# Animal Handler Occupational Health & Safety Program

Revision Date: 2/1/2026

**Applies to:** This Program is issued jointly by the University of Michigan Office of Research and the Department of Environment, Health & Safety to provide guidance and consistency in management of the health and safety program for animal handlers.

**Summary** ..... **1**
**Scope** ..... **2**
**Reference Documents** ..... **2**
**Responsibility** ..... **4**
Principal Investigator ..... 4
Animal Handler Personnel ..... 5
OHS ..... 6
IACUC/ACUO ..... 6
ULAM ..... 6
**Procedures** ..... **6**
A. Occupational Hazard Identification and Risk Assessment: ..... 6
B. Personnel Training ..... 7
C. Personal Hygiene ..... 9
D. Facilities and Engineering Controls ..... 9
E. Operational Protocols ..... 12
F. Program Monitoring ..... 13
G. Personal Protective Equipment ..... 14
H. Medical Surveillance Program ..... 15
**Technical Support** ..... **18**
**Attachments** ..... **18**
Appendix A : Informational Resources for Animal Handlers ..... 19
Revision History ..... 20

## Summary

Employees who care for and use animals in research face several occupational health and safety risks, including the possibility of allergic reactions, animal related injuries such as bites or kicks, zoonoses (diseases that spread from animals to humans), and exposure to hazardous materials. The University of Michigan is committed to compliance with all applicable federal and state laws and standards concerning occupational exposure to research activities. Requirements for an occupational health and safety program for personnel working with laboratory animals are outlined in various federal publications. A description of this occupational health program must be included in the Assurance of Compliance that is required by the National Institutes of Health Office of Laboratory Animal Welfare. Triennial inspections are conducted by the AAALAC International to assure compliance with applicable occupational health and safety standards.

Under guidelines outlined in the publication *Occupational Health and Safety in the Care and Use of Research*

*Animals*, the occupational health and safety program components should include: hazard identification and risk assessment; personnel training; personal hygiene; facilities, procedures, and monitoring; personal protection; and medical evaluation and preventive medicine. "A truly successful program, however, will ultimately depend on the participation of all employees whose work might affect occupational health and safety – their own, their colleagues, their subordinates, or their co-workers. Thus, protecting the health and safety of employees engaged in the care and use of research animals is a cooperative enterprise that requires the active participation of institutional officials, scientists who plan and carry out research involving experimental animals, persons responsible for the management of animal care and use programs, health and safety professionals, and the individual employees themselves who must share the responsibility both for their own health and safety and for the health and safety of those around them."

To further emphasize this principle, University of Michigan Standard Practice Guide 605.01 states "In a vibrant safety culture, everyone accepts responsibility for the well-being of themselves as well as those around them; allowing everyone to go home at the end of the day as healthy as when they arrived." The SPG further outlines the roles and responsibilities of the various members of the UM community.

The goal of this Program is to establish the responsibilities and methods to identify the hazards associated with the care and use of animals, assess the risk(s) associated with those hazards, and eliminate or manage those risks. The overall management of the animal care and use program on the University of Michigan campus is the responsibility of the Institutional Animal Care and Use Committee (IACUC). Fulfillment of the occupational health and safety administrative requirements are the responsibility of Environment, Health & Safety (EHS). The responsibility for operating research facilities and handling animals in a safe manner is the responsibility of every individual in the program.

## Scope

This Program applies to all faculty, staff, students, and other affiliates who have direct contact with animals; direct contact with non-sanitized animal caging or enclosures; direct contact with non-fixed or non-sterilized animal tissues, fluids, or wastes; who provide service support to animal equipment, devices, or facilities; or provide compliance review services. The species of animals and associated hazards that will be encountered in the workplace determine what type of health assessment and safety training each employee will receive. This program covers information from hazard identification to risk assessment to control of operations to the occupational medicine program for monitoring personnel.

## Reference Documents

The following documents provide guidance, rules, and regulations that govern the operation of the occupational health and safety program for animal handlers.

- *Hazardous Work in Laboratories* rule R325.70101 to R325.70114 of Act 154 Michigan Occupational Safety and Health Act (MIOSHA)
- *Biosafety in Microbiological and Biomedical Laboratories 6th Edition*, published by the Centers for Disease Control and Prevention and the National Institutes for Health.
- *Code of Federal Regulations, PART 20—STANDARDS FOR PROTECTION AGAINST RADIATION* Title 10, Part 20
- *Public Health Service Policy on Humane Care and Use of Laboratory Animals Guide for the Care and Use of Laboratory Animals,* published by the Office of Lab Animal Welfare, NIH.
- *Occupational Health and Safety in the Care and Use of Research Animals*, published by the National Academy of Sciences, 1997.

- *Guide for the Care and Use of Laboratory Animals*, published by National Research Council

