Molds at School

Healthy Schools Network, Inc.
www.HealthySchools.org
www.CleaningForHealthySchools.org

The Basics

About children

Children may be at special risk from exposures to molds at school. Young children's lungs and other organs are still developing and children can't identify hazards. They breathe more air per pound of body weight than adults do; they have hand to mouth behaviors; they rarely stop to wash their hands. While children are *required to be in school*, no laws protect children or even school personnel from exposure to molds or specific levels of contamination. Schools are required to provide accessible facilities and programs; children who are extremely mold-sensitive or sensitive to other indoor air pollutants may be eligible for special accommodations. Parents and personnel should be familiar with the symptoms and health effects of mold on children (see page 3) and monitor children's health.

About school buildings

Damp, moldy school environments are harmful to children for a variety of reasons. Damp indoor environments create conditions that are favorable for dust mites, and standing water in schools can increase pest and rodent infestations, all of which can release allergens. Moisture also can cause building materials to "off-gas" and release chemicals into the air, such as phthalates, a type of polyvinyl chloride (PVC), that can cause physical and mental health consequences. Damp environments may lead to growth of molds indoors. Although some molds are everywhere all the time, indoors and out, including in schools, when wet conditions exist, molds will grow to higher than normally occurring levels. Federal studies have shown that many schools are in poor repair and poorly maintained. Many schools have plumbing problems, leaky roofs or poor ventilation systems, which can create ideal moisture conditions for molds to grow. Moisture and mold problems can be present in schools regardless of the climate or time of year, and may be present in older buildings as well as new construction. Delaying repairs or cutting back maintenance makes mold problems worse. Many schools have mold problems because of poor construction, or because they are tightly sealed and poorly ventilated, which prevents moisture from escaping. School personnel and parents should be alert to and help monitor schools for moisture, water damage, and resulting mold problems. *(Sources: Institute of Medicine, Climate Change, the Indoor Environment, and Health; Collaborative on Health and the Environment, Learning and Developmental Disabilities Institute)*

Testing buildings for mold is time-consuming, expensive, and unreliable. No "safe" levels of molds have been established. The most important actions to stop or prevent mold growth are: keep the building dry, stop leaks, get rid of mold-contaminated items, fix sources of dampness and notify the school administration when problems are not addressed. Molds will return when dampness returns. The time and money spent on testing can be better spent on cleanup and repairs. **Indoor mold growth, mold contaminated buildings, and especially mold-contaminated schools have been the topic of a growing number of news reports and health advisories.** The public health community and the general public are increasingly aware of the harmful health effects of mold growth indoors, and that molds growing in schools can be harmful to children's health and learning.

About Molds

More than ugly, slimy nuisances, growing molds can damage your health and your school. Unfortunately, inadequate maintenance will allow molds to spread on ceilings, behind and on walls, on floors and carpets, and in books and other water-absorbing materials. Molds are a type of fungus. They eat or digest what they are growing on, and they grow colonies by producing long filaments of cells that form visible fuzzy or slimy patches. Molds reproduce by producing spores, tiny particles that can travel in the air and begin new colonies. Molds need two things to live: materials to digest (such as food leftovers, wood, paper, cloth and wallboard) and moisture (such as water leaks, flooded carpets, wet basements, or very high humidity). **If you see fuzzy, slimy, or discolored surfaces, especially in damp or wet areas, it's probably mold. Molds are often green, black, purple, or orange. An earthy or musty odor, or a smell like alcohol, is often a sign of hidden molds.**

"Toxic" molds

Virtually all molds have the potential to affect health, but some have received particular attention because they can release toxic substances called **mycotoxins.** These can cause health problems such as sinus inflammation, nose bleeds, and respiratory diseases, and can irritate existing asthma and allergies. Further, some have neurotoxic, reproductive and carcinogenic properties. Molds can also create **microbial volatile organic compounds (mVOCs**), which can cause headaches, dizziness, nausea and other symptoms. There are many varieties of molds and much more research is needed to fully understand the health effects of indoor mold exposure, however there are no "safe" molds. Here are a few of the more common toxic varieties:

