

STATE-BASED OCCUPATIONAL SAFETY AND HEALTH SURVEILLANCE COOPERATIVE AGREEMENT (ANNOUNCEMENT PAR-04-106)

As part of its mission to prevent injury, illness, and deaths caused by hazards in the workplace, the National Institute for Occupational Safety and Health (NIOSH) established surveillance programs which have helped to enumerate the extent of occupational hazards in the United States. The surveillance programs have also identified many old and new problems that require additional research and prevention efforts. A critical part of the NIOSH surveillance programs is extramural state-based occupational safety and health surveillance activities.

For fiscal year (FY) 2005, NIOSH developed and announced an integrated approach for the extramural state-based surveillance activities that includes: (1) a fundamental program to extract and analyze data from existing systems that capture information for 13 specific occupational safety and health indicators and the effects on workers; (2) an expanded program for identifying new sources of occupational safety and health data and developing interventions for reducing worker related injuries, illnesses, and fatalities; and (3) a consortium that will meet annually to share and learn from experiences within the group, work through issues of common interest, and work to refine state occupational safety and health surveillance activities to maximize impact on worker safety and health.

The NIOSH extramural budget currently includes \$5.4 million to support the surveillance program. In FY 2005, approximately \$3 million was available to fund the new comprehensive, integrated state-based program. In response to a request for applications (PAR-04-106), NIOSH received fundamental program applications from 26 states. In addition, 16 of those states applied for additional funding for 36 expanded programs addressing asthma, silicosis, pesticides, and other areas. NIOSH was able to fund 13 fundamental programs, as well as 12 expanded programs in 7 of those 13 states.

FY2005 Comprehensive State-Based Surveillance Awards

Project descriptions provided by principal investigators in their applications:

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WI Occupational Safety and Health Surveillance Program

The overall Occupational Safety and Health Surveillance System in Wisconsin has one component: the fundamental surveillance program. Our fundamental Occupational Safety and Health Surveillance System long-term goal is to achieve Objective 3 of the Environmental and Occupational Health Hazards Health Priority in Wisconsin's State Health Plan, Healthiest WI 2010: "By December 31, 2010 the incidence of occupational injury, illness, and death will be reduced by 30%." At the core of the proposed surveillance system are 19 CSTE/NIOSH (includes the 13

required by NIOSH) occupational health indicators. Tracking these indicators and publishing annual reports will assist Wisconsin and NIOSH monitor occupational health conditions, risk factors, and risk groups to determine progress toward State and National 2010 goals. Our Fundamental Surveillance Program design strategy recognizes the need for a full-time surveillance coordinator dedicated to building and maintaining a surveillance system with the assistance of a part-time data entry and occupation and industry coding staff.

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Oklahoma Occupational Safety and Health Surveillance

FUNDAMENTAL: Occupational injuries are a significant public health problem in the U.S. and in Oklahoma. Currently, occupational surveillance efforts in Oklahoma and across the U.S. are fragmented and inconsistent. The Oklahoma Occupational Safety and Health Surveillance program will establish a fundamental surveillance system to collect statewide data on occupational hazards, diseases, injuries, and deaths. The long term objectives of the Oklahoma Occupational Safety and Health Surveillance program are to 1) collect and analyze standardized indicators on occupational health conditions in order to determine the magnitude and 2) trends of occupational hazards, diseases, injuries, and deaths in Oklahoma; and develop, implement, and evaluate occupational injury and illness prevention programs in Oklahoma. The specific aims of this proposal are:

1. Collect statewide occupational health indicator data.
2. Establish a scientific advisory committee to provide input on collecting and disseminating data on occupational health conditions and establishing prevention programs.
3. Analyze occupational health indicator data and provide data to NIOSH and other partners/stakeholders.
4. Participate in all meetings of the Consortium of Occupational State-based Surveillance and the Coordination Committee; and prepare a performance review of the surveillance program.

Data on all 13 health conditions specified in the program announcement will be collected from existing databases according to the guidelines developed by the Council of State and Territorial Epidemiologists and NIOSH to facilitate comparisons between states. Based on input from the scientific advisory committee and NIOSH, in future years the surveillance system will be expanded, special studies conducted, prevention programs initiated, and publications prepared. Establishing the Oklahoma Occupational Safety and Health Surveillance program will be the first step towards the reduction of these adverse occupational health conditions in Oklahoma.

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Kentucky Occupational Safety and Health Surveillance

FUNDAMENTAL: Kentucky's occupational fatality rate is 6.9 deaths/100,000 workers (Kentucky Fatality Assessment and Control Evaluation [FACE] program data, 2003), 72.5 percent above the national rate of 4/100,000 workers.

