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Environmental Bioremediation-the malachite green adsorption in bioreactors on various pH domainsCatalina Gabriela Gheorghe¹, Gheorghe Viorel, Andreea Bondarev¹, Matei Vasile¹, and Mihaela Bombos²¹Petroleum-Gas University of Ploiesti, Romania²National Institute for Research Development for Chemistry and Petrochemistry- ICECHIM- Romania

Bioremediation has potential to provide a low cost, natural method, non-intrusive, to render toxic substances less harmful or harmless over time. The pollutant biodegradation evolution (the malachite green dye) was studied in this experimental research using low-cost adsorbents (biological sludge bio selected in experimental laboratory conditions) with biological activity in a pH-controlled environment. (1,2). The biodegradability tests were carried out in laboratory bioreactors, on aqueous solutions of green malachite contacted with microorganisms in which the dominant species was ciliates *Paramecium* sp. Certain physical and chemical parameters have been adjusted to optimize the process of bio-treatment of ciliates microorganisms. Bio-treatment: between a pH of 8 and 12, within the range of optimum temperature (25-35°C), chemical neutralization for pH adjustment and biomass growth promoters. Thus, providing different test environments, it was able to track gradually biodegradation depending on the reaction time (contact) of the analyzed colorant. Experimental evidences demonstrated the optimal conditions for malachite green biodegradation. (4,5) The initial dye concentration and those obtained after biological degradation depending on the contact time, at certain pH values, were established through UV-Vis spectrometry. Conclusion & Significance: The studies have shown a method for measuring the biodegradation of some organic potentially toxic chemicals with extended use, with largely aromatic structure, resistance to biodegradation of microorganisms, commonly used in wastewater treatment plants.

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