

THE SOIL AND GROUNDWATER TECHNOLOGY ASSOCIATION

SAGTA REPORT 28 - PART IIA - EXTENSION TO INCLUDE RADIOACTIVITY

Introduction

SAGTA's December 2005 workshop considered in depth the current initiatives covering the extension of Part IIA of the Environmental Protection Act, 1990 to include radioactivity. This workshop follows on from SAGTA's 2004 workshop: *Non chemicals - perceived risks?* and was particularly timely given the late 2005 consultations in England, Wales and Scotland covering radioactively contaminated land (RCL).

The objective of the workshop was to review the progress towards implementation of the new regime and exchange experiences in managing RCL. The specific aims of the workshop were to:

1. Define whether there was a consistency of approach between Part IIA and the requirements of *inter alia* the Nuclear Installations Act 1965 as it applies to contaminated land on nuclear licensed sites;
2. Define the regulatory perspectives and the progress towards implementation; and
3. Provide feedback on practical issues to be addressed during implementation of the regime.

Key Issues defined in the Workshop

The workshop brought to light a number of key issues which are summarised as follows:

1. There is a need for timely and comprehensive guidance to cover the new RCL regime. This need has been identified by regulatory authorities as well as individual SAGTA members.
2. There are significant differences between the regimes proposed in England and Scotland. [The proposed regime for Wales is virtually identical to that for England.]
3. There is concern, in particular from Local Authorities (LAs), that the regulations in England do not cover non-human receptors, principally, controlled waters. The Environment Agency (EA) cites a lack of evidence of unacceptable risk to the wider environment. However, they propose to address controlled waters at a later stage.
4. One of the problems associated with the new regime involves the generally low level of public (and in some cases, regulatory) understanding of RCL and the risks that it poses. There is therefore a communication challenge which will require significant training of *inter alia* LAs if the challenge is to be met.
5. There is a potential issue regarding the consistency between the Radioactively Contaminated Land Exposure Assessment (RCLEA) model and CLEA with respect to, for example, the derivation of Soil Guideline Values (SGVs).
6. It is unclear how the issue of RCL is approached in the Planning regime.
7. It may be difficult to elicit information about RCL from companies which are not currently prepared to provide it.

SAGTA Contributions

SAGTA should be able to contribute in the following ways:

1. By providing support to the preparation of guidance. SAGTA could, for example, aid in the design of reporting formats and quality assurance, and in selection/definition of appropriate contractors;
2. By continuing to provide ad hoc support and support to the RCLEA Steering Group;
3. By preparing a paper which communicates the key aspects of the definition of RCL in a way that can be easily understood by the majority of key stakeholders;
4. To facilitate the communication and training required by the new regime by encouraging DEFRA and SEPA to make use of the SAFEGROUNDS website; and
5. By providing regulators and national government with members views on the consistency of regulation in the 4 areas of the UK.

Summary of Workshop Presentations

Radioactively Contaminated Land – Regulation, Practice and Training

This presentation looked at the Part IIA extension from a DEFRA point of view and concentrated on what the legislation was likely to look like and what DEFRA's role would be. The legislation is being implemented to satisfy a long-standing Ministerial commitment to transpose Articles 48 and 53 of the Euratom Basic Safety Standards Directive into UK Law. The guiding principal of the new RCL regime is that it should not upset existing Part IIA arrangements.

Consultation on the proposed regime has been completed, and with the exception of the exclusion of non-human receptors/controlled waters, no issues of principal have been identified. There have been many requests for guidance but at this time DEFRA is stressing the need to be pragmatic.

The definition of RCL is based on Euratom Article 53 and relates to the potential for harm to be caused to human health ("lasting exposure resulting from the after-effects of a radiological emergency or a past practice"). There is no mention of "significant" harm. Harm is defined as an effective dose of 3 mSv/year above background; or an equivalent dose of either 15 mSv/year (lens of the eye) or 50 mSv/year (skin). DEFRA will produce a series of profile reports covering the industries most likely to have RCL which will *inter alia* be a useful reference to be used in conjunction with the Planning regime. DEFRA's role in the RCL regime will be to: prepare the legislation; prepare the Statutory Guidance; and provide training for LA officers in England. [It is anticipated that the RCL Regulations will take effect in England on 4 August 2006.]

The EA believe that, although the number of sites where radioactive materials were used or produced is many, the number of sites that may be actually determined as RCL is likely to be very small (a few tens of sites at most, and potentially none at all).

Part IIA – Extension to Include Radioactivity: Local Authority Perspectives

This presentation covered the perspectives of one well known LA with a wide range of interesting contaminated land challenges. Generally LAs work closely with the EA in management of contaminated land but there is still some confusion with respect to the designation of Special Sites. The key concerns of LAs with respect to the new regime are:

- The bulk of contaminated land management activities are associated with the Planning and Development regime. LAs would like to see an update on Planning guidance to reflect radioactivity and other complicated contamination issues;

- There are a number of issues related to site inspection, e.g. the more prescriptive nature of guidance on when to inspect. The LAs are unsure if they are only to look at sites where it is known that radioactive materials were known to have been used;
- The exclusion of significance in the definition of harm;
- The exclusion of controlled waters from the regime;
- The need for very close co-operation with the EA as determinations will need to be on the advice of the EA; and
- Difficulties in explaining to the general public the apparent two tier system whereby 3 mSv/year is the effective dose limit for existing sites but 0.3 mSv/year is the limit for re-development.

