MACT Startup Shutdown Malfunction Plans

“Enhancing Compliance Through Well Designed SSM Plans”

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What Is an SSM Plan

- Operating procedures during malfunctions or startup / shutdown events
  - Identify potential malfunction events
  - Minimize HAP emissions during SSM events
  - Specify corrective actions

- Sets forth administrative requirements
  - Notification and reporting of SSM events
  - Records on response to SSM events
Who Needs an SSM Plan

- Sources subject to MACT standards
- Flexible packaging primarily covered by:
  - Printing / Publishing MACT (Subpart KK)
  - Paper & Other Web MACT (Subpart JJJJJ)
- Other possible MACTs could include:
  - Misc. Coating Mfg (Subpart HHHHHH)
  - Boiler / Process Heater (Subpart DDDDDD)
  - Coil Coating, if foil > 0.006 in. thick (Subpart SSSSS)
SSM Plan Enforcement Protection

- SSM excess emission event not a violation if:
  - *Event addressed in the SSM Plan*
  - *Response to event in accordance w/ SSM Plan*
  - *SSM plan has appropriate response procedures (prompt & minimizes HAP emissions)*
  - *Required documentation of SSM event kept*
  - *SSM event summarized in semi-annual report*
SSMP Elements: Administrative

- Boilerplate information on source
- List of processes and control devices covered
- Definition of key terms
  - Malfunction, startup, shutdown
  - Specific operations related to SSM event response
  - Key process equipment relevant to SSM events
SSMP Elements: Startup/Shutdown

- Identify potential excess emissions or deviations
  - Air purge (safety issue) before lighting burners
  - Oxidizer temp ramp-up during initial start-up

- Sequence of steps to minimize emissions

- Corrective actions for improper startup / shutdown

- Exclude process interruptions
SSMP Elements: Malfunctions

- General process to address all malfunctions
  - Malfunction identification
  - Notification of responsible officials
  - Suspension of operations (when safe & practicable)
  - Diagnose cause of malfunction
  - Corrective actions
  - Documentation of malfunction
  - Reporting
SSMP Elements: Malfunctions

- Cover specific possible malfunction events
- Provide response actions for each specific event
  - System alarm or event notification
  - Operating procedure during event
  - Potential malfunction causes
  - Recommended corrective actions
- Typically presented in tabular plan attachment
SSMP Elements: Malfunctions

- Key features in specific malfunction responses
  - *When to cease process operations*
  - *Identify specific components to check or replace*
  - *Consider all possible causes of malfunction*
  - *Specify conditions that allow for re-start of operation*
  - *Address timing of response and suspension of operations*
SSMP Elements: Reporting

- Periodic reports
  - *Typically required on semi-annual basis*
  - *Covers response to SSM events consistent w/ SSMP*
  - *Typically letter w/ SSM event log*
  - *SSM Log should list description & duration of each SSM event and confirm response consistent w/ plan*

- Responsible official certification
SSMP Elements: Reporting

- Immediate reports
  - Verbal report within 2 days; written within 7 days
  - Covers response actions inconsistent w/ SSMP
  - Typically letter w/ SSM report form
  - Must explain circumstances of event and why response was inconsistent w/ SSMP
  - Identify possible excess emissions

- Responsible official certification
SSMP Elements: Record-Keeping

- SSM Log / Report Form / Agency Reports kept
- 5 year record retention
- SSM Plan must be revised w/ 45 days of:
  - Failure to properly address an SSM event
  - Occurrence of an SSM event not covered by plan
  - Request for modification by regulatory agency
Possible Deviations Addressed

- Excess emissions during cold start-up:
  - Dryer or oxidizer air purge
  - Low temp while solvent load to oxidizer ramps up

- Parameter deviations during sustained operations:
  - Avg. oxidizer temp below compliance level
  - Capture CPMS below compliance threshold
  - Avg. carbon bed temp above compliance threshold
Possible Excess Emissions Addressed

- Examples of oxidizer malfunctions covered:
  - Burner faults
  - Thermocouple failures
  - Blower or control damper malfunctions
  - PLC power/signal lost

- Operation during these events possibly covered
  - Brief period to allow finishing processing of roll
  - Allow for evacuation of oven or dryers
  - Safety issues allow for non-immediate shutdown
Conclusions

- SSM Plan will provide compliance benefits
  - Minimize reporting of rule / permit deviations
  - Clearly define when process must be shutdown
  - Optimize malfunction responses
  - Reduce reporting burden (fewer deviation reports)

- Careful plan preparation can pay dividends