Contribution ID: **406**   Type: **Verbal**

Nuclear and Related Analytical Techniques Used to Study Atmospheric Deposition of Trace Elements and Radionuclides in Rural and Urban Areas Experiencing Environmental Stress

Monday, 12 May 2014 16:00 (15 minutes)

Experience in applying mosses as biomonitors of trace elements and radionuclides in some selected rural and urban areas affected by intense anthropogenic activity is reviewed. Among them the western part of the Kola Peninsula (NW Russia), the most heavily industrialized area in the entire Arctic; the South Urals (Karabash) counted among the most polluted areas in the world where human impact on the environment is largely irreversible. The dominant groups of pollutants are heavy metals and long-lived radionuclides from full-scale activities and accidents at the radiochemical "Mayak" Production Association (PA). Moss was successfully used to study distribution of 137Cs and 210Pb in Belarus and Slovakia 20 years after the Chernobyl accident. A combination of analytical data (NAA and AAS in our case) with principle component analysis and GIS technologies allowed pollution source characterization and apportioning in the sampled areas around (1) copper mines in Karabash (RF), Bor (Serbia), South of Poland; (2) Zn-Pb smelters in Baia Mare (Romanai), Krdjali (Bulgaria) and Veles (Macedonia); (3) Fe-V plant in Tula (RF); (4) Fe-Cr industry in Tikhvin (RF) and Mo-i-Rana (Norway); (5) oil refinery industry in Yaroslavl (RF), and (6) thermal power plant in one of Moscow districts. Besides passive (terrestrial) moss biomonitoring, active moss biomonitoring (moss bags technique) showed itself efficient in accessing air pollution in large cities (street canyons of Belgrade and Moscow). The results obtained at local scale in the areas experiencing environmental stress can be used for establishing the emission levels of pollutants and to serve a source of information for health-related institutions.

Primary author: Dr FRONTASYEVA, Marina (Joint Institute for Nuclear Research)

Presenter: Dr FRONTASYEVA, Marina (Joint Institute for Nuclear Research)

Session Classification: Nuclear Analytical Methods 1

Track Classification: Nuclear Analytical Methods