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Bishop Home Inspections, L L C - Allegan

2041 FORREST DR
ALLEGAN, MI 49010

Report Date:

Prepared For: **Bishop Home Inspections, L L C - Allegan**

Received Date: **3/7/2006**

Analysis Date: **3/8/2006**

Report Number: **030706-0458**



The above information was compiled by PRO-LAB/SSPTM Inc. from the EPA's "A Brief Guide to Mold, Moisture, and your Home" and the NYC Dept. of Health "Guidelines Assessment and Remediation of Fungi in Indoor Environments", at the request of and for the exclusive use of the client named on this report. This document is not a legal instrument and should be used for informational purposes only. Currently there are no Federal regulations for evaluating potential health effects of fungal contamination and remediation information is subject to change as more information regarding fungal contaminants becomes available. For more information visit: <http://www.epa.gov/iaq/molds/index.htm> www.nyc.gov/html/doh/html/ei/eimold.html. This document was designed to follow currently known industry guidelines for the interpretation of microbial sampling, analysis, remediation. Since interpretation of mold analysis reports is a scientific work in progress, it may as such be changed at any time without notice. The client is solely responsible for the use or interpretation. PRO-LAB/SSPTM Inc. makes no express or implied warranties as to health of a property from only the samples sent to their laboratory for analysis. Client is hereby notified that due to the subjective nature of fungal analysis and the mold growth process, laboratory samples can and do change over time relative to the original sampled material. PRO-LAB/SSPTM Inc. reserves the right to properly dispose of all samples after the testing of such samples are sufficiently completed or after a 7 day period whichever is greater. PRO-LAB/SSPTM Inc. participates in the AIHA EMPAT program. LAB ID #163230

For more information please contact Pro-Lab at 1-800-427-0550

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Mold Analysis Report

NON-VIABLE Spore Trap

Analysis Method SSPTM SOP 6110

Report Number: 030706-0458

Received Date: 3/7/2006

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John D. Shane

John D. Shane Ph.D., QA Manager

Comments:

DEBRIS: MODERATE

Pro-Lab Number: 030706-0458
Date Collected: 03/04/2006
Collection Location: BASEMENT
Sample Submitted: AIR-O-CELL / NO COMPA
Volume (L): 150
Serial #: 10606150

Spore Identification	Raw Count	Spores / M3	Raw Count	Spores / M3
Alternaria	4	27	0	0
Other Ascospores	4	27	0	0
Cladosporium	12	80	0	0
Penicillium/Aspergillus	688	4587	0	0
Unid Hyphomycetes	4	27	0	0
Total Results (Spores / M3):		4748		0

Biological Particles	Raw Count	Particles / M3	Raw Count	Particles / M3
Cellulose Fiber	8	53	0	0
Fiberglass	12	80	0	0
Insect Fragments	4	27	0	0
Pollen	4	27	0	0

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The following fungal descriptions are pertinent to samples collected. General characterization of mold is made with respect to their most common impact to human health. Many genera of molds have species with varying characteristics.

