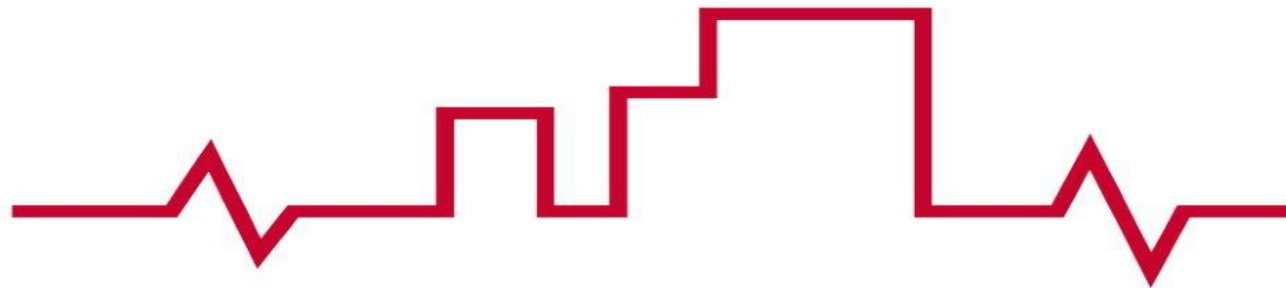


# WELCOME NORTH DAKOTA HEALTHCARE ENGINEERING SOCIETY

**CONSTRUCTION**  
**ICRA** BEST PRACTICES  
IN HEALTHCARE  
CONSTRUCTION



[ConstructionICRA.org](http://ConstructionICRA.org)

# **Infection Control Risk Assessment**

## **Best Practices in Health Care Construction**

**Mike Sturgesleski**

Olympic Companies

**Christa Mardaus**

ICRA Specialist/Instructor

**Jayson Karas**

ICRA Specialist/Instructor

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# WHY ICRA TRAINING?

## Patient safety



# ICRA TRAINING AND YOUR FACILITY

Current situation:

- On average, nearly 2,000,000 people will acquire a HAI each year
- 99,000 die each year from HAI



# How does 99,000 compare?

**Number of deaths for leading causes of death 2014 (from CDC):**

- Heart disease: 614,348
- Cancer: 591,699
- Chronic lower respiratory diseases: 147,101
- Accidents (unintentional injuries): 136,053
- Stroke (cerebrovascular diseases): 133,103
- Alzheimer's disease: 93,541
- Diabetes: 76,488
- Influenza and Pneumonia: 55,227

# ICRA TRAINING AND YOUR FACILITY

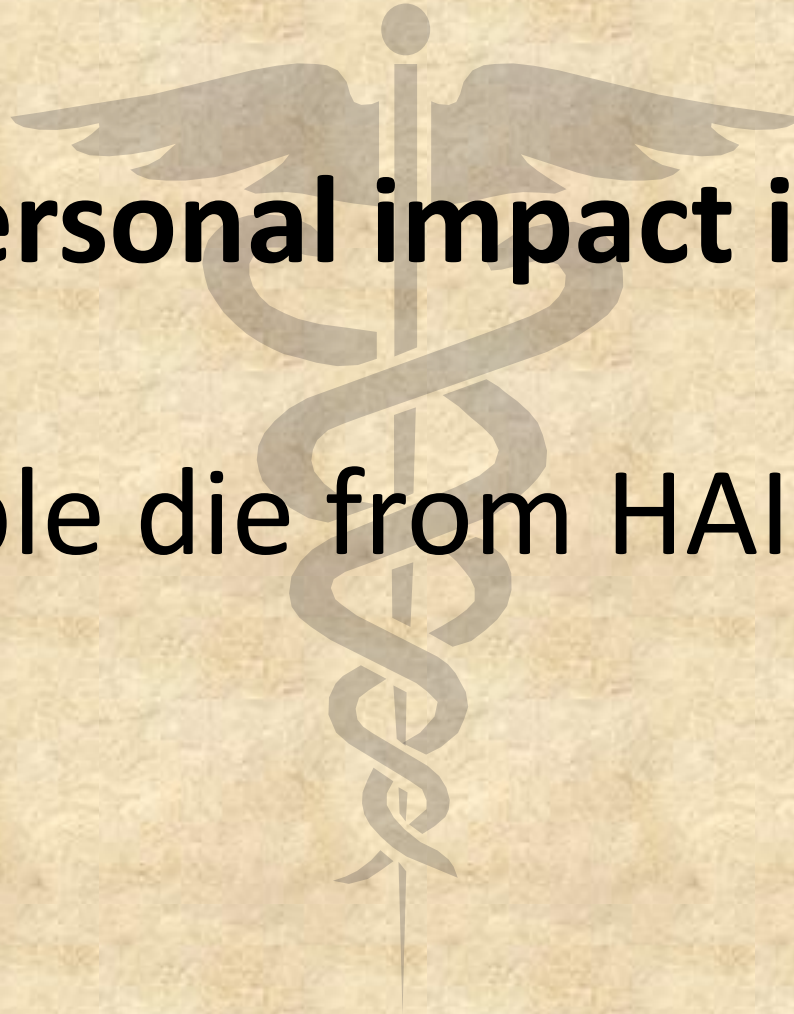


The CDC reports that for every 25 patients, 1 will suffer the effects of a HAI.

# ICRA TRAINING AND YOUR FACILITY

**The personal impact is real.**

271 people die from HAI each day.





# WHY ICRA TRAINING?



# ICRA TRAINING AND YOUR FACILITY

## Financial Impact

- **Studies** show that HAI cost Health-Care Facilities between \$35,000,000,000 – \$47,000,000,000 annually in the U.S.

As reported by the Alliance for Aging Research





# WHY ICRA TRAINING?





# ICRA TRAINING AND YOUR FACILITY

- Litigation



# WHY ICRA TRAINING?

Staff and visitors  
benefit from  
proper  
ICRA Training





# WHY ICRA TRAINING?





# ICRA TRAINING AND YOUR FACILITY

## Return on Investment

- Projects and Precautions done right, the first time
- Less Health Care staff time spent training and checking contractors



# ICRA TRAINING AND YOUR FACILITY

## Facility Reputations are at stake

- In highly competitive markets, patient satisfaction and outcomes matter



**EXCELLENT**



**GOOD**



**AVERAGE**



# WHY ICRA TRAINING?

## CONTRACTOR AWARENESS

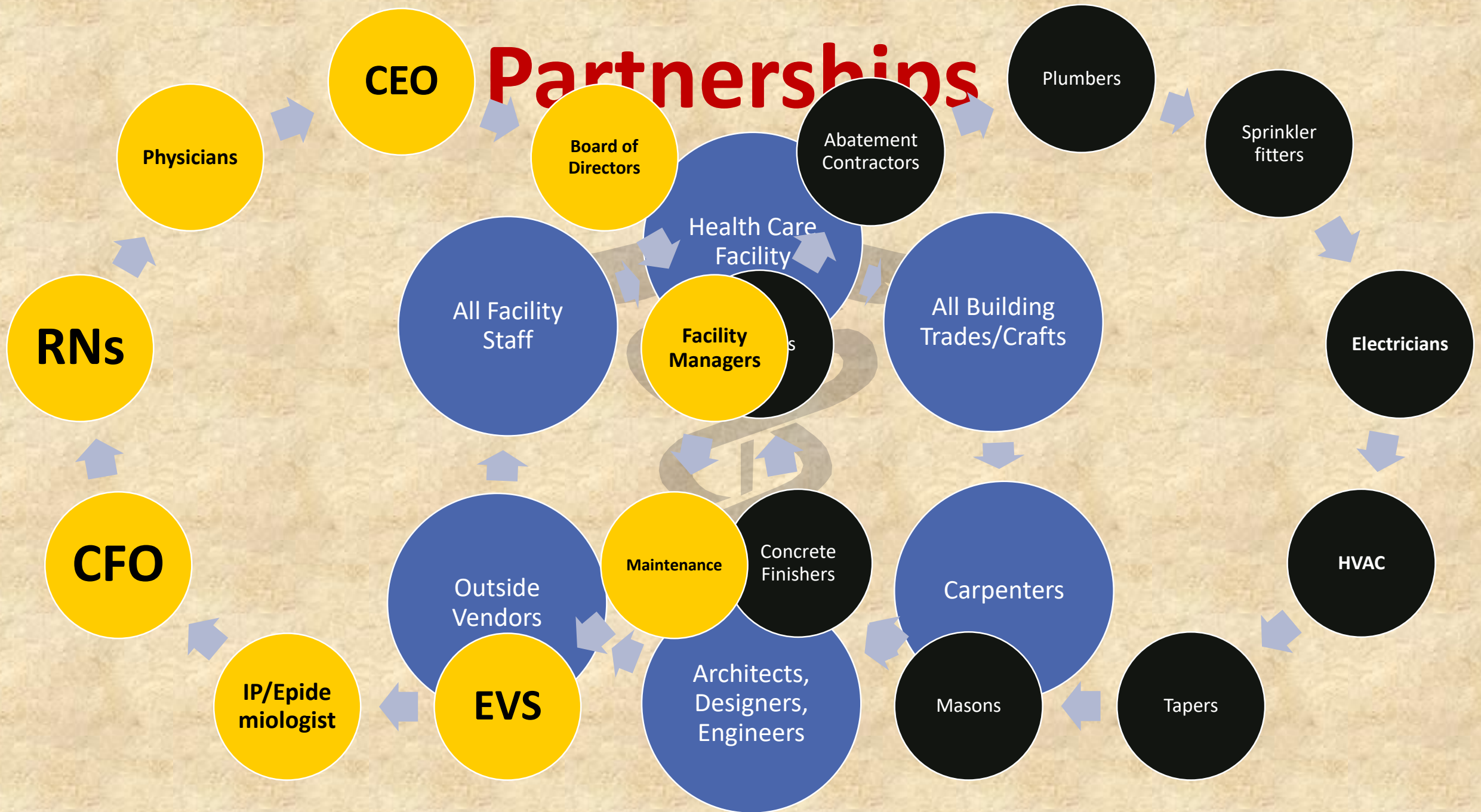
- Communication
- Precautions
- Unique environment





