

minerals of Krasnojarsk radwastes underground repository: feldspar, kaolinite, quartz. Technetium sorbed on minerals could be easily removed from these sorbents by several washings with water. No reduction of Tc(VII) has been observed after the sorption by these minerals. The sorption of Tc-99 from simulated acidic and alkaline wastes by main minerals and real core samples of the repository has been shown to be low like from seam water. Gamma-irradiation with the dose 20 Mrad increases K_d of Tc sorption by real core samples in several times from seam waters and acidic wastes. Significant increasing of Tc sorption by real core samples up to $K_d=0,9 \cdot 10^3$ ml/g has been observed in acidic wastes, containing small concentrations of TBP radiolytic destruction products, including butanol. This increasing is explained by us due to radiolytic reduction of Tc(VII) to Tc(IV) enhanced by the presence of butanol.

In spite of the absence of the antimony-containing minerals in Krasnojarsk underground radwastes repository, the sorption ability of stibnite (Sb_2S_3) and senarmontite (Sb_2O_3) for technetium has been studied from seam water, containing up to 50 mg/l Tc(VII). The high values of sorption coefficients (10^3-10^4 ml/g) have been obtained. The formation of pink layer of Tc(V) hydroxide has been observed on the surface of senarmontite after three weeks of its contact with technetium(VII) solution. Further reduction and formation of black film $TcO_2 \cdot nH_2O$ has been observed at 95°C.

Table 1. Composition of Simulated Acidic and Alkaline RAW Solution Pretreated for the Underground Storage

Alkaline RAW 1		Acide RAW 2	
Component	Concentr. g/l	Component	Concentr. g/l
NaNO ₃	200	NaNO ₃	200
Tc(VII)	0.01	Tc(VII)	0.01
Al(NO ₃) ₃	3.4	Nitric acid	15.5
NaOH	20	Fe ³⁺	3.1
TBP	0.04	Cr ³⁺	3.2
BuOH	0.01	Mn	4.9
HDBP	0.02	TBP	0.04
Na Acetat	14.5	BuOH	0.01
		HDBP	0.02
		Acetic acid	14.5

Table 2. Composition of Simulated Far Field Seam Water

Cations	Concentration, mg-eq/l	Anions	Concentration, mg-eq/l
Na ⁺	2,52	HCO ₃ ⁻	4,00
Mg ²⁺	0,74	Cl ⁻	0,5
Ca ²⁺	2,10	SO ₄ ⁻⁻	0,93
NH ₄ ⁺	0,01	NO ₃ ⁻	0,01
Fe ₃ ⁺	0,04	TcO ₄ ⁻	10 ⁻⁶