

UNITED STATES DEPARTMENT OF AGRICULTURE
FOOD SAFETY AND INSPECTION SERVICE
WASHINGTON, DC

FSIS DIRECTIVE

10,230.6

1/06/06

SUBMITTING TISSUE SPECIMENS FOR PATHOLOGICAL OR DIAGNOSTIC MICROBIOLOGICAL EVALUATION TO THE LABORATORY

I. PURPOSE

The Food Safety and Inspection Service (FSIS) is issuing this directive to provide Public Health Veterinarians (PHVs) with information on how to submit specimens for pathological evaluation to the FSIS Eastern Laboratory. In addition, PHVs may submit tissue samples for diagnostic microbiological evaluation when they submit pathological specimens. Finally, this directive provides instruction to import inspection program personnel, PHVs, and District Office (DO) personnel when PHV assistance is needed for disposition determinations and to respond to sample requests for pathological or diagnostic microbiological evaluations in import inspection facilities.

Key Points Covered

- *Selection of tissue specimens for pathological or diagnostic microbiological evaluation*
- *Preparation of tissue specimens for submission*
- *Completion of FSIS Form 10,300-2 and packaging of the specimens*
- *Submission of samples for pathological or diagnostic microbiological evaluation from import inspection facilities*

II. CANCELLATION

Meat and Poultry Inspection Manual Subpart 23.C, Pathology

III. RESERVED

**DISTRIBUTION: Inspection Offices; T/A Inspectors;
Plant Mgt; T/A Plant Mgt; TRA; ABB; TSC; Import Offices**

OPI: OPPEd

IV. REFERENCES

FSIS Directive 7355.1
FSIS Regulations 9 CFR 311.1, 381.77, and 381.80
Federal Meat Inspection Act 21 U.S.C. 604
Poultry Products Inspection Act 21 U.S.C. 455

V. BACKGROUND

The PHV makes a diagnosis after performing a careful examination and inspection of the carcass and parts. In most cases, once the PHV has made the diagnosis, he or she follows the regulations in making the disposition (i.e., disposal). On rare occasions, PHVs exercise their professional judgment in making the disposition when the regulations do not adequately describe the condition. When necessary, or if the PHV is in doubt of the disposition, specimens are submitted to assist in making that diagnosis if the carcass is retained, or to confirm a diagnosis if the carcass is already condemned. The PHV combines the organoleptic inspection information with the laboratory information in making a diagnosis.

PHVs may seek diagnostic assistance from the FSIS Eastern Laboratory. The Eastern Laboratory provides a diagnosis (e.g., metastatic squamous cell carcinoma or malignant lymphoma) or information on the severity and chronicity, as well as etiologic agents observed as a possible cause of a disease condition in animals or carcasses. If PHVs have submitted tissues for a diagnostic microbiological evaluation, the laboratory will only conduct the diagnostic microbiological evaluation if it determines that it is necessary after reviewing the histopathological slides.

VI. SELECTION OF TISSUE SPECIMENS FOR PATHOLOGICAL OR DIAGNOSTIC MICROBIOLOGICAL EVALUATION

PHVs are responsible for the preparation, and the submission to the laboratory, of tissue specimens for pathological or diagnostic microbiological evaluation. PHVs should collect tissue specimens, as necessary, to assist in the disposition determination of a carcass or carcass part. If the PHV has questions concerning the number of carcasses from which specimens should be collected for pathological or diagnostic microbiological evaluation, he or she should seek guidance from the Front-line Supervisor.

A. Where to Collect Tissues for Specimen Submission

Should PHVs decide that it is necessary to collect tissue specimens, they are to follow the instructions below when submitting samples for pathological evaluation.

1. PHVs are to submit tissue specimens from all organs and tissues suspected of having lesions. Whenever possible, PHVs should take tissue sections at a point of transition between normal and pathologic tissues. PHVs should submit potential inflammatory and neoplastic lesions with draining lymph nodes.

2. When systemic conditions are suspected, PHVs are to submit tissue specimens from a representative sample of the major visceral organs (liver, kidneys, spleen, heart, and lungs), two or three lymph nodes draining different areas in livestock, and any gross lesions (abscesses, hemorrhage, necrosis).

