



# Green and Healthy Jobs

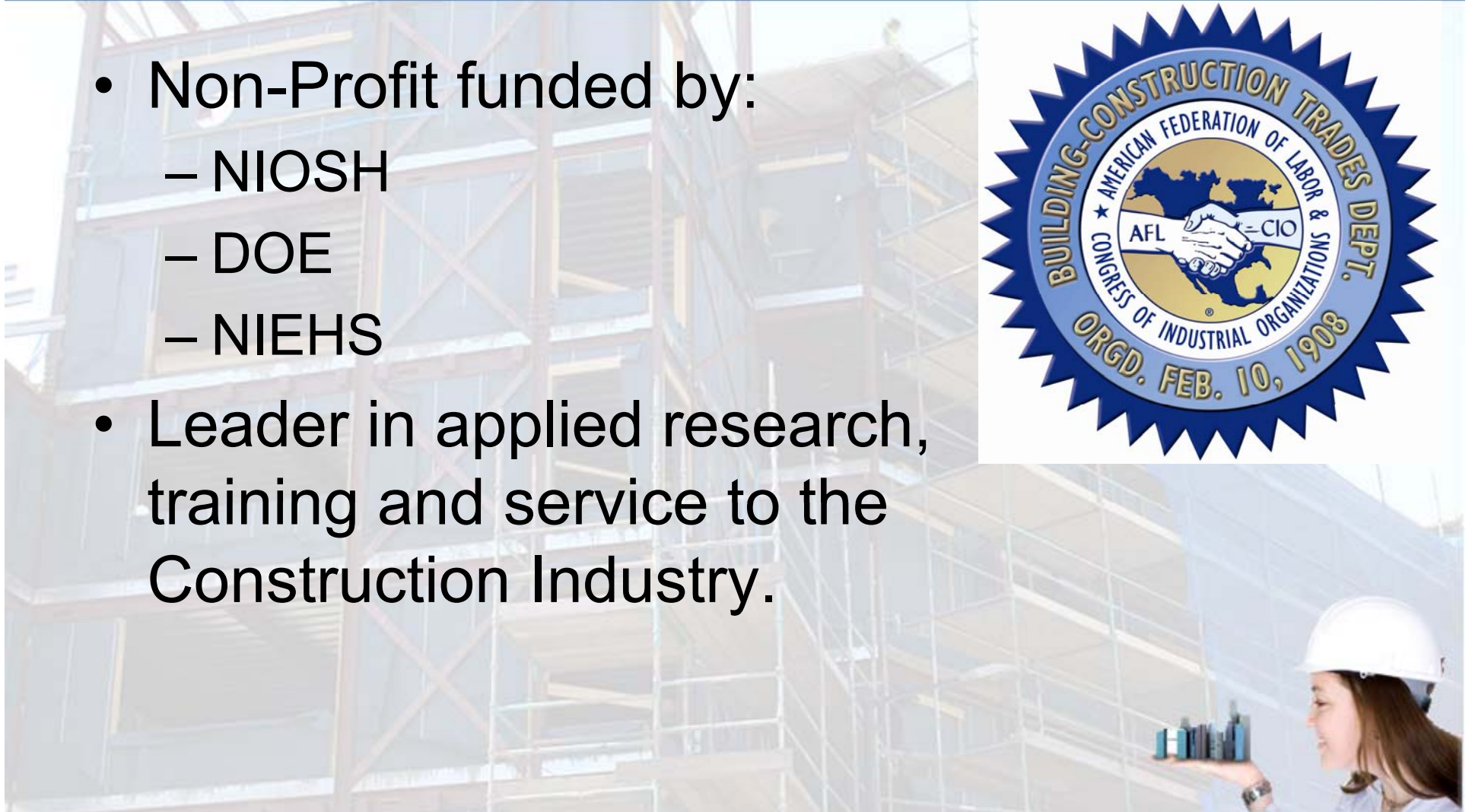
Presentation by Don Ellenberger, CPWR

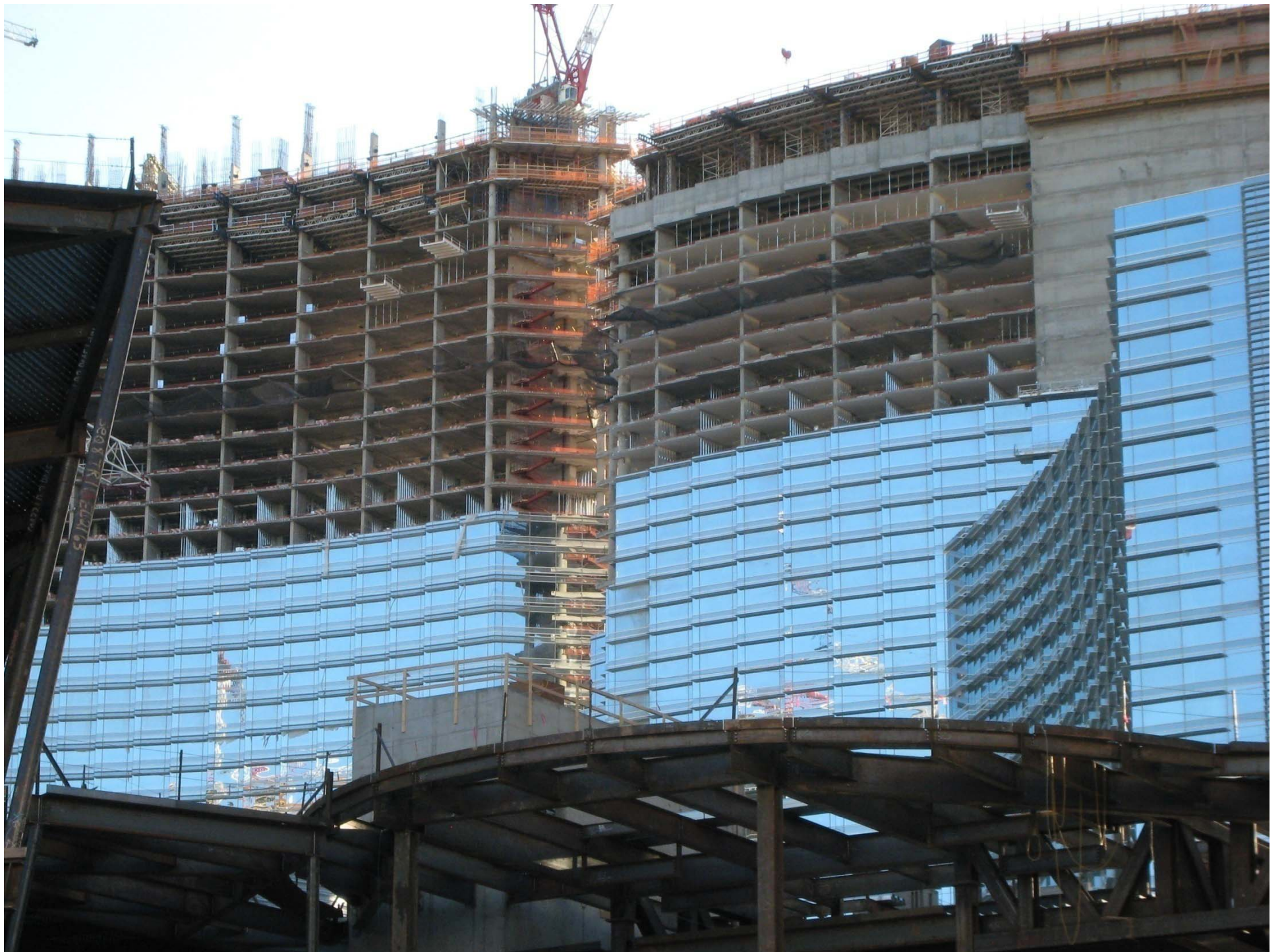
Based on a report by Helen Chen, J.D., M.S., Labor Occupational Health Program, University of California at Berkeley - 2010



