RADIOACTIVE WASTE MANAGEMENT: A BRIEFING FOR ELECTED MEMBERS

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1 Introduction

This Briefing Paper provides a high level overview of radioactive waste management and the role of the Nuclear Legacy Advisory Forum (NuLeAF). It covers:

Section 2 Categories of radioactive wastes and materials
Section 3 Main steps in the management of radioactive wastes
Section 4 National roles and responsibilities
Section 5 Government policies for radioactive waste management
Section 6 Strategies for implementing policy
Section 7 The role of NuLeAF

The Paper does not set out NuLeAF's views on the key issues that arise in developing or implementing strategies for managing radioactive wastes. For these, the reader is referred to further documentation on the NuLeAF website (www.nuleaf.org.uk).

2 Categories of Radioactive Wastes and Materials

Radioactive waste is any material that is either radioactive itself, or is contaminated by radioactivity, for which no further use is envisaged. Most radioactive waste is produced by nuclear power station operators and associated fuel cycle facilities. A substantial amount arises from nuclear research and development sites. Some also arises from Ministry of Defence sites, and relatively small amounts are produced by medical, industrial and educational establishments.

In the UK, radioactive waste is classified under the following broad categories:

- **High Level Wastes (HLW)** – these are highly radioactive and generate substantial amounts of heat. HLW is a product from reprocessing spent nuclear fuel at Sellafield in Cumbria. If declared a waste, spent fuel would also be categorised as HLW.

- **Intermediate Level Wastes (ILW)** – these are wastes where the radioactively levels are higher than for Low Level Waste, but which do not require heat levels to be taken into account in the design of management facilities. ILW is sufficiently radioactive to require shielding and containment. It arises mainly from the reprocessing of spent fuel and from operations and maintenance at nuclear sites.

- **Low Level Waste (LLW)** – Unlike HLW and ILW, LLW does not normally require shielding during handling or transport. Currently, LLW consists largely of paper, plastics

and scrap metal items that have been used in hospitals, research establishments and the nuclear industry. In future there will be large volumes in the form of soil, concrete and steel, as nuclear plant are decommissioned.

- **Very Low Level Waste (VLLW)** – this is a sub-category of LLW, consisting of the same sorts of materials, and divided into Low Volume ('dustbin loads') and High Volume ('bulk disposal'). Low volume VLLW can be disposed of to unspecified destinations with municipal, commercial or industrial waste. High volume VLLW can be disposed of to specified landfill sites and controls are necessary as specified by the environmental regulators.

3 Main Steps in the Management of Radioactive Wastes

Radioactive waste will undergo some or all of the following steps depending on the type of waste and strategy for its management:

- **Pre-treatment** – the aim is to segregate waste into streams that will be managed in similar ways.
- **Treatment** – involves changing the characteristics of the waste by volume reduction, radionuclide removal or change of composition.
- **Conditioning** – involves transforming wastes into a form suitable for handling, transport, storage and disposal, usually by immobilisation and packaging.
- **Storage** – involves emplacement of waste in a facility with an intention to retrieve for another step in the management process.
- **Retrieval** – involves removing wastes from storage for inspection, further storage or disposal.
- **Disposal** – occurs when packages of radioactive waste are emplaced in a facility with no intention of retrieval. Disposal can also include discharging liquid and gaseous effluent into the environment.

Strategies and plans for managing radioactive wastes need to address all the steps that are relevant to a particular waste.

4 National Roles and Responsibilities

National responsibilities are allocated in the following way:

- Government maintains and develops policy and the regulatory framework
- Regulators have the duty to ensure that the policy and regulatory framework is properly implemented
- The owners and producers of radioactive waste are responsible for developing their own waste management strategies to implement policy and regulatory requirements.

Within Government, the **Department for Energy and Climate Change** (DECC) and the Devolved Administrations have overall responsibility for policy and legislation.

The primary regulators in England and Wales are:

- **HSE Nuclear Directorate** – ensures that the public and workers are protected from radiation, enforcing the Nuclear Installations Act 1965 and the Ionising Radiations

Regulations 1999, through its Nuclear Installations Inspectorate (NII). The NII regulates radioactive waste management through conditions attached to a nuclear site licence.

