

MEASUREMENT OF NITROGEN AND SULFUR DEPOSITION TO LAKE PALDANG IN KOREA

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Lake Paldang, formed by a dam located on the Han River, is a main resource of drinking water in the greater Seoul area. The lake is surrounded by forests and farmland, but on the downwind side of prevailing westerlies from Seoul. It is susceptible that the lake would be affected by various pollutants from Seoul. Nitrogen and sulfur deposition was measured on Lake Paldang from March 2002 to October 2003. Wet and dry depositions were separately measured by using wet- and dry-only samplers, respectively. In order to measure the dry deposition to the waterbody, a dry deposition sampler composed of three pans filled with pure water, called the deposition water, was used. Since ammonium was generally in excess in ambient air, more than half of ammonium was present in the gaseous form. Ammonium concentration was also generally higher than the sum of major anion concentrations in the deposition water because gaseous species were much easily deposited than the species in fine particles. Nevertheless, the contribution of gaseous ammonia estimated by the multi-linear regression analysis was similar to that of particulate ammonium while the contribution of gaseous nitric acid was much higher than that of particulate nitrate. Annual wet deposition fluxes of nitrogen and sulfur were five and six times higher than their dry deposition fluxes, respectively. This was mainly caused by much smaller dry deposition velocities over the water than over the ground.