

The logo for r2p (Research 2 Partnership) is displayed in a bold, black, lowercase font. The background of the entire page features a silhouette of construction workers building a large number '2022' against a sunset sky with mountains.

**SEMINAR &
PARTNERSHIP
WORKSHOP**

CPWR Research Consortium Research Projects

[Health Hazard Controls Industry Diffusion: Evidence-Based Intervention Strategy \(PTD Diffusion\)](#)

Research team: Deborah E. Dickerson, Virginia Tech

Prevention through Design (PtD) aims to prevent injuries, illnesses, and deaths by “designing out” hazards, but its use in the construction industry has been limited. By leveraging previous NIOSH-sponsored work that developed effective interventions for a single trade, as well as an existing model for predicting readiness to adopt PtD, this project’s goal is to create industry-wide interventions to increase the use of PtD to prevent occupational respiratory diseases.

[Reactive Chemical Systems: Part B – Developing Data-Driven Interventions](#)

Research team: Dhimiter Bello and Anila Bello, University of Massachusetts Lowell

This project expands on earlier research on reactive chemical resin systems, with a focus on understanding exposures to Part B. Chemicals of concern in Part B include solvent blends, hardeners or catalysts, engineered nanomaterials and other additives, crystalline silica, and flame retardants. Exposures to Part B components have been associated with multiple diseases, including contact dermatitis, cancer, cardiovascular disease, and kidney and reproductive toxicity. This project aims to generate exposure and biomonitoring data for Part B chemicals of concern and develop comprehensive data-driven intervention strategies to minimize workers’ exposures and health risks.

[Manufactured Nanomaterials in Construction: Evaluating Exposures, Controls and Worker Training](#)

Research team: Gavin West, Bruce Lippy, and Sara Brooks, CPWR; and Leonard Burrelli, Mark Nealley, Michael Cooper, William Kojola, William Perry, Keith Rickabaugh, and Andreas Saldivar

This project will identify new nano-enabled construction products and study exposures and controls to better understand risks to workers. It will also examine how manufactured nanomaterial exposures in construction are affected by workplace factors, engineering controls, prolonged natural weathering, and chemical degradation. As part of this project, a new train-the-trainer program will be developed and implemented to increase knowledge in the trades of how nanomaterials are being used and to share the latest information on risks and safe work practices.

[Prevention through Augmented Pre-Task Planning](#)

Research team: Babak Memarian, Sara Brooks, and Chris Le, CPWR

Better pre-task planning has the potential to bring major improvements to worker safety and health. CPWR researchers are collaborating with general contractors, electrical construction associations, and unions to identify high-risk tasks in electrical construction; explore factors that increase task difficulties and exposure to hazards; and recommend interventions and work practices at the pre-planning phase to reduce those factors. A new tool will also be developed that other trades can apply to assess workers’ perception of task difficulty, address contributing factors, and establish a process for continuous improvement.

[Evaluation of the Best Built Plans Manual Material Handling Tool for Construction](#)

Research team: Ann Marie Dale, Bradley Evanoff, and Mario Barrera, Washington University in St. Louis

Construction workers continue to suffer from high rates of chronic musculoskeletal disorders, and although there have been solutions to prevent these injuries, contractors often lack the knowledge and resources to implement them. This project is testing the Best Built Plans (BBP) program – which provides contractors and workers with tools and resources to support planning for safer manual materials handling – with small and medium-sized contractors from several trades and types of construction. This project will measure the uptake and adoption of BBP tools and the reduction of physical exposures from lifting, as well as collect feedback on what has proven useful.

[Evaluation of Trunk and Arm Support Exoskeletons for Construction](#)

Research team: Carisa Harris-Adamson, University of California, San Francisco and Berkeley, and Maury Nussbaum, Virginia Tech; and Abiola Akanmu, Alan Barr, Sunwook Kim, David Rempel, Amber Young, and Aanu Ojelade

Occupational exoskeletons (EXOs) have the potential to benefit construction workers by providing assistive forces, particularly for movements involving the back or shoulder, that can reduce demands on areas of the body most affected by work-related musculoskeletal disorders. Passive EXOs, which require no actuators or power supply, are the main focus of this project, as they are more likely to be widely adopted since they are lighter, simpler, and more cost effective. This project will conduct a mixed-methods assessment of EXOs to understand the perspectives of a broad set of industry stakeholders, quantify the benefits and risks of their use, facilitate adoption, and prevent unexpected consequences.

[Construction Industry Data and Statistical Core](#)

Research team: Amber Trueblood, Samantha Brown, and William Harris, CPWR

The CPWR Data Center conducts proactive surveillance and research on construction safety and health, and provides the industry with reliable, updated data and research findings through frequent and regular publications (such as the CPWR Construction Data Bulletins), presentations, and statistical consultations. The data and research developed by this Core are broadly disseminated, and their utilization is tracked and evaluated through close collaboration with the Communications and r2p Cores, other projects and programs across the National Construction Center, and external stakeholders.

