

**INITIAL STATEMENT OF REASONS
TITLE 27, CALIFORNIA CODE OF REGULATIONS**

PROPOSED AMENDMENT TO

**SECTION 25805(b), SPECIFIC REGULATORY LEVELS: CHEMICALS CAUSING
REPRODUCTIVE TOXICITY**

**MAXIMUM ALLOWABLE DOSE LEVEL: CHLOROFORM BY THE INHALATION
ROUTE**

**SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986
PROPOSITION 65**

PURPOSE AND BACKGROUND OF PROPOSED AMENDMENT

PURPOSE

This proposed regulatory amendment would adopt a Maximum Allowable Dose Level (MADL) for inhalation exposures to chloroform under Proposition 65¹ in Title 27, California Code of Regulations, section 25805(b).² The proposed MADL for chloroform of 660 micrograms per day (inhalation) was derived using scientific methods outlined in Section 25803.

PROPOSITION 65 AND LISTING OF CHLOROFORM

Proposition 65 was enacted as a voters' initiative on November 4, 1986. The Office of Environmental Health Hazard Assessment (OEHHA) is the lead state entity responsible for the implementation of Proposition 65.³ OEHHA has the authority to adopt and amend regulations to further the purposes of the Act.⁴ The Act requires businesses to provide a warning when they cause an exposure to a chemical listed as known to cause cancer or reproductive toxicity. The Act also prohibits the discharge of listed chemicals to sources of drinking water.

¹ The Safe Drinking Water and Toxic Enforcement Act of 1986, codified at Health and Safety Code section 25249.5 et. seq., hereafter referred to as "Proposition 65" or "The Act".

² All subsequent citations are to sections of Title 27, California Code of Regulations, unless otherwise noted.

³ Section 25102(o)

⁴ Health and Safety Code, section 25249.12

On August 7, 2009, chloroform was added to the Proposition 65 list as known to the state to cause developmental toxicity based on the Labor Code mechanism.⁵

STUDY SELECTION

OEHHA reviewed relevant studies on the developmental toxicity of chloroform, which were identified through comprehensive searches of the scientific literature.

Human Studies

Human data on chloroform exposures (mostly through water disinfection by-products, as well as some workplace exposures) provide some evidence on developmental toxicity; however, these studies provide only a limited basis for establishing quantitative dose-response relationships.

Animal Studies

Six animal inhalation studies were identified. Of those studies, the most sensitive study of sufficient quality was chosen for use in determining the MADL for chloroform by the inhalation route. In an embryotoxicity study by Baeder and Hofmann (1990)⁶, female Wistar rats (20 females per group, 65–70 days old with a mean initial weight of 195 ± 9 grams) were exposed to chloroform by inhalation at concentrations of 3, 10, or 30 parts per million (ppm) for 7 hours per day for 10 days between days 7 and 16 of pregnancy. No effects were reported following exposure to 3 ppm. At 10 ppm, decreased weight gain in dams and an increased number of fetuses with retarded growth were reported. Exposure to 3 ppm was therefore a No Observable Effect Level (NOEL). A NOEL was not identified in any of the other studies.

For purposes of Proposition 65, this is the most sensitive study deemed to be of sufficient quality as defined in Section 25803 (a)(7), for inhalation exposures to chloroform.

MADL CALCULATION

The following calculations were performed in accordance with Section 25803 to derive the MADL for chloroform by the inhalation route:

- The Baeder and Hoffman study⁶ in Wistar rats provided a NOEL of 3 ppm.

⁵ Health and Safety Code section 25249.8(a)

⁶ Baeder, C. and T. Hofmann (1990). Chloroform: supplementary inhalation embryotoxicity study in Wistar rats. Report No. 91.0902. Hoechst Aktiengesellschaft Pharma Development Toxicology.

- Conversion of air concentration in ppm to milligrams per cubic meter (mg/m³) using a conversion factor of 4.88 mg/m³ per ppm.⁷

$$3 \text{ ppm} \times [4.88 \text{ mg/m}^3/\text{ppm}] = 14.64 \text{ mg/m}^3$$
- Conversion of the air concentration for a 7-hour exposure to a 24 hour day:

$$14.64 \text{ mg/m}^3 \times (7 \text{ hr} \div 24 \text{ hr}) = 4.27 \text{ mg/m}^3$$
- Expression of exposure in units of mg per kilogram (kg) of body weight per day. The average adult female Wistar rat has an assumed inhalation rate of 0.637 m³/day (the standard 24-hour breathing rate of an adult rat)⁸ and a body weight of 238 grams (= 0.238 kg) at 86–91 days of age.⁹

$$(4.27 \text{ mg/m}^3 \times 0.637 \text{ m}^3/\text{day}) \div 0.238 \text{ kg} = 11.4 \text{ mg/kg/day}$$

- Calculation of the NOEL for a 58 kg woman:

$$11.4 \text{ mg/kg-day} \times 58 \text{ kg} = 661.2 \text{ mg/day},$$

or 660 mg/day after rounding
- The MADL is derived by dividing the NOEL by one thousand (Section 25801(b)(1)). Thus, the adjusted NOEL was divided by 1,000 to obtain the MADL.

$$\text{MADL}_{\text{inhalation}} = 660 \text{ mg/day} \div 1,000 = \mathbf{660 \text{ micrograms/day}}$$

This MADL applies to exposure to chloroform by the inhalation route only. A MADL for exposures to chloroform by other exposure routes may be developed at a later time.

PROPOSED REGULATORY AMENDMENT

The proposed amendment to Section 25805(b) is provided below in underline:

<i>Chemical name</i>	<i>Level (micrograms per day)</i>
...	
<u>Chloroform</u>	<u>660 (inhalation)</u>

⁷ National Institute for Occupational Safety and Health (NIOSH) Pocket Guide to Chemical Hazards (<http://www.cdc.gov/niosh/npg/npgd0127.html>)

⁸ US EPA (1985). Reference Values for Risk Assessment. US Environmental Protection Agency. Cincinnati, OH, Environmental Criteria Office.

