

PtD

- ▶ Where good design is important to business success
- ▶ Where smart planning minimizes hazards and risks to workers

Highlights

Introduction 1

The Business Value of Prevention through Design 2

Prevention through Design Plan for the National Initiative Strategic Goal Areas . . 3

PtD Council Members 5

PtD Partners

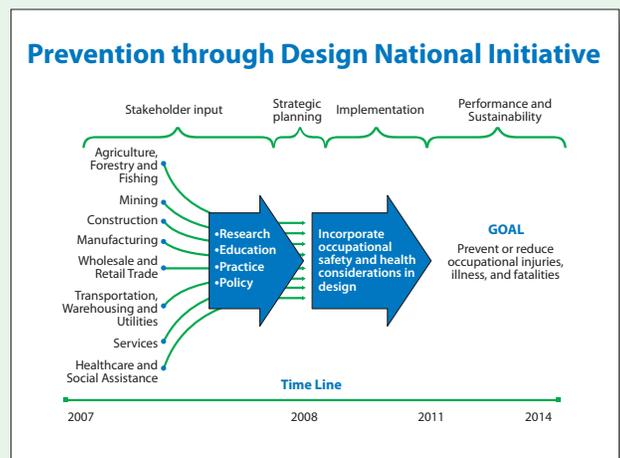
- American Industrial Hygiene Association (AIHA)
- American Society of Safety Engineers (ASSE)
- Center for Construction Research and Training (CPWR)
- Association of Equipment Manufacturers
- Kaiser Permanente
- Liberty Mutual
- National Safety Council (NSC)
- Occupational Safety and Health Administration (OSHA)
- ORC Worldwide
- Regenstrief Center for Healthcare Engineering

Introduction

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This issue of *PtD in Motion* is devoted to the introduction of the **Prevention through Design Plan for the National Initiative**. The **Plan**, developed from stakeholder input, focuses on eliminating hazards and minimizing risks in all designs affecting workers and is now available on the NIOSH Web site for your review and comment. Work on the Plan was initiated at the first PtD Workshop in Washington, DC on July 9–11, 2007. At the Workshop, 250 stakeholders from all industry sectors including representatives from labor, industry, academia, and government discussed the most compelling issues to be included in this Plan. Subsequent to that meeting, a PtD Council was convened to help draft the Plan, including specific goals, activities, outcomes and performance measures for successfully integrating PtD into businesses and organizations in all industry sectors. NIOSH offers a special “thank you” to all of the Council members, whose names are included on the back cover of this newsletter, for their efforts to craft this PtD Plan for the nation.

As the diagram below depicts, we are now entering the Implementation phase of the PtD Plan and hope to engage you, our stakeholders, in a conversation about the Plan. NIOSH invites you to review the draft **Prevention through Design Plan for the National Initiative**, offer comments, and identify areas where you can make an impact, either within your own business or organization, or on behalf of the National Initiative. NIOSH is interested in your opinions about the relevance of the goals and value of the



activities to achieve the goals in the draft Plan. NIOSH is also interested in your thoughts on the motivators, enablers and barriers to PtD implementation. Please share with us the elements of the Plan that you have already implemented in your workplace and the ones you hope to implement in the near future. Tell us what has been effective in your workplace and what has not. The link to the **Prevention through Design Plan for the National Initiative** is:

<http://www.cdc.gov/niosh/review/public/160/>.

Additional information on NIOSH's PtD National Initiative can be found at:

<http://www.cdc.gov/niosh/programs/ptdesign/>

The Business Value of Prevention through Design

Each year in the United States, 5,800 people die from work-related injuries and diseases, 228,000 become ill, and 3.9 million are injured [BLS 2006]. The annual direct and indirect costs of work-related injuries, illnesses, and fatalities have been estimated to range from \$128 billion to \$155 billion [Schulte et al. 2008]. Recent studies in Australia implicate design as a significant contributor to 37% of work-related fatalities [Driscoll et al. 2008]. Evidence suggests that the successful implementation of PtD concepts can greatly improve worker health and safety. This translates to lower workers' compensation expenses.

However, the business value of PtD does not end there. In the Value of the Industrial Hygiene Study, "Demonstrating the Business Value of Industrial Hygiene" [AIHA 2008], significant business costs savings are associated with hazard elimination and the application of engineering controls to minimize risks. The Value Study demonstrates that as businesses adopt hazard control measures higher in the "hierarchy of controls," i.e., designing-out hazards and minimizing risks, business value increases. These improvements in business value are related to faster time to market, improved operational efficiency, improved employee morale, decreased employee absenteeism and turnover, higher product quality, and increased market share.

PtD supports the adoption of hazard control measures higher in the hierarchy of controls by focusing on hazard elimination and substitution followed by risk minimization through the application of engineering controls and warning systems applied during design, re-design and retrofit activities. However, PtD also supports the application of administrative controls and personal protective equipment when they supplement or complement an overall risk minimization strategy and include the appropriate program development, implementation, employee training and surveillance.



The Hierarchy of Controls Supports Prevention through Design

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Strategy to Demonstrate the Value of Industrial Hygiene. American Industrial Hygiene Association [2008].

