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STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

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September 25, 2021

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Scientific Program Officer
Office of Extramural Programs
National Institute for Occupational Safety and Health
Centers for Disease Control and Prevention
1600 Clifton Road NE, MS E-74
Atlanta, GA 30329-4018

Re: Grant Close-out Report:
Grant Award Number U60-OH010904 (NIOSH PAR-14-275)
Connecticut Occupational Health Fundamental-Plus Surveillance Program

Dear Ms. West,

Enclosed, please find the Award Closeout Report for the Connecticut Department of Public Health's NIOSH Grant Award Number U60-OH010904 *Connecticut Occupational Health Fundamental-Plus Surveillance.* This report reflects the accomplishments of the Connecticut Department of Public Health related to this grant during the funding period 07/01/2015 through 06/30/2021. Attached is the Final Progress Report and Final Invention Statement and Certification Form.

If you have any questions or need any additional information, please feel free to contact me at (860) 509-7759 or by e-mail at Thomas.st.louis@ct.gov. Thank you again for your continued support of our occupational health surveillance activities in Connecticut and state-based surveillance, in general.

Sincerely,

Thomas St. Louis, M.S.P.H
Principal Investigator

09/16/2021

COOPERATIVE AGREEMENT CLOSEOUT REPORT

Connecticut Occupational Health Fundamental-Plus Surveillance Program

07/01/2015-06/30/2021

Connecticut Occupational Health Fundamental-Plus Surveillance Program

U60-OH010904

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List of Terms and Abbreviations

ABLES (Adult Blood Lead Epidemiology and Surveillance)

BLL (Blood Lead Level)

BLS (Bureau of Labor Statistics)

CBIA (Connecticut Business and Industry Association)

CCIA (Connecticut Construction Industries Association)

CO (Carbon Monoxide)

COHeN (Connecticut Occupational Health e-News)

ConnectiCOSH (Connecticut Council on Occupational Safety and Health)

COSS (Consortium of Occupational State-based Surveillance)

CPCC (Connecticut Poison Control Center)

CRISP (Connecticut Road Industry Surveillance Project)

CT DOL (Connecticut Department of Labor)

CSTE (Council of State and Territorial Epidemiologists)

CT DPH (Connecticut Department of Public Health)

DL (Deciliter)

EBLL (Elevated Blood Lead Level)

ED (Emergency Department)

ESL (English as a Second Language)

HD (Hospital Discharge)

MAC (Manufacturing Alliance of Connecticut)

MOA (Memorandum of Agreement)

NIOSH (National Institute for Occupational Safety and Health)

NPDS (National Poison Data System)

OHIs (NIOSH/CSTE Occupational Health Indicators)

OIISS (Occupational Injury and Illness Surveillance System)

OSH-PLAN (Occupational Safety and Health Planning and Action Network)

PACE (Preventing Acute Cardiovascular Events)

PCC (Poison Control Center)

PFTs (Peer Fitness Trainers)

SDE (State Department of Education)

SOII (Survey of Occupational Illness and Injury)

UConn DOEM (University of Connecticut Health Center, Division of Occupational and Environmental Medicine)

UG (Microgram)

WCC (Workers' Compensation Commission)

WHAP (Workplace Hazard Assessment Program)

XRF (X-ray fluorescence)

Connecticut Occupational Health Fundamental-Plus Surveillance Program

U60-OH010904

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ABSTRACT

The Connecticut Department of Public Health's (CT DPH) Occupational Health Program was funded by the National Institute for Occupational Safety and Health for the Connecticut Occupational Health Fundamental-Plus Surveillance Program, from 07/01/2015 through 06/30/2021. The specific aims for this project built on the foundation of existing occupational health surveillance, and also included new ideas to enhance existing surveillance capacity in Connecticut. Success was measured on the ability both to meet the objectives outlined in the specific aims and to build and expand those aims throughout the funding period to create the greatest impact possible on occupational public health with the awarded resources.

Continue and expand longitudinal analysis of occupational illness and injury under-reporting in Connecticut through comparison of existing data sources was completed for years 2014 through 2018, in collaboration with our partners at the University of Connecticut Health Center. CT DPH is currently completing entry of Physician's Reports for our 2019 analysis. This analysis allowed CT DPH to better understand the scope of occupational disease underreporting in Connecticut.

Continue population-based surveillance activities through longitudinal analysis of all occupational health indicators for Connecticut program staff compiled the OHIs for years 2013 through 2018, and presently Connecticut has a nineteen-year data set; we continue to mobilize OHI data to the Connecticut Open Data Portal, which is part of the Connecticut Data Collaborative, a public-private effort to improve the quality and access to policy-related data in the state.

Continue surveillance, investigation, and outreach activities related to adult lead poisonings allowed Connecticut to maintain the ABLES program in Connecticut providing outreach and prevention services to adults with elevated blood lead levels in Connecticut. Over the project period, Connecticut annually provided NIOSH with data and responded to close to 800 adult reports with BLL's over 20 ug/dL.

Conduct in-depth surveillance, investigation, and intervention activities for workplace chemical inhalation exposures is up to date and the Occupational Health Program's staff actively screened Connecticut Poison Control Center physician reports to identify chemical inhalation exposures in their data.

Maintain collaboration with the Connecticut Occupational Health Clinics Workgroup, as well as with regional occupational health partners from the other Northeast states on specific surveillance activities Regional Collaboration was a priority over the project period because of the importance of developing partnerships with our counterparts in other states. Most recently, Connecticut partnered with New York State to facilitate a working session on current trends in blood lead levels across Northeast states.

Project funding has also allowed Connecticut to publish an opioid white paper which serves as a guidance document for employers based on the recommendations of two full-day conferences. These recommendations were prepared using guidance from many stakeholders and business leaders from labor, insurance, and medical communities. The conferences helped over 250 attendees identify best-practices and innovative strategies to help employers and employees combat the opioid crisis with a new proactive approach to deal with substance use disorders in their workplaces. Over 1,600 white paper copies and opioid brochures were distributed throughout Connecticut and at national meetings.

Section 1: Significant or Key Findings

Longitudinal analysis of occupational illness and injury surveillance data from various sources in our state, using capture-recapture methodology, was completed for years 2014 through 2018. Analysis of this combined data set confirmed significant illness and injury underreporting (some estimates were as high as 93% of cases unreported) to the Connecticut Workers' Compensation Commission and the Connecticut Department of Public Health (CT DPH).

Analysis of Connecticut Adult Lead data showed a major shift from 2002 to 2019 in the industry or hobby where elevated adult blood lead levels were highest. In 2002, 1% of all adult blood lead reports greater than 20 ug/dL had an in indoor shooting range or other firearm related activity as a source of exposure. Beginning in 2015 and continuing to the present date, at least 40% of elevated adult lead reports received that are 20 ug/dL and greater are from adults exposed while working in indoor shooting ranges or as hobby shooters. This shift has changed our target audience for outreach materials.

NIOSH/CSTE Occupational Health Indicators (OHI) were analyzed and reported to CSTE for pooling with other state-based indicator data during the previous five-year funding period. Indicator data is continually incorporated into Connecticut's Open Data Portal, which provides open public access to data collected by Connecticut state agencies. This system will allow continued access to OHI data in future years as well.

Connecticut continued to host the Northeast Occupational Health Network Conference annually from 2016-2019. This meeting brought together all occupational health surveillance partners from the Northeast States, as well as Federal partners from NIOSH, to discuss various health topics of mutual interest, and engage in joint research projects. Our inability to convene the in-person meeting due to the COVID-19 pandemic has forced states to consider virtual meetings moving forward. Connecticut Occupational Health Clinics Workgroup meetings continued quarterly from 2016 through 2021. We continue these quarterly occupational health clinic meetings, to share findings and resources with clinical partners in the state.

Section 1: Translation of Findings

Longitudinal analysis using capture-recapture estimation methodology was beneficial in identifying strategies to improve workplace illness and injury surveillance. CT DPH identifies important work-related illness using OIISS data and specifically, the Workplace Hazard Assessment Program (WHAP) was developed as a mechanism for investigation of sentinel illness and injury cases of interest reported through our surveillance system. In 2017, staff from the CT DPH Occupational Health Program provided WHAP program support to an indoor shooting range where over 10 workers presented with EBLLs.

CT DPH has provided useful data regarding work-related injuries and illnesses to stakeholders and to the public over the past five years, in the form of Occupational Health Indicators reports. A specific example of this was our presentation of data on the elevated blood lead Indicator at the 2019 Northeast Occupational Health Network Conference. Connecticut partnered with the New York Department of Public Health to facilitate a session on adult lead and incorporated data from the lead indicator to show changes in lead exposure over the past decade. Another example included using data from Indicator 24, Occupational Heat-Related Emergency Department (ED) Visits. Data from this indicator was used to support the Health Stress Press Release that is disseminated any time prior to a major heat event that could impact outdoor workers.

Our collaboration with the Connecticut Occupational Health Clinics Workgroup was very successful in meeting its project goals over the past five years. Quarterly meetings from this advisory group provided feedback to the CT DPH on the utility of newly proposed indicators as well as providing comment on data collection relating to the OIISS. Recommendations from this advisory workgroup continue to influence the form and function of the occupational health surveillance strategy in our state. In addition, these meetings include presentation and discussion of occupational health topics that were listed as priorities for ongoing surveillance and research in Connecticut.

Meeting annually with our regional partners from the other Northeast states continues to provide an opportunity to develop working relationships and engage in joint projects. A recent example from the 2018 Northeast Occupational Health Network Conference was a research project led by CT DPH and other regional states to pilot test Indicator 24, Occupational Heat-Related Emergency Department Visits. This pilot test allowed CT to compare heat stress data across a few states to determine the feasibility of a roll-out on a national level.

Section 1: Outcomes/Relevance/Impact

Longitudinal analysis of occupational disease underreporting provided five-years of data that enabled us to partially understand the scope of disease underreporting in Connecticut. This data demonstrated that the number of cases received by the Occupational Illness and Injury Surveillance System (OIISS) at CT DPH is dwarfed by the estimates of the true burden of those diseases occurring in our state (8.0% in 2014, 7.0% in 2015, 8.5% in 2016, 12% in 2017 and 9.0% in 2018). In addition, those cases that are received are likely not a representative sample, but more likely represent the most severe cases.

With the mobilization of Connecticut OHI data to the Connecticut Open Data Portal, Occupational Health Indicator data updated annually is now publicly available to stakeholders, including researchers, legislators, clinicians, worker advocates, and the general public. Presentation of lead indicator data to our partners at the Northeast Occupational Health Network Conference led to more awareness of our state collaborators in other regional states to think about firing range use as a potential source of lead exposure in their patients. Connecticut developed new outreach materials targeting range shooters in 2020 based on the most recent data findings surrounding the burden of firing range lead.

Regional collaborative work has positively impacted the health of Connecticut's workers as well. The largest impact has come from the knowledge Connecticut gains during the Northeast Occupational Health Network Conference and in joint research and surveillance ventures with our Northeast States partners. This knowledge is regularly applied to surveillance, education, and intervention efforts in our state.

Connecticut published an opioid white paper which serves as a guidance document for employers based on the recommendations of two full-day conferences. These recommendations were prepared using guidance from many stakeholders and business leaders from labor, insurance, and medical communities. The conferences helped over 250 attendees identify best-practices and innovative strategies to help employers and employees combat the opioid crisis with a new proactive approach to deal with substance use disorders in their workplaces. Over 1,600 white paper copies and opioid brochures were distributed throughout Connecticut and at national meetings.

Section 2: Scientific Report

Background:

The primary objective of our proposed Fundamental-Plus project was to continue to maintain capacity for enhanced occupational illness and injury surveillance in Connecticut, developed as part of our most recent cooperative agreement with the National Institute for Occupational Safety and Health (NIOSH) U60 OH008463. Enhanced occupational illness and injury surveillance capacity includes not only our ability to collect and analyze data pertaining to occupational injuries and illnesses through the Connecticut Occupational Illness and Injury Surveillance System (OIISS), as well as existing external sources (*i.e.* laboratories, hospitals and emergency departments, the Bureau of Labor Statistics, Connecticut Poison Control Center, etc.), but also our ability to utilize the results of those analyses to develop specific intervention activities. In addition, established information exchange between the Connecticut Department of Public Health (CT DPH) and our partners with similar interests in protecting worker health within our state, regionally, and nationally was maintained as a critical component of our project.

We achieved the objective above through activities focused on addressing the specific aims of the proposed project listed below.

1. ***Continue and expand longitudinal analysis of occupational illness and injury under-reporting in Connecticut through comparison of existing data sources and addition of new data sources***

2. ***Continue population-based surveillance activities through longitudinal analysis of all 21 occupational health indicators for Connecticut***

3. ***Continue surveillance, investigation, and outreach activities related to adult lead poisonings***

4. ***Conduct in-depth surveillance, investigation, and intervention activities for workplace chemical inhalation exposures and develop indicator methodology for similar examination by other states***

5. ***Maintain collaboration with the Connecticut Occupational Health Clinics Workgroup, which acts as our advisory committee, as well as with regional occupational health partners from the other Northeast states on specific surveillance activities, including expanded analysis of selected occupational health indicators***

Since 1990, when the Connecticut Departments of Public Health and Labor published the baseline report titled Occupational Disease in Connecticut, Connecticut has developed and maintained a coordinated approach for the recognition and evaluation of occupational illnesses and injuries. Progress toward such recognition and evaluation is described in a follow-up report from June 2000, titled Occupational Disease in Connecticut: Data for Action. This report also highlights Connecticut's progress toward implementing the Guidelines: Minimum and Comprehensive State-based Activities in Occupational Safety and Health, published by NIOSH in 1995.

In the years since that initial report, Connecticut has implemented activities geared toward compliance with the minimum guideline activities in occupational safety and health outlined in the original NIOSH Guidelines document, in the areas of Surveillance, Policy Development, Intervention, and Infrastructure and Resources. In addition, Connecticut, through its integrated system, has implemented several comprehensive approaches in the areas of Surveillance, Policy Development, Intervention, and Infrastructure and Resources. The vision underlying this integrated activity is that the use of data pertaining to occupational illnesses and injuries leads to action to prevent these conditions. Thus, knowledge of the occurrence and causes of occupational illnesses and injuries provides the basis for creating intervention and education programs to control hazards and reduce the prevalence of these conditions in the workforce. Similarly, Connecticut's occupational illness and injury surveillance program has already implemented many of the recommended minimum and comprehensive state-level approaches in the areas of Assessment, Policy Development, and Assurance outlined in the updated Guidelines document, published jointly by NIOSH and CSTE in 2008.

One area where significant progress toward affecting change in the health of Connecticut workers has been made over the past two decades is occupational lead poisoning. With an emphasis on lead poisoning prevention and intervention programs, including the Connecticut Road Industry Surveillance Project (CRISP), the Connecticut Adult Blood Lead Epidemiology Surveillance Program (ABLES), and the OSHA Lead in Construction Standard, there has been a steady decline in the number of lead poisoning cases in Connecticut since 1996, even while reports of other conditions have increased. Connect continues this important work with lead in new and emerging sources of lead exposure such as indoor shooting ranges and imported products. Similar efforts continue in Connecticut to address the areas of other heavy metals exposures such as mercury, work-related burns, and injuries and illnesses occurring in young workers, older workers, and non-English speaking workers. It is our goal that these activities will lead to improved hazard control and subsequent decreases in the occurrence of these conditions, similar to those seen for adult lead poisoning. With the changing climate due to the COVID-19 pandemic innovative ways to address current occupational health issues are being researched and implemented and will likely be important as we move forward this year.

The objectives and strategic aims outlined below for this cooperative agreement were developed in recognition of the current occupational health surveillance capacity as well as goals from NIOSH's Surveillance Strategic Goals. These goals also recognize the importance of achieving an appropriate balance between national and State-based partnerships, as well as an appropriate balance among health, injury, and hazard surveillance activities.

Specific Aim 1. Continue and expand longitudinal analysis of occupational illness and injury under-reporting in Connecticut through comparison of existing data sources and addition of new data sources

NIOSH Surveillance Strategic Goals

Intermediate Goal 5.1 – Conduct and support research to evaluate existing surveillance systems.

Intermediate Goal 5.2 – Support the development of new approaches for occupational surveillance.

Background and Methods

The Connecticut Occupational Illness and Injury Surveillance System (OIISS) is the primary source of occupational disease data utilized by the Connecticut Department of Public Health (CT DPH) to track occupational illnesses and injuries affecting workers in the state. Connecticut State Law requires reporting of occupational illness and injury cases by all practicing healthcare providers within 48 hours of diagnosis.[i] The OIISS serves as a computerized database for physician reports of occupational illnesses and injuries received by CT DPH. As part of our state's previous Fundamental surveillance grant, funding was provided to our research collaborators at the University of Connecticut Health Center Division of Occupational and Environmental Medicine (UConn DOEM) to perform comparisons of the OIISS data with other existing data sources. Even prior to the existence of NIOSH funding for occupational health surveillance in Connecticut, similar analyses specific to musculoskeletal disorders had been performed very successfully by this group.[ii] To perform these comparative analyses, capture-recapture methodology is used to determine the amount of overlap in identified cases and the extent to which cases fail to be captured by one or more of the existing systems. Capture-recapture methodology provides estimates of the number of unreported cases of a disease condition by comparing the number of case reports to two different data collection systems (such as Workers' Compensation first reports of injury compared to physician reports). It provides a well-established epidemiologic method for estimating the extent of incomplete ascertainment of cases on a population level. [iiiivvviviiviiiixxxi]

As part of our basic occupational health surveillance activities for this project, we continued annual comparison of the OIISS data with employer First Report of Injury (FRI) data maintained by the Connecticut Workers' Compensation Commission (WCC) to determine the extent to which cases are under-reported to these two data systems. The WCC maintains a complete database of FRI data in electronic form. Illness and injury reports from the OIISS will be cross-referenced with data from the WCC to determine the level of overlap in case identification between these data sources.

Results and Discussion

Most activities under this specific aim were successfully completed during the funding period. Capture-Recapture estimates for 2019 are currently incomplete due to the inability to enter all of the 2019 Physician Reports into the CT OIISS. This delay was due to COVID-19 and the inability to hire the contractor who performs case data entry each year. 2019 estimates will be provided in the next progress report to NIOSH as the results become available. Capture-recapture methodology was used to estimate the level of underreporting of occupational diseases through comparison of OIISS data with data from the Connecticut WCC for years 2015 through 2019. Generally speaking, capture-recapture is a statistical method that utilizes maximum likelihood estimation to approximate total population size based on two independent population samples. For the purposes of occupational disease surveillance, the methodology allows for an estimation of the extent of underreporting of certain conditions based on reporting data from two sources containing potentially overlapping records, where a higher amount of overlap indicates fewer underreported cases. This methodology has been utilized successfully in the past for various work-related health events.

Capture-recapture analysis for 2014 data found that 480 cases of occupational disease were reported to both the OIISS and Workers' Compensation system (31 lung, 192 MSD, 27 skin, 215 Infectious and 15 other). This generates an unadjusted estimate of 26,171 unreported occupational illnesses (in addition to the 8,257 unique cases reported to at least one system) for a total estimate of 34,428 cases. This estimate results in an estimate of 17% of occupational disease cases being reported to Workers' Compensation, and only 8% of cases reported to the OIISS.

Capture-recapture analysis for 2015 data found that 428 cases of occupational disease were reported to both the OIISS and Workers' Compensation system (31 lung, 162 MSD, 34 skin, 173 infectious and 28 other). This generates an unadjusted estimate of 25,389 unreported occupational illnesses (in addition to the 7,525 unique cases reported to at least one system) for a total estimate of 32,914 cases. This estimate results in an estimate of 15% of occupational disease cases being reported to Workers' Compensation, and only 7% of cases reported to the OIISS.

Capture-recapture analysis for 2016 data found that 466 cases of occupational disease were reported to both the OIISS and Workers' Compensation system (17 lung, 119 MSD, 38 skin, 260 infectious and 32 other). This generates an unadjusted estimate of 23,773 unreported occupational illnesses (in addition to the 4,988 unique cases reported to at least one system) for a total estimate of 31,448 cases. This estimate results in an estimate of 17% of occupational disease cases being reported to Workers' Compensation, and only 8.5% of cases reported to the OIISS.

Capture-recapture analysis for 2017 data found that 640 cases of occupational disease were reported to both the OIISS and Workers' Compensation system (25 lung, 145 MSD, 42 skin, 379 Infectious and 45 other). This generates an unadjusted estimate of 13,425 unreported occupational illnesses (in addition to the 7,165 unique cases reported to at least one system) for a total estimate of 20,590 cases. This estimate results in an estimate of 26% of occupational disease cases being reported to Workers' Compensation, and only 12% of cases reported to the OIISS.

Capture-recapture analysis for 2018 data found that 475 cases of occupational disease were reported to both the OIISS and Workers' Compensation system (53 lung, 163 MSD, 28 skin, 194 Infectious and 37 other). This generates an unadjusted estimate of 18,411 unreported occupational illnesses (in addition to the 7,060 unique cases reported to at least one system) for a total estimate of 25,471 cases. This estimate results in an estimate of 20% of occupational disease cases being reported to Workers' Compensation, and only 9% of cases reported to the OIISS.

The CT DPH Occupational Health Program continues to work with a software developer to maintain and improve the current electronic disease reporting system that was developed between 2008 and 2010. This electronic surveillance system is used to store and report cases of occupational disease in the state and Connecticut's disease-reporting module has an electronic reporting form similar to the paper forms that are presently used. Connecticut continues to explore utilizing this data system for direct remote data capture from occupational medicine clinics in the state. Interfacing with occupational medicine clinics will entail meeting with each occupational health clinic to overcome any logistic barriers as well as a coordinated effort without software developer and information technology staff in the agency. The benefit of this type of electronic reporting system will be the availability of "real time" data and will eliminate delays in data reporting we have experience in the past.

Limitations and Conclusions

The most significant limitations experienced over the past project period were related to delays in processing Physicians' Reports at the Connecticut DOL and the recent inability for CT DPH to conduct timely data entry of case reports into the OIISS due to COVID-19 and its impact on hiring contractors. Currently, normal reporting flow has resumed from the CT DOL, and accurate case counts should be reflected in the next reporting period. The delay of case data entry into the OIISS impacted CT DPH's delivery of data to our research collaborators at the University of Connecticut Department of Occupational and Environmental Medicine (UConn DOEM), which then impacted their ability to include complete 2019 capture-recapture estimates into their annual report, *Occupational Disease in Connecticut*.[xii] This road block will be overcome in the fall of 2021 as onsite work has started to resume at CT DPH so we can hire a data entry contractor to resume work.

Ongoing potential difficulties with capture-recapture methodology include the fact that traumatic occupational injuries, as well as a subset of other injuries, are not included in the WCC database. This limited the analyses to only those occupational illnesses and injuries present in both data sets. In addition, WCC reports are coded by the employer for such things as occupation, industry, and disease type, and incorrect coding is common. To minimize this potential problem, each WCC record was reviewed individually, including the text description of the injury or illness, to ensure proper coding prior to analysis.

