

Equine Slaughter Inspection

Objectives

After completion of this course, the trainee will be able to:

1. Describe any restrictions placed on the slaughter of equines in federally inspected official establishments.
2. Identify at least one unique feature of equine:
 - a. Antemortem inspection
 - b. Dressing procedures
 - c. Head inspection
 - d. Carcass inspection
 - e. Branding
3. Given a list of pathological conditions, select those that would be most likely found during equine:
 - a. Antemortem inspection
 - b. Head inspection
 - c. Viscera inspection
 - d. Carcass inspection
4. Given pictures of a horse and beef liver, be able to identify each and give the primary anatomical difference that differentiates the two.
5. Given a list of equine organs or parts, be able to identify the ones that are routinely:
 - a. Observed.
 - b. Observed and palpated.
 - c. Incised and observed.

Background

The Federal Meat Inspection Act (FMIA) provides that there is to be an inspection of horses and other equines, among other species, to assess whether the carcasses of these animals are not adulterated, can be passed for human consumption, and are eligible to bear the mark of inspection (21 U.S.C. 604).

The FMIA requires that the slaughter or preparation of products of equines be conducted under inspection. FSIS regulations require that horse slaughter and preparation of products of equines be done in establishments that are separate from any establishment in which cattle, sheep, swine, or goats are slaughtered or their products prepared (9 CFR 305.2 (b)).

The Humane Methods of Slaughter Act of 1978 and 9 CFR Part 313 require that all livestock, including horses, slaughtered under inspection be handled humanely. Equines must be rendered insensible to pain (i.e. unconscious) before being shackled, hoisted, thrown, cast, or cut.

Humane Handling and Slaughter of Horses

The Humane Methods of Slaughter Act of 1978 and 9 CFR 313 makes humane slaughtering and handling mandatory for all horses (equines) slaughtered under inspection. It dictates that animals be made insensible to pain (unconscious) before they are shackled, hoisted, or cut. IPP are to follow instructions in FSIS Directive 6900.2 Rev. 2, Humane Handling and Slaughter of Livestock, for verifying establishment compliance with humane handling and slaughter requirements set forth in 9 CFR Part 313.

During official hours of operation and when performing official duties, IPP are to verify the humane handling of all equines on the official premises from the time of unloading up to the time of slaughter. IPP are to verify:

- a. Facilities and handling are maintained at a level to prevent equine injuries per 9 CFR 313.1.
- b. The humane handling, segregation, identification, and slaughter of equines identified as U. S. Suspects per 9 CFR Parts 309 and 313.
- c. The humane handling, identification, stunning, and disposal of equine identified as U. S. Condemned per requirements in 9 CFR Parts 309 and 313

FSIS IPP are to follow instructions in FSIS Directive 6900.2 Rev. 2, Humane Handling and Slaughter of Livestock, to perform and document HATS activities.

NOTE: IPP are to immediately contact the District Veterinary Medical Specialist (DVMS) or DO via the PHV or FLS regarding any questions regarding the humane handling of equines.

Antemortem Pens and Antemortem Inspection

The statutes establish our authority to examine and inspect livestock prior to slaughter. Under the statutes, IPP accept for slaughter only those animals which are capable of producing products that are acceptable for use as human food. With this goal in mind, the purpose of ante-mortem inspection is to accept only those animals that are healthful, safe from harmful chemical and drug residues, and capable of being converted into wholesome product for the consumer.

Antemortem pens, driveways and ramps must meet 9 CFR 313.1 (a). In addition, the establishment must provide an elevated walkway above the pens so that IPP can safely perform antemortem inspection. Also, the elevated walkway allows the inspector to observe the poll and withers because horses are prone to develop abscesses (or fistulas) in these areas. These fistulas are often caused by *Brucella abortus*, the bacteria which causes brucellosis in cattle.

