

# National Emission Inventory (NEI) Database Instructions

Developed by the Forsyth County Office of Environmental Assistance and Protection

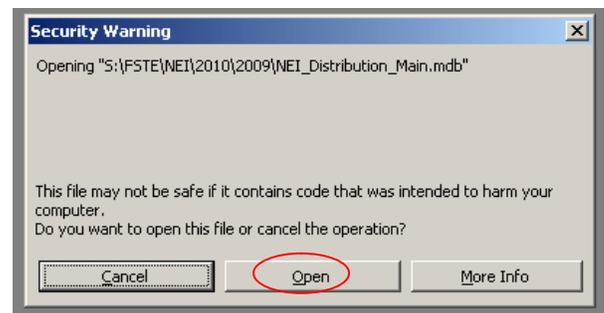
The US Environmental Protection Agency (EPA) stores air pollutant emissions data in the National Emissions Inventory System (EIS). Forsyth County Office of Environmental Assistance and Protection (FCEAP) is tasked with collecting emissions data from local facilities and submitting the information to EPA's EIS database. In order ease the transfer of data, FCEAP developed the NEI database. It was created using MS Access 2003. The user must have this version of MS Access or newer to make use of the database.

When FCEAP submits air emissions data to EPA, the information is subject to a battery of quality assurance checks. The QA process is done in phases due to the hierarchical nature of the data. Sometimes it may be necessary to contact an inventory preparer several times during the QA process, since errors in one level of data must be corrected before the QA process can proceed to the next level of detail. Following these instructions/tips and also the emission inventory preparation instructions provided on EAP's website at [https://forsyth.cc/EAP/assets/doc/EI\\_Instructions.pdf](https://forsyth.cc/EAP/assets/doc/EI_Instructions.pdf) should reduce errors and thereby reduce the amount of time spent on the emission inventory QA process for all parties involved.

Please do not re-use a previous year's NEI database to submit your inventory. **Obtain a new copy of your database each year so that errors corrected during the previous QA process are not repeated.**

## Database Startup – Security warnings

Access 2003: Upon start up, one or two security warnings may be present. Click "No" and/or "Open".



Access 2007: A security warning regarding the macros used in this database will be present. Click "Options" then "Enable this content" on the subsequent pop-up.

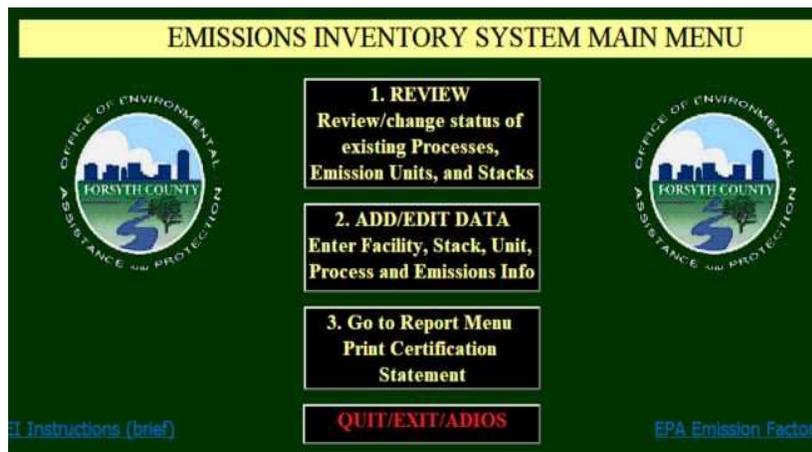


**MAIN MENU** - There are three main sections on the opening Menu.

**Review** – used to verify/change status of Processes, Emission Units, and Stacks already in the database. Please view this section before beginning data entry.

**Add/Edit Data** – this is the data entry section for adding and changing Facility, Release Point, Emission Unit, Process, Control and Emissions records

**Report Menu** – the Facility Emissions Summary/Certification Statement is found here as well as reports that may be useful for reviewing data.



