New Features for the Emissions Inventory System (EIS)

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ABSTRACT

Although it is still a "young" system, EIS has proven to be an invaluable tool in compiling and assessing emission inventories. Since it began allowing the submission of data from Tribal, state, and local agencies in July of 2010, EIS has been adding features to enhance data quality, ease of use, and retrieval features to improve the system. This paper will outline recent enhancements as well as future planned enhancements that will improve the quality and accessibility of data throughout the EIS application.

INTRODUCTION

For the purposes of this discussion, EIS consists of and Oracle database, a series of forms providing user interface to the database (called the "Gateway"), and an application server which controls the traffic and flow of information between the database and the Gateway. This paper will be discuss the most visible changes to EIS. That is, changes to the Gateway. The purpose of this paper is not to explain all new features recently made available, but to highlight those projects that we feel will have the greatest impact on user's day-to-day experience with EIS.

BODY

Submission Changes
The batch submission of an annual inventory for an agency can be a daunting task. The large volume of data required to provide a complete and accurate emissions inventory is staggering. It is the responsibility of EIS to implement data validation routines that verifies the accuracy of data submitted without being too restrictive in order to allow a wide range of possible scenarios into the system. In order to assist data submitters identify and correct data, a number of changes have been made to EIS quality assurance checks since January, 2012 for the 2011 inventory cycle.

Elimination of Warning Checks

A large majority of warning checks have been eliminated from being performed. After analyzing the results of some batch submissions, it was discovered that a large number of very important data validation warning checks were being overlooked by the user community. Twenty "nuisance" checks were eliminated from being performed. The aim is to provide a targeted list of warning checks that are deemed the most important of concern.

Allow the Submission of MOVES County Databases Activity Data (CDB)

The submission of on-road activity data has been changed to allow the submission of county-level databases (CDB) to be used in the MOVES model. The implementation of the CDB data is similar to that of the existing National County Databases (NCD) for use with non-road activity submittals. EPA has created default datasets for each state and placed them in a download area on the Gateway. Specific instructions as how to format the XML and supporting documents can be found at http://www.epa.gov/ttn/chief/eis/2011nei/submit_moves_inputs.pdf.

Submission of "Pollutant Group Totals" and "Pollutant Members" Not Allowed
In previous submission cycles there were no restrictions as to what pollutants could be reported. As long as EIS recognized the pollutant code as currently being "valid", the data was accepted. This left the possibility of reporting of data for both a pollutant code that represented a group of pollutants as well as the members of that group. This would leave the data analyst with the concern that the data may have been double-counted. To avoid this concern, a series of pollutant groups have been defined. If a user supplies both the "Group Total" pollutant as well as any other pollutants within that group, all pollutants for the process are rejected (even pollutants that do not belong to the group). For example, there is a defined group for Chromium. It has the following members:

EIS Pollutant Code	EIS Pollutant Name	Type of Pollutant
7440473	Chromium	Group Pollutant
16065831	Chromium III	Member
18540299	Chromium (VI)	Member

So within a given submission for a single process, you cannot supply pollutant code "7440473" and either "16065831" or "18540299". If you do, then all the pollutants reported for that process are rejected.

A complete list of the pollutant groupings can be found at http://www.epa.gov/ttn/chief/eis/2011nei/qa_changes_2011.xlsx.

Enforcement of Regulation Level

Some regulations in EIS are defined to only apply at either the "unit" or "process" level. Until this submission cycle, EIS did not enforce this relationship. That has been changed.

<u>Submission of Data by Shape</u>

For commercial marine vessels and railroad lines, EPA has defined a series of shape files for which data can be reported. Reporting data by shape identifiers is the preferred method for submitting data. If a state elects to report county totals for certain source classification codes (SCC) where shape identifiers are supported, the user will receive a "Warning" message indicating that their data will not be used in the data selection process when compiling the national emissions inventory.

Report Changes

One of the primary functions of any database application is to make the data available in a useful format. EIS continues to implement enhancements to meet these goals. These tasks may include enhancing the ability to filter data, provide new types of reports to be able to access data that is needed, or it may be to change existing reports to provide additional data elements not originally considered during development. This section will highlight projects that have been completed in the last year to improve EIS' capabilities in providing data to users as well as planned enhancements for new reports and new capabilities in the near future.

