



United States
Department of
Agriculture

Animal and Plant
Health Inspection
Service

Veterinary Services

National Veterinary
Services Laboratories

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Guidelines for Necropsy

I. Pre-necropsy

- a. Obtain and record the animal and/or herd history.
- b. Do not approach the examination with a preconceived diagnosis.
- c. Make sure appropriate disinfectant is available and be familiar with its use.
- d. Observe and collect samples from clinically normal animals first, if applicable (i.e., multiple pens with one pen containing clinically ill animals).
- e. Conduct the examination of live animals with precautions needed to protect attendants, yourself, and other animals from infection or injury. Always be aware of rabies and other diseases transmissible to man or highly contagious to other animals.
- f. Examine and collect specimens from live animals not necessarily intended for necropsy. Select animals in various stages of disease. Obtain permission from the owner to conduct the necropsy. Be aware of the owner's wishes, and use safeguards necessary for proper disposal of the carcass.

II. Preparing for a Necropsy

- a. Remove from the kit only what is needed, so that unused equipment will not be contaminated.
- b. Do not conduct necropsies while wearing street clothes. Wear rubber boots, gloves, and coveralls. A mask and goggles may be used at your discretion.
- c. Check the TABLE OF SPECIMEN COLLECTION to see what samples are required, but remember, this is a minimum recommended list. In addition to the listed specimens, samples of all lesions should be collected for histopathologic examination.
- d. Prelabel specimen containers to ensure all recommended specimens will be collected.
 - (1) Use a method of labeling that cannot be lost or easily destroyed. For example, adhesive tape should go entirely around the vial so that it will not be dislodged by moisture.
 - (2) Writing should be with pencil or waterproof ink.



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(3) Use plastic screw-cap containers instead of glass containers where practical. Electrical tape should be wound around the cap in the same direction as the screw cap is applied.

(4) Use disposable equipment such as cardboard trays and disposable syringes.

III. Transporting Specimens

a. Each tissue to be preserved in a refrigerated or frozen state should be placed in a separate container.

b. The recommended preservative for tissue for histological examination is 10% buffered neutral formalin. All tissues can be placed in one container, but allow a ratio of ten volumes of formalin to one volume of tissue (10:1). To provide adequate fixation, cut the tissue into slices no more than 3-6 mm thick. Cut lesions so that a normal area of tissue or organ is included in the section. Lymph nodes or organs with capsules should be incised. The whole brain or half brain should remain intact for fixation (i.e., do not make multiple cross-sections in the brain substance).

c. Collect the initial piece of each organ aseptically for microbiological examination. Flame the instruments before collecting each specimen, or use separate sterile instruments. Collect samples from the gut or intestine last.

d. Place swabs in transport medium, swirl, and then discard. For bacteriology investigations, swabs should remain in the transport medium until they reach the NVSL.

IV. Necropsy Procedure

a. If the animal is presented for euthanasia, collect blood samples before euthanizing. If the animal is presented dead, collect the blood or serum samples from the heart. Make blood smears, air dry, and fix in methanol.

b. Cattle, sheep, goats, and pigs are best positioned on their left side. Horses should be positioned on their right side.

c. Make an external examination and place ectoparasites in 70% ethanol.

d. Collect nasal swabs and skin lesions or swabs, if indicated. Place in transport or growth nutrient media, and refrigerate.

e. To prevent contamination, disinfect the skin or use clean instruments to open body cavities. Open the abdominal and thoracic cavities carefully so as to prevent contamination from the outside or from a cut organ.

f. Observe, but do not disturb, organ placement, noting any abnormalities.

- g. With a syringe, aseptically collect a specimen of any abnormal body fluid.
- h. Aseptically collect specimens of liver, kidney, spleen, and lymph nodes (gastrohepatic node for swine).
- i. Aseptically collect specimens of lung and heart.
- j. Remove the tongue, open the pharynx, and collect the tonsil (swine).
- k. Remove the trachea, lung, and heart. Collect tracheal and bronchial swabs, if appropriate. Examine the respiratory tract and heart.
- l. Tie off and remove a 3" section of ileum just anterior to the ileocecal valve. Double ligate to prevent spillage of intestinal contents. Do not tie off intestinal segments to be placed in formalin because the fixative should infiltrate the lumen of the organ.
- m. Complete the examination of the abdominal cavity. The entire digestive tract should be opened.
- n. Decapitate the animal, remove the brain and collect specimens, noting any abnormalities.

V. Post-necropsy

- a. Decontaminate instruments before cleaning them.
- b. Clean and disinfect all work surfaces.
- c. Decontaminate self (e.g., disinfect and remove boots, gloves, and coveralls).
- d. Record the necropsy findings.