Particulate Matter Emissions/Stack Testing: U.S. EPA Office Inspector General Report

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The United States Environmental Protection Agency ("EPA") Office of Inspector General ("OIG") issued a July 30th report titled:

More Effective EPA Oversight is Needed for Particulate Matter Emissions Compliance Testing ("Report")

See *Report* 19-P-0251.

OIG states that it conducted an audit to determine the effectiveness of EPA oversight in assuring "that emission stack tests are conducted in accordance with EPA regulation, policy and guidance." The audit was initiated because an air quality contractor was concerned about the adequacy of stack testing in Washington state and the effectiveness of EPA oversight. This individual's concerns were stated to have been brought to the attention of both EPA and OIG.

Air pollutants are emitted by both stationary and mobile sources. The role that each category plays in the emission of a given air pollutant varies. One of the significant types of air pollutants emitted by stationary sources is particulate matter.

Particulate matter is a generic term for a broad class of chemically and physically diverse substances that exists as discrete particles (liquid droplets or solids) over a wide range of sizes. Primary particulates are soot emitted directly into the atmosphere. Secondary particulates can also be formed through a secondary process. Larger particulates can be the result of mechanical, evaporate, and suspension processes. Smaller particulates that consist of sulfates, nitrates, elemental carbon, organic carbon, compounds and metals may be formed by chemical reactions, condensation, coagulation, and nucleation processes of gases.

Particulates are one of the Clean Air Act's criteria air pollutants for which EPA has set National Ambient Air Quality Standards ("NAAQS"). The establishment of NAAQS for particulates in turn required the states to formulate, subject to EPA approval, State Implementation Plans designed to achieve the NAAQS for its air quality control regions. Therefore, the states may often impose emission limits on stationary sources addressing these emissions.

Assorted equipment, devices, methods, and tests are utilized by various stationary sources to verify the initial and/or continued proper operation of the required air pollution control equipment put in place to attain emission limits. This determination is typically based on a comparison of the amount of air pollutants the stationary source is permitted and/or projected to emit with the amount actually emitted.

Periodic measurement of emissions from stationary sources are often accomplished by a method known as “stack sampling.” This direct measurement method involves obtaining a representative sample form a specific facility emission point. In order to ensure results are representative of actual facility operating conditions, multiple samplings of each stack are sometimes necessary.

The July 30th OIG *Report* states there are approximately 14,700 major stationary sources of air emissions in the United States. It notes that these facilities typically release emissions via smokestacks or stacks. Further, OIG notes that the facilities are subject to emission limits set by state-issued construction and operating permits. Concern is expressed by OIG that:

. . . if there are no there are no other means to demonstrate compliance with permit limits, as is typically the case with particulate matter emissions, stack emissions must be determined using EPA-approved test methods. If stack testers do not follow applicable EPA methods, test results are subject to greater variability and uncertainty. Accurate stack tests and reports are needed to verify that excess emissions do not negatively impact human health and the environment.

OIG states that it audited 30 stack tests from state and local agencies in Washington State and found “numerous examples of nonadherence to EPA test methods and inadequate supporting documentation to assess data quality.” It further states that the problems were not identified by state and local regulatory agencies responsible for implementing the Clean Air Act permitting programs in the state. Further concern was expressed about state and local agencies failure to regularly observe stack tests to verify that EPA methods are properly followed. The local and state agencies are stated to have indicated to OIG that additional training and tools from EPA were needed to help them conduct oversight of stack testing reporting.

OIG makes four recommendations to EPA headquarters which include:

1. Develop and implement a plan for improving the consistency of stack test reviews across EPA regions and delegated agencies;
2. Assess the training needs of EPA regions and state, local and tribal agencies concerning stack test plans and report reviews and EPA test methods, and develop and publish a plan to address any training shortfalls.
3. Develop stack test report checklists for EPA Method 5 and other frequently used EPA methods to assist state, local, and tribal agencies in their reviews of stack test plans and reports.
4. Develop and publish on EPA regional websites a list of EPA contacts who can assist state, local and tribal agencies with stack test method issues or other stack test problems.

Two recommendations were made to EPA Region 10 (which encompasses Washington state). They include:

1. Develop a communication plan to make all state and local agencies within Region 10 aware of EPA requirements and guidance for conducting stack testing oversight.
2. Develop and implement controls to assess delegated agencies’ stack testing oversight activities.

A copy of the OIG *Report* can be downloaded here.