

Research Round Up

Title of the project: Fate and Effects of sewage-derived pharmaceuticals on soil

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Funding Body: New Zealand Foundation for Research, Science and Technology, Waste 2 Resource programme and Tertiary Education Commission, Enterprise scholarship.

Collaborating organisations:

Key issue/s addressed:

- Fate and effects of pharmaceuticals in the soil environment after land application of sewage.

Objectives:

- Fate of selected pharmaceuticals after sewage effluent irrigation and the impact of some design factors.
- Effects on soil microbial communities.
- Determine toxicity of selected pharmaceuticals to plants and microbes.

Planned Outputs/Outcome (by when):

- PhD thesis defended by September 2007.
- Method developed for the simultaneous analyses of 10 acidic, neutral or basic pharmaceuticals in liquid and solid waste, and environmental matrices.

Methodological approach:

- Multifactorial experiment using a large scale experimental facility for effluent irrigation research to determine the impact of soil type, sewage pre-treatment and irrigation rate on pharmaceutical removal.
- Exposure experiment with non-irrigated soils and soils subjected to long-term sewage irrigation.
- Acute toxicity tests

Key findings so far:

- Pharmaceutical removal in land treatment systems depends on design parameters.
- Soil microbial communities are influenced by sewage-derived pharmaceuticals.
- Pharmaceutical levels present in sewage effluent are not acutely toxic to plants and microbes.

Please tick the relevant theme below:

Monitoring/ Analysis Exposure assessment Environmental Fate X Effects X

Treatment Technology X Risk Assessment Other