



# WVDEP Community Open House

*Ethylene Oxide in Western Areas of Kanawha County*

Saturday, March 26, 2022

Dunbar Recreation Center

## **What is Ethylene Oxide?**

Ethylene Oxide (EtO) is a versatile compound used to make countless everyday products:

- Adhesives
- Paints
- Detergents
- Cleaners
- Personal care products
- Vehicle antifreezes
- Noise and vibration reduction products
- Roofing materials
- Textiles
- Wood and water treatments

Ethylene Oxide has been used in the Kanawha Valley since the 1920s. It was produced at facilities in West Virginia at one time but is now shipped into the state via rail car.

EtO is also used to sterilize medical equipment and personal protective equipment that cannot otherwise be sterilized by steam or ultraviolet light. It is estimated that more than 50 percent of all medical devices are sterilized with EtO.

### **Health risks associated with EtO**

According to the U.S. Environmental Protection Agency (EPA), short-term inhalation exposure to high concentrations of EtO can cause headache, dizziness, nausea, fatigue, respiratory irritation and, in some cases, vomiting and other types of gastrointestinal distress. Long-term exposure can irritate the eyes, skin, throat, and lungs, and harm the brain and nervous system, causing headaches, memory loss, and numbness.

Studies show breathing air containing elevated levels of EtO over many years can increase the risk of some types of cancers. Workers exposed to EtO are associated with an increased risk of cancers of the white blood cells, including non-Hodgkin lymphoma, myeloma, and lymphocytic leukemia, as well as an increased risk of breast cancer in females.

## **Overview**

The U.S. Environmental Protection Agency (EPA) periodically conducts a national air toxics assessment. This is a broad overview of air emissions across the country – commonly referred to as a screening tool – and is designed to identify areas that may need further investigation.

The most recent assessment identified four census tracts in West Virginia – two in South Charleston and two in Institute.

While the latest assessment was being conducted, the EPA made a new finding related to Ethylene Oxide and reclassified it from a probable human carcinogen to a known human carcinogen.

The potentially elevated risk is not due to new emission sources or increased emissions from permit holders, but rather to the EPA's finding that long-term exposure to EtO may be more harmful than previously thought.

## **100 in 1 million lifetime cancer risk: What is that?**

This is a very conservative threshold the EPA uses to help evaluate the potential risk from a pollutant or emissions source. It means that if 1 million people were exposed to elevated levels of the same pollutant, 24 hours a day, 7 days a week, 365 days a year for 70 years, there is a possibility that 100 people would develop cancer at some point in their lifetime. This is in addition to a person's normal cancer risk.

The most recent EPA assessment estimated that the potential lifetime cancer risk from EtO emissions in the four census tracts in Kanawha County ranged from 151 in 1 million (or 1.51 in 10,000) to 325 in 1 million (or 3.25 in 10,000) over 70 years.

## **What has WVDEP done?**

- **WVDEP:** Immediately contacted the State Department of Health and Human Resources' (DHHR) Bureau for Public Health (BPH) for a review of the cancer registry for the areas identified by the EPA. BPH has not found elevated levels of the cancers associated with EtO in these areas.
- **WVDEP:** Gathered updated emissions data (2017) and weather data more representative of local conditions because the EPA's assessment used 2014 emissions data and weather data from Yeager Airport.
- **WVDEP:** Performed significantly more detailed, site-specific emissions modeling than previously done by the EPA. Modeling is a mathematical simulation, like weather forecasting models, used to predict the way pollutants behave in the atmosphere under different emission rates, weather, and operating scenarios.
- **WVDEP:** Requested the EPA to expedite their review of air regulations that govern EtO sources in West Virginia and across the country.
- **WVDEP:** Issued a press release in 2019 outlining the new findings related to EtO.
- **WVDEP:** Created an EtO webpage and online mailing list to keep the public informed and provide updates.
- **WVDEP:** Hosted meetings with state and local elected officials and the public in the fall of 2021.
- **WVDEP:** Has and will continue to participate in Community Advisory Panels (CAPs) for the South Charleston and Institute areas. CAPs are monthly meetings between citizens and industry representatives designed to increase communication and transparency. To learn more about a CAP, contact Mary Green at [mgreen@magc.info](mailto:mgreen@magc.info).
- **WVDEP:** Has and will continue to provide updates on EtO and other environmental topics via virtual town hall meetings with the agency's Environmental Advocate. These meetings are open to all citizens.

### **What is WVDEP doing now?**

The WVDEP started its fence line monitoring project at EtO-emitting sites in the Kanawha Valley in January of this year. The project uses EPA's most recent approved method designed to measure low concentrations of EtO and consists of four rounds of sampling at eight different sites: 3 around the South Charleston facility, 4 around the Institute facility, and 1 background site. A background site is an area with no known sources of EtO. Each round represents one 24-hour period.

The primary purpose of the monitoring is to determine the presence and concentration of EtO in the air.

As of today, the WVDEP has completed three rounds of sampling. The third round was completed this week and results are expected in the next 4 to 6 weeks. Results from the first and second rounds are available on the next page and on the WVDEP website.

The concentrations were measured in parts per billion (ppb) by volume. For comparison purposes, 1 ppb is equivalent to one second in a 32-year time span or one drop of water in an Olympic-sized swimming pool.

All sites monitored in this first round of sampling showed concentrations less than 0.1 ppb. Results from the second round are higher. These concentrations are influenced by many factors, including wind and weather data, operations at the facilities, and background levels, which is why multiple rounds of sampling are being conducted.

