

**Washington State: Fundamental State Occupational Safety and Health Surveillance Program**

**PI: David Bonauto, MD, MPH**  
**Washington State Dept. of Labor and Industries**  
**PO Box 44330**  
**Olympia, WA 98504-4330**  
**Tel: (360) 902-5664**  
**Fax: (360) 902-5672**  
**E-mail: bone235@Lni.wa.gov**

**Major Accomplishments and Output:** There are three main components to the Washington Fundamental Occupational Safety and Health Surveillance program:

- Conducting surveillance using the Council of State and Territorial Epidemiologists (CSTE)/NIOSH Occupational Health Indicators,
- Working with other states on common state-based surveillance projects, and
- Continuing Washington State surveillance programs for work-related musculoskeletal disorders (WMSDs), hospitalized burns, and work-related asthma (WRA).

CSTE/NIOSH Occupational Health Indicators: We have recently published and distributed a Washington State Indicator report for the years 1997-2004. The report documents the trend and high risk groups for most of the CSTE Occupational Health Indicators in addition to five common high cost occupational injuries. The additional indicators for Washington reflect those injuries presenting to the workers' common system that have a large social and economic burden reflected in the Washington workers' compensation data systems (falls from elevation, fall from same level, vehicle injuries, struck by injuries and caught in, under and between injuries). The report format and emphasis is directed towards Washington citizens and to Washington state policymakers unfamiliar with occupational injuries and illness data. The report, *Occupational Health Indicators for Washington State, 1997 – 2004*, is available at <http://www.lni.wa.gov/Safety/Research/Files/OccHealth/OccHealthReport2008.pdf>

We continue to collaborate with the Washington State Department of Health in our surveillance data dissemination efforts. During this grant period two multi-year collaborative efforts have been published. An occupational chapter has been included in the *Health of Washington State* (available at <http://www.doh.wa.gov/hws/OH2007.shtm>) and in the *Washington State Injury and Violence Prevention Guide* (available at <http://www.doh.wa.gov/hsqa/emstrauma/injury/pubs/icpg/default.htm>).

Washington surveillance personnel worked in partnership with other states on two projects. Nine states included a state added module on the 2007 Behavioral Risk Factor Surveillance System (BRFSS) survey to assess self-reported injury requiring medical care and whether that injury treatment was paid for by workers' compensation. As part of this effort we presented our results from a previous module regarding underreporting of occupational injury and illness at the Annual BRFSS conference in Orlando, FL on March 19, 2008. We are as well developing a low back hospitalization indicator for the COSS and CSTE Occupational health workgroups consideration.

The fundamental surveillance award supports, with in-kind state contributions, three state-based surveillance systems: WRA, hospitalized burns surveillance and WMSDs.

Our WRA program efforts included efforts to identify diacetyl exposures from use of butter flavored oils. The considerable favorable press attention to our program about this issue has increased visibility for our surveillance programs. We have produced English and Spanish informational materials for restaurant owners and cooks about possible diacetyl exposures from butter flavored oils. We have conducted outreach to physicians and other health care providers about cases of food flavoring lung disease. We have queried other states about their diacetyl outreach activities and wrote a NIOSH e-news article.

During this grant cycle we have produced burn narratives and fact sheets for restaurant burns (see <http://www.lni.wa.gov/Safety/Research/Pubs/default.asp#WorkBurns>). One burn narrative has been published in the Washington Restaurant Association's trade journal *Front Burner*.

The annual WMSD surveillance report was published and distributed. The report summarizes the high costs, trend and large overall burden of WMSDs in our state (see <http://www.lni.wa.gov/Safety/Research/Files/2007WmsdRpt.pdf>).

**Plans:** The grant activities in year 4 are likely to be: a) complete an in-depth analysis of amputation data from our workers' compensation data (Indicator 5), b) continue activities related to burn injury prevention, c) continue WRA surveillance and expand the surveillance system to include all respiratory diseases, d) complete an update of the annual WMSD surveillance report, e) continue participation in COSS and the development of new indicators and f) continue work on the BRFSS workers' compensation underreporting module. We expect a significant resource allocation for the conversion of our workers' compensation claims coding from the ANSI coding system to the OIICS which may delay completion of some of the above work.

**Washington State: Expanded Pesticide Illness Surveillance  
Identifying Preventable Causes of Pesticide-Related Illness Among Agricultural  
Workers**

**PI: Cynthia Lopez, Dr. P.H.  
Pesticide Program: Illness Monitoring and Prevention  
Washington State Department of Health  
PO Box 47846  
Olympia, WA 98504-7846  
Tel: (360) 236-3340  
Fax: (360) 236-3276  
Cynthia.lopez@doh.wa.gov**

**Former PI, Dr. Jim VanDerslice, has left DOH.**

**Major accomplishments:**

The purpose of the project is to identify and track causal factors for pesticide-related illness and injury among agricultural workers. The project expands Washington State Department of Health (DOH) pesticide-illness surveillance to collect and analyze root cause information. The leading two identified causal factors were problems with personal protective equipment (PPE) and pesticide drift. We developed a study to further probe the root causes of pesticide over-exposures related to PPE. We also worked with sister state agencies to develop supplemental data collection in pesticide drift incidents. DOH will use the information derived from this project to critically evaluate the adequacy of existing programs and policies, and to modify and expand current outreach efforts to address gaps in our prevention activities.