Ante-mortem inspection must be performed by an FSIS employee, either the PHV or IPP under PHV supervision. Antemortem inspection is performed daily before slaughter operations begin. Horses (Equine) shall be observed at rest and in motion. FSIS IPP are to follow the verification instructions for ante-mortem inspection that are found in FSIS Directive 6100.1, Ante-Mortem Livestock Inspection.

Horses showing signs of CNS conditions, may present with changes in behavior and locomotion. An equine with tetanus will have generalized muscle stiffness, erect ears, dilated nostrils, and the third eyelid prolapsed. Other conditions such as pyrexia, septicemia, fistulous withers or lameness shall be segregated into designated (suspect) pens for examination by PHVs. IPP while conducting ante-mortem inspection are to direct establishment employees to segregate all equines found to have any abnormalities or disease conditions into designated (suspect) pens for further examination by a PHV. Such additional inspection ensures removal from human food channels of equines that are:

- a. Obviously unfit for human food because of diseases or abnormalities;
- b. Have diseases or conditions that are difficult to detect on routine post-mortem inspection (e.g., central nervous system disorders, lameness, and chemical poisoning). See 9 CFR Part 309;
- c. Febrile or appear to be ill, depressed, or with a fever; or
- d. Showing indications of zoonotic or reportable diseases as listed in FSIS Directive 6000.1, Rev. 1, Responsibilities Related to Foreign Animal Diseases (FADs) and Reportable Conditions - Revision 1.

Melanoma is commonly seen in white and grey horses. On antemortem, the black tumors may be seen around the tail head. These animals will be handled as US Suspects and additional inspection procedures will be performed after hide removal.

In accordance with FSIS Directive 6100.1, Ante-Mortem Livestock Inspection, PHVs are to identify as "U.S. Condemned" any equines that found on ante mortem inspection to be:

- a. Dead or in a dying condition when offered for slaughter on the premises of the official establishment;

- b. Plainly showing on ante-mortem inspection any disease or condition that, under 9 CFR Part 311, would cause the PHV to condemn the carcass when inspecting post-mortem;
- c. Febrile with a temperature of 105° F or higher (9 CFR 309.3(c));
- d. In a comatose or semi-comatose condition; or
- e. Other condemnable condition per 9 CFR Part 309.

Post Mortem Inspection

The bleeding rail and other carcass rails tend to be higher than in cattle plants to accommodate the generally longer length of horse carcasses. Rendering companies generally require plants to remove horseshoes before the hooves are sent to rendering.

The head is removed either before or after it is skinned and identified with a duplicate of the tag that is placed on the carcass. The oral and nasal cavities are then flushed and the outer surfaces are thoroughly washed. The head is then presented for inspection.

Head Inspection

As in the inspection of other species, correlate with your supervisor regarding their standards for retaining carcasses so that you know which ones that you should retain and which that you should trim and pass on the line

1. Observe head's surfaces
2. Observe and palpate (incise when necessary) mandibular, pharyngeal and parotid lymph nodes, guttural pouches, and tongue.

The inspection of the head is similar to cattle except that incisions of muscle and lymph nodes are not routinely made. Guttural pouches in equines are not found in other slaughter species. They are normal sacculations of the eustachian tube. They are visible and palpable after the head has been severed from the neck and presented for inspection. When infection is present in the guttural pouches, retain the head, carcass, and viscera for veterinary disposition.

As in other species you may encounter malignant lymphoma (lymphoma) on head inspection. These may be seen as growths about the eyes on antemortem, or as enlargements of the lymph nodes of the head. When this condition is encountered retain the carcass and parts for veterinary disposition.

Equines may be affected with epithelioma, just as seen in cattle. Occasionally these tumors are so small that they are not detected on antemortem inspection. When you

encounter these on postmortem inspection always retain the carcass and viscera with the head for veterinary disposition.

A melanoma is a neoplasm of skin pigment cells. In the head, this may appear as black nodules of tissue in the lymph nodes. The lymph nodes may also be blackened in another condition called melanosis. You don't need to be able to tell the difference between the two but always retain any equine product whenever blackened tissues are encountered.

