

Center For Environmental Medicine

Mold Control

1. **SPRINKLE BORAX POWDER** in mold-prone areas, like the bottom of the garbage can. Borax is a natural, effective anti-mold agent. Also add 1/2 cup to your wash load in addition to your laundry detergent.
2. Place white vinegar in shallow containers inside your cabinets to discourage musty odors. Also add vinegar (1/2 cup) to your washload.
3. **ZEPHIRAN CONCENTRATE** acts as a fungicide and a germicide. Use 1 oz. to 1 gallon of water.
4. Use **ACTIVATED CHARCOAL** to absorb odors.
5. **TURN ON THE LIGHTS**. Light discourages mold growth. Use nightlights, even in the bathroom.
6. **CIRCULATE THE AIR**. Use small electric fans or ceiling fans to discourage mold growth.
7. **Get RID OF DAMPNESS** -- Under the house the ground should be dry. Use fans or lights under the house to discourage mold. Or, have the ground under the house lined with plastic.
8. **KEEP THINGS CLEAN**. Never hang clothes in the closet after they have been worn. Mold grows on them. Keep closets, dresser drawers, bathrooms, and refrigerator as clean and dry as possible.
9. Spread out the wet shower curtain. Use a small fan to quickly dry the shower or tub area, drastically reducing mold growth. Leave light on in shower to discourage mold, too.
10. Clean **REFRIGERATOR DRIP TRAY** and rubber door gasket.
11. Take wet towels and washcloths immediately to the laundry area. Hang outside to dry if you have to postpone laundering.
12. Change pet litter daily to reduce mold growth.
13. **THROW OUT ALL THOSE DAMP PILES OF ODDS AND ENDS** you have been hoarding. (newspapers, books, magazines, old carpets, cast off furniture, dingy pillows, etc.)
14. Use **ONLY LIGHT, WASHABLE THROW RUGS** instead of heavy carpeting. Carpet is a lush haven for mold growth.
15. **AVOID WALLPAPER**. It is a haven for mold, especially in the bathroom. It also contains insecticides.
16. Old mattresses are a source of mold. Replace them. Regularly air newer mattresses to discourage musty odors.
17. **CHECK YOUR RAISPOUTS**. Extend the downspouting to carry the rainwater farther away from the house.
18. **PUT PLANTS OUTSIDE**. The soil contains mold.
19. **TSP** (Trisodium phosphate - a heavy duty cleaner available at hardware stores.)

Common Air Borne Molds

ALTERNARIA Grows on plants, plant materials, fruits, vegetables. and cereal grains.

ASPERGILLUS Common soil fungus found on damp hay, grain, fruits, and sausage. Common on wet surfaces in bathrooms and in drip pans of refrigerators and other appliances. Grows on stored food products under damp conditions.

BOTRYTIS Found in the garden during wet weather on flowers.

CEPHALOSPORIUM Common soil inhabitant. Dust in textile plants.

EPICOCCUM Found on decaying vegetative material, plant leaves and uncooked fruit.

FOMES Found on rotting wood.

FUSARIUM Found on green plants such as peas, beans, tomatoes, corn, sweet potatoes, rice and cotton.

GEOTRICHUM Commonly found in soil and milk.

HELMINTHOSPIUM Found on cereal grain plants, such as corn, wheat, oats and rye.

HORMODENDRUM Found on decomposing plants, leather rubber, cloth, paper and wood, products.

Spores are released in great numbers after rains and damp weather.

MUCOR Normal soil inhabitant. Found around barns and barnyards where it grows on animal waste.

PENICILLIUM Normally a soil inhabitant. but grows on fruits, breads, cheese and other foods. (Mutant strains are used to produce the antibiotic penicillin.)

PHOMA Grows on paper products, such as books and magazines. Also grows on certain paints and green plants.

PULLULARIA Found in soil but also grows on decaying vegetation, plants and chalking compounds.

Center For Environmental Medicine

RHIZOPUS Grows on bread, cured meats, root vegetables indoors, and on sugary food products in storage (bakery goods, fruit and sweet potatoes).

RHODOTORULA Common soil inhabitant.

SPOROBOLOMYCES Wood decay on forest trees.

STEMPHYLIUM Grows on damp paper, canvas and cotton fabric, as well as decaying plant material.

Grows on leaves and stems of vegetable crops such as tomatoes and beans.

TRICHODERMA Found mainly on decaying wood. Also grows on damp cotton and wool and may be found in damp basements.

Molds and Fungi

CRYPTOCOCCUS NEOFORMANS

Cryptococcus neoformans is the cause of the fungal infection Cryptococcosis. The inhalation of the *Cryptococcus neoformans* in particles of dust contaminated by pigeon feces, therefore, cryptococcosis is primarily an urban infection. It is most common in the central and western states. It is most likely to develop in immunologically compromised persons, particularly those with Hodgkin's disease, leukemia, lymphomas and those receiving immunosuppressives.

