

Mold and Mildew Awareness

Indoor Air Quality

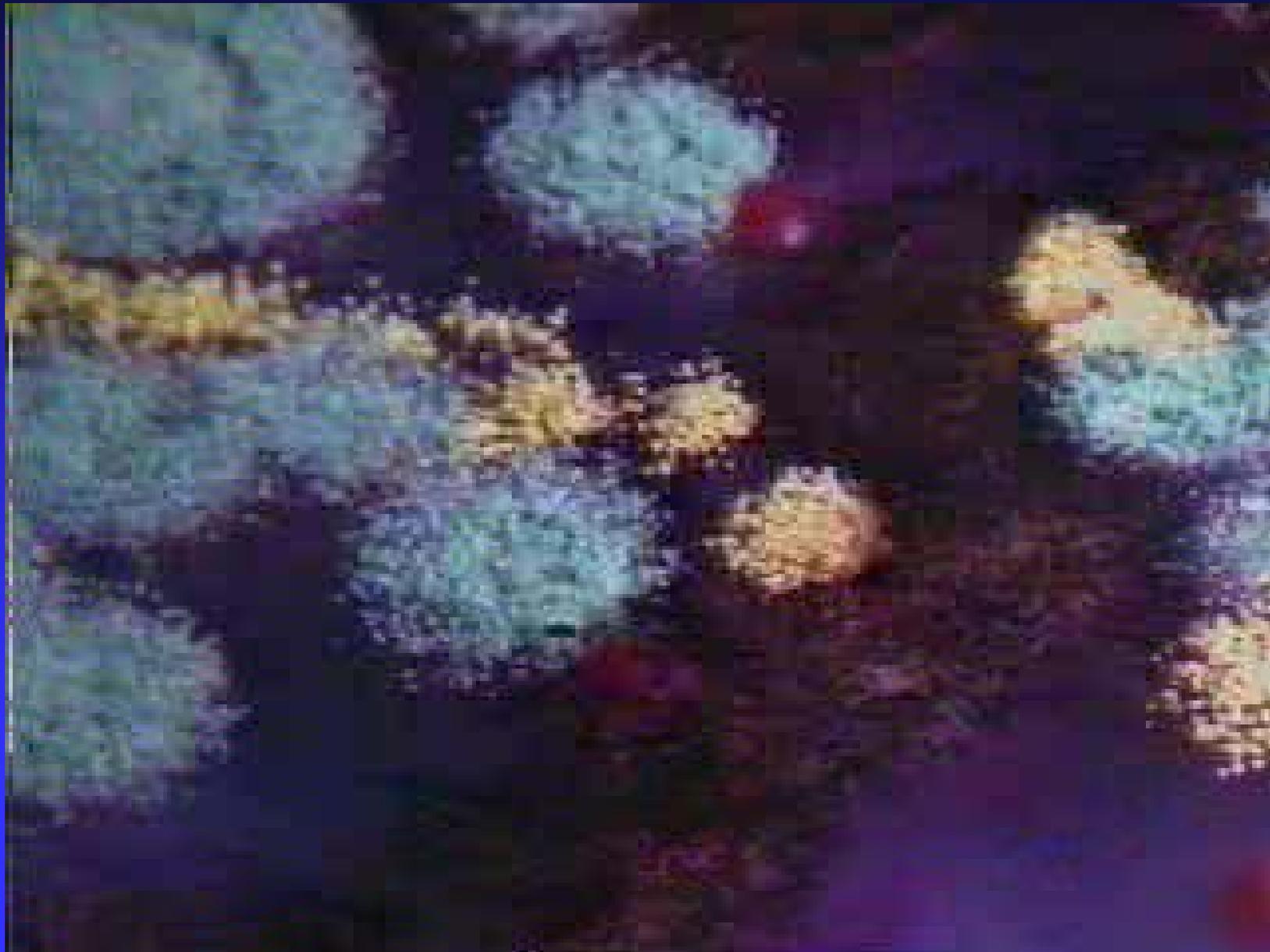
Toxic Mold

- A few years ago, few people had ever heard of "Toxic Mold"
- Stachybotrys
 - ◆ \$100 million lawsuits and of \$18 million mold verdicts
 - ◆ People moving out of their homes and leaving behind all their worldly possessions
 - ◆ People with mold colonies in their lungs
 - ◆ In Sacramento, three major apartment complexes have had outbreaks

Mold is Everywhere

Why is there such a concern?





Mold is Everywhere Why is there such a concern?

