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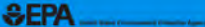
Dallas, Texas November 3-7, 2008

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B.5 Start-up, Shutdown and Malfunction (SSM) and Operations and Maintenance Plan (O&M)




This module presents a summary of the Subpart EEE requirements for Start-up Shutdown and Malfunction Plans (SSM Plans) and Operations and Maintenance Plans. It should be noted that recent action in the Washington, D.C. Circuit Court of Appeals regarding SSM Plans may affect these plans and current interpretations as to how they are to be used.

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Presentation Overview

- Purpose of SSMP
- SSMP regulatory requirements
- Start-up
- Shutdown
- Malfunctions
- Reporting Obligations
- O & M Plan Regulatory Requirements



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The topics that will be covered in this module are summarized on this slide. Topics discussed will be the purpose of Startup, Shutdown and Malfunction Plans, or SSMPs, SSMP regulatory requirements, start-ups, shutdowns, malfunctions, reporting obligations, and operation and maintenance plan regulatory requirements.


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Purpose of SSM Plan

- Facilities either are:
 - Operating under Subpart EEE;
 - Operating under another NESHAP or approved mode of operation; or
 - Are in start-up, shutdown or experiencing a malfunction
- When under Subpart EEE or other NESHAP regulation(s), must comply with those limits
- When in start-up, shutdown or experiencing a malfunction covered under SSMP
 - Facility is protected from enforcement to some degree if a limit or standard is exceeded



The purpose of the SSM Plan historically under NESHAP regulations has been to define certain procedures that re to be followed when a affected source is in start-up, shutdown or experiencing a malfunction. But, beyond that, it is first important to understand that all HWCs are either operating under Subpart EEE, operating under another NESHAP regulation or approved mode of operation or are in in start-up, shutdown or experiencing a malfunction. What this means is that when operating under Subpart EEE or other approved mode, they are subject to those requirements and when they in start-up, shutdown or experiencing a malfunction, they are subject to the requirements of their SSM Plan. When under the SSM Plan, this has historically provided some degree of an enforcement shield as there is recognition that during these events, compliance with operating limits or emissions standards may be problematic. This should not be construed to provide a carte blanche exemption or waiver of a source's duty to comply, but enforcement discretion by the lead agency has generally been the practice where justified. As mentioned in the introduction to this module, recent DC Court action may change the overall use of SSM Plans.

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SSMP Regulatory Requirements

- SSM Plan must cover all components of the HWC and include procedures for:
 - Start-up
 - Shutdowns
 - Malfunctions
 - Corrective Measures for malfunctioning equipment
- Plans are both inspectable and procedures are enforceable!
- SSMPs are required to be submitted to the Administrator for review and approval



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SSM Plans must cover all components of the HWC from waste feed to CEMs and include or identify procedures for start-ups, shutdowns and malfunctions. Plus, the SSM Plan must also contain corrective measures for malfunctioning equipment. The plans and procedures are part of the overall operating and compliance record and agencies are requiring them to be submitted for review and approval.


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SSMP Regulatory Requirements

- All start-up, shutdown and malfunction events must be documented in the Operating Record
- Events and action consistent with the Plan must be documented and reported semi-annually to agency
- For events and actions NOT consistent with Plan
 - Must be reported to the agency within 2 days
 - Followed-up in writing within 7 days documenting event and whether any excess emissions occurred
 - Revise Plan and notify agency of revision
 - Revisions are not technically in effect until this occurs



HWCs must document all SSM events in the Operating Records. Events and actions taken that are consistent with what is written in the plan must be documented in the Operating Records as well and included in the semi-annual report to the lead agency. Events and actions taken during an SSM event that are not consistent with or address in the SSM Plan trigger expedited reporting and follow-up by the facility. This includes verbal communication to the agency with 2 days after the event followed-up in writing within 7 days after the event documenting the actions taken and whether any excess emissions occurred during the event. The SSM Plan must then be revised and the agency notified of such revision before those revisions can be considered in effect in the SSM Plan.

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SSMP Definitions – Start-up

- Start-up is the setting in operation of an affected source or portion of an affected source for any purpose (40 CFR § 63.2)
- Facility’s definitions will vary to give them coverage
 - Usually tied to being at condition to burn waste and/or actually burning them

Revised 1/16/09



The following slides will discuss the definitions for each of the three types of events covered in the SSM Plan. The term start-up can cover several different scenarios at an operating HWC, depending on what condition the unit is in prior to commencing start-up. The first bullet provides the regulatory definition found on 40 CFR 63.2. HWCs can commence start-up from a totally “cold” condition, say after the unit has had maintenance or repair work done. They can be running, but burning non-Subpart EEE streams and then decide to start burning hazardous waste. Any of these conditions, and possibly some others, could be considered “setting in operation”. HWCs must also define when start-up ends as this determines when they are “operating” under Subpart EEE. Facility’s definitions of this in their SSM Plan may vary, but it is typically tied either to when they are at the right conditions to treat their hazardous waste or when they have actually successfully started feeding them. This is generally dependent on how challenging actually starting up on hazardous fuels is and whether the HWC feels they may have exceedance issues during the transition or not.


