

## **IN-SITU MEASUREMENTS OF SOLUTE TRANSPORT IN STRUCTURED SOILS BY MEANS OF NUCLEAR TRACER TECHNIQUE**

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Within the framework of the Swiss-Slovak joint research program “in-situ measurements of rapid solute and particle transport in structured soils” measurements of water flow and solute transport were made in structured silt-loam soil at the Experimental Station of the Research Institute of Irrigation in Most near Bratislava. The measurements of water flow were made by means of rapid TDR moisture meters (Swiss group) and those of solute transport by means of nuclear tracer technique (Slovak group). The probe, by means of which the transport of a selected gamma-emitting tracer in the unsaturated zone can be monitored, consists of 10-mm-diam duralumin tube, in which a Geiger-Mueller detector, connected to the nuclear analyser with coaxial cable, can be lowered to any desired depth. Immediately after the infiltration of 27 mm of water tagged with 200 MBq of iodine-131 the radioactive iodine was monitored up to the depth of  $47 \pm 7$  cm in the neighbourhood of 11 probes. After 22-hours redistribution the penetration depth of iodine was  $50 \pm 6$  cm. After infiltration and redistribution of three additional 27-mm doses of water (i.e. 81 mm of water) the penetration depth of iodine was  $70 \pm 8$  cm. These results make evident the presence of macropore and matrix flow to the depth of about 50 cm and matrix flow only in deeper soil layer.