Carryover of CH3Hg from feed to sea bass and salmon

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Publication date: 2017

Document Version
Publisher's PDF, also known as Version of record

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Citation (APA):
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Model. Fish concentration ($C_{fish}$) as a function of feed uptake, elimination ($k_E$) and growth dilution ($k_G$), where uptake depends on feed concentration ($C_{feed}$), assimilation ($\alpha$) and feeding rate ($F$). From fish and feed weight ($w$), specific growth rate (SRG) and feed conversion rate (FCR) are calculated.

\[
\frac{dC_{fish}}{dt} = \alpha \cdot F \cdot C_{feed} - k_E \cdot C_{fish}
\]

FCR = $w_{feed \ consumed} / \Delta w_{fish \ gained}$ [1]

$k_G = \text{SGR} = (\ln w_t - \ln w_0) / t$ [2]

$c_fish \ growth \ corrected(t) = c_{fish} \cdot (1 + k_G \cdot t)$ [3]

$\ln \ (c_{fish} - c_{fish, \ control \ diet}) = constant - k_E \cdot t$ [4]

$c_{fish}(t) = \frac{\alpha \cdot F \cdot C_{feed}}{k_E} \cdot (1 - \exp (k_E \cdot t))$ [5]

Conclusion. Toxicokinetics were modeled. Feed with low levels of CH$_3$Hg (41-75 ng/g) showed assimilation ($\alpha$) close to 100% and low elimination ($k_E$). Similar results for all diets.