National Academies' Review of the

NIOSH Construction Research Program









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NIOSH Construction Research Program

- Why Construction?
- Program Organization
- Inputs
- Outputs and Outcomes
- Future Directions





Construction Sector

Code	Sub-sector	# Employed
23	Construction Sector	7,416,000
236	Buildings	1,727,200
237	Heavy Construction	974,800
238	Specialty Trade Contractors	4,714,000

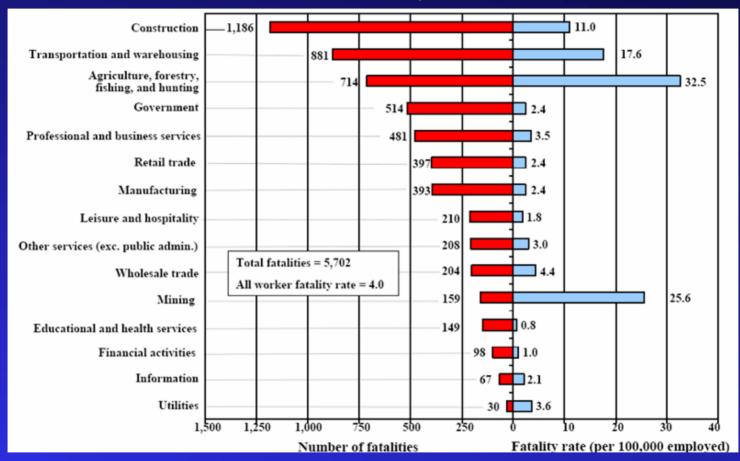
Plus 2.5 million self-employed one-person businesses.

Ref: Census Bureau, 2005





Numbers and Rates of Fatal Work Injuries by Industry, United States, 2005



8% of all workers

22% of all fatalities





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Logic Model

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Activities Inputs

Funds, Staff **Stakeholder input** Legislation

> Surveillance **Research Projects HHEs FACE Investigations**

Customer Activities and Outputs Outputs

Intermediate customers → Outputs → Final customers (transformation)

(implementation)

Outcomes

Transfer

OSHA, EPA

ISO, ANSI, ASTM

NGOs

Trade Associations

Labor Organizations

Publications

Presentations

Documents

Training materials

eLCOSH

Adoption of

Technology

Reduction in **Injuries &** Illnesses





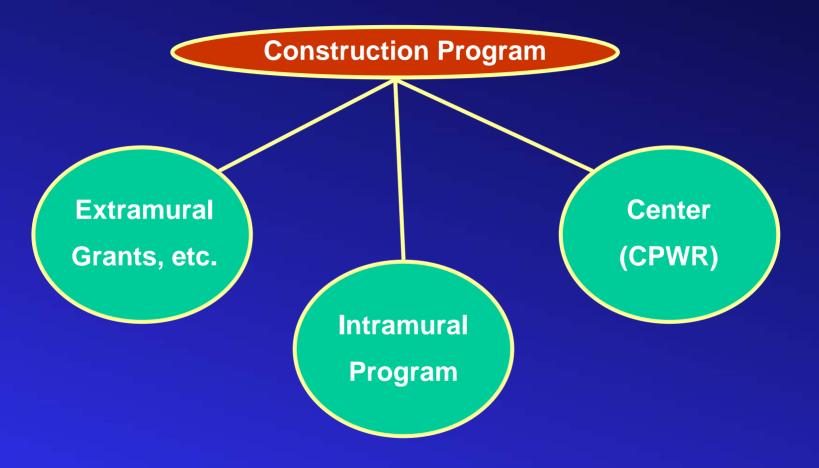
External Factors

- Constantly changing work environment
- Many small employers
- Multi-contractor work sites (responsibilities)
- Industry culture acceptance of risk
- Transient employment
- Cost of technology
- Immigrant and non-English speaking
- Standards and regulation process is slow
- Liability concerns of equipment manufacturers
- Limited, incomplete or missing surveillance data





