NRCA Safety Leadership Workshop
San Antonio, TX – February 19, 2025

Roofing industry technical update

presented by

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National Roofing Contractors Association (NRCA)

NRCA

1

TO VIEW, CLICK ON BOOK COVER

The NRCA Roofing Manual—2025 Set

NRCA

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2

Nighttime tie-in and night seal considerations

3

With single-ply membrane systems, nighttime tie-ins and night seals have gotten more difficult…

4

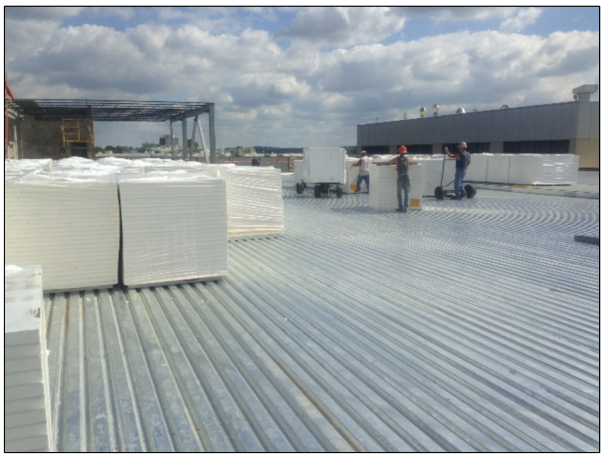
Some considerations

Nighttime tie-ins and night seals

- Project specific planning…
- Get back to the basics…
  - Water cut-off
  - Night seals
- SA underlayment and base sheet products can work well for cut-offs

Concepts to share?

5



Roof deck loading considerations

6

Some examples of roof loading

- Pallet of asphalt shingles (42 bundles): 2,500 to 4,200 lbs.
- Pallet of TPO membrane rolls: 1,400 to 3,450 lbs.
- Pallet of MB cap sheet (20 rolls): About 2,500 lbs.
- Pallet of glass-faced gypsum board (4 x 4): 1,600 to 2,400 lbs.
- Pallet of bonding adhesive (45 pails): 1,800 lbs.
- Bundle of polyiso. (4 x 8): 250 to 500 lbs.

7

University of Massachusetts – Amherst

"Roof Live Loads for Low-Slope Roofs"

Joint research

Metal Building Manufacturers Association
National Roofing Contractors Association
Steel Deck Institute

8

Some initial considerations

Roof deck loading concerns

- Roofing operations may exceed live load capacity
- Note joist/framing orientation
- Consider avoiding adjacent load placement
- Position loads across joists/framing
- Consider added dunnage across framing
- Also consider rooftop equipment weight

9

Radio frequency radiation

Rooftop cell phone transmitters

10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This is an access point to an area with transmitting antennas.
Obey all signs and barriers beyond this point.
Call the DISH NOC at 833-347-4602 for more information.
Site ID: CHCHI00722A
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RF SAFETY PROGRAM IN EFFECT AT THIS SITE
GUIDELINES:
ONLY AUTHORIZED PERSONNEL MAY ENTER this site.
All personnel must have RF SAFETY TRAINING as per the written RF SAFETY PROGRAM for this site.
Obey all posted signs.
Assume all antennas are active, unless LOCKED OUT.
Before working on antennas, notify owners and DISABLE APPROPRIATE TRANSMITTERS.
Maintain a safe distance from all antennas.
Do not stop or work in front of active antennas.
USE personal RF MONITORS while working at this site.
Replace all transmitter shields after service.
Do not mount or use antennas in equipment rooms.

11


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12

CRCA Advisory Bulletin

JUNE 2023

Radiofrequency Radiation and Electromagnetic Fields

The increased number of cellular antennas and other communication equipment that generates radiofrequency radiation (RF) and electromagnetic fields (EMF) may be exposing roofers and other contractors to harmful levels of radiations when working on rooftops, sides of buildings and other locations where RF generating antennas are located. This bulletin will focus on radiation types, safety limits and mitigating exposure.

