

INHALANT ALLERGENS

This article contains information about many of the most important allergenic substances (allergens) that cause allergy symptoms. Allergy affecting the eyes, nose and lungs almost always results from exposure to airborne allergens. Properly performed allergy skin tests (or special blood test) will identify the specific allergens that may be the cause of an individual's allergy symptoms. Measures to eliminate or avoid exposure to allergens often result in reduced symptoms. In addition, the formulation of extracts used for immunotherapy (allergy shots) requires the precise information obtained from allergy testing. Please consult the copy of your allergy test sheet to find those allergens of potential importance for you.

House Dust Mites

Allergens found in house dust are among the most important causes of allergic rhinitis and asthma and may also be a contributing factor in atopic dermatitis. House dust contains a multitude of substances including fibers, food debris, scales of human and animal skin, bacteria, mold spores, inorganic dusts, dust mites and other insect parts. The most allergy provoking components of house dust are dust mite and pet allergens.

Dust mites are microscopic members of the spider family. They do not bite or sting humans or animals. The dust mite allergen has been identified as a digestive enzyme found in the mite fecal pellet. There are two prevalent species of dust mites found in most of the homes in the United States, *dermatophagoides pteronyssinus* and *dermatophagoides farinae*.

The Latin term for the dust mite genus is *dermatophygoides*, which means "skin eater".

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They proliferate most when the relative humidity is high. Mite concentrations are greatest in bedding, upholstered furniture and carpeting.



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Measures to reduce exposure to dust mites often result in diminished allergy symptoms. Efforts to control exposure in the bedroom are particularly helpful because so many hours are spent there. Special attention should be paid to bedding and flooring since dust mites are found in large quantities in pillows, mattresses and carpets.

There are several effective measures for reducing dust mite levels in the home environment.

- Remove dust with a cloth dampened with water or one of the commercial products for dust removal. Reduce clutter to facilitate dusting.
- Hard wood or tile is the most desirable flooring for dust control. It is very difficult to decrease dust mite infestation of carpeting; short pile carpeting and frequent vacuuming are recommended if carpet cannot be removed.
- Washable curtains and window shades are recommended. Slat blinds (Venetian) are more difficult to keep free of dust.
- Allergen-proof encasings for pillows and mattresses are effective in reducing dust mite exposure.
- Electrostatic or other high efficiency central system filters reduce airborne allergens in the home. A free-standing HEPA (high efficiency particulate air) filter unit may be effective for a single room use, usually the bedroom; however, the door to the room must be closed most of the time for effectiveness.

Dust Control of the Bedroom

1. Encase pillows in zippered, dust-proof covers or use polyester or rubber foam pillows.
2. Encase the mattress and box springs in zippered, dust-proof encasings.
3. Replace carpeting with hard surface floor material.
4. Avoid heavy curtains and Venetian blinds. Use window shades instead. If the windows are curtained, launder frequently.
5. Substitute wooden or plastic for upholstered furniture.
6. Wash blankets in hot water every two weeks. Comforters can be encased in zippered dust-proof covers.
7. "H.E.P.A." air cleaners remove airborne dust particles. Central electrostatic air filters are helpful. Air conditioning can prevent the high heat and humidity that stimulates mite growth.
8. Avoid wall pennants, macramé hangings and other dust collectors.
9. Clean drawers and closets with a damp cloth.
10. If using a humidifier in the winter, avoid overhumidification. Mites grow best at 75-80% relative humidity and cannot live at under 50% humidity.

