WVU IACUC Guidelines:
Occupational Health and Biosafety Considerations When Working with Animals

Purpose

Occupational Health and Safety is an integral part of an animal care program. The Guide for the Care and Use of Laboratory Animals requires that "an occupational health program must be part of the overall animal care and use program.". WVU strives to ensure a safe work environment for all students, faculty, and staff. Working directly with animals can pose specific health risks. It is important to be aware of health risks and take appropriate steps to mitigate these concerns. All health and safety guidance should be provided by Occupational Health and Safety based on a risk assessment and recommendations followed by those involved in the work.

Definitions

Biosafety- Containment principles, technologies and practices that are implemented to prevent unintentional exposure to biological agents or their inadvertent release.

Zoonotic Disease- Infectious disease that is naturally transmitted from animals to humans.

Elimination- Removes source of hazard.

Substitution- Using a safer alternative to the hazard.

Engineering Controls- Risk control measures that are built into the design of a laboratory or laboratory equipment to contain the hazards. Reduces or prevents contact with hazards.

Administrative Controls- Work practices that reduce the exposure risk of a hazard.

Personal Protective Equipment- Equipment and/or clothing worn by personnel to provide a barrier against biological agents, thereby minimizing the likelihood of exposure.

Risk Assessment- A systematic process of gathering information and evaluating the likelihood and consequences of exposure to or release of workplace hazard(s) and determining the appropriate risk control measures to reduce the risk to an acceptable risk.

Considerations

1. Investigators should be aware of potential zoonotic agents of the species they are working with. Environmental Health and Safety can provide guidance on general safety measures and Occupational Medicine will provide input regarding individual risk when working with animals.

2. All animals have the potential to transmit zoonotic diseases. It is important to be aware of the general safety requirements when working with any animal.

3. Environmental Health and Safety reviews all hazards administered to animals which are described in the approve IACUC protocol. This group will provide recommendations regarding housing and safety precautions based on agent/chemical used.
    a. In certain circumstances an Institutional Biosafety Committee protocol will be required.

4. The IACUC policy on Personnel Protective Equipment should be followed when working with animals in various settings on campus.

5. When managing a potential hazard, the hierarchy of controls (Figure 1) should be considered to reduce risk of exposure, illness, or injury.

6. A risk assessment should guide the protection measures implemented.

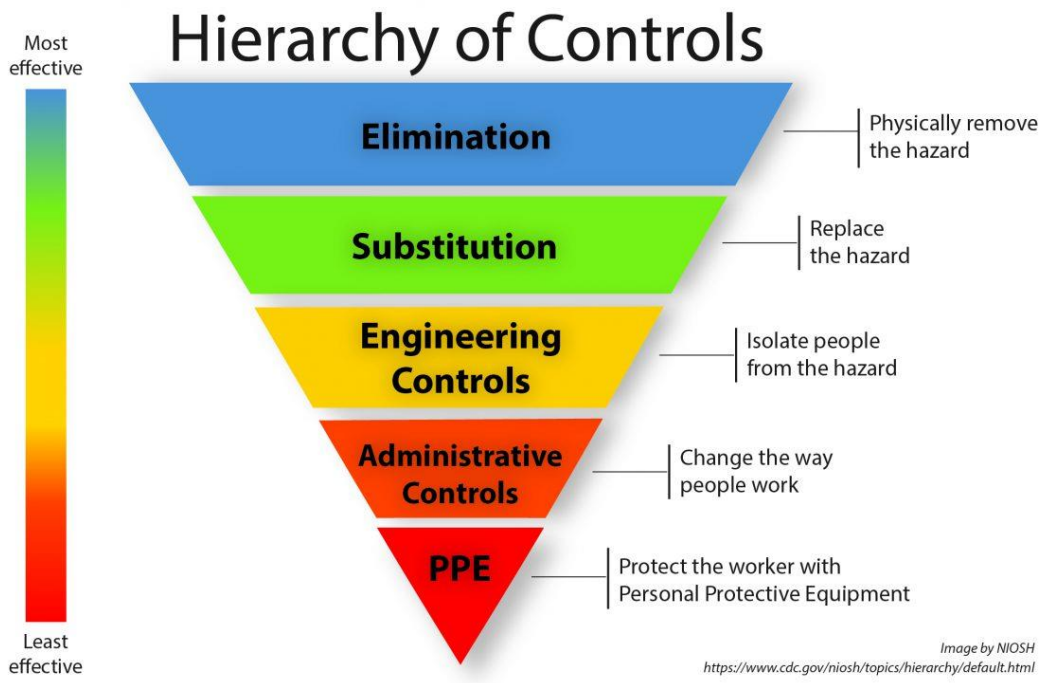
7. It is important to note that a potential zoonotic risk should be considered differently from a confirmed/active infection or working directly with an infectious agent. The degree of control measures may be different in these scenarios.
    a. If a veterinarian confirms or suspects the presence of a zoonotic agent, Environmental Health and Safety will be contact immediately to provide guidance on control measures. Appropriate signage should be posted indicating agent present and required safety measures.

