



Food Safety and Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

Livestock Inspection

Food Inspector
Accelerated Promotion
Program



Livestock Inspection Contents

- **Livestock Ante-mortem Inspection**
- **Humane Handling**
- **Post-mortem Inspection in cattle**
- **Specified Risk Materials**
- **Post-mortem Inspection in Lamb, Sheep, & Goat**
- **Post-mortem Inspection in Swine**





Livestock Ante-mortem Inspection

Objectives

- Describe the following:
 - Ante-mortem inspection
 - Delayed slaughter
 - Voluntary segregation procedure for swine and sheep
 - U.S. Suspect
 - U.S. Condemned
 - Non-ambulatory disabled
 - Purpose of ante-mortem inspection

Objectives (cont.)

- Describe the appropriate methods for conducting ante-mortem inspection.
- Identify the equipment and supplies that are needed to perform livestock ante-mortem inspection.
- Identify the establishment's responsibilities for:
 - Livestock pens
 - U.S. Suspect pen for livestock
 - Floors in livestock pens
 - Assistance for ante-mortem inspection

What is Livestock?

9 CFR 301.2 defines livestock as:

- Cattle, sheep, swine, goat, horse, mule, or other equine.
- Although equines are technically defined in the regulations as livestock, they are no longer slaughtered in the U.S.





What is Ante-mortem Inspection?

- The term ante-mortem means “before death.”
- Ante-mortem inspection is the inspection of live animals prior to being slaughtered.
- All livestock presented for slaughter must receive ante-mortem inspection.



Who Performs Ante-mortem Inspection?

- This inspection is performed by an FSIS Veterinarian (PHV) or either by a Food Inspector or CSI under veterinary supervision.
- If it is performed by a Food Inspector or CSI, the PHV must be notified of any disease conditions that are observed.

Establishment Facility Responsibilities

The establishment is required to provide:

- Adequate pens, sanitary and well-drained, in good repair
- Adequate footing
- Adequate lighting
- Designated pen(s) for U.S. Suspect and Condemned
- Suspect pen protected from adverse weather conditions
- Adequate restraining devices
- Adequate number of well-trained employees

Animal Identification Requirement

- Establishments are required by the regulations to have a system of identifying all livestock that receive ante-mortem inspection.
- Pen Cards typically contain the following information:
 - Date
 - Pen and Lot Number
 - Species
 - Breed
 - Number of Animals
 - Inspector's Signature
 - Time of Day Animals Inspected

Ante-mortem Inspection Methodology

"All livestock offered for slaughter in an official establishment shall be examined and inspected on the day of, and before, slaughter. Such ante-mortem inspection shall be made in pens on the premises of the establishment at which the livestock are offered for slaughter."

Special Situations - Delayed Slaughter

- **DELAYED SLAUGHTER**

- **Animals must be slaughtered within 24 hours of ante-mortem inspection by FSIS.**
- **Only low-volume establishments** (1-15 animals/day) are permitted to utilize delayed slaughter when slaughtering animals on a day other than on the day of ante-mortem inspection.
- Establishments need approval by the FLS.
- No U.S. Suspect animals may be slaughtered without Inspectors present.
- **Not permitted for cattle.**

Special Situations - Emergency Slaughter

- **EMERGENCY SLAUGHTER**

- **Emergency slaughter is permitted if an establishment informs the PHV that it was necessary for it to slaughter an animal because of a serious injury at a time other than normal inspection hours.**
- **Not permitted for cattle.**
- Not permitted for diseased, disabled, dying animals.
- The carcass and all associated parts must be held for post-mortem examination by PHV.

How to Perform Ante-mortem Inspection

- **100% animals presented for ante-mortem inspection must be observed:**
 - At rest
 - In motion
 - “...IPP are to observe livestock from **both sides** when the slaughter class (e.g., cows and bulls) or condition of the animals (e.g., diseased, distressed) at the slaughter establishment supports observing from both sides in order to determine whether they are fit to slaughter for human consumption. **At establishments where IPP other than PHVs perform ante-mortem inspection, the PHV is to correlate with the IPP on which animals the IPP are to observe from both sides.**”

Ante-mortem Inspection for Voluntary Segregation

- **VOLUNTARY SEGREGATION**

- **Only allowed for market classes of swine or sheep** (i.e., butcher hogs and lambs).
- The establishment voluntarily segregates abnormal animals from healthy animals.
- Establishment must have written procedures for this segregation program.
- All animals must be presented to IPP for ante-mortem inspection.
- **You will examine:**
 - **All** animals found normal **at rest**
 - **5 – 10%** of all animals from several lots **in motion**

Conditions to Look for in Ante-mortem Inspection

- **Overall condition of each animal**
 - Include the head, with attention to the eyes, legs, and body of the animal;
- **Degree of alertness, mobility, and breathing; and**
- **Whether there are any unusual swellings**
- **Any other signs of abnormalities or disease**
- **Any signs of reportable or foreign animal diseases (FADs)**

Ante-mortem Inspection: First Things First

- When working with live animals... **Safety First, ALWAYS!**
- When observing animals at rest and in motion, avoid going into the pens with livestock.
- Position yourself in a safe location, such as just outside a gate or somewhere where you can observe animals as they are driven past you.



What to Look for “At Rest”



- Some abnormal signs, such as labored breathing, are easier to see when the animal is at rest.
- Look for unusual excitability or depression.
- Look for any unusual swellings or any other abnormalities.
- Look at the animals from a few vantage points outside the pen.
- Observe their overall condition.

What to Look for “In Motion”



- Some abnormal signs, such as lameness or staggering, will be more apparent when the animal is moving.
- Look for unusual excitability or depression
- Look at the animals from a few vantage points outside the pen
- Observe their overall condition

Special Situations - Secondary Entrances

- **SECONDARY ENTRANCES**

- Secondary entrances are permitted to allow bringing livestock into the stunning area by means other than the normal route used.
- Not expressly prohibited by regulation.
- IPP should identify and observe secondary entrances for humane handling.
- Animals must receive ante-mortem inspection before slaughter.

Ante-mortem Dispositions by a Food Inspector

- **Food Inspector:**

- **Pass** for slaughter (if no abnormalities are observed)
- **Direct the establishment to segregate animals for PHV disposition** (if signs indicating possible condemnation of the animal at post-mortem are observed)
- Identify and tag **dead** animals as **“U.S. Condemned”**

Ante-mortem Dispositions by the PHV

- After the FI or CSI has had the establishment set the animal to the side for PHV disposition, the PHV will make the following dispositions:
 - **PHV:**
 - **Pass:** if the PHV determines that there are no conditions that would warrant condemnation of the carcass on post-mortem inspection.
 - **U.S. Suspect:** if the PHV determines that there are signs indicating possible condemnation at post-mortem,
 - **U.S. Condemn** (only the PHV has the authority to condemn **live** animals)

FI Ante-mortem Responsibilities

- **When you observe abnormalities, your responsibility as a FI is to instruct the establishment to set the animal aside for PHV disposition.**
- Since FI's cannot condemn live animals, these animals should be held for the PHV.
- Please keep this in mind as you view the following diseases and conditions.



Food Inspectors are not required to know the names of any of the following conditions.

The upcoming slides are shown to provide examples of abnormal conditions that might be encountered while performing ante-mortem inspection.



WHAT **YOU** NEED TO KNOW

1. How to **recognize abnormal** conditions
2. How to **direct the establishment to segregate** the animal for PHV disposition

Dead/Dying (Moribund) Animals

- All dead and dying animals are to be **condemned** on ante-mortem inspection.



- Since FI's cannot condemn live animals, dying animals should also be held for the PHV.

Non-Ambulatory Disabled (NAD) Livestock

- **All bovines (including veal calves) that cannot rise and walk without assistance are to be condemned at ante-mortem...no exceptions!**
 - Remember, only the PHV has the authority to condemn a live animal, so if IPP observe a NAD bovine or an animal displaying what might be CNS signs, they are to have it set aside for PHV disposition.
- All other species (swine, lambs, goats, equines, etc.) that are unable to rise and walk unassisted are automatically to be designated as U.S. Suspect.

Non-ambulatory Disabled Disposition

- Must be ante-mortem **CONDEMNED** (cattle) or identified as a **U.S. SUSPECT** (all other species).
- So be sure to instruct the establishment to hold these animals for PHV disposition.



Epithelioma of the Eye (Cancer Eye) - Cattle

- **Instruct the establishment to segregate the animal for PHV disposition.**
- Any bovine with a missing eye should also be segregated for PHV disposition due to the possibility that it was surgically removed due to cancer eye.
- Potential PHV dispositions:
 - Likely to be identified as U.S. SUSPECT
 - May be condemned if the animal is in extremely poor body condition (thin) or if there is evidence of infection or necrosis, or if the eye is completely obscured by the tumor.

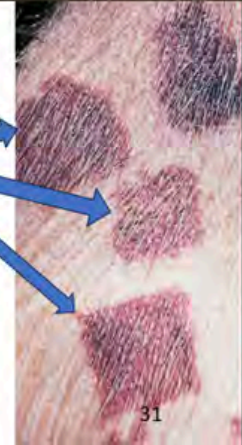


Central Nervous System (CNS) Disease

- **All species with definitive central nervous system (CNS) disease are to be ante-mortem CONDEMNED by the PHV.**
- **IPP should notify the PHV immediately and instruct the establishment to segregate the animal for PHV disposition.**
 - CNS signs may occur with certain foreign and reportable diseases.
 - Common CNS disease signs include:
 - Circling or staggering
 - Head-pressing
 - Inability to walk
 - Abnormal vocalization (bellowing)
 - Unusual depression
 - Unusual excitability or aggression
 - Tremors or seizures
 - Blindness

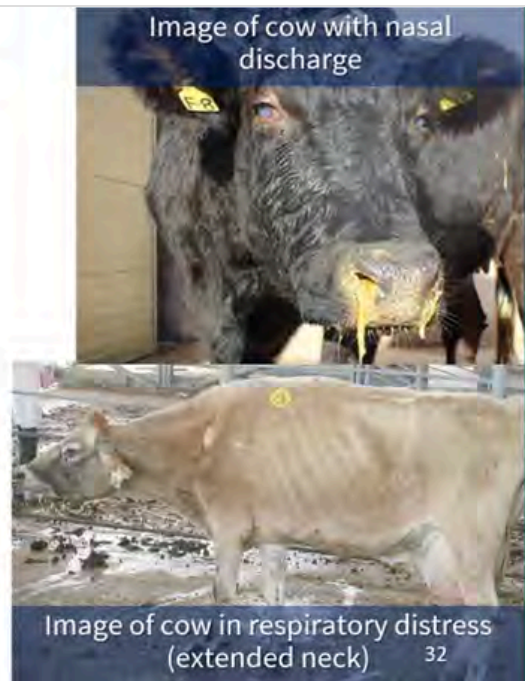
Swine Erysipelas - (Diamond Skin Disease)

- Instruct the establishment to segregate the animal for PHV disposition.
- Likely to be U.S. SUSPECT
- Clinical signs include:
 - Classic "**diamond-skin**" lesions may or may not be seen at ante-mortem
 - Animals may be severely depressed or may be lame/painful when walking,
 - Animals may vocalize in pain when asked to move
 - May have very high fever (may condemn at ante-mortem)



Pneumonia (All Species)

- **Instruct the establishment to segregate the animal for PHV disposition.**
- **Likely to be U.S. SUSPECT**
- Common clinical signs:
 - Coughing, may have nasal discharge
 - Chronic cases may be thin, dehydrated
 - Respiratory distress (extended neck, sawhorse stance, panting)
 - May look normal, or may be very depressed



Gastroenteritis (All Species)

- **Instruct the establishment to segregate the animal for PHV disposition.**
- **Likely to be U.S. SUSPECT**
- Common clinical signs may include:
 - Diarrhea, vomiting (swine)
 - Painful, tucked-up abdomen, arched back
 - Tail twitching, kicking at flanks
 - Reluctance to move
 - May appear thin, dehydrated



Retained Fetal Membranes

- **Instruct the establishment to segregate the animal for PHV disposition.**
- Animals should not be presented for slaughter until after giving birth and detachment of placenta



Image of goat and sheep with retained fetal membranes

Anasarca or Generalized Edema

- **Instruct the establishment to segregate the animal for PHV disposition.**
- **Should be U.S. SUSPECT**
- Edema is a build-up of watery fluid in places other than where it belongs (i.e., between cells rather than inside cells).



Images of bovine with severe edema on the bottom-most surfaces

Retrobulbar Lymphoma (Bulging Eyes)

- **Instruct the establishment to segregate the animal for PHV disposition.**
- **Should be U.S. SUSPECT**
- If found to be lymphoma, the carcass and parts will be condemned at post-mortem.
- You might also find visibly enlarged lymph nodes (face, neck, shoulders, etc.) that might indicate malignant lymphoma.

Image of bovine with retrobulbar lymphoma (yellow arrow)



Image of bovine with multiple swollen lymph nodes

Actinomycosis and Actinobacillosis ("Acti") - Cattle

- Instruct the establishment to segregate the animal for PHV disposition.
- Should be **U.S. SUSPECT**
- Clinical Signs may include:
 - Swelling around the jaw
 - Firm, swollen tongue
 - Difficulty eating and drinking

Image of cow with actinomycosis (Lumpy Jaw)



Image of cow with Actinobacillosis (Wooden Tongue)



External Tumors

- Instruct the establishment to segregate the animal for PHV disposition.
- Should be U.S. Suspect
- Brand carcinoma
- Melanoma



Image of melanoma lesion

Vesicular Disease

- **Must be U.S. SUSPECT--call the PHV immediately because of the possibility of a foreign animal disease!!!**
- Common clinical signs include:
 - Blisters which may or may not have ruptured
 - May or may not have a fever
 - Lesions may be present on the muzzle, in the mouth, and on the feet.
 - The ulcers are painful, so animals will walk gingerly (or not at all), they may hypersalivate (because of mouth ulcers) or refuse to eat or drink.

Image of vesicular lesions on swine (yellow arrows)



A Quick Word about Tuberculosis (TB)

- 9 CFR 311.2 addresses disposition of livestock based on tuberculosis.
- If a lot arrives to the establishment identified as TB reactors, TB suspects, or TB exposed, the SPHV takes the lead in TB ante-mortem examination.



