



IAEA

International Atomic Energy Agency

Atoms for Peace and Development

IAEA perspective on multinational solutions for radioactive waste management

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ERDO Association Webinar – The Road to Sharing

16 September 2021

Presentation outline



IAEA views and work on multinational solutions for:

1. Radioactive waste characterisation, treatment and conditioning
2. Radioactive waste disposal
3. RD&D in the field of radioactive waste management

Radioactive waste characterisation, treatment and conditioning

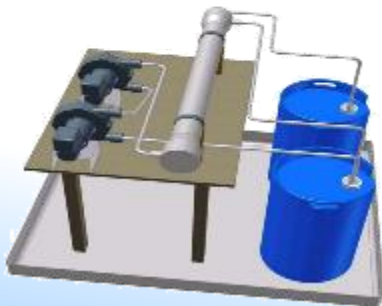
IAEA publication on modular designs of waste processing and storage facilities.



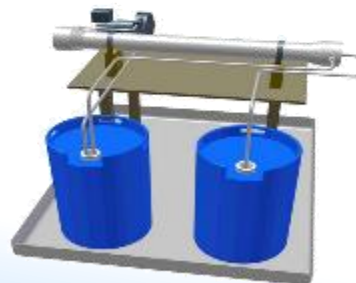
Filtration module



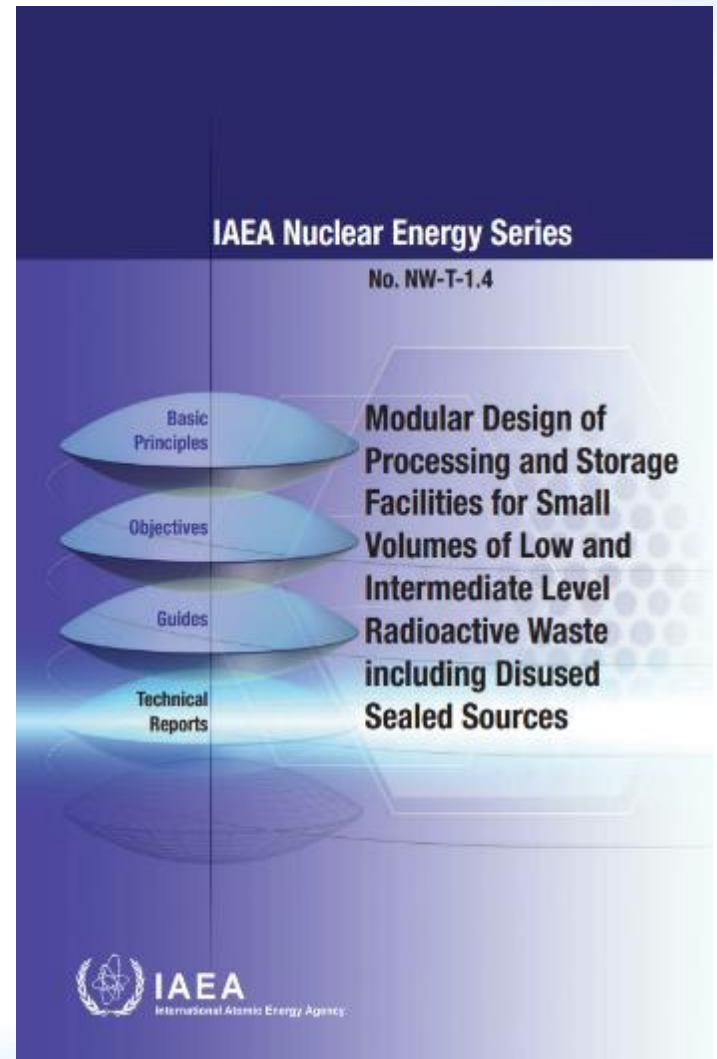
Ion exchange module



Reverse osmosis module



Cross-flow filtration module



Radioactive waste characterisation, treatment and conditioning

