Dickinson

Occupational Health & Safety in the Animal Care and Use Program

October 17, 2022

I. Purpose and Application

The purpose of this program is to prevent occupational injuries and illnesses associated with the care and use of research animals. This program is an addition to, not a replacement for, other health and safety programs at Dickinson College, including but not limited to those addressing: chemical hygiene, bloodborne pathogens, radioactive materials, personal protective equipment, and waste management. All safety policies are posted in the Campus Policy Manual.

Dickinson College is required to have an occupational health and safety program (OHSP) to comply with the Office of Laboratory Animal Welfare (OLAW), Public Health Service and the Animal and Plant Health Inspection Services (APHIS), United States Department of Agriculture. The primary reference for development of this program was *Occupational Health and Safety in the Care and use of Research Animals* (National Research Council, 1997).

This program applies to:

- All paid employees (including student employees and summer research students) of Dickinson College with frequent or substantial exposure and contact with research animals including faculty, staff, and students who may have direct contact as a result of their responsibilities.
- All (unpaid) students listed in an active IACUC protocol
- All (unpaid) students in advanced courses who have animal handling duties

This program does not apply to:

- Students who are only exposed to animals in a classroom setting where observation of the animal is the primary objective.
- Faculty, staff, students, or visitors who may visit the vivarium for a short duration of time for the purpose of observation, tour, or unrelated duties such as housekeeping and facility maintenance.

All participants in the OHSP will be provided a health survey to complete (Appendix A). The health survey will be reviewed by the Dickinson College Wellness Center (for students, regardless of employment status) and by a contracted occupational health physician or, if the employee chooses their own personal physician, (for Dickinson College faculty and staff) to determine immunization status, and any existing medical conditions that create an animal contact health risk. The physician will recommend any necessary accommodations required for the individual to work with the animal species specified on the health survey form.

II. Responsibilities

a. **The President of the College** has ultimate responsibility for occupational health and safety in the care and use of research animals. General oversight is assigned to the **Provost.**

b. The **Director of Compliance & Enterprise Risk Management** assists with the recognition, evaluation and control of hazards in the workplace and:
    i. Performs site inspections
    ii. Audits safety programs
    iii. Contracts occupational health services
    iv. Contracts equipment performance testing and certification for biosafety cabinets and fume hoods
    v. Assists with accident investigations
    vi. Assists with facility design
c. The **Director of Sponsored Projects and Research Compliance**:
    i. Manages and tracks IACUC specific training via electronic systems
    ii. Maintains records
    iii. Performs site inspections
d. The **Principal Investigator** has primary responsibility for safety in the workplace and:
    i. Distributes annual health survey forms to OHSP participants
    ii. Provides site specific training to OHSP participants
    iii. Properly manages hazardous waste
    iv. Maintains good housekeeping
    v. Cleans UV lamps on biological safety cabinets
e. The **Institutional Animal Care and Use Committee (IACUC)** approves all work conducted on live vertebrate animals and:
    i. Inspects animal facilities on a semiannual basis
f. The **Institutional Biosafety Committee (IBC)** approves all work involving biohazardous materials; human, animal, and plant pathogens; toxins; allergens; and recombinant DNA.
g. The **Radiation Safety Officer (RSO)** approves all work with radioisotopes or radiation producing machines.

III. Hazard Recognition

A. Physical Hazards

1. Bites, Kicks, Scratches

Most animals are capable of biting and scratching. Using proper handling methods will help prevent bites, kicks, and scratches. OHSP participants should review educational materials on safe animal-handling techniques and should have supervised instruction before undertaking a new procedure. Personal protective equipment such as nitrile gloves and lab coats should be worn.

The bacteriology of bite wounds is dependent on the oral flora of the animal. Injured employees should report all injuries as soon as possible, and seek prompt medical assistance following exposure. Injured students should report their injury to their professor or supervisor and seek treatment at the Wellness Center.

2. Sharps

Needles and syringes, broken glass, pipettes, and scalpels are commonly used in animal facilities. Where these sharps are used a puncture-resistant and leak proof container is needed for disposal. Where blood and other potentially infectious materials are used, workers must be trained on the exposure control plan. Sharps and other materials potentially contaminated with bloodborne pathogens must be disposed of as hazardous waste.

