

[Battling Mold Outbreaks \(/www.museumtextiles.com/blog/battling-mold-outbreaks\)](#)

9/23/2013

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By Josephine Johnson

It's that time of year again when we start seeing a lot of moldy textiles around Museum Textiles Services. Mold spores are everywhere, all of the time, but it takes specific conditions for mold to bloom and become a problem. In 90% relative humidity and 90°F, it only takes three days for mold spores to flourish and bloom. As the humidity and temperature decrease, the time it takes for mold to bloom increases, so at 80% relative humidity and 80°F, it takes three weeks. At 70% relative humidity and 70°F, it may take up to three months for a mold problem to become apparent.



Military jacket with severe mold outbreak.

We get the most calls from clients with mold problems in September, because 70%/70°F conditions may persist for three months and still feel quite comfortable. Mold also favors areas with low air circulation, so textiles in attics, basements, and backs of closets are at high risk for bloom. Needless to say, mold outbreaks are also very common following disaster events, such as hurricanes, floods, and fires.



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A plastic suitcase containing WWII uniforms with a severe mold problem.

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Most recently at Museum Textile Services, the culprit was a plastic suitcase that was discovered in a wet basement. The suitcase contained the World War II-era military and baseball uniforms of John Edward Holland, Jr., whose daughter recently inherited the suitcase. The collection consists of three hats, three jackets, two pairs of pants, and a baseball uniform. All of the objects were covered with a thick layer of multi-colored, furry mold. The patches and medals on Holland's uniforms tell us that he was a Staff Sergeant in the 3rd Marine Amphibious Battalion.



John Edward Holland, Jr.



(/uploads/7/8/9/0/7890082/4892249_orig.jpg)
Intern Jen Nason vacuuming a moldy uniform jacket.

The first step to battling the mold was to vacuum the textiles. It was very important to protect ourselves from inhaling mold spores, so we suited up with gloves, aprons, and masks, and worked outside. The next step was to kill the mold spores to minimize the chance of future outbreaks and to remove the human health hazard. To do this, we created a sealed fumigation chamber and exposed the items overnight to chlorine dioxide vapor. This treatment kills the mold spores and has also been shown to discourage future mold growth. When circumstances prevent vacuuming items first, we begin with the fumigation process.

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Creating a fumigation chamber.

Mold can be destructive: eating holes in fabric, weakening fibers, and leaving behind permanent stains. The wet and pestilent conditions in which this uniform collection was stored were so severe that the cotton threads holding the seams of one of the jackets together disintegrated, leaving the panels of the wool jacket largely intact. Cotton textiles in general are less likely than wool to survive conditions in which mold flourishes. This is because dirty, wet, and decaying conditions are usually acidic, and naturally acidic protein fibers such as wool will tolerate acid better than naturally basic plant fibers like cotton.

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Military jacket after treatment.

If you believe your historical or artistic collections have a mold problem, contact a conservator immediately. Do not use Lysol or other disinfecting chemicals on the items, or place old and fragile textiles in the sun to kill the mold. These actions may cause more harm than good. A conservator will walk you through the steps to safely dry and pack your items. You may be instructed how to carefully vacuum the textiles (http://www.museumtextiles.com/uploads/7/8/9/0/7890082/vacuuming_textiles_2.pdf) and surrounding areas to remove mold spores only if you are certain you can do so without damaging anything. If your items are already dry, you should quarantine them in zip-top or garbage bags before bringing them to a conservator.

For moldy modern clothing and textiles that are in good condition, you can take them to a dry cleaners for their professional opinion.

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