# CPWR – The Center for Construction Research & Training

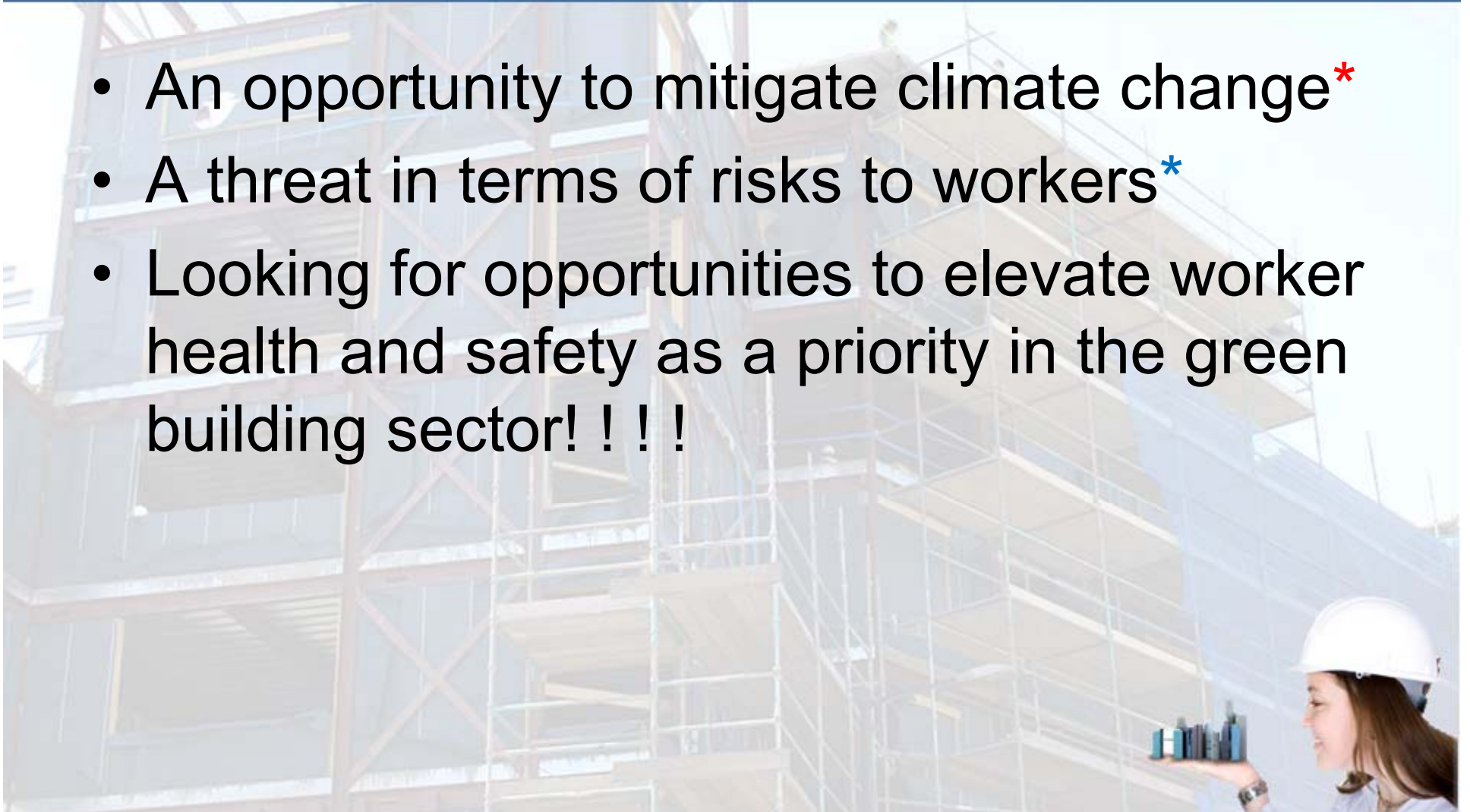
- Non-Profit funded by:
  - NIOSH
  - DOE
  - NIEHS
- Leader in applied research, training and service to the Construction Industry.





