

Meeting:	NuLeAF Steering Group, 7 July 2008
Agenda Item:	6
Subject:	Consultation on Guidance for Requirements for Authorisation of Disposal Facilities
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Purpose:	To report on the consultation being undertaken by the Environment Agencies

Introduction

This report outlines the proposals of the Environment Agencies for Guidance for Requirements for Authorisation of Disposal Facilities.

Two draft guidance documents are available for comment, with a deadline of 1 September ([EA Draft Guidance](#)). The first relates to Geological Disposal Facilities and the second to Near-Surface Disposal Facilities. The guidance sets out how the Environment Agencies propose to regulate the disposal of radioactive wastes.

A preliminary set of comments are outlined below. The intention is to refine the comments following SG discussion and attendance by the Executive Director at a workshop on 10 July organised by the Environment Agencies.

Recommendations

That the Steering Group agrees that a set of comments should be submitted based on the those outlined in this report.

Nature of the Proposed Guidance

The draft guidance applies to land-based facilities that will require an authorisation issued by one of the environment agencies under the Radioactive Substances Act 1993 and are classed as disposal facilities.

The summaries of the draft guidance explain that the developers of:

... facilities for solid radioactive waste disposal have to demonstrate to us that the facilities will properly protect people and the environment. To do this, they will need to show that the approach to developing and operating their facilities, and also the location, design, construction, operation and closure of the facilities, will meet a series of principles and requirements. This guidance sets out these principles and requirements, and how we are likely to interpret them.

The draft guidance goes on to explain that:

We are able to attach any limits and conditions relating to the accumulation and disposal of radioactive waste we think fit ... These limits and conditions are binding on operators ... In setting appropriate limits and conditions, we shall take into account the responses the develop/operator of such a disposal facility makes to the principles and requirements set out in this guidance.

The principles and requirements that are contained in each set of draft guidance are summarised in the Annex to this report.

Applicability of the Guidance

The guidance for **near surface disposal facilities** applies to existing and proposed facilities, to facilities solely for the disposal of radioactive waste, and to facilities for the co-disposal of solid radioactive wastes with conventional wastes. The types of solid radioactive wastes that might be suitable for disposal in near-surface facilities include very low level waste, low level waste and short-lived intermediate level waste.

The guidance for **geological disposal facilities** applies to facilities whose depth would remove the emplaced waste from disturbances at the surface. In this context, 'deep' can imply horizontal or vertical distance eg as in the case of a facility deep within a mountain. A geological disposal facility could be entirely on land or constructed under the seabed but accessed from land. Suitable wastes could include high level waste, intermediate level waste and some low level waste that is not suitable for near-surface disposal. Spent nuclear fuel and plutonium could also be disposed of in geological disposal facilities if they were categorised as wastes.

Differences in the Guidance

The two sets of draft guidance are very similar. The small number of differences can be pointed out by reference to the following paragraphs in the draft guidance for near surface facilities:

3.4/3.5 Explains that the guidance applies to all facilities for LLW disposal (existing and proposed, purpose designed for LLW and LLW co-disposed with conventional wastes), but that an approach proportionate to the level of hazard should be taken.

6.3.22 Is an additional para on risk assessment to say the complexity of the assessment should not be disproportionate to the scale of hazard.

6.3.29/30 Explains that the requirement re human intrusion is significantly different (based on the assumption that it is likely for NSD, but unlikely for GD).

7.1.2/3, 7.2.7, 7.3.22 Explains the proportionate approach needed for environmental safety cases for low hazard sites.

Preliminary Comments

Preliminary comments are as follows (with reference to paragraph numbers in the draft guidance for geological disposal facilities):

1.10 **Relationship to draft advice from the HPA.** For times beyond the period of institutional control, the EA propose use of a 'risk guidance level', whereas HPA propose a 'lower guidance level' and 'risk constraint'. HPA state that repositories estimated to give rise to a risk greater than the constraint would not be acceptable, and that if risks are estimated to be below the lower guidance level, then optimisation can be restricted to the design of the repository. At 1.10.6, EA state that the constraint should be viewed as an upper guidance level rather than a level not to be exceeded in any circumstances. They then state that for regulatory purposes they consider it suitable to provide only a single risk standard (the risk guidance level), which indicates the standard the EA is looking for, but is not an absolute requirement. Given the uncertainties associated with quantification of risks over such long timescales and the EA emphasis on multiple lines of reasoning, it could be argued that EA have a good case.

