

APPENDIX A

Instructions for Completing the 2016 Emissions Inventory and Fee Form for Class I Sources

Form 001:

Section 1: Source Information

This section should be completed if the requested information is not preprinted on the form. The name of the company or operation associated with the Source ID number should be entered in the space provided under source name. The street address or location of the source should be entered under source street address. The city where the source is located should be entered in the city box found under source street address. For rural locations, section, range, township and county would be more informative than the nearest city location. Underneath the source street address information, the postal address for the source should be entered. For forms that are preprinted and have incorrect information regarding the above items, please cross out the information that needs to be changed, and provide the correct information.

Section 2: Mailing address for fee forms and correspondence

In the first part of this section, please indicate to which mailing address you wish future correspondence regarding the fees and emissions inventory be sent. If this address is not already listed in Section 1, then provide the correct address in the space provided.

A responsible official or the person most directly responsible for the compilation of the submitted information must sign the forms. That person must certify to be familiar with the information and statements contained in the emissions inventory and fee calculation documents and that the information is true, accurate and complete.

Worksheet 1: Air Emissions Source Operating Information

Make as many copies of the blank worksheet as you will need for the facility. In general, one worksheet will be needed for each emissions point or process. More than one copy of worksheet 1 will be needed for a single emissions point or process if more than 10 SCC codes/SCC ID numbers are needed to describe the emissions point or process.

Step 1: Enter the source ID number in the upper right corner of the form.

Step 2: Enter the point ID number. This should be a three-digit ID number that will be unique to this specific process or emission point. Usually the ID

numbers are selected sequentially beginning with number 001. Briefly describe the emission point associated with the process in the space provided. In the description include such things as model or serial number, horsepower, etc. when applicable. Be sure NOT to combine operating units (engines, etc.). List operating units individually, e.g., a compressor station would report emissions for individual engines separately.

Note: Assign a separate point ID number to include emissions from upsets, startup, shut-down, control equipment malfunction or other abnormal operating conditions. Fill out a separate Worksheet 1 for this point ID number.

- Step 3:** Enter all eight-digit Source Classification Codes (SCC) that apply to this emissions point or process. A unique set of emission estimates and emission factors are normally associated with each SCC code. As needed, assign a two-digit SCC ID number (01, 02, 03, etc.) as an additional identifier. For example, two SCC ID numbers should be used for a boiler burning 1.5% sulfur coal and 0.6% sulfur coal, even though the same SCC is used.
- Step 4:** Enter the unique two-digit stack ID number from worksheet 2 that the emissions point or process is associated with. Enter "NA" if the process or operation is not vented to a stack or the stack emits less than 20 tons/year NO_x, 5 tons/year SO_x or 5 tons/year PM₁₀, unless the stack is associated with a combustion unit.
- Step 5:** For each SCC code, enter the operating rate for calendar year 2016. The type of information needed will vary from one SCC to another. Indicate the appropriate units for the operating information in the "units of measurement of annual operating rate" column.
- Step 6:** Under "Operating Schedule," enter the typical start time, along with the typical hours per day, days per week and weeks per year in operation, for the emissions point or process.
- Step 7:** Under "Seasonal Throughput," for the emissions point or process, enter the percent of the operating rate for each quarter in 2016 as a portion of the whole year. The quarters are specified as follows: December - February, March - May, June - August and September - November. The total of the four quarters should equal 100%. Note that the December through February quarter includes December, January and February of 2016, which are not consecutive months.

Worksheet 2: Stack Information

Worksheet 2 is for reporting all stacks with actual emissions greater than or equal to 20 tons/year NO_x, 5 tons/year SO_x or 5 tons/year PM₁₀ or associated with a combustion unit. If the facility has no stacks or has no stacks that meet this emissions criteria, this worksheet may be skipped.

