REVIEW ON REMOVEL OF HEAVY METAL USING LOW - COST ABSORBENTS

Mr. Jay Kothari[1], Mr. Sahil Kelaskar[1], Mr. Abhijit Sonawane[1], Mr. Pranav Karnawat[1]
Mr. Ratankumar Patil[2], Ms. Shweta Kashid[2]

[1]*Student, Department of civil engineering, MAEER's ++MIT Polytechnic, Pune - 411038, Maharashtra, India*
[2]*Lecturer, Department of civil Engineering, MAEER's MIT Polytechnic, Pune - 411038, Maharashtra, India*

Abstract: - Wholesome water must be treated so as to get rid of impurities & morbific being and serious metals to satisfy the standard tips for water or demand per World Health Organization. Here this study serious metal contamination of water body has been mentioned. Effluents from a good variety of industries viz., tannery, textile, pigment & dyes, paint, wood process, rock oil processing, electroplating, animal skin etc., have a significant quantity of serious metals in their waste. The standard technique of handling serious metal pollution includes chemical reaction, chemical precipitation, activity, reverse diffusion, membrane separation, electrodialysis etc. These processes square measure overpriced, energy intensive and regularly connected with generation of toxic by-product. Heavy metals like Zn, Ni, Cu, Hg, Cd, Pb, Cr etc. Therefore, the adsorption has been examined as a cost-efficient technique of elimination of heavy metals from wastewater. Utilization of those coagulants represents necessary progress in property environmental technology as they're renewable resources & their application is directly associated with the development of quality of life for underdeveloped communities.

Keywords: Textile water, low cost Adsorbents, Atomic absorption spectrophotometer

1. Preparation and Characterisation of Activated Carbon from Rice Husk and its Polyvinylpyrrolidone (PVP) Composite for Heavy Metal Removal from Simulated Wastewater

Aswini K., Jaisankar V.*

In his paper the investigation deals with the preparation of adsorbent activated carbon from rice husk to remove heavy metals from wastewater. As removal of heavy metals from industrial wastewater is of importance due to rapid increase in the global industrial activities. Rice husk is used as it is most available agriculturous waste as it is by-product of rice milling industry and also low cost. These natural coagulant function by means of adsorption mechanism. Rice husk based activated carbon was prepared via. Carbonization and go along with chemical activation treatment process. The composite was prepared by blending Polyvinylpyrrolidone (PVP) with prepared activated carbon. The activated carbon and the composite were characterized by Fourier Diffraction Analysis (XRD) and the pore structure was evaluated through morphology analysis using high resolution scanning electron microscope (HRSEM). The structure and morphology of the activated carbon from Rice Husk and Polyvinylpyrrolidone (PVP) composites were studied using a HITACHI S260ON-type scanning electron microscope (SEM).

2. Heavy Metal Removal from Wastewater Using Low Cost Adsorbents

Ashutosh Tripathi* and Manju Rawat Ranjan

In this review paper we have understand that due to industrialization mankind has witnessed various environmental issues in the society. One of the impacts is visible that is water pollution. Water pollution caused due to addition of heavy metals results in causing serious health disorders to the living that is humans and animals. In the present study heavy metal contamination of water bodies has been discussed. Various effluents from large number of industries viz. electroplating, leather, tannery, textile, pigment and dyes, paint, wood processing, petroleum refining. Contains significant amount of heavy metals in wastewater. The standard method of treatment of heavy metal contamination includes chemical oxidation, membrane separation, chemical precipitation, ion exchange, reverse osmosis, electro dialysis etc. These methods are costly, energy intensive and often associated with generation of toxic byproducts. Therefore, adsorption has been investigated as an effective method for removal of heavy metals from wastewater as it is economical and effective. Various low-cost absorbent derived from various natural as well as anthropogenic sources have been implemented for treatment of wastewater contaminated with heavy metals. The adsorbents mostly used are agricultural waste, industrial byproducts, natural materials or modified biopolymers.

