Research Round Up

Title of the project: Adsorption and removal of trace organic compounds by membrane processes used in water treatment and wastewater recycling

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Collaborating organisations: Nil.

Key issue/s addressed:
- Lack of detailed knowledge regarding specific removal mechanisms of trace organic contaminants by high pressure membrane treatment processes such as nanofiltration and reverse osmosis.

Objectives:
- Subject strategically selected trace organic contaminants to a range of operational conditions for treatment by high-pressure membranes (NF and RO).
- Improve understanding of key rejection mechanisms for various classes of trace organic contaminants by high pressure membranes
- Relate treatment performance to chemical characteristics and operational conditions

Planned Outputs/Outcome (by when):
- Expanded suite of analytical capabilities (2006)
- Database of rejection performance factors (2007)
- Computer-based model for predicting rejecting performance for specific chemicals subjected to specific operational conditions (2008)

Methodological approach:
- Analytical method development for expanded range of trace organic contaminants
- Design and construction of laboratory membrane filtration rigs
- Rejection experiments on membrane filtration rigs subjected to various operational parameters (pH, ionic strength, TOC, etc).
- Factorial analysis of molecular and solution characteristics as determinants of membrane reject for the development of a predictive modelling tool

Key findings so far:
- Highly variable rejection performance observed depending on molecular (and membrane) ionisation, according to solution pH.

Please tick the relevant theme below:

Monitoring/ Analysis ☐ Exposure assessment ☐ Environmental Fate ☐ Effects ☐

Treatment Technology ☑ Risk Assessment ☐ Other ☐