
North Carolina Department of Environment and Natural Resources
Division of Air Quality
Annual Air Pollutant Point Source Emissions Inventory
(Revised January 2008)

INSTRUCTIONS

Notice: Changes have been made to these instructions since you last reported. Please review thoroughly. These instructions are for completing optional paper forms printed from AERO (Air Emission Reporting Online), DAQ's electronic Internet-based inventory reporting system. AERO contains internal HELP-screens consistent with these instructions.

Facilities may choose to update the required information by use of paper forms printed from the Internet, but are encouraged to do so directly on-line via **AERO**. If making paper submittals, **Please use only the forms provided.**

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Please retain these instructions for future use, until revised.

Emission Inventory Reports must be submitted on or before the due date indicated in your notification letter and on the forms. If submitted via computer, the signed Certification Form must be mailed or sent by other physical delivery means to the same office. For facilities with permits classed as Synthetic Minor or Small (including General), complete and correct forms must be received with the permit renewal application, at least 90 days prior to your permit expiration date.

Reporting of Greenhouse Gas Emissions

Tracking and reporting of GHG emissions will be required for Title V facilities beginning with CY 2008. However, for those who wish to voluntarily report GHG emissions for CY 2007, you may do so by adding the GHG pollutant to the bottom of the HAP/TAP pollutant table or in the comments section of the Operating Scenario form. Supplemental guidance for the calculation of GHG emissions will be available from the DAQ in draft format in early 2008. The DAQ is seeking and encouraging comments on the guidance document.

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**North Carolina Department of Environment and Natural Resources
Division of Air Quality
Annual Air Pollutant Point Source Emissions Inventory
For Calendar Year (CY) 2007 Inventory and Until Superseded**

Overview

Obtaining and Printing Your CY 200X Forms ON-LINE from AERO

North Carolina's Division of Air Quality (DAQ) has developed the Air Emissions Reporting Online (AERO) web site to better assist facilities to report their emissions, and to facilitate internal cost savings and efficiencies. Direct submittal on-line is preferred. However, the option to print pre-filled paper forms as a basic back up is retained and allows updates to be made directly on these printed forms. Data submitted on-line or on paper will be reviewed by DAQ regional staff before acceptance. The HELP screens and instructions in the on-line system will assist the user as they progress through the process. Once the data are in the on-line system properly, very few updates are typically required from year to year, except when the facility makes major changes in its equipment and operations (as likely reflected in its air permit).

Each facility required to submit an inventory for a given calendar should receive a notification letter via Certified mail. Facilities that have a Title V permit (during the year of the inventory) should receive such an inventory notification each year, as their inventory is a key component of their fee determination. However, other facilities (e.g., those with Synthetic Minor or Small permit classifications) are only required to provide their inventory on a 5-year cycle, due 90 days prior to the normal expiration of their air permit, or at other times as required by DAQ. These facilities should receive a letter approximately 180 days prior to their permit expiration reminding them of their requirement to provide a renewal application along with their emission inventory for the required calendar year. Whether a letter is received or not, the reporting requirements are included in the rules and usually in the permit for the facility. The letters provide a reminder of the details of the year of the inventory, the due date, instructions on how to access the forms by way of the internet, facility-specific identification, a unique confidential Personal Identification Number (PIN) and other pertinent information. In cases where computer access may be unavailable, the facility is requested to call the appropriate Regional Contact as defined in the letter.

After gaining access to the web address provided, using the ID and PIN provided, the facility contact person will be able to access their custom print form package in pdf format (as well as an on-line update function not further addressed in these instructions). **Acrobat Reader** allows you to print an entire file, or any selected pages. If you do not have **Acrobat Reader**, use the link provided in AERO to access and install the program on your computer.

The first page of the packet you print will be a "**List of Contents of this Inventory Package,**" listing the contents for your facility. You should use this to verify that you have all the forms and information you need to start the process.

You are required to submit two complete, signed copies of the inventory forms, along with all required calculations and documentation (one paper copy or electronically), to the appropriate regional office prior to the due date, with the Certification form (signed in blue ink by the Responsible Official) being the top page of the submittal.

List of Contents of this Inventory Package (custom listing)

The first page of the packet to print should be a “**List of Contents of this Inventory Package**,” listing the contents of the packet for your facility. Most or all of the components of the listing below will result, depending upon the facility and its classification.

- ✓ **Pre-Submittal Check List** – This list helps to keep track of the inventory steps and to assure that the submittal contains all the required responses. You need not submit a copy of this checklist to DAQ.
- ✓ **Emission Sources and Control Devices in Permit (Table)** – This listing should repeat the listing in your current permit. Please compare it against your permit to assure that there are no significant errors. Since this form is for your information and review, it is not required for the submittal to DAQ. If there are errors, *make note of these and discuss with the appropriate regional office inventory contact.*
- ✓ **Group/Source/Operating Scenario Listing** – This listing will appear only for Title V and other facilities for which data already exist in AERO from a previous year. This listing provides a “road map” and means of keeping track of what you have in the system and how the components relate. ***Please update check boxes with status and provide a copy as part of the submittal.*** Please place after the Certification form in the submittal packet to facilitate rapid checking and review by DAQ.
- ✓ **Emission Source/Operating Scenario Data (Form)** – Review and update or complete a form for each operating scenario. For facilities with previously entered data (e.g. Title V), the system will automatically print a pre-filled form for each operating scenario, and an additional blank form at the end of the set. For those facilities with no base data already in the system, the form will be a blank. Since each emission source may have one to several operating scenarios, *make copies of the blank forms for use with multiple operating scenarios and include these in the submittal.*
- ✓ **Facility Total Emissions Summary (Form)** - This form must be used to provide the final facility-wide tally of emissions summed from all Emission Source/Operating Scenario Data Forms. It must include all emissions, even if some of the component forms contained confidential information. **Emissions data are never considered confidential (Federal law and NC Statute).**
- ✓ **Certification Form** – A Certification Form is required with each submittal, signed in blue ink and dated by the Responsible Official as defined by the language on the form. The form is different for Title V facilities, so verify that this form is appropriate for your permit classification. Contact your DAQ regional emission inventory contact if this form is incorrect. To facilitate DAQ review, we request that this form be placed first, as the top page, in your submittal packet (one original and one copy).

Instructions that follow are keyed to each form that is printed in the package, relative to the list above.

Instructions for Emission Source/Operating Scenario List

This form lists the various Emission Source Groups, their Component Emission Sources, the Operating Scenarios for each Emission Source and its description (and ID #'s) and three rows of check boxes. These boxes are **1**) for your use in tracking that all component forms have been printed and completed, **2**) indicating that the operating scenario or emission source “did not operate” during the inventory year or **3**) that the operating scenario is “not required to report.”

When the form submittal packet is complete, a copy of this form must be included as the second page (under Certification form) in the packet mailed to your regional office.

Instructions for Emission Source/Operating Scenario Data Forms
(As Printed by Facility Representatives – from AERO)

Forms for Title V facilities will be pre-filled with much of the information necessary except for throughput, emissions and temporal data, using the information DAQ has in its data system. Forms for most Synthetic Minors and Smalls will only have basic information entered and facilities will need to **photocopy the forms for multiple operating scenarios**.

