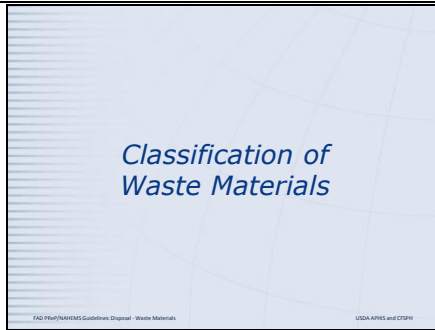


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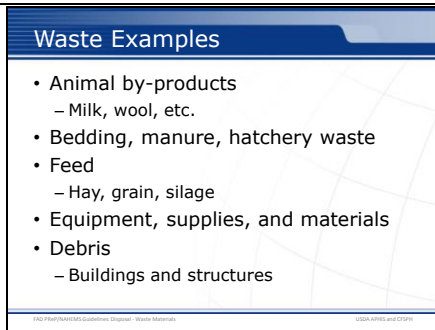
Effective disposal of animal carcasses and associated materials is a critical component of a successful response during an animal health emergency, such as a major disease outbreak or a foreign animal disease (FAD). During an animal health emergency, disposal measures are implemented to prevent the introduction of or mitigate the spread of the pathogen through the elimination of infected, or potentially infected, animal carcasses and associated materials. Disposal also serves to remove potentially contaminated feed or food products from the animal feed and human food supply, protect the nation’s agricultural and national economy, and also - if the disease is zoonotic, safeguard public health. This presentation describes the classification of waste materials and considerations for disposal. [This information was derived from the Foreign Animal Disease Preparedness and Response (FAD PReP)/National Animal Health Emergency Management System (NAHEMS) Guidelines: Disposal (2012)].

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During an animal health emergency involving large numbers of animal mortalities, carcass disposal will be a priority. In addition to animal carcasses, significant amounts of associated materials will require disposal. This section covers the classification of disposal waste materials.

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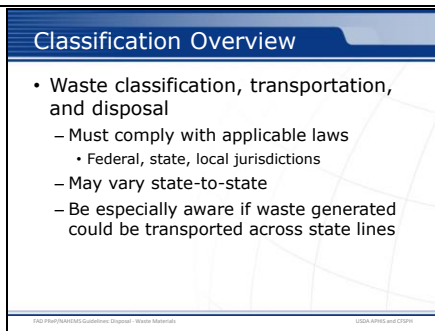


Common waste material types likely to be encountered during a response include:

- Animal by-products—milk, wool, etc.
- Bedding of all types, manure, hatchery waste
- Feeds-hay, grains, silage
- Equipment, supplies, and materials (e.g., personal protective equipment, trash, and sharps such as vaccination or diagnostic syringes and needles)
- Debris, including buildings and structures

All waste materials slated for disposal and/or transport during an FAD response must be correctly classified prior to disposal to assure that appropriate disposal and transportation methods are selected.

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Classification, transportation, and subsequent disposal of waste materials should comply with all applicable laws. Strict consideration needs to be given to federal laws, as well as the laws of the state where the waste is generated and where the waste is disposed of. In some instances, local jurisdictions will also have relevant and applicable regulations to consider. Classification is a determining factor in considering whether a proposed facility is permitted to accept the waste. Because regulations may vary between states, do not assume all states’ waste classification regulations are similar when planning and responding. This is particularly relevant if waste generated during a response could be transported across state lines for further processing.

