TEXAS A&M AGRILIFE EXTENSION

E-599
03-12

Routine and Emergency Burial of Animal Carcasses

Saqib Mukhtar*

Animal carcasses must be handled properly to prevent harm to people, herds, flocks, water, and the overall environment. Several problems can arise if dead livestock and poultry are disposed of improperly (Fig. 1):

- Diseases can be spread to people and animals.
- Carcass fluids can leach into and pollute groundwater (wells).
- Bacteria and viruses can be transmitted to surface water (creeks, ponds, lakes, or rivers).
- Obnoxious gases and odors can be emitted to the atmosphere.
- The carcasses can attract scavengers and rodents and provide a breeding habitat for flies and other insects.
- The sight or smell of dead animals may upset neighbors.

To avoid these problems, all livestock and poultry producers need to plan their responses to animal deaths on their property. If you suspect that a communicable disease is the cause of death, you must report it within 24 hours to the Texas Animal Health Commission. These animals must be disposed of within 24 hours by burial or burning. Animals dying from anthrax or ornithosis must be killed and burned on site within 24 hours.

*Associate Department Head and Extension Program Leader for Biological and Agricultural Engineering, The Texas A&M University System

Photo courtesy of US Environmental Protection Agency

Figure 1. Illegal carcass disposal.

There are two main types of farm mortalities: operational mortalities and catastrophic mortalities:

Operational mortalities are routine deaths that occur at a low but fairly predictable rate. Even well-managed farms and specialty facilities such as zoos and animal sanctuaries need a plan to deal with these carcasses.

Catastrophic mortalities are caused by natural disasters, severe weather events, or disease outbreaks. For these, you may need to establish an emergency disposal system. Permitted animal feeding operations are required to include plans for both operational and catastrophic mortalities in their permit documentation or nutrient management plans.

One of the approved disposal methods for dead animals is burial. In this process, a carcass is placed in a properly selected, enclosed environment such

as an earth-filled trench or pit. Burying animal carcasses properly can prevent or minimize problems for human, animal, and environmental health.

Figure 2. Carcass disposal in the Badlands Landfill, Moreno Valley, CA.

Steps for disposing of animal carcasses

1. Report to the authorities if needed.

If you suspect that a communicable disease has caused an animal to die, inform the Texas Animal Health Commission at 800-550-8242 within 24 hours of death. This requirement applies to veterinarians, veterinary diagnostic laboratories, and people having care, custody, or control of an animal.

If you suspect that a communicable disease has caused an animal death, report it to the Texas Animal Health Commission at 800-550-8242.

For a list of diseases that must be reported to authorities, see the Texas Secretary of State website at **http://info.sos.state.tx.us/fids/200904288-1.html**.

If you plan to bury domestic or exotic livestock carcasses on the farm, you must notify the Texas Commission on Environmental Quality (TCEQ) by a letter. The letter should contain:

- Your full name and address
- The type of animal(s) to be buried
- A short description of the locations on the farm where the carcasses will be buried
- The anticipated capacity of the burial areas
- The materials you will use to cover the carcasses before, during, and after burial

The agency also suggests that you include a map showing the general location of the burial area.

Mail the letter to the Industrial and Hazardous Waste Permits Section, MC-130, TCEQ, P.O. Box 13087, Austin, TX 78711-3087; Phone: 512-239-6595 Fax: 512-239-6383.

If more than 10 animals die at one time and will be disposed of on site, the TCEQ recommends that you contact one of its regional offices. For information on the regional office nearest you, call 512-239-1000 or visit **http://www.tceq.texas.gov/about/directory/region/county.html**.

2. Choose a method.

Two types of burial procedures are discussed for dead livestock and catastrophic poultry mortalities: landfilling and trench burial.

In the **landfilling** process, the carcasses are buried in an engineered, sealed containment area between layers of compacted solid waste and impermeable lining materials. Landfilling (Fig. 2) is an excellent option for disposing of carcasses if they can be moved in large vehicles that can transport them quickly and biosecurely.

Advantages of landfilling

- It is an excellent option for disposing of carcasses in emergencies.
- It can be used when carcasses can be moved in large vehicles that are able to transport them quickly and without transmitting disease-causing organisms.

Disadvantages of landfilling

- Not all landfills can accept animal carcasses.
- This method is more expensive than trench burial.
- There is a higher risk of spreading disease when the carcasses are taken from the farm to the landfill.

What diseases must be reported?

A list of diseases that must be reported to authorities is available at http://info.sos.state.tx.us/fids/200904288-1.html.

In the **trench burial** method, animal carcasses are placed in unlined trenches or pits that are then backfilled with excavated soil. The soil absorbs the leachate

(carcass fluids) and microorganisms; the confined environment deters carnivorous scavengers and holds in heat, which speeds up the decomposition process.

