World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:12, No:08, 2018

A Review of Recent Studies on Advanced Technologies for Water Treatment

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Abstract : Growing concern for the presence and contamination of heavy metals in our water supplies has steadily increased over the last few years. A number of specialized technologies including precipitation, coagulation/flocculation, ion exchange, cementation, electrochemical operations, have been developed for the removal of heavy metals from wastewater. However, these technologies have many limitations in the application, such as high cost, low separation efficiency, Recently, numerous approaches have been investigated to overcome these difficulties and membrane filtration, advanced oxidation technologies (AOPs), and UV irradiation etc. are sufficiently developed to be considered as alternative treatments. Many factors come into play when selecting wastewater treatment technology, such as type of wastewater, operating conditions, economics etc. This study describes these various treatment technologies employed for heavy metal removal. Advantages and disadvantages of these technologies are also compared to highlight their current limitations and future research needs. For example, we investigated the applicability of the ultrafiltration technology for treating of heavy metal ions (e.g., Cu(II), Pb(II), Cd(II), Zn(II)) from synthetic wastewater solutions. Results shown that complete removal of metal ions, could be achieved.

Keywords : heavy metal, treatment methodologies, water, water treatment
Conference Title : ICESE 2018 : International Conference on Environmental Sciences and Engineering
Conference Location : Dublin, Ireland
Conference Dates : August 16-17, 2018

Open Science Index, Environmental and Ecological Engineering Vol:12, No:08, 2018 publications.waset.org/abstracts/97580.pdf