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Classification Overview

- All non-nuclear waste designated as "solid"
 - Hazardous (solid) waste
 - Medical and infectious (solid) waste
- Utilize professionals to help classify waste



FAD PReP/NAHEMS Guidelines Document - Waste Materials | USDA APHIS and CSFIS

Unless designated as nuclear waste, all wastes are termed "solid"— further classifications may then occur. Solid waste materials related to disposal are likely to be further classified into the following categories: hazardous (solid) waste, and medical and infectious (solid) waste. Waste classifications may vary widely in regards to diseased animal disposal as well as disposal of associated waste materials. Professionals familiar with all regulations in the affected states should be included in planning and response related to waste classification and disposal methods. *[This photo shows the disposal of personal protective equipment that may be used during a disease response. Photo source: Iowa Department of Agriculture and Land Stewardship]*

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Solid Waste

- Subtitle D landfills
 - Accept most types of solid waste
 - Non-hazardous waste
 - Some medical waste
 - Usually privately owned and operated
 - Under no obligation to accept wastes
 - Carcass disposal could be restricted
- Pre-event agreements important

FAD PReP/NAHEMS Guidelines Document - Waste Materials | USDA APHIS and CSFIS

Most waste generated during a response to an animal health crisis will be classified as solid waste. Subtitle D landfills can be used to dispose of solid waste that is not classified as hazardous as well as some medical waste. Most Subtitle D landfills are privately owned and operated; however, some municipalities still operate landfills. The local or state permit or license under which each landfill operates will dictate the range, quantity and types of materials they can accept; however, privately held landfills are generally under no obligation to accept wastes and they could restrict the disposal of response related materials. The development of pre-event agreements regarding the acceptance of appropriate response related solid waste could facilitate and expedite disposal.

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Hazardous (Solid) Waste

- EPA definition
 - "Waste that is dangerous or potentially harmful to our health or environment"
 - Includes liquids, solids, gases, sludges
 - Disinfectants used in an animal health emergency may be considered hazardous waste
- Requires special shipping to a permanent treatment-storage facility


FAD PReP/NAHEMS Guidelines Document - Waste Materials | USDA APHIS and CSFIS

Classification of waste is affected by 40 CFR 262.11; any person generating a waste must determine if that waste is hazardous waste. The EPA defines a hazardous waste as: "waste that is dangerous or potentially harmful to our health or the environment." Hazardous wastes can be liquids, solids, gases, or sludges. They can be discarded commercial products, like cleaning fluids or pesticides, or the by-products of manufacturing processes." Many of the chemicals used to disinfect premises following disposal procedures may be considered hazardous waste. Any response related waste that is classified as hazardous waste will require special shipping and manifesting to a permitted treatment-storage-disposal facility approved to accept the materials being disposed of.

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Medical (Solid) Waste

- "Any solid waste generated in the diagnosis, treatment or immunization of human beings or animals..."
- Regulated by:
 - DOT
 - OSHA
 - FDA
- EPA does not directly regulate medical waste



FAD PReP/NAHEMS Guidelines Document - Waste Materials | USDA APHIS and CSFIS

Some disposal-related waste may be classified as medical and/or infectious waste. The Medical Waste Tracking Act of 1988 defines medical waste as "any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals." Several federal agencies regulate different aspects of medical waste management that could impact disposal including:

- The Department of Transportation (medical waste transportation)
- The Occupational Safety & Health Administration (medical waste in the workplace)
- The Food and Drug Administration (medical devices such as sharps containers)

The EPA does not have any specific or unique regulations on disposal of medical wastes at landfills. *[Sharps such as used hypodermic needles should be placed in appropriate sharp containers. Photo source: Dani Ausen, Iowa State University]*

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Infectious (Solid) Waste

- Regulated medical waste (RMW)
 - Also known as biohazardous waste or infectious medical waste
 - May be contaminated by blood, body fluids, or other potentially infectious materials
 - Must usually be rendered noninfectious before disposal
 - Typically governed by State law

FAD PReP/NAHEMS Guidelines: Disposal – Waste Materials USDA APHIS and CSFIS

Regulated medical waste (RMW), also known as ‘biohazardous’ waste or ‘infectious medical’ waste, is the portion of the waste stream that may be contaminated by blood, body fluids or other potentially infectious materials, thus posing a significant risk of transmitting infection. Most state laws require RMW to be rendered noninfectious before it can be disposed of as solid waste. Contaminated animal carcasses, body parts, and bedding from animals intentionally exposed to pathogens in research, biologicals production or in vivo pharmaceuticals testing may be RMW. Unlike many regulations that apply to healthcare, most regulations governing medical waste are defined at a state, rather than a federal level. EPA also provides guidance on medical-infectious waste. Most waste generated during a response to an animal health crisis will be classified as solid waste. Some waste may be classified as medical waste and little, if any waste, is likely to be classified as hazardous waste.