***Definitions***

1. *Animal Care and Use Office (ACUO)* supports the Institutional Animal Care & Use Committee (IACUC). ACUO works with researchers and the IACUC to assure that all projects adhere to University policies and federal laws that require a review of projects for humane treatment and judicious use of vertebrate animals.
2. *AAALAC International* is a private, nonprofit organization that promotes the humane treatment of animals in science through a voluntary accreditation program. The University goes through an extensive evaluation by AAALAC on a triennial schedule, which includes ensuring proper health and safety procedures are in place and being followed. The Occupational Safety and Health Program is one part of the accreditation process provided by AAALAC.
3. *Biosafety Manual* and *Exposure Control Plan* are written institutional documents that set forth policies and procedures for protecting employees from biological hazards in the laboratories. Laboratories must complete the mandatory supplements to these plans as applicable in the EHS Document Binder.
4. *Chemical Hygiene Plan* establishes a written program in accordance with the requirements of the Michigan Occupational Safety and Health Act (MIOSHA) Part 431 Hazardous Work in Laboratories Standard R 325-70100. Laboratories must complete the mandatory supplements to the Chemical Hygiene Plan in the EHS Document Binder.
5. *Environment, Health & Safety (EHS)* is the University of Michigan department that works to maintain a safe and healthy work environment. EHS surveys matters of environmental sanitation, occupational safety, occupational health, and radiation safety; coordinate and assist in educating faculty, staff and students on standards applicable to University-associated activities and safety efforts throughout the University; advise faculty and staff on procedures relating to biosafety and biological safety cabinets; develop accident prevention programs; provide advice; render service; investigate accidents; and maintain statistics related to occupational safety and health.
6. *Institutional Animal Care and Use Committee (IACUC)* is the University of Michigan committee that fosters and oversees the responsible and humane care and justified use of animals used in research and instruction at the University of Michigan. This is accomplished by overseeing, evaluating, and reviewing the animal care and use program, procedures, and facilities to ensure compliance with applicable standards, policies, and regulations.
7. *Institutional Biosafety Committee (IBC)* is the University of Michigan committee that oversees and approves Recombinant DNA and synthetic nucleic acid molecules (this includes human gene transfer studies), Infectious agents, Biological toxins, Human-derived tissues, fluids, cells; Certain animal-derived tissues, fluids, cells; Federally-regulated Select Agents, experiments with Dual Use Research of Concern potential, and research requiring BSL3 containment to assure compliance with guidelines for such research.
8. *Occupational Health Services* (OHS) is an on-campus provider of occupational medical services. OHS clinicians provide Medical Surveillance for individuals involved in the animal program and provide prompt medical attention to occupational injuries in order to return the employee to a productive work life.
9. *Personal Protective Equipment (PPE)* is a device or garment worn by the worker to protect against hazards in the environment. Examples include safety glasses, face shields, gloves, and hearing protection.
10. *Points of Contact* is a quick reference list of program areas where you can obtain additional information or assistance.
    - University of Michigan Police Department (UMPD)
      - General 734-763-1131
      - Emergency 911
- EHS
    - General 734-647-1143

- ACUO/IACUC
  - General 734-763-8028
- ULAM
  - Veterinary Care 734-936-1037
  - Emergency (after hours) 734-763-1131
  - General 734-764-0277

*Radiation Policy Committee (RPC)* is the University of Michigan committee that oversees and approves use of radioisotope and ionizing radiation producing equipment to assure compliance with federal and state regulatory requirements.

*Unit Laboratory Animal Medicine (ULAM)* is the University of Michigan department that provides oversight on the health and welfare of research animals on campus. ULAM provides a variety of services and educational offerings to support the U-M research community and the animals under their care, including: Laboratory animal procurement and care, veterinary care, compliance and oversight monitoring, personnel training, specialized research support services and activities, and academic teaching and research programs

## Responsibility

Everyone working at the University of Michigan has the right to expect a safe and healthy work environment. They also have a responsibility to help assure a safe and healthy work environment for themselves and others. These responsibilities are detailed in the University of Michigan Research and Academic Safety Policy. Please click on the Policy link to view role specific responsibilities including but not limited to the following categories:

- All faculty, staff, other employees and students
- Graduate Student Research Assistants/Trainees
- Post-Doctoral Trainee/Fellow
- Laboratory Director (Faculty/Lab Manager/Supervisor
- Department Chair
- Facility Managers/Department Managers/Key Administrators/Chief Department
- Administrators
- Unit (School/College/Department) Safety Coordinators

Additional responsibilities specific to the implementation of this guideline follow.

***Principal Investigator***

- Ensure that adequate facilities, ventilation, and equipment are provided based on the hazards associated with the work being conducted.
- Ensure employees are instructed on and follow proper procedures and utilize protective equipment provided during their work as detailed in written SOPs.
- Implement and document appropriate safety policies and procedures in accordance with the U-M Chemical Hygiene Plan, U-M Biosafety Manual, and U-M Exposure Control Plan.
- Make sure all individuals working in the laboratory are trained and familiar with the plans.
- Maintain documentation of the program and training as required by the Biosafety Manual, Chemical Hygiene Plan, or Exposure Control Plan.
- Implement procedures in accordance with this Program, including the disclosure of hazardous materials in animal protocols for EHS review.

- Ensure all individuals with direct contact with animals are enrolled and compliant with the Medical Surveillance Program.
- Ensure that staff is trained in proper safety procedures specific to their laboratory, and provided with equipment and methods to control hazards.
- Ensure animal handler personnel complete ULAM Training Core and EHS provided training courses as applicable.
- Implement corrective measures to eliminate identified hazards including but not limited to submitting work orders to repair facility deficiencies, acquiring the proper protective equipment, and re-educating staff on proper procedures when deficiencies are identified.
- Ensure deficiencies are corrected in a timely manner.
- Contact EHS to request technical assistance and to evaluate health and safety concerns within their unit.
- Report all work related injuries and illnesses (including animal bites) to the Work Connections office within 24 hours by completing and submitting the Illness or Injury Report Form. Follow the directions on the Work Connections website to obtain proper medical treatment and follow-up.
- Complete the EHS Incident and Near Miss Report Form for all work related injuries and illnesses (including animal bites and near misses).