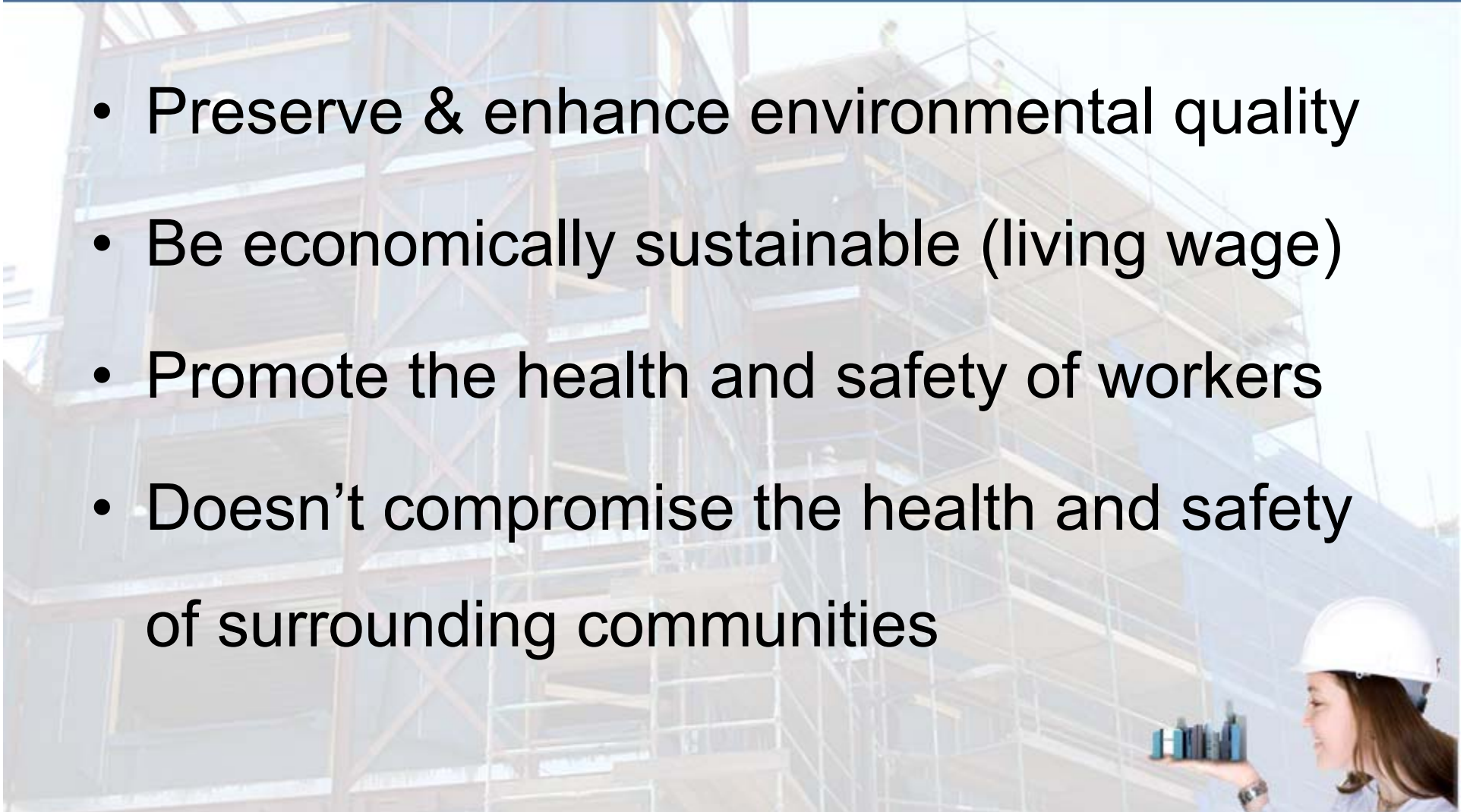
# “Green” Construction

- An opportunity to mitigate climate change\*
- A threat in terms of risks to workers\*
- Looking for opportunities to elevate worker health and safety as a priority in the green building sector!!!!



