Welcome to the Pfizer Memphis Logistics Center

Hosts/Help:

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21JUN2024

It’s Just a Warehouse

(What could go wrong?)

Lesley Morrison, LCRM Team Lead

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21JUN2024

About the Presenters

Lesley Morrison

EHS Experience 30+ years

Pfizer

STAR WORKSITE VPP Partners in Safety and Health OSHA – Management – Labor

x 12+

Jonathan Briley, CSP, SGE

EHS Experience 22+ years

Pfizer LCRM

Logistics Compliance and Risk Management (LCRM)

- Responsible for over 150 Internal and External Logistics Sites, Globally
- Managed by 3 EHS Professionals with local/market support.

What We Do

- Direct compliance and guidance for in-house sites
- Audit and assessment of compliance for 3rd party sites
- RFP and site selection support
- Risk Management & Intelligence

Does your site(s) have:

A Warehouse Area?
A Loading Dock?
A Dock Yard?

Which of these is more dangerous?

Why?

Let’s calibrate our risk meters

Program Drivers

	Manufacturing	Logistics
Fire and Life Safety		
Heavy Equipment/ Pedestrian Interaction		
Regulatory Scrutiny		
Change Control		
High Hazard Work		
Construction Projects		
Machine Guarding		
Contractor Management		
Industrial Hygiene		
Hazardous Waste		
SPCC/Storm Water		
Process Safety Management (PSM)		

In which profession are you most likely to be injured such that medical treatment is required

1. Coal Mining

2. Iron and Steel Mill

3. Nursing and Residential Care Facilities

4. General Warehousing and Logistics

You are statistically less likely to get injured as a coal miner or as a steel worker!

Coal Mining
TRIR = 3.2

Iron and Steel Mill
TRIR = 2.2

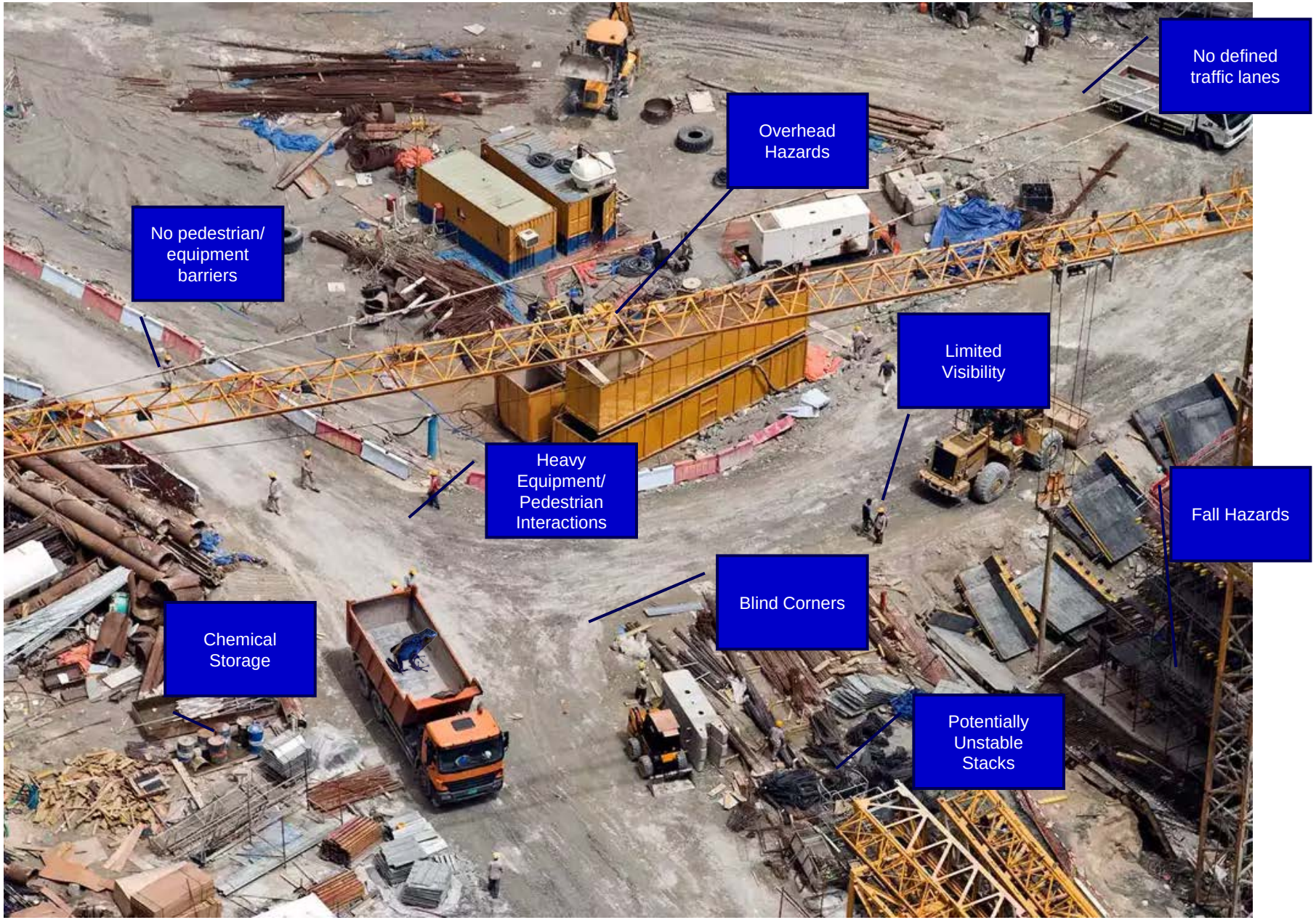
Nursing and Residential Care Facilities
TRIR = 13.1

