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FUNDAMENTAL (CORE) SURVEILLANCE AND PROGRAMMING

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The mission of the Iowa OHSSP is to promote and protect the health and safety of Iowans in the workplace. The fundamental or core program provides administrative coordination and continuity across all IDPH OHSSP projects, explores options to improve the surveillance and data translation capacity of the entire program, and provides outreach, dissemination, and evaluation functions to support each project. The core program is also responsible for the Occupational Health Indicators (OHI) project and Adult Blood Lead Epidemiology and Surveillance (ABLES), as well as working with external partner projects and reports.

Iowa ABLES

Blood lead levels (BLLs) previously considered harmless are now understood to have harmful effects in adults, such as decreased renal function and increased risk for hypertension and essential tremor at BLLs <10 micrograms per deciliter ($\mu\text{g}/\text{dL}$). The CDC has designated 10 $\mu\text{g}/\text{dL}$ as the reference BLL for adults with levels $\geq 10 \mu\text{g}/\text{dL}$ considered elevated. For 2014-2015, Iowa used 10 $\mu\text{g}/\text{dL}$ as the reference level and level considered elevated as well.

Outputs: Iowa has consistently been one of the top 7 states by prevalence rates, with rates double the US rate for BLLs of 10 or greater (US 2012 rate 22.5*) as calculated for the Occupational Health Indicators.

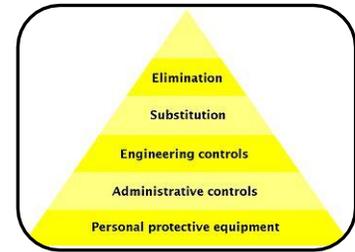
IDPH OHSSP ABLES Surveillance	# Iowa Adults with BLLs 10 $\mu\text{g}/\text{dL}$ or higher	Prevalence rate* adults with BLLs 10 $\mu\text{g}/\text{dL}$ or higher	Prevalence rate* adults with BLLs 25 $\mu\text{g}/\text{dL}$ or higher	Prevalence rate* adults with BLLs 40 $\mu\text{g}/\text{dL}$ or higher
2010	731	46.5	10.9	0.9
2011	832	53.0	15.3	2.4
2012	818	52.4	12.5	1.4
2013	856	53.5	12.6	1.2
2014**	759	46.6	9.1	0.6

*rate per 100,000 employed adults 16 years of age or older

**provisional data – subject to update due to transition issues in data collection

IDPH OHSSP ABLES surveillance data currently shows a significant improvement in the exposure rates for calendar year 2014, with rates similar to 2010, which reflected fewer exposures due to economic cutbacks (fewer workers in high risk industries). However, we are also working to determine whether this is a true decrease in persons with elevated blood lead levels or an artifact caused by the transition to a new data collection system.

Outcome: An Intermediate Success Story: A small-town Iowa manufacturing plant owned by an international company had low-level sporadic lead exposures. The air in the plant was checked annually for lead levels, and fell below the OSHA regulatory level mandating medical monitoring of their employees. However, voluntary blood lead testing done at employee health fairs repeatedly identified elevated blood lead levels for about 10% of the workers. After talks with the safety manager at the site, the IDPH OHSSP was asked in May 2012 to present information about ABLES data, lead exposure health effects, and safety messaging to all three shifts of workers. Later that year, a case of probable take-home exposure was identified for a child of one of the workers. IDPH OHSSP continued communicating with the plant safety officer, and in September 2014, the company announced they were voluntarily instituting improvements across the hierarchy of hazard control spectrum to reduce surface and air lead exposure in the plant. IDPH OHSSP will continue to assess the impact of the improvements through adult blood lead surveillance.



