Construction Sites are Workplaces, Too:
Considering the Health of Those Who Occupy Buildings Before Turnover

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PEPPER OVERVIEW

Markets

- Civic + Cultural
- Commercial Interiors
- Corporate Office
- Entertainment
- Healthcare
- Higher Education
- Hospitality
- Industrial
- K-12
- Manufacturing
- Mission Critical
- Residential
- Retail
- Senior Living

CONSTRUCTION JOBSITES

CONSTRUCTION HEALTH + SAFETY

Construction work
can be dangerous.

Much has improved
since the 1920s.

1920s
Grueling conditions, few regulations

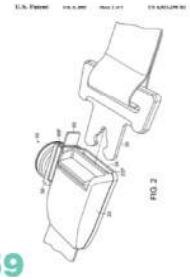
1920-30s
Rise of Unions

1933-37
Golden Gate Bridge: first project to require
- hard hats
- respirators
- goggles
- skin protection
- circus netting for falls

1927
Pepper Construction founded

1948
Workers' compensation programs nationwide

1950s
Some sites have untrained safety supervisors



1959
Patent awarded for safety belts

1969
Walsh-Healey Noise Standard for federal contract work

1971
Occupational Safety and Health Administration (OSHA) Founded

1980s
Locking snap hook connectors and full-body harnesses gain more acceptance

1996
National Occupational Research Agenda founded to reduce injuries and illnesses

2010s
Virtual construction helping to drive additional advancements

2016
Silica standards updated

WORKERS + END USERS

SOCIAL RESPONSIBILITY: creating a healthy workspace for the tradespeople

SAFETY: long-term health impacts of what goes into a project site

INDOOR AIR QUALITY (IAQ)

Occupant Complaint Investigations

USGBC - LEED Based Air Quality Testing

WELL Building Standard

STANDARD IAQ SAMPLING

SAMPLING KIT USGBC LEED v4

Baseline IAQ testing

performed **after construction**

ends and **before occupancy**


MEASURING IAQ
OUR RESEARCH AT A
CHICAGOLAND AREA HOSPITAL
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WHAT ARE WE **TESTING FOR?**