Kentucky's nonfatal worker injury and illness rate is also greater than the national rate (7.1 injuries and illnesses/100 full-time workers compared to 5.3/100 nationally (Bureau of Labor Statistics, 2003). The establishment of a fundamental occupational safety and health (OSH) surveillance program in a southeastern state, Kentucky, will target and unite resources from existing public health surveillance systems and identify and utilize new and existing sources of OSH data. The objectives are to identify worker populations, work environments, and other factors which contribute to occupational injury, and develop state OSH data dissemination strategies to reduce Kentucky occupational injuries. The methodology consists of establishing and conducting comprehensive population-based surveillance of the 13 occupational injury and illness indicators recommended by the Council of State and Territorial Epidemiologists and the National Institute for Occupational Safety and Health, and fatal and nonfatal occupational motor vehicle collisions (MVCs) as another indicator using existing independent data systems: hospital discharge, FACE, Workers Claims (WC), Poison Control Center (PCC), Vital Statistics, Kentucky Adult Blood Lead Epidemiology Surveillance, Collision Report Analysis for Safer Highways, emergency department (ED), and trauma registry data in addition to online resource data. Extensive analysis of 1) linked hospital discharge and WC datasets to examine occupational falls and: 2) linked CRASH, hospital discharge, ED, and trauma datasets to examine nonfatal occupational motor vehicle collisions will be performed. Narrative data analysis of PCC data will be completed on occupational poisoning incidents. The feasibility of ED data and trauma systems data as independent and linked occupational health data sources will be explored. We will initiate and expand partnerships with state and local stakeholders to establish a Kentucky state-specific consortium called "Kentucky-Working to SAFE Lives". We will analyze and disseminate surveillance data through the state consortium and other community stakeholders and a process and outcome evaluation of the major activities conducted will be performed.

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Washington Occupational Surveillance Program

FUNDAMENTAL: The objectives of the Washington State Fundamental Occupational Safety and Health Surveillance Program are to enhance comprehensive state-based occupational health surveillance in Washington State and to participate in the development of a state-based national occupational health

surveillance program. Through a combination of state and federal funding, we will continue to enhance our surveillance of work-related musculoskeletal disorders, work-related asthma and hospitalized burns. We will also incorporate the occupational health indicators identified by the Council of State and Territorial Epidemiologists and National Institute for Occupational Safety and Health into Washington's occupational health and safety surveillance program. Within this program, gaps in our present fundamental surveillance activities will be filled, including worksite walkthrough capacity for follow-up of occupational injury cases and identification of high-risk industries for occupational injury. The specific aims under Washington State's Fundamental Occupational Safety and Health Surveillance program are to:

1. Establish a dedicated Washington State Occupational Health and Safety Surveillance Advisory Committee.
2. Conduct population-based surveillance using the CSTE/NIOSH Occupational Indicators.
3. Develop, publish and disseminate an annual Washington State Occupational Indicator report.
4. Develop and publish a supplement to the indicator report that identifies industries at high risk for high-cost, high frequency non-fatal acute traumatic occupational injuries.
5. Participate in the Consortium of Occupational, State-based Surveillance (COSS).
6. Continue established Washington State occupational health surveillance systems for work-related musculoskeletal disorders, asthma and hospitalized burns.

PESTICIDE/AGRICULTURE WORKERS: The Washington Department of Health (DOH) Pesticide Program has investigated reported cases of occupational and non-occupational pesticide illness since 1970. The DOH pesticide program is a mature surveillance system and captures more cases per capita than any other state. DOH conducts personal interviews with agricultural workers and collects detailed information about the circumstances surrounding each case of pesticide illness. The program has been successful in tracking the extent and nature of pesticide illness in Washington State. For instance, the data show that pesticide drift and inadequate personal protective equipment (PPE) are leading causes of reported pesticide illnesses among agricultural workers. However, recent attempts to use DOH data to identify risk factors associated with these two general types of exposure have shown that our current data system is inadequate at tracking specific root causes of exposure. This limits our ability to identify key training messages and prevention strategies needed to address current problems. The goal of this expanded surveillance activity is to better understand and track specific causes of pesticide drift exposure and poor PPE practices among agricultural workers in Washington, and to use the results of these studies to develop effective prevention strategies. Specifically, we will conduct both retrospective and prospective analyses for causal factors. First, we will review the previous two years of case files to extract additional information about root causes of the two most common exposure scenarios among agricultural workers: pesticide drift and inadequate PPE. We will identify additional data fields needed

to track detail on cause and develop causal analysis models for these two exposure scenarios. Secondly, we will develop new interview tools to collect this information and expand our data system to track specific causal factors on new cases. Finally, we will develop prevention strategies based on identified causal factors and evaluate these prevention outreach activities.

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Expanded Occupational Safety and Health Surveillance in Massachusetts

FUNDAMENTAL: Work-related injuries and illnesses are a significant public health problem in Massachusetts, imposing substantial human and economic costs. Massachusetts recognizes the prevention of work-related injuries and illness as a public health priority and the need for state-based surveillance to promote prevention activities at the state and local levels. Since 1986 the MA Department of Public Health (MDPH) has worked to build an Occupational Health Surveillance Program (OHSP). OHSP has developed targeted surveillance and intervention systems for priority occupational health conditions and populations, carried out broad-based prevention activities based on surveillance findings, conducted surveillance research, and worked to integrate occupational health into mainstream public health practice.

