

PREPARED FOR: DOC SHANE TEST CLIENT ACCOUNT

TEST ADDRESS: 1234 JOHN MUIR STREET HAYWARD, CA 94544

# CERTIFICATE OF MOLD ANALYSIS

**PREPARED FOR:**

DOC SHANE TEST CLIENT ACCOUNT

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**TEST LOCATION:****MAX HEADROOM****1234 JOHN MUIR STREET****HAYWARD, CA 94544****CHAIN OF CUSTODY # 52214304**

COLLECTED: WED FEBRUARY 13, 2019

RECEIVED: THU FEBRUARY 14, 2019

REPORTED: THU FEBRUARY 14, 2019

**APPROVED BY:****JOHN D. SHANE PHD  
LABORATORY MANAGER**

VERSION: 1.0 (A VERSION NUMBER GREATER THAN ONE (1) INDICATES THAT THE DATA IN THIS REPORT HAS BEEN AMENDED)

EPA regulations or standards for airborne or surface mold concentrations have not been established. There are also no EPA regulations or standards for evaluating health effects due to mold exposure. Information about mold can be found at [www.epa.gov/mold](http://www.epa.gov/mold).

All samples were received in an acceptable condition for analysis unless noted specifically in the Comments section under a particular sample. All results relate only to the samples submitted for analysis.

A version greater than 1.0 indicates that the lab report has been revised.

FOR MORE INFORMATION, PLEASE CONTACT INSPECTORLAB AT (800) 544-8156 OR EMAIL [ASK@INSPECTORLAB.COM](mailto:ASK@INSPECTORLAB.COM)

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# Detailed Mold Report (WATER-INDICATING FUNGI, IF PRESENT, ARE SHOWN BELOW IN RED)

Analysis Method	Air Analysis	Air Analysis	Air Analysis	Air Analysis
Lab Sample #	52214304-1	52214304-2	52214304-3	52214304-4
Sample Identification	234876525	234876535	245876523	245776528
Sample Location	OUTSIDE CONTROL	KITCHEN	FAMILY ROOM	KITCHEN PANTRY
Sample Type / Metric	Air-O-Cell/150.0L	Air-O-Cell/150.0L	Air-O-Cell/150.0L	Air-O-Cell/150.0L
Analysis Date	Sun September 02, 2018	Sun September 02, 2018	Sun September 02, 2018	Sun September 02, 2018
<b>Determination</b>	<b>CONTROL</b>	<b>NORMAL</b>	<b>PROBLEM</b>	<b>PROBLEM</b>

Fungal Types Identified	Raw Count	Spores / m <sup>3</sup>	% of Total	Raw Count	Spores / m <sup>3</sup>	% of Total	Raw Count	Spores / m <sup>3</sup>	% of Total	Raw Count	Spores / m <sup>3</sup>	% of Total
<b>*INDOOR PROBLEM FUNGI</b>												
<b>Penicillium/Aspergillus</b>	---	---	---	---	---	---	<b>950</b>	<b>6,365</b>	<b>47</b>	<b>828</b>	<b>5,548</b>	<b>58</b>
<b>Scopulariopsis</b>	---	---	---	---	---	---	<b>740</b>	<b>4,958</b>	<b>37</b>	<b>433</b>	<b>2,901</b>	<b>30</b>
<b>Stachybotrys</b>	---	---	---	---	---	---	---	---	---	<b>10</b>	<b>67</b>	<b>&lt;1</b>
<b>Trichothecium</b>	---	---	---	---	---	---	<b>106</b>	<b>710</b>	<b>5</b>	<b>8</b>	<b>54</b>	<b>&lt;1</b>
<b>**Non-Problem Fungi</b>												
Alternaria	10	67	<1	3	20	<1	2	13	<1	---	---	---
Ascospores	859	5,755	66	185	1,240	49	15	101	<1	11	74	<1
Basidiospores	184	1,233	14	56	375	15	49	328	2	28	188	1
Bipolaris/Drechslera	5	34	<1	---	---	---	4	27	<1	1	7	<1
Cercospora	5	34	<1	4	27	1	3	20	<1	---	---	---
Chaetomium	---	---	---	---	---	---	---	---	---	1	7	<1
Cladosporium	98	657	7	54	362	14	91	610	4	72	482	5
Curvularia	8	54	<1	3	20	<1	4	27	<1	3	20	<1
Epicoccum	15	101	1	8	54	2	3	20	<1	---	---	---
Ganoderma	---	---	---	---	---	---	---	---	---	1	7	<1
Nigrospora	1	7	<1	---	---	---	---	---	---	---	---	---
Penicillium/Aspergillus	11	74	<1	35	235	9	*	*	*	*	*	*
Pithomyces	8	54	<1	2	13	<1	1	7	<1	5	34	<1
Pyricularia	8	54	<1	4	27	1	---	---	---	1	7	<1
Smut/Myxomycetes	78	523	6	17	114	4	19	127	<1	11	74	<1
<b>Total Spore Count</b>	1,290	8,647	100	371	2,487	100	1,987	13,313	100	1,413	9,470	100
<b>Minimum Detection Limit</b>	7			7			7			7		
<b>Comments/Definitions</b>	Control samples are normally taken outside a building to provide a baseline from which samples on the interior of the building are compared. Outside air is considered normal whatever the mold counts may be. MODERATE DEBRIS: The debris present in the sample likely had limited effect on the accuracy of the mold count.			Mold counts are within a NORMAL RANGE and there is no indication, based on the mold counts, that there is any exposure concern to the occupants. The LIGHT DEBRIS present in the sample likely had no effect on the accuracy of the mold count.			Mold concentrations in the air are ABNORMAL and based on the mold counts, you likely have a mold source from which spores are able to become airborne and are an exposure concern to the occupants. LIGHT DEBRIS: The debris present in the sample likely had no effect on the accuracy of the mold count.			Mold concentrations in the air are ABNORMAL and based on the mold counts, you likely have a mold source from which spores are able to become airborne and are an exposure concern to the occupants. LIGHT DEBRIS: The debris present in the sample likely had no effect on the accuracy of the mold count.		

