Perspectives on Air Toxics Priorities

New Jersey Clean Air Council Air Toxics Public Hearing

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Many Significant Accomplishments

- NJ DEP has many significant air toxics accomplishments. Particularly notable are:
  - Permitting program that includes analysis of short and long-term risks of a range of air toxics from proposed stationary sources
  - Incorporation of environmental justice considerations in permitting
  - Fumigation rule
  - Diesel particulate cancer risk map
  - Monitoring ambient levels of a range of organics at four sites and metals at six sites
  - *What's in My Community?* interactive mapping website
  - Well-designed and informative webpages on air toxics and related issues, including community air monitoring projects

Continuing Concerns

- Testimony will address two areas of continuing concern:
  - Ethylene oxide exposures
  - Impact of emissions from petroleum refining, storage, and distribution

Ethylene Oxide (EtO)

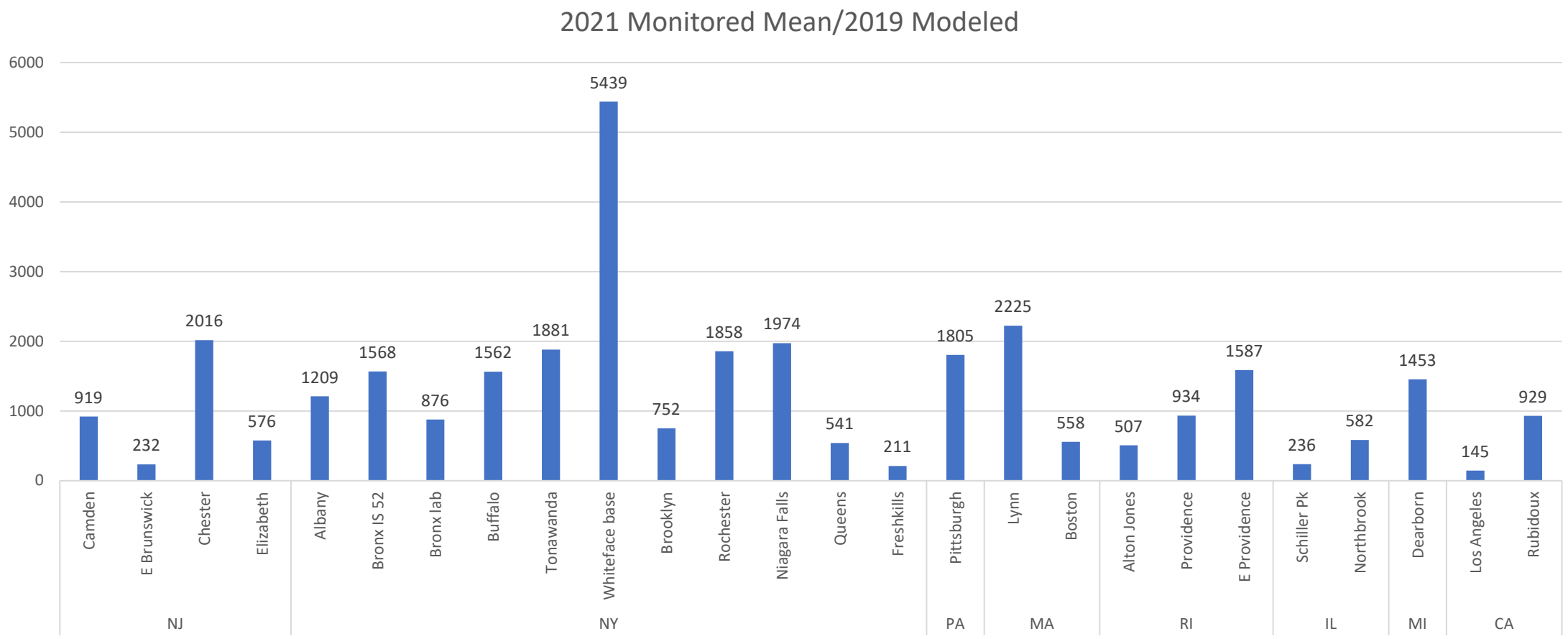
- According to EPA's 2019 AirToxScreen modeling analysis, EtO is the pollutant posing the highest risk in a New Jersey census tract.
- The predicted EtO risk for the maximally impacted NJ census tract was 151 per one-million, calculated from an ambient concentration of 0.028 $\mu g/m^3$ and a unit risk of 0.005 per $\mu g/m^3$.
- Virtually all of the predicted concentration was associated with emissions from a commercial sterilizer. AirToxScreen assumes that there is no EtO in background air and that it is not formed by reactions in the atmosphere.

