



EIQ Form 2.0 Emission Unit Information

Application Instructions for Form 780-1621

A separate form 2.0 is required for each Source Classification Code, or SCC, reported. The information given should be consistent with the construction permit.

This form must be completed for each reportable emission unit shown on *Form 1.1 Process Flow Diagram*, and *Form 1.2 Summary of Emission Units and Related Processes*. A reportable emission unit includes 876 pounds (0.438 ton) or more of:

- Particulate Matter of 10 microns, or PM₁₀.
- Volatile Organic Compounds, or VOCs.
- Particulate Matter of 25 microns, or PM_{2.5}.
- Ammonia or NH₃.
- 2,000 pounds (1 ton) or more of Nitrogen Oxide, Sulfur Dioxide or Carbon Monoxide.
- Exceeds Hazardous Air Pollutant, or HAP, thresholds.

HAPs are separated into two groups or categories with different emission unit level reporting thresholds based on the toxicity of the specific HAP chemical. The first group, Category 1, consists of a small set of the most hazardous or toxic chemicals that have an annual emission unit reporting level of 20 pounds or more emitted per year. If a total of 20 pounds or more of Category 1 HAPs are emitted from an emission unit, then all HAP emissions must be reported for that unit. All other HAP chemicals are in Category 2 with an annual emission unit reporting level of 200 pounds or more emitted per year. If a total of 200 pounds or more of Category 2 HAPs are emitted at a unit, then all HAP emissions must be reported for that unit. Also remember, when reporting HAPs such as PM₁₀ or VOCs, the emissions are subject to HAP reporting thresholds.

The authorized facility representative signing the EIQ is responsible for ensuring all submitted EIQ forms are filled out completely. Incomplete forms will be returned and the Air Pollution Control Program will note that a complete submittal was not received. Items that clearly do not apply may be left blank, but all others must be complete. Required items include, but are not limited to, SCC codes, throughput values, maximum hourly design rates, emission factors, source and references for emission factors and actual emissions.

All units of measure must be consistent (throughput unit of measure must match the Emission Factor denominator unit of measure). This is one of the most frequent errors we see and requires the department to contact you regarding the submission.

Complete the Facility Name, Federal Information Processing Standard, or FIPs, County Number, Plant Number and Year of Data fields at the top.

Emission Unit Identification

This information should be consistent with the construction permit.

Emission Unit Number - This identification number must match the emission unit identification number listed on Forms 1.1 and 1.2. The same unit number must be used on any other forms associated with this emission unit.

Emission Unit Description - This description must uniquely identify the equipment or emission process that generates air emissions.

Emission Process Detail

Segment Number - This is a two-digit number assigned by the facility used to uniquely identify processes associated with an emission unit. Generally, if an emission unit, i.e., EP01 has three processes associated with it, then segment numbers 01, 02 and 03 will be assigned to those processes. Once assigned, this number should remain constant from year to year. If there is a change in the SCC used by the facility to identify a process, a new segment number will be assigned to that process or SCC.

Source Classification Code - This is a required field. This eight-digit code identifies the type of equipment, process, or material associated with an emission unit. A list of SCCs is available on the Web at <http://cfpub.epa.gov/oarweb/download/WebFIRESCCs.csv>.

If you cannot locate a SCC specific for your process, use the SCC most closely associated with your process.

SCC Description - This is the written description of the unique process from which air pollutants are emitted. SCC descriptions are available at the Web address referenced above in the downloadable spreadsheet. Column I, titled SCC_L4 describes the specific emitting process occurring at the facility.

Emissions flow through stack or vent - If any air emissions created by this emission unit flow through a stack or vent to the outside atmosphere, check "Yes" and complete a 2.0S form to detail the parameters for the stack or vent. If no air emissions created by this emission unit flow through a stack or vent, check "No", then specify in the following fields that 100 percent of the air emissions from this unit are fugitive.

Fugitive Emissions - If any of the air emissions from this emission unit are fugitive or not released to the ambient air through a stack or vent, check "Yes" and enter the percentage of the total emissions from the unit that are fugitive.

Operating Rate/Schedule

Annual Throughput - The amount of material used, processed or produced in the process associated with the emission unit during the calendar year.

Annual Throughput Units - Report the unit of measure of the annual throughput.

Hours/Day - The annual daily hours the equipment or process associated with the emission unit was in operation.

Days/Week - The annual weekly days the equipment or process associated with the emission unit was in operation.

Weeks/Year - The number of weeks per year the equipment or process associated with the emission unit was in operation.

Total Hours Per Year - The product of the Hours/Day, Days/Week and Weeks/Year. It will automatically be calculated if you are using the Excel® file format.

Dec-Feb(percent), Mar-May(percent), Jun-Aug(percent), and Sept-Nov(percent) -

For each of the four quarters, which have been adjusted to conform to EPA standards, specify the percentage of total annual throughput attributable to each quarter. Estimates are acceptable. The entries for all four quarters must total 100 percent. Each month here is within the reporting year, so the first quarter will be January, February and December of the reporting year.

Annual Fuel Characteristics

If coal or fuel oil was used for fuel, complete the Heat Content, Ash Content and Sulfur Content fields. Ash content and sulfur content were separate fields included in the emission calculation that occurs below in section 5 in previous years. Beginning with the 2008 emission reporting year, the specific ash or sulfur content will be listed in section 4, and the emission factor column in section 5 should reflect the total emission factor for units burning coal or fuel oil and using an emission factor based on a formula.

Example: Emission factor is the result of $39 \times S$, and assuming sulfur content of 2 percent, the emission factor will be $39 \times 2 = 78$.

