

## **PCR assay used to monitor bioremediation**

Researchers at Purdue University, the United States, are using a genetic test to determine the progress of environmental clean-up efforts at sites contaminated with petroleum-based pollutants like petrol and diesel fuel. The technique screens soil for genes that reveal the presence of an enzyme produced by pollution controlling bacteria. Information about the bacteria's presence and concentration can then be used to assess the progress of efforts to remove toxins from the contaminated soil. While this approach yields results within a few hours, conventional methods can take days and are not always effective as some micro-organisms do not grow under laboratory conditions.

The technique under development at Purdue employs a PCR assay to detect the enzyme catechol 2, 3-dioxygenase, which is produced by bacteria growing in soils contaminated with petroleum-based toxins such as benzene, toluene and xylenes. The toxins typically get into the soil through leaking storage tanks. They are absorbed by the bacteria and broken down by enzymes into less toxic compounds, such as methyl catechol, which are further degraded into harmless chemicals by catechol 2, 3-dioxygenase. While this is not the only enzyme used by micro-organisms to neutralize petroleum-based toxins, it is one of the key biochemical "pathways" through which contaminants are degraded. *Contact: Prof. Loring Nies, School of Civil Engineering, Purdue University, West Lafayette, IN 47907-1284, the United States. Tel: +1 (765) 4948 327; Fax: +1 (765) 4961 107; E-mail: nies@ecn.purdue.edu. (Website: <http://www.bioresearch online.com>)*