

Synchrotron helping transform biosolids into fertiliser

Scientists at the CRC for Contamination Assessment and Remediation of the Environment are using the Australian Synchrotron to develop a way of turning biosolids from urban sewage into a safe nutrient source for farm soils.



Credit: istockphoto

Associate Professor Enzo Lombi and Dr Erica Donner, both also affiliated with the University of South Australia, are involved in the project. They aim to make available the phosphorus, nitrogen and potassium from biosolids, as well as organic carbon and micro-nutrients such as copper and zinc. They also want to ensure that toxic metals such as cadmium and lead in biosolids are not able to re-enter the food chain, as their presence is a major obstacle to the widespread reuse of biosolids as soil improvers.

The researchers hope that urban waste can supply nutrients to help maintain the fertility of Australian soils in the face of growing global nutrient scarcities and soaring fertiliser prices.

‘Australia’s sewage works produce more than 300 000 tonnes of biosolids every year, derived from the settling process in primary treatment and the waste bacteria from secondary treatment,’ says Assoc. Prof. Lombi.

‘Most biosolids material is simply stored in huge dumps, where it poses a long-term management issue.’

The team is using the synchrotron to study the chemistry of the bonds that bind toxic metals to particles within the waste. This will enable them to pioneer new ways to bind the metals, preventing their mobility into the environment – a lower-cost solution than separation and removal.

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