

## Biotechnology approach for the remediation of radioactive contaminants

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Bioremediation processes that harness the metabolic activity of microorganisms in situ use relatively low-cost, low-technology techniques, which generally have a high level of public acceptance. Compared to other more invasive “civil engineering” methods, bioremediation may offer a less expensive route for cleaning up radionuclide contaminated soil and water. Owing to the environmental disturbance, high cost input and limitations of current clean-up technologies, bioremediation has been developed as a potential approach that can be implemented in radioactive waste remediation. Over the last decade there have been significant advances in our understanding of the biogeochemical controls on key radionuclides, facilitated by advances of factors include improvements in techniques available in specialist areas as diverse as microbiology, molecular biology, and analytical chemistry. However, there is in many cases still a very significant gap between knowledge of radionuclide-microbe interactions obtained from laboratory studies using pure cultures of microorganisms under well-defined conditions, and detailed understandings of the complex mechanisms of key radionuclides in microbial communities.