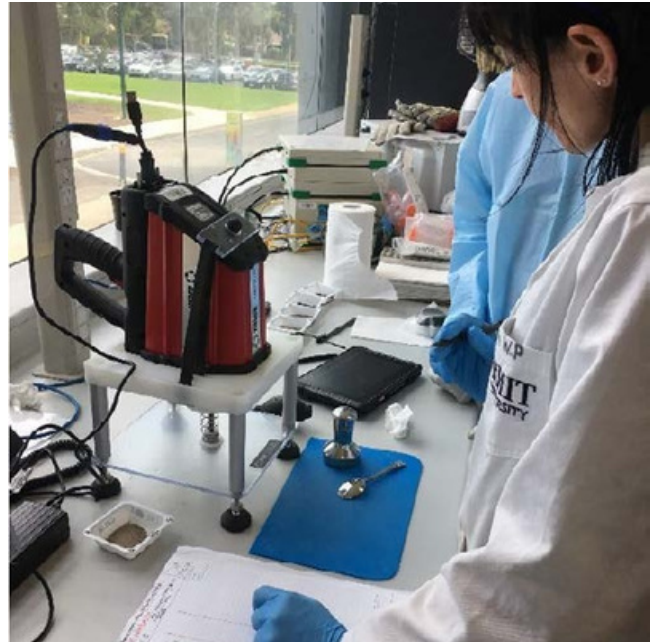


# CASE STUDY

## RemScan Used as a Tool for STEM Education

RemScan is being used as a teaching tool in Science Technology Engineering and Mathematics (STEM) education at RMIT University in Australia.

Students enrolled in the Environmental Biotechnology (BIOL2324/BIOL2370) course have been using RemScan to measure the effectiveness of bioremediation as part of their practical laboratory training.



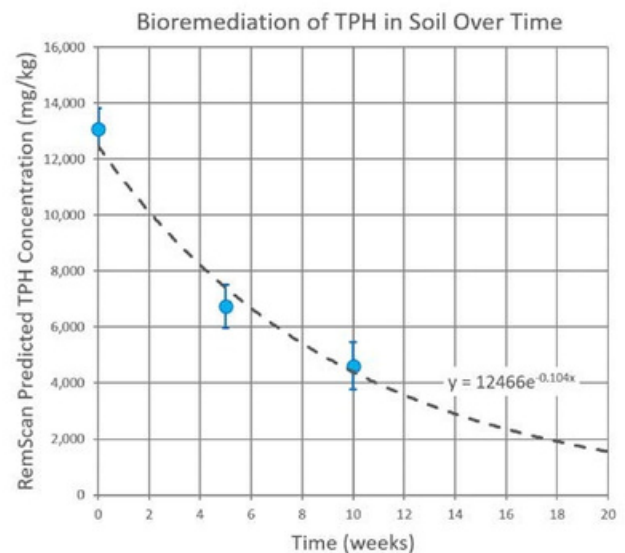
Bioremediation is a simple, low-cost, and environmentally safe method for cleaning up total petroleum hydrocarbons (TPH) in soil. It uses natural microorganisms in the soil to break down the TPH chemicals into harmless byproducts such as CO<sub>2</sub> and water.

The effectiveness of the bioremediation process is measured by the decrease in TPH achieved over time.

The standard approach for measuring TPH in soil involves sending soil samples to an external laboratory for analysis using gas chromatography which is costly and time-consuming.

RemScan provides a rapid, accurate, and inexpensive alternative for measuring TPH in soil. The hand-held unit measures soil directly, without the need for solvent extraction, and provides a TPH measurement (mg/kg) in less than 20 seconds.

Given the short time frames and limited resources available for the teaching course, such studies would normally be impossible to carry out in the classroom.



Graph showing bioremediation over time by scanning with RemScan

# CASE STUDY

## RemScan Used as a Tool for STEM Education

RMIT students are taking advantage of RemScan's rapid measurement time and ease of use to monitor the progress of the bioremediation of diesel-contaminated soil in the laboratory.

Since 2017, around 400 students have completed the course and utilised RemScan as a teaching aid.



The Environmental Biotechnology course caters for students from a range of backgrounds including biological, chemical, physical, social and health sciences.

The course covers key aspects of environmental microbiology including the diversity, function and ecological adaptations of microorganisms within the environment.



Subsequently it explores how these environmental microorganisms, products and processes can be applied within the environmental biotechnology sector to benefit our society and the environment. It highlights the importance of microbial life to key ecosystem processes and systems.

The course also outlines how microbiology can be applied to address key environmental and biological challenges facing society by integrating scientific understanding with consideration to important legal, regulatory and society issues.

Key themes within this course include Biogeochemistry and Biodegradation, Waste Management and Processing, and Bioenergy.



*“The RemScan made it possible for all 30 groups of students to analyse their own experiment during the practical laboratory class. This resulted in an enhanced appreciation and understanding of the process of bioremediation”.*

*Professor Andy Ball  
RMIT University*