Abstract

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Title

Myponga's bloomin' challenge

Description

The Myponga drinking water network supplies around 30,000 customers and communities on the Fleurieu Peninsula, South Australia (SA). Water is sourced from the Myponga Reservoir and treated via dissolved air flotation (DAF) at the Myponga Water Treatment Plant (WTP). The reservoir is subject to seasonal blooms of the geosmin producer *Dolichospermum circinale* which imparts an unpleasant earthy/musty taste and odour to the water. Unpleasant tastes and odours can negatively impact customer satisfaction and perceptions of drinking water quality and safety.

Removal of gesomin throughout the water treatment train can be characterised through WTP auditing which identifies the contribution each treatment process makes towards removal. Myponga WTP is designed deal with extracellular geosmin challenges by dosing activated carbon before coagulation. However, in 2017 there was an unexpected large release of intracellular geosmin from *D. circinale* cells in the floatation bay leading to ~ 50 ng/L in the network, well above the ADWG aesthetic guideline of 10 ng/L.

Tastes and odours are thought to be masked by the disinfectant chlorine however the impact of using monochloramine, as opposed to free chlorine is less clear. Chloraminated waters are generally more aesthetically pleasing due to a higher taste threshold for monochloramine and to improve aesthetics and better meet the ADWG, chloramination is planned for the entire Myponga network. Pilot chloramination at Myponga township was shown to improve customer's perception of drinking water taste, odour, safety and overall quality. Yet how disinfectant choice affects masking of taste and odours has not been determined in the South Australian context for concentrations observed in the distribution system. In this study we evaluated the effect of chlorine and chloramine on participant's sensitivity to geosmin. Testing consisted of flavour profile analysis and a flavour rating assessment of volunteers across 4 panels.