



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

# HAZARD EVALUATION SYSTEM AND INFORMATION SERVICE

## ANNUAL REPORT

November 1, 2017 – October 31, 2018

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

December 2018

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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 2017-2018, HESIS 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) 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 education;
- 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 CDPH’s contract with the Medical School Library of the University of Massachusetts.

Selected accomplishments of HESIS during this period include the following:

- HESIS continues to utilize its legislative authority to identify California companies that use products containing the chemical 1-bromopropane (1-BP), a known reproductive and developmental toxicant, neurotoxicant, and carcinogen used in cleaning, degreasing, and in spray adhesives. With this information HESIS is evaluating and investigating product uses and identifying safer alternatives to enable the program to promote adoption of safer alternatives and exposure controls. During this report period, HESIS has used California customer information provided by manufacturers and distributors to contact almost 500 California companies with 1-BP hazard information and offers of technical assistance. HESIS is working with a cleaning solvent substitution specialist to identify safer alternatives to 1-BP in various applications. Worksite visits,

interviews of employers and workers, and other activities continue to inform development of new or revised educational materials on 1-BP for workers and employers.

- 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 to revise 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 CDPH; Cal/OSHA’s Director’s Office, Enforcement Branch, and Research and Standards Unit; federal OSHA; 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 developed and presented a webinar, “Preventing Valley Fever in Construction Workers,” in August 2018, which was very well received. HESIS worked with local health departments to conduct several investigations of occupational outbreaks, and distributed the work-related Valley fever fact sheet and posters.
  - Antineoplastic drugs. HESIS reviewed the latest draft of the “Safe Handling of Antineoplastic Drugs in Health Care” regulation and shared technical input with the Cal/OSHA chairperson of the advisory committee on Occupational Exposure to Antineoplastic Drugs.
  - Surgical smoke. HESIS assisted the industrial hygienists on the Occupational Safety and Health Standards Board and Cal/OSHA’s Research and Standards Unit by obtaining recent literature on health effects and control of surgical smoke in anticipation of future meetings of the Cal/OSHA advisory committee to develop a standard.

- HESIS reviewed occupational health literature, identified new and under-appreciated hazards, and expanded its collection of literature to support possible future recommendations on educational materials or standards.

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

## Labor Code Section 147.2 Mandate 1

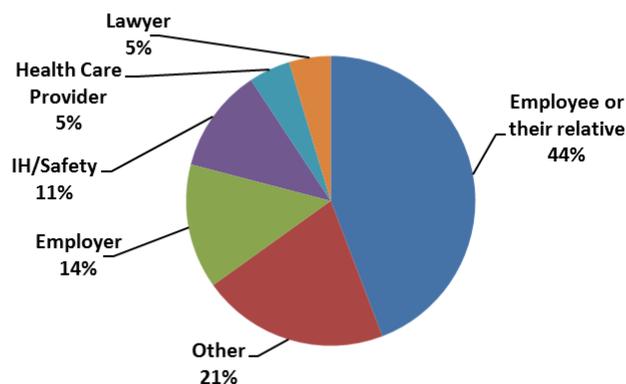
**Provide reliable information of practical use to employers, employees, representatives of employees, and other governmental agencies on the possible hazards to employees of exposure to toxic materials or harmful physical agents.**

### 1. Workplace Hazard Helpline / Telephone Response System

HESIS's telephone response system (TRS) logged 43 calls from November 2017 through October 2018. 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, two federal Centers for Disease Control and Prevention (CDC) Epidemic Intelligence Service Officers placed at 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. In this year's statistics, HESIS only counts 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."

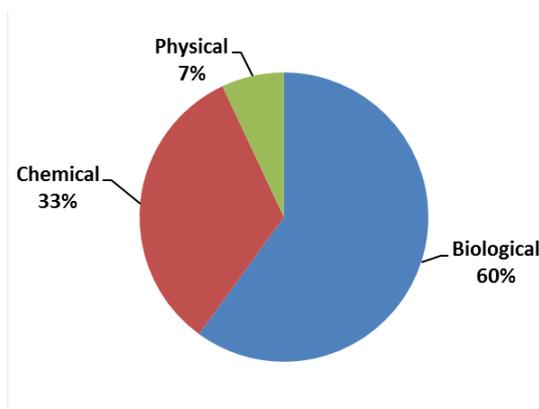
Type of caller. Most inquiries came from employees and their relatives, followed by "other," employers, industrial hygiene/safety personnel, health care providers, and lawyers. Examples of "other" callers include private individuals, local health officers, and worker advocacy groups.