Particulate Matter PM-10

Formaldehyde

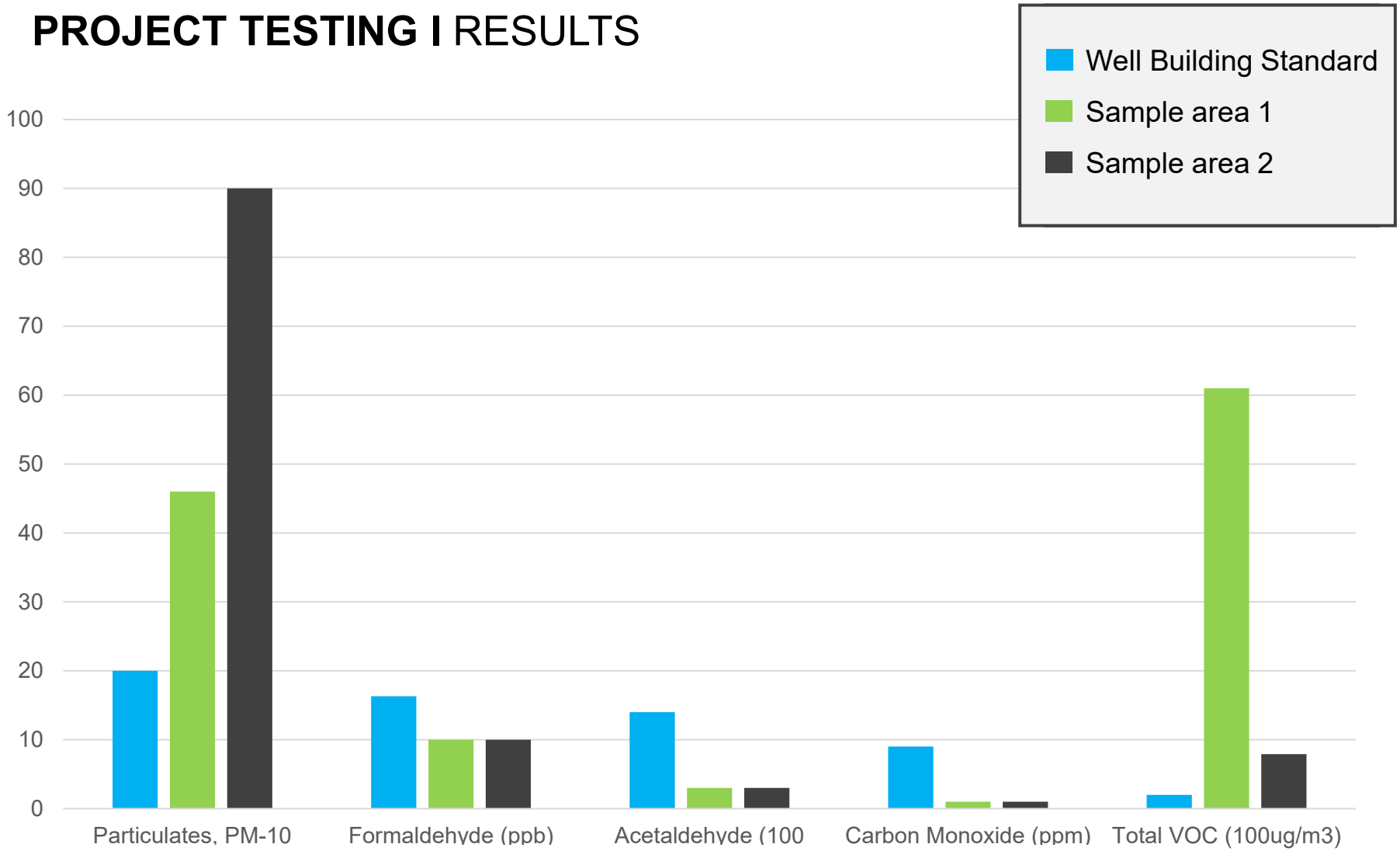
Acetaldehyde

Carbon Monoxide

Volatile Organic Compounds (VOCs)

