	0-0	0-0	0-0	0-84	0-0	0-0	0-100	0-50	0-0	0-46	0-42	0-7609
4	Living Room	Average	0	0	0	0	0	0	0	0	0	42	0	74
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-250	0-0	0-181
	Kitchen	Average	0	0	5	93	0	0	21	0	0	74	0	111
		Range	0-0	0-0	0-42	0-744	0-0	0-0	0-171	0-0	0-0	0-419	0-0	0-552
	1st Fl. Bed	Average	0	5	5	0	5	0	14	0	0	71	0	80
		Range	0-0	0-43	0-42	0-0	0-44	0-0	0-85	0-0	0-0	0-295	0-0	0-263
	Outside	Average	22	7	0	20	5	0	0	0	0	64	3	97
		Range	0-176	0-53	0-0	0-159	0-43	0-0	0-0	0-0	0-0	0-335	0-11	0-275
5	Basement	Average	0	0	200	7	0	7	0	0	0	4	4	30
		Range	0-0	0-0	0-1002	0-85	0-0	0-83	0-0	0-0	0-0	0-48	0-47	0-128
	Kitchen	Average	0	0	0	32	0	0	0	0	0	0	3	67
		Range	0-0	0-0	0-0	0-386	0-0	0-0	0-0	0-0	0-0	0-0	0-21	0-176
	1st Fl. Bed	Average	0	0	29	0	0	0	0	0	0	0	1	109
		Range	0-0	0-0	0-258	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-10	0-486
	Outside	Average	0	0	0	0	0	0	0	0	5	33	13	168
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-44	0-177	0-99	0-445
6	Basement	Average	0	0	0	9	0	0	0	0	5	6	0	30
		Range	0-0	0-0	0-0	0-85	0-0	0-0	0-0	0-0	0-41	0-42	0-0	0-84
	Kitchen	Average	0	0	0	0	0	0	0	0	0	2	0	150
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-22	0-0	0-1114
	1st Fl. Bed	Average	0	0	0	12	0	0	0	0	5	0	5	45
		Range	0-0	0-0	0-0	0-112	0-0	0-0	0-0	0-0	0-42	0-0	0-42	0-215
	Outside	Average	0	0	0	35	0	5	0	5	5	11	5	58
		Range	0-0	0-0	0-0	0-318	0-0	0-44	0-0	0-42	0-46	0-91	0-46	0-182

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus										
			Total Fungi	Alternaria	Aspergillus	Acrostalgnus	Botrytis	Cephalospora	Cladosporium	Curvularia	Epiccocum	Fusarium	Gliocladium ^a
7	Basement	Average	1939	13	599	0	10	6	350	9	3	1	245
		Range	400-3870	0-87	41-2335	0-0	0-88	0-44	80-1467	0-88	0-44	0-16	0-952
	Kitchen	Average	970	16	360	0	9	0	91	4	4	0	25
		Range	100-1760	0-84	0-1015	0-0	0-94	0-0	0-251	0-42	0-40	0-0	0-168
	1st Fl. Bed	Average	1295	36	501	0	9	5	235	11	0	0	0
		Range	30-3160	0-176	0-2077	0-0	0-73	0-44	0-1053	0-88	0-0	0-0	0-0
Outside	Average	2408	85	1334	0	30	5	367	6	0	12	11	
	Range	60-5000	0-421	0-3702	0-0	0-147	0-40	0-973	0-46	0-0	0-53	0-88	
8	Living Room	Average	2185	23	1341	8	79	15	171	0	0	0	7
		Range	30-5720	0-135	30-4767	0-45	0-388	0-45	0-857	0-0	0-0	0-0	0-43
	Kitchen	Average	2097	148	962	0	90	0	243	30	0	3	3
		Range	230-5000	0-502	0-3972	0-0	0-408	0-0	31-957	0-182	0-0	0-21	0-21
	1st Fl. Bed	Average	1780	33	941	0	105	0	195	7	0	4	4
		Range	360-4760	0-92	42-3790	0-0	0-584	0-0	0-903	0-43	0-0	0-21	0-21
Outside	Average	2417	53	1517	0	80	14	291	7	0	0	7	
	Range	150-6840	0-175	0-5610	0-0	0-393	0-85	0-891	0-42	0-0	0-0	0-44	
9	Basement	Average	370	3	18	0	79	7	151	0	0	0	14
		Range	300-470	0-10	0-32	0-0	0-237	0-21	31-235	0-0	0-0	0-0	0-32
	Kitchen	Average	173	25	24	0	11	0	55	0	0	0	21
		Range	50-260	0-74	0-62	0-0	0-32	0-0	30-74	0-0	0-0	0-0	0-32
	1st Fl. Bed	Average	173	38	28	0	14	0	52	0	0	0	3
		Range	80-220	0-115	0-73	0-0	0-42	0-0	42-63	0-0	0-0	0-0	0-10
Outside	Average	563	7	82	0	31	0	192	0	0	0	0	
	Range	300-750	0-22	11-134	0-0	0-93	0-0	0-466	0-0	0-0	0-0	0-0	
10	Basement	Average	3191	82	1108	7	101	25	335	7	0	67	27
		Range	300-8920	0-303	31-2556	0-52	0-626	0-93	0-782	0-52	0-0	0-469	0-104
	Kitchen	Average	2219	12	836	0	13	13	280	0	0	6	31
		Range	250-7200	0-84	10-3575	0-0	0-48	0-48	0-1043	0-0	0-0	0-41	0-48
	1st Fl. Bed	Average	2460	32	1001	0	0	13	328	0	0	0	6
		Range	520-6000	0-92	0-2160	0-0	0-0	0-48	0-1248	0-0	0-0	0-0	0-42
Outside	Average	3490	107	1495	0	26	33	365	13	7	12	15	
	Range	570-5720	0-233	11-2921	0-0	0-93	0-135	0-953	0-48	0-48	0-86	0-43	
11	Living Room	Average	1871	85	601	0	85	17	190	0	0	27	6
		Range	160-4480	0-219	10-1094	0-0	0-592	0-51	42-438	0-0	0-0	0-175	0-51
	Kitchen	Average	1693	33	613	0	8	16	233	0	0	11	0
		Range	330-2840	0-87	0-1833	0-0	0-43	0-44	23-744	0-0	0-0	0-87	0-0
	1st Fl. Bed	Average	1830	58	666	0	83	25	190	10	0	5	0
		Range	90-3080	0-176	0-1396	0-0	0-581	0-69	0-420	0-82	0-0	0-43	0-0
Outside	Average	2323	155	643	0	89	17	304	0	0	6	16	
	Range	680-5000	0-514	46-2193	0-0	0-526	0-93	0-922	0-0	0-0	0-48	0-93	

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location	Genus												
			Helminthosporium	Mucor	Mycosporium	Neurospora	Not Classified	Oidium	Paecilomyces	Papularia	Penicillium	Pilobolus	Phoma	Podospharea
7	Basement	Average	37	142	3	7	3	0	3	0	369	0	0	16
		Range	0-263	0-1873	0-40	0-46	0-23	0-0	0-43	0-0	47-1086	0-0	0-0	0-175
	Kitchen	Average	34	9	0	1	0	0	0	0	295	0	0	0
		Range	0-200	0-84	0-0	0-10	0-0	0-0	0-0	0-0	0-928	0-0	0-0	0-0
	1st Fl. Bed	Average	27	0	5	6	9	0	0	0	196	0	5	0
		Range	0-170	0-0	0-42	0-24	0-44	0-0	0-0	0-0	0-527	0-0	0-44	0-0
	Outside	Average	140	0	18	9	3	0	11	6	187	0	24	0
		Range	0-593	0-0	0-140	0-46	0-26	0-0	0-88	0-46	0-561	0-0	0-91	0-0
8	Living Room	Average	35	0	0	0	0	0	2	0	186	0	0	142
		Range	0-84	0-0	0-0	0-0	0-0	0-0	0-11	0-0	0-547	0-0	0-0	0-767
	Kitchen	Average	14	0	0	0	2	0	8	7	266	0	0	83
		Range	0-46	0-0	0-0	0-0	0-11	0-0	0-46	0-41	0-775	0-0	0-0	0-456
	1st Fl. Bed	Average	7	0	0	15	4	7	0	7	214	22	0	36
		Range	0-41	0-0	0-0	0-46	0-11	0-41	0-0	0-41	0-331	0-92	0-0	0-215
	Outside	Average	36	0	0	0	0	0	0	0	232	7	9	50
		Range	0-133	0-0	0-0	0-0	0-0	0-0	0-0	0-0	10-492	0-42	0-42	0-297
9	Basement	Average	0	0	0	25	11	0	0	0	35	0	0	0
		Range	0-0	0-0	0-0	0-64	0-32	0-0	0-0	0-0	10-53	0-0	0-0	0-0
	Kitchen	Average	0	0	0	0	0	0	0	0	31	0	0	0
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-83	0-0	0-0	0-0
	1st Fl. Bed	Average	0	0	0	0	0	0	0	0	14	0	0	0
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	10-21	0-0	0-0	0-0
	Outside	Average	0	180	0	3	14	0	0	0	4	0	0	0
		Range	0-0	0-529	0-0	0-10	0-43	0-0	0-0	0-0	0-11	0-0	0-0	0-0
10	Basement	Average	12	150	0	0	0	0	0	0	881	0	0	161
		Range	0-43	0-840	0-0	0-0	0-0	0-0	0-0	0-0	10-2660	0-0	0-0	0-1043
	Kitchen	Average	61	17	0	7	1	0	1	0	484	0	7	82
		Range	0-336	0-120	0-0	0-50	0-10	0-0	0-10	0-0	10-1688	0-0	0-50	0-497
	1st Fl. Bed	Average	67	140	13	0	0	0	0	0	632	0	6	55
		Range	0-378	0-672	0-92	0-0	0-0	0-0	0-0	0-0	0-1920	0-0	0-42	0-384
	Outside	Average	76	0	7	15	10	0	4	0	1109	0	19	26
		Range	0-270	0-0	0-47	0-106	0-45	0-0	0-27	0-0	0-3029	0-0	0-86	0-95
11	Living Room	Average	10	0	5	14	0	0	0	0	474	0	0	17
		Range	0-84	0-0	0-42	0-49	0-0	0-0	0-0	0-0	10-1884	0-0	0-0	0-88
	Kitchen	Average	16	0	5	9	3	0	5	0	480	0	0	11
		Range	0-83	0-0	0-42	0-46	0-22	0-0	0-43	0-0	0-1902	0-0	0-0	0-87
	1st Fl. Bed	Average	117	0	5	8	1	0	0	11	453	0	6	0
		Range	0-420	0-0	0-43	0-44	0-12	0-0	0-0	0-88	0-1408	0-0	0-44	0-0
	Outside	Average	10	8	35	25	12	0	17	5	396	12	6	74
		Range	0-42	0-45	0-280	0-140	0-48	0-0	0-91	0-42	0-1895	0-93	0-45	0-541

APPENDIX A (continued)

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											yeasts ^a
			Pseudopara	Puccinia	Pythium	Rhizopus	Sclerotia	Sepedonium	Spongosora	Stemphylium	Systanus	Ustilago	Verticillium	
7	Basement	Average	0	0	0	0	0	0	24	0	0	3	0	95
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-331	0-0	0-0	0-43	0-0	0-306
	Kitchen	Average	0	0	0	46	0	0	0	0	0	0	0	78
		Range	0-0	0-0	0-0	0-503	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-286
	1st Fl. Bed	Average	0	0	42	0	0	0	69	0	0	12	0	120
		Range	0-0	0-0	0-333	0-0	0-0	0-0	0-511	0-0	0-0	0-97	0-0	0-435
	Outside	Average	0	0	0	0	0	0	6	0	0	65	6	84
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-44	0-0	0-0	0-423	0-44	0-502
8	Living Room	Average	8	16	0	0	0	0	0	0	0	70	9	74
		Range	0-48	0-95	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-334	0-45	0-286
	Kitchen	Average	0	0	0	89	0	0	0	8	0	83	0	42
		Range	0-0	0-0	0-0	0-536	0-0	0-0	0-0	0-46	0-0	0-374	0-0	0-165
	1st Fl. Bed	Average	2	0	7	83	0	0	0	7	0	31	2	41
		Range	0-11	0-0	0-41	0-495	0-0	0-0	0-0	0-43	0-0	0-185	0-11	0-64
	Outside	Average	0	0	0	0	0	16	0	0	0	16	7	42
		Range	0-0	0-0	0-0	0-0	0-0	0-98	0-0	0-0	0-0	0-49	0-42	0-170
9	Basement	Average	0	0	0	0	0	0	0	0	0	0	3	17
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-10	0-31
	Kitchen	Average	0	0	0	0	0	0	0	0	0	0	0	7
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-21
	1st Fl. Bed	Average	0	0	0	0	0	0	0	0	0	0	0	24
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-63
	Outside	Average	0	0	0	0	0	0	0	0	0	0	3	46
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-10	0-87
10	Basement	Average	0	0	53	47	0	0	6	0	0	13	1	101
		Range	0-0	0-0	0-372	0-214	0-0	0-0	0-43	0-0	0-0	0-52	0-10	0-261
	Kitchen	Average	0	0	163	132	0	0	0	35	0	0	0	37
		Range	0-0	0-0	0-1144	0-840	0-0	0-0	0-0	0-248	0-0	0-0	0-0	0-124
	1st Fl. Bed	Average	7	7	39	32	0	0	0	7	6	0	0	70
		Range	0-46	0-46	0-276	0-179	0-0	0-0	0-0	0-48	0-42	0-0	0-0	0-224
	Outside	Average	15	0	13	0	0	0	0	0	0	42	14	66
		Range	0-106	0-0	0-93	0-0	0-0	0-0	0-0	0-0	0-0	0-239	0-54	0-239
11	Living Room	Average	1	0	159	84	0	0	0	5	0	3	2	82
		Range	0-10	0-0	0-1273	0-676	0-0	0-0	0-0	0-43	0-0	0-21	0-12	0-305
	Kitchen	Average	0	0	0	144	0	11	0	0	0	9	0	81
		Range	0-0	0-0	0-0	0-952	0-0	0-90	0-0	0-0	0-0	0-69	0-0	0-175
	1st Fl. Bed	Average	0	0	0	54	0	11	0	0	0	49	5	69
		Range	0-0	0-0	0-0	0-308	0-0	0-92	0-0	0-0	0-0	0-258	0-43	0-174
	Outside	Average	0	11	12	102	0	0	0	6	0	66	1	291
		Range	0-0	0-43	0-93	0-467	0-0	0-0	0-0	0-47	0-0	0-310	0-11	0-1963

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus										
			Total Fungi	Alternaria	Aspergillus	Acrostalgnus	Botrytis	Cephalospora	Cladosporium	Curvularia	Epicoccum	Fusarium	Gliocladium
12	Basement	Average	1153	30	357	0	14	12	182	0	4	12	18
		Range	60-1920	0-171	0-838	0-0	0-126	0-43	0-414	0-0	0-40	0-120	0-43
	Kitchen	Average	1083	48	425	0	24	0	151	0	0	11	8
		Range	310-2800	0-249	0-2144	0-0	0-165	0-0	0-511	0-0	0-0	0-80	0-44
	2nd Fl. Bed	Average	910	27	223	0	37	6	163	0	0	6	12
		Range	250-1960	0-120	10-852	0-0	0-128	0-40	0-617	0-0	0-0	0-40	0-44
	Outside	Average	5021	211	2593	0	69	48	546	10	0	49	9
		Range	770-12320	0-1394	0-8538	0-0	0-240	0-146	0-974	0-49	0-0	0-401	0-49
13	Basement	Average	3637	11	862	0	29	32	330	0	0	9	127
		Range	340-9000	0-52	0-2564	0-0	0-262	0-187	10-723	0-0	0-0	0-85	0-419
	Kitchen	Average	1958	37	800	0	10	4	202	7	0	22	0
		Range	80-5200	0-200	0-1884	0-0	0-47	0-22	0-609	0-44	0-0	0-88	0-0
	2nd Fl. Bed	Average	2298	73	636	0	29	0	88	0	0	0	7
		Range	210-5160	0-309	0-1070	0-0	0-88	0-0	0-258	0-0	0-0	0-0	0-42
	Outside	Average	3118	116	1929	0	134	30	195	5	0	10	5
		Range	300-5240	0-905	10-3790	0-0	0-374	0-93	0-462	0-46	0-0	0-92	0-47
14	Basement	Average	833	16	246	0	12	5	69	0	0	0	7
		Range	80-2120	0-43	0-1024	0-0	0-85	0-42	0-170	0-0	0-0	0-0	0-42
	Kitchen	Average	1396	0	548	0	47	5	89	0	0	11	5
		Range	100-3480	0-0	0-1502	0-0	0-343	0-43	0-168	0-0	0-0	0-86	0-43
	1st Fl. Bed	Average	1760	7	654	0	13	5	265	51	6	0	6
		Range	150-2920	0-43	0-2310	0-0	0-44	0-43	0-1482	0-410	0-46	0-0	0-50
	Outside	Average	2584	101	1043	0	8	17	245	12	0	12	11
		Range	280-5400	0-428	0-3695	0-0	0-62	0-47	0-700	0-95	0-0	0-95	0-56
15	Basement	Average	1003	122	597	0	12	0	130	12	0	12	17
		Range	190-2520	0-594	0-2216	0-0	0-87	0-0	0-434	0-85	0-0	0-87	0-87
	Kitchen	Average	1969	25	1037	0	32	13	322	0	0	13	11
		Range	110-4080	0-89	30-2947	0-0	0-221	0-45	0-1335	0-0	0-0	0-89	0-45
	1st Fl. Bed	Average	3209	119	1377	0	32	6	348	93	6	0	19
		Range	120-8360	0-669	50-3108	0-0	0-178	0-43	0-1231	0-564	0-43	0-0	0-85
	Outside	Average	2011	0	624	13	33	31	379	6	0	19	12
		Range	310-3720	0-0	83-2153	0-90	0-134	0-90	0-896	0-45	0-0	0-90	0-83
16	Basement	Average	490	64	0	0	43	0	170	0	0	0	0
		Range	490-490	64-64	0-0	0-0	43-43	0-0	170-170	0-0	0-0	0-0	0-0
	Living Room	Average	390	0	84	0	169	0	95	0	0	0	0
		Range	390-390	0-0	84-84	0-0	169-169	0-0	95-95	0-0	0-0	0-0	0-0
	Kitchen	Average	670	97	65	0	227	0	216	0	0	0	0
		Range	670-670	97-97	65-65	0-0	227-227	0-0	216-216	0-0	0-0	0-0	0-0
	Outside	Average	750	0	99	0	188	0	199	0	0	0	0
		Range	750-750	0-0	99-99	0-0	188-188	0-0	199-199	0-0	0-0	0-0	0-0

