

Idaho 2015 Human Health Criteria Update
Draft Policy Decision Document
September 30, 2015

The calculation of human health criteria involves inputs on chemical specific factors of toxicity, bioaccumulation, and relative source contribution. It also takes into account population specific exposure factors of body weight, drinking water intake and fish intake (or fish consumption rate). Related to the latter are questions regarding choice of target population, how to best describe the target population's exposure, and the acceptable level of exposure, i.e. risk.

The Idaho Department of Environmental Quality discussed these matters with a negotiated rulemaking committee over a series of nine meetings from Oct. 13, 2013 to March 12, 2015, and produced eight policy discussion papers to illuminate the issues. After considering the input from the meetings, DEQ presented its draft recommendations to the committee on April 21, 2015. Subsequent to that we received public comment, considered the comments, and further modified the basis for calculation of Idaho's proposed human health criteria.

This document summarizes the *draft* decisions that are embodied in DEQ's proposed human health criteria to be published for public comment on Oct. 7th. They are subject to change in response to public comment yet to be received, and are organized roughly in the order they were considered, not by importance.

Fish Consumers and non-consumers: Idaho has based its proposed rule on fish consumption rates for consumers of fish only. A fish consumer is anyone who reported eating fish in the 12 months preceding inquiry.

Target population: Idaho has followed EPA's 2000 guidance and looked at both the general population and three populations with higher exposure in Idaho, by virtue of expected higher fish consumption: Idaho anglers, Shoshone-Bannock Tribes, and the Nez Perce Tribe.

Criteria calculation: Idaho has based its human health criteria on probabilistic risk assessment, using distributions for Idaho specific fish consumption rate and body weight, and a national distribution for drinking water intake.

Fish Included: Idaho has based its fish consumption rate on 'Idaho Fish'. Idaho Fish is a subset of all fish that consists of Idaho resident freshwater species. Because of their life history steelhead and kokanee are considered resident freshwater species. Other varieties of salmon, e.g. Chinook and Coho, based on their life history, are excluded as being largely marine species.

Target Risk: Idaho's risk management decision is to apply an incremental cancer risk level of 10^{-6} for carcinogens and a hazard quotient of one for non-carcinogens. To accommodate the inherent range in

risk, we applied these risk levels at the 95th %tile for the general population and at the mean for the three higher fish consuming populations.

Relative source contribution: Idaho used EPA's recommended 2015 RSC values; most equaled their default value of 0.2.

Bioaccumulation: Idaho used EPA's 2015 recommended BAF values, where available. Where new BAFs are not available from EPA, EPA's older BCF values were used. Because BAFs are available for trophic levels 2, 3, and 4, DEQ created an average BAF for each chemical for purposes of criteria calculation. Our average BAFs are weighted by the trophic level proportions evident in the local fish consumption data we used.

Body Weight: Idaho used the body weight distribution from its Idaho general population survey. The mean of this distribution is 80 kg.

Drinking Water Intake: For exposure from drinking water Idaho used data provided in EPA's 2011 Exposure Factors Handbook for per capita adult intake of water from community water supplies. The 90th percentile of this distribution is 2.4 L/day.

Toxicity values: For the most part Idaho has used EPA's 2015 recommended values for toxicity. However, for some chemicals EPA did not update criteria in 2015 and so did not provide updated toxicity values. In these cases Idaho used current IRIS toxicity values. For one chemical, thallium, Idaho used an EPA Provisional Peer Reviewed Toxicity Value (PPRTV). PPRTVs are one of eight sources in addition to IRIS that EPA utilizes in developing AWQC. For benzene, where EPA provided a high and a low toxicity value, Idaho calculated criteria using both values and then averaged the resulting criteria for its proposal.

Fish consumption / exposure: Based on Idaho's survey and NCI analysis of dietary recall results, the 95th %tile Idaho fish consumption rate for the general population was 11.2 g/day. The estimated mean Idaho fish consumption rate for the three higher exposure populations – Idaho angler, Shoshone- Bannock Tribes and Nez Perce Tribe – are 4.5, 5.6 and 16.1 g/day respectively. Thus the Nez Perce Tribe was the targeted higher exposure population.

Comparison of target populations / risk: Idaho has proposed the lower of the criteria derived based on protecting the Idaho general population or the Nez Perce Tribe. Because of their greater risk through higher fish consumption, the population driving all the fish only criteria is the Nez Perce Tribe. Because of the interplay of target risk with different fractions of the two target populations, for the fish plus water exposure the general population risk drives 62 of the 104 the criteria values proposed.