

## Mildew Prevention and Removal

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Mildew is a thin, often whitish to bluish-green growth produced by molds on many surfaces. Molds are simple plants belonging to the group known as fungi. Though molds are always present in the air, those that cause mildew only need moisture and a certain temperature in order to grow.

Molds that cause mildew to flourish in areas that are damp, warm, poorly lighted or where air is not circulated: basements, crawl spaces of houses without basements and closets. They also grow on draperies, rugs and shower curtains -- anything from which they can get enough food. This includes cellulose products such as cotton, linen, wood, paper and protein substances such as silk, leather and wool.

In addition to an unpleasant musty odor, molds and mildew cause considerable damage if permitted to grow. They discolor fabrics and sometimes eat into them until the fabrics rot and fall apart. Leather, paper and wood also become discolored and are eventually damaged by mold and mildew.

Prevention is the best mildew policy. If things are kept clean, well-ventilated and dry, your chances of having mildew are greatly lessened.

### PREVENTION

#### Keep Things Clean

Keep closets, dresser drawers, basements - any place where mildew is likely to grow - as clean as possible. Soil on articles can supply enough food for mildew to start growing when moisture and temperature are right. Greasy films, such as those that form on kitchen walls, also contain many nutrients for mildew-causing molds.

#### Get Rid of Excess Moisture

##### 1. *Remove the cause.*

The first step in mildew control is to try to control the dampness inside the home. Cooking, laundering and bathing, without adequate ventilation, adds three gallons of water to the air everyday. Dampness in any structure is caused by condensation of moisture from humid air onto cooler surfaces. Excessive moisture collection may mean that a corrective measure is needed in the attic, crawl space or basement walls. (For information, please request "Moisture Control in Homes").

##### 2. *Dry the air.*

**Mechanically.** Cool air holds less moisture than warm air. Properly-installed air-conditioning systems remove moisture from the air of the living space by taking up warm air, cooling it (removing the moisture) and circulating cool, dry air back into the room. Use dehumidifiers in areas that are not air conditioned, especially the basement. You can attach a humidistat to the unit to control the humidity. If necessary, heat the house for a short time to get rid of dampness. Then open doors and windows to let out the moisture-laden air. Use an exhaust fan to force it out. Dry air in closets and other small areas with a continuously-burning electric light (60 to 100-watt bulb). The heat from the bulb will prevent mildew if the space is not too large.

**Chemically.** Moisture-absorbing silica gel, activated alumina, anhydrous calcium sulfate and a product called "Molecular sieves" may be used to dry the air. These chemicals are not harmful to fabrics and feel dry even when saturated; they hold half their weight of water.

To use, hang cloth bags of the chemical in clothing closets. Or place open container of it in the closet - on a shelf preferably, or on the floor. See that the door is well sealed and kept closed so that moisture from

outside air will not go in. You may scatter the dry granules through layers of clothing and other articles that are to be stored in tightly-closed chests or trunks.

Another moisture-absorbing chemical is anhydrous calcium chloride. It is available in small, white granules that hold twice their weight of water. Because it liquefies as it absorbs moisture, do not let this chemical touch clothing or household textiles; it can make holes in them.

To use anhydrous calcium chloride, place the granules in a simple cup-shaped container made from nonrusting screen or waxed cardboard perforated with small holes. Support the container in an enameled pot so the liquid can drip away from the container, leaving the calcium chloride to take up more moisture. Then place the pot in the closet, preferably on the shelf, and keep the door shut tightly and sealed. One pound of calcium chloride will last from two weeks to two months, depending on the humidity. When only liquid is left, discard and start over.

