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"Gheorghe Asachi" Technical University of Iasi, Romania

TREATMENT OF MERCAPTANS BY HUMID AIR PLASMA: APPLICATION IN THE DECONTAMINATION OF AN AQUEOUS POLLUTED INDUSTRIAL EFFLUENT

Beyram Trifi[1,2*], Nizar Bellakhal[1,3], Siméon Cavadias[2], Mohammed Dachraoui[1]

[1]Laboratoire de Chimie Analytique et Electrochimie, Département de Chimie, Faculté des Sciences de Tunis, Université Tunis El Manar, Tunisie
[2]Laboratoire de Génie des Procédés Plasma et Traitement de Surface, Ecole Nationale Supérieure de Chimie de Paris, Université Pierre et Marie Curie, France
[3]Département de Chimie et de Biologie Appliquées, Institut National des Sciences Appliquées et de Technologie, B.P. N°676, 1080 Tunis Cedex, Tunisie

Abstract

This study reports on the degradation of some mercaptans by the technique of the humid air plasma generated by "Glidarc" and application of this process to the decontamination of an industrial effluent rich in mercaptans. Several parameters were investigated such as electrode-to-solution distance, initial concentration and catalytic effect of ferrous ions. Under the optimal parameters, experiments show that the rates of degradation at the end of treatment are greater than 98 %. The degradation of mercaptans releases sulfur that oxidizes to sulfates.
The Chemical Oxygen Demand (COD) abatement efficiency of the 2-Mercaptoethanol and the 2-Mercaptobenzimidazole for 90 minutes of treatment was downgraded to 47 % and 53 % respectively. The treatment of the industrial effluent generates more than 1.3 g L^{-1} of sulfates and the COD abatement efficiency is around 90 %.

Key words: decontamination, glidarc, humid air plasma, industrial effluent, mercaptans

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[*]Author to whom all correspondence should be addressed: e-mail: beyramtrifi@yahoo.fr; Phone: +21697345796; Fax: +21671885008