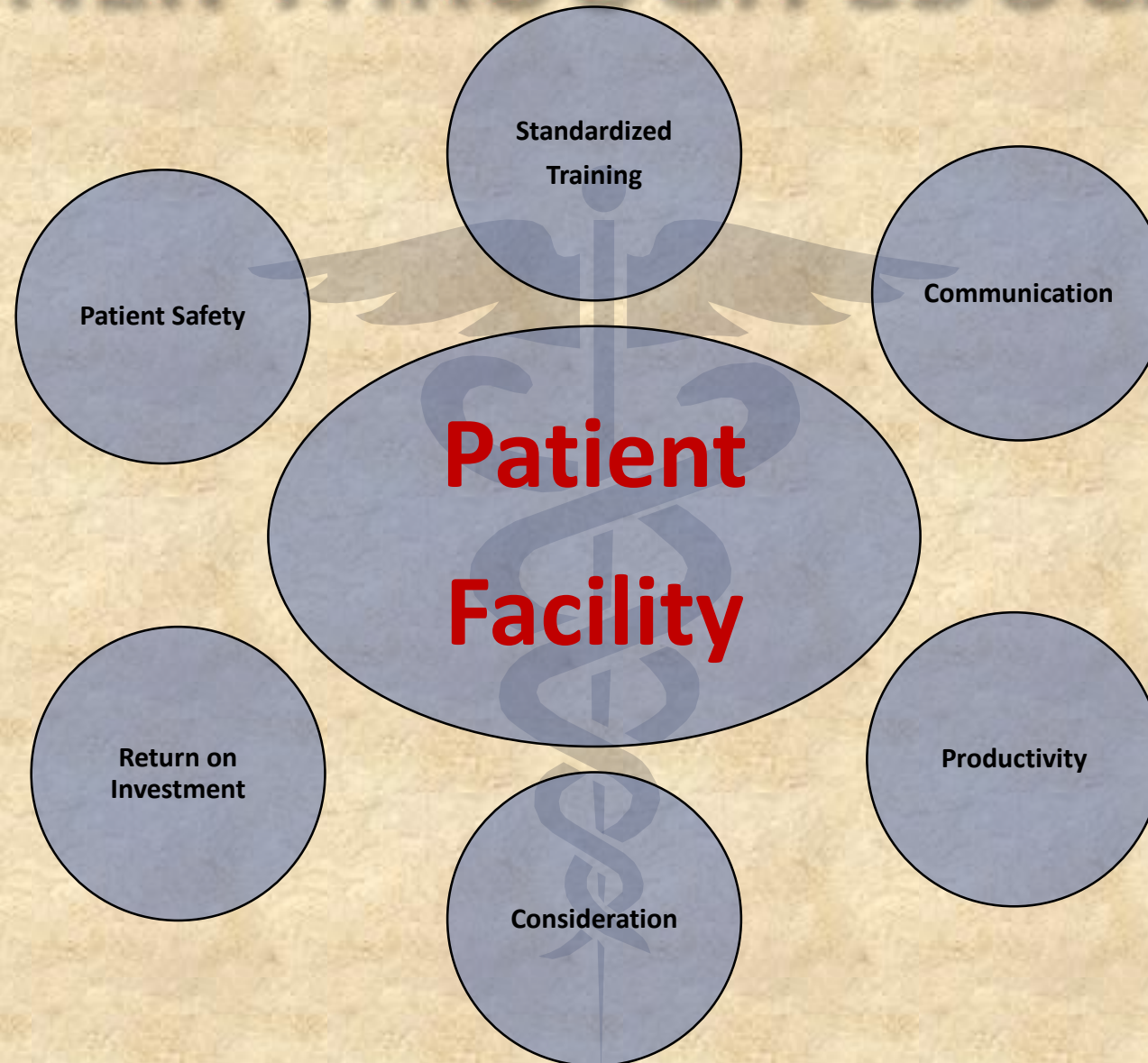








# PARTNER THROUGH EDUCATION



# Air and Water Management for Infection Prevention and Control

**Andrew Streifel**  
**Hospital Environment Specialist**  
**University of Minnesota Medical Center**



- **40 years service at U of Minnesota infection prevention.**
- **Visited over 400+ hospitals & assisted in IAQ infection issues.**
- **Technical expert for ASHRAE, CDC, FGI & other organizations.**
- **Goal to provide evidence based training for prevention of infections during water quality, construction & maintenance practice.**
- **Provide guidance for infectious disease prevention with design concepts.**





# ***Healthcare Construction: Case Studies in Medical Facilities***

## Demolition of Adjacent Structure





# ***Healthcare Construction: Case Studies in Medical Facilities***

## Demolition of Adjacent Structure



# **Healthcare Construction: Case Studies in Medical Facilities**

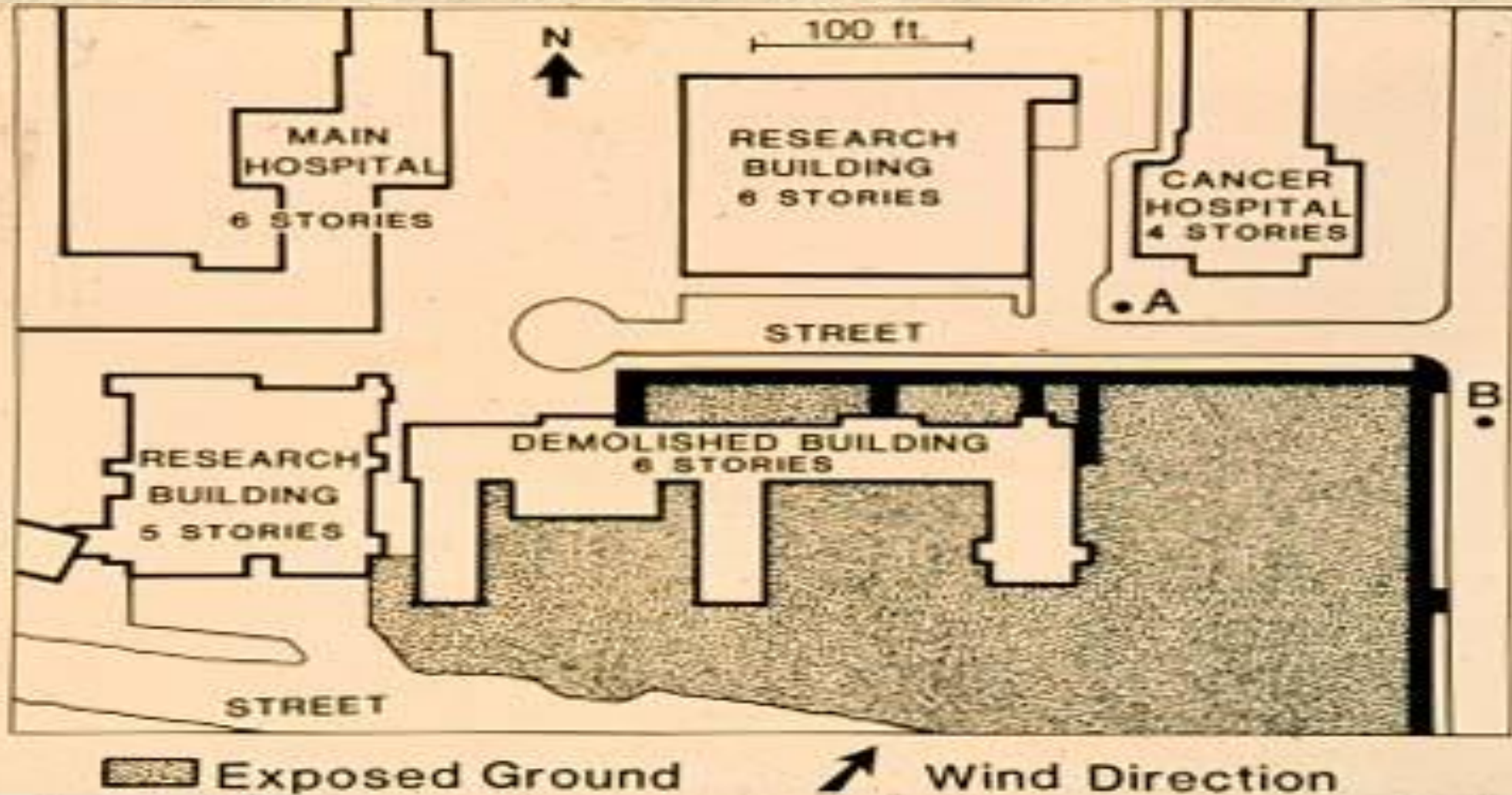
## Demolition of Adjacent Structure





# Healthcare Construction: Case Studies in Medical Facilities


## Demolition of Adjacent Structure





How do you build  
a barrier?



A photograph of a hospital hallway. On the left, a white wall with red vertical stripes is labeled 'FIRE RETARDANT' with a flame icon. A ramp with wooden railings leads down the hallway. Yellow 'CAUTION' signs are on the floor. In the background, a sign reads 'Registration & Check In'. On the right, there is a desk area and a piece of medical equipment labeled 'MACH 3'.

