MOLD

ASSESSMENT, INSPECTION & PREVENTION

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Develop a Prevention Plan

- Mold prevention needs to be a priority
- Assessments and inspections must be thorough
- Must be done routinely
- Team approach is critical. No single person can complete all necessary tasks and manage the program.
- Must address all phases of mold management

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Elements of a Good Plan

- Baseline assessment of facilities
- Periodic inspections of critical areas
- Constant monitoring of the building environment
- Detailed reporting and response procedures
- Adequate training for key personnel
- Proper documentation of response to issues

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Initial Assessment

- Conduct a thorough baseline inspection of all facilities
- Includes inside and outside of building
- May require inspecting hard to reach and limited access areas
- May require some low cost equipment such as moisture meters, temperature/humidity meters, boroscopes, high power flashlight

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Areas to Inspect

- Inside the building
  - Ceiling tiles-above and below
  - Drywall-surface and possibly behind if suspect
  - Behind vinyl wall coverings
  - Carpet and carpet padding
  - Storage areas with paper, books and boxes
  - Wood furniture
  - Closets
  - Under desks
  - Under sinks/pipe chases
  - Attic/cocklofts/crawl spaces
  - Plumbing, refrigeration and process lines
  - “Cold spots” that may not be insulated properly

Mold on Ceiling from Leak

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photo credit: black-mold-guide.com

Mold on Concrete Wall

photo credit:USEPA Terry Brennan

Mold Under Carpet

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photo credit: inspectApedia.com