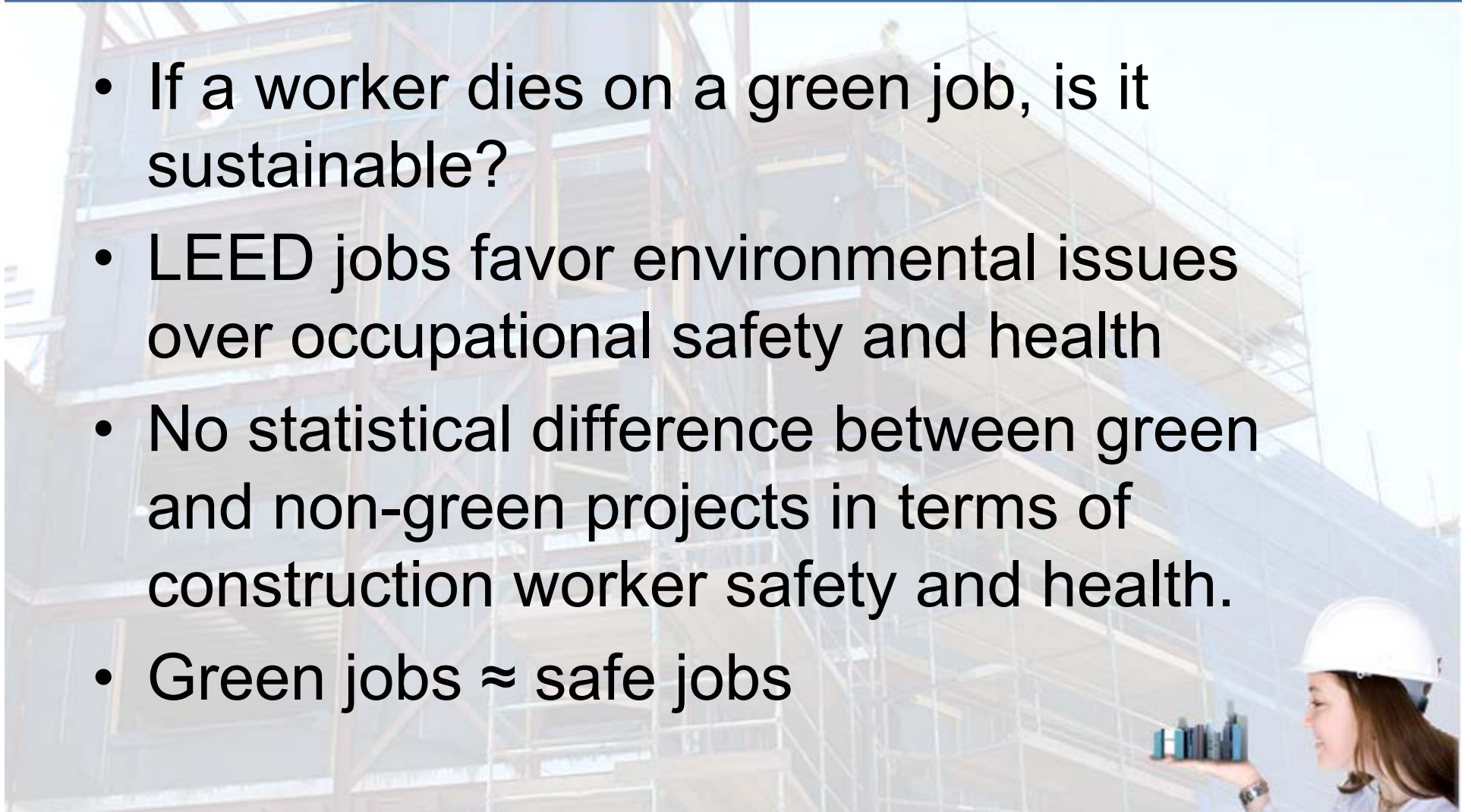
# Different Definitions of Green Jobs:

- Preserve & enhance environmental quality
- Be economically sustainable (living wage)
- Promote the health and safety of workers
- Doesn't compromise the health and safety of surrounding communities



# Green = Sustainable ?

- If a worker dies on a green job, is it sustainable?
- LEED jobs favor environmental issues over occupational safety and health
- No statistical difference between green and non-green projects in terms of construction worker safety and health.
- Green jobs  $\approx$  safe jobs



# Classifying and categorizing green jobs (construction and non-construction)

- Renewable energy generation
- Transportation
- Energy efficiency
- Water conservation
- Green construction
- Energy Trading
- Environmental protection
- Recycling and waste reduction



# Classification *within* the green construction sector

- Renewable energy generation
  - Solar energy installation
  - Wind turbine service
- Energy efficiency
  - Boiler technicians
  - Insulation installers
  - HVAC installers / maintenance technicians
- Green construction
  - Green increased demand
  - Green enhanced skills





# Occupational hazards in green construction

- New technology hazards:
  - Solar Power
  - Wind Power
  - Weatherization
- Existing products – increased hazards:
  - Skylights
  - Atriums
  - Recycling
  - Indoor Air Quality



# New Technology



# More & Different Insulating Materials



# Green Construction Jobs

- More atriums to increase natural light
  - More use of scaffolding, so more risk of falls
  - NORA identifies scaffolding as one of the major risk factors for falls



