New Approach for Timely Development of the 2005 Emissions Inventory

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ABSTRACT

Under the Consolidated Emission Reporting Rule, the U.S. Environmental Protection Agency (EPA) requests that state, local and tribal agencies submit their final 2005 emissions data to EPA in 17 months, as compared to 29 months for the 2002 emission inventory.[1] With EPA's proposed rule on Air Emissions Reporting Requirements (AERR) to improve the National Emission Inventory (NEI), EPA is accelerating further the reporting schedule to 12 months for the inventory, six months for point sources and 12 months for non-point and mobile sources beginning in 2011.[2]

In Minnesota, where there are not any non-attainment areas, resource constraints in the Emission Inventory Program will make these new deadlines difficult to meet. To increase its chances for success, the Minnesota Pollution Control Agency (MPCA) has developed a strategy that will attempt to maintain emission inventory quality, while meeting the new time requirement for the 2005 inventory.

In 2004, an internal survey was conducted to identify the needs of emission data users for in-state activities, in addition to regional and national activities. Following the analysis of survey results, MPCA emission inventory staff prioritized inventory development tasks. Emissions for point sources (particularly large point sources) and non-point sources that have state-specific activity data are the highest priorities. To accelerate the point source emission inventory, all aspects of the current approach have been scrutinized, including procedures for criteria air pollutant inventory, when and how to collect data for the toxic air pollutant inventory, how to integrate the efforts on criteria and toxic air pollutant inventories, and creative changes in staff work distribution. This paper presents the new approach Minnesota will use for emission inventory development, and discusses its rationale and expected outcomes.

INTRODUCTION

MPCA has two emission inventory systems: the criteria air pollutant emission inventory (CAP EI) system and the air toxics emission inventory (AT EI) system. The CAP EI system uses a state developed and maintained application, DELTA, and handles emissions of point sources for CO, NOx, PM, PM10, Pb, and VOC, but not PM2.5 and NH_3. The AT EI system manages, estimates, and stores air toxics emissions for point, non-point, and mobile sources in a Regional Air Pollutant Inventory Development System (RAPIDS). The AT EI covers more than 500

individual compounds, including 188 hazardous air pollutants (HAPs), additional air toxics specified by state and the Great lakes Region, PM2.5, and NH_3. The RAPIDS is developed and maintained by the Great Lakes Toxic Air Emission Inventory Steering Committee.[3]

Minnesota, like many other states, has a rule mandating CAP emission reporting, but does not have a rule mandating AT emission reporting. The Minnesota emission inventory rule requires all facilities in Minnesota that have an air emissions permit to submit an annual emission inventory report of criteria pollutants to the MPCA. Therefore, the CAP EI is updated annually. It is not only used to track the actual pollutant emissions of each facility but is also used to calculate an annual emission fee for each facility. On the other hand, the AT EI is updated triennially. The AT EI for point sources is established based on the CAP EI and relies on voluntary data reporting from facilities, emission factor calculations, and data from the Toxics Release Inventory (TRI). The AT EI for non-point and mobile sources is compiled based on information collected through surveys, from other state/national governmental agencies and organizations, and literature. For some categories of non-point and mobile sources, emission estimates in the NEI and EIs prepared by regional planning organizations are directly adopted. Compiling the AT EI takes much longer than the CAP EI due to the complexity of the AT EI.

Since there are not any non-attainment areas in Minnesota, resources in the emission inventory programs is limited. An electronic reporting system for point sources is not available for either the CAP EI or the AT EI systems at this time. However, the MPCA has submitted detailed state-specific emission information on all principal source categories to EPA to support NEIs for both CAPs and HAPs. Currently, EPA is accelerating the development of the NEI, requesting state, local and tribal agencies to submit their final 2005 emissions data to EPA in 17 months, as compared to 29 months for the 2002 emission inventory under Consolidated Emission Reporting Rule.[1] EPA is also proposing a reporting schedule of 12 months for the 2008 emissions reports, and EPA is accelerating the reporting schedule further to six months for point sources and 12 months for non-point and mobile sources beginning in 2011.[2] These new reporting schedules present a challenge for MPCA emission inventory programs.

To respond to the new compressed schedule for EI development, and improve Minnesota emission inventories, an internal survey was conducted, inventory development tasks were prioritized, and a new strategy was established.

EMISSION INVENTORY SURVEY

The goal of the internal survey was to identify the needs of the internal emission data users and correlate those results with submittal requirements for the inventory. In 2004, inventory staff conducted a survey of internal agency staff that included Managers, Modelers, Risk Assessors, Data Analyzers, Customer Assistance, Small Business Assistance, Permitting, and Compliance and Enforcement staff. The identified internal staff was familiar with the inventory, worked frequently with it and used it for activities.

