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THE CENTER FOR CONSTRUCTION
RESEARCH AND TRAINING

Research-Based Training & Awareness Programs

2023 NIEHS Trainers' Exchange
May 3, 2023

Jessica Bunting
Director, Research to Practice

Gary Gustafson
Director, Environmental Hazard Training Program

FREE CPWR Training Programs

- **Best Built Plans: Comprehensive Ergonomics Training Program for Workers and Contractors** – The worker training module raises awareness of soft tissue injuries and ways to prevent them, including safe lifting practices and proper body mechanics, through classroom and hands-on components. This part of the program includes an instructor guide, presentation, and handouts. The contractor training module is a recorded presentation that discusses the health risks, ways to mitigate the risk, and includes specific information that a contractor needs to create their own ergonomics program to reduce soft tissue injuries among the workers they employ.
- **Foundations for Safety Leadership** — The FSL training program is an OSHA-approved 30-hour elective module designed to provide construction foremen and other lead workers with the skills to become effective safety leaders. It can also be used as a stand-alone training program. Its resources include an instructor guide, student handouts, videos, and train-the-trainer resources.
- **Head Protection: Preventing Head Injuries** – This 15-minute recorded presentation addresses why head protection is important, what construction employers and their employees need to consider when selecting head protection, and safe practices for using head protection.
- **Construction Noise and Hearing Loss Prevention Training Program** — This comprehensive program includes modules and exercises that can be used on their own or as part of OSHA training programs. There are 1-hour and 30-minute modules and in-class and hands-on refresher exercises. Each part of the program has an instructor guide, presentation, and related handouts. The program is available in English and Spanish.
- **Opioids Awareness Training Program** — Construction has been hit particularly hard by opioids — state-level studies have found that construction workers are six to seven times more likely to die of an opioid overdose than workers in other professions. CPWR is playing a leading role in helping our industry respond through a range of resources, including an awareness training program. It was updated in August 2020 after extensive field testing. A second module will be added later this year.
- **Radiofrequency (RF) Radiation Awareness Program for the Construction Industry** — This program was developed to raise construction contractors' and workers' awareness of the potential risk of RF radiation exposure, how to identify the hazard, and steps to work safely. It includes a comprehensive guide, presentation and video, as well as the following items in English and Spanish – a Hazard Alert Card, Toolbox Talk, and infographic.
- **Safety Voice for Ergonomics (SAVE**) – This program was developed for apprentices in the brick and block segment of the masonry industry to teach them problem-solving skills and ergonomics, including how and when to speak up and who to go to with a safety concern. SAVE's materials include an instructor's manual and a series of videos. Elements of the program can be adapted for other trades or target audiences.

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Foundations for Safety Leadership

Foundations for Safety Leadership (FSL)

- OSHA-approved elective for 30-hour course
- 2.5 hours
- Highly interactive
- Teaches foremen, supervisors, and other front-line leaders on construction job sites about the **costs of ineffective, and the benefits of effective safety leadership** such as improved safety climate and reduced negative safety outcomes.
- Includes information on **critical leadership skills** to use on the job site
- Presents students with different **safety scenarios** which they review and then decide which leadership skills would help address the specific worksite hazard.

https://www.cpwr.com/research/training-and-awareness-programs-from-research/foundations-for-safety-leadership/

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Foundations for Safety Leadership

- Introduction
- Cover Up!
- It's Too Hot
- To Check
- Gimme Space
- The Right Tool
- Do We Have To?
- Fritz's Shortcut

Learning Objectives

By the end of this module students will be able to:

1. Explain why safety leadership is important
2. Describe 5 skills of safety leaders
3. Discuss how to apply safety leadership skills on the job site

A Safety Leader is defined as…

A person who has the **courage** to demonstrate that s/he values safety by working and communicating with team members to identify and limit hazardous situations even in the presence of other job pressures such as scheduling and costs

5 *LEADER*ship Skills

Leads by example

Engages and empowers team members

Actively listens and practices three-way communication

DEvelops team members through teaching, coaching, & feedback

Recognizes team members for a job well done

Foundations for Safety Leadership

Who	Role
Fritz	*Mighty Mechanical* Foreman
Elliot	*Mighty Mechanical* Experienced Worker

WATCH

READ

PLAY

7. Fritz's Shortcut

Situation

Discussion Questions: Situation

1. How often have you felt pressured to get a job done at the cost of safety? What did you do?
2. Keeping in mind the 5 leadership skills, what do you think Fritz should do next?

7. Fritz's Shortcut

Outcome A

Discussion Questions: Outcome A

1. What do you think about how Fritz handled this situation? What are some possible safety outcomes?
2. What do you think Elliot should do?

