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研究报告

饮用水源地突发事故环境风险分级方法研究

Study on the classification method of environmental risk for sudden accidents in drinking water sources

关键词： 饮用水源地 环境风险 环境风险源 分级

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摘要： 为了从源头降低饮用水源地环境风险,建立了用于识别环境风险源、划分饮用水源地环境风险级别的方法体系.本研究采用数学模型量化突发事故潜在影响及环境风险水平,应用层次分析法和指标体系法确定分级指标及风险因子.方法基于风险化学品数量与理化性质分析了环境风险源源强特征,研究了针对不同受体的环境风险表征方式,利用分级阈值体现饮用水源地突发事故环境风险水平,形成包含"环境风险源初步筛选"、"风险评估"和"风险分级"三步的分级方法.最后,依据本方法评估了南京某化工园区饮用水源地突发事故环境风险,筛选分级结果表明,通过模型评估可表征饮用水源地突发事故环境风险水平,同时实现风险分级.应用例中水源地突发事故环境污染风险值为6128.3,根据分级矩阵可知该饮用水源地为一级突发事故环境风险饮用水源地.

Abstract： A methodological framework of identifying environmental risk sources and classifying environmental risks for drinking water sources was developed to reduce its environmental risk. Quantified potential consequences of accident and risk level were determined by mathematical models; while grading indices and risk factors were determined by the analytic hierarchy method and the indicator system method. The method system analyzed the intensity of environmental risk sources based on the quantity of dangerous chemicals and their physical-chemical characteristics. Environmental risk representation forms targeting on different receptors were investigated by using grading thresholds to illustrate the level of environmental risk for sudden accidents in drinking water sources. The classification method is composed of three steps, namely preliminary screening of environmental risk sources, risk assessment and risk classification. According to the developed method system, the environmental risk of sudden accidents in the drinking water source of one chemical industrial park in Nanjing was evaluated. The results showed that through screening and assessment, the level of environmental risk can be represented by the system modeling assessment; with the risk classification achieved in parallel. In this case, the environmental risk value was 6128.3. It is classified as a Grade I drinking water source, according to the grading matrix.

Key words： drinking water source environmental risk environmental risk sources classification

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