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1. PURPOSE

The purpose of this program is to reduce or eliminate exposure to allergens produced by laboratory animals throughout USC. To this end, this document outlines a variety of protective measures including PPE, local exhaust ventilation, safe work practices, medical screening, and employee training.

2. DEFINITIONS/ACRONYMS

- BSC (Biological Safety Cabinets)
- DAR (Department of Animal Research)
- EH&S (Environmental Health & Safety)
- HEPA (High Efficiency Particulate Arrestance) – An air filter that removes 99.97% of airborne particles that have a size of 0.3 um or greater.
- IVC (Individual Ventilated Cages)
- LEV (Local Exhaust Ventilation) – A ventilation system that is designed to capture contaminants at their source and exhaust directly out of the workers' breathing zone.
- MUP (Mouse Urine Proteins)
- NIOSH (National Institute for Occupational Safety and Health)
- N95 Respirator – The most common type of particulate filtering facepiece respirators. A NIOSH- approved N95 respirator filters out at least 95% of airborne particulates but is not resistant to oil.
- RUP (Rat Urine Proteins)

3. SCOPE AND APPLICATION

This program applies system-wide to all locations where activities involving laboratory animals which occur for more than one hour per week. These include the Department of Animal Resources (DAR), clinical areas and any other location or operation where laboratory animals are in use.

Table 1. Animal Exposure Risk Levels

Risk Level	Animal or Bedding Contact	Near Animals or Bedding
High	• Frequent handling of animals without LEV (local exhaust ventilation) • Frequent handling or changing cages or bedding without LEV	• High density of animals
Moderate	• Frequent handling of animals with LEV • Frequent handling or changing cages or bedding with LEV • Infrequent handling or changing cages or bedding without LEV	• Unventilated, open cages • Wood-based bedding
Low	• Infrequent handling of animals with LEV	• Filter top cages • Positive pressure ventilated cages • Absorbent bedding • Non-contact bedding
Very Low		• Negative pressure ventilated cages

"Frequent" is defined as ≥ 1 hour/day; "Infrequent" is defined as < 1 hour/day
LEV = local exhaust ventilation. (Note: A laminar flow work bench is not considered LEV)

4. RESPONSIBILITIES

EH&S Biosafety Program

- Manage the overall program and oversight.
- Develop training materials and provide training.
- Manage and coordinate medical evaluation and surveillance.
- Promote overall compliance with exposure controls and other protective measures outlined in this program.

EH&S Occupational Health Program

- Maintain respirator recommendations and respirator fit testing documentation for each Employee.
- Coordinate respirator fit testing.

Supervisors and/or Principal Investigators

- Identify personnel who are covered by this program and inform them of the Requirements.
- Ensure that affected personnel are medically evaluated and fit tested as outlined in the Respiratory Protection Program.
- Provide personnel with respirators as needed during their work.
- Ensure that:
 - Affected personnel receive training, as outlined in this program
 - Training is properly documented.
- Enforce all applicable safety measures related to this program.

Employees

- Review the Laboratory Animal Allergy Prevention Program.
- Complete required training.
- Comply with all established work rules pertaining to the use of respiratory protection.

5. PROGRAM ELEMENTS**Occupational Exposure Guideline for Lab Rodent and Rabbit Allergens**

General. It is a commonly accepted practice to use 5 ng/m³ of MUP/RUP (mouse urinary proteins/rat urinary proteins) as a 30 minute short term exposure guideline for the prevention of laboratory animal allergy.

Protective Measures

Local Exhaust Ventilation (LEV). The University shall make every effort to provide adequate local exhaust ventilation for high exposure activities. All cage dumping operations shall have local exhaust ventilation. No cage dumping shall be performed without local exhaust ventilation.

Biosafety cabinets (BSCs). All horizontal or vertical hoods shall be replaced with Class II Biosafety Cabinets (BSC-II) in all rodent-handling facilities. The highest priority for BSC-II hoods shall be those spaces where cages do not have filter tops and where no hoods are currently in use. Personnel performing cage changing without a BSC-II hood shall be required to wear respiratory protection. The minimum level of respiratory protection shall be an N95 respirator.

Animal Bedding. All areas shall use corncob or anti-allergic bedding rather than wood chips to reduce the aerosolization of MUP/RUP.

Safe Work Practices. To minimize exposure to animal allergens the following safe work practices should be utilized:

- Protective clothing such as laboratory coats, disposable gowns, disposable head covering, shoe covers, and gloves should be worn to prevent skin contact.
- Procedures with animals should be performed in ventilated enclosures such as vented cage changing or dumping stations, and biosafety cabinets to capture the allergenic proteins.
- Cleanup of dust and bedding should be performed with a HEPA vacuum. Dry sweeping causes the release of bedding dust into the air, which contains the allergen proteins.
- Cage dumping (to remove the bedding from cages) and cage changing (moving rodents from dirty to clean cages) must be performed using a vented station.
- When animals are received into a research lab, procedures that can release particles into the air, such a shaving or surgical procedures must be performed in a vented enclosure.

Respiratory Protection

General. To identify work activities for which respiratory protection is required or permitted, refer to Table 2 (below). Personnel conducting activities with exposure levels greater than 5 ng/m³ MUP/RUP (30-minute, time-weighted average), as identified in Table 2, shall be required to wear respiratory protection.

Specific types of required respirators. In cases where exposure is less than 10 times the exposure guideline, a filtering facepiece N95 respirator shall be provided (at a minimum). Where exposures exceed 10 times the exposure guideline, a respirator with higher protection (e.g. full facepiece or powered air purifying respirator) will be required.

Requirements for respirator users. Covered individuals must be medically evaluated prior to wearing a respirator. Follow-up medical evaluations may be necessary based on the judgment of a qualified medical provider, or when job duties or health status change. All medical evaluations must comply with the University's Respiratory Protection program.

Table 2. Job tasks with exposures greater than 5 ng/m³ MUP/RUP and required respirator type

Job/Area/Task	Minimum type of respirator
Cage dumping with local exhaust ventilation	N95 respirator
Cage changing with local exhaust ventilation	N95 respirator
Cage changing in laminar flow hood (not BSC-II)	N95 respirator
Working in areas with high density of animals and cages without filter tops	N95 respirator
Performing lengthy experiments (>4 hours) without local exhaust ventilation or in non-BSC-II hood	N95 respirator

Cage dumping is not permitted without local exhaust ventilation. A hood or helmet PAPR may be used if the manufacturer has certified a protection factor of at least 1000.

Occupational Health Screening

General. All personnel covered by this program must receive preliminary medical evaluation through the administration of the Animal Exposure Risk Assessment (ARA). Periodic re-evaluation may be necessary for personnel who are found to be at increased risk.

Training

General. All persons covered by this program must complete Lab Animal Allergen training. Those required or permitted to wear respirators must also complete respiratory protection training as outlined in the Respiratory Protection Program.

Frequency. Training shall occur prior to the initiation work covered by this program with annual refreshers. Refreshers may be a brief summary of the information covered in initial/new employee training.

Content. At a minimum, Lab Animal Allergen training must cover the hazards of exposure to Lab Animal Allergens, including signs and symptoms of exposure, the types of work creating a risk of exposure, protective measures, and how to report concerns. The content of respirator training is indicated in the Respiratory Protection program.

Documentation. All safety training shall be appropriately documented. At a minimum, training documentation will include the time, date and length of training, a summary of the information presented, the name of the trainer, and name and job titles of those in attendance. Training records must be maintained by the employees' department.