Monitored EtO Levels are Higher

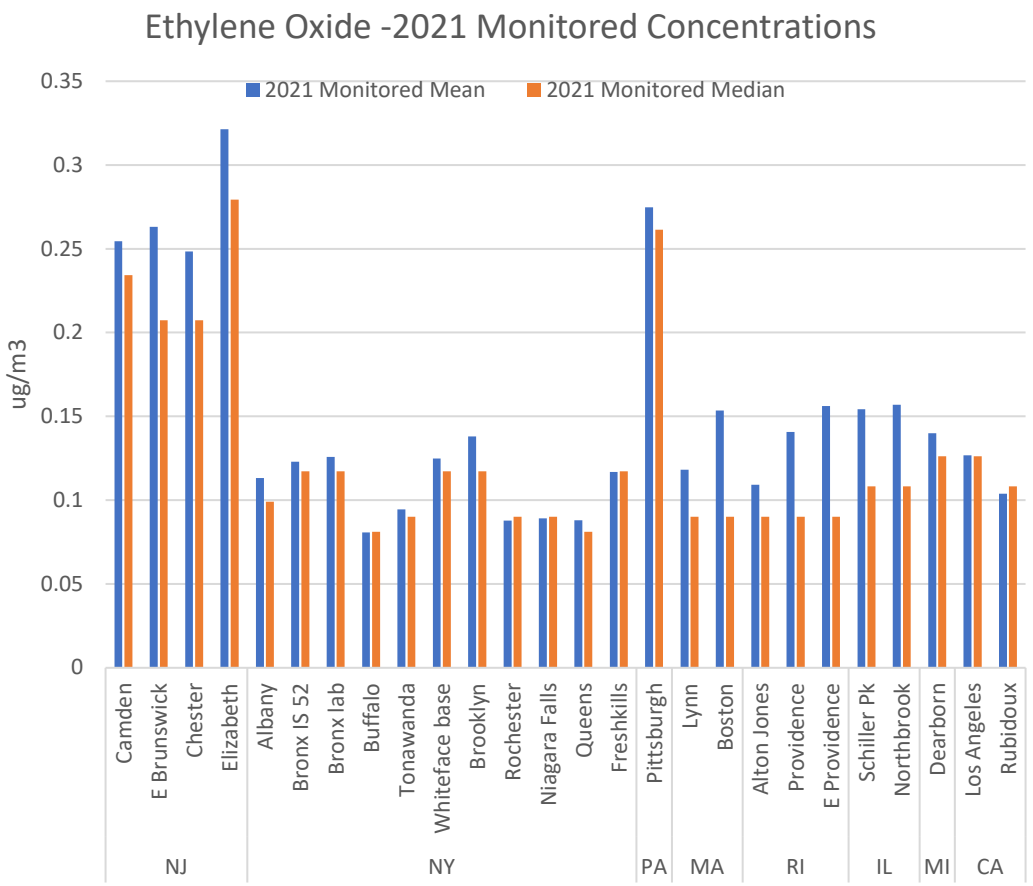
As NJDEP notes in its factsheet, concentrations of EtO measured at the four NJ monitoring sites are much higher than those that predicted for census tracts where the monitors are located by the EPA model. The monitored levels are also approximately 10X higher than AirToxScreen predicted for the maximally impacted census tract near the sterilizer facility.