Stains and lacerations of the horses' tongue may frequently be encountered. These are required to be trimmed.

Whenever any abnormality is encountered; check with your supervisor if you have questions about the proper disposition.

Carcass Inspection - Skinning and Special Procedures

Carcass skinning is similar to beef skinning, however, the carcasses of white and gray horses must be identified after the hide has been removed.

After the carcass has been skinned, and before splitting the carcass, the withers must be topped. The upper third of the spinous processes of thoracic vertebrae two through nine are removed and presented for inspection. This additional inspection procedure is required because inflammation and infection are occasionally encountered in the supraspinous bursa in the withers area. The incidence of brucellosis in these lesions is high and humans can contract brucellosis. The plant must assure that sanitary dressing procedures are maintained including sanitizing all implements used. To protect yourself, thoroughly wash hands, and avoid placing your hands about your face. Always retain the carcass and parts for veterinary disposition when brucellosis is suspected.

The shoulders of gray and white equines must be routinely dropped to expose the axillary (armpit) and subscapular (under the shoulder blade) spaces for inspection. It is in these areas that evidence of melanoma or melanosis is commonly seen. This procedure may be accomplished the day of slaughter or (at the request of the plant) the dropping may be accomplished the following day, after the carcass has chilled. The carcasses must be under FSIS control (U.S. Retained) until after the inspection is completed.

Carcass Inspection

Carcass inspection of equines is performed using the same methodology as cattle, described in FSIS Directive 6100.2, Post-mortem Livestock Inspection. Carcass inspection must be done after carcass splitting and before washing. Depending upon

facilities available, carcass inspection may be divided into *hindquarter*, *forequarter*, or *whole* carcass inspection.

1. Palpate superficial inguinal, or supramammary, and internal iliac lymph nodes.
2. Observe body cavities.
3. Observe cut surfaces of muscles and bones, diaphragm's pillars and peritoneum.
4. Observe and palpate kidneys and diaphragm.
5. Observe pleura, neck, and carcass exterior.
6. Observe (and incise when necessary):
 - a. Inner abdominal walls for encysted parasites.
 - b. Spinous processes of thoracic vertebrae, supraspinous bursa, and first two cervical vertebrae for fistulous conditions.
 - c. Axillary and subscapular spaces of white and gray horses for melanosis.

NOTE: Kidneys may be inspected during viscera inspection or carcass inspection. The plant must be consistent in the manner that the kidneys are presented. Just as with any species the plant is responsible to remove the kidney capsule before inspection.

Typical Abnormalities at Carcass Inspection

Parasite infestation is common in horses and may cause poor performance, poor appearance, colic and other diseases. Encysted parasites are larval stages of parasites and the encystment is an inflammatory reaction by the horses' body against the parasite. These inflammatory reactions can be seen as nodules in the equine stomach, the cecum, the colon, and in fat along the abdominal wall. The affected organs are condemned and the lesions along the abdominal wall require trimming.

The kidney may be inflamed and/or infected (nephritis) just as in other species. Similarly other disease abnormalities such as pneumonia, septicemia, pyemia (abscesses), peritonitis, pleuritis, arthritis, neoplasia, and emaciation might be encountered.

VISCERA INSPECTION

1. Observe and palpate lungs, bronchial and mediastinal lymph nodes (incise when abnormal).

2. Incise heart, from base to apex or vice versa, through interventricular septum, and observe cut, inner, and outer surfaces.

3. Observe and palpate spleen, liver (both surfaces), and portal lymph nodes.

Note: Equines do not have a gall bladder.