Knowing a good  
barrier from a bad  
depends on  
pressure management?

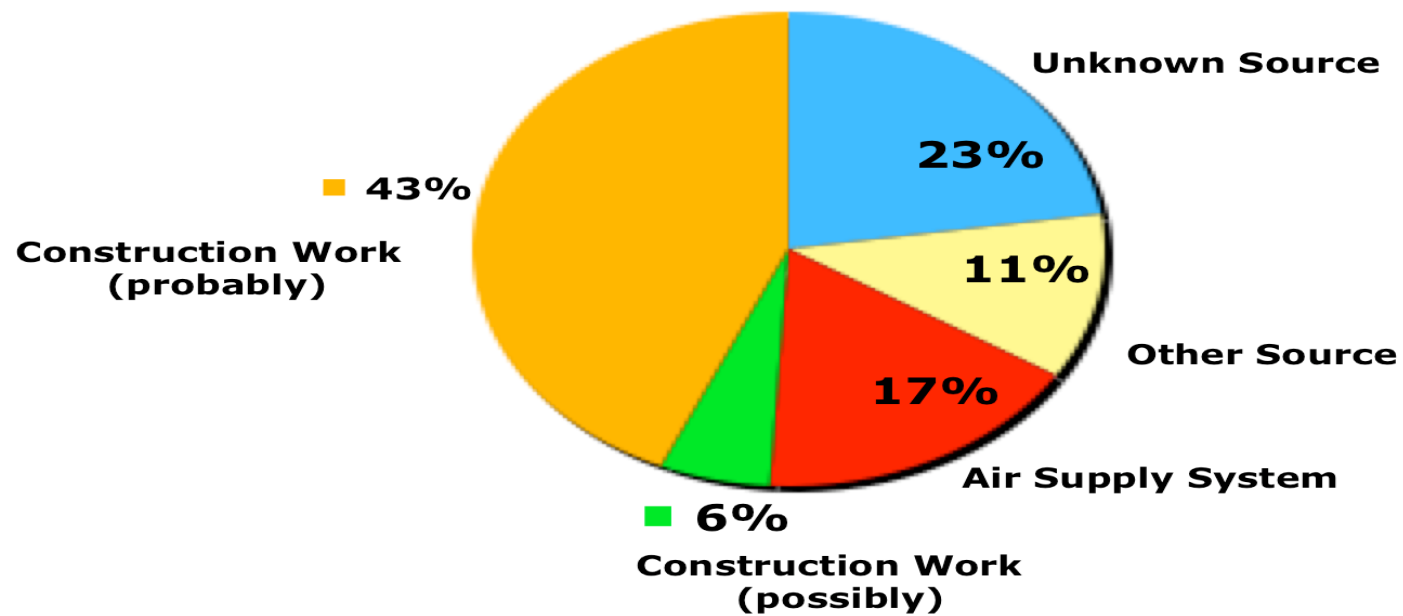




Which barriers  
will help control the  
airflow?

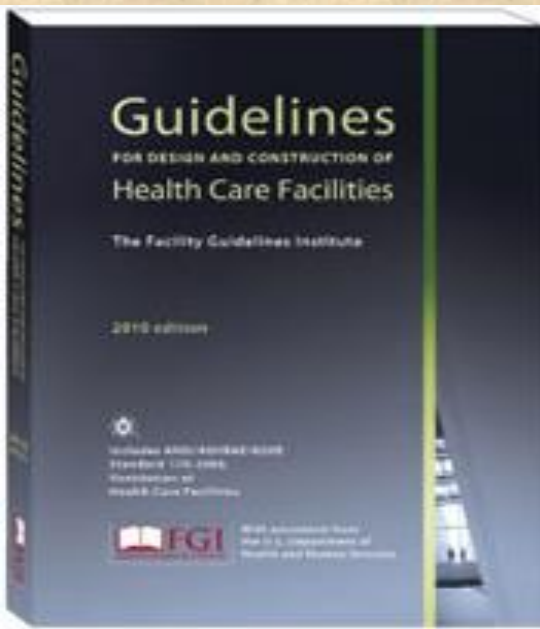
## **Distribution of Sources in 53 Nosocomial Aspergillosis Outbreaks**

**R-P. Vonberg, P. Gastmeier - *Journal of Hospital Infection* (2006) 63, p.250**



# 2012 Joint Commission Standards

- EC.02.06.05
  - When planning new, altered or renovated space the hospital uses one of the following design criteria:
    - State rules and regulations, or
    - Guidelines for Design and Construction of Hospitals and Healthcare Facilities,
    - When the above rules and guidelines do not meet specific design needs other reputable standards and guidelines that provide equivalent design criteria.





# 2012 Joint Commission Standards

- EC.02.06.05
  2. When planning for demolition, construction or renovation, the hospital conducts a preconstruction risk assessment for air quality requirements, infection control, utility requirements, noise, vibration, and other hazards that affect care, treatment, and services.

# ICRA PRECAUTIONS

## INDOOR PROJECTS (RENOVATION)

### Employee training

- Barrier management
- Water damage
- Demolition precautions
- Dust migration and control
- Debris and material transport
- Access routes to work area
- Outages (electrical and plumbing)
- Portable filter usage
- Noise and vibration
- Sanitation and break areas
- Commissioning -air & water

### Communication

- Emergency response
- Water damage reporting
- Changing work phases

### ICRA precautions during occupancy

### Water Quality

- Stagnant water flushing
- Testing water requirements
- Punch list
- Critical sinks drinking water

## OUTDOOR PROJECTS (NEW)

### Employee training

- Dust control
- Noise and vibration
- Pest control
- Building material storage
- Water damage management
- Sanitation and break areas
- Tie in building issues
- Commissioning-air & water
- Shell spaced-build out

### Communication

- Emergency response
- Water damage reporting
- Material crane location
- Changing ICRA precautions pre occupancy

### Water Quality

- Stagnant water flushing
- Testing water requirements
- Punch list
- Critical sinks drinking water





# Awareness Factors by Trade

	Plumber	HVAC	Electrician	Painter	Laborer	IT Specialist	<b>Carpenter</b>	Specialty Trade
<b>Awareness Factors</b>							x	
<b>Water damage</b>	x		x	x	x	x	x	x
<b>Mold discovery</b>	x		x	x	x	x	x	x
<b>Outages</b>	x	x	x				x	x
<b>ICRA</b>	x	x	x	x	x	x	x	x
<b>Water event response</b>	x				x		x	
<b>Stagnant water</b>	x						x	
<b>Building material storage/stocking</b>	x	x	x	x	x	x	x	x
<b>Noise/vibration</b>	x	x	x		x	x	x	x
<b>Track dirt</b>	x	x	x	x	x	x	x	x
<b>Wall/slab penetrations</b>	x	x	x		x	x	x	
<b>Material transport</b>	x	x			x		x	x
<b>Biocide application</b>				x	x		x	x
<b>Room/wall seal application</b>				x	x		x	

