



**Center for Healthy Communities | Occupational Health Branch**

# HAZARD EVALUATION SYSTEM AND INFORMATION SERVICE

## ANNUAL REPORT

November 1, 2018–October 31, 2019

A Report to the California Legislature Submitted to the Department of Industrial Relations  
for the Hazard Evaluation System and Information Service

December 2019

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## Executive Summary

As mandated by Labor Code section 147.2, this report details the implementation and operation of a “repository of current data on toxic materials and harmful physical agents in use or potentially in use in places of employment in the state.” “Repository” refers to the program established in 1978 and now known as the Hazard Evaluation System and Information Service (HESIS). HESIS is located within the California Department of Public Health (CDPH), Occupational Health Branch (OHB), and is supported by an interagency agreement with the California Department of Industrial Relations (DIR).

In 2018–2019, HESIS welcomed a new chief, Dr. Kristin Cummings, and continued to implement its mandate to protect California workers from occupational illness. HESIS identified, evaluated, and provided practical information on toxic chemicals and other workplace hazards; assisted the DIR’s Division of Occupational Safety and Health (Cal/OSHA, or DOSH) in promulgating protective occupational health standards; and initiated and worked collaboratively with others on targeted public health projects and activities.

Specifically, HESIS implemented the mandates of the Labor Code by providing:

- a telephone information service for individuals seeking information about workplace hazards;
- educational materials, outreach, and information;
- evaluation of workplace hazards;
- technical support and consultation regarding occupational health to DIR, other programs within CDPH, other agencies, and private organizations;
- technical input and recommendations on standards setting; and
- rapid access to electronic databases and full-text articles through the CDPH’s contract with the Medical School Library of the University of Massachusetts.

Selected accomplishments of HESIS during this period include:

- HESIS utilized its SB 193 legislative authority to identify and contact California companies that use cleaning, degreasing, and spray adhesive products containing the chemical 1-bromopropane (1-BP), a known reproductive and developmental toxicant, neurotoxicant, and carcinogen. HESIS worked with a cleaning solvent substitution specialist to identify safer alternatives to 1-BP in various applications. This effort enabled the program to promote exposure reduction via both exposure controls and the adoption of safer 1-BP substitutes.
- HESIS provided support to Cal/OSHA’s Health Effects Advisory Committee (HEAC) to advise Cal/OSHA on permissible exposure limits (PELs) for chemical substances in the workplace. HESIS reviewed the literature on exposure and toxicity of hazardous chemicals in preparation for establishing and revising

regulatory exposure limits, shared relevant research, and assisted in preparing toxicology summary documents, including PEL recommendations, for discussion in HEAC meetings. HESIS also collected and summarized chemical use data from the California Environmental Reporting System (CERS) for several chemicals. Finally, HESIS provided suggestions for revising HEAC's chemical prioritization concept scheme, used to update the priority chemical list.

- HESIS responded to calls to the Workplace Hazard Helpline (also referred to as the Telephone Response System, or TRS) from workers or their relatives, employers, health-care providers treating workers, and industrial hygiene/safety personnel.
- HESIS also responded to technical assistance requests from other branches of the CDPH; Cal/OSHA's Director's Office, Enforcement Branch, and Research and Standards Unit; the California Correctional Health Care Services; and local health departments. HESIS evaluated the health hazards of specific work-related exposures and provided technical assistance to these and numerous other agencies and groups.
- HESIS conducted several collaborative public health activities, including:
  - + Coccidioidomycosis (Valley fever). HESIS partnered with labor organizations in sponsoring students from the national Occupational Health Internship Program (OHIP) on a project to identify and address education needs for preventing Valley fever in construction workers. The resulting "tailgate training guide" will be adapted to promote adoption of training requirements of the recently enacted California legislation, Chapter 712, Statutes of 2019 (AB 203). HESIS worked with local health departments to conduct several investigations of occupational outbreaks and collaborated closely with a CDPH statewide Valley fever awareness media campaign.
  - + Occupational health regulations development. HESIS provided support for the industrial hygienists in Cal/OSHA's Research and Standards Unit in developing science-based regulations. HESIS obtained recent scientific literature and met with experts to collect information on health effects and effective hazard control measures for the Cal/OSHA advisory committees that are developing standards on Protection from Wildfire Smoke, Safe Handling of Antineoplastic Drugs in Health Care, and Occupational Exposure to Surgical Plume.

This report furnishes additional detail on all HESIS activities during the report year.

**Labor Code Section 147.2 Mandate 1**

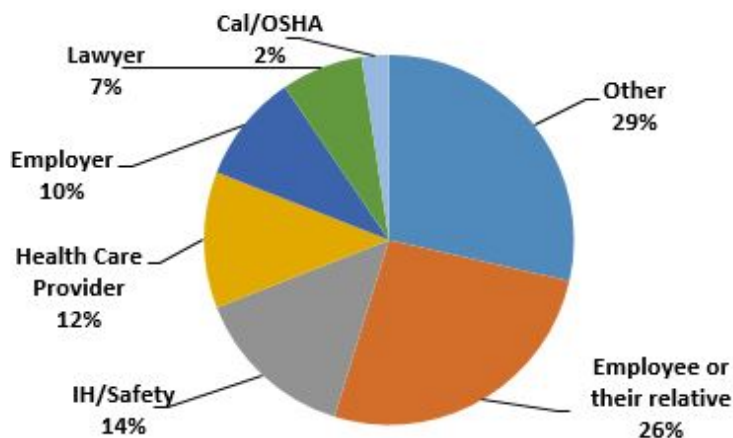
*Provide reliable information of practical use to employers, employees, representatives of employees, and other governmental agencies on the possible hazards to employees of exposure to toxic materials or harmful physical agents.*

**1. Workplace hazard helpline/telephone response system**

HESIS’s telephone response system (TRS) logged 42 calls from November 2018 through October 2019. A TRS response generally involved one to three telephone interactions with the caller, as well as substantial online technical data retrieval, determination of appropriate referral avenues, and provision of supporting documentation, either as online links or in hard copy. This year, a federal Centers for Disease Control and Prevention (CDC) Epidemic Intelligence Service Officer placed at the OHB supplemented HESIS staff and worked under their mentorship to assist with TRS response, gaining experience in addressing the questions and concerns raised by callers. The OHB Public Health Medical Officer III also provided medical consultation. In this year’s statistics, HESIS counted only inquiries that came in through the TRS telephone number. Those from other sources, such as referrals, the OHB website, or in-person communication with HESIS staff, are enumerated separately to better characterize the use of the helpline. Inquiries and requests for HESIS assistance by other routes are discussed below under “Technical Assistance to Cal/OSHA and Selected Other Constituencies.”

