

## Standard operating procedure and guidance for water damage and mold

### Mold prevention and response

#### Document approval and version history:

Version	Description of changes	Effective date
1.0	Initial release	11/19/2021

### 1.0 Purpose

The purpose of this document is to outline the procedures for responding to and remediating water damage and mold in ASU buildings, including residence halls. In addition, the document provides steps to prevent mold growth.

### 2.0 Scope

This SOP applies to Environmental Health and Safety, or EHS, Risk Management, Facilities Development and Management, or FDM, and ASU Housing staff involved in maintaining buildings and responding to water damage and mold. Staff training materials and other resources are provided in Attachment 1.

### 3.0 Introduction and background

This procedure focuses on management of water damage, preventing and remediating mold growth and indoor air quality, or IAQ problems that can occur from mold. The term mildew is often used generically to refer to mold growth. Mildew often grows on wet areas such as shower walls. In this document, the term mold includes mildew.

IAQ problems can be caused by multiple sources including mold growth in water-damaged building materials, buildings with high humidity and temperature and in damp environments. Indoor mold growth is frequently due to water damage to building materials that have been wet for 24-48 hours or more. Currently, there are no federal standards, (e.g., OSHA, NIOSH, EPA) for airborne concentrations of mold spores.

Molds are usually not a problem indoors, unless mold spores land on a wet or damp spot and begin growing. Molds have the potential to cause health problems. Molds produce allergens and irritants. Inhaling or touching mold or mold spores may cause allergic reactions in sensitive individuals. Allergic responses include hay fever-type symptoms, such as sneezing, runny nose, red eyes, and skin rash. Allergic reactions can be immediate or delayed. Molds can also cause asthma attacks in people with asthma who are allergic to mold. In addition, mold exposure can irritate the eyes, skin, nose, throat, and lungs of both mold-allergic and non-allergic people. Symptoms other than the allergic and irritant types are not commonly reported as a result of inhaling mold. Research on mold and health effects is ongoing. This document does not describe all potential health effects related to mold exposure. <sup>1</sup>

#### **4.0 Mold prevention and control**

This section addresses water damage and mold prevention. Remediating mold growth is addressed in the next section. If there is water intrusion into an ASU building, a service request is submitted to the FDM team. If needed, EHS will assist with determining the severity of water damage.

A prompt response (within 24-48 hours) and thorough clean-up, drying, and/or removal of water-damaged materials will prevent or limit mold growth. In all situations, the underlying cause of water accumulation must be corrected or microbial growth will reoccur. Emphasis should be placed on preventing contamination through proper building maintenance and prompt repair of water damaged areas. The goal of abatement is to remove or clean non-porous contaminated materials in a way that prevents the emission of microbial spores from leaving a work area and entering an occupied or non-abatement area, while protecting the health of workers performing the abatement.

The following measures can help to prevent mold growth:

- Dry any and all water-damaged items and areas.
- Fix water problems immediately.
- Regularly evaluate areas for water and mold damage.
- Remind occupants to use exhaust fans in bathrooms.
- Remind occupants to keep bathroom doors open when not in use to help exhaust moist air.
- Use dehumidifier to remove excess humidity from water-damaged areas.

#### **5.0 Mold assessment**

Suspected mold is reported through an FDM service request or to EHS or ASU Housing.

EHS or FDM will assess for mold by conducting a visual inspection to determine extent of any water-damaged material and to identify whether visible mold is present. The assessment will also confirm whether there is a source of water, such as a roof leak, that requires repair and whether there is a significant amount of mold even if only a small area is impacted.

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<sup>1</sup> From: [epa.gov/mold/mold-and-health](https://www.epa.gov/mold/mold-and-health). Accessed September 20, 2021.

