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Classification management plan of groundwater quality in Taiwan

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Taiwan Environmental Protection Administration has been monitoring regional water quality for 14 years. Since the beginning of 2002 till now, there are 453 regional groundwater monitoring wells in ten groundwater subregions in Taiwan, and the monitoring of groundwater quality has been carried out for a long time. Currently, water quality monitoring project has reached 50 items, while the number of water quality monitoring data has reached more than 20,000. In order to use the monitoring data efficiently, this study constructed the localized groundwater quality indicators of Taiwan. This indicator takes into account the different users' point of view, incorporating the Taiwan groundwater pollution monitoring standards (Category II), irrigation water quality standard and drinking water source water quality standard. 50 items of water quality monitoring projects were simplified and classified. The groundwater quality parameters were divided into five items, such as potability for drinking water, salting, external influence, health influences and toxicity hazard. The weight of the five items of groundwater was calculated comprehensively, and the groundwater quality of each monitoring well was evaluated with three grades of good, ordinary, and poor. According to the monitoring results of the groundwater monitoring wells in October to December of 2016, about 70% of groundwater quality in Taiwan is in good to ordinary grades. The areas with poor groundwater quality were mostly distributed in coastal, agriculture and part of the urban areas. The conductivity or ammonia nitrogen concentration was higher in those regions, showing that groundwater may be salinized or affected by external influences. Groundwater quality indicators can clearly show the current comprehensive situation of the groundwater environment in Taiwan and can be used as a tool for groundwater quality classification management. The indicators can coordinate with the Taiwan land planning policy in the future, and will be able to effectively grasp the changes of the national sub-regional environmental resources, which can serve as one of the important references in national land zoning according to environmental resources.

Keywords: Groundwater Quality Indicators, Groundwater Quality Classification management