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September 18, 2017

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

Re: Draft PHG Update – Update of the Public Health Goals for Cis-/Trans-1,2-Dichloroethylene in Drinking Water.

The Environmental Working Group, a national nonprofit public health research and advocacy organization with California offices in San Francisco and Sacramento, appreciates the opportunity to provide comments in support of the proposal from the California Office of Environmental Health Hazard Assessment to update the Public Health Goals (PHGs) for 1,2-dichloroethylene.

The agency's proposed drinking water health guidelines for the cis and trans isomers of 1,2-dichloroethylene – 13 parts per billion and 50 ppb respectively – are justified given the adverse health effects associated with the chemical. According to OEHHA, 1,2-dichloroethylene can depress the nervous system and has been associated with neurotoxic effects in humans and animals.<sup>i</sup> OEHHA also says the compound is linked to increases in serum alkaline phosphatase; increases in relative kidney, liver and thymus weight; and immune system suppression in laboratory animals – notably suppression of the antibody forming cell response in the spleen.<sup>ii</sup>

EWG applauds the efforts of OEHHA to conduct a thorough literature review and incorporate the most current scientific data for the development of the updated PHGs for cis-/trans-1,2-DCE. We found OEHHA's assessment to be scientifically sound and thorough, with one exception. We suggest that the agency strengthen the draft assessment by reviewing the chemical's synergistic effects, an aspect of toxicology that is crucial to fully understanding a chemical's potential public health impact.

### **Primary uses, environmental occurrence and human exposure**

While we understand that the main exposure to 1,2-DCE will arise from its use in or release from industrial settings, EWG supports OEHHA's decision to also consider the significant contribution of common chlorinated solvents like trichloroethylene and tetrachloroethylene – which degrade in air, soil and water to form 1,2-DCE – in determining the chemical's environmental impact. Given that environmental contamination from 1,2-DCE in California is expected to be minimal compared to the



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chemical's potential occurrence in drinking water, the relative source contribution value of 80 percent assigned by OEHHA seems appropriate.

Based on EWG's recently released Tap Water Database, a compilation of water quality testing data from utilities in all 50 states, 18 water utilities serving almost 1 million Californians detected either cis-1,2-DCE or trans-1,2-DCE contamination in their supplies in 2015. However, no utility detected the chemicals above the current California PHGs – 100 ppb and 60 ppb for cis- and trans-1,2-DCE, respectively – or federal legal limits – 70 ppb and 60 ppb for cis- and trans-1,2-DCE, respectively. In 2015, no water utilities in California detected cis- or trans-1,2-DCE contamination above the proposed PHGs of 13 and 50 ppb.<sup>iii</sup> However, we appreciate that OEHHA noted that both cis and trans isomers have recently been detected in California groundwater wells at levels as high as 40 and 33 ppb, respectively – levels that exceed the proposed health-protective concentrations.

### **Updated toxicological review and PHG derivations**

EWG applauds OEHHA's use of the most current risk assessment methodologies for the development of the updated PHGs, including advanced benchmark dose modeling and an updated intraspecies variability factor. We also strongly support the agency's decision to review epidemiological studies that examined the potential effects of 1,2-DCE exposure on adults, children and, importantly, on fetuses. The science is clear that *in utero* exposures can have important implications for long-term health. The agency's emphasis on this subgroup is important since the chemical is neurotoxic and it is anticipated to pass through to the placenta and the developing brain.

We are also encouraged by the agency's decision to incorporate data on immunotoxicity and utilize a more sensitive endpoint – decreases in humoral immune response in test animals – as the basis for the trans-1,2-DCE PHG. This serves as important recognition that environmental chemicals can have immunotoxic effects and have a critical impact on immune-mediated diseases, like allergies, asthma and cancer. We hope you will continue to assess immunotoxicity data, specifically for the cis isomer, if and when it becomes available.

The improved dermal/inhalation exposure estimates using CalTOX modeling for the development of the updated PHGs are critical given the volatile nature of the compound, and efficient dermal absorption and inhalation from bathing, showering and other household water use. We support OEHHA's rejection of the default daily water consumption rate of 2 liters of water per day for adults, or 4-liter equivalents of water consumption per day, to account for this multi-route exposure.



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We approve of OEHHA's improved use of life-stage specific oral ingestion rates for the calculation of tap water exposure equivalencies to account for the higher susceptibilities to pollutants and distinct physiological and behavioral variations separating adults from children, infants, and pregnant women or the unborn. Use of a one-size-fits-all approach, specifically an adult-only life stage, is not appropriate given these unique differences.

### **Suggested improvement to draft PHG**

The California Safe Drinking Water Act of 1996 (Health and Safety Code, Section 116365) requires that OEHHA consider possible "synergistic effects resulting from exposure to, or interaction between, the contaminant and one or more other substances or contaminants" when setting PHGs, "to the extent information is available." However, the agency made no specific mention of synergistic effects in the draft document, so it is unclear if these effects were assessed. Exploration of synergistic effects is extremely important to the PHG determination process, since interactions between an enormous amount of pollutants occur frequently, and are more realistic for everyday exposures than isolated chemicals. Addressing this gap would improve the draft assessment.

### **Conclusion**

EWG praises OEHHA for employing rigorous measures to further assess public health impacts from 1,2-DCE and urges the agency to consider potential synergistic effects in its ongoing evaluation. We look forward to reviewing the next revision of the document when OEHHA makes it available.

### **Submitted on behalf of the Environmental Working Group,**

Samara Geller, Database & Research Analyst  
Environmental Working Group  
500 Washington St., Suite 400  
San Francisco, CA 94111



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<sup>i</sup> Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, Public Health Goal for Cis- and Trans-1,2-Dichloroethylene in Drinking Water. March 2006. Available at [oehha.ca.gov/media/downloads/water/chemicals/phg/phgcistrans030306.pdf](http://oehha.ca.gov/media/downloads/water/chemicals/phg/phgcistrans030306.pdf)

<sup>ii</sup> Office of Environmental Health Hazard Assessment, California Environmental Protection Agency, Public Health Goals Draft: Cis-/Trans-1,2-Dichloroethylene in Drinking Water. August 2017. Available at [oehha.ca.gov/media/downloads/crn/draft12-dce071917.pdf](http://oehha.ca.gov/media/downloads/crn/draft12-dce071917.pdf)

<sup>iii</sup> Environmental Working Group, EWG's Tap Water Database. Accessed September 2017. Available at [www.ewg.org/tapwater/#.Wbwa03i--24](http://www.ewg.org/tapwater/#.Wbwa03i--24)

1436 U Street NW, Suite 100, Washington, DC 20009

p. 202.667.6982 | f. 202.232.2592

ewg.org