- ***Acremonium:*** can produce a substance that is toxic if consumed
- ***Alternaria:*** often found on carpets, textiles, and window frames in building interiors
- ***Aspergillis:*** several species produce mycotoxins, including *Aspergillus flavus,* found in water-damaged carpets and *Aspergillus versicolor,* found on damp wood or wallpaper glue
- ***Chaetomium:*** found on substances that contain cellulose (a plant material), such as paper, cardboard, soil, or compost; also often grows on carpet or between layers of wet plywood
- ***Cladosporium:*** often found inside supply ducts
- ***Fusarium:*** several *Fusarium* species produce mycotoxins; often found in humidifiers
- ***Paelimyces:*** often found in soil and dust, and sometimes in the air
- ***Penicillium:*** some species produce mycotoxins; often found in paint, compost piles, carpet, wallpaper, and interior fiberglass duct insulation; eg: *Penicillium chrysogenum* and *Penicillium expansum*
- ***Stachybotrys chartarum (Stachybotrys atra):*** the best-known "toxic" mold, *"stachy*" is greenish-black and grows on materials that have high levels of the plant material cellulose and low levels of nitrogen, such as ceiling tiles, wood, and drywall
- ***Trichoderma:*** often found in paper, as well as unglazed ceramics; produces airborne toxins that are harmful to humans

(Sources: Institute of Medicine, Damp Indoor Spaces; US Environmental Protection Agency, Mold Remediation in Schools and Commercial Buildings, Appendix B; American Industrial Hygiene Association, Facts About Mold; McNeel & Kreutzer. May/June 1996. Fungi & Indoor Air Quality. Health & Environment Digest, Vol 10, No 2.)

Molds at Home

Molds can cause serious health problems, but it can be hard to establish a direct relationship between specific molds and specific symptoms. Molds cause different reactions in different people. Students in one mold-infested classroom could have varying symptoms—some could become extremely ill, while others might have only mild, or even no, symptoms at present. To find out if molds or other types of indoor pollutants are affecting your child's health, keep a daily log, note when symptoms appear, whether they are worse in certain locations or on certain days. Walk through the school--and your house-- checking for mold or water damage. Tell your doctor.

Common symptoms

Include congestion, runny nose, coughing, and irritated eyes; new or worsening asthma; flu symptoms; headaches and, fatigue. Less common symptoms include fever, vomiting, nausea, nosebleeds, dizziness, memory loss, diarrhea or constipation, and changes in behavior. Not everyone has the same symptoms, and some are not bothered at all. Other symptoms may be related to exposure to chemicals produced by molds (including the volatile chemicals that cause moldy odors and chemicals known as mycotoxins), or fungicides and other chemicals applied to try to kill them. Some molds can cause illness in exposed people whose immune systems are weakened by disease or drug treatments.

Allergies and mold

All molds, dead or alive, can provoke allergic reactions in sensitive individuals. Research shows that people who live or work in very damp, moldy environments can become sensitized due to chronic exposures. Allergic individuals may also develop chronic inflammation. This inflammation then makes people susceptible to secondary bacterial infections. Damp buildings are associated with chronic upper respiratory problems.

Asthma and mold

We are in the midst of a nationwide asthma epidemic that is still not well understood, and some neighborhoods have been hit hard. If your child has asthma, mold at home or school can be an asthma "trigger". Mold can also be responsible for adult "work-related asthma" on the job. If your child encounters breathing difficulty at school, mold growth could be suspect. Recent studies have shown high levels of asthma-triggering molds in some schools. Asthma is the leading cause of school absenteeism due to chronic illness. *(Source: US Environmental Protection Agency, Managing Asthma in the School Environment)*

Monitoring schools for mold: the walk-through

A walk-through is a good way to check an entire building.

- Look at the parts of each room. Don't touch any mold you find.
- Go through the likely spots for mold growth. Pay special attention to any water stains.
- Check inside closets and boxes. Look behind furniture, especially if it is leaning against outside walls. If you **smell** a musty, earthy, or alcohol-like odor, it is often mold.
- Don't forget to look up—damp ceilings are frequent places to find mold in a school. It may be necessary for someone to remove a few ceiling tiles or a patch of wall to check for mold. Only trained individuals should do this, wearing protective gear, and controlling the site to prevent spores from spreading to new areas.