General Warehousing and Logistics
TRIR = 5.7

Safe?

Would you let your colleagues walk through this area?

Why/Why Not?



Safe?

Would you let your colleagues walk through this area?

Why/Why Not?

Safe?

Would you let your colleagues walk through this area?

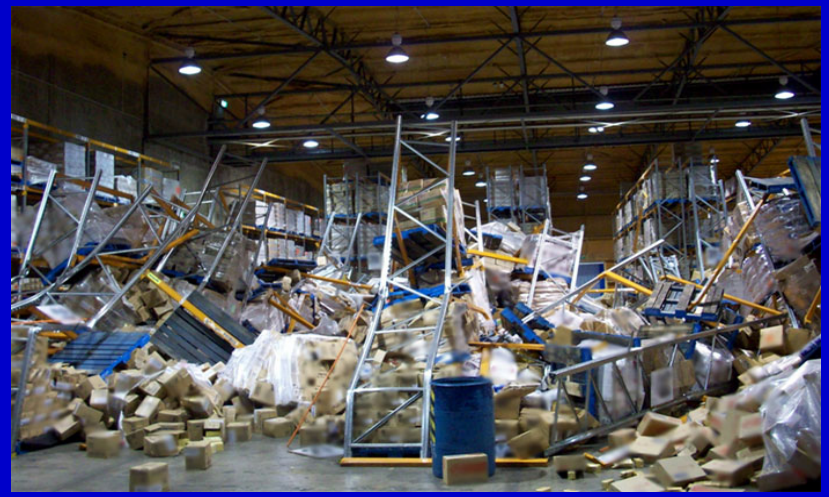
Why/Why Not?

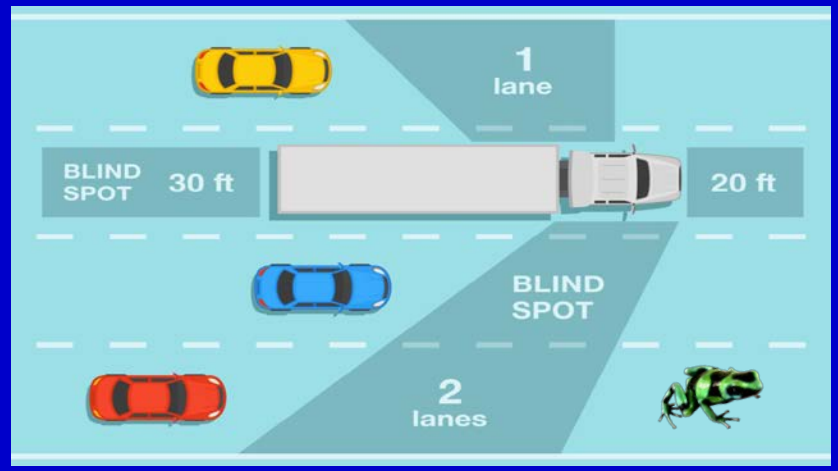
Some places are the tiger...

