

# OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT

## I. EXECUTIVE SUMMARY

Much of the scientific expertise in state government for the assessment of health risks posed by chemical contaminants in the environment is concentrated in the Office of Environmental Health Hazard Assessment (OEHHA). When the California Environmental Protection Agency (Cal/EPA) was established in 1991, OEHHA was deliberately created as a separate and distinct entity from the other five Cal/EPA boards and departments to provide adequate separation between the scientific work of “risk assessment” and the regulatory (“risk management”) activities of the other boards and departments, which must balance other considerations.

The mission of OEHHA is to protect and enhance public health and the environment by scientific evaluation of risks posed by hazardous substances. OEHHA has no enforcement authority. Instead, the Office performs many of the scientific assessments used by Cal/EPA boards and departments, the Department of Public Health (DPH) and other regulatory agencies as the basis for standards, regulations and other risk management decisions. These assessments help ensure that state regulations and policies focus on the most significant health threats, which in turn helps ensure that precious resources devoted to the protection of public health and the environment are expended in the most effective manner.

OEHHA’s responsibilities include:

- Assessing the hazardous characteristics of environmental contaminants (in air, water, food, and waste) and developing health-based criteria to support regulatory standards.
- Implementing the provisions of the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65).
- Developing tools and guidance for assessing human and ecological impacts and providing technical assistance concerning risk assessment to state and local agencies.
- Making recommendations regarding safe consumption of sport and commercial fish.
- Conducting special investigations of potential environmental causes of illness and deaths; including studies of the health effects of air pollutants, pesticides, and other chemical exposures.

These responsibilities are fulfilled by a staff of about 125, including toxicologists, physicians, research scientists and other public health professionals. OEHHA has an annual budget of approximately 18 million, with offices in Sacramento and Oakland.

## II. OEHHA ACTIVITIES THAT SUPPORT REGULATORY AND ENFORCEMENT PROGRAMS

The OEHHA functions described in this section are limited to those that support standards setting, provide guidance in the evaluation of health risks for purposes of risk management decisions, or facilitate compliance with regulatory requirements.

### **How OEHHA supports Proposition 65 Implementation**

The Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) requires the Governor to publish a list of chemicals known to cause cancer or birth defects or other reproductive harm. Two requirements apply to chemicals on the list: (1) a business is prohibited from discharging any listed

chemical to sources of drinking water; and (2) a business is required to give a warning prior to knowingly exposing a person to any listed chemical. There are currently 791 chemicals on the Proposition 65 list. The list is available at: [http://www.oehha.ca.gov/prop65/prop65\\_list/Newlist.html](http://www.oehha.ca.gov/prop65/prop65_list/Newlist.html) and in Title 27, Cal. Code of Regulations, section 12000.

The law is enforced through civil enforcement actions brought by the Attorney General's Office or local prosecutors, as well as private citizen suits. The majority of cases brought under Proposition 65 are for violations of the warning requirement. In most cases, these result in injunctive relief, such as reformulation of products to avoid exposure or provision of a warning on the product or source of exposure. Although OEHHA is the lead agency responsible for Proposition 65 implementation, it has no enforcement authority and does not oversee or direct other agencies' enforcement activities. The Attorney General's Office has independent authority to enforce Proposition 65 and general oversight authority over private enforcement actions. OEHHA provides scientific consultation to the Attorney General as needed regarding its enforcement cases.

Since it was passed in 1986, Proposition 65 has provided Californians with information they can use to reduce their exposures to chemicals that may not have been adequately controlled under other State or federal laws. This law has also increased public awareness about the adverse effects of exposures to listed chemicals. For example, Proposition 65 warnings on alcoholic beverages have resulted in greater awareness of the dangers of alcoholic beverage consumption during pregnancy. Many fast-food restaurants now post warnings concerning the presence of cancer-causing acrylamide in their fried and baked food products, and most California supermarkets post notices about the presence of methylmercury (a developmental toxin) in fresh and frozen fish. The law's warning requirements have provided an incentive for manufacturers to remove listed chemicals from their products. For example, toluene, which causes birth defects or other reproductive harm, has been removed from many nail care products. Proposition 65 enforcement actions have focused public attention on the presence of lead in imported candy, children's jewelry and a variety of other products.

