BEST ENVIRONMENTAL MANAGEMENT PRACTICES
FARM ANIMAL PRODUCTION

BROCHURE: MORTALITY MANAGEMENT

Recommendations from the Conservation Innovation Grant 69-8E49-1-107 Capturing Available Renewable Energy Resources Through Improved Mitigation of Environmental Protection On-farms (using PAD Technology)

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Prepared For:
Wyoming U.S. Department of Agriculture, Natural Resources Conservation Services (USDA-NRCS)

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NOTE:

This brochure has been created for the USDA-NRCS in support of adopting the portable anaerobic digestion (PAD) technology demonstrated in the referenced grant. The purpose of this brochure is to provide the USDA-NRCS with support in informing farmers and ranchers in Wyoming about the opportunities for utilizing anaerobic digestion to mitigate animal mortalities over other practices, such as burning (incineration), composting, rendering, and other disposal methods that are potential risks to the environment. The information in this brochure is a deliverable provided as part of the referenced grant and is in the form of a brochure, with the intent of permitting the USDA-NRCS to modify or use or alter the information in whatever form that is most convenient and effective for their use. Alternatively, this brochure may be modified (from time to time), by Earth By Design, in cooperation with the USDA-NRCS or upon recommendation of the USDA-NRCS.

Introduction

Biological waste disposal of animal mortality comes from a variety of sources:

- Some animals die due to age, disease, injury, or other causes in any livestock operation (whole carcasses),
- Some animal mortality waste is a result of butcher or rendering waste (whole to partial carcasses),
- And, some animal mortality waste comes after cooking/restaurant waste (partial carcasses).

For animals that die of disease, injury or other related conditions caused in confined livestock operations, the mortality rate is generally highest for newborn animals due to their vulnerability. Catastrophic mortality occurs from natural disasters (such as floods), or when epidemics infect and destroy large portions of a herd or flock. In even rarer instances, there are also times when an entire herd or flock must be destroyed to protect human health or other farms and livestock.

Butcher waste and rendering is typically a result of conversion of livestock into consumer products (edible products), that sometimes produces large quantities of waste. Restaurants, grocery stores, and even households have disposal animal waste disposal. Depending on the size of the operation, the waste can be in extremely large quantities.

The purpose of this publication is to present livestock and/or poultry producers with an innovative technology currently available to manage normal, day-to-day mortalities, known as, “The PAD”. This does not apply if an emergency is declared. The PAD is a cost effective technology that can be appropriately sized for optimum performance under the direction and guidance of Earth By Design (EBD) and pertinent authorities. Planning for animal mortalities, whether as part of normal, daily operations or in anticipation of a catastrophic mortality event, should include the study of appropriate regulations and permitting, site evaluation, and having insurance to cover the costs involved.

Mortality Management Methods

Today’s livestock mortality management calls for proper and environmentally sound methods of disposal. Mortality management is particularly important for at least three, main reasons:

1. Hygiene (prevention of disease to humans or livestock)
2. Environmental protection (impacts on the air, water, and soil in your area)
3. Aesthetics (avoiding nuisance issues)

Questions and Answers

Question: *I've been using other methods such as composting for years, why should I change now?*

Growing concerns about Bovine Spongiform Encephalopathy (BSE) or Johne's disease transmission (amongst others) have created a new problem for livestock owners. These diseases have spread, in part, as a result of not using environmentally safer methods of carcass disposal. Every time you dispose of animal carcasses or parts in a manner that doesn't' protect against the transmission of these diseases, you run the risk of losing your entire herd (which is also your livelihood), or worse, risking your family's, worker's or your own health.