Some places are the frog...

They may look different, but they are both dangerous if we don't recognize and control the hazards.

The Hazards





Perceptions and Limitations

- Perception of Risks
  - Viewed as low(er) risk environments
    - Lack of EHS Professionals & Supporting Functions
      - Risks/ Line of Fire – not recognized; unintended consequences
  - Resiliency overestimated (Business Continuity is a whole other presentation)
  - “Get the product out the door!”

- Warehouses as viewed as Cost Centers
  - Viewed as low-skilled work
  - Temps/ Turnover

- Space Constraints
  - Warehouses have design limitations
  - Over-filling = people/ property in “line of fire”

- Reliance on PPE and Administrative Controls
  - Not as many Layer of Protection
    - Powered Industrial Vehicles
    - Ergo
  - Non-routine tasks abound

Recognition & Control

We could do a whole presentation on PIV, dock yards, fall protection, ergonomics, Layers of Protection Analysis (LOPA), machine guarding and emergency stops, Management of Change, Fire Protection, and so on….

But this presentation is about looking at things from a different perspective.

You worry about getting squished a lot more when you are 2cm tall.

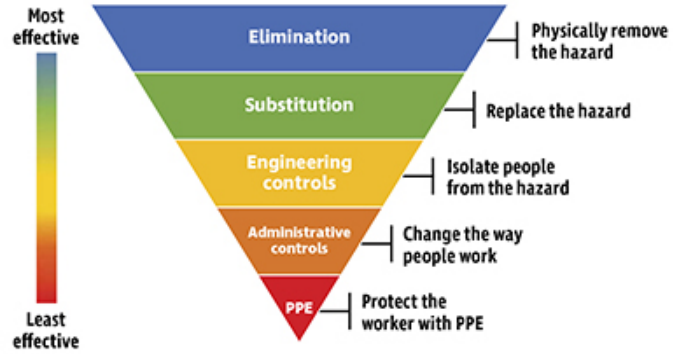
Risk Assessment

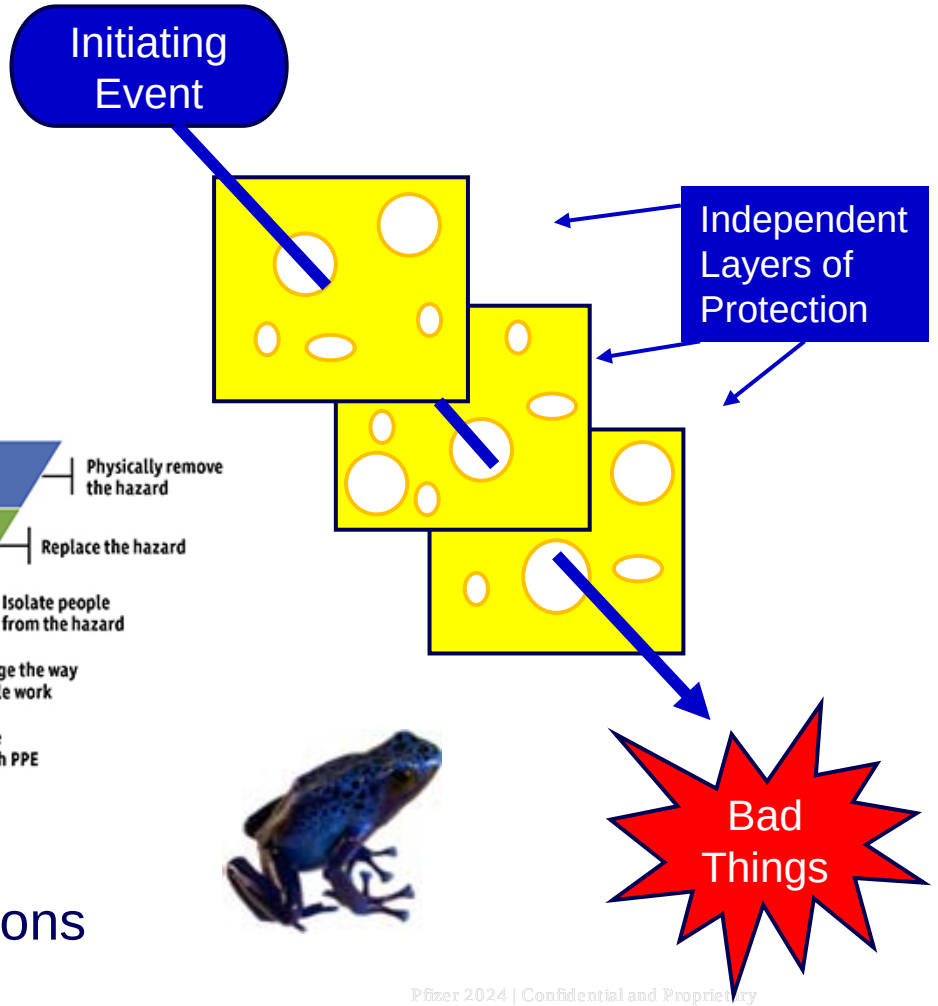
- Do thorough risk assessments and involve the people who actually do the work and the work area managers
  - Use this as a learning opportunity for you
  - Teach the to recognize changing/non-routine tasks

