

# **HSE CRITERION FOR DELICENSING NUCLEAR SITES**

## Introduction

1 This policy statement provides a basis for the considerations that need to be made by the Health and Safety Executive (HSE) in order to delicense the whole or part of a nuclear licensed site, licensed by HSE under the Nuclear Installations Act 1965, as amended<sup>1</sup>.

2 It attempts to achieve *broad* consistency with current scientific thinking, relevant guidance and other published material including the Radioactive Substances Act 1993 (and the exemption orders made under it), article 5 of the Basic Safety Standards Directive, and the International Atomic Energy Agency (IAEA) Safety Guide “Application of the Concepts of Exclusion, Exemption and Clearance”<sup>2</sup>. The criterion for determining ‘no danger’, described in this statement, is written with these standards and guidance in mind.

3 It should be noted it’s not the intention of this statement to consider the risk beyond human health<sup>3</sup>.

## Objective

4 This statement<sup>4</sup> forms a policy basis from which HSE can establish from its own assessment, from the licensee’s evidence, and through information from other regulatory bodies concerned with the site (e.g. the Environment Agency or the Scottish Environmental Protection Agency), that any residual radioactivity on the site, above the average natural background, represents ‘no danger’. Once the criterion of ‘no danger’ set by the Nuclear Installations Act is met, HSE will be able to make a decision on delicensing all or part of a site<sup>5</sup>.

5 The need for HSE to define ‘no danger’ is driven by the wording in the Nuclear Installations Act 1965. We believe the most helpful way to express this definition is to present it terms of a numerical risk to human life, rather than simply using a specific phrase such as “very low risk” without being clear about how low we mean.

## What Is Delicensing?

6 For the purposes of this policy statement we refer to the term delicensing as meaning the “ending of the period of responsibility under the Nuclear Installations Act”. This is defined in section 5(3) of the Nuclear Installations Act and can only happen when the HSE gives notice in writing to the licensee that in its opinion there has “ceased to be any danger from ionising radiations from anything on the site or, as the case may be, on that part thereof”.

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<sup>1</sup> Sections 3(6) and 5(3) of the Nuclear Installations Act 1965, as amended.

<sup>2</sup> IAEA Safety Standards Series No.RS-G-1.7. Available at [http://www-pub.iaea.org/MTCD/publications/PDF/Pub1202\\_web.pdf](http://www-pub.iaea.org/MTCD/publications/PDF/Pub1202_web.pdf).

<sup>3</sup> i.e. risks posed to flora/fauna

<sup>4</sup> The policy statement will be reviewed periodically to ensure that it remains relevant and appropriate.

<sup>5</sup> In the unlikely event that a licence has already been revoked by HSE or surrendered by the licensee, the Act imposes a period of responsibility during which the licensee remains liable for any harm caused by radioactivity on the site. That period of responsibility can only be terminated when the licensee is able to satisfy the ‘no danger’ criterion, as defined in this policy statement.

7 Before delicensing any land on nuclear sites, HSE must satisfy itself that delicensing (as interpreted in this policy statement) is appropriate and that licensable activities are no longer being carried out on the site or the part of the site to be delicensed. This means, among other things, that no radioactive waste remains on the site or the part of the site to be delicensed.

## **No Danger**

8 Sections 3(6)(b) and 5(3)(a) of the Nuclear Installations Act contain a requirement that there is “no danger” and has “ceased to be any danger” from ionising radiations from anything on the site or that part of site under consideration for delicensing. These requirements apply to the release of a licensee from his period of responsibility. However, assessment of what constitutes ‘no danger’ is not a straightforward matter, particularly if a site has been subject to radioactive contamination. This is because it is assumed internationally that there is a linear harm/dose relationship for ionising radiation and that there is no threshold below which small doses carry no risk of harm. All materials contain low levels of naturally occurring background radioactivity and thus, interpreted in a particular way, HSE would never be able to delicense any part of a site. However, the Nuclear Installations Act does allow for delicensing, so sites (or parts of sites) should be capable, in some circumstances, of being delicensed.

## **HSE’s Criterion For No Danger**

9 In HSE's view, requiring a licensee to demonstrate ‘no danger’ cannot mean asking the licensee to demonstrate that the site is ‘completely safe’. Such absolute certainty could never be delivered, no matter how comprehensively a site is cleaned up and monitored. To us, it suggests that after termination of licensable activities on a site, and following rigorous decontamination and clean up, it may be acceptable for there to remain a small but finite radiological hazard, whose further detection and reduction would necessitate a grossly disproportionate effort and cost. HSE would, however, require the licensee to show that any residual radiological hazard will not pose a significant ongoing risk to any person, regardless of any foreseeable uses to which the site, or anything left on the site, may be put.

10 On the basis of existing, published guidance<sup>6</sup>, HSE considers that an additional risk of death to an individual of one in a million per year, is ‘broadly acceptable’ to society. Applying this to nuclear licensed sites, any residual radioactivity, above the average natural background, which can be satisfactorily demonstrated to pose a risk less than one in a million per year, would be ‘broadly acceptable’. For practical purposes, therefore, we will use this criterion as the basis of what we regard as ‘no danger’ for the purposes of sections 3(6)(b) and 5(3)(a) of NIA65. Compliance with this criterion would normally mean that HSE can remove the site from regulatory control under NIA65 – i.e. allow the site to be delicensed.

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<sup>6</sup>For example, HSE’s “Tolerability of Risk” (TOR) and “Reducing Risks, Protecting People” (R2P2) publications.

