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HAZARD IDENTIFICATION IN WATERSHEDS BASED ON WATER SAFETY PLAN APPROACH: CASE STUDY OF CALI-COLOMBIA

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Abstract

Within the framework of the Water Safety Plan (WSP), it is necessary to assess and to manage risks in the catchment area, considered the first protection barrier of water supply systems. The Cauca River is one of the major water resources of Colombia and the principal source of drinking water supply for the city of Cali (approx. 2,300,000 people). Taking into account, usually in developing countries, available information and specialized technical resources are limited, in this study were evaluated three management tools of simple application for hazard identification, as a support of risk assessment in the watersheds and integrated with the WSP methodology. The used tools were: (i) matrix of hazardous events, (ii) calculation of Water Quality (WQI) and Water Pollution (WPI) Indexes, and (iii) hazard maps using Geographic Information Systems (GIS). The results showed that the progressive deterioration of water quality is associated with different types of land use of the watershed, which causes diffuse pollution and point source pollution, resulting in the exposure of served population to health risks if adequate treatment barriers are not implemented before the distribution to consumers. The three evaluated tools, showed their usefulness as inputs to risk management and support in activities of surveillance and water quality control. It is important to highlight that the strengthening of the cooperation and active participation of inter-agencies and stakeholders are crucial strategies for risk management in the watersheds.

Key words: geographic information systems, water pollution index, water safety plan, water quality index, watershed management

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