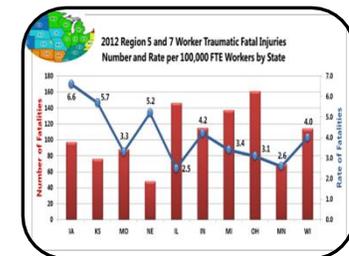
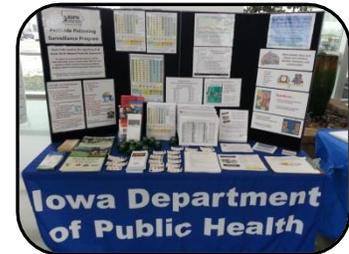
Fundamental Output and Activity Highlights

- OHSSP arranged funding for industry and occupation questions to be included in the 2015 Iowa Behavioral Risk Factor Surveillance System (BRFSS) survey. This will allow the program to have a minimum of two years (2014-2015 data) of BRFSS I/O data for analysis in future funding cycles.
- OHSSP took an active role in the annual revision of the CSTE Occupational Health Indicator (OHI) guidance manual for calculating the 2012 OHI data.
- OHSSP program manager was a supporting author for a variety of publications, including:
 - Public Health Reporting and National Notification for Elevated Blood Lead Levels, CSTE Position Statement EH-15-01, which was approved at the June 2015 Council of State and Territorial Epidemiologists
 - Swanton, Amanda R., Young Tracy L., Leinenkugel, Kathy, Torner, James C., Peek-Asa, Corinne (2015), Nonfatal tractor-related injuries presenting to a state trauma system, *Journal of Safety Research*. doi:10.1016/j.jsr.2015.03.002
 - Gross, N., Young, T., Ramirez, M., Leinenkugel, K. and Peek-Asa, C. (2015), Characteristics of Work- and Non-work-Related Farm Injuries. *The Journal of Rural Health*. doi: 10.1111/jrh.12121
- OHSSP continues working with state partners on the Zero Fatalities project (roadway deaths), the national Stop Construction Falls Campaign (construction fall fatalities), and the Healthy Iowans plan by providing Iowa data, pursuing collaborative projects for intervention, and the dissemination of materials. Departmental data from hospital discharge, emergency department, death, and trauma registry records are incorporated into broader partner projects with a specific work-related analysis component. An example is a project being done to update the Iowa Burden of Injury report, which was originally released in 2008, and did not include any occupational analysis. The new report will include extracted data findings for occupational injuries using analysis performed by a graduate student that interned with the OHSSP in January-May, 2015. The final report is due for release this fall, 2015.

Secondary usage of program outputs is also occurring. Iowa ABLES, OHI and FACE surveillance data are the most utilized program-generated outputs, and have been utilized by others for presentations, reports, program planning and education. OHSSP project data has also been utilized in media coverage.

OHSSP Dissemination Activities

- Iowa Hawkeye on Safety Construction Conference display (Stop Falls Campaign) and presentation (Construction and Lead Exposure) Oct. 1, 2014, Coralville IA.
- Iowa Environmental Health Association fall conference, two presentations: Acute Mercury Poisoning from a Residential Work Exposure, and Adult Lead Exposure in Iowa, Oct. 14-15, 2014, Marshalltown IA.
- Midwest Regional Agriculture Safety and Health Conference in partnership with the Iowa Rural Health Association display highlighting pesticide exposures, adult lead exposures, and fatalities in Iowa, Nov. 19-20, 2014, Ankeny IA.
- Master Builders of Iowa Conference display highlighting adult lead exposures, the Stop Construction Falls campaign, and Iowa FACE data, Feb. 24-25, 2015, Altoona IA.
- Iowa-Illinois Safety Council Professional Development Conference display (pesticide exposures, adult lead exposures, Stop Construction Falls campaign, Iowa FACE data) and presentation (F.A.C.E. of Midwest Worker Injuries and Fatalities utilizing OHI and FACE data, plus additional BLS CFOI and SOII data analysis for the Midwest), Apr. 23-24, 2015, Dubuque IA.
- Acute Mercury Poisoning poster, CSTE Conference, Jun. 17, 2015, Boston, MA.
- IDPH EpiUpdate weekly electronic newsletter: inclusion of multiple short articles highlighting occupational findings or resources targeted to Iowa medical providers and local public health.
- OHSSP webpages for core program, ABLES, and pesticides.
- OHSSP outgoing electronic mail list with periodic postings.
- Trainings to public health, medical, pharmaceutical, and veterinary graduate students during grand rounds presentations at IDPH – approximately six per year.
- OHSSP recruited 20 partnering groups for exhibits and hands-on activities. OHSSP coordinated displays and partners for the Health and Safety Tent at the 2014 Farm Progress Show August 26-28, 2014. The OHSSP project displays included pesticide surveillance data and safety information, the NIOSH ladder app and hearing safety materials, driver safety materials and surveillance data, and agricultural injury and fatality prevention data and materials. An OHSSP intern developed a stress and agriculture display and handouts.



