

## Development of Non-Point Pollutants Removal Equipments Using Media with *Bacillus* sp.

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**Abstract :** This study was conducted to reduce runoff by rainwater infiltration facility using attached growth with *Bacillus* sp., which are reported to remove nitrogen and phosphorus, as well as organic matter effectively. This study was investigated non-point pollutants removal efficiency of organic, nitrogen, and phosphorus in column using the media attached growth with *Bacillus* sp. To compare attached growth with *Bacillus* sp. and detached media, two columns filled with perlite, zeolite, vermiculite, pumice, peat-moss was installed. In A column (attached growth with *Bacillus* sp.), in case of infiltration velocity 30 mm/hr in high concentration of influent, it showed the removal efficiency (after aging term) is SS (suspended solid)  $85.8 \pm 1.2$  %, T-P (total phosphorus)  $67.0 \pm 8.1$  %, T-N (total nitrogen)  $66.0 \pm 4.9$  %, COD (chemical oxygen demand)  $73.6 \pm 2.9$  %,  $\text{NH}_4\text{-N}$   $72.7 \pm 3.0$  %. In B column (detached media), in case of infiltration velocity 30 mm/hr in high concentration of influent, it showed the removal efficiency (after aging term) is SS  $86.0 \pm 2.2$  %, T-P  $62.5 \pm 11.3$  %, T-N  $53.3 \pm 3.9$  %, COD  $34.6 \pm 3.7$  %,  $\text{NH}_4\text{-N}$   $61.5 \pm 2.8$  %. Removal efficiency of A column is better than B column. As the result from this study, using media with *Bacillus* sp. can improve an effective removal of non-point source pollutants.

**Keywords :** non-point source pollutants, *Bacillus* sp., rainwater, infiltration facility

**Conference Title :** ICEEESD 2015 : International Conference on Energy, Environment, Ecosystems and Sustainable Development

**Conference Location :** Bangkok, Thailand

**Conference Dates :** December 17-18, 2015