## Equilibrium partitioning of organic compounds

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## Sorption isotherm

Imagine the following experiment. You have a closed bottle with 1 L of water and 50 g soil immersed in the water (no air present). You add a tiny amount of chemical *i*, shake the bottle until partition equilibrium is attained. You then measure the equilibrium concentrations of i in both phases water and soil.

Then you re-add chemical *i* and, in the following, repeat the steps above. You repeat this 10 more times adding more and more of chemical i. Then you plot the measured data as the concentration in phase 2 (soil) vs. the concentration in phase 1 (water). This plot is referred to as a sorption isotherm:



concentration in phase 1

What will the plotted curve look like? How is the partition constant of *i* between water and soil related to this curve? What is the maximum concentration that you can reach experimentally? How would the graph look like if i was a volatile compound and the bottle also contained 1 L of air while the experiment was carried out exactly like before?



Proceed to help



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