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The Centers for Disease Control and Prevention and
The National Institute for Occupational Safety and Health
(CDC NIOSH)**

New Mexico

Occupational Health Surveillance

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Submitted by

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List of Terms and Abbreviations

ABLES - Adult Blood Lead Epidemiology and Surveillance
AFT - American Federation of Teachers
AOEC - Association of Occupational and Environmental Clinics
BLS - Bureau of Labor Statistics, US
BRFSS - Behavioral Risk Factor Surveillance System
CDC - Centers for Disease Control and Prevention, US
CFOI - Census of Fatal Occupational Injury (BLS)
CSTE - Council of State and Territorial Epidemiologists
EFT - electronic file transfer
EHEB - Environmental Health Epidemiology Bureau, Epidemiology and Response Division, New Mexico Department of Health
ERD - Epidemiology and Response Division, New Mexico Department of Health
HIDD - Hospital Inpatient Discharge Data
IRR - incidence rate ratio
MOA - memorandum of agreement
NEDSS - National Electronic Disease Surveillance System
NIOSH - National Institute for Occupational Safety and Health
NM - New Mexico
DOH, NMDOH - New Mexico Department of Health
NMDA - New Mexico Department of Agriculture
NMIPC - New Mexico Injury Prevention Coalition
NMOHR - New Mexico Occupational Health Registry
NMOHSB - New Mexico Occupational Health and Safety Bureau (NM OSHA)
NMOHSP - New Mexico Occupational Health Surveillance Program
NMPDIC - New Mexico Poison and Drug Information Center
NM-VDRS - New Mexico Violent Death Reporting System
NMVRHS - New Mexico Vital Records and Health Statistics
NMWCA - New Mexico Workers' Compensation Administration
NORA - National Occupational Research Agenda
OH - occupational health
OP - organophosphate
OSHA - Occupational Safety and Health Administration, US
PHI - protected health information
SOII - Survey of Occupational Illness and Injury (BLS)
UNM, UNM HSC - University of New Mexico Health Sciences Center
US - United States of America
WRA - work-related asthma

Abstract

Importance of problem: New Mexico is home to several high hazard industries, including mining, oil and gas drilling, construction, and agriculture. New Mexico has a vast and sparsely populated terrain, and its rural nature often contributes to the severity of occupational injury outcomes. There is a confluence of cultures, languages, and governmental jurisdictions, (federal and state, and tribal) in New Mexico that contribute to the challenges of conducting surveillance and developing appropriate prevention strategies for its workers.

Approach: The New Mexico Occupational Health Surveillance Program (NMOHSP) was established to utilize existing data from State and Federal public health and labor agencies, public and private healthcare providers, and academic institutions in order to create a single repository for combining these data into valid, reliable and useful surveillance information. The NMOHSP participates in the collection of state-based occupational health indicators (OHIs). The OHIs provided guidance for New Mexico's initial surveillance focus and continue to inform the Program's agenda.

Key findings: OHI #11, "Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers" consistently reports New Mexico as having over twice the rate of pesticide calls as the U.S. as a whole. An analysis of call data for the years was conducted and revealed that the highest rate of calls in the state were from the highly agricultural, southwestern region.

New Mexico initiated the use of state Behavioral Risk Factor Surveillance System (BRFSS) data for surveillance of work-related asthma (WRA). Analysis of the data indicated that New Mexico's WRA rates were similar to states funded to conduct WRA surveillance. However, State Workers' Compensation data for the same time period yielded very few, if any asthma cases.

Guided by Indicator #3 "Occupational Injury Fatality", data were obtained from both the Census of Fatal Occupational Injury (CFOI) and state vital records. Transportation was the leading cause of work-related injury fatalities (51%). Nine percent of worker deaths in New Mexico occurred among non-US citizens; of those, six percent were among Mexican Nationals. Variables obtained from death certificates, such as race and ethnicity, citizenship status, state of residence, and county of occurrence, yielded important information that was not available, or only partially available, through CFOI.

Application of surveillance: The pesticide surveillance study findings were shared with colleagues at the NM Poison and Drug Information Center, the NM Department of Agriculture and with community health workers in farming communities in Southern New Mexico. The pesticide surveillance work led to a pilot project to survey farmworkers in the border region of New Mexico on their experiences, training, knowledge, and attitudes towards pesticide use on farms where they work.

Findings from the BRFSS analysis have been used to bring awareness to workers and physicians about asthma induced or exacerbated in the workplace. The work has prompted the NMOHSP to collaborate with the New Mexico Asthma Program on occupational asthma surveillance and prevention.

The occupational injury mortality study highlighted the need to focus on industries that occur in rural areas, such as mining, farming, and transportation. The study also pointed out the lack of injury prevention programs for non-citizen workers. As a result the NMOHSP has become involved in the New Mexico Injury Prevention Coalition, a statewide coalition whose mission it is to prevent injury in New Mexico through community collaboration, capacity building and action.

SECTION I – HIGHLIGHTS/TRANSLATION/OUTCOMES

Project Highlights/Significant Findings

This section reviews the highlights of three surveillance projects conducted or completed within the funding period. Many of the activities undertaken while conducting the surveillance projects address the specific aims of the grant, especially the second goal to analyze existing data for patterns and problematic areas in occupational illness and injury (see section II Scientific Report).

Work-Related Pesticide-Associated Illness and Injury: Since 2000, New Mexico has consistently had over twice the annual rate of pesticide-related occupational illness and injury calls to poison control centers per 100,000 workers than the US overall. In response, the Program conducted an in-depth analysis of New Mexico's poison control center data. There were 176 work-related pesticide-associated calls received by the New Mexico Poison and Drug Information Center (NMPDIC) for the years 2001 through 2006. The most frequently reported pesticides associated with a health effect were organophosphates (n=32), followed by pyrethroids (n=26), unknown insecticides (n=22), other herbicides (n=16) and carbamate (n=12). The southwestern region of New Mexico has the highest rate of calls to the poison center (4.7/100,000 workers) compared to the central (3.9), eastern (3.0) and western (2.4) regions.

Work-related Asthma Surveillance: New Mexico Behavioral Risk Factor Surveillance System (BRFSS) data for 2005 were analyzed to create a baseline report to inform health care providers, employers and workers about the status of asthma due to work in New Mexico and to emphasize the importance of reporting cases to the New Mexico Occupational Health Registry (NMOHR). A significantly higher percentage of adult New Mexican males who currently have asthma reported having work-related asthma (WRA) than did females. Although New Mexico's WRA rates were similar to other states conducting WRA surveillance through BRFSS NM State Workers' Compensation data for the same time period yielded very few asthma cases.

