Allergy Mitigation and Personal Protective Equipment (PPE)

These guidelines provide a basis for discussion of risk when working with rodents and rabbits and specific protective measures to reduce personnel exposure to allergens.

For a protective program to be effective, personnel working with animals must understand that the recommendations in place will significantly increase their safety. As such the most important preventive strategy is education and training in proper animal interactions and handling, and proper use of protective clothing and equipment.

Personnel who are knowledgeable about the risks they face with a given species of animal and the protection offered by each device, article of clothing, and procedure are more likely to be motivated to comply with the protection program.

Human Health Concern:
One of the most common health concerns in the laboratory animal setting is work-associated allergy. The risk of developing an allergy depends on parameters such as species, facility, ventilation and the employee's base-line health status.

In humans four overlapping risk groups have been identified:
- Normal: No evidence of allergic disease;
- Atopic: Pre-existing allergic disease;
- Asymptomatic: Antibodies to animal allergens;
- Symptomatic: Clinical symptoms on exposure to allergenic animal proteins.

Symptoms of allergic reaction vary depending on the severity of the reaction and include:
- Contact urticaria with symptoms such as: redness, itchiness of skin, welts and hives;
- Allergic conjunctivitis and rhinitis with symptoms such as: sneezing, itchiness, clear nasal drainage, nasal congestion;
- Asthma with symptoms such as: coughing, wheezing, chest tightness, shortness of breath;
- Anaphylaxis with symptoms such as: generalized itching, hives, throat tightness, eye or lip swelling, difficulty in swallowing, hoarseness, shortness of breath, dizziness, fainting, nausea, vomiting, abdominal cramps, diarrhea.
Definitions:

Animal facility. Any and all buildings, rooms, areas, enclosures, or vehicles, including satellite facilities and investigator managed areas, used for animal confinement, transport, maintenance, breeding, or experiments inclusive of surgical manipulation and necropsy.

Gloves. Exam gloves – vinyl, latex or nitrile prevent contamination of skin by wet or dirty surfaces. Disposable sleeves extend from the top of the glove to the elbow. These provide additional protection if needed. Special gloves made from materials resistant to punctures, such as Kevlar and stainless steel mesh can be worn either over exam gloves or under other protective gloves to reduce bite punctures.

Hand sanitization. Alcohol-based hand rubs to reduce skin pathogens. NOTE: hand sanitization is not a substitution for hand washing.

Hand washing. The use of soap coupled with copious rinsing with free flowing water.

Mucous membrane protection. A device or combination of devices, such as a full face shield, surgical face or dust mask, form fitting goggles or approved protective glasses, that protect the mouth, nose and eyes from splash, droplet, or aerosolized contaminants.

Rodent and Rabbit Potential Health Hazards for Personnel

Allergy: Allergic skin and respiratory reactions are quite common in personnel working with laboratory animals. Hypersensitivity reactions to animal allergens are serious occupational health problems that develop in many individuals after repeated exposure. Hypersensitivity reactions include nasal congestion, rhinorrhea (runny nose), sneezing, itching of the eyes, asthma and a variety of skin manifestations such as redness, localized itching and flaking skin, and hives. Of the species used in biomedical research, the guinea pig, rabbit, mouse and rat appear to be the most allergenic. Urinary and salivary proteins from the animal’s fur, bedding, and caging are known sources of allergens.

Methods of prevention involve using facility engineering controls, administrative controls, and PPE. In practice this will include reduction of direct animal contact time, use of biological safety cabinets, filter tops on animal cages, ventilated caging rack systems, HEPA filtered bedding dump stations, and protective clothing, gloves, surgical masks, or fitted and non-fitted respirators when working with these species.

In LARC-managed facilities the PPE expectations for facility and animal room entrance are posted on the doors. Facility scrubs or a disposable gown over street clothes is required to enter animal areas. Gloves must be added if are handled and a mask must be worn if filter lids are removed from cages outside of a ventilated work station or biosafety cabinet.

Individual health concerns should be discussed with the campus physician or a personal physician. Additional PPE may be required by your health care provider. Employee health safety information is covered in detail in the Animal Handler Occupational Health and Safety Program, http://oregonstate.edu/research/ori/animal/safety.html. The use of respirators by OSU personnel must conform to the Respiratory Protection Program requirements found at http://oregonstate.edu/ehs/sd0020.
**Wounds:** Training in proper handling and restraint of rabbits and rodents is the single most effective means of protecting personnel from bites and scratches. Bite protection gloves can be helpful when working with fractious wild-caught rodents and rabbits. Wearing long sleeves while handling rabbits can help avoid scratches.

**Zoonotic Disease:** Zoonotic disease associated with LARC rodent and rabbit laboratory animal research facilities is infrequent due to the current use of Specific Pathogen Free (SPF) animals, breeding programs, sentinel health monitoring programs, approved vendor procurement, and policies for the importation of rodents and rodent products. Most zoonotic threats from rodents and rabbits come from wild caught species used for research (which necessitates special PPE requirements), the use of contaminated rodent products or the unlikely access of a feral rodent into a research animal environment. The table below lists some prevalent pathogens that are transmissible from rodent and rabbit species to humans.

<table>
<thead>
<tr>
<th>Zoonosis</th>
<th>Agent</th>
<th>Species</th>
<th>Route of Transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rat Bite Fever</td>
<td><em>Streptobacillus moniliformis</em>, <em>Spirillum</em></td>
<td>Rodents</td>
<td>Bites, fecal-oral (S. moniliformis) Bites (S. Minus): from feral rodent exposure.</td>
</tr>
<tr>
<td>Lymphocytic Choriomeningitis</td>
<td>LCM virus</td>
<td>Rodents</td>
<td>Aerosol, bites, direct contact, fecal-oral: from feral rodent exposure and rodent contaminated products.</td>
</tr>
<tr>
<td>Hantavirus pulmonary syndrome</td>
<td>Hantavirus</td>
<td>Rodents</td>
<td>Aerosol</td>
</tr>
<tr>
<td>Cheyletiellosis</td>
<td>Cheyletiella parasitivorax</td>
<td>Rabbit</td>
<td>Direct contact</td>
</tr>
<tr>
<td>Dermatophytosis (Ringworm)</td>
<td><em>Trichophyton sp.</em>, <em>Microsporum sp.</em></td>
<td>Rodent/Rabbit</td>
<td>Direct contact</td>
</tr>
<tr>
<td>Tapeworm</td>
<td><em>Hymenolepis nana</em></td>
<td>Rodents</td>
<td>Fecal-oral: from feral rodent exposure.</td>
</tr>
</tbody>
</table>

**References:**
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