OHSP proposes to build on past experience and continue occupational health surveillance activities that are fundamental to an established program. The overall goal is to reduce the incidence-of work-related injuries and illnesses in Massachusetts. Specific Aims are to: (1) Generate state occupational health indicators annually to track the occupational health status of the Massachusetts population; (2) Conduct more extensive analysis of existing state data sets to characterize work-related injuries and illnesses in Massachusetts; (3) Continue a limited level of case-based surveillance of selected serious occupational health conditions that require immediate public health response to control hazards; (4) Continue working with stakeholders to obtain input on program priorities and to promote use of surveillance findings for prevention; (5) Collaborate with other public health programs to foster integration of occupational health into ongoing public health activities; and (6) Promote collaboration among the northeastern states to improve state capacity to conduct occupational health surveillance and prevention activities. OHSP will be guided by an advisory board of local occupational health experts and advocates.

TEEN INJURY PREVENTION: Each year in the U.S. an estimated 230,000 youths are injured on the job and close to 70 are killed. Young workers have been recognized as a Special Population and a national occupational research priority (NIOSH, 1996). The Massachusetts Department of Public Health (MDPH) has likewise identified the prevention of occupational injuries to youths as a public health priority. In 1992, MDPH promulgated regulations requiring physicians and hospitals to report occupational injuries to youths less than 18-years old. Since that time, with support from NIOSH, MDPH has worked to establish a

comprehensive surveillance and intervention system for occupational injuries to youths. Multiple data sources including workers' compensation records, emergency department reports, and hospital discharge data are used for case ascertainment, follow-up interviews with injured teens are conducted, and surveillance findings are used to target work site interventions and broad-based prevention activities. MDPH proposes to continue and to enhance the Massachusetts surveillance system for occupational injuries to youths. Specific aims are to: (1) Continue and enhance case ascertainment using multiple data sources to identify sentinel cases and generate meaningful summary data; (2) Conduct timely follow-up interviews with injured youth in order to fully characterize the cases and to target work site interventions; (3) Analyze surveillance data and disseminate findings to increase awareness and understanding of work related injuries to youths; (4) Plan, conduct, and foster intervention and prevention activities to reduce the risk of occupational injuries to youths in targeted Massachusetts workplaces, industries, and communities; and (5) Continue collaboration with government and community stakeholders in Massachusetts and other states to promote use of surveillance findings for prevention. Proposed new initiatives include: (a) use of self-administered mailed questionnaires to increase capacity to conduct follow-up with injured youths; (b) use of a new statewide database to obtain population-based data on work-related injuries to youths treated in emergency departments; and (c) a targeted prevention project to address teen injuries in the restaurant industry. OHSP will also work with the Massachusetts Department of Education to explore options for conducting surveillance of injuries to teens in work-based learning programs.

INJURY/SHARPS HOSPITAL: Health care worker exposures to bloodborne pathogens due to percutaneous injuries with contaminated needles and other sharp devices are a significant public health concern. The health care industry is the largest single industry in Massachusetts. In 2000, in response to community concern about sharps injuries, the Massachusetts legislature passed legislation requiring hospitals to use safe needle devices, maintain logs of sharps injuries to workers and report information from these logs to the Massachusetts Department of Public Health (MDPH) on an annual basis. Subsequently, MDPH has worked to build a statewide surveillance system for sharps injuries to hospital workers. MDPH proposes to continue and enhance the Massachusetts Surveillance System for Sharps Injuries to Hospital Workers. Specific aims of the project are to: (1) Collect anonymous case level data on sharps injuries to hospital workers from all acute and chronic care hospitals in Massachusetts on an annual basis to generate both statewide and hospital specific information; (2) Analyze sharps injury data and disseminate summary surveillance findings to all hospitals and other stakeholders annually to increase understanding of the problem; (3) Provide guidance to individual hospitals to enhance sharps injury surveillance and intervention activities; (4) Facilitate information sharing among hospitals and health care workers regarding successes and challenges in sharps injury surveillance and prevention; (5) Maintain working relationships with key stakeholders within MDPH and the community to promote sharps injury surveillance and use of surveillance data for prevention; and (6) Collaborate with hospital employee health and infection control practitioners in several hospitals to

conduct a survey of health care workers regarding sharps injury reporting and perceptions of the hospital safety culture.