\* Indoor Problem Fungi are generally capable of growing on wetted building materials.  
 \*\* Non-Problem Fungi are less capable or do not grow on wetted building materials. They are commonly found in the air outside and infiltrate into indoor air naturally. High numbers of any one of these spore types as compared to the Control sample may indicate that they are growing on wetted building materials indoors.  
 Spore types not listed in this report were not observed.  
 Background debris estimates the amount of non-spore particles. Increasing amount of debris will affect the accuracy of the spore counts. Total percent may not equal 100% due to rounding.

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## Introduction

All spores found in indoor air are also normally found in outdoor air because most originate or live in the soil and on dead or decaying plants. Therefore, it is not unusual to find mold spores in indoor air. This Mold Glossary is only intended to provide general information about the mold found in the samples that were provided to the laboratory.

### *Alternaria*

- Outdoor Habitat:** One of the most commonly observed spores in the outdoor air worldwide, normally in low numbers.
- Indoor Habitat:** Capable of growing on a wide variety of substrates and manufactured products found indoors when wetted.
- Allergy Potential:** Type I (hay fever, asthma), Type III (hypersensitivity pneumonitis), Common cause of extrinsic asthma
- Disease Potential:** Not normally considered a pathogen, but can become so in immunocompromised persons.
- Toxin Potential:** Several known
- Comments:** One of the most common and potent allergens in the indoor and outdoor air. Seen in indoor air in low concentrations, probably as a result of outdoor air infiltration and/or recycling of settled dust.

### *Ascospores*

- Outdoor Habitat:** Soil and decaying vegetation, dead and dying insects. These spores constitute a large part of the spores in the air and can be found in the air in very large numbers in the spring and summer, especially during and up to three (3) days after a rain.
- Indoor Habitat:** Very few of fungi that produce ascospores grow indoors. Some fungi that produce ascospores are recognizable by their spores and when observed are listed under their own categories. Wetted wood and gypsum wallboard paper
- Allergy Potential:** Depends on the type of fungus producing the ascospores.
- Disease Potential:** Not normally pathogenic as a group
- Toxin Potential:** None known
- Comments:** Ascospores are produced from a very large group of fungi. Notable ascospores that are considered problematic for indoor environments are Chaetomium, Peziza, and Ascotracha. If these types of ascspores are observed they will be listed in the report under their own names.

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### *Basidiospores*

**Outdoor Habitat:** These are mushroom spores and are common everywhere outside, especially in the late summer and fall.

**Indoor Habitat:** Mushrooms can grow on very wet wood products, especially on footer plates, basements, and crawlspaces. Sometimes mushrooms can be observed growing in potted plants indoors.

**Allergy Potential:** Rarely reported, but some Type I (hay fever, asthma) and Type III (hypersensitivity pneumonitis) has been reported.

**Disease Potential:** None known

**Toxin Potential:** None known

**Comments:** Mushroom spores are commonly found indoors, especially when the outdoor spore count is high. When spores of this group are derived from wood rotting fungi, including dry rot (*Serpula* and *Poria*), they can be especially destructive to buildings. When spores from destructive types of mushrooms (dry and wet rot group) are observed in the sample they are listed under their own names on the report.