**REVIEW Section** – This section should be viewed first. If a Process, Emission Unit, or Stack emitted reportable emissions during any part of the year for which the inventory is being conducted, its Status Code should be Operating (OP). If a stack/unit/process did not emit any reportable emissions in the year being inventoried and is either permanently or temporarily shut down, enter Permanently Shutdown (PS) or Temporarily Shutdown (TS) as applicable, plus the first full year during which the did not operate. Taking time to verify operational status will ensure your facility’s emissions are totaled properly. If a shut-down stack/unit/process is not coded as PS or TS, it is assumed to be operating and any associated emissions data will be uploaded to EPA’s system.

A stack/unit/process marked as permanently or temporarily shut down will be hidden from view in the ADD/EDIT section the next time the database is opened. If a temporarily shutdown stack/unit/process becomes operational again, its status should be changed to OP, after which it will reappear in the ADD/EDIT section. Once a stack/unit/process is designated as shut down, do not assign its ID to a new stack, unit or process.

**Important:** In order to avoid orphaned records, when designating a stack or emissions unit as PS or TS please observe the following practices:

1. If the units or processes associated with a shut down stack ceased operation as well, mark them shut down at the same time the stack is designated shut down. Similarly, if a unit is to be marked shut down, shut down all of its processes before exiting the REVIEW section.
2. If, however, the units/processes associated with a shut down stack will continue to operate, **prior to** changing the stack’s operating status:
  - a. Assure that the new or existing stack that will be associated with these units/processes exists in the “Stacks” tab of the ADD/EDIT section. If not, add the new stack. **Do not create the new stack by typing over information for the stack you are shutting down**
  - b. For all processes associated with the stack being shut down, replace the old stack ID with the new stack ID in the “Processes, Controls, Emissions” tab.
  - c. Return to the REVIEW status section and change the status of the stack being shut down to PS or TS.

## ADD/EDIT DATA Section

### Navigation



System navigation buttons are used to move between records and appear within the form or subform whose records they control. The  button is used to add a new record in the associated form or subform.

### Performing Searches

A record search may be performed by FIRST placing the cursor in the data field to be searched, THEN clicking the binocular icon. A search box featuring choices (search for whole word, part of the word, etc.) will pop up. Once you have entered your search criteria click “Find Next. Enter your search term in the search box and not the data entry field being searched, otherwise you will be changing stored information.

### Adding Stacks, Emission Units, Processes, Control Devices, Emissions

The NEI database is relational, so “parent” records must exist before “child” records can be added. For example, a process cannot be added until the related stack and emission unit records have been established. Therefore, the **data should be entered in the following order: Facility Info, Stacks, Emission Units, Processes, Controls and Emissions.** When adding a Process, the associated Stack IDs and Emission Unit IDs must be entered **exactly** as in the previously established records.

### Facility Info

A screenshot of a web-based form titled "Facility Info". The form has a light blue background and contains several input fields and buttons. At the top, there are three main sections: "Premise" with a dropdown menu showing "000000", "Facility Name" with a text input field containing "Winston-Salem", and "Facility Street Address" with a text input field containing "1833 Winston Road". Below these are "Address supplemental info:" fields for "City" (Winston-Salem), "State" (NC), and "Zip" (27109). There are two buttons: "Check facility Lat/Long using Google Maps" and "Edit Lat/long info". A table shows "LATITUDE (decimal degrees)" as 36.07558 and "LONGITUDE (decimal degrees)" as -80.162456. To the right, there are dropdown menus for "Collection Method" (018), "Reference Datum" (002), "Reference Point Code" (106), "Facility Status Code" (OP), "Year Of Inventory YYYY" (2010), and "Source Category" (NON). A "NAICS Code" dropdown shows 61131. A "Back to Main Menu" button is on the far right. At the bottom, there are tabs for "Stacks", "Emission Units", "Processes", "Controls", and "Emissions".

