Livestock Siting Technical Expert Committee
Odor Subcommittee
Meeting Notes August 24, 2010

Attendance: All odor subcommittee members attended except Jeffery Voltz and Mark Powell. Richard Castelnuovo from DATCP was present.

Meeting called to order at 9 am and the public notice confirmed.

The subcommittee heard presentations on the development of the U of MN Odors From Feedlots Setback Estimation Tool (OFFSET) Version 1.0, as well as updates in Version 2.0. The siting odor standard was based upon OFFSET Version 1.0. The ATCP 51 odor standard was further explained, including dairy and swine odor examples. Utilizing data from the swine example the group confirmed that odor predictions generated by OFFSET, the Multi-Source Setback Model (Purdue), Odor Footprint Tool (University of Nebraska Lincoln) and Odor Site Index Tool (PA State Conservation Commission) produced comparable results to how the ATCP 51 odor standard predicted odors.

Odor regulations in other states and the relationship between odor modeling and setback requirements were discussed. Staff summarized the joint DATCP-DNR Conservation Innovation Grant (CIG) study titled Wisconsin's Dairy and Livestock Odor and Air Emission Project.

The subcommittee addressed specific odor assignment questions and developed recommendations as follows:

<u>Question 1 Existing odor sources on Appendix A Worksheet 2, Chart 2, p. 390-25</u>
<u>Question 1A</u> The odor generation number for slatted floor, pork gestation (PGSF) and finishing (PFSF) should not be changed. In reaching this decision, the group considered the science behind OFFSET and how other odor models predict swine odors.

<u>Question 1B</u> Considering research and field experiences the group agreed that the odor generation number is too low for alley flush to storage (DBAF). Different flush liquids have different odors. When anaerobic manure liquids are used the odor generation number should be between 20 and 50. Treatment of flush water can make significant improvements, e.g. rapid recirculation of liquids after solids separation.
Action Item: Determine how the group may adjust DBAF on Chart 2 and/or clarify flush practices and/or multipliers for B3 & B4 on Chart 3.

<u>Question 1C</u> The odor generation number for long-term waste storage (WSLT) does not accurately predict odors from structures 1 acre or less in size. The recommendation from the subcommittee is to switch from storage duration to storage size for predicting odors by 1) Changing WSST to refer to structures less than one acre, keeping the odor generation number of 28 and 2) changing WSLT to cover structures larger than 1 acre, keeping the odor generation of 13. Each cell in a multi tiered system would be scored separately based on its size. In reaching this decision, the group considered the CIG study, methods used in the other odor models with respect to above ground manure storage/steel tanks and limitations of the underlying dispersion models. Odor generation is more accurately predicted based on the surface area of a storage

structure, not if the storage duration is shorter or longer than 6 months. Also, size-based criteria will be easier for local governments to verify.

Question 1D Recommendations for existing sources:

- Generation numbers for swine and turkey housing are accurate.
- Odors from power ventilated dairy barns are comparable to curtain sided barns, therefore a new generation number is not needed. Power-ventilation may facilitate the use of certain odor control practices.
- Concrete feeding lanes in unpaved animal lots do not warrant a separate odor generation number, or recognition as a new odor control practice.
- No other existing odor generation numbers on Chart 2 need to be altered.

Question 2 Identify new odor sources (structures or manure management methods) that could be added to Appendix A Worksheet 2, Chart 2, p. 390-25