Advantages of trench burial

- This method is simple and relatively easy.
- The equipment needed for trench or pit burial is widely available.
- Onsite burial eliminates the need for moving potentially infectious materials to a landfill.

Disadvantages of trench burial

- Few sites have the appropriate soil and hydraulic (restricted movement of water or low seepage) properties.
- Even buried, the carcass can attract vermin.
- Groundwater is more likely to become contaminated.
- Because the trench walls and bottom are permeable, there's a higher risk of harming the environment. The buried carcasses may continue to produce leachate and gas for many years, contaminating air, soil, and water.
- Trench burial is not an option for routine poultry mortalities. They may be landfilled, composted, rendered, or incinerated.

A routine loss of poultry according to the TCEQ is the death of less than 0.3 percent of the total farm inventory per day.

For poultry: According to TCEQ guidelines, you cannot choose a disposal method that creates a nuisance odor (TCEQ Regulatory Guide, RG-326: *Handling and Disposal of Carcasses from Poultry Operations*).

The TCEQ rules also stipulate that poultry carcasses may be buried only after a major die-off. Routine poultry mortalities cannot be buried.

Approved methods for routine poultry mortality include landfilling, incineration, composting, and rendering. For information on landfilling poultry carcasses, call the TCEQ Waste Permits Division at 512-239-2334. Non-diseased carcasses can be placed in a Type I or Type IAE municipal solid waste landfill permitted by the TCEQ.

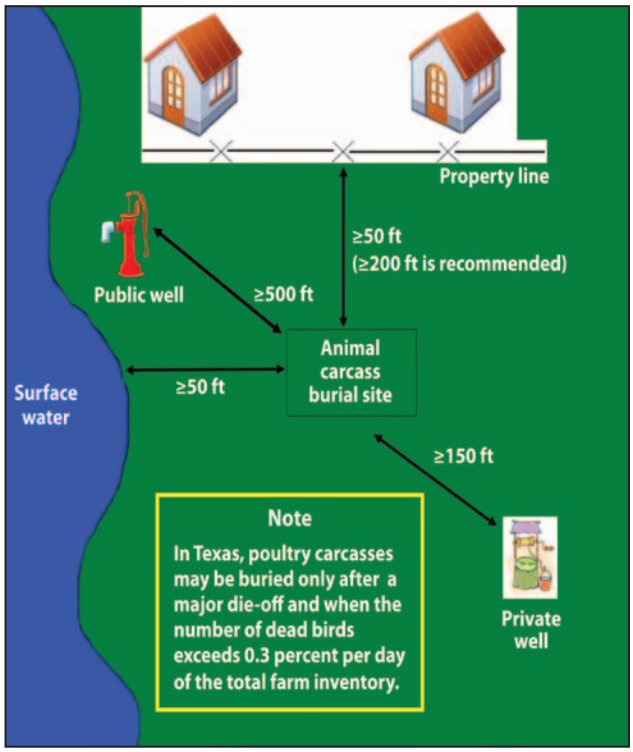

Figure 3. Setback distances for burial of animal carcasses (distance arrows are not to scale).

For information on incinerators, see the Texas AgriLife Extension Service publication, *How Much Does That Incinerator Cost?* It is available at https://agrilifebookstore.org/.

For information on landfilling poultry carcasses, contact the TCEQ Waste Permits Division at 512-239-2334.

3. If you choose landfilling or trench burial, follow the steps below.

Landfilling

Make sure that the landfill can accept carcasses.

- Confirm with the landfill operator that the facility is designed properly (Type I or Type IAE) and can accept dead animals.

Trench burial

1. Identify suitable soils.

The bottom soil should be highly impermeable,

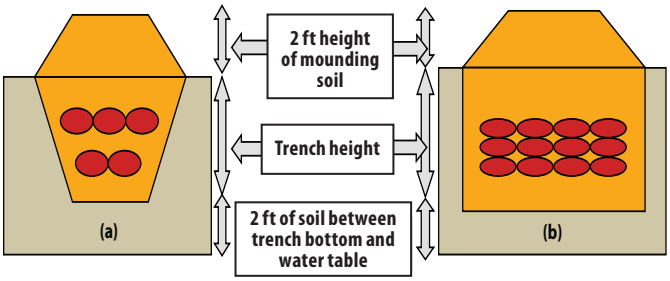

Figure 4. Layout of trapezoidal (a) and rectangular trench (b) for burying carcasses.

without fractured or cavernous rock. Do not bury or leave carcasses in sandy or highly permeable soils.

