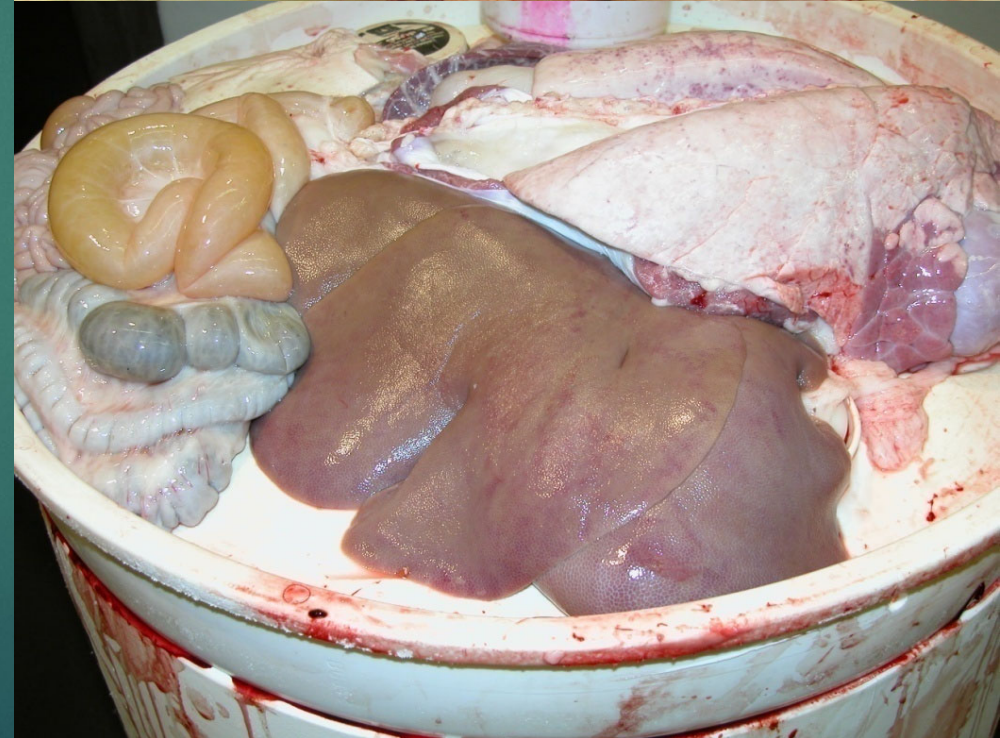


The background is a dark teal color. It features several light blue circles of varying sizes. A red vertical rectangle is located in the top right corner. The text 'SWINE PATHOLOGY' is centered in white, bold, sans-serif font.

# SWINE PATHOLOGY

# Anemia



Note the paleness of the lungs and other viscera.

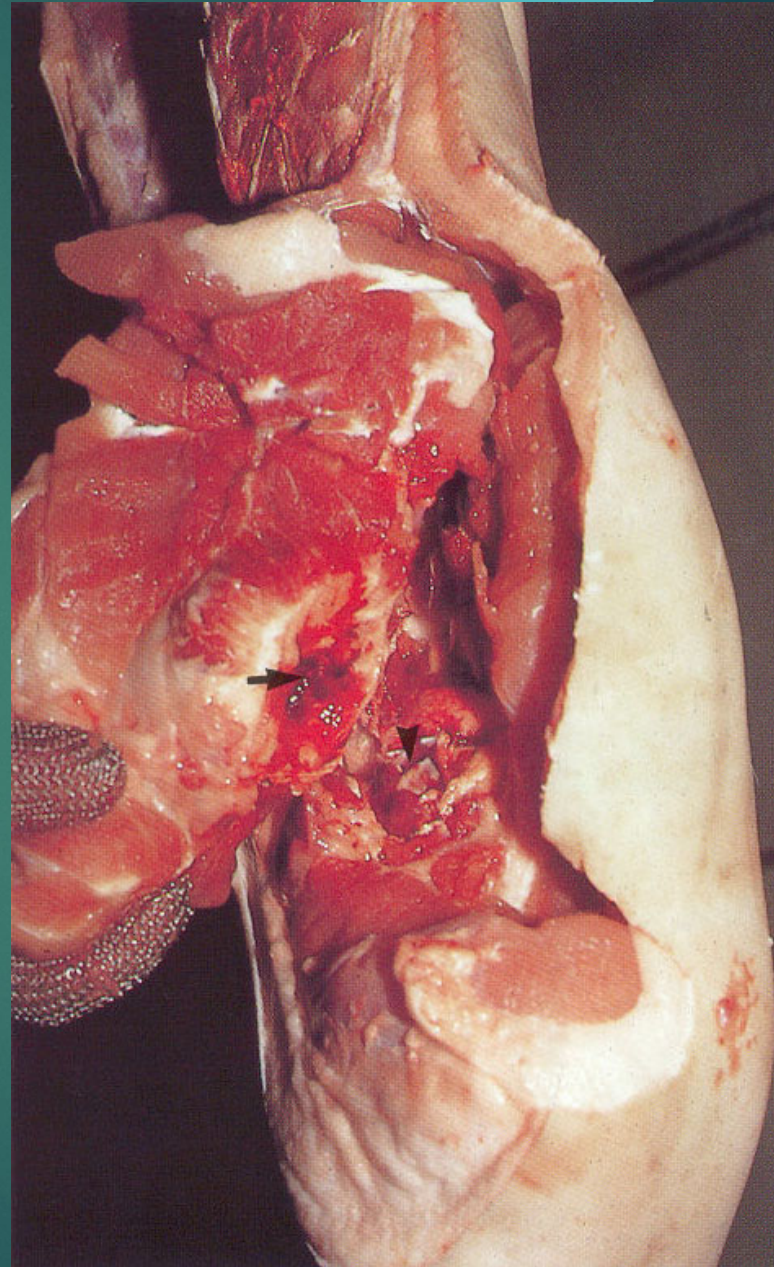


# Arthritis

## 9 CFR 311.7

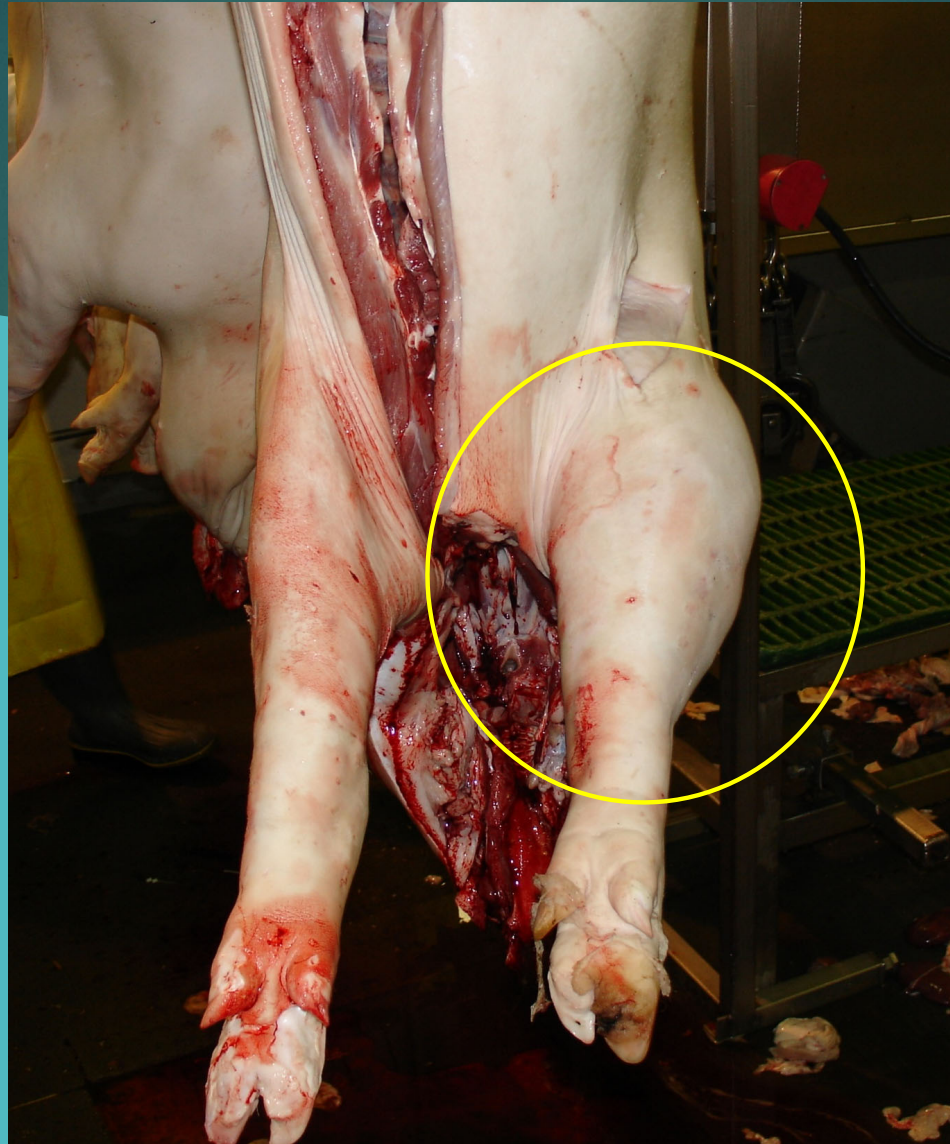
- ▶ May be in a single joint or may be a part of other disease processes.
- ▶ Lymph nodes will give evidence of severity of arthritis in the adjacent joint.
  - ▶ For example, enlarged, darkened internal iliac lymph nodes are a common finding with arthritis in the hindquarters.
- ▶ Joints with localized arthritis and corresponding lymph nodes shall be removed and condemned during dressing operations and before inspection is completed.

# Arthritis

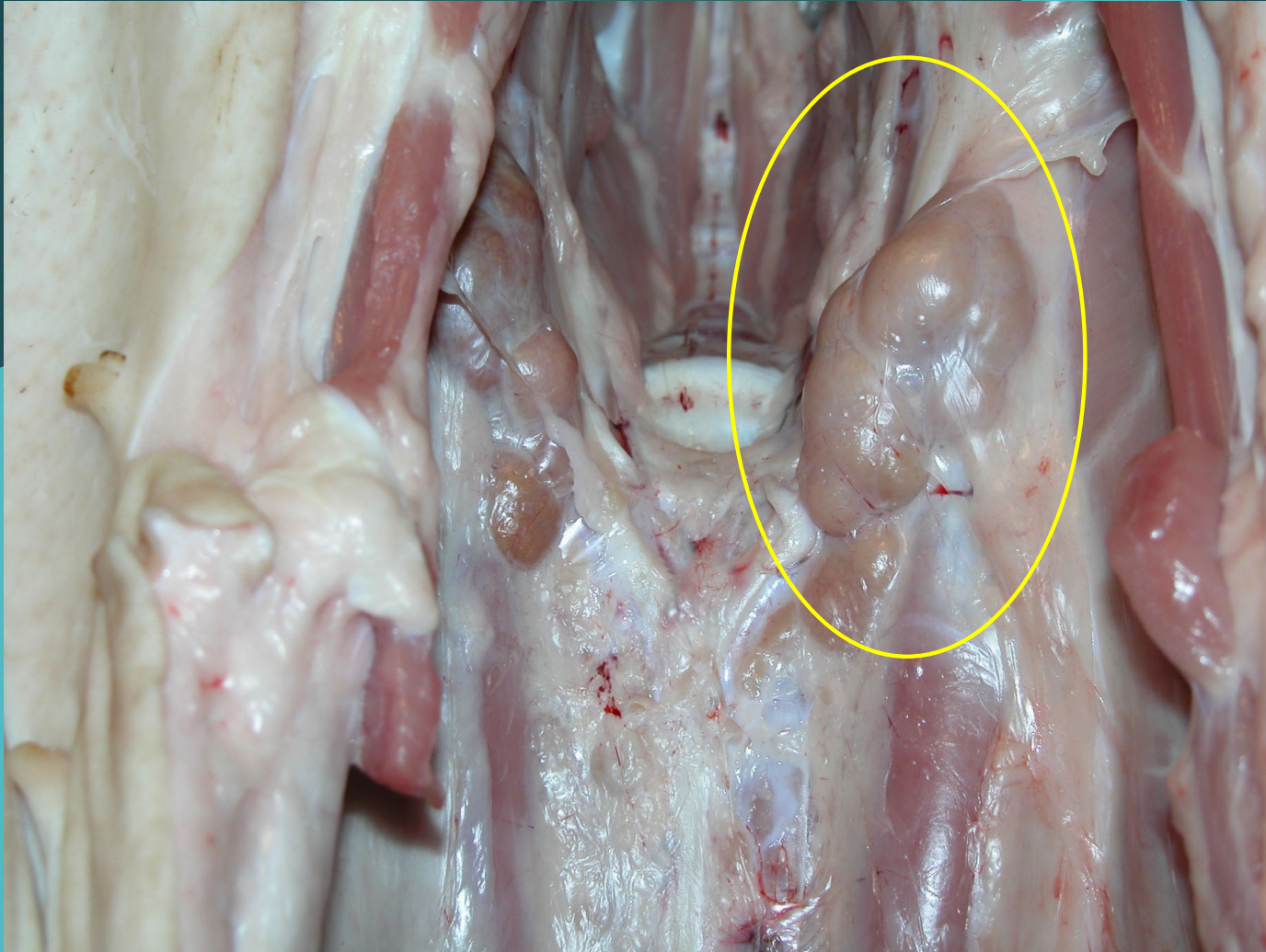




# Arthritis



# Arthritis



Shown above is an enlarged internal iliac lymph node due to the corresponding joint being affected by arthritis.



# Ascarids (Roundworms)

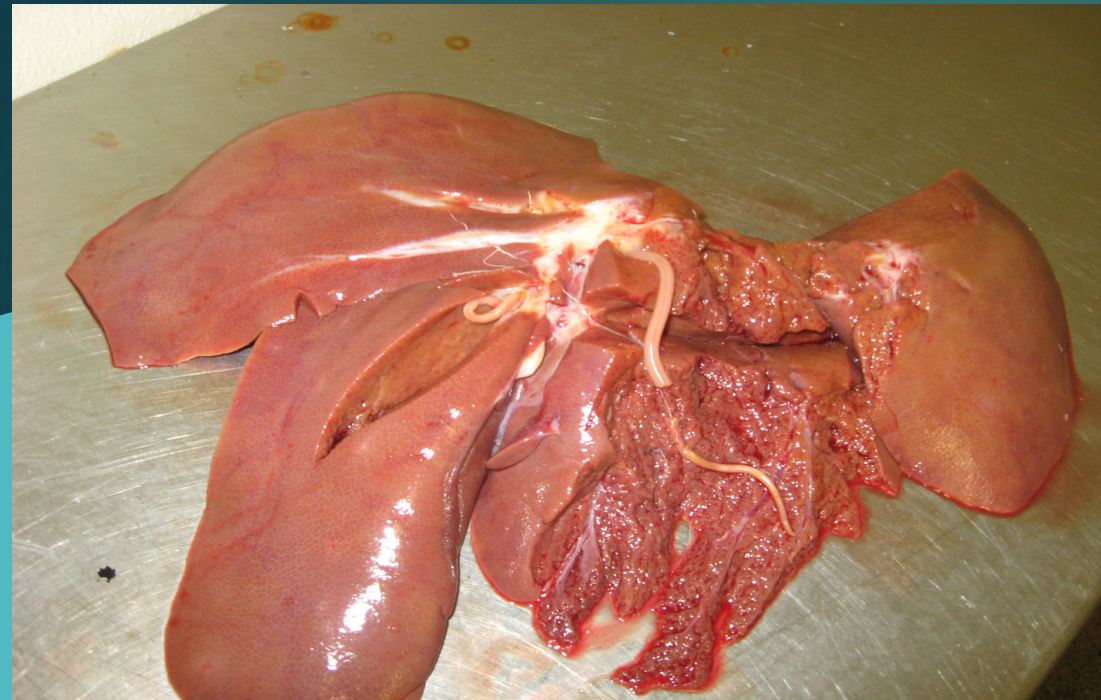
## 9 CFR 311.25(a)

- ▶ The larva of these roundworms frequently migrate through the liver and cause scarring on the liver's surface.
- ▶ "Slight" scarring may be trimmed (spotting the liver). More than slight evidence of ascarids requires the liver to be condemned.
- ▶ Top 2 photos on this slide show the scarring on the liver as a result of Ascarid migration.

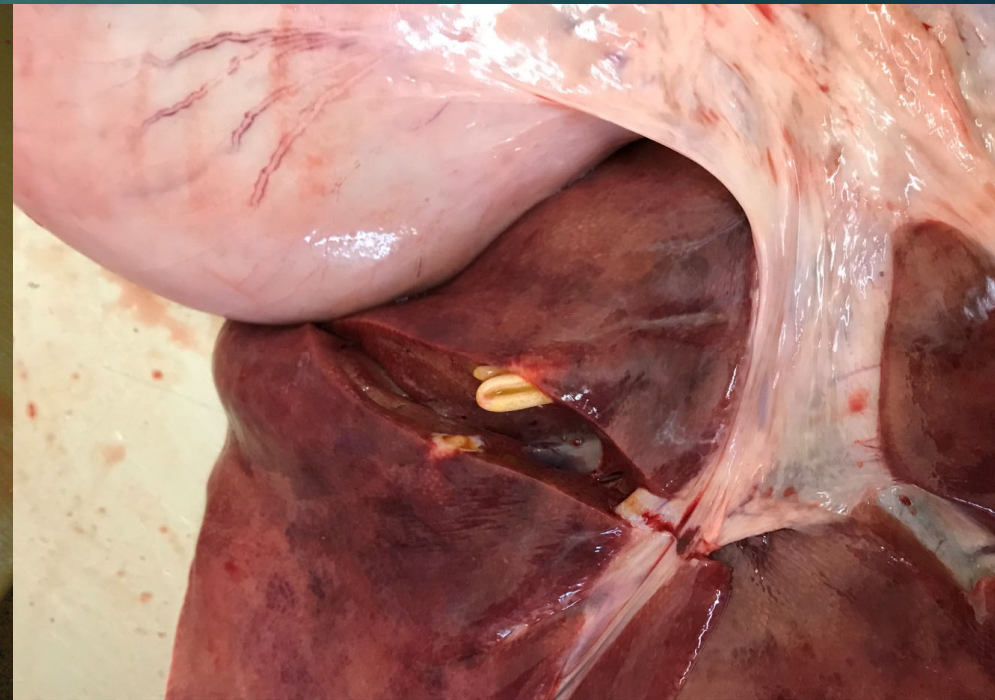




# Ascarids



Ascarids shown exiting  
bile duct.



Ascarid shown in cut  
surface of the liver.



# Ascarids



Ascarids in the stomach.  
Note the thickening of  
stomach wall.



Ascarids in the intestines.



