



Mountain Woodworker

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WOODWORKING AND MOLD

This article concentrates on mold remediation as it pertains to woodworkers.
It is not meant for carpenters or home remodeling.

From simply collecting wood in the outdoors, buying wood in lumber yards, using reclaimed wood, to refurbishing of antiques, woodworkers are constantly exposed to mold and mildew. Additionally woodshops themselves may have a variety of molds.

What is Mildew and Mold?

Mold and mildew are a type of fungus that consists of small organisms found almost everywhere. ... Outdoors, molds and mildews play an important role in nature, breaking down dead leaves, plants, and trees. However having these fungi in your home or workshop can be dangerous. Molds thrive on moisture and reproduce by means of tiny, lightweight spores that travel through the air. While mold and mildew are easily mixed up, there are differences between the two that you should know before trying to clean, treat, or prevent either one from growing.

Molds can grow on wood, concrete, or any surface that provides a suitable combination of temperature, moisture and food. Molds feed on nutrients on the surface of wood – they do not eat or weaken the wood itself.

Another form of fungus we need to concern ourselves with is dry rot. Similar to mold and mildew, this fungus relies on moisture and reproduces much in the same way as its cousins. Dry rot however feeds on the supporting structures found in wood.

Wood is a very hard-wearing material and is resistant to most kinds of fungi or biological attack. However, when it's subject to prolonged damp or wet conditions and the moisture content is raised to above 20%, it can be susceptible to the dry rot fungus. This wood-rotting fungus breaks down the cells in wood and causes it to lose its strength.

While molds, mildew, and dry rot fungi react differently to wood, they share many common elements. Thus this article will treat all three as the same unless otherwise noted and will reference them simply as mold.

What Causes Mold?

To have a mold problem, four elements must be present:

1. the spores themselves (they are everywhere);
2. food (which can include almost everything, but especially anything organic);
3. warmth (which is everywhere humans find comfortable for living); and
4. moisture or dampness.

Molds thrive in locations with humidity, places where there are leaks (as from pipes or a hole in a roof), crawlspaces, basements, and areas where temperatures can cause condensation to form.

The Woodshop

Like any home, woodshops are just as susceptible to mold infestation. In many cases workshops are actually part of a home – a basement or garage bay. Regardless of whether your workshop is part of your home or standalone, your workshop should have a monthly inspection and maintenance process. In addition to cleaning air ducts and filters, sweeping up sawdust, checking electrical connections to make sure they are tight, etc., checking for mold should be part of your inspection process. If you do not have an established, written, inspection and maintenance process, you need to develop one.

These inspections are doubly important when you work with certain types of woods such as:

- Wood found in the wild.
- Wood from air dried sources
- Wood that is damp and “green wood”
- Wood that has a musty odor
- Any reclaimed wood
- Antiques
- Figured woods such as ambrosia

Why Control Mold?

When it comes to woodworking we want to control mold in three areas:

1. woodshop health
2. wood brought into our shop
3. personal health

Woodshop health

Whether your workshop is part of your house or a standalone unit, you have made an investment in designing and setting it up. You may have even built your shop. Regardless, you have money invested in the shop's structure.

A 900 square foot standalone shop can easily cost \$30,000 or more to build. If you purchased a home and turned the basement or garage bay into a workshop, a percentage of your home's cost and mortgage interest can be considered the amount it took to "build" your shop.

In addition to the cost to "build" your shop, you have other expenses associated with it. These include taxes, utilities and repairs. Thus, just as a table saw needs maintenance, so does your shop. If you don't have a monthly maintenance schedule for your shop, you need to establish one.

Your maintenance schedule needs to include looking for any mold and then handling it. Remember that all molds require moisture. The worst mold that you can have in a shop and is an easy one to remedy is dry rot. The following checklist will help you get started.

- Foundation

All shops have some form of a foundation

- Outside

- Is the soil around the foundation very moist or has standing water?
- Are there cracks in the foundation
- Is vegetation growing right next to the foundation?
- Is there organic debris piled up along the foundation?
- Are window or door wells around the foundation clean or cluttered?
- If air vents are present, are they open and clean?