Mold on Insulation

photo credit: inspectApedia.com

Mold on Ceiling Tiles

photo credit: Jessica Smith Madison AL

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Mold on Air Vent

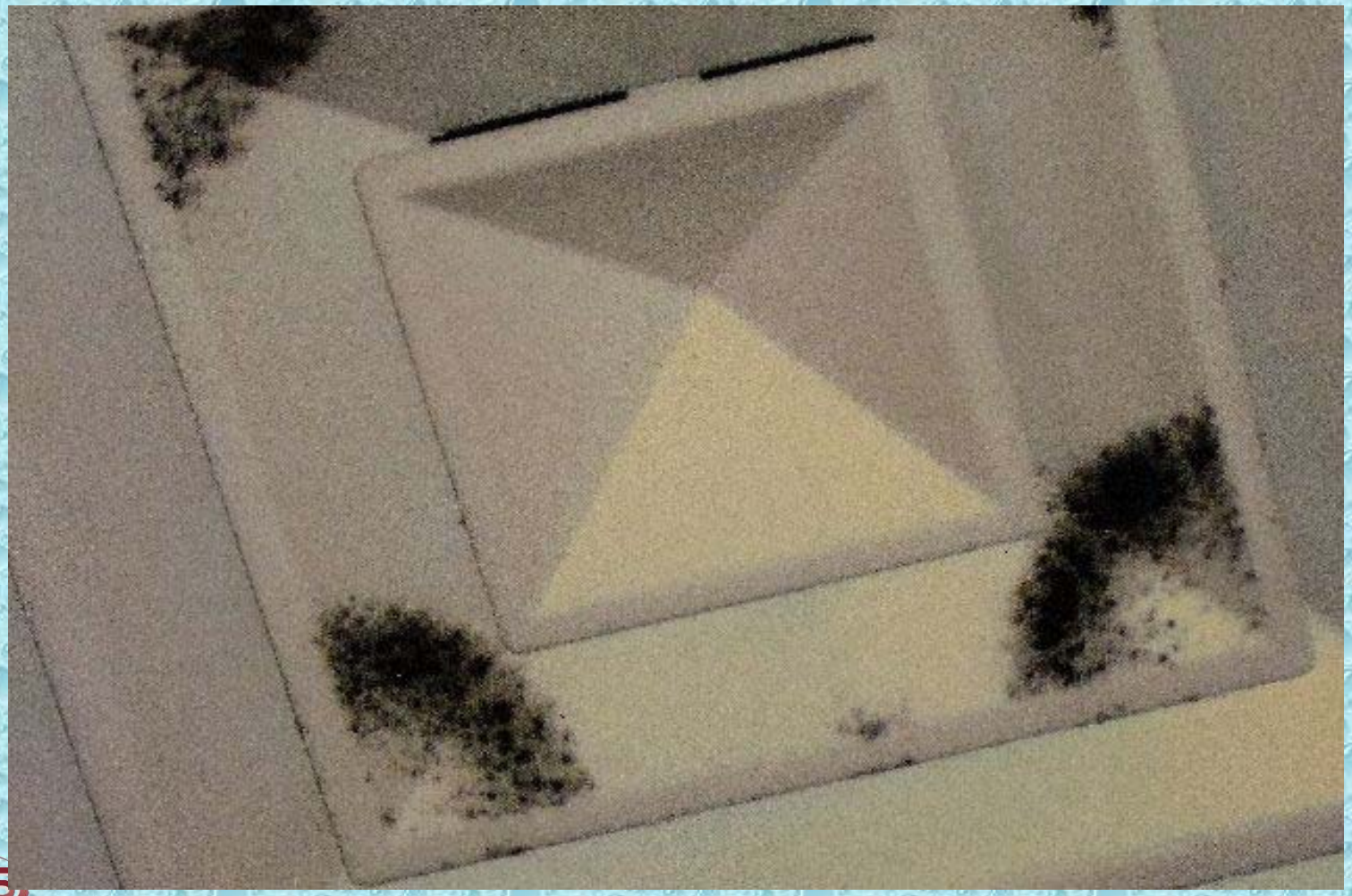

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photo credit: inspectApedia.com

Mold on Strand Board

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photo credit: inspectApedia.com

Mold on Sheetrock Under Sink

Photo credit: USEPA John Mautyny, PhD

Mold in Duct Work

Photo credit: inspectApedia.com

Areas to Inspect

- Outside building
  - Roof condition/pooling water
  - Special attention to flat roof/saturated insulation
  - Scuppers/gutters/downspouts
  - Flashing
  - Windows/Doors
  - Exterior Insulation Finishing System (EIFS)
  - Cracks in exterior walls
  - HVAC dampers
  - Drainage systems/grading/foundation
  - Trees overhanging roof line
  - Don’t forget winter when ice damming and snow can cause water damage

