Human waste and native plants can restore contaminated mine sites

RMIT University's Distinguished Professor Andrew Ball is using a combination of human sewage and native plants to rehabilitate depleted mine sites.

Through wastewater treatment, the sewage is converted into a concentrated, purified sludge known as a biosolid – a product increasingly used in agriculture, forestry, road building and landscaping.

Dr Ball is investigating the potential use of biosolids for the rehabilitation of disused mines in India. The work is supported by a grant from the Global Connections Fund and addresses issues of land degradation and waste management.

"The grant helped us to identify and validate potential areas for the application of biosolids and the ecofriendly restoration of abandoned mines," Ball said.

Before the introduction of mandatory rehabilitation clauses in mining licences, depleted sites were often left in ruins, posing threats to ecosystems and human health. Surface soils were often contaminated.

Dr Ball and his team remedy the problem using a two-pronged approach. First, the treated human sewage is added to the soil – either in sludge form or as a charcoal known as biochar. Native plants are then added to improve soil structure and composition, and to filter toxins.

"In the past, mine closure planning was not mandatory or statutory and as a result there are thousands of abandoned mines in Australia and India which pose severe problems to the environment and society," he explained.

His team works with Indian mine site restoration company Geovale Services, as well as wastewater treatment agencies.

"The grant was instrumental in bringing not only academics but also Australian water treatment industries in contact with key Indian water industry leaders, providing significant opportunities through AusTrade for further collaborations in India," he said.

"The benefit of this restoration approach is the obvious implications for ecosystem health. This will result in reduced pollution not only to land but also aquatic systems."

Distinguished Professor Andrew Ball

Director, Centre for Environmental Sustainability and Remediation
RMIT University

Treated human sewage & native plants can rehabilitate abandoned mine sites, finds @RMIT's Andrew Ball, thanks to an @ATSE_au Global Connections Fund grant. @IndustryGovAu

atse.org.au

The project, Innovative Biosolid reuse technologies for post mining restoration, was supported by the Global Connections Grant program, part of the Global Innovation Strategy in the National Innovation and Science Agenda. This program is administered by the Australian Academy of Technology and Engineering with the support of its expert Academy Fellows network.