The background is a teal color with a subtle sunburst effect emanating from the top left, creating a shimmering pattern over a textured surface that resembles water. The text is centered and rendered in a light yellow-green color.

USDA APHIS  
Highly Pathogenic Avian  
Influenza Biomass Disposal  
Support Tools

September 2007

# Contact Information

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USDA APHIS

Environmental Protection Program Manager

4700 River Road, Unit 124, Room 2A-02.42

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301-734-0626

# Overview

- Introduction
- Emergency Operations planning
- Biomass Disposal Issues
- Response Tools

# Introduction

- USDA APHIS mission – to protect American agriculture
- APHIS is lead Federal response agency for animal disease outbreak

# Emergency Operations Planning

- APHIS Emergency Operations Center
- Incident Command Group
- Carcass Disposal Working Group

# APHIS Carcass Disposal Working Group

- Over 150 members
- US, Canada, Australia, UK, Jamaica
- National and state governments
- Academia
- Industry
- Mission: to develop user-friendly, environmentally-sound disposal tools for responders in the field

# Disposal Option Criteria

- Control outbreak spread
- Minimize adverse environmental impacts
- Applicable to various locations
- Minimize need for resources (funding, labor, chemicals, utilities, fuel)

# Carcass Treatment/Disposal Options

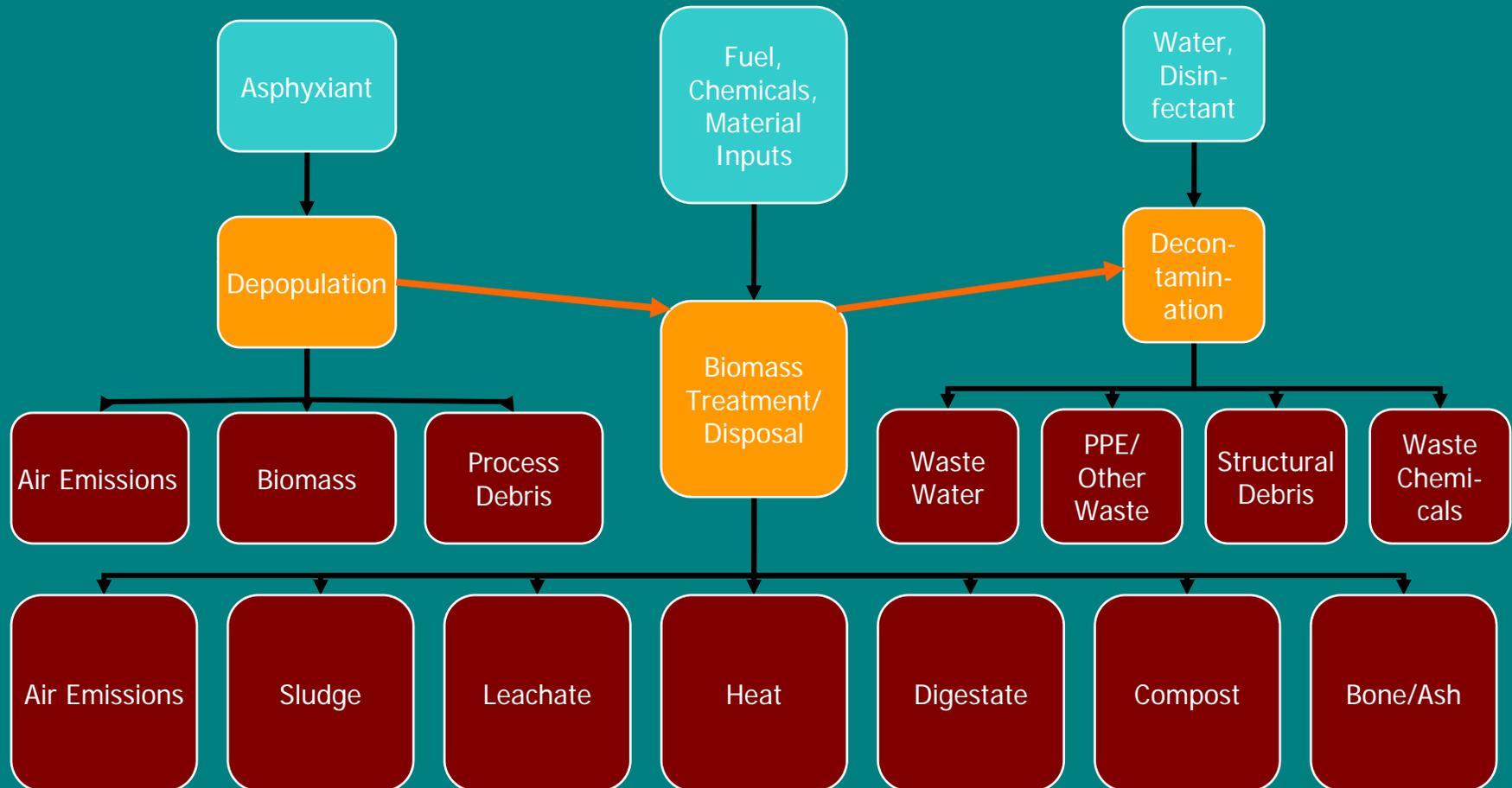
Disposal Option	Controls Spread of Pathogen	Applicable to Various Locations	Minimizes Inputs (capital, labor, energy, chemicals)	Minimizes Environmental Impacts
On-Site Burial	Yes	Yes	Yes	No
Landfill	Yes	Yes	No	Somewhat
Incineration	Yes	Yes	No	No
Composting	Yes	Yes	Yes	Yes
Lactic Acid Fermentation	Yes	No	No	Potentially
Alkaline Hydrolysis	Yes	Yes	No	Somewhat
Anaerobic Digestion	Yes	No	No	Potentially
Preprocess Onsite and Transport	Potentially	Yes	Somewhat	Potentially

Subjective rankings based on “Carcass Disposal: A Comprehensive Review”, National Agricultural Biosecurity Center Consortium, August 2004.

# Emerging Technologies

- Gasifier
- Microwave
- Plasma Arc
- Mobile Rendering
- Waste-to-Energy

# Response Process Components



# Onsite Burial



# Landfill Disposal



# Open Burning



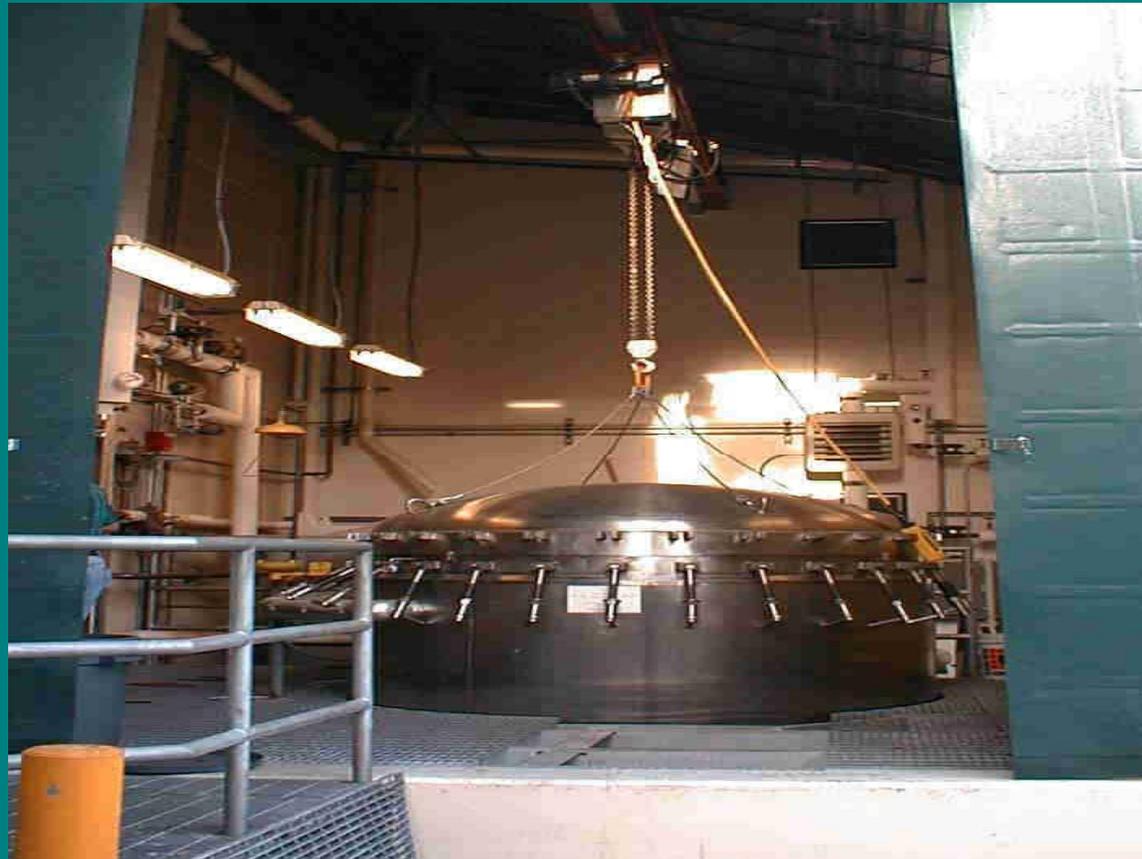
# Incinerators



# Composting



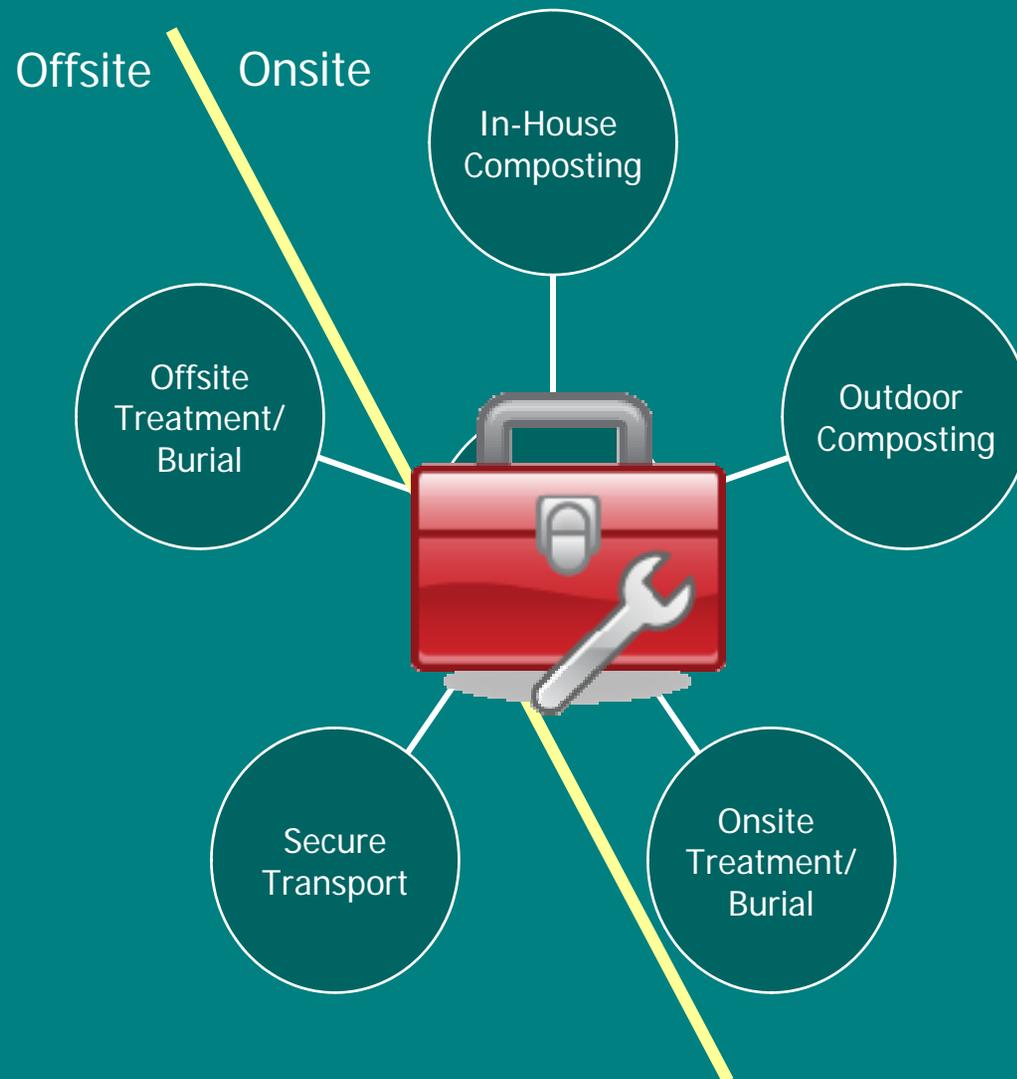
# Tissue digesters



# Facility Types



# The Tool Box Approach



# Tools Available or Being Developed

- In-House Composting training module (available)
- Outdoor Composting training module (available)
- Secure Transport training module (available)
- Off-site Treatment/Disposal training module (under review)
- On-site Treatment/Disposal training module (in progress)
- Cleaning and Disinfection training module (in progress)
- Depopulation training module (future)
- On-line Disposal Support Tool (available/in progress)
- Health and Safety Plan Template (available)
- HPAI Worker Protection Guidance (available)



File Edit View Favorites Tools Help

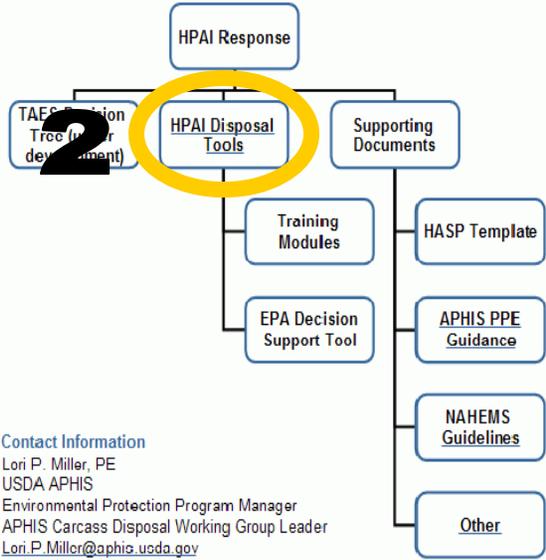


address <http://www.aphis.usda.gov/vs/ep/hpai-response.html> Links Customize Links Free Hotmail Windows Windows Marketplace Windows Media APHIS Home Page Employee Express

1

- [Emergency Management Response System](#)
- [Report a Pest or Disease](#)
- [HPAI Response](#)
- [Response Documents](#)
- [Reference Library](#)
- [Training](#)
- [Subscribe to the EMOC Notification List](#)
- [Site Map](#)

Mission Functions Staffs Search



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APHIS Carcass Disposal Working Group Leader  
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Wednesday, February 14, 2007



Presentation7 USDA - Anim... National Cent...

