



Protecting, maintaining and improving the health of all Minnesotans

March 31, 2009

George Schwint
Minnesota Pollution Control Agency (MPCA)
601 East Highway 12, Suite 1
Willmar, MN 56201 Sent by Fedex
320/441-6971
Sent by e-mail to: George.Schwint@state.mn.us

Dear Mr. Schwint:

The Minnesota Department of Health (MDH) is pleased to have the opportunity to comment on the proposed *Notice of Intent to Revoke and Reissue National Pollution Discharge Elimination System (NPDES/State Disposal System (SDS) Permit MN0068594* for the Excel Dairy (Dairy) located north of Thief River Falls, Minnesota.

MDH and the U.S. Agency for Toxic Substances and Disease Registry (ATSDR) found that the Dairy is a public health hazard because of measured hydrogen sulfide (H₂S) emissions from Dairy manure storage basins, and so stated in a letter of September 19, 2009 to the MPCA and the U.S. Environmental Protection Agency (EPA). That letter recommended immediate actions to reduce these emissions. A more extensive *Health Consultation*, just issued by MDH and ATSDR, reiterates these points. The *Health Consultation* is attached to this letter. The September 19 letter is an appendix to the *Health Consultation*, as is the ATSDR *Field Report* which describes the H₂S monitoring equipment and data Quality Assurance/Quality Control procedures.

Because the Dairy is a public health hazard, MDH supports the MPCA decision to revoke the Dairy permit as an important action for ensuring emissions reduction and protection of public health. We also have several concerns for possible public drinking water and private well impacts from Dairy operations, and comments and suggestions regarding the draft permit, should the MPCA decide to reissue a permit to the Dairy.

Reasons Why the Dairy is a Public Health Hazard

MDH received and analyzed MPCA air monitoring data for H₂S collected from May through October 2008, and assisted ATSDR in conducting residential air monitoring for H₂S over a 3 week period in July 2008. Based on MPCA and ATSDR data, the conclusion that H₂S emissions from the Dairy are a public health hazard is supported by findings of hundreds of periods of elevated air concentrations of H₂S above Minnesota Ambient Air Quality Standards, and exceedances of health-based criteria developed by state and federal agencies: a short-term health-based Minimal Risk Level developed by

ATSDR, a subchronic Health Risk Value developed by MDH, and a chronic Reference Concentration developed by the EPA. The MPCA maximum measurement of H₂S of 90 ppb averaged over 30 minutes, was exceeded 97 times. During the short period of ATSDR residential monitoring, the emergency response planning guideline (ERPG-1) provided by the American Industrial Hygiene Association (AIHA) of 100 ppb for 1 hour (and meant to be used only for rare or single events) was exceeded 8 times at one residence and 4 times at another residence. Three episodes of ambient levels above 200 ppb persisting for over 1 hour to more than 3 hours, were measured (2 episodes at one residence and 1 episode at another). H₂S is only one of many toxic gases known to be emitted from dairy cow manure basins.

MDH staff have also been in contact with citizens living near the Dairy, and have reviewed affidavits of citizens filed in Minnesota District Court (2008). Citizens from 11 families living nearby have reported a variety of health effects (including nausea, headaches, fatigue, difficulty concentrating, difficulty breathing, throat and eye irritation). All of these effects are consistent with known effects of H₂S exposures (ATSDR, *Toxicological Profile for Hydrogen Sulfide*, 2006). Citizens also report fear for their children and developing fetuses, anxiety, frustration, worry, depression, inability to plan events at their houses, inability to work around their property, inability to have visitors, and necessity to leave their houses when odors are bad or they experience health symptoms. While stress responses such as these are highly variable and difficult to quantify, prolonged stress in and of itself may be damaging to health and render people more vulnerable to effects from environmental exposures.

In addition to the air quality concerns described above, it should be noted that the Dairy falls within the Inner Emergency Response Area portion of the city of Thief River Falls source water protection area. This means that contaminated wastewater or improperly applied manure from the facility could impact the city's water supply via surface water drainage ways. In addition, private wells in the vicinity of the Dairy or manure application sites could be at risk if they are situated down-gradient and completed in shallow, geologically sensitive aquifers.

Finally, MDH noted that the manure basins are not fenced, and are a safety hazard. A child was observed on the site by MDH and ATSDR staff.