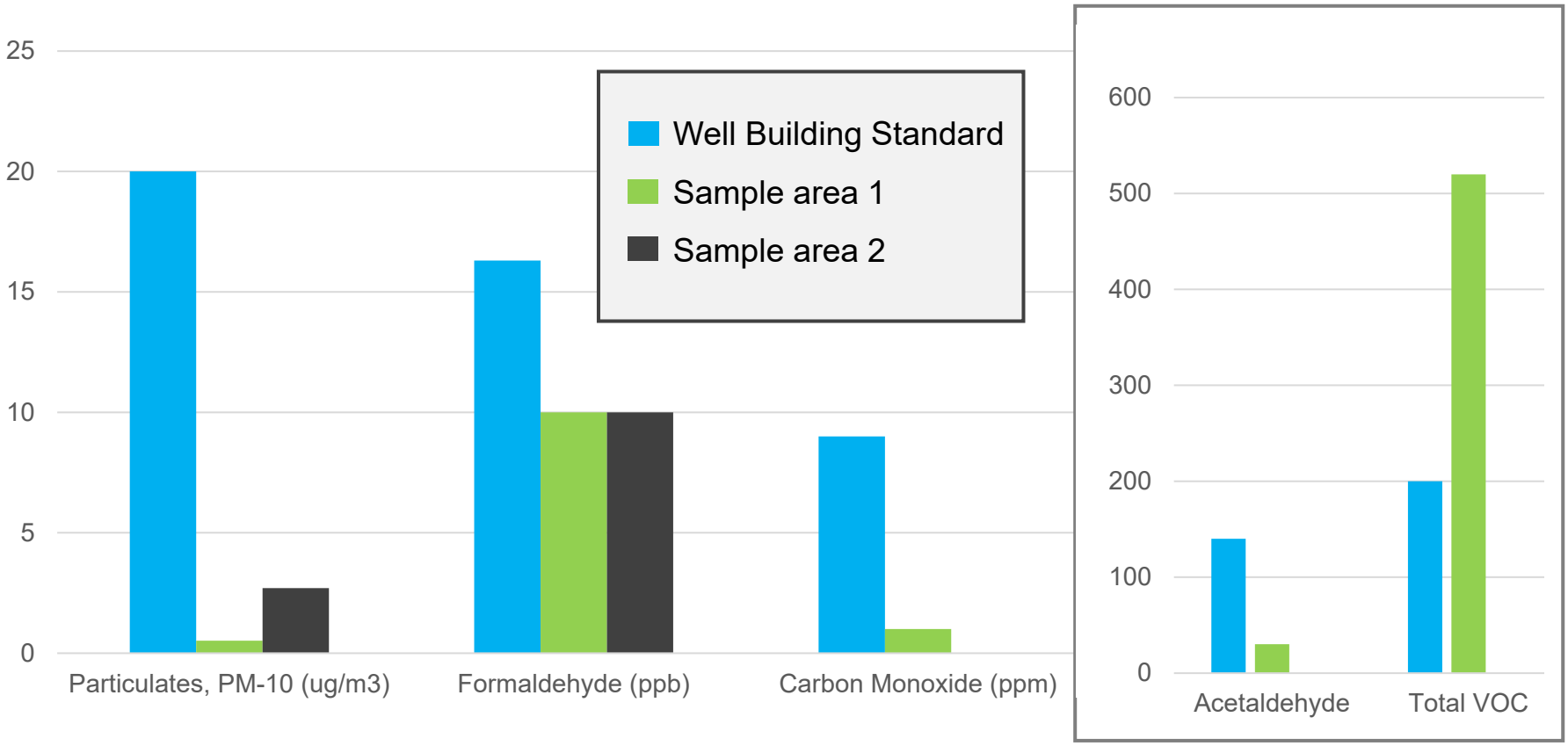
PROJECT TESTING I

PROJECT TESTING I RESULTS



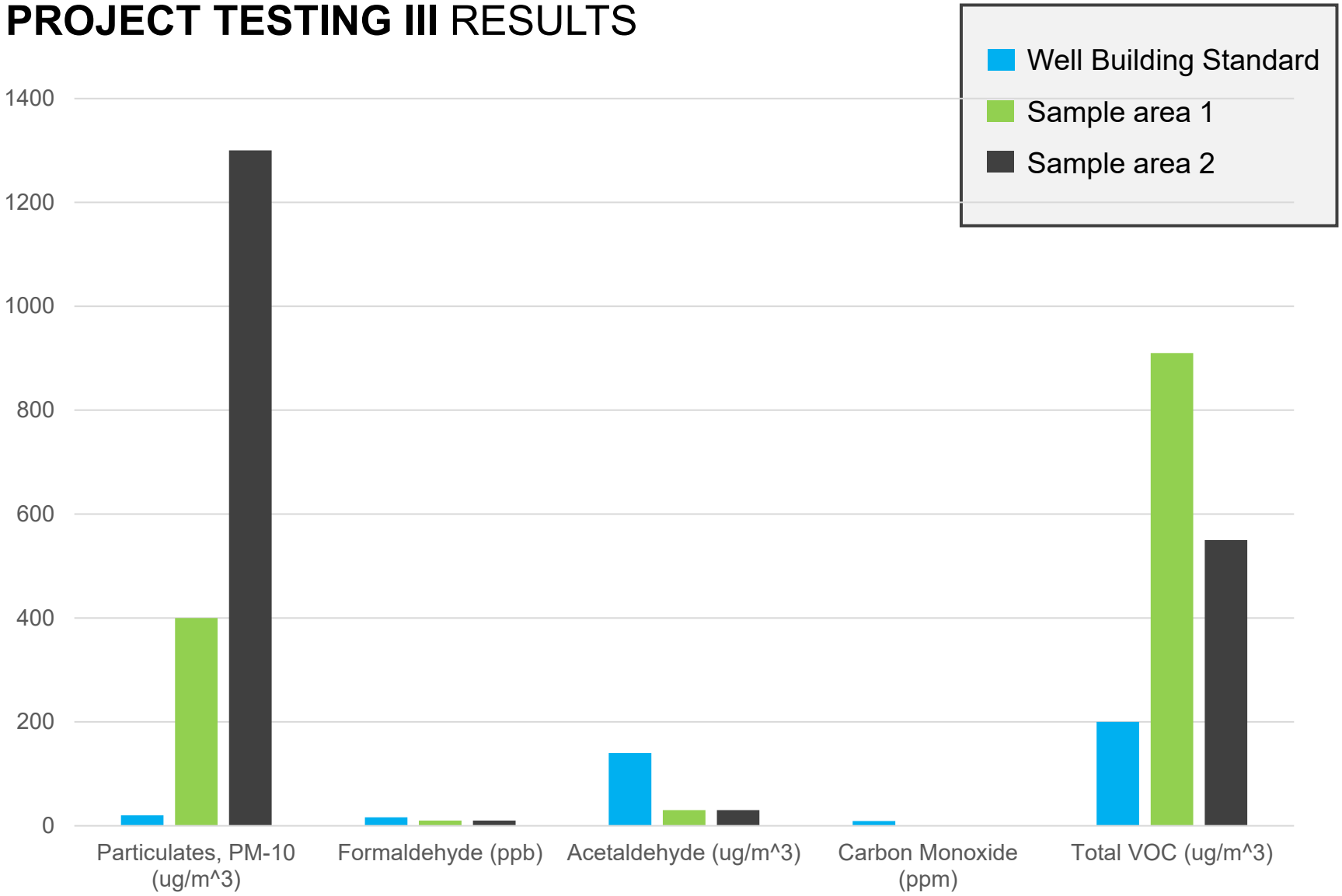
PROJECT TESTING II

PROJECT TESTING II RESULTS



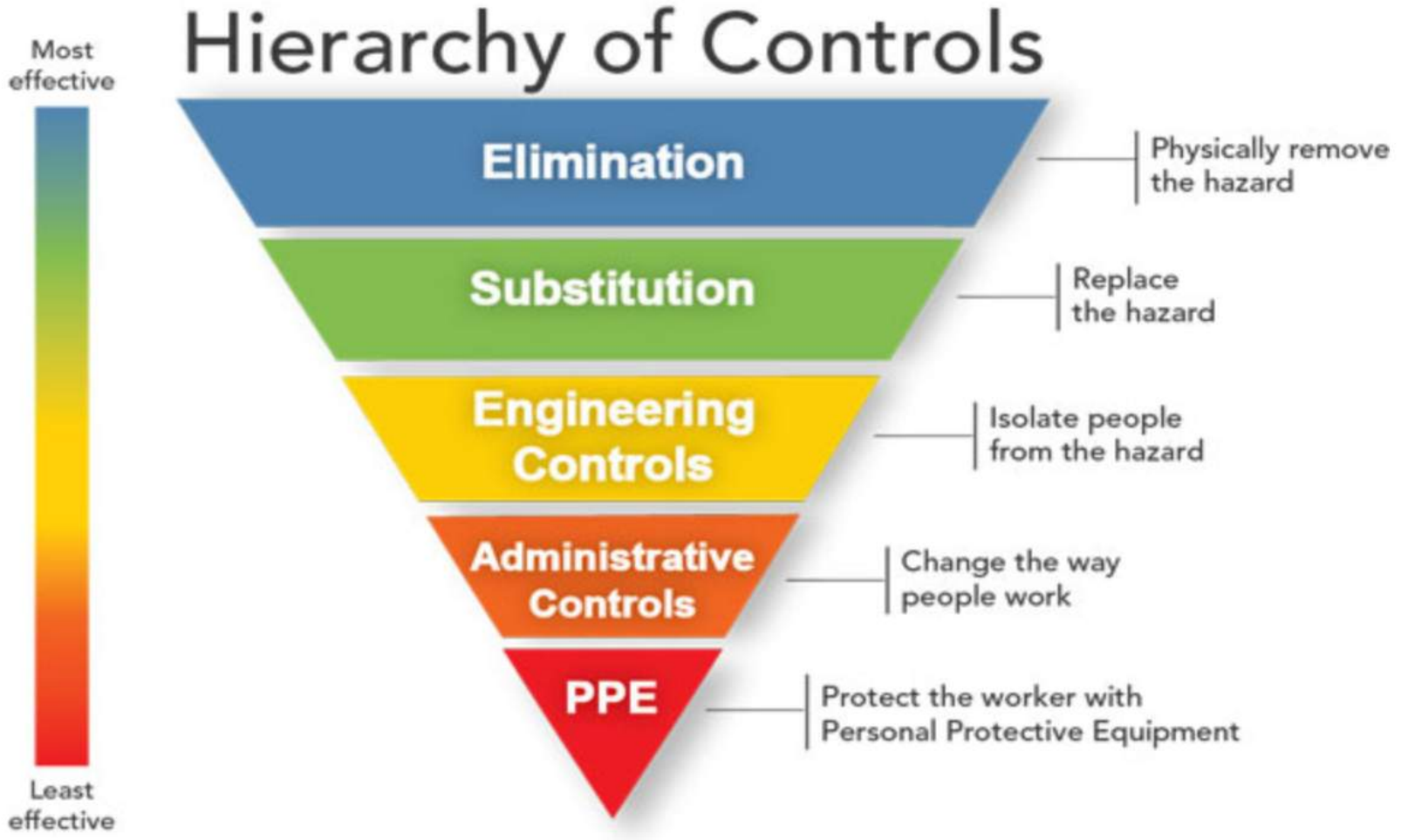
PROJECT TESTING III

PROJECT TESTING III RESULTS



