

APPENDIX G

Indiana Department of Environmental Management (IDEM) – Area Source Inventory Standard Operating Procedure

This page left intentionally blank.



Area Source Inventory
S-006-OAQ-R-MO-08-S-R1
Standard Operating Procedure

Office: Office of Air Quality
Branch: Air Programs Branch
Section: Technical Support and Modeling Section

Revised: 02/27/2008 **Revision Cycle:** 2 years
Effective date: 02/15/07

Scope of operations

This SOP is to identify source categories and develop emissions not calculated in point source inventories. This data is compiled every three years as mandated by EPA.

Scope of applicability

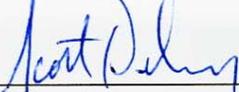
This SOP is for the Senior Environmental Manager and the Environmental Manager in the Emissions Group.

Authorized Signatures

I approve and authorize this Standard Operating Procedure:

Branch Chief

Scott Deloney
Typed/Printed


Signature

3/12/08
Date

Section Chief

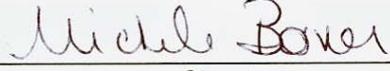
Ken Ritter
Typed/Printed


Signature

3/10/08
Date

Section QA Contact

Michele Boner
Typed/Printed


Signature

3/10/08
Date

Branch QA Coordinator

Chris Pedersen
Typed/Printed


Signature

3-10-08
Date

Author

Michele Boner
Typed/Printed


Signature

3/10/08
Date

This Standard Operating Procedure is consistent with agency requirements.


Indiana Department of Environmental Management
Quality Assurance Program
Planning and Assessment

3-17-08
Date

Table of Contents

Scope of operations.....	1
Scope of applicability	1
Authorized Signatures.....	1
1. Overview work flow chart.....	3
2. Definitions.....	3
3. Roles.....	4
Responsibilities:	4
4. Description of equipment, forms, and/or software to be used.....	4
5. Procedure	4
5.1 Procedural Flowchart	4
5.2 Procedure	5
6. Standards and checklists.....	24
7. Records Management.....	24
8. Quality Assurance / Quality Control	25
9. Continuous Improvement Cycle.....	25
10. References	25
11. History of Revisions	25
12. Appendices.....	25

1. Overview work flow chart

The process described is not part of a larger system and does not need an Overview work flow chart.

2. Definitions

AP-42 – Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources (January 1995) plus Supplements A – F (Updates 2001 – 2004). AP-42 can be obtained at www.epa.gov/ttn/chief/ap42/.

Area Sources - A collection of similar emission units within a geographic area that collectively represent individual sources that are small and numerous and have not been inventoried as a specific point, mobile, or biogenic source.

Authorized - Established by official authority and usage; as with a policy, standard operating procedure (SOP), or quality assurance project plan (QAPP) that is signed and dated.

EIIP (Emission Inventory Improvement Program) -The EIIP is an EPA program established in 1993 to promote the development and use of standard procedures for collecting, calculating, storing, reporting, and sharing air emissions data.

Emission Factors - An emission factor is the estimate of the quantity of pollutant released to the atmosphere (because of some operation or activity such as combustion or industrial production) divided by the level of that activity.

Process - The term “process” used when describing area sources is used to name an operation or activity that produces emissions.

NEI - National Emission Inventory Air Pollutant Emission Trends, U.S. EPA.

Standard Industrial Classification (SIC) Code - A Standard Industrial Classification code from the series of codes devised by the United States Office of Management and Budget (OMB) to classify establishments according to the type of economic activity in which they engage.

Source Classification Code (SCC) - Source Classification Code is a process-level code that describes the equipment or operation emitting pollutants.

3. Roles

Title	# of Staff	Experience	Qualifications	Location
Senior Environmental Manager	1	N/A	MS ACCESS, Emission Inventories and familiarity with the EIIP	Air Programs Branch
Environmental Manager	1	N/A	MS ACCESS, Emission Inventories and familiarity with the EIIP	Air Programs Branch

Responsibilities:

Senior Environmental Manager

Oversees work of the Environmental Manager and ensures that all goals are met. The Senior Environmental Manager also does the final upload to the NEI.

Environmental Manager

The Environmental Manager calculates the Area Source Emissions using the EIIP or other EPA guidance as provided. The Environmental Manager is also responsible for updating the SOP for the Emissions Group.

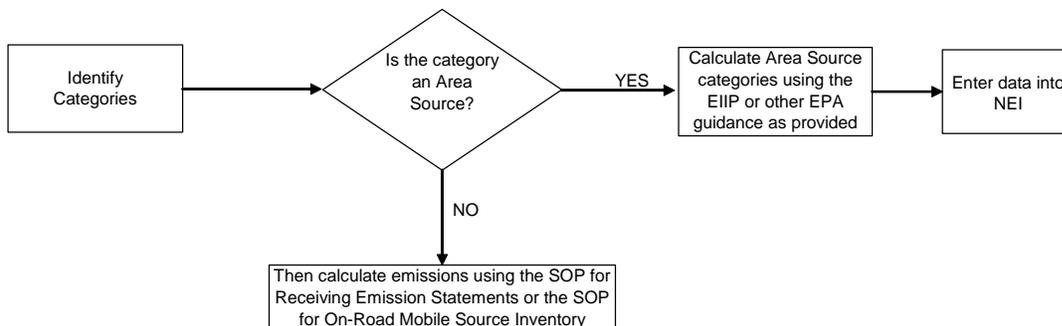
4. Description of equipment, forms, and/or software to be used

Equipment, Form, &/or Software	Who uses it?	Location
AP42	Senior Environmental Manager and Environmental Manager	EPA's website: http://www.epa.gov/ttn/chief/ap42/index.html
Emission Inventory Improvement Program (EIIP)	Senior Environmental Manager and Environmental Manager	EPA's website: http://www.epa.gov/ttn/chief/eiip/techreport/
National Emission Inventory (NEI) Air Pollutant Emission Trends, U.S. EPA	Senior Environmental Manager and Environmental Manager	EPA's website http://www.epa.gov/ttn/chief/trends/

5. Procedure

5.1 Procedural Flowchart

The procedural flowchart below titled "Area Source Inventory" is used to calculate non-point source inventories. This data is compiled every three years as mandated by EPA. The guidance followed is located in the EIIP. Emissions from area sources are calculated at the county level and consist of individual sources that are small, numerous and that have not been inventoried as specific point, mobile, or biogenic sources according to the EIIP.



5.2 Procedure

Category 1: Stationary Fuel Combustion

Sub-Category 1.1: Industrial Fuel Combustion

SCC: 2102002000, 210200400, 2102005000, 2102006000, 2102007000

Follow these steps when calculating emissions from industrial fuel combustion:

1. Obtain statewide fuel consumption for "Other Industrial" for the following fuels: coal, distillate oil, natural gas, and liquefied petroleum gas (LPG). Use the Energy Information Administration's website at <http://www.eia.doe.gov/> to find fuel consumption.