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											
			Helminthosporium	Mucor	Mycosporium	Neurospora	Not Classified	Oidium	Paecilomyces	Papularia	Penicillium	Pilobolus	Phoma	Podospharea
12	Basement	Average	38	4	0	0	1	0	17	0	259	0	0	13
		Range	0-210	0-43	0-0	0-0	0-11	0-0	0-84	0-0	11-714	0-0	0-0	0-84
	Kitchen	Average	19	0	11	16	0	0	0	0	108	0	0	12
		Range	0-131	0-0	0-80	0-83	0-0	0-0	0-0	0-0	0-208	0-0	0-0	0-44
	2nd Fl. Bed	Average	37	0	6	12	0	0	0	0	135	0	6	6
		Range	0-256	0-0	0-40	0-63	0-0	0-0	0-0	0-0	0-280	0-0	0-40	0-43
	Outside	Average	199	119	10	26	4	0	7	0	413	0	10	88
		Range	0-513	0-763	0-57	0-85	0-42	0-0	0-66	0-0	0-1472	0-0	0-49	0-304
13	Basement	Average	130	50	11	0	2	0	5	0	1553	64	0	31
		Range	0-1047	0-185	0-52	0-0	0-19	0-0	0-43	0-0	82-4585	0-580	0-0	0-85
	Kitchen	Average	97	14	14	0	0	0	0	0	365	0	0	23
		Range	0-307	0-87	0-87	0-0	0-0	0-0	0-0	0-0	11-1546	0-0	0-0	0-94
	2nd Fl. Bed	Average	87	19	0	65	0	0	9	0	565	0	0	0
		Range	0-300	0-116	0-0	0-215	0-0	0-0	0-43	0-0	11-1194	0-0	0-0	0-0
	Outside	Average	191	0	0	4	0	5	3	10	347	0	5	40
		Range	0-699	0-0	0-0	0-35	0-0	0-45	0-24	0-47	10-1005	0-0	0-42	0-317
14	Basement	Average	21	5	0	0	0	0	0	0	292	0	0	0
		Range	0-171	0-43	0-0	0-0	0-0	0-0	0-0	0-0	10-850	0-0	0-0	0-0
	Kitchen	Average	53	0	5	0	0	0	8	0	365	0	0	89
		Range	0-421	0-0	0-43	0-0	0-0	0-0	0-43	0-0	0-1118	0-0	0-0	0-714
	1st Fl. Bed	Average	49	11	0	12	0	0	2	11	448	0	0	6
		Range	0-174	0-86	0-0	0-84	0-0	0-0	0-12	0-87	0-1375	0-0	0-0	0-46
	Outside	Average	130	3	12	13	0	0	0	0	760	0	0	37
		Range	0-568	0-28	0-95	0-86	0-0	0-0	0-0	0-0	21-2893	0-0	0-0	0-300
15	Basement	Average	13	12	0	1	0	0	0	6	219	0	0	0
		Range	0-42	0-43	0-0	0-10	0-0	0-0	0-0	0-42	0-509	0-0	0-0	0-0
	Kitchen	Average	19	0	0	3	0	0	0	13	259	2	4	108
		Range	0-45	0-0	0-0	0-21	0-0	0-0	0-0	0-89	10-544	0-11	0-30	0-668
	1st Fl. Bed	Average	34	15	0	2	0	0	8	0	604	20	0	95
		Range	0-154	0-96	0-0	0-11	0-0	0-0	0-48	0-0	60-1846	0-143	0-0	0-622
	Outside	Average	48	12	0	6	6	6	0	0	316	0	6	43
		Range	0-293	0-83	0-0	0-44	0-44	0-45	0-0	0-0	41-1345	0-0	0-45	0-212
16	Basement	Average	0	170	0	0	0	0	0	0	0	0	0	0
		Range	0-0	170-170	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	Living Room	Average	0	0	0	0	0	0	0	0	32	0	0	0
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	32-32	0-0	0-0	0-0
	Kitchen	Average	0	0	0	0	0	0	0	0	0	0	0	0
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	Outside	Average	0	0	0	0	0	0	0	0	121	0	0	0
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	121-121	0-0	0-0	0-0

APPENDIX A (continued)

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											yeasts ^a
			Pseudopara	Puccinia	Pythium	Rhizopus	Sclerotia	Sepedonium	Spongosora	Stemphylium	Systanus	Ustilago	Verticillium	
12	Basement	Average	0	.8	0	128	0	0	0	0	0	9	4	42
		Range	0-0	0-84	0-0	0-769	0-0	0-0	0-0	0-0	0-0	0-84	0-42	0-126
	Kitchen	Average	0	0	48	48	0	0	13	0	0	18	4	119
		Range	0-0	0-0	0-333	0-333	0-0	0-0	0-88	0-0	0-0	0-125	0-31	0-706
	2nd Fl. Bed	Average	6	6	59	47	0	0	0	0	0	17	0	99
		Range	0-40	0-41	0-413	0-330	0-0	0-0	0-0	0-0	0-0	0-80	0-0	0-383
	Outside	Average	11	0	0	0	0	0	13	0	0	95	4	460
		Range	0-115	0-0	0-0	0-0	0-0	0-0	0-129	0-0	0-0	0-573	0-43	42-2635
13	Basement	Average	4	0	227	5	0	0	9	0	0	0	0	144
		Range	0-37	0-0	0-2047	0-41	0-0	0-0	0-85	0-0	0-0	0-0	0-0	0-493
	Kitchen	Average	0	0	172	0	0	0	0	0	0	0	2	189
		Range	0-0	0-0	0-1031	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-10	0-1041
	2nd Fl. Bed	Average	0	0	508	35	7	0	0	0	0	44	8	103
		Range	0-0	0-0	0-3049	0-211	0-43	0-0	0-0	0-0	0-0	0-265	0-47	0-300
	Outside	Average	0	0	0	0	0	0	0	0	5	1	6	76
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-42	0-12	0-40	0-140
14	Basement	Average	0	5	90	0	5	5	0	0	0	43	0	12
		Range	0-0	0-40	0-721	0-0	0-40	0-40	0-0	0-0	0-0	0-341	0-0	0-43
	Kitchen	Average	0	0	117	0	0	0	0	0	0	5	7	43
		Range	0-0	0-0	0-892	0-0	0-0	0-0	0-0	0-0	0-0	0-43	0-42	0-223
	1st Fl. Bed	Average	1	0	53	0	0	0	0	5	0	123	16	17
		Range	0-11	0-0	0-422	0-0	0-0	0-0	0-0	0-42	0-0	0-422	0-129	0-50
	Outside	Average	0	0	108	0	0	0	0	5	0	5	0	61
		Range	0-0	0-0	0-862	0-0	0-0	0-0	0-0	0-43	0-0	0-43	0-0	0-385
15	Basement	Average	0	0	0	0	0	0	0	25	0	0	0	93
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-87	0-0	0-0	0-0	0-391
	Kitchen	Average	0	0	31	12	0	0	0	0	0	0	6	62
		Range	0-0	0-0	0-126	0-84	0-0	0-0	0-0	0-0	0-0	0-0	0-42	0-317
	1st Fl. Bed	Average	0	0	301	0	0	0	0	7	0	0	0	122
		Range	0-0	0-0	0-1641	0-0	0-0	0-0	0-0	0-51	0-0	0-0	0-0	0-574
	Outside	Average	0	0	94	0	0	0	0	0	0	0	2	75
		Range	0-0	0-0	0-661	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-11	0-314
16	Basement	Average	43	0	0	0	0	0	0	0	0	0	0	0
		Range	43-43	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0
	Living Room	Average	0	0	0	0	0	0	0	0	0	0	0	11
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	11-11
	Kitchen	Average	0	0	0	0	0	0	0	0	0	0	0	22
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	22-22
	Outside	Average	0	0	0	0	0	11	0	0	0	0	0	132
		Range	0-0	0-0	0-0	0-0	0-0	11-11	0-0	0-0	0-0	0-0	0-0	132-132

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location	Genus										
		Total Fungi	Alternaria	Aspergillus	Acrostalgnus	Botrytis	Cephalospora	Cladosporium	Curvularia	Epiccocum	Fusarium	Gliocladium ¹
17	Basement	Average	1220	105	313	0	50	30	132	12	0	36
		Range	30-3120	0-213	0-810	0-0	0-264	0-83	0-374	0-44	0-0	0-176
	Kitchen	Average	1654	97	488	13	18	6	393	6	0	12
		Range	50-3560	0-209	0-1257	0-89	0-85	0-42	0-921	0-45	0-0	0-84
	1st Fl. Bed	Average	2260	115	528	0	56	12	283	6	0	12
		Range	40-7300	0-345	0-1578	0-0	0-296	0-42	20-712	0-42	0-0	0-42
18	Living Room	Average	1538	74	872	0	15	8	207	0	0	8
		Range	400-3580	11-166	0-2934	0-0	0-47	0-50	75-469	0-0	0-0	0-47
	Kitchen	Average	1242	26	676	0	7	15	186	13	0	2
		Range	360-2940	0-80	0-2677	0-0	0-43	0-48	0-536	0-80	0-0	0-11
	2nd Fl. Bed	Average	1900	64	1215	0	7	14	169	14	0	7
		Range	380-5780	0-290	0-5556	0-0	0-42	0-42	0-334	0-83	0-0	0-39
19	Basement	Average	541	42	176	4	0	13	148	13	0	0
		Range	150-1160	0-207	0-373	0-40	0-0	0-41	40-240	0-40	0-0	0-40
	Kitchen	Average	828	20	311	0	0	0	58	7	0	0
		Range	210-1800	0-120	0-628	0-0	0-0	0-0	0-209	0-42	0-0	0-0
	1st Fl. Bed	Average	645	22	144	0	13	0	92	13	0	0
		Range	190-1440	0-80	0-466	0-0	0-80	0-0	0-169	0-40	0-0	0-0
20	Living Room	Average	3951	139	2406	0	2	14	344	12	0	13
		Range	400-15680	0-479	11-13108	0-0	0-21	0-44	63-784	0-63	0-0	0-63
	2nd Fl. Bed	Average	2230	208	1163	0	0	8	105	0	0	0
		Range	880-4720	0-519	209-3008	0-0	0-0	0-42	12-210	0-0	0-0	0-0
	Outside	Average	1832	69	1013	0	0	30	138	17	0	4
		Range	680-5080	0-466	200-4055	0-0	0-0	0-128	0-478	0-83	0-0	0-42
21	Basement	Average	4758	155	3036	0	17	20	207	9	0	0
		Range	2080-11160	27-333	1189-8439	0-0	0-85	0-56	56-429	0-47	0-0	0-0
	Kitchen	Average	18710	33	325	0	133	17	2160	41	0	36
		Range	3380-48720	0-122	0-1737	0-0	0-452	0-69	110-5271	0-258	0-0	0-151
	1st Fl. Bed	Average	2062	0	815	0	8	19	577	0	0	16
		Range	150-4600	0-0	0-3575	0-0	0-40	0-53	0-2149	0-0	0-0	0-80
22	Living Room	Average	2458	19	902	0	15	32	514	0	0	5
		Range	250-4640	0-94	21-3585	0-0	0-43	0-158	21-1798	0-0	0-0	0-26
	Kitchen	Average	2002	153	948	9	17	0	283	0	0	0
		Range	870-3020	0-457	67-2528	0-44	0-45	0-0	47-677	0-0	0-0	0-0
	1st Fl. Bed	Average	18710	33	325	0	133	17	2160	41	0	36
		Range	3380-48720	0-122	0-1737	0-0	0-452	0-69	110-5271	0-258	0-0	0-151
23	Basement	Average	2062	0	815	0	8	19	577	0	0	16
		Range	150-4600	0-0	0-3575	0-0	0-40	0-53	0-2149	0-0	0-0	0-80
	Kitchen	Average	2458	19	902	0	15	32	514	0	0	5
		Range	250-4640	0-94	21-3585	0-0	0-43	0-158	21-1798	0-0	0-0	0-26
	1st Fl. Bed	Average	2002	153	948	9	17	0	283	0	0	0
		Range	870-3020	0-457	67-2528	0-44	0-45	0-0	47-677	0-0	0-0	0-0

APPENDIX A (continued)

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location	Genus												
			Helminthosporium	Mucor	Mycosporium	Neurospora	Not Classified	Oidium	Paecilomyces	Papularia	Penicillium	Pilobolus	Phoma	Podospharea
17	Basement	Average	6	6	0	6	0	0	6	0	328	6	6	0
		Range	0-42	0-43	0-0	0-43	0-0	0-0	0-42	0-0	0-1143	0-43	0-42	0-0
	Kitchen	Average	33	0	0	0	2	0	0	0	288	6	0	0
		Range	0-128	0-0	0-0	0-0	0-11	0-0	0-0	0-0	0-1113	0-42	0-0	0-0
	1st Fl. Bed	Average	36	28	6	14	30	0	2	12	407	6	0	102
		Range	0-126	0-197	0-42	0-99	0-197	0-0	0-11	0-83	10-1578	0-42	0-0	0-663
	Outside	Average	10	0	6	32	0	0	8	0	915	0	0	6
		Range	0-42	0-0	0-44	0-222	0-0	0-0	0-43	0-0	0-2998	0-0	0-0	0-42
18	Living Room	Average	0	7	7	8	0	0	0	0	195	7	0	0
		Range	0-0	0-40	0-40	0-50	0-0	0-0	0-0	0-0	0-838	0-40	0-0	0-0
	Kitchen	Average	13	0	0	8	0	0	0	7	220	0	0	0
		Range	0-80	0-0	0-0	0-48	0-0	0-0	0-0	0-40	0-944	0-0	0-0	0-0
	2nd Fl. Bed	Average	35	7	13	8	5	0	7	0	257	0	0	7
		Range	0-209	0-42	0-79	0-28	0-28	0-0	0-41	0-0	0-943	0-0	0-0	0-41
	Outside	Average	29	15	24	138	28	0	0	0	1438	0	0	15
		Range	0-132	0-88	0-93	0-818	0-117	0-0	0-0	0-0	0-3507	0-0	0-0	0-93
19	Basement	Average	4	9	0	14	0	0	0	0	80	0	9	0
		Range	0-40	0-80	0-0	0-83	0-0	0-0	0-0	0-0	0-290	0-0	0-80	0-0
	Kitchen	Average	7	14	0	0	2	0	0	0	205	0	0	21
		Range	0-42	0-84	0-0	0-0	0-11	0-0	0-0	0-0	11-459	0-0	0-0	0-126
	1st Fl. Bed	Average	7	7	0	0	7	0	2	0	208	0	0	0
		Range	0-40	0-40	0-0	0-0	0-42	0-0	0-10	0-0	0-635	0-0	0-0	0-0
	Outside	Average	136	151	7	1	0	0	5	0	575	0	7	55
		Range	0-319	0-1317	0-63	0-11	0-0	0-0	0-46	0-0	0-2651	0-0	0-63	0-411
20	Living Room	Average	34	0	0	9	0	0	17	0	562	0	0	9
		Range	0-168	0-0	0-0	0-46	0-0	0-0	0-84	0-0	23-1423	0-0	0-0	0-43
	2nd Fl. Bed	Average	4	0	8	12	5	0	0	8	233	0	0	17
		Range	0-43	0-0	0-83	0-71	0-47	0-0	0-0	0-42	0-539	0-0	0-0	0-87
	Outside	Average	167	44	19	61	14	0	0	0	733	0	0	38
		Range	0-661	0-222	0-94	0-222	0-56	0-0	0-0	0-0	27-1666	0-0	0-0	0-189
21	Basement	Average	15	356	0	16	17	0	0	0	2336	0	8	11586
		Range	0-122	0-2372	0-0	0-129	0-75	0-0	0-0	0-0	59-11024	0-0	0-67	0-41175
	Kitchen	Average	54	52	0	8	0	0	0	0	210	0	0	70
		Range	0-269	0-206	0-0	0-41	0-0	0-0	0-0	0-0	0-526	0-0	0-0	0-269
	1st Fl. Bed	Average	0	19	0	14	18	0	26	0	329	0	0	126
		Range	0-0	0-53	0-0	0-43	0-90	0-0	0-90	0-0	0-737	0-0	0-0	0-584
	Outside	Average	42	52	0	0	18	9	0	0	218	0	8	8
		Range	0-168	0-258	0-0	0-0	0-47	0-44	0-0	0-0	0-662	0-0	0-42	0-42

APPENDIX A (continued)

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											yeasts ²
			Pseudopara	Puccinia	Pythium	Rhizopus	Sclerotia	Sepedonium	Spongosora	Stemphylium	Systanus	Ustilago	Verticillium	
17	Basement	Average	0	0	113	0	0	0	0	12	0	0	0	53
		Range	0-0	0-0	0-791	0-0	0-0	0-0	0-0	0-84	0-0	0-0	0-0	10-88
	Kitchen	Average	0	6	223	0	0	0	0	12	0	0	12	39
		Range	0-0	0-43	0-1558	0-0	0-0	0-0	0-0	0-84	0-0	0-0	0-42	0-85
	1st Fl. Bed	Average	20	20	139	0	13	0	14	0	0	349	3	42
		Range	0-99	0-99	0-973	0-0	0-88	0-0	0-99	0-0	0-0	0-2318	0-21	0-99
	Outside	Average	8	0	0	333	0	0	0	6	0	114	21	77
		Range	0-56	0-0	0-0	0-2332	0-0	0-0	0-0	0-44	0-0	0-333	0-87	0-222
18	Living Room	Average	0	0	0	0	0	0	0	7	0	56	8	53
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-42	0-0	0-199	0-47	0-140
	Kitchen	Average	0	0	0	0	0	0	7	0	0	29	7	26
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-40	0-0	0-0	0-129	0-40	0-80
	2nd Fl. Bed	Average	0	0	0	0	0	0	0	0	0	19	7	37
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-112	0-42	0-118
	Outside	Average	56	15	17	0	0	2	8	0	0	172	39	143
		Range	0-292	0-93	0-102	0-0	0-0	0-11	0-46	0-0	0-0	0-584	0-231	0-409
19	Basement	Average	0	0	0	0	0	0	0	0	0	0	4	19
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-40	0-40
	Kitchen	Average	29	0	0	35	14	0	21	0	7	0	14	64
		Range	0-176	0-0	0-0	0-209	0-42	0-0	0-126	0-0	0-42	0-0	0-83	0-179
	1st Fl. Bed	Average	0	0	0	0	0	0	0	0	0	0	9	114
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-42	0-480
	Outside	Average	0	5	0	9	0	0	0	0	0	44	6	14
		Range	0-0	0-44	0-0	0-85	0-0	0-0	0-0	0-0	0-0	0-392	0-53	0-42
20	Living Room	Average	0	0	0	0	0	0	0	0	0	0	0	104
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-433
	2nd Fl. Bed	Average	5	0	97	0	0	0	0	0	0	7	4	146
		Range	0-47	0-0	0-973	0-0	0-0	0-0	0-0	0-0	0-0	0-46	0-42	0-652
	Outside	Average	0	0	0	0	9	0	0	0	8	52	3	167
		Range	0-0	0-0	0-0	0-0	0-43	0-0	0-0	0-0	0-42	0-170	0-14	0-614
21	Basement	Average	16	31	8	128	0	0	112	0	0	31	0	624
		Range	0-128	0-245	0-61	0-639	0-0	0-0	0-895	0-0	0-0	0-128	0-0	0-1243
	Kitchen	Average	0	0	83	0	0	0	5	0	0	44	0	88
		Range	0-0	0-0	0-413	0-0	0-0	0-0	0-26	0-0	0-0	0-210	0-0	0-269
	1st Fl. Bed	Average	0	0	234	0	0	0	0	0	0	78	4	110
		Range	0-0	0-0	0-1170	0-0	0-0	0-0	0-0	0-0	0-0	0-343	0-21	0-404
	Outside	Average	9	9	132	0	0	0	9	0	0	19	0	59
		Range	0-44	0-44	0-662	0-0	0-0	0-0	0-44	0-0	0-0	0-94	0-0	0-254

