**Section 302.575 Procedures for Deriving Tier I Water Quality Criteria and Values in the Lake Michigan Basin to Protect Wildlife**

The Lake Michigan Basin Wildlife Criterion (LMWC) is the concentration of a substance that, if not exceeded, protects Illinois wild mammal and bird populations from adverse effects resulting from the ingestion of surface waters of the Lake Michigan Basin or aquatic prey organisms taken from surface waters of the Lake Michigan Basin. Wildlife criteria calculated under this Section protect against long-term effects and are therefore considered chronic criteria. The methodology involves the use of data from test animals to derive criteria to protect representative or target species: bald eagle, herring gull, belted kingfisher, mink, and river otter. The lower of the geometric mean of species-specific criteria for bird species or mammal species is chosen as the LMWC to protect a broad range of species.

a) This method must also be used for non-BCCs when appropriately modified to consider the following factors:

1) Selection of scientifically justified target species;

2) Relevant routes of chemical exposure;

3) Pertinent toxicity endpoints.

b) Minimum Data Requirements

1) Test Dose (TD). To calculate an LMWC, the following minimal database is required:

A) There must be at least one data set showing dose-response for oral, subchronic, or chronic exposure of 28 days for one bird species; and

B) There must be at least one data set showing dose-response for oral, subchronic, or chronic exposure of 90 days for one mammal species.

2) Bioaccumulation Factor (BAF) Data Requirements

A) For any chemical with a BAF of less than 125, the BAF may be obtained by any method; and

B) For chemicals with a BAF of greater than 125, the BAF must come from a field measured BAF or Biota-Sediment Accumulation Factor (BSAF).

c) Principles for Developing Criteria

1) Dose Standardization. The data for the test species must be expressed as, or converted to, the form mg/kg/d utilizing the guidelines for drinking and feeding rates and other procedures in 40 CFR 132, incorporated by reference in 35 Ill. Adm. Code 301.106.

2) Uncertainty factors (UF) for utilizing test dose data in the calculation of the target species value (TSV);

A) Correction for Intermittent Exposure. If the animals used in a study were not exposed to the toxicant each day of the test period, the no observed adverse effect level (NOAEL) must be multiplied by the ratio of days of exposure to the total days in the test period.

B) Correction from the Lowest Observed Adverse Effect Level (LOAEL) to NOAEL (UF1). For those substances for which a LOAEL has been derived, the UF1 must not be less than one and should not exceed 10.

C) Correction for Subchronic to Chronic Extrapolation (UFs). In instances where only subchronic data are available, the TD may be derived from subchronic data. The value of the UFs must not be less than one and should not exceed 10.

D) Correction for Interspecies Extrapolations (UFa). For the derivation of criteria, a UFa must not be less than one and should not exceed 100. The UFa must be used only for extrapolating toxicity data across species within a taxonomic class. A species-specific UFa must be selected and applied to each target species, consistent with the equation in subsection (d).

d) Calculation of TSV. The TSV, measured in milligrams per liter (mg/L), is calculated according to the equation:

TSV = {[TD x Wt] / [UFa x UFs x UF1]} / {W + Σ[FTLi x BAFWLTLi]}

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| Where:  |  |  |
|  |  |  |
| TSV  | = | target species value in milligrams of substance per liter (mg/L).  |
| TD | = | test dose that is toxic to the test species, either NOAEL or LOAEL. |
| UFa | = | the uncertainty factor for extrapolating toxicity data across species (unitless). A species-specific UFa must be selected and applied to each target species, consistent with the equation. |
| Ufs | = | the uncertainty factor for extrapolating from subchronic to chronic exposures (unitless). |
| Uf1 | = | the uncertainty factor for extrapolation from LOAEL to NOAEL (unitless). |
| Wt | = | average weight in kilograms (kg) of the target species. |
| W | = | average daily volume of water in liters consumed per day (L/d) by the target species. |
| FTLi | = | average daily amount of food consumed by the target species in kilograms (kg/d) for trophic level i.  |
| BAFWLTLi | = | aquatic life bioaccumulation factor with units of liter per kilogram (L/kg), as derived from 35 Ill. Adm. Code 302.570 for trophic level i. |

1. Calculation of the Lake Michigan Basin Wildlife Criterion. TSVs are obtained for each target species. The geometric mean of the TSVs is calculated for all mammal species and all bird species. The LMWC is the lower of the bird or mammal geometric mean TSV.

(Source: Amended at 47 Ill. Reg. 4437, effective March 23, 2023)