Foreign & Reportable Animal Diseases (FAD/RAD)

What is a FAD?

- An important transmissible livestock or poultry disease believed to be absent from the United States and its territories that has a potential significant public health or economic impact.

What is a RAD?

- A disease or other condition that is present within the United States and may pose a threat to the public health or economy.

Both FADs and RADs must be reported to the authorities!

Why are FADs and Reportable Conditions so Important?

- **The unchecked spread of FADs into agricultural environments will have a negative ripple effect on many segments of the U.S. economy:**
 - Disruption of livestock marketing and trade
 - Some diseases carry the potential to infect people (zoonotic diseases)
 - Cost of controlling the spread of FADs
 - Animal quarantine
 - Depopulation
 - Cleaning and disinfecting livestock environments
 - Mass disposal of animal carcasses

Foreign & Reportable Animal Diseases (FAD/RAD)

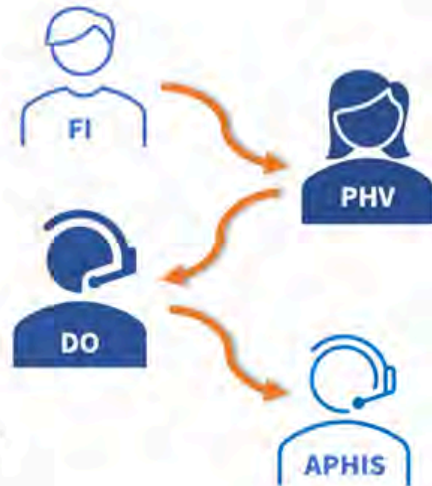
- **Who Investigates FAD and RAD conditions?**

- The USDA's Animal and Plant Health Inspection Service (APHIS) has the primary responsibility to investigate suspect conditions.
- If an FAD is detected, a chain of events is to occur at the state and national levels to mitigate the risk.



IPP Responsibilities with FADs and RADs

- If the FI identifies signs of a reportable disease, they immediately contact the PHV.
- The PHV will immediately contact the District Office (DO) through supervisory channels.
- The PHV will take the lot history. (**Refer to FSIS Directive 6000.1**)
- The District Office will contact APHIS, Veterinary Services.



Foreign & Reportable Animal Diseases (FAD/RAD)

- Remember that **you are the first line of defense** in food safety.
- You should inform the PHV of any symptoms seen on ante-mortem inspection or lesions seen on post-mortem inspection that are associated with a FAD or RAD condition.

You are the First Line of Defense!



Reportable Conditions to Observe in Ante-mortem Inspection

- High morbidity (many sick animals)
- High mortality (many dead animals)
- Vesicular lesions (blisters)
- Excessive salivation or drooling
- Sudden lameness (inability to walk/move normally)
- Severe respiratory conditions

Reportable Conditions to Observe in Ante-mortem Inspection (cont.)

- Pox or lumpy skin conditions
- CNS conditions (i.e., head pressing, head tilt, circling);
- Mucosal diseases (abnormalities of the mucous membranes)
- Larvae in wounds, unusual myiasis (fly maggot infestation), or acariasis (mite infestation)
- ANY unusual or unexplained illness or symptoms

Ante-mortem Inspection Summary

- **Purpose** - To prevent potentially adulterated product from entering the food supply
- **Scope** - Performed on *all* livestock presented for slaughter, the day of and prior to slaughter
- **Procedures** - Observe at rest and in motion
- **Dispositions** - Officially made by the PHV, but Food Inspectors must be able to recognize abnormal conditions, direct animals to be segregated, and know when to alert the PHV



Humane Handling

Objectives

- Name the two approved methods of slaughter in the Humane Methods of Slaughter Act (HMSA).
- Describe the Humane Activities Tracking System (HATS) categories and give one example of a requirement in each.
- Know when to notify the IIC when issues are observed.

Why is Humane Handling Important?

The use of humane methods in the slaughter and handling of livestock:

- Prevents needless suffering.
- Maintains safer working conditions.
- Improves the quality of meat products.



Where Did Humane Handling Come From?

- The humane handling regulations are derived from the **Humane Methods of Slaughter Act (HMSA)**, which was passed by Congress in 1978.
- The 1978 HMSA made mandatory the humane slaughter and handling of livestock in connection with slaughter of all food animals slaughtered in USDA inspected establishments.
- **It does not apply to poultry!**

Humane Methods of Slaughter Act

Among other things, the HMSA prescribes:

- 2 approved methods of slaughter - Stunning & Ritual Slaughter
- Certain facility conditions
- Handling requirements

Humane Methods of Slaughter

There are two approved methods of humane slaughter:

1. Stunning:

- Rendering the animal unconscious before being slaughtered

2. Ritual Slaughter:

- Sharp instruments are used to bleed the animal rapidly while they are conscious.

Stunning Requirements

- The HMSA requires that livestock be rendered **insensible to pain** on the first application of the stunning device before being shackled, hoisted, cast, or cut.
- This means that the animal must be **unconscious and unable to feel pain** before it is “stuck” (veins and arteries severed so it bleeds out).

Approved Methods of Stunning

1. Mechanical:

- Captive bolt (9 CFR 313.15)
- Gunshot (9 CFR 313.15)



2. Electrical:

- Electrical current (9 CFR 313.30)



3. Chemical:

- Carbon dioxide* (9 CFR 313.5)
- Carbon dioxide may only be used to stun sheep, calves, and swine.



Ritual Slaughter

- The HMSA permits ritual slaughter to protect religious groups' constitutional right to free expression of their faith.
- Examples of ritual slaughter include Jewish (Kosher) slaughter and Islamic (Halal) slaughter.



The Ritual Cut



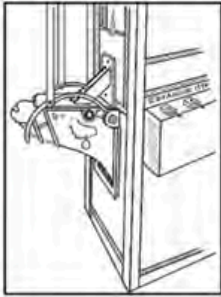
- In ritual slaughter, the animal's throat is cut by a properly-trained operator. This is known as the "**Ritual Cut.**"
- **The ritual cut is not evaluated** but is typically administered:
 - From side to side with a sharp knife.
 - Deeply enough for the major arteries and veins to be severed.
 - In a manner that simultaneously and instantaneously severs the carotid arteries, causing the animal to lose consciousness by anemia of the brain.

Ritual Slaughter and Stunning

- **Stunning is not required in ritual slaughter.**
- If stunning is used in addition to ritual cut, then stunning is verified by IPP, per the regulations.

The “Ritual Bubble”

The handling and restraint immediately prior to the Ritual Cut



The Ritual Cut



The Ritual Bubble



The Ritual Bubble & Humane Handling

- The activities that occur within that “ritual bubble” are protected as part of the Constitutional right to religious freedom.
- This does not mean that you are to ignore completely what happens within the “ritual bubble”—what it means is that you don’t enforce humane handling regulations within that “ritual bubble.”
- **If you have concerns about what is observed within the ritual bubble, discuss your concerns with the IIC.**

The Ritual Bubble



Humane Handling Activities Tracking System (HATS)

- There are **nine** HATS categories that are used by IPP to verify that establishments are meeting humane handling regulatory requirements.

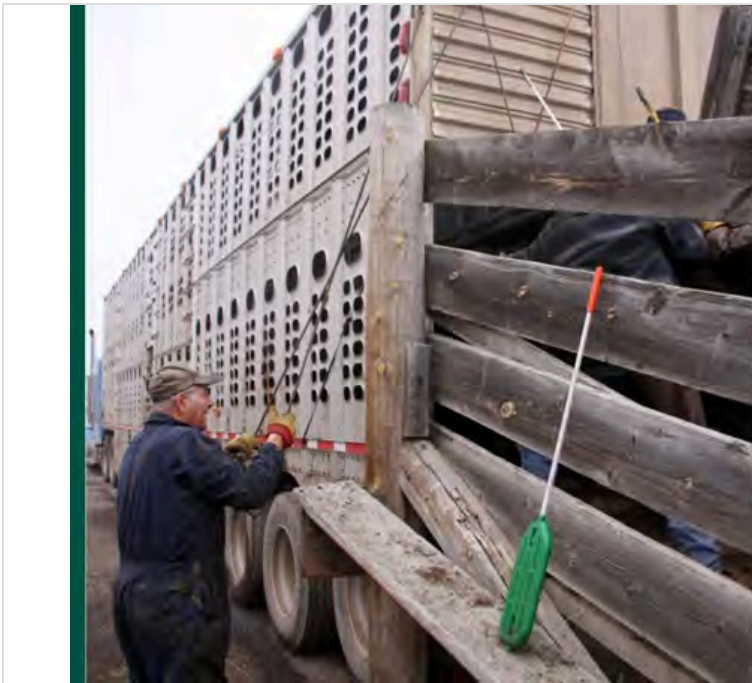
9 HATS Categories	
I. Inclement Weather	VI. Electric Prod/ Alternative Object Use
II. Truck Unloading	VII. Slips and Falls
III. Water and Feed Availability	VIII. Stunning Effectiveness
IV. Ante-mortem Inspection	IX. Conscious Animals on the Rail
V. Suspect and Disabled	

Category I: Inclement Weather



Some things to look for include:

- Animals slipping or falling because of wet or icy floors.
- Livestock overheated because of a lack of proper shade or because of a lack of water for cooling.
- Disabled livestock not in a covered pen protected from the elements.
- Inaccessible water due to frozen buckets or troughs.



Category II: Truck Unloading

Some things to look for include:

- Vehicles or ramps not being properly positioned, leading to the injury of animals.
- Animals forced to move faster than a normal walking speed.
- Livestock handling facilities must be kept in good repair.

Category III: Water and Feed Availability

Some things to look for include:

- Water must be accessible to livestock in all holding pens.
- Animals held longer than 24 hours must have access to feed.



Category IV: Ante-mortem Inspection

Some things to look for include:

- During ante-mortem inspection, the establishment's facilities and handling practices must provide for the humane handling of livestock.



Category V: Suspect and Disabled

Suspect and disabled livestock must be:

- Handled humanely (e.g., no dragging conscious animals).
- Separated from normal ambulatory animals.
- Suspect and disabled animals must be provided or placed in a covered pen.



Category VI: Electric Prod/Alternative Object Use

Some things to look for include:

- No excessive prodding.
- No use of sharp objects to move animals.
- Implements should be used as little as possible.



Category VII: Slips and Falls

Establishments must provide:

- Adequate footing in livestock facilities to prevent animals from slipping and falling as they are handled and moved.



Category VIII: Stunning Effectiveness

The establishment must:

- Effectively administer their stunning methods with a single application.
- Immediately render the animal unconsciousness.
- Maintain records for carbon dioxide gas concentrations.



Category IX: Conscious Animals on the Rail

After stunning, animals must not regain consciousness throughout shackling, sticking, and bleeding.

Signs of consciousness include:

- 1. Vocalization** (typical mooing, squealing, bleating, etc.)
- 2. Trying to hold its head up** (righting reflex)
- 3. Conscious tracking of the eyes** (the animal following movement with its eyes)

Verifying HATS Requirements

- If you observe any activities that are harming animals, you should immediately stop those activities and notify the IIC and establishment management.
- If you observe any other potential violations under any of the 9 HATS categories, you should notify the IIC immediately.



When do Humane Handling Regulations Apply?

When animals are:

- on the premises of the establishment,
- on vehicles that are on the premises,
- being handled in connection with slaughter (e.g., on trucks being staged for slaughter)





Livestock Post- mortem Inspection Dispositions

Objectives

1. Identify the purpose(s) of post-mortem inspection.
2. List the three main parts of livestock post-mortem inspection.
3. List the possible outcomes of post-mortem inspection.
4. List the procedures for post-mortem inspection of cattle, calves, swine, sheep, lamb, and goats.
5. Describe various abnormalities and conditions that would prompt you to retain heads, carcasses, or viscera for examination by the PHV.



What is Post-mortem Inspection?

- The term post-mortem means “**after death.**”
- Occurs after the animal has been slaughtered.
- Ensures that carcasses and parts entering commerce are wholesome, not adulterated, and properly marked, labeled and packaged.

Three Main Parts of Post-mortem Inspection

1. **Head** inspection;
2. **Viscera** inspection; and
3. **Carcass** inspection

9 CFR 310.1(a): IPP are to perform a careful post-mortem examination and inspection of the carcasses and parts of each animal.

Outcomes of Post-mortem Inspection

1. **Pass**: passed, and thus is eligible to receive the marks of inspection (9 CFR 310.8)
 - PHV's may also elect to **pass product with restrictions**
2. **Retain**: the carcass and parts are retained (held) for PHV disposition (9 CFR 310.3)
 - Commonly referred to as a "rail out"
3. **Condemn**: not eligible to receive the marks of inspection and cannot enter commerce (9 CFR 310.5)

Passed with Restrictions

- **Restricted product:** product that has been inspected and passed but cannot be released for human consumption because it has product quality issues or a disease or condition that might be transmitted to humans.
- It is subject to a product treatment before it can be released for human consumption.
 1. **Refrigeration** (311.23(a)(2));
 2. **Heating** (311.23(a)(2));
 3. **Cooking** (311.2(d)(f)(g), 311.18(e), 311.24, 311.25); or
 4. **Use in comminuted cooked meat food product** (311.20(b), 311.35(c), 311.37)

General Post-mortem Inspection Techniques

- IPP are to use **organoleptic** methods to detect diseases, abnormalities, and contamination of carcasses and parts:
 1. **Sight:** observing a disease lesion (e.g., abscess, tumor, injection site lesion);
 2. **Touch:** palpating (e.g., abnormal lump in tissues, abnormal firmness in an organ); and
 3. **Smell:** smelling (e.g., the urine odor of uremia, odor of a ruptured abscess, chemical odor)

Post-mortem Inspection - Normal vs. Abnormal

- When performing post-mortem inspection procedures, ultimately you are looking for any **abnormalities** in the anatomy of a livestock carcass and its parts, including signs of **contamination**.
- These abnormalities include changes in:
 - **Size**
 - **Shape**
 - **Color**
 - **Texture**
 - **Odor**

Post-mortem Inspection - Localized vs. Generalized

- When you have identified an abnormality, the next question you should ask is:

Is it Localized or Generalized?