PESTICIDE POISONING SURVEILLANCE PROJECT (PPSP)

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The Iowa PPSP is an expanded program component of the Occupational Health and Safety Surveillance Program (OHSSP), and operates as part of the NIOSH Pesticide Illness and Injury Sentinel Event Notification System for Occupational Risk (SENSOR) surveillance program. The goal of the Iowa OHSSP PPSP is to prevent pesticide illness and injury in Iowa through exposure surveillance, case investigation, and public health actions.

SURVEILLANCE and DATA ANALYSIS

Iowa receives a weekly TOXICALL[®] file from the Iowa Statewide Poison Control Center (ISPCCC). This file includes the ISPCCC contact report sheets for various types of calls, including chemical and pesticide exposure reports. The contact reports also include call notes and follow-up reports. Over 1200 contact reports have been reported to IDPH since July 1, 2014. Each contact report is reviewed manually to identify possible occupational pesticide exposure cases. Additional follow up is needed for some reports to determine case details. PPSP collaborates with the Iowa Department of Agriculture and Land Stewardship (IDALS) to consult or share investigative findings for a limited number of cases of public health importance.

Case details are entered into the Iowa PPSP database (SPIDER – SENSOR Pesticide Incident Data Entry and Reporting) utilized by some of the state Pesticide SENSOR programs. While 2011 and 2012 de-identified data had previously been reported to NIOSH, additional review and analysis was completed in 2015 that allowed the coding by industry and occupation of some of the cases, which improves the usefulness of the data.

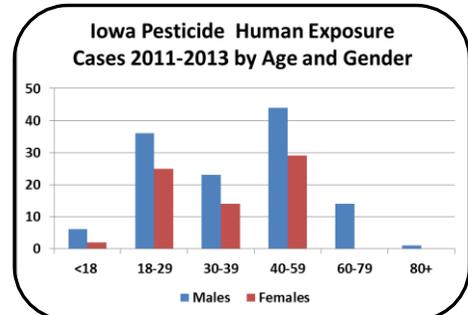
	Total Iowa Work-related Pesticide Cases	Industry Coded	Percentage	Occupation Coded	Percentage
2011 data	89	44	49%	37	42%
2012 data	60	29	48%	29	48%

The major limitation to coding cases by industry and occupation is the routine lack of those details in the ISPCCC reports, and an inability to obtain additional information. Work plan activities for 2015-2016 will tentatively include collaborating with the ISPCCC to improve data collection pertinent for pesticide surveillance. Activities will be limited due to the lack of external project funding for the 2015-2016 fiscal year.

For 2014, preliminary surveillance has identified 57 possible pesticide cases. There were 11 additional pesticide exposure reports without any signs or symptoms of illness or injury. As of

May, 2015, there have been 39 possible pesticide cases for the calendar year, with an additional 4 reports that did not include signs or symptoms of illness. 2013 case data entry for 45 incidents is entered into SPIDER and under final review. 2014 and 2015 data are in the process of being entered into SPIDER, with plans to report 2013-2014 de-identified data to NIOSH by the end of 2015 as current staffing allows.

Other than agricultural crop exposures, one of the most common workplace exposures involves the use of bleach while cleaning or disinfecting. Skin, respiratory, and eye irritations are common, resulting from direct contact or splash events, or fume exposure when the bleach is used in addition to another product containing acid.



PROJECT CAPACITY DEVELOPMENT

The Iowa PPSP built on prior project capacity activities by utilizing paid temporary workers and unpaid interns as staffing extenders throughout the year. The PPSP standard operating processes and strategic plan will be reevaluated with input from stakeholders as the OHSSP moves into the coming year as an unfunded pesticide surveillance site.

