



# Routine Animal Mortality Carcass Disposal Manual

2022



Washington  
State Department of  
Agriculture

**ANIMAL SERVICES DIVISION**

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*For copies or information contact:*

**Washington State Department of Agriculture**

PO Box 42560

1111 Washington St. SE

Olympia, WA 98504-2560

[agr.wa.gov](http://agr.wa.gov)

360-902-1800

WSDA Animal Services Division

Washington State Veterinarian’s Office

*Email:* [ahealth@agr.wa.gov](mailto:ahealth@agr.wa.gov)

*Phone:* 360-902-1878

## Overview

Managing livestock deaths requires environmentally sound methods of disposal. There are several options approved by the Washington State Department of Agriculture (WSDA), the Washington State Department of Ecology (Ecology), and the Washington State Department of Health (DOH).

The goal of proper carcass disposal is to prevent livestock disease from spreading, protect public health, and safeguard the economic viability of the state's livestock industry.

This guide covers the disposal of dead livestock or poultry in routine situations. During emergency situations and natural disasters, other disposal options might be identified on a case-by-case basis. Consult with [WSDA](#) and [Ecology](#) to help determine the best methods for carcass disposal options during emergency situations. Regional office contacts for Ecology can be found at [ecology.wa.gov](#) at the 'Contact Us' tab. Contact information for WSDA and the Office of the State Veterinarian can be found [agr.wa.gov](#) by searching for the Animal Health Program. This information is also included at the end of this publication.

This manual will help livestock owners choose the best option for them and how to follow the proper protocols. Livestock owners should still contact their [local health jurisdiction](#) to make sure they are following regulations in their area and know the available options. A list of state health districts is available at [doh.wa.gov](#) by searching for "local health districts."

A list of relevant laws and rules, as well as additional resources, is at the end of this guide.

## What is livestock?

State rules specifically identify livestock to include:

- Horses
- Mules
- Donkeys
- Cattle
- Bison
- Sheep
- Goats
- Swine
- Rabbits
- Llamas
- Alpacas
- Ratites
- Poultry
- Waterfowl
- Game birds

Other species are included with the complete list in Washington Administrative Code 16-25-020, or [WAC 16-25-020](#). Free ranging wildlife are not considered livestock.

## Reportable or unusual mortality disease events

When there is a case of livestock dying or becoming seriously ill due to a contagious disease, these are called "events." WSDA is especially concerned of infectious animal disease events with a large number of animals becoming sick or dying. In cases of a contagious or infectious disease, the carcass should be disposed quickly and on-site to minimize the spread of the disease.

All suspected or confirmed diagnoses of reportable diseases (the complete list is in [WAC-16-70-020](#)) must be reported to WSDA's Animal Health Program as soon as possible. The [WSDA Animal Disease Reporting Tool](#) is provided for veterinarians to report suspected or confirmed diagnoses of reportable diseases, new or emerging diseases, or events associated with unusual levels of mortality. The tool can be found at the WSDA website, [agr.wa.gov](#), by searching for "reportable diseases."

## Carcass disposal options

Livestock producers in Washington have several options for legal and effective carcass disposal. The disposal methods can depend upon specific situations, but the following methods are generally allowed in Washington State:

- Natural decomposition
- Composting
- Incineration
- Burial
- Rendering
- Landfilling