***Animal Handler Personnel***

- Complete ULAM Training Core and EHS provided training courses as applicable.
- Inform their Primary Care Physician that job responsibilities involve working with animals; provide the species, type of work, and length of employment.
- Complete and stay compliant with Medical Surveillance requirements
- Wear appropriate PPE
- Follow SOPs and guidance documents
- Report injuries, illnesses, and allergy symptoms when working with animals

***EHS***

- Review animal use protocols, which involve administration of a hazardous substance to animals, to determine occupational health risks, evaluate and recommend proper protective measures, and identify any need for special medical monitoring, assign appropriate housing facilities based on risk assessment.
- Assist in developing standard operating procedures (SOPs) for safe and compliant handling of animals, materials, and equipment.
- Provide respiratory protection evaluation and fit testing for individuals assigned to work in areas where the risk evaluation determines the need.
- Provide periodic inspections of areas where animal handling occurs to evaluate risks and determine the need for protective equipment or systems.
- Identify safety related deficiencies during inspections, coordinate the notification and tracking of deficiencies and corrective actions.
- Provide training and technical assistance to supervisors and employees upon request, and maintain records of EHS provided training.
- Manage the Medical Surveillance Program in coordination with the ACUO and OHS. Enrollment into the program and notification emails are generated through the Enterprise Health portal.
- Work with the IACUC on the semiannual report regarding the status of the Occupational Safety and Health Program as it relates to the Animal Care and Use Program, and the status of health and safety inspections of areas where animals are used.
- Serve as a University liaison for local, county, state, and federal agencies regarding safety issues.

### *OHS*

- Provide the occupational physical exams, immunizations (as needed), and follow-up services for individuals enrolled in the medical surveillance program.
- Medical Surveillance includes review of questionnaires and scheduling individuals for an exam, if one is needed. The specific examination will be determined by the OHS health care provider in coordination with EHS, ULAM, and IACUC, and will be based upon the individual risk assessment.
- Provide initial treatment and follow-up on occupational injuries or illnesses including exposures to hazardous materials.

### *IACUC/ACUO*

- Coordinate and manage the Animal Care and Use Program, including evaluation of the Occupational Health and Safety Program related to animal use, on campus to ensure compliance with all applicable laws, regulations, and standards as well as the proper care of all research animals.
- Ensure that animal handlers are compliant with their Medical Surveillance requirements.
- Identify animal housing and use locations so they can be included in the periodic inspection programs.
- Facilitates protocol reviews and protocol approval process.

### *ULAM*

- Maintain the health and safety of the research animals on campus.
- Provide training and develop SOPs for the safe use of facility equipment.
- Provide training on the proper PPE use for animal housing areas.
- Provide training on proper handling and restraint techniques on animals that will reduce the risk of injury.
- Provide training regarding the proper use of containment housing facilities.
- Provide professional guidance relating to animal associated hazards.
- Maintain and manage animal housing facilities on campus.
- Identify health and safety issues and report to EHS for follow-up.

## Procedures

The following procedures have been prepared to provide a consistent approach to the health and safety programs for animal handlers at the University of Michigan.

### *A. Occupational Hazard Identification and Risk Assessment:*

1. Animal use protocols are required to be completed by the researcher for review by IACUC. Researchers are required to identify hazardous materials and operations that may be used in the protocol. All rDNA, infectious agent, biological toxin, human derived substances, and Select Agent projects must be registered and approved by the Institutional Biosafety Committee (IBC) prior to commencement of the experiment. EHS verifies the IBC approval and the containment level required for work. The use of hazardous chemicals is reviewed by EHS and requires the researcher to list the dose and route of administration of any potentially hazardous substance (including FDA approved or experimental pharmaceutical products, laboratory chemicals and inhalation anesthetics to live animals). EHS conducts a risk assessment and provides safe handling and use information, along with housing recommendations in the EHS Safety Findings available in the protocol.

2. The PI/Supervisor will designate personnel responsible for preparing the supplemental information needed to the University of Michigan Biosafety Manual, Chemical Hygiene Plan, or Exposure Control Plan for the laboratory. Guidelines and templates are available on the EHS website. It is advised that one individual should be assigned for the laboratory to make sure the supplemental documents are maintained up to date. It is the PI/Supervisor that is ultimately responsible to devise effective occupational safety protocols in consultation with ULAM and EHS. Documents must be updated whenever protocols change or new hazards are identified. Staff affected by these changes must be briefed on new safety requirements.

3. EHS will assume responsibility for monitoring and reporting on personnel exposure to selected hazards as needed.

4. The University of Michigan Radiation Policy Committee (RPC) controls the use of radioactive substances and equipment emitting radiation. EHS acts as the operational arm of the Committee and has implemented standard operating procedures University-wide governing the use of radioactive materials in animals. EHS, ULAM, and the responsible investigators work together to establish specific procedures for each experiment based on the EHS standard operating procedures. EHS then monitors compliance during the course of the research.

   Refer to the following pages on the EHS web page for information about working with animals administered with radioactive material:
   - Hazmat & Radiation
   - X-Rays

5. Risk factors considered common across all animal handling and husbandry environments are allergen exposure, ergonomic stressors, physical hazards, zoonotic diseases, and noise. Proper training of personnel on these hazards and the proper use of PPE and appropriate work practices is essential in mitigating these risks. It is the university's position that allergenic and noise exposures, and ergonomic stressors, are to be engineered-out of work environments to the greatest extent possible.

6. Field researchers should be knowledgeable regarding the proper methods and tools for handling animals in their natural environments. It is the PIs responsibility to train personnel on safe handling and emergency procedures to be instituted when working in non-laboratory environments. First aid measures, evacuations plan, and contact numbers for relevant medical professionals should be part of the site safety plan. The EHS website provides information on the guidance for planning, training, incident reporting, and specific hazards for field research.

***B. Personnel Training***

1. All personnel working with research animals are required to complete courses regarding the humane care and use of animals. The mandatory training consists of an online orientation course that describes the regulations and policies governing the proper use of animals in research. Additional mandatory courses are

determined during protocol review. These courses include species and technique specific topics that are relevant to the protocol.

2. Chemical Laboratory Safety (EHS_BLS025w): is required for all newly hired laboratory personnel and it covers various standards applied at the University including Laboratory Safety, Hazard Communication, and proper use of personal protective equipment.

3. Biosafety Training (BSL-2) for Research Labs (EHS_BLS301w) : This training courses are intended for U-M laboratory personnel who work in a lab that has a biological safety containment level of 2 (BSL-2). This training covers risk groups & containment determination, BSL-2 policies and practices, and biosafety cabinets and aerosols. Procedures for the safe handling of sharps, waste, spills, as well as reporting for injuries and/or exposures are covered.

