Geophysical Research Abstracts
Vol. 15, EGU2013-258, 2013
EGU General Assembly 2013

Geochemical peculiarities of black poplar leaves (Populus nigra L.) in the sites with heavy metals intensive fallouts

Albina Yalaltdinova, Natalya Baranovskaya, Leonid Rikhvanov, and Irina Matveenko
Tomsk Polytechnic University, Tomsk, Russian Federation (yalaltdinova.aly@mail.ru)

The article deals with the content of 28 chemical elements in the leaves ash of black poplar (Populus nigra L.) growing in Ust-Kamenogorsk city area. It is the major industrial center of Kazakhstan Republic on the territory where the industrial giants of non-ferrous metallurgy and nuclear energy are situated. Comparative analysis with the similar data obtained from leaves ash of Populus nigra L. in Tomsk, Ekibastuz, and Pavlodar cities has revealed that in comparison with other urban areas, leaves ash of black poplar (Populus nigra L.) from Ust-Kamenogorsk city is characterized by elevated concentration rates of Ta, U, Zn, Ag, As, Sb, Br, Sr and Na. Within the city, the sites and areas with abnormal contents of typomorphic pollutants have been revealed. In the central part of the city, in the vicinity of lead-zinc plant and Ulba metallurgical plant, the highest concentrations of Ta, U, Zn, Ag, Au, As, Sb, Cr and Fe were marked. In the northeast, where the titanium-magnesium plant is located, elevated concentrations of Br and Sr were stated. Thus, the impact of major city enterprises which are the main sources of heavy metals is reflected in the element composition. Zn, As, Sb, Ag and Au comes from lead-zinc plant and its refinery plants, while Ulba metallurgical plant can be considered source of Ta and U in the environment, producing tantalum and fuel pellets for nuclear power plants. These companies, due to the current objective circumstances, are located in the central part of the city, have a significant negative effect on the environment and form the risk factors for human health.