

## WHY RESTORATION PROFESSIONALS SHOULD AVOID USING BLEACH

---

There are many situations in which restoration professionals may think that use of bleach as a cleaner/sanitizer is effective. Indeed, there are certain restoration projects, such as sewage backflows, floods, and even mold remediation, where individuals have been taught to use bleach as part of their restoration protocol. This history is supported by continuing references in publications put out by numerous organizations including the EPA, American Red Cross, Salvation Army and others. The use of bleach as a “disinfectant” seemed to reach new heights over the past few months as semi-truckloads of the chemical were donated for disaster relief efforts in the Gulf states following hurricanes Katrina and Rita.

Despite this surge in bleach use for restoration of water-damaged and mold-impacted environments, I have one thing to say about the situation: **Professional restoration contractors should not be using bleach for cleaning, sanitizing, or disinfecting surfaces!** Of course this opinion comes with a few caveats: I do not have any financial or management interest in a chemical company that manufactures bleach or alternative chemical products. I have never been seriously injured by bleach in a personal or industrial accident. I use bleach for my laundry and a bleach derivative for sanitizing my swimming pool water.

So the question that is obvious is, Why is this environmental engineer so adamant about contractors not using bleach? The answer is related to both practical and legal implications for restoration professionals.

### Practical Considerations

Let's start with the practical considerations. Bleach is favored by many because of its long history of use by homeowners for cleaning and stain removal. Its relatively low cost has made it so widely available that its odor is now commonly associated with cleanliness by the general public. But in contrast to this widespread use are its dangers. Bleach is a corrosive that can irritate and eventually cause considerable damage to the skin. Bleach releases chlorine gas as it is sprayed or evaporates. The effect of bleach vapors on the eyes and respiratory system are immediately evident to anyone who is in an area where the product is being used liberally. Because of these potential effects on the body, appropriate personal protective equipment such as gloves, goggles, and respirators should be employed when bleach is utilized for situations beyond laundry. However, such essential precautions are often ignored because of the product's acceptance in the mainstream of our society.

There are many practical impacts of bleach use beyond health concerns. Restoration professionals must appreciate the highly reactive nature of this chemical compound. The fact that bleach is used for stain removal and whitening means that it can also discolor and damage many fabrics. Less obvious is how bleach reacts with other materials. It is corrosive to many metals and stone products. It should never be used on stainless steel, aluminum, copper, brass, marble, or granite. In fact, bleach is so strong that it will etch glass if it is not neutralized after application to surfaces such as mirrors and windows. In New Orleans I observed how bleach solution had significantly corroded electrical components and anchoring bolts for load-bearing walls after less than 24 hours in a house where the drywall had been stripped due to flooding. In that particular case, the builder had been given bleach to use as a sanitizer and had sprayed it undiluted on all of the exposed studs and other building components.

## **A Bad Reaction**

The reactive nature of bleach is even more troublesome when it is mixed. Bleach should never be mixed with acids, as dangerous fumes are usually the result. Even a mixture of two innocuous cleaning compounds such as bleach and ammonia can produce deadly gasses that can kill with just a few breaths. Depending on the ratio of bleach to ammonia, chlorine gas, nitrogen trichloride and/or hydrazine will be produced when these two are mixed. In addition to being toxic the last two listed by-products from this bleach mixture are also explosive. Other reactive by-products that can come from bleach mixtures are toxic chloramines and dioxins. With all of these potential “side effects” a restoration professional is taking a significant chance when bleach or a bleach solution is applied to varied materials in an uncontrolled environment – exactly the situation that occurs when bleach is sprayed following a sewage loss or fire.

Perhaps the most misunderstood aspect of bleach when proposed as a cleaner or sanitizing agent is that its effectiveness is greatly reduced in the presence of organic material. To be a successful sanitizer, bleach must be used on clean materials and surfaces. This is why bleach products are used in the laundry after the wash cycle or in a commercial kitchen as a component in the third sink after the dishes have been washed and rinsed. The efficacy of bleach as a sanitizer is also compromised by heat and light. Despite the fact that the chlorine odor may linger for some time after use, bleach loses strength so quickly that it is not considered to have a residual effect that would prevent future bacterial or fungal growth.

The last, but by no means the least, issue related to the practicality of bleach for restoration projects is that many alternatives are readily available for contractors that need to incorporate a level of sanitization into their cleaning or restoration activities. These products are specifically developed for restoration projects such as sewage clean-up or mold remediation. They have been tested for the sorts of conditions and contaminants that the contractor faces rather than testing as a laundry additive. In areas where potable water is a concern, there are many

formulations that are ready to use, avoiding the dilemma of having to use the product full strength or mixing it with contaminated water. In addition to their cost effectiveness and ease of use, many sanitizing products developed for the restoration industry have a true residual effect which prevents bacterial or fungal regrowth.

### **The Trap of Label Directions**

If the practical reasons are not enough to change a contractor's habits away from bleach, the legal ramifications should be. Most bleach products are not registered with the EPA as an antimicrobial. In addition, the label directions for bleach often only mention a sanitizing capability for hard non-porous surfaces. As such, using a bleach solution to minimize antimicrobial activity on carpets, drywall, wooden studs, or other common building components means that the restoration contractor is engaged in an "off label" utilization of the product. Under such conditions the manufacturer will not warrant or assist the contractor if a problem or dispute arises.

So there you have it. Bleach is cheap, convenient, and recommended to a lot of homeowners for various restoration activities, but it is not the best choice for a contractor. As a restoration professional you have an obligation to understand what the standard of care in your industry demands and provide a quality service to your client. This means using the right tools and products. So leave the bleach at home for the load of white laundry where it belongs.

### **About the Author**

*Michael A. Pinto currently serves as Chief Executive Officer of Wonder Makers Environmental, Inc. He has more than 30 years of safety and environmental experience from jobs in the private sector, the non-profit arena, and regulatory agencies. Michael is the author of five books, including Fungal Contamination: A Comprehensive Guide for Remediation, over 150 published articles, and 18 commercial training programs. He can be reached at [map@wondermakers.com](mailto:map@wondermakers.com).*

**This article was published in the January 2006 issue of *Cleaning and Restoration* magazine.**