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SSMP Definitions – Shutdown

- Shutdown is the cessation of operation of an affected source or portion of an affected source for any reason (40 CFR § 63.2)
- Shutdown is typically defined as being when:
 - Hazardous waste feed to stop, and
 - The combustion chamber temperature is <allowable setpoint
- Can be either planned or emergency
- Can include cool-down to ambient temperatures or unit may be maintained at intermediate temperatures
 - Such as a standby mode

Revised 1/16/09 

The definition of shutdown is also included in 40 CFR 63.2 and is provided in this slide. Practically though, shutdowns are typically tied to two conditions. The first is ceasing the treating of hazardous waste and the second is when the HWC OPLs fall outside of allowable limits (e.g., when the combustion chamber temperature falls below the minimum allowable setpoint. Some shutdowns are planned, some are not and they can be a shutdown that includes a cool-down all the way to ambient temperatures in the combustion chamber or it may be a shutdown of a specific unit operation other than the combustion chamber(s) where the unit is maintained at intermediate temperatures, such as a “standby” situation.

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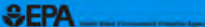
SSMP – Malfunctions Defined (40 CFR § 63.2)

- Any sudden, infrequent, and not reasonably preventable failure
- 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

Revised 1/16/09



And finally, malfunctions are also defined in the regulations and the language is provided in this slide. A key point that HWCs must focus on in identifying these events are the three criteria – sudden, infrequent and not reasonably preventable. For example, if the same piece of equipment fails consistently over time for the same or similar reason and a facility has considered this a malfunction, this is likely and incorrect classification. Where routine issues like this occur, HWCs should be correcting the underlying problems causing them.


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SSMP – Examples of Malfunctions

- Malfunctions of critical process instruments and control devices
 - Flow meter, block valve, etc.
- Equipment Malfunction
 - Pump, feed gun/burner, vessel, etc.
- Utility failures
 - Electricity, water, steam, nitrogen
- Control system failures
 - Field transmitters, control loop, process control computer
- CEM system failure



This slide provides some common examples of the type of events that might be considered malfunctions consistent with the definition provided on the previous slide. If these types of events occur only periodically and without any predictable pattern, then it is reasonable to consider them as malfunctions and utilize the SSM Plan.


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SSMP – Corrective Actions for Malfunctions

- Waste feeds are cutoff for all Malfunctions
 - This is a cutoff that is in addition to other Automatic Waste Feed Cutoffs (AWFCOs)
- Procedures to be followed:
 - Facilities must complete SSM documentation
 - Follow written procedures for correcting specific malfunction
 - Typical procedures include notification by operations to supervision immediately when actions are taken that are **NOT** consistent with written procedures



If a malfunction occurs, the first response that needs to be taken is an AWFCO. HWCs then must complete their SSM documentation and follow specific procedures that are either spelled out in the SSM Plan or referenced in it for correcting the problem. HWC operations staff typically follow a communications procedure to notify supervision immediately when actions are taken that are inconsistent with the SSM Plan due to rapid timing requirements for agency notification.

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SSMP – Recordkeeping

- The following must be documented during each SSM event:
 - Occurrence and duration of event
 - All required maintenance performed on process or monitoring equipment
 - For malfunctions, identify equipment involved and cause



Documentation, often in the form of a dedicated checklist for SSM events, must be kept that includes the information summarized on this slide. This documentation is part of the Operating Record and is used as a basis for summarizing these events in the semi-annual report.

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What is the Significance of Deviating from the SSMP or Internal Procedures?

- The deviation must be documented and there are 2 and 7 day regulatory agency notification requirements
- The SSMP and/or procedures that have been deviated from need to be revised within 45 days

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In addition to the 2 day and 7 day notification requirements for actions taken that are inconsistent with the SSM Plan, the Plan and/or relevant procedures need to be revised within 45 days.

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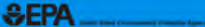
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SSMP – Excessive Exceedance Reporting

- If an HWC -
 - Exceeds an emission standard or an Operating Parameter Limit (OPL) during a malfunction,
 - While hazardous waste is still in the unit, and
 - Have 10 or more in a 60 day block period
- They get to -
 - Conduct an investigation of the cause of each,
 - Evaluate ways to minimize these,
 - Revise the SSMP, as needed,
 - Document this in the Operating Record, and
 - Include a summary in the Excess Emissions Report

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The SSM regulations also include requirements for investigating excessive exceedances depending on the number of occurrences in a 60 day period. Where 10 or more do occur in this time frame, HWCs must investigate their cause(s), evaluate ways to mitigate them, revise the SSM Plan if needed and document and report these activities.

