

Research on emergency plan for water supply emergencies in Beijing based on scenario construction method

(赵 佳, 郭春辉, 乔光毅)

(Beijing Water Supply Management Affairs Center, Beijing 100073)

Objectives

The construction of emergency scenarios is one of the cutting-edge scientific issues in the current field of public safety, which plays an indispensable supporting and guiding role in emergency management practices such as emergency preparedness planning, emergency plan management, and emergency training exercises. At present, most of the current research on emergency scenarios focuses on macro emergency response and other fields, lacking specific research on the water supply field. Constructing emergency response scenarios with water supply characteristics is of great significance. Firstly, based on the entire process of emergency response to water supply emergencies in the past, a comparative evaluation is conducted to identify deficiencies and deficiencies in the handling of water supply emergencies, and to enhance the ability to respond to water supply emergencies. Secondly, it provides important support for optimizing China's water supply emergency preparedness model and emergency management work in the water supply industry, and provides guidance for improving the water supply emergency management system. Thirdly, provide technical support for the formulation and revision of contingency plans, provide a basis for training and drills in water supply departments, and provide measurement standards and foundations for assessment work.

Methods

There are many methods for constructing scenarios of water supply emergencies, including data analysis of historical cases, simulation methods using mathematical modeling and computer technology, on-site investigation and physical simulation experiments, expert experience and reasoning. Both methods are roughly the same during the construction process. When constructing scenarios for water supply emergencies, similar events should be collected, converged, statistically analyzed, and then identified through hazard identification and risk analysis to identify potential risk sources that may cause water supply emergencies. Events that have already occurred should be organized according to their development patterns and future evolution trends, and the lack of emergency preparedness ability should be analyzed to fill the gap between existing capabilities and target demand capabilities. Extract different scenario elements based on event information, carrier information, and historical scenarios for panoramic construction, and systematically describe the evolution process of water supply emergencies.

Event Summary	Water Supply Emergency Occurred in Beijing(Example: Production stopped due to leakage of liquid chlorine and ammonia from xx water plant)
Event Impact	Water pressure in Beijing has significantly decreased, and water supply services in some areas have been interrupted
Affected area	Water users and business units within the scope of water supply (accounting for over 50% of urban areas)
Recovery time	2-3 days

Results and Conclusions

1. The total amount of required resources is basically sufficient, but for those scattered across different departments and regions of the city, effective resource coordination and allocation mechanisms should be established to achieve resource sharing, mutual assistance, and rapid deployment.
2. If there is a significant gap in the quantity of resources that cannot be resolved in the short term, it should be included in the medium to long-term emergency capacity building plan and promoted for implementation, or relevant laws and regulations should be revised and improved to clarify the social expropriation methods in emergency situations.
3. When human resources are insufficient, solutions should be provided by enhancing manpower allocation, training volunteers, mobilizing social forces, and requesting external support.