With the ever-increasing use and development of communication technology, there is an increased risk for those working in and around communication devices and equipment that emit radiofrequency electromagnetic fields (EMF) such as smart meters, cell phone towers and equipment using 5G technology. Roof areas are often prime locations for this type of equipment and anyone accessing these roof areas for any reason should be aware of the Occupational Health and Safety requirements and the Safety Code 6. Consult with provincial and/or federal authorities having jurisdiction for further information/guidance for most stringent requirements.

What is Radiofrequency (RF) Radiation?

There are two types of radiation – ionizing radiation and non-ionizing radiation. Both are forms of electromagnetic energy, but ionizing radiation has more energy than non-ionizing radiation. Ionizing radiation, like x-rays or gamma rays, has enough energy to cause chemical changes by breaking chemical bonds. Sources of this type of radiation can be found in hospitals, nuclear energy plants, and nuclear weapons facilities. Non-ionizing radiation causes molecules to vibrate, which generates heat. RF radiation is a type of non-ionizing radiation and is the energy used to transmit wireless information. RF radiation is invisible and power levels of equipment and amount of RF radiation can fluctuate without warning.

About Safety Code 6

Health Canada publishes Safety Code 6[1] which sets out recommended safety limits for human exposure to radiofrequency electromagnetic fields (EMF) in the frequency range from 3 kHz to 300 GHz. This range covers the frequencies used by communications devices and equipment that emit radiofrequency EMF such as: Wi-Fi, cell phones, smart meters, cell phone towers, those using 5G technology.

Safety Code 6 is reviewed on a regular basis to confirm that it continues to provide protection against all known potentially adverse health effects. If new scientific evidence were to show that exposure to radiofrequency EMF below the levels found in Safety Code 6 poses a risk, the Government of Canada would take steps to protect the health of Canadians.

[1] https://www.canada.ca/en/health-canada/services/health-risks-safety/radiation/occupational-exposure-regulations/safety-code-6-radiofrequency-exposure-guidelines.html

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June 2023

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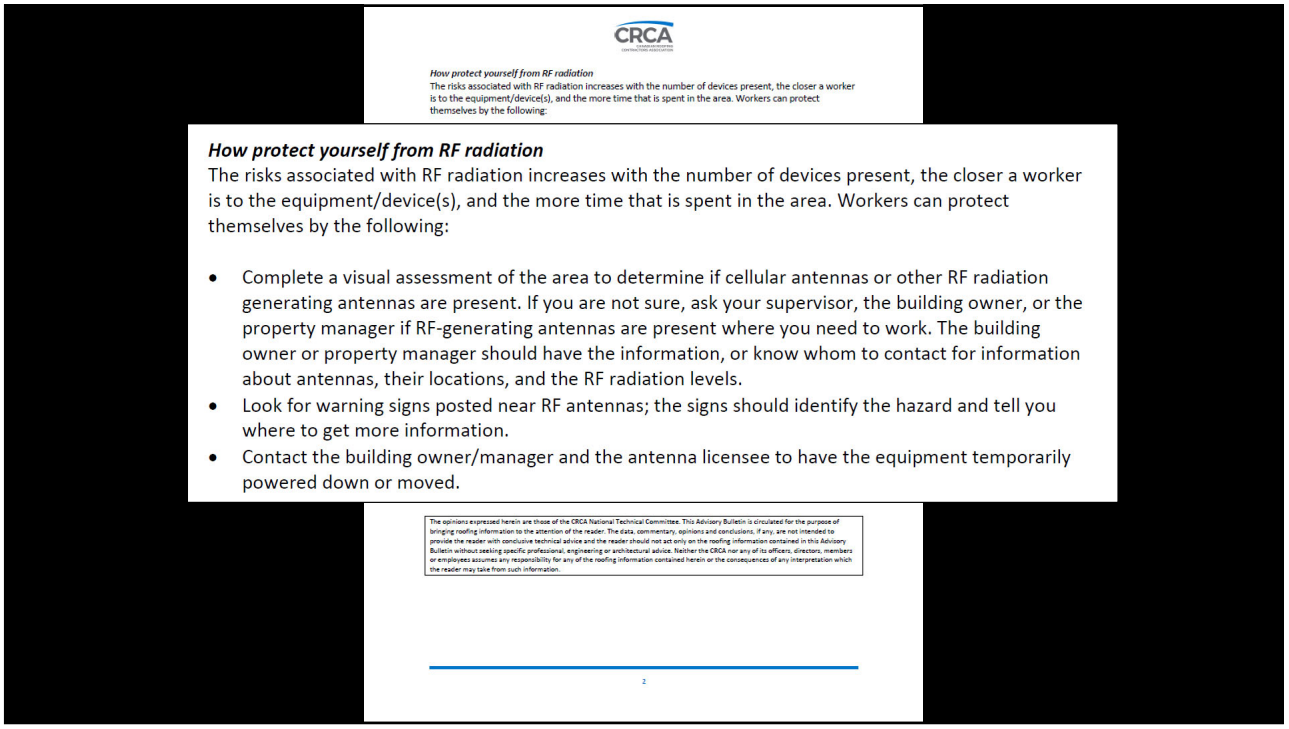
13