**Figure 2. TRS Calls by Type of Caller. (n=43)**



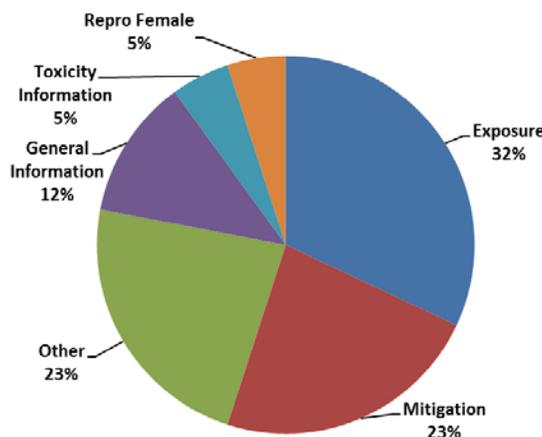
**Hazardous agent of concern.** The hazardous agents about which callers inquired were principally biological (e.g., bloodborne pathogens, aerosol transmissible diseases, mold, or coccidioidomycosis), followed in frequency by chemical (e.g., anesthetic gases, methylene chloride, or chromium), and then by physical agents (e.g., heat, radiation, or physical injuries).

**Figure 3. TRS Calls by Type of Hazardous Agent. (n=43)**



**Primary inquiry.** The most common types of questions concerned workplace exposures (e.g., what chemicals a worker might be exposed to and to what extent) and ways to control workplace hazards (“mitigation”). These were followed in frequency by “other” questions (e.g., regulatory information, referral to worker advocates or workers’ compensation resources, or medical surveillance) and “general workplace information” such as workplace policies, discrimination issues, sanitation, 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.

**Figure 4. TRS Calls by Primary Inquiry. (n=43)**



Examples. The following descriptions represent typical 2017-2018 TRS calls:

- A pharmacy technician who mixed antineoplastic drugs asked whether she should continue to work while pregnant. In interviewing the technician, HESIS staff found that one of the locations where she worked lacked a ventilated hood to provide containment of these drugs while mixing. Protective clothing was also inadequate. Since exposure to these drugs may cause adverse reproductive health effects and cancer, HESIS provided recommendations for protection and, at the request of the technician, discussed options for job reassignment and medical removal with her OB/GYN.
- A former dental laboratory technician who manufactured prosthetic devices asked whether the chemicals he worked with could have caused a reduction in kidney function. HESIS staff reviewed the toxicity of some of the chemicals used in making prosthetic devices and provided a summary. HESIS also referred the technician to an occupational medicine clinic and industrial toxicologist for consultation on the individual risk of exposure and possibility of an adverse health outcome.
- The owner of a small floor moisture testing company asked about his workers' potential exposure to silica dust when drilling and grinding concrete. HESIS provided links to information on commercially available shrouds and ventilation devices for specific tools. Staff also provided access to methods for easily creating a customized silica exposure control plan, and information on Cal/OSHA standards for silica and control of exposures from dust-generating operations conducted on concrete.
- A hospital infection preventionist asked about the ventilation requirements for bronchoscopy suites when doing "high hazard procedures" on a person with an infectious disease such as tuberculosis. HESIS staff discussed the requirements of the Cal/OSHA Aerosol Transmissible Diseases (ATD) Standard which references requirements in the California Mechanical Code for ventilation in airborne infection isolation rooms and bronchoscopy suites.
- A caller from a community health center requested help in interpreting the requirements for respiratory protection under the ATD regulation. HESIS sent a summary of requirements for referring employers and provided a link to the CDPH/OHB "Respiratory Protection Resources for Health Care" web page. Also referred her to Cal/OSHA for additional regulatory interpretation.

