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The seasonal characterization of highway particulate pollutants by size fraction

Jianghua Yu[a], Qitao Yi[b], Y. Kim[a]*

[a]*Department of Environment Engineering, Hanseo University, Seosan City 356-706, Korea*
email: ykim@hanseo.ac.kr
[b]*Department of Environmental Science and Engineering, Anhui University of Science and Technology, 232-001, China*

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ABSTRACT

The quality of highway waste sediments collected from Dangjin transfer station of the Korean Expressway Corporation were studied from October 2008 to July 2009, during which time four sampling events were conducted. The particle size distribution and pollutants content of the different particle sizes were analyzed. The results indicated that the particles were coarser in winter and summer than in fall and spring, with about 70% of particles within the range 250–850 μm. The analysis of particles uniformity indicated the particles were non-uniform over the study period. The concentrations of nutrients (TN, TP, COD and VSS) and heavy metals, such as cadmium (Cd), lead (Pb) and zinc (Zn), showed the same trend, i.e. the finer the particles, the higher the pollutant concentrations. The pollutant concentration distributions were analyzed, and the results revealed that around 40–74% of the pollutants were associated with particles less than 250 μm, and accounted for about 30% of total particles. It was concluded that a clear understanding of highway particles size distribution and pollutants contents of the different size ranges is really important in the treatment of highway waste sediments.

Keywords: Sediments; Particle size distribution; Heavy metals; Nutrient; VSS

* Corresponding author.