- There is also a significant cost associated with mold growth
- There are very serious liability risks
- Currently there are very few regulations regarding the identification, testing, or remediation of mold problems

Litigation

- Landlords have been sued for the condition of their rental units
- Concerned parents for mold in schools are suing school districts
- Employers have been sued by their employees for mold growth in the office buildings and exposure to molds on the job
- Contractors who may work with water damaged homes

Litigation

- Insurance companies have been sued for failure to properly repair water damage
- Home Builders have been sued for construction defects in the houses they have built, which leads to suits against the subcontractors involved
- Home inspectors or pest inspectors for failing to recognize a mold problem or moisture problem that will lead to a mold problem in the future

Mold Biology

- Molds are types of fungi, which are not plants or animals
- They feed on dead, organic material
- They reproduce through spores, which become airborne
- These are microscopic and are inhaled into our lungs along with pollen, dust and other tiny particles in the air
- Molds produce mycotoxins

Mold Biology

- For mold to grow it needs a food source with a high organic content
 - ◆ Wood
 - ◆ Paper
 - ◆ cotton'
 - ◆ Wicker
 - ◆ Other plant-derived materials

Mold Biology

- Mold needs moisture to grow
 - ◆ Leaks
 - ◆ Floods
 - ◆ Condensation
 - ◆ Steam
 - ◆ From high humidity



Sources of Moisture

- If mold growth is found on a wall it may be the result of a roof or pipe leak
 - ◆ If it is on an exterior wall then there may be water intrusion from outside or there may not be enough insulation so that condensation is occurring
- The moisture source may not always be from a structural or design problem with the building
 - ◆ It may be due to human activity inside, like steam from showers or cooking, a spilled fish tank, or a leaking waterbed

Mold Facts

- Molds and fungi are simple, microscopic organisms, found virtually everywhere
 - ◆ Indoors and outdoors
- Molds and fungi can be found on plants, dry leaves, and other organic material
 - ◆ Molds and fungi play an important role in the environment by breaking down dead, organic material
- Mold and fungi spores are very tiny and lightweight, allowing them to travel through the air

Mold Facts



- Airborne levels vary according to locale and current environmental conditions
- Sometimes conditions indoors can be favorable for fungal growth resulting in increased levels of airborne fungal spores
- Inhalation of such elevated levels of airborne spores can result in allergic or toxic responses

Mold Facts

- Although infection can occur in an otherwise healthy individual, those most susceptible include:
 - ◆ Infants
 - ◆ Children
 - ◆ The elderly
 - ◆ Immune compromised individuals



Health Effects

- Exposure to mold spores and their mycotoxins can lead to a variety of non-specific health problems such as:
 - ◆ Sinus problems
 - ◆ Respiratory problems (wheezing, coughing, difficulty breathing)
 - ◆ Headaches
 - ◆ Cold and flu-like symptoms (fever, muscle aches, fatigue)
 - ◆ Sore throats
 - ◆ Eye irritation
 - ◆ Frequent bloody noses

Health Symptoms

- ◆ The types of health problems that develop depend on a variety of factors:
 - ◆ The length and amount of exposure
 - ◆ The mold growth conditions
- ◆ Health symptoms may develop from chronic exposure and the mold growth conditions or from acute term exposure at very high levels, like those that occur during mold abatement
- ◆ The greatest factor affecting the development of health problems is individual sensitivity

Health Effects

- Mold exposure may be especially hazardous to young infants
 - ◆ It is believed that the *Stachybotrys* mold may have caused the death of 12 infants and the hospitalization of 37 infants in the Cleveland area of Ohio
- In most cases mold induced health symptoms will diminish upon removal from the environment with mold abatement

Health Effects

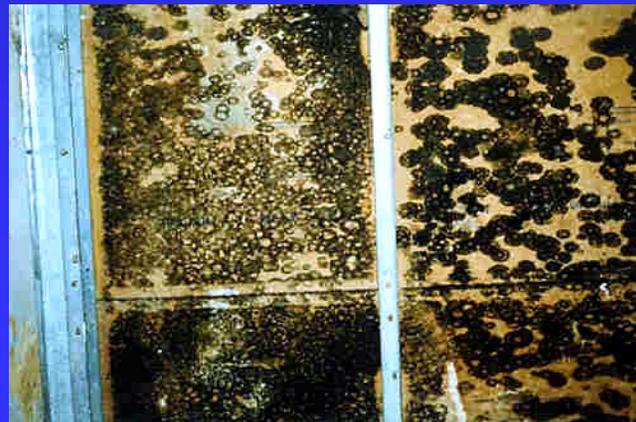
- The health effects from molds depend on the length and level of exposure (chronic vs. acute) and on individual sensitivity
- Health effects from exposure to molds can be divided into four general categories:
 - ◆ Infection
 - ◆ Toxicosis
 - ◆ Allergy
 - ◆ Irritation

Infection

- Systematic Infection
- Opportunistic Infection
- Dermatophytic Infection

Types of Commonly Encountered Fungi

- Alternaria
- Aspergillus
- Chaetomium
- Cladosporium
- Fusarium
- Penicillium
- Stachybotrys
- Ulocladium



Mold Inspections

- An investigation for mold growth begins with an inspection for visible mold growth
- If there is no visible mold immediately noticeable, an inspection for signs of water damage is completed and areas with possible moisture sources are inspected



