

Proposed Amendments to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Miscellaneous Organic Chemical Manufacturing

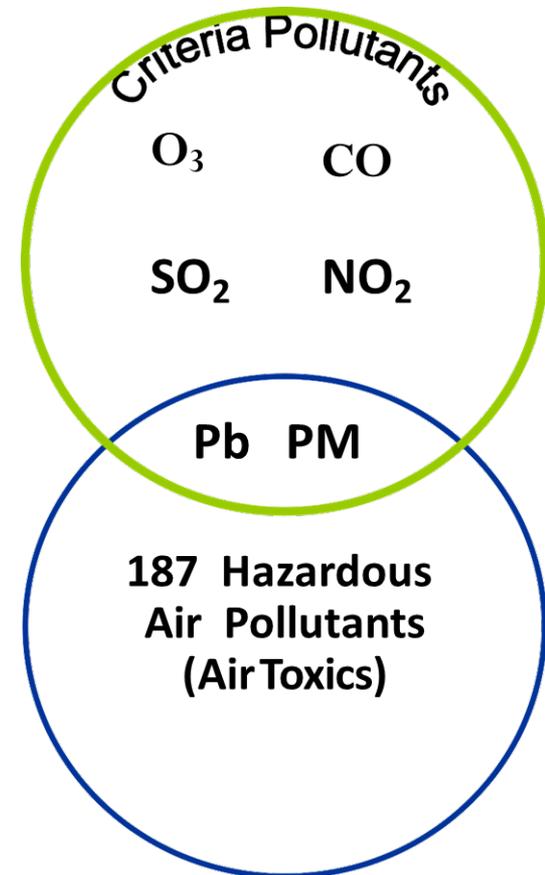
Webinar for Tribes and Communities
January 21, 2020

Webinar Overview

- ▶ Air Toxics Program Overview
- ▶ Risk and Technology Review (RTR) under the Clean Air Act
- ▶ Miscellaneous Organic Chemical Manufacturing Background
 - ▶ Source Category
 - ▶ Rule History
- ▶ Proposed MON RTR Rulemaking
 - ▶ Schedule
 - ▶ Summary
 - ▶ Data Gathering
 - ▶ Risk Review
 - ▶ Technology Review
 - ▶ Additional Actions
 - Startup, Shutdown, and Malfunction
 - Flares
 - Electronic Reporting

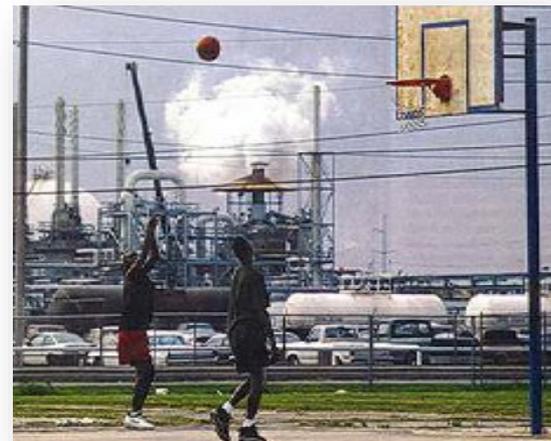
What are “Air Toxics”?

- ▶ Also known as Hazardous Air Pollutants (HAPs)
- ▶ 187 substances specified by Congress
- ▶ May cause cancer and other serious health effects
- ▶ Regulated differently than common, widespread pollutants like ozone or particulate matter, which are called “criteria pollutants”
 - ▶ Regulations limit *emissions* from sources



1990 Clean Air Act Amendments Changed The Way We Regulate Air Toxics

- ▶ Required EPA to regulate air toxics *emissions* from “source categories” based on existing technology
 - ▶ Source categories generally consist of industrial facilities with the same or similar types of processes, products, and equipment
 - ▶ The Miscellaneous Organic Chemical Manufacturing source category is one of the categories that is required to be covered by national emissions standards



Clean Air Act Section 112: Industrial Source Regulations

Air Toxics Program



- ▶ Two types of National Emissions Standards for Hazardous Air Pollutants (NESHAP)

- ▶ Maximum Achievable Control Technology (MACT) standards
 - Apply to “major sources” of air toxics

- ▶ Generally Available Control Technology (GACT) Standards
 - Apply to sources that are not major sources (known as “area sources”)

What is a Major Source?