Environmental sampling for mold is not necessary. Equipment such as a moisture meter, infrared camera or borescope may be helpful to determine the source of moisture and mold and the extent of water or mold damage. If the inspection will potentially disturb mold, personal protective equipment, including respiratory protection (N95 or higher) gloves, eye protection and coveralls, must be worn. Respirators, if required, must be used in accordance with the [ASU Respiratory Protection Program](#).<sup>2</sup>

The mold assessment includes a visual inspection of potentially impacted materials to identify areas with water damage, mold or both. Any musty odors will also be noted during the assessment. Examples of commonly impacted items are provided below.

- Baseboards.
- Carpet, including backing and padding.
- Ceiling tiles.
- Heating, Ventilation and Air Conditioning (HVAC) system.<sup>3</sup>
- Hidden areas such as crawl spaces, interstitial spaces and behind wallboard.
- Insulation.
- Moldings.
- Structural wood and other cellulose-containing surfaces.
- Upholstered.
- Ventilation system components including filters, insulation and coils/fins.
- Wallboard (drywall).
- Wallpaper.

Based on the initial visual examination, FDM will contact EHS for additional guidance if any of the following are true:

- Assistance is needed to help explain sampling results to individuals.
- Heavy mold growth is discovered.
- Mold growth is observed in an HVAC system.
- More than 10 square feet of visible light mold growth is found. FDM may only remediate areas up to 10 square feet of light mold growth.
- Sampling for mold has been, or will be, completed and results need to be interpreted.
- There is concern about a particularly sensitive building occupant.

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<sup>2</sup> New York City Department of Health and Mental Hygiene. *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*. November 2008. Available at: <https://www1.nyc.gov/assets/doh/downloads/pdf/epi/epi-mold-guidelines.pdf>. Accessed September 27, 2021.

<sup>3</sup> The visual inspection of the HVAC system includes checking to see whether the drip pan is clean and working properly and the filter is in good condition and installed correctly. FDM will conduct an inspection on HVAC units if requested. If HVAC remediation is needed, it would be conducted by a contractor.

## **6.0 Water damage without visible mold:**

When water damage is discovered but visible mold is not present, FDM or other trained staff will complete the steps shown below.

1. Visually inspect area to confirm there is no mold.
2. Identify whether Asbestos Containing Building Materials (ACBM) or lead-based paint are present. If these materials are present, follow appropriate management process. Information on asbestos and lead may be obtained from the Capital Program Management Group at 480-965-7505.
3. Identify and eliminate the source of water (e.g., repair roof, turn off water and repair pipe, etc.).
4. Remove any standing water.
5. Place fans and/or dehumidifiers in the affected area to start the drying process.
6. Allow the wet building materials to dry completely.
7. If the water does not reach any walls, FDM may dry the area completely and no moisture readings are necessary.
8. If the water reaches a wall, FDM or a contractor will dry the area completely and then check the moisture content of the building material each day until it drops below 10%.
9. Once water is removed and moisture drops below 10%, return area to occupants.

## **6.1 Remediation of small isolated areas with visible mold**

Remediation of small isolated areas of light growth with less than or equal to 10 square feet of affected space, including ceiling tiles, walls and similar surfaces may be conducted by trained ASU building maintenance staff. Training can be provided as part of the employee's Hazard Communication Program training. According to OSHA, recommended personal protective equipment, or PPE, comprises rubber gloves, respiratory protection, N-95 disposable respirator or higher level protection (half-face respirator is acceptable), goggles, and reusable or disposable coveralls. Respirators must be used in accordance with ASU Respiratory Protection Program, including fit testing, training and medical evaluation. The following steps are required to remediate small areas:

1. Identify whether ACBM or lead is present. If these materials are present, follow appropriate management process. Information on asbestos and lead may be obtained from the Capital Program Management Group at 480-965-7505.
2. Confirm the area is unoccupied and restrict access.
3. Put on personal protective equipment PPE – goggles, rubber gloves, coveralls, N-95 or higher level respirator.
4. Clean wet materials and surfaces with detergent and water.
5. Use dust suppression methods during any cutting or resurfacing of materials.
6. Remove excess moisture with wet-dry vacuum and dry the space as much as possible.

