A Primer on Sterigenics and Ethylene Oxide (EtO)

1. **What does Sterigenics do?**

The firm has facilities in Georgia, Texas, California and New York (GF) among other places. They use the gas, ethylene oxide, to **sterilize medical devices** in thick-walled, steel chambers the size of small shipping containers. The medical devices, still in their packages, are placed in the sealed chamber, the door is shut and the chamber is flooded with ethylene oxide. The gas penetrates the cardboard boxes in which the devices are packaged, killing all germs. After several hours about half of the gas is pumped out of the chamber and moved to a scrubber where the gas is transformed by a chemical reaction into ethylene glycol – anti-freeze. After that the chamber is repeatedly subjected to gas washing (pumping air and nitrogen into the chamber) diluting the ethylene oxide below explosive levels. That mixture is also pumped to the scrubber. The remaining trace amount of gas is removed by slightly opening the chamber door which automatically opens a valve, moving the gas to a catalytic oxidizer. Only then can workers enter the chamber and remove the packaged medical devices. [At a California plant](https://www.csb.gov/videos/ethylene-oxide-explosion-at-sterigenics/) in 2004, engineers skipped the procedure of gas-washing and the EtO ignited, traveling back to the chamber creating a catastrophic explosion which nearly destroyed the plant.

1. **How dangerous is Ethylene Oxide?**

First, the gas is **more explosive than rocket fuel**. Containers of ethylene oxide were dumped into caves in Tora Bora on the Afghan-Pakistan border and then ignited to kill terrorists.

Second, EtO was [classified by the EPA](https://www.epa.gov/hazardous-air-pollutants-ethylene-oxide/frequent-questions-health-information-about-ethylene-oxide#doctor) as **a human carcinogen** in 2016. The EPA stated that …

“Evidence in humans indicates that long-term exposure to ethylene oxide increases the risk of cancers of the white blood cells, including non-Hodgkin lymphoma, myeloma, and lymphocytic leukemia. Studies also show that long-term exposure to ethylene oxide increases the risk of breast cancer in females.”

1. **What evidence is there that Ethylene Oxide poses a risk from the Sterigenics plant** in Kingsbury (84 Park Rd)?
2. In the 2012-2016 Cancer Registry, out of 57 counties (excl NYC) Warren County ranked 17th for Non-Hodgkin Lymphoma, 1st for myeloma, 15th for leukemia and 10th for breast cancer. A recent [Post-Star article](https://poststar.com/news/local/support-group-aids-people-with-multiple-myeloma-a-roller-coaster-disease/article_1f38cfd2-fcad-534d-b597-79db57a364b7.html) just this month reported on two women who started a support group for victims of multiple myeloma. In 2019, a man living within 3 miles of Sterigenics died of multiple myeloma. This is a very rare disease and yet only the Bronx ranks above Warren County.
3. We have learned that although the monitoring of EtO emissions at the Sterigenics facility may have been adequate in 2006, it is “obscenely inadequate” now. It is said to be very hard to violate the EPA emissions’ standard. Queensbury is the wrong place to put this facility. There is no ambient monitoring and there is no Ph reader for the EtO emissions from the scrubber. That’s a very expensive upgrade but would make the plant safer.[[1]](#endnote-1)
4. The plant now handles 180 tons of EtO (annually I guess). Even a release of 1 to 5% would pose extreme risks to the public. A level of 1 ppm of EtO (the EPAj standard) is said to be well above acceptable levels.
5. Although Warren County has a low RSEI score, changing the geographic region to a ten-mile radius of downtown Glens Falls causes the score to jump from 56,000 to 1.5 million. That’s because of the Sterigenics facility.[[2]](#endnote-2)
6. **What is to be done?**
7. The public and public officials need to be alerted. Member letters to the editors of all local papers (and broadcast media). CAAN letter to each public official (mayors, town mgrs., city council mbrs, county board of supervisors) informing them of the danger.
8. Appeal to the company. CAAN letter to Kathleen Hoffman, company representative (who is said to “want to do the right thing”), informing her of our concern and asking for public comment.
9. Appeal to the EPA, DEC, DOH, our state representatives, and Elise Stefanik notifying them of what we have learned and demanding action to force the company to invest in expensive equipment upgrades and to adequately monitor the facility. Or we want the company shut down as the Willowbrook facility was and as the public in Georgia and Texas are trying to accomplish in their states.
10. Invite the citizens’ group from Willowbrook to a Zoom conference in which they inform us and other invitees of what they learned about Sterigenics and how they successfully forced it to shut down and leave the state. (Illinois enacted the strictest emissions requirement for EtO in the nation, making it unprofitable for the firm to operate in the state).

1. There was an incident in which the catalytic converter (the device that burns off the final trace amounts of EtO drawn from the chambers) failed at the Queensbury facility but no state notification was required. [↑](#endnote-ref-1)
2. The chart of combined cancer rates and RSEI scores using the ten-mile-radius method shows Warren County to stand out from all 57 NY counties.

   Only two NY counties have a higher Risk-Screening Environmental Indicator (RSEI) score per capita than Warren County. Additionally, Warren County has the highest combined cancer rates for 9 types of cancer in the state outside NYC. The score was compiled by adding up the facility-level RSEI scores for all companies within ten miles (TMR = Ten Mile Radius) of the largest town/city in a county. These cancer data are precisely what NYDOH uses for their own reports. The high RSEI score is attributed to the existence of the Sterigenics plant just 3.6 miles by air from downtown Glens Falls.

   RSEI Score: A RSEI Score is a unitless value that accounts for the size of the chemical release, the fate and transport of the chemical through the environment, the size and location of the exposed population, and the chemical's toxicity. A RSEI Score is calculated as toxicity weight multiplied by the exposed population multiplied by the estimated dose. [↑](#endnote-ref-2)