IAEA conditioning campaigns for disused sealed radioactive sources



Radioactive waste characterisation, treatment and conditioning

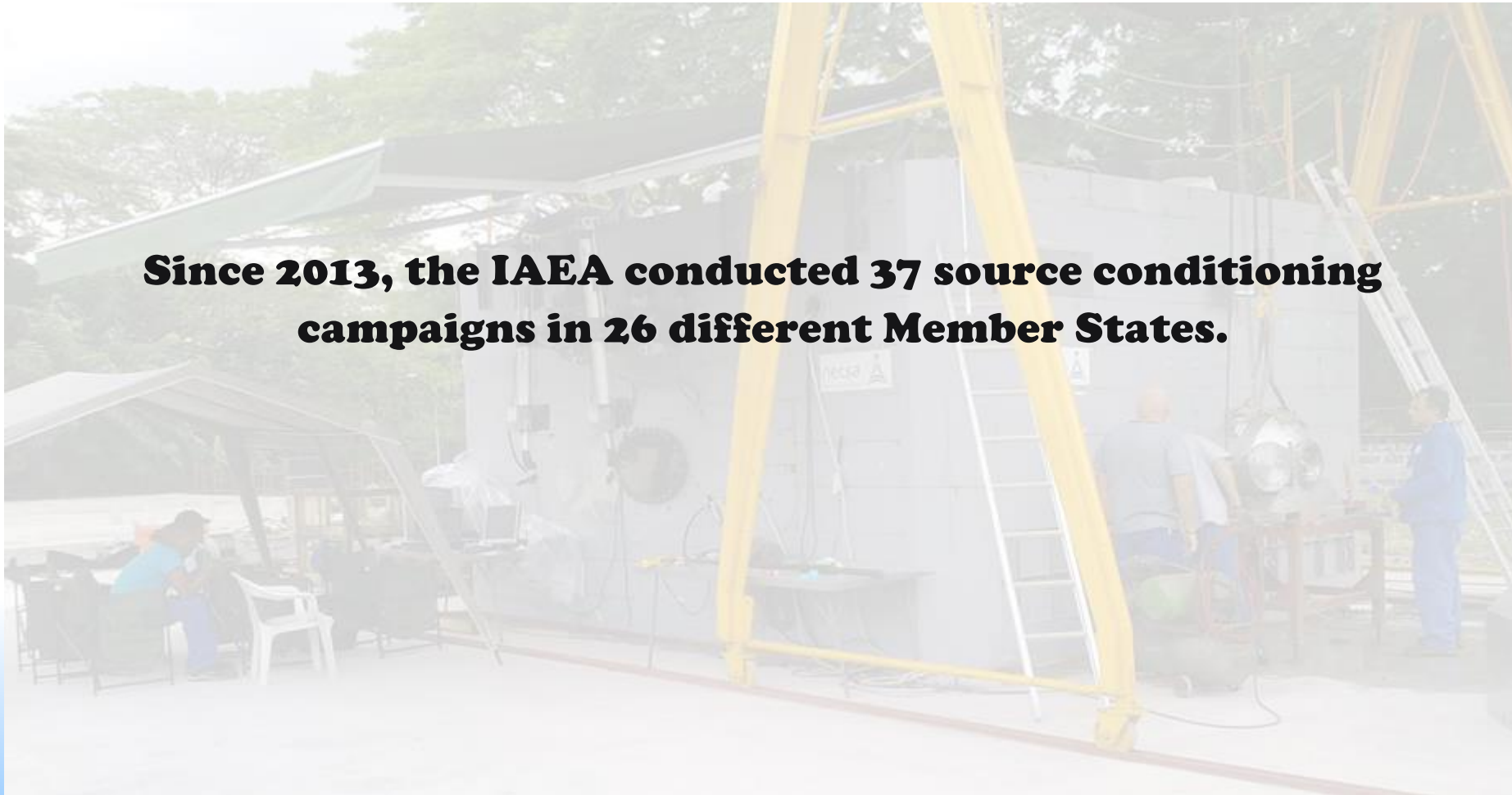
IAEA conditioning campaigns for disused sealed radioactive sources



Radioactive waste characterisation, treatment and conditioning

IAEA conditioning campaigns for disused sealed radioactive sources

Since 2013, the IAEA conducted 37 source conditioning campaigns in 26 different Member States.



Radioactive waste characterisation, treatment and conditioning



LABONET: IAEA International Network of Laboratories for Nuclear Waste Characterization

Technical Meeting planned in Q4 2022: “Achievements and Challenges in Radioactive Waste Characterization”

- Characterization and treatment of problematic wastes
- Sampling
- Waste stability and chemical compatibility
- Gas generation and measurement
- Waste clearance
- ...

