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NORA Construction Sector News

Volume One, Number Three, September 2008

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Greetings from the Co-Chairs

Welcome to the third issue of the NORA Construction Sector Newsletter. This issue includes a “Research to Practice (r2p) Corner” report on two projects that are developing new devices to address specific construction problems, and some short summaries of construction-related research presented at the recent NORA Symposium along with our other regular features.

The NORA “National Construction Agenda” is being finalized and will be posted on the NORA Construction Page on the NIOSH website later this month. The focus is now shifting to putting together an “Action Plan” to engage the construction industry to work with us to implement this agenda. The goals that make up the agenda represent opportunities for industry stakeholders to work together to make an impact in the years ahead. Please consider working with us on at least two. We will be planning additional outreach to various construction groups for the upcoming year.

Matt Gillen
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Coordinator
NIOSH Construction Program

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Welcome to NORA Construction Sector News!

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Sector Council News

The NORA Construction Sector Council met on July 30, 2008, in conjunction with the NORA Symposium held in Denver, Colorado. Breakout sessions at the symposium provided opportunities for meeting attendees to learn about and comment on the final draft NORA Construction goals. Resulting input led to some new ideas that were discussed by the NORA Council and incorporated into the final goals.

One issue that came up was the role of the news media in construction safety and health. This has been an unusually active year for media coverage of the construction industry, triggered by crane accidents in New York and multiple project fatalities in Las Vegas. Media outlets typically pay little attention to construction safety and health and reports are often cursory. When the media does cover a safety/health issue well, it can increase awareness of both construction industry leaders and the public and lead directly to improvements. The NORA Construction Sector Council members in attendance agreed to develop a 15th goal to improve understanding of how best to reach out to the media to inform and motivate them about construction safety and health issues.

Research to Practice (r2p) Corner

Here is a look at some innovative products recently generated by NIOSH-supported construction research.

An Adjustable Guardrail Bracket

Workers falling from unguarded edges and through unguarded holes and skylights accounted for a yearly average of 154 fatalities and 3,374 serious injuries (those involving days away from work) from 1998-2005.

A number of fall protection products are available, but many have limitations on their use, such as only being applicable to flat surfaces, adjustable for only a few roof pitches, or lacking components to support a horizontal guardrail.

NIOSH has been working to provide contractors with a new fall protection solution to protect employees working on pitched roofs and other elevated work surfaces. Tom Bobick, PhD, P.E., CSP, CPE, and his NIOSH Division of Safety Research colleagues have designed an adjustable roof bracket-safety rail system to protect workers from falls. The design is innovative in that it is highly adjustable to 7 roof pitches – from 27° to 63°. In addition it can also be used on flat roofs and working surfaces. The guardrail unit is capable of preventing workers from sliding off roof edges, falling through unprotected roof/floor holes and existing skylights, and falling from balconies or decks. Two applicable OSHA regulations were the focus for the initial design of the system.

The prototype design was modified and improved based on laboratory performance testing and user feedback. Tom has taken his design on the road to various construction meetings to exhibit it and he recently described it at the June 2008 International Society for Fall Protection Symposium in Las Vegas. The unique design is patent-pending in both the U.S. and Canada.

The challenge now is to get the design into the marketplace. Currently, a Material Transfer Agreement has been arranged with three companies. Send an email to Tom at tbobick@cdc.gov if you would like to receive a brochure or think you might be interested in 1) partnering to get the design to market; or 2) using the solution once it is available.

Additional information is available on the Adjustable Guardrail Bracket via the NORA Symposium Poster at <http://www.cdc.gov/niosh/nora/symp08/posters/029.html>

Congratulations to Tom and his NIOSH colleagues, Tony



A construction worker leans against the guardrail during a field trial of the Adjustable Guardrail Bracket. The unit is attached to a sloped residential roof.

McKenzie, Jr, PhD, PE; Doug Cantis, and Dave Edgell, for the honorable mention related to the 2008 NORA Innovative Research Award for Worker Health and Safety.