[Research to Practice \(r2p\) Core](#)

Research team: Jessica Bunting, Grace Barlet, Rosa Greenberg, Tyler Simpson, and Michael Aguilar, CPWR

The Research to Practice (r2p) program supports the translation and dissemination of construction safety and health research conducted by internal and external researchers and develops tools and resources to advance the use of research findings and evidence-based solutions. Building on earlier work, the focus of the r2p Core's project is to 1) develop and test new materials and dissemination strategies to raise awareness and use of research findings, with a particular focus on reaching construction populations at high risk; 2) support partnerships and engage stakeholders in the development and implementation of r2p plans across all CPWR research projects; and 3) identify and apply successful strategies that advance r2p. The r2p Core is also undertaking new research on how to communicate risk effectively, what motivates and influences the construction industry's use of research findings, and the effectiveness of training programs for dissemination and implementation. In support of these initiatives and other research projects, the r2p Core is exploring new approaches to assess progress and outcomes in construction intervention research, including piloting the use of developmental evaluation and establishing panels of industry stakeholders to identify and measure intermediate and end outcomes. Lessons learned and new r2p tools developed will continue to be shared with construction safety and health researchers, OSHA, NIOSH, and industry stakeholders through r2p Seminars and Partnership Workshops held in conjunction with meetings of CPWR's Research Consortium.

[Communications, Outreach and Education Core](#)

Research team: Bill Wright, Sharretta Benjamin, and Tyler Simpson, CPWR

The Communications Core focuses on expanding and improving existing online resources and products, growing the outreach database, and publishing CPWR's Update e-newsletters and Highlights annual report. Targeted direct mail outreach, marketing surveys, and customer interviews are used with critical audiences to assess demand and impact. In addition, this Core maintains and expands the interdisciplinary library of construction occupational safety and health research.

[Safety Climate-Safety Management Information System \(SC-SMIS\)](#)

Research team: Linda M. Goldenhar, Babak Memarian, Chris Le, and Sherri Wilson, CPWR

All construction companies can benefit from having a better understanding of their job site safety climate and being able to access evidence-informed safety management resources known to improve it. This project builds on earlier safety culture and climate research by developing the Safety Climate-Safety Management Information System (SC-SMIS). The SC-SMIS is a public, interactive, web-based system that construction companies of all sizes and types (e.g., general and subcontractors) can use to assess their safety climate, select and implement appropriate policies and procedures to strengthen it, and engage in continuous safety climate improvement.

[Improving Safety Leadership and Fall Prevention Training in Residential Work](#)

Research team: Bradley Evanoff, Ann Marie Dale, Jaime Strickland, and Anna Kinghorn, Washington University in St. Louis

Improving fall prevention on residential sites depends on foremen, who lead safety and production. This project is adapting CPWR's successful Foundations for Safety Leadership (FSL) training program - which teaches foremen six critical leadership skills for creating a stronger job site safety climate - to create an FSL for residential work (FSL4Res). The FSL4Res will be tailored to the unique hazards and organizational challenges of residential construction with a goal of improving safety leadership and reducing falls in this high-risk sector. The project is also disseminating and evaluating adoption of the FSL4Res.

[Promoting Safety and Well-Being Among Sheet Metal Worker Women Through Mentoring](#)

Research team: Noah Seixas and Marissa Baker, University of Washington

Women are underrepresented in construction's skilled trades. While they face the same safety and health risks as their male counterparts, they are also subjected to discrimination and harassment, and their skills are underutilized. As a result, they are at increased risk for injury, stress-related health effects, and high attrition rates from apprenticeship programs, all of which perpetuate their minority status. To help change these conditions, this project is developing and disseminating a mentorship program through local unions of the International Association of Sheet Metal, Air, Rail and Transportation Workers, and will evaluate its success in improving retention and reducing women's safety and health risks, including work stress.

[Evaluation and Improvement of OSHA 10-Hour Construction Safety Training](#)

Research team: Mark Fullen, West Virginia University and Kimberly Rauscher, Boise State University; and Brandon Takacs, Wayne Lundstrom, Douglas Myers, and Eric Lundstrom

Although the OSHA 10-hour is the most widely used safety training program for construction workers, it has never been thoroughly evaluated on a national scale. This project is conducting the most comprehensive assessment of the OSHA 10 training to date, identifying its strengths and limitations and then developing an enhanced training approach that incorporates the findings and current good practices in adult education. Because of how widely used the OSHA 10 training is, the resulting enhanced approach, when translated into practice for trainers across the country, has the potential to generate far-reaching improvements in construction workers' safety and health.