



Influence of the South-to-North Water Transfer and the Yangtze River mitigation projects on the water quality of Han River in China

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Algal bloom was occurred every year in the down stream of the Han River in recent five years. The operation of the Middle Route of China's South-to-North Water Transfer (MSNW) Project may affect the hydrological condition and self-purification of water body in the down and middle streams of the Han River, trigger algal bloom, and elevate the difficulty in the treatment of water pollutants, which is a crucial issue involved in ecology, environment, and economy. In this study, the monthly water samples were collected from the middle and down streams of Han River from July 2014 to December 2015. Factor Analysis and Cluster Analysis were applied to identify major pollution types and areas and determine the reasons influencing the variations of water quality in the down and middle streams of the Han River. The results show that whole monitoring period can be divided into three periods as different pollution levels. The factor analysis distinguishes three pollution types (inorganic pollution, organic pollution, and agricultural pollution) and thier contributions on Han River water quality in dry and wet seasons. Industrial areas are influenced by inorganic pollution and cultivated lands are influenced by agricultural pollution. The water quality in wet season is significantly affected by flow rate, which was sometimes controlled by two projects. The heavy polluted water may be diluted by high flow volume.