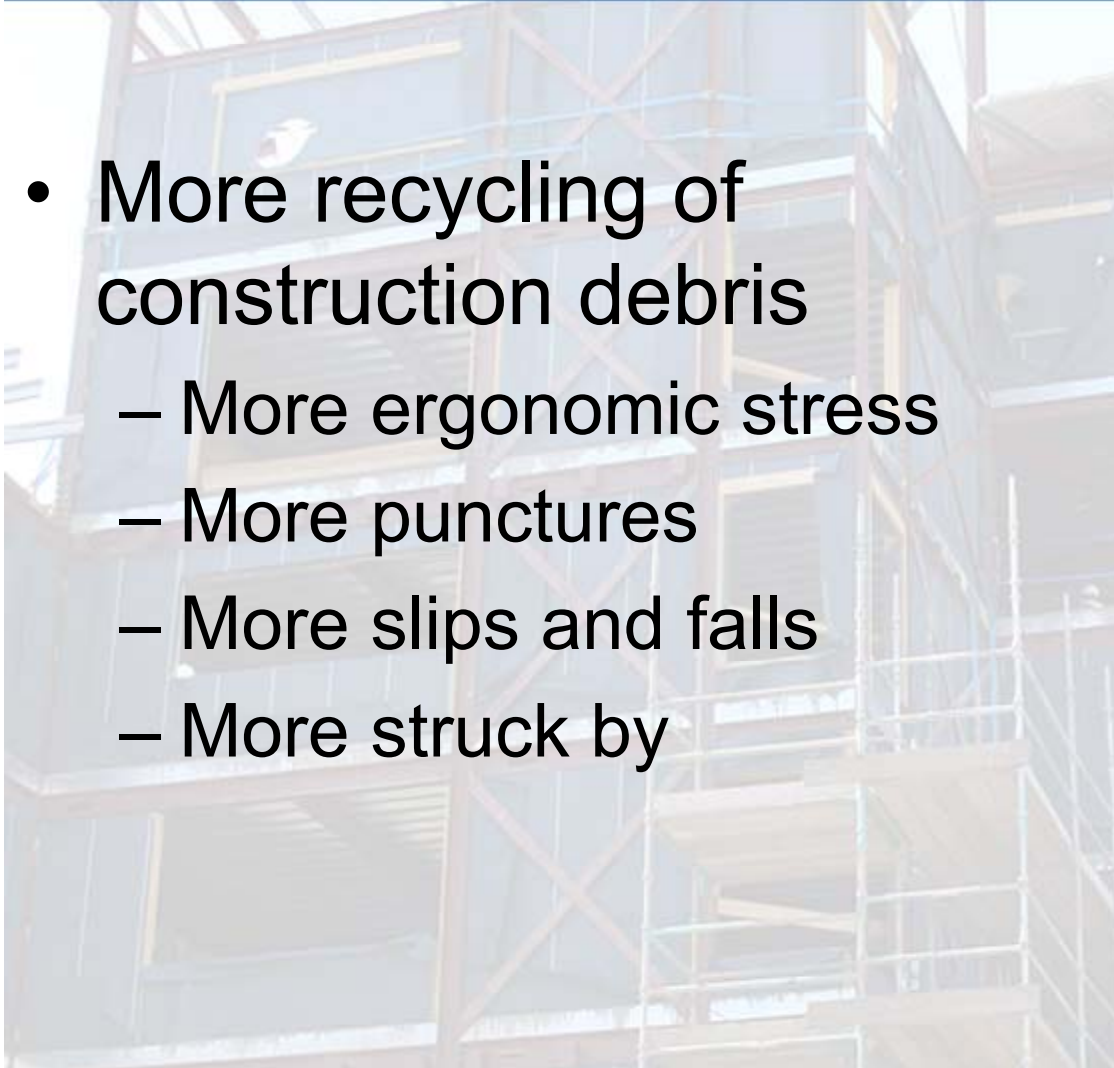
# Green Construction Jobs

- More skylights
  - Not built to withstand heavy loads
  - Usually don't have guardrails



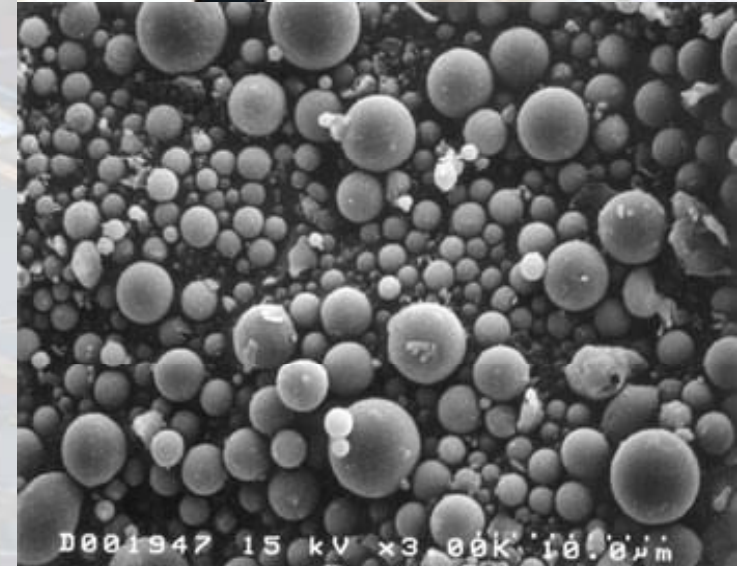
# Green Construction Jobs

- More recycling of construction debris
  - More ergonomic stress
  - More punctures
  - More slips and falls
  - More struck by



