THE QUEST FOR INCINERATOR AIR POLLUTION CONTROL

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The authors have demonstrated that the achievement of environmental controls within technical and economical limits is a long and frustrating business. The work conducted by the Authority hopefully will be used as the stepping stone into the next generation of control equipment in the field of incineration or resource recovery.

I would like to ask the authors two questions. First, do they have any analysis and mass balances on the wastewater discharger? The second question is: “Have they looked at the potential leachate problem from the residue disposal?”

Discussion by

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The authors of this paper are to be commended for sharing their experiences at the Central Wayne County Sanitation Authority in a detailed and comprehensive manner which can only redound to the benefit of all of those interested in seeing municipal incineration regain its rightful and deserved place as a viable and practical method of solid waste disposal. The fact that this same group is now studying the feasibility of modifying their present incinerators to effect energy recovery also points to the foresightedness of the involved parties in addressing another of the country’s pressing national problems besides solid waste disposal – that is, the recovery of energy from a municipal solid waste stream.

As a person intimately involved with the pioneering and evolution of air pollution control in the incineration industry, it was indeed gratifying and pleasing to see the amount of detailed performance data presented by the authors in their paper. All too often in the past, the results of air pollution performance tests and evaluations remained the private and restricted personal knowledge of a plant owner and his consultants in this evolving quest for the solution of one of the more perplexing problems that faced the municipal incineration industry. This very secretive approach to effecting a solution to this problem fostered repeated failures of new municipal incinerator installations to meet ever tightening air pollution control standards as plant after plant duplicated the installation of air pollution control systems that had previously been demonstrated as inadequate – but for which little public knowledge and appreciation of these inadequacies existed. This lack of sharing detailed air pollution performance evaluation information was a critical factor, in my view, leading to the virtual demise of the municipal incinerator industry in this country in the late 1960s and throughout the 1970s. This
problem was also exacerbated by the almost continuous tightening of air pollution control emission standards in this era and the slowly evolving appreciation of the importance of the development of standardized and acceptable air pollution test methods, test equipment and the need for a skilled and trained cadre of people who were capable of accurately conducting air pollution performance tests. The authors have recognized and alluded to this latter problem in their paper and rightfully insisted in their program that the same testing firm be utilized throughout the evolvement and analysis of the two pilot wet precipitator systems that demonstrated their ability to meet the present stringent particulate emission standards of Wayne County, as well as those embodied in the EPA New Source Performance Standards for municipal incinerators.

The detailed account of the authors’ quest for a satisfactory solution to the air pollution control problems at this plant also compels me to comment on a sore spot in the development of air pollution control emission standards and test procedures which have long been the subject of great controversy since my 8-page letter denunciation of the NAPCA and subsequent EPA proposed Test Method No. 5 in which EPA proposed the use of the “wet catch” or “condensible” fraction in its test train to be considered as particulate matter. That letter was widely circulated throughout the air pollution control industry as early as July, 1968. To the real credit of the U.S. EPA, after much study and evaluation, EPA agreed that the impinger catch in their EPA Test Method No. 5 test train was indeed test train generated particulate pollutant and should not be considered as stack emitted particulate pollutant in evaluating the performance of source emissions against prescribed particulate emission standards. That the Wayne County Air Pollution Division still persists in utilizing this thoroughly discredited method for establishing its air pollution control emission limitations must be perplexing and annoying to all who are subjected to this requirement. It is difficult for one who was a local air pollution control official for 25 years to argue with the premise that local units of government should be precluded from establishing their own emission standards and/or test methods rather than having them imposed upon them by State or Federal agencies. However, in this case, I personally feel that Wayne County has seriously erred in continuing to insist upon the use of the wet impinger catch material as particulate matter in the face of the preponderance of data that show this material to be a test train generated component. Not only is there a need for incinerator owners and consultants to share in the information developed in their own successes (and failures) of various air pollution control installations but there is also as great a need for various levels of government (Federal, State and local) to likewise share their data and experiences so that conflicting or unreasonable standards or test methods or procedures are not fostered or imposed.

One word of caution is offered relative to the stack discharge visual emission analyses that are reported in the paper. I am sure that the authors are well aware of the world of difference in visually assessing the opacity of an 18 in. diameter exhaust gas stream as compared to a 8 ft diameter saturated exhaust gas plume. The fact that air pollution control agencies are virtually compelled to utilize a visual emission analysis of saturated exhaust gas streams in their enforcement efforts (largely because of the time consuming and costly procedures involved in making a quantitative determination of particulate light-obscuring emissions) points to a real and crying need throughout the air pollution control field for a better, fairer and more precise method of quantitatively and objectively assessing visual emission performance – a need that would best be addressed by the U.S. EPA who continues to impose opacity requirements as part of their New Source Performance Standards.

AUTHORS’ REPLIES

To Anthony Licata

1. Data on bleed and recycled process water for both pilot tests are incomplete. These data will be utilized to the extent that they are meaningful in design of a full scale installation, but their release in present form would be of little value and could lead to erroneous conclusions.

2. It is anticipated that fly ash or residue from improved air pollution control facilities will continue to be combined with quenched grate residue and disposed of at the Authority’s sanitary landfill, a former limestone quarry some 17 miles from the incinerator plant. The site is used for disposal of the Authority’s incinerator residue only. No raw refuse. There has been no indication of a leachate problem to date nor has there been any investigation to determine whether a problem exists; however, under recently enacted legislation (Sec. 14(2)
of Act 641, P.A. of 1978, as amended, effective April 1, 1980, the Michigan Department of Natural Resources (DNR) requires a hydrogeological investigation of and establishment of a permanent groundwater monitoring program at each landfill in the State. Results will indicate whether remedial measures are required. The DNR-established timetable calls for the Authority to submit a work plan for DNR approval by July 15, 1980, and a preliminary hydrogeological report by September 15, 1980; install monitoring wells by November 15, 1980; and submit “a complete final hydrogeological report, including the initial water quality results,” by February 15, 1981. The Act requires that all landfills be in compliance or closed by September 1, 1984. As this was written (July, 1980) the work plan had been submitted and DNR approval was awaited.

To Fred R. Rehm

Fred Rehm is one of this Country’s real pioneers in the field of incinerator air pollution control and emission testing. His comments and kind words about our approach to the problem, based on his broad experience and knowledge, are much appreciated.

As Fred indicates, he was in the forefront of those opposing inclusion of the impinger catch in the calculation of emission test results as was originally proposed by USEPA under the New Source Performance Standards (NSPS) when they were issued for comment on August 17, 1971. EPA bowed to the request in the overwhelming majority of more than 200 written comments on the proposed standards by eliminating the impinger catch requirement from the standards as promulgated on December 23, 1971 and as they stand today. We were not aware that the agency ever formally acknowledged that the impinger catch is a “test train generated” pollutant. The question continues to be debated and has been discussed with Wayne County Air Pollution Control Division personnel; however, Michigan DNR requires inclusion of the impinger catch in the calculation of emission test results so Wayne County APC Division could not unilaterally eliminate the requirement if it wanted to.

Mr. Rehm’s cautions relative to visual opacity determinations are well made, though his reference to opacity limitations in NSPS may be a bit misleading. It is true that opacity limitations are stipulated under most of the subparts of NSPS, but there is now no opacity limitation for incinera tors under Subpart E. This is academic, since all but five states have opacity standards of 20 percent or stricter and the report on a recent review [1] of the present NSPS, Subpart E. recommends addition of an opacity standard for incinerators.

REFERENCE