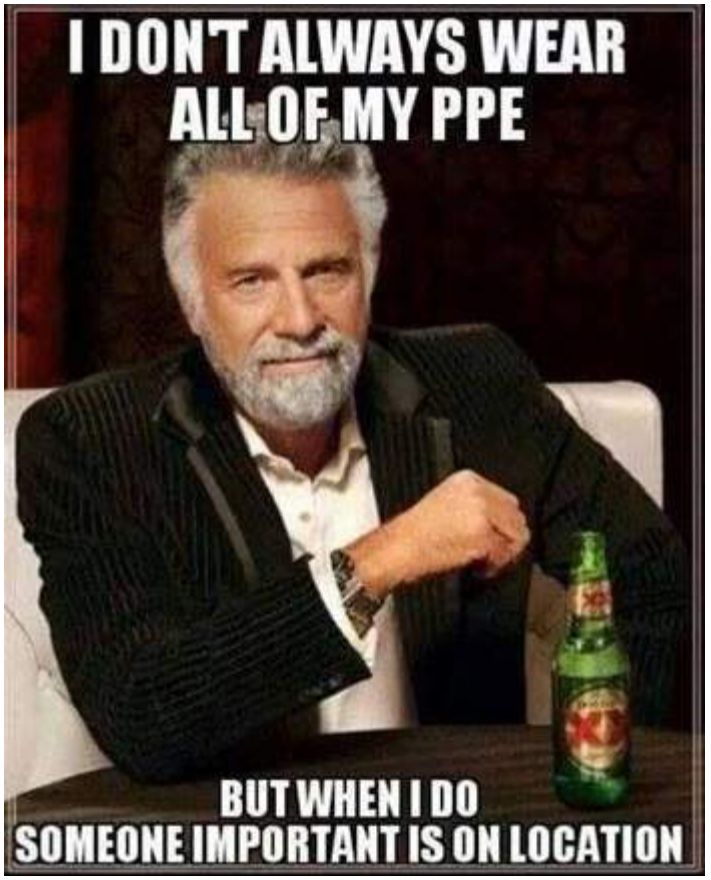
IDENTIFYING CONCERNS

PROTECTING OUR WORKERS



PPE and Administrative Controls

- Used with existing processes when hazards are not well controlled
- Hazards are not eliminated or reduced
- Inexpensive but can be ineffective
- Put burden on worker – ***human error***