The survey consisted of a varying degree of multiple choice and fill in the blank questions. Surveys were collected and analyzed, breaking down each question into related responses. Results identified five areas of concentration; pollutants and sources, spatial resolution, temporal resolution, inventory timeliness and inventory frequency.

Pollutants and Sources

The emission inventories currently and will continue to include criteria and toxic air pollutants for point, non-point, and mobile sources. Staff surveyed suggested additional pollutants (e.g. ammonia, PM2.5) which are already included in the emission inventories. Others surveyed suggested pollutants (e.g. flame retardants, endocrine disruptors) which are not currently included in the inventories.

To fill the need for additional pollutants, inventory staff developed a process to add additional pollutants to the air toxics emission inventory. Adding pollutants to the list, however, is not a guarantee that emissions for those pollutants will be available in future inventories. Some pollutants cannot be quantified in the emissions inventory, even though they appear on the inventory list, because of lack of data. Other pollutants such as biogenic emissions will not be added to the inventory list because the inventory staff can not add additional value to the emissions the U.S. EPA calculated.

Spatial Resolution

The emission inventories currently estimate point source emissions for each facility, assign emissions to individual stacks whenever possible, and estimate non-point and mobile source emissions by county. Some surveyed suggested greater levels of spatial detail including; census tracts, ZIP codes, links, or individual sources (e.g. gas stations, landfills) for non-point and mobile sources. Although emissions may be available for individual stacks, locational data for these stacks are incomplete. The MPCA will be working to acquire more detailed locational data as this is an important need of air quality modelers.

Most non-point sources are estimated by applying a generic emission factor to some activity data that is believed to be somewhat representative of the process being estimated. Although some data is available for census tracts (e.g. population), most activity data is only available at the county level.

Some non-point sources are currently included in the inventory as pseudo-point sources (e.g. airports, publicly owned treatment works, landfills). It may be possible to increase the number of categories that are treated this way, but additional data collection effort may be needed.

Little data exists about the detailed spatial distribution of nonroad mobile sources. Some data does exist about the detailed spatial distribution of onroad mobile sources. There are concerns, however, about resources (staff time and the cost of more powerful computing system) to improve the spatial distribution of onroad mobile source emissions.

Although inventory staff did estimate onroad mobile source emissions for the 2002 inventory, it was necessary to rely on model input data from the Central Regional Air Planning Association (CENRAP), the Lake Michigan Air Directors Consortium (LADCO), and the U.S. EPA. It is unlikely that CENRAP and LADCO will provide as much input for the 2005 inventory, so

estimating onroad emissions for 2005 would require greater effort from inventory staff, such effort that may not be available due to inventory timeliness requirements.

Even though the onroad mobile source emissions are only calculated by county, onroad mobile source records make up about half of the activity records in the RAPIDS database for 2002 (about 2.4 million records). Estimating onroad mobile source emissions by census tract or link would involve substantially more records in the database. Recent experience with RAPIDS indicates that more detailed mobile source data could easily overwhelm the current computational limits.

Temporal Resolution

The emission inventories currently estimate annual emissions. Some suggested greater temporal resolution including monthly, weekly, daily, and hourly emission estimates. In some cases, annual emissions are the sum of emissions calculated or recorded on a more frequent basis (e.g. Continuous Emission Monitoring System data, mobile source models). In many cases, the data used to estimate emissions is annual.

DELTA, the CAP EI system, does not have the capability to handle emissions information other than on an annual basis. RAPIDS can handle emission periods at least 1 second long, but the additional records and computational burden of including even monthly emissions in RAPIDS would likely overwhelm its computational ability. Therefore, it is not practical to increase the temporal resolution of the inventories at this time.

Inventory Timeliness

The criteria air pollutant inventory is usually completed by the end of the year following the inventory year (i.e. the 2005 inventory will be completed by the end of 2006). The 2002 air toxics emission inventory was completed about 29 months following the inventory year (i.e. the 2002 inventory was completed in summer 2005).

It will likely take significant effort, technological improvements, and possibly rule changes to dramatically speed up the emission inventory processes. One possibility that is being investigated is joining the growing list of states that collect annual emission inventory data from facilities electronically. Electronic data submission has the potential to not only accelerate the criteria air pollutant inventory, but when combined with hazardous air pollutant data submission could dramatically speed up the air toxics inventory, as well.

Although there were many suggestions about inventory timeliness that were received in the surveys, it is likely that U.S. EPA requirements will continue to dominate the inventory timeliness issue. The U.S. EPA's requirements, however, will force the emission inventory processes to meet many of the suggested target completion dates.