This form is to be used to report emissions from each individual source/operating scenario for the Calendar Year (CY) specified in the notification letter. Plant identification on this form should be pre-filled. If pre-filled information is incorrect, please correct legibly in pen. Provide all other information in the spaces provided. Emission totals from these individual forms must then be compiled to complete the **Facility Total Emissions Summary Form**.

At least one **Emission Source/Operating Scenario Data Form** is necessary for each operated emission source (or group of emission sources) required to report. Your Acrobat file printed from AERO should include a list of emission sources and control devices from your permit. You should use this list to determine how many blank forms you will need so that there is one for each operating scenario. **Make photocopies as needed.** DAQ encourages you to report electronically, which eliminates the need for these paper forms. If you are unsure of the computer operations, your designated DAQ regional representative (see your notification letter) will be glad to assist you.

Completing the “ES/OS” Form, item by item:

Facility ID & Name: This number and name should already be on forms. Include this number and name on all forms and pages of this submittal, including supporting documentation and calculations. If the facility, contacts or mailing information has changed, this information may be updated by clicking on the link provided in the AERO Welcome Screen, updating the form provided and mailing (or e-mailing) it to your regional office. Provide updates of this nature whenever they occur, even though they are not critical to the primary purpose of the emission inventory update. Most of such changes can also be made during the permit renewal process and such changes need be done only once.

Permit #: Your permit number should be pre-printed on your forms. If this number is missing or incorrect, please enter the correct information. If your facility has more than one permit, the base permit number is the one used.

County and DAQ Region: These are provided for convenience on the pre-printed forms to provide a reminder of where the completed forms should be submitted and for easy verification of the county where the facility is located.

Numbered Items on Form (for each operating scenario)

- 1.) **Emission Source ID or Emission Source Group ID:** The **Emission Source ID** is an identifier that a facility has previously assigned to a specific emission source (equipment) that uniquely identifies it in your air permit. The Emission Source ID's from your permit should also be pre-filled on the listing provided with the inventory forms. **Emission Source Group ID's** are assigned automatically by DAQ's data system. If you are adding an emission source not in the permit, use “U” as a prefix for Non-permitted.
- 2.) **Emission Source Description:** Review the description or describe the source in words – consistent with terms used in the applicable permit (also on supplemental sheet provided). **Example:** “25 mm Btu/hr, No.2 oil/natural gas-fired boiler.” (This example might likely have at least two operating scenarios, one for oil and one for natural gas). **Emission Sources may be grouped** (e.g. a “group of” tenter frames) when they meet the criteria outlined for Grouping in the Definition of Terms Section of this packet; specifically
 - ✓ Sources where there are similar hours of operation,
 - ✓ Same or very similar stacks,
 - ✓ Same or similar-pollutants,
 - ✓ Similar regulatory applicability (rules)
 - ✓ Same fuel (if applicable),
 - ✓ Same emission factors may be applied, and
 - ✓ No single operating scenario emits greater than 10 tons of VOC or NO_x (if located in an area formerly designated as an Ozone or PM_{2.5} Non-Attainment area).

Instructions for Completing Emission Source/Operating Scenario Data Form- Continued

- 3) **Operating Scenario ID/Description:** Describe the operating scenario for the emission source for which the emissions estimate is being made. In the example above, one operating scenario might be “Combustion of natural gas” and another “Combustion of oil.” For facilities already entered into the DAQ database, this will be pre-filled. In this case, the facility “inventory preparer” should review to assure that it is correct, make corrections by striking through the pre-filled data, or make comments in the comment box at the end of the form.
 - 4) **SCC/Description:** Source Classification Codes (SCC’s) relate to a system of classifying operating scenarios to facilitate proper grouping and to distinctly describe the operating scenario for emission estimation and compilation purposes. *They are not subject to change by the facility inventory submitter at this time*, but are provided for information. If the descriptions seem inappropriate, provide comments in the field provided at the end of the form, or on an attached piece of paper.
 - 5) **Throughput/Units in CY** (year specified at the top of the forms): Report the actual operating scenario activity level or throughput (production) during the specified calendar year, in units that are appropriate to the operating scenario (e.g. 5,750 /gal, 1,000,500 /board feet, etc.). For combustion sources, throughput is fuel used during the year for each operating scenario, one form for each fuel used.
 - 6) **Fuel Information** (if fuel is used in this operating scenario): From purchase or analysis information, provide the percentage (%) **Sulfur** (by weight) for fuel and the % **Ash** (by weight) content for liquid or solid fuels. **Heat content** (Btu/pound, gallon, mmmcf or other units appropriate to specific fuel) should also be provided. The sulfur content for wood and natural gas will normally be negligible. Cite the reference in documentation of calculations and keep it on file should there be questions.
If “in-process” fuel is used, in addition to the primary activity used to estimate emissions, enter that fuel quantity on a second form for the same operating scenario. Label the operating scenario as “in-process fuel” but do not duplicate information on the form that is also shown for the same operating scenario on the primary form.
 - 7) **Capture Efficiency (% of Process Emissions Vented Through Control Device):** Especially in hooding situations, not all emissions are captured by the air removal systems, and enter the control system. This term is to identify the percentage of the emissions generated by a source that actually enter the duct or control system, as opposed to being released as a fugitive emissions (e.g. by escaping a hood). For sources such as combustion devices where the exhaust system is integral to the equipment, the capture efficiency is 100%. Do not confuse with “control efficiency.”
 - 8) **Control Device Information (Table):** The list of control devices should be pre-filled for Title V facilities (from previously supplied information). One or more control devices constitute a Control System (CS).
 - ✓ **Control Devices ID’s** for this specific operating scenario should be as they appear in the permit and on the listing provided, if not already pre-filled.
 - ✓ **CS-ID** is the identification number assigned to the collection of control devices (or **Control System**) by DAQ to facilitate organization and tracking of multiple controls working in series or parallel.
 - ✓ **Control Device Description** is the informative descriptor such as “bagfilter” that applies, and likely appears in the permit and/or the supplemental list provided.
 - ✓ **Order** is the *physical relationship of the control devices in the Control System from the emission source to the emission release point* (note change for consistency with permit). List the device nearest the emission source at the top “(1.)” and other devices in series below as “(2.)”, etc. If there are space limitations, always be sure to include the “last and most efficient” control device, even if additional pages need be attached to the form.
- Net Control Device Efficiency** of the control system defined is pollutant-specific and will be addressed later.
- 9) **Emission Release Point (ERP) Information (Table):** (ERP may also be referred to as stack, vent or fugitive). Use one set of information that is descriptive of the entire ERP under normal operating conditions. For facilities with data already on the forms, this data needs to be reviewed for correctness and any errors identified where they occur or in the comment box at the end of the form.

Instructions for Completing Emission Source/Operating Scenario Data Form- Continued

Small ERP's with similar height, volume, temperature, velocity, diameter, etc., may be **grouped** and reported as one ERP, if the emissions and the operating scenarios are similar. This may simplify the reporting and avoid numerous small similar entries. An **example** is a line of multiple paint spray booths, doing essentially the same operations.