Overhead Drilling Device



The photo on the left shows a typical method for overhead drilling. The photo on the right shows the Generation 3 design for the overhead drilling device.

One of the most physically demanding tasks in construction is overhead drilling into concrete or metal ceilings for the attachment of bolts and anchors to hang pipes, ducts, wiring, and equipment. Overhead drilling is associated with risks of falls from ladders, acute injuries to the wrist when the drill seizes, and chronic wrist, elbow, shoulder, and back musculoskeletal disorders due to the high loads.

David Rempel, MPH, MD and his colleagues from the University of California, San Francisco and Simon Fraser University have worked over the past 3 years to develop a device for overhead drilling that addresses these risk factors. The device went through rounds of formal testing by commercial construction workers in the field and each round has resulted in improvements to the device based on worker feedback. This NIOSH/CPWR supported study demonstrates that multiple rounds of field testing may be necessary to identify health and safety interventions that both reduce musculoskeletal risk and are acceptable to workers.

The device was selected as one of three finalists for the 2008 Safety Innovation Award at the 4th Annual Safety Expo at Sacramento State University, sponsored by the Golden State Builders Exchange. A number of contractors have begun using the device. After an article about the device appeared in *Professional Safety*, three contractors have approached Dave with requests for purchasing or renting the equipment. A NORA Symposium poster was presented on this topic and additional information and photos are available at <http://www.cdc.gov/niosh/nora/symp08/posters/008.html>

Videos, brochures and the Professional Safety article on the device are available at: <http://www.me.berkeley.edu/ergo/odp/>

Rempel continues to receive requests from contractors who wish to purchase the overhead drill. His tool fabricator can accommodate only a small number of orders, so he and his research team are actively seeking collaborators to bring this product to market.

In fact, he approached tool manufacturer Hilti in July about producing the overhead drill. The company analyzed the product and responded in late August.

“The Hilti director of electric tools said they thought the overhead drilling device was a great idea and want to make sure their tools will work with it,” said Rempel. However, their business focus is tools and they do not offer devices or specialty accessories

Rempel’s next steps are to continue to work with local manufacturing shops to increase the number of tools fabricated and reduce their price. He is also working with a member of the business faculty at UC Davis to help find another partner to manufacture and market the overhead drill.

If you think you might be interested in 1) partnering to get the design to market, or 2) using the solution once it is available, send an email to David at David.Rempel@ucsf.edu.

Report from NORA symposium

The NORA Symposium held in Denver on July 29, 2008 included seven poster presentations related to construction. We are providing a short summary and the links to the poster for three of the presentations this issue. The link also provides information on how to contact the researchers. We will cover the other four presentations next issue.

Project Safe Talk: Safety Communication Training for Construction Workers

April E. Smith, MS, and colleagues at Colorado State University developed a training program to increase construction safety communication skills about sharing near misses and giving and receiving safety feedback. The program involved three components: 1) training for apprentices; 2) training for foremen and superintendents, and 3) a communication campaign for use in support of the training. The components were piloted and evaluated with plumber and pipefitters and apprentices.

The NIOSH/CPWR supported study provided preliminary evidence that safety communication can be trained. In particular, construction workers can learn new communication skills like giving and receiving safety feedback and conflict management on the jobsite. Persuading participants to change their attitudes toward sharing near misses was found to be more difficult. Work is continuing on evaluation of one-year follow-up and initiation of a management-oriented version of the Safe Talk training next. See <http://www.cdc.gov/niosh/nora/symp08/posters/015.html>.

Declining Health Insurance Access Among US Workers: Not all Jobs are Created Equal

Kristopher L. Arheart, EdD and colleagues from the University of Miami, University of North Carolina, and University of Texas used data from the National Health Interview Survey (NHIS) to examine a 9-year (1997-2006) trend in health insurance coverage by occupation type, industrial sector, and race-ethnic category. The study found that Hispanic workers appear to be particularly at risk for never obtaining or losing health insurance coverage. The decline was particularly sharp for Hispanic construction workers, where health insurance coverage dropped from 47.9% in 1997 to 29.5% in 2006. This was the largest drop (38.3%) seen among the sectors and construction was one of the two sectors with lowest overall health insurance rates for Hispanic workers See <http://www.cdc.gov/niosh/nora/symp08/posters/001.html> for additional detail.

