



Carcass Disposal

Overview




K-STATE UNIVERSITY
College of Veterinary Medicine

Method Selection

- Animal species
- Number of animals
 - Space and equipment needed
- Pathogen and its ability to persist or spread
- Environmental issues
 - Soil characteristics
 - Water sources
 - Air quality
- Public health issues
- Regulations

Just In Time Training Carcass Disposal: Overview


CARCASS DISPOSAL METHODS

- Burial
- Subsurface Disposal/Landfills
- Incineration
- Composting
- Rendering

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Burial


- Excavated trench or pit
 - Decomposition and heat
- Puncture/vent carcasses
 - Minimize accumulation of gases
 - Displacement and shift of soil
- Soil characteristics critical



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Burial: Construction and Design


- Trench area
 - 4-8' deep x 6' wide
- Site size/area
 - Depends on species, age/size, quantity
 - 42 cubic feet per
 - 1 adult bovine OR
 - 5 pigs/sheep OR
 - 40 chickens
- Liners to minimize seepage



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Regulations and Monitoring

- Consult State regulations
 - Sites highly regulated
 - Depth, width, length, max size
- Environmental impact
 - Groundwater monitoring
 - Surface water sources
 - Air quality/odor
- Record site GPS location



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Burial: Considerations

- Quick, easy, inexpensive
- Equipment generally readily available
- Takes large areas of land
- Difficult in cold weather conditions
- Environmental impacts
 - Water sources
 - Odor
 - Scavengers
- Public opposition

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Landfills

- Public and privately owned
 - Licensed
- Existing site
 - Leachate and gas collection systems
 - Minimal environmental risk
- Highly regulated
 - Resources Conservation and Recovery Act (RCRA)
- Carcass degradation may take longer



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Landfills: Considerations

- Immediately available
- Minimal environmental risk
- May have limited capacity
- Owner acceptance and terms of use
- Transportation
 - Biosecurity
 - Cost
- Public opposition

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Incineration

- Thermal destruction
 - High-temp combustion
 - Various fuel sources
- Methods
 - Open-air burning
 - Fixed-facility incineration
 - Air-curtain incineration



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Incineration: Considerations

- Complete combustion
- Limited capacity
- Air pollution
- Transportation
 - Biosecurity
- Regulations
 - State approval for process
 - Licensing
- Trained personnel
- Public opposition

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Composting: Design


- Carcasses layered with organic material
 - Microorganisms → heat → pathogen destruction
- Indoor or outdoor
 - Bin or static windrow (pile)
- Requirements
 - Carbon:nitrogen ratio
 - 25:1 to 40:1
- Biofilter layer



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Composting: Process

- Two phases
 - Active phase
 - Aeration essential
 - Curing phase
- Monitor frequently
- Aeration
- Odor, vector control



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Composting: Considerations

- On-site process
- Adaptable process
- Nutrient rich end product
- Transport of co-compost material
- Predators and scavengers

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Rendering

- Off-site process
 - Transport of carcasses
- Heat conversion into
 - Meat and bone meal
 - Fat/Tallow
 - Water
- Dry rendering
 - Batch or continuous process
- Tell renderer cause of death

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Rendering: Considerations

- Facilities have procedures for biosecurity, wastewater, byproducts
- Process closely regulated
- Transport of carcasses to site
 - Biosecurity
 - Leak proof containers
 - Coordination
 - Temporary storage may be needed

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Alkaline Hydrolysis

- NaOH or KOH hydrolysis
- Sterile aqueous product
- Advantages
 - Highly automated
 - No emissions, minimal odor
- Disadvantages
 - Effluent disposal
 - Lack of availability

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Carcass Disposal Considerations

- Site location
 - Soil topography and area
 - Slope, permeability
 - Proximity to water sources, public areas
 - Subsequent use of site
 - Regulations
- Environmental impacts
 - Water source contamination
 - Air quality
 - Scavengers

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Carcass Disposal Considerations

- Biosecurity
 - Personal protective equipment
 - Movement control
 - Cleaning and disinfection
- Site security
 - Unauthorized persons
 - Log book
 - Warning or restriction signs
 - Site security personnel

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Carcass Disposal Considerations


- Transporting infected materials
 - Closed, leak-proof
 - Liquid collection/absorption
 - Required permits
 - Applicable laws/regulations
- Safety Issues
 - Physical and psychological
- Regulations
- Public perception



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Disposal of Other Products

- Milk, wastewater, feed, grain, manure, bedding, wool
- Similar options as for carcasses
- Site selection guidelines apply
- Land application following treatment for manure, litter, slurry



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Resources

- USDA Foreign Animal Disease Preparedness (FAD PReP) Guidelines: Disposal
 - http://www.aphis.usda.gov/animal_health/emrs/nahems.shtml
- USDA Foreign Animal Disease Preparedness Standard Operating Procedures (SOP): Disposal
 - http://www.aphis.usda.gov/emergency_response/tools/aphis_role_emergency_tools.shtml

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