Grouping is not required but allowed as a matter of convenience for the facility as long as it remains consistent with the permit terminology. If grouping ERP's, use physical dimensions and data consistent with measurements of a representative stack, flow rates as a single value and as if all emissions were through the single stack. If a group of ERP's is used for more than one Emission Source or Emission Source Group, provide the detailed information once and only the ERP ID on subsequent Emission Source/Operating Scenario Data Forms.

- ✓ **ERP ID #** is a facility-defined identification number and should be less than 15 characters. Use the same ID's as previous year submittals if possible. If your facility already has these defined in the DAQ database, that identification should already be provided here. If not, a unique identifier that the facility wishes to use should be entered. (Physically marking stacks and process equipment with the same identification numbers, though not required, may facilitate a less time consuming inspection and easier discussion.).
- ✓ **ERP Type** is a simple categorization of the ERP using the appropriate code from the table below:

01	FUGITIVE
02	VERTICAL STACK
03	HORIZONTAL STACK
04	GOOSE NECK STACK
05	VERTICAL STACK WITH RAIN CAP
06	DOWNWARD-FACING VENT

- ✓ **Height** is the physical distance from the ground surface to the top of the stack, in feet.
- ✓ **Diameter** is internal diameter, in feet, of flue itself at the point the velocity is measured. If the stack/ERP is rectangular, enter the length and width of the rectangle: ("L x W" in 0.1 feet). Cross-sectional area and equivalent diameter will be calculated by DAQ.
- ✓ **Temperature** (degrees Fahrenheit) is the temperature of the gases within or at the exit of the ERP.
- ✓ **Velocity** is stack gas velocity in actual feet per second.
- ✓ **Volumetric Flow Rate** is in actual cubic feet per minute. [Velocity in feet/second times 60, times cross-sectional area (in square feet), should equal volumetric flow rate in cubic feet/ minute].
- ✓ **ERP Description** should describe each stack or vent (or grouped ERP) through which this operating scenario is vented, with sufficient detail that it can be readily identified by both the facility staff and inspectors.

10) **Operating Schedule:** Actual number, or representative estimate, rounded to the nearest whole number, for the operating scenario, of

- ✓ **Hours/Day**, (Operated normally in specified calendar year)
- ✓ **Days/Week**, (Operated normally in specified calendar year)
- ✓ **Weeks/Year** (Operated in specified calendar year)

11) **Typical Start and End Times for Operating Scenario** –Enter the “normal” start and end times of day, in 24 hour time. If the time varies substantially during the year, report the most representative start and end times for the summer season.

12) **Seasonal Periods Percentage Annual Throughput:** Production and emissions will likely vary over time. Percent throughput for each quarter is the percent production/emissions as a portion of the whole year. The total of the four quarters should equal 100%. Note that Dec-Feb is December, January and February of the same calendar year, not consecutive months.

Instructions for Completing Emission Source/Operating Scenario Data Form- Continued

13) **Actual Emissions Per Pollutant Listed (Table):** This table is very important for recording the emissions for each operating scenario. Note that for facilities with detailed data already in the system, a column with that data appears for reference and quality assurance. If these previous data appear to be the correct values, you need to do nothing to them, but if those values are in error, you may need to discuss the differences with your regional office emission inventory contact. If you must start with a clean form, these pre-filled values do not have to be entered, unless there is an error determined which can be easily corrected in this manner.

- ✓ **Criteria (NAAQS) Pollutants** are at the top of the left hand column and the **HAP/TAPs** emitted by the facility are to be defined and included in the areas further down that column.
- ✓ The **Pollutant Code** is either a Chemical Abstract Service (CAS) number that identifies a specific chemical or compound (See Definitions), or in some cases, it may be a character code. Criteria and some groups of pollutants have character codes that are not part of the CAS system.

All pollutants listed in the Tables of Hazardous and Toxic Air Pollutants for North Carolina Emission Inventory and Permitting Purposes (<http://daq.state.nc.us/monitor/eminv/forms/>) must be reported, if emitted above the facility-wide *de minimus* value. Be sure to consult definitions regarding when HAP/TAPs are also Particulate Matter or VOC and must be reported in both totals. Some other HAP compounds in the Tables are neither VOC nor Particulate Matter and are billable for Title V. Particulate matter (PM, PM-10 & PM-2.5) must include any condensable portion that would not necessarily be captured on a filter. Note the addition of a new category of pollutants for those not defined as HAP, TAP or criteria.

- ✓ The **Emissions-Criteria** column captures the emissions of the specified criteria pollutant, to the nearest 0.1 ton.
- ✓ **Emissions-HAP/TAPs** are below, in the same column. This is where the Hazardous and Toxic Pollutants (Federal and State, respectively) are to be reported in pounds (see facility-wide *de minimus* reporting list by pollutant).
- ✓ **Emission Estimation Method Code** is chosen from the table below:

NC Accepted Emission Estimation Methods/Codes

- 01 - CONTINUOUS EMISSION MONITORING SYSTEM (CEMS)
- 02 - ENGINEERING JUDGEMENT WITH DOCUMENTATION
- 03 - MATERIAL BALANCE
- 04 - NC DAQ-APPROVED & REPRESENTATIVE STACK TESTS
- 08 - USEPA/AP-42 EMISSION FACTOR NOT IN NC SPREADSHEETS
- 09 - NC/LOCAL APPROVED EMISSION FACTOR (e.g., NC. SPREADSHEETS)
- 10 - NC APPROVED SITE-SPECIFIC EMISSION FACTOR

Emission factors used should be of the highest/best level available and be applicable to the specific type of equipment identified. If there are tests of like/same equipment, material balances, etc. used, these should be carefully and fully documented and provided to DAQ with engineering arguments/documentation as to why the factors used were valid and the best available. If testing is warranted, this is encouraged, but only after coordinating the test plans with DAQ and obtaining agreement as to methods, analyses, data handling, etc. in advance of the test.

- ✓ **Control Efficiency** is the (net) control efficiency of the Control System (collection of control devices) that control and reduce the emissions of each specified pollutant(s), from this operating scenario, before release to the emission release point. **You must include documentation or justification for control device efficiencies used in estimating actual emissions.** These efficiencies should be indicative of the actual operation of the device throughout the calendar year of the inventory, not unrealistic or idealized design efficiencies.

Check all entries for accuracy and completeness and provide all assumptions and calculations clearly identified.

Most, if not all, of the information requested on this form is within the legal definition of “emissions data” and therefore a claim for confidential treatment is not likely to be valid.

To be accepted as complete, copies of calculations used to determine these values must be provided- submit on paper or in Microsoft Office Products such as Word or Excel.

Instructions for Completing Facility Total Emissions Summary Form

The values to be recorded on **Facility Total Emissions Summary Form** are total (facility-wide) actual emissions for permitted and non-permitted emission sources, resulting from adding up the emissions on the individual **Emission Source/Operating Scenario Data Forms** that reflect all emissions sources at the facility. For previously inventoried facilities, pre-filled facility-wide emissions for the latest year reported are provided for reference and quality assurance. Each pollutant listed as emitted above the *de minimus* value must be reported. Tables of HAP/TAP pollutants and these values can be obtained at <http://daq.state.nc.us/monitor/eminv/forms/>.