External link: http://www.aiha.org/votp/AIHA_2.html

Injuries, Illnesses, and Fatalities. Industry Injury and Illness Data. Washington, DC: U.S. Department of Labor, Bureau of Labor Statistics, Safety and Health Statistics Program, BLS [2006].

External link: <http://www.bls.gov/iif/oshsum.htm>

The Role of Design Issues in Work-Related Fatal Injury in Australia. Driscoll T, Harrison JE, Bradley C, Newson RS [2008]. *J Safety Research* 39(2): 209–214.

National Prevention through Design (PtD) Initiative. Schulte PA, Rinehart R, Okun A, Geraci CL, Heidel DS [2008]. *J Safety Research*, 39(2): 115–121.

Mechanical devices reduce risks to workers and improve patient safety

The ergonomic hazards associated with lifting present significant risk to health care workers in the United States. In 2003 alone, caregivers suffered 211,000 occupational injuries. As the population ages and the demand for skilled care services continues to rise, the incidences of musculoskeletal injuries to the back, shoulder, and upper extremities of caregivers will also increase. Lifting without the assistance of mechanical devices can also compromise the safety and comfort of patients.

A NIOSH study evaluated the effectiveness of a safe resident lifting and movement intervention in six nursing homes. After investing \$158,556 for patient lifting and handling equipment and worker training, lost workday injuries fell by 66%, restricted workdays dropped 38%, and workers' compensation expenses were reduced 61%. The initial investment for the lifting and handling equipment and worker training was recovered in less than three years based on post-intervention savings of \$55,000 annually in workers' compensation costs.



Preventing injury through effective design: Mechanical lifting devices reduce risk of back injuries to health care workers and improve patient safety and comfort

NIOSH [2006]. *Safe Lifting and Movement of Nursing Home Residents*. By Collins JW, Nelson A, Sublet V. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication Number 2006-117; <http://www.cdc.gov/niosh/docs/2006-117/>

Prevention through Design Plan for the National Initiative Strategic Goal Areas

The Initiative's goals are organized around four, overarching areas: **Research; Education; Practice; and Policy**. **Small Business** was added as an additional focus for goal development to address the unique challenges of applying PtD methods to small business processes and environments. Each of these overarching areas, as well as the small business focus area, is supported by a strategic goal. A summary of the strategic goals for each of these areas is provided below. Details about specific activities for accomplishing the goals, as well as performance measures and time frames, can be obtained by either downloading the Plan in PDF format (include link) or using our interactive website that allows you to browse through the goals in the Plan.

1. **Research:** Research will establish the value of adopted PtD interventions, address existing design-related challenges, and suggest areas for future research.

Research focuses on design factors that effectively reduce occupational morbidity, mortality and injury; metrics that assess the impact of these design factors; methods that diffuse effective designs; and economic and business issues including financial analysis of the impact of PtD on the business process.

2. **Education:** Designers, engineers, machinery and equipment manufacturers, health and safety professionals, business leaders, and workers understand PtD methods and apply their knowledge and skills to the design of facilities, processes, equipment, tools, and organization of work.

Education focuses on motivating and equipping professional communities to continually increase their knowledge of design features that have a positive impact on worker safety and health. Acquisition of

 <h1>Strategic Goals</h1>	
Research	Research will establish the value of adopted PtD interventions, address existing design-related challenges, and suggest areas for future research.
Education	Designers, engineers, health and safety professionals, business leaders, and workers understand PtD principles and apply their knowledge and skills to the design of facilities, processes, equipment, tools, and organization of work
Practice	Stakeholders access, share and apply successful PtD practices.
Policy	Business leaders, labor, academics, government entities, and standard-developing and setting organizations endorse a culture that includes PtD principles in all designs affecting workers.
Small Business	Small businesses have access to PtD resources that are designed for or adapted to the small business environment

PtD knowledge and skills will occur through enhanced design and engineering curricula as well as through improved professional accreditation programs that value PtD issues and include them in their competency assessments. Making business leaders aware of the potential for increasing company profitability by incorporating PtD methods in their systems and processes is also an important component of the Education goal. Further, some engineering educators are now advocating revision of curricula, so the time for incorporating PtD is potentially at hand.

3. **Practice:** Stakeholders access, share, and apply successful PtD practices.

Practice focuses on identifying and sharing successful procedures, processes, equipment, tools and results through on-line databases and other media. Practice also includes demonstrating the value of including workers' health and safety in design decisions and exploring links with the movements toward

green and sustainable design. For worker health and safety, sustainable design enhances indoor environmental quality; and optimizes operational and maintenance practices.

4. **Policy:** Business leaders, labor, academics, government entities, and standard-developing and setting organizations endorse a culture that includes PtD principles in all designs affecting workers.

Policy focuses on creating demand for safe designs for workers and incorporating these safety and health considerations into guidance, regulations, recommendations, operating procedures, and standards.

5. **Small Business:** Small businesses have access to PtD resources that are designed for or adapted to the small business environment.

These goals explore methods for tailoring and diffusing successful PtD practices and programs to small businesses.

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As part of the Centers for Disease Control and Prevention, NIOSH is the Federal agency responsible for conducting research and making recommendations to prevent work-related illnesses and injuries.

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