

## University of Massachusetts/Amherst Animal Handler Occupational Health Program



Federal regulations require that institutions where vertebrate animals are used in research projects develop an Occupational Health and Safety Program (OHSP) for personnel working with research animals. The [\*Guide for the Care and Use of Laboratory Animals\*](#) (National Academy of Sciences, 1996) further defines the requirements for the establishment of an Occupational Health and Safety Program as part of the animal care and use program at research institutions. At the University of Massachusetts Amherst this program follows the recommendations set by the National Committee on Occupational Health and Safety in Research Animal Facilities and summarized in their publication [\*Occupational Health and Safety in the Care and Use of Research Animals\*](#) (NAS, 1997).

The OHSP at UMass Amherst is based on hazards identified in the workplace, assessment of the risk associated with those hazards, and elimination or management of those assessed risks. The OHSP is under the supervision of the Institutional Animal Care and Use Committee ([IACUC](#)) and is coordinated by the Director of Animal Care and the Attending Veterinarian in conjunction with the Director of Environmental Health and Safety ([EHS](#)), and the Biosafety, Chemical Safety and Radiation Safety Officers in EHS. Operational and day-to-day responsibility for safety in the workplace, however, resides with the laboratory or facility supervisor (e.g. PI, facility director or veterinarian) and depends on performance of safe work practices of all employees.

At the time the IACUC reviews an animal use protocol the committee assigns a level of risk, identifies the hazards of concern, and informs the appropriate Safety Officer of the hazards. It is important that researchers and their collaborators on the protocol identify their manner of animal contact so that their risks can be identified and they can be properly informed. For projects that pose a moderate or high level of risk the Director of Animal Care may contact affected personnel with information about their risks and recommend appropriate tests and medical procedures. All researchers and all animal handlers exposed to moderate or high risk are asked to fill out an Annual Health History Review to be submitted to the Director of Animal Care for evaluation. Routine testing based on risk exposure is not usually performed but may occur when workers exposed to a specific hazard report symptoms. In these situations, if Workers Compensation is to be claimed to cover the cost of these procedures an Accident Report Form must be filed for the employee to be eligible for Workers Compensation.

### **Definitions :**

**Animal contact** is any contact with animals based on hazard identification and relative risk assessment. Animal contact may be direct or indirect. Indirect contact is contact with animal products or items that have been in contact with animals. Animal products include: unpreserved tissues, blood, excreta, body fluids or discharges, hair, dander etc. Items that could be contaminated include sharps, pens and cages, bedding, clothing, gloves etc.

**Health Hazard** is anything that has been scientifically proven to have an adverse health effect in a person. Hazards associated with animal use are identified by the nature of the procedure, the species of animal, the origin or source of the animal, the location where the animal(s) are housed or used, or the existence of known zoonotic diseases. Hazards are identified through protocol review, facility walk-throughs, animal disease and surveillance, review of personnel medical histories, during physical exams or through the evaluation of accident reports. Hazards can be chemical (e.g. disinfectants, bleach, formalin), physical agents (including ionizing and non-ionizing radiation), physical (e.g. bites, kicks, scratches, needle sticks, dust, noise, heavy lifting), or biological (zoonotic agents e.g. those that cause rabies, ringworm, TB). Procedures for the storage, handling and disposal of hazardous biological, chemical and physical agents are contained in the EHS Laboratory Safety Manual.

**Biohazards** are infectious agents that are transmissible to humans and capable of causing disease. Biohazardous agents may be used in animals as part of an experimental project, and thus may pose a risk to personnel working on those projects. Projects using such pathogens are reviewed by the Institutional Biosafety Committee and the Biological Safety Officer who advises investigators on the measures needed to minimize the risk to themselves and other workers.

**Chemical hazards** are chemicals or substances for which the [National Institute for Occupational Safety and Health](#) (NIOSH) has recommended exposure limits (RELs) and those with permissible exposure limits (PELs) as found in the [Occupational Safety and Health Administration](#) (OSHA) [General Industry Air Contaminants Standard](#) (29 CFR 1910.1000). Projects using such chemical hazards are reviewed by the Chemical Safety Officer who advises investigators on the measures needed to minimize the risk to themselves and other workers.

