

# EVERYTHING YOU NEED TO KNOW ABOUT MOLD

**A complete guide to mold: how you can prevent it, treat it and keep it from coming back.**



# MOLDS ARE ALIVE

Molds are living organisms. They are a type of fungi that grow in the form of filaments called hyphae. Molds and airborne mold spores are all around us all the time. As nature's recycler that breaks down organic material, they are essential to our ecosystem.

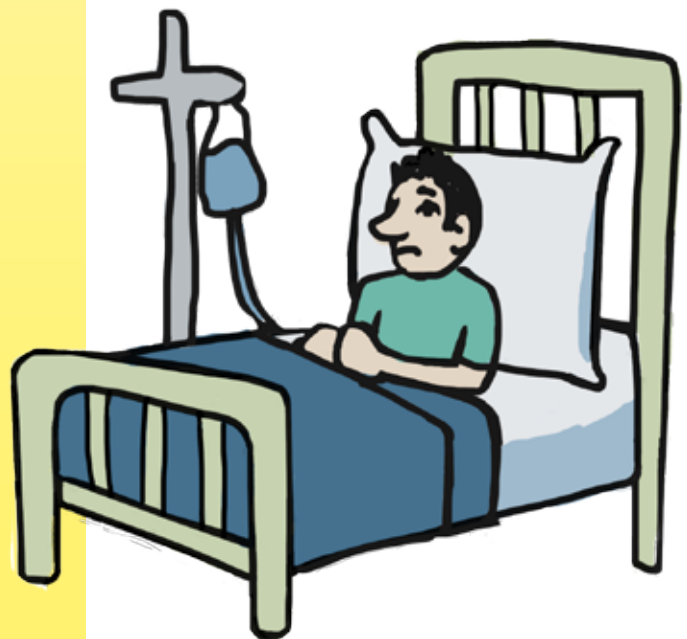
Molds are chemically and genetically closer to animals than plants. Just like animals, they require air, nutrients, and water to live. Molds grow best in warm, damp, and humid conditions, and spread and reproduce by making spores. Mold spores can stay dormant until there is enough moisture for them to grow and spread.

Scientists have identified over 5,000 species of mold. Many molds are allergenic to humans, causing respiratory problems. Others are pathogens and can grow inside the human body or produce dangerous mycotoxins, which are airborne poisons.

## MOLDS AND MYCOTOXINS

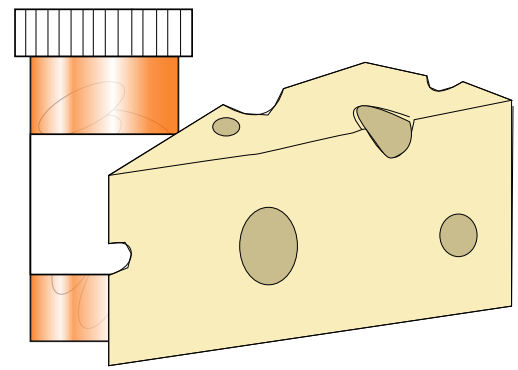
Mycotoxins, like spores, are microscopic airborne particles. Some molds, typically black molds, produce these chemical byproducts (fungal metabolites) to wage chemical "warfare" with other molds that are competing for the same space.

Otherwise healthy individuals who breathe in or come in contact with these poisonous compounds can have a strong reaction to these toxins, potentially becoming severely ill.



# GOOD MOLD AND BAD MOLD

**Good mold:** Some molds produce useful products like cheese, antibiotics, enzymes, and fermented products like beer and wine. Also, outdoor molds serve a vital function by decomposing organic matter.



