

## **LANDFILLING OF POULTRY CARCASSES: LESSONS LEARNED FROM THE VIRGINIA AVIAN INFLUENZA OUTBREAK OF 2002**

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Low pathogenic Avian Influenza (AI) affected 197 poultry farms in 6 counties of Virginia in 2002. To eradicate the virus, more than 4.7 million birds were destroyed. More than 3.1 million, or 13,000 tons, of the birds infected were disposed of in landfills. Since the outbreak in 2002, Virginia's poultry industry has invested significant resources to research and demonstrate the effectiveness of in-house composting as a carcass disposal method. However, during a significant disease outbreak, it is important to have as many disposal options as possible.

Landfilling provides several advantages including environmental protection and speed of disposal without long-term management. However, success with the large scale landfilling of poultry carcasses requires careful planning and execution in securing landfills, transportation, communication, and equipment.

### **Securing Landfills**

Prior to the first bird leaving the farm, a landfill must first agree to accept the carcasses. This decision is generally based on a wide variety of factors including the strain of AI virus, ability of the landfill to accept the waste without significant disruption to existing operations, the requirements of their solid waste permit, the financial incentive for accepting carcasses and political and public perception factors. Generally, larger regional landfills are better suited for carcass disposal than smaller county facilities.

Recent media attention on bird flu and the potential for a pandemic outbreak, may present a challenge for local authorities responsible for making a decision to accept infected carcasses. Public opposition to landfilling carcasses at their local landfill was a real challenge in 2002 and will be an even greater challenge in the next outbreak, regardless of the strain of avian flu.

Most of these factors are out of the poultry industry's control. However, the chances for success in negotiating an approved disposal location can be increased by discussing all of the landfills concerns well in advance of an outbreak. During an outbreak, the industry is at the mercy of the landfill and may face significant increases in tipping fees.

## Transportation

Since landfilling requires the transportation of poultry carcass from AI positive farms to off-site landfills, transportation issues are pivotal to the success of any landfilling operation. One of the first and most significant issues to be addressed is the availability of a sufficient number of trailers to haul the carcasses to the landfill. In order to ensure proper biosecurity, carcass must be transported in sealed, leak-proof trailers. In Virginia, we used gasketed tailgate dump trailers. These trailers were effective, but their availability was limited.

Proper protocols for loading carcasses should be implemented to reduce the chance of liquids leaking from the trailer and to enhance the removal of the carcasses. Trailers should be double lined with polyethylene plastic sheeting (minimum 6-mil thickness) large enough to completely cover the carcasses and seal at the top. As an alternative to double lining, a single smaller sheet of plastic can be placed in the bottom of the trailer to provide a slick surface for the single liner to slide out of the trailer. This option is only acceptable when trailer gaskets



have been inspected and determined to be leak proof. Regardless of the method used, placing the second liner can be dangerous to workers due to the slick surface and proper safety precautions should be in place.

Once the liner is in place, at least 1 foot of absorbent material (litter, straw or sawdust) is placed in the bottom of the trailer to absorb fluids and the carcasses loaded into the trailer. A minimum of 1 foot of headspace should be left at the top of the trailer to allow for expansion of the carcasses. Once the trailer has been filled, fold the plastic liner over the carcasses, seal with tape and spray with disinfectant. The trailer should be covered to prevent tears in the plastic liner resulting in a biosecurity breach during highway transport. Prior to leaving the farm, clean all organic material from the truck and trailer and spray tires, wheel wells and undercarriage with disinfectant.

During the 2002 outbreak in Virginia, not all of the trucks used to transport carcasses to the landfill were equipped with the hydraulic equipment needed to dump the trailers. This resulted in significant delays. Trucks full of carcasses had to wait at the landfill until vehicles with the necessary hydraulic equipment arrived. This obstacle can be overcome by using only trucks with hydraulic equipment installed or adapting a service truck with the necessary hydraulic equipment.



Similarly, it may be necessary to obtain waivers from the Department of Transportation on load weight and driver hours because of the demand on limited trucking resources. Due to the urgency and nature of an AI outbreak, these waivers may be issued if requested in writing by the lead response agency.

## **Communication**

Good communication is the key to the success or failure of this carcass disposal method. When carcasses arrive at the landfill, a number of actions should have already occurred:

- Cleaning and disinfection crews mobilized.
- Transportation routes determined and approved by the State Veterinarian to minimize biosecurity threats.
- A trench constructed into the existing solid waste at a strategic location.
- Bird control teams in place to control predation by buzzards, gulls, etc.
- State and/or federal inspectors in place.
- Landfill staff in place to direct activities.
- For after-hours disposal, lighting equipment placed at appropriate locations.
- In muddy conditions, stabilizing material—such as stone and wood chips—placed from the main road to the disposal site and from the disposal site to the cleaning and disinfection station.

A communication failure that prevents any of these actions from occurring will halt the disposal operation and waste extensive resources. In Virginia, we found that a single point of contact between the farm and the landfill along with a written communication plan eliminated many of our earlier communication failures.

## **Equipment**

At the landfill, carcasses are disposed of in large trenches constructed into the existing solid waste, typically in an area of intermediate cover. The excavation of trenches into the compacted solid waste requires heavy equipment not typically found at landfills. Although it is possible to excavate a trench using the on-site compactors, it may take 3 to 4 times as long as it would with an appropriately sized track hoe.



In order to minimize disruption on the normal landfill operations and to accommodate the volume of material that is generated during an outbreak, after hours operations are often necessary. Safe after hours operations require portable lighting at each of the critical areas of operation: disposal trench, staging areas, cleaning and disinfection station, etc.

## **Conclusions**

In 2002, landfilling was used extensively to manage an outbreak of low pathogenic avian influenza in the Shenandoah Valley of Virginia. This same disposal method, with proper preparations and good management, could be used for future outbreaks where site conditions prevent on-farm disposal options such as in-house composting.