

Update on EPA's work to understand air concentrations of ethylene oxide

November 6, 2019 - Today, EPA is providing an update on its work to better understand ethylene oxide – in particular, work to characterize air concentrations of this chemical. EPA is posting initial results of air monitoring for ethylene oxide (EtO) at 18 monitors in the National Air Toxics Trends Stations (NATTS) network and the Urban Air Toxics Monitoring Program (UATMP). Sharing information is an important component of the agency's two-pronged strategy to address emissions of EtO in the US.

Ethylene oxide is one of 187 hazardous air pollutants or “air toxics” that EPA regulates under the Clean Air Act. It has been determined to be carcinogenic to humans. At the same time, it is an important chemical in our society. It is used to make other chemicals that are the building blocks of a range of products, including antifreeze, textiles, plastics, detergents and adhesives. It is also used widely to sterilize equipment and plastic devices that cannot be sterilized by steam, such as medical equipment. Approximately fifty percent of the sterilized medical devices in this country are sterilized with ethylene oxide. Ethylene oxide in the air can come from different types of sources, including industries such as chemical manufacturers and sterilizers. In 2016, EPA updated its risk value for ethylene oxide and is working with state, local and tribal air agencies to address this chemical.

In 2018 and 2019, EPA and state air agencies monitored the air near industrial sources of ethylene oxide in [Lakewood, CO](#), and [Grand Rapids, MI](#), and [Willowbrook, IL](#) as part of follow-up to the most recent National Ambient Air Toxics Assessment or [NATA](#), issued in August 2018. That assessment identified a number of [census tracts](#) across the country as potentially having elevated cancer risks from exposure to ethylene oxide in the outdoor air.

Each of the three studies was focused on gathering information on emissions of ethylene oxide from a particular industrial source. In addition to finding elevated levels of ethylene oxide at monitoring sites downwind of the industrial sources, each study also found lower, yet measurable, levels of the chemical at locations upwind, where facility emissions would not be expected to reach air quality monitors.

In light of this information, 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 micrograms per cubic meter. The results confirmed the presence of ethylene oxide, with six-month averages ranging from about 0.2 to about 0.4 micrograms per cubic meter. For more information regarding this topic, please visit [Data Summary and Map of NATTSUATMP sites](#).

We believe that there is no immediate, short-term risk from the levels of ethylene oxide found in these limited air monitoring data. There is a need to better understand low levels of ethylene oxide over a longer-term period. EPA will continue to collect information from its existing air monitoring networks and share data as it becomes available.

To this end, EPA has added ethylene oxide to the list of air toxics that will be routinely monitored at all 34 sites in the NATTS and UATMP networks. Because ethylene oxide can be difficult to analyze, the Agency will provide training for states that use their own laboratories to assist them as they begin analyzing air quality samples for this pollutant. Data from future monitoring will be available in EPA's [Air Quality System](#) database after quality assurance is complete.