Localized

- Restricted to a limited region or to one or more spots
- In many cases, the establishment trims the affected tissues, which are then condemned

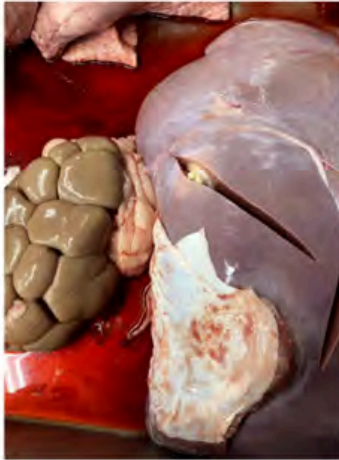
Generalized

- Widely distributed; existing in or affecting all or most of a carcass or part
- Retain the carcass, viscera, and head for veterinary disposition

Localized vs. Generalized Examples

Localized

Note the single lesion present in the liver



Generalized

Note the multiple lesions present throughout the liver



Post-mortem Inspection - Acute vs. Chronic

- Although not required to know, another important factor to consider when abnormalities are observed is:

Is this an Acute or Chronic process?

Acute

- Of short duration (minutes to days)
- May see signs of redness, swelling, and edema (fluid accumulation)
- Acute pathologies are often severe, still "active", more concerning
- **May warrant retaining the carcass for PHV disposition**

Post-mortem Inspection - Acute vs. Chronic (cont.)

- Although not required to know, another important factor to consider when abnormalities are observed is:

Is this an Acute or Chronic process?

Chronic

- Long-lasting (weeks to months)
- May see lesions that have a thick wall and are typically pale in color
- Chronic pathologies are often less severe, body is “healing”, less concerning

Acute vs. Chronic Examples

Acute:

- Typically characterized by areas of hyperemia (redness) with no prominent encapsulation or defined margins around the lesions.

Note the prominent redness and lack of encapsulation (or “wall” around the lesion)



Acute vs. Chronic Examples (cont.)



Note pale color
and thick "wall"
around abscess

Chronic

- Typically characterized by having thick walls or well-defined margins around the lesions
- Also, typically paler in color

Lymph Nodes

A normal lymph node (l.n.) can take on several different appearances, so IPP must be able to identify abnormalities in both size and appearance.



Both images show a typical “normal” appearance of lymph nodes.
Note the difference in color in both images.

Lymph Node Abnormalities

- Any carcasses with abnormal lymph nodes should be railed out for PHV disposition.
- Shown are a few examples of some changes that are commonly seen in abnormal lymph nodes.

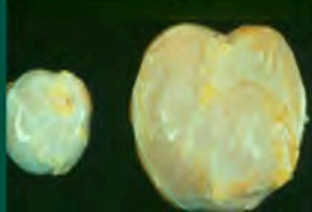
Incised tumor inside l.n.



Incised abscess inside l.n.



Normal sized l.n. on left; enlarged on right



Grossly enlarged incised l.n. with lymphoma



Grossly enlarged intact l.n. with lymphoma



Acute reaction in incised l.n. (note the areas of redness)



Head Inspection in Cattle

How to Perform Cattle Head Inspection

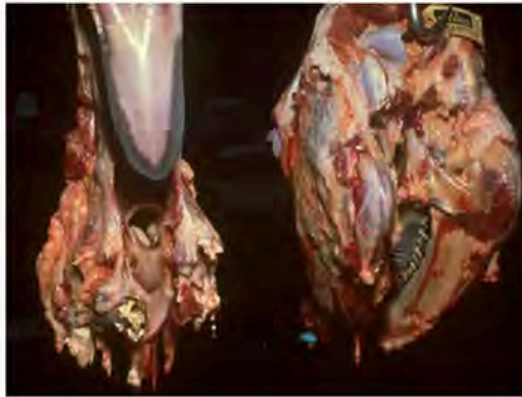
How the head is presented will determine the order in which these steps are performed. (See Directive 6100.2)

1. Observe the head's surfaces and eyes;
2. Incise and observe the four pairs of lymph nodes (mandibular, parotid, medial and lateral retropharyngeal);
3. Incise and observe the lateral and medial masticatory muscles (cheeks); and
4. Observe and palpate the tongue.

Cattle Head Inspection - Head and Eyes

1. Observe the external structures and eyes for abnormalities:

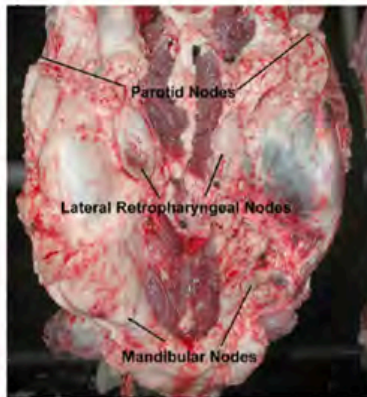
- Contamination
- Abscesses
- Tumors



Cattle Head Inspection - Lymph Nodes

2. Incise and observe the four pairs of lymph nodes

Tongue-in head presentation



1. Parotid

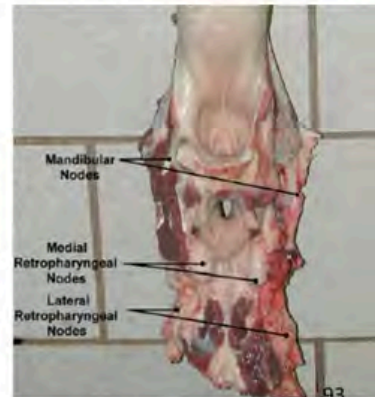
2. Lateral Retropharyngeal

3. Medial Retropharyngeal

4. Mandibular

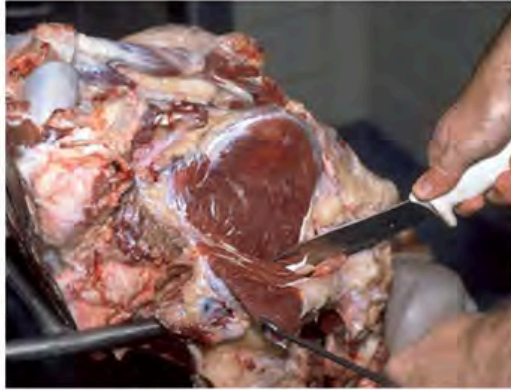
These remain attached to the head and are located under the chin, adjacent to the jawbone

Tongue-out presentation



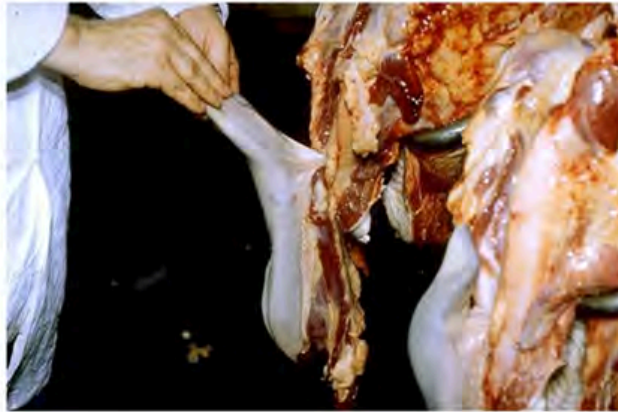
Cattle Head Inspection - Cheek Muscles

3. Incise and observe the masticatory (cheek) muscles



Cattle Head Inspection - Tongue

4. Observe and palpate (touch) the tongue



Cattle Head Inspection

Conditions which may be seen:

- **Contamination** (310.18(a))
- **Actinomycosis ("Lumpy Jaw") & Actinobacillosis ("Wooden Tongue")** (311.9)
- **Malignant lymphoma** (311.11)
- **Epithelioma ("Cancer Eye")** (311.12)
- **Abscesses** (311.14)
- **Tuberculosis** (311.2)
- **Cysticercosis** (311.24)
- **Eosinophilic myositis** (311.35)

Contamination

- Contamination may be observed the in form of pieces of:
 - **Hide**
 - **Hair**
 - **Ear tubes**
 - **Ingesta**
 - **Rust**
 - **Grease**
- When these or any other contaminants are present on the head when it is presented for inspection, you will delay inspection until the condition is removed by a company employee.

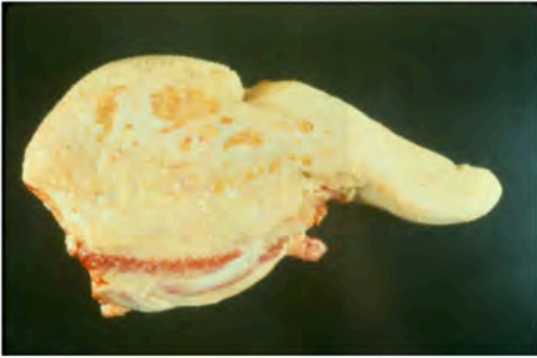
Actinomycrosis ("Lumpy Jaw")



- Yellow arrows are pointing to the enlarged bony structures in the mandible/jawbone



Actinobacillosis ("Wooden Tongue")

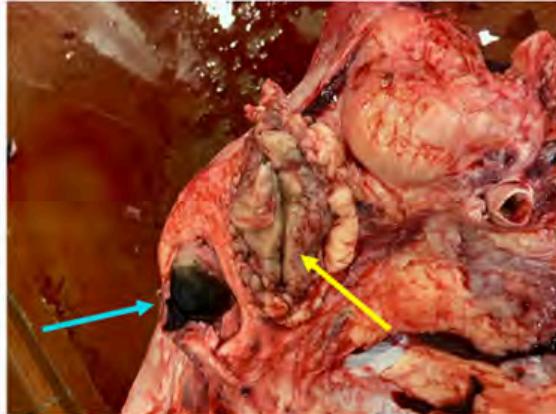


Note: Tongue will feel swollen and "firm"

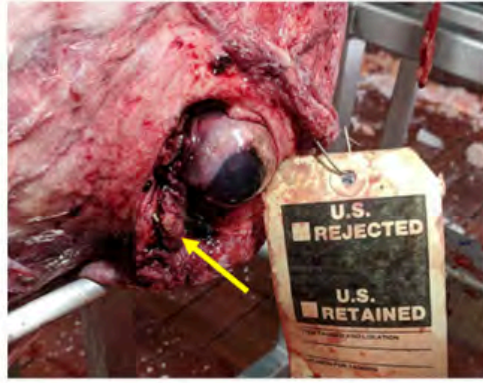
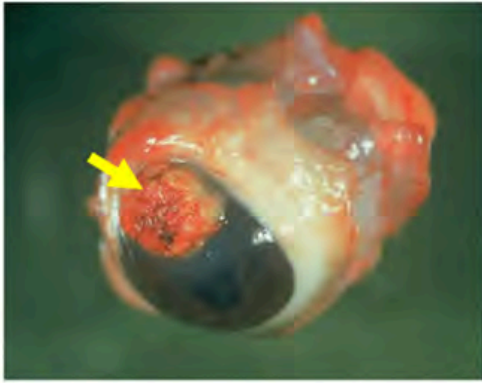


Malignant Lymphoma

- Retrobulbar (behind the eye)
- **Blue arrow** is pointing to the eye
- **Yellow arrow** is pointing to the lymphoma lesion behind the eye

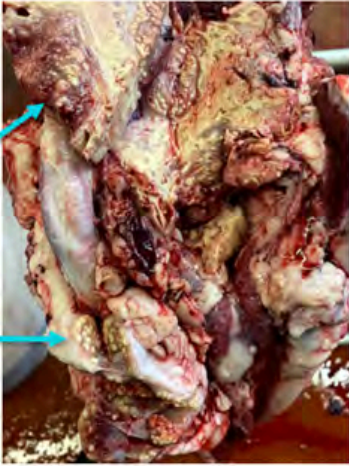


Epithelioma (“Cancer Eye”)



- Yellow arrows are pointing to the epithelioma lesions on the eyes

Abscesses

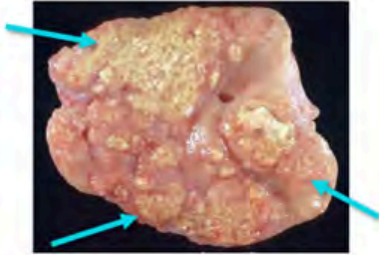


Blue arrows are pointing to multiple small abscesses are present throughout most of the musculature and lymph nodes of the head.



Tuberculosis

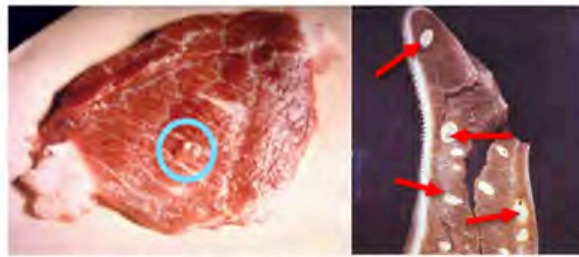
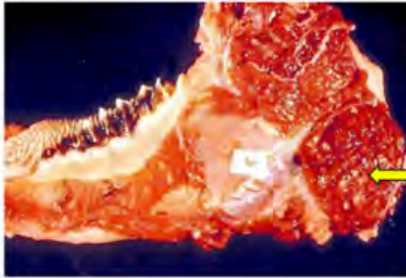
- Typically suspected when granulomatous lesions are found.
- A granulomatous lesion is one that has a “granular” appearance as shown below.



- Note the prominent TB lesion in the parotid lymph node located at the bottom of the knife blade

Cysticercosis

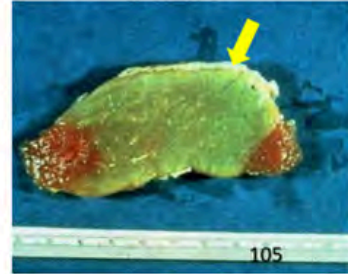
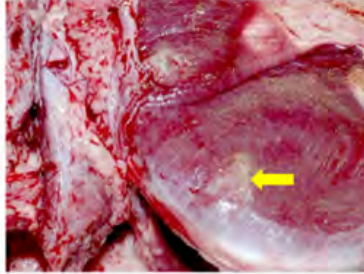
- Caused by the presence of the larval form of the beef tapeworm, *Taenia saginata*, in the carcass tissues.
- Look for cyst-like lesions.



