

ANIMAL SAFETY

(For assistance, please contact EHS at (402) 472-4925, or visit our web site at <http://ehs.unl.edu/>)

Use of animals in research, teaching, and extension is subject to the primary authority of the UNL Institutional Animal Care and Use Committee (IACUC). Protocol registration and requirements for animal care and welfare are available at <http://research.unl.edu/orr/iacuccomp.shtml>. This SOP is not intended to supplant any of the requirements or authority of the IACUC. Rather, it is intended to provide guidance regarding occupational health and safety considerations related to animal handling and use. The scope of this SOP is broad in that it includes safe practices that may apply to insects, reptiles, and other species that may not be subject to IACUC oversight.

Hazard Identification/Risk Assessment

Working with animals presents many hazards that can lead to injuries and/or illnesses. Conduct of a thorough risk assessment is an effective means of identifying potential hazards and developing mitigation measures to reduce risk. The basic process is described in the EHS SOP, **Job Safety Assessments**. Examples of hazards unique to animal handling that are relevant to the risk assessment process are provided below. Add to this list as appropriate to address specific situations, species, tasks, as well as actual injuries/illnesses and near-misses.

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| Kicks, bites, scratches | Zoonotic diseases |
| Slips, trips, falls | Crushing, goring |
| Allergies to animal/molds | Electric shock |
| Equipment pinch points | Chemicals (insecticides, injectables, fixatives) |
| Sharp objects/surfaces (cuts) | Extreme temperatures |
| Lifting, pushing, pulling | Specialized devices (X-ray, lasers, etc.) |
| High pressure devices (air compressors, pressure washers, hydraulics, etc.) | |

The reference publications used by IACUC contain detailed information on effective control of many of the hazards described above. Additional information on specific hazards for which EHS is often asked to provide consultation is provided below:

- **Animal Bites, Scratches, and Stings:** Bites and scratches received by individuals who work with animals, while not uncommon, are preventable. Procedures to be followed in response to bites, stings, and scratches follow.

Minor Incidents; Non-Venomous and Mildly Venomous	Major Incidents; or Highly Venomous
<ul style="list-style-type: none"> • Take immediate action to prevent further bites or scratches by evacuating the confinement area, removing limbs from cages, etc. If applicable and possible, lock cages or enclosures to prevent the animal 	<ul style="list-style-type: none"> • Immediately dial 9-1-1 and request advanced care. Administer first aid until relieved by emergency responders. • Notify EHS at (402) 472-4925 and IACUC at (402) 472-4486 during normal business

<p>from escaping.</p> <ul style="list-style-type: none"> • Immediately administer first aid. Wash the affected area with soap and water. Thoroughly irrigate affected mucous membranes. • Mild over-the-counter analgesics may ease pain and discomfort. • Seek medical attention if known allergies exist; or if infection or severe allergic reaction is suspected. • Complete a first report of injury. 	<p>hours; or via the Campus Operator at "0" (472-7201), after normal working hours.</p> <ul style="list-style-type: none"> • Complete a first report of injury. <p>If available and after consultation with a medical professional, stock a supply of appropriate anti-venom.</p>
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- **Animal Allergens:** Persons at greater risk of developing animal allergies as a result of their activities with animals include persons who have other allergies (e.g., latex, pollen, foods), allergies to domestic pets, family history of allergies, asthma or other lung disorders, and those who have a history or working with animals. The prevalence of allergic symptoms in the general population of regularly exposed animal-care workers ranges from 10% to 44%.

Allergic reactions result from an immune system response to proteins present in an animal's saliva, scales, serum, urine, feces, and dander through contact with the person's skin or mucous membranes, ingestion, inoculation, or inhalation. Symptoms may occur within 30 minutes following exposure or may not develop until several hours later, with an increase in severity possible for up to 12 hours.

Allergic individuals may display an assortment of symptoms such as:

- Rhinitis (runny nose and sneezing) or nasal congestion
- Conjunctivitis (irritation and tearing of the eyes)
- Coughing, wheezing, and/or shortness of breath
- Contact dermatitis (red, bumpy skin rash)

Allergies can often be managed by a combination of medical and workplace strategies. Employees that develop allergies or symptoms as a result of their job should file a **First Report of Alleged Occupational Injury or Illness Form** and arrange for evaluation by the UNL Occupational Physician. See EHS SOP, **On-The-Job Injuries and Accident Investigations** for more information. The following practices may help reduce exposure to animal allergens.