Targeting High Risk Tasks in Residential Construction

Ann Marie Dale, MS, and Bradley A. Evanoff MD, MPH, of Washington University examined approaches for identifying and measuring high-risk tasks that may contribute to musculoskeletal disorders in residential construction workers. The NIOSH/CPWR-funded researchers used a modified version of the Hand Activity Level threshold limit value (HAL-TLV) developed by the American Conference of Governmental Industrial Hygienists to evaluate worker tasks. Results may be used to categorize the overall job into a safe, caution or unsafe

level of risk.

Based on their analysis, the highest exposure work tasks included wood assembly, followed by packing and sawing. Analysis of subtasks for assembly determined nail gun use was most problematic. The report describes the distribution of exposures, the variables that could be examined to highlight tasks contributing to risks, research needs and suggestions for further collaboration. See <http://www.cdc.gov/niosh/nora/symp08/posters/017.html>

News from our Partners

CPWR Releases Crane Report

On June 17, CPWR - The Center for Construction Research and Training released a report giving statistics on crane fatalities and injuries to workers, along with eight recommendations to make the industry and its workers safer. The report, which covered crane-related fatalities over the period from 1992 through 2002, provided timely information given the increased interest in cranes generated by the spate of crane collapses and mishaps that have occurred this year.

Lead author Mike McCann's report found that cranes are responsible for the deaths of 22 workers annually. Of the 323 total crane-related deaths, 32% were due to overhead power line electrocutions, 21% were associated with crane collapses and 18% involved a construction worker being struck by a crane boom or jib. Construction laborers experienced the greatest number of crane-related deaths between 1992 and 2006 (total of 96 or 30%), followed by heavy equipment operators (74 deaths or 23%), which included 50 crane and tower operators. In addition, 40 supervisors/managers/ administrators died in crane-related incidents (12%), as did 18 ironworkers (6%), and 17 mechanics (5%). Other trades with fewer numbers of deaths included electrical workers, truck drivers, welders and carpenters (totaling 24%).

The report, along with the press release and a downloadable power point presentation containing much of the data in table and chart form, are available at www.cpwr.com/cranereport Among the recommendations are national certification programs for all crane operators, signalpersons, riggers, and crane inspectors.

New York City Meeting on Construction Noise rules

At the invitation of the Laborers Health and Safety Fund of North America and the General Contractors Association of New York, several NIOSH noise experts attended a meeting in July with local contractors, the NYC Department of Environmental Protection (NYCDEP), and a representative from the Association of Equipment Manufacturers to discuss technical issues associated with recent local construction noise codes.

Noise complaints are the number one quality-of-life issue reported by city residents and construction noise is considered to be an important noise source. The new comprehensive noise code developed by NYCDEP went into effect in July of 2007 and can be found at http://www.nyc.gov/html/dep/html/air_and_noise/index.shtml. It mandates that all construction be conducted in accordance with an individual site noise mitigation plan. Such plans need to include features such as: selection of quieter equipment, maintenance of equipment and mufflers, use of quieter back-up alarms, use of perimeter noise barriers, and worker training. The code does not include any specific noise level requirement, but is instead based on using the best available technology and practices to minimize noise generated by construction sites. For example, the code requires contractors to use the most quiet equipment available in some cases. This equipment is listed on a "Construction Noise Control Products and Vendor Guidance Sheet" available from NYCDEP. If this equipment cannot be used, then the code requires other steps be taken.

Some of the issues discussed at the meeting included:

- Insuring that approaches designed to protect the public do not inadvertently create other hazards for workers. For example, taking care to insure that mounting a noise control barrier on a piece of equipment does not block operator sight lines that could lead to a safety hazard; or that installing a

barrier around a masonry cutting operation does not increase silica dust exposures

- Clarifying and publicizing criteria that could be used for adding new types of equipment to the NYCDEP product list
- Providing small and medium size contractors with technical advice on how to retrofit current equipment along with other implementation issues.