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Occupational Safety and Health Surveillance in Louisiana

FUNDAMENTAL: Project objectives are to systematically evaluate existing data sources for use in occupational health surveillance, identify new data sources, coordinate Louisiana Office of Public Health (LOPH) programs currently using data relevant to occupational health surveillance, and describe the overall burden of occupational diseases and injuries occurring in Louisiana. Planning discussions for the project have identified LOPH program staff with expertise in 5 of the 7 data sources: hospital discharge, vital records (mortality), poison control data, laboratory test reports, and tumor registry. Working collaboratively with identified LOPH programs, data will be evaluated, analyzed, and interpreted. Data evaluation will consider completeness and validity, and analysis will include age-standardized and annual incidence rates, trends over time, spatial analysis using GIS, and hypothesis generating analysis. Chemical exposure and heavy metal toxicity will be included in addition to the required 13 occupational health conditions. An Occupational Health Surveillance Advisory Group will provide technical expertise on the project design, implementation, and dissemination of surveillance findings. A mailing list of individuals and agencies with an interest in occupational health will be developed and maintained. Results will be disseminated through various formats: OPH website; publication of articles in the Louisiana Morbidity Report, local newspapers, and the Journal of State Medical Society; and presentations at state conferences and at Tulane's and Louisiana State University's Schools of Public Health. Ultimately, the surveillance data will be used by LOPH to set research priorities for occupational health surveillance, to target interventions, and to enhance public health capacity in the field of occupational health.

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Occupational Safety and Health Surveillance in New York

FUNDAMENTAL: Program that will monitor the occupational health status of New Yorkers. Since NYS is large and has a diverse population, there is a wide spectrum of occupational fatalities, injuries and diseases that occur among the population. An integrated surveillance system will allow NYSDOH to gain insight into the populations being affected by these health issues which should then assist us in preventing future occupational diseases and injuries. We will continue to review existing data sources on occupational diseases and injuries to identify high-

risk industries and occupations, as well as populations at an increased risk. Maintaining a core staff dedicated to occupational health surveillance and intervention will also enable NYSDOH to conduct rapid response to new or emerging occupational health issues, including terrorism events.

NYSDOH currently oversees three occupational health registries mandated by law: the Heavy Metals Registry, the Occupational Lung Disease Registry, and the Pesticide Poisoning Registry. Information from each of these registries is shared with the National Institute for Occupational Safety and Health (NIOSH) as part of national surveillance activities. NYSDOH has actively worked to enhance each registry's case ascertainment. This has involved an integrated approach addressing barriers among health care providers towards occupational disease reporting. Therefore, NYSDOH has conducted extensive outreach to increase awareness of the diseases and reporting regulations, knowledge of how to diagnose occupational diseases, and understanding of the purpose and functioning of public health surveillance systems. In addition, we have offered consultation and patient referral support through the NYS Occupational Health Clinic Network.

We plan to translate these advances in case ascertainment into the development and implementation of measurable hazard prevention activities. Furthermore, by evaluating our activities and sharing this information with key stakeholders, we will be in a position to assist in improving occupational surveillance nationally.

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California Occupational Safety and Health Surveillance

FUNDAMENTAL: The Fundamental Program seeks to provide the foundation for surveillance and intervention activities by generating new information from available data sources, developing collaborations that will enhance program operation and impact, and evaluating progress with the aim of ensuring overall coordination and effectiveness. The Fundamental Program will:

- Collect and analyze on an annual basis surveillance data for 19 occupational health Indicators and an employment demographics profile.
- Conduct an in-depth analysis of selected indicators to guide future program work.
- Continue and expand assessment of the electronic Workers' Compensation Information System as a useful data source for occupational health surveillance.
- Collaborate with state partners, local public health agencies, and other stakeholders to obtain input to guide the program and support to further program goals. This effort will involve creating an OHB Advisory Committee and holding meetings on a regular basis.
- Collaborate with other state occupational health programs and NIOSH through participation in the Consortium of Occupational State-based Surveillance (COSS) and Coordination Committee.
- Disseminate surveillance data, findings of case investigations, and intervention results through an annual publication for stakeholders and enhanced OHB website.

- Prepare an annual performance review of the accomplishments and impact of the occupational health program (Fundamental Program and priority health conditions) with recommendations for improving effectiveness.

ASTHMA: The Occupational Health Branch of the California Department of Health Services proposes to reduce work-related asthma (WRA) in California by maintaining and expanding state capacity for WRA surveillance and intervention. This will be accomplished by conducting an expanded, comprehensive program of public health surveillance activities that builds on the 12 year foundation of the existing program. The expanded WRA program seeks to further characterize and monitor WRA trends using new surveillance data sources, to conduct both case-based and targeted worksite investigations in high risk occupations, to develop and provide prevention recommendations, to further develop collaborations that will enhance program impact, and to evaluate the program to ensure effectiveness. The specific activities to be conducted over the next five years for the California WRA Program are to:

- Expand surveillance by evaluating the utility of two different sources of electronic workers' compensation data and hospital discharge data as case ascertainment tools and adding them for routine data collection if determined to be effective
- Utilize follow-up data to assess the efficacy of each new data source for satisfying the case definition
- Conduct extensive statistical analysis on ten years of WRA surveillance and interview data
- Use surveillance data to guide ongoing case-based investigations, and also conduct in-depth targeted investigations and sustainable interventions for work settings documented by surveillance data to be at high risk for WRA: health care, government office buildings, and schools
- Collaborate with state partners, local public health agencies, labor, industry and other stakeholders through an OHB

