

MODELING MULTIMEDIA POLLUTION FOR ENVIRONMENTAL EXPOSURE

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Abstract. The contaminants released into the environment can originate human exposure by the transport through the atmosphere, aquatic systems or through soil sub-compartments. The need for tools to predict environmental behavior of chemicals, contaminants and metals led to the development of mathematical models, which are designed to describe the transport and fate of substances under special environmental conditions. A multicompartment modelling approach may be used to predict contaminants concentration in predefined end-points. Each compartment may represent an environmental media: air, soil, water, flora and biota. Also each one of these compartments may be divided into several sub-compartments. For the exposure assessment from contaminants at large contaminated sites, all transfer pathways leading to the exposure of man and vulnerable ecosystems have to be taken into account. A transfer model through the food chain should also be included, whenever it is possible or relevant. For some contaminants, the uptake into vegetation is the major entry route for the transfer into the food chains: contamination of the trophic chain will be a component of human exposure by transferring the contaminants into animal products that are part of the human's diet. By means of a multicompartment model, the various release mechanisms, transport, transfer and uptake processes are described and the concentration pattern resulting from the consequent exposure is simulated.

Keywords: multimedia models, compartment models, exposure, transport and fate

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