- Goat and sheep housing generation numbers are absent. Odor generation is similar to dairy bedded pack and a generation number of 2 should be assigned.
- A generation number should be created for sand settling/separation lanes. The recommendation is an odor generation number equivalent to or higher than the generation number of 28 applied to short-term manure storage. For purposes of the odor standard sand separation lanes are defined as the combined square footage of the manure flow path and sand stacking/weeping areas. In reaching this decision, the group considered the DATCP-DNR CIG study, field experience and field studies identified by Larry Jacobson. Jacobson will share additional research.
  Action Item: Refine odor generation number for sand settling lanes.
- A generation number should be created for mechanical sand separation systems enclosed in buildings. Mechanical separation systems are a significant odor source and should be assigned an odor generation number larger than short-term manure storage (28) and perhaps larger than the highest odor generation number (46). For purposes of the odor standard mechanical sand separation systems enclosed in buildings are defined as the area (square footage) of the building's footprint. Sand separation does not qualify as the odor control practice E4 solid separation on Chart 3 because sand removal does not reduce the solids content below 2%. Jacobson will provide additional information.
- Feed storage areas may be an odor source, however the group concluded that there is insufficient evidence to create a separate odor generation number (e.g. discussions of the NR445 advisory committee and California VOCs studies).
  Action Item: Refine how feed storage management practices impacting odors such as leachate control, face management and cleanup of spilled feed could be elaborated upon in a management plan.
  Action Item: Addressing dust, noise and other nuisance concerns from feed storage areas through the use of setback distances will be discussed at the next meeting.
- No additional new odor sources were identified.

Question 3A The group's knowledge of existing odor research and field observations, including the CIG study and U of MN study, point to lowering the multiplier (reduction in credit) for anaerobic digestion (E1). Municipal wastewater treatment facilities recognize minimal odor

benefit from digestion alone. At sewage treatment facilities digestion is followed by dewatering, aeration, and recirculation to reduce odors from the waste streams. No matter the type digestion process, there are limits on removing or neutralizing odors when manure is sent from a digester to open manure storage structures where manure decomposition will continue. However, there appears to be evidence that digested manure smells less than undigested manure when land applied. The addition of substrates may negatively impact odors. **Action Item:** To resolve uncertainty, Steve Struss will review research related to odor reductions from digesters and report his findings to the group.

Question 3H existing multipliers on Appendix A, Worksheet 2, Chart 3 p.390-26

- Diet manipulation (A1) The group discussed the trend toward increased use of distiller's grains for feed, particularly for swine. Jacobson noted that field experience indicates when high volumes of distillers (>40%) are feed to swine it negatively impacts odors, yet research is limited.
  Action Item: consider options to reduce the diet manipulation credit when operators use high volumes of distiller's grains.

Question 4 Identify new odor control practices that could be added to Appendix A, Worksheet 2, Chart 3 p.390-26 Poultry layer operations utilizing a belt drying system to move litter should be given an odor reduction multiplier of 0.25, reflecting a 75 percent reduction in odor. Research from Purdue and other sources, plus field experience verify the odor control benefits of drying poultry litter with this system. The group thought it best to include this system as a control practice on Chart 3 and not as an odor source on Chart 2.
Action Item: clarify the definition of the poultry layer belt drying system odor control practice.

Question 5 The Pennsylvania livestock facility odor law does not consider odor impacts beyond 3,000 feet from the center of a CAFO livestock facility. This is similar to the siting odor standard exemption for livestock facilities that have all of their livestock structures located at least 2,500 feet from the nearest affected neighbor.
Action Item: discuss further with the group to determine if the 2,500 foot exemption is appropriate.

Question 6 and Question 7 Management Plans The group discussed the merits of requiring producers to include a plan articulating how additional odor control practices would be implemented if the original odor control methods do not perform as anticipated. The backup plan may be triggered by verified complaints. The group discussed the advantages and disadvantages of a complaint-driven system, and the need to exempt certain odor events such as pumping manure storage. The Minnesota CAFO permit's air and odor management plan mandates a two tiered plan.

The Sept. 14th meeting will cover:

- Question 5 – distance exemption
- Questions 6 & 7 – management plans
- Question 8 – compliance monitoring
- Table 1 Setbacks – discussed jointly with the engineering subcommittee.
  Action Item: review materials pertaining to state odor rules, setbacks in local and state CAFO regulations.

Meeting was adjourned at 3 pm.