Occupational Injury Mortality: The work characterized patterns of occupational injury fatalities in New Mexico for the years 1998-2002 through the comparison of Census of Fatal Occupational Injury (CFOI) data and New Mexico death certificates. The study confirms that work-related injury mortality rates in New Mexico have remained high when compared to the US, with NM annual fatality rates ranging from 4.4 to 7.6/100,000 employed persons 16 years and older compared annual rates of 4.0 to 4.6 for the US. Transportation was the leading cause of work-related injury fatalities (51%) in New Mexico from 1998-2002. Forty-seven percent of transportation related deaths in the study occurred in out-of state residents (36% ground transportation, 10% air transportation). However, only 30% of deaths occurred in out-of state residents for all injury causes. Nine percent of worker deaths in New Mexico occurred among non-US citizens; of those, six percent were among Mexican Nationals. Variables for race and ethnicity, citizenship status, state of residence, and county where the fatality occurred were important variables available through death certificate data but were not available, or only partially available, through CFOI.

Translation of Findings

The elevated rates of pesticide calls in the southwestern region emphasize the need to focus surveillance in this highly agricultural area that borders Mexico. Because organophosphates (OPs) were the most frequently reported pesticides associated with

work-related illnesses, emphasis should be placed on crops and industries where OPs are commonly used.

Surveillance for occupational asthma should consider a broad spectrum of the state's occupations and industries and should consider gender differences. Because the initial analysis was done on one year of data it would be useful to aggregate BRFSS data across several years. The BRFSS WRA call back is to be repeated in coming years.

The occupational injury mortality study highlighted the need to focus on high hazard industries that may occur in rural locations, such as mining, farming, and transportation. The finding that a large proportion of transportation fatalities occur among out-of-state residents is new and should be investigated further to determine the cause and help to guide intervention for prevention. In addition, further research is needed to explore limitations of the emergency management system and the rural nature of the state and whether these are factors in the higher fatality rate in NM.

Outcomes/Relevance/Impact

The NMOHSP collaborated with the Environmental Health Epidemiology Bureau (EHEB) to conduct a survey to assess farmworker knowledge, training, and experiences with agricultural pesticides in southwestern New Mexico. The project was funded by the NMDOH Office of Border Health. Surveys of farmworkers in the southernmost counties Doña Ana, Luna and Hidalgo, New Mexico profiled participants' risk factors for exposure to pesticides and examined their knowledge base and beliefs with regards to pesticide exposure. The study helped to disclose knowledge and training gaps in order to target educational interventions for agricultural workers and the healthcare workers that serve them. A project has been initiated that will inventory farm employers, contractors and pesticide exposure prevention training providers. The inventory project will be used to inform farmworkers and their employers about pesticide exposure prevention training options in New Mexico.

The WRA analysis served as an opportunity to reach out to members of the NM chapter of the American Federation of Teachers (AFT). Claims data from the workers' compensation insurer of the members of NM AFT were obtained and a summary of the data analysis was presented to the NM AFT Board in October 2007. Because asthma is of concern to educators in this state, cases with a respiratory component were examined in depth. Cases were mostly due to aggravation of existing asthma and were not new onset. Mold was frequently mentioned in association with asthma cases in the data set. The communication resulted case reports and inquiries being made to the New Mexico Occupational Health Registry. Findings from the BRFSS analysis have been used to bring awareness to workers and physicians of asthma induced or exacerbated in the workplace. The work has prompted the NMOHSP to collaborate with the New Mexico Asthma Program on occupational asthma surveillance and prevention.

The investigation of occupational injury mortality has functioned as a bridge to important groups such as the NM Injury Prevention Coalition (NM IPC). The occupational health epidemiologist with NMOHSP has been actively assisting in the development of the NM IPC Strategic Plan in order to assure that occupational injuries are included in injury prevention efforts for NM. The study also has led to collaboration between the NMOHSP and the NM Violent Death Reporting System (NM-VDRS) to examine workplace fatalities due to violence.

SECTION II. – SCIENTIFIC REPORT

Background

In 2002, the Office of Epidemiology in the New Mexico Department of Health (NMDOH), in partnership with the University of New Mexico Health Sciences Center's (UNMH HSC) Program in Occupational and Environmental Health (POEH), received a grant (OH-02-007) from the National Institute for Occupational Safety and Health (NIOSH) to establish an occupational injury and illnesses surveillance system for New Mexico. Prior to that time, little surveillance had been conducted in the state on occupational illness and injury.

New Mexico is home to several high-hazard industries, including mining, oil and gas drilling, construction, and agriculture. New Mexico has a vast and sparsely populated terrain, and its rural nature often contributes to the severity of occupational injury outcomes. There is a confluence of cultures, languages, and governmental jurisdictions, (federal and state, and tribal) in New Mexico that contribute to the challenges of conducting surveillance and developing appropriate prevention strategies for its workers.

Within the surveillance program the New Mexico Occupational Health Registry (NMOHR) was established to collect occupational illness and injury case reports. NMOHR is authorized to access all records of physicians and surgeons, hospitals, outpatient clinics, nursing homes, and all other facilities, individuals, or agencies providing such services to patients that would identify or establish the characteristics or outcome of occupationally related illnesses or injuries. Institutional review board approval was obtained from the Human Research Review Committee at UNM.

The Principal Investigator (PI) was Ronald Voorhees, MD, MPH, deputy state epidemiologist at NMDOH. Karen B. Mulloy, DO MSCH assumed the role of co-investigator at UNM. Because of Dr. Mulloy's expertise in occupational medicine and limited staffing within NMDOH at the time, the majority of work was conducted by Dr. Mulloy and a surveillance coordinator hired at UNM. In 2005, the State of New Mexico conveyed bona fide agent status to the University of New Mexico to further the occupational health surveillance program at UNM on behalf of the state. Len Flowers, the bureau chief of the newly established Environmental Health Epidemiology Bureau (EHEB) within the Epidemiology and Response Division (ERD) of NMDOH, became co-investigator for the surveillance program. An alliance with the EHEB was formed as many of the surveillance activities conducted by the Program had elements that tied closely to the goals of EHEB surveillance of health conditions with possible links to environmental or occupational exposures. Denece O. Kesler, MD, MPH, UNM assumed the role of PI in 2007 upon Dr. Mulloy's departure from UNM. Dr. Kesler, assistant professor in the Department of Internal Medicine, is the Director of UNM Center for Occupational and Environmental Health Prevention (COEHP).