# Atrophic Rhinitis

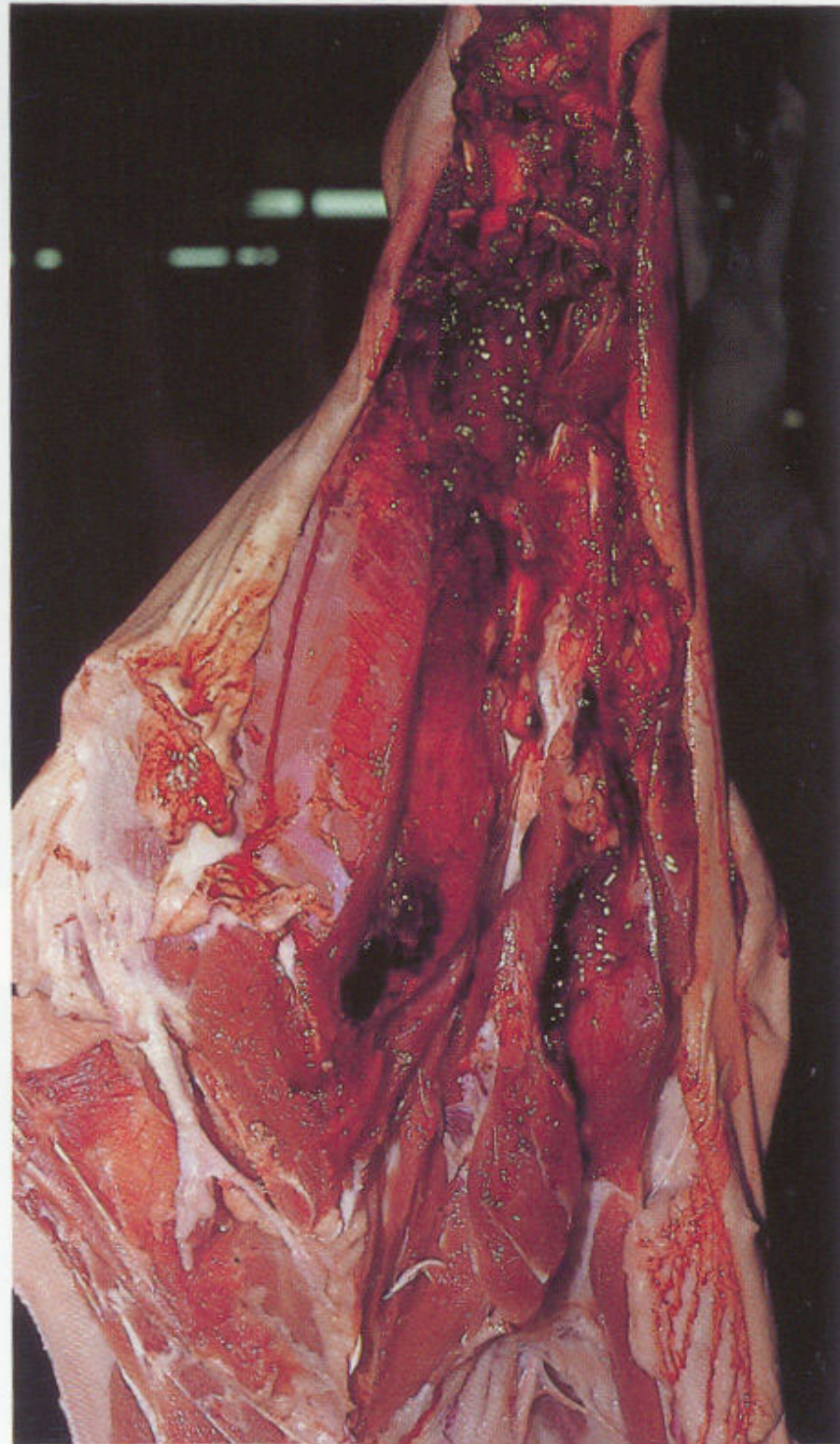
- ▶ Usually see sneezing in swine herds and causes turbinate bones to become damaged, shrink, or become distorted.
- ▶ May be caused by infectious and/or non-infectious organisms
  - ▶ Infectious: bacterial organisms, viruses
  - ▶ Non-infectious: dust, high ammonia levels
- ▶ Since this condition is usually localized, head tissues can be removed without contamination and saved for food.





# Bruised Tissue

- ▶ Bruised tissue should be trimmed and condemned.
- ▶ If evidence of infection exists, retain the carcass and parts for veterinary disposition.



# Central Nervous System Disorder

- ▶ Has many different causes and manifests itself in different ways.
- ▶ Commonly seen in animals displaying CNS signs is circling, walking into things, staggering, etc.
- ▶ These animals are always to be suspected at antemortem for veterinary disposition.





# Cirrhosis of the Liver

- ▶ A progressive disease where the healthy living tissue is replaced with scar tissue.
- ▶ Palpation of this liver would present with a very tough texture.
- ▶ Livers with this condition are to be condemned.



# Cysticercosis

## 9 CFR 311.24

- ▶ A parasitic condition caused by a tapeworm cyst.
- ▶ Similar to beef measles, it can affect any muscle tissue in the carcass.
- ▶ In pork, the heart seems to be the most common site.
- ▶ The carcass and parts must be retained for veterinary disposition.

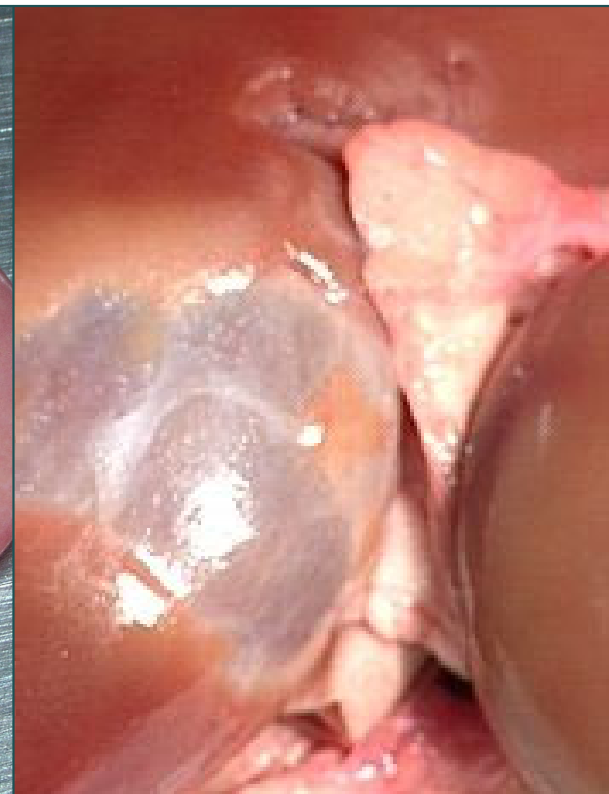
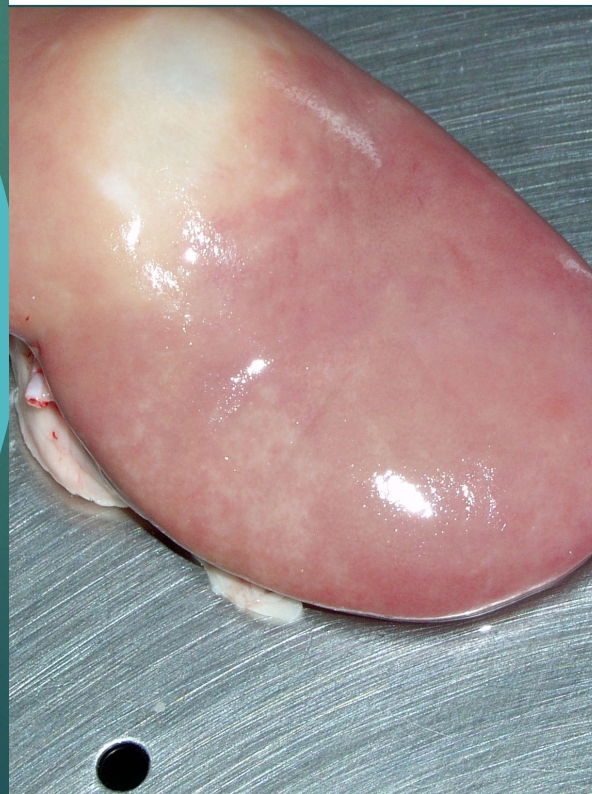




# Cystic Kidney

## 9 CFR 311.16(a)(7)

- ▶ Clear, fluid filled cysts of varying sizes.
- ▶ Condemn the kidneys (unless the condition is slight) and pass the carcass for food.





# Cystitis

- ▶ Inflammation of the bladder caused by a bacterial infection.

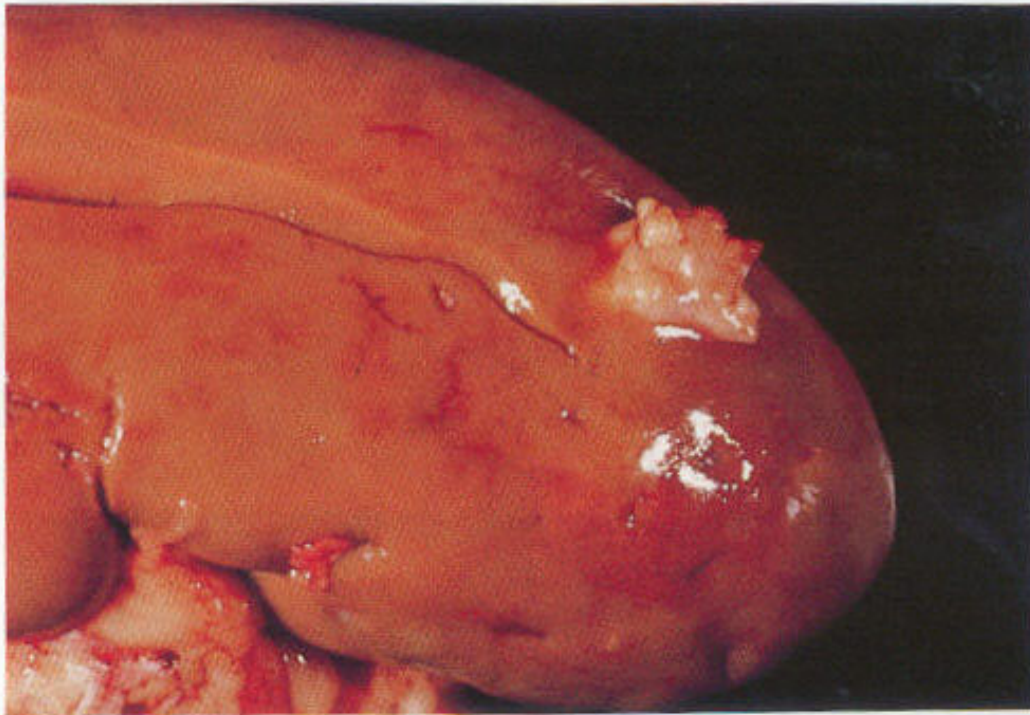




# Embryonal Nephroma

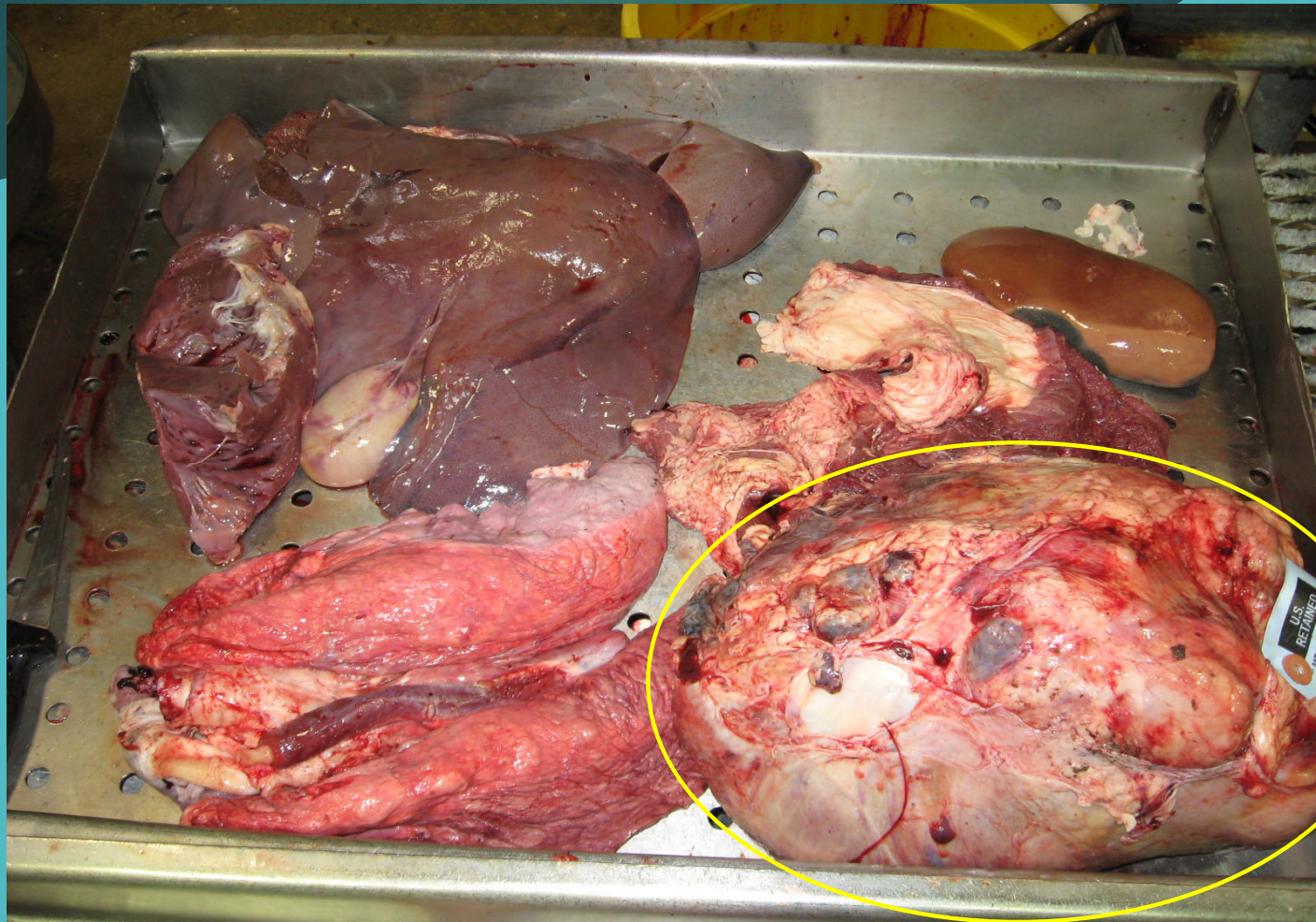
## 9 CFR 311.11(a)

- ▶ These are tumors of the kidney.
- ▶ Generally, they are benign and occur more commonly in young animals. These should be retained for veterinary disposition
- ▶ Top picture shows a cross section of a tumor.
- ▶ Bottom picture shows a small projection on the opposite kidney.





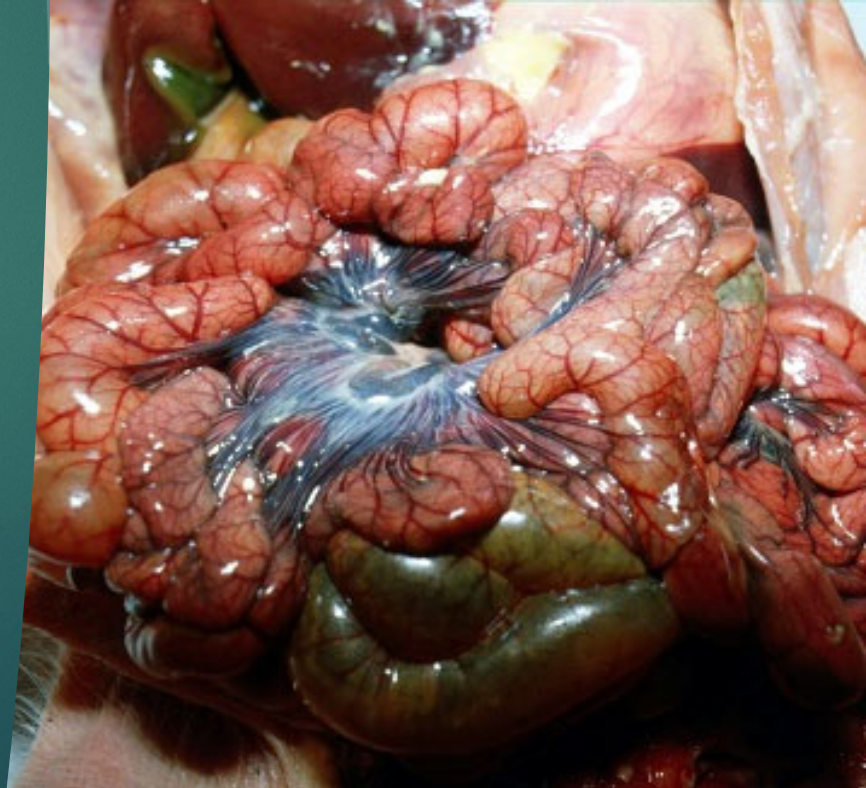
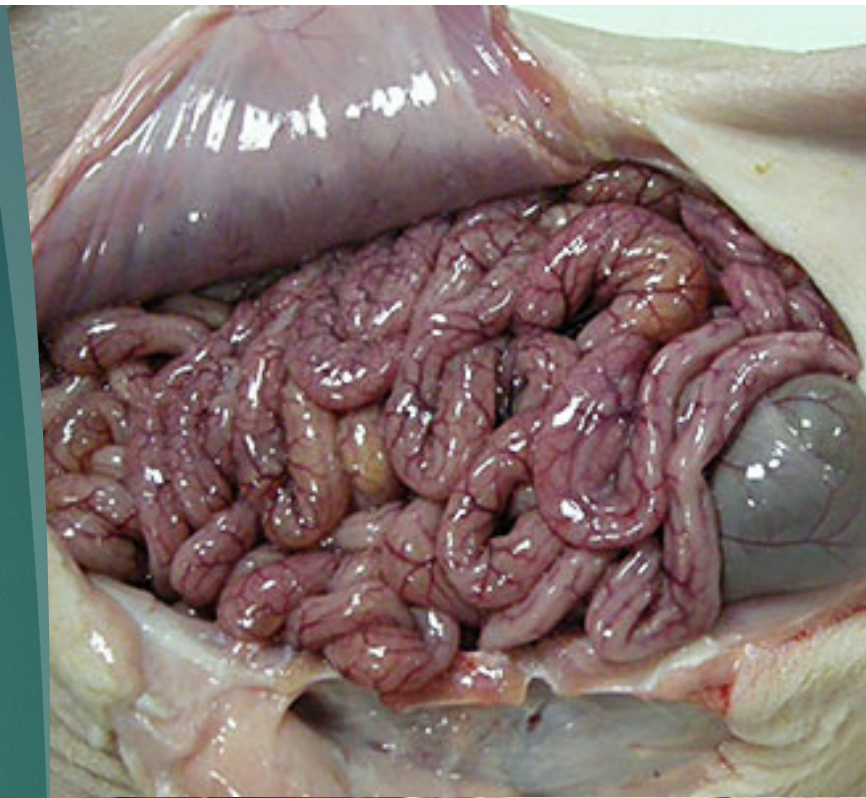
# Embryonal Nephroma





