Emission Point Data Instructions

(9/2023)

PURPOSE FOR EMISSION POINT INFORMATION:
The information in this form will provide Emission Point dispersion parameters for any new or revised emission points. This information is required for all non-exempt sources, regardless of whether or not a particular source was evaluated using air dispersion modeling.

Source data requirements are based on the appropriate source classification. Each emission source is classified as a point, area, volume, flare, area circular, area polygon, open pit, line or buoyant line source. Contact the Bureau of Air Quality (BAQ) for clarification of data requirements. Include source on facility site map. Also, a picture of area or volume sources would be helpful but is not required. A user-generated document or spreadsheet may also be submitted, provided the required emission point parameters are submitted in the same order as presented in the tables.

ITEM BY ITEM INSTRUCTIONS:

NOTE: For all Emission Points described below, list the unique Emission Point ID for that source. Use the same emission point ID as shown in the current permit/provided in the last modeling submittal. If the emission point ID has changed from what was previously submitted, please list the current emission point ID and include the old emission point ID in parenthesis.

A. Point Source Data
Please provide the following source (stack) dispersion parameters for all non-exempt point sources, such as stacks, chimneys, exhaust fans, and vents. All stacks involved in bypass scenarios should be included.

Emission Point ID: List the unique emission point/stack ID for the point source. Use the same emission point/stack IDs used in the current permit.

Description/Name: Include a description or name for each emission point/stack ID (e.g., Process Furnace, Boiler 1, Aux Boiler, etc.).

UTM Coordinates (m): The coordinates, in meters, should be based on NAD83 projection. They must be provided for each emission point location. All of SC is in UTM zone 17.

Release Height – AGL (ft): The actual height of the emission point, in feet above grade (ground), where the pollutant is being released into the air. For emission points located on building tops, this height must include the height of the building plus the height of the stack.

Temperature (ºF): The emission point gas exit temperature in degrees Fahrenheit (ºF). If the exit temperature is considered ambient, input "amb" or "ambient" here.

Exit Velocity (ft/sec): The emission point gas exit velocity in feet per second (ft/sec).

Inside Diameter (ft): The interior diameter, in feet, of the emission point. For rectangular stacks, indicate the rectangular dimensions separated by a comma.

Discharge Orientation: Indicate if the emission point orientation is vertical, horizontal (90 degrees), or some other angle from vertical (e.g., 45 degrees).

Rain Cap (Y/N): Indicate whether or not the stack has a rain cap (Yes or No).

Distance to Nearest Property Boundary (ft): The shortest distance, in feet, between the plant property boundary and the emission point. Provide a plot plan showing the emission point location and distances to plant boundaries. This plot plan should be drawn to scale and should include building dimensions (see "Building Height, Length, and Width (ft)" below). If the emission point is included in AERMOD modeling, input "see modeling files" here.

Building Height, Length, and Width (ft): The height, length, and width, in feet, of the structure most likely to obstruct the emission plume based on Good Engineering Practice (GEP) stack height analysis as described in the *SC Modeling Guidelines for Air Quality Permits*. If there are several structures near the emission point, include a plot plan showing emission point location as well as height, length, and width of each nearby building and input "see plot plan" here. If AERMOD modeling is submitted, input "see modeling files" here.

B. Flare Source Data
Please provide the following source (stack) dispersion parameters for all flare sources. Flare sources are point sources where the combustion takes place at the tip of the stack.

For a flare modeled with SCREEN3, exit velocity, exit temperature, and heat loss fraction are not required (but please provide them if known). If the flare is modeled with AERMOD, all parameters are required.

Emission Point ID: List the unique emission point/stack ID for the flare source. Use the same emission point/stack IDs used in the current permit, if applicable.

Description/Name: Include a description or name for each emission point/stack ID (e.g., North Flare).

UTM Coordinates (m): The coordinates, in meters, should be based on NAD83 projection. They must be provided for each flare emission point location. All of SC is in UTM zone 17.

Release Height – AGL (ft): The actual height* of the stack, in feet above grade (ground), where the pollutant is being released into the air. For emission points located on building tops, this height must include the height of the building plus the height of the stack. [*Note: This is not the effective stack height which is a computed parameter for modeling a flare as a point source in AERMOD. See *SC Modeling Guidelines for Air Quality Permits* for more information.]

Heat Release Rate (BTU/hr): The flare heat release rate in BTU (British Thermal Units) per hour.

Exit Velocity (ft/s): The emission point gas exit velocity in feet per second (if unknown, enter 65.5 ft/s). [This parameter is not required if modeled with SCREEN3.]