Facility –Wide Totals (Actual Emissions) Table: This table records the facility-wide totals of the actual mass of emissions of each air pollutant emitted to the atmosphere during the calendar year of the report.

- ✓ “**Actual (Facility Total) Emissions**” are obtained by summing all of the emissions on the individual **Emission Source/Operating Scenario Data Forms**, by pollutant. Be sure to include emissions from separately submitted forms for operating scenarios where the data are claimed to be confidential as emissions data are never considered confidential.

Report criteria pollutants to the nearest 0.1 ton/year. Report HAPs and TAPs to one significant figure above the number of significant figures of the *de minimus* value in pounds. For example if the source is estimated to emit 11.111 pounds, and the pollutant as shown on the list has a lower cutoff defined as 10 pounds/year, report the result as 11.1 pounds per year). If you encounter a need for *additional pollutants* not specifically identified on the list, but are components of a group on the pollutant list, please provide the pollutant names and CAS numbers in the table at the bottom of the form and they will be added to the list and system in the future.

- ✓ **Inventory Report Prepared by:** Often it is necessary for DAQ staff to consult directly with the person who prepared the work for clarifications and omitted information. Please provide the Name, Telephone Number, Fax Number and Email address of that person so that DAQ inventory staff can converse with the person who is familiar with the calculations and estimates. Please indicate whether that person is an employee or a consultant. If the person is a consultant, the facility technical contact will normally be the person with whom any problems are discussed. DAQ discussions with consultants are intended to occur only when necessary and with the knowledge and approval of the facility that hired them.

Note: The calculations to support emission estimates must be thoroughly documented. The specifications for this documentation are supplied at <http://daq.state.nc.us/monitor/eminv/forms/>. This documentation must be submitted with the inventory in paper format or electronically in MS Office (Word, Excel, etc.) format postmarked by the due date.

No information on the Facility Total Emissions Summary Form can be held confidential.

Instructions for Completing Inventory Certification Form

The **Inventory Certification Form** serves two main purposes. The first is to explain the basis and definition of “**Responsible Official**” as contained in NC rules. The second is to provide certification that the person signing the form is the responsible official as defined and that the data submitted are complete and correct. Improper certifications and submittals are subject to significant penalties.

If the **Printed Name** is correct, the form should be signed and dated in blue ink. If the pre-printed name is not correct, it should be corrected in pen and then signed and dated. The submittal is not complete until this form is properly completed and returned by the required date. **The Certification form must be completed even if the facility did not operate during the Calendar Year reported upon, or emissions were zero.**

Please staple or otherwise attach this form as the front page of the package submitted to the DAQ regional office.

General Instructions

Authority

This inventory is required under the authority of Title 15A, North Carolina Administrative Code, Subchapter 2Q, Regulation .0207 and .0304, and Subchapter 2D, Regulation .0202, pursuant to N.C. General Statutes § 143-215.65 and 143-215.107. Sources failing to comply with this requirement are subject to enforcement action including a civil penalty of up to \$25,000 per day and/or injunctive relief pursuant to N.C. General Statutes § 143-215.114. Text of Statutes and Rules that apply are provided via the on line version.

Who Must Report

Facilities with Title V permits must provide this information each year for annual fee determinations. Facilities with permits classified as Synthetic Minor or Small are required, as a minimum, to update their air emissions inventory and submit it with their permit renewal application at least 90 days prior to the expiration of the permit (normally every 5 years). This applies, even if the facility did not have any air emissions in the specified calendar year, has submitted modifications to an existing permit, has not begun operation or was closed part of the year. The Division may require inventories from selected facilities at any time, regardless of current classification. Such facilities will be notified through a letter and instructions from the North Carolina Division of Air Quality.

Forms/Format

Facilities may file on line or print facility-specific forms via AERO. The data system will already reflect detailed information previously provided in your permit or previous inventory. You may need to photocopy the blank pages in some situations and use them to satisfy the inventory requirements. A list, which you may print from the system, provides the identification and description of all emission sources and control devices covered in the applicable air permit. This list should be used and incorporated exactly, unless an error is found. Errors should be noted and correction provided. Use and return these **specific forms, and copies**, if not submitting electronically (on line). Older versions of emission inventory forms will not be accepted and the inventory will not be considered complete until the appropriate forms and documentation are received.

If there are circumstances where it is not possible for you to update on line or to access and print these forms, you may call the regional emission inventory contact defined in your notification letter for assistance. For paper forms, please verify all pre-printed information and correct it as needed by striking through and neatly entering the correct information. This allows DAQ staff to quickly recognize changes. Type or print updated information on the forms in the units and format requested. Reflect actual mass of total emissions emitted by pollutant for the calendar year requested.

Supporting calculations are important and must be submitted to document estimates. See “**Uniform Policy and Documentation Standards for Emission Inventory Estimates**” at <http://daq.state.nc.us/monitor/eminv/forms/>.

Deadlines

Title V facilities must have their paper submittals completed, signed and postmarked (with original and copy) by June 30, each year for the previous Calendar Year (CY), or submit emissions on-line and the certification form and calculations postmarked by the same date. If the June 30 deadline falls on Saturday or Sunday, the emission inventory must be postmarked on the next business day, usually the following Monday.

For Synthetic Minor or Small facilities, paper submittals must be completed, signed and received (with original and signed copy) at least 90 days prior to the date of the expiration of the related air permit or submitted on-line and the calculations and certification form received by the same date. These inventories must be for the most recent full calendar year that will allow at least 90 days to complete the inventory prior to the permit renewal application being required. The calendar year to be reported and due date will be in the notification letter and is also on the same web page as above, should there be questions.

Incomplete or erroneous submittals will be returned with no extension of the original due date and be considered in violation of the Air Permit and Title 15A, North Carolina Administrative Code, Subchapter 2D, Regulation .0202, and Subchapter 2Q, Regulation .0304 and subject to legal enforcement actions.

General Instructions – Continued

What to Report

This inventory requires the best estimate possible of actual emissions of all pollutants from all sources. All emission values shall reflect realistic estimates for actual production rates and control device efficiencies cumulative over the entire year. Emission sources defined as “insignificant” in the permit or not in the permit at all (non-permitted) shall be included when estimating actual emissions for the facility if the facility-wide total for a specific pollutant from all sources is more than the facility-wide *de minimus* value for any listed HAP or TAP or more than 0.5 tons of any criteria pollutant.

Individual emission sources that are contributing less than 5% of this *de minimus* value may be omitted from separate reporting. This “rule of thumb” shall not be used as a means to avoid reporting significant emissions from numerous small sources that might meet the *de minimus limit*, if reported together.

Sources Not Required To Be Reported

Some emission sources are not required to be reported either as specifically identified or by “common sense” tests. NC Rules (15A NCAC 02Q .0102) define some such sources for purposes of permitting. The requirements for emission inventory registration/reporting though not strictly identical to these permit requirements are generally parallel.

