

PREVENTING LABORATORY ANIMAL ALLERGY AT CMU

WARNING!

Exposure to animals or animal products in the workplace can cause asthma and allergies.

RISK OF DEVELOPING SYMPTOMS

Up to one third of laboratory animal workers have allergies to lab animals, and up to one sixth have symptomatic asthma. The skin, eyes, and respiratory system can be affected. Usually, sensitization occurs within the first three years of working with laboratory animals. People who have allergies to domestic animals are more likely to develop allergies to laboratory animals.

Some animal species are more likely than others to cause people to develop allergies. Most of the published studies have dealt with symptoms related to mammalian species, including monkeys, rats, dogs, mice, hamsters, cats, rabbits, guinea pigs, and others. Exposure to bird feathers and excrement can also cause people to develop allergic symptoms.



HOW TO PROTECT YOURSELF

Recommendations for reducing lab animal allergies are listed below. These recommendations come from the National Institute for Occupational Safety and Health (NIOSH) and published literature on this topic.

NIOSH Tips for Employees

- Manipulate animals within ventilated hoods or safety cabinets when possible.
- Avoid wearing street clothes while working with animals.
- Leave work clothes at the workplace to avoid potential exposure problems for family members.
- Keep cages and animal areas clean.
- Reduce skin contact with animal products such as dander, serum, and urine by using gloves, lab coats, and approved particulate respirators with face shields.
- Spend as little time as possible in the room where animals are kept.
- Do not eat, drink, or smoke in rooms where animals are housed.
- Moisten empty soiled cages before transport. Empty them only in the cleaning area.
- Move soiled cages to the cleaning area using a closed transport trolley. If this is not possible, drape the cages with a cover cloth or plastic sheet.

NIOSH Tips for Employers

- Modify ventilation and filtration systems:
 - o Increase the ventilation rate and humidity in the animal-housing areas.
 - o Ventilate animal-housing and -handling areas separately from the rest of the facility.
 - o Direct airflow away from workers and toward the backs of the animal cages.
 - o Install ventilated animal cage racks or filter-top animal cages.
- Decrease animal density.
- Keep cages and animal areas clean.
- Use absorbent pads for bedding. If these are not available, use corncob bedding instead of sawdust bedding.
- Use an animal species or sex that is known to be less allergenic than others.
- Provide protective equipment for animal handlers: gloves, lab coats, and approved particulate respirators with face shields.
- Provide training to workers about animal allergies and steps for risk reduction.
- Provide health monitoring and appropriate counseling and medical follow-up for workers who have become sensitized or have developed allergy symptoms.

Symptoms?

Promptly seek medical attention by calling McLaren Central Michigan-Occupational Medicine, 779-5600, or McLaren ReadyCare, 773-1166 then Contact the Office of Research Compliance to submit an Initial Medical Questionnaire (IMQ).

Asthma and Allergy in Animal Handlers

Some people develop allergies to the animals they work with or to their own pets. The incidence is quite high - some estimate that as many as 15 percent of a human population is allergic to some animal species. If you're allergic to a species that you work with in your job, it can be quite debilitating. If you suffer from asthma, working with a species to which you are allergic can be a significant health risk.

Symptoms

Allergic individuals may display any of a number of symptoms; allergic rhinitis (a condition characterized by runny nose and sneezing similar to hay fever); allergic conjunctivitis (irritation and tearing of the eyes); asthma (characterized by wheezing and shortness of breath), or contact dermatitis (a red, bumpy rash that may appear where your skin touches the animal). If you have a stuffy nose or other respiratory signs, and if it seems to last longer than a common cold (weeks instead of days) then you may very well be suffering from an allergy. If you develop suspicious symptoms whenever you're exposed to a certain species, then you're very likely to have an animal allergy.

Workers may be allergic to any animal species. The allergens are proteins that are excreted in the animals' saliva, urine, and from various glands associated with the skin. The proteins tend to be sticky and become associated with the animal's hair and with particles of dander. The allergens are unique to each species of animal, so it's possible to be allergic to mice and not to rats and vice versa. It's 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.

The animals most commonly associated with workplace allergies are mice and rats, perhaps 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.

Relative Risk

Exposure to animals is only one of many risk factors associated with asthma and allergy. Various studies have shown that the incidence of animal allergies among animal handlers may be as low as 10 percent or as high as 30 percent. While this means that the majority of animal handlers don't suffer from allergies to the animals under their care, it also means that animal handlers have an incidence of allergy and asthma about three times as high as that seen in workers who do not work with animals. Allergy is clearly an important risk associated with animals.