Logistic problems may be encountered when attempting to implement the electronic disease surveillance system statewide. Problems such as individual clinics inability to easily interface with the system and staffing issues at clinics are anticipated difficulties that may occur throughout this transition process. CT DPH hopes to overcome these problems by conducting in-person training on how to use the electronic reporting system, as well as providing technical support to assure a smooth transition to the new system. In addition, there may be costs incurred in this process from our software developer that need to be explored; these costs have the potential as they have in the past to restrict the capacity for development of our electronic surveillance system.

Specific Aim 2. Continue population-based surveillance activities through longitudinal analysis of all 21 occupational health indicators for Connecticut

NIOSH Surveillance Strategic Goals

Intermediate Goal 1.2 – Expand and refine dissemination (from NIOSH) of surveillance information and access to data for public health action.

Intermediate Goal 2.1 – Enhance and expand the development of State-based public health surveillance systems through State-based surveillance for the prevention of occupational illnesses, injuries, and hazards.

Intermediate Goal 2.2 – Improve nationwide use of state-level occupational health surveillance data and information for decision-making regarding research and intervention activities.

Background and Methods

Funding through our previous Fundamental Program grant has allowed the Connecticut DPH Occupational Health Program to participate with other NIOSH funded states in compiling the CSTE/NIOSH Occupational Health Indicators on an annual basis. To date, we have completed analysis of state-specific data which includes the initial 21 Indicators and the Employment Demographics Profile, for the years 2013 through 2018. A summary data report for the occupational health indicators in Connecticut titled Putting Data to Work in Connecticut: A Five-Year Review of Occupational Health Indicators, 2000-2004 was published to the CT DPH website in 2008.[xiii] In addition, over the course of our previous five-year grant period, we have participated with several of the other funded states in the Northeast region on more in-depth analyses for specific indicators.

As part of our basic occupational health surveillance activities for this project, we continued analysis of all the original 21 Occupational Health Indicators and the Employment Demographics Profile information on an annual basis. In addition, we also began including data for four new indicators; Indicator 22: Work-Related Severe Traumatic Injury Hospitalizations, Indicator 23: Influenza Vaccination Coverage Among Healthcare Personnel, Indicator 24: Occupational Heat-Related Emergency Department (ED) Visits, Indicator 25: Hospitalizations

for or with Occupational Eye Injuries. These new indicators were developed by our partner states in during the project period and approved for inclusion in the Occupational Health Indicators package by Connecticut and the other Consortium of Occupational State-based Surveillance (COSS) states.

Maintenance of our activities related to the Occupational Health Indicators provided us with a comprehensive method of surveillance for overall occupational health within our state. In addition, funding for this activity allowed us to maintain continuity with our inter-agency contacts from whom it is necessary to obtain data for specific indicators. Utilization of the occupational health indicators "how-to" document on an annual basis also provided an opportunity to perform a review of the indicator methodology provided in the document and to suggest changes and/or updates as appropriate.

In addition to providing data annually to CSTE, or to another data repository designated by NIOSH, on the 21 original Occupational Health Indicators, the additional indicators Work-Related Severe Traumatic Injury Hospitalizations, Influenza Vaccination Coverage Among Healthcare Personnel, Occupational Heat-Related Emergency Department (ED) Visits and Hospitalizations for or with Occupational Eye Injuries and the Employment Demographics Profile, we continue to prepare and publish data to the Connecticut Open Data Portal. The Connecticut Open Data Portal is part of the Connecticut Data Collaborative, a public-private effort to improve the quality of, and access to, policy-related data in the state. In February 2014, Connecticut's Open Data Initiative was launched by executive order. Shortly thereafter, CT DPH's Occupational Health Program mobilized 10 years of OHI data to the Connecticut Open Data Portal to support this initiative.[xiv] The efforts of state-based surveillance grantees in developing and calculating the OHIs data over the past decade resulted in this data being the first set of retrospective health outcome data to appear on the Connecticut Portal. This data report includes the most recent indicator data available as well as data from a number of previous years. In addition to providing data regarding the occupational health of the workforce in our state, the Occupational Health Indicators data on the Open Data Portal served to introduce the overall concept of indicators and specifics regarding the Occupational Health Indicators to our inter-agency partners, other external stakeholders, and potential data end-users.

Although not outlined as a current specific aim, as part of our past Fundamental Program activities, we conducted expanded surveillance activities for occupational asthma and mercury poisoning using the active contact algorithm already developed. Data collected as part of the expanded surveillance activities for occupational asthma, and mercury poisoning is entered into an electronic database and analyzed on a quarterly basis to determine trends and to help target interventions and educational activities. The data collected through our occupational asthma expanded surveillance activities helped us to better target educational and intervention efforts to prevent new cases of work-related asthma in potentially problematic workplaces not yet identified. In addition, reports of work-related asthma are shared with the CT DPH Asthma Program; where they use this data to drive their own intervention activities and also include findings in reports that may reach stakeholders that are separate from those encountered in the Occupational Health Program. A summary report from each analysis was generated and distributed internally to assist with targeting activities.

Results and Discussion

CT DPH compiled OHI data for 2013 through 2018 and submitted data to the Council of State and Territorial Epidemiologists (CSTE) annually each June. Data was compiled and formatted continually to be posted as a dataset to the Connecticut Open Data Portal. By providing access to OHI's data through the Connecticut Open Data Initiative, we are provided our stakeholders; including workers, employers, unions, trade associations, and legislators with valuable data they can use to inform decision-making and policy formation in the future. The OHI data for the Connecticut Open Data Portal is updated regularly as new data becomes available and incorporated into the existing dataset. Due to the long history of calculating the CT OHIs, CT DPH decided it would be appropriate to combine the data from the existing CT OHIs five-year report into a 15-year Open Data Portal dataset which is currently in progress. Presently, Connecticut's five-year web report is published to the CT DPH website. [xiii]

Sharing the OHI's with other programs internally and partners in Connecticut continued to be a priority from 2015 through the project period. Connecticut was invited to speak at the April, 2019 Northeast Occupational Health Network Conference. During the April 2019 conference, Connecticut in collaboration with New York State facilitated and organized a session on current trends in blood lead levels across Northeast states; Connecticut detailed two case studies one on a case of firing range lead and another on a case involving imported health supplements from India. Data from Indicator 13, *Elevated Blood Lead Levels (BLL) Among Adults* was used in this analysis and presentation along with detailing changes in the number of reports that were reported where firing range exposures were the cause of lead poisoning. We continued to share data with other CT DPH programs such as the Injury Program, and indicator data was shared to help set department priorities and goals in the past.

Beginning in 2017 program staff from the CT Occupational Health Program volunteered to join the ICD-10 Transition Team. This workgroup was developed by CSTE to allow for integration and transition from ICD-9 coding to the most recent ICD-10 coding. Program staff pilot tested the ICD-10-CM codes as part of a sub-workgroup on seven of the indicators. This process involved analyzing data quarterly on these seven indicators for the years 2014-2016 to see how changes in the coding from ICD-9 to ICD-10 would affect the results to ensure the codes are ready for ongoing collection and data analysis.

Although not a specific indicator reported to CSTE, CT DPH continued to conduct heavy metals surveillance and work-related asthma surveillance from 2015 through 2021. The success of these activities is measured by the ability to identify cases of work-related mercury poisoning and also cases of work-related asthma that could be prevented and sharing this data with our partners whenever possible.

We continued surveillance for mercury poisoning and for work-related asthma from 2015 to 2021. From July 1, 2015 to June 30, 2021 there were 1363 cases of mercury poisoning with levels that were 15 mcg/L or higher. Of those 1363 reports 232 were at Connecticut's investigation level of 30 mcg/L. Of these cases three were found to be work related and were all related to the same worksite. There were 66 cases of occupational asthma reported to the CT DPH Occupational Illness and Injury Surveillance System (OIISS) from 2015 to 2021 however all case reports are not currently entered for this time period. Annually a data report of work-related asthma cases is prepared and shared with the Connecticut Asthma Program to show the burden of work-related asthma in Connecticut.

Limitations and Conclusions

A significant limitation in analysis of OHI data during the last project period was the nation-wide transition from ICD-9 to ICD-10 coding. Many of the OHI's use ICD codes to query data from larger data sets and when the transition occurred, data comparability could have been impacted. Connecticut overcame this obstacle by assisting CSTE on the transition team to test data and revise the How-To document as required to assure that calculations were accurate and older data could still be easily compared to the newer ICD-10-based data. This team continues to meet to address similar issues that may impact the reliability of OHI data in the future.

The methodology for this specific aim was based on the currently available OHI "how-to" document, developed by the participating pilot states in conjunction with NIOSH and CSTE. Although this has proven to be a very useful document to this point in collecting indicator data, the "how-to" guide has become less useable over time as data sources have changed and website links continue to become outdated.[xv] This limitation was minimized through a central point of contact for states to report problems they encounter over time in using the OHI "how-to" document. Publishing data to the open data portal has presented difficulties mainly due to external approvals that need to take place prior to publishing data. This may result in delays in the timeliness of new data posted to the portal.

An additional methodological issue with the activities surrounding the indicators described above for Connecticut was our ability to easily obtain data in a timely fashion from our available sources. Difficulties such as these have not delayed the delivery of the most recent indicator data sets. One way this limitation was overcome was by states ability to continue to develop comparable methodology to extract the data needed to compile the OHIs. This allowed participating states to avoid delays in calculating data.

Specific Aim 3. Continue surveillance, investigation, and outreach activities related to adult lead poisonings

NIOSH Surveillance Strategic Goals

Intermediate Goal 1.2 – Expand and refine dissemination (from NIOSH) of surveillance information and access to data for public health action.

Intermediate Goal 2.1 – Enhance and expand the development of State-based public health surveillance systems through State-based surveillance for the prevention of occupational illnesses, injuries, and hazards.

Intermediate Goal 2.2 – Improve nationwide use of state-level occupational health surveillance data and information for decision-making regarding research and intervention activities.

Background and Methods

Connecticut State Law requires all laboratories to report any blood lead test results ≥ 10 ug/dl for Connecticut residents to the Connecticut Department of Public Health within 48-hours of receipt of the result.[xvi] From 2015 through 2021 close to 800 cases of adults with blood lead levels (BLL) ≥ 20 ug/dl were reported from laboratories to CT DPH. Analysis of blood lead case-level data in the past has helped in the identification of high-risk industries and occupations in our state, including bridge construction projects, home remodeling, furniture restoration, firing range hobby use and work, and plastics compounding. Analysis and dissemination of laboratory results, in conjunction with information on patient demographics and industry and occupation, has been at the core of the national approach to eliminate adult lead poisoning for over a quarter century. This national approach was coordinated around the integration, analysis, and dissemination of data from over 40 states through the NIOSH Adult Blood Lead Epidemiology and Surveillance (ABLES) program. CT DPH was a participant state in the NIOSH ABLES program for over 15 years, until funding for the national ABLES program was eliminated in 2013.

Connecticut continued the work of the ABLES program from 2015 through 2021. And all activities under this Specific Aim are up to date. Connecticut has implemented a protocol for follow-up of individuals with elevated blood lead levels (EBLLS) >20 ug/d and collect laboratory data on Connecticut residents with blood lead levels ≥ 10 ug/dl. This protocol includes sending a notification letter, accompanied by a Working Safely with Lead Fact Sheet and Take-Home Lead Survey, to the affected individuals. The Lead in Firing Ranges, Health Concerns fact sheet is mailed to patients with a known firing range exposure. (APPENDIX A) Copies of the letters are also sent to the local health department where the individual resides to notify the Director of Health about the EBLL and keep them informed of our activities. In many cases, we also contact the physician to gather essential information pertaining to the patient's lead exposure. Annually, Connecticut provided the ABLES program at NIOSH with line lists of case data for blood lead levels received at CT DPH ≥ 10 ug/dL and more comprehensive data line list for cases received that are ≥ 20 ug/dL. For cases with blood lead levels greater than ≥ 20 ug/dL. NIOSH was provided with employment, industry and other information to detail that cause of the elevated blood lead level for the case. In addition, beginning in 2020 Connecticut began working with ABLES Project Officer Rebecca Tsai to provide lead reports to NIOSH that are between 5 and 10 ug/dL. This data will continue to be provided annually; although it is far less than complete than reports with higher lead levels it will help NIOSH understand the burden of low-level cases in Connecticut.

Results and Discussion

From July 1, 2015 through January 1, 2020 CT DPH staff sent out 247 fact sheets and surveys to individuals with elevated blood lead levels. There were 2,120 reports received that were greater than 10 ug/dL entered into Connecticut's ABLES surveillance system over the same time period. These reports were sent annually to NIOSH for use in the National ABLES Data Summaries. During the COVID-19 pandemic Connecticut changed follow-up protocols due to the inability to conduct patient mailing as CT DPH program staff transitioned to offsite work. In lieu of sending physical mailings to workers and other residents with elevated lead

levels, direct patient calls were made with instructions to our online lead outreach materials. In addition, these phone calls allowed for us to obtain needed follow-up information for our investigation and provide an opportunity for questions to be answered relating to their lead exposure.

Below are detailed notable lead investigations from 2015 through 2021 that went beyond the scope of tradition work-lead investigations normally conducted. These case investigations are shared with our partners within our agency as well as at regional and national meetings.

- **Program staff identified a case of interest involving a family from Connecticut who recently moved to the United States from India. One family member presented with an EBLL of 31 ug/dL and another with a level of 12 ug/dL. Program staff at DPH tested a pressure cooker seal using our XRF unit. This pressure cooker was identified by DPH and Yale as possibly being implicated in the lead exposure. The pressure cooker was found to be negative for lead, but we also conducted lab analysis on other imported products the family had at the home including spices and powders. We determined the cause of the lead poisoning was the use of KumKum powder by the family and its use was discontinued.**

- **Program staff identified a case of particular interest involving a man from India living in Connecticut who presented with an EBLL of 96 ug/dL. This investigation was successful in determining the patient's lead poisoning was caused from taking a male enhancement product brought into the US from India. The product was tested at the state laboratory and determined to contain close to three percent lead. The patients lead levels have steadily decreased since discontinuing use of this product.**

- **Program staff identified a case of particular interest involving close to twenty adults who presented with EBLLs many of which were > 40 ug/dL. Through an extensive investigation, the cause of these lead poisonings were determined to be from an indoor firing range that had lead dust issues in past. Last year local health provided employee trainings and recommendations to improve these conditions; these local health recommendations were not adhered to and DPH made an OSHA referral in December 2016.**

- **Program staff identified a case of particular interest involving two adults who presented to their physician with EBLLs of unknown cause. Through an extensive investigation, the cause of the lead poisoning was determined to be from a private well plumbed with lead piping. CT DPH worked with local health to issue an enforcement order and due to non-compliance of the property owner, the home was condemned by order until proper clean-up protocols are performed. Blood lead levels of these two residents decreased after switching to clean water and subsequently leaving the home.**

In 2015, Connecticut began annual analysis on CT ABLES data to examine if the industry where adults were exposed to lead was changing as program staff were anecdotally recalling higher numbers of lab reports where indoor shooting ranges were the source of

exposure. Our analysis confirmed reports that were received from 2015 through 2021 showed higher percentages of adults exposed to lead from indoor shooting ranges than in past years. Data from 2001 through 2021 was analyzed and in 2002, 1% of all adult blood lead reports greater than 20 ug/dL had a source of exposure from indoor shooting ranges. Beginning in 2015 and continuing currently at least 40% of elevated adult lead reports each year that are 20 ug/dL and greater result from indoor shooting range workers or hobby shooters. This shift has changed our target audience for outreach materials and in 2020, Connecticut responded to this change by redesigning our *Lead in Firing Ranges* fact sheet. This fact sheet is mailed to all CT adults who are reported to have source of lead exposure from an indoor shooting range or other related activities such as bullet casting or test firing at small arms manufacturing facilities in Connecticut.

In addition to this finding there was a notable increase in adult lead cases from exposures involving the ingestion of spices, medications, and other products imported from India. Responding to these increases in imported products from India and in firing range lead, CT DPH partnered with the New York Department of Public Health in 2019 at the Northeast Occupational Health Network Conference, to facilitate a session that focused on changes in adult lead. We incorporated data from the lead indicator, CT firing range lead data, and detailed several case studies on ingestion on products imported from India. In addition, the CT ABLES program now works with the CT Childhood Lead Poisoning Prevention Program where we provide address information anytime there are adults identified as having a lead exposure determined to be from ingestion of imported products; this partnership was developed to identify children who might be sharing the same imported products that exposed the adult they are living with to lead.

Beginning in 2020, Connecticut began working with ABLES Project Officer Rebecca Tsai from NIOSH to provide lead reports that are between 5 and 10 ug/dL. This data will continue to be provided annually, although it is far less than complete than reports with higher lead levels it will help NIOSH understand the burden of low-level cases in Connecticut. In addition, Connecticut is exploring the feasibility of providing reports under 5 ug/dL in 2022.

Limitations and Conclusions

Conducting follow-up surveillance for case reports under 20 ug/dL is perhaps the biggest limitation in our ability to achieve the most complete dataset to share with NIOSH. Currently Connecticut conducts a complete follow-up investigation on every case report received 20 ug/dL or higher. Connecticut's process for follow-up surveillance is labor intensive; case reports between 10 and 20 ug/dL are close to 4 times higher than the number of cases over 20 ug/dL. The high case load of lower BLL's and Connecticut having limited staff requires the prioritization of investigation to only those cases with lead levels over 20 ug/dL.

During the COVID-19 pandemic program staff were required to work from home to avoid COVID-19 infection in the workplace. Our regular follow-up protocol historically involved the physical mailing of educational materials and a survey to obtain more information about the exposure. Working remote forced program staff to change the way we educate residents and obtain their information. From the beginning of the pandemic program staff telephoned each case to provide links to our outreach materials and to obtain exposure information. What we learned was this direct case contact afforded us with a better opportunity to ask questions and

offer techniques to avoid lead exposure for their lead exposure. As we begin to return to on-site work, we intend to revert to our routine follow-up surveillance however, we will continue to contact all incident cases over 20 ug/dL by phone.

This technique required more staff time however, there were far less reports received during the pandemic which may have been due to residents and workers curtailing regular testing at physician's offices and walk in labs. The overall impact to program staff at CT DPH to conduct direct phone calls to cases was manageable due to the lower number of reports received.

Specific Aim 4. Conduct in-depth surveillance, investigation, and intervention activities for workplace chemical inhalation exposures and develop indicator methodology for similar examination by other states

NIOSH Surveillance Strategic Goals

Intermediate Goal 1.6 – Promote the link between surveillance and intervention activities (Surveillance-to-Intervention).

Intermediate Goal 2.1 – Enhance and expand the development of State-based public health surveillance systems through State-based surveillance for the prevention of occupational illnesses, injuries, and hazards.

Intermediate Goal 2.3 – Expand State-based surveillance programs of selected occupational conditions or hazards.

Intermediate Goal 2.4 – Promote and support State-based intervention activities to address identified problems.

Intermediate Goal 3.4 – Enhance the use of surveillance activities to identify and report on previously unrecognized and emerging occupational injury, illness, and hazard risks.

Intermediate Goal 5.2 – Support the development of new approaches for occupational surveillance.

<u>Background and Methods</u>

Chemical inhalation exposures affecting workers represented approximately 4% of all illness and injury cases reported to the CT Occupational Injury and Illness Surveillance System (OIISS) from 1992-2007. During that time period, 1,309 reports of workplace chemical inhalation exposures were reported to the OIISS, an average of over 80 per year. Both the Manufacturing and Services sector show notable excesses in the proportion of reported chemical inhalation exposure cases when compared their proportional representation in the total Connecticut workforce (see table below).

Chemical inhalation exposure cases by industry sector reported to the Connecticut Occupational Illness and Injury Surveillance System (OIISS), 1992-2007 and Connecticut employment by industry sector, 2000.

Industry Sector	OIISS Chemical Exposure Cases	Connecticut Employment*
Agriculture, Forestry, Fishing	0.5%	0.9%
Construction	5.3%	4.0%
Manufacturing	23.2%	16.8%
Trans., Warehousing, Utilities	6.2%	4.6%
Trade	8.1%	17.2%
Finance, Insurance, Real Estate	1.4%	8.6%
Services	37.5%	28.1%
Public Administration	17.8%	11.8%

* Data from the 2000 Bureau of Labor Statistics (BLS) annual Survey of Occupational Illness and Injury (SOII)

Likewise, the Connecticut Poison Control Center (CPCC) receives approximately 100 calls per day from the public, healthcare facilities, schools, and workplaces. While the majority of calls to the poison center originate from the home and concern possible children's exposures, approximately 16% of calls originate from the medical community (usually emergency departments or intensive care units). On average each year, 3% of all incoming calls identify the workplace as the site of exposure. In general, workplace chemical exposures that result in medical evaluations will result in contacts with the CPCC, as these exposures often involve unusual substances or result in symptoms that are not familiar to most emergency medical personnel. All states currently have access to data from their state's poison control call data through the National Poison Data System (NPDS), and CT DPH has used this broader information for many years as part of our comprehensive occupational illness and injury surveillance system.[xvii]

As part of a supplement to the CDC Public Health Preparedness grant received by our state in 2008, CT DPH and the CPCC entered into a data sharing agreement through which the CPCC provides CT DPH with data in real-time to a number of "toxidromes", or exposure cases of interest to CT DPH. These toxidromes generally include exposures that are environmental, work-related, or infectious in nature. As a result, the CT DPH Occupational Health Program has direct, real-time access to data on calls coming in to CPCC through a shared server located at

CPCC. For the purposes of surveillance for work-related chemical inhalation exposures, cases of interest can be identified either from search queries developed to capture sentinel work-related events and/or instant notification alerts when cases of interest are entered into the CPCC Toxicall® system. CT DPH staff can subsequently access more detailed information from the CPCC call logs directly, including case note information, for the purposes of follow-up with the medical provider, the affected worker, and/or the facility owner, to the extent that information is available in the case notes. We propose to further expand our longitudinal analysis of workplace chemical inhalation exposure events occurring in Connecticut to include the currently utilized OIISS and CPCC data as well as additional data from the Connecticut Hospitals Association's hospital discharge (HD) and emergency department (ED) datasets. OIISS, CPCC, and HD/ED data pertaining to chemical inhalation exposure events will be compiled annually on a prospective basis to track changes and analyze trends over time. In addition, we will develop and pilot test the methodology for a new occupational health indicator that will involve the use of NPDS data, individual state-based HD/ED data, or some combination of both to identify a rate of workplace chemical inhalation exposures for states performing annual assessment of indicators. Once this methodology is sufficiently vetted, the addition of an indicator for this data will be proposed as an addition to the total state-based Occupational Health Indicators package, using the prescribed protocol for new indicator proposals.

