

**TEXAS DEPARTMENT OF STATE HEALTH SERVICES
MEAT SAFETY ASSURANCE
AUSTIN, TX**

MSA DIRECTIVE	6100.6 Rev.1	3/14/19
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POST-MORTEM DISPOSITIONS FOR VETERINARIAN CIRCUIT MANAGERS

CHAPTER I - GENERAL

I. PURPOSE

The directive instructs Veterinarian Circuit Managers (VCMs) on how to make post-mortem livestock dispositions for selected diseases and conditions and how to document the findings in the Public Health Information System (PHIS).

KEY POINTS:

- *Provides instructions to VCM on making dispositions of livestock carcasses and parts for selected livestock diseases and conditions*
- *Provides instructions to VCMs on documenting post-mortem findings in the PHIS Animal Disposition Report.*

II. BACKGROUND

The Federal Meat Inspection Act (FMIA) (Section 21 U.S.C. 604), Texas Meat and Poultry Inspection Act (TMPPIA) (Health and Safety Code (HSC) 433), Texas Administrative Code (25 TAC 221) and meat inspection regulation 9 CFR 310.1(a) mandate that inspection program personnel (IPP) conduct post-mortem inspection of all livestock carcasses and parts (i.e. cattle, sheep, swine, and goats). IPP are to examine the livestock carcasses and parts in official establishments in order to determine whether carcasses are wholesome and not adulterated. Product that is wholesome and not adulterated and suitable for human consumption is eligible to bear the mark of inspection as provided by 21 U.S.C. 604, HSC 433, 25 TAC 221.11(8) and 9 CFR 310.8.

III. GENERAL

A. VCMs play a critical role in protecting public health by appropriately identifying and addressing livestock affected with disease conditions and ensuring that there is an appropriate disposition of affected carcasses and parts.

B. VCMs are to conduct a thorough and complete post-mortem examination of carcasses or parts that are held for their final examination (e.g., Texas Retained carcasses, Texas Suspects).

C. In making dispositions, the VCM is to use a consistent, systematic approach for evaluating each carcass. The VCM is to conduct a thorough examination to gather sufficient evidence to support a sound disposition. When examining carcasses for the purpose of making a post-mortem disposition, the disposition is to be made as soon as the PHV has gathered enough information to provide adequate support for the disposition. This is to occur as early in the examination process as possible so normal slaughter operations are not delayed. There is no required "set" of procedures that must be performed on each carcass. Each VCM is to use their professional judgement, including their knowledge of the herd and establishment, to determine how much information is to be collected to make a supportable disposition.

D. VCMs are to use their professional judgment based on their organoleptic findings to apply the disposition requirements in 9 CFR 311 to carcasses and parts presented for their examination. VCMs may seek diagnostic assistance from the pathology laboratory if they are uncertain of the appropriate disposition from organoleptic findings. VCMs are to consider the laboratory's report within the context of ante-mortem and post-mortem findings to make the most supportable disposition possible.

E. For carcasses tested for residues, VCMs are to make final dispositions based on the regulations (9 CFR 311.39) and whether a tissue is:

1. Not adulterated, designated either as "residue not detected" or "positive but non-violative"; or
2. Adulterated, designated as "residue detected at a violative level." See [FSIS Directive 10,800.1](#), *Procedures for Residue Sampling, Testing, and Other Responsibilities for the National Residue Program*.

F. For instructions on foreign animal diseases, VCMs are to refer to and review:

1. [FSIS Directive 6000.1](#), *Responsibilities Related to Foreign Animal Diseases and Reportable Conditions*; and
2. The training material document [Reportable and Foreign Animal Diseases](#), that covers the following: Exotic New Castle Disease, Avian Influenza, Bovine Tuberculosis, Brucellosis, Bovine Spongiform Encephalopathy, Vesicular Stomatitis, Foot and Mouth Disease, Swine Vesicular Disease, Classical Swine Fever (Hog Cholera), African Swine Fever, Contagious Bovine Pleuropneumonia, Rinderpest, Heartwater, Sheep and Goat Pox, and Scrapie.

IV. VCM RESPONSIBILITIES FOR TEXAS RETAINED CARCASSES

A. VCMs are to examine all livestock carcasses showing abnormalities that IPP retain at post-mortem inspection (9 CFR 310.3).