⁹ Charles River Laboratories. (2011). "Wistar Rats: Strain Code 003." Retrieved 08/15/2011, from http://www.criver.com/SiteCollectionDocuments/rm_rm_c_wistar_rats.pdf.

PROBLEM BEING ADDRESSED BY THIS PROPOSED RULEMAKING

Proposition 65 does not provide guidance regarding how to determine whether a warning is required or a discharge is prohibited. OEHHA is the implementing agency for Proposition 65 and has the resources and expertise to examine the scientific literature and calculate a level of exposure, in this case a MADL, that does not require a warning or a discharge is not prohibited.

NECESSITY

This proposed regulatory amendment would adopt a MADL that conforms to the Proposition 65 implementing regulations and reflects the currently available scientific knowledge about chloroform. The MADL provides assurance to the regulated community that exposures or discharges at or below the MADL are considered not to pose a significant risk of developmental or reproductive harm and are, therefore, exempt from the warning and discharge requirements of Proposition 65.¹⁰

TECHNICAL, THEORETICAL, AND/OR EMPIRICAL STUDIES, REPORTS, OR DOCUMENTS

OEHHA reviewed relevant studies on the developmental toxicity of chloroform, which were identified through comprehensive searches of the scientific literature. For purposes of Proposition 65, the Baeder and Hoffman (1990) study⁶ in Wistar rats is the most sensitive study deemed to be of sufficient quality as defined in Section 25803 (a)(7), for inhalation exposures to chloroform. OEHHA relied on the values from this study as the basis for calculating the inhalation MADL for chloroform proposed for adoption into Section 25805(b). A copy of the study by Baeder and Hofmann (1990) will be included in the regulatory file for this action, and is available from OEHHA upon request. OEHHA also relied on the attached Economic Impact Assessment in developing the proposed regulation.

REASONABLE ALTERNATIVES TO THE REGULATION AND THE AGENCY'S REASONS FOR REJECTING THOSE ALTERNATIVES

The proposed MADL provides a “safe harbor” value that aids businesses in determining if they are complying with the law. The alternative to the amendment to Section 25805(b) would be to not promulgate a MADL for inhalation exposures to the chemical. Failure to promulgate a MADL would leave the business community without a “safe harbor” level to assist them in determining compliance with Proposition 65.

¹⁰ Health and Safety Code sections 25249.9(b) and 25249.10(c)

REASONABLE ALTERNATIVES TO THE PROPOSED REGULATORY ACTION THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESSES

OEHHA is not aware of significant cost impacts that small businesses would incur in reasonable compliance with the proposed action. In addition, Proposition 65 is limited by its terms to businesses with 10 or more employees (Health and Safety Code, section 25249.11(b)) so it has no effect on very small businesses.

EVIDENCE SUPPORTING FINDING OF NO SIGNIFICANT ADVERSE ECONOMIC IMPACT ON BUSINESS

Because the proposed MADL provides a “safe harbor” level for businesses to use when determining compliance with Proposition 65, OEHHA does not anticipate that the regulation will have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states.

DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS CONTAINED IN THE CODE OF FEDERAL REGULATIONS

Proposition 65 is a California law that has no federal counterpart. There are no federal regulations addressing the same issues and, thus, there is no duplication or conflict with federal regulations.

ECONOMIC IMPACT ANALYSIS

Gov. Code section 11346.3(b)

It is not possible to quantify any monetary values for this proposed amendment to the regulation given that its use is entirely voluntary and it only provides compliance assistance for businesses subject to the Act.

Impact on the Creation, Elimination, or Expansion of Jobs/Businesses in

California: This regulatory proposal will not affect the creation or elimination of jobs within the State of California. Proposition 65 requires businesses with ten or more employees to provide warnings when they expose people to chemicals that are known to cause cancer or developmental or reproductive harm. The law also prohibits the discharge of listed chemicals into sources of drinking water. Chloroform is listed under Proposition 65; therefore businesses and individuals who manufacture, distribute or sell products with chloroform in the state must provide a warning if their product or activity exposes the public or employees to this chemical.

Benefits of the Proposed Regulation: The MADL provides a “safe harbor” value that aids businesses in determining if they are complying with the law. Some businesses may not be able to afford the expense of establishing a MADL and therefore may be exposed to litigation for a failure to warn or for a prohibited discharge of the listed chemical. Adopting this regulation will save these businesses those expenses and may reduce litigation costs. By providing a safe harbor level, this regulatory proposal does not require, but may encourage, businesses to lower the amount of the listed chemical in their product to a level that does not cause a significant exposure, thereby providing a public health benefit to Californians.

Problem being addressed by this proposed rulemaking: Proposition 65 does not provide specific guidance regarding how to determine whether a warning is required or a discharge is prohibited. OEHHA is the implementing agency for Proposition 65 and has the resources and expertise to examine the scientific literature and calculate a level of exposure that does not require a warning or trigger the discharge prohibition.

How the proposed regulation addresses the problem: The proposed regulation would adopt a specific MADL for a listed chemical to provide compliance assistance for businesses that are subject to the requirements of the Act. While OEHHA is not required to adopt such levels, adopting them provides a “safe harbor” for businesses and provides certainty that they are complying with the law if the exposures or discharges they cause are below the established level.

Reasonable alternatives to the proposed regulation: OEHHA determined that the only alternative to the proposed regulation would be to not adopt an inhalation MADL for this chemical. This alternative was rejected because it would fail to provide businesses with the certainty that the MADL can provide.