

Assessment of organic booster biocide contamination in seawater from harbours of Gran Canaria Island

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Abstract

The term biofouling refers to an undesirable accumulation of microorganisms, plants and animals on artificial surfaces immersed in water. This accumulation causes several problems such as greater frictional resistance and deterioration of the coating with the consequent economic loss [1]. In the 70s, organotin compounds, as tributyltin (TBT), were introduced in ship painting industry with excellent results. However, TBT is considered a persistent and toxic compound. It manifests extreme toxicity in non-target species, such as bivalves and gastropods, some of which are of commercial interest [2]. For this reason organotin based paints have been progressively forbidden. Nowadays and from 2008, in European community waters it is not allowed sail with ships painted with these coatings. As a result, paint manufacturers introduced new products. These compounds are now known as booster biocides and are added to copper oxide-based paints to improve their effectiveness for the full spectrum of fouling organisms. Common booster biocides are growth inhibitors of freshwater and marine algae [3]. In consequence several restrictions has been adopted in some European countries as UK, Denmark or Sweden [4].

Seawater samples from fishing ports, and harbors of Gran Canaria Island were analyzed to determine levels of four booster biocides (diuron, TCMTB, dichlofluanid and irgarol 1051). A monitoring campaign of marine waters was conducted for one year. Diuron and irgarol 1051, with concentrations ranged from units to cents of ng/l, were the most common biocides present in seawater [5].

The method used to determine the levels of the biocides in seawater samples was based on a SPE process combining with LC-MS/MS technique.

References

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