- Note the small round cyst in the cheek muscle identified with the blue circle and white lesions identified with the red arrows in the tongue.
- Note the small round lesions or cysts identified with the yellow arrow in the muscles of mastication.

Eosinophilic Myositis

- A term used to describe an inflammatory condition characterized by small, green, yellow, or white muscular lesions.
- **Note** the yellow, white, and green lesions shown in the pictures below, respectively.



Viscera Inspection in Cattle

How to Perform Cattle Viscera Inspection

1. Observe and palpate the stomachs, spleen, and esophagus.
2. Incise and inspect the pluck (heart and lungs).
3. Incise and inspect the liver.

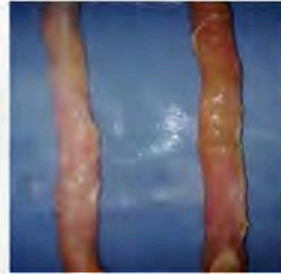
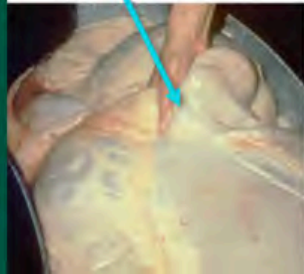


1. Cattle Viscera Inspection - Stomachs, Spleen, and Esophagus

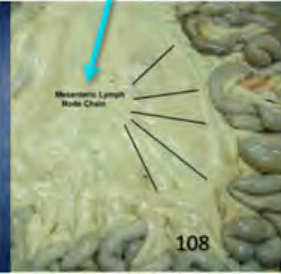
Observe and palpate the stomachs, spleen, and esophagus, including:

- The mesenteric lymph nodes
- The rumeno-reticular junction

(rumeno-reticular junction)



(mesenteric lymph node chain)



2. Cattle Viscera Inspection - Pluck

- **Pluck (heart and lungs):**
 - Incise and observe the lymph nodes of the lungs
 - mediastinal – anterior, posterior, middle
 - tracheobronchial (bronchial) - right and left
 - Observe and palpate costal (curved) surfaces of lungs.
 - Turn lungs over; observe ventral (flat) surfaces and heart's outer surface.
 - Incise heart, from base to apex, through the interventricular septum, and observe cut and inner surfaces.

2. Pluck (Heart and Lungs)



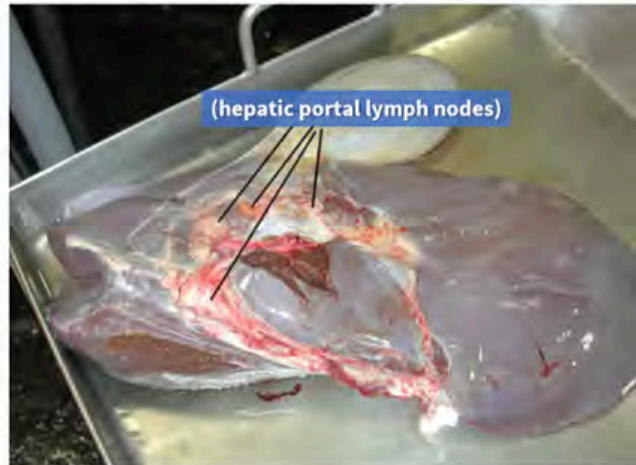
Yellow arrow is pointing inspector incising and observing the mediastinal and tracheobronchial lymph nodes (these are all located between the right and left lungs)

Blue arrow is pointing to inspector incising the heart, from base to apex, through the interventricular septum to observe the cut and inner surfaces



3. Cattle Viscera Inspection - Liver

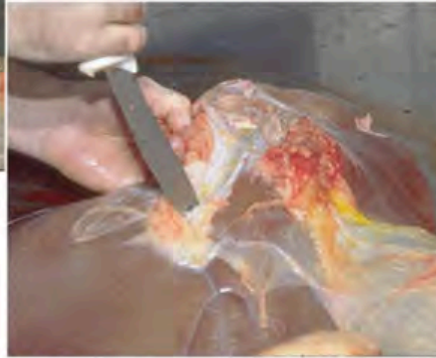
- Incise and observe the hepatic (portal) lymph nodes.
- Open the bile duct, observe its contents.
- Observe and palpate the dorsal and ventral surfaces of the liver.



3. Liver (cont.)



Yellow arrow is pointing to inspector incising a hepatic (liver) lymph node.



Blue arrow is pointing to inspector opening the bile duct.

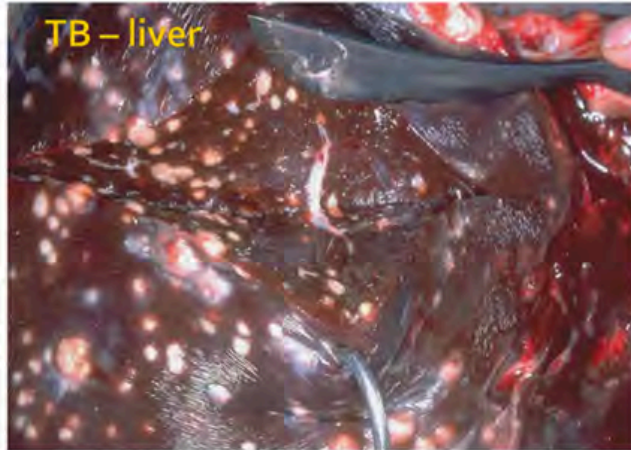
Cattle Viscera Inspection

Conditions which may be seen:

- **Tuberculosis/granulomas** (311.2)
- **Neoplasia (cancer)** (311.11)
- **Pigmentary conditions** (311.13)
- **Abscesses** (311.14)
- **Inflammatory changes** (311.16, 311.35)
- **Icterus** (311.19)
- **Tapeworm cysts** (311.23) **and parasites** (311.25)
- **Telangiectasia, carotenosis of the liver** (311.31)

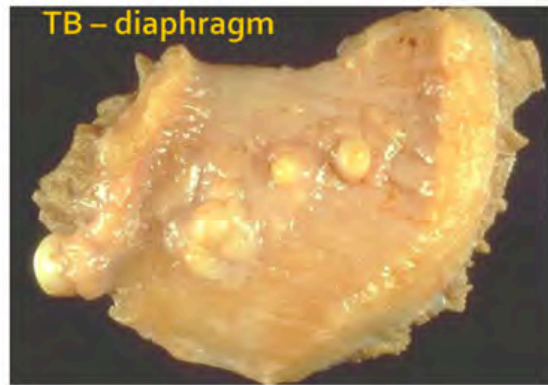
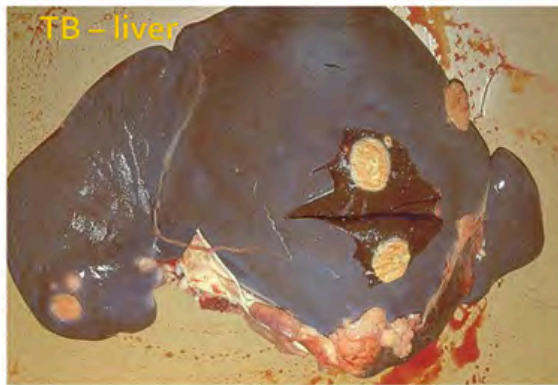
Tuberculosis/Granulomas – 9 CFR 311.2

- **Granulomas** are small, nodular lesions of inflammation.
- Unlike abscesses, they are firm and typically do not contain pus.



Note the multiple, widespread granulomatous lesions throughout the liver.

Tuberculosis/Granulomas – 9 CFR 311.2 (cont.)



Note the multiple tuberculosis granulomas in the liver (left image) and diaphragm (right image)

Tuberculosis/Granulomas – 9 CFR 311.2 (cont.)

If any lesions that resemble a granuloma are identified in the carcass, inspectors should tag and retain the carcass (and all associated parts) for PHV disposition and tuberculosis testing.



Note: multiple, widespread tuberculosis granulomas in the lungs and pleural (chest) cavity

Neoplasia (Cancer) – 9 CFR 311.11

Malignant Lymphoma

- Most commonly found in the lymph nodes, abomasum, spinal canal, heart, uterus, and diaphragm but may appear almost anywhere.
- In the heart, one common presentation of lymphoma is as nodular masses (yellow arrow)

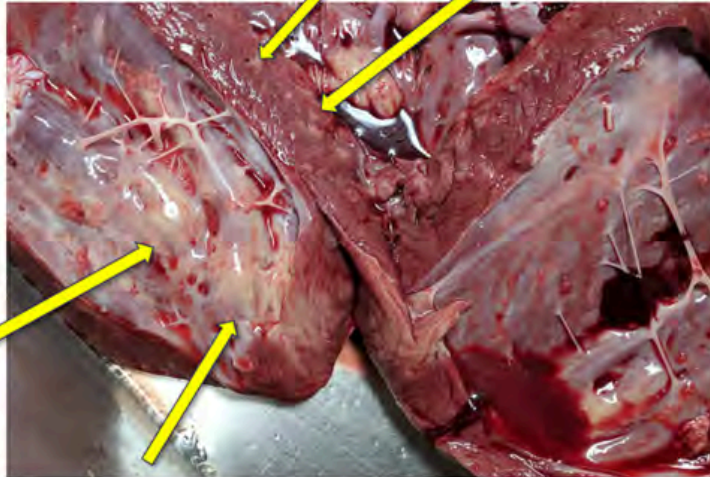
311.11(b): Carcasses affected with malignant lymphoma shall be condemned.



Neoplasia (Cancer) – 9 CFR 311.11 (cont.)

Malignant Lymphoma

- In the heart, lymphoma can develop either as nodular masses (previous slide) or infiltrate (yellow arrows in this image), where it appears as flat, tan-white spots and "sheets".

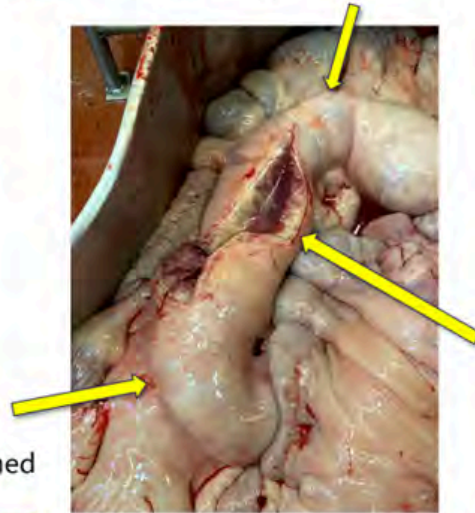


311.11(b): Carcasses affected with malignant lymphoma shall be condemned.

Neoplasia (Cancer) – 9 CFR 311.11 (cont.)

Malignant Lymphoma

- Mesentery
- The mesentery will feel thicker than normal due to the infiltration of lymphoma

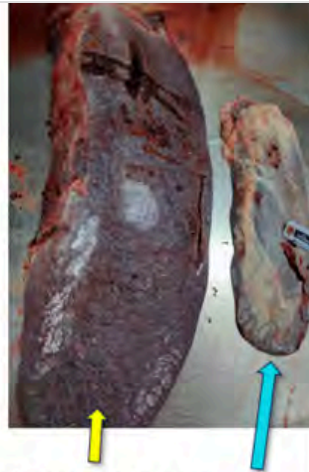


Note the thickened intestinal wall (yellow arrows)

Neoplasia (Cancer) – 9 CFR 311.11 (cont.)

Malignant Lymphoma

- Spleen



Above pic: right spleen = normal, for reference (blue arrow); left spleen = malignant lymphoma (yellow arrow)

Below pic: may see enlarged spleen (splenomegaly) with prominent white spots (lymphoid follicles) when cut open (yellow arrow); right spleen = normal

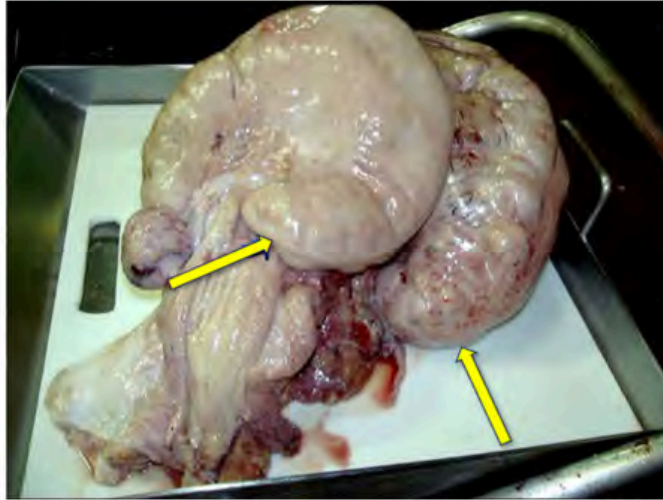


Neoplasia (Cancer) – 9 CFR 311.11 (cont.)

Malignant Lymphoma

- Uterus

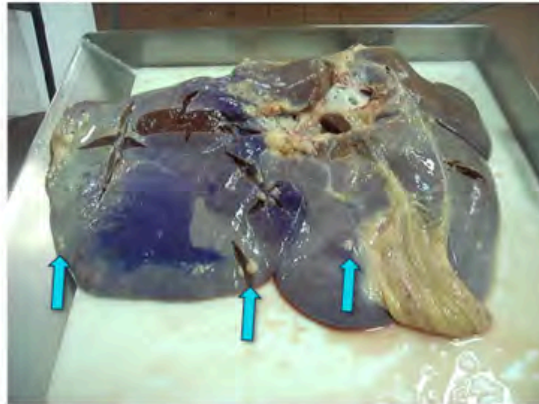
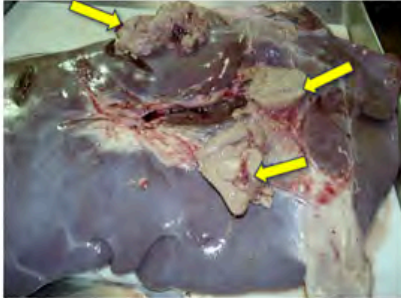
Note: the uterus will feel thicker than normal due to the infiltration of lymphoma (yellow arrows)



Neoplasia (Cancer) – 9 CFR 311.11 (cont.)