In addition to a baseline assessment of past experiences with workplace chemical exposures in our state, analysis of CT PCC data will allow CT DPH to evaluate the short-term effectiveness of a "green cleaning" law for schools and state-owned buildings that was designed, in part, to reduce worker exposures to potentially harmful cleaning chemicals. The Public Act was codified in 2009 and went into effect statewide in 2011.[xviii]

Results and Discussion

Connecticut Poison Control Center (CTPCC) data was analyzed throughout the project period, from June 1, 2016 through June 30, 2021, to identify those exposures captured in the data set with an occupational source. During this time period, approximately 87,905 exposures were reported to the CTPCC. Of these exposures, 1,986 were work-related with a rate of approximately 1 in 44 cases. While callers often contact the PCC regarding minor incidents or concerns, about 25% (479) of these occupational exposures had what the CTPCC quantified as a moderate to major clinical effect.

The initial focus of our PCC evaluation focused on inhalation exposures, which we expected to be more severe, however, the severity of medical outcomes was comparable to non-respiratory routes, which may have been in part to a higher proportion of inhalation calls than expected that included unpleasant, but non-toxic odors of a more irritant nature. Among all occupational exposures reported to the CTPCC, 42% were exposed, at least in part through inhalation.

Occupational exposure sources captured in the CTPCC database included numerous substances across many occupations and industries. Some of the most common exposures were to common cleaning products such as bleach; these cleaning agents are frequently used across many work settings in Connecticut. Other exposures were related to more unique agents that are particular to specific settings like hospitals and laboratories. Some exposures were common among specific types of workers such as metal fume fever among welders.

Incidents involving larger numbers of workers often appeared to be less severe, however, these incidents showed how similar exposures can vary worker to worker for reasons such as underlying medical conditions, including pregnancy, and other health conditions less understood such as individual chemical sensitivities.

Each month program staff prepares a report detailing inhalation exposures along with all non-inhalation exposures. This report is disseminated internally to our interagency partners a report shared with interagency partners to detail the burden of occupational case reports in the CT PCC. This data cannot be shared in a detailed form externally due to rules that are set in place that limits our data sharing. This includes sharing case reports and detailed case information with our partners at CT Federal OSHA. In addition, these rules also significantly limited any health outreach activities we were allowed to perform with specific data. We worked around our inability to perform data sharing by using this data to prioritize outreach and set program goals and also provide supplemental information to cases that were identified in other data sets or through calls. In addition, the knowledge we gained from our regular data analysis from the CT PCC center data has allowed us to provide general oversight to our inter-agency partners in Preparedness as well as answering questions that are received from the public as routine phone day inquiries.

Another use of the CT PCC data is examining the data for chemical misuse and including information abstracted from the CTPCC. An example of this was in 2017 where CT DPH presented an analysis on inhalation exposure to cleaning agents to the scientific community at the CSTE conference in BOISE Idaho. This analysis showed that 84 inhalation exposures from cleaning products were identified from 2013 through 2017. Chlorine compounds were found in 38 of 84 (45%) reported exposures. Common household bleach accounted for 15 of those 38 (40%). Among the non-chlorine compounds, 26 exposures were attributable to household, commercial and all-purpose cleaning agents and 20 exposures were to industrial cleaners, solvents and degreasers. This information assists outreach efforts through health alerts and other outreach materials by providing our program with information on what needs to be addressed.

Limitations

The CT PCC has limited our ability at CT DPH to conduct tiered investigations on data that we receive. This limitation was significant to the point that the utility of the data CT DPH receives can only be used for surveillance purposes or to supplement external investigations. This also limits our ability to conduct outreach with our partners at OSHA because the data is protected and cannot be shared. The informational utility and the partnership with the CT PCC is important in lieu of their strict data sharing protocols.

Another limitation is accessibility of this data; although each case in the CT PCC contains a detailed notes section for each exposure, reviewing all case notes independently is labor intensive. In general, the current surveillance system is complicated to use, slow and is significantly labor intensive. This process has included coordinating with CPCC leadership to gain remote access and scheduling due to limited licensure.

Specific Aim 5. Maintain collaboration with the Connecticut Occupational Health Clinics Workgroup, which acts as our advisory committee, as well as with regional occupational health partners from the other Northeast states on specific surveillance activities, including expanded analysis of selected occupational health indicators

NIOSH Surveillance Strategic Goals

Intermediate Goal 1.6 – Promote the link between surveillance and intervention activities.

Intermediate Goal 2.1 – Enhance and expand the development of State-based public health surveillance systems through State-based surveillance for the prevention of occupational illnesses, injuries, and hazards.

Intermediate Goal 2.2 – Improve nationwide use of state-level occupational health surveillance data and information for decision-making regarding research and intervention activities.

Intermediate Goal 3.1 – Conduct analyses of existing surveillance data and related information to identify research and intervention priorities.

Intermediate Goal 3.3 – Develop new activities to expand the scope of surveillance for priority conditions not covered by existing surveillance activities.

Intermediate Goal 3.4 – Enhance the use of surveillance activities to identify and report on previously unrecognized and emerging occupational injury, illness, and hazard risks.

Background and Methods

The Occupational Health Program in Connecticut has had a long-standing working relationship with the occupational health programs in our partner states in the Northeast region. As we began our efforts to build capacity for occupational disease surveillance in our state, we found these relationships to be critical to our understanding of the core functions of programs in the more established states and the common struggles of our partner capacity building states. Now that occupational health surveillance activities have been established in Connecticut, we continue to find these working partnerships with the Northeast states' occupational health programs to be a rich source of information and ideas for effectively maintaining and expanding our programmatic activities going forward.

In addition to periodically working with other states on regional projects, for the past 30 years Connecticut has hosted the Northeast Occupational Health Network Conference, which is organized collectively with our partners at the UConn DOEM and supported through occupational health funds from the Connecticut and Massachusetts Departments of Public Health. This meeting is held each spring in Chester, CT and brings together our occupational health program partners from the Northeast states, partners from other state-agencies, research partners, and advocacy groups from the region, and our Federal partners from NIOSH and OSHA. These meetings allow the states involved an opportunity to present the work our programs produce every year and to learn about activities happening in other states that may translate well to their program goals.

Meetings of the Northeast states occupational health programs often spawn ideas for various regional surveillance projects. At the 2007 conference, the states of Connecticut, Massachusetts, New York and New Jersey collaborated on a project to further examine Indicator #6: Hospitalizations for Work-Related Burns. This expanded analysis included detailing demographic characteristics for these hospitalized burn cases as well as an analysis of cost data associated with these hospital stays. Data from the participating states was compiled and analyzed to attempt to determine the cause of variation among states that based on their regional proximity and similarities in industries and population demographics should have similar exposures burn adults with burns. The results of that study showed an interest finding that providers were using dump codes to code work-related burn data that caused an artifact in the data to be discovered. The Northeast Occupational Health Network Conference has also provided a means to pilot new indicators on a smaller scale before piloting them nationally as we have done with Indicator 24: Occupational Heat-Related Emergency Department (ED) Visits.

Previous funding for Fundamental Program activities in our state provided CT DPH with the opportunity to convene the Connecticut Occupational Safety and Health Planning and Action Network (OSH-PLAN), a 15-member workgroup that provided a sounding board for issues related to occupational injury and illness surveillance in Connecticut. This workgroup included public and private stakeholders and was tasked with developing a list of recommendations for ongoing or new surveillance, intervention, and education initiatives, most of which have since been implemented in the state. Since 2009, on the advice of the now disbanded OSH-PLAN workgroup, the CT DPH Occupational Health Program has utilized the Connecticut Occupational Health Clinics Workgroup, a working group consisting of representatives from CT DPH, CT DOL, and the 15 occupational health clinics in our state who receive surveillance and operational funding from CT DOL, as our advisory committee. This group meets quarterly and its members, many of whom were active with the original OSH-PLAN group, continue to provide a useful sounding board for occupational health issues in Connecticut and the expanding role of the CT DPH Occupational Health Program in adequately addressing those issues. From 2015 through 2021 we utilized the Connecticut Occupational Health Clinics Workgroup as an advisory committee to our program. Over the project period the workgroup met quarterly, and their work has included recommendations for surveillance, intervention, and education activities to address existing and emerging occupational health issues in our state. Each of these meetings is hosted each quarter by a Connecticut occupational health clinic where they also present on a health topic of interest.

In 2016, the CT DPH Occupational Health Program responded to the national opioid epidemic that was affecting the residents in Connecticut. CT DPH identified the need for employees with substance use disorders to be afforded an environment in the workplace that was treatment-based opposed to historical punitive-based approaches to help employees recover and maintain employment. Substance use in the workplace costs Connecticut employers millions of dollars each year in lost productivity and days away from work, increased healthcare costs, human resources activities, and other resource expenditures. In addition, helping an employee or coworker maintain their work status in the face of substance abuse can increase workplace stress and severely impact morale.

Results and Discussion

Measures of success for this specific aim were reflected in our ability to convene the Northeast Occupational Health Network Conference each year as well as in the number of State, Federal, and non-governmental partners participating in the meeting. With the exception of 2020 and 2021 due to the COVID-19 pandemic, Connecticut has been successful every year in convening this conference, and in more recent years this conference has been expanded an extra day to allow partners at the State to hold meetings relating to young workers and on industry and occupation coding. The level of new information and innovative work presented by various partners at this meeting was a useful evaluative measure not only of the success of the meeting but also of the success of individual states in sustaining capacity for occupational disease surveillance. In addition, this conference allowed regional partners to meet to work on past collaborative projects such as the piloting of the work-related heat stress indicator. Our ability to perform expanded regional investigation of selected OHIs was evaluated on an on-going basis through the discovery of causes of regional variation in indicator data and our ability to reach consensus on how to better standardize systems for data collection across the region. In addition, the degree to which the Northeast states as a group can make recommendations to NIOSH and CSTE regarding changes and updates to the OHIs in general, and the "how-to" document specifically was a valid measure of the success of these regional collaborative activities. Fundamental Program funding has provided some support for the Northeast Occupational Health Network Conference. Highlighted below are some of the major accomplishments and presentations Connecticut participated in during the Northeast Occupational Health Network Conferences throughout the project period.

During the 2016 Northeast Occupational Health Network Conference, Connecticut presented on the Women's Health Report Card that was being developed at CT DPH in collaboration with the Family Health Section which focuses on all aspects of women's health including occupational health. At this conference, Connecticut also facilitated and presented at a session focused on leveraging outside organizations to prioritize occupational health and safety in the workplace. In addition, Connecticut worked with other states in the Northeast to look at the feasibility of calculating a regional heat stress indicator which involves looking at rates of workers exposed to heat extremes at work and resulting illness. States in the Northeast were encouraged to pilot this indicator prior to the May conference.

During the 2017 Northeast Occupational Health Network Conference, Connecticut presented on our collaborations with COSH groups to motivate change and why partnerships are the key to success and how we achieve doing more with less within our organization. In addition, Connecticut presented lead data from 2000 through 2016 that showed substantial increases in the number of elevated blood lead reports received where Connecticut indoor shooting ranges were implicated as the source of lead exposure.

During the 2018 Northeast Occupational Health Network Conference, Connecticut facilitated and organized a plenary session on occupational health and cancer. Topics in this session included how non-day shift work can cause circadian disruption and the Connecticut Tumor Registries response to calls about suspected occupational cancer clusters. In addition, Connecticut presented their work on opioids during an opioid in the workplace session, where we presented on our role with response to the issue.

During the 2019 Northeast Occupational Health Network Conference, Connecticut in collaboration with New York State facilitated and organized a session on current trends in blood lead levels across Northeast states; Connecticut detailed two case studies one on a case of firing range lead and another on a case involving imported health supplements from India.

Due to the COVID-19 pandemic the Northeast Occupational Health Network Conferences were curtailed in 2020 and 2021 as this conference is in person and required out-of-state travel. Going forward, the regional states involved in the conference planning are exploring the feasibility of a remote conference through Microsoft Teams or Zoom to resume the important work accomplished at this conference in the event COVID-19 continues to delay out-of-state travel in 2022.

CT DPH continued work to maintain the Connecticut Occupational Health Clinics' meetings from 2015 through 2021. In 2021 due to the COVID-19 pandemic virtual meetings were help through Microsoft Teams to meet the goals of this Specific Aim. These meetings bring together occupational health providers and other stakeholders in Connecticut to discuss and present on current occupational health topics. Clinics' meetings have been held quarterly by each of the funded Connecticut occupational medicine clinics and have been generally successful and informative. The findings from the OSH-PLAN report developed in the past funding period provided topics for discussion that clinics were able to use to drive the meetings. Detailed below are some examples of presented topics from selected clinics over the project period.

- The October 2016 meeting was hosted by UConn Occupational Medicine and focused on occupational disease reporting in Connecticut.
- The January 2017 meeting focused on curbing the epidemic of injuries in health care workers and was hosted by Yale Occupational Medicine.
- The May 2017 meeting was hosted by Middlesex Hospital Occupational and Environmental Medicine clinic and the topic was DOT Redux–Revisiting Guidelines and OSHA Concerns.
- The April 2017 meeting focused on Health Promotion and Wellness in Occupational Health and was hosted by Griffin Hospital in Derby Connecticut.
- In January 2020 the winter meeting was hosted by Yale Occupational and Environmental medicine where they presented "Workplace Violence in Healthcare: Learning to Defuse the Problem".

In 2016, the CT DPH Occupational Health Program responded to the National opioid epidemic that was affecting many residents in Connecticut. On March 1, 2017, the Connecticut

Department of Public Health convened a symposium, *The Opioid Crisis and Connecticut's Workforce*, to educate employers about the development of opioid and other substance use issues, the current state of the opioid crisis in Connecticut, and treatment options and strategies for workers struggling with addiction. A second symposium, intended to build on the topics discussed at the previous meeting, was held on October 4, 2017. This discussion focused on the roles of employers, employees, insurers, and healthcare providers in the recognition, treatment, and recovery of workers suffering from addiction. More specifically, the Connecticut Department of Public Health sought to assist symposium attendees with developing a new set of best practices for identifying workers engaged in or at risk for substance use disorders, encouraging workers who need counseling or treatment to seek it, and providing the resources and support necessary to help employees overcome their illness and return to the vital role they play in the workplace.

As an output of these two symposiums, the Connecticut Occupational Health Program and partners involved in the symposia developed a white paper *The Opioid Crisis and Connecticut's Workforce*; (APPENDIX C) this document is the culmination of over a year's worth of work by a group of professionals representing public and private employers, worker unions and their constituents, physical and mental healthcare providers, legal services, insurers, academic researchers, and state agencies. Though their professional credentials and scope of daily work is highly diverse, these dedicated professionals had a common interest in saving the lives and livelihoods of the workers and families in our state who are impacted by the tragedy of opioids and substance abuse.

Over the past project period the Connecticut Occupational Health Program has continued to publish fact sheets, other documents and outreach projects. Materials are often prepared for distribution to various stakeholders and trade groups in Connecticut. These parties are able to distribute the materials to at-risk populations and allow for these publications to reach the greatest number of workers.

In 2021, new fact sheets were developed to assist in our follow-up protocol for adults with elevated blood lead levels. Since our most recent analysis showed a sharp increase in adults where indoor shooting ranges were implicated as an exposure source, we developed new educational outreach materials to help target education toward this population to help reduce their exposure to lead while at the shooting range. These materials are sent out any time there is an elevated blood lead report received at CT DPH with a lead level greater than 20 ug/dL. Connecticut also updated their outdated *Working Safely with lead* fact sheet with a new look and information to align with the new formatting of the shooting range lead fact sheet. This work-lead fact sheet is mailed out to non-shooting range cases of lead exposure whenever the lead level is greater than 20 ug/dL with a known workplace exposure. (APPENDIX B)

In 2019, staff began a program working with firefighters to combat sudden cardiac death, which is the leading on-duty cause of death for firefighters. Program staff developed a model and other materials that focused on addressing diet, increasing activity and health monitoring recommendations with the long-term goal of reducing the number and severity of adverse cardiovascular events in Connecticut's career and volunteer firefighters. In February 2020, program staff distributed the Firefighter PACE (Preventing Acute Cardiovascular Events) survey to fire departments across Connecticut and 102 firefighters responded. Analysis of survey data showed firefighters need to improve on diet, exercise, sleep and emotional health. Feedback was provided to the CT Fire Academy over summer and fall of 2019.

On January 30, 2020, program staff gave a presentation to the Connecticut Firefighter Health/Wellness and Safety Consortium in Middletown Connecticut, where we provided a brief

overview of the new Connecticut Firefighter PACE Program. This included fitness and diet objectives and we discussed the need for collecting more data on firefighter health. Plans were discussed for how to disseminate the PACE survey to the volunteer and career firefighters across the Connecticut.

On February 19, 2020, program staff were invited to the Fairfield Regional Fire School to present preliminary survey findings as well as ways to improve diets for firefighters as part of the Peer Fitness Trainers (PFT) recertification program. This was a joint program between the Bridgeport and Fairfield Fire Departments and was the first fire department-operated recertification program approved by the American Council on Exercise in the United States. PFTs are firefighters who received certification to be leaders in and are responsible for implementing fitness programs and for the fitness training of recruits. The training focused on the role of nutrition in preventing cardiovascular disease, with a particular emphasis on a Mediterranean style diet. Thirty-two firefighters attended the training representing fire companies throughout the Fairfield and Bridgeport area.

In 2015 and 2016 the Connecticut Departments of Public Health, Education, and Labor, as well as the Capitol Regional Education Council (CREC) and Move Up! formed a partnership to pilot the Workplace Health and Safety English for Speakers of Other Languages Curriculum (developed by the Labor Extension Programs of the University of Massachusetts) in our state. The goal of this partnership was to help English as a Second Language (ESL) students learn about workplace health and safety and their rights as workers, by integrating these messages into the current ESL curriculum. The curriculum uses learner- centered activities to engage students in discussions and build on their personal experiences while utilizing their English language skills.

Eight current adult ESL teachers in Connecticut were trained on the Workplace Health and Safety ESOL Curriculum materials and how to integrate these materials into their current curriculum. In addition, these teachers were educated about the disproportionate risks many of their students face in the workplace, the challenges posed to them by workplace health and safety trainings and hazard warning signage exclusively provided in English, and the lack of knowledge of their student population about basic worker rights that many American--born adults take for granted.

Integrating workplace health and safety messages and information about workers' rights into the adult ESL curriculum in Connecticut should serve to increase the knowledge of students and teachers in these programs about disproportionate risks to Hispanic/Latino workers in the workplace. The information we collected from teachers and students in the pilot program, was used to expand the utilization of these curriculum modules to other adult ESL teachers in the state. The results of this project were presented at the at the 2016 CSTE conference as well as the 2016 SDE annual conference to ESL teachers in attendance. (APPENDIX D)

Citations:

[i] General Statutes of Connecticut. Section 31-40a.

[ii] Morse T, Dillon C, Warren N, Hall C, Hovey D. *Op. Cit.*

[iii] Cormack R. Loglinear models for capture-recapture. Biometrics 1989; 45: 395-413.

[iv] Cormack RM. Problems with using capture-recapture in epidemiology: an example of a measles epidemic. J Clin Epidemiol 1999; 52: 909-914.

[v] Hook EB, Regal RR. The value of capture-recapture methods even for apparent exhaustive surveys. The need for adjustment for source of ascertainment intersection in attempted complete prevalence studies. Am J Epidemiol 1992; 135: 1060-1067.

[vi] Hook EB, Regal RR. Capture-recapture methods. Lancet 1992; 339: 742.

[vii] Hook EB, Regal RR. Effect of variation in probability of ascertainment by sources ("variable catchability") upon "capture-recapture" estimates of prevalence. Am J Epidemiol 1993; 137: 1148-1166.

[viii] Hook EB, Regal RR. Internal validity analysis: a method for adjusting capture-recapture estimates of prevalence. Am J Epidemiol 1995; 142: S48-52.

[ix] Hook EB, Regal RR. Capture-recapture estimation. Epidemiology 1995; 6: 569-570.

[x] Hook EB, Regal RR. Capture-recapture methods in epidemiology: methods and limitations. Epidemiol Rev 1995; 17: 243-264.

[xi] Cormack RM, Chang YF, Smith GS. Estimating deaths from industrial injury by capture-recapture: a cautionary tale. Int J Epidemiol 2000; 29: 1053-1059.

[xii] Storey E., ed. *Op. Cit.*

[xiii] Connecticut Department of Public Health. Putting Data to Work In Connecticut: A Five-Year Review of Occupational Health Indicators, 2000-2004. http://www.ct.gov/dph/lib/dph/environmental_health/eoha/pdf/indicatorswebreport.pdf

[xiv] Connecticut Open Data Portal. *Connecticut Occupational Health Indicators*. https://data.ct.gov/Health-and-Human-Services/Connecticut-Occupational-Health-Indicators/4s7n-ckr3

[xv] Occupational Health Indicators: A Guide for Tracking Occupational Health Conditions and Their Determinants; 2017_OHI_Guidance_Manual_201.pdf (ymaws.com)

[xvi] General Statutes of Connecticut. Section 19a-110.

[xvii] American Association of Poison Control Centers. National Poison Data System. http://www.aapcc.org/data-system/

[xviii] Connecticut General Assembly. *An Act Concerning Green Cleaning Products in Schools.* Public Act 09-81. http://www.cga.ct.gov/2009/ACT/PA/2009PA-00081-R00HB-06496-PA.htm

APPENDIX A

Environmental & Occupational Health Assessment Program

Contact Us

Phone: (860) 509-7740

Email: dph.occhealth@ct.gov

Email Web:
www.ct.gov/dph/occupationalhealth

LEAD IN THE FIRING RANGE: HEALTH CONCERNS
410 Capitol Ave,
Hartford, CT 06134

LEAD IN THE FIRING RANGE: HEALTH CONCERNS

Adult Blood Lead Epidemiology and Surveillance Program

Exposure to lead dust in firing ranges is very common, and so are questions about what an exposure may mean. This fact sheet provides you with answers to some commonly asked questions about how an exposure to lead dust may affect your health.

How am I exposed to lead in the firing range?

You can become exposed to lead at the range by breathing in lead fumes or touching lead dust that settles on surfaces. When a weapon is discharged in a firing range, lead dust is aerosolized (dispersed as microscopic particles in the air) and fumes are generated. Leaded ammunition and primers are the main source of lead dust in firing ranges.

What are the health effects of lead exposure?

If not detected early, people with high lead levels in their bodies can suffer from high blood pressure, digestive problems, shakiness, irritability, memory and concentration problems, difficulties during pregnancy, and muscle and joint pain. You can also carry lead from the range home to your family on your clothes, shoes, and body. Lead carried in this way is referred to as "take-home lead." Take-home lead can affect children by causing damage to the brain and nervous system, behavior and learning problems, slowed growth, hearing problems, and headaches.

Make firing range safety a top priority for you and your family.

How can I reduce my exposure to lead at the firing range?

Individuals using the firing range, as well as those working at the range can be exposed to lead. Lead exposure at the firing range can be minimized by following some simple safety practices:

For Employees:

Avoid Exposure to Lead Dust During Cleaning

Always use wet mopping to pick up lead dust. Wet mopping should be used to clean firing range floors, because it is more difficult for moistened dust to become airborne. If a dry mop or broom is used, dust containing lead can be easily picked up into the air and can pose a health hazard. After cleaning, discard dirty water and remember to wash all cleaning tools immediately. Dispose of all lead-containing materials, including wastewater, in accordance with state guidelines. Never use a dry mop or a broom.

