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EFFECT OF GAMMA IRRADIATION ON SOME ORGANIC POLLUTANTS IN WATER

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The degradation kinetics due to irradiation of aqueous solutions of two acid dyes, namely Sandolane Milling N-BI and Telon Fast Red and a basic dye (Sandocryl Blue B-3G) has been investigated. The factors affecting the radiolysis of the dyes such as dye concentration, irradiation dose, dose rate and pH of the solutions were studied. The effect of irradiation dose on various dye concentrations showed the complete destruction of the dyes at a dose of 4 KGy for low dye concentrations (20-50 mg/l), while at higher concentrations (100 mg/l) a dose of 20 Kgy did not achieve the same effect. A combined treatment of the dye solutions by gamma irradiation and conventional methods showed that the saturation of these solutions did not enhance the degradation of the dyes. However, the addition of oxygen, hydrogen peroxide and sodium hypochlorite to the dye solutions coupled with γ -irradiation resulted in a remarkable enhancement in the degradation process and complete degradation of these pollutants was achieved using much lower doses of gamma radiation.