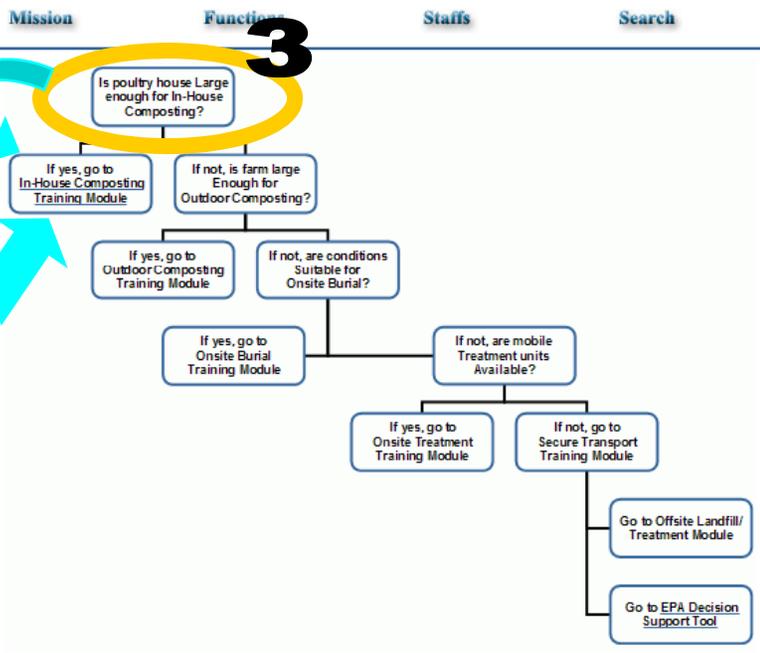


### National Center for Animal Health Emergency Management

United States Department of Agriculture

Animal and Plant Health Inspection Service

- Emergency Management Response System
- Report a Pest or Disease
- HPAI Response
- Response Documents
- Reference Library
- Training
- Subscribe to the EMOC Notification List
- Site Map



Wednesday, February 14, 2007



## In-House Composting

Select one of the following items:

- Introduction
- PPE for Avian Influenza
- ICS Disposal Unit
- Preparation for Composting
- Materials & Calculations
- Assembling a Windrow
- Monitoring, Turning and Disposal of Compost
- References
- Summary



5

Interactive Online Training Modules  
Public Access

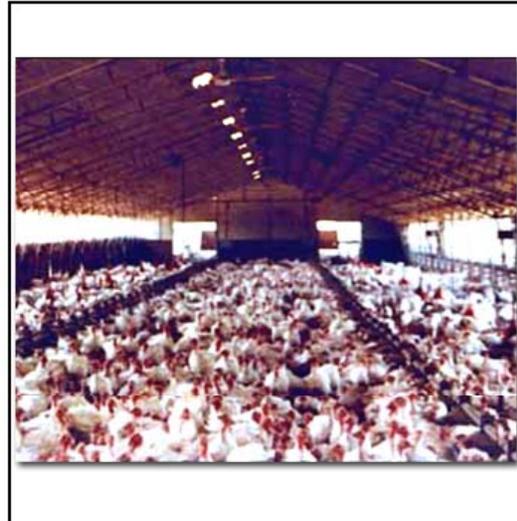


### Considerations for In-House Composting

After assessing the facility, you must collect data about the poultry. This information will be used to calculate resources for composting operations.

The requirements for composting at a given site are influenced by the specifics of the site. These considerations include:

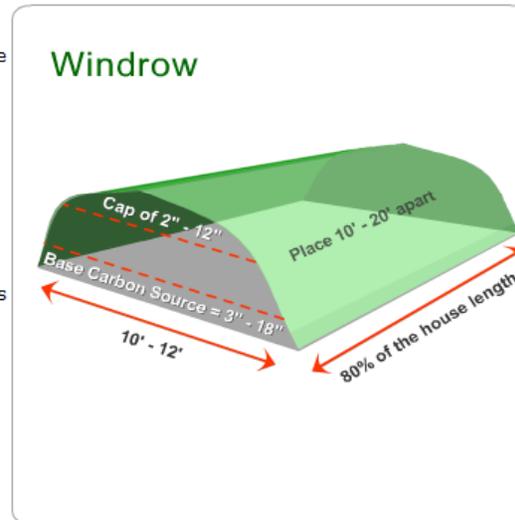
- [Bird species](#)
- [Average bird weight](#)
- [Production type](#)
- [Litter depth](#)
- [Litter moisture and condition](#)
- [Location of carcasses](#)
- [Ability to cap/turn piles](#)





### Mixing and Piling (2 of 2)

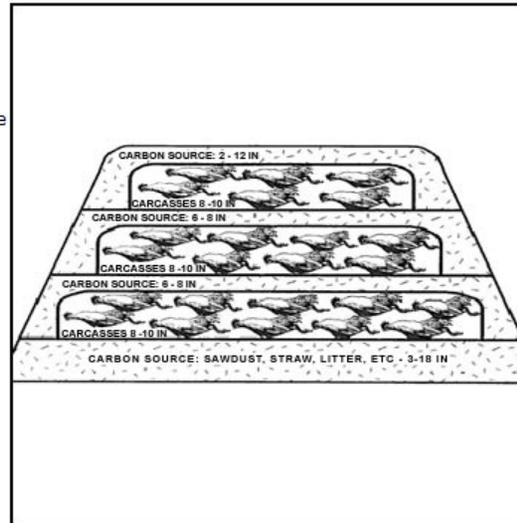
- Starting with a 3-inch minimum base of carbon source, use the feed line as a guide and mix the carcasses with the carbon source to start the formation of the windrow.
- Continue to roll the materials from along the sides together to form a windrow 10-12 feet wide in the center of the house or twice the reach of your loader so you can get to the middle from each side of the windrow.
- Cover (cap) the pile with a 2-12 inch thick layer of litter or sawdust, covering all carcasses and bird parts





### Layering (2 of 2)

- Spread carcasses evenly with rake or pitchfork until the carcass layer is 8 - 10 inches thick
- Deposit a 6 to 8-inch layer of clean carbon source over the birds with a foot overlap on the sides
- Repeat layering procedure as needed until the pile is 4 to 6 feet high, depending on height of ceiling
- Finish with a 2 to 12-inch layer of clean carbon source over the birds
- **Leave NO carcasses or bird parts exposed.**





## Personal Protective Equipment (2 of 4)

PPE required for In-house composting operations (continued):

Respirator - Carcass disposal team members must use an N-95 or higher protection disposable particulate respirator that has been fit-tested and meet respiratory requirements defined by OSHA in 29 CFR 1910.

The following respirators satisfy OSHA requirements:

- 3M 8210, N-95
- 3M 8270, N-95
- 3M 8511, N-95
- Moldex 2700, N-95
- Survivair full-face respirators, 4000 series
- MSA Millenium full-faced respirators
- MSA Advantage 3000 full-faced respirators





### Personal Protective Equipment (3 of 4)

Decontamination trailers may be incorporated into the carcass disposal operation. Workers may be transported from the carcass disposal site to the decontamination location where they will remove contaminated clothing, shower and don clean clothing prior to going home.

The following foot protection procedures apply on-site and at decontamination locations.

- Protective shoe covers or polyurethane boots that can be disinfected or discarded
  - Shoe covers should be put on when leaving your vehicle and taken off when getting back into the vehicle
  - Keep a trash bag in the car to dispose of them
  - Dirty feet never touch the inside of the vehicle
  - Spray shoes with disinfectant before getting back into your vehicle
  - Floor mats should be disinfected at the end of each day



### Building Windrows Cont.

#### Treat Excess Contaminated Litter

Place excess contaminated litter in windrows to compost and deactivate pathogens.

#### Disinfect tools and site

- ✓ Disinfect all tools and equipment from house after forming windrows
- ✓ Disinfect site according to approved disinfection procedures

#### Turn up heat in poultry house

Turn up to 100F for 1-3 days to expedite composting process and eliminate the pathogens on surfaces.

### Monitoring and Turning

#### Temperature Monitoring

1. Use a 3-foot long digital temperature probe connected to a data logger to take daily readings. Digital recording thermometers reduce the need to enter the building to once a week.
2. Use at least 2 probes per windrow. Best to have 1 at outside edge and 1 in center of windrow every 10 ft.
3. Put tip of thermometer in contact with carbon source layer at the center of the windrow.  
**NOTE:** If the temperature reaches 180F, monitor and/or turn the hotspot to prevent fire hazard.

#### Turning windrows

1. Turn windrows when temperature drops below 125F.
2. Turn inside house, shifting windrows toward ends.
3. Scrape along edges of the turned windrow and deposit material on top.
4. Cap with at least 4 inches carbon source to cover any exposed tissue.
5. Cover pile with compost fleece or another suitable porous fabric to protect from scavengers. Do not use airtight cover as this will cause condensation and may negatively affect the composting process.
6. Secure the material using dirt and soil on the edges or some other means to restrict scavengers access.

Weight	1 <sup>st</sup> Turn	2 <sup>nd</sup> turn/removal
4lbs	10 days	20 days
10lbs	16 days	28 days

#### Post-turning monitoring

2-3 weeks after 1<sup>st</sup> turning, test compost for maturity using a test kit such as Solvita.

### Disposal

2-3 weeks after the 1<sup>st</sup> turning, compost may be land applied and incorporated in accordance with the nutrient management plan for the soil and crop or hay. Total time may vary by locality and season depending on the temperature. The cooler the weather, the longer this process takes. If the temperature is below freezing, you may have to wait until spring before compost is assumed to be pathogen-free. If no growers are willing to take the mature compost, it should be landfilled as a nonhazardous waste.

### Important Numbers and Websites

#### Numbers

State veterinarian \_\_\_\_\_  
University extension \_\_\_\_\_

#### Websites



## Procedures for In-House Composting of AI- Infected Poultry Carcasses

This brochure contains information about composting AI-infected poultry mortalities inside poultry houses. It's divided into four sections:

- ✓ Steps you can take now to prepare for in-house composting in the event you have to implement it.
- ✓ Composting procedures
- ✓ Procedures to follow after composting
- ✓ Contact numbers and websites

## Preparation

If your poultry houses have enough ceiling clearance, in-house composting is a highly effective means to dispose of large numbers of poultry carcasses.

There are a number of steps you can take right now to prepare in the event of an outbreak.

- ✓ Obtain contact information for the proper authorities which may include: State veterinarian, poultry company personnel and university extension personnel.
- ✓ Identify any permits required to compost in your region especially those from APHIS and state/local environmental personnel.
- ✓ Determine the composting method best suited for your facility.
  - Mixing and Piling - ideal when carcasses are distributed more evenly over the litter surface. Less expensive than layering.
  - Layering - if depopulation concentrates carcasses in a small section of the house
  - Shredding and Piling - not preferred for highly pathogenic organisms
- ✓ Determine carbon source needs – This is the bulking agent used for moisture and odor control and as necessary ingredient for microbes to produce compost. Identify sources in advance.

