


Airborne Disease/Issues

- HPAI-High Path Avian Influenza
- Brucellosis suis
- Fowl Cholera-*Pasteurella multocida*- *pass word protected video*
- Floods/ Blizzards/ Fire / Barn collapse
- Virulent Newcastle
- African Swine Fever
- Listeria

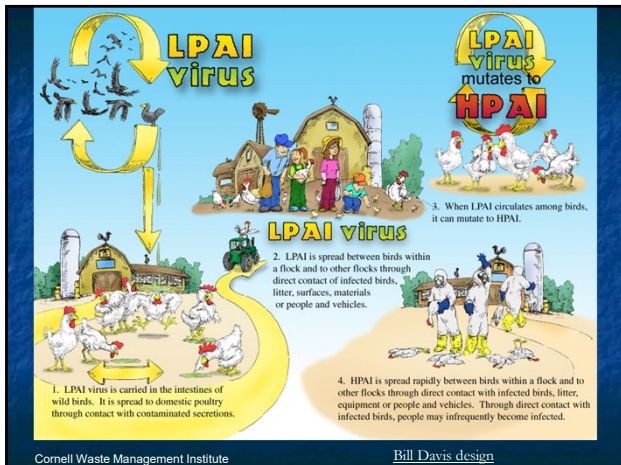


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Endless Applications

- Road kill
- Fish and Seafood Residuals
- Recalled Meat
- Source Reduction for Prion Diseases
- Mass Casualty
- Butcher Waste
- Beached Marine Animals
- Farm Mortality, etc...
- Mink-COVID
- LPAI & HPAI—Bird Flu

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Mortality Disposal & Environmental Implications

Jean Bonhotal, Cornell Waste Management Institute
<http://cwmi.css.cornell.edu>

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Response to High Path Avian Influenza Outbreak 2015

35 pounds
 5 days from onset

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The Composting Process

Air, Moisture and Shelter

FEEDSTOCKS	MANAGEMENT	METHOD

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Composting Methods

Static Pile
Passively Aerated OR
Turned Windrow

In-Vessel – buildings, bags,
cylinders

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Select a site

- Water
- Air
- Slope, soil conditions
- High and dry
- Amount and storage of feedstock
- Access to work on pile
- Population density

Make sure you are not close to wells, streams, water bodies. Check depth to groundwater. Look for plants that indicate wet areas.

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PPE

Use of Devices

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Avoid Disease Spread

- Move Animals as little as Possible
- Keep animals in a structure if able
- Keep animals off the ground
- Consider air handling systems
- Employees/labor/Farm Crew
- Off- Farm Crews

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Carbon/Feedstocks

- Fine Carbon
- Coarse Carbon

Mixed Carbon

Very Coarse Carbon

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Carbon Sources

Clear a barn center to place a bed of carbon

Wood shavings

Hot manure pile

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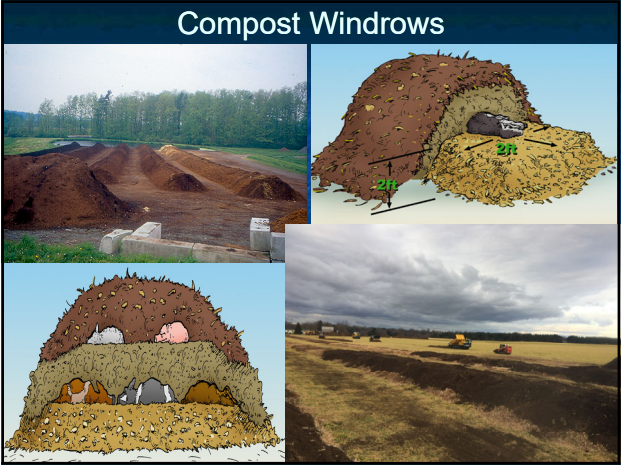
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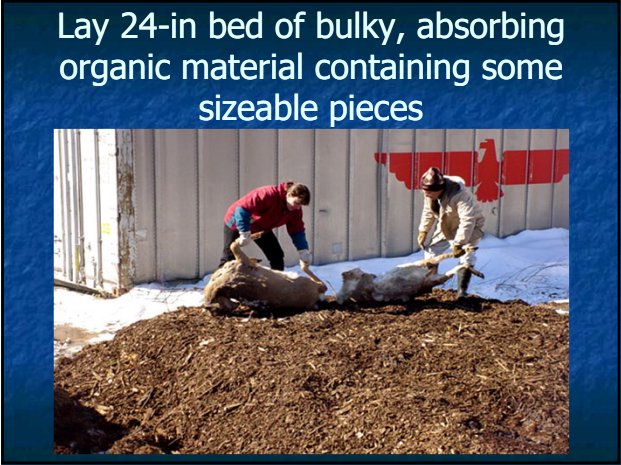
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Layering Medium Sized Animals