Note: As of the date of this SOP, the following steps will lead to data for fuel consumption.

- a. Go to <http://www.eia.doe.gov/>
 - b. Click on link for the various types of fuel consumption
 - c. Click on consumption tab for state totals
2. To avoid double calculating the various fuel combustions, subtract reported source totals from the total statewide fuel consumption by querying the total process rates for the various SCC codes using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb. The remaining number is the area source fuel consumption for the state.
 3. To distribute the remaining fuel to the county level, calculate the ratio of county to state employment for the manufacturing sector by dividing the number of Manufacturing Employees for each county by the number of manufacturing employees statewide. Use the County Business Patterns website at <http://www.census.gov/> to find the number of manufacturing employees for each county.

Note: As of the date of this SOP, the following steps will lead to data for Economic Census.

- a. Go to <http://www.census.gov/>
 - b. Click on Economic Census
 - c. Under 2002 Reports by State, use the down arrow key to select Indiana
 - d. Now, select each of the counties to find the county manufacturing employees
 - e. Use the total of employees for manufacturing under the paid employees' column
4. Multiply the ratio calculated above in step 3 by the area source fuel consumption to distribute the fuel to the county level. The remaining number is the process rate for each county. Multiply the process rate by the appropriate EPA emission factors for the various fuels for industrial manufacturing found in AP-42, Fifth Edition, Volume 1, Chapter 1, External Combustion Sources at <http://www.epa.gov/ttn/chief/ap42/ch01/>.

Sub-Category 1.2: Commercial/Institutional Fuel Combustion

SCC: 2103004000, 2103005000, 2103006000, 2103007000

Follow these steps when calculating emissions from commercial/institutional fuel combustion:

1. Obtain statewide fuel consumption for "Commercial" for the following fuels: distillate fuel oil, liquefied petroleum gas (LPG), natural gas, and residual fuel oil. Use the Energy Information Administration's website at <http://www.eia.doe.gov/> to find fuel consumption.

Note: Use the steps in sub-category 1.1-1 to navigate through the Energy Information Administration's website.

2. To avoid double calculating the various fuel combustions, subtract reported source totals from the total statewide fuel consumption by querying the total process rates for the various fuels using the SIC codes greater than 4999 using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb. These are the SIC codes that identify all the commercial/institutional area sources.
3. To distribute the remaining fuel to the county level, calculate the ratio of county to state employment for the commercial/institutional sector by dividing the number of commercial/institutional employees for each county by the number of commercial/institutional employees statewide. Use the County Business Patterns website at <http://www.census.gov/> to find the number of commercial/institutional employees for each county.

Note: Use the steps in sub-category 1.1-3 to navigate through the U.S. Census Bureau's website.

4. Multiply the ratio calculated above in step 3 by the area source fuel consumption to distribute the fuel to the county level. The remaining number is the process rate for each county. Multiply the process rate by the appropriate EPA emission factors for the various fuels for commercial/institutional found in AP-42, Fifth Edition, Volume 1, Chapter 1, External Combustion Sources at <http://www.epa.gov/ttn/chief/ap42/ch01/>.

Sub-Category 1.3: Residential Fuel Combustion

SCC: 2104002000, 2104004000, 2104006000, 2104007000

Follow these steps when calculating emissions from residential fuel combustion:

1. Obtain statewide fuel consumption for "Residential" for the following fuels: coal, distillate oil, natural gas, and liquid petroleum gas. Use the Energy Information Administration's website at <http://www.eia.doe.gov/> to find fuel consumption.

Note: Use the steps in sub-category 1.1-1 to navigate through the Energy Information Administration's website.

2. To distribute residential fuel to the county level, calculate the ratio of county fuel usage to statewide fuel usage using the breakdown of fuels by household per county divided by the breakdown of fuels by household per state using the U.S. Census Bureau's website at <http://www.census.gov/>.

Note: As of the date of this SOP, the following steps will lead to data for breakdown of fuels by household.

- a. Go to <http://www.census.gov/>
 - b. On the left hand side click on "American Fact Finder"
 - c. Using the drop down menu, click on Indiana
 - d. Scroll to "Housing Characteristics" and select "show more"
 - e. On the left hand side, select "change geography (state, county, place...)"
 - f. Using the drop down menu, select county, state, and each county name to obtain housing information
3. Multiply the ratio calculated above in step 3 by the area residential fuel use by state to distribute the fuel to the county level. The remaining number is the process rate for each county for the various fuels. Multiply the process rate by the appropriate EPA emission factors for the various fuels for residential found in AP-42, Fifth Edition, Volume 1, Chapter 1 External Combustion Sources at <http://www.epa.gov/ttn/chief/ap42/ch01/>.

Sub-Category 1.4: Residential Heating Using Wood

SCC: 2104008001, 2104008002, 2104008003, 2104008004, 2104008010, 2104008030, 2104008050

Follow these steps when calculating emissions from residential heating using wood:

1. Obtain statewide wood consumption for “Residential” using the Energy Information Administration’s website at <http://www.eia.doe.gov/>. To convert the statewide wood consumption from cords of wood consumed to tons, multiply the total cords consumed by 1.25.

Note: As of the date of this SOP, the following steps will lead to data for wood consumption.

- a. Go to <http://www.eia.doe.gov/>
 - b. Click on Households, Buildings & Industry
 - c. Under Consumption Summaries, click on “Annual”
 - d. Now, over to the right click on “State Energy”
 - e. Using the drop down menu at the bottom, select “Indiana”
 - f. Under “Consumption” click on the “Residential” document
2. Using the ratio estimates provided by EPA found in the “Documentation For The Final 2002 NONPOINT SECTOR (FEB 06 version) NATIONAL EMISSIONS INVENTORY FOR CRITERIA AND HAZARDOUS AIR POLLUTANTS” at <http://www.epa.gov/ttn/chief/net/2002inventory.html#documentaiton> the number calculated above in step 1 is broken out into three categories (fireplace without inserts, fireplaces with inserts and woodstoves).
 3. To distribute to the county level for the three categories above, calculate a ratio of county to state using the statewide total of households and the county total of households that burn wood found at the U.S. Census Bureau website <http://www.census.gov/>. The remaining number is the process rate for each county. Multiply the process rate by the appropriate EPA emission factors for each of the categories using the EIIP, Volume 3, Chapter 2, Residential Wood Combustion at http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii02_apr2001.pdf.

Note: Use the steps in sub-category 1.3-2 to navigate through the Energy Information Administration’s website.