4 **A principle on openness and transparency?** There is an argument for suggesting a principle on O&T (eg CoRWM state that “openness requires that we are accessible in person and through our publications” and “transparency means that we will make as clear as possible how, and why, we have reached our judgements”). This sort of principle could provide the high level commitment and context for Requirement 3 (Dialogue with host communities, p29), and the statements throughout about the need for explanation and publication of regulatory judgements and decisions.

5.4/5 **Link from step-wise/staged process to community dialogue.** Reference in these sections to discussion of environmental safety cases and staged authorisations (eg at 5.5.6 and 5.5.8) would benefit from a reference forward to requirement 3 (p29), to make it clear that the discussion is not just a two way discussion between developer and regulator, but should involve the affected communities.

5.5.12-15 **Distinction between site characterisation and repository construction.** The EA clearly distinguishes underground characterisation from construction and asserts a hold-point before construction starts. It is arguable that this position should be mirrored by a requirement for separate planning applications for underground investigations and construction. The recent White Paper explains that no decision on this will be taken until

surface-based investigations have provided sufficient information to enable a judgement to be reached about the legitimacy of a 'parameter-based' approach to a single planning application for underground investigations *and* repository construction.

6.2.32 Role for peer preview and 'joint fact finding'? The draft highlights the importance of peer review of technical work. It would be worth pointing out that some work may be of sufficient importance (eg potentially contested) to warrant peer *preview* (where key stakeholders, for example, review and agree the terms of reference for the work) or 'joint fact finding' (where key stakeholders also oversee appointment of the contractor and review the work at key stages prior to finalisation).

6.3.13-19 Explaining the significance of uncertainties. In addition to what's proposed here, it would be helpful if EA highlighted the need for the developer to provide accessible explanations of the significance of uncertainties, and that EA will express its own view on the significance (so that the lay reader can understand the position).

6.3.26 Robust and transparent explanations of what's 'good enough'. When it comes to regulatory judgements at the key steps at specific sites, the EA will need to pay very close regard to providing clear and robust justifications for reaching the view that consistency with the risk guidance level is "good enough".

6.3.44 Role of local stakeholders in optimisation. This para makes it clear than many different considerations may need to be weighed in the balance in optimisation assessments, including economic and societal factors. This suggests that judgements need to be informed by the views of local stakeholders. The developer and regulator will need to think through how this can be done most appropriately.

6.3.51 Unlikely circumstances. The draft guidance states that unlikely circumstances should not "have any additional major influence on design, construction or operation". A better wording might be "undue influence" - the meaning of "undue" in specific contexts can then be a matter for discussion.

6.3.52 Being clear about timescales associated with risks. The draft guidance says little about the need for stakeholders to understand the timescale over which risks might apply. This is not to suggest that the risks should be judged any less significant because they are not likely to apply until very long times in the future, but to argue there is a need for timescales to be made clear to increase understanding on the part of stakeholders. It might be appropriate to address the need for clarity in the distribution of risks over time at this point in the draft, or it might be a more fundamental point that should be addressed earlier and more prominently.

7.2.2-4 Using the environmental safety strategy to explain the significance of uncertainties? One way of giving due prominence to a lay explanation of the significance of uncertainties may be to cover this in the ESS (in addition to in the ESC).

7.3.28 Disputes between experts. There may be a case for strengthening this para by reference to the need for a specific process for addressing issues where there is known to be a significant difference of view between experts.

Annex: Principles and Requirements as set out in the Environment Agency draft Guidance for Requirements for Authorisation

Principle 1: Effects in the future (radiological)

Solid radioactive waste shall be disposed of in such a way that the assessed radiological risks to people and the environment in the future are no greater than the risks that would be acceptable at the time of disposal.

Principle 2: Optimisation (as low as reasonably achievable)

Both at the time of disposal and in the future, the radiological risks to people and the environment from a disposal of solid radioactive waste shall be as low as reasonably achievable under the circumstances prevailing at the time of disposal, taking into account economic and societal factors and the need to manage any non-radiological hazards.

Principle 3: Protection (radiological hazards)

Both at the time of disposal and in the future, the standard of protection to people and the environment against radiological hazards from a disposal of solid radioactive waste shall be no less stringent than the nationally acceptable standard at the time of disposal.