If vacuuming, a HEPA (High Efficiency Particulate Air) vacuum should be the only type of machine used in order to prevent fine lead particles from re-entering the air. A HEPA vacuum is different than a regular household vacuum, because it traps the very fine particles that are too small to see. Never use a regular household vacuum, because some lead particles are blown back out through the exhaust to become airborne and contaminate surfaces that have been cleaned.

Maintain Adequate Ventilation

Always maintain adequate ventilation. Good ventilation can significantly reduce airborne lead levels in the firing range. Air should circulate across all shooting booths carrying the gun smoke away from the shooter's face. The airflow should remain steady, since turbulence caused from the fired weapon will cause fumes to travel toward the shooter.

TIP: By using jacketed and plated ammunition, especially with a non-lead primer, airborne lead levels can be significantly reduced.

For Everyone:

Remember to Use Good Hygiene!

Never eat, drink, or smoke in the range shooting areas.
Remember to always wash your hands, arms, and face before eating, drinking, or smoking. Fine particles of lead dust can easily adhere to your skin and hair, resulting in the accidental ingestion of lead particles. Shower as soon as you arrive home, as this ensures that any other lead residue is washed out of your hair and from other

body parts. Wash all tools that come in contact with lead dust, especially if they are not stored in the shooting areas.

Never Take Lead Home with You!

Lead dust can settle on your body and clothes, where it can be carried into your home and car. Always change out of contaminated clothing articles prior to leaving the firing range and place them in a plastic garbage bag for laundering.

Wash range clothing separately from the rest of the family's clothing; this prevents any possibility of cross-contamination. In addition, shoes and boots used at the range should be left at the range, or adequately cleaned before leaving to prevent lead dust from entering your automobile and home.

Remember, even small amounts of lead can pose a health risk.

Wiping lead dust off your hands.

This fact sheet is funded in part by the National Institute for Occupational Safety and Health. (NIOSH) - 11/01/20

Where can I find more information?

Fact Sheet: Reducing Lead at Indoor Firing Ranges, New York State Department of health http://www.health.state.ny.us/nysdoh/lead/shoot.htm

Fact Sheet: Firing Ranges, The Airborne Lead Hazard, Commonwealth of Massachusetts, Departments of Labor and Workforce Development http://www.mass.gov/dos/leaddocs/Lead-firing.htm

Fact Sheet: Lead Fact Sheet, Centers for Disease Control and Prevention http://www.cdc.gov/niosh/topics/ranges/

HEPA Vacuum for Lead Dust Removal, Michigan Department of Community Health http://www.michigan.gov/leadsafe

How Much Cleaning is Enough? An Evaluation of Alternative Post-Lead Hazard Intervention Cleaning Procedures; Vermont Housing and Conservation Board & University of Cincinnati Department of Environmental Health. http://www.leadsafehousing.org/Vermont_Cleaning_Paper.pdf

APPENDIX B

New England Building Supply
Protecting Construction Workers
from Lead Exposure

Environmental & Occupational Health Assessment Program

Contact Us

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www.ct.gov/dph/occupationalhealth

LEAD HAZARDS IN THE WORKPLACE
410 Capitol Ave,
Hartford, CT 06134

LEAD HAZARDS IN THE WORKPLACE

Most adult lead exposure in Connecticut occurs in industries and occupations such as painting, metal recycling, shooting range work, manufacturing, and construction. The likelihood of lead poisoning increases when a worker inhales lead dust and lead fumes while working, or when they eat, drink, or smoke in or near lead contaminated areas.

OSHA estimates that more than **1.5 million workers are potentially exposed to lead in the workplace** during the production, use, maintenance, recycling, and disposal of lead material and products. Workers also unknowingly expose family members by bringing lead dust home on their skin, shoes, and clothing.

Lead brought home in this way is referred to as "take home lead." People who work with lead-containing materials need to learn how they can protect themselves and their family from lead exposure.

Firing range safety is more than gun-safety and hearing protection.

What is Lead?

Lead is a naturally occurring element that people have used since the beginning of civilization. Lead is bluish-gray in color and has no characteristic taste or smell. Lead is still widely used today for car batteries, pigments, ammunition, cable sheathing, weights for lifting, weight belts for diving, lead crystal glass, radiation protection and in some solders. What can you do today to reduce lead exposure and lead poisoning tomorrow?

A variety of human activities have spread lead widely throughout the environment, such as the past use of leaded gasoline. Efforts have been made to limit the use of lead containing products to minimize its harmful effects on people and animals.

Sanding, scrapping and disrupting lead-based paint poses a health risk to workers.

Who is at greatest risk for lead poisoning?

Children under six years of age are the most vulnerable population because their bodies are growing rapidly during these early years however, adults employed in a variety of occupational settings may be exposed to lead hazards too. Some lead-related industries and occupations include the following:

- Painters and remodelers
- Battery manufacturing and recycling
- Automotive radiator manufacturing and repair
- Casting and machining lead, brass, bronze, pewter, and white metal
- Plating operations
- Manufacturing or the use of leaded paints, inks, dyes, glazes or pigments
- Lead soldering, such as in the electronics industry
- Indoor firing ranges (including small arms manufacturing)
- Ship building and repair
- Scrap metal recycling
- Manufacturing ceramics, leaded glass or crystal, ammunition, and explosives
- Compounding plastic resins
- Auto body repair
- Making stained glass

Protect your health and wear respiratory protection.

Workers sealing the lead paint during the Hampden Bridge demolition.

If you work with lead, yo

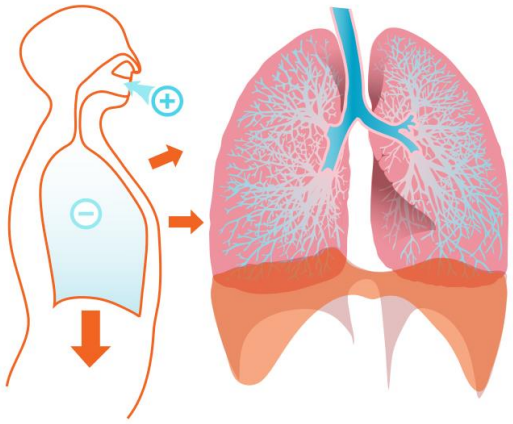
ur employer must inform and train you to safely work with lead hazards.

If you think you are being exposed to harmful substances like lead at work, ask to see the *Safety Data Sheet* (*SDS*) for hazards in your work area. These sheets will describe the dangers associated with harmful substances that you may work with.

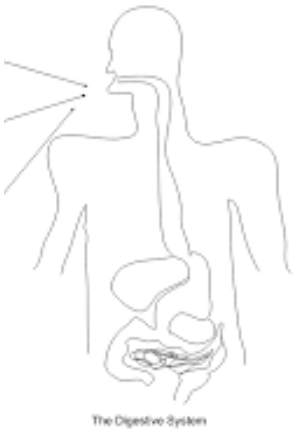
How does lead get into your body?

Lead exposure in humans occurs primarily through inhalation or ingestion. **You can breathe in lead dust, mist, or fumes, and swallow lead dust on food, drinks, cigarettes, from your hands and face.** Once lead gets into your body, it can stay there for a long time. Lead can build up in your body if you are in contact with even a small amount of lead for a long time.

The more lead in your body, the more likely that harm will occur. How much damage lead does to your body may differ from one person to another? If you are exposed to lead, many factors determine whether you will be harmed. These factors include how much, how long, and how you come-in-contact-with-it. You must also consider your age, gender, diet, family traits, lifestyle, and general state of health.



Inhalation



Ingestion

Wash your hands before eating to avoid swallowing lead dust particles.

What does lead do to your body?

Lead can damage the brain and nervous system, red blood cells, kidneys and reproductive systems of men and women. Lead easily crosses the placenta in a pregnant woman and can harm the fetus. **Lead exposure can cause headaches, dizziness, sleep disturbances, memory loss, depression, fatigue, irritability, joint and/or muscle pain, miscarriage, and other serious health problems.** Damage from lead exposure can cause permanent damage. The signs and symptoms of lead poisoning are often vague and can easily be confused with other health conditions. The blood lead level at which symptoms occur can vary greatly from person to person. Some people poisoned by lead have no obvious symptoms.

Why you should take a blood lead test?

You should have your blood tested if you work with lead or are employed in a lead-related industry or occupation. A blood-lead test measures how much lead is in your blood at the time of the test. The amount of lead in your blood is measured in micrograms of lead per deciliter of whole blood (µg/dL). This type of measurement in your blood is called your Blood Lead Level, or BLL. The typical BLL for U.S. adults is less than 5 µg/dL.

Check your blood lead levels if you are exposed to lead hazards.

What lead levels are considered elevated in adults?

Less than 10 µg/dL, is the typical level for adults in the U.S. (mean = 3 µg/dL).

Between 10 and 25 µg/dL, lead is building up in the body and some exposure is occurring and there is evidence of potential health problems.

Elevated 25 and 40 µg/dL, regular exposure is occurring with some evidence of potential physiological problems.

Seriously elevated between 40 and 80 µg/dL, serious health damage may be occurring even if there are no symptoms.

Extremely dangerous at levels above 80 µg/dL, serious, permanent health damage may occur.

Blood lead levels can rise quickly. With frequent monitoring, dangerous exposures can be quickly identified and corrected. A blood lead level over 20 µg/dL indicates a substantial exposure to lead.

Lead levels are building up in the body and considered elevated between 10 and 25 µg/dL.

Worker working in a lead-acid battery recovery facility.

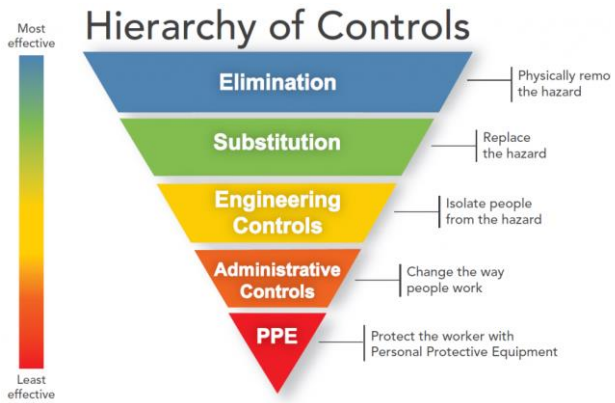
How can lead poisoning be prevented?

The best way to prevent lead poisoning is to remove the poisoned worker from the lead exposure. This will allow the body to begin removing the lead. Sometimes adults with very high BLLs and serious symptoms will be treated with a drug to help the body remove lead. This is called "chelation therapy." The need for chelation therapy is extremely rare. Only a licensed medical doctor (MD) with experience treating adult lead poisoning should make decisions regarding chelation for an individual.

Engineering Controls:

Another way to prevent lead poisoning is to avoid contact. Proper engineering controls (a local exhaust ventilation system, for example) are often the best way to control and minimize lead contact. Other ways of controlling lead exposure in your workplace include:

- Lead safety training
- Using lead-safe work practices
- Switching to lead-free materials or controlling lead at the source



Physical removal of lead hazards is the most effective control measure.

Using Respiratory Protection:

When engineering controls cannot reduce lead exposures to a safe level, you must wear a respirator. Your employer should have a respiratory protection program that includes fit testing to make sure your respirator will protect you properly. You must also be trained to use and take care of your respirator. Using the respirator correctly will protect you from breathing in lead.

For more information regarding respiratory protection and fit-testing you can contact the Occupational Safety and Health Administration (OSHA) at 1-800-321-OSHA.

Lead Safe Work Practices:

You can protect yourself and your family from lead poisoning by following these lead safe safety rules.

1. Do not eat, drink or smoke in lead-contaminated work areas.
2. Wash your hands before eating, smoking, or touching your face after working with lead.
3. Wear your protective equipment over your clothing whenever you work with lead.
4. Take a shower, wash your hair, and change into clean clothes (including shoes) before leaving the worksite. "Take home lead" can contaminate your vehicle, home, and potentially harm your family.
5. Store street clothes in a separate area from your work clothes.

Other Sources of Lead:

Adults can also be exposed to lead during certain hobbies and activities where lead is used, such as during renovation or removal of lead paint, or from certain lead-containing cosmetics (non-Western) and home health remedies. Hobbies that may involve lead exposure include:

- Artistic painting
- Ceramics/pottery making
- Jewelry making
- Indoor firing range use
- Stained glass making
- Home renovations
- Making homemade sporting products (like fishing sinkers and ammunition)

Who can I call for help?

U.S. Department of Labor
Occupational Safety and Health Administration (OSHA)
1-800-321-OSHA
https://www.osha.gov/

CT Department of Public Health (DPH)
Occupational Health Program
1-860-509-7740
https://portal.ct.gov/DPH/Environmental-Health/Environmental-and-Occupational-Health-Assessment/Occupational-Health-Unit

Occupational Health Clinics:

University of Connecticut (UCONN)
Division of Occupational and Environmental Medicine
263 Farmington Ave.
Farmington, CT 06030-6210
1-84-GET-UCONN (1-844-388-2666)
https://health.uconn.edu/medicine/divisions/division-of-occupational-and-environmental-medicine/

Yale University
Yale Occupational and Environmental Medicine Program (YOEMP)
135 College St.
New Haven, CT 06510
1-203-785-4197
https://medicine.yale.edu/intmed/occmed/clinical/

Where can I find more information?

Lead on the Job – A Guide for Workers
https://www.health.ny.gov/publications/2585.pdf

LEAD – NIOSH
https://www.cdc.gov/niosh/topics/lead/default.html

Lead Toxicity – (ATSDR) Case Studies in Environmental Medicine (CSEM)
https://www.atsdr.cdc.gov/csem/lead/docs/lead.pdf

Medical Surveillance Guidelines for Construction Industry (Standard 29 CFR) 1926.62

1926.62 App C - Medical Surveillance Guidelines - OSHA

Occupational Safety and Health Administration (OSHA) Regulations (Standards – 29 CFR) 1926. https://www.osha.gov/laws-regs/regulations/standardnumber/1926

Medical Surveillance Guidelines for Non- Construction Industry (Standard 29 CFR) 1910.1025 App C:
https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1025AppC

Occupational Safety and Health Administration (OSHA) Regulations (Standards – 29 CFR) 1910.1025.
https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1025

APPENDIX C

THE OPIOID CRISIS AND CONNECTICUT'S WORKFORCE

This white paper is the culmination of over a year's worth of work by a group of professionals committed to saving the lives and livelihoods of workers and families impacted by the tragedy of opioids and other substance abuse.

Updating Your Approach to Employees Suffering from Addiction Can Preserve Your Human Resources

FOREWORD

By David Messenger

As a person in recovery, it can be a very daunting task to re-enter the workforce. The stigma that surrounds addiction can be very negative and sometimes will prevent a person in recovery from even wanting to go through the hiring process. This document gives several recommendations regarding the tools that are needed by employers to properly navigate the complex world of workers dealing with addiction as well as those who are in recovery.

My personal experience within the workforce while in active addiction was one of shame and constant fear of being caught. I knew that if my employer found out that I was a drug-user, it would likely cost me my job. This is what ultimately led me to leave the workforce entirely for almost ten years. Once I left my job, my addiction spiraled completely out of control. This would lead me into treatment.

When I first left treatment I wanted to go back to work as soon as possible. I would eventually land a job with my current employer. To say that my experience was pleasantly surprising would be a great understatement. I was completely honest about both my past struggles with addiction and my plans moving forward. My new employer was absolutely in my corner and supportive beyond what I ever could have imagined. They took a very progressive stance when it came to my addiction. They treated me as a valued employee and never looked at me as a problem. This stance has led me to thrive at work. Based on this positive work experience, I will forever look upon this employer with the utmost respect and loyalty.

Addiction in the workplace is a topic that many have not wanted to examine in the past. This document not only addresses this extremely important topic but also provides recommendations for dealing with addicted workers in a way that benefits the employee as well as the bottom line. The costs to employers, workers, and families affected by addiction are staggering. If we are to end this debilitating crisis in workplaces and elsewhere, the days of just looking the other way have to end. As a person in recovery, this is a very exciting time. A document like this gives me hope.

At the end of the day, sometimes hope is all that someone needs.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

*(**Thomas St. Louis**, MSPH; Occupational Health Program Supervisor, Connecticut Department of Public Health)*

An estimated 21.7 million adults sought substance abuse treatment in 2015, according to the National Survey on Drug Use and Health. Many of those adults were workers struggling to maintain their employment status and livelihoods as a functional part of the workforce. Data from the National Safety Council reveal that, while 70% of employers report being impacted by prescription drug misuse, and just as many feel strongly about helping their employees return to work after substance abuse treatment, approximately 80% of employers lack a comprehensive drug-free workplace policy, and a similar percentage lack training on identifying substance abuse in their workplaces.

Substance use/abuse in the workplace costs Connecticut employers millions of dollars per year in lost productivity and days away from work, increased healthcare costs, human resources activities, and other resource expenditures. In addition, helping an employee or coworker maintain their work status in the face of substance abuse can increase workplace stress and severely impact morale. On March 1, 2017, the Connecticut Department of Public Health convened a symposium, *The Opioid Crisis and Connecticut's Workforce*, to educate employers about the development of opioid and other substance abuse issues, the current state of the opioid crisis in Connecticut, and treatment options and strategies for workers struggling with addiction. A second symposium, intended to build on the topics discussed at the previous meeting, was held on October 4, 2017. This discussion focused on the roles of employers, employees, insurers, and healthcare providers in the recognition, treatment, and recovery of workers suffering from addiction. More specifically, the Connecticut Department of Public Health sought to assist symposium attendees with developing a new set of best-practices for identifying workers engaged in or at risk for substance abuse, encouraging workers who need counseling or treatment to seek it, and providing the resources and support necessary to help employees overcome their illness and return to the vital role they play in the workplace.

This white paper is the culmination of over a year's worth of work by a group of professionals representing public and private employers, worker unions and their constituents, physical and mental healthcare providers, legal services, insurers, academic researchers, and state agencies. Though their professional credentials and scope of daily work is highly diverse, these dedicated professionals have a common interest in saving the lives and livelihoods of the workers and families in our state who are impacted by the tragedy of opioids and substance abuse.

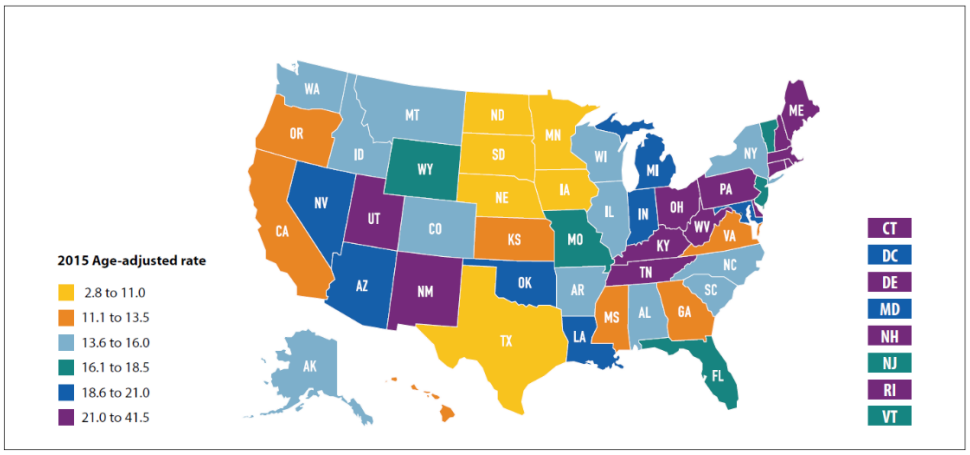
HISTORICAL PERSPECTIVES ON SUBSTANCE ABUSE AND EMPLOYMENT

The Rise of Opiate Use and Abuse

*(**Phil Walls**, RPh; Chief Clinical Officer, myMatrixx®)*

According to the Connecticut State Department of Public Health, Connecticut residents are more likely to die from an unintentional drug overdose than a motor vehicle accident, and the majority of drugs involved in these deaths include prescription opioids.[1] The national impact of overdose deaths in 2015 can be seen in the diagram below, with Connecticut falling into the highest tier of 21.0 to 41.5 per 100,000 population (Figure 1).[2]

Figure 1: Age-adjusted rates of drug overdose deaths by state — United States, 2015



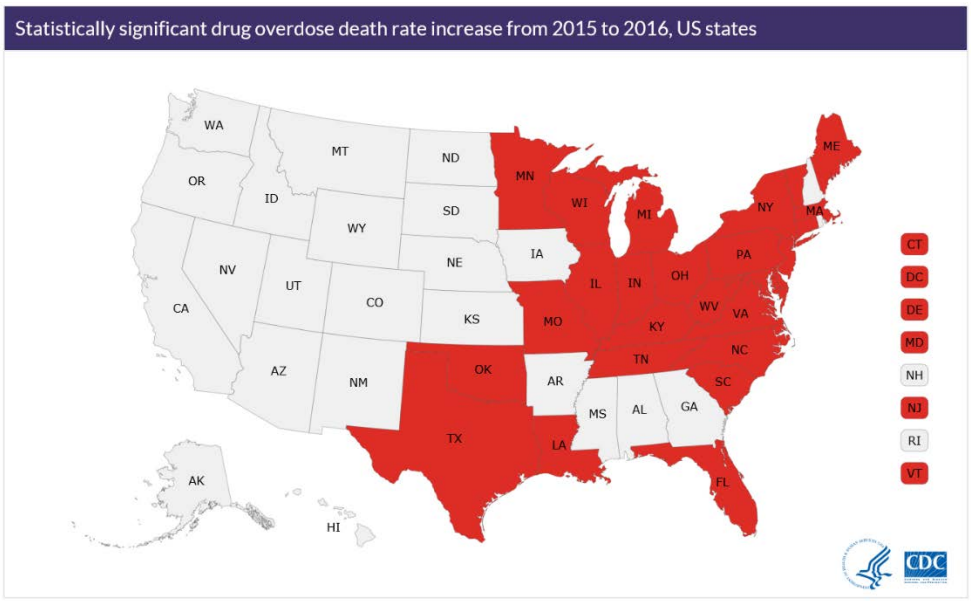
Source: National Vital Statistics System, Mortality File, CDC WONDER.

Nationally, the majority of drug overdose deaths – 66% according to the CDC – involve an opioid.[3] Opioids in this context include not only illegal drugs such as heroin and illicit forms of fentanyl, but also prescription opioids such as OxyContin©, Opana ER©, Duragesic©, and others. The number of overdose deaths was five-times higher in 2016 than in 1999, as the sale of prescription opioids to pharmacies, hospitals and other licensed entities quadrupled.[3] In fact, 600,000 people died from overdose during this 16-year period. The impact of these deaths led Princeton economist Alan Krueger to conclude that the increase in prescriptions has resulted in a 20% decline in labor force participation by men during that same 16-year period (Figure 2).[4] When surveyed, 43.5% of prime-aged men (aged 25 to 54 years) *not in the workforce* reported having taken "pain medication yesterday" compared to 20.2% of prime-aged men in the workforce and 18.9% of unemployed men in this age group.

