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# Phosphorus accummulation in reed bed treatment filter

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Introduction
Constructed wetlands are well known method for alternative wastewater treatment in rural areas in Poland. There are mainly used as a biological treatment step of domestic wastewater. The most popular are subsurface flow constructed wetlands (reed bed systems) with bed filled with site soil (mainly clayey sand or sandy clay). Over 30 such plants with daily flow above 5 m3 per day is operated in Poland.

Object and goal of research
Many researches have been made on estimation constructed wetlands treatment efficiency, however there are mostly concentrated on inlet outlet concentration compartments. In this study preliminary results of phosphorus accumulation in the bed of horizontal subsurface flow constructed wetland are presented. Monitored plant treats wastewater from 150 inhabitants in the volume of 14 m3 d-1 at average and is under operation from December 1998. The goal of research was to asses the distribution of phosphorus in the wetland bed after 8 years of treatment of domestic wastewater. Obtained results are shown on the background of organic matter (TOC) distribution.

The methods applied
The bed of the constructed wetland (30 m width and 33 m length) was divided by net of 20 points. In every point two soil samples, one from the depth of 0-10 cm and one from the depth of 20-30 cm, were collected. The samples were analyzed for organic matter and total phosphorus content.

Investigation findings
The results showed variation of measured indexes on the length and depth of treatment bed. In generally, the highest accumulation occurred near the inlet zone of wetland. The relation is rather clear in case of organic matter, but in case of phosphorus high contents were also observed at the outlet zone of wetland. Higher organic matter concentrations were observed in deeper layer (20-30 cm) than in upper layer (0-10 cm) of the bed.