Livestock Siting Technical Expert Committee
Odor Subcommittee
Meeting Notes Sept. 30, 2010

Attendance: All odor subcommittee members attended (Chuck McGinley along with Larry Jacobson participated via conference call). Richard Castelnuovo from DATCP was present in place of Mike Murray. Others attending were Dave Jelinski of DBA and Miriam Ostrov of MEA.

Meeting called to order at 9:35 a.m. Public notice confirmed.

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

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

- Chemical and Biological Additives (E2) The group discussed the wide variety of additives currently on the market and their relative effectiveness in controlling odors. Enzymes are an emerging technology that seems to hold some promise. Acidifiers have also been shown to be effective at limiting the release of ammonia from manure storages. The group reviewed the results of a Purdue study which concluded that only 5 out of the 35 additives they tested provided any measureable reduction in odor.

Group Consensus: The odor control credit of 20% currently provided in the siting rule is appropriate; however the requirements within the application need to be beefed up. Applicants should be required to identify the proposed additives, and provide science-based documentation that the products are effective in controlling odors. The group also determined that producers should be allowed to take credit for this practice together with other complementary odor control practices, such as solid separation, listed in Category E.

- Solids Separation and Reduction (E4) The group recognized the odor benefits of this practice; however, they agreed that current research does not support the 40% odor control credit provided in the siting rule. The group did not find research to support distinguishing credits for different separation processes. It was proposed to allow producers to combine this practice with other appropriate practices in Category E such as such as chemical or biological additives, for a cumulative overall control.

Group Consensus: The odor control credit for solids separation and reduction should be lowered from the current 40% to 20%, based on current research. A producer could qualify for a 40% reduction if this practice were to be combined with chemical or biological additives. The group recognized the value of period checks (e.g. after agitation) to determine compliance with the requirement for two or less percent solids.

- Aeration (F1) The group had a general concern that this practice is not being properly applied in the field, that the level of aeration provided in most cases falls well below what is needed to maintain the required 2 mg/l of dissolved oxygen. In evaluating the appropriate credit, members considered research and experience in related areas of waste treatment, the necessity for separating solids before aeration, and field observations that suggested that 30% credit might be generous.

Group Consensus: The odor control credit for aeration should be lowered from the current 70% to 30%, based on current research and field studies. The group also accepted a suggestion that DATCP consult with DNR in selecting the final number for this credit to ensure with consistency with the DNR's 445 findings. .

- Geotextile Cover (F3) The group was informed about the findings of the CIG study, which indicated that these covers can be quite effective at controlling odors from manure storage, upwards of 70%. They also discussed U of MN research findings about an early generation of covers, which indicated control effectiveness of between 30% and 70%, and the group acknowledged that there been improvements in technology.

Group Consensus: Increase the credit for geotextile covers from the current 50% to 60%, based on the above research results. They also recommended coordination with the DNR's 445 findings for this practice.

- Natural Crust (F5) The group agreed that the current odor control credit of 70% provided in the siting rule is appropriate; however, the definition should be tightened up. The use of "substantial amount" and "most of the time" leaves too much room for interpretation by producers and local officials who must administer the rule.

Group Consensus: The definition for natural crust should be altered to make it more measurable, such as "80% of the surface, 80% of the time" and DATCP staff should work with DNR staff through NR 445 coordination to create a consistent definition.

- Compost (E3) The group generally agreed that composting can have a positive effect on odors if properly managed; however, the 80% credit in the siting rule may be too high. The group considered the emissions from compost piles and the importance of limiting stack height to achieving good aeration of the windrows to avoid odors. While some of the group felt that composting poultry manure may have to be treated differently from cow manure, no agreement was reached in this area. There was discussion that indoor composting could be given added odor control credit over open air composting.

Group Consensus: The odor control credit for composting should be reduced from 80% to 50%. Additional credit for indoor composting may be justified; however, only when the compost area is completely enclosed and exhaust air from the building is treated with a biofilter or other approved odor control method.

- Anaerobic Digestion (E1) The group reviewed a summary of digester odor control research results prepared and distributed before the meeting. Larry Jacobson also provided the group with the unpublished findings of field studies conducted by U of MN staff. The group discussed this topic extensively, including the use of digester substrates, before reaching a decision. The group noted that odor generation can vary based on the types and amounts of substrates used, and substrates should be reviewed a case-by-case basis.

Group Consensus: Based on all the information currently available to them, consensus was that the odor control credit provided in the siting rule for anaerobic digestion should be lowered from

80% to 40%. To account for improvements in technology for control odor, such as two-stage systems, the group supported the use of the innovative practice provision in the siting rule. The group recommended that an applicant be allowed to combine digestion with solid separation from Category E to increase the overall credit to 60%. The group advised DATCP to coordinate this with the DNR's 445 efforts regarding digesters and the use of substrates.

Question 1 Existing odor sources on Appendix A Worksheet 2, Chart 2, p. 390-25

- Alley Flush to Storage (DBAF) After reviewing research, comparable odor generation sources, and real-life examples, the group determined that the current odor generation number of 10 currently in the siting rule is extremely low. Some of the farms in the state with the highest incidence of odor complaints have been dairies that utilize alley flush systems. This discussion of odor generation of ally flush systems in dairy freestall barns was necessary as a precursor to discussing the odor control credits for fresh water flush and treated water flush.

