Bioaccumulation of uranium in shrubs and spontaneous flora grown within mining dumps (Crucea uranium deposit, Romania)

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A study concerning the U transfer to flora grown within a uranium ore deposit was conducted on the Crucea mine (the East Carpathians, Romania). The bioaccumulation of U in the spontaneous flora resulted in the removal of this metal from the soil and reduces the risk to the environment. Phytostabilization is attractive to reduce bioavailability and offsite migration of contaminants. Unlike other phytoremediative techniques, the goal of phytostabilization is not to remove metal contaminants from a site, but rather to stabilize them and reduce the risk to human health and the environment. The increased concentration of uranium in the surfaced soils is related to dispersion of this element from wastes.

As regards the uranium assimilations processes by the vegetation growing up in the investigated area we find the follows:

-The fir *Abies alba* and the spruce *Picea excelsa* were found to have a high uptake capacities of uranium;

-*Urtica dioica*, *Oryopteris filix-mas*, *Holoshoenus vulgaris* and *Xanthium spinosum* don't have a uranium retaining capacities. From the investigating plants from the spontaneous flora only *Cardaria draba* have a higher retaining capacity;

-It was interesting the *Rubus ideaeus* and *Vaccinium myrtillus* shrubs situation who has edible fruits and which through U concentrations in different parts represent a peril for the health of common persons. The fact that they concentrate 6% of the uranium from the soil in fruits matches them dangerous for humans. As a matter of fact, *Vaccinium myrtillus* has the greatest capacity of concentrating the uranium, after the conifers, having an accumulation factor for U of 137.38;

-*Fragaria vesta* concentrate also uranium in the fruits, in a greater proportion than the *Rubus ideaeus*.

All those plants grown within mining dumps are tolerant to U contamination. It apparently blocked and/or "stored" U particularly in root cells and diminishing the quantity of mobile natural heavy radionuclides. Ones of them could be used for the regreening of sites with moderate heavy/radioactive metal pollution.