3. Agricultural waste as a low-cost adsorbent for heavy metal removal from wastewater

J. N. Egila, B. E. N. Dauda, Y. A. Iyaka and T. Jimoh

In this paper we study that removal of toxic metals from sewage and industrial waste water is a matter of great interest in the field of water pollution, which is a serious cause of water degradation. Pollution by heavy metal ions has become a major issue an over the world due to its toxic effects. Exposure to lead (Pb) is all over recognized as a major risk factor for several human diseases Such As heart disease, Kidney disease and reduced fertility Due to increasing environmental awareness and Legal constraints imposed on discharge of effluents the need for cost effective alternative technologies is essential for removed of heavy metals from Industrial waste water. An innovative technique that s both effective and economy col is adsorption. In this study biosorption was Carried out to test the suitability of Amaranthus hybridus (African Spinach) stalk and Carica papaya (pawpaw) seed for removal of Mn and Pb ions from aqueous solution. The amount of metal ions removed from solution depended on the metal ion-substrate contact time, ion concentration and ion type. The constant time was 90 minutes for both substrates. The results indicated that the removal of Mo was in higher percentage than Pb. Carica Papaya Seeds showed greater adsorptive capacity than Amaranthus hybridus stalk. We understand that both Substrates of favorable to sorption and removal of heavy metal from aqueous solution.

4. Removal of heavy metals from wastewater using agricultural and industrial wastes as adsorbents

Hala Ahmed Hegazi

We understand that adsorption process is being used worldwide for removal of heavy metals for Various waste stream. The need for Safe and economical methods of elimination of heavy metals from contaminated water has necessitude Research interest toward the production of low-cost alternatives to commercially available activated carbs. The main objective of this research is to study the utilization possibilities of less expensive agricultural and industrial by-products such as rice husk and fly ash. They are used for the elimination of heavy metals from wastewater for the treatment of the EL-AHLIA Company waste water fax electroplating industries. Results showed that low cost adsorbents con be fruitful used for the removal of heavy metals with a concentration range of 20-60 mg/l Copper removal using rice husk increased from 24. 491 to 98. 177% while, Copper removal using fly ash Varied from 31. 38% to 98.545%. This shows thot rice husk and fly ash were very effective in removal of copper from the wastewater.

5. Removal of chromium (VI) from aqueous medium using chemically modified banana peels as efficient low-cost adsorbent

Ashraf Ali, Khalid Saeed, Fazal Mabood

In this Review paper we come to know thot acrylonitrile grafted banana peels (GBP, s) were used for Removal of hexavalent chromium from aqueous solutions: Banana is available easily It is one of the world's most important Cops group by more than 130 countries. Several research groups have used Yaw and chemically truncated banana peels and banana stalks for removal of toxic heavy metals from aqueous Solutions and industrial wastewater. In the present work the banana peels were treated with 101. HCL followed by alkaline hydrolysis with10% NaOH, and washed thoroughly. The bleaching of alkali hydrolyzed peels was caned out with sodium chlorate ($Na\ ClO_3$) in the presence of hydrogen peroxide and glacial acetic acid. The grafting co-polymerization of acrylonitrile onto the bleached pulp was initiated by Fenton's Reagent. The optimum conditions for adsorption of chromium where pH 3, adsorbent dose 4 mg/L concentration400 mg/L and contact time of 120 minutes. The surface morphology of adsorbent was identified by scanning electron microscopy (SEM). The adsorption of hexavalent chromium onto lifted banana peels (GBP) was recorded as 96%. Thermodynamic study showed that the adsorption is exothermic and spontaneous It showed that grafted banana peels (GBPs) can be used as effective adsorbent for chromium removal from waste water due to high efficiency and low cost.

CONCLUSION:

From the above review we conclude that by using zeolite membrane the amount of removal of heavy metals is more as compared to other material. By using zeolite membrane, we have overcome the drawbacks by increasing the amount of removal of heavy metals and have achieved more effective results. Zeolite is locally available

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6. Low-cost adsorbents for heavy metals uptake from contaminated water: a review

   Sandhya Babel*, Tonni Agustiono Kurniawan

7. Low-Cost Adsorbents procedure by means of Heavy Metal Elimination from Wastewater

   Baby Abrarunnisa Begum, Dr.N Devanna, Dr.M A Chari

   Associate Professor, Chemistry Department, SWCET, Hyderabad, Telangana, India

   Professor & Head, Chemistry Department, JNTUA, Anantapuram, A.P., India

   R & D Director of Dr Macs Bio-Pharma Pvt Ltd Hyderabad Telangana.