# What do you do when you discover mold?



**Hidden behind objects that are not moved frequently**

**Dialysis cabinet in ICU**





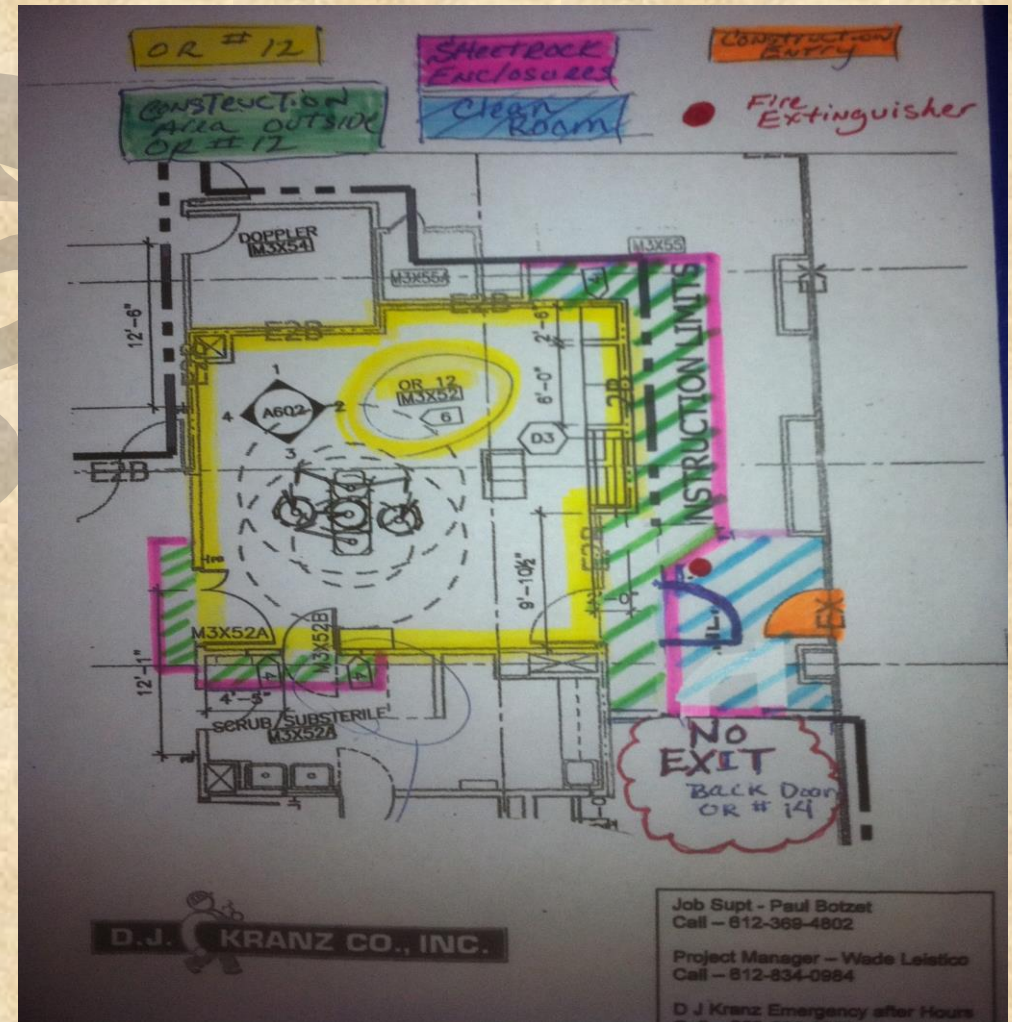
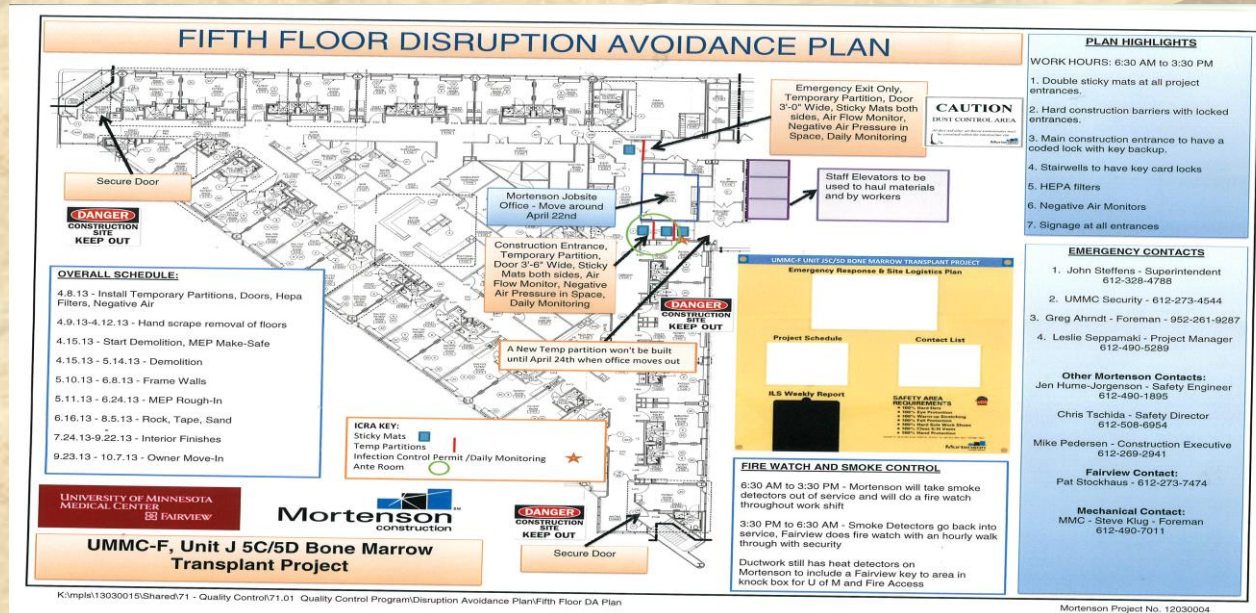


# Disruption Avoidance through ICRA Mitigation Planning

Knowing what to expect is key

Example: repairing water damage begets mold

Plan: be ready with mold training







- Use portable HEPA filters

- Provide visual indicators
  - pressure
  - signage
  - flexible door







**Use Walk-off Mats to control dust migration**



**Cover all construction materials and debris**



# *Floods happen for many reasons.*



Broken pipe



Expansion joint leak



Building junction

Floods with water damage require immediate or measured response.



*Or you may get this!!*





# Being Prepared for Floods is the Best Practice



**Tools assembled for quick response**

**Transport gurney plus vacuum  
and extension cords in waiting**





## Barrier containment of sources





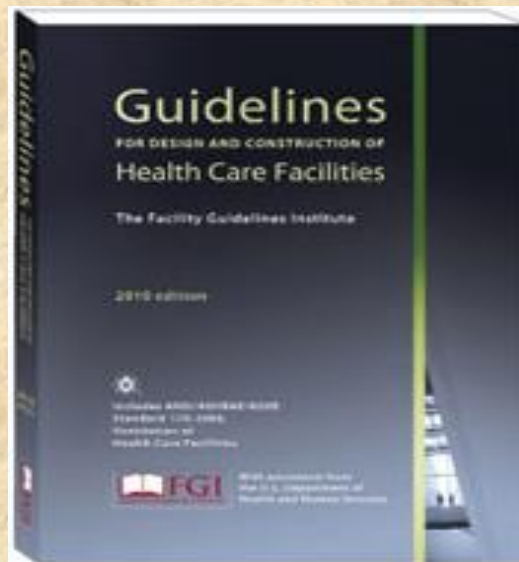
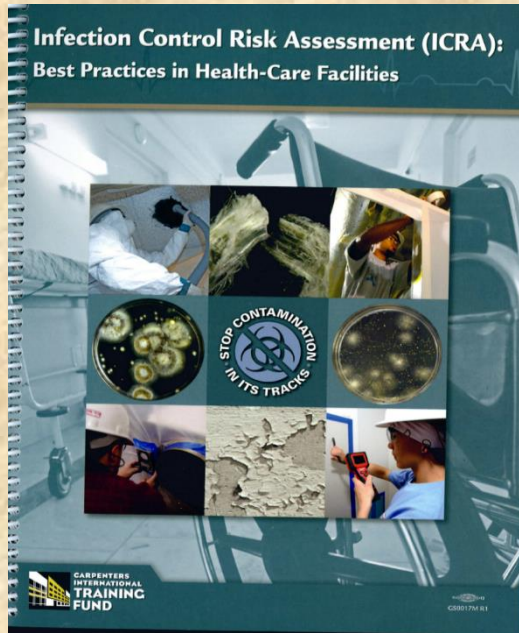
# How do we manage contaminants

## Cleanup Concerns



Barriers and pressure management help to contain the aerosols generated during cleanup procedures.

