

Payback Time for Continuous Monitoring Systems

Using CEMS to Protect Against Frivolous Credible Evidence Actions

by

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The “credible evidence” or “any credible evidence” rule (40 CFR 51.212, 52.12, 52.33, 60.11, and 61.12) allows the EPA to use any evidence to show that a source is violating applicable emission limits. Before promulgating this rule in 1997 in response to the 1990 Clean Air Act Amendments (CAAA), the U. S. Environmental Protection Agency (EPA) could only use an agency-prescribed performance or reference method test to sample and analyze air pollutants in order to show noncompliance, except where regulations explicitly specified continuous emissions monitoring systems (CEMS) or similar approaches for determining compliance. The 1997 credible evidence rule, however, allows the EPA to use operating parameter data, production, maintenance records, or, indeed, *anything* which might bear on emissions. In August, 1998, a U.S. appeals court in Washington, D.C., dismissed an industry challenge to the ACE rule as premature, thus clearing the way for EPA to use the rule in enforcement proceedings around the country, and to require states to include credible evidence provisions in their implementation plans.

To illustrate the ACE rule’s operation, suppose your source is subject to a carbon monoxide emission limit, with compliance based on an annual stack test. Before the credible evidence rule, the only way for the EPA to show noncompliance with the CO limit was to use the results of the reference method test specified in the regulation. Now, however, the EPA can use operating data, including such things as temperature and oxygen level, as credible evidence of noncompliance.

Nothing in the ACE rule defines or limits the possible kinds of evidence that the phrase “credible evidence” encompasses. The evidence must be sufficient only to show that, had the source performed the applicable method test, it would have shown a violation.

The Problem

The Compliance Assurance Monitoring (CAM) rule requires the collection of process and control device data to ensure good control device performance, and so give a reasonable (but not absolute) assurance of compliance with emission limits. Because the CAM rule’s focus is on providing a reasonable assurance of compliance and not on measuring actual emissions, it contains no requirement to install CEMS or any other technology that provides data on actual emissions. Particularly in light of the CAM rule, source owners and operators have a legitimate concern about enforcement actions based on process data. How can you protect yourself against these enforcement actions, possibly initiated by citizens?

This problem may be expressed more concretely as follows: You may understand how your facility operates, and know that, although a boiler temperature was lower than normal, or although one field of an electrostatic precipitator was not energized, your emissions still were below the applicable standard. The question facing you is: can you prove that you are in compliance (possibly in court), given a possible presumption by people unfamiliar with your particular facility that such parameter excursions mean increased emissions? Of equal importance, when you can prove compliance, how can you avoid having actions brought in the

first place? After all, even if you can prove your innocence after a protracted battle, you still have lost considerable time and money, and possibly the good will of the surrounding community.

This problem takes on added significance for the source's "designated representative" — who could be the President, Vice President, or plant manager — who must warrant compliance. Given the criminal penalties, including jail time, for noncompliance, does the designated representative want to rely on possibly ambiguous process data that is compiled by a line operator whose first priority is production, not compliance with air emission rules?

The Solution

Knowing your emissions at all times through direct, continuous measurement of the emissions will allow you to prove compliance with applicable standards. Even when operating parameters suggest an exceedance, direct emissions measurements will protect you from enforcement actions. EPA and citizen activists are unlikely to scrutinize process data to show noncompliance if you have direct emissions measurements showing compliance. Designated company officials facing criminal penalties for noncompliance can breathe easier.

While there are various approaches to continuously obtain direct emissions measurements, the most reliable involve the use of CEMS and continuous opacity monitoring systems (COMS; in the remainder of this article, we use CEMS to include COMS). These devices measure emissions or opacity directly and continuously, and provide emissions data in the units of the applicable standard, making proof of compliance straightforward. Further, when operating parameters suggest a violation of permit conditions, CEMS data may provide the only means of proving your innocence.

Regulatory agencies should trust CEMS over other means of determining emissions. Because these devices measure emissions directly and in the units of the applicable standard, no manipulation or interpretation of their output is necessary to determine emissions. Regular calibration and use in thousands of applications worldwide mean that CEMS data are reliable and well understood.

Environmental and community watchdog groups which might bring potential violations (e.g., reports of excess opacity) to the attention of regulatory authorities also favor CEMS. Direct and continuous measurement allows such groups to assure their constituencies that they are protected from excess emissions. Further, when rogue activists assert violations that are contradicted by CEMS data, they are very unlikely to be taken seriously.

Other Benefits of Continuous Monitoring

Use of continuous emissions or opacity monitoring as protection against frivolous credible evidence actions also gives plants operational flexibility. Rather than maintaining

process and control device parameters in narrow ranges to avoid the appearance of emissions exceedances, plants using CEMS may adjust operating parameters at will to maximize production and minimize operating costs. Parameter-monitoring-based approaches obviously do not provide this flexibility.

In the sense that CEMS data are operating parameters, they may be used to improve operations. In several cases, plant owners required to install CEMS have found that output

emissions data could be fed back to processes to improve performance/efficiency, or could be used to diagnose unexpected equipment failures.

With the continued growth of emissions trading in the U.S., continuous monitoring provides an additional benefit: CEMS data can be used to document over-compliance with emission limits, and thus to obtain saleable emissions reductions. Measurement of operating parameters, while allowing compliance with the CAM rule, typically cannot be used to show such over-compliance.

Continuous Monitoring Misconceptions

The principal perceived drawback of continuous monitoring systems is cost: the conventional wisdom is that they are expensive to buy and expensive to operate. In fact, the purchase costs of CEMS have dropped considerably over the past decade, in some cases by over 50 percent, and continue to fall. For example, the cost of purchasing a basic NO_x/O₂ CEMS, including sample probe, analyzers, and enclosure, is \$29,000-50,000, which is much less than in the past. Further, modern CEMS from reputable vendors are very reliable, and have low operating and maintenance labor requirements.

While some monitoring systems have been expensive, such as the “high-end” systems required under the acid rain provisions of the CAAA, there is little need to use such systems for typical industrial applications. To be useful in defending against credible evidence actions, less complicated CEMS, with lesser audit requirements (and thus lower costs), should suffice.

Further, as noted above, the increased operational flexibility which CEMS provide over parameter monitoring systems, the use of CEMS output to improve operation, and the use of CEMS to certify surplus emissions for trading purposes, all mean that continuous monitoring is likely to provide a payback.

Finally, a key reason for using CEMS to forestall credible evidence actions is to avoid expenditures on fines and legal defense, which likely would far exceed the cost of purchasing and operating a monitoring system.

A second perceived drawback to CEMS is that they will provide definitive evidence of noncompliance, increasing the chances (relative to using low-grade parameter monitoring) that out-of-compliance sources will be caught. However, the credible evidence rule will increase the chances that habitual noncompliers will be caught in any case. Further, giving the appearance of choosing the monitoring least likely to show noncompliance will certainly not help your standing with regulators or the local community.

Good Citizenship

Beyond other benefits, protection against credible evidence actions, the installation of CEMS will help industrial sources show good citizenship. Merely showing that you are not hiding anything helps build good community relations. Further, good monitoring allows you to show your environmental awareness, and may be used for “green marketing” beyond the community.