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Common Types of Molds

Acremonium

Contaminant/pathogen, found in sewage, soil and vegetation. It is commonly found in cultures and to a lesser extent, tape-lifts. Only a few species can survive at normal human body temperature and infection is rare in normal immune systems. Infections most commonly involve the cornea and nails. Some species are reported to be an allergen.

Alternaria

Common allergen/contaminant/pathogen, one of the most common molds found world-wide in soils and on plants; also found indoors (frequently appearing black on window frames). It's an important airborne allergen and common agent to cause hay fever, asthma, and other allergy-related symptoms.

Arthrinium

Contaminant, found commonly on dead plants and in soils. Generally not considered to have much health significance, but one species is reported to be an allergen. IAQ significance relates to that it will grow in the same conditions as *Stachybotrys* (wet cellulose) and amplified amounts in indoor air could be a warning that conditions do exist for *Stachybotrys* growth.

Ascospores

A large category of spores (produced in a sac-like structure) that are found everywhere in nature and include more than 3,000 genera. Most Ascospores of health or IAQ importance are identified separately by their genus (e.g. *Chaetomium*) when possible on a IAQ report, and the Ascospore category is used primarily on these reports for a large group of less important spore types often found in quantity on outdoor air samples. On tape samples, Ascospore is sometimes also used as a general morphological identification (i.e. the ascus or sac structure is present) for certain samples in those cases when the spores do not appear to represent any of the IAQ significant genera.

Aspergillus

Allergen/contaminant/pathogen, commonly found in the environment around the world. It comprises approximately 200 species and can appear in almost any color. Though commonly found on cultures, tape-lifts, and air samples, its spores



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are indistinguishable from *Penicillium* on non-cultured samples (like tape-lifts and air-o-cells) unless the conidiophore is present. Health effects vary by species, but many species are reported to be allergenic. Some species produce toxins that might have significant health effects in humans. *Aspergillus* is one of the most infectious of molds, but infections are not common in normal immune systems. In immuno-compromised individuals, however, the disease Aspergillosis is a very significant and potentially deadly health concern.

Aureobasidium

Contaminant/pathogen, found worldwide in soil, food, and wood, rarely associated with human disease but reported to be allergenic.

Basidiospores

Allergen/contaminant, a general class of spore formed on a structure known as a basidium, characteristic of the Basidiomycete class (that includes rusts, smuts and mushrooms). This category is commonly found in outdoor air samples. Many species are reported to be allergenic and some species are associated with dry rot in wood. Elevated airborne concentrations indoors might be indicative of water damage or high levels of humidity.

Beauveria

Contaminant, known to be pathogenic in animals and insects. Rarely involved in human infection.

Botrytis

Contaminant, parasitic on plants and fruits. Rarely involved in human infection, but it is reported to be allergenic.

Chaetomium

Contaminant, rarely involved in systemic and cutaneous disease and sometimes reported to be allergenic. Some species can produce toxins, and there is some research interest on whether these toxins can cause cancer. Primary IAQ importance is currently related to that it will grow in the same conditions as *Stachybotrys* (wet cellulose) and amplified amounts in indoor air could be a warning that conditions do exist for *Stachybotrys* growth. Many times on damp sheetrock paper, colonies of *Chaetomium* and *Stachybotrys* will be growing on top of each other or side by side.



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Chrysonilia

Contaminant, brightly colored, fast growing mold, which spreads easily through contamination. Health effects are not yet known. It is found in soil, breads, and contaminated laboratory cultures.

Cladosporium

Common allergen/contaminant/very rarely pathogenic, found everywhere, many times, it is the most common and numerous type of mold found in the outdoor air. Indoor concentrations are usually not as high, but it is an important airborne allergen and common agent for hay fever, asthma, and other allergy related symptoms. It can thrive in various indoor environments, appearing light green to black (the black mold on air vent grills is usually Cladosporium).

Curvularia

Contaminant/pathogen, found in air, soil and textiles. Reported to be allergenic. Rare infections of corneas, nails, and sinuses, primarily in immunocompromised individuals.

Dematiaceous mold

A very generic morphological description used for various brown molds that cannot be identified because of undistinguishable spores\structures or because of too much environmental damage to the mold structures. This identification generally excludes many of the common toxic and more infectious molds found indoors, but on some occasions when the mold is very weathered or damaged, this category could potentially include mold from Alternaria, Epicoccum, Ulocladium or others.

Drechslera or Bipolaris

Contaminant/pathogen, found in soil. Allergenic and the most common agent for allergic fungal sinusitis.

Epicoccum

Contaminant/pathogen, found in soil, air, water and rotting vegetation and can be commonly found in outdoor air. It is a common allergen, and can rarely cause skin infection.



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Exophiala

Contaminant/pathogen. Commonly found in soil, decaying wood, and various other damp materials. On the indoors, it can be found in air conditioning systems, humidifiers, and other surfaces that come in frequent contact with moisture. Some species have been linked to occasional skin infections and various other subcutaneous lesions. Allergenic effects and toxicity are not well studied.

Fusarium

Contaminant/pathogen, found on fruit, grains and is common in soils. On the indoors, it sometimes contaminates humidifiers. Often associated with as eye and other infections in immunocompromised individuals and burn patients. Produces a variety of toxins mainly important when ingested, particularly through contaminated grain products.

