# TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

*Protecting Texas by Reducing and Preventing Pollution*

November 6, 2014

EPA Docket Center (EPA/DC)
Environmental Protection Agency
Mail Code: 28221T
1200 Pennsylvania Avenue NW
Washington, DC 20460

Attn: Docket ID No. EPA–HQ–OAR–2013–0619

Re: Revisions to Ambient Monitoring Quality Assurance and Other Requirements; 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 September 11, 2014 edition of the *Federal Register* entitled: "Revisions to Ambient Monitoring Quality Assurance and Other Requirements; Proposed Rule."

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 Deric Patton, Monitoring Division, Office of Compliance and Enforcement, (512) 239-3159, or at deric.patton@tceq.texas.gov.

Sincerely,

Richard A. Hyde, P.E.
Executive Director

**Texas Commission on Environmental Quality (TCEQ) Comments on Revisions to Ambient Monitoring Quality Assurance and Other Requirements; Proposed Rule**

**Docket ID No. EPA–HQ–OAR–2013–0619**

## Background

On September 11, 2014, the United States Environmental Protection Agency (EPA) proposed Revisions to Ambient Monitoring Quality Assurance and Other Requirements that were last published in 2007. These proposed revisions are intended to provide clarifications to existing ambient air monitoring requirements for criteria pollutants. Specifically, this proposal focuses on reorganizing and clarifying quality assurance requirements, simplifying and reducing data reporting and certification requirements, clarifying the annual monitoring network plan public notice requirements, revising certain network design criteria for non-source lead (Pb) monitoring, and addressing other issues in 40 Code of Federal Regulations (CFR) Part 58, Ambient Air Quality Surveillance Requirements.

## Comments on the Proposed Rule

*I. General Comment*

**The EPA places undue importance on the accuracy and precision of ambient data that is near or below method and/or instrument detection limits.**

As mandated in the Clean Air Act, the EPA sets national ambient air quality standards (NAAQS) at levels that provide protection to public health and the environment. The ambient air monitoring network should support the same goal by ensuring that ambient pollutant measurements are most accurate at levels at or near the NAAQS. In this and other recent proposed rulemakings, the EPA has instead focused on the accuracy and precision of measurements at or below the method and/or instrument detection limits due to lower ambient air concentrations. Because data quality can only be measured within an established range, pushing calibrations and quality checks down to these low levels has the deleterious effect of both increasing uncertainty of measurements at or above the NAAQS, which may actually affect public health or the environment, and decreasing data return due to invalidation of otherwise good data due to the increased instrument noise at lower concentration levels. As stated in 40 CFR 58.2(6)(c), the purpose of the ambient air quality network is to provide "timely air quality data upon which to base national assessments and policy decisions." EPA should, then, focus its efforts on meaningful benchmarks, such as the NAAQS, rather than setting benchmarks at levels closer to ambient levels that, at times, are unachievable due to available technology and inherent uncertainties in sampling and analytical processes.

II. *Specific Comments*

**1. The TCEQ recommends that the EPA revise its definition of a monitoring organization.**

The proposed definition for "monitoring organization" under 40 CFR §58.1 includes the phrase, "or other monitoring organization." This phrase is ambiguous and should either be defined or removed from this definition. Other monitoring organizations could refer to universities, contractors, private organizations, or other governmental agencies that perform monitoring but are not considered monitoring agencies. Since many requirements apply to monitoring organizations, the proposed definition leaves questions as to what requirements pertain to which organizations. For instance, a technical system audit (TSA) is required for all monitoring organizations but the proposed definition leaves in question which entities are covered by the TSA. This could expand the scope of the EPA's oversight.

**2. The EPA proposal requiring that monitoring organizations report the submission and approval dates of quality management plans (QMP) and quality assurance project plans (QAPP) to the Air Quality System (AQS) is currently unachievable.**

The TCEQ requests clarification on proposed language under 40 CFR Part 58, Appendix A, Sections 2.1.1 and 2.1.2 requiring submission and approval dates for QMPs and QAPPs to be reported in AQS, specifically with regard to responsibilities and implementation. The preamble indicates that the monitoring organizations would be responsible for submitting the dates associated with QMP and QAPP submittals and approvals. If this is the intent of the proposed rule, AQS must be modified to allow monitoring organizations the ability to enter this data. Currently, the EPA's AQS web application only allows monitoring organizations to view QAPP and QMP dates, but the functionality to enter or revise those dates is unavailable. Additionally, the Texas network has multiple QAPPs associated with federal ambient air monitoring, in which a specific parameter may be listed in more than one plan. For example, the criteria pollutant ozone is in both the Photochemical Assessment Monitoring Station (PAMS) and State and Local Air Monitoring Stations (SLAMS) QAPPs. However, when viewing the parameter ozone within AQS's QA Project Plans screen, there is only one record returned with no field to indicate the QAPP to which the record applies. Moreover, there is no edit functionality when viewing this data within AQS. Thus, the TCEQ recommends that the EPA add the ability for monitoring organizations to associate a parameter to multiple QAPPs within AQS along with a batch process that would allow for multiple changes at one time.