For information on soils that are suitable for onsite burial of animal carcasses, contact the Natural Resources Conservation Service (NRCS) or other qualified technical service providers.

2. Select a burial site.

Avoid areas with seasonal high groundwater and shallow aquifers. Do not bury or leave carcasses in flood-prone, low-lying areas. Poultry carcasses must be buried outside the 100-year floodplain.

Producers must confirm with the landfill operator that the facility is designed properly (Type I or Type IAE) and can accept dead animals.

The burial site must be more than 500 feet from any public well, at least 150 feet from private wells, and at least 50 feet from surface water and property lines (Fig. 3).

3. Set up a staging area.

Do not move carcasses into a waterway or roadside ditch while awaiting final burial. Instead, set up a staging area at a site that will prevent water from moving onto to the temporarily stored carcasses or running off the carcass storage area.

The staging area should have a compacted bottom, preferably a compacted rock base or an existing concrete pad.

Cover the staging surface with 12 to 18 inches of wood shavings, sawdust, cotton gin trash, compost, spent horse bedding, or any other material that will absorb and contain liquids from carcasses.

Fence off or protect the staging area from scavengers.

If water run-on or runoff is expected, you may need to build a temporary soil berm around the staging area.

4. Prepare the carcasses if needed.

If the carcasses are badly burned or disintegrating, add an absorbent to the damaged carcasses. Appropriate absorbents include soil, sawdust, wood shavings, compost, or spent horse bedding.

5. Move the carcasses to the staging area.

Use a front-end loader or other similar bucket loader or dozer to take the carcasses to the burial site. Place the carcasses on the layer of absorbing material, and cover them completely with the absorbing material or soil to avoid predator problems.

6. Check for buried utility lines.

Call 800-344-8377 to avoid hitting a utility line on your property during excavation.

Remember! Call before you dig.

Before burying an animal carcass, call 800-344-8377 to avoid hitting a utility line on your property during excavation.

7. Dig the trench.

Caution! Prevent trench cave-in hazards by following Occupational Safety and Health Administration standards for the people building or working in or around trenches/pits.

The best cross-sectional shapes for the burial site are trapezoidal and rectangular (Fig. 4). The length of the trench is measured from the cross-sectional area of the trench geometry.

The ratio of trench volume to carcass volume for burying carcasses should be

- 4:1 for one to two layers of large carcasses (1,000 pounds)
- 2:1 for two to three layers of medium-sized or small carcasses

For massive mortalities, make the trenches no more than 12 feet deep and bury no more than two 3-foot layers of carcasses.

If you are digging more than one trench, maintain a minimum distance of 3 feet of undisturbed or compacted soil between two trenches. Leave 2 feet of impermeable soil between the bottom of the trench and the water table (Fig. 4).

Hydrated lime may be used during burial to reduce the potential for spread of disease or odor control.

8. Place the carcasses in the trench.

- If possible, vent (lance or puncture) the carcasses to prevent gases from accumulating and exploding.
- Inside the trench, separate the layers of carcasses with soil cover:
    - o For small animals such as poultry or nursery pigs, the layer should be 1 foot thick.
    - o For large animals such as hogs or cattle, the layer should be 2 feet thick.

9. Place and maintain 2 feet of impermeable mounding soil over the carcasses.
Do not compact the earth-filled trenches; it slows the natural decaying process.

10. Keep records on the locations and numbers of carcasses buried.

For more information

Catastrophic Animal Mortality Management (Burial Method), Technical Guidance, USDA/Natural Resources Conservation Service, Texas State Soil and Water Conservation Board, October 26, 2005. http://tammi.tamu.edu/burialguidance.pdf

Disposal of Domestic or Exotic Livestock Carcasses. 2005. Texas Commission on Environmental Quality publication RG-419 http://www.tceq.texas.gov/publications/rg/rg-419.html

Fires and Wildfires. Texas Extension Disaster Education Network (EDEN) http://texashelp.tamu.edu/004-natural/fires.php

Handling and Disposal of Carcasses from Poultry Operations. 2009. TCEQ publication RG-326 http://www.tceq.texas.gov/publications/rg/rg-326.html

Managing Contaminated Animals and Plant Materials: Field Guide on Best Practices. 2009. The Texas A&M University System. http://tammi.tamu.edu/MortalityTSWGguide-2008.pdf

NRCS TX Conservation Practice Standards: Code 316 Animal Mortality Management. http://efotg.sc.egov.usda.gov/references/public/TX/316tx0503.pdf

Texas A&M AgriLife Extension Service
AgriLifeExtension.tamu.edu

More Extension publications can be found at *AgriLifeBookstore.org*

Produced by Texas A&M AgriLife Communications