Malignant Lymphoma

- Liver

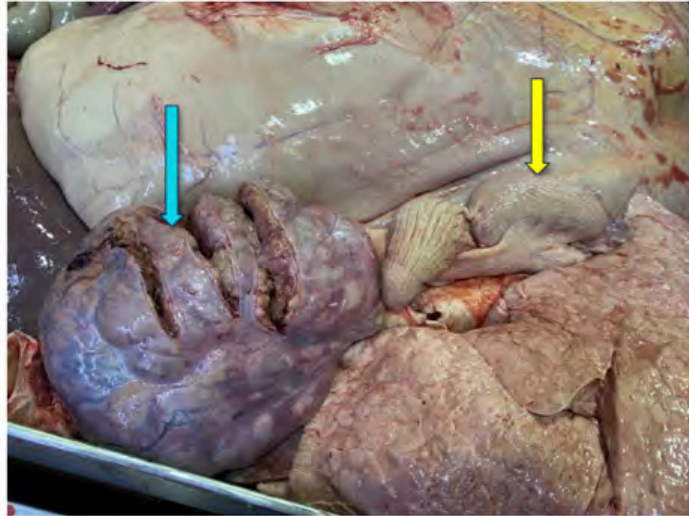


Note: the enlarged hepatic lymph nodes in the left image (yellow arrows) and the multifocal lesions of malignant lymphoma in the liver in the right image (blue arrows).

Neoplasia (Cancer) – 9 CFR 311.11 (cont.)

Ovarian Neoplasm

Note: blue arrow = affected ovary;
yellow arrow = "normal" ovary.

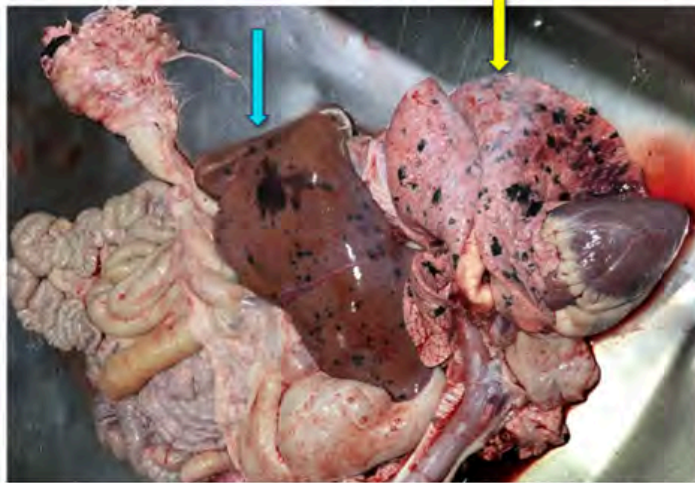


Pigmentary Conditions – 9 CFR 311.13

- **Melanosis**

- Melanosis is excessive melanin deposits (black pigment) or deposits in abnormal locations

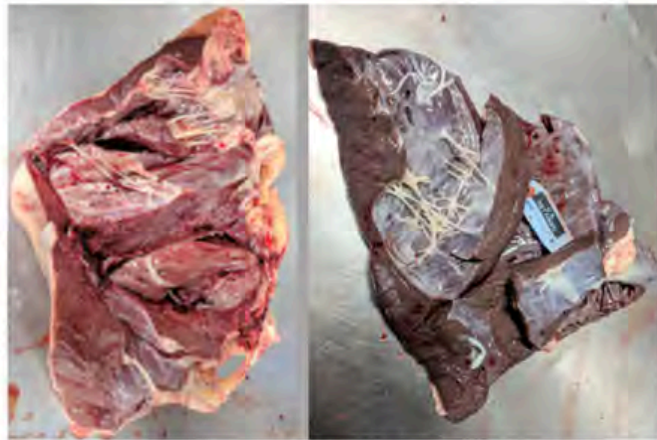
Note: the multiple deposits of black pigments in the liver (blue arrow) and lungs (yellow arrow).



Pigmentary Conditions – 9 CFR 311.13

- **Xanthosis**

- Xanthosis is the deposition of excessive amounts of cellular waste pigments.
- Affected muscle has dark brown or coffee-colored discoloration ("Brown Atrophy").
- Usually seen in older cattle and those suffering from chronic wasting disease.
- More commonly affects heart and head musculature.

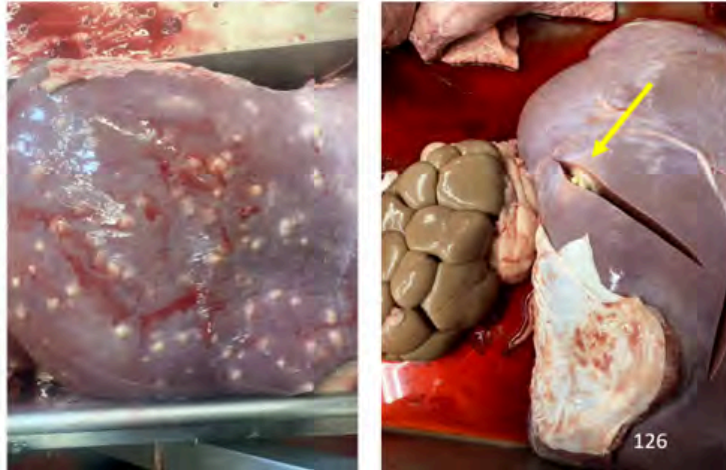


Note: left pic = "normal" heart; right pic = affected heart.

Abscesses - 9 CFR 311.14

Note: multiple, widespread abscess in liver in liver in left image and single, localized abscess in liver in right image (yellow arrow)

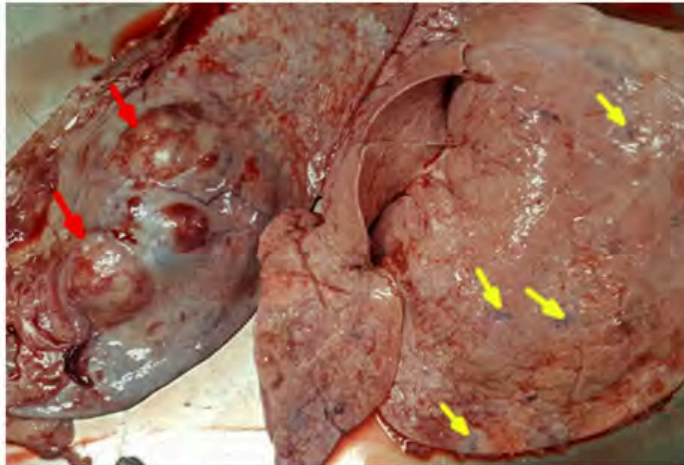
- An **abscess** is a contained collection of pus that is the result of an infection with certain types of bacteria.



Abscesses - 9 CFR 311.14

- Some abscesses are readily visible, while others must be palpated to identify.

Note: red arrows = large abscesses in spleen; yellow arrows = small abscess in lungs

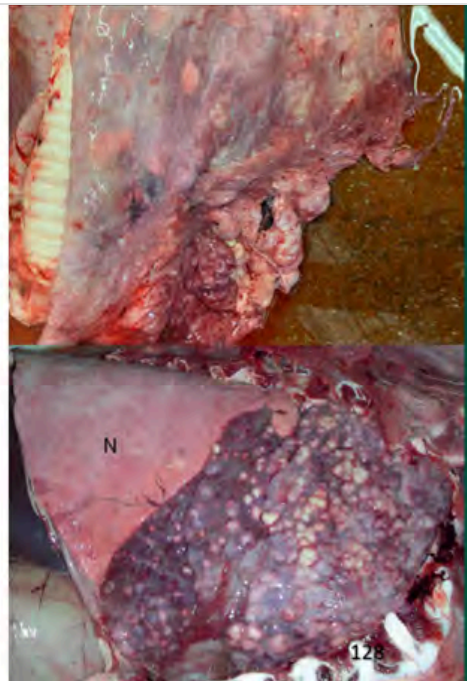


Inflammatory Changes – 9 CFR 311.16

- **Pneumonia**

- Lung lobes affected by pneumonia will typically feel thick, heavy, and consolidated compared to healthy lung lobes.
- It is very important to palpate each lung (and lung lobe) to check for these changes that are associated with pneumonia.

Note: top pic = normal lung tissue; bottom pic = affected lung.

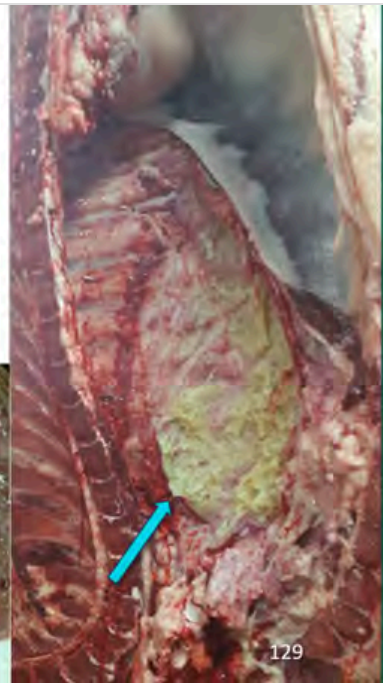
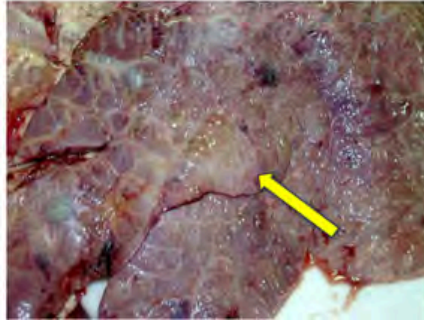


Inflammatory Changes – 9 CFR 311.16 (cont.)

- **Pneumonia and pleuritis**

- The pleura lines the outer surface of the lungs and the inner surface of the thorax (chest cavity).
- Pleuritis (or inflammation of the pleura) is often seen with pneumonia but may be seen without it as well.

Left image: pleuritis of the outer surface of the lungs (yellow arrow)
Right image: pleuritis of the inner surface of the thorax (blue arrow)



Inflammatory Changes – 9 CFR 311.16 (cont.)

- **Pericarditis**-inflammation of the heart
 - The common terminology for severe, acute cases of pericarditis is “shaggy heart,” due to its rough appearance



Inflammatory Changes – 9 CFR 311.16 (cont.)

- **Pericarditis**

- Severe pericarditis may lead to right-sided heart failure and an enlarged, "blue" liver
- These should be retained for the PHV

Note: See image of an enlarged, "blue" liver, due to severe pericarditis that ultimately led to right-sided heart failure.



Inflammatory Changes – 9 CFR 311.16 (cont.)

- **Peritonitis**

- inflammation of the abdomen
- peritonitis may affect the outer surfaces of abdominal organs and/or the inner wall of the abdomen.

Note: See image of inflammation of the reticulum, spleen, and a more extensive area of the abdominal viscera



Inflammatory Changes – 9 CFR 311.16 (cont.)

- Peritonitis



Note: left image = inflamed liver + gallbladder; right image = inflamed spleen

Inflammatory Changes – 9 CFR 311.16 (cont.)

- **Metritis**

- Inflammation of the uterus
- Often, an affected uterus will be filled with pus that has a very foul odor, so caution is warranted when potentially making a cut into the structure.



Note: the red inflammation along the outer surface of the uterus 134

Inflammatory Changes of Muscle – 9 CFR 311.35

• Eosinophilic Myositis

- The most common lesions are the irregularly distributed yellowish-green, yellowish-white, and red spindle-shaped foci found in the heart and tongue.
- Lesions may be found in the head, tongue, esophagus, heart, diaphragm, and cut surfaces of exposed muscles during the sanitary dressing process.

Image of weasand (esophagus) with red arrows pointing to lesions



Image of heart with red arrows pointing to lesions



Infiltration of Muscle – 9 CFR 311.35

- **Steatosis**

- Accumulation of fat in the muscle tissue.
- If steatosis is identified in the cheek muscles, IPP should make cuts into the musculature of the carcass.
- Widespread steatosis warrants condemnation by the PHV.



Note: widespread infiltration of fat (steatosis) in cut cheek muscle

Icterus – 9 CFR 311.19

- Icterus or jaundice, is a condition in which there is yellowish pigmentation of the tissues (as seen in the images to the right).
- Any findings of icterus warrant carcass condemnation.
- External factors such as diet may also affect the color of normal fat. (When in doubt, retain the carcass for the PHV)

Note: top pic = icteric heart (blue arrow);
bottom pic = icteric lung (yellow arrow)



Fatty Liver

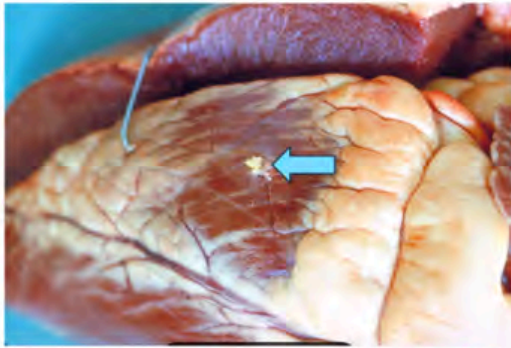
- Fatty liver (hepatic lipidosis) is often seen in cows with icterus.
- The liver will appear pale/tan and is often enlarged.
- If fatty liver is present but the rest of the carcass and viscera are normal, then only the liver is condemned.