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location	Genus										
		Total Fungi	Alternaria	Aspergillus	Acrostalgmus	Botrytis	Cephalospora	Cladosporium	Curvularia	Epiccocum	Fusarium	Glaciocladium ^a
22	Basement	Average	2047	51.	565	0	0	45	330	0	0	75
		Range	1160-4080	0-169	413-818	0-0	0-0	0-227	57-937	0-0	0-0	0-363
	Living Room	Average	1598	121	545	0	15	0	393	0	15	0
		Range	870-3080	44-251	376-968	0-0	0-88	0-0	22-1540	0-0	0-88	0-0
	Kitchen	Average	1485	33.	509	0	7	7	281	0	7	0
		Range	830-3080	0-166	42-1012	0-0	0-44	0-42	0-799	0-0	0-42	0-0
	Outside	Average	11563	272	1810	19	54	15	846	0	28	32
		Range	2120-41440	0-1120	45-5712	0-112	0-241	0-89	103-2800	0-0	0-127	0-112
23	Basement	Average	998	100	287	0	28	7	103	7	0	14
		Range	170-1480	0-424	20-500	0-0	0-85	0-42	0-381	0-42	0-0	0-42
	Kitchen	Average	1463	78	707	0	28	23	172	0	28	7
		Range	580-2040	0-342	21-1383	0-0	0-85	0-136	0-376	0-0	0-82	0-43
	2nd Fl. Bed	Average	1173	42	234	0	14	7	408	0	14	0
		Range	520-2000	0-149	11-426	0-0	0-85	0-42	84-723	0-0	0-85	0-0
	Outside	Average	2273	181	1139	0	59	0	337	0	8	0
		Range	1080-3640	25-494	46-2319	0-0	0-224	0-0	0-536	0-0	0-50	0-0
24	Basement	Average	857	19	251	0	30	6	145	0	12	0
		Range	240-1600	0-80	0-800	0-0	0-211	0-42	21-415	0-0	0-83	0-0
	Kitchen	Average	2671	154	821	0	73	19	604	13	0	9
		Range	340-4280	0-445	89-1730	0-0	0-427	0-88	31-1647	0-91	0-0	0-43
	2nd Fl. Bed	Average	2113	78	956	6	67	0	188	13	18	9
		Range	510-4400	0-441	80-2796	0-44	0-383	0-0	0-511	0-46	0-85	0-43
	Outside	Average	3200	195	1234	6	32	28	695	12	0	7
		Range	1800-5160	0-909	670-1899	0-44	0-128	0-85	26-3190	0-85	0-0	0-51
25	Basement	Average	1484	52	467	0	0	25	303	0	26	6
		Range	140-2600	0-173	0-953	0-0	0-0	0-43	0-763	0-0	0-129	0-30
	Living Room	Average	2522	80	868	0	17	0	312	9	0	0
		Range	90-4320	0-182	0-1848	0-0	0-44	0-0	0-676	0-45	0-0	0-0
	Kitchen	Average	1368	68	617	0	17	0	88	0	0	0
		Range	40-2600	0-173	0-1690	0-0	0-43	0-0	0-212	0-0	0-0	0-0
	Outside	Average	3246	210	1434	9	149	0	543	37	19	49
		Range	960-5440	42-416	186-3697	0-46	0-559	0-0	0-2365	0-95	0-95	0-199
26	Basement	Average	4548	11	633	0	0	63	230	0	7	52
		Range	2360-11000	0-55	0-1438	0-0	0-0	0-332	0-444	0-0	0-43	0-92
	Kitchen	Average	1673	63	570	0	21	21	257	0	0	0
		Range	400-2640	0-173	120-1217	0-0	0-43	0-82	0-866	0-0	0-0	0-0
	1st Fl. Bed	Average	3067	21	520	0	8	22	144	15	36	15
		Range	1440-6520	0-127	42-971	0-0	0-49	0-92	0-382	0-46	0-172	0-46
	Outside	Average	3140	114	1686	0	15	24	446	21	70	0
		Range	1800-5920	0-334	857-3575	0-0	0-46	0-95	42-1241	0-84	0-334	0-0

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											
			Helminthosporium	Mucor	Mycosporium	Neurospora	Not Classified	Oidium	Paecilomyces	Papularia	Penicillium	Pilobolus	Phoma	Podosphaera
22	Basement	Average	7	4	0	8	0	0	7	0	739	7	0	28
		Range	0-42	0-23	0-0	0-45	0-0	0-0	0-43	0-0	128-2267	0-41	0-0	0-127
	Living Room	Average	0	4	7	0	0	0	28	0	392	0	0	0
		Range	0-0	0-22	0-42	0-0	0-0	0-0	0-168	0-0	220-673	0-0	0-0	0-0
	Kitchen	Average	0	117	0	0	0	0	0	0	296	0	0	14
		Range	0-0	0-587	0-0	0-0	0-0	0-0	0-0	0-0	42-924	0-0	0-0	0-83
	Outside	Average	13	44	112	23	26	0	0	0	7957	0	0	54
		Range	0-62	0-224	0-672	0-138	0-112	0-0	0-0	0-0	86-29792	0-0	0-0	0-124
23	Basement	Average	14	12	21	11	0	7	7	0	320	0	0	0
		Range	0-42	0-42	0-127	0-42	0-0	0-42	0-42	0-0	0-592	0-0	0-0	0-0
	Kitchen	Average	35	7	28	9	0	0	7	0	134	0	14	43
		Range	0-128	0-43	0-85	0-45	0-0	0-0	0-43	0-0	0-376	0-0	0-82	0-255
	2nd Fl. Bed	Average	35	0	21	0	7	0	2	0	215	0	7	21
		Range	0-128	0-0	0-85	0-0	0-43	0-0	0-11	0-0	0-404	0-0	0-42	0-83
	Outside	Average	88	8	7	23	16	0	0	0	174	0	0	0
		Range	0-402	0-50	0-42	0-50	0-50	0-0	0-0	0-0	23-338	0-0	0-0	0-0
24	Basement	Average	0	9	0	0	0	0	6	0	230	6	0	30
		Range	0-0	0-63	0-0	0-0	0-0	0-0	0-40	0-0	42-633	0-42	0-0	0-84
	Kitchen	Average	143	6	7	13	0	6	0	7	445	0	0	12
		Range	0-911	0-43	0-46	0-44	0-0	0-44	0-0	0-46	41-997	0-0	0-0	0-44
	2nd Fl. Bed	Average	52	0	6	9	0	0	0	6	518	0	0	25
		Range	0-321	0-0	0-44	0-43	0-0	0-0	0-0	0-43	43-1635	0-0	0-0	0-92
	Outside	Average	117	6	13	23	0	0	0	0	614	0	0	19
		Range	0-455	0-45	0-47	0-90	0-0	0-0	0-0	0-0	154-1750	0-0	0-0	0-94
25	Basement	Average	17	0	0	9	11	0	26	0	419	0	0	17
		Range	0-85	0-0	0-0	0-43	0-43	0-0	0-87	0-0	0-1289	0-0	0-0	0-85
	Living Room	Average	255	71	0	18	0	0	18	0	320	0	0	36
		Range	0-1273	0-266	0-0	0-89	0-0	0-0	0-90	0-0	0-586	0-0	0-0	0-91
	Kitchen	Average	17	8	0	0	0	0	9	0	144	0	0	42
		Range	0-87	0-42	0-0	0-0	0-0	0-0	0-43	0-0	0-292	0-0	0-0	0-212
	Outside	Average	18	225	9	0	32	0	0	0	357	0	9	0
		Range	0-46	0-709	0-44	0-0	0-162	0-0	0-0	0-0	42-886	0-0	0-46	0-0
26	Basement	Average	29	175	0	2	0	7	0	0	2867	7	0	22
		Range	0-172	0-553	0-0	0-13	0-0	0-43	0-0	0-0	311-9673	0-44	0-0	0-86
	Kitchen	Average	21	83	0	7	0	7	0	0	375	7	0	14
		Range	0-126	0-497	0-0	0-41	0-0	0-43	0-0	0-0	120-901	0-41	0-0	0-86
	1st Fl. Bed	Average	148	65	8	15	0	0	0	0	1662	0	7	14
		Range	0-594	0-388	0-49	0-92	0-0	0-0	0-0	0-0	42-5012	0-0	0-42	0-85
	Outside	Average	129	0	0	15	0	0	0	0	425	0	0	47
		Range	0-388	0-0	0-0	0-46	0-0	0-0	0-0	0-0	0-1098	0-0	0-0	0-239

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											yeasts [*]
			Pseudopara	Puccinia	Pythium	Rhizopus	Sclerotia	Sepedonium	Spongosora	Stemphylium	Systanus	Ustilago	Verticillium	
22	Basement	Average	7	0	0	0	0	0	0	0	0	52	0	115
		Range	0-43	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-227	0-0	0-213
	Living Room	Average	7	7	0	0	0	0	0	7	0	28	0	31
		Range	0-42	0-41	0-0	0-0	0-0	0-0	0-0	0-42	0-0	0-126	0-0	0-132
	Kitchen	Average	0	0	132	0	0	0	7	0	0	7	0	68
		Range	0-0	0-0	0-792	0-0	0-0	0-0	0-42	0-0	0-0	0-41	0-0	0-206
	Outside	Average	52	14	0	0	52	0	14	29	0	59	0	38
		Range	0-224	0-86	0-0	0-0	0-224	0-0	0-86	0-112	0-0	0-171	0-0	0-134
23	Basement	Average	0	0	7	0	0	0	0	0	0	4	4	42
		Range	0-0	0-0	0-42	0-0	0-0	0-0	0-0	0-0	0-0	0-21	0-21	0-85
	Kitchen	Average	0	0	35	0	0	0	0	4	0	11	0	82
		Range	0-0	0-0	0-209	0-0	0-0	0-0	0-0	0-21	0-0	0-45	0-0	43-159
	2nd Fl. Bed	Average	0	7	70	0	0	0	7	0	0	11	0	37
		Range	0-0	0-43	0-418	0-0	0-0	0-0	0-43	0-0	0-0	0-42	0-0	0-149
	Outside	Average	4	0	76	0	0	4	0	0	0	91	22	36
		Range	0-25	0-0	0-457	0-0	0-0	0-23	0-0	0-0	0-0	0-349	0-89	0-126
24	Basement	Average	0	0	0	60	0	0	0	0	0	24	0	30
		Range	0-0	0-0	0-0	0-422	0-0	0-0	0-0	0-0	0-0	0-168	0-0	0-44
	Kitchen	Average	0	6	99	0	0	0	45	0	0	68	0	95
		Range	0-0	0-45	0-650	0-0	0-0	0-0	0-273	0-0	0-0	0-223	0-0	0-401
	2nd Fl. Bed	Average	0	0	46	0	0	0	72	0	0	18	12	13
		Range	0-0	0-0	0-320	0-0	0-0	0-0	0-504	0-0	0-0	0-128	0-85	0-46
	Outside	Average	0	0	0	0	0	0	0	6	0	92	32	67
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-44	0-0	0-314	0-182	0-318
25	Basement	Average	0	0	0	0	0	0	17	0	0	43	0	38
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-87	0-0	0-0	0-215	0-0	0-60
	Living Room	Average	9	18	304	0	0	0	0	0	0	100	9	66
		Range	0-43	0-45	0-1064	0-0	0-0	0-0	0-0	0-0	0-0	0-443	0-43	0-318
	Kitchen	Average	0	9	141	0	0	0	0	0	0	67	19	96
		Range	0-0	0-43	0-706	0-0	0-0	0-0	0-0	0-0	0-0	0-292	0-87	0-297
	Outside	Average	8	18	19	0	0	0	0	0	0	21	0	79
		Range	0-42	0-46	0-95	0-0	0-0	0-0	0-0	0-0	0-0	0-62	0-0	0-174
26	Basement	Average	0	0	0	22	0	0	0	0	0	0	0	420
		Range	0-0	0-0	0-0	0-135	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-1864
	Kitchen	Average	0	7	0	0	0	0	0	0	0	0	0	164
		Range	0-0	0-42	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-433
	1st Fl. Bed	Average	77	0	0	0	0	0	0	0	7	0	0	114
		Range	0-460	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-43	0-0	0-0	0-560
	Outside	Average	0	0	29	0	7	0	8	15	0	8	0	38
		Range	0-0	0-0	0-173	0-0	0-42	0-0	0-48	0-48	0-0	0-46	0-0	0-95

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus										
			Total Fungi	Alternaria	Aspergillus	Acrostalgnus	Botrytis	Cephalospora	Cladosporium	Curvularia	Epicoccum	Fusarium	Gliocladium
27	Basement	Average	2757	39	433	0	30	74	209	18	0	37	6
		Range	1360-6160	0-86	39-718	0-0	0-85	0-433	0-632	0-85	0-0	0-256	0-43
	Living Room	Average	2463	123	997	0	6	19	215	18	24	7	0
		Range	1560-5240	0-288	412-1820	0-0	0-42	0-47	0-506	0-43	0-84	0-47	0-0
	Kitchen	Average	2260	109	1082	0	0	25	260	12	6	6	6
		Range	1280-3720	0-310	463-2571	0-0	0-0	0-90	43-547	0-44	0-41	0-45	0-42
	Outside	Average	3367	284	1449	0	40	13	377	6	0	50	0
		Range	1640-6120	0-1624	799-2592	0-0	0-145	0-45	0-955	0-45	0-0	0-262	0-0
28	Basement	Average	1715	104	701	0	0	32	96	0	0	0	58
		Range	170-2840	0-433	40-1054	0-0	0-0	0-87	0-347	0-0	0-0	0-0	0-260
	Kitchen	Average	1325	37	652	0	15	7	338	3	0	0	0
		Range	150-2560	0-80	0-1755	0-0	0-90	0-43	80-713	0-20	0-0	0-0	0-0
	2nd Fl. Bed	Average	1885	53	568	0	0	0	98	0	0	8	3
		Range	130-3960	0-213	40-1064	0-0	0-0	0-0	0-292	0-0	0-0	0-45	0-20
	Outside	Average	6687	330	2761	8	44	40	773	24	0	0	29
		Range	400-21240	0-1734	42-14016	0-49	0-144	0-144	168-2167	0-144	0-0	0-0	0-72
29	Basement	Average	6740	241	1332	0	52	13	222	12	0	13	1677
		Range	3760-8840	50-572	514-2397	0-0	0-208	0-51	0-479	0-48	0-0	0-52	0-3595
	Living Room	Average	2210	236	674	0	32	11	539	22	0	10	0
		Range	1200-2680	0-856	538-869	0-0	0-43	0-43	41-1470	0-43	0-0	0-41	0-0
	Kitchen	Average	1810	22	984	0	0	0	348	0	0	0	32
		Range	480-2800	0-45	400-1481	0-0	0-0	0-0	0-1181	0-0	0-0	0-0	0-88
	Outside	Average	3050	434	1577	0	0	0	360	0	0	0	0
		Range	2000-3920	0-936	426-2613	0-0	0-0	0-0	24-668	0-0	0-0	0-0	0-0
30	Living Room	Average	806	17	189	0	0	6	148	0	29	18	6
		Range	200-1680	0-42	0-585	0-0	0-0	0-40	0-495	0-0	0-206	0-83	0-42
	Kitchen	Average	2486	71	706	6	6	65	802	6	0	18	3
		Range	240-13670	0-414	42-3728	0-42	0-40	0-414	0-4971	0-40	0-0	0-84	0-22
	1st Fl. Bed	Average	1401	14	431	0	36	0	256	0	0	12	6
		Range	520-2240	0-55	43-948	0-0	0-215	0-0	0-948	0-0	0-0	0-84	0-40
	Outside	Average	5117	178	2911	0	70	29	555	67	0	18	43
		Range	1800-22040	0-663	383-14816	0-0	0-170	0-90	39-885	0-295	0-0	0-43	0-85
31	Basement	Average	2091	43	503	0	6	18	418	6	0	0	68
		Range	520-5520	0-159	40-1473	0-0	0-42	0-80	23-2453	0-42	0-0	0-0	0-236
	Kitchen	Average	3986	47	636	0	13	6	387	44	0	0	13
		Range	1560-11160	0-111	211-1110	0-0	0-48	0-43	87-1110	0-167	0-0	0-0	0-48
	1st Fl. Bed	Average	3400	50	947	0	26	26	250	25	0	0	21
		Range	2200-7760	0-151	151-2491	0-0	0-50	0-48	0-756	0-175	0-0	0-0	0-101
	Outside	Average	3280	182	1130	0	19	7	441	13	0	13	90
		Range	1200-5040	0-933	124-3173	0-0	0-90	0-51	0-907	0-93	0-0	0-90	0-560

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											
			Helminthosporium	Mucor	Mycosporium	Neurospora	Not Classified	Oidium	Paecilomyces	Papularia	Penicillium	Pilobolus	Phoma	Podospharea
27	Basement	Average	80	0	6	0	6	0	0	0	1089	13	6	282
		Range	0-171	0-0	0-43	0-0	0-43	0-0	0-0	0-0	42-4572	0-48	0-42	0-1716
	Living Room	Average	31	6	0	7	0	6	7	0	877	0	0	0
		Range	0-87	0-43	0-0	0-46	0-0	0-41	0-47	0-0	130-3462	0-0	0-0	0-0
	Kitchen	Average	24	6	0	8	6	0	0	6	572	0	0	36
		Range	0-169	0-45	0-0	0-44	0-41	0-0	0-0	0-42	42-1703	0-0	0-0	0-211
	Outside	Average	202	0	76	17	2	6	12	0	824	0	14	25
		Range	0-524	0-0	0-530	0-48	0-14	0-44	0-87	0-0	87-3084	0-0	0-96	0-175
28	Basement	Average	43	147	0	4	0	0	0	0	435	0	0	0
		Range	0-217	0-850	0-0	0-21	0-0	0-0	0-0	0-0	40-1721	0-0	0-0	0-0
	Kitchen	Average	13	0	0	0	4	7	4	0	541	0	15	36
		Range	0-80	0-0	0-0	0-0	0-23	0-42	0-23	0-0	0-1710	0-0	0-45	0-217
	2nd Fl. Bed	Average	0	202	0	0	10	0	0	0	266	0	0	0
		Range	0-0	0-1172	0-0	0-0	0-43	0-0	0-0	0-0	0-699	0-0	0-0	0-0
	Outside	Average	46	0	15	38	2	0	0	0	2237	0	0	31
		Range	0-147	0-0	0-50	0-144	0-11	0-0	0-0	0-0	0-6333	0-0	0-0	0-144
29	Basement	Average	0	326	13	0	0	0	0	0	1815	26	0	0
		Range	0-0	0-1079	0-51	0-0	0-0	0-0	0-0	0-0	727-2652	0-103	0-0	0-0
	Living Room	Average	0	11	0	0	0	0	0	0	524	0	11	11
		Range	0-0	0-43	0-0	0-0	0-0	0-0	0-0	0-0	257-869	0-0	0-43	0-43
	Kitchen	Average	0	109	0	11	0	0	0	0	195	0	0	0
		Range	0-0	0-438	0-0	0-42	0-0	0-0	0-0	0-0	40-297	0-0	0-0	0-0
	Outside	Average	11	0	0	24	0	0	0	0	173	0	0	11
		Range	0-45	0-0	0-0	0-94	0-0	0-0	0-0	0-0	0-298	0-0	0-0	0-43
30	Living Room	Average	7	0	0	3	0	0	3	0	153	6	0	0
		Range	0-41	0-0	0-0	0-21	0-0	0-0	0-21	0-0	40-252	0-41	0-0	0-0
	Kitchen	Average	0	6	0	0	0	0	0	0	562	0	0	0
		Range	0-0	0-40	0-0	0-0	0-0	0-0	0-0	0-0	40-2900	0-0	0-0	0-0
	1st Fl. Bed	Average	0	9	0	5	0	0	0	0	203	0	0	24
		Range	0-0	0-42	0-0	0-33	0-0	0-0	0-0	0-0	86-424	0-0	0-0	0-129
	Outside	Average	18	6	6	12	2	0	0	0	995	0	6	6
		Range	0-128	0-42	0-42	0-42	0-13	0-0	0-0	0-0	42-4202	0-0	0-43	0-45
31	Basement	Average	43	59	0	7	10	0	6	6	300	0	0	127
		Range	0-298	0-413	0-0	0-47	0-47	0-0	0-43	0-41	80-578	0-0	0-0	0-849
	Kitchen	Average	206	162	0	0	0	12	0	6	2150	0	13	7
		Range	0-666	0-997	0-0	0-0	0-0	0-87	0-0	0-43	436-7884	0-0	0-46	0-48
	1st Fl. Bed	Average	49	49	0	28	0	0	12	0	1463	3	0	81
		Range	0-300	0-259	0-0	0-193	0-0	0-0	0-86	0-0	145-6097	0-24	0-0	0-438
	Outside	Average	236	19	0	4	4	0	4	0	551	0	13	123
		Range	0-858	0-136	0-0	0-25	0-25	0-0	0-25	0-0	213-1360	0-0	0-90	0-542