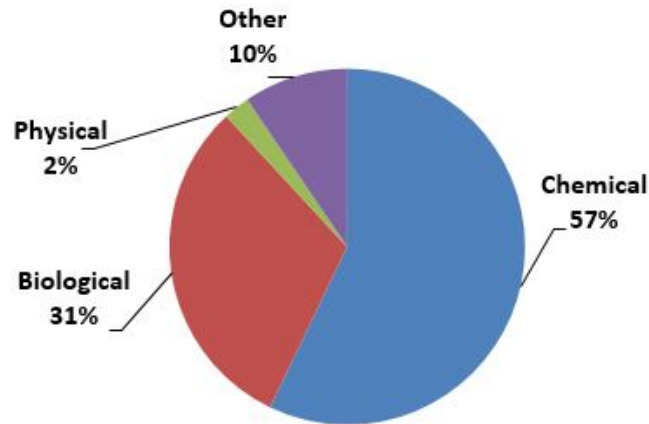
*Type of caller.* Aside from “other” callers, most inquiries came from employees and their relatives, followed by industrial hygiene/safety personnel, health-care providers, employers, lawyers, and Cal/OSHA. Examples of “other” callers include private individuals concerned about others’ workplace hazards, students, and worker advocacy groups.

**Figure 1. TRS Calls by Type of Caller (n = 42)**



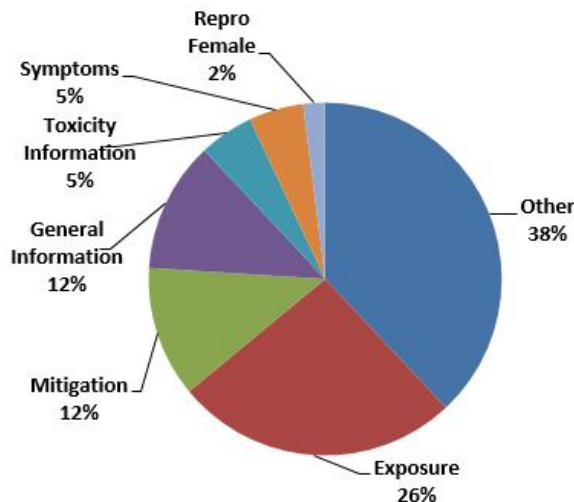
*Type of hazardous agent.* The hazardous agents about which callers inquired were principally chemical (e.g., anesthetic gases, silica, or asbestos) and biological (e.g., Legionella, aerosol transmissible diseases [ATDs], mold, or coccidioidomycosis), followed in frequency by physical agents (e.g., heat, radiation, or traumatic injuries).

**Figure 2. TRS Calls by Type of Hazardous Agent (n = 42)**



*Primary inquiry.* The most common types of questions concerned workplace exposures (e.g., nature, route, and duration of exposure to the hazardous agent) and ways to control workplace hazards (“mitigation”). These were followed in frequency by questions about “general workplace information,” such as workplace policies, discrimination issues, sanitation, and workplace programs (e.g., injury and illness prevention, hazard communication, and respiratory protection). Additional inquiries included the toxicity of specific chemicals, the relationship of symptoms to work exposures, and questions about pregnancy risks. “Other” inquiries were those requesting regulatory information, referral to worker advocates or workers’ compensation resources, or information about medical surveillance programs.

**Figure 3. TRS Calls by Primary Inquiry (n = 42)**



*Examples.* The following descriptions represent typical 2018–2019 TRS calls:

- A Cal/OSHA staff member requested information on hazards of an ultraviolet (UV)-curing process in the workplace. HESIS conducted a search on the subject and provided a description of the UV-curing process, its potential health hazards including skin irritation/sensitization, eye irritation, and respiratory system effects for workers following dermal and inhalation exposure to both UV light and UV-curable products (e.g., acrylates, epoxies), steps to limit exposure, and a UV-curing safety manual.
- A nurse practitioner from an occupational health clinic inquired about the availability and indications for laboratory testing of asymptomatic employees who may have been exposed to mold in a retail store. HESIS provided information on the clinically significant signs and symptoms of mold exposure and the circumstances that would warrant further investigation.
- The owner and sole employee of a floor finishing company experienced multiple episodes of symptoms while working that his health-care providers thought might be due to the commercial finishing products that he uses. He requested guidance on the potential health effects of these products. HESIS reviewed the Safety Data Sheets of the products he uses and provided the caller with the safety information, online link to the National Institute for Occupational Safety and Health (NIOSH) chemical database, online link to the OSHA site on safer chemical alternatives, and recommendations for industrial hygiene evaluation of his worksite.
- A former data analyst for an aerospace company called with concerns about a “cluster” of unusual neurologic, lung, brain, and hematologic symptoms and cancers for anyone (the analyst, coworkers, and others) who worked on the premises, mentioning that several former coworkers had died. The caller believed the cluster of illness was related to a contaminant or radioactive material stored on site by the previous occupant, which (according to colleagues) had conducted “top secret research” in the 1950s and 1960s. HESIS staff contacted the CDPH Radiologic Health (RHB) Branch to ascertain whether it had conducted site assessments of the premises; referred the caller to the RHB and EnviroStor, the Department of Toxic Substances Control’s data management system for tracking cleanup, permitting, enforcement, and investigations at hazardous waste facilities; and provided information on locating an occupational medicine specialist and navigating the workers’ compensation system. The RHB is following up locally with a site survey and investigation and will report the results to HESIS.
- An elementary school employee reported a history of water damage in a classroom, a damp carpet, a strong mold smell, and visible black mold, stating: “the District is resistant to removing the damp carpet.” HESIS staff provided information on the Cal/OSHA regulation governing uncontrolled accumulation of water and mold in the workplace; contact information for the local Cal/OSHA enforcement office; resources on best practices for eliminating mold contamination, particularly in schools; and general resources on mold and health and mold remediation.



