

**CALIFORNIA OCCUPATIONAL HEALTH AND SAFETY SURVEILLANCE
OCCUPATIONAL HEALTH INDICATORS COMPONENT
ANNUAL REPORT: July 1, 2014 – June 30, 2015**

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The overall aims of the Occupational Health Indicators Component are to:

- Collect and analyze surveillance data for 22 Occupational Health Indicators (OHIs) and an Employment Demographics Profile annually;
- Identify and respond to emerging occupational health issues;
- Collaborate with in-state partners to obtain input to guide our program, gain support to further program goals, and have impact on public health and regulatory policies;
- Collaborate with other states, the Council of State and Territorial Epidemiologists (CSTE), and NIOSH on nationwide activities to reduce work-related injury and illness;
- Disseminate our surveillance data, investigation findings, public health recommendations, and educational materials through a variety of means; and
- Regularly evaluate the accomplishments and impact of our occupational health program, and develop recommendations for improving effectiveness.

MAJOR OUTPUTS

Surveillance and Investigations

- 1. *HIV transmission in the adult film industry.*** Conducted and published an Alert about transmission of HIV between performers in the adult film industry (<https://www.cdph.ca.gov/programs/ohb/Documents/OccHIVinAFI.pdf>). A male adult entertainment actor obtained a test for HIV that was negative. Over the following two-week period, the actor had unprotected sex with several other male actors during two separate film shoots. During the second film shoot, he had symptoms of a viral infection. The actor went to a clinic and had another blood test that showed he had recently become infected with HIV. The local public health department initiated follow-up with the sexual contacts of this actor. One of the male actors from the second film shoot has tested newly positive for HIV. Public health investigation and laboratory results provide very strong evidence that the actor transmitted HIV to the other actor as a result of unprotected sex during the film shoot. An MMWR report has been completed and is undergoing CDC review.
- 2. *Chemical exposures in veterinary hospitals.*** Conducted site visits to two veterinary hospitals to evaluate a possible link between neurological symptoms and isoflurane (anesthetic gas) exposure, and to assess heavy metal exposures from onsite preparation of radiation shielding. Provided the two employers with customized recommendations for improvements in health and safety programs. Identified deficiencies in monitoring isoflurane exposures and employer responses to high exposures, leading to the initiation of an educational project. Established new relationships with vet and vet tech professional associations to further assess needs and inform the development of educational products.
- 3. *Heat illness in outdoor construction workers.*** Investigated heat-related illness among abatement workers in the San Francisco Bay Area. As part of the NIOSH-funded Occupational Health Internship Program (OHIP), we partnered with the Laborers' International Union of North America (LiUNA) Local 67 to conduct a heat illness needs assessment among unionized abatement workers. This assessment explored: 1) attitudes and behaviors related to general workplace health and safety, 2) attitudes, knowledge, and experience related to heat and work, 3) behaviors and barriers related to

heat illness prevention, and 4) knowledge and perception of the Cal/OSHA Heat Illness Prevention Standard. A final report was submitted in August 2015 to the union and CPWR (who provided funding for the project).

4. **Pilot surveillance of occupational coccidiomycosis** (Valley Fever, VF). Following on our investigation of 44 employees diagnosed with VF who worked on the construction of two large solar energy generation facilities, we provided technical assistance to support Cal/OSHA in upholding the citations they issued to multiple employers, had a journal article accepted for 9/2015 publication in *Emerging Infectious Diseases*, and collaborated on the analysis of survey data from 600 employees that has identified additional undiagnosed cases and allowed comparison of risk factors for cases vs. controls. Continued distribution of “Preventing Work-Related VF” fact sheet and provision of technical assistance to local health departments in VF-endemic areas with new energy development projects.
5. **Methylene chloride-based paint strippers**. Proposed and obtained funding for a digital video that can be used as a training tool/awareness piece to inform/educate construction workers, contractors and union apprenticeship programs about the hazards of DCM (methylene chloride) paint removers and the availability of well performing safer alternatives. This will be a 5-7 minute digital video (similar to those completed by the CDPH FACE program) (<http://www.cdph.ca.gov/programs/ohb-face/Pages/Stories.aspx>), where we will re-enact a construction trades-related DCM fatality or near-misses; present the general scope of problem; dangerous health effects; steps for prevention (work practices, PPE and most important substitution). Personal stories and testimonials from workers, foremen and contractors at job sites will be presented, with shots of actual job sites with paint removal underway. The video will be designed for wide distribution to the building trades apprentice programs, contractor trade association, district councils, union locals, health and safety funds, and day laborer centers. Release will be in December 2015.

Data, Electronic and Web-based Communications (See www.cdph.ca.gov/programs/ohb)

1. Submitted 2011 data (including new OHI Asthma Among Adults Caused or Made Worse by Work) and initiated calculation of 2012 data for Employment Demographics Profile and OHIs for submission to NIOSH/CSTE. Updated website topic page featuring all California OHI data from the years 2000-2011, in comparison to national data where available, adding new report with 2006-2011 data. OHB will publicize the report in the Sept. 2015 issue of its newsletter. Contributed to development and pilot testing of new OHI for severe traumatic injuries based on hospitalization data which has been adopted by CSTE and included with 2012 data.
2. Created and disseminated to between 3,000 and 7,000 stakeholder recipients eleven issues of our electronic program newsletter **Occupational Health Watch** (e-OHW). The November 2014 issue, “Asthma-Safer Schools Cleaning Guide and Video,” the January 2015 issue, “Using Videos to Reduce Work Injuries” and the August 2015 issue, “Preventing Worker Drownings” all highlighted the Branch’s work in creating digital stories to promote prevention.
3. Continued publicizing OHB fact sheets and resources through our website; CDPH Twitter account, YouTube channel, and Facebook page; the NIOSH State-based OH Surveillance Clearinghouse (691 documents submitted to date); and two items in NIOSH e-News, Sept. 2014 and March 2015.
4. Since OHB staff identified the need for branch-wide strategic communications planning, a multidisciplinary team has continued to take steps to improve and streamline work related to OHB health promotions. This year, the team has almost completed a final version of a communications policies and procedures manual and has completed a variety of tools to assist staff with communications projects. OHB staff met in May 2015 to evaluate a one-year “trial” implementation of the manual and tools, with staff training and an evaluation plan. Feedback from the staff was that the process and tools have been helpful but some tools need to be streamlined.

