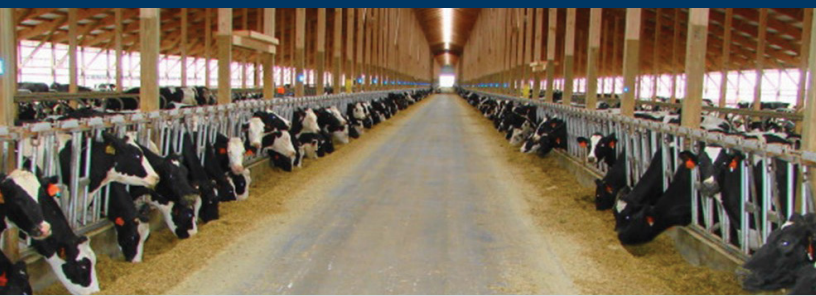




Photograph of inside a Modern Swine Facility



Photograph of inside a Modern Dairy Facility

Purpose of Brochure

This brochure was developed to provide the general public with some information about agricultural related odors, which can come from a variety of sources in rural areas. Odor impacts are difficult to predict. Downwind odors are a function of the amount and type of emissions source, weather conditions and topography. The impact these odors have is also a function of the distance to the neighbors.

Dealing with odor is a complex issue and agencies such as the Minnesota Pollution Control Agency (MPCA), Minnesota Department of Health (MDH), Minnesota Department of Agriculture (MDA) and research institutions such as the University of Minnesota are currently assessing odor mitigation technologies and are researching best management practices.

Livestock producer groups in Minnesota have also been active in promoting the use of odor reducing technologies and have been proponents of utilizing science and research to develop odor mitigation methods. Livestock producers are also becoming familiar with newer technologies to reduce odor emissions and are actively working with their producer groups and often partner with research institutions to conduct odor mitigation research.

Regulations

Currently, the State of Minnesota only regulates Hydrogen Sulfide (H₂S) emissions from livestock operations. H₂S is regulated by the MPCA through the state H₂S ambient air standard. This standard is a 30-minute average of 30 parts per billion (ppb) found twice in five days, or a 30-minute average of 50 ppb found twice per year. Odor is not regulated by the State at the present time. The MPCA utilizes a Flex Gas Detector to screen for H₂S. When screening indicates the potential to exceed the H₂S emission standard, the MPCA utilizes a Continuous Air Monitor (CAM) to further monitor H₂S emissions in the field for an extended period of time to establish a legal violation of the standard.

It should be noted that a variety of factors can affect the accuracy of CAM results. Livestock operators that are emptying liquid manure storage areas and are land applying the manure are exempt from H₂S standards for 21 days during a calendar year. Below is the weblink to the MPCA Odor Policy website: www.pca.state.mn.us/air/odor.

What about Ammonia?

Although the MPCA currently has no rule or law that regulates ammonia emissions, the MDH has established a Health Risk Value for ammonia. More information about Health Risk Values can be found at this MDH website: www.health.state.mn.us/communities/environment/risk/guidance/air/table.html.

Odor? Issues at the Local Level?

Some counties in Minnesota utilize an assessment tool called Odors From Feedlots Setback Estimation Tool (OFFSET) to determine the downwind odor impacts of a livestock operation. OFFSET was developed by the University of Minnesota and is based on science and research. Below is a weblink for further information about OFFSET: <https://extension.umn.edu/livestock-operations/manure-management>.

Counties may also enact specific zoning requirements to ensure that new residential development does not take place in agricultural areas. Many counties already require conditional use permits for larger livestock operations and can work with the livestock producers to ensure compliance with county specific odor mitigation standards.



Researchers from the USDA Agricultural Research Service conducting ammonia emissions research.

How Can Homeowners be more aware of Rural Living?

Potential new homeowners in rural areas should be aware of the sights, sounds and smells of country living before moving into rural areas. Researching the area where you may be building and talking with county planning and zoning staff or the County Feedlot Officer (CFO) for more information about where livestock operations are located is a good first step. The CFO and county staff can discuss things you need to know about living in or near highly intensive agricultural areas.



If you do mooove to the country, get to know your farm neighbors and talk with them first about odors, noise, sights and dust.

What Are Livestock Producers Doing to Control Odor or Dust?



Photograph of a Bio-filter.

Photograph of a Methane Digester.

Livestock producers are implementing a number of Best Management Practices and strategies to control odor, gas and dust emissions. These technologies and strategies include ensuring that organic crusts are maintained on open air liquid manure storage structures, developing and implementing odor management plans, injecting or immediately incorporating manure in accordance with a comprehensive nutrient management plan and disposing of spoiled feed in a timely manner.

Livestock producers also utilize other technologies such as biofilters, bio curtains, methane digesters, innovative ventilation systems, use feed additives and properly dispose of dead animals. Windbreaks are also installed to control dust and assist in the dispersion of odorous gases. Modern swine facilities

now utilize under barn deep pits versus open liquid manure storage structures of the past. Livestock producers also work with their local CFO to follow county and state feedlot rules and regulations.

Livestock producers inform their neighbors about manure hauling schedules during the manure pumping season, which is generally in the spring and fall of the year.

What do Odor Reducing Technologies Cost to Implement?

The costs vary for implementing newer odor reducing technologies and Best Management Practices (BMPs) and many factors can affect final project costs. On the lower end of the spectrum, a comprehensive nutrient management plan may cost \$1,500 to \$2,500 to initially develop while a methane digester may cost hundreds of thousands of dollars to engineer, construct and maintain.

The costs for some newer technologies such as methane digesters are relatively high. However, the ability to become more energy self-reliant and eligibility for carbon credits may offset some of the costs. Livestock producers are continually striving to find alternative odor reducing technologies and BMPs that are effective and economically feasible.

Mission of the Minnesota Department of Agriculture

Our mission is to enhance Minnesotans' quality of life by ensuring the integrity of our food supply, the health of our environment, and the strength of our agricultural economy.

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