Geophysical Research Abstracts, Vol. 9, 06436, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-06436

The Slanic-Prahova (Romania) salt mine ultra-low background radiation laboratory

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An ultra-low background radiation laboratory has been assembled and commisioned in an old Slanic-Prahove salt mine at a depth of 208 m. The concentration of natural radionuclides in mine salt determined by radiochemical and radiometrical methods as well as by epithermal neutron activation analysis showed significant lower concentrations than in soil.

At the same time, preliminary measurements performed within laboratory indicated a global reduction of the absorbed dose due to natural factors of about 75 times, and no traces of neutrons of cosmic origin, within the sensitivity threshold of commercially instruments.

The total gamma spectra between 40 keV to 3 MeV is 80 times lower compared with a spectrum collected in the same conditions in open field, while the background in the energy interval between 2.615 and 3.0 MeV is about 40 times smaller then the corresponding one measured outside mine.

Future experiments concerning low level radioactivity of rocks, soils or other environmental samples performed in this laboratory are discussed.