# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

August 17, 2012

Air and Radiation Docket and Information Center
U.S. Environmental Protection Agency
Mail Code 2822T
1200 Pennsylvania Ave, NW
Washington, DC 20460

Attn: Docket ID No. EPA–HQ–OAR–2011–0817

Re: National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants; Proposed Rule

Dear Sir or Madam:

The Texas Commission on Environmental Quality (TCEQ) appreciates the opportunity to respond to the United States Environmental Protection Agency's (EPA) proposal published in the July 18, 2012, edition of the *Federal Register* entitled: "National Emission Standards for Hazardous Air Pollutants for Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants."

Enclosed please find the TCEQ's detailed comments relating to the EPA proposal referenced above. If you have any questions concerning the enclosed comments, please contact Mr. Vincent Meiller, Air Quality Division, Office of Air, (512) 239-6041, or at vincent.meiller@tceq.texas.gov.

Sincerely,

Zak Covar
Executive Director

Enclosure

# Texas Commission on Environmental Quality Comments on National Emission Standards for Hazardous Air Pollutants for the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants; Proposed Rule

**Docket ID No. EPA-HQ-OAR-2011-0817**

The Texas Commission on Environmental Quality (TCEQ) provides the following comments on the United States Environmental Protection Agency's (EPA) proposed rules referenced above. The proposed rule was published in the July 18, 2012, issue of the *Federal Register* (77 *FR* 42368).

## I. Background

On July 18, 2012, the United States Environmental Protection Agency (EPA) published a notice of proposed amendments to the national emission standards for hazardous pollutants (NESHAP) rules for the Portland cement manufacturing industry in 40 Code of Federal Regulations (CFR) Part 63, Subpart LLL, and the new source performance standards (NSPS) rules for Portland cement plants in 40 CFR Part 60, Subpart F. The proposed revisions are in response to petitions for reconsideration submitted by the Portland cement industry. Additionally, the proposal addresses a decision by the United States Court of Appeals for the District of Columbia Circuit (D.C. Circuit) regarding the EPA's inclusion of cement kilns classified as commercial and industrial solid waste incinerators in the data used to set the existing unit maximum achievable control technology (MACT) emission standards. The major proposed changes to the Portland cement manufacturing NESHAP rule include: increasing the particulate matter (PM) emission standards for new and existing units; removing the requirement for a PM continuous emissions monitoring system (CEMS) for demonstrating compliance; increasing the organic hazardous air pollutant (HAP) alternative emission standard; and extending the compliance dates for existing cement kilns to September 9, 2015.

## II. TCEQ Comments on the Proposed Rules

### 1. The EPA's approach of setting MACT emission standards based on three times the representative detection limits (RDL) of the reference methods is arbitrary and capricious. The EPA has failed to consider the practical enforceability of emission standards set at levels so close to the method detection limits (MDL).

The EPA has not considered the enforceability of emission standards that have been arbitrarily set using the three-times-RDL approach that the EPA is using for the organic HAP emission standard in the Portland cement NESHAP and for different pollutant emission standards in other NESHAP regulations such as the Mercury and Air Toxics Standards (MATS) rule for electric utility steam generating units (EGU). The EPA has not adequately demonstrated the reliability and accuracy of the EPA test methods at such a narrow margin above the MDL of the methods. The three-times-RDL approach can set the emission standards close to or even significantly less than the practical quantitation limit (PQL), also referred to as the limit of quantitation. As discussed in TCEQ Comment 2, even if the emission standard is equivalent to the PQL the EPA's own technical experts recognize the need for an additional margin between an emission standard and the PQL of the method used to demonstrate compliance. If the three-times-RDL approach establishes an emission standard less than a method's PQL, compliance with the standard becomes indemonstrable. The TCEQ and other commenters in prior EPA rulemaking proposals have suggested that the EPA consider using the PQL to establish the

MACT emission standards. The EPA's general response to such comments has been that PQL is arbitrary and not statistically defined. However, the EPA's three-times-RDL approach is equally arbitrary and establishes emission standards near the MDL without determining the actual accuracy of the required methods at such extreme low concentrations. While PQL is not typically defined in EPA test methods, the generally accepted definition of PQL is the minimum level that can be reported with a specified degree of confidence or certainty. It is also generally accepted that a method's PQL will be greater than the MDL. While the PQL for some EPA methods has been estimated, such as the case with Method 5, many EPA stack test methods do not have a documented PQL. Therefore, the EPA cannot ensure that an arbitrary factor of three will establish an emission standard greater than the PQL of such methods. The EPA should determine the PQL of the required methods before assuming that the methods are sufficiently accurate to demonstrate compliance with an emission standard established using the three-times-RDL approach. A fundamental flaw in the EPA's reasoning for the three-times-RDL approach is that if the emission standard is near or less than the method PQL then the only emission data that can show compliance with the standard are data that is by definition of unknown certainty. If the data needed to determine compliance is questionable by default then enforceability of the emission standard is severely compromised unless the emission test results are substantially above the emission standard and clearly demonstrate non-compliance.

