# Mold Reduction and Removal

## In a Nutshell

Molds are part of our natural environment. Outdoors, they help break down dead leaves and other organic material. Indoors, however, mold growth should be avoided and prevented. Mold spores that land on a wet or damp spot indoors can begin growing and causing health problems. Molds produce allergens and irritants and can cause allergic reactions if inhaled or touched. Mold can cause asthma attacks, sneezing, and skin rash. Aside from the health issues, mold can also impact the structural integrity of buildings.

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## The “How To”

### Moisture Control

The best way to control mold is to control moisture levels. In order to control the mold within your home, you should remove the existing mold and fix any moisture problems present. The Mother Nature Network offers nine tips on how to prevent mold, which are listed below.

1. Identify problem areas and fix them.
2. Dry wet areas immediately.
3. Prevent moisture with proper ventilation.
4. Equip your home with mold-resistant products.
5. Monitor indoor humidity.
6. Direct exterior water away from your home.
7. Clean or repair roof gutters.
8. Improve airflow within your home.
9. Keep mold off household plants.

### Other Ways to Prevent Mold

In addition to the nine tips listed above, American Family Insurance offers a few tips to prevent mold in your home. These tips are listed below and as you can tell, the majority of them focus on the prevention of unwanted moisture.

1. Keep humidity below 60 percent by using air conditioners during humid months and dehumidifiers in damp spaces such as crawlspaces and basements.
2. Properly ventilate laundry, shower, and cooking areas and use exhaust fans that vent to the outdoors.
3. Properly fix leaky roofs, windows, and pipes.
4. Don't paint or caulk moldy surfaces, and add mold inhibitors to paint before applying to walls.
5. Use mold-killing cleaning products in bathrooms and in kitchens on surfaces that do not contact food.

### Mold Remediation

The Environmental Protection Agency offers tips and techniques for mold cleanup, a few of which are listed

below. It is necessary to note that sometimes mold issues are too great a task for the homeowner, and consultation of a mold remediation professional may be necessary.

- Fix plumbing leaks and other water problems as soon as possible.
- Scrub mold off hard surfaces with water and detergent and dry completely.
- Absorbent or porous materials, such as carpet or ceiling tiles, may need to be thrown away.
- Do not expose yourself or others to mold.

### Natural Disasters and Mold

Natural disasters can cause extensive damage to buildings and structures due to wet and humid conditions for extended periods of time. The Federal Emergency Management Agency offers resources and information regarding mold remediation. The information is intended for public facilites, but much of the information can be used in private buildings, as well.

The Environmental Protection Agency offers resources to homeowners and businesses regarding flood cleanup. Without proper water removal, mold will easily grow after the flood waters recede.

## Planning & Zoning

### Mold Remediation/Indoor Mold Inspection Laws

In 2003, the Connecticut General Assembly passed Public Act 03-220 which requires inspections to occur at all schools constructed, extended, renovated, or replaced after January 1, 2003. The Act, among other things, requires an inspection of indoor air quality, including molds, and to annually report on the air quality within schools.

In 2007, Illinois passed the Mold Remediation Registration Act, which requires that the Illinois Department of Public Health report annually any federal research and regulations related to mold cleanup and standards for mold remediation training.

### Mold Testing Laws

The Missouri Department of Health and Senior Services indicates that testing for mold should not be conducted because there is mold everywhere. Mold testing is not standardized and does not assess human health risk. Neither Missouri nor the federal government certifies any individual or firm as a mold tester.

## Dollars & Cents

### Mold Remediation Costs

The price of removing mold from your home can vary greatly depending on a few factors. Size and scope of the work necessary and the chosen remediation method will each contribute to the cost. For example, cleaning a small spot on the wall with a bleach solution will be much cheaper than removing and replacing entire sections of drywall.

### Health Costs Associated with Mold

In their 2007 article, David Mudarri and William J. Fisk examined the economic impact of mold. According to their research, of the 21.8 million people in the U.S. who have asthma, approximately 4.6 million of them developed it due to dampness and mold exposure in the home. In addition, the authors also found that the national annual average cost of asthma that is attributable to mold exposure and dampness in the home is roughly $3.5 billion.

## Measuring Success

### Mold Prevention Success

One easy way to measure whether you are adequately preventing mold from growing in your home is to frequently check where mold could grow and see if any mold is growing. If you do not have a mold problem in your house, you are probably successfully preventing the mold.