Worksheet 2 will be preprinted with the stack parameters reported in the previous inventory. Please review and make corrections as needed. If your facility has additional stacks meeting the above emissions criteria that are not shown on worksheet 2, please list them on the blank worksheet 2 that is included in your packet.

Make as many copies of the blank worksheet as you will need for the source.

Step 1: Enter the source ID number in the upper right corner of the form.

Step 2: For all stacks with actual emissions greater than or equal to 20 tons/year NO_x, 5 tons/year SO_x or 5 tons/year PM₁₀ or associated with a combustion unit, assign a two-digit stack ID number, beginning with 01, 02, 03, etc., that uniquely identifies the stack at your facility. Each stack ID number should be used only once for a facility. The stacks on this worksheet should be associated with the corresponding processes or operations on worksheet 1.

Step 3: Enter a meaningful stack description for your use.

Step 4: Enter the vertical distance, in feet, between ground level and the point of exhaust into the ambient air in the height column.

Step 5: In the diameter column, enter the inside diameter, in feet, of the top of a circular stack exit. For a non-circular stack exit, use an equivalent diameter calculated from the inside cross-sectional area. This equivalent diameter, *d*, is calculated as follows:

$$d = \sqrt{1.274 * A}$$

where *A* is inside cross sectional area in square feet.

Step 6: In the flow rate column, enter the exhaust gas volume from the stack at the actual operating temperature. The flow rate should be in actual cubic feet/minute. Flow rates can be obtained from manufacturers' fan output information in some cases (rated flow rate on the equipment). If a stack exit velocity is known through a test, then the stack cross-sectional area can be multiplied by the velocity to get the flow rate.

Step 7: Enter the exhaust temperature in degrees Fahrenheit for this stack. If the exhaust is discharged at ambient temperature, enter 77 degrees Fahrenheit.

Step 8: In the velocity column, enter the exhaust gas velocity from the stack expressed in feet per second. This value can be calculated from the flow rate by dividing the actual cubic feet per minute of flow rate by the cross-sectional area of the stack. Remember to convert minutes to seconds if you do this calculation.

Worksheet 3: Emission Factor Method Calculation Form - Criteria Pollutants

Worksheet 3 is for calculating criteria pollutant emissions using emission factors. If you are not using emission factors to calculate criteria pollutant emissions, you may skip this worksheet.

Make as many copies of the blank worksheet as you will need for the source. In general, one worksheet will usually be needed for each SCC/SCC ID number used on worksheet 1.

Step 1: Enter the source ID number in the upper right corner of the form.

Step 2: Enter the point ID, SCC ID and stack ID numbers from worksheet 1.

Step 3: In column B, enter the source of the emission factor. The following abbreviations may be used:

AP42 - EPA Emissions Factor Publication
FIRE - Factor Information Retrieval system
Test - Stack test data or laboratory analysis
MB - Material Balance
EE - Engineering Estimate
Other - Provide brief explanation
Upset - Upset/Malfunction

If AP-42 is the source of the emission factor information, please include the table number.

Step 4: In column C, provide the numeric value of the emission factor for the pollutant listed in column A. The factor should be in units of **pounds of pollutant per unit of measurement** for the SCC code under consideration. If you are using an AP-42 emission factor for ash- or sulfur-containing fuels, complete worksheet 4, and transfer the calculated emission factors from column I on worksheet 4 to column C on this worksheet.

- Step 5:** In column D, enter the operating rate for the SCC code under consideration as listed on worksheet 1. This number should be the same for all pollutants.
- Step 6:** Multiply column C by column D, and enter this value for each pollutant in column E. This value is the uncontrolled emissions for each pollutant in pounds.
- Step 7:** Divide each number in column E by 2,000 to obtain the uncontrolled emissions in tons, and enter the result for each pollutant in column F.
- Step 8:** Enter the value of (1-OCE) for emissions control equipment in column G. If no pollution control equipment is used for an emissions point, the value of (1-OCE) is 1. Note that many emission control devices will not control all types of pollutants. Worksheet 7 can be used to determine the value of 1-OCE.
- Step 9:** Multiply column G by column F for each pollutant and enter the result in column H. This value is the controlled emissions in tons for the SCC code under consideration.
- Step 10:** Transfer the total emissions for each pollutant from column H to worksheet 8 using the same point ID number that was used on this worksheet.

