Progress in Impacting Policy in Workplace Electrical Safety

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NIOSH PtD Conference
Washington DC
August 22-24, 2011
“Exposure to electrical energy is 6th leading cause of occupational fatality”
Workplace electrical deaths, 1992-2000

- Agriculture, forestry, and fishing, 341, 12%
- Construction, 1292, 45%
- Manufacturing, 300, 11%
- Finance, insurance, and real estate, 24, 1%
- Mining, 74, 3%
- Nonclassifiable establishments, 14, 0%
- Public Administration, 66, 2%
- Retail trade, 81, 3%
- Service industries, 269, 10%
- Transportation, communications, and utilities, 307, 11%
- Wholesale trade, 63, 2%

Construction is 7% of US Workforce

Source: BLS, OSHA, Nature of Injury

Electrical Injuries are 2nd Most Costly Workers Comp Claim
Fatal Occupational Electrocutions in the United States

Includes in depth analysis of fatalities by workplace scenarios
Progress in Electrical Safety

- Communicating awareness
- Professional activities
- Codes and Standards
PREVENTION THROUGH DESIGN

NIOSH: Strategy advancements for electrical safety benefits

By N. Candis Floyd, Ph.D.

This study reviews the current and potential use for the Prevention through Design (PtD) initiative sponsored by the U.S. National Institute for Occupational Safety and Health (NIOSH) under funding of the U.S. Department of Labor. It also reviews some of the best practice and environmental research of the NIOSH 2007 workshop held in Washington, D.C., and in subsequent NIOSH work to help ensure workers and their families have a safe and healthy work environment.

UNLESSING THE PtD Attitude

In July 2007, NIOSH presented an opportunity to the workshop participants to provide feedback to the National Research Council on the feasibility of adding environmental research to the NIOSH mission. The focus for this initiative was to promote a PtD approach. The sessions of the workshop were a critical element of PtD—PtD initiative, addressing the occupational safety and health needs of the design and construction industry.

HAZARD MITIGATION THROUGH DESIGN

Electrical safety for oil rigs in construction work environments

By N. Candis Floyd, Ph.D.

Because of the nature of PtD as a prevention strategy, it is not a current or potential requirement of the U.S. Department of Labor. It is a potential requirement for the OSHA or National Fire Protection Administration. The OSHA or National Fire Protection Administration is required to provide feedback on the feasibility and potential use for the PtD initiative.

One of the objectives of PtD—PtD initiative, addressing the occupational safety and health needs of the design and construction industry.

In July 2007, NIOSH presented an opportunity to the workshop participants to provide feedback to the National Research Council on the feasibility of adding environmental research to the NIOSH mission. The sessions of the workshop were a critical element of PtD—PtD initiative, addressing the occupational safety and health needs of the design and construction industry.
What is the best way to manage crane proximity to overhead power lines when servicing the drilling rig?

Permits, training, administrative procedures, PPE?
The Institute of Electrical and Electronics Engineers, Inc.
Certifies that

James Bowen
has been elected to the grade of

Fellow
for leadership in "safety by design" in electrical substation engineering

Michael Lightner
President

Secretary
Impacting NFPA Standards

Touch safe disconnect device replaces traditional connections for lighting ballasts
110.7 Electrical Safety Program

• FPN 1: Safety–related work practices are just one component of an overall electrical safety program
Hazard Control Measures
outlined in ANSI Z10

- Elimination
- Substitution
- Engineering Controls
- Warnings
- Administrative Controls
- PPE

ANSI Z10 provide the framework to enable decisions and actions in all hazard control measures
Annex O
Safety-Related Design Requirements

The application of <hazard analysis methods> should be used to compare design options and choices to facilitate design decisions that serve to eliminate risk, reduce frequency of exposure, reduce magnitude or severity of exposure, enable the ability to achieve an electrically safe work condition, and otherwise serve to enhance the effectiveness of the safety-related work practices contained in this standard.
Impacting CSA Standards

CSA Z462-2008 adopted the requirements in NFPA 70E-2009
Impacting IEEE Standards

Under development.....

IEEE Standard 1814
Recommended Practice for Electrical System Design Techniques to Improve Electrical Safety
Inherently Safer Technology

GFCIs (or RCDs)

- Extension cord
- Adapter
- Wall outlet
- Circuit Breaker
- 240-600 V Adapter
GFCI Impact on Electrocutions Associated with Consumer Products
Inherently Safer Design

Arc Resistant Switchgear
Arc energy directed away from personnel

Non Arc Resistant Switchgear
Personnel in line of fire
Inherently Safer Design

Smart motor control centers and substations

Smart MCC troubleshooting

Traditional troubleshooting
Inherently Safer Design

Substitution of less hazardous systems or equipment

Ports to allow thermographic & ultrasonic inspection without removing covers
Inherently Safer Design

- High resistance grounding for 480V systems
  - Reduces frequency and magnitude of arcing faults

- Remote racking for draw out circuit breakers

- Remote switching
ESW 2012
2012 IEEE IAS Electrical Safety Workshop
changing the electrical safety culture

...an international forum for changing the electrical safety culture and serving to advance application of technology, work practices, codes and regulations to prevent electrical incidents and injuries in the workplace...

www.ewh.ieee.org/cmte/ias-esw

Daytona Beach Hilton
January 30 – February 3, 2012

Our 19th Annual Conference
• Fundamental & Advanced Tutorials
• Products & Services Exposition
• Standards Working Groups
• Expert Presentations
• Technical Tours
• and more
The Goal is ZERO
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…..the journey continues…..

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