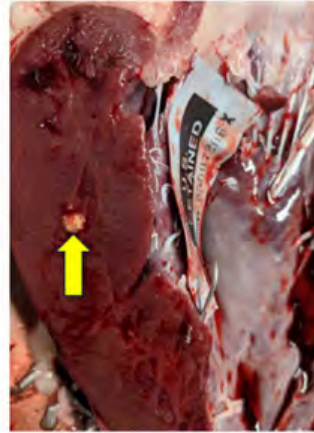
Note: pale color of the liver, evidence of liver enlargement (rounded edges) (yellow arrow)

Tapeworm Cysts (9 CFR 311.23) and Parasites (311.25)

- Beef Cysticercosis



Note: Image of cysticercosis lesion in heart (blue arrow)



Note: Image of cysticercosis lesion in heart (yellow arrow)

Tapeworm Cysts (9 CFR 311.23) and Parasites (311.25)



Note: yellow arrows = liver flukes; blue arrows = thickened bile ducts

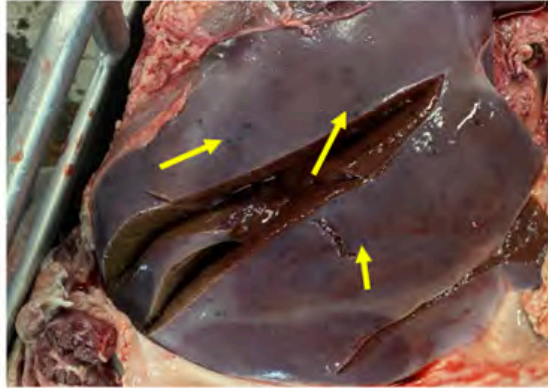
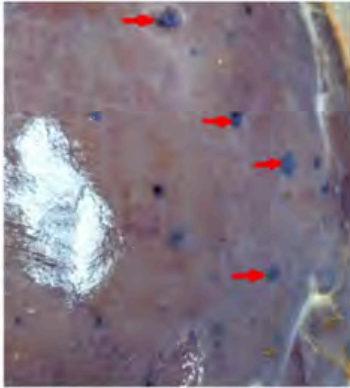
• Liver Flukes

- Typically identified during incision of the bile ducts.
- These flukes are flat, broad, and have a leaf-like shape.
- Affected livers should be condemned.

Telangiectasia of the Liver – 9 CFR 311.31

- **Telangiectasia**

- This disease causes dark spots on the surface of the liver
- Note the lesions shown in both images with red and yellow arrows.



Carotenosis of the Liver – 9 CFR 311.31

- **Carotenosis in the Liver**

- Is usually a result of excess carotenoid pigments in the diet.
- Affected livers should be condemned.



Note the yellowish-orange color of the liver.

Carcass Inspection in Cattle

Cattle Carcass Inspection

• **IPP are to examine livestock carcasses by incorporating the following steps (or stations) of the post-mortem inspection process:**

1. Observe the cut surfaces of the muscles, bones, neck, and carcass exterior
2. Observe and palpate the superficial inguinal (supramammary) and internal iliac (pelvic) lymph nodes
3. Observe and palpate the interior surfaces (pleura, peritoneum, diaphragm) of the carcass.
4. Observe and palpate the kidneys (9 CFR 310.19)

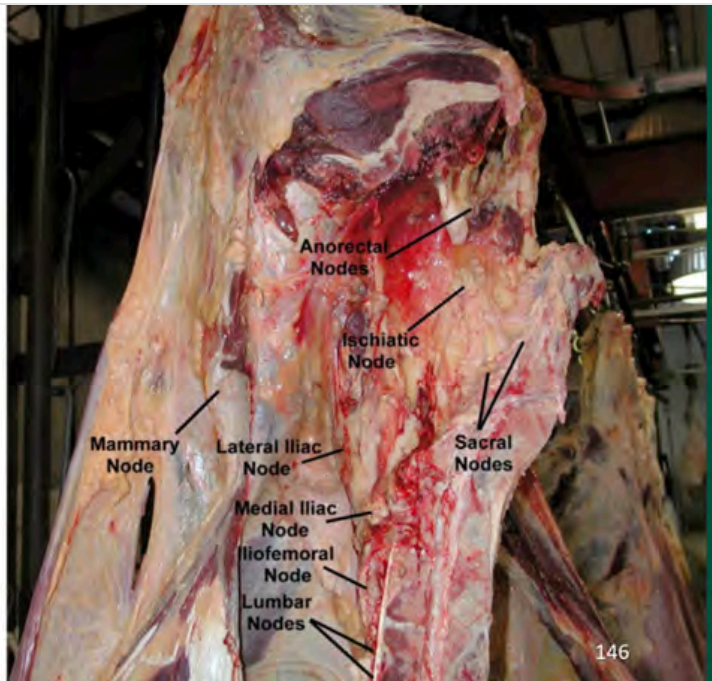
Cattle Carcass Inspection

1. Observe the cut surfaces of the muscles, bones, neck, and carcass exterior.



Cattle Carcass Inspection

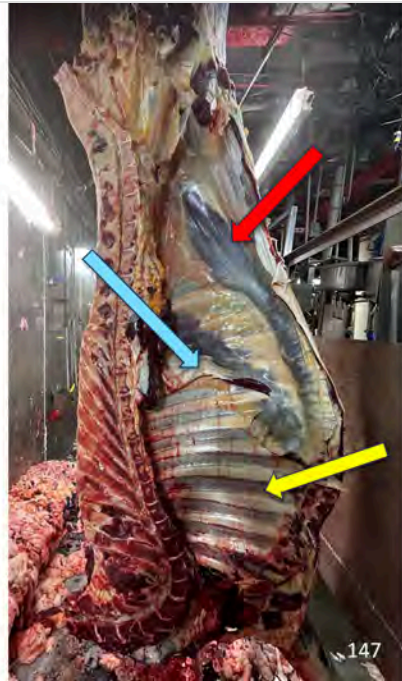
2. Observe and palpate the superficial inguinal (supramammary) and internal iliac (pelvic) lymph nodes.



Cattle Carcass Inspection

3. Observe and palpate the interior surfaces (pleura, peritoneum, diaphragm) of the carcass.

- **red arrow** is pointing to the peritoneum (abdominal cavity wall)
- **blue arrow** is pointing to the diaphragm (flap of muscle that separate the pleura from the peritoneum)
- **yellow arrow** is pointing to the pleural surface (space around the lungs)



Cattle Carcass Inspection

4. Observe and palpate the kidneys (9 CFR 310.19).



Note: establishments may present kidneys with the viscera

Cattle Carcass Inspection

Conditions which may be seen:

- **Arthritis (311.7)**
- **Neoplasia (cancer) (311.11)**
- **Bruises (311.14)**
- **Inflammatory changes (311.16, 311.35)**
- **Icterus (311.19)**
- **Emaciation (311.26)**

Arthritis – 9 CFR 311.7

- **Arthritis**

- Inflammation of joint tissues, such as the knee or shoulder
- Compare both halves of the carcass to see if there is any asymmetry (differences) between the joints (as seen in the pic on this slide)

Note: the right stifle (knee) joint of this dairy cow is markedly swollen and inflamed (yellow exudate).



Neoplasia (Cancer) – 9 CFR 311.11

- **Malignant Lymphoma**
 - Superficial inguinal (pelvic) lymph node

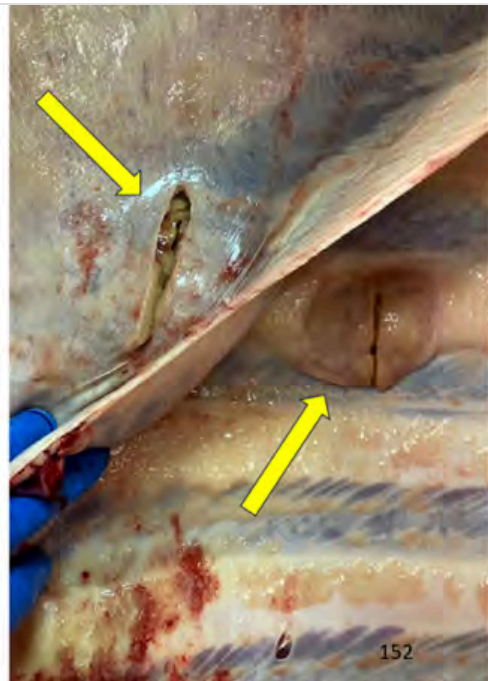
311.11(b): Carcasses affected with malignant lymphoma shall be condemned.



Neoplasia (Cancer) – 9 CFR 311.11

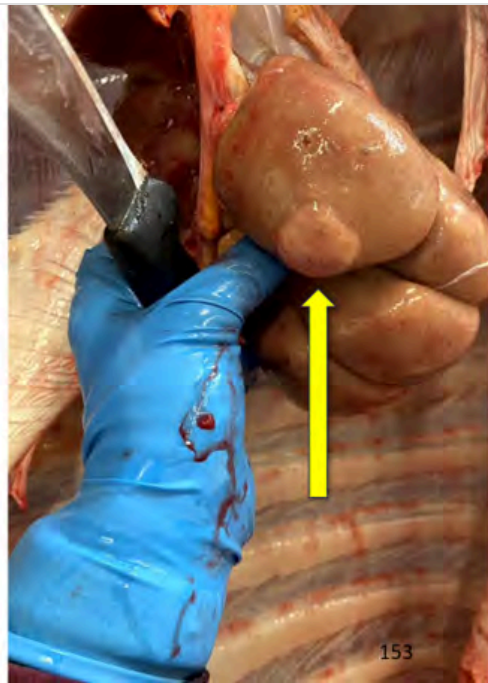
- **Malignant Lymphoma**
 - Diaphragm, thorax

Note: always palpate, inspect both sides, and look behind the diaphragm.



Neoplasia (Cancer) – 9 CFR 311.11

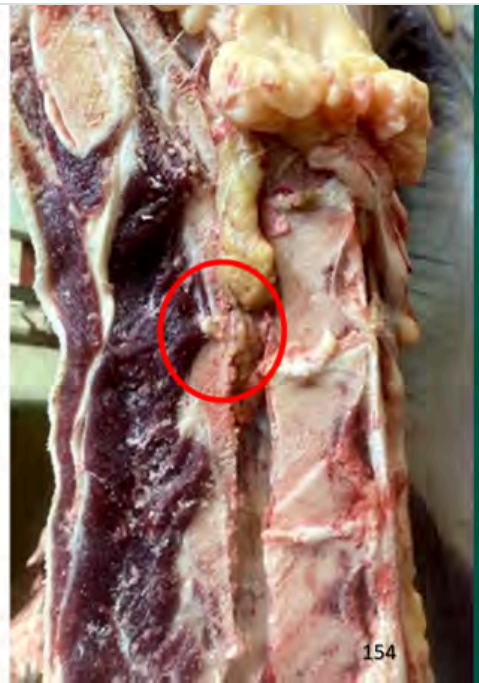
- **Malignant Lymphoma**
 - Kidney



Neoplasia (Cancer) – 9 CFR 311.11

- **Malignant Lymphoma**
 - Spinal canal

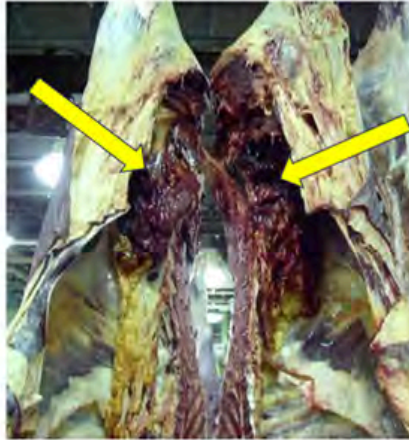
Note: a visible mass of fleshy tissue is seen in the spinal canal with a red circle.



Abrasions, Bruises, Abscesses – 9 CFR 311.14

- **Bruises**

- If any part can be salvaged from the carcass, the bruises are trimmed and the remainder of the carcass is passed



Note: yellow arrows point to bruised tissues

Inflammatory Changes – 9 CFR 311.16, 311.35

- **Pleuritis**

- Inflammatory condition of the pleural (chest) lining

Note: Pleuritis may affect the outer surface of the lungs and/or the inner wall of the thorax (chest cavity). It is often seen with pneumonia.



Inflammatory Changes – 9 CFR 311.16, 311.35

- **Peritonitis**

- Inflammation of the peritoneum (the lining covering abdominal organs and the inner wall of the abdominal cavity)

Note: peritonitis may affect the outer surfaces of abdominal organs and/or the inner wall of the abdomen.



Inflammatory Changes – 9 CFR 311.16, 311.35

- **Mastitis**

- Inflammation of the mammary glands (udders).

- **Cellulitis**

- Inflammation of subcutaneous tissues



Inflammatory Changes – 9 CFR 311.16, 311.35

- **Nephritis**

- Inflammation of the kidneys

Note: the right kidney has nephritis; the left kidney is normal.



Icterus – 9 CFR 311.19

- Presents as a yellow discoloration of visceral and carcass tissues.
- Note the yellow discoloration of the right carcass compared to the normal carcass on the left.
- Retain for veterinary disposition.

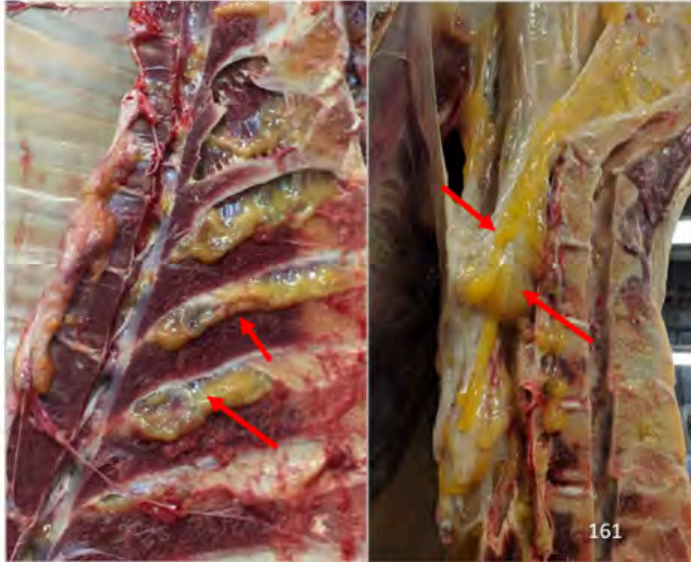


Emaciation – 9 CFR 311.26

- **Emaciation**

- Develops due to low intake of food or an increase in metabolic rate, which causes the animal to deplete its normal body fat and protein reservoir

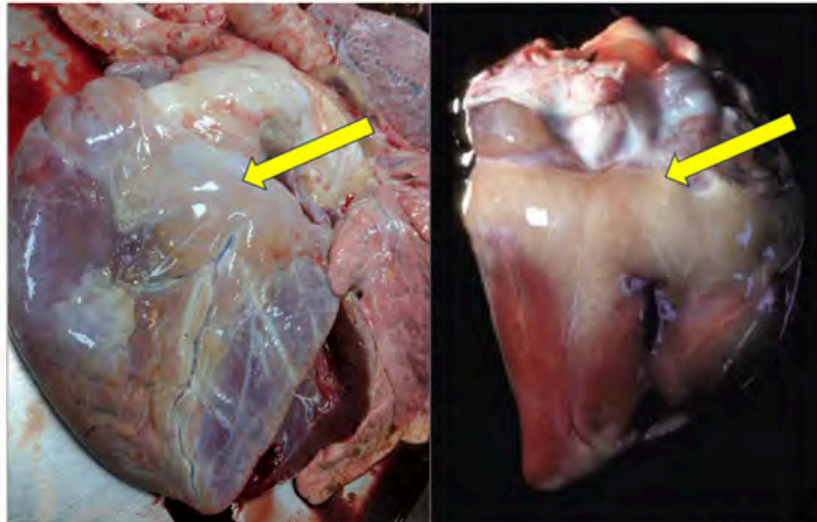
Note: In emaciated carcasses, fat will appear shiny and "melty" (**red arrows**).