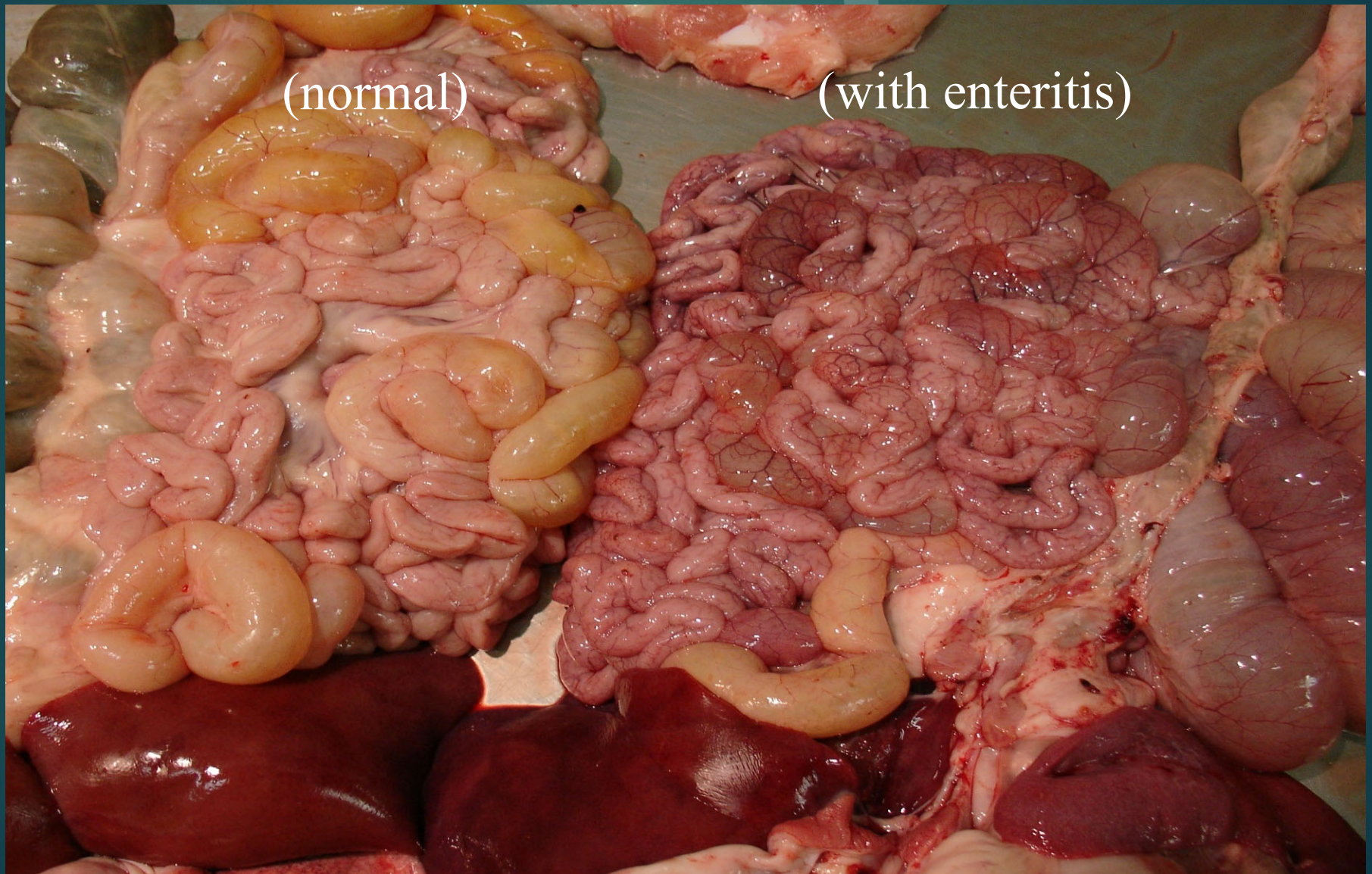
# Enteritis

- ▶ Intestinal tract is hemorrhagic in appearance.
- ▶ If extensive, or acute, retain the carcass and parts for veterinary disposition.





# Enteritis





# Erysipelas (Diamond Skin)

## 9 CFR 311.6

- ▶ Erysipelas is a disease of swine caused by the organism *Erysipelothrix rhusiopathiae*.
- ▶ Per MPID Notice 1-20:
  - ▶ If the carcass presents with skin lesions and any other disease condition, the carcass and viscera must be retained for veterinary disposition.
  - ▶ If the carcass presents with only diamond skin lesions, regardless of the number and no other signs of disease are seen, IPP may have the establishment trim all diamond skin lesions.
  - ▶ If the inspector is unsure of the significance of additional abnormalities or if there are any questions, the carcass and viscera should be retained for veterinary disposition.

# Erysipelas (As seen at antemortem)





# Erysipelas

- ▶ The disease starts with an infection of the skin, but can lead to several other diseases/abnormalities such as:

Arthritis

Red, swollen Lymph Nodes

Paintbrush hemorrhages on stomach

Endocarditis

Congested Liver

Turkey Egg Kidneys

Septicemia



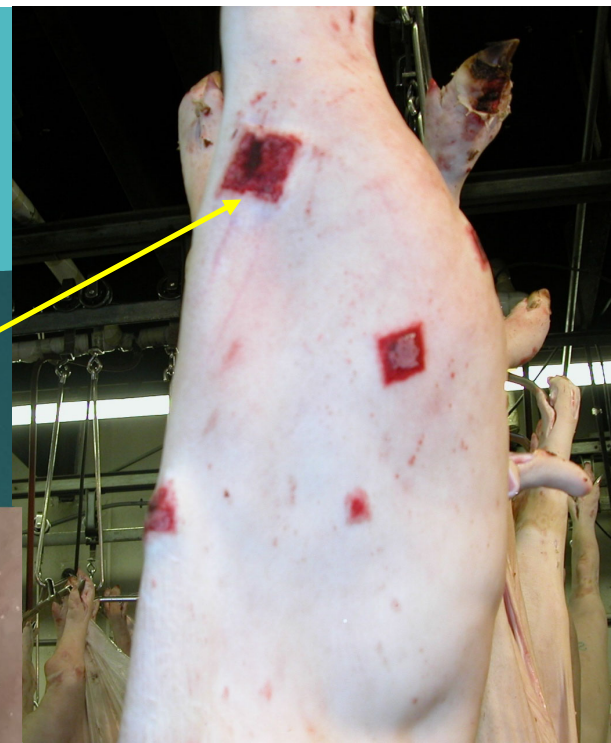
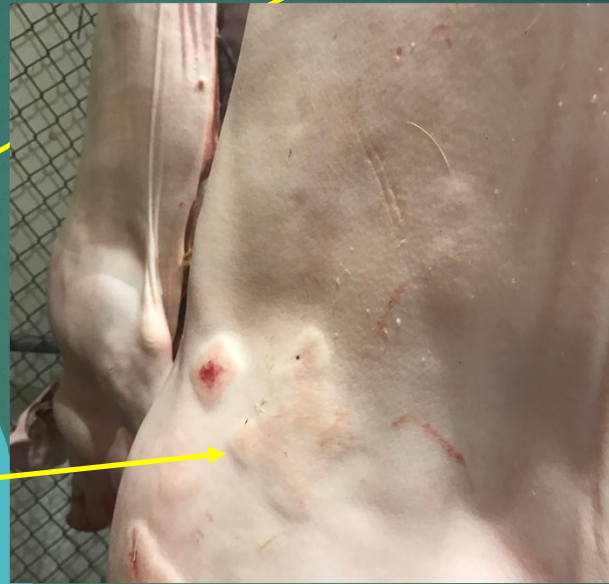
# Erysipelas:

Acute vs. Chronic vs.  
Acute on Chronic

Acute: Bright red,  
inflamed

Chronic: tan

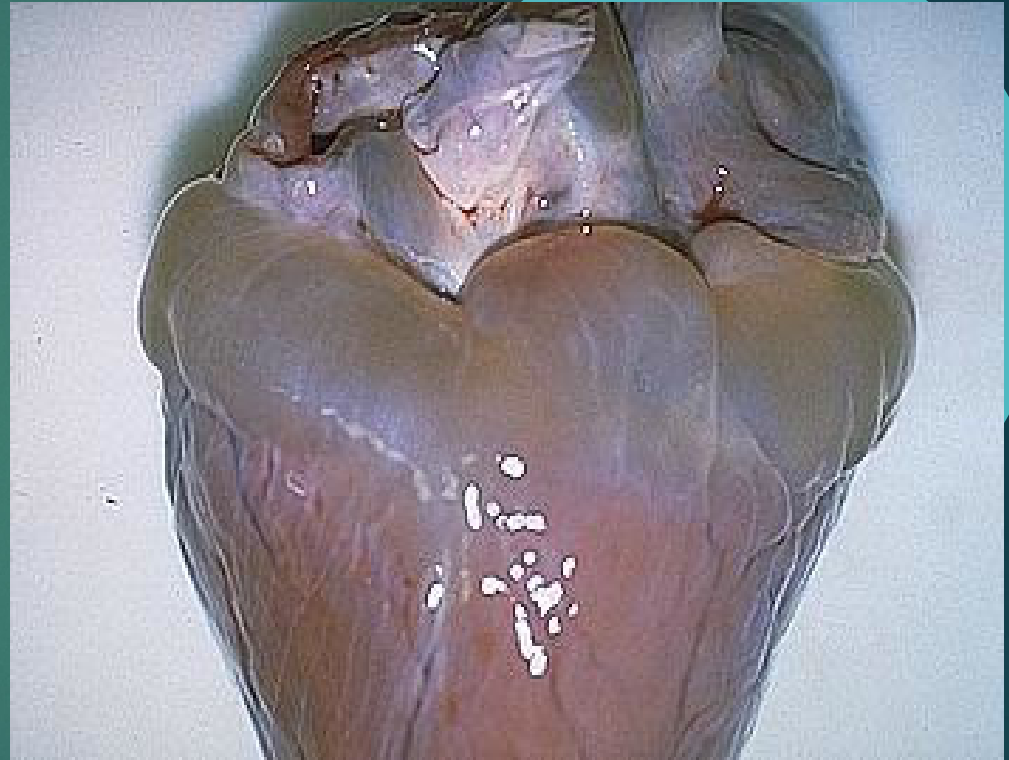
Acute on chronic:  
Previous infection has  
resolved; reinfected





# Fat Sloughing of the Heart Cap

- ▶ The gelatinous appearance of the heart fat is often an indication of emaciation.
  - ▶ Emaciation is a condition in which the carcass has reached a state of degeneration due to lack of nutritional input.
  - ▶ There will be no normal fat and the musculature will be moist and glassy.
  - ▶ You may see a watery material running down the backbone and dripping off the neck after the carcass is split.
- ▶ Retain carcasses in which you suspect emaciation for veterinary disposition.

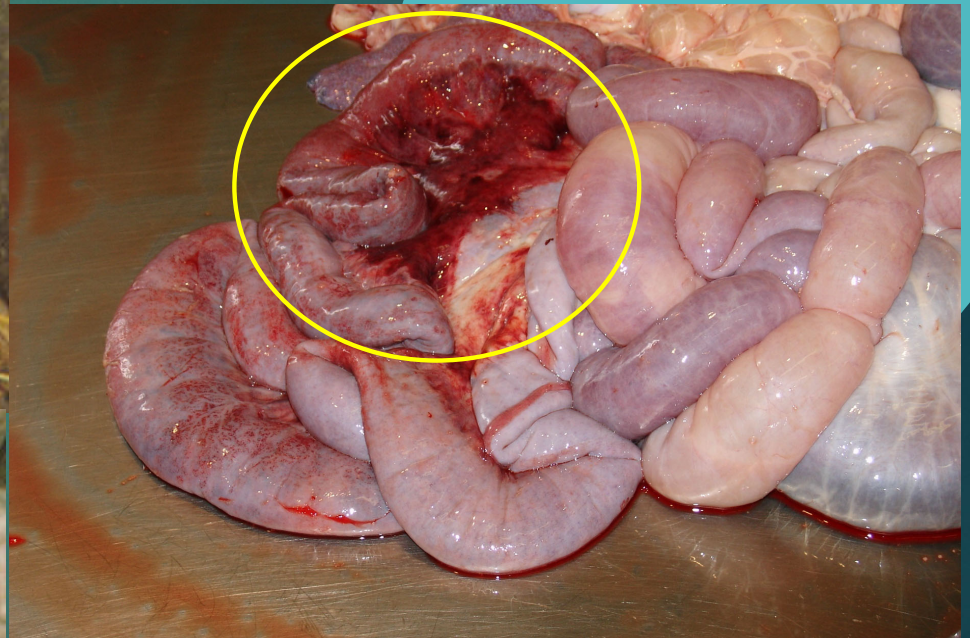


# Hernia





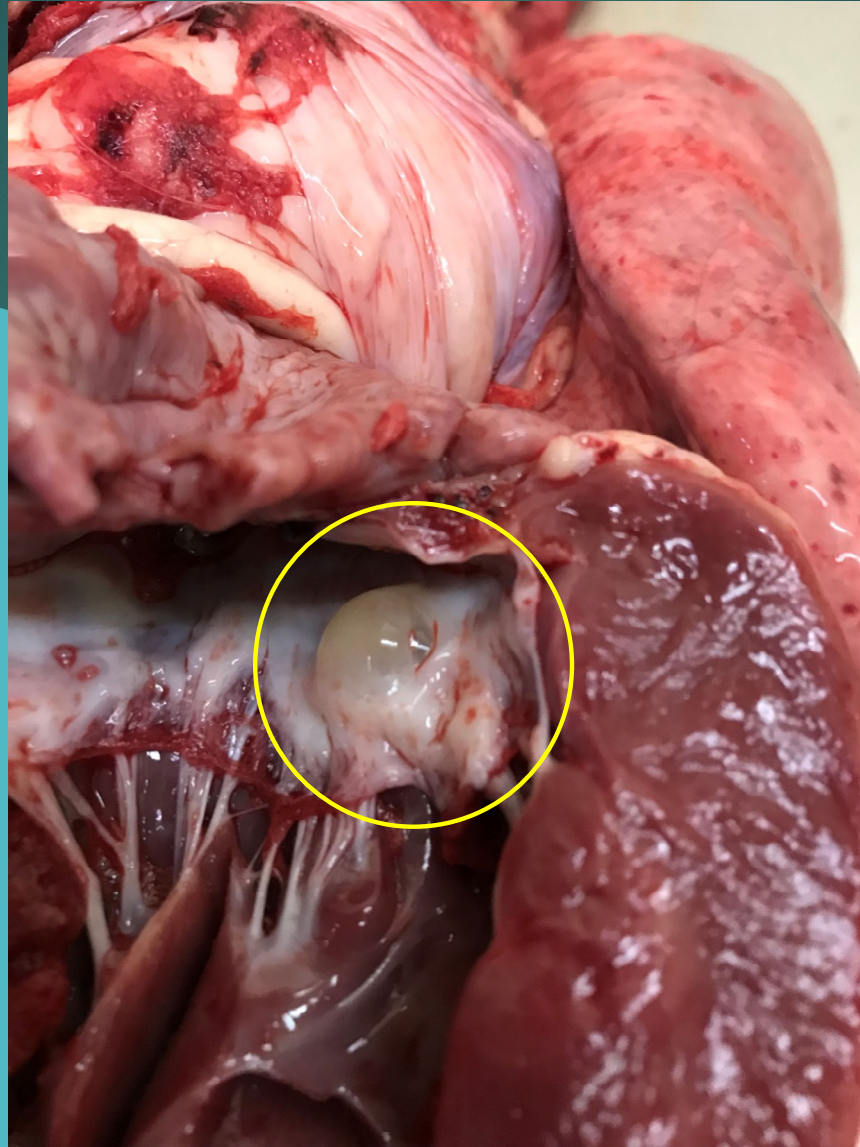
# Hernia



This portion of the intestines was in the hernia.



