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# **The Management of Contaminated Land from a Regulatory Perspective**

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# NUCLEAR INSPECTORS

- What are we?



homer\_college.wmv

# <sup>2</sup>The Management of Contaminated Land from a Regulatory Perspective



## Topics

- Who we are
- What we regulate
- Source of our powers
- How we regulate
- Our interactions with other regulators
- Guidance to inspectors and licensees
- Interactions with the NDA
- Safegrounds and its uses

## **3 What is the Health & Safety Executive**

- An independent body which regulates safety of workplace activities**
- To protect workers and the public**
- Formed in 1974**
- But predated by the Nuclear Installations Inspectorate which was formed in 1960**

- **NII – Nuclear Installations inspectorate**  
responsible for regulating nuclear safety and radioactive waste management on licensed sites
- **OCNS – Office for Civil Nuclear Security**  
responsible for regulating security of civil nuclear sites and transport



- **Health and Safety at Work Act 1974**
- **Nuclear Installations Act 1965**
- **Ionising Radiations regulations 1999**
- **Nuclear Reactor (Environmental Impact Assessment for decommissioning) Regs 1995**

- **NII grants licences for nuclear sites on behalf of HSE**
- **Licence granted to corporate body for a site to carry out certain prescribed activities**
- **Licence remains in place until NII decides no danger remains**
- **NII regulates nuclear safety, H&S and radioactive waste management also EIAD Regs**
- **Radioactive discharges, disposals, groundwater protection & Part IIA Regs regulated by EA / SEPA**

# 8 Licence Conditions



- NII can attach Conditions to the site licence
- Currently there are thirty-six standard Conditions attached to each licence
- Conditions can be added or varied at any time
- Before doing this NII will consult with the relevant environment agency and other relevant bodies

# Regulators' Objectives



- Compliance with the law
- Safe, secure and environmentally responsible
- Hazard reduction
- Minimisation of radioactive waste generation
- Minimise off-site risks – including during waste transport on site
- Security of nuclear material and sensitive nuclear information
- Efficient, cost-effective regulation



- Each Condition applies to all aspects of work on site including land quality management
- Some Conditions have particular relevance to individual duties in managing radioactive contaminated land and groundwater on site
- These include LC 4, 16, 25, 32, 33, 34 and 35
- Details of the licence and conditions are available [www.hse.gov.uk/silicon.pdf](http://www.hse.gov.uk/silicon.pdf)

# 11 Land-specific Licence Conditions (1)



- LC 4: Permits storage only under adequate arrangements
  - applies to nuclear matter incl. radioactive waste
- LC 16: Requires a plan of site
  - identity, particulars and location of all building & areas which might affect safety
- LC 25: Require records
  - of amount & location of all r/a material on site
  - includes r/a waste.
  - data must be up to date at all times

## <sup>12</sup> Land-specific Licence Conditions (2)



- LC 32: Requires minimisation of r/a waste
  - minimise as far as is reasonably practicable rate of production and total quantity accumulated on site
  - and record it
- LC 33 covers disposal under RSA 1993
- LC 34: Requires control so r/a cannot escape
  - control and containment to be adequate AFARP
  - arrangements to detect, leak or escape
  - arrangements to ensure reporting, investigation, recording

## <sup>13</sup> Land-specific Licence Conditions (3)



LC 35: Requires production and implementation of decommissioning programme

- for any plant or process that may affect safety
- safety justification required
- where appropriate division into stages
- NII can approve and thereby fix the plan and programme

# <sup>15</sup> Safety Assessment Principles (1)

- **SAPs provide NII inspectors with a framework for making consistent regulatory judgements**
- **SAP 646 to 683: R/a Waste Management**
  - **Strategies for radioactive waste**
  - **Waste Minimisation**
  - **Characterisation and Segregation**
  - **Storage of r/a waste and Passive Safety**
  - **Passive Safety timescales**
  - **Records for management of r/a waste**
- **Same principles used for contaminated land**

# <sup>16</sup> Safety Assessment Principles (2)



- **SAP 740 to 775: Control and Remediation of Radioactively Contaminated Land**
  - **Strategies for r/a contaminated land**
  - **Actions to establish the existence of r/a contaminated land**
  - **Discovery of contaminated land**
  - **Characterisation of r/a contaminated land**
  - **Survey, investigation, monitoring and surveillance**
  - **Plan for control of remediation**
  - **Records for radioactively contaminated land**
  - **Safety cases for radioactively contaminated land**
  - **Avoidance of construction or installation on r/a land**

