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合流制排水管道雨季出流污染负荷研究

### Pollution loading of overflow in combined drainage channels during rainy season

关键词: [合流制](#) [雨季溢流污染](#) [管道沉积物](#) [污染负荷](#)

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摘要: 针对北京城区合流制排水管道雨季溢流及雨后河道水质恶化等问题,研究了3场降雨期间合流制排水系统不同来源的污染物特性及污染贡献.通过对2012年雨季几场降雨的降雨量数据监测与统计发现,护城河沿岸合流制排水系统累积雨量约10 mm时发生溢流.特大暴雨情况下,溢流水质的污染物平均浓度高于排水系统旱流污水的污染物浓度,溢流水质差,污染物浓度范围为:TN 5.11~16.36 mg · L<sup>-1</sup>, TP 4.34~10.52 mg · L<sup>-1</sup>, 氨氮1.88~12.73 mg · L<sup>-1</sup>, COD 134~250 mg · L<sup>-1</sup>, SS 120~155 mg · L<sup>-1</sup>.管道沉积物在降雨期间对出水水质的污染贡献率分别为:TN 20.9%~44.6%, TP 35.76%~47.3%, COD 46.2%~48.8%, SS 35.7%~79.7%.控制合流制排水管道沉积物的沉积和冲刷对排水系统的正常运行及削减雨季出流污染负荷具有重要意义.

**Abstract:** Based on the situations of combined sewer overflow (CSO) and consequent water quality deterioration of urban rivers in Beijing, three rain periods were chosen to study the characteristics and their potential pollution risks from different combined sewage systems. The statistics of rainfall in 2012 show that CSOs usually occur when the accumulated rainfall reaches to 10 mm. In the case of heavy rainstorm, the average concentration of the pollutants in overflow are higher than that of sewage drainage systems in the dry weather. The concentrations of typical pollutants in overflow are as follows: TN 5.11~16.36 mg · L<sup>-1</sup>, TP 4.34~10.52 mg · L<sup>-1</sup>, NH<sub>4</sub><sup>+</sup>-N 1.88~12.73 mg · L<sup>-1</sup>, COD 134~250mg · L<sup>-1</sup>, and SS 120~155mg · L<sup>-1</sup>. The contribution rates of the sediment pollution load to runoff outflow of TN, TP, COD, and SS are 20.9%~44.6%, 35.7%~47.3%, 46.2%~48.8%, and 35.7%~79.7%, respectively. In conclusion, it is important to control the depositon and erosion of sediments in combined sewage systems, which can maintain the normal operation of the drainage system and reduce the effluents' pollution loading in the rainy season.

**Key words:** [combined system](#) [overflow pollution](#) [sediment](#) [pollution load](#)

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