Inventory Frequency

The criteria air pollutant inventory is currently prepared annually, and the air toxics emission inventory is currently prepared triennially. Some suggested estimating air toxics either annually or biennially. Biennial air toxics estimates would not align with the U.S. EPA's National Emission Inventory's triennial cycle. Annual air toxics estimates would require significant additional resources. It may be possible to revisit the issue of inventory frequency after inventory preparation time is shortened (see Inventory Timeliness above).

HISTORY OF THE MINNESOTA EMISSION INVENTORIES

CAP EI for Point Sources

Minnesota state rules require facilities to submit a CAP EI if they need an air emission permit from the MPCA. The first statewide EI was compiled for several hundred facilities in 1977 for the 1976 EI. The pollutants covered in the initial inventory effort were CO, NOX, PB, PM, SO2, and VOC. In 1986 a newly regulated CAP, PM10, was added to the EI. With the promulgation of the 1990 Clean Air Act Amendments (CAAA), the MPCA began collecting annual air emission fees to run the Title V permitting programs. Up to that point in time the state's general fund was used to run the MPCA air program. With the CAAA, air emission fees were assessed for NOX, PB, PM_{10}, SO2, and VOC. In 1996 MPCA started issuing air permits to minor point sources (registration permits). Registration permits are state permits for facilities that have potential emissions above the state thresholds but actual emissions much lower than the state thresholds. Registration permits include: Option A, facilities that need a permit solely because a New Source Performance Standard applies; Option B, facilities that purchase or use less than 2000 gallons of VOC containing material; Option C, facilities that have emissions from boilers, internal combustion engines or VOC-containing material; and Option D permits, facilities that have actual emissions below certain threshold amounts. Today about 2200 facilities submit a CAP EI, with 3 out of every 4 facilities operating with registration air permits.

Prior to 2002, the schedule for the CAP EI started with mailing of inventory forms in December; inventories were due per state rule on April 1 of the following year. Registration inventories were processed as soon as they were received and all of the registration inventories were completed by mid April. Large facility inventories were put aside until completion of the registration inventories. Large facility inventories were processed throughout the rest of the year and completed in December. Summaries were mailed back to the facilities with new inventory forms for the next EI year. Summaries are a report of emissions for each facility broken down by each unit per pollutant; this allows facilities to check for data entry or calculation errors. Facilities had until February 1, per state rule, to make changes. Changes were processed and emissions were finalized March 1 for fee calculation. The CAP inventory was then sent to the toxics inventory staff for processing.

The schedule for the pre 2002 CAP EI is as follows:

- December – MPCA mails out CAP EI forms and instructions to facilities that have air permits.
- April 1 – All CAP EI are due with no exceptions.

- April 15 – The list of nonsubmitters is referred to enforcement for appropriate follow up.
- December – MPCA completes processing all inventories, QA/QC, and mails out EI summaries to facilities.
- February 1 - due date, facilities must complete corrections for the EI summary.
- March 1 – finalized CAP inventory

For the 2002-2004 CAP EI, some changes were made to the schedule, including a state rule change which allows summaries to be collected 45 days after the summary mailing. The previous rule identified that summaries must be returned by February 1, the rule change allowed for corrections to be collected earlier. Another change to the schedule is large facility inventories are now completed by October 1. Summaries are mailed out to facilities in early October and are due back to the MPCA 45 days later (mid November). Emissions are finalized based on corrections from facilities on these summaries by January 1. Then, the final CAP inventory is used for processing the AT EI.

The schedule for the CAP EI, 2002-2004 is as follows:

- December – MPCA mails out CAP EI forms and instructions to facilities that have air permits.
- April 1 – All CAP EI are due with no exceptions.
- April 15 – The list of nonsubmitters is referred to enforcement for appropriate follow up.
- October 1 – MPCA completes processing all inventories, QA/QC, and mails out EI summaries to facilities.
- 45 days after MPCA mailed out the EI summaries (mid November); facilities must complete corrections for the EI summary.
- January 1 – finalized CAP inventory.

AT EI for Point Sources

The Minnesota AT EI is required by the state Legislature to support and evaluate emission reduction strategies and to respond to public inquiries. The information is also used to develop the NEI submittals and the Minnesota portion of the Great Lakes Regional Emission Inventory for Air Toxics.

The planning for an AT EI starts during the 3rd quarter of the EI year. The process outlines tasks, schedules, and methods to implement the tasks. How to collect data from point sources is always a challenging task. The need for incorporating a reporting requirement for AT EI in Minnesota rules has been considered several times. However, so far only voluntary reporting is conducted and implementation of a rule requiring an AT EI is still being investigated. The MPCA has collected AT EI data though voluntary reporting from permitted facilities since the 1996 EI, beginning with approximately 200 large facilities, increasing to about 500 large facilities with individual permits, and 300 facilities that have Option D registration permits and VOC emissions more than 5 tons, for the 2002 inventory. The MPCA collects data from these facilities because of their high VOC and PM emissions. Table 1 lists the number of facilities by permit type and their contributions to the state total point source PM and VOC emissions in the 2002 CAP EI. Although there are 482 facilities with Option B registration permits, the MN emission rule only

requires them to list the amount of VOC-containing material used or purchased in the inventory year, so no actual emissions are available.