- ▶ **Major source** “means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, **10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants**”

MACT Standards: Required Reviews

- ▶ Clean Air Act Section 112(f)(2) requires EPA to conduct two types of reviews of MACT standards
 - ▶ A “residual risk review”
 - To determine whether the MACT standard protects public health with an “ample margin of safety”
 - Required within eight years after a MACT standard is issued
 - ▶ A “technology review”
 - To review and revise standards, if necessary, to account for improvements in air pollution controls and/or prevention
 - Required within eight years after a MACT standard is issued, and every eight years afterward.

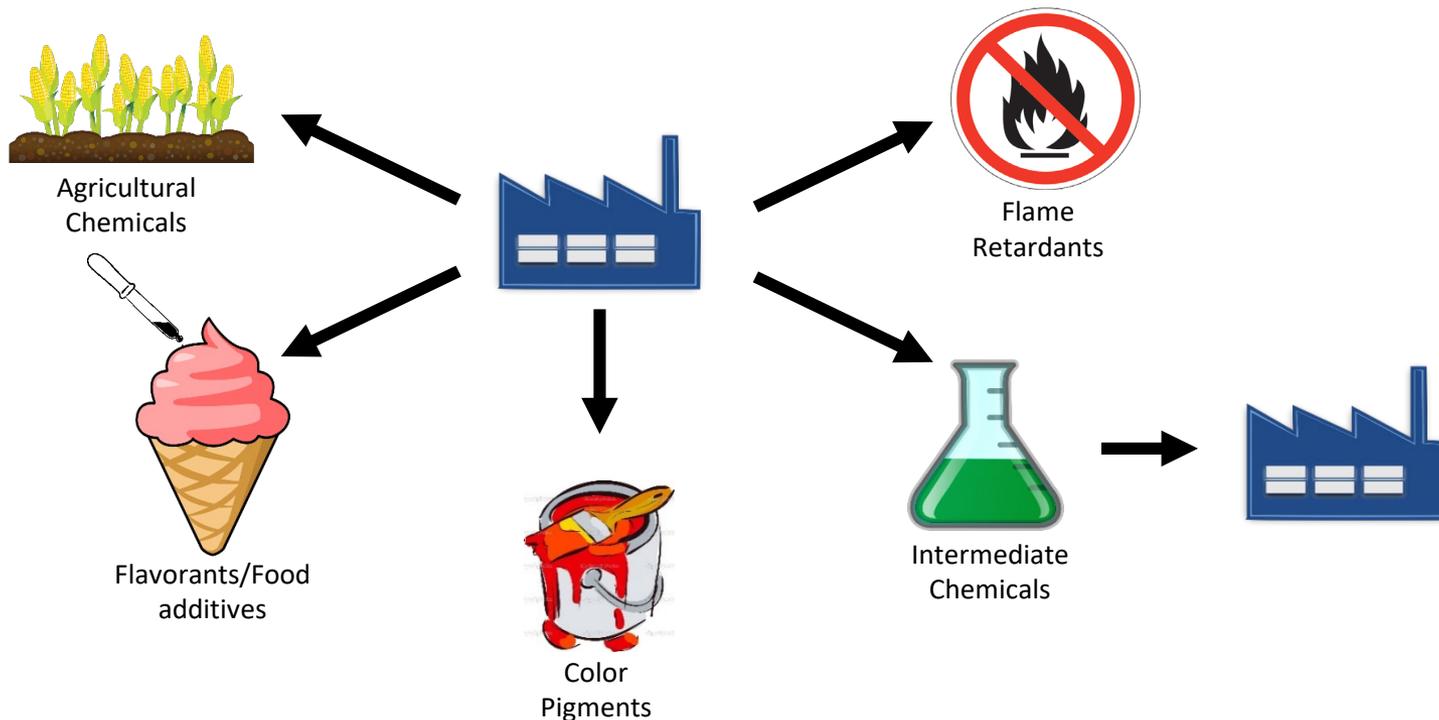
Clean Air Act Required Reviews: What's Considered

