

Washington Occupational Injury and Illness Surveillance and Prevention Program

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Washington State Department of Labor and Industries Safety and Health Assessment and Research for Prevention (SHARP) Program

Annual Report of Accomplishments and Outcomes, July 1, 2014-June 30, 2015

Washington Fundamental Occupational Safety and Health Surveillance Program

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The goal of Washington State's fundamental occupational safety and health surveillance program is to enhance capacity to provide information for action to improve the occupational safety and health of Washington's 3.3 million workers working at any of the 160,000 employers within the state.

1. The Occupational Health Indicator data describes the occupational health status of the Washington State working population. Washington collaborates with other NIOSH funded states to publish the indicator data on the CSTE website.

Output: Washington State has accelerated the publication of the twenty CSTE Occupational Health Indicators on the Washington State Department of Labor Website. We publish quarterly to semiannual web-based updates of the most current indicator data available for Washington State. The most recent update (during this reporting period) was March 2015. Updates are available at:

<http://www.lni.wa.gov/Safety/Research/Pubs/#Surveillance>.

2. The NIOSH-funded Washington State occupational health surveillance program has core expertise in using varied state-level data resources (e.g. workers compensation data, hospital discharge data) for research, analysis and to respond to emerging hazards and data requests from employers, workers, and groups representing employer and employees.

Output: A technical report summarizing work-related asthma (WRA) surveillance efforts in Washington State from 2009-2013 was published and made available on the web.

http://www.lni.wa.gov/safety/research/files/75_12_2015asthma_2015_v6.pdf

- The report describes Washington's WRA methods and processes, and characterizes WRA cases captured by the system (e.g. demographics, claim information, industry, asthma source agent, asthma classification). The most common asthma source agents in Washington were: Miscellaneous Chemicals & Materials (which include cleaning materials), Plant Material (including wood dusts and hops), Mineral & Inorganic Dusts, Pyrolysis Products, and Microorganisms (mold). The industry sectors with the highest number of claims for WRA were: Health Care & Social Assistance, Manufacturing, Public Administration, Educational Services, and Administrative and Support and Waste Management and Remediation Services.

Output: Presented hops asthma prevention materials and information at four separate events for a variety of stakeholders including: the Hop Growers Association (through a webinar); OEM Grand Rounds; to health care providers in Yakima (the hop growing region); and at the annual Division of Occupational Safety and Health Symposium (occupational health and safety professionals from around the state).

Output: Exposure to hydrofluoric acid (HF) causes chemical burns and toxicity that can be fatal, and HF is used widely in car and truck washing/detailing. An analysis of the burden of injury and fatality in Washington State due to HF in car and truck washing was submitted and accepted for MMWR publication.

Output: The project epidemiologist and FACE investigator produced an infographic comparing manual and mechanized logging. The infographic described the high burden of occupational injury and fatalities in manual logging and helped visualize the need for prevention efforts, such as the Washington State Logger Safety Initiative.

http://www.lni.wa.gov/safety/research/files/47_4_2014injuriesinmechanizedvsmanuallogginginwa_infographic.pdf. The purpose was to demonstrate the benefit of an infographic format; Washington State is not funded to conduct surveillance of logging injuries.

In response to a request from members of the Washington State Legislature, a workgroup on occupational injuries and illnesses in Janitorial Services workers was convened that included a representative from the Washington State occupational health surveillance program and our data analyses.

Output: A poster on “Work-related injuries in Janitorial Services workers in Washington State, 2003-2012” was presented at the Council of State and Territorial Epidemiologists (CSTE) June 2015 Annual Conference. The poster won the CSTE Outstanding Poster Presentation Award in its division (Environmental Health/Occupational Health/Injury).

Output: A stand-alone infographic version of the Janitorial services poster was created and made available on the web for wider distribution.

http://www.lni.wa.gov/Safety/Research/Files/Janitors_hand2.pdf

Output: A breakout session presentation was made at the Council of State and Territorial Epidemiologists (CSTE) June 2015 Annual Conference on the creation and use of infographics for Occupational Health (to aid in communicating occupational health data and analysis results to non-academic audiences).

