



## CHANCE project

(Contract Number: 755371)

### Practical training course on instruments and techniques developed within CHANCE

#### DELIVERABLE (D6.5)

#### Work Package 6

Authors: C. Bruggeman

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Dissemination Level		
PU	Public	X
CO	Confidential, only for partners of the CHANCE project and EC	

History chart			
Status	Type of revision	Partner	Date
Draft	Initial version	SCK•CEN	24/03/2022

**Reviewed by**

D. Ricard

**Approved by**

The Executive Board



Initially, it was foreseen to organize practical trainings related to the apparatus and technologies developed within the technical workpackages of CHANCE. However, due to the lasting covid crisis, which impeded traveling around Europe for a long period of time, it was decided within the CHANCE Executive Board to organize the training in the form of webinars.

Using the webinar format, it was envisaged to reach a broader audience, outside of CHANCE partners, to inform the wider radioactive waste community about the technologies and progress made within the CHANCE project.

The webinar content was standardised, and each webinar consisted of three presentations:

1. General introduction to the technique, basic scientific/technological premises
2. Developments within CHANCE (including lessons learned – if available – and potential future technological developments)
3. Presentation by an end user (who has already used the technique, or has indicated in the past the potential benefits of the technique for problems/issues encountered)

Each presentation was followed by a Q&A session. The audience could also raise questions or comments in the chat box.

The webinars were announced via different distribution channels:

- CHANCE website
- EURAD School of Radioactive Waste Management
- PREDIS
- Social media accounts (LinkedIn/Twitter)

The platform used was BigMarker, which is the same platform used by the SCK CEN Academy within the frame of the EURAD EJP. Participants needed to register beforehand through the CHANCE website. Each webinar lasted for 2-3 hours.

The webinars were recorded in order to make them available for future training (e.g. through Youtube channel) and the presentations are available as pdfs.

A total of 3 webinars were given, related to the 3 technical work packages of CHANCE. Through the webinars, we were able to reach a relatively wide audience (wider compared to practical training session), while it also appeared that more non-CHANCE partners attended the webinar than CHANCE partners (details on following pages).



## 1. Webinar on Cavity Ring-Down Spectroscopy (CRDS)

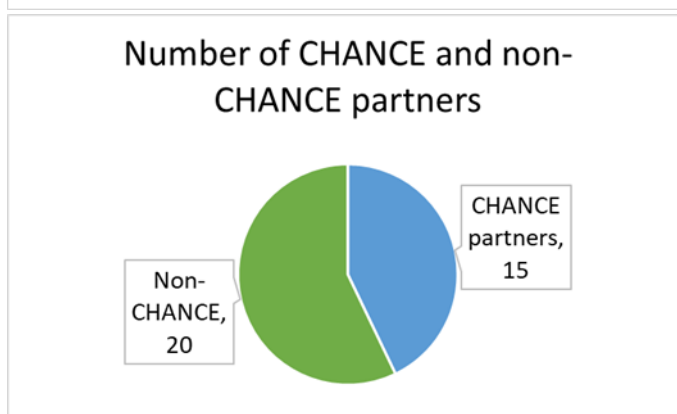
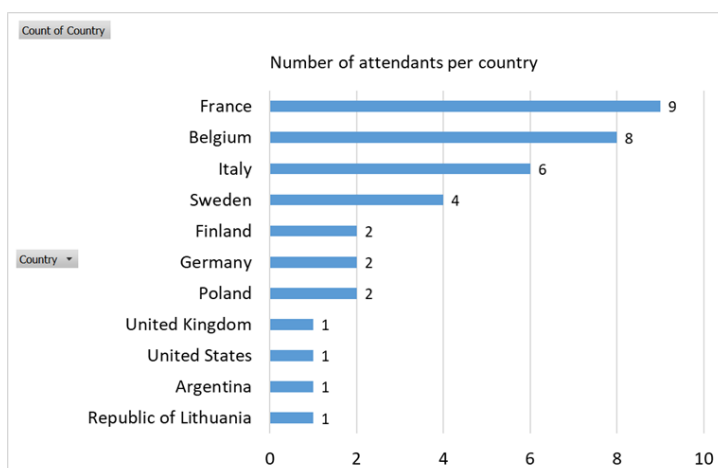
This webinar was organized on Fri, Jun 18, 2021, at 2 PM.

