**Improving bioaccumulation assessment for ionogenic compounds by measuring sorption to phospholipids and liver S9 clearance rates**

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Bioaccumulation is one of the key factors in terms of evaluating the fate and risk of chemicals in the environment. Under the chemical legislation REACH, adequate estimates of the bioaccumulation potential of thousands of chemicals, of which 50 % is ionogenic, are required. Only recently, a bioconcentration model specifically for ionogenic organic chemicals (IOCs) in fish has been developed (Armitage et al. 2013) and evaluated against empirical bioconcentration factors (BCFs). While bioaccumulation data on IOCs are scarce, outliers in BCF-IOCs model predictions are related to the uncertainty in and lack of empirical data for phospholipid membrane affinities and biotransformation rate constants. Charged IOCs behave differently than their neutral form and tend to interact with phospholipids through more complex interactions. Additionally, the phospholipid-water partition coefficient is also not sufficient to predict bioaccumulation potential when substantial biotransformation occurs. This study aims to improve the measurement of both parameters for a series of charged IOCs. The selected IOCs consist of different types of acids (phenolic, carbaoxylic and sulfonic) and bases (primary, secondary, tertiary amines and quaternary ammonium salts). Solid-supported lipid membranes (TRANSIL) were applied to determine partition coefficients of these selected IOCs at a fixed pH of 7.4. An *in vitro* method using fish liver S9 fraction was used to measure the decrease of the concentration of the parent compound over time. Biotransformation rate constants were then calculated according to the protein concentration and incubation time. The empirical data can be used to improve estimates of the bioaccumulation potential of the tested IOCs and allow for updates of IOC bioaccumulation model parameters.