**Radiation** is energy traveling through space. Collectively, energy radiation beyond ultraviolet is referred to as **ionizing radiation**. Ionizing radiation can cause damage, particularly to living tissue. Projects using sources of ionizing radiation are reviewed by the Radiation Safety Committee and the Radiation Safety Officer who advises investigators on the measures needed to minimize the risk to themselves and other workers.

**Radioisotopes** are 'unstable' or 'radioactive' atoms which are changing towards a more stable form (each element exists in the form of atoms with several different sized nuclei, called isotopes). Radiation is emitted by radioisotopes. Projects using radioisotopes are reviewed by the Radiation Safety Committee and the Radiation Safety Officer who advises investigators on the measures needed to minimize the risk to themselves and other workers.

**Allergies and asthma** due to animal contact result from exaggerated reactions of the body's immune system to animal proteins, also known as allergens. Sources of these allergens include animal dander, scales, fur, body wastes, and saliva.

**Zoonoses** are diseases in which the causative agents can be transmitted between animals and humans. Most animals used in research projects and their products are free from disease but there are exceptions in which infectious agents present in animals may produce disease in humans even when the animals show no symptoms. A potential risk of infection must be recognized in order to reduce or avoid it.

## **Risk Management**

**Risk assessment** is based on dose response and exposure information once a hazard has been identified. Risk characterization is based on a normal healthy adult. Risk assessment and management of biohazards and chemical hazards are coordinated by the Biological Safety Officer and Chemical Safety Officer in EHS, the Clinical Veterinarian, and the Director of Animal Care Services. Risk assessment considers the natural history of the health problem, the mode of disease transmission, virulence and pathogenicity, and manner of animal contact. Risk assessment and management of hazards from sources of ionizing radiation are coordinated by the Radiation Safety Committee and the Radiation Safety Officer.

Estimated risk level is for a normal healthy adult. Risk levels can be divided into four categories: negligible, low, moderate and high. Risk characterization is based on the severity of the health condition and on the probability that an adverse health effect will occur in a given situation. Risks associated with the experimental use of animals must be reduced to acceptable levels.

**Risk management for researchers** is based on the IACUC's assessment of the level of risk after consulting with the appropriate Safety Officer.

1. *Negligible risk hazard*: no action taken. Personnel are informed of the OHSP and are advised that all accidents are to be reported and may require a visit to UHS depending on the severity of the accident.
2. *Low risk hazard*: personnel at this risk level are provided informational handouts regarding the specific low risk hazard.
3. *Moderate and high risk hazards*: the names of personnel in these categories are entered into a database together with the hazards they are exposed to. The information is shared with the Biological/Chemical Safety Officer and/or the Radiation Safety Officer, the Attending Veterinarian and the Director of Animal Care. Personnel in these risk groups are provided with educational handouts and special training. They are asked to complete an Annual Health History Review and may be provided with specific procedures based on their medical histories and the particular hazards to which they are exposed.

**Risk management for animal care personnel** is organized in a slightly different manner. Animal handlers are entered into the database at the time they are hired. A pre-employment evaluation including health history is advised to assess the potential risks for individual employees. The Animal Care Director informs the Attending Veterinarian and the IACUC when a new person joins the animal care staff so that their risks can be assessed and they can be appropriately trained. The extent and level of participation of personnel in the OHSP is based on the hazards posed, the exposure intensity, duration, and frequency, an individual's probable susceptibility, and on the history of occupational illness and injury in the workplace. For occupational health purposes animal handlers are separated into two groups: basic or high risk exposure.

1. *Basic exposure animal handlers* include the majority of UMass animal caretakers. They are exposed to no, or a few well-defined, hazards. They require: tetanus shots every ten years, pre-employment physical exams, informational handouts specific to their tasks, a copy of the General Health Guidelines, information on special procedures to manage or monitor exposure to specific hazards, and an annual medical history review.

