



Radioactive Waste Management

IGD-TP EF8 – Technical topic 2

‘Heat-generating-waste containers’

Introductory session

Michelle Cowley, Senior Research Manager, RWM

BMWi, Berlin, Germany, 4th December 2018

Objectives of the session

- Knowledge share on heat-generating-waste containers and concepts which are at an early stage in the development lifecycle
- Discuss any changing needs and drivers for research relating to the topic of heat-generating-waste containers
- Explore opportunities for collaborative RD&D relating to ‘new-generation’ heat-generating-waste containers and implementation related concerns for both newer and well established concepts
- Capture areas where knowledge management activities may be beneficial
- Report findings back to executive group

Recap on EF 7

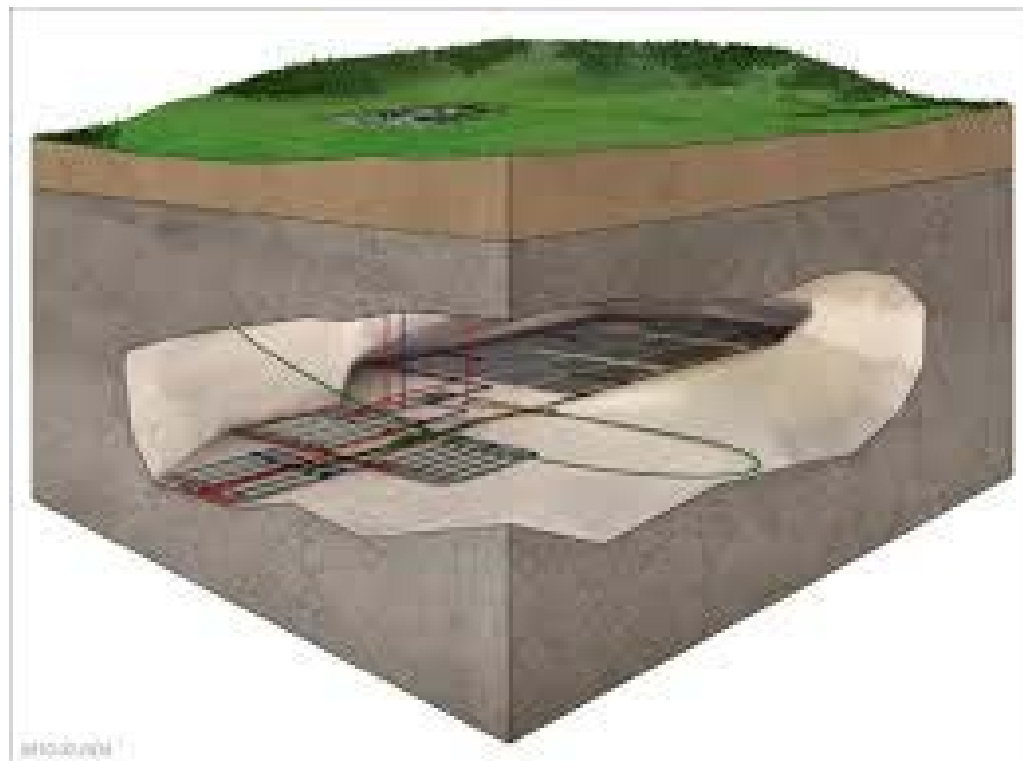
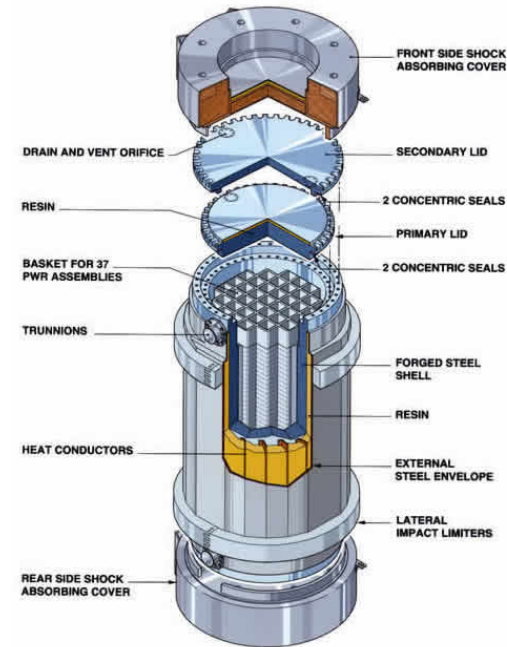
Session held Oct 2016 in Cordoba, WG 2 – Canister Design

