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Major Accomplishments/ Intermediate and Potential Outcomes

Heavy Metals Surveillance Database

NJ state regulations require reporting of heavy metal test values from clinical laboratories, physicians, and hospitals.¹ The Adult Blood Lead project collected 414 cases of employees (age 16+) with blood lead levels (BLL) of ≥ 10 $\mu\text{g}/\text{dL}$ and 71 cases with ≥ 25 $\mu\text{g}/\text{dL}$ in 2014; and 418 cases with ≥ 10 $\mu\text{g}/\text{dL}$ and 67 cases with ≥ 25 $\mu\text{g}/\text{dL}$ in 2015. In this grant period, Occupational Health Surveillance (OHS) staff conducted 41 interviews and sent 37 surveys (with educational materials). As per an agreement with OSHA, staff refers all BLL ≥ 40 $\mu\text{g}/\text{dL}$ cases. For example: 1) In collaboration with NJ Poison Information and Education System (NJPIES), staff referred a NJ firing range case with a BLL of 62 $\mu\text{g}/\text{dL}$, OSHA investigated and issued four citations; the patient was treated and subsequent lab tests are at or below 10 $\mu\text{g}/\text{dL}$; 2) A worker who restores/recoats paint on military vehicles with a BLL of 63.5 $\mu\text{g}/\text{dL}$ was identified; OSHA initiated a compliance investigation with the employer. For the other heavy metals, 130 arsenic and 117 mercury lab tests were collected in the grant period. Finally, staff are updating all lead educational materials, alerts and brochures targeted at workers, employers, and parents.

Work-Related Burn Injuries

Work-related burns are considered one of the most painful occupational injuries, and yet are largely preventable. Analysis of the NJ fatal occupational injuries database identified 64 burn victims from 1993 to 2013. The average age was 45 years old, 97% were male, 75% (48) were White and 17% (11) were of Hispanic origin. Four of the seven victims in the 16-24 age category were Hispanic. This project will characterize work-related burns between 2010-2014 found in the NJ Uniform Billing (UB) data and other data sources using the Occupational Health Indicator (OHI) framework. A case definition was developed. A list of data fields was generated from the current UB data dictionary and discussed with the NJDOH's Center for Health Statistics for validation. NJPIES is also being explored as a possible data source.

Occupational Eye Injuries

Eye injuries are among the most traumatic injuries sustained in the workplace. Yet, protective eyewear can prevent 90% of these serious eye injuries. This project utilizes the OHI framework to characterize occupational eye injuries in the NJ UB data for development of a new OHI. A case definition was developed and diagnostic codes were identified based on a review of the scientific literature and injury diagnosis matrices. Patient records were culled for the period 2010-2014 for individuals aged 16 years and older with workers' compensation as a primary payer. An injury severity scale is being used for case classification. Preliminary data show an annual average of 33 records in the inpatient data set and over 1,000 records in the outpatient data set. Inpatients had an average age of 43 years and 10% to 48% were Hispanics. A summary of the project was presented to the Council of State and Territorial Epidemiologists (CSTE)/NIOSH Occupational Health Indicators Work Group.

EpiCenter (Syndromic Surveillance)

OHS staff continue to explore the use of the NJ Syndromic Surveillance System, EpiCenter, as a real-time surveillance system for occupationally related injuries and illnesses. OHS staff currently receive automatic electronic notifications whenever three or more cases of chemical exposures present in NJ emergency departments. Between 2014 and 2015, OHS was alerted by EpiCenter, via e-mail, of 242 chemical exposure cases. Of these, 35% (85) were confirmed occupational related chemical exposures. Occupational events detected via EpiCenter included: five lifeguards treated for eye and respiratory irritation after being exposed to chlorine at a waterpark; 28 employees exposed to diisocyanate during an explosion at a foam factory; and six firefighters exposed to a UV-curable liquid coating during a fire at a warehouse. This has also provided an opportunity for the OHS Unit to partner with the NJDOH Public Employees Occupational Safety and Health Program (PEOSH) to provide them with real-time data on work-related injuries occurring

¹ N.J.A.C. 8:44-2.11, N.J.A.C. 8:58-1.5, 1.6, 1.7, and N.J.A.C. 8:58-1.4, 1.6, 1.7

among NJ public employees. A poster entitled, “Classification and Capture of Work-Related Non-Fatal Injuries Through a Real-Time Syndromic Surveillance System” was a finalist at the CSTE 2016 Conference in Anchorage, AK in June.

