

MULTIPLE SOURCES, SPECIES AND PARTICLE SIZES

CERC¹

1. Outline

In ADMS 4 up to 300 sources may be modelled. A single source may emit up to 10 pollutants and a pollutant, if particulate, may include up to 10 different particle sizes.

2. Groups and Sources

2.1 Groups

Up to 10 groups of sources may be created. Each group may contain up to all the sources, so that a source may be a member of more than one group, but, a source can only appear once in any one group. There is a default group called 'All Sources', of which all new sources are a member, but this group may be edited in the same manner as user-created groups.

2.2 Sources

A source may be continuous or discrete, (plume or puff), and if continuous, may be a point, area, volume, line or jet source. The source is defined by its position, dimensions (e.g. diameter, length, depth), height and emission characteristics, namely:

- velocity, volume flow rate, mass and buoyancy fluxes or mass emission rate
- temperature or density
- molecular mass
- specific heat capacity
- mixing ratio.

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A maximum of 30 is placed on the number of each of line, area and volume sources.

2.3 Pollutants

A pollutant is defined by a mass emission rate (plume) or total mass emission, start time and duration (puff). If the pollutant is particulate, up to 10 different particle sizes may be defined, but if gaseous, only one species may be defined.

2.4 Particle sizes and gases

The particles and gases are defined by their wet and dry deposition characteristics and conversion factor between $\mu\text{g}/\text{m}^3$ and parts per billion (gases only). (Note, however, that the wet and/or dry deposition characteristics are only taken into consideration if the appropriate deposition options are selected by the user.)

The default parameters are given in Table 1.

Table 1 Default dry and wet deposition parameters

Pollutant type	Deposition velocity (m/s)	Terminal velocity (m/s)	Washout coefficient (s^{-1})	Conversion factor
Gaseous	0	N/A	0	1
*Particulate	0	0	0	N/A

*1 particle species

2.4 Output

The user has the choice of output due to a single source or due to any or all of the source groups.

3. **Limitations**

The following options are only available for a single point source:

- (i) Gamma dose
- (ii) Puff (also available for a single jet source)

The fluctuations option is only used for the first pollutant for which short term averages are calculated and the first pollutant for which long term averages are calculated.