



Characterization of Conditioned Nuclear Waste  
for its Safe Disposal in Europe

# CHANCE Project - Characterization of conditioned nuclear waste for its safe disposal in Europe

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# CHANCE

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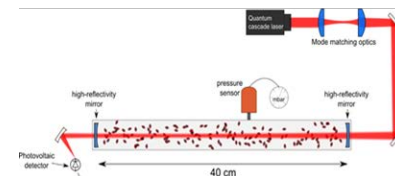
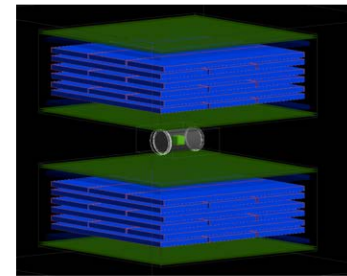
## CHANCE Overview

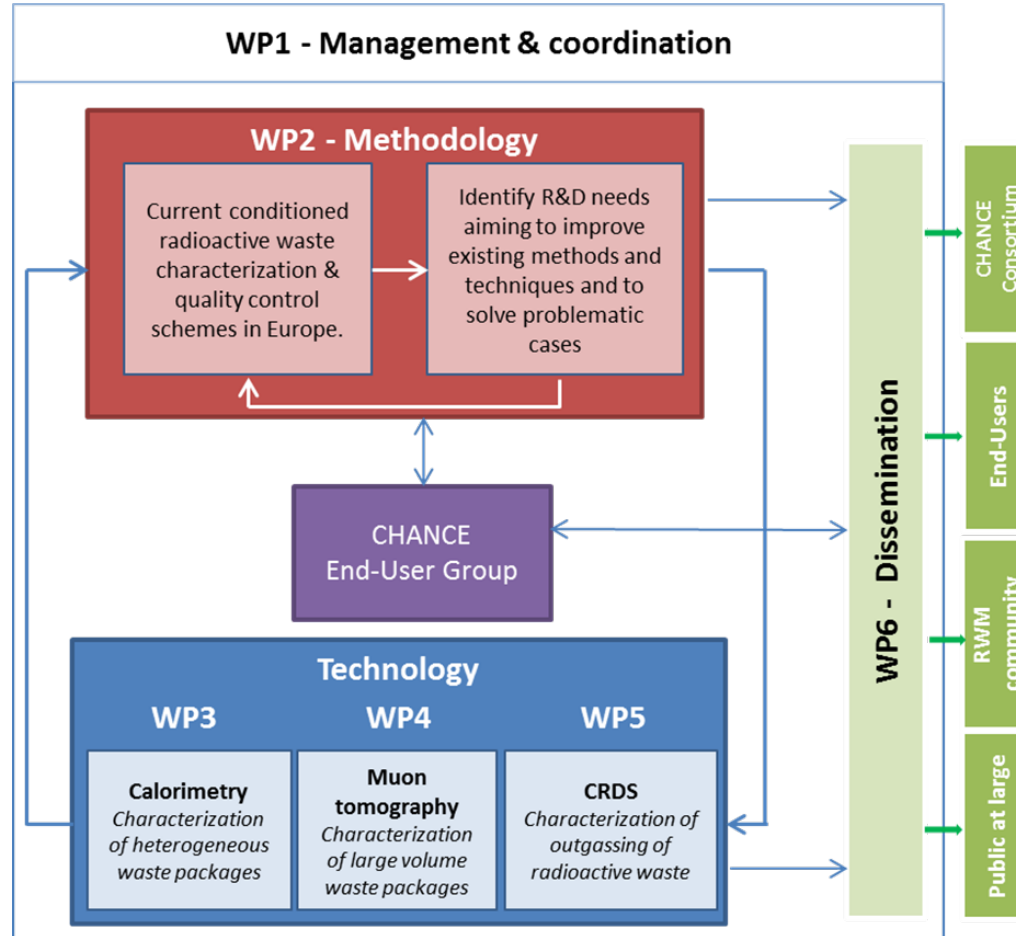
- Euratom research and training programme 2014-2018
- NFRP 7-2016-2017 topic "Research and innovation on the overall management of radioactive waste other than geological disposal"
- 4 years project: 1.6.2017 - 31.5.2021 (probable extension to 30.11.2021)
- Total budget: 4.25 M€ (3.98 M€ EC contribution)
- Consortium: 11 partners from 7 European countries
- Public website : [www.chance-h2020.eu](http://www.chance-h2020.eu)