Partnerships

1. Partnered with the Service Employees International Union and its local union to adapt OHB green cleaning and others’ materials into a peer educator training on workplace health and safety for family

home child care providers. OHB health educators began pilot testing the training material in August 2015.

2. Partnered with **NIOSH NPPTL** on improving respiratory protection programs for health care workers nationwide through a project that involved adapting the California Respiratory Protection Program Toolkit into a co-branded NIOSH-OSHA educational material, released in May 2015. Two OHB staff participated on an advisory group for a Joint Commission/NPPTL project that produced a monograph on best practices in respiratory protection programs in health care (released in December 2014).
3. Created new partnerships with and provided technical assistance to the California Nurses Association and the local chapter of the Association of Occupational Health Professionals during response to prepare for California hospital patients with Ebola.
4. Continued partnership with **Cal/OSHA** toward revising the 30-year-old lead standards by providing surveillance data, participating in advisory committee meetings, and working with Cal/OSHA staff on the drafting of new regulatory language.
5. Continued and expanded partnerships under which OHB staff provide mentoring to develop the future occupational health workforce (**CDC Epidemic Intelligence Service** program, **CSTE epidemiology fellowship** program, **University of California at San Francisco** occupational and preventive medicine fellowship programs, **OHIP** and **UCLA MPH** summer internship programs).
6. Partnered with NIOSH by having staff serve on the Services and Health Care **National Occupational Research Agenda (NORA) Sector Research Councils**.

Presentations and Publications

1. Wilken JA et al. Assessing prevention measures and Sin Nombre hantavirus seroprevalence among workers at Yosemite National Park. 2015. *Am J Indus Med* 58:658-667.
2. Friedman GK, Harrison RJ, Bojes H, Worthington K, Filios M: *Notes from the Field: Silicosis in a Countertop Fabricator — Texas, 2014*. MMWR February 13, 2015.
3. OSHA-NIOSH Hospital Respiratory Protection Program Toolkit, OSHA publication 3767, May 2015.
4. B. Materna presentations: "OHB: Promoting Safe & Healthy Workplaces," Stanislaus County Safety Council, Sept. 2014, Modesto, CA; "CDPH Update," CA Industrial Hygiene Conference, Dec. 2014, San Diego, CA; "HCW Protection: From ATDs to Ebola PPE," AOHP N CA chapter, Jan. 2015, Oakland, CA; "Protecting Public Health by Reducing Toxics," Green CA Summit, Jan. 2015, Sacramento, CA; "Injury & Illness in Low-wage Workers: An Issue of Health Equity," CDPH Executive Management, May 2015, Sacramento, CA.
5. CSTE annual meeting, June 2015, Boston, MA. OHB staff made numerous presentations on topics including: Partnering with a trade association to produce an ergonomic video series, Ebola personal protective equipment, HIV transmission in the adult film industry, and hospitalization for traumatic injuries.

MAJOR OUTCOMES

Potential Outcomes

Nearly all items described above include dissemination of findings and prevention recommendations based on our work that, if used by others, would reduce workplace health and safety risks.

Intermediate Outcomes

1. Cal/OSHA is actively utilizing CDPH contributions in the drafting of revised lead regulations.
2. Cal/EPA has used CDPH information to select MeCl paint strippers as a priority for safer alternatives assessment and potential future regulation.
3. Increased the relevance of e-OHW by scheduling issues to coincide with events and activities by OHB or its partners, including NIOSH, OSHA, Worksafe, SoCalCOSH, and COEH.

End Outcomes

Feedback from our stakeholders suggests that work conducted by OHB assists in reduction of workplace hazards and consequent injuries and diseases. These entities also carry out various interventions aimed at the same occupational health problem. When multiple parties come together at one point in time to respond jointly to a newly identified issue with a comprehensive, concerted prevention effort, we believe there is a measurable outcome with improvement in workplace health conditions.

**CALIFORNIA OCCUPATIONAL HEALTH AND SAFETY SURVEILLANCE
WORK-RELATED ASTHMA PREVENTION PROGRAM (WRAPP)
ANNUAL REPORT**

July 1, 2014 - June 30, 2015

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The overall aims of the project are to identify, characterize and prevent work-related asthma (WRA) in California by:

- expanding case ascertainment using multiple data sources
- performing case-based field investigations and developing prevention strategies
- collaborating with local and state agencies
- disseminating results generated from project activities; and
- evaluating surveillance activities on an ongoing basis

