Geophysical Research Abstracts
Vol. 12, EGU2010-13332, 2010
EGU General Assembly 2010

Liquid Technical Oxygen Samples User for Xe and Kr Radionuclides Determination in the Atmospheric Air

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Increased Kr and Xe concentrations (about $5*10^{-4}\%$ in sum) are known to be contained in liquid technical oxygen as compared with those in the atmospheric air, as the liquid oxygen is enriched with these gases in process of its production. Oxygen sample is conditioned up to the volume of 1L by natural evaporation in a gasifier and after that is processed in sample-preparative installation consisting of a gasifier and two sorbers with zeolite NaA and NaX. Gaseous phase from the gasifier is sequentially transmitted through two zeolite sorbers thus allowing becoming free from CO_2 and moisture. Special trap was used for Rn purification, and after that gaseous phase was introduced into a spectrometric ampoule with activated charcoal. Purification coefficient from Rn reached an analysis of about $5*10^5$. This technique was used for liquid technical oxygen samples 5-7L by volume, which is equivalent to 60-90m^3 of atmospheric air reprocessing.

In St-Petersburg monitoring using this technique was undertaken for 1.5 years. Volume of Xe separated varied from 2 to 15 cm^3, and that of Kr, from 4 to 30 cm^3.

As the duration of air sampling aimed at a sample obtaining was usually 1-2 hours, backward trajectories of air masses transport could be calculated rather exactly, and it is very important for the aims of Xe radionuclides monitoring. This technique could be expected to be useful for monitoring results refinement.

Results of monitoring in St-Petersburg will be presented in the report.

Investigations were carried out in the framework of the ISTC 2133 Project.