[1] http://portal.ct.gov/DPH/Health-Education-Management--Surviellance/The-Office-of-Injury-Prevention/Opioids-and-Prescription-Drug-Overdose-Prevention-Program
[2] Annual surveillance report of drug-related risks and outcomes, https://www.cdc.gov/drugoverdose/pdf/pubs/2017cdc-drug-surveillance-report.pdf
[3] https://www.cdc.gov/drugoverdose/epidemic/index.html
[4] https://www.brookings.edu/bpea-articles/where-have-all-the-workers-gone-an-inquiry-into-the-decline-of-the-u-s-labor-force-participation-rate/

Figure 2: Labor Force Participation Rate, United States, 1948-2018

Although opioid prescribing has declined at a rate of 4.9% annually from 2012 through 2016, prescribers still wrote 66.5 opioid prescriptions for every 100 individuals in the US in 2016. This decline has not necessarily equated to a decline in opioid-related overdose deaths. In fact, 26 states[5] – including Connecticut – saw a significant increase in drug-related deaths from 2015 to 2016:



Although various efforts are underway to limit the prescribing of opioids, it is important for policy makers to recognize that while these efforts are critical to solving the opioid crisis, they are not the absolute answer. As long as illicit drugs like heroin and illegal forms are fentanyl are available, tightening the supply of prescription drugs may only drive addicts to use these street drugs. Any effort to curtail access must also be balanced with rehabilitation programs.

[5] https://www.cdc.gov/drugoverdose/data/statedeaths.html

Gaps in Pain Management Practice

*(**Michael Erdil**, MD, FACOEM; Asst. Clinical Professor, University of Connecticut Health Center)*

A number of significant gaps between medical evidence and observations regarding treatment of pain, mental health, and Substance Use Disorders (SUDs) exist that have contributed to the opioid epidemic. These involve all stakeholder areas, but some of the most significant include:

Medical Evidence: While Opioid Pain Relievers (OPRs) can provide short term treatment for acute, moderate to severe pain (e.g. acute injuries like fractures, post-surgical pain, etc.) and can play an important role in managing cancer-related pain, there is limited evidence of OPR efficacy for conditions like non-specific back pain and other non-cancer pain conditions. Studies have found equal efficacy of non-steroidal anti-inflammatory agents (NSAIDs) like naproxen to treat acute back pain vs. OPRs.[6] A study of work-related low back pain noted that only a minority of patients treated long-term with OPRs experience significant improvement in pain or function.[7] A literature review concluded that in addition to the lack of significant efficacy of OPR to treat back pain, perhaps 50% of patients cease OPR due to side effects.[8] Risk of opioid overdose and death increases with higher dose, especially beyond a daily dose of 50 morphine milligram equivalents (MME, an estimate to account for different relative potencies of various opioids), as well as other factors including medical comorbidities (e.g. sleep apnea, respiratory or neurologic diseases, etc.) and the use of sedative and hypnotic medications (including benzodiazepines), gabapentin or alcohol.[9,10,11,12]

Patient Gaps: While many patients express preference for non-medication treatment for physical pain, 22% prefer to take prescribed pain medications[13] despite literature evidence that non-medication options such as exercise are more effective to treat conditions like back pain with less risk. Of concern, 22% perceive OPRs to be very safe and 55% somewhat safe in contrast to evidence of side effects and risks including misuse, addiction and overdose. Many at-risk patients do not seek care, including an estimated 35% of individuals with mental health disorders. Reasons include social concerns, not

[6] Friedman BW, Dym AA, Davitt M, et al. 2015. Naproxen With Cyclobenzaprine, Oxycodone/Acetaminophen, or Placebo for Treating Acute Low Back Pain: A Randomized Clinical Trial. JAMA;314(15):1572-80.
[7] Franklin GM, et al. 2009. Opioid use for chronic low back pain: A prospective, population-based study among injured workers in Washington State, 2002–2005. Clin J Pain 25:743–751.
[8] Abdel Shaheed C et al. 2016. Efficacy, tolerability, and dose-dependent effects of opioid analgesics for low back pain: A systematic review and meta-analysis, JAMA Internal Medicine; 176(7):958–68.
[9] Bohnert ASB, et al. 2011. Association between opioid prescribing patterns and opioid overdose-related deaths. JAMA 305:1315–1321.
[10] Dunn KM, et al. 2010. Opioid prescriptions for chronic pain and overdose: A cohort study. Ann Intern Med 152:85–92.
[11] Gomes T, Juurlink DN, Antoniou T, et al. 2017. Gabapentin, opioids, and the risk of opioid-related death: A population-based nested case–control study. PLoS Med; 14(10): e1002396.
[12] Jones CM and McAninch JK. 2015. Emergency Department Visits and Overdose Deaths From Combined Use of Opioids and Benzodiazepines. Am J Prev Med; 49(4):493-501.
[13] Gallup Americans Prefer Drug-Free Pain Management Over Opioids, 2017

wanting others to find out, job concerns, and others.[14] Additional barriers precluding treatment of mental health and SUDs include inability to access or afford care, fear, shame, discrimination, and a lack of screening and interventions in health care and the workplace.[15]

Opioid Prescribing Gaps: Despite the lack of evidence of efficacy of OPRs to treat back pain, and guideline recommendations to limit use, observational studies noted an increase in OPR prescriptions for back pain over a ten year period.[16] Similar trends have been observed with unsupported treatment of chronic back pain including OPR prescribing, injections and surgery in chronic settings.[17] Increased risk of long-term use of OPR has been observed in OPR naïve patients even with short-term prescriptions. For example, 6% of patients who received one day of OPR continued using OPR long-term; of those 13.5% continued $\geq$ 8 days and 29.9% continued $\geq$ 31 days.[18] Approximately 6% of patients remain on OPR long-term after minor elective surgery.[19] A review of post-operative OPR prescribing estimated that 60-90% of patients do not use all of their prescribed pills, with high rates of unsecured pills and failure to properly dispose of unused OPRs.[20] Another recently identified prescribing gap highlighted the observation that 28.5% of outpatient visits where opioids were prescribed did not include a diagnosis of a condition causing pain.[21] Patients with mental health and SUDs are at increased risk for OPR overdose, yet these patients are more likely to receive OPR and be prescribed high dose OPRs and sedatives.[22,23] Of great concern, over 90% of patients continue to receive OPR after non-fatal overdose.[24]

[14] Hendiksson M. 2016. Words matter. Substance Abuse and Mental Health Services Administration. 16 May 2016. Accessed at http://blog.samhsa.gov/2016/05/16/words-matter/#.V-1NNPkrLbh on 16 February 2017
[15] Crowley R, Kirschner N, Dunn A, et al.2017. Health and Public Policy to Facilitate Effective Prevention and Treatment of Substance Use Disorders Involving Illicit and Prescription Drugs: An American College of Physicians Position Paper. Ann Intern Med.;166:733-736. doi:10.7326/M16-2953.
[16] Mafi JN, McCarthy EP, Davis RB, et al. Worsening trends in the management and treatment of back pain. JAMA Intern Med. 2013 Sep 23;173(17):1573-81. doi: 10.1001/jamainternmed.2013.8992
[17] Deyo RA, Mirza SK, Turner JA,et al. 2009. Overtreating chronic back pain: time to back off? J Am Board Fam Med.;22(1):62-8. doi: 10.3122/jabfm.2009.01.080102
[18] Shah A, Hayes CJ, Martin BC. 2017. Characteristics of Initial Prescription Episodes and Likelihood of Long-Term Opioid Use — United States, 2006–2015. MMWR 66(10): 265-69.
[19] Brummett CM, Waljee JF, Goesling J. et al. 2017. New Persistent Opioid Use After Minor and Major Surgical Procedures in US Adults. JAMA Surg;152(6):e170504. doi:10.1001/jamasurg.2017.0504
[20] Bicket MC, Long JJ, Pronovost PJ, et al. 2017. Prescription Opioid Analgesics Commonly Unused After Surgery A Systematic Review. JAMA Surg. doi:10.1001/jamasurg.2017.0831
[21] Sherry TB, Sabety A, and Maestas N. 2018. Documented Pain Diagnoses in Adults Prescribed Opioids: Results From the National Ambulatory Medical Care Survey, 2006–2015. Ann Intern Med; DOI: 10.7326/M18-0644.
[22] Morasco B, Duckart JP, Carr TP, et al. 2010. Clinical Characteristics of Veterans Prescribed High Doses of Opioid Medications for Chronic Non-Cancer Pain. Pain; 151(3): 625–632. doi:10.1016/j.pain.2010.08.002
[23] Seal KH, Shi Y, Cohen G, et al. 2012. Association of mental health disorders with prescription opioids and high-risk opioid use in US veterans of Iraq and Afghanistan. JAMA; 307(9): 940–7. doi:10.1001/jama.2012.234. Erratum in: JAMA. 2012 Jun 20;307(23):2489. PubMed PMID: 22396516.
[24] Larochelle M, Liebschutz J, Zhang F, et al. 2016. Opioid prescribing after nonfatal overdose and association with repeated overdose. Ann Intern Med 28 Dec 2016, doi:10.7326/M15-0038.

Pain, Mental Health and Substance Abuse Treatment Gaps: Treatment of pain often lacks evidence based support, does not fully involve patients in shared decision making, or track outcomes.[25] In 2014, more than 21 million Americans were in need of treatment for alcohol (15.7 million) or illicit drugs including opioids (7.7 million), but only 10-18% received care.[26,27] More than 40% of patients with SUDs have mental health conditions, but only 48% receive treatment for either condition. Medication assisted treatment (MAT) including methadone, buprenorphine-naloxone, and naltrexone has potential for misuse, overdose and diversion. However, MAT increases retention in substance abuse treatment; decreases criminal behavior, infectious diseases and transmission associated with shared needles; and helps return affected individuals to healthy and functional lives.[28] Relapse occurs in many chronic diseases, including SUDs, and relapse rates for SUDs are similar to conditions like diabetes or asthma.[29] However, relapse in substance abuse may not be treated with parity compared to these other medical conditions. Naloxone use has been demonstrated to decrease opioid overdose deaths. Barriers to use of Naloxone need to be overcome as well.[30]

Pharmaceutical Industry Gaps: Aggressive promotion, direct marketing to patients and misleading information to prescribers overstating benefits and downplaying safety issues were some of the key pharmaceutical industry drivers associated with escalating OPR prescribing.[31]

Employer Gaps: According to the National Safety Council, although 70% of employers feel that prescription drugs have impacted them, 76% do not offer training to identify misuse, 81% lack a comprehensive drug free workplace policy, and 41% who perform drug tests do not include synthetic opioids (and thus may miss a significant number of positive specimens).[32] A number of employers lack sufficient insurance benefits to cover non-opioid therapies leading to overuse of OPRs and others may lack sufficient coverage for mental health and/or substance abuse treatment.[33]

[25] https://integration.samhsa.gov/clinical-practice/shared-decision-making
[26] Center for Behavioral Health Statistics and Quality. 2016. Results from the 2015 National Survey on Drug Use and Health: Detailed tables. Rockville, MD: Substance Abuse and Mental Health Services Administration.
[27] Han B, Hedden SL, Lipari R, et al. 2015. Receipt of services for behavioral health problems: results from the 2014 National Survey on Drug Use and Health. NSDUH Data Review. Substance Abuse and Mental Health Services Administration. Accessed at www.samhsa.gov/data/sites/default/files/NSDUH-DR-FRR3 -2014/NSDUH-DR-FRR3-2014/NSDUH-DR-FRR3-2014.pdf on 16 February 2017.
[28] U.S. Department of Health and Human Services (HHS). 2016. Office of the Surgeon General, Facing Addiction in America: The Surgeon General's Report on Alcohol, Drugs, and Health, Executive Summary. Washington, DC: HHS, November 2016.
[29] McLellan AT, Lewis DC, O'Brien CP, et al. 2000. Drug dependence, a chronic medical illness: Implications for treatment, insurance, and outcomes evaluation. JAMA, 284(13), 1689-1695.
[30] Crowley R, Kirschner N, Dunn A, et al.2017. *Ibid.*
[31] Van Zee A. 2009. The Promotion and Marketing of OxyContin: Commercial Triumph, Public Health Tragedy. American Journal of Public Health. Vol 99, No. 2: 221
[32] Hersman D. 2017. How the Prescription Drug Crisis is Impacting American Employers. National Safety Council.
[33] https://www.cdcfoundation.org/businesspulse/opioid-overdose-epidemic-infographic

Costs of Addiction to Employers

*(**Brian Downs**, MBA; Vice President, Quality & Provider Relations, Workers' Compensation Trust)*

The recent opioid crisis in the United States has not been discriminate in its path or destruction. It has cut across all economic geographies, social strata, and industries. Its devastation is revealed in social costs, personal struggles and loss, disrupted and broken families, lost productivity and increased crime.[34] With such far-reaching impacts, it is not difficult to imagine the cascading impact it continues to have on U.S. employers.

The American Society of Addiction Medicine has estimated that opioid abuse cost employers approximately $10 billion in absenteeism and presenteeism alone.[35] The term presenteeism, which is often difficult to measure, generally refers to employees who are coming to work despite having a sickness that justifies an absence and, as a consequence, performing suboptimal work. Employees taking opioid medications might struggle with presenteeism because the medications can produce drowsiness and mental confusion, impairing attention, focus, creativity and reliability. This can have a significant impact on both quality of work and safety.

A national survey on drug use and health conducted in 2015 by the Substance Abuse and Mental Health Services Administration revealed that 75% of adults ages 18 to 64 with substance misuse disorders are active in the workforce.[36] If that statistic alone is not alarming enough for employers, a recent study found that there has been a steady decline in the U.S. labor force since 2007 especially among prime age working males. The study found that nearly half of this demographic group were not actively in the workforce as a result of taking ongoing long-term opioid pain medication.[37]

The facts are clear, the problems are real, and yet many employers still struggle with understanding the potential present and future impact on their organizations and those they employ who may be struggling with this insidious disease of addiction. Most employers understand how detrimental illegal drugs can be in the workplace, but few recognize the toll of the prescription opioid painkiller epidemic. Listed below are several significant ramifications that could directly impact the safety and financial security of employers who find themselves unknowingly confronted with this hidden epidemic within their workforce.

[34] Substance Abuse and Mental Health Services Administration. Results from the 2012 National Survey on Drug Use and Health: Summary of National Findings, NSDUH Series H-46, HHS Publication No. (SMA) 13-4795. Rockville, Maryland: Substance Abuse and Mental Health Services Administration, 2013.
[35] J. Fudin, (2015). "The Economics of Opioids: Abuse, REMs and Treatment benefits." Retrieved February 19, 2018 - www.ajmc.com/journals/supplement/2015/ace0029_aug_painrems?ace0029_aug15painrems_fudin.
[36] Center for Behavioral Health Statistics and Quality (CBHSQ), Substance Abuse and Mental Health Services Administration (SAMHSA), U.S. Department of Health and Human Services (HHS), and by RTI International, Research Triangle Park, North Carolina. Retrieved February 19, 2018 - www.samhsa.gov/data/sites/default/files/NSDUHresultsPDFWHTML2013/Web/NSDUHresults2013.pdf
[37] 4) A. Krueger, (2017). "Where Have All the Workers Gone? An Inquiry into the Decline of the U.S. Labor Force Participation Rate. "Retrieved February 19, 2018 -www.brookings.edu/content/uploads/2017/09/1_krueger.pdf

1) Opioid painkillers compromise employee safety. Even after an employee returns to work, they could still feel the effects of prescription painkillers. Although an employee may take a legitimately prescribed amount of painkillers, they may be too impaired to operate equipment, drive, or perform other job duties.[38]

2) Workers prescribed opioids have significantly higher workers' compensation claims. Workers prescribed even one opioid have four-times more expensive claim costs than workers with similar claims who weren't prescribed opioids.[39]

3) Using opioid painkillers increases the likelihood of long-term disability claims. Studies have shown that receiving more than a one-week supply of opioids soon after an injury doubles a worker's risk of disability one year later.[40]

4) Workers with substance abuse disorders miss nearly 50% more days than their peers, and up to six weeks of work annually.[41]

So what should employers do? A good starting point would be to develop an action plan to gain a better understanding of the impact of opioid use within their employee population. This initial step helps determine the focus and breadth of a communications campaign in identifying the resources and programs needed to assist in prevention and treatment efforts. Employers should look at whether certain data points such as workers' compensation injury rates, particular demographics, or employee occupational groupings where higher than typical use of opioid medications are identified. Employers in industries such as construction, entertainment, recreation and food service should be particularly aware that those employed in these industries have twice the national average number of substance abuse disorders.[42]

All employers must recognize that the opioid epidemic is here and that no industry, level of education, professional credential or pay grade is immune to it. Moreover, those responsible for monitoring this epidemic agree that it is not going away anytime soon. Odds are that people struggling with opioid dependence or addiction are silently struggling on the job. As employers, the time is now to offer assistance to those who are struggling, and provide company-wide education and risk reduction efforts to protect the health and well-being of their employees as well as protect the financial well-being of the organization itself in addressing this issue head on and in a proactive manner.

[38] White JA, Tao X, Tairefa M, Tower J, Bernacki E, _eE_ect of Opioid Use on Workers' Compensation Claim Cost in the State of Michigan (August 2012) Journal of Occupational Environmental Medicine Vol. 54, Issue 8.
[39] *Ibid*.
[40] Franklin, G., Stover, B., Turner, J., Fulton-Kehoe, D., & Wickizer, T. (2008). Disability Risk Identification Study Cohort. Early opioid prescription and subsequent disability among workers with back injuries: the Disability Risk Identification Study Cohort. Spine, 199- 204.
[41] National Safety Council. "Drugs At Work- What Employers Need to Know." Retrieved February 19, 2018 - www.nsc.org/learn/NSC-Initiatives/Pages/prescription-painkillers-for-employers.aspx.
[42] U.S. Department of Health and Human Services. Results from the 2007 National Survey on Drug Use and Health: national findings. Rockville, MD: Substance Abuse and Mental Health Services Administration, Office of Applied Studies; 2008. NSDUH Series H-34, DHHS Publication No. SMA 08-4343.

Drug-free Workplace and "Zero-tolerance" Policies: Challenges and Barriers in the Opioid Age

*(**Holly Hinds**, Esq.; Managing Partner, CrossPoint Partners, LLC)*

The concepts of the drug-free workplace and zero-tolerance policy have roots in the military and federal government.[43] During the Vietnam War, a high percentage of returning service members used or were addicted to illegal drugs, including heroin. The military drug-tested these soldiers and referred those with positive drug tests for treatment. Service members tended not to face punitive action because the goals were treatment, rehabilitation, and retention. However with this approach, illegal drug use among service members remained high, ranging from 27-38% in some units.

On May 26, 1981, an aircraft crashed aboard the USS Nimitz, an American aircraft carrier and one of the largest war ships in the world. The accident killed 14 service members and injured 48, resulting in an estimated cost of $150 million. Illegal drug use by service members was found to have been a contributing factor to the disaster and began to be viewed as a discipline problem rather than an addiction problem. Afterwards, the Department of Defense instituted a zero-tolerance policy and authorized punitive actions including court martial and discharge to be used against service members who failed drug tests.

The military's new zero tolerance policy occurred within the larger political context of the launch of the new Presidential "War on Drugs"[44], where drugs were criminalized and punitive measures against drug users were emphasized, with drug users frequently incarcerated. By 1985, illegal drug use among service members had dropped to 8.9%.[45] In 1986, the Reagan Administration expanded the drug-free workplace and zero-tolerance policy to the entire federal government civilian workforce through Executive Order 12564.[46] As justifications for the policy, the Administration cited the billions of dollars of lost productivity in the American workplace caused by illegal drug use as well as the risks federal employees who used illegal drugs posed "to national security, the public safety, and the effective enforcement of the law." Ultimately, it was their intent that this drug-free workplace concept and zero-tolerance policy for the federal government, the largest employer in the nation, would serve as a model drug policy for all U.S. employers.

In 1988, Congress expanded the drug-free workplace concept and zero-tolerance policy into the private sector by passing the Drug-Free Workplace Act, requiring companies who wanted to contract with the federal government to establish a drug-free workplace policy and make "good faith" efforts to maintain a drug-free work place.[47] The Act, still in effect today, requires employers to penalize their employees

[43] United States Department of Defense, Military Drug Program Historical Timeline http://prhome.defense.gov/Portals/52/Documents/RFM/Readiness/DDRP/docs/72208/DoD%20Drug%20Policy%20History.pdf – accessed 12/23/17

[44] Dufton, Emily (March 26, 2012). "The War on Drugs: How President Nixon Tied Addiction to Crime". *The Atlantic*.

[45] United States Department of Defense, *ibid.*

[46] Federal Register, Executive Order 12564 (1986) - Drug-Free Federal Workplace, https://www.archives.gov/federal-register/codification/executive-order/12564.html – accessed 1/8/18

[47] The Drug-Free Workplace Act of 1988 (41 U.S.C. 81) http://uscode.house.gov/view.xhtml?req=(title:41%20chapter:81%20edition:prelim)%20] – accessed 12/20/17

for drug abuse violations and notify employees of the penalties they will receive.[48] For employers who do not meet the government's drug-free workplace standards, the Act permits harsh consequences including suspension of payments on a contract, termination of the contract and debarment, meaning the employer would be ineligible to contract with a federal agency for up to 5 years.[49] It was under the blanket of this directive that companies in the private sector followed suit and voluntarily established drug-free workplaces with zero-tolerance policies, often in conjunction with drug testing programs. Current policies established by private sector companies often reflect the zero-tolerance and punishment-oriented policies established by the military and federal government.

Viewed from the perspective of drug use and addiction as a personal choice to engage in illegal acts rather than a disease, traditional drug-free workplace and zero-tolerance drug policies can act as significant barriers to employees coming forward to get help with overcoming addiction. As an example, imagine a high-performing employee who has a 20-year tenure with a company who experiences a back injury, is prescribed opioids for pain by their doctor, and subsequently develops an opioid addiction disorder. Consider what this employee will think as they read a drug-free workplace policy. More importantly, consider what someone with a substance abuse issue is most likely to do after they read a policy. When employees see the usual language of a traditional workplace drug policy, they often see phrases like "zero-tolerance," and "will lead to discipline or termination". In these cases, employees struggling with substance abuse may not take the risk of coming forward to seek help for fear of losing their job or professional status.[50]

Companies often use the term zero-tolerance in conjunction with undesirable behavior or criminal, violent activity such as sexual harassment, racial discrimination, and workplace violence. To an employee struggling with addiction, it may seem as if the employer and coworkers will view them as a criminal rather than a valued employee with a chronic condition. As such, they may not come forward for fear of stigmatization.[51]

An additional incentive for employers to reassess drug policies which are zero-tolerance oriented is the fact that these drug policies might be legally challenged in the future.[52] The legalization of medical marijuana has taken place in several states, including Connecticut, and most states provide protections for employees who use medical marijuana outside the workplace. Moving forward, employers will need to navigate and course-correct in a rapidly changing legal landscape.

