# RA BRIEF

**Date Prepared:** April 25, 2019 **Priority Level:** 3 **EPA Goal Supported:** Improve Air Quality

**Issue: High cancer risk estimates for Ethylene Oxide (EtO) in Region 3—Status of Review**

**Location**: RA's Meeting Room

**Context:**

1. EPA updated its EtO cancer risk estimate in 2016.
2. National Air Toxics Assessment (NATA) used this new estimate for its upcoming assessment and found it to be 30-60 times higher than previous values.
3. Nationally, there are 11 EtO facilities with estimates of risks ranging 100-1000 in a million.
4. Region 3 has __ of those facilities
    - B. Braun Med Inc/Allentown, PA (565 in a million/census tract)
    - Union Carbide, Institute, WV (343 in a million/census tract)
    - Union Carbide, So. Charleston, WV (208 in a million/census tract)
    - Croda, Wilmington, DE (temporarily closed its production process)
5. Region 3 in total has about 27 known EtO facilities.
6. Region 5 conducted air sampling of Sterigenics (a commercial sterilizer) in Willowbrook, IL. The results show high concentrations of EtO (greater than 1000 in a million cancer risk). These results have garnered national concern and attention to EtO facilities (commercial sterilizers, hospitals, chemical plants). The Illinois Department of Health issued a cancer incidence assessment which showed higher than expected cancers related to EtO (lymphoma, breast cancer).
7. Office of Air and Radiation directed regional offices to share information and develop consistent messaging and communication with State/Local (S/L) agencies, communities and facilities.

**Commented [CA1]:** Is this block level risk?

**Commented [CA2]:** Would need to revise since this is tract level

**Critical Messages:**

1. Region 3's highest risk sources have been from coke oven emissions; the newly revised EtO risk estimates have surpassed many of the coke oven risks. We have 2 facilities with risks greater than Sterigenics (Braun, Allentown, PA and Union Carbide, Institute, WV)
2. The vast majority of R3 communities identified in NATA for EtO can be considered potential areas for Environmental Justice concerns based on preliminary analysis using the economic and demographic indices in EJ Screen.
3. Communities and environmental groups may be asking about health impacts, regulations, and permitting questions.
4. R3 has developed a plan to evaluate our EtO facilities:
    - First tier: focus on 100-1000 in a million risk

- Confirm latest emissions, obtain modeling parameters, work with S/Ls
- Remodel risk, determine latest cancer risk
- Develop communication plan, focus on risk communication
- Engage in discussions with facilities
- Engage S/Ls and local communities

- Second tier: We go down the list of the remaining facilities to confirm latest data to determine if additional remodeling is needed. If the risk remains low, a communication plan will be developed to reach out to the communities and facilities. Again, we would be working with our S/Ls.

**Considerations:**

1. Note that NATA is conducted on a national scale and it is meant to be used as a screening tool; high risk sources, such as EtO, are now being further assessed at a local level with local conditions.
2. This version of NATA uses 2014 emissions data, which does have a lag time as the 2017 emissions data are not due to EPA until early 2019. As such, we consulted with State and Local (S/L) agencies regarding more recent emission estimates and current conditions of the facilities.
3. We have been part of a national EtO workgroup to share experiences concerning air monitoring, community outreach and S/L collaboration. We also work closely with air enforcement as we moved forward in finding additional EtO sources.
4. We are notifying S/L air agencies of our activities and plan to share state-specific information packages when completed in order to conduct outreach.

**History & Demographics**:

1. EtO is a listed hazardous air pollutant in the 1990 Clean Air Act Amendments. Based on EPA's 2016 update of its inhalation cancer risk estimate, EtO is categorized as carcinogenic to humans, sufficient exposure can cause lymphoid cancer and breast cancer in females. Children under 16 have greater susceptibility to EtO's inhalation cancer risk.
2. There is a Maximum Achievable Control Technology (MACT) regulation for EtO sterilization and fumigation facilities such as medical equipment suppliers, pharmaceuticals, other health related industries, spice manufacturers, large libraries, large museums and archives, and contract sterilizers.
    - Office of Air Quality Planning and Standards is planning to issue an interim final EtO sterilizer MACT this summer. A final rule is planned for Dec. 2019. A separate EtO rule is being considered for hospitals. A Miscellaneous Organic NESHAP (National Emission Standards for Hazardous Air Pollutants) is also being developed for some EtO operations.