





Mold Awareness and Guidance Program

UC Berkeley
Environment, Health & Safety

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Overview

Mold can be found everywhere, and can be detected both indoors and outdoors, year-round. Persistent warm and humid conditions promote mold growth. Outdoor mold can be found in shady, damp areas or places where leaves or other vegetation is decomposing. Indoor mold can be found where humidity levels are high (like basements and showers) and where moist organic material accumulates (e.g. dirty carpets). Spoiled, rotten food is also a typical source of mold growth. It is common for mold to grow on materials like fiberboard, gypsum board, and paper.

Exposure to damp and moldy environments may cause a variety of health effects, or none at all. For people who are sensitive to mold, exposure can cause nasal stuffiness, throat irritation, coughing or wheezing, eye irritation, and in some cases, skin irritation. People with mold allergies may experience more severe reactions. Immunocompromised individuals and those with chronic lung illnesses need to follow their physician's guidance.

Current evidence indicates that allergies are most often associated with mold. Since the susceptibility of individuals to mold can vary greatly, sampling is not a reliable method for determining health risk. If one is susceptible to mold, there is a potential health risk where visible mold growth or odors are present in the indoor environment. Therefore, no matter what type of mold is present it should be removed. Furthermore, reliable sampling for mold can be expensive, and standards for judging what is, and what is not, an acceptable or tolerable quantity of mold have not been established.

Purpose

Mold Awareness and Exposure Prevention

It is important to consider the risk of exposure to indoor mold growth. While permissible exposure limits for mold have not been established by regulatory agencies, the University of California, Berkeley is committed to ensuring the health and safety of the campus community. The Office of Environment, Health & Safety (EH&S) has put this Mold Awareness and Guidance program together to provide information and resources about mold.

While the Centers for Disease Control (CDC) do not recommend routine sampling for mold to identify species of mold growing in buildings, the potential allergic reactions and health risks with mold exposure are a concern that requires proper controls and guidelines[1]. Damp building areas where mold can grow should be monitored. If a mold concern is identified, it should be addressed in order to promote a healthy indoor environment.

While there are currently no accepted quantitative standards for mold exposure, the following risks and limitations should be acknowledged:

- Mold and other fungal spores are common in the natural environment. Most existing guidelines focus on the amount and location of visible mold growth and comparison of indoor and outdoor spore levels.
- Airborne spore levels can vary greatly over time due to changes in environmental conditions and activity patterns.

Mold and Health

As noted above, there are currently no standards for mold exposure by Cal/OSHA or the California Department of Public Health (CDPH). However, prioritizing the health and wellbeing of the campus community is a priority for UC Berkeley.

Potential Mold Exposure Sensitivities

Allergy symptoms may be associated with individuals who are sensitive to specific types of mold spores. Similar to pollen, some people experience allergies, some don't. The symptoms are similar.

Despite what is reported in the media, there is no “toxic” mold, UNLESS:

- A person is immuno-compromised, and
- That person has an allergy (which is an immune system disorder) to a specific type of mold that doesn’t thrive in normal living spaces, and
- That person is chronically (very often) exposed to it.

Mitigating Airborne Mold Exposure

A **high-efficiency particulate air (HEPA)** filter has been shown to have a positive effect in areas where people are experiencing allergic reactions to bioaerosols, such as mold spores, pollen, and other airborne particulates.

Mold growth is kept in check by controlling moisture. Ensuring that water leaks are fixed, and humidity is controlled in buildings is an important precaution measure.

Applicability

This program is intended to apply to UC Berkeley employees for compliance with Cal/OSHA and California Department of Public Health (CDPH) regulations and guidance documents that may apply. It is also intended to suggest ways to mediate the concerns employees and students may have about presumed health effects of visible mold.

Roles and Responsibilities

All UC Berkeley Employees

Employees who observe visible mold growth or water intrusion should report it to their supervisor, department manager, or department safety coordinator, who can then report it to Facilities Services for cleaning and repair.