Spore Name	Description
ALTERNARIA	EXTREMELY WIDESPREAD AND UBIQUITOUS. OUTDOORS IT MAY BE ISOLATED FROM SAMPLES OF SOIL, SEEDS, AND PLANTS. IT IS COMMONLY FOUND IN OUTDOOR SAMPLES. IT IS OFTEN FOUND IN CARPETS, TEXTILES, AND ON HORIZONTAL SURFACES IN BUILDING INTERIORS. OFTEN FOUND ON WINDOW FRAMES. IT MAY BE RELATED TO BAKERS ASTHMA. IT HAS BEEN ASSOCIATED WITH HYPERSENSITIVITY PNEUMONITI, SINUSITIS, DERATOMYCOSIS, ONYCHOMYCOSIS, SUBCUTANEOUS PHAEOPHYCOMYCOSIS, AND INVASIVE INFECTION. COMMON CAUSE OF EXTRINSIC ASTHMA (IMMEDIATE-TYPE HYPERSENSITIVITY: TYPE I). ACUTE SYMPTOMS INCLUDE EDEMA AND BRONCHIOSPASMS; CHRONIC CASES MAY DEVELOP PULMONARY EMPHYSEMA.
OTHER ASCOSPORES	ONE OF THE MAJOR CLASSES OF FUNGAL ORGANISMS. THIS CLASS CONTAINS THE "SAC FUNGI" AND YEASTS.
CLADOSPORIUM	COMMONLY FOUND ON DEAD PLANTS, WOODY PLANTS, FOOD, STRAW, SOIL, PAINT AND TEXTILES. COMMON CAUSE OF EXTRINSIC ASTHMA (IMMEDIATE-TYPE HYPERSENSITIVITY: TYPE I). ACUTE SYMPTOMS INCLUDE EDEMA AND BRONCHIOSPASMS; CHRONIC CASES MAY DEVELOP PULMONARY EMPHYSEMA.
PENICILLIUM/ASPERGILLUS	THIS GROUP OF SPORES IS CONSIDERED COMMON TO INDOOR ENVIRONMENTS. COMMONLY FOUND IN SOIL, FOOD, CELLULOSE, AND ALSO CONSIDERED A COMMON CONTAMINANT OF FOOD. IT IS ALSO FOUND IN PAINT AND COMPOST PILES. IT MAY CAUSE HYPERSENSITIVITY PNEUMONITIS AND ALLERGIC ALVEOLITIS IN SUSCEPTIBLE INDIVIDUALS. COMMON CAUSE OF EXTRINSIC ASTHMA (IMMEDIATE-TYPE HYPERSENSITIVITY: TYPE I). ACUTE SYMPTOMS INCLUDE EDEMA AND BRONCHIOSPASMS; CHRONIC CASES MAY DEVELOP PULMONARY EMPHYSEMA. MANY SPECIES PRODUCE MYCOTOXINS, WHICH MAY BE ASSOCIATED WITH DISEASE IN HUMANS AND OTHER ANIMALS. TOXIC PRODUCTION IS DEPENDENT ON THE SPECIES OR A STRAIN WITHIN A SPECIES AN, ON THE FOOD SOURCE FOR THE FUNGUS.
UNID HYPHOMYCETES	ANY OF THE THREADLIKE PARTS POSSESSED BY MANY FUNGI THAT FUNCTION IN NUTRIENT ABSORPTION AND TRANSFER.

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Indoor Air Quality Testing

Introduction

It is important to realize and understand that everyone is exposed to mold throughout their lives. Exposures to mold are virtually inevitable in everyday life because mold of one kind or another is ever-present in the indoor and outdoor environment. Thus, exposures can be considered "unavoidable", "tolerable", or "acceptable" for the majority of healthy persons.

Understanding Mold

Mold grows throughout the natural as well as the built environment. Tiny particles of mold are present in both indoor and outdoor air. Mold produce microscopic cells called "spores" which are extremely tiny and spread easily through the air. This is how they reproduce. Mold spores are present through the indoor and outdoor air continually. When mold spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. There are mold that can grow on wood, paper, carpet, and foods. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem remains undiscovered or un-addressed. There is no practical way to eliminate all mold and mold spores in the indoor environment. The way to control indoor mold growth is to control moisture.

Controlling Moisture

The most critical step in solving a mold problem is to accurately identify and rectify the moisture sources that allowed the mold to occur. In order to prevent mold from growing, it is imperative that water damaged areas be dried within a 24-48 period. If mold is a problem in the home, the mold must be cleaned up and the excess water or moisture removed. There are many common sources of excess moisture that can contribute to indoor mold growth. Some of the primary means of moisture entry into homes and buildings are water leakage (such as roof or plumbing leaks), vapor migration, capillary movement, air infiltration, humidifier use, and inadequate venting of kitchen and bath humidity. Temperature must also be considered because of its role in moisture transfer and condensation. The key is to reduce indoor humidity and identify the molds' point of origin.