The last bullet point will represent a real challenge as communication will be a very big issue. The EA does not have enough resources to deal with the Part IIA regime as it stands; LAs are worried about how the EA will provide the resources required to implement the new RCL regime.

RCL – Scottish Consultation

The Scottish consultation on the RCL proposed legislation was undertaken to cover 3 main questions:

- How will RCL be found and who will find it?
- What is RCL?
- Who is responsible for sorting the problem out?

The Scottish Environment Protection Agency (SEPA) will be the lead regulator for RCL in Scotland; there will be no duty of LAs to inspect. Land will be inspected by SEPA where there are reasonable grounds to believe that there may be RCL. There is no guidance, however, on what represents “reasonable grounds”.

The regime defines RCL (as in England) on the basis of effective and equivalent dose but significantly, the definition also includes pollution of the water environment. However, significance tests have not yet been set for the water environment. Any RCL would be designated as a Special Site (with exception of nuclear licensed sites) and the polluter pays principle would apply to remediation.

Environment Agency Roles and Perspectives

This presentation covered the EA views on the types and number of RCL sites; the work that is required to implement the new regime; and the implications for the EA. The EA expects that the number of RCL sites will be small and the problems will be fairly local as most hazardous radionuclides do not migrate significantly in groundwater.

The EA generally supports the Part IIA extension particularly:

- Proposals to concentrate on human receptors and wait until the implications of the Water Framework Directive are made clear before applying the regime to pollution of controlled waters;
- The use of dose values which are in line with international dose values; and
- The DEFRA work to develop guidance and tools, particularly: industry profiles and RCLEA.

The EA does, however, have some concerns including the lack of additional resources and competition for funding with conventional contaminated land. It may be particularly difficult for the EA to fund remediation of any orphan sites. It is, however, not expected that there will be many of these.

Much of the EA's role will be reactive as the workload is unknown and out of the EA's control. There will therefore be a need for a significant degree of flexibility in the working arrangements of both the EA and the LAs. The EA is hoping to use the existing teams within the LAs as the points of contact to cover the new regime. The EA will also be preparing its own guidance and tools for both internal use and to help the LAs. This will include: reporting formats and standards; lists of potential contractors; etc. In addition, the EA is hoping to maximise web-based information due to the large number of LAs that will require support.

The Nuclear Decommissioning Authority (NDA) Perspective

The NDA is responsible for cleaning up the UK's nuclear legacy at 20 sites throughout the UK. Each site will require an agreed end state and decommissioning timescale to be defined. To achieve the end state defined, radioactively and conventionally contaminated land must be adequately managed. This is a significant challenge for the NDA as it estimates that it owns 20 million m³ of RCL (mostly at Sellafield). As this RCL is contained in nuclear licensed sites, it is outside the scope of the Part IIA extension. Never-the-less, the NDA recognises that management of this RCL is a key element of overall site management and decommissioning. The NDA will support the management of RCL, in part, by direct funded research into *inter alia* coastal and climate change.

RCLEA: Development Criteria & Assessment Methodology

This talk covered the background, scope and methodology used in the Radioactively Contaminated Land Exposure Assessment tool. RCLEA provides a tiered approach for the screening of RCL and is based on the well-known CLEA software. RCLEA is intended for assessment of potential intervention situations for historic contamination. It may be used to calculate doses to individuals and soil assessment criteria (generic Radioactive SGVs (RSGVs) for individual radionuclides and guideline values for radionuclide mixtures or using site-specific parameters). It includes exposure data for 46 radionuclides. RCLEA assumes uniform contamination to a depth of 1 m but enables a simple adjustment for patchy contamination.

The RCLEA methodology covers most common exposure pathways, a range of land uses and building types, and several different age groups (adult, child and infant). The RCLEA software tool is based on Microsoft Excel with generic assumptions that can be changed to reflect site-specific conditions.

A draft of RCLEA will be available for consultation in early 2006.

RCL Extension of Part IIA: Impact on MOD

The Ministry of Defence (MOD) is currently investigating whether UK contaminated land (and other environmental) legislation is compatible with the government's mission with respect to defence. The new RCL regime should not have an excessive impact on the MOD as it is expected that very few of its sites will meet the 3 mSv/year criterion as laid out in the new legislation. For example, radium-contaminated sites do exist but Ra is generally buried at depth and is immobile, making human exposure unlikely. The MOD does, however, take other drivers (e.g. reputation and commercial risk; civil liability; and other statutory duties) into account. It is these other drivers which more commonly result in decisions to remediate. A significant amount of guidance on MOD policy is available on the MOD website.

Remediation at AWE Cardiff: Evidence of Good Practice?

This paper presented a case study on remediation of a large defence site. The management of contaminated ground at the site followed the basic principles as defined by SAFEGROUNDS. Key to management of the remedial works was the involvement with all local stakeholders (SAFEGROUNDS Principle 2). Although the remedial works were a success, the stakeholder engagement was found to be a double-edged sword. Although risks at the site were generally

quite low, the MOD discovered that when it comes to radioactivity and hazardous waste “the perception of risk is the reality”.

Castle Gate Seep Remediation, Dounreay

This paper described the management solution which was chosen to remediate a spring contaminated with very low levels of anthropogenic radioactivity. The paper highlighted the drive by environmental regulators to mitigate a groundwater discharge that has caused no environmental damage and could not be justified on cost-benefit grounds. In order to comply with the wishes of the regulator, UKAEA has intercepted this groundwater discharge and re-routed it via the site’s authorised discharge system. There is a need for nuclear operators to follow best practice and work on the basis of net environmental benefit when making environmental management decisions.