MAJOR OUTPUTS

Data

1. From January 1, 1993 through June 30, 2015, we identified over 10,500 potential work-related asthma (WRA) cases and have so far confirmed 7,685 using the NIOSH guidelines. Of the 3,336 confirmed cases that could be classified, 53% were new onset and 47% were work-aggravated. Among the 1,778 new onset cases, 68% were classified as new onset, unknown inducer; 15% were new onset, known inducer; and 16% were new onset RADS cases. An additional 4,349 cases (57%) were confirmed but lacked temporal information necessary for case classification.
2. The overall rate of WRA was 2.4 cases/100,000 workers. The 5 3-digit industries with the highest rates were transit and ground passenger transportation (16.5/100,000); hospitals (13.3/100,000); utilities (8.1/100,000); social assistance (7.1/100,000); and manufacturing of wood products (6.3/100,000). The 5 occupations with the highest rates were firefighters (26.8/100,000); miscellaneous science technicians (15.9/100,000); medical assistants/healthcare support (11.7/100,000) correctional officers (11.5/100,000); and respiratory therapists (11.2/100,000).
3. The most common exposures identified were dust, unknown chemicals, cleaning chemicals, smoke, mold, indoor air pollutants, paint, and indoor air pollutants from building renovation. The most commonly reported known asthma-inducing exposures (AOEC 2015) were bleach, chlorine, latex, ammonia, formaldehyde, glutaraldehyde, sulfuric acid, diisocyanates, rat antigens, epoxies, and California redwood.
4. 824 previously unidentified cases were extracted from the DFR, WCIS, ED, and PDD data sets for 2013 and are now being interviewed.
5. We generated 118 case reports within our database, summarizing interviewed cases that illustrate an important or unusual exposure, occupation, industry or outcome. These case reports can be filtered by any variable in the database in order to identify appropriate cases to illustrate relevant points in dissemination materials, presentations, or prevention recommendations.
6. Data from 1993 through 2011 were de-identified, reformatted and submitted to NIOSH.

Press, workshops, conferences, and new partnerships

1. We presented the Healthy Cleaning and Asthma-Safer Schools How-To Guide and accompanying video information and recommendations in a workshop and webinar that was attended by 70 school

district, advocacy, and public health staff in collaboration with the School Environmental Health and Asthma Collaborative (SEHAC). Staff also presented the How-to Guide and video in a webinar that was attended by 60 school district management and maintenance staff in collaboration with the California Association of School Business Officials (CASBO), the California Department of Education, and the Livermore School District. Other presentations include the Coalition of Adequate School Housing's (CASH) Annual Conference, the Southern California Clean, Green, and Healthy Schools Partnership meeting, and the US Environmental Protection Agency's Children's Environmental Health Coordinators.

2. Staff collaborated with NIOSH and other international experts to develop an asthma-specific Job Exposure Matrix that is relevant to jobs and exposures in the US. .
3. Staff participated in application design and applicant review for selecting California schools as part of the National Green Ribbon Schools Program. Criteria for safer cleaning products and practices and worker training were included in the application.
4. Staff provided peer review of a journal article for a professional publication, as well as educational materials on WRA drafted by other organizations.
5. Staff participated on the steering committee to organize the California Breathing Asthma Research Summit, to be held in Fall 2015.
6. A recent article on the hazards of isocyanates in spray foam insulation in the Laborers' Health and Safety Fund of North America newsletter (Lifelines) included links to our WRA fact sheet.
7. We published an article in the NIOSH Science Blog announcing the release of the Healthy Cleaning and Asthma-safer Schools How-to Guide and video.
8. Staff attended and participated in the Conference for the Model Aquatic Health Code on behalf of CSTE to provide occupational health input regarding worker exposures to swimming pool chemicals.
9. We met with Migrant Clinicians Network Occupational Health and Professional Development staff to discuss collaboration. We provided case reports for them to use in physician training.

Presentations and Publications

1. We produced an announcement about the finalization and release of our [Healthy Cleaning and Asthma-Safer Schools How-To Guide and accompanying video](#) and distributed it to nearly 4,000 recipients through our electronic monthly newsletter (e-OHW). The announcement was accompanied by a Department tweet and Facebook posting, and was picked up and re-published in multiple labor, advocacy, public health, education, and federal organization newsletters.
2. We distributed an announcement about the development and release of our new fact sheets on [fragrances and work-related asthma](#) and a [model fragrance-free workplace policy](#) to over 4,100 recipients through our electronic monthly newsletter (e-OHW). The announcement was opened over 7400 times and was picked up and re-published in multiple organization newsletters.
3. A low literacy fact sheet for workers on general work-related asthma information was published in [Spanish](#) and posted to our website.
4. We collaborated with Michigan and New Jersey to combine our data on WRA and pool exposures and co-authored an article published in the Journal of Asthma in February 2015.
5. Staff contributed to and were acknowledged in a peer-reviewed article in the American Journal of Infection Control called "Cleaning and disinfecting environmental surfaces in health care: Toward an integrated framework for infection and occupational illness prevention."

MAJOR OUTCOMES

Potential Outcomes

1. Disinfectants in Poultry Processing

Based on the identification of nearly 20 confirmed WRA cases, we are investigating processing practices and chemical use in both organic and conventional poultry processing facilities and have conducted visits to two sites to observe disinfection practices at plants that use different methods during processing of poultry carcasses. We have interviewed the employers and the USDA inspectors

assigned to the plants. Plans are in place to visit several more plants, including facilities with reported cases.

2. Ozone in the Wine and Bottling Industries

Based on data showing worker illness due to ozone used as a disinfectant, in collaboration with the Occupational Pesticide Illness Prevention Program in OHB we have begun to investigate ozone use in wineries. We have conducted a preliminary site visit to observe ozone generator use and are planning further site visits to conduct air monitoring for ozone levels during various disinfection tasks. Based on our findings, we plan to create outreach materials for employers and workers in this industry.

Intermediate Outcomes

1. School Asthma-Safer Cleaning Guidelines

Our Cleaning for Asthma Safe Schools (CLASS) program continues to provide technical assistance to school districts around the state. The CLASS program has completed and released "[Healthy Cleaning and Asthma-safer Schools: A How-To Guide](#)," which walks a school district through the steps required to transition to safer cleaning products and practices. We have also released a [digital story](#) to accompany and promote the How-To Guide. The Guide has been downloaded from our website nearly 1900 times and hundreds of hard copies have been distributed to schools throughout California. The video has been accessed over 700 times on YouTube and Vimeo. The Guide has been featured by the state Department of Education as a resource for schools to improve air quality and to help them become a National and State Green Ribbon School, and state and county departments of education are helping promote it. A child care health consultant from the University of California has also used the guide to train child care providers.