Table 1. Statistics for point sources in the 2002 CAP EI.

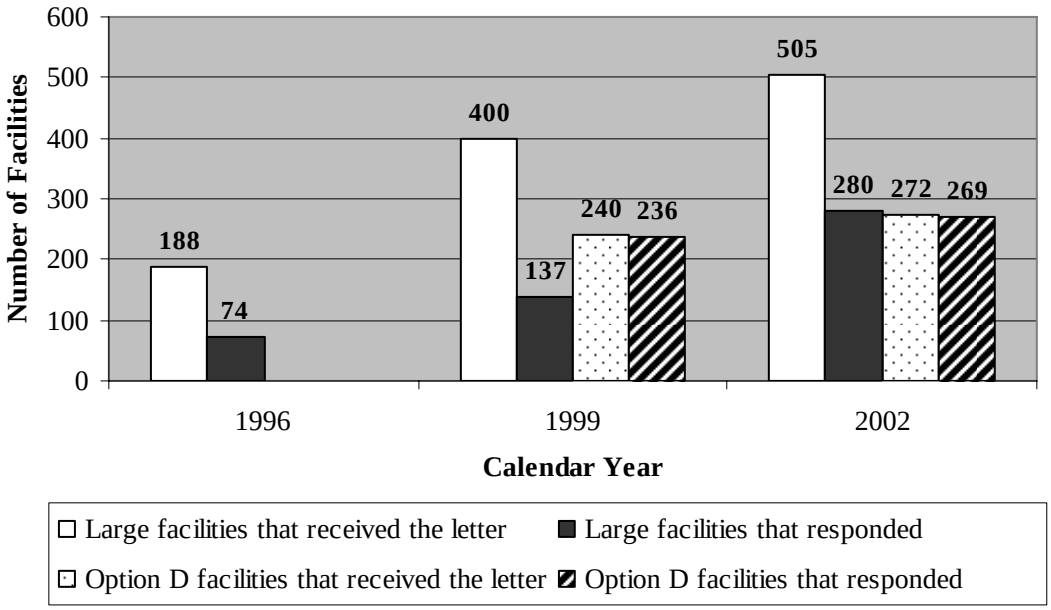
Permit Type	Total Number	Number of Facilities with Emissions in CAP EI*	PM Emissions (Ton)	VOC Emissions (Ton)	PM Emissions (%)	VOC Emissions (%)
Option B Registration	482	0				
Option C Registration	323	313	62.64	237.84	0.20	0.82
Option D Registration and VOC < 5 Tons	576	529	1,336.18	625.26	4.25	2.16
Option D Registration and VOC > 5 Tons	238	238	1,300.56	3,076.75	4.14	10.63
Nonmetallic	99	82	683.80	82.97	2.18	0.29
Individual	480	425	28,027.47	24,913.72	89.23	86.10
Total	2198	1587	31,410.65	28,936.54		

* These numbers do not represent facilities that submitted zeros for emissions.

VOC and PM emissions from facilities with individual permits and facilities that have Option D registration permits and actual VOC emissions more than 5 tons, accounted for 96.73% and 93.48% of state point source total VOC and PM emissions in 2002, respectively.

Figure 1 shows the number of facilities that received an MPCA letter for the AT EI data collection and the number of facilities that responded in different inventory years.

Figure 1: Analysis of Responding Rate from Point Sources to AT EIs



The responding rate for large facilities has the highest (55.4%) for the 2002 AT EI because of an extensive effort made in the follow-ups, including letters and phone calls. From the 1999 AT EI, the MPCA started to collect data from facilities holding Option D air quality permits with actual VOC emissions of more than 5 tons. The responding rate for these Option D facilities is very high, more than 98%. This is because the MN permit rule requires these Option D facilities to keep track of HAP emissions. However, there is no HAP record keeping requirement for all large facilities with individual permits.

The AT EI database is established based on the CAP EI, usually, after completion of the CAP EI, about 15 months after end of the EI year. A special computer program is used to convert data in the DELTA environment to the RAPIDS environment, providing source, emission unit, process, and control status identification, and throughput activities. It takes one month for the data conversion and QA/QC. Then, data voluntarily reported from facilities are entered, including emission estimates, additional throughput data, additional control efficiencies, and source-specific emission factors. Emission estimation using emission factors in RAPIDS follows. Five levels of emission factors are used in the following hierarchy: process-specific, source-specific, county-specific, state-specific, and generic. Finally, TRI data are incorporated. Since TRI data are at the facility level, analysis of TRI facility operations is needed to determine the emission processes that are most representative of the TRI emissions, then, the TRI emissions are allocated to these processes. It takes 12 months from the establishment of AT EI in RAPIDS to the completion of AT emissions with the most time consuming parts being data entry and TRI data incorporation.

