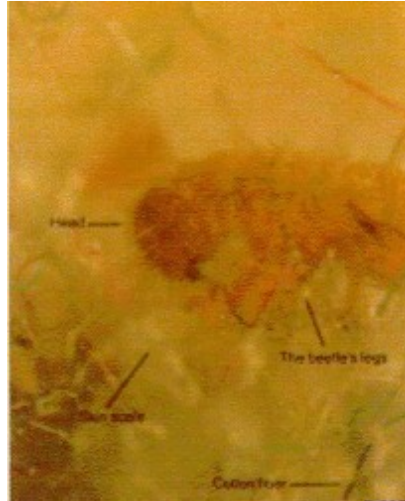
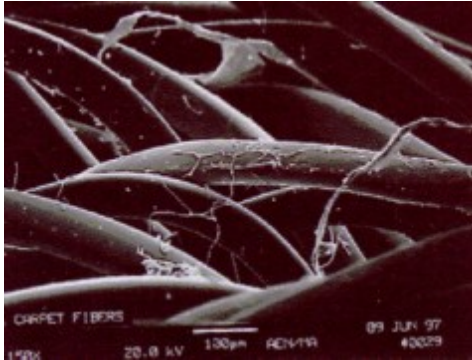


# What Else Is Living In Your Home ?



## Mould Spores

Mould hyphae wrapped around nylon carpet fibres with an aerial projection. The mould is growing on nutrients from the dust, \*not\* the carpet fibres itself. The most likely nutrient for the mould to consume contained in the dust is Carpet Beetles.

## Carpet Beetles

Carpet beetle larva in a vacuumed dust sample from a rug. It is eating a piece of food, possibly a skin scale, surrounded by coloured cotton fibres. The previous day, it was chomping on a cookie crumb.

## Dust Mite

Dust mite as it was crawling out of the carpet dust from a very contaminated apartment. Mites are normally quite shy and always hide in dust; this one was escaping from a silverfish that was devouring the mite's kin. The brown spot at abdomen is probably a faecal pellet.

## The Mighty Dust Mite. A Closer Examination of the Dust Mite

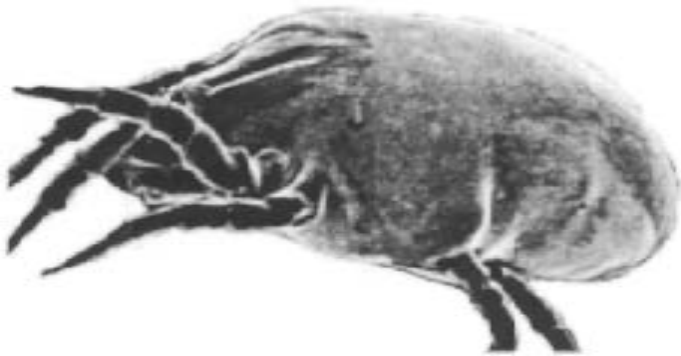
The dust mite's mouthparts are grouped in front of the body, resembling a head. Their body is oval and covered with fine striations. Their eight tiny legs have small sticky pads, which enable them to burrow deep into carpet fibers and furniture, easily resisting the pull of even the most powerful vacuum cleaners. You definitely would not want to turn over in your bed and find yourself face to face with one of these strange looking creatures. Unfortunately, that is where their populations are often the highest. The average bed can easily have over 10,000 dust mites living in it. Dust mites do not bite, sting or transmit diseases, so they pose no harm except to people who are allergic to a protein they produce. Their numbers have increased dramatically in the past 20 to 30 years, especially during the winter months, partly due to tighter homes where ventilation is limited and temperatures tend to be warmer.

Egg-laying female mites can increase the population by 25 to 30 every three weeks. They go through five stages in their life cycle; from egg, the larvae stage, then two nymphal stages, and finally the adult. The adult may also moult once.

It is the protein DER p1 in the faecal products and disintegrating body parts of these minute dust mites that has a mighty adverse effect on those who are allergic to it.

Dust mites produce about 20 pellets per day, each measuring about 10 to 24 microns in size. To put that in perspective, the diameter of the human hair measures 80-100 microns. A gram of dust can hold 250,000 of these minute droppings. They are so tiny and light that they float easily into the air when disturbed by our daily activities. Inhaling these minute particles causes allergic reactions in those who are sensitive to this protein.