- **Prevention of leakage to ground**
  - primary duty
  - appropriate multi-layered protection
  - effective detection systems
  - arrangements for investigation, reporting, remediation
- **Strategy**
  - ongoing monitoring programme
  - if found, manage with safety case and licence conditions
  - strategy integrated with IWS
  - remediation plan
  - records

# <sup>18</sup> Technical Assessment Guides (2)

- **Characterisation**
  - Find source term
  - location, quantity, nuclide and form
  - geology and hydrogeology
  - potential pathways
  - potential receptor's
  - Records

- **Control and remediation**
  - **Groundwater protection**
  - **Avoidance of construction on contaminated land**
  - **Remediation plan with end state**
  - **Retrieval with thorough understanding of technology**
  - **Remediation where appropriate**
  - **Confirmatory monitoring**
  - **Continual management until site delicensed**
  - **Records**

- **Safety Case (LC 14)**
  - Records what licensee knows about site
  - Demonstrates whether situation is ALARP
  - Identifies if additional work needs to be done
  - Justification of management plan and remediation options

## **Records (30-year retention or as Specified)**

- **activity accumulated, its location and characteristics**
- **history of site incl. spills, incidents**
- **results of remediation actions**
- **waste removed from site**
- **on-site disposals**
- **monitoring and sampling**
- **strategic options considered and decisions made**
- **plus any other evidence that will be required when delicensing is reached**

# <sup>14</sup> HSE Policy Guidance Documents

- **HSE publishes interpretation of policy**
- **Examples specifically relevant to land remediation**
  - **HSE Criterion for Delicensing Nuclear sites**
  - **[www.hse.gov.uk/nuclear/delicensing.pdf](http://www.hse.gov.uk/nuclear/delicensing.pdf)**
  - **Recently issued (Aug 2008) guidance for inspectors**
  - **[www.hse.gov.uk/2008/09/03/delicensing-nuclear-sites/](http://www.hse.gov.uk/2008/09/03/delicensing-nuclear-sites/)**

## <sup>22</sup> Part IIA regulations



- **Ensure that contamination of land is recorded and also remediated when appropriate**
- **Apply to licensed sites for non-active contamination only**
- **Are regulated by the environment agencies in association with the local authority**
- **The Radioactive Contaminated Land version of Part IIA do not apply on licensed sites leaving NII to apply equivalent controls**

- **Both HSE/NII and EA and SEPA have statutory duties to consult each other before making specified decisions**
- **Memoranda of Understanding are in place to manage these formal interactions. However .....**
- **The day-to-day liaison and joint working between inspectors is a live and effective activity**
- **It keeps both teams informed, promotes integrated arrangements that address health, safety and environmental issues without conflict**

# <sup>25</sup> Benefit of joint working



- **By working with colleagues in other agencies we aim to achieve effective, consistent and comprehensive regulation.**
- **By communicating with licensees and their funders (NDA & MoD in particular) is consistent with our “no surprises” philosophy**
- **Licensees consulting regulators before decisions are made and regulators informing licensee as soon as concerns are identified enables all to reconsider situations before commitments that are difficult to retrieve have been made.**

# NUCLEAR FUEL CYCLE FACILITIES



Sellafield



# 26 Examples of Joint Working

The coming together of EA and NII is seen at Sellafield

- A standing joint task team focuses regulators' work on land management at this site
- Joint inspections of on-going subsurface site characterisation took place a year ago
- Joint inspections of environmental monitoring in 2008
- Recently prepared joint statement on our vision for work to improve the state of the ground of the site over the next few years.