Group Consensus: The odor generation number for alley flush to storage should be raised from the current level of 10 to as high as 40. The group also requested that DATCP staff run a few example odor calculations using this number to illustrate the impact of this proposed change. **Action Item:** Steve Struss will run four examples of the odor score spreadsheet for a typical farm using various odor generation numbers for alley flush to storage between 10 and 40.

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

- Treated Water Flush (B4) The group considered the merits of options for treatment of flush water, including anaerobic digestion, and a relatively new practice where the flush water is taken from a reception pit rather than a manure storage basin. This form of "rapid recirculation" prevents the liquid from going anaerobic, thus greatly reducing odors.

Group Consensus: Treated water flush should be redefined to exclude the use of anaerobic digestion as a treatment method, and the odor control credit should remain at 30%. They also suggested that a new control practice "immediate return flush" be added to the list, along with an odor control credit of 50% over a base-line alley flush system.

- Fresh Water Flush (B3) The group discussed this practice in light of concerns over groundwater conservation, the impacts on waste storage capacity, and its lack of practicality (i.e., no farm to date has taken this credit).

Group Consensus: Fresh water flush should be eliminated as an odor control practice.

- Biofilter (B1) The group determined that it is common not to filter all the exhaust air from confinement buildings through biofilters. Rather, only the most odorous exhaust air from the manure pit beneath the animal housing is sent through the biofilter. The current odor control credit of 90% reduction assumes that all of the exhaust air is filtered.

Group Consensus: The odor control credit should be reduced from 90% to 50% to properly reflect how biofilters are actually installed on farms. The group did not give a credit for biofilters placed on reception pits in animal housing, since the odor from these is not counted separately in the odor model, but rather included within the housing generation number.

- Air Dam (for swine only) (B5) The group discussed the appropriate credit for this odor control practice and application of this practice to all positively ventilated housing, not just swine. The group considered a proposal to combine this practice with windbreaks, since they function in very much the same manner and are given the same odor control credit.

Group Consensus: In the case of odor control practices for animal housing, air dams should be combined with windbreaks, (at a 10% odor control level) and this practice should be applicable to all types of positively ventilated animal housing.

- Diet Manipulation (A1) The group discussed this practice and questioned its validity in light of the fact that virtually all producers are already feeding to protein needs for cost efficiency reasons. The group recognized the role of sound feed management in addressing concerns related to distillers grains. It was agreed that current research and data do not support a 20% credit.

Group Consensus: The credit for diet manipulation should be reduced from 20% to 10%. There was concern that producers may not have adequate documentation to prove that diets are managed with odor control as a goal, and suggested that this could be added to the rule.

<u>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</u>

- Sand separation lanes (a.k.a. sand channels) were an emerging technology just coming into use when the siting rule took effect four years ago. To decide on odor generation from this new odor source the group considering comparable odor sources and unpublished field studies that identified the sand channel as the major odor source. These studies confirmed the sand storage areas connected with the channels generate far less odor.

Group Consensus: Sand separation lanes should be added as an odor source and be assigned an odor generation number of 40. The odor score should be based on the area of the sand channel only (square feet), not to the sand storage pad area.

- The subcommittee discussed sand separation buildings and manure solids separation buildings, whose odor is not calculated under the current model. Based on field studies and comparisons with similar odor sources, the group discussed why these buildings should be treated as major odor sources They are very distinct, perhaps acting as more of a point source than and area source. The group discussed a range of 40 to 50 as a reasonable odor generation number.

Group Consensus: Sand and solids separation buildings should be added as odor sources; however, additional data would increase the confidence of the subcommittee in making a recommendation regarding an odor generation number. Members asked that DATCP look into this issue a little further and report back to them at a future meeting. **Action Item:** Steve Struss will look for additional studies on odor from sand and manure solids separation buildings and report back to the subcommittee.

Question 4 Identify new odor control practices that could be added to Appendix A, Worksheet 2, Chart 3 p.390-2

The subcommittee considered the following three odor control practices under review by the NR 445 advisory group:

- Ozone and Non-thermal Plasma: The group consensus was that these are new and unproven technologies when applied to agricultural operations.

- Clean Buildings: The group decided that these practices should be baseline activities in a well managed farm and therefore is not deserving of a separate odor control credit.

- Wet/Bio Scrubbers: Several members indicated that this technology is well proven in industry, and is becoming more common in agriculture. Also, the 445 advisory committee may recommend this practice for ammonia and/or hydrogen sulfide control for farms; however, the level of control has not yet been determined.

Group Consensus:

- Ozone and Non-thermal Plasma cannot at this time be recognized as control practices; however, DATCP could assign a credit for these odor practices by following standards for innovative practice approval in the siting rule.
- The group agreed that the siting rule should not add an odor control credit for maintaining clean buildings.
- The subcommittee needed additional information on wet/bio scrubbers before making a final decision. **Action Item:** Steve Struss will investigate the viability of using wet and bio scrubbers on agricultural operations and report back to the subcommittee.

Question 6 Required employee training plan and required environmental incident response plan and; Question 7 Optional advanced odor management plan and; the relationship between management plans and points awarded in the odor score

- The subcommittee reviewed a briefing document that recapped the subcommittee's progress on these questions, and agreed with the summary's characterization of issues resolved by the subcommittee, and those issues still needing to be resolved.

The next odor subcommittee meeting, on Oct. 26, 2010, will cover the action items listed above, conclude discussion on an odor generation number for poultry layer belt, and wrap up discussion on management plans. This meeting is being planned as a phone teleconference.

The odor subcommittee meeting adjourned at 3:00.