April 30, 2020

Pesticide and Environmental Toxicology Branch
Office of Environmental Health Hazard Assessment
California Environmental Protection Agency
P.O. Box 4010, MS-12B Sacramento, California 95812
Attention: PHG Program

https://oehha.ca.gov/comments

Subject: **First Public Review Draft; Haloacetic Acids in Drinking Water; Monochloroacetic Acid, Dichloroacetic Acid, Trichloroacetic Acid, Monobromoacetic Acid, Dibromoacetic Acid; January 2020.**

To Whom it May Concern:

The Southern California Water Coalition appreciates this opportunity to comment on the Office of Environmental Health Hazard Assessment's (OEHHA) first public review draft Technical Support Document (TSD) proposing Public Health Goals (PHGs) for Haloacetic Acids (HAA) in drinking water. As described in these comments, this draft document may have profound impacts on the ability of California drinking water purveyors to maintain effective and affordable treatment, disinfection, and distribution of drinking water and to communicate the safety of drinking water supplies to the public.

The Southern California Water Coalition is a broad-based nonprofit, nonpartisan public education partnership dedicated to informing Southern Californians about our water needs and our state's water resources. Spanning Los Angeles, Orange, San Diego, San Bernardino, Riverside, Ventura, Kern and Imperial counties, SCWC's approximately 200 member organizations include leaders from business, counties, cities, agricultural groups, labor unions, environmental organizations, water agencies, as well as the general public.

The diversity of our membership sets SCWC apart, giving us the unique ability to take an all-inclusive approach to a variety of important water policy challenges as we facilitate productive dialogue and build consensus to solve California's most critical water issues.

The draft TSD proposes five PHGs based on cancer and other health risk endpoints. While we have some preliminary comments on OEHHA's interpretation of the available scientific evidence for some of these disinfection by-products (DBPs), our principal concerns with this TSD are the threats it presents to effective drinking water disinfection and related risk communication. These concerns are magnified as the state and drinking water purveyors grapple with the immediate demands and longer-term health and socioeconomic ramifications of the COVID-19 public health crisis.

As OEHHA acknowledges in the preface to the TSD, state law requires the State Water Resources Control Board (SWRCB) to set the Maximum Contaminant Level (MCL) as close as feasible to the corresponding PHG. Three of OEHHA's proposed values - dichloroacetic acid, trichloroacetic acid, and dibromoacetic acid - are more than an order of magnitude below the 60 part per billion (ppb) total HAA MCLs established pursuant to current federal and state safe drinking water laws. The proposed PHG for dibromoacetic acid (0.03 ppb) is 2000 times lower than the current MCL for total HAAs. These proposed PHGs have the potential to drive enforceable regulatory limits below levels that can be readily and affordably achieved by the chlorine-based disinfection technologies employed by most drinking water purveyors in California—especially if they lead to development of MCLs for individual HAAs.

Our highest priority is the ability of water purveyors to deliver safe and affordable drinking water to customers, and this mission must not be compromised by narrowly focused regulatory actions that create unintended public health impacts. Unfortunately, as was the case in OEHHA's TSD for Trihalomethanes (THMs), this document approaches the evaluation of long-term theoretical cancer risks from exposure to HAAs in isolation, as if they are on an equal footing with acute risks of waterborne diseases from microbiological contaminants. In its current form, this document would place the SWRCB in the untenable position of either adopting MCLs that depart dramatically from the proposed PHGs or adopting much more stringent MCLs that compromise the efficacy of drinking water disinfection. As these comments will explain, neither of these outcomes is in the public interest.

Potential for Net Increase in Health Risks

We appreciate that OEHHA reiterates in the Summary and Introduction to this document findings from the World Health Organization and the International Agency for Research on Cancer asserting (1) the necessity of drinking water disinfection, (2) the very small cancer risk presented by DBPs relative to the very high risk of acute health effects presented by microbiological contaminants, and (3) the public health imperative of preserving the efficacy of

drinking water disinfection. However, we remain concerned that OEHHA is proposing to defer this critical public health analysis to the SWRCB as part of the MCL development process.

