



## **The Elbe River fluvial lakes – water and sediment quality as a result of anthropogenic activities**

**D. Chalupova, B. Jansky**

Department of Physical Geography and Geoecology, Charles University in Prague, Faculty of Science, Prague, Czech Republic

(dada.chalupova@volny.cz / Phone: +420 777 025 449, +420 2215 1350)

**Key words** – oxbow lake, Elbe, water quality, plankton, heavy metals, sediment

From the year 2000 to 2007, the environmental state and the impact of human activities on fluvial lakes in the central part of the Czech section of the Elbe River is evaluated. This paper presents the results from following oxbow lakes: Lake Labiště (east of Pardubice), Lake Doleháj (near Kolín), and Lake Obříství (near Mělník). New localities, which present different types of fluvial lakes in the Elbe River floodplain, have been evaluated in 2006 – Němčice (near Pardubice), Lžovice (near Kolín), Kluk (near Poděbrady) and Václavka (near Lysá nad Labem). In spite of the identical origin during the river canalization, major differences were found as a result of distinct anthropogenic strain. Very low oxygen saturation (mean saturation 46 %) was determined in Labiště; nutrient concentrations and their seasonal dynamics (nitrites, nitrates, and phosphates) differed in each lake according to the kind of fertilizer used in nearby fields. Unlike the Elbe River, significant organic pollution was determined in all the examined lakes. Concerning heavy metals in sediments, the lowest concentrations of all measured elements (Ag, Cd, Co, Cr, Cu, Fe, Hg, Mn, Ni, Pb and Zn) were found in Doleháj as a result of an earlier lake separation from the river and not as harmful effect of the Kolín chemical industry as it was in other two localities. At the locality of Obříství, the sediment pollution increased according to the Indices of Geoaccumulation only in the case of Cd and Pb after the flood in the Elbe River catchment area in August 2002. By comparing the appropriate lake sediment layer with the Elbe riverbed sediments, higher concentrations of the majority of studied elements were determined in the lakes.