Category 2: Industrial Processes

Sub-Category 2.1: Bakeries

SCC: 2302050000

Follow these steps when calculating emissions from bakeries:

1. Calculate a per capita consumption factor using the reported weight of yeast–raised product reported under the Bread, Cake, and Frozen Bakery Products from the Economic Census Bureau at <http://www.census.gov/econ/census02/> and the U.S. population at the U.S. Census Bureau at <http://census.gov/>.

Note: As of the date of this SOP, the following steps will lead to data for yeast-raised product.

- a. Go to <http://www.census.gov>
- b. Under Business & Industry open “Economic Census”
- c. Now open “Subject Series”
- d. Under Manufacturing, open the table “Product Summary”
- e. Use the yeast – raised product under Commercial Bakeries (NAICS code 311812) and Frozen cakes, pies, and other pastries manufacturing (NAICS code 311813)

2. Multiply the per capita consumption factor calculated above in step 1 by the Indiana population found at the U.S. Census Bureau at <http://www.census.gov>.
Note: As of the date of this SOP, the following steps will lead to Indiana population data.
 - a. Go to <http://www.census.gov>
 - b. Under Population Finder, use the drop down menu to select Indiana
3. To avoid double calculating the amount consumed for the state, subtract the reported process rate for both the straight-dough and sponge-dough by querying the total process rates for the SCC 30203202 (straight-dough) and SCC 30203201 (sponge-dough) using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb.
4. Multiply the remaining process rate by the straight-dough emission factor of .5 lbs VOC/1,000 pounds baked found in the EIIP, Volume 3, Area Source Method Abstracts: Baked Goods at Commercial/Retail Bakeries at <http://www.epa.gov/ttn/chief/eiip/techreport/volume03/index.html>.
5. Calculate a per capita factor by dividing the Indiana population found in step 2 by the remaining process rate. Now multiply the per capita factor by each of the county populations to calculate the VOC emissions for each county.

Note: As of the date of this SOP, the following steps will lead to county population data.

- a. Go to <http://www.census.gov>
- b. Under Population Finder, use the drop down menu to select Indiana
- c. Under "View more results", select the county table

Category 3: Solvent Utilization

Sub-Category 3.1: Architectural Coatings

SCC: 2401001000

Follow these steps when calculating emissions from architectural coatings:

1. Calculate an emission factor for architectural coating area sources first by adding all the solvent-based paints together and all the water based paints together using the U.S. Census Bureau's website <http://www.census.gov>. Use Table 1 to select all solvent-based paints and Table 2 to select all water based paints.

Table 1
National Solvent Coating Sales

Solvent Type	1,000 gallons
Exterior Solvent Type	XX
Interior Solvent Type	XX
Architectural Lacquers	XX
Architectural Coating N.S.K.	XX
Total Solvents	XX

Table 2
National Water Based Coating Sales

Water Type	1,000 gallons
Exterior Water Type	XX
Interior Water Type	XX
Total Water Type	XX

Note: As of the date of this SOP, the following steps will lead to architectural coating data.

- a. Go to <http://www.census.gov>
 - b. Under Business & Industry, select more
 - c. Now select Current Industrial Reports (CIR)
 - d. Select CIRs by Subject
 - e. Tab down to find the report "Paints and Allied Products"
2. Now multiply the total national number for solvent-based paints by the average solvent-based coating content number (3.87 lbs VOC/gallon) and the total national number for water-based paints by the average water-based coating content number (0.74 lbs VOC/gal) found in the EIIP, Volume 3, Chapter 3: Architectural Surface Coating at <http://www.epa.gov/ttn/chief/eiip/techreport/volume03/archsfc.pdf>.
 3. Add the total solvent-based coatings and the water-based paints together for a total national VOC emission factor from architectural surface coating. Then divide this number by the total national population using the U.S. Census Bureau's website <http://www.census.gov>.
 4. Multiply the number calculated above in step 3 by each of the county populations to calculate the total emissions per county.

Note: Use the steps in sub-category 2.1-5 to navigate through the Census Bureau's website.

Sub-Category 3.2: Automobile Refinishing

SCC: 2401005000

Follow these steps when calculating emissions from automobile refinishing:

1. To avoid double calculating, first query the employees from the reported sources using the SIC 7532- Body Repair and Paint Shops using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb. Subtract this number from the county employment for the same SIC using the U.S. Census Bureau's website <http://www.census.gov>.

Note: As of the date of this SOP, the following steps will lead to county employment data.

- a. Go to <http://www.census.gov>
 - b. Under Business & Industry, select more
 - c. Now select the County Business Patterns report for county
 - d. Select Indiana
 - e. Select each of the counties to find the number of employees for the corresponding SIC or NAICS code
2. Multiply the emission factor 3,519 lbs VOC/employee found in the EIIP, Volume 3, Chapter 13 Auto Body Refinishing at <http://www.epa.gov/ttn/chief/eiip/techreport/volume03/archsfc.pdf> and the county employment found above in step 1 to calculate the VOC emissions for each county.

Sub-Category 3.3: Traffic Markings

SCC: 2401008000

Follow these steps when calculating for traffic markings:

1. First calculate the national emissions by finding the amount of sales for traffic marking paints from the U.S. Census Bureau's website <http://www.census.gov> and multiply 3.36 lb VOC/gallon the national average VOC content for water and solvent-based paints from the EIIP, Volume 3, Chapter 14, Traffic Markings at <http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii14.pdf>.

Note: As of the date of this SOP, the following steps will lead to traffic marking paints.

- a. Go to <http://www.census.gov>
 - b. Under Business & Industry, select more
 - c. Now select Current Industrial Reports (CIR)
 - d. Select CIRs by Subject
 - e. Tab down to find the report "Paints and Allied Products"
 - f. Use the quantity amount in 1000/gallons under "Traffic marking paints (all types: shelf goods and highway department)"
2. Allocate the national emissions calculated above in step 1 to the state level by dividing the amount of money spent in Indiana by the money spent nationally on highway maintenance using the category "Total Disbursements" at the Federal Highway Administration's website <http://www.fhwa.dot.gov/policy/ohim/hs04/htm/sf2.htm>.
 3. Calculate the emission factor for Indiana by dividing the state level emissions by the total number of roadway miles in Indiana, given by contacting the Program Development Division, Highway Statistics, Indiana Department of Transportation or the Office of Air Quality, Technical Support and Modeling Section's mobile inventory preparer.
 4. Multiply the emission factor by the total number of roadway miles in each county using the information supplied from above in step 3.

Sub-Category 3.4: Industrial Surface Coating (employment based emission factor)

SCC: 2401015000, 2401020000, 2401030000, 2401040000, 2401045000, 2401055000, 2401060000, 2401065000, 2401070000, 2401075000, 2401080000

Follow these steps when calculating for industrial surface coating using the employment based emission factor:

1. Calculate an employee based emission factor for the following SIC's in the table below running a query to find the point source employment for each of the SIC's and the reported VOC emissions for each using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb.

