

## **NECROPSY BIOSAFETY**

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

This SOP provides general biosafety considerations for necropsy areas, with the intent of minimizing the potential for zoonotic infection. It is not intended as a substitute for facility-specific procedures. However, facility specific procedures must be at least as stringent as those contained in this procedure.

### **Containment Considerations**

- At a minimum, necropsy must be conducted in accordance with BSL-2 containment principles and practices. In addition, prior to conducting any necropsy procedures, the attending pathologist must review the animal's history to determine if BSL-2+ practices are recommended based on the likelihood of zoonotic agents (i.e., Q fever, Rabies, Psittacosis, West Nile Virus, SE, etc.).
- Necropsy of small animals should be conducted within a biosafety cabinet.
- Unessential personnel and others should not be allowed in the necropsy area.

### **Personal Protective Equipment Considerations**

- A rear-closing gown or coveralls are recommended for any necropsy conducted outside of a biosafety cabinet. A lab coat is acceptable when working inside of a biosafety cabinet. The gown must be of impervious construction or supplemented with an impervious apron when working with animals of a size that body fluids are present in a quantity that could lead to soak-through of the gown.
- Impervious gloves must be worn at all times. Gloves must be changed when damaged or compromised. Consider also using cut-resistant gloves when using sharp instruments.
- When conducting a necropsy within a biosafety cabinet or when worn in combination with a face shield, safety glasses with side shields are acceptable eye protection.
- Impervious disposable shoe covers or rubber boots must be worn when working outside of a biosafety cabinet.
- All PPE must be removed before entering clean areas. Disposable PPE must not be washed or otherwise disinfected for the purpose of re-use.
- When conducting procedures that could generate aerosols and work is conducted outside of a biosafety cabinet, respiratory protection is needed. However, use of a respirator must be approved by EHS. No one is allowed to use respiratory protection equipment unless they are enrolled in the UNL Respiratory Protection Program (RPP). Therefore, persons who perform necropsy procedures are encouraged to contact EHS to enroll in the UNL RPP upon initial assignment to necropsy tasks. Under the UNL RPP, participants must complete annual training and fit-testing, and may be subject to medical qualification.

## **Procedural Considerations**

- Similar to the approach taken with bloodborne pathogens, all necropsies should be approached with “universal precautions.” That is, all specimens should be handled and treated as though they were known to present risk of zoonotic disease.
- No eating, drinking, grooming, or other activities that are a means of exposure are permitted in necropsy areas.
- To limit the risk of unexpected or unknown exposure, all workers handling unpreserved tissues must be offered vaccination for rabies. Departments must pay expenses for vaccinations. Workers can decline vaccinations after being apprised of the risk. Records of declination shall be maintained. Maintenance of vaccination and policy shall be in accordance with current CDC guidelines and updated as guidelines change. Employees shall also be informed that risk of exposure is greater if their immune systems are compromised or suppressed
- Tools should be used to the extent feasible to manipulate tissues to avoid cut hazards (i.e., forceps).
- Hand tools are preferred to power tools. Use of power tools should be reserved only when there are no other alternatives. Use of power tools must be treated as an aerosol-generating activity.
- Transport unfixed tissues in leak-proof containers.

## **Disinfection Considerations**

- Necropsy areas and tools must be disinfected at the end of each work shift. The disinfectant must be approved for such use and used in accordance with label directions, including but not limited to recommended contact time.
- Remove solid chunks prior to applying disinfectant. Remove in a manner that avoids production of aerosols.
- Avoid high pressure wash until after the disinfectant has remained in contact with surfaces for the prescribed contact time.
- Carcasses free from known or suspected zoonoses may be sent for rendering. Other tissues are to be incinerated or managed through a biological waste contractor.
- Reusable PPE must not be removed from the necropsy area unless sealed in a sturdy bag. PPE known to be used with animals harboring a zoonotic agent should be autoclaved, if feasible; chemically disinfected if autoclaving is not feasible. When zoonoses are not likely, standard washing in detergent and warm or hot water is adequate. Laundering should not be conducted at home or at a Laundromat.
- Always wash hands thoroughly with soap and water after removing PPE and before exiting the necropsy area.

## **Select Agent Considerations**

Identification of a regulated select agent or toxin from a clinical specimen must be reported to the appropriate federal agency (APHIS or CDC) within 7 days after

identification by the laboratory that confirms the agent. However, confirmatory identification of any of the following agents requires immediate notification to the appropriate federal agency:.

African horse sickness virus  
African swine fever virus  
Avian influenza virus (highly pathogenic)  
Bacillus anthracis  
Botulinum neurotoxins  
Bovine spongiform encephalopathy agent  
Brucella melitensis  
Classical swine fever virus  
Ebola virus  
Foot-and-mouth disease virus  
Francisella tularensis  
Hendra virus  
Lassa fever virus  
Marburg virus  
Nipah virus  
Peronosclerospora philippinensis (Peronosclerospora sacchari)  
Phoma glycinicola (formerly Pyrenochaeta glycines)  
Ralstonia solanacearum race 3, biovar 2  
Rathayibacter toxicus  
Rift Valley fever virus  
Rinderpest virus  
Sclerophthora rayssiae var zeae  
South American Haemorrhagic Fever viruses (Junin, Machupo, Sabia, Flexal, Guanarito)  
Swine vesicular disease virus  
Synchytrium endobioticum  
Variola major virus (Smallpox virus)  
Variola minor (Alastrim)  
Venezuelan equine encephalitis virus  
Virulent Newcastle disease virus  
Xanthomonas oryzae  
Xylella fastidiosa (citrus variegated chlorosis strain)  
Yersinia pestis

See EHS SOP, **Select Agents and Toxins – Clinical and/or Diagnostic Laboratory Activities**, for additional information.

### **Suspected Exposures and Occupational Injuries/Illnesses**

Seek immediate medical attention for any known or suspected cut or wound, or other potential exposure to infectious agents or aerosols incurred during the necropsy procedure. Procedures are described in the EHS SOP, **On-the-Job Injuries**.

Immediately notify EHS of known or suspected exposures or wounds that may involve an animal, specimen, or culture that harbors a select agent pathogen (see below). These events are subject to federal reporting requirements, compliance with which will be coordinated by EHS. In the event that a select agent is not suspected at the time, but later confirmed, contact EHS immediately if the necropsy or subsequent specimen handling may have resulted in an occupational exposure. Following are examples of potentially reportable occupational exposures, as described by the federal Select Agent Program (for additional examples see [http://www.selectagents.gov/resources/CompleteTHEFT%20LOSS%20%20RELEASE%20guidance%20document%20June82010\\_FINAL.pdf](http://www.selectagents.gov/resources/CompleteTHEFT%20LOSS%20%20RELEASE%20guidance%20document%20June82010_FINAL.pdf)).

- A laboratorian receives a self-inflicted cut with a scalpel during a necropsy of an animal infected with a select agent. The glove and skin were penetrated. The necropsy took place on a downdraft table that pulled air away from the laboratorian, and there was no contact between the laboratorian and hand and any tissue or fluid from the carcass.
- A non-registered BSL-2 clinical laboratory performs multiple manipulations with a fastidious gram-negative bacterial isolate from the blood of a febrile patient. The work is performed outside of a biological safety cabinet. The laboratory is unable to identify the isolate and sends it to a reference laboratory for further studies. The reference laboratory identifies the isolate as *Francisella tularensis*.
- Routine serological testing of a worker in a Q-Fever laboratory shows an elevated antibody titer.