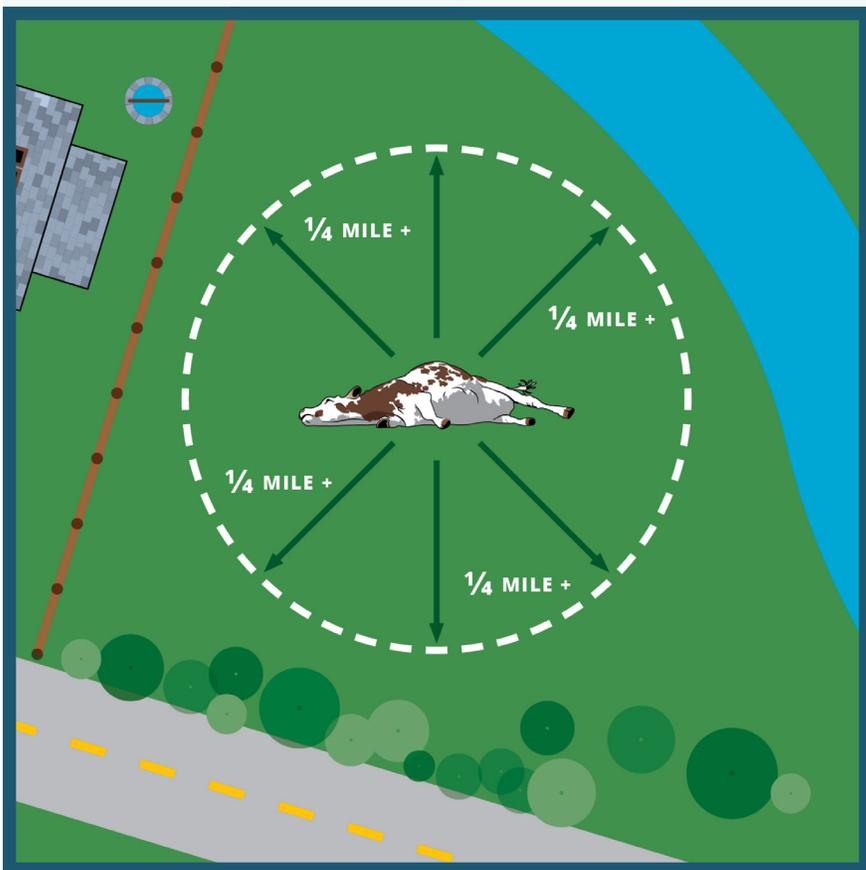
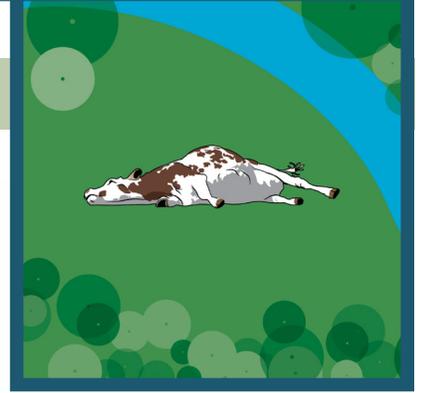
No matter the method selected, the appropriate best management practices found in this guide should be used.

## — NATURAL DECOMPOSITION —

Natural decomposition is decay of a carcass left on the ground without any covering material. A livestock animal that has died on private or state rangeland from something other than a reportable infectious or contagious disease can be left to decompose naturally on that property with the property owner's permission, as long as the carcass is:

- At least a quarter mile from any well, spring, sinkhole, or body of surface water such as a river, stream, lake, pond, or intermittent stream.
- At least a quarter mile from any residence not owned by the owner of the dead animal.
- At least a quarter mile from any public roadway.
- Out of public view.

**Caution:** Animals euthanized with any barbiturates, pentobarbital, other chemicals harmful to animals, or prohibited chemicals or drugs, may not be left for natural decomposition and must be buried or composted soon after death. There is a significant lethal risk to all scavengers, including household pets, if they consume any part of an animal that has been euthanized in this manner as the carcass can retain traces of the drugs for several weeks after death. The U.S. Food and Drug Administration (FDA) prohibits these animals from being sent to rendering plants.



**Figure 1** — Natural decomposition is only legal when the animal can be placed at least 1/4 mile from any well, spring, sinkhole, or body of surface water; 1/4 mile from any residence not owned by the dead livestock owner; 1/4 mile from any public roadway and out of public view.

## — BURIAL —

Burial is an option in some cases and is most effective when disposing of a small number of carcasses. When considering burial as an option, keep in mind these considerations:

