

# NEWSLETTER

**IGD-TP Newsletter**

Issue #12, August 2022



safe solutions for radioactive waste

## Dear Reader

The first half of 2022 can in the future be remembered many ways. European security conditions were shaken after Russia attacked Ukraine and the situation in Ukrainian nuclear facilities, in addition the humanitarian crisis, was unclear. The Covid-19 pandemic caused the moving of IGD-TP Symposium from January to September. Currently it seems that the symposium can be held safely as planned although the COVID-19 pandemic still occasionally raises its head.

In the field of nuclear waste management there is positive news. Year 2022 started with the news that the world's first operating licence application for final disposal facility of spent nuclear fuel had been submitted by Posiva. The applica-



Tiina Jalonen IGD-TP Chair



The SIX ConventionPoint in Zurich-West

tion covers both the underground final disposal facility and the encapsulation plant in Olkiluoto, Finland. In January the Swedish Government decided to allow SKB to build a final repository for spent nuclear fuel in Forsmark in Östhammar municipality and an encapsulation plant in Oskarshamn.

Right before the summer holiday season we got good news from the European Commission regarding nuclear activities in Europe. The EC presented a Taxonomy Complementary Climate Delegated Act on climate change mitigation and adaptation covering certain gas and nuclear activities. The College of Commissioners had reached a political agreement stating: „The gas and nuclear activities selected are in line with the EU's climate and environmental objectives and will allow us to accelerate the shift from more polluting activities, such as coal generation, towards a climate-neutral future, mostly based on renewable energy sources.” The statement is based on environmental criteria and means that nuclear energy is considered by the EC as an environmental friendly technology to produce energy and the investments in all phases of nuclear energy production, including final disposal of spent nuclear fuel are sustainable.

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## IGD-TP Symposium and Webinar

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# The role of optimisation in radioactive waste geological disposal programmes

20-22 September 2022, Zurich, Switzerland

29 September 2022, Online

We are delighted to announce that, following postponement due to Covid-19, registration has now re-opened for the IGD-TP's international symposium on the role of optimisation in geological disposal programmes for radioactive waste. Hosted by Nagra in September 2022, the event is open to anyone interested in geological disposal of radioactive waste.

Geological disposal projects are first of a kind projects, span several decades, and are multi-billion endeavours. In order to build and operate repositories safely, to make consistent progress, and to ensure efficiency, optimisation of all aspects plays a critical role and is a continuous activity throughout its implementation. While safety optimisation is well established, also through international guidelines, optimisation of the implementation of geological disposal has gained increased attention. This symposium and webinar aim to summarise the status of the main aspects of repository optimisation from a technical-scientific viewpoint and to discuss future directions.

To enable access and involvement of all interested parties, the event will be held in two parts. The first, physical event, will consist of a two-day meeting in Zurich with sessions on:

- the role of optimisation in selected national geological disposal programmes
- technology and material optimisation
- lessons learned from optimisation in large infrastructure projects
- integrating optimisation for safety
- global optimisation approaches – concepts and numerical applications

A number of side events will also be arranged to make the most of attendee time. Registration for such meetings will be arranged separately to the symposium.

Throughout the symposium the IGD-TP will host a series of themed poster sessions that aim to showcase the cutting-edge radioactive waste management RD&D of our community.

The third day will provide an opportunity for attendees to tour the Mont Terri or Grimsel underground research laboratories, or the ZWILAG interim storage facility (see overleaf for descriptions). Tour numbers are limited.

The second part of the event will consist of a live webinar that will include a panel discussion and question and answer session. Questions can be submitted in advance via the IGD TP website and during the webinar.

Talks and posters presented at the symposium will be recorded and made available online, prior to the webinar.

## IGD-TP Symposium and Webinar

### Day 3 Tour Options (seats available only for Grimsel Visit)



Interior view of the Mont Terri rock laboratory ([mont-terri.ch](http://mont-terri.ch))

#### Rock Laboratory Mont Terri ([mont-terri.ch](http://mont-terri.ch))

The Mont Terri rock laboratory is situated to the north of St-Ursanne in the canton of Jura, around 300 m underground. It is accessed via the safety gallery of the Mont Terri motorway tunnel. The rock laboratory comprises 1200 m of galleries and niches. The horse-shoe shaped galleries are 4 to 5 m high and well-lit. The key question being investigated is: can radioactive waste be stored safely in Opalinus Clay? The Mont Terri rock laboratory is engaged solely in research; no deep geological disposal facility will be built at Mont Terri. There are 22 partners from Europe, Japan, Canada, United Kingdom, the USA and Switzerland carrying out research at the Mont Terri rock laboratory. This will be a full-day tour including a small lunch.

#### ZWILAG Wurenlingen ([zwilag.ch](http://zwilag.ch))

ZWILAG is a key link between the generation of waste and its disposal in deep geological repositories. In Switzerland, the producers of radioactive waste are responsible for its safe disposal. The Swiss disposal concept sees the final solution as the disposal of radioactive waste in repositories located in suitable rock formations. Until underground repositories are available, radioactive waste must be kept in interim storage for 30 to 40 years as it cools. All categories of radioactive waste generated in Switzerland are processed and temporarily stored in the ZWILAG facility and the neighbouring federal interim storage facility. This will be a half-day tour and will include a small lunch.



