



Katz

Testing • Research • Consulting

January 12, 2005

ERA Eagle
4020 Rosewood Dr.
Muncie, IN 47304

David Whittington @
excide.com

RE: David Whittington, 8901 N. SR 3, Muncie, IN

Dear Sir or Madam:

The following are the result(s) of the test(s) performed on the sample(s) received at 2:30 PM on 1-5-05:

<u>SAMPLE(S)</u>	<u>TEST(S)-METHOD</u>	<u>RESULT(S)</u>	<u>DATE COMPLETED</u>
Kitchen 1-4-05	Allergenco Count Allergenco ID	3,761 spores/m ³	1-10-05
		<u>Penicillium/Aspergillus</u> sp.	1-10-05
		<u>Cladosporium</u> sp.	1-10-05
		<u>Periconia</u> sp. —	1-10-05
		Basidiospores	1-10-05
		Ascospores	1-10-05
		Pollen	1-10-05
		<u>Alternaria</u> sp.	1-10-05
Pool Room 1-4-05	Allergenco Count Allergenco ID	1,074 spores/m ³	1-10-05
		<u>Penicillium/Aspergillus</u> sp.	1-10-05
		<u>Cladosporium</u> sp.	1-10-05
		<u>Alternaria</u> sp. —	1-10-05
		Pollen	1-10-05
Outside Control 1-4-05	Allergenco Count Allergenco ID	6,074 spores/m ³	1-10-05
		Basidiospores	1-10-05
		Ascospores	1-10-05
		<u>Alternaria</u> sp.	1-10-05
		<u>Cladosporium</u> sp.	1-10-05

DESCRIPTION OF MOLD TYPES

Alternaria / Ulocladium

Using the testing protocol employed with the Aircuity system, Alternaria and Ulocladium spores are indistinguishable.

Alternaria is a large and universally occurring genus, and the spores are easily carried by the wind. It is commonly found in house dust, carpets, textiles and on horizontal surfaces in building interiors. It is a common cause of allergies.

Ulocladium is fairly widespread and may be found on plant materials, in soil, dust, rotten wood, paper, textiles and in water-damaged cellulose rich building materials. It is known to be a common airway allergen.

Ascospores

Ascospores are considered a wet weather spore. They are typically plentiful during light rainfall or in pre-dawn hours when condensation is heavy. They are found practically everywhere.

Basidiospores

These spores come from mushrooms, puffballs, and bracket fungi, and are considered a wet weather spore. They are found in lawns, fields, parks, and wooded areas from spring through fall within a few days after rainfall. In mushrooms and bracket fungi, the release of spores requires high humidity and so they are most abundant in the pre-dawn hours. The spores are not transported over long distances or in large numbers. They are considered to be allergenic.

Cladosporium

Cladosporium herbarum is the most frequently found species in outdoor air in temperate climates, and spores are usually found indoors for this reason. It may also grow in dirty refrigerators and on damp painted surfaces, and is usually associated with humid environments. It is also found on dead plants, woody plants, food, straw, soil and textiles, and its tendency to produce large quantities of easily airborne spores make this fungus the most important fungal airway allergen, and with Alternaria commonly causes asthma and hay fever.

Curvularia

Curvularia is a common fungus found in soils, decaying organic matter, and as a plant pathogen. It is distributed world-wide, yet mostly occurs in subtropical or tropical environments. It is a possible contaminant on almost any outdoor or indoor surface. Curvularia is associated with eye, skin and sinus infections.

Drechslera

Drechslera is found in plant debris and soil, and is considered to be a plant pathogen of numerous plants, particularly grasses. It is a common allergen.

Epicoccum

Epicoccum is commonly found with Cladosporium in plants, soil, grains, textiles and paper products. Epicoccum is frequently isolated from air and occasionally occurs in house dust. It is considered to be an allergen, but not a strong one.

Nigrospora

Nigrospora is found in decaying plant material and soil, and is rarely found growing indoors. It is reported to be allergenic.

Penicillium / Aspergillus

Using the testing protocol employed with the Aircuity system, Penicillium and Aspergillus spores are indistinguishable.

