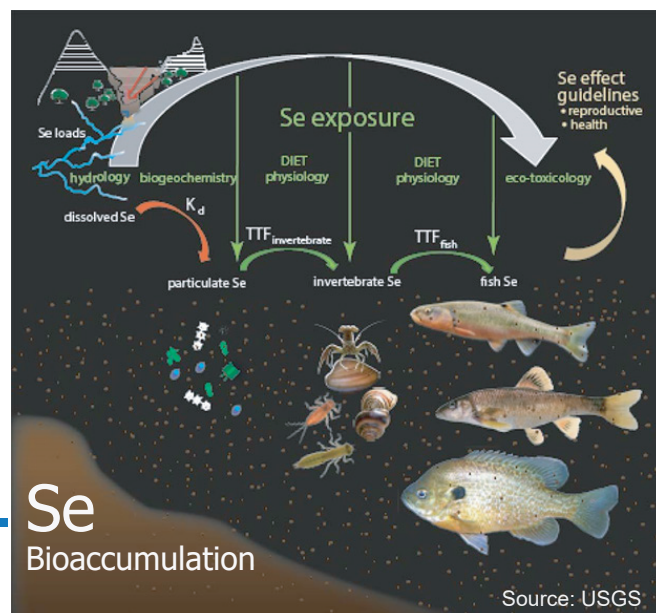




Selenium Site-specific Assessment and Water Quality Criteria Development

For protection of ecological resources under the Clean Water Act, national criteria for selenium involve a tiered system of criteria values applicable to concentrations in water or in fish tissue. Both types of values can be modified on a state- or site-specific basis. Because of site-to-site differences in selenium bioaccumulation, there can be considerable differences in the water concentration needed to prevent the fish tissue criterion from being exceeded. And because of the protectiveness built into the nationally applicable selenium water criteria values – the bottom tier of the federal criteria, intended to be applied to all sites in the initial phase of any selenium assessment – most sites can achieve the fish tissue criterion (and full protection of their ecological resources) using somewhat less restrictive site-specific water values.



Capabilities

- Sampling Water and Fish Tissue
- Site-specific and State Water Quality Criteria
- NPDES Permit Support
- Risk Assessment
- Aquatic Toxicology

Clients

- Federal and State Agencies
- Electric Utilities
- Mining Industry
- Oil Refineries



Photo: Patrick Campbell, WV DEP

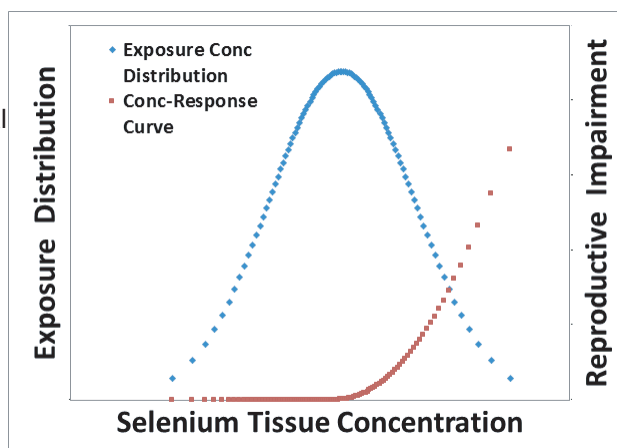
Measurement of fish tissue concentrations – Obtaining selenium concentrations at a site allows for comparison with the more accurate and less restrictive fish tissue criteria. GLEC has over 20 years of experience collecting targeted fish species for analysis of contaminants in a variety of surface waters across the U.S. for federal and state agencies, industry, and municipalities.

Derivation of site-specific selenium water criteria – Because the degree of bioaccumulation of selenium from water, through the food chain, into fish or bird tissue varies substantially from site to site, there is often considerable benefit in deriving a site-specific water value. Having worked with selenium bioaccumulation data from 65 sites nationwide, GLEC has the expertise needed to provide the most appropriate and scientifically defensible water criterion for a site.

Derivation of site-specific fish- or bird-tissue criteria – In some situations it may be appropriate to reassess whether the federal selenium tissue criteria values are appropriate for a site, following federal guidance. Through its past experience GLEC is familiar with the data (and associated technical issues) involving all 16 species evaluated in the national criteria document, and can confidently assess the utility of new data generated subsequent to the national criterion derivation.

Quantitative risk assessment

GLEC can generate quantitative risk assessments accounting for the variability of temporal or spatial exposure at a site. GLEC has considerable experience with modeling techniques applicable to derivation of alternative values for selenium criteria averaging periods and attainment frequencies.



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