ZWILAG ([zwilag.ch](http://zwilag.ch))

#### Grimsel Test Site ([www.grimsel.com](http://www.grimsel.com))



Grimsel Test Site ([www.grimsel.com](http://www.grimsel.com))

The Nagra Grimsel Test Site (GTS) is an underground research laboratory (URL) located in crystalline rock in the Swiss Alps. Since 1984, Nagra has worked with more than 20 international partners at the GTS to ensure the availability of scientific and technical expertise in the field of radioactive waste management. The research has focused on understanding key processes in the geosphere and engineered barriers, as well as on investigating the behaviour of radioactive materials under realistic conditions relevant to deep disposal. The GTS also hosts large-scale experiments to demonstrate the technical feasibility of complex components at a realistic scale for all types of radioactive waste. The on-site visit will provide an insight into the current status of research activities at GTS and show the contribution of the various experiments to the challenging development, optimisation and implementation of deep geological repositories. Last but not least, the stunning landscape also invites a visit. This will be a full-day tour including a small lunch.

# IGD-TP Symposium and Webinar

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## Practical Details

### Registration

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The registration is ended to the Symposium 20.-22.september, 2022, Zürich, Switzerland and altogether 110 persons is registered to the event. The symposium consist of 20 invited presentations and 40 open call posters.

All registrations would be refunded in full if the physical event were to be cancelled due to the Covid-19 pandemic. Please note that a COVID certificate may be needed for travel and to enter the premises.

Webinar is free to attend for all and there are seats available. See guidance and programme below.

### Symposium venue

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The Symposium will be held at SIX ConventionPoint, Pfingstweidstrasse 110, 8005 Zurich, Switzerland (<https://www.conventionpoint.ch>). Travel directions and advice are provided on the IGD-TP websit

### Accomodation

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The cost of accommodation in Zurich is not included in the registration fee and must be booked and paid directly by the participant. We recommend the following two hotels, which are both within walking distance to SIX Convention Point:

- Sheraton Zurich - [marriott.com/hotels/travel/zrhzs-sheraton-zurich-hotel](https://marriott.com/hotels/travel/zrhzs-sheraton-zurich-hotel)
- 25hours-Hotel Zurich West - [25hours-hotels.com/en/hotels/zurich](https://25hours-hotels.com/en/hotels/zurich).  
Note that there are two 25hours-Hotel's in Zurich – *please make sure that you book the Zurich West.*

You will find more hotels via Zurich tourism: [zuerich.com/en](https://zuerich.com/en)

### Online Webinar

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**Webinar:** The access link will be provided directly to registered participants.

The role of optimisation in disposal programmes: Thursday 29 September CET 13:30-16:00

Webinar chairs:

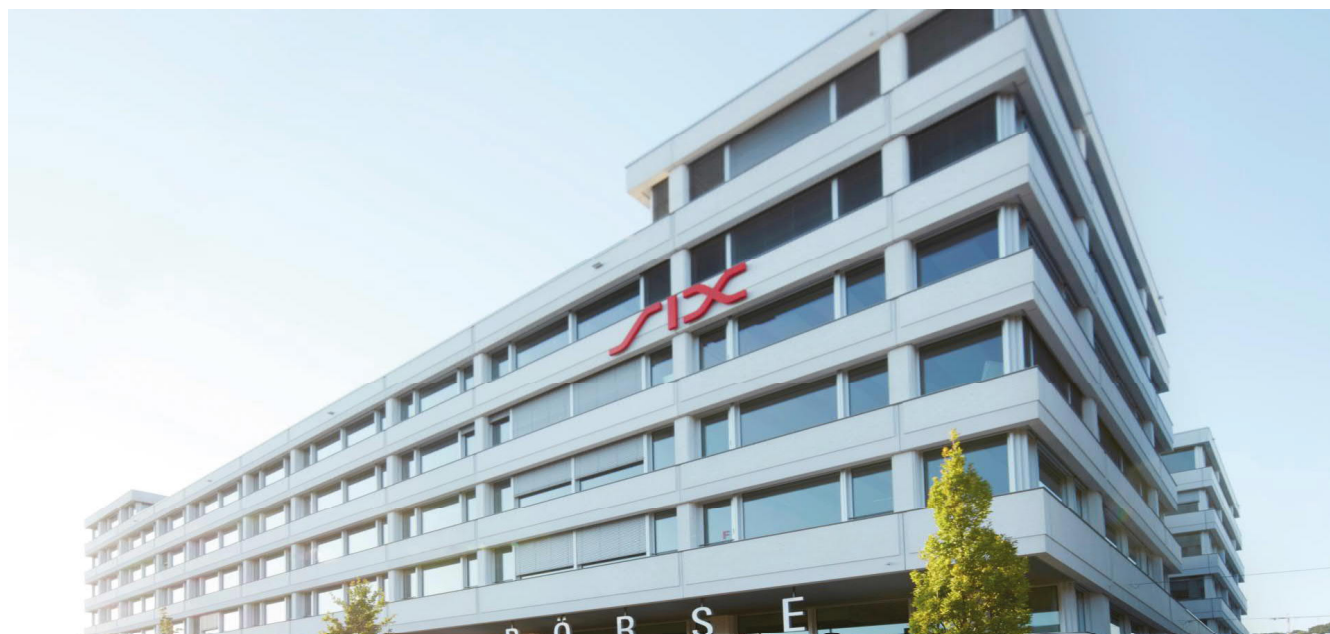
- IGD-TP Chairs, previous Irina Gaus (Nagra) and current Tiina Jalonen (Posiva)

