Waste Management Challenges and the Nuclear Renaissance – a Worldwide Perspective

WM2009, Phoenix

Graham Fairhall, Chief Technology Officer

National Nuclear Laboratory

UK Perspective

- Historic programme > 50 years
- Current nuclear activities at a number of locations
  - Fuel manufacture
  - Reactor operations
  - Reprocessing
  - Waste management
  - Decommissioning
  - Disposal
- Meeting the Energy Challenge - May 2007
- Managing Radioactive Waste Safely – June 2008

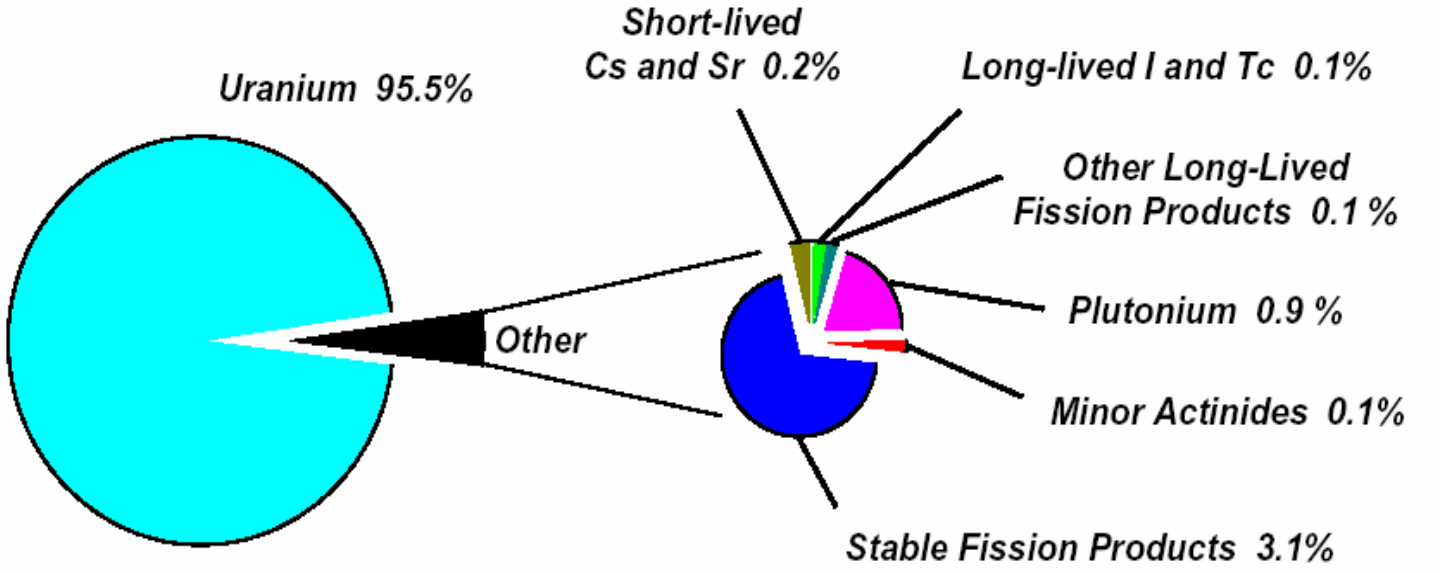
International Perspective

- Future prospects for nuclear power depend on establishing both **public** and **commercial** acceptability
  - safety
  - economics
  - proliferation & security
  - radioactive waste management
- 39 countries with significant radioactive waste; 25 adopted geological disposal as long term policy (2006)
- Interim storage taking place but no country adopted this as long term policy
- Spent fuel – direct disposal or recycle?

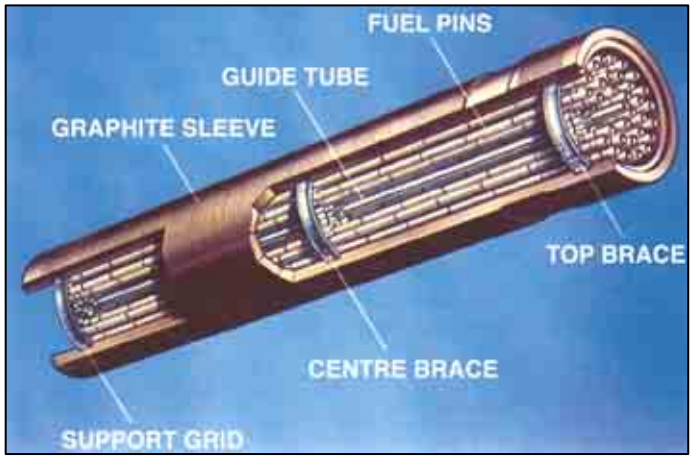
Fuel Cycles : a new emphasis

- Sustainability of nuclear energy
- More effective utilisation of uranium resources
- Concern over longevity of radioactive waste
- Possibility of partitioning spent fuel from thermal reactors and "burning" Pu and minor actinides

Typical components of spent fuel from LWRs



Waste Management in the UK



Generic co-located geological disposal facility