<u>Report Changes Implemented in the Last Year</u>

1) New "Facility Configuration Reports" (Released in September – November, 2011) developed to provide information describing the configuration of a facility. Due to the relational nature of the data, five separate facility configuration reports were developed (Facility, Units & Processes, Regulation, Controls, Release Points, Facility Alternate Identifiers, and Unit Alternate Identifiers). All reports are available in a comma-separated format that imports easily to third-party applications (like Excel and Access).

2) Additional facility metadata provided to several reports. In order to make the interpretation of information appearing on the reports as useful as possible, additional descriptive information have been added to the reports throughout the year. Here are a few examples:

   a. June 20, 2011: All reports were modified to display the pollutant name in addition to the pollutant code.

   b. September 8, 2011: The following columns were added to the Facility Summary Reports: Regulation information (both at the unit and process level), Latitude, Longitude, Address, City, Zip Code

   c. March 9, 2012: The emissions comments and emissions calculation method information was added to the Process-level Facility Summary Report

3) The Feedback report was modified (January 23, 2012) to create a separate area to display those records trying to change "Locked" data. There errors were causing confusion as to the status of the records and the action the data supplier needed to take when displayed with other "Critical Errors". The new tab clearly separates these types of system messages as informational and no further action is required by the user.
4) Allow State, Local, and Tribal users to access the "Agency Submission History" Reports (November 4, 2011). This report allows users to see the reporting activity for their agency. The report contains information as to the number of processes received and (for point submissions) the number of facilities that are expected to be reported (based on the operating status code. The report was also modified on May 9, 2012 to show agencies that supplied activity data files for the on-road and/or non-road data categories.

Planned System Changes in the Next Year

There are continual suggestions from our user community as to how to improve the reports from EIS. The following changes have been identified by the Office of Air Quality Planning and Standards (OAQPS) as enhancements that would provide a great service to the emissions inventory community for improving the selection of data as well as analyzing the data. Due to other system enhancements currently under consideration, not all of these enhancements may actually be completed in the coming year. Many of these activities are very early in their conceptual design, so the look and feel of these system changes cannot be presented at this time.

1) New Data Flagging. This function will allow data reviewers at OAQPS to identify data values that have been deemed "suspect" during review. Reports will be available to the data providers so they can download and review any of their data identified with the OAQPS comments. These comments will be available for all data categories. This mechanism should streamline the communication between OAQPS and the data providers to help resolve any outstanding issues prior to compiling a national emissions inventory.
2) New Events Reports. Events data in reports are currently available on an annual basis at a National – State/Tribal – County – SCC level. There is a need to analyze the events data on a temporal basis as well. To address this, several new reports will be developed that will extend the evaluation of events data on a National – State/Tribal – County – SCC basis as well by Quarter, Month, and Day.
3) Filter Facility Records by Facility ID. In order to obtain data for only the facilities of interest on the Facility Summary Reports, a new function will be added to allow users to supply the system with a list of EIS Facility IDs and retrieve the data for only those facilities. Many details need to be worked out as to how this function will be implemented.

4) Allow the selection of multiple datasets and/or selections in a report to provide a "Side-by-Side" comparison of the data. This report would provide a useful tool to compare emissions results from two different data sources (State vs. EPA for example), or one data source across multiple years.

5) Update the on-line browse to show multiple years of aggregated data total instead of the "Current Year" only. This applies to displaying data for a Facility, Release Point, and/or Unit. At a minimum, the system will be modified to inform the user as to what EIS is considering to be the "Current Year".

CONCLUSION

EIS is a constantly changing and evolving system meeting the needs and concerns of the emissions inventory community. The features outlined in this document are designed to provide users with the tools required to produce a quality emissions inventory and the capability to extract the data for review and analysis as well. EIS is still in its early stages of existence and has proven to be a valuable tool to the emissions inventory community. It is intended that with these, as well as other, enhancements, EIS will continue to assert itself as *the* repository for emissions inventory data.

KEY WORDS

EIS
Emissions Inventory System
Reports
Data Submission