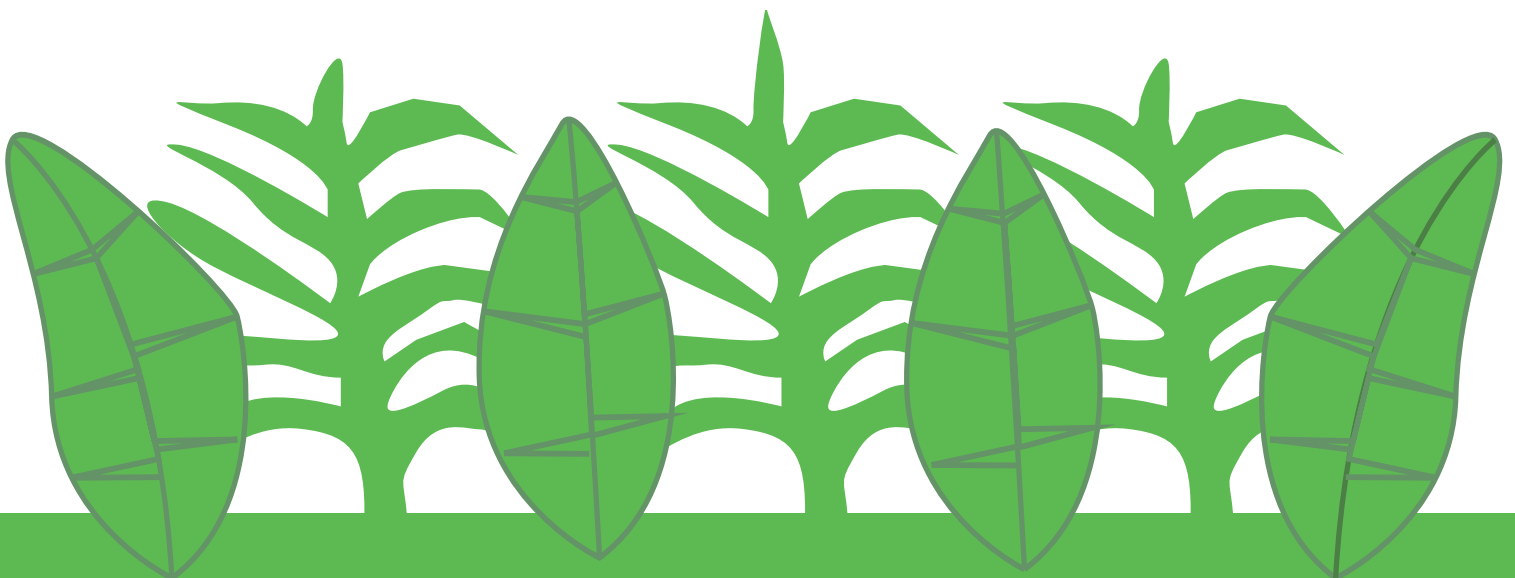
**Bad mold:** Molds are bad, not because of what they are, but because of their location. Molds create problems when they grow indoors in residential structures, schools, and other buildings.



## INDOOR AND OUTDOOR MOLDS

Molds are found in virtually every environment, indoors and outdoors, year round. Outdoor molds grow in shady, damp areas or in places where leaves or other vegetation is decomposing. Mold-sensitive individuals should avoid areas that are likely to have mold, such as compost piles, cut grass, and wooded areas. Fortunately, most of us do not have sensitivities to outdoor mold.

Indoor molds grow where humidity levels are high, such as basements or showers, or where there is a moisture or water intrusion problem. Molds and people cannot peacefully coexist in the same living space. Molds growing indoors degrade indoor air quality and damage building materials. Indoor mold is a very real health emergency for you and your family.



# ACTIVE, DORMANT, AND DEAD MOLD

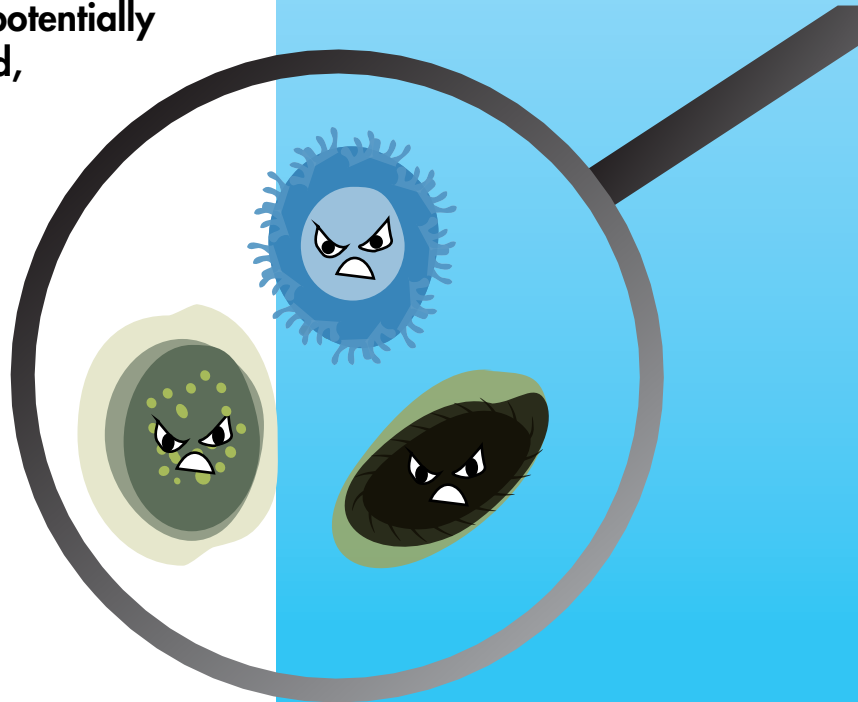
Active molds are living, breathing, growing, and reproducing. This is the mold that often emits a musty unpleasant odor, and can cause allergies and health issues, especially in small children, and in the elderly.

Dormant molds have dried out from inadequate humidity or moisture and no longer grow and produce spores. Once the moisture conditions are right, they resume their activity. Individuals can have reactions to dormant molds just as much as active molds. Even dead molds can be allergenic. No matter what the state of the mold – active, dormant, or dead – it can make you sick and has to be rendered inert and harmless.