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											yeasts ^a
			Pseudopara	Puccinia	Pythium	Rhizopus	Sclerotia	Sepedonium	Spongosora	Stemphylium	Systanus	Ustilago	Verticillium	
27	Basement	Average	6	.19	0	147	0	0	0	0	0	14	0	43
		Range	0-43	0-48	0-0	0-1031	0-0	0-0	0-0	0-0	0-0	0-96	0-0	0-193
	Living Room	Average	0	6	0	0	0	0	0	0	0	52	0	35
		Range	0-0	0-43	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-234	0-0	0-94
	Kitchen	Average	6	0	0	0	0	0	0	6	0	32	6	44
		Range	0-45	0-0	0-0	0-0	0-0	0-0	0-0	0-43	0-0	0-224	0-45	0-94
	Outside	Average	6	6	0	0	0	0	0	19	0	90	4	47
		Range	0-45	0-45	0-0	0-0	0-0	0-0	0-0	0-48	0-0	0-337	0-28	0-241
	Basement	Average	0	0	0	14	0	0	7	0	0	11	0	64
		Range	0-0	0-0	0-0	0-85	0-0	0-0	0-43	0-0	0-0	0-64	0-0	0-130
28	Kitchen	Average	0	0	0	0	0	3	57	7	0	23	0	56
		Range	0-0	0-0	0-0	0-0	0-0	0-20	0-217	0-43	0-0	0-90	0-0	0-294
	2nd Fl. Bed	Average	0	0	0	94	0	0	0	7	0	43	7	33
		Range	0-0	0-0	0-0	0-520	0-0	0-0	0-0	0-42	0-0	0-255	0-42	0-113
	Outside	Average	7	8	15	0	0	0	0	19	0	152	4	101
		Range	0-42	0-49	0-49	0-0	0-0	0-0	0-0	0-72	0-0	0-541	0-23	0-366
	Basement	Average	0	64	13	749	0	0	0	0	0	121	13	38
		Range	0-0	0-257	0-52	0-1768	0-0	0-0	0-0	0-0	0-0	0-431	0-52	0-100
	Living Room	Average	0	0	0	109	0	0	0	0	0	0	0	22
		Range	0-0	0-0	0-0	0-434	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-43
29	Kitchen	Average	0	0	0	0	0	0	0	11	0	34	0	63
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-44	0-0	0-135	0-0	0-170
	Outside	Average	0	56	0	213	0	0	0	22	0	34	11	124
		Range	0-0	0-223	0-0	0-851	0-0	0-0	0-0	0-89	0-0	0-90	0-43	43-223
	Living Room	Average	0	0	180	0	0	0	0	6	0	0	6	11
		Range	0-0	0-0	0-1260	0-0	0-0	0-0	0-0	0-40	0-0	0-0	0-42	0-40
	Kitchen	Average	2	0	0	0	0	0	0	0	0	6	2	49
		Range	0-11	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-40	0-11	0-84
	1st Fl. Bed	Average	0	0	133	140	0	0	0	0	0	9	6	110
		Range	0-0	0-0	0-934	0-983	0-0	0-0	0-0	0-0	0-0	0-41	0-43	0-258
30	Outside	Average	2	0	0	0	6	0	6	0	0	89	17	61
		Range	0-13	0-0	0-0	0-0	0-45	0-0	0-43	0-0	0-0	0-516	0-74	0-295
	Basement	Average	0	0	282	0	0	0	0	19	0	0	0	170
		Range	0-0	0-0	0-1256	0-0	0-0	0-0	0-0	0-94	0-0	0-0	0-0	0-944
	Kitchen	Average	7	0	0	0	0	0	6	0	7	16	0	235
		Range	0-48	0-0	0-0	0-0	0-0	0-0	0-44	0-0	0-46	0-112	0-0	45-697
	1st Fl. Bed	Average	0	12	198	0	0	0	0	0	0	138	0	22
		Range	0-0	0-86	0-1388	0-0	0-0	0-0	0-0	0-0	0-0	0-454	0-0	0-87
	Outside	Average	0	6	106	39	0	0	0	32	0	86	6	149
		Range	0-0	0-45	0-741	0-272	0-0	0-0	0-0	0-181	0-0	0-187	0-45	0-331

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location	Genus										
		Total Fungi	Alternaria	Aspergillus	Acrostalgnus	Botrytis	Cephalospora	Cladosporium	Curvularia	Epiccocum	Fusarium	Gliocladium ²
32	Basement	Average	1050	63.	204	0	0	210	7	0	14	28
		Range	260-2120	0-377	52-594	0-0	0-0	0-763	0-42	0-0	0-85	0-85
	Kitchen	Average	1577	23	334	14	16	368	0	0	0	14
		Range	300-4080	0-84	103-861	0-45	0-42	0-997	0-0	0-0	0-0	0-45
	1st Fl. Bed	Average	1587	33	494	8	24	388	14	0	21	0
		Range	360-4120	0-200	120-996	0-45	0-91	10-1222	0-85	0-0	0-82	0-0
	Outside	Average	3072	236	1014	0	40	548	16	0	8	0
		Range	1040-5840	0-475	0-3369	0-0	0-127	0-1723	0-95	0-0	0-48	0-0
	Basement	Average	7280	250	1791	0	54	309	0	0	16	864
		Range	5520-8400	0-743	755-2488	0-0	0-102	0-1089	0-0	0-0	0-65	0-2349
33	Kitchen	Average	5330	140	1202	23	0	565	0	0	118	0
		Range	4600-5840	0-468	0-2878	0-92	0-0	0-1170	0-0	0-0	0-474	0-0
	2nd Fl. Bed	Average	3420	77	747	0	54	659	0	0	0	136
		Range	2320-5760	0-174	0-1286	0-0	0-217	0-1714	0-0	0-0	0-0	0-476
	Outside	Average	3430	333	1355	0	0	406	0	0	85	0
		Range	1720-6240	42-1064	967-1874	0-0	0-0	0-1451	0-0	0-0	0-339	0-0
	Basement	Average	2160	129	652	0	7	276	0	7	0	15
		Range	440-3480	42-299	21-1300	0-0	0-43	0-597	0-0	0-42	0-0	0-89
	Kitchen	Average	1963	105	915	0	0	290	29	0	14	0
		Range	820-3520	0-419	83-2556	0-0	0-0	0-944	0-86	0-0	0-84	0-0
34	2nd Fl. Bed	Average	1456	40	517	0	7	269	0	0	8	0
		Range	356-2880	0-84	166-829	0-0	0-42	14-629	0-0	0-0	0-42	0-0
	Outside	Average	2993	39	1623	0	0	208	15	0	28	0
		Range	1680-5080	0-102	385-3635	0-0	0-0	0-539	0-47	0-0	0-85	0-0
	Basement	Average	1827	142	563	0	0	350	0	0	28	0
		Range	1720-1960	0-426	294-724	0-0	0-0	213-586	0-0	0-0	0-84	0-0
	Kitchen	Average	1533	0	528	0	28	196	14	0	0	0
		Range	1240-1800	0-0	211-795	0-0	0-84	124-295	0-41	0-0	0-0	0-0
	2nd Fl. Bed	Average	2520	173	505	0	0	763	0	0	144	14
		Range	2320-2640	0-433	86-736	0-0	0-0	650-945	0-0	0-0	87-258	0-43
36	Outside	Average	15120	395	2249	0	0	1122	51	0	16	28
		Range	1920-37680	0-1041	43-3999	0-0	0-0	427-2082	0-104	0-0	0-48	0-85
	Basement	Average	840	126	294	0	42	42	0	0	0	0
		Range	840-840	126-126	294-294	0-0	42-42	42-42	0-0	0-0	0-0	0-0
	Kitchen	Average	880	251	126	0	0	42	0	0	0	0
		Range	880-880	251-251	126-126	0-0	0-0	42-42	0-0	0-0	0-0	0-0
	2nd Fl. Bed	Average	1280	41	1032	0	0	41	0	0	0	0
		Range	1280-1280	41-41	1032-1032	0-0	0-0	41-41	0-0	0-0	0-0	0-0
	Outside	Average	1920	85	0	0	0	43	0	0	0	0
		Range	1920-1920	85-85	0-0	0-0	0-0	43-43	0-0	0-0	0-0	0-0

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											
			Helminthosporium	Mucor	Mycosporium	Neurospora	Not Classified	Oidium	Paecilomyces	Papularia	Penicillium	Pilobolus	Phoma	Podospharea
32	Basement	Average	0	55	0	16	0	0	0	0	179	0	0	14
		Range	0-0	0-167	0-0	0-94	0-0	0-0	0-0	0-0	73-251	0-0	0-0	0-42
	Kitchen	Average	21	40	0	5	0	0	0	7	236	0	0	68
		Range	0-84	0-124	0-0	0-31	0-0	0-0	0-0	0-41	0-496	0-0	0-0	0-408
	1st Fl. Bed	Average	7	49	14	19	0	0	0	15	220	0	8	52
		Range	0-41	0-293	0-42	0-72	0-0	0-0	0-0	0-45	0-453	0-0	0-45	0-272
	Outside	Average	16	113	0	30	6	0	0	0	323	0	16	7
		Range	0-96	0-596	0-0	0-95	0-36	0-0	0-0	0-0	95-592	0-0	0-96	0-42
33	Basement	Average	0	74	25	48	0	0	0	0	2270	0	0	204
		Range	0-0	0-153	0-99	0-97	0-0	0-0	0-0	0-0	693-3198	0-0	0-0	32-495
	Kitchen	Average	23	178	0	0	46	0	0	0	732	0	0	737
		Range	0-94	0-460	0-0	0-0	0-184	0-0	0-0	0-0	94-1298	0-0	0-0	0-2667
	2nd Fl. Bed	Average	0	11	11	0	24	0	0	0	919	0	0	22
		Range	0-0	0-46	0-44	0-0	0-95	0-0	0-0	0-0	264-2142	0-0	0-0	0-88
	Outside	Average	0	0	0	41	6	24	121	0	607	0	0	36
		Range	0-0	0-0	0-0	0-164	0-23	0-97	0-484	0-0	117-1361	0-0	0-0	0-145
34	Basement	Average	103	29	29	7	0	0	7	0	369	0	0	14
		Range	0-402	0-89	0-87	0-45	0-0	0-0	0-43	0-0	84-1205	0-0	0-0	0-87
	Kitchen	Average	28	0	0	4	0	0	7	7	253	0	0	29
		Range	0-129	0-0	0-0	0-21	0-0	0-0	0-42	0-42	41-604	0-0	0-0	0-86
	2nd Fl. Bed	Average	35	0	1	0	0	0	0	1	335	0	0	23
		Range	0-168	0-0	0-5	0-0	0-0	0-0	0-0	0-5	27-873	0-0	0-0	0-87
	Outside	Average	201	0	0	7	12	0	0	0	436	0	0	113
		Range	0-494	0-0	0-0	0-45	0-47	0-0	0-0	0-0	180-609	0-0	0-0	0-539
36	Basement	Average	0	28	14	0	0	0	0	0	295	0	0	28
		Range	0-0	0-85	0-43	0-0	0-0	0-0	0-0	0-0	209-383	0-0	0-0	0-43
	Kitchen	Average	55	0	14	0	0	14	14	0	349	0	14	0
		Range	0-124	0-0	0-42	0-0	0-0	0-41	0-42	0-0	207-544	0-0	0-42	0-0
	2nd Fl. Bed	Average	101	0	14	0	29	14	0	0	447	0	0	0
		Range	0-303	0-0	0-43	0-0	0-86	0-43	0-0	0-0	260-779	0-0	0-0	0-0
	Outside	Average	143	171	0	16	0	0	0	0	10528	0	0	32
		Range	0-428	0-512	0-0	0-48	0-0	0-0	0-0	0-0	95-31018	0-0	0-0	0-95
37	Basement	Average	0	0	0	0	0	0	0	0	294	0	0	0
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	294-294	0-0	0-0	0-0
	Kitchen	Average	0	126	0	0	0	0	0	0	251	0	0	0
		Range	0-0	126-126	0-0	0-0	0-0	0-0	0-0	0-0	251-251	0-0	0-0	0-0
	2nd Fl. Bed	Average	0	0	0	41	0	0	0	0	41	0	0	0
		Range	0-0	0-0	0-0	41-41	0-0	0-0	0-0	0-0	41-41	0-0	0-0	0-0
	Outside	Average	0	0	0	43	0	0	0	0	1621	0	0	0
		Range	0-0	0-0	0-0	43-43	0-0	0-0	0-0	0-0	1621-1621	0-0	0-0	0-0

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											yeasts ²
			Pseudopara	Puccinia	Pythium	Rhizopus	Sclerotia	Sepedonium	Spongosora	Stemphylium	Systanus	Ustilago	Verticillium	
32	Basement	Average	0	0	155	0	0	0	35	0	0	14	0	56
		Range	0-0	0-0	0-932	0-0	0-0	0-0	0-170	0-0	0-0	0-85	0-0	0-170
	Kitchen	Average	83	0	0	121	0	0	113	8	7	7	0	77
		Range	0-499	0-0	0-0	0-621	0-0	0-0	0-680	0-45	0-42	0-41	0-0	0-419
	1st Fl. Bed	Average	38	0	0	0	0	0	91	8	7	42	0	22
		Range	0-226	0-0	0-0	0-0	0-0	0-0	0-543	0-45	0-42	0-212	0-0	0-93
	Outside	Average	136	0	8	40	0	0	375	16	0	81	8	36
		Range	0-814	0-0	0-48	0-238	0-0	0-0	0-2010	0-96	0-0	0-250	0-48	0-132
33	Basement	Average	0	0	0	752	0	0	59	0	0	0	0	405
		Range	0-0	0-0	0-0	0-2197	0-0	0-0	0-236	0-0	0-0	0-0	0-0	51-1188
	Kitchen	Average	0	12	529	357	0	0	0	0	0	58	12	572
		Range	0-0	0-47	0-2116	0-959	0-0	0-0	0-0	0-0	0-0	0-230	0-47	0-1659
	2nd Fl. Bed	Average	0	11	0	367	0	0	11	0	0	6	0	325
		Range	0-0	0-44	0-0	0-1285	0-0	0-0	0-44	0-0	0-0	0-23	0-0	0-968
	Outside	Average	12	0	0	0	0	0	12	0	0	59	11	258
		Range	0-47	0-0	0-0	0-0	0-0	0-0	0-48	0-0	0-0	0-234	0-44	0-967
34	Basement	Average	0	0	208	154	0	0	73	0	0	0	7	58
		Range	0-0	0-0	0-1249	0-926	0-0	0-0	0-436	0-0	0-0	0-0	0-43	0-218
	Kitchen	Average	0	0	93	117	0	0	0	7	0	0	21	42
		Range	0-0	0-0	0-561	0-703	0-0	0-0	0-0	0-42	0-0	0-0	0-84	0-168
	2nd Fl. Bed	Average	0	2	160	0	0	0	0	0	0	21	0	38
		Range	0-0	0-14	0-916	0-0	0-0	0-0	0-0	0-0	0-0	0-84	0-0	0-104
	Outside	Average	0	0	0	0	0	0	90	0	0	58	15	129
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-539	0-0	0-0	0-299	0-47	42-299
36	Basement	Average	0	0	280	0	0	0	0	0	0	0	42	56
		Range	0-0	0-0	0-839	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-126	42-84
	Kitchen	Average	0	0	239	0	0	0	0	0	0	0	14	55
		Range	0-0	0-0	0-717	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-42	0-124
	2nd Fl. Bed	Average	0	14	29	0	0	0	14	0	0	158	0	72
		Range	0-0	0-43	0-86	0-0	0-0	0-0	0-43	0-0	0-0	0-473	0-0	0-173
	Outside	Average	0	0	100	0	0	0	69	0	0	63	0	35
		Range	0-0	0-0	0-299	0-0	0-0	0-0	0-208	0-0	0-0	0-104	0-0	0-104
37	Basement	Average	0	0	0	0	0	0	0	0	0	42	0	0
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	42-42	0-0	0-0
	Kitchen	Average	0	42	0	0	0	0	0	0	0	0	0	42
		Range	0-0	42-42	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	42-42
	2nd Fl. Bed	Average	0	0	0	0	0	0	0	0	0	41	0	41
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	41-41	0-0	41-41
	Outside	Average	0	0	0	0	0	0	0	0	0	85	0	43
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	85-85	0-0	43-43

