



# Radioactive waste management in Estonia

**Ivo Tatrik**

*EURATOM, The safe management of spent fuel and radioactive waste in  
the small inventory Member States, 22.10.2024, Brussels*

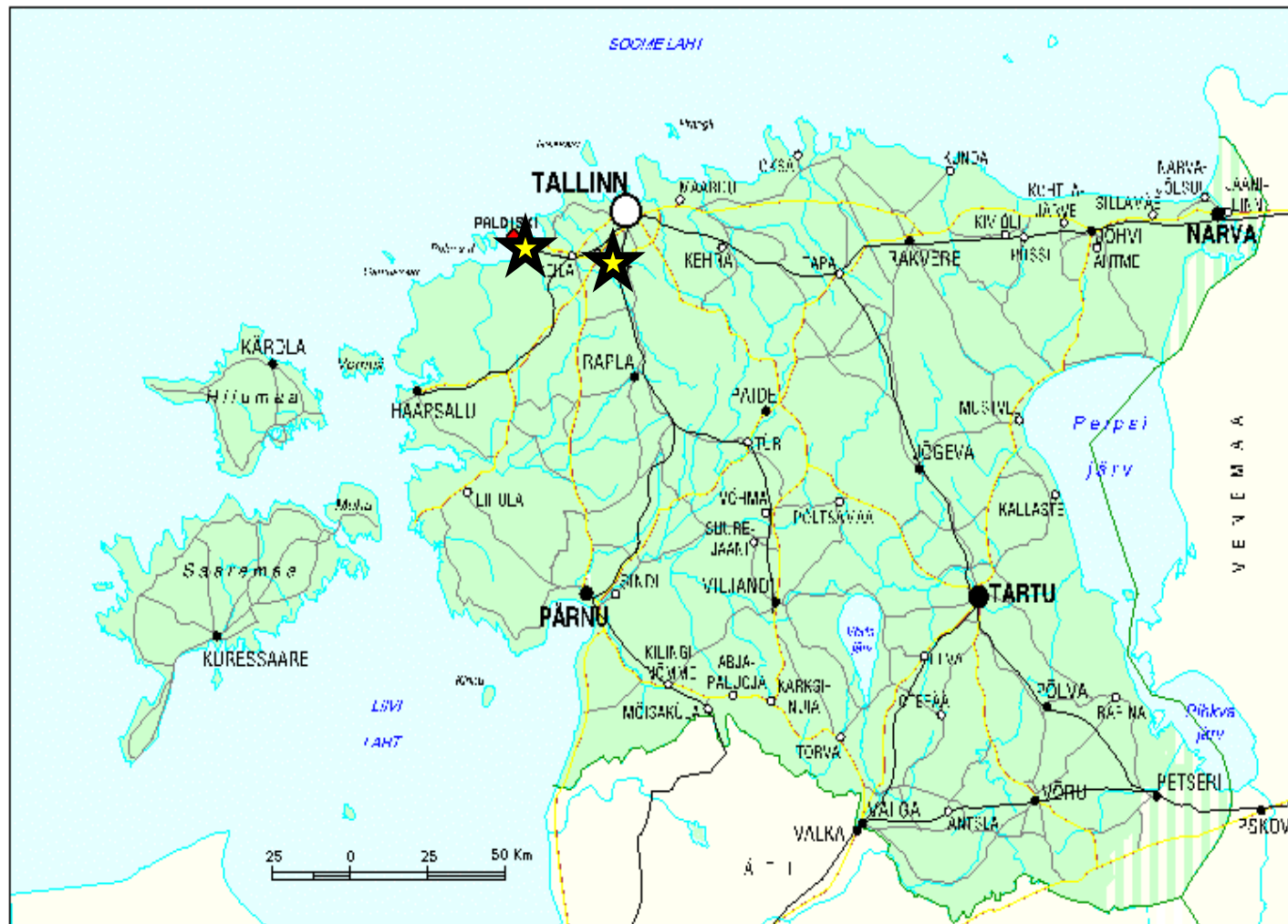


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# Radioactive waste storage facilities in Estonia

