Moisture Control and Mold Prevention in Schools

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Mold is a fungus and a common allergen and irritant. Controlling leaks and moisture inside school buildings is key to combating mold growth.

School District Responsibilities

Each district should have an established process for identifying, drying and resolving mold contamination, as well as a plan to prevent moisture issues from occurring.

Important questions to consider include:

1. Do we have a process for identifying and resolving moisture issues?
2. What is our process and where can it be found?

Key questions and components in this process should include:

- Who's responsible for what?
- What steps should be taken to resolve issues?
- What steps should be taken to dry wet areas?
- What resources are required, and who can restore conditions to original state?
- What is the standard around quality control?

Appropriate maintenance, including preventative maintenance, is a district responsibility. The challenge is that there are roof leaks, window leaks, plumbing leaks, etc., regardless of the district's best efforts to maintain a building. Leaks happen...so vigilance is required.

What mold needs to grow

- Food – mold can feed off any biological or carbon-based substance (e.g., dust, paper, wood, drywall etc.)
- Water (in liquid form)
  - Elevated relative humidity (>70%)
  - The American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) recommends that relative humidity be maintained between 30-60%, and other environmental health experts recommending indoor humidity levels be between 30-50%, to better control for dust mites in the environment.
  - Mold could possibly grow in conditions below 70% relative humidity, but these occurrences would most likely be a result of microclimates. Contextually, a microclimate is a smaller area within a room that has different conditions than the rest of the room. For example, relative humidity in a room may be measured at 55%; behind a file cabinet placed against the exterior wall, relative humidity levels could be higher, leading to condensation on cooler surfaces within that microclimate.
- Oxygen

Moisture in schools

Moisture problems in schools are typically caused by water vapor entering the building through vapor diffusion and air infiltration, including rainwater/groundwater, plumbing leaks, condensation on surfaces, damp earth in crawl spaces, and construction moisture (i.e. concrete, gypsum mud/joint compound).

Schools should **identify things that may cause moisture to form and the extent of damage they could cause. Examples include:**

- Having a cold water pipe in a warm plenum space where condensation occurs.
- Having an intermittent roof leak.
- Having a flooded area.

Methods for identifying moisture issues

- Visual identification
  - Custodial staff can monitor for moisture issues during routine daily activities.
  - All school staff should know how to recognize and report issues with moisture.
- Odor concerns
  - Identify possible moisture issues in areas where odors are reported.
  - Look for excessive use of fragranced products (used to cover up odors).
- Assess for leaks
  - Touch or feel components, drains and supply lines for leaks.
  - Fix leaks/moisture issues immediately.
  - Temporary measures may be used until the problem is resolved.

How to resolve moisture issues

- **Dry** the wet areas and keep them dry in the short-term. If the area is less than 10 square feet, clean it up. If the area is over 10 square feet, take extra precautions with PPE: Respirator - P100 or P95 filter, eye protection, rubber gloves, and wear coveralls or outer wear and bag them before leaving work areas.
- Clean using detergent and hot water – see NY Guideline for Mold Identification and Remediation as well as the IICRC S500 and S520 documents. It's important to maintain relative humidity levels within the 30-50% range.
- Use a two-bucket cleaning system — one to wash and one to rinse — and assorted brushes and rags. Do not use high pressure sprayers.
- Containment -See EPA Guidance https://www.epa.gov/mold/printable-version-mold-remediation-schools-and-commercial-buildings.
- Discard or decontaminate contaminated material.
- See EPA Guidance for mold remediation guidelines: https://www.epa.gov/mold/mold-remediation-schools-and-commercial-buildings-guide-chapter-1

How to prevent moisture issues

- Design long-term interventions to address moisture issues.

- Ensure fungal clean-up procedures and clearance criteria. Most expert guidance does not recommend districts test for mold, as there are no standards or guidelines to reference, individual sensitivities are unique, and interpretation of any results can be challenging.
- Tests are available for airborne molds, and surface samples can be collected from stains to help identify and address fungal concerns.
- Implement repairs and program changes to prevent future problems.

If issues can be resolved and wet materials dried within 48 hours, no mold growth should occur.

- Maintain relative humidity levels in the facility between 30%-50%.
- Dehumidifiers may be required in problem areas.
- Control dust mite populations.
- Routinely monitor the facility for moisture leaks or intrusion issues.
- Ensure systems are in place for staff to report issues.
- Develop routine schedules for inspections and maintenance of facility, including:
    - Heating, Ventilation, and Air Conditioning (HVAC) systems.
    - Plumbing systems.
    - Roof and building exterior.

Dust mites are ubiquitous in that they are pretty much everywhere. They don't directly contribute to the moisture issue, but they do thrive and proliferate as the relative humidity levels rise or if moisture issues occur. We have learned from examining dust mite life cycles that they do best in warmer, moist environments, which also can include relative humidity levels. Dust mites are a concern because they are known to exacerbate asthma and allergies and increase the risk for asthma.

For additional tips on environmental health and safety in schools, visit PEHSU.net. You can also explore more fact sheets to help you create a safer school environment for students, teachers and everyone in the school.

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