Exit Temperature (ºF): The emission point gas exit temperature in Fahrenheit (if unknown, enter 1831.7 ºF). [This parameter is not required if modeled with SCREEN3.]

Heat Loss Fraction: The radiative heat loss fraction (default = 0.55). [This parameter is not required if modeled with SCREEN3.]

Distance to Nearest Property Boundary (ft): The shortest distance, in feet, between the plant property boundary and emission point. Provide a plot plan showing the emission point location and distances to plant boundaries. This plot plan should be drawn to scale and should include building dimensions (see "Building Height, Length, and Width (ft)" below). If the emission point is included in AERMOD modeling, input "see modeling files" here.

Building Height, Length, and Width (ft): The height, length, and width, in feet, of the structure most likely to obstruct the emission plume based on GEP stack height analysis as described in the *SC Modeling Guidelines for Air Quality Permits*. If there are several structures near the emission point, include a plot plan showing emission point location as well as height, length, and width of each nearby building and input "see plot plan" here. If AERMOD modeling is submitted, input "see modeling files" here.

C. Area Source Data
Please provide the following source dispersion parameters for area sources, such as storage piles and other sources that have low-level or ground-level releases with no plume rise that are rectangular areas. If the area source is an area circular (AREACIRC) or area polygon (AREAPOLY) source, it would be included in those tables and not in this table.

Emission Point ID: List the unique emission point ID for the area source. Use the same emission point IDs used in the current permit, if applicable.

Description/Name: Include a description or name for each emission point ID (e.g., Grinding Fugitives).

UTM Coordinates (m): The coordinates, in meters, should be based on NAD83 projection. They must be provided for the center of each area source unless the area source was evaluated using AERMOD. For AERMOD modeling, the coordinates for the southwest vertex must be provided. All of SC is in UTM zone 17.

Release Height – AGL (ft): The actual height of the source, in feet above grade (ground), where the pollutant is being released into the air.

Easterly Length (ft): The length, in feet, of the easterly dimension of the area source.

Northerly Length (ft): The length, in feet, of the northerly dimension of the area source.

Angle from North: The directional angle (in degrees) in which the area source is oriented from North.

Initial Vertical Dimension (ft): The depth, in feet, of the initial vertical dimension of the area source. (Optional — calculated the same way as for a volume source initial vertical dimension. See the *SC Modeling Guidelines for Air Quality Permits* for information on calculating this parameter.)

Distance to Nearest Property Boundary (ft): The shortest distance, in feet, between the plant property boundary and the center of the area. Provide a plot plan showing the area source location and distances to plant boundaries. This plot plan should be drawn to scale. If the emission point is included in AERMOD modeling, input "see modeling files" here.

D. Area Circular Source Data
Please provide the following source dispersion parameters for all circular area sources, such as storage piles and other sources that have low-level or ground-level releases with no plume rise. This source type cannot be used to characterize an area source for a SCREEN3 analysis.

Emission Point ID: List the unique emission point ID for the area source. Use the same emission point IDs used in the current permit, if applicable.

Description/Name: List the unique name of the area circular source to aid in identification (e.g., Raw Material Storage Pile A).

UTM Coordinates (m): The coordinates, in meters, should be based on NAD83 projection. They must be provided for the center of each circular area source. All of SC is in UTM zone 17.

Release Height - AGL (ft): The actual height, in feet above grade (ground), where the pollutant is being released into the air.

Radius of Area (ft): The radius of the circular area in feet.

Number of Vertices: The number of vertices used to approximate the circular footprint of the area.

Initial Vertical Dimension (ft): The depth, in feet, of the initial vertical dimension of the circular area source. (Optional — calculated the same way as for a volume source initial vertical dimension. See the *SC Modeling Guidelines for Air Quality Permits* for information on calculating this parameter.)

Distance to Nearest Property Boundary (ft): The shortest distance, in feet, between the plant property boundary and the center of the circular area source. Provide a plot plan showing the area source location and distances to plant boundaries. This plot plan should be drawn to scale. If the emission point is included in AERMOD modeling, input "see modeling files" here.

E. Area Polygon Source Data
Please provide the following source dispersion parameters for polygonal area sources, such as storage piles and other sources that have low level or ground level releases with no plume rise. This source type is for area sources with a footprint that can be represented as an irregular polygon and is used only for evaluation using AERMOD.

Emission Point ID: List the unique emission point ID for the area poly source.   Use the same emission point IDs used in the current permit, if applicable.

Description/Name: List the unique name of the area poly source to aid in identification (e.g., Raw Material Storage Pile A, Landfill B).