- Update your risk assessment approach
  - Identify tasks with Serious Injury/Fatality (SIF) potential
    - Use a Layers of Protection Analysis (LOPA)

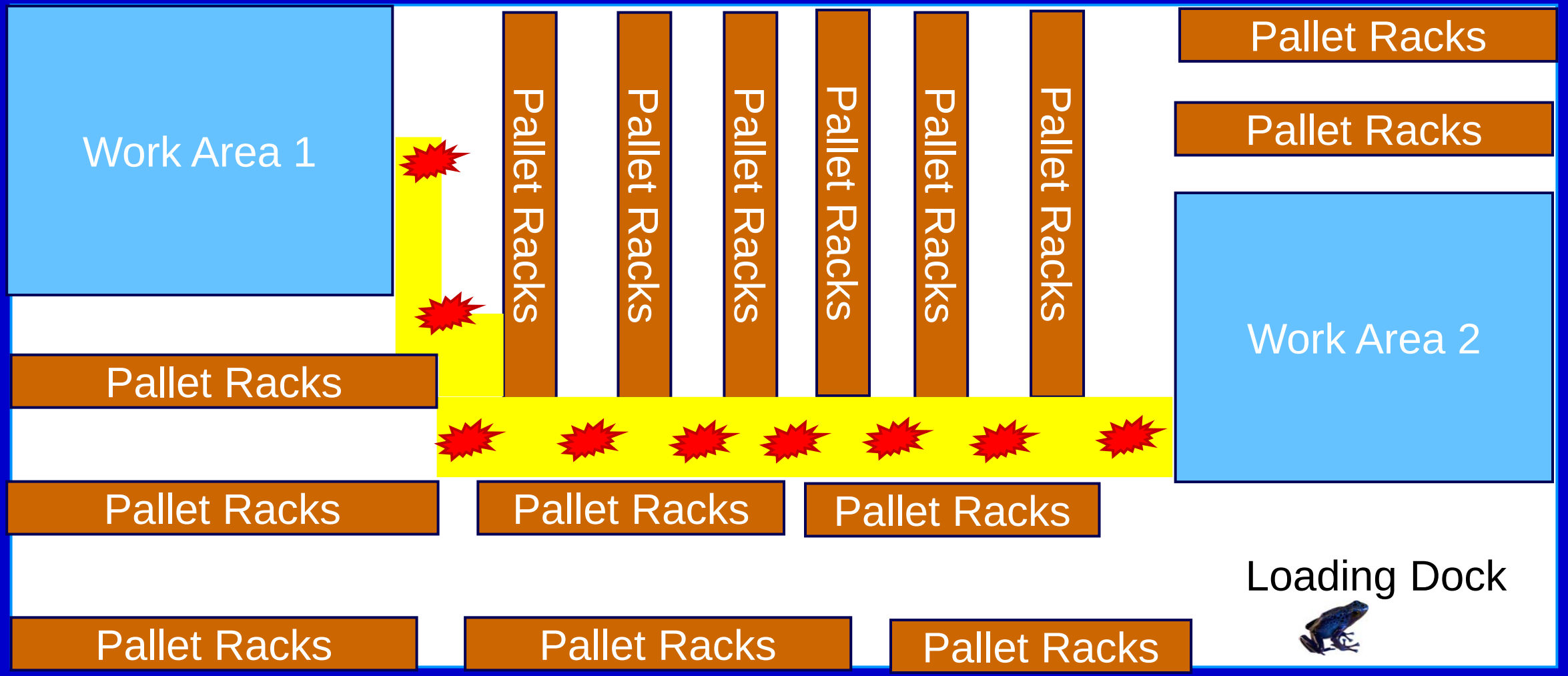
- Management of Change
  - Incorporate SIF/LOPA concepts
  - Develop and use a checklist
  - Require some level of commissioning

