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Business, Industries

Nowadays heavymetal pollution has become the most important problem in our environment.

Itmainly causes pollution in natural water bodies. These heavy metals arecontinuously released into the water bodies from natural process like volcanicactivity and weathering of rocks. There are lot of industries involved inreleasing of heavy metals.

The concentration of the heavy metal has been increasedby the release of effluents from metal processing, ore processing, mining, metal polishing, cleaning, paint manufacturing and battery manufacturingindustries. This heavy metal content in the environment cause various healthissues in animals in the water bodies and to the human beings. Chromiumis one of the important heavy metals in our environment.

Chromium has becomeserious health concern due to its carcinogenic and teratogenic characteristics. Chromium has been released by various industrial and agriculturalactivities. Chromium has been mainlyexonerated to the environment by leather tanning, textile, paper & pulpproduction, electroplating, petroleum refineries, inorganic chemical productionand metal finishing industries. Chromium also has a wide range of applicationsin paper and pulp industries and alloy industries.

It is also an essentialelement in drinking water for most animals and it also involved in iron metabolismand maintenance of blood vessels in human beings. Thereis various health issues has been arise in human beings due to the effect ofchromium in the environment. Various researches depicts

that the workers ofvarious industries had been affected by various health issues like eyeirritation, epigastric pain, nausea, vomiting, severe diarrhoea and haemorrhage. Some researchers stated that increasedchromium level may also caused increased risk of various cancers like cancer indigestive tract & lungs, bone prostate cancer, lymphomas, Hodgkin’s, leukaemia, stomach, genital, renal and bladder cancer. Thereare different kinds of treatment methods were used for the removal of heavymetals like chromium. Common methods like chemical precipitation, coagulation, adsorption, membrane separation, ferrite treatment system, solvent extractionand evaporation were used for the removal of chromium in waste water.

But thereis a need of alternative methods due to their operational demerits and highcost. There are diverse technologies were developed and reported by differentresearchers by solving these disadvantages in a conventional treatment methods. Agreen micro algal biomass collected from local lake has been used to remove thechromium in a synthetic aqueous solution of chromium. Adsorptive removal of chromium had been calculated by using variousfactors like concentration of adsorbent, contact time, metal ion concentrationand pH.

The adsorption equilibrium from the data were correlated with differentequilibrium isotherm models like Langmuir, Freundlich, Temkin, Redlich –Peterson, Khan to provide the accurate data. The adsorbent material is highlyeffective due to its adsorption capacity of chromium (99.

75%). 1 Effluentfrom the electroplating and galvanizing industry has been treated with biosorbent(dried biomass of chlorella vulgaris).

Biosorption of chromium had been measured under different conditions likebiosorbent dosage, pH, salinity, contact time and initial metal ionconcentration. The results were compared with Freundlich and Langmuir isothermmodels. So the results reveals that the chlorella vulgaris biomass can be used for the adsorption ofchromium. 2 Immobilizedalgal- bloom biomass had been treated with Chromium (VI) synthetic solution. Various parameters like chemical activation, pH, contact time, initialconcentration of chromium were investigated. The results were fitted with Langmuirisotherm.

So it reveals that the bloom forming algae can be used for theremoval of chromium in a wastewater. 3 Chromiumand copper in the waste water of textile industry has been removed by usingimmobilized algal species of Chlorella andSpirulina. Removal percentage of bothspecies has been calculated with Langmuir adsorption isotherm. 4