Accommodating the Allergic Employee in the Workplace

This brochure is one of a series on human resources practices and workplace accommodations for persons with disabilities edited by Susanne M. Bruyère, Ph.D., CRC, SPHR, Director, Program on Employment and Disability, School of Industrial and Labor Relations – Extension Division, Cornell University. This publication was written in 1994 and updated in February 2002 by Nellie J. Brown, M.S., CIH, Statewide Director, Workplace Health and Safety Program, New York State School of Industrial and Labor Relations, Cornell University, 237 Main St. – Suite 1200 Buffalo, New York 14203, (716) 852-4191.

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The full text of this brochure, and others in this series, can be found at: www.ilr.cornell.edu/ped/ada. Research reports relating to employment practices and policies on disability civil rights legislation, are available at: www.ilr.cornell.edu/ped/surveyresults.html

For further information, contact the Program on Employment and Disability, Cornell University, 102 ILR Extension, Ithaca, New York 14853-3901; 607/255-2906 (Voice), 607/255-2891 (TTY), or 607/255-2763 (Fax).

More information is also available from the ADA Technical Assistance Program and Regional Disability and Business Technical Assistance Centers, (800) 949-4232 (voice/TTY), www.adata.org

Defining the Allergic Employee

An allergy is an overreaction of the immune system to food, dust, pollen, or other element. The function of the immune system is to recognize and eliminate agents that are harmful to the host. When the immune system is functioning properly, the foreign agents are eliminated quickly and efficiently. Occasionally, the immune system responds adversely to environmental agents, resulting in an allergic reaction. When the immune system hyper-reacts, the response is out of proportion to, and more harmful than, the initial threat of the substance.

Hypersensitivity, or allergy, is not due to an alteration of the immune system by a foreign substance, but is an inappropriate activation of the immune system. So an allergy is a normal immune response with deleterious consequences, such as allergic rhinitis, hay fever, or contact sensitivity. In some of these cases, the response can be the source of tissue damage, so that suppressing certain immune reactions actually reduces tissue injury. Once sensitized, the affected individual becomes more sensitive to lower concentrations. This brochure will not discuss all of the various types of allergic reactions an individual might have, but several deserve mention.

One type occurs when antibodies bind to the environmental agent (antigen), which has been taken into the body or makes contact with the skin or mucous membranes. The binding reaction causes the body to release chemicals that produce dilation of the blood vessels, and release fluid, causing swelling and inflammation. The main targets of this type of reaction are the skin, producing urticaria (hives), and atopic dermatitis (rash); the respiratory system, producing rhinitis (inflamed nasal passages) and asthma; the vasculature, causing anaphylactic shock; and the gastrointestinal tract, causing food allergies. These responses are called *immediate hypersensitivity* because they usually occur quickly after reexposure to an antigen to which the individual has been sensitized.

Delayed hypersensitivity does not involve antibodies; instead specialized types of white blood cells produce an inflammatory reaction. The target for this type of reaction can be almost any organ, but the classic example is the skin, as in the case of contact dermatitis.

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Anaphylactic shock is a life-threatening allergic condition in which a reaction takes place all through the body immediately after exposure to an antigen to which the person is sensitive. The reaction causes the release of body chemicals that make the arteries and veins dilate, greatly reducing blood pressure in the arteries, and also causes a rapid loss of fluid from the blood and into the tissue spaces. The resulting shock can produce death within minutes.

Allergies to Workplace Exposures

Hypersensitivity from environmental exposures in the workplace can produce respiratory disorders, skin disorders, or anaphylactic shock. Numerous inhalants cause immune-mediated respiratory disorders, including some types of bronchial asthma, hypersensitivity pneumonitis, allergic rhinitis, and broncho-pulmonary aspergillosis. Immune system involvement has also been seen for silicosis, asbestosis, coal workers' pneumoconiosis, and possibly byssinosis. Allergic reactions of the skin include allergic contact dermatitis (red rashes, swelling, itching, and sometimes blisters).

Although almost anyone can develop an allergy, a distinct segment (15 - 20 percent) of the population is clinically atopic (unusually reactive to a variety of substances). Some individuals could have genetic differences that might predispose them to allergies to certain environmental and occupational antigens. Generally, however, the individual who develops occupational asthma is not unusually reactive. This person may not have symptoms at work, but may have a delayed response in the evening or at night. Characteristically, the individual develops the symptoms of asthma, which include wheezing, shortness of breath, cough, and sometimes chest tightness. The symptoms improve away from work, but get worse upon return to work.