The genus Penicillium contains a large number of species. Outdoors it is commonly found in soil, cellulose, grains and compost piles. Indoors it may be found in food, carpet, wallpaper, paint, and in interior fiberglass duct insulation. Penicillium is considered to be an allergen (although less so than most other molds), and may cause conditions such as hypersensitivity pneumonitis in susceptible individuals.

There are more than 160 different species of Aspergillus. These species are frequently found in forage products, grains, nuts, cotton, organic debris and water damaged building materials. Aspergillus related diseases are relatively uncommon in healthy individuals (normally functioning immune systems). However, its presence may be a concern in areas associated with clinical applications.

Periconia/smuts/myxomycetes

Periconia is found on the roots of various crops and dead plant stems, and is the cause of root-rot disease in some cultivated plants. The spores tend to be abundant in the air, but its significance as an allergen is not well known.

Smuts do not usually grow indoors, and are parasitic on cereal crops, grasses, weeds, fungi, and on flowering plants. They are members of the Basidiomycetes, and are considered an allergen.

Myxomycetes are commonly known as slime molds, and are typically found in the forest where it is cool, moist and shady. They can be seen on decaying wood and in decaying leaves as colorful, shapeless structures. The tiny spores peak in number in early summer and late fall.

Pithomyces

Pithomyces is found in dead stems, rotting leaves, paper, feed grass, tree bark and in many types of plants. It is an early colonizer of dead material, and in northern climates lasts well into the fall season. It is known only as a possible allergen, and is more likely to be a factor in rural areas.

Pollen

Pollen is an essential component of flowering plants, and many pollen grains are transported via the air. Pollen found indoors almost always has an outdoor source, but may occasionally be produced indoors when numerous plants are cultivated indoors.

(attached greenhouse). Indoor plants typically contain pollen designed for insect transport (not air transport) and thus are not usually an indoor source. Pollen may also be introduced by humans and pets, and this may be a more important source than via HVAC in many buildings. Climate will determine the types of pollens found in the local air. Pollen is associated with a number of allergic symptoms.

Stachybotrys

Stachybotrys grows on water damaged cellulose rich materials such as sheet rock, paper, ceiling tiles, cellulose containing insulation backing and wallpaper. This fungus is significant due to its ability to produce mycotoxins that are extremely toxic. Exposure to these toxins can produce a variety of symptoms including dermatitis, cough, cold and flu symptoms, headache and fever. It generally appears as a sooty black fungus, and is best isolated using surface sampling techniques – it may occasionally be missed using air sampling techniques.

Torula

Torula is rated as the second highest level of spores in the US after Aspergillus, and is typically found on dead plant stems and leaves, wood, dung and several crops. It appears as a velvety black material on the surface. Spore production is at a peak in the fall and late spring/early summer. Torula is reported to be allergenic.

Unknown

The unknown category is used when the analyst identifies a fungal spore on the filter, but cannot positively type it. It is not uncommon to place a significant number of spores in this category, and the IAQ Advisor™ will use this information as well as that from the known types.

Other

This category is reserved for mold types found that are not in the above categories, and for other materials (both organic and inorganic) that may be found on the filter and are identified by the analyst. This information is not used by the IAQ Advisor™, but is included in the report for the user's consideration.

TECHNICAL EXCHANGE

and differences in the sensitivity of individuals.

To date, worker exposure to fungal spores has been measured in a variety of industrial environments including grain terminals, refuse incinerators and whole-glass recycling facilities, in concentrations exceeding 300,000 spores/m³. Water-damaged residences have also shown ele-

vated spore counts, ranging from less than 1,000 spores/m³ to more than 200,000 spores/m³, before any remediation. Abatement workers are exposed to even higher concentrations—in the millions of spores/m³.

Over the past few years, hygienists have collectively gathered a significant amount of exposure information from air, dust and

surface samples during both investigative studies and abatement projects. Using numbers adapted from a variety of sources, including peer-reviewed publications, courses and seminars presented by other consultants and individual investigations, Clark presented the set of proposed numerical guidelines for fungal spores as shown in Table 1.

