How Can I Participate in the Development of HAP Emissions Data for the 1999 National Emissions Inventory ?

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ABSTRACT

Requirements of the Clean Air Act (CAA) and Government Performance Results Act (GPRA) have established the need for a more comprehensive hazardous air pollutant (HAP) emissions inventory effort that can be used to track progress by the Environmental Protection Agency (EPA) over time in reducing HAPs in ambient air. To estimate risk and HAP emission reductions, EPA compiles the National Emissions Inventory (NEI) to provide a model-ready emissions inventory. The EPA previously compiled a baseline 1990 and 1996 National Toxics Inventory (NTI). For calendar year 1999, the EPA is preparing the 1999 NEI which will contain both HAP and criteria emissions data.

The NEI contains estimates of facility-specific HAP emissions and their source-specific parameters necessary for modeling such as location and facility characteristics (stack height, exit velocity, temperature, etc.). Complete source category coverage is needed, and the NEI contains estimates of emissions from stationary point and non-point and mobile source categories. Point source categories include major and area sources as defined in section 112 of the CAA. Non-point source categories include area sources and other stationary sources that may be more appropriately addressed by other programs rather than through regulations developed under certain air toxics provisions (sections 112 or 129) in the CAA.

Potential sources of data in the NEI are state and local agency data and tribal data, industry data, data gathered by the EPA's Emission Standards Division while developing Maximum Achievable Control Technology (MACT) standards, Toxic Release Inventory (TRI) data, data developed by the EPA's Office of Transportation and Air Quality, and EPA-estimated non-point emissions for sources not included in the state data. Because of the multiple sources of data, the compilation of the 1999 NEI requires many steps. Key processing activities include submittal of 1999 HAP inventory data by state and local agencies, tribes, and industry; blending/merging of data from multiple data sources; augmentation of blended data for missing data elements; QC/QA of the data; preparation of draft NEI for external review; incorporation of external review comments; and preparation of final NEI. In order to compile an inventory that meets the various needs of CAA and GPRA programs in a timely manner,

the EPA encourages the participation of agencies, tribes, industry and the public in the submittal of inventory data and in the review of the draft inventory.

This paper discusses the steps in compiling the 1999 NEI, and how you can participate in the process.

INTRODUCTION

Requirements of the Clean Air Act (CAA) and Government Performance Results Act (GPRA) have established the need for a comprehensive hazardous air pollutant (HAP) emissions inventory effort. As part of the CAA and GPRA analyses, the U.S. Environmental Protection Agency (EPA) compiles the National Emissions Inventory (NEI) to provide a model-ready emissions inventory to estimate risk and HAP emission reductions. Thus, the NEI is a critical component of the national Air Toxics Program.[1] The EPA has previously compiled the 1990 and 1996 base year National Toxics Inventory (NTI). The 1990 and 1996 NTI are used by EPA in regulatory efforts such as those required under sections 112(c)(6) and 112(k) of the CAA. Recently, the EPA used the 1996 NTI in the national scale assessment being performed as part of EPA's National Air Toxic Assessment (NATA) activities and residual risk analyses required under section 112(f) of the CAA**.** The 1996 NTI was also used as the starting point for state and local agencies who wished to maintain their own emission inventories.

EPA is now initiating efforts to develop a 1999 HAP emission inventory as part of its 1999 National Emission Inventory (NEI) development process. For calendar year 1999, the EPA is preparing the 1999 NEI which will contain both HAP and criteria emissions data. The 1999 NEI will again be used by EPA and state and local agencies to assess progress in reducing HAP emissions and exposure to HAPs. The NEI will be updated every three years (1999, 2002, 2005, etc.)

The various CAA and GPRA needs for air toxics emission data cover major, area, and mobile sources and include estimates of emissions of the 188 HAPs at the national, regional, and county level, and facility-specific and process-specific emission data suitable for use as input to atmospheric dispersion and exposure models. The NEI is thus designed to provide a model-ready emission inventory of all anthropogenic sources of the 188 HAPs listed in the CAA to facilitate comprehensive dispersion and exposure modeling. This paper summarizes the approach that EPA will use in developing the 1999 NEI and provides information on how state, local, and tribal groups can participate in the inventory development process to improve the quality of the inventory.

NEI SOURCE CATEGORY AND HAP DEFINITION

In order to provide model ready inventory to support CAA and GPRA analyses, NEI emissions need to be clearly associated with individual HAPs and source categories.

Reporting of HAP Groups

HAPs are generally defined as those pollutants that are known or suspected to cause serious health problems. Section 112(b) of the CAA currently identifies a list of 188 pollutants as HAPs. (www.epa.gov/ttn/uatw/pollsour.html) EPA's Unified Air Toxics Web Site (UATW) presents more information on HAPs, their effects, and EPA's programs to reduce HAPs. (www.epa.gov/ttn/uatw/basicfac.html)

In addition to numerous specific chemical species and compounds, the list of 188 HAPs includes seventeen compound groups (e.g., individual metals and their compounds, polycyclic organic matter (POM), and glycol ethers). Many of the uses of the NEI depend upon data for individual compounds within these groups rather than aggregated data for the groups. A list of the specific pollutants and compound groups included in the NEI, along with their Chemical Abstract Services (CAS) numbers (for individual compounds), is available at the chief website (www.epa.gov/ttn/chief/nti/ntiq&a.pdf).

