



Analysis on the warning situation of sudden water pollution for typical river under different water regime in the river network area

Dayong Li

Hohai university, hydrology and water resources , China (lidayong@hhu.edu.cn)

In this paper, a comprehensive early-warning method of sudden water pollution is used to systematically evaluate the hazards of sensitive receptors after accidents. A coupling model of the river network hydrodynamic and water quality for conventional pollutants and conservative substance is developed to track and predict the behavior and fate of the accidental pollution mass, the expert questionnaires and other means are used to construct a quantitative and qualitative early warning index system to describe the accidental hazard, the AHP and fuzzy comprehensive evaluation method are used to quantitatively evaluate the consequences of accidental hazards and a sudden water pollution risk early warning method based on the process of "accident occurrence-pollution prediction-consequence evaluation" is finally formed. The method is applied to the Yincungang River in the Yixing River Network, and the response of sensitive receptors to the discharge status of risk sources under different water regime is analyzed. The results show that: (a) the duration of the impact from the accident, the maximum standard-exceeding multiple of water quality and the degradation degree of water quality in the sensitive receptors are positively related to the discharge intensity or discharge time of the accident source, but the response time from the accidental impact is negatively related to them. (b) during the non-flood season, the warning situation in the Yincungang River shows a gradual decrease from upstream to downstream; during the main flood season, the warning situation in the upper and middle reaches of Yincungang River shows a decreasing trend, but in the middle and lower reaches that increases.(c) the transport distance and speed of accidental pollutants in the river and the concentration of accidental pollutants in the background at the sensitive receptors determine the quantitative early warning indexes dynamically, which is the fundamental reason for the spatial change of warning situation in different water regime.