Table 1 – Proposed Guidelines for Fungal Spores

Type	Normal Background *	Possible Contamination Source	Probable Contamination Source
Air Samples from Residential Buildings	< 5,000 spores/m ³ < 500 cfu/m ³	5,000–10,000 spores/m ³ 500–1,000 cfu/m ³	> 10,000 spores/m ³ > 1,000 cfu/m ³
Air Samples from Commercial Buildings	< 2,500 spores/m ³ < 250 cfu/m ³	2,500–10,000 spores/m ³ 250–1,000 cfu/m ³	> 10,000 spores/m ³ > 1,000 cfu/m ³
Dust Samples	< 100,000 spores/g < 10,000 cfu/g < 50,000 mycelial frags/g	100,000–1,000,000 spores/g > 10,000–100,000 cfu/g 50,000–100,000 mycelial frags/g	1,000,000 spores/g > 100,000 cfu/g > 100,000 mycelial frags/g
Bulk Samples	< 100,000 spores/g < 10,000 cfu/g < 50,000 mycelial frags/g	100,000–1,000,000 spores/g 10,000–100,000 cfu/g 50,000–100,000 mycelial frags/g	> 1,000,000 spores/g > 100,000 cfu/g > 100,000 mycelial frags/g
Swab Samples	< 10,000 cfu/in ² < 1,500 cfu/cm ²		> 10,000 cfu/in ² > 1,500 cfu/cm ²
Tape Samples	NSFM or NSFB ** 1–5%	5–25%	25–100%

* Types and relative proportions of fungal spores should be similar to outdoors.

** NSFM = no significant fungal material; NSFB = no significant fungal biomass

These guidelines were developed for the purpose of addressing concerns regarding fungal assessments and abatement and would not necessarily apply to health effects. In addition, they should not be used as the only means of decisionmaking in the remediation of fungal contamination.

Clark is with PE Services, Houston.

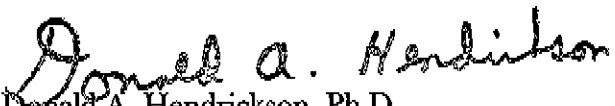
Technical Exchange is a feature offering a forum to discuss real-life experiences in technical areas. These experiences are informational and are not peer reviewed; however, submissions are reviewed for technical accuracy. They are intended to help I/Hs share information for the benefit of all industrial hygiene professionals.

Readers are encouraged to submit summaries of case studies, new technology, problem-solving and other experiences they may encounter through the course of their work. Send submissions to Terry Hoskins, The Synergist, 2700 Prosperity Ave., #250, Fairfax, VA 22031; fax (703) 207-3561; thoskins@aiha.org. Submissions will be edited for space and clarity.

ERA Eagle
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January 12, 2005

These tests were performed by K.N. Please feel free to contact us if we can be of further service to you.

Sincerely,



Donald A. Hendrickson, Ph.D.

President - Microbiologist
Chemistry Lab # C-18-01

DAH/skp



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INVOICE

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INVOICE NUMBER: **152781**

INVOICE DATE: 01/10/05

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Muncie, IN 47304

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SHIP DATE: 01/10/05
DUE DATE: 02/09/05
TERMS: Net 30

CUST. I.D.: **EAGLER**
P.O. NUMBER:
P.O. DATE: 01/05/05
OUR ORDER NO.:
SALESPERSON:

ITEM I.D./DESC.	ORDERED	SHIPPED	UNIT	PRICE	NET	TX
8901 N SR 3						
Allergenco Count w/ID		2		55.00	110.00	
Allergenco Count w/ID (Outside Sample)		1		20.00	20.00	
Equipment Rental (Allergenco Air Sampler)		1		50.00	50.00	
SA #126699-126701						

SUBTOTAL: 180.00
TAX:
PAYMENTS: 0.00
TOTAL: 180.00

If sent to collection, you will be responsible for any fees.



912 West McGalliard
Muncie, IN 47303-1702

Phone: (765) 288-1124 (800) 551-5217 Fax: (765) 288-8378
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