Electronic TRS database. HESIS' 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 OHB. The site includes commonly consulted documents, useful website URLs, agency contacts, and other resources. Responding to TRS calls, with training and oversight by HESIS staff, provides valuable experience to trainees, fellows, students, and other OHB staff.

## **2. Development of Educational Products and Materials**

In 2017-2018, HESIS completed or worked on the following educational products and materials:

- Continuing medical education (CME) on adult lead poisoning. The HESIS PHMO developed [Adult Occupational Lead Poisoning in California for Occupational Medicine Providers](#), a free online CME course promoted by CDPH and the University of California at Davis.
- Fact sheet on Valley fever for inmate wildland firefighters. HESIS developed an educational fact sheet, titled “If you are a wildland firefighter, here is what you should know about Valley fever,” at the request of California Correctional Health Care Services. The fact sheet was distributed to inmates during an epidemiological study of their risk of Valley fever infection.
- Valley fever webinar and website. Updated the [Preventing Work-Related Valley Fever \(Coccidioidomycosis\) web page](#) with materials from our 8/21/18 webinar, “Preventing Valley Fever in Construction Workers.” This includes the PowerPoint presentation and recording of the webinar. Unique visits to this web page totaled 2,580, and Valley-fever-related materials accounted for almost half of all HESIS materials downloaded this year. See “Prevention of Valley fever in construction workers” in “5. Addressing New and Underappreciated Workplace Hazards...” for more details.
- Fact sheet on isoflurane use in veterinary hospitals. HESIS continued work on a new fact sheet on isoflurane, an anesthetic gas used by veterinarians and veterinary technicians. Work was initiated in this area after HESIS received inquiries from employees regarding possible exposure in veterinary hospitals. HESIS staff completed a draft fact sheet on potential health effects and minimizing exposure and sent it to stakeholders for review and input.
- Fact sheet on mold. HESIS is updating the Mold in Indoor Workplaces fact sheet.
- Chemical hazard tracking web pages. HESIS created the [Chemical Hazard Tracking for Early Warning and Prevention web pages](#) to highlight and explain its SB 193 activities. The pages offer background, explain the process, describe HESIS activities, and provide information and resources for industry and the public on this important mandate.

### **3. Dissemination of Educational Products and Materials**

Telephone response. During the report period, 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
- Mariposa County Health Department
- Ventura County Public Health
- San Luis Obispo County, Public Health Department
- Tulare County Health and Human Services
- California Department of Toxic Substances Control
- State Compensation Insurance Fund
- 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 Advisory Committee Meeting, Oakland
- Cal/OSHA Senior Industrial Hygienist Technical Meetings
- Northern California Food Industry Safety and Health Symposium
- Caltrans Statewide Safety Conference
- Council of State and Territorial Epidemiologists Annual Meeting

Website. HESIS continued to use the CDPH website to disseminate educational materials and promote health and safety awareness in 2017-2018. New additions to the website are described in “Development of Educational Products and Materials” above. HESIS staff continue to play a major role in improving the OHB website by making informational products ADA-compliant, supplementing content and graphics, and reworking content architecture to make it more user-friendly, including the creation of a unified A to Z listing of all program materials.

There were more than 1,700 unique downloads of HESIS materials this report period. The top 10 HESIS publications downloaded or viewed during the report period are listed below. Together they represent approximately 59 percent of all unique downloads. Not surprisingly, given the outreach effort surrounding the webinar, many of the Valley fever-related materials topped the list, comprising over 46% of total downloads.

1. Fact Sheet: Preventing Work-Related Coccidioidomycosis (Valley Fever)
2. Valley Fever - *Fiebre del Valle* - bilingual workplace posters
3. Webinar PowerPoint presentation: Preventing Valley Fever in Construction
4. Report Valley Fever Symptoms – workplace poster
5. Occupational Hazard Alert: Methylene chloride is dangerous... There are safer alternatives!
6. Tailgate Training: Preventing Work-related Valley Fever in Wildland Firefighters
7. Guide to Choosing Paint Stripping Products: Safety Considerations
8. Fact Sheet: Formaldehyde
9. 1-Bromopropane (n-Propyl Bromide) Health Hazard Alert
10. Fact Sheet: Molds in Indoor Workplaces

In addition to disseminating its educational materials, HESIS provides other health and safety resources, promotes its activities, and shares other information of interest to stakeholders on its web pages. There were close to 4,500 unique visitors to HESIS web pages during the report period. Over half of these, 58%, were visits to the “Preventing Work-Related Valley Fever” page, again reflecting the interest HESIS/OHB outreach activities have generated on this issue.