Advisory Committee to guide surveillance and prevention efforts

- Collaborate with other state occupational health programs and NIOSH through participation in the Consortium of Occupational State-based Surveillance (COSS) and the Coordination Committee
- Disseminate surveillance data, findings of case investigations, and intervention results through an enhanced OHB website, written materials, peer-reviewed publications, and presentations to a wide audience
- Evaluate program activities, outcomes, and outputs, including utilizing capture/recapture analysis to assess the extent of WRA in California

PESTICIDE INJURY/ILLNESS: The Occupational Health Branch (OHB) of the California Department of Health Services (CDHS) proposes to prevent work-related pesticide illness by maintaining and expanding our current NIOSH-funded surveillance program for Occupational Pesticide Illness (OPI) as one of the four Priority Health Conditions submitted under the Expanded Program. California has had a 12-year history of NIOSH-funded cooperative agreements for State-based surveillance of OPI (1987-1992, 1997 to present). Over the next five years, we propose to maintain the existing model for the surveillance of OPI, and to implement new activities that will expand our previous work:

- Continue to conduct multi-source surveillance for OPI, relying on existing statewide provider-based reporting systems and expand case ascertainment to include reports from poison control centers, electronically reported workers' compensation data and electronic confidential morbidity reports.
- Continue to perform selected case-based investigations of agricultural incidents; targeted investigations of indoor pesticide applications and incidents involving pesticides for which there is little human data; and to recommend policy interventions affecting cholinesterase testing.
- Continue to collaborate with governmental agencies and other organizations to develop and implement strategies to prevent OPI, and continue outreach to employers, labor organizations, health care providers, and community-based organizations. This effort will involve creating an OHB Advisory Committee and holding meetings on a regular basis.
- Continue to collaborate with a diverse range of governmental agencies and other organizations to develop and implement OPI prevention strategies, as well as continue outreach to employers, labor organizations, health care providers, and community-based organizations.
- Continue to disseminate surveillance and case investigation findings to target audiences through a variety of methods including presentations, educational curricula, newsletters, field investigation reports, web site content, and peer-reviewed scientific publications.
- Continue to perform routine and formal evaluations of the OPI surveillance system for case ascertainment, case follow-up and field investigations, and information dissemination.

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Oregon Worker Illness & Injury Prevention Program

FUNDAMENTAL: The Oregon Department of Human Services' Environmental & Occupational Epidemiology section (EOE) proposes to build a more comprehensive state-based occupational health surveillance system, the Oregon Worker Illness & Injury Prevention Program (OWIIPP). The Fundamental surveillance system goes beyond condition-specific surveillance and survey data to generate standard Occupational Health Indicators that include industry and occupation-specific information. OWIIPP will supplement and evaluate the standard Indicators with data from existing EOE surveillance data, including economic costs. OWIIPP will disseminate data that better characterize the magnitude, severity, causes and costs of worker injuries and illnesses in Oregon. Building on existing, extensive partnerships, EOE will engage additional stakeholders in prioritizing, developing and implementing intervention strategies. The formal mechanism for this communication will be the Occupational Health Surveillance Advisory Committee. OWIIPP will include extensive evaluation to improve the fundamental surveillance model and its components. Data, methods, process and other findings will be widely shared, through the Consortium of Occupational State-based Surveillance and other mechanisms, to

learn from and provide a model .for other states conducting occupational health surveillance.

BURNS: The Oregon Department of Human Services' Environmental and Occupational Epidemiology section (EOE) will establish the Oregon Worker Illness and Injury Prevention Program (OWIIPP). OWIIPP will collaborate with a wide range of public and private partners to better understand and prevent occupational burn injuries. Data from sentinel providers and worker's compensation claims will be analyzed to characterize demographic patterns and causal factors in general and within specific industries and occupations. These data will be compared to and supplemented with hospital discharge measures generated in the Occupational Health Indicator #6. Economic costs and case rates will be calculated.

Particular attention will be paid to special population of workers at risk of burn injury, including youth. Data for the target condition will be reviewed, and investigations conducted on selected case to identify underlying causes and potential new hazards. Analysis results and intervention recommendations will be shared with partners through the Occupational Health Surveillance Advisory Committee. EOE will work with these partners to prioritize and pursue strategies to prevent occupational burns in high-risk populations. The project will be evaluated for efficiency and usefulness of the model and its components. This evaluation will serve to improve Oregon's surveillance system and demonstrate its reproducibility for other states. EOE's surveillance methods, data findings and intervention experiences will be disseminated through local publications, peer-reviewed journals, presentations, and shared with NIOSH and other states via the Consortium of Occupational State-based Surveillance.