3. Very little data are available to describe health and health behaviors of the workforce at the state level by the workers’ industry and occupation of employment. Washington State has collected and coded Industry and Occupation (I/O) data from 1997 through 2013 on the Washington State Behavioral Risk Factor Surveillance System (BRFSS), allowing us to analyze a wide variety of conditions by I/O. This history and expertise allows us to help other states interested in developing this capacity.

Output: A roundtable presentation that included a Washington State speaker and handouts was made at the Council of State and Territorial Epidemiologists (CSTE) June 2014 Annual Conference on “Practical Issues in Exploring Industry and Occupation in the BRFSS.”

4. Surveillance data that systematically evaluates occupational injury and illness by industry are relatively scarce, as are resources for prevention. Washington State periodically produces reports prioritizing industries for prevention efforts based on high rate and high count of workers’ compensation claims using a Prevention Index (PI) to identify where injuries are occurring, and where the most benefit from research and prevention could be gained.

Output: A paper using PI rankings of industry groups within the NORA Services Sector was published in the *Journal of Occupational Medicine and Toxicology*. We examined the Services Sector by 7 high-cost, common occupational injury types (paper originally submitted in previous reporting period).

Major Outputs:

Anderson NJ, Bonauto DK, Adams D. Prioritizing industries for occupational injury and illness prevention and research in the NORA Services Sector in Washington State, 2002-2010.

J Occup Med Toxicol. 2014 Nov 9;9(1):37. PMID: 25395986.

<http://www.occup-med.com/content/9/1/37>

Reeb-Whitaker CK, Miller C, Anderson NJ, Bonauto DK. Occupational hydrofluoric acid (HF) injury from car and truck washing, Washington, 2001-2013. *MMWR*. *In Process*.

Washington Fatality Assessment and Control Evaluation (WA FACE) Program

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Program Coordinator: Christina Rappin; rapc235@Lni.wa.gov; (360) 902-4438

The goal of the Washington State FACE program is to prevent workplace fatalities through surveillance, fatality investigations, and prevention activities.

1. Outputs: Improving Safety through targeted distribution of new WA FACE Materials

A. Prevention resources on the web: WA FACE created new prevention resources for employers, health and safety professionals, and workers (see Fatality Assessment and Control Evaluation (FACE)):

- 7 Fatality/Injury Narratives (Construction (n=4), Agriculture (n=3))
- 7 Fatality/Injury Narrative slideshows (Construction (n=4), Agriculture (n=3))
- 7 Injury Alerts for the Logging Industry
- 4 FACE Fatality Investigation Reports
- 1 Hazard Alert
- 5 Construction Fatality Narratives and Slideshows translated into Spanish language

Combined, these resources were communicated via approximately 6440 email messages. FACE maintains growing distribution lists for agriculture narratives, construction narratives, and investigation reports.

B. Prevention resources targeting specific employers: WA FACE utilized the WA State workers' compensation database to effectively communicate over 3200 prevention messages by mail to employers at risk of specific hazards.

WA FACE Fatality Narratives:

- 261 copies of "Chaser Caught in Choker Bight" mailed to WA risk class – Manual logging
- 312 copies of "Backhoe Operator Crushed by Boom" mailed to WA risk class – Hay farms
- 254 copies of "Choker Setter Injured When Struck by Log" mailed to WA risk class – Manual logging
- 540 copies of "Ironworker Falls 72 Feet From Mast Scaffold" mailed to WA risk class – Non-wood steel construction
- 337 copies of "Carpenter Falls From Ladder" mailed to WA risk class – Wood frame building construction
- 106 copies of "Tractor Operator Crushed by Trailer" mailed to WA risk class – Hop and Mint farms
- 109 copies of "Hop Yard Laborer Struck by Hop Pole" mailed to WA risk class – Hop and Mint farms

WA FACE Investigation Reports:

- 355 copies of "Operator Dies After Excavator Tips Over the Side of a Bridge into River" mailed to employers in WA risk classes-Concrete paving and repairing, and Bridge construction
- 114 copies of "Two Propane Gas Supplier Workers Electrocuted when Boom Truck Crane's Boom contacts 7,200 Volt Overhead Power Line" mailed to employers in WA risk class- Gas and Oil Dealers
- 508 copies of "Orchard Laborer Dies after Being Struck and Run Over by Dump Trailer" mailed to employers in WA risk class-Orchards
- 343 copies of "Log Truck Driver Dies When Struck by Logs Being Loaded Onto Trailer" mailed to employers in WA risk class-Log Hauling

C. Prevention resources communicated through social media:

Publication Title	Type	Posted to	Account Manager	Followers
Hop Yard Laborer Struck by Hop Pole	Fatality Narrative	Twitter	WA Dept. of L&I	4275
Log Truck Driver Dies When Struck by Logs Being Loaded Onto Trailer	Investigation Report	Twitter	Keep Trucking Safe	1268
Preventing Injuries to Retail Workers	Hazard Alert	Facebook	WA Dept. of L&I	1205
Orchard Laborer Dies after Being Struck and Run Over by Dump Trailer	Investigation Report	Twitter	WA Dept. of L&I	4275
		Facebook	WA Dept. of L&I	1205
		Twitter	WA State Dept. of Agriculture	1083
		Twitter	Good Fruit (Trade Journal)	624

D. Prevention resources presented and distributed at conferences and meetings:

- Puget Sound Safety Summit: 11 meetings attended with FACE documents distributed
- Washington Industrial Safety and Health Act (WISHA) Advisory Committee quarterly meetings: FACE documents distributed at 3 meetings
- Poster presented at the 2015 National Occupational Injury Research Symposium (NOIRS) meeting: Fatal and Non-Fatal Injuries Among Tree Care Workers in Washington State

E. Prevention resources used in industry training: WA FACE created seven Logging Injury Alerts and one Investigation Report to support the Washington Logger Safety Initiative (LSI). The LSI sent these to their email distribution list (n>260) as weekly safety messages. Three of the Alerts produced during this time have been incorporated as required LSI safety training:

- Timber Cutter Injured When Struck by Hung-up Tree
- Choker Setter Injured When Struck by Log
- Chaser Caught in Choker Bight

2. Outcomes: Improving Safety through targeted use of WA FACE Materials

A. Improvements among employers resulting from WA FACE resources:

Employer feedback from evaluations sent with investigation reports

Publication Sent	Responses	Usefulness: % Rated good to excellent	% will use for trainings/ toolbox talks	% will use to identify hazards	% will distribute to employees
Operator Dies After Excavator Tips Over the Side of a Bridge into River	27	93%	56%	52%	33%
Two Propane Workers Electrocuted when Crane's Boom contacts 7,200 Volt Power Line	16	88%	81%	75%	69%
Orchard Laborer Dies after Being Struck and Run Over by Dump Trailer	32	97%	75%	69%	34%

Employer feedback from evaluations following Construction Safety Stand-Down campaign

Publication Sent	Responses	Usefulness: % Rated good to excellent	% will use for trainings/ toolbox talks	% will use to identify hazards	% will use to choose safety gear
Fatality Narratives-Construction					
<ul style="list-style-type: none"> • English (5) • Spanish (5) 	83	88%	49%	45%	36%

Using Workers' Compensation Data to Identify High Risk Workplaces for Work-related Musculoskeletal Disorders (WMSDs)

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Project Coordinator: Daniel Hunter, MA; hund235@lni.wa.gov; (360) 902-6836

The overall goal of this project is to develop and test a surveillance system to identify prevention efforts for high hazard workplaces by industry sector and size for work-related musculoskeletal disorders (WMSDs). We have been comparing different field exposure assessment methods such as the Quick Exposure Checklist, the Washington State Caution and Hazard Zone Checklists, the Strain Index, and the ACGIH TLVs for the low back. Since July 2014 our research team has:

- Completed injured worker interview data collection. Conducted 57 injured worker telephone interviews with WMSD claimants having received four or more lost workdays;
- Completed data collection of management and labor interviews. Conducted 74 employer management and 81 labor interviews regarding injury experience, WMSD risk factors, training, employment patterns, safety culture, and turnover to identify potential explanations for differences in WC claims rates; and,
- Completed exposure data collection at participating companies. Conducted 51 employer site visits to companies with either a high or low WMSD incident rate to identify potential differences in exposures, management culture, and safety issue awareness via site walkthroughs, observations of workers, and job-based WMSD risk factor assessment.