B. VCMs are to examine and inspect all “Texas Suspect” animals (identified on ante-mortem inspection) during post-mortem inspection.

V. CORRELATING WITH THE IN-PLANT INSPECTION TEAM

VCMs are to ensure that IPP make consistent and supportable decisions when they determine that carcasses and parts shall be passed, passed after trimming, or Texas Retained for VCM disposition. VCMs are to meet with the inspection team as necessary to review pathology and regulatory requirements for addressing each condition (e.g., show, explain, discuss, and answer questions). VCMs may utilize “The Entry Training for the PHV” modules on [Post-Mortem Inspection](#) and [Multi-Species Disposition](#) for correlating.

CHAPTER II - POST-MORTEM DISPOSITIONS FOR VCMs

I. VCM DISPOSITION OF SPECIFIC DISEASE CONDITIONS

A. Cysticercosis is a condition caused by the presence of tapeworm larval cysts (*Taenia spp.*) in livestock carcass tissues. Beef, pork, or sheep carcasses affected with cysticercosis (*Cysticercus bovis* in beef; *Cysticercus cellulosae* in swine; *Cysticercus ovis* in sheep) will contain live, dead, or degenerated cysts in the heart, tongue, esophagus, or muscles. The live cyst will appear as a vesicle or small bladder (balloon) filled with fluid. In most cases, the cyst will be dead, and degenerated to some extent, and will appear as small intramuscular foci of fibrotic (hard, thick) tissue that may or may not be calcified and gritty in texture. In addition to these lesions, the associated muscle tissue may be watery or discolored.

B. *Taenia saginata* (the larval cyst is found in beef) and *Taenia solium* (the larval cyst is found in swine) are tapeworms that infect humans and *Taenia ovis* (the larval cyst is found in sheep) is a tapeworm that infects several carnivores.

II. VCM DISPOSITION OF BEEF CYSTICERCOSIS

A. When a beef carcass is retained for cysticercosis, VCMs are to:

1. Incise thoroughly the lateral and medial masticatory (cheek) muscles, heart, diaphragm, and its pillars. The peritoneum is removed before incising the diaphragm;
2. Observe and palpate the tongue. If cysts are suspected in the muscular part, the tongue is thoroughly incised and observed; and
3. Examine the esophagus and all exposed muscular surfaces.

- B. When cysts in a carcass are in two or more of the above sites, VCMs are to:
1. Make one transverse cut in each shoulder (2-3 inches) above the olecranon's point. This cut is to extend to the humerus and expose the triceps brachii;
 2. Make one cut in each round to expose musculature in cross section; and
 3. Observe the cut surfaces for cysticercosis lesions.
- C. The presence of even one cyst, whether viable or not, indicates beef cysticercosis. When IPP find one beef carcass to contain a cyst, the following procedure is to be performed on all carcasses that the establishment receives from the same producer. IPP are to verify that the establishment addresses all potentially affected products. IPP are to:
1. Make multiple incisions of the interventricular septum of the heart and the external and internal masticatory (cheek) muscles;
 2. Observe closely the esophagus and cut surfaces of muscles exposed during the dressing operation; and
 3. Incise, as above, hearts and cheeks from carcasses that passed inspection before the finding of the infected carcass, and identified as part of the potentially affected production.
- D. A carcass is extensively infested if VCMs find lesions in at least two of the usual inspection sites and two of the additional exposed sites.
1. Usual inspection sites are: heart; diaphragm and its pillars; cheeks; esophagus; tongue; and muscles exposed during normal dressing operations.
 2. Additional exposed sites are: an incision made into each round exposing the musculature in cross section; and a transverse incision made into each forelimb commencing 2-3 inches above the joint of the olecranon and extending to the humerus exposing the triceps brachii.
- E. For the disposition of beef carcasses with cysticercosis, VCMs are to:
1. Condemn the carcass and its parts when lesions of cysticercosis are present, and the musculature is edematous or discolored; or if the infestation is extensive (9 CFR 311.23(a));
 2. Pass for refrigeration or pass for heating, after removal and condemnation of affected parts, any carcass with an infestation that is less than extensive and

that does not show edema or discoloration in the musculature and verify that the establishment:

- a. Holds carcasses for 10 days at not higher than 15 °F ;
 - b. Holds boned meat for 20 days at not higher than 15 °F ; or
 - c. Heats product to an internal temperature throughout of at least 140 °F;
3. Verify that the establishment handles edible offal in the same manner as the rest of the carcass. If edible product has lesions of cysticercosis, VCMs are to verify that the offal is condemned (9 CFR 311.23(b)); and
 4. Identify that all affected products are appropriately controlled by Texas Retained tags. VCMs are to verify removal of the retain tags only after the product has met the processing restrictions.