# Green Construction Jobs

- More use of building materials with post-consumer recycled content
  - Coal, or fly ash in concrete
  - Arsenic, mercury, etc
  - Grinding / drilling cured concrete



# Green Construction Jobs

- More weatherization
  - Electrical - knob-and-tube wiring in older homes
  - Electrical – exterior caulking near power lines
  - Lead and asbestos exposure
  - Isocyanate / other





# NIOSH's Top Compelling Activities

- #3 – Include OSH into green and sustainable standards as they are being updated
- #4 – Include OSH in procurement and construction
- #6 – Integrate safety and health into green elements of contractor specifications
- #9 – Develop, validate and disseminate a LEED-like OSHA rating system



# *We can quantify*

## **LEED rates jobs on:**

- Sustainable sites
- Water efficiency
- Energy and atmosphere
- Materials and resources
- Indoor environmental air quality
- Innovation and design

## **So let US rate jobs on:**

- Owner commitment to safety
- Safety and health professionals / contracts
- Safety and health planning
- Training and education
- Employee involvement

**There is a tool in development to do this**



# LEED-like OSH rating system

## Sustainable Construction Safety and Health Rating System

*Building Towards Sustainable Construction Worker Safety and Health*

By  
Sathyanarayanan Rajendran, PhD  
Safety Supervisor  
Hoffman Construction Company of Oregon

©Copyright by Sathyanarayanan (Sathy) Rajendran



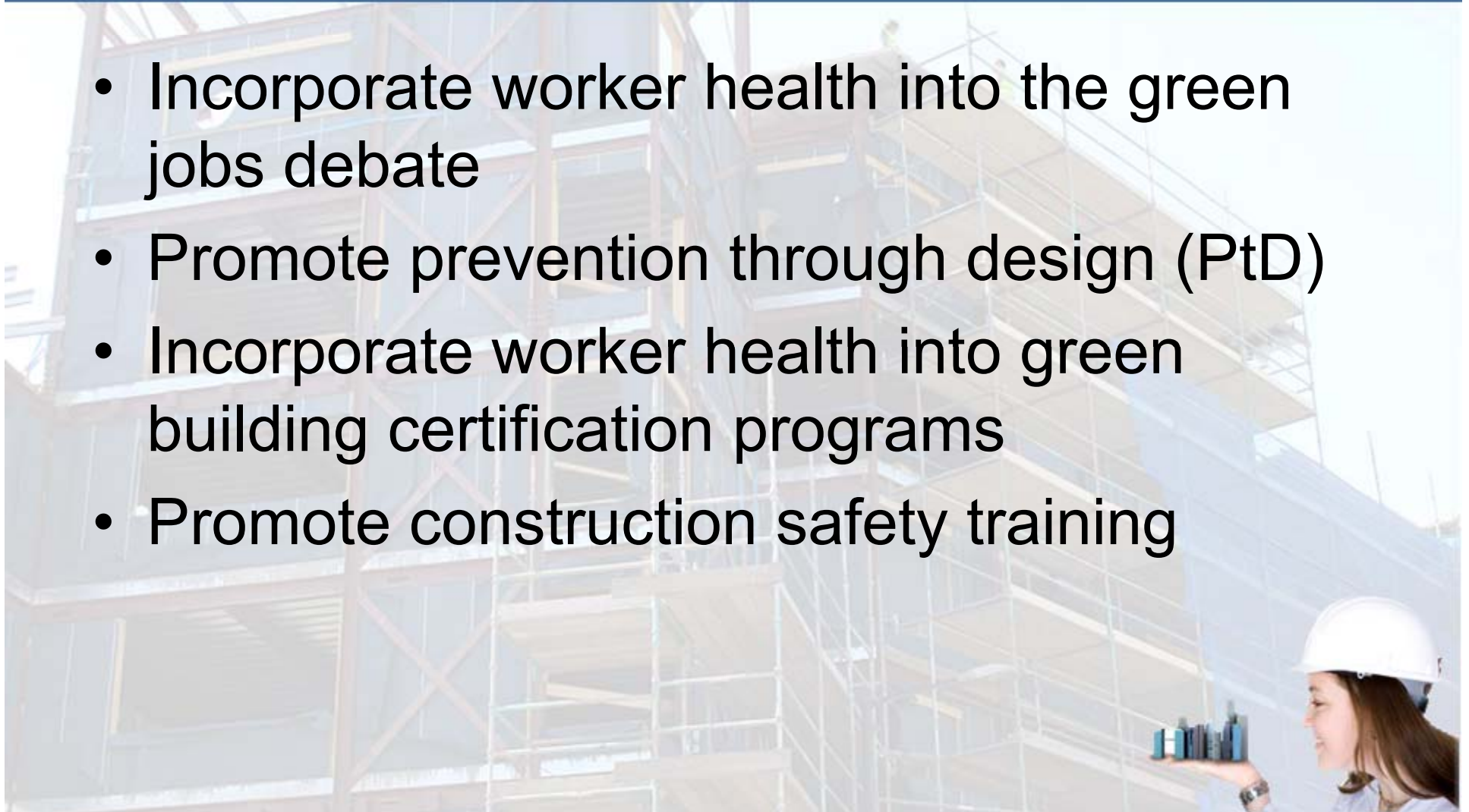
### Sustainable Construction Safety and Health (SCSH) Checklist (R = Required, E = Elective)

