PUBLIC NOTICE
Initiation of Risk Assessments for Chemicals in Drinking Water
June 2005

A. Requirements

The Calderon-Sher California Safe Drinking Water Act of 1996 requires the Office of Environmental Health Hazard Assessment (OEHHA) to post notices on its Web site of water contaminants for which it is initiating work, pursuant to development of a public health goal (PHG) for the chemical in drinking water. The law also describes the intent and general context of the PHGs. PHGs are concentrations of chemicals in drinking water that are not anticipated to produce adverse health effects following long-term exposures. These goals are non-regulatory in nature but are to be used as the health basis to update the state's primary drinking water standards (maximum contaminant levels, or MCLs) established by the California Department of Health Services (DHS) for chemicals subject to regulation.

The act requires PHGs to be developed for the approximately 85 chemicals for which state MCLs are presently available, and review and update of the risk assessments at least every five years. Other chemicals may be added to the list by legislative or interdepartmental request. Opportunities for public comment and peer review are provided.

B. Implementation

OEHHA has published 71 PHGs as of June 2005, although one of these evaluations, that for total chromium, has been rescinded. The technical support documents for the published PHGs are posted on the OEHHA Web site at www.oehha.ca.gov.

PHGs for all the other chemicals that have state MCLs are currently in preparation. Drafts for public comment on seven of these chemicals are posted on the OEHHA Web site, and are currently under peer review by the University of California. PHGs for the remaining chemicals with existing MCLs should be released for public review this year. A 45-day public comment period will be provided after posting, followed by a public workshop. The overall process includes scientific peer review arranged through the University of California, allotting time for revisions, further public comment, and preparing responses to comments.

OEHHA has prepared memoranda to DHS on the MCLs for “Gross alpha” and “Gross beta.” These MCLs are screening levels for radionuclides in drinking water, rather than regulatory standards for specific chemical entities. The memoranda discuss the relative risk from exposure to radioactivity derived from the various isotopes in the above categories, and are also posted on our Web site.

The PHG re-evaluation has been completed for thallium, inorganic mercury, and lindane. OEHHA concluded that no new information was available on these chemicals that would

require significant changes to the PHG document. Memoranda to this effect are available at http://www.oehha.ca.gov/water/reports/index.html. The re-reviews of several other chemicals which were announced in July 2004 are nearing completion.

Evaluation is now being initiated for another chemical for which a new MCL has been requested by the Department of Health Services, which therefore required preparation of a PHG. Re-review of earlier PHGs is being initiated for two additional chemicals. Comments are requested on each of these chemicals.

C. PHGs soon to be released for public review (initiation announced July 2001)

Draft documents for the following chemicals are nearing completion, and are planned for release for public review as soon as possible:

- Hexavalent chromium
- Dioxin
- Molinate
- Selenium
- Styrene
- Trihalomethanes

D. Initiation of risk assessments

Risk assessment is being initiated for the following chemical:

- 1,2,3-Trichloropropane

1,2,3-Trichloropropane is being evaluated at the request of DHS, because of a pattern of increasing detections in California groundwater.

In addition, reviews are being updated for chemicals for which PHGs were prepared in the first years of our program, prioritized on the basis of availability of new data and significance as a drinking water contaminant. The following chemicals have been newly assigned for re-review:

- 2,4-Dichlorophenoxyacetic acid
- 1,2-Dichloroethane

A brief description of these chemicals is provided below. This announcement solicits the submission of pertinent information on these contaminants that could assist our office in preparing or updating the risk assessment and deriving a PHG.

Information submitted to OEHHA in response to this request should not be proprietary in nature, because all information submitted is a matter of public record. Information should be submitted by **August 1, 2005** to:

Catherine Caraway
PHG Project
Pesticide and Environmental Toxicology Section
Office of Environmental Health Hazard Assessment
P.O. Box 4010
Sacramento, California 95812-4010

All data submitted will be considered in the development of the PHG for these chemicals. The draft documents will be available for discussion in a public workshop and public comment will be solicited as described above in Section B. The final risk assessments will be utilized by DHS in potential revisions to the MCLs for the chemical in drinking water, as described in more detail on the DHS Web site at http://www.dhs.ca.gov/ps/ddwem/chemicals/chemindex.htm.

E. Descriptions of chemicals or substances for review initiation:

1,2,3-TRICHLOROPROPANE

1,2,3-Trichloropropane (TCP) is a chlorinated alkane that has been used as a cleaning and degreasing agent and as a chemical intermediate, and is classed as a high production volume chemical. It also occurs as a byproduct in the production of other chlorinated compounds such as epichlorohydrin and has been detected in groundwater, especially in association with waste sites (ATSDR, 1992; CDHS, 2005). Synonyms are allyl trichlorhydride and trichlorohydrin. The California Department of Health Services established a notification level of 0.005 μg/L for TCP in 1999 based on it causing cancer in laboratory animals (CDHS, 2005). No MCL has been promulgated for this chemical.