MOLD PREVENTION and CLEANUP TIPS FOR SCHOOLS

(Source: US Environmental Protection Agency, Mold Remediation in Schools and Commercial Buildings)

- Fix leaky plumbing, and stop condensation and leaks in the building envelope.
- To reduce moisture levels indoors, stop leaks, increase ventilation, and/or dehumidify the air. Schools in damp, humid climates may need to dehumidify the air year-round to prevent mold damage.
- Perform regular maintenance on heating, ventilating, and air conditioning (HVAC) equipment. Keep HVAC drip pans clean, flowing properly, and don't block the airflow with books and papers.
- Ventilate damp areas such as janitor's closets, lavatories, shower rooms, pools, and kitchens to the outside.
- Maintain low indoor humidity **year round**, below 60% relative humidity (RH), ideally 30-50%, if possible.
- Clean floors and other surfaces frequently and thoroughly, minimizing moisture; use vacuums with multi-stage filtration and a HEPA filter or high filtration disk. (HEPA or high-efficiency particulate air filters prevent very fine particles, such as mold spores, from returning to the vacuumed area from the vacuum cleaner's exhaust.)
- Clean and let dry any wet or damp areas or materials within 24-48 hours.
- Don't let building foundations stay wet. Provide drainage and slope the ground away from the foundation. Cut back trees and shrubs that are touching the walls; let sunlight and fresh air keep the building dry. For renovations and new construction, keep building materials dry; keep the site dry; and tell the architect to design the building to be easy to clean and to keep dry.
- Monitor the building for leaks and dampness; report and fix problems quickly.

Cleanup Tips

Don't use school children to remove moldy materials and don't do it yourself!

Does your school have enough custodians to stay current on repairs? If so, the custodial crew can sometimes handle small mold remediation jobs. The best way to remove mold-contaminated material depends how much mold is present and where it is. Ask the Department of Health for guidelines, or consult the resources at the end of this guide. Typical guidance includes:

Surface area. According to a National Institute for Occupational Safety and Health (NIOSH) Pilot for Dampness and Mold Assessment, a small mold growth has a total area of equal to or less than a standard-sized sheet of paper (8.5" x 11") on a surface, such a wall, floor or ceiling. A moderate mold growth has a total area of greater than a sheet of paper but less than the size of a standard interior door (32" x 80") on a surface. A large mold growth has any growth with a total area greater than the size of a standard interior door on a surface. *(Source: NIOSH Pilot Study: Dampness and Mold Assessment Tool Instructions Packet)*

Waterlogged items. Wet vacuuming or hot water extraction may work on items such as carpets or drapes. When dry, they should be dry-vacuumed, using a vacuum with multi-stage filtration and a HEPA filter or high filtration disk. Any porous items that are washed must be dried; if fast drying is not possible, the items should be thrown out. Once ceiling tiles and insulation get wet, it is easier to replace them.

Hard surfaces. Areas like walls, ceilings, and uncarpeted floors can usually be damp-wiped, either with water alone or with a solution of water and detergent. (For wood, however, use special wood cleaners.) Scrub the surface. Discard rags or other items used in the cleanup.

Trained staff or contractors? How can you tell? Only people who have been specially trained should remove damaged materials. Contain the remediation area so that spores don't spread. The protective equipment needs will vary according to how extensive the molds are, but the minimum is gloves and eye protection, plus an N-95 respirator that covers the nose and mouth and filters 95 % of the

particles in the air. These respirators are available in many hardware stores.

How do I know that mold remediation is complete?

(Source: US Environmental Protection Agency, Mold Remediation in Schools and Commercial Buildings)
Mold remediation can be considered complete when:

- The water or moisture problem is completely fixed.
- Visible mold, mold-damaged materials and moldy odors are no longer present.
- Shortly after remediation, there should be no signs of water damage or mold growth at the school.
- You or your children should be able to return to the school without experiencing health symptoms.

SCHOOL MAKES MY CHILD SICK. I THINK IT IS MOLD. NOW WHAT?

School officials. Take health complaints seriously. Timely responses and 'transparent' actions are good for the building, good for the community, help protect child health and learning, and prevent small problems from becoming large headaches.

Parents, personnel. Do you or does your child go to school healthy and come home sick? Has your child complained of "funny" smells at school? Maybe you have noticed the odors, or have seen damp areas or patches of molds during your visits. First, if you see or smell mold, get it cleaned up. Keep a log or diary of health symptoms. Talk to your family physician. To address the school environment, you will likely need a plan, information and probably more than a little persistence. Since there is no system to protect children, and no laws specifically designed to protect children or employees from molds, your next step is to influence your local school. Here are some recommended steps:

Learn more: talk to the facility director, or the health and safety committee. Call your principal or superintendent. Ask if anyone else has complained about health problems at school. Ask the school nurse how many children are using asthma inhalers. Ask if there is a plan to investigate or to fix the problem. Ask to see a copy of the results of the investigation or the work order for remediation. These are public documents.