## MOLD IDENTIFICATION

Mold often appear as spots or velvety, fuzzy moss. There is no uniform appearance. Mold comes in various colors including black, white, green, grey, brown, red, yellow and an assortment of combinations and various shapes. There is a misconception that you only have to worry about toxic black mold. That's incorrect! Any and all types of mold can cause health problems and damage your home's structure. **Any type of mold is potentially toxic to some people and has to be treated, regardless of color.**

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# TYPES OF MOLD

Over 100 different kinds of molds can be found in homes. Four of the more frequently found molds that grow indoors are:

**1. Penicillium:** Penicillium is often found growing on materials that have been damaged by water, including carpeting, wallpaper, insulation, and furnishings. Usually appears as a blue mold and/or a green mold.

**2. Aspergillus:** Aspergillus can cause a complication called allergic aspergillosis, especially with those more susceptible to health problems. Aspergillus can appear as a yellow or green mold.

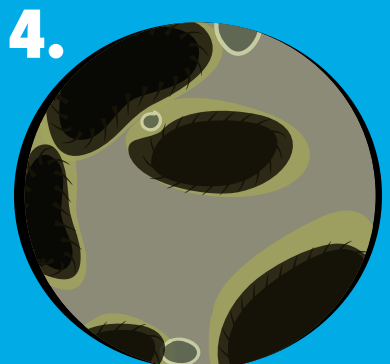
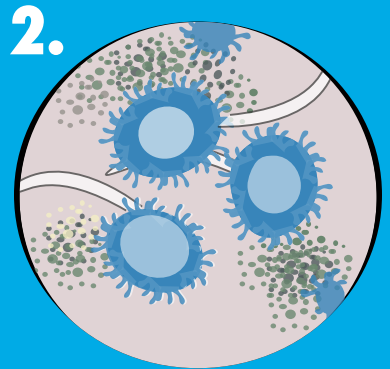
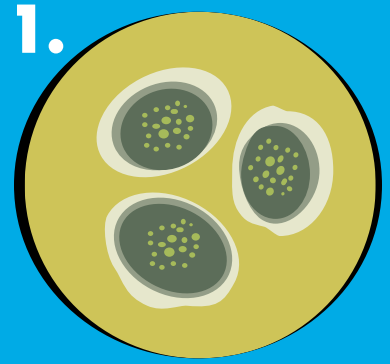
**3. Cladosporium:** Cladosporium often grows on fabrics, like carpets, and on wood surfaces, like cabinets and floorboards. Usually appears as olive-green to brown or black colonies.

**4. Stachybotrys:** Stachybotrys is often referred to as “black mold” or “toxic black mold” due to its slimy black appearance. Stachybotrys feeds on materials rich in cellulose, and produces toxic compounds called mycotoxins, which cause health problems when people inhale or come in contact with them.

# MOLD SICKNESS

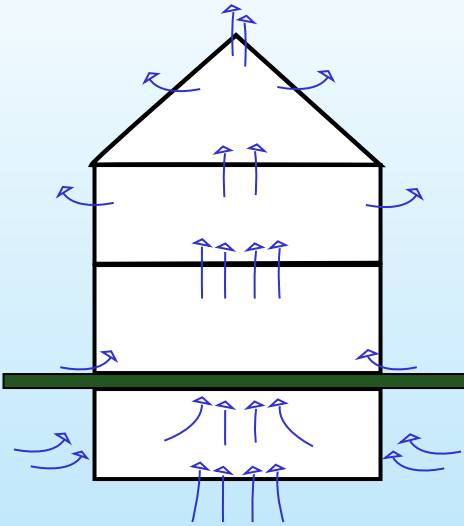
Typically, those who already have allergies or respiratory problems are more sensitive to mold. They may experience symptoms ranging from mild stuffiness and headache to severe cases of fever, shortness of breath and infections of the lungs. Others are not bothered by mold at all, surrounded by mold for weeks without noticing any effects.

Even if just one family member is having chronic headaches or other symptoms that don't resolve and other family members are not affected, you may have a mold problem. Mold does not affect people uniformly. We all have different sensitivities to foreign particles and different immune systems.





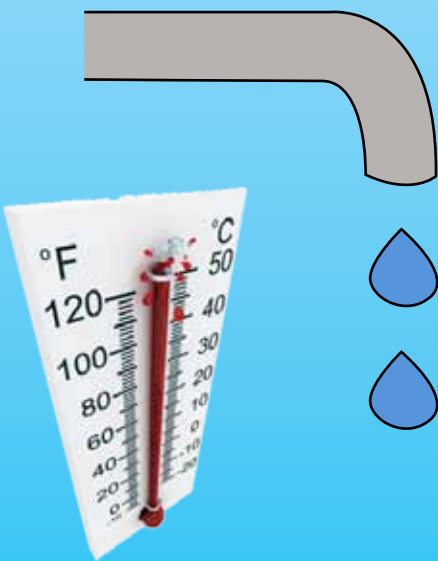
## AIR



## NUTRIENTS



## WATER



## THE RIGHT TEMPERATURE

# WHAT DOES MOLD NEED TO LIVE AND REPRODUCE?

Mold reproduces via microscopic spores, which are carried on wind currents until they land on a suitable surface where they can germinate and produce new colonies. Spores are almost always present in the air and they surround us all the time. You cannot eliminate mold spores in your home. Some people have allergies or sensitivities to high mold spore counts just like they may have with high levels of plant pollen.