The NIOSH crew included researchers from the Division of Applied Research and Technology (DART) and the Pittsburgh Research Lab (PRL) mining program. They visited two construction sites during the visit to collect measurements on three pile drivers, a construction operation associated with high noise levels and community complaints. Preliminary data showed that exhaust noise from pile drivers to be a major contributor to the overall noise level. Peak sound pressure levels on the order of 130 dBA at 25 feet were measured for all 3 pile drivers.

The visit provided insights on how groups working on occupational and environmental noise issues might find common ground on reducing noise "at the source" to benefit both workers and community members. The National Construction Agenda Strategic Goal 4 on noise/hearing loss includes this approach in an intermediate goal to "Increase the availability and adoption of quieter tools and equipment in the construction industry via research and implementation of a "Buy Quiet" campaign".

The need for coordination to minimize the shifting of risks from the environment to workers was also apparent. The question of how best to organize information to help contractors select the quietest equipment needed for a particular job was also a mutual interest. NIOSH currently has an online database for power tools at <http://www.cdc.gov/niosh/topics/noise/workplacesolutions/toolsDatabase.html> (Link updated 12/16/2009 - <http://wwwn.cdc.gov/niosh-sound-vibration/>)

The parties involved with the meeting will continue discussions and hope to find ways to develop a partnership on construction noise issues.

Construction Solutions Website Adds New Trade to Database

The sheet metal trade has been added to Construction Solutions, CPWR's online database of construction hazards and solutions. Sheet metal is the second of the 16 construction subject areas the Web site will offer; the first trade completed is masonry, cement and plaster. Contractors, supervisors and workers can look up a task, like "installing risers," then find hazards associated with that task and possible solutions. After selecting the hazard, a page describing the problem in detail and giving solutions appears. Most of the sheet metal hazards and solutions posted on Construction Solutions deal with ergonomic issues workers face.

CPWR is reaching out to experienced professionals in the sheet metal trades and safety professionals to contribute to the site if they know proven ways to prevent or control hazards. Check out the site at www.cpwrConstructionSolutions.org. If you know a solution to contribute, click on "Suggest a Solution" under "Solutions" on the appropriate hazard page. You can also give feedback on solutions you have tried and rate them by going to the bottom of the page for "Reviews." You can rate the solution (up to five stars) and submit your review.

Silica/Milling-Machines Partnership efforts in Michigan

Pavement milling machines remove the top layer of asphalt from a pavement surface in preparation for repaving. An ongoing partnership is evaluating how these machines can be modified to reduce emissions of respirable dust and crystalline silica to minimize workers' exposures to these hazards. So how can you get



The home page of the Construction Solutions Database.

real world construction conditions AND also minimize uncontrolled variables for research measurements?

The Chair for the Silica/Milling-Machines Partnership effort, Tony Bodway, of Wisconsin-based highway-construction contractor Payne & Dolan, Inc., was instrumental in finding a solution. He secured an abandoned airport in Marquette, Michigan, where milling demonstrations could be done on the main runway. This location proved ideal: no traffic and a highly controlled test environment. The resulting June 2008 testing was dubbed "Mill Fest '08."



A Wirtgen pavement-milling machine removes the top layer of asphalt from a former airport runway in Marquette, Mich., during controlled field testing of prototype water-spray dust-suppression systems in June 2008, as NIOSH investigator Li-Ming Lo, of DART, walks alongside. NIOSH wind-measuring equipment and video equipment can be seen mounted on the top of the machine.

Begun in 2004, the Partnership is coordinated by the National Asphalt Pavement Association (NAPA), and includes NIOSH along with six major milling machine manufacturers, numerous construction contracting companies, the Association of Equipment Manufacturers, the Laborers' International Union of North America (LIUNA), and the International Union of Operating Engineers (IUOE). Since that time the Partnership has facilitated a variety of activities to evaluate the effectiveness of various operational and prototype machine changes designed to minimize silica-bearing dust surrounding asphalt-milling operations. The partnership Partnership is working in a voluntary, non-regulatory setting. The effort involves NIOSH researchers from the Division of Applied Research and Technology (DART), and mining researchers from the Pittsburgh Research Lab (PRL). They are sharing knowledge gained from studies of similar mining equipment.