SCC	Description	SIC's
2401015000	Factory Finished Wood	2426-2429,243-245, 2492, 2499
2401020000	Wood Furniture	25
2401030000	Paper Coating	26
2401040000	Metal Cans *	341
2401045000	Metal Coils *	3479
2401055000	Machinery and Equipment	35
2401060000	Appliances *	363
2401065000	Electronic and Other Electrical	3612, 3357
2401070000	New Motor Vehicles **	3711
2401075000	Other Transportation	37 (not 3711, 373)
2401080000	Marine Coatings	373

* Use the National default emission factor because the reporting sources are low.
** Emissions reported in point source

2. Divide the reported VOC emissions for each of the SIC's by the reported employment for each SIC. Use this number for the emission factor.
3. Subtract the number of reported employees found in step 1 from each of the SIC county totals using the U.S. Census Bureau's website <http://www.census.gov>. Use the remaining number for the process rate for each of the counties.

Note: Use the steps in sub-category 3.2-1 to navigate through the County Business Patterns.

4. Multiply the process rates above found for each of the SIC's in step 4 by the emission factors found in step 3 to allocate the emissions to each of the counties.

Sub-Category 3.5: Industrial Surface Coating (default emission factor)

SCC: 2401090000, 2401100000, 2401200000

Follow these steps when calculating emissions from industrial surface coating using the default emission factor:

1. Calculate industrial surface coating emissions using the default emission factor in the EIIP, Volume 3, Chapter 8, Industrial Surface Coating at <http://www.epa.gov/ttn/chiep/eiip/techreport/volume03/iii08.pdf> and multiply by the county populations found at the U.S. Census Bureau's website <http://www.census.gov>.

Note: Use the steps in 2.1-5 to navigate through U.S. Census Bureau's website.

SCC's	Description	Default Emission Factor
24-01-090-000	Miscellaneous Manufacturing	0.600 lbs VOC/person
24-01-100-000	Industrial Maintenance Coatings	0.800 lbs VOC/person
24-01-200-000	Other Special Purpose Coatings	0.800 lbs VOC/person

Sub-Category 3.6: Degreasing

SCC: 2415230000, 2415245000, 2415345000, 2415360000

Follow these steps when calculating emissions from degreasing activities:

1. Use the U.S. Census Bureau to find employment numbers for each of the counties for the categories in Table 1 below at <http://www.census.gov>.

Note: Use the steps in 2.1-5 to navigate through U.S. Census Bureau's website.

Source Classification Codes and Industries Associated with Degreasing		
SCC	SIC	Description
2415230000	36	Electronic and other electronic equipment
	25	Furniture and fixtures
	33	Primary metal industries
	34	Fabricated metal products
	35	Industrial machinery and equipment
	37	Transportation equipment
	38	Instruments and related products

2415245000	39	Miscellaneous manufacturing industries
	417	Bus Terminal and Service Facilities
	423	Trucking terminal facilities
	551	New and used car dealers
	552	Used car dealers
	554	Gasoline service stations
	555	Boat dealers
	556	Recreational vehicle dealers
	753	Automotive repair shops
2415345000	25	Furniture and fixtures
	33	Primary metal industries
	34	Fabricated metal products
	35	Industrial machinery and equipment
	36	Electronic and other electronic equipment
	37	Transportation equipment
2415345000 cont.	38	Instruments and related products
	39	Miscellaneous manufacturing industries
2415360000	417	Bus Terminal and Service Facilities
	423	Trucking terminal facilities
	551	New and used car dealers
	552	Used car dealers
	554	Gasoline service stations
	555	Boat dealers
	556	Recreational vehicle dealers
	753	Automotive repair shops

- Run a query to find reported employment numbers for each of the categories in the table above using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb.
- Subtract the reported employment from the U.S Census Bureau's numbers to find the process rates for each of the counties.
- Calculate the VOC emissions by multiplying the default emission factor in the EIIP, Volume 3, Chapter 6, Solvent Cleaning at <http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii06fin.pdf> and the process rate for each of the counties found in step 3.

Sub-Category 3.7: Dry Cleaners

SCC: 2420010370

Follow these steps when calculating emissions from dry cleaners:

- Calculate an emission factor by finding the number of employees state wide and county wide for SIC 7216(Laundry and Garment Services) at the U.S. Census Bureau's website <http://www.census.gov>.

Note: Use the steps in 2.1-5 to navigate through U.S. Census Bureau's website

- Take the sum of the employment from the counties, multiply by 2000, and divide by the statewide total found in step 1. Use this number for the emission factor.
- Calculate the process rate by running a query to find the number of reported employees for SIC 7216 using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb and subtract this number from the county total.
- Multiply the process rate for each of the counties above by the emission factor to calculate for VOC emissions.

Sub-Category 3.8: Graphic Arts

SCC: 2425000000

Follow these steps when calculating emissions from graphic arts activities:

1. Multiply the per capita factor found in the EIIIP, Volume 3, Chapter 7, Graphic Arts at <http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii07.pdf> by the state population from the Census Bureau <http://www.census.gov> to find the total emissions for the state.

Note: Use the steps in 2.1-2 to navigate through the U.S. Census Bureau's website.

2. Develop an emission factor by subtracting point source emissions from the total emissions and dividing by the state population found in step 1.
3. Distribute to the counties by multiplying the emission factor by the population for each county.

Note: Use the steps in 2.1-5 to navigate through the U.S. Census Bureau's website.

Sub-Category 3.9: Rubber and Plastics

SCC: 2430000000

Follow these steps when calculating emissions from rubber and plastics activities:

1. Run a query to find the total of reported emissions and number of reported employees for all SIC's beginning with 30 using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb.
2. Calculate the emission factor by dividing the point source emissions by the reported employees.
3. Subtract the reported employment for SIC's beginning with 30 from total employment for each of the counties.

Note: Use step 3.2-1 to navigate through the County Business Patterns.

4. Multiply the remaining number from above with the emission factor calculated in step 2.

Sub-Category 3.10: Miscellaneous Industrial Adhesives

SCC: 2440020000

Follow these steps when calculating emissions from industrial adhesives activities:

1. Using the guidance in the Air Pollutant Emission Trends at <http://www.epa.gov/ttn/chief/trends>, calculate an emission factor by finding the total National Emissions from Industrial Adhesives and divide by the National Manufacturing Employment from the U.S. Census Bureau's website <http://www.census.gov>.

Note: As of the date of this SOP, the following steps will lead to emission trends data for industrial adhesives.

