Total mercury (THg) in water and sediment

Zorana Kljaković-Gašpić

Institute for Medical Research and Occupational Health (IMROH)

SECOND MEETING

Integrated evaluation of aquatic organism responses to metal exposure: gene expression. bioavailability. toxicity and biomarker responses (BIOTOXMET)

Zagreb. 16th December 2021

HrZZ Croatian Science Foundation

ANDRIJA STAMPAR TEACHING INSTITUTE OF PUBLIC HEALTH

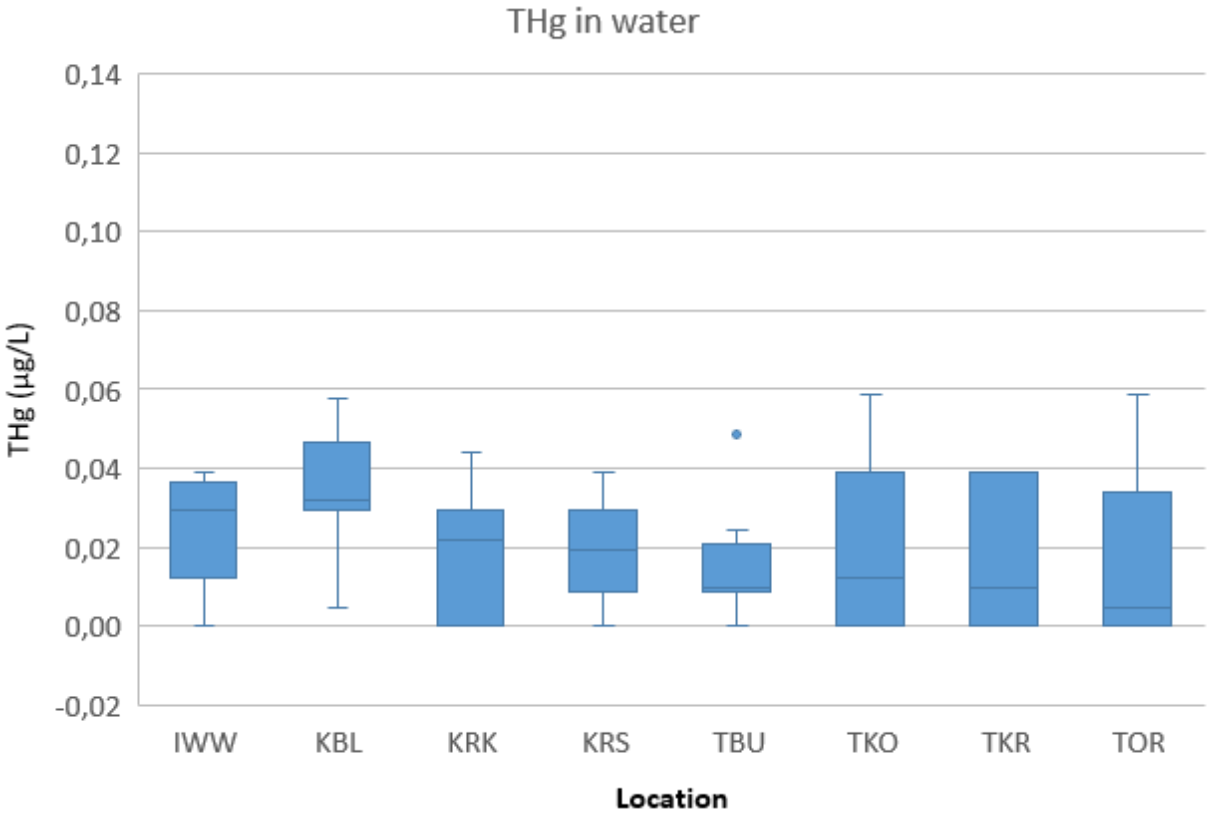
MONTAN UNIVERSITÄT WWW.UNILEOBEN.AC.AT

FFoQSI FEED AND FOOD QUALITY SAFETY AND INNOVATION

BIOTOXMET

THg in water samples

- We expected that most of the mercury will be present in complexed form (unfiltered >> filtered)