The Facility Info section includes the reporting facility’s physical address and geographic information. The lat/longs are in decimal degrees format and should locate the facility using either a GPS or via satellite or aerial images such as those seen on the Forsyth County Tax Administrator’s *Geo-Data Explorer* or on *Google Earth*. Latitudes in Forsyth County should be between 35.972730 and 36.261614. Longitudes should be between -80.035433 and -80.516445. The “Check facility Lat/Long using Google Maps” button is provided to check the coordinates for your facility location in Google Maps via your system’s default web browser. Please do not make unnecessary trivial changes (i.e., less than a few hundred feet) to existing geographical coordinates. The reason for this is that EPA locks geographical info in their system and FCEAP must request EPA to unlock this data to make changes. If the coordinates are not at all representative of your facility’s location, you may unlock and edit the data fields by pressing the *Edit Lat/Long Info* button. The Year of Inventory is the 4 digit year during which the emissions occurred. If you are unsure of your *Source Category*, leave the field blank and your case manager will complete it.

## STACKS (1<sup>st</sup> tab)

Stack ID	Description					
SO01	BOILER #1 CHP					
Stack Type	Height (feet)	Diameter (feet)	Exhaust Flow (ACFM)	Temp (deg F)	Exit Gas Velocity (FPS)	Dist. to Fenceline (feet)
2	68	4.2	698461	280	821	50
				entered vs calc:		 Stack Search
Calculated Velocity from Flow entered:				839.4	2.2%	
Calculated Flow Rate from Velocity entered:				682122.9	2.4%	
There should be less than 5% difference between entered values and calculated values.						
Record: 1 of 6						

Each Stack ID must be unique within the facility. You will not be able to enter a Process Unit unless you have first entered the stack or release point that you will associate with that process. If a process emits through multiple stacks, choose the most representative stack for that process. Provide the actual criteria for the chosen stack, do not add exhaust velocities, diameters, etc. from two or more stacks to create a bogus representative stack.

Enter both the Exhaust Flow (ACFM) and the Exit Gas Velocity (FPS). The flow rates and velocities you enter should be within 5 percent of the calculated flow and velocity using the following formula(s) (note: if you have a rectangular stack, there is a formula in the main EI instructions on how to convert it to its equivalent diameter):

$$VolumetricFlowRate(\frac{ft^3}{min}) = \Pi r^2 \times velocity(\frac{ft}{sec}) \times 60(\frac{sec}{min})$$

$$Velocity(\frac{ft}{sec}) = VolumetricFlowRate(\frac{ft^3}{min}) \times \frac{min}{60sec} \times \frac{1}{\Pi r^2}$$

Where r = radius of stack in feet

The **Brown outlined fields** are read-only entries for you to check your calculations for the Flow Rate and Exit Gas Velocities that you enter in area above them.

## EMISSION UNITS (EU) (2<sup>nd</sup> tab)

EU ID	Description	Unit Type	Capacity	Unit of measure
ES-2	60000 Erie City Water Tube Boiler #2	100	71.1	E6BTU/HR
ES-4	BOILER #1 - 6900 PPH WPC	100	8.2	E6BTU/HR
ES-5	BOILER #2 - 6900 PPH WPC	100	8.2	E6BTU/HR
ES-6	12 EMERGENCY GENERATORS	160	1930	KW
ES-1	60000 PPH ERIE CITY WATER TUBE BOILER	100	71.1	E6BTU/HR
*				

Record: 14 of 5

\*\*\* Unit Type must be complete for ALL Emission Units\*\*\*  
 Design Capacity and Units of Measure are required for Unit Types 100, 120, 140, 150, 160, 180, and 200 only.  
 For all other Unit Types, leave Design Capacity and Units blank.

