Appendix 6: Traumatic Injury Research Partners/Stakeholders

Project: Evaluation of Emergency Services Vehicle Occupant Safety

For Partners and Stakeholders:

Name of Organization: Allied Services Systems

Category of Organization: Manufacturer

Contact:

Ned Dunnington
President
(301) 943-5294

For Partners only:

Type of Formal Agreement (if any)**:**

Letter of Intent to CRADA
Confidential Disclosure Agreement

Description of collaborative activities (narrative):

Allied Services Systems provided materials and engineering support to conduct dynamic tests of their Kicker Vest restraint system through the NIOSH project, "Evaluation of Emergency Vehicle Occupant Safety" project. Allied Services Systems responded to a FedBizOps announcement for this research, and their restraint system was one of four deemed to hold potential for worker occupant crash protection based on computer simulations.

Current U.S. ambulances use lap belts for occupant protection in the patient compartment. Proper use of lap belts require emergency service (EMS) workers to remain seated against the back of the seat. This prohibits mobility needed to access the patient and EMS equipment. NIOSH and its partners explored the potential of four types of mobile occupant restraints to provide crash protection for EMS workers in ambulance patient compartments while allowing needed mobility. The Kicker Vest provides crash protection as well as mobility needed to access patients and equipment. Using crash test dummies, the partners conducted dynamic sled tests and full scale vehicle crash tests. These tests yielded data that can be used for further system development and to support proper selection of restraints for ambulance patient compartments.

Collaborative Outputs:

Data collected from the tests was shared with Allied Services Systems. The company is using the data to support system refinement.

Intermediate Outcomes:

The EMS community has been introduced to a source of improved occupant restraint systems. As a result of this work, Allied Services Systems has been working with EVS Ltd., a seat manufacturer that supplies ambulance manufacturers. EVS and Allied have incorporated the system into a prototype attendant's seat.

End Outcomes:

Though not yet realized, it is expected that EMS services and ambulance manufacturers will ultimately use restraint systems that are improvements over the currently used lap belts. This will lead to a reduction of crash-related injuries to EMS workers.

Project: Evaluation of Emergency Services Vehicle Occupant Safety

For Partners and Stakeholders:

Name of Organization: American Medical Response (AMR)

Category of Organization: Company (Health Care and Social Services Sector; ambulance service provider)

Contact:

Ronald W. Thackery
Vice President, Safety and Risk Management
American Medical Response
ron_thackery@amr-corp.com
(303) 495-1236

For Partners only:

Type of Formal Agreement (if any): Letter of Agreement

Description of collaborative activities (narrative):

NIOSH is currently conducting research to identify ambulance crash-related injury risks and risk intervention for emergency medical service (EMS) workers. The research begun in 2001 is conducted under the "Evaluation of Emergency Vehicle Occupant Safety" project and the "Ambulance Crash Survivability Improvement" project. These projects include analysis of surveillance data that can be used to describe the scope of the ambulance crash-related injury problem for EMS workers. EMS worker fatality data is available on a national level. However, until now, data describing non-fatal ambulance crash-related injuries for EMS workers has not been available. Currently, there is no national-level non-fatal injury database for EMS providers.

AMR is the largest medical transport provider in the United States with more than 200 operations in 32 states, ranging in size from 20 to over 250 employees. AMR maintains an extensive database that includes employee injury, worker's compensation claims, vehicle crashes, and liability claims. Analysts at AMR and NIOSH are working together to examine non-fatal ambulance-related injuries to EMS personnel utilizing AMR data sources. This project provides a national sample of private ambulance service EMS worker non-fatal injury data for analysis.

Collaborative Outputs:

Findings from the analyses will be jointly published in peer-reviewed and trade journals, and presented in other formats, as appropriate. Analyses are currently ongoing.

Intermediate Outcomes:

End Outcomes:

Though not yet realized, it is expected that EMS providers and ambulance manufacturers will ultimately use the findings to make changes to ambulance patient compartment designs and standard operating procedures. This will lead to a reduction in non-fatal injuries to EMS workers**.**

For Partners and Stakeholders:

Name of Organization: American National Standards Institute Z15.1 Committee

Category of Organization: Consensus standards committee

Contact:

Mr. Tim Fisher
Director, Practices and Standards, American Society of Safety Engineers
1800 East Oakton Street, Des Plaines, IL 60018-2187
Phone: (847) 768-3411
Fax: (847) 296-9221
E-mail: tfisher@asse.org
WWW URL: http://www.asse.org

For Partners only:

Type of Formal Agreement (if any): Letter accepting committee membership

Description of collaborative activities (narrative):

In cooperation with numerous other stakeholders, staff in the NIOSH Division of Safety Research made substantial contributions to the development of the American National Standards Institute (ANSI) standard Z15.1-2006, Safe Practices for Motor Vehicle Operations, which received final approval from ANSI on February 15, 2006. The Z15.1 standard is intended to further prevention of motor vehicle crashes, which are the leading cause of workplace fatalities and a major contributor to workers' compensation and liability costs, lost productivity, and property loss. The standard delineates minimum requirements for workplace traffic safety programs, and was designed for use by any organization whose employees drive on the job. Approval of the Z15.1 standard is a landmark achievement in worker protection; this is the first occupational safety standard that offers comprehensive guidance to protect all workers who operate a motor vehicle as part of their job.

The American Society of Safety Engineers (ASSE) serves as secretariat of the Z15 Accredited Standards Committee. The Z15 Committee draws its membership from more than 30 government agencies, insurance companies, employers, consulting groups, and trade associations.

NIOSH representatives Stephanie Pratt (primary) and Lee Husting (alternate) served on the ANSI Z-15 Committee from its inception in 2001. NIOSH made substantive contributions to all parts of the standard, and took the lead in drafting the portion of the standard that addresses crash data collection and incident analysis. In addition, Ms. Pratt chaired the subcommittee that resolved technical and editorial discrepancies across the sections of the standard and addressed the 100 pages of public comments received.

Collaborative Outputs:

ANSI/ASSE [2006]. Safe practices for motor vehicle operations [American National Standard]. New York, NY: American National Standards Institute, ANSI/ASSE Z15.1-2006.

Intermediate Outcomes:

As early as the public comment periods, the Z15 standard generated substantial interest within the fleet safety community. In response to the flood of interest that followed publication of the standard, ASSE held a special session devoted to Z15 at its 2006 annual meeting. In addition, ASSE's Transportation Practice Specialty published a special issue of its newsletter that detailed the standards development process and offered an attorney's perspective on the value of the standard to businesses.

ASSE [2006]. ANSI/ASSE Z15.1-2006 motor vehicle operations standard approved. Transportation Practice Specialty newsletter (special issue). Available: http://www.asse.org/SpecialZ15Issue.pdf.

End Outcomes: None

For Partners and Stakeholders:

Name of Organization: Bureau of Labor Statistics (BLS)

Category of Organization: Government (Federal)

Contact:

Kate Newman
Office of Compensation & Working Conditions
Newman.Kate@bls.gov
(202) 691-6162

For Partners only:

Type of Formal Agreement (if any): Memorandum of Understanding

Description of collaborative activities (narrative):

NIOSH collaborates with the Bureau of Labor Statistics formally through a Memorandum of Understanding (MOU), and informally through periodic meetings. The MOU between BLS and NIOSH permits BLS to share data files from the BLS Census of Fatal Occupational Injuries (CFOI) with NIOSH. BLS provides NIOSH coded demographic characteristics, information on how the fatal incident occurred, and narrative descriptions of the injury circumstances. Through the MOU, BLS also provides additional data elements not otherwise available on the general public-use data set. Although NIOSH collected 22-years of occupational fatality data, NIOSH now relies almost solely on CFOI for studying current occupational fatality trends and issues and for directing its safety research.

Staff from the NIOSH Surveillance and Field Investigations Branch and BLS staff from the CFOI and Survey of Occupational Injuries and Illnesses (SOII) programs meet approximately annually, to share information about ongoing work and identify potential opportunities for collaboration.

Collaborative Outputs:

Marsh SM, Pegula S. Fatal Occupational Injuries by Incident Event or Exposure –United States, 2005. (in draft format – targeted for publication in the CDC MMWR)

Intermediate Outcomes:

The utility of the NIOSH National Traumatic Occupational Fatalities (NTOF) surveillance system influenced the National Academy of Science Panel on Occupational Safety and Health Statistics' recommendation for development of a more comprehensive national fatality census. This led directly to the development of the BLS CFOI system. After a decade of overlap, NIOSH discontinued the NTOF data collection at the end of 2001 and now uses the CFOI data for occupational fatality surveillance. While BLS only produces aggregated statistics from their data, NIOSH often analyzes the CFOI data in more detail and issues prevention recommendations based on the results. Thus, NIOSH and BLS have developed a mutually beneficial relationship that expands the utility of the CFOI data.

End Outcomes: None

Project: Evaluation of Emergency Services Vehicle Occupant Safety

For Partners and Stakeholders:

Name of Organization: Canadian Forces Health Group

Category of Organization: Government

Contact:

Lt Col. Ray Goulet
Goulet.JJMR@forces.gc.ca
(613) 945-6738

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

Current U.S. ambulances use lap belts for occupant protection in the patient compartment. Proper use of lap belts require emergency service (EMS) workers to remain seated against the back of the seat. This prohibits mobility needed to access the patient and EMS equipment. NIOSH and its partners explored the potential of four types of mobile occupant restraints to provide crash protection for EMS workers in ambulance patient compartments while allowing needed mobility. Using crash test dummies, the partners conducted dynamic sled tests and full scale vehicle crash tests. These tests yielded data that can be used for further system development and to support proper selection of restraints for ambulance patient compartments.

As a part of the project team, the Canadian Forces Health Group provided full funding for the sled test facility, at an estimated cost of $300,000 U.S., two instrumented test manikins, and engineering support both for test plan development and the conduct of all sled testing. In addition, they provided two instrumented manikins and engineering support in support of the crash testing conducted at a private facility near Montreal, Ontario, CA. Finally, the Canadian Forces Health Group facilitated the involvement of an additional Canadian partner: the Ontario Ministry of Health. As a result of the this work, the Canadian Forces Health Group was also able to test a militarized litter lift system concurrent to the testing of the mobile restraint systems. This prototype system was developed to allow the military ambulance to carry up to four patients simultaneously.

Collaborative Outputs:

Data collected from the tests was shared with Canadian Forces Health Group.

Intermediate Outcomes:

To date, we are unaware of any additional activities resulting from the work on this project within the Canadian Forces Health Group.

End Outcomes:

It is expected that military and private EMS services and ambulance manufacturers will ultimately use restraint systems that are improvements over the currently used lap belts. This will lead to a reduction of crash-related injuries to EMS workers.

For Partners and Stakeholders:

Name of Organization: DBI-SALA Fall Protection Inc.

Category of Organization: Manufacturer

Contact:

Tom Wolner
Vice President
twolner@capitalsafety.com
(651) 385-6229

For Partners only:

Type of Formal Agreement (if any): Letter of Agreement

Description of collaborative activities (narrative):

DBI-SALA Fall Protection Inc. has actively participated in the TI Harness Sizing research and is finalizing the adjustment range of each harness component with the NIOSH research team. They have provided original static-test criteria, harness blue prints, and technical input for each study and have continued to provide feedback on proposed new sizing systems. They also are working on prototypes of harnesses based on the proposed new sizing systems and other TI program study results.

Collaborative Outputs:

A provisional sizing scheme with an algorithm that describes the human torso-shape-and-size distribution and a set of recommendations for producing vest-type harnesses has been accepted for publication by the Human Factors journal. DBI-SALA Fall Protection Inc. reviewed the report before our submission to the journal in 2005. The provisional sizing scheme is currently being used by DBI-SALA Fall Protection Inc. for the first-stage prototype development. A simplified version of the provisional sizing schedule was also presented at the Ergonomics Society Conference and was published in the Contemporary Ergonomics in 2005.

The draft report of the second provisional size scheme has been shared with DBI-SALA Fall Protection Inc. NIOSH, two research contractors, and DBI-SALA Fall Protection Inc. are finalizing the adjustment range of each harness component. The final report is expected to be completed in December 2006. DBI-SALA Fall Protection Inc. and NIOSH research team will complete the prototypes of the new generation over-the-head harnesses in year 2007 for NIOSH to conduct validation studies to determine the validity and reliability of the newly established sizing system.

Intermediate Outcomes:

Development of prototype harnesses that incorporates the TI schemata is currently underway at the DBI-SALA Fall Protection Inc. DBI-SALA Fall Protection Inc. and the other harness manufacturer responded to the NIOSH announcement on the Federal Business Opportunities in 2003 for partnership in harness-sizing studies and in transferring the knowledge into design process and commercialization. Since DBI-SALA Fall Protection Inc. and the other NIOSH partner harness manufacturer account for about 60% of the national market share of fall-arrest harnesses, the future adoption potential of the new harnesses and sizing systems in the construction trades is very high.

End Outcomes: Not available yet

Project: HCCB7 9277178 - New Technology to Increase ROPS Use on Tractors

For Partners and Stakeholders:

Name of Organization: FEMCO Inc

Category of Organization: OEM ROPS Manufacturer

Contact:

Rick Young, Managing Director
youngr@femcomfg.com
(620) 241-3513

For Partners only:

Type of Formal Agreement (if any): LOA

Description of collaborative activities (narrative):

FEMCO and NIOSH have collaborated in value assessment and design evaluation of the AutoROPS. FEMCO located and help to form the working agreement between Scag Power Equipment, Inc and NIOSH. FEMCO has manufactured AutoROPS components used in product development and testing evaluation phases of the project.

Collaborative Outputs:

McKenzie, Jr., E.A., Etherton, J.R., Harris, J.R., Cantis, D.M and Lutz, T.J [2005] "NIOSH AutoROPS Research to Practice: Zero Turn Commercial Mowers" (IMECE2005-81575) *Proceedings of 2005 American Society of Mechanical Engineers, Congress and Exposition,* {November 11, 2005}: Orlando, FL

Lutz, T.J. and McKenzie, Jr., E.A.,[2005] "Remote Control on a Zero-turn Commercial Lawn Mower To Conduct SAE J2194 Rollover Test" Proceedings of the 2005 ASAE Annual International Meeting (#055004), {July 17-20 2005}Tampa, FL

Etherton JR, McKenzie, Jr., E.A., Lutz TJ, Cantis DM, Kau TY, [2004]. "An Initial Farmer Evaluation of a NIOSH AutoROPS Prototype," *International Journal of Industrial Ergonomics* 34:155-165

Intermediate Outcomes: With the help of industry, NIOSH successfully introduced a new American Society of Agricultural and Biological Engineers (ASABE) standard for the NIOSH AutoROPS. The new standard, ASABE-X599, Standardized Deployment Performance of an Automatic Telescoping ROPS for Agricultural Equipment, is in draft form and has undergone its first review. This standard, once issued, will give the manufacturers criteria to build, test, and sell AutoROPS to consumers

End Outcomes: This research is still ongoing

For Partners and Stakeholders:

Name of Organization: Garlock Equipment Company

Category of Organization: Manufacturer

Contact:

Richard B. Stoffels
Engineering Manager
rstoffels@garlock.org
(612) 747-8076

For Partners only:

Type of Formal Agreement (if any)**:**

A Material Transfer Agreement has been signed by the Manufacturer on March 16, 2006. It was approved by the CDC Tech Transfer Office on April 14, 2006 and by the NIOSH TTO on April 17, 2006.

Description of collaborative activities (narrative):

The adjustable roof bracket-safety rail assembly was shipped to the company for the company to conduct engineering analyses on the assembly, and to provide NIOSH with an estimate of the cost to produce the assembly and an estimate of what the final customer cost would be. After the company's initial price estimate, there was concern that the price suggested by the manufacturer might have been too expensive for the market to show any interest. The manufacturer has asked for additional time to conduct further marketing analyses, and to consider redesign options to produce this product easier and less expensively.

Collaborative Outputs: None to report.

Intermediate Outcomes: None to report.

End Outcomes: None to report.

For Partners and Stakeholders:

Name of Organization: HJA International

Category of Organization: Manufacturer

Contact:

Peter Hurd, CEO
phurd9@hotmail.com
(716) 332-7061

For Partners only:

Type of Formal Agreement (if any)**:** Cooperative Research and Development Agreement

Description of collaborative activities (narrative):

Through the use of this CRADA, NIOSH and HJA International have agreed to collaborate on the further developments of the "JamAlert" device for balers. Under the agreement, HJA will provide expertise in making the "JamAlert" device marketable. HJA will make modifications and fabricate prototypes for testing. NIOSH will assist with design modifications and testing. Together we will publish the results. The goal is to produce a commercial product that will be available to baler manufacturers and owners.

Collaborative Outputs: None to report.

Intermediate Outcomes: None to report.

End Outcomes: None to report.

For Partners and Stakeholders:

Name of Organization: Helicopter Association International

Category of Organization: Industry association representing helicopter pilots and helicopter transportation companies

Contact:

Harold L. Summers
Director, Flight Operations and Technical Services
Helicopter Association International
1635 Prince Street
Alexandria, VA 22314
Phone: (703) 683-4646
Fax: (703) 683-4745

For Partners only:

Type of Formal Agreement (if any)**:**

Developed Helicopter Logging Safety Committee based on NIOSH sponsored seminars/workshops on helicopter logging safety

Description of collaborative activities (narrative):

Collaborative Outputs:

Intermediate Outcomes:

NIOSH Publication No. 98-147, “Helicopter Logging Safety”

End Outcomes:

Since 1996 there have been no logging helicopter crashes in Alaska in spite of increased helicopter logging operations from 1996 through 1999.

For Partners and Stakeholders:

Name of Organization: Hugs One, LLC

Category of Organization: Manufacturer

Contact:

Joseph Martinez
Vice President of Operations
jmartinez@hugsone.org
(813) 966-7238

For Partners only:

Type of Formal Agreement (if any)**:**

After a lengthy phone conversation, Mr. Martinez expressed his interest in further collaboration with NIOSH regarding the adjustable roof bracket-safety rail assembly. A Confidential Disclosure Agreement has been signed by Mr. Martinez as a prelude to receiving additional information from the research team regarding the prototype assembly. This additional information was sent to Mr. Martinez in mid-September 2006.

Description of collaborative activities (narrative): None to report.

Collaborative Outputs: None to report.

Intermediate Outcomes: None to report.

End Outcomes: None to report.

For Partners and Stakeholders:

Name of Organization: Ideal Shield, LLC

Category of Organization: Manufacturer

Contact:

Chris Parenti
Vice President
cparenti@idealshield.org
(313) 842-7290

For Partners only:

Type of Formal Agreement (if any)**:**

A Material Transfer Agreement has been signed by the Manufacturer on March 24, 2006. It was approved by the CDC Tech Transfer Office (date not known) and by the NIOSH TTO on March 27, 2006.

Description of collaborative activities (narrative):

An adjustable roof bracket-safety rail assembly was shipped to the company for they could conduct engineering analyses on the assembly, and to provide NIOSH with an estimate of the cost to produce the assembly and an estimate of what the final customer cost would be. After receiving the prototype assembly, the company, disappointingly, has not returned any e-mail messages and has not returned any phone calls. They have not provided any feedback to NIOSH as to what their estimate of their manufacturing cost would be, and has not provided an estimate of the final selling cost to customers. The research team is dissatisfied with this lack of communication. They have not responded to an e-mail message to return the prototype materials. The NIOSH Tech Transfer Office has been made aware of this situation.

Collaborative Outputs: None to report.

Intermediate Outcomes: None to report.

End Outcomes: None to report.

For Partners and Stakeholders:

Project: Evaluation of Emergency Services Vehicle Occupant Safety

Name of Organization: H. Koch & Sons

Category of Organization: Manufacturer

Contact:

Charlie Van Druff
Engineering Manager
cvandruff@hkoch.com
(714) 779-7000

For Partners only:

Type of Formal Agreement (if any)**:**

Letter of Intent to CRADA
Confidential Disclosure Agreement

Description of collaborative activities (narrative):

H. Koch & Sons provided materials and engineering support to conduct dynamic tests of their gunner's restraint system through the NIOSH project, "Evaluation of Emergency Vehicle Occupant Safety" project. H. Kock & Sons responded to a FedBizOps announcement for this research, and their restraint system was one of four deemed to hold potential for worker occupant crash protection based on computer simulations.

Current U.S. ambulances use lap belts for occupant protection in the patient compartment. Proper use of lap belts require emergency service (EMS) workers to remain seated against the back of the seat. This prohibits mobility needed to access the patient and EMS equipment. NIOSH and its partners explored the potential of four types of mobile occupant restraints to provide crash protection for EMS workers in ambulance patient compartments while allowing needed mobility. The H. Koch & Sons gunner's restraint is intended for use in military helicopters and allows the door gunner to move around the aircraft while still providing crash protection. The project team believed that this technology could be transferred to a ground ambulance patient compartment. Using crash test dummies, the partners conducted dynamic sled tests and full scale vehicle crash tests. These tests yielded data that can be used for further system development and to support proper selection of restraints for ambulance patient compartments.

Collaborative Outputs:

Data collected from the tests was shared with H. Koch & Sons.

Intermediate Outcomes:

The EMS community has been introduced to a potential source of improved occupant restraint systems.