3. When neoplasia is suspected, PHVs are to submit tissue specimens from the affected tissue and the surrounding normal tissue. Specimens in livestock should include lymph nodes that have suspected metastatic lesions and lymph nodes receiving lymphatic drainage from the site of origin of the tumor.

4. When Avian leukosis complex is suspected, PHVs are to submit tissue specimens from the skin, sacrosclatic nerve with attached dorsal root ganglion, liver, spleen, kidney, bursa of Fabricius, and any other tissues with suspicious lesions.

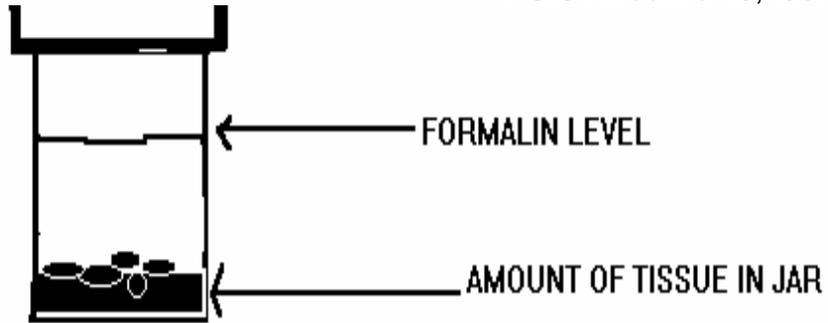
VII. PREPARATION OF TISSUE SPECIMENS FOR SUBMISSION

A. Tissue Specimens for Slaughter Pathological Evaluation

Tissue specimens are preserved or fixed for evaluation by placing the tissues in a jar containing formalin kept at room temperature. The formalin will preserve the integrity of the specimens.

1. PHVs are to cut specimens 3/8 inch thick (9 mm). Thicker tissues do not maintain their cellular integrity properly, leading to loss of cellular detail. Avoid prolonged exposure of the tissue specimens to air that results in drying of the tissue surfaces before immersion in formalin. PHVs should not submit intact organs such as lymph nodes or avian spleen without sectioning through the capsule.

2. PHVs are to place tissues immediately in formalin (preserves cellular detail). Prolonged holding, even at refrigerated temperatures, will result in autolytic changes that mimic degeneration. PHVs should use approximately one part tissue to ten parts formalin to adequately preserve or fix the tissue specimen.



NOTE: If formalin is unavailable, PHVs may refrigerate (do not freeze) tissues to retard autolysis until formalin is available.

3. PHVs are to identify lymph nodes or other affected tissues by using metal or plastic devices. For example, PHVs could, when submitting two lymph nodes, place a pink pin in one lymph node and place two staples in the other lymph node for identification purposes. PHVs should use metal or plastic for identification because paper dissolves in formalin. Affected tissue includes the normal surrounding tissue and any lymph nodes draining lymph from the affected area.

4. PHVs are to store specimens at room temperature. PHVs should **not** place specimens in the freezer. Freezing tissue reduces the microscopic cell detail of the specimen, and refrigeration of the specimen in formalin retards fixation.

NOTE: PHVs with access to a microscope may request histologic slide preparations of tissues from a submitted case. Review of the slides may be used for their own professional development. However, the PHV interpretation of the histologic preparations cannot be used by itself to make a determination of the disposition of the carcass.

B. Tissue Specimens for Diagnostic Microbiological Evaluation

If a PHV decides to request the diagnostic microbiological evaluation of tissue samples in conjunction with the pathological evaluation, he or she should submit solid tissues that are frozen. PHVs should submit exudates or other tissue fluids using a sterile culturette for culture.

PHVs are to prepare frozen samples for submission when requesting diagnostic microbiological evaluation in addition to the preserved tissue samples. The samples for microbiological examination are **not** placed in formalin. Submit samples as either:

1. culturettes of affected tissues placed in the slot in the foam padding of standard pathology containers; or
2. tissues in leak-proof bags, frozen, and placed in a separate special frozen product container for shipping.

NOTE: Culturettes are plastic tubes that pull apart. The top half has an attached sterile cotton swab. The bottom half contains a liquid transport medium in a glass vial. PHVs are to swab the affected site and then place the swab firmly into the bottom half of the plastic tube to close. PHVs then should crush the bottom of the plastic tube containing the liquid-filled pellet to maintain a moist environment during transit. Culturettes are available from the pathology laboratory upon request.