In its capacity as the lead agency for Proposition 65 implementation, OEHHA carries out the following tasks:

- OEHHA maintains and updates the Proposition 65 list of chemicals known to cause cancer, birth defects or other reproductive harm. OEHHA administers two expert scientific panels that decide on the listing of chemicals and also lists chemicals that have been identified as carcinogens or reproductive toxicants by other authoritative scientific organizations.
- OEHHA adopts "safe harbor" levels for listed chemicals. No warning is required at exposures that occur below these levels, and discharges of listed chemicals into drinking water sources below these levels are exempt from the prohibition. Businesses use the safe harbor numbers to help them comply with Proposition 65, and the Attorney General and other prosecutors can use them in their enforcement activities. OEHHA has established safe harbor levels ("No Significant Risk Levels" or NSRLs for carcinogens and "Maximum Allowable Dose Levels" or MADLs for reproductive toxins) for 304 of the chemicals listed under Proposition 65, and continues to adopt them as time and resources allow.
- OEHHA updates and improves its Proposition 65 regulations on an ongoing basis. Recognizing that compliance with Proposition 65 comes at a price, OEHHA strives to make the regulatory requirements as clear as possible.

- OEHHA provides technical guidance concerning the application of the law and implementing regulations to specific factual scenarios through the issuance of “Safe Use Determinations,” Interpretive Guidance and informational letters. Businesses can use this guidance to help them comply with Proposition 65 requirements.

OEHHA’s Proposition 65 work products can be used by Cal/EPA boards and departments as well as by other state agencies. Chemicals added to the Proposition 65 list are often incorporated by the other BDOs into their programs. For example, the ARB Hot Spots program incorporates the Proposition 65 list by reference. The safe harbor levels may be used by Cal/EPA programs in their risk management and enforcement activities. Also, the listing of several phthalate compounds as reproductive toxins informed the passage of 2007 legislation (AB 1108, Chapter 672) that bans several of these compounds in toys and children’s products.

#### *Accomplishments in 2008:*

In 2008, 12 chemicals were added to the Proposition 65 List – eight as causing cancer and four as causing reproductive toxicity. Safe harbor levels were adopted for two carcinogens (nitromethane and C.I. Direct Blue 218) and one chemical causing reproductive toxicity (di-*n*-hexyl phthalate). An Interpretive Guideline was issued for hand-to-mouth transfer of lead through exposure to fishing tackle, based on a formal request for technical guidance from the Sports Fishing Coalition. The 199 Proposition 65 settlements in 2008 resulted in increased warnings and citizen awareness of potential sources of exposures to carcinogens and reproductive toxicants.

#### **How OEHHA supports air quality programs**

OEHHA conducts health risk assessments of chemical contaminants in air. These assessments provide the basis for regulatory actions and control measures implemented by the Air Resources Board (ARB) and local and regional air districts. OEHHA’s activities relating to air quality include:

- Conduct risk assessments to support the designation of air pollutants as *toxic air contaminants*.
- Develop and update risk assessment guidance and establishing reference exposure levels and cancer potency factors for use in site-specific risk assessments under the Air Toxics Hot Spots Act.
- Develop risk assessment methods to ensure that infants and children are explicitly considered in evaluating the health risks of air pollutants.
- Recommend Ambient Air Quality Standards for *criteria air pollutants* to protect the health of all Californians.
- Conduct epidemiological investigations of the health effects of criteria air pollutants, particularly on sensitive subpopulations such as children and the elderly. These investigations also are examining the impacts of climate change, and specifically rising temperatures, on public health in California.
- Evaluate the health effects of chemicals commonly found in indoor air and developing reference exposure levels for assessing indoor air exposure.
- Characterize human and environmental health risks of air pollution associated with gasoline use. These activities complement those of ARB in their ongoing efforts to identify and regulate mobile sources of air pollution. This work on the air exposure pathway for gasoline-related air pollutants is a component of the multimedia evaluation of motor vehicle fuels mandated under state law.

#### *Accomplishments in 2008*

In 2008, OEHHA completed the revised *Air Toxics Hot Spots Guidelines for Determining Non-cancer Reference Exposure Levels*. The revised guidelines more explicitly account for children’s susceptibilities. Reference exposure levels for acute, repeated 8-hour and chronic exposures for six chemicals were established.

