

AQUATIC PHOTOLYSIS OF ANTIFOULING BIOCIDES

V.A. SAKKAS, I.K.KONSTANTINOY, T.A. ALBANIS

*Lab. of Industrial Chemistry, Dept. of Chemistry, University of Ioannina,
Ioannina 45110, GREECE.*

ABSTRACT

The photochemical behavior of biocides used in antifouling paints was investigated in different natural waters as sea water, lake water and river water as well as in distilled water under simulated solar light. The tested biocides were irgarol 1051 and sea-nine 211 that belong to different chemical groups. In order to examine the effect of dissolved organic matter photolysis experiments were also conducted in the presence of various concentrations of humic acids. The photolysis of the biocides proceeds via first-order reaction. Kinetic experiments were monitored with GC-FTD while the major photodecomposition products were identified with GC-MS. These were the dealkylated derivatives for irgarol 1051 and the dechlorinated and dealkylated derivatives for sea-nine 211. Based on this byproduct identification a possible degradation pathway is proposed for the photolysis of these biocides in aqueous media.