Employees who experienced an allergic reaction while at work that is thought to have been caused by mold or exposure to other contaminants should report this to their supervisor.

Employees may **report mold or water intrusion concerns** to EH&S as well.

Employees who do not have a mold sensitivity may clean areas with minor accumulations of mold or mildew if they choose to (e.g., an area the size of 1 sq. ft. or less).

Department Safety Coordinators (DSC), Building Coordinator (BC) and/or a Person Responsible for the Location (e.g., Building, Room)

Assist employees in the department to remediate mold. Options include and are not limited to:

- Placing a work order with FS Custodial Services to remove visible mold and remediate water that may have accumulated from plumbing leaks or water intrusion from outside the building.
- Clean the surface to remove mold growth if the impacted area is small.
- Contact EH&S and ask for further investigation and other options. Since there are no regulatory or health department clearance criteria, collecting air and other types of samples is unlikely.

Facilities Services and Residential & Student Services Programs (RSSP)

Facilities Services is the main campus operations and maintenance group responsible for remediating significant mold growth and water intrusion in most campus buildings.

RSSP is also responsible for other campus buildings such as residential housing units. They are responsible for remediating mold growth and water intrusion, except for instances where residential contract language specifies that the resident is responsible for routine cleaning and housekeeping practices to prevent mold growth (see detailed **contract language below**).

Occasionally, mold growth issues in residential student rooms require some urgency because a student's sensitivity to mold spores is not known and cannot be determined by UC Berkeley personnel. If they claim a harmful reaction to the visible or presumed presence of mold, remediation would be expedited. This would include:

- Removing any visible mold
- Collecting water that may have accumulated,
- Dehumidifying the room if the humidity is excessive
- Repairing plumbing leaks on the interior, or water intrusion from the exterior

The clearance for these actions is a visual assessment conducted by the facilities manager or EH&S. Air samples or material samples would not be collected and analyzed because there is no regulatory agency or health department clearance criteria.

If this process has been determined to be inadequate, perhaps by a student's parent, then the student who claims a reaction to mold must be relocated. That decision may be based on the opinion of the student's physician as to the student's sensitivity to substances that could include mold. This implies the student may have allergies or sensitivity to substances and particulates other than mold, and UC Berkeley cannot make that determination.

Residence Hall Terms and Conditions

There is a provision in the **Residence Hall Terms and Conditions** document, *Section L*, that applies to student responsibilities around mold and mildew:

> *L. MOLD AND MILDEW occurs naturally in the environment, and can be injurious to one's health. The Resident acknowledges that the Resident has inspected the premises at the outset of tenancy, and has found no signs of moisture, mold or mildew therein. Residents are required to take steps to control the growth of mold and mildew by keeping the premises clean and well-ventilated, particularly when showering, bathing, or washing dishes or clothes. Residents are required to notify Cal Housing promptly about the existence of visible mold or mildew, and/or water leakage or overflow in or about the premises. Residents must also promptly notify*

> *the University of any malfunction of ventilation or heating systems. Each resident is expected to keep their room in a clean and habitable condition, and shall be liable for any injuries or damages that may result from any negligent performance of the foregoing duties.*

Students and their parents or guardians have agreed to this document, and thus the students must be held responsible for the cleanliness of their rooms and report observed or suspected mold growth conditions.

Additionally, it is the responsibility of RSSP to respond in a reasonable amount of time to complaints, make reasonable efforts to remediate the conditions of the building if necessary and relocate students who have sensitivities to something that is associated with the condition of the building.

Office of Environment, Health & Safety (EH&S)

EH&S manages the mold and mildew guidance program for UC Berkeley and is responsible for the following:

1. Assuring that applicable guidance, resources, and programs are revised periodically to be up to date with codes and regulations.
2. Communicating program changes, objectives, and requirements to all departments impacted by this program.
3. Developing and updating training content to comply with Cal/OSHA and CDPH regulations.
4. Conducting investigations of mold complaints.
5. Advising departments on hiring a mold consultant (e.g., an industrial hygiene firm) to conduct air sampling when warranted.

