

Allergies in the workplace

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Allergies in the workplace

There is a danger lurking in almost every house, office, shop and factory in the land. A hidden danger that has struck down hundreds of thousands of people, and is affecting more and more in ever-increasing numbers. It is often unrecognised and poorly understood, but it will touch the lives of almost every family in the country.

What is this danger, which seems to be passed over by successive Governments, year on year? Allergies. To be more specific, pest allergies.

We all know of people who are allergic to various forms of pollen (hay fever) or to foods or chemicals (urticaria or hives). But there are many other allergies affecting many thousands of us which need urgent action. Most of them are caused by pest activity, particularly insects.

"Insects cause more ill-health, and by a greater variety of mechanisms than is generally appreciated. Consequently, entomologists are more useful than is generally thought!" said Dr John Maunder of the Medical Entomology Centre at Cambridge.

An allergy is a specific immunological reaction to a normally harmless substance, one that does not bother most people. The definition of an allergy is quite broad, being described as "an altered or exaggerated susceptibility to various foreign substances or physical agents which are harmless to the majority of individuals." People who have allergies are usually sensitive to more than one substance. Many types of particles (known as allergens) cause allergic reactions, including insect and mite droppings, fragments of dead insects and mites, animal hair and dander, feathers and insect venom, along with environmental allergens such as pollen of trees, grasses, weeds, or molds which cause hay fever. There are four typical reactions to an allergen: Hay fever symptoms include sneezing, itching and weeping eyes, stuffy or running nose, and coughs.

Asthma results from a partial closing of the airways of the lungs. The main symptoms are wheezing and shortness of breath. Pollens, molds, house dust, insects (such as cockroaches) and mites, exercise, infection, weather changes and stress can trigger asthma attacks. Skin allergies, such as contact rashes like eczema, affect the skin. Contact with allergens like plants, insects and mites can produce itchy rashes and weeping blisters. Hives are small, red, itchy inflamed swellings found in clusters on the skin.

Anaphylactic shock is the most serious kind of allergic reaction and is life threatening. It affects many areas of the body at the same time. It may be caused by insect venom, certain foods, and drugs such as penicillin. Within seconds or minutes, allergic shock affects breathing and circulation. If not treated right away, breathing may stop and death may occur.

What is an allergic reaction?

Normally, the immune system functions as the body's defence against invading agents such as bacteria and viruses. In most allergic reactions, however, the immune system is responding to a false alarm. When an allergic person first comes into contact with an allergen, the immune system treats the allergen as an invader and mobilizes to attack.

The immune system does this by generating large amounts of a type of antibody (a disease-fighting protein) called immunoglobulin E, or IgE. Each IgE antibody is specific for one particular allergenic (allergy-producing) substance.

In the case of pollen allergy, the antibody is specific for each type of pollen: one type of antibody may be produced to react against oak pollen and another against rape-seed pollen, for example.

These IgE molecules are special because IgE is the only class of antibody that attaches tightly to the body's tissue and blood cells. When the allergen next encounters its specific IgE, it attaches to the antibody like a key fitting into a lock, signaling the cell to which the IgE is attached to release (and in some cases to produce) powerful inflammatory chemicals like histamine, cytokines and leukotrienes. These chemicals act on tissues in various parts of the body, such as the respiratory system, and cause the symptoms of allergy.

Many people with allergy develop asthma. The symptoms of asthma include coughing, wheezing, and shortness of breath due to a narrowing of the bronchial passages (airways) in the lungs, and to excess mucus production and inflammation. Asthma can be disabling and sometimes can be fatal. If wheezing and shortness of breath accompany allergy symptoms, it is a signal that the bronchial tubes have also become involved, indicating the need for medical attention.

Allergy sources

Following extensive newspaper coverage, many people will associate asthma and other allergic responses to pollen,

exhaust fumes and chemicals in the environment, but there is growing evidence to suggest that insects and mites play an enormous role in both the initial sensitisation and subsequent incidence attacks.