7. Discard porous materials that have been wet for more than 48 hours and that cannot be sufficiently cleaned. This includes drywall and ceiling tiles.
8. Use fans and/or dehumidifiers to assist in the drying process.
9. Once the area is visibly dry, check the moisture content of the building materials each day until the humidity of building materials drops below 10%. The moisture readings are generally taken while the drying process is occurring and is stopped when building materials are below 10%.

Mold sampling is not required for small areas impacted by mold. If sampling has been or will be conducted, a sampling plan is required; contact EHS for mold sampling guidance.

## **6.2 Remediation of large area with visible mold**

Large areas affected or potentially affected (greater than 10 square feet) by mold, will require an EHS or FDM evaluation. If it is determined that a large area is impacted by mold, FDM staff will take the steps listed below.

1. Identify whether ACBM or lead is present. If these materials are present, follow appropriate management process. Information on asbestos and lead may be obtained from the Capital Program Management Group at 480-965-7505.
2. Restrict access to the impacted area, including directly adjacent rooms.
3. Enlist services of a qualified remediation contractor to remove water and initiate drying to prevent mold growth. The contractor should be listed on the current ASU Fire, Water, and Mold Remediation contract.
4. Enlist services of a qualified mold remediation contractor to remove the mold-impacted materials and restore the space. The contractor will take steps to prevent mold from spreading to other areas of the building. Work will be completed by a qualified remediation contractor on the current ASU Fire, Water, and Mold Remediation contract.
5. Conduct a visual inspection after the work is completed to confirm the area is free from visible dust and debris; remediation contractor must address any areas with remaining dust or debris.
6. EHS will determine whether mold samples are required after a large remediation project is complete. If samples are collected, a sampling plan is required.

## **6.3 Response to suspected mold in HVAC system**

1. FDM or a qualified contractor will inspect the HVAC system components, including vents, coils, drip pan and filter to identify areas potentially impacted by mold.
2. If a small amount of isolated mold is found in a bathroom or shower exhaust vent, FDM staff may remove the mold as described in Section 6.1. Otherwise, staff will follow the steps below.
3. If mold is found inside HVAC system components, a qualified remediation contractor will address any water leaks or intrusion, remove mold and restore the system. The contractor will take steps to prevent mold from spreading to other areas of the building.

Work will be completed by a qualified remediation contractor on the current ASU Fire, Water, and Mold Remediation contract.

4. EHS may require a mold sampling plan and mold sample results to complete the remediation.
5. FDM will confirm completion of the work and EHS will review mold samples before building occupants are allowed to return.

#### **7.0 Completion of work and waste disposal**

Plastic sheeting, moldy materials, used cleaning supplies, such as sponges or rags, disposable PPE and other mold-impacted materials will be sealed in heavy-duty plastic bags and disposed of in the municipal trash.

Staff will clean any reusable supplies or equipment using soap or detergent.

The water-damaged or mold-impacted space will be returned to an intact and finished condition. At which time, occupants will be allowed to return.

EHS will determine if any follow-up action is needed. This may include a follow-up inspection to ensure the underlying moisture problem remains corrected and mold growth does not occur. This may also include post-remediation air sampling.

Questions? Contact ASU Environmental Health and Safety  
at 480-965-1823 or email [asuehs@asu.edu](mailto:asuehs@asu.edu).

Revision date 1/5/2022

**Staff training materials and  
resources**

# Mold and mildew facts and resources



Prepared by Arizona State University  
Environmental Health and Safety Department  
Updated January 7, 2022



# Mold facts

1. Mold is a common type of fungus that can be found almost anywhere. Mildew is a type of mold.
2. According to the Centers for Disease Control and Prevention, the most common indoor molds are *Cladosporium*, *Penicillium* and *Aspergillus*. However, there are many other common indoor molds that vary depending on the region.
3. Most people have little or no reaction to common household molds but some people who suffer from asthma or have other allergies may be more sensitive.

