

Chlorine Bleach is Not Effective in Killing Mold

CHLORINE BLEACH IS INEFFECTIVE IN KILLING MOLD FOR THESE REASONS:

(1) The object to killing mold is **to kill mold at its "roots"**. Mold remediation involves the need to disinfect wood and wood-based building materials, all of which are porous materials. Thus, **chlorine bleach should not be used in mold remediation** as confirmed by OSHA's Mold Remediation/ Clean Up Methods guidelines. The use of bleach as a mold disinfectant is best left to kitchen and bathroom countertops, tubs and shower glass, etc. and other non-porous surfaces. (What is Mold?, About Mold, Mold Facts) When used to "kill" mold, it removes the surface fungi, and seemingly removes the mold, when in fact, it discolors it, and it will grow back.

(2) Chlorine Bleach does kill bacteria and kill viruses, but has not been proven effective in killing molds on non-porous surfaces. Bleach itself is 99% water. Water is one of the main contributors of fungal growth and harmful bacteria and mold. Current situations using bleach re-grew and regenerated mold and bacteria twice the CFU* counts than were originally found before bleaching, within a short period of time. Bleach is an old method used for some bacteria and mold. It is the only product people have known for years. The strains now associated within Indoor Air quality issues are resistant to the methods our grandmothers employed to clean-up mold.

(3) What potential mold '*killing*' power chlorine bleach might have, is diminished significantly as the bleach sits in warehouses, on grocery store shelves or inside your home or business 50% loss in killing power in just the first 90 days inside a never opened jug or container. Chlorine constantly escapes through the plastic walls of its containers.

(4) The ionic structure of bleach prevents Chlorine from penetrating into porous materials such as drywall and wood---it just stays on the outside surface, whereas mold has enzyme roots growing inside the porous construction materials---



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however, the water content penetrates and actually FEEDS the mold---this is why a few days later you will notice darker, more concentrated mold growing (faster) on the bleached area.

(5) Chlorine Bleach accelerates the deterioration of materials and wears down the fibers of porous materials.

(6) Chlorine Bleach is NOT registered with the EPA as a disinfectant to kill mold. You can verify this important fact for yourself when you are unable to find an EPA registration number for killing mold on the label of any brand of chlorine bleach.

(7) Chlorine bleach off gases for a period of time. Chlorine off gassing can be harmful to humans and animals. It has been known to cause pulmonary embolisms in low resistant, and susceptible people.

(8) Chlorine bleach will evaporate within a short period of time. If the area is not dry when the bleach evaporates, or moisture is still in the contaminated area (humidity, outside air dampness), you could re-start the contamination process immediately and to a greater degree.

(9) Chlorine is a key component of DIOXIN. One of the earliest findings of dioxin's toxicity in animals was that it caused birth defects in mice at very low levels. This finding led to dioxin being characterized as "one of the most potent teratogenic environmental agents". The first evidence that dioxin causes cancer came from several animal studies completed in the late 1970's. The most important of these, published in 1978 by a team of scientists from Dow Chemical Company, led by Richard Kociba, found liver cancer in rats exposed to very low levels of dioxin. This study helped establish dioxin as one of the most potent animal carcinogens ever tested and, together with the finding of birth defects in mice, led to the general statement that dioxin is the "most toxic synthetic chemical known to man."

*CFU = colony-forming units

Opposing Views and Confusion.

Chlorine bleach, commonly referred to as laundry bleach, is generally perceived to



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be an "accepted and answer-all" biocide to abate mold in the remediation processes. Well-intentioned recommendations of the Environmental Protection Agency (EPA) and other federal, state and local agencies are perpetuating that belief. And confusing the issue is one federal agency, the Occupational Health and Safety Administration (OSHA), taking an opposing point of view by NOT recommending the use of chlorine bleach as a routine practice in mold remediation.

Does Bleach Really Kill Mold?

Will chlorine bleach kill mold or not—yes or no? The answer is yes, but with a caveat. That answer comes from The Clorox Company, Oakland CA, manufacturer and distributor of Ultra Clorox® Regular Bleach. The company's correspondence to *Spore°Tech Mold Investigations, LLC* stated that their Tech Center studies supported by independent laboratories show that "...3/4 cup of Clorox liquid bleach per gallon of water will be effective on hard, non-porous surfaces against... *Aspergillus Niger* and *Trichophyton mentagrophytes* (Athlete's Foot Fungus)". Whether or not chlorine bleach kills other molds and fungi, the company did not say. The words "*hard, non-porous*" surfaces" present the caveat. **Mold remediation involves the need to disinfect wood and wood-based building materials, all of which are porous materials. Thus, chlorine bleach should not be used in mold remediation as confirmed by OSHA's Mold Remediation/ Clean Up Methods guidelines. The use of bleach as a mold disinfectant is best left to kitchen and bathroom countertops, tubs and shower glass, etc.**

Why Chlorine Bleach is NOT Recommended for Mold Remediation.