Panellists from the following organisations are confirmed:

- Stefan Mayer (IAEA)
- Chris Boyle (NWMO, Canada)
- Jaakko Leino (STUK, Finland)
- Reinhard Knerr (WIPP, USA)
- Piet Zuidema (EURAD)

Each panellist will give a 5 minute presentation on their view of optimisation  
Questions can be submitted in advance and by the audience during the webinar

## IGD-TP Symposium and Webinar



The SIX ConventionPoint Pflingstweidstrasse 110 8005 Zürich

### Dates

April 2022	Registration re-opens
1 July 2022	Poster abstract submission deadline
1 August 2022	Symposium registration closes and selected poster presenters informed
2 September 2022	Final programme published
12 September 2022	Deadline to supply presentation and poster files
20-22 September 2022	IGD-TP Symposium
26 September 2022	Symposium presentations and posters published on <a href="http://www.igdtp.eu">www.igdtp.eu</a>
28 September 2022	Webinar registration and advance question submission closes
29 September 2022	IGD-TP Webinar

### Webinar

The access link will be provided directly to registered participants.

Further information will be added to the IGD-TP website as it becomes available on [igdtp.eu/event/igq-d-tp-symposium](http://igdtp.eu/event/igq-d-tp-symposium).

For any other questions please contact [secretariat@igdtp.eu](mailto:secretariat@igdtp.eu)

## First operating licence application for Spent Fuel GDF Submitted



The first 5 deposition tunnels are excavated and as part of commissioning the Trial Run of Final Disposal takes places in as tunnel (in figure) beside the disposal area

**Posiva Oy submitted the operating licence application for the encapsulation plant and the final disposal facility for spent nuclear fuel at the end of 2021 to the Ministry of Economic Affairs and Employment of Finland.**

The application includes a safety case which addresses the safety of final disposal. The safety case gathers research, development and demonstration work that has been made for more than four decades. The application is a public document and can be found at <https://www.posiva.fi/en/index/media/material.html>

The Ministry of Economic Affairs and Employment will review the operating licence application and eventually forward it to the Council of State for approval. The Radiation and Nuclear Safety Authority of Finland (STUK) will conduct a safety assessment of the application.

According to Posiva's CEO and President, Mr. Janne Mokka, the submittal of the application for the operating licence is a significant milestone for the entire emission-free and climate-smart nuclear energy sector.

- We can all be proud about the long-term and responsible approach of the various parties in the use of nuclear energy in Finland with Posiva now having the capability to launch the first, demonstrably safe final disposal operation of spent fuel in the world here in Olkiluoto. We have a solution, Mr. Mokka says.

- The work carried out for several decades to demonstrate long-term safety and develop the final disposal facility concept ONKALO® to suit the conditions of Olkiluoto has now been finalised and we can concentrate on the installation of equipment in the encapsulation plant and the final disposal facility, commissioning of the facility and preparations for operational activities.

The multi-disciplinary project has required world-class expertise, and still does. The main roles of the project have been played by Posiva's own personnel and its extensive network of partners, developing the safe final disposal concept for more than 40 years.

Ms. Tiina Jalonen, Senior Vice President, Development, for Posiva, says that the future outlook is now promising. In addition to engaging in the safe operational implementation of final disposal in the future, we are developing our concept further towards a more industrial and optimized solution. We are also happy to support other countries and their programmes with our expertise gained during the project, through our subsidiary Posiva Solutions Ms. Jalonen concludes.

- References: <https://www.posiva.fi/en/index.html>

Visualisation of Posiva encapsulation plant



## Update from the Members – Spain

### Seventh Radioactive Waste Management Plan



#### Policy and strategy

In March 2020, a draft Seventh Radioactive Waste Management Plan was submitted by Enresa to the Ministry for Ecological Transition and Demographical Challenge (MITERD). According to the law, this draft must undergo Strategic Environmental Assessment (SEA). This draft was updated in April 2022.

The public consultation phase ended on June 16th, 2022. Currently, it is the time for MITERD to analyze the reports and arguments presented and to prepare a final proposal of the plan. This final version needs to be approved by the Council of Ministers, after a report from the Nuclear Safety Council and after hearing the Autonomous Communities which have an interest in presenting arguments. The approved Plan will subsequently be reported to the Spanish Parliament and the European Commission in compliance with the Radioactive Waste Directive 2011/70/Euratom.

The initial version of the Seventh Radioactive Waste Management Plan presents the following reference scenario:

- Shutdown of the Spanish nuclear power plants between 2027 and 2035, in accordance with the National Integrated Energy and Climate Plan 2021-2030 and with the Protocol for the orderly shutdown of the plants, signed in March 2019 between Enresa and its owners.
- Beginning of the dismantling of the nuclear power plants three years after their definitive shutdown, except for Vandellós I, whose last phase will be carried out from 2030.
- Continuity of actions to expand the capacity of the Individualized Temporary Storage (ATIs) for spent fuel in nuclear power plants, allowing its operation and dismantling.
- Start-up of a Centralized Temporary Storage (CTS) for spent fuel and high-level waste or, alternatively, of seven Decentralized Temporary Storage (DTS) facilities at the nuclear power plant sites. The period of operation considered for this installation is approximately 60 years, compatible with the licensing of the Deep Geological Repository (DGR).
- Disposal of spent fuel and high-level waste in a Deep Geological Repository (DGR), for which the date for start of operation is established by 2073.
- Continuity of the operation of the disposal center El Cabril (Córdoba), for low and intermediate-level waste and very low-level waste, until the dismantling of the plants is complete.