# Environmental Management Training



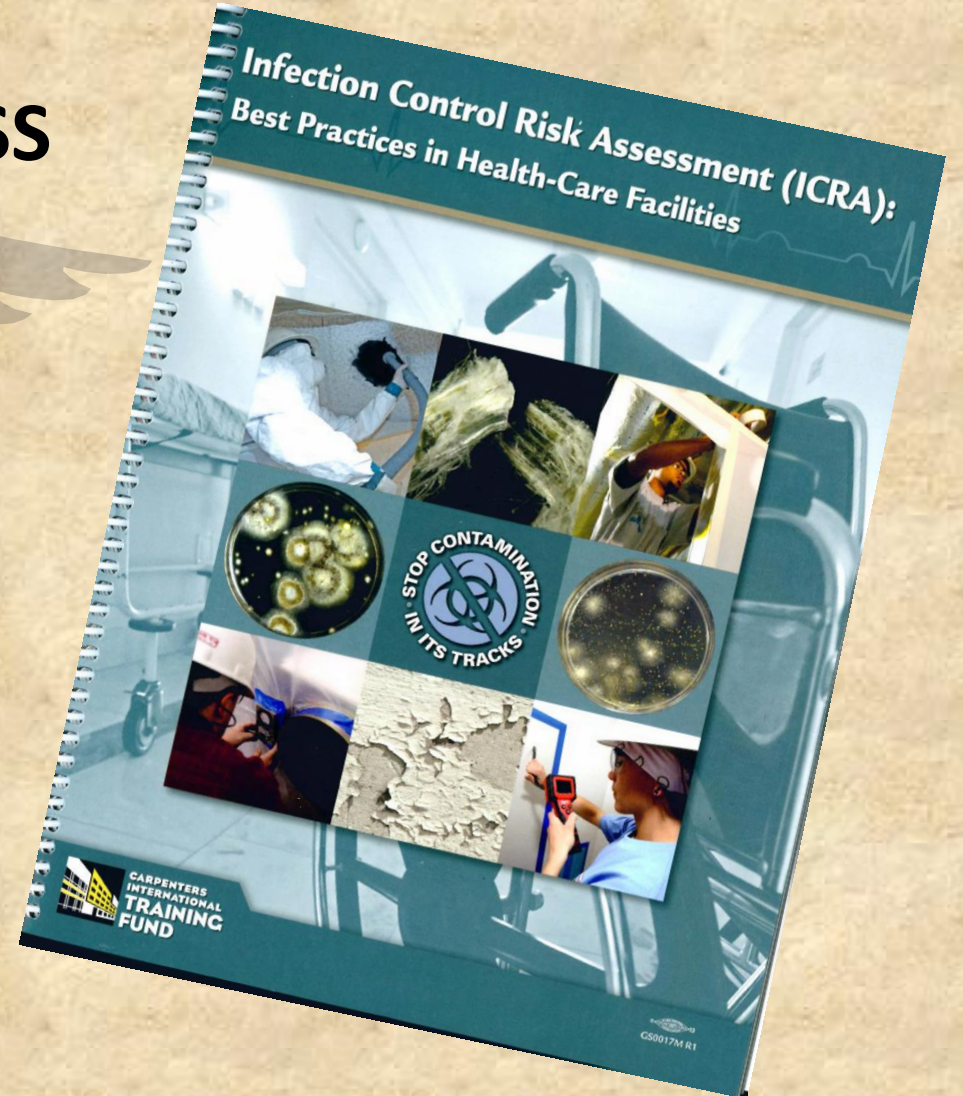
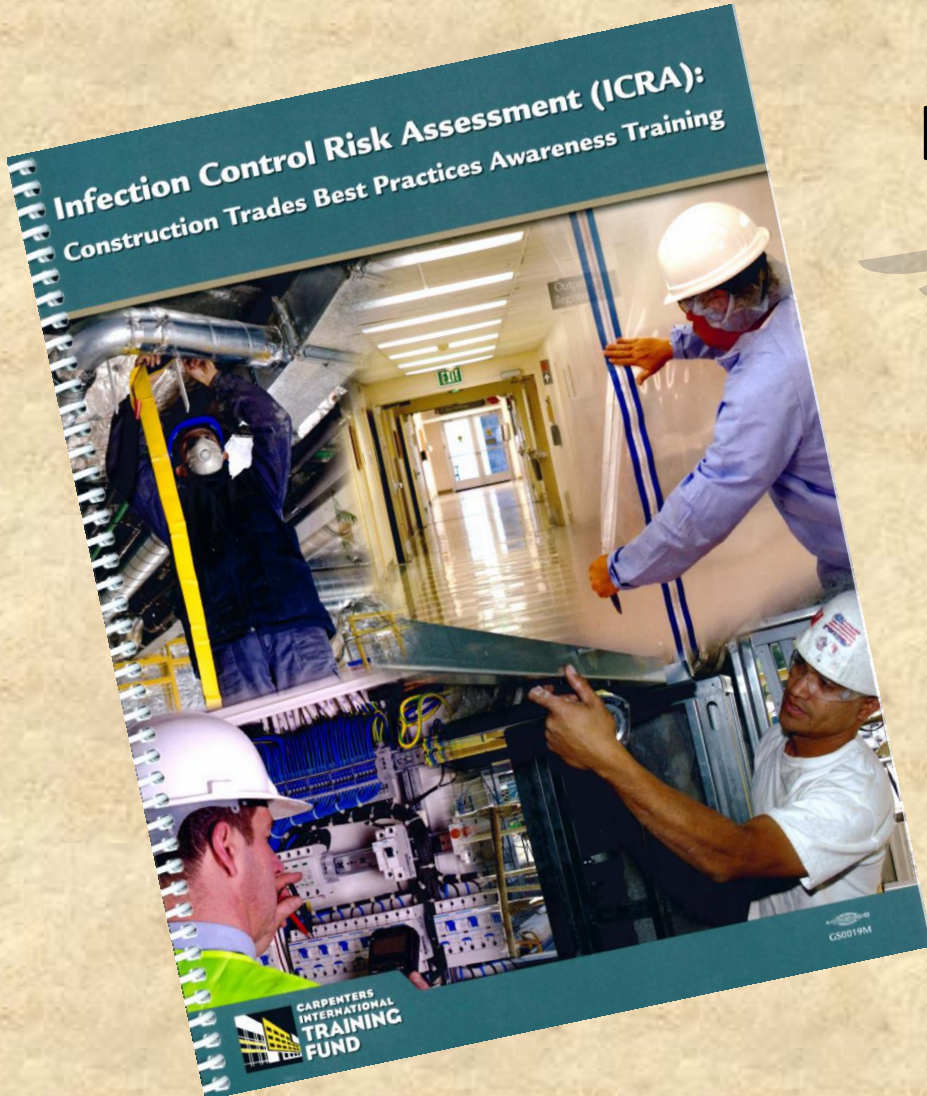


# ICRA TRAINING

## ICRA AWARENESS

ICRA 24

ICRA AIA









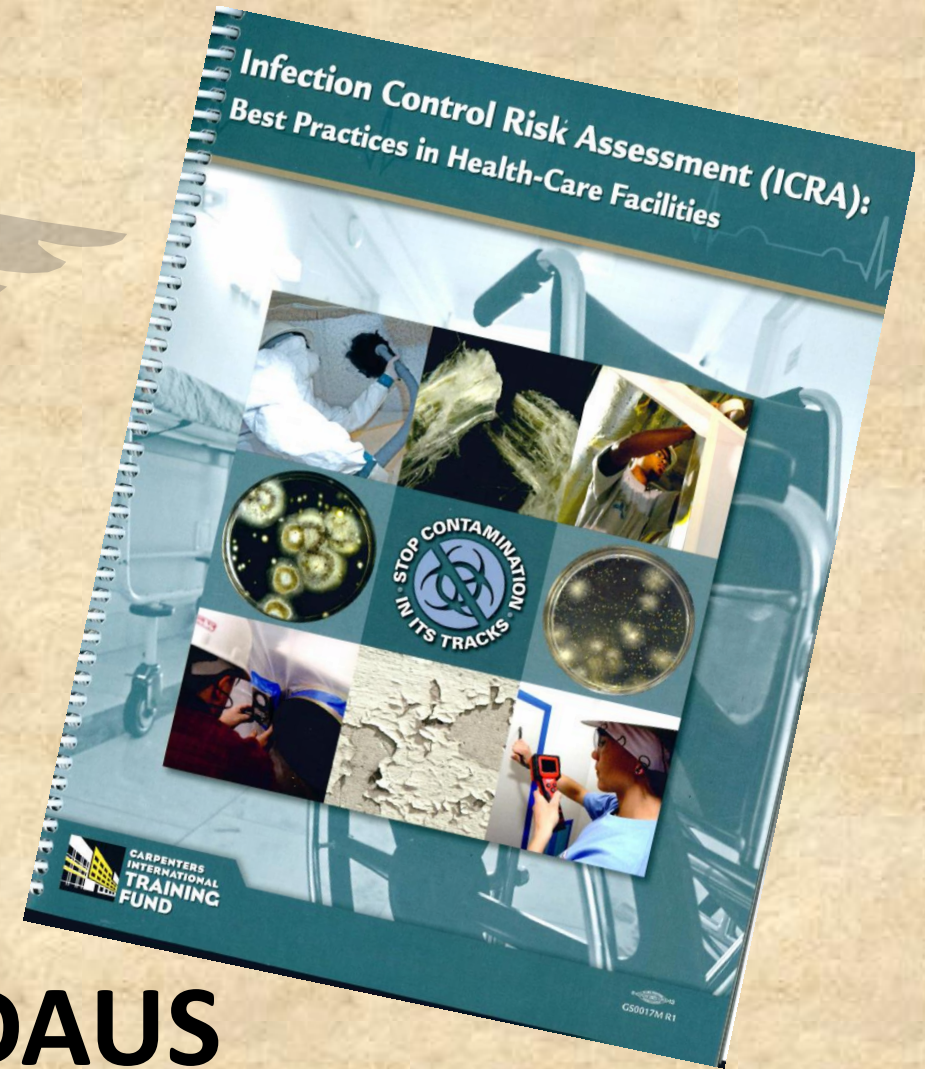
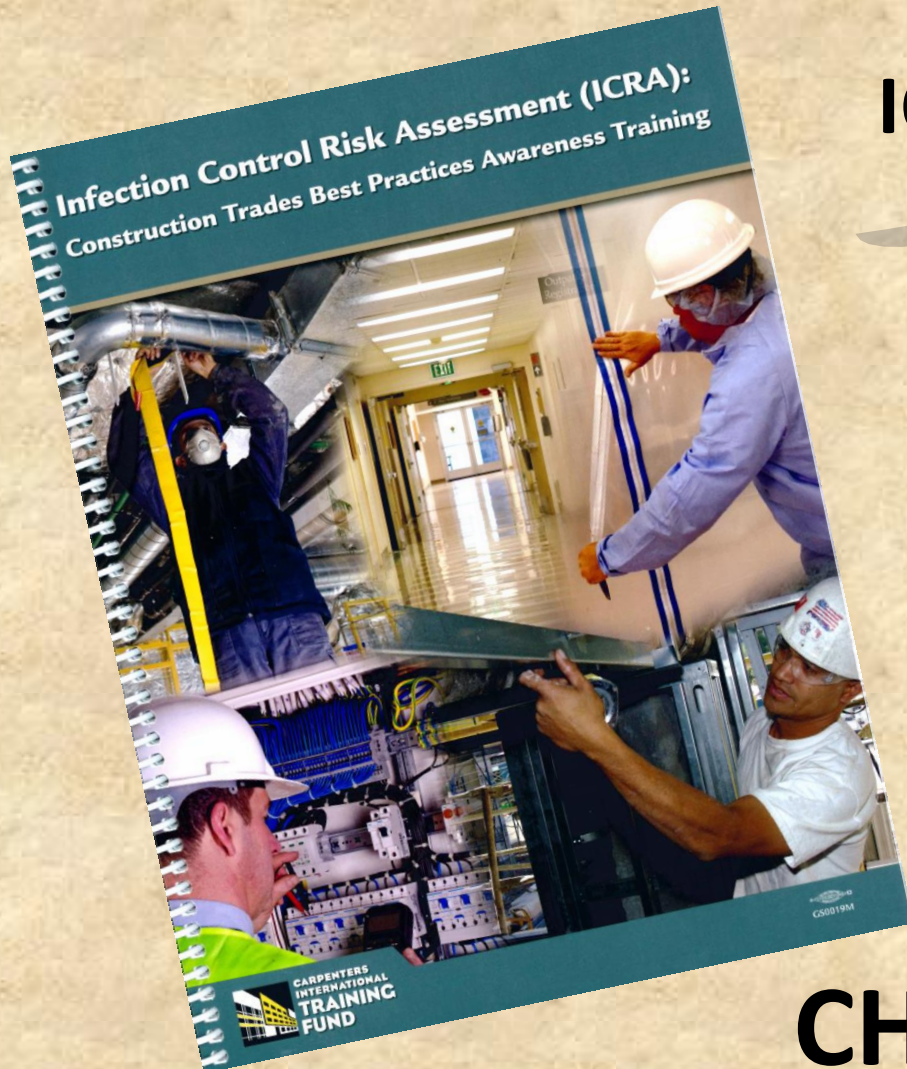
# ICRA TRAINING