OEHHA's Risk Characterization discussion includes the following statements describing USEPA's approach to balancing the public health benefits of drinking water disinfection against the risks of exposure to residual DBPs:

> "US EPA (2006) attempted to balance the benefits of chlorination versus risks of exposure to DBPs when it established a drinking water MCL of 60 ppb for HAAs. US EPA stated that 'maximizing health protection for sensitive subpopulations requires balancing risks to achieve the recognized benefits of controlling waterborne pathogens while minimizing risk of potential DBP toxicity. Experience shows that waterborne disease from pathogens in drinking water is a major concern for children and other subgroups (e.g., the elderly, immunocompromised, and pregnant women) because of their greater vulnerabilities.' OEHHA agrees that children and other subgroups are sensitive subpopulations for disease from waterborne pathogens."
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> *"The PHG development process does not include a quantitative risk-benefit analysis comparing risks from exposure to DBPs to risks from exposure to microorganisms in water. This task is conducted by SWRCB in its description of best practices for drinking water disinfection and development of California MCLs."* (emphasis added)[1]

Here, OEHHA implies that the SWRCB will conduct a quantitative "risk-benefit analysis" similar to that conducted by US EPA in the development of a National Primary Drinking Water Regulation (US EPA MCL). However, we see no indication either in the SWRCB's statutory mandates or in its past practice that would support this conclusion. As both OEHHA and the SWRCB regularly attest, there is a clear division of responsibility under the California Safe Drinking Water Act between risk assessment (OEHHA's responsibility), and risk management (SWRCB's responsibility). Dr. Dale Hattis of Clark University, one of four scientists selected to peer review OEHHA's first public review draft TSD for Trihalomethanes (THM), challenged a similar statement in the draft THM TSD,[2] indicating that he doubts that "an explicit balancing

[1] HAA TSD Section 12 – Risk Characterization; Disinfection Benefits Versus HAA Risk; page 233.
[2] THM TSD page 7: "The determination of the MCL explicitly balances the important benefits of water disinfection against the risks of exposure to residual toxic byproducts in the drinking water, as well as technical feasibility."

has been done." OEHHA's final THM document did not address this critical issue, and this draft HAA TSD makes the same unsupported assertion.

The California Safe Drinking Water Act only requires that the SWRCB consider the applicable federal standard, the PHG for the contaminant(s) at issue, and the technological and economic feasibility of compliance.[3] OEHHA's DBP TSDs present a unique circumstance where focusing only on reducing the concentration of chemical contaminants is likely to pose public health risks that exceed any public health benefits that might result from such actions. The acute health threats presented by microbiological contamination of drinking water from pathogenic bacteria (e.g., fecal coliforms, *Legionella*), parasites (e.g., *Cryptosporidium* and *Giardia*) and, viruses (e.g., hepatitis A) cannot be overstated. They include waterborne disease outbreaks, gastrointestinal problems, pneumonia-like symptoms, and in severe cases deaths. According to a 2019 report issued by the National Academies of Sciences, Engineering and Medicine,[4] "Legionnaires disease (a pneumonia caused by the *Legionella* bacterium) afflicts and kills more people in the US than any other reportable waterborne disease." The same NASEM report also states that "Public water systems that maintain a disinfectant residual and manage hydraulics to prevent stagnation are helping to reduce *Legionella* exposure from the distribution system."

Absent a rigorous quantitative risk balancing analysis, it is unclear how a future regulation that considers only long-term, theoretical cancer risks from exposure to DBPs will protect public health from potentially severe acute risks posed by microbiological contaminants that may occur both in source water and in the drinking water distribution system.