Emission Units must be entered prior to any processes associated with it. Every Emission Unit must have at least one process. You must enter a *Unit Type*. If your unit type is not in the drop down box, there are general unit types such as “*other combustion*”, “*other process equipment*”, etc. that are meant to describe those not specifically listed. You are only required to enter the Design Capacity for Unit Types 100, 120, 140, 150, 160, 180, and 200. Entering a *Design Capacity* for all other *Unit Types* is optional.

## PROCESSES, CONTROLS, EMISSIONS (3<sup>rd</sup> tab)

Process ID: ES-1 Process Description: BOILER #1 60000 PPH - NG

EU ID: ES-1 Stack ID: SOO1 SCC: 10300602

Operating Hours: Actual Hrs/Yr: 8760 Material Code: 209 Material E/O: I

% production between 8/1 and 9/30 inclusive: 42 Mat. Throughput: 76449720 Units: FT3 Data Source: AP 42

If all pollutants are uncontrolled or calculated using controlled emission factors, leave control info (orange section) blank

CONTROL APPROACH Description: Capture Efficiency %

CONTROL MEASURE(S) CODE

ENTER A CODE FOR EACH CONTROL MEASURE USED IN THIS CONTROL APPROACH

Record: 14 of 1

THE ABOVE BUTTONS NAVIGATE THROUGH THE CONTROL MEASURES (A Control Approach may have several Control Measures)

IMPORTANT! Every Control Approach must have at least one Control Measure and one controlled pollutant (eff%).

Pollutant Code	Pollutant Name	Emissions	Unit	Calc Meth	Control Eff%
110543	Hexane	135.55	LB	8	
50000	Formaldehyde	5.62	LB	8	
50328	Benzo[a]Pyrene	79	LB	8	
CO	Carbon Monoxide	3.13	TON	8	
NOX	Nitrogen Oxides	3.75	TON	8	
PM10-PRI	PM10 Primary (Filt + Cond)	0.267	TON	8	
PM25-PRI	PM2.5 Primary (Filt + Cond)	0.267	TON	8	
SO2	Sulfur Dioxide	0.038	TON	8	
VOC	Volatile Organic Compounds	0.191	TON	8	
*					

Record: 14 of 9

Once your stacks and emission units are entered, begin working on the processes, controls, and emissions. Navigating through the processes is controlled by the process navigation icons at the right of the process *Description*. (see description of Navigation Buttons on the first page of instructions). If there are controls, there can be only one *Control Approach* per process. There can be more than one control measure for any control approach and of course multiple pollutants per process

## Processes (top blue area)

Stacks Emission Units Processes, Controls, Emissions

Process ID: ES-1 Process Description: BOILER #1 60000 PPH - NG

Emission Unit associated with this Process (UE ID): ES-1 Release Point associated with this Process (Stack ID): SO01

SCC: 10300602 Material Code: 209 Material I/O: I

Mat. Throughput: 63601000 Units: FT3

Actual Operating Hrs/Yr: 2654 Throughput Data Source: Fuel purchase records, meter readings

Add a new Process

PROCESS NAVIGATION

1. *Process IDs* must be unique for each process of the facility. You may have more than one process for each emission unit. For example, a boiler assigned Emission Unit ID “ES-B1” that burns #2 fuel oil as well as natural gas, could have a Process ID of “B1NG” for natural gas combustion and “B1FO” for fuel oil combustion. If your process IDs are prefilled from a previous inventory, please do not change them.
2. *Process Description* - Please make your descriptions unique. For example, including identifiers such as “Boiler #1 NG”, “Boiler #1 Oil”, etc. will help to identify and differentiate between multiple processes.
3. *EU ID* – Enter the Emission Unit ID associated with this process. It must be one already entered in the Emission Units section. Be careful to distinguish between “0”s and “O”s. Also, all spaces and dashes must be exact.
4. *Release Point/Stack ID* – Enter the Stack ID associated with this process. The stack must already be an established record in the Stack Section.
5. *SCC* – The Source Classification Codes – select an SCC, either by entering the code directly or by using the drop down box. For help choosing an appropriate code, click the blue “SCC” label to open EPA’s SCC search site in your browser.
6. *Operating Hours* – The number of hours that the process operated during the calendar year being inventoried. Must be either a null value (blank) or a whole number between 1 and 8784 inclusive (i.e., NOT zero).
7. *Material Data*– From the drop-down list, choose the *Material Code* that best represents the substance involved in the process that causes the majority of emissions, then specify in the *Material I/O* field whether the material is input to the process, output by the process or simply passes through the process. Quantify the *Material Throughput* using a unit available in the *Units* drop down box. This field must be greater than or equal to zero (cannot be left blank). Specify the source of your throughput estimates in the *Throughput Data Source* field (e.g. Production Records, Material Inventory, etc.)