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus										
			Total Fungi	Alternaria	Aspergillus	Acrostalgnus	Botrytis	Cephalospora	Cladosporium	Curvularia	Epicoccum	Fusarium	Gliocladium
38	Basement	Average	1165	41.	208	0	0	16	415	11	0	21	5
		Range	480-1960	0-160	84-497	0-0	0-0	0-42	0-1256	0-43	0-0	0-85	0-42
	Kitchen	Average	810	25	159	0	16	5	211	15	0	5	5
		Range	360-1280	0-200	0-330	0-0	0-42	0-42	0-705	0-42	0-0	0-41	0-40
	2nd Fl. Bed	Average	1280	41	318	0	26	8	298	0	0	0	8
		Range	320-2520	0-80	0-936	0-0	0-128	0-41	0-869	0-0	0-0	0-0	0-41
Outside	Average	7896	502	2783	0	192	48	1646	94	13	94	0	
	Range	1440-16640	132-1612	508-7642	0-0	0-701	0-132	85-6127	0-382	0-64	0-255	0-0	
39	Basement	Average	17393	178	1820	0	32	260	1432	8	0	75	1019
		Range	2240-48760	0-896	182-8703	0-0	0-128	0-1408	172-4096	0-45	0-0	0-452	0-4531
	Kitchen	Average	3647	49	1146	23	51	46	309	7	0	0	18
		Range	920-9360	0-210	42-5101	0-97	0-210	0-172	0-769	0-42	0-0	0-0	0-105
	1st Fl. Bed	Average	3540	229	941	0	62	7	293	0	0	7	59
		Range	1040-8160	0-1122	83-3468	0-0	0-102	0-44	0-524	0-0	0-0	0-44	0-187
Outside	Average	7527	488	2724	8	26	82	1132	18	0	36	34	
	Range	1680-12600	0-2832	971-8059	0-51	0-106	0-231	109-4104	0-106	0-0	0-132	0-106	
40	Basement	Average	1352	83	345	0	0	0	103	8	0	0	9
		Range	520-2920	0-160	160-610	0-0	0-0	0-0	0-305	0-41	0-0	0-0	0-44
	Living Room	Average	1872	67	231	0	0	9	230	0	0	35	25
		Range	560-3920	0-160	40-352	0-0	0-0	0-45	40-451	0-0	0-0	0-176	0-45
	Kitchen	Average	1576	42	266	0	0	17	182	0	0	0	9
		Range	320-3920	0-167	0-496	0-0	0-0	0-42	0-451	0-0	0-0	0-0	0-45
Outside	Average	13544	642	2151	0	0	18	612	79	0	15	0	
	Range	2440-31720	43-1103	297-5149	0-0	0-0	0-92	87-1486	0-310	0-0	0-74	0-0	
41	Basement	Average	1360	19	256	0	14	28	298	33	0	5	0
		Range	280-2400	0-125	40-756	0-0	0-42	0-129	85-797	0-125	0-0	0-42	0-0
	Kitchen	Average	2191	48	523	0	5	32	401	19	0	10	5
		Range	720-4080	0-267	170-1677	0-0	0-45	0-160	160-771	0-86	0-0	0-86	0-43
	1st Fl. Bed	Average	2507	44	411	7	21	0	519	82	0	7	7
		Range	920-4040	0-89	0-817	0-43	0-85	0-0	85-1725	0-490	0-0	0-45	0-45
Outside	Average	4453	170	1532	16	15	34	569	7	0	0	9	
	Range	920-11840	0-567	335-3342	0-93	0-47	0-113	42-1133	0-44	0-0	0-0	0-57	
42	Basement	Average	6382	202	1222	0	0	40	436	0	0	0	63
		Range	1600-18000	0-830	296-4800	0-0	0-0	0-267	42-949	0-0	0-0	0-0	0-351
	Kitchen	Average	1867	122	958	0	29	14	220	0	0	0	0
		Range	680-2880	0-524	280-1907	0-0	0-130	0-44	43-393	0-0	0-0	0-0	0-0
	2nd Fl. Bed	Average	1880	159	596	0	0	21	442	0	0	15	0
		Range	1120-2840	0-655	253-961	0-0	0-0	0-85	83-918	0-0	0-0	0-87	0-0
Outside	Average	3007	250	1110	0	14	7	709	15	0	7	14	
	Range	1480-4600	43-686	296-1829	0-0	0-86	0-43	85-1600	0-46	0-0	0-42	0-85	

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											
			Helminthosporium	Mucor	Mycosporium	Neurospora	Not Classified	Oidium	Paecilomyces	Papularia	Penicillium	Pilobolus	Phoma	Podospharea
38	Basement	Average	42	0	5	5	5	21	0	0	176	0	0	37
		Range	0-85	0-0	0-43	0-43	0-43	0-170	0-0	0-0	42-293	0-0	0-0	0-256
	Kitchen	Average	25	0	0	0	0	5	0	5	216	0	0	0
		Range	0-160	0-0	0-0	0-0	0-0	0-41	0-0	0-42	0-667	0-0	0-0	0-0
	2nd Fl. Bed	Average	9	0	17	9	8	17	0	0	193	0	0	0
		Range	0-43	0-0	0-43	0-43	0-41	0-85	0-0	0-0	80-348	0-0	0-0	0-0
	Outside	Average	77	0	76	0	26	25	52	0	1146	0	13	179
		Range	0-191	0-0	0-382	0-0	0-129	0-127	0-258	0-0	339-2993	0-0	0-64	0-764
39	Basement	Average	71	382	8	21	7	0	0	8	7704	0	0	1664
		Range	0-273	0-1280	0-45	0-128	0-43	0-0	0-0	0-45	91-32251	0-0	0-0	0-9760
	Kitchen	Average	7	0	0	7	18	0	0	0	997	0	0	64
		Range	0-42	0-0	0-0	0-43	0-105	0-0	0-0	0-0	208-3155	0-0	0-0	0-300
	1st Fl. Bed	Average	94	22	0	16	7	73	0	0	1118	0	0	370
		Range	0-562	0-131	0-0	0-51	0-44	0-436	0-0	0-0	330-2907	0-0	0-0	0-1968
	Outside	Average	283	54	19	48	19	76	0	0	931	0	0	664
		Range	0-1700	0-327	0-116	0-289	0-58	0-347	0-0	0-0	88-2538	0-0	0-0	0-3293
40	Basement	Average	17	52	8	0	0	0	0	8	470	9	8	26
		Range	0-44	0-218	0-42	0-0	0-0	0-0	0-0	0-42	120-865	0-44	0-41	0-87
	Living Room	Average	27	70	0	0	0	0	0	0	1001	0	0	44
		Range	0-88	0-225	0-0	0-0	0-0	0-0	0-0	0-0	120-2200	0-0	0-0	0-180
	Kitchen	Average	8	115	0	0	0	0	0	0	382	0	0	8
		Range	0-42	0-496	0-0	0-0	0-0	0-0	0-0	0-0	125-1126	0-0	0-0	0-42
	Outside	Average	226	105	0	9	110	37	9	0	8707	9	15	192
		Range	0-477	0-371	0-0	0-43	0-552	0-184	0-43	0-0	257-23077	0-43	0-74	0-669
41	Basement	Average	33	5	9	0	0	0	0	0	545	0	0	5
		Range	0-168	0-42	0-43	0-0	0-0	0-0	0-0	0-0	40-1757	0-0	0-0	0-42
	Kitchen	Average	209	0	4	0	0	0	9	0	795	0	0	15
		Range	0-589	0-0	0-40	0-0	0-0	0-0	0-85	0-0	40-1953	0-0	0-0	0-91
	1st Fl. Bed	Average	14	29	15	14	0	0	14	7	1075	0	0	0
		Range	0-84	0-127	0-91	0-86	0-0	0-0	0-84	0-43	42-1812	0-0	0-0	0-0
	Outside	Average	116	0	9	0	8	0	0	0	1664	8	8	8
		Range	0-392	0-0	0-57	0-0	0-47	0-0	0-0	0-0	92-5382	0-47	0-47	0-47
42	Basement	Average	74	86	0	30	0	0	0	0	2226	0	0	34
		Range	0-664	0-443	0-0	0-267	0-0	0-0	0-0	0-0	211-6467	0-0	0-0	0-266
	Kitchen	Average	13	0	0	0	0	0	0	0	355	0	0	7
		Range	0-80	0-0	0-0	0-0	0-0	0-0	0-0	0-0	120-684	0-0	0-0	0-40
	2nd Fl. Bed	Average	14	14	7	0	0	0	21	0	402	0	0	14
		Range	0-83	0-85	0-41	0-0	0-0	0-0	0-85	0-0	87-806	0-0	0-0	0-44
	Outside	Average	43	0	0	0	0	0	0	0	640	7	14	7
		Range	0-171	0-0	0-0	0-0	0-0	0-0	0-0	0-0	211-2484	0-43	0-85	0-43

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											yeasts ²
			Pseudopara	Puccinia	Pythium	Rhizopus	Sclerotia	Sepedonium	Spongosora	Stemphylium	Systanus	Ustilago	Verticillium	
38	Basement	Average	5	.10	0	26	5	0	11	0	0	0	5	94
		Range	0-42	0-42	0-0	0-208	0-40	0-0	0-43	0-0	0-0	0-0	0-42	0-458
	Kitchen	Average	0	0	0	0	5	0	0	0	0	21	26	66
		Range	0-0	0-0	0-0	0-0	0-40	0-0	0-0	0-0	0-0	0-165	0-206	0-200
	2nd Fl. Bed	Average	0	0	278	0	8	0	0	26	0	0	0	16
		Range	0-0	0-0	0-1390	0-0	0-40	0-0	0-0	0-128	0-0	0-0	0-0	0-41
	Outside	Average	8	0	0	0	26	0	0	162	0	168	322	244
		Range	0-42	0-0	0-0	0-0	0-132	0-0	0-0	0-764	0-0	0-838	0-1225	42-580
	Basement	Average	8	195	1605	43	0	0	8	0	11	235	0	600
		Range	0-45	0-909	0-9539	0-174	0-0	0-0	0-45	0-0	0-63	0-1408	0-0	43-1408
39	Kitchen	Average	0	0	679	0	0	0	14	0	0	9	0	190
		Range	0-0	0-0	0-3430	0-0	0-0	0-0	0-86	0-0	0-0	0-53	0-0	0-460
	1st Fl. Bed	Average	0	0	117	0	0	0	14	0	0	0	0	89
		Range	0-0	0-0	0-703	0-0	0-0	0-0	0-83	0-0	0-0	0-0	0-0	0-250
	Outside	Average	86	18	457	0	0	0	89	19	0	80	0	135
		Range	0-405	0-109	0-2742	0-0	0-0	0-0	0-531	0-116	0-0	0-381	0-0	0-636
	Basement	Average	0	0	0	0	0	0	78	0	9	8	9	102
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-392	0-0	0-44	0-42	0-44	0-218
	Living Room	Average	0	0	0	99	0	0	0	0	0	0	0	25
		Range	0-0	0-0	0-0	0-496	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-83
40	Kitchen	Average	0	0	252	198	0	0	0	17	0	0	8	71
		Range	0-0	0-0	0-1260	0-991	0-0	0-0	0-0	0-45	0-0	0-0	0-40	0-270
	Outside	Average	18	0	149	0	0	0	0	0	10	199	0	166
		Range	0-92	0-0	0-743	0-0	0-0	0-0	0-0	0-0	0-52	0-919	0-0	0-828
	Basement	Average	5	0	0	0	0	0	61	0	5	0	9	32
		Range	0-42	0-0	0-0	0-0	0-0	0-0	0-210	0-0	0-42	0-0	0-42	0-125
	Kitchen	Average	0	4	5	0	0	0	0	15	0	14	0	78
		Range	0-0	0-40	0-42	0-0	0-0	0-0	0-0	0-89	0-0	0-85	0-0	0-453
	1st Fl. Bed	Average	0	0	0	122	0	0	8	0	0	30	0	79
		Range	0-0	0-0	0-0	0-733	0-0	0-0	0-45	0-0	0-0	0-182	0-0	0-182
41	Outside	Average	0	9	189	0	7	0	0	0	0	0	0	74
		Range	0-0	0-57	0-1133	0-0	0-42	0-0	0-0	0-0	0-0	0-0	0-0	0-183
	Basement	Average	0	0	0	1872	0	0	10	0	0	0	5	82
		Range	0-0	0-0	0-0	0-5467	0-0	0-0	0-87	0-0	0-0	0-0	0-47	0-267
	Kitchen	Average	0	7	0	107	0	0	7	0	0	0	7	21
		Range	0-0	0-44	0-0	0-641	0-0	0-0	0-43	0-0	0-0	0-0	0-41	0-43
	2nd Fl. Bed	Average	0	0	0	147	0	0	0	0	0	0	7	21
		Range	0-0	0-0	0-0	0-842	0-0	0-0	0-0	0-0	0-0	0-0	0-44	0-83
	Outside	Average	7	15	0	0	0	0	0	8	0	37	7	94
		Range	0-44	0-46	0-0	0-0	0-0	0-0	0-0	0-46	0-0	0-178	0-44	0-311

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus										
			Total Fungi	Alternaria	Aspergillus	Acrostalgnus	Botrytis	Cephalospora	Cladosporium	Curvularia	Epicoccum	Fusarium	Gliocladium ²
43	Basement	Average	2207	97,	926	84	7	7	317	8	67	7	14
		Range	480-4400	0-413	240-1958	0-504	0-41	0-43	80-895	0-46	0-183	0-41	0-45
	Kitchen	Average	1827	28	647	0	14	28	183	7	64	0	7
		Range	1120-3040	0-166	331-1077	0-0	0-43	0-85	0-507	0-43	0-211	0-0	0-41
	2nd Fl. Bed	Average	2987	70	914	0	45	0	386	54	203	47	7
		Range	1480-5040	0-373	338-1756	0-0	0-176	0-0	41-933	0-280	0-747	0-280	0-44
	Outside	Average	8013	798	1472	7	117	48	2984	130	24	0	23
		Range	2520-18600	0-2570	676-2594	0-43	0-484	0-108	0-9401	0-538	0-54	0-0	0-135
44	Living Room	Average	2520	76	835	0	133	44	302	17	0	72	25
		Range	1000-4040	0-293	251-2270	0-0	0-312	0-91	0-908	0-84	0-0	0-318	0-83
	Kitchen	Average	2232	67	736	0	53	18	320	0	0	27	42
		Range	960-3560	0-252	42-2175	0-0	0-223	0-89	167-666	0-0	0-0	0-133	0-210
	1st Fl. Bed	Average	2880	154	752	0	45	28	303	0	0	0	19
		Range	1160-4720	0-458	46-2360	0-0	0-185	0-139	166-694	0-0	0-0	0-0	0-93
	Outside	Average	4976	259	3133	0	18	29	388	0	0	18	10
		Range	2840-8800	44-921	786-6769	0-0	0-89	0-52	187-670	0-0	0-0	0-89	0-52
45	Basement	Average	848	25	158	0	8	8	166	0	0	50	17
		Range	240-1600	0-42	0-415	0-0	0-42	0-42	80-253	0-0	0-0	0-166	0-42
	Kitchen	Average	1320	33	282	0	0	25	343	0	0	8	0
		Range	280-2680	0-80	40-735	0-0	0-0	0-126	40-951	0-0	0-0	0-42	0-0
	2nd Fl. Bed	Average	1536	137	376	0	17	0	324	0	9	0	9
		Range	80-2240	0-388	0-936	0-0	0-86	0-0	0-851	0-0	0-43	0-0	0-43
	Outside	Average	4216	164	979	9	28	35	609	18	9	0	0
		Range	2920-5440	0-539	224-2445	0-45	0-95	0-90	237-1032	0-90	0-45	0-0	0-0
46	Basement	Average	1728	34	307	0	18	53	316	0	0	0	34
		Range	840-3240	0-128	255-399	0-0	0-89	0-222	128-488	0-0	0-0	0-0	0-128
	Kitchen	Average	2248	116	1076	0	0	8	494	17	0	8	0
		Range	1120-5080	0-326	415-1957	0-0	0-0	0-42	0-1631	0-42	0-0	0-42	0-0
	1st Fl. Bed	Average	2344	95	883	0	8	67	785	8	0	0	0
		Range	920-6840	0-169	502-1514	0-0	0-42	0-336	42-3420	0-42	0-0	0-0	0-0
	Outside	Average	3424	297	972	0	79	88	1033	18	0	17	0
		Range	1960-6520	43-781	781-1216	0-0	0-213	0-438	426-2627	0-91	0-0	0-85	0-0

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											
			Helminthosporium	Mucor	Mycosporium	Neurospora	Not Classified	Oidium	Paecilomyces	Papularia	Penicillium	Pilobolus	Phoma	Podospharea
43	Basement	Average	65	21	7	0	0	15	0	0	418	0	0	15
		Range	0-178	0-83	0-42	0-0	0-0	0-89	0-0	0-0	80-979	0-0	0-0	0-46
	Kitchen	Average	0	102	42	0	0	0	0	14	422	0	0	14
		Range	0-0	0-529	0-127	0-0	0-0	0-0	0-0	0-85	0-1024	0-0	0-0	0-43
	2nd Fl. Bed	Average	125	7	14	15	0	0	0	7	536	7	0	52
		Range	0-487	0-42	0-86	0-47	0-0	0-0	0-0	0-43	211-974	0-44	0-0	0-233
	Outside	Average	80	192	33	199	18	29	0	0	885	0	0	52
		Range	0-391	0-1150	0-108	0-1150	0-108	0-108	0-0	0-0	217-1667	0-0	0-0	0-161
	Living Room	Average	18	50	0	0	0	17	0	0	646	0	0	36
		Range	0-45	0-251	0-0	0-0	0-0	0-86	0-0	0-0	45-1562	0-0	0-0	0-91
44	Kitchen	Average	42	177	0	9	0	0	0	0	583	0	0	18
		Range	0-210	0-838	0-0	0-44	0-0	0-0	0-0	0-0	89-1780	0-0	0-0	0-89
	1st Fl. Bed	Average	156	8	0	46	0	0	0	0	1093	0	0	0
		Range	0-642	0-42	0-0	0-231	0-0	0-0	0-0	0-0	207-2979	0-0	0-0	0-0
	Outside	Average	27	0	0	9	10	0	9	0	811	9	0	37
		Range	0-92	0-0	0-0	0-47	0-52	0-0	0-45	0-0	268-1311	0-46	0-0	0-184
	Basement	Average	8	0	0	0	0	0	0	0	350	0	0	0
		Range	0-42	0-0	0-0	0-0	0-0	0-0	0-0	0-0	80-1221	0-0	0-0	0-0
	Kitchen	Average	8	0	17	0	0	0	0	0	399	0	0	9
		Range	0-42	0-0	0-85	0-0	0-0	0-0	0-0	0-0	80-865	0-0	0-0	0-43
45	2nd Fl. Bed	Average	0	0	0	0	0	0	0	0	273	0	0	0
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	40-646	0-0	0-0	0-0
	Outside	Average	9	0	9	0	19	0	9	0	1995	9	0	113
		Range	0-45	0-0	0-45	0-0	0-47	0-0	0-47	0-0	449-3926	0-45	0-0	0-564
	Basement	Average	51	0	0	0	0	0	0	0	785	0	0	17
		Range	0-170	0-0	0-0	0-0	0-0	0-0	0-0	0-0	252-1642	0-0	0-0	0-42
	Kitchen	Average	18	0	8	0	0	8	0	8	287	0	0	8
		Range	0-47	0-0	0-42	0-0	0-0	0-41	0-0	0-42	127-466	0-0	0-0	0-42
	1st Fl. Bed	Average	34	0	0	11	11	0	0	0	180	0	0	0
		Range	0-127	0-0	0-0	0-56	0-56	0-0	0-0	0-0	41-392	0-0	0-0	0-0
46	Outside	Average	18	49	9	0	0	0	0	0	534	0	0	43
		Range	0-45	0-243	0-45	0-0	0-0	0-0	0-0	0-0	85-1813	0-0	0-0	0-174