With EHEB infrastructure more fully developed, the NMDOH ERD applied for, and was awarded, an interim competitive grant to continue New Mexico Occupational Health Surveillance for two additional years, from July 2008 to June 2010. Michael Landen, MD, MPH is the current PI and Dr. Kesler remains involved as co-investigator.

Specific Aims/Goals

The overall aim of the NM Occupational Health Surveillance Program (NMOHSP; "Program") is to continue and build upon the occupational illness, toxic exposure, hazard evaluation and injury surveillance program in the State of New Mexico utilizing existing data sources in state and federal public health and labor agencies, public and private

healthcare provider data, and academic institutions. The specific goals of the program are listed below.

- G 1. Enhance existing surveillance infrastructure.**
- G 2. Analyze existing data for patterns and problematic areas in occupational illness and injury.**
- G 3. Report data to NIOSH, the New Mexico Department of Health, health care providers, workers, and labor and industry.**
- G 4. Evaluate the potential for the development and/or utilization of additional datasets including biomonitoring and health tracking.**
- G 5. Continue to work with CSTE and NIOSH on the Occupational Health Indicator Project.**
- G 6. Establish a formal agreement and mechanism of reporting occupational illnesses between NMOHR and NMOHSB.**
- G 7. Participate in the Consortium of Occupational State-based Surveillance (COSS).**
- G 8. Maintain and expand the Scientific Advisory Committee (SAC).**
- G 9. Continue to provide education and assistance to health care providers in rural areas.**
- G 10. Prepare an annual performance review of the accomplishments, impact, and evaluation of the NMOHR surveillance program.**

Scope of Report

This report describes the goals of the OH surveillance in detail, along with methods used to achieve the objectives set forth by the goals. Progress made during the funding period, along with conclusions and recommendations are subsequently discussed.

METHODOLOGY/RESULTS

G 1. Enhance existing surveillance infrastructure. Data sets will continue to be evaluated for the availability of identifying information, demographic variables, occupational coding, provider information, and geographic locating information with the aim of integrating data sets into a comprehensive occupational health surveillance system. The utility of each dataset for occupational health surveillance will continue to be assessed.

Objective 1a. Data use agreements continue to be refined with holders of existing databases regarding the variables to be provided to NMOHR, format for data submittal, confidentiality and data sharing issues, and security. The program also collaborates with data holders on identifying means for increasing completeness of reporting for each specific dataset.

Progress:

1. An informal agreement between the NM Occupational Health Surveillance Program and NM Workers' Compensation Administration (NMWCA) on the sharing of data was established. A memorandum of agreement (MOA) enabling the full disclosure of data including protected health information (PHI) requires a change in state statute which currently prohibits the disclosure of PHI in workers' compensation data. A change in statute was not achieved during this funding period.

2. A direct electronic link was established between the NMOHR and the NMPDIC Toxicall database. Data on all closed cases are accessible through the establishment of the link. Data is transferred using SQL programming language on the secured UNM servers.
3. Agreements were signed with the NM Health Policy Commission, data holder of New Mexico's Hospital Inpatient Discharge Data (HIDD) and the NM Vital Records and Health Statistics (NMVRHS), data holder of death certificates.

Objective 1b. Collaborate with the NMDOH Office of Epidemiology to analyze trends in non-occupationally related reportable diseases for occupation. Specifically, reports of pesticide related illness and injury, zoonoses, infectious diseases that may be transmitted in health care settings, and other notifiable diseases that may have an occupational component will be evaluated for occupation to determine if trends exist.

Progress:

The Infectious Disease Bureau of the ERD has established electronic reporting of reportable illnesses from laboratories. The OH epidemiologist participated in meetings and conference calls in 2007 and again in 2008 to advocate for the inclusion of occupation and industry fields for all reports to the ERD.

Objective 1c. Continue coding of occupation and industry on all death certificates and maintain training levels of New Mexico Vital Records Health Statistics (NMVRHS) staff to assure continuity and consistency of occupational coding.

Progress:

Because grant funding was cut in year 2 and again in year 3, funding for the coding of occupation and industry could no longer be maintained. Recognizing the importance of coding, the OH epidemiologist determined that this was an important element in spite of this lack of funding. The OH epidemiologist therefore participated in a three day, NIOSH-sponsored training for coding of occupation and industry in August 2005. The training enabled the NMOHSP to continue the coding of occupation and industry for certain fatalities, such as work-related injury fatalities and deaths from or with pneumoconiosis.

Objective 1d. Continue the evaluation of existing databases using CDC Guidelines for Evaluating Surveillance Systems, with special attention to use of NIOSH/BLS recommended codes.

Progress:

1. In 2006 workers' compensation data from 2002 and 2003 were analyzed by the Program. Errors were discovered in some of the cases coded as amputations. The Program reported back errors to the NMWCA research director and staff and the data analysis was rectified.
2. Through the process of analyzing NMPDIC data for work-related pesticide illness and injury, it became apparent that occupation and industry were only captured intermittently in the narrative portion of case reports. The NMOHR and the NMPDIC met and discussed the issue of using NIOSH approved codes to capture occupation and industry. Because it would require considerable additional funding and resources to assure that information on occupation and industry could be accurately captured, the NMPDIC concluded that it would not be able to add codes to the data system at this time. An informational training session was held for NMPDIC staff regarding the use of data collected by the NMPDIC for surveillance of work-related illness and injury. Staff members were

encouraged to ask specific questions about occupation and industry during client calls in order to better obtain information on work-related cases.

Objective 1e. Work with the National Electronic Disease Surveillance System (NEDSS) data manager in the NMDOH Office of Epidemiology to assess database compatibility with NEDSS.

The NMDOH data manager resigned shortly before the implementation of the grant. The project was proposed for reassignment within NMDOH, however the amount awarded to the OH surveillance program was reduced and the database manager position could not be staffed.

Other activities that were not directly related to the original objectives contributed toward the progress of Goal 1.

Progress:

1. Notifications were made to large employers such as Sandia National Laboratories about their obligations to report data to NMOHR.
2. An assessment of the NMOHR database was conducted by interviewing key informants and working with a subcommittee of the NMOHR SAC. The recommended activities made by the subcommittee were to:
 - a. Focus on capturing one or two conditions at a time
 - b. Work with the database as it was developed
 - c. Partner with other agencies to achieve goals, especially for outreach and education.