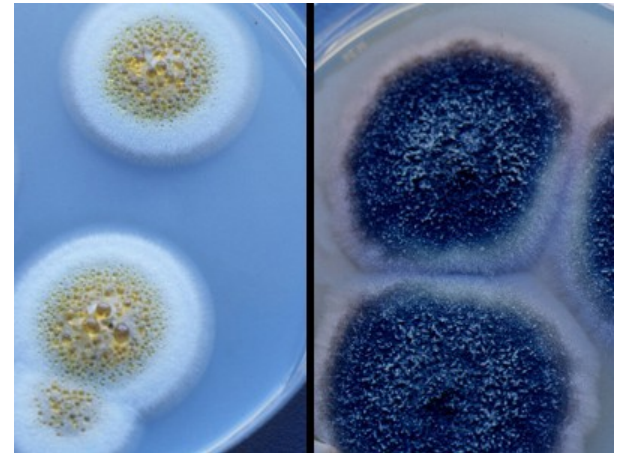


Image from: [epa.gov/mold](http://epa.gov/mold)

# Mold humidity and water intrusion

1. Mold grows in humid locations such as shower areas and in locations where flooding or water leaks have occurred.
2. Removing the source of water and reducing humidity is key to preventing mold growth.
3. If mold is found, the best practice is to remove the mold and prevent future growth by eliminating water intrusion and reducing humidity in the space.



Image from: [epa.gov/watersense/showerheads](https://epa.gov/watersense/showerheads)

# Questions for occupants to help assess mold and mildew concerns

- Have you noticed any water leaks or water damage in the room? If so, where and when?
- Is there a particular location that you are concerned about?
- Have you noticed a musty smell?

**Note:** If you have any health concerns, please discuss them with your medical provider.

# How to prevent mold and mildew

- Clean surfaces regularly.
- Leave exhaust fan on while showering and avoid long hot showers.
- Leave bathroom doors open when not in use.
- Report water leaks and suspected mold by calling 480-965-3633 or submit a [service request](#).



Image from: [ogs.ny.gov/greenyny/disinfectants-and-sanitizers](https://ogs.ny.gov/greenyny/disinfectants-and-sanitizers)

# Resources

Report water damage, leaks or suspected mold to [Facilities Development and Management](#) at 480-965-3633

Arizona State University Environmental Health and Safety

- Phone: 480-965-1823.
- Email: [asuehs@asu.edu](mailto:asuehs@asu.edu).

Report potential health issues to your medical provider or the following:

- Employees - [ASU Employee Health](#) at 602-496-1917.
- Students – [ASU Student Health Services](#) at 480-965-3349.

Learn more about mold from the following agencies:

- [Arizona Department of Health Services](#)
- [Centers for Disease Control and Prevention](#)
- [United States Environmental Protection Agency](#)

# The Key to Mold Control is Moisture Control

Mold... no one wants it in their home. Mold produces allergens and can cause health problems. Although mold is naturally found in the indoor environment, it won't grow without moisture.

## Take steps to control mold and moisture indoors:



Reduce humidity: use exhaust fans or open windows in kitchens and bathrooms, and use air conditioners or dehumidifiers as needed.



Prevent condensation by reducing humidity, increasing ventilation, or raising the indoor air temperature.



Completely dry any damp or wet surfaces within 24–48 hours, and fix the source of the water problem or leak.

## If mold does grow in your home...



Promptly fix the source of any water problems or leaks.



Clean mold off of hard surfaces with water and detergent, and dry completely.



Absorbent materials that have mold growth may need to be replaced — e.g. ceiling tiles, carpet, furniture.



If you are experiencing symptoms that you think are caused by mold, consult a medical professional.



Visit [epa.gov/mold](https://www.epa.gov/mold) to learn what personal protective equipment to wear to limit your mold exposure. If mold or water damage is extensive, or the water is not clean, consult a professional.