Mold can grow just about anywhere. It doesn't require much: only air, nutrients, water, and the right temperature.

**Air:** There is no way to restrict air in and around our homes. Air constantly moves in and through our homes carrying airborne mold spores. Mold may be growing unnoticed in the basement and crawl space, but its mold spores enter the human living spaces above. Much of the air we breathe in our homes comes from below. So if the air quality is poor in a crawl space or basement, the air quality will be poor throughout the home.

**Nutrients:** Unlike plants, molds lack chlorophyll so they cannot make their own food. Molds, like animals, must break down organic material into simple nutrients. Outdoors, molds break down leaves, wood and plant debris. Indoors, molds digest wallpaper, insulation, drywall, carpet, ceilings and roofs, and any other organic substances that they land on.

**Water (Moisture):** Water can be in vapor or liquid form. A common water source is when vapor in moist air condenses on a cold surface. **Water is the key factor to control mold growth.**

**Temperature:** For mold growth, 50° F is the magic number. Under 50° F, mold is dormant. 50° F or more, mold grows. And the hotter and more humid, the faster the mold growth.

# THE KEY TO MOLD CONTROL IS MOISTURE CONTROL!

- Fix leaky plumbing and leaks as soon as possible.
- Look for condensation and wet spots throughout the home. A home that has cold walls and nearby water pipes is likely to have a condensation problem.
- Reduce the relative humidity (RH)/moisture level in the home or business. A commercial-grade dehumidifier is essential for moisture control, especially for homes with basements or crawl spaces. RH must be kept less than 50% or you run the risk of mold growth.
- Keep heating, air-conditioning and ventilation (HVAC) drip pans clean, flowing properly, and unobstructed. A home's HVAC system must be regularly inspected and maintained. It is an often-overlooked source of mold in a home. Never run the HVAC system if you suspect that it's contaminated with mold or mold spores. You'll turn your HVAC system into a mold spore disbursement system.
- Do not allow building foundations to remain wet. Provide drainage and slope the ground away from the foundation.



# LOCATING MOLD IN A HOME

Sometimes mold is visible or odorous and doesn't take much detective work to find. Other times, mold is not always easy to spot. It may start with a leaking window that funnels water into the wall and grow for weeks or months before signs appear on the outside of the walls. The mold may start in one room, but appear as a stain on a wall in an adjoining room. Mold is sometimes concealed: growing between walls, under floors or ceilings, in heating and cooling vents, or in less accessible spots like crawl spaces, basements, and attics.

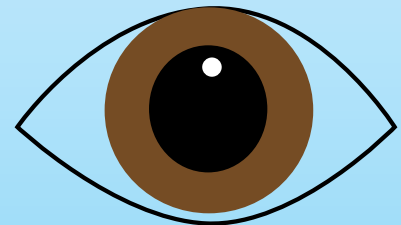
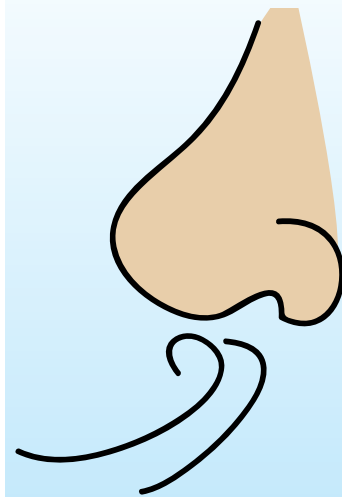
**Smelling for mold:** When walking into a home with mold, you can often smell its damp, musty unpleasant odor, especially in enclosed areas like basements, attics, and crawl spaces. Mold releases gasses called microbial volatile organic compounds (MVOCs). Sometimes these gasses are odorless, so the absence of a mold odor does not necessarily mean that there isn't mold.

**The usual suspects.** Homes with poor ventilation, numerous over-watered houseplants, and not regularly aired out may have a mold problem. These homes feel "stuffy" and "swampy." Check the carpeting, furniture, and curtains for dampness. A wet film spells trouble.

Crawl spaces and basements are common places of mold because of potential condensation or water intrusion problems including past flooding, especially for homes located in designated flood zones.

Tightly sealed homes (common with new construction) are prone to mold problems because they trap excess moisture.

Houses that have been used as rental properties or those that have been vacant, like summer homes, can be more prone to mold. They often are not as well maintained as ones that are occupied by their full-time owners.





# WHAT IS RELATIVE HUMIDITY?

Relative Humidity (RH) is the amount of water in the air relative to the maximum amount of water the air can hold at that temperature. So, if the air is 70° F and has a 60% RH, then the air is 60% full of water compared to the maximum amount of water 70° F air can hold.