Conclusions/Recommendations

Building and surveillance infrastructure is ongoing and challenging process. Personnel, technology, and the datasets themselves change over time. Working other data users towards common goals can strengthen and streamline data requests.

G 2. Analyze existing data for patterns and problematic areas in occupational illness and injury. There are many data sets available in New Mexico that may be utilized for occupational injury and illness surveillance. In addition there are several national data sets with state specific data. Table 1 details some of the datasets and their applicability for indicator surveillance. The table is not inclusive of all datasets used for OH surveillance purposes.

Objective 2a. Continue to collect data and conduct analysis using the CSTE/NIOSH Occupational Health Indicators How to Guide.

Progress:

The NMOHSP has collected and analyzed data for New Mexico using the "How-to Guide" for all 19 indicators and reported data to CSTE annually since 2004. The indicators proved very useful for launching New Mexico's occupational surveillance program by familiarizing program staff with the state's unique data sources and gaps. The indicators also guided the focus of the program's earliest studies on workplace fatalities and pesticide illness and injury. Table 1 summarizes the data sources used to generate the OH indicators.

Table 1 New Mexico Data Sources for Occupational Health Indicators

Indicator	Data source	Denominator source	Additional data sources
1. Non-fatal work related injuries and illnesses reported by	Annual Bureau of Labor Statistics	SOII	

employers	(BLS) Survey of Occupational Injuries and Illnesses (SOII)		
2. Work-related hospitalization	NM Health Policy Commission Hospital Inpatient Discharge Data (HIDD)	BLS Profiles CPS	
3. Fatal work-related injuries	Census of Fatal Occupational Injuries (CFOI)	BLS Profiles CPS	
4. Work-related amputations with days away from work reported by employers	SOII	SOII	
5. State workers compensation claims for amputations with lost work time	NM Workers' Compensation Administration (NMWCA)	National Academy of Social Insurance (NASI)	
6. Hospitalizations for work-related burns	HIDD	BLS Profiles CPS	
7. Work-related musculoskeletal disorders with days away from work reported by employers	SOII	SOII	
8. Carpal tunnel syndrome cases filed with state workers compensation	NMWCA	NASI	
9. Hospitalizations from or with pneumoconiosis	HIDD	Bureau of Census (BOC) state population estimates	BOC Year 2000 US standard population (for standardization)
10. Mortality from or with pneumoconiosis	NM Vital Records and Health Statistics (NMVRHS) death certificate data	BOC state population estimates	BOC Year 2000 US standard population
11. Acute work-related pesticide-associated illness and injury reported to poison control centers	American Association of Poison Control Centers (AAPCC)	BLS Profiles CPS	NM Poison & Drug Information Center
12. Incidence of malignant mesothelioma	New Mexico Tumor Registry	BOC state population estimates	BOC Year 2000 US standard population
13. Elevated blood lead levels among adults	NM Adult Blood Lead Epidemiology and Surveillance (ABLES)	BLS Profiles CPS	
14. Percentage of workers employed in industries at high risk for occupational morbidity	Bureau of Census County Business Patterns (CBP)	CBP	
15. Percentage of workers employed in occupations at high risk for occupational morbidity	BLS CPS microdata	BLS CPS microdata	
16. Percentage of workers employed in industries and	BLS CPS microdata	BLS CPS microdata	

occupations at high risk for occupational mortality			
17. Occupational safety and health professionals	American (Am.) Board of Preventive Medicine Am. College of Occupational and Environmental Medicine Am. Board of Occupational Health Nurses Am. Assoc. of Occupational Health Nurses Am. Board of Industrial Hygiene Am. Industrial Hygiene Association Board Certified Safety Professionals Am. Society of Safety Engineers		BLS Profiles CPS (denominator)
18. OSHA enforcement activities	Occupational Safety and Health Administration Inspection reports.	BLS Covered Employers and Wages (CEW)	
19. Workers' compensation awards	NASI	NASI	

Highlights of New Mexico indicator data are as follows:

- Profile of Employment and Demographics:* New Mexico differs from the rest of the country in several ways. In New Mexico, Whites (both Hispanic and Non-Hispanic) comprised 86.5 – 87.7% of the employed workforce for the years 2000-2004 whereas they are 82.8 – 83.9% of employed US workers. For the US as a whole, Blacks comprised between 10.7 and 11.3% of employed persons while in New Mexico the percentage was between 1.8 – 2.4%, except in those years where the percentage of black workers was not reported. Hispanics comprise a large percentage of the New Mexican workforce, with the percentage of Hispanic workers ranging from 37.5 to 43.8%. Workers belonging to a race other than Black or White also comprise a substantial percentage of the employed with 10.6 – 12.3% of New Mexico's workers belonging to another race, mostly American Indian (approximately 8% of the state's workforce is American Indian [U.S. Census Bureau, 2000]). New Mexico's workers also tend to be more often self employed (8.8 – 9.4% vs. 7.1 – 7.5% for U.S.) and employed in part-time jobs (18.1 – 20.7% vs. 16.9 – 17.8% for U.S.). New Mexico has a higher percentage of employment in industries such as Mining (2.1 vs. 0.4% for the U.S.) and Agriculture (2.3 vs. 1.6% for the U.S.) but has fewer workers employed in Durable and Non-durable Goods Manufacturing (3.6 vs. 7.4% and 1.5 vs. 4.4% for the U.S., respectively).
- Indicator #3 Occupational Injury Fatalities:* For the years 2003-2007 the rate of fatal work-related injuries in New Mexico has been significantly higher than the U.S. rate (incidence rate ratio (IRR) 1.45, 95% confidence interval 1.28 – 1.64).
- Indicator #7.6 Carpal Tunnel Syndrome Cases (CTS) with Days Away from Work Reported by Employers and Indicator; 8: CTS Filed with the New Mexico Workers' Compensation System:* Data on CTS from NMWCA are similar to, but not identical to SOII estimates for CTS. Rates for CTS from workers compensation ranged from 5.4 to 14.4/100,000 and from 5.0 to 15.0/100,000 workers in the SOII for the years 2000-2005. Claims filed with workers' compensation for CTS in New Mexico declined significantly between 2000 and 2005 (IRR 0.83, 95% confidence interval 0.87-0.88).
- Indicator #11 Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers:* Since 2000 New Mexico has had over twice the rate of

work-related pesticide illness and injury calls reported to poison centers than the United States as a whole (IRR 2.4, 95% confidence interval 2.1 – 2.8).