### *Bipolaris/Drechslera*

**Outdoor Habitat:** Commonly observed spores in the outdoor air worldwide, normally in low numbers.

**Indoor Habitat:** Wetted wood and gypsum wallboard paper

**Allergy Potential:** Type I (hay fever, asthma)

**Disease Potential:** Opportunistic pathogen in immunocompromised persons, not normally a pathogen in healthy individuals.

**Toxin Potential:** None known

**Comments:** This category represents at least three genera, including *Bipolaris*, *Drechslera*, and *Exserohilum*. This group cannot be consistently separated by spore morphology alone.

### *Cercospora*

**Outdoor Habitat:** Parasitic on leaves

**Indoor Habitat:** Not known to grow indoors

**Allergy Potential:** None known

**Disease Potential:** None known

**Toxin Potential:** None known

**Comments:** Easily dispersed by wind

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### *Chaetomium*

**Outdoor Habitat:** Commonly found on paper products, soil, decaying vegetation, wood and natural fiber textiles (such as jute-backed carpets, canvas, etc.) and similar materials. They are rarely identified in outdoor air. These spores can be disseminated by insects, wind and water splash, etc. It is also known as a soft-rot fungus for softwood and hardwood timber.

**Indoor Habitat:** Chaetomium is often found on a variety of substrates containing cellulose that are chronically wetted, including paper documents, wallpaper, textiles and construction materials like gypsum board (paper-coated sheet rock) and wood.

Chaetomium can development quickly, covering a surface with substantial growth after two weeks.

Chaetomium globosum is the most commonly found species indoors. It is not that unusual to find the occasional Chaetomium spore in the air indoors.

**Allergy Potential:** Type I (hay fever, asthma) potential. However, no allergens have yet been characterised. However, at least two potential allergens have been isolated.

**Disease Potential:** Rarely reported as human pathogen.

**Toxin Potential:** Several known

**Comments:** Chaetomium spores are easily disseminated when it becomes dry. However, Chaetomium spores do not remain airborne for long unless disturbed.

High numbers of spores of this genus is not normal for indoor environments and indicate a current or former water problem. Furthermore, since the spores are held together by mucilage and trapped by hairs, few become airborne until the mold has completely dried out or is mechanically disturbed during renovations remediation. It is, therefore, not uncommon to find low Chaetomium spore counts in pre-remediation air samples and relatively higher counts in post-remediation samples.

Chaetomium species colonize surfaces under similar conditions as Stachybotrys, Alternaria, Fusarium and Ulocladium.

HIGH CONCENTRATIONS AND LONG EXPOSURES TO CHAETOMIUM SHOULD BE AVOIDED.

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### *Cladosporium*

**Outdoor Habitat:** Cladosporium is one of the most common environmental fungi observed worldwide and is widely reported from soil and decaying vegetation.

Cladosporium herbarum and C. cladosporioides are among the most frequently encountered species, both in outdoor and indoor environments.

**Indoor Habitat:** Wetted wood and gypsum wallboard paper, paper products, textiles, rubber, window sills. Cladosporium has the ability to grow at low temperatures and can thus, grow on rubber gaskets and food in refrigerators.

**Allergy Potential:** Type I (hay fever, asthma) - an important and common outdoor allergen

**Disease Potential:** Opportunistic pathogen in immunocompromised persons, not normally a pathogen in healthy individuals. Cladosporium are some of the most common species reported as indoor contaminants, occasionally linked to health problems.

**Toxin Potential:** Cladosporium has two known toxins (cladosporin and emodin). These toxins are not known to be highly toxic. There is no evidence in the literature of toxic effects associated to inhalation of Cladosporium conidia (spores) indoors.

**Comments:** The most commonly reported spore in the outdoor air worldwide. This makes Cladosporium one of the most commonly reported and abundant spore types both indoors and outdoors. The prevalence of this spore can vary throughout the year, but is especially high in late summer and autumn, especially where cereal crops are commonly planted.

An important and common allergen source.

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### *Curvularia*

**Outdoor Habitat:** Soil and decaying vegetation

**Indoor Habitat:** Wetted wood and gypsum wallboard paper, many cellulytic substrates

**Allergy Potential:** Type I (hay fever, asthma), common cause of allergenic rhinitis

**Disease Potential:** Potential human pathogen in immunocompromised people

**Toxin Potential:** None known

**Comments:** None

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***Epicoccum***

**Outdoor Habitat:** Epicoccum is a widespread cosmopolitan that grows on dead or decaying organic matter, wood, textiles, paper, a variety of foods, insects and human skin. It is commonly found in the soil. Epicoccum spores are more prevalent on dry, windy days, with higher counts late in the day.

**Indoor Habitat:** Capable of growing on a wide variety of substrates and manufactured products found indoors when wetted such as gypsum board, floors, carpets, mattress dust, and house plants.

