

OMB Meeting
40 CFR 63 Subparts F, G, and H
HON Rule
February 28, 2024

Agenda

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HON/Ethylene
Oxide Regulatory Discussion

2

Questions

Summary

- Ethylene oxide is a versatile and valuable building block used as a raw material in chemicals that enable countless everyday products, such as household cleaners and personal care items, and the manufacture of raw materials into more useful forms.
- We believe in advancing regulation and redefining reasonable limits for emissions standards, based on the best available science.
- The proposed HON rule includes technical and timeline actions that are not feasible; further, some proposed actions have limited impact on EPA's overall goal of reducing Ethylene Oxide emissions.
- If not addressed, the implementation of this rule could pose a risk of global supply chain disruptions for products consumers use every day – soaps, shampoos, detergents, and food, for example.
- The implementation of this rule could also have an impact on production of priorities of this administration – EV batteries, carbon capture and semiconductors.
- We are committed to collaborating with the EPA on solutions to further improve regulation and address current technical and timeline feasibility gaps.

Area of Concern: Timeline for Projects

Shortened, 2-year compliance timeline limits feasibility of certain critical projects

- Projects requiring more than 2 years for implementation:
 - Process vent control projects
 - Wastewater collection and treatment revision projects
 - Replacing flares with thermal oxidizers
- Some ethylene oxide requirements that don't require projects could be implemented in a 2-year timeframe:
 - Leak detection and repair requirements
 - Heat exchanger monitoring requirements
- EPA should have flexibility to provide a 3-year compliance timeline:
 - The required Residual Risk review for the HON rule was completed in 2006
 - This action is a second discretionary Residual Risk review

Thermal Oxidizer Project Example

Major Steps in Process	Estimated Time to Complete (Months)
Front End Engineering Design, Scoping, Obtaining Vendor Bids	12 -14
Vendor Questions and Selection	3
Vendor Prepares Equipment and Delivers to Site	12
Construction and Installation of Required Piping and Instrumentation	6 – 8
Operating Procedures, Commissioning Equipment, and Placing Into Service	3
Total Estimated Time for Project	36 – 40

Current Lead Time Experience: 12-24 months for permitting depending on the project, 52 weeks+ for major equipment

Area of Concern: Flare Cap

Benefit of flare cap proposal is limited and conflicts with other regulatory requirements

- EPA recommends replacement of some flares with thermal oxidizers, which causes concerns and risks:
 - At two Dow sites, flare dispersion modeling approach used by TCEQ for air permitting results in potentially much lower off-site impacts vs. EPA's modeling analysis, thus calling into question whether a flare cap is needed.
 - EPA modeling = 500 in 1 million & 90 in 1 million
 - Modeling using TCEQ approach < 20 in 1 million at both sites
 - Practical concerns:
 - Removal of Delay of Repair (DOR) provisions for equipment leaks will result in more planned shutdowns and start-ups = More flaring
 - Pressure Relief Device (PRD) discharges and maintenance venting to a flare count against the flare cap.
 - Projects to Replace Flares with Thermal Oxidizer Concerns:
 - Concerns about being able to meet two-year compliance deadline
 - Flare replacement with thermal oxidizer would result in the need to maintain a flare for intermittent venting scenarios
 - Projected costs ~17X vs background memo costs

Area of Concern: Process Vents

- EPA proposes that “In ethylene oxide service” means the following:
 - For process vents, each Group 1 and Group 2 process vent in **a process** that, when uncontrolled, contains a concentration of \geq to 1 ppmv undiluted ethylene oxide, and when combined, the sum of all of these process vents would emit uncontrolled, ethylene oxide emissions \geq 5 lbs/yr
- Comments:
 - The 5 lbs/yr emission limit should be on a CMPU-by-CMPU basis.
 - The 1 ppmv threshold should apply on an annual average basis
 - Some CMPU’s only have EO emissions when certain products are produced
- For All HAP’s - EPA proposes to remove TRE Index approach and replace with a HAP emission rate of 1.0 lbs/hr.
- Comments:
 - Significant and wide-reaching change that amounts to re-implementation of the rule
 - EPA should retain the TRE index approach as it considers important parameters such as the volumetric flow rate and net heating value of the vent gas stream when evaluating control options.
 - Important for process vent streams that occur on an intermittent basis and with removal of the SSM exemptions and plans.

Area of Concern: Fenceline Air Monitoring

Applicability

- Should only apply if a HON CPMU emits one of the compounds
- Should be a threshold such as uses, produces, or stores at least 25,000 lbs. and has emissions of 1 tpy or higher