**2. The EPA's own technical experts on emission test methods have indicated that the margin between an emission standard and the MDL of a method should be greater than the arbitrary factor of three that the EPA is using for three-times-RDL approach. The EPA has not considered the practical limitations of the methods required to demonstrate compliance with the emission standards.**

Technical support documents contained in the docket for the Portland cement NESHAP from EPA test method experts indicate that the margin between an emission standard and the MDL of the method used to demonstrate compliance should be greater than the factor of three that the EPA is using in the three-times-RDL approach to set MACT limits. In the EPA's technical memorandum regarding the capabilities of PM CEMS (EPA Docket ID No. EPA-HQ-OAR-2011-0817-0187, *Particulate Matter Continuous Emissions Monitoring System (PM CEMS) Capabilities*, dated June 13, 2012) the EPA's technical staff also provided an analysis of the capabilities of EPA Method 5 for determining PM emissions. The memorandum indicates on page 4 that a one-hour Method 5 test run would have an MDL of approximately 2 milligrams per dry standard cubic meter (mg/dscm) and that this MDL would equate to a PQL of approximately 6 mg/dscm using a three-times-MDL approach for estimating the PQL. The memorandum also states on page 5 that to "achieve a PQL of 1 mg/dscm (as would be necessary to demonstrate compliance with a 2 to 3 mg/dscm emission limit), one would need to conduct a Method 5 test of 6 hours or longer." The analysis in the EPA technical memorandum indicates that the overall recommended margin between the Method 5 MDL and the emission standard is 6 – 9 and not an arbitrary factor of three that the EPA is using in multiple rulemakings. While the EPA did not appear to use the three-time-RDL approach to set the new unit PM emission standard in the Portland cement NESHAP, the EPA did set the new unit PM emission standard for coal-fired EGUs in the MATS rule using the three-times-RDL approach. The new unit PM emission standard for coal-fired EGUs in the MATS rule is approximately equivalent to an in-stack PM concentration of 1 mg/dscm. The six-hour test run assumed in the memorandum should easily achieve the minimum sample volume of 4 dry standard cubic meters (dscm) required for a Method 5 test run for demonstrating compliance with the new unit PM standards in the MATS rule. Depending on stack conditions and the Method 5 sample train parameters, a

six-hour test run could exceed 5 dscm. The EPA has set the new unit PM limit for coal-fired EGUs equivalent to the PQL for Method 5 testing as required by the MATS rule. However, the analysis provided by EPA's technical staff indicates that conducting a six-hour Method 5 test run with the PQL equivalent to the emission standard is not sufficient to demonstrate compliance.

While Method 5 sensitivity can be improved by sampling a greater volume of stack gas, as indicated in the EPA memorandum on page 5, longer Method 5 test runs raise practicality concerns. In order to achieve the recommended factor of 2 – 3 between PQL and the MATS rule PM emission standard for new coal-fired EGUs, a Method 5 test run would have to achieve a PQL of 0.3 – 0.5 mg/dscm. Using the same assumptions from the EPA technical memorandum, each Method 5 test run would have to be 12 – 18 hours in duration to achieve the recommended PQL. Method 5 was not designed to be conducted for test runs of this duration. While the PM emission standards in the MATS rule are filterable PM only, the amount of moisture condensation in a Method 5 test run of this duration would be problematic because the impinger train would have to be periodically changed out to remove condensed water. This action would require multiple leak checks of the entire sampling train over the course of the test run and would increase the possibility of contamination on the front-half component of the sample train, i.e., the filterable PM component. Test runs of extremely long duration also increase the likelihood of human error due to physical exhaustion of testing staff or having multiple staff conduct a single test run.

The TCEQ acknowledges that comments about the MATS rule emission standards are not within the scope of the Portland cement NESHAP proposed rulemaking. The TCEQ's comments regarding the limitations of Method 5 in the context of the MATS rule are to highlight the flaws in the EPA's arbitrary three-times-RDL approach for setting MACT emission standards. Furthermore, the technical memorandum on PM CEMS and Method 5 is dated June 13, 2012, and was not available during the MATS rule comment period. The analysis in the EPA technical memorandum regarding PM CEMS and Method 5 capabilities is not source specific. The limitations regarding Method 5 MDL and PQL for PM emissions are equally applicable to Portland cement kilns and coal-fired EGUs. The TCEQ strongly encourages the EPA to consider the technical limitations of Method 5 as well as the other required methods for demonstrating compliance when setting emission standards in the current Portland cement NESHAP proposed rulemaking as well as in the recently announced reconsideration of the MATS rule new unit emission standards.

### 3. The EPA has made significant errors in the analysis provided in the technical support document for the determination of the reference method RDL values used to set MACT emissions based on the three-times-RDL approach for the Portland cement NESHAP and the MATS rule.