## ICRA AWARENESS

ICRA 24

ICRA AIA

CHRISTA MARDAUS

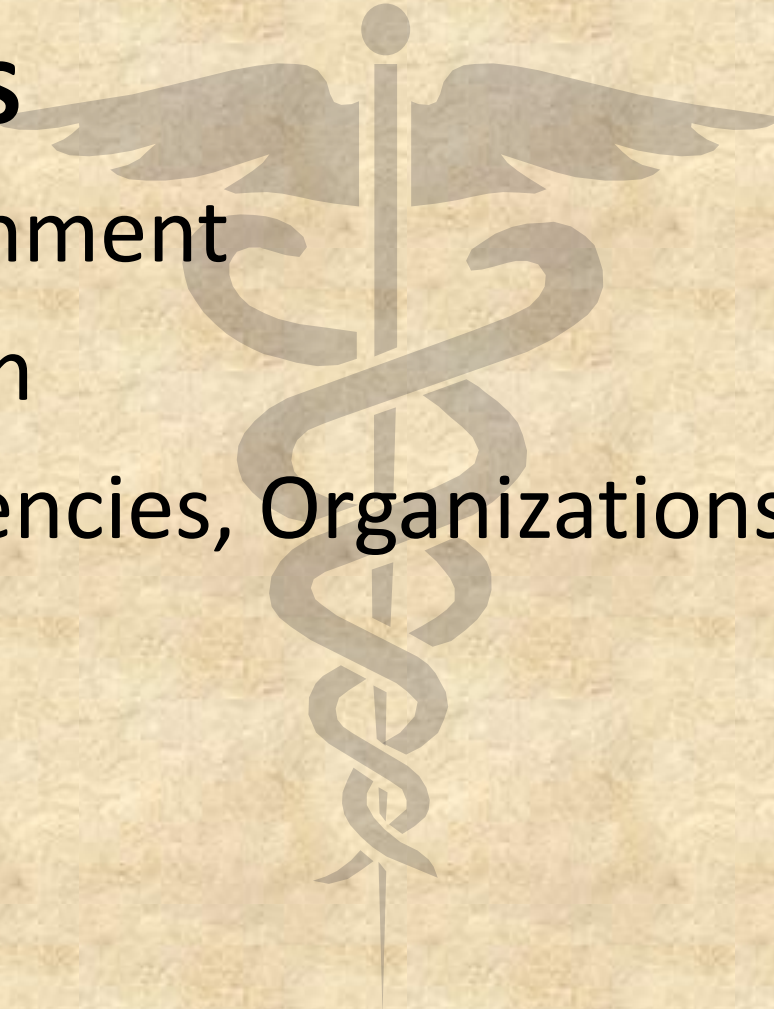




# ICRA TRAINING

## BASIC AWARENESS

- Unique Environment
- Professionalism
- Regulatory Agencies, Organizations, and Responsible Parties



# ICRA TRAINING

## Health Care Facility Administrative Controls

- Risk Evaluation
- Documentation
- Fire Control

<b>Infection Control Matrix</b> <b>Class of Precautions: Construction Project by Patient Risk</b>				
Construction Project Type				
Patient Risk Group	TYPE A	TYPE B	TYPE C	TYPE D
LOW Risk Group	I	II	II	III/IV
MEDIUM Risk Group	I	II	III	IV
HIGH Risk Group	I	II	III/IV	IV
HIGHEST Risk Group	II	III/IV	III/IV	IV

Note: Infection Control approval will be required when the Construction Activity and Risk Level indicate that Class III or Class IV control procedures are necessary.



# ICRA TRAINING

## Controlling Contaminants

- Contaminants and Infectious Agents
- Controlling Contaminants
- Air Pressure and Quality



# ICRA TRAINING

## WORK PROTOCOL

- Pre-work Activities
- Work Activities
- Scenarios

Description of Required Infection Control Precautions by Class		
	During Construction Project	Upon Completion of Project
CLASS I	<ol style="list-style-type: none"><li>1. Execute work by methods that minimize raising dust from construction operations.</li><li>2. Immediately replace a ceiling tile displaced for visual inspection</li></ol>	<ol style="list-style-type: none"><li>1. Clean work area upon completion of task.</li></ol>
CLASS II	<ol style="list-style-type: none"><li>1. Provide active means to prevent airborne dust from dispersing into atmosphere.</li><li>2. Water mist work surfaces to control dust while cutting.</li><li>3. Seal unused doors with tape.</li><li>4. Block off and seal air vents.</li><li>5. Place dust mats at entrances and exits of work areas.</li><li>6. Remove or isolate HVAC system in areas where work is being performed.</li></ol>	<ol style="list-style-type: none"><li>1. Wipe work surfaces with disinfectant.</li><li>2. Contain construction waste in tightly covered containers before transport.</li><li>3. Wet mop and/or vacuum with HEPA-filtered vacuum before leaving work area.</li><li>4. Upon completion, restore HVAC system where work was performed.</li></ol>
CLASS III	<ol style="list-style-type: none"><li>1. Remove or isolate HVAC system in area where work is being done, to prevent contamination of duct system.</li><li>2. Complete all critical barriers—i.e., drywall, plywood, plastic—to seal area from non-work area before construction begins. Or, implement control cube method with HEPA-filtered vacuum for vacuuming prior to exit.</li><li>3. Maintain negative air pressure within worksite utilizing HEPA-equipped air filtration units.</li><li>4. Contain construction waste in tightly covered containers before transport.</li><li>5. Cover transport receptacles or carts. Tape down covering unless cart has a solid lid.</li></ol>	<ol style="list-style-type: none"><li>1. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department.</li><li>2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction.</li><li>3. Vacuum work area with HEPA-filtered vacuum.</li><li>4. Wet mop area with disinfectant.</li><li>5. Upon completion, restore HVAC system where work was performed.</li></ol>
CLASS IV	<ol style="list-style-type: none"><li>1. Isolate HVAC system in area where work is being done, to prevent contamination of duct system.</li><li>2. Complete all critical barriers—i.e., drywall, plywood, plastic—to seal area from non-work area before construction begins. Or, implement portable cube method with HEPA-filtered vacuum for vacuuming prior to exit.</li><li>3. Maintain negative air pressure within worksite utilizing HEPA-equipped air filtration units.</li><li>4. Seal holes, pipes, conduits, and punctures.</li><li>5. Construct anteroom. Require all personnel to pass through anteroom so they can be vacuumed using a HEPA-filtered vacuum cleaner before leaving worksite. Or, require all personnel to wear cloth or paper coveralls that are removed each time they leave the worksite.</li><li>6. All personnel entering worksite are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area.</li><li>7. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department.</li></ol>	<ol style="list-style-type: none"><li>1. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction.</li><li>2. Contain construction waste in tightly covered containers before transport.</li><li>3. Cover transport receptacles or carts. Tape down covering unless cart has a solid lid.</li><li>4. Vacuum work area with HEPA-filtered vacuum.</li><li>5. Wet mop area with disinfectant.</li><li>6. Upon completion, restore HVAC system where work was performed.</li></ol>



# ICRA TRAINING

## Mold Considerations

- Mold in Health-Care Facility
- Discovery
- Pre-Remediation Activities and Considerations
- Remediation

TABLE 2 NYC Guidelines for levels of contamination and PPE requirements

Level	Area type	Example	PPE requirements	Negative air required
1	Small isolated areas, 10 ft <sup>2</sup> or less	Ceiling tiles, small areas on walls	N95 respirator, gloves, eye protection	No*
2	Midsized isolated areas, 10 ft <sup>2</sup> or less	Individual wallboard panels	N95 respirator, gloves, eye protection	No*
3	Large isolated areas, 30 ft <sup>2</sup> -100 ft <sup>2</sup>	Several wallboard panels	N95 respirator, gloves, eye protection	No*
4	Extensive contamination, greater than 100 contiguous square feet in an area	Faulty building designs, improper building material installation, condensation from high-humidity environments, buildings affected by natural disaster	Full-face respirator with HEPA cartridges for mold; disposable protective clothing covering the head, hands, and shoes	Yes

\*Although not required by NYC Guidelines, as an added precaution negative air and containment should be provided for all levels