**3. The proposed language added to clarify the National Performance Audit Program (NPAP) requirements increases the burden on the Primary Quality Assurance Organization (PQAO) to implement the program.**

The EPA's stated intent for proposed language added under Appendix A, Sections 2.4 and 3.1.3 is to clarify the NPAP requirements. However, these additions have changed the requirements for demonstrating independence and adequacy that were originally outlined in the memorandum *National Performance Audit Program/PM2.5 Performance Evaluation Program Implementation Decision Memorandum for*

*Calendar Year 2008*[1] by implementing training requirements, requiring separate audit equipment, and adding a requirement to perform a whole system check tested against an independent and qualified lab. These proposed changes will impact the costs for the PQAO to implement the NPAP and raise questions as to the objective of the program.

In Sections 2.4.1, 3.1.3.4, and 3.1.3.4 (f) there is new language stating that "field and laboratory personnel will be required to meet PE field and laboratory training and certification requirements to establish comparability to federally implemented programs" and that "the EPA will establish training and other technical requirements for PQAOs to establish comparability to federally implemented programs," as well as "participate in initial and update training/certification sessions." This requirement is not new for the $PM_{2.5}$ Performance Evaluation Program (PEP) but is now being proposed for use in the NPAP as well. This training requirement adds additional training costs for those PQAOs that self-implement without adding benefit. Training on processes used by the EPA would only be beneficial to programs that use EPA's procedure; otherwise the training is a waste of both time and resources for trainees and trainers alike. This is not to say that training is not necessary, but the training requirement should be revised to ensure that auditors have been trained in the procedures that PQAOs actually employ to satisfy this requirement, that the training is documented, and that the documentation is available for review by the EPA. Revising the training requirement would make this part of the NPAP much more efficient, especially for the PQAOs that self-implement.

Proposed Section 3.1.3.4 states that a PQAO must, (a) "utilize an audit system equivalent to the federally implemented NPAP audit system and is separate from equipment used in annual performance evaluations" and (b) "perform a whole system check by having the NPAP system tested against an independent and qualified EPA lab, or equivalent." The requirement for separate equipment adds to the cost of the program without a related benefit to the program. It is known that using separate audit equipment causes audit results to vary due to differences in equipment calibration and standards. Through error propagation analysis, the TCEQ estimates that the error associated with using different equipment would be approximately 2.8%. The TCEQ's average error between annual audits and NPAPs is 2.2%. This shows that the NPAPs are primarily indicating error associated with the auditing equipment and not necessarily any additional error associated with the data itself. Taking this one step further, the average difference seen between TCEQ audits and the EPA collocated audits is approximately 3.0%. This additional error is most likely due to the slight differences between the TCEQ's auditing procedures and the EPA's auditing procedures.

The proposed changes would also impact the cost for the PQAO to implement NPAP. The additional costs required would depend on whether the PQAO decides to self-implement or participates in the EPA's NPAP. As a self-implementing PQAO, the TCEQ has already incurred the costs of additional audit equipment and standards and is

[1] Timothy D. Hanley, Acting Leader to Kipp, et al., July 31, 2007, U.S. EPA, Ambient Air Monitoring Group, National Performance Audit Program/PM2.5 Performance Evaluation Program Implementation Decision Memorandum for Calendar Year 2008.

currently incurring the costs from the time required to train auditors as well as the time and travel required for the NPAP audits. For participating PQAOs, the cost would be the amount withheld from the grants for the audits.