- A concerned citizen asked about medical surveillance programs for construction workers exposed to naturally occurring asbestos. HESIS responded that construction work involving grading and excavating soil containing naturally occurring asbestos is covered under the Cal/OSHA Asbestos regulation for construction and that the regulation could require employers to provide medical surveillance depending on the intensity of exposure. HESIS provided resources for determining exposure levels and a link to a list of occupational medicine clinics that provide medical surveillance.
- A consulting industrial hygienist reported overexposure to crystalline silica when workers cut quartzite counter tops even with the use of wet methods. She requested information on ways to further minimize exposures. HESIS provided information on vacuum systems that can be used with wet saws that have been found to reduce exposures.

*Electronic TRS database.* HESIS’s searchable database of TRS calls uses EpiInfo software and is routinely employed by staff responding to information requests.

*TRS intranet site.* HESIS uses a CDPH Information Technology Services SharePoint utility to maintain an intranet site for use by TRS responders within the OHB. The site includes commonly consulted documents, URLs for useful websites, agency contacts, and other resources. Responding to TRS calls, with training and oversight by HESIS staff, provides valuable experience for trainees, fellows, students, and other OHB staff.

## 2. Development of educational products and materials

In 2018–2019, HESIS worked on or completed the following educational products and materials:

### **Coccidioidomycosis (Valley fever)**

- Continuing medical education (CME): OHB/HESIS reviewed and revised the OHB [Coccidioidomycosis: Update on Occupational Health Issues](#) course, a free online CME course promoted by the CDPH and the University of California at Davis. The course provides information on the epidemiology, diagnosis, and treatment of coccidioidomycosis; highlights workers at risk for occupational coccidioidomycosis; and describes measures to prevent its occurrence.
- “Valley Fever: Tailgate Training Guide for California Construction Workers”: an interactive guide for safety managers, supervisors, union reps, and others to train workers on the basics of Valley fever and how to prevent infection on the job. AB 203, passed in October 2019, requires California employers to train workers about eight specific aspects of Valley fever if they work in areas where it is endemic. The guide is currently being revised and expanded to include the new requirements.
- CDPH social media campaign materials: OHB/HESIS collaborated with the CDPH Infectious Diseases Branch to develop social media products that were featured in August 2019 (Valley Fever Awareness Month).

- CDPH statewide awareness campaign materials: HESIS actively worked with the team that is developing traditional and media materials for workers and employers to warn them of the work-related risks of Valley fever. These will likely include one or more factsheets, posters, event “giveaway” items, and a redesign of the OHB [Preventing Work-Related Valley Fever \(Coccidioidomycosis\) web page](#) to coincide with the campaign.
- In November 2018, the CDC Career Epidemiology Field Officer assigned to the CDPH presented a webinar to Caltrans based on the OHB August 2018 Preventing Valley Fever in Construction Workers webinar but revised to address their needs. The presentation was recorded for Caltrans to use as its own training tool.

### **Isoflurane use in veterinary hospitals and clinics**

The Workplace Hazard Update “[Isoflurane May Harm Veterinary Worker Health](#),” about this anesthetic gas used by veterinarians and veterinary technicians was completed. Work was initiated on this topic after HESIS received inquiries from employees regarding possible exposure in veterinary hospitals. The update addresses potential health effects and features practical ways to minimize exposure that have been vetted with key partners, including employers and veterinary technicians. HESIS worked closely with these groups as well as regulatory, business, and academic stakeholders to develop and disseminate the update, which was featured in the [June 2019](#) edition of OHB’s *Occupational Health Watch*, a monthly electronic newsletter distributed by email to registered recipients and also available online.

### **Wildfire Smoke: Cal/OSHA’s protection from wildfire smoke standard**

In September 2019, HESIS contributed to the OHB’s *Occupational Health Watch*, “[Protecting Outdoor Workers from Wildfire Smoke](#),” which highlighted Cal/OSHA’s new emergency regulation.

### **Silica exposure to workers when manufacturing countertops**

HESIS contributed to a health advisory letter for stone countertop fabrication businesses on the hazards of silica and the new regulatory requirements designed to minimize exposure.

## **3. Dissemination of educational products and materials**

*Telephone response.* HESIS distributed its publications to TRS callers to supplement and reinforce information provided by telephone and email. Publications were also sent in response to direct telephone requests to our publication line: (866) 627-1586.

*Cal/OSHA and other organizations.* HESIS continued to provide its publications to the Cal/OSHA district and area offices for dissemination by the Enforcement and Consultation Branches and to serve as resources for telephone consultations.

Other organizations that requested and disseminated HESIS publications include:

- Labor Occupational Safety and Health Program, University of California, Los Angeles
- Los Angeles County Department of Public Health
- Ventura County Public Health
- Tulare County Health and Human Services
- National Clearinghouse for Worker Safety and Health Training, National Institute of Environmental Health Sciences

*Conferences and meetings.* HESIS distributed its publications at conferences and meetings, including:

- Cal/OSHA Senior Industrial Hygienist Technical Meetings
- Caltrans Statewide Safety Conference
- Council of State and Territorial Epidemiologists Annual Meeting
- American Society of Safety Professionals, Sacramento Chapter, Safety & Health Summit

*Website.* HESIS continued to disseminate educational materials, provide health and safety resources, promote its activities, and share other information of interest to stakeholders on the HESIS website, a subset of the OHB website, in 2018–2019. HESIS staff continue to play a major role in improving the OHB’s website by making informational products ADA compliant, supplementing content and graphics, and reworking content architecture to make it more user friendly.