Radioactive waste disposal

The IAEA recognises the benefits of multinational disposal facilities...



Costs can be shared which reducing the capital investment for each party participating in the project.



Participants can pool their financial, human and technical resources.



Economies of scale can be created.

Radioactive waste disposal

... but recommends that such a strategy is part of a dual track approach.

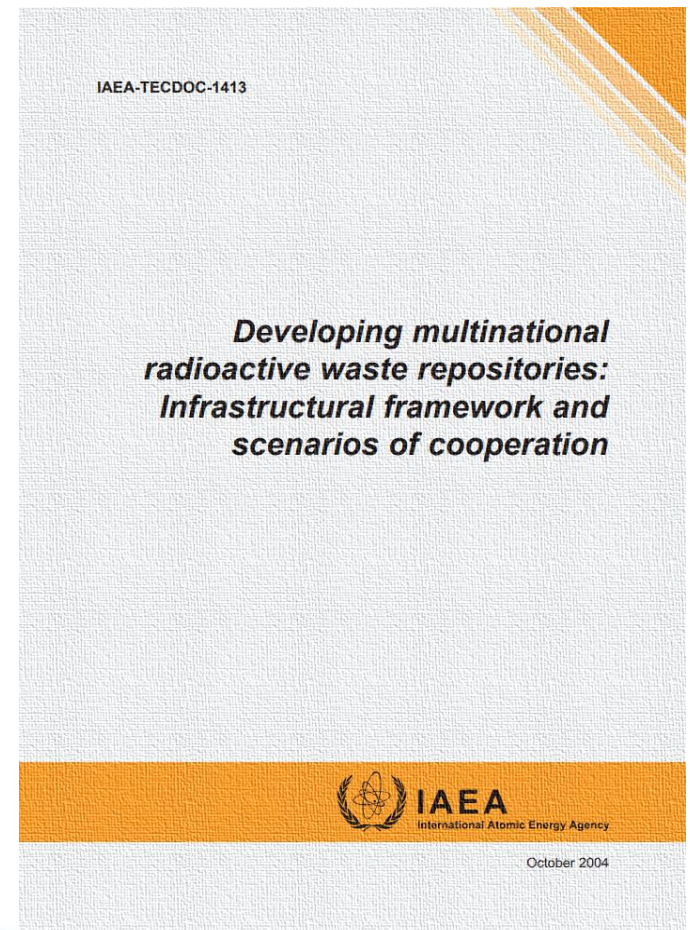
- each country needs to have a national policy and strategy on radioactive waste management
- only relying on a multinational facility would make a country too dependent
- being an informed customer (of a multinational disposal project) requires own expertise



Radioactive waste disposal

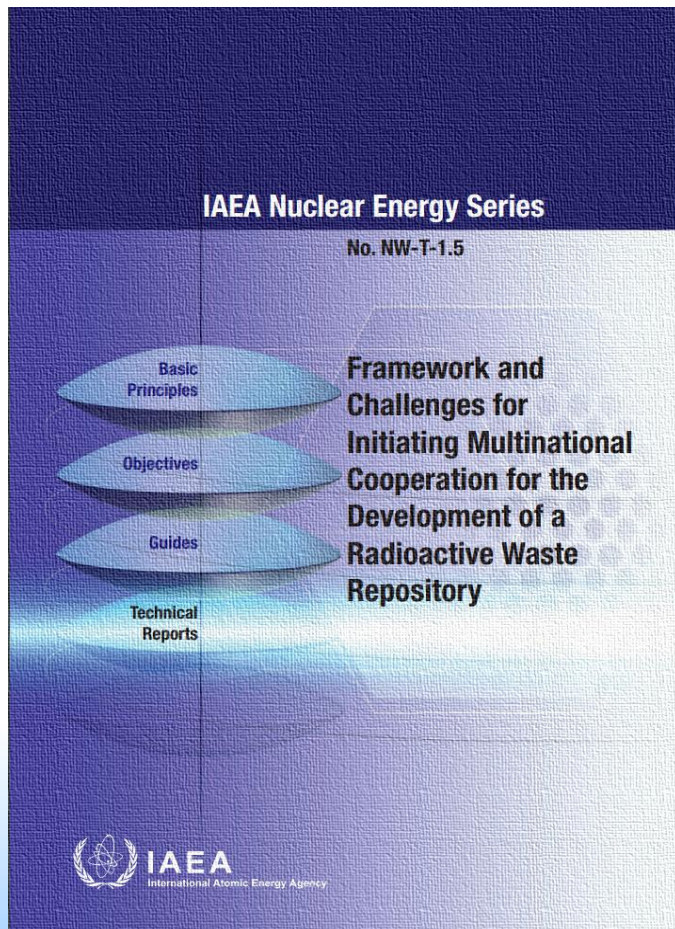
Three basic concepts for developing a multinational disposal facility were identified in IAEA TECDOC-1413 (2004)