**Allergy Potential:** Type I (hay fever, asthma)

**Disease Potential:** None known

**Toxin Potential:** None known

**Comments:** Very common in outdoor air in the summer months, especially in the midwest USA during harvest times.

***Ganoderma***

**Outdoor Habitat:** Growing as a parasite on other plants and fungi, especially on trees, notably hardwoods

**Indoor Habitat:** Does not grow indoors

**Allergy Potential:** Type I (hay fever, asthma), rare

**Disease Potential:** None known

**Toxin Potential:** None known

**Comments:** Extensively used as a Chinese herbal supplement

***Nigrospora***

**Outdoor Habitat:** Soil and decaying vegetation

**Indoor Habitat:** Wetted wood and gypsum wallboard paper

**Allergy Potential:** Type I (hay fever, asthma)

**Disease Potential:** None known

**Toxin Potential:** None known

**Comments:** Rarely observed growing indoors

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***Penicillium/Aspergillus***

**Outdoor Habitat:** Soil and decaying vegetation, textiles, fruits. These spores are commonly observed and are a normal part of outside air.

**Indoor Habitat:** Wetted wood and gypsum wallboard paper, textiles, leather, able to grow on many types of substrates.

**Allergy Potential:** Type I (hay fever, asthma), Type III (hypersensitivity pneumonitis)

**Disease Potential:** Opportunistic pathogen in immunocompromised persons, not normally a pathogen in healthy individuals.

**Toxin Potential:** Several known

**Comments:** Extremely common in indoor air in low amounts. This type of spore should not constitute an overwhelming percentage and be present in very high numbers.

These two genera are grouped together because they cannot be reliably differentiated into their respective genera based solely on spore morphology.

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***Pithomyces***

**Outdoor Habitat:** Soil and decaying vegetation and their spores are easily dispersed into the air by wind

**Indoor Habitat:** Wetted wood and gypsum wallboard paper

**Allergy Potential:** None known

**Disease Potential:** None known

**Toxin Potential:** One known (sporidesmin)

**Comments:** A very common spore type in the air. Can be a water indicator mold type indoors

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***Pyricularia***

**Outdoor Habitat:** Soil and decaying vegetation, especially grass and leaves

**Indoor Habitat:** Not known to grow indoors

**Allergy Potential:** None known

**Disease Potential:** None known

**Toxin Potential:** None known

**Comments:** Spores easily dispersed into the air by wind



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***Scopulariopsis*****Outdoor Habitat:** Soil and decaying vegetation, dung**Indoor Habitat:** Wetted wood and gypsum wallboard paper**Allergy Potential:** Type III (hypersensitivity pneumonitis)**Disease Potential:** Opportunistic pathogen in immunocompromised persons, not normally a pathogen in healthy individuals.**Toxin Potential:** Not well studied**Comments:** Easily dispersed by wind and air currents. Can grow with very little water and readily grow on wallboard when high humidity situations, e.g. closets - capable of growing on leather clothes***Smut/Myxomycetes*****Outdoor Habitat:** Soil and decaying vegetation and wood, especially dead stumps and bark**Indoor Habitat:** Not known to grow indoors, sometimes found on firewood**Allergy Potential:** Type I (hay fever, asthma), rare**Disease Potential:** None known**Toxin Potential:** None known**Comments:** These two groups are difficult to distinguish due to their "round, brown" morphology. Smuts are especially common in the environment and can be seen in indoor air samples even during the winter in homes because the spores can get trapped in carpets***Stachybotrys*****Outdoor Habitat:** Soil and decaying vegetation, especially straw**Indoor Habitat:** Wetted wood, gypsum wallboard paper, cardboard boxes and ceiling tiles. This type of mold needs significant water to grow and thrive**Allergy Potential:** Type I (hay fever, asthma)**Disease Potential:** None known**Toxin Potential:** Several known (including macrocyclic trichothecenes, satratoxin F, G, H)**Comments:** Spores can be dispersed into the air when old and dry, but are wet, slimy and heavy when actively growing and thus are not easily dispersed into the air. Significantly higher numbers of spores, as compared to outside background levels, of this genus are not normal for indoor environments and indicate a current or former water problem. It is not that unusual to find the occasional *Stachybotrys* spore in the air indoors. *Stachybotrys* has several mycotoxins and has been implicated as a causative agent in disease. HIGH CONCENTRATIONS AND LONG EXPOSURES TO STACHYBOTRYS SHOULD BE AVOIDED.

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***Trichothecium***

**Outdoor Habitat:** Soil and decaying vegetation

**Indoor Habitat:** Wetted wood and gypsum wallboard paper

**Allergy Potential:** None known

**Disease Potential:** None known

**Toxin Potential:** Several known

**Comments:** Rarely seen in indoor air samples

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