The popular image of insect allergies is that associated with the bites and stings of venomous species like bees, ants, and wasps. Over 100 deaths per year in the U.S. are attributed to fatal reactions to arthropod venoms. These accounts make hot news, although the vast majority of victims suffer little more than short-term itching, burning and swelling. More common allergic reactions attributable to insects include those caused by contacting body parts or waste products (contactant allergens) or inhaling microscopic dust particles composed of pulverised carcasses, cast skins and excreta.

What is certain is that allergies and diseases will play a far greater role in both medical case histories and in the treatments carried out by pest controllers.

Regrettably, funding for this little-understood area is slow to materialise, and only now are the first studies showing the huge dangers involved.

Dr Ken Wildey of the Central Science Laboratory puts it all into perspective:

"The industry is well aware of the insect allergens associated with, for example, cockroaches and dermestid beetles and to date there has been much focus on house dust mites as the major allergenic challenge to people in the UK.

"However, evidence is emerging that storage mites in foodstuffs might be responsible for a range of allergic responses in the consumer. Storage mites have long been established as causing serious health problems including urticaria and asthma, through dermal or respiratory contact.

"And now a recent study of cereal-based foodstuffs purchased at retail outlets has shown storage mites to be present in more than 1 in 5 of samples. Clinical trials are now underway to assess the degree of risk of consuming these mites and the early indications are that storage mites might well be responsible for some of the, so-far, unexplained food intolerances in the UK.

"Whatever the final conclusions of this study, there can be little question that consumption of the nearly 400 mites found in a 20g sample of baby food, would be totally unacceptable".

Allergies - The Risks to workers

Since most insect allergies are of the contactant and inhalant type, it would be reasonable to assume that the greatest health risk associated with insects would be to workers involved in their production, farming or elimination (ie pest controllers).

There are many records of insect-induced allergies among workers in these enterprises. Workers shelling and cleaning walnuts in Bulgaria developed eczema, dermatitis and intense itching of the skin associated with exposure to the larvae and excreta of the Indian meal moth.

Although they are not insects, mites that infest cheese, bran, dried fruits, jams and sugars are known to cause transient dermatitis among workers when body fluids are released upon crushing. Records of inhalant allergies in the workplace make up the majority of case histories. In a NIOSH survey of USDA labs that rear insects, nine orders of insects plus mites and spiders were named as sources of the inhalant allergens.

Workers exposed to the obligate beetle and weevil (Coleoptera) pests of stored grains and milled products have also been affected. Reports of skin itching, hives, rhinitis, dyspnea, and bronchial asthma are numerous and well-documented. Flies and midges (Diptera) as well as mayflies (Ephemeroptera) and caddisflies (Trichoptera) have likewise been implicated as allergenic hazards in the workplace.

Reports too numerous to mention in this article highlight the fact that insects and related arthropods pose a very real occupational health threat to workers repeatedly exposed to them. Coping with this problem can be an annoying inconvenience that has both economic and health consequences for the worker and employer.

Although good ventilation, protective clothing, gloves and masks are common-sense preventive measures (as well as being mandated by legislation), reassignment of the sensitized victim to a non-threatening work environment is often the only viable remedy to the problem.

Some statistics:

- * Experts estimate that 35 million Americans and 15 million Britons suffer as a result of allergies.
- * Allergies are responsible for 3.4 million lost U.S. work days each year, at a cost of \$639 million.
- * An estimated 2 million school days are lost each year due to allergies.
- * U.S. consumers and employers spend as much as \$2 billion per year on allergy treatment, including office visits, tests, medications and immunotherapy.
- * Allergy sufferers account for more than 8.4 million physician visits each year, and \$225 million is spent on

physician services annually.

- * An estimated 6 to 10 million Americans are allergic to cats.
- * An estimated 2 million Americans develop severe allergic reactions to insect stings. Insect stings are to blame for about 50 deaths a year. The number of deaths is thought to be higher because deaths from insect stings are not always reported.
- * More than half of all allergy sufferers fail to recognise their symptoms at first, falsely believing they have a cold or the flu.
(Figures: Better Health & Medical Network, 1996)

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