

O-21*Biomarkers***CRITICAL CONCENTRATIONS OF ENVIRONMENTAL VARIABLES AND ACCUMULATED POLLUTANTS IN RELATION TO ECOLOGICAL WATER QUALITY**

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In the present study two different approaches were followed to assess the protectiveness of environmental quality standards (EQS) for the ecological quality of surface waters. In the first approach we investigated whether concentrations of some environmental variables including metals, chloride and sulfate are related to ecological quality as assessed by a macroinvertebrate-based biotic index, the MMIF (Multimetric Index of Flanders). This way it was evaluated whether the current EQS for these variables was protective enough to reach a good ecological status. Large datasets from total and dissolved metal concentrations and other variables in Flemish (Belgium) fresh water systems and the associated macroinvertebrate-based biotic index MMIF (Multimetric Macroinvertebrate Index Flanders) were used to estimate critical environmental concentrations for good ecological water quality, as imposed by the European Water Framework Directive (2000). Measurements of metals in the environment only reflect the momentary pollution status and do not take into account differences in bioavailability, affected by abiotic factors such as pH, water hardness, temperature and biotic factors such as feeding habits. As a consequence, current water or sediment quality criteria for micro pollutants are not necessarily adequate and well related to effects on aquatic communities observed in the real world. Direct measurement of pollutants in biota could tackle these problems. Therefore in a second approach we also related accumulated metal levels to effects at the community level again by combining datasets of accumulated metals in larvae of the non-biting midge (*Chironomus* sp. gr. *thummi*) with the MMIF. For both approaches quantile regression analysis was used. We were able to evaluate the existing EQS of the measured metals, chloride and sulfate and to derive for a set of metals safe body burdens in midge larvae that are protective of ecological quality.