- Crawlspace and basements

- Are the walls and pilings damp?
- Is there a musty smell?
- Are there cracks in the walls?
- Is the soil at the base of the walls moist?
- Can you see any mold on the floor joists?
- If the floor is dirt, is there plastic sheeting covering it and intact?
- If the floor is concrete, is it moist? (see concrete slab for tip)
- If there is a sump pump, is it working properly?
- If bare steel/iron or copper is present, is there rust or corrosion present?

- Concrete slabs

- Are there cracks in the slab?
- Is the slab damp anywhere?
- Is there any standing water?
- Is any wood or sawdust on the slab, damp or moist?

- Tip: place small metal cans in various places around the shop, but out of the way. If the bottoms rust, the slab is too damp.
- Waterlines
Waterlines have two major problems, the leak and they condensate moisture in the air. Both of these issues need to be resolved in the shop, crawlspaces and/or basement.
- Closets and cabinets
Closets and cabinets need to be carefully checked for mold.
 - In closets look around the base of the walls for any signs of moisture stains. You may have to move stuff out of the closets.
 - For cabinets, remove the bottom drawer and inspect the base of cabinets for any moisture stains.
 - Do not install cabinets flush with exterior walls, leaving some space for air circulation. This will also help your tools.
 - Remove all sawdust and clutter.
 - Do not store wood up against the walls. Leave some space for air circulation.
 - Elevate wood 2-3 inches off the floor
 - Sniff for musty odors.

Wood brought into our shop

As previously mentioned moisture is needed in order for mold to grow. While all wood contains moisture, some classes of wood have more moisture than others. Generally speaking the moisture content of the class are as follows:

1. Green wood (highest content)
2. Pressure treated wood
3. Reclaimed wood
4. Air dried wood
5. Kiln dried wood (lowest content)

While these classes of wood are arranged from the highest to lowest, some kiln dried woods such as the pines may have a higher moisture content than air dried woods.

As a general rule, when you buy wood, it should be clean and free of dirt or other debris. Green and pressure treated woods should not be stored in the workshop but outdoors under cover.

From the woodworker's perspective, the moisture content for wood should range between 6% to 8%. As moisture content increases it has a greater chance to expand and contract, warp, crack, bow, split, diminished strength, increase corrosion of fastener, and fungal growth after the project is completed. Additionally, the project's finish may be adversely affected.

Personal health

There are thousands of types of mold that can adversely affect your health, your workshop, and the items you make. While many people may be allergic to mold, other people with respiratory issues may also react to these fungi. Reactions can be mild or so severe that they result in death. It is important to know what your sensitivity level is, not only to certain types of woods, but also to molds.

As a woodworker, knowing your sensitivity level is very important and can restrict you to selected types of wood. For example, most old barn wood, often called reclaimed lumber, is contaminated with mold, not to mention fertilizers, chemicals, manure, etc. Some lumber suppliers will “treat” reclaimed wood with chemicals to kill the molds, but such treatment is often surface only and does not penetrate all the way through. In general, if the wood is locally reclaimed, it probably has not received any quality mold remediation treatments.

If you are highly sensitive to mold, you may want to avoid using barn wood altogether, or use appropriate personal protection equipment (PPE) and protection procedures. All reclaimed lumber should be used with care, PPE, and implemented protection procedures such as porting dust collection to the outside, and taking cool showers after working with these woods while still wearing a dust mask. It may sound extreme, but such actions could save you from a severe reaction.

Exposure to mold may cause signs and symptoms of respiratory allergies, including:

- Sneezing
- Runny or stuffy nose
- Dry, scaly skin
- Itchy eyes, nose, and throat
- Coughing
- Wheezing
- Chest tightness
- Shortness of breath

The severity of mold exposure depends on your age and overall health, and the type of mold you are exposed to. If you do have a mold allergy, you may be allergic to specific types of mold. An allergen-specific mold test performed by your doctor can help determine what types of molds you are sensitive to.

One of the worse types of mold that you can have in your shop is “Black Mold.” Black mold is considered to be poisonous. While it is hard to detect, especially when other molds are present, if you have experienced the following symptoms for prolonged periods of time and there are no other explanations, black mold should be considered.

- **Lack of Focus**
Black mold can negatively influence how your brain functions. One of the most important processes is the ability to concentrate on something for an extended

period of time. Black mold can make it very difficult to focus on things for longer than a few seconds.