UTM Coordinates (m): Only the starting vertex coordinates (i.e., corresponding to the first vertex listed in AERMOD) should be included in this table. The coordinates of the vertex should be based on NAD83 projection. All of SC is in UTM zone 17.

Release Height – AGL (ft): The actual height, in feet above grade (ground), where the pollutant is being released into the air.

Initial Vertical Dimension (ft): The depth, in feet, of the initial vertical dimension of the area polygon source. (Optional — calculated the same way as for a volume source initial vertical dimension. See the *SC Modeling Guidelines for Air Quality Permits* for information on calculating this parameter.)

Number of Vertices: The number of vertices (limited to a number between 3 and 20) in the area polygon footprint.

Area (ft^2): The area in square feet of the footprint of the area polygon source.

Distance to Nearest Property Boundary (ft): The shortest distance, in feet, between the plant property boundary and the center of the area polygon source. Provide a plot plan showing the area source location and distances to plant

boundaries. This plot plan should be drawn to scale. If the emission point is included in AERMOD modeling, input "see modeling files" here.

F. Volume Source Data
Please provide the following source dispersion parameters for all volume sources. Volume sources have an initial dispersion (vertical depth) prior to release and must have a square shape (footprint). A few examples include roof monitors, conveyor belt transfer points and buildings (emissions from doors and windows).

Emission Point ID: List the unique emission point ID for the volume source. Use the same emission point IDs used in the current permit, if applicable.

Description/Name: Include a description or name for each emission point ID (e.g., Paint Building Fugitives).

UTM Coordinates (m): The coordinates, in meters, should be based on NAD83 projection. They must be provided for the center of each volume source. All of SC is in UTM zone 17.

Release Height – AGL (ft): The actual height of the source, in feet above grade (ground) where the pollutant is being released into the air. This is usually the height above ground of the center of the volume source.

Physical Horizontal Dimension (ft): The length, in feet, of the actual physical horizontal dimension of the volume source.

Initial Horizontal Dimension (ft): The length, in feet, of the initial horizontal dimension of the volume source. See the *SC Modeling Guidelines for Air Quality Permits* for information on calculating this parameter.

Physical Vertical Dimension (ft): The depth, in feet, of the actual physical vertical dimension of the volume source.

Initial Vertical Dimension (ft): The depth, in feet, of the initial vertical dimension of the volume source. See the *SC Modeling Guidelines for Air Quality Permits* for information on calculating this parameter.

Distance to Nearest Property Boundary (ft): The shortest distance, in feet, between the plant property boundary and the edge of the volume source. Provide a plot plan showing the emission point location and distances to plant boundaries. This plot plan should be drawn to scale. If the emission point is included in AERMOD modeling, input "see modeling files" here.

G. Open Pit Source Data
Please provide the following source dispersion parameters for all open pit sources, such as rock quarries, where fugitive emissions are generated below ground level of the surrounding terrain, and the shape (footprint) is approximately rectangular. This source type is used only for evaluation using AERMOD.

Emission Point ID: List the emission source ID for the associated open pit source. Use the same emission unit IDs used in the current permit, if applicable.

Description/Name: List the unique name of the open pit source to aid in identification (e.g., South Quarry).

UTM Coordinates (m): The coordinates, in meters, should be based on NAD83 projection. They must be provided for the southwest corner of each open pit source. All of SC is in UTM zone 17.

Release Height – AGL (ft): The average release height, in feet above the bottom of the pit, where the pollutant is being released into the air.

Easterly Length (ft): The length, in feet, of the easterly dimension of the open pit source.

Northerly Length (ft): The length, in feet, of the northerly dimension of the open pit source.

Pit Volume (ft^3): The volume of the open pit in cubic feet.

Angle from North (deg): The directional angle (in degrees) in which the open pit source is oriented from North.

H. Line Source Data
Please provide the following source dispersion parameters for all line sources (such as a roads or lines of vents). This source type is used only for evaluation using AERMOD.

Emission Point ID: List the unique emission point ID for the volume source. Use the same emission point IDs used in the current permit, if applicable.

Description/Name: Include a description or name for each emission point ID (e.g., Building Roof Vent A).

UTM Coordinates (m): The coordinates, in meters, should be based on NAD83 projection. They must be provided for the start and end points of each line source. All of SC is in UTM zone 17.

Release Height – AGL (ft): The actual height of the source, in feet above grade (ground) where the pollutant is being released into the air.

Line Length (ft): The length, in feet, of the line source.

Line Width (ft): The width, in feet, of the line source.

Initial Vertical Dimension (ft): The depth, in feet, of the initial vertical dimension of the line source. (Optional -- calculated the same way as for a volume source initial vertical dimension. See the *SC Modeling Guidelines for Air Quality Permits* for information on calculating this parameter.)