## CONTROL APPROACH AND CONTROL MEASURE(S)

If all pollutants are uncontrolled or calculated using controlled emission factors, leave control info (orange section) blank

CONTROL APPROACH	Description: <input type="text"/>	Capture Efficiency % <input type="text"/>	IMPORTANT! Every Control Approach must have at least one Control Measure and one controlled pollutant (eff%).
CONTROL MEASURE(S) CODE <input type="text"/>			
ENTER A CODE FOR EACH CONTROL MEASURE USED IN THIS CONTROL APPROACH			
Record: <input type="button" value="Home"/> <input type="button" value="Left"/> <input type="text" value="1"/> <input type="button" value="Right"/> <input type="button" value="End"/> of 1			
THE ABOVE BUTTONS NAVIGATE THROUGH THE CONTROL MEASURES (A Control Approach may have several Control Measures)			

The Controls section has its own navigation buttons in the gray bar at the bottom of the section. If process emissions are reduced by a control device (or a combination of control devices) and this reduction is accounted for in your estimates, you must complete this section and enter in the *Emissions* section the Total Control for each pollutant controlled by the Control Approach.. When utilizing an emission factor that inherently accounts for the effect of the control device, (e.g. an AP-42 controlled emission factor), completing the Control section and entering Total Control for each pollutant controlled is optional. Note that no calculations are done by the database. The reported emissions will not be changed by the capture/control efficiencies entered. If there are no emission controls associated with the process, leave Control Approach and the Control Measure Code sections blank.

### Control Approach

**There can be no more than one** Control Approach for any given Process. However, there may be more than one Control Measure for each Control Approach. The navigation buttons in the gray area are to add Control Measures to the Control Approach.

1. *Control Approach Description* – Give a brief description of the Control Approach. Use a description that is unique and... descriptive.
2. *Capture Efficiency* – This is the weight per unit time of a pollutant entering a Control Approach system and delivered to the control device(s) divided by the total weight per unit time generated by a source of the pollutant, expressed as a percentage. Note: the Total Control (capture and control efficiency) is reported for individual pollutants under *Emissions*.

### Control Measures

The *Control Measure Code* – From the drop-down box, choose the Control Measure code that best represents the control device associated with the process. You may enter more than one Control Measure per Control Approach by using the navigation buttons in the gray bar just beneath this section (shown in the picture above).

For example, if the Control Approach for a process is a “Cyclone and Fabric Filter System” then you would enter two (2) control measures under this Control Approach – one for the cyclone and one for the fabric filter. In the drop-down box, there are several choices to consider depending on the efficiency, etc. of the control devices. For example, you could select “210 - Centrifugal Collector” as the first control device in series then, using the navigation button to add a blank record, add the second Control Measure by selecting “127 - Fabric Filter”.