Simply doing nothing, it should be noted, may not necessarily prevent future mold. Regular examination of bathrooms, laundry rooms, and other areas with moisture and humidity needs to occur in order to catch any mold that may begin to grow or spread.

### Mold Remediation Success

A way to measure your remediation techniques is to see whether mold has returned to the treated area. Simply painting over mold will not kill it, and if the proper steps are not taken, the mold will continue to grow in any location.

## Discover More

### Mold in the News

In 2009, the Columbia Daily Tribune published a story regarding tenants who came across mold in their rental unit. The landlord was unwilling to pay the entire cost of the remediation, and the article points out that there are no mold limits written into federal law or Missouri's landlord-tenant law.

As of November 13, 2013, a school in the Tri-City School District in Illinois was not using its heaters due to the presence of mold. The mold present in the school probably would not cause the elementary students to get sick, but the district was not taking any chances.

### Mold Clean Up Resources

Organizations like the Association of Specialists in Cleaning and Restoration and the Institute for Inspection, Cleaning, and Restoration Certification can help homeowners find mold remediation professionals.

### Informational Resources

The Illinois Department of Public Health offers a fact sheet which answers many common questions regarding indoor mold.

# Case Studies

## Healthy Indoor Environments

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### Description

The Healthy Indoor Environments Unit is a non-regulatory program that deals with a variety of indoor air quality issues in a variety of environments. We provide on-site IAQ evaluations to public schools and universities, occasionally private schools and universities (as work load permits), and local and federal government owned/occupied facilities. We provide IAQ services to state owned/occupied facilities through a memorandum of understanding with the state facilities management unit in Office of Administration. The air quality issues we address include predominantly mold and moisture issues, radon, lead, other heavy metals, carbon monoxide, asbestos, formaldehyde, pest control and integrated pest management. We do not conduct on-site visits to any private sector entity, as it is not our intent to compete with private sector businesses that provide the same type of service. We will, however, provide technical assistance to private sector entities and individuals over the phone and may send them educational materials to assist them. We also no longer do IAQs at private residences, partly due to fiscal constraints and partly due to employee safety issues.

We use direct read equipment to measure the IAQ parameters of Temperature, Relative Humidity, Carbon Monoxide, and Carbon Dioxide. We may also screen for formaldehyde, ozone, mercaptans, or a variety of other contaminants, depending upon what we find during our walkthrough. We do not test for mold, nor do we recommend it, because testing for mold does not assess health risk. We contend that money is better spent finding and fixing the source of the moisture that is causing the mold growth.

We promote use of the EPA's Tools for Schools Program when dealing with schools and other large buildings. We have assisted with several Schools for Tools Implementations at the school's request. We also promote the National Center for Healthy Housing's steps of "Keep it Dry, Keep it Pest Free, Keep it Clean, Keep it Ventilated, Keep it Safe, Keep it Contaminant-Free, and Keep it Maintained" for schools and residences. The radon program is in the process of testing all Missouri public schools (and a few private) for radon. We have completed testing in approximately 3/4 of the state, and have tested at least some of the schools in every county. We also give free radon test kits to individuals who want to test their homes for radon. We also run the state Radon Poster Contest in conjunction with the EPA's National Radon Poster Contest every fall. This encourages children in public schools, aged 9-14 to make a poster to help increase awareness of radon. We

judge posters at the state level, and the top three go to the national level for judging. Several years ago Missouri had a third place national winner from Savannah, MO.

Another facet of our program that uses a different funding source is the Childhood Lead Poisoning Prevention Program (CLPPP). We have 5 risk assessors that cover the entire state, excluding St. Louis City and County, Jefferson County, Jasper County, Green County, and Kansas City proper, providing environmental risk assessments to children who have elevated venous blood lead levels. These children are followed until the environmental hazards have been adequately controlled and the blood lead level drops below 10 ug/dL.

