

Flooding, Mold, and Your Health

Flood Clean-Up Series #12

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Introduction:

The purpose of this fact sheet is to cover the health effects of mold exposure, including some new information about mold health hazards. Also, important recommendations on mold cleanup are provided, including when to get professional help.

Mold—The Basics:

The term “mold” refers to a growth of small organisms called fungi. (This includes what we often refer to as mildew.) There are many thousands of different types of these organisms. The main feature of mold is that it grows on “organic” matter—found on almost any surface, breaking it down. To grow, all molds need moisture—humidity or liquid water. But they do not need light. Mold can grow in wall cavities and beneath carpet.

Mold—What's New:

It is well known that molds can cause health problems. Inhalation of mold spores, parts of mold cells, or mold waste products can have harmful effects. These effects include allergic reactions, toxic effects, or infections.

Allergic reactions include asthma, and a disease called Hypersensitivity Pneumonitis, a lung irritation. Allergic symptoms such as a runny nose, eye irritation, cough and congestion, and aggravation of asthma are common.

Toxic effects include fatigue, nausea, headaches, and throat and eye irritation. These symptoms are “non-specific”; many things can cause them. These symptoms do not necessarily mean there has been mold

Stachybotrys—The “Killer Mold”

Recent years have seen an increasing number of media reports about “killer mold”. These stories usually refer to *Stachybotrys*, known to scientists as *Stachybotrys chartarum*. This is a mold that can produce poisonous particles which can cause serious health problems – even death among humans. (Other molds [types of *Aspergillus*, *Penicillium*, and *Fusarium*, to name a few] can produce similar or identical toxins.) These particles are released when the mold is disturbed, as in cleaning. More importantly, these particles are not destroyed by bleach, which can kill the mold. Infants, the elderly, and those in poor health and with impaired immune systems are especially at risk.

What should you know about “stachy” (pronounced “stacky”)? This mold grows on cellulose. This means materials made from wood or wood products. Some examples are paper, cardboard, wallboard, and wall framing. Stachy needs high moisture to grow. It seems to be fairly common when things have been wet for several weeks. When wet, it appears as black slimy mold. However, there are many other black, slimy molds, so appearance is not too helpful. (Only laboratory analysis can identify the type of mold that is growing.) *Stachybotrys* is most dangerous after drying. This is because the dry, powdery spores can become airborne more easily.

What are the health effects? The poisons in stachy (and other molds) called “mycotoxins” can cause some serious problems. These mainly affect the lungs. Reports have linked stachy to infant deaths due to lung bleeding. However, this connection has not been proven.

In adults, heavy exposure to these poisons can cause serious lung problems, including bleeding. Lesser exposures can cause many other symptoms. These can include headache, nausea, fatigue, and irritation of the eyes, nose, and throat. Also, molds trigger asthma symptoms.



exposure. Certain diseases have also been blamed on fungal exposure. These include Organic Dust Toxic Syndrome and lung bleeding disorders. The former may be caused by heavy exposure to common types of fungi (such as types of *Penicillium* and *Aspergillus* as well as *Stachybotrys*).

Infections resulting from fungi are rare, and usually occur in persons with impaired immune systems.

For all of the serious illnesses above, they are usually seen in occupational exposures. Typically, a “large” exposure or continued small exposures are needed to produce these problems. How large is “large”? This is difficult to say, because of many variables, including the type of mold and the general health and vulnerability of those exposed. Later, some guidelines for deciding on small vs. large exposures are presented.

With buildings that have been flooded, and have remained wet for many days or weeks, there is the concern that mold growth will be so extensive as to be a serious health risk. This is especially important for those attempting to do cleanup. This work can put mold particles into the air, where they can be inhaled. Extreme caution is needed for occupants as well as workers. It may be advisable to hire experienced personnel for handling large contaminations.

Mold Cleanup:

Many health officials now feel that *an exposure to large amounts of any type of mold is a serious health risk*. Those attempting cleanup of moldy areas should be aware that if this activity produces a lot of airborne mold debris, this could cause serious health problems for themselves and occupants. *Young children, the elderly, those who are ill (especially those with allergy and breathing problems) and the immunocompromised (those on chemotherapy, AIDS patients, etc) are especially susceptible to mold toxins*. Workers exposed to large amounts of mold debris can also develop illnesses such as hypersensitivity pneumonitis (a lung disorder and Organic Dust Toxic Syndrome (causing fever, flu-like symptoms, and breathing problems). Thus, protection for workers, occupants, and the building is very important during mold cleanup, especially when large areas are involved. The following guidelines are based in part on guidelines developed by the New York City Health Department.

- **Personal Protection:** Those doing cleanup, as well as other occupants, should be protected from contamination produced during mold cleanup. Breathing protection is most important. Ordinary “nuisance” dust masks are not sufficient. An “N95” disposable respirator should be worn. (These cost a couple of dollars and should have the “N95” designation printed on the mask.) Gloves and eye protection should also be worn. Those not involved in the work should not be in the immediate area. It may be advisable to remove infants from the home during cleaning. (These precautions are not necessary for small amounts of mold [such as mold growing on bathroom tiles or grouting] that can be cleaned using normal housekeeping measures.)
- **When to call a professional:** Personal risk, and risk of contaminating the rest of the home, increases with the size of the area being cleaned.
 1. Very small isolated areas, as indicated above, can be cleaned with normal housekeeping measures. Wash the area with a soap or detergent solution. Follow up with a bleach and water solution. Dry thoroughly.
 2. Small isolated areas, less than about 10 square feet, can be cleaned using the precautions and protections outlined above. Susceptible persons, as listed above, should not be in nearby areas.
 3. Mid-sized, isolated areas, 10 to 30 square feet, about one wallboard panel, require more precautions. The above measures need to be followed. In addition, to protect the site, the following should be done: 1.) work areas should be protected with plastic sheets and sealed with tape; and 2.) the work area and areas where workers exit should be vacuumed with a high performance HEPA vacuum, followed by damp mopping with a detergent solution.
 4. For areas larger than about 30 square feet, call in professionals who are trained in dealing with mold cleanup. This is because the health risks from this much mold are serious. Firms specializing in flood cleanup are the best sources for this expertise.

Mold Cleanup Tips:

1. The first step is to remove or fix the source of water or moisture. Get rid of standing water.

2. If the area or materials can be dried out within a day or so of getting wet, mold probably will not grow.
3. It is best to clean areas while they are still wet. For mold that has dried, mist with a spray bottle prior to cleaning to reduce dust production.
4. It may not be possible to clean some products, such as soft materials. These should be removed from the building and discarded. There are no special requirements for disposal of moldy materials.
5. Personal protection during cleanup is essential for workers and occupants—see above.
6. A bleach solution (follow mixing directions on bottle) can be used to kill mold spores. This mixture will NOT inactivate harmful mold particles. ***Never mix bleach with ammonia or ammonia-containing products!***
7. After mold is removed, materials and building parts must dry thoroughly before being covered or closed in. If walls were flooded, usually they must be

opened up to dry (unless special drying equipment is used). Discard wet insulation. Complete drying may take several weeks; fans, air conditioning, dehumidifiers, and heaters can speed this process. Opening windows can also help if outdoor humidity levels are low. Otherwise, if walls are immediately closed, mold will grow within. Flood remediation companies have large drying units that can speed the process.

References:

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