Program Organization







NIOSH

Office of the Director Washington, DC

Organization

Office of the Assoc. Director for Science Washington, DC

Office of Health Communication Washington, DC

Office of Mine Safety and Health Research Washington, DC

Pittsburgh Research Laboratory Pittsburgh, PA

Spokane Research Laboratory Spokane, WA

Div. of Applied Research & Technol. Cincinnati, OH

Div. of Surv.Hazard Eval. &Field Studies Cincinnati, OH

Education and Information Div. Cincinnati, OH

Deputy Director for Management Atlanta, GA

Office of Admin. & Management Svcs. Atlanta, GA

Office of Extramural Programs (OEP) Atlanta, GA

Office of Emergency Prep. & Response Atlanta, GA

Office of Compens. Analysis & Support Cincinnati, OH

Div. of Respiratory Disease Studies Morgantown, WV

Div. of Safety Research (DSR) Morgantown, WV

Health Effects Lab. Division (HELD) Morgantown, WV

National Personal Protective Tech Lab Pittsburgh, PA





Divisions with Construction **Program Activity** Office of the Assoc. **Director for Science** Washington, DC Office of Health Communication Washington, DC Office of Mine Safety and Health Research Washington, DC Pittsburgh Research Laboratory

Office of the Director Washington, DC

Deputy Director for Management Atlanta, GA

Office of Admin. & Management Svcs. Atlanta, GA

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Health Effects Lab. Division (HELD) Morgantown, WV

National Personal Protective Tech Lab Pittsburgh, PA Personnel Input

2007:

56 FTE

Div. of Surv.Hazard
Eval. &Field Studies
Cincinnati, OH

Education and
Information Div.
Cincinnati, OH

Pittsburgh, PA

Laboratory

Spokane, WA

Div. of Applied

Cincinnati, OH

Spokane Research

Research & Technol.





Matrix
Management
Components of
NIOSH
Program
Portfolio

Sector Programs	Cross-Sector Programs	Coordinated Emphasis Areas
Agriculture, Forestry and Fishing	Authoritative Recommendations	Economics
Construction	Cancer, Repro and Cardiovascular	Exposure Assessment
Healthcare and Social Assistance	Communications and Information Dissemination	Engineering Controls
Manufacturing	Emergency Preparedness/Response	WorkLife Initiative
Mining	Global Collaborations	Occupational Health Disparities
Services	Health Hazard Evaluation (HHE)	Small Business Assistance and Outreach
Wholesale and Retail Trade	Hearing Loss Prevention	Surveillance
Transportation, Warehousing and Utilities	Immune and Dermal	
	Musculoskeletal Disorders	
	Personal Protective Technology	
	Radiation Dose Reconstruction	
	Respiratory Diseases	
	Training Grants	
	Traumatic Injury	
	Work Organization and Stress-Related Disorders	





Matrix
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NORA Sector Programs	NIOSH Cross-Sector Programs	NIOSH Coordinated Emphasis Areas
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Program Formally Established 1990

- Funding of \$1 million provided by Congress (1990)
- Purpose:
 - "...develop a comprehensive prevention program directed at health problems affecting construction workers and expanding existing NIOSH activities in areas of surveillance, research and intervention."





1990-1995 Congressional Appropriations

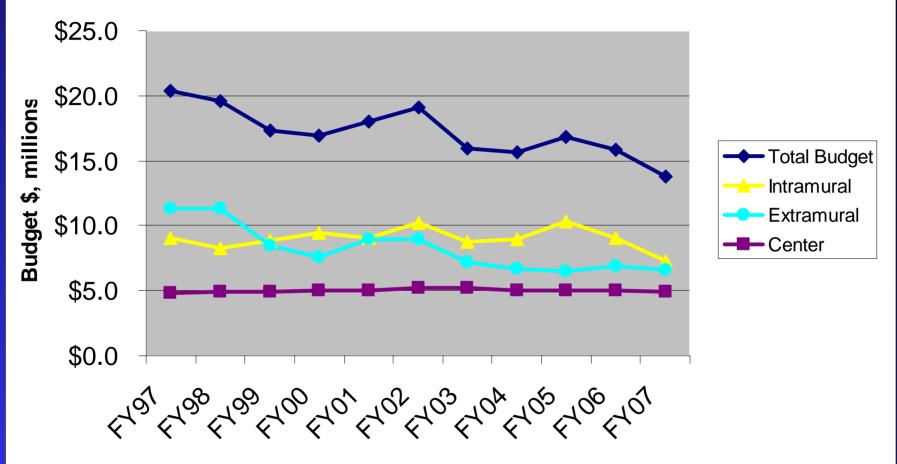
- 1990: \$ 1 million
- 1991: \$ 2.9 million
- 1992: \$ 5.5 million
- 1993: \$ 9.4 million
- 1994: \$12.1 million
- 1995: \$12.1 million







