Application of health-based targets for cyanobacteria toxins in recycled water

Abstract

Recycled water is a climate-independent water source and has an increasing role to play in water security in a changing climate. Recycled water use in South Australia is regulated by the DHW under the SA Public Health Act 2011 and SA Public Health (Wastewater) Regulations. In SA there are approximately 180 wastewater treatment plants which supply recycled water for various uses including irrigation of parks, gardens and sporting grounds, agriculture (food and non-food crops), dust suppression and woodlot irrigation.

Nutrient-rich recycled water storage lagoons provide an ideal environment for the development of cyanobacterial blooms including potentially toxic species. Depending on the species, exposure to cyanobacteria and their toxins can cause health impacts ranging from skin irritation to liver and neurotoxicity. Algal blooms typically occur in summer and can last for many months, when recycled water use is at its peak.

SA Water wastewater treatment facilities are monitored for toxic cyanobacteria, with reports made to the DHW when defined criteria, as outlined in the Water/Wastewater Incident Notification and Communication Protocol (the Protocol) are breached. Risk assessments have been undertaken to determine when uses of recycled water can continue, or are required to cease for a period of time. These consider exposures of the public and workers at facilities using recycled water. However, the amount of information available to incorporate into the risk assessments is limited.

The aim of this project is to investigate exposures to toxic cyanobacteria associated with identified uses of recycled water to expand the available database and aid the establishment of health-based targets for cyanobacterial toxins in recycled water. These health-based targets will inform public health policy and provide greater certainty to suppliers and users of recycled water in SA in responding to the occurrence of cyanobacterial blooms.

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