



Land Contamination Risk Assessment Tools: An evaluation of some of the commonly used methods

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The regulation of land contamination in England and Wales has long been accomplished via the planning process. The increasing importance paid to the state of land and the potential presence of pollutants on previously utilised land has been recognised and is an underlying driver behind the planned introduction of Part IIA of the Environment Act 1990 (Contaminated Land Regulations).

Integral to best practice in site redevelopment and certainly to the new legislation is the use of a risk-based approach to the assessment and remediation of land contamination. This is a common approach internationally and a number of risk assessment tools are in common and increasing use in England and Wales. Part IIA itself is supported by a DETR developed risk assessment method "CLEA". However, this method is not currently available, moreover the Agency cannot require site owners or their Agents to use a particular risk assessment method.

This project provides a survey of the extent of use of risk assessment packages in the UK and an indication of the level (or lack) of training which practitioners currently have. It is plain from the survey responses that several packages are in common use by environmental consultants, industry and even local authorities. However, whereas best practice overseas is for high levels of training (e.g. US EPA require 1 or 3 week dedicated course attendance before staff may interpret REBECCA data) few respondents had received formal training courses in the UK. It highlights the need that regulators such as the Agency will increasingly face for sound training of staff to provide regulatory decisions based on interpretation of such risk assessment data. It also provides a valuable insight into the level of expertise present in risk assessments carried out on behalf of industry.

The project's second phase provides a logical exploration of a number of commonly used models:

- ◆ Risk*Assistant
- ◆ RISC-HUMAN
- ◆ RBCA
- ◆ ConSIm
- ◆ HRS
- ◆ NCS
- ◆ CLR6

The report therefore describes the aims and approaches of each of the models. It provides an detailed overview of the content of each package and the ways in which they perform to allow a reader to either select the package most appropriate to their needs or, more importantly, aid regulators to form an opinion on their suitability for decision making in particular circumstances.

Methods which purport to provide a similar service were tested side-by-side by introducing real-world site data from 10 contaminated sites. The 10 were chosen to give a range of different ground and contaminant conditions. Models were then run using mostly their default parameters and bearing in mind the differences in approach on:

- Contaminants included
- Exposure pathways and assumptions; and
- Toxicity and carcinogenicity assumptions.

The results confirmed that the key to acceptable use of these tools lies in the training and understanding of the operator. Default parameters, whilst highly relevant for specific portions of the models in general, were poorly suited to representing individual sites emphasising the site specific nature of conditions and data. Small changes to model parameters can lead to major differences in final output.

The reports should be of use to Head Office and National Centre staff in steering the strategic response to model use and in preparation for the arrival of the CLEA data and model from DETR. They should also inform operational staff engaged in the assessment of site investigation and remedial strategies.

This R&D technical summary relates to information from R&D Project P5-026 contained in the following output:

R&D Technical Report P260 “Contaminated land assessment tools and models; an evaluation and benchmarking”

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