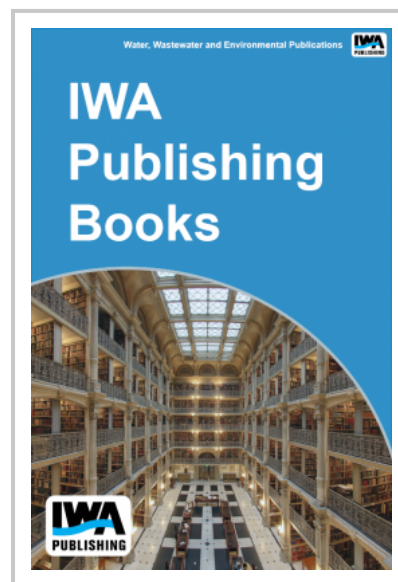


Assessing Bioavailability of Metals in Biosolids-Treated Soils

Plant-availability of metals in biosolids-treated soils may be mathematically described by $M_t = C \times [1 - e^{-(k \times t)}]$ where M_t (mg kg⁻¹) is the cumulative metal removal from the biosolids-treated soils by growing and harvesting plants for t years, C is the total phytoavailable metal pool of the soil (mg kg⁻¹) at $t = 0$, and k is the metal absorption rate coefficient (yr⁻¹).

The total available metal pool, C , is defined as metals extractable by organic acids in the rhizosphere of growing plants and k is related to the kinetics of metal release by organic acids. Half-life of the available metals in biosolids-amended soils may be derived from k . Experiments were conducted to characterize the concentration and composition of the organic acids. A successive extraction method was used to extract metals from biosolids-treated soils for determining C and k .

In this manner, the plant available metals of the biosolids-treated soils are defined by the total available metals, half-life, and duration of plant growing.



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