During the webinar, CHANCE WP5 leader G. Genoud (VTT) introduced CRDS, as well as the recent developments with CHANCE.

CHANCE WP5 aims to advance the use of CRDS as an innovative technique to characterize outgassing of radioactive waste by developing new instrumentation for H36Cl and demonstrating an application of the technique to the monitoring of radiocarbon outgassing. Both technical presentations were complemented by P. Menegon (ANDRA) presenting the end-user needs for waste outgassing measurements.

Announcement was published on CHANCE website: <https://chance-h2020.eu/webinar-1806-cavity-ring-down-spectroscopy>

A total of 57 participants registered, while 37 attended (65%). Details about the attendees are presented below.



The presentations are available through following link: <https://chance-h2020.eu/rewatch-first-chance-webinar-cavity-ring-down-spectroscopy>

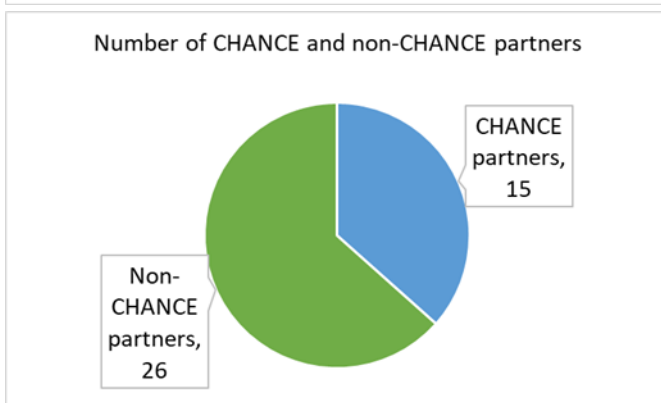
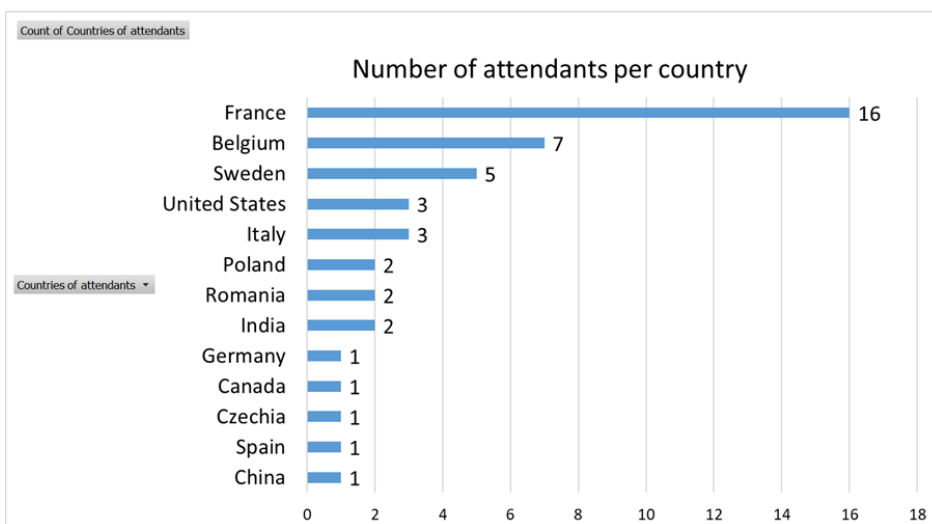
## 2. Webinar on Calorimetry

This webinar was organized on Tue, October 5, 2021, at 2 PM.

Calorimetry is one of the solutions to estimate the overall quantity of nuclear material on a wide range of mass, from a few milligrams up to kilograms of radionuclides, by measuring the overall thermal power coming from the radionuclides due to the radioactive decay. Up to now calorimetry has been used mainly to quantify raw material (Pu and isotopes or 3H) for inventory purposes. The technical presentations were complemented by a presentation from the end user perspective by K.Dylst (SCK CEN).

Announcement was published on CHANCE website: <https://chance-h2020.eu/webinar-510-calorimetry>

A total of 91 participants registered, while 45 attended (50%). Details about the attendees are presented below.



The presentations are available through following link: <https://chance-h2020.eu/rewatch-2nd-chance-webinar-calorimetry>

### 3. Webinar on Muon tomography

This webinar was organized on Tue, January 25, 2022, at 2 PM.