- ▶ Technology review takes into account new developments in practices, processes and control technologies, considering cost and feasibility
- ▶ EPA also considers previously unregulated processes and emission points of air toxics, and makes technical corrections
- ▶ Residual risk review includes inhalation risk assessment (cancer and non-cancer). It also includes:
 - ▶ Screens to assess different ways you might be exposed like eating something contaminated
 - ▶ Whole facility, acute and environmental risks
 - ▶ Can perform refined assessments in limited cases

Miscellaneous Organic Chemical Manufacturing

Source Category

- ▶ The Miscellaneous Organic Chemical Manufacturing source category combines 20 individual source categories from EPA's original listing, in addition to processes not covered by other MACT standards
- ▶ Category primarily covers miscellaneous specialty chemical production
- ▶ Emissions and processes are not consistent across the source category and may vary significantly from facility to facility



Miscellaneous Organic Chemical Manufacturing

2003

- ▶ Final Miscellaneous Organic Chemical Manufacturing NESHAP (MON)
 - ▶ Established emission limits and work practice standards for new and existing miscellaneous organic chemical manufacturing processes
 - ▶ Includes provisions for process vents, storage tanks, equipment leaks, wastewater streams, transfer racks and heat exchange systems

2005

- ▶ Direct Final Rule
 - ▶ Amended 2003 NESHAP – clarified flare and alternative standard compliance requirements
- ▶ Partial Withdrawal of Direct Final Rule

2006

- ▶ Final Amendments to 2003 NESHAP
 - ▶ Clarify NESHAP applicability
 - ▶ Provide additional compliance options
 - ▶ Simplify recordkeeping and reporting

2019 Proposed MON RTR

- ▶ November 1, 2019: Proposal signature
- ▶ December 17, 2019: Notice published in *Federal Register*
- ▶ Public hearings
 - ▶ January 14, 2020: Houston, Texas
 - ▶ January 16, 2020: Washington DC
- ▶ February 18, 2020: Comment period closes
- ▶ March 13, 2020: Court-ordered deadline to issue final rule

2019 Proposed MON RTR

- ▶ In the proposed rulemaking, EPA has:
 - ▶ Assessed risk in source category at the current level of control
 - ▶ Reviewed advancements in practices, process, and controls
 - ▶ Addressed other revisions (i.e., SSM, flares, etc.)
- ▶ Proposed amendments will:
 - ▶ Provide clarifications, corrections, and improved compliance
 - ▶ Reduce hazardous air pollutants (HAP) emissions from the source category by 116 tons per year (includes ethylene oxide emissions reductions of approximately 10 tons per year)
 - ▶ Reduce excess HAP emissions from flares by approximately another 260 tons per year

2019 Proposed MON RTR

Data Gathering

- ▶ Data gathering provides information to indicate whether amendments are needed
- ▶ EPA identified 201 facilities estimated to be impacted by proposed RTR, 17 of which are small businesses
- ▶ Emissions data were gathered primarily from 2014 National Emissions Inventory, facility air permits, and updated information provided from industry, when available.
- ▶ Using its authority under CAA section 114, EPA also requested information from one entity to use for the RTR
 - ▶ Survey gathered information about process equipment, control technologies, point emissions, and other aspects of facility operations known to emit ethylene oxide
 - ▶ Required stack testing for processes known to emit ethylene oxide, along with historical monitoring and compliance data
- ▶ Gathered emissions data were used to develop a modeling file to estimate risks



2019 Proposed MON RTR

- ▶ EPA determined risks to be unacceptable and driven by ethylene oxide emissions.
- ▶ EPA identified nine facilities with ethylene oxide emissions from MON processes.
 - ▶ Two of these facilities have unacceptable cancer risks driven by ethylene oxide emissions.