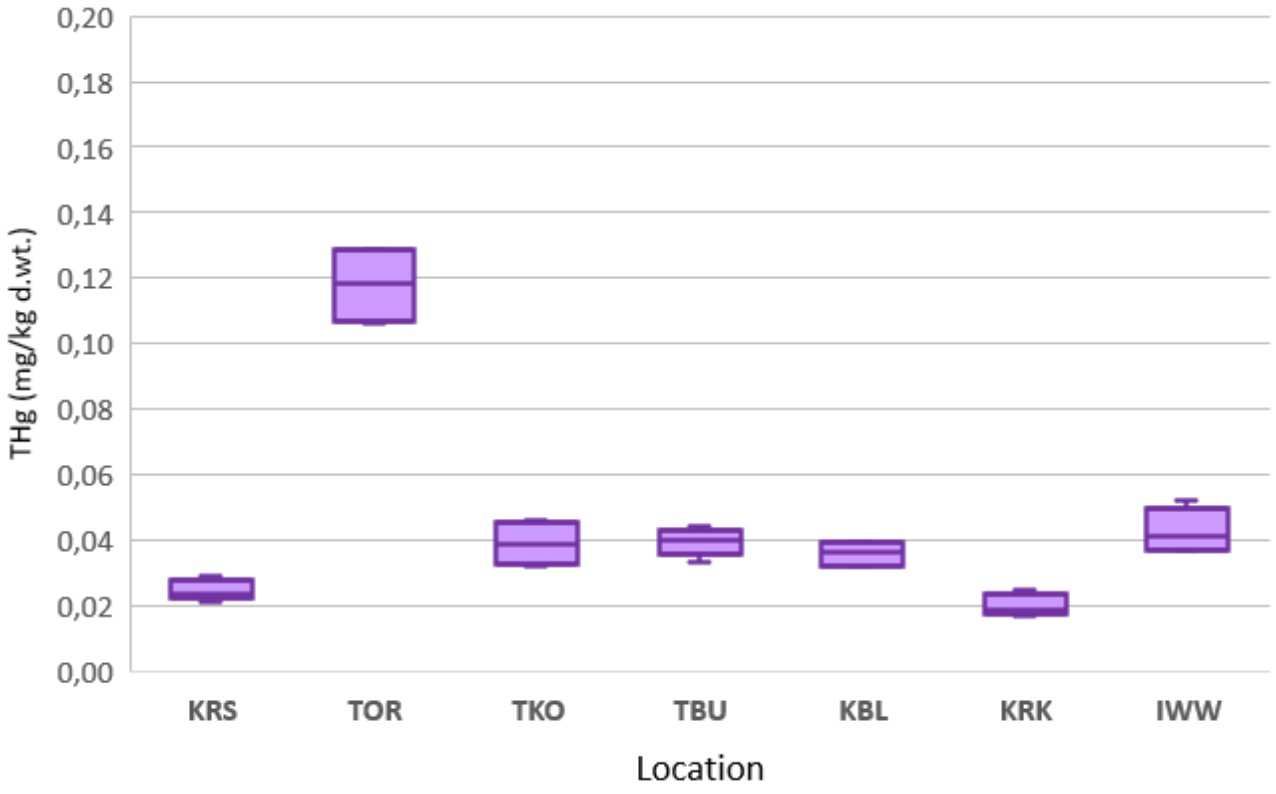


➢ Concentrations of THg in all water samples (filtered and unfiltered) were close to the detection limit of the method, i.e. at the noise level

THg in sediments

Location	Average concentration (mg/kg d.wt.)
Krka source (KRS)	0.025 ± 0.003
Tributary Kosovčica (TKO)	0.039 ± 0.007
Tributary Orašnica (TOR)	0.118 ± 0.013
Industrijska otpadna voda (IWW)	0.043 ± 0.007
Krka kod Knina (KRK)	0.020 ± 0.004
Tributary Butišnica (TBU)	0.040 ± 0.004
Brljan Lake (KBL)	0.036 ± 0.004
Average (range)	**0.045 ± 0.031 (0.017 - 0.129)**

THg in sediments



- Concentrations of THg in sediments were mostly lower than 0.05 mg/kg d.wt.
- Sediments of Tributary Orašnica had 2.5-6 times higher values in comparison to other locations

THg in sediments: comparison with other locations

Location	Average concentration (mg/kg d.wt.)	Reference
World average for stream sediment, fraction <63 µm	0.09 (<0.01-3.3)	Reimann and de Caritat, 1998
Open central Adriatic	0.02-0.13	Ferrara and Maserti, 1992
Open south Adriatic	0.03-0.07	Ferrara and Maserti, 1992
Krka River estuary (unpolluted surface sediment)	0.109-0.158	Kwokal et al., 2002
Kaštela Bay - chlor alkali plant	10.20 ± 0.87	Kljaković-Gašpić et al., 2006
Kaštela Bay - at the bay exit	0.167 ± 0.025	Kljaković-Gašpić et al., 2006
Gulf of Trieste (Cinnabar mine in Idrija)	47.8	Hines et al., 2000
Krka River	**0.045 (0.017 - 0.129)**	**This study**

- Concentrations of THg in water and sediments were low, indicating that there was no significant pollution with total mercury at the analyzed sites!!