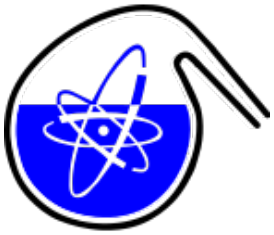

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Sorption of europium on cementitious materials in the presence of organic substances

Cement-based materials are used as engineering barriers for low-level and intermediate-level radwaste and in high-level radwaste disposal as facilities or buffer materials. To evaluate the long-term safety of radioactive waste repositories, it is necessary to describe the behavior of stored radionuclides that will be present, such as europium used as an analog of trivalent actinoids. The migration of radionuclides is affected by interaction with the material of the engineering barriers of the repositories, including cement-based barriers. In this study, the sorption of europium on hardened cement paste (HCP) of type CEM I, CEM III and synthetic cement phase CSH (Calcium-Silicate-Hydrate) with Ca/Si ratio 1.0 was carried out with the addition of different organic substances (adipic acid, phthalic acid, EDTA). Radionuclide sorption is described by the distribution ratio (R_d) between the liquid and solid phases (L/S) or with sorption isotherm.

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