## Update from the Members – Spain

### LILW and VLLW management: need to increase the licensed capacity of El Cabril

The analysis of the capacity of the currently existing RBMA cells (LILW waste) concludes with the need to have new cells in the year 2028, so as not to affect the operation and dismantling planning of the Nuclear Power Plants and to be able to continue with the normal storage of this radioactive waste. Therefore, it is planned to make a design modification at the facility.

The current data about the capacity of El Cabril are for the disposal of LILW about 50,000 m<sup>3</sup>, in 28 disposal cells, of which, as of December 31st, 2021, 22 have been completed. With regard to VLLW, a complementary disposal facility has authorization for four cells with a combined capacity of around 130,000 m<sup>3</sup>, which are built as needed. Currently, cells 29 and 30 are in operation.

Regarding the programmed capacity of the facility in relation to the foreseen needs in the future:

- For the disposal of all the LILW, 27 new cells will be needed. The construction of the new cells will be undertaken by steps, contemplating in a first step the construction of 12 cells and, subsequently, additional cells will be constructed in accordance with the necessary means, agreeing to the development of the dismantling works.

- The disposal capacity for all the VLLW is presumed to be sufficient with the four authorized cells. As required, construction is planned for cells 31 and 32.

Licence documentation for increasing capacity of LILW was sent to Ministry and the Nuclear Safety Council on June 23rd, 2022.

As has been explained, the Seventh General Radioactive Waste Plan considers building a Centralized Temporary Storage (CTS) for spent fuel and high-level waste as the main option, with an alternative option of seven Decentralized Temporary Storage (DTS) facilities at the nuclear power plant sites. Should the option of licensing seven DTS be chosen, they must be com-

plemented with a facility for maintenance operations on the containers in which the spent fuel is stored.

A tripartite working group has been created with members of the Nuclear Safety Council, the MITERD and Enresa, as a result of the recommendations addressed to Spain by the ARTEMIS expert group during the mission conducted in October 2018. The objective of this working group is the study and development of a proposal for a legislative, regulatory and procedural framework that allows supporting a DGR programme in Spain.

Furthermore, a workshop is planned to be held in Madrid on 14-16 November 2022 with the aim of raising awareness of the need to develop a DGR. The expected audience is composed of stakeholders related to the development of the DGR in Spain: experts, researchers, members of the National Parliament, regional and local politicians, press, etc.





## Update from the Members – Spain

### Decommissioning works

- The decommissioning of the José Cabrera NPP is approaching completion, with 95% of the works done. The dismantling of equipment, systems (large components and radioactive systems) and decontamination of buildings has already been carried out. Major building demolitions are almost complete and the site restoration is in progress.
  - The next NPP to start decommissioning is Santa María de Garoña. A dismantling strategy in 3 phases is proposed.
  - The first one is the so-called transition phase, during which the licence holder continues to be the NPP owner Nuclenor. This phase lasts 3 years, from 2019 to 2022. Preparatory activities are being carried out, such as the transfer of 5 containers to the Individualized Temporary Storage (ATI).
  - The second phase will start at the beginning of 2023, with transfer of the licence to Enresa. During this phase, transfer of the spent fuel to 44 containers in the ATI is foreseen as well as the dismantling and conditioning of the turbine building as an Auxiliary Dismantling building.
- This phase is foreseen to end in 2025.
- During the next 7 years, until 2032, Enresa will proceed with the dismantling of all systems of the rest of the radiological buildings, the reactor building and others (warehouses, etc.). Decontamination, declassification and demolition of buildings and site restoration will take place.
  - It is expected to get the licence for the transfer of the title to Enresa, including licence for the dismantling phase 2 by the end of this year.
  - As regards Vandellós I NPP, this completed its level 2 dismantling in 2003, initiating its dormancy period two years later. Level 3 dismantling is to be initiated in 2030.
  - Initial desk studies on dismantling of Almaraz I NPP will start in the following months as this facility should stop by 2027.



Aerial view of El Cabril repository for LILW and VLLW (Enresa)

