Processing of AI Wastes at Covanta Energy-from-Waste Facility

Committee on Transmissible Diseases of Poultry and Other Avian Species

United States Animal Health Association

October 17, 2016
Greensboro, North Carolina
Proper management of waste should be a tool used to stamp out animal disease, not an obstacle that facilitates its spread.
Methods of Managing AI Wastes

- Combustion
- Landfill
- Burial
- Compost
A Phone Call From Iowa

- May 2015, inquiry from Iowa on possible use of Covanta Indianapolis Energy-from-Waste facility to treat AI wastes
- Had to say no because of:
  - Biosecurity concerns transporting AI wastes across state lines and through poultry production-dense areas
  - Uncertain how wastes would be managed to prevent spread of disease
  - Uncertain if facility was permitted to accept wastes infectious to animals
- We, collectively, were not prepared
Goal of Exercise

• Develop a quick-response, biosecure method to manage and dispose of AI waste to limit the spread of disease with special focus on managing wastes from the index premise depopulated within 24 hours of an incident.

  – ISPA Member Facility – depopulate and package AI-type waste for transport to combustion facility (uninfected birds were used in exercise)

  – Covanta – establish operational parameters to process AI-type waste at Energy-from-Waste (EfW) facility
Benefits of Using Combustion Facility for AI Wastes

• 24 hour/7-day operation
• Manage wastes from the index premise while need for other waste management options evaluated based on scale of incident
• Variable volumes – small backyard flock to 126,000 lbs poultry per day
• Can accept birds and other wastes from AI incident like poultry litter and feed
Indiana Poultry Industry

• Large, diverse poultry industry, both in size of farm and type of birds
  – Egg-laying facilities
  – Pullets
  – Meat birds – turkeys, chickens, ducks
• $4.25 billion direct contribution to Indiana’s economy
• Trade restrictions - effect of incident on Indiana’s ability to trade nationally and internationally
Public and Private Partnership

- Indiana Board of Animal Health (lead agency)
- Indiana State Poultry Association
- Indiana Department of Environmental Management
- Indiana Department of Homeland Security
- Indiana State Department of Health
- Indiana State Department of Agriculture
- Covanta Environmental Solutions
- Max Katz Bag Company, Inc.
Exercise Order of Events

- Designate biosecurity hot, warm, and cold zones at farm
- Construct, line, and stage containers
- Depopulate and package birds in containers
- Load containers onto trailer
- Transport to Covanta Energy-from-Waste (EfW) Facility in Indianapolis
- Unload and stage containers at Covanta
- Introduce containers into combustor
# Farm Cold/Warm/Hot Zone Activities

<table>
<thead>
<tr>
<th>Cold Zone</th>
<th>Cold/Warm Interface</th>
<th>Warm Zone</th>
<th>Warm/Hot Interface</th>
<th>Hot Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct, line, and label empty containers; place on pallets</td>
<td>Empty and packed containers passed back and forth</td>
<td>Transport containers to and from hot zone</td>
<td>Empty and packed containers passed back and forth</td>
<td>Birds depopulated and packed into containers</td>
</tr>
<tr>
<td>Transportation vehicle and driver staged; transportation paperwork prepared; vehicle disinfected</td>
<td>Packed containers loaded onto transportation vehicle</td>
<td>Wrap packed containers with plastic wrap</td>
<td></td>
<td>Containers secured</td>
</tr>
<tr>
<td>Staging of personnel, supplies, and other support needs; medical monitoring and safety meeting; donning of PPE</td>
<td>Doffing of PPE</td>
<td>Spray wrapped containers with disinfectant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Biosecurity Zones

Cold Warm Hot
Construct, Line, and Stage Containers

Cold Zone
Construct, Line, and Stage Containers
Cold Zone
Deliver Empty Containers to Hot Zone

Warm Zone to Hot Zone
Depopulate and Package Birds

Hot Zone
Deliver Packed Containers

Hot Zone to Warm Zone
Wrap and Disinfect Containers

Warm Zone
Load Containers onto Trailer

Warm Zone to Cold Zone
Seal Trailer Tailgate

Cold Zone
Prepare Transportation Paperwork

Cold Zone
Covanta Indianapolis
Energy-from-Waste Facility
Unload and Inspect Containers
Disinfect Trailer
Unload and Stage Containers
Place Containers in Waste Storage Pit
Grapple Collecting Container
Grapple Transporting Container to Combustor Feed Chute
Introduce Containers into Combustor Feed Chute
Containers Entering Combustor
Exercise Logistical Package

- 12,200 uninfected egg-laying hens
- 30 containers with 400 egg-laying hens per container
- 30 pallets
- Five - 12’ x 100’ rolls of Synthetic BurLene®
- Six - 12’ x 16’ liners per roll
- 1,500 lbs. per box (30 boxes) = 45,000 lbs. total freight (1,400 lbs. egg-laying hens + 92 lbs. packaging material per container)
- One - 53’ semi-tractor trailer, 79,500 lbs. freight plus truck (80,000 lb. total legal limit)
Proposed Response Logistical Package

