DAIRY AIR EMISSIONS: what you must know

Recent developments in air research and regulations will require action: stay informed, especially if you're a CAFO.

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IN 2005, over 600 U.S. dairy farmers voluntarily signed the Air Compliance Agreement (Agreement) with the U.S. Environmental Protection Agency (EPA). In this Agreement, among other terms and conditions, EPA agreed not to sue participating farms for alleged violations of air emissions regulations if the dairy industry (the swine and poultry industries participated, too) would pay for research to measure regulated emissions, including ammonia (NH_3), hydrogen sulfide (H_2S), volatile organic compounds (VOCs), and particulate matter (TSP, PM_{10} and $PM_{2.5}$) from cow housing facilities and long-term manure storages. The study would later be named the National Air Emissions Monitoring Study (NAEMS).

The main goal of the study is for EPA to use the data to develop sound, science-based emission estimation methodologies (EEMs) for regulated emissions for all dairy farms. This benefits dairy producers by providing a reliable way to see if their farm falls into a regulated category, potentially reducing the risk of lawsuits for alleged noncompliance. Once developed and released by EPA (targeted for June 2012), the EEMs will be the recognized method for all dairy farmers and their advisors to determine if farms' regulated emissions exceed thresholds for reporting, additional permitting, and possibly mitigation.

In 2006, the EPA approved the selection of six representative dairy farms. The two-year monitoring study for dairy farms started in the summer/fall of 2007 and concluded in the summer/fall of 2009. Relevant barn, corral, and manure storage air emissions were monitored at each site, along with other farm data such as feed intake, milk yield and composition, and management group populations.

Monitored farms were located in California, Indiana, New York, Texas, Washington state, and Wisconsin. Three of the farms had mechanically ventilated barns (Ind., N.Y., and Wis), two had naturally ventilated barns (Calif. and Wash.), and one was an open lot corral (Texas). Purdue University led the overall study with scientists and engineers from the individual states' land-grant university responsible for the work at each site.

Nine separate dairy research reports containing all data collected from each site were delivered to EPA in July 2010. On January 13, 2011, EPA made the research reports publicly available by posting them on the web at http://www.epa.gov/airquality/agmonitoring/index.html. The data gathered suggests that dairy emissions are overall lower than expected.

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So, what's next?

The Agreement requires EPA to develop EEMs for each species from the data (and other available data that meets strict quality control requirements) within 18 months of receiving the research reports. As the draft EEMs are completed, they will be posted on EPA's website for public review and comment. Once posted, their availability will be announced in the Federal Register (www.gpoaccess.gov/index.html).

The final EEMs for all species are scheduled to be released together by June 2012.

After the final EEMs are released by EPA, producers who signed the Agreement have 60 days to use the EEMs and certify to EPA in writing that their farm does not trigger emission reporting thresholds or, if they do trigger reporting, they have 120 days from issuance of the EEMs to comply with the Emergency Planning and Community Right-to-Know Act (EPCRA) reporting requirements.

Depending on the outcome of the data review, participating dairies may have further obligations to meet and should consult the Agreement. Nonparticipating dairies would be wise to use the EEMs to also determine their obligations since it is likely EPA will focus on agricultural air emissions compliance once the Agreement expires.

Leading up to the Agreement (2005), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 103 and Emergency Planning and Community Right-to-know Act (EPCRA) Section 304 required farms to report NH_3 and H_2S emissions if 100 pounds or more of either were emitted in any given 24-hour period.

However, in January 2009, EPA issued a CERCLA/EPCRA Administrative Reporting Exemption for Air Releases of Hazardous Substances from Animal Waste at Farms exempting all dairy and other livestock farms from the CERCLA Section 103 reporting requirements (reporting emissions to EPA). The change also exempts farms that emit 100 pounds or more in any given one 24-hour period to the air of animal waste-derived NH_3 or H_2S if the farm has less than 700 total mature cows or 1,000 other dairy cattle (heifers, steers, veal calves). Farms that confine animal numbers at or above these (CAFO Permit) thresholds are required to submit reports to the appropriate state and local officials.

What should producers be doing now?

If you signed the Agreement. If a dairy farm is participating in the Agreement, the legal coverage it provides is still in force, and nothing needs to be done at this time. However, once EPA finalizes the EEMs, the Agreement requires participants to use the EEMs to calculate their estimated emissions and file EPCRA reports if the outcomes exceed reporting thresholds, or alternatively inform EPA that the EEMs have been used and the output shows that no reporting is required. The Agreement also requires participating producers to mitigate VOC and PM emissions above Clean Air Act threshold values (250 tons annually for areas with clean air and 100 tons annually or significantly less for air sheds with poorer air quality) if they exceed them. Preliminary review of the NAEMS data set suggests most farms will not need to be concerned with this.

If you did not sign the Agreement. If the farm has animal numbers that are in excess of those specified in the 2009 EPCRA (large CAFO size) exemption, the Dairy Ammonia Loss Estimation Worksheet posted on the PRO-DAIRY facilities program website, http://prodairyfacilities.net/ (click on air emissions), can be used to estimate a farm's ammonia emissions and determine if reports need to be filed with the local and state authorities. (It should be noted that the EEMs that are being developed by EPA will supersede the PRO-DAIRY on-line tool once EPA releases them next year.)

If after using the worksheet a farm chooses to report emissions, our on-line EPA-EPCRA Continuous Release Report Forms (with animal agriculture-specific directions superimposed on the EPA forms) can be downloaded. Simply complete the forms, print them, and mail to the appropriate authorities. Be sure to save a copy of the estimation tool results and completed forms for your records.

Note: Until the release of the NAEMS study reports, very little information about H_2S emissions was available for use in determining a good faith estimate of a farm's H_2S emissions. Prior to the release of the NAEMS reports, our position was that all but perhaps the largest of large dairy farms emit 100 pounds or more of H_2S in a 24-hour period. A preliminary review of the NAEMS dairy data recently released supports this position.

At the end of the day, the EEMs generated by EPA will be deemed the standard method for dairy producers to estimate their regulated emissions. Farms will know how to accurately estimate their emissions using the EPA developed EEMs from science-based data. As a result, farms will be more assured they are covered in their air emission obligations.