1. The table below lists several of specific sources that are not generally required to be reported (any air emissions may be subject to reporting at the Director’s discretion):

<u>Irrespective of Permit Category</u>	
Maintenance, upkeep and replacement: i) Housekeeping activities or building maintenance procedures, Janitorial services and consumer use of janitorial products, ii) use of office supplies; maintenance of copying equipment; iii) use of fire fighting equipment or; iv) paving of parking;	
Air conditioning or ventilation , including heating or ventilating units used for human comfort that do not provide heat or exhaust air pollutants into the ambient air from any manufacturing or other industrial process; residential wood heaters, <u>space heaters</u> burning distillate oil, kerosene, natural gas or liquefied petroleum gas <u>used solely for comfort heat</u> ; and heaters, fireplaces and hot water heaters used for domestic purposes only, and not used to heat process water.	
Noncommercial food preparation	
Storage tanks: i) Used solely to store fuel oils, kerosene, diesel, crude oil, used motor oil, natural gas, or liquefied petroleum gas (LPG), if such <u>facility-wide</u> emissions are ≤ 1000 pounds/year; ii) used solely to store inorganic liquids; or iii) vessels used for the temporary containment of materials resulting from an emergency response to an unanticipated release of hazardous materials.	
Consumer use of office equipment and products	
Internal combustion engines used for landscaping purposes	
Gasoline service stations or similar <u>retail</u> dispensing facilities	
Demolition and renovation activities	
Non-Title V Facilities Only:	
Industrial or municipal wastewater treatment (Except sludge incinerators and lime silos at such facilities must be reported by Non TV);	Title V Facilities Only: See item 2, below, for discussion of Title V fugitives.
Fugitive dust emissions generated from <u>haul roads, storage piles and the like</u> do not need be included in this routine inventory but may be asked for later;	
Research and development laboratory equipment (Production labs are required to report).	

General Instructions – Continued

2. Fugitive Emissions

Fugitive emissions are excluded from reporting for emission-based fees for **Title V** facilities only, as indicated below:

Fugitive processes outside a building	& Not listed in Table 1	Must Report
Source is listed in Table 1	& Facility is listed in Table 2	Must Report
Source is listed in Table 1	& Facility is not listed in Table 2	Do not Report

Table 1: Fugitive Emissions Source List (TV)

(Located outside of buildings, > 1 ton/year cumulative –Excluded from reporting for Title V facilities if not listed in Table 2)

Open coal and mineral or other similar product storage piles
Open waste storage piles and handling (i.e. mineral fines, agricultural trash)
Manual material handling (such as front end loaders) and coal handling operations
Particulate emissions from open-top product and aggregate storage bins/silos
Conveyors, conveyor drop points and material screens
All sources at concrete batching plants other than unloading to silos
Haul roads
Pumps, flanges and valves associated with volatile organic liquid processing or handling

Table 2: Major Stationary Source Categories (TV)

(Fugitive emissions must be included for Title V applicability and inventory (fees) purposes for these categories)

Coal cleaning plants (with thermal dryers)	Sulfur recovery plants
Kraft pulp mills	Carbon black plants (furnace process)
Portland cement plants	Primary lead smelters
Primary zinc smelters	Fuel conversion plants
Iron and steel mills	Sintering plants
Primary aluminum ore reduction plants	Secondary metal production plants
Primary copper smelters	Chemical process plants
Municipal incinerators capable of charging more than 250 tons of refuse per day	Fossil-fuel boilers (or combinations thereof) > 250 million British thermal units per hour heat input
Hydrofluoric, sulfuric, or nitric acid plants	Petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels
Petroleum refineries	Taconite ore processing plants
Lime plants	Glass fiber processing plants
Phosphate rock processing plants	Charcoal production plants
Coke oven batteries	Fossil-fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input

and, all other stationary source categories regulated by a standard promulgated under section 111 or 112 of the Act, but only with respect to those air pollutants that have been regulated for that category. This includes Maximum Achievable Control Technology (MACT), New Source Performance Standards (NSPS) and New Source Performance Standards for Hazardous Pollutants (NESHAPS).

General Instructions – Continued

Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)

A document included on the Division of Air Quality web page <http://daq.state.nc.us/monitor/eminv/forms/> (**Tables of Hazardous and Toxic Air Pollutants for North Carolina Emission Inventory and Permitting Purposes**) lists the criteria, Hazardous and Toxic Air Pollutants as defined by the Federal and State rules, respectively. This document lists the required pollutants alphabetically by name with their Chemical Abstract System (CAS) number (You may search or re-sort electronically by CAS using features of Excel®).

Each compound listed must be quantified and reported if the facility-wide total exceeds the value listed in the *de minimus* column. Some of these pollutants are also VOCs or Particulate Matter. In such cases, each emission must be reported as both (VOC and as a HAP, for example). The list is not inclusive of all particulate matter or VOC compounds that must be reported to make up these criteria pollutants. In some cases, a HAP/TAP may be emitted that is excluded from the federal definition of VOC. In these cases, the emissions still should be reported as a HAP/TAP, but not included in the VOC reported. For HAPs and TAPs, there is no legal lower cut-off value. However, a suggested table of *de minimus* values may be used where appropriate.

Particulate Matter Less Than 2.5 Micrometers in Aerodynamic Size

Estimates of emissions of fine particles defined as less than 2.5 micrometers in aerodynamic particle diameter are necessary and required by Federal ambient air quality standards, and other regulations related to atmospheric haze. DAQ continues to collect this information to allow the evaluation of appropriate control technologies and regulations. These estimates are thus very important and will be under increased scrutiny. PM_{2.5} emissions from an operating scenario can never exceed the emissions of PM₁₀ from that operating scenario.

Information to Use for Estimation of Emissions

The Division realizes the difficulty of preparing accurate emission estimates and requests that you prepare this information carefully and thoroughly using the “best available” information you can develop. Sometimes it may require testing at your expense. Continuous emission monitoring (CEM) or other appropriate, representative and approved test data are to be used when available, if judged by the DAQ regional staff to be superior to generic emission factors. Facilities are solely responsible for the accuracy and completeness of the information, even if State or other governmental authorities provide guidance, spreadsheets and/or other assistance with emission estimation. Additional guidance regarding emission estimation appears later in these instructions and on the DAQ web at <http://daq.state.nc.us/monitor/eminv/>.

You may also need to obtain, and maintain, additional information from your chemical suppliers or corporate headquarters in order to comply with this requirement. Limited assistance may also be provided by DAQ regional office staff. You may also be eligible to receive technical assistance from the Small Business Assistance Program (call 1-877-623-6748 or visit their web page at <http://www.envhelp.com/html/sba.html>).

Claims of Confidential Business Information

North Carolina General Statutes §143-215.3C(b) provides that emission data: as defined in 40 Code of Federal Regulations (CFR) 2.301 are not entitled to confidential treatment. North Carolina Statutes specifically exclude most or all information requested on the Air Pollutant Point Source Emissions Inventory from being considered confidential.

The definition of emissions data that may not be held as confidential includes days/week, weeks/year, hours/year, emission estimation method and other items related to the calculations and subsequent modeling analyses, “in so far as these data are necessary to calculate emission data.” However, certain information, which if made public, would divulge methods or processes entitled to protection as trade secrets, may be considered confidential following N.C. Gen. Statue §132-1.2.