- **Irregular Blood Pressure**

Many people do not realize that blood pressure problems can actually be caused by black mold. Most do not consider black mold as a possible cause because stress, heredity, and many other things can cause blood pressure problems as well. If you monitor your blood pressure frequently and notice wild swings in readings, this could be caused by black mold.

- **Respiratory Problems**

a very common symptom of black mold poisoning is respiratory problems. These problems could come in any number of forms. Some people experience trouble breathing or catching their breath. Others may continuously sneeze and have mucous discharges from the mold. In extremely severe cases, it has even caused bleeding in the lungs. The symptoms are often magnified when other respiratory conditions exist.

- **Headaches**

Many people experience headaches when exposed to black mold. While headaches are common, if you have tried everything else and the headaches persist, you might want to have your shop tested for mold.

- **Urinary Problems**

Black mold can also cause urinary problems as well. You might find yourself with symptoms of a urinary tract infection. You might also have problems urinating. Some people urinate more frequently and feel thirsty all the time. All of these things could be attributed to black mold.

The symptoms of black mold exposure vary so it is important to follow up with a healthcare provider if you have any symptoms that concern you.

Preemptive Solutions to Mold Problems

Mold is a serious concern, and if you're in the process of building or renovating a home, mold resistant products will help reduce your risk of encountering mold. Remember, mold loves moisture so keeping moisture out of your house helps keep mold out of your house. The fight against mold has become high-tech and scientific.

Conditions required for mold growth:

- Air
- Water
- Food(what mold feeds on)
- Temperature between 41 and 104 degrees Fahrenheit

Here are the best ways to keep your shop dry:

1. **Start from the outside.** For mold to grow, it needs moisture. So your first step is to determine where and how the moisture is coming into your shop. In most shops, moisture comes in from rain runoff and water that seeps under the foundation through the soil. One house that I owned actually had an underground stream that flowed under it.

Some shops may have a crawlspace or basement that has air vents or windows. Often times these vents or windows are below ground level and have a metal “well” shield around them. Check to see if water is seeping into the crawlspace or basement around these vents or windows.

Once you have identified the outside sources, you need to determine the best way to keep the water from entering your shop. Sometimes you may only need to install a French drain around the foundation. If water flow is heavy some form of water-resistant membrane may be needed. Below ground house wrap, tar, or bentonite sheets are often used up against the foundation in conjunction with a French drain.

2. **On the inside of your home.** The first thing you need to do is make sure that your crawlspace or basement is kept dry. If your shop has a “slab foundation” you will need a professional to help figure out how to keep the ground underneath it dry. In your crawlspace or basement you may need to install drain lines and a sump pump. You may also need to install a moisture resistant barrier under your floor joists. The best advice here is to consult with a professional on the ways this mitigation can be done. Do this even if you plan on doing the work yourself. Your professional not only has the knowledge of how to keep the moisture down but also the zoning laws that affect mold remediation. If not done properly, you could exacerbate the problem and decrease your home’s value.

Sometimes a dehumidifier will be helpful in removing moisture from the air. A commercial dehumidifier is recommended over one that can be purchased online or in a big box store. You may need an electrician to add an electrical outlet for the dehumidifier to run on.

If you are in the building or remodeling stage of your shop, you can apply a protective coating directly to the framework to inhibit the growth of mold in the wall cavity after it is sealed.

3. **Select a moisture managing insulation.** Use an insulation that keeps your walls dry year round that incorporates MoistureSense technology.
4. **Follow that with a mold-resistant drywall** such as [M2Tech® Mold and Moisture Resistant Drywall](#) or [AirRenew® with M2Tech®](#). This is especially important in areas with high moisture contents such as kitchens, baths and laundry rooms. AirRenew drywall also helps clean the air by absorbing formaldehyde.
5. **Don't forget the walls behind decorative features like tile backsplashes or shower surrounds.** While tile might seem to be waterproof, it is not. CertainTeed's [Diamondback® Tile Backer](#) protects tile installations and the walls behind from moisture intrusion.

When it comes to combating mold and mildew it is particularly important to pay special attention to areas of high moisture including kitchens, baths, laundry rooms and basements.