4. Bloodborne Pathogen (BBP) Training for Research Labs (EHS_BLS100w): This annual training course is intended for all laboratory employees who may have occupational exposure to human blood or body fluids, unfixed tissue; human cells or cell lines, Human Immunodeficiency Virus (HIV), Hepatitis B virus, or Hepatitis C virus. This training covers the MIOSHA BBP training requirements, bloodborne pathogens, biological hazards, aerosols, and BSL-2 policies and practices. Procedures for transporting specimens, biological exposures, safe handling of sharps, waste, spill response, and reporting injuries and illnesses are covered.

5. Working Safely with Viral Vectors (BLS008) is intended for new or entry level laboratory personnel who plan to use recombinant DNA viral vectors in vitro or in vivo, and who cannot demonstrate significant previous experience and expertise in the necessary aspects of biosafety and regulatory compliance.

6. 6. Additional health and safety training opportunities are available through the EHS Training Programs and ULAM Training Core program and it is highly recommended laboratory staff take advantage of these classes as additional needs arise, or as directed by IACUC, EHS, ULAM, IBC, or RPC. The ULAM Training Core also participates in training personnel who are exposed to hazards in the animal facility with regard to special entry procedures, use of protective clothing, and other precautions and best practices.

7. Researchers are required to draft standard operating procedures (SOPs), giving detailed instructions on how to safely perform specific tasks associated with chemical, biological, or physical hazards. These procedures are documented in the EHS Document Binder. These documents are used by the PI/Supervisor to instruct employees on the safety aspects of a particular method or task. This is considered "site-specific" training under the Laboratory Safety Standard, and EHS performs audits to assure these documents are available in research labs. Training records are audited by EHS as a part of periodic lab inspections and reviews.

8. In order to work with radioactive materials on the University of Michigan campus, individuals must attend a separate Radiation Safety Orientation to address the requirements for training mandated by State & Federal regulation. EHS has implemented training for all individuals working in or frequenting radioactive

material laboratories or facilities. Annual training updates are required and can be given by the EHS laboratory radiation safety contact. Records of follow up training sessions are reviewed by EHS. In addition, a course, The Care of Animals Containing Radioactive Materials is offered to personnel who care for animals treated with radioactive materials.

9. Educational materials are available in the animal areas to provide basic education to personnel of the hazards and concerns associated with animal research. A brochure providing an overview of the occupational hazards and safety concerns is available in many animal areas. Posters discussing risks associated with animal allergies are posted in animal areas.

### *C. Personal Hygiene*

1. An important factor in protecting the health of personnel engaged in animal care or research is personal hygiene. All employees need to understand the importance of personal hygiene and specific measures that are to be taken routinely to protect them against zoonotic agents found naturally in experimental animals as well as hazardous materials used experimentally in approved studies using animals. Hands need to be washed after handling animals, non sterilized tissues, or fluids or waste. Employees should avoid working with animals if they are ill, especially with respiratory problems. Take additional precautions if they have open wounds by bandaging the area and wearing double gloves.

2. Dedicated Work Clothing: Animal care personnel are provided protective clothing each day. Dedicated work clothing is either laundered by husbandry staff using in-house facilities, or laundered by professional laundry services. Dedicated work clothing must not be taken home. Laboratory personnel must follow the requirements for lab attire in the UM Chemical Hygiene Plan, which indicates that legs, toes, and upper torso must be covered. In addition, The Animal Handler PPE chart details the level of protective clothing minimally required for the various animal areas based on species and activities.

3. Hand Washing: Most animal rooms contain a sink and soap for washing hands. Those that do not have a sink have one available nearby or have access to waterless hand sanitizer. All staff handling animals are required to wash their hands prior to leaving an area and moving to another animal area, the general occupancy areas of the facility, or before eating, drinking, smoking, or applying cosmetics.

4. Policies Regarding Eating, Drinking, and Smoking in Animal Facilities: There is no eating, drinking, or application of cosmetics in the animal areas or laboratories. The University of Michigan is a smoke free campus – smoking is prohibited in all university buildings, facilities, and grounds.

### *D. Facilities and Engineering Controls*

1. All protocols to use hazardous materials in animals are reviewed by EHS. The appropriate containment level will be assigned to the research by EHS. The containment level is necessary to protect the health of personnel exposed to the animals or their environment, and to protect the health of other animals maintained at the University. It is up to the unit sponsoring the research to obtain the appropriate

equipment necessary to meet the level of protection. The researcher will acknowledge acceptance of the EHS Safety Findings in eRAM. The EHS Safety Findings are emailed via eRAM to all animal handlers listed on the protocol. EHS, in coordination with the IACUC, will review and approve new animal use locations to ensure that the location has the proper engineering controls and safety measures available.

2. All personnel entering an animal housing containment room with potential exposure to a hazardous material are notified by signage on the entrance door. This signage will include any special requirements for entering that room including personal protective equipment. Individual cages will be labeled on the cage card with the specific hazard administered. Additionally, a dissolvable sticker will be placed directly on the cage to identify the type of hazard administered to the animals in that cage to ensure that the cage is appropriately handled by husbandry and cage wash personnel. A binder is located in the containment housing rooms with the agent specific information. Procedure rooms approved for use with animals housed in containment will be posted with generic signage to alert people entering the space that chemical or Biosafety Level 2 agents may be present in the room.

3. Environmental hazards are substances, which EHS has determined during the review process presents a concern for environmental contamination, but has been deemed not a risk to human health in the concentrations being used. These substances can be used in a standard animal housing room and do not require animal containment housing. An example of this is antibiotics, which are not hazardous to humans directly but can cause problems with antibiotic resistance when released into the environment. An environmental hazard sticker is placed on cages or water bottles that denotes the name of the agent and date of administration. The food or water containing the environmental substance is collected for disposal through EHS HazMat.