	Facility A	Facility B
Source Category Cancer Risk	2,000-in-1 million	300-in-1 million
Source of Ethylene Oxide Emissions	Storage Tanks, Process Vents, Equipment Leaks	Equipment Leaks

- ▶ The seven other facilities have cancer risks less than 100-in-1 million.
- ▶ EPA has proposed ethylene oxide-specific requirements for storage tanks, process vents, and equipment leaks.
 - ▶ These requirements are expected to impact eight of the nine facilities.
 - ▶ The ninth facility is expected to fall below applicability thresholds that would require control, due to very low concentrations of ethylene oxide in their process.
- ▶ Once requirements are implemented, EPA proposes that risks are acceptable and provide an ample margin of safety to protect public health.

2019 Proposed EtO-Specific Requirements

Residual Risk Review

- ▶ Advancements in practices, processes, and controls identified to reduce risks driven by ethylene oxide emissions from storage tanks, process vents, and equipment leaks.

Emission Source	Change	Current Standards	Proposed Revisions
Storage Tanks	Control Requirements	<ul style="list-style-type: none"> • Group 1: 95% control • Group 2: No control 	<ul style="list-style-type: none"> • Require control if in ethylene oxide service (non-trace quantities): <ul style="list-style-type: none"> ➤ Control device achieving 99.9% emissions reduction, or ➤ Control device that reduces ethylene oxide to < 1 ppmv, or ➤ Flare that meets the proposed flare standards
	Method of compliance demonstration	<ul style="list-style-type: none"> • Performance testing or • Design evaluation 	<ul style="list-style-type: none"> • Periodic performance testing, 5 years
Process Vents	Control Requirements	<ul style="list-style-type: none"> • Group 1: 98% control • Group 2: No control 	<ul style="list-style-type: none"> • Require control if in ethylene oxide service (non-trace quantities): <ul style="list-style-type: none"> ➤ Control device achieving 99.9% emissions reduction, or ➤ Control device that reduces ethylene oxide to < 1 ppmv or < 5 lb/yr for all combined process vents, or ➤ Flare that meets the proposed flare standards
	Method of compliance demonstration	<ul style="list-style-type: none"> • Performance testing or • Design evaluation 	<ul style="list-style-type: none"> • Periodic performance testing, 5 years
Equipment Leaks	Leak definitions for pumps and valves, and monitoring of connectors	<ul style="list-style-type: none"> • Pumps, batch: 10,000 ppm leak definition, monthly monitoring • Connectors: no connector monitoring • Valves: 500 ppm leak definition, monitoring frequency depends on number of leaks 	Option 1 <ul style="list-style-type: none"> • Pumps, batch: 1,000 ppm leak definition, monthly monitoring • Connectors: 500 ppm leak definition, annual monitoring
			Option 2 <p>Same as Co-Proposed Option 1, except for the two highest risk facilities:</p> <ul style="list-style-type: none"> • Pumps, batch: Leakless, annual monitoring • Connectors: 100 ppm leak definition, monthly monitoring • Valves: Leakless, annual monitoring or no detectable leaks above background, quarterly monitoring

2019 Proposed MON RTR

- ▶ Once proposed requirements are implemented, EPA proposes that risks are acceptable and provide an ample margin of safety to protect public health.