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Selecting Disposal Methods for Waste

FAD PReP/NAHEMS Guidelines: Disposal – Waste Materials USDA APHIS and CSFIS

Selection of appropriate disposal methods for all generated waste is a critical component of the response during an animal health emergency. This section describes considerations for the selection of disposal methods for waste.

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Waste Disposal Examples

- Additional waste materials can include:
 - Liquid wastes (milk, wastewater, etc.)
 - Manure, litter, slurry
 - Livestock feeds
- Disposal methods vary according to pathogen
 - May include burning, burial, composting, or landfilling

FAD PReP/NAHEMS Guidelines: Disposal – Waste Materials USDA APHIS and CSFIS

In addition to animal carcasses, waste materials generated during response to an animal health emergency can include liquid wastes (milk, dairy wastewater, or fluids from lagoons) and manure, litter or slurry. Livestock feeds such as dry grains, hay, and straw can also act as fomites and should be properly disposed of. Depending on the pathogen, contaminated materials may be burned, buried, or composted. In some cases, off-site management, such as transport to a landfill, could be an option. If this is chosen, biosecurity measures must be utilized to prevent further transmission of disease through transport of this material.

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Pathogen Type/Strain

- Important to understand pathogen type/strain in order to:
 - Prevent further pathogen spread
 - Safeguard human, animal, and environmental health
- Also affects transportation planning, as well as cleaning and disinfection protocols

FAD PReP/NAHEMS Guidelines: Disposal – Waste Materials USDA APHIS and CSFIS

A comprehensive understanding of the type and strain of pathogen is essential to prevent further spread of infection and to safeguard human, animal, and environmental safety and security. In addition, it also weighs heavily in transportation planning as well as human safety—both during disposal activities and following them. Biosecurity and cleaning and disinfection protocols will be largely based on the type and strain of pathogen. The *FAD PReP SOP: Disposal* provides further details regarding potential health risks, disposal methods and potential pathways of pathogen transfer to humans.

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For More Information

- FAD PRéP/NAHEMS Guidelines & SOP: Disposal (2012)
 - http://www.aphis.usda.gov/animal_health/emergency_management/
- Disposal web-based training module
 - <http://naherc.sws.iastate.edu/>

Thumbnail image: NAHEMS GUIDELINES: DISPOSAL, FAD PRéP, NAHEMS, USDA APHIS and CFSIS.

More details can be obtained from the sources listed on the slide, available on the USDA website (http://www.aphis.usda.gov/animal_health/emergency_management/) and the NAHERC Training Site (<http://naherc.sws.iastate.edu/>).

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Guidelines Content

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Thumbnail image: NAHEMS GUIDELINES: DISPOSAL, FAD PRéP, NAHEMS, USDA APHIS and CFSIS.

This slide acknowledges the authors and those who made a significant contribution to the content of the FAD PRéP/NAHEMS Guidelines: Disposal document. Please see the Guidelines document for others who also provided additional assistance with content development.

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Acknowledgments

Development of this presentation was by the Center for Food Security and Public Health at Iowa State University through funding from the USDA APHIS Veterinary Services

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Logos: USDA, Center for Food Security and Public Health, Iowa State University.

Information provided in this presentation was developed by the Center for Food Security and Public Health at Iowa State University College of Veterinary Medicine, through funding from the US Department of Agriculture, Animal and Plant Health Inspection Service, Veterinary Services.