

NORTH DAKOTA STATE UNIVERSITY

GUIDELINES FOR THE OCCUPATIONAL

HEALTH AND SAFETY

IN THE CARE AND USE

OF VERTEBRATE ANIMALS

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1. Guidelines for/care and Use of /Vertebrate Animals

I. Introduction

Employers and principal investigators are responsible for the health and safety of their workers, whether they are paid employees, volunteers or students. Workers must be aware of hazards that have been identified in the workplace.

A health care program is required not only for a person having “frequent contact with animals,” but for all “personnel who work in laboratory animal facilities.” These include not only animal caretakers, technicians, students, volunteers, investigators, and veterinarians but facilities maintenance engineers, housekeepers, security, and other staff. This includes preventive as well as diagnostic and treatment features.

Working with animals is not risk free but risks may be reduced by being alert, trained and working safely. Efforts are made to maintain the safety and health of animals in the Animal Care and Use Program at NDSU. Proper animal quarantine periods, timely veterinary and human medical care, and safe work practices by you and your coworkers are critical to the maintenance of a safe and healthful workplace. Your assistance is requested in reporting disease in animals and yourself.

Standards for North Dakota State University are outlined in the *NDSU Safety and Risk Management Program Employee Reference* and modeled on guidelines set forth on pages 14-18 of the Institute of Laboratory Animal Resources’ *Guide for the Care and Use of Laboratory Animals* (1996). Copies of the *Guide* may be obtained from NDSU Research Administration office or may be viewed on-line at <http://www.nap.edu/readingroom/reader.cgi?auth=free&label=ul.book.0309053773>.

II. Occupational Safety and Environmental Health of Personnel

Human occupational health and safety programs and animal colony health and use, as they relate to animal work, are under federal, state, and local regulations and are a major concern at North Dakota State University.

North Dakota State University is committed to providing a safe and healthy environment. To facilitate this objective, NDSU has established a Safety and Risk Management Program which places a high priority on the prevention of accidents and injury, and quality health care for

injured employees. It includes a review of the workplace, identification of hazards, and an assessments of jobs duties. Recommendations are made and corrective action is initiated for loss prevention and risk management.

The Safety and Risk Management Program is a significant part of the Institutional Animal Care and Use Program at NDSU. Its success is dependant on each employee's active participation and cooperation in every aspect of the program. It is also dependant on the animal husbandry facility, research protocol, and animal species involved.

Administrative or supervisory personnel, professional staff and principal investigators are responsible for an expanded role in the development of and compliance with the Safety and Risk Management Program and the Animal Care and Use Program. They will provide the incentive and full support for all safety rules and procedures, training, and elimination of hazardous practices. They will keep fully informed on all health and safety issues in order to constantly review the effectiveness of the program.

The principal investigator or professional staff will promote a higher level of safety awareness through positive leadership and reinforcement. They will not permit safety to be sacrificed for any reason, be it production, time limitations, or unexpected problems.

III. Personal Hygiene - Laboratory Safety Protocols

High standards of personal cleanliness among individuals having animal contact are necessary to maintain human and animal health. Basic requirements for using infectious materials are:

Ensure that all laboratory personnel including service and custodial staff, and visitors understand the chemical and biological dangers associated with the lab.

Affix biohazard signs on doors outside laboratories where biohazardous materials is handled or stored. The protocol to be followed in case of a spill of the biohazardous materials should be posted in a visible location in the laboratory.

Restrict laboratory access and keep doors locked when laboratory is unattended.

Keep the facility clean and free of clutter. Ensure that emergency safety devices (fire extinguishers, eye washes, etc.) are easily accessible and in working order.

Ensure that all personnel, students and visitors wear protective clothing such as lab coats, gloves and safety glasses. Remove lab coats or gowns before leaving the laboratory; never wear lab clothing in eating facilities.

Avoid eating, drinking, smoking, storage of food and food utensils, application of cosmetics or lip balm and insertion or removal of contact lenses in the laboratory.

Restrain long hair. Avoid wearing loose clothing or jewelry, shorts, open-toed shoes or sandals.

Observe “Universal Precautions” when collecting, processing, storing, shipping or transporting blood or body fluids; handle such specimens as if infected with a blood borne pathogen such as Hepatitis B.

Carry out procedures so as to minimize risks of splashes, spills, and generation of aerosols.

Refrain from pipetting my mouth.