### *3. Circulate the Air.*

Air movement is very important to removing moisture. When the air outside is drier than the air inside, the dry air enters, takes up excess moisture and then travels back outside. When natural breezes are not sufficient, you can use electric fans. Poorly-ventilated closets get damp and musty during continued wet weather, and articles stored in them are apt to mildew. Try to improve the air circulation by opening the closet doors or by installing a fan. In addition, hang clothes loosely so air can circulate around them. Cooking, laundering, and bathing may add three gallons of water a day to the house, which can cause the moisture build-up unless circulation is adequate. It is often necessary to use some type of exhaust fan.

### **Get Rid of Musty Odors**

Musty odors, which indicate mold growth, are sometimes noticeable in basements and shower stalls. Take special precautions to get rid of musty odors as soon as possible to prevent further objectionable and damaging mold growth. Usually musty odors disappear if the area is well heated, ventilated and dried. If odors remain, the following treatments may be necessary.

Basements. Use chlorinated lime (commonly called chloride of lime or bleaching powder) to remove musty odors in basements. Sprinkle this chemical over the floor. Leave it until all mustiness disappears, then sweep it up.

Cement and Tile. Scrub cement floors, tiled walls and bathroom floors with a very dilute solution of sodium hypochlorite or any chlorine bleach available in grocery stores. Use one-half to one cup of liquid household bleach to a gallon of water. Rinse with clear water and wipe as dry as possible.

Keep windows open until walls and floors are thoroughly dry. Aerosol sprays for cleaning and sanitizing bathroom walls are also available.

## **REMOVAL**

### **Clothing and Fabrics**

Remove mildew spots as soon as you discover them. Brush off surface growth outdoors to prevent scattering the spores in the house. Sun and air fabrics thoroughly. If any mildew spots remain, treat washable articles as described below. Dry-clean non-washable articles. Wash mildew-stained articles once with soap and water, rinse them well and dry them in the sun. If any stain remains, use one of the following bleaches:

1. Lemon juice and salt. Moisten stain with lemon juice, spread on salt and place in the sun to dry. Rinse thoroughly. Use with care on colored fabrics.

2. Perborate bleach. Mix one tablespoon sodium perborate bleach and one pint of water. Use hot water if it won't damage the fabric, otherwise use lukewarm water. Sponge or soak the stained area. Allow to remain one-half hour, then rinse. Test on colored garments first.

3. Chlorine bleach. Mix two tablespoons of liquid chlorine bleach with one quart of warm water. Sponge the stain or soak the stained area in the solution. Allow the bleach to remain on the fabric from five to 15 minutes, then rinse.

An additional soaking in weak vinegar (two tablespoons to a cup of water) will stop further bleach action. Never use a chlorine bleach on silk, wool, or Spandex fabrics. Some fabrics with wash-and-wear or other special finishes may be damaged by chlorine bleaches. Articles with such fine finishes usually have a warning label or on a hang tag attached to the garment when it is sold.

### **Upholstered Articles, Mattresses**

First, remove loose mold from outer covering by brushing. Do this outdoors if possible. Run a vacuum cleaner attachment over the surface to draw out more of the mold. Do everything conveniently possible to dry the article, such as using an electric heater. Sun and air the article to stop mold growth.

Another way to remove mildew from upholstered furniture is to wipe it with a cloth wrung out in a solution of one part denatured alcohol to one cup of water. Dry thoroughly.

Use a fungicide available in aerosol cans to get rid of musty odors and mildew. You can use vapors of paradichlorobenzene or paraformaldehyde in closed areas. Mildew that has reached the padding of cushions and mattresses must be cleaned by a storage company that has facilities for fumigation.

### **Rugs and Carpets**

To remove mildew stains sponge rugs and carpets with thick, dry soap or detergents suds and wipe clean with a damp cloth, or clean them with an electric shampoo machine.

If the problem is that of excess water (example -- flooding due to burst pipes or washer overflow) the procedure is somewhat different. Immediate action is important to keep mildew from starting up. First, determine how much water has been absorbed by the carpet. To check, raise a portion of the carpet by pulling it off the installation strips at one corner. If the pad is wet, the entire carpet and pad will have to be removed. This is necessary so the sub-floor can dry, which in many cases prevents it from buckling.