2. Technical Assistance on Safer Cleaning Products

We continue to provide technical assistance to employers, workers and community-based organizations seeking to select safer cleaning products, including recommendations about safer cleaning processes and referrals to third party certification resources.

End Outcomes

Feedback from stakeholders suggests that findings, results, and recommendations have contributed to documented reductions in work-related morbidity and mortality related to asthma in the workplace. Our CLASS program has trained custodial staff to significantly reduce exposures to hazardous ingredients in cleaning chemicals in seven school districts and one charter school. These districts have followed our guidelines and made efforts to transition to asthma-safe cleaning methods and products. This has potentially reduced exposure to hundreds of teachers, custodians and staff members and over 143,000 students working and studying in the affected schools. This number will escalate with the imminent release of the CLASS How-To Guide for Asthma-safer Cleaning. In addition, our program has continued to collaborate with non-governmental advocates, local health departments, private industry, and other government agencies to develop and implement interventions and strategies for prevention targeted at the jobs, industries and exposures identified as high risk by our ongoing surveillance data. Our data and recommendations are also continually used by academia and other public health agencies to characterize the nature and extent of WRA and focus further prevention efforts in order to reduce WRA. We also continue to work toward policy changes, such as the addition of asthmagen criteria to third party certification programs, to decrease exposures, improve working conditions, and to reduce the burden of work-related asthma in California.

**CALIFORNIA OCCUPATIONAL HEALTH AND SAFETY SURVEILLANCE
WORK-RELATED INJURY FATALITIES
ANNUAL REPORT**

July 1, 2014 - June 30, 2015

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The overall aims of the California FACE (CA FACE) project are to identify, characterize, and prevent and occupational fatalities in California by:

- Maintaining and enhancing case ascertainment using multiple data sources;
- Performing case-based field investigations and developing prevention strategies;
- Collaborating with local and state agencies, and a wide range of other partners;
- Disseminating results generated from project activities; and
- Evaluating surveillance activities on an ongoing basis.

MAJOR OUTPUTS

Data

1. A total of 2,450 work-related injury fatalities in Los Angeles County have been identified since 1992.
2. The overall fatality rate is 2.8 per 100,000 employed.
3. The rate of work-related fatalities among Hispanic workers (3.7/100,000) was 62% higher than non-Hispanic workers (2.3/100,000).
4. The two (two-digit NAICS code) industries with the highest rates since 2009 are transportation, warehousing & utilities (5.5/100,000), and construction (5.2/100,000).
5. The five occupations with the highest rates are fishing and hunting workers (113.6/100,000), counter & rental clerks (33.2/100,000); roofers (26.7/100,000); taxi drivers & chauffeurs (22.9/100,000); construction workers (17.3/100,000), and security guards (15.8/100,000).
6. We added the web-based Electronic Death Registry System (CA-ERDS) as a new surveillance source.

Electronic and Web-based Communications, Partnerships, Collaborations

1. Published two fact sheets, *A Golf Course Maintenance Worker Drowns When He Falls From a Boat* & *Un Trabajador De Mantenimiento De Un Campo De Golf Se Ahoga Al Caer De Una Barca*; and two digital stories (short safety videos) *Preventing Worker Drownings* & *Cómo prevenir muertes de trabajadores por ahogamiento*. These materials highlight findings and prevention recommendations from an investigation involving a lake maintenance worker who drowned when he fell out of a boat. Both videos are available on the CDPH YouTube Channel, and were promoted via CDPH and NIOSH Twitter and Facebook.
2. Sent the August 2015 issue of OHB's electronic e-newsletter "*Preventing Worker Drownings*" to over 6,000 OHB stakeholders and employers and publicized both the new digital stories and other drowning prevention resources. The announcement was rebroadcast by multiple list serves and by labor, advocacy, regulatory, and public health organizations.
3. Created an enhanced '*Digital Stories Topic Page*' featuring all ten CA FACE digital stories, discussion questions, how the videos can be used in tailgate trainings, and how to download the videos.
4. Created a new '*Drowning Prevention Topic Page*' featuring the FACE videos, discussion questions, investigation report and fact sheet related to prevention.
5. Collaborated with NIOSH to write a blog about *another palm tree worker death* in California. OSHA and the Tree Care Industry Association (TCIA) are promoting it to additional stakeholders.
6. Collaborated with The Insurance Journal to write an article about palm tree fatalities (publish date TBD).

7. As a partner in the Campaign to Prevent Falls in Construction, we promoted both the Campaign and the Safety Stand-Down in CA FACE email blasts announcing newly-published investigation reports. We also updated our Fall Prevention Topic Page 'Preventing Worker Injuries and Deaths from Falls, which has the Campaign highlighted as a resource; and our Fall Prevention Tailgate Training Materials (16 bilingual cards). Two of our CA FACE digital stories (Preventing Falls Through Skylights, Preventing Falls in the Solar Industry) continue to be highlighted on the Campaign website.
8. Based on previously published CA FACE fatality investigations involving workers who died when they inhaled toxic amounts of methylene chloride (MeCl) found in paint strippers (see 'Preventing Worker Deaths from Paint Strippers Containing Methylene Chloride'), and our previous collaboration with the California Department of Toxic Substances Control (DTSC) to finalize and publish a proposed Priority Products list (hazardous products including MeCl), we are now partnering with the Center for Construction Research and Training (CPWR) to produce a digital story about the dangers of MeCl products.
9. Ongoing collaboration with the NIOSH Western States office and the Fed OSHA Office of Occupational Medicine on investigating a series of deaths linked to volatile organic hydrocarbons among flowback operators in oil and gas production in the Western states. An MMWR on the nine fatalities has been drafted and approved by NIOSH, with publication expected in Fall 2015.
10. Partnered with UCLA Labor Occupational Safety and Health Program to disseminate 1,250 hard-copy English and Spanish fact sheets to workers, employers, unions, labor centers, foreign consulates, community-based organizations, trade associations, state and local agencies and health care professionals
11. CA FACE fact sheets, investigation reports, fatality alerts and digital stories were promoted widely using social media (bilingual messages) including CDPH and NIOSH FACE Twitter, YouTube, and Facebook.

