



**Minnesota Pollution  
Control Agency**

AIR QUALITY  
520 LAFAYETTE ROAD  
ST. PAUL, MN 55155-4194

PERMIT APPLICATION FORM **EC-13C**  
**HAZARDOUS AIR POLLUTANTS**  
**CALCULATION FORM (FUEL COMBUSTION HAPS)**

5/9/06

- Duplicate this form as necessary, or attach sheets with equivalent information.
- Instructions begin on Page 6.

- 1) AQ Facility ID No.: \_\_\_\_\_
- 2) Facility Name: \_\_\_\_\_
- 3) Emission Unit Identification Number: \_\_\_\_\_
- 4) Stack/Vent Designation Number: \_\_\_\_\_
- 5) Maximum Rated Equipment Capacity: \_\_\_\_\_ million BTU/hr
- 6) Control Equipment Designation Number: \_\_\_\_\_
- 7) Fuel Parameters

7a) Fuel Type	7b) % Sulfur	7c) % Ash	7d) Heat Value	Units	7e) Fuel Consumption Rate	Units
				Btu/ton, Btu/gal, Btu/cf		tons/hr; gal/hr; cf/hr
				Btu/ton, Btu/gal, Btu/cf		tons/hr; gal/hr; cf/hr
				Btu/ton, Btu/gal, Btu/cf		tons/hr; gal/hr; cf/hr

When calculating Potential Emissions, use items 8a, 8b, 8d, 8e, 8g, 8h, and 8i (if a limit is proposed in item 12). When calculating Actual Emissions, use items 8a, 8b, 8c, 8f, 8g, and 8j.

### 8) Calculations Summary - Primary Fuel:

[illegible]

When calculating Potential Emissions, use items 9a, 9b, 9d, 9e, 9g, 9h, and 9i (if a limit is proposed in item 12). When calculating Actual Emissions, use items 9a, 9b, 9c, 9f, 9g, and 9j.

### 9) Calculations Summary - Back-up Fuel:

[illegible]

When calculating Potential Emissions, use items 10a, 10b, 10d, 10e, 10g, 10h, and 10i (if a limit is proposed in item 12). When calculating Actual Emissions, use items 10a, 10b, 10c, 10f, 10g, and 10j.

### 10) Calculations Summary - Back-up Fuel:

[illegible]

**11) Worst-Case Potential-to-Emit Summary:** (Ignore this item if filling out this form for a Registration Permit Option D)

HAP Name (CAS)	<b>11a) Before Operating Limits: (tons/yr)</b>	<b>11b) After Operating Limits: (tons/yr)</b>	HAP Name (CAS)	<b>11a) Before Operating Limits: (tons/yr)</b>	<b>11b) After Operating Limits: (tons/yr)</b>

**12) Operating Limitations, if applicable:** (Ignore this item if filling out this form for a Registration Permit Option D)

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**INSTRUCTIONS FOR FILLING OUT AQ FORM**  
**EC-13C Hazardous Air Pollutants (Fuel Combustion)**

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**NOTE** - Calculate Hazardous Air Pollutants (HAPs) for all significant emission units. You may be asked during the permitting process to also calculate HAPs from certain insignificant activities.

**Actual Emissions:**

All major sources under Minn. R. 7007.0200, subp. 2 shall provide actual emission rates, in total tons per year, or if emissions of a HAP are less than one ton per year, in pounds per year, of each HAP for the stationary source as a whole. You are not required to report HAP actual emissions unit-by-unit, although you may do this if this is the only or most convenient way to calculate HAP emissions.

For sources applying for Registration Permit Option D, or who are using this form for emission tracking for Registration Permit Option D, you must provide HAP actual emissions calculations on a unit-by-unit basis. See the *Registration Permit Handbook* for more information on calculating HAP actual emissions.

Actual emissions shall be calculated using the emission unit's actual operating hours, production rates, and types of materials processed, stored, or combusted during the elected time period. You may use the FIRE database, other EPA publications such as AP-42, test data, material balances, or other types of engineering calculations to estimate HAP emissions. You can also use information and calculations for actual emissions that are different from the calculation methods detailed on this form. However, if you do not use this form for actual emissions, the information used in calculating actual emissions must be attached and included in the permit application.

