Characteristics of heavy metals in soil in infiltration splash blocks and rain gardens for management of roof runoff from apartment buildings

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ABSTRACT

An increase in impermeable surfaces due to burgeoning urbanization is creating problems of non-point source, deterioration of urban amenities and the urban water cycle. Therefore, stormwater management with natural drainage has been attempted in Korea as a countermeasure. Objectives of this study are analysis of impact on heavy metals and distribution characteristics of the heavy metals in soil in infiltration splash blocks and rain gardens for management of roof runoff from apartment buildings. In this study, infiltration splash blocks and rain gardens were constructed to hold and infiltrate runoff from an apartment building roof. The distribution of heavy metals in soil in infiltration splash blocks and rain gardens was analyzed. There is a common feature that heavy metals were detected more in soil from the infiltration devices than in the surrounding soil in the order of Cu>Cd>Zn>As>Pb. The levels of these heavy metals are significantly lower than the Korea soil pollution standards. However, the distribution characteristics of Cu, Cd, Zn, As, and Pb in the splash blocks and rain gardens soil show that these heavy metals are influenced by roof runoff. This means that roof runoff could also be a non-point source.

Keywords: Decentralized rainwater management; Source control; End-of-pipe; LID; Non-point source

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