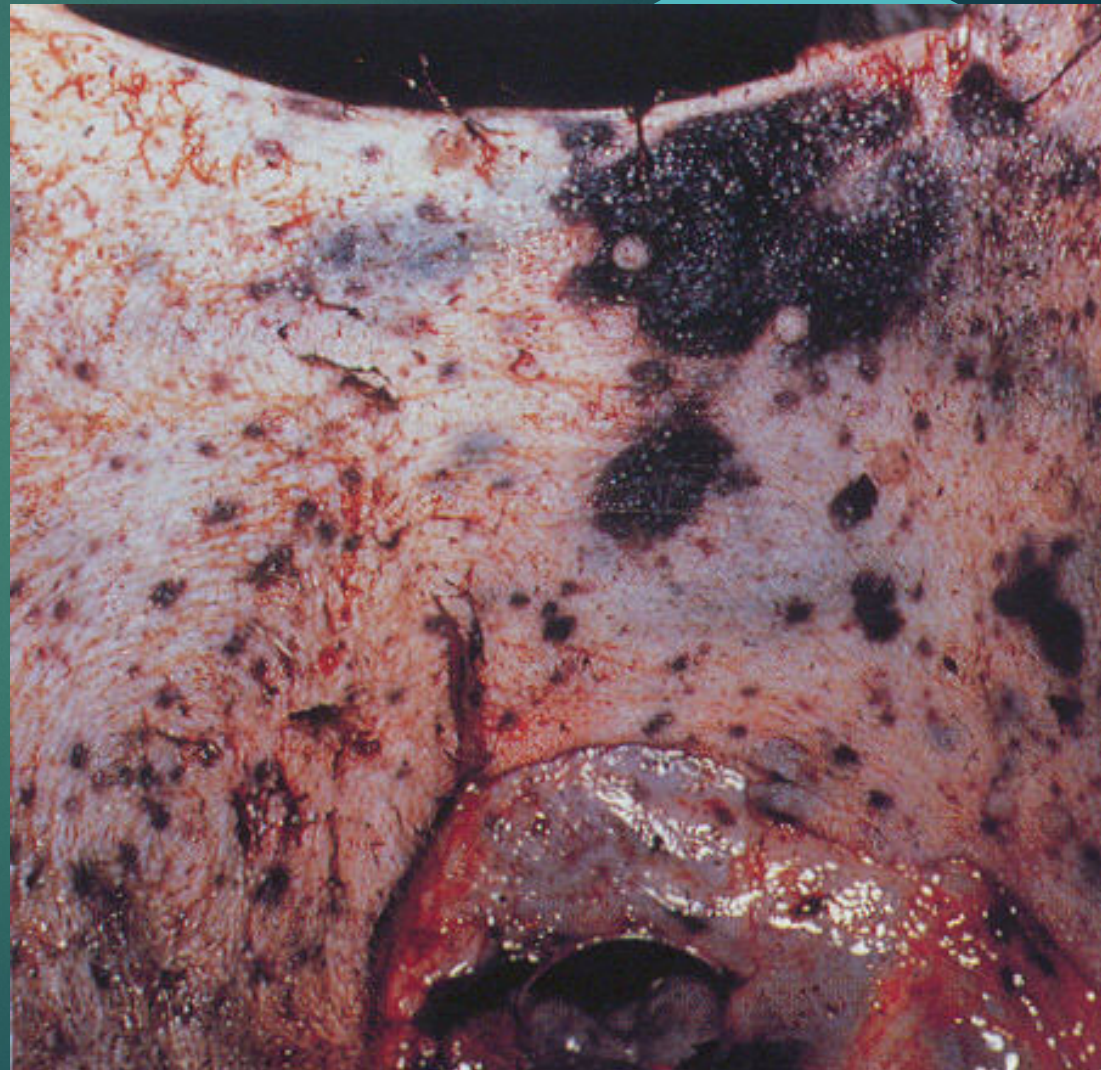
# Heart Valve Cyst



# Hog Cholera

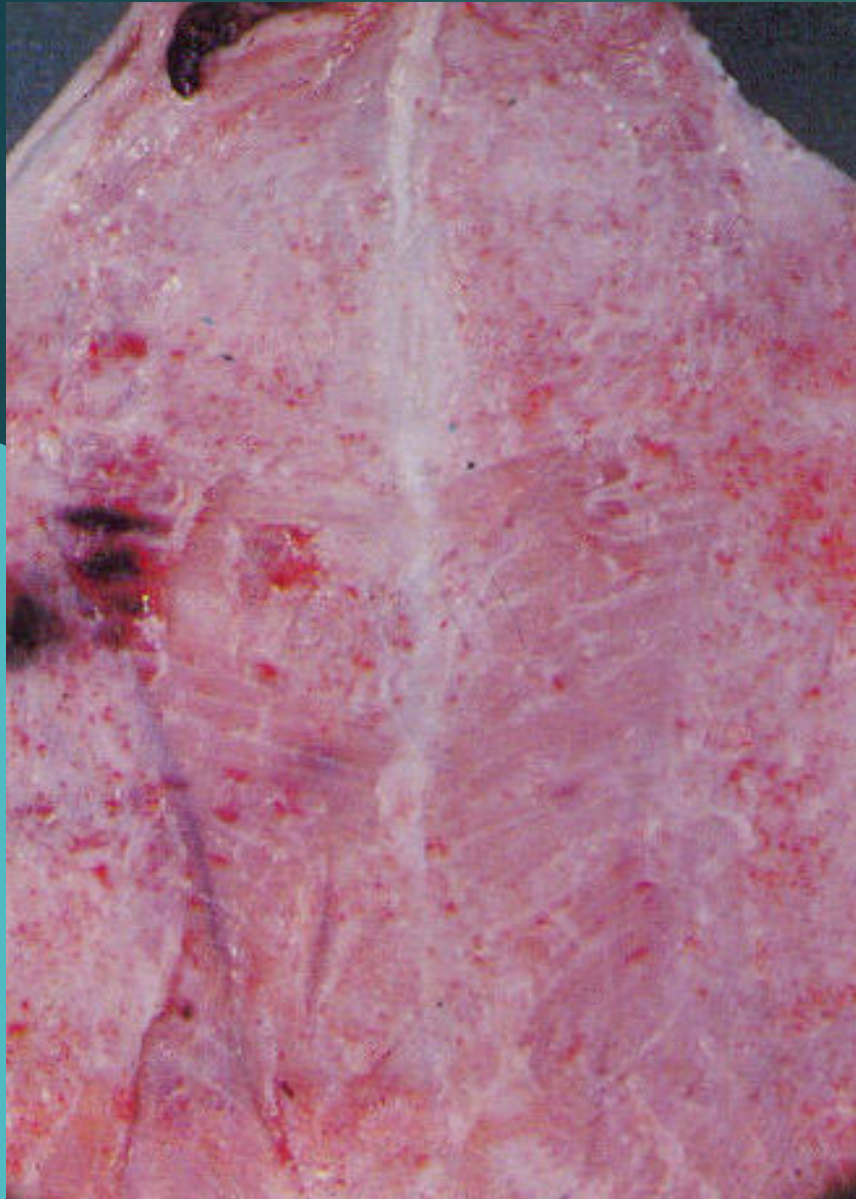
## 9 CFR 311.3

- ▶ Identified by such findings as hemorrhagic lymph nodes and red spots on belly and legs, and possibly a "turkey egg" kidney.
- ▶ If abnormal hemorrhages are observed, the carcass should be retained for veterinary disposition
- ▶ Not currently in the U.S., but there's huge potential for economic impact.
- ▶ Animal should be suspected at antemortem for veterinary disposition.





# Hog Cholera



As shown on muscle.



As shown on bladder.



# Hydronephrosis (Kidney)

9 CFR  
311.16(a)(7)

- ▶ One or both kidneys literally become a "bag of water".
- ▶ Normal kidney tissue is replaced by fluid.
- ▶ There is generally no effect upon the carcass.
- ▶ Affected kidneys are removed and condemned.





# Icterus

## 9 CFR 311.19

- ▶ The carcass has a lemon-yellow appearance.
- ▶ Can be caused by anemia, biliary obstruction (ascarids) or liver dysfunction/disease.
- ▶ Icterus particularly affects connective tissues (tendons, ligaments, sclera of the eye, etc.).
- ▶ Carcasses affected with any degree of icterus are retained for veterinary disposition.
- ▶ **Note:** Often difficult to determine if icterus (true disease) vs. pigmentary changes. Can retain overnight and evaluate the next day as icterus will get more obvious over time.

# Icterus



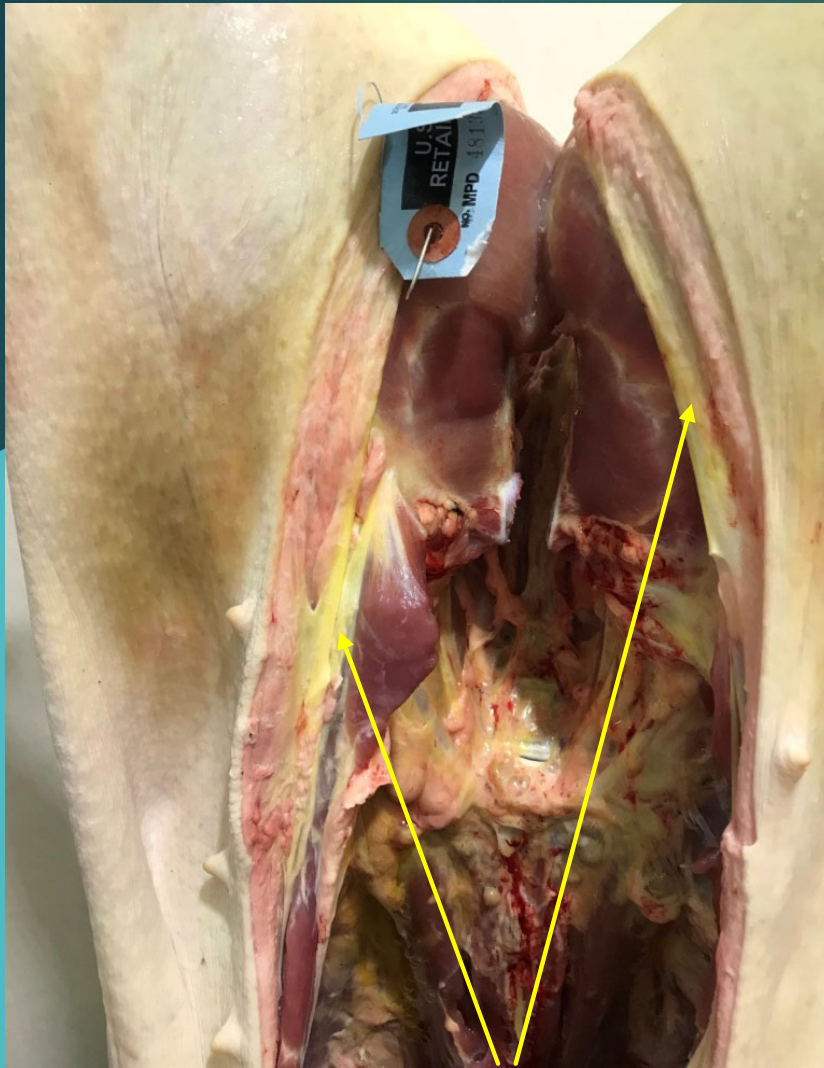
Normal pigmentation of skin.



Yellow pigmentation of skin indicative of icterus.

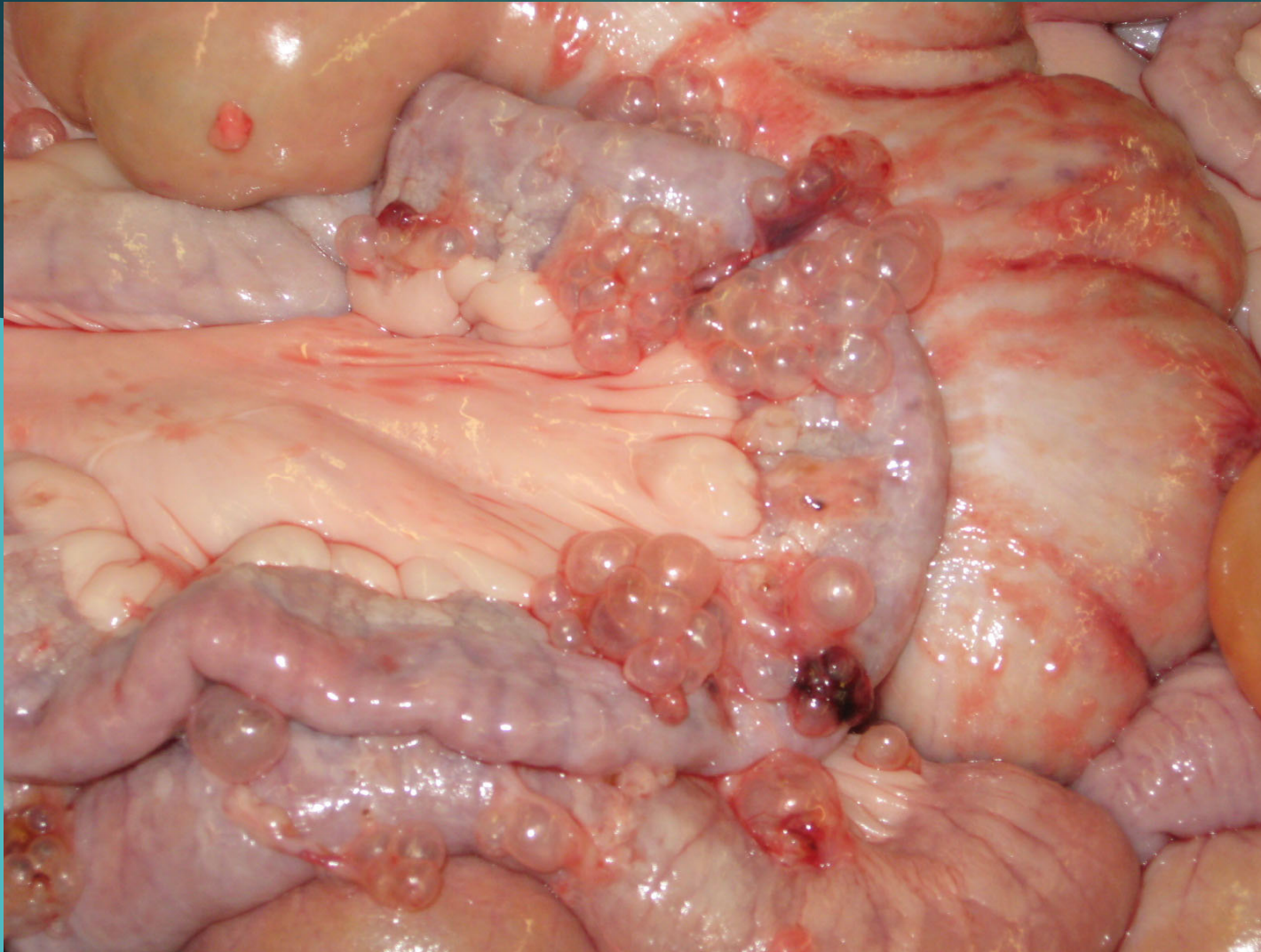


# Icterus



Note the yellowing of connective tissues.

# Intestinal Emphysema



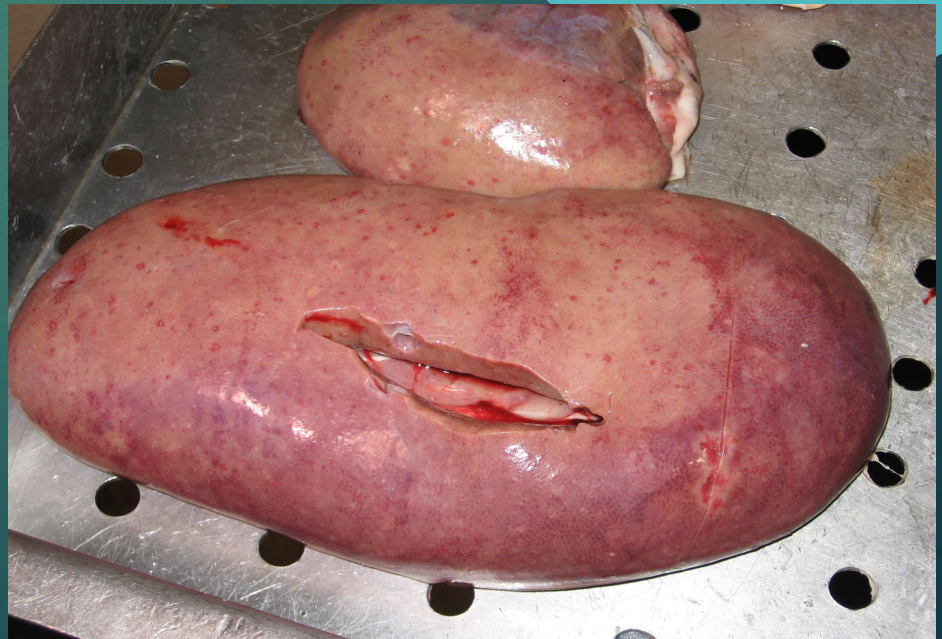


# Kidney Infarcts

- As in the spleen, infarcts are quite commonly seen in the kidneys with certain disease processes
- Looks like an upside-down candy corn

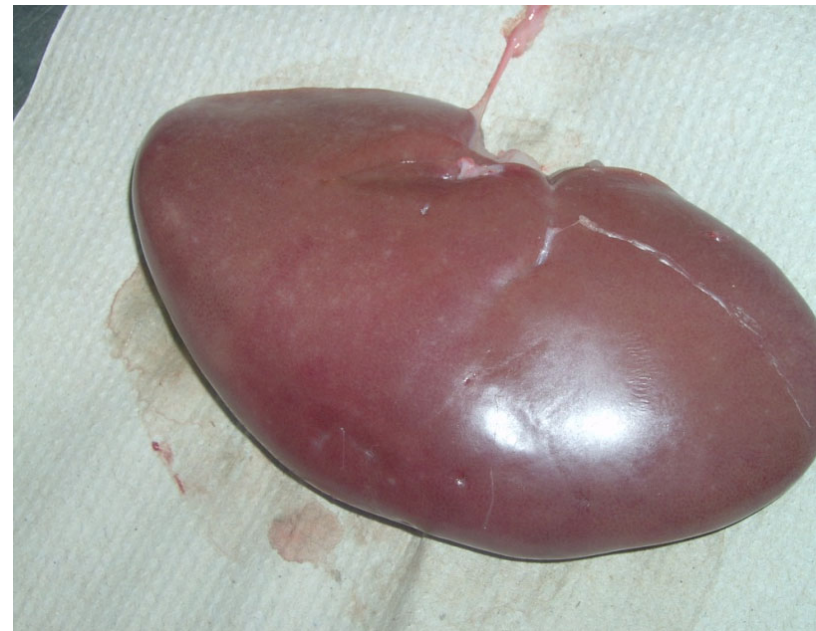


Above: Chronic infection.  
Below: Acute infection.



# Kidney Infarcts

- ▶ Both of these photos are from the same kidney, therefore why it is imperative that both sides of the kidneys should be inspected during postmortem procedures.