To further develop, test and validate non-destructive techniques that will improve the characterization of conditioned radioactive waste (CRW) :

- **Calorimetry** as a non-destructive technique to reduce uncertainties on the inventory of radionuclides
- **Muon Tomography** as a non-destructive technique to control the content of large volume nuclear waste
- **Cavity Ring-Down Spectroscopy (CRDS)** to characterize outgassing of radioactive waste





## WP2 Methodology

To identify current methodologies and shortcomings of current characterization and metrology of CRW in Europe

- Synthesis of questionnaire answers of end users group about characterization of conditioned radioactive waste (WAC, methods currently used, needs, special issues, socio-technical and ethical frameworks, etc.) (**D2.2** available on [www.chance-h2020.eu](http://www.chance-h2020.eu))

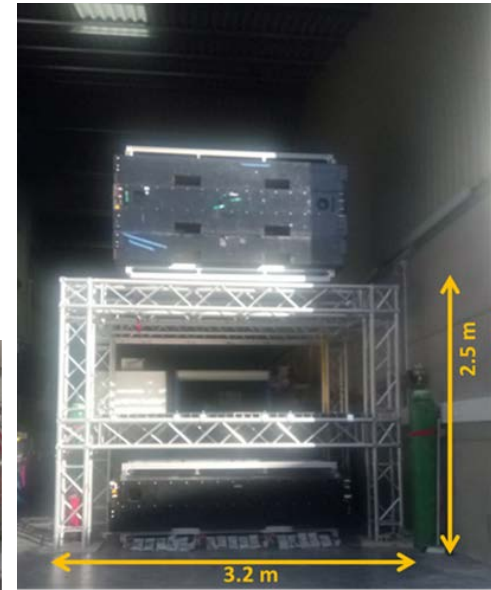
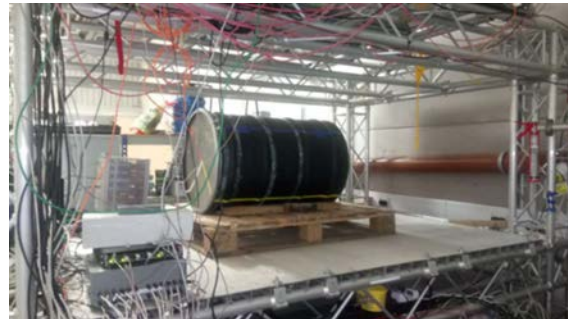
## WP3 Calorimetry

- Construction of a novel calorimeter with an optimized detection limit (1.5mW) to host a 200L drum (10-3000mW range)
- Measurements of mock-up drum (Pu pellet in concrete matrix)



## WP4 Muon tomography

- The detector system was commissioned in a non-laboratory environment
- Track fitting and image processing for imaging a mock-up drum in progress



## WP5 Cavity Ring-Down Spectroscopy

- Development of a transportable C-14 instrument for analysis of irradiated samples in a radiation laboratory
- Analysis of C-14 outgassing from solid graphite pieces has been started

## Next steps

- Finalisation of state of art about on going R&D techniques for the characterization of conditioned radioactive wastes
- Combination of different characterization methods to reduce uncertainties
- Validation of methods developed in CHANCE if possible with real waste

## Ways to Get Involved

- Participate to the training courses
- Apply to EUG group (WMO, regulators, waste producers, repository operators, research entities)
- Public website : [www.chance-h2020.eu](http://www.chance-h2020.eu)

# **i**CHANGE

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# Thank you for your attention !