F. IPP will find regulatory information regarding shipment and control of products containing cysticercosis in 9 CFR 325.7.

G. In addition, VCMs are to:

1. Send tissue samples to the laboratory to confirm the diagnosis, if necessary;
2. Notify the Central Office(CO) of the finding.

III. VCM DISPOSITION OF SWINE CYSTICERCOSIS

A. When IPP retain swine carcasses for cysticercosis on post-mortem inspection, VCMs are to:

1. Examine the cheeks, heart, and esophagus by sight and numerous incisions;
2. Make several deep longitudinal incisions into the tongue;
3. Remove the peritoneum from the diaphragm and examine the muscles of the diaphragm by numerous incisions; and
4. Carefully examine the cut surfaces of muscles exposed during regular dressing procedures (ventral muscles of the ham).

B. If, after performing the inspections as described above, VCMs find:

1. Only the initial lesions, they are to make the disposition based on these findings;
or

2. Any additional lesions, they are to:

- a. Make incisions parallel to cuts as described above; and
- b. Remove the peritoneum from the abdominal muscles in the flank and paralumbar regions. Examine visually and then make several incisions to aid in the examination.

C. If VCMs find no additional lesions, they are to make the disposition based on these findings; or if additional lesions are found, they are to make deep, bold incisions into the heavily-muscled primal parts to determine if various parts of the musculature expose one or more cysts on most of the cut surfaces.

D. VCMs are to confirm the diagnosis of swine cysticercosis (*Cysticercus cellulosae*) or cases resembling such disease by sending samples to the laboratory. VCMs are to retain swine carcasses pending diagnostic results from the laboratory and report the disease to the CO.

E. For the disposition of swine carcasses with cysticercosis (9 CFR 311.24), VCMs are to:

1. Condemn the carcass when porcine cysticercosis infestation is excessive (when the lesions are too extensive to be removed by trimming the carcass);
2. Pass for cooking, any swine carcass affected with *Cysticercus cellulosae* that is less than excessively affected;
3. Verify that the carcass is cooked at 170 °F for 30 minutes (9 CFR 315) after removal and condemnation of all affected areas; and
4. Verify removal of Texas Retain tags only after the product has met the processing restrictions in 9 CFR 311.24.

IV. VCM DISPOSITION OF SHEEP CYSTICERCOSIS

A. When IPP detect cysticercosis (9 CFR 311.25) in sheep carcasses during routine post-mortem inspection procedures, VCMs are to:

1. Re-examine the heart and esophagus by sight and palpation;
2. Palpate the muscles of the diaphragm; and

3. Examine carefully the cut surface of muscles exposed during regular dressing procedures (ventral muscles of the neck and brisket and medial muscles of the leg).
- B. If VCMs find only the initial lesions they are to make the disposition based on these findings.
- C. If VCMs find additional lesions, they are to:
1. Make incisions parallel to the cuts; and
 2. Remove the peritoneum from the abdominal muscles in the flank and paralumbar regions. VCMs are to examine visually and then make several incisions to aid in the examination.
- D. After this examination, if there are no additional lesions, VCMs are to make the disposition based on the findings.
- E. If after the examination there are additional lesions, VCMs are to make deep bold incisions into the heavily-muscled primal parts to determine if various parts of the musculature expose one or more cysts on most of the cut surfaces.
- F. For the disposition of sheep carcasses affected with *Cysticercus ovis*, VCMs are to:
1. Condemn the carcass if complete removal of the infection is impractical because of the extent of the infection;
 2. Pass the carcass for heating to an internal temperature of 140 °F after trimming and condemning affected tissue when:
 - a. There are more than five cysts in the tissues, excluding the heart; and
 - b. Removing the parasites from the affected tissue is practical; and
 3. Pass the carcass for human food after trimming and condemning affected tissues when VCMs find five or fewer cysts in the tissues, excluding the heart (9 CFR 311.25).