- Training – ***usually not lack of knowledge***
- Require work to be done off hours – ***costs more***



PROTECTING OUR WORKERS

Thumbs up!?

PPE = Last Resort

Engineering Controls: Isolate people from the hazard

- Favored over PPE and Administrative controls
- Remove hazard at the source
- Can be highly effective
- Cost is higher
- Requires additional equipment and work
- Hazard still exists, still potential exposure

PROTECTING OUR WORKERS

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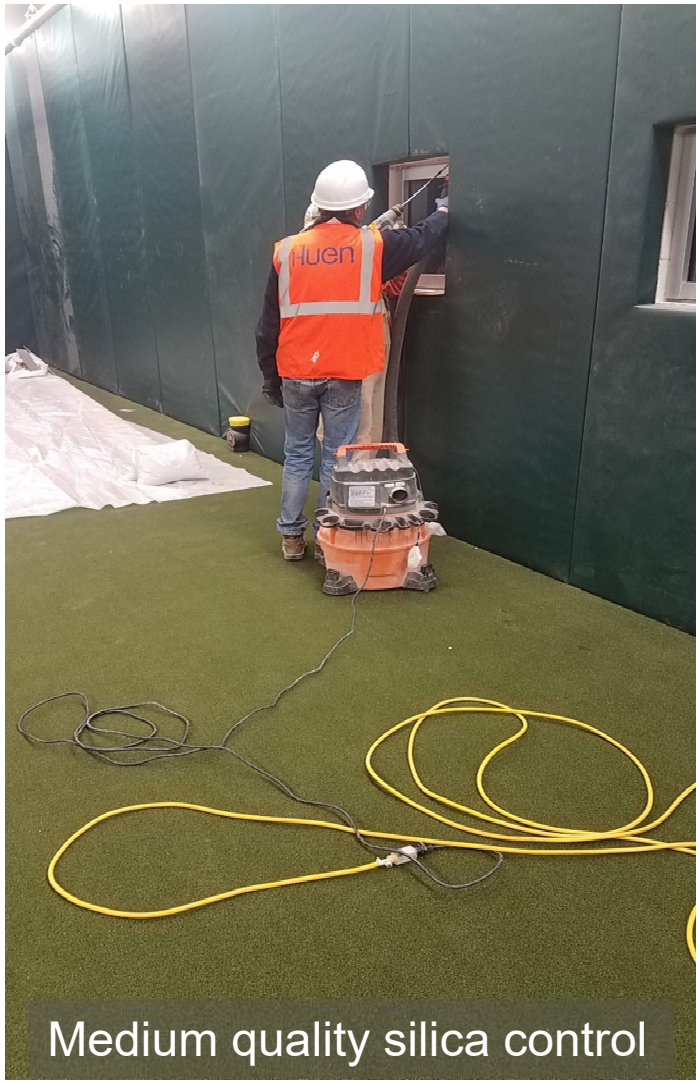

