

MEDIA ACCURACY ALERT

Ethylene Oxide Air Monitoring in Covington—What the Results Mean

This document seeks to clarify prevalent inaccuracies in the reporting on ethylene oxide in Covington.

Interpreting EtO Air Quality Results

We understand that interpreting air quality assessments and regulations related to ethylene oxide (EtO) is complicated. To understand the recent actual air testing results in Covington, here are some basics take-aways.

(1) EPA has never issued a standard or a safety level for EtO in ambient air. For this reason, any statement that a measurement is above or below EPA's "safe" level is inaccurate and misleads readers. [See more here](#).

As part of its regular screening process, EPA issued a "maximum" level of EtO to be used by scientists as a screening threshold to determine which areas of the country need further study. As even EPA acknowledges, **the screening threshold is NOT intended to represent "safe" or "not safe" or to make health assessments of any kind.**

In its guidance document explaining the agency's air quality screening process, [EPA specifically states](#) its results should NOT be used to pinpoint exposure values at a home or school; to characterize or compare risks or exposures between neighborhoods, or to control the emission of specific sources of EtO.

A measurement can be above or below EPA's screening threshold, but that simply means further study may be warranted. Again, EPA's threshold number is not intended as a health standard. It does not say that more people have gotten, or will get, cancer or any other disease. In fact, it may have nothing to do with health outcomes.

(2) If you are reporting on air monitoring measurements and trying to compare them to the screening threshold, you should use average measurements when more than one measurement is available. EPA notes that the screening threshold assumes continuous exposure at that level 24 hours a day for 70 years. Using the highest or lowest air measurement is irrelevant because you can't compare one point in time with continuous exposure over a lifetime (i.e. 70 years).

(3) It is crucial to consider the "background" concentrations of EtO when evaluating whether EtO results are meaningful. The screening level used by EPA (0.02 micrograms of EtO per cubic meter of air ($\mu\text{g}/\text{m}^3$)) is based on the most conservative assumptions has significant limitations, as even EPA admits. In fact, EPA's threshold number does **not account for EtO found in the environment throughout the United States which is 10-20 times higher than EPA's threshold screening value.** This problem was confirmed by EPA in November when it first reported EtO measurements from monitoring stations across the country and said this:

EPA began to examine whether ethylene oxide is present more broadly in the air in the U.S., and if so, at what levels. To begin this work, the Agency analyzed for ethylene oxide in available air quality samples from a subset of existing, longstanding monitors in the NATTS network and the UATMP network. These networks, which are not focused on specific industrial sources, are designed to help track progress in reducing air toxics across the country. They include monitoring locations in both urban and rural areas. EPA analyzed samples from the subset of these monitors that send samples to EPA's national contract laboratory for analysis. **The results confirmed the presence of ethylene oxide, with six-month averages ranging from about 0.2 to about 0.4 $\mu\text{g}/\text{m}^3$.** For more information regarding this topic, please read the [Nov. 6, 2019 update from EPA](#) and review the [Data Summary and Map of NATTSUATMP sites](#).

Georgia EPD's sampling in the relatively secluded [General Coffee State Park](#), for example, has consistently provided readings well above EPA's screening level. Average (arithmetic mean) readings from General Coffee State Park are 0.188 $\mu\text{g}/\text{m}^3$, nearly 10 times higher than EPA's screening threshold.

(4) [EtO is emitted from very diverse sources](#). In urban areas, EtO is emitted from diesel engines and many other sources. In rural areas EtO is emitted from swamps and decaying debris. Perhaps most interesting, EtO is also emitted from the human body. In its high-level assessment, **EPA did not account for the EtO humans create in their bodies through metabolism.** However, **our bodies make EtO at the equivalent of one to**

two micrograms per day¹. EPA's screening threshold of 0.02 µg/m³ *is about 50-to-100-fold less than what our own bodies make every day.*

Practically speaking, as a result of these combined sources, it is not surprising that air monitoring in nearly any area has exceeded EPA's screening threshold. This has been the case even where there was not any EtO contribution from commercial sterilizers or other similar sources.

