

Discussion paper - Review of PM for Solid Waste Disposal (6A)

In the current version of the EMEP/EEA Guidebook (in the following referred to as GB) there are no emission factors for particle emissions from waste handling.

Fugitive emissions from waste handling at municipal solid waste disposal sites include emissions from the loading of wastes onto storage piles, equipment traffic at the disposal sites, wind erosion of piles and ground areas and possibly the load out of waste e.g. for waste burning. US EPA (2006) provides emission factors for fugitive emissions from different outdoor storage piles including municipal solid waste at landfills. US EPA chapter 13.2.4 includes a formula for estimation of emissions from any drop related operation:

$$E = k(0.0016) \frac{\left(\frac{U}{2.2}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

E: emission factor (kg/Mg)

k: particle size multiplier

U: mean wind speed (m/s)

M: material moisture content (%)

If available, country specific parameters should be applied. Else the following assumptions and standard values can be used for k and M. The following EFs proposed for the GB are based on the US EPA formula and the following assumptions:

k (PM_{TSP}) = 0.74

k (PM₁₀) = 0.35

k (PM_{2.5}) = 0.053

source: US EPA (2006) page 13.2.4-4

U = 6.7 m/s (upper range for the equation (0.6-6.7 $\frac{m}{s}$), which will be too high for many areas. The formula could be included in the GB chapter to enable countries to apply country specific mean wind speed, which are assumed to be available for all or at least a majority of countries)

According to US EPA (2006) table 13.2.4-1, the moisture content for municipal solid waste landfills can vary from 2.3 % (low end range for slag) to 29 % (high end range for fly ash). The average moisture content for miscellaneous fill materials is set to:

M = 11 % (US EPA, 2006)

The proposed EFs for any drop-operation of waste are:

EF_{TSP} = 0.463 g/Mg (US EPA, 2006)

EF₁₀ = 0.219 g/Mg (US EPA, 2006)

EF_{2.5} = 0.033 g/Mg (US EPA, 2006)

References

US EPA, 2006: AP42, Compilation of air pollutant emissions factors, Volume 1: Stationary point and area sources, Section 13.2.4 Aggregate handling and storage piles.