## IGD-TP Projects – What is going on?

### Long-term Monitoring of C-14 compounds released during corrosion of IRradiated metal

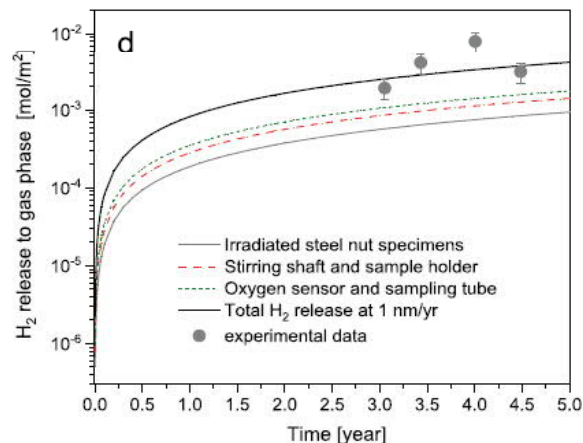
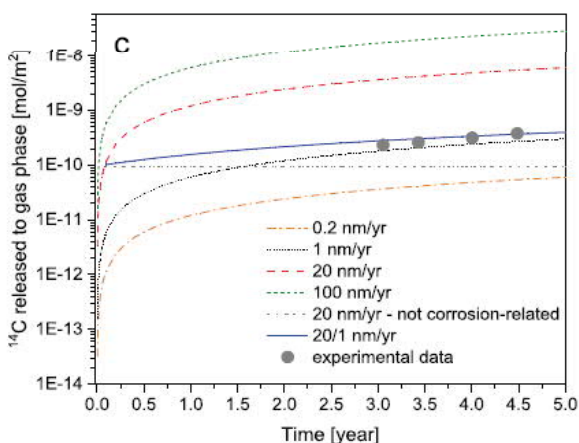
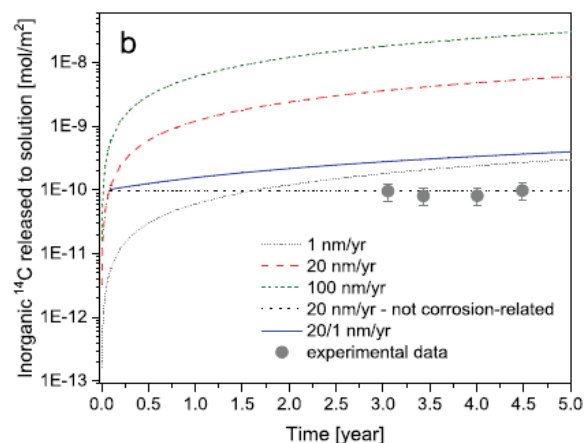
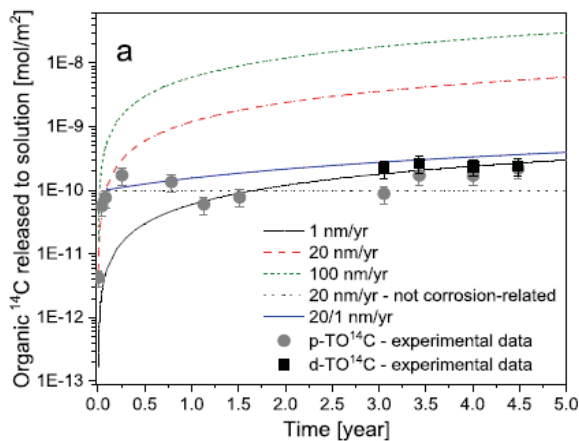
Carbon-14 (<sup>14</sup>C) is a key radionuclide in the safety assessment of deep geological repositories (DGR) for low- and intermediate-level radioactive waste (L/ILW). Irradiated metallic wastes generated during the decommissioning of nuclear power plants are an important source of <sup>14</sup>C after their disposal in a DGR.

The chemical form of <sup>14</sup>C released from the irradiated metallic wastes determines the pathway of migration from the DGR into the environment. Hence, knowledge of the chemical forms of the <sup>14</sup>C-compounds released during corrosion in highly alkaline anoxic conditions and the relation between the <sup>14</sup>C release and steel corrosion rates is required to support safety assessments.

A corrosion experiment with activated steel was started in May 2016 by the Laboratory for Waste Management (LES) at the Paul Scherrer Institute (PSI), and is still currently running in the PSI hot laboratory (HOTLAB).

#### Facts about LOMIR project

- Beginning of the project: 1st January 2022; end date: 31st December 2024 with the possibility for an extension of the project for two more years.
- Current IGD-TP partners: Nagra, BGE and SKB. Co-funding-contractor: PSI.
- Project leader of LOMIR: Dr. Typhaine Guillemot (typhaine.guillemot@nagra.ch).
- For more information about the experiment:
- Guillemot, T., Salazar, G., Rauber, M., Kunz, D., Szidat, S., Wieland, E. (2022). Carbon-14 release and speciation during corrosion of irradiated steel under radioactive waste disposal conditions. Science of the Total Environment 817, 152596.



