NDA Strategy – Integrated Waste Management

Nuclear Decommissioning Authority, United Kingdom
The legacy
Strategy development

• NDA Strategy document published on the 1st April 2016

• Driving themes
  • Site Decommissioning & Remediation
  • Spent Fuels
  • Nuclear Materials
  • Integrated Waste Management

• Critical Enablers
Integrated Waste Management

Objective:
To ensure that wastes are managed in a manner that protects people and the environment, now and in the future, and in ways that comply with government policies and provides value for money.

Three Topics:
• Solid Radioactive Waste
• Liquid and Gaseous Discharges
• Non-radioactive Waste
Dealing with the legacy
### Classification of Radioactive Wastes

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Level Waste</strong></td>
<td>- Heat generation has to be taken into account in design of storage and disposal facilities</td>
</tr>
<tr>
<td><strong>Intermediate Level Waste</strong></td>
<td>- Exceeds the radiological limits for LLW but do not require heat generation to be taken into account for storage and disposal</td>
</tr>
<tr>
<td><strong>Low Level Waste</strong></td>
<td>- Wastes containing up to 4 GBq/Te $\alpha$ and 12 GBq/Te $\beta/\gamma$</td>
</tr>
<tr>
<td></td>
<td>- Also contains a sub category of VLLW</td>
</tr>
<tr>
<td><strong>Out of Scope Waste</strong></td>
<td>- Waste which is non-radioactive</td>
</tr>
</tbody>
</table>

**HAW**

**LAW**
Radioactive Waste Inventory

<table>
<thead>
<tr>
<th>Waste Type</th>
<th>Volume (m³)</th>
<th>% Volume</th>
<th>Total Activity (TBq)</th>
<th>% Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>VLLW</td>
<td>2,860,000</td>
<td>63.6</td>
<td>0.002</td>
<td>0.00003</td>
</tr>
<tr>
<td>LLW</td>
<td>1,350,000</td>
<td>30</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>ILW</td>
<td>290,000</td>
<td>6.4</td>
<td>3,800,000</td>
<td>4.6</td>
</tr>
<tr>
<td>HLW</td>
<td>1150</td>
<td>0.03</td>
<td>79,000,000</td>
<td>95.4</td>
</tr>
</tbody>
</table>

Source: 2016 UKRWI

% volume

% activity
IWM Principles

- Robust and sustainable infrastructure
- Risk & hazard reduction
- Lifecycle
- Waste hierarchy
- Robust decision making
- Sharing capability
- Timely characterisation
The waste management lifecycle

- There is a need to consider the entire lifecycle
- Supports the Waste Hierarchy and should:
  - avoid waste arisings in some circumstances
  - minimise waste volumes
  - help with improved waste sorting & segregation
  - help to secure waste reclassification opportunities
Developed Integrated Waste Management principles

UK LLW Strategy for the Nuclear Industry and NDA HAW Strategy are standalone documents with an aligned format and overall direction at a principle level.

We are moving towards a single radioactive waste strategy, moving away from category (e.g. ILW, LLW) based waste management route planning to a risk based lifecycle approach to the management of wastes.

- IWM Principles
- Planning & preparation
- Treatment & Packaging
- Storage
- Disposal
Effective waste management

Impact of UK LLW strategy and creation of waste management services on the UK’s Low Level Waste Repository:

LLWR Ltd
Strategy development

- Waste treatment technologies
  - Reducing overall waste volumes
  - Thermal treatment

- Boundary wastes
  - Large volume of waste at the ILW/LLW boundary
  - Close working between LLWR Ltd & RWM

- Problematic wastes
  - Understanding the inventory
  - Management options

- Alternative disposal options
  - Near-surface disposal