Allergens from the dust mite which cause asthmatic symptoms was first suggested in 1921 but analysis of dust did not happen until 1964 when a group led by Voohorst suggested that a mite may be responsible for the dust allergen. It was soon established that the dust mite droppings contain an allergen so they became a focus over the years for their involvement with respiratory ailments. The DER p1 produced by the dust mite is thought to be the most important allergen associated with asthma. About 10% of the population are allergic to dust mite extracts.



### **Identifying the Sensitivity to Dust Mite Protein.**

House dust contains many types of debris, including fabric fibres, human skin scales, human and animal dander, bacteria, cockroach parts, mould spores, food particles and other organic and synthetic materials. About 90% of the people who are allergic to house dust extracts are allergic to dust mite extracts. Symptoms, which may come from sensitivities to the dust mite protein, include sneezing, congestion, itchy, watery eyes and persistently stuffy nose and ears. Symptoms point more Specifically to dust mites when you experience repeated sneezing shortly after awakening, symptoms get worse when beds are made or when using your vacuum cleaner, and improve when you are outside. Diagnosis, using scratch tests, etc., by an Allergist is recommended to determine which allergens cause reactions. These doctors who specialise in treating allergies can recommend a course of action specifically designed to reduce or eliminate your allergic reactions. This may include steps for reducing exposure to troublesome allergens, medical therapy and desensitisation injections (Systemic Immunotherapy - SIT). The latter may be recommended if avoidance and medical therapy fail to sufficiently reduce the allergic reaction. It involves injections of a dust mite extract starting weekly, followed by injections every six weeks for three to five years.

## **Importance of Reducing Exposure to the Dust Mite Allergen**

If your family is not sensitive to the dust mite protein DER p1, managing them may not be a high priority. For those who suffer from it, management by reducing exposure to the allergen DER p1 is quite important. Two important aspects, which need to be addressed, are the removal of environments, which are conducive to dust and dust mites and the reduction of airborne dust mite droppings and disintegrating body parts. Inhaling these minute particles causes allergic reactions in those who are sensitive to this protein.

The exposure level at which you experience allergic reactions is determined by the sum of exposure to all allergens you're sensitive to. Those who are sensitive to multiple allergens find that reduction of exposure to any of the allergens will help in their tolerance of all the allergens. It is important to realise that you do not need to completely eliminate exposure to allergens. Simply keeping your total exposure of all allergens below the threshold at which you experience reactions is all that is necessary.

### **Reducing Exposure to Allergens in Your Bed**

Due to the amount of time we spend sleeping, our bedrooms are the areas, which deserve the most attention. Simply turning over in bed or breathing near your pillow can cause you to inhale minute dust mite droppings. Using hypo-allergenic Fiberfil pillows is recommended over feather, kapok or foam since they are more easily washed. Encasing your pillows, mattress and box spring with plastic or specially coated or finely woven (pore size < 10 microns) vapour- permeable fabrics will deprive the dust mites of food and prevent many of the dust mite droppings from reaching you.

The fabrics are more comfortable since they allow perspiration vapour to be more naturally carried away from your skin. Thorough vacuuming the mattresses, especially the seams and bed frame on a regular basis is also helpful. Wash your sheets and mattress pads in soapy water at 130 degrees F every one or two weeks to kill all mites. Bedding and curtains that can withstand frequent washing should be selected. Blankets can be dry cleaned or washed frequently. Using an electric blanket for eight hours every day can reduce dust mites in beds significantly. Heating blankets in a cloths dryer for several hours also kills mites. By doing this, dry cleaning or washing of blankets can be reduced to once a year.

### **Reducing Exposure to Allergens in All Your Rooms**

Wall to wall carpet and upholstered surfaces can be reduced or replaced with hard surfaces that are easier to clean. Dust mites can not survive long on hard surfaces due to dehydration. They absorb water through contact with their environment. Dusting with a ULPA or HEPA filtered vacuum cleaner or specially treated cloths is recommended over damp mopping. The latter may increase the humidity in the house. Dust mites can't live at humidities below 50%. Using air conditioners and dehumidifiers during the summer to keep the humidity between 40% and 50% is often recommended. During winter, if using a humidifier, be careful to keep the humidity in this same range. A good humidity gauge can help monitor this. Carpets that get damp on a regular basis should be replaced with hard surfaces.

Having carpets professional cleaned with superheated steam will effectively killing dust mites in them. Carpets can be treated with sprays containing 3% tannic acid to make dust mite droppings non-Allergic. Benzyl benzoate powder, which actually kills dust mites, is also available. Reduction of contact with dust mite droppings is often preferred since these

contain toxic chemicals, which some people are sensitive to.