## IGD-TP Projects – What is going on?

### Long-term Monitoring of C-14 compounds released during corrosion of Irradiated metal (LOMIR)

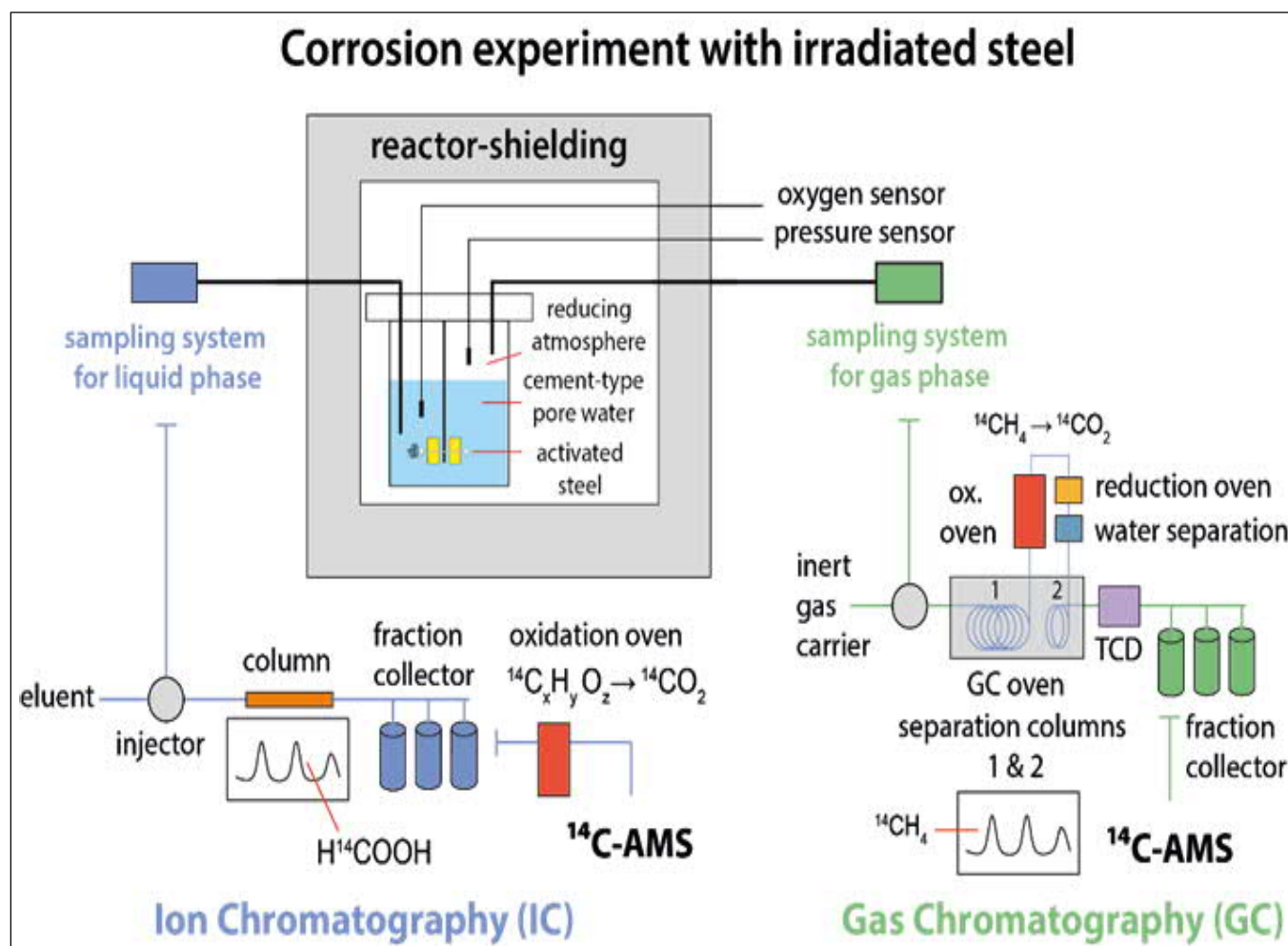


Illustration of the gas-tight reactor set-up with the analytical methods used for measuring both dissolved and gaseous  $^{14}\text{C}$ -compounds.

The experiment consists of two activated ~1 g steel nut specimens, provided by the nuclear power plant Gösgen (KKG, Switzerland), mounted in a gas-tight reactor and immersed in artificial cement porewater (pH = 12.5).

Since May 2016, regular solution and gas samplings have been carried out, typically two per year. The total inorganic ( $\text{TI}^{14}\text{C}$ ) and organic  $^{14}\text{C}$  contents ( $\text{TO}^{14}\text{C}$ ) in solution and total  $^{14}\text{C}$  content in the gas phase ( $\text{TG}^{14}\text{C}$ ) have been measured, with individual  $^{14}\text{C}$ -compounds identified both in solution and the gas phase.

The  $\text{TO}^{14}\text{C}$  rapidly increased during the very early phase of the corrosion experiment (~ 30 days) and remained constant within the scatter of the data. The release in this phase can tentatively be modelled by assuming a corrosion rate of 20 nm/yr.

The rapid increase of  $\text{TO}^{14}\text{C}$  in the beginning of the corrosion process is interpreted in terms of the presence of  $^{14}\text{C}$ -compounds in the oxide corrosion layer of the irradiated steel.

These compounds, mainly identified as  $^{14}\text{C}$ -carboxylic acids (i.e. formate, acetate and lactate), were instantaneously released upon contact between steel and alkaline solution. Further in time, the concentrations of dissolved  $^{14}\text{C}$ -compounds did not increase, suggesting that they might not be produced through the corrosion process.  $\text{TI}^{14}\text{C}$  was also found to be constant with time after three years of corrosion.

Regarding  $^{60}\text{Co}$ , its release with time does not occur in accordance with the corrosion rate of 1 nm/yr, as initially expected. A more detailed analysis of the  $^{60}\text{Co}$  data will be required to quantify its potential retention by activated steel.

## LOMIR continues

In the gas phase, TG<sup>14</sup>C continuously increased and can be modelled by assuming a corrosion rate of the irradiated stainless steel of 1 nm/yr.