Prevention and Treatment

Those who work with animals should be aware of the signs and symptoms of animal allergies. If you work with animals, and if you feel you may suffer from allergy to the animals you work with, you should consult your physician for counseling and appropriate treatment. If you're a supervisor, you should be aware of the possibility of allergy in your workers, and you should be aware of factors in the workplace that can increase or decrease the exposure of your workers to animal allergens.

Allergy can often be managed by a combination of medical management and workplace strategies. It's important to consult with a physician to determine the cause of your allergy in order to manage it effectively.

The most effective way to control and prevent allergies is to minimize exposure to the allergens. If you work in an animal facility, or if you work with animals in a laboratory setting, the following practices may help reduce your exposure to animal allergens:

- When possible, perform animal manipulations in a ventilated hood or a biosafety cabinet.
- When you're not working in a hood or cabinet, make sure that the animal room or other work area is adequately ventilated and that all the air handling equipment in the room is in good order. If there is doubt, your supervisor can ask the Office of Laboratory and Field Safety (OLFS) to measure the number of air changes in the room. Animal rooms should deliver at least 10 air changes per hour.
- Don't wear your street clothes when working with animals. Wear dedicated, protective clothing.
- Launder your protective clothing at work, or have it cleaned by a professional service. Don't take your protective clothing home with you.
- Wash your hands frequently. Avoid touching your hands to your face while working in the vivarium.
- Keep cages and your work area clean.
- Use beddings that are not dusty. Most commercial beddings are not dusty. Wood shavings may be dusty or not depending on their source and quality.
- Reduce your skin contact with animals by wearing gloves and long-sleeved lab coats.

If you suffer from allergies to a species you must work with, consider wearing an approved, NIOSH certified N95 respirator when in the animal facility. Respirators are, in general, less effective than the other methods shown above and should not be used as a substitute for good workplace hygiene. (*NOTE* all university

employees who wish to wear a respirator must be involved in the Universities Respiratory Protection Program which includes a respirator fit test with OLFS).

*If your job requires you to be exposed to something to which you are allergic, you should discuss with your physician 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

Zoonosis

Several diseases can be transmitted between animals and people. These diseases are called zoonoses. Some zoonoses are of potential hazard in institutions conducting animal-research. While some zoonoses are very rare in laboratory rodents and rabbits raised for research purposes, they can be problematic for animal researchers or handlers who work with animals obtained from the wild or handled in the field. Certain zoonoses are very problematic for pregnant women or researchers or staff who are immunosuppressed. Awareness, proper and appropriate PPE use, certain vaccinations, avoidance and common sense will prevent most of these diseases.

Animal researchers and handlers should routinely maintain the cleanliness of their surroundings. Personnel handling animals should routinely wear non-latex gloves to protect against injury or self-inoculation, avoid mouth pipetting all solutions, use safety sharps, take time to give injections properly, avoid re-capping sharps, use a two-person team to give injections or do procedures on non-anesthetized animals, and use properly marked and stabilized sharps containers.

Animal researchers, animal handlers, animal facility staff should not handle animal wastes or bedding without appropriate PPE. Animal soiled PPE or clothes should not be taken home because researchers or staff can expose household members to allergens or biohazards. All laboratory personnel should not enter into research areas or vivaria unless they are authorized to do so and understand the potential health risks. All laboratory personnel should not handle research animals unless they are authorized by their Principal Investigators to do so.

Information regarding species-specific handling techniques may be obtained from the Institutional Veterinarian and animal care staff. Rabies prevention and post-bite treatment protocols do not apply to bites from animals bred for laboratory use (e.g., rats, mice, hamsters, guinea pigs, rabbits, etc.) Rabies pre-and post-exposure prophylaxis procedures may be considered for researchers and staff who work with animals in the field or which have been caught from wild sources. However, all animal researchers and staff should be cautioned that both laboratory and non-laboratory animals have the potential to cause injuries and transmit zoonotic diseases.

Sources:

Department of Labor: Occupational Safety and Health Administration, Duke University, University of Louisville, Centers for Disease Control and Prevention, National Institutes of Health Laboratory Animal Allergy Prevention Program, National Institute for Occupational Safety and Health and National Institute for Allergy and Infectious Disease