### Acceptable carbon sources include:

- Litter
- Silage
- Wood chips
- Corn husks
- Sawdust
- Bedding material
- Straw

## Carbon Source Calculation Equations

$Pounds\ of\ Broiler\ Meat = (\#\ of\ birds) * (Avg\ weight)$

$Area\ of\ House = Length\ x\ width\ of\ house$

$Total\ Required\ Litter = \frac{Pounds\ Broiler\ Meat}{Area\ of\ House\ x\ 0.8^*}$

*\*or 1.0 for large turkeys or layering compost method*

$Average\ Litter\ Depth =$

$\frac{Sum\ litter\ depths\ in\ each\ part\ of\ house}{Number\ of\ parts\ of\ house^*}$

*\*converted to same units as length/width of house*

$Litter\ Available = (Avg\ litter\ depth) * (area\ of\ house)$

$Required\ Carbon\ Source\ Material =$   
 $(Total\ litter\ required) - (litter\ available)$

## Post Infection

### Secure the infected site

- ✓ Rope off infected area and establish disinfection area
- ✓ Ensure disinfectant is contained and doesn't run offsite or to surface or ground water
- ✓ Prohibit entry into infected area unless personnel are properly trained, fit tested, and wearing personal protective equipment

### Identify existing mortality storage areas and remove possible contaminants

- ✓ Move any carcasses and infected organic materials inside the building on the secured infected site
- ✓ Clean and disinfect the mortality storage area to eliminate the pathogen

### Evaluate the site

Assess housing and inventory available supplies, equipment, materials in order to enable planning for the disposal of carcasses. Compile information compiled about:

- Bird age, species, avg. weight
- End door access to deliver carbon source and remove compost
- Production type (cage, floor, outdoor)
- Ability to turn piles
- House type
- Security – How to protect compost pile from scavengers, vandals or disease vectors
- Litter depth, moisture and condition
- Depopulation method/location of carcasses
- Poultry house type and dimensions including ceiling height [Sufficient clearance for front loader to make windrow 4 to 6 feet high?]

### Inventory/Supplies

At least one day prior to composting event, obtain required items, including:

- Personal protective equipment
- Monitoring equipment
- Mixing equipment
- Carbon source
- Turning equipment

### Till litter

If carcasses are confined to a portion of house and caking is extensive, till the litter in the house in order to enhance composting.

### Final Preparation for Composting

- ✓ Let birds consume all feed
- ✓ Raise the feeder and drinker lines
- ✓ Depopulate

## Building Windrows

### Address health concerns

- ✓ Provide dust control measures if needed.
- ✓ Ventilate composting byproducts by opening one of the curtains part way or using one of the smaller ventilation fans on the building – filter ventilation to avoid pathogen spread.

Select composting method – See Preparation topic

### Mixing and piling method

1. Remove carcasses one bucket-width wide from along the sidewalls and spread them evenly in the center of the house.\*
  2. Starting with a 3-inch minimum base of clean carbon source, use feed line as a guide and mix the carcasses with the carbon source to start windrow.
  3. Continue rolling materials together to form a windrow 10-12 ft. wide or twice the reach of your loader so you can access the middle.
  4. Cover with 6-12 inches of litter or sawdust over all carcasses and bird parts.
- \* If litter is inadequate and supplemental sawdust is required, this step is not required.

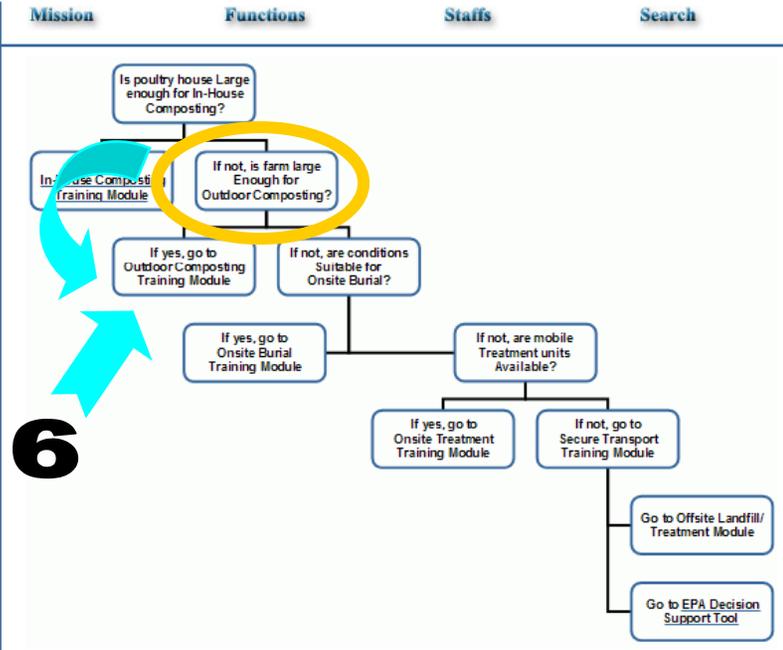
### Layering method

1. Create a 3-inch thick base of clean carbon source. Make the base 10-12 feet wide or twice the reach of your loader so you can access the middle.
2. Place carcasses on top of base using loader.
3. Spread carcasses evenly with rake or pitchfork until the carcass layer is 8-10 inches thick.
4. Repeat layering procedure until the pile is 4-6 feet high, depending on height of ceiling.
5. Cover with 6-8 inch layer of clean carbon source with a foot overlap on the sides over all material.

### Shredding and piling method

1. Remove carcasses one bucket-width wide from along the side walls and spread them evenly in the center of the house.
2. Either - Shred the carcasses using a tiller attached to a skid steer loader or a 3-point hitch, PTO driven unit for farm tractor.
  - At least 2 passes
  - Use sharp tines and high rpm.
  - Use the best angle and direction of rotation for shredding.
3. Alternate - Crush carcasses with a rubber tire loader and roll carcasses into the litter/sawdust windrow. Dust control may be issue.
4. Pile shredded carcass/litter mixture into a 12-14 foot wide by 3-5 foot high windrow.
5. Cap windrow with litter/carbon source to cover exposed carcasses.

- Emergency Management Response System
- Report a Pest or Disease
- HPAI Response
- Response Documents
- Reference Library
- Training
- Subscribe to the EMOC Notification List
- Site Map



Wednesday, February 14, 2007

# 7 Outdoor Composting

- Course Introduction
- PPE for Avian Influenza
- ICS Disposal Unit
- Disposal Planning
- Obtaining Resources and Materials
- Preparation for Outdoor Composting
- Composting Carcasses
- Maintaining the Compost Site
- Summary



### Conducting the Farm Evaluation (1 of 2)

The facility evaluation should be conducted as soon as possible but at least one day prior to carcass disposal operations. Regardless of the outdoor compost method used, the compost site should be:

- Located away from neighbors and/or out of sight
- Located downwind from neighbors and/or houses
- Located away from environmentally sensitive areas
- Located close to the poultry facility or have clear access for transport
- Clear of overhead utility lines
- Void of excess water
- Located on a gentle slope so there will be no water ponding





### Selecting the Composting Method (1 of 3)

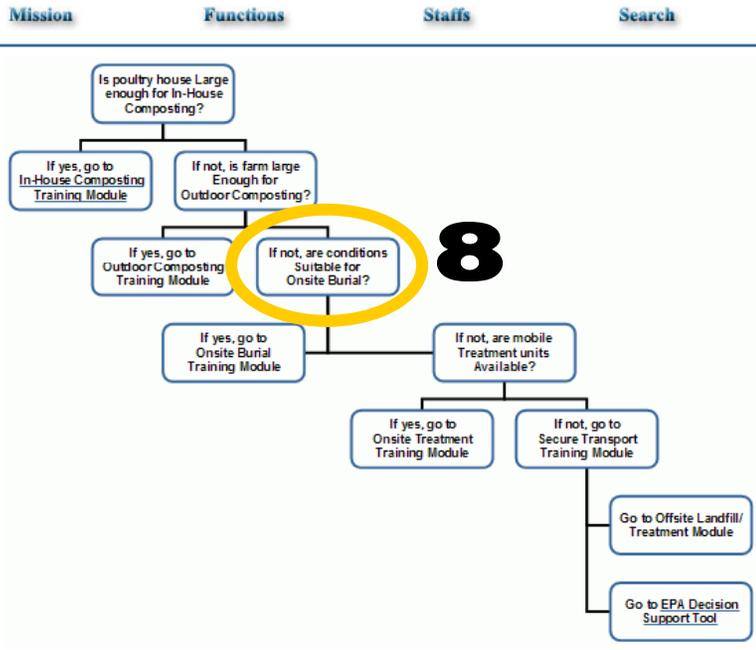
Composting can be carried out in a variety of configurations, namely windrow, compost bin, or compost bag.

- The windrow is the most popular for composting large carcasses or quantities of carcasses. Windrows are constructed on top of the ground in open spaces.
- Compost bins are three sided structures built from any material. Bin composting confines carcasses within a structure built from any material that is structurally adequate to confine the compost pile. Compost bins may be constructed with or without a roof.
- Compost bags are self-contained vessels that use a forced-air generation system to support composting.



Method	Advantages	Disadvantages
<b>Windrow</b>	<ul style="list-style-type: none"> <li>• Forming and turning the windrow is simple since the windrow is not restrained by walls or roofs</li> <li>• The length of the windrow can be extended to accommodate the quantity of carcasses</li> <li>• Windrows are mounded to better control moisture, temperature, gases, and odors</li> </ul>	<ul style="list-style-type: none"> <li>• Maintaining the windrow requires continuous monitoring and periodic turning</li> </ul>
<b>Compost Bin</b>	<ul style="list-style-type: none"> <li>• Simple</li> <li>• Low maintenance</li> <li>• Allows higher stacking of materials</li> <li>• Better use of floor space than free-standing piles</li> <li>• Elimination of weather problems</li> <li>• Containment of odors</li> <li>• Better temperature control</li> </ul>	<ul style="list-style-type: none"> <li>• Impractical for large quantities of animals <ul style="list-style-type: none"> <li>◦ Usually 100 ft<sup>3</sup> needed for every 1000 pounds of carcasses</li> </ul> </li> </ul>
<b>Compost Bag</b>	<ul style="list-style-type: none"> <li>• Contains all material within the bag</li> <li>• Reduced compost time compared to windrow or bin methods *</li> <li>• Requires less land area for composting *</li> <li>• Reduces odors and leachate issues</li> <li>• Reduces potential for negative impact on the compost materials by inclement weather</li> </ul> <p>* Carcass Disposal: A Comprehensive Review, 2004</p>	<ul style="list-style-type: none"> <li>• Not practical for composting larger carcasses unless they are ground and thoroughly mixed with an appropriate quantity of bulking agent</li> <li>• Requires specialized equipment and equipment operators</li> <li>• Different manufactured bags may have different dimensions <ul style="list-style-type: none"> <li>◦ Bags may be up to 200 feet in length and 5, 10 or 12 feet in diameter</li> <li>◦ May hold 250 to 1000 yd<sup>3</sup> depending on the diameter</li> </ul> </li> </ul>

- Emergency Management Response System
- Report a Pest or Disease
- HPAI Response
- Response Documents
- Reference Library
- Training
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- Site Map



Wednesday, February 14, 2007



Search Soils Enter Keywords GO

Access to soil survey information is provided through maps. All text and tables relate to the map symbols and the areas delineated on these maps. Persons with disabilities who require alternative means for communication of soil survey information should contact the [NRCS at the USDA Service Center](#) that services the county of interest. See also the [NRCS Accessibility Statement](#).

Before you start, see:



# Web Soil Survey

Version 1.1  
[Maintenance Schedule](#)  
[Supported Browsers](#)  
[New features in version 1.1](#)  
[Release Notes](#)

## Welcome to the NCSS Web Soil Survey.

3 Basic Steps make WSS a simple yet powerful way to access and use soil data.

### 1 Define.



Use the Area of Interest tab to define the area you are interested in. You can define an area by zooming in on a map and drawing a box around your area or by selecting from a choice list. You must complete this step before you can go on to the next two steps.

### 2 View.



Next, click on the Soil Map tab to view and print a map of the soils in your area.

### 3 Explore.

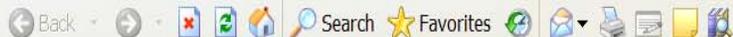


Third, click on the Soil Data Explorer tab to access soil data for your area. You can determine the suitability of the soils in your area for a particular use.

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.



