

Planning Considerations for Dairy Cattle Disposal by Incineration & Landfilling

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Livestock carcass incinerators use liquid fuel—diesel, propane, or natural gas— to support high temperature combustion that reduces carcasses to ash and gaseous emissions. The primary benefits of incineration are rapid and timely disposal, minimal operational labor, and ability to rapidly destroy pathogens.

Iowa regulations require carcass incineration to be done in engineered incinerators equipped with an afterburner or other approved devices that limit smoke emissions sufficiently to meet Iowa DNR limits (open burning of carcasses is prohibited). Incinerators usually include a primary burn chamber that is lined with refractory materials to withstand high heat, and secondary chambers—sometimes called scrubbers—that combust unburned products from the primary chamber thereby reducing emission of odor and smoke.

Overloading can result in lower than desired combustion temperatures, resulting in air pollution. So it is important to purchase a unit having dimensions and burner capacity matching the needs of your operation.

Fuel usage is an important incinerator characteristic; a 2001 report by University of Nebraska Extension listed diesel fuel consumption ranging from 1 to 3 gallons per 100 pounds of mortality. Ash removal and disposal, and routine repairs, are additional factors to be considered.

Incinerators designed for on-farm disposal of routine mortalities are usually inadequate to handle surges caused by disease or other catastrophic events. Large capacity portable air-curtain incinerators, however, have been used successfully to handle emergency losses. These units consist of large open-topped refractory-lined boxes, or a temporary trench excavated in the ground, that is fitted with a fan and air manifold system. The fan blows a high velocity air “curtain” over and into the combustion chamber. This results in elevated burn temperatures, and significantly improved retention and combustion of smoke, larger particulates, and odorous emissions. Air curtain incineration is a fuel-intensive process requiring both liquid fuel and dry wood. Trained operators also are required. As a result, routine use on most farms is impractical, but air curtain incineration service can be obtained through companies specializing in disaster cleanup and recover.

Disposal of livestock mortalities in landfills is limited by local landfill policies. About 30 % of landfill operators surveyed by the Iowa DNR said they do not accept dead stock, and another 26 percent will only accept carcasses under pre-arranged conditions. The benefit of using engineered landfills for disposal is that these facilities are carefully sited to avoid environmentally sensitive areas, and are constructed with leachate containment and/or treatment systems that substantially reduce the risks of soil and groundwater contamination.

Small county or municipal landfills often do not have sufficient excavating capacity, or stockpiles of cover soil, to handle large volumes of livestock during an emergency. Furthermore, animal remains are difficult to compact, making proper construction of landfill cells difficult unless large quantities of more stable solid waste are available to bury with the carcasses. Since most landfills are publically owned, public perceptions of environmental risk also affect the willingness of landfill operators to accept carcasses. During the foot-and-mouth disease outbreak in Great Britain in 2001, opposition from the public limited the use of public and commercial landfills, forcing British authorities to construct special large emergency mass burial sites. With the above in mind, livestock producers are advised to contact landfill managers in advance of disposal needs to determine if facilities and services will be available for routine or emergency livestock disposal.