Research Activities and Outputs:

WMSD Risk Factor Assessment Employer Site Visits

- We identified pairs of Washington businesses from six NORA sectors with upper and lower quartile incidence rates for WMSDs in one or more body regions (back, shoulder, hand/wrist, and knee).
- In the past year, we have completed 51 site visits to 29 different participating companies to conduct worker observations and job hazard assessments.
- We have completed site visits of all participating companies, a total of 96 of a projected 96 within six NORA sectors (16 per sector).
- During these visits SHARP staff members have had the opportunity to consult with company representatives regarding safety issues of specific interest to employers, and have discussed suggestions for reducing exposures to WMSD risks.

Exposure Assessment Tool: Digital Risk Factor Assessment Checklist

- The abundance of exposure parameters as well as the results derived using different job evaluation tools has provided a foundation for us upon which to compare exposures between companies with divergent injury rates. During worksite visits, we collected detailed information about jobs and their task activities making it possible for us to (1) link specific task activities to potentially unsafe work conditions, (2) provide specific explanations for their causes, and (3) develop industry/job-specific assessment protocols.
- Risk factor data from site visits were collected and entered into an electronic checklist application developed by SHARP staff. Exposure risk scores are calculated in this electronic checklist which allows ergonomists to identify and report potentially hazardous risk factors in real time.
- Pending final analysis of identifying associations between job exposure data and workers' compensation claims data, we will assess the predictive power of several validated assessment methods for each of six industry sectors and tailor industry-specific job evaluation tools based on these results.

- We anticipate that this electronic WMSD hazard checklist will find traction throughout industry with a broad user base among regional and national employers and occupational safety and health professionals interested in identifying and mitigating high-risk job tasks.

Job Evaluation Reports

- Each visited company received a company job evaluation report based on the exposure data collected. These reports provided details regarding potentially hazardous risk factors and targeted recommendations for injury prevention as well as overall exposure assessments including instances of potential best practices..
- Since July 2014, we have generated and delivered 18 company job evaluation reports using completed exposure assessments of 406 workers across 118 jobs.

Injured Worker Interviews

We completed data collection from injured workers, completing 239 of 245 projected interviews (98%). Since July 2014, 57 interviews were completed.

Company Management and Labor Interviews

We have completed data collection from management and labor representatives, completing interviews at 189 of a projected 194 companies. Since July 2014, we have completed interviews from 71 companies.

Publications and Presentations

Since July 2014, we have generated the following publications and presentations:

1. Haas, A. (2015) The Caretaker Crisis: Investigating Work-Related Injuries in Healthcare (digital story), <https://www.youtube.com/watch?v=bl9fIVLtlE>, Mar 24, 2015.
2. Hunter, D. (2015) Workers' Perceptions of Musculoskeletal Injury, SHARP Focus Newsletter (research results), April 15, 2015.
3. Hunter, D. (2015) A Systems Approach to Safer Caregiving (trade journal article), Today's Caregiver, May 2015.
4. Haas, A. Research confirms work-related musculoskeletal disorders a major issue for nurses in Washington, Washington Nursing Commission News.
5. Anderson A, Adams D, Bonauto D, Howard N, Silverstein B. Work-Related Musculoskeletal Disorders of the Back, Upper Extremity, and Knee in Washington State, 2002-2010: Technical Report #40-12-2015, February 2015. *Released electronically*
6. Bao, S. (2015) Finding causes of musculoskeletal disorders and identifying best practices among industries, Semiahmoo Annual Occupational, Environmental, and Public Health Conference, January 8, 2015, Blaine, WA.
7. Howard, N. (2015) Development of an Industry-Specific Assessment Tool for WMSD Risk Factors, SHARP Brown Bag, March 1, 2015.
8. Howard, N (2015) Using a Work-Related Musculoskeletal Disorder Surveillance System to Guide the Development of an Industry-Specific Work Related Musculoskeletal Disorder Hazard Surveillance Tool, CSTE Annual Conference, June 15, 2015, Boston, MA.