**For each Control Approach, there must be at least one Control Measure Code and at least one pollutant in the emissions section along with a non-zero Total Control efficiency specified.**

## EMISSIONS

EMISSIONS FROM: BOILER #1 60000 PPH - NG					
Pollutant Code	Pollutant Name	Emissions	Unit	Calc Meth	Control Eff%
▶ 110543	Hexane	135.55	LB	8	
50000	Formaldehyde	5.62	LB	8	
50328	Benzo[a]Pyrene	79	LB	8	
CO	Carbon Monoxide	3.13	TON	8	
NOX	Nitrogen Oxides	3.75	TON	8	
PM10-PRI	PM10 Primary (Filt + Cond)	0.267	TON	8	
PM25-PRI	PM2.5 Primary (Filt + Cond)	0.267	TON	8	
SO2	Sulfur Dioxide	0.038	TON	8	
VOC	Volatile Organic Compounds	0.191	TON	8	
*					

Record: 1 of 9

Use mouse, tab, or button controls to navigate the emissions data fields. Regulated Pollutant emissions must be quantified for each Process. Emissions of an individual pollutant are not required to be reported if the **total facility-wide emissions** of that pollutant are less than the reporting threshold. If the total facility-wide emissions are greater than the reporting threshold, the emissions of that pollutant from every process must be entered even if the processes emissions are below the reporting threshold. If a threshold is not provided, the pollutant's emissions must be quantified. Reporting thresholds are found on the List of Pollutants, which can be downloaded here:

[https://forsyth.cc/EAP/assets/doc/EI\\_pollutants.pdf](https://forsyth.cc/EAP/assets/doc/EI_pollutants.pdf).

*Pollutant Code* – Pollutant Codes and the corresponding pollutant names can be selected using either box. If the pollutant code is known, it may be entered directly in the drop-down box. When the code is selected the corresponding pollutant name is automatically entered. Similarly, the pollutant name may be entered in pollutant name field and the corresponding code is also entered. Alternatively, one can open and search either drop-down box by clicking the button on the right side of the field.

EPA's pollutant code list is constantly evolving. If your database was prefilled from a previous inventory, it may include pollutant codes that are no longer valid. *Please assure that all pollutants you are reporting are present in the drop-down list.*

*Emissions and Units* – All Criteria Pollutants, TSP, PM2.5 and Non-Criteria Regulated Air Pollutants shown on the below table **must be entered in tons**. **Billable pollutants are shown in bold.**

<b>Criteria Pollutants, TSP &amp; PM2.5</b>	<b>Code</b>	<b>Non Criteria Regulated Air Pollutants</b>	<b>CAS #</b>
Total Suspended Particulate Matter	TSP	<b>Chlorine</b>	7782-50-5
Condensable Particulate Matter	PM-CON	<b>Fluorine</b>	7782-41-4
<b>Particulate Matter &lt;= 10 microns in diameter</b>	PM10-PRI	<b>Hydrazine</b>	302-01-2
Filterable Particulate Matter <= 10 microns in diameter	PM10-FIL	<b>Hydrogen Chloride</b>	7647-01-0

Criteria Pollutants, TSP & PM2.5	Code	Non Criteria Regulated Air Pollutants	CAS #
Particulate Matter <= 2.5 microns in diameter	PM25-PRI	Hydrogen Fluoride	7664-39-3
Filterable Particulate Matter <= 2.5 microns in diameter	PM25-FIL	Hydrogen Sulfide	7783-06-4
Sulfur Dioxide	SO2	Methyl Chloroform	71-55-6
Oxides of Nitrogen	NOx	Methylene Chloride	75-09-2
Volatile Organic Compounds	VOC	Perchloroethylene	127-18-4
Carbon Monoxide	CO	Phosphine	7803-51-2
Lead (as lead metal or total weight of lead compounds)	7439921	Tertiary Butyl Acetate	540-88-5