TABLE III
AVERAGE AND RANGE VALUES OF INDIVIDUAL GENERA AND TOTAL FUNGI FOR EACH ROOM IN CFU/m³

House	Location		Genus											
			Pseudopara	Puccinia	Pythium	Rhizopus	Sclerotia	Sepedonium	Spongosora	Stemphylium	Systanus	Ustilago	Verticillium	yeasts ²
43	Basement	Average	0	.14	0	0	0	0	7	0	7	7	0	97
		Range	0-0	0-84	0-0	0-0	0-0	0-0	0-43	0-0	0-41	0-40	0-0	0-458
	Kitchen	Average	0	0	7	162	0	0	7	0	0	36	0	36
		Range	0-0	0-0	0-43	0-969	0-0	0-0	0-44	0-0	0-0	0-215	0-0	0-44
	2nd Fl. Bed	Average	0	7	276	99	0	0	93	0	0	7	8	7
		Range	0-0	0-44	0-1008	0-592	0-0	0-0	0-513	0-0	0-0	0-44	0-47	0-41
	Outside	Average	0	30	167	0	9	0	188	17	18	90	11	393
		Range	0-0	0-135	0-999	0-0	0-54	0-0	0-1075	0-54	0-108	0-541	0-68	0-1353
44	Living Room	Average	0	17	0	18	8	0	9	0	0	129	0	68
		Range	0-0	0-83	0-0	0-89	0-42	0-0	0-45	0-0	0-0	0-312	0-0	0-251
	Kitchen	Average	0	26	0	0	0	0	0	0	0	107	8	0
		Range	0-0	0-84	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-534	0-42	0-0
	1st Fl. Bed	Average	0	0	33	87	0	0	9	0	0	78	18	34
		Range	0-0	0-0	0-166	0-433	0-0	0-0	0-46	0-0	0-0	0-390	0-92	0-83
	Outside	Average	0	0	0	9	0	0	0	9	0	144	0	27
		Range	0-0	0-0	0-0	0-44	0-0	0-0	0-0	0-46	0-0	0-417	0-0	0-92
45	Basement	Average	0	0	8	0	0	0	8	0	0	0	0	41
		Range	0-0	0-0	0-40	0-0	0-0	0-0	0-42	0-0	0-0	0-0	0-0	0-83
	Kitchen	Average	0	8	9	0	0	0	9	8	0	0	17	145
		Range	0-0	0-40	0-43	0-0	0-0	0-0	0-43	0-42	0-0	0-0	0-43	0-726
	2nd Fl. Bed	Average	0	0	223	0	0	0	9	9	0	0	0	136
		Range	0-0	0-0	0-1113	0-0	0-0	0-0	0-43	0-43	0-0	0-0	0-0	0-511
	Outside	Average	9	9	0	0	0	0	0	27	0	46	36	66
		Range	0-47	0-47	0-0	0-0	0-0	0-0	0-0	0-90	0-0	0-142	0-180	0-235
46	Basement	Average	0	0	0	0	0	0	0	0	0	18	0	87
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-89	0-0	0-266
	Kitchen	Average	0	8	8	0	0	0	0	17	0	74	18	64
		Range	0-0	0-42	0-42	0-0	0-0	0-0	0-0	0-85	0-0	0-326	0-47	0-280
	1st Fl. Bed	Average	0	0	0	0	0	0	0	17	0	93	0	151
		Range	0-0	0-0	0-0	0-0	0-0	0-0	0-0	0-42	0-0	0-336	0-0	0-673
	Outside	Average	9	10	0	0	0	0	10	0	0	231	0	9
		Range	0-45	0-49	0-0	0-0	0-0	0-0	0-49	0-0	0-0	0-1070	0-0	0-45

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	2			3			4		
	Living Room	Kitchen	1st Fl. Bed.	Basement	Kitchen	2nd Fl. Bed.	Living Room	Kitchen	1st Fl. Bed.
Number of Observations	10	13	8	5	9	8	7	8	7
Penetration	37%	54%	42%	23%	49%	28%	59%	41%	48%
Outdoor Measured Total Fungi Concentration	1232	2134	1738	7638	4337	4833	3086	3085	3514
Indoor Measured Total Fungi Concentration	604	1512	1485	1850	1334	876	1531	1460	1727
Total Fungi Residual	101	209	528	830	366	332	81	363	191
Genus	Living Room	Kitchen	1st Fl. Bed.	Basement	Kitchen	2nd Fl. Bed.	Living Room	Kitchen	1st Fl. Bed.
Alternaria	24.6	9.95	8.95	-9.01	-3.5	-12.3	5.63	30.63	3.12
Aspergillus	46.8	34	62.6	75.8	27.01	-29.8	50.35	62.04	92.6
Acrostalgmus	0	0	0.53	0	0	0	0	0	0
Botrytis	2.13	24.9	32.06	-5.17	-8.31	-6.6	-45	-43.1	-66
Cephalospora	4.32	-12	-4.75	0	2.32	25.9	5.93	0	17
Cladosporium	15.3	46.57	130.99	91.5	109.59	82.3	92.3	38.02	97.9
Curvularia	0	-0.51	0	-3.6	-2.25	-2.04	0	-4.11	-3.97
Epicoccum	0	0	-5.11	0	0	0	6.24	5.16	0
Fusarium	-11.5	-15	-8.7	0	0	20.97	12.2	4.68	11.4
Gliocladium	-6.25	-8.66	-0.05	64.7	8.24	4.82	-14.4	-5.74	-13.4
Helminthosporium	-12.3	12.6	39.8	-34.2	-15.9	-18.9	-7.52	-28.8	36.7
Mucor	-11.1	15.7	33.71	6.34	50.74	69.8	-83.8	-43.3	-44.8
Mycosporium	-2.88	0	0	0	0	0	0	5.46	6.07
Neurospora	6.21	7.75	-1.06	-0.75	-4.26	5.48	-7.4	-4.89	-7.94
Unclassified	-2.88	-1.67	-3.8	0	0	0	0	0	3.52
Oidium	0	0	0	0	0	0	0	0	0
Paecilomyces	0	3.3	62.04	2.11	0	0	10.33	6.5	-0.35
Papularia	-2.88	3.4	0	-3.6	-2.25	-2.04	0	0	0
Penicillium	-8.03	15.59	-24.9	40.66	62.9	159	58.5	140.36	-17.2
Pilobolus	0	0	0	8.82	0	0	6.06	5.46	0
Phoma	1.04	0	0	-3.58	-3.38	4.79	0	0	0
Podospharea	13	-2.42	5.47	-3.6	53.8	83.3	-5.74	-17.7	-2.19
Pseudopara	4	0	0	0	0	0	0	-16.4	-15.9
Puccinia	0	12.75	-0.11	0	0	0	-1.33	-0.67	5.36
Pythium	0	0	135	0	5.34	0	0	5.24	6.02
Rhizopus	0	-24.2	0	594	72.4	-2.93	-3.98	90.98	-2.13
Sclerotia	0	7.83	0	0	0	0	-4.08	-3.23	1.75
Sepedonium	-0.04	-0.08	-0.1	17.6	0	0	0	0	0
Spongosora	0	31.7	8.04	19.2	3.92	-1.09	0	21.4	15.7
Stemphylium	0	0	0	-7.18	-5.62	-2.58	0	0	0
Systanus	0	0	0	0	0	0	0	0	0
Ustilago	5.12	6.15	5	-5.17	33.4	-3.5	-4.17	46.5	24.6
Verticillium	-5.75	-3.93	4.91	-1.58	-0.35	-2.47	-1.22	-0.6	-0.85
yeasts	36.5	33.8	48.4	-13.4	-18	-40.4	6.11	60.04	25.07

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	5			6			7		
	Basement	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.
Number of Observations	8	11	6	8	8	8	13	11	8
Penetration	25%	42%	55%	32%	43%	24%	34%	30%	41%
Outdoor Measured Total Fungi Concentration	2365	2211	3637	2611	2468	2468	2506	2907	2408
Indoor Measured Total Fungi Concentration	2005	1396	2263	761	1349	1031	1791	970	1295
Total Fungi Residual	1184	112	12	262	849	566	784	216	290
Genus	Basement	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.
Alternaria	-31.1	-37.5	-53.9	33.5	0.11	66.09	-25.3	-6.11	15
Aspergillus	-59.3	138.25	116	-97.5	-108	-104	108.84	22.8	-13.3
Acrostalgmus	0	4.01	0	0	0	0	0	0	0
Botrytis	-5.62	-6.84	-15.9	-15	-19.3	0.05	-12.7	-10.6	-7
Cephalospora	4.65	-5.82	-3.12	8.19	2.48	12.7	5.46	-1.28	4.65
Cladosporium	165	-60.6	-62.2	56.9	266	106.36	124.02	-29.9	53.01
Curvularia	-8.53	-9.43	-17.9	-2.76	-4.46	0.99	4.04	-1.74	7.29
Epiccocum	0	0	0	0	5.16	0	3.37	3.64	0
Fusarium	-3.31	-3.16	-4.93	-2.52	-3.38	2.01	-1.64	-1.49	-6.15
Gliocladium	413	3.89	-6.47	39.7	-7.12	-0.74	263.58	23.8	-4.92
Helminthosporium	-27.9	-57.9	-63.3	5.01	11.8	20.74	-41.9	-45.3	-50.7
Mucor	20.26	106.16	47.9	0	5.39	9.18	8.67	8.61	0
Mycosporium	0	0	0	4.67	-2.39	4.08	-3.77	-1.99	3.44
Neurospora	2.02	-1.81	-4.93	3.15	-3.12	7.35	1.11	-6.03	0.34
Unclassified	3.33	-3.16	-6.2	-3.47	-5.7	-3.14	2.91	-0.48	6.66
Oidium	0	4.01	0	0	0	0	0	0	0
Paecilomyces	0	0	7.37	1.3	0	0	2.71	-1.06	-4.92
Papularia	16	0	7.21	-1.33	-2.64	-2.14	-6.04	-5.57	-3.69
Penicillium	330.61	29.8	69.5	139	419	324.08	306.76	232	124
Pilobolus	-2.01	-2.75	-6.2	0	0	0	0	0	0
Phoma	0	3.9	0	5	0	0	-14.9	-12.4	-5.54
Podosphaera	193	17.2	-12.8	5	0	10.66	16.77	0	0
Pseudopara	0	0	0	0	0	0	0	0	0
Puccinia	0	0	0	0	0	0	0	0	0
Pythium	204.88	0	43.08	0	0	0	0	0	41.6
Rhizopus	10.63	35.09	0	5.93	-9.22	6.46	0	45.7	0
Sclerotia	0	0	0	0	0	0	0	0	0
Sepedonium	0	0	0	-3.19	-4.96	-1.62	0	0	0
Spongosora	0	0	0	0	0	0	25.19	-0.53	66.9
Stemphylium	0	0	0	-0.33	-2.39	-1.2	0	0	0
Systanus	-2.01	-2.75	-6.2	3.98	-0.74	4.13	0	0	0
Ustilago	-3.2	-21	-38.1	3.82	0.3	-3.15	-11.9	-9.04	-18.6
Verticillium	-7.36	-3.19	-9.88	-1.19	-0.74	4.12	-0.31	-0.53	-2.46
yeasts	-26.5	-10.6	39.4	18.9	150.21	36.4	28.92	13	76.7

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	8			9			10		
	Living Room	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.
Number of Observations	6	5	5	3	3	3	6	6	7
Penetration	64%	44%	53%	46%	14%	19%	62%	33%	55%
Outdoor Measured Total Fungi Concentration	2417	2484	2758	563	563	563	3118	3118	3490
Indoor Measured Total Fungi Concentration	2185	1668	1984	370	173	173	2237	1388	2460
Total Fungi Residual	431	373	393	166	121	102	495	593	491
Genus	Living Room	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.
Alternaria	-17.8	31.1	23.4	-0.09	24.05	37.6	34.6	-16.4	-19.3
Aspergillus	286	-22.2	150.98	-22.7	8.71	7.03	184	-8.22	285
Acrostalgmus	7.52	0	0	0	0	0	0	0	0
Botrytis	20.16	18.6	3.4	54.11	0.59	0.24	-1.27	11.7	-11.4
Cephalospora	0.86	0	-14.9	6.87	0	0	13.8	10.7	0.61
Cladosporium	-62.8	24.7	-3.84	71.9	44.7	34.4	60.77	76.2	65.2
Curvularia	-6.84	0	1.18	0	0	0	-6.3	-0.44	-10.9
Epiccocum	0	0	0	0	0	0	0	0	-6.51
Fusarium	0	4.18	4.24	0	0	0	-12	-1.47	-9.29
Gliocladium	4.24	2.27	1.31	14.1	20.9	3.49	-1.6	27.3	-4.02
Helminthosporium	12.81	2.53	-15.3	0	0	0	-22.2	35.6	28.9
Mucor	0	0	0	-15.2	-4.95	-3.22	140	20	140.01
Mycosporium	0	0	0	0	0	0	-6.3	-0.44	8.76
Neurospora	0	0	11.4	22.03	-1.1	-1.53	-5.42	-6.12	-2.53
Unclassified	0	2.15	2.12	3.61	-0.9	-1.54	-2.36	-0.82	-1.99
Oidium	0	0	8.25	0	0	0	0	0	0
Paecilomyces	1.8	0	0	0	0	0	-1.36	0.21	-0.63
Papularia	0	8.28	8.25	0	0	0	0	0	0
Penicillium	15.3	67.61	93.1	34.8	30.97	13.8	4.3	116	-107
Pilobolus	-6.84	0	19.3	0	0	0	0	0	0
Phoma	-7.29	-0.36	-8.49	0	0	0	-18.3	-8.81	-7.64
Podospharea	94	8.28	-8.96	0	0	0	6.8	8.12	35.8
Pseudopara	7.95	0	0	0	0	0	-5.42	-6.12	4.03
Puccina	15.9	0	0	0	0	0	0	0	6.56
Pythium	0	0	8.25	0	0	0	49.4	189.7	30.64
Rhizopus	0	107.25	99	0	0	0	55.2	154	31.7
Sclerotia	0	0	0	0	0	0	0	0	0
Sepedonium	-13.8	-13.8	-13.3	0	0	0	0	0	0
Spongosora	0	0	0	0	0	0	7.14	0	0
Stemphylium	0	0	8.6	0	0	0	0	0	6.86
Systanus	0	0	0	0	0	0	0	0	5.96
Ustilago	59.8	90.77	27.41	0	0	0	-11.5	-18.7	-9.15
Verticillium	2.47	0	-7.43	0.68	-1.1	-1.53	-11.2	-7.08	-7.45
yeasts	37.2	40.6	6.08	-10.8	-0.36	13.6	44.9	17.3	38.9

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	11			12			13		
	Living Room	Kitchen	1st Fl. Bed.	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed
Number of Observations	5	7	7	10	7	7	6	6	5
Penetration	27%	43%	61%	14%	23%	14%	20%	54%	40%
Outdoor Measured Total Fungi Concentration	2868	2306	2557	5021	4571	4571	4057	2187	2512
Indoor Measured Total Fungi Concentration	1444	1551	1897	1153	1083	910	1843	1958	2086
Total Fungi Residual	599	420	527	460	213	402	942	643	1019
Genus	Living Room	Kitchen	1st Fl. Bed.	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed
Alternaria	61.6	2.93	-34.5	16.9	28.5	8.01	-42.5	-85.8	-68.6
Aspergillus	390	271	262	-10.9	29.8	12.2	-38	105.39	119
Acrostaligus	0	0	0	0	0	0	0	0	0
Botrytis	4.36	-13.2	5.45	2.12	12.9	32.6	-41.5	-21.2	-5.1
Cephalospora	13.3	15.41	13.4	4.81	-13.5	-1.06	-8.78	-6.12	-12.4
Cladosporium	88.8	90.28	-2.29	100.45	31.4	87	289	106.73	7.38
Curvularia	0	0	0	-1.93	0	0	-1.56	7.3	0
Epicoccum	0	0	0	4	0	0	0	0	0
Fusarium	40.5	6.88	1.88	7.87	7.85	1.99	10.97	22.4	0
Gliocladium	-4.36	-3.61	-4.67	16.7	3.94	10.5	52.5	-3.85	5.62
Helminthosporium	15.02	11.2	82.7	-1.28	-27.5	15.09	-41.7	34.5	24.4
Mucor	-4.55	-3.55	-8.01	-10.6	-37.6	-24	30.91	14.5	23.2
Mycosporium	-3.33	-2.34	-2.06	-1.02	10.05	4.36	0	14.5	0
Neurospora	3.89	-0.21	-0.42	-2.47	10.15	7.88	0	-2.51	43.01
Unclassified	-3.1	-3.03	-8.82	0.5	-1.68	-1.02	0	0	0
Oidium	0	0	0	0	0	0	-2.32	-5.95	-4.3
Paecilomyces	-1.71	-5.71	-15.8	16.3	-1.21	-0.69	7.08	-1.67	10.62
Papularia	-1.71	-4.45	9.14	0	0	0	-3.85	-9.8	-7.07
Penicillium	140.76	115	167.11	185	32	95.6	343	186	200.25
Pilobolus	-3.9	-2.8	-2.74	0	0	0	0	0	0
Phoma	-4.55	-3.24	1.37	-1.83	-3.48	4.24	0	-3.77	-8.1
Podospharea	-39	-27.8	-60.3	-5.71	-21.3	-10.7	17.9	-22.6	-32.8
Pseudopara	2	0	0	-0.83	-0.33	5.31	0	0	0
Puccinia	-1.71	-4.45	-9.49	8.4	0	5.9	0	0	0
Pythium	-3.9	-2.8	-2.74	0	47.6	59	341	172	609.82
Rhizopus	-33.2	115	13.4	128	47.6	47.2	6.87	0	42.2
Sclerotia	0	0	0	0	0	0	0	0	8.56
Sepedonium	0	12.81	13.08	0	0	0	0	0	0
Spongosora	0	0	0	-1.81	8.85	-3.44	14.2	0	0
Stemphylium	6.65	-1.4	-1.37	0	0	0	0	0	0
Systanus	0	0	0	0	0	0	0	-3.77	-8.1
Ustilago	-26.7	-37.6	2.97	3.46	12.4	11.2	0	-0.84	-0.02
Verticillium	0	-0.16	4.66	3.03	2.14	-1.35	0	-4.63	9.36
yeasts	-66	-11.4	-12	1.47	53.7	45.9	8.55	154	45.7

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	14			15			16		
	Basement	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.	Basement	Living Room	Kitchen
Number of Observations	8	8	7	7	6	3	1	1	1
Penetration	24%	45%	47%	31%	53%	28%	36%	55%	81%
Outdoor Measured Total Fungi Concentration	2584	2584	2604	2011	1993	2043	750	750	750
Indoor Measured Total Fungi Concentration	833	1396	1594	1003	1703	1880	490	390	670
Total Fungi Residual	230	241	462	766	921	1349	221	-21	61
Genus	Basement	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.	Basement	Living Room	Kitchen
Alternaria	-25.3	-68.7	-41.4	121.6	28.81	226	63.9	0	97.3
Aspergillus	18.2	91.06	51.71	476	803.8	652	-35.6	29.9	-15.7
Acrostalgmus	0	0	0	-6.4	-8.45	0	0	0	0
Botrytis	10.39	45.4	5.26	-1.3	15.2	72	-24.5	65.8	74.8
Cephalospora	-0.03	-3.22	-0.16	-10.5	0.57	12.5	0	0	0
Cladosporium	-0.34	-40.2	197	13.1	43.8	53.9	99.3	-14	55.05
Curvularia	-0.22	-3.1	54.8	8.91	-4.23	14.9	0	0	0
Epiccocum	0	0	6.51	0	0	0	0	0	0
Fusarium	-0.22	7.63	-3.84	4.02	6.31	0	0	0	0
Gliocladium	5.22	2.18	-0.02	13.2	-6.04	27.8	0	0	0
Helminthosporium	-12.9	-19.7	-4.27	-3.28	-27.8	0	0	0	0
Mucor	4.78	-0.68	10.03	5.1	-12.7	0	170.43	0	0
Mycosporium	-0.22	2.28	-3.84	0	0	0	0	0	0
Neurospora	-6.93	-10.8	12.05	1.25	3.03	-1.68	0	0	0
Unclassified	0	0	0	-0.17	-0.48	-1.68	0	0	0
Oidium	0	0	0	-3.2	-4.23	0	0	0	0
Paecilomyces	0	7.86	1.78	0	0	0	0	0	0
Papularia	0	0	12.5	6.06	14.8	0	0	0	0
Penicillium	127	81.2	88.5	96.03	15.2	375	-43.5	-34.9	-98.4
Pilobolus	0	0	0	0	1.76	0	0	0	0
Phoma	0	0	0	-3.2	0.78	0	0	0	0
Podospharea	-18.7	54.6	-15.3	-15.1	5.1	0	0	0	0
Pseudopara	0	0	1.51	0	0	0	42.6	0	0
Puccinia	5	0	0	0	0	0	0	0	0
Pythium	84.5	91.08	-6.27	-27.8	-59.8	32.9	0	0	0
Rhizopus	0	0	0	0	14	0	0	0	0
Sclerotia	5	0	0	0	0	0	0	0	0
Sepedonium	5	0	0	0	0	0	-3.95	-6.05	-8.95
Spongosora	0	0	0	0	0	0	0	0	0
Stemphylium	-0.28	-1.27	2.7	24.7	0	0	0	0	0
Systanus	0	0	0	0	0	0	0	0	0
Ustilago	42.4	4.09	93.3	0	0	0	0	0	0
Verticillium	0	6.51	18.4	-0.15	6.92	-0.55	0	0	0
yeasts	-12.5	-5.36	-19.2	59.5	29.3	40.82	-47.4	-62.1	-85.8

