P 128

Plant bioassays of possible environmental contamination

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In plants exposed to the sites in the area of the former uranium mine in Slovenia, where the influence of radioactivity was suspected, chromosomal aberrations were studied. Experimental plants (*Vicia faba* L.) were potted in the soil from experimental sites in the close proximity of the dry tailings pile and yellow-cake production plant of the mine as well in the normal garden soil – one pot of each was exposed to the experimental sites and in environment with no anthropogenic radiation sources. At every experimental and control site flower buds and root tips were sampled after six weeks of exposure. Squash-slides of root tips and stamens were prepared for cytogenetic analyses using standard methods. In the analyses, mitotic indices, percentage of chromosomal aberrations and micronuclei as well as pollen sterility and deformation were determined. The results indicated the relationship between the degree of radioactive contamination and damage to plant genetic material, but impacts of harsh weather conditions and factors other than ionising radiation on cytogenetic damage could not be excluded. Thus plant bioassays in natural environments should be involved only with long-term biomonitoring for identification of hazards from complex mixtures of genotoxic agents.