Principle 4: Protection (non-radiological hazards)

The level of protection to people and the environment against any non-radiological hazards associated with disposing of solid radioactive waste shall be no less stringent than that provided by the nationally acceptable standard for such hazards from the disposal of any other waste at the time of disposal for wastes that present a non-radiological but not a radiological hazard.

Principle 5: Reliance on human action

Both at the time of disposal and in the future, unreasonable reliance shall not be placed on human action to protect the public and the environment against radiological and any non-radiological hazards from a disposal of solid radioactive waste.

Principle 6: Role of the relevant environment agency

For any disposal of solid radioactive waste, the relevant environment agency shall:

- use its legal powers to achieve conformity with the principles and requirements of this guidance;
- establish ways of informing interested parties and the public about regulatory goals, processes and issues;
- consult in an open and inclusive way.

Requirement 1: Voluntary agreement

The developer of a disposal facility for solid radioactive waste should, under appropriate circumstances, enter into an agreement with the relevant environment agency to encourage early dialogue.

Requirement 2: Step-wise process

The developer should follow a step-wise process for developing a disposal facility for solid radioactive waste.

Requirement 3: Dialogue with potential host communities and others

The developer should take the lead on dialogue with the potential host community, other interested parties and the general public.

Requirement 4: Environmental safety case

An application under RSA 93 relating to a proposed disposal of solid radioactive waste should be supported by an environmental safety case.

Requirement 5: Environmental safety culture and management system

The developer/operator of a disposal facility for solid radioactive waste should foster and nurture a positive environmental safety culture at all times and should have a management system, organisational structure and resources sufficient to provide the following functions:

- (a) planning and control of work;
- (b) the application of sound science and good engineering practice;
- (c) provision of information;
- (d) documentation and record-keeping;
- (e) quality management.

Requirement 6: Dose constraints during the period of authorisation

During the period of authorisation of a disposal facility for solid radioactive waste, the effective dose from the facility to a representative member of the critical group should not exceed a source-related dose constraint of 0.3 mSv/year. Also, the effective dose from the site as a whole to a representative member of the critical group should not exceed a site-related dose constraint of 0.5 mSv/year.

Requirement 7: Risk guidance level after the period of authorisation

After the period of authorisation, the assessed radiological risk from a disposal facility to a person representative of those at greatest risk should be consistent with a risk guidance level of 10^{-6} per year (i.e. 1 in a million per year).

Requirement 8: Human intrusion after the period of authorisation

The developer/operator of a deep geological disposal facility should assume that human intrusion after the period of authorisation is highly unlikely to occur. The developer/operator should, however, consider, and implement, any practical measures that might reduce this likelihood still further. The developer/operator should also assess the potential consequences of human intrusion after the period of authorisation

Requirement 9: Optimisation

The choice of waste acceptance criteria, how the selected site is used and the design, construction, operation, closure and post-closure management of the disposal facility should ensure that radiological risks to members of the public and to the environment, both during the period of authorisation and afterwards, are as low as reasonably achievable (ALARA), taking into account economic and societal factors.

Requirement 10: Environmental radioactivity

The developer/operator should carry out an assessment to show that the radiological effects of a disposal facility on the accessible environment are acceptably low, both during the period of authorisation and afterwards.

Requirement 11: Protection against non-radiological hazards

The developer/operator of a disposal facility for solid radioactive waste should demonstrate that the disposal system provides adequate protection against non-radiological hazards.

Requirement 12: Site investigation

The developer/operator of a disposal facility for solid radioactive waste should carry out a programme of site investigation and site characterisation to provide information for the environmental safety case and to support facility design and construction.

Requirement 13: Use of site and facility design, construction, operation and closure

The developer/operator of a disposal facility for solid radioactive waste should make sure that the site is used and the facility is designed, constructed, operated and capable of closure so as to avoid unacceptable effects on the performance of the disposal system.

Requirement 14: Waste acceptance criteria

The developer/operator of a disposal facility for solid radioactive waste should establish waste acceptance criteria consistent with the assumptions made in the environmental safety case and with the requirements for transport and handling, and demonstrate that these can be applied during operations at the facility.

Requirement 15: Monitoring

In support of the environmental safety case, the developer/operator of a disposal facility for solid radioactive waste should carry out a programme to monitor for changes caused by construction, operation and closure of the facility.