One of the major issues encountered in compiling the 1996 NTI was associated with the reporting of information on HAP groups. To the extent that only aggregated emissions were reported for the HAP groups, various assumptions had to be made about the HAP compound group, which introduced uncertainties in the use of the 1996 NTI data for air quality modeling and risk characterization. Uncertainties in air quality modeling arise because individual compounds in some of the HAP groups (e.g., mercury compounds) have substantially different fate and transport characteristics which strongly affect the modeling results. For example, for the Great Waters program, it is important to inventory the different species of mercury because they do not all transport or react the same once they are in the atmosphere. In particular, organic mercury is transported long distances as small particulate matter, while inorganic mercury reacts as a gas in the atmosphere. Uncertainties in risk characterization also arise because the HAP exposures and associated human health effects can vary enormously among the specific compounds within many of the HAP groups. For example, some compounds within the polycyclic organic matter (POM) group are relatively non-toxic, while others are highly potent carcinogens. Hexavalent chromium is a known carcinogen, whereas trivalent chromium is an essential nutrient for which data are inadequate to determine potential carcinogenicity. In compiling the 1999 NEI, the EPA is therefore encouraging improvements in the reporting of the individual compounds within the HAP groups, so as to reduce uncertainties and potential overestimation of risk in future NEI-based assessments.

Organizations that provide data for the 1999 NEI should thus report emissions for specific compounds, both for individual HAP species and for HAPs within compound groups. CAS numbers are preferred to identify pollutants reported to the EPA. If emissions of individual pollutants within HAP groups cannot be reported, aggregated compound group emissions will be accepted. However, the EPA will have to use simplifying assumptions regarding speciation within the group in order to use these data as inputs to models.

Recommendations for reporting data for specific groups of compounds are summarized below in a hierarchy of most preferred method to least preferred. For pollutant groups, only one reporting strategy per HAP group per source should be used. Simultaneous use of more than one reporting strategy (e.g., reporting both individual chromium compounds and total chromium for the same source) will result in the same emission being counted twice resulting in a potential overestimation of emission levels and risk. Following is a discussion of how emissions should be reported for five compound groups.

Metal and cyanide groups:

1. Report emissions and associated CAS numbers of all individual metal and cyanide compounds; e.g., report emissions and associated CAS numbers of arsenic oxide, lead arsenate, etc., rather than emissions of arsenic compounds as a whole. All individual compounds should be reported as the mass of the total compound, not just the metal within the compound.
2. If individual metal compounds cannot be reported, a less preferred method for chromium, lead, mercury and nickel is to separately report two forms of widely-varying toxicity. If you use this approach, report <u>only</u> the mass of emissions of the metal, not of the entire metal compound.

- Chromium – Separate chromium compounds into trivalent (CAS #1606583) and hexavalent chromium (CAS #18540299).
- Lead – Separate lead compounds into organic and inorganic.
- Mercury – Separate mercury compounds into organic (CAS #22967926) and inorganic (CAS #7439976).
- Nickel - Separate nickel compounds into nickel subsulfide (CAS #12035722) and other nickel (CAS #7440020).
- For all other metal and cyanide groups, report total emissions of the group in terms of the mass of the metal or cyanide alone, and report under the CAS number of the metal or cyanide.

3. Alternatively, but far less preferred, report total emissions of the group in terms of mass of <u>total</u> emissions, and report under the pollutant group number for "metal and compounds" or "cyanide and compounds". <u>Do not include metals or cyanide already reported using the more preferred methods above</u>, in order to avoid the possibility of double counting emissions.

POM: Clearly identify what you inventory as POM

1. Report emissions and associated CAS numbers of as many individual POM compounds as possible, rather than as total polycyclic aromatic hydrocarbons (PAH) or total POM. The most important PAH compounds to report individually are the 7-PAH compounds listed in Table 1. The EPA encourages the reporting of other individual POM compounds for which cancer assessments are available (also listed in Table 1).
2. If emissions of all individual PAHs cannot be reported, then report 7-PAH as a subgroup.

3. If emissions of 7-PAH cannot be reported, then report total POM (total POM includes total PAH). Since naphthalene is listed individually as a HAP, do not include any individually-reported naphthalene as total POM.
4. If emissions are reported using any other scheme than one listed in this hierarchy, clearly identify what it is.

Table 1. POM Compounds

7-PAH	POM Compounds for which we have cancer assessments - includes 7-PAH
Benz(a)anthracene	Carbazole
Benzo(a)pyrene	Dibenz[a,h]acridine
Benzo(b)fluoranthene	Dibenz[a,j]acridine
Benzo(k)fluoranthene	7H-Dibenzo[c,g]carbazole
Chrysene	Dibenzo[a,e]pyrene
Dibenz(a, h)anthracene	Dibenzo[a,i]pyrene
Indeno(1,2,3-cd)pyrene	Dibenzo[a,l]pyrene
	7,12-Dimethylbenz[a]anthracene
	1,6-Dinitropyrene
	1,8-Dinitropyrene
	3-Methylcholanthrene
	5-Methylchrysene
	5-Nitroacenaphthene
	6-Nitrochrysene
	2-Nitrofluorene
	2-Nitrofluorene
	1-Nitropyrene
	4-Nitropyrene

Dioxins/Furans: Clearly identify what you inventory as dioxins and furans

1. Report mass emissions and associated CAS numbers of all individual congeners of both chlorinated dibenzodioxins (CDDs) and chlorinated dibenzofurans (CDFs).
2. If emissions of individual CDD and CDF congeners cannot be reported, report dioxins and furans as 2,3,7,8-tetrachlorodibenzodioxin (TCDD) toxic equivalents (TEQ) under the HAP

name “dioxins/furans as TEQ”. (Note: Although the CAA specifically lists only 2,3,7,8-TCDD and dibenzofurans as HAPs, other CDDs and CDFs qualify as HAPs within the “dioxins/furans as TEQ” group. Because some of these other congeners are also potent carcinogens, EPA will use the TEQ approach to evaluate CDDs and CDFs as a group.).

