Use of Recent Source Test Data to Develop Emissions Factors for WebFIRE

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ABSTRACT

MACTEC has been working with EPA's Measurement Policy Group (MPG), to develop emissions factors from source test reports. The effort includes working with state agencies to obtain copies of source test reports that have been reviewed and accepted by the agency within the past five years. This effort is targeting MACT area source categories and non-utility sources of $PM_{2.5}$ where condensable particulate matter was included. MACTEC is evaluating the availability and quality of information in these source test reports and extracting information necessary to calculate emissions factors. The emissions factors and associated information from the source test are then being entered into an electronic format for uploading to the WebFIRE data base. As the information is added to the data base, WebFIRE will be able to automatically calculate a new emissions factor, and users will be able to use search criteria to find emissions factors for pollutant emissions from similar sources or processes. In addition to the traditional characterization of emissions factors by Source Classification Code, (SCC), pollutant, and associated controls, the user will be able to review and group by multiple process parameters such as throughput and process design capacities, specific control parameters, equipment manufacturer, etc. Available information is being included in searchable format as well as descriptive narrative within each emissions factor record. In a parallel effort, information from EPA background documents used to develop AP-42, is being transferred to the more detailed format. Detailed, high quality source test data in a format that can easily be searched, sorted, and examined will make it possible for EPA, state and local air quality agencies, and industry to estimate emissions for individual processes.

INTRODUCTION

EPA's Measurement Policy Group (MPG), is currently involved in an effort to improve the availability of high-quality emissions factors data for use by EPA, state and local air quality agencies, and industry. The traditional approach to making emissions factors available has been for EPA to develop the factors from a number of source tests planned to collect such data, from source test data made available by industry, or a combination of the two. The data collected from these source tests are quality assured by EPA and emissions factors are developed together with a narrative source characterization description to accompany the emissions factor. Background documentation is developed to house the data used to develop the factors and the narrative. The resulting emissions factors and source characterization description are then compiled in an AP-42 document for the source. The AP-42 documents were originally available in hard copy format. Today, there are 15 Chapters of

AP-42 with several hundred subchapters containing emissions factors for criteria and toxic pollutants for major source categories and many smaller source subcategories. Conducting revisions of these documents to make corrections, adjust emissions factors to account for improved controls, or other similar modifications is a monumental task considering the large amount of data that was used to develop the original factors. Additionally, the differences in emissions from many different processes within the same category are lost when these data are combined to form average emissions factors.

Updated Approach to Emissions Factors Data Availability

The WebFIRE data model is being designed to receive frequent updates of new source test data, and to use those data to calculate emissions factors for specific sources. We have scanned source test reports made available by several states and are currently developing test data records in WebFIRE format from these data. We are also bringing existing background data into a standard format that can be used by WebFIRE. We are evaluating AP-42 background documentation to develop data records in WebFIRE format from individual source tests. In the future it will be possible to query WebFIRE to calculate high-quality emissions factors for increasingly specific sources by building the emissions factors from selected test data. This updated approach provides a streamlined update process that eliminates the periodic "batch process" approach to updates and provides the most updated data available in a timely manner.

SOURCE TEST DATA OBTAINED THROUGH COOPERATION WITH STATE AGENCIES

We have scanned recent source test reports from the states of North Carolina, Pennsylvania, and Wisconsin to extract emissions factor data for criteria and toxic pollutants. This involved coordination with state agencies to visit the air permitting and source testing offices of the three states. These states allowed MACTEC to visit their offices with a portable scanner, review source test reports that had been submitted by industry, and scan the files for subsequent review. We have obtained scanned copies of approximately 750 public record test reports, which have been submitted to state agencies. We have also been granted access to source test data from Iowa which we plan to process as we move forward.

In collecting these data, we have targeted MACT area source categories and non-utility sources of $PM_{2.5}$ where condensable particulate matter emissions were included. We are also collecting source test data for other criteria and toxic pollutants from these sources. All source test reports being collected from the states are recent, within approximately the past 5 years, and have been quality assured and accepted by the state agency in fulfillment of permit testing requirements. Most of the reports contained information on total particulate matter (expressed as TSP or just particulate matter), and some other criteria pollutants. A lesser number of reports contained air toxics data, and fewer contained condensable PM emissions data that could be used to calculate $PM_{2.5}$.