Causal factor codes:

The coding includes 18 possible causal factors associated with reported illnesses (e.g., posting of treated field did not occur, early re-entry into a treated field, required PPE not worn). It also includes a text box to record details regarding why this problem occurred.

- In 2005 and 2006, twenty-four of the 111 occupational agricultural pesticide illnesses/injuries (22%) involved handling pesticides without a required piece of PPE or were wearing PPE improperly. Factors associated with lack of required PPE included: lack of training/supervision of handlers, and employer reportedly not providing PPE.
- Twenty-six of 111 occupational agricultural cases were due to pesticide drift (23%).

Root causes of pesticide over-exposures related to PPE - ongoing

The specific objectives of this study are: 1) to identify common root causes of situations where lack of PPE contributed to a pesticide illness, and 2) to assess whether the questions used to collect information about these root causes would likely be answered in the context of a regular pesticide illness investigation interview.

- Agricultural workers involved with pesticide handling tasks are recruited at the end of the standard pesticide illness investigation. Those who choose to participate are interviewed by phone using a semi-structured instrument designed to gather information on the root causes of the incident. The second interviewer is blind to the worker's identity.

- At the end of the interview the person is asked specific questions to determine whether they would have been comfortable answering such probing and potentially incriminating questions during the standard investigation interview.
- This study has been extended into Year 4 to capture the 2008 investigation season.

Improving Data Collection in Pesticide Drift Incidents - *ongoing*.

We initiated a three-agency effort to improve the type and completeness of information collected in cases of pesticide drift in July 2007. A checklist of supplemental information was developed with Washington State Departments of Labor and Industry and of Agriculture. The checklist includes detail on type of equipment and equipment settings, more detail on local weather conditions, distance of documented drift, use of drift retardant in the tank mix, and use of best management practices in the application.

- The majority of agricultural drift incidents were associated with ground sprayers in tree fruit operations. Analysis of underlying factors for drift will be available for the 2007-2008 season.
- This project will extend through July 2008 to capture one full year of data.

Outputs/Reports:

- Causal factor information was used to build recommendations for improving worker safety in a published paper (Calvert, G.M. et al. Acute Pesticide Poisoning Among Agricultural Workers in the United States, 1998-2005. American Journal of Industrial Medicine. (in press)).
- Causal factor data has been used to identify problem pesticide labels for EPA resulting in a letter to EPA with recommendations for improving fogger and aerosol insecticide labels.
- DOH assisted three other states (NY, MI, and CA) in testing interview questions and the coding last year. The coding scheme is under consideration for adoption by the NIOSH Pesticide SENSOR program.

Plans:

We will analyze data from the PPE study and the drift checklist in Year four. We will continue to use the prevention codes to identify causal factors and improve prevention activities at the state and national level.

**Washington State: Fatality Assessment and Control Evaluation surveillance program (FACE)**

**PI: Barbara Silverstein, PhD, MPH**  
**Washington State Dept. of Labor and Industries**  
**PO Box 44330**  
**Olympia, WA 98504-4330**  
**Tel: (360) 902-5668**  
**Fax: (360) 902-5672**  
**E-mail: silb235@Lni.wa.gov**

Co-PI, Peregrin Spielholz has left the program.

**Major Accomplishments and Output:** The goal of the FACE program is to prevent occupational fatalities from occurring throughout the state and the nation by providing industry specific statistical data, and acute trauma prevention communication to all workplace sectors in the state using a variety of formats and identifying and investigating hazardous work situations and then formulating and disseminating prevention strategies to those who can apply these strategies within the workplace.

The Washington FACE Program produces reports and discusses fatalities weekly and conducts data analyses on a quarterly basis. The program prepares and updates reports on annual summary data, construction fatalities, listing of fatalities and other selected industry summaries.

The surveillance process in addition to FACE investigation protocols often identify areas of emerging or unrecognized hazards or incidents that continue to have a significant impact on fatality trends. The identified hazards are often the topic of the case series reports, Fatal Facts, or additional surveillance reports that are disseminated to industry.

In 2007/2008 our analysis of data highlighted several areas of importance. This led to the publishing of a case series report on Truck Drivers. Incidents in Washington and elsewhere also led to the publication and dissemination of two Fatal Facts reports on Carbon Monoxide Poisoning in Commercial Cleaning and Low Voltage Electrocution Hazards in Overhead Lighting Systems.

Washington FACE data were also used to prepare and publish reports on Agriculture, Commercial Fishing and Construction. A draft data report has also been prepared on Motor Vehicle Crashes.

