

EPA Taking Steps to Address Emissions of Ethylene Oxide
Latest National Air Toxics Assessment Shows Potential Long-Term Health Concerns in Some Areas

OVERVIEW

- **AUGUST 22, 2018** -- The U.S. Environmental Protection Agency (EPA) is taking steps to address emissions of the chemical *ethylene oxide* from some types of industrial facilities across the country.
- EPA is addressing ethylene oxide based on the results of the latest National Air Toxics Assessment (NATA), which identified the chemical as a potential concern in several areas across the country. NATA is the Agency's nationwide air toxics screening tool, designed to help EPA and state, local and tribal air agencies identify areas, pollutants or types of sources for further examination.
- The 2014 NATA uses emissions data from the latest National Emissions Inventory (2014 is the most recent data available), along with the latest scientific information on air toxics and health, to estimate long-term air toxics exposures and potential public health risk in census tracts across the United States.
- NATA estimates long-term risks – those that may occur from breathing air containing elevated levels of air toxics continuously for many decades. It does not estimate short-term (acute) or intermediate risks. However, based on an examination of available data, EPA does not expect ethylene oxide levels in the air in these areas to be high enough to cause immediate harm to health.
- Nationwide, total emissions of air toxics are declining, and air quality monitoring data show that concentrations of many toxics in the air, such as benzene, also are trending downward.
- Despite these trends, some local areas still face challenges. The 2014 NATA estimates that ethylene oxide significantly contributes to potential elevated cancer risks in some census tracts across the U.S. (less than 1 percent of the total number of tracts). These elevated risks are largely driven by an EPA risk value that was updated in late 2016.
- Ethylene oxide is a flammable, colorless gas used to make other chemicals that are used in making a range of products, including antifreeze, textiles, plastics, detergents and adhesives. Ethylene oxide also is used to sterilize equipment and plastic devices that cannot be sterilized by steam, such as medical equipment.
- EPA will work with industry, and state, local and tribal air agencies as it takes a two-pronged approach to address ethylene oxide emissions:
 - *Reviewing Clean Air Act regulations for facilities that emit ethylene oxide:*
 - EPA has begun reviewing its air toxics emissions standards for miscellaneous organic chemical manufacturing facilities, some of which emit ethylene oxide.
 - The Agency also plans to take a closer look at its rules for other types of facilities, beginning with its emissions standards for commercial sterilizers.

- *Getting additional information on ethylene oxide emissions*
 - EPA also is gathering additional information on industrial emissions of ethylene oxide, which may include data from testing at some types of facilities.
 - This information will help EPA as it evaluates opportunities to reduce ethylene oxide emissions as part of its regulations review.
 - It also will help the Agency determine whether more immediate emission reduction steps are necessary in any particular locations.
- EPA will post updates on its work to address ethylene oxide on its website at: <https://www.epa.gov/ethylene-oxide>

Ethylene Oxide and Risk

- Ethylene oxide in the air can come from different types of sources, including industries such as chemical manufacturers and sterilizers.
- Long-term exposure to ethylene oxide can irritate the eyes, skin, nose, throat, and lungs, and harm the brain and nervous system (causing effects such as headaches, memory loss, numbness). Studies show that breathing air containing elevated ethylene oxide levels over many years increases the risk of some types of cancers, including cancers of the white blood cells (such as non-Hodgkin's lymphoma, myeloma and lymphocytic leukemia); and breast cancer in females.

EPA's Strategy for Addressing Ethylene Oxide Emissions

Reviewing Regulations

- EPA will review Clean Air Act regulations for facilities that emit ethylene oxide to ensure that they protect the public from significant risk. The Agency has begun its review of its air toxics emissions standards for [miscellaneous organic chemical manufacturing](#) (often referred to as the "MON"). EPA last updated this rule in 2006 and is under a court order to complete review of the rule by March 2020. As part of this review, the Agency will consider risks to health and the environment, along with advances in work practices, processes or emission controls that can further reduce air toxics emissions.
- The Agency also plans to take a closer look at air toxics emissions standards for other industries that emit ethylene oxide to determine whether a review of those rules is needed. EPA will start this closer look with its air toxics emissions standards for [commercial sterilizers](#).

Gathering Additional Information

- As part of its review of rules, EPA will gather additional information on industrial emissions of ethylene oxide, including where emissions occur, how those emissions can be controlled, and how current emission controls can be improved. The Agency also may seek information from emissions testing at facilities that emit ethylene oxide, focusing first on areas where NATA estimates elevated cancer risk.
- For ethylene oxide, facility *emissions* testing, combined with air quality modeling, can provide a more complete picture of ethylene oxide in the air in an area than air quality monitoring can

currently provide. Existing monitoring methods are not sensitive enough to detect ethylene oxide at all levels in the outdoor air. EPA is actively working to develop new techniques for measuring ethylene oxide in the outdoor air.

- In addition, data from emissions testing can be used in the review and development of air toxics regulations; data from air quality monitoring cannot. Under the Clean Air Act, air toxics regulations focus on setting limits on the amount of a pollutant an industrial facility can emit to the air.
- The information EPA obtains will help the Agency as it evaluates opportunities to reduce ethylene oxide emissions as part of its regulations review. It also will help EPA determine whether more immediate emission reduction steps are necessary in any locations.

For more information

- For more information on ethylene oxide, and for updates on EPA's efforts to address risk from this chemical in the outdoor air, visit <https://www.epa.gov/ethylene-oxide> .
- To learn more about NATA, and to see the 2014 NATA results, visit <https://www.epa.gov/national-air-toxics-assessment> .