Penetration is the average of all penetration values which were between zero and one.
Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.
* Table reflects 852 comparisons with no penetration values <0 and 10% >1
* Table based on 753 penetration values between zero and one
* A zero value signifies that there was no measureable concentration either inside or out
* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	17			18			19		
	Basement	Kitchen	1st Fl. Bed.	Living Room	Kitchen	2nd Fl. Bed	Basement	Kitchen	1st Fl. Bed.
Number of Observations	7	7	6	6	6	6	9	6	6
Penetration	29%	44%	31%	33%	34%	35%	19%	18%	15%
Outdoor Measured Total Fungi Concentration	3566	3566	3880	6512	6512	6512	3951	4952	4952
Indoor Measured Total Fungi Concentration	1220	1654	2350	1538	1242	1900	541	828	645
Total Fungi Residual	400	433	1078	42	-55	-105	157	260	272
Genus	Basement	Kitchen	1st Fl. Bed.	Living Room	Kitchen	2nd Fl. Bed	Basement	Kitchen	1st Fl. Bed.
Alternaria	86.2	60.07	94.4	25.6	-14.9	8.59	13.2	-9.96	-25.8
Aspergillus	-5.38	55.8	19.1	123	14.4	45.11	13.5	21.7	38.7
Acrostalgnus	0	12.7	0	0	0	0	4.44	0	0
Botrytis	45.01	10.96	58.05	-2.29	-7.04	-8.73	-0.69	-0.08	12.4
Cephalospora	23.3	-5.68	6.98	6.07	13.41	11.9	9.68	-5.86	-3.85
Cladosporium	15.9	141	139.8	54.4	47.7	58.3	79.2	-15.6	14.5
Curvularia	11.7	4.64	-1.74	-11.5	6.23	3.44	11.9	6.51	13.3
Epiccocum	0	0	0	0	0	0	0	0	0
Fusarium	-5.14	6	-0.91	4.28	-1.38	0.03	-1.39	-4.11	-0.99
Gliocladium	35.5	-0.47	-0.35	-3.16	-3.61	2.3	3.4	0	8.33
Helminthosporium	2.4	26.6	20.5	-7.31	6.54	24.3	-13.3	-12.5	1.13
Mucor	6.1	0	32.9	2.23	-3.42	2.94	7.39	1.2	4.65
Mycosporium	-0.56	-1.71	5.25	0.62	-4.06	7.56	-0.02	-0.43	-0.07
Neurospora	0.5	-5.7	2.62	-17.6	-16	-38.1	13.31	-0.04	-0.45
Unclassified	0	1.56	34.7	-6.02	-5.38	-4.2	0	1.75	7.06
Oidium	0	0	0	0	0	0	0	0	0
Paecilomyces	4.22	-4.3	-0.43	0	0	6.9	-0.33	-0.84	1.19
Papularia	0	0	13.8	0	6.67	0	0	0	0
Penicillium	130	-3.67	90.12	-154	-71.4	-164	12.4	104.51	120
Pilobolus	6.09	5.99	0	6.67	0	0	0	0	0
Phoma	5.94	0	0	0	0	0	8.87	-0.43	-0.07
Podospharea	-3.3	-5.83	119	-3.51	-1.84	3.71	-3.46	16.5	-3.95
Pseudopara	-1.4	-1.43	20	-15	-15.1	-18.7	0	29.3	0
Puccina	0	6.09	23.4	-3.51	-1.84	-3.19	-1.72	-2.22	-3.38
Pythium	113	223	162.11	-5.08	-4.42	-4.7	0	0	0
Rhizopus	-58.7	-59.9	-145	0	0	0	-2.13	34.9	0
Sclerotia	0	0	14.7	0	0	0	0	13.9	0
Sepedonium	0	0	0	-1.58	-1.81	-0.61	0	0	0
Spongosora	0	0	16.4	-1.76	5.75	-1.6	0	20.93	0
Stemphylium	11.4	10.25	-1.74	6.98	0	0	0	0	0
Systanus	0	0	0	0	0	0	0	6.98	0
Ustilago	-39.8	-49.9	356	18.5	-2.44	-32.8	-15.5	-20	-30.4
Verticillium	-1.64	6.65	-1.33	-1.02	2.06	-0.98	2.73	13.7	6.48
yeasts	24.6	5.66	14.6	19.09	-2.88	-9	15.4	60.67	114

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	20		21			22		
	Living Room	2nd Fl. Bed	Basement	Kitchen	1st Fl. Bed.	Basement	Living Room	Kitchen
Number of Observations	5	10	6	4	4	6	5	6
Penetration	40%	34%	75%	33%	55%	42%	18%	20%
Outdoor Measured Total Fungi Concentration	4758	4758	1742	1748	1748	11563	13396	11563
Indoor Measured Total Fungi Concentration	2230	1832	14367	1428	1913	2047	1302	1485
Total Fungi Residual	324	245	13418	892	857	605	558	681
Genus	Living Room		Basement			Living Room		
	Living Room	2nd Fl. Bed	Basement	Kitchen	1st Fl. Bed.	Basement	Living Room	Kitchen
Alternaria	142.8	12.7	-64.7	-33.9	-56.9	19.2	114	18.9
Aspergillus	-16.2	53.5	-412	-134	-147	269	280.14	294
Acrostalgmus	0	0	0	-2.7	-9.09	-0.62	-0.57	-0.69
Botrytis	-8.9	-5.27	171	6.34	10.48	-16.9	-10.1	-4.18
Cephalospora	-0.17	24.7	22.3	10.32	0	32.3	-2.91	5.22
Cladosporium	30.38	69.02	2320	628	450.94	96.4	103.22	125
Curvularia	-4.57	12.2	54.2	0	0	0	0	0
Epiccocum	0	0	0	0	0	0	0	0
Fusarium	0	4.17	47.4	20	0	-18.9	-14.5	-2.1
Gliocladium	10.97	13.7	564	11.2	11.2	66.8	-2.78	-2.25
Helminthosporium	-37.4	-65.4	-81	34.07	-35	6.44	-0.68	-0.41
Mucor	-16.4	-12.1	445	51.6	10.36	-1.62	-1.51	115
Mycosporium	-9.13	-0.66	0	0	0	-3.74	5.01	-4.12
Neurospora	-14.4	-6.89	21.5	10.32	10.83	3.91	-3.02	-2.74
Unclassified	-5.31	0.45	17.8	-2.7	13.4	-6.91	-0.57	-6.21
Oidium	0	0	0	-2.7	-9.09	0	0	0
Paecilomyces	16.7	0	0	0	32.8	7.1	33.6	0
Papularia	0	8.17	0	0	0	0	0	0
Penicillium	250.12	-25.8	637	47.2	119	53.5	11.2	2.09
Pilobolus	0	0	0	0	0	6.88	0	0
Phoma	0	0	11.1	-2.67	-6.28	0	0	0
Podospharea	-9.61	-0.55	8580	84.5	150.61	16.8	-6.01	6.28
Pseudopara	0	4.66	0	-2.7	-9.09	-6.65	7.25	-12.4
Puccinia	0	0	0	-2.7	-9.09	-12.6	8.26	-11.1
Pythium	0	97.3	0	62.7	156	0	0	132
Rhizopus	0	0	64.5	0	0	0	0	0
Sclerotia	-1.74	-1.77	0	0	0	-13.8	-1.13	-12.4
Sepedonium	0	0	0	0	0	0	0	0
Spongosora	0	0	0	-2.7	-9.09	-12.6	0	-4.04
Stemphylium	0	0	0	0	0	-0.77	7.48	-0.76
Systanus	-4.45	-2.63	0	0	0	0	0	0
Ustilago	-26	-11.7	-11.1	2.5	11.2	24.4	31.3	-17.3
Verticillium	-1.21	3.03	0	0	5.21	0	0	0
yeasts	28.8	73.6	689	53.6	93.3	90.19	0.27	62.9

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values<0 and 10%>1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	23			24			25		
	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed	Basement	Living Room	Kitchen
Number of Observations	6	6	5	7	6	6	5	5	5
Penetration	34%	60%	37%	22%	52%	49%	27%	42%	20%
Outdoor Measured Total Fungi Concentration	2273	2273	2424	3200	3433	3013	3246	3246	3246
Indoor Measured Total Fungi Concentration	998	1463	1008	857	2683	1732	1484	2522	1368
Total Fungi Residual	328	108	357	228	823	297	633	1074	525
Genus	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed	Basement	Living Room	Kitchen
Alternaria	59.4	-19.4	-20	-11	1.59	54.6	-4.18	-1.2	7.29
Aspergillus	-24.4	27.8	-70	-14.2	169	43.9	96	240.64	148
Acrostalgnus	0	0	0	-1.42	-5.07	3.35	-2.37	-3.05	-4.23
Botrytis	13.3	-7.52	-9.87	15.8	58.3	53.7	-14.9	2.76	-1.07
Cephalospora	7.06	22.7	8.41	-5.08	7.29	-19.8	25.07	0	0
Cladosporium	-0.36	-26.6	257	33.2	252.41	-48.7	95	24.6	-62.7
Curvularia	6.95	0	0	-8.2	5.83	-6.45	-8.48	-12.3	-6.89
Epiccocum	0	0	0	0	7.59	0	0	9.01	8.67
Fusarium	-1.33	23.1	-1.11	11.9	0	21.3	18.1	-10.8	-5.56
Gliocladium	14.11	7.12	0	-0.07	2.38	8.52	3.65	-6.09	-1.07
Helminthosporium	-17.5	-19.8	-5.06	-34	69.4	-34	14.2	246	12.4
Mucor	10.72	2.32	-1.11	8.09	-2.86	-5.73	-58	-63.3	-17.6
Mycosporium	16.02	23	8.41	-2.44	4.57	4.26	-0.41	-5.24	-0.67
Neurospora	3.49	-4.26	-9.64	-3.16	3.28	-5.81	8.59	17.7	0
Unclassified	-3.12	-9.18	-3.54	0	0	0	9.02	-0.69	-0.33
Oidium	7.05	0	0	0	7.27	0	0	0	0
Paecilomyces	7.05	7.09	2.12	5.71	0	0	25.9	18.03	8.67
Papularia	0	0	0	0	7.59	7.1	0	0	0
Penicillium	245	21.8	164	115.2	67	187	345	126	82.7
Pilobolus	0	0	0	6.03	0	0	0	0	0
Phoma	0	13.7	8.41	0	0	0	-2.37	-3.05	-4.23
Podospharea	0	42.6	16.7	26.5	8.4	9.47	17	36.2	42.4
Pseudopara	-0.67	-2.4	-0.56	0	0	0	-5.14	3.41	-1.52
Puccinia	0	0	0	0	7.42	0	-7.51	9.45	2.92
Pythium	-33.5	-15.7	6.81	0	7.42	53.3	-7.66	293	136
Rhizopus	0	0	0	60.32	0	0	0	0	0
Sclerotia	0	0	0	0	0	0	0	0	0
Sepedonium	-0.4	-1.8	-2.03	0	0	0	0	0	0
Spongosora	0	0	0	0	52.9	0	17.3	0	0
Stemphylium	0	3.58	0	-1.42	-5.07	-4	0	0	0
Systanus	0	0	0	0	0	0	0	0	0
Ustilago	-17.1	-42.2	-16	11.7	41.6	-36	41.9	94.2	66.21
Verticillium	-2.15	-13	-6.4	-4.51	-30	8.46	0	8.5	19.3
yeasts	35.8	64.1	30.28	19.2	62.6	2.48	18.6	45.6	79.9

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	26			27			28		
	Basement	Kitchen	1st Fl. Bed.	Basement	Living Room	Kitchen	Basement	Kitchen	2nd Fl. Bed
Number of Observations	4	6	4	6	6	6	6	6	6
Penetration	49%	50%	41%	44%	60%	59%	27%	33%	20%
Outdoor Measured Total Fungi Concentration	3580	3140	3660	2908	2908	3348	6687	6687	6687
Indoor Measured Total Fungi Concentration	3163	1673	1820	2190	2000	2090	1715	1325	1885
Total Fungi Residual	1989	410	630	1030	377	255	542	118	1107
Genus	Basement	Kitchen	1st Fl. Bed.	Basement	Living Room	Kitchen	Basement	Kitchen	2nd Fl. Bed
Alternaria	-29.2	14.41	10.84	-17.1	2.65	-58.9	79.5	13.7	25.2
Aspergillus	-54.7	-51.3	0.9	-169	127	138	350	320.62	200.6
Acrostalgmus	0	0	0	0	0	0	-3.15	-3.36	-0.99
Botrytis	-0.38	13.5	-8.71	27.3	-4.54	-27.4	-9.71	4.1	-6.88
Cephalospora	-6.48	14.3	6.56	5.95	7.05	20.43	23.9	-0.43	-3.84
Cladosporium	72.6	34.5	-19.5	70.24	45	106.4	-94.5	190	8.78
Curvularia	-15.1	-8.52	2.32	20.5	18.1	3.8	-1.75	2.39	-1.87
Epiccocum	0	42.9	43.08	0	27.8	6.88	0	0	0
Fusarium	-10.6	-34.7	23.6	11.9	-30.9	-22.3	0	0	7.52
Gliocladium	55.9	0	10.56	7.12	0	7.04	54.4	-6.56	-1.37
Helminthosporium	-50.4	-84.6	24	-8.01	-91.3	-53.2	20.03	-1.76	-4.79
Mucor	124	82.9	96.9	0	7.1	7.47	147	0	202.2
Mycosporium	0	0	0	7.16	0	-52.4	-5.14	-2.9	-0.82
Neurospora	2.95	1.25	-0.25	-3.71	0.7	-9.61	-4.57	-6.95	-5.86
Unclassified	0	0	0	5.7	-2.04	4.88	-0.06	3.21	10.26
Oidium	10.73	7.14	0	-3.76	2.87	-3.52	0	6.99	0
Paecilomyces	0	0	0	-7.53	-8	-7.04	0	3.76	0
Papularia	0	0	0	0	0	7.04	0	0	0
Penicillium	1390.34	183	382.61	338	177	82.2	11.4	19.03	82.01
Pilobolus	11.1	6.91	0	7.04	0	0	0	0	0
Phoma	0	0	10.61	7.04	0	-9.54	0	14.7	0
Podospharea	-3.82	-6.26	4.8	314	-16	28.04	-6.31	33.5	-2.47
Pseudopara	0	0	0	6.38	-2.97	4.39	-4.56	-1.68	-0.61
Puccina	0	6.99	0	12.06	5.91	-1.74	-3.15	-3.36	-0.99
Pythium	-40.1	-22	-28.2	0	0	0	-7.71	-5.03	-1.6
Rhizopus	0	0	0	172	0	0	14.2	0	93.9
Sclerotia	0	-6.81	-8.46	0	0	0	0	0	0
Sepedonium	0	0	0	0	0	0	0	3.33	0
Spongosora	-3.05	-3.01	-1.87	0	0	0	7.22	57.1	0
Stemphylium	-10.6	-3.86	-1.87	-5.51	-9.71	-1.18	-5.43	5.09	5.41
Systanus	0	0	10.77	0	0	0	0	0	0
Ustilago	-0.38	-0.3	-0.25	-39.3	-18.2	-42.7	-36.6	-19.6	26.8
Verticillium	0	0	0	-2.93	-4.09	3.46	-1.67	-3.24	3.9
yeasts	474	144	150.82	15.1	13.5	28	19.7	-11.3	-20.7

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	29			30			31		
	Basement	Living Room	Kitchen	Living Room	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.
Number of Observations	3	4	4	7	6	7	6	4	5
Penetration	67%	43%	49%	23%	21%	44%	37%	59%	60%
Outdoor Measured Total Fungi Concentration	3400	3050	3050	5117	5343	5117	3147	3450	3768
Indoor Measured Total Fungi Concentration	6040	2210	1810	806	622	1401	1520	2675	2624
Total Fungi Residual	3741	893	229	287	88	392	323	586	528
Genus	Basement	Living Room	Kitchen	Living Room	Kitchen	1st Fl. Bed.	Basement	Kitchen	1st Fl. Bed.
Alternaria	-207	29	-224	3.36	-1.83	-10.3	-59	6.77	-85.8
Aspergillus	-11.8	12.9	91.02	-18.7	-26.1	2.88	75.2	-29.2	184
Acrostalgnus	0	0	0	0	6.97	0	0	0	0
Botrytis	0	31.9	0	-23.8	-11.2	-3.41	2.71	3.37	12.6
Cephalospora	17.1	10.86	0	0.55	5.04	-6.25	9.37	6.37	27.8
Cladosporium	74.5	376	182	30.34	14.06	27.3	-74.1	31.6	-53.3
Curvularia	16	21.6	0	-9.4	-1.63	-14.9	0.56	24.06	28.4
Epiccocum	0	0	0	29.5	0	0	0	0	0
Fusarium	0	10.35	0	9.92	13.6	-0.93	-2.69	-14.6	-5.34
Gliocladium	1438.04	0	32.5	0.12	-2.79	-4.23	-2.89	13.4	-37.3
Helminthosporium	-5.04	-6.31	-6.16	-2.11	-4.56	-14.9	-24.7	36.03	-52
Mucor	434.71	10.81	109.38	-0.95	5.93	5.27	68.8	243	33.8
Mycosporium	17.1	0	0	-0.95	-0.74	-3.94	0	0	0
Neurospora	-23.2	-10.3	-7.08	1.83	-2.96	2.04	-1.99	-2.23	34.7
Unclassified	0	0	0	-0.28	-0.7	-0.64	1.79	-2.23	-3.96
Oidium	0	0	0	0	0	0	0	21.8	0
Paecilomyces	0	0	0	2.95	0	0	5.11	-2.23	13.2
Papularia	0	0	0	0	0	0	6.88	10.83	0
Penicillium	1430.61	457	117	58.71	48.5	23.7	108.36	321	182.8
Pilobolus	34.2	0	0	5.89	0	0	0	0	4.84
Phoma	0	10.81	0	-3.58	-3.39	-6.07	-2.69	-3.66	-5.34
Podosphaera	0	6.78	-1.8	-0.96	0	24.09	-9.08	-145	39.4
Pseudopara	0	0	0	-0.28	1.12	-0.64	0	12.03	0
Puccinia	60.41	-31.6	-30.8	0	0	0	0	-10	11.1
Pythium	0	0	0	180	0	133	258	0	278
Rhizopus	409.42	30.13	-35.9	0	0	140.49	0	-60	-35.9
Sclerotia	0	0	0	-0.96	0	-0.39	0	0	0
Sepedonium	0	0	0	0	0	0	0	0	0
Spongosora	0	0	0	-3.58	-3.39	-6.07	0	10.9	0
Stemphylium	-10.1	-12.6	-1.38	5.71	0	0	-0.77	-29.1	-10.7
Systanus	0	0	0	0	0	0	0	0	0
Ustilago	104.12	-12.8	13.5	-2.75	-1.58	0.46	-35.2	-17.5	32.9
Verticillium	0	-3.93	-1.8	4.97	0.7	1.72	0	-10	-5.98
yeasts	-37.6	-37.1	-7.1	8.25	54.7	103.49	1.04	156.08	-56.7