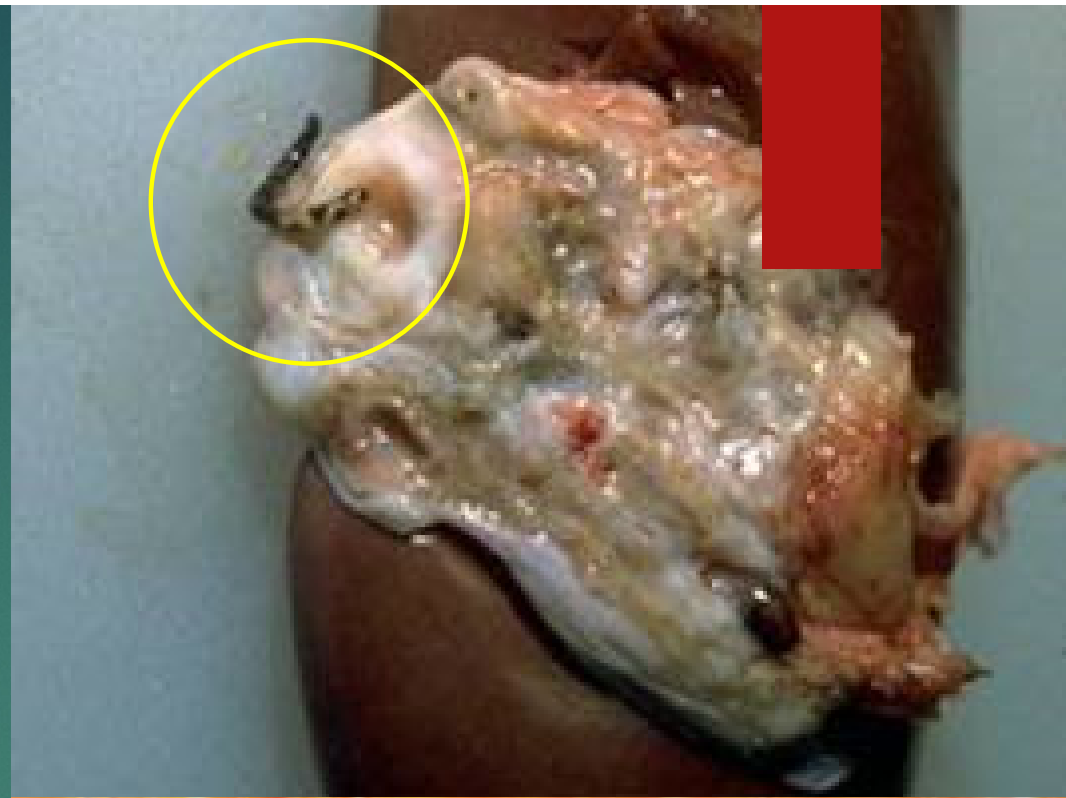




# Kidney Worms

## 9 CFR 311.25

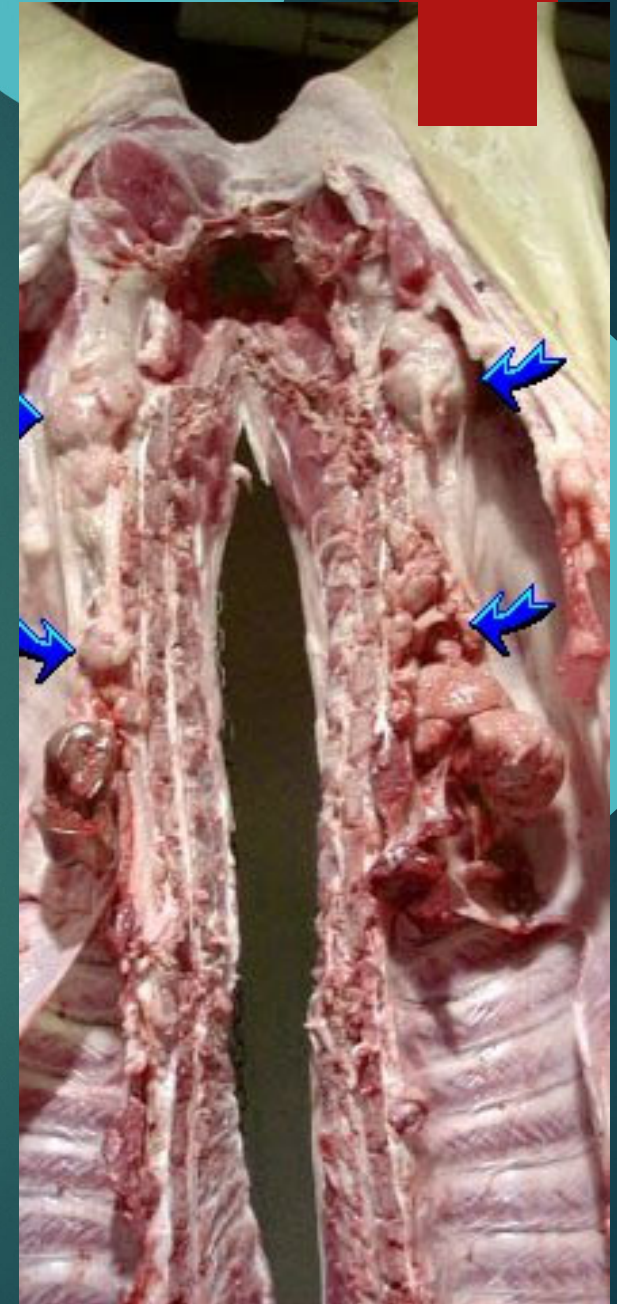
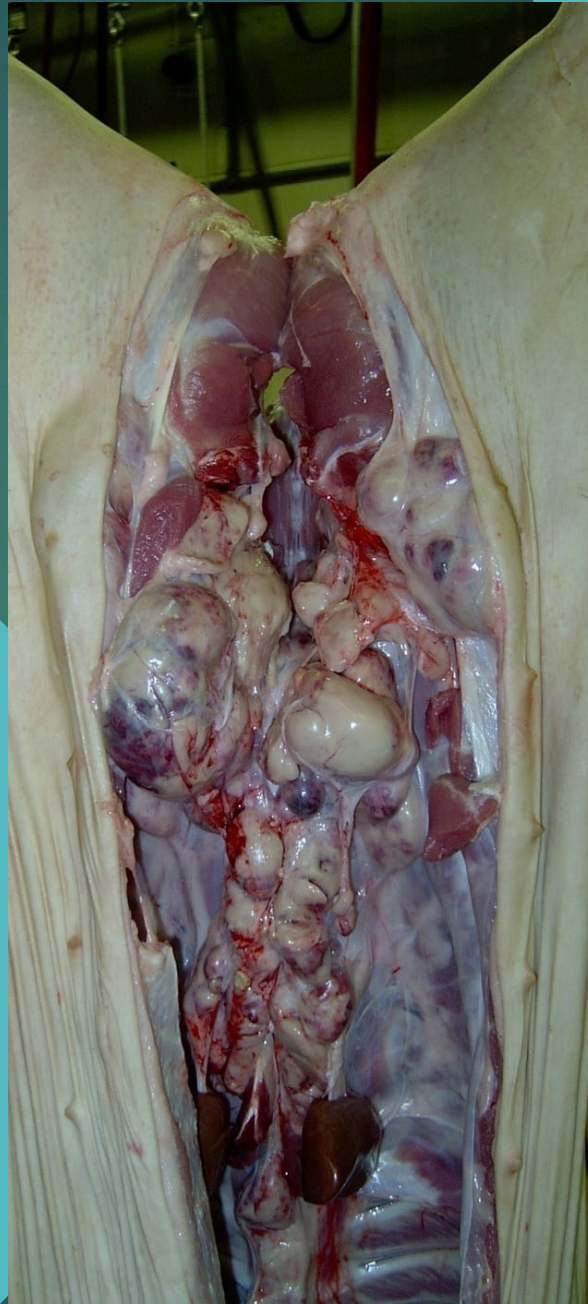
- ▶ Caused by parasites and can also be seen in the soft tissue of the carcass and abdominal viscera.
- ▶ Generally, this is a localized condition. Condemn the kidney and affected tissues.
- ▶ Postmortem findings may include the following:
  - ▶ Adult kidney worms found in pelvic region, muscles (loin, ham), organs (kidney, liver, pancreas, spleen, lungs)
  - ▶ Brown-yellow color to skin and fat
  - ▶ Cysts and/or abscesses near kidneys



# Lymphoma

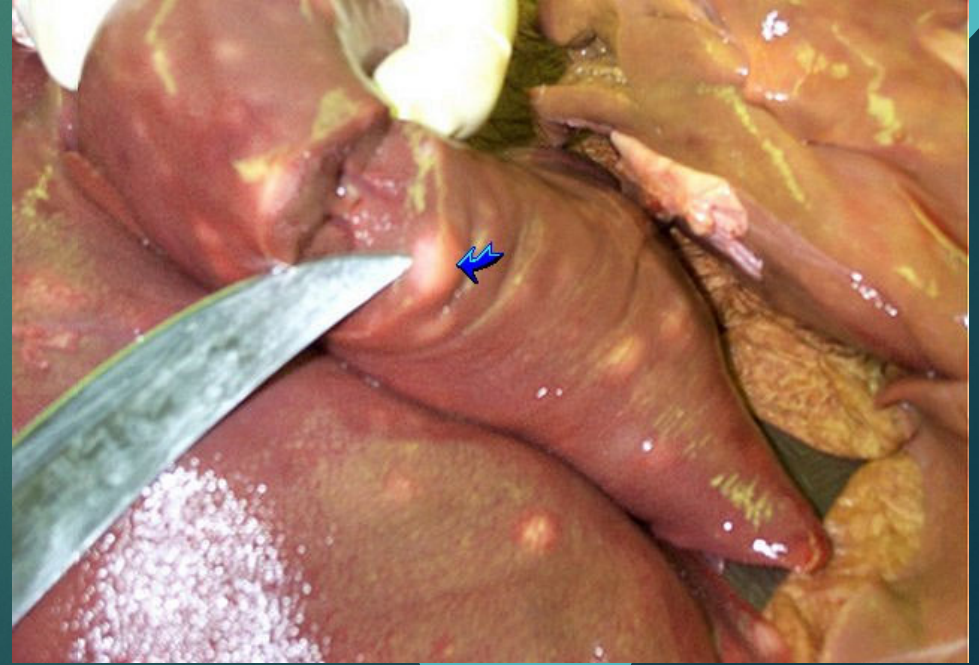
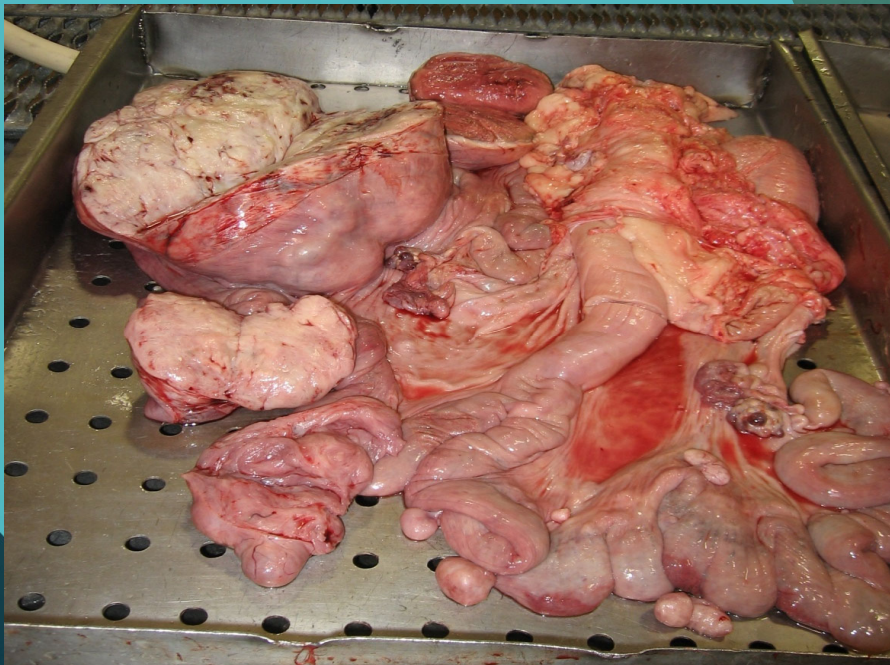
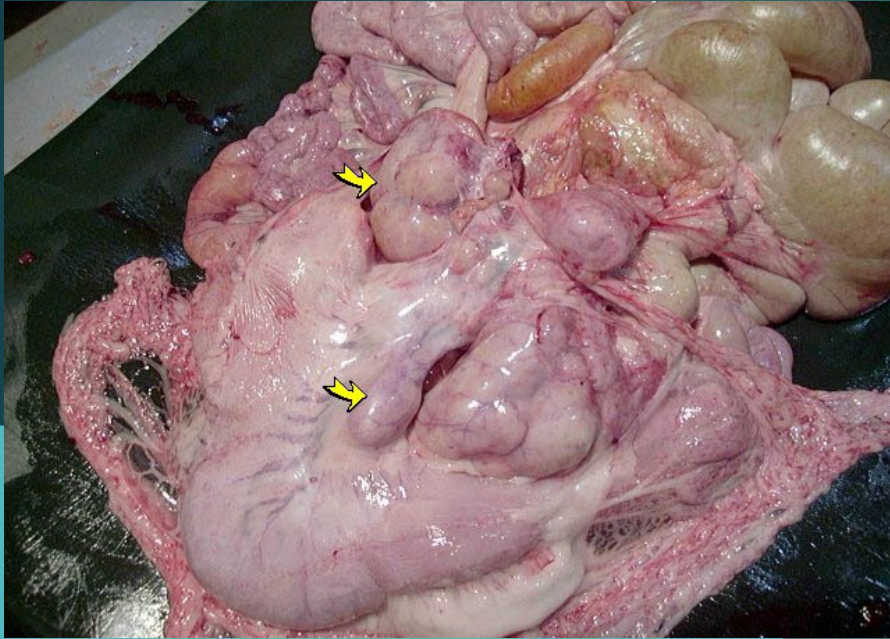
## 9 CFR 311.11(b)

- ▶ A cancerous disease of the lymph nodes.
- ▶ Characterized by lymph nodes 5 times or more normal size.
- ▶ Lymphoma can also be seen in the right atrium of the heart, abomasum, and uterus.
- ▶ If lymphoma is suspected, always retain the carcass and parts for veterinary disposition.





# Lymphoma





# Lymphoma



Left Mandible is at the top. Right ear circled in black. Lymph nodes circled in red.



# Mastitis

## 9 CFR 311.16

- ▶ An inflammation of the udder tissue usually associated with a bacterial infection.
- ▶ Retain the carcass for veterinary disposition if there are generalized signs.





# Melanoma

## 9 CFR 311.11(a)

- ▶ Tumors that contain black pigment (melanin).
- ▶ Often difficult to differentiate between melanoma and melanosis without histopathology.
- ▶ Retain carcass and parts and for veterinary disposition.

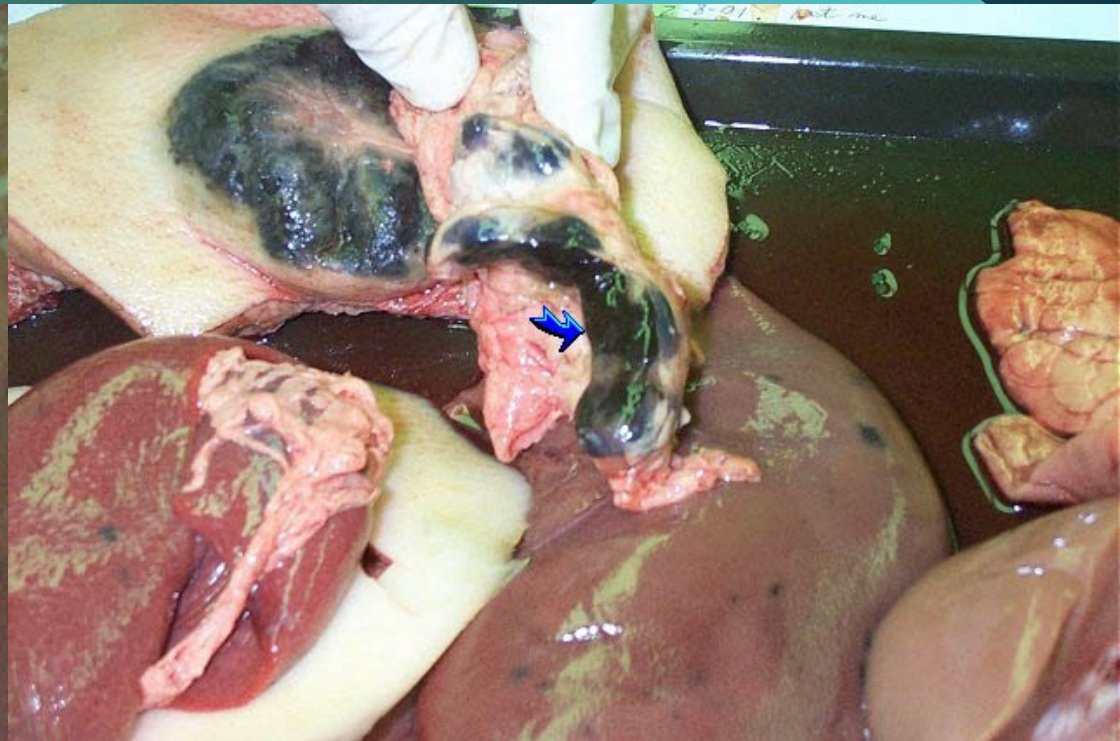




# Melanoma



As seen on the skin (blue arrow). As seen on the liver (red arrow).



As seen in a lymph node (blue arrow).



# Metritis

- ▶ Inflammation of the uterus.
- ▶ May vary from a slight redness or odor in the uterus or pyometra (metritis), to a retained placenta or fetus.
- ▶ In these instances, you should evaluate the degree of involvement, the remaining viscera condition, and the carcass condition.





# Megacolon

- ▶ An inflammation caused by Salmonella, along with other viruses or bacteria.
- ▶ The inflammation causes rectal stricture, which is the narrowing of the anal canal that would normally allow stool out of the body.
- ▶ The anal stricture doesn't allow the waste to properly leave the body, resulting in fecal build-up and enlarged colon.

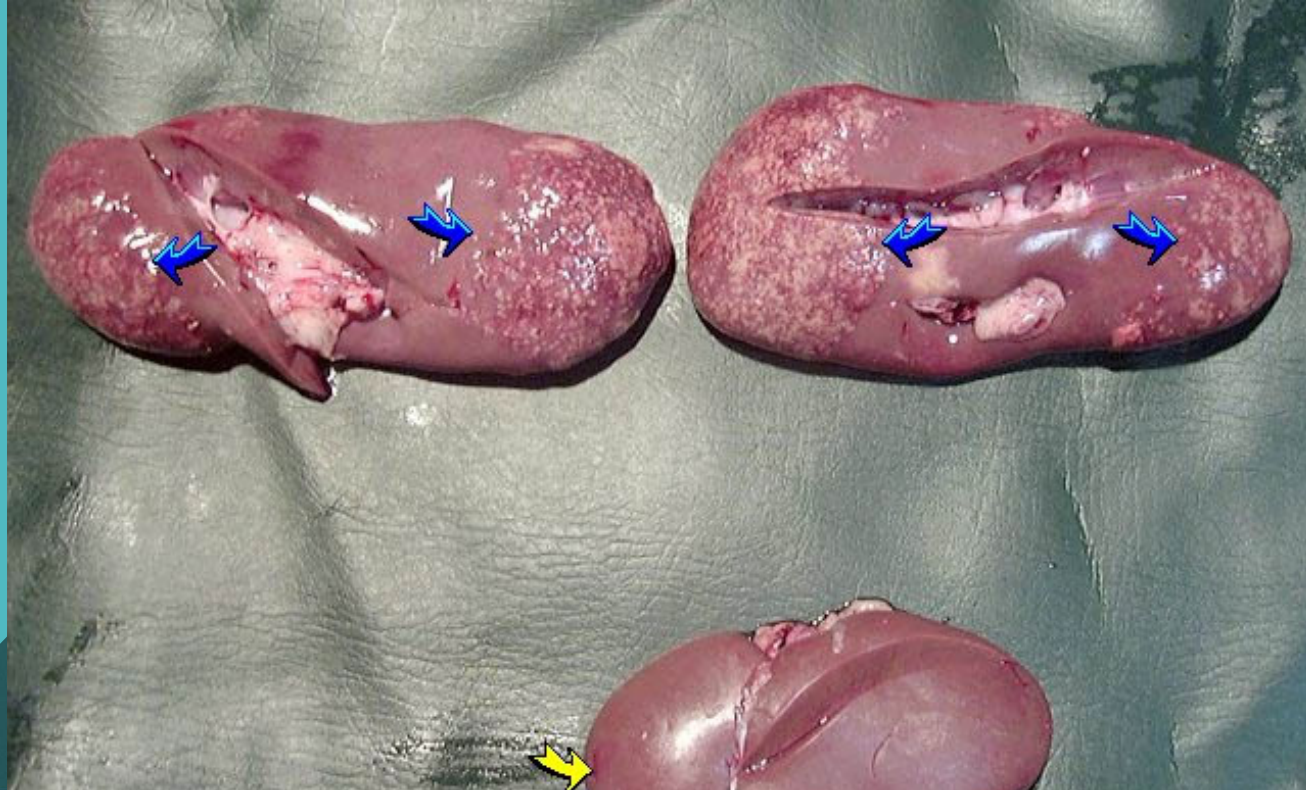




# Nephritis

## 9 CFR 311.16(a)(7)

- ▶ An inflammation of the kidney and is usually characterized by swelling, off- color, or abscess.
- ▶ One or both kidneys may be affected.
- ▶ Localized conditions require the affected kidney(s) to be removed and condemned.
- ▶ If there is doubt as to whether the condition is localized to the kidney or if other pathology exists, the carcass and parts should be retained for veterinary disposition.