A new trauma registry database was implemented in late spring 2015 that includes data elements earmarked in a 2014 OHSSP project to allow better surveillance usage by the Iowa PPSP. It is anticipated that this will increase the number of pesticide exposure cases captured through trauma and EMS run data for SENSOR reporting.

TECHNICAL CAPACITY DEVELOPMENT

The Iowa PPSP personnel participated in coding exercises, teleconferences, webinars, and training events coordinated by NIOSH pesticide surveillance program. Skills learned with the 2014 NIOSH Industry & Occupation Computerized Coding System (NIOCCS) training were utilized and taught to interns and temp workers.

COLLABORATION WITH STATE REGULATORY PARTNERS AND TRAINING PARTNERS

The Iowa PPSP collaborates with the Iowa Department of Agriculture and Land Stewardship (IDALS) on any cases of label violations, over-spraying, or other cases of public health concern and human exposure.

The PPSP communicates regularly with the Iowa State Extension Service about new or innovative pesticide safety information that can be utilized in their development of pesticide applicator training. Pesticide information is also disseminated to additional stakeholders, including the AgriSafe Network, the National Educational Center for Agricultural Safety, and the Great Plains Center for Agricultural Health, all of which provide worker and occupational health training across the U.S.

COLLABORATION AND DISSEMINATION

It is a priority of the Iowa PPSP to collaborate with NIOSH and the other state-based pesticide surveillance organizations, and to represent not only the concerns of Iowa workers, but the needs of other states with numerous owner/operator or family agricultural operations and businesses. We participate on various national workgroups and assist the NIOSH pesticide program whenever requested. Personnel of the Iowa OHSSP/PPSP are members of the Agriculture Health Study (AHS) Iowa advisory group which meets periodically.

DATA DISSIMINATION/PRESENTATIONS/EXHIBITS

- Midwest Regional Agriculture Safety and Health Conference in partnership with the Iowa Rural Health Association display highlighting pesticide exposures, adult lead exposures, and fatalities in Iowa, Nov. 19-20, 2014, Ankeny IA.
- Iowa-Illinois Safety Council Professional Development Conference display (pesticide exposures, adult lead exposures, Stop Construction Falls campaign, Iowa FACE data) and presentation (F.A.C.E. of Midwest Worker Injuries and Fatalities utilizing OHI and FACE data, plus additional BLS CFOI and SOII data analysis for the Midwest), Apr. 23-24, 2015, Dubuque IA.
- IDPH EpiUpdate weekly electronic newsletter: inclusion of pesticide topics of interest targeted to Iowa medical providers and local public health with a current subscription of over 1,300.
- OHSSP webpage for pesticide project.
- OHSSP outgoing electronic mail list with periodic postings.
- Trainings to public health, medical, pharmaceutical, and veterinary graduate students during IDPH grand rounds presentations – approximately six per year.
- OHSSP coordinated displays and partners for the Health and Safety Tent at the 2014 Farm Progress Show August 26-28, 2014.



OHSSP FPS project displays included information about pesticide surveillance data, pesticide labels, laundering of personal clothing used during application of pesticides, and other pesticide safety information, as well as agricultural injury and fatality prevention data and materials. OHSSP recruited 20 partnering groups for exhibits and hands-on activities. The Iowa Department of Agriculture and Land Stewardship (IDALS), which regulates pesticide use in Iowa, participated for the first time, providing free USB drives with the Worker Protection Standard updates to farmers.