HESIS offers links to over 70 of its documents; most of them are available on the [HESIS Publications web page](#). There were at least 500 unique downloads of HESIS materials, and over 2,900 unique visitors to the HESIS website during this report period. More than 2,100, or 73% of the visits, were to the “[Preventing Work-Related Valley Fever](#)” page, which reflects the interest generated about this issue by HESIS/OHB activities.

*Occupational Health Watch.* HESIS contributed to the issues on the following topics:

- [New A-Z Index for CDPH Occupational Health Resources](#), January 2019, 3,966 recipients. Highlighted the OHB’s new full-site navigation listing.
- [Anesthetic Gas: A Risk for Veterinary Workers](#), June 2019, 3,897 recipients. Featured the new HESIS update on isoflurane; was promoted by key industry partners who provided input for its development, including the California Veterinary Medical Association and the California Veterinary Technician Association.
- [Valley Fever Is a Work-Related Illness](#), July 2019, 3,864 recipients. Promoted Valley Fever Awareness Month (August) and provided key prevention recommendations for employers, workers, and health-care providers.
- [Protecting Outdoor Workers from Wildfire Smoke](#), September 2019, 3,846 recipients. Featured the recent Cal/OSHA wildfire smoke emergency standard and

highlighted employer obligation to protect workers when air quality is poor due to smoke.

### **Coccidioidomycosis (Valley fever) in construction materials**

- HESIS continued to offer the August 2018 webinar presentation and speakers' notes to construction partners to conduct their own training. We have received requests from, and provided the materials to, public employers such as the Departments of Transportation and Corrections and the U.S. Army, construction companies, insurance companies, and risk management groups.
- Distributed educational materials on preventing Valley fever to union apprentices, workers, business agents, and officials during visits to construction worksites and discussion groups with union members as part of the OHB-sponsored [Occupational Health Internship Program \(OHIP\)](#) during the summer of 2019. This effort was supported by the State Building and Construction Trades Council and Laborers International Union; these groups are committed to disseminating the new Valley fever tailgate training guide when it is ready (see below).

*NIOSH Publication Clearinghouse.* HESIS also featured over 75 publications on a searchable online database created by NIOSH. The [State-Based Occupational Health Surveillance Clearinghouse](#) is a centralized online library with publications from occupational public health programs in 27 states. The clearinghouse provides electronic access to thousands of educational tools, data and case reports, studies, investigations, and articles, including more than 830 from California's OHB. During the report period, HESIS revised seven XML (data) files for clearinghouse listing.

## **4. Presentations and scientific publications**

### **Presentations**

Barbara Materna, PhD, CIH, OHB Chief

- "Update from the CDPH Occupational Health Branch," California Industrial Hygiene Council Annual Conference, San Francisco, December 10, 2018.

Jennifer McNary, MPH, CIH, HESIS Research Scientist

- "Zoonotic Influenza and Occupational Health Considerations," CDPH Division of Communicable Disease Control's (DCDC's), Division Information Sharing Seminar, February 22, 2019.

Jason Wilken, PhD, MPH, CDC Career Epidemiology Field Officer at the CDPH

- "Coccidioidomycosis (Valley Fever): Risks and Prevention for Workers," Caltrans Live Webinar, November 21, 2018.

### **Scientific journal article**

- de Perio MA, Materna BL, Sondermeyer Cooksey GL, Vugia DJ, Su CP, Luckhaupt SE, McNary J, Wilken JA. [Occupational Coccidioidomycosis Surveillance and](#)

[Recent Outbreaks in California](#). Med Mycol. 2019 Feb 1;57(Supplement\_1):S41-S45. doi:10.1093/mmy/myy031. PubMed PMID: 30690596.

## **5. Addressing new and underappreciated workplace hazards through collaboration and stakeholder outreach**

### **Preventing Valley fever (coccidioidomycosis) in construction workers**

- During July and August 2019, OHB/HESIS hosted students from the national [Occupational Health Internship Program \(OHIP\)](#), who visited worksites, conducted surveys, and held discussion groups with union workers to better understand worker knowledge and education needs for preventing Valley fever in construction. The State Building and Construction Trades Council and Laborers Union (LiUNA) facilitated access to its members, some of whom shared their experiences as survivors of severe Valley fever disease. The students worked with OHB staff, our CDPH Infectious Disease Branch colleagues, and our union partners to create a user-friendly tailgate training tool; this will form the basis of a more comprehensive guide based on [AB 203 of 2019](#), which spells out specific training employers must provide their employees when working in areas where Valley disease is endemic. This work will help inform future OHB and CDPH education efforts.
- CDPH statewide awareness media campaign: HESIS actively participated in a large-scale multimedia effort to raise awareness about this illness, which has become increasingly prevalent in California in recent years. A key element of the campaign is to reach populations that are at increased risk of more severe, and sometimes deadly, disease. These groups include African-Americans, Filipinos, older (more than 60 years old) adults, pregnant women, and people with a compromised immune system. Outdoor workers who disturb dust and dirt or work around it are at particular risk for contracting the illness; OHB/HESIS plays a critical role in representing this aspect of the campaign.
- Plans were made to identify and collaborate with new construction stakeholders to increase the reach of our prevention efforts, including to raise awareness about the new legislation requiring delivery of training by May 1, 2020.

### **Preventing avian influenza in poultry workers**

In collaboration with the California Department of Food and Agriculture, the California Poultry Association, the Pacific Egg and Poultry Association, the CDPH Immunization Branch, and Division of Communicable Disease Control public health veterinarians, OHB/HESIS sent a letter to poultry and egg producers in California encouraging vaccination of their employees for seasonal influenza in the fall. Poultry workers should receive the influenza vaccine each fall to reduce the possibility of infection with both avian and human influenza A viruses, which could result in the formation and spread of new influenza viruses for which humans have no immunity.

### **Personal protective equipment for Ebola**

Discussed and provided information to a staff member from Kaiser Permanente, National Environmental Health and Safety, about our CDPH guidelines and Cal/OSHA requirements for impermeability of personal protective equipment (e.g., powered air-purifying respirator hood), for Ebola.

