Lead removal from industrial wastewater using constructed wetland with Horizontal Sub-Surface Flow

Saeed Taheri Ghanad[1*]
Hadi Moazed[2]
Saeed Bromand Nasab[3]
Nematolah Jafarzadeh Haghighi Fard[4]

1. Department of Water Science, Dezphul Branch, Islamic Azad University, Dezphul, Iran
2, 3. Faculty of Water Sciences and Engineering, Shahid Chamran University of Ahvaz, Ahvaz, Iran
4. Faculty of Health, Ahvaz Jundishapour University of Medical Sciences, Ahvaz, Iran

***Corresponding author:**
staheri2007@yahoo.com

Received date: 2014.12.18
Reception date: 2016.01.15

Abstract

In this study the effects of substrate and hydraulic retention times of 1, 3, 5 and 10 days on lead removal efficiency in horizontal subsurface constructed wetland under crop the common reed were evaluated. The results showed that the removal efficiency increased with increasing hydraulic retention time so observed significant difference at 5% level in sand substrate among hydraulic retention times 1, 3 and 5days in average removal efficiency of lead but there was no significant differences between retention times 5 and 10days and in the fine and medium gravel substrate between retention times of 1 and 3day was significant different at 5% but there was observed a significant difference at 5% level among retention times 3, 5 and 10 days, So the best hydraulic retention time was obtained in the sand, Fine and medium substrates respectively 5, 3 and 3 days with maximum efficiency of 88.51, 81.53 and 80.35 percent. The analysis results also showed that the substrate had a significant effect at 5% level on the lead removal efficiency in retention time 3 and 5 days so that sand substrate had higher efficiency than the other two substrates; therefor can be concluded the sand substrate has more effect to intensify in the physical, chemical and biological effective processes on removal of lead synthetic wastewater.

Keywords: Synthetic wastewater, Subsurface constructed wetland, Lead removal efficiency, Substrate.

[Downloaded from jweb.ahvaz.iau.ir on 2026-11-25]