Construction Program Funding History



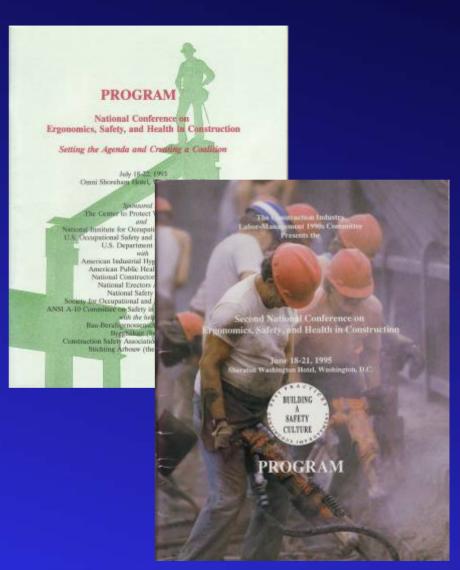
Fiscal Year





Planning Inputs 1990-1995

- Established Cooperative Agreements
- National Conferences on Ergonomics, Safety and Health in Construction – Setting the Agenda and Creating a Coalition
 - 1993
 - 1995
- Established National Construction Center
 - CPWR



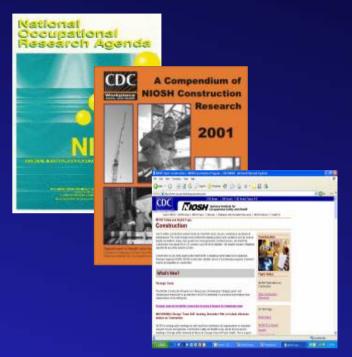




Planning Inputs 1996 – 2006

Major Strategic Inputs

- NORA 1 Priorities (21 in 3 categories)
 - Disease and Injury
 - Work Environment and Workforce
 - Research Tools and Approaches
- 1996 External Review
- 2002 "High Priority Construction Topics"
 - Health and Injury outcomes
 - Chemical and Physical Exposure topics
 - Approach and sector topics
- 2005 "Draft Strategic Goals"
 - 7 outcome goals and 1 surveillance goal







Planning Inputs 1996 – 2006

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Goals in the
Evidence Package
are a composite
of these





2007 Construction Research Program Four Key Goals

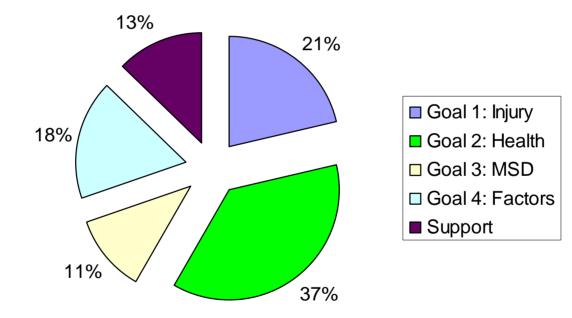
- Goal #1: Reduce injuries and fatalities
- Goal #2: Reduce overexposure to health hazards
- Goal #3: Reduce musculoskeletal disorders
- Goal #4: Increase understanding of factors for improving outcomes