IOWA FATALITY ASSESSMENT & CONTROL EVALUATION (FACE) PROGRAM

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The aims of the Iowa FACE Program are to:

- conduct surveillance to identify all traumatic occupational fatalities in the state
- conduct investigations to determine the root cause and contributing factors to fatal occupational injuries
- disseminate recommendations for prevention to employers, workers, and safety and health professionals
- involve occupational safety and health graduate students in Iowa FACE Program activities

MAJOR OUTPUTS

Surveillance

- Surveillance activities identified 71 in-scope cases (preliminary information) occurring during FY 2015 using data obtained through numerous sources, including media, state and county medical examiners, press clipping services, Iowa State Patrol/Department of Transportation crash reports, and the Iowa Division of Labor Services (IOSHA).
- FY 2015 cases included 69 males and 2 females, aged 8 to 88. Industry sectors with highest numbers of fatalities were agriculture (23), construction (16), and transportation and warehousing (6). This ranking is consistent with prior years. The most common event/exposures were transportation incidents (29), falls (12), and contact with objects and equipment (12).

Fatality Investigations

New FACE investigation reports completed in FY 2015 targeted a construction fall, an older worker, and a multiple fatality that involved grain handling, confined space entry, and hazardous atmospheric conditions.

- **2014 IA 020: Construction and maintenance crew leader fell 13 feet to sidewalk while cutting penetrations in a building façade** was completed with assistance from witnesses, the victim's family, and the IOSHA.
- **2014 IA 034: Maintenance worker was pinned between overhead garage door and lawn tractor** was completed with assistance from the victim's employer, local law enforcement agencies, and IOSHA.
- **2013 IA 006 & 007: Carbon monoxide from smoldering grain fire killed two employees who entered a grain storage bin** was completed with assistance from local law enforcement agencies and IOSHA. Review for this report was provided by the National Education Center for Agricultural Safety (NECAS). Information and recommendations from this report will be used in NECAS teaching and demonstration projects and disseminated through the Great Plains Center for Agricultural Health (GPCAH, a NIOSH Ag Center).

Dissemination

- Iowa FACE and Iowa's Center for Agricultural Safety and Health (I-CASH) initiated and coordinate a monthly safety column published in **Iowa Farmer Today**, **Missouri Farmer Today**, **Illinois Farmer Today**, and **Midwest Marketer**. These weekly tabloid and online publications reach a circulation of 94,000 farm operators and other allied agricultural

operations. The *Safety Watch* column incorporates FACE cases and survivor stories, and includes collaborative contributions from I-CASH and GPCAH.

- FACE personnel delivered lectures in the UI Occupational and Environmental Health (OEH) graduate level and professional development courses and Kirkwood Community College agricultural production curriculum. The lectures incorporated surveillance data and case investigation findings to illustrate hazard recognition and injury prevention.
- FACE contributed a case write-up based on a distracted driving fatality [2012 IA 041](#) to the National Truckers Association® [Safety Issues blog](#) (for publication later in 2015).
- FACE responded to June 2015 media coverage of an incident involving two fatal construction falls (which stated that construction deaths were rare) by providing fall data and resource links, including a link to the CPWR Stop Falls Campaign website.
- FACE personnel participated in dissemination activities via conferences, professional meetings, and graduate and undergraduate classroom presentations as guest lecturers and exhibitors. Professional groups, including those interacting with FACE surveillance and investigation activities, requested FACE presentations at continuing education seminars and conferences. Audiences included employers, employees, health and safety professionals, and graduate and community college students. Please refer to Table 1 for a summary of presentations and outreach activities.



Annual NIOSH FACE meeting

- Iowa FACE hosted NIOSH and eight other state FACE programs at their annual meeting in Cedar Rapids (October 2014). Iowa FACE partners representing UI Hospitals and Clinics Department of Pathology, IOSHA, an attorney specializing in workers compensation claims, and NECAS provided guest presentations. The 3-day meeting included a tour of NECAS facilities and demonstrations that incorporate FACE reports in NECAS training programs.

MAJOR OUTCOMES

Publications

- National Safety Council's [Safety+Health](#) magazine featured Iowa FACE case investigation 2011 IA 035: [Convenience store worker dies from smoke inhalation](#) in their regular *FACEValue* series (July 2014).
- FACE provided articles for *Safety Watch* columns published in Iowa Farmer Today, Illinois Farmer Today, Missouri Farmer Today, Midwest Marketer:
 - Sharing experiences can help prevent ag injures (September 13, 2014).
 - Knock-down effect of hydrogen sulfide (November 8, 2014).
 - Anhydrous injury survivors share stories; What makes anhydrous so dangerous? Anhydrous safety online resources (April 9, 2015).
- Iowa FACE investigations involving grain vacuums and grain engulfment were discussed in a review of 27 grain engulfment incidents and fatalities:
 - Field W, et al. [Worker hazards associated with the use of grain vacuum systems](#). Journal of Agricultural Safety and Health. July 2014; 20(3):147-63.