- **The Environment Agency** – regulates any disposal, discharge or off-site transfer of radioactive waste through authorisations issued under the Radioactive Substances Act 1993 (RSA93). It advises HSE on the long-term disposability of conditioned waste and scrutinises plans for disposal.

Other regulators include: the Office for Civil Nuclear Security (OCNS) – responsible for regulating security arrangements; and the Radioactive Materials Transport Division (RMTD) of the Department of Transport – responsible for regulating the transport of radioactive materials.

The **owners and producers** of radioactive waste are:

- Civil public sector nuclear sites are owned by the **Nuclear Decommissioning Authority** (NDA), and operated by Site Licensee Companies. The NDA is a non-departmental public body established under the Energy Act 2004.
- Private sector nuclear sites are owned and operated by **British Energy**, which is now part of EdF Energy.
- Defence-related sites are usually owned by the **Ministry of Defence**, and operated by private sector companies.

5 Government Policies for Radioactive Waste Management

These can be summarised as follows:

Higher Activity Wastes (mainly HLW and ILW)

In October 2006, Government announced that it accepted the primary recommendations of the independent Committee on Radioactive Waste Management (CoRWM) for geological disposal, preceded by safe and secure interim storage. In June 2008, it published a White Paper setting out its implementation framework, based on the concepts of voluntarism and partnership. At the same time, it invited Expressions of Interest (EoI) in participating in the siting process for a Geological Disposal Facility (GDF). To date, EoIs have been made by three local authorities – Allerdale Borough Council, Copeland Borough Council and Cumbria County Council.

Low Level Wastes

Government published a policy statement on LLW management in March 2007. This sets out what Government describes as a flexible and pragmatic approach, stressing the need to minimise the amount of LLW created and effectively utilise existing disposal routes, including the LLW repository near Drigg in Cumbria, use of landfill and incineration. The NDA is consulting on its strategy for managing LLW (see below).

Spent Fuel (SF) and Plutonium

Government policy is that the question of whether to reprocess SF (a chemical process for separating uranium and plutonium), or hold it in storage, is a matter for the commercial judgement of the owner of the SF, subject to meeting the necessary regulatory requirements.

Government has recently confirmed its view that in the absence of any proposals from industry, new nuclear power stations built in the UK should proceed on the basis that SF will not be reprocessed.

The plutonium separated from spent fuel by reprocessing is currently considered a 'zero-rated' asset. However, the NDA is reviewing what portion should be retained as a strategic stock (for future reactor fuel) and how much should be regarded a waste.

Liquid and Gaseous Waste Discharges

Under the terms of the Radioactive Substances Act 1993 (RSA 93), disposal includes the discharge of liquid and gaseous wastes to the environment. Such disposals are made as part of normal operations from hospitals, research establishments and the nuclear industry, and are controlled by means of authorisations issued under RSA 93. The Government is committed to progressive and substantial reductions in radioactive discharges.

Decommissioning

This is the process whereby a nuclear facility is taken permanently out of service, dismantled and its site made available for other purposes. Government policy on decommissioning was updated in 2004. This states that decommissioning should be carried out as soon as reasonably practicable, taking all relevant factors into account, including the availability of waste disposal routes. Government states that the relevant factors, and their respective importance, can only be determined on a case-by-case approach.

Import and Export

Government policy is that radioactive waste should not be imported or exported from the UK, except for the recovery of reusable materials and, in specific cases, for treatment that will make its subsequent storage and disposal more manageable.

6 Strategies for Implementing Policy

NDA Strategy

The NDA is responsible for producing a strategy for managing civil public sector nuclear liabilities. It published its Government approved Strategy for years 2006-11 in March 2006. This set out the NDA's top six priorities:

- Create robust, costed and funded plans to clean-up sites
- Demonstrate real progress in reducing high hazards in legacy ponds and silos, especially at Sellafield
- Complete competitions for managing and operating most of our sites
- Determine a better approach to ILW storage and LLW disposal
- Accelerate the decommissioning timescale for reactor sites, if supported by a sound business and safety case
- Review site end states and agree decommissioning timescales for all sites.

The NDA is currently undertaking a review of its strategy through a series of 'topic strategy' reviews. One of the key reviews is on strategy for managing LLW. A consultation on this is underway. Proposals focus on ways of optimising use of the LLW repository (LLWR) near Drigg, implementing the Waste Management Hierarchy, and opening up new disposal routes.

