Investigation of performance horizontal subsurface flow constructed wetland for lead removal from wastewater

Mohammad Hossein Sayadi[1*]
Narges Salmani[2]

1. Associate professor, Department of Environmental Sciences, School of Natural Resources and Environment, University of Birjand, Birjand, Iran
2. MSc in Environmental Pollution, Department of Environmental Sciences, School of Natural Resources and Environment, University of Birjand, Birjand, Iran

***Corresponding author:**
Mh_sayadi@birjand.ac.ir

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Abstract

Constructed wetlands are natural systems that have the ability to purify the chemical, physical and biological and can remove variety pollutants from wastewater. The purpose of this study was investigation of the performance of horizontal subsurface flow constructed wetland for lead removal in wastewater treatment. This research was conducted in 2014 at Birjand University and evaluated efficiency of *Carex* for heavy metal removal. A total of, 12 rectangular concrete reactor in parallel was built at the desired location. The overall dimensions of 12 reactor is sized length 220, width 75 and height 50 cm. in 6 reactor of coarse gravel and was used in six other reactor of fine-grained sand that 4 ponds as control and other ponds were working with *Carex* plant. Horizontal flow pattern done through a split pipe and valve controls. The data from this study indicates that the maximum lead removal of reactor No. 8 was 51 percent and the minimum the removal of related to wetland No. 9 by 35 percent. The most remove done by increasing the hydraulic detention time. As a result, we can say that the removal efficiency when the lead initial concentration was Equal in all cells, detention time high, with plant cells and as well as fine bed material used, Removal rate is the highest value, It is obvious that such high efficiency without the high cost and adverse environmental effects is highly desirable.

Keywords: Constructed wetland, Wastewater, Lead, Pollutant removal.

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