Odor Control for Animal Feeding Operations

Alabama Job Sheet No. AL6A

Land User: _____ **County:** _____ **Date:** _____

Farm No.: _____ **Tract No.:** _____ **Assisted By:** _____

General Information

It may not be practical or feasible to eliminate all odor emissions from animal feeding operations, but it is possible to manage or mitigate the odor. Some variables that effect odor are:

- Type of operation
- Building design
- Ventilation method
- Animal numbers
- Animal diets
- Manure treatment system
- Lagoon loading
- Season
- Topography
- Management skill or effort

A properly designed facility and waste management system will still have odor emissions if not properly operated and maintained.

Best Management Practices for On-Farm Odor Reduction

Properly Locate the Facility

The further an animal operation is from its neighbors, the better. Try to locate facilities in the middle of the tract of land if possible. Odors from an animal operation often follow the landscape topography the same as runoff from rainfall; therefore, an alternative building site may avoid odor complaints from neighbors.

Keeping the Animals Clean, Dry, and Healthy

Clean, dry, and healthy animals are less odorous. Dirty, manure-covered animals promote accelerated bacterial growth and the production of odorous gases. Animal stress can also be correlated to an increase in odor production. Ventilation and environmental controls for the buildings must be properly designed and maintained to keep the animals healthy.

Minimize Dust

It has been established that there is a correlation between dust and odor emission. Dust particles adsorb and concentrate odorous compounds. As the dust particles are carried by the wind, so is the odor. Therefore, minimizing dust will reduce odor. Most farm dust comes from feed, fecal matter and, in the case of poultry, from feathers and litter. Dust also comes from animal skin, insects, and other sources. Buildings should be cleaned of all dust between batches of animals (including fans, shutters, and screens).

Properly Design, Construct, and Manage Lagoons

When properly sized and managed, an anaerobic lagoon can be operated with a minimum of disagreeable odor. New lagoons should be filled with fresh water to a depth corresponding to 60 percent of the minimum treatment volume before manure loading begins. Inoculating the new lagoon with bacteria from a working lagoon may accelerate the establishment of an anaerobic bacterial population. Don't "shock load" the lagoon. The waste stream entering the lagoon should be as continuous and frequent as possible. Always maintain the minimum design treatment volume. Maintain the lagoon pH at 7 to 8. Lagoons with pH of 6.5 or less have more odor.

Decrease Waste Concentrations

The more dilute the water/waste mixture, the less odor. This should be considered in the design process. An over-sized lagoon will have less odor. Animal diets can also be manipulated to produce less waste and a less odorous waste. Consideration should also be given to the

separation of the solids from the waste mixture. This will dilute the liquid waste product being treated in the lagoon and cause less odor. The solid separated material can be composted and sold or land applied.

Proper Disposal of Mortality

Normal mortality for the animal feeding operation *must* be properly handled for both odor control and biological security of the operation. Composting, incineration, and rendering are acceptable methods for mortality disposal.

Good Fly and Rodent Control Programs

These programs must be a continuous process on the farm. When feed and waste products are properly handled, these problems are minimized.

Utilize Trees

While trees should not grow directly adjacent to facilities, wind breaks of trees correctly positioned near the facility not only create a visual barrier but can also provide a large filtration surface for dust and odorous compound removal. Trees can adsorb odorous compounds and create turbulence that enhances odor dispersion and dilution. Trees also can create a cooler microclimate around the facility, which can reduce odors.

Biofilters

Biofilters serve to control odors in the exhaust air from confinement buildings. Exhaust air is forced through a biological medium such as wood chips, that is kept moist to promote the growth of bacteria. The bacteria breaks down the odorous compounds as they pass through the biofilter.

Utilize Covers

Waste storage ponds and tanks have the potential to release strong odors. Covers can eliminate the manure/wind connection on waste storage tanks, waste storage ponds or small lagoons, thereby reducing the wind-induced volatilization of gases and odors. Synthetic covers can be quite expensive but can provide opportunities for methane recovery and utilization. Biological (straw) covers have been found to be beneficial in odor reduction. The straw must occasionally be replaced. The decomposed straw is chopped during the agitation process and land applied with the waste product.

Properly Land-apply Waste

Apply waste only to crops at the recommended rates. Avoid application during windy periods. Pressure on sprinklers used to apply wastewater must be high enough for uniform distribution patterns but not so high that the wastewater is atomized thereby creating drift. Incorporating or injecting the waste into the soil will reduce odors.

References

NRCS AL Conservation Practice Standards
- Code 317 - Composting Facility
- Code 359 - Waste Treatment Lagoon
- Code 633 - Waste Utilization
- Code 769 - Incinerator

NRCS Guide Sheets
- AL313 - Waste Storage Facility
- AL317 - Composting Poultry Mortality
- AL317A - Composting Swine Mortality
- AL359 - Waste Treatment Lagoon
- AL590 - Application Distances for Animal Manure and Organic By-Products Application
- AL656 - Constructed Wetlands for Animal Waste Treatment

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Revised 5/08

Odor Control Measures Selected By Land User

	Yes	No	Notes
Facility location:	___	___	_____
Keeping animals clean, dry, and healthy:	___	___	_____
Minimize dust	___	___	_____
Properly design, construct, and manage lagoon:	___	___	_____
Decrease waste concentrations:	___	___	_____
Properly dispose of mortality:	___	___	_____
Rodent and fly control:	___	___	_____
Utilize trees:	___	___	_____
Utilize biofilters:	___	___	_____
Utilize covers:	___	___	_____
Properly land apply wastes:	___	___	_____