### **Protection for opioid overdose first responders**

At the request of the California Statewide Opioid Safety Workgroup, HESIS reviewed guidance for first responders on preventing exposure to fentanyl while tending to patients suffering from a fentanyl overdose. HESIS staff provided suggestions on ways to make it consistent with guidelines published by national interagency working groups that have expertise from drug enforcement agencies, the U.S. Department of Justice, and the CDC's NIOSH.

### **Other examples**

*Safety and health training and education.* HESIS's health education consultant served on the Advisory Committee of the Worker Occupational Safety and Health Training and Education Program (WOSHTEP), under DIR's Commission on Health and Safety and Workers' Compensation.

*Young worker health and safety.* HESIS's health education consultant served on the Advisory Board of the California Partnership for Young Worker Health and Safety and participated in its Young Worker Policy Initiative workgroup. HESIS and the OHB promoted partnership activities, such as Safe Jobs for Youth Month, and provided input for the development and evaluation of educational and outreach efforts.

*Collaboration with the University of California.* HESIS maintained regular contact with the Labor Occupational Health Programs at UC Berkeley and at UCLA to remain apprised of their projects, share resources, and explore collaboration opportunities.

## **6. Technical assistance for Cal/OSHA and selected other constituencies**

### **Technical assistance provided to Cal/OSHA**

*Facilitating collaboration.* HESIS expanded and maintained a SharePoint site for communicating efficiently and sharing documents and references with Cal/OSHA's Research and Standards Unit. The site currently houses 20 individual chemical "pages" with link lists and document libraries.

Research and educational materials development. HESIS assisted Cal/OSHA with research on the following topics:

- The HESIS industrial hygienist reviewed and provided comments and links to resources for the Cal/OSHA Publications Unit's guidance on complying with the ATD–Zoonotic standard and on the model exposure control plan.
- HESIS staff reviewed the new Cal/OSHA fact sheet on the ATD standard and provided updated links going to CDPH topic pages on reportable infectious diseases.



- HESIS provided assistance to the Research and Standards Unit on easily accessible language to communicate hazards to workers and to the Consultation Service on new lead surface dust standards to protect children.
- At the request of a staff member from the Occupational Safety and Health Standards Board, HESIS collected literature with estimates of the number of adult film performers and provided contact information for subject matter experts.

## **Technical assistance provided to selected other constituencies**

### **State government**

- *Respiratory protection against wildfire smoke.* At the request of the California Correctional Health Care Services, HESIS researched and provided information on protection afforded by N95 filtering facepiece respirators against wildfire smoke when respirators are not fit tested.
- *Respiratory protection against wildfire smoke.* At the request of the Emergency Preparedness Office of CDPH, HESIS reviewed language for a CDPH publication for public health officials on respiratory protection against wildfire smoke.
- *Coccidioidomycosis.* HESIS provided support for Caltrans in developing their code of safe practice on preventing exposure to Valley fever and provided an explanation of how Valley fever spores cause this infectious disease.
- *Bloodborne pathogens.* HESIS provided guidance to the CDPH Infectious Diseases Branch on medical evaluation recommended for employees following an exposure to blood.
- *Personal protective equipment.* At the request of the California Correctional Health Care Services, HESIS provided recommendations for personal protective equipment and procedures for minimizing exposures to strong oxidizing chemicals during hyperchlorination of the water supply following detection of Legionella.
- *Psittacosis.* In coordination with the California Department of Food and Agriculture, HESIS provided guidance and worker educational material for a farm owner and veterinarian on protecting poultry farm workers from psittacosis, a zoonotic disease.
- *Mold.* HESIS provided guidance to the CDPH Program Support Branch on requirements for cleaning mold safely.

### **Local government**

- *Coccidioidomycosis.* Following an outbreak of Valley fever illnesses with several hospitalizations of construction workers, HESIS and CDPH Infectious Diseases Branch staff met with the Ventura County health officer and communicable disease controller to discuss construction permitting and conditions of approval that can be used to help prevent infections in workers. HESIS sent examples of "conditions of approval" that provide requirements for dust suppression and respiratory protection for workers and a list of occupational Valley fever prevention resources.

- *Coccidioidomycosis*. HESIS participated in a discussion with the Kern County Health Department of ways to address employees' concerns about getting Valley fever while working in an office building. Also provided information about California's regulatory requirements for maintaining building ventilation systems.

#### Labor representatives/advocates

- *Respiratory protection*. HESIS summarized published studies that compared breathing resistance of N95 filtering facepiece respirators with and without exhalation valves for the California Rural Legal Assistance Foundation.

#### Media inquiries

- *Pesticide use warnings for office buildings*. At the request of the CDPH Office of Public Affairs, HESIS prepared a response to a media outlet regarding requirements for warning workers of fumigant use in an office building.



## Labor Code Section 147.2 Mandate 2

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*Collect and evaluate toxicological and epidemiological data and any other information that may be pertinent to establishing harmful effects on health of exposure to toxic materials or harmful physical agents.*

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### 1. Selected hazard evaluations

*Health effects from wildfire smoke.* HESIS conducted a literature search and reviewed articles on the health effects of wildfire smoke to respond to worker advocates, inquiries from the general public, and Cal/OSHA's Research and Standards Unit.

*Occupational exposure to isoflurane.* In response to several helpline calls, HESIS continued to study the epidemiologic and toxicologic data regarding short- and long-term health effects of occupational exposure to isoflurane, a waste anesthetic gas, including review of genotoxicity, reproductive toxicity, and neurotoxicity. (Also see Mandate 1.)

*Antineoplastic agents.* HESIS collected and evaluated toxicologic and epidemiologic studies on the reproductive and carcinogenic health effects of occupational exposure to antineoplastic agents.

### 2. Information repository

*HESIS electronic repository of occupational health information.* With support from a CDPH contract with the University of Massachusetts, HESIS continued electronic document delivery to Cal/OSHA's Research and Standards Unit. HESIS prepared annotated bibliographies in support of the advisory committees developing standards on Occupational Exposure to Antineoplastic Drugs and on Protection from Wildfire Smoke. HESIS also expanded its repository on Coccidioidomycosis (Valley fever).