3.Nonionizing Radiation

Ultraviolet radiation is often used to sterilize surfaces in animal care facilities—particularly in biological safety cabinets. Employees with exposure to UV light must wear skin and eye protection. Additionally, chlorinated solvents should not be used around UV light or the toxic gas, phosgene, may be produced.

4.Ionizing Radiation

Researchers using radioactive materials or radiation producing machines should refer to the Dickinson College Radioactive Materials Safety Program. Any protocol using radioactive substances must be approved by the Radiation Safety Officer prior to approval by IACUC.

5.Ergonomics

Repetitive motions and heavy lifting are the most common causes of ergonomic injuries in animal research. Activities contributing to injury include lifting heavy feed bags, lifting heavy animals, lifting bulky cages, and mopping.

6.Machinery

Improperly guarded machines can cause injury by pinching or crushing body parts. Cage washers and other machinery should be evaluated to determine where nip, pinch, and crush points exist and those points should be guarded appropriately.

7.Noise

When noise exceeds an 8-hour average of 85 dBA, employees must be placed in the Dickinson College Hearing Conservation Program. When noise exceeds an 8-hour average of 90 dBA, employees are required to wear hearing protection. Common sources of noise in animal facilities include the animals and cage washing equipment.

B. Chemical Hazards

Common chemicals found in animal facilities include anesthetic gases, drugs, preservatives, and disinfectants. Refer to the Dickinson College Chemical Hygiene Plan.

C. Biological Hazards

1.Infectious Agents

Researchers using infectious agents should refer to *Biosafety in Microbiological and Biomedical Laboratories*[1] (It identifies four biosafety levels and their respective control methods. Researchers working with recombinant DNA should refer to *Guidelines for Research Involving Recombinant DNA Molecules* (NIH 2019).[2] Any protocol using infectious agents or recombinant DNA must be approved by the Institutional Biosafety Committee prior to approval by IACUC.

2.Allergens

To prevent or reduce allergies, animal work should be done in a well-ventilated area. Exhaust air shall be HEPA filtered if it will be recirculated to the room. Animal cages should be cleaned and bedding changed frequently. Cage cleaning should be done in a ventilated hood or work station when feasible. Ventilated or filter-top cages with solid bottoms are recommended. Absorbent pads are recommended over wood-based chips or saw dust. Employees must wear gloves and a lab coat and all personal protective equipment must remain in the workplace. Employees are encouraged to wash their hands frequently.

Hair caps and shoe covers are available, but are not required.

3. Zoonosis

The transmission of diseases between animals (including humans) is uncommon in the laboratory environment when healthy animals are purchased from reputable vendors and then properly cared for under the direction of a veterinarian. Researchers should be aware of zoonoses specific to the animal species they are working with and take necessary precautions to control these hazards. For this reason, the use of wild caught animals is discouraged. Control methods include but are not limited to: preventing bites and scratches, adequate ventilation and respiratory protection, frequent hand washing, and good personal hygiene.

IV. Control Measures

The Occupational Safety and Health Administration (OSHA) requires employers to protect their employees from workplace hazards. The preferred way to do this is through engineering controls or work practice and administrative controls, but when these controls are not feasible or do not provide sufficient protection, an alternative or supplementary method of protection is to provide workers with personal protective equipment (PPE) and the know-how to use it properly.

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[1] 6th edition – U.S. Department of Health and Human Services Public Health Service, Centers for Disease Control and Prevention, National Institutes of Health. HHS Publication No. (CDC) 21-1112
Revised June 2020

https://www.cdc.gov/labs/BMBL.html

[2] https://osp.od.nih.gov/wp-content/uploads/NIH_Guidelines.pdf

A. Engineering Controls

1. General Room Ventilation

Dilution ventilation helps reduce the level of allergens caused by dander and excreta and helps control temperature and humidity to ensure personnel comfort. Higher volumes of air exchange are needed in cage cleaning and washing areas where the level of allergens and heat load are the greatest. To protect against exposure to chemical and biological hazards, it is often necessary to employ local exhaust ventilation in addition to general room ventilation.