Key points

- There is sufficient knowledge on properties and behaviour of legacy materials
- There are some open questions with regards to manufacturability, welding and remote handling (e.g. for repair) of legacy materials
- New technology and materials have not been sufficiently evaluated
- Manufacturing and welding technology for ceramics is unavailable or immature
- New field of coatings has a lot of international interest, there are many open questions and requirements are unclear

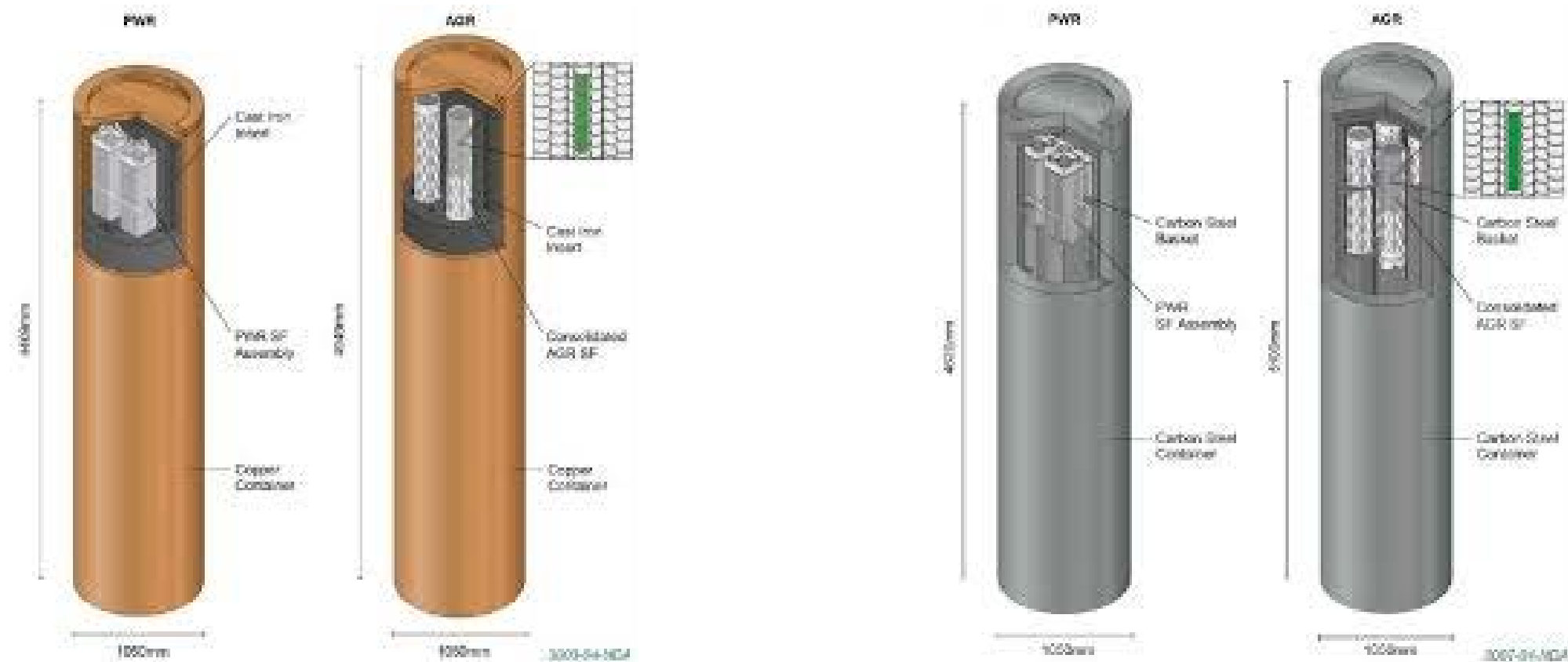
Common considerations and requirements for disposal facilities/heat-generating-waste containers

- Long container lifetimes required to prevent groundwater access to heat generating wastes too soon
- Integrity of container closures must be proven to be high and not detrimental to overall performance