Additionally, the proposed changes raise questions as to the objective of the NPAP. In Appendix A, Section 3.1.3 of the proposed rule, the stated objective for the NPAP is to serve as "a performance evaluation which is a type of audit where quantitative data are collected independently in order to evaluate the proficiency of an analyst, monitoring instrument or laboratory." This objective is already being accomplished with the annual performance evaluation in proposed Section 3.1.2. If this is truly the objective of the NPAP, then this requirement appears to be redundant, requiring significant resources and time for a program that does not provide any additional benefits over the annual performance evaluation. Furthermore, proposed language in Section 3.1.3.4 (a) states that the PQAO must "utilize an audit system equivalent to the federally implemented NPAP audit system and is separate from equipment used in annual performance evaluations." This requirement is restated in Section 3.1.2.3 and indicates a deviation from the objective in Section 3.1.3 by implying that the objective of this program is actually to determine the accuracy of the annual performance audits. If this is the objective, then the program could be accomplished more cost effectively by requiring the PQAO to simply comply with Section 3.1.3.4 (c) that requires PQAOs to "evaluate the system with the EPA NPAP program through collocated auditing at an acceptable number of sites each year (at least one for an agency network of five or less sites; at least two for a network with more than five sites)." This one collocation requirement provides the benefit of determining the accuracy of a PQAO's annual performance audits.

For these reasons, the TCEQ contends that the NPAP requirements, based on the stated objective, are redundant of existing performance evaluation requirements, and that requiring separate audit equipment for NPAPs will only increase costs without providing additional benefits. In addition, Section 3.1.3.4 requirement (b) is redundant with the requirement for collocated checks that are listed in requirement (c). To reduce the overall burden on PQAOs, the TCEQ recommends the removal of both requirements (a) and (b) under Section 3.1.3.4.

**4. The EPA's proposed changes to the TSA program are unnecessarily burdensome to both monitoring organizations and the PQAO and, due to current AQS technology, may jeopardize annual certification of ambient monitoring data.**

The EPA's assertion in the preamble that TSAs conducted at the PQAO level once every three years and for all monitoring organizations associated with a PQAO once every six years would not materially affect the burden on monitoring organizations is flawed. In reality, the proposed schedule would increase the workload of not only the monitoring organizations but also the PQAO and EPA regional staff without providing additional information on the quality systems that encompass all of the monitoring agencies within the PQAO.

Section 1.2.1 of Appendix A in the proposed rule states that each PQAO shall be defined such that measurement uncertainty among all ambient air monitoring stations in the organization can be expected to be reasonably homogeneous as a result of common factors. These common factors to be "considered in defining PQAOs include:

a) operation by a common team of field operators according to a common set of procedures;
b) use of a common quality assurance project plan (QAPP) or standard operating procedures;
c) common calibration facilities and standards; and
d) oversight by a common quality assurance organization."

In other words, the monitoring organizations grouped together into a PQAO follow a common quality system. In Texas, the TCEQ is the PQAO over seven to 17 monitoring organizations, depending on the definition of monitoring organization (see Comment 1). All but one of these monitoring organizations use the same quality system as described in Section 1.2.1 and many are currently included as part of the TCEQ's PQAO audit every three years.

The proposed rule would treat these monitoring organizations as individual entities, causing a vast increase in the number of TSAs and difficulty in ensuring consistency among monitoring organizations within the PQAO. Specifically, the proposed rule would result in an EPA TSA of Texas monitors every three to 11 months (seven to 17 monitoring organizations once every six years). In addition to the logistical issues of scheduling and conducting the audits themselves, all monitoring organizations covered under the umbrella of the Texas PQAO's quality system would have to make changes in their operation each time a TSA at any of the monitoring organizations indicates an issue with that quality system. Each change in a quality system can require a tremendous amount of time and effort to implement. Implementation may include purchasing new equipment, training staff in the new procedures, documentation of new procedures, etc. The PQAO's staff would be required to oversee the changes throughout the monitoring organizations, participate in each of the TSAs, track all corrective actions, verify implementation, and ensure consistency of implementation across all monitoring organizations. For these reasons, the proposed rule would be a significant change in current operation of the quality system and could pose an overwhelming cost to the PQAO, monitoring organizations, and regional EPA personnel in terms of staff hours, travel, and fiscal costs of implementation, all with little benefit to the quality of the data from these organizations.

Perhaps a greater concern with the proposed rule is the potential impact on the PQAO's annual data certification. Currently, the PQAO ensures that ambient data, quality checks, and audits collected and conducted by it and its monitoring organizations are entered into EPA's AQS database. The PQAO annually certifies the quality of this data to the EPA by recommending a flag in AQS. AQS has restrictions in place to keep the EPA from concurring with the PQAO's certification flag if all quality checks were not completed. The current certification process is not contingent upon events outside the

PQAO's control, such as the EPA's performance of a TSA. Should EPA concurrence with a PQAO's data certification be prohibited due to the lack of a current TSA, then the PQAO runs the risk of being penalized based on the EPA's ability to complete their audit workload. This is particularly problematic when considering that design values and, as a result, NAAQS compliance, relies upon certified data.