Public Perception of Drinking Water Safety

The ongoing novel coronavirus pandemic highlights the criticality of accurate and balanced risk communication, especially involving DBPs. Water purveyors continue to be inundated with questions from customers concerned about the safety of their tap water. The SWRCB is attempting to address these concerns with public-facing materials which consistently

[3] Health and Safety Code §116365(b)

[4] National Academies of Science, Engineering, and Medicine; *Management of Legionella in Water Systems*. National Academies Press: Washington, DC.; 2019.

communicate that the risk of contracting COVID-19 from the drinking water supply is low. The following statements are taken from a SWRCB fact sheet issued on March 19, 2020[5]:

> "California's comprehensive and safe drinking water standards require a multi-step treatment process that includes filtration and disinfection. This process removes and kills viruses, including coronaviruses such as COVID-19, as well as bacteria and other pathogens."
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> "The treatment process must destroy at least 99.99% of viruses. The limited number that might pass through the removal process are quickly inactivated in the disinfection process, typically in less than 10 minutes."
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> "Public water systems that utilize groundwater sources maintain protective physical measures, including soil barriers, to ensure that water sources are protected from pathogens, including viruses. In addition, most of these systems use chlorine disinfection to inactivate viruses or bacteria that might find their way into the water."

An article published in the San Jose Mercury News on April 1, 2020, titled: *Coronavirus: Is the drinking water supply safe?*[6] included the following quote:

> "The same treatment processes that protect tap water from other viruses and other harmful organisms also protect against coronavirus," said Stefan Cajina, a section chief for the State Water Resources Control Board's Division of Drinking Water, in Richmond. "Chlorine kills viruses very effectively even in small concentrations."

These statements are aligned with those provided by national and international public health authorities, including the World Health Organization[7], the U.S. Centers for Disease Control and

[5] https://www.waterboards.ca.gov/publications_forms/publications/factsheets/docs/covid-19/covid19_drinking_water_factsheet_english.pdf

[6] https://www.mercurynews.com/2020/04/01/coronavirus-is-the-drinking-water-supply-safe/

[7] **World Health Organization Technical Brief; Water, sanitation, hygiene and waste management for COVID-19 (March 19, 2020; https://www.who.int/publications-detail/water-sanitation-hygiene-and-waste-management-for-covid-19):** "The COVID-19 virus has not been detected in drinking-water supplies, and based on current evidence, the risk to water supplies is low…Conventional, centralized water treatment methods that use filtration and disinfection should inactivate the COVID-19 virus."

Prevention[8] and the U.S. EPA.[9] California water system customers should be reassured by these consistently affirmative public health messages. Instead, they may be alarmed by conflicting messages from their water utility stating that the very technologies that destroy the coronavirus also introduce carcinogens into the water supply.[10]

This result is counter-productive - it undermines public confidence in the water supply. Large gaps between numeric PHGs and MCLs, as could be the case for individual HAAs, make this already difficult situation worse. If finalized as currently proposed, OEHHA's HAA PHGs would drive more PWS customers to expensive bottled water, adding new economic hardships, more greenhouse gas emissions, more waste, and increased exposure to poorly characterized contaminants that may present different human health risks.

Effective Drinking Water Disinfection Is a Public Health Imperative

Any state action that could ultimately diminish the efficacy of drinking water disinfection or undermine public confidence in the safety of their water supply constitutes a serious threat to public health. Chlorine-free technologies (e.g., ozone, UV light) may not be a direct source of regulated DBPs, but they also do not protect the public from microbiological contaminants that can be reintroduced into the drinking water distribution system from biofilms, water pressure losses, and cross-contamination from leaking sewer lines. Only chlorine-based technologies can provide lasting and effective *residual disinfection*.

It is important to emphasize that acute risks from microbiological contaminants are increasing as drinking water infrastructure ages and PWS are forced to spend more of their

[8] **U.S. Centers for Disease Control and Prevention; Water and COVID-19 FAQs (April 3, 2020; https://www.cdc.gov/coronavirus/2019-ncov/php/water.html):** "The COVID-19 virus has not been detected in drinking water. Conventional water treatment methods that use filtration and disinfection, such as those in most municipal drinking water systems, should remove or inactivate the virus that causes COVID-19."