NORA Surveillance Project: Trucking Injury Reduction Emphasis through Surveillance (TIRES) Program

Program Director: Caroline Smith, MPH; smcb235@lni.wa.gov; (360) 902-4528

The Washington State trucking industry has some of the highest costs and rates for work-related injuries of any industry sector. Previous research by the SHARP Program revealed that the most common and costly injuries in trucking are musculoskeletal disorders, falls, motor vehicle collisions and injuries from being struck by or against an object. From case follow-up surveillance data SHARP determined that these injuries occurred during four particular work activities: loading and unloading activities including manual handling, securing the load, entering and exiting the cab, and walking around the job site. Subsequently, we determined that many of injuries during these four activities are caused in part by: lack of control of the site of work, co-worker support issues, equipment maintenance or mismatch issues, company support and training. Determining and targeting the root cause of injuries is the continuing mission of TIRES and has been the driving force of reaching industry employers and workers through KeepTruckingSafe.org.

Outputs

Outputs are developed through a collaborative process using information obtained from worker and employer surveys, data extracted from injured worker claims and interviews and the direct guidance of the TIRES steering committee which consists of industry stakeholders such as employers, industry associations, labor groups and trainers, and insurers. All materials are developed to support industry best practices and to enhance the safety training of large and small employers.

For the period from July 1, 2014 to June 30, 2015, these outputs included:

- **Online simulation training tools** - Interactive, educational resource to be used by drivers and training personnel. Safety Climate: teaches Safety Directors and owners how best to impact safety at their companies. **Produced 1.**
- **Technical report** – Provides stakeholders with information on claims, claim rates, costs common injury causes and prevention ideas. Trucking Industry: Examining Injuries for Prevention, Washington State, 2006-2012.
- **TIRES E-news electronic newsletter** - Introduces and educates managers and safety personnel on the magnitude of specific injury types. **12 produced.**
- **True story narratives** – Actual stories of Washington workers injured on the job. Includes injury prevention tips. **2 produced.**
- **Tip sheets** – Injury prevention tips for specific scenarios. **5 produced.**
- **Posters** – Eye catching and educational posters for employee awareness. **10 produced.**
- **Company corner** – Profiles safety professionals or companies that have made safety at priority. **3 produced.**
- **Website** - We continue to build on an interactive website where industry stakeholders can download free educational materials or share their own success stories. www.KeepTruckingSafe.org. **Over 2,300 visitors per month.**
- **Social media** - We have expanded marketing and outreach into social media tools such as Twitter, YouTube and the TIRES Blog.
- **Outreach** – The TIRES team participates in industry events such as the World’s Largest Truck Convoy to benefit the Special Olympics, the Washington Truck Driving Associations’ (WTA) Truck Driving Championships. We have presented at WTA safety meetings on slips, trips and falls, safety climate and heat related illness.
- **Company trainings** – TIRES staff presented training simulations at a local company’s safety training event.

Intermediate Outcomes

All TIRES publications are distributed through voluntary avenues, meaning people need to sign up to receive our materials or download them from our web pages, therefore, visits to our web sites are an accurate representation of the usefulness of the materials. During the past year, there were over **150,000 visits** to our web pages at <http://www.lni.wa.gov/Safety/Research/Trucking/Pubs/Default.asp> and www.KeepTruckingSafe.org.