In cooperation with the WebFIRE developer we are compiling the test data records in a format that can be used by WebFIRE. The data being compiled for each test data record includes: Source Classification Code (SCC), pollutant name, pollutant NEI code, test method used, facility name, process description, information on any process parameters such as sulfur percentage of the fuel, process control information, the test result and units, miscellaneous notes on the process, and reference information. Individual run data from the test report are averaged to calculate one test data point. Once these data are added to WebFIRE, it will be possible to link the detailed information provided in each record to AP-42 style source characterization information. Additionally, it will be possible for users to select and review several data points and calculate emissions factors that best characterize the emissions source of interest.

During our visits with the states we were also given an opportunity to introduce the Electronic Reporting Tool (ERT), being developed by MACTEC under the direction of MPG. The ERT is a Microsoft Access desktop application that acts as an electronic alternative for paper reports documenting

the following EPA manual isokinetic and instrumental test methods: Methods 1-4, 3A, 5, 6C, 7E, 10, 17, 25A, 26A, 29, 101, 101A, 201A, 202, and Conditional Test Methods 39 and 40. The program is currently available as Beta Version 3 - ERT on EPA's website at the following address: http://www.epa.gov/ttn/chief/ert/ert_tool.html, and will continue to be available at this address as updates are incorporated. ERT replaces the time-intensive manual preparation and transcription of stationary source emissions test plans and reports currently performed by contractors for emissions sources while assisting state agencies with quality assurance evaluations and documentation. Through presenting and demonstrating the ERT to these state agencies, MACTEC and MPG have gained valuable insight into ways to make the ERT more effective and user friendly.

TRANSFER OF AP-42 BACKGROUND DOCUMENTS TO WEBFIRE FORMAT

In an effort being conducted in parallel to that of compiling information from source test reports, we are working to transfer data from EPA background documents used to develop AP-42, to the detailed WebFIRE format. Our approach to assessing the status of the current data and determining which AP-42 chapters should be a priority for addition to WebFIRE began with outlining the existing AP-42 chapters available on EPA's website. It was determined that the priority AP-42 chapters for addition to WebFIRE should be those chapters that contained emissions factors that are used by the most industries. Additionally, priority AP-42 chapters should be the chapters with the highest data quality and greatest potential for updates through source test submission. Also, the most recently published AP-42 chapters were considered to be most likely to have source test data available in electronic format. In consideration of these criteria, MPG tasked MACTEC to review background documentation from AP-42 chapters:

1) External Combustion Sources
2) Solid Waste Disposal
3) Stationary Internal Combustion Sources

These chapters contain emissions factors that are among the most widely used; many of these sections have been updated within the past 10 years, and include sources that are tested regularly. Most of the subchapters have been updated in recent years, the data quality is high, and the source tests are believed to be well documented. The new test data could be used to update these sections periodically.

We are reviewing background documentation from AP-42 sections and transferring data from the background documents into the format to be used by WebFIRE as described previously in this document. These emissions factors data together with the recent source test data obtained from state agencies will become a part of WebFIRE. The ability of WebFIRE to access AP-42 data as well as recent high-quality stack test data from source test reports quality assured by state agencies will be a valuable tool to the emissions factors user community.

CONCLUSIONS

The WebFIRE data model is being designed to receive frequent updates of new source test data, and use the updated information to calculate emissions factors for highly specified sources. We have scanned approximately 750 source test reports made available by several states and are currently working to develop test data records in WebFIRE format from these data. MACTEC is also working with MPG to bring existing background data into a standard format that can be used by WebFIRE. We are evaluating AP-42 background documentation from AP-42 chapters 1, 2, and 3 to develop data records in WebFIRE format from individual source tests. In the future it will be possible to query WebFIRE to calculate high-quality emissions factors for increasingly specific sources by building the emissions factors from selected test data. This updated approach provides a streamlined update process

that eliminates the periodic “batch process” approach to updates and provides the most updated data available in a timely manner.

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KEY WORDS

Emissions factor
Emission factor
WebFIRE
ERT
Source test