TCP is rapidly absorbed from the gastrointestinal tract, metabolized and excreted. TCP metabolites have been detected bound to DNA, RNA and proteins in rats. TCP was positive for mutagenic activity in both bacterial and mammalian cells in the presence of metabolic activation (IARC, 1995).

The administration of TCP by gavage yielded tumors in a number of tissues in male and female rats and mice at low doses (NTP, 1993). IARC classified TCP as a probable human carcinogen (Group 2A based on sufficient evidence of carcinogenicity in experimental animals and inadequate evidence in humans (IARC, 1995). The National Toxicity Program (NTP) classified TCP as reasonably anticipated to be a human carcinogen based on sufficient evidence of malignant tumor formation at multiple sites in multiple species in experimental animals (NTP, 2004), and it was listed as a carcinogen under Proposition 65 in 1999 (OEHHA, 2005).

Other effects observed in experimental animals include inflammation, degeneration and other histopathological changes in nasal cavity, lung, liver, and kidney; decreased body weight gains; alterations in serum enzymes associated with hepatic and renal toxicity; and decreased red cell mass. Reproductive toxicity has also been observed in laboratory animals.

The review of this chemical should give special consideration to exposure of infants and children because of its potent carcinogenicity and its detection in California drinking water.

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2,4-DICHLOROPHENOXYACETIC ACID (2,4-D)

2,4-Dichlorophenoxyacetic acid (2,4 D) is an alkylchlorophenoxy herbicide commonly used to control a variety of broad-leaf weeds (while sparing grasses) in agricultural, nonagricultural (e.g. residential turf, right-of way), forestry, and aquatic sites. It has been widely used in consumer products for weed control on lawns, formulated as an ester, an aqueous solution of the amine salt, or as a wettable powder.

For this review, the medical literature was searched, concentrating primarily on articles published since the first review, published in 1997. Those articles that appeared to have the potential to affect the regulatory level were retrieved. Among these, the most significant animal studies were the acute, subchronic and chronic toxicity studies (Charles *et al.*, 1996a,b; Paulino *et al.*, 1996) identified in the previous review. The report on chronic tests by Charles *et al.* (1996a) provides cancer bioassays in rats and mice. These studies were conducted by Dow Chemical Company at the request of U.S. EPA to investigate doses of 2,4-D higher than those in the previous studies (Dow, 1983).

A major factor in the present review is whether the health of sensitive subpopulations is being adequately protected, considering both new data and the strengthened emphasis on protection of infants and children required under AB2342 (2004). There is some concern about the potential for adverse effects on neurological development in infants and children, combined with the extra exposure potential of infants and children from the use of 2,4-D on lawns. Comments on these aspects are particularly welcomed.

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1,2-DICHLOROETHANE (1,2-DCA)

1,2-Dichloroethane (1,2-DCA), also known as ethylene dichloride, is primarily used in the production of vinyl chloride, 1,1,1-trichloroethane, trichloroethylene, perchloroethylene, and other industrial chemicals. It is also used as a solvent in cleaning and degreasing industries, a grain fumigant, and is a constituent in varnish removers and scouring compounds. The PHG, published in 1999, is based on carcinogenicity, specifically, hemangiosarcomas in male rats from a chronic oral bioassay conducted by the National Cancer Institute in 1978. 1,2-DCA has been identified by U.S. EPA as a probable human carcinogen (B2) and is listed under Proposition 65 as a chemical known to the state to cause cancer. The California Department of Health Services reports that between 1984 and 2001, 1,2-DCA was detected in 123/15,350 water samples analyzed for this chemical. Between 1984 and 2000, the MCL was exceeded 119 times; between

1994 and mid-2002, it was exceeded 59 times. 1,2-DCA is one of the most commonly exceeded organic MCLs in California.

Little new toxicological data appear to be available on 1,2-DCA. Animal studies show that 1,2-DCA ingestion can cause mild-to-moderate transient lung injury; ethanol exposure can increase the hepatotoxic effects of 1,2-DCA; and oral exposure to 1,2-DCA can result in renal toxicity. The mouse bone marrow genotoxicity assay is weakly sensitive to 1,2-DCA exposure, but sister chromatid exchange frequencies were significantly increased in workers exposed to a low concentration of 1,2-DCA in air. The authors express concern about the genotoxicity potential of 1,2-DCA.

Animal reproductive studies do not suggest a potential for birth defects, although there is an epidemiology study suggesting an association of cardiac defects with exposure to 1,2-DCA in drinking water. The potential effects of 1,2-DCA in infants, children, and other sensitive populations need further evaluation. The risk assessment on this significant drinking water pollutant should be given a high priority to ensure that the PHG remains appropriate for protection of public health, including sensitive subpopulations.

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