GEOTRICHUM CANDIDUM

Geotrichum candidum fungi is the cause of the disorder Geotrichosis, a term applied to several oral, bronchial, pharyngeal and intestinal disorders. This fungus is normally found even in healthy persons. *Geotrichum candidum* grows in soil and is often found in dairy products. *Geotrichum candidum* can cause a bronchopulmonary disorder with viscous, blood-tinged sputum and allergic asthmatic reactions similar to allergic aspergillosis. Geotrichosis occurs most often in immunosuppressed persons and in diabetics.

ASPERGILLOSIS FUMIGATUS

Aspergillus occurs in four major forms: *Aspergilloma*, *Aspergillus fumigatus*, *Aspergillus niger*, *Aspergillois endophthalmitis*. *Aspergillus* is found worldwide, often in fermenting compost piles and damp hay. It is transmitted through inhalation of the fungal spores or the invasion of spores through a wound or other tissue injury. It is a common laboratory contaminant and is the most common cause of infections in hospitals. *Aspergillus* is normally present in the mouth and sputum. *Aspergillus* may cause infection of the ear (otomycosis), cornea (mycotic keratitis), and prosthetic heart valves (endocarditis).

ZYGOMYCETES

There are two orders of Zygomycetes that act as pathogens in humans: the MUCORALES order which contains the Mucoraceae family of genera – *Rhizopus*, *Mucor*, and *Absidia*, and the ENTOMOPHTHORALES order. *RHIZOPUS*, *MUCOR*, and *ABSIDIA* cause mucormycosis infections. Typically, the transmission of rhinocerebral mucormycosis occurs by inhalation of fungi found in soil or decaying vegetable matter. These fungi are found throughout the world. This fungi then invades the mucous membrane and blood vessel walls.

TINEA

Tinea is a fungal infection of many different kinds of the skin infections. The specific type depends on the characteristic appearance, etiologic agent and site. The Tinea fungi feed on the body's waste products of dead skin and perspiration. The fungi are highly contagious. Prevention is largely a matter of cleanliness – washing all parts of the body with soap and water, especially hairy areas and body folds, followed with thorough drying. Transmission may also occur through ingestion, trauma, and I.V. catheterization.

EPIDERMAOPHYTON FLOCCOSUM

A fungal infection of the skin involving the feet but can cause rash and itching in other body parts as well. Transmission can occur directly, through contact with infected lesions or through contact with contaminated articles, such as shoes, towels, or shower stalls. This fungus combined with *Candida albicans* and *Trichophyton* cause the Tinea infection Athlete's Foot.

TRICHOPHYTON

Trichophyton fungus is the source of several fungal infections of the skin.

Tinea Corporis – commonly called ringworm. Flat lesions on the skin at any site except the scalp, bearded skin or feet. These lesions are dry and scaly or moist and crusty. As they heal they cause the classic ring-shaped appearance.

Tinea Unguium – (Onychomycosis) an infection that typically starts at the tip of one or more toenails or fingernails (fingernail infection is less common) and produces a gradual thickening, discoloration, and crumbling of the nail eventually destroying the nail completely.

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Tinea Capitis – Characterized by small spreading papules on the scalp, causing patchy hair loss with scaling. These lesions may progress to inflamed, pus filled lesions. This infection is sometimes called Ringworm of the scalp.

MICROSPORUM FURFUR

Microsporum furfur fungus is of the Tinea family that is the cause of the chronic, superficial infection Tinea Versicolor. Tinea Versicolor typically produces raised or macular, round or oval, slightly scaly lesions on the upper trunk but may extend to the lower abdomen, neck, arm, but rarely the face. These lesions usually are tawny but may range from white patches in the dark-skinned persons to hyperpigmented (brown) patches on fair skinned persons. These areas do not tan when exposed to sunlight. Inflammation, burning or itching is possible but usually absent.

- Rhinocerebral mucormycosis produces ulceration or perforation of the nasal septum and necrosis of the nasal turbinates.
- Pulmonary mucormycosis causes gradual or sudden onset of chest pain, fever, hemoptysis and friction rub.
- Gastrointestinal mucormycosis often is associated with malnutrition, causes abdominal pain, bloody diarrhea, and eventually intestinal perforation.

RHIZOPUS

Rhizopus is the black mold found on bread. Once Rhizopus lays down a mat of hyphae on bread it pushes specialized spore bearing hyphae up in the air. Each spore can germinate to produce a new mat of hyphae creating lumps of hyphae spores that look like small black balloons.

SPOROTRIX SCHENCKII

Sporotrix schenckii is found throughout the world. It is found in soil, wood, sphagnum moss and decaying vegetation. This fungus usually enters through broken skin, (the pulmonary form through inhalation).

Sporotrix schenckii occurs in three forms:

Cutaneous lymphatic produces skin lesions, usually on the hands or fingers. Each lesion begins as a small painless subcutaneous nodule but progresses to ulcerated, swollen, crusted nodules.

Pulmonary sporotrichosis causes a productive cough, lung cavities and nodules, and the formation of a fungus ball. It is often associated with sarcoidosis and tuberculosis.