- Perform small animal manipulations, cage emptying, and bedding changes in a ventilated hood or biosafety cabinet. House small animals in HEPA filtered cages.
- Adhere to animal room ventilation rates specified in the *Guide for the Care and Use of Laboratory Animals*, (National Research Council, 1996) and the *Guide for the Care and Use of Agricultural Animals in Agricultural Research and Teaching* (Federation of Animal Science Societies, 1999).
- To the extent feasible, reduce animal numbers.
- Wear gloves, eye protection, and long-sleeved outer garments to minimize skin and eye contact and contamination of street clothing. Discard disposable outer garments or launder reusable protective clothing at work or have it cleaned by a professional service. In some cases, respiratory protection may be necessary. Use of respirators is subject to the UNL

Respiratory Protection Program and generally requires medical qualification, fit-testing, and training.

- Steel toe boots are necessary when working with large animals.
 - Wash hands frequently and avoid touching hands to face while working with or around animals. Wash hands and exposed areas of the skin immediately after removing personal protective equipment and outer garments.
 - Keep cages and work areas clean, change bedding often, and disinfect routinely. Use wet methods for cleaning to avoid creation of dusts.
 - Use beddings that are not dusty, preferably non-contact pads.
- **Zoonoses:** Some vertebrate animals may be infected with or carry zoonoses, which are bacteria, viruses, rickettsia, fungi, or parasites that can cause disease in humans. Infection can occur through bites, scratches, contact with secretia or excretia, inhalation of aerosols, contact of the eye with contaminated materials, etc. Zoonotic diseases are more of a concern with wild animals than with laboratory animals. However, laboratory animals can become infected if housed outdoors, intentionally challenged, or if a good pest and rodent control program is not in place. The table below contains a partial list of zoonotic diseases and their hosts.

Disease/Agent	Common Hosts
Acariasis, AKA Mange (<i>Sarcoptes scabiei</i>)	Dogs and some wild animals (i.e., fox)
Anthrax (<i>Bacillus anthracis</i>)	Cattle, sheep, goats, horses, wild herbivores
Brucellosis (<i>Brucella ssp. melitensis, abortus, suis, and canis</i>)	Dogs, cattle, goats, sheep, swine
Campylobacteriosis (<i>Campylobacter ssp. jejuni and others</i>)	Birds and poultry in particular, but other species can also become infected and act as carriers including but not limited to cattle, dogs, and cats
Cat-Scratch Fever (<i>Bartonella henselae</i>)	Cats
Cryptosporidiosis (<i>Cryptosporidium parvum</i>)	Wide variety of mammals, including humans, cattle, sheep, goats, pigs, and horses, deer, raccoons, opossums, rabbits, rats, mice, and squirrels
Giardiasis (<i>Giardia intestinalis</i> , AKA <i>Giardia lamblia</i>)	Domestic and wild warm-blooded animals
Hantaviral Disease (<i>Bunyaviruses</i>)	Wild rodents
Leptospirosis (<i>Leptospira</i>)	Rats, mice, squirrels, hamsters, rabbits, dogs, horses, domestic livestock and other mammals and amphibians
Listeriosis (<i>Listeria monocytogenes</i>)	Wide spread, occurring in more than 40 species of animals including cattle, swine, birds, and poultry
Lymphocytic Choriomeningitis (<i>LC virus</i>)	Rodents (especially house mice and hamsters)
Newcastle Disease (<i>Paramyxoviridae</i>)	Birds, including poultry
Plague (<i>Yersinia pestis</i>)	Cats, wild rodents, fleas
Psittacosis (<i>Chlamydia psittaci</i>)	Birds, including poultry
Q-fever (<i>Coxiella burnetii</i>)	Sheep, goats, and cattle
Rabies (<i>Rhabdoviridae</i>)	Although all species of mammals are susceptible to

