VARIABILITY OF METALS AND DIOXINS IN STACK EMISSIONS OVER FIVE YEARS: HOW MUCH IS CONTRIBUTED BY THE WASTE AND HOW MUCH BY THE TECHNOLOGY

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Discussion by:

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Mr. Hasselriis makes an excellent case for using a statistical approach for establishing future emission standards provided you have a viable and sufficiently large enough data base.

Since states must adopt emission standards which must be at least as restrictive as the EPA's Emission Guidelines, they can either adopt the EPA proposed emission standards, a logical choice, or establish their own standards. If states want to set their own emission limits, they must use a statistical approach that reflects the variability of changes in waste composition and plant operations and not subjectively lower standards without technical, economical, and public health justification. Some states have set emission limits lower than their neighbors for public relations reasons and to show that they can be more restrictive without justification.

This paper demonstrates that emissions standards should not be based on a single test program. If regulators try to "ratchet" standards without consideration for the variations in operation and changes in fuel characteristics, they could push facilities beyond achievable limits. Mr. Hasselriis's approach logically supports a method of using the mean of field test data plus two or three standard deviations when established permits. I hope that we continue to build a better data base to supplement this method so that regulators will have a firm basis to establish permit standards.

I seriously disagree with the author on his statement that "...the permit level could be adjusted after efforts were made to reduce emissions, as much as possible." I wish that this policy was employed throughout the U.S. as it is used in Europe. When U.S. regulators look at the European permitting process, they fail to adopt this concept in their permitting. If this permitting process was used in the U.S., we could mitigate many of the contractual problems that evolved out of the operation of MWCs.

The data analyzed for this paper seems to be limited to outlet data. Did you consider the inlet data?

AUTHORS' REPLY

The data for this paper was limited to outlet data because it is very unusual to test both the inlet and the outlet of the emission control systems.

Because obtaining simultaneous inlet/outlet data requires two separate sampling trains and crews, and because this data is not required in order to comply with the EPA regulations, most of the instances where inlet/outlet data have been obtained were those obtained by the U.S. EPA as part of obtaining data in support of the regulatory process. Data from tests of municipal waste and medical waste combustion systems financed by the EPA have been used to estimate control efficiencies which have been used to predict emissions of facilities as part of preparing environmental impact studies. Some efforts to predict emisions have had to rely on emission factors published by the EPA in AP-42, Section 2.1, Refuse Combustion, using uncontrolled emissions based on a few facilities, and controlled emissions of different facilities, as a means of evaluating the effectiveness of various types of emission control. The lack of simultaneous control efficiency data puts control efficiencies based on the data in Table 2.1-1 of AP-42 in serious doubt.

In spite of this doubt, it is worth noting that control efficiency estimates for ESPs, dry sorbent/ESP, spray-dry/ESP, dry sorbent/fabric filter and spray-dry/fabric filter emission control systems, based on Table 2.2-1, generally ranged from 97% to 99.9% for particulate matter as well as for the individual metals of concern, arsenic, cadmium, chromium and nickel. As is well know, control efficiencies for mercury can be increased by remedies such as injection of activated carbon.