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Environmental Working Group (EWG) comments in support of the California Office of Environmental Health Hazard Assessment released Draft Technical Support Document for Proposed Public Health Goals for Haloacetic Acids in Drinking Water

Submitted via electronic docket at https://oehha.ca.gov/comments

Environmental Working Group, a nonprofit research and policy organization with offices in San Francisco, Sacramento, Minneapolis, and Washington, D.C., submits these comments in support of the California Office of Environmental Health Hazard Assessment proposed public health goals for five haloacetic acids in drinking water.[1]

On January 31, 2020, the California Office of Environmental Health Hazard Assessment, or OEHHA, published a document proposing cancer risk-based public health goals for dichloroacetic acid, trichloroacetic acid and dibromoacetic acid, as well as non-cancer-risk-based public health goals for monochloroacetic acid and monobromoacetic acid. Drinking water disinfection is essential, because it protects people from water-borne microbial diseases. But when chlorine and other disinfectants react with plant matter and animal waste in drinking water supplies, they form toxic disinfection byproducts. These unintended water pollutants increase the risk of cancer[2] and may damage the developing fetus.[3] In addition to polluting drinking water, disinfection byproducts can also affect people when they bathe or go in a swimming pool.

In 2018, the National Toxicology Program's Monograph on Haloacetic Acids proposed classifying dichloroacetic acid and dibromoacetic acid as "reasonably anticipated to be human carcinogens."[4] Trichloroacetic acid is classified by the International Agency for Research on Cancer as "possibly carcinogenic to humans"; and evidence of liver neoplasms in male and female mice exposed to this chemical through drinking water was documented in OEHHA's review of this chemical.[5]

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[1] Available at https://oehha.ca.gov/water/crnr/announcement-availability-draft-technical-support-document-and-public-workshop-proposed

[2] Richardson SD, Plewa MJ, Wagner ED, Schoeny R, Demarini DM. 2007. Occurrence, genotoxicity, and carcinogenicity of regulated and emerging disinfection by-products in drinking water: a review and roadmap for research. Mutat Res. 636(1-3): 178-242.

[3] Colman J, Rice GE, Wright JM, Hunter ES 3rd, Teuschler LK, Lipscomb JC, Hertzberg RC, Simmons JE, Fransen M, Osier M, Narotsky MG. 2011. Identification of developmentally toxic drinking water disinfection byproducts and evaluation of data relevant to mode of action. Toxicol Appl Pharmacol. 254(2): 100-26.

[4] National Toxicology Program Report on Carcinogens Monograph on Haloacetic Acids Found as Water Disinfection By-Products. 2018. https://ntp.niehs.nih.gov/whatwestudy/assessments/cancer/ongoing/haa/index.html

[5] Office of Environmental Health Hazard Assessment (OEHHA). 1999. Evidence on the Carcinogenicity of Trichloroacetic Acid and its Salts. https://oehha.ca.gov/media/downloads/crnr/tcaf.pdf

OEHHA proposed the following public health goals: 0.2 parts per billion, or ppb, for dichloroacetic acid; 0.1 ppb for trichloroacetic acid; and 0.03 ppb for dibromoacetic acid. These public health goals correspond to a one-in-a-million cancer risk. Public health goals of 53 ppb for monochloracetic acid and 25 ppb for monobromoacetic acid are based on health-protective concentrations for non-cancer effects.

EWG applauds OEHHA's approach of using Age Sensitivity Factors for different life stages for the cancer risk assessment of haloacetic acids and other contaminants. OEHHA's pioneering 2009 analysis[6] convincingly demonstrated the need for age-specific susceptibility factors for the assessment of carcinogens' impact on human health. This approach is also supported by the peer-reviewed research literature,[7] which demonstrates that, at a minimum, a susceptibility factor of 10 should be applied to account for infants' and the developing fetus' greater vulnerability to toxic chemicals.

In the table below, we summarize cancer slope factors for trihalomethanes and haloacetic acids published by OEHHA and the EPA. We note the overall similarity of the cancer slope factors, which supports OEHHA's proposed approach on both haloacetic acids and trihalomethanes, and we support OEHHA's decision to use the 5 percent increased risk benchmark for calculating the cancer slope factor. Further, cancer-based public health goals for haloacetic acids are supported by the findings from human epidemiological studies. EWG agrees with the references that OEHHA cites in the draft public health goal document that link the ingestion of drinking water containing disinfection byproducts to an increased risk of bladder cancer.

Table: Cancer slope factors for disinfection byproducts reported by OEHHA and the EPA

Disinfection byproduct	**Cancer slope factor reported by OEHHA $(mg/kg/day)^{-1}$ and year published**	**Cancer slope factor reported by the EPA $(mg/kg/day)^{-1}$ and year published**
Dibromoacetic acid	0.250 (2020)	N/A
Bromodichloromethane	0.087 (2018)	0.062 (1993)
Trichloroacetic acid	0.071 (2020)	0.067 (2011)
Dibromochloromethane	0.045 (2018)	0.084 (1990)
Dichloroacetic acid	0.041 (2020)	0.048 (2003)
Chloroform	0.014 (2018)	N/A
Bromoform	0.011 (2018)	0.008 (1990)

[6] OEHHA (2009). Technical support document for cancer potency factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures. Available at https://oehha.ca.gov/media/downloads/crnr/tsdcancerpotency.pdf

[7] Barton HA, Cogliano VJ, Flowers L, Valcovic L, Setzer RW, Woodruff TJ (2005). Assessing susceptibility from early-life exposure to carcinogens. Environ Health Perspect 113:1125-1133.

In conclusion, EWG agrees with the methodology OEHHA used to derive the cancer and non-cancer risk values for these chemicals, and we support OEHHA's approach to making the proposed public health goals protective for everyone, including those in vulnerable life stages, such as young children and the developing fetus. EWG urges OEHHA to finalize these proposed values as the final public health goals for the state of California.

Submitted on behalf of the Environmental Working Group,

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