

Research Round Up

Title of the project: Removal of Potential Impact of Pharmaceutically Active Compounds during Wastewater Treatment

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Funding Body: ARC Discovery Projects

Collaborating organisations: Nil.

Key issue/s addressed:

- The need to understand the fate of pharmaceutically active compounds (PhACs) during biological treatment processes and how performance optimisation may be achieved.
- The possibility of small concentrations of antibiotic compounds providing a selective pressure for the proliferation of antibiotic resistant bacteria during biological sewage treatment

Objectives:

- Study the fate of PhACs during activated sludge and membrane bioreactor treatment processes
- Identify the impact of variable key operational parameters
- Gain an understanding of the role that antibiotics may have in the proliferation of antibiotic resistant bacteria in sewage treatment plants

Planned Outputs/Outcome (by when):

- Expanded suite of analytical methods for PhACs, with a particular focus on some key antibiotics (2006)
- Understanding of the impact of key treatment process operational parameters for optimisation of PhAC removal (2007)
- Conclusive observations to determine whether antibiotic resistance proliferation occurs during biological sewage treatment and whether trace concentrations of some specific compounds plays a role.

Methodological approach:

- Chemical analytical method development, -GC/MS and LC/MS-MS
- Microbiological analytical method development (culturing and PCR techniques)
- Construction of lab-scale activated sludge and MBR reactors
- Undertake 'spiking experiments' to observe removal rates and impacts on antibiotic resistance

Key findings so far:

- Extensive analytical method development and characterisation for chemical and microbial analysis.

Please tick the relevant theme below:

Monitoring/ Analysis Exposure assessment Environmental Fate Effects

Treatment Technology Risk Assessment Other