

Fungi Hazards and Flood Cleanup

Flood conditions contribute to the growth and transmission of many kinds of fungi, some of which can cause sickness. Cleanup workers are at increased risk of exposure to airborne fungi and their spores because they often handle moldy building materials, decaying vegetable matter, rotting waste material, and other fungus-contaminated debris. The fungal material is carried into the respiratory tract when airborne particles are inhaled.

There are many different kinds of fungi, including mildew, molds, rusts, and yeasts. Most of these are harmless, but some can cause respiratory and other disorders when workers inhale or come into contact with fungi. Inhalation is the route of exposure of most concern to flood cleanup workers. The recommendations below offer strategies for workers renovating flooded buildings, homes, and structures to protect themselves while handling building materials that are visibly contaminated with fungi.

For workers cleaning up flooded buildings, homes, and other structures, excessive moisture or water accumulation indoors will encourage the growth of the fungi that are already present. Some fungi have the potential to cause adverse health effects such as allergic responses and asthma attacks. Individuals who are sensitive to molds may have signs and symptoms of allergic reactions such as nasal stuffiness, eye irritation, and wheezing. These individuals should minimize fungal exposure by wearing respirators, gloves, and eye protection. They should also seek to eliminate fungi, as described below.

In addition, repeated or prolonged contact of the skin with flood water and continuous sweating can lead to fungal skin infections. These can be minimized or avoided by washing the skin with warm, soapy water and keeping it as dry as possible.

What to Do If Symptoms Develop

If a cleanup worker experiences severe aller-

gic or skin symptoms, or severe flu-like symptoms, he or she should seek medical advice. A health care provider can determine whether medication or any other precautions are necessary.

Tips to Remember

For all workers who may be exposed to mold and fungi:

- Avoid breathing dust (fungal spores) generated by moldy building materials, crops, and other materials.
- Consider using an N-95 NIOSH-approved disposable respirator as a minimum when working with moldy or damp hay, grain, compost, or building materials. Respirator protection must be used in accordance with OSHA's Respiratory Protection standard (29 CFR 1910.134, Appendix D).
- Consider discarding all water damaged materials. Articles that are visibly contaminated with mold should be discarded.

When in doubt, throw it out.

- Surfaces that have a light covering of mold should be scrubbed with warm, soapy water and rinsed with a disinfectant made of $\frac{1}{2}$ cup liquid household bleach mixed into one gallon of water.
- CAUTION: Do not mix bleach with other cleaning products that contain ammonia.
- After working with mold-contaminated materials, wash thoroughly, including the hair, scalp, and nails.
- If the safety of food or beverage is questionable, throw it out. Only drink safe drinking water that has been bottled, boiled, or treated until there is confirmation that the

community water supply is safe for consumption.

When cleaning up or renovating buildings and homes that have been flooded, consider the following recommendations:

- NIOSH-approved respirators are strongly recommended. Respiratory protection such as the N-95 must be used in accordance with OSHA's Respiratory Protection standard (29 CFR 1910.134). Also wear gloves and eye protection.
- Remove building materials and furnishings that are wet and may become contaminated with mold growth and place them in sealed impermeable bags or closed containers. Large items with heavy mold growth should be covered with polyethylene sheeting and sealed with duct tape before being removed from the area. These materials can usually be discarded as ordinary construction waste.
- Remove and discard porous organic materials that have become wet or are visibly contaminated (e.g., damp insulation in ventilation system, moldy ceiling tiles, and mildewed carpets). Again, these materials can usually be discarded as ordinary construction waste.
- Clean and disinfect nonporous surfaces where microbial growth has occurred with detergents, chlorine-generating slimicides, or other biocides and ensure that these cleaners have been removed before air handling units are turned on. When using a biocide or disinfectant, consult the material safety data sheet (MSDS) or warning label

for the appropriate personal protective equipment (PPE) that should be used when handling these chemicals. Chemical safety and handling must be done in accordance with OSHA's Hazard Communication standard (29 CFR 1910.1200). PPE, such as NIOSH-approved respirators with the appropriate chemical cartridges, can be used. Wear gloves and eye protection also.

For cleanup workers in rural and agricultural communities:

- Silos and other enclosed areas should be vented prior to entry. However, this may not eliminate the problem entirely. If a worker is transporting or working with moldy animal feed, exposures are likely to be increased if the feed and the worker are enclosed in a barn, silo or other structure. Workers will still need to wear respirators. NOTE: Any entry in a silo or other confined space must be done in accordance with OSHA's Permit-Required Confined Spaces standard (29 CFR 1910.146).
- Workers uncapping a silo, shoveling grain, or working with feed, especially in any enclosed space, should always wear at a minimum a NIOSH-approved N-95 particulate respirator. Grain and hay should be stored when fully dry.

For additional information concerning fungi, health effects, and addressing flood damaged materials, please visit OSHA's Safety and Health Topics web page on Molds and Fungi at: www.osha.gov/SLTC/molds/index.html

This is one in a series of informational fact sheets highlighting OSHA programs, policies or standards. It does not impose any new compliance requirements. For a comprehensive list of compliance requirements of OSHA standards or regulations, refer to Title 29 of the Code of Federal Regulations. This information will be made available to sensory impaired individuals upon request. The voice phone is (202) 693-1999; teletypewriter (TTY) number: (877) 889-5627.

For more complete information:



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