HESIS also offers 70 of its online publications through a searchable website created by the National Institute for Occupational Safety and Health (NIOSH). The [State-based Occupational Health Surveillance Clearinghouse](#) is a centralized online library with publications from occupational public health programs in 25 states. The Clearinghouse provides electronic access to thousands of educational tools, data and case reports, studies, investigations, and articles, including approximately 800 from California’s OHB. During the report period, HESIS revised seven XML files for Clearinghouse listing.

E-newsletter. HESIS promoted Valley Fever Awareness Month by dedicating the July 2018 issue of OHB’s Occupational Health Watch to the topic. [Preventing Valley Fever in Construction Workers](#) highlighted special risks in construction and promoted our August 2018 webinar; it was sent to 4696 recipients.

## 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 4, 2017.
- “Implementation of Chemical Hazard Early Warning Authority by the California Department of Public Health,” Council of State and Territorial Epidemiologists Annual Conference, West Palm Beach, Florida, June 12, 2018.

Saeher Muzaffar, MD, MS, MPH, HESIS Chief

- “40 Years of the Hazard Evaluation System and Information Service (HESIS): Program Overview and Focus on Early Chemical Warning,” Center for Occupational and Environmental Health’s 40th Anniversary Symposium, Sacramento, May 4, 2018.

Jennifer McNary, MPH, CIH, HESIS Research Scientist

- “Coccidioidomycosis (Valley Fever): Risks and Prevention for Workers,” Northern California Food Industry Safety and Health Symposium, Fresno, April 17, 2018.
- “Recommendations for Contractors from CDPH’s Valley Fever Investigation at a Solar project” and “Update on CDPH’s New, Redesigned Website,” to Cal/OSHA Senior Industrial Hygiene Technical Meeting, Oakland, November 28, 2017.
- “Overview of Hepatitis A Transmission and Guidelines for Safely Disinfecting Surfaces,” Cal/OSHA Senior Industrial Hygiene Technical Meeting, Oakland, March 20, 2018.

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

- “Coccidioidomycosis (Valley Fever): Risks and Prevention for Workers,” Caltrans Statewide Safety Conference, Folsom, November 16, 2017.

### Public health and scientific journal publications

Laws RL, Cooksey GS, Jain S, Wilken J, McNary J, Moreno E, Michie K, Mulkerin C, McDowell A, Vugia D, et al. [Coccidioidomycosis Outbreak Among Workers Constructing a Solar Power Farm - Monterey County, California, 2016-2017](#). MMWR Morb Mortal Wkly Rep. 2018 Aug 24; 67(33):931-934.

## **5. Addressing New and Underappreciated Workplace Hazards through Collaboration and Stakeholder Outreach**

Prevention of Valley fever (coccidioidomycosis) in construction workers. HESIS spearheaded an effort to raise awareness and motivate employers and others to take action to prevent this debilitating and potentially lethal illness. Program staff personally contacted key stakeholders in industry associations, the employer and workers' compensation communities, and unions to assist with needs assessment and promotion for an educational webinar on the topic. The webinar was developed with input from our CDPH Infectious Diseases Branch colleagues and the CDC Career Epidemiology Field Officer assigned to the California Department of Public Health. It was held on August 21, 2018, and was attended by over 275 participants. Among them were construction employers and their trade association representatives (25%), union representatives, and a large showing of health and safety professionals (34%). Attendance was robust among Cal/OSHA and other DIR staff; Caltrans supervisors, workers, and health and safety staff; and California Department of Water Resources personnel.