- a. Go to <http://www.epa.gov/air/airtrends/aqtrnd03/>
- b. Select "Appendix A –Data Tables"
- c. Search for industrial adhesives

Note: As of the date of this SOP, the following steps will lead to National Manufacturing Employment.

- a. Go to <http://www.census.gov>

- b. Select Economic Census
 - c. Now select “Businesses with paid employees”
 - d. Use the manufacturing number under “paid employees”
2. To avoid double calculating, run a query collecting sources reporting adhesives using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb. Subtract the reported employment from the total amount of manufacturing employment. The remaining number is the process rate.

Sub-Category 3.11: Commercial/Consumer Solvents

SCC: 2460100000, 2460200000, 2460400000, 2460500000, 2460600000, 2460800000, 2460900000

Follow these steps when calculating emissions from commercial/consumer solvent usage:

1. Using the EIIP, Volume 3, Chapter 5, Consumer, and Commercial Solvent Use at <http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii05.pdf>, multiply the per capita factors for each of SCC codes by the population for each county from the U.S. Census Bureau’s website <http://www.census.gov>.

Note: Use the steps in 2.1-5 to navigate through the U.S. Census Bureau’s website.

Emission Factors for Commercial/Consumer Solvents

Source Classification Codes	Product Category	Per Capita Emission Factor (lb VOC/person)
2460100000	Personal Care Products	2.32
2460200000	Household Products	0.79
2460400000	Automotive Aftermarket Products	1.36
2460500000	Coatings and Related Products	0.95
2460600000	Adhesives and Sealants	0.57
2460800000	FIFRA-Regulated Products	1.78
2460900000	Miscellaneous Products	0.07

Sub-Category 3.12: Asphalt Emulsions

SCC: 2461022000

Follow these steps when calculating emissions from asphalt emulsions:

1. To calculate the process rate, find the number of barrels of asphalt used for the state found at the State Energy Data website at http://www.eia.doe.gov/emeu/states/seds_updates.html.
2. Obtain the amount of roadway miles for the state and county from the Indiana Department of Transportation’s, Division of Roadway Management Section.
3. Divide the county roadway miles by the state roadway miles and multiply by the total asphalt usage for the state found above in step 1.
4. Multiply the process rate by the default emission factor in the EIIP, Volume 3, Chapter 17, Asphalt Paving http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii17_apr2001.pdf.

Sub-Category 3.13: Pesticide Usage

SCC: 2461800000

Follow these steps when calculating emissions from pesticide usage:

1. Calculate pesticide usage by using a state specific emission factor. Develop the factor using a methodology that includes the retrieval of information of pesticides used, an emission factor for each pesticide used, a calculation about the inert ingredients in each pesticide, and an estimate of the amount of crop oil concentrate (an adjuvant used for the application of herbicides) used in the state of Indiana.
2. Find the amount of active ingredients for herbicides and insecticides applied to Indiana fields at the Indiana Agricultural Statistics Service at <http://www.usda.gov/nass/pubs/agr02/acro02.htm>.
3. Insert the numbers for both corn and soybeans to the Excel pesticide table found at K:\OAQ_INV\Inv\pesticide.
4. Calculate the emission factor by adding the emissions from crop oil concentrates obtained in the pesticide Excel table, pesticides, and solvent carriers and then divide by the total number of acres of corn and soybeans in Indiana found at the National Agricultural Statistics Services, United States Department of Agriculture <http://www.nass.usda.gov/QuickStats/>.
5. Multiply the emission factor by the county-specific acreage for both corn and soybeans found at the National Agricultural Statistics Services, United States Department of Agriculture <http://www.nass.usda.gov/QuickStats/>.

Category 4: Petroleum Marketing

Follow these steps when calculating emissions for bulk terminals:

Sub-Category 4.1: Bulk Terminals

SCC: 2501050120

1. Find the amount of gasoline sold in Indiana at the Federal Highway Administration, U.S. Department of Transportation <http://www.fhwa.dot.gov/policy/ohim/hs04/htm/mf21.htm>.
2. Find the amount of gasoline sold statewide and by county using, the NAICS code 447-Gasoline Service Station from the U.S. Census Bureau's, Economic Census at http://www.census.gov/econ/census02/data/in/IN000_44.HTM#N447.
3. Run a query to find the amount of point source reported gasoline using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb and subtract from the amount sold statewide. Use this to allocate to each county.
4. Allocate the amount gasoline sold to each of the counties by dividing the amount of sales in each county by statewide sales and multiplying by the number of gallons sold statewide found above in step 1.
5. EPA guidance suggests that only 25% of all gasoline consumed goes through bulk plants. To calculate process rate, multiply each county by 25% to estimate the amount of fuel transferred through bulk terminals.
6. Multiply process rate by the emission factors in the table below:

Emission Factors	
Source	Emission Factor (lb VOC/1000) gal
Storage Tanks Breathing Loss	5.0
Storage Tank Working Loss - Filling	9.6
Storage Tank Working Loss - Emptying	3.8
Gasoline Loading Racks (Vapor balance controlled)	11.9 (0.3)
Total	30.3

7. Bulk terminals also have controls set forth in the Indiana rule (326 IAC 8-4). This rule says that any source of this type that is new after January 1, 1980 is required to make sure that any transfer between a tank and transport uses a submerged pipe vapor balance system. Using EPA's default rule effectiveness, multiply the number in step 2 by the Control Efficiency (CE) 38%, a Rule Effectiveness (RE) of 80%, and a Rule Penetration (RP) of 13%, i.e. process rate X emission factor X (1-(CE x RE x RP)) X 1 ton/2000 lb = VOC tons.

Sub-Category 4.2: Portable Fuel Containers

SCC: 2501011011, 2501011012, 2501011016, 2501012011, 2501012012, 2501012016

Follow these steps when calculating emissions for portable fuel containers:

1. Calculate the emissions for Commercial and Residential gas cans by using the method developed by the California Environmental Protection Agency's document Public Meeting to Consider Approval of California's Portable Gasoline-Container Emissions Inventory. Use the excel spreadsheet found at K:\OAQ_INV\Inv\Area Source\Gasoline.zip to calculate the emissions for permeation, diurnal, and transport. Both the Spillage and Vapor losses are estimated in the nonroad emissions inventory by EPA models.
2. Using the survey results below in Table 1, estimate the number of fuel containers in the state for residential categories. The calculations are set up in an excel spreadsheet at K:\OAQ_INV\Inv\Area Source\ Gasoline.zip\250101\GasCans.xls, insert the number of occupied housing, from the U.S. Census Bureau's website at <http://www.census.gov/>, in the space marked "households".

Note: As of the data of this SOP, the following steps will lead to number of households in Indiana.