End Outcomes:

Though not yet realized, it is expected that EMS services and ambulance manufacturers will ultimately use restraint systems that are improvements over the currently used lap belts. This will lead to a reduction of crash-related injuries to EMS workers**.**

For Partners and Stakeholders:

Name of Organization: The Lehigh Group

Category of Organization: Manufacturer

Contact:

Mr. Ken Laga
Director of Marketing
klaga@thelehighgroup.org
(610) 966-9702, x-141

For Partners only:

Type of Formal Agreement (if any**):**

After a lengthy phone conversation, Mr. Laga expressed his interest in further collaboration with NIOSH regarding the adjustable roof bracket-safety rail assembly. A Confidential Disclosure Agreement has been signed by Mr. Laga as a prelude to receiving additional information from the research team regarding the prototype assembly. This additional information was sent to Mr. Laga in mid-September 2006.

Description of collaborative activities (narrative): None to report.

Collaborative Outputs: None to report.

Intermediate Outcomes: None to report.

End Outcomes: None to report.

For Partners and Stakeholders:

Name of Organization: National Children's Center for Rural and Agricultural Health and Safety (NCCRAHS)

Category of Organization: Academic/Advocacy

Contact:

Barbara Lee, PhD
Director, NCCRAHS
Marshfield Clinic
1000 North Oak Avenue
Marshfield, WI 54449-5790
E-Mail: Lee.Barbara@mcrf.mfldclin.edu
Telephone: (800) 662-6900 or (715) 387-9182

For Partners only:

Type of Formal Agreement (if any)**:** Cooperative Agreement

Description of collaborative activities (narrative):

NCCRAHS was established through the NIOSH cooperative agreement grants process as part of the broader NIOSH Childhood Agricultural Injury Prevention Initiative. This partnership has existed since fiscal year 1997. The main focus of the partnership is to provide NCCRAHS assistance in conducting a national outreach campaign to promote childhood agricultural injury prevention. NIOSH does this by providing surveillance and research results to NCCRAHS, which helps them define the types of activities the Center should be conducting. In addition, NIOSH staff participate in several NCCRAHS activities, providing scientific and technical assistance on these center projects.

Collaborative Outputs:

Conferences supported:

The Childhood Agricultural Injury Prevention Strategy Workshop: A Private Sector Perspective, November 90-11, 1997, Indianapolis, IN.
Special Session: Childhood Agricultural Injuries, Fourth International Symposium: Rural Health and Safety in a Changing World, October 18-22, 1998, Saskatoon, Saskatchewan, Canada.

Special Session: Childhood Agricultural Injuries, Agricultural Safety and Health in a New Century, April 28-30, 2000, Cooperstown, NY.

Special Session: Childhood Agricultural Injury Prevention, National Occupational Injury Research Symposium, October 17, 2000, Pittsburgh, PA.

Special Session: Childhood Agricultural Injuries, National Institute for Farm Safety 2001 Annual Meeting, June 24-27, 2001, Pittsburgh, PA.
2001 Summit on Childhood Agricultural Injury Prevention, April 30-May 1, 2001, Brooklyn Park, MN.

Special Session: The NIOSH childhood agricultural injury prevention initiative. National Occupational Injury Research Symposium, October 28-29, 2003, Pittsburgh, PA.

Conference Proceedings and Reports:

Lee B, Gallagher S, Marlenga B, Hard D Eds. [2002]. Childhood Agricultural Injury Prevention: Progress Report and Updated National Action Plan from the 2001 Summit. Marshfield, WI: Marshfield Clinic.

Vela-Acosta M, Lee B Eds. [2001]. Migrant and Seasonal Hired Adolescent Farmworkers: A Plan to Improve Working Conditions. Marshfield, WI: Marshfield Clinic.

Presentations:

Hard DL [2003]. The NIOSH childhood agricultural injury prevention initiative. National Occupational Injury Research Symposium, October 28-29, 2003, Pittsburgh, PA.

Hard D, Castillo D, Myers J, Pizatella T, Olenchock S. [2000]. Overview of the NIOSH childhood agriculture injury prevention initiative. National Occupational Injury Research Symposium, October 17-19, 2000, Pittsburgh, PA.

Myers JR, Hendricks K. [2000]. NIOSH approach to childhood agricultural injury surveillance. Agricultural Safety and Health in a New Century, April 28-30, 2000, Cooperstown, New York.

Myers JR, Hendricks K. [2000]. NIOSH approach to childhood agricultural injury surveillance. Presented at the National Occupational Injury Research Symposium (NOIRS), Pittsburgh, PA, October 17-19, 2000.

Intermediate Outcomes:

NCCRAHS Using NIOSH Surveillance:

1. One significant finding from the CAIS, M-CAIS, and NIOSH death certificate studies has been the importance of non-work injuries and fatalities to youth on farms. These findings led to the development of a new recommendation in the updated 2002 Childhood Agricultural Injury Prevention National Action Plan to address non-work injuries on farms. In response to this new recommendation, NCCRAHS produced several documents on the importance and design of safe play areas for children on farms. NCCRAHS also maintains a website dedicated to the topic of safe play areas on farms (see http://www.marshfieldclinic .org/nfmc/pages/default.aspx?page=nfmc_nccrahs_safe_play_ welcome).

2. NCCRAHS reports the results from the NIOSH youth farm injury surveillance studies. Following the lead of NCCRAHS, other childhood injury prevention organizations, such as Farm Safety for Just Kids and the National Safe Kids Campaign now use the NIOSH injury and injury rate estimates for children on farms as their official numbers.

3. In 1999, Dr. Barbara Marlenga of NCCRAHS, approached NIOSH to provide assistance on a research project. Dr. Marlenga's research required a national sample of farms with household youth 7 to 16 years of age. NIOSH worked with NASS to identify farms with household youth in this age range and asked if they would be willing to participate in this study as part of the CAIS data collection effort. Dr. Marlenga was given access to those farm families who agreed to participate. Results of Dr. Marlenga's study are reported in: Marlenga BL**,** Pickett W, Berg RL. [2002]. Evaluation of an enhanced approach to the dissemination of the North American Guidelines for Children's Agricultural Tasks: a randomized controlled trial. Preventive Medicine 35:150-159. PubMed ID: 12200100

4. NIOSH has also worked with NASS to provide CAIS data to Dr. Marlenga for two additional research studies. Results from the 1998 CAIS were used by Dr. Marlenga to assess whether guidelines for assigning youth work tasks based on their age would have prevented certain types of farm injuries. Results of this research are reported in: Marlenga BL**,** Brison RJ, Berg RL, Zentner JL, Linneman JG, Pickett W. [2004]. Evaluation of the North American Guidelines for Children's Agricultural Tasks using a case series of injuries. Injury Prevention 10:350-357. PubMed ID: 15583256

Data from the 1998 CAIS and 2000 M-CAIS have also been provided to Dr. Marlenga to assess the potential impact of applying Child Labor hazardous orders for youth working on farms to youth working on their family's farm. This research is still in progress.

5. Dr. Barbara Lee, Director of the NCCRAHS, recently published an editorial in the Journal of Agromedicine (2005: Vol. 10(4)) entitled 'NIOSH Fills Void with Surveillance of Injuries to Youth Living on U.S. Farms." This editorial commends the work that NIOSH done in the leadership role of the Childhood Agricultural Injury Prevention Initiative and in collecting youth farm injury data that was previously unavailable. Additionally, Dr. Lee encourages others to give their support to NIOSH and the continuation of the NIOSH childhood agricultural injury surveillance plan.

Technical and Scientific Interactions with NCCRAHS:

1. Dr. Hard represented NIOSH as an active participant in the expert panel that developed the 62 North American Guidelines for Children's Agricultural Tasks (NAGCATs) by the NCCRAHS.

2. NIOSH sponsored research has shown that the NAGCATs can be an effective means of reducing injuries to youth on farms. A controlled study conducted in the State of New York found that farm parents who used the NAGCATs reported a 50% reduction in youth farm injuries compared to youth in control farm families.

3. A 2001 Summit on Childhood Agricultural Injury Prevention was convened by the National Children's Center for Rural and Agricultural Health and Safety with substantial involvement by the project officer, Dr. David Hard. The goal of the Summit was to propose specific injury prevention strategies based on knowledge gained from research and interventions undertaken since the endorsement of the 1996 National Action Plan, *Children and Agriculture: Opportunities for Safety and Health.* This resulted in publication:

Lee, B., Gallagher, S., Marlenga, B., & Hard, D. (Eds.). (2002). Childhood Agricultural Injury Prevention: Progress Report and Updated National Plan from the 2001 Summit. Marshfield, WI: Marshfield Clinic.

Available via internet at: http://marshfieldclinic.org/nfmc/Pages/Proxy.aspx?Content=MCRF-Centers-NFMC-nccrahs-reports-summitreport.1.pdf

The 2001 Summit Report was utilized by NIOSH in providing further guidance in administering the NIOSH Childhood Agricultural Injury Initiative.

4. The NCCRAHS published *Creating Safe Play Areas on Farms* in 2003 to provide safety professionals and community leaders guidance on addressing this emerging issue. This document has increased the attention to the development of safe, structured, supervised play areas for children on farms, and has prompted many Safety Day Camps for farm youth to offer parent-oriented programs to promote fenced, supervised play areas for children on farms.

End Outcomes:

1. The NIOSH Childhood Agricultural Injury Prevention Initiative began in 1997. Since the beginning of this initiative, NIOSH has worked closely with the NCCRAHS to identify and promote injury prevention activities nationwide. In addition, NIOSH had funded numerous research projects to improve our understanding of both the effectiveness of existing and new interventions. During the initiative, the total number of youth injured on farms has decreased from 37,800 in 1998 to 27,600 in 2004. For the same time period, the number farm work-related youth injuries decreased by 51% from 16,695 down to 8,130 *(Table 1)* (**Source**: NIOSH CAIS).

*Table 1. Injuries to youth less than 20 years of age that occurred on U.S farms during 1998, 2001, and 2004, by sex and work status (**Source:** NIOSH CAIS).*

	1998	2001	2004
Injuries‡	37,774	29,207	27,590
Male	29,564	16,526	14,390
Female	8,210	12,641	13,201
Work	16,695	9,481	8,130
Non-work	18,169	19,611	19,439

‡ Total injuries may not add up due to rounding or missing data.

2. A major focus of the NIOSH Childhood Agricultural Injury Prevention Initiative has been working with the NCCRAHS on the development and promotion of the North American Guidelines for Childhood Agricultural Tasks (NAGCAT) released in 1999. The primary focus of the NAGCAT is to provide guidance to farm families on how to assign work to farm youth to reduce their risk of injury. The NAGCAT have been widely reported in the popular farm press, and have been shown to be effective in reducing injuries to household youth in one controlled study. Since the establishment and promotion of the NAGCATS, work-related farm injuries to youth living on the farms have decreased from 11,600 injuries in 1998 down to 6,400 in 2004. The work-related injury rate for household youth decreased from 14.1 to 9.1 injuries per 1000 working household youth for the same period *(Figure 1)* (**Source:** NIOSH CAIS).

3. Males account for 58% of the household youth who work on farms, and have traditionally accounted for most of the work-related youth injuries occurring on farms. Since the introduction of the NAGCATs, farm injuries to young males on farms decreased 50%. A major part of this decrease was seen for work-related farm injuries to males that decreased from 11,800 in 1998 to 5000 in 2004 (**Source**: NIOSH CAIS). The male household youth work-related injury rate decreased from 20.3 to 9.0 injuries per 1000 working household youth during this same time period *(Figure 2)* (**Source**: NIOSH CAIS).

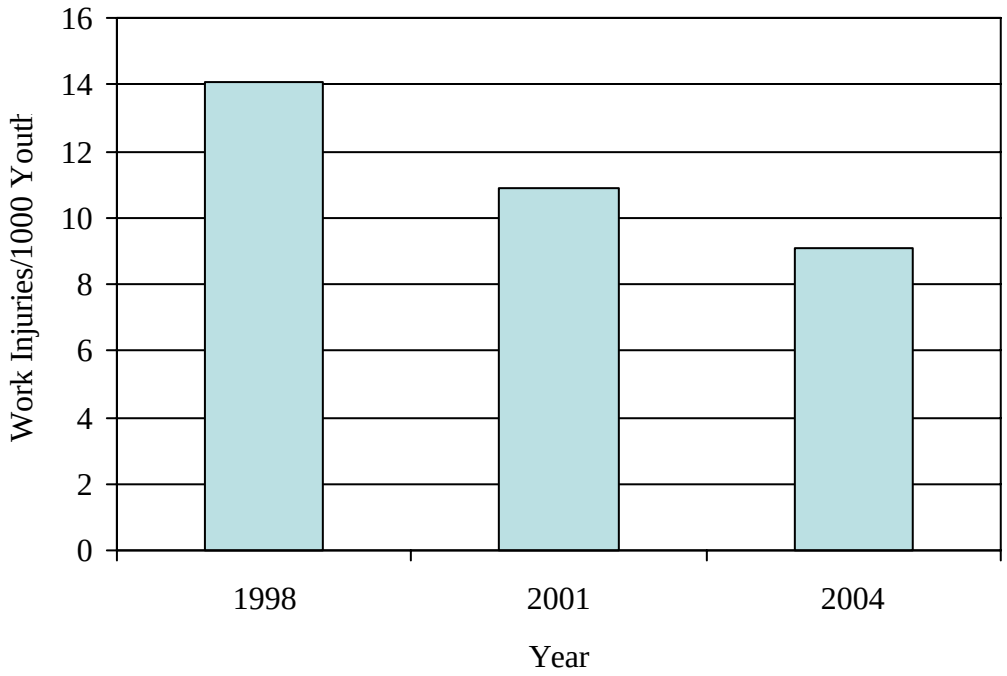

*Figure 1. Work Injuries per 1000 Working Farm Household Youth, 1998-2004 (**Source**: NIOSH CAIS).*

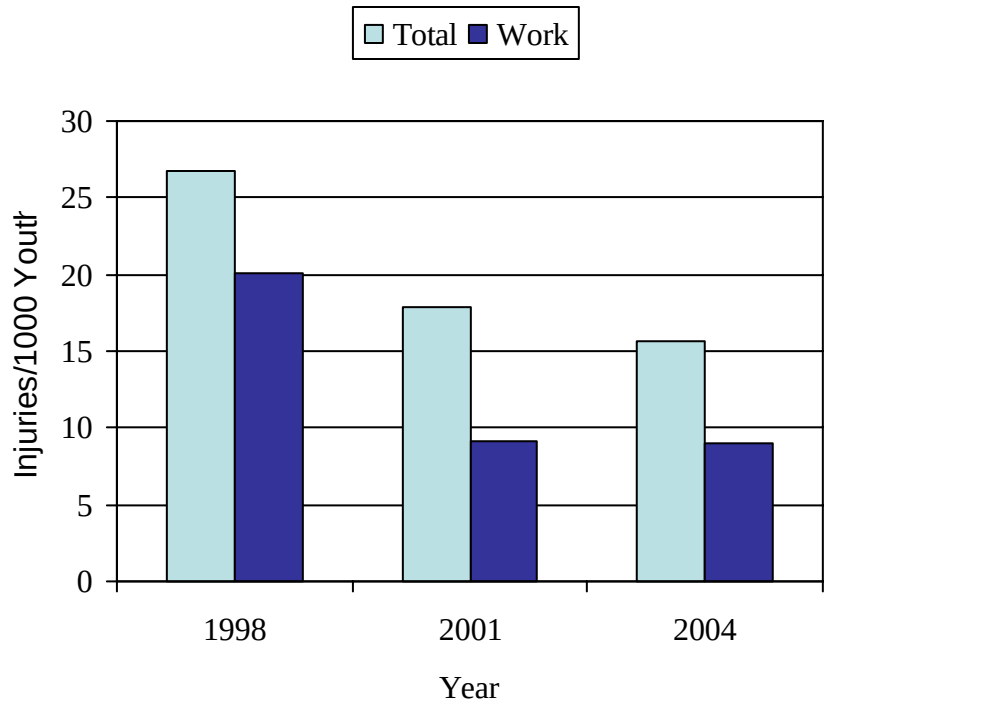

*Figure 2. Injuries per 1000 Household Male Youth and Work Injuries per 1000 Working Household Male Youth, 1998-2004 (**Source**: NIOSH CAIS).*

For Partners and Stakeholders:

Name of Organization: Mine Safety Appliances Co.

Category of Organization: Manufacturer

Contact:

Joseph Feldstein
Manager of Technical Services
Joseph.Feldstein@MSAnet.com
(303) 922-6246 Ext 304

For Partners only:

Type of Formal Agreement (if any)**:** Letter of Agreement

Description of collaborative activities (narrative):

Mine Safety Appliances Co. has actively participated in the TI Harness Sizing research and is finalizing the adjustment range of each harness component with the NIOSH research team. They have provided original static-test criteria, harness blue prints, and technical input for each study and have continued to provide feedback on proposed new sizing systems. They also are working on prototypes of harnesses based on the proposed new sizing systems and other TI program study results.

Collaborative Outputs:

A provisional sizing scheme with an algorithm that describes the human torso-shape-and-size distribution and a set of recommendations for producing vest-type harnesses has been accepted for publication by the Human Factors journal. Mine Safety Appliances (MSA) Co. reviewed the report before our submission to the journal in 2005. The provisional sizing scheme is currently being used by MSA for the first-stage prototype development. A simplified version of the provisional sizing schedule was also presented at the Ergonomics Society Conference and was published in the Contemporary Ergonomics in 2005.

The draft report of the second provisional size scheme has been shared with MSA. NIOSH, two research contractors, and MSA are finalizing the adjustment range of each harness component. The final report is expected to be completed in December 2006. MSA and NIOSH research team will complete the prototypes of the new generation over-the-head harnesses in year 2007 for NIOSH to conduct validation studies to determine the validity and reliability of the newly established sizing system.

Intermediate Outcomes:

Development of prototype harnesses that incorporates the TI schemata is currently underway at the Mine Safety Appliances (MSA) Co. MSA has indicated interest in more extensive efforts to develop the next-generation harness designs and prototypes using the criteria and schemata identified by the TI program. MSA was strategically selected to participate in the TI pilot studies in year 2000 in that MSA expressed interest to TI team in the past that they plan to revise fall protection designs using updated measurements of human form. MSA also responded to the NIOSH announcement on the Federal Business Opportunities in 2003 for partnership in harness-sizing studies and in transferring the knowledge into design process and commercialization. Since MSA and the other NIOSH partner harness manufacturer account for about 60% of the national market share of fall-arrest harnesses, the future adoption potential of the new harnesses and sizing systems in the construction trades is very high

End Outcomes: Not available yet

For Partners and Stakeholders:

Name of Organization: OSHA/NIOSH Roadway Work Zone Safety and Health Coalition Alliance

Category of Organization: Government- led (OSHA). Includes industry associations (Road Construction) and labor unions. Functions as an advocacy group.

Contact:

Todd Briggs, Program Analyst
OSHA Directorate of Cooperative and State Programs
Briggs.Todd@dol.gov
(202) 693-2200

For Partners only:

Type of Formal Agreement (if any)**:** OSHA Alliance Agreement

Description of collaborative activities (narrative):

On November 18, 2003, OSHA, the National Institute for Occupational Safety and Health (NIOSH) and the Roadway Work Zone Safety and Health Coalition (National Asphalt Pavement Association, American Road and Transportation Builders Association, Laborers' International Union of North America, and the International Union of Operating Engineers) formed an Alliance focusing on providing information, guidance, and access to training resources to protect employees' health and safety, particularly in reducing and preventing exposure to roadway work zone safety and health hazards. The NIOSH representative actively participated in Alliance meetings and activities, including providing technical assistance and review of draft materials.

OSHA, NIOSH, and the Roadway Work Zone Safety and Health Coalition are working together to sign a new Alliance agreement with additional signatories, including the Federal Highway Administration and the Associated General Contractors of America. As a result, OSHA and the Roadway Work Zone Safety and Health Coalition agreed to conclude the Alliance signed November 18, 2003 as of February 10, 2006.

Collaborative Outputs:

The Alliance had a number of collaborative outputs. Only those in which NIOSH played a key role are identified below.

Roadway Safety, a CD-ROM-based training program which addresses highway work zone safety hazards including runovers, struck by, noise, electrical and falls. The training program incorporates information regarding working around operating construction equipment, construction equipment blind areas and implementing internal traffic control plans developed by the NIOSH research project, Evaluating Roadway Construction Work Zone Interventions.

An "Internal Traffic Control Plans" brochure which details how to safely manage the flow of construction vehicles and equipment operating near ground workers in a roadway construction work zone. NIOSH played a key role in supporting the development of the brochure by providing content, technical assistance, and review. The brochure is considered a joint publication of the Alliance members and includes the NIOSH logo, as well as logos from other Alliance participants. [Roadway Work Zone Safety and Health Coalition Alliance [2005]. Internal traffic control plans. Washington, DC: Laborers' Health and Safety Fund of North America, CDC Contract 212-2003-M-02677].

