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Electrical hazards, building and electrical code exemptions and OSHA regulations

Curt Gooch and Karl Czymmek, Cornell PRO-DAIRY

OSHA has started to conduct comprehensive inspections of NYS dairy farms with 11 or more non-family employees under the Local Emphasis Program (LEP). Electrical systems are one of twelve health and safety risks areas that are being reviewed during these inspections. Electrical systems may also be reviewed if an employee is seriously injured by a farm’s electrical system, if there is an electrical system related complaint filed with OSHA, if an inspector observes an immediate threat to health and safety driving by, or when on a site for other reasons. We have received electrical code related questions from producers. Below are some points that farm managers and electrical contractors should keep in mind.

EPA Agricultural Air Emissions Compliance Agreement and National Air Emissions Monitoring Study (NAEMS) Dairy Industry Update

Curt Gooch and Karl Czymmek, Cornell PRO-DAIRY
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In 2005, over 600 US dairy farmers voluntarily entered into the Air Compliance Agreement (Agreement) with the US Environmental Protection Agency (EPA). In the 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 conducted by a third party to quantify regulated emissions [ammonia (NH3), hydrogen sulfide (H2S), volatile organic compounds (VOCs), and particulate matter (TSP, PM10 and PM2)] from select representative dairy cow housing facilities and long-term manure storages.

The overarching goal of the study is for EPA to use the collected data to develop sound, science-based emission estimation methodologies (EEMs) for regular emissions for all dairy farms. The benefit for the dairy producer is that they will know if their farm falls into a regulated category and reduce the risk of lawsuits for alleged non-compliance. Once developed and released by EPA, the EEMs will be the recognized method for dairy farmers and their advisors to determine if farm regulated emissions exceed thresholds for reporting.
The Building Code of NYS provides design and construction requirements for buildings and structures in NYS. [1] The code includes an electrical chapter[2] that requires compliance with NFPA 70, also called the National Electric Code (NEC). There are four exceptions where buildings and structures are NOT required to follow the Building Code of NYS. One of these exceptions is for “agricultural buildings, including barns, sheds, poultry houses, and other buildings and equipment on the premises used directly and solely for agricultural purposes”. [3] The code defines an agricultural building as:

A structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products, excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.[4]

Since buildings in NYS used directly and solely for agricultural purposes are not required to follow the Building Code of NYS, they therefore are not required to follow the National Electric Code (NEC). This also means that OSHA cannot enforce based on the electric code alone, they must observe a recognized hazard.

One code compliance caveat: Farm managers should check with local municipalities as it is possible that local building code regulations may not be written to exclude agricultural buildings. The NYS Department of Agriculture and Markets (NYSDAM) has determined, in a number of cases, that it is unreasonable for local rules to override the state building code exclusion for agricultural buildings, unless there is a threat to public health or safety, and has informed several municipalities of that when it has come to their attention. If your local municipality does require compliance with the Building code of NYS, you can contact NYSDAM and apply for a “Section 305-a review” to request a review of a local law or regulation and its impact on your farm.

additional permitting, and possibly mitigation.

In 2006, the EPA approved the selection of six representative dairy farms submitted by the Agricultural Air Research Council (AARC), a non-profit established to administer the NAEMS study, from the national pool of over 600 signatory dairies. The 2-ye monitoring study for dairy farms started in the summer/fall of 2007 and concluded in the summer/2009. (Monitoring at each site started on different days.) Barn, corral, and manure storage air emission were monitored, as appropriate at each site, along other relevant farm data such as feed intake, milk yield and composition, and management group population. Overall, 911 million data points were collected from six farms.

Monitored farms were located in California, Indiana New York, Texas, Washington State, and Wisconsin. Three of the farms had mechanically ventilated barns (IN, NY, and WI), two had naturally ventilated barns (CA and WA), and one was an open lot corral (TX). Purdue University led the overall study with scientists and engineers from the individual states’ land-grant university responsible for the work at each site.

Data Sent to EPA in July, 2010
Nine separate dairy research reports containing all data collected from each site were delivered to EPA in July, 2010. Overall, EPA received 26 separate reports containing 2.45 billion data points as a result of the monitoring work performed on poultry (broilers and layers), swine, and dairy housing facilities and manure storages.

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. EPA has retained a 3rd party contractor to review the data and develop the EEMs. Per EPA’s plan, draft EEMs were developed for poultry broilers and open source emissions and were made available for public review and comment in March 13, 2012. Comments received were reviewed by the project’s scientific advisory board and recommendations were made by the board to EPA. A key recommendation made was for EPA not to aggregate emission data developed by monitoring open air storages on swine and dairy storages/lagoons, as EPA appears to be following this recommendation. Another recommendation was for EPA to include data sets in the overall analysis from relevant research
While general industry has many codes and specific regulations that are defined in OSHA regulations, agriculture is treated differently by the law. There are only a few detailed areas under the agricultural regulations, such as hazard communication, rollover protection and machine guarding. OSHA rules do not cover specific requirements for electrical systems in agriculture. Without specific statutory direction, OSHA enforcement in this area, like many other areas OSHA looks at while doing farm inspections, relies on the “general duty clause” where “each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees”. [5] Accordingly, in the absence of specific standards, if OSHA inspectors observe recognized hazardous conditions at your farm, including electrical system hazards, they can issue fines and require changes.

The bullets below are some of the electrically related items farms should expect OSHA inspectors to review as part of a LEP (or other) inspection. This list is not intended to be all inclusive of the hazards or items that OSHA will cite, but can be used as discussion points with your electrical contractor or farm staff when performing electrical work.