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Pile Building – Cornell

- 24" wood chips
- 2 deer
- 12" wood chips
- 2 deer
- 24" wood chips

Temperature recorded via data loggers – recorded every ¼ hour




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Wood Chip Analysis – Day 0

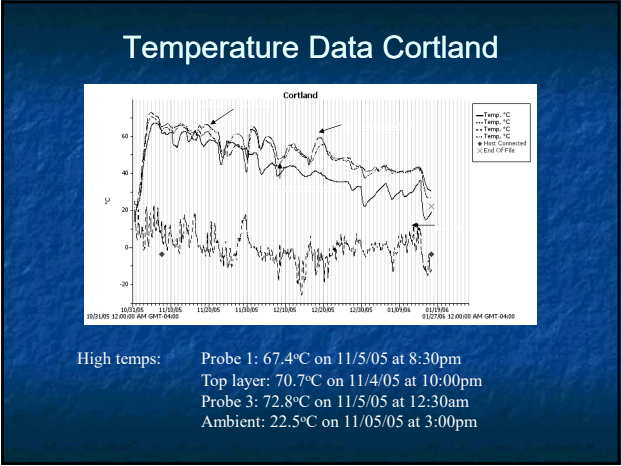
Pile	% solids	Fecal Coliforms (MPN/g solids)	<i>E. Coli</i> (MPN/g solids)	<i>Salmonella</i> spp. (MPN/4g solids)	Fecal Strep (MPN/g solids)	Fecal Enterococci (MPN/g solids)
Watertown	36.5	1.9 x 10 ⁵	2800	0.71	6.9 x 10 ⁶	3.2 x 10 ⁶
Cortland	57.2	1.2 x 10 ⁴	2000	0.47	5.0 x 10 ⁶	1.5 x 10 ⁵
Highland	54.5	1.4 x 10 ⁵	140000	0.49	1.3 x 10 ⁷	9.2 x 10 ⁴

Analysis done by Woods End Research Laboratory, Mount Vernon, ME

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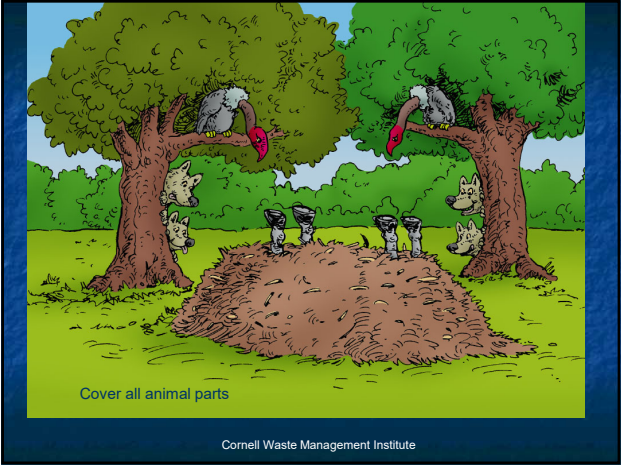
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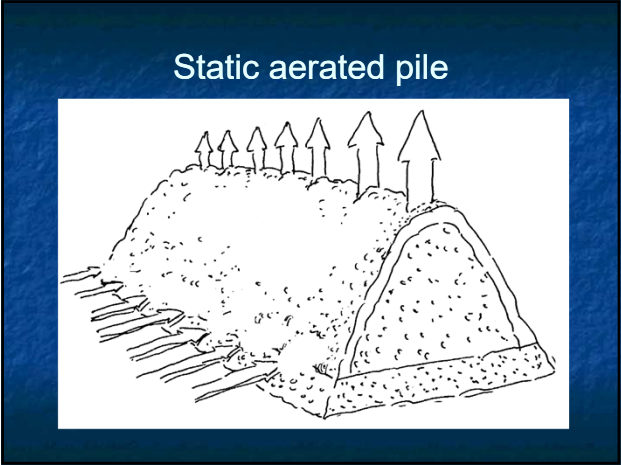
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Time it takes

- Well stacked pile should heat up in 12-24 Hours.
 - Month 1- cooked meat
 - Month 2- meat is digested
 - Month 3- clean bones
 - Mature compost 6-9 months
- Frozen Animals placed in piles- Feb 2004 piles registered 40 F
- Late May-reached temperatures of 130 F

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Small Animals/ Butcher Residual

- Poultry -14 days for initial composting
- Butcher Residual- no bones
- Fisheries-16-24 days
- RoadKill- 9 months
- Bones/ teeth/ hair or wool

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Mortality Composting
 Materials address composting as a method to manage livestock mortalities (including mass mortalities resulting from avian influenza), butcher wastes and road killed animals.

<https://cwmi.css.cornell.edu/mortality.htm>

- *Natural Rendering: [Composting Livestock Mortality & Butcher Waste](#)
- *[Avian Influenza and Poultry Composting](#)
- *Composting Road Kill
- *Horse Mortality: Carcass Disposal

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USDA Animal & Plant Health Inspection Service
SOP's

- FY2016 HPAI Response Mortality Composting Protocol for Avian Influenza Infected Flocks
https://www.aphis.usda.gov/animal_health/emergency_management/downloads/hpai/mortalitycompostingprotocol.pdf
- Composting Livestock 2017 Livestock Mortality Composting Protocol
https://www.aphis.usda.gov/animal_health/emergency_management/downloads/nahems_guidelines/livestock-mortality-compost-sop.pdf

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Northern Right Whale



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