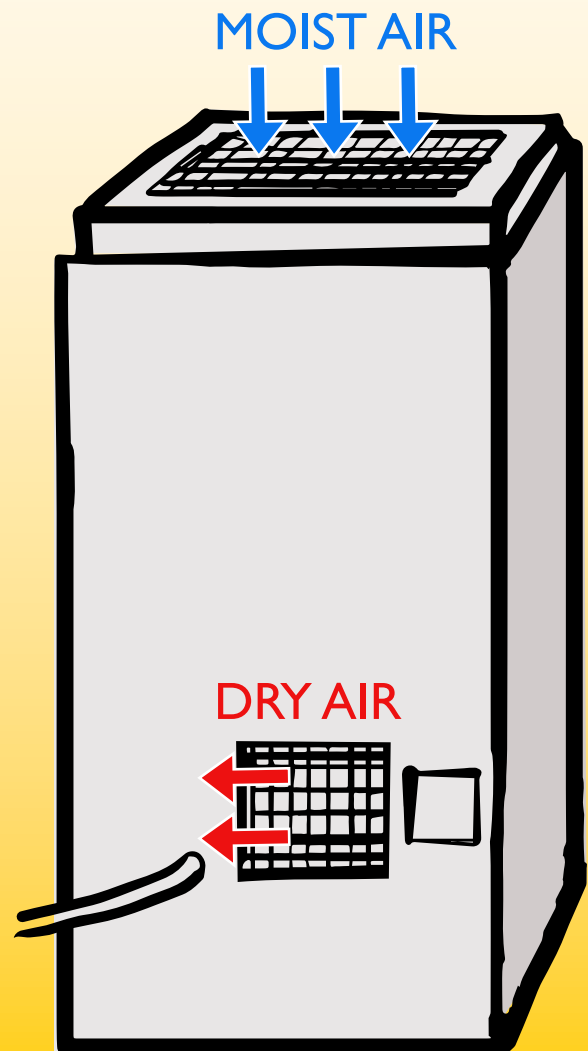
The warmer the air, the more water it can hold because the air molecules are more dispersed. Likewise, when you cool the air, it shrinks and can't hold as much water. The RH is raised unless you simultaneously take water out of the air. For every one degree the air is cooled, its RH is raised by approximately 2.2% even if we haven't added a drop of water.

The Center for Disease Control (CDC) recommends keeping humidity levels as low as you can – no higher than 50% all day long.

# REDUCING HUMIDITY WITH A DEHUMIDIFIER

If your home is too humid, you can use a dehumidifier to bring down the amount of moisture in the air.

**Don't guess your RH.  
Every home should  
have a hygrometer.**



# MOLD TESTING AND THE CDC

## CDC POSITION ON MOLD TESTING

1. If mold is found, there is a potential health risk and the mold should be removed regardless of the type of mold. Conducting a mold test to identify the specific type of mold is unnecessary.
2. If a mold test is conducted, no standard has been established to judge whether an indoor mold spore count is “acceptable, tolerable, or normal.”

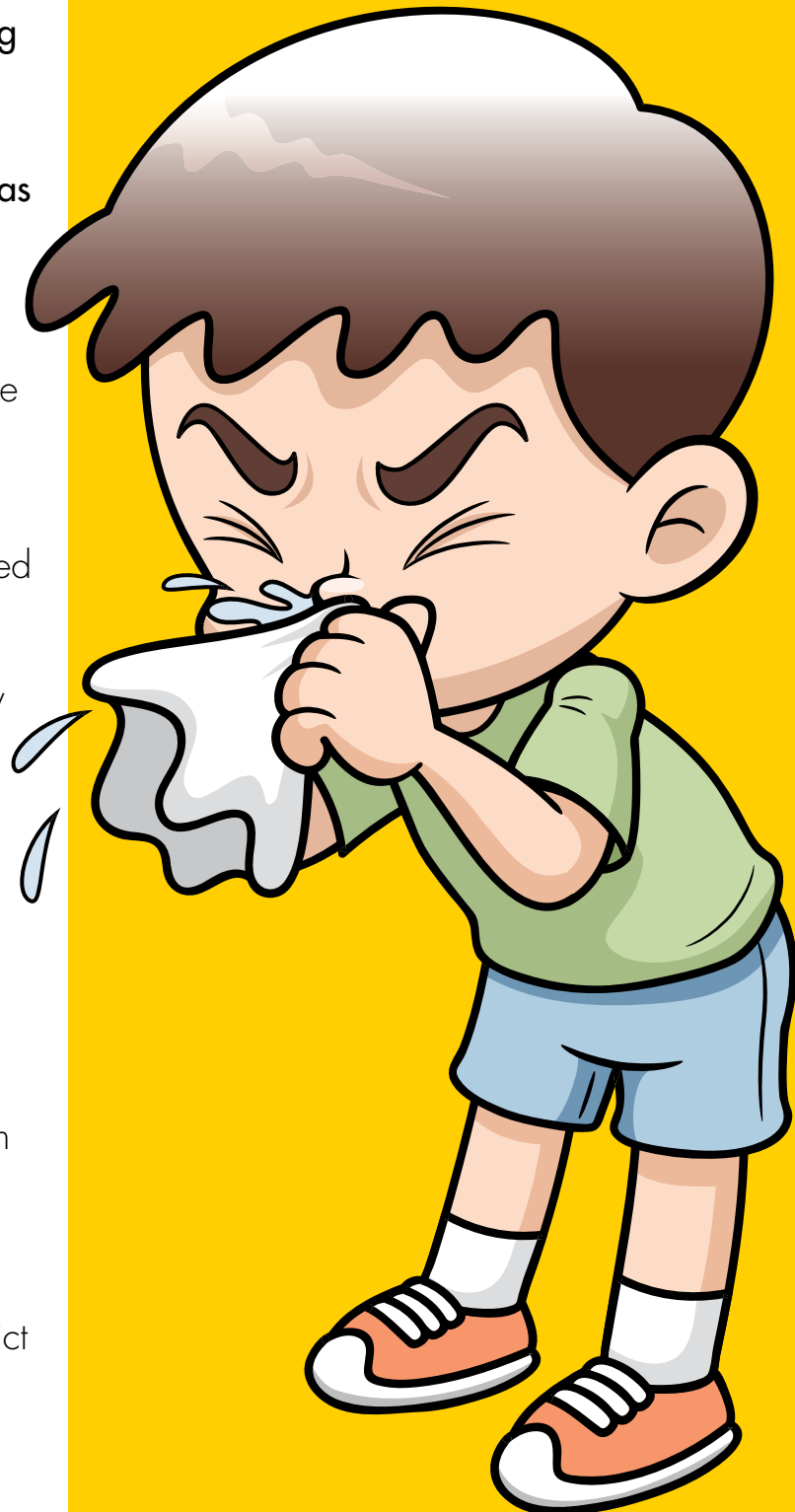
If mold testing is to be done at all, it should be done to determine whether there is mold, not to determine the type of mold. For example, a mold test may be appropriate to test for concealed mold that cannot be seen or smelled when someone in the home has symptoms consistent with mold exposure. If you can't find any other explanation for their respiratory problems, a mold test will help rule in or rule out mold as the cause.