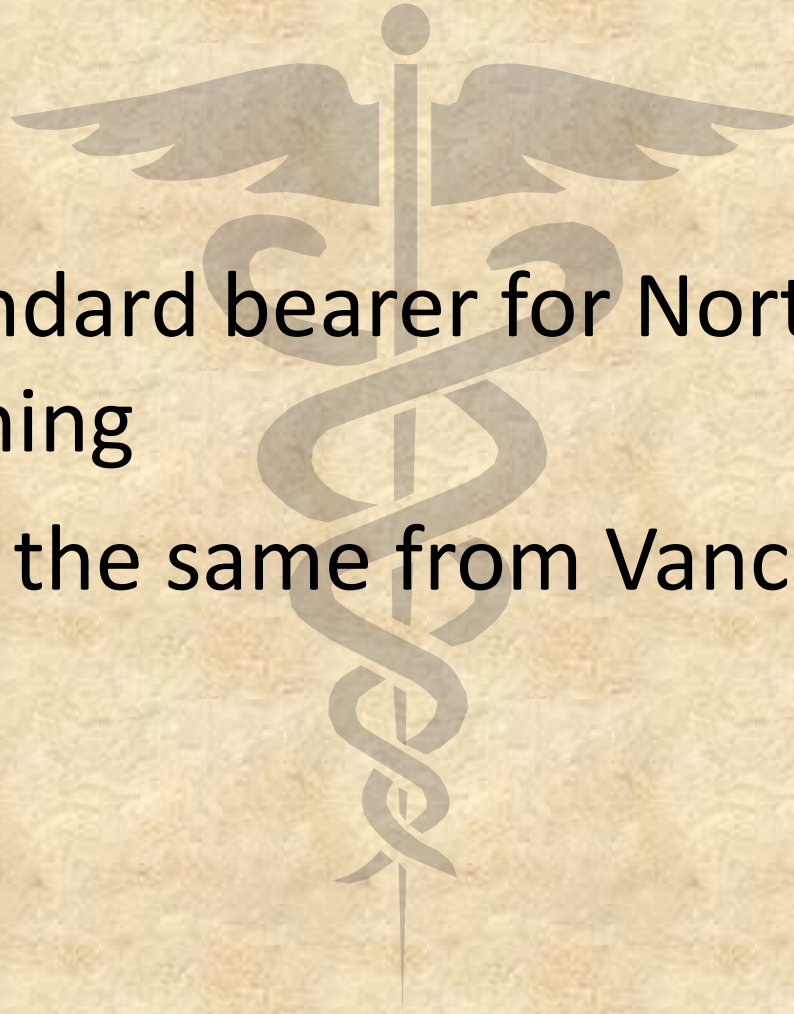




# THE STANDARD BEARER

INSTALL is the standard bearer for North American floorcovering training

The standards are the same from Vancouver to Miami and Boston to LA



# MANUFACTURER RELATIONSHIPS

- Manufacturer subject matter experts are welcomed back to continually review our training standards to make sure that they keep up with industry changes
- The industry supports, endorses, recommends and specifies INSTALL training and certifications because INSTALL is their training



# TRAINING

- INSTALL training is theoretical/ classroom, practical/workshop, and realistic (on the job)
- Outside of INSTALL the industry norm is informal jobsite training from one untrained installer to the next

**INSTALL Certifications fulfill the promise that every installer should be able to provide:**

**“I know how to install the flooring correctly prior to my arrival on the job site.”**









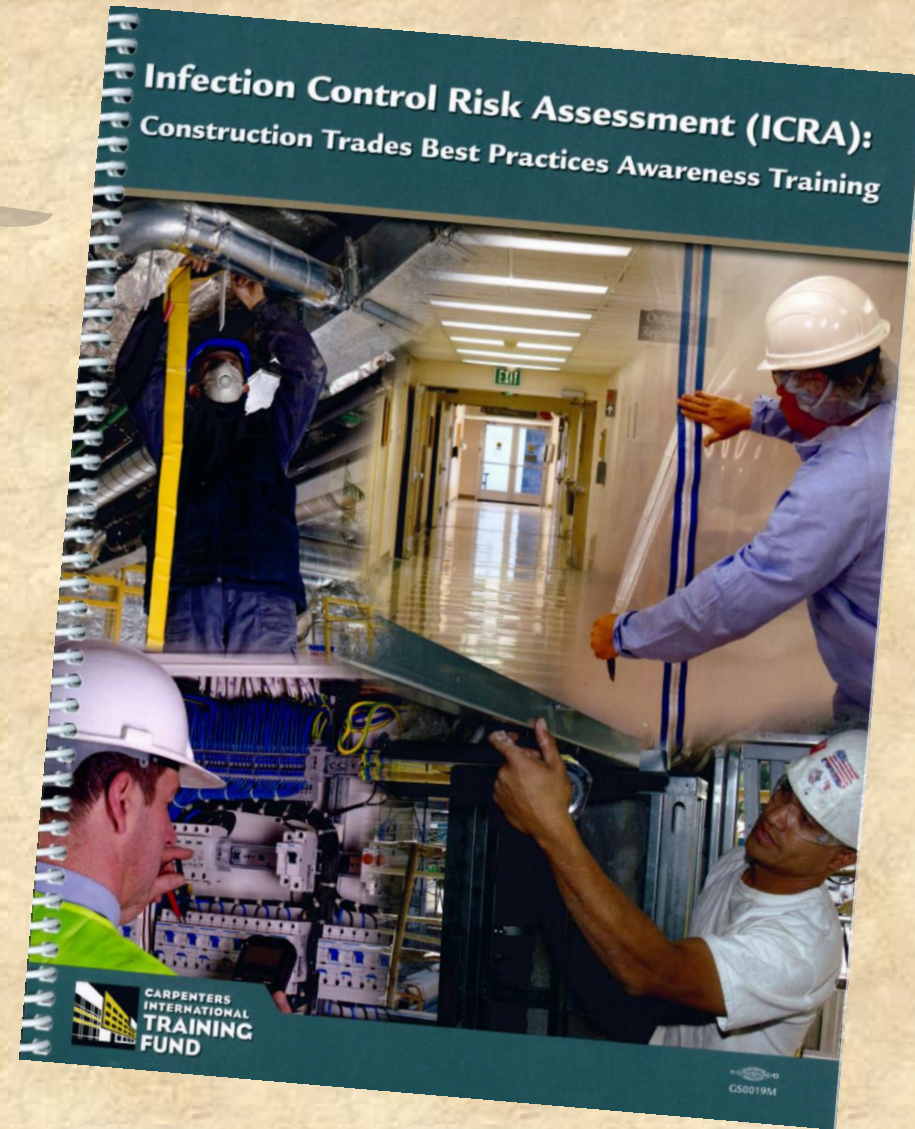
**ICRA | ENSURING INSTALLATION SUCCESS**





# ICRA AWARENESS

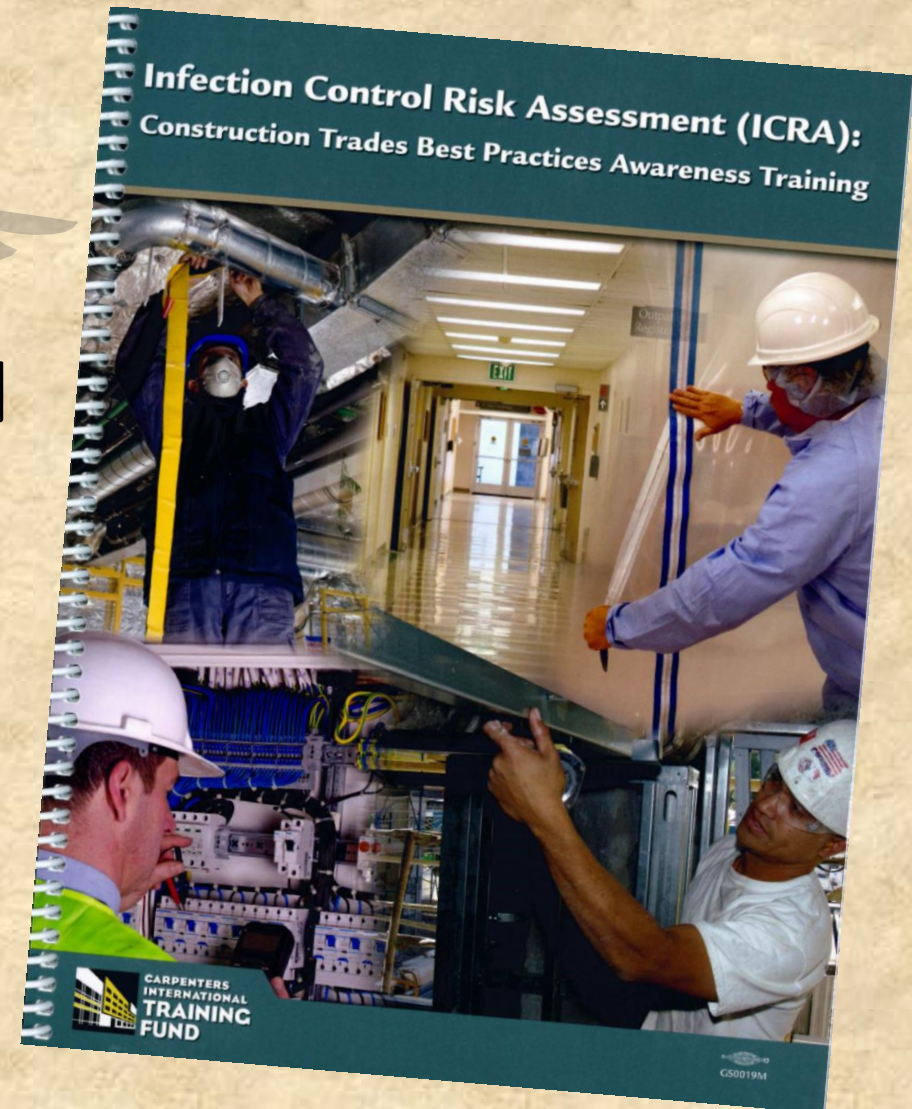
- BUILDING TRADES CRAFT WORKERS
- ALL FACILITY STAFF
- ONE DAY TRAINING





# ICRA AWARENESS

- NO COST
- CAN BE SET UP AT YOUR LOCATION OR OURS
- BREAKFAST AND LUNCH PROVIDE
- BADGE, HARDHAT STICKER, AND TRAINING MANUAL PROVIDED



# ICRA AWARENESS

## Continuing Education for Architects, Engineers, and Interior Designers

700 Olive Street • Saint Paul, MN 55130



Phone: 651.646.7207 • Fax: 651.645.8318

### 8 hour Continuing Education Credits in Infection Control Risk Assessment (ICRA)

**Mission:** Help enhance and expand your skills, knowledge, and ability when working in an Occupied Healthcare Facility. ICRA trained professionals will have the ability to identify proper work practices during a construction project and be aware of the potential hazards inside a Healthcare Facility.

