**Section 302.555 Determining the Tier I Lake Michigan Acute Aquatic Toxicity Criterion (LMAATC): Independent of Water Chemistry**

If the acute toxicity of the chemical has not been shown to be related to a water quality characteristic, including hardness, pH, or temperature, the Tier I LMAATC is calculated using the procedures below.

a) For each species for which more than one acute value is available, the Species Mean Acute Value (SMAV) is calculated as the geometric mean of the acute values from all tests.

b) For each genus for which one or more SMAVs are available, the Genus Mean Acute Value (GMAV) is calculated as the geometric mean of the SMAVs available for the genus.

c) The GMAVs are ordered from high to low in numerical order.

d) Ranks (R) are assigned to the GMAVs from "1" for the lowest to "N" for the highest. If two or more GMAVs are identical, successive ranks are arbitrarily assigned.

e) The cumulative probability, P, is calculated for each GMAV as R/(N+1).

f) The GMAVs to be used in the calculations of subsection (g) must be those with cumulative probabilities closest to 0.05. If there are fewer than 59 GMAVs in the total data set, the values utilized must be the lowest four obtained through the ranking procedures of subsections (c) and (d).

g) Using the GMAVs identified under subsection (f) and the Ps calculated under subsection (e), the Final Acute Value (FAV) and the LMAATC are calculated as:

FAV = exp(A) and

LMAATC = FAV/2

Where:

|  |  |  |
| --- | --- | --- |
| A | = | L + 0.2236 S |
| L | = | [Σ(lnGMAV) – S(Σ(P(0.5)))]/4 |
| S | = | [[Σ((lnGMAV)2) - ((Σ(lnGMAV))2)/4] / [Σ(P) - ((Σ(P0.5))2)/4]]0.5 |

h) If a resident or indigenous species whose presence is necessary to sustain commercial or recreational activities will not be protected by the calculated FAV, then the SMAV for that species is used as the FAV.

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