Questions and Answers
Virtual Ethylene Oxide Community Meeting in St. Gabriel, Louisiana near the
BCP Ingredients and Taminco Corporation Facilities
August 12, 2021

Q: What is the definition of near with regard to near the facilities?

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: Is BCP currently subject to the chemical manufacturing area source NESHAP standards, and if no, why not?

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

According to the facility air permit, the National Emission Standards for Hazardous Air Pollutants (NESHAP) do not apply. The facility is a minor source of Louisiana Administrative Code (LAC)Title 33, Part III, Chapter 51 Toxic Air Pollutants TAPs). The facility is likely exempt from Chemical Manufacturing Area Source NESHAP (CMAS) because their affected systems do not use any of the air toxics listed in Table 1 to 40 CFR Part 63 Subpart VVVVVV as feedstocks, or because they do not manufacture any listed air toxic as byproducts or products. Currently, EtO is not one of the air toxics listed in Table 1 to 40 CFR Part 63 Subpart VVVVVV. We note that EPA committed in our March 5, 2021, response to the Office of the Inspector General to complete a thorough review of CMAS, and we intend to consider EtO emissions as part of this review.

Q: When discussing ethylene oxide emissions per year on slide 11 of the presentation, why is 2019 higher?

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

Those are the numbers that we actually received from the emission inventories that are submitted by the company each year to the states and EPA. The emission inventory is not constant, and it does fluctuate some, based on process and production for each year.

Q: Does this cancer risk show up in Louisiana Tumor Registry? How does it relate to NATA cancer risk in Louisiana, especially in areas like St Gabriel?

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

The 2014 National Air Toxics Assessment (NATA) provided modeled cancer risks from inhalation of outdoor air toxics based on 2014 emissions and is meant to represent a snapshot in time from 2014. The Louisiana Tumor Registry is based on cancer incidence information gathered by the state.

Tumor and Cancer registries collect data on actual cancer cases occurring, or cancer incidence. The development of cancer is a complex process and there are many things that impact an individual's

cancer risk, including diet, exercise, and smoking. Chemical exposures like those from air toxics like EtO can play a role.

One thing to keep in mind is the fact that developing cancer is common. According to the National Cancer Institute, approximately 39.5% of Americans are expected to develop cancer in their lifetime, which is equivalent to 395,000 in a million. When EPA completes risk assessments, we look at *excess* cancer risk attributable to a pollutant. It is important to note that this risk is above and beyond the risk of developing cancer from other sources. While EPA is deeply concerned about the cancer risk from exposure to EtO and other air toxics, air toxics are ultimately, in most cases, a small piece of a person's overall cancer risk. This piece, however, may be a preventable piece, and it is one EPA is committed to reducing.

Even though there may be risk associated with an air toxic, the complexity and commonness of cancer and the fact that many cancers develop over the course of decades means both that we are not able to attribute any one individual's cancer to a specific exposure and that an increased risk may not be reflected in a tumor registry.

Q: How does the 2018 emissions inventory compare to 2019 and 2020? What does EPA expect the individual risk to be in 2021?

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

EPA's latest National Air Toxics Assessment was prepared using a 2014 emission inventory, which was the most complete data set at that time that could be used to evaluate, analyze, and compare across the nation to determine risk from air toxics. When EPA more recently assessed risk, we used the 2018 emission inventory data for these facilities, which was the most recently available, complete dataset at the time of that assessment.

For Taminco, 2018, 2019, and 2020 EtO emissions are similar. For BCP Ingredients, 2018 EtO emissions are about 4 times lower than 2019. 2020 BCP Ingredients' EtO emissions are not yet available. For 2021, we are not able to project the estimated air toxics inhalation risk because we don't yet have the information necessary to conduct that assessment.

Q: Since the risks have existed since the plants were built in the 1970s, and the previous plants and other plants affect St Gabriel, what is the lifetime risk?

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

EPA's more recent risk assessment used 2018 emissions data to estimate risks assuming that level of emissions persists over a 70-year lifetime. We do not have sufficient information to characterize risks in prior years due to a lack of detailed historical emissions information.

Q: Louisiana cancer studies show lower actual cancers in our industrial corridor than the state average. Why do some people say ethylene oxide is so much more carcinogenic than others say?