**Picture of one of the two activated steel nuts specimens placed in the gas-tight reactor for the corrosion experiment.**

<sup>14</sup>C-methane is the dominant carbon compound identified, contributing to > 80 % of the TG<sup>14</sup>C. <sup>14</sup>C-ethane, <sup>14</sup>C-propane and <sup>14</sup>CO are also present but to a much less extent (< 5 %). Interestingly, the release of <sup>14</sup>C and H<sub>2</sub> to the gas phase occurred at the same corrosion rate (1 nm/yr), showing that <sup>14</sup>C compounds might be used as a corrosion marker for activated steel.

The running corrosion experiment with irradiated steel in alkaline anoxic conditions is a unique experiment as it determines the corrosion rate of stainless steel based on <sup>14</sup>C release, identifies and quantifies single <sup>14</sup>C-bearing carbon compounds, and assesses the fate of <sup>60</sup>Co during steel corrosion for more than 6 years now.

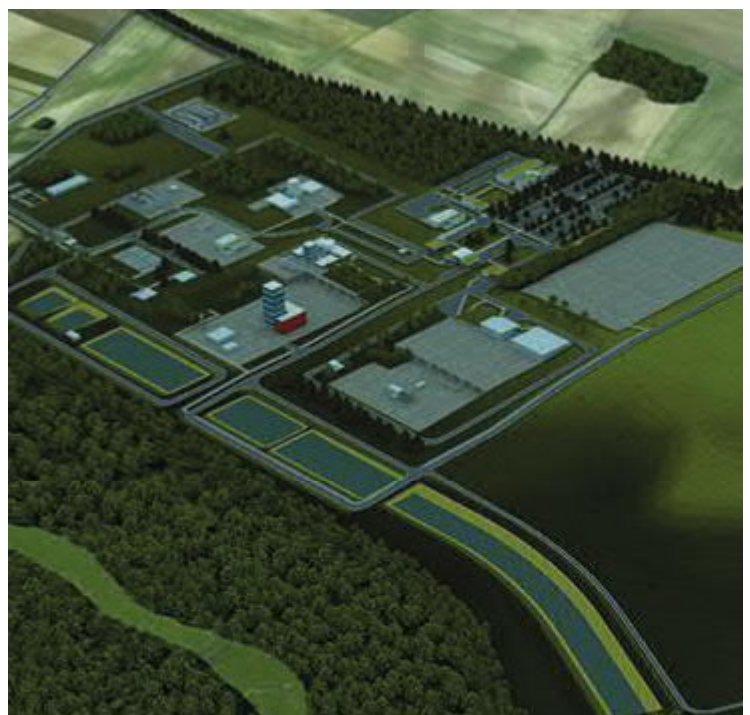
The LOMIR project aims at extending it until 2024. This 8-year old corrosion experiment dataset will therefore allow a less conservative treatment and more profound data-driven decision regarding <sup>14</sup>C. More especially, the hypothesis of an increase in the concentrations of gaseous <sup>14</sup>C-compounds driven by progressing corrosion of irradiated steel will be tested, such as the relation between the release of <sup>14</sup>C-compounds and the corrosion process measured via H<sub>2</sub>. The ratios with time between dissolved and gaseous <sup>14</sup>C-compounds will also be quantified, as will the dissolution of <sup>60</sup>Co during the corrosion of steel.

## Update from the Members – France

### Major progress for the Cigéo project - Declaration of Public Utility for the Cigeo Project

Good news was received by Andra at the beginning of July 2022. The declaration of public utility (DUP) is a key stage in the licensing process of the Cigéo project for the French National Radioactive Waste Management Agency (Andra). The declaration of public utility attests to the recognition of the general interest of the project as a solution for the final disposal of high-level and intermediate-level long-lived waste. It does not authorize the creation of the disposal facility: this authorization could be granted at the end of the examination of the licensing application, which will be submitted to the French Nuclear Safety Authority at the end of the year.

[Read the decree \(link to the French Official Journal\)](#)



## IGD-TP Projects – What is going on?





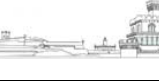



### IGD-TP R&D Activities

The waste management organisations (WMOs) undertake many bilateral and multilateral research activities, some of which are organised through the IGD-TP. The ongoing activities, their objectives and current status are summarised here.