Persons wishing to claim that their information meets the requirements for treatment as confidential shall state, in writing, exactly how public disclosure of the information would divulge methods or processes entitled to protection as trade secrets and cause them harm. All such claims must be specific and unambiguous and indicate clearly any information you claim to be confidential business information not subject to public disclosure. To expedite review, please submit two versions of the inventory (one original, containing the information claimed as confidential, and two “sanitized” copies for the public files.).

General Instructions – Continued

Each page which contains material claimed to be confidential should be clearly stamped “confidential” in red with the specific information highlighted. The Director of DAQ, or a designee, will issue a determination of which, if any, information is entitled to confidential treatment under the rules. Persons dissatisfied with such determinations may request a declaratory ruling from the N.C. Environmental Management Commission, pursuant to N.C. Gen. Statute §143-215.3C(d), within ten (10) days of notice of the DAQ decision. The public may also challenge any ruling that the information is confidential. Until such time that rulings are made and all avenues of objection are exhausted, the DAQ will hold contested data as confidential.

Completeness

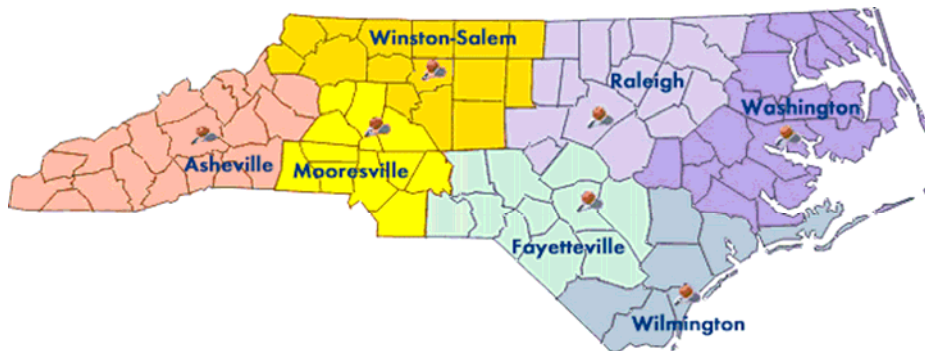
For a submittal to be considered complete and acceptable, all data requested must be supplied. If the submittal is not complete by the deadline, it may be returned and the facility declared in violation of 15A NCAC 2Q .0207 and/or 2D .0202.

Supporting calculations are important and must be submitted to document estimates. See “**Uniform Policy and Documentation Standards for Emission Inventory Estimates**” at <http://daq.state.nc.us/monitor/eminv/forms/>.

Questions?

The Emission Inventory Contact for the region serving your facility can answer most questions regarding the point source emission inventory. If not, that person can direct your call to a more appropriate person in the region or in the DAQ central office. It is important for your interests, and for those of DAQ, that you establish and maintain a working relationship with the regional person assigned to your facility so that orderly and consistent communications can be maintained.

Map showing Regional Offices in NC. Local agencies in Forsyth, Mecklenburg and Buncombe Counties handle the inventories for those areas.



DAQ Regions:

Asheville – (828) 296-4500
Fayetteville – (910) 433-3300
Mooresville – (704) 663-1699
Washington – (252) 946-6481
Wilmington – (910) 796-7215
Winston Salem – (336) 771-5000

Local Agencies

Buncombe – (828) 250-6777
Forsyth – (336) 727-8064
Mecklenburg – (704) 336-5500

North Carolina Emission Data - Definition of Terms

Actual Emissions - Weight of specific pollutant(s) exhausted into the ambient air by a facility.

AERO – The Air Emissions Reporting Online computer system is accessed via the Internet, allows facilities to access and complete their North Carolina emission inventory requirements via the Internet.

Affiliation - The identification of the associations of a data element, emission equipment, control device or other information as a member of a connected group or flow process. For example, an emission source is affiliated with one or more operating scenarios which are affiliated with one or more control devices or system which is affiliated with one or more emission release points (vents/stacks/etc.).

Billable HAPs - Under Title V rules, pollutants that are HAPs are billable for permit fee purposes except those that are also particulate matter (specifically, PM-10) or VOC. This is to avoid “double billing.” Pollutants listed below are federally defined Hazardous Air Pollutants (HAPs) but are not components of particulate matter or VOC, but billed separately:

<i>Chlorine,</i>	<i>Methyl Chloroform</i> (Not a VOC due to Federal definition)
<i>Fluorine</i>	<i>Methylene Chloride</i> (Not a VOC due to Federal definition)
<i>Hydrazine</i>	<i>Ozone</i> (Not often expected as a facility emission)
<i>Hydrogen Chloride</i> (Reported as mass of HCl in solutions)	<i>Perchloroethylene</i> (Not a VOC due to Federal definition)
<i>Hydrogen Fluoride</i> (Reported as mass of HF in solutions)	<i>Phosphine</i>
<i>Hydrogen Sulfide</i>	

An additional group of pollutants, such as tri butyl acetate may not fit into either category but need be inventoried.

Carbon Dioxide (CO₂) - Compound of two atoms of oxygen and one atom of carbon, usually resulting from the complete combustion of a carbon based fuel which is one of several greenhouse gases not currently defined as a Clean Air Act pollutant under federal rules. Carbon dioxide will be required to be reported as a result of the recommendations adopted subsequent to the reports required by the NC Clean Smokestacks Act. Title V facilities are required to report carbon dioxide and other greenhouse gas emissions starting with the Calendar Year 2008 emission inventory. Facilities that have made significant prior year reductions are advised to maintain data or records needed to estimate emissions back through calendar year 1990.

Carbon Monoxide (CO) - Compound of one atom of oxygen and one atom of carbon, usually resulting from the incomplete combustion of a carbon based fuel. It is a criteria pollutant and must be reported, but is not billed under the Title V program.

CAS Number - This is a number assigned to each chemical compound by Chemical Abstracts Service (CAS) to register the compounds and to avoid duplication by use of different names for the same chemical substance. CAS numbers may be obtained from Chemical Abstracts Service publications, from the supplier, on the containers and other commonly available reference documents. Names of mixtures and “families of compounds” may not have a CAS Number but may have a substitute code. A list of the compounds with CAS numbers that are to be reported in North Carolina are included on the DAQ web page at <http://daq.state.nc.us/monitor/eminv/forms/>. Handy (free) tools on the Internet may assist in determining chemical synonyms, etc. An example is at URL <http://chemfinder.cambridgesoft.com/>

Company Name - is the legal name of the company. This name should agree with the name on file with the NC Secretary of State and on the NC air permit. A change in name may precipitate a permit modification.

Control Device - equipment (fume incinerator, adsorber, absorber, scrubber, filter media, cyclone, electrostatic precipitator, or the like) used to destroy or remove air pollutant(s) before discharge to the ambient air. A control device is normally used to destroy or remove a specific pollutant, but may also remove or destroy multiple pollutants likely at different efficiencies.