Worksheet 4: Guideline for Emission Factor Calculation For Ash- or Sulfur-Containing Fuels When Using AP-42 or SCC Emission Factors

Worksheet 4 is designed to help calculate emission factors for ash- or sulfur-containing fuels when using emission factors from AP-42. If this worksheet is applicable, it should be used in conjunction with worksheet 3. This worksheet may be skipped if it is not applicable.

- Step 1:** Enter the source ID number on the upper right corner of the form.
- Step 2:** Enter the point ID number in column A and the SCC ID number in column B.
- Step 3:** Enter the SCC in column C.
- Step 4:** Enter the pollutant to which the emission factor applies in column D.
- Step 5:** Enter the formula of the AP-42 emission factor in column E.
- Step 6:** Enter the units of the emission factor in column F.

- Step 7:** Enter in column G the fuel ash content for emission factors with an 'A' flag.
- Step 8:** Enter in column H the fuel sulfur content for emission factors with an 'S' flag. A value of 2% sulfur is entered as 2.0.
- Step 9:** Using the formula in column E, and/or ash content from column G, and/or sulfur content from column H, calculate the emission factor and enter in column I.
- Step 10:** Transfer the calculated emission factor(s) from column I to column C on worksheet 3.

Worksheet 5: Material Balance Calculation form - Criteria Pollutants

Worksheet 5 is primarily for calculating VOC emissions using the material balance method. Please refer to the "Guideline for Estimating Solvent Emissions Using Material Balance Procedures" in Appendix C for more information on material balance calculations. Skip this worksheet if it is not applicable.

Make as many copies of the blank worksheet as you will need for the source. One worksheet for each SCC/SCC ID number that the material balance method is used for will normally be required.

- Step 1:** Enter the source ID number in the upper right corner of the form.
- Step 2:** Enter the point ID, SCC ID and stack ID numbers from worksheet 1.
- Step 3:** Identify the criteria pollutant for which the material balance method is used in column A.
- Step 4:** Enter the total amount of pollutant that enters the process in column B. For surface coating and printing operations, this will usually be the product of the VOC content and the total usage. The results of the calculation should be expressed in pounds.
- Step 5:** In column C, enter the amount (in pounds) of pollutant that becomes part of the product or is otherwise consumed in a manner that prevents the release of that pollutant to the atmosphere.
- Step 6:** The total amount (in pounds) of pollutant that is recovered and recycled or destroyed in a manner that prevents the release of the pollutant to the atmosphere should be entered in column D.
- Step 7:** Subtract column C and column D from column B to obtain an estimate of the total pounds of emissions before any pollution control device. Enter this value in column E.

- Step 8:** Divide this result by 2,000 to convert to tons, and enter the result in column F.
- Step 9:** Enter the value of (1-OCE) for any control devices for this emissions point or process in Column G. If there are no emissions control, the value of (1-OCE) is 1. Worksheet 7 can be used to determine the value of 1 - OCE.
- Step 10:** Multiply column F by column G, and enter the result in column H. This value will be the controlled emissions in tons estimated using the material balance method.
- Step 11:** Transfer the total emissions for each pollutant from column H to worksheet 8 using the same point ID number that was used on this worksheet.

Worksheet 6: Material Balance Calculation Form - Fuels Containing Sulfur

Worksheet 6 is for calculating SO_x emissions using the material balance method. This worksheet may be skipped if it is not applicable.

Make as many copies of the blank worksheet as you will need for the source. One worksheet for each SCC/SCC ID number that the material balance method is used for will normally be required.

