IN-FIELD ANALYSIS

A new technology for in-field measurement of hydrocarbons in soil promises rapid results. By Dr Richard Stewart.

CSIRO's Sean Forrester takes hydrocarbon measurements at a contaminated site.

Standard industry practice in Australia for measuring hydrocarbons in soil is to send a soil sample to an off-site accredited laboratory for analysis. This typically costs $25-50 per sample and takes 5-7 days to turnaround the results.

While there are in-field hydrocarbon measurement technologies available in the US, most involve extracting the hydrocarbons from the soil and analysing the resulting liquid. These methods are time-consuming and often involve toxic solvents and clumsy equipment.

A new technology developed by Ziltek and CSIRO allows for real-time measurement in the field. The user simply pulls the trigger on a hand-held infrared spectrometer and within a few seconds gets a digital read-out of the hydrocarbon concentration. The technology requires no toxic solvents or consumables, and sampling positions can also be logged automatically using GPS coordinates.

The technology is essentially a software application that can be used with any third-party supplied hand-held infrared device. A working prototype has been tested at several contaminated sites across Australia, with very promising results.

> **The user simply pulls the trigger on a hand-held infrared spectrometer**

The site trials involved taking in-situ measurements using an infrared instrument before sending the soil to an external laboratory for conventional analysis – and comparing the results. Ziltek technical director Dr Ben Dearman noted at some sites the variation between the infrared results and lab results was less than 10 per cent.

The technology gives a single concentration value in mg/kg for total petroleum hydrocarbons in the range C10 and above. It is not designed to measure volatiles, but provide the first reliable in-field method for measuring non-volatile hydrocarbons.

The technology can also potentially distinguish between petroleum- and plant-derived hydrocarbons and there is also a trend towards risk-based assessment of petroleum-impacted sites in Australia, which can involve simply monitoring the natural degradation of hydrocarbons in the soil. This new technology will allow more regular monitoring.

Ziltek plans to launch the product commercially in Australia next year.

Dr Richard Stewart is MD of Ziltek. More at www.ziltek.com.au