Intermediate Outcomes: None to report

End Outcomes: None to report

Project: Evaluation of Emergency Services Vehicle Occupant Safety

For Partners and Stakeholders:

Name of Organization: Ontario (Canada) Ministry of Health

Category of Organization: Government

Contact:

Mr. Tim Cooke
COOKETI@sdsx.moh.gov.on.ca
(416) 326-7325

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

Current U.S. ambulances use lap belts for occupant protection in the patient compartment. Proper use of lap belts require emergency service (EMS) workers to remain seated against the back of the seat. This prohibits mobility needed to access the patient and EMS equipment. NIOSH and its partners explored the potential of four types of mobile occupant restraints to provide crash protection for EMS workers in ambulance patient compartments while allowing needed mobility. Using crash test dummies, the partners conducted dynamic sled tests and full scale vehicle crash tests. These tests yielded data that can be used for further system development and to support proper selection of restraints for ambulance patient compartments.

As a part of the project team, the Ontario (Canada) Ministry of Health provided a fully functional operating ambulance for destructive testing as a part of the instrumented crash test program conducted at PMG Technologies near Montreal, Ontario (Canada). The estimated value of this ambulance to the project team was $25,000 US.

Collaborative Outputs:

Data collected from the tests was shared with Ontario (Canada) Ministry of Health in a joint brief with the Canadian Forces Health Group. Data was also provided in electronic format for their use.

Intermediate Outcomes:

To date, we are unaware of any additional activities resulting from the work on this project within the Ontario (Canada) Ministry of Health.

End Outcomes:

It is expected that EMS services and ambulance manufacturers will ultimately use restraint systems that are improvements over the currently used lap belts. This will lead to a reduction of crash-related injuries to EMS workers**.**

Project: Evaluation of Emergency Services Vehicle Occupant Safety

For Partners and Stakeholders:

Name of Organization: Pacific Scientific

Category of Organization: Manufacturer

Contact:

Steve Fanelli, Director of Sales
sfanelli@htl.pacsci.com
(626) 434-1178

For Partners only:

Type of Formal Agreement (if any):

Letter of Intent to CRADA
Confidential Disclosure Agreement

Description of collaborative activities (narrative):

Pacific Scientific provided materials and engineering support to conduct dynamic tests of their gunner's restraint system through the NIOSH "Evaluation of Emergency Vehicle Occupant Safety" project. Pacific Scientific responded to a FedBizOps announcement for this research, and their restraint system was one of four deemed to hold potential for worker occupant crash protection based on computer simulations.

Current U.S. ambulances use lap belts for occupant protection in the patient compartment. Proper use of lap belts require emergency service (EMS) workers to remain seated against the back of the seat. This prohibits mobility needed to access the patient and EMS equipment. NIOSH and its partners explored the potential of four types of mobile occupant restraints to provide crash protection for EMS workers in ambulance patient compartments while allowing needed mobility. The Pacific Scientific gunner's restraint is intended for use in military helicopters and allows the door gunner to move around the aircraft while still providing crash protection. The project team believed that this technology could be transferred to a ground ambulance patient compartment. Using crash test dummies, the partners conducted dynamic sled tests and full scale vehicle crash tests. These tests yielded data that can be used for further system development and to support proper selection of restraints for ambulance patient compartments.

Collaborative Outputs:

Data collected from the tests was shared with Pacific Scientific.

Intermediate Outcomes:

The EMS community has been introduced to a potential source of improved occupant restraint systems.

End Outcomes:

Though not yet realized, it is expected that EMS services and ambulance manufacturers will ultimately use restraint systems that are improvements over the currently used lap belts. This will lead to a reduction of crash-related injuries to EMS workers**.**

Project: HCCB7 9277178 - New Technology to Increase ROPS Use on Tractors:

For Partners and Stakeholders:

Name of Organization: Scag Power Equipment

Category of Organization: Commercial manufacture of lawn care equipment primarily Zero-turn commercial mowers

Contact:

Dave Sugden, Vice President Product Development
dsugden@Mtlcraft.com
(920) 387-0100

For Partners only:

Type of Formal Agreement (if any): Letter of Agreement

Description of collaborative activities (narrative):

NIOSH, through a partnership with SCAG Power Equipment, a zero turn mower manufacturer, obtained support for the Office of Technology Transfer and Commercialization (OTTC) to develop an AutoROPS design for a zero turn mower. OTTC is a private, nongovernmental office with the mission of promoting the transition of new technologies to the marketplace. As part of this process, OTTC conducted a marketing study for NIOSH for this technology.

Collaborative Outputs:

McKenzie, Jr., E.A., Etherton, J.R., Harris, J.R., Cantis, D.M and Lutz, T.J [2005] "NIOSH AutoROPS Research to Practice: Zero Turn Commercial Mowers" (IMECE2005-81575) *Proceedings of 2005 American Society of Mechanical Engineers, Congress and Exposition,* {November 11, 2005}: Orlando, FL

Lutz, T.J. and McKenzie, Jr., E.A.,[2005] "Remote Control on a Zero-turn Commercial Lawn Mower To Conduct SAE J2194 Rollover Test" Proceedings of the 2005 ASAE Annual International Meeting (#055004), {July 17-20 2005}Tampa, FL

Etherton JR, McKenzie, Jr., E.A., Lutz TJ, Cantis DM, Kau TY, [2004]. "An Initial Farmer Evaluation of a NIOSH AutoROPS Prototype," *International Journal of Industrial Ergonomics* 34:155-165

Intermediate Outcomes:

With the help of industry, NIOSH successfully introduced a new American Society of Agricultural and Biological Engineers (ASABE) standard for the NIOSH AutoROPS. The new standard, ASABE-X599, Standardized Deployment Performance of an Automatic Telescoping ROPS for Agricultural Equipment, is in draft form and has undergone its first review. This standard, once issued, will give the manufacturers criteria to build, test, and sell AutoROPS to consumers

End Outcomes: This research is still ongoing

For Partners and Stakeholders:

Project: Evaluation of Emergency Services Vehicle Occupant Safety

Name of Organization: Schroth Safety Products

Category of Organization: Manufacturer

Contact:

Ron Grilliot, President
ron.grilliot@schroth,com
(954) 784-3178

For Partners only:

Type of Formal Agreement (if any)**:**

Letter of Intent to CRADA
Confidential Disclosure Agreement

Description of collaborative activities (narrative):

Schroth Safety Products provided materials and engineering support to conduct dynamic tests of their High Mobility Restraint (HMR) System through the NIOSH project, "Evaluation of Emergency Vehicle Occupant Safety" project. Schroth Safety Products responded to a FedBizOps announcement for this research, and their restraint system was one of four deemed to hold potential for worker occupant crash protection based on computer simulations.

Current U.S. ambulances use lap belts for occupant protection in the patient compartment. Proper use of lap belts require emergency service (EMS) workers to remain seated against the back of the seat. This prohibits mobility needed to access the patient and EMS equipment. NIOSH and its partners explored the potential of four types of mobile occupant restraints to provide crash protection for EMS workers in ambulance patient compartments while allowing needed mobility. Using crash test dummies, the partners conducted dynamic sled tests and full scale vehicle crash tests. These tests yielded data that can be used for further system development and to support proper selection of restraints for ambulance patient compartments.

Collaborative Outputs:

Data collected from the tests was shared with Schroth Safety Products. The company is using the data to support system refinement.

Intermediate Outcomes:

The EMS community has been introduced to a source of improved occupant restraint systems. As a result of this work, Schroth Safety Products has developed a marketing plan for the emergency medical services industry. The company has been working with several U.S. ambulance manufacturers to adapt the systems to specific ambulance designs. Schroth restraint systems are being used to equip concept ambulances. Additionally, Schroth has been working with EVS Ltd., a seat manufacturer that supplies ambulance manufacturers. EVS and Schroth have incorporated the system into a prototype attendant's seat

End Outcomes:

Though not yet realized, it is expected that EMS services and ambulance manufacturers will ultimately use restraint systems that are improvements over the currently used lap belts. This will lead to a reduction of crash-related injuries to EMS workers.

Project: Evaluation of Emergency Services Vehicle Occupant Safety

For Partners and Stakeholders:

Name of Organization: United States Army Tank and Automotive Research Engineering and Development Center

Category of Organization: Government

Contact:

Richard McClelland, PhD
mcclellr@tacom.army.mil
(586) 574-6144

For Partners only:

Type of Formal Agreement (if any)**:** None

Description of collaborative activities (narrative):

Current U.S. ambulances use lap belts for occupant protection in the patient compartment. Proper use of lap belts require emergency service (EMS) workers to remain seated against the back of the seat. This prohibits mobility needed to access the patient and EMS equipment. NIOSH and its partners explored the potential of four types of mobile occupant restraints to provide crash protection for EMS workers in ambulance patient compartments while allowing needed mobility. Using crash test dummies, the partners conducted dynamic sled tests and full scale vehicle crash tests. These tests yielded data that can be used for further system development and to support proper selection of restraints for ambulance patient compartments. As a part of the project team, the U.S. Army provided partial funding for the crash test facility and an instrumented test manikin for use in support of dynamic sled and crash testing for each of the four mobile restraint systems tested.

Collaborative Outputs:

Data collected from the tests was shared with U.S. Army's Tank and Automotive Research Engineering and Development Center.

Intermediate Outcomes:

While we are not aware of any ongoing work with the ambulance environment within the U.S. Army, as a follow-on effort, the U.S. Army is now working with one of the four restraint manufacturers from this project, Schroth Safety Products, to develop and field a restraint system to protect turret gunners riding in a military version of the Humvee. Though it is understood the system to be fielded by the Army has an additional tether or lanyard to mitigate vertical loading in the event of a vehicle roll, the testing and collaborative work undertaken in this project was a catalyst to the Humvee effort.

End Outcomes:

It is expected that EMS services and ambulance manufacturers will ultimately use restraint systems that are improvements over the currently used lap belts. This will lead to a reduction of crash-related injuries to EMS workers**.**

Project: HCCB7 9270025 – Fall Prevention for Aerial Lifts in the Construction Industry:

For Partners and Stakeholders:

Name of Organization: SkyJack Inc.

Category of Organization: Industry Association

Contact:

Brad Boehler, P.Eng, *Director, Product Safety*
55 Campbell Road, Guelph, Ontario, Canada N1H 1B9
Tel: (519) 837-0888 Toll Free: (800) 265-2738
Fax: (519) 837-3102
brad.boehler@skyjackinc.com
www.skyjackinc.com www.linamar.com

For Partners only:

Type of Formal Agreement (if any): Letter of Agreement (LOA)

Description of collaborative activities (narrative):

Following a presentation to the ANSI committee on scaffolding and aerial lift safety, as well as subsequent, intensive communication and negotiation with officers and representatives of the committee and industry representatives, as well as public announcements, a select group of invitees came to Morgantown, WV, for a public meeting on research directions for aerial lift safety. As a result of these events and negotiations, a letter of agreement (LOA) was signed on October 7, 2004 with a leading scissor lift manufacturer – SkyJack Inc. Based on the LOA, SkyJack agreed to provide the project with the use of two new scissor lifts for the duration of the project, an extra platform, and other critical technical and design data. This represents an unprecedented degree of cooperation between an industrial manufacturer and NIOSH; this manufacturer has provided a significant item of capital equipment for NIOSH research use, and has additionally assumed the responsibility for shipping the lift and platform to NIOSH. Additionally, SkyJack provided training at a NIOSH facility in April, 2005. This LOA not only provides the project with a strong collaborative partnership with a leading scissor lift manufacturer, but it saves the project the funds that would be required to purchase the lifts and experimental hardware; two new scissor lifts and a new platform are valued at approximately $45,000, at this stage. Further, NIOSH-purchased equipment would need to be replaced or repaired in the event of accidental damage during testing; SkyJack has indicated a willingness to continue support of the project in this unlikely event.

Collaborative Outputs:

As the leading manufacturer of scissor lifts, SkyJack is intimately familiar with the myriad of issues related to aerial lifts safety--in terms of design, manufacturing, materials, training, use and misuse, and the record of injuries and deaths associated with the use of this equipment. Mr. Boehler has provided NIOSH with continuous information about acceptable and unacceptable practices and parameters associated with the design and use of this equipment, and has provided expertise, items of capital equipment, design criteria, and assistance in the form of public support for this project, and has indicated willingness to continue to do so in the future, and to assume a leadership role in the dissemination and diffusion of knowledge related to these issues to the manufacturing, user and standards community. Mr. Boehler will also help transfer the study products/outcomes to practical production elements/designs for SkyJack. SkyJack's cooperation is widely recognized within the aerial lift and scaffolding industries, and represents an unprecedented initiative within an industry which had previously been concerned about cooperation with governmental agencies, given the possibility of regulatory and legislative oversight over industry standards.

Intermediate Outcomes:

SkyJack engineers and safety officers have been continuously involved in developing aspects of the study protocol, in transferring information to NIOSH on critical design and engineering parameters, and in providing public testimony. Additionally, Mr. Boehler has presented information to peers within the ANSI A92 committee on the purpose and design of the study, and has indicated willingness to provide material support to ensure that the project continues. Data collection for this project will continue, under field conditions, and Mr. Boehler has indicated willingness to continue to assess effectiveness of the modeling effort in validating performance. Mr. Boehler's involvement in evaluation is twofold: First, validation of the model will establish to the industry that the model will not expose manufacturers to frivolous product-liability lawsuits, and that the design parameters are defensible and safe for widespread dissemination and use within the manufacturing community; and Second, that lifts, if within the parameters or redesigns set forth by the manufacturers are safe, and that he and other colleagues can concentrate on training operators to know and stay within these guidelines for their own safety. Evaluation of the requirements and effectiveness of this operator training could also be additional NIOSH research targets; ANSI members have consistently indicated that proper training and behavioral aspects of operations are of great importance in assuring operational safety. SkyJack and ANSI have indicated a willingness to conduct safety efforts in this area with NIOSH partnership.

End Outcomes:

A validated computer simulation model and related design recommendations/ interventions are the end outcomes of this project. The outcomes of this project will immediately be used for aerial lift companies involved with design and production of equipment — representing a step forward in the r2p process, and involving purposeful collaboration between a leading manufacturing partner and NIOSH. NIOSH partners have indicated that they are willing to be instrumental in the distribution of this information to end users, design engineers, industrial partners, and other stakeholders. External partners have also expressed willingness to support future NIOSH endeavors in this area and to express public support for NIOSH research endeavors in public and private forums. This project has implications for many types of lift equipment used in construction, building maintenance, warehousing, and other applications. The involvement of NIOSH in addressing advanced engineering aspects of cross-sector safety research is directly extensible to boom trucks, cranes, scaffolds, and other elevating equipment. Additionally, this project has implications for the entire area of fall safety, in that the safe engineering of mechanized lift equipment is significantly related to many aspect of fall safety for workers operating at height.

For Partners and Stakeholders:

Name of Organization: Vermeer Manufacturing Company

Category of Organization: Manufacturer

Contact:

Ivan Brand, Senior Technical Coordinator (Product Safety)
ibrand@vermeermfg.com, (641) 621-7323

For Partners only:

Type of Formal Agreement (if any)**:**

Letter of Intent for a Cooperative Research and Development Agreement

Description of collaborative activities (narrative):

Through the LOI, NIOSH and Vermeer were able to share expertise towards the development of a sensor to detect an operator's hands on the controls levers of a stump grinder. Vermeer provided hardware that NIOSH researchers tested in the laboratory. NIOSH provided prototypes to Vermeer, including drawings and source code, that they tested and modified at their manufacturing plant. Remaining collaborative work will involve the testing of the prototype on the stump grinder and jointly publishing results.

Collaborative Outputs: None to report.

Intermediate Outcomes:

Vermeer is developing a prototype device to be tested on the stump grinder.

End Outcomes: None to report.

For Partners and Stakeholders:

Name of Organization: U.S. Consumer Product Safety Commission (CPSC)

Category of Organization: Federal Government

Contact:

Tom Schroeder, Director
Division of Hazard and Injury Data Systems
U.S. Consumer Product Safety Commission
Email: TSchroeder@cpsc.gov
(800) 638-8095 x7431

For Partners only:

Type of Formal Agreement (if any): Interagency Agreement

Description of collaborative activities:

NIOSH and CPSC collaborate to collect nonfatal work-related injuries and illnesses treated in U.S. hospital emergency departments through the CPSC National Electronic Injury Surveillance System (NEISS)—a surveillance system originally intended for the collection of consumer-product related injuries. CPSC collects data for NIOSH at a national probability-based sample of hospital emergency departments (nominally 67) and provides technical expertise on the collection, management, analysis, and interpretation of NEISS data. In turn, NIOSH helps financially support the NEISS program and provides reciprocal technical expertise on matters of joint interest.

From time to time, as funding has permitted, NIOSH has conducted in depth followback special topic interview studies with injured workers identified through the NEISS. CPSC has assisted in development of telephone survey instruments, case identification, assignment of interviews to a third-party contractor, and collection of interview data.

The interagency collaboration provides breadth and stability to the NEISS increasing its utility to a broader public and government audience.

Collaborative Outputs: Annual NEISS data

Intermediate Outcomes:

The NIOSH Work-RISQS public query site has been used by external researchers as the sole data source to produce a peer-reviewed journal article (Xiang H, Stallones L, Chen G, Smith GA, 2005. Work-related eye injuries treated in hospital emergency departments in the US: Am J Ind Med; 48:57-62).

Two objectives for Healthy People 2010, reducing young worker and occupational eye injuries, rely on NEISS-Work data for tracking of progress over the decade.

End Outcomes:

For Partners and Stakeholders:

Name of Organization: US Food and Drug Administration / Center for Devices and Radiological Health (CDRH)

Category of Organization: Government (Federal)

Contacts:

Daniel Schultz, MD., Director CDRH
dbs@cdrh.fda.gov, (301) 827-7975)

John J. Crowley
Director Regulatory Affairs, Office of Surveillance and Biometrics
jjc@cdrh.fda.gov, (240) 276-2389

For Partners only:

Type of Formal Agreement (if any**):**

Interagency agreement in 1999 for FDA to develop a video on safe handling of oxygen regulators.

Description of collaborative activities (narrative):

In 1998, the International Association of Fire Fighters (IAFF) requested that the NIOSH, Division of Safety Research investigate a series of incidents involving fire fighters who were injured when portable oxygen resuscitators spontaneously ignited and burned. Some of these incidents resulted in serious burn injuries. NIOSH contacted the Food and Drug Administration since the FDA is responsible for the approval of this type of medical device. A review of FDA data identified at least 16 work-related incidents during the prior six years (1993-1999), in which 15 people were injured, including 11 fire fighters, three emergency medical technicians, and one health care worker. A joint FDA and NIOSH investigation was initiated to identify the cause of these regulator fires, with consultation from the NASA White Sands Test Facility that has expertise in compressed oxygen delivery systems, and the contracted services of a forensics testing laboratory, Wendell Hull and Associates (WHA). It was quickly determined that most of the incidents involved the same model oxygen regulator, and NIOSH and FDA worked with this manufacturer who took steps to address the hazard (see “Intermediate Outcomes” section). WHA identified the source of ignition in these incidents to be particle impact within the internal oxygen flow path inside the regulators. This model regulator was constructed of aluminum which is known to be a poor material for use in compressed oxygen systems. In February 1999, FDA and NIOSH issued a joint Public Health Advisory which was distributed to approximately 37,000 fire departments, emergency medical services (EMS), state fire marshals, and healthcare organizations. FDA and NIOSH also entered into an interagency agreement in which FDA produced a video on safe handling procedures for oxygen regulators (see “Collaborative Outputs” section).

On February 23, 2005, the Virginia Beach Fire Department contacted the NIOSH, Division of Safety Research, Fire Fighter Fatality Investigation and Prevention Program and requested NIOSH's assistance in evaluating an oxygen resuscitator that ignited and burned while fire department crew members were going about their daily equipment checks. NIOSH again contacted the FDA, and a joint investigation was undertaken to identify the cause of the resuscitator ignition and resultant fire, with FDA and NIOSH jointly funding WHA to conduct a forensic evaluation of the oxygen resuscitator. The WHA evaluation indicated that the ignition was most likely the result of flow friction caused by oxygen leaking across the surface of the deformed oxygen resuscitator sealing gasket used to create the seal at the cylinder valve / regulator interface. The type of gasket used in this oxygen resuscitator was a plastic (nylon®) crush gasket suitable for single use applications. Because of evidence that this type of single use gasket is routinely re-used in the emergency medical services (EMS) and healthcare professions, FDA and NIOSH issued a joint Public Health Notification in April 2006, to alert users to the dangers associated with the incorrect use of these seals (see "Collaborative Outputs" section). The notice was distributed to approximately 38,000 fire departments, emergency medical services (EMS), state fire marshals, and healthcare organizations.

Collaborative Outputs:

NIOSH [1998a]. Oxygen Regulator Flash Severely Burns one Fire Fighter – Florida. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. NIOSH FACE Report 98F-23.

NIOSH [1998b]. Emergency Medical Technician Receives Serious Burns from an Oxygen Regulator Flash Fire - South Carolina. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. NIOSH FACE Report 98F-24.

NIOSH [1999]. Aluminum Regulator Fire Injures One Fire Fighter – Nevada. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. NIOSH FACE Report 99F-07.