- *Indicator #13 Elevated Blood Lead Levels Among Adults:* The prevalence rate of elevated BLLs in New Mexico for the 2001 – 2004 is significantly less than the US rate (prevalence RR 0.25, 95% confidence interval, 0.19 – 0.32). The most common industry where workers with EBLLs were employed, comprising 30% of cases, is Automotive Repair Shops, NEC, followed by non-occupational causes representing 22% of cases, then Aircraft Parts and Auxiliary Equipment, Not Elsewhere Classified.

Objective 2b. Conduct epidemiologic analysis of datasets in order to elucidate trends and patterns of occupational illness and injury.

Progress:

1. An analysis of work-related asthma questions from the Behavioral Risk Factor Surveillance System 2005 survey was conducted. Work-related asthma is poorly assessed from traditional data sources for occupational health surveillance. For the years 1992 through 2004 in New Mexico there were no cases of asthma reported through the SOII data system. In 2007 NMOHR collaborated with the CDC-funded New Mexico Asthma Program in order to analyze BRFSS data from 2005 to estimate the state's prevalence of work-related asthma. The analysis findings were presented at the 2007 CSTE annual conference. Methods for the analysis were similar to those used by states of Massachusetts, California and Michigan which have been funded by NIOSH to conduct occupational asthma surveillance [Flattery et al. 2006]. The overall prevalence of adults who currently have asthma was estimated to be 8.9% for 2005 and the percentage who attributed their asthma to work was 9.3% of adults who currently have asthma. It was noted that in New Mexico men reported a significantly higher percentage of work-related asthma (16.9%) than did women (4.6%). This pattern was not observed by the other asthma surveillance states where men did not report significantly higher percentages of work-related asthma than did women. The results of the analysis will be used as part of an outreach effort to health care providers, as well as labor and industry groups throughout the state in order to increase the awareness and recognition of asthma due to work.
2. The workers' compensation dataset was also analyzed for work-related asthma conditions. There were no work-related asthma cases coded as such in the system. Because of this, text fields of the records were searched for the words "asthma" or "respiratory". This yielded eight cases of possible asthma cases. In large, the number of respiratory cases that potentially could have been asthma in the workers' compensation system did not support data findings from NMBRFSS responses to questions "Have you ever been told by a doctor that your asthma is related to your work?" nor "Have you ever told your doctor that your asthma is related to your work?". This leads to the conclusion that, in New Mexico, claims for asthma are not being filed for workers' compensation.
3. Data from the NM Poison and Drug Information Center were analyzed for work-related illness and injury associated with pesticides. As of December 2006, there were 10,342 products with 739 active ingredients registered for pesticide use in New Mexico [NM Department of Agriculture 2006]. Workers in New Mexico are at risk for a variety of acute health effects from pesticides including skin irritation, respiratory effects, and organophosphate poisoning symptoms. Data from the CSTE/NIOSH Occupational Health Indicator #11, "Acute Work-Related Pesticide-Associated Illness and Injury Reported to Poison Control Centers" indicate that

from 2000 – 2003 New Mexico had over twice the rate of work-related pesticide illness and injury calls reported to poison centers than the United States as a whole [CSTE 2006]. Driven by the results from indicator 11, the Program conducted an analysis on five years of calls to the NMPDIC made for work-related pesticide illness and injury. The analysis helped to characterize work-related pesticide calls and also provided a better understanding of NMPDIC data for occupational pesticide surveillance. The preliminary analysis, which included disinfectants in the pesticide definition as described by the Indicator 11 methods, placed hypochlorite disinfectant non-bleach product at the top of the most frequently reported pesticides reported in 14% of calls (the final report excluded disinfectants). This was followed by disinfectant industrial cleaner (11%), organophosphate (9%), pyrethroid (8%), and unknown insecticide (7%).

The severity of the calls tended to be low; the largest percentage of cases was categorized as "minimal effects" (43%) then "not followed, minimal effects possible" (32%), "unable to follow, judged as potentially toxic" (15%) and "moderate effect" (10%). An outcome resulting in a "major" effect was observed in less than 1% of cases and there were no work-related deaths due to pesticides reported to the NMPDIC during the five-year period. The most common route of exposure was inhalation (43%) followed by dermal (26%), ocular (19%) and ingestion (11%).

There are no defined fields in the NMPDIC database to capture industry and occupation, so the narrative portions of calls were reviewed in an attempt to determine occupation and industry associated with the calls. Fifty-one percent of calls could be coded to an industry and only 37% could be coded with an occupation. The most frequently mentioned industry group was Food Service/Accommodation followed by Public Administration/Military, Retail Trade, Administrative Support/Waste Management, Health Care and Social Assistance and Agriculture/Forestry. The most frequently reported occupation groups were Building and Grounds Maintenance, followed by Office and Administrative Support, then Food Preparation and Serving-related occupations.

Evaluation of Pesticide Surveillance: An evaluation of the pesticide surveillance project was conducted employing a logic model framework. The logic model is a tool used to provide organization and structure to the evaluation process [University of Wisconsin Cooperative Extension]. The evaluation outcomes revealed that the process of generating occupational indicators set work-related pesticide poisonings as a surveillance priority for the state. The indicator process successfully identified a priority occupational health condition. The inputs to the process of conducting surveillance for pesticide illness and injury were to develop a data use agreement between NM Poison and Drug Information Center and NMOHR and to establish a direct access link to the NMPDIC database over a secured network connection. Data sets were also acquired from NM Workers' Compensation and analyzed for chemical poisonings. Partnerships were formed to address technical issues and included the following stakeholders: NM Internal Medicine Epidemiology, NM Department of Agriculture, NMPDIC, and NMDOH EHEB.

The main output considered in the evaluation was the epidemiologic analysis of pesticide-related data from NMPDIC database, NMOHR and NM Workers' Compensation. It was determined that workers' compensation data were not adequate for the project and WCA data were dropped from the analysis. Other

outputs considered were presentations developed from the analysis for different audiences, such as the CSTE annual conference in Anaheim, June 2006, NM Injury Surveillance Alliance, NM Environmental Health Association annual conference, and Rio Grande Chapter of the American Industrial Hygiene Association. In addition to presentations, trainings were developed for health care providers (HCPs) and promotores (community health workers) in agricultural regions of New Mexico. Informational feedback and training sessions were also developed and presented to staff of NMPDIC and Office of the Medical Investigator. A brochure was developed to assist in the recognition of acute pesticide illness and injury in workers and reporting guidelines to accompany presentations. Audiences reached: Physicians, promotoras, industrial hygienists, other state epidemiologists, public and environmental health practitioners. Total number of participants was estimated to be 150 - 200 individuals.