Paldiski site

Tammiku disposal site



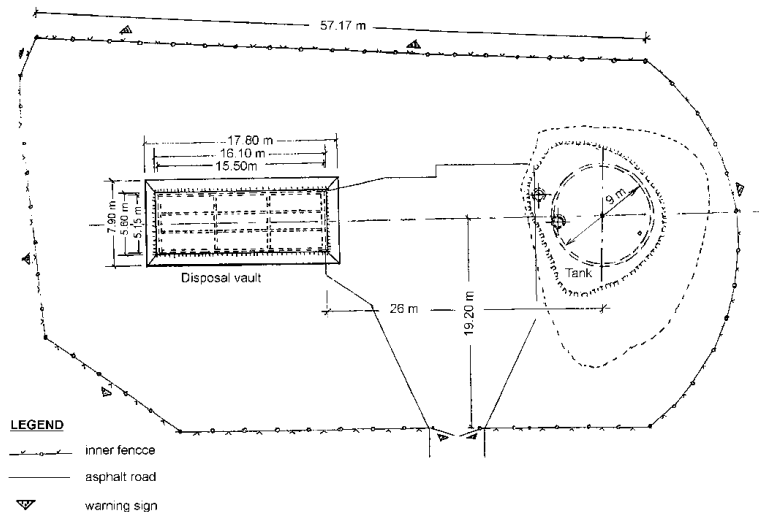
# Paldiski Nuclear Training Center



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# Tammiku disposal site

- Operated 1960-1995;
- “Radon” type facility (near surface);
- For institutional waste;
- Solid waste storage outer dimensions 17,8 x 7,9 x 3,3 m (below ground). Contained about 110 m<sup>3</sup> waste.
- Liquid waste tank volume 600 m<sup>3</sup>, filled capacity 200 m<sup>3</sup>;



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# Sources of radioactive waste in Estonia

- Waste generated from first decommissioning stage of Paldiski site (2 defueled submarine reactors) - 1995...2012;
- Waste arising from second decommissioning stage of Paldiski site – 2041...2050;
- Waste arising from decommissioning of historical Tammiku disposal site (institutional waste) – 2008...2012;
- Institutional waste from the country (up to 5 m<sup>3</sup>/a) - until 2060.



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## Disposal volumes and waste types

- LILW-SL (half-life up to 31 y) – 2100 m<sup>3</sup>
- LILW-LL (half-life > 31 y) – 900 m<sup>3</sup>