The online simulation tools were developed in response to stakeholder requests for interactive trainings to meet the challenge of training younger drivers who believe they are invincible (e.g. Don't Jump) and experienced drivers (e.g. Ratchet vs. Lever Binders) who don't want to change from the way things have always been done. We've also created an interactive training for safety directors and company owners that want to improve the safety climate of their companies. The simulations have been downloaded over **20,000 times**. We don't know how many companies have downloaded to their company web sites or trainings, since the option is available and free to the public. We've been told by company safety personnel that they are using them in their new hire trainings. Our simulations are also available on external websites (e.g., SafetyDriven CA) where they can be downloaded. We do not have a count of those downloads.

Leveraging social media - Our Twitter account was launched on October 20, 2011. We currently have **1,266 followers**. A YouTube training video was viewed over **1,900 times**. At least one blog article was posted per week until 2015, then periodically as stories arose, and a special is released to honor each truck driver killed in Washington. The TIRES blog was visited **over 500 times a month**.

TIRES educational materials are being used by occupational safety and health professionals within the industry.

- TIRES training materials are used as a major component of Washington Teamsters Training, train-the-trainer program for the trucking and construction industries.
- TIRES has been contacted by other states' (AL, MT, MN, and even Canada) workers' compensation programs to partner with TIRES to develop additional training materials and to use the materials already developed. Trucking injuries are similar across the globe so by sharing data and strategies, we've collaborated to make our materials even better.
- TIRES is responding to stakeholder feedback by continuing to produce safety materials and online training simulations.
- KeepTruckingSafe.org website is being shared by a national insurer to clients in WA and CA.
- Highlighted in the NIOSH Extramural Research and Training Program Annual Report of Fiscal Year 2012. DHHS (NIOSH) Publication No. 2014-114, p. 57.
- Highlighted by CSTE Occupational Health Success Stories: How Do You Develop A Successful Safety Training?

NORA Surveillance Project: Injury Reduction Among Temporary Workers in Washington State through Surveillance

Program Director: Michael Foley, MA; folm235@Lni.wa.gov; (360) 902-5429

Research Results:

Aim #1: Characterize the magnitude of workers' compensation claims incidence among workers employed by temporary agencies grouped by industry sector, as represented by risk class, and compare to that of workers employed under standard employment arrangements working in comparable industries and occupations.

- Time-loss claims rates in 2013 continue to show that for twelve temporary risk classes and their selected comparable permanent risk classes there was a significant excess rate of injury for temporary workers. The greatest discrepancy in injury rates between temporary workers and their permanent counterparts continue to be in the following industry sectors: machine operation, vehicle operation, construction, agricultural services, food services and assembly operations. Overall risk ratio for temporary status workers relative to permanent counterparts is 1.32.

Aim #2: Conduct follow-up interviews per year with temporary workers and a matched set of standard workers to gain information about tasks, hazards, safety training, and ability to identify and report hazards. Special emphasis was placed on completing matching permanent worker interviews. All work under this aim has been completed. To date we have completed over 450 interviews of which 190 are with temporary workers. For matching, 125 temporary worker interviews are matched to 256 permanent worker interviews.

Preliminary results from interviews with injured temporary workers and their matched counterparts in standard, permanent employment showed that:

- Exposures to injury hazards were perceived by claimants to be distributed similarly between temporary and permanent workers, with the total level of hazard exposure slightly higher for permanent workers than for temporary workers. Greatest exposures for both categories of worker were to manual handling, machinery and falls
- Temporary workers received training that was less frequent and perceived to be less adequate than that of their permanently-employed peers. A higher percentage of temporary workers report receiving no safety training from their jobsite employer.
- Temporary workers report receiving greater jobsite supervision than do their permanent counterparts.

Aim #3: Conduct interviews with temporary agency managers covering how temporary agencies provide safety training to temp workers; what safety-related issues are covered; what kinds of practices do they think are more successful or less successful at preventing worker injuries; how they ensure that the workers they send to clients receive the proper on-site training; and whether they visit client worksites to review safety practices and to ensure conformity with contracted tasks. Agencies were recruited from a variety of industrial risk classes they deploy workers into. We recruited nine agencies from across a broad range of worker' compensation experience ratings in order to increase the range of performance observed and to increase the possibility of detecting meaningful differences in safety practices.