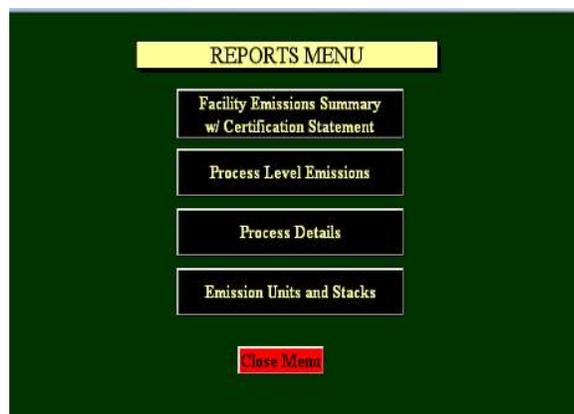
Enter all other pollutants in pounds (lbs) including all Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs).

*Calculation Method* – via the drop-down box, choose the method used to estimate emissions of the corresponding pollutant.

*Total Control* - If a Control Approach was entered for a process, enter a value for Total Control for at least one pollutant. Where the values are readily available, enter a “Total Control” for pollutants that are controlled by the Control Approach. Entering a number in the Total Control box means that this number (*greater than or equal to 1 and less than or equal to 100*) was used as a percentage to calculate your emissions of this pollutant for this process. The *Total Control* value is not used to perform calculations in the database. Unless changes are required during the QA process, the emissions you enter on this form are reported to EPA as your facility’s actual emissions for the inventory year.

## REPORTS MENU

From the main menu, click on the “Go to Report Menu.”



### Facility Emissions Summary/Certification Statement

After clicking on the Preview/Print button beside Facility Emissions Summary you are presented with a screen showing the summary for each pollutant emitted from the facility. From that screen you may print a hard copy. Press the Esc key to return to the REPORTS MENU. You will also see the Certification Statement at the end of the emissions report. **This must be signed by a responsible official and returned with the electronic database holding your facility information.** If you transfer your data via email, return the signed statement

by US Mail, Fedex, etc. along with any background information that is not transferable electronically (or drop it by the FCEAP office) soon after emailing the database.

## Process Level Emissions

This report shows each process and its emissions entered by the user.

## Process Details

This report includes all data entered for the facility down to the process level details.

## Emission Units and Stacks

This report allows one to review Emission Units, Process Units and Stacks\Release Points and lists the NAICS code and SCC code for all operating processes.

## Miscellaneous Tips

1. **Pounds vs. Tons** – A common error observed is when a pollutant is entered in both pounds and tons. It is good practice to review the emissions summary report to see if a pollutant is listed twice. If so, it was most likely entered as being emitted in pounds for one process and tons in another process. This error should be corrected to assure a pollutant is entered consistently in lbs or tons in accordance with the table found in the Emissions section of these instructions.
2. **Stack Velocity and Flow parameters** - The most common emission point error occurs when velocity is reported as feet per minute instead of the required feet per second (FPS). See discussion under Stacks section.
3. **Missing Data** – All data must be complete with the exception of the following:
  - a. Supplemental Address Information in the Facility information section
  - b. The *Control Approach* section, *Control Measure* section, and the *Total Control* component found under the emissions section should be left blank when there are no controls for the process. They may be left blank if controlled emission factors are used to calculate the emissions and you opt not to complete them. However, they should be completed if the control efficiency is applied to reduce your emissions in your calculations. The most common error here is entering a control approach and control measure but failing to include the pollutant that is controlled and its percent control.
  - c. Under the Emissions Unit tab, the *Unit Type* must be complete but the *Design Capacity* only needs to be complete for the Unit Types 100, 120, 140, 150, 160, 180, and 200. It is optional to complete *Design Capacity* for any other Unit Type.
4. **Pollutant Codes** – EPA retires pollutant codes on a regular basis. Problems during the QA process will be avoided if you take the time to ensure that pollutant codes selected during previous inventories are still on the current pollutant list.
5. **All CAPS** - When entering data, AVOID USING ALL CAPS. Capital letters use up more space and sometimes truncate information in the data entry fields as well as the printed reports.