

Startup, Shutdown, and Malfunction Events - The EPA and State Regulators Current Approach and Future Plans to Minimize Air Emissions

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Introduction

- ▶ The regulation of air emissions sources during non-routine operations including Startup, Shutdown, and Malfunction (SSM) events has been a lengthy and controversial struggle
- ▶ The SSM events often last only brief periods of time; however, they can generate significantly higher short-term air emissions than periods of normal operations
- ▶ The reality that a source's emissions can vary greatly and be more difficult to control during SSM events is well understood
- ▶ However, fitting this reality into the framework of the Clean Air Act (CAA) has proven quite challenging

Introduction (continued)

- ▶ Mitigating excess air emissions during periods of SSM are addressed under Sections 110 and 112 of the CAA
- ▶ The primary intent of CAA Section 110 is to provide the regulatory framework to demonstrate and maintain compliance with National Ambient Air Quality Standards (NAAQS) for criteria pollutants
- ▶ The primary intent of CAA Section 112 is to provide the regulatory framework to reduce Hazardous Air Pollutants (HAPs) emissions

Section 110 of the CAA

► SSM Definitions from Louisiana State Implementation Plan (SIP)/Louisiana Administrative Code (LAC) 33:III.111

- **Startup:** The setting in operation of an affected facility for any purpose
- **Shutdown:** The cessations of operation of an affected facility for any purpose
- **Malfunction:** Any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner. Failures that are caused entirely or in part by poor maintenance, careless operation, or any other preventable upset condition or preventable equipment breakdown shall not be considered malfunctions

Section 112 of the CAA

► SSM Definitions from 40 CFR Part 63 Subpart A

- **Startup:** The setting in operation of an affected source or portion of an affected source for any purpose
- **Shutdown:** The cessation of operation of an affected source or portion of an affected source for any purpose
- **Malfunction:** Any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions

Historical Background – SSM Emissions Saga Begins

Section 112 of the CAA - The SSM Vacatur

- ▶ Initially, 40 CFR Part 63 (aka MACT) regulations included a rather comprehensive exclusion for operations during SSM events
- ▶ Sierra Club sued EPA claiming SSM exemptions in 40 CFR Part 63, Subpart A (General Provisions) were illegal because Section 112 of the CAA requires sources to comply with the emission limitations “continuously”
- ▶ December 19, 2008, D.C. Circuit Court of Appeals agreed with Sierra Club. On October 16, 2009, mandate in Sierra Club v. EPA vacated provisions exempting sources from control of HAP emissions during periods of SSM
 - Vacatur of 40 CFR 63.6(f)(1) and 63.6(h)(1) for non-opacity and opacity standards which are incorporated by reference in the emission standards throughout MACT regulations and were the regulatory basis for the SSM exemptions

Section 110 of the CAA - SSM Final Rule and SIP Call

► **May 22, 2015: EPA Issued Final Rule for SSM**

- EPA applied the 2008 D.C. Circuit Court of Appeals SSM vacatur ruling to CAA Section 110 standards, i.e., SIPs and compliance with the NAAQS
- To prohibit states from having SIPs that allow for potentially broad SSM exemptions

► **June 12, 2015: EPA Issued SSM SIP Call**

- EPA concluded 36 states' SIPs, including Louisiana, were “substantially inadequate” to meet CAA requirements because they provided:
 - ◆ Automatic exemptions, or
 - ◆ Impermissible discretionary exemptionsduring SSM events from otherwise applicable SIP emission limitations
- As a result, EPA issued the SSM SIP call for those 36 states directing them to submit corrective SIP revisions to update the potentially broad SSM exemptions in their regulations
- The EPA's position on acting upon the responses to the 2015 SIP call has remained inconsistent, approving a few, withdrawing three, and leaving the majority, including LDEQ's, pending

LDEQ's Response to EPA's SSM SIP Call

► November 22, 2016: LDEQ Submitted SIP Update in Response to SSM SIP Call

In response to EPA's SIP call, the State of Louisiana, through the Louisiana Department of Environmental Quality (LDEQ), transmits to EPA for incorporation into the state's SIP the regulatory actions summarized in the table below.

Rule	Title	Proposed	Public Hearing	Promulgated
AQ360	Repeal of LAC 33:III.1507.A & B	June 20, 2016	July 27, 2016	October 20, 2016
AQ361	Repeal of LAC 33:III.1107.A	April 20, 2016	May 25, 2016	October 20, 2016
AQ362	Repeal of LAC 33:III.2153.B.1.i	April 20, 2016	May 25, 2016	October 20, 2016
AQ363	Repeal of LAC 33:III.2307.C	June 20, 2016	July 27, 2016	October 20, 2016
AQ364	Work Practice Standards During Start-up and Shutdown	June 20, 2016	July 27, 2016	February 20, 2017 ²

¹ 80 FR 33840

² AQ364 will be promulgated after November 22, 2016. However, because LAC 33:III.Chapter 22 applies only during the ozone season, defined as "May 1 to September 30, inclusive," this date will not delay the repeal of the exemption provided by LAC 33:III.2201.C.8.

► June 9, 2017: LDEQ Submitted Subsequent SIP Update in Response to SSM SIP Call

- Notified substantive changes to AQ364 rule in response to public comments
- Addressed work practice standards via LAC 33:III.2201.K for startup and shutdown

LDEQ's Response to EPA's SSM SIP Call (continued)

▶ **AQ360 (Repeal of LAC 33:III.1507.A & B)**

- Exempted sulfuric acid plants from SO₂ and sulfuric acid mist emission limitations of §1503.A during (1) startup events and (2) “where upsets have caused excessive emissions and on-line operating changes will eliminate a temporary condition.”
- Exemption extended only to existing sulfuric acid plants not subject to NSPS Subpart H emission standards.