**Target Audience:** Architects, Engineers, Geoscience, Interior Design and Landscape Architects

**Content Development Facility:** Carpenters International Training Fund-Las Vegas, NV; James Barr, New England Carpenter Training Fund; Susan Field, Indiana/Kentucky/Ohio Regional Council of Carpenters (JAFT); Timothy Moriarity, Connecticut Carpenters Apprenticeship Training Center; Craig Ramey, Carpenter Training Committee for Northern California; Special thanks to Andrew Streifel, Hospital Environment Specialist, University of Minnesota.

### Learning Objectives:

Upon completion of this workshop, the participants should be able to:

- Understand the importance of hazardous material awareness
- Identify potential hazards that may be found on a construction site
- Know how to read an ICRA form and identify type of work, patient risk, matrix, and classification
- Understand the importance of a firestop system in an occupied facility
- Identify different types of construction barriers that may be used
- Understand proper ways to use a HEPA machine, CFM, and ACH requirements
- Understand important safety consideration and work protocols during a construction project
- Understand the importance of using ISLM assigned routing
- Understand mold remediation process

**Date:** \_\_\_\_\_

**Session Time:** 0800 – 1600

**Contact:** 8.0

This certifies that \_\_\_\_\_ has completed the 8 hour ICRA Construction Trades Best Practices Awareness Training.

According to Minnesota State Statute 326.107, Subd. 2, this meets the state requirements for continuing education. However, it is the responsibility of the participant to determine whether this activity meets the requirements for acceptable continuing education.



# ICRA AWARENESS

## *Certificate of Completion*

This is to certify that

\_\_\_\_\_

has completed the training requirements of the UBC Infection Control Risk Assessment ICRA: Construction Trades Best Practices Awareness Training Qualification Program developed by the United Brotherhood of Carpenters and Joiners of America's International Training Fund

Retain certificate until  
expiration in four years

**CONSTRUCTION**  
**ICRA** BEST PRACTICES  
IN HEALTHCARE  
CONSTRUCTION



\_\_\_\_\_  
Date

\_\_\_\_\_  
North Dakota Board of  
Nursing Course 1545

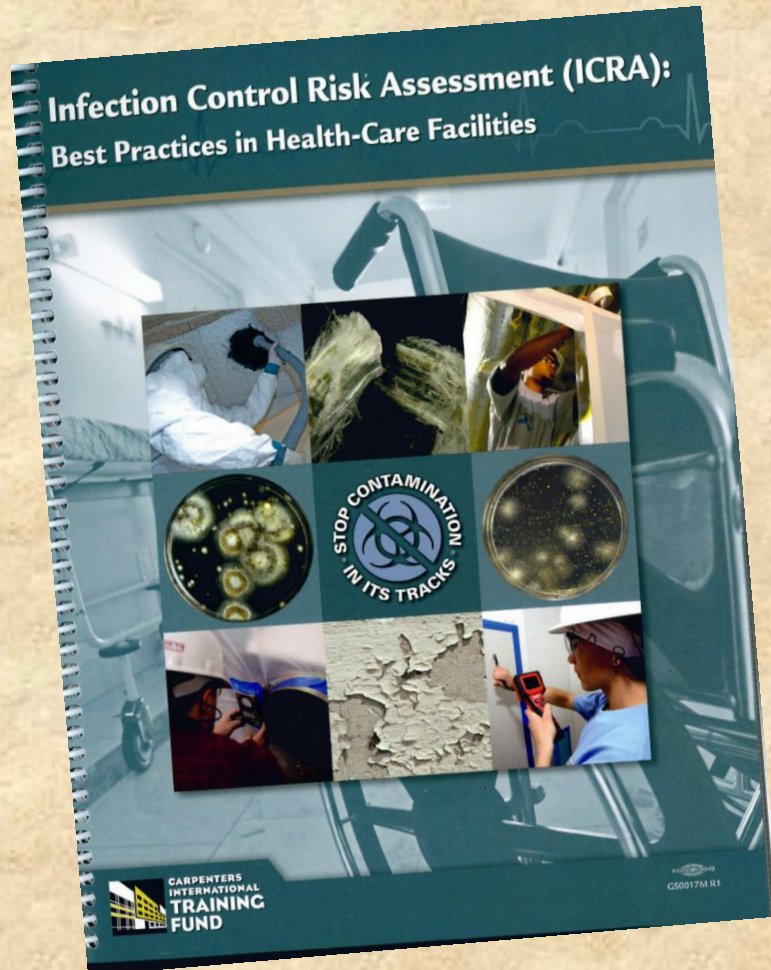
\_\_\_\_\_  
Instructor

\_\_\_\_\_  
Seven contact hours

ConstructionICRA.org

# Continuing Education for Registered Nurses

# ICRA 24 HOUR TRAINING



- Standard Training for Carpenters
- All Apprentices take during their program
- No cost to contractors



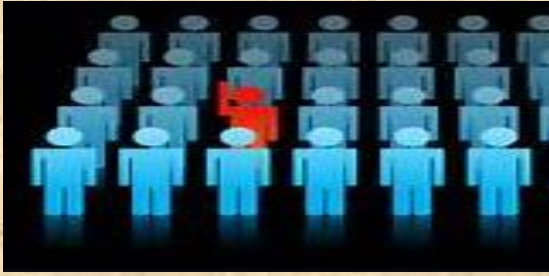
# ICRA AIA

ICRA Training for Architects

1.5 – 2 hour overview

Learning Unit for Health,  
Safety, and Welfare





# WHY ICRA TRAINING?

**\$35,000,000,000 - \$47,000,000,000**





# ARE WE ROLLING THE DICE?



**Reduce the risk of HAI during renovation,  
maintenance, and construction.**

# RAISE THE STANDARD



## NORTH CENTRAL STATES REGIONAL COUNCIL OF CARPENTERS (NCSRCC)

### *Construction ICRA Best Practices Language for Bidding Specs*

\_\_\_\_\_ desires to implement the highest level of protection to our patients. Thus, \_\_\_\_\_ will require all construction carpenters performing work in its health care facilities to complete an Infection Control Training and Certification Program, of no less than twenty-four (24) hours, which will include no less than eight (8) hours of hands-on-training utilizing and understanding the latest construction techniques, based upon an approved program. This includes but is not limited to, setting up and inspecting HEPA equipment, such as air scrubbers and vacuums, reading and identifying Magnehelic gauges and negative air pressure techniques, various soft-wall partitions, as well as hard-wall and ante room construction and the ability to recognize and understand ICRA forms.

Each construction firm contracted to perform work at \_\_\_\_\_ will bear responsibility in verifying its employees, supervisors, and carpenters performing the work, regardless of the tier of subcontracting, **will have the aforesaid approved training**. At this time \_\_\_\_\_ recognizes the twenty-four (24) hour UBC Construction ICRA Best Practices in Healthcare as the acceptable training and certification. All other trades and subcontractors will be required to complete an eight (8) hour Infection Control Training Awareness Orientation prior to working in our health care facilities.

\_\_\_\_\_ recognizes the UBC Construction ICRA Best Practices in Healthcare eight (8) hour awareness as acceptable training.

These requirements will take effect on \_\_\_\_\_ and will be a pre-requisite per the bid specifications for all projects to be performed at our health care facilities.

Signed and dated on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**Health Care Facility Representatives**

**NCSRCC Representatives**

\_\_\_\_\_  
Name & Title

\_\_\_\_\_  
NCSRCC/ ICRA Lead

\_\_\_\_\_  
Name & Title

\_\_\_\_\_  
NCSRCC Representative/ICRA Lead



# STANDARDIZED TRAINING IDENTIFICATION

ICRA  
Infection  
Control  
Risk  
Assessment



Name: Charles Sandor  
Trade: Carpenter  
Expiration Date: 01/31/2021

**CONSTRUCTION  
ICRA** BEST PRACTICES  
IN HEALTHCARE  
CONSTRUCTION



## IDENTIFICATION

*Certificate of Completion*  
This certifies that

has completed the training requirements of the UBC Infection Control Risk Assessment ICRA: Construction Trades Best Practices Awareness Training Qualification Program developed by the United Brotherhood of Carpenters and Joiners of America's International Training Fund

Date

Instructor

ConstructionICRA.org



ICRA  
Infection  
Control  
Risk  
Assessment



Name: Jason Davis  
Trade: Carpenter  
Expiration Date: 2/28/2021

**CONSTRUCTION  
ICRA** BEST PRACTICES  
IN HEALTHCARE  
CONSTRUCTION



# UPCOMING ICRA AWARENESS SESSIONS



**November 2, 2017**  
**Holiday Inn : Mezzanine IV**  
**3803 13<sup>th</sup> Ave S**  
**Fargo, ND 58103**

**Contact: Brian Pyle**  
**(218)341-4912**



## ICRA REGISTRATION

**Register Online with name  
and email at**

**<http://constructionicra.org/>**