FDA and NIOSH [1999]. FDA and NIOSH Public Health Advisory: Explosions and Fires in Aluminum Oxygen Regulators. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. Also posted on the internet at the FDA website: http://www.fda.gov/cdrh/oxyreg.html

FDA and NIOSH [2001]. Video - "Hidden Danger: Oxygen Regulator Fires" Rockville, MD: Food and Drug Administration. Available at http://www.fda.gov/cdrh/ocer/dcm/html/gallery.html

FDA and NIOSH [2006]. FDA and NIOSH Public Health Notification: Oxygen Regulator Fires Resulting from Incorrect Use of CGA 870 Seals. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. Also posted on the internet at the FDA website: http://www.fda.gov/cdrh/safety/042406-o2fires.html and the NIOSH website: http://www.cdc.gov/niosh/fire/

Intermediate Outcomes:

The primary manufacturer of oxygen regulators that had spontaneously ignited in the 1990s, recalled over 200,000 regulators from the field, developed a retrofit kit to convert the oxygen flow path within existing regulators to brass (a material much better suited for use in compressed oxygen systems), and modified their new production to include brass components.

The 1998-1999 investigation by FDA, NIOSH and NASA ultimately resulted in the development and adoption of a new standard test method to evaluate oxygen regulators for susceptibility to particle impact ignition and fires. Representatives of the NASA White Sands Test Facility led the development of this standard, known as the American Society for Testing and Materials *G175-03 Standard Test Method for Evaluating the Ignition Sensitivity and Fault Tolerance of Oxygen Regulators Used for Medical and Emergency Applications*. (http://www.astm.org/cgi-bin/SoftCart.exe/DATABASE.CART/REDLINE_PAGES/G175.htm?L+mystore+xoqp4502+1158875864). This standard became active in 2006.

News stories on the 2006 FDA and NIOSH publication were printed by at least two publications:

Patricia Shehan [2006]. Improper use of oxygen seals causing fires. All Headline News, April 27, 2006.

Fire Chief [2006]. FDA, NIOSH issue safety alert. Fire Chief, May 4, 2006. Available at: http://www.firechief.com/news/seal_alert05042006/index.html

End Outcomes:

NIOSH and FDA are not aware of any injuries associated with explosions and fires in aluminum oxygen regulators subsequent to the NIOSH and FDA outreach in the late 1990s.

For Partners and Stakeholders:

Name of Organization: National Aeronautics and Space Administration (NASA), White Sands Test Facility

Category of Organization: Government (Federal)

Contacts:

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Harold D. Beeson, Ph.D., Special Projects Director
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For Partners only:

Type of Formal Agreement (if any):

Interagency agreement in 1999 for NASA to develop a forced ignition test for emergency medical oxygen regulators.

Description of collaborative activities (narrative):

In July 1998, the International Association of Fire Fighters requested that NIOSH investigate the circumstances surrounding a series of incidents involving fire fighters who were injured when portable oxygen resuscitators spontaneously ignited and burned. NIOSH worked with the Food and Drug Administration (FDA) that regulates these devices and the National Aeronautics and Space Administration (NASA) that has a long history of relevant expertise in oxygen safety. NASA provided technical expertise, identified a forensics testing laboratory that could provide an evaluation of burned regulators, co-authored peer-reviewed journal articles, and developed a new testing protocol to ensure safer regulators.

Collaborative Outputs:

NIOSH [1998a]. Oxygen Regulator Flash Severely Burns one Fire Fighter – Florida. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. NIOSH FACE Report 98F-23.

NIOSH [1998b]. Emergency Medical Technician Receives Serious Burns from an Oxygen Regulator Flash Fire - South Carolina. Cincinnati, OH: U.S. Public Health Service, Centers for

Disease Control and Prevention, National Institute for Occupational Safety and Health. NIOSH FACE Report 98F-24.

NIOSH [1999]. Aluminum Regulator Fire Injures One Fire Fighter – Nevada. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. NIOSH FACE Report 99F-07.

FDA and NIOSH [1999]. FDA and NIOSH Public Health Advisory: Explosions and Fires in Aluminum Oxygen Regulators. Cincinnati, OH: U.S. Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. Also posted on the internet at the FDA website: http://www.fda.gov/cdrh/oxyreg.html *(NASA contacts provided an expert review of the draft document)*

Washenitz F, Stoltzfus J. et. al. [2001]. Fire Incidents Involving Regulators Used in Portable Oxygen Systems. Injury Prevention. September 2001. pp 24-37.

Hodous T, Washenitz F, Newton B [2002]. Occupational burns from oxygen resuscitator fires: The hazard of aluminum regulators. Am J Industr Medicine 42(1): 63-69.

Intermediate Outcomes:

The primary manufacturer of oxygen regulators that had spontaneously ignited in the 1990s recalled over 200,000 regulators from the field, developed a retrofit kit to convert the oxygen flow path within existing regulators to brass (a material much better suited for use in compressed oxygen systems), and modified their new production to include brass components.

The 1998-1999 investigation by FDA, NASA and NIOSH ultimately resulted in the development and adoption of a new standard test method to evaluate oxygen regulators for susceptibility to particle impact ignition and fires. Representatives of the NASA White Sands Test Facility led the development of this standard, with funding provided by NIOSH. The standard is known as the. (http://www.astm.org/cgi-bin/SoftCart.exe/DATABASE.CART/REDLINE_PAGES/G175.htm?L+mystore+xoqp4502+1158875864)

End Outcomes:

NIOSH and FDA are not aware of any injuries associated with explosions and fires in aluminum oxygen regulators subsequent to the collaborative effort of NIOSH, NASA and FDA to identify and solve the problem, and subsequent outreach by NIOSH and FDA.

For Partners and Stakeholders:

Name of Organization: Child Labor Coalition

Category of Organization: Advocacy group

Contact:

Darlene Adkins
Senior Program Associate
Dak7ncl@sbcglobal.net
(614) 575-2539

For Partners only:

Type of Formal Agreement (if any): None.

Description of collaborative activities (narrative):

The Child Labor Coalition periodically requests assistance in identifying and interpreting young worker injury statistics. The Child Labor Coalition has provided reviews of NIOSH young worker safety and health materials, and provided assistance in disseminating the NIOSH Alerts on young worker safety. NIOSH researchers have given presentations by request at Child Labor Coalition meetings and conferences.

Collaborative Outputs: None

Intermediate Outcomes:

The Child Labor Coalition routinely cites NIOSH statistics, findings and recommendations in their reports and publications, including their annual list of the five worst teen jobs, and a June 2005 report to the International Labour Organization (ILO), "Protecting Working Children in the United States: Is the Government's Indifference to the Safety and Health of Working Children Violating an International Treaty? The Child Labor Coalitions' annual list of the five worst teen jobs gets considerable press coverage. At the 2006 annual meeting of the ILO in Geneva, Switzerland, the Conference Committee on the Application of Standards discussed the U.S. application of Convention No. 182 (Elimination of the Worst Forms of Child Labour) as it relates to children performing hazardous work in agriculture. The Conference Committee requested that the U.S. Government provide copies of any new Hazardous Orders when adopted. In addition, the Conference Committee requested the U.S. government to "indicate, in its next report to the Committee of Experts, the measures taken or envisaged (including but not limited to legislation) to ensure that work performed in particular in the agricultural sector was prohibited for children under 18 years where it was hazardous work within the meaning of the Convention."

End Outcomes: None specific to this partnership.

For Partners and Stakeholders:

Name of Organization: Federal Network for Young Worker Safety and Health

Category of Organization: Federal Government

Contact:

Elise Handelman
Director of Occupational Health Nursing, OSHA
Handelman.elise@dol.gov
(202) 693-1987

For Partners only:

Type of Formal Agreement (if any):

Description of collaborative activities (narrative):

OSHA has lead the Federal Network for Young Workers (FedNet) since April, 2003. FedNet is comprised of 12 federal agencies who work collaboratively to educate, train and provide outreach to youth, their employers, parents and counselors about how young workers (less than 24 years of age) can avoid injury and illness on the job. FedNet provides opportunities for federal agencies to leverage resources by building on existing activities, and broadly disseminating available tools and resources. TI program staff actively participate in Network meetings and the development of FedNet materials and products. NIOSH hosts the FedNet website.

Collaborative Outputs:

Federal Network for Young Worker Safety and Health website: www.youngworkers.net This website includes links to relevant products of each FedNet agency.

OSHA [2004]. Forklift operations by young workers subject of safety initiative: OSHA, Wage and Hour Division, NIOSH join forces to foster youth safety on the job. Washington, DC: OSHA Trade Release, February 11, 2004.

OSHA [2004]. Federal agencies launch effort to help teen workers stay safe and healthy on the job this summer. OSHA Trade Release, May 18, 2004.

OSHA [2004]. Federal agencies launch effort to help teen workers stay safe and healthy on the job this winter. Washington, DC: OSHA News Release 04-2467-NAT, December 6, 2004.

Intermediate Outcomes:

In 2004, the federal Job Corps program and some OSHA training centers began using safety and health curricula developed through NIOSH supported young worker safety demonstration projects.

End Outcomes: None specific to this partnership.

For Partners and Stakeholders:

Name of Organization: Interstate Labor Standards Association

Category of Organization: State government

Contact:

Mary Ellen Grace
Co-Chair, Child Labor Committee
Maryellen.grace@state.tn.us
(609) 984-7356

For Partners only:

Type of Formal Agreement (if any)**:** None

Description of collaborative activities (narrative):

The Interstate Labor Standards Association is an organization of state labor department officials responsible for administering and enforcing state labor laws, including child labor laws. ILSA representatives have provided technical reviews of some NIOSH products on young worker safety, and helped in the distribution of NIOSH publications, including NIOSH Alerts on young workers safety. TI program staff have given invited presentations at annual ILSA meetings.

Collaborative Outputs: None

Intermediate Outcomes: None to report

End Outcomes: None specific to this partnership.

For Partners and Stakeholders:

Name of Organization: Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor

Category of Organization: Federal government

Contact:

Arthur Kerschner, Jr.
Child Labor Team Leader
KerschnerJr.Arthur@dol.gov
(202) 693-0072

For Partners only:

Type of Formal Agreement (if any):

Interagency agreements in 1999, 2000 and 2001 in which the Employment and Standards Administration, Wage and Hour Division funded NIOSH research focused on the safety and health risks for children and adolescents in the workplace, with particular emphasis on issues relevant to child labor regulations as developed and enforced by the Wage and Hour Division.

Description of collaborative activities (narrative):

The TI program and Wage and Hour Division have a long history of collaborative activities. Beginning in 1994, the Wage and Hour Division participated on the NIOSH Child Labor Working Team charged with assessing research and prevention efforts and making recommendations for future directions. Over the years, the Wage and Hour Division has requested technical assistance in assessing injury statistics and injury hazards, including assessing youth hazards associated with balers. The Employment Standards Administration, Wage and Hour Division co-sponsored the National Research Council study on the Health and Safety Implications of Child Labor. The NIOSH TI program and Employment Standards Administration, Wage and Hour Division established interagency agreements in 1999, 2000 and 2001 in which funds were provided to the TI program for research focused on the safety and health risks for children and adolescents in the workplace, with particular emphasis on issues relevant to child labor regulations as developed and enforced by the Wage and Hour Division. These interagency agreements supported the TI-lead development of NIOSH recommendations to the Department of Labor for changes to Hazardous Orders (those activities deemed to be especially dangerous for youth, and prohibited for youth less than 18 years of age in non-agricultural industries, and youth less than 16 years of age in agriculture) and extramural grants on young worker safety and health in construction. The Wage and Hour Division notifies the TI program of young worker deaths and provides reviews of draft fatality investigation reports and other TI publications, such as Alerts on young worker safety and health. The TI program and Wage and Hour Division have also collaborated numerous times on outreach on young worker safety and health, including the TI program providing NIOSH resources for use in Department of Labor campaigns such as “Work Safe this Summer,” and the TI program and Wage and Hour

Division doing targeted mailings on young workers and forklifts, and young workers in construction jobs.

Collaborative Outputs:

NIOSH [1995]. Review of safeguarding technology used on paper balers. Morgantown, WV: Division of Safety Research. *(Report provided to Wage and Hour Division in response to request for technical assistance.)*

NIOSH [1997]. Child labor research needs: Recommendations from the NIOSH child labor working team. NIOSH Publication No. 97-143. *(The Team included two representatives from the Wage and Hour Division).*

NRC (National Research Council/Institute of Medicine) [1998]. Protecting youth at work: health, safety, and development of working children and adolescents in the United States. Washington, DC: National Academy Press. *(Wage and Hour Division was a co-sponsor of this study).*

NIOSH [2002]. National Institute for Occupational Safety and Health (NIOSH) Recommendations to the U.S. Department of Labor for Changes to Hazardous Orders. May 3, 2002. *(This report was a deliverable for the NIOSH/Employment Standards Administration, Wage and Hour Division Interagency agreements).*

DOL stakeholder meetings in 2003. In response to the release of the 2002 NIOSH report recommending changes to Hazardous Orders, the Wage and Hour Division convened a series of stakeholder meetings to gather input on priorities for future rulemaking. TI researchers involved in developing the NIOSH recommendations participated in these meetings.

Packet on forklift safety distributed by the TI program and the Wage and Hour Division to more than 10,000 retail warehouses and storage facilities in December, 2002. The packet included a NIOSH tear-out sheet on forklift safety, 3 FACE reports involving youth and forklifts, and a Wage and Hour Division sticker on youth and forklifts.

Packet on forklift safety distributed by the TI program, Wage and Hour Division and OSHA in January 2004. In addition to materials included in the 2002 mailing, the packet also included OSHA materials and a cover letter signed by agency heads for NIOSH, the Employment Standards Administration and OSHA.

Packet on young worker safety and construction work was distributed by the TI program, Wage and Hour Division and OSHA in May, 2004. The mailing included a cover letter signed by agency heads from NIOSH, the Wage and Hour Division and OSHA, the NIOSH pamphlet Safe Work for Youth in Construction (Information for Employers), and publications from the Wage and Hour Division and OSHA. OSHA provided the mailing list.

Intermediate Outcomes:

Changes to child labor laws based on NIOSH recommendations. A final rule published by the Department of Labor (DOL) in 2004 incorporated NIOSH recommendations, referring to NIOSH comments and recommendations in the accompanying narrative [69 Fed. Reg. 75382 (2004)]. The new federal child labor regulations went into effect on February 14, 2005. NIOSH research and recommendations were cited among the justifications for the rule changes. NIOSH recommendations were submitted to DOL in response to a public comment period on the proposed rule, and a report that NIOSH developed at the request of DOL recommending changes to Hazardous Orders (those activities deemed to be especially dangerous for youth, and prohibited for youth less than 18 years of age in non-agricultural industries, and youth less than 16 years of age in agriculture). These changes have the potential to reduce young worker deaths and injuries associated with working on roofs, compactors and balers, driving, and the manufacture of explosives.

Calls for the Department of Labor (DOL) to implement NIOSH recommendations for changes to Hazardous Orders. Since the release of the NIOSH Hazardous Orders recommendations in May 2002, numerous researchers, standards-setting bodies, legislators, and advocacy groups nationally and internationally have called for implementation of its recommendations or cited them as justification for the need to update child labor laws. Several examples of the many ways in which the report has been used are detailed below.

Action by the International Labour Organization (ILO) Related to U.S. Compliance with Convention No. 182, 2006: At the 2006 annual meeting of the ILO in Geneva, Switzerland, the Conference Committee on the Application of Standards discussed the U.S. application of Convention No. 182 (Elimination of the Worst Forms of Child Labour) as it relates to children performing hazardous work in agriculture. The Committee of Experts report used as a resource by the ILO Conference Committee mentions the NIOSH recommendations on Hazardous Orders, noting that the U.S. Government has indicated that it is "in the process of determining which recommendations concerning the Hazardous Orders will be presented in a first round of proposed rules" [International Labour Organization 2006, p. 231]. The Conference Committee requested that the U.S. Government provide copies of any new Hazardous Orders when adopted. In addition, the Conference Committee requested the U.S. government to "indicate, in its next report to the Committee of Experts, the measures taken or envisaged (including but not limited to legislation) to ensure that work performed in particular in the agricultural sector was prohibited for children under 18 years where it was hazardous work within the meaning of the Convention" [International Labour Organization 2006, p. 230].

Letter from Child Labor Coalition to Secretary of Labor Elaine Chao requesting action on child labor regulations for agriculture, June 28, 2006: The Child Labor Coalition followed the action by the ILO Conference Committee with a letter to Secretary of Labor Elaine Chao requesting that forthcoming proposed changes to child labor laws focus on agriculture. The letter references the 2002 NIOSH report recommending changes to Hazardous Orders (HOs), and the discussions at the 2006 annual ILO meeting questioning U.S. compliance with ILO Convention No. 182 (Elimination of the Worst Forms of Child Labour) in relation to children working in agriculture.

Proposed legislation that references NIOSH Hazardous Orders recommendations: In 2003 and again in 2005, Representative Tom Lantos (D-California) introduced the Youth Worker Protection Act, which would amend the Fair Labor Standards Act of 1938 (FLSA) to revise requirements relating to child labor and to set forth new requirements for the employment of minors. The Act included a provision directing the Secretary of Labor to promulgate a rule relating to particularly hazardous occupations for children between the ages of 16 and 18, specifying that this rulemaking was justified based on the Hazardous Orders recommendations released by the National Institute for Occupational Safety and Health in 2002.

The December 2003 TI program/Wage and Hour Division mailing on young worker safety and forklifts resulted in requests from employers and a trade association for nearly 7,000 stickers and over 2,000 information packets. Request for the stickers continue. In September 2005, the Wage and Hour Division received a request for 300 stickers from the Crown Equipment Corporation, a forklift manufacturer. This firm noted that customers wanted the stickers affixed to forklifts that they sold.

End Outcomes:

The rates of young worker injury deaths have fluctuated over the last decade. Rates since 2000 are generally lower than rates in the 1990s (Figure 1).

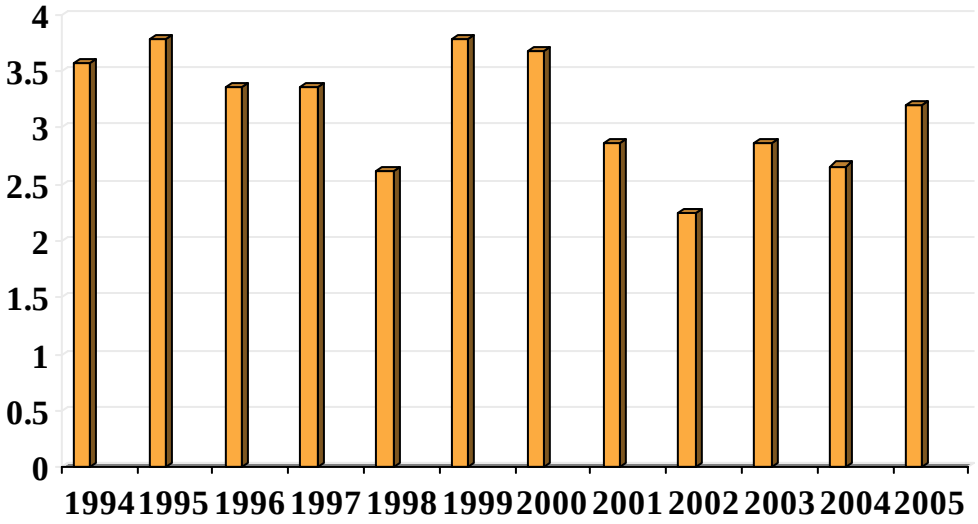

Figure 1. Fatality rates per 100,000 fulltime equivalents, youth 15-17 years of age (Source: Bureau of Labor Statistics, Census of Fatal Occupational Injuries (CFOI))

While there appear to be positive reductions in rates of young worker injury deaths for 16- and 17- year-olds generally since 1996, there has been little change for youth 15 years of age, and apparent increases in fatality rates for 15- and 16-year-olds in agriculture (Table 1). It is important to note that youth less than 14 years of age work, especially in agriculture, but the absence of official statistics for youth employment preclude the ability to calculate comparable fatality rates.

	All Industries			Ag Production		
Age (Years)	**1992-96 Rate**	**1997-02 Rate**	**% Change**	1992-96 Rate	1997-02 Rate	% Change
15	**5.2**	**5.1**	**-1.9**	13.3	24.1	81.2
16	**3.6**	**2.8**	**-22.2**	10.5	15.2	44.8
17	**3.5**	**2.9**	**-17.1**	16.8	12.9	-23.2

Table 1. Fatality rates per 100,000 fulltime equivalents for youth 15-17 years of age for all industries and the agricultural production industry for select time periods. (Source: CFOI. Numbers and rates were calculated by NIOSH and may differ from previously published BLS CFOI numbers and rates. We are currently seeking review by BLS of updated numbers.)

For Partners and Stakeholders:

Name of Organization: Young Worker Safety and Health Network

Category of Organization: Professional Society

Contact: (name, title, email, phone)

Mary Miller, MN, RN
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Diane Bush, MPH
Co-Chair, Young Worker Safety and Health Network
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For Partners only:

Type of Formal Agreement (if any)**:** None

Description of collaborative activities (narrative):

The Young Worker Safety and Health Network is an organization of individuals who have, as a common goal, the safety of youth in the workplace. The Network was founded at the 1997 American Public Health Association Conference, and is comprised of researchers, medical specialists, government and other interested persons. The network operates as an informational tool for anyone with a need or interest in young worker safety. TI researchers participate in the network. In November 2000, TI researchers participated in a meeting sponsored by the Network, "Protecting Youth at Work: A Working Symposium to Discuss Strategies and Develop a National Action Plan."

