Manure Odors from Livestock Operations

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tightness, depression or anxiety. These results are similar to those reported by Kelly Donham's laboratory at Iowa State University.

Dispersion of Odors

An important aspect of odor dispersion is that the width of the odor plume changes very little as it moves from the source. Thus, wind blowing across a 1000-ft-wide field with freshly applied manure will potentially affect more people than wind blowing across a 300-ft wide manure application area.

During a sunny day, most of the odors are carried up with rising air currents. This is the primary reason that neighbors won't notice odors as often or as far away during days when the sky is clear.

During the night, the ground is cool so there are no rising air currents. In fact, when the air is very stable, temperatures are often inverted or upside down. This means that the temperature near the ground is lower than at higher altitudes. Under these conditions, the odor emissions from the building will stay near the ground and at high concentrations for long distances because there is little dilution.

Odor Control

To reduce odor emissions from buildings, producers should keep the inside of the facility as clean, dry, and dust free as possible. Undesirable conditions normally occur in facilities with poorly designed or malfunctioning ventilation systems.

Biofiltration of the exhausted air is showing promise for reducing odor emitted from swine facilities. Air from exhaust fans is pushed under and up through a layer of compost and wood chips.

Based on our personal observations and neighbors' odor scores from the research study last summer, the biofilters appear to be effective at removing odors. Our biofilter cost per 18-inch pit fan was about $400, but we are continuing to make design improvements which will probably add to the construction costs.

To reduce odor emissions from outside manure storages, many producers use pit additives, although these products have met with limited success. Covering manure containments with floating biocovers is an old technology that is gaining new popularity. We also included this technique in our odor study last summer and found that an 8-inch layer of floating straw effectively reduces odor, but without some type of support, it will probably not float for an entire summer. Our cost was about $.08/sq ft of manure storage.

To reduce odor at the time of manure application, the manure must be pretreated, injected, or incorporated immediately. Pre-treatment processes such as digestion, composting, or blending with dry materials can effectively reduce odor, but these practices are too costly for most producers. Injecting or incorporating manure whenever possible is recommended because it helps reduce ammonia and odor emissions. Many producers are reluctant to adopt these practices because incorporation interrupts conservation efforts and it damages forage crops.