[9] **U.S. EPA Frequent Questions about Coronavirus (https://www.epa.gov/coronavirus/frequent-questions-about-coronavirus-covid-19):** "Based on current evidence, the risk to water supplies is low. Americans can continue to use and drink water from their tap as usual…Coronavirus, which causes COVID-19, is a type of virus that is particularly susceptible to disinfection and standard treatment and disinfectant processes are expected to be effective." Similar statements, as well as online resource pages and informational webinars, have been made available by a wide variety of national and local drinking water associations, utilities, and related organizations.

[10] State law requires public water systems serving more than 10,000 connections to notify their customers of PHG exceedances through triennial consumer confidence reports and public hearings.

limited operating budgets on reducing much smaller risks from other contaminants, including HAAs which are already regulated, to reduce potential public health risks from exposure to DBPs. Increased treatment costs are typically passed on to the public through rate increases and already constitute a hardship in many socioeconomically disadvantaged communities - hardships that have only increased as a result of the novel coronavirus pandemic and are not likely to be resolved for months if not years. The last thing these communities need is higher water rates, especially if the additional treatment results in a net increase in health risk from exposure to microbiological contaminants.

Comments on Health Risk Assessment and PHG Calculation

Three of the five HAAs addressed in this TSD - trichloroacetic acid (TCA), dichloroacetic acid (DCA) and dibromoacetic acid (DBA) - have been added to the Proposition 65 list based on evidence that these substances cause tumors in studies of laboratory mice. Although these listings occurred in 2013 or earlier, OEHHA still has not established "no significant risk levels" (NSRL) for any of these substances. In each case, there are open questions in the scientific literature about the relevance of the mouse data upon which the listings were based to human health risk assessment.

For TCA, there is consistent evidence of liver tumors in male mice but evidence for tumors is less consistent in female mice, and tumors have not been reported in rat studies. In addition, the mouse tumors appear to result from a non-genotoxic mechanism that can be defined as a threshold mechanism (*i.e.*, no cancer risk below a threshold exposure level). Separate evaluations by the National Toxicology Program[11] and U.S. EPA[12] indicate that the PHG for TCA should not be based on carcinogenic effects.

Similarly, DCA appears to be weakly genotoxic and only at higher doses, which may indicate a threshold cancer mechanism. It should be noted that DCA has been used therapeutically in humans at doses as high as 25 mg/kg-day. Moreover, the mice in the key study selected by OEHHA for the DCA risk assessment exhibited a high rate of spontaneous liver

[11] National Toxicology Program. Report on Carcinogens, Monograph of Haloacetic Acids Found as Water Disinfection By-Products. March 2018.
[12] U.S. Environmental Protection Agency. Toxicological Review of Trichloroacetic Acid (CAS No. 76-0309) In Support of Summary Information on the Integrated Risk Information System. EPA/635/R-09/003F. September 2011.

tumors, which complicates interpretation of the study results. This study does not appear to be an appropriate foundation for a quantitative health risk assessment.

Although there is more evidence of the genotoxicity of DBA (liver tumors in male mice, rare spontaneous tumors in rats), the mechanism for tumor induction has not been clearly identified and may involve precursor events that are non-genotoxic.

These issues should be addressed in revisions to OEHHA's draft TSD for HAAs. They should also be considered by the external scientific peer reviews.

We appreciate OEHHA's consideration of our comments and we look forward to OEHHA's responses in the second public review draft TSD. If you have any questions on the content of this letter, please feel free to contact me at Cwilson@socalwater.org.

Sincerely,

Charley Wilson

cc: Dr. Lauren Zeise, Director – OEHHA
Allan Hirsch, Chief Deputy Director – OEHHA
Darrin Polhemus, Chief Deputy Director, Division of Drinking Water - SWRCB
Julie Henderson, Deputy Secretary, Cal-EPA
Kristin Peer, Deputy Secretary, Cal-EPA
Christine Hironaka – Governor's Office