V. VCM DISPOSITION EOSINOPHILIC MYOSITIS (EM)

A. The most common lesions of EM are the irregularly distributed yellowish-green, yellowish-white, and red spindle-shaped lesions found in the heart and tongue. Less common lesions are the large, well-defined, bright green to greenish-gray areas found in the more active muscles (e.g., round, shoulder, esophagus, heart, and brisket). IPP may not notice the lesions until the carcass is broken into primal parts. VCMs will

most readily detect EM in warm carcasses. Chilling causes muscle to contract and reduces the size and visibility of lesions present. In most cases, EM affects the more active muscles first and affects them more severely than other muscles.

B. When IPP find EM on post-mortem inspection, VCMs are to:

1. Thoroughly incise and observe the lateral and medial masticatory muscles and the heart;
2. Observe and palpate the esophagus;
3. Make several deep longitudinal incisions into the tongue;
4. Thoroughly incise and observe the diaphragm and pillars after removal of the peritoneum;
5. Observe the cut surfaces of muscles exposed during dressing operations (ventral muscles of the neck, the brisket, and the medial muscles of round):
 - a. Make several parallel incisions to all such cut surfaces when lesions are in any of the locations; and
 - b. Incise thoroughly and observe abdominal muscles in the flank and paralumbar region; and
6. Slash freely and examine closely the affected primal parts exposed during the above procedures if VCMs find any lesions in those areas.

C. For the disposition of Carcasses Affected with EM, VCMs are to:

1. Condemn affected parts when localized lesions are present and only certain parts are affected (head, tongue, heart, esophagus, diaphragm, and pillars);
2. Follow the disposition requirements in the regulations when carcass muscles other than the diaphragm and pillars are affected;
3. Condemn the carcass if lesions in the musculature of the carcass are extensive and impractical to remove; and
4. Pass the carcass for comminuted cooked product when lesions are slight, or the establishment personnel cannot remove the lesions easily and completely. This outcome may occur if the lesions are slight or of such character as to be insignificant from a standpoint of wholesomeness. VCMs are to pass the carcass or parts for use in the manufacture of comminuted cooked product after removal and condemnation of the visibly affected portions (9 CFR 311.35).

- D. As per 9 CFR 314.11, a carcass condemned for EM is eligible for shipment for animal food (pet food) if:
1. The CO grants permission; and
 2. The establishment adequately identifies, slashes freely, and denatures (9 CFR 325.11 and 325.13(a)(2)) all parts of the carcass in an inedible area under MSA supervision.

VI. VCM DISPOSITION OF SARCOCYSTOSIS

A. Specific protozoa not considered pathogenic for humans in the U.S. cause Sarcocystosis. Sarcocystosis appears most frequently in older sheep. IPP may detect the lesions in the esophagus first. Lesions are white, semi-oval, cigar-shaped, or rice grain-shaped lesions. IPP may also detect lesions in the diaphragm, skin muscles, internal abdominal (stomach) muscles, or intercostal (muscles between the ribs) muscles. VCMs may find the lesions in the skeletal muscles, after incision and observation of primal parts.

B. When IPP detect sarcocystosis during routine post-mortem inspection procedures, VCMs are to re-examine the esophagus, superficial and cut surfaces of the muscles, diaphragm, and the internal abdominal and intercostal muscles.

C. If VCMs find lesions in locations other than the esophagus they are to incise the muscles of the shoulder, round, and back to expose the deep muscle tissues.

D. VCMs are to condemn the carcass if the lesions are impractical to remove (9 CFR 311.35).

F. As per 9 CFR 314.11, a carcass condemned for sarcocystosis is eligible for shipment for animal food (pet food) by the establishment when:

1. The CO grants permission; and
2. Under MSA supervision, the establishment identifies, slashes freely, and denatures (9 CFR 325.11 and 325.13(a)(2)) all parts of the carcass in an inedible area.

VII. VCM DISPOSITION EPITHELIOMA OF THE EYE (OCULAR SQUAMOUS CELL CARCINOMA)

A. Epithelioma is a neoplastic (cancerous) lesion involving the eye and surrounding tissues. Metastasis (disease spreads to different parts of the body) may occur to the

lymph nodes and lungs. Infection, suppuration (the formation of pus), and necrosis (death or rotting of tissues) of the tissues around the eye may also occur.