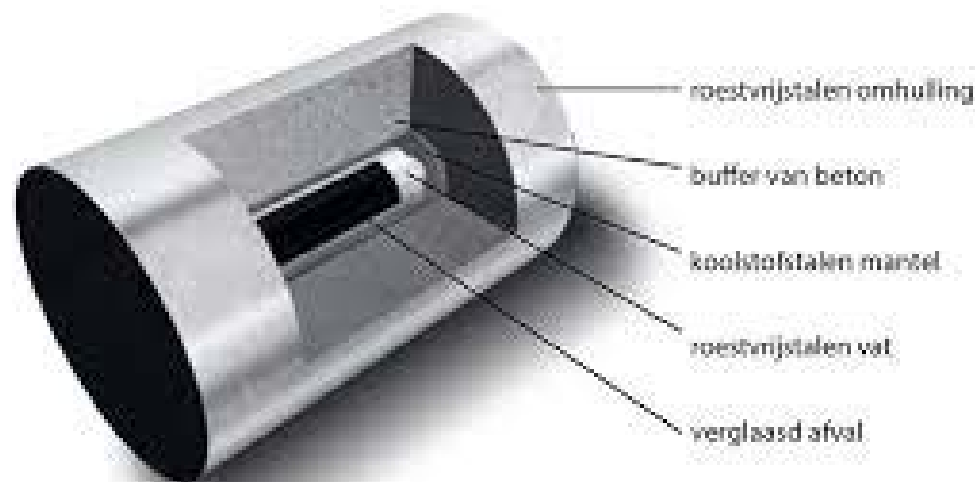
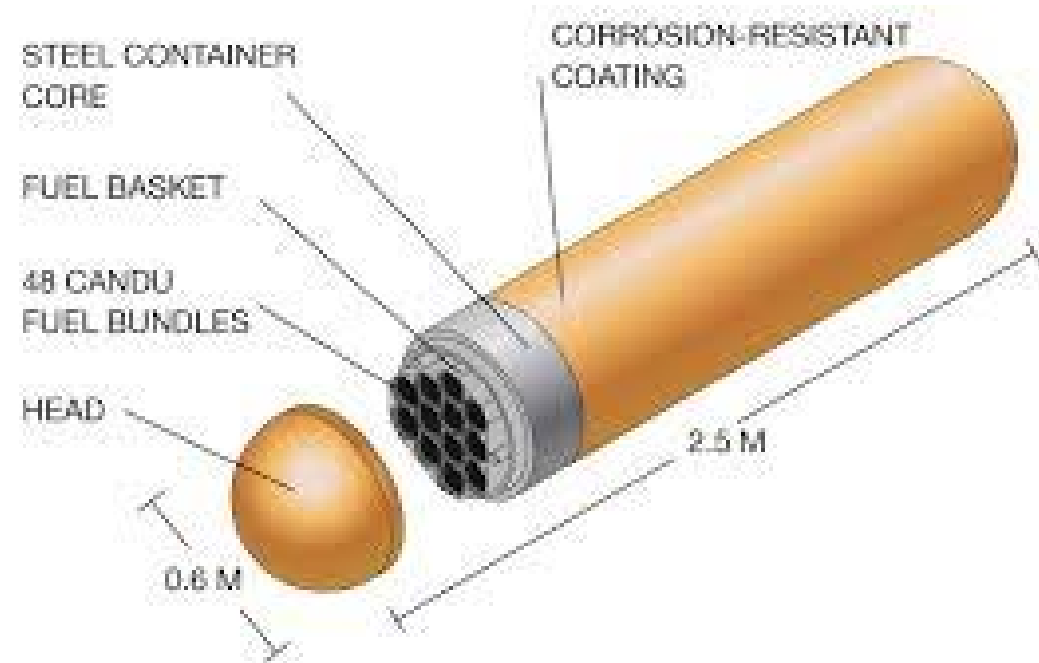
- Underground operations can be more difficult/hazardous than above ground – benefits in doing as much at the surface as possible
- As maturity of programmes develop there is a drive for ‘industrialisation’ i.e ensuring requirements are met whilst maintaining efficiency

Concepts at a high level of maturity



- Corrosion generally well understood and work ongoing to confirm in-situ
- Few outstanding areas of uncertainty, largest area, radiation effects as outlined in <https://www.tandfonline.com/doi/full/10.1080/1478422X.2017.1356973?src=recsys>
- Based on learning from the development of these concepts – what else can we do?

Concepts developed further



- Designs utilising benefits of multiple materials
- Use of non-metallic materials (greater resistance to corrosion)



- Moving more operations to surface facilities
- Considering the waste to be contained (change of design to accommodate other wastes)

Agenda Recap

Technical Session 2: Heat generating waste containers

Time	Item	Lead
0930	Introduction <ul style="list-style-type: none">- Objectives- Recap of EF7- Knowledge management	Michelle Cowley (RWM)
1000	Ceramics as possible FUTURE alternative materials for the HLW overpack (Cigeo project)	Nathalie Texier – Mandoki (Andra)
1020	Discussion session	Jon Martin (RWM)
1050	Alternative coatings for disposal canisters	Nikitas Diomidis (Nagra)
1110	Tea/coffee break	
1130	Discussion session	Jon Martin (RWM)
1155	Belgian Supercontainer concept	Séverine Levasseur (ONDRAF)
1215	Discussion session	Jon Martin (RWM)
1245	Wrap up, summary of key points and future actions	Jon Martin (RWM) and Michelle Cowley (RWM)
1300	Lunch	