Identifying the Sensitizer in the Work Environment

There is an enormous range of potential allergens in the workplace. Documented cases involve a large number of substances, even though the numbers of people affected by any one substance may be very small. Below are listed some industrial chemicals that have been documented as producing allergic reactions.

Some common industrial chemicals associated with occupational asthma include:

Platinum salts
Nickel salts
Pyrethrum (used as the bases of some insecticides)
Diisocyanates (such as toluene diisocyanate or TDI)
Ethylenediamine
Phthalic anhydrides
Colophony resins (derived from pine resin)
Exotic wood dusts
Latex

Some common contact sensitizers of the skin include:

Poison ivy	European primrose
Benzocaine	Epoxy Resins
Mercaptan	Picric acid derivatives
Ethylenediamine	Formaldehyde
Thimerosol	Beryllium
Nickel	Cadmium
Chromates	Silver
Zirconium	Metalworking fluids
Paraphenylenediamine	
Carbon-iodine hydrocarbon compounds	
Latex	

Occupational Exposure Limits and the Sensitive Worker

It would be most helpful in solving a workplace exposure problem if the specific allergen could be identified and the nature and extent of the exposure documented so that it could be addressed or reduced. Immunotoxicologists have identified many substances that have demonstrable immunotoxic effects in laboratory animals. In a few instances the effects of these substances have been observed in humans as well. Occupational experience has provided some evidence of substances' effects in humans. For the most part, however, data are sparse on the effects of general exposure to immunotoxicants in the environment, although the scientific community does recognize that the immune system is an important target organ for toxicity.

Several federal activities are designed to enhance public awareness of the hazards of toxic substances. The Occupational Health and Safety Administration (OSHA)'s Hazard Communication Standards (29 CFR 1910.1200) and Laboratory Standards (29 CFR 1910.1450) require that workers be provided with information about the known health hazards of their jobs. Since so little information is available regarding immunotoxic effects, however, the Standards do little at present to protect workers from potential allergens.

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Only a few potential sensitizers are presently regulated by OSHA:

- Cobalt metal, dust, and fume (Respiratory System)
- Formaldehyde (Skin and Respiratory System) (29 CFR 1910.1048)
- Isophorone Diisocyanate (Skin and Respiratory System)
- Phenyl Glycidyl Ether (Skin)
- Picric Acid (Skin)
- Toluene-2,4-Diisocyanate (Respiratory System)

Most scientists agree that the lack of human test data should not stop efforts to control human exposures to suspected sensitizers, but the absence of data ensures continued disagreement about suitable means and levels of control. In regulating exposure to potential allergens, the nature of the dose is significant: to prevent adverse health effects, should the exposure be considered over an 8-hour work shift, as one larger dose, or as an intermittent high dose? Some information indicates that perhaps high intermittent doses can result in sensitization or can affect individuals who are sensitive. There is evidence to indicate even a one-time exposure can produce sensitization. A problem with setting exposure limits for a immune system-related response is the challenge of developing an acceptable exposure limit for an event that does not appear to fit the standard dose-response relationship.

Accommodating the Allergic Employee

Once an employer learns that an applicant or employee is allergic to a substance in the workplace, and in need of an accommodation, the employer may be required by the Americans with Disabilities Act to provide the needed accommodation. The allergic worker may be able to respond to low levels of exposure, levels that may be lower than the relevant occupational exposure limits set by OSHA or recommended by agencies such as NIOSH or organizations such as The American Conference of Governmental Industrial Hygienists (ACGIH). Accommodating the allergic employee would therefore generally involve reducing exposure by providing specific protection for the sensitive individual, such as additional protective equipment the average (non-allergic) worker probably would not need. Protective equipment could involve the use of respirators for respiratory protection or protective clothing (such as gloves) or barrier creams for skin protection. The use of respirators would involve employer compliance with OSHA's Respiratory Protection Standard (29 CFR 1910.134), including determining whether a worker could wear a respirator.

Battery-powered respirators may enable those with pulmonary or cardiovascular problems to still use a respirator. Respirators made of silicone may enable someone to wear a respirator who has a rubber allergy.