B. For the disposition of Epithelioma of the eye (Ocular squamous cell carcinoma), VCMs are to:

1. Condemn the head, viscera, and carcass if they find metastatic lesions, cachexia or evidence of absorption or secondary changes, or involvement of the osseous (bony) structures of the head with extensive infection, suppuration, and necrosis (9 CFR 311.12); and
2. Condemn the head of mature cattle (e.g., cow) carcasses when there is an absence of the eye (or associated structure) that may indicate prior surgical removal of epithelioma.

C. As per 9 CFR 314.11, a carcass condemned for ocular squamous cell carcinoma is eligible for shipment for animal food (pet food) by the establishment when:

1. The CO grants permission, and
2. Under MSA supervision, the establishment identifies, slashes freely, and denatures (9 CFR 325.11 and 325.13(a)(2)) all parts of the carcass in an inedible area.

VIII. VCM DISPOSITION OF MELANOSIS

A. Melanin is a normal black pigment of the body. Melanosis is excessive melanin deposits or deposits in abnormal locations.

B. For the disposition of carcasses with Melanosis (9 CFR 311.13), VCMs are to:

1. Condemn carcasses with generalized pigmentary deposits of melanin;
2. Condemn affected carcasses, organs, or parts when the establishment cannot remove melanin completely; when its removal is impractical; or, when it makes a carcass, organ, or part unfit for people to eat;
3. Remove melanin deposits when they extend into spinal nerve sheaths and meat; however, slight melanin deposits in spinal meninges are insignificant;
4. Remove only tumorous or smeary uniform melanin deposits over or in circumscribed skin areas of swine; and

5. Record melanin deposits under pigmentary conditions on PHIS, Animal Disposition, except record melanin deposits under carcinoma when they are associated with malignant tumor formation.

IX. VCM DISPOSITION OF XANTHOSIS

A. Xanthosis is the deposition of excessive quantities of cellular waste pigments. The condition is usually seen in older cattle and those suffering from a chronic wasting disease. VCMs will only find xanthosis during post-mortem inspection. Xanthosis more commonly affects the musculature of the heart and head. Affected muscle has dark brown or coffee-colored discoloration of otherwise normal tissue.

B. For the disposition of carcasses with Xanthosis (9 CFR 311.13), VCMs are to:

1. Condemn carcasses with generalized pigmentary deposits; or
2. Pass for food carcasses with less than generalized distribution of pigmentary deposits after condemnation and removal of the affected areas (9 CFR 311.13).

X. VCM DISPOSITION OF CAROTENOSIS

A. Carotenoid pigments enter the body with food. Therefore, they are classified with the exogenous pigments. When carotenoid pigments are deposited in the fat tissues and liver to the extent they become grossly visible, the resulting discoloration of tissues is carotenosis. To determine carotenosis, place a white paper towel or napkin on the cut surface of the liver. A bronze-orange stain indicates carotenoid pigment. Deposition of carotenoid pigments in the fatty tissue does not affect carcass disposition.

B. For the disposition of carcasses with carotenosis, VCMs are to condemn livers with carotenosis (9 CFR 311.31).

C. Livers condemned for carotenosis may be saved for purposes other than for human food (9 CFR 314.10).

XI. VCM DISPOSITION OF ICTERUS

A. Recognizing Icterus: If, for any reason, the amount of bilirubin (waste product that results from the breakdown of hemoglobin molecules from worn out red blood cells) increases in the blood and therefore in the tissues, a yellowish pigmentation of the tissues arises that is called icterus or jaundice. Look for icterus where the tissues are normally very white or pale, such as:

1. The sclera (white part) of the eye;

2. Tendons;
3. Pleura (lining of the chest cavity);
4. Peritoneum (lining of the abdominal cavity);
5. Omentum (tissue that extends from the stomach to the adjacent organs in the abdominal cavity);
6. Cut surface of abdominal wall fat;
7. Joint surfaces; or
8. Mesentery (fold of tissue attaching small intestines to the body wall).

NOTE: Fat may be yellow from diet, breed, and age changes that are essentially normal. Yellow fat is normal in some animals.

B. For disposition of carcasses showing signs of Icterus (9 CFR 311.19), VCMs are to defer final disposition of carcasses with a slight yellow discoloration and no visible pathological changes in the organs until the establishment has the opportunity to chill the carcasses.