Of the one third (33%) of participants who completed the webinar evaluation, most (81%) rated it as very good or excellent. Top items of new learning they reported were areas in California where Valley fever spores are found, facts about the illness, and prevention measures and strategies. Participants praised the quality and professionalism of the presentation and presenters, inclusion of an employer who spoke about his personal experience with Valley fever illness in himself and among his employees, and the extensive Q & A session with experts. OHB/HESIS has posted an audio-recording and the written presentation of the webinar on its work-related Valley fever web page; it provides the PowerPoint with speakers' notes for trainers upon request. The program is tracking distribution of the training presentation and how it is used. Plans are underway to continue collaborating with webinar participants and other interested construction stakeholders to increase awareness and prevention efforts.

Avian influenza in poultry workers. In the fall of 2018, HESIS responded to an avian influenza outbreak in poultry. Following the CDPH "Guidance for Monitoring and Protecting Workers Exposed to an Infected Poultry Flock," HESIS met with CDPH colleagues in veterinary public health, infectious diseases and immunization branches, and with the local health officer, to confirm worker health monitoring occurred as required by Cal/OSHA's Aerosol Transmissible Diseases – Zoonotic standard, Title 8 §5199.1. Also, with the CDPH Immunization Branch and public health veterinarian, HESIS sent a letter to poultry and egg producers in California encouraging vaccination of their employees for seasonal influenza. Poultry workers should receive the influenza vaccine each fall to reduce the possibility of dual infection with avian and human influenza A viruses, which could result in the formation and spread of new influenza viruses for which humans have no immunity.

Safety and health training and education. HESIS' health education consultant served on the Advisory Committee of the Worker Occupational Safety and Health Training and

Education Program (WOSHTEP), under DOSH's Commission on Health and Safety and Workers' Compensation.

Young worker health and safety. HESIS' 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 OHB promoted partnership activities such as Safe Jobs for Youth Month and provided input into the development and evaluation of educational and outreach efforts.

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

Worksafe. HESIS met periodically with Worksafe staff to discuss relevant HESIS projects and areas for future collaboration to prevent work-related illness among vulnerable workers exposed to chemicals and other hazards.

## **6. Technical Assistance for Cal/OSHA and Selected Other Constituencies**

### Technical assistance provided to Cal/OSHA

**Appeals hearings.** Cal/OSHA required no sworn testimony from HESIS in 2017-2018.

**Facilitating collaboration.** During the report period, 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:

- Cannabis oil. HESIS provided information from the scientific literature and from a subject matter expert at NIOSH on the potential for occupational exposure to THC through skin absorption, dermal reactions, and allergic sensitization from skin contact with cannabis.
- Hepatitis A. The OHB Chief worked collaboratively with the CDPH Immunization Branch in offering suggestions to the DOSH Chief on language for Cal/OSHA's topic page for workers on preventing hepatitis A exposure during the outbreaks in California.
- Coccidioides immitis. HESIS staff provided information to the Medical Unit on soil sampling and laboratory analyses for this soil-dwelling fungus that causes outbreaks of occupational coccidioidomycosis (Valley fever).

- Hotel housekeeper musculoskeletal injuries. HESIS reviewed DOSH drafts of the hotel housekeeper fact sheet and poster on its new rules and prevention information.
- Aerosol transmissible diseases (ATD). HESIS reviewed and provided comments on three draft educational materials designed by the Cal/OSHA Publications Unit to assist employers in meeting the requirements of the ATD standard (California Code of Regulations, Title 8, Section [5199](#)):
  - The ATD booklet (40 pages)
  - The Model Exposure Control Plan and Written Procedures (70 pages) and
  - ATD fact sheet (four pages).
- HESIS responded to nine technical inquiries from the Research and Standards Unit.

#### Technical assistance provided to selected other constituencies

##### **Federal Government**

- Coccidioidomycosis. HESIS assisted Federal OSHA staff members to investigate an outbreak of Valley fever at a federal facility in California by describing ways to assess work-relatedness.