How protect yourself from RF radiation

The risks associated with RF radiation increases with the number of devices present, the closer a worker is to the equipment/device(s), and the more time that is spent in the area. Workers can protect themselves by the following:

- Complete a visual assessment of the area to determine if cellular antennas or other RF radiation generating antennas are present. If you are not sure, ask your supervisor, the building owner, or the property manager if RF-generating antennas are present where you need to work. The building owner or property manager should have the information, or know whom to contact for information about antennas, their locations, and the RF radiation levels.
- Look for warning signs posted near RF antennas; the signs should identify the hazard and tell you where to get more information.
- Contact the building owner/manager and the antenna licensee to have the equipment temporarily powered down or moved.

The opinions expressed herein are those of the CRCA National Technical Committee. This Advisory Bulletin is circulated for the purpose of bringing roofing information to the attention of the reader. The data, commentary, opinions and conclusions, if any, are not intended to provide the reader with conclusive technical advice and the reader should not act only on the roofing information contained in this Advisory Bulletin without seeking specific professional, engineering or architectural advice. Neither the CRCA nor any of its officers, directors, members or employees assumes any responsibility for any of the roofing information contained herein or the consequences of any interpretation which the reader may take from such information.

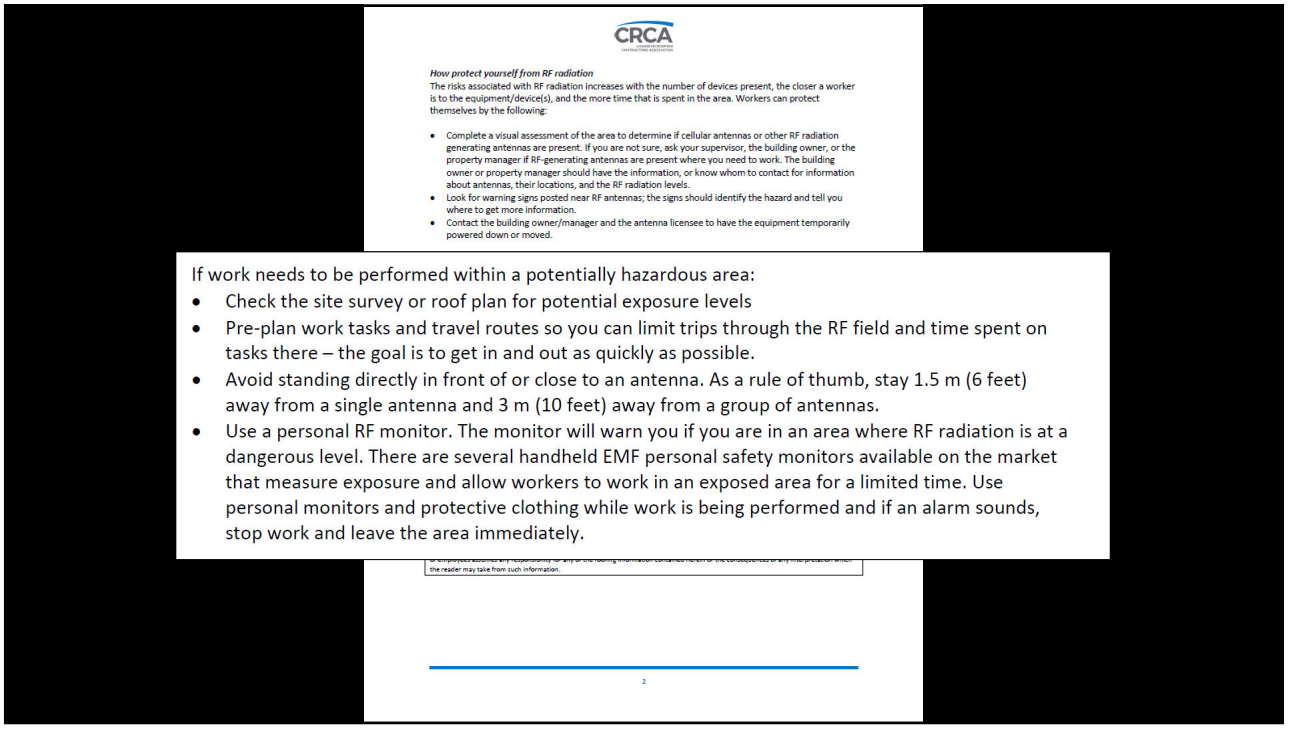
2

14

Recognize the signage

Photos courtesy of Peter Shackford—Hettrick, Cyr & Associates, Inc.

15



16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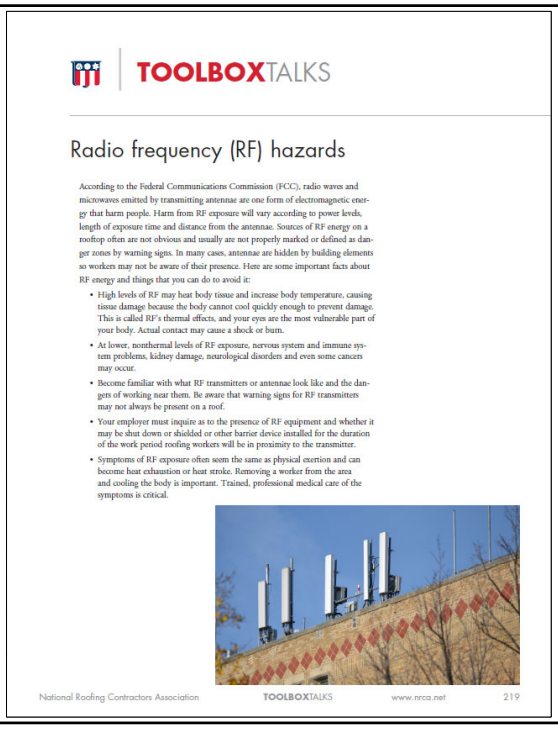