C. VCMs are to re-examine the carcasses preferably under natural light or a good quality light of at least 50 foot-candles and make a disposition.

D. VCMs are to pass the carcass for food if the discoloration disappears, and there are no other conditions warranting a different disposition, and condemn carcasses showing any degree of icterus.

XII. VCM DISPOSITION OF NEUROFIBROMA (NERVE SHEATH TUMOR)

A. Neurofibroma is a neoplasm of nerve sheath cells most often seen in cattle. The tumors may be firm or soft and often have gelatinous centers and appear as shiny, glistening, white-to-gray, lobulated, firm nodular growths on or within the nerve. Neurofibromas are generally regarded as benign but may metastasize to regional lymph nodes.

B. Neurofibromas are found along any nerve trunk of the carcass but are most often found in the intercostals (between the ribs) and paravertebral spaces (beside the spinal (back) bones), heart, brachial plexus (network of nerves located between the shoulder and neck), and celiac plexus (network of nerves located behind the stomach and below the diaphragm). They may be seen as multiple nodular enlargements along any nerve.

Neurofibromas are often seen in multiple sites because of multicentric origin of neoplasms.

C. For the disposition of carcasses with neurofibroma, VCMs are to:

1. Examine the brachial and celiac plexus for lesions when inspection program personnel find neurofibromas when performing post-mortem inspection;
2. Condemn an individual organ or part of a carcass affected with a neoplasm; and
3. Condemn the entire carcass if there is evidence of metastasis, or that the general condition of the animal has been adversely affected by the size, position, or nature of the neoplasm (9 CFR 311.11).

XIII. VCM DISPOSITION OF ARTHRITIS

For the disposition of carcasses with arthritis, VCMs are to:

1. Condemn joints affected with arthritis;
2. Verify removal of lymph nodes corresponding with affected joints;
3. Verify that the establishment does not open joint capsules until after they remove affected joints; and
4. Condemn the carcass if systemic involvement is present (9 CFR 311.7).

XIV. VCM DISPOSITION OF ACTINOMYCOSIS AND ACTINOBACILLOSIS

For the disposition of carcasses and heads with Actinomycosis and Actinobacillosis, VCMs are to:

1. Pass for food carcasses with localized lesion, after removal and condemnation of the infected parts;
2. Condemn heads affected with actinomycosis or actinobacillosis, including the tongue; except that when the disease of the jaw is slight, strictly localized, and without suppuration, fistulous tracts, or lymph node involvement, the tongue, if free from disease, may be passed. Or, when the disease is slight and confined to the lymph nodes, the head including the tongue, may be passed for human food after the affected nodes have been removed and condemned;

3. Pass for human food when the disease is slight and confined to the tongue, with or without involvement of the corresponding lymph nodes, after removal and condemnation of the tongue and corresponding lymph nodes; and
4. Condemn carcasses with generalized condition (9 CFR 311.9).

XV. OTHER DISEASE CONDITIONS

A. When VCMs find slight abscesses in cattle and swine heads, they are to:

1. Pass the head for food after removal of the lymph node when a small, well-encapsulated abscess is in a cervical lymph node; and
2. Verify removal of all affected lymph nodes, including mandibular and adjacent lymph nodes, when heads with slight abscesses are passed for food (9 CFR 311.14).

B. If VCMs observe chronic lesions that do not create a generalized condition in the carcass when conducting post-mortem dispositions, they are to verify complete removal of all chronic lesions, including adhesions (9 CFR 311.14).

CHAPTER III - DOCUMENTING POST- MORTEM INSPECTION FOR LIVESTOCK, DATA ANALYSIS, AND SUBMITTING QUESTIONS

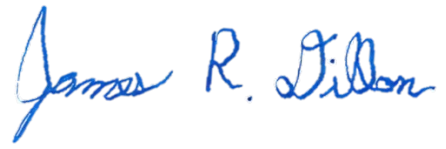
I. DOCUMENTATION

VCMs are to follow the documentation instructions as set out in [FSIS Directive 6100.2, *Post-Mortem Livestock Insepction*](#) to enter data in PHIS related to the following:

1. Steps to enter daily slaughter data for livestock;
2. Enter in the free text narrative box any additional information for post-mortem carcass disposition, such as pathological findings to support the disposition and animal identification when needed;
3. The steps to enter no kill period

II. QUESTIONS

Refer questions through supervisory channels.



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