Activity	Objective	WMOs Involved	Status
<b>KINA - Kiruna Natural Analogue</b>	The KINA project aims to investigate a smectite clay body that has been in contact with a magnetite ore body for hundreds of millions of years under repository-like conditions.	SKB, Nagra, RWM, POSIVA, Andra, NWMO	Samples have been prepared for isotopic dating and analyses. Swelling pressure measurements have been made. Further sampling is planned. A workshop is planned for November 2022.
<b>CCSC - Climate change in the safety case</b>	As climate evolution is a global topic there are clear benefits in WMOs sharing knowledge and expertise. This project involves exchange of applied methodologies, uncertainty estimations and results between the WMOs to ensure consistent argumentation.	SKB, Posiva, RWM, ANDRA, Nagra, BGE, COVRA, SURAO, ONDRAF/NIRAS	A series of meetings have been held so far and a comparison of the results of the different global climate simulations has been started.
<b>PCCS - Post-closure criticality safety</b>	Criticality safety over long, post-closure, timescales is unique to geological disposal. This project aims to benefit WMOs by sharing knowledge and approaches to demonstrating criticality safety, including discussion of applied methodologies, knowledge gaps and results.	RWM, ANDRA, Nagra, ENRESA, SKB, PURAM, BGE, ONDRAF/NIRAS, US DOE, NWMO	A series of information exchange workshops are planned. Approach to burn-up credit and consequence analysis workshops have been held recently.
<b>Technical aspects of retrievability</b>	This project aims to exchange knowledge regarding the approach and the technical solutions developed by each WMO to address retrievability in geological disposal facilities, and to identify common needs for future development.	ANDRA, BGE, COVRA, ENRESA, NAGRA, ONDRAF/NIRAS, POSIVA, RWM, SKB	A workshop was held in May 2021 and a synthesis document of the situation in each of country is being produced.
<b>Seismic hazards assessment</b>	A workshop is to be held to identify the similarities and differences between WMOs regarding: disposal facility contexts and concepts; regulatory requirements; and seismic hazard assessment approaches. Possible opportunities for further collaborative projects between one or more WMOs may be identified.	BGE, COVRA, ENRESA, NAGRA, ONDRAF/NIRAS, POSIVA, PURAM, RWM, SKB, SURAO	The workshop was held in November 2021. The potential SHA collaboration topics being developed during 2022.
<b>LOMIR - Long-term monitoring of <sup>14</sup>C compounds released during corrosion of irradiated metal</b>	This project continues an ongoing corrosion experiment with irradiated stainless steel. Additional sampling will be carried out to i) verify an increase in the <sup>14</sup> C content in the gaseous phase with time, ii) verify constant concentration of aqueous <sup>14</sup> C-carrying species, and iii) quantify the retention of <sup>60</sup> Co by corroding irradiated steel.	Nagra, SKB, BGE	See the article on pages 10-12.
<b>iCHANCE - Chemotoxic and non-radioactive contaminants evaluation</b>	Understanding the non-radiological and chemotoxic properties of radioactive wastes is essential. This project involves sharing knowledge and approaches in evaluation of the transport of chemotoxic and other non-radiological contaminants.	PURAM, Nagra, RWM, COVRA, ONDRAF/NIRAS, ENRESA, BGE	A benchmarking workshop was organised in May 2022. PURAM will compile a summary about practices and approaches in different countries.

## Secretariat News and Meeting Announcements

### Upcoming Meetings

	<b>IGD-TP Symposium and Webinar (2022)</b> The role of optimisation in radioactive waste geological disposal programmes Date: (1) 20-22 September 2022; (2) 29 September 2022 Location: (1) Zurich, Switzerland; (2) Online
	<b>DECAY Days (2022)</b> Date: 21-23 September 2022 Location: Mont Terri Rock Laboratory, Switzerland
	<b>EURAD Third Annual Event (2023)</b> Date: 13-16 March 2023, Location: Cyprus
	<b>Waste Management Symposium (2023)</b> Date: 26 February-2 March 2023, Location: Phoenix, USA
	<b>European Radiation Protection Week (2022)</b> Date: 9-14 October 2022, Location
	<b>DigiDECOM '22 (2022)</b> Date: 18-20 October 2022, Location: Halden, Norway (hybrid event)
	International Conference on Non-destructive Evaluation of Concrete in Nuclear Applications (NDE NucCon 2023) Date: 25-27 January 2023 Location: Espoo/Helsinki, Finland
	Webinar on innovative program for decommissioning waste management optimization: focus on characterization developments Date: 27 September 2022, Location: Online
	<b>ENYGF'23: European Nuclear Young Generation Forum (2023)</b> Date: 8-12 May 2023, Location: Krakow

### New IGD-TP Members

Since our last newsletter we have welcomed two new organisations to the IGD-TP:

- The ERDO Association (<https://www.erdo.org/>) members come from different organisations with a mission to work together to address the common challenges of safely managing the long-lived radioactive wastes in our countries. ERDO members are developing both national and shared waste disposal options until the optimum solution for each country becomes apparent – this is called the Dual-Track approach.

The IGD-TP now has 142 member organisations from 27 countries active in geological disposal. All our member organisations and their contact points are listed at: [igdtp.eu/members](http://igdtp.eu/members)

### IGD-TP Website [igdtp.eu](http://igdtp.eu)

We have continued to develop the activities pages on the IGD-TP website by adding historical and ongoing collaborative research projects. You can now find project summaries, key reports and links to further information for 46 projects. We also announce events and news relevant to geological disposal research on our website. Please contact the IGD-TP Secretariat ([secretariat@igdtp.eu](mailto:secretariat@igdtp.eu)) if you would like to highlight something of interest to our community.

### IGD-TP Chair and secretariat handover from Nagra to Posiva [igdtp.eu](http://igdtp.eu)

Posiva is chairing the IGD-TP during 2022 and 2023 and the hand-over from Nagra took place at the start of April 2022. The IGD-TP Chair is Ms Tiina Jalonen and the Secretary General is Ms Johanna Hansen. They are supported by Ms Erika Holt from VTT. Posiva aim to continue to chair the IGD-TP after Nagra's successful period. New chair and secretary general express sincere thanks to Nagra's Irina Gauss and Ingo Blechsmidt for expert and excellent coordination of European Waste Management organisations joint effort for IGD-TP. Great thanks also to Tamara Baldwin from Galson Sciences Limited, who has helped the Secretariat in daily challenges.

The contact details remains the same as previously ([secretariat@igdtp.eu](mailto:secretariat@igdtp.eu)).