17


TOOLBOXTALKS
Radio frequency (RF) hazards
According to the Federal Communications Commission (FCC), radio waves and microwaves emitted by transmitting antennae are one form of electromagnetic energy that harm people. Harm from RF exposure will vary according to power levels, length of exposure time and distance from the antennae. Sources of RF energy on a rooftop often are not obvious and usually are not properly marked or defined as danger zones by warning signs. In many cases, antennae are hidden by building elements so workers may not be aware of their presence. Here are some important facts about RF energy and things that you can do to avoid it:
• High levels of RF may heat body tissue and increase body temperature, causing tissue damage because the body cannot cool quickly enough to prevent damage. This is called RF's thermal effects, and your eyes are the most vulnerable part of your body. Actual contact may cause a shock or burn.
• At lower, nonthermal levels of RF exposure, nervous system and immune system problems, kidney damage, neurological disorders and even some cancers may occur.
• Become familiar with what RF transmitters or antennae look like and the dangers of working near them. Be aware that warning signs for RF transmitters may not always be present on a roof.
• Your employer must inquire as to the presence of RF equipment and whether it may be shut down or shielded or other barrier device installed for the duration of the work period roofing workers will be in proximity to the transmitter.
• Symptoms of RF exposure often seem the same as physical exertion and can become heat exhaustion or heat stroke. Removing a worker from the area and cooling the body is important. Trained, professional medical care of the symptoms is critical.
National Roofing Contractors Association
TOOLBOXTALKS
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219

