

Analysis of Relationship Among Conventional Pollutant concentration in tributary to the estuarine reservoir

하구담수호로 유입되는 하천 오염물질간의 상관성 분석

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ABSTRACT

Large scale projects of sea-land reclamation have been practiced mainly to enlarge farmland in Korea. Most projects produced estuarine reservoir with dike construction, which might result in water quality problems due to block of natural flowing of stream water to the sea. External loading to the reservoir through the tributaries are particularly concerned water quality management. Total phosphorus (TP), suspended solid (SS), and chemical oxygen demand (COD) were directly proportional to discharge rate. During wet-days, the TP demonstrated high correlation coefficients with SS and COD showing 0.50~0.97 and 0.52~0.99, respectively. During dry-days, correlation among pollutant concentrations was less apparent. The relationships among the pollutants might be used to estimate one pollutant concentration from the other in external loading estimates, and its application to other area could be possible if watershed characteristics are not significantly different. The watersheds studied are mainly non-urban and their land uses are similar to typical watershed of Korean estuarine reservoirs, therefore, the relationships developed in the study might be applicable to water quality management of others.

CONCLUSIONS

Statistical analyses were performed on the monitoring data from Whaong and Seamangeum watersheds in Korea. During wet-days, the TP demonstrated high correlation coefficients with SS and COD, however, TN didn't show significant relationship with other constituents. TN concentration was already high in dry-days and runoff during wet-days didn't change it substantially unlike in other pollutants. During dry-days, relationship among pollutant concentrations was less apparent. Relationship and regression equation for COD-TP was relatively consistent than other combinations among pollutants. The relationships among the pollutants might be used to estimate one pollutant concentration from the other in external loading estimates, and its application to other area could be possible if watershed characteristics are not significantly different. The watersheds studied are mainly non-urban and their land uses are similar to typical watersheds of Korean estuarine reservoirs, therefore, the relationships developed in the study might be applicable to water quality management of others.