<b>Project Team Selection</b>		6.6 Possible Credits	
R	Element 1.1	Constructor Selection	2.3
R	Element 1.2	Subcontractor Selection	2.3
E	Element 1.3	Designer Selection	2.0
<b>Safety and Health in Contracts</b>		5.5 Possible Credits	
R	Element 2.1	Safety and Health Requirements in Contracts	2.2
E	Element 2.2	Safety and Health Hazard Identification in Drawings	1.6
E	Element 2.3	Specification of Less Hazardous Materials	1.7
<b>Safety and Health Professionals</b>		8.1 Possible Credits	
R	Element 3.1	Competent Personnel for All High Hazard Tasks	2.4
E	Element 3.2	Owner Safety Representative	1.8
E	Element 3.3	Constructor Safety Representative	2.0
E	Element 3.4	Subcontractor Safety Representative	1.9
<b>Safety and Health Commitment</b>		4.3 Possible Credits	
R	Element 4.1	Management Commitment to Safety and Health	2.3
R	Element 4.2	Owner/Representative Commitment to Safety and Health	2.0
<b>Safety and Health Planning</b>		27.8 Possible Credits	
R	Element 5.1	Safety and Health During Conceptual Planning Phase	2.3
R	Element 5.2	Constructability Review	2.3
R	Element 5.3	Designing for Worker Safety and Health	2.2
R	Element 5.4	Life Cycle Safety Design Review (LCS)	2.0
R	Element 5.5	Safety Checklist for Designers	2.1
R	Element 5.6	Constructor Site Specific Safety Plan	2.0
R	Element 5.7	Subcontractor Site Specific Safety Plan	2.1
R	Element 5.8	Job Hazard Analysis	2.3
R	Element 5.9	Pre-task Planning	2.3
R	Element 5.10	Look Ahead Schedule	2.1
R	Element 5.11	On and Off site Traffic Plan	2.1
R	Element 5.12	Good housekeeping Plan	2.2
E	Element 5.13	Personnel Protection Equipment (PPE) Plan	1.8
<b>Training and Education</b>		15.3 Possible Credits	
R	Element 6.1	Safety Training for Designers	2.0
R	Element 6.2	Safety Orientation for All Workers	2.0
E	Element 6.3	Safety Training for All Field Supervisors	2.0
E	Element 6.4	OSHA 10-hour Training for All Workers	1.8
E	Element 6.5	Equipment Operators Skills and Training Assessment	1.8
E	Element 6.6	Toolbox Meetings	1.8
E	Element 6.7	Regular Safety Training for All Project Personnel	2.0
E	Element 6.8	Constructor Mentors Subs to Improve Safety Performance	1.9

©Copyright by Sathyanarayanan (Sathy) Rajendran

# Recommendations for elevating construction safety as a priority in green building

- Incorporate worker health into the green jobs debate
- Promote prevention through design (PtD)
- Incorporate worker health into green building certification programs
- Promote construction safety training



# Helen Chen's Report:

[www.cpwr.com](http://www.cpwr.com)