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New Mexico Occupational Health Surveillance

FUNDAMENTAL: The goal of this funding is to continue and expand the occupational illness, toxic exposure, hazard, and injury surveillance program in the State of New Mexico. The fundamental program goals are to enhance existing surveillance infrastructure by refining data use agreements and incorporating other datasets with occupational health surveillance application, conduct analysis of existing datasets including, but not limited to, analysis using the "CSTE/NIOSH Occupational Health Indicators How to Guide", and to report data analysis results and program impacts to partners at NIOSH, CSTE, and the NM Department of Health, as well as to health care providers, workers, and labor and industry. Interventions for occupational illness and injury prevention will be conducted, and the NMOHR will work with the New Mexico Occupational Health and Safety Bureau, the state occupational health regulatory agency, for the analysis of data and intervention within the NMOHSB Local Emphasis Programs of silica, blood lead, and workplace violence.

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Michigan Enhanced Program in Occupational Injury and Illness Surveillance

FUNDAMENTAL: Michigan State University (MSU), the MIOSHA Program at the Michigan Department of Labor and Economic Growth (MDLEG), and the Michigan Department of Community Health (MDCH) have been collaborating in the conduct of state-based occupational health surveillance since 1988, when Michigan received a NIOSH grant for the NIOSH SENSOR Program. Building on these 16 years of experience, this application for the Fundamental Program proposes four specific aims to maintain and enhance occupational health surveillance activity in Michigan. These specific aims are designed to promote the overall goal of the Expanded program; the reduction of the occurrence and burden of work-related illnesses and injuries in the state. The four specific aims of the Fundamental Program are: 1) Collect, analyze, and publish surveillance data for Michigan's occupational health Indicators; 2) Implement three key occupational health surveillance recommendations contained in a report issued by MDCH in June 2004: Profiles of Occupational Injuries and Diseases in Michigan; 3) Maintain the surveillance reporting infrastructure and data systems for mandatory occupational disease reports submitted under the Michigan Public Health Code; and 4) Maintain and promote infrastructure for occupational health across Michigan's public health, academic, and occupational health regulatory system, in partnership with stakeholders and the concerned public. The three recommendations in the 2004 Profiles report that will be implemented include:

(a) Publish summary data on occupational diseases and injuries annually, and issue an update of the Profiles report in 2009 (b) Conduct in-depth analyses in order to elucidate two findings in the Profiles report: that Michigan rates of injuries overall and of disorders of repeated trauma were consistently higher than national rates in data published by the Bureau of Labor Statistics, and (c) Improve surveillance data by the promulgation of new rules that require health care providers and laboratories to report all cases of injury or illness due to exposure to mercury, arsenic, cadmium and pesticides. There will be an interim and a final program evaluation in years three and five, respectively, based on CDC's framework for evaluating public health surveillance systems. MSU is designated the bona fide agency of the state for this Program, and will provide overall leadership and direction. MDCH staff will provide much of the data analysis and report writing for the Fundamental Program, as a contractor to MSU, under the guidance of the Principal Investigator at MSU. Legal authority to conduct occupational health surveillance and to protect Michigan's workforce is responsibility of MDLEG, which will provide consultation to the Fundamental Program.

PESTICIDE: Michigan State University (MSU), the MIOSHA Program at the Michigan Department of Labor and Economic Growth (MMDLEG), and the Michigan Department of Community Health (MDCH) have been collaborating in the conduct of state-based occupational health surveillance since 1988, when

Michigan received a NIOSH grant for the NIOSH SENSOR Program. Surveillance for work-related pesticides illness and injury began in 2001 at MDCH under the NIOSH "Core Occupational Health Surveillance" program. Building on 16 years of occupational health surveillance collaboration and four years of pesticide surveillance, this application for work-related pesticides surveillance proposes four specific aims, with the overall goal of reducing the occurrence and burden of work-related pesticide illness and injury. These aims are: (1) To continue surveillance for work-related pesticide illness and injury in Michigan. (2) To prioritize and expand ongoing compliance and consultative activity to prevent and reduce work-related pesticide exposure. (3) To integrate work-related pesticide illness and injury surveillance with related public health programs in Michigan. (4) To continue and expand on occupational pesticides surveillance collaborative activities among states and with NIOSH. Interventions to prevent additional exposure and illness will be conducted primarily by the Michigan Department of Agriculture (MDA), which has lead responsibility in the state for oversight of pesticide use, investigations into misuse, and enforcement and training for the federal Worker Protection standard for agricultural workers. MIOSHA has an agreement with MDA to delegate enforcement actions related to these authorities to MDA. Cases will be referred to MIOSHA for intervention in situations where MDA does not have jurisdiction. Prevention and intervention activities beyond enforcement activities are also included in this proposal. There will be an interim and a final program evaluation in years three and five, respectively, based on CDC's framework for evaluating public health surveillance systems. MSU is designated the bona fide agency of the state for this Program, and will provide overall leadership and direction. MDCH staff will carry out the management of the reporting and follow up to pesticide illness reports. Legal authority to conduct occupational health surveillance and to protect Michigan's workforce is responsibility of MDLEG.

