THE "INFO"-HALER

TAKE IN THE INFORMATION

An easy to understand, informative newsletter for our patients of all ages from the
Allergy & Asthma Associates of Michigan, P.C.

DUST/DUST MITES

House dust allergens are probably the most common cause of running nose, sneezing, and itchy, watery eyes in allergic individuals. Dust is unique in that it is a high-powered allergen, but also a damaging irritant. As an allergen, exposure to dust causes the immune system of an individual to form IgE antibodies specific to the dust. These antibodies sit on the mast cells in the patient's nose and airways. When the patient is re-exposed to dust, the antibodies irritate the mast cells causing them to release histamine which triggers the allergic reaction. Seventy percent of all allergic and asthmatic individuals are sensitive to house dust, and for many it is their only significant allergen. As an irritant, house dust (such as drywall dust) does not cause an IgE antibody response, but rather triggers the airways of a sensitive individual to constrict provoking an asthma attack.

Dust is a mixture of living (organic) and non-living (inorganic) sources. It contains both plant and animal, as well as environmental, substances. It contains insect debris, animal dander, human skin fragments, food remnants, bacteria, fungi, dried saliva, urine from pets, pesticides, fibers of different fabrics and carpets, feathers, stuffing materials, pollens, smoke particles, and dust mites. People are usually not as allergic to house dust in general, as they are to the specific components of the dust. The most significant allergenic component is the dust mite.

Dust mites are tiny, eight legged arthropods that are closely related to ticks and spiders. They are members of the arachnoid family. Unlike spiders and ticks, they are not visible to the naked eye and can only be seen under a microscope. They do not bite, nor do they transmit disease. They cannot see and have no lungs. Their bodies consist of a shell through which they take air and water in and out by diffusion. They have little sucking pads on the ends of their legs which enable them to grip tightly to surfaces. Dust mites eat particles of dry, sloughed human skin. They prefer to live in mattresses, pillows, carpets, upholstered furniture, clothing, closets, and car seats which are all areas likely to contain human skin sheddings.

Dust mites are very hardy creatures that multiply easily in warm, humid places. They prefer temperatures at or above seventy degrees fahrenheit with humidity of seventy to eighty percent. Mites die when humidity falls below forty to fifty percent, or temperatures fall below fifty degrees fahrenheit. They are rarely found in very dry climates or at high altitudes. Several thousand dust mites can be found in a pinch of dust. Female mites can lay twenty-five to fifty eggs at a time, with a gestation period of three weeks. Mites generally live for one month, and produce ten to twenty waste particles per day. It is primarily the digestive proteins in the mite's fecal waste particles, and their decomposing bodies, that people are allergic to. Therefore, mites, both living and dead, cause allergic reactions. A single live mite will produce two hundred times its weight in fecal pellets. Once expelled, the pellets break down, incorporate into the dust of the house, and become airborne when the carpets, bedding, or furniture are disturbed. These particles are easily inhaled into a person's nose and lungs where they trigger allergic symptoms. The density of the live mite population in a person's home can determine the degree of allergy problems they will have. A dead mite, however, may even be more aggravating. When mites die, they disintegrate into fragments which are lighter than the intact mite and more likely to become airborne particularly in areas with ceiling fans, recently vacuumed areas, or areas where forced air heating systems exist. When airborne, they enter a person's respiratory tract and again cause an allergic reaction. In the U.S. the mite population thrives in July and August and allergen levels remain high throughout

the winter. People tend to experience more dust allergy symptoms in the fall and winter since they spend more time indoors then.

It has been proven that reducing exposure to dust and dust mites can dramatically reduce symptoms in allergic individuals and can cause a marked improvement in asthma. Medications and allergy injections are very effective, but environmental control is a must. Since most people spend at least eight hours of their day (one third of their life) in their bedrooms, it makes sense that the bedroom should be the first place to make changes. There are two ways to make changes: remove dust sources and set up barriers between dust sources.

To remove dust sources, eliminate all dust catchers and clutter in the home, use only washable curtains or preferably roll up window shades, remove all carpeting and replace with hardwood floors or seamless sheet vinyl, replace all upholstered furniture with wood, plastic, or metal furniture, remove all stuffed animals, and use only bedding that can be washed weekly in one hundred and forty degree water.

To set up barriers between the patient and non-removable dust sources, encase mattress, box springs, and pillows in non-vinyl zip around covers, clean room thoroughly with a damp cloth and a damp mop one to two times a week, keep bed away from heat ducts, cover heat ducts with filters or cheesecloth, replace furnace filters monthly, vacuum weekly with a HEPA (high efficiency particulate arresting) vacuum system or a central vacuum system (person with allergies should wear a mask if they plan to vacuum, then avoid the vacuumed area for at least an hour after vacuuming), keep humidity in the home below fifty percent and temperatures at sixty-eight degrees Fahrenheit, and consider having heat ducts cleaned yearly, purchasing a HEPA air cleaner, having central air conditioning installed, and using dehumidifiers as needed. Filtration and purification systems can be a tax deductible medical expense.

In the past twenty years, there has been a significant increase in the dust mite population in the U.S. Some speculate it is due to newly designed "energy efficient" homes with limited ventilation and higher indoor temperatures and humidity. Some experts believe that many new cases of asthma may be solely due to high levels of dust mite exposure, and without this exposure the person may not have developed asthma at all. These ideas, though speculation at this point, are definitely incentive to continuously work to control the environment.

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