- **Cooperation scenario:** partner countries cooperate in developing a repository jointly, one of them becomes a hosting country or each country takes one type of waste
- **Add-on scenario:** the host country offers to dispose of imported waste from other countries
- ~~**International scenario:** repository fully in the hands of international body, the host country effectively cede the control of the siting area~~



Radioactive waste disposal

A more recent IAEA publication (2016) provides further thinking on what a **cooperation scenario** could look like



- It includes a chapter on risk management in the multinational project (technical, financial, institutional, socio-political).
- It concludes that technical and economic challenges may be more easily addressed by multinational partners than by a single, possibly small, nation on its own, but that the political and societal challenges in multinational projects are undoubtedly greater.

Multinational projects can also concern the collaboration with other countries in joint research programmes. Many examples of such projects exist: ERDO, EDRAM, IGD-TP, etc.



The flags of international research partners at the Whiteshell URL in Canada

The IAEA provides a forum for discussion and cooperation of experts and policy makers:

- IAEA networks



The IAEA provides a forum for discussion and cooperation of experts and policy makers:

- IAEA publications, Wiki articles, e-learning material and databases



The Spent Fuel and Radioactive Waste Information System (SRIS) contains information on national spent fuel and radioactive waste management programmes, spent fuel and radioactive waste inventories and facilities, as well as relevant laws and regulations, policies, plans and activities.



SRIS allows national experts to have full visibility and understanding of their own, as well as of the global situation, regarding spent fuel and radioactive waste management. SRIS has replaced the Net Enabled Waste Management Database (NEWMDB). Its content reflects submissions from authorized national representatives.

The IAEA provides a forum for discussion and cooperation of experts and policy makers:

- Coordinated Research Projects have been designed to coordinate research in selected nuclear fields by scientists in IAEA Member States. They are targeted to work on a specific issue or topic.



Services

- › How CRPs work
- › How to participate

The IAEA encourages and assists research on and development and practical use of atomic energy and its applications for peaceful purposes throughout the world. It brings together research institutions from its developing and developed Member States to collaborate on research projects of common interest, so-called Coordinated Research Projects (CRPs).

Explore
CRP project
details

The IAEA CRP on borehole disposal:

1. develop a standardised framework for the borehole disposal of disused sealed radioactive sources



2. explore to what extent this concept, developed for the disposal of DSRS, can be applied or adapted to dispose of **small quantities of radioactive waste other than DSRS**

17 organisations from 11 Member States are participating to this CRP:

- ANSTO & CSIRO, Australia
- CNEN, Brazil
- IPEN, Brazil
- BNRA, Bulgaria
- SERAW, Bulgaria
- AECL and CNL, Canada
- CNSC/CCSN, Canada
- CIRP, Republic of China
- ANDRA, France
- BGE, Germany
- BAPATEN, Indonesia
- BATAN, Indonesia
- Norwegian Nuclear Decommissioning, Norway
- NRWDI, South Africa
- Sandia NL, United States of America

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Conclusion



What can the IAEA do for you ?

1. IAEA publications on modular designs of waste processing and storage facilities and IAEA conditioning campaigns for DSRS
2. IAEA Networks provide a forum to exchange information (e.g., LABONET's TM on waste characterization planned in 2022)
3. IAEA publications and databases can provide a source of information (e.g., SRIS database)
4. IAEA CRP on borehole disposal explores to what extent borehole disposal can provide a suitable disposal solution for small quantities of radioactive waste. Particularly relevant for the ERDO group is CSIRO's work on this topic.



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Thank you