ASTHMA: Work-Related Asthma: Michigan State University in conjunction with the Michigan Department of Community Health and the Michigan Department of Labor and Economic Growth has been conducting state-based occupational safety and health surveillance since 1988. This proposal will continue and expand this activity. This proposal will fund a surveillance program for work-related asthma. The state has had a SENSOR funded project for work-related asthma since 1988. With SENSOR funding, overall occupational disease reporting has increased from less than 100 reports a year prior to 1988 to between 15,000 - 20,000 reports a year. Since initiation of surveillance 2,074 cases of work-related asthma have been confirmed. Five hundred and eighty-eight follow back industrial hygiene inspections have been conducted, and 8,443 fellow workers interviewed during these inspections. The confirmation process industrial hygiene inspections and fellow worker interviews will be continued. Sixty different quarterly newsletters and 13 annual reports have been written and mailed out to approximately 3,000 targeted physicians and health care professionals. There has been 100% reporting from the 156 acute care hospitals in the state. Active outreach to encourage reporting will be continued. Additional activity that will continue will include presentations and display booths at medical meetings, publishing papers in the medical literature on worked-related asthma and working with other state organizations such as the medical licensing board to publicize Michigan's

occupational disease reporting law. There will be the evaluation of the effectiveness of this surveillance system to improve working conditions. All the above basic surveillance activity will continue over the next 5 years.

The State of Michigan has had a long standing work-related asthma surveillance program and is aware of many although not all of the significant exposures in the state that cause work-related asthma. We will initiate several new projects to address previous identified problems: expanding our use of workers' compensation data, conducting follow-back interviews of previously confirmed asthma cases, conducting follow-back interviews of fellow workers of the index case, evaluation of reasons for under reporting by health care providers, evaluation of the effectiveness of OSHA enforcement inspections in response to cases of work-related asthma and a project to investigate the reason(s) for the increased incidence of work-related asthma among African-Americans.

SILICOSIS: Michigan State University in conjunction with the Michigan Department of Community Health and the Michigan Department of Labor and Economic Growth has been conducting state-based occupational safety and health surveillance since 1988. This proposal will continue and expand this activity. This proposal will fund a surveillance program for silicosis. The state has had a SENSOR funded project for silicosis from 1988-1992 and from 2002 to date. With this funding, overall occupational disease reporting has increased from less than 100 reports a year prior to 1988 to 15,000 - 20,000 reports a year. The state continued silicosis surveillance without SENSOR funds from 1993 to 2001. Nine hundred twenty four cases of silicosis have been confirmed since the initiation of surveillance. Seventy-nine follow-back industrial hygiene inspections have been conducted. Both the confirmation process and industrial hygiene inspections will be continued. There has been 100% reporting from the 156 acute care hospitals in the state.

Sixty different quarterly newsletters and 13 different annual reports have been written and mailed out to approximately 3,000 targeted physicians and health care professionals. Active outreach to encourage reporting will be continued. Additional activity that will continue will include presentations and display booths at medical meetings, publishing papers on silicosis and working with other state organizations such as the medical licensing board to publicize Michigan's occupational disease reporting law. The effectiveness of our effort to reduce silica exposure levels will continue to be evaluated. All the above basic surveillance activity will continue over the next 5 years.

The State of Michigan has had a long-standing silicosis surveillance program and is aware where the risk of silica exposure is in the state. Accordingly, in addition to the ongoing surveillance which allows us to both target and monitor our intervention program we will initiate several new projects to address previously identified problems: implementation of contract language for highway reconstruction; resurvey of abrasive blasters; inspection of foundries; under-reporting surveys; mine education program; and an assessment of increased risk of silicosis in African-Americans.

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Connecticut State-Based Surveillance Capacity in Occupational Health

FUNDAMENTAL: The primary objective of this proposed project is to maintain established capacity for occupational disease surveillance in Connecticut. This surveillance capacity includes not only the ability to collect and analyze data pertaining to occupational diseases through the CT Occupational Disease Surveillance System, but also the ability to utilize the results of those analyses to target specific intervention activities. In addition, the degree to which information exchange is established and maintained between the Connecticut Department of Public Health Occupational Health Program and its partners interested in protecting worker health within our state, regionally, and nationally is critical to the continued success of the program. We propose to achieve this primary objective through activities focused on addressing the specific aims of the proposed project, which are: 1) to continue longitudinal analysis of occupational disease underreporting in Connecticut through comparison of existing data sources; 2) to continue longitudinal analysis of the occupational health indicators for Connecticut; 3) to expand surveillance activities for work-related carbon monoxide poisoning and mercury poisoning and continue expanded surveillance activities for occupational asthma; 4) to broaden the representation and scope of duties for the Connecticut Occupational Health Advisory Group; and 5) to maintain regional collaboration with occupational health partners from the other Northeast states on specific surveillance activities, including expanded analysis of selected occupational health indicators. These specific aims have been developed to support the current capacity for occupational disease surveillance in Connecticut and to maintain continuity in existing surveillance and intervention programs for the duration of the project period. These programs and the staff they support provide the basis for the protection of worker health in Connecticut, not only through surveillance and intervention activities but also through the generation of ideas of how to make our program activities more efficient, effective, and beneficial to the health of the Connecticut workforce.