Publications and Presentations

1. A total of four on-site CA FACE investigation reports were published and posted on our website:
 Investigation Report 13CA003: Welder dies when he is struck by a projectile from a truck's hydraulic tank
 Investigation Report 13CA004: Electrician dies when he is crushed between a traveling hoist and a plating tank
 Investigation Report 14CA001: Floor hand dies when he falls off a mobile oil well servicing rig
 Investigation Report 15CA001: Lake maintenance worker drowns while removing weeds from a golf course lake
2. "Death in the Trees: Linking Data to Prevention". Presentation by R. Harrison at the 2014 CSTE Annual Conference, Nashville, Tennessee (June 25, 2014).
3. "From Data to Practice: Preventing Palm Tree Fatalities." Presentation by L. Styles at the 2014 CSTE Annual Conference, Nashville, Tennessee (June 25, 2014).
4. CSTE Features Blog: Telling the Stories Behind the Data. R. Harrison and L. Styles. July 31, 2014.
5. FACE Value: Worker Dies from Exposure to Dichloromethane. National Safety Council's Safety and Health Magazine, September 2014.
6. FACE: Safety Devices Aren't Any Good if They're Not Operational. Cal-OSHA Reporter, September 26, 2014, Vol. 41, No. 36.
7. "Using Digital Storytelling to Prevent Palm Tree Worker Fatalities" Presentation by L. Styles at the APHA Film Festival, New Orleans, LA (November 17, 2014).
8. "Preventing Palm Tree Worker Fatalities: The California FACE Program" FACE Digital Story was shown at the APHA Film Festival, New Orleans, LA (November 18, 2014)
9. FACE: Fatal Hydraulic Tank Explosion – Could it Have Been Prevented? Cal-OSHA Reporter, December 19, 2014, Vol. 41 No. 48.
10. FACE Value: Worker Crushed by Industrial Washing Machine. National Safety Council's Safety and Health Magazine, February 2015.
11. "Preventing Falls/FACE Digital Stories Tailgate Trainings". Presentation by David Harrington at the Roofing Contractors Association of California 'Safety Days' (April 25, 2015).
12. FACE: Lessons from a Fatality: Drugs and Working from Heights Don't Mix. Cal-OSHA Reporter, June 5, 2015, Vol 42 No. 22.

13. Two fact sheets, *A Golf Course Maintenance Worker Drowns When He Falls From a Boat* and *Un Trabajador De Mantenimiento De Un Campo De Golf Se Ahoga Al Caer De Una Barca* were published in July 2015.
14. Two digital stories (short safety videos) *Preventing Worker Drownings* & *Cómo prevenir muertes de trabajadores por ahogamiento* were published in July 2015.
15. *Palm Tree Worker Suffocated by Palm Fronds – Another Death in California*. NIOSH Science Blog, August 24, 2015.
16. *Drowning of Lake Maintenance Worker Spurs New Safety Resources*. National Safety Council's Safety and Health Website, August 2015.

MAJOR OUTCOMES

Potential Outcomes

Nearly all items described above include dissemination of findings and prevention recommendations based on our work that, if used by others, would reduce workplace health and safety risks.

Intermediate Outcomes

1. The Occupational Safety and Health Administration (OSHA) highlights CA FACE reports on the Tree Care Industry Safety and Health Topic Page. Our palm tree asphyxiation investigation reports and digital story led to the addition of a *new hazard category - asphyxia* (see <https://www.osha.gov/SLTC/treecare/hazards.html>)
2. The largest national tree care industry trade association uses our wood chipper and palm tree safety digital stories, fact sheets, and investigation reports in their national tree worker training curricula.
3. The California Department of Toxic Substances Control has included MeCl in a list of hazardous, or priority, products based in part from findings from our CA FACE fatality investigations.
4. Based on our investigation findings from the death of a psychiatric technician at a large forensic facility we provided technical information in regard to legislative proposals to require workplace violence prevention plans in acute care hospitals. Beginning in September 2014, we are participating in the Cal/OSHA Advisory Committee process to develop a new comprehensive workplace violence regulation. As part of the proposed standard, we developed a workplace violence incident log that will be included in the required record keeping by employers.
5. CA FACE continues to assist NIOSH and other FACE states on how to create and incorporate digital stories into their educational materials and promotional strategies.
6. Large national employers and municipalities are using our digital stories in trainings to decrease worker injury and death. Worker and employer evaluations of the CA FACE digital stories indicate the videos and investigation findings motivate them to work safely, increase the number of worker safety trainings, and follow safety protocols.
7. CA FACE continues work with the American Society for Testing and Materials (ASTM) International to help establish a new test method for human impact on commercial skylights. (ASTM WK17797). FACE staff contributes investigation findings and work on the standard is ongoing. In addition FACE staff will attend and comment on 'Fall Protection for Work Around Skylights' at the Cal/OSHA Standards Board Meeting in September, 2015.
8. Equipment World is using FACE reports to create Safety Watches, which are used for safety training/toolbox talks (see <http://www.equipmentworld.com/safety-watch/>).