Partnership members Wirtgen America and Roadtec, major suppliers of pavement-milling machines in the U.S., each shipped a new machine modified with prototype water-spray dust-suppression systems designed in accordance with NIOSH-recommended engineering concepts for June 2008 field testing.



NIOSH mining engineer Gregory Chekan, of PRL, affixes dust-monitoring equipment to a Roadtec pavement-milling machine, in preparation for controlled field testing of prototype water-spray dust-suppression systems in June 2008. PRL mining engineers are helping to optimize the dust-suppression systems of the milling machines by applying their experience with similar mining machinery.

Each machine was tested for comparison of the dust-suppression performance of several water-spray configurations (including the current production design), and at least seven replicate test trials were conducted using each configuration. Preliminary feedback from this first set of demonstrations was presented to NAPA's membership at its midyear meeting. Results from real-time, data-logging dust monitors suggest that one water-spray configuration for each of the two machines may be superior to the others tested. A second Mill Fest to evaluate prototype dust-suppression systems on additional milling machines provided by manufacturers Terex and Volvo is planned for September 2008.

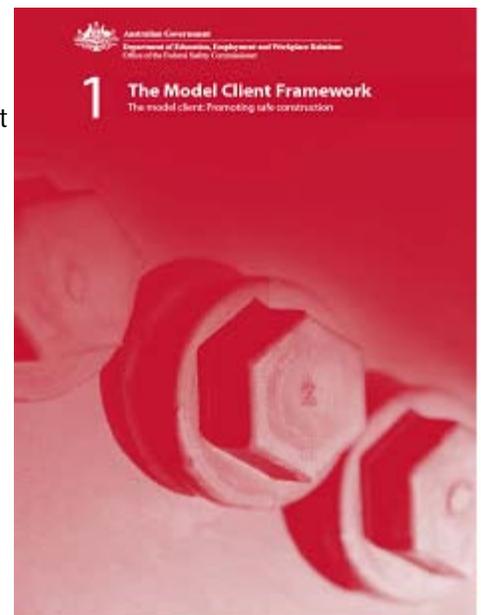
World of Construction

Construction is a major industry in every country. Approaches used elsewhere can sometimes provide a fresh perspective that can stimulate how we look at problems and solutions here in the United States. One topic of increasing interest in construction is the role of the owner or client in construction safety and health. How are other countries looking at this issue? Here is an example from Australia.

The Australian federal government launched an initiative earlier this year called the "**Model Client**" to promote safe construction by using its purchasing power as a client or customer to influence change. The government will follow "model" best practice guidelines for owner involvement in safety and health for federal construction work in Australia. The "Model Client" materials (five booklets and a process map) provide an overall framework and step-by-step guidance for integrating construction safety and health into funded construction projects. These materials are available at <http://www.fsc.gov.au/ofsc/Otherinformation/Publications/ModelClientpublications.htm>.

The rationale for this effort is summed up well on page 7 of Booklet 1:

"Model clients play a key coordination role in ensuring that OHS issues are managed and



information is shared throughout the construction supply chain. As the drivers of projects—from concept through to completion—and as purchasers of the building and construction industry's services, model clients are in the best position to drive the cultural change needed to bring about improvements in OHS in the building and construction industry.

Model clients make key decisions concerning project budget, quality, performance criteria and time-lines, all of which are influential in creating pressures and constraints which can affect OHS during construction.

In the past, OHS management has tended to concentrate on the construction stage where the contractor was held fully responsible for OHS strategy and management. However, it is now widely recognised that better OHS outcomes can be achieved on a project where there is a collaborative approach among all stakeholders throughout all the stages of a project. The involvement of a model client in pre-construction planning, promoting a collaborative and participative safety culture in all project decision-making, and participating proactively in OHS strategy, monitoring and evaluation is important for excellent project OHS performance."