4. Open bile duct (both directions) and observe its content.

5. Observe rest of the viscera and body cavities.

Residue Testing Policy and Sample Submission

FSIS recognizes that most equines presented for slaughter will likely not have been raised for human consumption. Therefore, FSIS has concerns regarding the potential presence of chemical residues from drugs not previously approved for use in all food animals including equine. In addition, FSIS expects many of the drugs used in working or pleasure horses are not antimicrobials and therefore would not be detected by FSIS in-plant antibiotic residue screening tests. Therefore, whenever IPP collect equine tissues for residue sampling as instructed below, IPP are to submit those tissues directly to the specified FSIS laboratory where a complete residue analysis can be conducted.

There are two types of residue testing in equine.

1. Suspect animals either from antemortem or postmortem inspection
2. Random testing of normal animals that passed antemortem inspection on a lot basis

All carcasses will be retained pending test results.

Suspect Animals

IPP are to select carcasses for residue testing when ante-mortem or post-mortem findings suggest an increased likelihood of recent drug treatment. IPP are to use the existing residue policies in FSIS Directive 10,800.1, Procedures For Residue Sampling, Testing, and Other Responsibilities for the National Residue Program, for residue sampling, testing, and verification of the establishment's residue program and test every time the IPP suspect that there is an increased likelihood of a violative residue. Also, IPP are to use the list of pathologies and conditions in FSIS Directive 10,220.3, as a reference for conditions warranting residue testing. IPP are to retain any carcass suspected of containing a drug residue and follow the sample submission instructions described in part D. of this section for selected carcasses. The policy for testing

animals from producers that are listed on the Residue Repeat Violator List as described in FSIS Notice 44-12 also applies to horse slaughter.

Random Sampling of normal appearing animals

Because equines are not generally raised as food animals, FSIS will conduct random residue testing of normal-appearing animals to provide additional assurance that carcasses are free from drug residues. FSIS will conduct random testing of normal-appearing horses at least the same rate as for show livestock as described in FSIS Directive 10,800.1, Procedures for Residue Sampling, Testing, and Other Responsibilities for the National Residue Program. IPP are to randomly select, on the slaughter floor from normal-appearing equine, from every lot of animals that passes ante-mortem as follows:

1. A minimum of 1 animal if there are 1 to 10 animals in a lot;
2. A minimum of 2 animals if there are 11 to 50 animals in the lot;
3. A minimum of 3 animals if there are 51 to 100 animals in the lot; and
4. A minimum of 4 animals if there are more than 100 animals in the lot.

For each animal selected for testing, IPP are to collect two (2) 1 lb. muscle samples. One sample will be sent to the Western Lab and one sample will be sent to the Eastern Lab. IPP are to follow the instruction provided in FSIS PHIS Directive 13,000.2, Performing Sampling Tasks in Official Establishments using the Public Health Information System, and FSIS Notice 58-12, Scheduling and Submitting Lab Samples in PHIS, on sample collection and submission of inspector-generated residue samples for laboratory testing.

IPP are to create and schedule the sampling task in PHIS by selecting the following projects from the drop down menu in the Sample Management window of PHIS:

- a. Select project CG_EQUINE_EL for the one pound of muscle going to the Eastern Laboratory.
- b. Select project CG_EQUINE_WL for the one pound of muscle going to the Western Laboratory

Note: Until the equine class is available in PHIS unless directed by the DO, IPP are to verify that the establishment profile includes the slaughter class "GOAT" and enter equine data in PHIS using the goat slaughter class. If the establishment profile does not include the goat slaughter class, IPP are to add "GOAT" slaughter class to the plant profile. Refer to FSIS PHIS Directive 5300.1 Managing the Establishment Profile in PHIS, for additional instructions.

Sample Results and Dispositions

IPP are to check LEARN and review the test results. The PHV is to make a final disposition on the carcass and parts and take any necessary regulatory enforcement actions based on the results.

- a. For residue test results reported as "Not Detected," the PHV is to inform the establishment that the test result is "in compliance" and release the carcass and its parts.
- b. For residue test results reported as "Detected – violative," the PHV is to condemn the carcass and all parts and notify the establishment of the results and the final disposition of the carcass and parts.

