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## Problem 4

Horstmann and McLachlan (1998; [Journal link](#) [Download paper](#)) have shown that PCBs with 6 or more chlorines do not reach equilibrium between the forest canopy and the atmosphere as a source. Try to find out what the dominating resistance is!

Use the following numbers: The major compartment of the plant for accumulating non-polar compounds such as PCB is the wax layer at the outside of needles and leafs. Assume that this layer is  $1\text{ }\mu\text{m}$  thick. The laminar boundary layer on the air side is about 1 cm thick. Assume the following numbers for a heptachlorobiphenyl: a diffusion coefficient of  $10^{-10}\text{ cm}^2/\text{sec}$  in the wax; a partition coefficient  $K_{\text{wax/air}}$  of  $10^{-10}\text{ (L/L)}$  for a diffusion coefficient in air of  $0.04\text{ cm}^2/\text{sec}$ .