Definition of Terms –Continued

In some cases, devices used to remove pollutants are an integral part of the process. An integral part is one without which the unit cannot be manufactured, purchased or operated and are usually necessary for proper production of product. Such situations occur with several emission sources, such as asphalt batch plants, where the cyclone to collect fines is integral to the process by returning needed fines to the product; therefore it may not be appropriate to be separately identify it as a control device for emission inventory estimations. Similarly, a secondary combustion chamber that is an integral part of a combustion device used for energy production or for cleaning or waste disposal purposes, is not considered a control device under 15A NCAC 2D .0101(9) or for emission inventory purposes. Add-on thermal or catalytic controls, such as fume incinerators or flares, are considered control devices. As an example, pyrolysis ovens, the oven and afterburner must essentially be inseparable to consider the afterburner as part of the unit and to exclude it as a control device. For other examples, such as furniture spray booths, the filter is considered integral because it is built in, even though it may need replacement or maintenance from time to time to keep it functioning as a control device.

Control System - is a "group" of control devices that work together on a specific exhaust gas stream or combination thereof. Though it may be best to visualize a control system to consist of a single device or multiple control devices in series, there are applications where multiple control devices function in parallel to compose a complex control system.

Criteria Pollutants - are six principal pollutants regulated based on 1990 Clean Air Act which required EPA to set National Ambient Air Quality Standards for pollutants considered harmful to public health and the environment.

de Minimus reporting levels - are values below which it is not generally accepted as practical to report emissions. NC rules do not include specifications for emission inventory lower cut-offs for reporting purposes. The values defined as *de minimus* or lower cut-off are facility-wide, not for individual emission sources or operating scenarios. These limits have no legal status. As such, the definition of these practical values shall not be used as a means to subdivide facility-wide emissions into small components to subvert the reporting process. Please note that very toxic pollutants, such as 2,3,7,8-tetrachlorodibenzo (p) dioxin, have very small reporting quantities (e.g. 0.001 lb/year).

Emission Release Point (Stack) - generally refers to any physical structure, vent or chimney designed to exhaust gases from a facility into the ambient air. Emissions that escape capture by such devices are normally termed process fugitive emissions.

Emission Source - is any stationary article, machine, process equipment, other contrivance or combination thereof from which air pollutants emanate or are emitted, either directly or indirectly. This term generally replaces the term "process" that was previously used by the emission inventory activities and may include fugitive emissions.

Facility - is a collective term that includes all pollutant-emitting activities located on one or more contiguous or adjacent properties under the control of the same person or persons. Emissions are to be estimated for all sources at the facility, even if some may be "exempt" from some air permit requirements, non-permitted or listed as "insignificant."

Fugitive Emissions - as defined in 15A NCAC 2D and 2Q: "means those emissions which could not reasonably pass through a stack, chimney, vent, control device, or other functionally equivalent opening." Fugitive emissions from "non-negligible" sources and activities should generally be reported in the air emissions inventory. "Process" fugitive emissions should always be reported in the air emissions inventory. However, if fugitive dust emissions are generated from haul roads, storage piles and the like on the grounds of a facility with a permit classed as small or synthetic minor, they do not need be included in this routine inventory. Quantification and reporting of such emissions may be required at any time for special studies and to satisfy specific requirements. There are certain cases where fugitive emissions are excluded from reporting for emission-based fees for Title V Facilities only.

Greenhouse gases - are generally considered to be gases that trap heat in the atmosphere. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities.

Grouping of like sources - is allowed under certain conditions, especially when it simplifies emission reporting and is consistent with the permit for the facility. An example would be grouping ten paint spray booths together where the emissions are estimated as a group and no distinct regulations apply to any one that is different from the others.

Definition of Terms –Continued

Grouping of emission **sources** should be limited to:

- ✓ Sources where there are similar hours of operation,
- ✓ Same or very similar stacks,
- ✓ Same or similar-pollutants,
- ✓ Similar regulatory applicability
- ✓ Same fuel (if applicable),
- ✓ Same emission factors may be applied, and
- ✓ No single operating scenario emits greater than 10 tons of VOC or NO_x (if located in an area formerly designated as an Ozone Non-Attainment area).

Grouping of emission release points - is also allowed and encouraged in some situations where grouped sources are exhausted and are nearly identical. Use good judgment to show calculations as simply, but completely, as possible to enable accurate emission estimations and entries will be understood by a reviewer or an on-site inspector who may not be familiar with the site.

Hazardous Air Pollutants (HAPs) - are pollutants on a list of 188 specific compounds which may be modified by U. S. Environmental Protection Agency (US EPA) regulation, or families of compounds listed in the (US) Clean Air Act of 1990 as harmful to health. Be reminded that some are families of compounds such as for **metals and other pollutants**: For certain groupings of pollutants such as “Compounds of < >.” (Mercury for example), where it is important to report the mass of the individual compounds AND the sum of the mass of those compounds under the appropriate pollutant code(s). The total should be for all the elemental or substance compounds listed and must be at least as large as the mass of the sum of the individual compounds or substances reported. Any **unknown** compounds of that element may be lumped into the total for that element or substance and then listed as “other compounds of xxx (the family for which the compound is a part).” You may get this list at <http://daq.state.nc.us/monitor/eminv/forms/> .

In Process Fuel – means fuel that is burned inherent with the emission source’s function whose combustion products cannot be separately quantified from emissions from the “process.” Examples are direct-fired tenter frames, asphalt drum mixers, etc. where the combustion and process gases are mixed and quantification of the total emissions is possible, but not necessarily quantification of the separate components.

Insignificant Permitted Source - is any emission source included in the NC permit, but specifically listed as “insignificant activities.” These operations may have emissions, but often do not. If these sources do have emissions, and the facility-wide total for those emissions annually exceed 0.5 tons of any criteria pollutant or the *de minimus* value of any HAP/TAP, these emissions should be reported in the inventory.

Non-Permitted Emission Source - means any emission source which is not included in the permit but which has emissions. This may include such things as paved or unpaved roads on the facility’s property, small generators, etc. If these sources do have emissions, they should be reported in the inventory when the facility-wide total for these emissions exceed 0.5 tons of any criteria pollutant or the pollutant-specific *de minimus* level for a HAP/TAP.

NO_x- any oxide of Nitrogen; reported as the chemically equivalent mass of NO₂.

Permitted Emission Source - means any emission source specifically listed/included in the existing permit for the facility. Most emission sources should be listed in the permit, as either permitted or insignificant.

Operating Scenario - the actual use or application of the equipment that defines an emission source (formerly termed a “process”). Operating scenarios define the way(s) that permitted and non-permitted equipment operate on an actual and day-to-day basis. For example, a tangential boiler may be the permitted equipment or emission source. However, if it burns coal, oil, natural gas or other fuels under different situations, each of these situations is defined as an operating scenario. There is at least one operating scenario for each emission source or group of emission sources. Conversely, each operating scenario can only be a component of one emission source or group of emission sources.

Definition of Terms –Continued

Particulate Matter, PM/TSP/PM-10/PM-2.5 - Particulate matter (PM) is all finely divided solid or liquid material, other than uncombined water, emitted to the ambient air inclusive of all particle sizes capable of becoming air borne.