Sources of Moisture

- Sinks
- Dishwashers
- Leaking roofs and pipes
- Steam from cooking or showers
- Moisture vapor through slab foundations
- Indoor plants
- Wet towels or laundry
- Fish tanks
- Water heaters
- HVAC systems
- Washing machines



Sources of Moisture

- Improper grading of the yard
- Flower beds next to exterior walls
- Outside sprinklers spraying against the house
- Cracked stucco
- Clogged weep screeds
- Missing or torn moisture paper
- Or a combination of many of these problems



Signs of Mold Growth or Water Damage

- Cracked or bubbling paint
- Staining or discoloration
- Damp or soft walls or surfaces
- Buckling or warped flooring of baseboards
- Musty odors



Mold Sampling And Analysis

- Air Sampling
- Surface Sampling
 - ◆ Bulk sampling
 - ◆ Swab sampling
 - ◆ Tape sampling
- Dust Sampling

Mold Abatement



- The first step in mold abatement is to find and eliminate the source of mold
 - ◆ Flooring
 - ◆ sheet rock
 - ◆ Insulation
 - ◆ Any other materials with visible mold must be removed and disposed of

Mold Abatement

- Any surface that is not easily removed, like wood framing, may remain provided:
 - ◆ It is not severely impacted with mold growth
 - ◆ Is structurally sound
 - ◆ Is thoroughly treated to kill the mold and remove the dead spores
- In many cases this may require a 10% chlorine solution with several applications (Ordinary household bleach is usually a 0.5% chlorine solution)

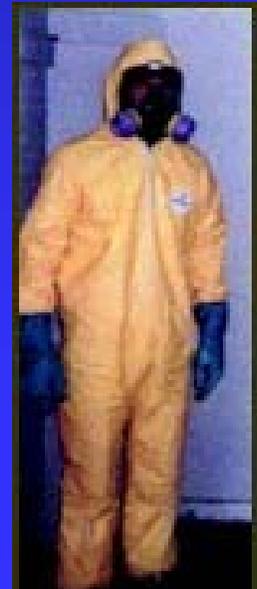
Mold Abatement



- When conducting abatement it is necessary to limit the amount of spores that become airborne and prevent cross contamination of spores to clean rooms
- This involves sealing off affected areas with plastic, sealing off and/or limiting use of the HVAC system, and using vacuums and air filtering devices with HEPA filters

Mold Abatement

- Mold abatement can be extremely hazardous if proper precautions are not taken
- It is very important that PPE be worn when doing any kind of mold cleanup



Common Misconceptions About Mold

- This isn't mold, its just mildew. *Or* this mold isn't the toxic mold
 - ◆ Mold and mildew are the same thing
 - ◆ Any mold growth on a surface has the potential to have negative health effects
- If the mold is not *Stachybotrys*, it is safe to clean it myself
 - ◆ When doing any kind of mold abatement, it is necessary to take steps to limit exposure, no matter what type of mold it is

Common Misconceptions About Mold

- If you have *Stachybotrys* in your home you have to get rid of all your personal belongings
 - ◆ As long as there is no moisture on those surfaces the spores will not form active growth
 - ◆ Since the spores are primarily just on the surface of the furniture, they can be treated and removed

Common Misconceptions About Mold

- I want to make sure that my house is free of mold
 - ◆ No house is completely free of mold
 - ◆ Molds are very common outside, so some mold spores will always be present in the air indoors as well

Common Misconceptions About Mold

- I cleaned the mold with bleach, so I have fixed the problem



- ◆ Bleach is not always effective at killing mold, especially if the mold is present on a porous or fibrous material, like wood or sheet rock
- ◆ If mold growth is significant, it is better to remove the impacted material
- ◆ Cleaning the mold also does not fix the underlying moisture problem that is allowing the mold to grow

10 Things You Should Know About Mold

- Exposure to elevated levels of molds can cause serious health problems
- There are many molds that have the potential to cause health problems including:
 - ◆ *Alternaria*
 - ◆ *Aspergillus*
 - ◆ *Chaetomium*
 - ◆ *Cladosporium*
 - ◆ *Fusarium*
 - ◆ *Penicillium*
 - ◆ *Stachybotrys*



10 Things You Should Know About Mold

- Mold spores can cause health problems even if the spores are dead
- Mold requires an organic food source, such as cloth, sheet rock, or wood, and a moisture source to grow
- Mold spores are very common outdoors and there is no practical way to eliminate all mold spores indoors

10 Things You Should Know About Mold

- Molds can grow undetected inside wall spaces, under carpet, and inside HVAC systems
- Mold growth can often be the visible sign of a structural defect that allows moisture to intrude into a building
- When doing mold abatement, it is first necessary to find and eliminate the moisture source

10 Things You Should Know About Mold

- Cleanup of large areas of mold growth can cause airborne levels of spores to increase up to 10,000 times that of background levels resulting in acute exposure
- The best way to abate mold growth indoors is to remove the impacted materials