## PROBLEMS WITH MOLD TESTING

One difficulty with mold tests is that there are no guidelines or standards as to what mold level is normal or acceptable. Any level of mold in an enclosed area is a potential health hazard.

The mold tester should be an independent third-party that has no financial interest in the outcome of the test to ensure there is no conflict of interest.

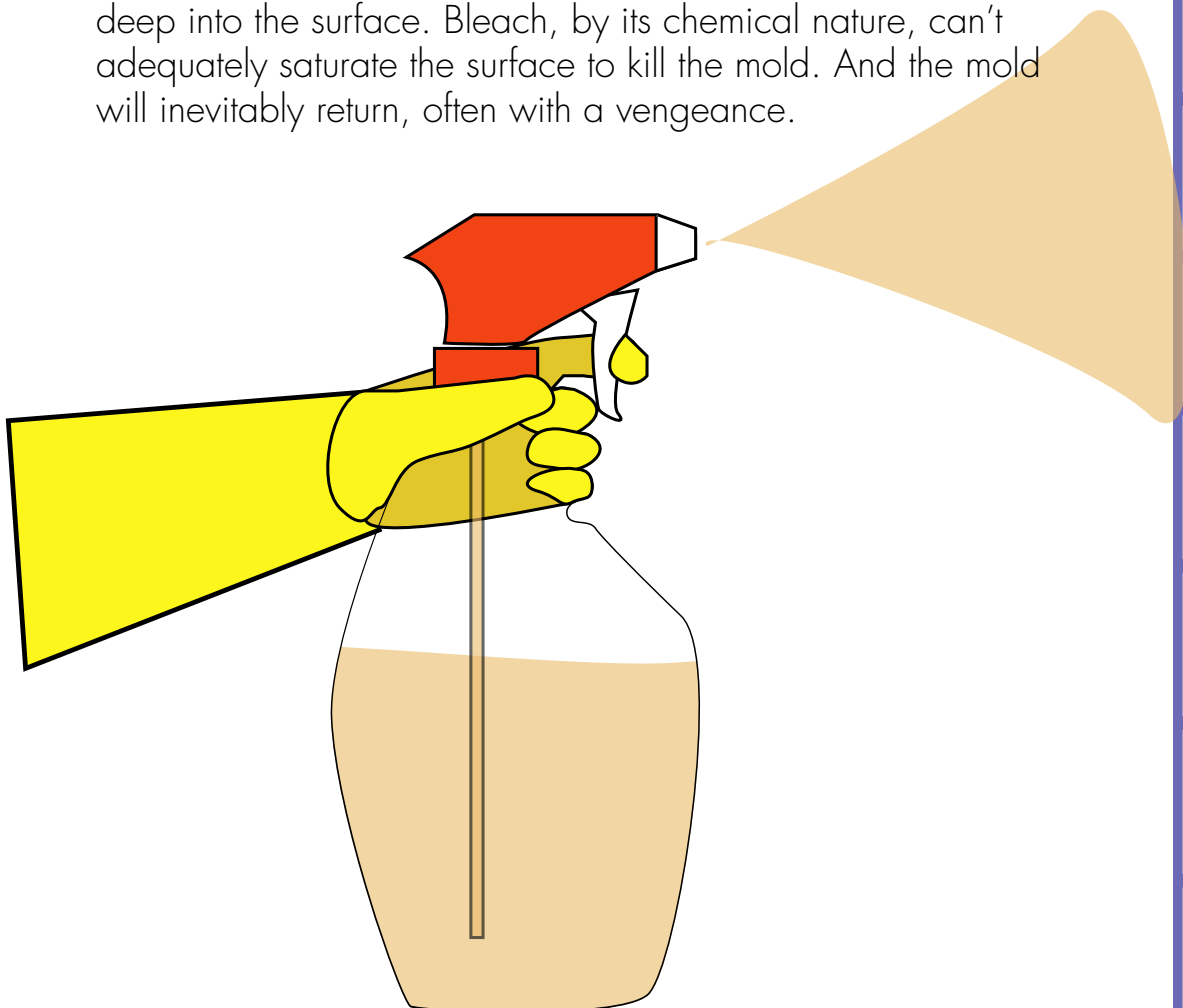
For more information visit: [cdc.gov/mold](http://cdc.gov/mold)