File Edit View Favorites Tools Help



Address <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.as> Go Links Customize Links Free Hotmail Windows Windows Marketplace Windows Media APHIS Home Page Employee Express

**10**

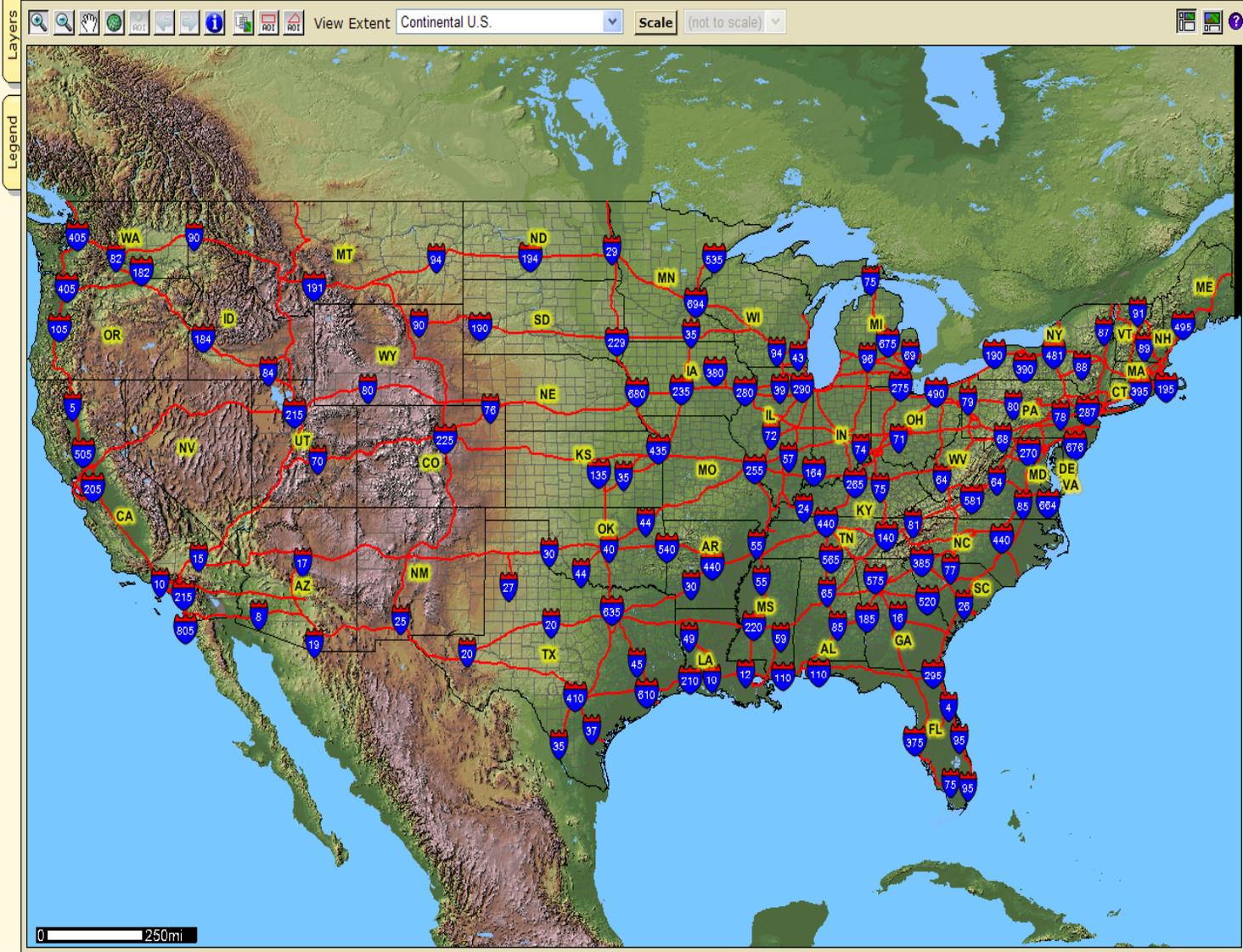
Address

Soil Survey Area

Latitude and Longitude

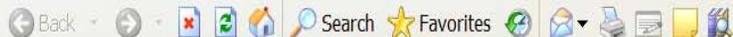
PLSS (Township and Range)

Hydrologic Unit





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**Navigate By...**

**Address**

Address: 1580 millersville rd

City:

State:

Zip Code: 21108

Show Postal Code Layer in Map

**11**

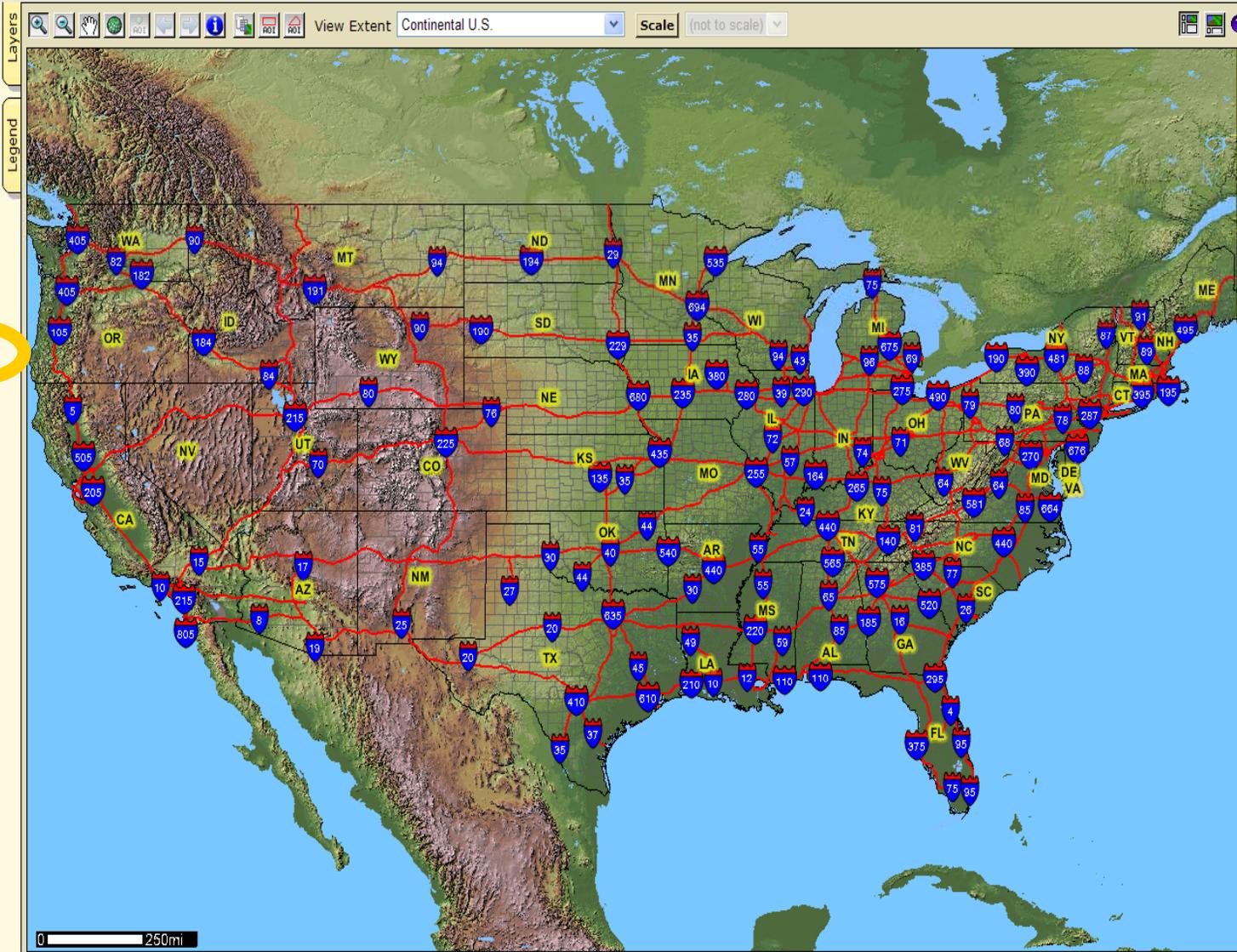
County

Soil Survey Area

Latitude and Longitude

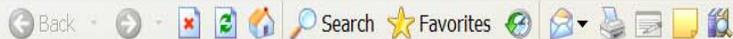
PLSS (Township and Range)

Hydrologic Unit





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**Navigate By...**

**Address**

City

State

Zip Code

Show **Postal Code** Layer in Map

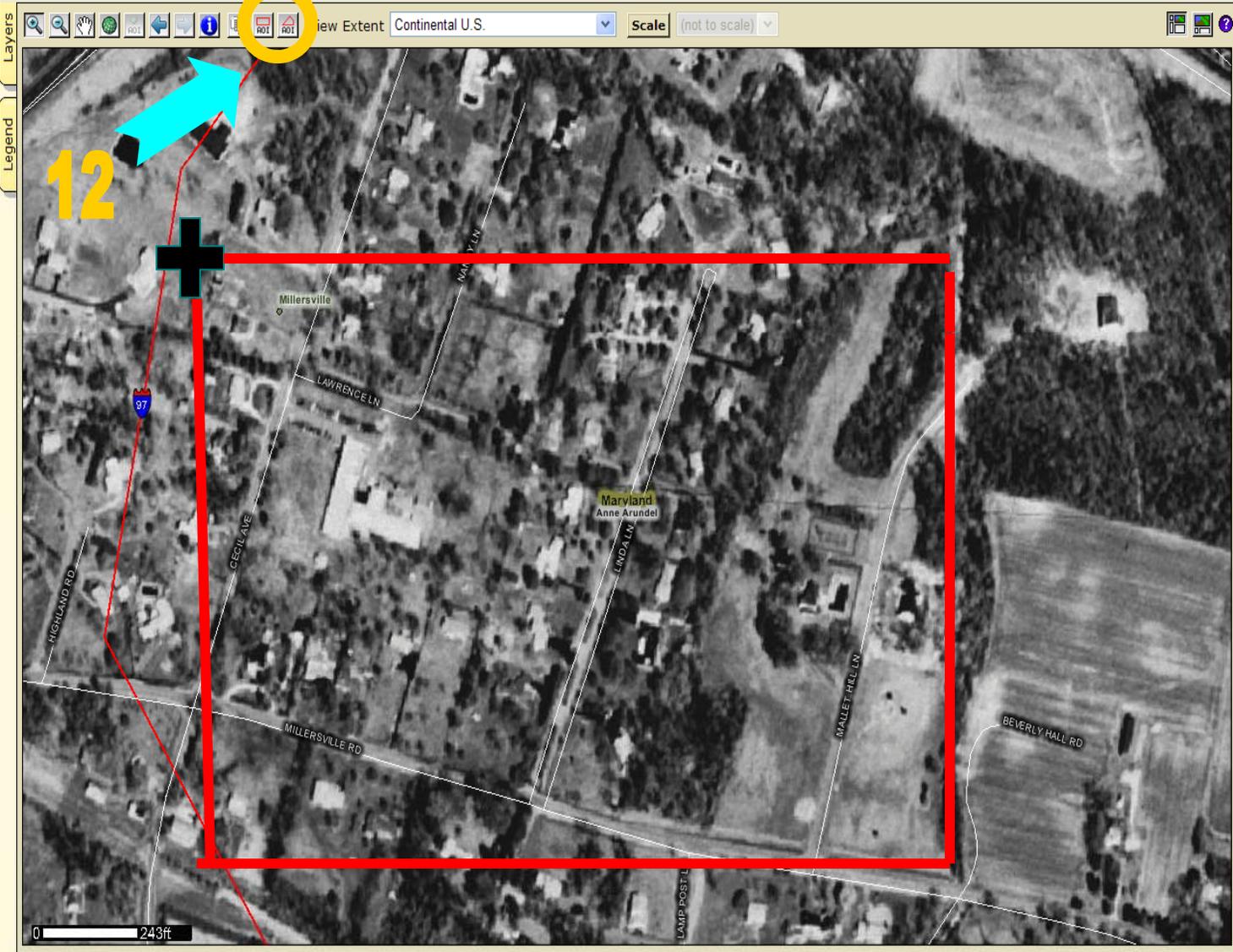
County

Soil Survey Area

Latitude and Longitude

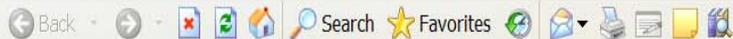
PLSS (Township and Range)

Hydrologic Unit





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Contact Us Download Soils Data Preferences Logout

Area of Interest Soil Map **Soil Data Explorer**

13

Area of Interest Properties

Clear AOI

AOI Information

Name

Area (acres) 60.3

Soil Data Available from Web Soil Survey

Anne Arundel County, Maryland (MD003)

Soil Maps yes

Soil Data yes

Archived Soil Survey Manuscript no  
Publication Maps no

Clear AOI

Quick Navigation

Navigate By...

Address

View

Address 1580 millersville rd

City

State

Zip Code 21108

Show Postal Code Layer in Map

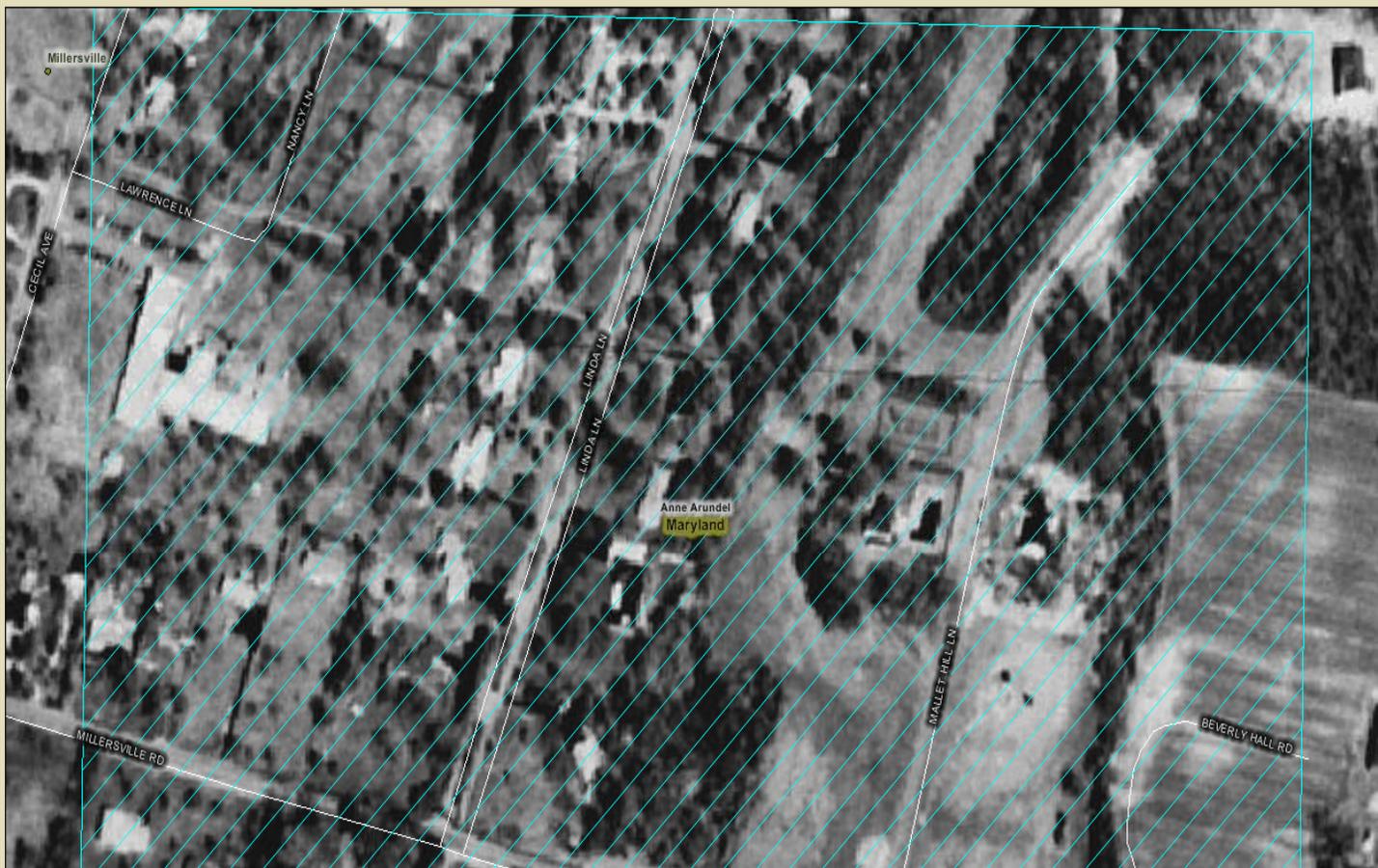
View

County

Area of Interest Interactive Map

Layers Legend

View Extent Continental U.S. Scale (not to scale)