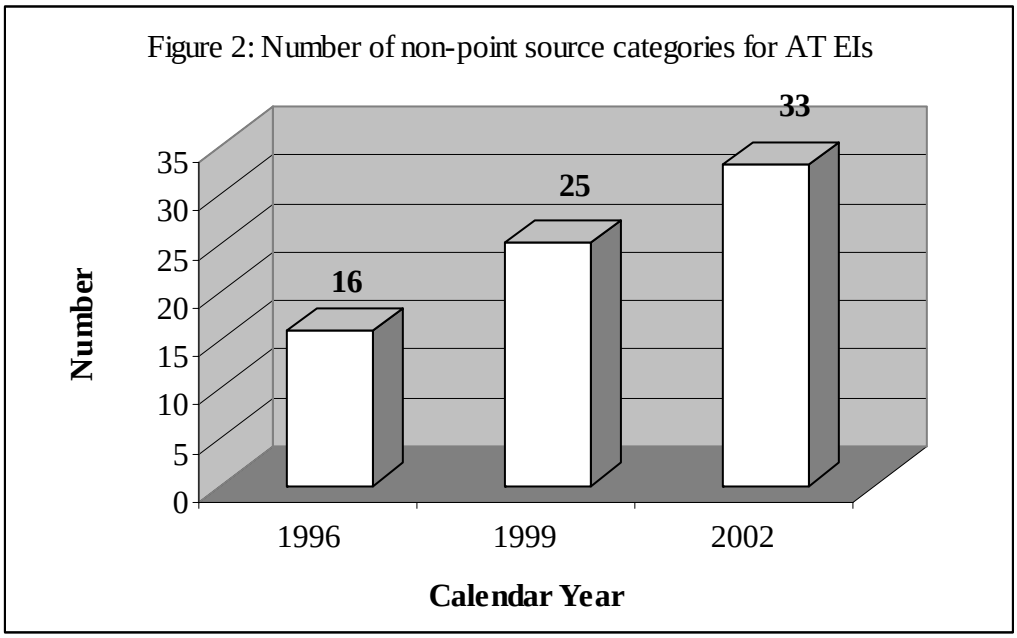
Upon completion of the AT emissions, QA/QC activities are performed at the state level, Great Lakes Regional level, and national level. Corresponding corrections are made to the inventory database. This is an on-going process, starting from the beginning of AT EI compilation (mainly

state-level QA/QC) and ending many months, even one year after the completion of AT emissions. The MN AT EI is finalized about 29 months after the end of the EI year, at least 2 months after the release of the final NEI to incorporate the best information from the final NEI.

CAP EI and AT EI for Non-Point Sources and Mobile Sources

The Minnesota non-point source category represents stationary sources that are not required to submit criteria pollutant emissions to the MPCA, including facilities with Option B permits. The categories of non-point sources for air toxics have been determined by the Great Lakes States after reviewing the NEI documents, Emission Inventory Improvement Program (EIIP) documents and other available information. The number of non-point source categories covered in the ATEI has been increased from 16 in the 1996 EI, to 33 in the 2002 EI (Figure 2).

Figure 2: Number of non-point source categories for AT EIs



The emission data for these categories were obtained from surveys, literature, and the submittals for the National Emission Standards for Hazardous Air Pollutants (NESHAPs). There are different levels of source activity data available for different categories of non-point sources. Some source categories, such as Dry Cleaning, Chromium Electroplating, Halogenated Solvent Cleaners, need to comply with NESHAPs and the source-level or process-level activity data are available from the initial notification forms. However, for some non-point sources direct activity data are not available at the county level. In these cases, statewide activity data were apportioned to each county based on appropriate activity indicators. For example, county-level fuel consumption data for Residential Fuel Combustion were allocated from the state fuel consumption totals by using population data. If state-level activity data were not available, appropriate surrogate activity data were used. For example, county-based population data were used as the most appropriate or applicable activity data for commercial and consumer solvent products and architectural surface coating.

Source-specific emission factors and speciation profiles were developed for each non-point source category. Then, the county-level activity data were imported to RAPIDS and emission estimates were calculated by using the emission factor method and speciation method. The MPCA compiles the AT EI for all categories even though for certain categories we are using the same activity data, emission factors, and methods EPA is using in the NEI.

