

# Reducing algal blooms with mining by-products

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Blue-green algae (or cyanobacteria) on the Swan River, Perth, WA. 2000. Credit: CSIRO

CSIRO research has shown that some mining by-products can be effective in preventing nutrients from entering river systems, thereby reducing the potential for algal blooms.

A joint project between CSIRO and the Western Australian Department of [Water](#) investigated a range of [mining industry](#) by-product materials, which are currently unused, to determine whether they could instead be used to filter nutrients from natural waters or to treat wastewater that would otherwise be discarded.

CSIRO project leader, Dr. Grant Douglas, says the use of abundant, low-cost by-product materials generated from mineral processing offers a

potentially cost-effective and environmentally-friendly strategy for the removal of nutrients.

“The largely unexploited by-product materials we generate in Western Australia could be developed as ‘designer’ contaminant adsorbents,” Dr. Douglas said.

After assessing a range of potentially suitable by-products to determine their efficacy in removing nutrients or reducing acidity, a four-year field trial was conducted with a potentially suitable by-product.

The by-product was added to soil at a turf farm in the Swan Canning catchment, and was shown to remove 97 per cent of phosphorus and 82 per cent of nitrogen from the shallow groundwaters. Adding the by-product also reduced water use and improved turf health.

With around 400 hectares of turf farms currently under cultivation over the Swan Coastal Plain, use of this by-product as a soil amendment on turf farms would equate to the removal of around two tonnes of phosphorus and nitrogen from groundwater each year.

“This is good news for the health of Perth’s waterways, as it could lead to a substantial reduction in the key nutrients that eventually contribute to [algal blooms](#),” Dr. Douglas said.

“The productive use of the by-products also has the potential to reduce the environmental footprint of mining and mineral processing industries by lowering by-product stockpiles.”

The potential benefits of this project could be realised anywhere in the world where similar by-product materials are produced and similar water management issues exist.

The research is being delivered through CSIRO's Water for a Healthy Country National Research Flagship for the Water Foundation of Western Australia, which promotes water-related research and development activities within Western Australia.

Provided by CSIRO

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