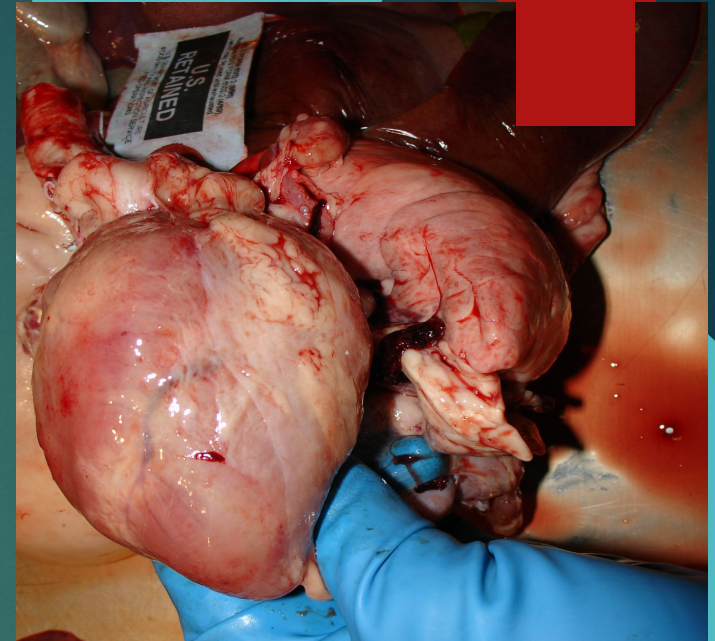




# Pericarditis

## 9 CFR 311.16(a)

- ▶ Inflammation of the pericardium (heart sac)
- ▶ If acute, extensive, or other pathology is detected, retain for veterinary disposition.
- ▶ If pericarditis is localized and chronic (adhesions of the pericardial sac to the wall of the heart), the heart and pericardium is condemned, but the carcass may be passed for food.

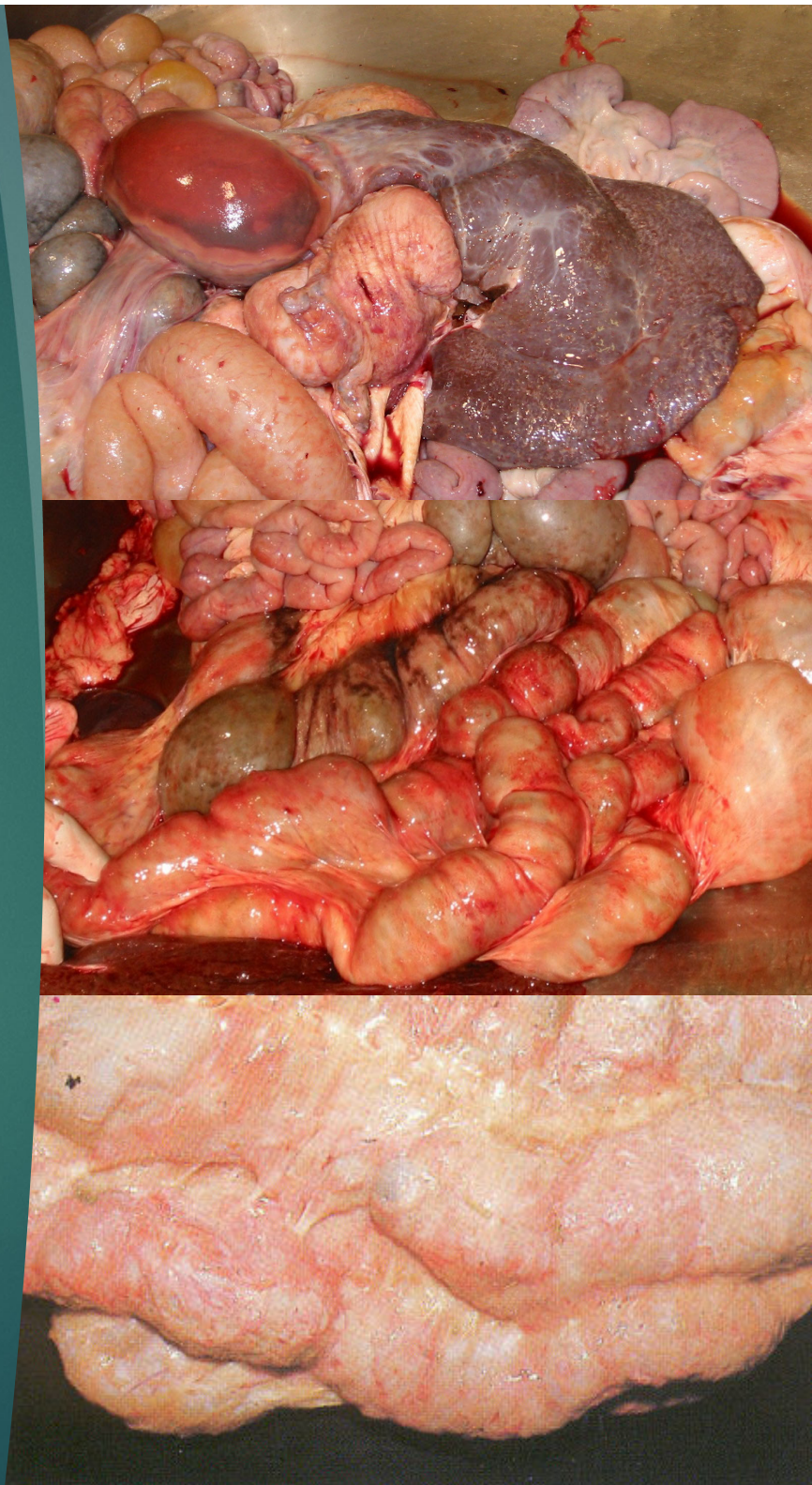




# Peritonitis

## 9 CFR 311.16(a)(1)

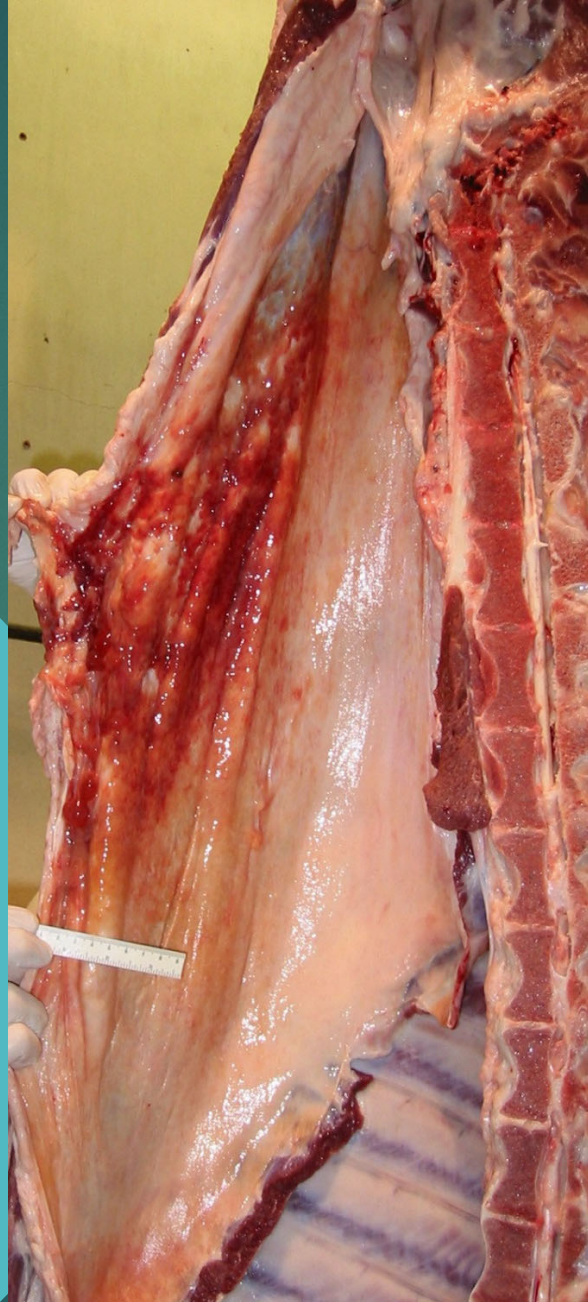
- ▶ Inflammation of the lining of the abdominal cavity.
- ▶ Localized, chronic inflammatory processes with adhesions may be "peeled out" with the remainder of the carcass passed for food.
- ▶ If acute, extensive, or other associated pathology is present, the carcass and its parts should be retained for veterinary examination





# Peritonitis

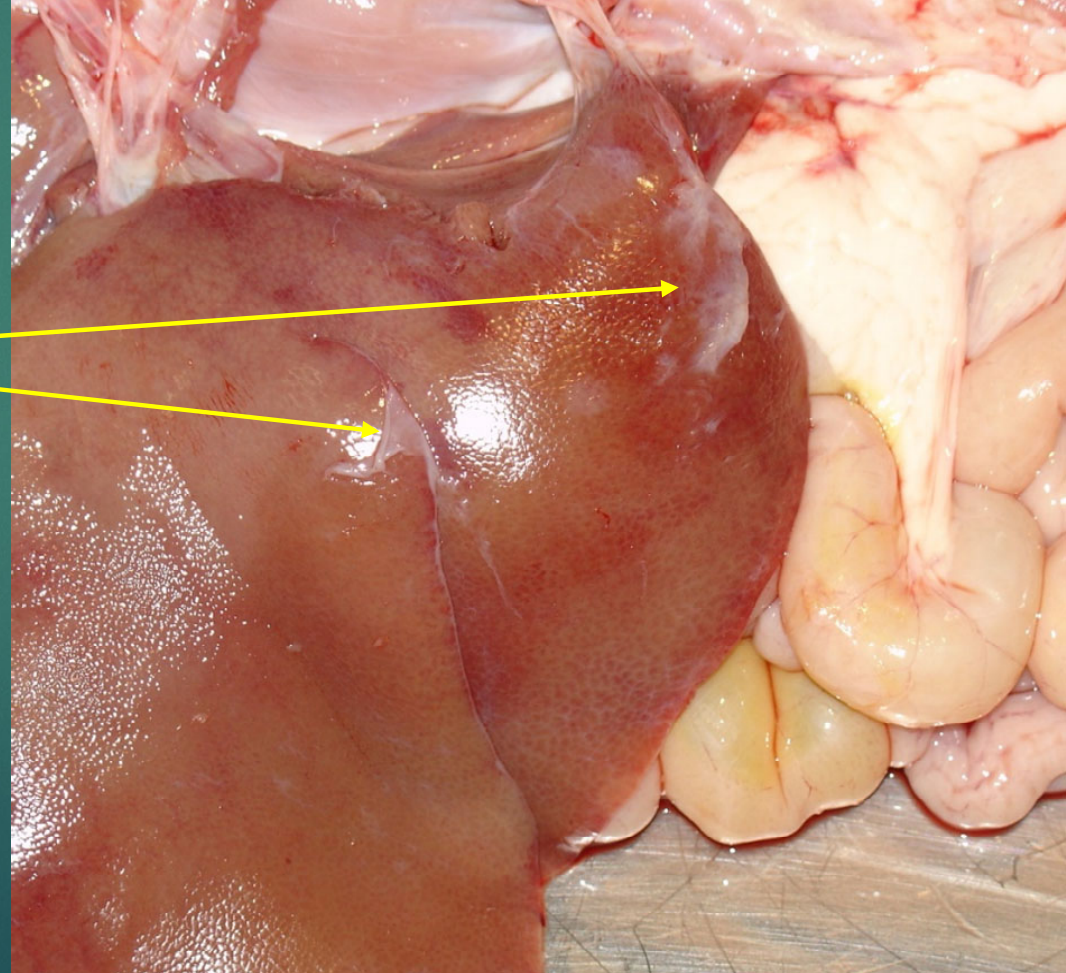
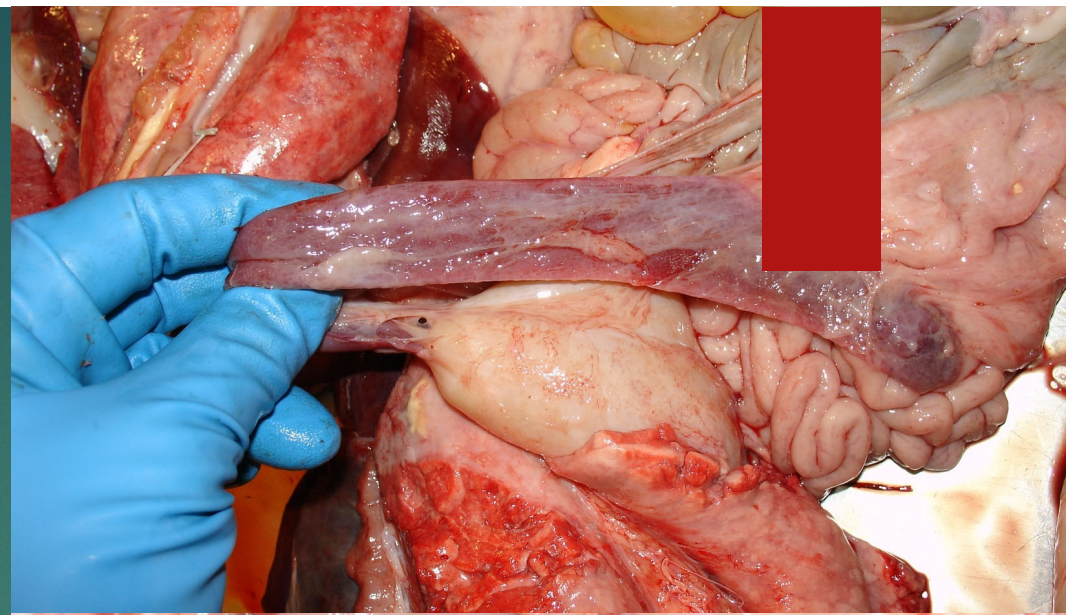
- ▶ Photo on Left: Peritonitis presenting as inflammation/redness on the cavity lining.
- ▶ Top Photo: Acute peritonitis with hemorrhagic mesenteric lymph nodes.
- ▶ Bottom Photo: Megacolon shown with peritoneal adhesions.





# Peritonitis

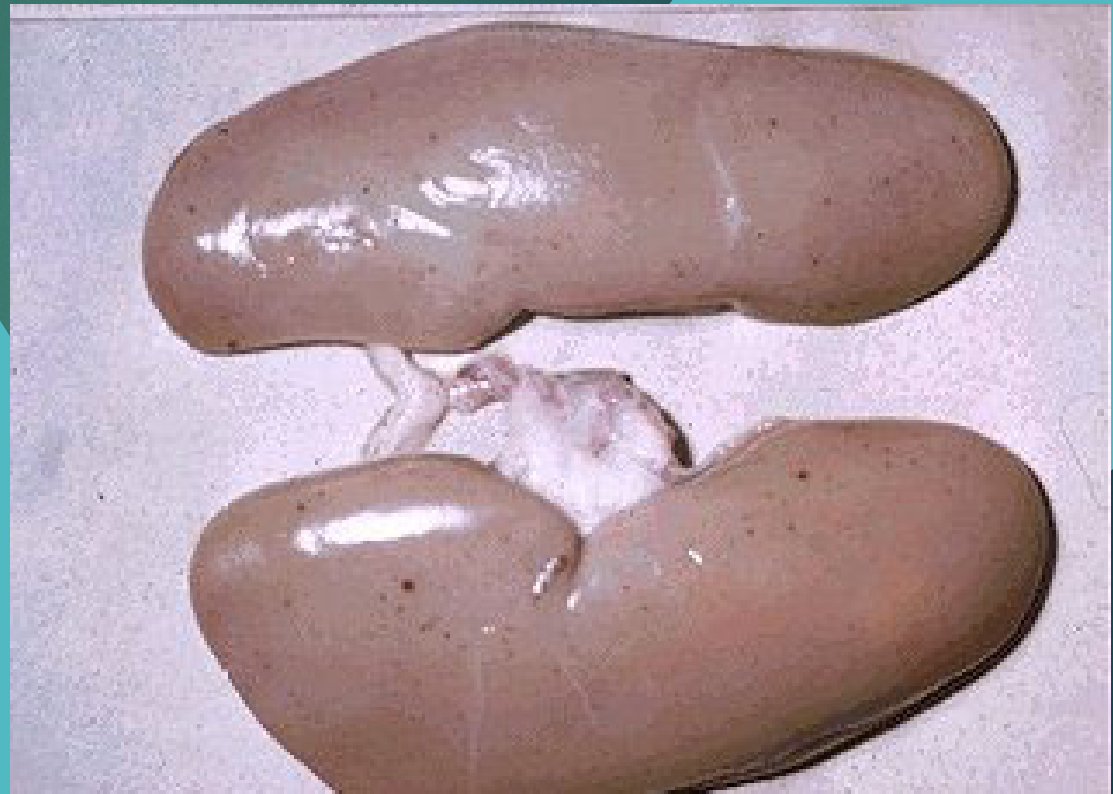
- ▶ Top Photo: Chronic adhesions seen on the spleen.
- ▶ Bottom Photo: Chronic adhesions seen on the liver.





# Petechial Hemorrhages on the Kidneys

- ▶ Can be associated with septicemia.
- ▶ If a localized condition, condemn the kidneys and pass the carcass.
- ▶ If a generalized condition, retain the carcass and parts for veterinary disposition.





