



**UNSW**  
SYDNEY

# Nuisance and Harmful Algae Science-Practice Partnership

## Granular Activated Carbon Application for Algal Metabolite Treatment

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Microscopic algae can produce various taste and odour (T&O) metabolites that give water an undesirable earthy and musky smell. Granular/biological activated carbon (GAC/BAC) is often applied to remove algal T&O compounds following conventional water treatment. GAC is an effective material because it is highly porous, and it presents a large surface area for adsorption. The formation of a bacterial biofilm during GAC operation (thus creating BAC) further improves T&O removal by increasing the 'stickiness' of the material and by extending the lifetime of the activated carbon particles. This project will analyse the ecology of bacterial biofilm formation during GAC operation and its effect on removal efficiency for various algal T&O compounds. It will also investigate the possibility of seeding and maintaining a desirable bacterial community in the BAC. The student will model the relationship between process conditions, biofilm thickness, surface structure and ecology, and T&O compound removal efficiency.

The **Nuisance and Harmful Algae Science-Practice Partnership (NHASP)** with Melbourne Water (<http://www.algae.unsw.edu.au/>) is a multi-party initiative that seeks to more effectively manage algal blooms by introducing smart surveillance and evidence-based, cost-effective policy and asset design for the benefit of the Melbourne region and Australia.

The successful candidate(s) will join the NHASP program. The candidate should have a background in either civil, chemical or environmental engineering (or similar), a demonstrated aptitude for undertaking laboratory/field work, have excellent communication skills and will be expected to interact regularly with industry partners. The student needs to be successful in securing their own primary scholarship via a **Research Training Program (RTP)** or equivalent (<https://research.unsw.edu.au/graduate-research-scholarships>). A secondary Water Research Australia (WaterRA) top-up scholarship (<https://www.waterra.com.au/education/waterra-scholarships/phd-masters-scholarships/>) may be available for exceptional applicants.

Further information on the project and scholarship may be obtained from **Prof. Richard Stuetz** (email: [r.stuetz@unsw.edu.au](mailto:r.stuetz@unsw.edu.au)). Applications should be submitted by email (including a cover letter, academic transcript and CV) to Prof Stuetz at UNSW Sydney.

