

NNL Experience of Redundant Sealed Source Management

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**Workshop on end-of-life management in support
of radiological security and technology transition**

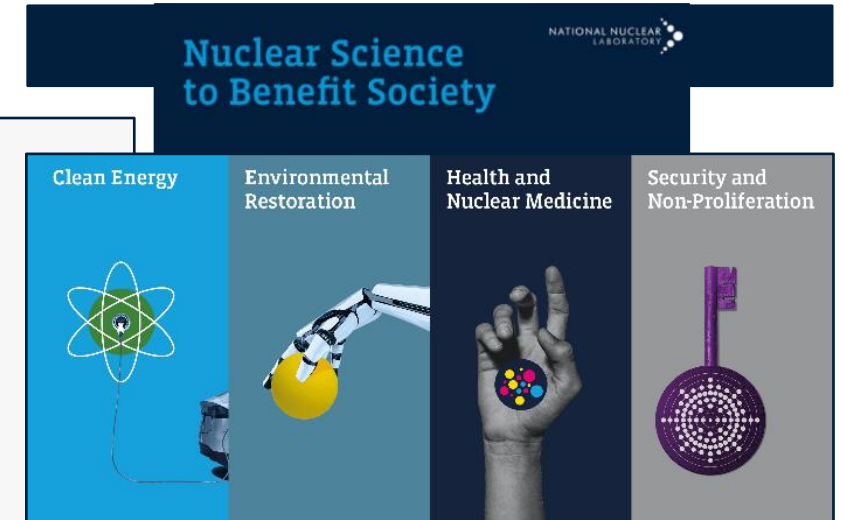
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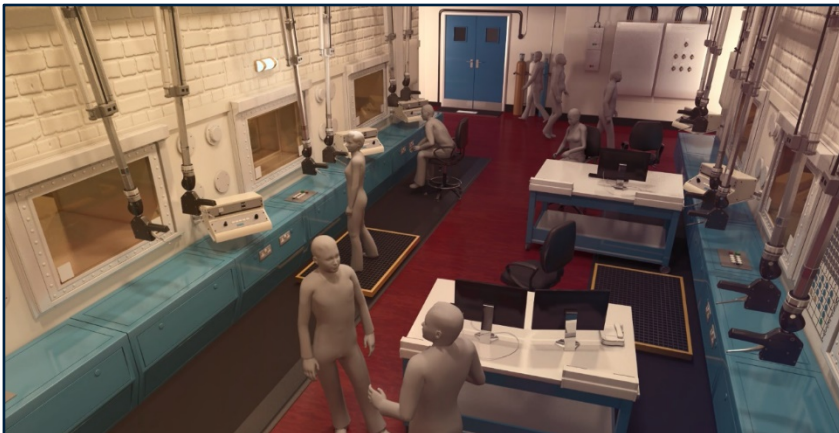
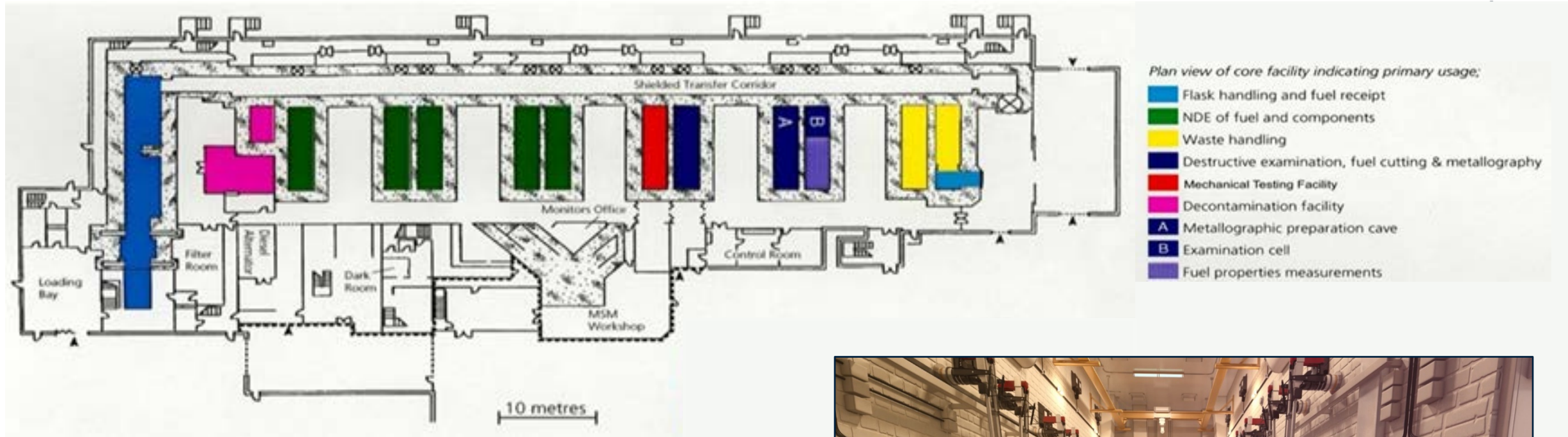
Overview of National Nuclear Laboratory (NNL)



