

Title	Speciation Analysis of Radionuclides in the Environment -NSK-B SPECIATION project report 2009
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Abstract	<p>The second stage of the NKS-B project SPECIATION was complemented in 2008-2009, which mainly focus on three aspects: (1) Further improvement and development of methods for speciation analysis of radionuclides; (2) Investigation of speciation of some radionuclides in the environment (water, sediments, particles); and (3) Intercomparison exercise for speciation analysis of radionuclides in soil and sediment. This report summarizes the work completed in the project partners' laboratories, Method developments include: Development of an rapid and in-suit separation method for the speciation analysis of ¹²⁹I in seawater samples; Development of a simple method for the speciation analysis of ¹²⁹I in fresh water and seawater samples; Development of an on-line HPLC-ICP-MS method for the direct speciation analysis of ¹²⁷I in water and leachate samples; Speciation of radionuclides in water includes: Speciation of ¹²⁹I and ¹²⁷I in time-series precipitation samples collected in Denmark 2001-2006 and its application for the investigation of geochemistry and atmospheric chemistry of iodine, Speciation of radionuclides in Ob and Yenisey Rivers, and Speciation of ¹²⁹I and ¹²⁷I in Lake Heimdalen water. Speciation of radionuclides in soils and sediments includes: Sequential extraction of radionuclides in sediments and of trace elements in soil samples. Sequential extraction of radionuclides in aerosols and particles has also been performed. Further-more, sorption experiments have been performed to investigate the association of Pu, Am and Cs with different geological materials. The intercomparison exercises included sequential extraction of Pu, ¹³⁷Cs, U, Th, and ¹²⁹I in one soil and one sediment standard reference materials (NIST-4354, IAEA-375) and Pu in sediment collected from the Lake Heimdalen, Norway.</p>
Key words	Speciation, radionuclides, radioecology, radioanalytical chemistry, Iodine-129, plutonium, fractionation, intercomparison, water, sediment, soil, aerosol, precipitation