Emissions Calculations

Source of Emission Factor - Choose from the list in the right column.

Emission Factor - This is the relationship between pounds of pollutant emitted per one unit of throughput. Example emission factors would be 100 pounds of NO_x emitted per million cubic feet or MMCF of natural gas burned, 15 pounds of VOC emitted per gallon of paint applied, or 3.5 pounds of PM_{10} emitted per Vehicle Mile Traveled, or VMT.

Emission Factor Control Status - This is a commonly misunderstood box, resulting in many errors. This field refers to the status of the factor itself, and determines how the emission calculation formula will work

- If the emission factor itself is net of control, this is C. The emission calculation formula will not be reduced a control efficiency value because the factor already accounts for the control reductions.
- If the emission factor itself is not net of control, this is U. The emission calculation formula will include the control efficiency reduction.
- If a control device is being used, the factor can be either controlled (C) or uncontrolled (U). If there is no control device, the factor used must be U.

Overall Control Efficiency (percent): An overall control efficiency for each class of pollutant will be determined using the following formula:

$$\text{Overall Control Efficiency for } x = (CP \times CE_x) \div 100$$

Where:

- x = Class of pollutant (PM_{10} , SO_x , NO_x , VOC, CO, Lead or HAP)
- CP = Capture Efficiency of the Control Device
- CE_x = Control Efficiency for that Class of Pollutants

A pollutant should have an overall control efficiency only if there is a control device listed on Form 2.0C and the device controls that particular class of pollutants and the control efficiency has not been included in the emission factor.

Example: A control device has a Capture Efficiency of 50 percent, and destroys 75 percent of the VOCs it captures.

$$CP = 50\%, CE_{VOC} = 75\%$$

$$\begin{aligned} \text{Overall Control Efficiency for VOCs} &= (50 \times 75) \div 100 \\ &= 3,750 \div 100 \\ &= 37.5\% \end{aligned}$$

Multiple Control Devices - If more than one control device applies to the same pollutant at an emission unit, the combined overall control efficiency needs to be calculated. This can be done several different ways, depending on the configuration of the control devices.

- If each control device has its own separate intake, then each control device will use its own capture efficiency.
- If the control devices are in series, the capture efficiency of the first device in the series is used to determine the overall control efficiency for the entire series. To determine the Overall Control Efficiencies for devices in the series, use the following formula. If using the Excel spreadsheet, it will calculate the series' Overall Control Efficiency.

$$\text{Combined Control Efficiency} = \{CE_1 + CE_2 - [(CE_1 \times CE_2) \div 100]\} \times CP / 100$$

Where:

CE₁ = Control Efficiency for First Device in the Series

CE₂ = Control Efficiency for Second Device in the Series

CP₁ = Capture Efficiency for First Device in the Series

When two devices in the series are used to remove the pollutant PM₁₀ from the same emission unit, the control efficiencies must be combined.

Example: If the first device has a capture efficiency of 75 percent and a control efficiency of 50 percent for PM₁₀ and the second device has an efficiency of 80 percent for PM₁₀, the calculation of combined efficiency is as follows:

$$\begin{aligned} \text{Combined Control Efficiency} &= \{50 + 80 - [(50 \times 80) \div 100]\} \times (75 / 100) \\ &= \{130 - [4,000 \div 100]\} \times 0.75 \\ &= \{130 - 40\} \times .75 \\ &= 90 \times 0.75 \\ &= 67.5\% \end{aligned}$$

Thus, the combined control efficiency for PM₁₀ at this emission unit would be 67.5 percent.

- If control devices are in a configuration other than the two listed above, you may provide documentation for your facilities' control devices. This documentation should show your calculations for the overall control efficiency for each class of pollutant at this unit. If you have any questions call the Air Pollution Control Program at 573-751-4817.

Actual Emissions (tons/year) - If you are using the Excel spreadsheet versions of Form 2.0, actual emissions will be automatically calculated based on the throughput, emission factor, emission factor control status and overall control efficiency provided. If you have measured the emissions, you will need to back calculate or use *Goal Seek* to determine the correct emission factor.

The actual emissions are the amount in tons per year of the pollutant emitted at the emission unit described. All figures should be rounded to two decimal places. Use the following formula:

$$\text{Actual Emissions} = \frac{\text{Annual Throughput} \times \text{Emission Factor} \times [(100 - \text{Overall Control Efficiency}) \div 100]}{2,000}$$

Example: Assume the annual throughput is 30,000 tons of grain processed, the PM₁₀ uncontrolled emission factor is 0.91 pounds of PM₁₀ emitted per ton of grain processed and a PM₁₀ control device for this emission unit has an efficiency of 90 percent. Using the formula above:

$$\begin{aligned} \text{Actual Emissions} &= 30,000 \times 0.91 \times [(100 - 90) \div 100] \div 2,000 \\ &= 27,300 \times [10 \div 100] \div 2,000 \\ &= 27,300 \times [0.1] \div 2,000 \\ &= 2,730 \div 200 \\ &= 1.37 \text{ tons of PM}_{10} \text{ emitted per year} \end{aligned}$$

Enter 1.37 in the PM₁₀ box in column (5), Actual Emissions, on Form 2.0.

Note: If no control devices were used, the Control Efficiency equals 0% and the annual PM₁₀ emissions would be 13.65 tons.

$$\text{Actual Emissions} = \frac{\text{Annual Throughput} \times \text{Emission Factor} \times [(100 - \text{Overall Control Efficiency}) \div 100]}{2,000}$$

For More Information

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