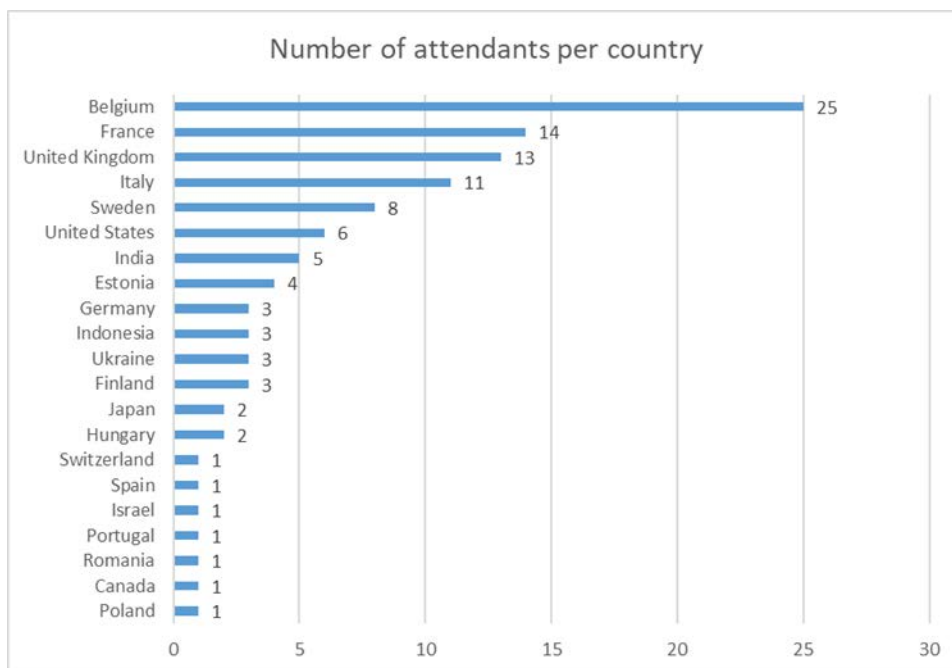
Muon tomography is a non-destructive technique to image objects from a safe distance. It utilizes the ever-present cosmic radiation and thus does not require additional radiation sources. Due to the highly penetrating nature of muons, it is possible to image the insides of large objects, ranging from nuclear waste drums to pyramids and volcanoes. As such it is an ideal tool to determine the contents and condition of nuclear waste materials in containers like waste drums up to CASTOR storage casks.

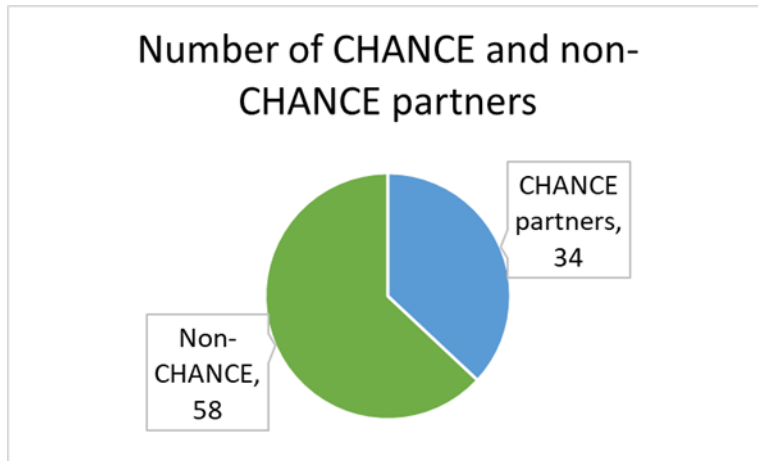
#### Detailed Agenda

- Muon tomography - Dr. J. Velthuis
- Muon tomography in CHANCE - Dr. C. De Sio
- Detection of bubbles in nuclear waste packages - Mr. M. Mhaida
- Material identification of materials in nuclear waste packages - Mr. M. Weekes
- Muon tomography reconstruction algorithms for small and large scale waste casks - Mr. A. Alrheli
- Future outlook for muon tomography - Prof. Dr. L. Thompson
- Q&A

Announcement was published on CHANCE website: <https://chance-h2020.eu/webinar-2501-muon-tomography>

A total of 195 participants registered, while 111 attended (57%). Details about the attendees are presented below.





The presentations are available through following link: <https://chance-h2020.eu/rewatch-3rd-chance-webinar-muon-typography>