A: EPA provided a verbal response during the meeting. We offer the following additional information: Consistent with advice received from EPA's Science Advisory Board, EPA's Integrated Risk Information System, or IRIS, value for EtO is based on a statistical model that best describes the relevant human cancer data. This model was selected from among multiple alternative models that were considered by the Science Advisory Board.

A central part of the Scientific Advisory Board review was two major studies by a branch of the Centers for Disease Control and Prevention, or 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. EPA determined that there is sufficient evidence that long-term exposure to EtO can cause 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: Why is the EPA ethylene oxide cancer risk threshold many times less here in East Iberville than at various spots in the country, and what are the everyday levels in places without heavy industry?

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

During the presentation, EPA discussed the estimated risk instead of the risk threshold. The lower revised estimated risk from EtO in the Iberville area is based on updated and lower emissions inventories from the two facilities in 2018, compared to 2014 values.

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.

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

Q: A study by the Texas Commission of Environmental Quality (TCEQ) came up with the risk threshold more than 2000 times higher than EPA estimates. Do you plan to revise your numbers and is EPA reconsidering the ethylene oxide IRIS value in rulemaking for the Clean Air Act?

A: In short, EPA stands behind the IRIS value for ethylene oxide.

In January 2022, EPA signed a proposed reconsideration of both the use of the 2016 IRIS value for ethylene oxide in assessing cancer risk and the use of the TCEQ risk value as an alternative. This proposed reconsideration was for a particular rule, the Miscellaneous Organic NESHAP, or MON rule, passed in 2020.

In this reconsideration action, EPA is proposing to not change its decision to use the EPA's 2016 IRIS value for ethylene oxide when assessing risk for the source category in the 2020 MON final rule, as the 2016 ethylene oxide IRIS assessment remains the best available science, and to decline to use the TCEQ risk value for ethylene oxide instead of the EPA's 2016 IRIS value, after careful consideration of the TCEQ risk value for ethylene oxide. The reconsideration action carries a 90-day comment period for the public to comment on the proposal.

Q: There are seven major facilities that affect people living in St Gabriel. Based on the LDEQ permitted information and given the success of these facilities, will the seven permits to emit ethylene oxide also be lowered by 96% to ensure levels stayed lower?

A: Currently, there are no EPA requirements that these permit limits be lowered since most states and EPA do not require them to be renewed or the limits lowered.

Q: If EtO is so much more carcinogenic than previously thought, why does the Louisiana Tumor Registry show lower actual cancers in the industrial corridor than the state average?

A: See our comments above about this issue. Due to response efforts for Hurricane Ida, the Louisiana Department of Health has not yet responded.

Q: Is it possible that the threshold—being three orders of magnitude or 1000 times lower than the background—is too conservative? Are we limiting ourselves and industry too far, and how does this compare to the risks that scientists and medical professionals have when working with other hazardous chemicals?

A: In 2016, EPA published the IRIS assessment for ethylene oxide. This assessment underwent two rounds of public comment and two rounds of peer review by EPA's Scientific Advisory Board (SAB). EPA stands behind the ethylene oxide IRIS value.

Q: If the EtO industry experts and scientists disagree with the methodology to accurately reflect EO hazards in the IRIS report, then why would there be several scientists adamantly opposed to the IRIS report information?

A: In 2016, EPA published the IRIS assessment for ethylene oxide. This assessment underwent two rounds of public comment and two rounds of peer review by EPA's Scientific Advisory Board (SAB). Even though there are disagreements from outside of EPA on the methodology and decisions EPA used for evaluating the inhalation risks from EtO, EPA stands behind the ethylene oxide IRIS value.

TCEQ and industry groups have proposed an alternative, much lower toxicity value for ethylene oxide, which actually relies on the same major Centers for Disease Control (CDC) occupational studies that are the basis of the IRIS value. The TCEQ 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 – it does not consider female breast cancer.

Q: What is the difference between state and federal environmental jurisdictions?

A: Federal environmental jurisdictions are defined in our Code of Federal Regulations. Congress wrote the Federal Clean Air Act and EPA developed regulations that work towards meeting the requirements Congress specified. Chapter 40 of the Code of Federal Regulations governs EPA activities. Where there is a specific EPA regulatory air program requirement, state air programs can be more broad, conservative or stricter, but they cannot be less strict, than EPA.

EPA has the primary responsibility for developing Federal air program rules, but we typically delegate those rules down to state level for implementation. If, for some reason, a Federal air regulation is not delegated to a state, then EPA retains primary jurisdiction for that specific regulation.