Chlorine bleach (sodium hypochlorite) is corrosive and that fact is stated on the product label. Yet the properties of chlorine bleach prevent it from "soaking into" wood-based building materials to get at the deeply embedded mycelia (roots) of mold. The object to killing mold is **to kill its "roots"**. **Reputable mold remediation contractors use appropriate products that effectively disinfect salvageable mold infected wood products. Beware of any mold**



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inspector or mold remediation company that recommends or uses chlorine bleach for mold clean up on wood-based building materials.

Chlorine Bleach Is Active Ingredient in New Mold & Mildew Products.

The appearance of new mold and mildew household products on store shelves is on the rise. *Most are dilute solutions of laundry bleach.* **The labels on these mold and mildew products state that they are for use on (again) *hard, non-porous surfaces* and not for wood-based materials. Instructions where not to apply the products are varied. A few examples where the branded products should not be applied include wood or painted surfaces, aluminum products, metal (including stainless steel), faucets, marble, natural stone, and, of course, carpeting, fabrics and paper.** One commercial mold and mildew *stain remover* even specifically states it should not be applied to porcelain or metal without immediate rinsing with water and that the product isn't recommended for use on formica or vinyl.

Before purchasing a mold and mildew product, read and fully understand the advertised purpose of that product — and correctly follow the use instructions of a purchased product. The labeling claims on these new products can be confusing — some say their product is a mold and mildew *remover* while another says their product is a mildew *stain remover* and yet others make similar 'ambiguous' claims. Make double sure that the product satisfies your intended need on the surface to which it is to be applied. If your intention is to kill mold, make sure the product does exactly that and *follow the directions for usage*. Consumers may find that mixing their own diluted bleach solution will achieve the same results as any of the new mold and mildew products — **keep in mind that the use of chlorine bleach is not for use on mold infected wood products including wall board, ceiling tiles, wall studs, fabric, paper products, etc.**

Conclusion.

Laundry bleach is not an effective mold killing agent for wood-based building materials and *NOT EFFECTIVE* in the mold remediation process. OSHA is the first federal agency to announce a departure from the use of chlorine bleach in mold remediation. In time, other federal agencies are expected to follow OSHA's lead.



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The public should be aware, however, that a chlorine bleach solution *IS* an effective sanitizing product that kills mold on **hard, non-porous** surfaces and neutralizes indoor mold allergens that trigger allergies.

WARNING: Never mix chlorine with ammonia products, as the result is extremely toxic.

Using bleach can cause serious health problems.

The fumes are very caustic and great care must be taken not to breathe it in too much.

It is also very damaging to clothing and carpeting, the human body, and the environment.

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How to control mold?

It is impossible to completely eliminate airborne mold spores. Specialists warn that living in environments entirely safe from mold spores, bacteria or viruses would not be healthy since our immunological system needs to be active. It is recommended that steps be taken to reduce airborne microorganisms, not complete extermination. Even the most clean environments, like a sterile operating room has mold spores floating around in the air, even with a HEPA filtration system functioning!

Prevention

- Reduce humidity in your home by opening windows for approximately 30 minutes daily; unless the relative humidity outside is 60% or above.
- Prevent leaks due to rain; and when unavoidable, dry and treat water damage within 24 to 48 hours; mold begins growth in 48 hours after any porous material becomes wet or moist, including humidity above 60%, mold will begin to grow;
- Regularly clean places that accumulate humidity such as showers, faucets and



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pipes and the floor areas around such fixtures; use bathroom exhaust vent fan after showering, and make certain the exhaust vents out through a roof vent or a soffit vent, or mold will grow in the attic on the trusses, and framing members;

- Limit carpets and plants in your home;
- Use air purifier to drastically reduce high contamination levels.
- Whenever possible, leave objects exposed to sunlight after cleaning. It is very important that objects are dried after cleaning otherwise they will be subject to new mold contamination.
- Porous materials such as wood, fabric, cushions, and mattresses retain water and are likely to be contaminated, making it difficult to clean them. In the event that these objects are contaminated, it is advised to dispose them. Avoid putting wet towels and gym towels in your automobile, or on a bed. Hang them to dry, or place them in a plastic bag until you can wash them or hang them dry.

FACT: Mold needs 2 things to grow, food which is anything porous or semi-porous, and water which can come in the form of moisture, condensation, or relative humidity >60%.

FACT: Grout is porous, so if you use bleach products on grout in the bathroom (or kitchen, etc.) the grout will appear to lighten up to its original color, but the bleach (chlorine) whitens the color back to a lighter color because it bleached the color and appears to be gone. When in fact, bleach which is 90% chlorine, will take root in the grout, and return in a few weeks. So what do we do when we see the mildew again? We bleach it again, and the cycle continues.

FACT: When you use bleach and water to pressure clean your roof or other outside porous materials, it can kill certain types of shrubs and other vegetation, when it drips down below the roof, and it discolors the growth of algae and mold and takes off the surface growth from pressure cleaning, and discolors the mildew or algae, and takes root in the porous roofing material, and grows right back.

We are our own worst enemies. Contact us to learn how to make the mildew go away for good!



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