



Project Summary

Guidelines for Stack Testing at Municipal Waste Combustion Facilities

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As part of the current federal regulatory process, permitting agencies need guidance on identifying critical emission parameters for municipal waste combustors (MWCs) and on methods that can be used to measure those parameters, especially toxic substances.

The Northeast States for Coordinated Air Use Management (NESCAUM), with the support of the U.S. Environmental Protection Agency's (EPA's) Control Technology Center (CTC), organized a work group of recognized experts to provide guidance on methods for measuring stack emissions from MWCs and reporting formats to facilitate standardization of emissions tests. This methods guidelines report is based on the discussions of the NESCAUM work group. Specific testing recommendations, emissions, measurement methods, and recommended reporting formats are presented. These recommendations are not intended to prescribe regulatory requirements, but to recommend emissions test programs responsive to typical requirements.

The measurement methods presented are based primarily on reference methods already in widespread use, although few have been validated specifically for MWC testing. Many of the method recommendations and descriptions of critical methods features specific to MWC emissions testing were drawn from the considerable knowledge and broad experience of the work group. A bibliography of useful references for MWC testing is included.

This Project Summary was developed by EPA's Air and Energy Engineering Research Laboratory, Research Triangle

Park, NC, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

Considerable interest and activity has recently been focused on assessing emissions from municipal waste combustors (MWCs). In particular, state and local environmental agencies have been charged with developing regulations for MWCs in response to the increasing number of facilities currently in operation or planning. To develop and implement the regulations, many permitting agencies need guidance in identifying critical emission parameters and the appropriate methods for measuring those parameters (especially toxic substances) in MWC stack emissions. The U.S. Environmental Protection Agency (EPA's) Control Technology Center (CTC) and the Northeast States for Coordinated Air Use Management (NESCAUM) jointly convened a work group of experts to provide that guidance. The work group included representatives from EPA and the NESCAUM member states as well as California, Minnesota, Environment Canada, firms operating MWCs, and related professional societies.

Lines Document

The objectives of the work group are to recommend standardized MWC stack test methods, recommend standardized reporting formats for the test results, identify unresolved stack testing technical issues, and promote the exchange of technical information on MWC stack testing. This document was based on the discussions and

consensus of the work group. Emission parameter measurements, process data collection, and test results reporting formats are recommended.

Test Recommendations

The objectives of an MWC stack test determine the parameters tested and may influence selection of test methods. The work group considered four categories of MWC tests:

- Regulatory compliance testing — determination of compliance with permit limits,
- Performance testing — characterization of emissions from a specific unit or component,
- Research and development testing — study of specific processes or emissions data base development, and
- Continuous emissions monitoring.

The work group discussions focused on the first three categories, recommending that continuous emissions monitoring be considered separately.

Compliance Testing

Based on the work group's assessment of current and developing permit requirements, the following emissions parameters, combustion parameters, and operating conditions were identified as likely requirements for MWC compliance tests:

- Polychlorinated dibenzo-p-dioxins (PCDDs) and dibenzofurans (PCDFs) — tetrachloro through octachloro homologs;
- Total hydrocarbons;
- Lead, mercury, cadmium, and total chromium;
- Carbon monoxide, carbon dioxide, and oxygen;
- Particulate matter and opacity;
- Acid gases — hydrochloric acid, nitrogen oxides, and sulfur dioxide; and
- Furnace, boiler, and emissions control process data.

The work group recommended that three tests be conducted at or near 100% of the design heat input capacity expected during normal operations. For facilities consisting of multiple units of the same design, the work group recommended testing for bulk combustion parameters for each unit and testing for fuel-related parameters on only one unit (assuming the units are operated under the same nominal conditions).

Performance Testing

The work group did not identify emission parameters that are uniquely associated with performance testing. However, testing at the inlet and outlet of specific com-

ponents (e.g., particulate control devices) may be required. It was also recognized that test objectives can vary widely, but that parameter measurement methods suitable for compliance testing are likely to be appropriate also for performance testing.

Research and Development Testing

As for performance testing, the objectives of research and development testing may be many and varied. Nonetheless, the work group identified several parameters of potential interest and recommended appropriate measurement methods. The parameters include:

- Volatile organics;
- Polychlorinated biphenyls (PCB)s;
- Semivolatile organics, including chlorinated benzenes, chlorinated phenols, and polynuclear aromatic hydrocarbons; and
- Metals, including arsenic, beryllium, chromium (VI), and nickel.

Measurement Methods

Measurement methods are presented for all parameters identified as potentially required for compliance or performance tests. Measurement methods for additional parameters that may apply to research and development testing are presented in an appendix. The methods recommended are based primarily on reference methods already in use, although few have been validated specifically for MWC testing. Most refer to EPA methods contained in the *Federal Register* and/or the EPA methods manual for solid waste. However, many recommendations and descriptions of critical method features specific to MWC emissions testing were drawn from the knowledge and experience of the work group.

Each method discussion includes four elements:

- Method description — procedure descriptions containing applicable references to EPA methods or other documented sources;
- Critical features — details directly applicable to MWC emissions testing;
- Quality assurance and quality control procedures; and
- Data quality objectives — including limit of detection, accuracy, precision, and completeness.

Results Reporting

A key objective of the work group is to encourage reporting of MWC test results in

consistent formats to facilitate data comparison. Specific formats were recommended for reporting permit conditions, process data, emissions parameter test results, and quality assurance results.

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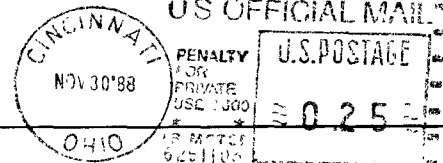
The complete report, entitled "Guidelines for Stack Testing at Municipal Waste Combustions Facilities," (Order No. PB 88-234 893/AS; Cost: \$14.95, subject to change) will be available only from:

National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161
Telephone: 703-487-4650

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