

Total Mercury in Lake Neusiedl, Austria

F. Jirsa¹, D. Pirker¹ and R. Krachler¹

¹ University of Vienna, Institute of Inorganic Chemistry, Währinger Strasse 42, 1090 Vienna, Austria, franz.jirsa@univie.ac.at

Abstract. Between May and September 2011 a total of 361 samples from water, sediment, macrophytes and fish tissues from the shallow, slightly alkaline Lake Neusiedl were measured for their total mercury content with cold vapour atomic absorption spectroscopy (CV-AAS). Hg content of surface water was below the LOD of 0.1 µg/L and the sediments displayed contents between 0.025 and 0.113 µg/g dw, significantly correlated with the proportion of organic components (fig 1). Although these results do not point to an anthropogenic pollution of the lake, considerable amounts of mercury could be measured in fish samples and macrophytes. Both investigated submerged plant species, namely *Potamogeton pectinatus* and *Myriophyllum spicatum* show a high potential for bioaccumulation of Hg, presenting mean values of 0.245 ± 0.152 and 0.298 ± 0.115 µg/g dw respectively. Compared to freshwater fish from other unpolluted sites high amounts of Hg could be measured (fig. 2). Biomagnification and significant differences could be observed when comparing muscle samples of the planctivorous fish species rudd *Scardinius erythrophthalmus* (n = 10, mean = 0.084 µg/g ww) with the piscivorous perch *Perca fluviatilis* (n = 21, mean = 0.184 µg/g ww) or pike-perch *Sander lucioperca* (n=9, mean = 0.205 µg/g ww) respectively. Significantly lower values were measured in the muscle of the piscivorous pike *Esox lucius* (n = 25, mean = 0.135 µg/g ww) in which a strong correlation between fish age and Hg content did not occur. In addition the muscle/liver ratio of Hg in pike was significantly lower compared to the other fish species, which points to a different Hg metabolism in pike, maybe under the specific saline alkaline conditions of this lake.

Key words: total mercury, bioaccumulation, bioindication, freshwater fish, submerged waterplants

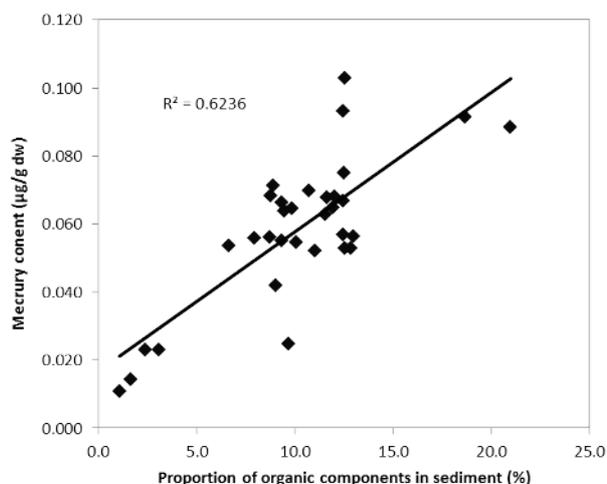


Fig. 1. Correlation of total mercury and organic components in sediments of Lake Neusiedl.

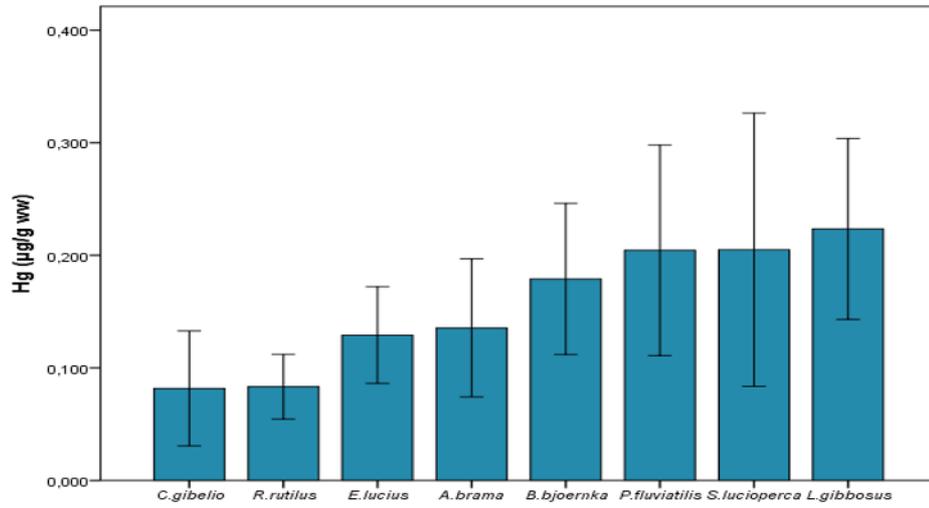


Fig. 2. Total mercury in muscle of different fish species from Lake Neusiedl.