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## MONITORING AND ASSESSMENT OF HERBICIDES REMOVAL BY INDUSTRIAL WASTEWATER TREATMENT

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### Abstract

Herbicides industry is a large consumer of water, as well as a major wastewater generator, its effluents contain priority organic pollutants in very high concentrations which have severe effects on human health and on the environment due to their toxicity and bio-recalcitrant nature, persistence in the environment and bioaccumulation. A vast number of herbicides and other priority organic pollutants have been found in wastewater effluents, surface water, and drinking water around the world.

The aim of this paper is the evaluation of the effectiveness removal of herbicides from the wastewater streams of a herbicides manufacturing factory located in the SE of the Mediterranean basin. The concentrations of various herbicides and other common wastewater control parameters were continuously measured in both the influents and effluents of the biological treatment plant during a period of two years.

Concentrations of various herbicides (e.g., s-triazines, phenylurea herbicides) were measured in samples of wastewater entering the WWTP or in the treated effluent. An analytical method was developed to simultaneously determine and quantify more than 20 organic compounds (herbicides or related compounds) based on high performance liquid chromatography coupled to a mass spectrometer (LCMS) and gas chromatography mass spectrometer (GCMS). The results presented in this paper include also the characterization of herbicides industrial effluents in terms of total herbicides and an evaluation of the effects of the physical-chemical and biological process on these hazardous organic compounds.

*Key words:* herbicides removal, monitoring, wastewater treatment

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