4. ULAM operates several containment facilities located throughout campus. The containment facilities are available for use by all PIs on campus. They are designed for housing animals administered with hazardous materials including infectious biohazards, hazardous chemicals and cytotoxic agents. The facilities are negatively pressurized with respect to the hallway. A biological safety cabinet and isolation cages are maintained within the facilities to provide additional containment as necessary. The facilities are either equipped with an autoclave or have access to an autoclave for decontaminating infectious wastes. All hazardous substances waste must be appropriately discarded. Carcasses are collected for proper disposal. One hundred percent of the room air is exhausted to the outside. Air pressure differentials are monitored and noted daily by ULAM. Special personnel procedures are implemented to comply with containment room requirements. A ULAM standard operating procedure, "Animals Administered a Hazardous Substance Requiring Containment" has been developed in coordination with EHS. This protocol describes the standard animal care and use practices for use in containment rooms. It is applied to all containment projects unless EHS and/or the Faculty Veterinarian deem specific modifications are necessary

5. The HVAC systems are maintained by Facilities and Operations who perform triennial ventilation surveys to balance systems where appropriate; however, any equipment failure not picked up in the surveys must be reported to Facilities and Operations for repair. ULAM and EHS will evaluate if research operations must stop until the equipment is repaired. This will be based on the type of research and risk involved, and

availability of other options for ventilation. If ULAM or EHS requires the research be stopped for safety reasons, the PI/Supervisor will be notified. Once repairs are completed by Facilities and Operations, they will notify EHS to verify the appropriate ventilation and allow operations to resume as normal.

6. Individuals who use volatile anesthetic gases for animal anesthesia and/or euthanasia are required to utilize local exhaust ventilation (scavenging devices, fume hoods, or snorkel hoods) to prevent unnecessary personnel exposure, unless otherwise determined by EHS risk assessment. EHS will provide personnel monitoring of anesthetic gas exposure upon request. Additional information is available in the EHS Animal Anesthetics guideline.

7. Biosafety cabinets, fume hoods, and other local exhaust ventilation systems are surveyed and certified annually by EHS staff. Cage changing stations are certified annually by ULAM. The ventilation system will be certified for use of hazardous materials or agents. Because of the rigid standards for certification, not all systems can be used for hazardous material operations. Every individual working in the area with a ventilation system is responsible to know the approved use of the system and to not use hazardous materials in a system not designed to control the hazard. Any questions on appropriate operation must be addressed to the PI/Supervisor or EHS, and appropriate restrictions must be documented by the laboratory.

8. ULAM has developed cage wash information specific to each animal cage wash location. This information provides instructions for the safe use of the equipment and directions for stopping all cage wash equipment during both routine operations and during emergencies, including location and use of emergency stop features. ULAM staff trainers or the appropriate area supervisor will provide safety training for all new and current cage wash employees. This training will be documented by the ULAM Training Core. Ease of egress/escape will be validated twice yearly.

9. All emergency eyewash and showers are inspected by the University of Michigan's Facilities and Operations on an annual basis. The inspection criteria are based on manufacturer's recommendations and ANSI guidelines. If the equipment is in need of repair, a work order is submitted to the Facilities and Operations for correction. Laboratory staff are required to flush the plumbed eyewashes on a monthly basis and report any malfunctions to Facilities and Operations Service Center. Facilities and Operations Maintenance performs the monthly flush of eyewash units located in common areas such as corridors.

10. Fire extinguisher inspection and testing programs are managed by Facilities and Operations under direction of EHS's Fire Safety Program as the authority having jurisdiction. In this program all extinguishers are checked and pressure tested under requirements of NFPA and the State of Michigan MIOSHA rules. Requirements for type and placement of new extinguishers are based on the operations involved and are reviewed and approved for placement by the University Fire Marshal. Any extinguishers that are discharged must be reported to Facilities and Operations Service Center for immediate replacement. Any fire, regardless of size, must be reported to UMPD immediately for investigation and follow up by dialing 911 from any University phone system. UMPD will rely on EHS to inspect the area after the fire and perform any appropriate air monitoring prior to allowing the work to continue.

11. Sharps are commonly encountered in research involving animals. Needles, glass, pipettes, and scalpels are all used in animal facilities and laboratories. Puncture-resistant and leak proof containers for sharps disposal are available in the animal housing rooms and in laboratories. Basic rules to remember when working with sharps:

- Never recap needles after use (have a sharps container nearby)
- Dispose of syringes, needles, glass, vials, and scalpels in a sharps container only.
- Do not overfill sharps containers. Call EHS Hazmat (3-4568) for removal when containers are three quarters full. Sharps containers can also be placed in vendor provided bins for collection, in areas with that service.
- Write the date that waste accumulation begins. This waste stream must be removed from campus within 180 days of the start of accumulation or when ¾ filled, whichever comes first.
- If you cut yourself, perform first aid immediately and report the incident to your supervisor promptly.

### *E. Operational Protocols*

1. It is the Laboratory Director/Supervisor responsibility to devise effective safety protocols in consultation with ULAM and EHS. In the case of hazardous materials, husbandry practices are outlined in the ULAM SOP "Animals Administered a Hazardous Substance Requiring Containment." Investigators are required to utilize this protocol when working with infectious biohazards, hazardous chemicals and cytotoxic agents in the animal facilities unless he/she provides acceptable alternative protocols or an alternative protocol is recommended by the Faculty Veterinarian and EHS. In the case of radioisotopes, the use must be approved by the RPC. The approval will include requirements for housing based on whether the lab or ULAM will be providing husbandry.