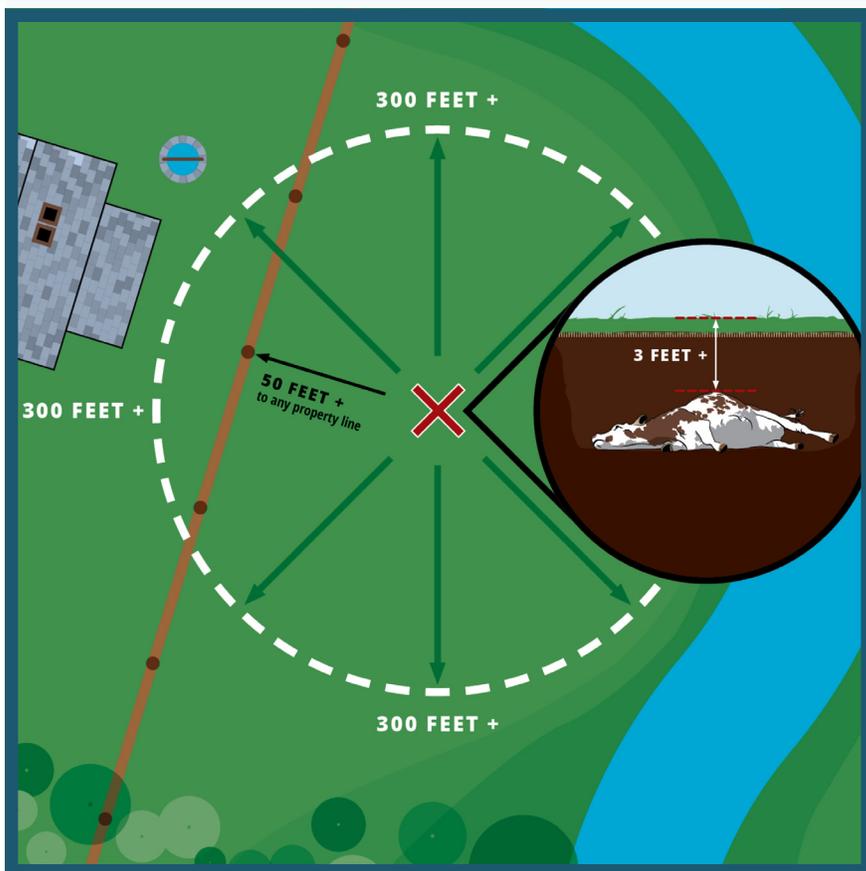
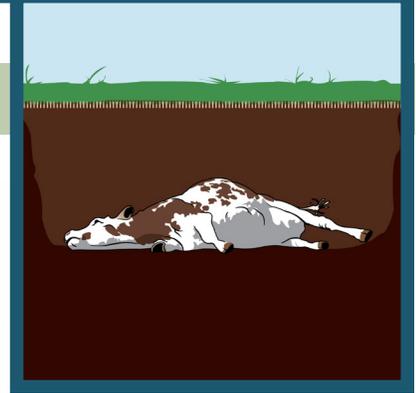
- It is most effective for fewer carcasses.
- There are ground water level limitations.
- Burial is not possible in all locations.

Sometimes burial is an option during disasters. However, consult an expert to evaluate environmental conditions before considering burying a large number of carcasses.

### **Getting started with burial:**

A carcass can be buried on the property where the animal died if the property owner approves. Animals dying off the livestock owner's property can be moved onto the owner's property for disposal. Burial is usually not recommended for animals that have died from a disease.

A carcass cannot be buried on property of less than five acres, unless it is a single carcass weighing less than 200 pounds. The maximum amount of land allowed for burial during any year is limited to 10 percent of the property or one acre, whichever is greater.



**Figure 2** — Disposing of livestock by burial is not recommended in areas of high water tables.

### **A burial site must be:**

- At least 300 feet from any well, spring, or body of surface water, such as a river, stream, lake, pond, or intermittent stream.
- At least 300 feet from any residence not owned by the owner of the livestock animal.
- At least 50 feet from any property line.
- Away from any low-lying areas subject to seasonal flooding, within a 100-year flood plain or in an area that will impact ground water.
- Limited to 1,000 pounds of carcasses or one livestock animal carcass weighing more than 1,000 pounds.

A carcass must be buried deep enough so no part of the carcass is closer than three feet to the natural surface of the ground. After a carcass has been placed in the ground, it must be covered with at least three feet of soil within 24 hours.

Visit the [National Water Information System website](#) to see the ground water level in your area.

## — COMPOSTING —

Composting is a biological process in which aerobic bacteria and fungi convert animal carcasses and slaughter waste, animal by-products, and other raw organic waste, into usable, nutrient-rich organic matter. Composting allows for accessible carcass disposal, often immediately, and protects surface and ground water when managed appropriately. As a way to dispose of a carcass, composting is:

- Recommended and supported by the U.S. Department of Agriculture (USDA).
- Able to digest a carcass with very little residuals when done correctly.



