ES5.

TREATMENT OF INDUSTRIAL EFFLUENTS BY NATURAL SUBSTANCES

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Rapid growth of industrialization has caused serious environmental problems resulting in contamination of water resources with organic and inorganic pollutants. Consequently, increase in the levels of pollution parameters, such as suspended matter, chemical oxygen demand (COD), biological oxygen demand (BOD), heavy metals, nitrates and phosphates, would result in. Effective treatment of industrial effluent which would decrease these levels below the tolerance limits would therefore be of great importance. It is desirable that treatment methods be economical and environmentally friendly, to be practiced in developing countries. Naturally available substances such as dolomite, different types of clay (burnt brick, ball-clay, kaolinite, etc.), saw-dust, feldspar and laterite have become attractive in this regard.

Treatment of laboratory prepared solutions, with added pollutants with the above stated natural substances, in beakers (static condition) indicates that ions of many heavy metals (chromium, manganese, iron, cobalt, copper, zinc, cadmium and lead) can effectively be removed by clay-based substances, feldspar, laterite and saw-dust. More importantly, some of these metals are removed to undetectable levels by some substances. Phosphates and sulfates are removed by dolomite and feldspar, respectively. Chemical Oxygen Demand (COD) is also decreased significantly by many of these substances. Efficiency of removal can be maintained at levels similar to those determined under static condition, when laboratory prepared samples are passed through glass columns packed with each substance (dynamic condition).

Extension of this technology for treatment of effluents collected at brewery, ceramic, soft-drink and garment industries produces satisfactory results. However, the efficiency of removal of many pollutants is less as compared to laboratory prepared solutions due to interference problems. Improvement of the efficiency of the treatment process by employing mixtures of substances packed in filters will be the next logical step of this research.