The outcomes with short term impact were an increased awareness among health practitioners, as evidenced by inquiries from HCPs in southern New Mexico to the NMOHR on pesticides related to the dairy industry. Awareness among policy makers was also evidenced by a call from U.S. Senator Bingaman's office inquiring about aerial pesticide spraying and health impacts to workers and residents in Southern NM. The medium term impact observed was collaboration between the NMOHR, NMPDIC, NMDA Bureau of Pesticide Management, and NM DOH. Outcome was consensus to exchange information between agencies and to inform the public about respective programs. Collaboration increased communication for prevention.

Some assumptions that were challenged by the evaluation were that data from NMPDIC would be complete for identifying information – this was not the case. The prime goal of NMPDIC is to assist people with potential poisoning situations, not for accurate data collection, therefore much identifying information was found to be incomplete. Another assumption was that data from NM Workers' Compensation would be fully and correctly coded for cause and nature of injury. The preliminary analysis found several injury types that did not fit with substance/cause code. Because NMWCA had recently switched coding systems, these issues may be resolved in the future.

Some of the external factors disclosed by the evaluation were that audiences reached may not be in direct contact with workers who are injured by pesticides and that it is difficult to compete with other activities that health care providers may be asked to perform and with other health priorities competing for their attention.

Using the evaluation, the following activities were planned:

- Collaborate with NM DOH to release a report on occupationally related pesticide illness and injury for distribution through the New Mexico Epidemiology Report. The report was issued December, 2007.
- Follow up with data providers to improve the collection of collection of data, including improving coding and capturing occupational and industry data.
- Continue to collect and assess data from NMPDIC.
- Examine other data sets for pesticide poisoning surveillance.
- Seek out community or labor groups in direct contact with potentially affected workers. Get input on how to create preventive messages for workers.

In addition to the above listed activities, the NMOHSP reports work-related pesticide illness and injury case data to NIOSH SENSOR Pesticides Program. Data contribution led to New Mexico contributing to an article on pesticide illness and injury in farm workers [Calvert, et al. 2008].

Objective 2c. Apply the results of the analyses to target specific industries, populations, or illnesses/injuries for more in-depth epidemiologic investigation and analysis.

Progress:

1. Data from Poms insurance, the workers' compensation insurer of all teachers in New Mexico outside of Albuquerque were obtained for 2005. An analysis was conducted of the data and a descriptive report was provided to the New Mexico chapter of the American Federation of Teachers.
2. Analysis of pesticide illness and injury data has resulted in the targeting of the agricultural industry for in-depth analysis (see 3 under Objective 2b).'

Conclusions/Recommendations

Data from the indicators have guided surveillance priorities leading to focused studies of occupational injury mortality and pesticide illness and injury. New Mexico will continue to participate in the indicator process and to adapt indicators as they are developed. The indicator process is one of many tools the Program uses to assess and establish OH surveillance priorities.

G 3. Report data to NIOSH, the New Mexico Department of Health, health care providers, workers, and labor and industry.

Objective 3a. Refine mechanisms and procedures for the production and dissemination of occupational surveillance data results and incorporate feedback from federal, state and labor and industry stakeholders in the development of interventions.

Progress:

Educational materials developed by the Program undergo a review process. Colleagues within ERD and at UNM with content expertise and SAC members are sought out to review materials before distribution.

Objective 3b. Prepare reports for the *New Mexico Epidemiology Report, The State of Health in New Mexico*, prepare and distribute press releases as appropriate, when warranted by assessment or surveillance analysis.

Progress:

Reports

Moraga-McHaley S, Kesler D. Work-related pesticide-associated illness and injury: New Mexico, 2001 – 2006. *New Mexico Epidemiology Report*, Vol 7. No. 9, 2007.

Presentations

Pesticide Illness and Injury due to Work - New Mexico 2001 – 2005. Presented at the CSTE Annual Conference Anaheim, CA, 2006.

Setting the Foundation for Work-related Asthma Surveillance in New Mexico: Results from the 2005 New Mexico BRFSS. Presented at the CSTE Annual Conference June, 20, 2007, Atlantic City, NJ.

Objective 3c. Develop a website for reporting data and disseminating information and resources on occupational illness and injury.

Progress:

The website resided at the University of New Mexico Health Sciences Center and provided a downloadable form for health care provider reporting of occupational illness and injury, instructions on how to file reports and case classification information. The website also served as a platform for information dissemination and education for health care providers, industry, workers, and other stakeholders in the prevention of occupational illness and injury. Links were made available to NIOSH, Federal Occupational Safety and Health Administration (OSHA) and State OSHA. Additionally, reports issued by the NMOHSP were made available for downloading in PDF or other formats. A mirror webpage was established on the NMDOH website.

With the transition of the NMOHSP to NMDOH, the UNM website was discontinued. The Program page has been modified since the move. The current address is <http://nmhealth.org/eheb/occhealth.shtml>.

Conclusions/Recommendations

During the grant period, one article was published, an epidemiology report was generated and several presentations were given at different venues. In addition, other brochures, letters and other outreach materials were developed. Most data reporting efforts were directed towards professional organizations, governmental agencies and health care providers. The web could be used effectively to disseminate information to workers and industry.

G 4. Evaluate the potential for the development and/or utilization of additional datasets including biomonitoring and health tracking.

Objective 4a. The EHEB and State Laboratories are developing a biomonitoring program in New Mexico with the support of CDC funding. The potential for expansion of this program to include occupational exposures will be evaluated.

Progress:

NM DOH has included laboratory reporting of cholinesterase, heavy metals and cotinine to the list of notifiable conditions. This will expand the surveillance of occupationally related illnesses that can be tracked through biomonitoring. The integration and linkage of new datasets has been somewhat hindered due to the recent centralization of information technology resources/personnel within the state government and other options are being explored, including the use of outside contractors and/or personnel at UNM.

Objective 4b. Evaluate the potential for expansion of the Environmental Public Health Tracking program to include occupational health effect registries and chemical exposure data.

Progress:

The EHEB is transferring technology being developed under Centers for Disease Control (CDC) funding to develop plans for enhancing occupational surveillance. This includes the potential for expansion of the biomonitoring program to include occupational exposures. Under the current biomonitoring program the capacity of our State Laboratory is being improved with instrumentation and methodology to conduct analyses of chemical exposures in human sample media such as urine and blood. Several state-wide environmental exposure studies are being conducted for a variety of organic and inorganic analytes. Additionally, the Bureau is developing systems to link environmental exposure databases with health effects databases under two Public Health Tracking grants from CDC which have potential application for use in occupational illness tracking. This

Bureau works closely with the New Mexico Environment Department, which is responsible for the State OSHA program.

