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Toxicity Analysis of Metal Coating Industry Wastewaters by Phytotoxicity Method

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Abstract : Metal coating which is important method used for protecting metals against oxidation and corrosion, decreasing friction, protecting metals from chemicals, easing cleaning of the metals. There are several methods used for metal coating such as hot-dip galvanizing, thermal spraying, electroplating and sherardizing. Method which will be used for metal coating depends on the type of metal. The materials mostly used for coating are zinc, nickel, brass, chrome, gold, cadmium, copper, brass, and silver. Within these materials, chrome ion has significant negative impacts on human, other living organisms and environment. Moreover, especially on human chrome may cause lung cancer, stomach ulcer, kidney and liver function disorders and death. Therefore, wastewaters of metal coating industry including chrome should be treated very carefully. In this study, wastewater containing chrome produced by metal coating industry was analysed with phytotoxicity method that is based on measuring the reaction of some plant species against different concentrations of chrome solution. Main plants used for phytotoxicity tests are Lepidium sativum and Lemna minor. Owing to phytotoxicity test, assessing the negative effects of chrome which may harm plants and offering more accurate wastewater treatment techniques against chromium wastewater is possible. Furthermore, the results taken from phytotoxicity tests were analysed with respect to their variance and their importance against different concentrations of chrome solution were determined.

Keywords : metal coating wastewater, chrome, phytotoxicity, Lepidium sativum, Lemna minor
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