In developing new drug policies, employers may want to consider the unique features of the opioid epidemic in contrast to past drug epidemics. Rather than addiction to illegal drugs, individuals with

[48] Drug-Free Workplace Act of 1988, 41 U.S.C.§ 8102(a)(1)(B)(iv)
[49] Drug-Free Workplace Act of 1988, 41 U.S.C. §8102 (b)(3)
[50] A Painful Epidemic, Julie Cook Ramirez, June 5, 2017
http://www.hreonline.com/HRE/view/story.jhtml?id=534362500 – accessed 12/6/17
[51] Prescription Drug Monitoring Programs: Critical Elements of State Legislation, Shatterproof, March 2016
[52] "Viewpoint: Zero-Tolerance Policies May Need to Be Trashed," Sue Stott, Esq. and Lauren Kulpa, Esq. Apr 25, 2016

opioid addictions are often addicted to legal painkillers that have been prescribed by a physician, often after workplace injuries, a surgery, or a chronic medical condition. Moreover, 60% of people with a prescription opioid addiction disorder are employed.[53] In applying traditional zero-tolerance policies, employers may not only lose good, loyal frontline employees, they may also lose management employees and even executives.[54]

While reassessing their drug policies, employers may want to consider developing policy and language that encourages employees to come forward for help when they are experiencing issues with addiction rather than keeping the issue of employee addiction underground. Traditional drug policies that are punitive in nature reflect an old understanding of addiction as a moral failing rather than a disease. This traditional point of view may act as a barrier to employees seeking help with their addiction from their employer. Drug policies that reflect a current, science-based understanding of addiction as a disease and which communicate empathy and compassion can act as encouragement to employees with substance use disorders to come forward for help.

Policies include not only the employer's written policy but what employees perceive through company culture, leadership messaging and how the employer engages with addicted employees. An inquiry as simple as: "Is work going ok? You seem a little fatigued. Is there anything I can do to help?" from a supervisor or a Human Resources representative to a struggling employee can make the difference between an employee coming forward or keeping their disease hidden.[55] Employers themselves say policy changes are compassionate, but they admit they are also motivated by productivity and profit.[56] There are costs, risks and liabilities of keeping the issue of addicted employees underground in the workplace including reduced productivity, increased absenteeism, risk of injury to themselves and others, as well as increased workers' compensation, disability, medical, and legal costs associated with employee overdoses and deaths.

Many large employers, such as Google, Gap, Inc., and CVS Health have moved away from zero-tolerance language in their workplace substance use policies, and frame their policies in the broader context of the safety of their employees, contractors, vendors, and customers.[57-59] If employers are to retain a healthy and stable workforce, they must consider developing new drug policies that engage addicted employees and embrace the current, science-based understanding of addiction as a disease.

[53] A Substance Use Cost Calculator For Employers Methodology, Eric Goplerud, Vice President Public Health Department NORC at the University of Chicago
[54] A Painful Epidemic, Julie Cook Ramirez, June 5, 2017
[55] Combatting the Prescription Drug Crisis, Dori Meinert 10/13/17
[56] Employers Shift Focus to Treatment for Workers Struggling with Addiction, Amy Coveno, 12/7/17
[57] Google, Inc., 2017 Code of Conduct, https://abc.xyz/investor/other/google-code-of-conduct.html - accessed 1/8/18
[58] Gap, Inc. 2016 Code of Conduct, http://www.gapinc.com/content/dam/gapincsite/documents/COBC/COBC_english.pdf - accessed 1/8/18
[59] CVS Health, 2017 Code of Conduct, https://cvshealth.com/sites/default/files/cvs-health-code-of-conduct.pdf - accessed 1/8/18

A NEW APPROACH TO ADDICTION IN THE WORKPLACE: 5 Key Principles for Employers

As is clear in the information presented above, substance use and abuse is increasing at a drastic rate in the US; much of this increase has been and continues to be fueled by the prescribing and use/misuse of prescription opioid medications. It is also clear that the potential effects on the health and stability of the workforce could be significant. Employers' past and current use of punitive measures as a method for preventing substance abuse by employees and contractors, such as "drug-free workplace" and "zero-tolerance" policies, can ultimately exacerbate worker addiction issues by villainizing this disease state and encouraging the drug-addicted worker to keep their condition hidden rather than seeking much needed help. Below, we outline five key principles to change the culture in US workplaces as it pertains to addiction, from one of punitive judgment to one of encouragement and support.

1. Early Identification

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Abuse of licit (e.g., nicotine) and illicit substances (e.g., cocaine) costs Americans more than $700 billion annually from lost productivity, health care costs, and crime.[60,61] While members of the general public often conceptualize addiction or substance use disorders (SUDs) as an absence of willpower or a personality flaw, these views are not supported by scientific research. Instead, addiction is a chronic, relapsing medical condition that is characterized by compulsive drug-seeking despite negative consequences.[62] Imaging studies of people with SUDs have shown that brain areas central to job performance, such as judgment, learning, decision making, and behavior control, are altered.[63,64] Among the estimated 29 million people with SUDs globally, only 14% have accessed treatment.[65] This is highly problematic, since SUDs often do not resolve without treatment. Prevention efforts targeting SUDs may be primary (e.g., prevent an employee from using illicit substances by providing psychoeducation regarding risk), secondary (e.g., identify an employee with subthreshold substance abuse problems and intervene so that a full-blown SUD does not emerge), or tertiary (e.g., assist an employee in treatment for SUD to not relapse). In this section, we focus on opioid use disorder given that the US is currently in the midst of an opioid epidemic.

[60] National Drug Intelligence Center. The Economic Impact of Illicit Drug Use on American Society. Washington DC: United States Department of Justice. 2011.
[61] Rehm J, Mathers C, Popova S, Thavorncharoensap M, Teerawattananon Y, Patra J. Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. The Lancet. 2009; 373(9682):2223-2233
[62] McLellan AT, Lewis DC, O'Brien CP, Kleber HD. Drug dependence, a chronic medical illness. JAMA. 2000; 284(13):1689-1695
[63] Fowler JS, Volkow ND, Kassed CA, Chang L. Imaging the addicted human brain. Science & practice perspectives. 2007; 3(2):4-16.
[64] Volkow ND, Fowler JS, Wang G-J. The addicted human brain: insights from imaging studies. The Journal of clinical investigation. 2003; 111(10):1444-1451
[65] United Nations Office on Drugs and Crime. World Drug Report 2016 (United Nations publication, Sales No. E.16.XI.7). Accessed on October 16, 2017 at: http://www.unodc.org/doc/wdr2016/WORLD_DRUG_REPORT_2016_web.pdf.

Many adults who use illicit substances are employed.[66] Employees who use substances are more likely than those who do not to be absent or late for work, be less productive, change jobs frequently, be involved in a workplace accident, and file for workers' compensation. Many employers in the U.S. have implemented drug-free workplaces (e.g., federal government), resulting in decreased rates of absenteeism, work accidents, and turnover.[67] Additionally, employers with drug-free workplace policies may qualify for decreased workers' compensation and other incentives.[68] However, linking employees with SUDs to appropriate treatment is a less stigmatizing alternative, which may ultimately benefit employees, employers, and society.

Common strategies for early detection of SUDs include: a) drug testing. Specimens are collected via urine, saliva, hair, or sweat and tested for commonly used drugs such as opioids, cannabis, or amphetamines (in the case of alcohol, breathalyzer tests are more commonly used); and b) screening or survey instruments. Traditionally, workplaces in the U.S. have relied on drug testing to detect substance use. However, the Substance Abuse and Mental Health Services Administration (SAMHSA) recently established the Preventing Prescription Abuse in the Workplace (PAW) program to develop occupation-specific screening instruments and to provide workplaces assistance to reduce nonmedical opioid use. Screening instruments with demonstrated reliability and validity include the 10-item Alcohol Use Disorders Identification Test (AUDIT)[69]; the 8-item Alcohol, Smoking and Substance Involvement Screening Test (ASSIST); and the 8-item NIDA Modified ASSIST (NM ASSIST).[70] Since most people with SUDs do not seek specialty treatment but may use primary care services, many primary care clinics have implemented universal addiction screening. Given the large number of people in the U.S. who have been prescribed opioids for the management of chronic pain, a 5-item screening instrument with established psychometric properties called the Opioid Risk Tool (ORT)[71] is often used by medical providers prior to initiating treatment to identify patients at risk for nonmedical or prescription opioid use or opioid use disorder.

In recent years, a public health approach called SBIRT (Screen, Brief Intervention, Refer to Treatment) has been successfully applied in primary care, emergency departments, and other healthcare settings to

[66] Substance Abuse and Mental Health Services Administration. Results from the 2015 national survey on drug use and health: Detailed tables. https://www.samhsa.gov/data/sites/default/files/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015/NSDUH-DetTabs-2015.pdf. Published September 8, 2016. Accessed February 17, 2018.
[67] Substance Abuse and Mental Health Services Administration. Making Your Workplace Drug-Free: A Kit for Employers. http://store.samhsa.gov/product/Making-Your-Workplace-Drug-Free/SMA07-4230. Published January 1, 2007. Accessed February 17, 2018.
[68] Substance Abuse and Mental Health Services Administration. 14 Short Employer Cost Savings Brief. http://store.samhsa.gov/product/Making-Your-Workplace-Drug-Free/SMA07-4230. Published January 1, 2007. Accessed February 17, 2018.
[69] Saunders JB, Aasland OG, Babor TF, De la Fuente JR, Grant M. Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption-II. Addiction. 1993; 88(6):791-804.
[70] WHO ASSIST Working Group. The alcohol, smoking and substance involvement screening test (ASSIST): development, reliability and feasibility. Addiction. 2002; 97(9):1183-1194.
[71] Webster LR, Webster RM. Predicting aberrant behaviors in opioid-treated patients: preliminary validation of the Opioid Risk Tool. Pain Med. 2005; 6(6):432-442.

identify and intervene with individuals who have risky levels of substance use or SUDs. Early detection and intervention can avert the considerable health, psychiatric, and safety problems that frequently accompany addiction.[72] The U.S. Preventive Services Task Force graded SBIRT for alcohol use (one of the most common clinical targets of this approach) a 'B' (the same rating it awarded influenza vaccination).[73] Using a SBIRT approach, tools like the AUDIT and ORT can be used to assess level of risk and determine the appropriate level of intervention. Augmenting problem awareness and increasing intrinsic motivation toward behavior change often comprise the foci of the brief intervention, while individuals requiring more treatment can be referred to specialty care. Evidence-based interventions for opioid use disorder called medication-assisted treatment (MAT) combine psychosocial interventions with FDA-approved medications such as methadone (opioid agonist), buprenorphine (partial opioid agonist) or injectable naltrexone (opioid antagonist), and form a crucial public health strategy in confronting the opioid epidemic.[74-77]

2. Instant Support

*(**Melissa Monroe**, LPC; Clinical Director, Rushford)*

There are many faces of addiction as it does not discriminate. Addiction, once thought of as an inner-city problem, is a national crisis that impacts every demographic, gender, race, and socioeconomic class. There is no community that is immune to the effects of addiction. In this growing opioid crisis we are starting to also see our working professionals and employers being more directly impacted. Employers who are willing to acknowledge and address the opioid epidemic and other substance use disorders are more likely to retain their employees, increase productivity, and be recognized for having a positive company culture.

Addiction is defined as a disease by most medical associations, including the American Medical Association and the American Society of Addiction Medicine. Like diabetes, cancer and heart disease, addiction is caused by a combination of behavioral, environmental and biological factors. Genetic risk factors account for about half of the likelihood that an individual will develop addiction.[78] Even though addiction is recognized as a chronic disease, there is still a significant negative stigma attached to those

[72] Babor TF, McRee BG, Kassebaum PA, Grimaldi PL, Ahmed K, Bray J. Screening, Brief Intervention, and Referral to Treatment (SBIRT) toward a public health approach to the management of substance abuse. Subst Abus. 2007; 28(3):7-30.
[73] Force USPST. Final Recommendation Statement: Alcohol Misuse: Screening and Behavioral Counseling Interventions in Primary Care. May 2013. https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/alcohol-misuse-screening-and-behavioral-counseling-interventions-in-primary-care. Accessed on February 19, 2018.
[74] Kolodny A, Courtwright DT, Hwang CS, et al. The prescription opioid and heroin crisis: a public health approach to an epidemic of addiction. Annu. Rev. Public Health. 2015; 36:559-574.
[75] Volkow ND, Frieden TR, Hyde PS, Cha SS. Medication-assisted therapies—tackling the opioid-overdose epidemic. N. Engl. J. Med. 2014; 370(22):2063-2066.
[76] Murthy VH. Ending the opioid epidemic—A call to action. N. Engl. J. Med. 2016; DOI: 10.1056/NEJMp1612578.
[77] Crowley R, Kirschner N, Dunn AS, Bornstein SS. Health and public policy to facilitate effective prevention and treatment of substance use disorders involving illicit and prescription drugs: an American College of Physicians position paper Ann. Intern. Med. 2017; doi:10.7326/M16-2953.
[78] Columbia. (2012) Addiction Medicine: Closing the gap between science and practice. Center on Addiction.

who are impacted by this disease, which can be a cause of discrimination in the workplace. A person who experiences stigma based on their health issues can be seen as "less than" or incapable of completing their work duties. Those who feel impacted by stigma are less likely to seek treatment. Therefore, an employee who is suffering from addiction may find it more challenging to approach their employer about what they are going through based on a history of stigmatization.

Organizational involvement is critical to help our communities address the opioid crisis. Employers need to ensure that they are treating substance abuse as a disease and discouraging stereotype terms such as "addicts, druggies" in the workplace. Employers should consider working closely with Employee Assistance Programs (EAPs) or their own Human Resources departments for additional guidance in supporting employees who are asking for assistance in finding treatment. If applicable, all managers should be trained to know how to address staff with potential addiction abuse or misuse. Employers may even consider having visible educational materials on mental health and substance abuse in the workplace either in their Human Resources offices, as part of an employee handbook, or visible in a communal area (such as a break room).

The more open an employer is about accepting addiction as a disease, the more likely an employee will feel more comfortable seeking help. There are also opportunities to work with local treatment agencies to have a forum on these topics and demonstrate openness and willingness to help an employee or even employee's loved ones with a substance use disorder. Training supervisors and managers to spot the first signs of drug misuse and scheduling routine check-ups with employees will help enhance rapport and staff engagement. Enacting strong company drug policies that are clear, specific and allow for an open door policy (unlike punitive "zero-tolerance" policies) and ensuring employee confidentiality may also help increase the likelihood that employees will feel supported and that they will not be discriminated against for their addiction.

There are many ways in which employers can create a drug-free work environment that is not strictly punitive. Employers can educate themselves and employees on not only identifying the signs and symptoms of alcohol and drug use; but also, the necessary steps to take when one suspects that a coworker may need help. Through education and clear drug-free workplace policies, employers can aim to increase awareness and clarify expectations.[79] Lastly, employers should exercise best practices around managing and treating employees with empathy. Treatment for addiction, facilitated within or by the workplace, has been shown to be successful in increasing employees' legal, mental, and social functioning, as well as decreasing absenteeism rates, workplace conflict, and productivity problems upon return from treatment. Addiction is a chronic and relapsing disease, but individuals can achieve long term sobriety, allowing them to live a healthy, meaningful and productive life. Employers can help break the stigma of addiction and provide education and support to their employees who need help, and in doing so, employers can save lives.

[79] Kelly. (2017) Working on Addiction in the Workplace. Harvard Health Publishing, Harvard Medical School.

3. Employer Flexibility

*(**Tom Matthews**, MA, CEAP, CPP; Director, Solutions EAP and **Marlene Kurban**; Kurban Consulting)*

While some employees with a substance use disorder may need to take a leave of absence for detoxification and treatment, many treatment programs are designed to let individuals continue working. For employees in recovery, the job is often a lifeline providing not only a paycheck but daily structure, a sense of purpose and identity, stability, and social support. The employer's intervention may have even been the catalyst for the employee to get help.

Keeping valued employees on the job has benefits for employers as well. First, it makes good business sense. The costs of recruiting and training a new employee can be significant, and there are no guarantees that a new hire will be a better choice. Second, employees who feel valued and appreciated by their leaders are likely to be more engaged, loyal, and willing to go the extra mile for the organization. Third, employers who demonstrate compassion and concern for employees' well-being generate good will internally and externally. An organization that has a reputation for caring about its employees has a competitive edge when it comes to employee recruitment and retention.

However, one of the challenges employees may face, especially while in treatment or early recovery, is balancing the demands and responsibilities of work with self-care. For example, employees may request flexibility in their work schedule to attend medical appointments, or treatment or support groups. There may be a temporary need for light duty, non-hazardous work, or other modifications. Employers can address these needs as they would with employees who have other health-related conditions and in accordance with their personnel policies and collective bargaining agreements, if applicable. In addition, if the employer has an Employee Assistance Program (EAP), they can consult with their EAP for guidance. The EAP can help manage referrals and monitor the individual's progress.

It is important to note that an employer's actions regarding employees who are recovering from a substance use disorder may also be subject to state and federal laws and regulations, including the Family and Medical Leave Act (FMLA)[80] and the Americans with Disabilities Act (ADA)[81]. In addition, employees in certain safety-sensitive positions are subject to the rules of the U.S. Department of Transportation, which has its own return-to-duty process and procedures that the employer and employee must follow.

The **Job Accommodation Network (JAN)**, a service provided by the U.S. Department of Labor's Office of Disability Employment Policy, provides free, expert, confidential guidance to employers regarding workplace accommodations and disability employment issues, including drug addiction.[82] Employers of all sizes, including government agencies, can contact JAN for assistance by telephone or via electronic communication.

[80] Family and Medical Leave Act (1993); 29 U.S.C. § 2601.
[81] Americans with Disabilities Act (1990); 42 U.S.C. § 12101.
[82] Job Accommodation Network. (2013) Accommodation and Compliance Series: Employees with Drug Addiction. Retrieved from https://askjan.org/media/drugadd.html

JAN provides a list of questions on limitations and possible accommodations for employers to consider:

1. What limitations is the employee with drug addiction experiencing?

2. How do these limitations affect the employee and the employee's job performance?

3. What specific job tasks are problematic as a result of these limitations?

4. What accommodations are available to reduce or eliminate these problems? Are all possible resources being used to determine possible accommodations?

5. Has the employee with drug addiction been consulted regarding possible accommodations?

6. Once accommodations are in place, would it be useful to meet with the employee with drug addiction to evaluate the effectiveness of the accommodations and to determine whether additional accommodations are needed?

7. Do supervisory personnel and employees need training regarding drug addiction?

Depending on the employee's needs and the employer's policies, possible solutions may include the use of paid or unpaid leave for treatment, counseling and attendance at support meetings, a modified daily schedule, temporary reassignment to a less stressful job, flexible use of leave time, or the ability to work from home. Making reasonable accommodations does not prevent an employer from addressing poor job performance, as some employers fear. Employers can hold employees with a substance use disorder to the same performance standards that apply to other employees.

4. Regular Review

*(**Andrea Becker-Abbott**, CADC, SAP, LAP and **Gerard Marcil**, LADC, LAP-C, CEAP, Managing Partners of CCW-EAP & Connecticut Counseling & Wellness)*

Addiction is a disability that requires simple, but consistent accommodations. Due to the chronic nature of addiction, and the necessity of external motivation during the early stages of recovery, regular review of an employee's recovery progress by his or her supervisor(s) should be conducted in an atmosphere of positive reinforcement. Employer and peer-based supports are established through careful planning. Volunteers are obtained to assist the employee with successful workplace re-entry. Effective methods for soliciting workplace volunteers may include promotional emails, flyers, written invitation, or supervisor referral.

The primary task of the recovery accommodation review is to support and encourage the employee's adherence to his or her Recovery Accommodation Plan (RAP). Feedback regarding the employee's recovery progress excludes references to overall job performance, and should not be construed as a stressful job performance review. Regular review is not to be regarded as an afterthought. The RAP process commences upon an employee entering treatment for a Substance Use Disorder. The returning employee may be encouraged to sign a release of information. Doing so will enable those involved in his or her RAP to verify the employee's compliance with treatment recommendations.

1. A Recovery Accommodation Plan is initiated when an employee enters treatment, discloses an interest in recovery support services, or when a supervisor is informed of an employee's early recovery status.

2. The RAP begins by educating the recovery team with information concerning addiction and the recovery process. This education will include recovery-sensitive language (suitable vs. offensive terminology), the stages of change model, and motivational interviewing skills. Additionally, specialized training with respect to reasonable suspicion will provide team members with the necessary skills to identify and address relapse warning signals. Objective and consistent identifiers are documented, and the RAP is amended as is indicated.

3. Once the basic plan is established, an individualized RAP is documented. It is recommended that the RAP meeting occurs before the employee returns to duty. This meeting takes into consideration clinical recommendations to personalize a return to work RAP. Both the employee and recovery support team review and sign the RAP agreement. The employee should be informed that he or she is expected to follow any accommodations that have been agreed upon. Strict adherence to the RAP protocol will enable all involved parties to measure the effectiveness of the plan.

4. Drug screening is a well-established deterrent to relapse.[83] Independent of customary drug screening protocol, the employee agrees to additional screening upon request. Compliance with this provision of the plan is explicitly communicated to the employee and is indicated explicitly in the RAP.

5. The employee is provided with a list of available peer and community supports and is encouraged to participate in related self-help support groups such as Alcoholics Anonymous (AA), Narcotics Anonymous (NA), Al-Anon, and similar resources.

6. The RAP team meets at regular intervals, which at first are daily, then weekly, and eventually monthly. The plan can be reviewed and adjusted as is deemed necessary.

7. Unless the employee requires an extension, he or she is permitted to transition to a peer-based support plan after six months of abstinence.

[83] Carpenter CS. (2007) Workplace drug testing and worker drug use. Health Services Research 42(2):795-810.

The employer may note that addiction is a disease, and treatment, followed by a prompt return to work, is cost-effective in comparison to the prospect of replacing the employee. Addiction is a disability which, in the absence of a reliable and effective RAP protocol, may result in a significant loss of productivity. According to Dr. James Quayle, the Medical Director of more than 60,000 employees at Kimberly-Clark over a 20-year period, recovering employees typically return to work and perform significantly better than their non-recovery counterparts.[84] The effectiveness of regular review is optimized when the RAP is executed correctly, monitored closely and becomes an established component of company policy.