## <sup>28</sup> Risks to be ALARP



- HSE policy is that acceptable risk is individual death of 1 in million per year
- HSE / NII expect safety cases to demonstrate risks acceptable or better and ALARP
- As low as is reasonably practical  
Not disproportionate effort or cost
- ALARP embraces benefit, cost of implementation and use of good practice

# <sup>29</sup> Definitions of Contaminated land / standards of remediation to be achieved



- **Part IIA and RCL Regs base obligation to mitigate based on risk levels for planned use**
- **NII criteria for licensed sites based on safety case and ALARP for current operations**
- **HSE criteria for delicensing nuclear site based on risk level for any foreseeable use**
- **RCL Regs situation applies to “intervention”  
The NIA65 situations relate to a “practice” by existing management**

- **At the end of nuclear activity on site and once the site has been fully remediated**
- **Subject to application by licensee**
- **Subject to NII being satisfied that “no danger” remains – from any r/a material on the site**
- **Licensee’s period of responsibility can end**
- **NII criteria are specific**

## <sup>31</sup> Safety Case to Support Delicensing

**Licensee's safety case will need to include:**

- **Reasons why land could be removed from licence control**
- **History of use of site**
- **Identification of areas of potential risks and details of remediation**
- **Records and results of radiation surveys**
- **Assessment of dose & risk to show any future use of the land represents no danger**

# <sup>33</sup> Objectives for Contaminated Land

- Reduction of risks on all sites to a position that delicensing is possible
- In line with NII guidance on waste management, progressive reduction of risks
- Pragmatically, this is likely to be a stepped process as opportunities occur e.g. when demolition or new construction is taking place

# NDA STRATEGY MANAGEMENT SYSTEM



Under the Energy Act the NDA must produce a Strategy for its work.

HSE is a statutory consultee.

The NDA is deriving a series of strategies to apply across all its sites as part of its duties to remediate them.

These strategies will then be implemented by all NDA sites unless there is a good reason why not.

# NDA STRATEGIES

Amongst the strategies being developed:

- Contaminated land
- End States
- A national LLW strategy

Regulators collaborate with the NDA in developing the strategies, e.g. NDA document on contaminated land expectations prepared with help from regulators.

# NDA Nuclear Industry LLW Strategy (Draft)



This has specific section on contaminated land;

- Contaminated land currently declared waste ~0.5 million cubic metres (17% of total LLW inventory)
- Actual inventory could be 13 million cubic metres

# NDA Nuclear Industry LLW Strategy (Draft)

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- Waste avoidance and characterisation
- Minimise, Re-use and Recycle
- Waste treatment

## **34 What Use is Safegrounds? (1)**

- I have described the statutory duties on the licensee and the guidance HSE and NII has published to amplify this and set goals.**
- What we have not done is specified the methods we expect the licensee to use**
- This is because the licensee is required to convince us that the method selected has produced satisfactory results using best practice.**

## <sup>35</sup> What Use is Safegrounds? (2)



- **Over the past ten years the Safegrounds project has identified the liabilities that accompany contaminated land**
- **It has involved stakeholders throughout**
- **It has developed detailed guidance on good practice in the management of land**
- **Advice has been published: the regulatory framework and practical experience**

## <sup>36</sup> What Use is Safegrounds? (3)



- **The guidance has expanded to key topics including site characterisation, optioneering, risk management, records and engagement**
- **You will recognise each of these topics have been mentioned earlier as being vital**
- **Nll very much welcome the detailed advice presented in the Safegrounds documents**
- **Due to the quality of the guidance, we believe that it forms an excellent first port of call for those tasked with ensuring land quality**

## <sup>37</sup> What Use is Safegrounds? (4)



- **It is noticeable how often Safegrounds advice is quoted in Government documentation.**
- **Our experience also convinces us that site operators find it useful as an aide-mémoire**
- **The document summaries have potential for operating staff to inform others of the liabilities and tasks: e.g. senior managers and financial controllers**
- **The documents are written to act as sources of information to all stakeholders**

## <sup>38</sup> What Use is Safegrounds? (5)



- From the beginning of this project the work of the process has been transparent.
- Minutes of Project Steering Group meetings are on the web site [www.safegrounds.org](http://www.safegrounds.org)
- Similarly, the documents, once ratified by PSG, are freely available to all.
- The number of web “hits” is remarkable as are the reference to Safegrounds at international conferences
- It is clearly becoming a primary reference

# <sup>39</sup> Conclusion (1)



**Dutyholders have obligations set out in legislation**

**These have been interpreted by the regulators in terms of what needs to be done and the standards to be achieved**

## Conclusions (2)

**This is now supported by the work of the Safegrounds team adding a key layer to the suite of documents to facilitate compliance**

**I recommend Safegrounds to you!**

N.B. Safegrounds guidance are not legal documents and the Regulator is the final arbiter of compliance!