[epa.gov/mold](https://www.epa.gov/mold)

# Mold and mildew training for ASU staff



Prepared by Arizona State University  
Environmental Health and Safety Department  
Updated November 19, 2021

# Mold facts

1. Mold is a common type of fungus that can be found almost anywhere. Mildew is a type of mold.
2. According to the Centers for Disease Control and Prevention, the most common indoor molds are *Cladosporium*, *Penicillium* and *Aspergillus*.
3. Most people have little to no reaction to common household molds but some people who suffer from asthma or have other allergies may be more sensitive.

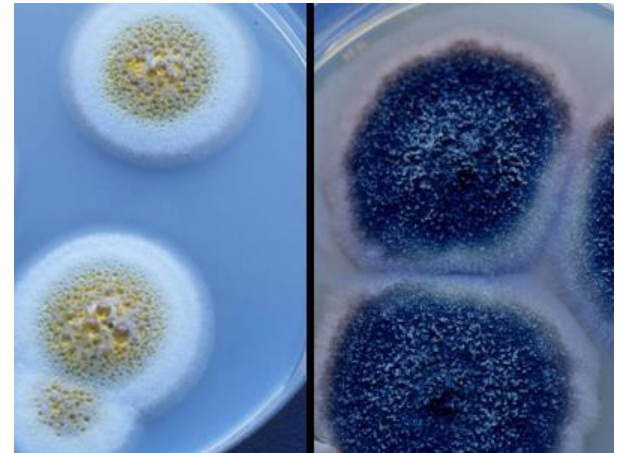


Image from: [epa.gov/mold](http://epa.gov/mold)



# Mold humidity and water intrusion

1. Mold grows in humid locations such as shower areas and in locations where flooding or water leaks have occurred.
2. Removing the source of water and reducing humidity is key to preventing mold growth.
3. If mold is found, the best practice is to remove the mold and prevent future growth by eliminating water intrusion and reducing humidity inside the building.



Image from:  
[epa.gov/watersense/showerheads](https://epa.gov/watersense/showerheads)

# How to prevent mold growth

- Clean surfaces regularly.
- Leave exhaust fan on while showering and avoid long hot showers.
- Leave bathroom doors open when not in use.
- Reduce condensation in showers by keeping room temperature above 70F.
- Report water leaks and mold immediately



Image from: [ogs.ny.gov/greenyny/disinfectants-and-sanitizers](https://ogs.ny.gov/greenyny/disinfectants-and-sanitizers)

# Information from occupants to help assess mold concerns

- Have you noticed any water leaks or water damage in the room? If so, when?
- Have you seen any visible mold on surfaces?
- Have you noticed a musty smell?

# Response to water damage without visible mold

1. Visually inspect area to confirm there is no mold.
2. Identify whether Asbestos Containing Building Materials, or ACBM, or lead-based paint are present and if so, follow management process. Contact the Capital Program Management Group at 480-965-7505 for information and guidance.
3. Identify and eliminate the source of water.
4. Remove standing water.
5. Place fans and/or dehumidifiers to dry the affected area.
6. Allow wet building materials to dry completely.
7. If the water does not reach any walls, no moisture readings are necessary.
8. If the water reaches a wall, dry the area completely and then check the moisture content of the building material each day until it drops below 10%.
9. Once water is removed and moisture drops below 10%, return area to occupants.

# Response to report of mold

1. Identify whether ACBM or lead-based paint are present and if so, follow management process before disturbing any materials.
2. Assess area to determine extent of mold and water damage.\*  
Commonly impacted items are baseboards, drywall, carpet, insulation, upholstery and other porous materials.
3. If the heating ventilation and air conditioning, or HVAC, system is suspected to have mold growth, conduct a thorough inspection of components.
4. A moisture meter, infrared camera or borescope may be used to help determine moisture source and extent of damage.
5. If mold is found, ensure occupants have left and restrict access to the area.
6. Proceed with mold removal process.