There are five subcategories of Mobile Source Emissions: onroad sources, nonroad sources, aircraft, commercial marine vessels, and locomotives. For onroad sources and nonroad sources, air toxics emissions were either estimated by MPCA or directly adopted from the NEI depending on the availability of emission models and resources. For aircraft and locomotives, the MPCA has used activity data collected by the state and estimated emissions for these categories. For commercial marine vessels, emissions that were not included in the 1996 EI; NEI emissions were adopted with two modifications to the distribution of in port emissions in the 1999 EI; and emissions with state-specific data from CENRAP were adopted for the 2002 EI. Table 2 shows air toxics emission data sources for the five categories of mobile sources.

Table 2. Air toxics emission data sources for mobile sources.
(S – State estimated, N – NEI values adopted, C – CENRAP values adopted)

Mobile Source Categories	**1996**	**1999**	**2002**
Onroad	S	N	S
Nonroad	S	N	N*
Aircraft	S	S	S
Commercial Marine Vessels		N**	C
Locomotives	S	S	S

* MPCA used state-specific data to spatially allocate recreational marine and snowmobile emissions, and used state-specific weather data to estimate snowmobile emissions.

** MPCA made two modifications to the distribution of in port emissions. These modifications did not affect the total emissions for the state.

In all cases, emissions for air toxics, in addition to HAPs, were estimated by the MPCA.

The CAP EI for non-point and mobile sources was compiled starting with the 1999 EI. The MPCA compiled the CAP EI as it compiled the AT EI for the non-point source categories that were included in the AT EI. The NEI data for CAP emissions were adopted for additional non-point source categories such as paved roads, non-paved roads, and feedlots. The emission data sources for mobile sources are the same as those listed in Table 2 for air toxics.

NEW STRATEGY

To meet compressed schedules starting with the 2005 EI, the MPCA established a new strategy, with the main focus on point sources.

Integrated Approach to the Two EIs for Point Sources

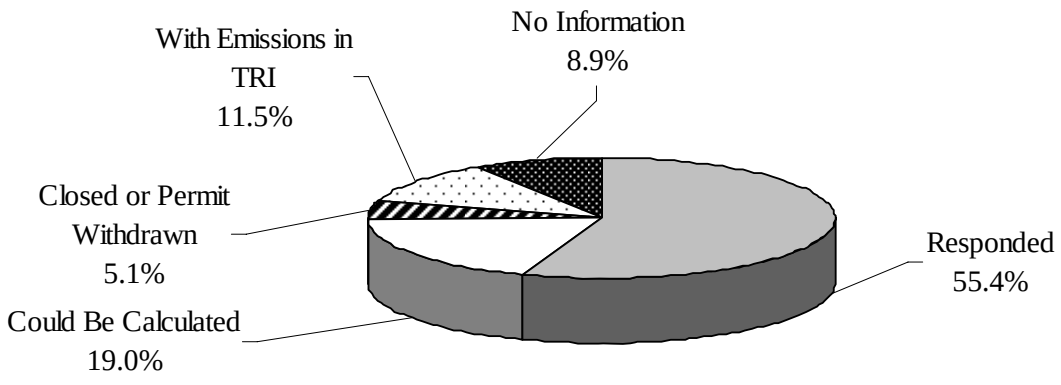
Data Collection

In the previous inventory cycles, data collection for the AT EI was started after the due date for the CAP EI data collection to avoid possible confusion of the two inventories and gave enough time for facilities to meet the rule requirement for the CAP EI.

The compressed schedule for the 2005 EI doesn't allow this much time for AT EI data collection. Actually, compiling both CAP EI and AT EI starts from the same throughput activities. So it may provide a savings for facilities to prepare the two EIs together. To determine the best approach for the 2005 EI data collection, a phone survey was conducted of 11 industrial companies and 2 consulting companies that prepare EIs for a variety of facilities. The survey results favored integrated data collection for both EIs. Therefore, two separate packages for CAP EI and AT EI, with distinct paper colors, were enclosed in the same envelope. The mail was sent out in mid-December 2005 to large facilities with individual permits and facilities that have Option D or Option C registration permits and VOC emissions of more than 4 tons, during operating year 2004. Setting lower cut-off VOC emissions for the AT EI reporting for Option D facilities is taking into consideration of possible higher emissions for some facilities in 2005 than in 2004. Inclusion of Option C facilities will make the 2005 AT EI more complete. The submittal deadline is April 1, 2006 for CAP EI reporting and May 1, 2006 for ATEI reporting. One extra month was given to the AT EI reporting with a consideration of the AT EI complexity and minimizing any interruption to the CAP EI. This approach advances the AT EI reporting deadline by 4 months.

To increase the responses to the 2005 AT EI from large facilities with individual permits, emission information in the 2002 EI for these facilities was analyzed (Figure 3).