Geotrichum

Contaminant, commonly found in dairy products and found as a normal part of human flora. There are some reports of infection in compromised hosts, but most of these are not well documented.

Gliocladium

Contaminant, found widespread in soil and decaying vegetation. Similar to Pencillium, but there are no reports of infections in humans or animals. There have been some reports of allergies.

Memnoniella

Contaminant, found most often with Stachybotrys on wet cellulose. Forms in chains, but it is very similar to Stachybotrys and sometimes considered to be part of the Stachybotrys family. Certain species produce toxins very similar to the ones produced by Stachybotrys chartarum and many consider the IAQ importance of Memnoniella to be on par with Stachybotrys. Allergenic and infectious properties are not well studied, however.

Mucor

Contaminant/pathogen, found in soil, decaying vegetation, and animal wastes. It is common to find some spores in normal house dust. It's a minor allergen and can cause Zygomycoses and lung infections in immunocompromised individuals.



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Myxomycete

General category for commonly found genera usually associated with living and decaying plants as well as decaying wood. Sometimes it can be found indoors. Some allergenic properties have been reported, but generally pose no health concerns to humans or animals.

Paecilomyces

Contaminant/pathogen, found worldwide in soil and decaying vegetation; associated with pulmonary and sinus infections in those who had organ transplants, as well as inflammation of the cornea. Some reports of allergies, humidifier associated illnesses, and pneumonia.

Penicillium

Contaminant/pathogen, one of the most common genera found worldwide in soils, decaying vegetation and indoors in dust, food, and various building materials. Common bread mold is a species of Penicillium. Spores usually cannot be distinguished from Aspergillus on non-cultured samples (like tape-lifts and air-o-cells). It is reported to be allergenic, to cause certain infections in compromised individuals, and some species do produce toxins unhealthy to humans.

Phoma

Contaminant/pathogen, found on plant material and soil. Reported to be a common allergen found indoors on painted walls (including the shower) and on a variety of other surfaces including cement, rubber, and butter. Some believe its effect on indoor air is not that significant because the spores do not travel well via air currents. Some species are linked to occasional eye, skin, and subcutaneous infections.

Pithomyces

Contaminant, found on decaying plants, especially leaves and grasses. Rarely found indoors, but it can grow on paper. No reports of allergies or infections, but some species produce a toxin that causes facial eczema in sheep.

Rhizopus

Contaminant/pathogen, found in soil, decaying vegetation, and animal wastes. It is reported to be allergenic, and some consider it a major allergen often linked to



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occupational allergy. It can cause Zygomycoses and other infections in compromised individuals.

Scopulariopsis

Contaminant/pathogen, found world wide in soil and decaying vegetation and often be found indoors on various materials. Usually is only a contaminant but some reports of allergies and an as agent for certain types of nail infections.

Stachybotrys

Contaminant, found indoors primarily on wet cellulose containing materials. This is what often referred to as the **"toxic black mold"**. Some species produce a potent toxin that is lethal to animals, though dose effect on humans is not clear. One species produces a toxin linked to the bleeding lung deaths of several infants. A host of other toxic reactions in humans are also linked to it, but many of these require further study. Stachybotrys is sometimes difficult to detect indoors because many times it will grow unseen on the back of walls or in the wall cavity with little disturbance that would cause it to be detected by routine air sampling. This is potentially a major health concern when it covers entire wall surfaces and constantly produces toxins undetected. Non-cultured lab analyses (air-o-cells and tape-lifts) usually are the proper method of identification because Stachybotrys does not grow or compete well on most culture plate media, and it is reported that even non-viable spores can be toxigenic.

Stemphylium

Contaminant, reported to be an allergen. Rarely grows indoors, but can grow on cellulose materials such as paper.

Syncephalastrum

Contaminant, often found in the soil of warm, moist climates. Very rarely involved in infections.

Taeniolella

Contaminant, little is known concerning allergenic properties or toxicity. Primarily grows on wood.

Trichoderma

Contaminant/pathogen, found in soil. Can be found indoors on cellulose materials like paper and in kitchens on various ceramic items. Human infections



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are rare but some have been reported in compromised patients. It is reported to be allergenic though some report these effects to be rare. It can produce toxins very similar to those produced by *Stachybotrys chartarum*, and because of this it is considered an important mold in IAQ investigations.

Torula

Contaminant, and has been reported to be allergenic. Can be found indoors on cellulose containing material.

Ulocladium

Contaminant, found everywhere. Can grow indoors on various materials including paper, but requires more water than some other molds. It is reported to be a major allergen.

Verticillium

Contaminant found in soil and decaying plants. Health effects are not well studied. A few sources report it as a very rare cause of cornea infections.

Zygomycetes

Large class of genera that includes *Mucor* and *Rhizopus*. Some species may cause infections and zygomycosis in compromised individuals, and some species may be major allergens. The category Zygomycete on reports is a morphological identification when the particular genus cannot be identified. Particularly on non-cultured samples such as tape-lifts and air-o-cells, many Zygomycete spores and even other clear round spores are indistinguishable by genus.

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