HESIS continued to review table-of-contents alerts in toxicology, industrial hygiene, and occupational medicine journals, as well as evidence-based reports from sources such as national professional societies. HESIS also followed the activities of authoritative agencies to identify emerging hazards and issues. These agencies included NIOSH and U.S. EPA, as well as the California EPA's Office of Environmental Health Hazard Assessment (OEHHA), International Agency for Research on Cancer, National Toxicology Program, and European Chemicals Agency.

HESIS assimilated this research by cataloging key articles in its electronic repository.

## Labor Code Section 147.2 Mandate 3

*Chemical manufacturers, formulators, suppliers, distributors, importers, and their agents shall provide to HESIS the names and addresses of their customers who have purchased certain chemicals, or commercial products containing those chemicals, when HESIS, in consultation with DIR, determines that a substance, which may be in use in a place of employment, may pose a hazard under a reasonable anticipated condition of use, and potentially poses a serious new or unrecognized health hazard to an employee.*

Chapter 830, Statutes of 2014 (SB 193–Monning), added this HESIS authority and mandate, effective January 1, 2016. The intent of the bill was to enable HESIS to provide critical hazard information directly to California employers and to workers potentially exposed to chemicals of concern, and to support HESIS investigations evaluating the extent of particular hazards. The legislation authorizes HESIS to obtain customer contact information from manufacturers and suppliers of a particular chemical or product of concern for California workplaces.

### 3. Bromopropane

In November 2016, HESIS exercised its authority under SB 193 for the chemical 1-bromopropane (1-BP), a solvent used in degreasing and spray adhesives. A known reproductive/developmental toxicant and neurotoxicant, 1-BP has now been added to the California Proposition 65 carcinogen list. The current PEL of five (5) parts per million was based on reproductive/developmental outcomes and may not be sufficiently protective for cancer and other endpoints.

*1-BP customers reported.* As described in the 2016-2017 and 2017-2018 HESIS Annual Reports, in September 2017 HESIS contacted 36 manufacturers of 1-BP-containing vapor degreasers, cold cleaners, and spray adhesives. HESIS received responses from 32 companies (89%). Of these, 22 companies provided customer lists and 10 indicated they had no 1-BP sales in California. We supplemented the information received from manufacturers with customer lists provided by distributors. Between the dates of September 2017 and June 2019, HESIS received the names of approximately 480 unique companies that purchased one or more 1-BP-containing products in a 12-month period. Around 360 of these were “end-users,” that is, not distributors or retailers.

*1-BP shipments and product information.* The quantities and frequencies of product shipments varied substantially. Individual shipment volumes ranged from one 12-oz. can to hundreds of gallons. Approximately 70% of products reported contained 90% or more 1-BP, with 49% containing 95% or more.

*Customer industry codes.* HESIS staff used a commercial business database's assignment of North American Industry Classification System (NAICS) codes to identify industry codes for companies purchasing 1-BP products. This revealed a large number of industry codes without a clear preponderance of companies in a particular code. This may be due, at least in part, to poor NAICS coding accuracy in the commercial database; it may also reflect a true diversity of industries purchasing 1-BP products. Industry sectors with high purchase volumes included *Manufacturing*, with machine shops, electronic components, surgical and medical instruments, and search/navigation systems; *Professional, Scientific and Technical Services*, with engineering services and research and development; and *Other Services*, including dry cleaning, automotive repair, and repair/maintenance of commercial and industrial machinery and equipment.

*1-BP product Safety Data Sheets.* In addition to customer lists, HESIS requested that manufacturers and distributors provide Safety Data Sheets (SDSs) for the 1-BP products they sell. HESIS received 43 unique SDSs, which represent the range of vapor degreasers, cold cleaners, and spray adhesives purchased from the suppliers we contacted. HESIS staff reviewed the SDSs for completeness and accuracy, finding approximately half had deficiencies in communicating information on recognized health hazards of 1-BP. HESIS prepared a letter to manufacturers alerting them to these deficiencies and asking them to revise the SDSs. This letter was shared with DOSH staff for input.

*Promoting safer alternatives.* During this reporting year, HESIS has continued to work with companies to identify safer alternatives and try them out, with the goal of finding viable, safer alternatives to 1-BP that HESIS can then recommend to other companies in the same industry or with similar uses of 1-BP products. We have met with two companies that use 1-BP in vapor degreasers and who are experimenting with safer cleaning products. One, an optical parts manufacturer, and the second, a medical device manufacturer, have agreed to switch from 1-BP to safer degreasers. HESIS is preparing information on these successes, along with cost estimates, to share with other 1-BP users.

*Future work.* HESIS plans to conduct selected worksite visits, interviews, workshops, or other activities to inform recommendations for safer alternatives or development of prevention resources. These may include worker training guides, new or revised educational materials for workers and employers, or guidance document(s) on exposure control tailored to each industry. HESIS may also conduct interventions to promote the use of safer alternatives, as well as engineering, work practice, personal protective equipment, and other controls to reduce exposure.

## Labor Code Section 147.2 Mandate 4

*Recommend to the Chief of the Division of Occupational Safety and Health Administration that an occupational safety and health standard be developed whenever it has been determined that a substance in use or potentially in use in places of employment is potentially toxic at the concentrations or under the conditions used.*

### **1. Support for Cal/OSHA Health Effects Advisory Committee (HEAC) development of permissible exposure limits under California Code of Regulations Title 8, Section 5155**

The HESIS staff toxicologist and public health medical officer (PHMO) attended the periodic HEAC meetings to participate in development of the permissible exposure limits (PELs) for workplace chemicals. HESIS provided the following support to Cal/OSHA staff throughout the process.