2. EHS has guidelines for the safe and compliant way to handle and manage biological, chemical, and radioactive materials, and the proper use and disposal of research related equipment and materials.
   - Biohazardous (Medical) Waste Disposal
   - Biohazardous Sharp Glassware (Pasteur pipettes) Disposal
   - Biological Safety Cabinets
   - Anesthetic Gas Use (Animal Anesthetics in Research)
   - Chemical Safety (Chemical Hygiene Plan and SOPs)
   - Cryogenic Liquids Use
   - Laboratory Fume Hoods
   - Laser Safety
   - Proper Segregation and Disposal of Low-level Radioactive Wastes (LLRW)
   - Radiation Safety Protocols
   - Radionuclide Users Annual Refresher Training Guide
   - Radio Isotope Data Sheets
   - Compressed Gas Use
   - Training for the Safe Transportation of Biologics (DOT/IATA Dangerous Goods)
   - Waste Disposal Supplies
   - Waste Collection and Supplies (for pick-up)

3. It is very important to maintain health and safety for all visitors to research facilities. EHS developed a guideline to assist Laboratory Directors/Supervisors in this area: Visitors and Volunteers to UM Laboratories. A brochure is available upon entry to many animal locations discussing occupational hazards and safety concerns in animal care facilities.

4. Emergency response procedures have been prepared describing how to respond to incidents involving hazardous materials, radioisotopes, or animal bites/scratches. EHS is available to provide assistance in spill clean-up activities. Staff members should notify their supervisors of all incidents and potential exposures. Supervisors should assist staff members with all required notifications, which may include EHS, ULAM, Risk Management, UM Police Department, or IACUC. If medical treatment is necessary, staff members must report to UM Occupational Health Services or the UM Emergency Department for treatment.

5. Laboratory personnel working with human source materials must treat all human blood, blood products, body fluids, tissues, or cell-lines as if they are potentially infectious and handle them accordingly. PIs must register work with human source materials (cell lines, tumors, blood, tissues, etc) with the IBC. All animal research using human source material is conducted using Universal Precautions. Hepatitis B vaccination is available to all at-risk personnel through OHS. All personnel working with human source material must complete required Bloodborne Pathogens training offered by EHS before using human source materials and annually thereafter. A U-M standard Exposure Control Plan (ECP) has been developed and applies to all at-risk employees and these employees must have access to it.

6. EHS has a program to respond to ongoing concerns regarding ergonomic risks and may incorporate ergonomic tools to address these issues. For transporting heavy equipment or supplies, hand-operated trucks, motorized pallet drivers, and dollies may be utilized. In addition, training sessions on avoiding back injuries and preventing repetitive motion injuries can be provided for personnel. ULAM provides ergonomic awareness training to husbandry technicians.

### *F. Program Monitoring*

1. Monitoring health and safety activity in the research laboratories and animal facilities requires a multi-pronged approach. The first line of oversight is with the PI/Supervisor staff within the laboratory. They have primary responsibility to ensure everyone within their area understands and follows all appropriate health and safety measures. Any unsafe activity must be immediately corrected. If the problem goes beyond their expertise, they must consult with ULAM or EHS staff on proper procedures.

2. Additional monitoring and oversight comes from IACUC during regular facility inspections and visits, and by the ULAM veterinary staff in the course of performing their clinical duties. Additionally, in ULAM facilities, the ULAM animal care staff monitors compliance of research staff with posted protocols. These inspections and monitoring efforts are typically directed at the health and welfare of the research animals; however, IACUC and ULAM staff have the ability to identify health and safety concerns during their visits. IACUC and

ULAM may take the opportunity to identify these concerns to the PI/Supervisor for correction at the time of the visit or these can be referred to EHS for follow-up and resolution.

3. EHS staff performs periodic inspections of animal research laboratories, housing facilities, and containment facilities. The frequency of inspection will be based on the risk involved in the area or operation. The PI/Supervisor is responsible for correcting the deficiencies in a timely manner, or discussing with the EHS representative a timeline for correction on major items. A follow-up visit will be performed by the EHS representative on any item identified by EHS as a significant risk to laboratory personnel to ensure corrective measures have been implemented. Failure to correct significant items in a timely manner will require escalation of the issue to higher authorities within the user department and the IACUC.

4. Additional monitoring is also completed during EHS protocol review consults with the laboratory. During the consults, EHS staff meet with laboratory staff to review safety practices involving animals, the hazards used in the protocol, and the housing levels and practices indicated in the EHS Safety Findings. Necessary updates are implemented after the consults as needed.

5. Depending on the operation and materials being used, exposure monitoring may be necessary to document the employees need for medical assessment, use of PPE, or the efficiency of engineering controls. This activity will be performed by the EHS representative following generally accepted industrial hygiene practices. A report of the monitoring will be prepared by the EHS representative and will be provided to the PI/Supervisor for distribution to affected employees, with a copy to IACUC and OHS if necessary, for documentation purposes. All recommendations generated by EHS based on the monitoring are the responsibility of the PI/Supervisor to implement within their area.

6. EHS will conduct investigations following incidents of employee exposure, accidents or injuries, or spills of material. The investigation will focus on determining a root cause and corrective measures to prevent reoccurrence. The Director of EHS does have the authority to stop an operation if it cannot be conducted in a safe manner through use of administrative controls, PPE, or engineering controls. This authority is generally used only in situations involving imminent danger.

### *G. Personal Protective Equipment*

1. Use of protective clothing and safety devices is mandated when working with laboratory animals. Risk assessments assist in selecting the proper PPE. A laboratory coat, uniform, or surgical gown, is supplied by the department. Reusable clothing is provided for husbandry staff and is laundered onsite and must not be taken home. The Animal Handler PPE chart details the level of protective clothing minimally required for the various animal areas based on species and activities.