Emaciation – 9 CFR 311.26 (cont.)

- **Emaciation**

Note: these changes are also commonly seen in the fat on the surface of the heart (arrows).

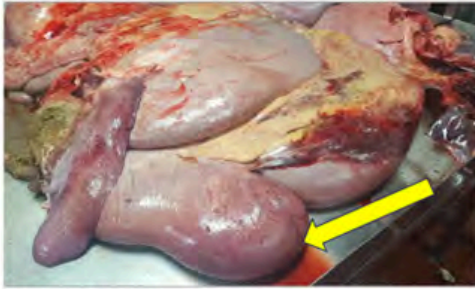


Overall Carcass Inspection

- **311.16:** Carcasses so infected that consumption of the meat may cause food poisoning
 - Septicemia
 - Toxemia
 - Pyemia
 - Any infectious or inflammatory process that involves multiple organ systems in the carcass

Septicemia & Toxemia

- Signs may include:
 - **Dark, congested carcass and viscera**
 - Hemorrhage in the carcass, lymph nodes, and organs
 - Renal infarcts

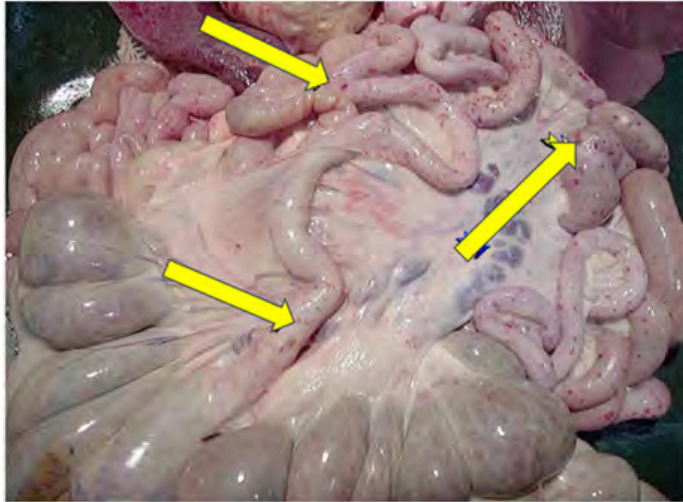


Note red congested viscera and carcass with yellow arrows



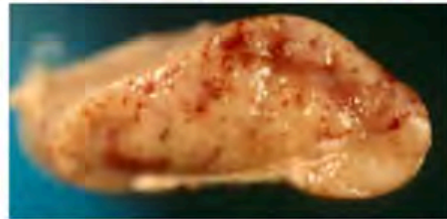
Septicemia & Toxemia

- Some signs may include:
 - Dark, congested carcass and viscera
 - **Hemorrhage in the carcass, lymph nodes, and organs**
 - Renal infarcts



Septicemia & Toxemia

- Some signs may include:
 - Dark, congested carcass and viscera
 - **Hemorrhage in the carcass, lymph nodes, and organs**
 - Renal infarcts



Note: observe the small red areas of hemorrhage

Septicemia & Toxemia

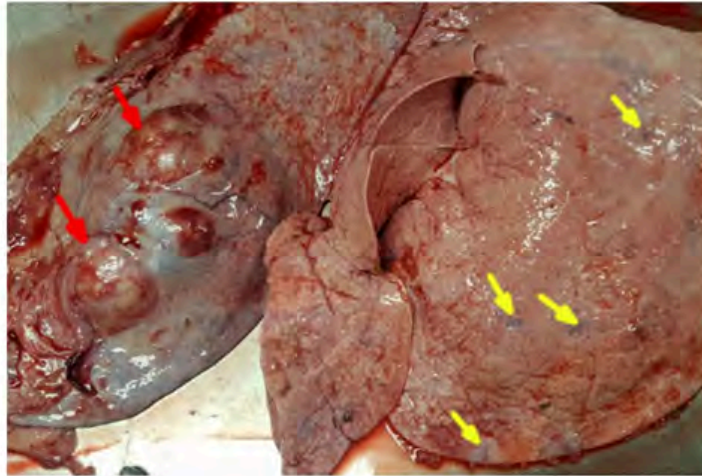
- Some signs may include:
 - Dark, congested carcass and viscera
 - Hemorrhage in the carcass, lymph nodes, and organs
 - **Renal infarcts** (red circle and arrow)



Pyemia

- Characterized by the presence of abscess(es) and signs of systemic change.

Note: red arrows = splenic abscesses; yellow arrows = lung abscesses





Specified Risk Materials

Objectives

1. Identify Specified Risk Materials (SRMs)
2. State the purpose of SRM control
3. Understand regulatory requirements for SRM removal

Remember SRMs?

- Remember, specified risk materials (SRMs) are the parts of cattle that could potentially harbor the BSE agent, or prions, in an infected animal.
- Prions are misfolded proteins that cause Bovine Spongiform Encephalopathy (BSE).
- **Because of the risk for BSE, SRMs are considered inedible and are prohibited for use as human food.**



Specified Risk Materials (SRMs)

9 CFR 310.22 regulatory requirements:

1. SRMs must be removed from all cattle of any age that are presented for slaughter.
2. Establishments must identify, remove, denature and dispose of SRMs.
3. SRMs are inedible and prohibited for use as human food.

SRM Control

- The removal of SRMs from all cattle presented for slaughter in accordance with 9 CFR 310.22 is the most important safeguard the United States has against BSE.

Age	SRMs
All Ages (including veal) 310.22(a)(2)	Tonsils and Distal Ileum (final 80 inches of unstretched small intestine)
30 Months or older 310.22(a)(1)	Skull, Brain, Eyes, Spinal Cord, Trigeminal Ganglia, Dorsal Root Ganglia, Vertebral Column

- Because SRMs are different for cattle that are 30 months of age or older, establishments must identify the age of cattle being slaughtered.

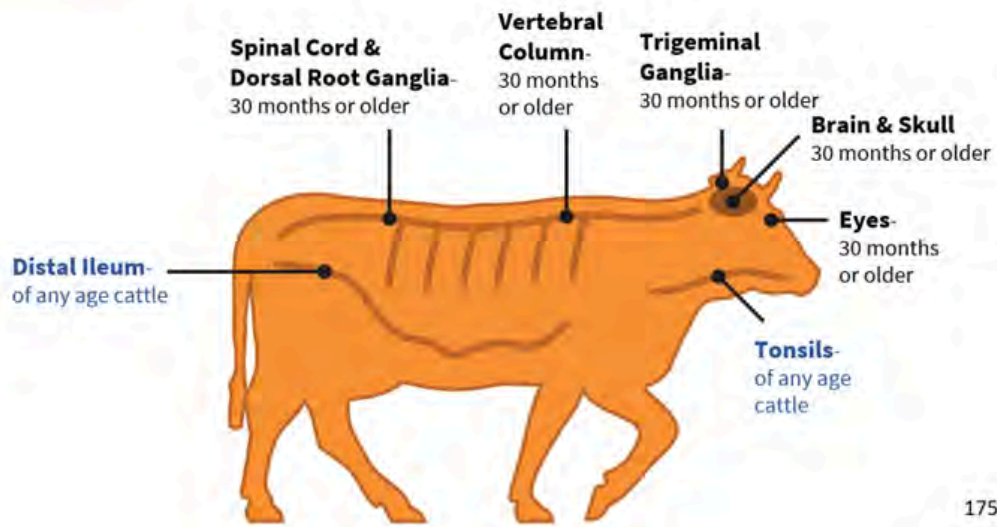
How to Age Cattle

- FSIS considers cattle that exhibit eruption of one or both of the second set of permanent incisors (i.e., third or fourth permanent incisor) above the gum line to be 30 months or older in age.



Note: Yellow arrows=1st set of permanent incisors; Blue arrows= the second set of permanent incisors.
Cattle in both images with blue arrows are considered to be 30 months of age or older.

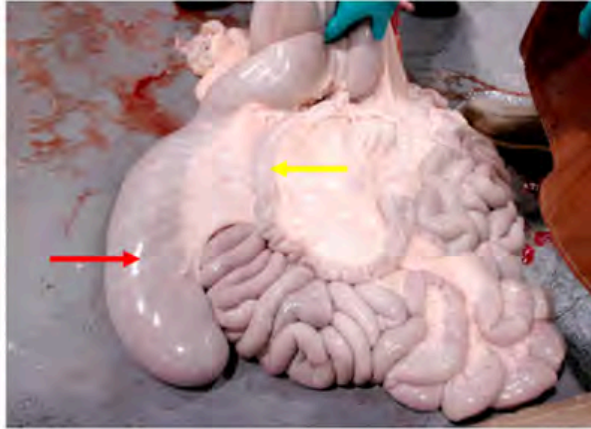
Where are Specified Risk Materials Found?



SRM - Distal Ileum

- **Distal Ileum:**

- The final 80 inches of the small intestine (up to the point where it attaches to the cecum)
- An SRM in all ages of cattle
- The rest of the small intestine can be used for human food or in the manufacture of beef natural casings (9 CFR 318.6(b)(8)).



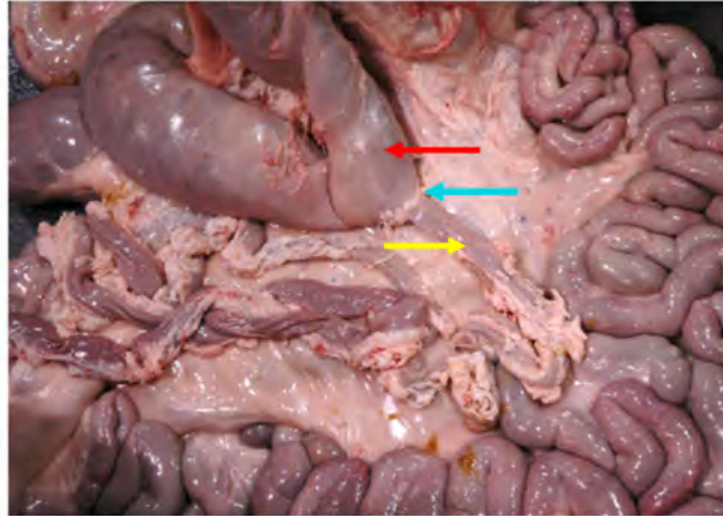
Note: red arrow=cecum; yellow arrow=ileum

Distal Ileum Explained

The **distal ileum** is considered the final 80 inches of the small intestine, up to the point where it attaches to the cecum (ileocecical junction).

Note: red arrow=cecum;
yellow arrow=ileum;
blue arrow=ileocecical junction

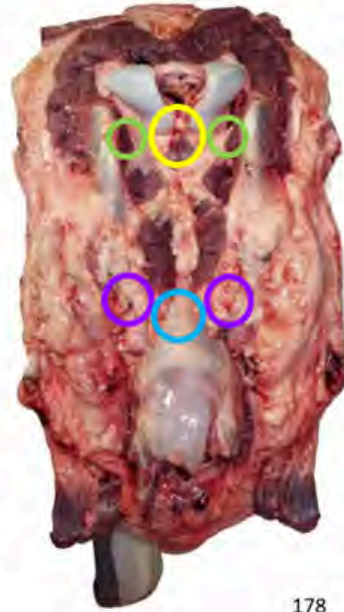
Image of bovine digestive tract.