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Fundamental and Expanded Occupational Health Surveillance

FUNDAMENTAL: The New Jersey Department of Health and Senior Services (NJDHSS) Occupational Health Surveillance (OHS) Program proposes to conduct comprehensive population-based surveillance of established occupational health indicators in order to estimate their magnitude and trends, and evaluate existing occupational health surveillance systems in order to enhance data collection, prevention, and intervention activities in the state.

NJDHSS will maintain and expand data collection for 13 specified occupational health indicators. The indicators will be completed using the directions provided by CSTE's "How To Guide." The indicators will be completed for all years starting with

year 2000. NJDHSS will perform an annual analysis of the occupational health indicators including yearly numbers and trends over time. Further analysis will be completed for indicator data outliers. An end result of completing the occupational health indicators will be the dissemination of an annual indicators summary report to interested parties in New Jersey. NJDHSS will work with other state health departments on a regional and national level to produce reports combining indicator data from all states.

NJDHSS will conduct additional surveillance of occupational injuries and illnesses among the Hispanic and African-American workforce using the occupational health indicators framework. NJDHSS will focus on the 5 of the 13 indicators where we have current access and experience with the database and historical data. An annual analysis and report on these special populations will include annual numbers and rates, trends over time, primary exposure agents, primary industries, and occupations.

NJDHSS will use New Jersey's Hospital Discharge Data (HDD) and Emergency Department Data (EDO) real-time data system in order to identify cases of reportable occupational injuries, illnesses, and poisonings. The HDD and EDO systems will provide data on the number and types of occupational injuries, illnesses, and poisonings occurring in New Jersey. These analyses of HDD and EDO data will culminate in two separate annual reports and a five-year cumulative report that will be disseminated to public health groups.

ASTHMA: The New Jersey Department of Health and Senior Services (NJDHSS) Occupational Health Surveillance (OHS) Program proposes to conduct comprehensive surveillance of work-related asthma in New Jersey. The overall goal of this proposal is to identify cases of work-related asthma, evaluate agents and exposures associated with the cases, identify new agents and causes, and implement preventive measures to reduce and eliminate work-related asthma in New Jersey. This occupational disease surveillance system follows a model comprised of four principal components: a selected target condition, health data sources for case identification and reporting, a surveillance center to collect and evaluate case data, and targeted intervention activities using case data. Cases of work-related asthma will be identified from hospital discharge data, emergency department data, physician/advanced practice nurse/physician assistant reporting system, workers' compensation data, and death certificate data.

NJDHSS will conduct industrial hygiene evaluations at the companies identified by our work-related asthma surveillance. This intervention process includes employer telephone contact to collect preliminary information, an on-site industrial hygiene evaluation of the workplace, a report of findings for the company with recommendations for preventing exposure to the suspected asthmagen, and a follow-up evaluation to determine company action pertaining to the NJDHSS intervention. Three industry-wide interventions will be conducted under the work-related asthma surveillance system. NJDHSS will work with various partners and stakeholders in work-related asthma surveillance. The objective of this surveillance component is to provide outreach and education aimed at increasing recognition, identification, and prevention of work-related asthma both nationally and in New Jersey.

SILICOSIS: The New Jersey Department of Health and Senior Services (NJDHSS) Occupational Health Surveillance (OHS) Program proposes to conduct comprehensive surveillance of silicosis in New Jersey. The overall goal of this proposal is to identify cases of silicosis, evaluate exposures associated with the cases, identify new industries and sources of exposure, and implement preventive measures to reduce and eliminate silicosis in New Jersey. This occupational disease surveillance system follows a model comprised of four principal components: a selected target condition, health data sources for case identification and reporting, a surveillance center to collect and evaluate case data, and targeted intervention activities using case data. Cases of silicosis will be identified from hospital discharge data, death certificate, physician/advanced practice nurse (APN)/physician assistant (PA) reporting system, workers' compensation data, and emergency department visit data, data. Additional data for the case are collected from patient interviews, reporting physician/APN/PA, medical record review, chest X-ray classification, and work/exposure history evaluation. All available information is then evaluated to confirm and classify the case of silicosis.

NJDHSS will conduct industrial hygiene evaluations at companies identified by our silicosis surveillance. This intervention process includes employer telephone contact to collect preliminary information, an on-site industrial hygiene evaluation of the workplace, a report of findings for the company with recommendations for preventing exposure to crystalline silica, and a follow-up evaluation to determine company action pertaining to the NJDHSS intervention. NJDHSS will work with various partners and stakeholders in silicosis surveillance. The objective of this surveillance component is to provide outreach and education aimed at increasing recognition, identification, and prevention of silicosis both nationally and in New Jersey.