2. *High exposure animal handlers* are exposed to numerous hazards. They must receive all the basic information and training plus annual physical examinations that may include special procedures based on the hazards to which they are exposed.

#### **Standard Safe Work Practices and Procedures:**

It is strongly recommended that new employees should receive a pre-employment medical evaluation and history which is free at University Health Services (contact Wende Graves at UHS for an appointment). Health risks associated with working with animals are minimized by following safe practices that include:

- Pre-employment medical evaluations.
- Restricting access to the laboratory or animal care facility.
- Ensuring that tetanus shots are up to date.
- Providing training in animal restraint and handling, lab safety, and safe work practices relating to animal work-related hazards.
- Posting appropriate safety procedures (e.g. bite and scratch procedures)
- Providing employees with “good practice” General Health Guidelines to minimize the likelihood of work-related health problems.
- Minimizing splashes and aerosols and providing protection from inhalation of aerosols.
- Isolating sick or infected animals where possible and caring for them last.
- Decontaminating equipment and work surfaces at least once a day and after spills.
- Using appropriate waste disposal (see Laboratory Safety Manual).
- Reviewing employees' medical health history as appropriate.
- Reporting accidents, illnesses and zoonotic diseases promptly.

#### **OH&S Training**

##### **Training for personnel who work with animals in laboratories and the field**

All personnel (faculty, staff, and students, graduates and undergraduates, post-doctorates and visiting scholars) who work with animals are required to take a one-hour classroom Animal Users Training session. OHS-related topics covered include: what information is included in a protocol; how the IACUC works with the Environmental Health and Safety (EHS) Program on OH&S issues; how the IACUC assigns an OH&S risk level; how the IACUC oversees projects; and contact information for questions, advice, and reporting problems. Training participants are provided with General Health Guidelines and Safety Sheets specific to the animals they will be working with (see Specific Guidelines) and are told how to access the Safety Sheets on the web. There are online training modules that faculty, staff, students, post-doctorates and visiting scholars are required to take before they perform surgery or conduct wildlife studies.

All personnel who work with animals in laboratories or in the field are required to take the IACUC's annual online refresher training for animal users.

### **Training for animal care personnel**

New animal care employees receive the General Health Guidelines and individual instruction from the Animal Care Director on the use of appropriate personal protective clothing and equipment before starting to work with animals.

Throughout the year the Attending Veterinarian organizes monthly lunch time seminars that address topics pertinent to the health and safety of animal care employees. Topics relating to OH&S include:

- Ergonomics
- Zoonoses
- Hazardous agents

### **Training for personnel working with biohazardous agents and radioisotopes used with animals**

All personnel working with biological or chemical hazardous agents and/or radioisotopes must receive specific safety training before starting work with these hazardous materials. Personnel who will be working with, or exposed to, biological or chemical hazards or radiation are identified via EHS records, PI reporting on the IPF submitted with a grant proposal, PI reporting directly to a Safety Officer, or through the submission of an animal use protocol for review by the IACUC.

Any protocol submitted for IACUC review involving a biohazardous agent, infectious agent, material of non-human primate origin (blood, tissues, body fluids), toxic agent, carcinogens, mutagens, controlled substances, radioisotopes and/or irradiation devices, or animals brought to campus from non-conventional sources requires review and approval by the Biological Safety Officer and/or Chemical Safety Officer (and as needed, the Institutional Biosafety Committee), and/or the University Radiation Safety Committee before the work can start.

EHS Safety Officers ensure that all employees who work with hazardous agents receive appropriate formal training before joining a project. For new projects the appropriate Safety Officer at EHS contacts the investigator, the members of his/her research team, and affected animal care workers about specific hazards and safety issues that will be encountered. The

Safety Officers ensure that all personnel that require it receive formal classroom training in Radiation Safety and/or Biological and Chemical Safety. These officers also assist investigators in designing appropriate project-specific safety protocols for the safe handling and disposal of animals and other materials that are contaminated with hazardous or radioactive materials. For ongoing projects the Safety Officers ensure that new personnel joining the research team or the animal care staff receive appropriate training before they have contact with hazardous materials.