NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

MEMO TO : Companies that Report Excess Opacity Emissions

FROM : James L. Semerad
Manager, Permitting & Compliance
Division of Air Quality

RE : Reporting of Excess Opacity Emissions

DATE : February 10, 2006

FILE

In a December 1, 2005 memo, the Department provided you with a draft document entitled "Guideline for Reporting Excess Opacity Emissions". Based on comments we received, minor changes and clarifications and some additional items have been incorporated into the final version dated February 6, 2006 which is attached.

The guideline is intended to provide consistency with definitions, recordkeeping, and reporting of excess opacity emissions. The guideline is based on regulations already in place and no new requirements are included. Please use the guideline for all excess opacity emission reports beginning with the submittals for the first quarter of 2006.

Questions regarding the guideline should be addressed to Gary Kline at (701)328-5188.

The following individuals are recipients of this memorandum:

Jerry Menge - Basin Electric Power Cooperative
John Graves - Minnkota Power Cooperative, Inc.
Jeff Hansen - Basin Electric Power Cooperative (AVS)
Kal Boyd - Basin Electric Power Cooperative (Stanton)
Kevin Thomas - Minnkota Power Cooperative, Inc.
Lael Schmidt - Cargill Corn Milling (Wahpeton)
Terry Graumann - Ottertail Power, Coyote Station
Rick Ludwig - Cargill, Inc.
Diane Stockdill - Great River Energy (Underwood)
Steve Smokey - Great River Energy (Stanton)
Jason Boeckel, Montana-Dakota Utilities
Richard Irish - Northern Sun-ADM
Steve Lundquist - American Crystal Sugar Co. (Drayton)
Pete Anderson - American Crystal Sugar Co. (Hillsboro)
Air Quality Permitting & Compliance Staff

JLS:csc
Enc:

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North Dakota Department of Health
Division of Air Quality
Guideline for Reporting Excess Opacity Emissions

A. PURPOSE:

The purpose of this guideline is to foster a common understanding among Department and industry personnel concerning how and when to report emissions of excess opacity.

B. GENERAL:

Excess emissions reporting is a requirement of operating permits for specific sources in North Dakota. Each owner or operator that is required to install a continuous monitoring system shall submit an excess emissions and monitoring system performance report. This requirement is applicable to those sources that are subject to NSPS (40 CFR 60, §60.7) and to those other sources that are so directed by the Department through the permitting process by referencing §60.7. Such reports have been designated by the Department to be submitted quarterly and not later than 30 days following the end of each calendar quarter. The Division of Air Quality has developed a standard format for summarizing the excess emissions and the monitoring system status; this format records the data as shown by the example in §60.7. Once the reports are received by the Department, the assigned project manager for that source reviews the report, prepares a summary sheet, and then submits that summary sheet for electronic reporting to EPA, Region VIII.

Many sources use their own reason codes or reason categories to describe the causes of excess emissions. When the reasons are different from those used by the Department, the reviewer attempts to correlate the source reason codes to the Department's reason codes so that a uniform code system is used for submitting data to EPA. The reason categories used by the Department for reporting to EPA are listed and discussed in Appendix A to this guideline. Additionally, the types of continuous emission monitoring systems (CEMS) downtime and reason categories are listed in Appendix B.

C. BACKGROUND:

There has been some confusion over the years as to when excess opacity emissions are to be reported and when the monitors must be operated. The Department's understanding is that opacity must be monitored at all times the boiler/source unit is combusting fuel and thereby creating emissions, and that excess opacity emissions during all periods of boiler operation must be reported.

Some stations have elected to operate the opacity monitors during periods when the boilers are not combusting fuel and creating emissions; i.e., during periods of boiler and/or pollution control equipment maintenance. Experience has shown that, unless the fans are operating, static conditions can occur in the stack whereby the opacity monitor will be recording opacity but there will be no plume exiting the stack. Recording and reporting "excess" opacity under such conditions is not appropriate for excess emission reporting. Also, during an outage when the ID fan is used to evacuate suspended debris out of the stack, there will be emissions from an emission point listed in the permit, but from a source (e.g. equipment maintenance) that is not identified in the permit. In this regard, a temporary source unit has been created so the standard opacity limit of 20% with a 6-minute excursion to 40% once per hour will apply. Electing to operate the opacity monitor during such periods may help to ensure compliance with the 20/40% opacity limit, but the emissions are not reported on the excess emissions report that is submitted to the Department.

