



Supporting Innovation

SmartKits

CASE STUDY

Overview

In 2006, Dr Anil de Sequeira – Subject Leader for Food Studies at Bath Spa University – won innovation funding to develop a laboratory system, which could be used to develop a simple inexpensive kit to ascertain whether phenols are present in contaminated waters.

About the Project

Phenol is a widely used general disinfectant in chemical analysis, medical and industrial compounds. It is also used in fertilisers, explosives, paint, paint removers, textiles and pharmaceutical products, which can be damaging to the environment. Phenol can enter our environment from natural sources such as animal waste and decomposing organic material. It is also a common component of industrial waste, particularly from oil refineries, coal plants and municipal waste treatment.

Phenol deposits from industrial waste presents health and environment problems. Phenol is particularly persistent in water and the ease with which phenol can be transported increases the likelihood of environmental stress and amplifies the need to devise tools for the effective detection and removal of phenols in waste waters.

Currently, phenols are measured using spectrophotometric methods and high performance liquid chromatographic techniques, which are time consuming and cannot be used in the field.

The innovation award funding was used to:

- Deliver data on the development and selection of suitably sized phenol oxidase alginate beads.
- Deliver data to demonstrate that phenol oxidase alginate beads can be used in the development of a suitable laboratory system.
- Deliver data on the measurement of phenols in model systems using the phenol oxidase alginate beads in model systems.

Benefits

The kit would allow for quick and easy assessments of sites for phenols.

Outcomes

The kit is potentially attractive to a number of end users, including environment agencies and private consultants, for qualitative assessment to ascertain whether phenolics are present in the land being assessed. If the presence of phenolics is detected, water samples can be taken back to the laboratory for further analysis.

Fast Facts

- **The idea:** development of a kit to determine the presence of phenols in contaminated waters
- **Market opportunity:** the ease with which phenol can be transported increases environmental stress and amplifies the need to devise tools for the effective detection and removal of phenols in waste waters
- **Potential for commercial application:** environment agencies and private consultants; further development of the kit for quantitative and qualitative analysis of phenolics
- **Competitive advantage:** current detection methods can be time consuming and cannot be used in the field