

Is there a way to enter soil gas data directly?

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Soil gas concentrations cannot be directly entered. However, by using the equilibrium partitioning equation, an equivalent total soil concentration can be calculated as function of soil gas concentration, which can in turn be entered into the software as the soil concentration.

Assuming equilibrium partitioning among the soil, air and water phases, the bulk soil concentration can be derived from the soil gas concentration by the following:

$$CT \text{ (mg/kg)} = C_{air} \text{ (mg/L)} / H \text{ (dimensionless)} / K_{sw} \text{ (kg/L)}$$

Where:

CT (mg/kg) = bulk soil concentration

C_{air} (mg/L) = air phase (soil gas) concentration, (mg/L = ug/L * 10⁻⁶)

H = dimensionless Henry's Law constant

K_{sw} (kg/L) = bulk soil-water partition factor, defined as follows.

$$K_{sw} = \rho_{ob} / (\theta_{w} + k_{d} \rho_{ob} + H \theta_{A})$$

Where:

ρ_{ob} (kg/L) = soil bulk density

k_{d} (L/kg) = soil-water partition coefficient (=foc*Koc for organics)

θ_{w} = volumetric water content (dimensionless)

θ_{A} = volumetric air content (dimensionless)