C. Special Instructions for Submitting Poultry Specimens for Slaughter Pathological Evaluation

1. PHVs are to submit skin specimens, approximately 1½-2 x 2 inches, with normal and abnormal areas (preferably, where the two meet). For example, PHVs may submit skin specimens for neoplasia or dermatitis, e.g., squamous cell carcinoma or keratoacanthoma. If smaller skin specimens are submitted,

PHVs are to place the skin on a piece of cardboard to prevent curling. The skin will self-adhere to the cardboard due to the fat and serum in the tissue. PHVs should place the cardboard with the skin attached into the formalin. Fixation of skin occurs through the depth or layers of cells of the skin tissue, not across the width of the specimen. For this reason, skin may be submitted in larger pieces.

2. PHVs are to select bone marrow specimens from the femoral shaft. For example, PHVs may submit specimens of bone marrow when avian leukosis or osteomyelitis are suspected.

a. For osteomyelitis, PHVs should submit the distal femur, proximal tibiotarsus, or other bone (usually including the growth plate) in formalin.

b. For avian leukosis, PHVs should expose the bone and cut a ¾ to 1" portion of the cranial shaft, and crack the bone, but leave bone adherent to marrow. PHVs should place the specimen in formalin so that it will preserve adequately.

3. PHVs are to take samples the approximate thickness of two stacked nickels; a little thicker sample is acceptable when sampling the kidneys, liver, spleen, intestines, bursa, pancreas, gonads, nerves, substantial skin portions, thymus, and thyroid. It is important not to cut the tissues submitted for pathology in pieces that are too small, since this makes identification of the tissue difficult when preparing tissues for processing. If a kidney specimen is needed, PHVs should make a tangential cut (across longitudinal axis of kidney-see Fig. 2) in the cranial division of the kidney (Fig. 1). PHVs are to include some of the normal tissue around the abnormal tissue when sampling definitive focal lesions (masses), either neoplastic or otherwise.

Fig. 1

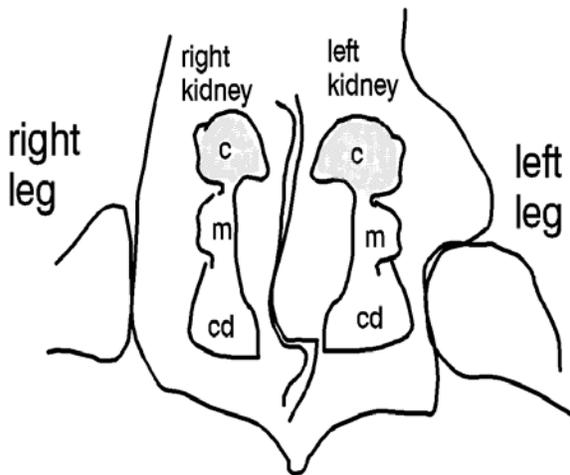
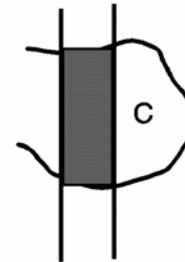


Fig. 2



NOTE: Instructions for sampling and packaging specimens are included in the pathology specimen box. For further assistance, contact the pathology laboratory at the Eastern Laboratory at (706) 546-3556.

VIII. SUBMISSION OF SPECIMENS

A. Completion of FSIS Form 10,300-2

1. PHVs are to submit a separate, completed FSIS Form 10,300-2 with each set of specimens from each individual carcass. PHVs should not pool tissues from different carcasses in a jar and may use more than one jar if needed. If PHVs use more than one jar to submit specimens for a specific carcass, the PHV should include on FSIS Form 10,300-2 the number of jars submitted associated with a specific carcass (See FSIS Directive 7355.1). This identification is important to maintain the chain of evidence.

NOTE: In poultry, the same tissue, for example liver, may be submitted for pathological evaluation from a flock. The PHV should include on FSIS Form 10,300-2 the number of livers from separate carcasses submitted for each flock. PHVs may place the tissues in the same jar provided they meet the requirements in VII A 1-3 above.

2. PHVs are to complete all spaces on FSIS Form 10,300-2 that apply.

3. PHVs are to describe the species, sex, age, and condition of the carcass. PHVs are to include information on animal type and origin in the appropriate space. PHVs should accurately describe ante-mortem and post-mortem findings used to determine the diagnosis and indicate why the specimen is being submitted.

