7/24 -- Note to reviewers: This draft white paper on relative source contribution is provided to spark conversation about the form and level of detail in Delegates' Table white papers, and how best to capture the perspectives of Delegates during this process. The perspectives of Delegates captured here are based on meeting notes and have not (yet) been reviewed by the Delegates. It is anticipated that the content will be revised and the views and perspectives of Delegates more completely captured as these reviews are undertaken and as discussions continue at the Delegates table.

Relative Source Contribution

July 24, 2013

Background and Definition

The Relative Source Contribution (RSC) is meant to account for non-water sources of exposure to non-carcinogens. The human health water quality criteria address exposure only through untreated, surface-water-derived drinking water and eating fish and shellfish. The RSC identifies or estimates the portion of a person's total exposure attributed to water and fish consumption and thereby accounts for potential exposure from other sources such as skin absorption, inhalation, other foods, and occupational exposures. The goal is to ensure that people are protected and to avoid exposures that would trigger threshold effects. (For carcinogens, the human health water quality criteria are intended to ensure that exposures through drinking water and eating fish and shellfish increase a person's lifetime risk of developing cancer by a very small increment (one in 10,000 to one in 1 million) regardless of the additional lifetime cancer risk due to exposure, if any, to other sources.)

RSCs are established at 1 or less. An RSC of 1 means that exposure through drinking water and eating fish and shellfish are considered to be the primary exposures of concern because other exposures don't exist. An RSC of lower than one means that significant, , exposures through other sources are anticipated, and therefore the human health water quality criteria must be ratcheted down (made lower, or more stringent) to provide "room" for these other exposures.

EPA has recently calculated and recommended RSCs for 17 non-carcinogens. For other non-carcinogens, recent EPA guidance recommends a default RSC of .20 (20 percent) unless there are sufficient data to develop a scientifically defensible alternative value. The recent EPA guidance also recommends that the RSC should not be established at a value over .80 (or 80 percent), in order to accommodate unknown exposures.[1] Previous EPA guidance recommended an RSC of 1.

The RSC can drive, very directly, the resulting human health water quality standards and related regulatory and permit levels. Using an RSC of .2, for example, means that an ambient water quality criterion that would otherwise be 10 units would be reduced by 80%, to 2 units, thus becoming lower, or more stringent. Many other programs that address toxics, such as the Safe Drinking Water Act and the Superfund clean-up program, also establish concentration goals but then use a risk management approach that allows for consideration of other factors, such as cost and feasibility, in establishing actual

[1] Human Health Ambient Water Quality Criteria and Fish Consumption Rates, Frequently Asked Questions. (EPA, date)

ED_002991_00017371-00001

7/24 -- Note to reviewers: This draft white paper on relative source contribution is provided to spark conversation about the form and level of detail in Delegates' Table white papers, and how best to capture the perspectives of Delegates during this process. The perspectives of Delegates captured here are based on meeting notes and have not (yet) been reviewed by the Delegates. It is anticipated that the content will be revised and the views and perspectives of Delegates more completely captured as these reviews are undertaken and as discussions continue at the Delegates table.

compliance levels that have to be achieved. On the other hand, the ambient water quality criteria under the Clean Water Act set direct regulatory levels that are enforced as both ambient concentrations in the water body as well as through NPDES permit levels.

Ones approach to setting a RSC is related to ideas about what the geographic and source control scope of the Clean Water Act is and how the Act's scope should inform choices about criteria development. For example, if one believes that the scope of the Clean Water Act is limited to addressing potential exposures from NPDES- or other CWA-regulated discharges to surface water (so called primary sources), one might argue that a RSC of less than (1) inappropriately expands the reach of the Act. On the other hand, if one believes that the scope of the Clean Water Act requires consideration and protection from non-CWA regulated sources of toxics such as atmospheric deposition (so called secondary sources) one might argue for an RSC of less than (1). The issue of the role of the RSC and how to calculate it is an emerging issue, subject to ongoing national debate.

Experience in Other States

Oregon

In 2011, Oregon used the EPA calculated RSC for sixteen constituents. The EPA defaults were used for fifteen of those constituents. For Endrin, Oregon proposed (and EPA approved) an RSC of .80 instead of .20, based on local data. For methylmercury, Oregon proposed (and EPA approved) no RSC because Oregon included marine species in its fish consumption rate. (Marine species are not included in the national default fish consumption rate; the primary human exposure to methylmercury to humans is consumption of fish and shellfish). For all other non-carcinogens, Oregon used (and EPA approved) an RSC of 1.