### **Reducing Exposure to Allergens with Air Filters**

Wearing a well fitting dust mask while vacuuming and making beds can reduce the dust mite allergens you inhale. Some allergists even recommend airing out a room really well after vacuuming to reduce the airborne particles, which are stirred up by many vacuum cleaners. Furnace mounted and portable air cleaners are available but their cost may be greater than the benefits achieved by them. They definitely are not a substitute for the preventative measures described above. The best are media type filters like those, which meet the stringent HEPA specification. Electrostatic filters are not recommended unless cleaned regularly in which case they may be as effective. Special filters can be placed on the furnace air vents leading to your rooms to help trap allergens before they can enter the room. Air cleaners which generate ozone should be avoided since they have little effect on allergens in the air and may worsen allergy symptoms since the ozone may irritate the respiratory system.

### **Importance of an ULPA or HEPA Filtered Vacuum Cleaner**

The vacuum cleaner is one of the most important tools for managing dust mites and their minute droppings. Thorough cleaning of carpets, mattresses, upholstered furniture, curtains and drapery regularly will reduce the dust mite allergens in your home. It is better to clean thoroughly once a week instead of lightly every day. In order to prevent these minute particles containing allergens from being recirculated into the air you breathe, a vacuum cleaner's filtration system must be very efficient at trapping particles at least that small.

The agitation and airflow created by your vacuum cleaner to clean you surface causes a huge number of minute dust mite dropping to be drawn into it. They can easily pass through most vacuum cleaner bags and filters and be exhausted back into the air you breathe, making it much dirtier than before. The vacuum cleaner industry is taking advantage of the development of advanced filtration media to provide much higher quality exhausted air than was possible just a few years ago. The current cutting edge in vacuum cleaner technology is in the area of improving the filtration efficiencies of vacuum cleaners. Special high filtration paper bags are available from many manufacturers which filter much better than conventional ones.

To reduce the effects on allergies and asthma caused by the allergens in dust mite droppings, look for a vacuum cleaner with an ULPA or HEPA filter. It also is very important to have a completely sealed system so all air flow must pass through the ULPA or HEPA filter to be cleaned by it. By combining high filtration paper bags, a Certified HEPA filter and completely sealed systems, vacuum cleaners can achieve extremely high filtration efficiencies of 99.97% at 0.3 micron size particles. ULPA filters have an even higher efficiency of 99.999% at 0.12-micron size particles.

### **SUMMARY**

Dust mites are microscopic creatures, which live at peace with all of us, constantly going about their outline of cleaning up our environment. Unfortunately, for about 10% of the population, the protein DER p1 in their minute droppings causes allergic reactions, which affect their respiratory systems causing allergic reactions and triggering asthmatic attacks. A visit to an doctor specialising in allergies (allergist) can confirm which allergens you are sensitive to. They are able to prescribe a course of action, which may include steps to reduce the allergen exposure, medication therapy and possibly desensitisation injections.

Key steps to reduce exposure to dust mite allergens include encasing mattresses and pillows, washing bedding and curtains regularly, controlling humidity in your home and cleaning thoroughly with a powerful high filtration vacuum cleaner. Necessarily to elimination of all exposure to the dust mite allergen.

### **WHAT DO THE EXPERTS HAVE TO SAY?**

Dr. Thomas Platts-Mills, head of Allergic Medicine at the University of Virginia Medical School, estimates that somewhere between 500,000 and a million hospital visits are made each year by patients allergic to biocontaminants such as fungi, mites, and bacteria. Dr. Michael Berry of the EPA states that "Carpeting and fabrics not cleaned and properly maintained have the potential to cause a variety of health problems inside the building environment."

### **WILL YOUR CHILDREN HAVE LIFELONG ALLERGIES BECAUSE YOU DIDN'T GET YOUR CARPETS CLEANED?**

The average person spends 90% of their time indoors. Worse, recently the EPA put into the congressional Record the fact that indoor air is more polluted than outdoor air. Americans are literally giving themselves and their children lifelong allergies with our disgusting indoor air. Every time you walk into your house, you bring lots of pollutants in with you--pollens, chemicals, soil, tar, dirt, car exhaust, cigarette smoke, and thousands of other things.

Then you shut the door, and these pollutants have nowhere to go except where gravity takes them--into your carpet! How bad are these pollutants?

Well, for example, the day after you spray for bugs, the concentration of insecticide is 10 times stronger in your carpet than it is outside where you put the poison. Can you imagine your child or grandchild crawling across a carpet that has 10 times the insecticide needed to kill bugs, putting their hands in their eyes and mouths?