University Health Services (UHS)

UHS recommends that individuals concerned about mold exposure consult their primary care provider to recommend an appropriate course of action.

For Employees - *Be Well at Work*

The Occupational Health Clinic is available to employees who believe their mold exposure is work-related. Note: The Occupational Health Clinic may still refer an employee to their primary care provider for a follow-up health checkup.

For Students - *Tang Center*

Students may consult medical professionals at the Tang Center Primary Care Clinic, or their personal physician (see the UHS Student Resource Guide).

Definitions

Allergen: An allergen is a substance, such as mold, that can cause an allergic reaction.

Antimicrobial: An antimicrobial substance is an agent that kills or inhibits microbial growth.

Biocide: A biocide is a substance or chemical that kills organisms, such as mold.

Fungi: Fungi are a kingdom comprising of living things that are neither animals or plants. The kingdom of fungi includes molds, yeasts, mushrooms, and puffballs. In the course of mold, the terms fungi and mold are used interchangeably.

HEPA: High-Efficiency Particulate Air Filter: The term HEPA unit refers to a device that filters room air, such as portable units used in offices and households.

Hypersensitivity Pneumonitis: Hypersensitivity Pneumonitis is a group of respiratory diseases that cause inflammation of the lung (specifically granulomatous cells). Most forms of hypersensitivity pneumonitis are caused by the inhalation of organic dust, including molds.

Microbial Volatile Organic Compound (mVOC): An mVoC is a chemical made by mold that is a gas at room temperature and may have a moldy or musty odor.

Mold: Mold is a group of organisms that belong to the kingdom of fungi. **Mycotoxin**: Mycotoxin is a toxin produced by mold that can have health impacts.

Spore: Spores are the means by which molds reproduce. Spores are microscopic. They vary in shape and range from 2 to 100 microns in size. Spores can travel in several ways. They can passively be moved by a breeze or water drop, mechanically disturbed (by a person or animal passing by), or actively discharged by the mold (usually under moist conditions or high humidity).

Procedures

Recommended Procedures for Recognizing and Mitigating Mold Growth

Examples of Mold

Type of Mold	Common Places Found	Images
Indoor Mold	• Warm, humid environments. • Bathrooms, garages, basements. • Areas with poor ventilation • Wood, cardboard, paper, carpet, and building materials	 *Mold on a bathroom wall, Adobe Stock*  *Wooden surface covered with mold, Adobe Stock*

Type of Mold	Common Places Found	Images
Outdoor Mold	• Shady, damp areas • Places where leaves and vegetation are decomposing.	 *Mold growing on a willow leaf, National Park Service (2)*  *A bay laurel leaf affected by Sudden Oak Death, a water mold, National Park Service (3)*

Preventing Mold Growth

Mold needs three things to grow:

1. **Moisture**
    - Moisture can be caused by a water leak or an environment with high humidity. Fix or report any leaks as quickly as possible. Keep humidity levels in the workplace low. An air conditioner, dehumidifier, or fan can help lower humidity levels. When cleaning restrooms, use mold-killing products. If a carpet becomes soaked with water and cannot be dried right away, it should be replaced. Carpet should not be used in moist areas such as bathrooms or humid basements.
2. **Temperature**
    - Mold grows faster in warmer temperatures. Frequently check warm and humid areas for mold growth.
3. **Nutrients/Food**
    - Wood, cardboard, paper, carpet, and building materials can all be food for mold. When possible, store these materials in dry, elevated, and well-ventilated spaces. Elevated storage keeps the materials away from damp floors and can prevent mold growth. Be sure to regularly

inspect these materials for mold. If these materials become wet, dry them promptly. When possible, use mold-resistant building materials and consider treating wood with fungicidal sealants or treatments, especially in basements or other damp areas. Since dust can harbor mold spores, be sure to clean surfaces regularly. Having an air purifier with HEPA filters or a vacuum with a HEPA filter greatly helps in the removal of dust particles. Using exhaust fans in kitchens also helps improve ventilation.