5. Enlisting Success

*(**Kyle Zimmer**, LAP-C; Health & Safety/Member Assistance Director, International Union of Operating Engineers, Local 478 and **Jody DeCarolis**; Site Safety Manager, Dimeo Construction)*

The International Union of Operating Engineers (IOUE) Local 478 Members Assistance Program (MAP) is an innovative tool to assist in tackling the current opioid crisis and help members who are struggling with lifestyle issues.[85] The MAP trains staff, union members and contractors as peer counselors to help members and their families who are in need of assistance. The objective of the MAP is to get members back to work, after completing treatment programs or other recovery options and devising a plan to follow up with them on a frequent basis. IUOE Local 478 has nearly 250 signatory contractors, many of which have taken an interest in MAP and have looked into further training to instill the program on their job sites. Many employees are trained with the skills to notice if there is something not right in a person

[84] https://www.hazelden.org/web/public/ade40405.page
[85] https://local478.org/training_and_licensing/community_outreach/page.php

that they work with on a daily basis, and know the proper ways to approach them, or to get them help. Many times, other members don't have to approach the struggling member, as the environment created at Local 478 is a stigma-free environment that encourages members to feel comfortable seeking help. MAP is discussed frequently at monthly union meetings, and also at other events. It is a key component to safety in many situations, because if a member on a job is using substances, or going through something at home that is emotionally impacting them, their job can be compromised. This can put them personally, and those around them, at risk.

When substance abuse is involved, the biggest priority is to get the member healthy and in recovery. The second biggest priority is to get them back to work. Local 478's Operating Engineers are trained at a state-of-the-art training school, and they go through many years of training to become experts. The contractors recognize the expense and time that goes into each of these Operators and they do not want to lose these highly-skilled workers. When the MAP program is properly implemented, it is not uncommon to get members back to work with the company they left when they entered the path of recovery.

Another priority of Local 478 is follow-up. The union reaches out to the member and recommends avenues to take on their journey of recovery. As of last year, the union started hosting a group that covers substance abuse education and allows for a check-in and personal stories. The group has become an outlet for many people in recovery. It has been very successful and has grown since its inception. The union recognizes that recovery is not easy and that sometimes its members will have to enter treatment a few times before they make a change. As long as the worker in recovery is honest and remains willing to work with the union, Local 478 will continue fighting the battle of addiction alongside their members.

One of the contractors working with Local 478, Dimeo Construction, has successfully implemented MAP into their everyday work routine. Dimeo embraces the program, and their management has led by example, by taking the lead when they notice someone on the job site is having a difficult day. Dimeo is completely invested in MAP, and in turn so are their employees.

After members enter recovery, many of them decide to become key peer-to-peer counselors. There is no better person to speak with when entering the journey of recovery, than someone who has walked that path themselves. MAP has proven to be a great success with participation from union leaders, union staff and members. MAP has helped many people and their families get help, get back to work and live a healthy lifestyle.

PRINCIPLES-TO-PRACTICE *(**Adam Seidner**, MD, MPH; Chief Medical Officer, The Hartford and **Michael Erdil**, MD, FACOEM; Asst. Clinical Professor, University of Connecticut Health Center)*

Employee Support and Retention

Employers should know that there are many contributors to the growing opioid epidemic in the US, including overprescribing, availability of prescribed and illicit opioids, gaps in patient expectations and perceptions of risk, fractionation of care, problematic insurance benefit systems, lack of effective management of chronic pain and mental health, social and economic inequalities, misleading information and aggressive pharmaceutical marketing and other problems. For example:

Prescribing Observations: In 2015, it is estimated that 37.8% of the U.S. adult population received a prescription for an opioid pain reliever (OPR).[86] This is approximately 640 morphine milligram equivalents (MME) per capita, or the per person equivalent of hydrocodone 5 mg, four times per day for more than one month.[87]

Misuse and Addiction: For individuals prescribed OPRs, 12.5% reported misusing their OPR and 16.7% reported having an opioid use disorder (OUD).[88] Overall, an estimated 11.5 million Americans misused OPR and 1.9 million Americans had an OUD in 2015.[89] OUD estimates increased to 2.1 million Americans in 2016.[90] As many as 600,000 Americans have a substance abuse disorder (SUD) involving heroin.[91] Almost half of patients treated for OUD began using opioids after receipt of a physician prescription[92] and 80% of heroin users report using OPR before transitioning to heroin.[93] There were 520,000 hospitalizations for OUD in 2012 with an estimated cost of $15 billion.[94] Each day, more than 1,000 people are treated in emergency rooms for misusing prescription opioids.[95]

[86] Han B et al., 2017. Prescription opioid use, misuse, and use disorders in US adults: 2015 National Survey on Drug Use and Health, Ann Intern Med,[published online ahead of print August 1, 2017]. doi:10.7326/M17-0865.
[87] Guy GP, Zhang K, Bohm MK, et al. 2017. Vital Signs: Changes in Opioid Prescribing in the United States, 2006–2015 MMWR 66(26) 07/07/17
[88] Shah A, Hayes CJ, Martin BC. 2017. Characteristics of Initial Prescription Episodes and Likelihood of Long-Term Opioid Use — United States, 2006–2015. MMWR 66(10) 03/17/17
[89] Han B et al., 2017. *Ibid.*
[90] https://www.hhs.gov/opioids/sites/default/files/2018-01/opioids-infographic.pdf
[91] O'Donnell JK, Gladden RM, Seth P. 2017. Trends in Deaths Involving Heroin and Synthetic Opioids Excluding Methadone, and Law Enforcement Drug Product Reports, by Census Region — United States, 2006–2015. MMWR 66(34) 09/01/17
[92] Cicero TJ, Ellis MS, Kasper ZA. 2017. Psychoactive substance use prior to the development of iatrogenic opioid abuse: a descriptive analysis of treatment-seeking opioid abusers. Addict Behav.;65:242-244
[93] Compton WM, Jones CM, Baldwin GT. 2016. Relationship between nonmedical prescription-opioid use and heroin use. N Engl J Med.;374(2):154-163.
[94] Ronan MV, Herzig SJ. 2016. Hospitalizations related to opioid abuse/dependence and associated serious infections increased sharply, 2002-2012. Health Aff.;35:832-837.
[95] https://www.cdc.gov/drugoverdose/data/overdose.html

Overdose Deaths: Approximately 33,000 Americans died from opioids in 2015, including almost 13,000 from illicit heroin and fentanyl.[96] The updated estimate for prescribed and illicit opioid deaths in 2016 was 42,249 deaths (116 per day), including 47 deaths each day resulting from prescribed OPRs.[97,98] The nature and rates of opioid deaths in all states are highly variable and constantly changing, and many opioid overdose deaths involve multiple opioids.[99] Thus, of the 42,249 opioid deaths in 2016, 17,087 involved prescribed opioids, 15,469 involved heroin and 19,413 involved synthetic opioids such as fentanyl. Opioid overdose deaths are contributing to a decline in overall life expectancy after years of increased longevity for each generation.[100]

Overall Costs: Estimated costs of nonmedical use of OPR in 2011 was $53.4 billion, including $42 billion (79%) due to lost productivity, $8.2 billion (15%) to criminal justice, $2.2 billion (4%) to treatment of drug abuse, and $944 million to medical complications (2%).[101] A 2013 estimate for the total cost of opioid misuse and dependence was $78.5 billion including $28.9 billion for health care and substance abuse treatment.[102]

Workers' Compensation Costs and Facts: Opioids contribute to delayed recovery from low back pain, increased medical costs, disability and overall costs.[103-105] In 2011, opioids accounted for an estimated 25% of workers' compensation prescription drug costs.[106] In Utah, 36% of individuals with opioid overdose deaths were employed within two months of death, and 57% had a history of work injury.[107] In Washington state, of the individuals receiving workers' compensation benefits who experienced overdose deaths, 60% were probably related to prescribed opioids.[108]

[96] Rudd RA, Seth P, David F, Scholl L. 2016. Increases in drug and opioid-involved overdose deaths—United States, 2010–2015. MMWR 65(50,51) 12/30/16:1445–52. https://doi.org/10.15585/mmwr. mm655051e1
[97] https://www.cdc.gov/drugoverdose/data/overdose.html
[98] https://www.hhs.gov/opioids/sites/default/files/2018-01/opioids-infographic.pdf
[99] https://www.drugabuse.gov/drugs-abuse/opioids/opioid-summaries-by-state
[100] Dowell D, Aria E, Kochanek K, et al. 2017. Contribution of Opioid-Involved Poisoning to the Change in Life Expectancy in the United States, 2000-2015. JAMA; Volume 318, Number 11 1065
[101] Hansen RN, Oster G, Edelsberg J, Woody GE, et al. 2011. Economic costs of nonmedical use of prescription opioids. Clin J Pain.;27:194–202.
[102] Florence CS, Zhou C, Luo F, et al. 2016. The Economic Burden of Prescription Opioid Overdose, Abuse, and Dependence in the United States, 2013 Medical Care _ Volume 54, Number 10
[103] Franklin GM, Stover BD, Turner JA, et al. 2008. Early opioid prescription and subsequent disability among workers with back injuries: the Disability Risk Identification Study Cohort. Spine;33:199-204.
[104] Tao XG, Lavin RA, Yuspeh L, et al. 2015. The association of the use of opioid and psychotropic medications with workers' compensation claim costs and lost work time. J Occup Environ Med.;57:196-201.
[105] Volinn E, Fargo JD, Fine PG. 2009. Opioid therapy for nonspecific low back pain and the outcome of chronic work loss. Pain.;142:194-201.
[106] https://www.cdcfoundation.org/businesspulse/opioid-overdose-epidemic
[107] Cheng M, Sauer B, Johnson E, et al. 2013. Comparison of opioid related deaths by work related injury. Amer Journal of Indust Med 56:308-316.
[108] Franklin GM, Mai J, Wickizer T, et al. 2005. Opioid dosing trends and mortality in Washington state workers' compensation, 1996-2002. Amer Journal of Indust Med 48:91-99.

Implementing the Five Key Principles for Supportive Substance Abuse Policies

The potential consequences of opioid use in the workplace include the risk and the cost of injury and the loss of productivity. These safety concerns have led to the development of this guidance, and the corresponding policy-development principles to assist in identifying and addressing impairment issues related to the use of opioids and other substances. Although prevention of injuries is important, helping your employees who are struggling with a chemical impairment or a substance use disorder requires a thoughtful and compassionate approach. So the remaining question is: *How should employers revise their thinking about workers suffering from addiction and what are the steps employers can take to begin to develop and/or revise substance abuse and other policies to reflect these principles?*

Under Occupational Safety and Health Administration rules, employers have a federal mandate to address impaired workers who contribute to unsafe work environments.[109,110] The best practice for employers is to begin with a clear written policy regarding chemical use and impairment. We firmly believe that employers who are able to integrate the five key principles outlined in this document as the foundation of their workplace substance abuse policies will be engaging in current best practices to help raise awareness, assist efforts in managing chemical impairment and substance use disorders in their workplaces, and support addicted workers through treatment, recovery, and retention.

Early identification and an employer's approach to an employee with a substance use disorder are critical to successful outcomes. Simply having a Drug-Free Workplace Policy is not enough. Employers can embrace a new paradigm to address substance abuse in the workplace. Treating substance use disorders as a disease represents a fundamental shift from previous approaches.

Ongoing performance problems that do not respond to normal supervisory actions may be signs of addiction or other personal problems and may require further intervention. Examples of common performance problems that may be indicators of underlying substance use or chemical addiction include: poor attendance, tardiness, unexplained absences, coworker or customer complaints, and mistakes or missed deadlines. Workplace policies may rely on the observation of specific individual behaviors indicating chemical influence or impairment. There are guides that outline the steps management should take to properly execute and document situations under a drug and alcohol testing policy.[111] Management should document reasonable suspicion and may pursue drug testing, however organizations should seek legal counsel on how to proceed with positive test results. When a performance problem has been identified, it should be properly documented. The employee can be

[109] Shaw WS, Robertson MM, Pransky G, McLellan RK. Employee perspectives on the role of supervisors to prevent workplace disability after injuries. J Occup Rehabil. 2003; 13(3):129–42

[110] Shaw WS, Robertson MM, et al. A controlled case study of supervisor training to optimize response to injury in the food processing industry. Work 2006 26. 107-14.

[111] Slavit W, Reagin A, Finch RA. An Employer's Guide to Workplace Substance Abuse: Strategies and Treatment Recommendations. Washington, DC: Center for Prevention and Health Services, National Business Group on Health; 2009

referred for assistance and, in return, the employer should follow up on how the employee is progressing.

Employers should determine what type of assistance will be made available to their employees who are in need of help. Employers should clearly state the company's policy and communicate that they are there to help employees. The employee's decision to seek help is a private one and should not be made public. Privacy policies help protect employee confidentiality.

Employees who appear to be impaired in the workplace should be assessed according to employer policies and made to feel that they are receiving ***Instant Support***. Small business owners, managers, supervisors, and human resource personnel can be helpful by providing information for community hotlines; self-help groups such as Alcoholics Anonymous, Narcotics Anonymous, Al-Anon; community mental health centers; private therapists or counselors; and addiction treatment centers.

If the employee has a primary care physician, he or she may want to follow up with them or the physician prescribing their opioids. When Employee Assistance Program (EAP) services are available, employees should be reassured that their EAP records are separate from personnel records and can be accessed only with a signed release from the employee. EAP professionals are bound by a code of ethics to protect the confidentiality of the employees and family members that they serve.

Employer Flexibility should be an overarching theme of policy statements outlining the company's commitment to addressing employee chemical use and impairment in the workplace. A good policy will support the worker and assist in their recovery and retention as well as outline the company's policies, procedures and programs related to chemical use and impairment in the workplace. The employer can demonstrate their commitment by inviting workers to participate in the development, implementation and improvement of the company's policies and programs.

Policies and procedures related to addressing chemical impairment in the workplace should align with any existing medical practices, wellness program elements, and organizational values. Questions to be asked when developing a workplace policy include: *What is the purpose of the policy and program? Who is covered by the policy? When does the policy apply? What behavior is prohibited? Are employees required to notify supervisors of drug-related convictions? Does the policy include searches? Does the program include drug testing?*

Policies should conform to union contracts where applicable. In addition to legal counsel, other disciplines to be considered in the development of a chemical impairment policy include managers, human resources, a medical review officer (MRO), or other occupational health professional. An effective policy will focus on employee needs and provide ongoing communication and support.

Employers should understand their legal requirements for dealing with chemically impaired employees. Employers who have established policies and procedures may transition from a reactive state to a

proactive state, indicating the workplace has the basics in place and is ready to develop a comprehensive policy and procedure program to implement best practices. Employers may wish to expand their focus to include general wellness programs for their workforce.

Company policies should be regularly reviewed. They may need to be updated because of recent court rulings, new regulations, or changes in the workplace. Employees with chemical impairment should also be reviewed to document their progress. Some general principles to consider include making early and considerate contact with employees who are out of work. The employer should consider making an offer of modified work accommodations to the employee so they can return early and safely to work. Accommodations should include activities suitable to their condition and abilities. A Return-to-Work policy and plan involve more than matching the affected worker's restrictions to a job accommodation. Coworkers and supervisors might be placed into new relationships and routines. Managers and supervisors have been identified as important to the success of a worker returning to work due to their proximity to the worker and their ability to manage the immediate work environment. Managers and supervisors should be trained in work disability prevention and included in return to work planning.

While early contact is a key component to helping a worker suffering from addiction feel supported, ***Regular Review*** and continued contact that keeps an employee feeling connected to the workplace is just as important to successful recovery. If an employee is out of work, contact within the first week is recommended.[112] Regular contact with the employee should be established and the contact times or frequency agreed upon by the employee and employer. Once the employee is released to perform work, ensure that the work activities are consistent with the employee's capabilities and restrictions.

Managers and supervisors can assist the employee with chemical use and impairment issues by asking how they can be helpful to the recovering employee and his or her family. An open dialogue can be helpful from the beginning. If there are times that the employee is experiencing difficulty, speak directly to that employee about how you can assist them. Providing feedback will allow the employee to help identify what kind of help they need and ensure a successful return to work. Return-to-Work policies are an excellent opportunity for the company to show its commitment to their employees and facilitate return to work.

Consider ***Enlisting Success*** in your workplace by developing a bridging program to help prepare the employee to return to the workplace while or after they receive treatment. Partnerships with stakeholders can play a significant role in identifying chemically impaired employees and assist in their return to work process. To the extent employees are comfortable, peer-to-peer counseling networks within your workplace or in combination with others for smaller employers, that match workers in recovery with a peer network of individuals who have overcome similar addictions, can help overcome

[112] Barbieri B, Dal Corso L, Di Sipio AM, De Carlo A, Benevene P. Small opportunities are often the beginning of great enterprises: The role of work engagement in support of people through the recovery process and in preventing relapse in drug and alcohol abuse. Work. 2016 Oct 17; 55(2):373-383

feelings of isolation and promote the realization that addiction is a common disease that affects many other working adults, including coworkers.

In addition, communicating with the worker's healthcare provider(s) and providing them information about his/her work environment can be beneficial.[113] The more these stakeholders understand the worker's job and the workplace's ability to provide accommodation, the better able they are to advise the worker and participate in informed return to work. Permission from the worker is needed for this contact to proceed, and the degree and nature of the contact between the workplace and health care providers can vary depending on individual circumstances. The contact may be in the form of a paper-based information exchange or a telephone conversation about work and job demands. It may even include a workplace visit by a health care provider to view the work activities and converse directly with the employer.

These partnership arrangements may help accelerate the impaired worker's recovery. Sharing evidence-based knowledge with stakeholders can improve workplace quality for all employees. Providing practical assistance to employees, managers, supervisors, physicians, and other health care providers can help support the development and refinement of successful and sustainable policies and procedures dealing with worker addiction, recovery, and return-to-work, ensuring the success of the employer's most valuable asset – the employee.

[113] Phillips JA, Holland MG, Baldwin DD, Meuleveld LG, et al. Marijuana in the workplace: guidance for occupational health professionals and employers: Joint Guidance Statement of the American Association of Occupational Health Nurses and the American College of Occupational and Environmental Medicine. J Occup Environ Med. 2015 Apr; 57(4):459-75

A CALL TO ACTION IN THE WORKPLACE

*(**Michael Erdil**, MD, FACOEM; Assistant Clinical Professor, University of Connecticut Health Center)*

Many of the causes of the opioid epidemic are outside of the immediate domain of employers, including socioeconomic and cultural factors, health care systems design, health disparities, medical evidence and practice, regulatory controls and other considerations. However, employers have a responsibility and opportunity to effect change. These include:

Recognize the significance of the opioid epidemic and the impact on employers and their employees.

Establish a workplace framework to permit action. This includes changing workplace culture (including treatment of pain, mental health and Substance Use Disorders (SUDs), encouraging confidentiality and employee ability to seek care early, addressing barriers to reporting and care (such as stigmas), achieving support throughout the organization, and adopting appropriate policies and procedures that translate to action.

Educate managers and employees to identify mental health and SUDs, understand treatment and pain management options and recognize ways to avoid or reduce risks.

Review benefit structures to improve coverage (evidence-based pain management with demonstrated outcomes, mental health and substance abuse coverage, better partnerships and innovations with health care providers) and achieve better integration among group health insurance, pharmacy benefit managers, workers' compensation, and short and long-term disability.

Become active to prompt action by federal and state legislators, including workers' compensation systems and health care organizations. Promote innovative solutions and research to identify and implement better screening and practice, develop ideal systems design for integrated and multidimensional pain and substance abuse care, and analyze outcomes.

While there are a number of treatment options that could benefit from further research, there are some recent guidelines that have evidence-based support and the potential to improve outcomes. Employers interacting with insurers, providers and health care systems could benefit from promoting the concept that care systems should implement and track evidence-based care and outcomes. Additionally, substance abuse treatment guidelines should include evidence-based treatment. Some relevant guidelines include the following:

- ✓ Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians [114]

- ✓ CDC Guideline for Prescribing Opioids for Chronic Pain [115]

- ✓ American Society of Addiction Medicine. 2015. National Practice Guideline for the Use of Medications in the Treatment of Addiction Involving Opioid Use [116]

- ✓ Substance Abuse and Mental Health Administration (SAMSHA) Federal Guidelines for Opioid Treatment Programs [117]

- ✓ VA/DoD Clinical Practice Guideline For The Management Of Substance Use Disorders [118]

To assess the efficacy of interventions, outcomes need to be tracked. The decision regarding key indicators to monitor requires an understanding of stakeholder experience and goals. The following data elements may be relevant:

Employers Working with Insurers and Pharmacy Benefit Managers (PBMs) - Frequency of opioid prescribing, opioid duration and dosing, utilization of evidence-based non-opioid pain and behavioral treatments, monitoring with urine drug testing, work loss and modified duty days

Public Health Systems - Prescription Drug Monitoring Program (PDMP) - Use by prescribers, emergency room visits resulting from opioid misuse including overdose (fatal and non-fatal), hospitalizations for Opioid Use Disorders (OUDs), OUD treatment delays, rates of Medication assisted treatment (MAT) for OUDs including retention and relapse rates, opioid overdose and deaths, naloxone distribution

While research agendas are beyond the domain of employers, employers can play a role in advocating for research funding and participating in research studies. There are a number of considerations for research efforts involving employers and workplaces:

[114] Qaseem A, Wilt TJ, McLean RM, Forciea MA, et al. 2017. Noninvasive Treatments for Acute, Subacute, and Chronic Low Back Pain: A Clinical Practice Guideline From the American College of Physicians. Ann Intern Med.;166:514–530. doi: 10.7326/M16-2367
[115] Dowell D, Haegerich TM, Chou R. 2016. CDC Guideline for Prescribing Opioids for Chronic Pain — United States, 2016. MMWR Recomm Rep 2016;65(No. RR-1):1–49. DOI: http://dx.doi.org/10.15585/mmwr.rr6501e1
[116] https://www.asam.org/docs/default-source/practice-support/guidelines-and-consensus-docs/asam-national-practice-guideline-supplement.pdf
[117] https://www.store.samhsa.gov/product/Federal-Guidelines-for-Opioid-Treatment-Programs/PEP15-FEDGUIDEOTP
[118] https://www.healthquality.va.gov/guidelines/MH/sud/VADoDSUDCPGRevised22216.pdf

- Effective workplace prevention programs (pain, mental health, substance abuse) and barriers to implementation of evidence-based prevention efforts

- Design and implementation of workplace programs equivalents of Screening, Brief Intervention and Referral to Treatment (SBIRT) programs[119]

- Interventions to decrease stigma in the workplace and promote early reporting by employees with OUD/SUD

- Assessment of the impact of Workers' Compensation Medical Protocols (including pain and opioids) on outcomes of care and further needs (e.g. additional medical protocols, formulary options) and implementation of changes where necessary

- Strategies to improve employer insurance coverage and health care provider utilization of evidence based treatment of pain, mental health and OUD/SUD including safer opioid prescribing, and monitoring (e.g. pain and function outcomes, adverse effects, PDMP, UDT)

- Interventions to overcome workplace barriers to improve stay at work, return to work for patients with pain, mental health and OUD/SUD

- Determining the most effective communication strategies to improve workplace participation in interventions and to understand the scientific basis and rationale for interventions

Connecticut, like many other states, is facing an epidemic of opioid use and abuse. The impact of this epidemic touches individuals, employers, health care systems, governments, public health systems and our society. However, as with many other public health crises throughout history, there are solutions. The answer will require cultural shifts, education, innovation, adoption of evidence-based prevention and treatment, improved care coordination and communication, evaluation of health care reimbursement structures, funding for research, public health systems and interventions as well as data tracking and analysis.