Use hypodermic needles only when absolutely necessary. Do not bend, break, shear or recap used needles. Use the appropriate sharps containers.

Use a two-person team to inoculate animals.

Wash hands after handling infectious material, even when gloves have been worn and before leaving the laboratory.

Decontaminate all contaminated materials before disposal or reuse.

Decontaminate laboratory surfaces following any spill of biohazardous materials and at the end each work day.

Report all spills, accidents and incidents, as required by the NDSU Safety and Risk Management Program.

Any additional or job specific requirements or precautions will be outlined by the principle investigator or supervisor prior to the start of the procedure or project.

IV. Personal Protective Equipment

Protective equipment, to include personal protective equipment (PPE) for eyes, face, head, and extremities; protective clothing, respiratory devices, and protective shields and barriers, shall be provided, used and maintained in a sanitary and reliable condition.

This equipment shall be used wherever it is necessary by reason of hazards of processes or environment, chemical hazard, radiological hazard, or mechanical irritants encountered in a manner capable of causing injury or impairment in the function of any part of the body through absorption, inhalation or physical contact.

Any additional equipment or job specific requirements or precautions will be outlined by the principle investigator or supervisor prior to the start of the procedure or project.

Please refer to NDSU's Safe Operating Procedure on *Personal Protective Equipment*. A copy of this standard may be obtained from Occupational Safety & Environmental Health Office (OSEHO).

Attachment: PPE Std.

V. Training

NDSU's Institutional Animal Care and Use Committee (IACUC) and the OSEHO will provide the principal investigators, employees, and new students with the required training or training aids that outline general health and safety issues at NDSU and issues associated with working with vertebrate animals. The IACUC and OSEHO will serve as the primary resource and will assist principal investigators in locating and obtaining training materials, or assist in designing training materials to meet specific needs.

Principal investigators will be responsible to provide training for students and employees working under their supervision; ensuring the scientists, research technicians, animal technicians, and other personnel involved in animal care, treatment, and use are qualified to perform their duties. The training will be specifically tailored to the species and the techniques to be used.

The principal investigators shall be responsible for documentation and record keeping of all training activities. The training material shall be made available to the IACUC Chair and USDA inspectors upon request.

General health and safety issues associated with working with vertebrate animals may include:

- personal hygiene
- prophylactic vaccinations
- use of personal protective equipment
- potential hazards - to include chemical and microbiologic safety and handling of waste
- physical hazards - work related illness or injury
- zoonoses
- animal care after human accident
- susceptibility of personnel - to include pregnant women, women of child-bearing age, and decreased immunocompetence
- incident/accident reporting and medical treatment

The principal investigator on a project is responsible for making the judgement as to when and in what situations a graduate student or research assistant may perform surgical manipulation or procedures without direct supervision. This judgement must be documented in the employee's training record.

VI. Training Materials

Federal regulations stipulate that it is the responsibility of individual institutions to ensure that people caring for or using laboratory animals are qualified to do so in a humane and scientifically acceptable manner. Continuing education activities relevant to program responsibilities are expected, with both formal and on-the-job training to ensure effective implementation.

Special training programs shall be provided for technicians and faculty, as well as undergraduate, graduate, and postdoctoral students who work with animals.

With this in mind, the NDSU Institutional Animal Care and Use Committee has put together a collection of educational videotapes and print material which are available on request at the Circulation Desk of the NDSU Library. The materials may be checked out either in a two-hour block for viewing and study in the library, or for overnight use.

This collection of educational materials is intentionally broad to cover the spectrum of activities undertaken by NDSU faculty. These materials provide a valuable informational resource available to all NDSU personnel and students, but the use of this resource can only be recommended. The ultimate responsibility for animal care lies with the individual faculty and staff members involved in the use of animals for research, teaching, or other NDSU purposes.

VII. Special Qualifications - Use of Hazardous Agents

Health and safety specialists with knowledge in appropriate disciplines shall be involved in the assessments of risks associated with hazardous activities and in the development of procedures to manage such risks.

Professional staff conducting and supporting research programs involving hazardous biological, chemical or physical agents shall be qualified to assess dangers associated with these programs and capable of selecting safeguards appropriate to the dangers of using hazardous agents.

Animal care staff shall understand the hazards involved and shall be proficient in implementation of the required safeguards. Potentially hazardous chemicals in the animal laboratory and care room may be found in disinfectants, cleaning agents, pesticides, feeds and bedding.

