



Mark H Russell
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To: Catherine A Barton/AE/DuPont@DuPont
cc:
Subject: Modeling soil concentrations

Cathy,

I tried calling you but you weren't in.

The simplest way to estimate potential soil concentrations is to divide the estimated loading (mass/area/time) by the depth of soil sampling, which you have already done.

A more refined approach to estimating soil concentrations is to use a model such as PRZM which provides a daily mass balance of water and chemical. For a mobile, persistent (half-life = 10 yr) chemical that is semi-continuously deposited on the soil surface, an estimated mass balance would be:

Annual mass balance

mass added to soil:	100 gm/ha/yr
mass volatilized:	1-2 gm/ha/yr (assuming low volatility)
mass degraded in top 1 m of soil:	1-2 gm/ha/yr
mass removed via runoff/erosion:	1-2 gm/ha/yr
mass taken up by plants:	20-30 gm/ha/yr
mass leached below 1 m depth	40-60 gm/ha/yr (results in gw conc of 15-20 ug/L)
mass remaining in top 1 m of soil:	10-20 gm/ha/yr (results in mean soil conc of 0.7-1.4 ug/kg in top 1 meter)

More exact numbers can be calculated using PRZM.

Hope this is useful

Mark

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