We never want to see this again.

Low quality ventilation during silica work

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Elimination and Substitution:

Replace or remove the hazard

- Most effective
- Most difficult
- Requires cooperation from multiple parties
- Can be costly and take time
- Not typical and may challenge assumptions
- Easier during design and developmental stages

PROTECTING OUR WORKERS

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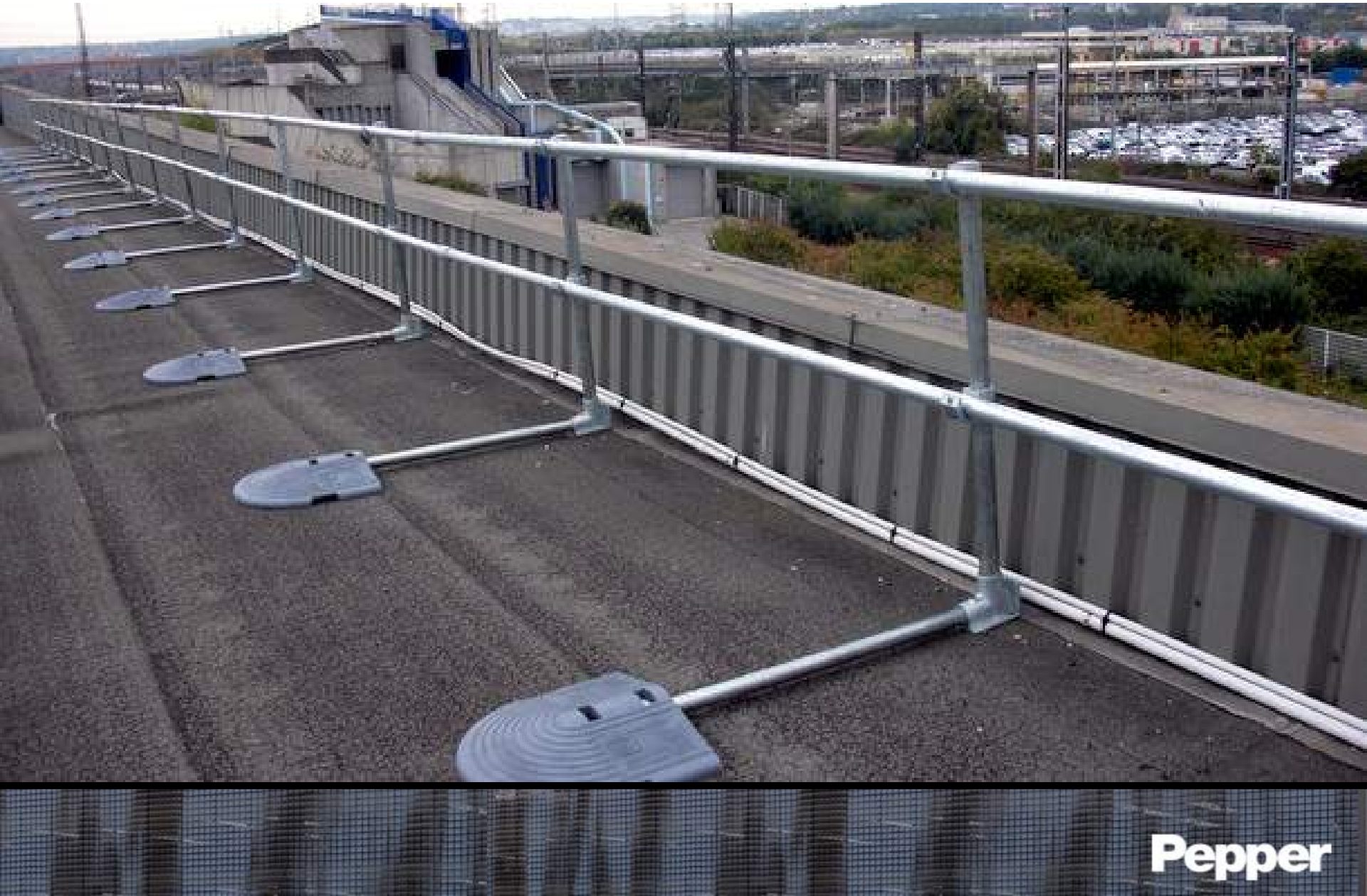
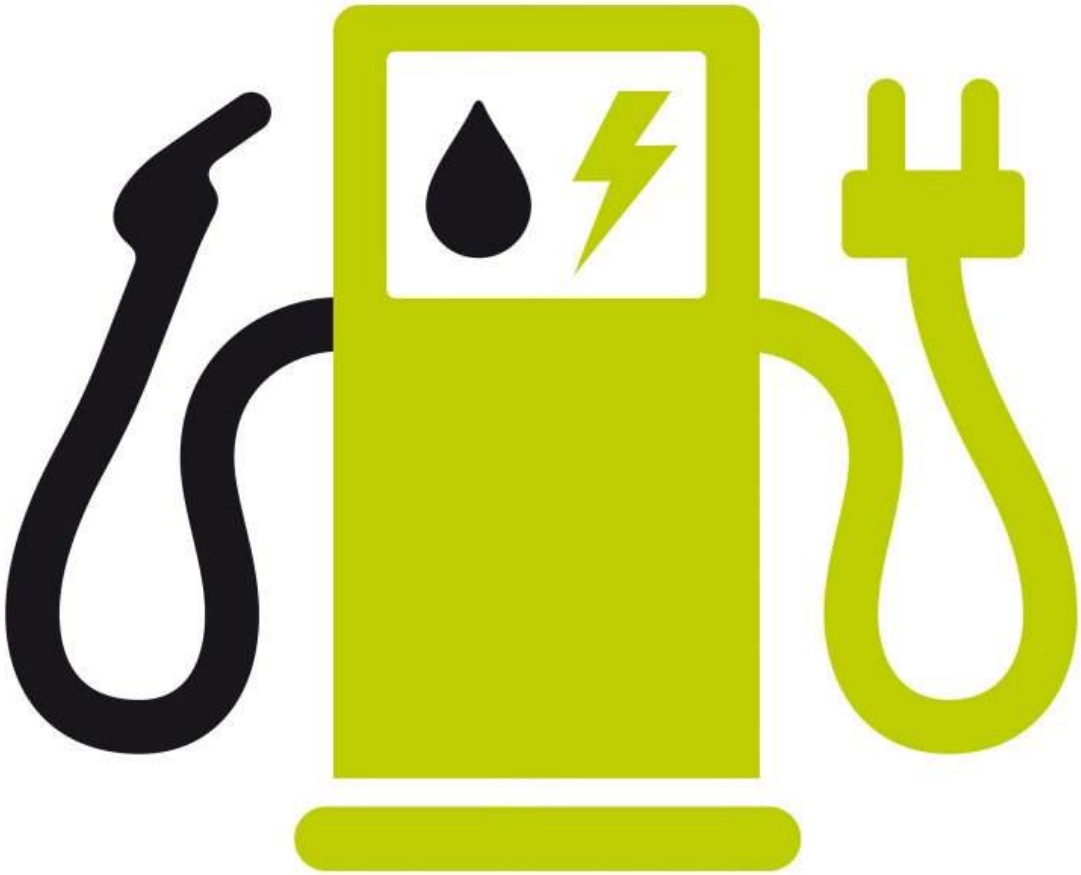


PROTECTING OUR WORKERS



PROTECTING OUR WORKERS

Vs

PROTECTING OUR WORKERS

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Keep hazardous materials off the jobsite