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Mold Testing Purposes

Contamination Sources

If the source of moisture is not easily detected, mold testing can prove beneficial. Often a roof leak or a plumbing leak can be identified as the source. The difficulty arises when there is an odor present or when an occupant shows signs of mold exposure but no visible mold is discovered.

Scope of Remediation/Restoration:

The area that is contaminated and the extent of the contamination will determine the scope of the remediation required. Following the completion of the remediation process, mold testing should be performed to obtain clearance.

Mold Sampling Methods

Mold Sampling Methods

A wide variety of analytical methods are available to investigators to study biological agents in indoor environments. Since there are no generally accepted guidelines for fungi or bacteria, comparison with reference samples is the most useful approach. Reference samples are usually outdoor samples and samples from "non-complaint" areas. In general, indoor fungal concentrations should be similar to or lower than outdoor levels. If fungi at a significant level are only found indoors, this often suggests indoor amplification of the fungi. Furthermore, the detection of some fungi, even at low levels, may require further evaluation.

The word "sample" means different things in different contexts. At times, investigators use the term to designate an individual measurement (e.g., an air or source sample). However, a sample may also designate a set of measurements (e.g., multiple measurements of some parameter that comprise a sample of size n). In either case, the goal of sampling is to learn about entire populations by looking at subsets of the members of the population.

There are several types of testing methods that can detect the presence of mold. They can be used to find mold particles which are suspended in air, in settled dust, or growing on surfaces of building materials and furnishings. Some methods can identify a portion of the types of live molds in a sampled environment.

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Surface Sampling Methods

Surface Sampling Methods

Surface sampling can be useful for differentiating between mold growth and stains, for identifying the type of mold growth that may be present and, in some instances, identifying signs of mold growth in a general vicinity. Surface sampling can improve the accuracy of the results and interpretation of the inspected environment if sampled correctly, although not required. The following are the different types of surface samples that are commonly used to perform a direct examination of a specific location:

Tape (or tape-lift)

These samples can be collected using clear adhesive tape or packing tape. For microscopic examination of collected particles, adhesive tapes must be of good optical quality and compatible with any stains the analytical laboratory may use on the specimens. Easily removed material is collected by touching the tape gently to a test surface and removing the tape with a steady force.

Bulk

These are portions of environmental materials (e.g., settled dust, sections of wall board, pieces of duct lining, carpet segment return-air filters) tested to determine if they may contain or be contaminated with biological agents. The objective of such sampling is to collect a portion of material small enough to be transported conveniently and handled easily in the laboratory while still representing the material being sampled. Samples obtained using this method can be analyzed using culturing or direct microscopy.

Swab:

These are very similar to tape samples except for a sterile wipe (looks like a long Q-tip) is used to test an area of suspected mold. Samples obtained using this method can be analyzed using culturing or direct microscopy.

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Air Sampling Methods

Air Sampling Methods

Air samples are possibly the most common type of environmental sample that investigators collect to study bioaerosols. The physics of removing particles from the air and the general principles of good sample collection apply to all airborne materials, whether biological or other origin. Therefore, many of the basic principles investigators use to identify and quantify other airbc particulate matter can be adapted to bioaerosol sampling. Common to all aerosol samplers is consideration of collection efficiency. The following are the two most common forms of air sampling methods:

Micro5

The Micro5 Microcell uses spore trap cassettes in conjunction with a portable air pump to rapidly collect airborne aerosols including mold, pollen and other particulates. Air is drawn through a small opening at the top of the cassette and spores are trapped on a sticky surface inside the cassette.

Air-O-Cell

These are similar to the Micro5 spore trap cassettes in that they are also used in conjunction with portable air pumps. The difference is in the air flow sampling rate.

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Data Interpretation

Data Interpretation

The term "data" can vary and may consist of the simple observation of fungal growth on a wall, analytical measurements of hundreds of environmental samples, or the results of a survey of building occupants with and without particular building-related conditions.