Exposure could be reduced by the use of engineering controls such as better or more efficient use of ventilation to dilute or remove exposure; improved equipment design to reduce the production of vapors, mists, and splashes; or enclosures of equipment or processes to contain or collect any emissions. Air cleaning equipment could be used to reduce the air concentration of a potential allergen in the work area of a sensitive individual. Exposure may be reduced by scheduling changes that do not place the sensitive worker in a work area at the same time that a potential allergen is being used. (For example, avoiding the use of products such as cleaning chemicals or pesticides or paints in the sensitive person's office or work area.)

Accommodation includes having personnel aware of what to do or who to call (such as emergency telephone numbers) if the allergic person experiences an adverse reaction such as an asthmatic attack or anaphylactic shock. The allergic person's physician should be consulted as to what such measures should include (such as having antihistamines or bronchodilators available for emergency use).

There are, however, some other alternatives to consider that could reduce or altogether remove the potential for exposure to an allergen, including product or process substitution. Product substitution involves the use of an alternative formulation for the chemical or material being used and eliminates containing or using the potential allergen. For example, to avoid asthma from inhalation of persulfate boosters in hair bleaches, a hairdresser could use a bleach with a non-persulfate booster such as sodium perborate, sodium percarbonate, or magnesium carbonate. Process substitution reduces or eliminates exposure to an allergen by the use of an alternative method for doing a job. (For example, to avoid skin or respiratory allergies from the use of cold sterilization with formaldehyde solutions, sterilization using steam or ultraviolet light could be considered.

Both product and process substitution may be well worth investigating, because they may have advantages to the employer in the areas of cost savings on hazardous waste disposal, less potential liability for handling or storage of hazardous materials, reduced need for extra or special ventilation or protective materials, reduced need for extra or special ventilation or protective equipment/clothing, reduced needs for fire or other types of insurance, reduced workers' compensation costs for injuries or illnesses, etc. Moreover, substitutions may have the added advantage of

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reducing exposure for other workers who have not yet shown any adverse health effects.

For some chemical exposures, it may be possible to have medical testing to determine if an individual is likely to have an allergic reaction to an exposure or to diagnose hyper-reactive respiratory airways. To assure compliance with the ADA and to protect the individual's privacy, it is important that such testing be performed only after the employer has made a job offer and that it be performed by a physician who reports to the employer only the information as to whether the employee can perform the requirements of the job and what accommodations might be necessary to enable him/her to do so.

Resources

For information on the Americans with Disabilities Act and accommodations the following can be contacted:

ADA Regional Disability and Business Technical Assistance Center Hotline, (800) 949-4232 (voice/TTY).

Job Accommodation Network,
918 Chestnut Ridge Road, Suite 1, Morgantown, WV 26506-6080,
(800) ADA-WORK (voice/TDD).

American Conference of Governmental Industrial Hygienists (ACGIH)
1330 Kemper Meadow Drive
Cincinnati, Ohio 45240, USA
Customers/Members Phone: 513-742-2020
Administrative Phone: 513-742-6163
Fax: 513-742-3355
E-mail: mail@acgih.org
http://www.acgih.org/

Workplace Health and Safety Program, Cornell University, School of Industrial and Labor Relations, 237 Main St. – Suite 1200, Buffalo, NY 14203 (716) 852-4191

U.S. Equal Employment Opportunity Commission,
1801 L Street, NW, Washington, DC 20507, (800) 669-4000 (voice), (800) 800-3302 (TDD), or (800) 666-EEOC (publications).

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Cornell University is authorized by the National Institute on Disability and Rehabilitation Research (NIDRR) to provide information, materials, and technical assistance to individuals and entities that are covered by the Americans with Disabilities Act (ADA). However, you should be aware that NIDRR is not responsible for enforcement of the ADA. The information, materials, and/or technical assistance are intended solely as informal guidance, and are neither a determination of your legal rights or responsibilities under the Act, nor binding on any agency with enforcement responsibility under the ADA.

The Equal Employment Opportunity Commission has issued enforcement guidance which provides additional clarification of various elements of the Title I provisions under the ADA. Copies of the guidance documents are available for viewing and downloading from the EEOC web site at: http://www.eeoc.gov

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