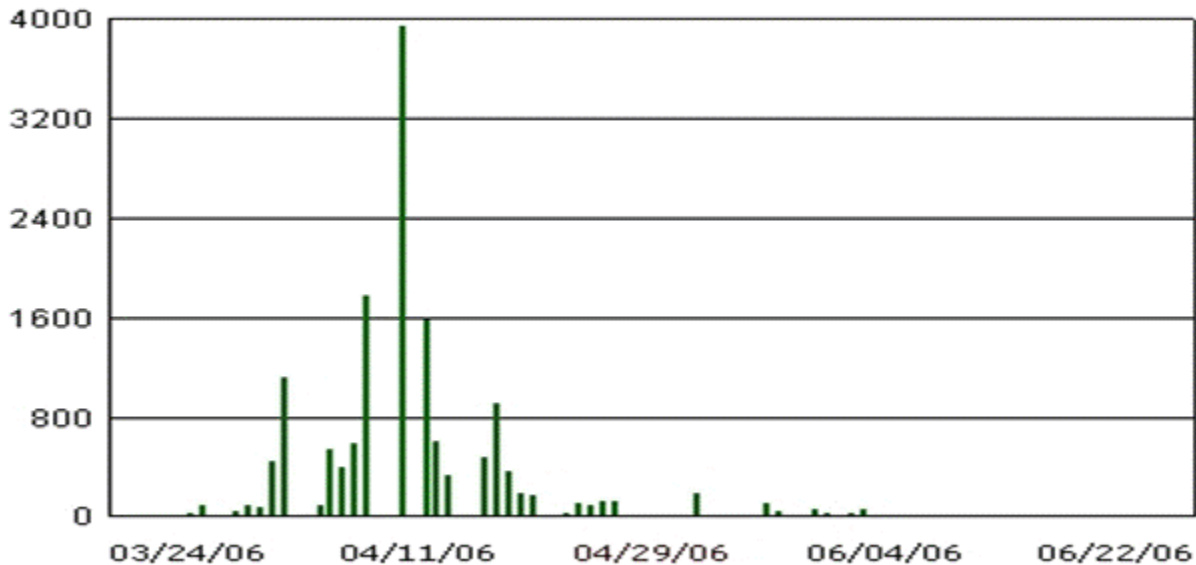


Pollens

Many plants reproduce by fertilization. Their flowers form grains of pollen which are the male spores of seed plants involved in plant reproduction. Plants fertilized primarily by air-borne transport of pollen are the cause of allergy in susceptible individuals. Pollen grains are microscopic in size and are transported between plants either by insects or by the wind. Plants producing beautiful flowers are typically pollinated by insects and do not commonly cause allergy. The pollens most often responsible for respiratory allergy come from plants that have inconspicuous flowers. They release large amounts of light pollen into the air which may be carried by the wind for miles. The plants most commonly causing respiratory allergy are trees, grasses, and weeds.

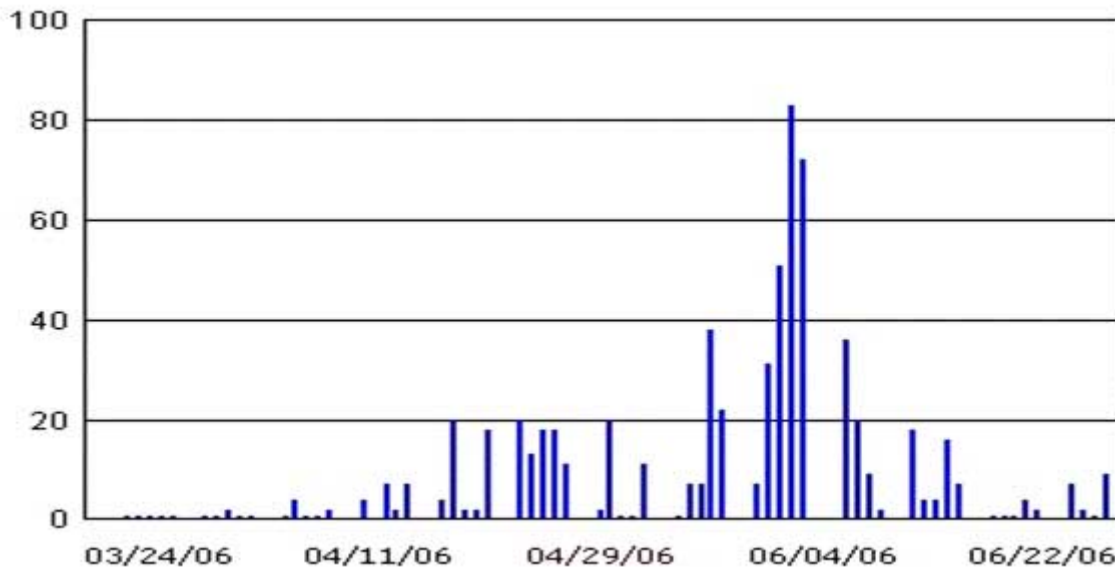
POLLEN SEASONS			
<u>Early Spring</u>	<u>Late Spring</u>	<u>Summer</u>	<u>Fall</u>
<u>Trees</u>	<u>Trees</u>	<u>Weeds</u>	<u>Weeds</u>
Cedar	Oak	Plantain	Ragweed
Elm	Walnut	Sorrel	Cocklebur
Maple	Hickory	Pigweed	Marsh Elder
Sycamore	<u>Grasses*</u>	Lambs Quarters	Sorrel
Cottonwood	Bermuda		
Birch	Blue		
Mulberry	Fescue		
Ash	Rye		
	Orchard		
	Timothy		
	<u>Weeds</u>		
	Plantain		
	Sorrel		