4. PHVs are to include some description of gross pathology. It is very important to describe lesions. At a minimum, PHVs are to provide information regarding the lesion's size, color, and consistency and are to indicate the location on the carcass from which the specimen was taken.

5. PHVs are to include the official establishment number, any retain tag numbers, or other identifying numbers on FSIS Form 10,300-2. PHVs should indicate the preferred method for reporting results (phone, e-mail, or fax). For e-mail, PHVs are to clearly print their name as it appears in the Outlook address book list. PHVs should use only fax numbers to a dedicated government fax machine.

6. PHVs are to include the method of identification used to signify each coordinating lymph node per VII A 3 on FSIS Form 10,300-2.

7. PHVs are to indicate on the 10,300-2 form that culturette samples are included in the container per VII B 1 when submitting microbiological samples.

8. PHVs are to include a separate FSIS Form 10,300-2 for the microbiological samples when placed in a separate special frozen product container. PHVs should correlate diagnostic microbiological samples to the formalin-fixed tissues submitted. On the form for the microbiological sample, PHVs are to state that a corresponding formalin-fixed tissue specimen was sent to the laboratory. On the formalin-fixed tissue specimen form, PHVs are to identify the respective frozen sample that was sent to the laboratory. This information is needed to maintain the chain of evidence.

9. PHVs are to obtain supplies and forms from the Eastern Laboratory. Two specimen forms are included in each box sent by the laboratory.

NOTE: PHVs should send samples for suspected Tuberculosis (TB) lesions to the National Veterinary Services Laboratory for the Animal and Plant Health Inspection Service. Instructions for sending TB samples are found in Directive 6240.1, Bovine Mycobacteriosis Disposition Guideline.

B. Packaging of Tissue Specimens for Submission to the Laboratory

1. PHVs are to follow the directions in Directive 7355.1, Use of Sample Seals for Program Samples and Other Applications, when submitting pathology specimens. The Laboratory will discard improperly sealed specimen containers.

2. PHVs are to safeguard the security of tissue specimens during preparation, storing, packaging, and submission of specimens for pathological or diagnostic microbiological evaluation.

3. PHVs are to send properly prepared and packaged specimen containers via FedEx to the:

USDA-FSIS Eastern Laboratory
Russell Research Center
950 College Station Road
Athens, GA 30605

PHVs are not to leave specimens under conditions where the specimens in formalin are exposed to freezing temperatures. For example, specimens are not to be left outside for FedEx to pick up when the temperature is below freezing.

NOTE: PHVs are to record the collection of histopathology tissue specimens in the eADRS (electronic animal disposition reporting system) under tissue specimens: other, following the directions in the eADRS User Guide.

IX. SUBMITTING TISSUE SPECIMENS FROM IMPORT FACILITIES

Instructions to Import Inspection Personnel, PHVs, and DO Personnel for Submitting Specimens from Import Facilities

1. When import inspection program personnel find abnormal tissue or a pathology defect and require assistance in classifying the defect and making a disposition determination on product, they are to notify the Regional Import Field Supervisor (RIFS) or Assistant RIFS.

2. If assistance in making a determination on the defect is needed, the RIFS should contact the DO and request that a PHV be sent to the import facility to assist in a disposition determination.

3. The DO should send a PHV to assist the import inspection program personnel in the import inspection facility as soon as it is reasonably possible.

4. When a PHV is in doubt in making the diagnosis or to confirm a diagnosis, the PHV may need to send a sample to the laboratory. In such cases, the PHV will request that the import inspection program personnel collect a sample.

5. The import inspection program personnel should follow the applicable instructions in the Import Inspection Manual of Procedures, Part 3, Sections 1 and 8, for submitting samples to the laboratory.

6. The import inspection program personnel shall place the lot on FSIS Hold and add the unscheduled laboratory type of inspection (TOI) in the Automated Import Information System (AIIS).

7. The results reported by the laboratory must be interpreted by the PHV, who will assist the RIFS in classifying the defect and determining the disposition of the lot. Based on this determination, import inspection program personnel shall enter the results in the AIFS.

Contact the Technical Service Center at (800) 233-3935 with technical questions.

A handwritten signature in black ink, appearing to read "K. S. Duffin".

Assistant Administrator
Office of Policy, Program, and Employee Development