**Table of Contents**

- Introduction to Soils **14**
  - Soils 101
    - What is soil? (less technical)
    - What is soil? (more technical)
    - How does soil form?
      - Parent Material
      - Climate
      - Living organisms
      - Landscape position
      - Time
    - What are soil horizons?
    - What is a soil scientist?
    - What is a soil survey?
    - Who uses a soil survey?
    - What is a map unit?
    - What is a consociation, complex, association, undifferentiated group, or miscellaneous area?
    - What is an Official Series Description?
  - Information for Land Users
    - Homebuyers
    - Land Use Planners
    - Appraisers
    - Developers and Builders
  - Waste Disposal Entities
    - Septic tank absorption fields
    - Sewage lagoons
    - Sanitary landfills
    - Disposing of other kinds of waste
  - Park Boards and Recreation Area Planners

**Intro to Soils**

**Viewing Topics**

A Table of Contents appears in the navigation panel to the left.

- Click an item in the Table of Contents to make it the **active topic** and view its content.
- To view an entire section, click the name of the section that contains the topics you want to view.

**Saving or Printing Topics**

Choose the topics you want to view, so they appear in the view panel, and then click **Create Printable Document**.

Suitabilities and Limitations Ratings Instructions

Open All Close All

Building Site Development

Construction Materials

Disaster Recovery Planning

Catastrophic Mortality, Large Animal Disposal, Pit

View Description View Ratings

View Options

Map

Table

Component Breakdown and Rating Reasons

Description of Rating

Rating Options

Detailed Description

Advanced Options

View Description View Ratings

Catastrophic Mortality, Large Animal Disposal, Trench

Clay Liner Material Source

Composting Facility - Subsurface

Composting Facility - Surface

Composting Medium and Final Cover

Rubble and Debris Disposal, Large-Scale

**Viewing Suitabilities and Limitations Ratings**

Suitabilities and limitations ratings are organized by category. Note that in cases where no ratings data is available for the AOI, folders and the ratings categories within folders may disappear.

1. Open a ratings category in the panel to the left, and select a rating.
2. To learn more about the rating, click **View Description**.
3. In the **View Options** pane, select the items you want to view. For more information, click the help button.
4. Optional: To change the aggregation method as well as other advanced parameters, click on the **Advanced Options** pane and make changes. For more information, click the help button.
5. When ready, click **View Ratings**.

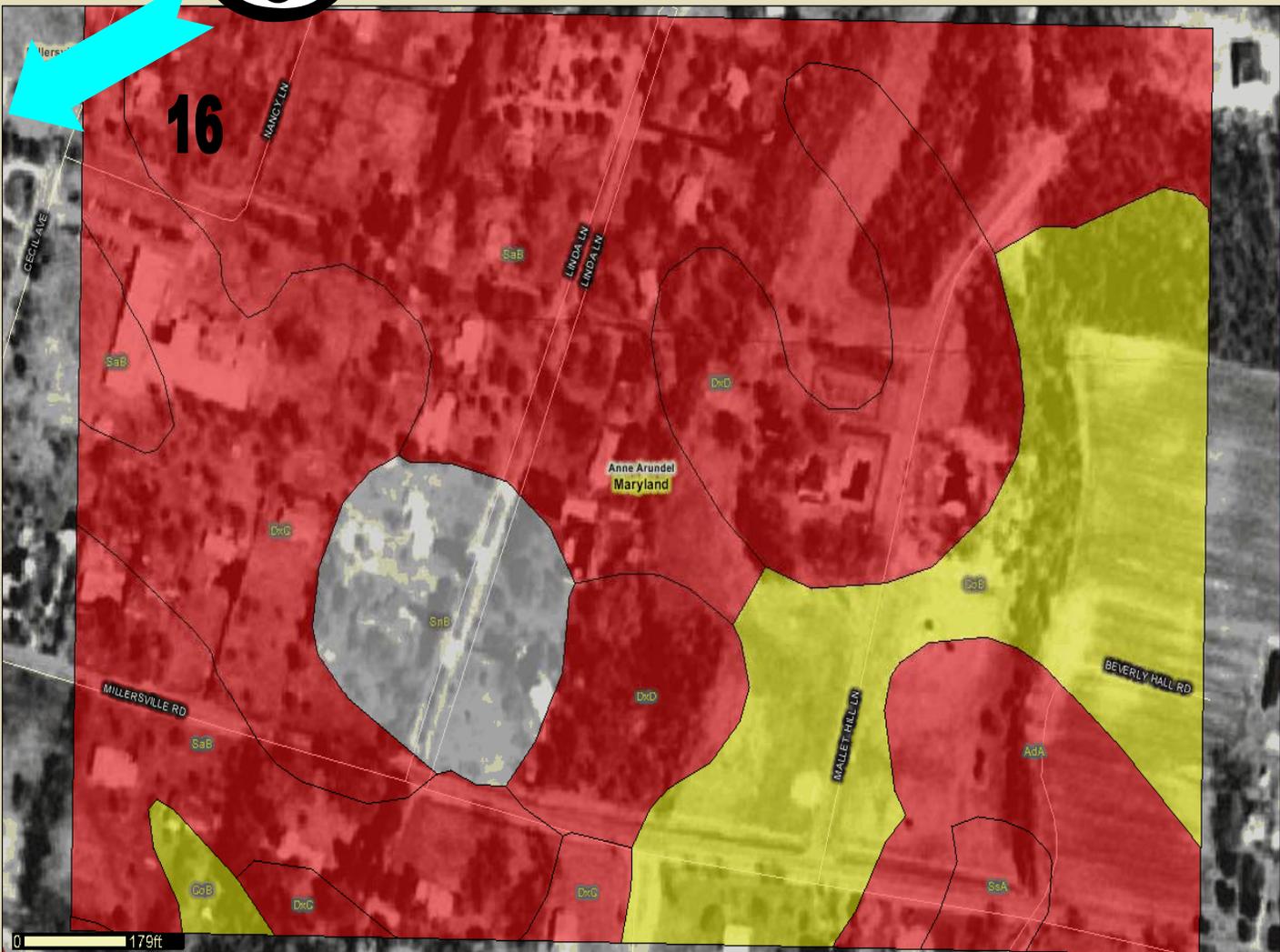
Note: The ratings results you get in Web Soil Survey are identical to those in [Soil Data Viewer 5.0](#) or later.





Map Legend

- Soil Ratings
  - Very limited
  - Somewhat limited
  - Not limited
  - not rated or not available
- Soil Map Units
- Hydrography
  - Water
  - Roads
  - Rails
  - Interstate Highways
- Cities
  - Detailed Counties
  - Detailed States
  - Oceans
- Composting Medium and Final Cover
- Rubble and Debris Disposal, Large-Scale Event
- Land Classifications
- Land Management
- Military Operations
- Recreational Development
- Sanitary Facilities
- Vegetative Productivity
- Waste Management
- Water Management



Tables - Catastrophic Mortality, Large Animal Disposal, Pit

17

Tables - Catastrophic Mortality, Large Animal Disposal, Pit

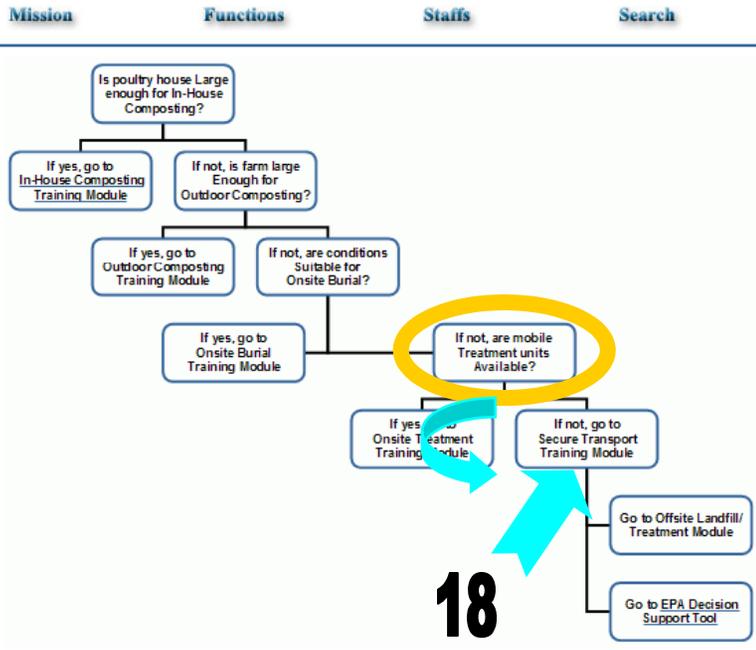
Summary by Map Unit - Anne Arundel County, Maryland

Soil Survey Area Map Unit Symbol	Map Unit Name	Rating	Component Name (Percent)	Rating Reasons	Total Acres in AOI	Percent of AOI
AdA	Adelphia-Holmdel complex, 0 to 2 percent slopes	Very limited	Adelphia (50%)	Wetness Seepage Cutbanks cave	3.9	6.5
			Holmdel (30%)	Wetness Seepage Cutbanks cave		
CoB	Collington-Wist complex, 2 to 5 percent slopes	Somewhat limited	Collington (50%)	Cutbanks cave	11.1	18.3
DxC	Downer-Phalanx complex, 5 to 10 percent slopes	Very limited	Downer (45%)	Seepage Sand content Slope Cutbanks cave	8.1	13.4
DxD	Downer-phalanx complex, 10 to 15 percent slopes	Very limited	Downer (45%)	Slope Seepage Cutbanks cave	8.6	14.3
			Phalanx (40%)	Slope Adsorption Cutbanks cave		
SaB	Sassafras fine sandy loam, 2 to 5 percent slopes	Very limited	Sassafras (75%)	Seepage Cutbanks cave	24.2	40.1
SnB	Sassafras-Urban land complex, 0 to 5 percent slopes	Not rated	Urban land (35%) Woodstown (5%) Matapeake (5%) Hambrook (5%)		3.6	6.0
SsA	Shrewsbury loam, 0 to 2 percent slopes	Very limited	Shrewsbury (75%)	Wetness Ponding Cutbanks cave	0.7	1.2
WdB	Woodstown sandy loam, 2 to 5 percent slopes	Very limited	Woodstown (75%)	Wetness	0.0	0.0
				Seepage		
				Sand content		
				Cutbanks cave		

Summary by Rating Value

Rating	Total Acres in AOI	Percent of AOI
Very limited	45.6	75.6
Somewhat limited	11.1	18.3

- Emergency Management Response System
- Report a Pest or Disease
- HPAI Response
- Response Documents
- Reference Library
- Training
- Subscribe to the EMOC Notification List
- Site Map



18

Wednesday, February 14, 2007



# 19 Secure Transportation

- Course Introduction
- Overview
- PPE for Avian Influenza
- ICS Disposal Unit
- Planning
- Loading and Unloading Procedures
- Emergency Situations
- Summary



## Secure Transportation

Secure transportation includes protecting the health of personnel involved in the removal and transportation of HPAI-infected carcasses as well as containing the contaminated carcasses and byproducts during transport.

Containment of all HPAI-infected material within the transport is critical and may require particular vehicles equipped with an absorption or liquid collection system. The location of the selected disposal site will affect load requirements and limits for transportation.



## Modes of Transportation (1 of 2)

AI-infected carcasses may be transported across the highways or by rail. The list below identifies different forms of highway transportation.

Highway:

- [Roll-off dumpster trucks](#)
- [Tractor trailers](#)
- Custom-built trucks
- Roll-off containers:
  - Solid waste - these containers are designed to carry solid/bulk waste and may not have closed seams.
  - Sludge - designed for transporting sludges or liquid waste products. These types of containers have continuously welded seams to prevent leaks.
  - Intermodal - container may be transported via truck or rail and normally have watertight seams and door seals.

