

SPACE-TIME DYNAMIC OF PESTICIDE LOADING IN THE DRINKING WATER RESERVOIR ŠVIHOV

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The article deals with space-time dynamic of non-polar and polar compounds load into the drinking water reservoir Švihov in Želivka river basin during the whole vegetation season by passive sampling techniques. The monitoring on the nine tributaries of the Švihov water reservoir and on the raw water inlet to the Želivka drinking water treatment plant took place for eight months from April to November 2018. Several types of membranes were used to capture wide range of pollutants: silicone rubber (61 compounds measured), semipermeable membrane device (43 compounds measured) and polar organic chemical integrative sampler (38 compounds measured). Exposition time in water environment was 30 days. Hydrological and precipitation data from measuring stations in Želivka river catchment were recorded.

Several dozens of organic compounds (over 80) were detected by passive monitoring. Presence of formerly widely used organochlorine pesticides HCH and DDT were confirmed. The ratio of PCB congeners in samples corresponds to historical usage of products containing Delor 106. The detection of pesticides in membranes corresponded to the species composition of cultivated agricultural crops in the catchments of individual tributaries. The level of water pollution depended strongly on precipitation-runoff conditions, soil erosion and river basin characteristics. The most polluted were Medulán and Lohenický streams. For some pesticides the metabolite concentrations were higher than parent compound concentration. The highest levels of pesticides were observed for metazachlor (19,000 ng/membrane), metolachlor (max. 1,300 ng/membrane) and terbutylazine-2-hydroxy (1,800 ng/membrane). Of the nonpolar compounds, the highest concentration was found for fluoranthene (683 ng/membrane).