- Competitive pressures appear to limit the extent to which temp agencies are able to monitor host employer safety practices. In a period of slack labor markets, agency managers say that host employers are quick to switch agencies if too many conditions are attached.
- Many agencies say that host employers increasingly use temp agencies as a way to supply and test candidates for potential permanent positions. This limits their loss of investment in case of poor performance, but also limits their liability in case of injury.

Aim #4: Conduct manager interviews at host employers that use temporary workers. As in Aim 3, the information gathered covers site-specific hazards and how information about these are communicated to both permanent workers and temporary workers; safety training provided to temporary workers; the nature of tasks typically assigned to temporary workers as opposed to permanent workers; how temporary workers are monitored and supervised while they are on-site; what managers see as the advantages and disadvantages of using temporary workers; why they think temporary workers have higher injury rates; ideas they may have for reducing injury rates for temporary workers.

Employers who use temporary workers were identified through the place of injury reported on the temporary workers claims records. A recruitment screening questionnaire ensured that only businesses with recent and sufficient experience with temporary workers were selected. Ten host employer businesses were selected so that a broad range of industries are represented. These interviews were conducted at host employer offices. Two researchers were present and each transcribed the interviews.

- Host employers emphasize the need for better screening for experience on the part of agencies supplying temporary workers. Several employers cite a deficiency of safety awareness among the temporary employees they have hosted as a primary risk factor leading to injuries.
- Host employers are not uniform in their reasons for using temp workers. Some clearly see temps as a source of low skill labor to fill less attractive roles in their operations. Little if any investment is made in these workers as they are expected to leave after a short stint. But other employers, particularly in manufacturing and light assembly operations, view temp workers as a way to test workers over a 2-3 month period before extending an offer of a permanent position.

Aim #5: We are developing educational materials for temporary workers, agencies and client businesses, based upon what we have learned from interviewing the injured workers, the agencies and host employers. The first product is an online safety awareness teaching tool, viewable on tablets, smartphones or computers using any operating system, which we hope will be an advance over the passive-mode videos and printed materials we observed being used in the field. This tool will cover topics such as hazard identification, communication, PPE and what to do when an unexpected condition arises in the worksite. It requires the active participation of the user to move through a set of graphics-based scenarios towards the goal of safety awareness. We plan to complete development of the tool by August 30 and we have recruited several host employers and temporary agencies to review the tool and evaluate its utility.

Publications and Presentations

- Presentation at APHA annual meeting in New Orleans on November 19, 2014 on “Occupational Health and Safety Surveillance of Temporary Workers in Washington State”.
- Presentation at NORA Services and Manufacturing Sectors joint annual meeting, April 29, 2015 on “Occupational Health and Safety Surveillance of Temporary Workers in Washington State”.
- Presentation at Washington State OSHA inspectors and consultants annual symposium in Wenatchee, WA on “Occupational Health and Safety Surveillance of Temporary Workers in Washington State”.
- Peer-review publication: “Contingent Workers: Workers’ Compensation Data Analysis Limitations and Strategies”, submitted to American Journal of Industrial Medicine. Published July 2014.
 - Citation: Foley, M., Ruser, J., Shor, G., Shuford, H. and Sygnatur, E. (2014), Contingent workers: Workers’ compensation data analysis strategies and limitations. Am. J. Ind. Med. 57:764-775. Doi: 10.1002/ajim.22302
- Access databases created: claimant case-control matching; call tracking/interview completion; claimant interview responses.
- Online educational tool on safety awareness for temporary workers (in development).

Maintaining and Improving Pesticide-Illness Surveillance in Washington State

Performance Location: Washington State Department of Health (DOH)

Program Director: Joanne B. Prado, MPH, joanne.prado@doh.wa.gov, (360) 236-3172

The goal of this project is to reduce pesticide-related illness through maintaining and improving the pesticide-illness surveillance and prevention program operated by the Washington State Department of Health (DOH).