Containers are normally available in 10, 20, 30 and 40 cubic yard sizes. The following sizes are recommended for transporting AI-infected carcasses and byproducts:

- [Twenty cubic yard containers](#)
- [Forty cubic yard containers](#)

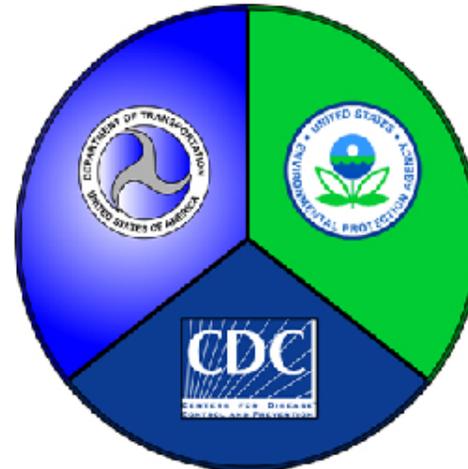


## Rules and Regulations

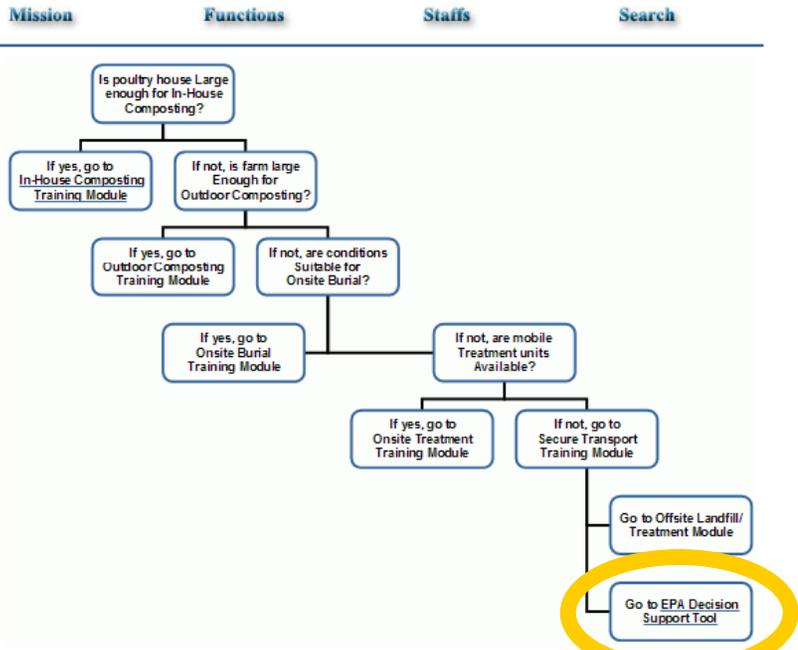
Carcasses contaminated with highly pathogenic avian influenza (HPAI) are categorized as [Select Agents](#) and must be transported in accordance with Department of Transportation (DOT), Environmental Protection Agency (EPA), and Centers for Disease Control and Prevention (CDC) regulations. To view specific regulations, select here: [EPA's Suite of Disposal Decision Tools](#). If you are a first-time user, you may submit a request to the EPA's Administrator to obtain a userID and password.

Additional rules and regulations that may apply to carcasses are listed here:

- [Title 49 - Transportation](#) - DOT requirements for packaging and shipping hazardous materials.
- [9 CFR Part 121 - Possession, Use, and Transfer of Biological Agents and Toxins; Final Rule](#)
- [FMSCA hazardous materials regulations](#) - Provides links to rules and regulations governing transporting hazardous materials.
- [How to Transport Infectious Substances](#) - DOT guidance on transporting infectious substances.
- [Office of Hazardous Materials Exemptions and Approvals \(OHMEA\)](#) - This department issues the DOT exemptions to the hazardous materials regulations.



- Emergency Management Response System
- Report a Pest or Disease
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- Response Documents
- Reference Library
- Training
- Subscribe to the EMOC Notification List
- Site Map



Wednesday, February 14, 2007



20





## EPA's Suite of Disaster Debris Management and Disposal (DDMD) Decision Support Tools

EPA's Suite of Disaster Debris Management and Disposal (DDMD) Decision Support Tools

Welcome to EPA's Suite of Disaster Debris Management and Disposal Decision Support Tools website. This website organizes large amounts of information related to disposal of debris resulting from incidents of national significance (e.g., contaminated buildings and water treatment systems). The tools can be used by emergency responders (e.g., EPA On-Scene Coordinators) and other individuals responsible for making disposal decisions to access technical information, regulations, and guidance to work through important disposal issues to assure safe and efficient removal, transport and disposal of waste materials. It is important to understand that the information provided here does not override existing regulatory or legal requirements that apply to the disposal of waste residues. This information should be used as a starting point for understanding some of the options available for disposal of these materials.

Information contained within the tools accessible from this website includes:

- Disposal Facility Information
- Building Residue Characteristics and Quantity Estimates
- Water Systems Material Characteristics and Equipment
- Agricultural Biomass Disposal Guidance
- Natural Disaster Debris Characteristics and Guidance
- Contaminant and Decontaminant Characteristics
- Transportation, Packaging, and Storage Information
- Worker Protection Information
- Library of Useful Resources

21

### Login

A UserID and password are required to access the tools. [Request a UserID and Password](#) if you do not have one. Enter your UserID and Password to get started.

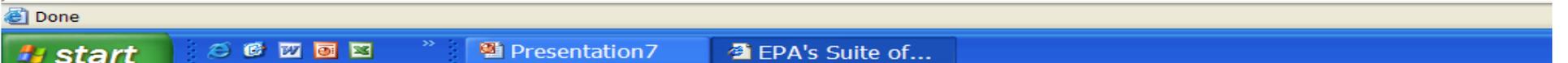
UserID:

Password:

Login

Version 4.1 Last Updated: November 17, 2006.

22





## EPA's Suite of Disaster Debris Management and Disposal (DDMD) Decision Support Tools

### Home

You can access any of EPA's Suite of Disaster Debris Management and Disposal Decision Support Tools (DST) by clicking the links below. The tools can be used by emergency responders (e.g., EPA On-Scene Coordinators) and other individuals responsible for making disposal decisions to access technical information, regulations, and guidance to work through important disposal issues to assure safe and efficient removal, transport and disposal of waste materials.

[Building Decontamination Residue Disposal Decision Support Tool](#)

[Decontamination Wastewater Disposal Decision Support Tool](#)

[Water System Management Decision Support Tool](#)

[Agricultural Biomass Disposal Decision Support Tool](#)

[Natural Disaster Debris Disposal Decision Support Tool](#)

Radiological Dispersion Device (Dirty Bomb) Debris Disposal Decision Support Tool — Not Yet Available

It is important to understand that the information provided in these tools does not override existing regulatory or legal requirements that apply to the disposal of materials. This information should be used as a starting point for understanding some of the options available for disposal of these materials. Final disposal decisions can only be made after contacting the appropriate people at state and Regional regulatory offices and coordinating with the disposal site.

More detailed instructions for using the tools are contained in the [Help System](#).

If you are a first-time user, or would like information on the Background, Status and Future Plans of the tool, and a discussion of the Design Philosophy and Technical Approach we have applied to the development of the BDR Tool, you may want to read [Before You Begin](#).

**\*Note that you will be required to re-login after 15 minutes of inactivity.**

Version 4.1 Last Updated: November 17, 2006.

23



## Agricultural Biomass Disposal Decision Support Tool

Disposal Options

Log Out

View Facility Info

View Transportation Regulations

View Other Guidance

Training Modules

Change Password

### Home

The Agricultural Biomass Disposal Decision tool is intended to provide guidance to personnel who are responsible for disposing of animal carcasses or plant materials in the aftermath of an event. The U.S. Department of Agriculture has developed several training modules that can be accessed within the tool by clicking Disposal Options from the left navigation menu. Access to several other key resources for additional guidance is provided via the hyperlinks below:

- [National Center for Animal Health Emergency Management](#) [Exit Disclaimer >](#)
- [National Animal Health Emergency Management System \(NAHEMS\) Guidelines](#) [Exit Disclaimer >](#)
- Carcass Disposal Rule Root: Best Practices Handbook - Not yet available.

It is important to understand that the information provided in these tools does not override existing regulatory or legal requirements that apply to the disposal of materials. This information should be used as a starting point for understanding some of the options available for disposal of these materials. Final disposal decisions can only be made after contacting the appropriate people at state and regional regulatory offices and coordinating with the disposal site.

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Version 4.1 Last Updated: November 17, 2006.



## Agricultural Biomass Disposal Decision Support Tool

Disposal Options

Lessons Learned

View Facility Info

View Pathogen Info

View Transportation Regulations

View Other Guidance

Training Modules

Change Password

### View Facility Information

You may customize the list of facilities generated by applying one or more of the following filter criteria. To view all facilities, leave the selection boxes blank. Click View List of Facilities to generate a list of facilities that meet all of the specified criteria.

#### Filter Criteria

Disposal Facility Types:

25

Inert or Construction and Demolition (C and D) Landfills  
Large Landfills (largest by state based on acceptance rate)  
Municipal Solid Waste (MSW) Landfills  
RCRA Subtitle C (Hazardous Waste) Landfills  
Transfer Stations

(Hold down the CTRL key to select multiple facility types)

APCDs:

Select an APCD

(APCDs are associated with combustion facilities only; therefore, selecting an APCD will produce results containing only combustion facilities.)

State:

26

DC - DISTRICT OF COLUMBIA  
DE - DELAWARE  
FL - FLORIDA  
GA - GEORGIA

(Hold down the CTRL key to select multiple states)

EPA Region:

Region 1 (CT, ME, MA, NH, RI, VT)  
Region 2 (NJ, NY)  
Region 3 (DE, MD, PA, VA, WV, DC)  
Region 4 (AL, FL, GA, KY, MS, NC, SC, TN)

(Hold down the CTRL key to select multiple EPA regions)

View List of Facilities

27

Version 4.1 Last Updated: November 17, 2006.



# Agricultural Biomass Disposal Decision Support Tool

Disposal Options

Lessons Learned

View Facility Info

View Pathogen Info

View Transportation Regulations

View Other Guidance

Training Modules

Change Password

## View Candidate Disposal Facilities

The list of candidate facilities matching your criteria are listed below. For your reference, the criteria used to conduct this search are also listed below.

### Filter Criteria:

Municipal Solid Waste (MSW) Landfills

State(s): DE - DELAWARE



Universe of Facilities

Save to File

Print Facilities

28

Name	Address	State	Region	Contact Information	Select All This Page
<a href="#">Cherry Island Northern Solid Waste Management Center</a>	1706 East 12th Street, Wilmington	DE	3	Mr. Tom Houska, P.E. (302) 739-5361	<input type="checkbox"/>
<a href="#">Delaware Central Solid Waste Management Center</a>	1107 Willow Grove Road, Kent County Route 10, Sandtown	DE	3	Mr. Tom Houska, P.E. (302) 739-5361	<input type="checkbox"/>
<a href="#">Jones Crossroads Landfill</a>	Rt. 20 between Millsboro and Seaford., P.O. Box 455, Dover, 19903, Georgetown	DE	3	Mr. Mark Mallamo (302) 875-3448	<input type="checkbox"/>
<a href="#">NSWMC New Castle County</a>	Intersection of 12th St & Hay Rd, I-495 (Exit 3 - 12th Street), New Castle	DE	3	Mr. Ann Marie Andrzejewski (302) 577-3457	<input type="checkbox"/>

Page: 1

Make a New Selection

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**Owner**

**Owner Type:** Public  
Mr. Tom Houska, P.E.  
Chief of Administrative Services  
Engineering & Operations  
Phone: (302) 739-5361  
Fax: (302) 739-4287  
Delaware Solid Waste Authority  
P.O. Box 455, 1128 South Bradford Street  
Dover  
DE  
199030455

**Operator**

**Operator Type:** Public  
Delaware Solid Waste Authority  
Mr. Ann Marie Andrzejewski  
Facility Manager  
1101 Lambson Lane  
New Castle, DE 19720  
19720  
Phone: (302) 577-3457

**Facility Information**

**Capacity:** 2,310,000 tons/day  
**Operating Times:** Mon-Fri 7am-5pm, Sat 7am-3pm  
**Operating Days per Year:** 312  
**Permit number:** SW-93/02, SW-95/04  
**MSW Acceptance Rate (tons/day):** 504450.96  
**MSW Tip Fee (\$/ton):** 59  
**C&D Acceptance Rate (tons/day):** 10920  
**C&D Tip Fee (\$/ton):** 59  
**Total Waste Acceptance Rate (tons/day):** 567550.12  
**Total Waste Tip Fee (\$/ton):** 59  
**Facility Size:** 342 acres