- 150,000 egg-laying hens/525,000 lbs. poultry
- 375 containers with 400 egg-laying hens/1,400 lbs. poultry per container
- 375 pallets
- 63 – 12’ x 100’ rolls of Synthetic BurLene® liners (assumes 6 – 12’ x 16’ liners per roll)
- 560,500 lbs. freight (poultry + packaging)
- 13 – 53’ trailers of boxes (30 boxes per trailer)
Covanta Indianapolis EfW Capacity

• Assuming two combustors are available, Covanta is able to accept 90 containers (3’ x 3’ x 3’) per day between the hours of 6 p.m. and 6 a.m. for three consecutive days.

• 270 containers with 400 birds per container = 108,000 egg-laying hens

• 270 containers with 1,400 lbs. poultry per container = 378,000 lbs. poultry
Contracts and Statements of Work

• Covanta and BOAH counsel are drafting a statement of work to establish terms to be used in the event of an incident where this waste management option would be utilized.

• Combustion units at the Covanta Indianapolis EfW facility are representative of combustion units at Covanta facilities nationwide, so the processing parameters established through the exercise may be able to be used at other Covanta facilities.
Proper management of waste cannot be an effective tool to stamp out animal disease without preparedness.
Contact Information

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Please see additional slides for more detailed information.
Biosecurity at Farm

- Pre-arrival – quarantine time frames, vehicle washing
- Medical monitoring
- Cold, warm, and hot zones
  - Activities
  - Personal protective equipment
- Disinfection
Container Specifications

• Containers are triple-walled, corrugated cardboard boxes with lids or flaps.
• Boxes strength/weight requirement – able to hold 1,766 lbs.
• Dimensions – roughly 3’ x 3’ x 3’ with allowances of 4”- 6” in each dimension, includes the lid / flaps, but not the pallet – 48” x 41” x 41” high boxes used in exercise.
Container Specifications (cont.)

• Pallet - can be integrated into the box, although having it free from the box is preferred
• Stacking - able to be stacked two containers high
• Used or new boxes are acceptable; recycled boxes used for exercise
Construction of Containers

- Unconstructed boxes delivered flat with separate pallets
- Four people to construct a box, one minute per box
  - Unfolding
  - Taping bottom
  - Seating on pallet
- Marking boxes – boxes numbered for record-keeping purposes with marking paint
Container Liners

• Specifications and Description: Synthetic BurLene® is a non woven synthetic fabric extrusion laminated to 4 mil white reinforced polyethylene.
  • Weight: 57lbs. per 1000 sq. ft. Meets AASHTO M-171 and ASTM C-171-69 for moisture retention standards per (ASTM C-156) and light reflectance not less than 70% per ASTM E97

• Purchased from Max Katz Bag Company, Inc. 
  www.maxkatzbag.com/synthetic-burlene.html
Container Liner Cutting

• Synthetic BurLene® comes in 12 ft. x 100 ft. rolls folded to 40 in. width.

• Rolls are bagged separately and secured with ties to maintain quality until ready for use.

• 16’ lengths of liner cut from the rolls to make 12’x16’ pieces. The liner pieces were cut at the farm using a utility knife and cutting guide.

• Two people to measure, cut, and mark center of liners, one minute per liner.
Container Liner Fitting

- Liners fitted into boxes with longest dimension parallel to longest side.
- Liner pieces pushed down into the boxes using a rounded two-by-four or other similar tool.
  - Four plunger tools with a person at each corner with a plunger and two people on two opposite sides holding the centerline of the material against the box edge to keep liner centered.
  - Six people to line box, one minute per box.
Additional Supplies for Packaging

• Duct tape to secure liner flaps inside container.
• Strapping tape for securing box flaps (top and bottom) or lids – need enough for three or four pieces of tape on both the top and bottom of the boxes.
• Plastic film to wrap exterior of containers to facilitate disinfection and provide additional structural support.
• Utility knives and blades.
• Tape measures to measure liners.
• Marking paint to number boxes and mark center of liners.
• Sharpie-type markers.
Depopulation and Packing Containers

• Modified atmospheric carts were used to depopulate the birds.
• Birds were transferred directly from the carts into the waste containers.
• Poultry facility employees depopulated the birds and packed the containers; BOAH and ISPA staff observed.
Packing Containers

• Pack birds into the container at least 12” below the 12’ dimension of the liner piece on each side.
• Fold 12’ dimension flaps in first; cover with 16’ dimension flaps.
• Liner flaps secured using duct tape (optional)
• Box flaps woven (folded one flap on top of the other) to close container. No tape needed.
Disinfect Containers

• Wrap containers with plastic film - tuck end of plastic film under bottom corner of container and wrap sides from bottom to top and around top rim of container.