Key Points

In November 2019, in interpreting air monitoring samples taken in spring and fall 2019, several points need to be made:

1. ***The assertion that EtO readings "above" the threshold were caused by BD is not correct.*** It would be ***virtually impossible for the samples to be below EPA's threshold*** because it's an urban area and ***many sources of EtO exist without any contribution from industry.***

Georgia EPD has continued to conduct air monitoring around Covington. **The average exposure in Covington is around 0.4 µg/m³, which is consistent with the "background" range that EPA found at their monitoring stations nationwide (as noted above).**

2. ***An assertion that people in Covington are going to get cancer from EtO at levels above the EPA screening threshold is also incorrect. EPA itself says that its screening values above its threshold does not indicate a health issue in a neighborhood or school.*** In fact, the ***EPA has NOT mandated use of its threshold as a health statement.*** That's because ***the threshold is a modeled, very conservative maximum number from exposure to chemicals such as EtO at continuous levels over a lifetime.***
3. The Georgia Department of Public Health publicly stated in multiple public meetings that their preliminary analysis of cancer incidence in the zip code areas near the facilities did not show increased rates of cancer overall, nor for any of the cancers known to be associated with ethylene oxide ([See slide 10](#)). Not surprisingly, no link to cancer has been observed with ambient or other low-level EtO exposure.

Understanding the Covington EtO Air Quality Results:

- EPA, the Georgia EPD, the City and BD have each collected extensive air quality data throughout the Covington area. A wide range of EtO samples have been now collected in both residential and industrial areas in Covington and throughout the state.
- EPD has also collected EtO air quality samples throughout the state (<https://epd.georgia.gov/ethylene-oxide-information>). In those samples, EPD found the average concentration of EtO at 0.2 µg/m³. Many of EPD's samples were taken where there were no sources of EtO.
- EPA also has taken samples of EtO throughout the USA. EPA's sampling results range from about 0.2 to about 0.4 µg/m³.
- Based on more than 100 samples taken in the Covington area, the average EtO levels from EPD's air monitoring in Covington are about 0.4 µg/m³. This average is based on air quality samples collected throughout the Covington area.
- Using any background standard, the results from actual EtO testing in Covington is well within the range of what EPD found at their monitoring stations across the nation, including those that were not near industrial sources of EtO.
- In other words, **EtO levels in Covington are within the range for what EPA has identified as normal background levels throughout the U.S.**

¹ C.R. Kirman & S.M. Hays, Derivation of endogenous equivalent values to support risk assessment and risk management decisions for an endogenous carcinogen: Ethylene oxide, *Regulatory Toxicology and Pharmacology* (2017 Dec; 91: 165-172), available at <https://www.ncbi.nlm.nih.gov/pubmed/29111443>.

- However, most media stories do not present the information in this context and readers/viewers are left to believe that average EtO levels in Covington are higher than other areas of the state or country. This is not accurate and has been proven false through air monitoring results to date.
- One last point. Some television reports include outside shots of BD's complex and focus on the roofline while commenting about "spewing" ethylene oxide. **Those perspectives are entirely inaccurate and a gross mischaracterization of the permitted operations at BD.** The truth is **the vapor depicted in these media reports are not EtO, but water vapor (steam) from the company's boiler and other normal building processes.** BD employs best available technology at its sterilization plant in Covington, including an EtO incinerator, to destroy 99.999% of EtO and the byproducts of that process are water and carbon dioxide. The plant's small EtO emissions are released through [a separate stack] on the facility's roof.
- So, when interpreting EtO results for Covington, recognize the results in Covington are within normal background concentrations for EtO throughout the state and nation, follow EPA's own guidance around what their screening threshold is and isn't, and don't speculate about spills and releases of EtO that are not accurate.
- We are available to fact check statements on BD's operations and air monitoring results. Please reach out to us if you have any questions.