

# Molds in Indoor Workplaces

## **Molds are forms of fungi that are found indoors and outdoors.**

You are exposed to them daily in the air you breathe. Sometimes molds grow excessively inside your workplace and can cause different types of illnesses. Most workers will not be affected by molds. Some workers have symptoms like those of hay fever and the common cold, but they can last for longer periods. Molds can also aggravate asthma. In addition, some people in wet or moldy buildings may have flu-like symptoms. Most health problems are temporary and can be controlled by limiting exposure to molds.

## **H**ow do I know I am being exposed to molds at work?

Molds need moisture and a food source (organic material). Molds can be any color, including white, orange, green, brown, or black. Even if you cannot see any molds, you may notice a mildew or earthy smell. They may be found indoors on wet/damp walls, carpets, ceilings, or behind wallpaper, as well as in heating, ventilation, and air conditioning (HVAC) systems. Indoor moisture leading to the growth of molds may come from flooding, leaks, high humidity, and steam.

Symptoms also can indicate that you are exposed to molds at work. See “Health Effects of Mold Exposure” on page 3. If you have symptoms, observe when they occur. They may be work-related if they worsen when you are at work, and disappear or lessen at home or on weekends, or during vacations. The onset of symptoms depends on your individual reaction to molds.

## **H**ow do I get exposed to molds?

Molds produce seed-like spores that are small enough to travel through the air. You can breathe in spores or come into contact with them. Sometimes molds also produce chemicals called mycotoxins, which are attached to the spores and other parts of the mold. You may be exposed to mycotoxins at the same time you are exposed to molds. Mycotoxins are produced only under certain environmental conditions.

## **H**ow can molds affect my health?

Molds can cause allergic reactions, fungal infections, and other health effects. Most workers, however, will have no reaction at all when exposed to molds (see page 3). Some workers have underlying health conditions that make them more sensitive to effects of mold exposure.

Allergic reactions, similar to common pollen or animal allergies, are the most common health effects of molds. Allergic and other illnesses can be treated by getting rid of the mold exposure. Your doctor may also prescribe medication to control symptoms.

*Continued inside...*

FACT SHEET



**HESIS**

**HAZARD EVALUATION SYSTEM & INFORMATION SERVICE**

California Department of Health Services  
Occupational Health Branch  
1515 Clay Street, Suite 1901, Oakland, CA 94612  
510-622-4300 • [www.dhs.ca.gov/ohb](http://www.dhs.ca.gov/ohb)

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California Department of Health Services • California Department of Industrial Relations

In almost all cases of allergic or other illnesses, the symptoms are temporary. However, a small percentage of people may experience longer recovery times.

Fungal infections of internal organs are rare. They require immediate medical attention and treatment.

The symptoms described on page 3 for mold exposure can also be due to other causes such as bacterial or viral infections, or other allergies. Therefore, it is important to tell your doctor if you are concerned about exposure to molds. If possible, have your doctor refer you to, or consult with, an occupational medicine physician to help determine if the illness is work-related. An occupational medicine physician can also help identify other workplace conditions that could be related to your symptoms.

## What do I do about molds in the workplace?

There are no standards to say how much mold is hazardous to your health. There should not be visible mold growth or strong moldy odors in the workplace.

**Report mold problems.** If you see or smell mold, or if you or others are experiencing mold-related symptoms, report it so the problem can be investigated. You may need to tell your employer, supervisor, health and safety officer, union representative, or school board. Find out whether co-workers are experiencing any of the listed symptoms. See if a particular office, floor, or area is affected. Your workplace must have an Injury and Illness Prevention Program (Title 8, California Code of Regulations, Section 3203) with a hazard reporting procedure. Allow a reasonable amount of time for your employer to assess and remedy the problem. See “Resources” for additional (regulatory or investigative) reporting options.