- Step 1:** Enter the source ID number in the upper right corner of the form.
- Step 2:** Enter the point ID, SCC ID and stack ID numbers from worksheet 1.
- Step 3:** Enter the total pounds of sulfur-containing fuel burned in column B.
- Step 4:** Enter the percent by weight sulfur of the fuel in column C.
- Step 5:** Enter the conversion factor for converting sulfur to SO_x in column D. Use 1.95 for coal combustion and 2.00 for all other fuels.
- Step 6:** Multiply columns B, C and D, and enter the result in column E. This is the uncontrolled SO_x emission estimate in pounds. Divide column E by 2,000 and enter the result in column F. This is the uncontrolled emissions in tons.
- Step 7:** Enter the value of (1-OCE) in column G. Worksheet 7 explains how to arrive at this value if SO_x removal is involved. If no control equipment is used on the process, the value of (1-OCE) is 1.

- Step 8:** Multiply column F by column G, and enter the result in column H. This is the controlled SO_x emissions estimate in tons using the material balance method.
- Step 9:** Transfer the total SO_x emissions to worksheet 8 using the same point ID number that was used on this worksheet.

Worksheet 7: Overall Control Efficiency - Criteria Pollutants and HAPs

Worksheet 7 may be skipped if the facility does not have any air pollution control equipment.

Make as many copies of the blank worksheet as you need for the source. Please use a separate worksheet for each air pollution control system.

- Step 1:** Enter the source ID number on the upper right corner of the form.
- Step 2:** Enter the point ID number used for the emissions point and the SCC ID number associated with this SCC in the box located in the upper left corner of the form.
- Step 3:** Provide a brief description of the control device and capture system.
- Step 4:** Enter the pollutant for which the overall control efficiency estimate is being made in column A.
- Step 5:** Enter in column B the estimated capture efficiency (in percent) for the collection system (hooding, ductwork, etc.) between the source of emissions and the emissions control device. For totally enclosed systems, the capture efficiency will be 100%.
- Step 6:** Enter in column C the estimated control efficiency (in percent) for the device when controlling the pollutant listed in column A.
- Step 7:** Multiply column B by column C and divide by 10,000 to obtain the overall control efficiency by the collection system and control device expressed as a decimal.
- Step 8:** Calculate the value of (1-OCE) by subtracting column D from 1.0.
- Step 9:** Transfer the value of (1-OCE) to column G on worksheets 3, 5, 6, 9 and 10 as applicable for each pollutant.

Worksheet 8: Emissions Summary - Criteria Pollutants

- Step 1:** Enter the source ID number on the upper right corner of the form.

Step 2: Enter the point ID number for each process listed on all Worksheet 1s. Use more copies of Worksheet 8 if needed.

Step 3: For each point ID number, sum the emissions estimates for that process for each pollutant, and enter the results on the appropriate row on worksheet 8.

Note: Actual emissions from upsets, startup, shut-down, control equipment malfunction, and other abnormal operating conditions should be included at this time.

Step 4: A column to subtotal your emissions is provided if you have more than one worksheet 8.

Step 5: In the total column on worksheet 8, sum the emissions by pollutant for all point ID numbers listed. If you have more than one worksheet 8, the total column on your last worksheet 8 will be the total of the subtotal columns of all worksheet 8s.

Step 6: Transfer the results for NO_x, VOC, (PM₁₀-FIL+PM-CON) and SO_x from the total column to the corresponding pollutants in boxes 1 through 4 on worksheet 13. (Because fees are not paid on PM_{2.5}, NH₃ or CO, these emissions totals do not need to be transferred to worksheet 13.)

Worksheet 9: Emission Factor Calculation Form - Hazardous Air Pollutants (HAPs)

Worksheet 9 is for calculating HAP emissions using emission factors. If you are not using emission factors to calculate HAP emissions, you may skip this worksheet.

Make as many copies of the blank worksheet as you will need for the source. One worksheet for each SCC/SCC ID number that the material balance method is used for will normally be required.