Here are some tips for efficient ways to prevent mold and mildew in your home and workshop:

- Keep all surfaces and areas dry and moisture-free.
- Maintain a humidity level of about 40-50% inside the house (a dehumidifier provides the most advantageous solution for ensuring appropriate indoor humidity),
- Regularly inspect your heating and cooling systems,
- Change air filters regularly
- Keep air ducts clean and in good condition,
- Ensure good air circulation inside the home ,
- Fix any leaks in the bathroom, kitchen or other areas, etc.
- Inspect your home regularly for mold and mildew,
- Remove mildew-affected plants and weeds as soon as you notice them.
- Use an indoor air purifier

Confirming If Your Shop has Mold

Here are three ways to confirm mold if you suspect it's infiltrated your home:

- **Visual Inspection**
A trained inspector can visit your shop and conduct a visual inspection. You'll have to pay for this. The inspector will produce a report showing whether or not your shop has damage and if there are any possible sources of excess moisture.
- **Infrared Inspection**
Infrared inspections are typically cost-effective, as mold inspectors use infrared

cameras to check behind walls, in attics and in crawl spaces for differences in temperature. They can check for problems such as moisture, leaks and condensation without resorting to “destructive testing.” This means they don’t need to drill into your walls or remove your flooring to identify mold.

- **Air-quality test**

Air-quality tests are usually suggested after an initial mold inspection produces a concern for mold. Mold inspectors take an air quality test when they inspect your shop and send samples away to be analyzed by an independent lab. These tests may be costly.

Removing and Killing Mold

If woodworkers dealt with only raw wood, mold removal and killing it would not be much of a problem. However, most woodworkers need to consider what the project they are working on entails. For example, does the project. . .

1. Involve only new wood?
2. Repairing or replacing part of an antique?
3. Repairing something that was in a flood, or other high moist area?
4. Replacing upholstery?
5. Working on something that has a high moisture content?

As woodworkers much of what we do is related to making furniture or décor items. Depending on where we get our wood, mold and/or mildew may be present. So the first step in prevention is to select wood that is mold free. There are several ways you can do this.

On entering any lumber storage facility, take a whiff of air. If it smells “musty,” mold is probably present. Also check the floor and base of walls. If they appear to be wet or moist, you can bet that mold is present in the storage facility. If either of these conditions exist, the best thing to do is turn around and leave, don’t buy any wood that is or has been stored in that particular facility. If, however, you just need the wood, then you need to take the following precautions:

1. Line your truck bed or SUV floor with a water resistant tarp that can be wrapped all the way around the wood.
2. Put on a dust mask and carefully place your lumber on top of the tarp being careful to ease it to the truck bed or on top of the other lumber. Do not to “drop” the boards as this will cause the mold spores to go airborne.
3. Carefully wrap the lumber with the tarp, making sure that the ends are folded over and will not open. You may need to tie the ends or put something on top of them to keep them closed.

4. If you are using an SUV or station wagon, leave the back window (or rear side windows) open and crack the driver's and front passenger's window so that when you drive down the road, an air flow is created that takes air out the back windows.
5. Once you get to your shop, carefully unwrap your wood and remove it from your vehicle using the same care as you did when loading it. DO NOT take the wood into your shop.
6. Now that you have unloaded your vehicle take it to a car wash. If you used a truck, a simple wash with detergent should clean off any mold spores. If however, you used an SUV or station wagon, first vacuum out your car starting at the rear and working forward. Depending on the amount of mold present in the wood, you may have to repeat this step 2-3 more times.

At this point, regardless of the type of vehicle you used, take a change of clothing into a bathroom and change your clothing. Put the used clothing in a plastic bag and seal the bag to later washing. Now go and have your vehicle's exterior washed.

While this step may seem extreme, keep in mind that if you don't clean out the spores, you could end up carrying them into your shop. Also, any passengers you have in your vehicle may be sensitive to molds.

7. When you return to your shop, it is time to clean the wood and make it mold free.

Clean up Process for Mold Removal

Before taking any moldy wood into your workshop, you need to clean and kill any mold outdoors.