**What about Stachybotrys?  
See back page...**

### **If you have symptoms see a doctor.**

If possible, go to an occupational health clinic. Take this factsheet in to show your doctor, and refer to HESIS if there are further questions (see ‘Resources’). If your illness is work-related, your doctor may recommend your removal from the workplace and you may be eligible for workers’ compensation benefits. Make sure your doctor fills out a Doctor’s First Report of Occupational Injury or Illness (DFR), a form necessary for a successful claim.

**Clean up mold contamination.** Employers should ensure that mold contamination is cleaned up regardless of the types of molds present. Environmental sampling is usually not necessary, since all molds need to be eliminated. A thorough investigation of the building should reveal all sources of mold growth and water collection. No one with symptoms or at risk for mold-related illness should participate in the cleanup. The level of protection depends on the type of cleanup work:

- Scrubbing hard surfaces such as tile, concrete, or vinyl requires gloves for worker protection. An effective disinfectant is 10% chlorine bleach (1.5 cups bleach per gallon of water). Never mix bleach with ammonia. The area needs to be well ventilated.
- Mold growth on porous surfaces such as ceiling tile, wallboard, or wood usually requires tearout and replacement of materials. Cleanup workers should be free of allergies, asthma, and immune suppressive disorders. They should wear gloves, eye protection, disposable coveralls, head and shoe covers, and proper respiratory protection. Dust masks are not adequate for tearout work. A disposable N-95 particulate respirator is usually adequate, as long as it is properly fitted (see the recommended respiratory protection program Title 8, California Code of Regulations, Section 5144).  
Training for cleanup workers should cover cleaning methods, use of personal protective equipment, and health hazards. If the contaminated area is extensive (greater than 30 square feet), professional help is recommended.

### **Avoid exposure during mold cleanup.**

The highest exposure to mold often occurs during cleanup. You may need to temporarily leave work areas where cleanup is occurring, especially if you have symptoms or underlying medical conditions that increase your risk of mold-related illnesses.

# Health Effects of Mold Exposure

## ALLERGIC REACTIONS



**Dermatitis** – Red itchy skin and/or rash.



**Asthma** – May be aggravated or caused by exposure to mold, resulting in acute attacks of coughing, wheezing, and shortness of breath. Reactions usually occur within minutes after exposure, and may repeat 6-10 hours later.



**Allergic rhinitis or sinusitis** – Similar to hay fever or the common cold, but over an extended period of time. Symptoms include a runny nose, nasal or sinus congestion, irritated or red eyes, irritated or scratchy throat, and cough. Reactions occur quickly after exposure to molds.

**Hypersensitivity pneumonitis (extrinsic allergic alveolitis)** – Involves the lungs and body. Symptoms include tightness in the chest, difficulty breathing, cough, fever, and muscle aches. Reactions occur 6-8 hours after exposure. **RARE**

## OTHER EFFECTS



Reported symptoms include fatigue, headache, fever, muscle ache, difficulty concentrating and mood changes. The cause of these symptoms is not completely understood.

## FUNGAL INFECTIONS



**Invasive pulmonary aspergillosis** – Only occurs in the severely immunocompromised. Symptoms include pneumonia plus fever, bone pain, chills, headache, and weight loss. **RARE**



**Aspergilloma (formed in a pre-existing healed lung abscess)** – Symptoms include cough, coughing up blood, and weight loss. **RARE**



**Allergic Bronchopulmonary Aspergillosis (ABPA)** – Worsening of underlying condition (asthma or cystic fibrosis) plus coughing up blood and weight loss. **RARE**

**Most people will have no reaction at all when exposed to molds.**

**Workers with a higher sensitivity to mold-related illness include those who:**

- Have other allergies
- Have existing respiratory conditions including asthma or other lung diseases
- Are moderately immunocompromised (such as diabetic or pregnant) or severely immunocompromised (have AIDS or leukemia, receiving chemotherapy, or are organ transplant recipients)
- Are elderly

**Eliminate and control the source of moisture.** As long as moisture is present the mold will return, so the source of the moisture must be eliminated and the building properly maintained.

