
Brief Research Report

ADSORPTION AND ADSOLUBILISATION OF ORGANOTINS ONTO SILICA*

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The adsorption of organotins bis-tributyltin oxide (TBT), triphenyltin chloride (TPeT), tripropyltin chloride (TPrT), dibutyltin dichloride (DBT) and butyltin trichloride (MBT) onto a model silica surface at pH 5.2 and 0.4M NaCl was investigated in the presence of the non-ionic surfactant Triton X-100 (TX-100). For the trialkyltin series (i.e. TBT, TPeT and TPrT), adsolubilisation onto the surface was observed for the more lipophilic species TPeT and TBT at equilibrium surfactant concentrations below the critical micellar concentration (CMC) of TX-100. This was not observed for TPrT, possibly because of the lower lipophilic character of this compound as a result of its smaller sized alkyl chain groups. Solubilisation within micelles above an equilibrium surfactant concentration in excess of the CMC was however observed for all trialkyltin compounds investigated. Solubilisation of the three trialkyl tin species studied followed the trend TPeT > TBT > TPrT.

In contrast to trialkyltins, adsorption of DBT onto the silica surface was complete and unaffected by the presence of the surfactant. The behaviour of DBT in this system could be explained by assuming the formation of doubly charged dibutyltin cations ($\text{Bu}_2\text{Sn}^{2+}$).

Unlike DBT, adsorption of MBT was affected by the presence of TX-100. At surfactant concentrations in excess of the CMC, the formation of micelles was found to slow down MBT adsorption onto silica, possibly *via* a solubilisation phenomenon.

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