NJ Poison Information and Education System (NJPIES)

The OHS Unit is collaborating with NJPIES as an additional data source for occupational health surveillance. Occupational exposures are reportable under NJ state law. Thus, one of the areas NJPIES codes for is occupational exposure. NJPIES currently provides cases (Table 1) of occupational poisonings to the OHS Unit on a weekly basis to further enhance the classification and capture of work-related non-fatal injuries with possible improved efforts in prevention. Also, in collaboration with the NJDOH Communicable Disease Service, Infectious, and Zoonotic Disease Program, OHS staff are working with NJPIES to stream NJ poison data into EpiCenter in real-time.

Table 1. Number of Work-Related Poisoning Calls Received by NJPIES

Year	Total Chemical Exposures	Total Occupational Chemical Exposures	% of Chemical Exposures that were Occupational
2012	50,477	466	0.92
2013	47,651	446	0.94
2014	45,611	437	0.96

CSTE Occupational Health Subcommittee

The New Jersey Occupational Health Indicator Coordinator continues serving as the state-representative co-chair for the CSTE/NIOSH Occupational Health Indicators Work Group. The Principal Investigator is a member of the Occupational Health Subcommittee Leadership Group.

Meetings

Staff attended various conferences and meeting to help build capacity for public health surveillance and develop strategies for incorporating the latest approaches, methodologies, and results into data driven programs. Staff presented on:

- Work-related injuries that occurred during Hurricane Sandy at the North East Regional Epidemiology Conference in New Brunswick, NJ in October 2015.
- “Occupational Disease Surveillance in New Jersey” at the New Jersey Hospital Employee Health Nurses Association quarterly meeting in Princeton, NJ on April 22, 2016.
- Two posters at the CSTE 2016 Conference in Anchorage, AK in June 2016.
- The Prevention of Lead Poisoning to the Interagency Task Force, a multi-disciplinary group whose goal is to reduce and prevent lead exposure in NJ.
- NJ’s occupational surveillance activities such as Work-Related Burns and Occupational Eye Injuries; using EpiCenter real-time data for surveillance; and fatal occupational injuries at the 2016 Northeast Regional Occupational Disease and Injury Surveillance (NEON) Conference in Chester, CT.

Major Outputs/Products

NJ SHAD (State Health Assessment Data) System

OHS staff continues to work with NJDOH Environmental Public Health Tracking (EPHT) researchers to incorporate OHIs into the NJDOH online indicator-based information system, NJ SHAD. This allows for increased visibility and integration into mainstream public health as the OHIs are now featured with all the leading NJ health indicators. Profiles with data analysis for seven OHIs were updated with 2013 data and published on the SHAD website.² Incidence of Malignant Mesothelioma was added as an Occupational Indicator to SHAD. Three OHIs, “Fatal Work-Related Injuries (OHI #3),” “Mortality from or with Pneumoconiosis (OHI #10),” and “Elevated Blood Lead Levels among Adults (OHI #13)” were incorporated into Healthy NJ 2020 as Occupational Health and Safety objectives and referenced accordingly in the NJ SHAD indicator system.

² [NJ SHAD](#)

NJDOH Occupational Health Indicators Webpage

Staff completed trend analyses for 20 NJ indicators from 2000-2012 and the data has been updated on the OHI webpage.³ Trend analysis shows that from 2000-2012 rates of asbestosis hospitalizations continue to be higher in NJ (160.0-277.0 hospitalizations per million residents) than the US (33.2-103.2 hospitalizations per million residents). Asbestosis also resulted in the greatest number of deaths from or with pneumoconiosis, over 1,314 from 2000-2012. This information is updated annually. The webpage provides stakeholders and the public with quick access to comprehensive NJ occupational health and safety statistics. Links to related topics are also featured on the page.