##### **State Government**

- Asbestos and lead. HESIS discussed sources of lead and asbestos exposure and ways to evaluate exposure with a state agency's medical director.
- Coccidioidomycosis. At the request of the California Correctional Health Care Services, OHB, with input from HESIS staff, investigated several cases of Valley fever among inmate wildland firefighters. OHB interviewed the ill workers, and developed and administered a survey of all inmate firefighters who worked on the Derrick Fire in Fresno County. With input from Infectious Diseases Branch staff, the Department of Corrections and Rehabilitation, and CAL FIRE, HESIS developed an educational fact sheet for inmate firefighters that accompanied the survey.
- Safer consumer products. HESIS consulted with the Department of Toxic Substances Control (DTSC) on their 2018-2020 Priority Product Work Plan and discussed potential chemicals and product categories for consideration.
- Chemical exposure from cannabis oil extraction. HESIS provided information on toxic chemicals used in the cannabis oil extraction process to CDPH's Manufactured Cannabis Safety Branch.

- Seasonal influenza. Updated our CDPH partners in the Immunization Branch on our Occupational Health Branch recommendations for respiratory protection for seasonal influenza viruses and where to find this information on the web. In January, when the Medical and Health Coordination Center (MHCC, emergency operations center) was activated for influenza, HESIS provided information on the Aerosol Transmissible Diseases regulation and its application to health care workers caring for patients with influenza.
- Mold. HESIS responded to questions from the California Correctional Health Care Services about the health hazards of mold and about people who may be at higher risk of effects from mold.
- Duty officer service. HESIS staff served as occupational and environmental duty officers for CDPH for questions about emergency response to hazardous chemical exposures, as well as providing subject matter expertise for a variety of environmental and occupational incidents.

### **Local Government**

- Coccidioidomycosis. HESIS provided support to a number of Valley fever outbreak investigations reported to CDPH by local health departments. Also provided a local health department with information on dust suppressants and the contact information for the air pollution control districts that cover their county.
- p-Chloro- $\alpha,\alpha,\alpha$ -trifluorotoluene (PCBTF). At the request of the San Francisco Department of Public Health, HESIS summarized a new report from an authoritative body on the toxicity of this chemical.

### **Labor Representatives/Advocates**

- Opioids. HESIS staff met with the National Nurses United industrial hygienist to discuss developing educational materials for nurses exposed to opiates from overdose patients' clothing and waste materials. HESIS identified gaps in existing guidance and planned a collaborative meeting with subject matter experts to improve the guidance on procedures and effective protective equipment to avoid exposure.

### **Employer Trade Associations**

- Mercury. HESIS provided information and references to a caller regarding medical monitoring following mercury exposure to dentists and dental technicians.
- Antineoplastic drugs. HESIS relayed information to a legislative analyst in a physician's group regarding regulatory activity by Cal/OSHA on antineoplastic

drugs and on existing regulations that currently apply when handling hazardous drugs in the workplace.

### **Media Inquiries**

- Veterinary hazards. HESIS responded through the CDPH Office of Public Affairs to questions from a nonprofit news organization regarding occupational hazards to veterinary health care workers. The questions concerned chemotherapeutic drugs, zoonotic diseases, and anesthetic agents.
- N-Methylpyrrolidone (NMP). At the request of a news organization, HESIS provided a summary of scientific reports describing occupational exposure measurements for NMP.

## Labor Code Section 147.2 Mandate 2

**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.**

### 1. Selected Hazard Evaluations

Health effects from wildfire smoke, surgical smoke, and diesel exhaust. HESIS reviewed the literature regarding the toxicity and risks to workers who are exposed to these three hazardous combustion products.

Occupational exposure to anesthetic gas. 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, including review of genotoxicity, reproductive toxicity, and neurotoxicity. (Also see Mandate 1.)

Occupational exposure to p-chloro- $\alpha,\alpha,\alpha$ -trifluorotoluene (PCBTF). In response to an inquiry from the San Francisco Department of Public Health, HESIS continued to study the toxicity and statewide use of PCBTF to determine whether the chemical is an occupational hazard.

Occupational exposure to hazardous chemicals from cured-in-place pipe (CIPP). HESIS is collecting studies of exposure to chemical components released during CIPP installation and participates in a national committee addressing this issue.

### 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 on Occupational Exposure to Antineoplastic Drugs and Protection of Employees from Surgical Plume and Smoke.

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 US 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.