D. AUTHORITY:

Federal regulation 40 CFR 60, **§60.7 Notification and record keeping** states, in 60.7 (c), ". . . . . Written reports of excess emissions shall include the following information:"

"(1) The magnitude of excess emissions . . . . . and the date and time of commencement and completion of each time period of excess emissions. The process operating time during the reporting period."

"(2) Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the affected facility. The nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted."

"(3) The date and time . . . . . or adjustments."

"(4) The summary report . . . . . be stated in the report."

Federal regulation 40 CFR 60, **§60.8 Performance tests** states, in §60.8 (c), "Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test nor shall emissions in excess of the level of the applicable emission limit during periods of startup, shutdown, and malfunction be considered a violation of the applicable emission limit unless otherwise specified in the applicable standard."

Federal regulation 40 CFR 60, **§60.11 Compliance with standards and maintenance requirements** states, in §60.11 (c), "The opacity standards set forth in this part shall apply at all times except during periods of startup, shutdown, malfunction, and as otherwise provided in the applicable standard."

E. DISCUSSION:

Key words and/or phrases are:

§60.7 (c) (1) "process operating time." Boilers combust fuel for the purpose of generating steam; that is the "process" irregardless of whether or not electricity is being generated by steam turbine powered generator. Therefore, it seems logical to equate "process operating time" with all times that fuel is being combusted in the boiler. When the supply of pulverized coal in a utility electric plant boiler is terminated, the combustion process terminates rather abruptly. However, when the coal supply to a spreader stoker boiler is terminated, the combustion process continues as long as the grate contains burning fuel.

§60.7 (c) (2) "excess emissions that occurs during startups, shutdowns, and malfunctions." Excess emissions must be included in the written reports even though these periods do not represent normal operation of the boiler.

§60.8 (c) "emissions in excess . . . . . during periods of startup, shutdown, and malfunction." The NSPS recognizes that excess emissions during the aforementioned periods are not representative of normal operations. However, it is expected that the excess emissions during those periods are to be reported but will not be considered a violation of the applicable standard. The reporting of excess emissions during those periods helps the Department and industry to focus on possible problem areas that might lend themselves to fewer excesses if scrutinized properly and if corrective action(s) are appropriate.

§60.11 (c) "opacity standards . . . . . shall apply at all times

except . . . . . startup, shutdown, and malfunction." There may be some who believe that there can be no excess opacity during periods of startup, shutdown, and malfunction if the standard does not apply during those periods. However, one must consider the total context of 40 CFR 60 in that excesses during those periods are to be recorded and reported but are not to be considered a violation of the "applicable emission limit." Otherwise the term "applicable emission limit" in §60.8 (c) during periods of startup, shutdown, and malfunction would be a contradiction of the term "opacity standards . . . . . shall apply at all times except . . . . . startup, shutdown, and malfunction."

F. CONCLUSION:

The following key points pertaining to reporting excess opacity emissions are summarized:

1. Opacity monitoring systems must be operating and monitoring opacity at all times any fuel is being combusted in the boiler. When the combustion gases have been evacuated, shutdown is complete.

2. Emissions in excess of the applicable standard or emission limit must be reported during periods of startup, normal operations, malfunction, and shutdown.

3. Following shutdown, the boiler "process" has terminated so there is no requirement in 40 CFR 60 to operate the monitor(s) or to report emissions.

4. Operation of the opacity monitor(s) during periods other than for boiler "process operating time" will not be included in excess emission reports.

5. If a boiler is subject to an NSPS opacity standard of 20/27%, then that standard is applicable when the boiler and its associated stack or emission point are operating jointly. However, if the emission point is being used for emitting other than combustion gases from the boiler, then the 20/40% opacity standard applies.

Approved: Jim Semerad Date: 2/6/06

Jim Semerad, Manager
Permitting and Compliance Branch

Attachments:
Appendix A - Excess Opacity Reason Categories
Appendix B - Types of CEMS Downtime and Reason Categories

Appendix A
Excess Opacity Reason Categories

REASONS FOR EXCESS EMISSIONS:

1. **Startup/Shutdown**: "Startup/Shutdown" as defined in 40 CFR § 60.2, means "the setting in operation of an affected facility for any purpose," and "the cessation of operation of an affected facility for any purpose." If certain excess emissions during startup or shutdown are caused by a control equipment failure or a process problem, that portion of the exceedance should be reported as a control equipment failure or a process problem.

