New Strategies on Organotin Speciation

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Organotin compounds exhibit insecticide, fungicide and bactericide activity and have been extensively used as biocides in antifouling paints by the maritime industry. They are among the most toxic compounds ever intentionally introduced by man into the aquatic environment and appear as top priority pollutants in the European Union and US Environmental Protection Agency lists. Tributyltin (TBT) in particular has a number of complex ecotoxic effects on estuarine populations, and has been included in the xenoestrogens or endocrine disrupters group, since the biocide effects observed in natural ecosystems of which the onset of *imposex* to a great number of gastropod species is a shocking example.

State-of-the-art analytical methodologies currently used for organotin speciation are still based on several conventional approaches, in particular using derivatization, i.e. hydride generation, alkylation, etc., to confer volatile characteristics of the analytes followed by enrichment procedures (e.g. liquid-liquid extraction, etc.). Additionally, suitable analytical instrumentation is selected, in particular capillary gas chromatography with specific detectors (e.g. flame photometric detector, etc.) or hyphenated to particular techniques (e.g. mass spectrometry, etc.), to reach the low trace levels usually found in environmental matrices. Nevertheless, in the last decade several new approaches has been proposed for organotin speciation, allowing the decreasing of the detection limits at the ultra-trace level, becoming easy of work-up, less time consuming, cost-effective in many cases and possibility of automation.

Taking into consideration these issues, the present contribution focused on the main analytical novelties and strategies regarding all advantages for organotin speciation in environmental matrices.

References

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