Collaborative Outputs: None

Intermediate Outcomes:

In March 2003, the Young Worker Health and Safety Network (YWH&S) released its report, *NIOSH Recommendations for Changes to the Federal Child Labor Regulations: A Response from Members of the Young Worker Health and Safety Network* (TI program staff did not participate in the development of this report). The report was provided to the US Department of Labor and findings were described in a peer-reviewed journal article [Miller and Bush 2004]. The Young Worker Safety and Health Network recommendations were recently cited in a June 28, 2006 letter from the Child Labor Coalition to Secretary of Labor Elaine Chao requesting action on child labor regulations for agriculture.

End Outcomes: None specific to this partnership.

For Partners and Stakeholders:

Name of Organization: Young Worker Safety Resource Center

Category of Organization: Resource Center

Contact: (name, title, email, phone)

Diane Bush, Project Coordinator
dbush@uclink4.berkeley.edu
(510) 643-2424

Christine Miara, EDC Project Coordinator
cmiara@edc.org
(617) 618-2238

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

The National Young Worker Safety Resource Center (YWSRC) is a collaborative project of U.C. Berkeley's Labor Occupational Health Program (LOHP) and the Education Development Center, Inc. (EDC) in Massachusetts. The Center, supported with funding by OSHA, provides training, technical assistance, and resource materials to state and community groups throughout the country. The work of the Center is an extension of work initiated under NIOSH supported young worker safety and health demonstration projects. The Center partnered with NIOSH to develop a national curriculum which was tested and evaluated in partnership with state educational agencies. The Center also provided a technical review of the 2003 NIOSH Alert on young worker safety.

Collaborative Outputs:

National curriculum on young worker safety and health. This curriculum is currently being customized for each state.

Intermediate Outcomes:

For the years 2000-2005, the Center identified and trained a master trainer in 11 states to deliver occupational safety and health training workshops to teachers and job readiness professionals. Workshops were provided to over 1,700 teachers and job trainers, and 300 employers. Teachers and job trainers documented teaching 9,000 youth. Occupational safety workshops became a part of ongoing training offered by state departments of education, workforce investment boards, and other job readiness programs.

For the years 2000-2005, the Center provided technical assistance to over 340 individuals, agencies or organizations, including advice on developing effective worker safety programs, information on child labor laws and injury data, and background information for media representatives.

For the years 2000-2005, the Center convened and provided technical assistance to key state agencies in 11 states.

End Outcomes: None specific to this partnership.

For Partners and Stakeholders:

Name of Organization: Alaska Air Carriers Association

Category of Organization: Professional society

Contact: (name, title, email, phone)

Karen Casanovas
Executive Director
Phone: (907) 277-0071
Fax: (907) 277-0072
karen@alaskaaircarriers.org

For Partners only:

Type of Formal Agreement (if any): Professional Services Contract

Description of collaborative activities (narrative):

The Alaska Air Carriers Association collaborates with the NIOSH Alaska Field Station on translating safety research into practice through an annual aviation conference with pilots and operations managers. The conference takes place during winter, and includes the following elements:

Presentation topics will include an update on pilot/operator training, weather information access, Medallion Program, Capstone Program, Circle of Safety Program, analysis of air carrier and pilot safety, and other relevant aviation safety intervention strategies and information

Compile and summarize symposium evaluations from symposium attendees

Disseminate all the above items to symposium attendees

Collaborative Outputs: Safety presentations, materials to attendees, and a summary of the conference evaluations

Intermediate Outcomes: Translating safety research and trends in aviation safety to the target audience: pilots and aviation operation managers. This is an important part of taking research to practice in Alaska.

End Outcomes: Decreasing the number and rate of occupational fatalities due to aviation crashes in Alaska.

For Partners and Stakeholders:

Name of Organization: Alaska Airmen's Association

Category of Organization: Professional society

Contact:

Dee Hanson
Executive Director
Phone: (907) 245-1251
Fax: (907) 245-1259
airmens@alaska.net

For Partners only**:**

Type of Formal Agreement (if any): Professional Services Contract

Description of collaborative activities (narrative):

The Alaska Airmen's Association collaborates with the NIOSH Alaska Field Station on translating safety research into practice through an annual aviation conference with pilots and operations managers. The conference takes place during spring, and includes the following elements:

A presentation session that will include topics on pilot training, Capstone Program, consumer safety information, access to weather information, and other aviation safety intervention strategies.

Compile and summarize conference evaluations from session attendees

Disseminate all the above items to session attendees

Collaborative Outputs: Safety presentations, materials to attendees, and a summary of the conference evaluations

Intermediate Outcomes: Translating safety research and trends in aviation safety to the target audience: pilots and aviation operation managers. This is an important part of taking research to practice in Alaska.

End Outcomes: Decreasing the number and rate of occupational fatalities due to aviation crashes in Alaska.

For Partners and Stakeholders:

Name of Organization: Transportation Research Board

Category of Organization: Government/academic

Contact: (name, title, email, phone)

Richard F. Pain, Ph.D.
Transportation Safety Coordinator
Transportation Research Board
500 Fifth St., N.W.
Washington, DC 20001
(202) 334-2964 fax (202) 334-2003
rpain@nas.edu www.trb.org

For Partners only**:**

Type of Formal Agreement (if any**):** Letters accepting committee membership

Description of collaborative activities (narrative):

The Transportation Research Board (TRB) is a division of the National Research Council which serves as an independent adviser to the federal government and others on scientific and technical questions of national importance. The mission of the Transportation Research Board is to promote innovation and progress in transportation through research. The Board facilitates the sharing of information on transportation practice and policy by researchers and practitioners; stimulates research and offers research management services that promote technical excellence; provides expert advice on transportation policy and programs; and disseminates research results broadly and encourages their implementation. [Information abstracted from TRB website, http://www.trb.org/TRB/About/About.asp]

NIOSH scientists are represented on two Transportation Research Board (TRB) committees: Truck and Bus Safety (ANB70) [Lee Husting]; and Vehicle User Characteristics (AND10) [Stephanie Pratt]. In this capacity, Dr. Husting and Ms. Pratt contribute to committee-authored documents and strategic plans, review manuscripts to be presented at the TRB annual meeting, and participate in committee meetings and related conferences and workshops. Through ANB70, Dr. Husting contributed to a conference proceedings that was published as a TRB document, and Ms. Pratt served as a peer reviewer for the same document. Ms. Pratt also participated in a structured interview about NIOSH involvement in global road safety prior to a TRB-sponsored workshop on the topic. A summary of this workshop was subsequently published by TRB.

Collaborative Outputs:

Husting EL [2006]. Health and wellness: future truck and bus safety research opportunities. In: Future truck and bus safety research opportunities [Conference Proceedings 38]. Washington, DC: Transportation Research Board, p. 48-54.

Transportation Research Board [2006]. Improving road safety in developing countries: opportunities for U.S. cooperation and engagement [Special Report 287]. Washington, DC: The National Academies (National Research Council, Institute of Medicine, and Transportation Research Board).

Intermediate Outcomes: None.

End Outcomes: None.

For Partners and Stakeholders:

Name of Organization: US Department of Agriculture, National Agricultural Statistics Service (USDA, NASS).

Category of Organization: Federal Government

Contact: (name, title, email, phone)

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U.S. Department of Agriculture
Room 5041, South Building
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For Partners only:

Type of Formal Agreement (if any): Interagency Agreement

Description of collaborative activities (narrative):

NIOSH obtains injury and farm hazard surveillance of farm workers, youth, and farmers using USDA, NASS as the data collection agency. NASS maintains the complete list of farm operators in the U.S., and has the necessary data collection resources to conduct this surveillance for NIOSH in a cost efficient and timely manner. This collaborative effort began in 1994 when USDA, NASS conducted the first occupational farm injury survey for NIOSH, the Traumatic Injury Surveillance of Farms (TISF) survey. Since that time, NASS has partnered with NIOSH to establish a series of farm injury surveys covering farm youth, farm operators, and farm workers that cover both the general farming population and minority farm operators. These surveillance systems include: 1) Childhood Agricultural Injury Survey (CAIS); 2) the Minority Childhood Agricultural Injury Survey (M-CAIS); 3) the Occupational Injury Survey of Production Agriculture (OISPA); and 4) the Minority Occupational Injury Survey of Production Agriculture (M-OISPA). NASS is currently working with NIOSH on the collection of a new farm hazard survey. Results of this joint effort should be available in the beginning of 2007.

In addition to serving as a major data collection partner for NIOSH, USDA, NASS also works with NIOSH to increase the dissemination of the findings of these injury surveys. NASS works with NIOSH to develop and release a fact sheet for each survey they conduct for NIOSH. These fact sheets are made available to the public on the USDA publications website. In addition, NASS works with NIOSH to disseminate survey results and recommendations to farms across the U.S. USDA, NASS has distributed more than 100,000 NIOSH pamphlets to farm operators across the U.S., including those specifically targeting minority farm operators. These pamphlets summarize common causes of childhood farm injury and steps that farmers can take to foster

safe and healthful farm environments for children. NASS will continue to provide these services to NIOSH as part of our ongoing data collection partnership.

Collaborative Outputs:

Databases:

NIOSH maintains four surveillance systems as part of its current collaboration with USDA, NASS:

Childhood Agricultural Injury Survey (CAIS): data available for 1998, 2001, and 2004.
Minority Childhood Agricultural Injury Survey (M-CAIS): data available for 2000 and 2003.

Occupational Injury Surveillance of Production Agriculture (OISPA): data available for 2001 and 2004.

Minority Occupational Injury Surveillance of Production Agriculture (M-OISPA): data are available for 2003.

NASS is currently collecting farm hazard data for NIOSH. This data collection effort uses the same general methodology as was used to collect the CAIS and OISPA data. The farm hazard data should become available in FY-2007.

NIOSH retains data from an earlier NIOSH-USDA, NASS collaboration, the Traumatic Injury Surveillance of Farmers (TISF) survey. TISF data are available for the years 1993-1995.

NIOSH and USDA Numbered Documents:

Myers JR. 1997. Injuries among farm workers in the United States, 1993. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 97-115.

Myers JR. [1998]. Injuries among farm workers in the United States--1994. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 98-153.

Myers JR. [2001]. Injuries among farm workers in the United States, 1995. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2001-153.

Myers JR, Hendricks KJ. [2001]. Injuries among youth on farms in the United States, 1998. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers

for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2001-154.

Myers JR, Hendricks KJ, Goldcamp EM, Layne LA. [2005]. Injuries and asthma among youth less than 20 years of age on Minority farm operations in the United States, 2000 Volume I: Racial minority national data. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2005-147.

Myers JR, Hendricks KJ, Layne LA, Goldcamp EM. [2005]. Injuries and asthma among youth less than 20 years of age on Minority farm operations in the United States, 2000 Volume II: Hispanic national data. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2006-109.

NIOSH. [2004]. Injuries to youth on minority farm operations. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2004-117.

NIOSH. [2004]. Asthma among household youth on minority farm operations. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2004-118.

NIOSH. [2004]. Injuries to youth on Hispanic farm operations. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2004-157.

NIOSH. [2004]. Asthma among household youth on Hispanic farm operations. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 2004-158.

NIOSH. [2004]. Injuries among youth on farms, 2001. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Pub. No. 2004-172.

USDA. [1999]. 1998 Childhood agricultural injuries. Washington, DC: U.S. Department of Agriculture, National Agricultural Statistics Service, Sp Cr 8 (10-99).
USDA. [2002]. 2000 Childhood agricultural injuries on minority-operated farms. Washington, DC: U.S. Department of Agriculture, National Agricultural Statistics Service, Sp Cr 9 (02).

USDA. [2004]. 2001 Childhood agricultural-related injuries. Washington, DC: U.S. Department of Agriculture, National Agricultural Statistics Service, Sp Cr 9 (1-04).

USDA. [2004]. 2001 Adult agricultural–related injuries. Washington, DC: U.S. Department of Agriculture, National Agricultural Statistics Service, Sp Cr 9 (12-04).

Intermediate Outcomes:

NIOSH surveillance collaborations with USDA, NASS have impacted the types of outreach and research being done, especially for childhood agricultural injury prevention and for tractor safety research. Intermediate outcomes related to the joint NIOSH-USDA, NASS surveillance program follow:

1. Data from the 1998 CAIS were used extensively by NIOSH staff in the preparation of recommended changes to the agricultural hazardous orders for the U.S. Department of Labor. The 1998 CAIS provided the most representative and current data on occupational youth farm injuries by covering youth of all ages and farms of all types.

2. One significant finding from the CAIS and M-CAIS has been the importance of non-work injuries to youth on farms. These findings led to the development of a new recommendation in the updated 2002 Childhood Agricultural Injury Prevention National Action Plan to address non-work injuries on farms. In response to this new recommendation, the National Children's Center for Rural and Agricultural Health and Safety (NCCRAHS) produced several documents on the importance and design of safe play areas for children on farms. NCCRAHS also maintains a website dedicated to the topic of safe play areas on farms (see http://www.marshfieldclinic.org/nfmc/pages/default.aspx?page=nfmc_nccrahs_safe_play_welcome).

3. NCCRAHS is just one of the national child safety organizations that use the results from the NIOSH-USDA, NASS youth farm injury surveillance studies. Other organizations, such as Farm Safety for Just Kids and the National Safe Kids Campaign now use these injury and injury rate estimates for children on farms as their official numbers.

4. The estimates of youth farm injuries produced by NIOSH have also been cited in proposed congressional legislation. In July 2005, the Children's Act for Responsible Employment of 2005 ('CARE' Act of 2005, HR 3482) was submitted in the House of Representatives by Representative Roybal-Allard. The CARE Act proposed changes to child labor laws in agriculture, and identified the youth farm injury data collected by the CAIS as one source of data that would be used to develop an annual report on occupational injuries to youth working on farms in the US. At this time, no action has yet been taken on this proposed bill within Congress.

5. As part of a cost-benefit analysis of proposed changes to Child Labor hazardous orders for youth working on farms, a contractor for USDOL requested data from the CAIS in the spring of 2004. The contractor, SiloSmashers, requested information on estimates of youth less than 20 years old working on farms, estimates of working youth who operated farm tractors on farms,

work-related injuries occurring to these youth, and non-work injuries occurring to youth on farms. SiloSmashers concluded that the CAIS surveillance data were the only source of these data, and were critical to conducting the cost-benefit analysis requested by USDOL. This work is still in progress.

6. In 1999, Dr. Barbara Marlenga of the National Farm Medicine Center in Marshfield, Wisconsin, approached NIOSH to provide assistance on a research project. Dr. Marlenga's research required a national sample of farms with household youth 7 to 16 years of age. NIOSH worked with NASS to identify farms with household youth in this age range and asked if they would be willing to participate in this study as part of the CAIS data collection effort. Dr. Marlenga was given access to those farm families who agreed to participate. Results of Dr. Marlenga's study are reported in:

Marlenga BL**,** Pickett W, Berg RL. [2002]. Evaluation of an enhanced approach to the dissemination of the North American Guidelines for Children's Agricultural Tasks: a randomized controlled trial. Preventive Medicine 35:150-159. PubMed ID: 12200100

7. NIOSH has also worked with NASS to provide CAIS data to Dr. Marlenga for two additional research studies. Results from the 1998 CAIS were used by Dr. Marlenga to assess whether guidelines for assigning youth work tasks based on their age would have prevented certain types of farm injuries. Results of this research are reported in:

Marlenga BL**,** Brison RJ, Berg RL, Zentner JL, Linneman JG, Pickett W. [2004]. Evaluation of the North American Guidelines for Children's Agricultural Tasks using a case series of injuries. Injury Prevention 10:350-357. PubMed ID: 15583256

Data from the 1998 CAIS and 2000 M-CAIS have also been provided to Dr. Marlenga to assess the potential impact of applying Child Labor hazardous orders for youth working on farms to youth working on their family's farm. This research is still in progress.

8. A search of the literature has identified a minimum of 22 peer reviewed journal articles that have cited surveillance data from the CAIS.

9. Dr. Barbara Lee, Director of the NCCRAHS, recently published an editorial in the Journal of Agromedicine (2005: Vol. 10(4)) entitled 'NIOSH Fills Void with Surveillance of Injuries to Youth Living on U.S. Farms." This editorial commends the work that NIOSH has undertaken in collecting youth farm injury data in collaboration with USDA, NASS that was previously unavailable. Additionally, Dr. Lee encourages others to give their support to NIOSH and the continuation of the NIOSH childhood agricultural injury surveillance plan.

10. Tractor data collected through the TISF survey were used by engineering researchers within NIOSH as part of their Cost-Effective Roll-Over Protective Structures (CROPS) project. TISF tractor data were used to identify commonly used farm tractors without a ROPS, and to provide low-cost ROPS designs for them to encourage farmers to retrofit to these tractors. Having tractor estimates by manufacturer and model was important in this process because these factors influenced each individual CROPS design. Six CROPS designs have been developed by NIOSH

and have been shared with a ROPS manufacturer (FEMCO). Having an estimate of the potential market for each NIOSH ROPS design was helpful in getting FEMCO to pursue CROPS on a commercial basis.

11. Tractor data collected through the TISF survey were used by the Colorado State University to help target engineering research evaluating the ability of pre-ROPS tractors to withstand the forces of a tractor overturn if a ROPS were designed and mounted on them. This work was conducted by Dr. Paul Ayers, currently with the University of Tennessee, Department of Agricultural Engineering. TISF tractor prevalence data were used to identify common tractors by manufacturer and model for ROPS retrofit evaluations (e.g., Ford 8-N). The TISF data were the only information source for prioritizing these research evaluations.

12. Tractor data from the TISF have been referenced in a minimum of 25 peer reviewed journal articles based on a reference search for the manuscript "Roll-over protective structure use and the cost of retrofitting tractors in the United States, 1993" by Myers and Snyder [1995].

13. Economic analyses of ROPS retrofitting by NIOSH have been referenced in a minimum of 32 peer-reviewed journal articles based on a search of the series of manuscripts published by Myers and Snyder, and Myers and Pana-Cryan.

14. Tractor data from the OISPA have been shared with Dr. Barbara Marlenga of the National Farm Medicine Center, Marshfield, Wisconsin. Dr. Marlenga used the more recent tractor prevalence data for an ergonomic evaluation of common tractors with and without ROPS for use by youth on farms. Dr. Marlenga's research is being done in collaboration with the NIOSH Agricultural Safety and Health Center located at the University of California-Davis.

Dr. Henry Cole at the University of Kentucky is also using OISPA tractor prevalence data from 2001 and 2004 for an economic analysis project of ROPS use on farms. The project includes analysis of tractor and ROPS use by hours worked, farming operation, and the need/feasibility of retrofitting ROPS to existing tractors. This project is part of a larger national NIOSH Agricultural Research Centers' tractor initiative in which NIOSH is also collaborating.

End Outcomes:

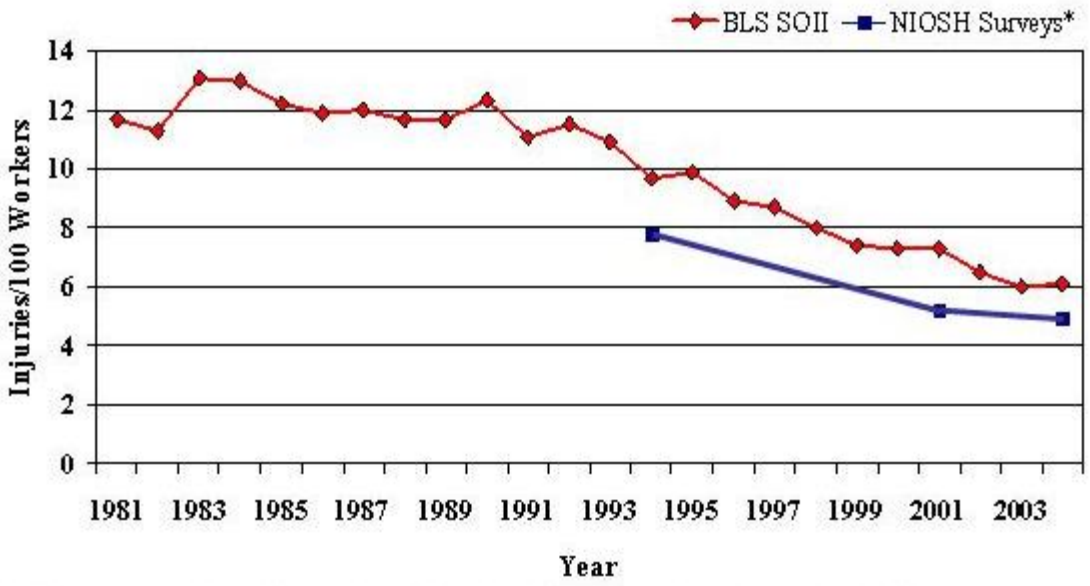
NIOSH surveillance collaborations with USDA, NASS provide information for tracking the changes in farm injuries and hazards over time.