- 1) **AQ Facility ID No.** -- Fill in your Air Quality Facility ID Number as indicated on the *Facility Information Form* (GI-01 or RP-01), item 1a.
- 2) **Facility Name** -- Enter your facility name as indicated on the *Facility Information Form* (GI-01 or RP-01), item 2.
- 3) **Emission Unit Identification Number** -- Fill in the identification number of the emission unit. Obtain this number from your *Emission Unit Information Form* (GI-05B). Indicate total facility or multiple units if applicable. [Note: If you are using this form for Registration Permit Option D, you did not fill out Form GI-05B; instead, just provide information identifying the emission unit.]
- 4) **Stack/Vent Designation Number** -- Fill in the designation number of the stack(s) or vent(s) through which the unit will exhaust into the atmosphere. Obtain these numbers from Form GI-05B. Indicate total facility or multiple stacks if applicable. [Note: If you are using this form for Registration Permit Option D, you may skip this question.]
- 5) **Maximum Rated Capacity** -- Fill in the manufacturer's rated capacity for the fuel to be listed in item 7). If the unit has been derated, attach the supporting documentation.
- 6) **Control Equipment Designation Number** -- Fill in the designation number of the control equipment (CE) through which the unit will exhaust. Obtain these numbers from Form GI-05B. If you are using this form for Registration Permit Option D, fill in the description from Form RP-D2. [Note: If you are using this form for Registration Permit Option D, any

control efficiency used for controlling HAPs must be verified with a performance test as explained in Minn. R. 7011.0070, subp. 2.]

**7) Fuel Parameters** - For each type of fuel used (primary and backup), provide the following information:

- 7a) Fuel Type** -- Fill in the fuel type used by the combustion unit (e.g., natural gas, No. 2 fuel oil).
- 7b) % Sulfur** -- Fill in the weight percent sulfur content of the fuel, if applicable.
- 7c) % Ash** -- Fill in the weight percent ash content of the fuel, if applicable.
- 7d) Heat Value** -- Fill in the heating value of the fuel. If the heating value is unknown, the value found in Table EC-13C.1 may be used. Circle or write in the applicable units.
- 7e) Fuel Consumption Rate** -- Fill in the manufacturer's maximum fuel consumption rate, or calculate it using the following equation:

Fuel Consumption Rate:

$$\begin{aligned} &= \frac{\text{Maximum Rated Capacity}}{\text{Heating Value of the fuel}} \\ &= \frac{(\text{item 5})}{(\text{item 7d})} \end{aligned}$$

Circle or write in the applicable units.

**8) Calculations Summary - Primary Fuel**- When calculating Potential Emissions, use the items in columns a, b, d, e, g, h, and i (if applicable). When calculating Actual Emissions, use the items in columns a, b, c, f, g, and j.

- 8a) HAP Name** -- Identify the HAP (e.g., Hexane, Methylene Chloride, etc.) by the chemical name used in the list of HAPs attached to Form GI-09A. This list is also found in Section 112(b) of the Clean Air Act and in 40 CFR pt. 63. Provide the chemical abstract system (CAS) number if available.
- 8b) Emission Factor** - Use the most current emission factors available. Fill in the emission factor including the units, such as pounds per gallon or pounds per million BTU. Sources you may use include US EPA's AP-42, EPA's FIRE database, source-specific test data if the test was completed in accord with MPCA policies and rules. If the factor given in an EPA document is given as a range, you should use the maximum number in the range to calculate potential emissions. For actual emissions, note the special instructions below. Include a list of the sources for your emission factors with the following:

- ◆ include a copy of the emission factors and indicate their source, and
- ◆ show the calculations used to determine the maximum continuous rates.

Remember to use only uncontrolled emission factors.

- 8c) Actual Annual Fuel Use** - Use the average quantity of fuel used per year for the past two years, unless you are using this form for Registration Permit Option D. If you are using this form for Registration Permit Option D, use the quantity of fuel used during the most recent 12 months (for example, if you are filling out this form in July, use the quantity of fuel used

starting July 1 of last year through June 30 of this year). If this is a new unit or no records exist, use a reasonable estimate of how much fuel will be used.

- 8d) Emission Rate --** Fill in the Emission Rate in lbs/hr. Calculate the emission rate by using this method:

Emission Rate [lb / hr]:

$$= \text{Emission Factor} \times \text{Fuel Consumption Rate}$$

$$= (\text{item 8b}) \times (\text{item 7e})$$

(e.g., if the fuel consumption rate is 8571 ft<sup>3</sup>/hr and the emission factor for PM is 0.000003 lbs/ft<sup>3</sup>, then the emission rate is 8571 ft<sup>3</sup>/hr × 0.000003 lbs/ft<sup>3</sup> = 0.0257 lbs/hr)

- 8e) Maximum Uncontrolled Emissions --** Fill in the Maximum Uncontrolled Emissions in tons/yr. Use this method for calculations:

Maximum Uncontrolled Emissions [tons / yr]:

$$= \text{Emission Rate} \left[ \frac{\text{lb}}{\text{hr}} \right] \times 4.38 \left[ \frac{\text{hrs}}{\text{yr}} \cdot \frac{\text{ton}}{\text{lbs}} \right]$$

$$= (\text{item 8d}) \times 4.38$$

(e.g., if the emission rate is 0.0257 lbs/hr, then the maximum uncontrolled emissions are 0.0257 lbs/hr × 4.38 [hrs/yr·tons/lbs] = 0.113 tons/yr of toluene emissions)

