



## House Dust Allergy

House dust allergy is common even in clean homes. House dust is a major cause of year-round runny or stuffy nose, itchy, watery eyes and sneezing for allergy sufferers. Dust can also make people with asthma experience wheezing, coughing and shortness of breath.

### **Why does house dust cause allergic reactions?**

House dust is a mixture of many substances. Its content varies from home to home, depending on the type of furniture, building materials, presence of pets, moisture and other factors. A speck of dust may contain fabric fibers, human skin particles, animal dander, microscopic creatures called mites, bacteria, parts of cockroaches, mold spores, food particles and other debris. Of these, animal dander, house dust mites and cockroaches are the most common culprits. A person may be allergic to one or more of these substances, and, if exposed to the dust, will have an allergic reaction.

### **Is dust allergy a sign of a dirty house?**

No. A dirty house can make a house dust allergy problem worse, however. Normal housekeeping procedures may not be enough to get rid of house dust allergy symptoms. This is because many of the substances in dust cannot be removed by normal cleaning procedures. For example, no matter how vigorously you dust or vacuum, you will not reduce the number of dust mites present deep within carpeting, pillows and mattresses. Vigorous cleaning methods can put more dust into the air making symptoms worse.

### **What are dust mites?**

Tiny microscopic creatures called dust mites are an important cause of allergic reactions to house dust. They belong to the family of eight-legged creatures called arachnids. This family also includes spiders, chiggers and ticks. Dust mites are hardy creatures that live well and multiply easily in warm, humid places. They prefer temperatures at or above 70 degrees Fahrenheit with a relative humidity of 75 percent to 80 percent and die when the humidity falls below 40 percent to 50 percent. They are rarely found in dry climates. As many as 10 percent of the general population and 90 percent of people with allergic asthma are sensitive to dust mites. Recent studies in the United States suggest that at least 45 percent of young people with asthma are allergic to dust mites.

People who are allergic to dust mites react to proteins in the bodies and feces of the mites. These fecal particles are found in the highest concentrations in pillows, mattresses, carpeting and upholstered furniture. They float into the air when anyone vacuums, walks on a carpet or disturbs bedding, but settle out of the air once the disturbance is over. Dust mite-allergic people who inhale these particles frequently experience allergy symptoms. In fact, a dust mite allergic patient who sleeps for eight hours every night spends one third of his life with his nose in direct contact with a pillow loaded with dust mite particles! There may be many as 19,000 dust mites in one gram of dust, but usually between 100 to 500 mites live in each gram. (A gram



is about the weight of a paper clip.) Each mite produces about 10 to 20 waste particles per day and lives for 30 days. Egg-laying females can add 25 to 30 new mites to the population during their lifetime. Mites eat particles of skin and dander, so they thrive in places where there are people. Dust mites don't bite, cannot spread diseases and usually do not live on people. They are harmful only to people who become allergic to them. While usual household insecticides have no effect on dust mites, there are ways to reduce exposure to dust mites in the home.

### **Why is mold present in house dust?**

Molds are commonly found in outdoor air. However, any house can develop a mold problem given the right conditions. You might not see it growing on the walls, but it may still be present in your home. Molds require two factors to grow indoors: (1) free moisture that can occur in the form of relative humidity above 50 percent, leakage from pipes or foundations, or any ongoing source of water; and (2) something to grow on. Molds particularly like to grow on wallboard, wood or fabrics, but will grow virtually any place if they are given a chance. Molds spread by producing spores that can become airborne. These spores end up in house dust where they grow. Dust from mold-contaminated houses can cause allergy symptoms if a mold-sensitive person inhales it.

### **Does house dust contain cockroaches?**

As unappealing as it seems, some houses do have dust that contains parts of cockroaches. This is most common in older, multifamily housing and in the southern United States where complete extermination of cockroaches is very difficult. Allergic individuals, particularly those with asthma, will tend to have increased symptoms when they go into such houses. Cockroaches require food and moisture to survive, so eliminating sources of each can help reduce exposure.

### **Is house dust allergy seasonal?**

In the United States, dust mite populations tend to peak in July and August, and their allergen levels stay high through December. Mite allergen levels are lowest in late spring. Some dust mite-sensitive people report that their symptoms get worse during the winter. That's because mite fecal particles and pieces of dead mites, both of which trigger dust mite allergy, are still present. Mold levels tend to peak during the summer months depending on where you live since some tropical areas have molds year-round. There is also evidence that cockroaches have a seasonal pattern, peaking in the late summer.