3. If emissions using the TEQ approach cannot be reported, report individual congener emissions where possible and report any remaining emissions as total “dioxins” or total “dibenzofurans”.

Glycol Ethers:

1. Report emissions for individual glycol ethers with their associated CAS numbers. Use the Toxic Release Inventory (TRI) guidance on glycol ethers to identify compounds that are glycol ethers. This guidance can be found at the following address:

   http://www.epa.gov/opptintr/tri/glycol.pdf .

   Note that, historically, many compounds have been mistakenly included in the glycol ethers compound group. In addition, ethylene glycol butyl ether (EGBE) has been delisted as a HAP and should not be included in the glycol ethers compound group.
2. If individual glycol ether emissions cannot be reported, report total emissions of glycol ethers as a group under “glycol ethers”.

Xylenes and Cresols:

1. Report emissions for individual xylene and cresol isomers with their associated CAS numbers. Do not report any emissions for total xylenes or cresols to avoid double counting.
2. If individual emissions of xylenes or cresols cannot be reported, report total emissions of xylenes or cresols as a group under “xylenes (mixture of o, m, and p isomers)” (CAS #1330207) or “cresols/cresylic acids”.

Reporting of Source Categories

The NEI contains HAP emission estimates for point, non-point, and mobile source categories. Point sources in the NEI are sources for which the specific location is known. The NEI contains point source estimates of facility-specific HAP emissions and their source-specific parameters needed for modeling such as location and facility characteristics (stack height, exit gas velocity, temperature, etc.). Point sources in the NEI are identified as either major or area, but this identification may not correspond to the official regulatory classification of some sources. Non-point source categories include area sources and other stationary sources that may be more appropriately addressed by other programs rather than through regulations developed under certain air toxics provisions in sections 112 or 129 of the CAA. Non-point sources in the NEI also include area sources that are not identified as point sources because

their specific locations are not known. Non-point and mobile source categories are reported as aggregates at the county level in the NEI.

The following section summarizes the NEI source category definitions.

- Major sources, as defined by section 112 of the CAA, are stationary sources that emit or have the potential to emit 10 tons per year or more of any listed HAP or a 25 tons per year or more of a combination of listed HAPs. (www.epa.gov/ttn/uatw/pollsour.html) When estimates of potential emissions are not available, the NEI identifies point sources as major based on actual emissions being at or above 10/25 tons per year. The NEI includes facility data for all major sources. Examples of major sources include electric utility plants, chemical plants, steel mills, oil refineries, and hazardous waste incinerators. These sources may release air toxics from equipment leaks, when materials are transferred from one location to another, or during discharge through emissions stacks or vents.

- Area sources, as defined by section 112 of the CAA, are stationary sources that emit or have the potential to emit less than 10 tons per year of a single HAP or less than 25 tons per year of a combination of HAPs. (www.epa.gov/ttn/uatw/pollsour.html) When estimates of potential emissions are not available, the NEI identifies point sources as area based only on actual emissions being below 10/25 tons per year. The NEI includes facility data for some area sources and aggregated emission estimates at the county level for the remaining area sources. Area sources are regulated under toxics provisions in the CAA. Examples of area sources include neighborhood dry cleaners and gas stations. Though emissions from individual area sources are often relatively small, collectively their emissions can be of concern particularly where large numbers of sources are located in heavily populated areas.

- Other stationary sources are sources that may be more appropriately addressed by other programs rather than through regulations developed under air toxics provisions such as sections 112 or 129 in the CAA. Examples of other sources include wildfires and prescribed burning whose emissions are being addressed through the burning policy agreed to by EPA and the U.S. Department of Agriculture (USDA). The NEI includes aggregated emission estimates at the county level for these other sources.

- Mobile source categories include on-road vehicles, non-road 2- and 4- stroke and diesel engines, off road vehicles, aircraft, locomotives, and commercial marine vessels. The NEI includes aggregated emission estimates at the county level for mobile sources.

To evaluate EPA's progress in reducing air toxic emissions through the Maximum Achievable Control Technology (MACT) standards and to identify sources that may be modeled as part of residual risk

assessments, operations within facilities that are subject to MACT standards are identified in the NEI by MACT codes. The tagging of data with MACT codes allows EPA to determine reductions attributable to the MACT program. The NEI associates MACT codes corresponding to MACT source categories with major and area source data. MACT codes are assigned at the process level or at the site level in the point source data, e.g., the MACT code for municipal waste combustors (MWCs) is assigned at the site level whereas the MACT code for petroleum refinery catalytic cracking is assigned at the process level. MACT codes are also assigned to source categories in the non-point source file. The EPA requests state and local agencies and tribes to include MACT codes as part of their submittal of 1999 HAP emission inventory data. If state and local agencies and tribes do not include MACT codes in their inventories, then the EPA will assign MACT codes.