**Related Websites**

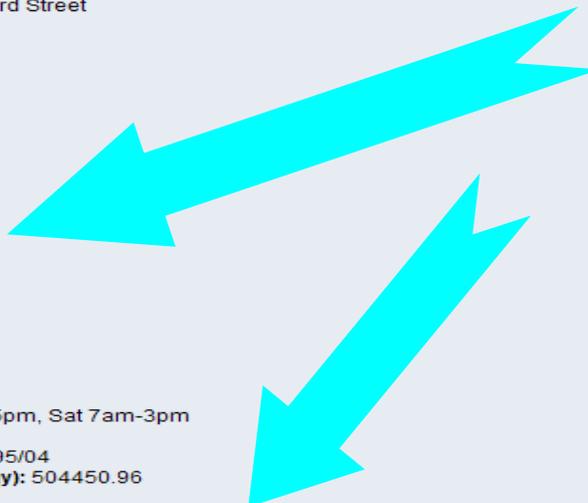
**Facility Information**  
<http://www.dswa.com/>  
**EPA's Envirofacts Data Warehouse**  
[http://oaspub.epa.gov/enviro/fji\\_query\\_dtl\\_disp\\_program\\_facility?p\\_registry\\_id=110007354308](http://oaspub.epa.gov/enviro/fji_query_dtl_disp_program_facility?p_registry_id=110007354308)

**State Solid Waste Information**

Delaware Department of Natural Resources and Environmental Control - Delaware Division of Air and Waste Management - Solid Waste  
<http://www.dnrec.state.de.us/DNREC2000/Divisions/AWM/hw/indexsw.htm> [Exit Disclaimer >](#)

**State Hazardous Waste Information**

Delaware Department of Natural Resources and Environmental Control - Delaware Division of Air and Waste Management - Hazardous Waste  
<http://www.dnrec.state.de.us/DNREC2000/Divisions/AWM/hw/indexhw.htm> [Exit Disclaimer >](#)



Help

Search Favorites

/vs/ep/hpai-response.html Go Links Customize Links Free Hotmail Windows Windows Marketplace Windows Media APHIS



## National Center for Animal Health Emergency Management

United States Department of Agriculture

Animal and Plant Health Inspection Service

[Emergency Management Response System](#)

[Report a Pest or Disease](#)

[HPAI Response](#)

[Response Documents](#)

[Reference Library](#)

[Training](#)

[Subscribe to the EMOC Notification List](#)

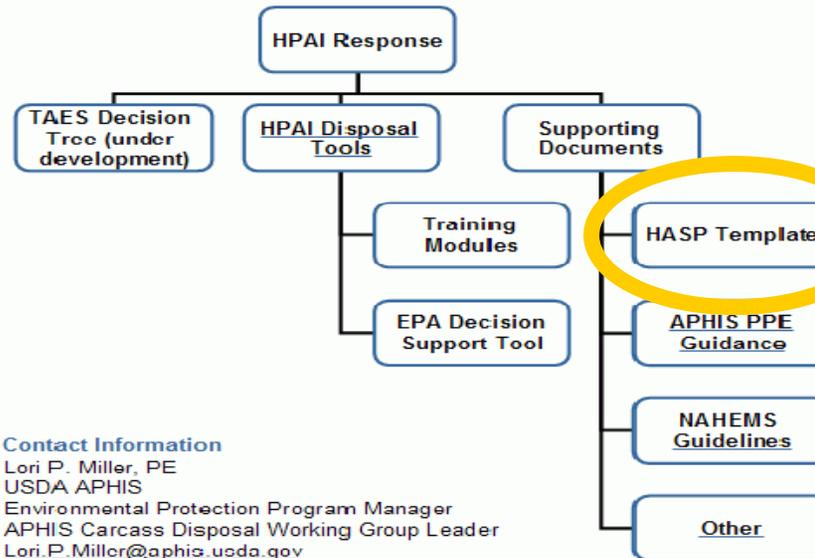
[Site Map](#)

**Mission**

**Functions**

**Staffs**

**Search**



29

**Contact Information**

Lori P. Miller, PE  
USDA APHIS  
Environmental Protection Program Manager  
APHIS Carcass Disposal Working Group Leader  
[Lori.P.Miller@aphis.usda.gov](mailto:Lori.P.Miller@aphis.usda.gov)

Wednesday, February 14, 2007



- 1 Introduction
  - 1.1 Scope
  - 1.2 Applicability
  - 1.3 Overview of Operation
  - 1.4 Administration
  
- 2 Key Personnel/Identification of Roles and Responsibilities
  - 2.1 Overview
  - 2.2 Specific Responsibilities
  
- 3 Hazard Analysis
  - 3.1 Hazard Analysis
  - 3.2 Job Hazard Analysis
  
- 4 Training Requirements
  - 4.1 Basic Health and Safety Training
  - 4.2 Safety Briefings
  
- 5 Personal Protective Equipment
  - 5.1 Introduction
  - 5.2 PPE Levels
  - 5.3 PPE Selection and Use
  - 5.4 Obtaining and Disposing of PPE
  - 5.5 Training
  - 5.6 General Guidelines
  
- 6 Medical Surveillance Requirements
  - 6.1 Purpose
  - 6.2 Application
  
- 7 Monitoring
  - 7.1 Introduction
  - 7.2 Sampling Methods
  - 7.3 Non-Invasive Operations
  - 7.4 Invasive Operations
  - 7.5 Equipment Calibration and Maintenance
  - 7.6 Photoionization Detector Use
  - 7.7 Radiation Survey Meter Use
  - 7.8 Combustible Gas Indicator Use
  - 7.9 Oxygen Meter Use
  - 7.10 Air Monitoring Action Levels
  - 7.11 References
  
- 8 Site Control Measures
  - 8.1 Introduction
  - 8.2 Security and Control

- 8.3 Work Zones
- 8.4 Accountability
- 9 Decontamination Procedures
  - 9.1 Introduction
  - 9.2 Contamination Prevention
  - 9.3 Specific Decontamination Procedures
  - 9.4 Level A and B Decontamination
  - 9.5 Other Decontamination/Disposal Procedures
  - 9.6 Respirator Decontamination Procedures
  - 9.7 Reusable Equipment Decontamination
  - 9.8 Disposable Equipment
  - 9.9 Heavy Equipment
  - 9.10 Personal Hygiene
  - 9.11 Monitoring the Effectiveness Of Decontamination
- 10 Emergency Response/Contingency Plan
  - 10.1 General Principles
  - 10.2 Emergency Response Preparations
  - 10.3 Evacuation Procedures
  - 10.4 Shelter in Place Procedures
  - 10.5 Response to Specific Emergencies
  - 10.6 Incident Reporting
  - 10.7 Contingency Plan and Other Procedures
  - 10.8 Termination
  - 10.9 Training
  - 10.10 Critique and Update
- 11 Confined Space Entry
  - 11.1 Overview
  - 11.2 Recognition
  - 11.3 Administration
- 12 Container Handling/Spill Prevention and Containment
  - 12.1 Potential Spills and Available Controls
  - 12.2 Initial Spill Notification and Response
  - 12.3 Spill Evaluation and Response
  - 12.4 Post-Spill Evaluation

#### Appendices

##### 1-A Forms

- 1 Incident Description
- 2 Command Structure
- 3 Key Team Members
- 4 Location of Incident

- 5 Local Medical Care Providers
- 6 Hazard Analysis
- 7 Personal Protective Equipment
- 8 Monitoring Equipment
- 9 Site Control
- 10 Decontamination
- 11 Emergency Procedures
- 12 Spill Response Equipment/Confined Space
- 13 Daily Report Form
- 14 Final De-Briefing Form
- 15 New Safety Officer De-Briefing

- 2-A OSHA 300 Forml -1-04 pdf
- 2-B CA-1 Federal Employee's Notice...
- 2-C CA-2 Notice of Occupational Disease
- 2-D SF91 Auto Accident Form
- 3-A Hazard Analysis Example
- 3-B Job Hazard Analysis Blank
- 3-C Job Hazard Analyses
  - 1. Public
    - a. APHIS 515-R
    - b. APHIS 259
  - 2. Unknown Locations
    - a. Haz-Com
  - 3. Driving Car
    - a. Auto Accident Report
  - 4. Driving ATV
    - a. HOSTA Guideline
    - b. ATV Riding Tips
  - 5. Material Handling
    - a. Back Safety Handouts
    - b. Lifting-Moving Concerns
    - c. Material Handling Ergonomics Program
  - 6. Reaching Hazardous Locations
    - a. Heat Stress
    - b. Cold Stress
    - c. Poison Ivy, Oak and Sumac
    - d. Insect Hazards
    - e. Reptiles
    - f. High Elevations
  - 7. Working with Large Animals
    - a. Animal Handling
  - 8. Working with Small Animals
  - 9. Physical Cleaning of Large Animals
  - 10. Physical Cleaning of Small Animals
  - 11. Physical Cleaning of Animal Storage Areas

- 12. Use of Firearms
  - 13. Disinfecting of Areas
    - a. Selection and Use of Disinfectants
    - b. One Stroke MSDS
    - c. Virkon MSDS
  - 14. Drawing Blood-Other Sample from Large Animals
  - 15. Drawing Blood-Other Samples from Small Animals
  - 16. Physical Removal of Plants by Motorized Vehicle
  - 17. Physical Removal of Plants by Hand Applications
  - 18. Transportation of Small Animals
  - 19. Transportation of Large Animals
  - 20. Application of Pesticides-Herbicides by Motorized Vehicles
  - 21. Application of Pesticides-Herbicides by Air Craft
  - 22. Disposal of Animal Carcasses
  - 23. Physical Handling and Containment of Biological (insect and plant) Samples
  - 24. Placement of Bait Stations-Traps
- 3-D Job Safety Analysis Preparation
- 4-A Safety Messages
- 1. Accidents Happen
  - 2. Ankle Sprain
  - 3. Athletes Foot
  - 4. Blood Borne Pathogens
  - 5. Bees and Wasps
  - 6. Black Widows
  - 7. Blisters
  - 8. Cold Weather
  - 9. Confined Space Precautions
  - 10. Decontamination
  - 11. Dew Rash
  - 12. Do Not Drink and Drive 32305
  - 13. Do Not Drink and Drive
  - 14. Driving in Sand
  - 15. Driving Safety
  - 16. Employee Injuries
  - 17. Eye Fungal Infection
  - 18. Fire Ants
  - 19. Food Safety
  - 20. Foot Care Facts
  - 21. Foreign Matter in Eyes
  - 22. Foreign Objects in Eyes
  - 23. Hand Safety
  - 24. Heart Attack Signs
  - 25. Heat Illness
  - 26. Heat Rash
  - 27. Heat Rash and Heat Cramps

28. Heat Related Illnesses
29. Heat Stress Basics
30. Ladder Safety
31. Life Hammer Safety
32. Lightning
33. Mold
34. Mosquitoes
35. MSDS Part 1
36. MSDS Part 2
37. Noise
38. Not in My Fridge
39. Pesky Critters
40. Preventing Carpal Tunnel
41. Reading the MSDS Brief
42. Respirator Fit-Testing
43. Safe Lifting
44. Safe Side of Corrosives
45. Safe Side of Oxidizers
46. Safe Side of Solvents
47. Safety Attitude
48. Safety in the Field
49. Security
50. Snatch Strap Safety
51. Sprains and Strains
52. Sunburn
53. Sun Burns
54. Sun Safety
55. Tetanus
56. Tick Safety
57. Tornadoes
58. Universal Blood and Body Fluid Precautions
59. Working in Tall Grass
60. Workplace Violence

- 5-A Why PPE
- 5-B PPE Selection
- 5-C Respiratory Protection
- 5-D PPE Form
- 6-A Self-Certification
- 6-B Cholinesterase Testing Program
- 6-C Psittacosis Testing Program
- 6-D Brucellosis Testing Program
- 6-E Tuberculosis Testing Program
- 8-A APHIS Facility Security
- 9-A Department of Fire Services Decontamination
- 10-A Spill Response Materials

10-B Shelter in Place  
10-C Part 1 Disaster Information  
10-D Thunderstorms  
10-E Winter Storms  
11-A Confined Space Program  
12-A Container Integrity and Labeling Checklist  
12-B Spill Response Kits  
12-C Spill Kit Locations  
12-D Overpacking Operations Guidelines

|

# Health and Safety Plan (HASP) Template (Example HASP Forms)

- **Hazard Analysis**

- Under each type of hazard, list the specific hazards present:

- Physical:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- Biological:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

- Chemical:

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

# Example HASP Forms (cont'd.)

## Personal Protective Equipment

### Required PPE for

Position: \_\_\_\_\_

Check box if used and fill in type of PPE on provided line

Eye Protection \_\_\_\_\_

Feet Protection \_\_\_\_\_

Head Protection \_\_\_\_\_

Hand Protection \_\_\_\_\_

Skin Protection \_\_\_\_\_

Respiratory Protection \_\_\_\_\_

### Required PPE for

Position: \_\_\_\_\_

Check box if used and fill in type of PPE on provided line

Eye Protection \_\_\_\_\_

Feet Protection \_\_\_\_\_

Head Protection \_\_\_\_\_

Hand Protection \_\_\_\_\_

Skin Protection \_\_\_\_\_

Respiratory Protection \_\_\_\_\_

<b>JOB HAZARD ANALYSIS (JHA)</b>		Date: 04-01-06	<input checked="" type="checkbox"/> New JHA <input type="checkbox"/> Revised JHA
Task: Working with Large Animals		JHA #7	Page <u>1</u> of <u>2</u>
Task Overview:	APHIS personnel will be working around animals of large (50 lbs. or greater) size and weight. Various tasks will be performed around the animals		
Task Elements:	•Working around large animals		
Personal Protective Equipment:	Work clothes, Dust mask, air purifying respirator, safety glasses, nitrile (exam) gloves, work gloves		
Tools and Equipment:			
<b>OCCUPATIONAL HEALTH CONCERNS</b>			
<b>Chemical Agents:</b> Various possible	<b>Physical Agents:</b> Bites/scrapes/gorges Stepping on/falling on	<b>Biological Agents:</b> Allergic reactions Animal borne pathogens	
<b>Activity/Sequence of Job Steps</b>	<b>Potential Hazards/ Injury sources</b>	<b>Safe Action or Procedure</b>	
Working around large animals	Working with possible chemically contaminated animals Bites/scrapes/gorges Stepping on/falling on Allergic reactions Animal borne pathogens	<ul style="list-style-type: none"> <li>• If the animal is contaminated with a known or unknown chemical agent, the APHIS Safety Officer will confer with and follow the procedures of the Incident Safety Officer.</li> <li>• APHIS personnel should have a basic understanding of animal behavior and characteristic before working around animals. A number of articles discussing safe animal handling are provided (see appendix 3-7-A Animal Safety Guidelines). The appendix can be used to provide training or develop guidelines for APHIS personnel not familiar with working with the animals of concerns.</li> <li>• The dust and particulate matter in animal areas may cause throat and eye irritation. Goggles and n-95 dust masks are to be used as needed.</li> <li>• APHIS personnel should be familiar with the signs of an allergic reaction (sneezing, tearing, watery nasal discharge, congestion, skin rashes, asthma), report to their supervisor if symptoms are noted and be examined by a physician.</li> </ul>	

- |  |  |  |
|--|--|--|
|  |  | <ul style="list-style-type: none"><li>• <b>Basic biosecurity precautions should be taught (see supplemental information below) to limit the spread of animal borne diseases.</b></li></ul> |
|--|--|--|

\* Supplemental Information

#### Basic Disease Transmission Prevention

- Wear disposable boots or rubber boots that can be disinfected, if you must visit farms.
- Wash clothing and footwear using an APHIS approved disinfectant after contact with foreign livestock or poultry.
- Clean nostrils and fingernails and wash hair thoroughly after contact with foreign livestock or poultry.
- Dispose of clothing, shoes, equipment, cameras, and other items that are difficult or impossible to disinfect.
- Keep clean clothing and footwear available for visitors to wear if they must be around your livestock or poultry.
- Provide shower-in, shower-out facilities if possible.
- Discourage handling of animals by all visitors.

**\*The following articles are all from the National Ag Safety Database**

## **Animal Handling Safety**

**Eric Hallman, Darcy M. Demmin**  
**Cornell Agricultural Health and Safety Program**

Animals are handled daily on nearly half of New York farms. In the Northeast, animal handling mishaps rank second in reported farm accidents. Every year at least one New York farmer dies as a direct result of a confrontation with a farm animal. An understanding of animal behavior is essential to preventing these accidents. Handlers must be aware of how animals react to different situations and know how to avoid or control potentially dangerous predicaments.

### **Animal Characteristics**

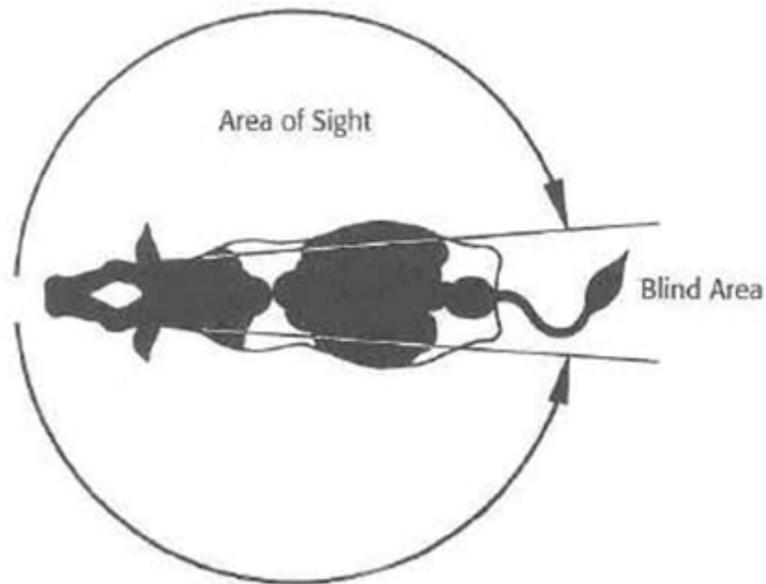
#### **Smell, Hearing, Sight**

Most livestock rely heavily on their senses of smell, hearing, and to a lesser extent, sight. The sense of smell is particularly important to animals, and they will often react to odors that people cannot detect. Cattle may be lured by the smell of freshly mown hay, or a bull may become aggressive if he detects a cow in heat. Odors can trigger defensive reactions in livestock, especially females with newborns. Animals have extremely sensitive hearing. They hear high-pitched sounds better than humans and loud high-pitched noises often frighten or excite them.

Cattle and sheep see objects in black and white. Cattle have a panoramic field of vision, which means they can see everything around them except what is directly behind their hindquarters. If approached from the rear, they may be startled. Cattle have limited depth perception and judge distance poorly. Shadows may appear as holes, so they sometimes balk at sharp contrasts in light. Chute and alley walls should have flat surfaces to minimize this reaction. Diffuse lighting, which reduces bright spots and shadows, helps quiet animals. Livestock move more comfortably from dark to light areas than the reverse.

#### **Behavior**

People who regularly work with livestock realize that each animal has its own personality, however, certain animal behaviors are predictable.



## Hazards and Precautions

### Physical Injuries

There are four common types of animal handling injuries:

- Animal steps on handler
- Animal slips and falls on handler
- Animal pins or squeezes handler against a barrier
- Animal kicks handler

By employing practical experience and adhering to a few general rules, handlers can prevent most accidents and injuries.

- Move calmly, deliberately, and patiently. Avoid quick movements or loud noises that may startle animals.
- Do not alter the daily routine or the animals' living conditions. Animals often balk at anything out of the ordinary.
- Always leave an escape route when working in close quarters with animals.
- Avoid startling an animal. Make it aware of your approach before getting too close to it.

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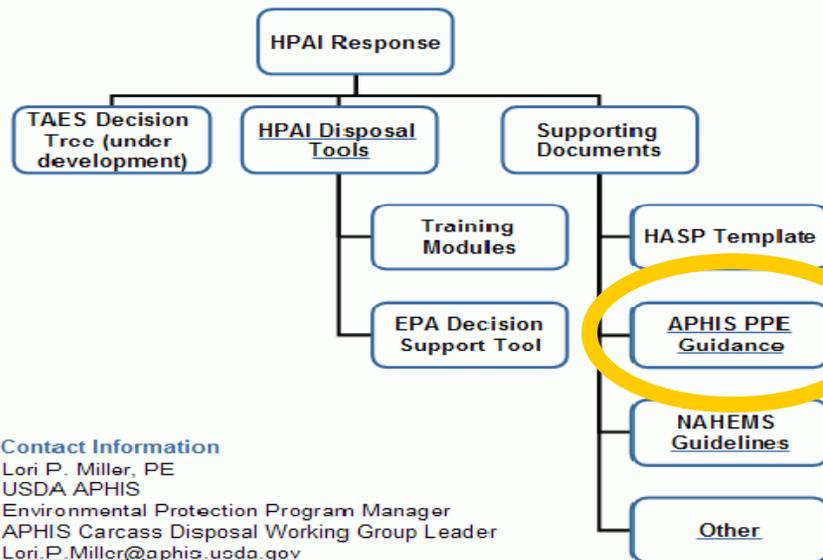
## National Center for Animal Health Emergency Management

United States Department of Agriculture

Animal and Plant Health Inspection Service

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30

Wednesday, February 14, 2007



# APHIS Employee Protection Guidance

United States Department of Agriculture  
Marketing and Regulatory Programs  
Animal and Plant Health Inspection Service  
Directive APHIS 6800.1 5/10/06

## ENSURING THE PROTECTION OF EMPLOYEES INVOLVED IN HIGHLY PATHOGENIC AVIAN INFLUENZA CONTROL AND ERADICATION ACTIVITIES

### 1. PURPOSE

This Directive specifies APHIS policy to ensure the safety of employees engaged in highly pathogenic avian influenza (HPAI) control and eradication activities. The policy is based on the degree of risk known to be associated with various levels and types of exposures to HPAI viruses and should be considered complementary to avian disease control and eradication strategies as determined by State government, industry, or the United States Department of Agriculture (USDA).

# GUIDANCE FOR PROTECTING POULTRY WORKERS AT RISK

The following summarizes recommendations for protecting at-risk workers developed by the Centers for Disease Control and Prevention (CDC), the World Health Organization, and the Occupational Safety and Health Administration. Employees involved in HPAI control and eradication activities must take these precautions.

1. All persons who have been in contact with poultry, their feces or respiratory secretions, or contact with potentially contaminated surfaces must wash their hands frequently. Hand hygiene also must be performed immediately after gloves are removed and must consist of washing with soap and water for at least 15-20 seconds or using other standard hand disinfection procedures as specified by State government, industry, or United States Department of Agriculture (USDA) outbreak-response guidelines.
2. All workers involved in the culling, transport, or disposal of HPAI virus-infected poultry...

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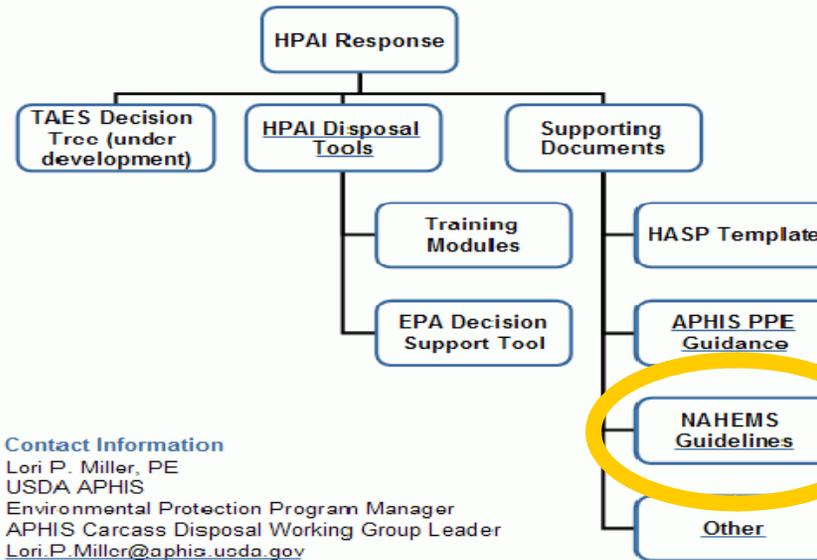
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31

Wednesday, February 14, 2007





# Veterinary Services - Emergency Management National Animal Health Emergency Management System (NAHEMS) Guidelines



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The National Animal Health Emergency Management System (NAHEMS) is an integrated system for dealing with animal health incidents in the United States, such as the incursion of a foreign animal disease or a natural disaster. It encompasses the four tenets of emergency management: prevention, preparedness, response, and recovery. One cornerstone of the NAHEMS is the response guidelines series. The NAHEMS Guidelines are designed for use by official response personnel in the event of a major animal health emergency. They provide information that may be integrated into the preparedness plans of other Federal, State and local agencies, Tribes, and additional groups involved in animal health emergency management activities. The guidelines are being reviewed and updated on an ongoing basis; comments and [suggestions](#) are welcome. Some of the documents posted here are drafts, while others are "final" versions of living documents that will be updated as often as necessary.

The NAHEMS Guidelines are for official use only. Access is restricted to persons involved in the

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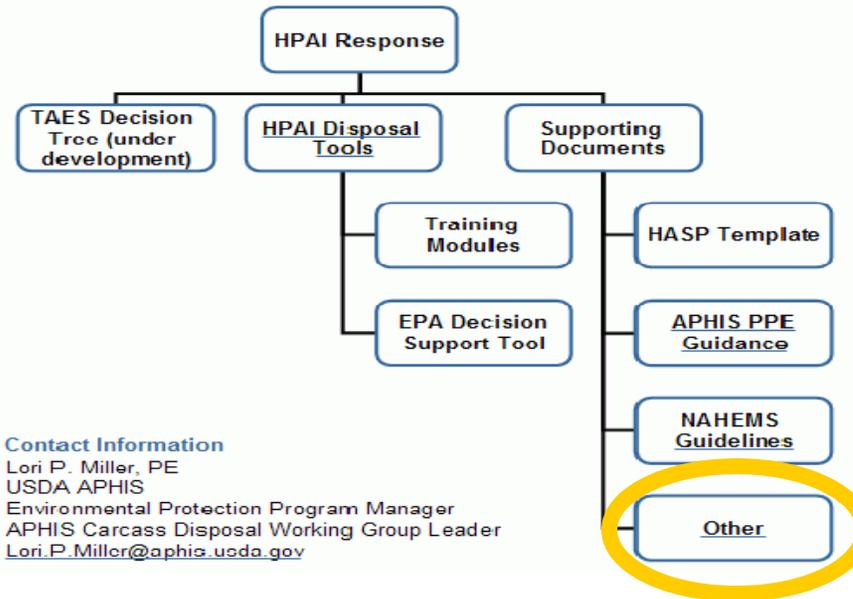
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32

Wednesday, February 14, 2007



# Questions

