

Questions and Answers
Virtual Ethylene Oxide Community Meeting in Longview Texas near the
Eastman Chemical Company Longview, TX Facility
August 10, 2021

Q: Where is the geographic area in Longview and from slide 11 [of the presentation] what is meant by near?

A: EPA provided a verbal response during the meeting. We offer the following additional information:

Typically, air toxics emissions impacts decrease with more distance from the emission source. There is not a simple answer to how far away is far enough when it comes to risk, as many factors impact how far ethylene oxide (EtO) can travel and how long it stays concentrated in outdoor air. Like all air pollutants, EtO disperses in the air. Wind direction, weather patterns, topography, how much is emitted and where exactly the emissions occur at the facility all impact the distance and direction that EtO travels and the concentrations in air where exposure may occur. Modeling was performed out to 50 kilometers, or about 30 miles.

Q: Why are the Texas Commission on Environmental Quality (TCEQ) risk numbers so much higher than EPA?

A: EPA provided a verbal response during the meeting. We offer the following additional information:

TCEQ developed a state-specific health risk screening level for ethylene oxide that is considerably different from EPA's risk screening level, which corresponds to a lifetime excess cancer risk of 100-in-1-million. TCEQ has the right to develop their own health effects screening levels under state law; on this issue, we disagree with the screening level. EPA is proceeding with ethylene oxide activities and outreach based on the EPA ethylene oxide inhalation risk screening level. To calculate EPA's risk screening level, EPA is currently using the Agency's inhalation unit risk estimate (URE) [or Integrated Risk Information System (IRIS) cancer risk value] for EtO that was updated in 2016. That update followed the advice of the Agency's Science Advisory Board, who conducted a thorough, lengthy review of the available science. The IRIS EtO assessment underwent two rounds of public comment and two rounds of peer review by the Agency's Science Advisory Board. The Science Advisory Board peer review process provides EPA with high-level scientific guidance and advice from external subject matter experts about our actions and research activities.

TCEQ and industry groups have proposed an alternative, much lower inhalation cancer risk value for EtO, which relies on the same major Centers for Disease Control (CDC) occupational studies that are the basis of the IRIS risk value. The TCEQ cancer risk value is substantially lower than the IRIS risk value for two main reasons: 1) TCEQ selected a different statistical model – one that both EPA and the Science Advisory Board determined does not adequately describe the relevant human cancer data, and 2) the TCEQ value is based only on lymphoid cancer.

1. Consistent with advice received from EPA's Science Advisory Board, EPA's IRIS value for EtO is based on a statistical model that best describes the human cancer data at exposure levels relevant to the general population. This model was selected from among multiple alternative

models, including the model used by TCEQ, that were considered by the Science Advisory Board.

2. A central focus of the Scientific Advisory Board review was two major studies by a branch of the CDC which looked at occupational exposures to EtO in several thousand workers in the commercial sterilization industry. Those studies showed excess lymphoid cancer and excess breast cancer in females. When considering the CDC studies along with other studies on the carcinogenicity of EtO, EPA determined that there is sufficient evidence associating long-term exposure to EtO with breast cancer in women, and the Scientific Advisory Board supported this determination. Thus, the IRIS value for EtO includes risk for breast cancer in women in addition to lymphoid cancers in both men and women.

Q: Please clarify the difference between the measured and actual emissions values. Were the measured and actual emission values views and the risk assessment calculations?

A: EPA provided a verbal response during the meeting. We offer the following additional information:

We can say that generally, measured emissions are actual emissions. Air toxics emissions reported to State agencies and EPA can be either measured or estimated. Some of the estimates can be made even more accurate by using on-site measurements rather than just being based solely on engineering calculations.

Q: EtO concentration in non-industrial areas seems to be high, higher than EPA's risk value; can you explain this?

A: EPA has been studying background concentrations of ethylene oxide. Background concentrations represent the amount of a pollutant that exists in the air that does not come from a specific source. These pollutants may come from a natural source or from distant sources. Background concentrations can explain pollutant concentrations found even without recent human-caused emissions.

We are evaluating background concentrations of ethylene oxide from monitors across the nation, in urban and rural areas, that are not associated with a particular industry. EPA is also working to understand other sources of ethylene oxide emissions that may influence the results from those monitors. Right now, we don't know what background levels are for ethylene oxide – we can't put an exact number on it. Measuring ethylene oxide is challenging – especially at lower concentrations. Right now, we don't know what background levels are for ethylene oxide – we can't put an exact number on it. Measuring ethylene oxide is challenging – especially at lower concentrations.

It is also important to note that when EPA completes risk assessments, the risk that is estimated is risk over and above the level of risk expected from other exposures, including background exposures.

More information can be found at: <https://www.epa.gov/system/files/documents/2021-10/background-eto-explainer-document.pdf>