• Spray wrapped containers with disinfectant spray.
Loading and Transportation

- Telescopic forklift (e.g., - Lull) and a standard forklift were used to transport containers and pallets around the farm and to load the containers onto the back of the semi-tractor trailer. Flatbed truck would better facilitate movement of containers.
- Pallet jack was used to maneuver containers inside the trailer.
- 30 containers fit in a single layer in a 53’ trailer.
- Tailgate was sealed.
Transportation and Storage

- Covanta Environmental Solutions driver experienced with escorted loads and waste tracking paperwork.
- Indiana Department of Transportation provided example paperwork for a convoy.
- Freight weight limits might be waived in an emergency allowing more wastes to be transported at one time. Limitations of rural bridges and roads need to be considered.
- Refrigerated trucks could stage wastes at farm until Covanta is ready to receive them. Covanta cannot accept frozen wastes.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Time per Container (minutes)</th>
<th>Total time (hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Construct container</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Cut liner sections</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Install liner in container</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Transporting containers warm to hot zone</td>
<td></td>
<td>variable</td>
</tr>
<tr>
<td>Depopulation and packing of poultry</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>Sealing of liner and container</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Transporting containers hot to warm zone</td>
<td></td>
<td>variable</td>
</tr>
<tr>
<td>Wrap and disinfect containers</td>
<td>2</td>
<td>0.5</td>
</tr>
<tr>
<td>Loading containers onto trailer</td>
<td>1</td>
<td>0.5</td>
</tr>
<tr>
<td>Doffing, packaging, and loading used PPE</td>
<td></td>
<td>0.25</td>
</tr>
<tr>
<td>Prepare trailer for release and transport</td>
<td></td>
<td>0.5</td>
</tr>
</tbody>
</table>

**Note:** Some activities occur concurrently
<table>
<thead>
<tr>
<th>Activity</th>
<th>Number of Staff</th>
<th>Zone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparation</td>
<td>15</td>
<td>Hot, warm, cold</td>
</tr>
<tr>
<td>Construct container</td>
<td>4</td>
<td>Cold</td>
</tr>
<tr>
<td>Cut liner sections</td>
<td>2</td>
<td>Cold</td>
</tr>
<tr>
<td>Install liner in container</td>
<td>6</td>
<td>Cold</td>
</tr>
<tr>
<td>Load and transport containers warm to hot zone</td>
<td>3</td>
<td>Warm/Hot</td>
</tr>
<tr>
<td>Depopulation and packing of poultry</td>
<td>25</td>
<td>Hot</td>
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<td>Sealing of liner and container</td>
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<td>Load and transport containers hot to warm zone</td>
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<td>Hot/Warm</td>
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<td>Wrap and disinfect containers</td>
<td>3</td>
<td>Warm</td>
</tr>
<tr>
<td>Loading containers onto trailer</td>
<td>2</td>
<td>Warm</td>
</tr>
<tr>
<td>Doff, package, and load used PPE</td>
<td>1</td>
<td>Warm/Cold</td>
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<tr>
<td>Prepare trailer for release and transport</td>
<td>2</td>
<td>Cold</td>
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Covanta EfW Facility Procedures

• Truck checks in at gate house, provides paperwork, is weighed, and directed to unloading dock.
• Seal is removed from tailgate, and load inventoried and evaluated for releases.
• Containers are unloaded using a forklift and staged adjacent to waste storage pit.
• Inside of trailer sprayed with disinfectant immediately after off-loading containers
Covanta EfW Facility Procedures (cont)

• Ramp to staging area and staging area sprayed with disinfectant after all containers unloaded and transferred to waste storage pit.
• Containers transferred to waste storage pit and positioned for pick up by grapple.
• Grapple transfers containers to combustor feed chute.
• Containers fed into the combustor.
Small Scale Release

• Minor failure of a container or other release of AI waste:
  – Don appropriate, additional PPE
  – Contain/absorb and repackage AI waste
  – Feed materials directly to combustor
  – Disinfect equipment and areas impacted by release
Large Scale Release

• Major failure of multiple containers or other large release of AI waste:
  – Emergency Response Contractor
    • Contain spill
    • Repackage AI wastes
    • Decontaminate impacted areas and equipment
    • Disinfect impacted areas and equipment
  – Decontamination waste waters generated are treated through direct injection at Covanta
  – Repackaged AI wastes processed at Covanta
Indiana State Department of Health

- Influenza-like illness monitoring – pre-exercise briefing on the medical monitoring program and the information to be collected to fulfill monitoring requirements.
  - ISDH Symptom Monitoring Log 1-19-16
  - ISDH Monitoring Guidance for LHD Response to Highly Pathogenic Avian Influenza (Generic May 2016)
  - Personnel Check-in List