Standards for North Dakota State University's use of radioisotopes and controlled substances will follow the guidelines set forth in the *NDSU Radiation Safety Handbook and the NDSU Hazardous Chemical Management Plan*. Copies of the manuals may be obtained at the OSEHO or by contacting the University Safety Director.

VIII. Occupational Health Program and Medical Monitoring

While prevention is the most desirable means of minimizing the risk of transmission, it is not always 100 % effective, so having a means of checking the health status of those involved in animal studies or animal care is a necessary safety valve.

NDSU in conjunction with IACUC and OSEHO had developed an occupational health program, in the care and use of vertebrate animals, which includes medical monitoring for students and staff who, as a part of their duties, are or may be exposed to zoonotic agents.

IX. Features of the Medical Monitoring Program

All procedures are specific to the species of animal involved and the nature of contact. They are designed to be relevant only to the diagnosis of zoonoses, and are not used for any other purpose.

The program is free of charge for North Dakota State employees and students who are involved in animal studies. Participation is optional; however, those choosing to opt out of the program must sign a waiver.

All medical records remain confidential, will be maintained only by the administrating physician, and will be shared only with the patient. The physician will inform the University only in instances where active zoonoses are diagnosed. Such cases will be handled no differently than any other illness which compromises the safety of the individual or that of others.

A. Pre-Placement Assessment

Pre-placement evaluations are conducted to ensure that the individual is capable of the demands and exposure of the job and to provide a **medical reference baseline**.

Personnel whose duties or activities involve working with vertebrate animals will be required to complete a written health evaluation (medical history) form prior to beginning their duties or activities.

Medical examinations will be performed only if health problems are clinically indicated. **Personnel whose exposure to vertebrate animals is less than 20 hours per week may, upon written request, be exempted from the required health evaluation.**

B. Periodic Examinations

Allows for detection of early states of disease, updating immunizations, and for reevaluation of any medical restrictions.

Follow-up evaluations will be required, at a minimum, every two years - to include

review of current health status. Examinations/tests shall be performed accordingly if symptoms or exposure history merits it.

Persistent symptoms, symptoms that indicate the onset of a work-related illness, or the occurrence of a work-related injury shall prompt immediate and appropriate medical evaluations and care.

C. Immunizations

Vaccinations are recommended if research is to be conducted on infectious diseases for which effective vaccines are available. A consulting physician will make all decisions with respect to immunizations.

- 1) Tetanus immunization; boosters suggested every 10 years. The history of immunization will be determined at the time of the initial assessment. Additional immunizations will be administered as needed.
- 2) Rabies immunization - pre-exposure immunizations with follow-up antibody titers every two years, repeat immunizations are required as follows if you:
 - a. work directly with the rabies virus;
 - b. have direct contact with animals quarantined for rabies surveillance;
 - c. are exposed to animals or animal parts with potential of containing rabies virus; and/or
 - d. are responsible for the control of wild animals on campus.
- 3) Hepatitis B immunization - pre-exposure immunization with follow up series as deemed necessary.
- 4) Other - the consulting physician will collaborate with the principal investigator, the IACUC Chairman and OSEHO to advise on or determine the need of other or additional immunizations.

D. Serum Banking - to serve as a reference sample if ever zoonosis transmission is suspected. Pre-employment or pre-exposure serum collection is advisable only in specific circumstances as determined by the consulting physician.

E. Allergies - to be identified and documented at the time of the pre-placement assessment.

Individuals with preexisting allergic tendencies will be encouraged to seek help from a private physician.

Individuals with work-related allergies will be encouraged to seek advice from the consulting physician.

X. Female Caretakers

Serological samples shall be taken on all women handling high-risk species prior to beginning work to avoid confusion about the significance of various positive antibody tests in case of subsequent pregnancy.

Female caretakers, especially those of child-bearing age, without immunity to toxoplasmosis (cat scratch disease), should not be exposed to possible toxoplasmosis infection from infected species or contact with cats.

Working with hazardous agents, in particular exposure to the possible inhalation of toxic chemicals, in the first trimester of pregnancy is discouraged.

Personal Protective Equipment shall be worn at all times with additional precautions outlined by the principal investigator or supervisor prior to the start of the project.