In Washington, three regulatory agencies have overlapping authority over on-farm composting of livestock mortalities. WSDA has authority to regulate disposal of livestock that have died of disease or an unknown cause. DOH regulates disposal of other animal mortalities. Ecology regulates solid waste management, including composting.

Successful carcass composting requires good bulking agents, aerating the pile, and adding water as needed. Under optimum conditions, rapid and complete decomposition of soft tissue will occur.

### **Acceptable methods for composting:**

- Aerated static pile
- In a container
- Using windrow composting

### **Getting started with composting:**

Composting carcasses is a viable disposal option for many operations. Composting works best when it is closely managed from start to finish. Effective composting requires meeting desirable ranges for six conditions:

1. Carbon:Nitrogen (C:N) ratio [ 20-30:1 ]
2. Moisture content [ 50 - 65 percent ]
3. Temperature [ 110-160F ]
4. Oxygen level [ 5-10 percent ]
5. pH 6-8
6. Particle size [ ~2" ]

### **Appropriate carcass composting site considerations:**

- Prevailing winds that do not effect nearby residences, farms or communities.
- Hardened soil pad with adequate slope to encourage on-site drainage.
- A site not affected by potential leachate, odors, or pests.
- A location not on a flood plain.
- A location a safe distance from water bodies, water wells, or drainage leading to water bodies or wells.

### **Resources needed:**

- A carbon source including wood chips in addition to straw, hay, corn silage, shavings, or other high carbon organic waste.
- Nitrogen (found naturally in manure).
- Full or partial carcasses including animal processing byproducts.
- Water.
- Adequate space for the compost pile(s), carbon source storage, and maneuvering vehicles and equipment.
- Heavy equipment such as front-end loaders, with skilled operators to create and turn compost piles.

- Probe-type thermometer with a three-foot stainless steel stem to monitor internal pile temperatures.
- Logbook to record amount and type of compost materials, carcass weights, internal pile temperatures, dates that piles are built and turned, and other observations.
- A qualified compost expert available for the project.

### **Building the compost pile:**

A compost pile should have a two- to three foot base of coarse carbon material, such as wood chips. The carcass should be positioned in the middle of the base, with a buffer of at least two-feet of carbon material on all sides of the carcass. The carcass should be covered with another two to three feet of carbon-rich compost material. It is important to ensure all parts of the carcass are buried at least two feet from any edge. A thick layer of carbon material covering the carcass is essential to help retain heat, reduce odors, and prevent attracting scavengers.

Mixing two or three types of carbon-rich material together works best. The wider the variety of particle sizes in the pile, the better the balance will be among air movement, insulation, pile strength and surface area for microbial activity.

Carbon-rich material include:

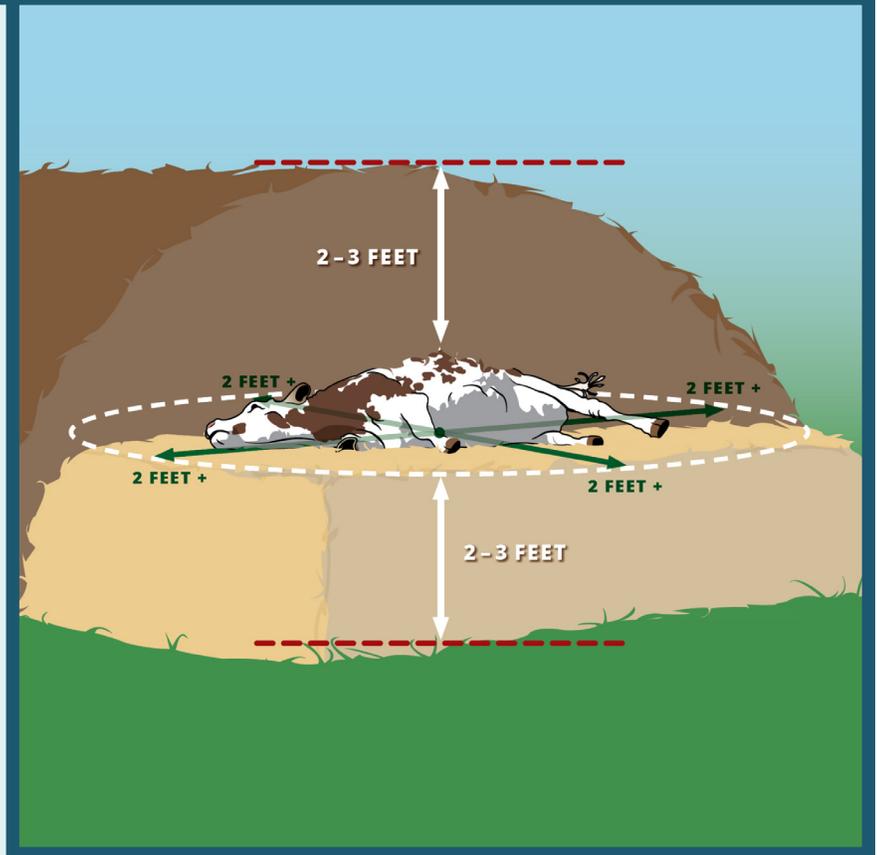
- Leaves
- Waste straw
- Waste hay
- Corn stalks
- Wood shavings
- Dead, dry plants
- Wood chips