Figure 3: Analysis of Emission Information in the 2002 AT EI for Large Facilities
(Total Number of Facilities that Received the Letter: 505)



A total of 505 facilities, based on the permit status in the 2002 EI, received a letter for collecting the 2002 emissions. More than half of them (280 facilities) responded to the data request. Among the remaining facilities that didn't responded, 26 facilities were closed or withdrew their permit; emissions for 96 facilities could be calculated based on their throughput data; and some emissions of 58 facilities could be obtained from the TRI database. For 45 facilities (8.9%) there wasn't enough information for MPCA to calculate emissions and further action was required.

A further analysis was conducted of the 45 facilities that didn't have emission information. Fourteen of the 45 facilities have less than 3 tons VOC emissions in the 2002 EI, therefore, AT emissions may not be as significant as others. Six facilities produce ethanol and have conducted stack tests for air toxics in recent years. Estimating AT emissions for these ethanol plants by MPCA is feasible in the 2005 EI. The remaining 25 facilities emitted more than 3 tons (up to about 100 tons) of VOC in the 2002 EI from coating, solvent usage, printing, lumber mills, and paper manufacturing processes. Air toxics emissions from these facilities are expected to be significant and the MPCA does not have sufficient information about these facilities to estimate their non-combustion HAP emissions. The primary reasons for these facilities not reporting air toxics emissions are: lack of attention, lack of resources, and lack of data or emission factors. The MPCA has decided to take additional action to collect data for these 25 facilities. The planned actions are: follow-up calls from EI staff, follow-up calls from managers, listing names of non-reporting facilities on the MPCA webpage, looking at facilities with similar processes, and working more closely with facilities.

Creative Changes in Staff Work Distribution

There are 4 staff designated as coordinators for air emission inventories in the Environmental Data Management Unit, MPCA, 2 for the CAP EI and 2 for the AT EI. In that unit, other members are working on environmental data in different media. Meeting the challenge of compressed emission inventory schedule brought attention to the entire unit. Creative changes in staff work distribution have been arranged. Some non-emission inventory staff will be delegated work load for smaller, less complex facilities. Meanwhile, emission inventory staff will work on larger more complex facilities. This collaboration is expected to accelerate the EI process time by about one month.

Integrated Schedule

In past inventory cycles, a CAP EI was finalized for all facilities, then, the CAP EI was used to process an AT EI. This meant the AT EI could not be started until about 12 - 15 months after the end of the inventory year.

For the 2005 inventory year, CAP EI staff will process about 24 of the largest CAP emitters as soon as the selected facilities submit their inventory. The AT EI will start with these 24 selected facilities, while the CAP EI will continue processing other facilities. This allows a 7-month "head start" on the AT EI cycle, which provides additional time to the AT EI for the most complex facilities and spreads out the work load. In case the AT EI staff cannot complete calculations for all point sources due to any unexpected reasons, at least AT emissions for these largest emitters will be finished.

The integrated schedule of the two EIs for point sources is shown in Table 3.

Table 3. Integrated schedule of the two EIs for point sources.

Date	Planning	Data Collection	Emission Factor Update	EI for 24 Large Facilities	EI for Other Facilities	TRI data Incorporation	QA/QC	Data Submittal
Jul. 2005								
Aug. 2005								
Sept. 2005								
Oct. 2005								
Nov. 2005								
Dec. 2005								
Jan. 2006								
Feb. 2006								
Mar. 2006								
Apr. 2006								
May 2006								
Jun. 2006								
Jul. 2006								
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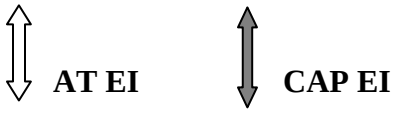
Mar. 2007								
Apr. 2007								
May 2007								



Integrated Approach to the Two EIs for Non-point and Mobile Sources

To guarantee enough time for point sources, the approach for non-point sources is focusing on source categories that have state-specific information on activity data, emission factors, and emission estimation methodologies. The state-specific information will be collected and CAP and AT emissions will be estimated for these categories. For other non-point source categories,

the 2005 NEI data will be adopted either before or after June 1, 2007 depending on the resource availability.

The MPCA will continue to compile both EIs for aircraft and locomotives but will review the draft NEI results for commercial marine vessels and input files for onroad and nonroad mobile sources. If time allows, EI staff will run emission models for onroad and nonroad mobile sources. Otherwise MPCA will adopt the final NEI results after June 1, 2006.

LOOKING FORWARD

Possible Rule Update

The Emission Inventory is limited to state and federal rules including inventory due dates and requirements of submittals. One possible rule update for the CAP EI would be to change the submittal deadline; currently it is April 1. Moving the submittal deadline to March 1, would allow staff to start on the inventory earlier.

