

## **Ethylene Oxide in Lake County: Status Update January 17, 2020**

### **Background/historical information**

- Ethylene oxide (EtO) is a colorless gas used in the production and sterilization of many everyday items. Vantage Specialty Chemicals in Gurnee uses EtO in the production of personal care products and food additives, and Medline Industries in Waukegan uses EtO to sterilize medical equipment and devices. EtO sterilization is used for approximately 50 percent of medical equipment and devices in the country;
- The U.S. Environmental Protection Agency (EPA) reclassified ethylene oxide as a known human carcinogen in December 2016, indicating that EtO is 30 to 60 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;
- In late February 2019, LCHD was informed by the U.S. EPA that they definitively would not be conducting town hall meetings in Lake County, nor would they conduct any ambient air monitoring in the County;
- Within days of receiving that information, LCHD officials met with the mayors of Gurnee and Waukegan and their staff, and reached consensus to fund and conduct air monitoring in Lake County;
- LCHD worked closely with air modeling experts at the U.S. EPA to select monitoring sites based on scientific dispersion modeling to assess community exposure and risk;
- LCHD secured the contractual services of GHD Services, Inc. to conduct the monitoring, arrange for lab analysis, and provide reports of the results on the LCHD website.

### **Ambient air monitoring, Phase I**

- The LCHD, Gurnee, Waukegan partnership funded and conducted a 30-day monitoring program that began on June 6, 2019, and concluded on July 4, 2019;
  - GHD collected samples from 10 locations;
  - A total of 126 samples were collected; 2 were not able to be analyzed due to equipment failure;
- 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/m<sup>3</sup> (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 reading of 5.56 µg/m<sup>3</sup> on June 21-22, 2019;
- EtO levels were generally lower around the Vantage facility, with the highest recorded level of 3.6 µg/m<sup>3</sup> on June 30-July 1, 2019;
- LCHD has posted all results on the LCHD website, including results of the independent testing conducted by Vantage and Medline.

### **Public information meetings in 2019**

- Two separate public hearings were conducted by Illinois Environmental Protection Agency (IEPA) to allow for public comment on emission permit applications from the two facilities:
  - Medline's permit application meeting occurred on May 23, 2019;
  - Vantage's permit application meeting occurred on November 14, 2019;
- Senator Melinda Bush hosted a town hall meeting on October 2, 2019, at the College of Lake County, attended by hundreds of concerned residents;
  - Representatives from the IEPA and the Agency for Toxic Substances and Disease Registry (ATSDR) presented and answered questions and concerns from the community.

### **State legislation**

- The two bills that were signed into law by the Governor in the summer of 2019 to tighten restrictions on EtO emissions became fully effective in December 2019;

- The laws require strict emission controls, modeling of dispersion of the emissions, and ambient air monitoring for sterilization facilities;
  - Vantage had installed additional pollution controls in April of 2019 and completed all other requirements in the law before December 2019;
  - Medline began installing additional pollution controls in late November, and did not complete installation by December 2019;
    - As a result, Medline stopped its sterilizing operations on December 13, 2019. Medline expects to resume operations in January 2020, after testing of the new emission controls occurs with IEPA.

### **Hemoglobin adduct study**

- In August of 2019, the University of Illinois at Chicago (UIC) Occupational and Environmental Medicine program, funded by the Centers for Disease Control and Prevention (CDC), collected blood samples from 93 residents in Lake County to measure the level of ethylene oxide hemoglobin adducts (HbEO), which indicate exposure to EtO;
  - The survey results showed that 17 non-smoking residents living within approximately ½ mile of Medline had higher average HbEO levels than the rest of the non-smoker participants;
  - Residents living near Vantage did not exhibit elevated HbEO levels;
  - Tobacco users (smokers) had substantially higher HbEO levels compared to non-smokers;
  - The researcher's report indicated that the "results should be interpreted as pilot data" and that a "larger investigation could be performed to confirm these results."
- During a public meeting held on January 12, 2020, the UIC researcher presented the results of the survey. LCHD was also present to answer residents' questions.

### **Ambient air monitoring, Phase II**

- Through the efforts of the State and County elected officials and LCHD, the IEPA agreed to fund an additional 90 days of air monitoring to provide additional data for risk assessments and to assess the effectiveness the installation of the additional pollution controls at Medline and Vantage;
- Phase II of the monitoring started on October 26, 2019, and was originally scheduled to continue until January 21-22, 2020;
  - In Phase II, GHD is collecting samples from 12 locations (the original 10 locations from Phase I, plus two new locations placed to the northwest of each facility);
  - Results for samples collected up to December 24-25, 2019 indicate:
    - Generally lower levels around Medline than Phase I;
      - The highest reading was 1.61 µg/m<sup>3</sup> on October 26-27, 2019;
    - Sporadically higher levels around Vantage than Phase I;
      - There was a reading of 3.66 µg/m<sup>3</sup> on November 1-2, 2019;
      - 5.29 µg/m<sup>3</sup> and 8.86 µg/m<sup>3</sup> were measured on November 13-14, 2019;
- Because Medline temporarily suspended operations on December 13, 2019, LCHD is in negotiations with GHD Services, Inc. to extend the monitoring period to end around February 20, 2020;
  - If extended, the entire data set will include sampling over 150 days, and will contain approximately 600 test results;
  - LCHD provides all results as they become available to the U.S. EPA, IEPA, and ATSDR;
    - U.S. EPA and ATSDR continue to assist in interpreting the results, and will develop risk assessments based on the complete data set;
    - LCHD will provide the complete data set and risk assessments to the Illinois Department of Public Health for a cancer incidence study that includes Lake County and focuses on the greatest areas of risk;