

Ethylene Oxide in Lake County: Status Update August 21, 2019

Ethylene oxide is a colorless gas at room temperature and is used primarily:

- In the production of many everyday products such as personal care products, food additives and antifreeze – (i.e., Vantage Specialty Chemicals);
- To sterilize medical equipment and devices (approximately 50% of medical equipment and devices are sterilized with EtO) – (i.e., Medline Industries).

The U.S. Environmental Protection Agency (EPA) reclassified ethylene oxide as a known human carcinogen in December 2016 in an Integrated Risk Information System (IRIS) report.

- The report indicated that EtO is 30 to 50 times more potent as a carcinogen than previously determined.

On November 2, 2018 the Lake County Health Department (LCHD) learned about EtO emissions from Medline Industries in Waukegan and Vantage Specialty Chemicals in Gurnee.

- The issue of EtO emissions was brought to the forefront nationwide by the release of the 2014 National Air Toxics Assessment (NATA) online map in August 2018;
- The 2014 NATA map was adjusted to include more at-risk areas due to the re-assessment of the potency of EtO as a carcinogen in December 2016;
- The NATA map depicts areas of potential increased cancer risk, **not** known cancer cases, clusters, or higher rates of cancer.

LCHD began investigating immediately, working with federal, state, and local partners to determine the risks and next steps.

- Initial efforts by all parties were focused on seeking action from the Illinois EPA (IEPA) and the U.S. EPA, which are solely responsible for regulating EtO emissions;
 - U.S. EPA establishes exposure levels and promulgates emission regulations;
 - Illinois EPA issues permits for emissions and enforces the permits;
- Multiple requests were made to both U.S. EPA and IEPA to conduct town hall meetings and ambient air monitoring, as was being done in Willowbrook around the Sterigenics facility.

In late February 2019, LCHD was informed by U.S. EPA that they definitively would not be conducting town hall meetings and would also not conduct any ambient air monitoring in Lake County.

- Three days later, LCHD officials met with the mayors of Gurnee and Waukegan and their staff and reached consensus to conduct air monitoring in Lake County.

In March 2019, LCHD:

- Drafted an ambient air monitoring plan, which was sent to U.S. EPA for review;
- Formally petitioned the Agency for Toxic Substances and Disease Registry (ATSDR), part of the CDC, to perform a health risk assessment based on anticipated ambient EtO air quality monitoring results;
- Began conversations with the Illinois Department of Public Health (IDPH) asking them to perform a cancer incidence rate study like the one conducted in Willowbrook;
- Began working with U.S. EPA, Gurnee and Waukegan to take measures needed to initiate an ambient air monitoring program for EtO (approvals from the municipal boards were also required for many of these measures):
 - Draft a scope of work, quality assurance plan, and contracts to conduct the monitoring plan;
 - Draft intergovernmental agreements between the municipalities and the county to facilitate a partnership to contract with a qualified monitoring vendor;
 - Request to U.S. EPA to produce the dispersion modeling required to select monitoring locations;
 - Work with U.S. EPA to select monitoring sites based on scientific dispersion modeling to assure the assessment of community risk;

- Secure permission from owners of site properties to allow access for placement of monitors;
- Conduct a search for a qualified vendor (GHD Services, Inc.), negotiate the terms of the contract for services, finalize and enter into the contract, and work out logistics for placing monitors with vendor field staff (locations, schedule, etc.).

The initial 30-day monitoring program began on June 6, 2019 and concluded on July 4, 2019.

- 10 sites were sampled through the LCHD, Gurnee, Waukegan partnership;
 - 4 around Vantage;
 - 4 around Medline (a 5th site was later added);
 - 2 remote sites selected to assess background levels (one between the facilities, and one approximately 4 miles west of both facilities);
- A total of 126 samples were collected; 2 were not able to be analyzed due to equipment failure;
- An additional 75 samples were obtained from independent testing conducted by Vantage and Medline (for a total of 199 sample results).

LCHD has received all results and posted them online, including results of the independent testing conducted by Vantage and Medline.

- The highest EtO levels were obtained on June 6-7, 2019 at the monitoring location closest to Medline, with the highest observed level being 10 µg/m³ (micrograms per cubic meter of air);
- Subsequent results continued to indicate that the highest levels were at sites closest to Medline, with the next highest observed level being 5.56 µg/m³ on June 21-22, 2019;
- EtO levels were generally lower around the Vantage facility, with the highest recorded level being 3.6 µg/m³ on June 30-July 1, 2019;
- In the first set of results (up to June 12, 2019) analyzed by SGS Galson Lab, all samples detected some level of ethylene oxide (EtO);
- In the subsequent data sets, analyzed primarily by Eastern Research Group (ERG), there were several results that did not detect EtO down to the Method Detection Limit (MDL);
 - Eight sets of duplicate samples collected on the same day from the same location sent to the two labs indicated that SGS Galson detected EtO at levels ranging from 0.15 to 0.39 µg/m³, while ERG did not detect EtO at the MDL of 0.045 µg/m³;
 - LCHD is exploring this apparent anomaly with GHD and with USEPA scientists;
- LCHD continues to work with the U.S. EPA and the IEPA to review and interpret the results, and to devise future monitoring plans;
- LCHD has provided the data to ATSDR for an initial health risk assessment;
- Data and any risk assessments will be provided to the Illinois Department of Public Health for a cancer incidence study that includes Lake County;
- The IEPA has provided funding for additional monitoring, to take place after additional pollution controls are installed at the two facilities (anticipated to resume in September or October).

Two bills recently passed the Illinois General Assembly and were signed into law by the Governor to tighten restrictions on EtO emissions.

- The new law requires all EtO emitting facilities in Illinois to reduce emissions significantly within 180 days;
- The law requires strict emission controls, modeling of dispersion of the emissions, and ambient air monitoring for sterilization facilities.