IPP are to notify the establishment of each new violation, any developing trends, and final disposition of any carcass and its parts at the next weekly meeting and document the meeting in a MOI. IPP are to seek guidance through their supervisory chain of command for any questions regarding residue test results or action to take based on test results. IPP may also submit questions through AskFSIS,

NOTE: Additional information on how FSIS expects establishments to address residues in a HACCP environment is available in Federal Register: November 28, 2000 (Volume 65, Number 229).

Marking of Equine Carcasses and Parts

The carcass is branded with a "U.S. INSP'D and P'S'D brand before being placed in the cooler. Horses and ponies are branded with a horsemeat brand. Mules, donkeys, etc. are branded with an equine brand (9 CFR 312.3). Horses and other equines are the only species which FSIS allows the use of green ink for the inspection brand (9 CFR 316.5 (e)).

The word *Horsemeat* can be used on the label to identify product obtained only from horses and/or ponies. Other equine products would be labeled *Equine Meat*. The forequarters are usually boned and boxed whereas the hindquarters are usually wrapped and exported as quarters. This hindquarter is a little unusual in that the loin and part of the rib cage is included with it. When viewed from the side the quarter looks like the handle and barrel of a pistol and is referred to as a *pistola* by the industry.

PERFORMING AND DOCUMENTING INSPECTION TASKS

Where no comparable PHIS FSIS Directive is published, IPP are to follow the instructions in the standard (non-PHIS) FSIS Directives for inspection activities applicable to all livestock slaughter and processing. Where FSIS Directives specifically

provide instructions applicable to specific classes of livestock other than equine, and no specific direction is available for equine, IPP are to refer to and extrapolate instructions applicable to cattle when performing inspection procedures on horses after discussion with the PHV. The PHV may modify such instructions as appropriate. For example, IPP seeking guidance regarding sanitary dressing of horses are to refer to FSIS Directive 6410.1, Verifying Sanitary Dressing and Process Control Procedures in Slaughter Operations of Cattle of Any Age - Revision 1, until such information for equine is provided in a revised or new issuance

[http://www.fsis.usda.gov/Regulations & Policies/5000 Series-Program Services/index.asp](http://www.fsis.usda.gov/Regulations%20&%20Policies/5000%20Series-Program%20Services/index.asp)

When PHIS is not available, IPP are to contact the DO for additional instructions on how to determine what inspection tasks they are to perform, how often they perform the tasks, and how to document results.

EXPORTS

IPP are to follow the instructions in FSIS Directive 9000.1, Export Certification, to certify exports of equine products for edible purposes. IPP are to refer to the FSIS Export Library opening page first for any general remarks about equine product exports, as well as the specific requirements for the country to which exports are being considered:

Equine Inspection Supplement

1. Place an "X" in the space provided to indicate which conditions may be detected while performing equine antemortem inspection.

___ Caseous lymphadenitis

___ Pneumonia

___ Dead

___ Moribund

___ Cirrhosis

___ Pyrexia

___ Lameness

___ Cysticercosis

Foot injuries Fistulous withers EM CNS disorders Tetanus

2. Place an "O", "O-P", or "I-P" in the space provided to indicate the inspection technique routinely used on that equine organ or part.

O = Observe

O-P = Observe

I-O = Incise and Observe

HEAD INSPECTION

 Head surfaces Parotid lymph nodes Mandibular lymph nodes Guttural pouch Retropharyngeal (pharyngeal) Tongue

VISCERA INSPECTION

 Lungs Liver Mediastinal lymph nodes Portal lymph nodes Heart Spleen Tracheobronchial (bronchial)
Lymph nodes Hepatic bile duct

CARCASS INSPECTION

 Body cavities First two cervical vertebrae Inner abdominal walls Axillary spaces. Supraspinous bursa Subscapular space

___ Spinous processes of thoracic vertebrae

3. Place an "x" in the space provided to indicate which conditions may be detected while performing equine head inspection.