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	rabies virus infection, only a few species are commonly infected (i.e., fox, coyotes, skunks, raccoons, bats)
Rat-Bite Fever (<i>Streptobacillus moniliformis</i>)	Rats and mice
Ringworm (<i>Microsporum, Trichophyton</i>)	Dogs, cats, cattle, rodents, and other animals
Salmonellosis (<i>Salmonella</i> spp.)	Cattle, chickens, reptiles (depending on <i>Salmonella</i> spp.)
Shigellosis (<i>Shigella</i> spp.)	Rodents, poultry, horses, primates
Toxoplasmosis (<i>Toxoplasma gondii</i>)	Cats
Tuberculosis (<i>Mycobacterium</i> spp.)	Swine, sheep, goats, rabbits, cattle, cats, dogs, and some birds
Tularemia (<i>Francisella tularensis</i>)	Rabbits, deer, and rodents
Vesicular stomatitis (<i>Vesiculovirus</i> in the family <i>Rhabdoviridae</i>)	Swine, cattle, horses, bats, rodents, and wild mammals via biting insects and contact
West Nile Fever Virus (family <i>Flaviviridae</i> , genus <i>Flavivirus</i>)	Wild birds, horses, and other warm blooded animals via mosquito bite

Many of the same practices for reducing risk of developing animal allergens and suffering bites and scratches are also effective in reducing the potential for infection with zoonotic agents. In addition:

- Implement an effective pest management program.
- Quarantine and remove sick animals from the general animal population. Do not unduly expose employees to any sick animal.
- Immunize animals and keep them free of parasites. If there is high risk of contracting a zoonotic disease, immunize animal handlers/users.
- Do not consume food or beverages in the immediate vicinity of animal handling areas.
- Implement engineering and other controls for animal manipulations that may create aerosols.

General Animal Facility Design

The first line of defense in reducing the risk of hazards posed by working with animals is engineering controls, particularly those related to the design of the animal facilities. Specific animal welfare design criteria are discussed in detail in publications referenced by the IACUC. In addition, this SOP does not address design criteria specified in Nebraska Title 130, *Livestock Waste Control Regulations*.

- Area lighting should be even and diffused. Sharp contrasts between brightly and poorly lit areas produce shadows that may cause animals to panic.
- Facilities should be designed to allow easy access to and exit from animal confinement areas, as well as emergency exits.
- Electrical outlets and circuits in the building should be grounded and appropriately sized for the load. If they are in a location prone to being wet, they should be equipped with Ground Fault Interrupters (GFIs). Use extension cords only for temporary purposes and that are approved for outdoor use.

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- Incorporate floor design features to ensure even and secure footing and ease of cleaning. Make sure ladders, steps, and flooring are sound, and that steps are equipped with a handrail.
- Avoid visual interferences. For example, blocking gates in a chute should not form line of sight barriers to the animal ahead since herding animals tend to follow each other.
- Guard or eliminate sharp protruding surfaces or points (e.g., edge or corner of a beam, board, cabinet, containers, nails or bolts, etc.).
- Make sure electrical machinery is properly installed, grounded, maintained, and shielded. Make sure equipment can be locked out during maintenance and use lockout procedures for maintaining the equipment. Starting switches should be convenient and in full view of others who may be working in the area.
- Avoid creating confined spaces, such as deep sumps. If present, adhere to UNL's Confined Space Program.
- Heat lamps for brooding should be solidly supported and shielded.

General Safe Work Practices

The second line of defense in reducing the risk of hazards posed by working with animals is administrative controls, generally consisting of safe work practices.

- Employees whose responsibilities will require them to work with and around animals must be trained by someone who has experience with the type of animals being handled prior to being allowed to perform such duties alone. In cases where an animal's behavior is being studied or where unusual behaviors might arise due to conditions of confinement, the employee should be informed in advance of what to expect and how to protect against injury or illness.
- Restrict access to animals and animal holding areas to authorized personnel only. Avoid working alone with large animals.
- Be alert when handling animals. Maintain a dominant role with an animal, but work with them in a calm and gentle manner. Avoid making loud noises. Keep groups of herding animals together for better control. Be extremely alert when separating a mother from its offspring. Be aware of and avoid circumstances and environments that might make an animal more aggressive or more skittish, and take extra precautions when these conditions exist. For example, animals may become agitated on an extremely windy day or when undergoing veterinary treatment; or they may be naturally more active at dawn or dusk.
- Leave an unobstructed exit path when working in close quarters with large animals that may become aggressive.
- Use appropriate restraining and handling devices. If an animal needs to be tapped so it will move, use a sorting stick to maintain a safe distance.
- Avoid dramatic changes in the animal's surroundings or routines.
- Do not position yourself in an animal's blind spot.
- To avoid becoming entangled in the line, handlers should never tie leads to their bodies.