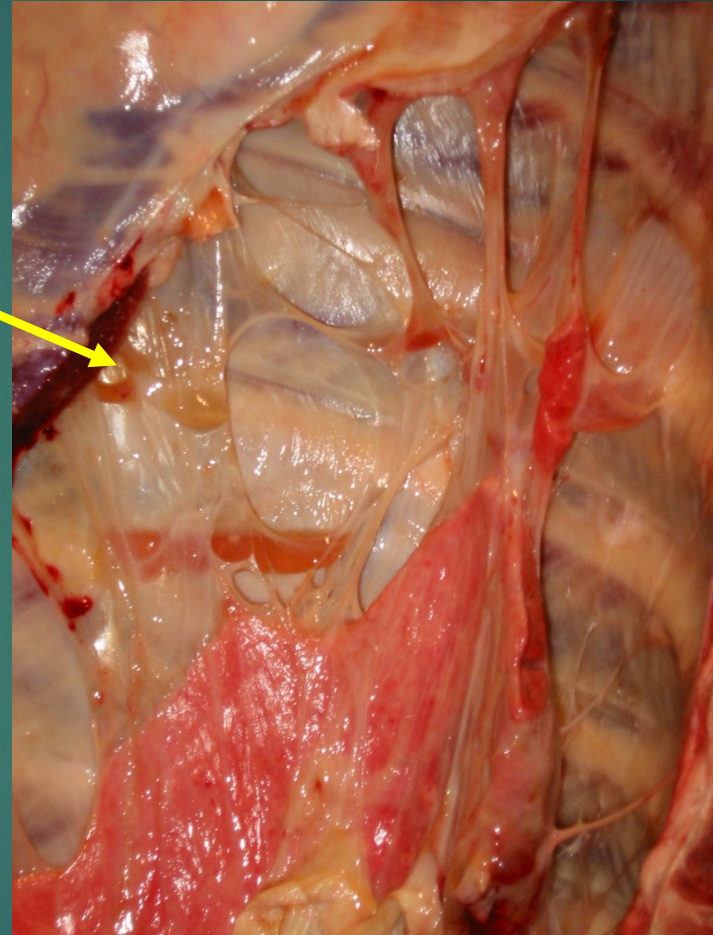
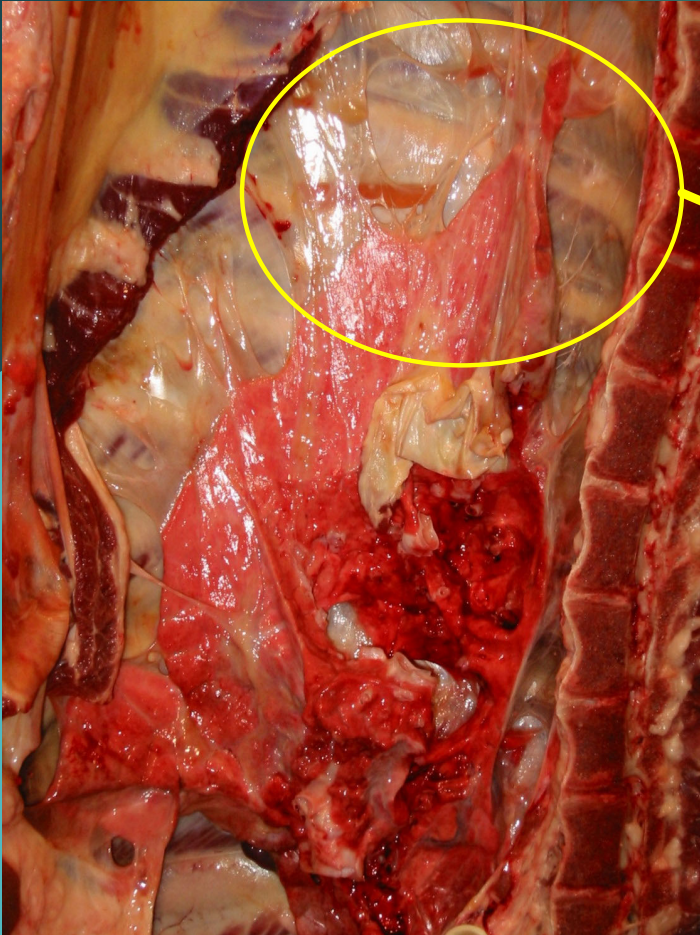
# Pleuritis

## 9 CFR 311.16(a)(1)

- ▶ Localized, chronic inflammatory processes with adhesions may be "peeled out" with the remainder of the carcass passed for food.
- ▶ If acute, extensive, or other associated pathology is present, the carcass and its parts should be retained for veterinary disposition.



# Pleuritis



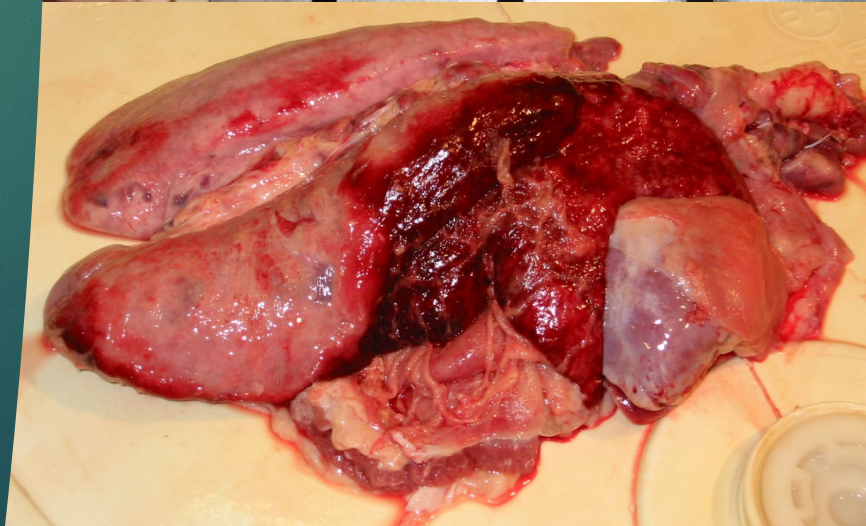
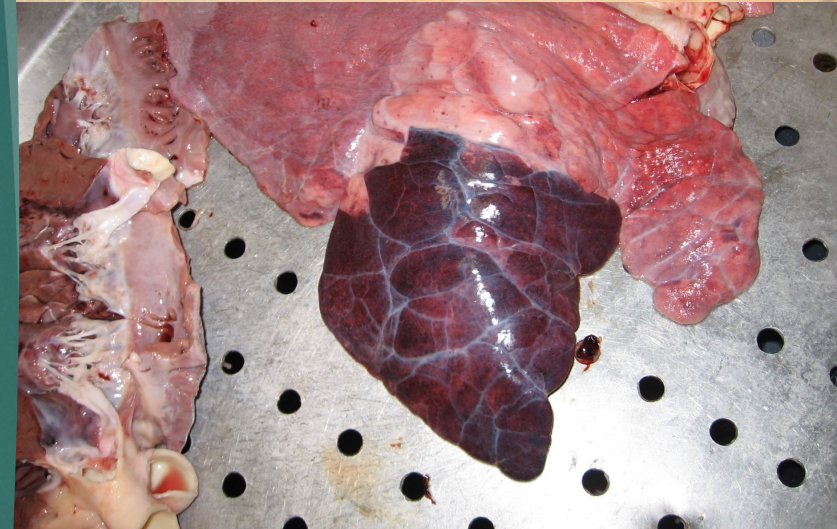
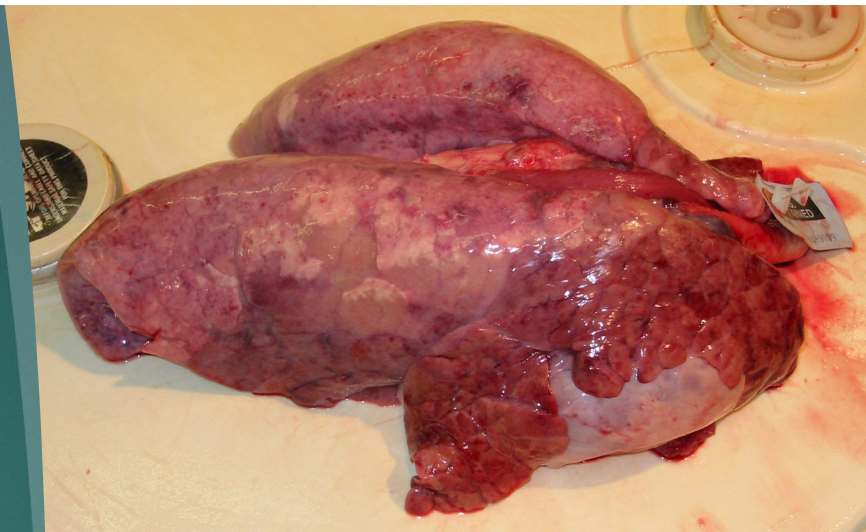
Close-up of the photo on the left showing the fibrin attachments to the diaphragm, pleura and lung.



# Pneumonia

## 9 CFR 311.16(a)(1)

- ▶ An inflammatory disease in which the normal soft "foamy consistency" feel of the lungs and their normal "light-pinkish" color are changed.
- ▶ Lungs will have varying degrees of inflamed tissue which will usually have a red or purple coloration.
- ▶ Lungs will feel heavy or fluid-filled.
- ▶ If acute, extensive, or other associated pathology is present, the carcass and its parts should be retained for veterinary examination.





# Porcine Dermatitis as seen by MPID Inspection Personnel!

- ▶ Antemortem: No notable signs.
- ▶ Postmortem:
  - ▶ Red, splotchy lesions on exterior of carcass
- ▶ Retain for veterinary disposition





# Porcine Dermatitis





# Porcine Stress Syndrome (Pale Soft Exudative – PSE Pork)

- ▶ Inherited metabolic disorder
- ▶ Clinical signs are brought on by stress, transport, handling, exercise, or excitement.
- ▶ Meat is light in color due to a rapid decline in muscle pH and degradation of muscle protein and structure.





# Septicemia

## 9 CFR 311.16(a)(2)

- ▶ A generalized inflammatory condition caused by pathogenic bacteria and associated toxins in the blood.
- ▶ Most, or all, of the body lymph nodes may be enlarged, hemorrhagic, and edematous.
- ▶ Kidneys may have petechiae (small pinpoint hemorrhages).
- ▶ Other pathology may be present.
- ▶ Retain the carcass and parts for veterinary disposition

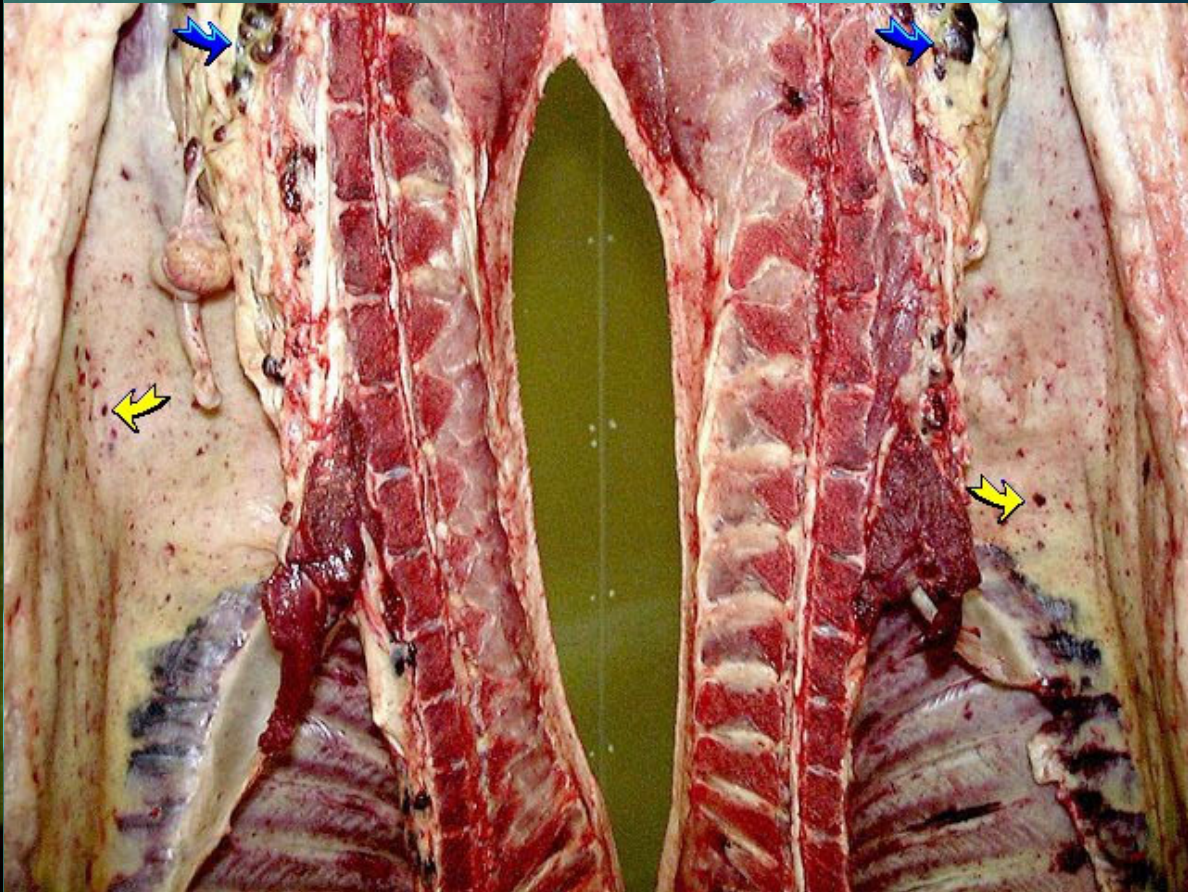


# Septicemia (Antemortem)





# Septicemia



Hemorrhages can be seen on the skin (left photo) and cavity lining (right photo).



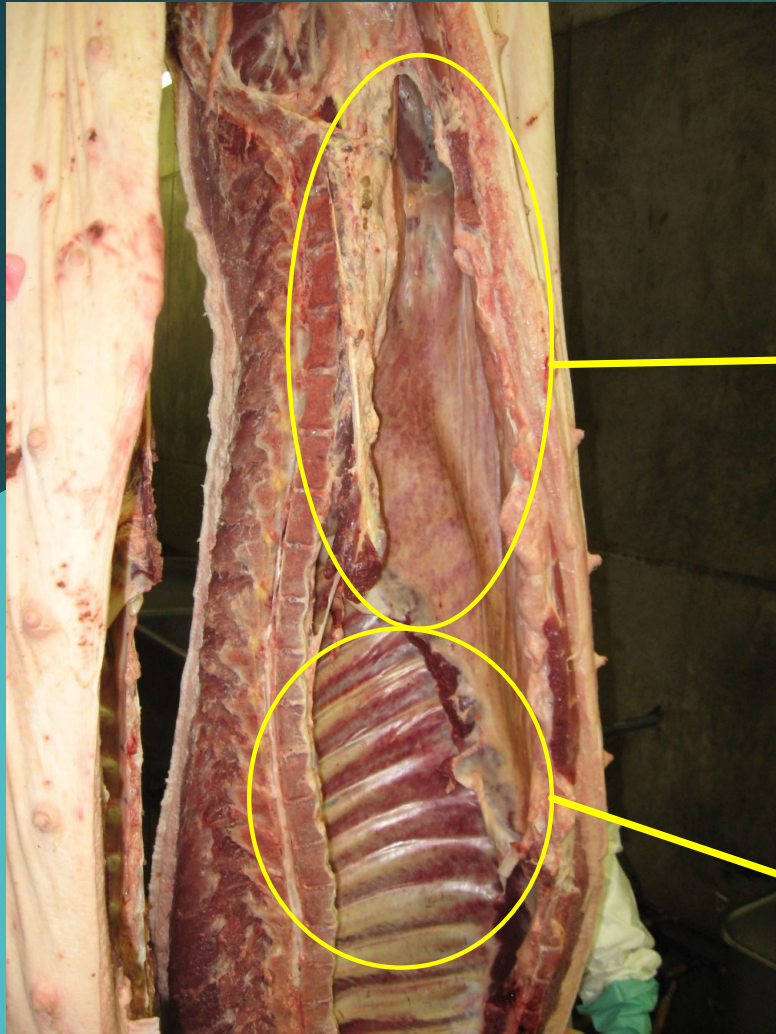
# Septicemia



Diamond skin lesion on left ham (Above photo) . Extensive hemorrhaging on right leg (right photo).