Training

- Prevention recommendations from Iowa FACE data and investigations were incorporated into curriculum for graduate, professional, and community college courses:
 - UI OEH [Occupational and Environmental Health for Rural Health Professionals – The Core Course](#) and OEH graduate course *Rural Health and Agricultural Medicine*.
 - Kirkwood Community College farm management *Agricultural Procedures and Safety*.

Research to Practice

- Iowa FACE cases were incorporated in curriculum of a journalists' workshop cosponsored by Iowa FACE and I-CASH. *Injuries and Agriculture: Telling the Story* brings together journalists, farmers, safety and health professionals, and community public safety professionals to address the media's role in disseminating injury prevention messages associated with fatal and nonfatal agricultural injuries (July 2015 in Cedar Rapids, IA,).
- FACE provided information and resources on fatality surveillance, investigations, and injury prevention to Marcos Grigioni, MD of Agromedicinia, a farm safety and health program serving members of a 36,000-producer cooperative in Argentina (June 2015).
- Google Analytics recorded that the Iowa FACE website was visited 1,542 times by 1,160 unique visitors, generating 3,314 total page views in FY 2015. (Statistics exclude visits by UI network users.)

Table 1. Iowa FACE outreach activities at conferences, seminars, workshops

Presentations

- Iowa Construction Fatalities. *Hawkeye on Safety Conference*. Oct 1, 2014. Coralville, IA
- An Agricultural Fatality Case Study Involving an Hispanic Worker. *2014 Midwest Rural Agricultural Safety & Health (MRASH) Conference*. Nov 20, 2014. Ankeny, IA
- Transportation Hazards in Agriculture; Agricultural Fatality Case Studies; Epidemiology of ATV and UTV Use & Recommendations to Ride Safer, in *Rural Health and Agricultural Medicine*. UI OEH. Feb 2 & 9, 2015. Iowa City, IA
- Agricultural Fatalities, Iowa FACE, and Injury Prevention in Agriculture, in *Agricultural Safety & Procedures*. Kirkwood Community College. Feb 19, 2015. Cedar Rapids, IA
- Overview of FACE Occupational Fatalities and Regional Construction Deaths. *Iowa Illinois Safety Council's 62nd Annual Professional Development Conference & Expo*. Apr 23-24, 2015. Dubuque, IA
- Transportation Hazards in Agriculture; Epidemiology of ATV and UTV Use & Recommendations to Ride Safer, in *Occupational and Environmental Health for Rural Health Professionals – The Core Course*. UI OEH. Jun 8, 2015. Iowa City, IA
- Iowa FACE Program Overview & An Agricultural Case Study Involving Confined Space Entry, in *Occupational and Environmental Health for Rural Health Professionals – The Core Course*. UI OEH. Jun 9, 2015. Peosta, IA
- Occupational Fatalities in Iowa & the Iowa FACE Program. *WORKSAFE IOWA OSH Priority Network Summit*. Jun 30, 2015. Iowa City, IA

Posters, workshops, and exhibitions

- Iowa FACE Program. *Farm Progress Show*. Aug 26-28, 2014. Boone, IA
- Stop Falls Campaign. *Hawkeye on Safety Conference*. Oct 1, 2014. Coralville, IA
- Stop Falls Campaign. *Master Builders of Iowa Annual Winter Conference*. Feb 24-25, 2015. Altoona, IA
- Stop Falls Campaign & Occupational Fatalities. *2015 Total Worker Health Symposium*. Apr 16, 2015. Cedar Rapids, IA
- Stop Falls Campaign. *Iowa Illinois Safety Council's 62nd Annual Professional Development Conference & Expo*. Apr 23-24, 2015. Dubuque, IA