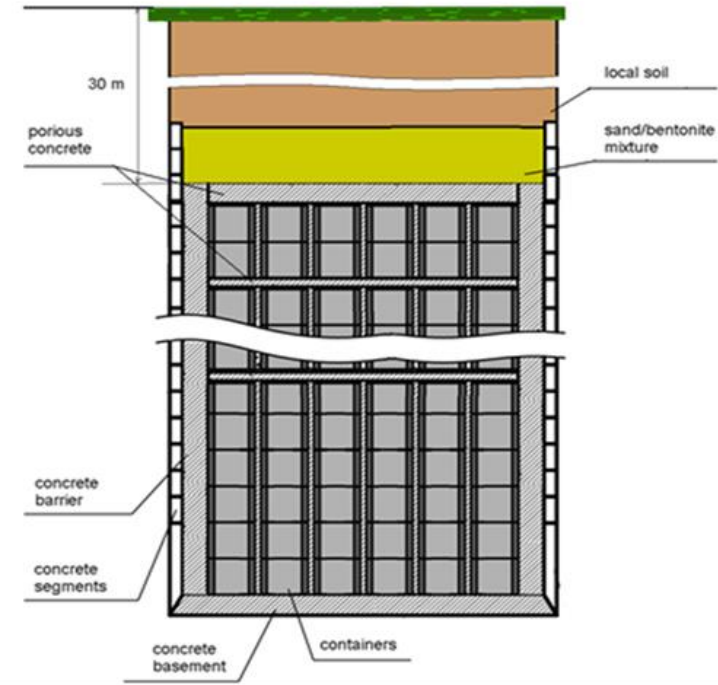
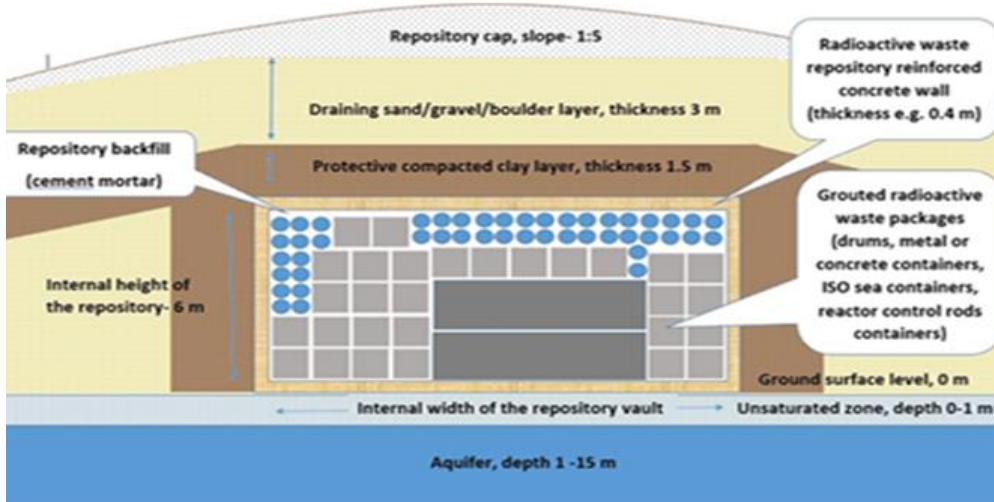


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# Repositories concept

- Near-surface facility (El Cabril, CSA Aube);
- Shaft-type intermediate depth facility – clay formation, depth 60-80 m (Slovenia).





## Site selection

Our approach:

**Step 1:** selection of 3 possible sites in West-Harju county based on existing geological and socio-economical information 2021-2022;

**Step 2:** Technical studies in 3 selected sites 2022-2023;

**Result:** Current interim storage site was selected for disposal facilities;

**Step 3:** Detailed studies for design purposes in selected site 2028+;

...

Repositories commissioned 2040.



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# Reporting on the Waste Directive implementation

Estonia has established the necessary administrative and legal regulations for the transposition of the directive, and the operation of the national legal, regulatory and organizational framework required by the directive is guaranteed.

In order to fully implement the directive's requirements, the provisions of the Radiation Act are supplemented and the radioactive waste action plan is updated. Both processes are underway and the updated documents will be forwarded to the European Commission.



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With the support of the EU Cohesion Fund, a new position was created in the Ministry of Climate from September 2024 (knowledge transfer doctorate, in cooperation with the University of Tartu). The focus and specialization of new position is related with radioactive waste activities.

Supervision has also been made more efficient, and the position of an inspector specializing in radiation supervision has been created within the Climate and Radiation Department of the Environmental Board.



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The development of regulations and legal provisions for the disposal of radioactive waste remains a challenge. In this regard, Estonia cooperates with the IAEA through the technical cooperation program, and one of the goals of the national project "Capacity building of the legal and regulatory framework of radiation protection and nuclear safety" which started in 2024 is to develop Estonia's national radioactive waste management and disposal system within four years. The focus is on improving the existing framework for the management of low- and intermediate-level radioactive waste and preparing for the establishment of a final repository - improving the necessary legislation, regulations, permitting and safety assessment processes.



# The needs and challenges in managing radioactive waste in Estonia

- Lack of adequate legislation regarding siting of disposal facilities. Operator leads the process based on international recommendations and experiences;
- Funding of the disposal project;
- There is a need for additional specialists within the Ministry of Climate, the Environmental Board, and the radioactive waste management company AS A.L.A.R.A. to support the development and implementation of key projects as the establishment of a radioactive waste disposal facility.