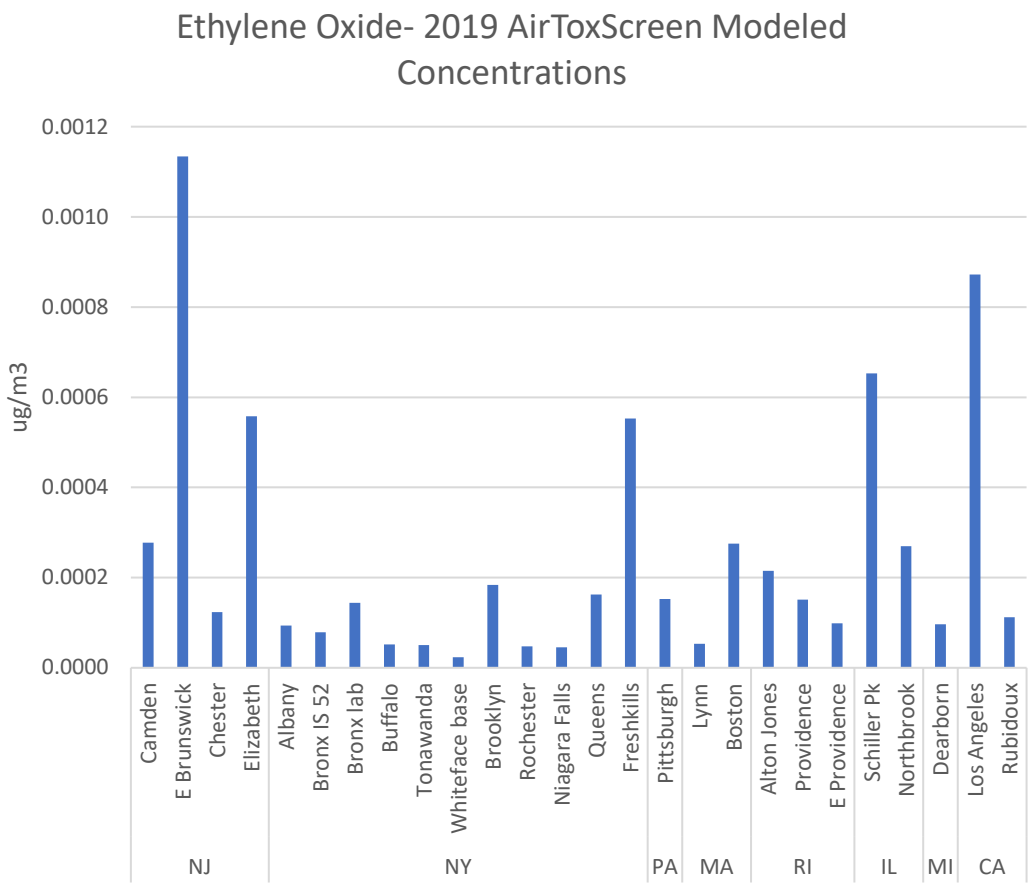
Site	Concentrations ($\mu g/m^3$)		Ratio Mon./Mod.
	Modeled	Mean Monitored	
Camden	0.0003	0.2546	919
E Brunswick	0.0011	0.2632	232
Chester	0.0001	0.2484	2016
Elizabeth	0.0006	0.3213	576

Discrepancies also exist between modeled and monitored EtO concentrations in other states



NJ monitored EtO levels are higher than those monitored in other states, except Pittsburgh, PA.