Control Scenario	Cancer Risk	
	Facility A	Facility B
Whole Facility	2,000-in-1 million	3,000-in-1 million
MON Source Category Baseline	2,000-in-1 million	300-in-1 million
After Proposed Requirements (Storage Tanks, Process Vents, Equipment Leaks Option 1)	200-in-1 million	300-in-1 million
After Proposed Requirements (Storage Tanks, Process Vents, Equipment Leaks Option 2)	100-in-1 million	200-in-1 million

2019 Proposed MON RTR

- ▶ Identified cost-effective developments in practices, processes and control technologies for heat exchange systems and equipment leaks (not specific to ethylene oxide)
 - ▶ Amendments will strengthen control requirements for these emission sources

Emission Source	Current Standards	Proposed Revisions
Heat Exchange Systems	Leak Detection and Repair (LDAR) program requiring leaks identified by (1) water sampling methods or (2) surrogate indicator of leaks to be fixed.	LDAR program requiring use of the Modified El Paso Method, an air stripping method (currently used by a number of facilities in Texas) with total strippable hydrocarbon concentration ≥ 6.2 ppmv in the stripped air to be fixed.
Equipment Leaks	LDAR program requires monitoring of pumps in light liquid service at existing batch processes at a leak definition of 10,000 ppmv.	Lower leak definition to 1,000 ppmv.

Startup, Shutdown, and Malfunction

- ▶ In accordance with a D.C. Circuit Court decision, proposing to remove exemptions for periods of SSM to ensure CAA section 112 standards apply continuously
- ▶ Proposed action will correct and clarify regulatory provisions related to emissions during periods of startup, shutdown and malfunction (SSM)
 - ▶ Eliminate exemptions during periods of SSM
 - ▶ Proposes work practice standards for periods of SSM for when flares are used as an air pollution control device and for certain vent streams (*i.e.*, pressure relief device (PRD) releases and maintenance vents)
 - ▶ Proposes clarifications for vent control bypasses for certain vent streams (*i.e.*, closed vent systems containing bypass lines, and flares connected to fuel gas systems)

Flares

Additional Actions

- ▶ In 2015, EPA finalized new monitoring and operational requirements for petroleum refinery flares (40 CFR part 63, subpart CC)
 - ▶ Standards ensure that over-assisting flares with steam or air will not deteriorate flare performance and reduce control efficiencies below those required in NESHAP (e.g., 98% control)
 - ▶ Emergency flaring work practice standards also finalized for periods of operation when flares operate above their smokeless capacity (given the removal of SSM exemptions)
- ▶ Propose applying same requirements to a subset of flares that:
 - ▶ Control emissions from processes that produce olefins and polyolefins; or
 - ▶ Control ethylene oxide emissions; or
 - ▶ Choose to opt in for facilities outside of subset
- ▶ Expected to affect 16 of 145 flares in the source category
- ▶ Propose operational and monitoring requirements to allow use of multi-point ground flares



Electronic Reporting

- ▶ Proposing to require electronic copies of notification of compliance status reports and submit electronic copies of performance test results and reports

2019 Proposed MON RTR

Seeking Comment

- ▶ The comment period will be open until February 18, 2020
- ▶ Submit comments online: <https://www.regulations.gov/>
- ▶ Email comments: a-and-r-Docket@epa.gov, Attention Docket ID No. EPA-HQ-OAR-2018-0746
- ▶ Fax comments: (202) 566-9744, Attention Docket ID No. EPA-HQ-OAR-2018-0746
- ▶ Mail comments: EPA Docket Center, U.S. Environmental Protection Agency, Mail Code: 28221T, 1200 Pennsylvania Ave., NW, Washington, DC 20460, Attention Docket ID No. EPA-HQ-OAR-2018-0746
- ▶ Deliver comments in person: EPA Docket Center, 1301 Constitution Ave., NW, Room 3334, Washington, DC
 - ▶ In-person deliveries (including courier deliveries) are only accepted during the Docket's normal hours of operation
 - ▶ Special arrangements should be made for deliveries of boxed information

Additional Information

- ▶ Docket ID number: EPA-HQ-OAR-2018-0746
- ▶ For more information about this proposed action:
 - ▶ <https://www.epa.gov/stationary-sources-air-pollution/miscellaneous-organic-chemical-manufacturing-national-emission>

Questions?