

Working Safely with Animals: Allergy and Asthma Concerns

The VSU IACUC occupational health and safety program is designed to inform individuals who work with animals about potential zoonoses (diseases transmitted to humans from animals), personal hygiene to prevent zoonotic transmission, and other potential hazards associated with animal exposure. This information sheet is directed toward those involved in the care and use of laboratory animals who are at risk for allergic reaction and asthma.

Biology:

Animal-related asthma and allergies are exaggerated reactions of the body's immune system to animal proteins, also known as allergens. Allergens are excreted in the animals' saliva and urine, and from various glands associated with the skin. The proteins tend to be sticky and become associated with the animal's hair, scales, and/or particles of dander. The allergens are unique to each species of animal, so it is possible to be allergic to mice and not to rats and vice versa. It is also possible to be allergic to multiple species; in fact a person who is already allergic to one allergen (animal or otherwise) has a greater chance of becoming allergic to a new allergen than a person that has no allergies at all.

Risk:

The National Institute for Occupational Safety and Health reports that approximately two million workers have jobs that require constant contact with animals or animal products. About 33% of animal handlers have allergic symptoms, and approximately 10% have symptoms of animal-induced asthma. Workers at risk include laboratory animal and veterinary technicians, researchers, veterinarians, and others who have prolonged, close association with animals or their secretions or excretions. Also at risk are workers who handle animal products or associated materials such as bedding and feed. Symptoms from animal-related asthma and allergies can be severe and may require affected workers to change jobs or careers. Affected workers and their employers must bear the costs for treatment, time lost from work, and temporary or even permanent disability.

Sources of Exposure:

The animals most commonly associated with work place allergies are mice and rats, perhaps because these are the most common laboratory animals. Other animals to which allergies are seen include rabbits, cats, guinea pigs, dogs, horses, and even cattle and pigs. An individual could potentially be allergic to almost any animal.

Sources of exposure to animal allergens vary with animal species. For example, the most important allergens have been found in the urine of rats and in the urine, saliva, and pelts of guinea pigs. Rat urine contains significant amounts of a protein that has been found in dust in animal facility ventilation systems. Other important sources of allergen exposure include rabbit pelts, cat saliva and dander, dog dander, and horse serum and dander.

Inhalation is one of the most common ways for allergens to enter the body. After a period of time (often several months, but occasionally many years), workers may inhale sufficient quantities of allergens to become sensitized; that is, they develop symptoms when exposed again, even to tiny amounts of the allergen. Airborne exposures to dusts derived from animals are not currently regulated to protect workers from developing allergic problems.

Exposures to rats, mice, and rabbits have frequently been associated with the development of occupational asthma. Species other than mammals have also been reported to cause respiratory symptoms, (e.g., frogs, which are commonly used in science classes). Exposures to birds have been associated with other respiratory diseases, including hypersensitivity pneumonitis. A person who becomes allergic to one animal species may react to other species as well. Even a low exposure to these common sources of animal allergens can result in allergies, but the risk increases as the worker's exposure increases.

Prevention and Control:

The most effective way to prevent and control allergies is to minimize exposure to the allergens. Supervisors should be aware of the possibility of allergy in workers and should be aware of factors in the work place that can increase or decrease the exposure of the workers to animal allergens.

The following practices for animal facilities and laboratories may help workers reduce their exposure to animal allergens:

- If possible, use an animal species or sex that is known to be less allergenic than others.
- Perform animal manipulations within ventilated hoods or safety cabinets when possible.
- When not working in a hood or cabinet, ensure adequate ventilation in the work area.
- If working with a species to which you are allergic, consider wearing a NIOSH certified N-95 respirator when in the animal facility. The VSU Office of Environmental & Occupational Safety (OEOS) can provide information about the N-95 respirator and the required medical clearance and fit test.
- Reduce skin contact with animal products such as dander, serum, and urine by using gloves, lab coats, and approved particulate respirators with faceshields.
- Avoid wearing street clothes while working with animals.
- Leave work clothes at the workplace to avoid potential exposure problems for family members. Have them cleaned by a professional service.
- If you must take your work clothes home with you for laundering, seal them in a plastic bag for transport. Carefully remove them from the bag, immediately place them in the washing machine by themselves, and promptly launder with hot water and detergent. Carefully dispose of the plastic bag; do not reuse or recycle it.
- Keep cages and animal areas clean.
- Use absorbent pads for bedding or commercial bedding that is not dusty. (Wood shavings may or may not be dusty depending on their source and quality.)

Symptoms:

Symptoms vary among workers who have become sensitized to animals. Mild reactions include allergic rhinitis (a condition characterized by runny nose and sneezing similar to hay fever) and allergic conjunctivitis (irritation and tearing of the eyes). More serious reactions to an inhaled allergen may result in asthma symptoms such as cough, chest tightness, wheezing, or shortness of breath. Animal workers who have become sensitized may also experience contact dermatitis (a red, bumpy rash that may appear where his/her skin touches the animal).

A worker who has developed asthma symptoms from animal allergies often improves or recovers completely if he or she immediately stops being exposed to dusts containing the animal allergens. However, the longer the exposures continue, the more likely the illness will persist, even after all contact with animals has stopped.

Diagnosis and Treatment:

Those who work with animals should be aware of the signs and symptoms of animal allergies. If you have a stuffy nose or other respiratory signs and if these symptoms seem to last longer than a common cold (weeks instead of days), then you may be suffering from an allergy. If you develop suspicious symptoms when you are exposed to a certain species, you have an animal allergy. In sensitized workers, reactions often occur soon after exposure to the animal or animal product, but they may be delayed for two to eight hours or more.

If your job requires you to be exposed to something to which you know you are allergic, you should discuss with your health care provider what effect the allergy may have on your future health. Some workers are so severely affected that only a change in career will control their allergies.

If you suspect you have developed an animal allergy, you should see your health care provider. He/she can diagnose animal allergy or sensitization by using skin-prick tests, blood antibody tests, and other methods. Students may receive services from the Student Health Center.

Allergy can often be managed by a combination of medical management and work place strategies. It is important to consult with a health care provider to determine the cause of your allergy in order to manage it effectively.