

SENSOR Occupational Lung Disease Bulletin

A project of the Massachusetts Department of Public Health's Occupational Health Surveillance Program, the Massachusetts Thoracic Society, and the Massachusetts Allergy Society

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Dear Health Care Provider:

Laboratory workers, veterinarians and others who work with animals on a regular basis may be at risk for developing allergies and work-related asthma. Because Massachusetts has a large number of research laboratories where animals are used, a substantial worker population in the Commonwealth may be at risk. Since 1992, Massachusetts SENSOR has received 8 case reports of occupational asthma related to exposure to animals in laboratory settings.

Recently, the National Institute for Occupational Safety and Health released its alert, *Preventing Asthma in Animal Handlers*. This month we reprint their recommendations along with a substantial portion of the alert for your review.

Sincerely,
Catharine M. Tumpowsky, MPH
Work-Related Asthma Surveillance Project

Asthma in Animal Handlers

(Adapted from NIOSH Publication No. 97-116 and *Occupational Airways* (newsletter of the Occupational Health & Special Projects Program at the CT Department of Public Health), April 1999)

Massachusetts Case Reports

Case 1: A 22 year-old female worked as a lab technician harvesting mice embryos for a research facility. She developed wheezing, cough, and shortness of breath four months after she began working in the job. Her symptoms began gradually. At first they bothered her only when she was in the laboratory but eventually her symptoms stayed with her throughout the day and night. The patient reported that she had asthma as a child but had not experienced any symptoms since she was in her early teens. Her doctor advised her to change jobs. She is out of her job on workers' compensation and reports that her symptoms are now less severe.

Case 2: A woman in her late twenties was diagnosed with work-related asthma after working for nine months in a laboratory for a pharmaceutical research facility. Her job duties involved taking blood samples from small animals such as mice, rats, and rabbits. Her symptoms grew worse throughout the work day and work week but improved over the weekends. Following her asthma diagnosis, she learned that she had allergies to dusts, mold, pollen, and cats. Her physician advised her to avoid working with animals

indefinitely. She was transferred to an office job within her company where she is no longer exposed to animals.

Animals or animal products such as dander, hair scales, fur, saliva and body wastes contain allergens that can cause respiratory and skin disorders. The National Institute for Occupational Safety and Health (NIOSH) reports that approximately 33% of animal handlers have allergy symptoms and about 10% have symptoms of animal-induced asthma. Occupations at risk include laboratory workers, veterinarians and veterinary technicians, horse handlers, livestock workers, garment workers (who work with pelts, fur, or textiles made from animal products such as wool, cashmere, alpaca) as well as workers who handle other animal materials such as bedding and feed.

Common Sources of Exposure

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 is also found in dust samples from ventilation systems of animal facilities. Other important sources of allergen exposure include rabbit pelts, cat saliva and dander, dog dander, and horse serum and dander.

Exposure 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-various insects, for example, and 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.

REPORT JAN-MARCH CASES NOW

By April 30th, report all occupational lung disease cases seen for the first time between January and March 1999. If you have NOT seen any cases, it is not necessary to return the report form.

Health Effects

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When animal allergens become airborne, the eyes, nose, or skin may be affected. The allergens may also be inhaled directly into the lungs. After a period of time, workers may inhale sufficient quantities of allergens to become sensitized. This period of time varies greatly from worker to worker. In a recent prospective study, symptom onset from the date of employment ranged from a mean of less than one month to 3.75 years. Animal workers who do not become allergic within 3 years of exposure are less likely to develop the problem after longer exposures. However, a study of 16 poultry workers with symptoms of asthma and rhinitis showed that the onset of symptoms can be delayed for up to 10 years.

The diagnosis of animal allergy or sensitization is made using skin-prick tests, blood antibody tests, and other methods. Symptoms vary among workers who have become sensitized to animals. Mild reactions include sneezing and runny nose. More serious reactions to inhaled allergen may result in asthma symptoms such as cough, chest tightness, wheezing, or shortness of breath. The majority of workers with animal allergy present with multiple symptoms including nasal congestion, sneezing, runny nose, and watery, itchy eyes. As many as 50% of workers with these symptoms go on to develop asthma symptoms such as recurrent episodes of coughing, wheezing, chest tightness, and difficult breathing. Nasal symptoms usually develop first; occupational asthma without nasal symptoms is uncommon. Once an individual has become sensitized to animals, allergy symptoms can occur after only a few minutes of exposure, or they may be delayed up to 8 hours or more. In severe cases, anaphylactic reactions (including shock) may develop, although rarely. A worker who had 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.

References for this article are available upon request by calling (617) 624-5632.

Copies of this alert are available by calling 800-35-NIOSH or by visiting the NIOSH website at www.cdc.gov/niosh. Refer to publication 97-116, January 1998.

******CONFERENCE ANNOUNCEMENT******

Healthy Schools: Designing, Renovating, and Maintaining our School Buildings: *A statewide conference sponsored by the Massachusetts Public Health Association, Massachusetts Healthy Schools Network, U.S. Department of Education, U.S. Environmental Protection Agency, Massachusetts Medical Society and Massachusetts Teachers Association.*

**Wednesday, June 2, 1999
8 a.m. - 5 p.m.
Clark University, Worcester, MA**

For more information, please call the Massachusetts Public Health Association at (617) 524-6696.

Recommendations for Preventing Asthma in Animal Handlers

NIOSH recommends the following measures to reduce exposures to animal allergens in the workplace and prevent animal-induced asthma and allergies:

1. Modify ventilation and filtration systems:
 - Increase the ventilation rate and humidity in animal-housing areas.
 - Ventilate animal-housing and handling areas separately from the rest of the facility.
 - Direct airflow away from workers and toward the backs of the animal cages.
 - Install ventilated animal cage racks or filter-top animal cages.
2. Perform animal manipulations within ventilated hoods or safety cabinets when possible.
3. Decrease animal density (number of animals per cubic meter or room volume),
4. Avoid wearing street clothes while working with animals. Leave work clothes at the workplace to avoid potential exposure problems for family members.
5. Keep cages and animal areas clean. Take particular care to control exposures during cleaning.
6. Use absorbent pads for bedding. If these are unavailable, use corncob bedding instead of sawdust bedding.
7. Use an animal species or sex that is known to be less allergenic than others.
8. Reduce skin contact with animal products such as dander, serum, and urine by using gloves, lab coats, and approved particulate respirators with faceshields.
9. Provide training to educate workers about animal allergies and steps for risk reduction.
10. Provide health monitoring and appropriate counseling and medical follow-up for workers who have become sensitized or have developed allergy symptoms.

Number of Lung Disease Cases Reported to MA SENSOR, March 1992-December 1998

	November 1998	December 1998	Total to Date (3/92-12/98)
Asthma	5	2	636
Silicosis	0	0	10
Asbestosis	0		118
Chemical Pneumonitis	0	0	14
Total Number of Lung Disease Reports	5	2	778