Tree Pollens: Each species releases pollen for only a few weeks each spring. Some trees start pollinating as early as late February (Cedar, Juniper, Elm, and Maple) and others do not complete pollination until early June (Oak, Walnut and Hickory). The total “season” for tree pollen is a little over three months. Tree pollens may be carried by the wind for miles.



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Grass Pollens: In our area grass starts to pollinate in May and continues through the summer. The most intense pollination is usually during the last two weeks in May and the first week in June. From mid-July to the end of summer there is much less grass pollen in the air. Grass pollen comes mostly from unmown grass; it makes little difference which variety is in your lawn.



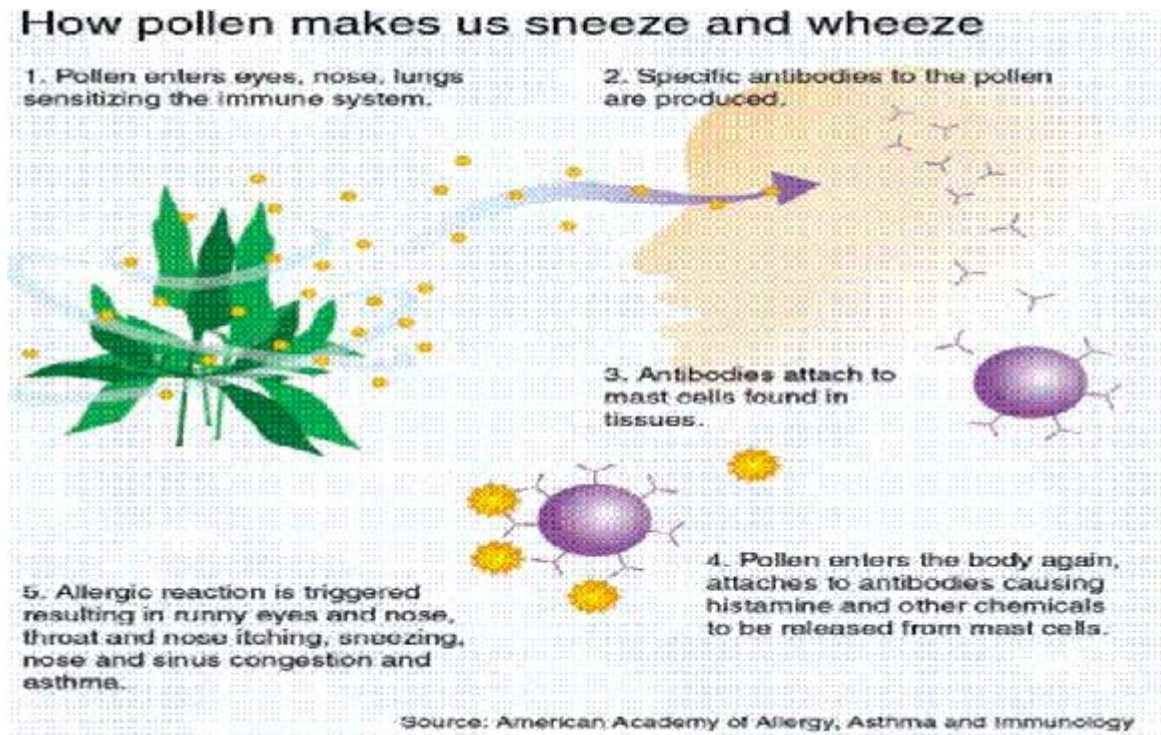
Sorrel (dock): Sorrel starts pollinating in May about the same time as the grasses and continues to pollinate until late August or early September.