2. Training on PPE use is the responsibility of the Husbandry Supervisor for the animal housing area. Training on PPE use is the responsibility of the PI/Supervisor in the research areas. EHS representatives are available to assist with the proper selection of equipment and training for staff. The extent of PPE required for an operation is established based on the risk involved and required PPE is posted on the entry sign into the

room. It is the responsibility of all personnel entering an area to note the specific equipment required and make proper use of it.

3. Personnel with specific exposure to hazardous substances, as determined by EHS in consultation with OHS, may have a mandatory requirement to wear a respirator. Personnel that have developed allergies to animals, as determined by OHS, may also have a mandatory requirement to wear a respirator. Areas or operations that require the mandatory use of a respirator will be posted. Staff will be fit tested for the appropriate respirator and will be entered into the EHS Respiratory Protection Program. Note: a surgical mask is not considered a respirator requiring entry into the EHS respiratory protection program – the surgical mask is provided for the protection of the animals, or for preventing splash exposure or ingestion of foreign objects by the wearer.

4. The noise level in animal facility areas may reach potentially damaging levels, depending on the type of equipment being used. This is true for the cage washing areas and may occur in other areas. When EHS determines that exposures to noise have a potential to exceed regulatory limits, employees will be placed in the EHS Hearing Conservation Program for proper follow up and training. Areas or operations that require use of hearing protection are posted.

5. The use of restraint devices can provide an extra measure of safety when handling animals. Squeeze cages, nets, heavy leather gloves, and Kevlar sleeves are available for use when working with primates. Plastic restraint tubes and shields can be used to restrain rodents and canvas restraint bags can be used for cats. A plexiglass or metal restraint box is commonly used to restrain rabbits and a variety of muzzles are available for use with dogs. Contact ULAM Training Core for training about proper handling and restraint techniques for animals.

### *H. Medical Surveillance Program*

1. All faculty, staff, students, and other affiliates who have direct contact with animals; direct contact with non-sanitized animal caging or enclosures; and/or who provide service support to animal equipment, devices, or facilities must be reviewed for enrollment in the Medical Surveillance Program. The species of animals and associated hazards that will be encountered in the workplace determine what type of health assessment and safety training each employee will receive. Operational and day-to-day responsibility for health in the workplace, however, resides with the laboratory or facility supervisor (e.g., Laboratory Director, facility director, or veterinarian) and depends on the performance of safe work practices by all employees. Appendix A provides general information on potential hazards associated with handling research animals. Note: in the event of a bite or scratch from a research animal follow the procedures in the SOP for Bites and Scratches from Research Animals.

2. The Medical Surveillance Program is managed by EHS and administered by Occupational Health Services (OHS) clinic as the occupational health provider. IACUC provides advice and consultation to EHS and OHS regarding specialized requirements of the medical surveillance program, and staff that need to be included in the program. OHS employs clinicians and nurses licensed and certified in occupational medicine and its

various specialty functions. They work with EHS to assure that any necessary testing is administered properly, health care provider's determinations are delivered in a timely fashion, and records are adequately maintained. These activities are regulated by standards set by the Michigan Department of Licensing and Regulatory Affair's Occupational Safety and Health Administration (MIOSHA). The confidentiality of medical records and test results is protected under the law. EHS receives a determination as to whether or not an employee is physically fit to work under the stressors presented by their work environment and personal protective equipment. EHS does not receive test results or diagnoses concerning the employee's general health or particular conditions. If it is determined that an employee is not physically fit for a particular type of work or task, this will be discussed in detail with the employee and noted as a restriction on the health care provider's determination.

3. Enrollment of participants into the Medical Surveillance Program occurs when they are identified in eRAM as being affiliated with a protocol or through the hiring department notifying EHS. Employees will be screened at the time of initial enrollment and assigned medical surveillance based on species, job duties, or personal medical history. PI/Supervisors must identify all personnel as they are recruited to or leave the laboratory. Personnel changes must be provided on a timely basis, so that they can be enrolled in the program prior to beginning work.

4. Enrolled employees will automatically be sent an email from the medical record system, Enterprise Health , requesting the Medical Surveillance Questionnaire be completed and submitted for review at the OHS clinic. Personnel are directed to review educational materials for all animal handlers, as well as species specific information linked on the EHS website through the Medical Surveillance Questionnaire. IACUC, ULAM, and EHS will work together to ensure that all provided information is current. Failure to comply will result in being removed from the protocol, locked out of animal rooms, being unable to work with animals, and being reported to IACUC.

5. The Enterprise Health medical records system is utilized for the completion, review, and notification of medical surveillance requirements. OHS may schedule a clinic visit, if deemed necessary. The need for a clinic visit will be based on the functional requirements of the position, the type of animal contact, and the individual's medical history. Failure to comply with the required clinic evaluation process will also result in sanctions by the IACUC, as noted above.

6. Enterprise Health sends a notification annually to those enrolled in the Medical Surveillance Program. Annually, individuals will either have to complete a questionnaire or complete a survey. Both the questionnaire and survey are reviewed by OHS health care providers.
    a. The determination for an annual questionnaire is based on an individual's work status, species use, or personal medical condition, EHS or OHS clinicians may determine that it is a mandatory requirement to complete an annual Medical Surveillance Questionnaire. Personnel who work with animals or within an animal care facility in this high risk category must obtain their annual medical clearance by completing the questionnaire in the Enterprise Health portal.
    b. Those individuals not included in the high risk category will complete a questionnaire every 3 years. In the years between, an annual survey is sent in their Enterprise Health portal to indicate

if there has been a change in their medical status, a change in species or level of animal contact, or any concerns with their work environment. OHS health care providers review both the survey and questionnaire.

7. UM staff with incidental animal contact including Police Officers, Maintenance, Construction, and Building Services staff and other staff working in or around animal areas are provided orientation training and the brochure, which includes awareness of issues in animal care areas. Training for particular species will be provided by the ULAM Training Core. They are enrolled in the Medical Surveillance Program, along with other pertinent surveillance by their supervisor upon request to EHS. Annual reminder notifications for these personnel are managed through the Enterprise Health portal.