- a. Go to <http://www.census.gov/>
- b. On the left hand side select American Fact finder
- c. Now select housing
- d. Under "Occupancy Status", select occupies housing units
- e. Now use the drop down menu and select Indiana

Table 1

Residential Survey Results	
Percentage of households with at least one gas can	46%
Number of gas cans per household	1.8
Percentage of plastic cans/metal cans	76% / 24%
Weighted average gas can capacity (gal)	2.34
Percentage of gas cans stored with fuel	70%
Weighted average stored fuel volume (% of capacity)	49%

Percentage of all gas cans that are plastic and stored open/closed	23% / 53%
Percentage of all gas cans that are metal and stored open/closed	11% / 13%
Percent of all cans stored open/closed	34% / 66%

- Using the survey results below in Table 2, estimate the number of fuel containers for commercial categories for the state. Do this by using the commercial population based on the number of identified businesses in Table 3 and insert into the excel spreadsheet at K:\OAQ_INV\Inv\Area Source\ Gasoline.zip\250101\GasCans.xls.

Table 2

Commercial Survey Results	
Percentage of businesses with at least one gas can	80%
Number of gas cans per business	6.9
Percentage of plastic cans/metal cans	72% / 28%
Weighted average gas can capacity (gal)	3.43
Weighted average stored fuel volume (% of capacity)	49%
Percentage of all gas cans that are plastic and stored open/closed	39% / 33%
Percentage of all gas cans that are metal and stored open/closed	10% / 18%
Percent of all cans stored open/closed	49% / 51%

Table 3

Category	NAICS
Agricultural	115
Automotive Club and Towing Services	48841
Service Stations	8111
Lawn and Garden Maintenance Services	81141
General Contractors	23
Construction and Rental Yards	5324
Landscaping Services	561730

- Calculate permeable emissions separately for both residential and commercial by using the emission rates given in the California document. Use 1.57g/gal/day for plastic containers and 0.6g/gal/day for metal containers. Insert the numbers for both residential and commercial into the excel spreadsheet at K:\OAQ_INV\Inv\Area Source\ Gasoline.zip\250101\GasCans.xls.
- Calculate diurnal emissions by inserting the numbers for both residential and commercial into the excel spreadsheet at K:\OAQ_INV\Inv\Area Source\ Gasoline.zip\250101\GasCans.xls.
- Calculate transport spillage emissions by inserting the numbers for both residential and commercial into the excel spreadsheet at K:\OAQ_INV\Inv\Area Source\ Gasoline.zip\250101\GasCans.xls

Sub-Category 4.3: Service Station Tank Loading or Tank Truck Unloading (Stage 1)

SCC: 2501060052 (uncontrolled), 2501060053 (controlled)

Follow these steps when calculating emissions from tank loading and unloading

- Find the amount of gasoline sold in Indiana at the Federal Highway Administration, U.S. Department of Transportation <http://www.fhwa.dot.gov/policy/ohim/hs04/htm/mf21.htm>.
- Find the amount of gasoline sold statewide and county wide by using the NAICS code 447-Gasoline Service Station from the U.S. Census Bureau's, Economic Census at http://www.census.gov/econ/census02/data/in/IN000_44.HTM#N447.

3. Run a query to find the amount of point source reported gasoline using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb and subtract from the amount sold statewide. Use this to allocate to each county.
4. Allocate the amount sold to each of the counties by dividing the amount of sales in each county by statewide sales and multiplying by the number of gallons sold statewide found above in step 1.
5. Find the amount of gasoline tanks from the Underground Storage Tank data files from the Office of Land Quality, Indiana Department of Environmental Management
<http://www.in.gov/idem/programs/land/ust/ust.html>.
6. Now copy the data into an Excel spreadsheet. Filter finding the tanks that have only gasoline. Also filter out the tanks that are “permanently out of service”, “suspended per inspection”, and “unregulated”.
7. Using the Petroleum Sources Applicability Rule 326 IAC 8-4-1, filter out the tanks that are located in Clark, Boone, Dearborn, Elkhart, Floyd, Hamilton, Hancock, Harrison, Hendricks, Johnson, Lake, Marion, Morgan, Porter, Saint Joseph, and Shelby counties.
8. To find the amount of balanced tanks in Indiana, use the total of gasoline tanks found in step 7 and divide by the number of tanks that constructed after 1985 through current year. Use the spreadsheet created in step 7 and filter out the tanks that constructed prior to 1985.
9. Now apply the percentage found in step 8 to the amount of gasoline found in each county.
10. Apply the controlled emission factor to only those counties identified in 326 IAC 8-4, i.e. Boone, Clark, Dearborn, Elkhart, Hamilton, Hancock, Harrison, Hendricks, Johnson, Lake, Marion, Morgan, Porter, Saint Joseph, and Shelby. Use the emission factors for stage 1 controlled and uncontrolled in the EIIP, Volume 3, Chapter 11, Gasoline Marketing (Stage 1 and Stage 2)
http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii11_apr2001.pdf.

Sub-Category 4.4: Vehicle Fueling (Stage II) – Vapor Displacement

SCC: 2501060101 (uncontrolled), 2501060102 (controlled)

Follow these steps when calculating emissions from vehicle fueling – Vapor Displacement:

1. Find the amount of gasoline sold in Indiana at the Federal Highway Administration, U.S. Department of Transportation <http://www.fhwa.dot.gov/policy/ohim/hs04/htm/mf21.htm>.
2. Find the amount of gasoline sold statewide and by county using the NAICS code 447-Gasoline Service Station from the U.S. Census Bureau’s, Economic Census at http://www.census.gov/econ/census02/data/in/IN000_44.HTM#N447.
3. Allocate the amount sold to each of the counties by dividing the amount of sales in each county by statewide sales and multiplying by the number of gallons sold statewide found above in step 1.
4. Calculate an emission factor using the input files supplied from the mobile model. Table 1 and Table 2 show examples of how the emission factors for January and July for the Southern Counties were calculated. By using these two months, the other months are distributed. Use the average of all months for the emission factor for the Southern counties. Use the same methodology for the Northern counties, Central Counties, Clark/Floyd, and Lake/Porter.