Plantain: This very common broad-leaf lawn weed pollinates in June, July, and August.

Pigweed (amaranth): This weed pollinates in the Midwest during July and August so that sensitivity to it may cause symptoms prior to and overlapping the ragweed pollen season.

Lamb Quarters: Lambs quarters pollinates from mid-summer through September. The weed is common but the amount of pollen it sheds is modest.

Ragweed: Ragweed is the most common cause of pollen allergy. Two varieties, giant and dwarf, are prevalent in the Midwest. These pollens start to appear shortly after the first week in August, by the fifteenth of the month there is usually enough ragweed pollen in the air to trouble sensitive patients. Ragweed pollination continues until there is a killing frost, usually in late October or early November. Once pollen induced allergy symptoms become intense a small amount of pollen is sufficient to keep many patients uncomfortable.



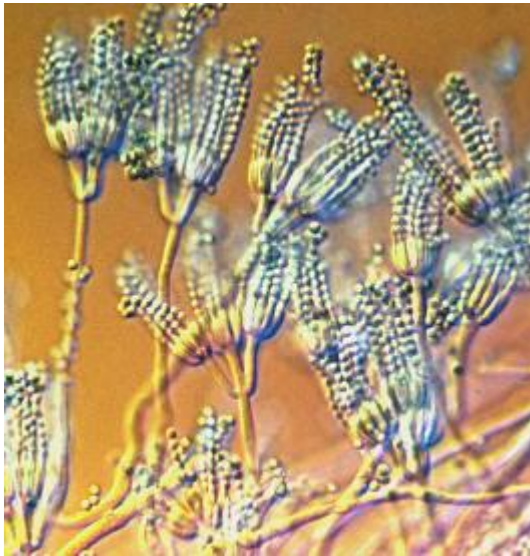
During the pollen seasons home and automobile windows should be kept closed to reduce pollen exposure. Air-conditioning should be used for cooling but not window fans or attic fans. A mask may be helpful during grass cutting. When symptoms are troublesome, limit outdoor activities.

MOLDS

Mold is a low form of plant life that propagates by forming spores that become airborne. Mold spores are known to trigger asthma and allergic rhinitis in some patients. Mold (fungus, mildew, rusts, smuts, yeast, etc.) grows on the surface of the soil, plant leaves, grains, paper, damp walls, old leather, in the refrigerator, shower stall, etc.

Generally there is a high concentration of spores during damp weather, and in the autumn when the leaves are falling and annual vegetation decays. Some forms of mold flourish particularly well in a July and August which are humid months even though there may be less rain than during other months. In this region, mold spores are in the outdoor air throughout the year. There are fewer spores in the air during the cold months, particularly when the weather is dry. The greatest concentration of mold spores in the outdoor air occurs during the early spring and again in the autumn but the mold spore counts remain high all summer in our area. The spore concentration varies greatly from day to day depending on daily weather conditions. The number of mold spores in the air is usually far greater than pollen grains. Air samples contain the spores of many different molds. An individual person may be allergic to one or to many different molds.

Measures may be undertaken to minimize indoor mold contamination. These include avoiding storage of old paper products, repairing leaky basement walls or plumbing and the use of Lysol or other commercially available fungicides. Be sure to read directions carefully. Pillows, including foam rubber, can sustain mold growth. For avoidance of mold spores from pillow use polyester (Dacron) or cover pillows in allergen proof encasing. Mold growth may occur in free-standing cold-air vaporizers; their use is discouraged except for very limited periods and with thorough cleaning after each use. Central humidifiers that do not contain a reservoir of water are acceptable but the humidity in the house should not be increased to a level above 45%. Air conditioners and dehumidifiers should also be checked regularly for mold growth. A damp, sweaty basement can be improved by a dehumidifier. Mold-inhibiting paints for basements walls are available from most commercial paint stores. Gutters should be kept free of leaves and downspouts kept open and draining freely away from the foundation to minimize damp walls and basements.