8. The following species specific procedures are required for personnel working with:
   a. Non-Human Primates
      - Verification of Rubeola immunity
      - Annual tuberculin test (QFT)
      - Review of the Macacine herpesvirus 1 (Herpes B virus) Prevention, and bite/scratch procedures for personnel working with macaques.

   b. Sheep:
      - Review of educational materials for exposure to Orf and Q fever.
      - Depending on the work environment may require respiratory protection.

9. The OHS health care professionals, in consultation with EHS regarding potential exposures in the particular job category, will determine the need and frequency of the following:
   - Boosters - Tetanus, Rabies, MMR
   - Vaccinations
   - Hearing test
   - Respiratory function test
   - Allergy/asthma tests

10. Women who know or suspect they are pregnant must take special precautions when working with animals. There are certain pathogens that pose a serious health risk to the fetus and can cause birth defects. If you know or suspect you are pregnant, you can contact EHS or OHS for additional information. EHS provides technical support regarding occupational risk, as well as workplace safety assessments, fetal radiation dose monitoring, and educational materials, which focus on preventative and protective measures.
    - Fetal infection occurs when women become infected with Toxoplasma (a parasite) for the first time during their second trimester of pregnancy. Miscarriage or birth defects can result. Pregnant personnel, without immunity to toxoplasmosis, should avoid contact with toxoplasma-infected animals, especially cats to prevent congenital Toxoplasma infection. Pregnant women should avoid contact with Toxoplasma infected animals and materials.
    - Listeriosis is a bacterial infection, which may cause repeated spontaneous abortions. Many species can carry Listeria but sheep, goats and cattle are the most common source. Due to the potential risks to the fetus, pregnant women should be advised of the risks of exposure.

- Exposure of women to certain anesthetic gases can increase the risks of kidney disease, miscarriage, and birth defects.

## Technical Support

All reference guidelines, regulations, and other documents are available through EHS by calling 734-647-1143 or emailing EHS-AnimalSafety@umich.edu or the EHS website.

## Attachments

Appendix A: Informational Resources for Animal Handlers

# Appendix A : Informational Resources for Animal Handlers

Broadly speaking, there are four types of potential hazards you need to be aware of:

- Zoonotic diseases
- Animal bites and other traumatic injuries induced by animals
- Allergic responses
- Sharps

**Zoonoses** are infectious diseases transmitted from animals to man. Most animals used in research do not pose a risk to people handling them because whenever possible, disease-free animals are utilized as research subjects. Nevertheless, on rare occasions, animal handlers can contract diseases from research animals. For example, two serious zoonoses that are relatively rare but often fatal are rabies and Macacine herpesvirus 1 (Herpes b). Rabies can be carried by a number of wild mammals such as bats, raccoons and skunks, but may also occur in domestic carnivores such as dogs. By comparison, the Macacine herpesvirus 1 (Herpes B virus) is carried only by certain species of nonhuman primates, principally macaques such as rhesus and cynomolgus monkeys. Both diseases are transmitted through bites or scratches from infected animals. Less serious diseases can result from scratches from cats and bites from rodents.

Injury from animal bites or scratches presents two risks to animal handlers: tissue damage and secondary infections from some disease-causing agents (pathogens) that are found on the oral mucous membranes or in the saliva of laboratory animals. Although the bites and scratches inflicted by small animals usually result in only minor wounds, those inflicted by larger animals can result in substantial tissue damage. Proper handling techniques are essential in preventing animal induced injuries.

**Animal allergies** are among the most common conditions that adversely affect the health of personnel involved in the care and use of animals in research. Allergies can be manifested as allergic rhinitis (characterized by runny nose and sneezing), asthma, or contact urticaria (hives). Allergy to animals is particularly common in workers exposed to animals such as cats, rabbits, mice, rats, gerbils, and guinea pigs. Symptoms typically develop within the first year after a person begins working with animals but may appear even years later. Certain procedures should be routinely followed in order to prevent the development of animal allergy. Animals should be housed, as well as manipulated and/or handled, in extremely well ventilated areas. Gloves and protective clothing should always be worn to prevent direct exposure to animals, animal urine, and animal dander (small particles of animal hair, feathers, or skin). In order to prevent the inhalation of contaminated material, cages should be changed frequently, and an EHS approved respirator (N-95) should be worn when ventilation controls are not available.

Although latex gloves are effective in preventing transmission of infectious diseases and allergens, latex itself contains proteins which have been shown to cause allergy. Latex allergy is a reaction to proteins in latex rubber. The amount of latex exposure needed to produce sensitization or allergic reaction is unknown. Increasing the exposure to latex proteins increases the risk of developing allergic symptoms. In sensitized persons, symptoms usually begin within minutes of exposure; but they can occur hours later and can be quite varied. Mild reactions to latex involve skin redness, rash, hives, or itching. More severe reactions may involve respiratory symptoms such as runny nose, sneezing, itchy eyes, scratchy throat, and asthma.

**Sharps** are commonly encountered in research involving animals. Needles, broken glass, syringes, pipettes, and scalpels are all used in animal facilities and laboratories. Puncture-resistant and leak proof containers for sharps are available in the animal housing rooms and in laboratories. Basic rules to remember when working with sharps:

- Never recap needles after use (have a sharps container nearby).
- Dispose of syringes, needles, glass, vials, and scalpels in a sharps container only and do not overfill the container.
- If you cut yourself, perform first aid immediately and report the incident to your supervisor promptly.

| ***Revision History*** | | |
|---|---|---|
| 9/28/2026 | Link Update | Update ECP, CHP, BS, RASC, Animal Handler PPE, Animal Anethetics links (TAJ) |
| 2/1/2026 | Annual Revision | JB - updated medical surveillance with Enterprise Health information. |
| 04/01/2025 | Partial Revision | |