Program Activities

Construction Program Funding Total Funds for FY96 - FY06







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Outputs

- **1996-2006**
 - > 600 peer-reviewed publications
 - > 500 presentations
 - > 500,000 NIOSH Numbered publications distributed
 - > 1 million pocket cards
 - Electronic Library (eLCOSH) > 2 million hits/yr
 - Cosponsored National Conferences on Construction Safety and Health



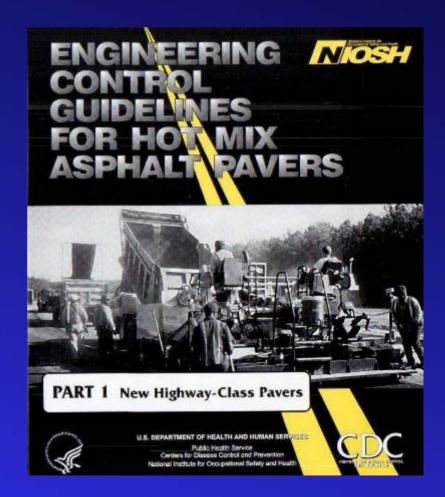


Transfer Activities: Research to Practice



- Asphalt PaversPartnership
- Partnered with OSHA to distribute Trenching Safety CD-ROM

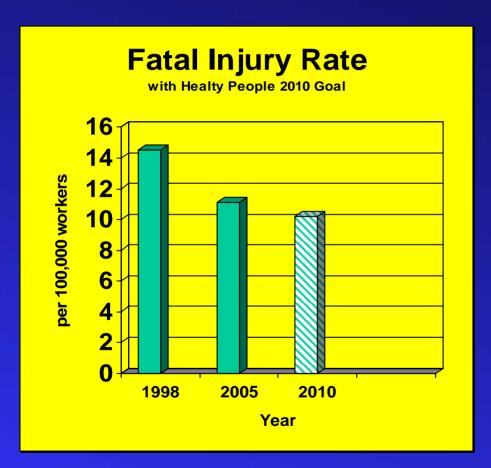
(over 7,000 distributed)

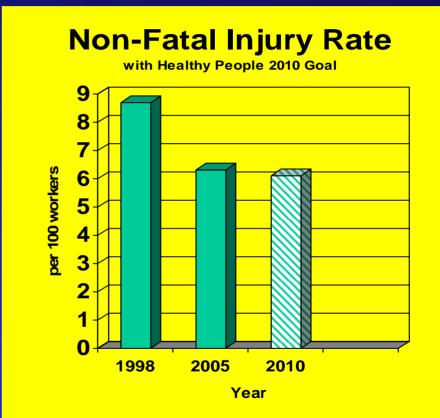






End Outcomes









Future Directions



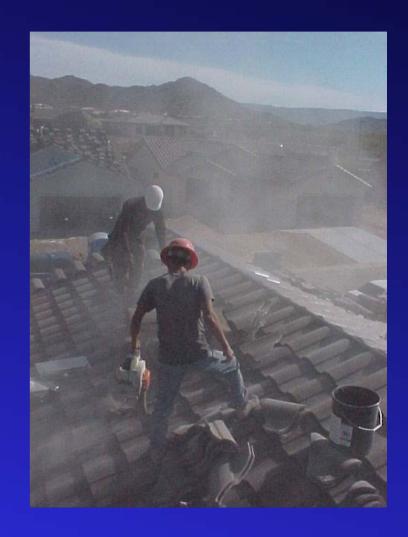
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Future Directions

- Demographics in the construction industry:
 - Multi-lingual
 - Immigrant cultural
- New construction technologies & materials:
 - Green buildings
 - Nanomaterials
- New technologies for Exposure Assessment







New Technologies for Exposure Assessment Potential Synergy with *Mining Sector*





Exposure readout window visible to worker

Personal Dust Monitor (PDM)





What's Next?

- Briefing from National Construction Center (CPWR)
- Goals, Accomplishments, Impact
 - Reducing injuries and fatalities
 - Reducing disease
 - Musculoskeletal disorders
 - Factors for improving outcomes
- Future Directions



