

The role of substrate materials in constructed wetland to remove Cs

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Introduction

The paper presents the role of substrates materials in constructed wetlands for removal of Cs originating from radioactive liquid waste.

Method

The experimental approach was tested in physical models of CW, forty 75L containers were divided to 4 treatment groups with different composition of filtration beds. The common substrates were gravel and sand (default), than additional substrates as biochar, crushed bricks and technogenic soil (TS) were added. Three plants of *Phragmites australis* were planted in each container. The experiment was run with low and high hydraulic load. Stable Cs was provided as 0,5mM CsCl (0.0664 g/L Cs⁺). Cs concentrations in outflow were measured in 24 hours interval.

Discussion of results

The highest efficiency of Cs removal was observed for the default treatment, followed by technogenic soil, biochar and crushed bricks. High efficiency of default and TS filters agrees with Wang et al [1], who indicate their high efficiency for metals removal. The results indicate that in case of low hydraulic load, the CW have higher efficiency of Cs removal, while in case of high hydraulic load, the efficiency is lower and desorption of the pollutants may occur in the later phase, especially in case of biochar and crashed bricks.

[1] Wang et al (2020). *Sci Total Environ.* 701. A.N. 134736

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