### **How OEHHA supports the drinking water program**

OEHHA performs risk assessment and hazard evaluation activities relating to chemical contaminants in California's drinking water. These activities include developing public health goals (PHGs), health advisories, and notification levels for chemical substances in drinking water. OEHHA also provides toxicological assistance for interpreting chemical monitoring of the drinking water supply. Public health goals are concentrations of chemicals in drinking water that are not anticipated to produce adverse health effects following long-term exposures. These health-protective advisory levels are determined after a comprehensive review of applicable toxicity data, and presented in the form of detailed documents that are posted on the OEHHA Web site at [www.oehha.ca.gov/water/phg/allphgs.html](http://www.oehha.ca.gov/water/phg/allphgs.html). PHGs are used as the health basis for the state's primary drinking water standards (maximum contaminant levels, or MCLs), which are established by the California Department of Public Health (DPH). To date, OEHHA has developed PHGs for 83 chemicals and completed updated assessments on 16 of them.

#### *Accomplishments in 2008:*

In 2008, PHGs were adopted for copper and endrin (updates), and molinate. Eight draft PHGs were issued. About twenty-four risk assessments were in progress during the year.

### **How OEHHA supports pesticide programs**

OEHHA carries out the following activities relating to pesticides:

- Reviews risk characterizations of pesticide active ingredients prepared by the Department of Pesticide Regulation (DPR) and evaluates pesticide toxicity data in support of pesticide use and regulation in California.
- Reviews and evaluates data to identify pesticides as Toxic Air Contaminants.
- Pesticide illness surveillance activities:
  - Provides epidemiological and other assistance to local health officers in the event of pesticide poisoning outbreaks (Health and Safety Code Section 105210).
  - Is responsible for creating the Pesticide Illness Report Form that is used for reporting pesticide illnesses (Health and Safety Code Sections 105200).
  - Provides training to physicians on their requirement to report pesticide illnesses, how to complete the reports, and penalties for not reporting (Health and Safety Code Sections 105200 and 105205).
  - Identifies problem pesticides and establishes trends and history of poisonings.
- Assists DPR with development of worker health and safety regulations for pesticide use, handling, notification and enforcement (Food and Agricultural Code Sections 12980 and 12981) and reviews worker exposure protocols for scientific merits and ethical considerations.
- Provides health effects data and toxicological evaluations of pesticides and associated formulation products used to combat invasive species in support of pest eradication programs of the Department of Food and Agriculture.

#### *Accomplishments in 2008:*

In 2008, OEHHA conducted six physician trainings on recognition and management of pesticide poisoning. Three pesticide reviews were completed, three initiated and permit conditions recommended for metam sodium/metam potassium application. Worker exposure protocols were reviewed for various pesticide products.

OEHHA prepared a report summarizing symptoms reported following aerial pheromone application in Monterey and Santa Cruz counties and a risk assessment of twist ties to control the light brown apple moth (LBAM). In collaboration with DPR and the Department of Public Health, OEHHA also reviewed and analyzed the results of acute toxicity studies on four potential LBAM eradication products as well as the LBAM pheromone active ingredient.

### **How OEHHA supports site cleanup programs**

OEHHA supports site cleanup programs through two types of activities:

- **Development of health-based values for assessing risks at contaminated sites**

OEHHA develops: (a) child-specific reference levels to assess risks at proposed or existing California school sites; (b) screening concentrations for contaminants in soil and soil vapors (CHHSLs) for use by community organizations, property owners, developers, and local government officials to assist in the remediation of contaminated properties; (c) wildlife toxicity values for ecological risk assessments; and (d) cleanup standards for properties contaminated by the clandestine manufacture of methamphetamine.

- **Risk assessment reviews**

OEHHA assists the Regional Water Quality Control Boards, the California Integrated Waste Management Board (CIWMB) and local government entities to identify health and ecological risks from exposure to hazardous materials at contaminated sites.

#### *Accomplishments in 2008:*

In 2008, OEHHA reviewed health risk assessments and supporting documents for 63 contaminated sites in California. OEHHA also provided risk assessment trainings for local enforcement agencies who participate in site cleanup activities.