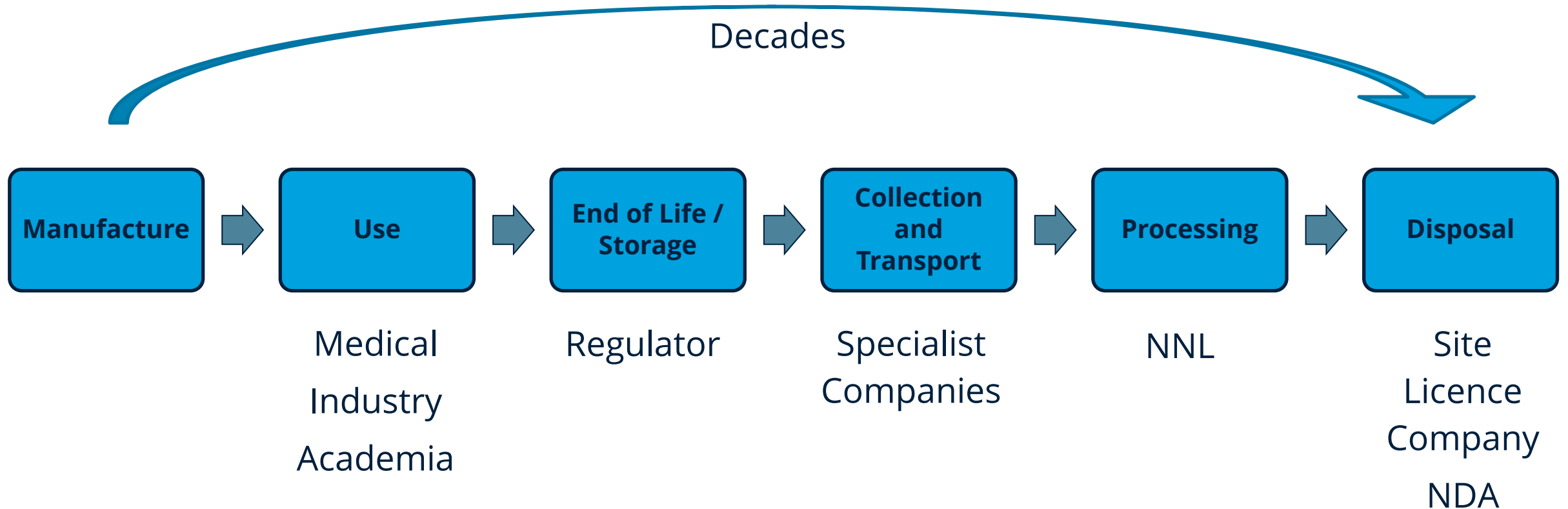
- **Sites**
- **Science and Technology Research**
 - Supporting Nuclear Fuel Cycle
- **Three active laboratories**
 - Active Handling Facility
 - 13 highly shielded hot cells
 - Post Irradiation Examination
 - Central Laboratory
 - Research and Development
 - Analytical Laboratories
 - Preston Facility
 - Research and Development
 - Analytical Laboratories



Active Handling Facility (AHF) / Windscale Laboratory



Source Lifecycle



- **Receipt and Unloading**

- Handover from collection company to NNL
- Transfer of title to the Nuclear Decommissioning Authority

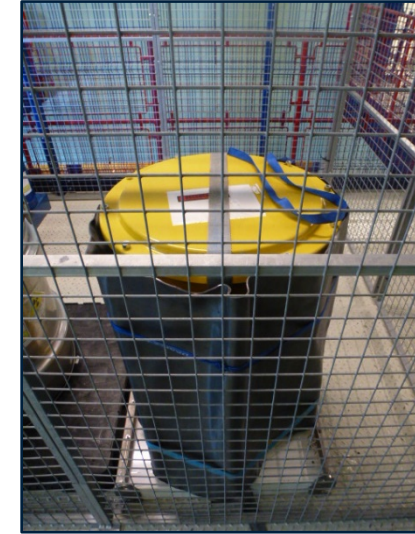
- **Health Physics and Security Checks**

- Check the condition/seals against documentation

- **Active Workshop**

- Removal of inner shielded container(s)
- Transfer into hot cells
- Removal of sources and checks against documentation
- Interim storage and collation
- Disposal to ILW store via flask

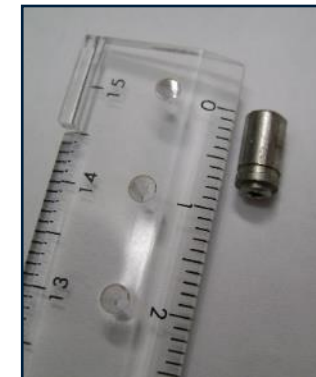
- **Decontaminate and return of Packages**



- **Successfully disposed of tens of thousands of redundant sources**
 - Supporting the Environment Agency (SSDP)
 - Commercial arrangements with three Collection Companies
- **Waste disposal arrangements in place**
 - Flasking export route to ILW store
 - Contractual arrangements with the Site Licence Company
- **Wide range of source types processed**
 - Including size reduction
 - Radium sources processed
 - Very high active Co-60 and Cs-137 processed
- **Thousands of hours of safe operations**



Pu Sources



Cf Source



Challenges

- **Lack of information about the Sources**

- Particularly challenging for the Collection Companies
- Resulted in events being raised with the Site Licence Company

- **Facility space and constraints**

- Physical Restrictions: Crane limitations, Posting Port dimensions, weight limitations, working environment
- Operator dose and manual handling
- In cell remote handling and identification
- Storage space
- Contamination
- Balancing strategic programme

- **Return of clean transport packages**

- Availability of suitable transport packages
- Maintenance and licencing

- **Contractual confines and liabilities**



← In cave
MSM
grip

Current Arrangements

- **Source collection is ongoing in the UK**
- **NNL does not currently operate a programme of source processing**
- **Collection companies currently operating in the UK with direct disposal to the ILW store**



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Thank you

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