Question: *Traditionally, I've used portable rendering operations or taken my animals to the landfill, is there a problem with that?*

Both of these methods of disposal are regulated and typically operate within the required parameters of local, State and federal laws. However, there are both continued risks to the environment, and continuously increasing high costs that have to be considered. Many landfills are either refusing animal mortalities (due to the concerns of spreading disease) or increasing the costs dramatically (in order to afford the additional work required for compliance with burial regulations). Most landfills are already doing all they can to mitigate exposure of bacteria and excessive nutrients and particles into the soil and ground water, but this is becoming increasingly difficult with the growing number of farmers and ranchers. In many states, rendering facilities have closed their doors due to the high cost of disposal. Portable rendering operations continue to be an option, but they 1) take funds out of the community, and 2) continue to have increasingly higher costs in order to afford the disposal costs. While you can still have portable rendering performed for your operations, having on-site disposal methods saves time and money. Additionally, using an on-site, portable digester provides opportunities for developing clean soil amendments and generating valuable, natural gas.

Question: *I've heard anaerobic digestion has a large, up-front cost and may not be a technology I can use on my farm?*

Up until recently, the return on investment for anaerobic digestion was typically limited based on the capital costs. The PAD technology is a small, sizeable unit that can be located on your farm for a small, capital investment. There are multiple financing options supported by the USDA-NRCS (and possibly other, Federal, State and local agencies), including valuable incentives and grants. The value of an on-farm PAD is not primarily based on "income generated," but rather on the reduction of existing costs. What the technology also provides are opportune cost benefits, such as improving the environmental aspects of your operations and producing healthier livestock and crops.

While there are many methods available for managing mortalities, anaerobic digestion is currently one of the most effective methods for protecting the environment. Following specific guidelines, on-site, portable anaerobic digestion has the following advantages and disadvantages:

Advantages	Disadvantages
Opportunities for incentives to off-set capital costs and loan guarantees to support financing	Capital costs that may require financing
Low maintenance and remote monitoring options	Lead stabilization time in between operations and at startup
Small foot-print and contained system to reduce risks	There are always risks with gas Flaring and storage
Operational (Value-added) Benefits including: soil amendments, clean (recycled) water, cleaner air (avoiding nuisance concerns)	Additional permitting and regulations compliance
Nutrient Recycling (which does not occur with composting, incineration, landfills, or burial)	Additional fertilizer testing and re-processing can be time consuming
Pathogen reduction and destruction (using specific operational techniques)	Pre-processing of feedstock can be time consuming
Reduction of storage methods reducing preservation requirements (without preservation, dead animals should typically be transported to rendering facilities within 24 - 72 hours to prevent the spread of disease and bacteria to humans and livestock), and contamination of surface and ground water)	
Reduction of transportation bio-security measures with vehicles and personnel (vehicles transporting carcasses must be leak proof, covered, and in some cases, permitted)	
No fees for pick-up or handling (which is typical with landfills and rendering facilities)	

Appropriate anaerobic digestion operations require proper permitting and record keeping. The operational costs and time associated with PAD technology are minimal, and may actually be less than the time you spend handling mortalities now.

For more information, contact the appropriate agency for your region to learn more.

References

For help learning more about applicable laws, rules, and resources:

Agency: United States Department of Agriculture, Natural Resources Conservation Services (USDA-NRCS)
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For a list of Service Center locations, visit:
http://offices.sc.egov.usda.gov/locator/app?service=page/CountyMap&state=WY&stateName=Wyoming&stateCode=56

For additional information on rules and regulations:

Agency: Wyoming Department of Environmental Quality

Air	Industrial	Water	Solid & Hazardous Waste
Cheyenne Herschler Building 122 W. 25th St. Cheyenne, WY 82002 Telephone 307-777-7391 Fax 307-777-5616	**Industrial Siting Division** Luke Esch, Administrator 307-777-7192 Kimber Wichmann, Principal Economist 307-777-7369 Herschler Building 4 West 122 West 25th Street Cheyenne, WY 82002	**DEQ/Water Quality Division** 122 West 25th Street Herschler Building, 4th Floor-West Cheyenne, Wyoming 82002 Phone: 307-777-7781 Fax: 307-777-5973 For field offices, visit: http://deq.state.wy.us/wqd/	Alan Edwards (307) 777-7753
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For additional information about specific, agricultural operations:

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