For large animal composting, use a front-end loader or other machine to move the carcass, assemble and turn the pile to incorporate air and water after sufficient time has passed to allow for tissue to decompose (3 to 12 months), and to load the finished compost into a spreader truck for land application. A three-foot, long-stemmed thermometer can be used for measuring the temperature at the core of the pile. Temperatures inside the pile should be between 110°F and 158°F, to indicate active aerobic composting. Maintaining internal pile temperatures above 131°F for three days or more helps reduce pathogens such as fecal coliforms and salmonella.

If compost will be distributed off the original farm, it must meet pathogen reduction and other testing parameters specified by Ecology in [WAC 173-350-220](#) Table 220-B.

Water should be mixed into the pile occasionally as the high interior temperatures dry it out. The ideal moisture content for compost materials surrounding the carcass is about 50% water by weight. Too much moisture limits oxygen in the pile, causes odors, and increases the potential for nutrient leaching. Too little moisture limits microbial activity, slows carcass decomposition, and causes odors.

Monitor the compost pile regularly for odors, pests, settling, or disturbance. It is essential to record temperatures and observations weekly in a log book. Record the date, size of carcass, and types of compost material used for each pile.



**Figure 3** — Avoid sites with poor drainage or within 300 feet of surface water and drinking water wells. The carbon to nitrogen (C:N) ratio should be approximately 20:1 to 30:1. Too much nitrogen will result in release of ammonia or water-soluble nitrates that smell and can leach to groundwater or runoff with precipitation to surface water. Too much carbon results in inadequate microbial growth and slow composting.

## — RENDERING —

Rendering is a process that recycles animal carcasses and waste tissue into usable products. This can only be done at licensed rendering plants.

- The process creates a usable byproduct.
- Companies may offer direct pick up services for hauling to processing plants.
- Vehicles need to safely transport carcasses and follow biosecurity practices.
- Animals euthanized with any barbiturates, pentobarbital or other chemicals harmful to animals, or prohibited chemicals or drugs, must be buried or composted soon after death. Federal regulations prohibit sending these animal for rendering.



There are several companies providing this service to livestock producers in Washington. Facilities licensed under the USDA Food Safety Inspection Services (FSIS) that receive dead animals for processing must also obtain a Rendering Plant License from WSDA.

Carcasses and animal parts must be transported in a leak-proof vehicle to prevent disease spread and keep roads clean. Contact Ecology and the Utilities and Transportation Commission (UTC) for more information on loading and transporting animal carcasses. Transporters of animal carcasses must comply with all applicable regulations.

