

Determining the Biological Significance of Contaminant Bioaccumulation

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ABSTRACT

Bioaccumulation data are useful in that they provide direct information on the actual bioavailability of contaminants. This is particularly important as bioavailability and toxicity may be substantially altered by site-specific variations in water chemistry (e.g., salinity, pH, dissolved organics) or by the presence of other contaminants. This latter point is crucial in complex effluent situations where a myriad of trace metals and organics results in complex matrices which make modeling of uptake and toxicity of individual compounds exceedingly difficult. By measuring bioaccumulation of contaminants in organisms from the environment, it is possible to skip past the alterations described above and determine the contaminants' actual bioavailability. Laboratory simulations are also useful in predicting bioaccumulation for complex mixtures such as dredge spoils. The major problem currently facing these approaches, however, is determining the relevance of a specific tissue or body burden to the fitness of an organisms have the ability to detoxify and acquire tolerance to a wide range of environmental contaminants.

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