End Outcomes

Feedback from our stakeholders suggests that work by CA FACE has contributed to reduction of workplace hazards and consequent fatalities in the workplace. Our program continues to work with a variety of governmental and non-governmental stakeholders to encourage safe work practices. Data and investigation findings from our program have been used to identify high hazard industries and occupations. We continue to work towards both legislative and non-legislative solutions to improve working conditions, increase worker and employer knowledge of workplace hazards, and to reduce the burden of work-related fatalities in California.

**CALIFORNIA OCCUPATIONAL HEALTH AND SAFETY SURVEILLANCE
PESTICIDE-RELATED ILLNESS
ANNUAL REPORT**

July 1, 2014 - June 30, 2015

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The overall aims of the project are to identify, characterize, and prevent and occupational pesticide illness in California by:

- Expanding case ascertainment using multiple data sources
- Performing case-based field investigations and developing prevention strategies
- Collaborating with local and state agencies
- Disseminating results generated from project activities; and
- Evaluating surveillance activities on an ongoing basis.

MAJOR OUTPUTS

Data

1. We identified 5,032 case reports of occupational pesticide illness from January 1, 1998 through June 30, 2015. Of these, we have coded and analyzed 98%. We classified a total of 3,242 (65%) cases as definite, probable, or possible.
2. The overall pesticide illness rate is 1.4/100,000 workers. The top 5 industries with the highest rates are farm production and services (27/100,000 workers); food manufacturing (12); highway, street, and bridge construction (5); beverage manufacturing (5); and wholesale of nondurable goods (4). The top 5 occupations with the highest rates are pest control operators (63/100,000); agricultural field workers (45); agricultural graders and sorters (26); chemical processing machine operators (18); and agricultural supervisors (16).
3. From January 1, 2007 through June 30, 2015 we also identified 1,708 case reports of illness or injury caused by exposure to disinfectants. We have analyzed and coded 88% of these reports. 938 (75%) of these reports were case classified as definite, probable, or possible cases.
4. We expanded our collaboration with CDPR and are sharing data to aid case ascertainment and case classification.

Press, workshops, conferences, and new partnerships

1. We attended and participated in the annual SENSOR-Pesticide Program conference in January 2015. The meeting focused on data quality issues, illnesses due to exposure to paraquat, and illnesses due to disinfectant exposure during food processing activities.
2. Staff organized and planned the occupational health workshop and occupational health sessions of the 2015 Council of State and Territorial Epidemiologists (CSTE) annual conference held in Boston, Massachusetts.
3. We presented “Roast chicken paired with pinot noir (oh, you say chardonnay?). Disinfectants causing illness in California food processing workers with a focus on workers in the chicken processing and wine making industries, 2007-2012” at the annual CSTE Conference. The presentation focused on worker illness due to exposure to disinfectants while working in food processing industries.
4. We have collaborated with a Public Health Institute expert in mobile health, Planned Parenthood, and

other Santa Cruz and Monterey County community-based organizations on a pilot project to evaluate whether text messaging was an effective way to emphasize pesticide illness prevention and reporting with area farmworkers. Evaluation results indicated that the novel health communications methods can raise awareness and influence behavior change. Findings will be presented to CDPH in September 2015.

5. We consulted with staff from the Massachusetts Department of Public Health to assist them with using data from the poison control system to track pesticide illness and injury.
6. We met with Migrant Clinicians Network Occupational Health and Professional Development staff to discuss collaboration for physician occupational health education efforts.
7. Staff attended and participated in the Conference for the Model Aquatic Health Code on behalf of CSTE to provide occupational health input regarding worker exposures to swimming pool chemicals.

Presentations and Publications

1. "Roast chicken paired with pinot noir (oh, you say chardonnay?). Disinfectants causing illness in California food processing workers with a focus on workers in the chicken processing and wine making industries, 2007-2012" at the Council of State and Territorial Epidemiologists Conference, Boston, Massachusetts, June 2015.

MAJOR OUTCOMES

Potential Outcomes

1. Poultry Processing

In collaboration with the Work-Related Asthma Prevention Program (WRAPP), also a part of the Occupational Health Branch, we have evaluated illness and injury data and are investigating antimicrobial and other pesticide use in the poultry processing industry in California. We are investigating processing practices and chemical use in both organic and conventional poultry processing facilities and have visited two sites to observe disinfection practices at plants that use different methods during processing of poultry carcasses.

2. Swimming Pool Chemical Illness

In collaboration with the WRAPP and CDPH's Emergency Preparedness Team we are developing educational materials and a web topic page to promote the safer use of pool chemicals. Previous contacts with pool operator associations will be used to help disseminate our materials as will CDPH's Twitter feed and Facebook page. Staff is also involved in the Conference for the Model Aquatic Health Code to provide input regarding occupational health related to swimming pool chemical use.

3. Ozone Use in Beverage Processing

Based on data showing worker illness due to ozone used as a disinfectant, in collaboration with WRAPP we have begun to investigate ozone use in wineries. We have conducted a preliminary site visit to observe ozone generator use and are planning further site visits to conduct air monitoring for ozone levels during various disinfection tasks. Based on our findings, we plan to create outreach materials for employers and workers in this industry.

Intermediate Outcomes

1. Pesticides in public transit

We distributed an announcement to 4000 recipients about the development and release of our new fact sheet "Safer and Effective Cockroach Control for Buses and Trains," URL: <http://www.cdph.ca.gov/programs/ohsep/Documents/CockroachControlOnTransit.pdf>, based on our

investigations into pesticide illnesses attributed to the use of pesticides on buses and other public transit and our research and observation of integrated pest management (IPM) practices in municipal bus systems. The fact sheet has been posted on our web topic page (URL: <http://www.cdph.ca.gov/programs/ohsep/Pages/IndoorPest.aspx>) that is dedicated to preventing worker illness from indoor pesticide exposures. We plan to partner with transit unions and trade organizations to disseminate educational materials and to work with municipalities to implement IPM.