Thermal image of roof showing wet insulation

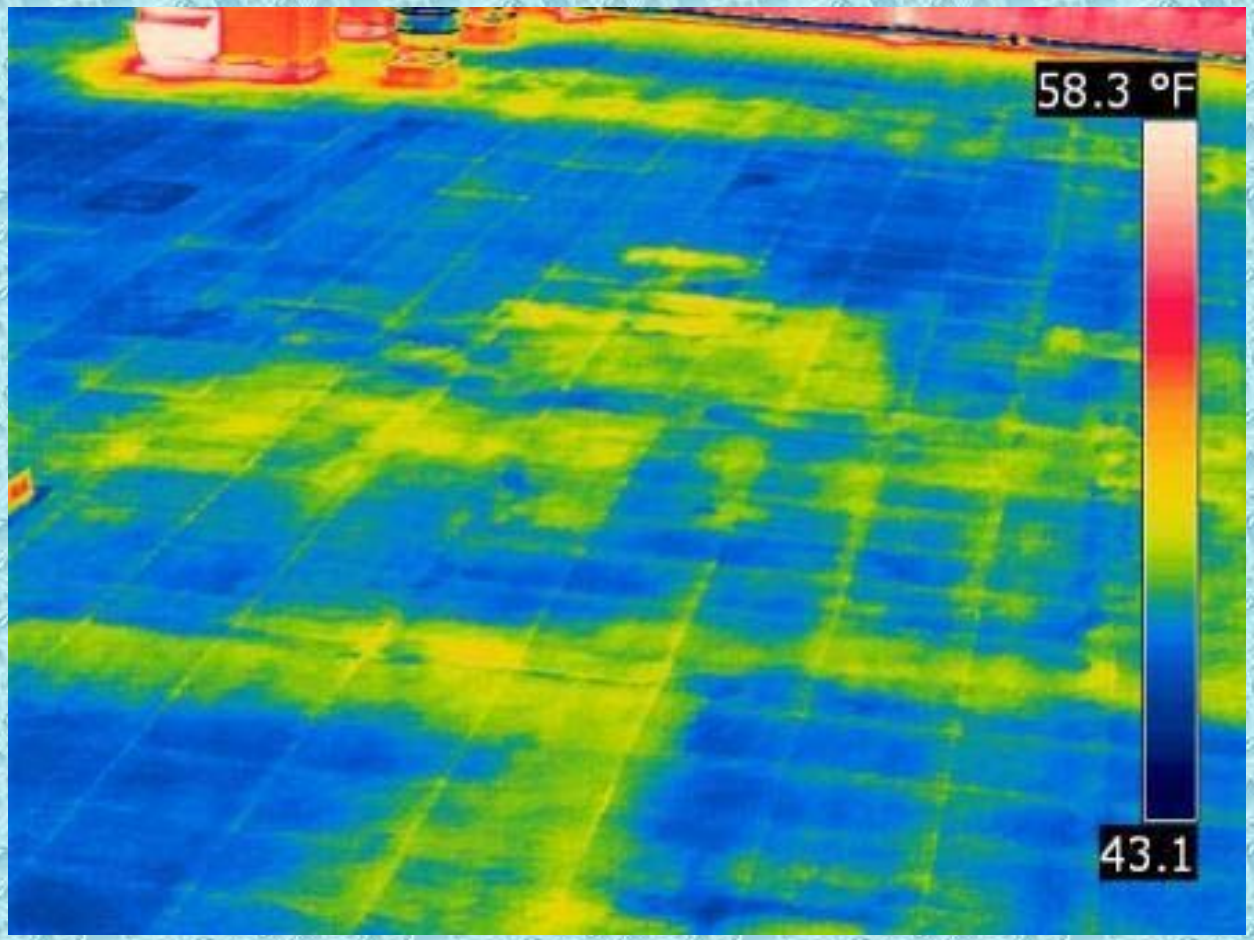
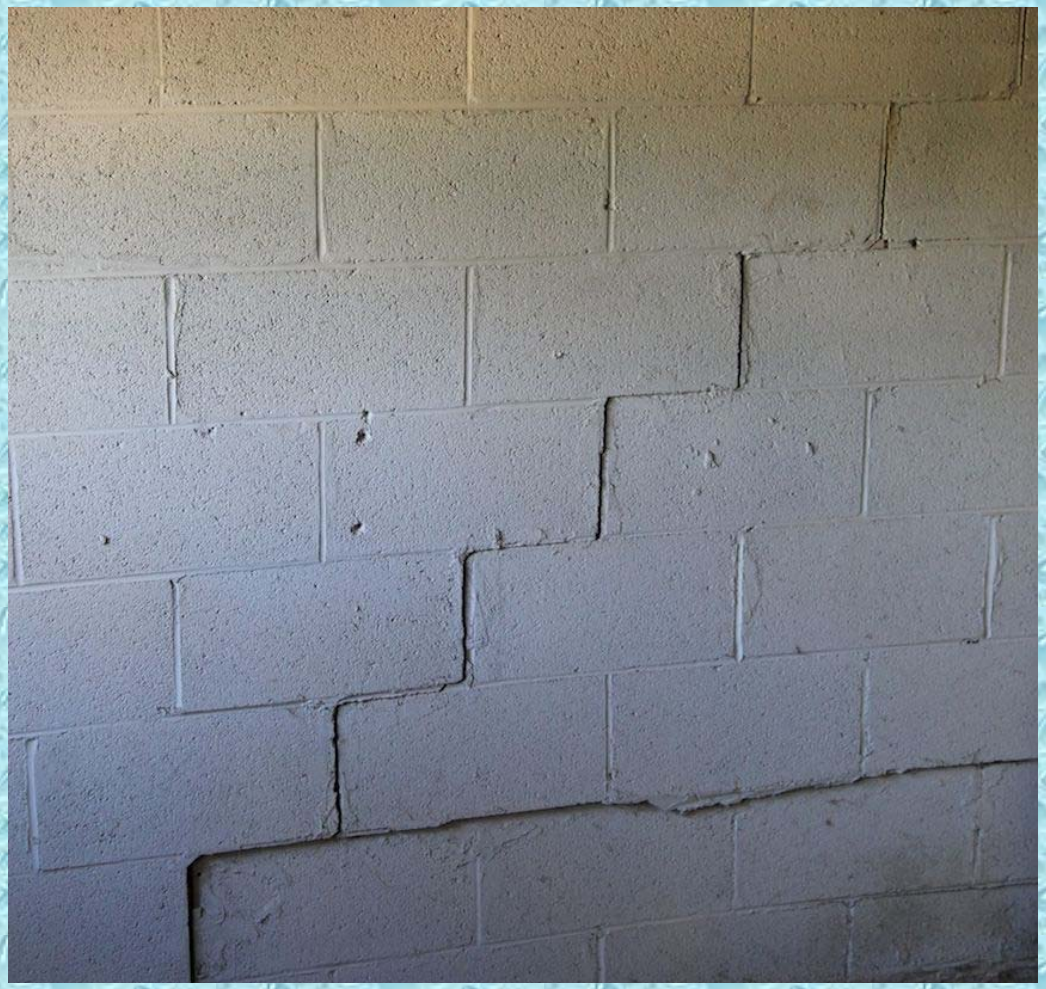