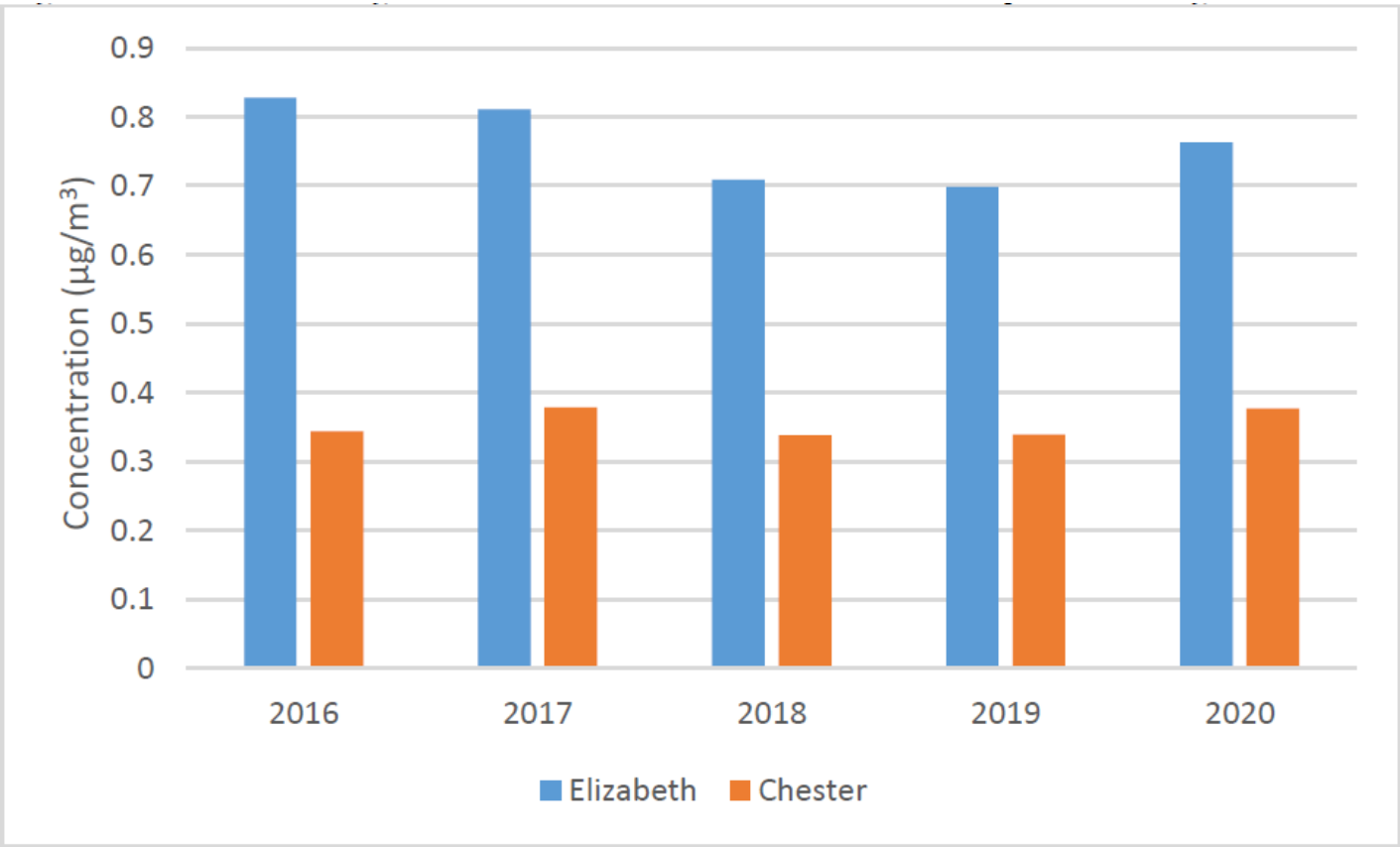


Recommended EtO Follow-up

- Identify reasons for model-monitor discrepancies, e.g., sources/background levels missing in the AirToxScreen analysis. This is essential because the monitored levels correspond to a substantially elevated risk.
- Identify reasons that NJ monitored concentrations are higher than those in other states, except for the Pittsburgh, PA monitor. Possibilities include discrepant sampling/analytical techniques or equipment, as well as higher source impacts.
- Preliminary information indicates that there is some formation of EtO in photochemical reactions in warmer months. This effect needs further evaluation.