Data interpretation is the process whereby investigators make decisions on (a) the relevance to human exposure of environmental observations and measurements, (b) the strength of associations between exposure and health status, and (c) probability of current or future risks. These interpretation steps are followed by decisions on what measures can be taken to interrupt exposure and prevent future problems.

Remediation of Mold

Remediation of Mold

Prevention of mold growth indoors is only possible if the factors that may allow it are identified and controlled. When prevention has failed and visible growth has occurred in a home or building, restoration requires (a) removal of porous material showing extensive microbial growth, (b) physical removal of surface microbial growth on non-porous materials to typical background levels, and (c) reduction of moisture to levels that do not support microbial growth.

Identification of the conditions that contributed to microbial proliferation in a home or building is the most important step in remediation. No effective control strategy can be implemented without a clear understanding of the events or building dynamics responsible for microbial growth.

Symptoms of Mold Exposure

Symptoms of Mold Exposure

The most common symptoms of mold exposure are runny nose, eye irritation, cough, congestion, and aggravation of asthma. Individuals with persistent health problems that appear to be related to mold or other types of air quality contaminant exposure should see their physicians for a referral to specialists who are trained in occupational/environmental medicine or related specialties and are knowledgeable about these types of exposures. Decisions about removing individuals from an affected area must be based on the results of such medical evaluation. Since mold is naturally present in outdoor environments and we share the same air between the indoors and the outdoors, it is impossible to eliminate.

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Mold Recap: Ten Things You Should Know About Mold

Mold Recap: Ten Things You Should Know About Mold

- 1) Potential health effects and symptoms associated with mold exposures include allergic reactions, asthma, and other respiratory problems.
- 2) There is no practical way to eliminate mold and mold spores in the indoor environment; the way to control indoor mold growth is to control moisture.
- 3) If mold is a problem in your home or building, you must clean up the mold and eliminate sources of moisture.
- 4) The source of the water problem or leak must be repaired to prevent mold growth.
- 5) Indoor humidity must be reduced (to 30-60%) to decrease mold growth by: adequately venting bathrooms, dryers, and other moisture-generating sources to the outside; using air conditioners and de-humidifiers; increasing ventilation; and using exhaust fans whenever cooking, dishwashing and cleaning.
- 6) Clean and dry any damp or wet building materials and furnishings within 24-48 hours to prevent mold growth.
- 7) Clean mold off of hard surfaces with water and detergent and dry completely.
- 8) Prevent condensation: reduce the potential for condensation on cold surfaces (e.g., windows, piping, exterior walls, roof, or floors) by adding insulation.
- 9) In areas where there is a perpetual moisture problem, do not install carpeting
- 10) Mold can be found almost anywhere; they can grow on virtually any substance, providing moisture is present. There are molds that can grow on wood, paper, carpet, and foods.

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References & Resources

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Bioaerosols: Assessment and Control, Janet Macher, Sc.D., M.P.H., Editor. 1999. ACGIH, 1330 Kemper Meadow Drive, Cincinnati, OH 45240-1634.

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Indoor Air and Human Health, Gammage & Kaye. 1985. Lewis Publishers.

Microfungi, S.G. Gravesen, J.C. Frisvad, & R.A. Samson, published by Munksgaard.

Useful Websites

www.acgih.org

American Conference of Governmental Industrial Hygienists - information on IAQ and useful links.

www.aiha.org

American Industrial Hygiene Association - general IAQ information

www.calepa.ca.gov

California Environmental Protection Agency - California IAQ resources

www.epa.gov

Environmental Protection Agency - information regarding prevention and remediation of mold

www.health.state.ny.us

New York State Department of Health - New York state recommendations for IAQ, indoor mold inspections, remediation, and prevention

www.nih.gov

National Institutes of Health - information regarding environmental health issues, including IAQ

www.niehs.nih.gov

National Institute of Environmental Health Sciences - information on mold