For dispersion and exposure modeling, it is preferable to model all stationary sources as point sources. To the extent possible, the EPA encourages organizations to provide facility-specific emissions data for all point sources, regardless of whether they are classified as major or area. At a minimum, all major sources, including both sources for which MACT standards will be developed and those which are not currently listed for MACT standard development, should be reported as point sources in the 1999 NEI. The EPA also encourages organizations to report facility-specific emissions data for all MACT source categories regardless of whether a facility is classified as major or area. The NEI will retain all facility-specific data as point sources, regardless of the magnitude of the emissions, to facilitate more comprehensive assessments. Therefore, no reporting thresholds exist for point sources in the NEI.

COMPILATION OF 1999 NEI

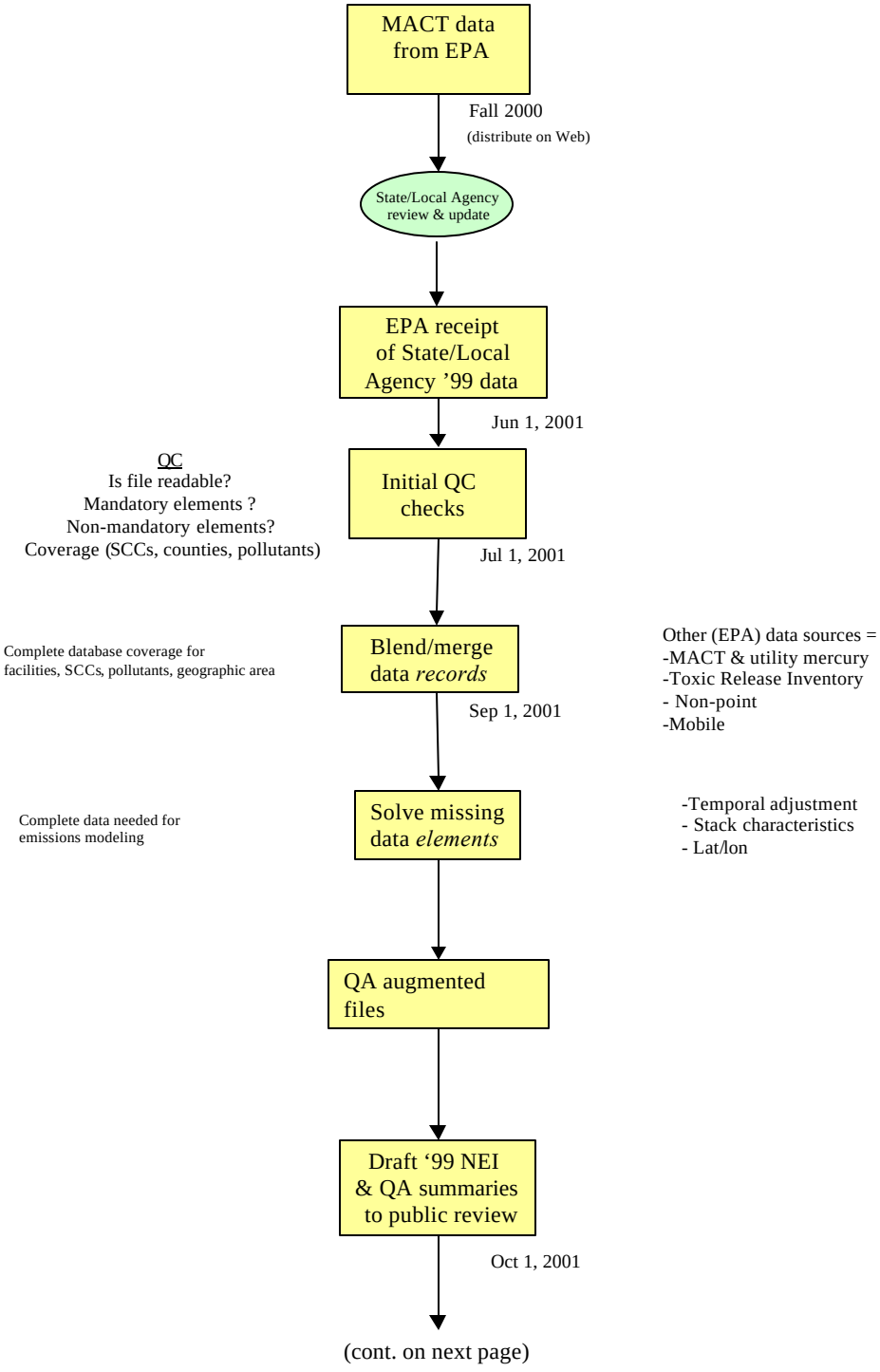
Figure 1 illustrates the major steps involved in compiling the 1999 NEI Key processing steps include data submittal, blending/merging of data from multiple data sources, augmentation of blended data for missing data elements, QC of data, preparation of draft 1999 NEI for external review, incorporation of external review comments, and preparation of final NEI.