XI. Special Qualifications - Exposure/ High Risk Employees

Medical conditions that might alter an employee's exposure-risk profile shall be identified at the pre-placement assessment. These could include current conditions (such as tuberculosis) and possible future conditions (such as pregnancy in women of child-bearing age).

Medical conditions that could temporarily alter fitness for duty or require on-site emergency treatment (such as diabetic hypoglycemia and epileptic seizures) must be documented and appropriate contingency plans can be made.

Appropriate accommodations, job modifications, or personal protection equipment must be identified and in place prior to start of employment.

XII. Zoonoses

Zoonoses are diseases that can be transmitted from animals to humans and may be acquired through various routes. In many cases the animals show little, if any, sign of illness. Animal contact includes contact with animal products, the animal itself or a byproduct of the animal.

Individuals whose work involves exposure to or handling of animals and animal tissues, body fluids and cell cultures should be aware of the possibility of illnesses that may be transmitted by contact with animals.

The routes of infection include ingestion, inhalation, penetration of broken or unbroken skin, wound penetration, and contact with the mucous membranes of the eyes, nose and mouth via the following:

- animal bites and scratches
- contact with animal tissues and cultures, body fluids and excreta
- inanimate objects that are contaminated by the animal or animal contact

- exposure to aerosols produced as a result of activities such as cleansing of cages

All known human exposure to a zoonotic disease is considered an accident and must be reported by the employee to the principal investigator or their supervisor for appropriate medical treatment and investigation. An Employee and Supervisor Incident/Accident Report is filed.

If a zoonotic disease is suspected in an animal, the principal investigator or supervisor, and the IACUC Chairman shall be notified immediately for appropriate action. No Incident/Accident report is filed.

Table - Examples of laboratory-acquired zoonoses, causative microorganisms, and animals most commonly in contact with humans.

	<u>Disease</u>	<u>Means of Spread</u>	<u>Animal</u>
Viral	Rabies	Bites, saliva contact	Dogs, bats, other feral animals
	Lymphocytic choriomeningitis	Contact, inhalation	Mice, guinea pigs, cattle
	Hantavirus Pulmonary Syndrome	Contact, inhalation, ingestion	Rodents: deer mice, mice, rats
	<u>Disease</u>	<u>Means of Spread</u>	<u>Animal</u>
Bacterial:	Anthrax	Contact, inhalation, ingestion	Farm animals
	Brucellosis	Contact, ingestion	Swine, sheep, goat, dog, cattle
	Tuberculosis	Contact, inhalation, ingestion	Primates
	Salmonellosis	Contact, inhalation, ingestion	Farm animals, rodents, reptiles
	Tetanus	Bite, soil contaminated puncture wound	Horses, soil, other mammals
	Chlamydia psittaci	Contact, inhalation	Birds
	Francisella tularensis	Contact	Rabbits

Fungal	Ringworm	Contact	Dogs, cats, guinea pigs, cattle
	Histoplasmosis	Inhalation	Dogs, other domestic or wild species
Rickettsial	Q-fever	Contact, inhalation, ingestion	Cattle, sheep, goats
Protozoan	Toxoplasmosis	Ingestion of oocytes, and inhalation	Cats

All personnel are advised to contact the principal investigator or immediate supervisor for additional guidance and detailed information on specific zoonoses. Special attention shall be given to appropriate animal handling procedures, personal hygiene and protective equipment specific to the animal type and use.

XIII. Animal Care after Human Injury

An animal may require special procedures to identify the risk of human exposure to diseases. All samples, animals or equipment involved in a human injury shall be preserved and have special identification to aid in further testing and/or procedures.

The principal investigator or supervisor and the IACUC Chairman should be notified immediately for appropriate care of the animal, investigation of the incident and corrective action.

If the animal is used for teaching or research, medical information and care required shall be relayed to all participants

XIV. Incident/Accident Investigation and Reporting

All work related incidents, work related injuries/illnesses and work related near misses, or those incidents/accidents that appear to have no apparent adverse effect, shall be reported immediately by the employee to their immediate supervisor or the principle investigator.

A report must also be filed when a known human exposure to a zoonotic disease occurs.

If the immediate supervisor or other department supervisory or administrative personnel are unavailable, the employee will call the NDSU Police (231-8998) to report incidents involving employee work related injury and/or property damage. Please refer to the *NDSU Safety and Risk Management Program Employee Reference* for procedures, detailed instructions and review of the appropriate claim forms.

