

Water Quality Criteria: Implications for Testing

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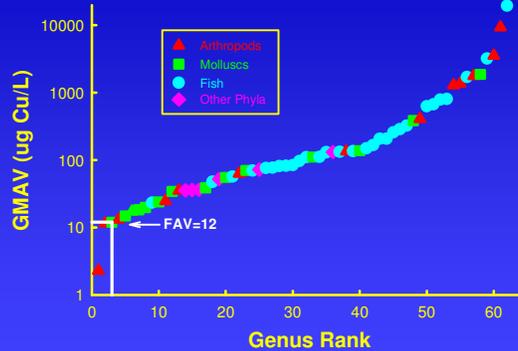
The McKim Conference on the Use of QSARs
and Aquatic Toxicology in Risk Assessment
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U.S.EPA Water Quality Criteria for the Protection of Aquatic Life

- Aquatic Life Criteria (ALC) issued by the U.S.EPA Office of Water define limits on chemical exposures which are considered sufficient to preclude unacceptable effects on aquatic communities.
- Procedures are described in "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" (Stephan et al., 1985, U.S.EPA).
- Used in regulatory programs to limit discharge of toxic chemicals, in evaluations of aquatic resource condition from monitoring data, and in setting clean-up goals for Superfund sites and other assessments.

U.S.EPA Aquatic Life Criteria Acute Toxicity Data Use

- 48- or 96-hr acute toxicity data are used to derive aquatic life criteria.
- Mean acute values (MAV) are derived from the 5th percentile of the acute toxicity data (i.e., the 5th percentile of the Species Sensitivity Distributions (SSDs)).
- The “Final Acute Value” (FAV) is set equal to the MAV divided by the average SMAV:SMCV ratio for at least three species, or an SMCV of an important species.
- The “Criterion Maximum Concentration” (CMC) is set equal to the FAV or a value based on plant toxicity data.
- 1-hr average exposure concentrations are allowed to exceed the CMC only once in three years on average.

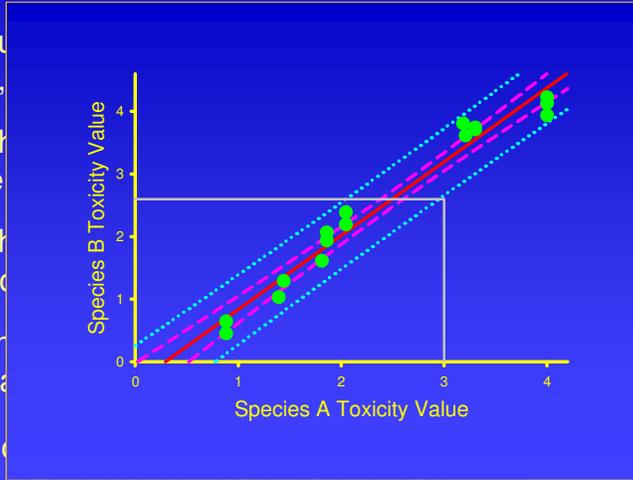


U.S.EPA Aquatic Life Criteria Chronic Toxicity Data Use

- “Chronic values” (CV) are set to the EC20 or the mean of the NOEC&LOEC for the most sensitive of survival, growth, or reproductive endpoints from tests with minimum duration of several days to a few months, depending on species.
- The “Final Chronic Value” (FCV) is set equal to the fifth percentile of GMCVs for at least eight animal genera, the FAV divided by the average SMAV:SMCV ratio for at least three species, or an SMCV of an important species.
- The “Criterion Continuous Concentration” (CCC) is set equal to the FCV or a value based on plant toxicity data.
- 4-day average exposure concentrations are allowed to exceed the CCC only once in three years on average.

U.S.EPA Aquatic Life Criteria Test Data Issues

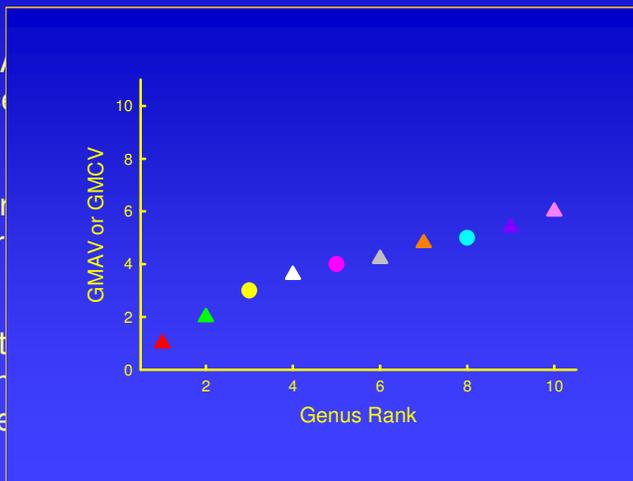
- Although limited,
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U.S.EPA Aquatic Life Criteria Benefits from Predictive Toxicity Tools

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