Before you even start trying to remove mold there are several steps that need to be taken first. The first step is to gather the following:

1. Obtain and wear appropriate protective equipment
 - a. A mask designed to filter out mold spores
 - b. Wrap around eye protection
 - c. Waterproof gloves
 - d. Shirts with long sleeves and button up collar
 - e. Long pants
 - f. Shower cap or similar to keep spores out of your hair
2. Fan
3. Appropriate cleaning chemicals
4. Two pails or large containers
5. Appropriate cleaning materials such as rags, brushes, etc.

Once you have the above items you will need to:

1. Determine where the mold is and how you will approach cleaning the wood
2. Put on your protective clothing and equipment.
3. Place the fan so that it blows across the boards and away from any shop entrance.

There is one thing that you need to realize about mold. It is often believed that mold grows by spreading out much like a weed. This is only one part of how mold grows and while you need to address this process, it is more important to realize that mold contains spores. Think of these spores as miniature volcanoes which can explode at the lightest touch, by even the slightest of breezes. When they explode, spores within these miniature volcanoes are spewed outwards and spread the mold. Because mold spores are extremely light they can travel long distances and are also easily inhaled. Whenever you see mold, especially “black” mold, you need to leave it alone until you are ready to remove it.

The first step is to dry out the wood and lower the humidity if it is exceptionally high. The fan blowing across the wood will help do this. Also having the wood under some form of shelter to keep water, dew and other moisture away from the wood will help.

Once the wood is dry, any visual evidence of mold should be removed. This can be done by washing with detergent and water or, sometimes, by vacuuming. However neither process will kill the spores and the mold will grow back if the humidity is high enough. If you vacuum the wood, throw out the bag in the vacuum.

Now it's time to get down to cleaning. There are many products on the market for removing mold. The less expensive ones contain biocides and disinfectants such as OxB. Finding the product that works best for your situation and the type of mold you have, requires the right chemistry.

There are many commercial products you can use to kill and remove mold. Natural mold and mildew killers can also be used and are often less costly. Fill a spray bottle with solutions containing natural solvents, like:

- **Ammonia**
- **Baking Soda** – Dissolve 1 teaspoon of baking soda in 1 cup of water for a safe, effective mold cleaner. You can also combine baking soda with white vinegar.
- **Bleach** – works only on hard surfaces, the chlorine does not penetrate porous materials.
- **Borax**

- **Detergent** – cleans only surface mold, does not kill.
- **Grapefruit seed extract**
- **Hydrogen Peroxide** – Your best choice is a 3 percent solution. It makes a cheap and easy-to-use spray. Be careful not to spill on fabrics or carpet.
- **Tea tree oil**
- **White Vinegar** –Use this natural household cleaner full strength or diluted with equal parts warm water. Use after cleaning as a preventative treatment by spraying on affected areas.

The basic process is to spray moldy areas with your cleaning solution. Wait 10 minutes before scrubbing mold with a bristle brush. Rinse with a clean cloth, and repeat the process. After a final rinse, let the wood dry in fresh air. Speed up the drying process with fans directed onto the wood.

While you can handle many mold cleanup jobs, don't take on a project that can endanger your health. It's not worth the risk. Leave mold removal to certified professionals if:

- The affected area is larger than 3 square feet.
- The mold appears to be black and slimy.

Using Bleach

Bleach can kill virtually every species of indoor mold that it comes into contact with, along with its spores, leaving a surface sanitized and resistant to future mold growth.

Unfortunately, however, using bleach is only effective if the mold is growing on non-porous materials such as tiles, bathtubs, glass and countertops. Bleach cannot penetrate into porous materials and so it does not come into contact with mold growing beneath the surface of materials such as wood and drywall. Using bleach on these materials will kill the mold above the surface but the roots within the material will remain and the mold will soon return.

Bleach produces harsh fumes so make sure the area is well ventilated before you begin. You should also wear gloves during the process to protect your hands.

1. For killing mold with bleach use a ratio of one cup of bleach per gallon of water (ie about 1 part bleach to 10 parts water).
2. Apply the solution to non-porous surfaces with mold growth either by using a spray bottle or by using a bucket and a sponge or cloth.

3. You don't need to rinse the surface afterwards (unless it is used for food preparation or a surface which may be touched by small children or pets) as the bleach will inhibit mold growing in the future.

Using Borax

There are many advantages to using borax to kill mold. For starters, borax is a natural cleaning product and although it is toxic if you swallow it, borax does not emit chemicals or dangerous fumes like some other mold killers. Borax, a white mineral powder, has a pH level of about 9 (baking soda is pH 8.1 and pH 7 is neutral) and a low toxicity.