- 8f) Actual Uncontrolled Emissions --** Fill in the Actual Uncontrolled Emissions in tons/yr. Use this method for calculations:

Actual Uncontrolled Emissions [tons / yr]:

$$= \text{Emission Factor} \left[ \frac{\text{lb}}{\text{ton, gal, or MMcf}} \right] \times \text{Actual Annual Fuel Use [ton, gal, MMcf]}$$

$$= (\text{item 8b}) \times (\text{item 8c})$$

- 8g) Pollution Control Efficiency --** The pollution control efficiency is the product of the capture efficiency and the destruction/collection efficiency indicated on Form GI-05A or Form RP-D2. Enter this number here and remember to include on Form CD-01 a plan to demonstrate and maintain the destruction/collection efficiency (unless you are using this form for Registration Permit Option D - in that case, Form CD-01 does not apply). The efficiency should be expressed for each pollutant. If there is no control for the particular pollutant, then indicate “zero” as the control efficiency.

- 8h) Maximum Controlled Emissions --** Fill in the Maximum Controlled Emission in tons/yr. Use this method for calculation



Maximum Controlled Emissions [tons / yr]:

$$\begin{aligned} &= \text{Max. Uncontrolled Emissions} \left[ \frac{\text{tons}}{\text{yr}} \right] \times \left( \frac{100 - \text{Pollution Control Efficiency}}{100} \right) \text{ (e.)} \\ &= (\text{item 8e}) \times \left( \frac{100 - (\text{item 8g})}{100} \right) \end{aligned}$$

g., if the maximum uncontrolled emission is 0.113 tons/yr and the pollution control efficiency is 90%, then the maximum controlled emission is 0.113 tons/yr  $\times$  ((100-90)/100) = 0.0113 tons/yr

- 8i) Limited Controlled Emissions** -- If you are using this form for Registration Permit Option D, you may skip this question. The Limited Controlled Emissions are calculated by taking into account all limitations on operation of the source you are proposing to comply with in this application. These limitations include limits on hours of operation, limits on the HAP content of the materials used, screened, etc. You start the calculation of Limited Controlled Emissions by repeating the calculation of Emission Rate (item **8d**) and taking into account the limits you propose.

If an emission unit is subject to an emission limitation specified in 40 CFR pt. 60, 40 CFR pt. 61, 40 CFR pt. 63 or Minn. R. ch. 7011, you must show this requirement in the calculation of Limited Controlled Emissions and take this into account in calculating the Limited Controlled Emissions. If you choose to propose to comply with a more stringent limit, you should state this clearly and show the resulting allowed emissions in this calculation.

- 8j) Actual Controlled Emissions** -- HAPs emissions estimates must be reported to four places to the right of the decimal point.

Actual Controlled Emissions [tons / yr]:

$$\begin{aligned} &= \text{Actual Uncontrolled Emissions} \left[ \frac{\text{tons}}{\text{yr}} \right] \times \left( \frac{100 - \text{Pollution Control Efficiency}}{100} \right) \\ &= (\text{item 8f}) \times \left( \frac{100 - (\text{item 8g})}{100} \right) \end{aligned}$$

- 9) Backup Fuel** -- If the combustion unit uses a backup fuel, complete this table for backup fuel number 1, following the instructions for items **8a** through **8j**.

- 10) Backup Fuel** -- If the combustion unit uses a backup fuel, complete this table for backup fuel number 2, following the instructions for items **8a** through **8j**.

**Note:** If the emission unit burns more than three fuels, copy and fill out the third page of the form for the additional fuels or attach additional sheets with the calculations.

- 11) Worst-case Potential-to-Emit Summary:**

- 11a) Before Operating Limits** -- Look at the completed tables for each type of fuel, find and fill in the highest potential-to-emit (before limits) for each HAP.

- 11b) After Operating Limits** -- Look at the completed tables for each type of fuel, find and fill in the highest potential-to-emit (after limits) for each HAP.

**12) Operating Limitations --** Describe any permit limits you plan to take to restrict your potential-to-emit (fuel type and/or usage, hours of operation, bottlenecks, etc.). Attach additional sheets, if needed. Describe the limiting factors and cite any rules that apply (e.g., Standards of Performance for Stationary Sources (NSPS, 40 CFR pt. 60), Best Available Control Technology (BACT)). The associated limit must be used to calculate your potential-to-emit after permit limits in the following step. If you used vendor certification or stack test data to limit your potential-to-emit, the factor you used will become your permit limit. Include all proposed limits on Form CD-01.