Emissions from Petroleum Refining, Storage, and Distribution

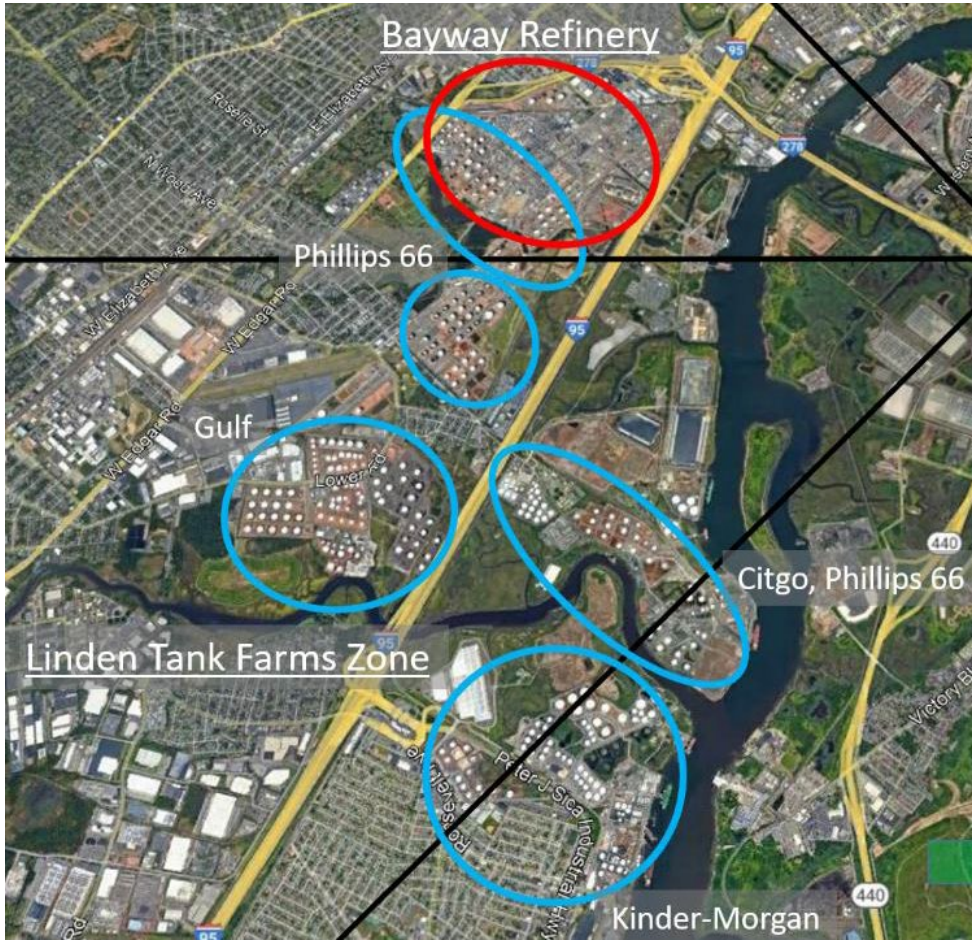
- NJ DEP monitor at Elizabeth, NJ shows elevated benzene levels relative to background monitor at Chester, NJ.
- While higher levels are partially attributable to NJ Turnpike, there are several bulk terminals nearby as well.
- In August 2022, NESCAUM commented to EPA that it should evaluate risks to nearby communities from terminals (https://www.nescaum.org/documents/nescaum-comments-neshap-gas-dist-facilities-20220809.pdf).



Annual Average Benzene Concentrations at New Jersey Monitoring Sites. Source: NJDEP

VOCs from Tank Farms and Bayway Refinery in Linden, NJ

- NJDEP has also identified the Linden, NJ area as an overburdened community, which could be influenced by emissions from nearby tank farms and the Bayway refinery.
- NESCAUM is currently supporting work to investigate VOC emissions from this area.
- Will have analyzed results by early 2024.



Follow-up Recommendations - Petroleum Product Emissions

- Increased monitoring in the vicinity of petroleum facilities is warranted to better characterize emissions, impacts, and risks.
- Relatively low-cost VOC sensors under development may be valuable for identification of local impacts and sources.
- Evaluations should include comparisons to NJ's one-hour average benchmark, as well as to average values based on long-term exposure risk.