1. Nonfatal injury data collected through the Traumatic Injury Surveillance of Farmers (TISF) and the Occupational Injury Surveillance of Production Agriculture (OISPA) programs indicate that lost-time occupational injuries on farms decreased between the years 1993-1995 and 2004. This decrease is collaborated by independent injury surveillance data maintained by the Bureau of Labor Statistics covering the same time period *(Figure 1)*.

2. Roll-Over Protective Structures (ROPS) are special structures attached to farm tractors to prevent the tractor from crushing the operator during an overturn. ROPS represent the best method of preventing tractor overturn-related deaths on farms. The percentage of farm tractors

used on U.S. farms fitted with a ROPS increased from 38% in 1993 up to 50% in 2001 ***(Source**: NIOSH TISF and OISPA).*

3. The NIOSH Childhood Agricultural Injury Prevention Initiative began in 1997. Since the beginning of this initiative, NIOSH has worked closely with the NCCRAHS to identify and promote injury prevention activities nationwide. In addition, NIOSH had funded numerous research projects to improve our understanding of both the effectiveness of existing and new interventions. During the initiative, the total number of youth injured on farms has decreased from 37,800 in 1998 to 27,600 in 2004. For the same time period, the number of farm work-related youth injuries decreased by 51% from 16,695 down to 8,130 *(Table 1)*. (**Source**: NIOSH CAIS).



* BLS rates are for all OSHA reportable injuries. NIOSH results are for restricted activity injuries only.

*Figure 1. Injury Rates per 100 Workers, 1980-2004 for the Production Agriculture Industry (**Source:** BLS Survey of Occupational Injuries and Illnesses, NIOSH Traumatic Injury Surveillance of Farmers, and Occupational Injury Surveillance of Production Agriculture).*

*Table 1. Injuries to youth less than 20 years of age that occurred on U.S farms during 1998, 2001, and 2004, by sex and work status (**Source:** NIOSH CAIS).*

	1998	2001	2004
Injuries‡	37,774	29,207	27,590
Male	29,564	16,526	14,390
Female	8,210	12,641	13,201
Work	16,695	9,481	8,130
Non-work	18,169	19,611	19,439

‡ Total injuries may not add up due to rounding or missing data.

4. A major focus of the NIOSH Childhood Agricultural Injury Prevention Initiative has been working with the NCCRAHS on the development and promotion of the North American Guidelines for Childhood Agricultural Tasks (NAGCAT) released in 1999. The primary focus of the NAGCAT is to provide guidance to farm families on how to assign work to farm youth to reduce their risk of injury. The NAGCAT have been widely reported in the popular farm press, and have been shown to be effective in reducing injuries to household youth in one controlled study. Data from the CAIS shows that since establishment and promotion of the NAGCATS, work-related farm injuries to youth living on the farms have decreased from 11,600 injuries in 1998 to 6,400 in 2004. The work-related injury rate for household youth decreased from 14.1 to 9.1 injuries per 1000 working household youth for the same period *(Figure 2)* (**Source:** NIOSH CAIS).

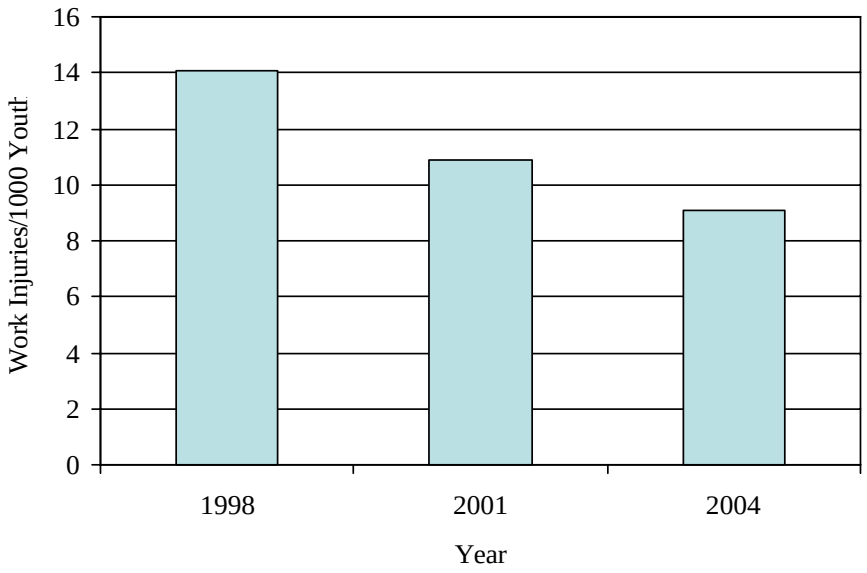


*Figure 2. Work Injuries per 1000 Working Farm Household Youth, 1998-2004 (**Source**: NIOSH CAIS).*

For Partners and Stakeholders:

Name of Organization: U.S. Department of Labor, Education and Training Administration (USDOL, ETA)

Category of Organization: Federal Government

Contact:

Daniel Carroll
Program Analyst, National Agricultural Workers Survey
Office of Policy Development and Research
Employment and Training Administration
U.S. Department of Labor
200 Constitution Ave., NW
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Washington, DC 20210
Phone: (202) 693-2795
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E-Mail: carroll.daniel.j@dol.gov

For Partners only:

Type of Formal Agreement (if any): Interagency Agreement

Description of collaborative activities (narrative):

NIOSH obtains injury and farm hazard surveillance of migrant and seasonal farm workers from the USDOL, ETA National Agricultural Worker Survey (NAWS). ETA maintains the NAWS, with is a nationally representative demographic and economic survey of farm workers across the U.S. NIOSH has partnered with ETA to include an injury module to the NAWS to estimate the occurrence of occupational farm injuries to migrant and seasonal farmworkers. This collaborative effort began in Fiscal Year 1999 when NIOSH first included this injury module in the NAWS. Since that time, ETA has partnered with NIOSH to collect this injury module during Fiscal Years 2001-2004. NIOSH is currently working with USDOL, ETA to continue this data collection partnership.

Collaborative Outputs:

Databases:

NAWS with NIOSH Injury Module: data available for FY-1999, and FY-2001 through FY-2004.

NIOSH and USDOL, ETA Numbered Documents:

NIOSH. [2004]. Worker Health Chartbook, 2004. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication 2004-146. ***(Pages 195-211 of this publication contain agricultural data developed in part from the NAWS project).***

Presentations:

Myers JR. [1999]. Work-related injuries among hired, non-family farm workers. The Dynamics of Hired Farm Labor: Constraints and Community Response, October 25-26, 1999, Concordville, PA.

Myers JR. [2000]. Work-related injuries among hired, non-family farm workers. Agricultural Safety and Health in a New Century, April 28-30, 2000, Cooperstown, New York.

Myers JR. [2000]. Comparison of farmworker injury and fatality experiences to all U.S. workers. Presented at the 13th Annual East Coast Migrant Stream Forum, Double Tree Hotel, Philadelphia, PA, November 3-5, 2000.

Intermediate Outcomes: None to report.

End Outcomes: None to report.

Project: Evaluation of Emergency Services Vehicle Occupant Safety

For Partners and Stakeholders:

Name of Organization: National Registry of Emergency Medical Technicians (NREMT)

Category of Organization: Professional Society

Contact:

William E. Brown Jr., MS, RN, NREMT-P
Executive Director
billb@nremt.org
(614) 888-4484

For Partners only:

Type of Formal Agreement (if any): N/A

Description of collaborative activities (narrative):

Through a working relationship with the National Highway Traffic Safety Administration's (NHTSA) EMS Division, NIOSH was invited to contribute questions for the National Registry of Emergency Medical Technicians (NREMT) Longitudinal Emergency Medical Technician Attributes & Demographics Study (LEADS). LEADS is hosted by NREMT with support from NHTSA's EMS Division. NREMT's mission statement is: "To certify and register Emergency Medical Services Professionals throughout their careers by a valid and uniform process that assesses the knowledge and skills for competent practice."

Collaborative Outputs:

A manuscript is currently in review at the Journal of Emergency Medical Services.

Intermediate Outcomes:

End Outcomes:

Though not yet realized, it is expected that EMS providers and ambulance manufacturers will ultimately use the findings to make changes to ambulance patient compartment designs and standard operating procedures. This will lead to a reduction in non-fatal injuries to EMS workers**.**

For Partners and Stakeholders:

Name of Organization: National Highway Traffic Safety Administration (NHTSA), Office of Emergency Medical Services

Category of Organization: Government

Contact:

Drew Dawson, Chief
ddawson@nhtsa.dot.gov
(202) 366-9966

For Partners only***:***

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

Through a working relationship with the National Highway Traffic Safety Administration's (NHTSA) EMS Division, NIOSH was invited to contribute questions for the National Registry of Emergency Medical Technicians (NREMT) Longitudinal Emergency Medical Technician Attributes & Demographics Study (LEADS). LEADS is hosted by NREMT with support from NHTSA's EMS Division. The survey addressed issues regarding ambulance safety, including restraint usage and types of patient transport.

NIOSH has received letters of support for continued ambulance safety research from NHTSA and is expected to provide a significant content contribution to NHTSA's EMS Safety Consortium meeting planned for the fall of 2006.

Collaborative Outputs:

A manuscript reporting the analysis of the NREMT survey is currently in review at the Journal of Emergency Medical Services.

Intermediate Outcomes:

End Outcomes:

Though not yet realized, it is expected that EMS providers and ambulance manufacturers will ultimately use the NIOSH research findings to make changes to ambulance patient compartment designs and standard operating procedures. This will lead to a reduction in non-fatal injuries to EMS workers**.**

For Partners and Stakeholders:

Name of Organization: General Services Administration, Automotive Division, Office of Vehicle Acquisition and Leasing Services

Category of Organization: Government

Contact:

John McDonald
jmcdonald@gsa.gov
(703) 605-2971

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

The General Services Administration (GSA) Automotive Division is responsible for maintaining the GSA KKK-1822F Specification for the Star-of-Life Ambulance. This specification is the principle influence on ambulance design in the U.S. This specification has been adopted by 34 states as the minimum specification for ambulance acquisition and construction. NIOSH has developed a strong relationship with GSA as a result of sharing preliminary research findings from the "Evaluation of Emergency Service Vehicle Occupant Safety" project. GSA has provided letters of support for continued research and has requested data to support future revisions of the KKK-1822 specification.

Collaborative Outputs:

At GSA's request, NIOSH provided anthropometry data in support of revisions to the KKK-1822 specification scheduled to take affect in the 2007. The data supported a revision to the specification that will increase the required head clearance over occupant seats.

Intermediate Outcomes:

Though not yet finalized, it is expected that the revision will result in safer seating for patient compartment occupants by reducing the risk for head strikes during ambulance crashes.

End Outcomes:

For Partners and Stakeholders:

Name of Organization: National Highway Traffic Safety Administration (NHTSA), National Center for Statistics and Analysis, Crash Investigation Division NRD-32

Category of Organization: Government

Contact:

John E. Brophy, Special Crash Investigations Team Leader
John.Brophy@nhtsa.dpt.gov
(202) 366-0328

For Partners only:

Type of Formal Agreement: Interagency Agreement

Description of collaborative activities (narrative):

Through an interagency agreement, NIOSH funded NHTSA's Special Crash Investigations Division to conduct reconstructions of 5 ambulance crashes. This effort was in support of the NIOSH "Evaluation of Emergency Vehicle Occupant Safety" project. The NHTSA reconstructions documented the circumstances and injury risks present during ambulance crashes. In particular, the reconstructions identified injury mechanisms present in an ambulance patient compartment during a crash. This data was not previously available to researchers or the public. The data was used by the NIOSH project team to focus efforts on appropriate engineering interventions for patient compartment occupants.

Collaborative Outputs:

Five ambulance crash reconstruction reports were produced. These reports are available to researchers and the public at the NHTSA Special Crash Investigations Web Page: www-nass.nhtsa.dot.gov/BIN/logon.exe/airmislogon

NHTSA CA02-028, 1999 Ford E-350 Super Duty Van Chassis W/Wheeled Coach Type III Ambulance Body, New Jersey, July 2002

NHTSA CA02-009, 2000 Ford E-350 Type III Ambulance, Kentucky, March 2002

NHTSA CA02-033, 1995 Ford E-350 Type III Ambulance, Minnesota, July 2002

NHTSA CA03-004, 1997 Ford E-350 Type III Ambulance, Kentucky, January 2003

NHTSA DS02-003, Wheeled Coach Moduvan Ambulance on a 1997 Ford E-350 Series Chassis, Washington, February 2002

Intermediate Outcomes:

As a result of this partnership, NHTSA's Special Crash Investigations Team has become interested in ambulance crashes and has initiated several ambulance crash reconstructions on their own initiative.

End Outcomes:

For Partners and Stakeholders:

Name of Organization: Virginia Department of Criminal Justice; National Association of Convenience Stores

Category of Organization: Convenience store industry

Contact:

VDCJ: Jay Malcan, Ph.D., University of Virginia. No longer with Virginia Dept of Criminal Justice

For Partners only:

Type of Formal Agreement (if any): Protocol for case control study of convenience store study robberies. Joint partners in project

Description of collaborative activities (narrative):

Joint partnership with VDCJ consisted of development of protocol, determination of key risk factors for study, recruiting police teams for field activities, methods of measuring convenience store security features, development of agreements with police departments in and around Norfolk, Fairfax, and Richmond, VA to send copies of all convenience store robbery report to VDCJ. Jay Malcan and staff used GIS software to select control stores matched to robbed stores within 2 miles proximity. NIOSH received all data collections, developed data base, and completed analyses and draft reports/papers.

Partnerships with industry stakeholders included review of protocols and papers, and dissemination of results.

Collaborative Outputs:

Paper for publication. Presentation at the APHA conference.

Intermediate Outcomes:

Results impacted on OSHA and NIOSH recommendations for late night retail workplace violence prevention. Results focused NIOSH future research in late night retail on models for increasing compliance to guidelines.

End Outcomes:

Future research is now being planned to investigate models for increasing compliance to guidelines.

For Partners and Stakeholders:

Name of Organization: WalMart Corporation

Category of Organization: Corporation *(Retail sector)*,

Contact:

John Leynberger
WalMart Corporation
Bentonville, AR

For Partners only:

Type of Formal Agreement (if any):

Description of collaborative activities (narrative):

NIOSH has long had an interest in evidence about the effectiveness of back belts and has made considerable effort in evaluating the existing scientific literature to develop recommendations. The limitations of the existing studies have been addressed in this extensive study. The NIOSH role in this partnership was to conduct a scientifically credible evaluation of back belts that could withstand peer review scrutiny. NIOSH was able to contract for interviews with employees to ensuring confidentiality to obtain honest responses. Wal-Mart has had a long standing policy of recommending back-belts for use by their employees and has even required back belt use. Wal-Mart provided for employees to use time at work to participate in the interviews in a confidential setting. Wal-Mart also provided payroll and injury claims records data for analysis. Employees are interested in preventing back injury and back pain which causes considerable disability and reduced quality of life among its victims.

Collaborative Outputs:

A Prospective Study of Back Belts for Prevention of Back Pain and Injury

This prospective cohort study was designed to address the question of the effectiveness of back belts for the reduction of low back pain and injury claims in material handlers in a retail setting. Back belt use in the workplace has become commonplace, with approximately 4 million back belts purchased in 1995. From April, 1996 until April, 1998, we enrolled material handlers in a prospective cohort study of back belts in 160 Wal-Mart stores, distributed across 30 states, as the stores opened. Baseline interviews were completed for 9,377 employees asking about belt use, job, lifting exposure, demographics, health risks, and other factors. Outcomes included back injury workers' compensation claims filed with Wal-Mart and the six-month incidence of self-reported back pain on a followup interview of 6,311 employees.

We used multivariable logistic regression, controlling for multiple risk factors to compare employees who reported wearing belts "usually every day" with employees who reported "never" or "once or twice a month." We found no statistically significant effects for the rate of back injury claims or self-reported back pain between these groups. We also compared stores having a belt-requirement store policy with stores having a voluntary belt use policy and found no statistically significant differences in either the back injury claim rate or back pain. Our results were confirmed in subgroup analyses of employees with and without a prior history of back injury, employees in the most strenuous job, and employees with consistent belt-wearing habits. Interaction analyses also were confirmatory of our findings. Results based on multiple analyses of data all converge to a common conclusion: back-belt use is not associated with reduced incidence of back injury claims or low back pain in material handlers.

Intermediate Outcomes:

Although not well quantified, some intermediate outcomes have been noted. Anecdotally, there has been a shift in the type of safety products advertised in safety trade journals. The emphasis on back belts before the publication of the research results has shifted to other safety products and there has been a reduction in the number of advertisements for back belts. Annual sales figures for back belts are not available.

End Outcomes:

The expected or potential end outcomes of the evaluation of back belts (that concludes that there is no reduction in back injuries or back pain) is to redirect efforts and attention toward other measures (e.g. engineering controls) that could reduce the burden of back injury and back pain among material handlers. Data from the Department of Labor, Bureau of Labor Statistics indicates that the number of lost time injuries has steadily decreased. Following the publication of the research results in 2000, there was a 10% decline the first year (255,774 overexertion back injuries reported involving lost work days in 2000, to 230,523 in 2001) and 8% decline in 2002 (212,229 injuries reported) followed by a 13% decline in 2003 (184,850 injuries reported). Other external factors may be responsible for the reduction in injuries, but specific causes have not been definitively identified.

For Partners and Stakeholders:

Name of Organization: Bureau of Justice Statistics (BJS)

Category of Organization: Federal Government

Contact:

Michael Rand
RandM@ojp.usdoj.gov
(202) 616-3494

For Partners only:

Type of Formal Agreement (if any): Interagency agreement to conduct the Workplace Risk Supplement questions for the National Crime Victimization Survey (NCVS).

Description of collaborative activities (narrative):

The Workplace Risk Supplement was a supplemental series of questions asked of eligible NCVS household members. These questions were designed to gather critical information about circumstances surrounding incidents involving violence in the workplace, details concerning the relationship of the offender, and other risk factor information that currently do not exist for non-fatal workplace violence.

Collaborative Outputs:

Peer reviewed manuscripts are being written. The first manuscript is scheduled to be submitted for publication in fourth quarter 2006.

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: Bureau of Labor Statistics (BLS)

Category of Organization: Federal Government

Contact:

Kelley Frampton
Frampton.Kelley@bls.gov
(202) 691-6189

For Partners only:

Type of Formal Agreement (if any): Interagency agreement to conduct the Survey of Workplace Violence Prevention.

Description of collaborative activities (narrative):

This survey evaluates the employers' perspective regarding policies, training, and other related issues on workplace violence prevention, including risk factors associated with workplace violence and prevention strategies, in workplaces within the United States.

Collaborative Outputs:

Peer reviewed manuscripts are being written. The first manuscript is scheduled to be submitted for publication in fourth quarter 2006.

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: Consumer Product Safety Commission (CPSC)

Category of Organization: Federal Government

Contact:

Phil Travers
ptravers@cpsc.gov
(303) 504-7447

For Partners only:

Type of Formal Agreement (if any):

Interagency agreement to conduct a follow back survey of victims who presented at a participating National Electronic Injury Surveillance System All Injury Program (NEISS-AIP) hospital with injuries sustained in a workplace violence incident.

Description of collaborative activities (narrative):

Workplace violence victims identified from NEISS-AIP were contacted to voluntarily participate in the NEISS assault follow back survey. The questionnaire was designed by NIOSH TI and administered by CPSC using the computer assisted telephone interview technique. The follow back survey consisted of both open-ended and multiple choice questions that covered items such as: general workplace organization, worker characteristics, perpetrator characteristics, security measures, and prevention strategies.

Collaborative Outputs:

Manuscript – Non-Fatal Workplace Violence Injuries in the United States2003-2004. Will be submitted for publication in November 2006. Other peer reviewed publications will follow.

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: Association of Equipment Manufacturers (AEM)

Category of Organization: Industry Association (Manufacturing)

Contact:

Russell Hutchinson
Association of Equipment Manufacturers
Russell Hutchison [rhutchison@AEM.org]
(414) 298-4118

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

The Association of Equipment Manufacturers (AEM) provides technical reviews of NIOSH products pertaining to equipment and machinery, and provides support in dissemination. For example, AEM provided NIOSH with an international mailing list with approximately 300 entries to support distribution of the NIOSH Workplace Solutions, "Preventing Injuries and Deaths when Working with Hydraulic Excavators and Backhoe Loaders," and helped distribute "Preventing Injuries when Working with Ride-on/Roller Compactors."