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	32			33		34		
	Basement	Kitchen	1st Fl. Bed.	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed
Number of Observations	6	6	6	3	4	6	6	6
Penetration	23%	36%	41%	49%	63%	53%	56%	46%
Outdoor Measured Total Fungi Concentration	3072	3072	3072	3707	3430	2993	2993	2993
Indoor Measured Total Fungi Concentration	1050	1577	1587	5160	3420	2160	1963	1456
Total Fungi Residual	521	589	497	2728	1370	669	449	600
Genus	Basement	Kitchen	1st Fl. Bed.	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed
Alternaria	20	-39.6	-40.6	-152	-105	120.04	90.57	32.6
Aspergillus	-24.8	108.86	211	88.3	-120	33.06	90.34	88.6
Acrostalgnus	0	14.4	7.55	30.67	0	0	0	0
Botrytis	-12	-4	4.19	0	54.3	7.22	0	6.98
Cephalospora	0	7.56	15.09	-42.2	-15.8	5.86	-1.46	-8.41
Cladosporium	136	174	180	299	444	149	168	163
Curvularia	3.52	-2.66	10.03	0	0	-5.59	22.7	-5.22
Epiccocum	0	0	0	0	0	7.02	0	0
Fusarium	13.8	-3.68	17.7	57.4	-43.4	-21.1	-5.9	-13.5
Gliocladium	28.2	14.5	0	0	136	14.9	0	0
Helminthosporium	-0.6	13.6	-0.29	31.2	0	-2.65	-77.6	-42
Mucor	42.7	19	28.5	153	11.5	29.4	0	0
Mycosporium	0	0	13.7	0	11	28.9	0	0.75
Neurospora	11.2	0.46	13.2	0	-28.2	2.15	-0.79	-3.65
Unclassified	-0.36	-0.88	-0.65	61.3	19.8	-2.88	-6	-0.77
Oidium	0	0	0	-28.7	-12.4	0	0	0
Paecilomyces	0	0	0	-144	-62	7.22	7.01	0
Papularia	0	6.89	14.6	0	0	0	6.98	0.75
Penicillium	98.5	87.1	61.4	144	535	159	7.28	156
Pilobolus	0	0	0	0	0	0	0	0
Phoma	-0.6	-7.36	0.39	0	0	0	0	0
Podospharea	10.75	62.4	46.6	940.17	3.39	-57.3	-39	-22.1
Pseudopara	-5.06	20.56	-23.1	0	-8.06	0	0	0
Puccina	0	0	0	15.6	11	0	0	2.25
Pythium	155	-3.68	-3.58	705.33	0	208.21	93.5	160
Rhizopus	-2.39	115	-4.33	156	367	154	117	0
Sclerotia	0	0	0	0	0	0	0	0
Sepedonium	0	0	0	0	0	0	0	0
Spongosora	13.9	-47.8	-70.1	-14.4	4.8	9.19	-51.5	-43.7
Stemphylium	-0.6	0.2	0.39	0	0	0	6.98	0
Systanus	0	6.97	7.08	0	0	0	0	0
Ustilago	-11.8	-17.9	4.11	76.7	-34.6	-44.3	-45.4	-21.9
Verticillium	-0.3	-3.68	-3.58	8.36	-7.44	-1.21	9	-4.91
Yeasts	45.8	62.3	7.86	343	190.4	-6.94	-31.1	-20.8

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	36			37			38		
	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed
Number of Observations	3	3	3	1	1	1	8	8	5
Penetration	29%	27%	35%	19%	16%	3%	25%	20%	28%
Outdoor Measured Total Fungi Concentration	15120	15120	15120	1920	1920	1920	6120	6120	7896
Indoor Measured Total Fungi Concentration	1827	1533	2520	840	880	1280	1165	810	1280
Total Fungi Residual	851	596	1248	483	566	1223	215	60	213
Genus	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed
Alternaria	128	-13.9	153	110.12	237	38.7	-27.4	-25.6	-57.7
Aspergillus	287.31	305.17	189	294	126	1032.26	-30.7	-27.8	-68.9
Acrostalgmus	0	0	0	0	0	0	0	0	0
Botrytis	0	27.91	0	42	0	0	-7.94	9.14	4.27
Cephalospora	-0.52	-0.69	13.3	0	0	0	-5.48	-14.5	-3.87
Cladosporium	192	49.7	569	34.06	34.9	40.01	190.78	42.8	131
Curvularia	-3.53	10.75	-4.31	0	0	0	0.58	5.34	-18.4
Epiccocum	0	0	0	0	0	0	-0.34	-0.36	-1.53
Fusarium	24.9	-2.34	140.35	0	0	0	5.44	-8.85	-10.2
Gliocladium	-18.8	-18	-8.5	0	0	0	5.22	5	8.28
Helminthosporium	-27	34.4	71.2	0	0	0	25.6	11.6	0.11
Mucor	-84.3	-108	-137	0	126	0	0	0	0
Mycosporium	14.2	14	14.4	0	0	0	3.28	-2.16	7.99
Neurospora	-3	-2.34	-3.32	-7.94	-6.97	40.01	5.33	0	8.51
Unclassified	0	0	28.6	0	0	0	3.24	-1.26	6.09
Oidium	0	13.8	14.4	0	0	0	20.62	4.44	14
Paecilomyces	0	14	0	0	0	0	-4.18	-2.52	-4.38
Papularia	0	0	0	0	0	0	0	5.21	0
Penicillium	29.8	39.4	20.68	-7.65	-13.4	-7.24	-33.3	45.2	6.08
Pilobolus	0	0	0	0	0	0	0	0	0
Phoma	0	14	0	0	0	0	-0.34	-0.36	-1.53
Podospharea	22.2	-4.67	-6.65	0	0	0	14.7	-21.3	-21.3
Pseudopara	0	0	0	0	0	0	3.43	-2.09	-8.2
Puccinia	0	0	14.4	0	41.9	0	10.4	0	0
Pythium	214	176	-51.2	0	0	0	0	0	278.07
Rhizopus	0	0	0	0	0	0	26	0	0
Sclerotia	0	0	0	0	0	0	-13.3	-12	5.15
Sepedonium	0	0	0	0	0	0	0	0	0
Spongosora	-1.05	-1.38	12.5	0	0	0	10.52	0	0
Stemphylium	0	0	0	0	0	0	-10.2	-9.98	6.17
Systanus	0	0	0	0	0	0	0	0	0
Ustilago	-19.3	-18.7	134	26.1	-13.9	38.7	-13.6	12.5	-14.2
Verticillium	41.9	14	0	0	0	0	-30	-1.03	-37
yeasts	55.6	54.6	71.2	-7.94	34.9	40.01	66.6	48.7	-15.9

Penetration is the average of all penetration values which were between zero and one.
 Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.
 * Table reflects 852 comparisons with no penetration values <0 and 10%>1
 * Table based on 753 penetration values between zero and one
 * A zero value signifies that there was no measureable concentration either inside or out
 * All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	39			40			41		
	Basement	Kitchen	1st Fl. Bed.	Basement	Living Room	Kitchen	Basement	Kitchen	1st Fl. Bed.
Number of Observations	3	6	6	5	5	5	8	9	5
Penetration	31%	35%	29%	18%	19%	18%	30%	45%	36%
Outdoor Measured Total Fungi Concentration	7947	7527	7527	13544	13544	13544	4320	3942	5160
Indoor Measured Total Fungi Concentration	3467	3647	3540	1352	1872	1576	1390	2191	2584
Total Fungi Residual	1960	986	1124	355	340	649	453	606	888
Genus	Basement	Kitchen	1st Fl. Bed.	Basement	Living Room	Kitchen	Basement	Kitchen	1st Fl. Bed.
Alternaria	-177	25.1	155	8.56	-51.6	-35.3	-8.42	-11.2	-29.1
Aspergillus	-48.6	-184	-76.7	47.4	-111	-51.3	-118	-105	-164
Acrostalgmus	0	17.07	-2.16	0	0	0	-3.86	-1.82	-1.07
Botrytis	-3.78	42.5	50.44	0	0	0	13.2	1.03	0.28
Cephalospora	5	19.6	-16.5	-0.12	8.82	16.5	21.8	27.08	-15.4
Cladosporium	584	118	68.3	19.5	114	100.9	78.3	90.21	380.91
Curvularia	11.4	4.41	-9.01	-11.9	-29.7	-21.9	26.6	8.84	94.7
Epiccocum	0	0	0	0	0	0	0	0	0
Fusarium	133.11	-10.6	0.12	-0.74	33.3	-0.22	5.24	9.55	8.9
Gliocladium	175	13.8	47.03	8.72	25.01	9.01	-0.46	3.07	6.03
Helminthosporium	60.55	-33.2	-50.4	-43.4	-33.6	-52.8	-55.8	102.36	-31.6
Mucor	120	-36.4	-3.57	39.7	48.3	104.93	5.24	0	8.9
Mycosporium	7.57	-0.69	-2.8	8.36	0	0	10.1	2.79	15.3
Neurospora	-18.7	3.42	8.78	-1.9	-2.24	-1.53	0	0	17.3
Unclassified	10.61	11.1	1.64	-0.74	-1.17	-1.09	-1.93	-0.91	-4.85
Oidium	-26.3	-4.59	55.3	-0.25	-0.39	-0.36	0	0	0
Paecilomyces	0	0	0	-2.9	-1.3	-3.18	0	9.46	16.7
Papularia	15.06	0	0	8.36	0	0	0	0	8.63
Penicillium	545	542	827	111	301.73	112	290	435.2	344.01
Pilobolus	0	0	0	5.81	-1.3	-3.18	-1.93	-0.91	-4.85
Phoma	0	0	0	7.51	-1.86	-0.22	-1.93	-0.91	-4.85
Podospharea	-87.4	-17.7	73.7	3.46	7.02	-10.9	3.37	13.9	-4.85
Pseudopara	-11.2	-14.6	-18.3	-0.12	-0.19	-0.18	5.24	0	0
Puccinia	303.16	-12.1	-8.46	0	0	0	-0.46	2.79	-2.87
Pythium	30.32	345	0.38	-7.35	-18.6	250	-9.17	-28.4	-57.4
Rhizopus	28.7	0	0	0	99.1	198	0	0	147
Sclerotia	0	0	0	0	0	0	0	-2.86	0
Sepedonium	0	0	0	0	0	0	0	0	0
Spongosora	-3.75	1.74	-31.2	78.4	0	0	68.6	0	9.08
Stemphylium	-7.49	-0.69	-2.8	0	0	17.4	0	14.6	0
Systanus	0	0	0	5.99	-4.2	-3.15	5.25	0	0
Ustilago	-12.5	-34.9	-32.3	6.35	-3.8	-2.04	0	14.41	36.3
Verticillium	0	0	0	8.72	0	8	5.29	0	0
yeasts	328	176	68.07	58.05	-41.8	20.42	29.5	58.7	44.3

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measureable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	42			43			44		
	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed	Living Room	Kitchen	1st Fl. Bed.
Number of Observations	4	5	6	5	6	5	4	6	8
Penetration	54%	42%	53%	23%	31%	34%	20%	13%	44%
Outdoor Measured Total Fungi Concentration	3330	3144	3007	9104	8013	9104	6200	6200	5360
Indoor Measured Total Fungi Concentration	3920	1720	1880	1936	1827	2952	1840	1453	2420
Total Fungi Residual	2049	460	350	312	567	1041	487	692	772
Genus	Basement	Kitchen	2nd Fl. Bed	Basement	Kitchen	2nd Fl. Bed	Living Room	Kitchen	1st Fl. Bed.
Alternaria	146	-14.5	-0.01	-71.9	-51.1	-102	-26	19.2	-46.2
Aspergillus	-51.2	338	82.06	329	245	244	-94.6	-83.2	-367
Acrostalgmus	0	0	0	99.05	-4.46	-6.39	0	0	0
Botrytis	-11.9	8.55	-5.68	-40.5	-4.58	-26.6	42.6	0	10.36
Cephalospora	-5.96	17.2	18.6	-2.94	13.4	-16.7	5.73	-5.88	-9.67
Cladosporium	-31.2	-104	38.7	-32.4	-51.2	19.3	50.44	192	44.05
Curvularia	-10.7	-5.09	-7.22	-50.3	-16.7	-0.43	27.91	0	0
Epiccocum	0	0	0	48.7	56.2	203.47	0	0	0
Fusarium	0	-6.3	7.83	8.29	0	56	14	0	0
Gliocladium	142	-12.6	-13.5	8.11	6.41	7.98	40.88	68.5	-0.85
Helminthosporium	137	2.3	-0.61	37.9	-50	87.6	-0.41	61.06	134.01
Mucor	194	0	14.1	14.1	97.7	1.82	83.7	279	10.57
Mycosporium	0	0	6.91	-5.84	32.6	-1.09	0	0	0
Neurospora	0	0	0	-5.6	-6.07	-0.75	-1	-0.29	-1.51
Unclassified	0	0	0	-9.33	-3.34	-8.55	-0.85	-1.36	-0.85
Oidium	0	0	0	-9.47	-3.59	-8.94	28.7	0	0
Paecilomyces	0	0	21.2	0	0	0	0	0	0
Papularia	0	0	0	0	14.2	8.65	0	0	0
Penicillium	456	138	110.29	75.9	229.21	295	352	220.36	717
Pilobolus	-4.61	-2.15	-1.81	0	0	0	-7.38	-4.52	-8.82
Phoma	-9.22	-4.31	-3.61	0	0	0	0	0	0
Podospharea	71	8	11.4	-1.51	3.04	40.3	-15.2	-18.1	-35.3
Pseudopara	0	-1.94	-4.41	0	0	0	0	0	0
Puccinia	-8.73	3.76	-7.49	13.4	-2.29	4.54	27.8	28.03	0
Pythium	0	0	0	-41	-95.3	184	0	0	41.4
Rhizopus	1003.65	128	147	0	162	118	0	0	99.4
Sclerotia	0	0	0	-4.66	-1.67	-4.27	14	0	0
Sepedonium	0	0	0	0	0	0	0	0	0
Spongosora	21.8	0	0	-86.5	-26.9	24.2	0	0	0
Stemphylium	-8.73	-3.03	-3.09	-7.79	-3.46	-7.71	-7.38	-4.52	-8.82
Systanus	0	0	0	-1.04	-3.34	-8.55	0	0	0
Ustilago	-4.79	-12.9	-22	6.84	33.9	-3.13	104.7	-10.9	29.2
Verticillium	0	6.34	2.88	-0.15	-0.25	8.94	0	14.02	22.9
yeasts	24	-24.4	-41.5	41.8	-9.13	-69	69	-9.03	15.7

Penetration is the average of all penetration values which were between zero and one.

Outdoor Total Fungi Concentration is average of levels where penetration values > 0 and < 1.

* Table reflects 852 comparisons with no penetration values < 0 and 10% > 1

* Table based on 753 penetration values between zero and one

* A zero value signifies that there was no measurable concentration either inside or out

* All values except Penetration and Number of Observations are in units of (CFU/m³)

TABLE XV
SUMMARY OF GENERA RESIDUALS FOR ALL SAMPLED ROOMS WITH PENETRATIONS GREATER THAN ZERO AND LESS THAN ONE

House	45				46			
	Basement		2nd Fl. Bed.		Basement		2nd Fl. Bed.	
Number of Observations	10	10	10	10	10	10	8	8
Penetration	15%	28%	24%	24%	32%	32%	52%	46%
Indoor Measured Total Fungi Concentration	4216	4216	4216	1536	3424	3780	2290	1220
Total Fungi Residual	274	241	638		747	230		108
Genus								
Alternaria	-16	-62.2	64.4	124	-59.5	-72.8	-11.8	292
Aspergillus	-5.35	1.35	124	-5.32	4.97	441	0	0
Acrostalagus	-2.88	-7.35	11.7	-6.02	-43	-29.3	0	0
Botrytis	4.97	-7.77	11.7	31.01	-68.6	-144	0	0
Cephalospora	0	-16.7	130.72	26.4	-113	-4.59	5.04	0
Cladosporium	50.17	106.07	-10.6	-3.47	0	0	0	0
Curvularia	-5.76	-14.7	-2.88	3.29	0	0	0	0
Fusarium	50	8.38	0	-6.73	-1.85	-11.5	0	0
Gliocladium	16.7	8.51	0	34.41	0	0	0	0
Helminthosporium	5.54	1.03	-5.32	45.3	19.2	33	0	0
Mucor	0	0	0	-12.1	-44	0	0	0
Mycosporium	-0.65	15.2	-0.42	-1.74	7.58	-2.77	0	0
Neurospora	0	0	0	0	0	0	0	0
Unclassified	-1.75	-1.94	-1.98	0	0	0	0	0
Oidium	0	0	0	10.37	0	0	0	0
Pactiomyces	-1.52	-1.73	-1.89	0	0	0	0	0
Papularia	0	0	0	0	0	0	0	0
Penicillium	179	90.17	26.5	658	111	-54.7	0	0
Phlobolus	-2.88	-7.35	-5.32	0	0	0	0	0
Phoma	0	0	0	0	0	-25.5	0	0
Podospharea	-18.2	-12.2	-22.7	1.55	-28.3	-2.77	0	0
Pseudopara	-0.23	-0.21	-0.09	-1.74	-2.99	0	0	0
Puccinia	-1.52	6.27	-1.89	-2.42	1.77	0	0	0
Pythium	8	8.65	223	0	10.57	0	0	0
Rhizopus	0	0	0	0	0	0	0	0
Sclerotia	0	0	0	0	0	0	0	0
Sepedonium	0	0	0	0	0	0	0	0
Spongosora	8.38	8.55	8.51	-2.42	-8.8	0	0	0
Stemphylium	-6.41	-8.25	-2.55	0	21.1	20.96	0	0
Systemans	0	0	0	0	0	20.28	0	0
Ustilago	-3.24	-3.51	-6.29	-42.2	-114	0	0	0
Verticillium	-11.5	-12.4	-21.3	0	22.2	0	0	0
Yeasts	33.4	136	126	85.2	77.5	18.2	0	0

Penetration is the average of all penetration values which were between zero and one.
 * Table reflects 852 comparisons with no penetration values<0 and 10%>1
 * Table based on 753 penetration values between zero and one
 * A zero value signifies that there was no measurable concentration either inside or out
 * All values except Penetration and Number of Observations are in units of (CFU/m³)

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