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The removal of COD and color by Fenton oxidation from leachate of Erzurum municipal solid waste landfill

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Owing to its properties and composition, landfill leachate is one of the major environmental problems. The optimization of the leachate treatment, in order to completely reduce the negative effect on the environment, is a biggest challenge at the present time. For this purpose, the treatment of leachate by Fenton oxidation was studied. The Fenton oxidation is based on the addition of hydrogen peroxide to the leachate in the presence of ferrous salt as a catalyst. The leachate used in this study was obtained from Erzurum Municipal Solid Waste Landfill. Primarily, the characterization of leachate was determined. Later, the effects of various experimental parameters such as pH, amounts of hydrogen peroxide and ferrous on the leachate treatment were also investigated. During experiments done, changes of chemical oxygen demand (COD) and color were observed. The optimal conditions for treatment of leachate were determined as pH=2.5, Fe^{2+}=2 mgL-1 and H_2O_2=100 mgL-1. Under the optimal conditions, approximately 90% color (at 620 nm), 84% color (at 525 nm), 74% color (at 436 nm) and 47.8% COD removal efficiency from leachate were achieved after 20 min of reaction. Depending on the results obtained in the experiments, Fenton process has been used successfully in removal of COD and color in landfill leachate.

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Effectiveness of solid waste management in the Maldives: Case study from Ukulhas

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Waste management in preindustrial times was simple because most of the waste comprised of organic materials which decompose naturally. However with the introduction of non- biodegradable synthetic materials such as plastic, waste treatment and waste disposal have become a pressing concern in the Maldives due to limited financial and human resources available in the country. This research tries to identify factors that can influence the long term sustainability of Community Based Solid Waste Management Systems (CBSWMS) using Driver, Pressure, State, Impact, Response (DPSIR) framework. The main focus of the research is to determine social, economic and environmental factors that influence effectiveness of CBSWMS in small islands such as Maldives, and to suggest recommendations for areas that need further improvement. A quantitative approach was adapted to study the effectiveness of the system. Data analysis showed Ukulhas waste management Centre utilizes most of organic waste brought to the island waste management Centre by making compost. Analysis on the social aspect of the CBSWMS suggests that even though there was satisfaction among the community members with the waste management system, satisfaction varies across different age groups. Results also suggest there was no association between respondent's belief about plastic pollution and their willingness to adopt green consumer behaviors such as use of recyclable bags. The results were also analyzed using DPSIR framework to find out which elements in the framework was affected most by the establishment of CBSWMS in the island.

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