FOSSILS AND PETROLOGY
After a flood, precautions should be taken so that livestock do not get ill by feeding on forages that have been contaminated by soil, bacteria and flood debris contained in flood water. Here are some things to remember:

STANDING FORAGE (PASTURE AND HAY FIELDS)
- First, remove livestock from flood damaged pastures and provide access to clean water and forage.
- Cut the standing forage (pasture and hay) affected by the flood to a 2- to 4-inch stubble height to allow it to decompose. Hay fields that have not been harvested within 2 to 3 weeks should be cut as well.
- Do not make hay from, or allow animals to graze, impacted fields until the damaged forage has fully decomposed.
- When grass has regrown to a height of 8 to 10 inches, livestock may be allowed to graze the pasture.

HARVESTED FORAGE (HAY BALES)
- Feeding hay impacted by flood water can be risky and dangerous to livestock. Do not feed dry hay that has been soaked by flood water.
- Inline wrapped bales that were not sealed on both ends could be contaminated and should not be fed. However, some individual, plastic-wrapped bales may be useable.
- Closely inspect bales for punctures or separation of the plastic layers. If there is no visible damage, the hay may be safe to feed. However, continue monitoring for separation of plastic layers prior to feeding.
- If the plastic separates, the forage will spoil and should be discarded.
- If the plastic remains intact until feeding, closely inspect bales for abnormal smells or colors and the presence of molds and excess moisture at feeding. If any of these conditions exist, the bales should be discarded.
- Damaged hay should be unrolled to allow it to decompose; however, be careful not to breathe the dust from flood-damaged hay.
- A ton of dry hay (2-4 large, round bales depending on size) contains about $50 to $60 worth of fertilizer nutrients. Place the bales on areas with the greatest need for soil amendments.
- Do not unroll hay in areas where livestock currently are, or will be, before the hay fully decomposes.
- As an alternative, damaged hay can sometimes be sold to mining operations for reclamation efforts. If damaged hay can be sold for more than the fertilizer value, this may be the best option for disposal.

ANIMAL HEALTH
Animal health is both a short- and long-term concern in areas impacted by flood waters. Consult a local veterinarian should questions arise regarding animal health.
- Closely inspect all livestock that were exposed to flooded areas for injuries.
- Livestock can consume flood debris, which can cause hardware disease, so remove flood debris from livestock fields as soon as possible.
- Because soil and sediment is moved along with debris, livestock will have been exposed to numerous soilborne pathogens.
- Livestock that were not exposed to flooded areas during the event, but will be placed on a pasture that was previously flooded should also be vaccinated prior to being placed there.
- All age classes of livestock should be vaccinated.
- If livestock have not been vaccinated for clostridial diseases previously, vaccination protocols should include both a primary and a booster vaccination according to label directions. A single vaccination should be sufficient for animals that have been vaccinated previously for clostridial diseases.
- A seven- or eight-way clostridial vaccine is recommended for cattle and sheep, and can be found in combination with tetanus (Covexin® 8, Merck Animal Health).
- A tetanus toxoid vaccine is necessary for horses and other equids, and will require a booster.
- If there is an observed injury, tetanus antitoxin should be administered.

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