The EPA has made significant errors in determining the method RDL values in the technical support document entitled *Data and procedure for handling below detection limit data in analyzing various pollutant emissions databases for MACT and RTR emission limits* (EPA Docket ID No. EPA-HQ-OAR-2011-0817-0142, dated December 13, 2011/Revised April 5, 2012). While the EPA has used this document to set standards for the MATS rule, the document was not available for comment at proposal of the MATS rule. The EPA has made errors in the calculations used to estimate RDL for some of the methods. For example, in the RDL determination for Method 26A for hydrogen chloride (HCl) and chlorine ($Cl_2$), the EPA assumed a total mass RDL for a Method 26A test of 60 micrograms (µg). The 60 µg total mass RDL value is presumably calculated using the documented analytical detection limit in Method 26A of 0.2

micrograms per milliliter (µg/ml) and the impinger volume of 300 milliliters (ml) assumed in Section 13.3 of Method 26A. The EPA has failed to consider the significant amount of water vapor condensation that occurs when sampling combustion sources such as a coal-fired utility boiler, especially if four dry standard cubic meters (dscm) of gas are required for the test run. The 300 ml of volume assumed in Section 13.3 of Method 26A is for a 1-dscm test run, and appears to be based on a relative gain of approximately 100 ml of liquid from moisture vapor condensation in the impingers. Assuming only a 12 - 14% by volume moisture vapor content in the stack gas and given that the majority of water vapor will condense in the first two impingers, which are used to determine HCl, sampling 4 dscm of stack gas would also require sampling and condensing approximately 0.5 dscm of moisture vapor from the stack gas. Using EPA Method 4 calculation procedures, this volume of moisture vapor condensed in the impingers would increase in the impinger volume for the HCl determination at the end of the test run by more than 400 ml. This increases the total solution volume of impingers for the HCl determination to more than 600 ml, not the 300 ml assumed by the EPA. Method 26A analytical procedures would not allow concentration or extraction of the impinger solution before analysis as some other EPA methods (e.g., Method 29). Therefore, the final volume of the impinger solution at the end of the sample run directly affects the total mass detection limit of the test. For a 4-dscm test run, the total mass RDL for a Method 26A test would be greater than 120 µg, twice the 60 µg assumed by the EPA. The resulting three-times-RDL value for a 4-dscm test would be more than 90 µg/dscm, which is twice the EPA's estimated three-times-RDL value and represents an in-stack concentration that is almost two times the HCl emission standard for new coal-fired EGUs in the final MATS rule.

**4. The EPA is misrepresenting the results of the Reference Method Accuracy and Precision (ReMAP): Phase 1 study. The results of the ReMAP study do not support and in some instances contradict the EPA's claim that the EPA reference methods are accurate to within 10 – 20% at a level three times the method detection limit. It is misleading, inappropriate, and not scientifically valid for the EPA to rely upon the ReMAP study for its claims of accuracy of the reference methods in setting the organic HAP emission standard using the three-times-RDL approach for Method 18 and Method 320 because neither of these methods were included in the ReMAP study.**

In the EPA document Portland Cement Reconsideration Technical Support Document (EPA Docket ID No. EPA-HQ-OAR-2011-0817-0225), the EPA's indicates that using the three-times-RDL approach to set the organic HAP limit would result in "a standard where the method would produce measurement accuracy on the order of 10 to 20 percent, similar to other EPA test methods and the results found in the ASME ReMAP study." The EPA's claim of accuracy for Methods 18 and 320 in the technical support document is baseless and without any scientific validity. The ReMAP study only evaluated a limited set of EPA reference methods: Methods 5 and 5i for particulate matter; Method 23 for dioxin and furan; Method 26 for hydrogen chloride; Method 29 for multi-metals; Methods 101a and 101b for mercury; and Method 108 for arsenic. The EPA apparently has extrapolated the ReMAP study to apply to all EPA reference methods, yet the EPA has provided no technical basis for making such an extrapolation. In the case of the organic HAP emission standard for the Portland cement NESAHP, Methods 18 and 320 use sampling procedures, analytical technology, or instrumentation that is completely different from the methods evaluated in the ReMAP study.

The final report of the ReMAP study, published February 2001, does not support EPA's claims regarding the accuracy of the reference methods that were included in the study. The data presented in the ReMAP study shows no indication that the study evaluated the methods at concentration levels near three times the RDL. For example, the ReMAP study evaluation of Method 26 only included data for HCl concentrations at 1 mg/dscm, or a 1000 µg/dscm. However, the EPA technical support document on determining the three-times-RDL values shows the three-times-RDL value for a Method 26 test to be between 83 – 250 µg/dscm. Further, the MATS rule does not allow Method 26 for HCl testing on coal-fired boilers. Either the isokinetic sampling HCl method, Method 26A, or the instrumentation methods Method 320 or ASTM D6348-03 are required for compliance demonstrations on coal-fired EGUs and these methods were not evaluated in the ReMAP study.