NDA has recently published its Business Plan for the years 2009-12, setting out how it intends to implement its strategy during that time period.

British Energy (BE) Strategy

The NDA has responsibility for oversight of British Energy's planning for decommissioning and radioactive waste management. In practice this means that the NDA has to give approval for spending to meet the company's waste management liabilities.

Key aspects of British Energy's plans are:

- AGR Operational Wastes – LLW is sent to the LLWR. ILW is stored on site in tanks or vaults (and will require retrieval during decommissioning), and SF is sent to Sellafield for storage or reprocessing.
- AGR Decommissioning – the strategy is known as 'safestore', with clearance of all buildings except the reactor block within 10 years, a 70-80 year period of storage, followed by dismantlement of the reactor block and site clearance.
- Sizewell B Operational Wastes – LLW is sent to the LLWR, ILW is conditioned and packaged as it arises and stored on site, and SF is stored on site (and may be transferred from pond to cask storage at some point in the future).
- Sizewell B Decommissioning – the strategy is 'early site clearance' within 25 years.

For new nuclear power stations, BE anticipates that lifetime arisings of ILW and SF would be stored on site, pending disposal, and that decommissioning strategy would be based on 'early site clearance'.

Ministry of Defence Strategy

The MoD is committed to complying with legislation and "so far as is reasonably practicable" with national policy relating to the management of radioactive wastes and decommissioning. MoD's approach includes sending LLW to the LLWR and interim storage of ILW at the sites where it arises. The intention is that ILW will be disposed of in the geological repository.

MoD has been running a specific project – the Submarine Dismantling Project (formerly known as ISOLUS) - to determine the means of managing radioactive wastes and other material from laid up nuclear submarines. The project is developing a strategy for siting facilities for the processing of waste from submarines and the interim storage of ILW. These activities will not necessarily take place at the same site. Consultation is expected towards the end of 2009.

Strategy for Managing Non-Nuclear Industry (NNI) LLW

A Programme Board has been established by DEFRA to develop and recommend a NNI waste strategy for the UK. The strategy will seek to address: increasing difficulties with securing disposal routes for NNI LLW; ways of discouraging unnecessary transport of NNI waste; and encouraging communities to take greater responsibility for arisings in their areas. Consultation is expected in the autumn of 2009.

7 The Role of NuLeAF

NuLeAF is a Special Interest Group of the Local Government Association. Its remit encompasses all aspects of the management of the UK's nuclear legacy. This includes the implications for legacy management of any developments (including construction of new nuclear power stations) that are likely to impact on that management.

NuLeAF's primary objectives are:

- to provide a mechanism to identify, where possible, a common, local government viewpoint on nuclear legacy management issues;
- to represent that viewpoint, or the range of views of its member authorities, in discussion with national bodies, including Government, the NDA and the regulators;
- to seek to influence policy and strategy for nuclear legacy management in the interests of affected communities; and
- to develop the capacity of its member authorities to engage with nuclear legacy management at a local level.

Recent achievements include a significant influence on Government policy on the implementation framework for geological disposal, and on draft NDA strategy for managing LLW.

NuLeAF has 100 member local authorities, made up of 21 contributing members, 75 corresponding members and 4 NFLA co-optees. Its work is overseen by a Steering Group (SG) of elected members from member authorities. At the AGM in October 2008 Councillor Allan Holliday from Copeland Borough Council was re-elected as Chair. The SG meets on average four times a year. SG reports are published on the NuLeAF website.

NuLeAF has three Working Groups which provide detailed input from member authorities:

(a) Geological Disposal Facility Officer Working Group - considers the issues which will arise in the siting process and identifies points for discussion in liaison meetings with Government and NDA.
(b) Low Level Waste Officer Working Group - discusses the development of strategies and associated issues, including coverage in Minerals and Waste Development Frameworks.
(c) Strategy Review Group (officers and members) - considers the implications of the NDA Strategy Review.

The work of these three groups informs decision-making at the NuLeAF Steering Group and inputs to meetings with other national bodies.

NuLeAF disseminates information and guidance to its member authorities through use of its website, circulation of e-bulletins, the organisation of seminars and publication of Case Studies and Briefing Papers.

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