18

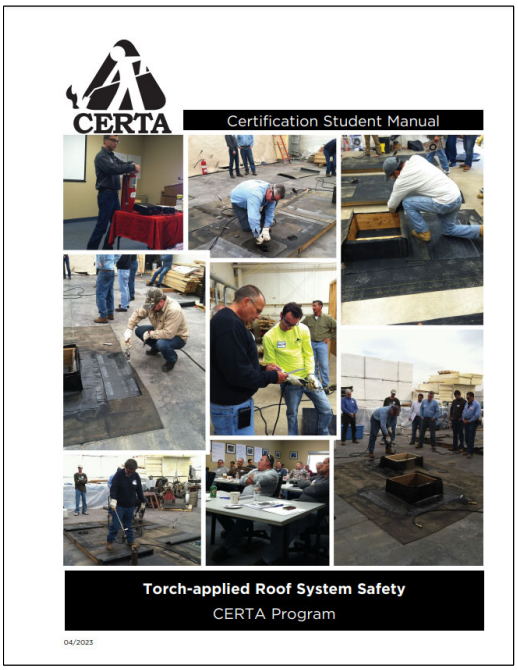
Some useful references

- CRCA Advisory Bulletin (Link)
- Health Canada's Safety Code 6 (Link)
- Federal Communications Commission (Link)
- Center for Construction Research and Training (Link)

19

MRCA/NRCA Certified Roof Torch Applicator program

20



CERTA student manual

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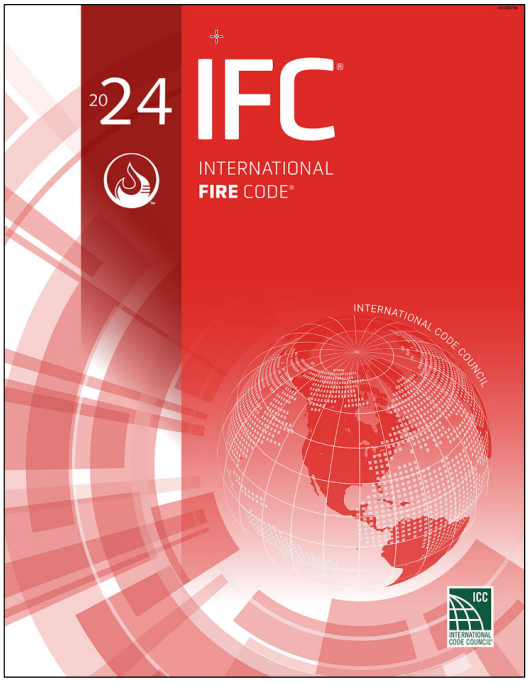
21



International Fire Code, 2024 Edition

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22


RESEARCH+TECH

Preventing building fires

IFC® provides fire-prevention guidelines for building and structures

by Mark S. Graham

The International Code Council®'s International Fire Code® establishes minimum requirements that provide a reasonable level of life safety and property protection from the hazards of fire, explosions or dangerous conditions in new and existing buildings. It includes several roofing-related provisions.

IFC 2024

IFC first was published in 1997 and was written by a committee consisting of members of the three legacy model code organizations (Building Officials and Code Administrators International, International Conference of Building Officials and Southern Building Code Congress International). The committee's draft generally was consistent with the existing model fire codes at the time *(The BOCA National Fire Prevention Code, Uniform Fire Code and Standard Fire Prevention Code)*.