The goals of this proposed rule revision could be more efficiently realized by the EPA performing a TSA once every three years at the PQAO level. The TSA at the PQAO level could encompass any and all monitoring organizations within a PQAO to determine if the overall quality system is being implemented and determining if the PQAO has a process in place for the oversight of all the monitoring organizations under its purview. If the proposed rule is finalized as written, the EPA should at a minimum allow EPA concurrence of certified data in AQS with or without the EPA's TSA information.

**5. The modifications to the annual performance evaluation for sulfur dioxide ($SO_2$), nitrogen dioxide ($NO_2$), ozone ($O_3$), or carbon monoxide (CO) requirements could result in higher data loss and decreased confidence in NAAQS compliance determinations.**

Appendix A, Section 3.1.2.1 of the proposed rule requires that the annual performance evaluation be "made by challenging the monitor with audit gas standards of known concentration from at least three audit levels. Two of the audit levels selected will represent a range of 10–80 percent of the typical ambient air concentrations either measured by the monitor or in the PQAO's network of monitors. The third point should be at the NAAQS level or above the highest 3-year ambient air hourly concentration, whichever is greater." The proposed changes to the audit levels for the annual performance evaluation will unintentionally reduce data quality around the NAAQS and maximum levels. For example, the TCEQ $SO_2$ ambient air concentrations measured over the past three years have a 10 to 80% concentration range of 0.2 to 2.0 parts per billion (ppb) with a high concentration of 529 ppb, while the NAAQS level is 75 ppb. In addition, the $NO_2$ 10 to 80% ambient air concentration range over the same time period is 1.7 to 14 ppb with a high concentration of 166 ppb, while the NAAQS level is 100 ppb. The proposed audit levels would unintentionally reduce the data quality around the NAAQS due to the significant difference between ambient air concentration ranges and the NAAQS level. In addition, the proposed language should clarify whether the audit concentration to be selected near the NAAQS is referring to the primary or secondary standard since these can differ greatly. For instance, the primary and secondary NAAQS for $SO_2$ is 75 ppb and 500 ppb respectively.

Additionally, for some monitors, the 10 to 80% operating range could be near the detection limit of the instrument, causing the selected audit levels to be low. The calculated percent differences of values near the detection limit would indicate a higher percent error than would be seen at the NAAQS level. As noted in comment 6 regarding the change in the Pb threshold level, decreasing ambient concentrations increases the percent error of the instrument, even though the absolute error remains the same. This error could ultimately lead to audit failures that would directly affect the data validity and exclude the data from NAAQS compliance determinations.

As evidenced above, the proposed changes to the annual performance evaluation could lead to low data return and cause data used in the determination of compliance with the NAAQS to be unnecessarily invalidated. Instead, the TCEQ recommends that two of the levels should be selected at the lower and higher ends of the monitor's calibration range, rather than the operating range, with a third point near the NAAQS level. This would have the benefit of indicating the errors associated with any measurement that falls within the monitor's calibration range and provide data users with information about the expected quality of the data near the NAAQS. This would also ensure that audits are not performed in a concentration range that is below the lowest calibration point where the data quality is more greatly affected by small differences in results. Either the suggested approach should be employed or the measurement uncertainty limits should be reviewed for applicability at these lower concentrations.

**6. The proposed Pb threshold for methods approved after March 4, 2010, will increase data loss without providing additional confidence in data quality at the regulatory level.**

The proposed rule changes the Pb threshold in Appendix A, Section 4 (c) (1) for methods approved after March 4, 2010, from 0.02 micrograms per cubic meter (μg/m$^3$) to 0.002 μg/m$^3$. This change will increase the likelihood that collocated data will not meet the 20% coefficient of variation (CV) limit for precision as specified in Appendix A, Section 2.3.1.3. This will in turn decrease data completeness and, if data loss is great enough, could potentially render the data from an entire monitoring location useless for NAAQS compliance determinations.

The EPA states in its preamble that the proposed change is due to "the increased sensitivity inherent in this new FRM." Changing the threshold based solely on the estimated federal reference method (FRM) detection limit may not translate to other federal equivalent methods (FEM) that may have different detection limits. Detection limits can also change due to variations in sample volume. Differences in detection limit can affect the data variability at the threshold, ultimately affecting the calculated CV.