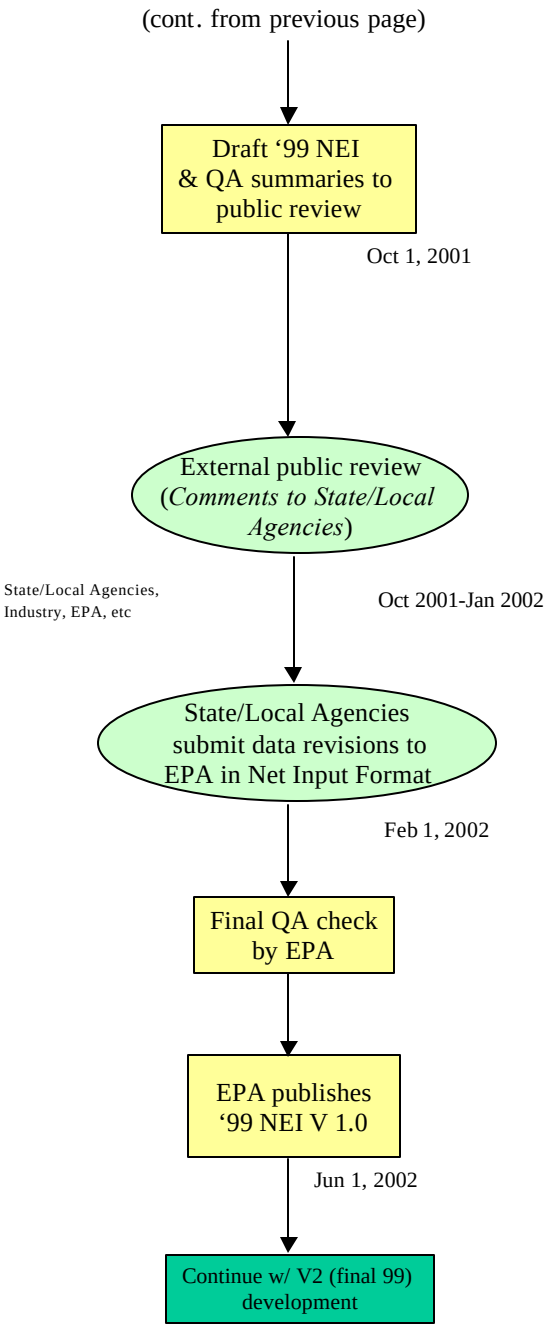
Data Submittal

The EPA prefers to use state, local and tribal agency HAP inventory data to compile the NEI. The NEI includes data for all 50 states, the District of Columbia, Puerto Rico and the Virgin Islands. American Samoa and Guam did not provide data for the 1996 NTI, but their data will be accepted for the 1999 NEI if provided. Because complete data are not available from some states, tribes, and territories, the EPA will prepare the 1999 NEI using additional sources of data.

In addition to state, local and tribal agency HAP inventories, the primary sources of NEI data are:

Figure 1. 1999 NEI Data Development Steps




(cont. from previous page)
Draft '99 NEI & QA summaries to public review
Oct 1, 2001
External public review (*Comments to State/Local Agencies*)
State/Local Agencies, Industry, EPA, etc
Oct 2001-Jan 2002
State/Local Agencies submit data revisions to EPA in Net Input Format
Feb 1, 2002
Final QA check by EPA
EPA publishes '99 NEI V 1.0
Jun 1, 2002
Continue w/ V2 (final 99) development

1. Data gathered by EPA's Emission Standards Division while developing MACT standards;
2. Industry data;
3. TRI data;
4. Mobile source data developed by EPA's Office of Transportation and Air Quality; and
5. Non-point source data generated for approximately 30 source categories by EPA using emission factors and activity data.

State and local air pollution control agencies and tribes are being asked to submit their HAP inventories directly to EPA. The EPA will work directly with agencies and tribes to address issues identified during quality checks and to revise data as a result of the external review of the draft NEI. State and local agencies and tribes should use the National Emission Inventory Input Format (NIF) Version 2.0 to submit their 1999 HAP emission inventories to EPA. Details on the NIF Version 2.0 can be found at the following web site, www.epa.gov/ttn/chief/eidocs. The NIF Version 2.0 specifications are available in MS Excel and MS Access.

To assist state and local agencies and tribes in preparing their 1999 HAP emission inventories, the EPA posted facility-specific inventory information on selected MACT source categories (e.g., municipal waste incinerators, and electric utilities) and data received from several trade associations on the 1999 NTI ftp site in December 2000. The EPA also distributed the 1996 NTI in NIF Version 2.0 format via the 1996 NTI ftp site for use by state and local agencies and tribes in February 2001.

Data Blending/Merging and Data Augmentation

In order for the 1999 NEI to be contain reliable data for air dispersion and exposure modeling, it must be comprehensive for the 188 HAPs emitted from point, non-point and mobile sources in all states, D.C., and territories. To support the CAA and GPRA requirements for a comprehensive HAP inventory, the NEI should at a minimum contain the following data:

- Specific geographic location of point sources;
- Facility emissions at point/unit/stack levels for point sources;
- Stack parameters for point sources;
- Operating schedule of point sources;
- Information on source category; and
- Annual emissions for point, non-point, and mobile sources.

Because state and local agency and tribal HAP inventories will likely contain missing facilities, source categories and data elements, the EPA will prepare additional data to complete the 1999 NEI. Completing the database consists of two steps -

1. Blending/merging data records to add missing facilities (point sources) or non-point and mobile source categories; and
2. Augmenting existing records with missing data elements.

Point Sources

The methodology for compiling the point source data in the 1999 NEI will use the following hierarchy.

1. State and local agencies and tribes HAP emissions data;
2. Supplement state/local/tribal data with MACT inventory data;
3. Supplement state/local/tribal and MACT inventory data with TRI data; and
4. Supplement with 1996 NTI data projections.