In November 2016, HESIS implemented 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 no longer be sufficiently protective for cancer and other endpoints.

As described in the 2016-2017 HESIS Annual Report, in September 2017 HESIS requested California customer lists from 36 manufacturers of 1-BP-containing products. During this reporting year, HESIS has continued to follow up with these manufacturers, their California customers, and distributors of 1-BP products we have identified. As of October 31, 2018:

- HESIS has sent letters to 472 California customers to advise them of the hazard posed by 1-BP, provide the [1-BP Hazard Alert](#), and invite them to work with HESIS to learn more about work processes and ways to prevent exposure.
- HESIS has sent letters to 24 distributors with the 1-BP Hazard Alert and a request to provide their California customer lists to HESIS. When additional customers are identified, HESIS contacts them as described above.
- HESIS has received 73 Safety Data Sheets (SDSs) for 1-BP-containing products and 13 for non-1-BP alternative products.
- Several companies have reported they have discontinued or plan to discontinue use of 1-BP products, including some that did so in response to our letter.

HESIS has prioritized reported customers/companies based on volume and type of 1-BP use and potential exposure. We have identified as industries of interest optics, semiconductor and electronic component manufacturing, precision machining, and manufacture of furniture using 1-BP adhesives. The first phase of this work is focused on working with selected companies in the industries of interest to identify safer alternatives and try them out, with the goal of being able to find viable, safer alternatives HESIS can then recommend to other companies in the same industry or with similar uses of 1-BP products. To achieve this, HESIS has

- Recruited representative companies to work with HESIS to identify and try out safer alternative chemicals to substitute for 1-BP.
- Established a service order with a cleaning solvent substitution specialist to work with HESIS to identify safer alternatives to 1-BP in various applications.
- Begun to recruit companies for field visits to observe 1-BP use and exposure control measures.

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 Development of Permissible Exposure Limits under California Code of Regulations Title 8, Section 5155**

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

- Researched recent scientific literature on toxicity of several chemicals including n-, sec-, iso-, and tert-butyl acetates; n-, sec-, iso-, and tert-butyl alcohols; benzophenone; furfuryl alcohol; p-chloro- $\alpha,\alpha,\alpha$ -trifluorotoluene (PCBTF), phthalates; diesel exhaust; and wildfire smoke.
- Reviewed the literature search results to identify relevant articles.
- Shared relevant articles along with the literature search results with Cal/OSHA for preparation of toxicology summaries, including health-based PEL recommendations for discussion in HEAC meetings.
- Provided additional recommendations for most of these chemicals with updated “authoritative body” listing data, reference exposure levels, and occupational exposure limits. 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 US 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 OEHHA.
- Continued recommending revision of PELs for hydrogen sulfide, manganese, and methyl isobutyl ketone; recommended PELs for additional chemicals including tert-butyl acetate and diesel exhaust.
- Reviewed HEAC priority 1 and 2 chemicals for toxicity hazards, identified their usage and occupational exposure in California through the California

Environmental Reporting System (CERS), and recommended upgrading the priority of some chemicals (e.g., phthalates, 1-bromopropane) for HEAC consideration.

- Provided summaries of CERS data for about 60 high priority chemicals identified as having no PEL, high PEL/TLV (>5) ratio, and either cancer or reproductive and developmental toxicity hazards for HEAC consideration to develop new PELs or revise existing PELs. Some of these chemicals, such as diesel engine exhaust, di-isodecyl phthalate (DIDP), benzophenone, bisphenol A, and 1-bromopropane, are common to both the HEAC priority list and HESIS priority list. Some other chemicals that have no PELs, such as acetamide, butyl benzyl phthalate, nitrilotriacetic acid, propylene glycol mono-t-butyl ether, and thiourea, are on the HEAC priority list.
- Responded to Cal/OSHA research requests by providing 70 peer-reviewed scientific articles and three books or chapters.
- Provided suggestions for streamlining the chemical prioritization process for selection of high priority chemicals to add to the list of HEAC priority chemicals which can be considered for development of new PELs or for updating of existing PELs.