2. Local Exhaust Ventilation

a. **Chemical Fume Hoods** provide local exhaust ventilation to protect employees from aerosols, fumes, vapors, and gases generated during the use of chemicals. Fume hood performance must be certified annually to ensure an average face velocity between 80—120 fpm.

b. **Biological Safety Cabinets** provide containment for infectious agents. Depending on the type of safety cabinet it may provide protection to the biological agent, personnel, or both and it may or may not be used as a fume hood. Biological safety cabinets must be tested and certified after installation or after being moved and recertified at least annually by appropriately trained personnel. The biocidal capacity of UV lights in biological safety cabinets decreases with time and is adversely affected by contamination with dust or chemical films. Bulbs should be cleaned once a week and replaced on a regular schedule to maintain proper performance.

c. **Cage Systems** including cage filter tops are commonly used in animal research facilities to prevent cross contamination among animals and between animals and people. Cage filter tops prevent particles from entering cages. Less common are isolation cages with filter tops. These cage tops form a seal with the cage providing complete isolation between animals. Isolation cage tops should only be removed in biological safety cabinets to maintain isolation. Ventilated cage systems use local exhaust to contain and exhaust bioaerosols and they maintain negative pressure within the cage with respect to the surrounding environment and exhausted air is filtered through a HEPA filter.

d. **Autoclaves** use high pressure steam to sterilize equipment and material before use or disposal. Autoclave performance must be validated using biological indicators to ensure proper sterilization. The use, performance, and testing of autoclaves is the responsibility of the academic department in which the autoclave resides.

B. Administrative (Work Practice) Controls

Where hazards cannot be controlled by engineering, work practice controls shall be used.

1. Access to animal facilities is limited to authorized personnel only.

2. Animal Handling and Restraint

All employees, students, and visitors who will handle animals shall be trained in proper animal handling techniques. Employees should wear personal protective equipment specific for the animal being handled. Species specific restraint techniques should be used. Where possible choose a mechanical or chemical restraint over manual restraint. Be aware that physical restraint increases the likelihood of exposure to animal excreta and aggressive behavior.

3. Housekeeping (Performed by the Vivarium Technician)

Animal facilities must be kept clean and free of obstructions. Work surfaces should be decontaminated after spills and wiped with disinfectant at the end of each work day. Floors should be cleaned and disinfected at least weekly using a HEPA vacuum then a wet mop.

4.Personal Hygiene

Employees should wash their hands frequently, and always before and after handling animals and before eating, drinking, smoking, or applying cosmetics. Eating, drinking, smoking, or applying cosmetics is prohibited where animals are housed or used. Shower facilities are available, and their use is strongly encouraged for full-time vivarium staff and any other OHSP participant.

5.Waste Disposal

Refer to the Dickinson College Comprehensive Waste Management Program.

6.Occupational Health Services

Occupational health services at Dickinson College are provided by external occupational health physicians and their services include but are not limited to:

- providing immunizations (e.g. – tetanus or rabies)
- providing medical surveillance when exposure monitoring reveals exposure above the OSHA action level for regulated substances
- providing post-exposure prophylaxis (e.g. – rabies)
- providing pre-placement, periodic, and post-employment health evaluations to employees who have substantial animal contact or cage cleaning duties.

Determining whether or not there is substantial contact and the frequency of periodic health evaluations is a matter of professional judgment based on a number of risk factors including the level of exposure, the length of exposure, and the specific hazards. All occupational injuries or illnesses (including animal bites, regardless of severity) must be reported as soon as possible to your department supervisor, Human Resources and the Department of Compliance and Enterprise Risk Management.

Emergency medical treatment can be obtained at UPMC Carlisle at 361 Alexander Spring Road, Carlisle.

C. Personal Protective Equipment

Employees should refer to the Dickinson College Personal Protective Equipment Program for guidance on the proper selection, use, and maintenance of personal protective equipment.

- When handling animals a minimum of rubber gloves and a lab coat should be worn. Dust masks are recommended but not required.
- When changing animal bedding or manually cleaning cages, a minimum of rubber gloves, lab coat, and eye protection should be worn.
- Personal protective equipment should be removed before leaving the animal facility. Lab coats and scrubs should be laundered on a regular basis.

V. Training

Training shall be provided prior to initial exposure to hazards in the animal care facility. Retraining shall be provided when changes in the workplace render previous training obsolete, as required by OSHA, or when inadequacies indicate that the employee has not retained the requisite knowledge.