- Searched recent scientific literature on toxicity of turpentine and updated previous scientific literature searches on toxicity of
  - + n-, sec-, iso-, and tert-butyl acetates
  - + n-, sec-, iso-, and tert-butyl alcohols
  - + sulfur dioxide
  - + benzophenone and
  - + di-(2-ethylhexyl)-phthalate (DEHP).
- Reviewed the literature search results on the above chemicals to identify relevant articles.
- Shared the literature search results and relevant articles with Cal/OSHA for preparation of the draft toxicology summary documents, including a health-based PEL recommendation for each chemical, for discussion at HEAC meetings. Reviewed the Cal/OSHA draft toxicological summary documents and provided comments for incorporating into the final versions.
- Provided additional information on the above chemicals from “authoritative bodies” to the committee. This includes data on health hazards and recommendations for exposure limits such as reference exposure levels, occupational exposure limits, etc. Authoritative bodies are government agencies that characterize the toxicities of chemical substances and publish this information via reports, regulations, and monographs. They include NIOSH, the U.S. EPA, the National Toxicology Program (NTP), the International Agency for Research on Cancer (IARC), the Agency for Toxic Substances and Disease Registry (ATSDR), the European Chemicals Agency (ECHA), federal OSHA, and Cal/EPA’s Office of Environmental Health Hazard Assessment (OEHHA).

- Provided summaries of California Environmental Reporting System (CERS) data for the following chemicals as requested by HEAC:
  - + 1-bromopropane
  - + carbon tetrachloride
  - + dicyclopentadiene
  - + diethylene glycol monobutyl ether
  - + methanol
  - + plastisol
  - + trichloroethylene
  - + benzophenone
  - + turpentine and
  - + n-butanol.
- Provided suggestions for recent HEAC prioritization process to select 10 “Priority 1” chemicals for future HEAC review and development of new PELs or updating existing PELs.
- Responded to Cal/OSHA research requests by providing more than one hundred peer-reviewed scientific articles or book chapters.
- Recommended that Cal/OSHA adopt the current *NIOSH Chemical Carcinogen Policy* published in 2017 as a basis for setting health-based PELs for carcinogens through its HEAC process. In particular, HESIS supported the updated NIOSH policy of setting a risk management limit for carcinogens at a risk of one excess cancer case in 10,000 workers (rather than using one in 1,000).
- Provided written comments on the *Review of HEAC 2016-2018 Proceedings* for HEAC consideration.
- Provided a brief overview of companies and 1-BP product purchase amounts reported to CDPH under SB 193 for DOSH Toxicologist (Garrett Keating) to share with HEAC members, and a more detailed data report in summary, de-identified form which will be shared with committee members prior to the December 3, 2019, HEAC meeting. Important limitations to these data were provided for the HEAC members’ consideration.
- At the DOSH Toxicologist’s request, the HESIS Chief provided information related to the effects of particles/air pollution on cardiac arrhythmia. She contacted a colleague at NIOSH who has been looking at the issue of heart rate variability from inhalational exposures and provided several references that demonstrate particles, volatile organic compounds (VOCs), and gases from ambient air pollution are associated with decreased parasympathetic input to the heart.
- The HESIS Chief also responded to a query about the existence of a national case report system for chemical toxicity. Provided response that no such registry exists, but NIOSH Health Hazard Evaluation (HHE) reports can be searched online. Provided link with 5 relevant HHE reports. Also provided an article on establishing an environmental health registry.

*HESIS prioritization of workplace chemicals.* HESIS routinely reviews the recent toxicity literature including documents from the “authoritative body” sources and gathers information to identify new and unappreciated workplace chemical hazards. HESIS uses this information to prepare and maintain its own priority chemical list primarily based on the severity of health hazard (e.g., cancer and reproductive/developmental health) and high

usage and exposure (based on CERS data) of the workplace chemicals. HESIS utilizes this list to periodically recommend to HEAC chemicals for which new or revised health-based PELs need to be developed. Recently, HESIS recommended the following seven chemicals to HEAC to include in HEAC's Priority 1 list for either new or revised health-based PEL development:

- + bisphenol A (BPA)
- + 1-bromopropane (1-BP)
- + p-chloro- $\alpha,\alpha,\alpha$ -trifluorotoluene (PCBTF)
- + diesel engine exhaust
- + di-isodecyl phthalate (DIDP)
- + isoprene and
- + titanium dioxide.

## 2. Support for other Cal/OSHA standards advisory committees

*Safe handling of antineoplastic drugs in health care.* At the request of Cal/OSHA's Medical Unit, HESIS searched the literature for recent scientific articles on medical surveillance for workers who handle antineoplastic drugs and provided a bibliography with abstracts.

HESIS's industrial hygienist and PHMO also provided technical input on medical surveillance language in the draft "Safe Handling of Antineoplastic Drugs in Health Care" regulation and shared these with the Cal/OSHA chairperson of the advisory committee and the Cal/OSHA Medical Unit.

*Protection from wildfire smoke.* At the request of Cal/OSHA's Research and Standards Unit, HESIS did one general and two focused literature searches on wildfire smoke. HESIS prepared bibliographies of recent articles on the health effects from wildfire smoke, on health effects from short-term exposure, and on the toxicity of wildfire smoke compared to that of particulate matter. These provided support for the chairperson of the advisory committee that developed Cal/OSHA's emergency regulation, Protection from Wildfire Smoke. Copies of relevant articles were also provided. At the request of a chairperson of the advisory committee, HESIS also assisted Cal/OSHA in responding to comments from the public. HESIS conducted a literature search and summarized information on the protection respirators provide when not fit tested.

HESIS also consulted with an engineer at the California Air Resources Board (CARB) and our CDPH Outdoor Air Section Chief to recommend language for the draft Protection from Wildfire Smoke standard on building ventilation filters and the appropriate use of portable CARB-certified air cleaners to protect against wildfire smoke.

*Occupational exposure to surgical plume.* The HESIS industrial hygienist and PHMO attended the advisory committee meeting and prepared technical comments on the draft Cal/OSHA Occupational Exposure to Surgical Plume regulation.



### Labor Code Section 147.2 Mandate 5

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*Notify the Director of Pesticide Regulation of any information developed by HESIS that is relevant to carrying out his or her responsibilities under Chapters 2 (commencing with section 12751) and 3 (commencing with section 14001) of Division 7 of the Food and Agricultural Code.*

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There were no activities under this mandate during the report period.