### **Other OEHHA programs and activities**

- **Fish Advisory Program:**

OEHHA evaluates contaminants in fish and wildlife and develops fish consumption health advisories. Fish consumption advisories are published in the California Sport Fish Regulations. OEHHA developed advisories for 235 miles of river, 220,000 acres of estuary, and 11,990 acres of lake in 2008. The advisories serve as a public communications program intended to help protect citizens, including sensitive subpopulations, against toxic chemicals present in fish. Advisories are also used by the State Water Resources Control Board for their Integrated Report of Water Quality and to prioritize developing Total Daily Maximum Loads. The program also advises the Department of Fish and Game on the closure of commercial and sport fishing in marine areas impacted by oil spills.

- **EPIC Project:**

OEHHA hosts the [Cal/EPA Environmental Protection Indicators for California \(EPIC\) Program](#), where Cal/EPA BDOs, the Resources Agency and other state agencies provide input towards developing and maintaining environmental indicators. *Environmental indicators* are scientifically based measures that convey information on environmental status and trends. They are intended to assist environmental programs in evaluating outcomes of their efforts and in identifying areas that require more attention. Indicators are considered in strategic planning, policy formation, resource allocation and priority setting. The current focus of the EPIC project is to develop and update indicators of the impacts of climate change on California.

- **Artificial turf fields evaluation:**

OEHHA is conducting a safety study of the new generation of artificial turf playing fields in support of the CIWMB's stewardship of recycling in California. These fields contain crumb rubber infill made from recycled tires. OEHHA conducted an evaluation of existing knowledge in 2008 and prepared a report dated Feb 2009. OEHHA is currently testing whether these fields release harmful chemicals or particles into the air. In addition, the fields are also being assayed for bacteria capable of infecting athletes.

- **Ecotoxicology Program:**

OEHHA develops tools and technical resources to assess the impacts of chemical, physical, and biological stressors on ecosystems. Some of the work being carried out by the Ecotoxicology Program includes: developing a tool for estimating imperviousness—a key stressor in most urban watersheds; conducting a risk assessment of the Dry Creek watershed, a rapidly urbanizing watershed spanning Sacramento and Placer Counties; providing guidance, training and technical assistance in conducting watershed assessments; and participating in the California Water and Land Use Partnership (Cal WaLUP), a network of state, local, and non-governmental organizations engaged in outreach and education efforts to promote a better understanding of the relationship between land use decisions and aquatic/water resources.

### III. FUTURE DIRECTIONS

In addition to the ongoing activities described above, OEHHA will address current and emerging issues and provide support to regulatory activities of Cal/EPA boards and departments and other state and local agencies through the following projects:

- **Cumulative Impacts and Precautionary Approaches (CI/PA):**

The CI/PA Project is a Cal/EPA program for the development of a framework and guidance for Cal/EPA programs to use in addressing the cumulative impacts in California communities of environmental pollution from multiple sources. OEHHA is leading this agency-wide effort. This framework and guidance will be instrumental in helping Cal/EPA BDOs conduct their regulatory activities, particularly in communities disproportionately impacted by pollution.

- **Green Chemistry:**

Pursuant to recent legislation (SB 509, Simitian, Chapter 560, Statutes of 2008), OEHHA is evaluating chemical-hazard traits and environmental and toxicological effects to be included in a Toxics Information Clearinghouse. A key goal of the Clearinghouse is to increase public knowledge about the toxicity and hazards of the thousands of chemicals in commerce. The traits, effects and other characteristics specified by OEHHA must be incorporated by the Department of Toxic Substances Control (DTSC) into criteria for evaluating toxic chemicals and safer alternatives. OEHHA is also providing consultation to DTSC in the development of the regulatory process for identifying and prioritizing chemicals of concern in consumer products.

- **Biomonitoring:**

The California Environmental Contaminant Biomonitoring Program, or CECBP, is a collaborative effort of CDPH, OEHHA, and DTSC. This program is designed to measure levels of environmental chemicals in biological samples from statewide participants and establish trends over time. In the start-up phase, the program is identifying priority chemicals for biomonitoring and conducting pilot studies to develop laboratory and field methods. The information generated by CECBP will be used to assess the effectiveness of regulatory programs intended to decrease exposures to specific chemicals.

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