2. **Clean/Sootblowing**: This category refers to the periodic removal of soot, slag and/or fly ash from the firebox walls or the tubes of fuel-burning equipment by the use of compressed air, steam or water.

3. **Control Equipment Failure**: This category refers to any on-site control equipment failures or other problems such as excess emissions caused by control equipment maintenance. It is intended to cover all failures whether they are excusable or inexcusable as malfunctions under 40 CFR § 60.2, and even when the underlying reason for the control equipment failure is not known.

4. **Fuel/Process Problems**: Fuel problems cover any problem relating to the quality or condition of the fuel. Process problems include on-site equipment failures other than control equipment and include problems described by the sources as: load changes, steam leaks, and various other problems involving dampers, flame scanners, combustion control, I.D. fans, etc.

5. **Other**: "Other Known Problems" are intended to cover all known causes of excess emissions not already covered.

6. **Unknown**: "Unknown Causes" apply to all excess emissions for which the operator must guess at the reason (even though his guess might be a good one). It would not apply to an equipment failure even though the reason for failure is not known. This category includes problems where:

    - the source does not know the cause of the excess emissions;
    - the source does not state any cause for the excess emissions, or
    - the cause reported by the source is unclear, ambiguous or contradictory.

Appendix B
Types of CEMS Downtime and Reason Categories

Sources are required to operate the CEMS when the source unit is operating. CEMS downtime which occurs during source downtime is not included in the excess emissions report (EER).

1. TYPES OF CEMS DOWNTIME: Three types of CEMS downtime may be reported in the EER; all three types should be included as CEMS downtime:

   - periods during which the CEMS is inoperative;
   - periods during which the CEMS is undergoing routine maintenance or other repairs, performance evaluations, extensive calibrations, etc.; and
   - periods during which the CEMS is operating, but is generating inaccurate data.

Occasionally a source will report excess emissions caused by problems with the CEMS as "excess emissions." Such excess emissions should be excluded and the affected time periods should be reported as "CEMS Downtime" and categorized appropriately. Note that the CEMS includes all parts of the system including the opacity monitor and the data handling/recording equipment. For example, failure to record data because of computer or data recorder problems is a failure of the entire system and the time is included as CEMS downtime.

2. REASONS FOR CEMS DOWNTIME OR REASONS FOR NO DATA RECOVERY:

   a. **Monitor Equipment Malfunction**: This category includes the equipment needed to measure opacity. It does not include chart recorders and data acquisition systems. A "malfunction" is any period during which the monitor is not operating or is producing inaccurate data due to a failure of any CEMS component, and does not include periods of calibration, QA or normal preventive maintenance.

   b. **Non-monitor Equipment Malfunction**: This category includes all equipment other than the monitor equipment that is necessary to transfer, compute averages, and record opacity data. Non-monitor equipment malfunctions almost always refer to failures or problems with the chart recorder, data losses or computer data acquisition system problems.

c. **Calibration/QA**: This category includes any period during which the monitoring system is out-of-service for the purpose of calibration, routine preventive maintenance, or other quality assurance related activity. The time required to perform the daily zero and span checks is usually a few minutes per day; the reporting of this time is not required and should not be included in "Calibration/QA" or any other category since the monitor is performing a required activity. However, when the zero or span drift limits are exceeded, a significant amount of time may lapse before the adjustments are completed. Monitor downtime associated with completing the zero or span adjustments should be included in "Calibration/QA."

d. **Other**: "Other known causes" includes other known reasons for monitor downtime or inaccuracy, excluding all malfunctions and "Calibration/QA" activities. This category includes the interruption of the monitoring equipment power supply, human error and other relatively unusual events. It also includes monitor problems or inaccuracy associated with the inability to perform routine maintenance because of severe weather conditions.

e. **Unknown**: "Unknown cause" includes inaccurate or no data without an apparent explanation. If a data recorder fails, and the reason for failure is not known, this would be categorized under "non-monitor equipment malfunction." However, if data are clearly inaccurate, and a data recorder failure is suspected but cannot be confirmed, it should be classified as "unknown cause." The "unknown cause" reason also includes CEMS downtime explanations which are insufficient to determine the appropriate reason category.