

**MODELING VEGETATION EXPOSURE TO ORGANIC COMPOUNDS: THE  
IMPORTANCE OF ATMOSPHERE-CANOPY EXCHANGE  
PARAMETERIZATION**

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**ABSTRACT**

The importance of atmosphere-canopy exchange parameterization in the modeling assessment of airborne organic pollutant in vegetation is investigated within the framework of a simulation model. Air/canopy interaction is parameterized by a variable resistance term which considers vegetation and chemical characteristics and atmospheric conditions effects. Model estimates of accumulation of selected pollutants in two different types of vegetation and under various environmental regimes are performed. Model results are then compared with calculations obtained by assuming an invariant resistance term which is the typical modeling practice in environmental assessments. The comparison shows that the use of the more simple parameterization of the air-canopy processes may be not valid over a wide range of meteorological conditions and vegetation characteristics, resulting to both underestimations and overestimations of pollutant concentration in vegetation. The results stress the major influence of air/vegetation exchange, and that this parameterization must be appropriately considered when calculating exposure of vegetation to atmospheric pollutants. Implications for monitoring studies are also identified and briefly discussed.