Contribution ID: **19** Type: **Poster**

Determination of ⁹⁰Sr and ²¹⁰Pb in deer bone samples by liquid scintillation counting after ionic exchange procedures

Tuesday, 20 April 2010 11:45 (20 minutes)

Environmental monitoring of hazardous radionuclides is an important issue. ⁹⁰Sr can be found in the environment due to the global fallout from atmospheric nuclear explosions and the Chernobyl accident in 1986. It is one of the most hazardous fission products due to its chemical similarity with calcium, because it can be accumulated in bone tissue delivering irradiation doses to the bone marrow.
²¹⁰Pb is a naturally occurring radionuclide which also accumulates in bones. If these two nuclides are measured, a natural and an anthropogenic activity concentration can be compared for the respective samples. Deer bone samples were selected as a feasible environmental contamination indicator.
This work describes different procedures for the isolation of ⁹⁰Sr and ²¹⁰Pb from deer bones by anion exchange methods and their sequential measurement. The aim was to obtain pure ⁹⁰Sr and ²¹⁰Pb spectra in order to avoid spectrum deconvolution procedures.
To prevent collection of Pb on the Sr•Spec® resin we first separated Pb on a Dowex anion exchange column. Sr, which is not held back on the Dowex column, was then purified using Sr•Spec® resin: first Ca and the Ra isotopes were eluted with 3M HNO₃ and then Sr was eluted with distilled water. With this two-step procedure of lead separation on Dowex followed by Sr purification on Sr•Spec®, pure ²¹⁰Pb and ⁹⁰Sr spectra can be achieved by liquid scintillation counting of the respective eluting solutions. The chemical yield of both steps was determined by ICP-MS. Our results of re-measured samples show satisfying agreement with data obtained by a modified Sr•Spec® method and also by the "classical"⁹⁰Sr determination using fuming nitric acid.

Primary author: Mrs WALLOVA, Gabriela (Institute of Inorganic Chemistry, University of Vienna)

Co-authors: Prof. WALLNER, Gabriele (Institute of Inorganic Chemistry, University of Vienna); Mr KANDLER, Norbert (Institute of Inorganic Chemistry, University of Vienna)

Presenter: Mrs WALLOVA, Gabriela (Institute of Inorganic Chemistry, University of Vienna)

Session Classification: Poster Session - Nuclear Analytical Methods

Track Classification: Nuclear Analytical Methods