8. Engineering Controls
    a. Engineering controls should be considered when working with animals and hazards.
    b. Considerations should include:
        i. Ventilation of area
        ii. Equipment that is used (Biosafety cabinet, cage change station, restraint devices, chemical fume hood).
        iii. Adequate hand-washing/shower facilities.
        iv. Housing/procedural locations

9. Administrative Controls
    a. Managers should work with EHS to evaluate work processes to ensure they meet safety requirements.
    b. Considerations should include:
        i. Work process
        ii. Assessment of number of individuals working on the task (working in pairs if hazard is involved).
        iii. Appropriate training and hazard communication to individuals involved
        iv. Adequate break times
        v. Consideration of fomites (phones, cameras, lab equipment) and disinfecting when moving out of space.

10. Personal Protective Equipment (PPE) (See IACUC PPE policy)
    a. PPE does not replace adequate Engineering and Administrative controls. PPE should not be the first line of control for hazard risk reduction.
    b. PPE must be worn properly in order to offer appropriate protection.
    c. It is important to consider order of PPE donning and doffing when work with hazards.

Figure 1. Hierarchy of Controls



https://www.cdc.gov/niosh/topics/hierarchy/default.html

Table 1. List of Example Zoonotic Agents (not a complete list)

Zoonotic Agents	Species	Transmission
Brucellosis	Ruminants, Camelids, Dogs, Swine	Ingestion, contact with mucus membranes, broken skin
Campylobacter	Poultry, cattle, swine, dogs, cats, rodents, wild birds	Foodborne, waterborne, feca-oral
Cat Scratch Disease (*Bartonella henselae*)	Cats	Scratches, bites, exposure of broken skin to saliva, conjunctival exposure
Chlamydiosis (*C. abortus*)	Sheep, goats, cattle	Contact with pregnant/aborting ruminant
Clostridial Diseases	Domestic and wild animals	Environment
Escherichia coli	Cattle, sheep, pigs (most common)	Fecal-oral
Methicillin-Resistant *Staphylococcus aureus*	Domestic animals	Direct contact
Mycobacteriosis	Many species of mammals, birds, aquatics	Ingestion, direct contact
Pasteurellosis	Many species of domestic and wild animals	Direct contact with open skin lesion, bites, scratches, contact with mucus membranes
Rat Bite Fever (*Streptobacillus moniliformis*)	Rodents	Bites, scratches, exposure to rodent urine
Salmonellosis	Domestic and wild animals	Fecal-oral
Tuberculosis	Domestic and wild animals	Ingestion or direct contact
Vibriosis	Aquatic animals	Ingestion, handling water or animals
Q-fever (Coxiella Burnetti)	Sheep, cattle, goats, cats, dogs, wild animals	Airborne, exposure to birth tissues, ingestion
Cryptococcosis	Birds (including pigeons)	Environmental exposure to via skin or inhalation
Ringworm (Dermatophytosis)	Dogs, Cats, Cattle, Sheep, Goats, Horses, Rodents, Birds	Direct skin/hair contact with infected animals
Cryptosporidiosis	Cattle, other ruminants, dogs, cats, rabbits	Fecal-oral, ingestion of contaminated food/water, inhalation
Giardiasis	Domestic and Wild mammals	Fecal-oral, contaminated water
Toxoplasmosis	Felidae (definitive host)	Ingestion of oocysts shed in feces of infected cats
Contagious ecthyma (Orf virus)	Sheep, goats, camelids	Contact with broken skin
Hantavirus	Wild rodents	Aerosols from rodent excretions and secretions, contact with broken skin, mucus membrane, rodent bites
Influenza virus (Avian influenza)	Wild and domestic birds	Contact with infected poultry

https://www.merckvetmanual.com/public-health/zoonoses/zoonotic-diseases

References

Laboratory Biosafety Manual Fourth edition
https://www.cdc.gov/niosh/topics/hierarchy/default.html