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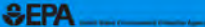
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SSMP – Summary of Reporting Requirements

- Semi-annual SSM Reports include:
 - Events that did not follow the SSMP
 - Excessive Exceedance Reports
 - Summary Report
- Immediate SSMP reports (2 & 7 day reports)
 - Actions taken during an SSM event that are not consistent with SSMP or written procedures
- Written reports must be signed by Responsible Company Official




This slide summarizes the various types of reports that HWC facilities should be providing under SSM regulations. In addition, written reports must be signed by personnel meeting the definition of “Responsible Company Official” or who has been delegated that role for these reporting purposes.

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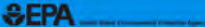
Revisions to SSMP

- When Scope of Activities are altered, revision is required
- Revision does not take effect until agency is notified in writing
- Notify promptly if revision is made
- Maintain last 5 years of SSMP revisions



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This slide summarizes the revision procedures and records retention period for SSM Plans.

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O & M Plan Regulatory Requirements

- HWC and associated equipment must operate according to a written O&M Plan that includes procedures for:
 - Operations
 - Inspection
 - Maintenance
 - Corrective Measures



Switching now to the Subpart EEE requirements pertaining to Operations and Maintenance (O&M) Plans, every HWC must operate and maintain their unit(s) in accordance with a written O&M Plan. This plan must include procedures for operations, equipment inspection, maintenance procedures and corrective measures procedures to address malfunctioning equipment.

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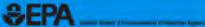
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Regulatory Requirements – Continued

- The Plan must prescribe how the HWC and associated equipment will be operated:
 - In a manner consistent with good air pollution control practices
 - To minimize pollutant emissions to at least performance test levels
 - automatic waste feed cutoffs,
 - and malfunctions.
- Plan must be entered into the Operating Record.



The plan must address how the unit will be operated in a manner consistent with good air pollution control practices and to minimize emissions to CPT levels and minimize AWFCOs and malfunctions. This O&M Plan is also part of the operating Record.


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O&M Plan – Overview

- Based on specific written procedures for
 - Operation
 - Inspection and Maintenance
- Operating Procedures are specific for operation of feed systems, HWC itself, APC and associated CMS
 - Typically there is a separate written plan for CEMS
- Inspection and maintenance activities managed by separate maintenance function
 - Maintenance personnel generates work lists
 - Specific procedures should be maintained for all key equipment

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Operating procedures would cover waste feed systems, the combustion system(s) and air pollution control equipment. Typically, facilities maintain separate written plans for their CEM systems. Operating procedures are often maintained by the operations group. Inspection and maintenance procedures are often managed and performed by a separate maintenance group which tracks required preventative maintenance activities, along with following up on any repair issues identified by Operations and then generating the specific work assignments for the maintenance staff to complete. Inspection and maintenance procedures should be maintained for all equipment components of the HWC.

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O & M Plan QC Requirements

- Procedures must address the following activities:
 - Checks for component failures, leaks, and other abnormal conditions.
 - Operator training and certification.
 - Data recording, calculations, and reporting.
 - Checks of record keeping.



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In addition, O&M Plans should be reviewed to make sure they contain the information summarized on this slide.


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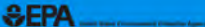
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Maintenance Programs

- Typically Have three main components
 - Preventive maintenance and inspection.
 - Servicing, repair and replacement of process and air pollution control system components
 - Support of process troubleshooting.
- Maintenance procedures can be maintained either in hard copy, electronically or in a web-based systems.



From a maintenance perspective, there are typically three components to a well organized program. First, there are numerous routine preventative maintenance activities, like lubrication, that must be done according to a regular schedule in order to keep the equipment operating properly. This is often coupled with specific equipment inspection activities that are recommended by the vendor or are developed from experience. Checking pump seals for leaks and bearings for excessive noise or vibration are examples of this type of activity. Then, there is a routine servicing and repair/replacement component, for example when a motor burns out or a section of pipeline needs to be replaced. And finally, operating problems can also need the expertise of maintenance staff to determine what the problem is and correct. Equipment alignment issues, electrical power or control can be examples of this aspect of support. Facilities utilize two primary and different approaches to their maintenance program depending on their size and complexity of that and the relative cost to operations of their maintenance program. Larger facilities tend to utilize computer or web based approaches as their needs are large and manual tracking and management of the maintenance function makes a manual system unworkable. Other smaller facilities may be able to function effectively and support the maintenance work strictly using manual and hard copy methods.


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O&M Plan – Review and Recordkeeping

- Facilities should review plans on some frequency and document their reviews/revisions
 - Documentation of the review must be kept in the Operating Record for five years
- Facilities should have defined roles for who is responsible for reviews and procedure revisions
 - Operations typically manages operating procedures
 - Maintenance functions are typically responsible for keeping Maintenance Procedures up-to-date



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Finally, in maintaining sound operations and maintenance practices, and while there are no specific regulations requiring them to do so, facilities should be reviewing these plans and procedures on a regular basis and maintaining records of revisions to these as well. In addition, there should be clearly defined roles for who manages both the procedures and plans for also for who manages duties and responsibilities and assures the needed work is accomplished.