

Tips on Mold Avoidance

Molds (sometimes called “moulds” or “mildew”) are a diverse subgroups of fungi, a classification which also includes mushrooms, yeasts, rusts and smuts. The term “mold” usually refers to fungi that appear as woolly or powdery growths on stored fruits or grow in damp areas of the home (e.g., bathrooms). Although molds are often viewed as food spoilers and causers of plant and human diseases, they, like bacteria, are nature’s organic decomposers in the biotic food chain. Molds are also used in the production of certain foods (e.g., bread, cheese, mushrooms), alcohol, and antibiotics.

Under optimal conditions, a single mold spore can germinate and produce a fungal colony with hundreds of thousands of spores in 4 to 9 days. To grow and thrive a fungus requires organic matter and water. The organic matter can almost be any carbon-containing material, such as plant matter, cotton, wood, hemp, wool, leather, soil, house dust or paints. Water can be in the form of standing water, condensation, dampness, or high humidity. Fungi can survive in humidity ranges from 0% to 100% but flourish in the 65% to 85% range. Most allergenic molds release their spores into the atmosphere during dry conditions (humidity below 70%); however, some allergenic fungi (certain mushrooms and Ascomycetes) prefer an environment with high humidity for spore release.

Mold allergy is similar to pollen allergy in its symptoms and treatment. However, the growth and spore dispersal of many molds are not as seasonal as that of pollen, and most molds can grow indoors as well as outdoors. People who are allergic to molds may have symptoms that persist for long periods of time, recur several times throughout the year, or are associated with specific environments where molds flourish.

Indoor Mold Spores

Mold colonies may not be large or colorful enough to be seen with the naked eye, but mold growth should be suspected in the following locations:

- Areas where “musty” or “moldy” odors are detected
- Areas with poor circulation, such as basements, closets, and other storage areas; closed-up cabins, summer homes and boat cabins.
- Locations where flooding has occurred, especially on rugs and under padding, wood floors, baseboards, paperbacked wallboard (gypsum board), wallpaper.
- Sites where constant dampness is a problem: leaky plumbing around toilets, under sinks and dishwashers; leaking roofs; poorly sealed basements; inadequately ventilated bathrooms; poorly vented clothes dryers; refrigerator drip pans; air conditioner or dehumidifier condensate reservoirs.
- Indoor house plants and aquariums.
- Stuffed furniture, pillows, mattresses, old stuffed toys, wool carpets, stored paper products (books, magazines), stored clothing and bedding.
- Anywhere dust or soil accumulates in the home. (Counts can be very high during vacuuming).

Outdoor Mold Spores

High concentrations of outdoor mold spores generally are associated with certain conditions or situations:

- The air is relatively free of mold spores in the northern latitudes during periods of freezing temperatures.
- Increased mold spore concentrations can be found in late summer and fall as annual plants die and decomposing leaves begin to pile beneath trees and shrubs.
- High concentrations of Ascomycetes fungal spores can occur during intermittent rains and for 3 to 4 days after a rainstorm.
- Soaring mushroom (toadstool) spore counts will be evident in the spring and fall, 1 to 4 days after a rainstorm.
- High mold spore counts can be found in garden areas, decomposing leaf or plant debris piles, and compost piles, as well as during lawn mowing and raking.
- Elevated mold spore counts can be found in agricultural areas, especially during harvest and around barns, silos, and baled or stacked hay.
- Mold colonies can grow on the north side of a home, on windows next to outdoor plant debris, or on outside walls that are covered by or adjacent to growing plants.

Because molds can appear to be everywhere, complete avoidance of their spores is impossible, but taking a few basic precautions can reduce exposure considerably.

Indoor Mold Spore Avoidance

Fungal colonization and fungal spore densities within the home can be decreased by altering the conditions under which fungi thrive. Precautions include:

- **Decreasing available water.** The amount of water available for mold growth can be decreased by repairing plumbing and roofing, sealing basement walls where they contact outside soil, removing plant and leaf litter next to the home, and decreasing indoor moisture. Indoor humidity can be lowered by increasing ventilation; using dehumidifiers, silica gel, or incandescent lights in small rooms (e.g., closets); air-conditioning; removing aquariums and indoor houseplants; and using home mist vaporizers only infrequently.
- **Elimination of organic material.** The organic materials on which molds grow indoors can be eliminated or decreased by:
 - Removing dust and soil frequently with standard house cleaning methods (vacuum or wet mop);
 - Removing older stuffed furniture, toys, wool rugs, cotton window coverings, and stored paper products;
 - Sealed clothing in plastic bags, encasing mattresses and pillows in vinyl, discarding older mattresses and pillows.
 - Removing indoor houseplants, wicker baskets, just and hemp products;
 - Using synthetic (e.g., vinyl, plastic) furnishings and textiles for home decoration;
 - Cleaning refrigerator drip pans, air-conditioner coils and condensate pans, and dehumidifier reservoirs frequently;
 - Changing filters in forced air systems regularly.
- **Use of fungicides.** Fungicides intended for agricultural or nursery use can be used sparingly **outside** the home with the advice of a nurseryman or agricultural agent. Unfortunately, there are no long-lasting, **safe** fungicides that can be used inside the home. Common household germicides (e.g., Lysol or Tylex) can help kill many indoor molds. Ordinary bleach, at 50% to full strength, can decontaminate basement and bathroom floors and walls as well as other areas where bleach will not damage home furnishings or paint. Special mold retardants are available as paint additives and can be purchased through retail paint suppliers.
- **Air filtration.** Air filtration, either as part of an existing forced air system or as a portable single room system, has been shown to be very effective in lowering indoor spore and pollen densities. Two recommended types include high efficiency mechanical filtration or electronic precipitation filtration, either of which can be obtained through local heating and air-conditioning suppliers.

Outdoor Mold Spore Avoidance

Exposure to high concentrations of outdoor mold spores can be reduced by:

- Avoiding piles of leaves and decaying vegetation, gardens, compost piles, and other areas associated with high mold spore counts.
- Removing dense vegetation or plant debris from areas close to outside walls or windows of the home.
- Avoid lawn mowing or raking.
- Avoiding agricultural areas (especially at harvest time), barns, stored grains, stacked hay.
- Limiting the amount of time spent outdoors during times of high mold spore concentrations; wearing a face mask if necessary.

In summary, mold-sensitive individuals can decrease their exposure to allergenic molds by:

- Reducing the humidity in the home
- Decreasing the amount of organic material in the indoor environment
- Using fungicides (sparingly and **only outdoors**) or common household germicides.
- Considering the use of high-efficiency air filtration
- Avoiding outdoor areas known to be associated with high mold spore densities
- Limiting the amount of time spent outdoors during times of high mold counts.

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