The need for a reporting requirement for the point-source AT EI should be investigated further. Much effort is expected in data collection and follow-up with voluntary reporting. Although AT emissions could be estimated for non-reporting facilities through reviewing stack testing data, incorporating TRI results, or other methods, it takes time. Moreover, as is well known, TRI results do not represent complete emission status for a facility because of the large reporting thresholds (e.g., 10,000 pounds for many compounds). The current MN rule requires facilities with Option D permits and VOC emissions of more than 5 tons to keep records for HAP emissions, but does not require facilities that have much higher emissions than Option D facilities to keep the same records. Therefore, an AT EI reporting rule may be established which would reduce the AT EI burden on the MPCA and provide more complete and reliable AT emission data.

Modeling Ready EIs

The current MN AT EI has been used by EPA in the national risk assessment. However, some geographic locational data for point sources are in error. The geographic coordinates are only available for one point at a facility, with no information on what the point represents. The MPCA is currently developing a statewide cumulative risk assessment model. Many comments related to the MPCA's emissions inventory were received during an EPA peer review for a prototype of the model. These comments indicate the EI spatial resolution of point sources is inadequate. Better stack location information is needed. It is expected that good stack locational coordinates will be collected by the MPCA in the future. Then, EIs could be developed ready for modeling.

The current temporal resolution of EIs is annual, which is only good for screening assessment. Data on point-source upset and maintenance releases are necessary for risk assessment on acute effects posed by pollutants. These events may release large amounts of emissions in short time periods. The CAP EIs have tracked emissions from some of these events on an annual basis. In

the future, emissions from these events for both CAPs and AT should be inventoried with dates and duration of the events.

Electronic Reporting

Electronic reporting is a key component for shortening the emission inventory cycle. The MPCA is in the early stage of developing such system. The system may be developed with an online reporting capability for facilities to submit air emission inventory data that would be compliant with the EPA's proposed Cross-Media Electronic Reporting Rule. The electronic reporting system should also enable facilities to create and maintain a comprehensive emission inventory. A series of commands will guide emission inventory reporters from facilities with registration permits through essential steps, while emission inventory reporters from facilities with individual permits will be free to edit and create data via additional options. For processes where no specific emission factors are available, emissions can be estimated using an emissions estimation calculator based on generic emission factors. The system will produce a summary report that allows users a quickly review and identify errors. Data in this reporting system should be easily fed to the state EI systems for further processing and quality assurance. Data after modified by MPCA should be reflected back to the reporting system for approvals by facilities. Finally, data in the electronic reporting system should be downloadable in different formats.

MPCA is actively working on several electronic reporting projects. These projects are emission inventory (NEI) submittal, water quality Discharge Monitoring Reports (e-DMR), and hazardous waste Resource Conservation Recovery Act (RCRAinfo) reporting. The flow will be from regulated party to the MPCA and MPCA to EPA Central Data Exchange Network (CDX). MPCA has benchmarked the efforts of other states. The XML Schema for these data flows will aid in the mapping of the mandatory and optional data elements. Knowledge and experience of one data flow will be applied to subsequent data flows. MPCA currently flows Facility Registry System (FRS) data to CDX. MPCA is working to flow NEI data for multiple facilities from MPCA to CDX by June 30, 2006. A pilot project is underway to flow NEI data from one facility to MPCA. MPCA hopes this flow can be completed by August 2006. After successfully demonstrating the functionality of an electronic EI reporting, MPCA thinks other facilities will want to use this tool.

Combined Submittals

Currently facilities have to calculate and submit separate CAP and AT inventories. Combining the CAP and AT inventory submittals would be of great benefit to the overall inventory process. It would decrease the amount of time for the total processing of the inventory and also ease reporting for facilities.

Combining the submittal process would decrease the amount of handling and time of calculation for inventory staff. With receipt of the total combined inventory, it would be processed once instead of one portion being worked on and then transferring to other staff for the rest of the inventory to be completed. This would allow for a more efficient inventory calculating process;

handling the emissions only once, keeping all of the information in one spot and having totals for each facility together instead of combining at a later date.

A combined inventory would allow facilities to produce and submit only one inventory; this would decrease the calculation burden for each facility. Many facilities already calculate both criteria and toxic emission totals for each process, so having a combined inventory would allow the facility to report once, instead of separating the total facilities emissions into two submittals. Also, currently the CAP and AT inventories have different due dates, having one submittal would ease the reporting burden of facilities to remember only one date.

At this time the MPCA does not have the ability to calculate both the CAP and AT at one time because of database limitations and rule requirements. Currently two separate databases are used to calculate each inventory. A database that would be able to calculated both the CAP and AT inventor would have to be created or purchased. Also, state rule changes would have to be implemented to allow mandatory reporting of toxics with the CAP inventory.

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KEY WORDS

Criteria pollutants, Air toxics, Emissions, Emission inventory, Strategy.