SRM - Tonsils

- **Tonsils:**
 - Are an SRM in all ages of cattle
 - All visible tonsils must be removed under both 9 CFR 310.22(c) and 9 CFR 318.6(b).
- **Tonsil locations:**
 - Head
 - Tongue

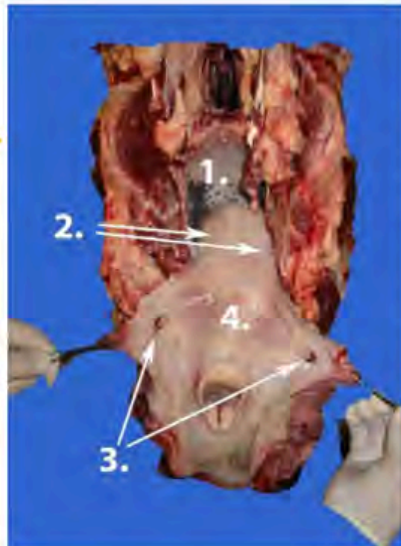
Note: Yellow circle = pharyngeal tonsil; green circles=tubal tonsils; purple circles=palatine tonsils; blue circle=lingual tonsil



SRM - Lingual and Palatine Tonsils

- **Tonsils:**

- To remove the tonsils, beef tongues should be cut no more than five millimeters behind the caudal vallate papillae



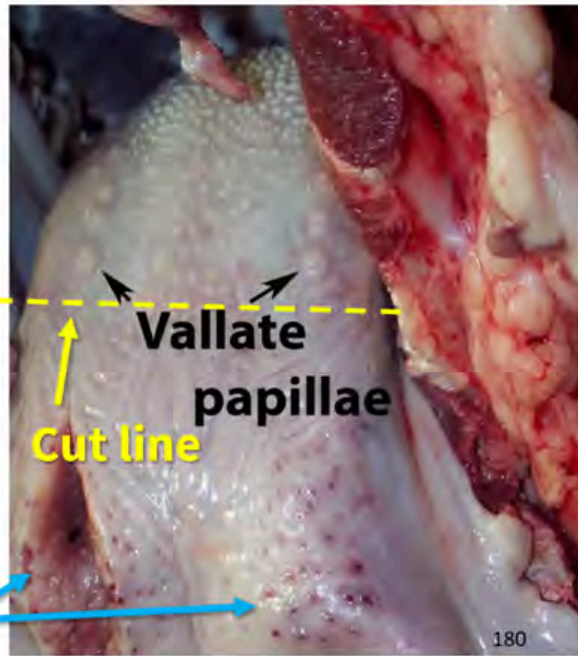
Note the following locations in the image:

1. Hard palate or roof of mouth
2. Vallate papillae
3. **Palatine tonsils** are located behind the sinuses or openings behind the tongue
4. **Lingual tonsils**

SRM - Lingual Tonsils

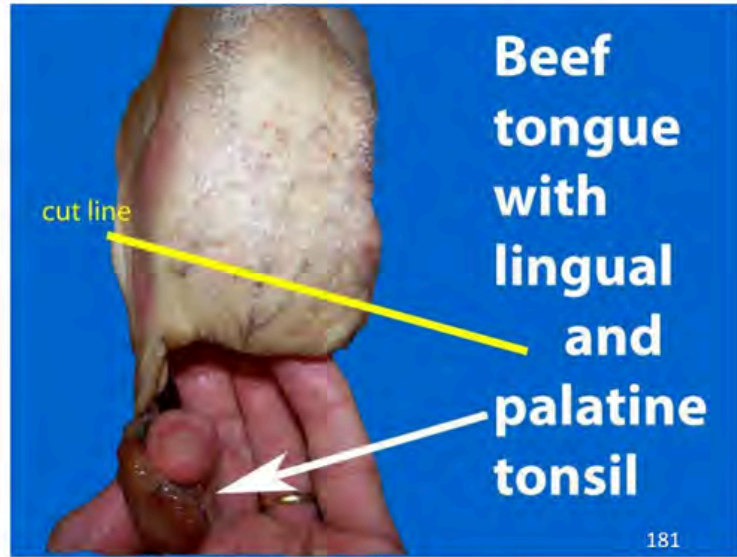
- To remove the lingual tonsils, beef tongues should be cut no more than five millimeters behind the last vallate papillae.
- Vallate papillae are large, circular structures on each side near the back of the tongue.

Lingual Tonsils



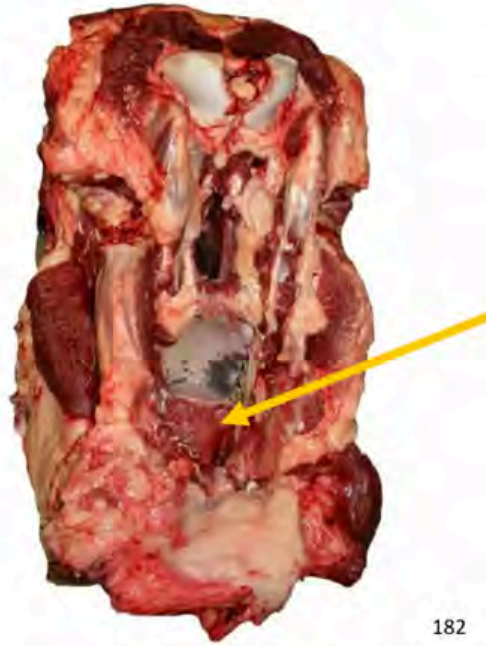
SRM - Lingual & Palatine Tonsils

- Depending on how the tongue is removed from the head, the palatine tonsil may remain attached to the tongue.



Example of SRMs Removed from Head

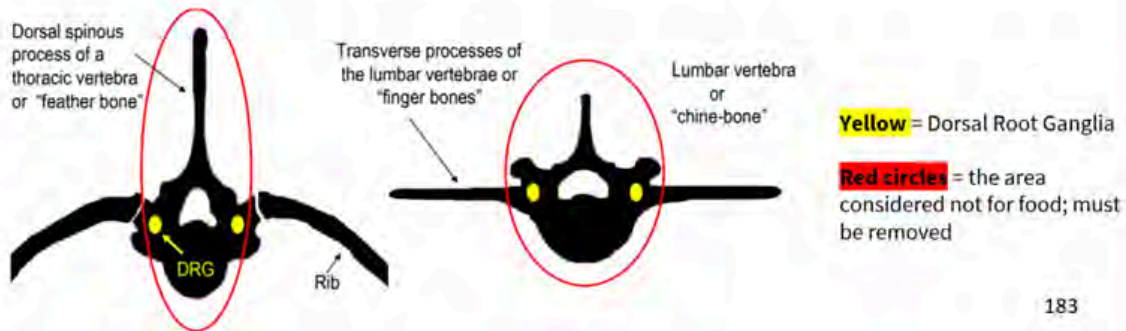
- Here is a beef market head with all tonsil related SRMs removed.
- The yellow arrow points to the cut made on the tongue to remove the lingual tonsils.



SRM - Dorsal Root Ganglia

- **Dorsal Root Ganglion:**

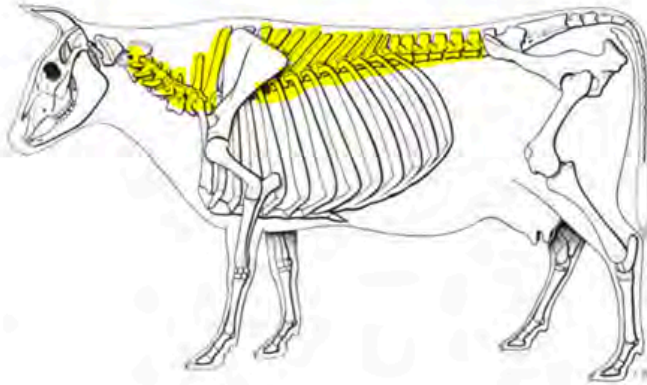
- An SRM in cattle 30 months or older
- Nodular enlargements of nerve tissue representing the junction of spinal and peripheral nerves (as shown in yellow)



SRM - Spinal Cord & Vertebral Column

- **Spinal Cord, Vertebral Column**

- Are considered SRMs in cattle 30 months or older.
- The bones of the vertebral column enclose the spinal cord.



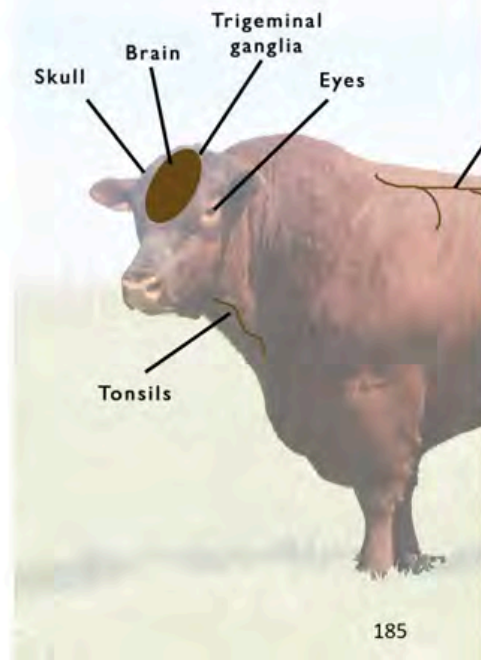
SRM - Skull, Brain, Eyes, & Trigeminal Ganglia

- **Skull, Brain, Eyes:**

- Are SRMs in cattle 30 months or older

- **Trigeminal Ganglia:**

- Enlarged nerve tissue at the base of the skull, where cranial nerves exit the skull.
- An SRM in cattle 30 months or older



Remember...

If there is any concern about the age of the cattle, or the appropriate removal of SRMs, notify the PHV immediately.



Post-mortem Inspection in Lamb, Sheep, & Goat

How to Perform Viscera Inspection in Lamb, Sheep, and Goat

IPP will observe and palpate the:

1. Abdominal viscera
2. Liver
3. Lungs
4. Heart



IPP will also express the gall bladder and observe the cut bile duct and expressed content for tapeworms

How to Perform Carcass & Head Inspection in Lamb, Sheep, and Goat

IPP will observe and palpate the:

1. Outer surfaces
2. Inner surfaces
3. Kidneys and spleen
4. Neck, shoulders, and head



Post-mortem Inspection in Swine

How to Perform Head Inspection in Swine

IPP will:

1. Observe the head and cut surfaces;
2. Incise and observe the mandibular lymph nodes; and
3. Observe the carcass when required.



How to Perform Viscera Inspection in Swine

IPP will observe and palpate the:

1. Visceral organs
2. Spleen
3. Liver
4. Lungs
5. Heart
6. Lymph nodes
 - Portal
 - Mesenteric
 - Mediastinal
 - Bronchial



How to Perform Carcass Inspection in Swine

IPP will observe and palpate the:

1. Outer surfaces
2. Inner surfaces



Additional Considerations

- **Carcass identification**

- In addition to having a means of maintaining the identity of each carcass, the establishment should be able to maintain the association between the carcass and all its associated parts

- **Line speeds**

- Online inspectors cannot slow line speeds
- If current line speeds are adversely affecting sanitary dressing or presentation, IPP should ask the IIC to adjust the lines speed

- **Alternative presentation methods should not:**

- Interfere with the establishment's ability to maintain sanitary dressing
- Interfere with inspection

Post-mortem Livestock Dispositions

- **Food Inspector:**

- **Pass** for slaughter (if no abnormalities are observed)
- **Retain** for PHV disposition (if signs indicating possible condemnation of the animal at post-mortem are observed)
- **Condemn** (only affected tissues and parts, **NOT** entire carcasses)*

Post-mortem Inspection Summary

- **Purpose** - To prevent potentially adulterated product from entering the food supply
- **Scope** - Performed on *all* livestock carcasses
- **Procedures** - Perform inspection on the head, viscera, and carcass on each animal presented for inspection
- **Dispositions** - Food Inspectors must be able to recognize abnormal conditions, so that they know when to pass normal carcasses and parts, retain abnormal carcasses and parts for the PHV, and know when to condemn affected tissues and parts

Resources

FSIS has issued **Directives** that provide instructions to inspection personnel on how to perform ante-mortem & post-mortem livestock inspection. They include:

- [FSIS Directive 6000.1 - Responsibilities Related To Foreign Animal Diseases \(FADs\) and Reportable Conditions \(usda.gov\)](#)
- [FSIS Directive 6100.1, Revision 3 - Ante-mortem Livestock Inspection\(usda.gov\)](#)
- [FSIS Directive 6900.2 Revision 3 - Humane Handling and Slaughter of Livestock \(usda.gov\)](#)
- [FSIS Directive 6100.2 Revision 1 - Post-mortem Livestock Inspection \(usda.gov\)](#)

UNITED STATES DEPARTMENT OF AGRICULTURE FOOD SAFETY AND INSPECTION SERVICE	
FSIS DIRECTIVE	
6100.1 Rev 3	6/27/20
ANTE-MORTEM LIVESTOCK INSPECTION	
I. PURPOSE: This directive provides instructions to inspection personnel (IPP) on how to inspect livestock before slaughter (ante-mortem inspection) and the methods used to verify that livestock offered for slaughter have received ante-mortem inspection. FSIS is issuing this directive to incorporate the instructions for verifying the handling of non-ambulatory disabled and calves, ensuring the requirement that ante-mortem inspection must be performed on feeding pens, and updating the disclaimer instructions for nonambulatory calves. Also, FSIS has updated this directive to provide a definition for "premises" (as it pertains to mechanical and electrical instructions about entering the left-hand leg in the Public Health Information System (PHIS)).	
KEY POINTS: • Provide instructions for IPP to use in performing ante-mortem inspection of livestock. • Provide methodology to IPP for verifying that livestock offered for slaughter have received ante-mortem inspection. • Provide instructions to IPP for handling disqualifications at PHIS. • Clarify the IPP flow disposition requirements for non-ambulatory disabled calves, including and calves.	
II. CANCELLATIONS: FSIS Directive 6100.1, Rev 2, Ante-mortem Livestock Inspection, 12/4/14	
III. BACKGROUND: A. As required under the Federal Meat Inspection Act (FMIA) and the Poultry Inspection Act (PIA), FSIS is responsible for ensuring that livestock and poultry are safe, wholesome, and fit for human consumption. This includes ensuring that livestock and poultry are inspected and found to be safe, wholesome, and fit for human consumption before they are slaughtered. FSIS is also responsible for ensuring that livestock and poultry are handled in a humane manner and that the slaughter process is conducted in a sanitary manner. FSIS is also responsible for ensuring that livestock and poultry are inspected and found to be safe, wholesome, and fit for human consumption before they are slaughtered. FSIS is also responsible for ensuring that livestock and poultry are handled in a humane manner and that the slaughter process is conducted in a sanitary manner. B. On March 15, 2020, FSIS published a final rule, Requirements for the Disposition of Carcasses That Require Non-Ambulatory Disabled (NAD) Livestock Inspection, 35 FR 11,111. This final rule requires that all non-ambulatory disabled calves, including non-ambulatory disabled calves, that are offered for slaughter (including those that have received ante-mortem inspection) be inspected and properly disposed of in accordance with 9 CFR 301.15. It also requires establishment personnel to notify	
DISTRIBUTION: Electronic	OPP (2/17)



Food Safety and Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

As a Food Inspector, you provide the first line of defense against diseased and adulterated meat and poultry by performing much of the day-to-day in-plant inspection of animals before and after slaughter. So remember...

When in doubt, PLEASE REACH OUT!



Cattle Slaughter Procedures Video



As a review, the following slide will show a video that briefly covers how to perform the cattle slaughter post-mortem procedures.

Lamb, Sheep, and Goat Slaughter Procedures Video



As a review, the following slide will show a video that briefly covers how to perform the lamb, sheep, and goat slaughter post-mortem procedures.

Swine Slaughter Procedures Video



As a review, the following slide will show a video that briefly covers how to perform the swine slaughter post-mortem procedures.



Food Safety and Inspection Service
U.S. DEPARTMENT OF AGRICULTURE

This concludes the Livestock Inspection module.



**Thank you for all you do to deliver on our mission, and for
all you do for this country!**