

Quick Reference Guide to Stack/Release Parameters -CEIDARS/HARP-

Objective: This Guide was created to help assist air districts on how to report point sources, volume sources, area sources, and open pits sources into CEIDARS/HARP.

Every emission release (e.g. every process) must be assigned a Stack/Release **ID Number** and one of the 4 “**Stack/Release Types**” (which are defined by the ISC User Manual for modeling), along with their associated release parameters. Each stack/release type is described below. The HARP software requires source characteristics for emission release types in order to simulate the downwind dispersion for risk assessments.

In addition, every Stack/Release must have location parameters for the **East** and **North Coordinates**, and the **Coordinate System** and **Datum** of the projection. (For UTM coordinates, the UTM **Zone** is also needed)

Likewise, the **Elevation** is also needed for every release.

Stack/Release Types:

(1) **POINT**: a conventional stack, having a stack height, diameter, temperature, and velocity.

The parameters entered into CEIDARS/HARP for a **Point Stack Release Type** are:

- **Release Height**: stack height, from the base of the stack, in feet (will be converted to meters for ISC modeling within HARP).
- **Stack Diameter**: stack diameter at exit in feet (will be converted to meters for ISC)
- **Temperature**: actual gas temperature at exit in degrees F (will be converted to degrees K for ISC). (Must be a number from 50 – 2500 degrees F).
- **Velocity**: actual gas velocity at exit in ft/min (will be converted to m/s for ISC).

**Note:* The gas flow rate (in cubic feet per minute) can be reported in HARP, and the velocity can then be derived mathematically by HARP using the diameter and flow rate.

Where emissions are not from a stack, they are generally categorized as fugitive releases and can be simulated as a fugitive volume release or a fugitive area release.

(2) **VOLUME**: a 3-dimensional “box” used to represent the emissions’ initial release. For example, a 5m x 5m x 5m “box” is sometimes used as a default volume release type for a fugitive volume release escaping from a warehouse or building’s ventilation system. In this case, the parameters required by for the HARP model include dimensions of the building or warehouse to simulate the initial dispersion or mixing of the fugitive emissions as they leave the source.

The parameters entered into CEIDARS/HARP for a **Volume Release Type** are:

- **Release Height:** release height (center of volume) above ground, in feet (will be converted to meters for ISC modeling within HARP).
- **Lateral Dimension (Width) of Volume Source:** corresponds to parameter SYINIT in ISC. The user must divide the physical width of the volume source by the appropriate factor (e.g., 4.3), and then enter it into CEIDARS/HARP, in feet (will be converted to meters for ISC modeling within HARP).
- **Vertical Dimension (Height) of Volume Source:** corresponds to the parameter SZINIT in ISC. The user must divide the physical height of the volume source by the appropriate factor (e.g., 2.15) and then enter it into CEIDARS/HARP, in feet.

(3) AREA: a 2-dimensional surface area used to characterize low level or ground level releases with no plume rise. For example, an evaporation pond, a lagoon, storage pile, or the spillage of liquid gasoline onto the ground at a service station, may be represented by an area release type.

The parameters entered into CEIDARS/HARP for an **Area Release Type** are:

- **Release Height:** release height above ground, in feet (will be converted to meters for ISC modeling within HARP).
- **X Width of Area Source:** corresponds to parameter XINIT in ISC. This is the length of the X side (in the east-west direction is Angle is 0 degrees), in feet (will be converted to meters for ISC modeling within HARP).
- **Y Width of Area Source:** Corresponds to parameter YINIT in ISC. This is the length of the Y side (in the north-south direction if Angle is 0 degrees), in feet (will be converted to meters for ISC modeling within HARP).
- **Vertical Dimension of Area Source:** corresponds to parameter SZINIT in ISC. This is the initial vertical dimension of the area source plume in meters. The user must divide the height of the source by the appropriate factor (e.g., 2.15), and then enter it into CEIDARS/HARP, in feet.
- **Angle:** Orientation angle for the rectangular area in degrees from North (measured positive in clockwise direction). (Optional).

(4) OPEN PIT: used to model particulate emissions from open pits, such as surface coalmines and rock quarries.

The parameters entered into CEIDARS/HARP for an Open Pit Release Type are:

- **Release Height:** release height above ground, in feet (will be converted to meters for ISC modeling within HARP).
- **X Width of Open Pit Source:** corresponds to parameter XINIT in ISC. This is the length of the X side (in the east-west direction is Angle is 0 degrees), in feet (will be converted to meters for ISC modeling within HARP).
- **Y Width of Open Pit Source:** Corresponds to parameter YINIT in ISC. This is the length of the Y side (in the north-south direction if Angle is 0 degrees), in feet (will be converted to meters for ISC modeling within HARP).
- **Volume of Open Pit:** corresponds to parameter PITVOL in ISC. This is the volume of the open pit in cubic feet (will be converted to cubic meters for ISC modeling within HARP).
- **Angle:** Orientation angle for the rectangular area in degrees from North (measured positive in clockwise direction). (Optional).