Outputs

The following research activities and public health actions were conducted from July 1, 2014 – June 30, 2015.

- Completed 230 pesticide-illness investigations and annual upload of case data to NIOSH Sentinel Event Notification System for Occupational Risk (SENSOR).
- Identified a subset of antimicrobial-related illness reports to include in the existing illness surveillance system. Finalized criteria and process for including antimicrobial-related data in the system beginning July 1, 2015.
- Served on the Governor's Farm Work Advisory Committee. Presented illness-case data and farm worker health information and drafted a chapter about pesticide drift for the Committee's report on concerning farm work.
- Spoke before the Legislature's House Committee on Health Care and Wellness and addressed Representatives' questions as a panelist at the Committee's session on pesticides and farmworker health and safety.
- Presented case studies of pesticide drift and discussed illness-prevention in English and Spanish at Governors' Conference of Agricultural Safety. Answered questions from farm workers, farm managers, and farm owners and spoke at length with participants after the sessions.
- Collaborated with researchers from Pacific Northwest Agricultural and Safety (PNASH) center to prepare a study of drift data (2000-2014) and local weather patterns to learn about impacts of weather (temperature, wind) on drift over past 15 years and in particular, weather's impact on the earlier seasonal pattern of drift exposure to WA workers seen in 2014.

Public health surveillance data gathered and analyzed by the DOH Pesticide Program were used to develop two letters commenting on Environmental Protection Agency (EPA) proposals.

- DOH commented on proposed changes to the "Worker Protection Standard". (Docket EPA-HQ-OPP-2011-0184) August 2014.
- DOH commented on "Revised Health Risk Assessment for Chlorpyrifos". (Docket EPA-HQ-OPP-2008-0850) May 2015.

Publications and Presentations:

The following publications and presentation were conducted from July 2014 – June 2015.

- Health Care Provider Education
 - Case Report of Severe Acute Illness in a Toddler Exposed to Pesticides. 24th Annual Midwest Stream Farmworker Health Forum, San Antonio, Texas. November 2014.
 - Pesticide-Illness Case Studies and Reporting. Current Topics and Best Practices in Occupational and Environmental Medicine in Agricultural Communities. Yakima. February 2015.
 - Pesticide-Illness Case Studies and Reporting. Central WA Family Medicine Residency Program. The training was led by Debra A. Gould MD, MPH, Associate Clinical Professor, University of WA. Yakima. May 2015.
- Pesticide-Illness Surveillance and Drift. WA 2nd Annual Farm Summit. A gathering of grower advocates and farm chemical company representatives sponsored by Washington Friends of Farms and Forests. Lacey, WA. February 2015.

- Problems with Pesticides in Multi-Family Housing. 2014 Rental Housing Management Conference and Trade Show. Seattle, WA. December 2014
- Pesticide Drift (English and Spanish presentations). Eleventh Annual Agriculture Safety Day. Wenatchee, WA. February 2015.
- Worker health & safety issues from case studies of herbicide applications in forests and fields. Forestry Vegetation Management Annual Summit. Tumwater, WA. March 2015.

Calvert MC, Rodriguez L, Prado JB. Worker Illness Related to Newly Marketed Pesticides-Douglas County, Washington, 2014. MMWR Morb Mortal Wkly Rep 2015;64:42-44

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Intermediate Outcome

Eight pesticide-illness cases were referred to Washington’s Labor and Industries DOSH. Their inspection in one of these cases resulted in five serious and seven general violations. Outcomes of the other referrals are not known at this time.

End Outcome

Illness cases resulting from exposure to agricultural pesticide-drift were markedly reduced during the spring and summer 2015 when compared to the previous year. Weather patterns and employment statistics appear to have been similar. Prevention activities conducted by DOH Pesticide Program specifically about agricultural pesticide drift may have impacted this improvement.

Early Season	Number Events	Number Illness Cases (People)
March - June 30, 2014	19 events	59 people
March - June 30, 2015	6 events	20 people