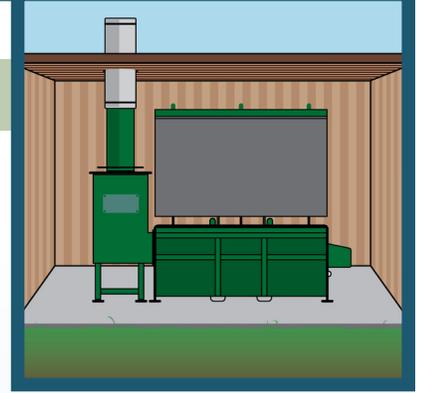
### ***Getting started with rendering:***

1. Contact a Washington rendering company (see [Carcass Disposal Options for Animal Mortality Events](#) interactive map for options or visit [agr.wa.gov](http://agr.wa.gov) and search “Emergency Management.” The map can be found under ‘Carcass Disposal’ on the ‘Animal Health Emergencies’ webpage).
2. Check to see if there are any limits, like capacity limits, service area restrictions, or whether an operation will accept the remains of diseased animals.
3. Make sure the rendering truck follows your farm biosecurity plans when it arrives.

## — INCINERATION —

Incineration is controlled and monitored burning to reduce carcass volume and destroy pathogens. It is done in an enclosed device approved by Ecology or the local air pollution control authority.

Complete incineration of carcasses to a mineral residue must be performed in an approved incineration facility. Using this carcass disposal option requires that the appropriate permits be obtained in advance through Ecology or the local air pollution control authority.



- Best for smaller scale disposal.
- Not readily available everywhere.
- Need to work with an approved facility.

Incineration is an effective method for routine mortalities of smaller carcasses, like poultry. However, it may not be viable for large losses or large carcasses. Ash and gas emissions from the incinerator cannot exceed pollution standards set by the federal Environmental Protection Agency (EPA), Ecology, and the local clean air agency.

### ***Getting started with incineration:***

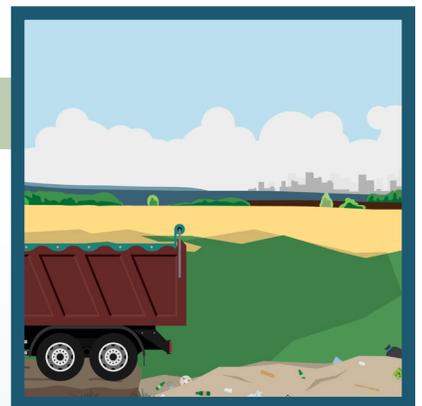
1. Contact Ecology or visit [ecology.wa.gov](http://ecology.wa.gov) and search for “solid waste management” to review information about incineration and see if this is the right fit for your operation.
2. Animal crematoriums and permitted incinerators can be viewed on the [Carcass Disposal Options for Animal Mortality Events](#) interactive webmap. Visit [agr.wa.gov](http://agr.wa.gov) and search “Emergency Management.” The map can be found under ‘Carcass Disposal’ on the ‘Animal Health Emergencies’ webpage.

## — LANDFILL DISPOSAL —

Carcasses can be disposed at permitted landfills if approved in advance by the local health control officer and the landfill operator.

### ***Getting started with landfill disposal:***

1. Contact permitted landfills directly for information on the number of carcasses they can accept and when deliveries are accepted.
2. Check to see if there are any limits on capacity, service area restrictions, or the acceptance of diseased animal materials.
3. Consult with Ecology for additional technical assistance.



## Resources

[Carcass Disposal Options for Animal Mortality Events](#) interactive webmap — This map provides visual guidance of disposal options to support public, federal, state, and local agencies responding to a significant animal mortality event. Visit [agr.wa.gov](http://agr.wa.gov) and search “Emergency Management.” The map can be found under ‘Carcass Disposal’ on the ‘Animal Health Emergencies’ webpage.

[USDA Animal and Plant Health Inspection Service listed slaughter and rendering establishments](#) — USDA APHIS has a list of slaughter and rendering establishments approved to receive livestock and poultry. The list can be found at [aphis.usda.gov](http://aphis.usda.gov) and searching for “Slaughter and Rendering Establishments.”

## Publications

Visit [pubs.extension.wsu.edu/extension-publications](http://pubs.extension.wsu.edu/extension-publications) for publications of the Washington State University Extension.