Partner with architects to specify safe products

PROTECTING OUR WORKERS

NIOSH – National Institute for Occupational Safety and Health

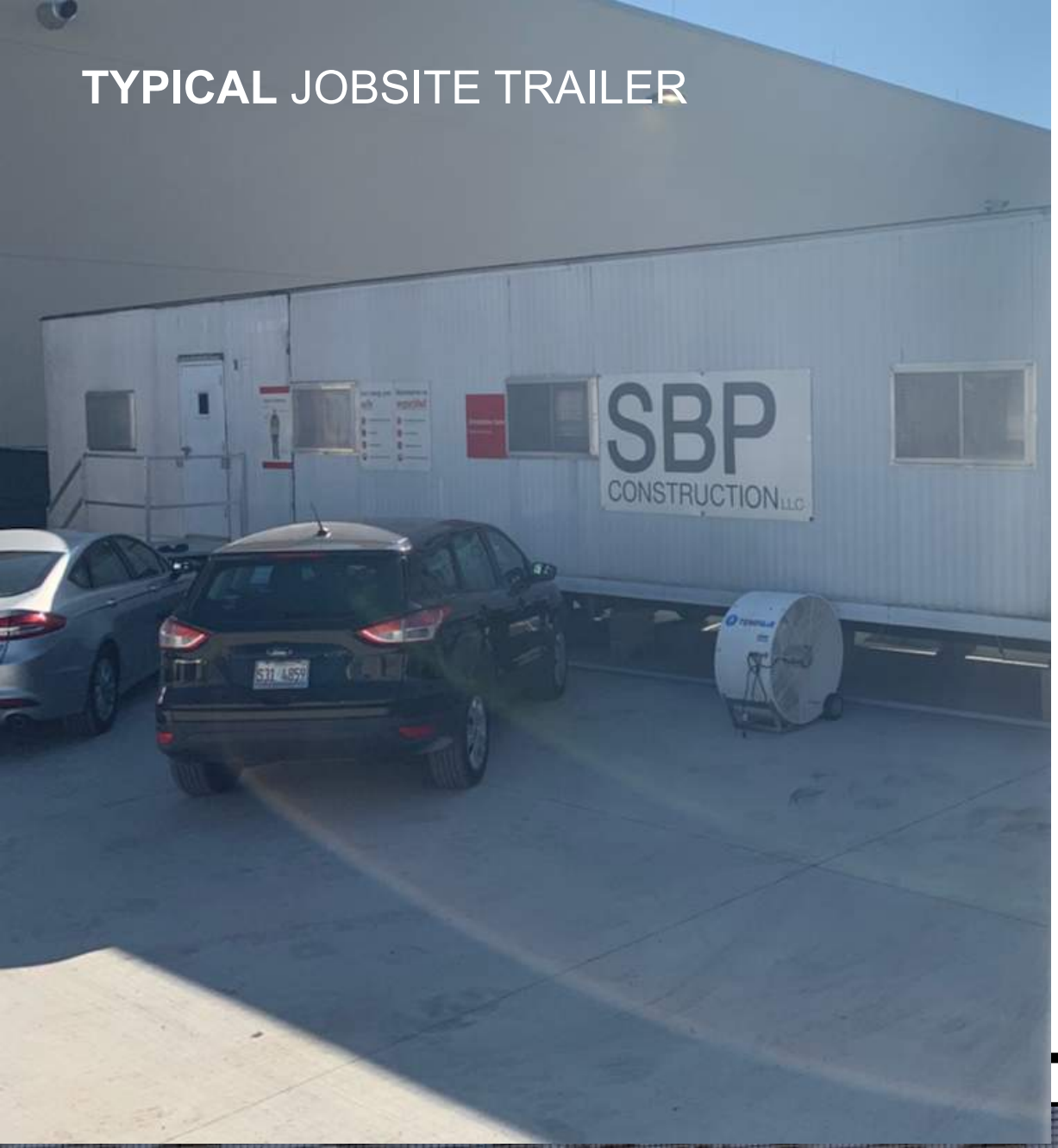
Examples:

- Parapet walls and skylights
- Rooftop anchor points
- Weight and size of building materials
- Surface coatings and finishes
- Eliminate RED LIST items
- Eliminate confined spaces
- Require prefabrication

cdc.gov/niosh/topics

Making progress

TYPICAL JOBSITE TRAILER



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BUILDING THE FUTURE

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WHERE WE’RE GOING

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Success
Nutrition Facts
Amount Per Serving

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One Net Zero Trailer eliminates **53,712 pounds of CO_2 emissions** each year (4 homes)

If 700,000 construction companies had one trailer each, we'd eliminate **19 trillion tons of CO_2** each year (2,800,000 homes)…

…or **760 trillion tons** over their lifetime of use (28,000,000 homes)

That's more than the populations of the **10 largest US cities** combined!

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QUESTIONS + ANSWERS