# THE POPULAR MYTH OF MOLD AND CHLORINE BLEACH

There is a popular myth that to kill mold, all you need to do is wipe it down with bleach, and like magic, the problem is solved. This is not only incorrect, but is dangerous as well, especially if bleach is used in an enclosed, poorly ventilated areas without proper protective equipment. According to the EPA's Guide discussing mold in schools and commercial buildings, "the use of a biocide, such as chlorine bleach, is not recommended as a routine practice."

The CDC states that you can use bleach for mold growth on hard (nonporous) surfaces in limited areas of less than 10 square feet. Limiting the use of bleach to hard (nonporous) surfaces is an important one. Bleach does NOT work on softer, porous surfaces like drywall and most other materials in your home where there is usually a significant mold problem. Even though mold is visible, you are only seeing the tip of the iceberg. The embedded mold roots (mycelia) are buried deep into the surface. Bleach, by its chemical nature, can't adequately saturate the surface to kill the mold. And the mold will inevitably return, often with a vengeance.



# DISTINGUISHING MOLD GROWTH FROM STAINS AND OTHER COMMON DISCOLORATIONS

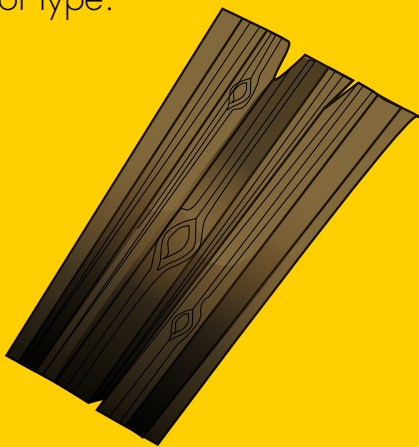
The first step in any mold investigation is a visual inspection of the building and documentation of the areas covered by visible mold growth. This requires the ability to recognize mold growth as opposed to dirt, stains, or other discolorations. Black discolorations on insulation material and wood can be difficult to distinguish from mold. Similarly if the mold has matured and degenerated, it is difficult to recognize since it rubs off the surface leaving only stained spots or patches.

Some mold groups are easy to recognize based on the growth pattern of the mold and the colony surface texture. However, mold growths that lack aerial mycelia and have fine texture are difficult to recognize by unaided eye. It is also difficult to recognize mold growth if the color of the surface on which the mold is growing is similar to that of the mold or if the mold is not pigmented.

## MOLD IMPERSONATORS

### Mold Impersonator: Wood Discoloration

Wood discoloration can be caused by a variety of reasons, one of which is mold growth. A person experienced with molds can visually tell the difference between mold and other sources of discoloration, and in some cases, based on the coloring and growth pattern, identify the type of mold. No special lab testing is necessary since the mold has to be removed regardless of type.



### Mold Impersonator: Efflorescence

Efflorescence looks like mold, but it's caused by salt deposits. When water seeps through concrete, brick, or stone, it can leave behind salt and mineral deposits. When the water evaporates, what's remaining is a white crystalline substance that resembles white mold. It's harmless inorganic material that won't grow or spread, and it doesn't cause any of the health problems of molds.



# BIOREMEDIATION WITH MOLDEXTERM™:

The MoldExterm sealant leverages the proven anti-microbial power of silver nanotechnology. From the perspective of mold and mold spores, the sealant is an impermeable sheet of DNA-destroying silver.

Any mold that comes into contact with the sealant is destroyed at the cellular level. The mold is rendered inert, harmless, non-toxic, and non-allergenic.

## WHY SILVER NANOTECHNOLOGY?

Silver has been used for thousands of years as a highly effective antimicrobial. It is the most non-toxic and safest of nature's metals. It is especially powerful at the nanoscale level where silver nanoparticles are able to kill mold, bacteria, and viruses within minutes of exposure.