The EPA will use the following criteria to determine which source of data to use for a facility which appears in multiple data sets.

- Base year 1999;
- Actual emissions are reported rather than potential, allowable, maximum;
- Non-TRI emissions data;
- Source Classification Codes (SCCs) are associated with emissions, and
- Stack data are provided with emissions data.

Facility-specific inventory information for two MACT source categories - utility mercury emissions and HAP emissions from municipal waste combustors will be used directly and will not be replaced with state/local/tribal data because these data sets are highly accurate and the result of extensive source testing by EPA and industry.

Potential facility data gaps in state/local/tribal emission inventories will likely include:

- Entire counties missing, and
- Missing facilities.

To assess the completeness of state/local/tribal-submitted HAP emission inventories for source category and facility coverage within a geographic area, EPA will use MACT inventory data, TRI data, the 1996 NTI, and the National Emissions Trends (NET) criteria pollutant inventory to determine if the state/local/tribal-submitted inventories need to be supplemented with additional facilities. State and local agencies and tribes should identify facilities in the 1996 NTI that have closed, are duplicate facilities, or have changed their names. For facilities in geographic areas that are not submitted to EPA and for missing individual facilities, EPA will fill point source facility gaps using the steps 2 - 4 of the hierarchy presented above.

The goal of the 1999 NEI is to compile a comprehensive inventory of emissions of the 188 HAPs. In the process of merging point source data from the three primary data sources (state/local/tribal, MACT, and TRI data), EPA will include all HAPs emitted from a facility. If a facility is duplicated in one or more data sources, EPA will evaluate the HAPs emitted from the processes and emission units at the duplicate facilities. EPA will retain process, emission unit and individual stack emissions of HAPs. If HAPs emitted from stacks, emission units, processes or at the facility level are duplicated, state/local/tribal data will be used and duplicate data from MACT or TRI data will be deleted. If only a subset of HAPs are included for duplicate facilities, EPA will retain the subset of HAPs from state/local/tribal data and then merge the remaining HAPs from the duplicate sites to create a unique site with a unique set of HAPs.

Similarly, EPA will evaluate data at the process, emission unit, and individual stack level. Data will be retained at the most refined level. For example, MACT data are available for two petroleum refinery MACT standards - catalytic cracking units and vents, and TRI data are available at the facility level. The more refined MACT data for the two categories would be compiled in the NEI rather than total facility data from the TRI.

After an inventory of facilities and associated emissions has been compiled by EPA, missing data elements will be defaulted. Missing data elements will likely include:

- Stack parameters;
- Facility location data [county FIPS codes and names, latitude/longitude or Universal Transverse Mercator (UTM) coordinates)]; and
- MACT codes.

The 1999 National Emission Inventory Data Incorporation Plan presents a detailed description of how the EPA will augment these missing data elements. (www.epa.gov/ttn/chief/net/nei_plan.pdf)

Because the NEI is a modeling inventory, the association of stack parameters and location data to each facility emission estimate of point sources is required. EPA will obtain default stack parameters from the following sources in the hierarchy presented.

1. Facility specific stack data in 1996 NTI and NET inventory;
2. Derived stack data (derive velocity, diameter, and flow rate if 2 of 3 variables are provided);
3. Default stack data associated to SCCs (file provided by EPA's Office of Research and Development);
4. Default stack data associated to SIC codes (file provided by EPA's Office of Policy); and
5. Model plant defaults provided in MACT data developed by EPA.

EPA will assume that the release point is a stack for facilities with no information on the types of release (stack vs. fugitive). The NEI will contain flags to identify data fields that use defaults.

The NEI requires that point sources include facility location data. If latitude/longitude coordinate problems exist (missing or incorrect), EPA will fill location data gaps using the following hierarchy of methods.

1. Using existing inventories - 1996 NTI, TRI, and NET inventory;
2. Using addresses and zip codes to identify latitude/longitude coordinates; and
3. Prioritizing remaining facilities based on the size of emissions. Small facilities with emissions of total HAPs less than 10 tons/year of HAPs will be defaulted to the county level when preparing the data for modeling.

The NEI also requires that county FIPS codes be associated with point source facilities. If county FIPS codes are missing, EPA will assign county codes by:

- Using data from the 1996 NTI, NET, and TRI; or
- Contacting the agency who submitted the data.

MACT codes are 4-digit codes that are assigned to all MACT categories and sub-categories. The MACT code is assigned to all facilities and processes within a MACT category. The MACT implementation code is then used to indicate control due to CAA section 112 and 129 standards. EPA will assign MACT code and MACT implementation codes to facilities if codes are not assigned by state and local agencies and tribes. The MACT codes will be assigned by EPA using the following methodology.

- Facility lists provided by EPA staff developing MACT standards;
- SCCs that are applicable to MACT processes within a facility provided by EPA staff developing MACT standards; and
- SIC codes that are applicable to specific MACT categories provided by EPA staff developing MACT standards.

Non-Point Stationary Sources

To begin compiling the non-point stationary source data, EPA will first identify non-point stationary source categories that emit HAPs. The 1996 NTI will be the starting point for non-point stationary source category identification. The methodology for compiling the non-point stationary source data in the 1999 NEI uses the following hierarchy.

1. Obtain HAP emissions data from the state and local agencies and tribes;
2. Supplement state/local/tribal data with MACT inventory data; and
3. Supplement state/local/tribal and MACT inventory data with EPA-generated data using emission factors and activity data.