**Monitor symptoms after cleanup.** If the symptoms persist after cleanup, they may not be related to molds, or the cleanup effort was unsuccessful. You and your doctor should explore other possible causes of illness. If there are other indoor air quality problems or the cleanup was not adequate, your employer may need professional assistance. ■

# RESOURCES

## ORGANIZATIONS

- **HESIS** can answer questions about the health effects of molds and other workplace hazards for California workers, employers, and health care professionals, call (510) 622-4317.
- **Occupational health clinics** are located at:
  - UC San Francisco/SFGH Occupational and Environmental Medicine Clinic: (415) 206-4320.
  - UC Davis Occupational and Environmental Health Clinic: (916) 734-2715.
  - UC Irvine Occupational and Environmental Clinic: (949) 824-8641.
- **California Division of Occupational Safety and Health (Cal/OSHA)** can cite an employer for visible mold as a sanitation issue (Title 8, California Code of Regulations, Section 3362). Employees who need information on workplace health and safety regulations or want to file a complaint should contact the nearest Cal/OSHA Enforcement District Office. They are listed in the blue government section near the front of the phone book, under “State Government Relations/Occupational Safety and Health/Enforcement.”
- **National Institute for Occupational Safety and Health (NIOSH)** conducts health hazard evaluations (HHEs) for workplace health problems with unknown causes, at the request of at least 3 employees, employee representatives, or the employer. This should be reserved for situations with multiple employee involvement. The number for information and applications is 1-800-35-NIOSH.

## PUBLICATIONS

- **Factsheets on Workers’ Compensation and Disability** produced by the Labor Occupational Health Program (LOHP), University of California Berkeley. They are available from the Division of Workers’ Compensation. To request these factsheets or to ask questions, look up your local office in the blue government section near the front of the phonebook under “State Offices/Industrial Relations/ Workers’ Compensation/Information and Assistance” or call 1-800-736-7401. The factsheets are also on the internet at [www.dir.ca.gov](http://www.dir.ca.gov) linked to Commission on Health and Safety and Workers’ Compensation.
- **“Guidelines on Assessment and Remediation of Fungi in Indoor Environments”** is available through the New York City Department of Health, Bureau of Environmental and Occupational Disease Program. See [www.ci.nyc.ny.us](http://www.ci.nyc.ny.us).
- **“Building Air Quality: A Guide for Building Owners and Facility Managers”** is written by NIOSH and the EPA for employers and building maintenance staff interested in a technical guide for maintaining acceptable indoor air quality. NIOSH publication 91-114, Dec. 1991. Call 1-800-35-NIOSH or see [www.cdc.gov/niosh/home-page.html](http://www.cdc.gov/niosh/home-page.html).
- **“Indoor Air Quality Tools for Schools”** is a kit put out by the EPA to help with investigation of indoor air issues at schools. See [www.epa.gov/iaq](http://www.epa.gov/iaq) or call 1-800-438-4318.
- **Listings of indoor air quality consultants** can be obtained from the American Industrial Hygiene Association (AIHA) or the California Department of Health Services’ Indoor Air Quality Program. See [www.aiha.org](http://www.aiha.org) and [www.cal-iaq.org](http://www.cal-iaq.org) or call the California IAQ assistance line at (510) 540-2476.

## What about *Stachybotrys*?

*Stachybotrys chartarum* (also known as *Stachybotrys atra*) is a greenish-black mold that grows on materials with high cellulose content (dry-wall, wood and paper, and dropped ceiling tiles). This mold, like some other molds, produces chemicals called mycotoxins under certain environmental conditions. Health effects of breathing mycotoxins are not well understood.

Here are the most important things to know:

- Not all black molds are *Stachybotrys*, and not all *Stachybotrys* produces mycotoxins.
- While still alive, *Stachybotrys* is slimy and does not release many spores or mycotoxins. Exposure is low unless it dries up, when spores and mycotoxins (if present) are released into the air.
- There is no diagnostic test to determine if you are currently exposed to *Stachybotrys*.
- All indoor molds are potential health hazards and need to be cleaned up.

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