

Fully-funded PhD position on “Bioremediation of radioactively contaminated land”

Applications are invited for an NDA-funded project on “Bioremediation options for UK radwaste impacted land” based at the University of Manchester in collaboration with the National Nuclear Laboratory.

The remediation of large nuclear facilities, such as Sellafield, is challenging & costly. However, microbial processes offer cheap & scalable bioremediation approaches that can be applied to such sites with minimal engineering input. By stimulating naturally-occurring microbial processes “in situ”, sediment-dwelling bacteria are able to fix problematic radionuclides into new “biominerals”, preventing migration off-site and through the biosphere. These “bioremediation” techniques have been tested at nuclear sites in the US, but not yet in the UK. As they depend on the chemistry of the sediments at a given site, and the microbes that they support, work must be done to see if they will be effective at NDA sites. Several alternative approaches are possible, and this project will assess the best option(s) in terms the efficiency of radionuclide removal, & the long-term stability of the radionuclide-containing biomineral phase under field-relevant conditions.

The studentship will be based in two state of the art research centres in The School of Earth, Atmospheric and Environmental Sciences (SEAES), at the University of Manchester. The Radwaste and Decommissioning Research Centre in SEAES is a new centre focusing on underpinning the management and geo-disposal of legacy radioactive wastes including the contaminated land legacy. It has been supported by >£5M investment from RCUK and industrial sources, and will have new state of the art radiochemistry and molecular ecology laboratories when the student starts. The student will also have access to a large suite of dedicated laboratories within the Williamson Research Centre for Molecular Environmental Science (WRC) at the University of Manchester, which has also received more than £5M investment over the last decade and houses state of the art equipment for molecular environmental studies. The student will also benefit from the facilities at NNL including state of the art laboratories for radiochemical studies at high levels of radioactivity at its Central Laboratories located at the Sellafield Site, and extensive experience in undertaking site investigations for most of the NDA estate and an internationally renowned capability for biogeochemical modelling which will support this study.

For further details please contact Professor Jon Lloyd (jon.lloyd@manchester.ac.uk)

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