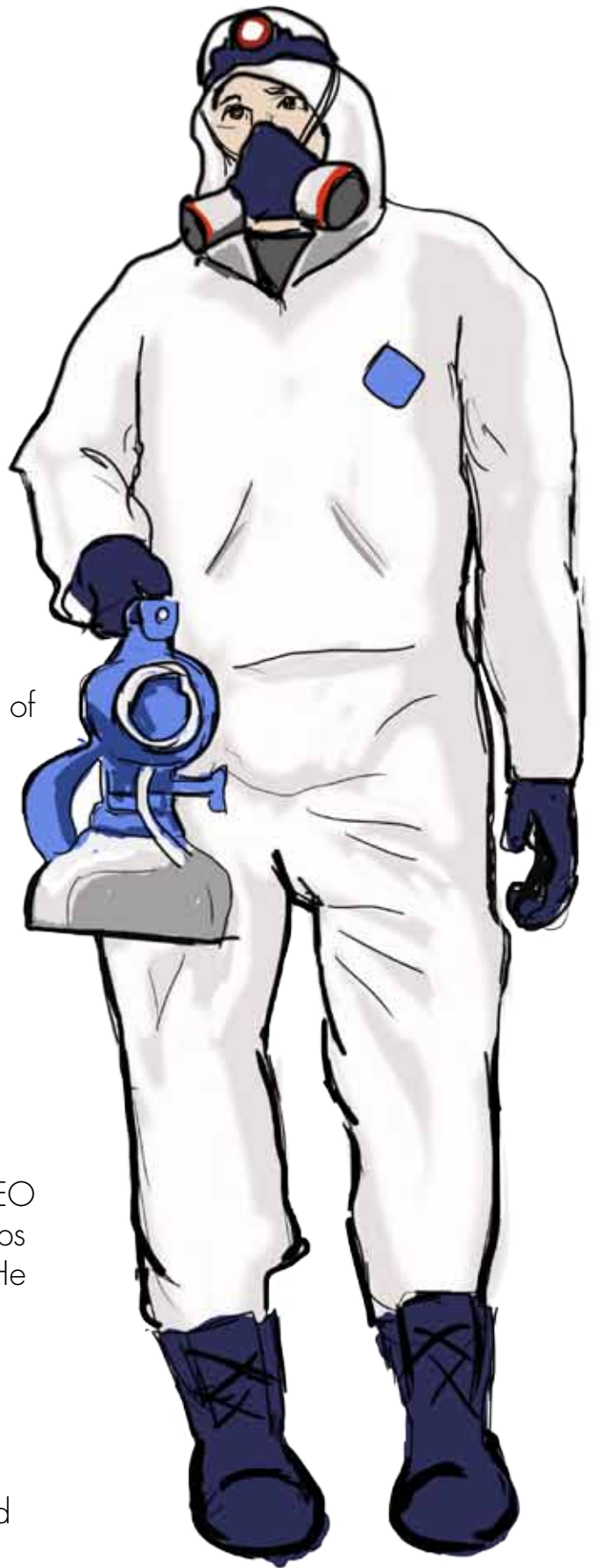
Today, we have an extensive range of nanosilver-based antimicrobial products including: wound dressings, implant devices, and neonatal eye drops to prevent eye infections.

## THE BRAINS BEHIND THE TECHNOLOGY

Dr. Leonard Pinchuk: Interdepartmental PhD in Chemistry, Engineering, and Medicine from the University of Miami and co-founder, President and CEO of Innovia LLC, a privately held company that develops novel biomaterials and innovative medical devices. He holds over 100 patents, including the design of the world's most widely used angioplasty catheter.

Dr. Pinchuk developed the MoldExterm sealant to kill microorganisms outside of the human body.

The sealant is derived from the same biomaterial used for implant devices.







If you see, smell or suspect mold in your home, or have symptoms that may be mold related, contact a mold professional immediately.



Drew Cowley  
Bill Cowley

Fully Insured

Member of BBB, NPMA, NJPMA, NWCOA, NJWDCA, CAI, IREM, BOMA NJ, JAHMA, IAQA, and NUBIA

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Neptune City, NJ 07753

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## THE MOLDEXTERM™ SYSTEM IS A 4-STEP PROCESS:

- 1. A Water Intrusion Inspection** is conducted to locate moisture and water sources and to find mold.
- 2. An anti-microbial is applied to kill the mold.** We use an EPA-registered, multi-purpose anti-microbial, based in quaternary ammonium salts, that kills virtually anything. It is a bactericide, virucide, disinfectant, fungicide, cleaner, mildew stat and deodorizer.
- 3. Our unique, proprietary patented sealant is applied to encase the mold and destroy it** at the cellular level rendering it inert. This sealant is moisture-sensitive and it reactivates when it gets moist, so if any new mold attempts to grow, the sealant will be there to stop it. For mold that is behind wall voids, the sealant will form a protection barrier, taking care of any mold that seeps through the sheetrock. This sealant is completely non-toxic. It is the same underlying material as the coating used on implant devices like heart stents placed inside the body.
- 4. A dehumidifier is installed** to keep down indoor humidity. With the purchase of a dehumidifier, a homeowner has the option of purchasing a 5-year renewable guarantee.

The MoldExterm™ System can only be used by Pest Control Operators licensed by the State DEP and are authorized by MoldExterm™ professional partners.



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