

Example Multi-cyclone Operation & Maintenance Plan

Monitoring Guidelines

The facility makes a commitment to take timely corrective action during periods of excursion where the indicators are out of range. A corrective action may include an investigation of the reason for the excursion, evaluation of the situation and necessary follow-up action to return operation within the indicator range. An excursion is determined by the averaged discrete data point over a period of time, or the presence of a monitored abnormal condition. An excursion does not necessarily indicate a violation of an applicable requirement. If the corrective action measures fail to return the indicators to the appropriate range, the facility will report the excursion to the department and conduct source testing within 90 days of the excursion to demonstrate compliance with applicable requirements. If the test demonstrates compliance with emission limits then new indicator ranges must be set for monitoring and the new ranges must be incorporated in the operating permit. If the test demonstrates noncompliance with emission limits, then the facility, within 60 days, proposes a schedule to implement corrective action to bring the source into compliance and demonstrate compliance.

Monitoring Methods & Corrective Actions

General

- Periodic Monitoring is not required during periods of time greater than one day in which the source does not operate.
- Maintain a written record of the observation, deficiencies, and any action resulting from the inspections.
- Verify the rated gas flow rate for the multi-cyclone and the actual gas flow rate for the system.
 - Rated gas flow rate for multi-cyclone _____
 - System gas flowrate _____
- Verify the multi-cyclone system was designed to prevent Cross-Hopper Gas Movement.

Daily

- Visible emissions shall be observed on a daily basis to ensure opacity does not exceed _____% during the material handling operation of the unit. If visible emissions are observed with an opacity level greater than _____% but less than _____% this would be an exceedence, not a violation, and action will be taken as soon as possible, but no later than 1 hour after the occurrence. If weather conditions prevent the observer from conducting an opacity observation, the observer shall note such conditions on the data observation sheet. At least three attempts shall be made to retake opacity readings at approximately 2 hour intervals throughout the day. If unsuccessful that day due to weather, an observation shall be made the following day.
- Record daily pressure drops across the cyclone.

- Corrective action measures will be taken when the pressure drop deviates from its normal operating range. The normal operating ranges are:
 - Low Efficiency cyclones 2-4 inches of water.
 - Medium Efficiency cyclones 4-6 inches of water.
 - High Efficiency cyclones 8-10 inches of water

Weekly

- Inspect the solids discharge valve for proper operation.
 - Valve Type (Select one):
 - Manual Slide ____ (list operating schedule for removal of solids from collecting tube)
 - Rotary Valve ____
 - Screw Feeder ____
 - Double Flap ____
 - Other (indicate whattype) _____
 - Prevent multi-cyclone tube outlet plugging by:
 - Pull solids from the hopper on a frequent basis.
 - Minimize air infiltration.
 - Maintain the solids discharge valve in good condition.
 - Use an adequately sized hopper throat.
 - Ensure the design of the hopper has the proper slope.
- Maintain a written record of the observation, deficiencies, and any action resulting from the inspection.

If leaks or abnormal conditions are detected the appropriate measures for remediation will be implemented within eight (8) hours.

Quarterly

- Inspect the structural components including the multi-cyclone ductwork and hoods for leaks or component failure.
- Maintain a written record of the observations, deficiencies, and any action resulting from the inspection.

If leaks or abnormal conditions are detected the appropriate measures for remediation will be implemented within eight (8) hours.

Annually

- Inspect the hopper unloading components.
- Check for leaks in the system to ensure the airflow from the dirty side doesn't infiltrate the clean side. Verify that the inlet and outlet ductwork is in good operating condition.
- Check the barrel and collecting tube for deposits and/or excess wear and clean/repair as needed. Dents in the barrel or collecting tube must be removed to ensure proper operation.

- Clean multi-cyclone inlet vanes (ramps or spinners) and ensure they operate according to manufacture specifications.
- Maintain a written record of the observations, deficiencies, and any action resulting from the inspection.

If leaks or abnormal conditions are detected the appropriate measures for remediation will be implemented before the system is returned to service.

Record Keeping and Reporting

- Maintain a written or electronic record of all inspections and any action resulting from the inspections.
- Maintenance and inspection records will be kept for five (5) years and available upon request.

Quality Control

- All instruments and control equipment will be calibrated, maintained, and operated according to the manufacture specifications.
- Opacity readings for visible emissions must be accomplished using EPA Method 9 as described in 40 CFR 60 Appendix A.