In 2000, IFC's first edition was published using ICC's code development process. New editions have been published every three years since with the most current edition being IFC 2024.

IFC 2024 is divided into seven parts with 50 chapters and 15 appendices (see figure). The appendices are not mandatory unless

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23

NFPA 1 Fire Code, 2024 Edition

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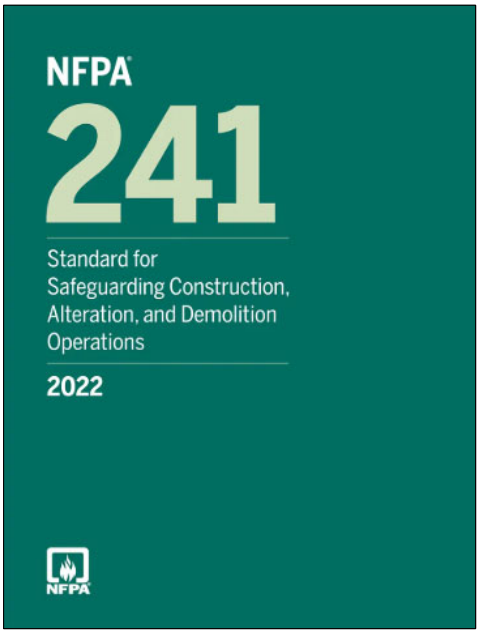
24



NFPA 241 Standard for Safeguarding Construction, Alteration and Demolition Operations, 2022 Edition

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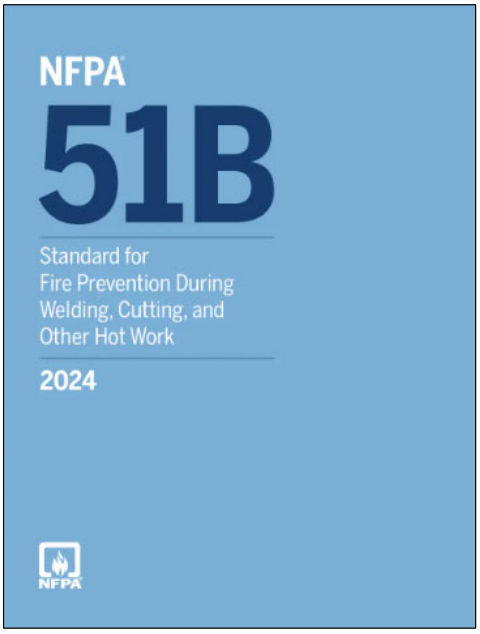

NFPA 51B Standard for Fire Prevention During Welding, Cutting and Other Hot Work, 2024 Edition

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26

RESEARCH+TECH

Fire drill

NFPA 1 provides fire prevention guidelines for buildings and structures

by Mark S. Graham

Although the International Code Council®'s International Fire Code® applies in most of the U.S., another fire code, *NFPA 1, Fire Code* also applies in some jurisdictions. NFPA 1 prescribes minimum requirements necessary to establish a reasonable level of fire and life safety and property protection from hazards created by fire, explosion and dangerous conditions; it applies to new and existing buildings.

Background

NFPA 1 originated in 1971 when members of the National Fire Protection Association requested a single document addressing all aspects of fire protection and prevention noted in other NFPA codes and standards.

During the late 1980s, the Fire Marshals Association of North America (now the International Fire Marshals Association) undertook the task of adding administrative sections to NFPA 1, making it a self-contained code. The 1992 edition was titled *Fire Prevention Code*.

Since 1997, NFPA has updated NFPA 1 on a three-year cycle. The 2003 and 2006 editions were titled *Uniform Fire Code*. In 2009, NFPA 1's title changed to *Fire Code*, which is still used. The current edition of

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27

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28

We're moving! NRCA's new office address as of mid-April 2025…

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29