Contribution ID: **854** Type: **Poster**

Can be barium and strontium used as analogues to radium in clay migration?

Thursday, 17 May 2018 18:45 (15 minutes)

Most of the migration data for radium in the performance assessment of deep geological repository, which are used in modelling the long-term safety, were obtained from experiments performed with its chemical analogues - barium and strontium. To our knowledge, there are few data available on radium migration in the engineered barrier of compacted bentonite, possibly due to difficult work with Ra-226. In this study, we applied short-term Ra-223 on planar source diffusion experiments and sorption experiments with the Czech commercial bentonite (named as BaM). Sorption and diffusion behaviour of Ra-223 has been compared with those of Sr-85 and Ba-133.
The apparent diffusion coefficients were as follows Sr>Ba>Ra that is in line with results from batch experiments. Radium apparent diffusion coefficient was one order of magnitude lower than for strontium. Radium distribution coefficient from batch experiments was 4.8 times higher than for strontium and 2.4 higher than for barium.
Based on the results, a difference between radium and its chemical analogues appear to be more significant than expected from reference diffusivities. Therefore, we have focused on the chemistry of these elements under certain conditions in order to answer the title question.

Primary authors: PECKOVÁ, Anna; HOFMANOVÁ, Eva (UJV Rez, a. s.)

Presenter: PECKOVÁ, Anna

Session Classification: Poster NFC

Track Classification: Chemistry of Nuclear Fuel Cycle, Radiochemical Problems in Nuclear Waste Management