Odour treatment in potable water using biofiltration with ozone addition

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Traditional water treatment processes cannot provide an effective removal of geosmin and MIB. The application of activated carbon is one of the most commonly used treatment processes, however, the presence of natural organic materials can result in competition for adsorption sites, leading to decreases in geosmin and MIB removal. Larger dose of activated carbon is required for effective removal. A cost effective and practical method for the treatment of MIB and geosmin is therefore required. One of the effective processes is ozone-enhanced biofiltration. Locating biofilters downstream of ozonation improves dissolved organic carbon removal and can aid in producing biologically stable water such that the potential for biofilm re-growth in water distribution systems is minimized. Field operational data suggests that ozone can oxidize 10% to more than 90% of the Geosmin and MIB and typical biofiltration can reach 50% removal only. Several factors may significantly influence geosmin and MIB removal in biofilters, including such as seasonal water temperature variations, filter media (GAC, EC or sand), empty bed contact time. Some investigations demonstrated that temperature and media are the most important factors affecting drinking water biofiltration processes and may influence the removal of compounds such as geosmin and MIB. In this study, the major factors affecting the biological degradation of geosmin and MIB removal in biofilters, including initial concentration, empty bed contact time, ozone dosage and media were examined.

Biography

Yiu Fai Tsang is currently an Assistant Professor in the Department of Science and Environmental Studies at the Hong Kong Institute of Education (HKIEd). He has received his PhD from the Hong Kong Polytechnic University (PolyU). He has further worked as a Visiting Scholar in the Department of Agricultural and Biological Engineering at the University of Illinois at Urbana-Champaign (UIUC). Prior to joining HKIEd, he was a Research Fellow in the Department of Civil and Environmental Engineering at PolyU. In addition, he is the Program Leader of Master of Social Sciences in Community Education for Environmental Management.

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