**Cost**

We strive to be good stewards of the tax monies we receive and to run our program in a fiscally responsible manner. Our funding comes from the State Indoor Radon Grant (SIRG), which funds the radon and indoor air quality activities. The budget for this program is roughly $140,000. This funds two full time radon staff—the grant coordinator and a Health Program Representative, and partially funds four lead risk assessors who do some of the radon and IAQ work, as well as all radon detectors, equipment, supplies, and travel. We also will occasionally get a small grant to conduct a specific radon activity such as a demonstration mitigation project or a Radon Resistant New Construction (RRNC) project. These are usually small grants under $100,000. Title XIX money in the amount of $400,000 is used to fund all lead poisoning prevention activities. These funds cover salaries for one Unit Chief, two Healthy Homes Registered Nurse case managers, four full-time lead risk assessors, one half-time lead risk assessor, and one quarter-time risk assessor. It also covers travel, equipment purchases and maintenance and repair, printing costs, and supplies for the CLPPP Program.

**Lessons Learned**

Note: Excluding lead poisoning prevention, which is statutory, ours is a non-regulatory program.

1. **Education, then legislation.** We must educate the public and our elected officials regarding indoor environmental issues and their health impacts before trying to obtain any legislation on these issues. Since the introduction of our program in 2003, we have conducted extensive outreach and educational activities in a variety of venues to achieve this goal. As a result, during the 2012 fiscal year, a radon bill was introduced in the house for the first time. It was reintroduced in the 2013 fiscal year. No legislation resulted from this either time, as the state budget was a much more pressing issue both times, but this shows that we have educated many people and gotten many stakeholders, both private and public sector, in the radon community to understand the importance of having this legislation. The private-sector stakeholders were able to lobby the legislature, which resulted in buy-in by several members of the House and the resultant introduction of the bills. Attempts to reintroduce the legislation will continue. This same concept applies to any legislation regarding mold and indoor air quality issues, but is much further down the road from being introduced in the house or senate.

2. **It is possible to do more with less.** During the 2013 fiscal year we lost our Healthy Homes Funding due to Federal budget cuts. This money was previously used for county health departments to conduct lead risk

assessment activities. Approximately 15 county health departments received funds to train one or two of their Environmental Specialists in lead risk assessment and to conduct risk assessment activities in a four or five county area. We also purchased the XRFs and all risk assessment supplies for the counties. Since this money no longer exists, the responsibility has fallen to the five risk assessors at the state level. Through extensive planning and teamwork, and dividing the state into an equitable distribution of cases, we have been able to successfully "inherit" the cases from the other risk assessors at whatever stage of completion they were in and assume management of the cases. We closed a record number of cases this past fiscal year, more than doubling the number of cases closed the previous year. We have also increased the number of children who were tested for lead but happily, the percentage of children with elevated blood lead levels has decreased. We have redeveloped all our risk assessment report forms to make the report process more streamlined and less labor intensive. We still give our clients the same high-quality service that they received when there were many more risk assessors in the state. We do all of this while also conducting radon and indoor air quality activities, as we are all cross-trained to do all program activities, except the two full-time radon staff.

**3. Education, education, education.** As you are probably aware, there is a plethora of information and misinformation on the web regarding mold. This has resulted in a "mass hysteria" of sorts on the part of the unknowing general public and the people who choose to prey upon the individuals who are more vulnerable to this misinformation. We get many phone calls each day from individuals who have been told by a "certified mold specialist" that they need to get their purse, their children, and leave immediately because their house is killing them. They are somewhat in a state of panic about this. We must try to re-educate these individuals on the true health effects of mold and that it is not, in the greatest majority of cases, causing severe or irreversible health effects such as cancers, gastrointestinal, reproductive, and neurological problems. We spend lots of time talking with these individuals to convince them that mold testing will not give them any useful information needed to remediate the mold problem or treat their health effects, and explaining the proper method to use to clean up mold. The Department of Health and Senior Services has no statutory authority to require any property owner to remediate a mold problem. Authority lies at the individual jurisdiction's (usually city) level and is contingent upon what property maintenance codes the individual jurisdiction has adopted. Since many of our callers are tenants, we spend a lot of time discussing these problems in the context of the Missouri Landlord Tenant Law, and explaining to people the language to be used when discussing the problem with the local codes officials (i.e. telling them you have a moisture problem rather than a mold problem). In about 85% of the calls, we are able to "talk the person off the edge" and help them develop a rational plan of action to address the problem. In about 15% of the cases, the people hear what we say through their pre-determined filter based on what they've already learned, and we get called a wide variety of names, are told we don't know what we are talking about, and get hung up on. When you tell people what they need to hear rather than what they want to hear, sometimes you are unpopular.