Cleaning

If you see or smell mold you should remove it. The following procedures can be used to clean surfaces with mold growth:

1. Spray the surface with a cleaner/disinfectant such as Windex, Clorox, or a 10% bleach solution.
2. Use a single-use material, like a paper towel, to wipe the area and dispose of it in a closed container.
3. Dry the surface with a fresh piece of single-use material and dispose of it in the same way.
4. Check the area daily to see if action is needed to eliminate moisture and prevent mold recurrence.

If there is a flood in your home, be sure to clean and dry your home quickly (within 24-48 hours).

When cleaning mold you should take precautions to protect your mouth, nose, skin, and eyes. It is recommended by the CDC to wear an N95 respirator, goggles designed to prevent dust and small particles from coming into contact with your eyes, and protective gloves (non-latex, vinyl, nitrile, or rubber) when cleaning. Avoid touching mold with your bare hands.

You should not clean mold if you are allergic or sensitive to mold, are immunocompromised, have any underlying lung disease, a chronic respiratory disease such as asthma or chronic obstructive pulmonary disease (COPD), or are at high risk for fungal infections.

To learn more about mold cleaning guidelines see the CDC's Mold Clean Up Guidelines and Recommendations, or the EPA's mold web page.

Responding to Significant Mold Accumulation or Water Intrusion

Recommended Procedures

The following is an outline of responding to mold concerns or water intrusion events. In water intrusion events, prompt remediation and drying of surfaces within 24 hours is important to prevent mold growth.

1. Document the event location:
    a. If mold is present, determine the square footage of visible mold growth
    b. If a water leak or flood has occurred, determine the water source (potable or sewage) and the amount of water that has been released, and where it has traveled (e.g. to the creek, storm drain, landscape, etc.).
    c. Take photographs of the scene to document the evidence
    d. Note the location description, including identifying information such as building name, room number, contact person, and area name/description (e.g. when describing an outdoor flood event or sewage overflow)
2. Notify appropriate responding units such as Facilities Services or RSSP Maintenance. Also, notify EH&S at 510-642-3073 or ehs@berkeley.edu and campus Risk Services.

3. Responding service personnel will do the following:
    a. For water leaks and floods:
        i. Personnel will attempt to stop the flow and/or contain it to prevent it from reaching the stormwater system or the creek.
        ii. Personnel will cordon off the area to keep bystanders and pedestrians away.
        iii. Personnel will begin to remove standing water and wet materials. A contractor may be needed for large events depending on the size and scale of a flood.
        iv. Personnel will begin drying or removing damaged surfaces within 24 hours of the event to prevent mold growth.
        v. Personnel will consider using a HEPA air scrubber if mold odor or growth is present.
    b. For mold growth incidents:
        i. Personnel will clean and disinfect surfaces with a 10% bleach solution or other cleaner to remove visible mold growth.
        ii. Personnel will note that if mold covers more than 100 sq. ft. a contractor may be necessary which may include removal of contaminated surfaces.
        iii. Personnel will determine the source of water that may have contributed to mold growth and repair the leak.
        iv. Personnel will consider using a HEPA air cleaner device to capture mold spores in the air.
4. Request clearance from EH&S
    a. A visual and olfactory inspection of the area will be conducted to assess any issues.
    b. If impacted clients are unsatisfied with the remediation process and the resulting EH&S clearance, an Industrial Hygiene contractor may be needed to conduct air sampling.

Reporting Procedures

Visible mold growth on materials indoors is not an acceptable condition and should be reported so that it can be remediated.

Questions or concerns about mold growth can be directed to EH&S at 510-642-3073 or ehs@berkeley.edu

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