



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

June 24, 2004

OFFICE OF
AIR AND RADIATION

Ms. Karen Toth
Authorized Account Representative
Glens Falls Lehigh Cement Company
P.O. Box 440
313 Warren Street
Glens Falls, NY 12801

Re: Petition to Use a Default Moisture Value to Determine NO_x Mass Emissions from
Glens Falls' Portland Cement Kiln (Facility ID (ORISPL) 880052)

Dear Ms. Toth:

The United States Environmental Protection Agency (EPA) has reviewed the January 23, 2004 petition submitted by the Glens Falls Lehigh Cement Company (Glens Falls) under §75.66, in which Glens Falls requested permission to quantify the nitrogen oxides (NO_x) mass emissions from its cement kiln using a default moisture value, in lieu of continuously monitoring the moisture content of the stack gas. EPA approves the petition, in part, as discussed below.

Background

Glens Falls owns and operates a Portland cement facility, located in Glens Falls, New York. The cement manufacturing process at Glens Falls employs a roller mill to grind the raw materials, which are then pre-heated and fed into a kiln. Inside the kiln, the raw materials are fused into a material known as "clinker". During normal operation, the kiln exhaust gases are routed through a pre-heater and a spray tower for conditioning and are then sent to an electrostatic precipitator, before discharging to the atmosphere through two identical stacks, MS1S and MS1N.

The Glens Falls cement kiln has a rated heat input capacity of 280 mmBtu/hr. The kiln combusts bituminous coal as its primary fuel. Natural gas is used as a secondary fuel during startup and coal mill outages. The kiln is subject to the NO_x Budget Trading Program, under New York's State Implementation Plan (SIP)¹. Under this program, Glens Falls is required to continuously monitor and report the ozone season² NO_x mass emissions from the kiln, in

¹ NYCRR Part 204

² The ozone season extends from May 1st through September 30th each year.

accordance with 40 CFR Part 75, Subpart H. Further, Glens Falls is required to hold NO_x allowances equal to its NO_x mass emissions, beginning with the 2003 ozone season.

Glens Falls uses a time-shared NO_x continuous emissions monitoring system (CEMS) to monitor each of the kiln stacks. The CEMS measures the NO_x concentration, in parts per million (ppm), on a dry basis. The stack gas flow rate (which is a wet-basis measurement) is monitored in the duct leading to each of the respective stacks. Glens Falls uses Equation F-2 in Appendix F of Part 75 to calculate the hourly NO_x mass emissions from the kiln. This equation, which includes a correction for the stack gas moisture content, is appropriate for Glens Falls because the stack gas flow rate and NO_x concentration are not measured on the same moisture basis.

During the 2003 ozone season, Glens Falls used continuous moisture monitoring systems, consisting of wet- and dry-basis oxygen monitors, to make the appropriate moisture corrections. However, according to Glens Falls, the maintenance of this moisture monitoring approach has proved to be exceptionally difficult. Therefore, Glens Falls petitioned EPA for permission to use a default moisture value of 17.2% H₂O in the NO_x mass calculations, in lieu of operating and maintaining the continuous moisture monitoring systems.

The proposed default value of 17.2% H₂O was derived in the following manner from moisture data collected with the wet-dry oxygen systems during the 2003 ozone season. Glens Falls first calculated the average stack gas moisture content for each of the three principal modes of kiln operation, i.e.: (1) with the roller mill operating; (2) with the roller mill down and the No. 2 fan operating; and (3) with the roller mill and No. 2 fan down. Then, using the number of hours that the kiln operated in each mode, a weighted average moisture percentage was determined.

EPA notes that this is the second time that Glens Falls has petitioned to use default moisture values for Part 75 reporting. In an April 17, 2002 petition, Glens Falls requested permission to use two different moisture defaults, one for times when the kiln is operated with the roller mill on and the other for times when the roller mill is off. The Agency denied this request in its August 5, 2002 response, because EPA's Electronic Data Report (EDR) reporting format does not support the use of multiple moisture default values. Instead, EPA approved the use of a single moisture default value of 14.8% H₂O for all operating conditions. The approved default value was a weighted average, calculated from the results of several stack tests in conjunction with an estimate (provided by Glens Falls) of the percentage of time that the kiln operates in each mode. To ensure that NO_x mass emissions would not be under-reported, EPA subtracted a 95% confidence coefficient from the average moisture value for each mode of operation before calculating the weighted average.

Despite receiving approval from EPA to use a default moisture value of 14.8% H₂O, Glens Falls elected not to use this value in the NO_x mass emission calculations for the 2003 ozone season. Instead, continuous moisture monitoring systems were installed and certified in the ducts leading to each of the stacks.

EPA's Determination

EPA approves Glens Falls' request to use a default moisture value to quantify NO_x mass emissions from its cement kiln. However, the approved default value is 15.3% H₂O, rather than 17.2% H₂O as proposed by Glens Falls. The approved value of 15.3% H₂O was obtained by analyzing moisture data collected by Glens Falls' certified continuous moisture monitoring systems during the 2003 ozone season (2,951 operating hours). Hours where substitute moisture data were reported were excluded from the evaluation. EPA also excluded all operating hours where the moisture value recorded at either MS1N or MS1S was not within 10% of their average. These data were excluded because each duct simply serves as a channel for a portion of the kiln effluent and there is no reason to expect significant differences in the two moisture values for any hour. EPA notes that for many of these excluded hours, the moisture readings at MS1S were unreasonably high when compared to those at MS1N.

After excluding unrepresentative data as described above, there remained 1,048 hours of quality assured moisture data. From this data set, EPA selected the 10th percentile value (i.e., 15.3% H₂O) as the approved default moisture value. This is consistent with the manner in which EPA determined the fuel-specific default moisture values for coal and wood combustion in §75.11(b)(1) as part of the May 26, 1999 revisions to Part 75.³ The 10th percentile value was selected because in Equation F-2, as the percent moisture decreases, the NO_x mass emissions increase. Therefore, using a conservatively low moisture value in Equation F-2 greatly reduces the possibility of underestimating NO_x mass emissions.

EPA's determination in this letter relies on the accuracy and completeness of the information in the January 23, 2004 petition and in the 2003 electronic data reports (EDRs) submitted to EPA by Glens Falls, and is appealable under Part 78. If you have any questions regarding this correspondence, please contact Matthew Boze at (202) 343-9211.

Sincerely,



Sam Napolitano, Director
Clean Air Markets Division

cc: Ann Zownir, EPA Region II
Don Spencer, NYDEC
Matthew Boze, CAMD

³ See 64 FR 28568 (May 26, 1999)