- Washington State University Extension: [“On-farm Composting of Large Animal Mortalities”](#)
- Washington State Department of Ecology: [“On-farm Composting of Livestock Mortalities.”](#)  
NOTE: Regulatory references in this document are outdated, but composting guidance is applicable.
- USDA APHIS [Carcass Management Tools and Resources](#) (available at [aphis.usda.gov](http://aphis.usda.gov))
- USDA APHIS [Carcass Management Dashboard](#) (available at [aphis.usda.gov](http://aphis.usda.gov))
- United States Environmental Protection Agency (EPA) [Agriculture and Carcass Disposal](#) (available at [epa.gov](http://epa.gov))
- Cornell Waste Management Institute: <http://cwmi.css.cornell.edu/mortality.htm>
- “On-Farm Composting Handbook” (NRAES-54 June 1992). Request a copy by contacting Plant Life and Sciences (PALS) Publishing, call 607-255-7654 or email [palspublishing@cornell.edu](mailto:palspublishing@cornell.edu)

## Washington state laws and rules governing disposal of livestock carcasses

Visit [apps.leg.wa.gov/wac](http://apps.leg.wa.gov/wac) to find relevant rules in the Washington Administrative Code including but not limited to:

- WAC 16-25: Disposal of Dead Livestock
- WAC 16-70: Animal Diseases – Reporting
- WAC 246-203-121: Disposal of Dead Animals
- WAC 173-350: Solid Waste Handling Standards
- WAC 173-351: Criteria for Municipal Solid Waste Landfills
- WAC 173-350-220: Composting facilities and Terms and Conditions for Solid Waste Permit Exemptions

Visit [apps.leg.wa.gov/rcw](http://apps.leg.wa.gov/rcw) to find relevant laws in the Revised Code of Washington:

- RCW 16.36.090: Destruction of Diseased or Quarantined Animals
- RCW 70A.205: Solid Waste Management – Reduction and Recycling
- RCW 70A.15: Washington Clean Air Act
- RCW 16.68: Disposal of Dead Animals

## Frequently Asked Questions

### ***How much time is there to dispose of a dead animal?***

Generally, you have 72 hours to dispose a carcass after it has been discovered. If weather conditions prevent burial and other options are not possible, the carcass must be buried as soon as weather permits.

### ***Who is responsible for carcass disposal?***

The responsibility for disposing of an animal carcass belongs to the owner of the animal or, if the owner cannot be found, the owner of the property where the carcass was found. This responsible party must cover the carcass or remove it from public view as soon as it is discovered.

### ***I don't know the cause of death. Does this affect carcass disposal?***

No. Livestock found dead from an unknown cause are presumed to have died from an endemic (common) disease, so any approved routine disposal method can be used. Anyone owning or responsible for livestock dying from disease must dispose of carcasses in the time frame and manner following state rules and laws.

**Caution:** If you suspect the animal died from a zoonotic disease (one that can be transmitted to humans), do not open the carcass. Instead, notify your veterinarian and WSDA at 360-902-1878 and [ahealth@agr.wa.gov](mailto:ahealth@agr.wa.gov).

All suspected or confirmed diagnoses of reportable diseases (complete list in WAC-16-70-020) must be reported to the Animal Health Program as soon as possible. The WSDA Animal Disease Reporting Tool is provided to report suspected or confirmed diagnoses of reportable diseases and can be found by visiting [agr.wa.gov](http://agr.wa.gov) and searching for "reportable diseases."

### ***What is routine animal carcass disposal?***

Routine carcass disposal is disposal of the carcass of an animal that has died in the normal course of livestock operations.

### ***What is non-routine animal carcass disposal?***

Owners of livestock and poultry are responsible for the proper disposal of animal carcasses from natural disasters or routine mortality. It is understood that in time of disasters and disease events, catastrophic mortality may overwhelm the capabilities of owners/operators and outside assistance may be requested.

Catastrophic mortality loss during emergency situations and natural disasters (e.g., severe storms, floods, wildfires, mass die-offs, etc.) should be reported to the local health department and county emergency management division. If local capabilities are exceeded, state agencies with regulatory authority must be contacted for assistance and approve the method of disposal.

### ***Is burning allowed?***

Open burning of carcasses is not allowed for routine disposal.

## Washington State Veterinarian's Office contact information

Phone: 360-902-1878

Web: [agr.wa.gov](http://agr.wa.gov) and search for the Animal Health Program

Email: [ahealth@agr.wa.gov](mailto:ahealth@agr.wa.gov)