Borax is commonly used as a deodorizer as well as for cleaning toilets and drains. Borax is also used as an insecticide, herbicide and fungicide and it can be mixed with water in a solution to kill and remove mold as it is a natural mold inhibitor. You can buy borax in supermarkets for a few dollars from the laundry section.

1. To kill mold using borax, create a borax-water solution using a ratio of 1 cup of borax per gallon of water.
2. Vacuum up any loose mold with a HEPA filtered vacuum cleaner to lessen the number of spores stirred up into the air during the cleaning process.
3. Use a scrubbing brush with the borax-water solution to scrub the mold off the surface.
4. Wipe up any extra moisture and excess mold particles or dust/debris to prevent them spreading into the air once the surface has dried.
5. You don't need to rinse off the borax as the solution will prevent more mold beginning to grow on the surface again.
6. Leave the surface to dry completely.

Using Vinegar

Vinegar is a mild acid which can kill 82% of mold species. However it also has the advantages of being natural and safe. Vinegar is non-toxic and doesn't give off dangerous fumes like bleach does.

To kill mold with vinegar, use white distilled vinegar which you can buy cheaply from the supermarket.

1. Pour some vinegar into a spray bottle without watering it down.
2. Spray the vinegar onto the moldy surface and leave it to sit for an hour.
3. Wipe clean the area with water and allow the surface to dry. Any smell from the vinegar should clear within a few hours.

If you want to use vinegar to prevent mold growing on surfaces just spray vinegar on the surface and leave it. Repeat this every few days to ensure the surface will stay mold-free. You can even mop your tiled bathroom floor or other hard non-porous floors with vinegar if you are worried about mold growing on them.

Using Ammonia

Like bleach, ammonia will kill mold on hard non-porous surfaces such as countertops, glass or tiles but it is ineffective at killing mold growing in porous material such as wood or drywall.

Another disadvantage of using ammonia is that it is a harsh, toxic chemical. Make sure you never mix ammonia with bleach because the gas they create when combined is toxic. Chlorine mixed with ammonia was even used as a chemical weapon during World War 2.

Additionally, although ammonia can kill surface mold, dead mold and dead mold spores are still allergenic so you will need to make sure to remove them afterwards.

1. To kill mold using ammonia, create a solution of 50% clear ammonia and 50% water in a spray bottle and spray it on moldy areas.
2. Make sure the ammonia you use says "clear ammonia" on the label.
3. Leave the area for a few hours before wiping and rinsing.
4. Often detergents or mold cleaning products will contain ammonia. In that case just follow the directions on the label and be sure never to mix it with bleach.

Using Hydrogen Peroxide

Hydrogen peroxide kills mold as it is anti-fungal as well as anti-viral and anti-bacterial. Hydrogen peroxide is a good alternative to chlorine bleach because it is safe to use and doesn't damage the environment, nor does it leave behind toxic residue or produce toxic fumes like chlorine bleach does. You can buy hydrogen peroxide from drug stores for around one dollar for a bottle of 3% concentration.

Hydrogen peroxide kills mold effectively on many materials such as clothes, floors, bathroom fixtures, walls and items such as kitchen appliances. Since hydrogen peroxide is a bleaching agent it may also help fade the stain mold leaves behind. Spot test hydrogen peroxide on the material you're going to be cleaning to make sure it won't fade the material's colors.

1. To kill mold pour 3% concentration hydrogen peroxide into a spray bottle.
2. Spray the moldy surface completely so that the moldy areas are saturated with hydrogen peroxide.

3. Leave the surface to sit for 10 minutes while the hydrogen peroxide kills the mold.
4. Then scrub the area to make sure to remove all the mold and mold stains.
5. Finally wipe the surface down to remove residual mold and spores.

You can also use vinegar with hydrogen peroxide during the cleaning to more effectively remove the mold. Afterwards store the spray bottle in a dark place since light diminishes hydrogen peroxide's effectiveness.

Using Detergent and Water

A solution of detergent and warm water can be used to scrub surface mold off non-porous surfaces. Although detergent itself doesn't kill mold, if the mold is on non-porous materials then the solution doesn't need to kill it as long as you completely remove all the mold on the surface.