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: National Association of Tower Erectors (NATE)

Category of Organization: Industry Association (Construction Sector)

Contact:

Don Doty, Vice-Chairman, National Association of Tower Erectors,
[Don.Doty@StainlessLLC.com]
(972) 550-9504

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

Since 1997, NIOSH researchers have worked closely with the National Association of Tower Erectors to improve the safety and health of tower erectors. NIOSH researchers provided technical assistance to NATE in the development of a comprehensive safety and health manual, and have provided safety presentations at annual NATE meetings. NATE assisted with dissemination of the NIOSH Alert, "Preventing Injuries and Deaths from Falls During Construction and Maintenance of Telecommunication Towers," and had provided a technical review of a draft. NATE published two NIOSH-authored articles in their monthly publication *"Tower Times."*

Collaborative Outputs:

The National Association of Tower Erectors best practices safety manual *"NATE Recommended Site Safety Practices-Reference and Developmental Materials."*

NATE published two NIOSH-authored articles entitled *"NIOSH—A Resource for Occupational Health and Safety Support" and "Falls- A Deadly Hazard for Tower Workers"* in the respective October 1998 and March 1999 issues of their monthly publication *"Tower Times."*

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) – Ohio Area Offices

Category of Organization: Federal government

Contacts:

Rob Medlock, Cleveland, Ohio Area Director
U. S. Department of Labor/OSHA
medlock.rob@dol.gov
(216) 615-4242

Deborah Zubaty
Columbus, Ohio Area Director
U. S. Department of Labor/OSHA
(614) 469-5582

Richard Gilgrist
Cincinnati, Ohio Area Director
U. S. Department of Labor/OSHA
(513) 841-4132

Jule Jones
Toledo Ohio Area Director
U. S. Department of Labor/OSHA
(419) 259-7542

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

The four Area Directors for the U. S. Department of Labor/OSHA in the state of Ohio voluntarily notify the NIOSH, Division of Safety Research of selected occupational fatalities (currently machine-related, workers under 18 years of age, highway construction work zones, and Hispanic workers) that occur within their jurisdictions. NIOSH investigators then collaborate with the OSHA investigator(s) during NIOSH FACE investigations. This collaboration includes an exchange of information and/or photographic documentation obtained during witness interviews or site visits, and/or information obtained from other outside entities such as a coroner, medical examiner, or police. This information is utilized in the development of the FACE report and prevention recommendations. Prior to the FACE report being finalized, the draft report is reviewed by and discussed with the OSHA compliance officer. In this way, accurate findings of the investigation can be ensured.

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: South Carolina Department of Labor, Occupational Safety and Health Administration

Category of Organization: State government

Contacts:

Dottie Ison
Director of Compliance Programs
South Carolina Department of Labor/OSHA
Dottie.Ison@osha.gov
(803) 896-6910

Thomas Wilkes
Director of Safety Compliance
South Carolina Department of Labor/OSHA
Thomas.Wilkes@osha.gov
(803) 896-6910

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

The Director of Compliance Programs or the Director of Safety Compliance voluntarily notify the NIOSH, Division of Safety Research of selected occupational fatalities (currently machine-related, workers under 18 years of age, highway construction work zones, and Hispanic workers) that occur within their state. NIOSH investigators then collaborate with the OSHA investigator(s) during a NIOSH Fatality Assessment and Control Evaluation (FACE) investigation. This collaboration includes an exchange of information and/or photographic documentation obtained during witness interviews or site visits, and/or information obtained from other outside entities such as a coroner, medical examiner, or police. This information is utilized in the development of the FACE report. Prior to the FACE report being finalized, the draft report is reviewed by and discussed with the OSHA compliance officer. In this way, accurate findings of the investigation can be ensured.

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: Tennessee Department of Labor, Occupational Safety and Health Administration

Category of Organization: State government

Contact:

Mike Maenza
Manager, Standards and Procedures
Tennessee Department of Labor/OSHA
(615) 741-6384

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

Mike Maenza, Manager, Standards and Procedures, Tennessee Department of Labor/OSHA notifies the NIOSH, Division of Safety Research of selected occupational fatalities (currently machine-related, workers under 18 years of age, highway construction work zones, and Hispanic workers) that occur within the state of Tennessee. NIOSH investigators then collaborate with the OSHA investigator(s) during the NIOSH Fatality Assessment and Control Evaluation (FACE) investigation. This collaboration includes an exchange of information and/or photographic documentation obtained during witness interviews or site visits, and/or information obtained from other outside entities such as a coroner, medical examiner, or police. This information is utilized in the development of the FACE report. Prior to the FACE report being finalized, the draft report is reviewed by and discussed with the OSHA compliance officer. In this way, accurate findings of the investigation can be ensured.

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: Virginia Department of Labor and Industry

Category of Organization: State government

Contact:

Glenn Doyle, Director of Compliance
Virginia Department of Labor and Industry
(804) 786-7776

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

Glenn Doyle, Director of Compliance, Virginia Department of Labor and Industry voluntarily notifies the NIOSH, Division of Safety Research of selected occupational fatalities (currently machine-related, workers under 18 years of age, highway construction work zones, and Hispanic workers) that occur within the state of Virginia. NIOSH investigators then collaborate with the OSHA investigator(s) during the NIOSH Fatality Assessment and Control Evaluation (FACE) investigation. This collaboration includes an exchange of information and/or photographic documentation obtained during witness interviews or site visits, and/or information obtained from other outside entities such as a coroner, medical examiner, or police. This information is utilized in the development of the FACE report. Prior to the FACE report being finalized, the draft report is reviewed by and discussed with the OSHA compliance officer. In this way, accurate findings of the investigation can be ensured.

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: Maryland Department of Labor and Industry/Occupational Safety and Health Administration

Category of Organization: State government

Contact:

Craig Lowry, Maryland Department of Labor/Occupational Safety and Health Administration, (410) 767-2363

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

In the 1980s, the Maryland Department of Labor and Industry/Occupational Safety and Health Administration cooperated with NIOSH in in-house Fatality Assessment and Control Evaluation (FACE) investigations. In the early 1990s, Maryland was funded through a cooperative agreement to conduct a state-based FACE program. Recently, the Maryland Department of Labor has agreed to cooperate again in the in-house FACE program. The Maryland Department of Labor notifies the NIOSH, Division of Safety Research of selected occupational fatalities (currently machine-related, workers under 18 years of age, highway construction work zones, and Hispanic workers) that occur within the state of Maryland. NIOSH investigators will collaborate with the OSHA investigator(s) during the NIOSH Fatality Assessment and Control Evaluation (FACE) investigation. This collaboration will include an exchange of information and/or photographic documentation obtained during witness interviews or site visits, and/or information obtained from other outside entities such as a coroner, medical examiner, or police. This information will be utilized in the development of the FACE report. Prior to the FACE report being finalized, the draft report will be reviewed by and discussed with the OSHA compliance officer. In this way, accurate findings of the investigation can be ensured.

In 1989, NIOSH and the Maryland Occupational Safety and Health Administration (MOSH) jointly developed the NIOSH Alert entitled: Preventing Worker Deaths and Injuries from Falls Through Skylights and Roof Openings. MOSH then distributed the Alert to every licensed contractor in the state and required the contractors to attend a safety course on preventing falls through skylights and roof openings.

Collaborative Outputs:

NIOSH [1990]. Alert: Preventing Worker Deaths and Injuries from Falls Through Skylights and Roof Openings. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 90-100.

Intermediate Outcomes:

End Outcomes:

NIOSH and MOSH tracked the fatal falls within Maryland for four and a half years following the publication of the Alert, and did not identify any falls through skylights or roof openings.

For Partners and Stakeholders:

Name: North Carolina Department of Labor/OSHA

Category of Organization: State government

Contact:

Steve Sykes
State Plan Coordinator
North Carolina Department of Labor/OSHA
steve.sykes@nclabor.com
(919) 807-2858

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

Steve Sykes, the State Plan Coordinator, North Carolina Department of Labor/OSHA notifies the NIOSH, Division of Safety Research of selected occupational fatalities (currently machine-related, workers under 18 years of age, highway construction work zones, and Hispanic workers) that occur within the state of North Carolina. NIOSH investigators then collaborate with the OSHA investigator(s) during the NIOSH Fatality Assessment and Control Evaluation (FACE) investigation. This collaboration includes an exchange of information and/or photographic documentation obtained during witness interviews or site visits, and/or information obtained from other outside entities such as a coroner, medical examiner, or police. This information is utilized in the development of the FACE report. Prior to the FACE report being finalized, the draft report is reviewed by and discussed with the OSHA compliance officer. In this way, accurate findings of the investigation can be ensured.

NIOSH data analysis, and information and recommendations from FACE fatality investigations were used by the North Carolina OSHA in the development of the North Carolina Telecommunication Tower standard, the first safety regulation of its kind regarding tower erection in the nation. At the request of North Carolina OSHA, NIOSH staff gave a presentation entitled “Communication Towers: A Rising Injury Risk” to North Carolina stakeholders.

Collaborative Outputs:

Intermediate Outcomes:

Senate Bill 602/S.L. 2006-264 was recently approved by the N.C. General Assembly and provides that, effective August 27, 2006, the N.C. Department of Labor may adopt rules in connection with its requirements regarding tower climbers.

End Outcomes:

For Partners and Stakeholders:

Name of Organization: United States Fire Administration, National Fire Academy

Category of Organization: Federal Government

Contact:

Dr. Kirby Kiefer
National Fire Academy
[Kirby.Kiefer@dhs.gov]
(301) 447-1083

For Partners only:

Type of Formal Agreement (if any): Memorandum of Understanding, signed in 2005

Description of collaborative activities (narrative):

The National Institute for Occupational Safety and Health (NIOSH) and the United States Fire Administration (USFA), including the National Fire Academy (NFA) entered into a Memorandum of Understanding (MOU) to identify specific steps or collaborations the two agencies can undertake with the goal of improving safety and health conditions for fire fighters throughout the United States.

The NIOSH/FFFIPP and the USFA/NFA have agreed to work together to provide the United States' fire service with recommendations for the prevention of future fire fighter fatalities in the following manner:

NIOSH provides USFA/NFA currently published NIOSH/FFFIPP documents and the USFA posts the NIOSH documents and/or provides an Internet URL link to NIOSH documents on the USFA web site.

NIOSH provides the periodic fire fighter health and safety quiz/challenge,
based on NIOSH report recommendations to go along with the USFA monthly provisional fire fighter fatality statistics release via listserve.

NIOSH provides and the USFA disseminates NIOSH reports into the Fire and Emergency Services Higher Education (FESHE) community, other higher education programs, and State and local fire service training programs wherever practicable for the use as case studies in fire service training curriculum(s).

NIOSH provides and USFA incorporates NIOSH/FFFIPP reports into relevant USFA course curriculum and national fire service training curriculums as case studies.

NIOSH and USFA have agreed to research, coordinate, and collaborate on firefighter safety and health initiatives, and in response to emergent issues regarding firefighter health and safety.

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

Project: CAN 8861, Fire Fighter Fatality Investigation and Prevention Program

For Partners and Stakeholders:

Name of Organization: National Institute of Standards and Technology

Category of Organization: Government - Federal

Contact:

Mr. Nelson Bryner
National Institute of Standards and Technology
(301) 975-6868
(nelson.bryner@nist.gov)

For Partners only:

Type of Formal Agreement (if any): Past interagency agreements

Description of collaborative activities:

In Fiscal Year 1998, Congress recognized the need for further efforts to address the continuing problem of occupational fire fighter fatalities, and funded NIOSH to undertake this effort. NIOSH has been given a congressional appropriation to investigate fire fighter fatalities within the United States, and has developed and implemented the Fire Fighter Fatality Investigation and Prevention Program. The program's goals/objectives are to prevent fatal work injuries to fire fighters by identifying work situations at high risk for fatal injury.

The National Institute of Standards and Technology (NIST), Building and Fire Research Laboratory, performs fire-related research, including but not limited to: building materials; computer-integrated construction practices; fire science and fire safety engineering; and structural, mechanical, and environmental engineering. Products of the laboratory's research include measurements and test methods, performance criteria, and technical data that support innovations by industry and are incorporated into building and fire standards and codes. NIST has been, and continues to be a valued research partner in the performance of the FFFIPP.

NIOSH and NIST have entered into a few interagency agreements for NIST to conduct research in support of the FFFIPP and fire fighter safety. These interagency agreements have addressed thermal protection properties of fire fighter turnout gear, and the development of fire dynamics simulations models for selected incidents.

To date, NIST developed fire simulation models for three fatal fires investigated by NIOSH: (99F-21) Two fire fighters die and two are injured in townhouse fire - District of Columbia; (F2000-04) Structure Fire Claims the Life of Three Career Fire Fighters and Three Children – Iowa; and, F2000-13 Restaurant Fire Claims the Lives of Two Career Fire Fighters – Texas. Additionally, NIOSH personnel worked with NIST on another fire simulator model regarding Two Fire Fighter Deaths at a Training Fire in Florida (F2002-34). These models have proven to

be instrumental to NIOSH investigators in elucidating the circumstances resulting in fire fighter injury and death, and in testing the validity of recommendations for preventing future similar deaths (e.g., impact of ventilation on fire growth). NIOSH has referenced these models in fatality investigation reports, and provided links to the models on the NIST website. NIST has distributed these models at fire service meetings, and makes them available on the NIST website. It is anticipated that these models will enhance communication of findings from these fires, and potentially be of value as training tools.

Collaborative Outputs:

NIST [1999]. NISTIR 6510, Simulation of the Dynamics of the Fire at 3146 Cherry Road NE, Washington D.C., May 30, 1999. National Institute of Standards and Technology, Technology Administrations, U.S. Department of Commerce.

NIST [2000]. NISTIR 6854, Simulation of the Dynamics of a Fire in a Two-Story Duplex - Iowa, December 22, 1999. National Institute of Standards and Technology, Technology Administrations, U.S. Department of Commerce.

NIST [2000]. NISTIR 6923, Simulation of the Dynamics of a Fire in a One-Story Restaurant – Texas, February 14, 2000. National Institute of Standards and Technology, Technology Administrations, U.S. Department of Commerce.

NIST [2001]. NISTIR 6750, Measurement Techniques for Low Heat Flux Exposures to Fire Fighters Protective Clothing – June 2001. National Institute of Standards and Technology, Technology Administrations, U.S. Department of Commerce.

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: U.S. Department of Labor**,** Occupational Safety and Health Administration

Category of Organization: Federal Government

Contacts:

Rob Medlock
Cleveland Area Director
Ohio Department of Labor/OSHA
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Frank Liebrich
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Frank Perrino
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Mary Anderson
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Office of Enforcement Programs
(202) 693-2127

Todd Briggs
Program Analyst
OSHA Directorate of Cooperative and State Programs
Briggs.Todd@dol.gov
(202) 693-2200

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

In 1996, due to the high incidence of telecommunication tower erector deaths, OSHA placed an emphasis on the inspection of telecommunication tower construction sites. Because this was a relatively new segment of the construction industry, OSHA inspectors were not consistent in the interpretation of OSHA standards during their inspections. For instance, what was considered to be a fall protection violation of a standard at one site by one inspector would not be considered to be a violation by a second inspector at another site. In an effort to gain consistent inspection procedures and regulation interpretations, the National Association of Tower Erectors (NATE) approached the U.S. Assistant Secretary of Labor to develop uniform enforcement policies and procedures. The Assistant Secretary instructed the National OSHA office to develop such policies and procedures, and as a result, the OSHA telecommunication tower task force was formed in April 1997. Members on the task force consisted of representatives from various government agencies and private industry groups. NIOSH, through their representative on the Advisory Committee on Construction Safety and Health (ACCSH,) placed two representatives on the task force. NIOSH targeted tower incidents for investigation by the Fatality Assessment and Control Evaluation Program (FACE) to support task force work. NIOSH representatives actively participated in the task force, providing technical assistance, communicating findings from NIOSH statistical analyses and fatality investigations, and participating in the development of associated products.

OSHA supports the NIOSH FACE program, which includes cooperative agreements with state departments of health and labor to conduct state-based FACE programs. NIOSH personnel worked closely with Tom Galassi and Mary Anderson, U.S. Department of Labor/OSHA, Office of Enforcement Programs in the development of the OSHA Compliance Directive, CPL 02-00-134 - OSHA Support of NIOSH "FACE" Program, effective date January 26, 2004. This directive encourages both federal and state-plan OSHA programs to cooperate with the FACE program, including notification of worker deaths and sharing of investigation findings as appropriate. This directive provides a framework for OSHA, NIOSH, and state-based FACE programs to work cooperatively in distinct, but complementary, worker injury death investigations.

NIOSH consulted with OSHA when first targeting deaths of Hispanic workers for FACE investigations. OSHA representatives provided suggestions for investigation methods, areas of inquiry in investigations, and dissemination of findings. NIOSH has also worked with OSHA to identify OSHA materials that can be highlighted in FACE reports.

The OSHA Outreach Training and Education Centers support OSHA's training and education mission through a variety of safety and health programs. The training provided by the Education Centers serves the public in the recognition, avoidance and prevention of unsafe and unhealthful working conditions. NIOSH FACE staff work with individual Education Centers to gauge their interest and needs, and provide relevant publications (e.g., Alerts, Hazard ID's, and Workplace Solutions) that the Education Centers can use in their training and outreach.

Collaborative Outputs:

OSHA Compliance Directive CPL 02-01-029 - CPL 2-1.29 - Interim Inspection Procedures During Communication Tower Construction Activities, December 1999. This directive contained the procedures to be used during the inspection of tower construction sites, and the procedures to be followed during tower construction. Procedures for the hoisting of materials and employees, hoist selection and use, and fall protection for erectors were outlined.

OSHA Compliance Directive CPL 02-01-036 - CPL 2-1.36 - Interim Inspection Procedures During Communication Tower Construction Activities, effective date March 26, 2002. This was a revision of the 1999 Directive that removed a restriction that an employee's work station had to be over 200 feet in the air before they could ride the hoist line to their workstation. Findings from FACE investigations were considered in making this revision.

Three-day OSHA train- the- trainer program, OSHA 10-hour and OSHA 500 Tower Safety Courses. Findings and prevention recommendations from FACE investigations were used in the development of these training programs.

ACCSH recommended best practices site safety manual.

OSHA Compliance Directive, CPL 02-00-134 - OSHA Support of NIOSH "FACE" Program, effective date January 26, 2004. This directive encourages both federal and state-plan OSHA programs to cooperative with the NIOSH FACE program.

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: International Union of Operating Engineers (IUOP)

Category of Organization: Labor Union

Contact:

Emmett Russell
International Union of Operating Engineers
Emmett Russell [ERussell@IUOE.ORG]
(202) 778-2672

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

The International Union of Operating Engineers (IUOP) provides technical reviews of NIOSH products pertaining to equipment and machinery, and provides support in dissemination. For example, IUOP helped distribute, "Preventing Injuries and Deaths when Working with Hydraulic Excavators and Backhoe Loaders," and "Preventing Injuries when Working with Ride-on/Roller Compactors."

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: The International Association of Fire Chiefs (IAFC)

Category of Organization: Industry Association (Services Sector)

Contact:

David Daniels
Fire Chief, Fulton County (GA) Fire Department
(404) 505-5722 ipager - daviddaniels@mycingular.blackberry.net

For Partners only:

Type of Formal Agreement (if any):

Description of collaborative activities (narrative):

The International Association of Fire Chiefs (IAFC) is a network of more than 12,000 fire chiefs and emergency officers. A NIOSH employee serves as a non-voting member on the IAFC Executive Board of the Safety, Health and Survival Section. The mission of the Safety, Health and Survival Section is to support and provide leadership for the advancement of occupational safety and health within the fire service and in the greater emergency response community.

Collaborative Outputs:

The NIOSH Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) partnered with the International Association of Fire Chiefs (IAFC), the International Association of Fire Fighters (IAFF) and the Volunteer and Combination Officers' Section of the IAFC who called for a second fire service stand down that was held starting Wednesday, June 21, 2006 and continued until all personnel and duty nights had been included.

During this stand down and in consonance with all of the 2006 Stand Down sponsors and partners, the NIOSH FFFIPP urged all fire departments to suspend all non-emergency activity and instead focus entirely on fire fighter safety. NIOSH posted a notice regarding the stand down on the NIOSH website. The 2006 stand down focused on emergency vehicle safety, including seatbelt usage and safe driving through intersections. FFFIPP fatality investigation reports and publications were identified as tools for training in stand down materials.

Intermediate Outcomes:

End Outcomes:

Project: CAN 8861, Fire Fighter Fatality Investigation and Prevention Program

For Partners and Stakeholders:

Name of Organization: National Volunteer Fire Council

Category of Organization: Industry association (Services Sector)

Contact:

Ms. Heather Schafer
Executive Director, National Volunteer Fire Council
(202) 887-5700
[hschafer@nvfc.org]

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities:

The United States currently depends on approximately 1.1 million fire fighters, three out of four who are volunteers, to protect its citizens and property from losses caused by fire. Data from recent years indicate that approximately 56 fire fighters die each year from fatal traumatic injuries, and approximately 95,000 are injured at work each year. In Fiscal Year 1998, Congress recognized the need for further efforts to address the continuing problem of occupational fire fighter fatalities, and funded NIOSH to undertake this effort. NIOSH has been given a congressional appropriation to investigate fire fighter fatalities within the United States, and has developed and implemented the Fire Fighter Fatality Investigation and Prevention Program. The program's goals/objectives are to prevent fatal work injuries to fire fighters by identifying work situations at high risk for fatal injury.

The National Volunteer Fire Council (NVFC) is a non-profit membership association representing the interests of the volunteer fire, EMS and rescue services. The NVFC serves as an information source regarding legislation, standards and regulatory issues impacting volunteer fire and emergency services. The NVFC is a valued NIOSH partner helping to disseminate the products produced through the NIOSH FFFIPP. NIOSH has given presentations at annual meetings of the NVFC:

Braddee RW [1998]. NIOSH's Fire Fighter Fatality Investigation and Prevention Program. Unpublished paper presented at the National Volunteer Fire Council, Warwick, RI, October 9, 1998.