▶ **AQ361 (Repeal of LAC 33:III.1107.A)**

- Exempted flares from 20% opacity limitation of §1105 during startup and shutdown events assuming flaring was not due to failure to maintain or repair equipment.

▶ **AQ362 (Repeal of LAC 33:III.2153.B.1.i)**

- Exempted wastewater tanks from VOC control requirements of §2153 (90% removal efficiency or 50 ppmv concentration) during periods of malfunction or maintenance not to exceed 336 hours per year.

LDEQ's Response to EPA's SSM SIP Call (continued)

▶ AQ363 (Repeal of LAC 33:III.2307.C)

- Exempted nitric acid production units from NO_x emission limitations of §2307.D during (1) startup events and (2) “where upsets have caused excessive emissions and on-line operating changes will eliminate a temporary condition.”
- Exemption extended only to nitric acid production units not subject to NSPS Subpart G emission standards.

▶ AQ364 (Repeal of LAC 33:III.2201.C.8, Addition of LAC 33:III.2201.K)

- §2201.C.8 exempted point sources from the provisions of LAC 33:III.Chapter 22 during SSM events.
 - ◆ LAC 33:III.Chapter 22 establishes NO_x standards for certain emission sources located at affected facilities in nine parishes.
 - ◆ Note that the exemption did not apply to units intentionally shutdown more than once per month.
- §2201.K was added by LDEQ to allow facilities the option to comply with either
 - ◆ Applicable emission factors in §2201.D at all times (including startup and shutdown) or
 - ◆ Work practice standards designed to minimize NO_x emissions during startup and shutdown

Recent Developments – SSM Emissions Saga Continues

Section 112 of the CAA - Risk and Technology Review

- ▶ The CAA requires the EPA to conduct a Risk and Technology Review (RTR) on MACT regulations; the CAA stipulates that this process should take place at least every 8 years but the EPA often misses that schedule
- ▶ There are two phases in the RTR process:
 - The EPA reviews the latest control technologies and industry practices to determine whether regulatory upgrade is necessary (aka “technology-based” phase)
 - The EPA assesses whether the existing standards successfully met their objective of mitigating the risk to human health and the environment with ample margin of safety (aka “risk-based” phase)

The EPA will then determine whether more stringent standards are required

Section 112 of the CAA - Risk and Technology Review (continued)

- ▶ In recent years, EPA has utilized the RTR process as an opportunity to evolve the MACT emission standards associated with Startup and Shutdown events. For example:
 - MACT YY (for Ethylene MACT)
 - ◆ Work practice standards for shutdown of decoking operations
 - ◆ Controlled degassing of storage tanks by 98% until vapor conc. is less than 10% Lower Explosive Limit (LEL)
 - MACT EEEE (OLD MACT)
 - ◆ Controlled degassing of storage tanks by 95% until vapor conc. is less than 10% LEL
 - MACT FFFF (the MON)
 - ◆ Controlled degassing of storage tanks by 95% until vapor conc. is less than 10% LEL
 - MACT DDDDD (Boiler MACT)
 - ◆ Use of clean fuels such as natural gas or propane for startup up a boiler or process heater
 - ◆ Minimization of startup duration
- ▶ However, the MACT emission standards associated with Malfunction events have remained somewhat fuzzy, case-by-case, and subject to interpretation and enforcement discretion

Section 110 of the CAA - Trump EPA Guidance Memo

- ▶ On October 9, 2020, the Trump EPA published a guidance memo outlining whether and when it may be permissible for a state to include certain types of provisions governing periods of SSM in the SIPs
- ▶ The Trump EPA acknowledged that a SIP can adequately provide for attainment and maintenance of the NAAQS, even if it allows exemptions to specific emission limits for SSM events
- ▶ The Trump EPA asserted that the rationale behind the SIPs is attainment of NAAQS; thus, emission limits need not necessarily be “continuous,” as long as NAAQS is attained

Section 110 of the CAA - Biden EPA Guidance Memo

- ▶ On September 30, 2021, the Biden EPA published a guidance memo withdrawing the October 9, 2020 Trump EPA guidance memo “entirely”
- ▶ The Biden EPA is re-instating the 2015 SSM SIP Policy and asserts that SIP provisions containing exemptions or affirmative defense are inconsistent with the CAA
- ▶ Out of the 36 SSM SIP calls issued in the 2015, 32 states submitted revised SIPs. The Biden EPA will now review those revised SIPs
- ▶ The Biden EPA is intending to revisit the three state-specific SSM SIP call withdrawals issued in 2020 (Iowa, North Carolina, and Texas)

Section 110 of the CAA - Biden EPA Guidance Memo (continued)

- ▶ The Biden EPA asserted the following as the rationale behind the September 30, 2021 memo:
 - Attaining and maintaining NAAQS is not the only consideration behind the SIPs
 - There is no basis to distinguish between CAA Section 110 and Section 112 standards; all emission limitations should be applied on a “continuous” basis
 - Since the short-lived Trump EPA 2020 policy is not widely implemented yet, minimal reliance interests/damage exist in reversing that policy

Conclusion

In Closing

- ▶ The EPA will continue to use the RTR process as an opportunity to evolve the MACT emission standards associated with SSM events
- ▶ The EPA regional offices will work with states to take action on the responses to the 2015 SSM SIP call
- ▶ Potential for SSM SIP calls for additional states?

Questions?

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