Be sure to use a detergent that does not contain trisodium phosphate (TSP) which feeds mold growth.

Using Baking Soda

Baking soda is well known as a natural and safe household cleaner. But you can also use baking soda to kill mold in your home. Unlike other mold killers which contain harsh chemicals, baking soda is mild (pH of 8.1) and harmless to your family and any pets.

Besides killing mold, baking soda also deodorizes and so using it can get rid of the smell mold leaves in your home. Baking soda also absorbs moisture to help keep mold away.

Vinegar is often used along with baking soda when cleaning up a mold problem since vinegar kills different species of mold to baking soda.

1. Add one quarter of a tablespoon of baking soda to a spray bottle of water.
2. Shake the bottle to dissolve the baking soda into the water.
3. Spray the moldy area with the baking soda and water solution.
4. Then use a sponge or scrubbing brush to make sure to remove all the mold from the surface.
5. Once you've scrubbed away the mold rinse the surface with water to remove any residual mold on the surface.
6. Spray the area with the spray bottle again and let the surface dry. This will kill any left over mold and prevent the mold returning.

You can use a cloth instead of a spray bottle to clean mold with baking soda:

1. Soak a cloth in water and then add one quarter of a tablespoon of baking soda to it.
2. Use the cloth on the moldy area to remove the mold with the baking soda and water solution.

Using Tea Tree Oil

Of all the natural mold killing solutions tea tree oil is the most effective. Although it is also expensive, a small amount of tea tree oil goes a long way in killing mold.

Tea tree oil is an essential oil which is harmless to people and pets. Tea tree oil is antifungal, capable of killing all types of molds. Tea tree oil is antibacterial as well.

You can buy tea tree oil for about \$10 for a small bottle from most natural food stores. Make sure the tea tree oil you buy is derived from the *Melaleuca Alternifolia*, which is the technical name for tea tree, as not all brands always are.

1. To kill mold using tea tree oil add water to a spray bottle, keeping in mind how many cups it takes to fill the bottle.
2. Next add tea tree oil at the ratio of 1 teaspoon per cup of water that went into the spray bottle.
3. Spray the solution on the moldy surface.
4. There is no need to rinse since leaving the tea tree oil on the surface will kill the mold and prevent it from returning.

An alternative to using a spray bottle is to use a rag or cloth with the tea tree oil solution to clean away mold:

1. First create a solution of tea tree oil and water in the ratio of 1 teaspoon per cup of water.
2. Use a cloth to apply the solution to the moldy surface and scrub the mold away.
3. Again, you do not need to rinse the surface afterwards.

Tea tree oil has a strong smell but it will go away after some time. You can keep and use the solution you have made for a long time afterwards as tea tree oil does not lose its potency quickly.

Using Grapefruit Seed Extract

Grapefruit seed extract is similar to tea tree oil in that it is an expensive but very effective natural mold killer. The advantage of grapefruit seed extract over tea tree oil

however is that it has almost no odor. Like tea tree oil you can buy grape fruit seed extract from most health food stores.

Grapefruit seed extract kills mold naturally as the citric acid from the grapefruit attacks mold. Grapefruit seed extract also disinfects areas and deodorizes as well. Like tea tree oil, a small amount of grapefruit seed extract goes a long way in killing mold.

1. To kill mold with grapefruit seed extract create a solution of grapefruit seed extract and water in a spray bottle in the ratio of 10 drops of grapefruit seed extract per cup of water.
2. Shake the spray bottle to mix the solution thoroughly and then spray it onto the surface where mold is growing.
3. You do not need to rinse the solution away afterwards although you can use a cloth to wipe away the mold and solution after some minutes if you like. The longer grapefruit seed extract is in contact with mold the more it will cut through and kill the mold colony and prevent mold from returning.
4. Repeat if needed to more thoroughly remove mold from the surface.

The grapefruit seed extract solution in the spray bottle will remain potent for a long time and can be reused again and again as grapefruit seed extract has a long shelf life.

Cleaning Method # 1

When you're cleaning mold from wood, if the mold is just on the surface, follow these steps.

1. Dip a clean soft rag in your cleaning solution.
2. Wipe away the mold on the surface using this rag.
3. Rinse the affected area of the wood with water and dry.