Step 1: Enter the source ID number on the upper right corner of the form.

Step 2: Enter the point ID number and the SCC ID number in the box located on the upper left corner of the worksheet.

Step 3: Enter the hazardous air pollutant chemical name and CAS number in column A.

Step 4: In column B, enter the source of the emission factor. The following abbreviations may be used:

AP42 - EPA Emissions Factor Publication
FIRE - Factor Information Retrieval system
Test - Stack test data or laboratory analysis
MB - Material Balance
EE - Engineering Estimate
Other - Provide brief explanation
Upset - Upset/Malfunction

If AP-42 is the source of the emission factor information, please include the table number.

- Step 5:** Enter the numeric value of the emission factor in column C.
- Step 6:** In column D, enter the operating rate for the SCC under consideration as listed on worksheet 1.
- Step 7:** Multiply column C by column D to obtain the uncontrolled HAP emissions in pounds, and enter the result in column E.
- Step 8:** Divide the value in column E by 2,000 to obtain the uncontrolled emission estimate in tons, and enter the result in Column F.
- Step 9:** Enter the value of (1-OCE) for the HAP in column G. For uncontrolled operations, (1-OCE) will equal 1. Worksheet 7 can be used to calculate (1-OCE).
- Step 10:** Multiply column F by column G to obtain the controlled HAP emissions. Enter this value in column H.
- Step 11:** Transfer the total emissions, pollutant by pollutant, to worksheet 11 using the same point ID number that was used on this worksheet.

Worksheet 10: Material Balance Calculation Form - Hazardous Air Pollutants (HAPs)

Worksheet 10 is for calculating HAP emissions using the material balance method. Please refer to the "Guideline for Estimating Solvent Emissions Using Material Balance Procedures" in Appendix C for more information on material balance calculations. If you are not using material balance to calculate HAP emissions, you may skip this worksheet.

Make as many copies of the blank worksheet as you will need for the source. One worksheet for each SCC/SCC ID number that the material balance method is used for will normally be required.

- Step 1:** Enter the source ID number on the upper right corner of the form.

- Step 2:** Enter the point ID number and the SCC ID number in the box located on the upper left corner of the worksheet.
- Step 3:** Enter the hazardous air pollutant chemical name and CAS number in Column A.
- Step 4:** Enter the total amount of pollutant which enters the process in column B. For surface coating and printing operations, this will usually be the product of the HAP content and the total usage. The results of the calculation should be expressed in pounds.
- Step 5:** In column C, the amount (in pounds) of pollutant that becomes part of the product or is otherwise consumed in a manner which prevents the release of that pollutant to the atmosphere should be entered.
- Step 6:** The total amount (in pounds) of pollutant that is recovered and recycled or destroyed in a manner which prevents the release of the pollutant to the atmosphere should be entered in column D.
- Step 7:** Subtract column C and column D from column B to obtain an estimate of the total pounds of emissions before any pollution control device. Enter this value in column E.
- Step 8:** Divide this result by 2,000 to convert to tons, and enter the result in column F.
- Step 9:** Enter the value of (1-OCE) for any control devices for this emissions point or process in column G. If there are no emissions controls, the value of (1-OCE) is 1. The value of (1-OCE) can be calculated using Worksheet 7.
- Step 10:** Multiply column F by column G, and enter the result in column H. This value will be the controlled emissions in tons estimated using the material balance method.
- Step 11:** Transfer the total emissions, pollutant by pollutant, to worksheet 11 using the same point ID number that was used on this worksheet.

Worksheet 11: Emissions Summary - Hazardous Air Pollutants (HAPs)

Make as many copies of worksheet 11 as you will need for the facility.

- Step 1:** Enter the source ID number on the upper right corner of the form.