\* If mold will potentially be disturbed during assessment, personal protective equipment (PPE), including gloves, eye protection and respiratory protection are required. Respiratory protection requires medical evaluation and fit test.

# Response to report of mold

If mold is found, staff will contact EHS for additional guidance if any of the following are true:

- More than 10 square feet of visible light mold growth is found. Trained ASU staff may only remediate areas up to 10 square feet of light mold growth.
- Heavy mold growth is discovered.
- Mold growth is observed in an HVAC system.\*
- There is concern about a particularly sensitive building occupant.
- Sampling for mold has been, or will be, completed and results need to be interpreted.
- Assistance is needed to help explain sampling results to individuals.

\* Mold found in an HVAC system, other than a small area of isolated mold in a bathroom or shower exhaust vent, requires response by a professional remediation service vendor.

# Mold remediation – small isolated area

Trained ASU staff may remediate area of less than 10 square feet of light mold growth, following the steps below:

1. Identify whether ACBM or lead is present and follow appropriate management process.
2. Confirm the area is unoccupied and restrict access.
3. Put on personal protective equipment PPE – goggles, rubber gloves, coveralls, N-95 or higher level respirator.
4. Clean wet materials and surfaces with detergent and water.
5. Use dust suppression methods during any cutting or resurfacing of materials.
6. Remove excess moisture with wet-dry vacuum and dry the space as much as possible.

# Mold remediation – small isolated area

7. Discard porous materials that have been wet for more than 48 hours and that cannot be sufficiently cleaned. This includes drywall and ceiling tiles.
8. Use fans and/or dehumidifiers to assist in the drying process.
9. Once the area is visibly dry, check the moisture content of the building materials each day until the humidity of building materials drops below 10%. The moisture readings are generally taken while the drying process is occurring and is stopped when building materials are below 10%.

Mold sampling is not required for small areas impacted by mold. If sampling has been or will be conducted, a sampling plan is required; contact EHS for mold sampling guidance.



# Mold remediation professional services required

Professional mold remediation services will remediate large areas of mold impact, heavy mold growth in a small area and mold growth found in an HVAC system.\* Steps taken by ASU staff are as follows:

1. Identify whether ACBM or lead is present. If these materials are present, follow appropriate management process.
2. Restrict access to the impacted area, including directly adjacent rooms.
3. Enlist services of a qualified remediation contractor to remove water and initiate drying to prevent mold growth.
4. Enlist services of a qualified mold remediation contractor to remove the mold-impacted materials and restore the space. The contractor will take steps to prevent mold from spreading to other areas of the building.

\* A small area of mold growth in bathroom or shower exhaust vents may be cleaned by trained ASU staff.

# Mold remediation professional services required

5. Conduct a visual inspection after the work is completed to confirm the area is free from visible dust and debris; remediation contractor must address any areas with remaining dust or debris.
6. EHS will determine whether mold samples are required after a large remediation project is complete. If samples are collected, a sampling plan is required.

# Mold remediation HVAC system

1. Mold found or suspected to be present in an HVAC system, will require an EHS and ASU Facilities Maintenance staff evaluation.
2. Qualified ASU Facilities Maintenance staff or a qualified contractor will inspect the HVAC system components, including vents, coils, drip pan and filter to identify areas potentially impacted by mold.
3. If mold is found inside the HVAC system, occupants will be moved and the impacted area restricted.
4. A qualified HVAC mold remediation contractor will address any water leaks or intrusion, remove mold and restore the system. The contractor will take steps to prevent mold from spreading to other areas of the building.
5. EHS may require a mold sampling plan and mold sample results to complete the remediation.
6. Trained ASU Facilities Maintenance staff will confirm completion of the work and EHS will review mold samples before building occupants are allowed to return.

# **Questions?**

**Contact ASU EHS at  
480-965-1823 or  
[asuehs@asu.edu](mailto:asuehs@asu.edu)**