Cleaning Method # 2

Using a cloth and chemical solution is effective at removing mold from wood when the mold is simply sitting on the surface; however, method number one is not effective when the mold appears to have penetrated deep into the wood.

Follow the steps below when the mold has grown deeper into the surface of your wood.

1. Apply cleaning method #1 first.
2. Using 100-grit sandpaper, begin to sand the affected area wherever you see any mold.
3. Continue sanding, using #220-grit sandpaper on the wood. Be sure to only sand the area that shows mold, as you don't want to wear down the clean, surrounding areas.

4. As you're sanding the wood, spray a diluted solution of bleach onto the affected area. This will attack any live mold spores before they spread.
5. Using a dry microfiber cloth, wipe away any residue that remains from the sanding.

Should you suspect that you have a mold problem beyond just a small amount, it's crucial to take this very seriously. Mold spores can be very hazardous to your health when left untreated.

Cleaning Fabrics or Upholstery

When cleaning fabrics or upholstery that has mold, take the material or furniture outside. If the material is wet, let it sit in the sun until dry. Next, use a brush to remove as much mold as possible. For any remaining stains, use the bleach and water method of removal. If the piece is washer friendly, send it through a cycle after you've removed the mold with bleach.

On upholstered furniture, it is best to replace all fabric and padding materials. Once the fabric and padding is discarded, make sure that all the wood is free of mold. You may wish to use one of the above solutions to wipe down and/or treat the wood.

Even after cleaning the wood there may be some visual damage to the finish, and a musty odor may still be present.

Remember to always do a spot removal test on a spot that is normally not visible.

Damage to the Finish

Mold can dull or pit a finish. Short of stripping and refinishing, there are two ways to repair this problem – cut back and level the surface of the finish with abrasives and rub what is left to the sheen you want; and/or add more finish on top.

Both methods can be used on the same piece of wood. The sequence of the methods does not matter. You can cut the finish back to level the pitting, then add more finish on top. Or apply more finish, and then level the surface.

Musty Odor

After cleaning a musty odor may still linger. It may be possible to remove this odor by washing all the surfaces you can get to with the commercial biocide or a weak solution of household bleach and water.

If some odor still remains after the surfaces have thoroughly dried, coat all the surfaces you can get to with shellac. Shellac provides an excellent barrier to all types of odor. If pieces of wood are bolted or screwed together, disconnect them and apply the shellac and then reconnect the pieces.

If you still have a problem (usually because there are places you can't get to), try placing some charcoal bricks in drawers to absorb the odor; or mask the musty odor

with a pleasant one by spraying a scented deodorant onto the interior or hidden surfaces.

Removing Mold Stains from Wood

Once you've cleaned the mold off the wood a mold stain may be left behind. If you don't like the look of the stain you can sand the wood if you want. This should usually remove the stain, although sometimes the mold stain might run deep into the wood so that it can't be completely sanded away.

Another way to get rid of mold stains is to use a small amount of bleach to fade it away. This could discolor the wood though so it's a good idea to do a spot test.

Mold Sealant (Encapsulating Mold)

Mold sealant is a paint-like substance designed to seal a moldy surface from which the mold cannot be fully removed, like wood. Encapsulating mold in this way is generally only done when the moldy material cannot be removed and replaced. Most of the time, it's better to remove the moldy material if it cannot be adequately cleaned.

Sealant can be applied with a paint brush, paint roller or sprayer. However, unlike regular paint, it contains antimicrobial ingredients that help fight mold. It also seals in any mold remaining on a material, like wood, so that it cannot continue to grow and spread.

It's important to understand that regular paint will not have the same effect. It will just cover up any remaining mold, making it more difficult to see the mold when it begins to grow and spread. It will make the situation worse in the long run.

Mold sealants can be purchased at many home improvement stores. Mold remediation experts recommend products like Foster 40-50. It's important to read and follow all directions carefully when using these products to ensure they work properly and for safety's sake. To be safe, you'll need safety gear, including disposable gloves and an N-95 respirator mask (also available at many home improvement stores), when applying a sealant to moldy materials.

For information about mold remediation, read the ebook [A Homeowner's Complete Guide to Mold Remediation](#) by Brian Turner.