2. Occupational Pesticide Illness Mapping Project

We conducted targeted investigations of workplaces surrounded by farm fields in heavy pesticide use areas based on our prior mapping of occupational pesticide illness cases due to drift. (In collaboration with CDPH's Environmental Health Investigations Branch, we had combined pesticide illness case geocoding with pesticide application location data to explore the relationship between pesticide use (volume, type, and location) and illness.) We investigated incidents of pesticide drift onto two workplaces that were surrounded on all sides by farm fields. We are using our findings to develop materials to target outreach to similar workplaces and to county agencies to help them prevent, prepare for, and respond to drift incidents.

3. Disinfectant use in several work settings

Disinfectant use in food and beverage production, child care, schools, and swimming pools has been investigated and we have used our data and field expertise to provide technical review in several collaborations and to develop our own educational materials. We continue to work jointly with the Work-Related Asthma Prevention Program to conduct investigations and develop materials to educate employers and workers about safer disinfectant use.

4. In collaboration with EHIB, we completed a project to evaluate whether text messaging is an effective way to emphasize pesticide illness prevention and reporting with area farmworkers. We trained staff from Santa Cruz and Monterey County community-based organizations (CBOs) to recruit 30 farm workers to receive 40 pesticide illness prevention texts in Spanish over a four-month period. The CBOs helped developed text messages that emphasized keeping family members safe from take home exposures. The project showed that texting of health and safety messages was an effective mechanism to reach farmworkers.

End Outcomes

Feedback from stakeholders suggests that our findings, results, and recommendations have contributed to reductions in work-related morbidity, mortality, and exposure related to pesticide use in the workplace. Our program continues to work with a variety of governmental and non-governmental stakeholders to encourage the elimination of the most toxic pesticides and the substitution of less-toxic pesticides and other non-chemical pest-control treatments. Data from our program has been used to help describe pesticide-related illness in California and has been used, alongside analogous data from other states, to demonstrate the extent of pesticide-related illnesses in certain populations (e.g. farmworkers, women, geographic locations) and associated with certain pesticide uses (e.g. swimming pool disinfection, beverage processing, public transit, poultry processing) and causative factors that should be changed in order to reduce illness. The Environmental Protection Agency (USEPA) extensively cited data from our program to substantiate their recommended changes to the Worker Protection Standard, and we provided additional public comments to USEPA regarding their proposed revisions. We continue to work towards both legislative and non-legislative solutions to improve working conditions, increase worker and employer knowledge of pesticide-related health effects, and to reduce the burden of pesticide-related illnesses in California.

**CALIFORNIA OCCUPATIONAL HEALTH AND SAFETY SURVEILLANCE
CARPAL TUNNEL SYNDROME
ANNUAL REPORT**

July 1, 2014 - June 30, 2015

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The overall aims of the Carpal Tunnel Syndrome (CTS) project are to identify, characterize, and prevent work-related CTS in California by:

- Reestablishing and enhancing our previous surveillance system for CTS;
- Utilizing surveillance data to perform selected case follow-up and workplace interventions with prevention recommendations for employers and employees;
- Collaborating with local and state agencies and a wide range of other partners to track CTS in the workplace and implement prevention strategies;
- Disseminating our surveillance data, findings of case investigations, and intervention results
- Evaluating the results of surveillance, field investigations, and information dissemination.

MAJOR OUTPUTS

Data

1. Continued our analysis of workers' compensation data that can be used for efficient and timely targeting of occupations and industries for intervention and prevention activities.
2. Extracted 68,496 claims from the 2006-2011 Workers' Compensation Information System (WCIS) datasets, developed a series of procedures that allowed us to assign a Census Industry Code (CIC) to 95% of these cases, and used the NIOSH Industry and Occupation Computerized Coding System (NIOCCS) to assign Census Occupation Codes (COC). With industry and/or occupation codes assigned to cases, we were able to calculate industry specific rates of CTS and ascertain the major occupational groups within these high rate industries. These rates are used to focus our public health education and ergonomic intervention outreach activities.
3. For the years 2006-2011, we identified the ten leading occupations with CTS and reviewed this data to determine whether (1) there is evidence in the medical or scientific literature of ergonomic interventions for these occupations that can reduce the risk of MSDs; (2) information is already widely available to employers and employees about how to reduce the risk of MSDs; and (3) targeted ergonomic interventions are feasible and have an opportunity for collaboration.
4. We selected cake decorators, nurses, legal assistants and dental hygienists for ergonomic evaluation and interventions.
5. In order to prioritize employers for worksite evaluations, we identified California establishments with two or more claims of CTS among employees with the same job title within any 12-month period between 2006 and 2011.
6. Gathered a case definition team for musculoskeletal disorders consisting of two occupational health physicians, a public health nurse, an epidemiologist, and a data analyst who reviewed work-related musculoskeletal disorder case definitions from several sources and decided to use the NIOSH MSD definition
7. Ascertained cases of MSD from WCIS using three steps:
 - Several injury classifications were excluded *a priori* based on their inability to be MSDs. For example any injury caused by burn, cold exposure, or motor vehicle was excluded; any injury with a nature of poisoning, cancer, contagious disease, dermatitis, poisoning, or laceration was excluded; and any injury affecting the head was excluded.