When both carpet and pad have been saturated, the best recommendation is to have a professional pick up the carpet and transport it to the plant, where it can be cleaned, deodorized and dried. Some shrinkage should be expected (one to two inches). However if the carpet backing is in good repair, it can be re-stretched to fit the room by a power stretcher.

If professional services are not available, it is possible to dry a saturated carpet at home. Using a hot water extraction unit, vacuum the carpet until no more water can be removed. Then place the carpet on a flat surface outside in the fresh air and sunshine. It is important to turn the rug or carpet upside down so that, as the carpet dries, any soil in the carpet backing or along the carpet fibers will be drawn toward the base of the carpet rather than to the surface.

Once the sub-flooring has dried, the dry pad and carpet can then be re-installed. If a musty odor is present in the padding, it is best to replace it. Do not re-install the padding, thinking that, in time the odor will disappear. Once the carpet is placed over the musty odor, the problem will only get worse, since the moisture cannot readily escape. Musty carpet can be deodorized by professional cleaners.

If only the carpet is wet, (padding and sub-flooring are dry) a hot water extraction vacuum may be sufficient to remove the water. These units can be rented in many cities from rental agencies, hardware and grocery stores. Do not attempt to use a home vacuum unless it is specifically designed as a wet vacuum.

### **Leather Goods**

To remove mildew from leather goods, wipe them with a cloth moistened with dilute alcohol (one cup denatured or rubbing alcohol to one cup water). If mildew remains, wash with thick suds made from a mild soap or detergent, saddle soap, or a soap containing germicide or fungicide, then wipe with a damp cloth and dry in an airy place. Polish leather shoes and luggage with a good wax dressing.

Shoes contaminated with fungus growth on the inside often develop unpleasant odors. You can remove this kind of mildew with low-pressure sprays specially intended for freshening shoes; these sprays are available at shoe and department stores. Use these products as directed.

### **Paper and Books**

Remove any dry, loose mold from paper with a clean, soft cloth. If mildewed paper is damp, dry it first. To dry wall paper, heat the room for several hours or even days to dry the plaster as well as the paper. Plaster should be dried slowly to prevent cracking. If the mildewed paper is washable, wipe it gently with a cloth wrung out of thick soapsuds, then with clear water. For more stubborn stains, wipe the area with a solution of one quart household bleach in one gallon of water then rinse with clear water. A commercial ink eradicator may also be useful for small stains.

If mildewed paper is unwashable, rub the wall with a commercial wallpaper cleaning dough. To avoid contrast, you will probably have to clean the entire wall.

To dry books, spread the pages out fan-wise to air. If the books are very damp, sprinkle cornstarch or talcum powder between the leaves to take up the moisture. Leave starch or powder on for several hours, then brush off.

### **Wood**

Thoroughly clean mildewed surfaces, woodwork, and other wooden parts by scrubbing them with a mild alkali, such as washing soda or trisodium phosphate (eight to 10 tablespoons to a gallon of water), or with disinfectants, such as a quaternary disinfectant or pentachlorophenate. Paint and grocery stores and janitors' supply houses sell these products under various trade names.

Rinse the wood well with clear water, and allow it to dry thoroughly, then apply a mildew-resistant paint. Mildew-resistant paints in all colors for outdoor wood surfaces are available for use in untreated paints.

If the mold has grown under the paint or varnish, remove all the paint or varnish from the stained areas, then scrub with a solution containing eight to 10 tablespoons of trisodium phosphate and one cup of household chlorine bleach to a gallon of water. Use stronger solutions if necessary. Wear rubber gloves. If the stain remains, apply oxalic acid (three tablespoons to one pint of water). Finally, rinse the surface thoroughly with clear water. Dry well before refinishing. (The acid is poisonous, so handle it carefully).

For further information, please request a copy of PA-HE-125, "Moisture Control In Homes."

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