To submit 1999 base year non-point stationary source HAP estimates, state and local air pollution control agencies and tribes should start by reviewing the 1996 NTI estimates to determine if improvements or updates can be made. State/local/tribal activity data for a 1999 base year may not be readily available to EPA, but would greatly improve the emission estimates in the NEI.

Emissions from a limited number of non-point stationary source categories in the 1999 NEI will be estimated using top-down methods for those geographic areas that state and local agencies and tribes do not provide data. For these source categories, EPA will evaluate the emission factors for their completeness, representativeness, and overall quality. In some cases, EPA will use emission factors from published documents such as the EPA's AP-42 document of emission factors. For other source categories, more recent emission factors based on recent test data gathered from the MACT program, state and local agencies, or industry will be used.

EPA will then obtain most source activity data from published sources such as government statistical documents and databases (e.g., Energy Information Administration fuel consumption reports, U.S. Forest Service reports on fires and burned acreage, and waste disposal reports published by EPA), industry trade publications, and commercially published business directories and journals. Census data from the U.S. Department of Commerce will be used to estimate emissions using per capita and per employee emission factors. Similar to the development of the 1996 NTI, EPA will used information about raw material usage and production levels supplied by industry and trade groups. These data will be extrapolated as needed to represent emissions on a state and national scale.

Non-point emission estimates in the 1999 NEI would be greatly improved if states, local agencies, and tribal groups submit inventory data, in large part because EPA does not have access to the local activity data that are needed for acceptable emissions estimates.

Mobile Sources

The methodology for compiling the mobile source data in the 1999 NEI will use the following hierarchy.

1. Obtain HAP emissions data from the state and local agencies and tribes; and
2. Supplement state/local/tribal inventory data with EPA's Office of Transportation and Air Quality (OTAQ) generated data.

Again, the mobile source emission estimates in the 1999 NEI would be greatly improved if states, local agencies, and tribal groups submit inventory data.

Quality Control Checks to be Performed

In order to achieve the goal of developing a reliable toxics emissions inventory that can be used to meet CAA and GPRA requirements, quality control (QC) checks of the data will be an important step in the compilation of the 1999 NEI. Major issues that EPA encountered in compiling the 1996 NTI included reporting of emissions for just the HAP groups, location errors, missing facilities or emission units, inclusion of closed facilities, inconsistency in reporting units of emissions, missing data fields needed for modeling, erroneous emission estimates, and transcription errors. The most common problems encountered with incorporating state and local agency data into the 1996 NTI were:

- Missing primary key fields, e.g., stack ID for a stack record;
- Missing mandatory fields - e.g., county FIPS codes;
- Missing related records or "orphan records" - e.g. emission record with no emission process record;
- Duplicate key data - e.g., two emission record with same identifier and same amount of emissions making it unclear where this was actually a single emissions point that was duplicated or two distinct emissions points that were given the same identifier;
- Transposed latitude and longitude coordinates;
- Incorrect latitude and longitude coordinates that plot outside continental US; and
- Missing latitude and longitude coordinates.

Agencies should try to correct these problems prior to submitting their 1999 HAP emission inventory data to EPA. QC of the 1999 NEI will help identify these problems and will be automated for the 1999 NEI. The QC of the 1999 NEI consists of two steps:

1. Initial QC checks for format; and
2. QC checks for data content.

The 1999 National Emission Inventory Data Incorporation Plan presents a detailed list of quality checks that the EPA will use for each data file. (www.epa.gov/ttn/chief/net/nei_plan.pdf)

For state and local agency and tribal data, automated checks will be run after the data are received by EPA to ensure that the files can be processed. The logic for these checks is primarily based on the NIF Version 2.0 specifications, instructions, and code tables. Initial QC checks will include:

- Review of the file format (verify that correct field width, start/end position, and data type are used);
- Verification that mandatory data elements are provided; and
- Review of the data set to see if it agrees with what the state or local agency or tribe indicated they submitted (geographic coverage, pollutants, source categories, etc.).

After the EPA completes its initial QC check of each submitted file, electronic files that summarize the errors and problems EPA encountered in performing the initial QC check will be provided to state and local agencies and tribes for correction. State and local agencies and tribes are then asked to submit corrected files to the EPA.

The EPA will perform QC checks for content after data blending/merging and data augmentation have occurred. Examples of content checks include:

- Completeness of conditional fields - fields required by other fields in the same table (e.g., if a % control is reported, then a control device should be reported);
- Use of acceptable codes - e.g., CAS number;
- Verification that numeric values fall in an acceptable range - e.g., reasonable stack heights;
- Review of inter-file format - fields required by other fields in different data tables (e.g., CAS number is required in both Emissions and Control Equipment tables and should be consistent for the same release);
- Review of inter-pollutant relationships - reduce double counting by evaluating source category/pollutant emissions (e.g., are perchloroethylene emissions from dry cleaners reported both as a point and a non-point source within a county by an agency); and
- Review of inter-source relationships - reduce double counting by evaluating overlap between source categories (e.g. residential wood combustion and fireplaces reported by an agency).