Molds are present in many foods. Ingestion of mold containing foods may worsen allergy symptoms in some but not most mold sensitive patients. Only trial and observation can determine whether these foods should be avoided. Foods with high mold content include aged cheeses, fermented drinks, soy sauce, pickles and smoked meats.

Common Mold Spores

<u>Mold</u>	<u>Special Features</u>
Fusarium	Grows on plants (tomato, banana, melons, etc). Common in summer and fall and increased in damp weather.
Aspergillus	Found in basements, crawl spaces, humidifiers, decaying vegetation, stored cereals, fruits and vegetables.
Penicillium	Forms “mildew” on stored objects and found on blue cheese, camembert cheese, decaying vegetation. It is not the antibiotic penicillin.



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Phoma	“Slime mold” particularly prevalent outdoors during autumn rains.
Hormodendrum	Most common outdoor mold spore. Peak spore counts spring and fall. Levels are higher at night. Grows on leaves. Released by wind in moderately dry weather.
Alternaria	Second most common outdoor mold causing allergy. Present most during May, June, August, September and October, Released by wind in drier weather. High counts in morning or afternoon. May be found on Christmas trees.
Spondylocladium	Less common than other outdoor mold causing allergy.
Helminthosporium	Common outdoor mold spore with peak season in summer. Common in soil and released after tilling and at night. Grows on plants, especially corn, oats, and grasses.

Mold Control

General: Keep humidity low- not over 45% if possible.

Basement: Vent dryer to the outdoors. Use dehumidifier if basement is damp.

Bedroom: Encase pillows and mattresses. Check for excess window condensation.

Kitchen: Use exhaust fan to remove water vapor when cooking. Empty garbage containers frequently. Empty water pans below self-defrosting refrigerators frequently.

Bath: Use exhaust to remove excess humidity after bathing. Replace shower Curtains if mold growth is noted. Repair damaged tiles and grouting.

Outdoors: Avoid raking leaves and grass cutting. Use mask if unavoidable. Correct ground drainage problems, guttering, downspouts and tuck pointing to keep walls and basement dry.

Animals

Allergy to animals is often severe. Intermittent exposure may cause an explosive onset of symptoms while long term exposure, as occurs with a pet in the home, may result in more gradual and persistent symptoms. The animals most commonly responsible for causing allergic reactions are cats and dogs but sensitivity to rabbits, horses and pet rodents (mice, gerbils, guinea pigs) also occurs frequently.

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Surveys indicate that in the United States 28% of homes have at least one cat. It has been calculated there are approximately 50,000,000 cats in American homes. Cat allergen is so prevalent that it is impossible for someone allergic to cats to completely avoid exposure. Some cat allergen has been found in studies of public places where cats are not allowed, including shopping malls, hospital corridors and even allergists' offices, suggesting that cat allergen is spread on the clothing of people with pet cats. The primary source of this allergen is now believed to be from the cat's skin, originating from sebaceous glands (oil glands) at the base of the hair roots. Cat allergen is also derived from the cat's saliva. It is interesting that individual cats vary greatly in the amount of allergen shed but there have been no studies suggesting a difference in shedding by breed. Cat allergen in the home is very persistent. Generally it takes about 20 weeks after cat removal for cat allergen to be reduced to levels comparable to homes where there have been no cats but this reduction may take a year or even longer. Cat allergen accumulates in carpets and unfortunately steam cleaning is not effective in its removal. Allergy injections for cat allergy has been proven to reduce symptoms in patients with allergic rhinitis and reduce but not eliminate bronchial sensitivity and allergy test reactivity to cat in individuals with asthma. There has been less scientific study of dog allergy than cat allergy. Dogs kept outside are not likely to cause severe allergy symptoms. Dog allergen is found is dog dander. The lick of a dog will cause an immediate allergic skin reaction in some dog sensitive patients. Studies indicate that dog allergy may be breed specific but materials for testing dogs by breed are not commercially available to allergist. Washing to remove dog dander may be helpful but the best measure is elimination of dogs from the house.

