

Abstract

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Title

Turning BAC; assessing GAC filter performance for taste and odour removal

Description

A key water quality issue of cyanobacteria is the production of secondary metabolites. Some of which impart tastes and odours which are a problem for the water industry as they can impact customer perception of water quality and safety. Granular activated carbon (GAC) can be an effective barrier for the removal of these metabolites; and while there is a limited adsorption capacity GAC can also act as an effective biological filter. If the biofilm present on the GAC can degrade the metabolites, the GAC filters have the potential to continue to remove the metabolites despite reduced adsorption capacity over time.

It is difficult to determine at full scale whether the GAC is functioning biologically, or whether the challenge of a cyanobacterial bloom would result in breakthrough at the water treatment plant into the distribution system. This study used laboratory column experiments to evaluate the performance of full-scale GAC filters at selected SA water treatment plants over the past 12-14 years since plant commissioning (2007-2009). The GAC from the filters was tested for the removal of the two main taste and odour compounds; MIB and geosmin. This performance testing of GAC filters allows the determination of the current effectiveness for taste and odour removal, both physical and biological. The data obtained assists operators and key personnel by providing information regarding the maintenance of the GAC, including the need to top-up or replace GAC prior to a challenge at the plant that may compromise water quality or the need to implement alternative treatment barriers during a challenge event.