___ Infection

___ Malignant melanoma

___ Pyrexia

___ Hair contamination

___ Bruises

___ Telangiectasis

___ Sawdust

___ Degeneration

___ Caseous lymphadenitis

___ Abscess

___ Lacerations

___ Distoma

4. Place an "X" in the space provided to indicate which conditions may be detected while performing equine viscera inspection.

___ Melanosis

___ Malignant melanoma

___ Brucellosis

___ Sexual odor

___ Degeneration

___ Tumors

___ Abscesses

___ Erysipelas

___ Sarcocystosis

___ Pneumonia

___ Parasitic lesions

___ Caseous lymphadenitis

___ Kidney worms

5. Place an "X" in the space provided to indicate which conditions may be detected while performing equine carcass inspection

___ Fat necrosis

___ Fistulous withers

___ Bruises

___ Cholera

___ Skin conditions

___ Caseous lymphadenitis

___ Tumors

___ Malignant melanoma

___ Kidney worms

___ Abscess

___ Degeneration

___ Rabies

___ Erysipelas

6. Your supervisor brings the two livers shown in figure 1 and figure 2 on the next page to you and says that one is a horse liver and the other is a beef liver. Which one is which? Complete the statements below.

a. Figure 1 is a _____ liver.

b. Figure 2 is a _____ liver.

c. The structure in figure 2 with the number 23 on it is a _____.

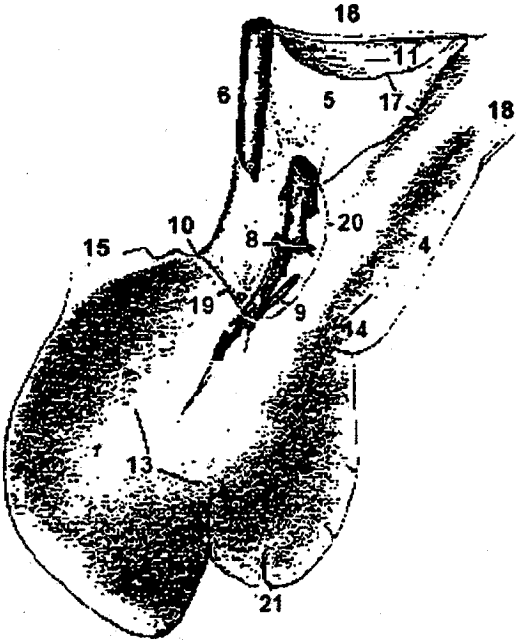


Figure 1

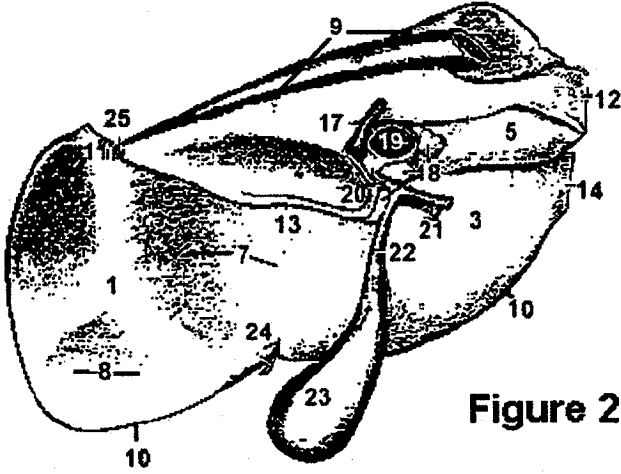


Figure 2

EQUINE ANATOMICAL TERMS

The following drawing will help you to identify equine anatomy.

- A. Guttural pouch
- B. Muzzle (lips)
- C. Subscapular space
- D. Carpus (knee)
- E. Poll
- F. Withers
- G. Stifle (knee)
- H. Hock