- Text description of the injury and medical billing data of a set of cases for each injury classification were reviewed to determine if different parts of body, nature of injury, or causes of injury should be included in the case definition. We set a 90% threshold for including each part of body, nature of injury, and cause of injury classification, and reached a consensus about each case we viewed. Through this process, we excluded injuries caused by being caught in or between an object; caused by a cut, puncture, scrape, or caused by a fall or slip. This process produced the list of acceptable injury classifications.
 - Finally, we decided on the relationship between the three injury classification fields. While it is theoretically possible that a claim that matches only an acceptable cause of injury or nature of injury should be satisfactory to include it as a case, previous experience and examination of the data let us to believe that a combination of all three fields is necessary for a valid case definition. We examined three sets of potential cases: 1) claims with an acceptable nature of injury, cause of injury and part of body, 2) claims with an acceptable cause of injury and either nature of injury or part of body, and 3) claims with an acceptable part of body and either cause of injury or nature of injury. We decided that the more restrictive definition of claims that matched on all three classifications was preferable.
8. Further work has determined that expanding the definition to include claims identified from a list of acceptable ICD9 diagnosis codes that match either one of two causes, repetitive motion or strain from lifting, or one of three natures, carpal tunnel syndrome, VDT-related diseases, and hernia, deserve to be included as work related MSD cases. These cases are an increase in approximately 1,000 claims a year that would not otherwise have been captured.
 9. Identified 1.26 million MSD claims between 2006-2011 (148/10,000); and 10,532 MSDs among hotel housekeepers (156/10,000).
 10. Coded CTS industry rates for the top 30 industries using a multistep process, finding demographic case characteristics and occupations within the top 10 industries (presented at the 2014 annual CSTE meeting).

Partnerships

1. Collaborated extensively with the UC Berkeley Ergonomic Program (David Rempel, MD) to develop a selection of industries and occupations that would most benefit from ergonomic education programs designed to prevent CTS. Dr. Rempel and his team have also worked with us to design and complete a series of short instructional videos aimed at preventing CTS among dental hygienists,
2. Collaborated with the California Dental Hygienist Association (CDHA), San Francisco Component, on an advisory board that created scripts, storyboards and published five videos to educate dental hygienists about CTS, MSDs, and how to prevent work-related injuries.
3. Collaborated with CDHA to produce a “home study” article for the CDHA Journal that will allow dental hygienists to complete two continuing education units based on the videos and an accompanying article.
4. Attended California Safety and Health Standards Board meetings about an ergonomic standard for the hotel industry, and shared data with the Standards Board about MSDs in hotel housekeepers.

Presentations

1. Cohen R et al: “Evaluation of a workers’ compensation electronic database for tracking work-related musculoskeletal disorders (MSDs) among hotel housekeepers—California, 2006-2009.” CSTE Annual Conference, June 2013.
2. Cohen R et al: Sold Out! 89,762 Carpal Tunnel Syndrome (CTS) Cases Fill the Seats of The Rose Bowl, California 2006-2011. CSTE Annual Conference, June 2014.
3. Cohen R et al: A Whizzard, a Burrito Roller, and an Office Worker: Industry and Occupation Coding of Workers’ Compensation Claims. CSTE Annual Conference, June 2014.

MAJOR OUTCOMES

Potential Outcomes

1. Completed a major report of CTS surveillance findings in California, and presented summary of results to BLS, NIOSH and State research partners in July 2012. A peer-reviewed paper has been published in the American Journal of Industrial Medicine (Joe L, Roisman R, Beckman S, Jones M, Beckman J, Frederick M, Harrison R: Using multiple data sets for public health tracking of work-related injuries and illnesses in California. *Am J Ind Med.* 2014 Oct;57(10):1110-9, see <http://www.ncbi.nlm.nih.gov/pubmed/26351141>).
2. Demonstrated feasibility and utility of using workers' compensation data to enumerate cases of CTS in California.
3. Identified employers with multiple cases of CTS that may benefit from public health education and intervention efforts to implement an effective ergonomic program.
4. Offered continuing education (CE) credits for ergonomic training for dental hygienists.

Intermediate Outcomes

Developed a series of five educational videos on dental hygiene and ergonomics. The purpose of the peer-to-peer video series is to educate dental hygienists about the risks of CTS, MSDs, and the steps that can be taken to prevent CTS and MSDs. Using interviews with dental hygienists to bring the subject to life, the video topics include: an overview of CTS and MSDs, proper patient positioning, the importance of selecting and using the correct dental instrument for the task at hand, the use of loupes, and creating a work schedule that prevents workers from doing high risk activities for extended time periods. The videos were reviewed by academics, dental hygienists, and trade associations. The videos have been posted online at a new CDPH web site (<https://www.cdph.ca.gov/programs/ohb/Pages/ErgonomicsDentalHygiene.aspx>) and are available for download. These videos are eligible for continuing education units for dental hygienists (registered dental hygienists in the state of California are required to complete 25 units of continuing education (CEUs) every two years as part of their licensure renewal – see <http://cdha.org/lifelonglearning-spring-2015>).

End Outcomes

It is challenging to attribute a change in morbidity or mortality to specific work conducted by OHB, especially when multiple entities are carrying out various interventions aimed at the same occupational health problem. However, when multiple parties come together at one point in time to respond jointly to a newly identified issue with a comprehensive, concerted effort, it can be easier to see the overall impact.

An ongoing multisource surveillance system for CTS in California has the potential to identify high-risk occupations and industries that can implement effective ergonomic programs to reduce the known risk factors for work-related musculoskeletal disorders (MSDs). In 2011, California enacted a standard for Safe Patient Handling in acute care hospitals that may significantly lower the rate of MSDs. The methods for CTS surveillance can be applied to tracking the incidence of other MSDs such as back injuries that occur to healthcare personnel in these settings. Likewise, the California Safety and Health Standards Board is considering a new standard to reduce MSDs among hotel housekeepers. The latest version is undergoing comments and is expected to set the benchmark for improving ergonomic work practices in this major industry (http://www.dir.ca.gov/dosh/doshreg/Hotel_Housekeeping.html). The surveillance methods and systems for tracking CTS cases are currently being used to evaluate the risk of MSDs among this population, and to inform the rulemaking process. The ongoing analysis of surveillance data on the risk of CTS and other MSDs in selected occupations and industries has led to public health and regulatory interventions that reduce the medical and other costs associated with these disorders.