

Summary

A number of technologies exist for the reduction of odor and gas emissions from livestock buildings, starting with good housekeeping and including both physical and chemical treatments (see Table 41-1). Effective reduction of overall emissions will most likely include several of these control strategies rather than any single one.

Table 41-1. Summary of technologies for odor control.

Process/System		Description	Advantages	Disadvantages	Cost
Exhaust Air Treatment	Biofilters	Odorous gases are passed through a bed of compost and wood chips; bacterial and fungal activity help oxidize volatile organic compounds.	Effectively reduces odors and hydrogen sulfide emissions	May need special fans because of pressure drop. Rodent control is important.	\$0.50 to \$0.80/pig
Dust Reduction	Windbreak walls	Many odorous compounds are adsorbed on dust particles and conveyed on dust. A wall made of tarp or any other porous material is placed 10-15 ft from exhaust fans. The walls block some of the fan airflow in the horizontal direction. Dust and odor levels downwind of windbreaks may be lower since the plume is deflected.	May effectively reduce dust and odor emissions is necessary for sustained odor control.	Periodic cleaning of dust on walls	\$1.50/pig space of bldg capacity

Table 41-1. (Continued)

Process/System	Description	Advantages	Disadvantages	Cost	
Dust Reduction	Shelterbelts	Rows of trees and other vegetation are planted around a building, creating a barrier for both dust and odorous compound removal from building exhaust air. Trees can absorb odorous compounds, and they create turbulence that enhances odor dispersion upward.	May effectively reduce dust and odor emissions	It may take several years to grow an effective vegetative windbreak.	\$0.20/pig space of bldg capacity or more
	Washing walls	A wetted pad evaporative cooling system is installed in a stud wall about 5 ft upwind of ventilation fans and downwind of hogs in a tunnel-ventilated building. All of the ventilation airflow passes through the wet pad before being pulled through the fans.	At medium ventilation rate, reduces about 50% of dust and 33% of ammonia	Residence time inside the pad is very small; thus odor removal may not be highly effective.	\$5.70/pig space of bldg capacity installation cost
	Oil sprinkling	Vegetable oil is sprinkled daily at low levels in the animal pens.	Helps reduce airborne dust and odors	Requires more time and effort to power waste between groups of animals	\$2.50/pig space of bldg capacity
Diet Manipulation	Synthetic amino-acids and low crude protein content	Products are mixed into the feed.	Lower N content in the manure, may reduce odor and ammonia emissions	Not known yet	N/A
	Feed additives (Yucca schidigera)	Product is mixed into the feed.	May reduce odor and ammonia emissions	Not known yet	\$0.20/pig marketed or more
Bedding	Dry carbon source added to animal pens to promote comfort and soak up manure.	Reduced obnoxious odors, works for all species	Must harvest or buy bedding and add it throughout the year, increased volume of manure to haul	\$3.00/head capacity for swine buildings	
Manure Additives	Chemical or biological products are added to the manure.	May reduce odor and ammonia emissions	Usually questionable products, may not achieve desirable results under field conditions	\$0.25 to \$1.00/pig or more	