- Grounded equipment is used with grounded outlets and grounded equipment and cords are properly maintained (no adapters or broken ground pins)
- Power cords and extension cords are in good repair (no cracks, exposed wires)
- Extension cords are removed at the end of each work period, typically the day used, once a job is completed, not zip tied or stapled in place
- Power strips are used only for low-powered loads
- GFCI outlets are installed outdoors and other places where users are likely to contact or be drenched by water or other liquids
- Energized parts are not exposed. Unused circuits are covered by plate or the circuit breaker is in place
- Lock out tag out options are provided and used by staff to prevent accidental re-energizing during repairs
- Traffic route to electrical panels are kept clear

EPA indicates that they will be continuing the focus effort to further develop the EEMs based on comments received and also draft and release the remainder of the EEMs for swine, poultry egg layers, and dairy in order.

As the remainder of the draft EEMs are completed, will be posted on EPA’s web site for public review a comment. Once posted, their availability will be announced on the Federal Register (http://www.gpoaccess.gov/index.html). No time frame is available for when the remainder of the draft EEMs will be released, but time has shown that the EEMs are proving difficult to accurately develop and likely will require significant more time to complete.

So, what then?
After the final EEMs are released by EPA, producers 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, they have 120 days from issuance of the EEMs to comply with EPCRA reporting requirements.

Depending on the outcome of the data review, some dairies may have further obligations to meet and should consult the Agreement.

Other dairies would be wise to use the EEMs to also determine their obligations.

In a holding pattern
Farms that are 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 finalize the EEMs, the Agreement requires participants to use the EEMs 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 reporting is required. The Agreement also requires participating producers to mitigate VOC and PM emissions above Clean Air Act threshold values (250 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 scanning of the final data sets suggests most farms will not likely need to be concerned with this requirement.

PRO-DAIRY pre-Empire Farms Days tour success
Overall, maintenance and repairs of electrical systems or equipment should be conducted by qualified farm staff or contractors to ensure safe conditions exist. Additionally, the potential for equipment such as a backhoe, loader, lift, auger, or ladder to come into accidental contact with overhead or buried power lines should be assessed and prevention measures implemented.


[3] Emphasis provided


Save the Date!

2015 Operations Managers Conference - Sponsorship Opportunities Available!

The 2015 Operations Managers Conference, “Effective Management through Teamwork and Leadership” will be held January 20 - 21, 2015 at the Holiday Inn, Liverpool/Syracuse.

Organized by the PRO-DAIRY Program at Cornell University and the Northeast Dairy Producers Association (NEDPA), this conference provides an opportunity for people responsible for day to day activities on dairy farms to increase their management and operations skills while interacting with other managers. Sessions on January 20 will be followed by a tour and interaction with a local dairy operations team on January 21. Agenda online at: http://prodairy.cals.cornell.edu/OMC/. Pre-registration will open in late October. Sponsorship information is also found on the conference Web site.

Cornell Dairy Executive Program Application Deadline Approaching!

The Cornell Dairy Executive Program (CDEP) provides professional, cutting-edge management training for progressive dairy producers in New York and across

Nearly 70 business and dairy leaders came from across the state, across the country, and from as far as Uganda to participate in the PRO-DAIRY pre-Empire Farms tour.

They heard the story of a non-family business owner transition at Walnut Ridge Dairy, Lansing, toured Cornell University’s new dairy processing facilities, Ithaca, and wrapped up with a walk-through and discussion at the new Cornell Dairy Research Facility: Hartford.

Many participants commented that while workshops helpful, visiting a farm and seeing practices in place is a powerful learning tool. Hearing the ethics at Walnut Ridge, where cows, people and the environment are valued, and learning about the partnership transfer non-family members was inspiring.

“It has to be real and hands on to get to the practical side of things,” said Meghan Moody, nutritionist with Virtus Nutrition. “As an industry we’re always looking for what we can do better. One of the things we can best is to see the cows in action.”

Swidiq Mugerwa, National Agricultural Research Organization, Uganda, came specifically for the tour and to talk to Cornell researchers.

“We’re trying to set up a freestall in Uganda. It’s new to Africa, so we’ve come to learn from you. It’s quite an opportunity to see,” he said.

Mary Ann and Marty Young, owners of the 500-cow Whey Street Dairy in Cuyler, came with their daughter Lydia and herdsman Joe Baldwin.

“I grew up going to Extension tours. We’re interested in cow comfort and efficiency. We came to see what’s there of value. It’s a chance to see the facilities,” Marty said.

An additional 300 people attended the Dairy Profit Seminars at Empire Farm Days and PRO-DAIRY’s Junior Dairy Leader graduation was held.

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the country. With input and support from producers and agriservice, this year-long program is designed to enhance understanding of the fast-changing dairy industry. Participants will develop leadership and business management skills to lead their dairy business into the future.

Qualified applicants are well-rounded individuals who:

· are motivated to achieve business excellence through personal growth
· have five or more years of dairy experience in a decision making position
· are interested in creating a network of dairy producers and industry leaders
· value pursuit of meaningful goals in a dairy business

Application deadline is October 15. Visit: http://prodairy.cals.cornell.edu/dairyexec/.

Mission PRO-DAIRY’s mission is to facilitate New York State economic development by increasing the profitability and competitiveness of its dairy industry. PRO-DAIRY specialists have made a positive impact on the technical knowledge, management skills and economic strength of New York State’s dairy industry since 1988.

Find PRO-DAIRY online at:

- Visit the PRO-DAIRY Web site to sign up for e-Leader and for more program information: http://prodairy.cals.cornell.edu.
- Like us on Facebook: http://www.facebook.com/pages/PRO-Dairy-at-Cornell/160696327285694

Diversity and Inclusion are a part of Cornell University’s heritage. We are a recognized employer and educator valuing AA/EEO, Protected Veteran and Individuals with Disabilities.