OHI Multi-State Report

The 2013 OHIs were submitted to NIOSH and posted to the CSTE website. The OHS Unit submitted 21 of the 24 OHIs for 2013 to NIOSH including a new OHI #24 (Occupational Heat-Related Emergency Department Visits) for incorporation into their multi-state OHI report posted on the CSTE Website. Data are not yet available for OHI #23 (Influenza Vaccination Coverage Among Hospital Care Personnel). Examples of NJ OHIs are provided in Table 2 below.

Table 2. Selected 2012 and 2013 New Jersey Occupational Health Indicators

Occupational Health Indicator	2012	2013
Annual average # of adults (civilian non-institutionalized) working in NJ ¹	4,158,000	4,153,000
Estimated annual total number of work-related injuries and illnesses ²	80,900	78,000
Work-related hospitalizations ¹	3,945	3,937
Annual number of work-related traumatic fatalities ¹	92	102
Total amount of workers' compensation benefits paid ³	\$2,215,453,000	\$2,235,166,000

Sources: ¹National Bureau of Labor Statistics, ²NJ Department of Labor and Workforce Development, ³National Academy of Social Insurance

Fatal Occupational Injuries

OHS Staff continues to conduct occupational health surveillance on fatal work-related injuries in NJ. A new webpage was developed that provides an analysis of the 2,470 NJ cases, from 1990 to 2013.⁴ The following topics are characterized: demographics; incident type; industry; occupation; and public employees. In this grant period, nine investigations (one electrocution, one crushed by, two machine related, four struck by, and one fall fatality) were initiated, updated, or published.

Project Evaluation

The OHI Evaluation Tracking Tool, designed by CSTE to collect information to assess the value of generating OHIs, has shown that generating the NJ OHIs led to new surveillance activities, such as investigating work-related burns and occupational eye injuries; improved source data quality, for example the creation of a new heavy metals database that more efficiently captures adult blood lead levels and partnering with NJPIES to stream NJ poison data through EpiCenter in real-time to enhance the classification and capture of work-related non-fatal injuries. The tool has also shown that generating the NJ OHIs enhanced collaboration with existing partners such as PEOSH and EPHT. The OHI data has been published on the NJDOH occupational website and in larger state databases such as NJSHAD and Healthy NJ 2020; and has been used to respond to internal department requests which have helped raise awareness of occupational health in NJ.

³ [OHI website](#)

⁴ [Fatality data](#)

Resources:

The following is a summary of the four education and outreach projects that were completed in this grant period:

- An infographic entitled, "[Fatalities Among NJ Workers Less than 25 Years Old](#)" was published that characterizes the 216 fatalities of workers less than 25 years old in NJ between 1990 and 2013. It provides an in-depth look at Assaults/Violent acts, which make up more than 20% of the total incidents, depicts incidents that occurred with minors (aged 15-17), and lists the industry sectors with 10 or more fatalities. It was featured on Rutgers University's Office of Public Health Practice Facebook Page.
- An [infographic](#) that summarizes the 442 Hispanic worker fatalities that occurred in NJ between 1990 and 2013 was published. It includes a section that focuses on falls, which was the leading cause of death in this working population.
- A webpage dedicated to ladder safety and resources was created. Entitled, "[Ladder Safety on the Job](#)," the page lists resources from NJDOH, CPWR, NIOSH, OSHA, and others. A link to the page was posted on CPWR's site as a resource for the National Falls Campaign.
- Staff published a hazard alert regarding trenching safety entitled, "[Hazard! Unprotected Trench](#)." This alert characterizes the 20 fatalities that occurred in NJ between 1992 and 2015. As expected the majority of the fatalities resulted from trench cave-ins, but there were also falls, struck-bys, and electrocutions. The alert gives a case study for each of these incident types, presents lessons learned, and provides an in-depth list of resources. An evaluation questionnaire and an industry-specific mailing list were developed, along with a cover letter that was cosigned by New Jersey Department of Labor and Workforce Development (NJDLWD). The mailing package, which also included the NJDLWD brochure on their free On-site Consultation Service, was mailed to over 2,250 employers in NJ. This effort was the subject of a June 2016 [NIOSH eNews](#).