Photo credit: nachi.org

Cracked Foundation Wall



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Clogged Roof Scupper

Photo credit: disastersafety.org

Ponding On Roof

Photo credit: ashlreporter.com John Cranor

HVAC Assessment

- Work with Facilities Managers, HVAC mechanics, Architects and Engineers to fully evaluate your current systems
- Are they able to deal with current high temperature and high humidity issues?
- Can settings be adjusted to operate properly at both occupied and unoccupied levels?
- Make sure system does not short-cycle
- Are they maintained at peak performance and in accordance with manufacturer's guidelines?
- System properly balanced
- Are air intakes and diffusers clear and unobstructed?

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HVAC Inspection

- Evaluate all components of the HVAC system periodically
  - Coils clean
  - Condensate lines clear and pans drain properly
  - No visible leaks
  - Insulation in good condition and properly installed
  - Fans clean and functioning properly
  - Filters changed regularly
  - Belts tightened/adjusted properly
  - System run as needed to keep temperature and humidity levels in check

Monitor the Environment

- Do not shut down HVAC systems in summer as a cost savings measure when temperatures and/or humidity are elevated
- Assign facilities staff to check temperature and humidity levels at regular intervals. This might mean several times a day in summer
- Check several areas as these levels can vary significantly throughout the building
- Strive to maintain humidity levels between 30% and 60%.

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Monitor the Environment

- Pay special attention to critical areas:
  - Restrooms
  - Locker rooms/showers
  - Kitchens/cooking areas
  - Laundry facilities
  - Pools
  - Other areas with high water vapor potential such as biology rooms or environmental sciences
  - Rooms with excessive live plants
- These areas typically have or should have special ventilation systems that must be working properly

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Response Actions

- Organize a team approach. Empower people.
- Involve key personnel such as Business Administrators, Principals, Facilities Managers maintenance staff and custodians
- Do not be afraid to solicit information from other employees regarding potential mold producing conditions
- Investigate all potential and reported problems
- Document findings and remedial actions
- Call in experts when necessary

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Prevention Measures

- Promptly fix leaks in building envelope
- Repair leaking/sweating pipes
- Address condensate issues in areas that may be improperly insulated
- Remove/dry wet building materials within 24-48 hours
- Increase air flow throughout building as necessary, including opening interior doors and using fans/blowers

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Prevention Measures

- Use dehumidifiers in areas where you are having trouble controlling humidity levels
- Consider updating computerized HVAC controls with automatic humidity gauges tied to control system
- For extreme weather conditions, consult with HVAC experts to determine if fresh air intakes should be shut down for a short period to minimize excess humidity

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Rethink How You Clean

- Carpet extraction
  - Avoid doing on hot/humid days
  - Do earlier in day to allow proper drying time
  - Make sure HVAC system is running
  - Use high velocity fans/blowers to dry carpet quickly
  - Operate for several hours after cleaning. Test with moisture probe to ensure thoroughly dry
  - Keep interior doors open to increase airflow
  - Do not clean more than you can adequately dry
- Try to minimize carpet use in buildings
- Minimize use of upholstered furniture

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Rethink How You Clean

- Floor stripping/scrubbing
  - Try to avoid during extreme weather conditions
  - Clean in small sections
  - Dry quickly and thoroughly
  - Do not use excessive amounts of water as this will be drawn into the air and increase moisture content
  - Consider floor scrubbers that vacuum up the excess water and allow for quicker drying
  - Do not allow standing water in buckets/slop sinks

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Contractors

- Closely monitor building projects that could contribute to mold issues
  - Roof repair/tear offs
    - Only tear off what can be replaced that day
    - Proper tarps readily available if weather changes
    - Monitoring of weather conditions during critical phases
  - Exposure of wood subsurface elements exposed to rain where proper drying time may not be provided
  - Exposed window openings during replacements, exposing interior and wall cavities
  - Unprotected facades that are not allowed to dry

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Summary

- Schools must make mold prevention a priority
- Everyone must be part of the solution
- Continuously deferring maintenance and upgrades will significantly increase the chances of a mold-related problem
- Inspect the facilities using checklists to document findings
- Respond promptly to potential mold-causing issues
- Use all available resources including JIF, architect, HVAC maintenance personnel, engineers, environmental consultants, other school peers, etc.

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Thank You!

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