Table 1

January Run for Southern Counties

VTYPE	GM_MILE	MILES	MPG	VMT	G/GAL	Month	Factor	
1	0.0628	29.4642	23.89	0.463793	0.322719	1	1.01	
2	0.1058	35.2923	18.77	0.070491	0.009868	2	1.14	
3	0.1058	35.2923	18.77	0.234672	0.109364	3	1.28	
4	0.1486	34.0851	14.31	0.071379	0.010834	4	1.41	
5	0.1486	34.0851	14.31	0.032825	0.002291	5	1.55	
6	0.2152	35.8919	9.88	0.028896	0.001775	6	1.69	
7	0.2342	32.3617	9.08	0.001027	2.24E-06	7	1.82	
8	0.2465	19.9098	8.63	0.000522	5.8E-07	8	1.69	
9	0.2719	27.6093	7.82	0.001164	2.88E-06	9	1.55	
10	0.2733	27.4686	7.78	0.002489	1.32E-05	10	1.41	
11	0.2972	24.3758	7.15	0.001132	2.72E-06	11	1.28	
12	0.3169	23.6257	6.71	0.000004	3.4E-11	12	1.14	
25	0.3421	27.2301	6.22	0.000496	5.23E-07	Sum	16.97	
					0.456873	g/gal	Average	1.41
					1.007222	lb/E3gal		

Table 2
July Run for Southern Counties

VTYPE	GM_MILE	MILES	MPG	VMT	G/GAL
1	0.1144	29.1752	23.9	0.456768	0.570447
2	0.1955	34.8826	18.75	0.071404	0.018689
3	0.1955	34.8826	18.75	0.237712	0.207133
4	0.2882	33.944	14.3	0.072838	0.021865
5	0.2882	33.944	14.3	0.033496	0.004624
6	0.4164	35.8288	9.9	0.029201	0.003515
7	0.4529	32.4716	9.1	0.001038	4.44E-06
8	0.4763	19.6757	8.66	0.000509	1.07E-06
9	0.5264	27.4602	7.83	0.00116	5.55E-06
10	0.5283	27.3328	7.8	0.002482	2.54E-05
11	0.5749	24.2458	7.17	0.001122	5.19E-06
12	0.6128	23.3718	6.73	0.000004	6.6E-11
25	0.6629	27.2301	6.22	0.000485	9.7E-07
					0.826316 g/gal
					1.821697 lb/E3gal

5. Multiply the process rate in step 4 by the emission factor found in the mobile model.

Sub-Category 4.5: Vehicle Fueling (Stage II) – Spillage

SCC: 2501060103

Follow these steps when calculating emissions from vehicle fueling – Spillage:

1. Find the amount of gasoline sold in Indiana at the Federal Highway Administration, U.S. Department of Transportation <http://www.fhwa.dot.gov/policy/ohim/hs04/htm/mf21.htm>.
2. Find the amount of gasoline sold statewide and by county using the NAICS code 447-Gasoline Service Station from the U.S. Census Bureau's, Economic Census at http://www.census.gov/econ/census02/data/in/IN000_44.HTM#N447.
3. Allocate the amount sold to each of the counties by dividing the amount of sales in each county by statewide sales and multiplying by the number of gallons sold statewide found above in step 1.
4. Apply the emission factor 0.7 lb VOC/1000 gallons in AP-42, Fifth Edition, Volume 1, Chapter 5, Petroleum Industry, Transportation, and Marketing of Petroleum Liquids <http://www.epa.gov/ttn/chief/ap42/ch05/final/c05s02.pdf> to the process rate found in step 4.

Sub-Category 4.6: Underground Tank Breathing

SCC: 2501060200

Follow these steps when calculating emissions from underground tank breathing:

1. Find the amount of gasoline sold in Indiana at the Federal Highway Administration, U.S. Department of Transportation <http://www.fhwa.dot.gov/policy/ohim/hs04/htm/mf21.htm>.
2. Find the amount of gasoline sold statewide and by county using the NAICS code 447-Gasoline Service Station from the U.S. Census Bureau's, Economic Census at http://www.census.gov/econ/census02/data/in/IN000_44.HTM#N447.

3. Allocate the amount sold to each of the counties by dividing the amount of sales in each county by statewide sales and multiplying by the number of gallons sold statewide found above in step 1.
4. Apply the emission factor 1.0 lb VOC/1000 gallons in AP-42, Fifth Edition, Volume 1, Chapter 5, Petroleum Industry, Transportation, and Marketing of Petroleum Liquids <http://www.epa.gov/ttn/chief/ap42/ch05/final/c05s02.pdf> to the process rate found in step 4.

Sub-Category 4.7: Tank Trucks in Transit

SCC: 2505030120

Follow these steps when calculating emissions from tank trucks in transit:

1. Find the amount of gasoline sold in Indiana at the Federal Highway Administration, U.S. Department of Transportation <http://www.fhwa.dot.gov/policy/ohim/hs04/htm/mf21.htm>.
2. Find the amount of gasoline sold statewide and by county using the NAICS code 447-Gasoline Service Station from the U.S. Census Bureau's, Economic Census at http://www.census.gov/econ/census02/data/in/IN000_44.HTM#N447.
3. Allocate the amount sold to each of the counties by dividing the amount of sales in each county by statewide sales and multiplying by the number of gallons sold statewide found above in step 1.
4. Using the guidance in the EIIP, Volume 3, Chapter 11, Gasoline Marketing (Stage I and State II) at http://www.epa.gov/ttn/chief/eiip/techreport/volume03/iii11_apr2001.pdf), multiply the activity rate 1.25 by the amount sold per county found in step 4.
5. Now multiply the process rate found in step 5 by the emission factor .06 lb VOC/gallon transported using the EIIP guidance above.

Category 5: Waste Management Practices

Sub-Category 5.1: Solid Waste Incineration

5.1.1: Industrial Solid Waste Incineration

SCC: 2601010000

Follow these steps when calculating emissions from industrial solid waste incineration:

1. Find the number of manufacturing employees, NAICS code 31, for each county using the County Business Patterns at the U.S. Census Bureau's website <http://censtats.census.gov/cgi-bin/cbpnaic/cbpsel.pl>.

Note: Use the steps in 3.2-1 to navigate through the county business patterns.

2. Multiply the county manufacturing employment by the default fuel-loading factor 420 tons / 1,000 manufacturing employees.
3. Multiply the process rate in step 2 by AP-42, Fifth Edition, Volume 1, Chapter 2-1.12, Solid Waste Disposal at <http://www.epa.gov/ttn/chief/ap42/ch02/index.html>.

5.1.2: Commercial Solid Waste Incineration

SCC: 2601020000

Follow these steps when calculating emissions from commercial solid waste incineration:

1. Find the population for each county at the U.S. Census Bureau's website <http://www.census.gov/>.
Note: Use steps 2.1-5 to navigate through the U.S. Census Bureau's website.
2. Next find the default factor of .65lb/person/day from U.S. EPA Municipal Solid Waste Report <http://www.epa.gov/epaoswer/non-hw/muncpl/msw99.htm>.
3. Find the percent of commercial solid waste from the U.S. EPA Municipal Solid Waste Report above.
4. Now, calculate the process rate for commercial solid waste incineration by multiplying population by the default factor of .65lb/person/day by the percent of commercial solid waste and number of days in a year.
5. Multiply the process rate in step 4 by AP-42, Fifth Edition, Volume 1, Chapter 2-1.12, Solid Waste Disposal at <http://www.epa.gov/ttn/chief/ap42/ch02/index.html>.