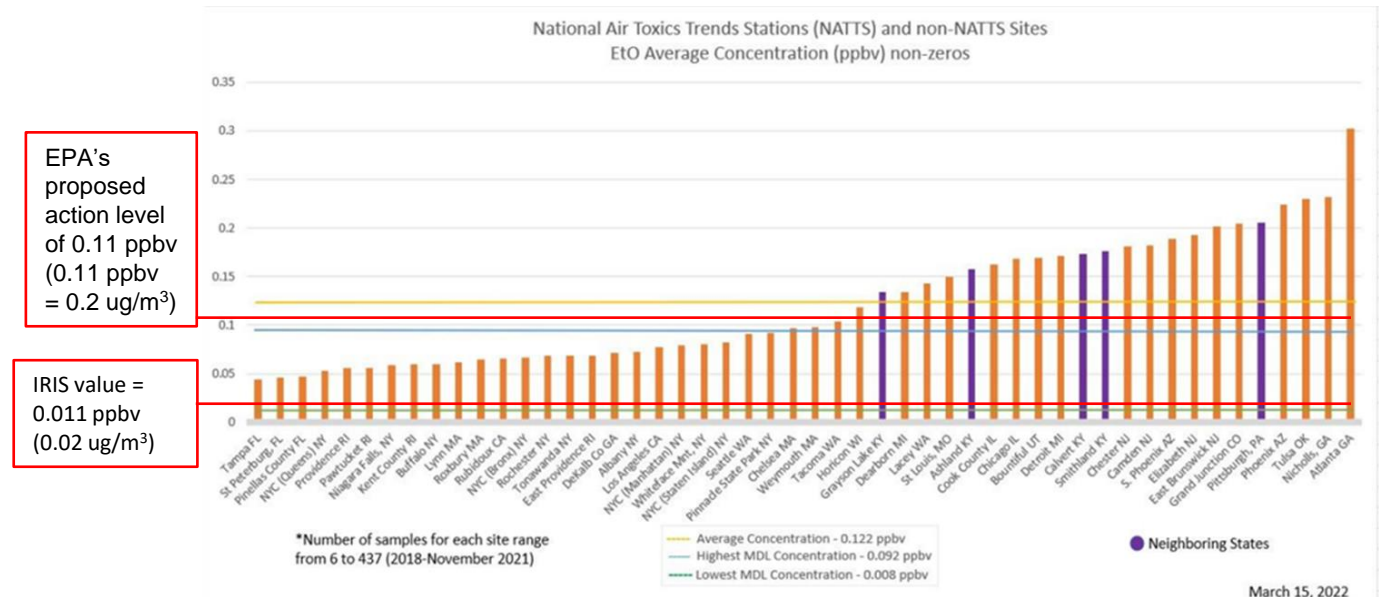
EO - Proposed Action Level of 0.2 ug/m³ is lower than background levels

- Proposed Method 327 uncertainty
- On-line methods uncertainty

Canister proposed sampling frequency of every 5 days has limitations

- Sampling frequency would require standard weekend and holiday practices for multiple parties, including:
 - Companies managing the sampling
 - Contract companies taking samples
 - Labs retrieving and analyzing samples
- Suggested alternative - weekly sampling frequency ± 1 day

Proposed Action Level Challenges Monitoring Results



Areas of Concern: Equipment Leaks & Process Wastewater Streams

Equipment Leaks

- Lack of **Delay of Repair** provisions would force unplanned shutdowns, resulting in higher emissions than the leaking component
- **Monitoring frequency** and reduced threshold level from **5% to 0.1 wt%** require resource and operational changes with negligible benefit
 - At such small wt%, process streams are primarily other compounds, rather than ethylene oxide
- **Leakless valves** are not a proven technology for ethylene oxide service with potential for unsafe polymerization

Process Wastewater Streams

- Threshold for application of regulatory requirements reduced from **>1,000 ppmw to >1ppmw**
- Extensive operational changes to meet proposal with negligible benefit
- Up to 95% of emissions reductions will be gained at 25ppmw*
- Regulating below 10 ppmw is not consistent with other regulations, such as with benzene, e.g., ≥ 10 ppmw

*varies by site

Area of Concern: Estimated Costs

- EPA Estimated costs summarized in Table 8 (FR 25122) are much lower than industry projections:
 - Flare Load Limit – Replace two flares with thermal oxidizers = 17X higher than background memo costs of \$0.28 MM
 - Waste Water Controls – Extensive projects needed
 - Not representative accounting for removal of SSM exemption
 - Emission reduction estimates are not accurate (higher than projected)

TABLE 8—NATIONWIDE EtO EMISSION REDUCTIONS AND COST IMPACTS FOR CONTROL OPTIONS CONSIDERED FOR HON PROCESSES

Control option	Total capital investment (MM\$)	Total annualized costs (MM\$/yr)	EtO emission reductions (tpy)	Cost effectiveness (\$/ton EtO)
A—Process Vent & Storage Vessel Controls	10.2	5.28	32.0	165,000
B—Equipment Leak Controls	0.18	3.53	42.3	83,500
C—Heat Exchange System Controls	0.043	0.19	6.06	31,400
D—Wastewater Controls	65.8	41.1	396	103,800
E—Maintenance Vent Emission Cap ¹	0.017	0.0027	0	N/A
F—Flare Load Limit	0.28	0.46	5.04	91,300
Total (A + B + C + D + E + F)	76.5	50.6	481	105,000

¹ We anticipate that all facilities with HON processes that use and emit EtO can already meet the proposed maintenance vent emissions limit without additional control, thus only minimal costs are included.

Questions?