During the 2007/2008 grant period, we produced and distributed:

- 2 Two FACE Fatality Investigation Reports
- 3 FACE Fatal Facts
- 13 Fatality Narratives -
- 4 Surveillance Data reports -

A FACE /SHARP website is maintained monthly  
<http://www.lni.wa.gov/Safety/Research/FACE>

FACE maintains an electronic distribution list (by request only) and sends reports to over 700 interested persons, groups and associations on a monthly basis.

**Selected outreach presentations and publications:**

- Spielholz P, Clark R and Sjostrom T, (2007), "Fatal Falls from Elevation in Construction: An Evaluation of Incidents in Washington State and Recommendations for Prevention," *AIHA Conference Proceedings*, Philadelphia, PA, June 2-7, (abstract).
- Spielholz P, Clark R and Sjostrom T, (2007), "Fatality Narratives: An Effective Way to Convey Hazard Information," *Professional Safety*, 52(4), pp. 22-25.
- Kedan G, Spielholz P, Sjostrom T, Trenary B and Clark R, (2007), "An Assessment of Gases in Oxygen-deficient Hay Silos and the Effects of Forced Ventilation," *Journal of Agricultural Safety and Health*, 13(1), pp. 83-95.
- Stevens E, Cohen M and Spielholz P (submitted), "Optical Properties of Plane and Convex Mirrors: Evaluation of Use to Improve Flagger Safety," *Journal of Safety Research*.
- Submitted two trade journal articles- one on farm tractor hazards to *Wheat Life* magazine, and one on falls in residential construction.

**Plans:** WA FACE has entered into an information sharing agreement with NIOSH Alaska Field Station on commercial fishing incidents. Several cases were identified by each party that the other did not have on record over the previous 5 years. The NIOSH team and WA FACE team met in-person in November 2007 in Seattle. This cross-checking of information appears to have strong utility.

We will also develop a short report related to Occupational Motor Vehicle fatalities in Washington State. Motor Vehicle incidents are the leading cause of occupational fatalities in the state.

## **Washington State: Trucking Injury Reduction Emphasis through Surveillance (TIRES)**

**PI: Barbara Silverstein, PhD, MPH**  
**Washington State Dept. of Labor and Industries**  
**PO Box 44330**  
**Olympia, WA 98504-4330**  
**Tel: (360) 902-5668**  
**Fax: (360) 902-5672**  
**E-mail: silb235@Lni.wa.gov**

Co-PI, Peregrin Spielholz has left the program.

### **Major accomplishments/findings**

The trucking industry has some of the highest occupational injury rates in Washington State. The most common and costly work-related injury types are musculoskeletal disorders of the neck, back and upper extremity, falls, struck by injuries and motor vehicle-related. We are working with the industry to determine how/why these injuries occur (find the root cause) and to develop solutions to prevent them from occurring.

Each year we emphasize one type of injury for education and prevention efforts. During the grant year from July 2007 though June 2008, we focused on musculoskeletal disorders of the neck, back and upper extremity and how to avoid them. Musculoskeletal disorders are the most common and costly injuries in the trucking industry.

Additionally, we continued tracking all of our trucking industry priority conditions. Case follow-up interviews are completed with workers who have an injury that prevents them from working for more than 7 days. We also conduct site visits to employers who've had a time loss case. Our hope is to obtain more information about the 'root cause' of the injury than is available in the administrative databases used to ascertain cases. This root cause information can be used to prevent future injuries.

During the 2007 – 2008 grant period, we produced and distributed the following:

- 2 TIRESPIN newsletters and 5 electronic newsletters to engage trucking industry employers and workers in occupational health and safety.
- 5 workplace safety posters for preventing and raising awareness about common occupational injuries.
- 5 tip sheets and 4 true story narratives with tips to be used during safety trainings to promote discussion about occupational safety and health.
- 4 Dollars & Sense informational sheets which are analyses of the costs of occupational injuries and the benefits of preventing them.
- 1 technical report on the trucking industry discussing the trucking economy, injury data and prevention activities.

A safety and health website was developed for the industry and allows us to post all publications for use in the industry (see <http://www.KeepTruckingSafe.org>).

We conduct outreach within the industry to promote the TIRES program. We did the following during 2007 – 2008:

- Washington's annual Truck Driving Rodeo

- Trucking Wellness Seminar Presentation
- Trucking Survey results presented at PREMUS 2007 in Boston, MA and the ASSE 2008 annual conference in Las Vegas, NV
- 15 site visits to various trucking companies
- Washington Trucking Association Executive Leadership conference

We continue to receive monthly guidance from and meet 3 times per year with our steering committee composed of industry representatives from: trucking companies, a publicly funded truck driving school, an insurance carrier, labor union and trucking associations as well as an independent owner/operator.

**Next year**

We will focus on injuries resulting from the worker being 'struck by or against' an object in the trucking workplace. We will continue case follow-up interviews with injured trucking industry employees and conducting site visits to companies where a worker had injuries resulting in seven days of time lost from work. We will be producing educational materials for the prevention of 'struck by' injuries. Additionally, we will visit employers who appear to have very good workers' compensation rates and safety programs to determine what they are doing 'right' to prevent injuries. We will continue to disseminate the results of our surveillance program to the rest of the trucking industry.