

Area Source Episodic Inventories

AREA SOURCE OVERVIEW

This section of the Technical Support Documentation (TSD) gives information describing how the Area Inventory is developed.

Area Sources are small sources that do not qualify as point sources under the relevant emissions cutoffs. Area sources encompass more widespread sources that may be abundant, but that, individually, release small amounts of a given pollutant. These are sources for which emissions are estimated as a group rather than individually. Examples typically include dry cleaners, residential wood heating, auto body painting, and consumer solvent use. Area sources generally are not required to submit individual emissions estimates.

The main distinction between point and area sources is the methodology used to estimate emissions. Point sources are inventoried individually, and area sources are inventoried collectively.

The term “process” is used here to name an operation or activity that produces emissions. Area sources include broad groups of processes such as:

1. Commercial and consumer solvent usage;
2. Stationary fuel combustion;
3. Material storage and distribution;
4. Waste treatment and disposal;
5. Miscellaneous industrial manufacturing operations;
6. Miscellaneous sources (agricultural/forest burning, structure fires, mining construction, for example); and
7. Fuel distribution.

Each of these broad groups of processes contains a number of more specific groups or categories that share similar emission processes and emission estimation methods. The “Inventory Preparation Plan” included under section 1.b of the Table of Contents provides additional information on what is included in the area source inventory.

This section includes individual reports for the categories included in the Area Source Inventory. Summary tables for 2011, 2013, and 2016 of the area source SMOKE output data are included under 2.c.ii of the Table of Contents.

Activity data is used to calculate area source categories. This data includes population, employment, VMT, fuel usage, animal, crop, and other estimates. A list of the individual data tables and sources of the data used in the calculation processes is included in the relevant Excel input workbook. This activity data workbook contains the activity data by county and is included in this submission.

Excel workbooks are included for reference. These workbooks contain annual outputs by source category code and by county from the main calculation workbook which draws activity data from the input workbook. This data is, thereafter processed through SMOKE which adjusts the data for the desired episode and applies relevant controls.

INPUT DATA

ACTIVITY DATA FOR ESTIMATION METHODS

Emissions from area sources are nearly always estimated using some type of calculation procedure. Direct measurement of area source emissions is hardly ever practical because of technical and cost considerations.

There are four basic approaches for developing an area source emission estimate:

- _ Extrapolation from a sample set of the sources (surveys, permit files, or other databases);
- _ Material balance method
- _ Mathematical models; and
- _ Emission factors applied to activity levels.

The calculation procedures determine what data is used to estimate the area source emissions. A list of the individual data tables and sources of the data used in the calculation processes is included in the relevant Excel input workbook. These data are used in the calculations to estimate emissions for area sources.

SUMMARY TABLES

SUMMARY TABLES

The baseline (2016) calculation workbooks (one for 2011, another for all other years and, an oil and gas calculation workbook) are included in this submission along with other workbooks and source files: an input workbook with activity data used in the calculation workbook, sources files (appendices) for the activity data, and model data workbooks (2011, 2013, and 2016) with outputs for use in SMOKE (note: oil and gas emission calculation files are not included as no oil and gas sources occur in the area of interest). Included in the calculation workbooks, are the annual emissions that were input into SMOKE for the various area source categories. They do not include the effectiveness of any of the control strategies applied as a result of the SIP. SMOKE also adjusts the calculation workbook emissions from tons per year by county to the episode timeframe of interest as well as boundary/area of interest. An explanation of how the various area source categories were calculated is found in the “Area Source Categories” section of the TSD.

Emissions [tons/year]	Region	Sector	CO	NH3	NOx	PM10	PM2.5	SO2	VOC
2011	Salt Lake County	Area Sources	5951.9	3352.9	1972.6	13365.4	2208.3	19.7	18466.6
2013	Salt Lake County	Area Sources	5719.7	3369.7	1995.0	12022.8	2159.3	20.8	18746.5
2016	Salt Lake County	Area Sources	5691.7	3100.0	1950.8	12476.4	2202.1	20.1	19180.0

AREA SOURCE CATEGORIES

Individual reports for the area source categories are found in the category spreadsheets for the baseline year are included in the Excel calculation workbooks. These spreadsheets calculate the emissions and contain a list of assumptions, emission factors, equations and references for the specific categories and are included in this submission

Some categories that are included in the workbook were not used in the SMOKE process because emissions from these categories do not occur in the county and/or during the time period of interest. The categories not included in are indicated by their absence in the SMOKE output.