The cycling of tin is a topic of concern because of its anthropogenic entry of organotin compounds into the environment. Special attention is given to the transformation of organotins and the methylation of inorganic tin, since these processes often give rise to more toxic formulations. By far the largest application of organotins is as stabilizers in polyvinyl chloride (PVC) plastics. As large shares of PVC waste have been and still are disposed of in landfills, landfills are considered as potential sources for pollution by tin-organic compounds.

This thesis focuses on laboratory studies investigating the possible release of organotins from different PVC products prevailing under landfill conditions, their anaerobic biodegradability and microbial transformation. In addition, their possible effect on the anoxic mineralization is addressed. Temperature was shown to have a particular influence on the release of organotin stabilizers present in the investigated PVC products, and the main release occurred under methanogenic conditions. However, the results demonstrate that landfill microorganisms have the capacity to partially or completely degrade the commercially used tin stabilizers investigated according to performed anaerobic biodegradation assays. Landfill microorganisms also have the potential for tin methylation. The alkyltin stabilizers had an impact on anoxic mineralization of organic matter, which was revealed by inter alia retarded methane formation.