5.1.3: Residential Solid Waste Incineration

SCC: 2601030000

Follow these steps when calculating emissions from residential solid waste incineration:

1. Find the population for each county at the U.S. Census Bureau's website <http://www.census.gov/>.
Note: Use step 2.1-5 to navigate through the U.S. Census Bureau's website.
2. Next find the default factor of .65lb/person/day from U.S. EPA Municipal Solid Waste Report <http://www.epa.gov/epaoswer/non-hw/muncpl/msw99.htm>.
3. Find the percent of residential solid waste from the U.S. EPA Municipal Solid Waste Report above.
4. Now, calculate the process rate for residential solid waste incineration by multiplying population by the default factor of .65lb/person/day by the percent of commercial solid waste and number of days in a year.
5. Multiply the process rate in step 4 by AP-42, Fifth Edition, Volume 1, Chapter 2-1.12, Solid Waste Disposal at <http://www.epa.gov/ttn/chief/ap42/ch02/index.html>.

Sub-Category 5.2: Residential Open Burning

5.2.1: Leaf and Brush Burning

SCC: 2610000100 and 2610000400

Follow these step when calculating emissions from leaf and brush burning:

1. Find a per capita factor for leaf burning and a per capita for brush burning by using the U.S. EPA's Solid Waste Report at <http://www.epa.gov/epaoswer/non-hw/muncpl/msw99.htm>.
2. Allocate the amount burned by adjusting the per capita factor for leaves at 25% and for brush at 25%. Of the total waste generated only 28% burns.

- Once all the percentages from above are calculated, multiply the adjusted per capita factor by the rural population for each county from the U.S. Census Bureau at <http://www.census.gov/>

Note: As of the data of this SOP, the following steps will lead to county rural population.

- Go to <http://www.census.gov/>
 - On the left hand side, select American Fact Finder
 - Select data sets
 - Detailed tables
 - County
 - Indiana
 - All counties
- Use the table below to adjust the amount of waste generated to account for the percentage of forest in each county. The percentages come from a document from the United States Department of Agriculture at http://ncrs.fs.fed.us/pubs/rb/rb_nc253b.pdf.

Percent Forested Acres per County	Adjusted for Yard Waste Generated
< 10%	0% generated
>= 10%, and < 50%	50% generated
>= 50%	100% generated

- Now, multiply the amount of leaves and brush by the emission factors found in AP-42, Fifth Edition, Volume 1, Chapter 2, Solid Waste Disposal, Table 2.5-5, and Table 2.5-6 at <http://www.epa.gov/ttn/chief/ap42/ch02/final/c02s05.pdf>.

5.2.2: Residential Waste Incineration

SCC: 2610030000

Follow these steps when calculating emissions from for residential waste incineration:

- Find a per capita factor for residential waste incineration by using the U.S. EPA's Solid Waste Report at <http://www.epa.gov/epaoswer/non-hw/muncpl/pubs/mswchar05.pdf>.
- Using the Solid Waste Report above, subtract the percentage of recycled and composted material from the per capita factor above.
- Now, subtract the percentages of combustibles i.e. glass, metal, yard trimmings, and other waste.
- Using a document from EPA, it states that only 28% of waste generated by rural population burns and of that percent, 49% is actually combusted. Using this information multiply the per capita factor by 0.28 and then multiply that number by 0.49 actually burned in rural counties.
- Once all the percentages are calculated, multiply the adjusted per capita factor by the rural population for each county from the U.S. Census Bureau at <http://www.census.gov/>.

Note: Use steps 5.2.1-3 to find county rural population.

- Calculate the amount of residential waste by the emission factors in the EIIP, Volume 3, Chapter 16, Open Burning at <http://www.epa.gov/ttn/chief/eiip/techreport/volume03/index.html>.

Sub-Category 5.3: Public Owned Treatment Works (POTW's)

SCC: 2630020000

Follow these steps when calculating emissions from POTW's:

1. To calculate the amount of annual flow for public owned treatment works, obtain the amount of monthly flow rate for each county. This is data is supplied by the Office of Water Quality. To calculate for annual flow multiply the monthly flow by the default of 0.16 that represents the amount of industrial flow.
2. Calculate the process rate above by the emission factors in FIRE 6.25 using the SCC code 2630020000.

Sub-Category 5.4: Treatment, Storage, and Disposal Facilities

SCC: 2640000004

Follow these steps when calculating emissions from treatment, storage, and disposal facilities:

1. Obtain a list of treatment facilities and the amount of ignitable waste from each facility from IDEM's Office of Land Quality.
2. Using the list of facilities from step 1, run a query using the ACCESS data tables at K:\OAQ_INV\Steptool\Stptl_02.mdb to obtain the amount of ignitable waste reported to IDEM's Office of Air Quality.
3. Compare the two lists obtained in step 1 and step 2, for each facility subtract any quantity reported to OAQ from the quantity reported to OLQ. Do this in order to avoid double counting quantities reported to both offices. Combine the quantities reported from facilities within the same counties. Use these quantities as the process rate for each county.
4. Multiply the process rate above with the combined emission factor in the table below:

Emission Source	Emission Factor in AP-42 (lb VOC/Ton)	Emission Factor Used (lb VOC/Ton)
Storage Tank Vent	0.004-0.09	0.09
Spillage (filling)	0.20	0.20
Loading (filling)	0.00024-1.42	1.42
Spillage (emptying)	0.20	0.20
Loading (emptying)	0.00024-1.42	1.42
Combined Emission Factor		3.33

Category 6: Submit Data to EPA

Submit data in a format that is acceptable to EPA. At the present time the format is the National Emission Inventory (NEI).

6. Standards and checklists

The Emission Reporting program does not have any checklist for the Area Source Inventory at this time. The Emission Group does this electronically through an excel spreadsheet that is created when needed.

7. Records Management

The Area Source Inventory files are kept electronically at K:\OAQ_INV\Inv\Area Source.

The Branch Contact for the Air Programs Branch and the Section contact for the Technical Support and Modeling Section will keep copies of the SOPs for the Technical Support and Modeling Section to be referenced as needed. An electronic copy will also be available on K:\OAQ_INV\SOPs.

8. Quality Assurance / Quality Control

Comparisons are made against the emissions estimates made by The U.S. EPA in the NEI.

9. Continuous Improvement Cycle

A periodic review will be completed per updates and changes made to the EIIP.

10. References

The Area Source Inventory is a requirement of 40 CFR Part 51 Subpart A - Emission Inventory Reporting Requirements.

11. History of Revisions

Date Month/day/year	Revision Number	Description
02/27/2008	1	Revised using new SOP template.

12. Appendices

None

This page left intentionally blank.