Florida

Florida is in the process of updating their Surface Water Quality Criteria with the final rule anticipated in August 2013. The technical support document *Derivation of Human Health-Based Criteria and Risk Impact Assessment* released in March 2013 notes that FDEP followed the EPA recommendations for RSC and applied a value of 0.2 to all non-carcinogens unless an alternative value was available from EPA, in which case that value was used.[2]

California

California calculated RSC for 70 non-carcinogens and developed detailed public health guidelines for each constituent. A summary table of RSC values in California that compares values to EPA guidelines can be found at: http://oehha.ca.gov/water/reports/RSCPoster2.pdf and the detailed public health guidelines for each constituent can be found at: http://www.oehha.ca.gov/water/phg/allphgs.html.

---

[2] *Derivation of Human Health-Based Criteria and Risk Impact Assessment* (March 2013): http://www.dep.state.fl.us/water/wqssp/docs/tr_review/hh_tsd_032813.pdf

ED_002991_00017371-00002

7/24 -- Note to reviewers: This draft white paper on relative source contribution is provided to spark conversation about the form and level of detail in Delegates' Table white papers, and how best to capture the perspectives of Delegates during this process. The perspectives of Delegates captured here are based on meeting notes and have not (yet) been reviewed by the Delegates. It is anticipated that the content will be revised and the views and perspectives of Delegates more completely captured as these reviews are undertaken and as discussions continue at the Delegates table.

Other states:

New York uses a default of 0.2[3]
Connecticut proposed using a default of 0.2 except for constituents where EPA has calculated a specific RSC[4].

Delegates Discussion

Representatives of AWB

- An RSC of 1 is appropriate because making a case that all sources for all chemicals are understood well enough to calculate a more precise RSC would be difficult; it is appropriate to rely on other environmental and human health programs to protect from other potential exposures.
- Using an RSC of 20 or 80% implies some understanding of other sources that, in many cases, we simply do not have.
- In the absence of specific information about other sources, using an RSC of anything less than 1 is difficult to justify because the information simply isn't available, we don't have an understanding of the other sources, if any.

Representatives of Cities

Representatives of Counties

- An RSC of 1 should be coupled with a commitment to develop other programs to address other sources.

Representatives of Commercial Fishing

- Do not reinvent the wheel. Use the EPA established criteria for the 17 chemicals if they were based on scientific studies, and then chose 20, 80, or 100% for everything else.

Representatives of Farming / Agriculture

Representatives of Irrigators

DRAFT

[3] R.A. Howd, J.P. Brown, A.M. Fan. Risk Assessment for Chemicals in Drinking Water: Estimation of Relative Source Contribution. Office of Environmental Health Hazard Assessment (OEHHA), Oakland, CA. Presented as a poster at the 43rd annual meeting of the Society of Toxicology, Baltimore, Maryland, March 21-25, 2004 (The Toxicologist 78(1-S), March 2004) .

[4] Technical Supporting Information for Proposed Revisions to the Connecticut Water Quality Standards: Ambient Water Quality Criteria Connecticut Department of Environmental Protection Bureau of Water Protection and Land Reuse Planning & Standards Division. January 28, 2010.
http://www.ct.gov/deep/lib/deep/water/water_quality_standards/tech_s_wqs.pdf

ED_002991_00017371-00003

7/24 -- Note to reviewers: This draft white paper on relative source contribution is provided to spark conversation about the form and level of detail in Delegates' Table white papers, and how best to capture the perspectives of Delegates during this process. The perspectives of Delegates captured here are based on meeting notes and have not (yet) been reviewed by the Delegates. It is anticipated that the content will be revised and the views and perspectives of Delegates more completely captured as these reviews are undertaken and as discussions continue at the Delegates table.

Representatives of Ports

Additional Information

Table of Relative Source Contribution for Common Chemicals for CA, EPA, World Health Organization, and Health Canada as reported in *Risk Assessment for Chemical s in Drinking Water: Estimation of Relative Source Contribution by R.A. Howd, J.P. Brown, A.M. Fan. Office of Environmental Health Hazard Assessment (OEHHA), California Environmental Protection Agency (Cal/EPA), Oakland, CA*
Link: http://oehha.ca.gov/water/reports/RSCPoster2.pdf

National Recommended Water Quality Criteria: 2002 Human Health Criteria Calculation Matrix
Link:
http://water.epa.gov/scitech/swguidance/standards/upload/2002_12_30_criteria_wqctable_hh_calc_matrix.pdf

EPA FAQ - Human Health Ambient water Quality Criteria and Fish Consumption Rates Frequently Asked Questions
Link: http://water.epa.gov/scitech/swguidance/standards/criteria/health/methodology/upload/hhfaqs.pdf

ACWA Monitoring, Standards & Assessment Committee Call - Wednesday, April 17, 2013
Subject: Discussion on EPA's new FAQ: Human Health Ambient water Quality Criteria and Fish Consumption Rates. Comments from WA and ID
Link: http://www.ecy.wa.gov/programs/wq/swqs/DraftCommentsACWAonEPAHHCFAQdae.pdf

DRAFT

ED_002991_00017371-00004