

Development of State-Specific Aquatic Life Criteria for Selenium in West Virginia

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Abstract: In response to a legislative mandate to derive State-specific aquatic life criteria for selenium, the West Virginia Department of Environmental Protection (WVDEP) has studied lotic and lentic waters having elevated selenium exposures for assessment of potential population-level effects on resident fishes. Of interest, the spawn of several lotic fish species common to the State (e.g., creek chub, *Semotilus atromaculatus*, and central stoneroller, *Campostoma anomalum*) were successfully field-collected, cultured, and examined for selenium-induced impacts to sensitive early life (larval) stages. Measurements of selenium concentrations in various fish tissue matrices, including whole body, egg/ovary, and gut contents, were performed to determine the extent of selenium uptake, and to derive tissue-based thresholds that correspond to toxicological endpoints among the larvae. Severity-graduated deformity evaluations of larval fishes were performed to establish deformity rates for craniofacial, spinal, fin, and yolk-sac sorption anomalies. The findings, along with information from other relevant studies, will be used in development of the State-specific selenium criteria.