Conclusions/Recommendations

Data on occupation and industry collected by the biomonitoring program during biomonitoring studies have been coded. Analysis of the data should be completed to further evaluate the utility of including occupational data in future biomonitoring studies.

G 5. Continue to work with CSTE and NIOSH on the Occupational Health Indicator Project. The NMOHR has been involved with the CSTE/NIOSH Indicator Work Group in the development and pilot testing of the occupational health indicators. NMOHR was able to complete all indicators with the exception of Elevated Blood Lead Levels among Adults (indicator 13) for the year 2000 due to data collection issues. However, indicator #13 has been completed for 2001 and will continue to be conducted along with the other 12 core indicators.

Objective 5. Continue to participate by conference call and in person biannually to assess and refine the indicators.

Progress:

1. The epidemiologist has participated on the occupational health indicator workgroup to determine core data elements for occupational surveillance datasets, develop management of a format that is uniform and compatible, and determine the methods that would allow for comparison across states.
2. The epidemiologist is the designated point person for OHI #3 "occupational injury fatality". She has undertaken the technical review of all state data for OHI #3 and the annual update of the "How-to Guide" for this indicator.

Conclusions/Recommendations

The indicators have proved a useful tool for jump starting the NMOHSP. New Mexico will continue to collect indicator data and will include new indicators as they are developed. It may be of some value to explore the development of occupational health indicators specific to New Mexico.

G 6. Establish a formal agreement and mechanism of reporting occupational illnesses between NMOHR and NMOHSB. When it has been determined that intervention is indicated, the NMOHR will share information on reported incidents of occupational illness and injury to the NMOHSB, the regulatory agency for occupational health and safety for New Mexico. In order to "close the loop on surveillance", formal agreements will be established between the NMOHR and the occupational health and safety regulators for the state of New Mexico. Agreements will address confidentiality issues, reporting formats and prioritization of cases.

Progress:

A memorandum of agreement (MOA) between the NMOHR, NMDOH and NMOHSB was finalized in May, 2006. The MOA facilitates communication between the agencies and aligns goals for state occupational illness and injury surveillance and prevention. With this agreement the NMOHSP has communicated information on case reports received by the NMOHR regarding work-related asthma, elevated blood-lead exposure and other occupationally related health issues. Periodic meetings are held with NMOHSB to reassess occupational health surveillance goals.

Conclusions/Recommendations

The MOA has opened communication between the three entities but communication is still limited and sporadic. Regularly scheduled meetings could facilitate communication further.

G 7. Participate in the Consortium of Occupational State-based Surveillance (COSS). New Mexico is committed to working with NIOSH and other states in the development of uniform occupational health surveillance activities.

Objective 7a. The Principal Investigator of the NMOHR project will serve on the Coordination Committee of the COSS and will attend two meetings annually.

Progress:

The PI and OH epidemiologist have attended all annual program meetings of the COSS. Progress reports were prepared for meetings in December 2006 and again in 2007.

Objective 7b. Participate in COSS activities relating to occupational health surveillance.

Progress:

The NMOHSP has participated in several COSS activities including:

- Provided feedback through a survey regarding the BLS SOII data for state surveillance (March 2006).
- Occupational Health Indicator evaluation – NM submitted tracking data on calls, website hits, press releases and other activities generated from the release of the OHI data document for 2000 "Putting Data to Work".
- Shared NMOHSP success stories with other states and NIOSH (March 2007).
- Provided program webpage links and contact information to CSTE and NIOSH
- Participated in the review and update of the Minimum and Comprehensive Occupational Health Surveillance Profile for Pesticides (2007-2008).

Conclusions/Recommendations

The COSS serves as a valuable resource to New Mexico. Information shared through the COSS helps to guide states whose capacities for occupational health surveillance are less developed than other COSS states that have more OH surveillance experience.

G 8. Maintain and expand the Scientific Advisory Committee. A scientific advisory committee has been established for the NMOHSP and includes academic, governmental, labor and industry representatives to facilitate data collection, analysis of findings, and to implement policy changes in the state of New Mexico for primary prevention of occupation injury and illness.

Objective 8a. Work with SAC members to refine and improve surveillance infrastructure.

Progress:

1. An assessment of the NMOHR database was made after interviewing key informants and working with a subcommittee of the NMOHR SAC. This activity was described in Objective 1f.
2. Yvonne Boudreau, MD, from the NIOSH office in Denver was invited to speak to the 2008 SAC meeting. The meeting provided a venue for Dr. Boudreau to describe NIOSH intramural surveillance and the Health Hazard Evaluation program.
3. SAC members have contributed technical and medical expertise, on an ad hoc basis, for a number of occupational health issues including occupational cancer

clusters, pesticide surveillance in farmworkers and work-related asthma reports. This has enhanced the ability of the NMOHSP to respond rapidly to an incidences involving occupational morbidity, analogous to the current system for infectious disease outbreaks.

Objective 8b. Expand the Scientific Advisory Committee to incorporate representatives from labor and industry and underrepresented populations.

Members that have participated from the previous funding period include:

New Mexico Department of Health

Division of Epidemiology and Response

Environmental Health Epidemiology Bureau – Barbara Toth,
Epidemiologist and Toxicologist

Glenda Hubbard, Asthma Surveillance Epidemiologist.

Injury Epidemiology Bureau – Barbara Chatterjee, Program Manager and
epidemiologist

Public Health Division, Chronic Disease Bureau – Dr. Susan Baum, Medical
Epidemiologist

Vital Records and Health Statistics – Kimberley Peters, Director

New Mexico Worker's Compensation Administration – Mark Llewellyn, Bureau
Chief, Economic Research

University of New Mexico Health Sciences Center

New Mexico Tumor Registry - Dr. Charles Wiggins, Director

New Mexico Poison and Drug Information Center – Dr. Blaine (Jess)
Benson, Director

Institute for Public Health / Master's in Public Health Program – Dr. Andy
Rowland, Occupational and Environmental Epidemiologist

Center for Injury Prevention Research and Education – Cameron
Crandall, MD, Research Director

Sandia National Laboratory (US Department of Energy) – Larry Clevenger, MD, Director,
Benefits and Health Services

Progress:

Members added during the funding period include:

New Mexico Environment Department, Occupational Health and Safety Bureau –
Dr. Hal Eitzen, Consultant.