### Labor Code Section 147.2 Mandate 6

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*Notify the Secretary for Environmental Protection of any information developed by HESIS that is relevant to carrying out his or her responsibilities.*

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There were no activities under this mandate during the report period.

### Labor Code Section 147.2 Mandate 7

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*Assure the use and non-duplication of resources of other governmental agencies.*

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Cal/OSHA. HESIS continued routinely to meet with, confer with, and make referrals to Cal/OSHA and to use and disseminate Cal/OSHA educational materials.

The OHB Chief and HESIS staff participated in quarterly meetings with the Cal/OSHA Deputy Chief for Health, the program manager for communications and strategic planning, and staff of the Research and Standards Unit and the Medical Unit to discuss priorities and share updates on HESIS and Cal/OSHA activities.

HESIS' industrial hygienist participated in Cal/OSHA statewide senior technical meetings held once every two months by video conference for staff industrial hygienists. This forum provided an opportunity for information exchange and discussion regarding new regulations, enforcement initiatives and procedures, sampling protocols, laboratory issues, staffing changes, significant projects, and interesting case reports. At these meetings, HESIS staff discussed ongoing investigations and new or revised guidelines and fact sheets.

OHB's Chief and medical officers participated in monthly conference calls convened by Cal/OSHA's Medical Unit to discuss emerging issues, medical aspects of proposed standards, and activities underway at each agency.

HESIS staff and Cal/OSHA's Communication and Strategic Planning Program Manager maintained and regularly updated a *Publications Tracking Tool* on the HESIS-DOSH SharePoint collaboration website to keep each other apprised of educational materials that each program is developing in order to foster collaboration and avoid duplication.

*CDPH.* To evaluate and provide consultations regarding workplace hazards, HESIS routinely consults, makes referrals to, and uses materials and website information developed by numerous CDPH programs. In this report period, these programs included the Indoor Air Quality Section of the Environmental Health Laboratory Branch, the Environmental Health Investigations Branch, the Environmental Management Branch, the Radiologic Health Branch, the Tuberculosis Control Branch, and the Infectious Diseases Branch.

*California Environmental Protection Agency (Cal/EPA).* HESIS provided consultation to the OEHHA and the Office of Pollution Prevention and Technology Development, both offices within Cal/EPA, citing technical information and other resources to recommend exposure prevention strategies to protect workers from adverse health effects of organic solvents and other hazardous substances.

*NIOSH and Federal OSHA.* HESIS used and disseminated NIOSH and OSHA publications and referred callers to the NIOSH and OSHA websites for additional resources. In addition, HESIS shared its own publications in the NIOSH-sponsored [State-Based Occupational Health Surveillance Clearinghouse](#). (See also Mandate 1.)

## Labor Code Section 147.2 Mandate 8

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*Recommend legislative changes related to the functions of HESIS.*

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No legislative changes in HESIS functions were proposed during the report period.



## Authorized HESIS Positions, 2018–2019

### Permanent Positions

Public Health Medical Officer III	Kristin J. Cummings, MD, MPH*	100%
Staff Toxicologist (Specialist)	Kashyap Thakore, PhD	100%
Research Scientist III (Phys/Engr Sci)	Jennifer McNary, MPH, CIH	100%
Health Education Consultant III	Mary Deems, MPH	100%
Management Services Technician	Angela Williams-Bell	100%

\*Barbara Materna, PhD, CIH, OHB chief, served as acting HESIS chief after the previous PHMO III's departure and before the hiring of Dr. Cummings as the new PHMO III on June 3, 2019.

### Source of Funding

HESIS is supported through an interagency agreement between the Department of Industrial Relations, Cal/OSHA, and the Occupational Health Branch of the Department of Public Health.

### Annual Budget

The HESIS budget follows the state fiscal-year cycle. The budget for July 1, 2018, to June 30, 2019, was \$1,159,999, and the budget for July 1, 2019, to June 30, 2020, is \$1,215,672.

## Acronyms

1-BP	1-bromopropane
AB	California Assembly Bill
ADA	Americans with Disabilities Act
ATD	Aerosol Transmissible Diseases
ATSDR	Agency for Toxic Substances and Disease Registry (U.S. Department of Health and Human Services)
Cal/EPA	California Environmental Protection Agency
Cal/OSHA	DIR Division of Occupational Safety and Health
CDPH	California Department of Public Health
CDC	U.S. Centers for Disease Control and Prevention
CERS	California Environmental Reporting System
CIH	Certified Industrial Hygienist
CME	Continuing Medical Education
DCDC	CDPH Division of Communicable Disease Control
DIR	California Department of Industrial Relations
DOSH	Division of Occupational Safety and Health
ECHA	European Chemicals Agency
EPA	U.S. Environmental Protection Agency
HEAC	Cal/OSHA Health Effects Advisory Committee
HESIS	CDPH Hazard Evaluation System and Information Service
HHE	NIOSH Health Hazard Evaluation
IARC	International Agency for Research on Cancer
LiUNA	Laborers International Union
MD	Doctor of Medicine
MPH	Master of Public Health degree
NAICS	North American Industry Classification System
NIOSH	U.S. National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OEHHA	Cal/EPA Office of Environmental Health Hazard Assessment
OHIP	Occupational Health Internship Program
OSHA	U.S. Occupational Safety and Health Administration

OHB	CDPH Occupational Health Branch
PCBTF	p-chloro- $\alpha,\alpha,\alpha$ -trifluorotoluene
PEL	Permissible exposure limit
PHMO	Public Health Medical Officer
RHB	CDPH Radiologic Health Branch
SB	California Senate Bill
SDSs	Safety Data Sheets
TRS	HESIS Telephone Response System
URL	Website's Uniform Resource Locator
UV	Ultraviolet
VOC	Volatile organic compound
WOSHTEP	Worker Occupational Safety and Health Training and Education Program, DOSH Div. of Health & Safety and Workers' Compensation
XML	Document encoding format Extensible Markup Language