# Septicemia



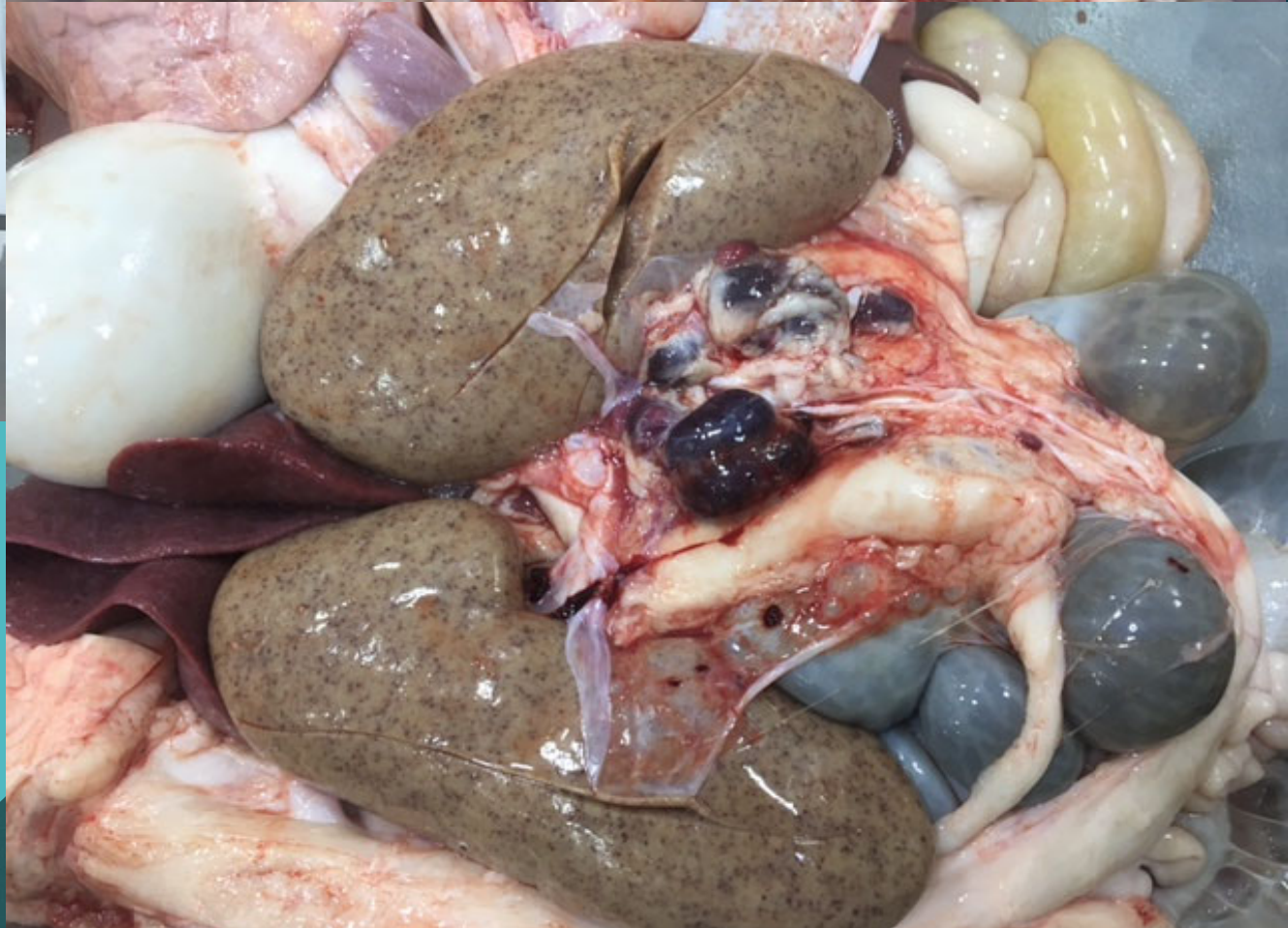
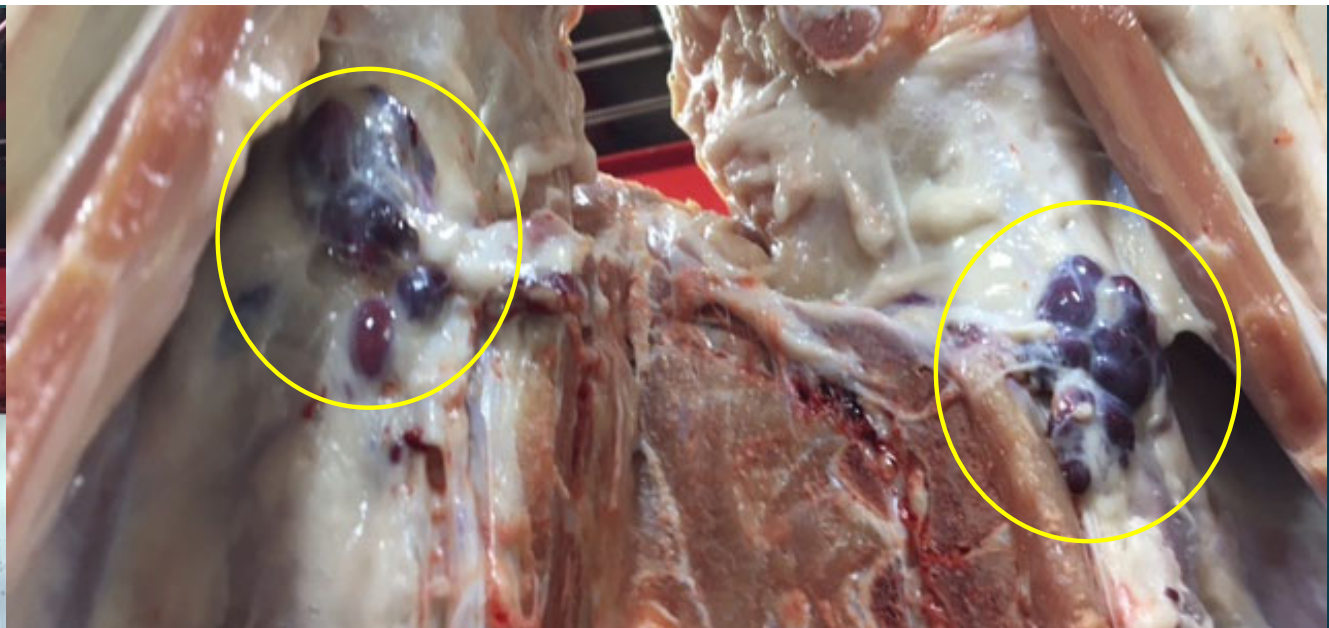
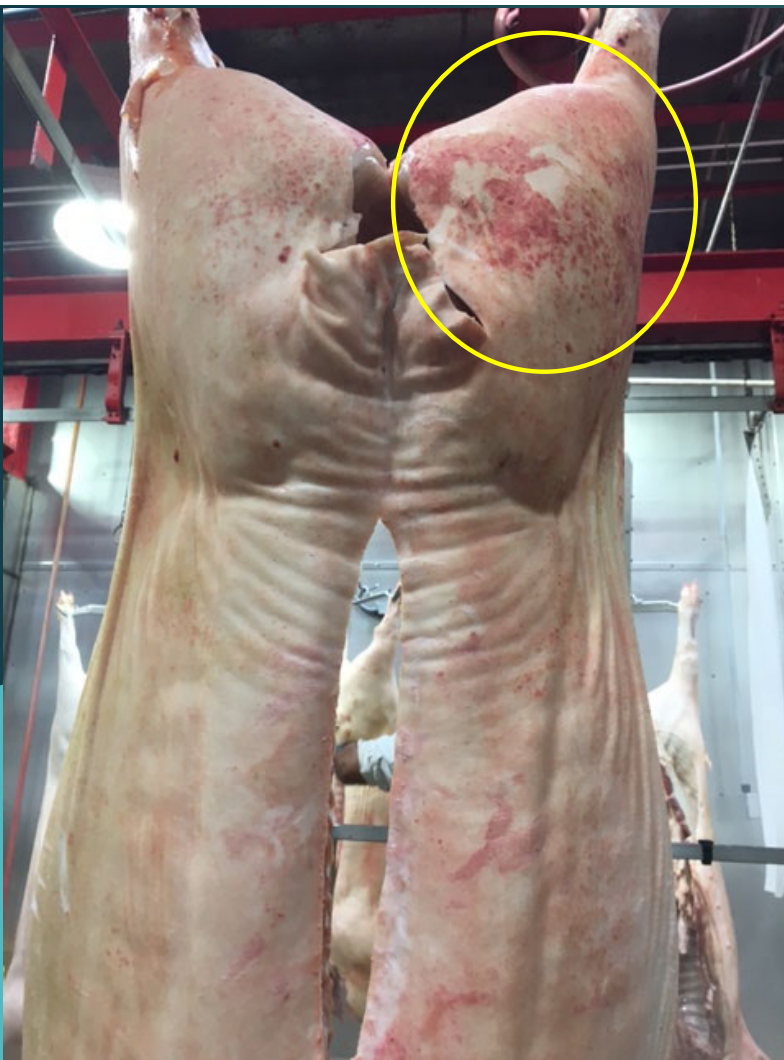
Notice the redness of the cavity lining and pleura.



# Septicemia







Septicemia presenting with:  
Top Left Photo

-Reddened skin w/  
hemorrhages

Top Right Photo

-Hemorrhagic and enlarged  
internal iliac lymph nodes

Bottom Right Photo

-Petechiated kidneys



# Spleen Infarct

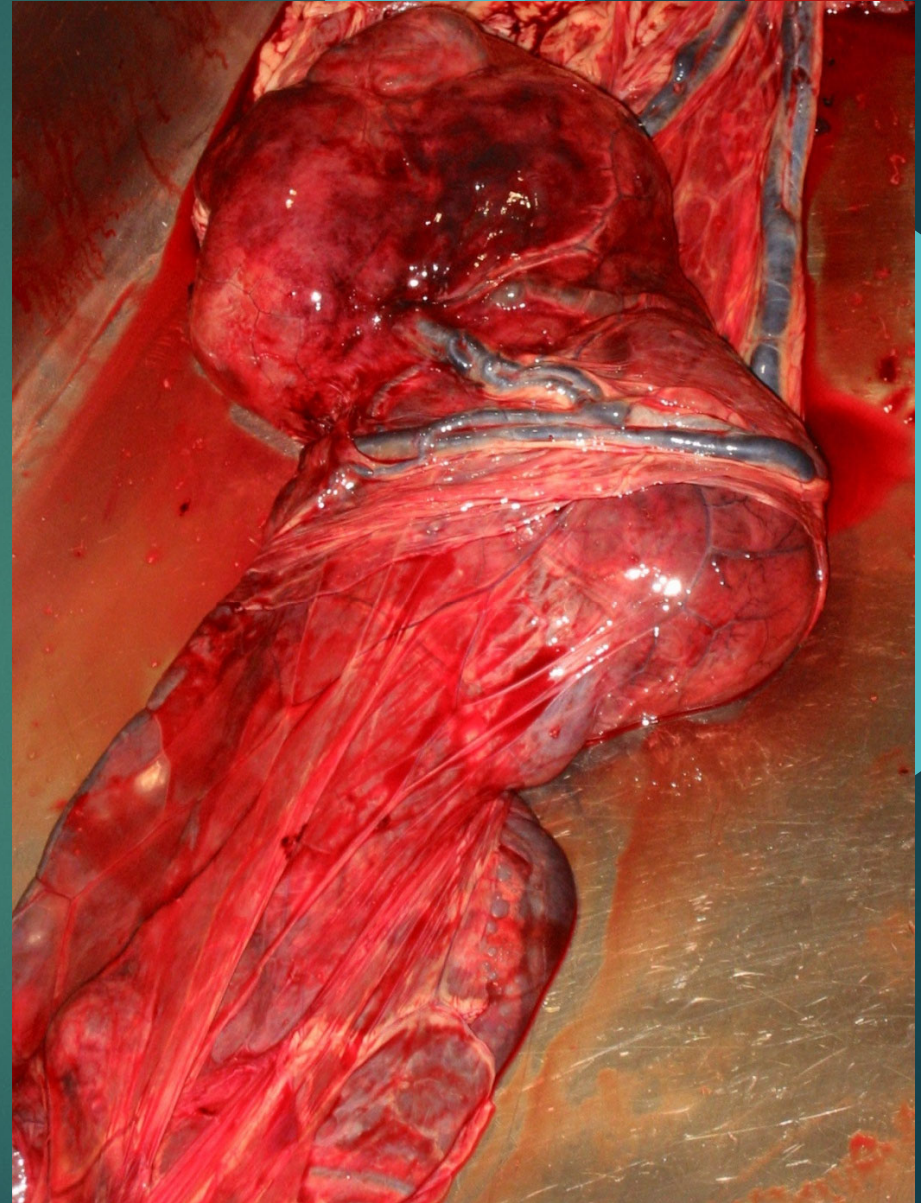
- ▶ Infarcts can occur in multiple organs and are usually caused by occlusion or damage to the normal blood supply.
- ▶ Commonly, certain types of bacteria can plug up arteries causing such lesion.
- ▶ Infarcts can be acute (red/purple) or chronic (pale, tan colored).





# Splenic Torsion

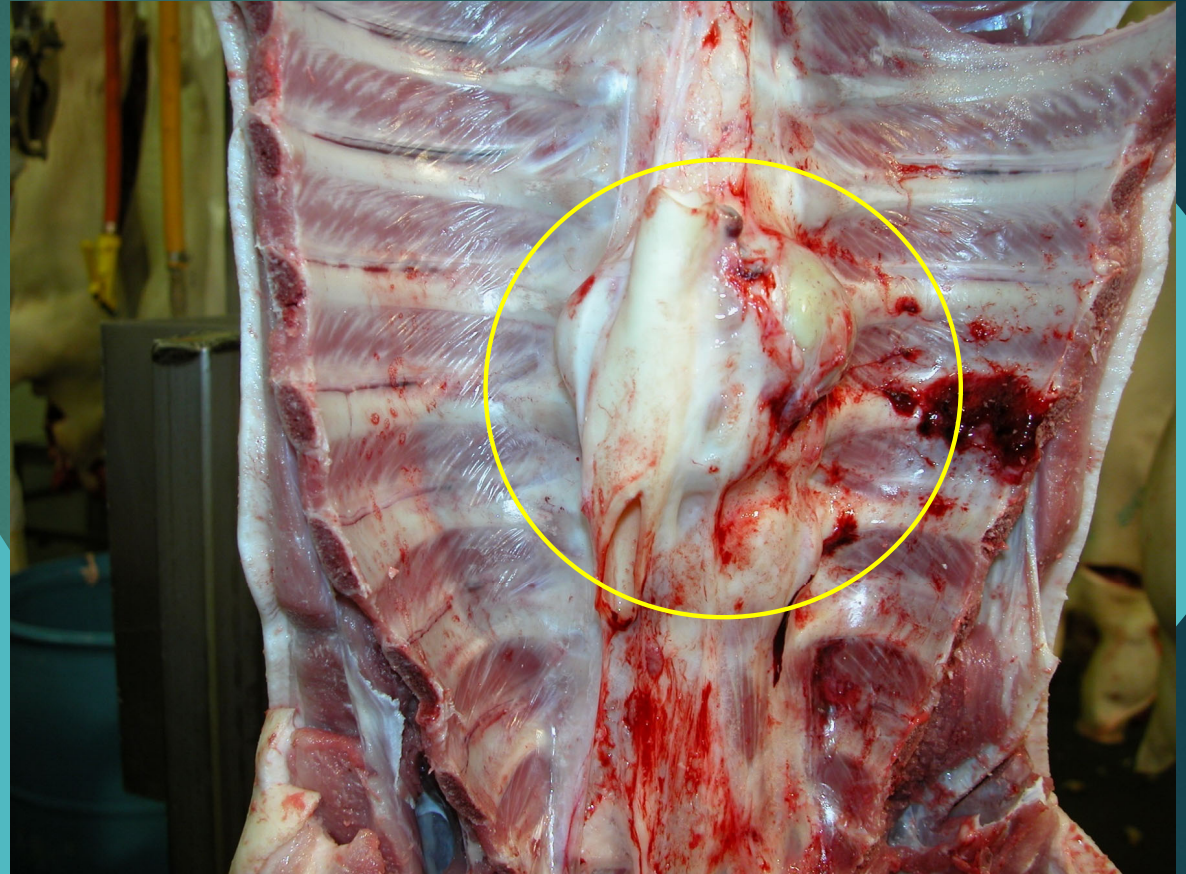
- ▶ A twisting, folding, and unfolding of the spleen.
- ▶ This prevents proper blood drainage, therefore swelling of the spleen can be seen.





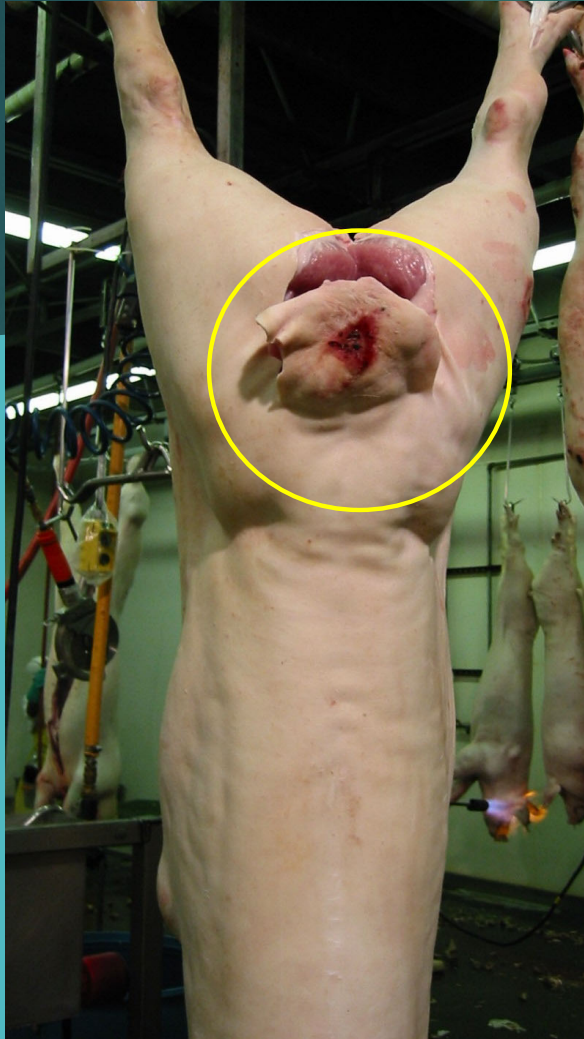
# Tail Bite Abscesses

- ▶ Caused by pigs biting each others' tails. Bacteria then migrates down the spinal cord.
- ▶ If localized, you would have the affected tissues, including any exudate, removed and the carcass passed.
- ▶ If you suspect the condition may be generalized, retain it for veterinary disposition.

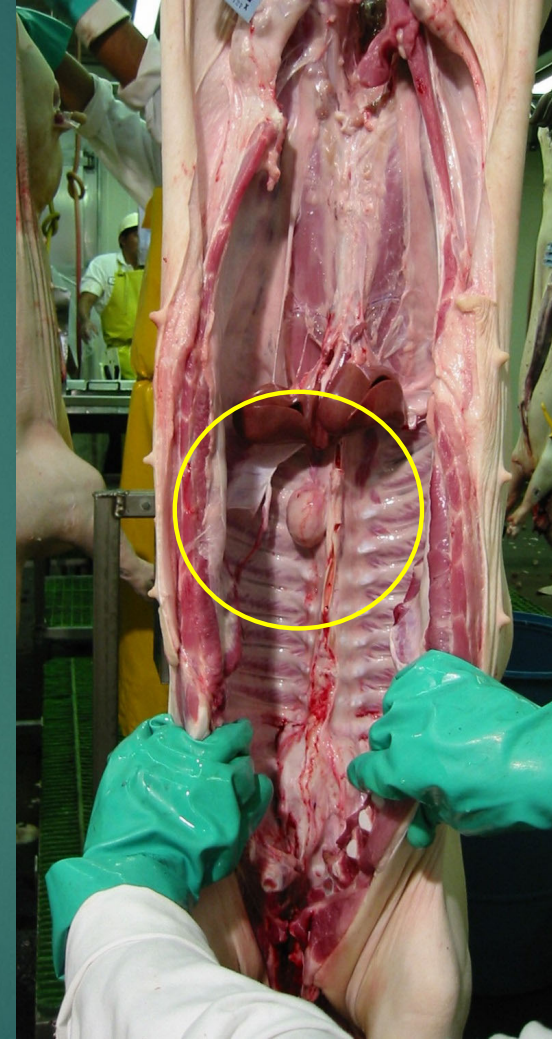




# Tail Bite Abscesses



Evidence of tail bite  
on exterior.



Evidence of tail bite  
on interior.



# Tuberculosis

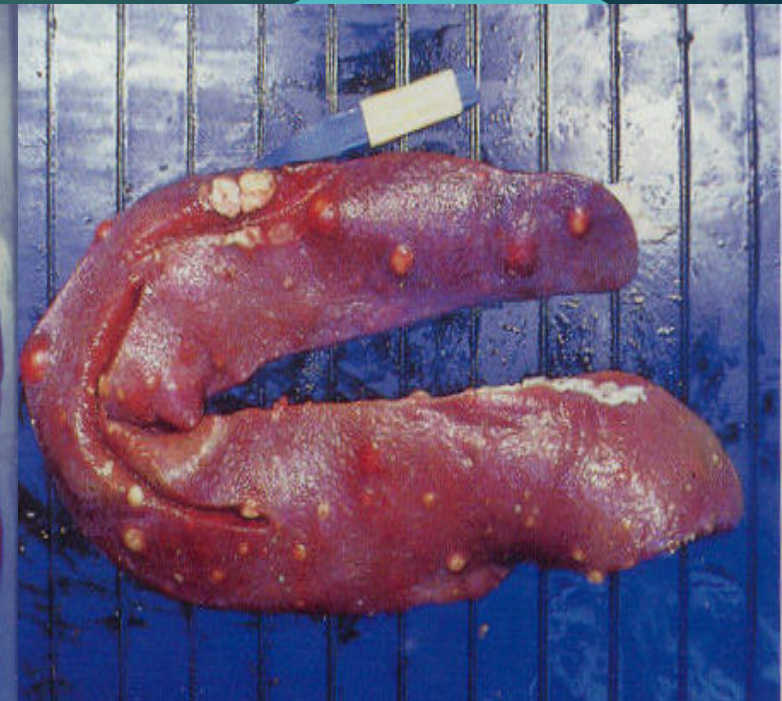
## 9 CFR 311.2



Granulomatous lesions in mesenteric lymph nodes.



Granulomatous lesions in the liver.



Granulomatous lesions in the spleen.