Mobile Forms of Fluorine in Ecosystems end Endemic Diseases

DMYTRENKO G.E., ZHOVINSKY, E.Ya. Kiev National University, Kiev, Ukraine; Institute Geochemistry, Mineralogy and Ore Formation NAS of Ukraine, Kiev, Ukraine.

Fluorine is a chemically active element. But despite this fact many forms of fluorine have high migration ability. Fluorine is supplied to objects of environment due to geological and technogenic processes disrupting the balance of natural system solution-rock-air and determining migration, differentiation and concentration of fluorine in air, soils, rocks, waters, plants.

High concentrations of fluorine in air, potable waters and plants cause different endemic diseases – fluorosis, aging of bones and many others. Fluorine is supplied from air into human body only in the areas with high technogenic pollution. In all other cases the main supply of fluorine into human body occurs with potable waters. They are enriched with fluorine when the natural system solution-rock is disbalanced as a result of various natural and technogenic processes.

It has been established that endemic diseases are caused by potable waters with high concentrations only of active fluorine forms. With the same fluorine concentration in water fluorine forms may become much more active if nitrates, heavy metals, radionuclides and other toxic elements are present. That is why the studies of mobile forms and equilibrium of natural system solution-rock make possible to forecast the character and type of endemic disease, to distinguish the areas with anomalous concentrations of various forms of fluorine and its compounds and to predict the territories with high degree of ecological risk.