



Internship project: Nuclide Inventory Determination from Dose Rate Measurements of Cemented Resins

Your tasks

Nagra is offering an internship position to support the radiological characterization of cemented ion exchange resins. Drums of cemented spent ion exchange resins of the NPP Leibstadt are radiologically characterised via dose rate measurements. Subsequently, Nagra infers for each individual drum the nuclide activities of gamma-emitters, needed for operational and long-term safety analyses, from the dose rate measurements using spectrometrically measured samples of each production batch as well as activity-to-dose rate conversion factors.

Your task would be to check the dose rate conversion factors currently in use by performing state-of-the-art MCNP simulations. The main steps of the project are the following:

- Recalculation of dose rate conversion factors using MCNP and comparison to existing factors
- Validation of the calculations by comparison of the theoretically determined dose rates with the measured dose rates of sampled drums
- Quantification of differences in calculated radionuclide inventories using old and new sets of dose rate conversion factors

Your profile

- Ability to solve problems independently using a structured approach and critical thinking skills
- Motivation and willingness to learn
- Good scientific writing skills (in English, German is considered a plus)
- Programming skills (e.g. Python, Matlab, etc.) and experience with MCNP are considered a plus

We offer

Our ongoing projects at the interface between industry and fundamental research offer the unique opportunity to explore the most fascinating aspects of these two worlds. You will be working along experts on key scientific, technical and implementation topics related to the deep geological disposal of radioactive waste, under realistic conditions. You will also have the opportunity to train and/or gain additional experience with the industry-standard code suite MCNP.

Contingent upon availability and the outcome of the internship project, an MSc. thesis topic could be proposed after completion of the internship.

Your application should include:

- Your CV
- A record of all available exam grades from the BSc. and/or MSc. programme (e.g. first semester grades)
- A cover letter not exceeding 300 words

Applications will be reviewed and processed on the following dates:

17 – 21 February '25

14 – 18 April '25

10 – 17 June '25



11 – 15 August '25

13 – 17 October '25

15 – 19 December '25

If you would like to work with us on the disposal of radioactive waste, please send your complete application documents by e-mail to bewerbungen@nagra.ch