Here are some examples of features included in the Model Client framework:

- "Accredited" contractors are used on directly funded projects. Accreditation criteria include best practice provisions such as having an "Occupational Health and Safety Management System" (OHSMS), a good safety record, involvement of senior management, integration of safe design principles, demonstrated effective management of subcontractor safety arrangements (see <http://www.fsc.gov.au/ofsc/Theaccreditationscheme/>).
- Project safety and health performance is tracked by the owner.
- Designers used for the project assess occupational health and safety risks that may be encountered in the construction phase and incorporate design solutions that minimize risks.
- Contract provisions with contractors must include clear occupational safety and health provisions
- Conditions related to occupational safety and health standards are actively enforced by owners.

The model client approach, developed with input from construction partners, is intended to provide a publicly available template that others in the private sector can use as well. The overall goal is to promote world class occupational safety and health outcomes on Australian building and construction projects

Several of the National Construction Agenda goals mention the important role of owners and clients in construction safety and health. Take a look at the Model Client framework – the materials provide some interesting ideas.

Upcoming Events

National Occupational Injury Research Symposium (NOIRS) 2008

NIOSH, in conjunction with the National Safety Council and Liberty Mutual Research Institute for Safety is sponsoring the fourth NOIRS to be held at the Sheraton Station Square Hotel on **October 21, 22, and 23, 2008**. This meeting brings together many of the foremost researchers in occupational injury and the agenda includes a number of sessions devoted to construction issues such as:

- *Describing and Preventing Falls From Heights in Construction*
- *Assessing Risks and Interventions in Fall Prevention*

- *The Relationship of Organizational Culture, Climate, and Safety*
- *Ladder Safety*
- *Injury Prevention in Construction*
- *Training in Construction*
- *Using Surveillance Systems to Identify Injury Characteristics in Construction*
The agenda and additional registration information is at <http://www.cdc.gov/niosh/noirs/2008/>

ASSE Symposium on Construction Safety

The American Society of Safety Engineers is currently planning a symposium to be held **November 20-21, 2008** in Scottsdale, Arizona. Contact Trudy Goldman of ASSE at 847-768-3405 tgoldman@asse.org for more information.

19th Annual Construction Safety & Health Conference

The date for this conference, hosted by the Construction Safety Council (www.buildsafe.org) has been set for **February 17– 19, 2009** in Rosemont, Illinois.

NOTE that speakers interested in submitting an abstract need to fax in their proposal to Gayla Bockrath by **September 30, 2008**. She can be reached at (708) 544-2371 or gbockrath@buildsafe.org

First Annual Voluntary Protection Program for Construction (VPPAC) Meeting

VPPAC will hold its first annual meeting on **February 5-7, 2009** in Las Vegas in conjunction with the World of Concrete meeting. Additional details are available at www.vppac.org

Recent and Upcoming Communication Products

Here are some recent NIOSH-supported construction products that you might be interested in:

Control of Hazardous Dust during Tuckpointing <http://www.cdc.gov/niosh/docs/wp-solutions/2008-126/>

Water Spray Control of Hazardous Dust When Breaking Concrete with a Jackhammer
<http://www.cdc.gov/niosh/docs/wp-solutions/2008-127/>

Spanish translation also available:

Rociado de agua para controlar el polvo peligroso que se genera al romper el concreto con un martillo neumático

http://www.cdc.gov/spanish/niosh/docs/wp-solutions/2008-127_sp/default.html

(NOTE that these are the first two in a series of NIOSH Workplace Solutions documents that will be coming out on hazardous dust control issues over the next year)

Welding and Manganese: Potential Neurologic Effects Topic Page

<http://www.cdc.gov/niosh/topics/welding/>

Respiratory Protection Recommendations for Airborne Exposures to Crystalline Silica

<http://www.cdc.gov/niosh/docs/2008-140/>

(NOTE: This document describes the NIOSH policy for respiratory protection against airborne exposures to crystalline silica)

Work-Related Injury Deaths Among Hispanics --- United States, 1992--2006

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5722a1.htm>

(NOTE: Construction was the industry with the most Hispanic worker deaths in 19 of the 21 states examined and falls to a lower level and highway incidents were the two most common fatal events)

Construction Goal Spotlight

Each NORA Construction Sector News ends with a closer look at one strategic goal from the “National Construction Agenda”. This executive summary piece describes the key issues, solutions, and partners needed. It also includes a link for those wanting to take a look at the wording of the goals.