Preparation of Draft and Final 1999 NEI

After the QC of content has been completed, the draft 1999 NEI will be made available for external public review. To improve the quality of the draft 1999 NEI, the EPA will request the review of the inventory from state and local agencies, industry, and others. The draft 1999 NEI and documentation will be available for review and comment for a four month period. The EPA will provide the draft 1999 NEI in two formats - a detailed data set in NIF Version 2.0 format and summary data sets in Excel or ACCESS format. For incorporation into the final 1999 NEI, reviewers will need to submit their revisions in the format specified by EPA.

Revisions to the 1999 NEI will be subjected to a rigorous review process in order to ensure internal consistency of the NEI. Specifically, the following steps will be performed:

- Review of the documentation provided by the commenter to ensure that it is consistent with the actual changes to the inventory submitted;
- Verification that the add/revise/delete designations of the revisions are accurate (e.g., that a record designated for addition is not in fact a revision to an existing record);
- Verification that there is no source category overlap between the existing draft and revised data (non-point stationary source categories);
- Review of the revised emission estimates, by source category and HAP, to identify outliers and determine the validity of such estimates;
- Verification that added pollutants are HAPs; and
- Verification that added pollutants have correct or valid Chemical Abstracts Service numbers.

It is anticipated that revisions can be grouped into the following three categories.

- Changes to draft emission records (e.g., draft emissions for a HAP were 10 tons and revision changed the emissions to 5 tons);
- Additions of new facilities not in the draft NEI or additions of HAPs to a facility in the draft NEI; and
- Deletions of draft NEI facilities or deletions of HAPs within a facility.

For the most part, revisions provided by state and local agencies and tribes will be incorporated to produce the final inventory. When questions arise over specific revisions, the reviewers will be contacted by the EPA. Memos describing how specific revisions are addressed into the final NEI will be sent to the reviewers.

Point source revisions will be incorporated into the final NEI using the following methodology.

1. All revisions and additions will be made for:
   - Process throughput information
   - Zip codes
   - Control/capture efficiencies
   - Control device information
   - SCC/process descriptions
   - Stack parameters
   - Unit descriptions
   - Lat/long or UTM coordinates
   - FIPS codes
   - SIC codes

2. Additions of new facilities not in the draft NEI will be automatically processed.

3. Emission record additions and revisions to existing emission records will be automatically processed if the original data are provided by the state or local agency or tribe.

4. Facilities marked for deletion will be evaluated to determine whether the deletions should be processed.
   - If the draft NEI data are provided by state or local agencies, the EPA will process the deletion.
   - If the draft NEI data are provided by TRI or in MACT databases, the EPA will further evaluate the proposed deletions. The EPA will use trade association journals to determine if facilities were in operation in 1999. If a facility was closed in 1999, the EPA will delete the facility.
   - If a TRI or MACT facility is recommended for deletion, but was open in 1999, and no duplicate facility is present in the draft inventory, the EPA will not process the deletion.
   - If a TRI or MACT facility is recommended for deletion, was open in 1999, and a duplicate facility is present in the draft inventory, the EPA will then evaluate the HAPs emitted from both facilities. If the HAP emission records are duplicated, the EPA will process the deletions. The HAP emission records that are not duplicated will be retained. The EPA will then merge the HAPs for the duplicate sites using a unique site ID.

After the revisions to the draft inventory are incorporated, the EPA will conduct final QC and produce the final 1999 NEI. The final 1999 NEI will be available in the following formats:

- AIRData Web site - data summaries (www.epa.gov/air/data)
- ftp site - complete modeling data files

Schedule

Table 2 shows the schedule for the development of the 1999 NEI.

CONCLUSION

The EPA has a variety of information available to help you understand and assist in the development of the 1999 NEI. The following information to support the development of the 1999 NEI is available to you.

- 1999 National Emission Inventory Data Incorporation Plan (www.epa.gov/ttn/chief/net/nei_plan.pdf)
- 1999 NTI Questions and Answers (www.epa.gov/ttn/chief/nti/ntiq&a.pdf)
- NIF Version 2.0 (www.epa.gov/ttn/chief/eidocs)
- 1999 MACT and Industry data - 1999 NTI ftp site
- 1996 NTI Modeling Files - 1996 NTI ftp site
- 1996 NTI Documentation, (www.epa.gov/ttn/chief/nti/)
- 1996 Data Summary on AIRData Web (www.epa.gov/air/data)

Table 2. 1999 NEI Schedule

Date	Activity	Expected Result
June 1, 2001	State, local, and tribal data submitted to EPA	Prescribed data transfer format used
June/July, 2001	Initial QC review of submitted data	Confirmation that data file can be read; required minimal data included
October 1, 2001	Draft 1999 NEI Version 1.0 published	Draft database available for review

February 1, 2002	Comments on draft 1999 NEI Version 1.0 submitted to EPA	Revisions submitted in prescribed data transfer format
June 1, 2002	1999 NEI Version 1.0 published	Files available to support CAA and GPRA needs
June 1, 2002	State, local, and tribal data submitted to EPA, Version 2.0	Prescribed data transfer format used
October 1, 2002	Draft 1999 NEI Version 2.0 published	Draft database available for review
February 1, 2002	Comments on draft 1999 NEI Version 2.0 submitted to EPA	Revisions submitted in prescribed data transfer format
June 1, 2003	1999 NEI Version 2.0 published	Files available to support CAA and GPRA needs

REFERENCES

1. U.S. EPA, Federal Register 64FR 38706, July 19, 1999.

Key Words

Hazardous Air Pollutants; Emissions Inventory; National Toxics Inventory; NATA; Air Toxics