Forced-air heating systems tend to blow dust particles into the air. As they dry out over time, even more of the particles become airborne. This does not account for the seasonal pattern, however, since air blows through the same ducts during the summer when air conditioning is used. People may have fewer symptoms from house-dust exposure during the summer because they spend more time outdoors.

### **How do I know if I have house dust allergy?**

If you think you may have an allergy to house dust, consult an allergist-immunologist. To pinpoint the cause of your symptoms, the allergist may ask questions about your work and



home environments, eating habits, family medical history, frequency and severity of symptoms, exposure to pets and a variety of other questions. Your allergist may test you for allergy by doing skin tests, which involves pricking the skin or injecting it with different allergens and observing for a reaction. A positive reaction (a raised welt with redness around it) may indicate that you are allergic to that allergen. Occasionally, your allergist may order a blood test instead of the skin test to confirm the diagnosis of allergy.

### **What can I do to relieve house dust allergy symptoms?**

The three basic treatments for dust mite allergy are:

- Dust mite avoidance
- Prescription medications
- Allergy shots (immunotherapy)
- House dust avoidance works best to relieve symptoms.
- How do I avoid house dust?

Environmental control of house dust exposure is best done if you know what allergens present in your home's dust are causing the problem. Dust mites can be difficult to remove completely from your home. However, you can follow certain anti-mite procedures that will reduce mite populations and your exposure to them, thereby reducing your symptoms. Some of these procedures are difficult, and you may not need to do them all. Ask your allergist which ones will be most helpful for your situation.

### **Pay Special Attention to Bedrooms**

On average, people spend one-third of their lives in the bedroom. Studies have shown that, of all the rooms in the home, the bedroom often contains the most dust mites. Concentrate efforts in the bedroom of the dust-sensitive person.

Select non-allergic, washable bedding materials. Rather than pillows stuffed with feathers, down, kapok or foam rubber, use pillows stuffed with synthetic materials. Get special casings (plastic or rubberized fabric) that zip around mattresses, box springs and pillows. These limit your exposure to dust mite particles. Avoid bulky comforters and chenille bedspreads. Use washable blankets and spreads, and wash all bedding (including pillows without cases) every week to 10 days, using hot water.

If possible, install a room air conditioner and dehumidifier in the bedroom if the home does not have central air-conditioning. Lowering humidity reduces the number of mites, molds and cockroaches. Avoid using vaporizers or humidifiers.

Place a filter made of cheesecloth under the faceplate of the bedroom-heating vent to help prevent circulation of dust into the bedroom air and change it frequently.

Hang clothes in a closet and keep the closet door closed, or put them into dresser drawers.

Get rid of stuffed animals or use washable ones.

Never allow pets in the bedroom.

Reduce Surface Dust



Use air-conditioning to keep inside humidity at 50 percent or lower to slow the growth of dust mites and molds during warm weather months. An inexpensive hygrometer will help you monitor humidity.

Change or clean air-conditioner and furnace filters often. In some cases, your physician may recommend using a HEPA cleaner on your heating system or a portable HEPA filter unit in your bedroom. The portable units are efficient at cleaning air in their immediate vicinity, but are of limited use in large rooms. They have not been shown to be useful for patients with dust mite allergy, since the dust mite particles are not airborne.

What products are available to get rid of dust mites?

Certain chemicals kill dust mites or inactivate dust mite allergens. They are expensive, and some products can be respiratory irritants for some people. In general, their use is reserved for situations when the above measures have been tried and have failed.

Tannic acid destroys mite allergens but does not kill the mites themselves, so its effect is temporary. It can be sprayed on carpets or upholstered furniture to break down allergen from mites or cat dander. When the allergen is inactivated, it no longer causes allergy symptoms. Tannic acid works fast and is easy to use, but its effects do not last long because mites remain and allergen continues to build up. This requires frequent application of the product. Also, tannic acid may stain some carpets and upholstery so it should be tested in a non-critical area prior to widespread application.

Benzyl benzoate actually kills mites and helps remove them and their waste products from carpet. It comes as a moist powder that needs to be brushed into carpets, allowed to dry for 8 to 12 hours, and vacuumed up. The Environmental Protection Agency (EPA) has approved this product as safe for home use, and it will not usually stain carpets. Unlike tannic acid, benzyl benzoate's effect may be long lasting. After one or two initial applications, you might be able keep mites and allergy symptoms under control by using it only once or twice a year.

### **What if avoiding dust mites doesn't work for me?**

If you follow these procedures to reduce your exposure to house dust but allergy symptoms persist, your allergist may recommend other treatment methods such as medications or allergy shots. Consult your allergist to determine the most effective treatment method for you. You can gain control of your dust mite allergy and achieve relief from allergy symptoms.