

## Animal Agriculture and Air Quality II

*Strategies for air quality controlling emissions*

Odor from livestock and poultry production facilities is one of the biggest challenges facing farmers and citizens living in rural areas. Research at the University of Minnesota and other research institutes around the world has developed tools and technologies that can help solve some odor problems. The Animal Agriculture and Air Quality series, offered through the University of Minnesota Department of Biosystems and Agricultural Engineering, brings this valuable information to farmers, regulators, community members, technicians, consultants and others dealing with livestock odor concerns on a day-to-day basis.



This workshop series has been offered for the past five years and have provided hundreds of people the skills necessary to deal with odor issues related to livestock and poultry production. These workshops are a “must attend” for anyone dealing in the livestock industry. This is the second of the two workshop series.

Animal Agriculture and Air Quality II will provide participants with a thorough understanding of management and technologies for controlling odor and other air emissions from buildings and manure storages. The discussion will focus on the basic principles of air quality measurements, emissions control methods including dispersion, biofiltration, manure storage covers, additives, anaerobic digestion, aeration, and others. The economics of these systems will also be evaluated along with performance. Several examples of current field scale systems will be presented along with the design parameters for these systems. New and innovative technologies will also be discussed along with an update on current research activities in this area. This hands-on course (practical examples, problems, etc.) will be extremely valuable to technical staff, engineers and government officials who work with livestock producers on issues associated with livestock odors. Prior participation at Animal Agriculture and Air Quality I or some background in odor quantification and control is recommended. Bring your calculator!!

### **Who Should Attend:**

- Private and Public Engineers, Consultants, and Technicians
- County Feedlot Officers
- Planning and Zoning Officials
- Livestock Producers
- Regional and County Extension Educators

### **Course Instructors:**

Faculty members from the University of Minnesota Department of Biosystems and Agricultural Engineering who work in the area of air quality.

**To register: <http://www.manure.umn.edu/workshops>  
or call 1-800-646-2282**

## Detailed Course Agenda Animal Agriculture and Air Quality II

### **Odor and Gas Measurement**

A general discussion on odor and odor issues related to animal agriculture. Gives an understanding of tools used to quantify odor for research work or assessment of odor problems. Participants will leave this talk with a good understanding of methods to assess community odor issues. Participants will also be exposed to the latest research in air quality and some of the results from this research.

### **Overview of Air Emissions Control**

A discussion of the basic principles of controlling emissions from buildings and manure storages with emphasis on dispersion, capture and treatment, and reducing gas and dust generation. Discussion will also include economics of these systems and the integration of these technologies into the overall production systems.

### **Overview of Management and Technologies to Control or Disperse Emissions**

Several options are available to disperse odors and gasses or capture and treat these gasses. Technologies such as wind breaks, covers, ozone, and biofilter will be discussed. This discussion will focus on the mechanisms of treatment, practical applications, and system economics.

### **Manure Treatment**

This introduction to manure treatment will give a broad understanding of manure characteristics, differences between manure and what processes it takes to form odors and gasses along with the processes that can be used to reduce the generation of these gasses. Discussion will include definitions of TS, VS, VFA, BOD, COD, etc., microbial growth and growth kinetics, separation for odor control, types of separation equipment (or settling), and the benefits of separation in the chain of manure treatment.

### **Manure Treatment (II)**

This will be a continuation of the section above but will focus on aerobic treatment. The discussion will define the objectives of aerobic treatment and design parameters such as how much air is needed, what types of aeration "systems" to use (aerobic ponds, aeration tanks, SBRs, etc.), and types of equipment used. System economics will also be discussed.

### **Manure Treatment (III)**

Continuing on with the manure treatment theme, this talk will focus on anaerobic treatment options. The discussion will also focus on the conditions where anaerobic treatment might be most cost effective or what problems are best solved through AD. Capital and operation costs will be discussed along with a case study (Haubenschild Dairy).

### **North Carolina Story**

A video and discussion of the current treatment technologies being tried in North Carolina and Missouri on large scale hog facilities. Discussion will focus on the weaknesses and strengths of these treatment systems and their potential use in Minnesota.

To register: <http://www.manure.umn.edu/workshops>  
or call 1-800-646-2282