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The evolution of the bio-filter layer for manganese removal and the countermeasure

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Biological filtration is the highly-efficient and economical process for manganese removal from groundwater but after the bio-filter's long time operation manganese concentration of the effluent often exceeded the PRC national standards for drinking water quality. In order to know the truth, the as-prepared samples of the filter media were characterized. The filtration experiment had been done using filter media in various properties from mature bio-filters which had run for different time: Just maturation after 2 years operation. Also we replaced the old sand in the bio-filter with the new sand in different proportion (50%, 30%, 25%, 15% and 10%) to investigate the filtration effect. The results indicated that the diameter of the filter media became more and more lager due to the adhesion and accumulation of oxides of iron and manganese after long time operation which led to the change of filter bed structure and even the deterioration of filtrate. Therefore, to maintain high efficiency of manganese removal in long-term operation replacing some old filter media which optimum thickness was 10 cm to 15 cm with new one periodically was necessary and feasible.

Biography

Hui-ping Zeng received his PhD and ME from Harbin Institution of Technology in 2010 (Thesis: Biological purification of groundwater with high concentration of iron, manganese and ammonia and engineering application) and 2007 (Thesis: Deterioration of biological filter for the purification of groundwater with iron and manganese) and BE from Hunan University in 2005 (major in water supply and drainage engineering). His research interests include the theory, technology and engineering application of biological purification of groundwater with high concentration of iron, manganese and arsenic. He has finished several demonstration projects of biological purification of groundwater with iron and manganese in Harbin and Shenyang. He has Published over 20 papers and participated in several research projects, including China Postdoctoral Fund (2012), National Natural Science Foundation (2013), Beijing Education Commission Project (2014). Dong Li received her PhD from Beijing University of Technology in 2004, ME from Harbin Institution of Technology in 2001, B.E. from Shenyang Jianzhu University in 1999. She currently holds the position of Deputy Director of ERIHCUWS (Engineering Research Institute for Health Cycle of Urban Water System) since 2011. Her research interests include water and wastewater treatment technology, water environment recovery theory and key technology. She participated in a number of large-scale research projects and has received many honors and awards. She has published over 100 papers, including 20 SCI, 30 EI, has written three monographs and edited two textbooks.

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