- Step 2:** For each HAP for which emissions estimates have been made, enter the HAP chemical name in column A and the CAS number in column B. **Only chemicals on the HAP list for the 1990 Clean Air Act should be listed on this worksheet. (See Appendix B.)**
- Step 3:** List the point ID numbers from which the emissions originated in column C.
- Step 4:** Enter the controlled HAP emissions for each pollutant in column D.
- Step 5:** If the HAP emissions for this pollutant have already been assessed a fee as PM₁₀ emissions, copy the emissions estimate for this chemical from column D to column E.
- Step 6:** If the HAP emissions for this pollutant have already been assessed a fee as VOC emissions, copy the emissions estimate for this chemical from column D to column F.
- Step 7:** Transfer the total of column D to line 1 on worksheet 12 and box 5 on worksheet 13.

Worksheet 12: Worksheet to Determine if Hazardous Air Pollutant Emissions Are Subject to Fees

Worksheet 12 is designed to help you determine whether you owe fees on emissions of HAPs. In addition, if your facility is paying fees on PM₁₀ and/or VOC emissions, this worksheet will ensure that you don't pay twice for any HAP emissions that you're already paying for as part of your PM₁₀ and/or VOC fees. You may skip this worksheet and move on to worksheet 13 if your facility does not emit any HAPs.

For more information on calculating fees for HAP emissions, please refer to the "Guideline for Determining Air Emissions Fees for Hazardous Air Pollutants" in Appendix C.

- Step 1:** Enter the source ID number in the upper right corner of the form.
- Step 2:** In line 1, enter the sum of all column Ds from all Worksheet 11s.
- Step 2:** All HAP emissions are subject to fees except for those which have already been paid for as VOC and/or PM₁₀. Enter the total of columns E and F from all worksheet 11s in line 2. Enter 0 if there are no HAPs in columns E and F on worksheet 11.

Step 3: The HAP emissions which have already been assessed fees as VOC and/or PM₁₀ should be subtracted out. This is accomplished by subtracting the value on line 2 from the value on line 1. The result is entered on line 3. This value is the amount of HAP emissions that are subject to fees. This result should be transferred, rounded to the nearest ton, to worksheet 13, box 10.

Worksheet 13: Emissions Summary and Fee Calculation

For more information on calculating emissions fees, refer to “Guideline for Determining Air Emissions Fees for Criteria Pollutants” and “Guideline for Determining Air Emissions Fees for Hazardous Air Pollutants” in Appendix C.

- Step 1:** Enter the source ID number on the upper right corner of the form.
- Step 2:** From worksheet 8, enter the total facility emissions of NO_x, VOC, (PM₁₀-FIL+PM-CON), and SO_x in boxes 1-4, respectively. These values should be **rounded to the nearest ton**.
- Step 3:** In box 5, enter the total source HAP emissions rounded to the nearest ton (totals of column D from all worksheet 11s or line 1, worksheet 12).
- Step 4:** If box 1 is greater than 4,000 tons, enter 4,000. Otherwise, enter box 1. Repeat this procedure for boxes 7-9.
- Step 5:** In box 10, enter the total source HAP emissions subject to fees. This value is on line 3, worksheet 12 (rounded to the nearest ton).
- Step 6:** Add boxes 6-10 and enter the total in box 11. This is the total emissions subject to fees.
- Step 7:** Multiply the emissions value in box 11 by \$37/ton and enter the result in box 12.
- Step 8:** Enter the dollar amount of any fee credit carried over from previous years in box 13. If no fee credit applies, enter zero.
- Step 9:** Subtract box 13 from box 12, and enter the result in box 14. This is the total air emission fee due.

Submit to KDHE Bureau of Air

Complete this form and worksheets used in the 2016 calendar year emissions inventory and return with the annual emissions fee payment:

Kansas Department of Health and Environment
Bureau of Air
1000 SW Jackson, Suite 310
Topeka, Kansas 66612-1366
Attn: Barb Bangert

The emissions inventory form and emissions fee payment must be submitted by April 1, 2017. The timeliness of your submission will be determined by the postmark date.