[119] https://www.samhsa.gov/sbirt

EMPLOYER RESOURCES

Connect with JAN at (800) 526-7234 (VOICE) OR (877) 781-9403 (TTY)

If you have a question about workplace accommodations or the Americans with Disabilities Act (ADA) and related legislation, ask us.

The Job Accommodation Network (JAN), a service of the U.S. Department of Labor's Office of Disability Employment Policy (ODEP) is the leading source of expert, confidential guidance on workplace accommodations and provides one-on-one consultation to employers and employees, as well as service providers and others, free of charge. https://www.dol.gov/general/topic/disability/jobaccommodations

SAMHSA: Drug-Free Workplace Toolkit https://www.samhsa.gov/workplace/toolkit

National Safety Council:

The Proactive Role Employers Can Take: Opioids in the Workplace
http://www.nsc.org/RxDrugOverdoseDocuments/proactive-role-employers-can-take-opioids-in-the-workplace.pdf and/or https://www.nsc.org/Portals/0/Documents/NewsDocuments/2017/Media-Briefing-National-Employer-Drug-Survey-Results.pdf

Drugs at Work: What Employers Need to Know
https://www.nsc.org/work-safety/safety-topics/drugs-at-work

Prescription Drug Employer Kit
This includes a number of resources including what to do if you suspect someone has an addiction disorder, updating your drug-free workplace program, structuring benefits, and educational resources for staff and employees. http://www.nsc.org/learn/NSC-Initiatives/Pages/prescription-drug-employer-kit.aspx

U.S. Chamber of Commerce

Contains useful information for employers with links to additional resources including a substance use cost calculator, links to useful information from the National Safety Council.
https://www.uschamber.com/event/the-opioid-epidemic-the-front-lines-the-boardroom

CDC Foundation

There are a number of materials and links to information regarding opioids, overdose information, infographics, evidence-based policies and interventions, support for employees struggling with OUD, external links including a national helpline. https://www.cdcfoundation.org/businesspulse/opioid-overdose-epidemic-resources

Workplace Mental Health

The Partnership for Workplace Mental Health is a program of the American Psychiatric Foundation, a subsidiary of the American Psychiatric Association. The Partnership collaborates with employers to advance effective approaches to mental health and promotes the business case for quality mental

health care. The Partnership's network includes more than 9,000 employers and related stakeholders. For more information see www.workplacementalhealth.org.

The American Psychiatric Association

The American Psychiatric Association is a national medical specialty society whose physician members specialize in the diagnosis, treatment, prevention and research of mental illnesses, including substance use disorders. Visit the APA at www.psychiatry.org. The American Psychiatric Association (APA) https://www.asam.org/docs/default-source/2015-conference-epk/asam-impact_barriers4-02-14.pdf?sfvrsn=4

EMPLOYEE RESOURCES

Substance Abuse and Mental Health Services Administration (SAMHSA)

National Helpline: 1-800-662-HELP (4357) or 1-800-487-4889 (TDD, for hearing impaired)

Behavioral Health Treatment Services (search by address, city, or ZIP Code):
http://findtreatment.samhsa.gov/

Choosing Wisely http://www.choosingwisely.org/ is an initiative of the ABIM Foundation that seeks to promote conversations that reduce unnecessary medical tests, treatments or procedures associated with unnecessary costs and potential patient harm. Several medical organizations and associations have identified tests, treatments or procedures commonly used in their field whose necessity should be questioned. The goal is to prompt patient and provider conversations regarding these interventions.

American Society of Anesthesiologists – Pain Medicine

Don't prescribe opioid analgesics as first-line therapy to treat chronic non-cancer pain.
http://www.choosingwisely.org/clinician-lists/american-society-anesthesiologists-opioid-analgesics-for-chronic-non-cancer-pain/

Medicines to Relieve Chronic Pain

http://www.choosingwisely.org/wp-content/uploads/2018/02/Medicines-To-Relieve-Chronic-Pain-ASA.pdf

Avoid Opioids for Most Long-Term Pain

http://www.choosingwisely.org/wp-content/uploads/2018/03/Avoid-Opioids-For-Long-Term-Pain_8.5x11-Eng.pdf

American Academy of Neurology Treating Migraine Headaches

Using too much pain medicine can lead to a condition called MOH, or medication overuse headache.
http://www.choosingwisely.org/patient-resources/treating-migraine-headaches/

Consumer Reports https://www.consumerreports.org is an independent, nonprofit organization that works side by side with consumers to create a fairer, safer, and healthier marketplace. To help patients understand medical screening and treatment options for select conditions including pain and opioids, and to better ask questions about what tests, treatments and procedures are right for them, Consumer Reports (has developed several patient-friendly health information materials.

The Better Way to Get Back Pain Relief

https://www.consumerreports.org/back-pain/the-better-way-to-get-back-pain-relief/

Should You Take Opioids to Treat Pain?
https://www.consumerreports.org/cro/2012/07/should-you-take-opioids-to-treat-pain/index.htm

5 Surprising Facts on Prescription Painkillers
https://www.consumerreports.org/cro/2014/01/5-surprising-things-you-need-to-know-about-prescription-painkillers/index.htm

Long-Term Opioid Use Can Start After Surgery, New Study Shows
https://www.consumerreports.org/opioids/long-term-opioid-use-can-start-after-surgery-study-says/

If You're Taking Opioid Painkillers, You Need to Have Naloxone on Hand
https://www.consumerreports.org/opioids/long-term-opioid-use-can-start-after-surgery-study-says/

How to Avoid Getting Hooked on Opioids
https://www.consumerreports.org/opioids/how-to-avoid-getting-hooked-on-opioids/

Federal Drug Administration (FDA) Patient Handouts:
A Guide to Safe Use of Pain Medication and How to Dispose of Unused Medications
https://www.fda.gov/Drugs/ResourcesForYou/Consumers

Centers for Disease Control and Prevention
CDC has information for several stakeholders including Helpful Materials for Patients regarding the CDC Guidelines for prescribing opioids for chronic pain, prescription opioid information, preventing misuse and overdose, pregnancy and opioids, infographics.
https://www.cdc.gov/drugoverdose/patients/materials.html

Turn the Tide
The Turn the Tide addresses the U.S. Surgeon General's initiative to address the opioid epidemic. It includes information for clinicians regarding treatment of pain, prescribing opioids, assessing patients, opioid use disorders and overdose risk. Information for patients includes opioid education, managing pain, taking opioids, safe storage and disposal, help lines. https://turnthetiderx.org/for-patients/#about-opioids

SAMSHA Treatment and Recovery
Decisions in Recovery: Treatment for opioid use disorder
https://store.samhsa.gov/shin/content//SMA16-4993/SMA16-4993.pdf

Opioid Overdose Prevention Toolkit (includes information for prescribers, patients and family members, first responders and community members) https://store.samhsa.gov/shin/content//SMA18-4742/SMA18-4742.pdf.

Naloxone Emergency Treatment of Known or Suspected Opioid Overdose

Connecticut Department of Mental Health & Addiction Services - *Opioid Overdose Prevention/Naloxone (Narcan) Initiative.* For more information regarding CT laws, training, naloxone prescribing pharmacists, and other useful links go to http://www.ct.gov/DMHAS/cwp/view.asp?a=2902&q=509650.

Opioid Overdose and Prevention Initiatives

https://portal.ct.gov/DPH/Health-Education-Management--Surveillance/The-Office-of-Injury-Prevention/Opioids-and-Prescription-Drug-Overdose-Prevention-Program

Train Connecticut

Free training course to prepare Emergency Medical Responders to intervene in opioid emergencies
https://www.train.org/connecticut/course/1072448/

Narcan Quick Start Guide - https://www.narcan.com/pdf/NARCAN-Quick-Start-Guide.pdf
Narcan Patient Information - https://www.narcan.com/pdf/NARCAN-Patient-Information.pdf

NIH Opioid Overdose Reversal with Naloxone

https://www.drugabuse.gov/related-topics/opioid-overdose-reversal-naloxone-narcan-evzio

Naloxone for Opioid Overdose: Life-Saving Science

https://www.drugabuse.gov/publications/naloxone-opioid-overdose-life-saving-science/naloxone-opioid-overdose-life-saving-science

Harm Reduction Coalition Guide to Developing and Managing Overdose Prevention and Take-Home Naloxone Projects

http://harmreduction.org/wp-content/uploads/2012/11/od-manual-final-links.pdf

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Lead Author Thomas St. Louis, M.S.P.H.

Project Coordinator Deborah Pease, M.P.H.

Commissioner Raul Pino, M.D., M.P.H.

Governor Dannel P. Malloy, J.D.

APPENDIX D

WHY IS WORKPLACE HEALTH AND SAFETY IMPORTANT FOR ESL STUDENTS?

English as a Second Language (ESL) adult learners are at a greater risk for workplace injuries and fatalities because of their inability to adequately understand workplace health and safety information. This population often includes foreign born, non-English or limited English proficient, Hispanic/Latino, undocumented, farm/migrant workers, young workers, and older workers.

A major risk factor for work-related fatalities for all workers is lack of health and safety training. Language and cultural barriers may call for the use of special training techniques such as use of a participatory approach and proper selection and use of translation methods.[2]

National Data:

- An average of nearly 13 workers die every day in the US.[1]
- The nearly 3 million nonfatal workplace injuries and illnesses reported by private industry employers in 2014 occurred at a rate of 3.2 cases per 100 equivalent full-time workers.[3]
- 821,000 workers in state and local government experienced non-fatal occupational injuries or illnesses, which is estimated to cost the U.S. economy approximately $200 billion annually.[3]
- Hispanic/Latino workers are at a greater risk for workplace illnesses, injuries, and fatalities.[2]
- 789 Hispanic or Latino workers were killed from work-related injuries in 2014. On average, more than 15 deaths a week or two Latino workers are killed every single day of the year, all year long.[1]
- Only one-third of immigrant Hispanic workers received any job safety training and 55% had no workers' compensation coverage.[2]
- There is a disproportionate burden of occupational deaths and injuries on the Hispanic workforce.[2]

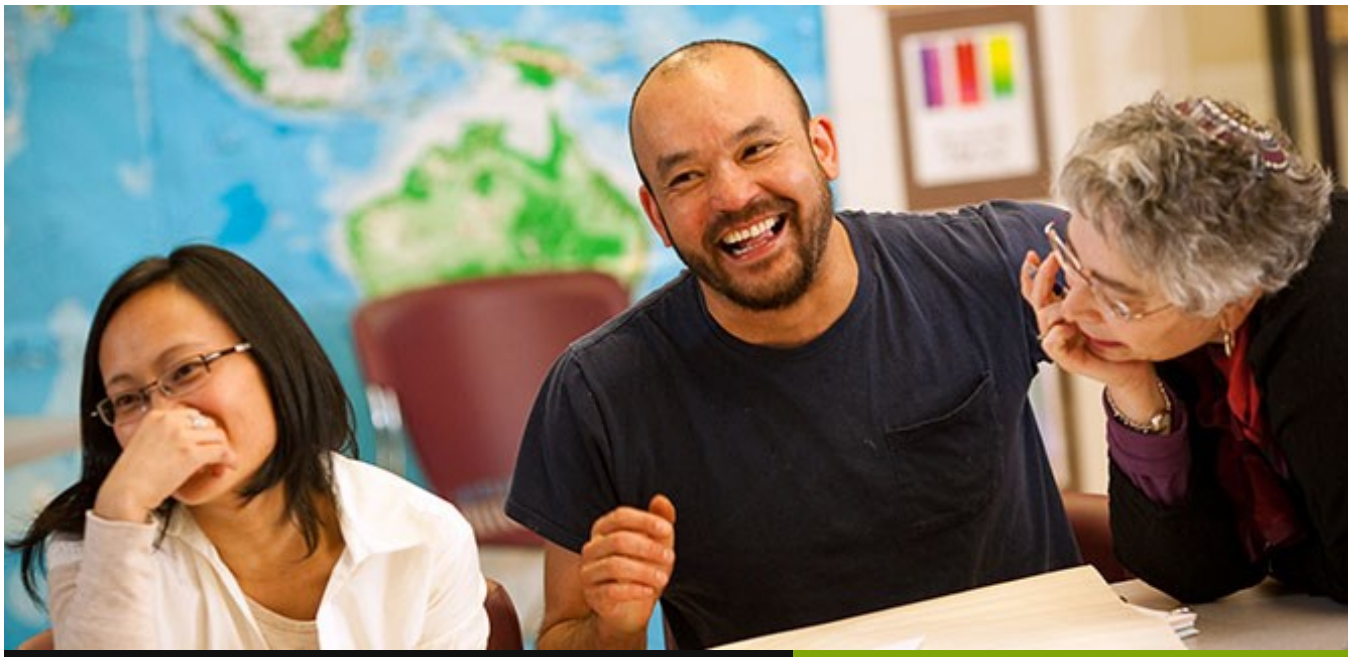
"Workers with limited English-language proficiency often have difficulty fully understanding health and safety messages in their workplaces. This puts them at an increased risk for suffering an injury or illness. The Connecticut Department of Public Health is working to ensure a healthy and safe workplace for all Connecticut workers, regardless of their primary language or country of origin."

- Dr. Jewel Mullen, DPH Commissioner

English As A Second Language

Connecticut Data:

The Connecticut fatality rate for Hispanic workers is almost 3 times higher than for non-Hispanic workers. This is similar to other states and national data. Even within job categories, the risk to Hispanic workers is higher. A national study of construction occupations showed that Hispanic construction workers were twice as likely to be injured or killed as their non-Hispanic counterparts.



EMPOWERING ADULT LEARNERS TO KNOW THEIR RIGHTS ON THE JOB

Advantages of a Workplace Health and Safety Curriculum for ESL Students

The purpose of this pilot program is to help ESL students learn about their workplace health and safety rights. The curriculum uses learner-centered activities to engage students in discussions and build on their experiences while utilizing their English language skills. By using a Workplace Health and Safety Curriculum, students will learn to identify and develop strategies to address workplace health and safety scenarios. This Curriculum is an excellent resource for all ESL Teachers.

Contact Us

Give us a call for more information about our services and educational materials.

State of Connecticut
Department of Public Health
Environmental Health Section
Environmental & Occupational Health Assessment Program
(860) 509-7740

Visit us on the web at
www.ct.gov/dph/occupationalhealth

Or email deborah.pease@ct.gov

Sources:

1. U.S. Department of Labor, Occupational Safety & Health Administration (OSHA), "Worker injuries, illnesses and fatalities", 2014. https://www.osha.gov/oshstats/commonstats.html
2. La Noticia De Salud: The Official Newsletter of the Connecticut Center for Eliminating Health Disparities among Latinos* Spring 2007 – Vol. 2, NO. 3. *CEHDL is an NIH EXPORT Center funded by the National Center on Minority Health and Health Disparities (grant#P20MD001765).
3. Centers for Disease Control and Prevention (CDC). Morbidity and Mortality Weekly Report (MMWR). Nonfatal Work-Related Injuries and Illnesses – United States, 2010. November 22, 2013, 62(03);35-40.

Form Approved Through 06/30/2012
OMB No. 0925-0001

DEPARTMENT OF HEALTH AND HUMAN SERVICES

Procedure for Submission of Final Invention Statement and Certification (For Grant or Award) Form HHS 568

A Final Invention Statement and Certification (Form HHS 568) shall be executed and submitted within 90 days following the expiration or termination of a grant or award. The Statement shall include all inventions which were conceived or first actually reduced to practice during the course of work under the grant or award, from the original effective date of support through the date of completion or termination. The Statement shall include any inventions reported previously for the grant or award as part of a non-competing application. This reporting requirement is applicable to grants and awards by Department of Health and Human Services in support of research.

The Final Invention Statement and Certification does not in any way relieve the person responsible for the grant or award, or the institution, of the obligation to assure that all inventions are promptly and fully reported directly to the National Institutes of Health, as required by terms of the grant or award. Information regarding the reporting of inventions, including the reporting form to be followed, may be obtained from the Office of Policy for Extramural Research Administration, Division of Extramural Inventions and Technology Resources, 6705 Rockledge Drive MSC 7980, Bethesda, Maryland 20892-7980, Telephone: (301) 435-1986.

The original of the completed Final Invention Statement and Certification is to be returned to the awarding component that funded the grant or award. The entire grant or award number must appear in the designated box on the form. The period covered by the Final Invention Statement is the project period of the grant or award at a particular grantee institution. If no inventions were involved, insert the word “None” in the first block under item Title of Invention. Each Statement requires the signature of an institution official authorized to sign on behalf of the institution.

Form Approved Through 06/30/2012
OMB No. 0925-0001

Department of Health and Human Services

Final Invention Statement and Certification

(For Grant or Award)

DHHS Grant or Award No.

6 U60OH010904

A. We hereby certify that, to the best of our knowledge and belief, all inventions are listed below which were conceived and/or first actually reduced to practice during the course of work under the above-referenced DHHS grant or award for the period

07/01/2015 *original effective date* through 06/30/2021 *date of termination* .

B. Inventions (Note: If no inventions have been made under the grant or award, insert the word *"NONE"* under Title below.)

NAME OF INVENTOR	TITLE OF INVENTION	DATE REPORTED TO DHHS
None	None	
(Use continuation sheet if necessary)		

C. Signature — This block ***must*** be signed by an official authorized to sign on behalf of the institution.

Title
Section Chief, Fiscal Services TSHC

Typed Name
Chukwuma Amechi

Signature
Chukwuma Amechi, Section Chief, Fiscal Services (TSHC)
Digitally signed by Chukwuma Amechi, Section Chief, Fiscal Services (TSHC)
Date: 2021.09.23 18:58:19 -04'00'

Date
9/23/2021

Name and Mailing Address of Institution

CT Department of Public Health
410 Capitol Avenue, MS13 ACT
Hartford, CT 06134

HHS 568 (Rev. 06/09)

Privacy Act Statement

The PHS maintains application and grant records as part of a system of records as defined by the Privacy Act: 09-25-0112, Grants and Cooperative Agreements: Research, Research Training, Fellowship, and Construction Applications and Related Awards." The Privacy Act of 1974 (5 USC 522a) allows disclosures for "routine uses" and permissible disclosures.

Some routine uses may be:

1. To the cognizant audit agency for auditing.
2. To a Congressional office from a record of an individual in response to an inquiry from the Congressional office made at the request of that individual.
3. To qualified experts, not within the definition of DHHS employees as prescribed in DHHS regulations (45 CFR 5b.2) for opinions as part of the application review process.
4. To a Federal agency, in response to its request, in connection with the letting of a contract or the issuance of a license, grant, or other benefit by the requesting agency, to the extent that the record is relevant and necessary to the requesting agency's decision on the matter;
5. To organizations in the private sector with whom PHS has contracted for the purpose of collating, analyzing, aggregating, or otherwise refining records in a system. Relevant records will be disclosed to such a contractor, who will be required to maintain Privacy Act safeguards with respect to such records.
6. To the sponsoring organization in connection with the review of an application or performance or administration under the terms and conditions of the award, or in connection with problems that might arise in performance or administration if an award is made.
7. To the Department of Justice, to a court or other tribunal, or to another party before such tribunal, when one of the following is a party to litigation or has any interest in such litigation, and the DHHS determines that the use of such records by the Department of Justice, the tribunal, or the other party is relevant and necessary to the litigation and would help in the effective representation of the governmental party.
   a. the DHHS, or any component thereof;
   b. any DHHS employee in his or her official capacity;
   c. any DHHS employee in his or her individual capacity where the Department of Justice (or the DHHS, where it is authorized to do so) has agreed to represent the employee; or
   d. the United States or any agency thereof; where the DHHS determines that the litigation is likely to affect the DHHS or any of its components.
8. A record may also be disclosed for a research purpose, when the DHHS:
   a. has determined that the use or disclosure does not violate legal or policy limitations under which the record was provided, collected, or obtained;
   b. has determined that the research purpose (1) cannot be reasonably accomplished unless the record is provided in individually identifiable form, and (2) warrants the risk to the privacy of the individual that additional exposure of the record might bring;
   c. has secured a written statement attesting to the recipient's understanding of; and willingness to abide by, these provisions; and
   d. has required the recipient to:
      (1) establish reasonable administrative, technical, and physical safeguards to prevent unauthorized use or disclosure of the record;
      (2) destroy the information that identifies the individual at the earliest time at which removal or destruction can be accomplished consistent with the purpose of the research project, unless the recipient has presented adequate justification of a research or health nature for retaining such information; and
      (3) make no further use or disclosure of the record, except (a) in emergency circumstances affecting the health or safety of any individual, (b) for use in another research project, under these same conditions, and with written authorization of the DHHS, (c) for disclosure to a properly identified person for the purpose of an audit related to the research project, if information that would enable research subjects to be identified is removed or destroyed at the earliest opportunity consistent with the purpose of the audit, or (d) when required by law.

The Privacy Act also authorizes discretionary disclosures where determined appropriate by the PHS, including to law enforcement agencies, to the Congress acting within its legislative authority, to the Bureau of the Census, to the National Archives, to the General Accounting Office, pursuant to a court order, or as required to be disclosed by the Freedom of Information Act of 1974(5 USC 552) and the associated DHHS regulations (45 CFR Part 5).

Attachment 1
CDC Procurement & Grants Office - Branch ODEOH&IPSB
Equipment Inventory Listing

Report Date:	09/22/2021	Grant Number:	U60-OH010904
Project Title:	Connecticut Occupational Health Fundamental-Plus Surveillance Program	Project Period:	07/01/2015 - 06/30/2021
Grantee Name:	Connecticut Department of Public Health	Project Officer:	Thomas ST. Louis, MSPH
Grants Management Officer:	Linda West	Grants Specialist:	Mary Pat Shanahan

Description of Item: i.e. pH Meter	Mfr.[1] i.e. Fischer	Serial Number	Quantity	Condition[2]	Location[3]	Purchase Cost	Date Received [mm/dd/yyyy]

[1]Mfr. (Manufacturer)
[2]Condition: (Excellent) (Good) (Fair) (Poor) (Inoperable)
[3]Location: complete physical address

For Government Use Only, not to be completed by the Grantee
Property Administrator & PO Disposition Recommendation and Instructions:

Description of Item	Disposition[1]	Address[2]
	_____Transfer Title _____Retain and Compensate Awarding Agency _____ Return to Program Office _____Other (explain)	Attn: CDC / NIOSH 1600 Clifton Road, NE MS E-74 Atlanta, GA 30329-4018
	_____Transfer Title _____Retain and Compensate Awarding Agency _____ Return to Program Office _____Other (explain)	

[1]Check the appropriate disposition
[2]CDC Warehouse is the central receiving point for delivery of all non-hazardous and non-perishable supplies and equipment, CDC –AM–2004-03, update 2010