The Latest on the Ethylene MACT

Gary Daves
Proposed New Ethylene MACT (EMACT) Requirements

- Important For Entire Chemical Sector – Not Just Ethylene Producers.
- Substantial Effort Will Be Required To Comply.
- Proposed Changes Follow Refinery Sector Rule (RSR) Template.
- RSR Lessons Learned Will Be Beneficial.
Ethylene MACT Proposed Rule

- Hot Off The Presses!
  - 9/5/2019 - Proposed rule signed by EPA Administrator.
  - 10/9/2019 - Published in Federal Register (84 FR 54278).

- Stemmed from CAA-required Risk and Technology Review.
  - Required for EPA every 8 years after setting MACT standard.
  - Account for improvements in air pollution controls and/or prevention.
  - Assess remaining health risks (“residual risk”) for the source category.
Fenceline Monitoring?

- Sigh Of Relief – No Fenceline Monitoring In Proposed Rule
- Doesn’t Mean Fenceline Monitoring Will Be Confined To Refineries, Though:
  - Consent Decrees,
  - Negotiated Settlements,
  - Facilities near refineries affected by refinery monitoring.
Flares – Substantial New Requirements

- $45 Million – Expected Capital Expenditures Due To New Monitoring And Operational Requirements Across. Approximately 100 Affected Flares (Average Of Approx. $450,000 Per Flare) – EPA’s Estimate.
- Multiple Types Of New Requirements.
- Adding Provisions For Multi-point Ground Flares (As Part Of A More General Category “Pressure-assisted Multi-point Flare”).
Proposed Flare Changes Tied to RSR

- EPA Relied On The Same Analyses And Proposing The Same Operating Limits As For RSR.
- Proposed Rule Directly Applies The Petroleum Refinery Flare Rule Requirements In MACT CC To Ethylene Production Source Category Flares With Clarifications.
- Proposal Eliminates Cross-references To The MACT Subpart A General Provisions And Instead Specifies All Flare Operational And Monitoring Requirements In The EMACT Standards.
Flares – New Requirements

- Vent Gas Net Heating Value (NHV) Monitoring.
  - Gas Chromatograph (GC).
  - Calorimeter.
  - Mass Spectrometer (MS).
  - Grab Samples.

- Volumetric Flow Rate Monitoring For Assist Air/Steam.

- Smokeless Design Capacity.

- Flare Management Plan (FMP).

- Root Cause Analysis (RCA).
Startup/Shutdown/Malfunction – Major Changes

- Eliminating General Exemptions For Startup, Shutdown, And Malfunction (SSM) Emissions.
- Implementing Work Practices For Some SSM Activities.
  - Maintenance vents.
  - Pressure relief device (PRD) releases.
  - Decoking operations for ethylene cracking furnaces.
Work Practices - Maintenance Vents

- All Process Liquids Removed From The Process Equipment.
- Not Vented To Atmosphere Unless One Of Following;
  - The vent is measured to be ≤10% LEL, and
  - If the LEL cannot be measured due to the design of the equipment, depressured to 5 psig or less.
    - In this case, no active purging (i.e., flow through) to the atmosphere would be allowed until the vent meets the ≤10% LEL criterion.
  - The equipment contains <50 lb of VOC (engineering calculations)
- Equipment Must Be Depressured To Less Than 2 Psig During Blind Installation If <10% LEL Cannot Be Achieved.
Work Practices - PRDs

- Equip Each PRD In Organic HAP Service With A Device(s) Or Use A Monitoring System That Is Capable Of:
  - Identifying the pressure release,
  - Recording the time and duration of each pressure release, and
  - Notifying operators immediately that a pressure release is occurring.

- Minimum 3 Redundant Measures To Prevent Atmospheric Releases Or Install A Closed Vent System And Route To A Flare, Drain, Or Other Control System.

- Root Cause Analysis (RCA) Conducted On All Release Events For Each PRD
Work Practices - Decoking Ethylene Cracking Furnace

- Conduct Daily Inspections For Flame Impingement During Normal Operations.
- Conduct At Least Two Of The Following Other Work Practices:
  - Monitor CO₂ concentration at the radiant tube outlet during decoking,
  - Monitor temperature at the radiant tube outlet during decoking,
  - Purge the radiant tubes with steam after decoking,
  - Apply a coating material to radiant tube interior after decoking.
Vent Control Bypasses – Clarifying Provisions

- Closed Vent Systems Containing Bypass Lines.
- In Situ Sampling Systems.
- Flares Connected To Fuel Gas Systems.

- Existing Sources: Quarterly Monitoring (After An Initial 6 Months Of Monthly Monitoring).
- New Sources: Monthly Monitoring (After An Initial 6 Months Of Weekly Monitoring).
- Leak Definition: 6.2 Ppmv Of Total Strippable Hydrocarbon Concentration (As Methane).
  - Repairs required within 45 days for leaks less than 62 ppmv.
  - Leaks detected with 62 ppmv or greater require immediate repair (within 30 days of detection) with no delay of repair available.
Other Provisions

- Tightening Applicable Storage Vessel Thresholds For Control Requirements By Reducing Thresholds.
  - Storage capacity.
  - Maximum true vapor pressure.

- Adding Provisions For Electronic Reporting Of Performance Test Results And Reports And Notification Of Compliance Status (NOCS) Reports.
Implementation Deadlines for New Requirements

- “New Sources”.
  - Affected sources that commenced construction or reconstruction after the publication date of the proposed rule (10/9/2019).
  - Compliance deadline – upon startup or final rule effective date, whichever later.
- “Existing Sources”.
  - Compliance deadline – 3 years after final rule effective date.
  - Not as long as it seems considering amount of effort required.
Summary

- Many new Ethylene MACT requirements proposed
- Comment deadline for the proposed rule is 11/25/2019
- Start early to prepare for compliance dates
- Budget time and money for extensive effort required to comply with new requirements
- Leverage lessons learned from Refinery Sector Rule implementation
Question Time!

Gary Daves
TRICORD CONSULTING, LLC
945 McKinney St., Ste 389
Houston, TX 77002
Office and Fax: (888) 900-0746 x 730
Cell: (713) 542-7892
E-mail: Gary.Daves@TRICORDconsulting.com
Web: www.TRICORDconsulting.com