Training topics should include, but are not limited to:

- Requirements of the Dickinson College OHSP
- Animal Handling and Use
- Hazards found in the Animal Care Facility
- Hazard Control Methods
- Waste Management Procedures
- Emergency Response Procedures
- Bloodborne Pathogens

Site and animal specific training shall be provided by the principal investigator.

VI. Emergency Procedures

Emergency response should follow the following hierarchy: protect personnel, then animals, and finally the animal care facility and surrounding buildings. Provisions for relocating animals to temporary housing should be included.

A. Fire

The following steps are basic protocol for handling a fire or fire-related emergency situation in the laboratory:

1. Pull the fire alarm.
2. Evacuate
3. Do NOT attempt to extinguish a fire unless you have first warned others and/or activated an alarm
4. Call 911 from a safe location.
5. Contact Public Safety at 1111

A fire in a small vessel can usually be suffocated by covering the vessel. If the fire is burning over an area too large to be suffocated quickly (within 30 to 45 seconds) leave the firefighting to those who have been trained and equipped. If you have been trained in the use of fire extinguishers, fight the fire from a position from which you can escape, and only if you are confident that you will be successful. It is easy to underestimate a fire.

B. Spill

Refer to the Dickinson College Chemical Hygiene Plan, Exposure Control Plan, or Radioactive Materials Safety Plan for detailed instructions on emergency and nonemergency spill response.

C. Injury or Illness

For non-emergency medical treatment, under current Dickinson College policies and procedures, affected employees must seek care from a panel of approved providers. The approved provider list may be obtained by contacting the Office of Human Resources. For emergency treatment, go to the nearest facility and schedule a follow-up treatment with an approved provider. This can best be accomplished at:

UPMC Carlisle Emergency Department
361 Alexander Spring Road
Carlisle, PA 17013
717-249-1212

If you have any questions regarding injury and illness procedures, contact your supervisor or the Department of Human Resources at 245-1503.

VII. Record Keeping

A. Medical Records shall be maintained in accordance with 29 CFR 1904.
B. Training records shall be maintained by the Director of Sponsored Projects and Research Compliance.

Dickinson College - Animal Care and Use Health Survey

Employee or Student Name _____
Date of Birth_____
Date Form Completed _____
Animal Species Used or Cared For:

_____

Current Medical Conditions (Please check all that apply).

❒ Asthma	❒ Chest Tightness	❒ Itchy Eyes
❒ Hay Fever	❒ Wheezing	❒ Pneumonia
❒ Hives	❒ Coughing	❒ Current or Planned Pregnancy
❒ Allergies to Animals	❒ Shortness of Breath	❒ Diabetes
❒ Seasonal Allergies	❒ Eczema	❒ Seizures
❒ Food Allergies	❒ Undergoing Chemotherapy or Radiation Therapy	
❒ Allergies to Insects	❒ Immune System Suppressed by Disease or Other Cause	
❒ Sneezing	❒ Chronic Cardiovascular Disease	
❒ Runny Nose	❒ Chronic Respiratory Disease	

Do you have any illness or injury presently? If yes, list below: ❒Yes ❒ No

_____

Are there any other medical conditions we should be aware of? If yes, list below: ❒Yes ❒ No

_____

Do you take prescription medications? If yes, list below: ❒Yes ❒ No

_____

Do you have allergies? If yes, list below: ❒Yes ❒ No

_____

When was your last Tetanus shot?

_____

❒ I have responded to the above questions truthfully and to the best of my knowledge
❒ I was given the opportunity to complete this form and chose not to.

OHSP Participant's Signature Date

For students:

Reviewed by _____Date _____

Wellness Center gives unconditional approval to this student: _____

Wellness Center has made recommendations for further action to the student: _____

Return this form to the applicable location below prior to starting your assignment

Students – return this form to the Wellness Center

Faculty and staff – return this form to Human Resource Services; if you have checked any boxes in the current medical conditions field, answered yes to any of the checkboxes, or do not have a current Tetanus vaccination please also notify Enterprise Risk Management of your need to have an appointment with a local occupational medicine physician so that your concerns can be addressed.

History/Revision Information

Responsible Division/Office: Risk Management

Approval Date:

Effective Date: 10/27/2009

Last Amended Date: 10/17/2022

Next Review Date: 10/17/2025