In addition, the proposed change overlooks the impacts that other parts of the sampling method have on collocated samples. For instance, the variability of Pb contamination in EPA-provided filters may have an impact on the overall variability of the method. Over the last three years, the average Pb contamination measured on unexposed filter blanks by the TCEQ was 0.0010 μg/m$^3$, with a maximum of 0.0029 μg/m$^3$, indicating a 97% difference in Pb concentrations due to filter contamination alone. Additionally, the errors associated with sampler flow rates also impact the result variability. Although many samplers are impacted by plumes from sources, the proposed threshold does not take into account the gradients that can be seen across plumes. All of these factors may be contributing to data variability between collocated samplers and should be considered before setting the threshold value.

All of the above variations can impact the calculated CV since the CV is based on individual sample pair percent differences at a monitoring site. Due to the fact that the CV is based on individual sample pair percent differences, the CV tends to increase at

lower concentrations for constant absolute differences. An example of this increase in CV at lower concentrations can be demonstrated by considering two qualifying sample pairs, one pair near the current 0.02 μg/m3 level and the other pair near the proposed 0.002 μg/m3 level. The concentrations of the first sample pair are 0.021 μg/m3 and 0.020 μg/m3, and the second pair are 0.003 μg/m3 and 0.002 μg/m3. Both of these sample pairs have a small 0.001 μg/m3 absolute difference. However, the percent differences vary greatly, 4.9% for the first pair and 40% for the second pair. This percent difference significantly increases the precision estimate based on an absolute difference of 0.001 μg/m3. A second example of the impact of the proposed change is shown in Table 1 below, which provides a comparison of the CV values calculated using the current and proposed threshold values on the TCEQ's 2013 data for three different sites as well as across the TCEQ network. These results demonstrate how the CV increases as the threshold value decreases. This increase in CV is based on the larger percent differences that are seen at lower concentrations and would ultimately lead to invalidation of data based on increased percent variability of concentrations that are well below the NAAQS level.

**Table 1. Coefficient of variation (CV) comparison using 2013 data with the current and proposed Pb threshold values for three sites and across the TCEQ network.**

| Pb Threshold | Frisco 7 CV | Frisco Eubanks CV | Ojo de Agua CV | Network CV |
|---|---|---|---|---|
| Current threshold (0.02 μg/m$^3$) | 12.66% | 17.90% | 1.74% | 14.37% |
| Proposed threshold (0.002 μg/m$^3$) | 18.66% | 29.81% | 3.60% | 21.91% |

Note: Using 2013 data, the proposed reduction in the Pb threshold would have caused all CV values to increase resulting in the collocated site at Frisco Eubanks as well as the CV calculated across the network to not meet the 20% CV data quality objective as specified in 40 CFR Appendix A, Section 2.3.1.3.

The TCEQ supports maintaining the threshold at the current level until a statistical analysis of ambient data can be performed to determine a limit of quantitation (LOQ). Basing the threshold on the LOQ, rather than a detection limit, would be the more technically sound approach because it takes into account data accuracy. The method detection limit (MDL) is described as the minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero. Unlike the LOQ, the MDL does not ensure that the analyte concentration is accurately measured. Taking into account dilutions, sample volumes, etc. that contribute to the determination of the final concentration, the TCEQ's LOQ for Pb is 0.011 μg/m3, which is well above the proposed threshold. If the threshold is not revised using the LOQ, the CV limit must be reassessed to determine if it is still appropriate to apply the current limit to the lower concentrations.

### 7. The EPA should clarify what is considered a valid measurement quality check.

Appendix A, Section 5.1.1 of the proposed rule requires that results of all valid measurement quality checks be reported to AQS. However, the proposed rule does not provide a clear definition of a valid measurement quality check. One interpretation is

that quality check results that meet specified limits are the only results that should be considered valid and entered into AQS. Another interpretation is that if the check was performed correctly, then the check is valid and should be entered regardless of whether or not the results meet specified limits. Finally, a third interpretation is that only quality checks related to valid data should be entered. Section 5.1.1 should be revised to clarify which quality checks are expected to be entered into AQS. The TCEQ contends that all results from properly performed quality checks should be entered into AQS regardless of whether or not the results meet specified limits. This provides the data user with the most information about the quality of the data and allows the data user to decide whether the data is appropriate for their use.