MDH Comments on the Revised NPDES/SDS Permit Number MN00068594

The revised permit contains several explicit provisions which, if enforced, will reduce the likelihood that there will be excessive emissions of H₂S and other toxic gases from the Dairy, and reduce the likelihood of runoff of contaminated waters. These include requirements for covering the manure storage basins (including a gas collection and flare system on basin 2), and for underground transfer of manure waste. The Dairy is prohibited from re-stocking the site until these corrective actions have been taken. The permit explicitly states that the number of animal units permitted is unchanged and that the Dairy may not stock more than the permitted number of animals. A perimeter tile system must be installed around the feed storage area runoff basins. Further, the Dairy must submit and follow plans for manure management, operations and maintenance, and

water quality management. The Dairy must keep and submit accurate records to the MPCA verifying integrity of basin covers, water quality management and manure management, including land application. It is explicitly stated in the permit that the facility has a 21 day exemption from air quality standards to allow for manure transfer, and that the facility must notify the MPCA in advance of transfer operations. MPCA has also said that it will conduct continuous air monitoring for H₂S in 2009.

Thus, the permit, *if followed*, should greatly alleviate the unhealthy environment around the Dairy throughout 2008 and into early 2009. To increase the likelihood that a new permit will be successful, MDH has the following recommendations:

- MPCA needs to ensure vigorous enforcement, first as a deterrent, and second in case there actually are violations that cause health effects. MPCA should specify enforcement activities, including enforcement timelines, which may be undertaken in the event of permit violations for air quality, water quality management, and manure management (including land application).
- The permit should require that the manure basins be fenced, and that signs indicating danger be posted.
- MPCA needs to ensure that the Dairy is not re-stocked before the new permit is issued and appropriate modifications have been made to the Dairy, as specified in the draft revised permit.
- Manure basins are reported to be full at present. MPCA needs to ensure that when basins are emptied, prior to re-stocking, that there is a plan in place for land spreading of manure at agronomic rates on specific fields, and that there is compliance with the 21 day maximum statutory exemption for manure transfer. Further, given the flooding now occurring in the region, MPCA should put in place emergency plans to prevent the basins from over-flowing.
- MPCA should require quantitation of total reduced sulfur gases subjected to burning (i.e., flaring) at basin 2, and model or monitor output of sulfur oxides to ensure that ambient air quality standards for sulfur dioxide (SO₂) are not exceeded. This will likely require determination of the efficiency of the flare by concurrent measurements at the inlet and outlet, and documentation of continuous maintenance of flare performance. Sensitive individuals such as exercising asthmatics, may experience health impacts of SO₂ at levels of 0.25 ppm (ATSDR, *Public Health Statement for Sulfur Dioxide*, 1998), below the short term ambient air quality standard.
- Citizens need to be notified when air quality standards H₂S may be exceeded as a result waivers granted during basin emptying and land application. The permit should include an explicit requirement to notify citizens in advance so that they can take actions to avoid exposure during these times.
- MPCA should assure citizens that any application for an increase in the number of animal units permitted will undergo environmental review in accordance with the provisions of Minnesota Statutes 116D.04: preparation of an Environmental Assessment Worksheet, and a determination whether or not an Environmental Impact Statement is needed. If there is an application to expand the Dairy,

residents within 5,000 feet of the facility must be notified at least 20 working days in advance (Minnesota Statutes 116.07 Subd. 7a).

- The definition of sensitive areas on page 19 of the proposed permit (Land Application Setbacks and Management for Sensitive Areas) currently includes “drinking water supply management areas where the well is vulnerable.” This should be changed to state “any vulnerable portion of a drinking water supply management area.” The definition should also be expanded to include not only vulnerable portions of drinking water supply management areas, but any vulnerable source water protection areas, including those representing the Inner Emergency Response Areas for surface water intakes. We have attached a fact sheet regarding wellhead protection issues related to feedlot operations for your reference.

Conclusion

MDH supports the revocation of the Excel Dairy permit. The new permit has explicit provisions for operation of the Dairy that should greatly mitigate health impacts, if enforced. However, MPCA needs to ensure that air quality standards for SO₂ are not exceeded as a result of flaring reduced sulfur gases. MPCA also needs to ensure that citizens are informed when air quality standards for H₂S may be exceeded as a result of waivers, and to ensure that citizens are informed when or if there are any plans to modify or expand the Dairy.

Thank you for the opportunity to comment on the *Notice to Revoke and Reissue* the permit for the Excel Dairy.

Sincerely,



Rita B. Messing, Ph.D., Supervisor
Site Assessment and Consultation

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