7. Fritz's Shortcut

Outcome B

Discussion Questions: Outcome B

1. How did Fritz do this time?
2. Describe how the two endings differ in terms of demonstrating the leadership skills.

"The small huddle approach has been adopted for all projects with manning exceeding 30 workers. The supervisor indicated that the FSL supported this initiative. His remarks are consistent with feedback provided by the lead foreman on our other projects." (Corporate Safety Director, Dimeo Construction)

"I am excited by the ease of engagement with this topic, and feel all who attended will commit and support this new elective in construction outreach going forward." (Program Director, Region 1 OTI)

"…you see the superintendent and the foreman more deliberately recognizing employees for things they do that are a little bit above and beyond what they have to do." (Corporate Safety Director)

Link to download FSL materials

http://www.cpwr.com/foundations-safety-leadership-fsl

NEW: FSL4Res

- Designed to meet the **unique safety issues found in the residential construction sector**, particularly fall hazards
- Same content as the FSL, including the critical leadership skills
- The main difference is that three new real-world scenarios have been added that illustrate how foremen and other frontline leaders can use the leadership skills to prevent fall hazards on the job site
- Trainers can tailor the FSL4Res to different audiences and locations
- Can be done as a **single 2.5-hour session** (like the original FSL) **or** as **four 30-minute sessions and a short booster session**

Preventing Head Injuries

Preventing Head Injuries

- In 2018 alone, almost 8,000 construction workers suffered a head injury and 230 construction workers died from their injury. These deaths and injuries take a significant human and financial toll on the injured workers, their families, and their employers.
- Some common causes of head injuries include:
  - Being struck by a falling tool or material or a moving object, such as materials being moved by a crane or another worker.
  - Falling and coming in contact with an object or surface, such as equipment, a wall, or the ground.
  - Coming in contact with overhead hazards, such as equipment or electrical wires – the latter can result in a worker being electrocuted.

15-minute Awareness Program Recording

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Additional Resources

- Hazard Alert: Preventing Head Injuries (English, Spanish)
- Toolbox Talk: Head Protection (English, Spanish)
- Infographic: Protect Your Head
- **NEW!** NIOSH Science Blog: Construction Helmets and Work-related Traumatic Brain Injury

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What's Next?

- Promoting hard helmets vs. hardhats
- Technical webinar?
- More In-depth training program for classroom delivery?

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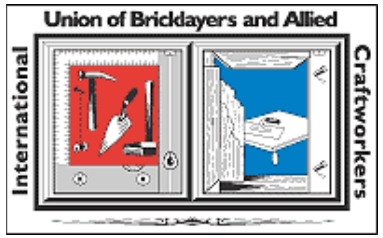
Radiofrequency (RF) Radiation

Radiofrequency (RF) Radiation Awareness Program

- RF Radiation Work Group
- Roofing r2p Partnership



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RF Radiation Awareness Program

- **Presentation** — Radiofrequency (RF) Radiation Awareness Program for the Construction Industry Overview
- **Guide** — Radiofrequency (RF) Radiation Awareness Guide for the Construction Industry — This Guide builds on the information covered in the presentation by providing additional details on how to assess the hazard, find regulations and guidance documents, determine if an RF generating device is present, and find protective equipment.
- **Video** — Safe Transmission: RF Awareness for the Construction Industry
- **Hazard Alert Card** — RF Radiation – An invisible danger (available in Spanish)
- **Toolbox Talk** — RF Radiation Awareness (available in Spanish)
- **Infographic** — Radiofrequency (RF) Radiation- An Invisible Danger (also available in Spanish)

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Overview

1. Radiofrequency (RF) Radiation
2. Common Uses
3. Health Effects
4. At Risk Workers
5. Regulations & Guidelines
6. Hazard Identification
7. Protective Measures