I. Buoyant Line Source Data
Please provide the following data for all buoyant line sources. [Note: Line Source data (above) should also be provided for each buoyant line source.] This source type may be used for a single buoyant line source or a group (or groups) of buoyant line sources. If only a single buoyant line source is being defined, ignore "average" and plural language in the instructions below. This source type is used only for evaluation using AERMOD. Contact SC BAQ Modeling Section personnel for more information.

Average Building Length (ft): The average length, in feet, of the building(s) where the buoyant line source(s) is (are) located.

Average Building Height (ft): The average height, in feet, of the building(s) where the buoyant line source(s) is (are) located.

Average Building Width (ft): The average width, in feet, of the building(s) where the buoyant line source(s) is (are) located.

Average Line Source Width (ft): The average width, in feet, of the buoyant line source(s).

Average Building Separation (ft): The average separation, in feet, of the buildings the buoyant line source(s) is (are) associated with.

Average Buoyancy Parameter (m^4/s^3): The average buoyancy parameter, in meters to the fourth power divided by seconds cubed, of the buoyant line source(s).

J. Emission Rates
Please list the requested emission information for all sources included above.

Emission Point ID: List the emission point ID for each emission.

Pollutant Name: List the pollutant's name (or chemical symbol) as listed in the applicable regulation(s) for each pollutant addressed. Examples: sulfur dioxide, NO_x, methylene chloride.

CAS #: The Chemical Abstracts Service number for each Standard No. 8 (toxic) pollutant is required (except for those Standard 8 pollutants that do not have a CAS #; also leave blank for Standard No. 2 and Standard No. 7 pollutants).

Emission Rate (lb/hr): The maximum hourly emission rate for each pollutant.

Same as Permitted? Select Yes or No. Are the emissions evaluated for the air compliance demonstration the same as the permitted emission rates? Any difference between the evaluated rate and the permitted rate must be explained in the application report.

Controlled or Uncontrolled: Are the emissions controlled or uncontrolled? Emission rates should be the maximum PTE unless there is a control or permit limit. Then, controlled or permitted rates may be used.

Averaging Period: The averaging period corresponding to the applicable regulatory standard (e.g., SO_2 3-hr) for the emission rate listed in the emission rate column. If a pollutant is subject to standards for more than one averaging period, list an emission rate for one averaging period on one line with a different emission rate based on a different averaging period on another line. [Note: Ton per year emissions can only be averaged to obtain lb/hr values if emissions are based on the facility operating 8,760 hrs/year or, if there is an annual limit, the ton per year emissions can be used to average the emissions for an annual averaging period.] Different emission rates for different averaging periods may be allowed providing the averaging method is appropriate to the averaging time.

If the instantaneous emission rate is not listed for a particular regulatory standard (e.g., PM_{10} 24-hr), and the emissions for that particular standard are averaged over some given part of the period, the averaging should be included and explained in the application. Examples of this type of averaging are discussed below.

Example 1: A source has a limit to operate a maximum of 8 hrs/day and has a maximum hourly emission rate of 3 lb/hr of a regulated toxic air pollutant, for a total emission rate of 24 lb/day. The lb/hr rate could be calculated by dividing the daily rate by 24 hrs/day (not the 8 hrs/day of operation), i.e., 24 lbs/day divided by 24 hrs/day = 1 lb/hr. This can be done since the standard for toxic air pollutants is a 24-hour standard.

Example 2: If a source has a maximum emission rate of 2 lb/hr of SO_2 and has a limit to operate only 10 hrs/day, the lb/hr rate for the 3-hr standard would be the maximum emission rate of 2 lb/hr. Since the standard is less than 24 hours, the emission rate cannot be averaged over the entire day. (However, if AERMOD modeling is

submitted, the maximum allowable emission rate of 2 lb/hr may vary by using hour-of-day model emission factors based on a permit condition of 10 hrs/day operating limit. The procedure used must be explained in the application.)

Example 3: If a source has a permit limit of 4,380 hrs/year of operation and a maximum hourly emission rate of 10 lb/hr, then an averaged annual lb/hr rate for demonstrating compliance with an annual standard can be calculated by multiplying the maximum hourly rate of 10 lb/hr by 4,380/8,760 = 5 lb/hr. In this example, the appropriate emission rate for demonstrating compliance for an averaging period less than annual would be the maximum hourly rate of 10 lb/hr, unless a limit corresponding to a smaller averaging period is also adopted (e.g., a 12 hour per day limit for a 24-hr average standard).