

Questions and Answers: Emissions at Sterigenics

<https://www.epa.gov/il/questions-and-answers-emissions-sterigenics>

(While these Q & A are for Sterigenics in Willowbrook, IL, but they are also very likely pertinent to the facility in Kingsbury, NY.)

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Emissions at Sterigenics

[See additional categories of questions and answers.](#)

I would like to know the specifics of the test equipment make, model, specifications?

The emissions source testing equipment includes:

- SRI Model 8610 Portable GC
- Dual Sample Loops /Dual Injector/Dual Column/Dual Detector
- Outlet - 2 cc sample loop/ 6' packed column - 1% SP-1000 on 60/80 Carbopack B/ 11.7 eV Photoionization Detector (PID).
- Inlet – 2 cc sample loop/ 6' packed column - 1% SP-1000 on 60/80 Carbopack B/ Flame Ionization Detector (FID).
- This information can also be found in Section 5 of the test reports available on the Illinois EPA website.
- <https://www2.illinois.gov/epa/topics/community-relations/sites/sterigenics/Documents/WBI%20rev1.pdf>
- <https://www2.illinois.gov/epa/topics/community-relations/sites/sterigenics/Documents/WBII%20rev.1.pdf>

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Is there a time of day that is the worst time, higher emissions than normal, that one would be exposed to emissions from Sterigenics?

When the weather is calm and clear, specifically during the nighttime, temperature inversions may occur. Temperature inversion occurs when cold air close to the ground is trapped by a layer of warmer air. As the inversion continues, air becomes stagnant and pollution may become trapped close to the ground.

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Is Sterigenics required to self-report data?

The Clean Air Act does not require mandatory reporting of emissions for air toxics, like ethylene oxide. As such, when EPA conducts its national air toxics assessment, it relies primarily on air toxics data that state air agencies voluntarily report to EPA for the National Emissions Inventory (NEI). The agency also considers air toxics information that facilities are required to report to the Toxics Release Inventory (TRI), which was created under the Emergency Planning and Community Right-to-Know Act (EPCRA).

EPA is currently reviewing the reporting of ethylene oxide to the TRI Program.

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It looks like the amount of EtO used at Sterigenics was higher in prior years. Does that mean that the risk was higher in prior years?

The National Air Toxics Assessment (NATA) provides risk estimates that are a “snapshot” in time. EPA’s most recent NATA is based on emissions data from 2014. We do not have sufficient information to characterize risks for prior years. For example, even though EPA conducted NATAs for prior years (1996, 1999, 2002, 2005, and 2011), it’s not meaningful – and sometimes misleading – to compare these assessments to the 2014 NATA, because we have improved the NATA source inventory, made modeling changes, revised background calculations, and updated some health benchmarks. The lack of detailed emissions information for prior years is a significant limitation in the ability to assess past risks. But we do know that current emissions have changed since 2014 in light of the additional controls put in place in July 2018. We are in the process of gathering the detailed emissions information we need to provide a more certain and refined risk assessment for people in Willowbrook.

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Why is Sterigenics allowed to self-report their annual emissions when the EPA's own people estimate emissions that are 5-8.5% higher than the numbers reported by Sterigenics?

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For their NEI reports, a state may have received different facility-provided values compared to those reported to the TRI, performed additional emission calculations, or made revisions to certain data.

A facility will trigger TRI-reporting requirements if it: (1) is in a TRI-covered industry sector; (2) has 10 or more full-time employees; and (3) manufactures, processes, or otherwise uses more than the listed threshold amount of a TRI-listed chemical during a reporting year. Ethylene oxide sterilizers, like Sterigenics, fall under “product sterilization and packaging services” (NAICS Code 561910), which is not a TRI-covered industry sector. Although Sterigenics did report emissions to TRI in years past, they stopped reporting in 2017.

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In September 2018, Sterigenics conducted stack tests pursuant to a requirement in their construction permit, which was issued by the Illinois EPA in June 2018 (see Special Condition 6 of Application Number 18060020). Testing was performed according to the test protocol approved by the Illinois EPA. The purpose of the test was to demonstrate the effectiveness of the pollution controls to remove the ethylene oxide from the chamber exhaust vent cycle (also called the backvent) at conditions that should have represented the highest amount of ethylene oxide through the chamber exhaust vents (see Section 3.0 of Test Protocol Addendum). U.S. EPA will consult with the Illinois EPA on whether the Illinois EPA, in their capacity as the permitting authority, will require further stack tests for the purpose of determining compliance with the applicable permit conditions.

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Is the third party conducting the testing owned by Sterigenics or a financial connection?

ECSI LLC is the testing company hired by Sterigenics to conduct the September stack testing at the facility. There is no indication this company has a financial connection to Sterigenics. Illinois EPA and USEPA were on site to be sure the tests were conducted correctly.

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Are all discharges of EtO connected to scrubbers at the Sterigenics facility? These would include the main vent when EtO is pumped out of the sterilization chamber at the end of a cycle, any back vents during the purging of the chamber and vents?

There are two exhaust streams that are required to be controlled - the aeration room vent and the chamber vent. These are connected to control devices. The backvent emissions also are now controlled (though not required). This control measure doesn't include fugitive emissions – those that leak out of a door or vents, for example.

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What has changed to make emission controls on the back vents suddenly feasible? The EPA and industry removed the rule about controlling back vents after it was determined it was too dangerous (risk of explosion)?

The EPA rule for commercial sterilizers, like Sterigenics, was adopted in November 1994. That rule required either a maximum concentration limit or 99% control, depending on the facility ethylene oxide usage. In July 1997, EPA learned of explosions that were occurring at several facilities due to oxidizers being overfed with ethylene oxide. This was determined to be caused by abnormal activity coming from back vents. At the time, industry and EPA concluded that there were no safety mechanisms available to regulate the flow of EO from back vents into control devices, and the backvent requirement was subsequently removed from the rule in November 2001. In April 2006, EPA reviewed and retained the 1994 rule (as amended), which did not require back vent control. At the time the rule was adopted in 1994 (and subsequently reviewed in 2006), our understanding of the risk of ethylene oxide was not what it is today. We have now begun the work to re-review that rule, but the regulation development will take time.