- ✓ Total Suspended Particulate (TSP) is the portion of PM that has become airborne and has an aerodynamic diameter less than or equal to about 100 micrometers.
- ✓ PM-10 is the portion of PM with an aerodynamic diameter less than or equal to 10 micrometers and is the particulate pollutant form used in calculation of Title V fees. PM-10 can never be greater than PM (TSP).
- ✓ PM-2.5 is the portion of PM that has an aerodynamic diameter less than or equal to 2.5 micrometers and is most health offensive. PM-2.5 can never exceed the quantity of PM-10 or PM.

All forms of particulate matter include the condensable(ed) particles and all estimates should be made accordingly.

Permit Number - This is the unique identification number(s) assigned and found on your North Carolina Air Permit(s).

Potential Emissions - the maximum emissions that could be generated from a facility under a definition beyond the purposes of this inventory. You are not required to report potential emissions for this submittal, but you should periodically review the facility total potential emission calculations for proper permit classification. Incorrect classification may place you in a violation status. You should notify your regional office as soon as possible of such changes to avoid compounded penalties.

Process – See Emission Source and Operating Scenario above.

Source – See Emission Source above.

Standard Industrial Classification (SIC) and North American Industrial Classification System (NAICS) Codes - these are 4-digit primary SIC code(s) or six-digit NAICS Codes which help classify businesses into statistical business categories from the US Office of Management and Budget. The SIC will eventually be phased out and be replaced by NAICS codes. It will not be possible for all codes to be automatically cross-referenced so you may need to consult NAICS documentation. The NAICS is also available on paper and Compact Disk (CD-ROM) from the Superintendent of Documents or on line at <http://www.census.gov/econ/www/mm/naics.html>.

Sulfur Dioxide (SO₂) - is a compound with one sulfur atom and two oxygen atoms, usually resulting from the combustion of sulfur in fossil fuels. It is a criteria pollutant and National Ambient Air Quality Standards apply. Federal or state emission standards may also apply including those for Acid Rain.

Toxic Air Pollutants (TAPs) - a specific list of pollutants established by North Carolina Rules subject to state regulation and control. A combined list of HAPs and TAPs is available on the DAQ Internet web page <http://daq.state.nc.us/monitor/eminv/forms/>.

TPY or tpy - (English) tons per year.

Volatile organic compounds or VOC (for purposes of State Implementation Plans and this inventory) – is “any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate, which participates in atmospheric photochemical reactions. This includes any such organic compound other than the following, which have been determined to have negligible photochemical reactivity:

Compounds Excluded from VOC Definition (and reporting)	
Acetone	Methyl formate**
Ethane	Methylene chloride (dichloromethane)
2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-hepta fluoropropane	1,1,1,2,2,3,3,4,4 nonafluoro-4-methoxybutane
1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane	Parachlorobenzotrifluoride (PCBTF)
2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane	Perchloroethylene (tetrachloroethylene)
Methane	Siloxanes, cyclic, branched, or linear completely methylated
Methyl acetate	Tri-Butyl acetate (TBAC) but to be inventoried*
Methyl chloroform (1,1,1-trichloroethane)	

Definition of Terms –Continued

CFCs	
CFC-11 (trichlorofluoromethane)	CFC-114 (1,2-dichloro 1,1,2,2-tetra fluoroethane)
CFC-12 (dichlorodifluoromethane)	CFC-115 (chloro-pentafluoroethane)
CFC-113 (1,1,2-trichloro -1,2,2- trifluoroethane)	

HFCs	
HFC-23 (trifluoromethane)	HFC 227ea (1,1,1,2,3,3,3-heptafluoropropane)**
HFC-32 (difluoro-methane)	HFC-236ea (1,1,1,2,3,3-hexafluoropropane)
HFC 43-10mee (1,1,1,2,3,4,4,5,5,5-deca-fluoropentane)	HFC-236fa (1,1,1,3,3,3-hexafluoropropane)
HFC-125 (pentafluoroethane)	HFC- 245ca (1,1,2,2,3-pentafluoro propane)
HFC-134 1,1,2,2-tetra fluoroethane	HFC-245ea (1,1,2,3,3-pentafluoropropane)
HFC-134a (1,1,1,2-tetra-fluoroethane)	HFC-245eb (1,1,1,2,3- pentafluoropropane)
HFC-143a (1,1,1-trifluoroethane)	HFC-245fa (1,1,1,3,3- pentafluoropropane)
HFC-152a (1,1-difluoroethane)	HFC-365mfc (1,1,1,3,3-pentafluorobutane)
HFC-161 (ethylfluoride)	

HFE's	
HFE-7000, also known as 1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane **	
HFE-7500 also known as HFE-s702, T-7145, L-15381 and 3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane**	
HFE-7300 also known as L-14787 or 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane***	

HCFCs	
HCFC-22 (chloro- difluoromethane)	HCFC-141b (1,1-dichloro-1-fluoroethane)
HCFC-31 (chlorofluoromethane);	HCFC-142b (1-chloro 1,1-difluoroethane)
HCFC-123 (1,1,1-trifluoro 2,2- dichloroethane)	HCFC-151a (1 chloro 1-fluoroethane)
HCFC-123a (1,2-dichloro-1,1,2- trifluoro-ethane)	HCFC-225ca (perchloroethylene (tetrachloroethylene))
HCFC-124 (2-chloro-1,1,1,2-tetra- fluoroethane)	HCFC-225cb (1,3-dichloro -1,1,2,2,3-pentafluoro propane)

and **perfluorocarbon compounds** which fall into these **classes**:

- i. Cyclic, branched, or linear, completely fluorinated **alkanes**,
- ii. Cyclic, branched, or linear, completely fluorinated **ethers** with no unsaturations,
- iii. Cyclic, branched, or linear, completely fluorinated tertiary **amines** with no unsaturations, and
- iv. Sulfur containing **perfluorocarbons** with no unsaturations and with sulfur bonds only to carbon and fluorine.”

(Fed. Register- §51.100, August 25, 1998 – emphasis added for groups and classes; and order edited and annotated to facilitate easier look-up).

* Federal Register: November 29, 2004 (Volume 69, Number 228), Page 69298-69304, Revision to definition of Volatile Organic Compounds--Exclusion of t-Butyl Acetate, Environmental Protection Agency (EPA), Final rule.

**Federal Register: November 29, 2004 (Volume 69, Number 228), Page 69290-69298, 40 CFR Part 51, *Air Quality: Revision to Definition of Volatile Organic Compounds--Exclusion of Four Compounds*, Environmental Protection Agency (EPA), and

***Federal Register January 18, 2007, 40 CFR Part 51, Volume 72, Number 11, Pages 2193-2196, *Revision to Definition of Volatile Organic Compounds--Exclusion of HFE-7300*.

Emissions of VOC's must be reported based on actual mass of compound(s) emitted, as opposed to “as carbon, as propane,” etc. If available data does not provide for a firm determination of this mass, estimates should be made both with the information available and with the best insights available as to the mass of actual emissions. If differing estimates result, the best data set should then be provided to DAQ with clear documentation.

Being on the above list of exclusions does not mean that a compound should not be reported as a HAP or TAP. If a HAP or TAP is excluded as a VOC, it still must be separately reported as a HAP/TAP.

The End