Put it in writing. Schools get phone calls every day on every topic. Write a friendly letter to your superintendent, and keep a copy. Let him/her know that a serious child and adult health issue is at stake. Tell him/her about this guide and other resources about molds. *See Tips on our website.*

Get action. You don't need to be a mold expert to help your school. If school does not answer your letter or take necessary action, then talk to other parents or personnel. Your parent association or PTA may help; if not, form your own group to push for a healthy school. Let the new group write a letter; it can speak to the superintendent or the board of education. It is your school's job to maintain a safe school environment and to provide accessible programs and facilities.

Keep a log. Keep notes on phone calls, observations, responses from school, other communications, and you/your child's health. **If your doctor agrees that molds or other indoor hazards are affecting you or your child's health at school,** ask about "Section 504" or other accommodations laws designed to guarantee an accessible educational program or workplace.

Say thank you. If school fixes the problem, say thank you. Support the school budget.

SOURCES AND RESOURCES

American Academy of Pediatrics, Council on Environmental Health. *Pediatric Environmental Health, 3rd ed.* Etzel RA, Balk SJ, Ed. Elk Grove Village, IL: American Academy of Pediatrics, 2012.

American Federation of Teachers, *Tips for Investigating Moisture and Mold Problems in Schools.* Health consequences of mold, information on consultant work and clean up: *http://www.aft.org/pdfs/healthsafety/fs_mold0210.pdf*

(SOURCES AND RESOURCES cont.)

Ammann, Harriet M., Ph.D., D.A.B.T. Senior Toxicologist, Washington State Department of Health, Olympia, Washington, "Is Indoor Mold Contamination a Threat to Health?" *http://www.lamold.com/printables/Harriet_Ammann.pdf*

Asthma and Allergy Foundation of America, *Americans with Disabilities Act.* Guidance on requesting accommodations for individuals with asthma and allergies: *http://www.aafa.org/display.cfm?id=8&sub=16&cont=43*

California Department of Health Services, California Indoor Air Quality Program, *"Mold in My School: What Do I Do?"* Site includes a number of other mold and indoor air related links: *http://www.cal-iaq.org/phocadownload/moldinmyschool.pdf*

Centers for Disease Control, *Mold FAQs.* Information about mold exposure, health effects, mold in schools and workplaces: *http://www.cdc.gov/mold/faqs.htm#link1*

Connecticut Department of Public Health, *Indoor Air Quality Testing Should not be Their First Move.* Steps to take on addressing mold issues in schools and other buildings: *http://www.ct.gov/dph/lib/dph/environmental_health/eoha/pdf/ieq_testing_should_not_be_the_first_move_6-10.pdf*

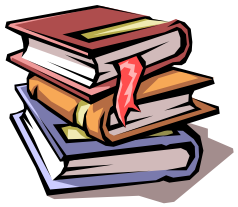
New York City Department of Health and Mental Hygiene, *Facts About Mold.* General information on mold as well as sources New Yorkers can turn to for help in identifying or responding to mold problems: *http://www.nyc.gov/html/doh/downloads/pdf/epi/mold-brochure.pdf*

New York City Department of Health and Mental Hygiene, *Guidelines on Assessment and Remediation of Fungi in Indoor Environments, 2008.* Detailed guidance on responding to indoor mold: *http://www.nyc.gov/html/doh/html/epi/moldrpt1.shtml*

Occupational Safety and Health Administration (OSHA), *Mold*. List of mold-related resources including recognition, health effects, and clean-up: *http://www.osha.gov/SLTC/molds/*

US Department of Health and Human Services, *Your Rights Under Section 504 of the Rehabilitation Act.* Basic explanation of rights for parents, in case children should require accommodations in school: *http://www.hhs.gov/ocr/civilrights/resources/factsheets/504.pdf*

US Environmental Protection Agency, *Mold Remediation in Schools and Commercial Buildings.* Detailed advice on addressing mold problems in schools: *http://www.epa.gov/mold/index.html*



Available from the Healthy Schools Network:

- *Asthma and Environment Fact Sheet for Parents and Schools*
- *Guide to School Renovation and Construction*
- *Guide to School Health and Safety Committees*
- *Guide to Protecting Vulnerable Students in "Sick" Schools*
- *Parent's Guide to School Indoor Air Quality*

Healthy Schools Network, Inc.
773 Madison Avenue • Albany, NY 12208
Tel. (518) 462-0632 • Fax (518) 462-0433

www.HealthySchools.org
www.NationalHealthySchoolsDay.org
www.CleaningforHealthySchools.org