***These single data points, on their own, cannot be used to draw conclusions regarding the lifetime health risk associated with EtO.***

Collectively, the results of the four (4) rounds of sampling, along with emissions and weather data from the days sampled, will be reviewed by both the WVDEP and EPA and compiled into a final report. This report will be made available to the public as soon as it is completed and will guide future actions taken by the agencies.

## WVDEP Ethylene Oxide Sampling: First and Second Round Results

Sample Location	First Round Results - January 25-26, 2022		Second Round Results - February 15-16, 2022	
	Results (ppbv)*	Predominant Wind Direction	Results (ppbv)*	Predominant Wind Direction
Guthrie WV Background Site **	0.0361	Not Available	0.0884	Not Available
#0 South Charleston, WV	Non-Detect	From the Northwest	VOID	Intake regulator not working
#3 North Charleston, WV	0.0165	From the Northwest	0.0227	From the Northeast
#4 North Charleston, WV	0.0121	From the Northwest	0.088	From the Northeast
#10 Institute, WV	0.0821	From the West/Northwest	0.0996	From the Northeast and Southeast
#13 Institute, WV	0.0375	From the West/Northwest	0.204	From the Northeast and Southeast
#14 Institute, WV	0.0376	From the West/Northwest	0.0958	From the Northeast and Southeast
#15 Institute, WV	0.0505	From the West/Northwest	1.3	From the Northeast and Southeast

\* Concentrations measured in parts per billion by volume (ppbv)

\*\* Background site: This is an area with no known sources of Ethylene Oxide

Method Detect Level (MDL) for the sampling = 0.0261 ppbv

MDL is the minimum concentration of a substance that can be measured and reported with 99% confidence that the concentration is greater than zero.

# WVDEP records on Ethylene Oxide are available online

The WVDEP houses the majority of its documents in its online database, Application Xtender (AX). This database is free and open to the public and all documents found here can be viewed, downloaded, or printed.

Below are instructions for accessing the Division of Air Quality's files related to the facilities in Kanawha County that use Ethylene Oxide.

If you encounter any issues with the below instructions or do not have access to a computer or reliable internet service, please contact the DAQ at 304-926-0475.

To log into AX, visit: <https://documents.dep.wv.gov/appxtender> (*works best with Microsoft Edge or Google Chrome*)

Username = DEP / Password = DEP

## **To see specific requests from DAQ on Ethylene Oxide:**

1. Double-click on PERMITSAIR from the applications listed on the left pane. It should turn blue when selected.
2. Click on the blue square – NEW QUERY.
3. In the SECONDARY ID NUMBER box, enter EO Information\*. Click the RUN button at the bottom of the page. You may sort any of the columns by clicking the column heading.
4. Double-click the document in the QUERY RESULTS you want to view.

## **To see company reports containing EtO information:**

1. Double-click on PERMITSAIR from the applications listed on the left pane. It should turn blue when selected.
2. Click on the blue square – NEW QUERY.
3. In the SECONDARY ID NUMBER box, enter 34 PPP\*. Click the RUN button at the bottom of the page. You may sort any of the columns by clicking the column heading.
4. Double-click the document in the QUERY RESULTS you want to view.

## **To see air permits:**

1. Double-click on PERMITSAIR from the applications listed on the left pane. It should turn blue when selected.
2. Click on the blue square – NEW QUERY.
3. In the PRIMARY ID box,
  - For Specialty Products US, LLC, type 039-00682; *OR*
  - For Union Carbide Corporation, Institute, type 039-00005; *OR*
  - For Covestro LLC, South Charleston, type 039-00102; *OR*
  - For Union Carbide Corporation, South Charleston, type 039-00003
4. In the DOCUMENT TYPE box, choose PERMIT/GENERAL PERMIT REGISTRATION from the dropdown list. Click the RUN button at the bottom of the page. You may sort any of the columns by clicking the column heading.
5. Double-click the document in the QUERY RESULTS you want to view.

### **To see inspections:**

1. Double-click on PERMITSAIR from the applications listed on the left pane. It should turn blue when selected.
2. Click on the blue square – NEW QUERY.
3. In the PRIMARY ID box,
  - For Specialty Products US, LLC, type 039-00682; *OR*
  - For Union Carbide Corporation, Institute, type 039-00005; *OR*
  - For Covestro LLC, South Charleston, type 039-00102; *OR*
  - For Union Carbide Corporation, South Charleston, type 039-00003
4. In the DOCUMENT TYPE box, choose INSPECTION from the dropdown list. Click the RUN button at the bottom of the page. You may sort any of the columns by clicking the column heading.
5. Double-click the document in the QUERY RESULTS you want to view.

### **State and Federal staff in attendance:**

#### **WVDEP**

Scott Mandirola, Deputy Cabinet Secretary and Chief Science Officer

Ed Maguire, Environmental Advocate

Dennis Stottlemeyer, Deputy Environmental Advocate

Terry Fletcher, Chief Communications Officer

#### **WVDEP Division of Air Quality**

Laura Crowder, Director

Renu Chakrabarty, Assistant Director, Air Monitoring, Laboratory, & Air Toxics

Mike Egnor, Air Toxics Coordinator

Jon McClung, Air Modeling

Dan Baurerle, Compliance and Enforcement

Todd Shrewsbury, Planning Section

Stephanie Hammonds, Information Management and Outreach Manager

#### **West Virginia Department of Health and Human Resources, Bureau for Public Health**

Steve Blankenship, Epidemiologist

Lee Orr, Readiness Coordinator

#### **U.S. Environmental Protection Agency**

Alice Chow, Region 3 Air Quality and Analysis Branch Chief