11 Legislation such as the Radioactive Substances Act 1993 (and the exemption orders made under it) and the Basic Safety Standards Directive (Euratom 96/29) that set standards for the protection of human health may be also used to inform decisions on what constitutes 'no danger'. Under the Radioactive Substances Act 1993, in line with government policy<sup>7</sup>, regulators do not seek further reductions in discharges where exposures of members of the public are optimised and less than 20 microSieverts per year. Annex 1 of the Basic Safety Standards Directive (Euratom 96/29) allows member states to exempt a practice where appropriate and without further consideration if doses to members of the public are of the order of 10 microSieverts or less per year. HSE is of the view that this dose limit broadly equates to the 1 in a million per year 'no danger' criterion as well as being consistent with other legislation and international advice relating to the radiological protection of the public.

12 HSE considers that equating 'no danger' with this criterion is a pragmatic approach to satisfying what could be perceived as an absolute and practically unachievable requirement of the Nuclear Installations Act. To place the residual risks we are considering here into a broader context, it should be noted that the average risk of death in the UK from naturally occurring radioactivity is estimated to be around 1 in 10,000 per year<sup>8</sup>.

### **Other Legislation**

13 If an operator can demonstrate that the above criterion can be met, HSE may be content for the site to be removed from the requirements of the Nuclear Installations Act. However, the overarching requirements of the Health and Safety at Work Act, which requires operators to ensure health and safety 'so far as is reasonably practicable' (or, equivalently, that risks are reduced "As Low As Reasonably Practicable" – ALARP) also apply and HSE will expect the operator to demonstrate that he has also considered these overarching ALARP requirements. In practice, this may be simple to achieve and may amount to no more than showing that there are no further low-cost clean-up activities that could be carried out<sup>9</sup> since, if HSE judges that the operator has demonstrated that residual risk has been reduced to less than 1 in a million, this will usually be sufficient to satisfy all of its substantive concerns. At such low risk levels, it would not be reasonable for, nor would HSE expect, an operator to expend significant resource pursuing an even greater risk reduction.

14 While HSE considers that a risk of a fatality of 1 in a million per year is low enough to satisfy the 'no danger' requirement of sections 3(6)(b) and 5(3)(a) of the Nuclear Installations Act, this cannot guarantee that other, particularly

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<sup>7</sup> Cm 2919 Review of Radioactive Waste Management Policy – Section 73

<sup>8</sup> National Radiological Protection Board publication "Living with Radiation", ISBN 0-85951-419-6, 1998. This states (Page 24) that the average annual risk of death in the UK from all sources of ionising radiation, including medical and background, is about 1 in 7700.

<sup>9</sup> For example, the complete removal of previously contaminated buildings and foundations may significantly reduce any likelihood of there being any residual radioactivity – and hence dramatically lower the residual risk. Such actions may also offer further reassurance to potential future site occupants or owners. Weighed against this are the costs of undertaking the work and the associated disbenefits to the wider environment. Such considerations would vary from site-to-site and may depend strongly on property values and foreseeable commercial use.

environmental, legislation will not impose ongoing management requirements on the delicensed land.<sup>10</sup> Therefore, it would be prudent for any operator submitting a delicensing application to have regard for any legislation other than the Nuclear Installations Act that might apply to the delicensed site and to seek the views of the appropriate government department, environment agency, and local planning authority.

### **Assessment of Delicensing Requests**

15 While this policy statement sets out a fundamental principle against which delicensing request will be judged, it does not provide practical guidance to operators on how to go about making a case for delicensing. Nor does it provide guidance to HSE's own assessors in determining the acceptability of operators' delicensing proposals.

16 HSE's Nuclear Installations Inspectorate's technical guidance to assessors carrying out assessments of delicensing requests will be freely available from HSE's website<sup>11</sup>.

### **Notification Of Delicensing Decisions**

17 In line with HSE's policy on openness and stakeholder involvement, HSE will inform local stakeholders of its decisions with respect to delicensing applications via routine Local Liaison Committee meetings and reports<sup>12</sup>.

### **Summary**

18 In summary, HSE's requirements for establishing 'no danger' when considering an application to delicense all or part of a licensed nuclear site is:

- A demonstration that any residual radioactivity, above background radioactivity, which remains on the site, which may or may not have arisen from licensable activities, will lead to a risk of death to an individual using the site for any reasonably foreseeable purpose, of no greater than 1 in a million per year.

## **HSE**

May 2005

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<sup>10</sup> Activities in relation to radioactively contaminated land may be subject to regulations under the Radioactive Substances Act 1993. In addition, Part IIA of the Environmental Protection Act 1990 defines "contaminated land", and provides for its remediation, and this may have any implications for any chemical contamination that may be present. It may be sensible for any assessment of the risks arising from residual radioactivity to be assessed alongside chemical contamination. This may enable remedial measures to address all risks in a more cost-effective way than if they are considered at different times. Licence holders may wish to consider obtaining a Land Condition Record (see [www.silc.org.uk](http://www.silc.org.uk)) or equivalent, to help provide further confidence in the condition of the land.

<sup>11</sup> A draft version is scheduled to be accessible via HSE's website (see [www.hse.gov.uk](http://www.hse.gov.uk)) from summer 2005, with a formal version expected to be published late 2005.

<sup>12</sup> HSE reports to Local Liaison Committees (LLC) as part of its policy on stakeholder engagement and with a view to making information about inspection and regulatory activities relating to licensed nuclear sites available to the public. Each major licensed nuclear site has a local liaison committee, usually run by the licensee, which includes local authorities, trade unions, interested local groups and members of the public. HSE's LLC reports are distributed quarterly to members of the committees and cover activities associated with the regulation of safety at the sites. Site Inspectors of HSE's Nuclear Installations Inspectorate attend LLC meetings, report on any regulatory actions taken and respond to any questions raised there. HSE's quarterly reports are also published on HSE's website (<http://www.hse.gov.uk/nsd/index.htm#local>).