HESIS prioritization of workplace chemicals. HESIS reviewed the workplace chemicals on the State of California Proposition 65 list that are known to cause reproductive or developmental toxicity or cancer and identified those that either a) lacked a Cal/OSHA PEL, or b) had a PEL based on endpoints other than reproductive or developmental toxicity or cancer. To provide protection against these health outcomes, HESIS prepared a short list of 80 priority chemicals and began to identify their current usage and occupational exposure in California. HESIS also determined whether the priority chemicals needed either a) development of new PELs, or b) revision of their existing PELs. HESIS recommended HEAC consider prioritizing several chemicals including p-chloro- $\alpha,\alpha,\alpha$ -trifluorotoluene (PCBTF), diesel engine exhaust, di-isodecyl phthalate (DIDP), leather dust, benzophenone, bisphenol A, 1-bromopropane, tetrafluoroethylene, 1,2,3-trichloropropane, tert-butyl acetate, 2,3-pentanedione, diacetyl (2,3-butanedione), tetrachloroethylene (perchloroethylene), and others.

## **2. Support for Other Cal/OSHA Standards Advisory Committees**

HESIS' industrial hygienist and PHMO prepared technical input on the latest draft of the "Safe Handling of Antineoplastic Drugs in Health Care" regulation and shared these with the Cal/OSHA chairperson of the advisory committee on Occupational Exposure to Antineoplastic Drugs.

At the request of the industrial hygienist on the Occupational Safety and Health Standards Board, HESIS did a literature search and provided 20 articles from the

literature on health effects and control of surgical smoke in anticipation of future meetings of the Cal/OSHA advisory committee to develop a standard.

#### Labor Code Section 147.2 Mandate 5

**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.**

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

#### Labor Code Section 147.2 Mandate 6

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

Department of Toxic Substances Control (DTSC). HESIS participated in a meeting of CDPH and DTSC scientists to provide information, references, and other input to DTSC on their Safer Consumer Priority Products Workplan.

## Labor Code Section 147.2 Mandate 7

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

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 from the Medical Unit and headquarters. 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.

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 Vector-Borne Disease Section, the Infectious Diseases Branch, the Tuberculosis Control Branch, and the Immunization Branch.

California Environmental Protection Agency (Cal/EPA). HESIS provides consultation to 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 uses and disseminates NIOSH and OSHA publications and referred callers to the NIOSH and OSHA websites for additional resources. Conversely, HESIS promoted its own publications in the NIOSH-sponsored [State-based Occupational Health Surveillance Clearinghouse](#). (Also see Mandate 1.)

**Labor Code Section 147.2 Mandate 8**

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

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

## Authorized HESIS Positions, 2017-2018

### Permanent Positions

Public Health Medical Officer III	Saeher Muzaffar	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%

### 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, 2017, through June 30, 2018, was \$\$1,058,316, and the budget for July 1, 2018, through June 30, 2019, was \$\$1,159,999.

Acronyms	
1-BP	1-bromopropane
AI	Avian influenza
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
CDCR	California Department of Corrections and Rehabilitation
CERS	California Environmental Reporting System
CIH	Certified Industrial Hygienist
CIPP	Cured-in-place pipe
CME	Continuing Medical Education
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
IARC	International Agency for Research on Cancer
IDB	CDPH Infectious Diseases Branch
MD	Doctor of Medicine
MHCC	CDPH Medical and Health Coordination Center
MPH	Master of Public Health degree
MS	Master of Science degree
NIOSH	U.S. National Institute for Occupational Safety and Health
NMP	n-Methylpyrrolidone
NTP	National Toxicology Program
OB/GYN	Obstetrics and gynecology physician
OEHHA	Cal/EPA Office of Environmental Health Hazard Assessment
OSHA	U.S. Occupational Safety and Health Administration
OHB	CDPH Occupational Health Branch
OPA	CDPH Office of Public Affairs
PCBTF	p-chloro- $\alpha,\alpha,\alpha$ -trifluorotoluene
PEL	Permissible exposure limit

PHMO	Public Health Medical Officer
SDSs	Safety Data Sheets
TBCB	CDPH Tuberculosis Control Branch
THC	Tetrahydrocannabinol
TRS	HESIS Telephone Response System