STRATEGIC GOAL 8.0 Understand and Improve Safety and Health Culture in Construction

Why is this important for construction?

The safety and health hazards in construction and the large number of injuries each year can in part be attributed to the atmosphere on many construction sites that does not encourage people to speak up about hazards or correct them; and, in many cases, discourages them or terminates them for doing so. The terms construction safety and health culture and climate are used to describe this concept. For example, a culture that places productivity ahead of safety or which considers injury an inevitable part of construction can negatively influence safety. The safety culture concept includes the attitudes, values, priorities, and behaviors of management and employees and how these impact safety and health on the worksite. Improving safety culture is likely to bring important benefits.

Our Goal

Increase our understanding of the characteristics of safety and health culture in construction so that we can define it, measure it, and know how to reliably change it for the better. Then diffuse that knowledge throughout the industry.

What do we need to know and do?

We can build on existing work on construction culture and on safety culture and climate and focus on these needs:

1. Create a working definition and framework for understanding safety culture in the construction industry - We can build upon existing work on safety culture, some of which has been done in other sectors. But we need to insure that construction-specific factors are accounted for in developing a meaningful framework. This also includes working with best practice construction employers who are already addressing safety culture in their safety and health programs, and investigating factors that influence safety culture.
2. Develop and expand the use of validated measurement methods for evaluating safety culture and safety climate in the construction industry. Research is needed to determine the available measurement methods and the key conceptual elements of the existing measures, identifying similarities and conceptual gaps.
3. Partner with construction stakeholders to develop, evaluate and then disseminate effective intervention measures for improving safety and health culture in the construction industry. Researchers and stakeholders need to partner to identify and validate effective interventions for improving safety culture. We can then work together to determine the best available avenues to transfer and diffuse these interventions in the construction industry.

What solutions and outcomes can we expect from the research?

- A better understanding of what factors contribute to construction safety and health culture and how they influence it.
- A common definition that can be used throughout the industry
- Valid measurement methods for evaluating whether a positive or negative safety and health culture exists at a construction site.
- Recommendations for measures that can be reliably implemented to guide companies or worker subgroups towards a positive safety and health culture.
- A roadmap for encouraging the adoption of these best practices.

What construction partners are needed?

- Researchers and social scientists interested in construction safety and health culture.
- Safety and health professionals interested in sharing their knowledge about safety culture
- Best practice construction employers who are currently making efforts to measure and improve safety culture.
- Groups and individuals interested in expanding safety and health management systems to include safety culture aspects
- Trade associations, construction unions, contractors and workers interested in field testing of intervention methods and solutions to ensure they are practical and effective, and to help disseminate resulting solutions.

Looking for more information, partnering opportunities or want to share comments?

A longer more detailed description of this goal can be found in the National Construction Agenda. Go to <http://www.cdc.gov/niosh/nora/councils/const/pubprod.html> for the most recent version of strategic goal 8

Contact Construction Sector Coordinator Matt Gillen (Mgillen@cdc.gov) or Assistant Coordinator David Bang (Dbang@cdc.gov) to express interest in participating or to ask any questions.

To receive NIOSH documents or for more information about occupational safety and health topics, contact:

1-800-CDC-INFO (1-800-232-4636) • 1-888-232-6348 (TTY)

e-mail: cdcinfo@cdc.gov

or visit the NIOSH Web site at <http://www.cdc.gov/niosh>

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- Page last reviewed: October 24, 2011
- Page last updated: September 2008

- Content source: [National Institute for Occupational Safety and Health \(NIOSH\)](#) Education and Information Division