

Environmental bridge over troubled waters

May 8 2013



A breakthrough innovation designed to purify water through the rapid removal of oily pollutants, could have major environmental benefits in agriculture and manufacturing industries.

The application, developed at the School of Engineering in collaboration with the Mawson Institute, involves the deployment of surface engineered silica particles, which act as oil magnets in [water](#), adsorbing oil, yet repelling water.

The use of the technology can enable the removal of motor oil, crude oil, petrol or kerosene in just a few minutes.

Professor Peter Majewski, head of the school of engineering, who lead

the research, outlined the practical benefits of the technology, which could revolutionise the treatment of [oil spills](#) at sea, [water reservoirs](#), and rivers.

"Oils are among the major pollutants in drinking water reservoirs," he says.

"Contamination may occur through natural spills, cracked pipe lines and run off of oil from land-based sources. The toxic effects of these pollutants can lead to conditions including narcosis and cancer.

"By applying plasma polymerisation technology to develop surface engineered silica particles for oil removal, these adsorbents can remove more than 99.9 per cent of the oil from both fresh and sea waters.

"Sprinkling the silica particles onto an oil spill would result in the [oil](#) binding itself to the particles and falling to the ocean floor, where it could then be collected and removed.

"The use of the silica particles in small quantities, such as in filters for farms could aid water purification in remote and rural communities. In large quantities filters for industrial outlets could help in the treatment of waste water.

"As the [absorbent material](#) is based on silica particles or simple quartz sand, it is very easy to use, store, and transport. In addition, it can be used in already existing conventional [sand filters](#).

"It's at early stage but we are now looking to develop the water treatment technology with industry partners, through UniSA's technology commercialisation company, [ITEK](#)."

Provided by University of South Australia

Citation: Environmental bridge over troubled waters (2013, May 8) retrieved 20 June 2024 from <https://phys.org/news/2013-05-environmental-bridge.html>

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