Cortez K [1999]. NIOSH's Fire Fighter Fatality Investigation and Prevention Program. Unpublished paper presented at the National Volunteer Fire Council Meeting, Memphis, TN, October 4, 1999.

Cortez K [2001]. NIOSH's Fire Fighter Program and Two Fatality Incidents. Presented at the National Volunteer Fire Council meeting, Wenatchee, Washington, April 20, 2001.
Additionally, the NVFC routinely reviews selected fatality reports and other documents such as Alerts and Workplace Solutions documents.

Collaborative Outputs:

The NVFC provides web page links on their web to the NIOSH FFFIPP
http://www.nvfc.org/

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: Emergency Responder Safety Institute (ERSI)

Category of Organization: Advocacy Group

Contact:

Stephen P. Austin
Project Manager/Fire Police Officer
steveaustin@earthlink.net
(302) 995-0336

For Partners only:

Type of Formal Agreement (if any): N/A

Description of collaborative activities (narrative):

A NIOSH employee from the NIOSH Fire Fighter Fatality Investigation and Prevention Program serves as a member of the Emergency Responder Safety Institute (ERSI). Created as a Committee of the Cumberland Valley Volunteer Firemen's Association, the Institute serves as an informal advisory panel of public safety leaders committed to reducing deaths and injuries to America's Emergency Responders.

The Emergency Responder Safety Institute is comprised of members who are personally dedicated to the safety of the men and women who respond to emergencies on or along our nation's streets, roads and highways. Members of ERSI include trainers, writers, managers, government officials, technical experts and fire service leaders. NIOSH works with ERSI members to reduce fire fighter injuries and fatalities resulting from motor vehicle struck-by incidents by providing the ERSI members with recently released NIOSH fatality investigation reports. The Emergency Responder Safety Institute maintains a web site highlighting the NIOSH fire fighter fatality investigation reports and the hazards fire fighters face while working in or near moving traffic.

Collaborative Outputs: None to report.

Intermediate Outcomes: None to report.

End Outcomes: None to Report.

For Partners and Stakeholders:

Name of Organization: The Commonwealth of Pennsylvania, Office of the State Fire Commissioner

Category of Organization: State Government

Contact:

Ed Mann
Pennsylvania State Fire Commissioner
(717) 651-2201
emann@state.pa.us

For Partners only:

Type of Formal Agreement (if any): Letter of Agreement, signed in 2006

Description of collaborative activities (narrative):

The National Institute for Occupational Safety and Health (NIOSH) Fire Fighter Fatality Investigation and Prevention Program (FFFIPP) and the Commonwealth of Pennsylvania, Office of the State Fire Commissioner entered into a Letter of Understanding to identify specific steps or collaborations the two agencies can undertake with the goal of improving safety and health conditions for firefighters throughout the Commonwealth.

The NIOSH/FFFIPP and the Office of State Fire Commissioner have agreed to work together to provide the Commonwealth fire service with recommendations for the prevention of future firefighter fatalities in the following manner:

NIOSH agreed to provide the Office of State Fire Commissioner currently published NIOSH FFFIPP documents and the Commonwealth agreed to post NIOSH documents and/or provide an Internet URL link to NIOSH documents on the Office of State Fire Commissioner web site.

NIOSH provides a monthly/periodic firefighter health and safety quiz/challenge, based on NIOSH report recommendations to go along with the Office of State Fire Commissioner firefighter fatality statistics release via listserve.

NIOSH provides and the Office of State Fire Commissioner disseminates NIOSH reports to the Firemen's Association of the State of Pennsylvania, The Pennsylvania Fire and Emergency Services Institute and other means to include electronic messages through a variety of distribution list wherever practicable.

NIOSH provides, and the Office of State Fire Commissioner incorporates NIOSH FFFIPP reports into relevant Office of State Fire Commissioner and the Pennsylvania State Fire Academy, courses and training curriculum(s) as case studies.

The Office of State Fire Commissioner and NIOSH agreed to research, coordinate, and collaborate on firefighter safety and health initiatives, and in response to emergent issues regarding firefighter health and safety.

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders:

Name of Organization: The American Society of Safety Engineers (ASSE)

Category of Organization: Professional Society

Contact:

Terry Wilkinson
Director, Member/Region Affairs
1800 East Oakton Street
Des Plaines, IL 60018
(847) 768-3420
twilkinson@asse.org

Rennie Heath
Manager Practice Specialties
1800 East Oakton Street
Des Plaines, IL 60018
(847) 768-3425
rheath@asse.org

Dave Heidorn
Manager, Government Affairs & Policy
847.768.3406
dheidorn@asse.org

For Partners only:

Type of Formal Agreement (if any): Partnership agreement

Description of collaborative activities (narrative):

The American Society of Safety Engineers (ASSE) is the oldest and largest professional safety organization. Its more than 30,000 members manage, supervise and consult on safety, health, and environmental issues in industry, insurance, government and education. ASSE has 13 practice specialties, 150 chapters, 56 sections and 64 student sections. When a final NIOSH Fatality Assessment and Control Evaluation (FACE) program publication is completed, an electronic version is sent to ASSE. ASSE determines where best the document should be targeted, and prints it in either their Professional Safety Magazine or one of their thirteen practice specialties newsletters.

Collaborative Outputs:

FACE report 2004-11, Hispanic Laborer on Roadway Construction Worksite Run Over and Killed by a Backing Flat Bed Dump Truck-North Carolina, was printed in its entirety in the Summer, 2006 issue of Blueprints, the American Society of Safety Engineers' construction practice specialty newsletter. The Editor's note gave an excellent description of both the in-house and state-based FACE program.

FACE report 2005-06, Hispanic Worker Dies After Falling From a Pile of Construction Debris in the Bed of a Trash-Style Body Truck to a Paved Driveway Below—North Carolina, was printed in its entirety in the Spring, 2006 issue of Blueprints, the American Society of Safety Engineers' construction practice specialty newsletter. The Editor's note gave an excellent description of both the in-house and state-based FACE program.

NIOSH Recommendations Based on fire fighter fatality investigations were printed in an article "Roadway Incident Safety Best Practices for Emergency Responders" in the Spring 2006 issue of Perspectives, the American Society of Safety Engineers' public sector practice specialty newsletter.

Intermediate Outcomes: None to report.

End Outcomes: None to report.

For Partners and Stakeholders:

Name of Organization: Occupational Safety and Health Administration (OSHA) Outreach Training and Education Centers

Category of Organization: Academic

Contact:

Keene State College
OSHA Education Center
175 Ammon Drive
Manchester, NH 03103-3308
Phone: (800) 449-6742
oshaed@keene.edu

West Virginia University
Safety and Health Extension
130 Tower Lane
Morgantown, WV 26506-6615
Phone: (800) 626-4748

Outreach Education and Training
Kitren VanStrander
Rochester Institute of Technology
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Rochester, NY 14623-5603
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Mississippi State University
Center for Safety and Health
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University of Washington
Rick Gleason
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Great Lakes Regional OTI Education Center
UAW Health and Safety Dept.
8000 East Jefferson Ave
Detroit, MI 48214-3963
Phone: (800) 605-2046

Great Lakes Regional OTI Education Center
Eastern Michigan University
2000 Huron River Drive, Suite 101
Ypsilanti, MI 48197-1699
Phone: (800) 932-8689

For Partners only:

Type of Formal Agreement (if any):

Description of collaborative activities (narrative):

The OSHA Outreach Training and Education Centers support OSHA's training and education mission through a variety of safety and health programs. The training provided by the Education Centers serves the public in the recognition, avoidance and prevention of unsafe and unhealthy working conditions.

NIOSH disseminated publications (e.g., Alerts, Hazard ID's, and Workplace Solutions) that were developed by the NIOSH Fatality Assessment Control and Evaluation (FACE) program to various OSHA Outreach Training and Education Centers throughout the United States. Contact was made with individual Education Centers to gauge their specific interests and needs, and relevant publications were sent accordingly.

Intermediate Outcomes: None to report.

End Outcomes: None to report.

For Partners and Stakeholders:

Name of Organization: International Association of Fire Fighters (IAFF)

Category of Organization: Labor Union

Contact:

Mr. Richard M. Duffy
Assistant to the General President
International Association of Fire Fighters
(202) 824-1571
rduffy@iaff.org

For Partners only:

Type of Formal Agreement (if any): None

Description of collaborative activities (narrative):

The United States currently depends on approximately 1.1 million fire fighters to protect its citizens and property from losses caused by fire. Data from recent years indicate that approximately 56 fire fighters die each year from fatal traumatic injuries, 46 die from cardiovascular related disease received in the line-of-duty, and approximately 95,000 are injured at work each year. In fiscal year 1998, as a direct result of efforts by the International Association of Fire fighters (IAFF), the U.S. Congress recognized the need for further efforts to address the continuing problem of occupational fire fighter fatalities, and funded NIOSH to undertake this effort. NIOSH was given a congressional appropriation to investigate fire fighter fatalities within the United States, and developed and implemented the Fire Fighter Fatality Investigation and Prevention Program (FFFIPP). The program's goals/objectives are to prevent fatal work injuries to fire fighters by identifying work situations at high risk for fatal injury and formulating prevention strategies for those who can intervene in the workplace.

The IAFF has been, and continues to be, an effective partner in the support and growth of the NIOSH FFFIPP. The IAFF has provided input on the scope and directions of the FFFIPP at stakeholder meetings held in 1998 and 2006. The IAFF notifies NIOSH of fire fighter fatalities and other incidents they believe need to be researched. The IAFF provides expert reviews of some FFFIPP products.

NIOSH provides technical presentations and informational booths, and distributes FFFIPP products at IAFF conferences and meetings. The following are examples of presentations and posters given at IAFF functions -

Presentation – Braddee R [1999]. NIOSH's FFFIPP. Presented at the IAFF Redmond Conference, Honolulu, Hawaii, August 21-28, 1999.

Workshop: Presentations included an Overview of the Fire Fighter Fatality Investigation and Prevention Program Accomplishments, NIOSH Alert "Preventing Injuries and Deaths to Fire Fighters Due to Structural Collapse," Oxygen Regulator Fires, and Fire Fighter Cardiovascular Fatalities which were presented at the Redmond Conference (International Association of Fire Fighters Safety and Health Conference), Honolulu, Hawaii, August 21-28, 1999. The two workshops were interactive and involved the procedures used in investigating fire fighter fatalities.

Presentation – Braddee R [2001]. Structure Fire Claims the Life of Three Career Fire Fighters and Three Children – Iowa. Presented at IAFF 16th Redmond Symposium, Phoenix, Arizona, September 2001.

Presentation - Castillo D [2001]. NIOSH's Fire Fighter Fatality Investigation and Prevention Program's Investigation Database. Presented at the IAFF 16th Redmond Symposium, Phoenix, Arizona, September 2001.

Presentation - McFall M [2001]. Restaurant Fire Claims the Life of Two Career Fire Fighters – Texas. Presented at the IAFF 16th Redmond Symposium, Phoenix, Arizona, September 2001.

Presentation - Merinar T [2003]. Fatality cases involving roof and floor truss failures. Presented at the IAFF 17th Redmond Symposium, San Francisco, California, October 2003.

Presentation - Tarley T [2003]. Live-fire training case study. Presented at the IAFF 17th Redmond Symposium, San Francisco, California, October 2003.

Poster regarding NIOSH's Fire Fighter Fatality Investigation and Prevention Program. Displayed and presented at the International Association of Fire Fighters Annual Conference, August, 2000, Chicago, Illinois.

Poster regarding NIOSH's Fire Fighter Fatality Investigation and Prevention Program. Displayed and presented at the IAFF 16th Redmond Symposium, September 2001, Phoenix, Arizona.

Poster regarding NIOSH's Fire Fighter Fatality Investigation and Prevention Program. Displayed and presented at the International Association of Fire Fighters Conference, August 2002, Las Vegas, Nevada.

Poster regarding NIOSH's Fire Fighter Fatality Investigation and Prevention Program. Displayed and presented at the International Association of Fire Fighters' Redmond Conference, October 2003, San Francisco, California.

Poster regarding NIOSH's Fire Fighter Fatality Investigation and Prevention Program. Displayed and presented at the International Association of Fire Fighters' Redmond Conference, October 23-27, 2005, Honolulu, Hawaii.

Collaborative Outputs: None to report.

Intermediate Outcomes: None to report.

End Outcomes: None to report

Project: HCCB7 9278061 - Evaluation of a New Method for Machinery Risk Reduction*:*

For Partners and Stakeholders:

Name of Organization: United Steel Workers (PACE Union)

Category of Organization: Labor Union

Contact: (name, title, email, phone)

Tom McQuiston, Safety and Health Coordinator
tom.mcquiston@earthlink.net
(919) 929-5878

For Partners only:

Type of Formal Agreement (if any): Letter of cooperation

Description of collaborative activities (narrative):

Machine risk assessment site visits were made to 3 paper manufacturing worksites; risk assessment leaders were trained for each site; the research is stopped due to workplace and NIOSH personnel moves.

Collaborative Outputs:

A 2-day machine risk assessment training session was held in Cincinnati in 2004. Also a NIOSH presentation on machine risk reduction was provided for the USW(PACE) national safety committee meeting in Orlando in Sept 2005.

Intermediate Outcomes:

Pending restart of the NIOSH research on machine risk reduction

End Outcomes:

Pending restart of the NIOSH research on machine risk reduction

Project: HCCB7 9278061 - Evaluation of a New Method for Machinery Risk Reduction

For Partners and Stakeholders:

Name of Organization: Design Safety Engineering

Category of Organization: Company (safety consulting)

Contact: (name, title, email, phone)

Bruce Main
bruce@designsafe.com
(734) 483-2033

For Partners only:

Type of Formal Agreement (if any): Task order

Description of collaborative activities (narrative):

Helped design the study, train the test site personnel, and collect data

Collaborative Outputs:

2 journal articles, 2 press releases, NIOSH Workplace Solutions document in process

Intermediate Outcomes:

Study findings were that injury rates fell among the test sites

End Outcomes:

NIOSH is considering new research to follow-up on the positive results of the initial pilot study

For Partners and Stakeholders:

Project: HCCB7 9278061 - Evaluation of a New Method for Machinery Risk Reduction

For Partners and Stakeholders:

Name of Organization: Cloutier Consulting Services

Category of Organization: Company (safety consulting)

Contact: (name, title, email, phone)

Dennis Cloutier
dennis@cloutierconsulting.com
(513) 941-2917

For Partners only:

Type of Formal Agreement (if any): Task order

Description of collaborative activities (narrative):

Helped design the study, train the test site personnel, and collect data

Collaborative Outputs:

2 journal articles, 2 press releases, NIOSH Workplace Solutions document in process

Intermediate Outcomes:

Study findings were that injury rates fell among the test sites

End Outcomes:

NIOSH is considering new research to follow-up on the positive results of the initial pilot study

Project: HCCB7 9278061 - Evaluation of a New Method for Machinery Risk Reduction

For Partners and Stakeholders:

Name of Organization: Christensen Consulting for Safety Excellence

Category of Organization: Company (safety consulting)

Contact: (name, title, email, phone)

Wayne Christensen
wchrissafe@aol.com
(815) 455-7328

For Partners only:

Type of Formal Agreement (if any): Task order

Description of collaborative activities (narrative):

Helped design the study, train the test site personnel, and collect data

Collaborative Outputs:

2 journal articles, 2 press releases, NIOSH Workplace Solutions document in process

Intermediate Outcomes:

Study findings were that injury rates fell among the test sites

End Outcomes:

NIOSH is considering new research to follow-up on the positive results of the initial pilot study

Project: HCCB7 9278061 - Evaluation of a New Method for Machinery Risk Reduction

For Partners and Stakeholders:

Name of Organization: United Auto Workers

Category of Organization: Labor Union

Contact: (name, title, email, phone)

Jim Howe
Safety Consultant
jimhowe@earthlink.net
(248) 797-1741

For Partners only:

Type of Formal Agreement (if any):

Description of collaborative activities (narrative):

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

Project: HCCB7 9278061 - Evaluation of a New Method for Machinery Risk Reduction

For Partners and Stakeholders:

Name of Organization: Hazards, Limited

Category of Organization: Company *(safety consulting)*

Contact: (name, title, email, phone)

Fred A. Manuele
Safety consultant
famhl@sbcglobal.net
(847) 392-9449

For Partners only:

Type of Formal Agreement (if any):

Description of collaborative activities (narrative):

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

Project: HCCB7 9278061 - Evaluation of a New Method for Machinery Risk Reduction

For Partners and Stakeholders:

Name of Organization: General Motors

Category of Organization: Manufacturer

Contact: (name, title, email, phone)

Mike Taubitz
Global Health and Safety Director
michael.taubitz@gm.com
(248) 753-5771

For Partners only:

Type of Formal Agreement (if any):

Description of collaborative activities (narrative):

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

Project: HCCB7 9278061 - Evaluation of a New Method for Machinery Risk Reduction

For Partners and Stakeholders:

Name of Organization: Liberty Mutual

Category of Organization: Company *(worker comp insurance)*

Contact: (name, title, email, phone)

John Russell
Technical Director - Manufacturing Technology & Ergonomics
john.russell@libertymutual.com
(781) 986-5043

For Partners only:

Type of Formal Agreement (if any):

Description of collaborative activities (narrative):

Collaborative Outputs:

Intermediate Outcomes:

End Outcomes:

For Partners and Stakeholders*:*

Name of Organization: National Fire Protection Association (NFPA)

Category of Organization: International Nonprofit

Contact:

Carl E. Peterson
Assistant Director, NFPA Public Fire Protection Division
cpeterson@nfpa.org
(617) 984-7485

For Partners only:

Type of Formal Agreement (if any): N/A

Description of collaborative activities (narrative):

Two NIOSH employees serve as non-voting members on the NFPA 1500 Standard on fire department occupational safety and health program standards setting committee.

The mission of the international nonprofit NFPA is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. NFPA membership totals more than 79,000 individuals from around the world and more than 80 national trade and professional organizations.

NIOSH provides the NFPA committee with the causal factors and hazards identified in NIOSH fire fighter line-of-duty fatality investigations. The committee members utilize the NIOSH investigation report findings in discussions and dialogue regarding current and future standards related to fire fighting safety and health.

Collaborative Outputs: None to report.

Intermediate Outcomes: None to report.

End Outcomes: None to report.

For Partners and Stakeholders:

Name of Organization: State Occupational Safety and Health Administration (OSHA) Consultation Programs

Category of Organization: Government (State)

Contact:

Connecticut Occupational Safety Health Administration
John Able, Occupational Safety Training Specialist
38 Wolcott Hill Road
Wethersfield, CT 06109
(860) 263-6902

Nevada Safety Consultation and Training Section (SCATS)
Mary Jo Brown
1301 N. Green Valley Parkway Suite 200
Henderson, Nevada 89074
(702) 486-9140

Michigan Occupational Safety and Health Administration
Department of Labor & Economic Growth
Nella Davis-Ray, Consultation Education and Training Division
7150 Harris Drive-P.O. Box 30643
Lansing, MI 48909-8143
(517) 322-6560

Alaska, Dept. of Labor & Workforce Development
Clifford V. Hustead, Labor Standards & Safety Division
3301 Eagle Street, Suite 305
Anchorage, AK 99503-4149
(800) 656-4972
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Iowa Division of Labor/OSHA Education
Sue Sirna
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Washington State (WISHA) Services
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Arizona Consultation
Toni DeDomenico
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Phoenix, AZ 85007
(520) 628-5478

Virginia Department of Labor & Industry
David L. Atkins, Occupational Safety & Health Training Officer
13 South 13th Street
Richmond, VA. 23219
(804) 786-6359

MOSH Training and Education
Linda Price
312 Marshall Ave Suite 600
Laurel, MD 20707
(410) 767-2190

For Partners only:

Type of Formal Agreement (if any): N/A

Description of collaborative activities (narrative):

States with OSHA-approved programs have their own cooperative and voluntary compliance programs. Outreach services are responsible for coordinating OSHA's compliance assistance and outreach activities. Resources for these activities include print and electronic information and assistance tools, and worker safety education and training. States promote cooperative programs, such as employer safety and health consultation programs, the Voluntary Protection Programs (VPP), the Strategic Partnerships Program, and the Alliance Program. They also promote OSHA's training resources and the tools available on OSHA's web site.

NIOSH disseminated publications (e.g., Alerts, Hazard ID's and Workplace Solutions) that were developed by the Fatality Assessment and Control Evaluation (FACE) program to various OSHA Consultation Programs. Contact was made with OSHA Consultation Programs to gauge their specific interests and needs, and relevant publications were sent accordingly.

Collaborative Outputs:

The Washington State Department of Labor and Industry utilized and disseminated 150 copies of the NIOSH "Building Safer Highway Work Zones: Measures to Prevent Injuries from Vehicles and Equipment" publication (Pub. No. 2001-18) during training for compliance officers and consultation officials. The training addressed a new standard and enforcement procedures for dump trucks on highway work zones.

Intermediate Outcomes: None to report.

End Outcomes: None to report.