

## 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) as well as other locations. Sterigenics uses ethylene oxide, which is an explosive and carcinogenic gas, 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](#) in 2004, engineers skipped the gas washing procedure and the EtO ignited, traveling back to the chamber creating a catastrophic explosion which nearly destroyed the plant.

### 2. 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](#) 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.”

EtO has mutagenic and genotoxic activity in all kinds of cells, including germ cells (sperm and eggs) and in single celled and complex organisms. EtO is capable of destroying most viruses, bacteria and fungi, including bacterial spore,

3. **What evidence is there that Ethylene Oxide poses a risk from the Sterigenics plant in Kingsbury (84 Park Rd)?**
  - a. In the 2012-2016 Cancer Registry, out of 57 counties (excl NYC), Warren County ranked 17<sup>th</sup> for Non-Hodgkin Lymphoma, 1<sup>st</sup> for myeloma, 15<sup>th</sup> for leukemia and 10<sup>th</sup> for breast cancer. A recent [Post-Star article](#) 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 in its incidence.
  - b. 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 for EtO. Also, there is no continuous pH analyzer to monitor the acidity of the liquid in the scrubber. To make the Sterigenics plant safer, continuous pH monitoring and control are needed to ensure that the proper pH and scrubber efficiency are maintained.

- c. In a recent one-year period, the plant handled 180 tons of EtO. Even a release of 1 to 5% would pose extreme risks to the public. An ambient level of 1 ppm of EtO (the EPA standard) is said to be well above acceptable levels.
- d. Although Warren County itself has a low RSEI (Risk-Screening Environmental Indicators) 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.<sup>i</sup>

**4. What is to be done?**

- a. The public and public officials need to be alerted. We encourage concerned residents to send letters to the editors of all local papers and broadcast media.
- b. Appeal to the company. Send a letter to Kent Adamson, Sterigenics Vice President for Global Environment Health and Safety, informing him of your concern and asking for public comment.
- c. Appeal to the EPA, DEC, DOH, our state legislators, US Senators, and Elise Stefanik, notifying them of what we have learned and demanding action to force the company to invest in necessary equipment upgrades in order to adequately monitor and control all EtO emissions from the facility. If Sterigenics does not take action, we will work to shut down Sterigenics in Kingsbury as the community did in Willowbrook, Illinois, and as communities in Georgia and Texas are trying to do in their states.
- d. Invite someone from the Willowbrook Stop Sterigenics citizens group to a Zoom meeting so they can inform us about 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).

<sup>i</sup> There was an incident in which the catalytic oxidizer (the device that burns off the final trace amounts of EtO drawn from the chambers) failed at the Queensbury facility. However no state notification was required.

Note: The catalytic oxidizer has regularly met the permit requirements (continuous temperature monitoring and annual performance testing). At one point, the facility elected to test the efficacy of the catalyst. Upon learning that the catalyst needed replacement, Sterigenics replaced it. Because the catalytic oxidizer performance testing is only required annually, it is impossible to know if the operations of the catalytic oxidizer were subpar during the intervening months.

Chart of combined cancer rates and RSEI scores using the ten-mile-radius (TMR) method makes Warren County stand out from all NYS’s 56 other counties.