1. What is radiofrequency (RF) radiation?

RF radiation is a form of non-ionizing radiation

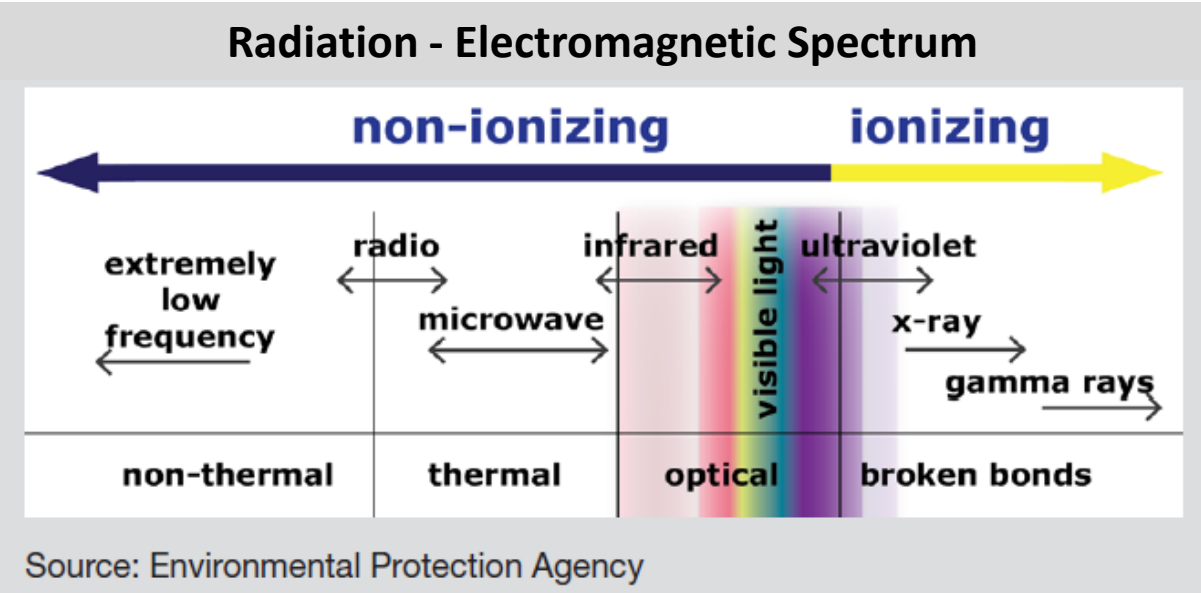
- Causes molecules to vibrate, which can generate heat

It is not ionizing radiation

- Creates enough energy to cause chemical changes by breaking molecular bonds
- X-rays and gamma rays are forms of ionizing radiation
- This type of radiation is used in health care and nuclear weapons facilities

Electromagnetic Spectrum: Common Terms

- RF radiation is a type of **energy**
- RF radiation = **radio waves** and **microwaves**
- **Waves** are characterized by wavelength and frequency
  - The **frequency** of each wave is measured in **Hertz (Hz) –** 1 cycle per second
  - **RF radiation frequencies =** 3 kilohertz (3 kHz) to 300 gigahertz (300 GHz)
  - **Different frequencies affect humans differently**
- **RF Power** is measured in **watts, and RF Power Density** is measured in milliwatts per square centimeter (mW/cm^2)



2. What is RF energy used for?

- Microwave ovens
- Radar
- Industrial heating and sealing processes
- Medical applications
- Telecommunications & broadcast services:
  - Cellular antennas/base stations
  - Radio and television broadcasting
  - Radio communications for police and fire departments
  - Microwave point-to-point radio links
  - Satellite communications

3. What are the potential health effects?

- **Thermal effects:** heating of tissue, blindness and sterility
- **Non-thermal effects**: alter the human body's circadian rhythms, immune system, and the nature of the electrical and chemical signals communicated through the cell membrane

  Source: *Occupational Safety and Health Administration (OSHA)*
- ***Group 2B - Possibly carcinogenic to humans***

  Source: *World Health Organization – International Agency for Research on Cancer (WHO/IARC)*
- **Pacemakers** could be susceptible to electromagnetic signals that could cause them to malfunction.

  Source: *Federal Communications Commission (FCC)*

Symptoms of overexposure may include:

- Labored breathing
- Perspiring
- Pain
- Headache
- Numbness
- Paresthesia
- Malaise
- Diarrhea
- Skin erythema
- Burns

If you experience these symptoms, move to a new location

4. Who's at risk?

Roofers
HVAC technicians
Electricians
Masons
Painters
Carpenters
Laborers
Maintenance staff

Anyone who works on rooftops, sides of buildings, in and around mobile news trucks, and other locations where RF generating antennas are located

5. What are the applicable regulations, guidelines, and voluntary standards?

- FCC Guidelines
- OSHA Standards
- Voluntary Standards:
  Institute of Electrical and Electronics Engineers (IEEE)
- State, Local & Other Standards & Requirements

6. What does a potential hazard look like?

Challenges:

- Identifying RF generating devices where work needs to be performed
- Determining if exposure limits are being exceeded and protective measures

Photo credit: deyangeorgiev/123rf.com

Photo credit:: Steve Kazella/Wikimedia Commons/CC-BY-3.0

7. What can be done to work safely?

What to consider:

- Distance from antennas
- Direction and angle of antennas
- Height of antennas

Exercise caution:

1. Assume all antennas are active and operating at full power
2. Stay away from the antenna
   - *Request to have the antennas powered down or moved*
3. *As part of a safety program:*
   - *Use a personal RF (field) monitor*
   - *Use RF protective clothing*

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Thank you! Questions?

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