New Mexico Department of Health, Vital Records and Health Statistics – Anne
Worthington, Epidemiologist

New Mexico Department of Agriculture – Ms. Marjorie Lewis, Worker Safety
Program Manager

Sandia National Laboratory (US Department of Energy) – Edward Cazzola, MD,
Director, Benefits and Health Services

New Mexico Federation of Labor – Ms. Christine Trujillo, President

New Mexico Associated General Contractors – Mr. Dennis Roberts, Director,
Industry Relations and Safety

U.S. Public Health Service, Albuquerque Area Indian Health Service –

Commander Mike Lewis, Institutional Environmental Health Officer

Conclusions/Recommendations

SAC members provide valuable recommendations to the NMOHSP. It is a challenge to bring all members together on a regular basis, so working in small subcommittees can help to move activities forward. Newer additions to the SAC provide a more diverse perspective than the previous membership.

G 9. Continue to provide education and assistance to health care providers in rural areas. The NMOHR has conducted educational sessions at numerous locations around the state of New Mexico. The goal is to increase awareness of occupational injuries and illnesses by both urban and rural medical care providers, especially those serving minority populations, Native American, and the US-Mexico border region.

Objective 9a. Provide education and assistance to community health centers serving migrant farm workers in southern New Mexico.

Progress:

1. Work-related pesticide prevention and recognition trainings were conducted for promotoras through the Southern Area Health Education Center.
2. NMOHSP communicated with representatives from La Clinica de la Familia and Ben Archer in Doña Ana County prior to the initiation of the farmworker pesticide survey project to inform health care providers that the survey project was being conducted in their area. Brochures on pesticide poisoning recognition and reporting forms were provided to clinics.
3. The OH epidemiologist attended a farmworkers' health fair at El Centro De Los Trabajadores Agrícolas Fronterizos in El Paso, TX April 11, 2008. The purpose was to distribute information about pesticide exposures in farmworkers, to inform workers about the upcoming farmworker pesticide surveillance project. Brochures on pesticide reporting and educational materials from the NM Poison Center were distributed.
4. The Program initiated communications for collaboration with the Occupational Medicine TeleECHO (Extension for Community Health Outcomes) Clinic at UNM. Project ECHO provides information to physicians across the state on treatment and case-based learning on occupational illnesses and injuries through video conferencing and webcam technologies, enabling practitioners in rural areas to interface with specialists in occupational medicine.

Objective 9b. Provide education and assistance to clinics, both Indian Health Service (IHS) and tribal/pueblo, where American Indian workers are likely to present.

Progress:

NMOHSP staff worked on collaborative projects with IHS and others to address injury issues through the NMIPC. Although little surveillance was conducted during the grant period, relationships with tribes and IHS were maintained.

Objective 9c. Give presentations on the surveillance of occupational injuries and illnesses to health care providers, public health, and occupational health practitioners.

Progress:

1. Occupational Pesticide Injury and Illness Surveillance in New Mexico – Presentation at the Annual New Mexico Environmental Health Conference, October 30, 2006.

2. Occupational Pesticide Injury and Illness Surveillance in New Mexico – Presentation to the Rio Grande Chapter of the American Industrial Hygiene Association, Albuquerque, NM October, 2006.
3. Regional Issues in Occupational and Environmental Health: New Tools for Your Tool Kit. Sponsored by NM School of Medicine. Albuquerque, NM February, 2008. Presentation on occupational notifiable conditions and distribution of Worker Health Surveillance for New Mexico brochure.
4. Occupational Health Surveillance in New Mexico – presentation at NMDOH Quarterly Epidemiology Meeting 1/17/2008.
5. Training sessions were provided for UNM medical residents undergoing rotations through internal medicine. Sessions review the outcomes of occupational health surveillance in the state, the importance of reporting occupational illnesses to the NMOHR and how to report cases. Reporting forms and educational materials are provided.

Objective 9d. Maintain and update library of occupational health materials library and make available to all stakeholders.

Progress:

The Occupational Health Library has been maintained and expanded to include NIOSH materials and educational materials from other states, such as the New York Occupational Lung Disease Registry Health Care Provider Toolkit. Other state OH indicator reports have been added.

Objective 9e. Develop the Program's website to provide health care providers in remote areas easy and accessible occupational health information.

Progress:

This activity was completed through objective 3c.

Conclusions/Recommendations

The NMOHSP has conducted a fair amount of outreach in a vast, sparsely populated state. Outreach efforts can be costly. It is important to continue to develop networks and collaborations in order to maximize resources. The Program will continue to work with groups such as the NMIPC and Project ECHO to accomplish outreach goals.

G 10. Prepare an annual performance review of the accomplishments, impact, and evaluation of the NMOHR surveillance program.

Objective 10a. An annual report on the activities and accomplishments will be made and shared with NIOSH, the COSS, the SAC and the NMDOH. Reports include:

- Accomplishments of the NMOHSP in surveillance and intervention activities within the state of New Mexico.
- Analysis of the impact that the NMOHR has affected on occupational health within the state of New Mexico.
- Discussion of the setbacks and problems encountered during the performance of surveillance and intervention activities.

Progress:

Annual Performance Reports were submitted to NIOSH for 2007 and 2008.

Objective 10b. Evaluate the NMOHS program activities. Evaluation of the fundamental surveillance and interventions will be conducted to determine the success of identification of occupationally related injuries and illnesses.

Progress:

1. An evaluation of the poison center pesticide surveillance project was conducted (see activity 3 under objective 2b).
2. A Utilization-Focused Evaluation plan was designed for the NMOHSP to evaluate underreporting of occupational illness and injury by health care providers.

Conclusions/Recommendations.

Annual reports provide useful summaries of Program activities and allow for review of accomplishments and challenges. Evaluating the Program project by project provides more immediate feedback than overall program evaluation.

Summary Conclusion

The work accomplished by the NM Occupational Health Surveillance Program has served to address important occupational health issues for the state. Traumatic injury and chemical exposures have both emerged as conditions needing surveillance. High hazard industries such as agriculture, mining and transportation also warrant close attention. Furthermore, New Mexico provides unique opportunities and challenges due to its geography, social and political structure. The NMOHSP plans to continue to meet these challenges by exploring partnerships and collaborations with groups involved in keeping the states' workers and citizens safe and healthy.

4. Publications, Reports and Presentations

Journal Articles

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