- Incident Analysis
  - Incorporate human factors
  - Incorporate SIF/LOPA concepts
  - Don't constrain your corrective/preventive recommendations





Example: Fork Trucks and Pedestrians



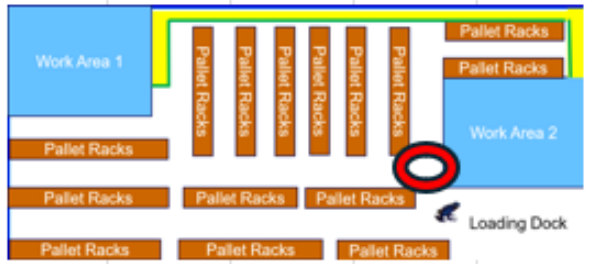
Yellow = Pedestrian Path. White = PIV areas. Red = Conflict Points.

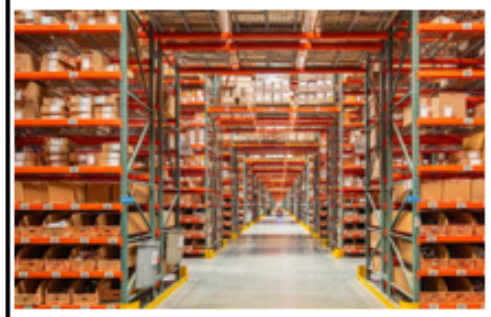
Example: Risk Assessment

PIV - Pedestrian Interaction Risk Assessment

Site:	Imaginary Logistics	**Work Area:**	Warehouse 1	**Date:**	25-Jan-24
Assessment Team:	John Doe, Jane Doe,				
Specific Location:	Intersection of Aisles AA and BB and pedestrian door 12				
Interaction Area Description:	Intersection of pedestrain walkway and exit from office A to storage aisle intersection of AA and BB where PIV traffic is present. 3 blind corners. No mirrors. No stop signs, no cross walks.				
Environmental, Health and Safety Risks	1. Pedestrian/PIV collision - SIF potential 2. PIV/PIV collision - SIF potential 3. Spilled product leaking into floor drain to sanitary sewer				
Existing Controls:	1. Driver training and site rules that require stopping at intersections				

Photos & Diagrams





SCALE	Low	1-9	Medium	10-48	High	>48

Risk Rating BEFORE Additional Controls are Implemented

Severity	Probability	Existing Controls Effectiveness Modifyier
10	9	0.9

INITIAL RISK RATING	81

- **High probability of PIV/Pedestrian uncontrolled interaction**
- **SIF potential**

Example: Applied Controls Assessment

PIV - Pedestrian Interaction Risk Assessment

Site:	Imaginary Logistics	**Work Area:**	Warehouse 1	**Date:**	25-Jan-24

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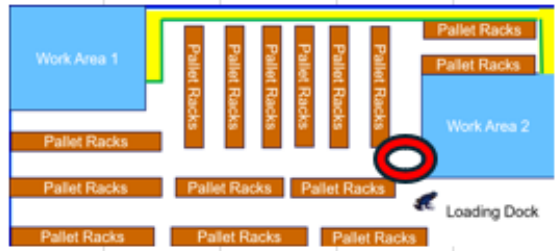
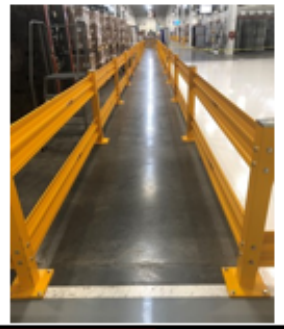
Environmental, Health and Safety Risks	1. Pedestrian/PIV collision - SIF potential 2. PIV/PIV collision - SIF potential 3. Spilled product leaking into floor drain to sanitary sewer
Applied Controls:	1. Moved quarded pedestrian walkway 2. AI Cameras on PIV and stationary cameras to "see around corner" 3. Stop signs and floor markings

Photos & Diagrams





SCALE	Low	1-9	Medium	10-48	High	>48

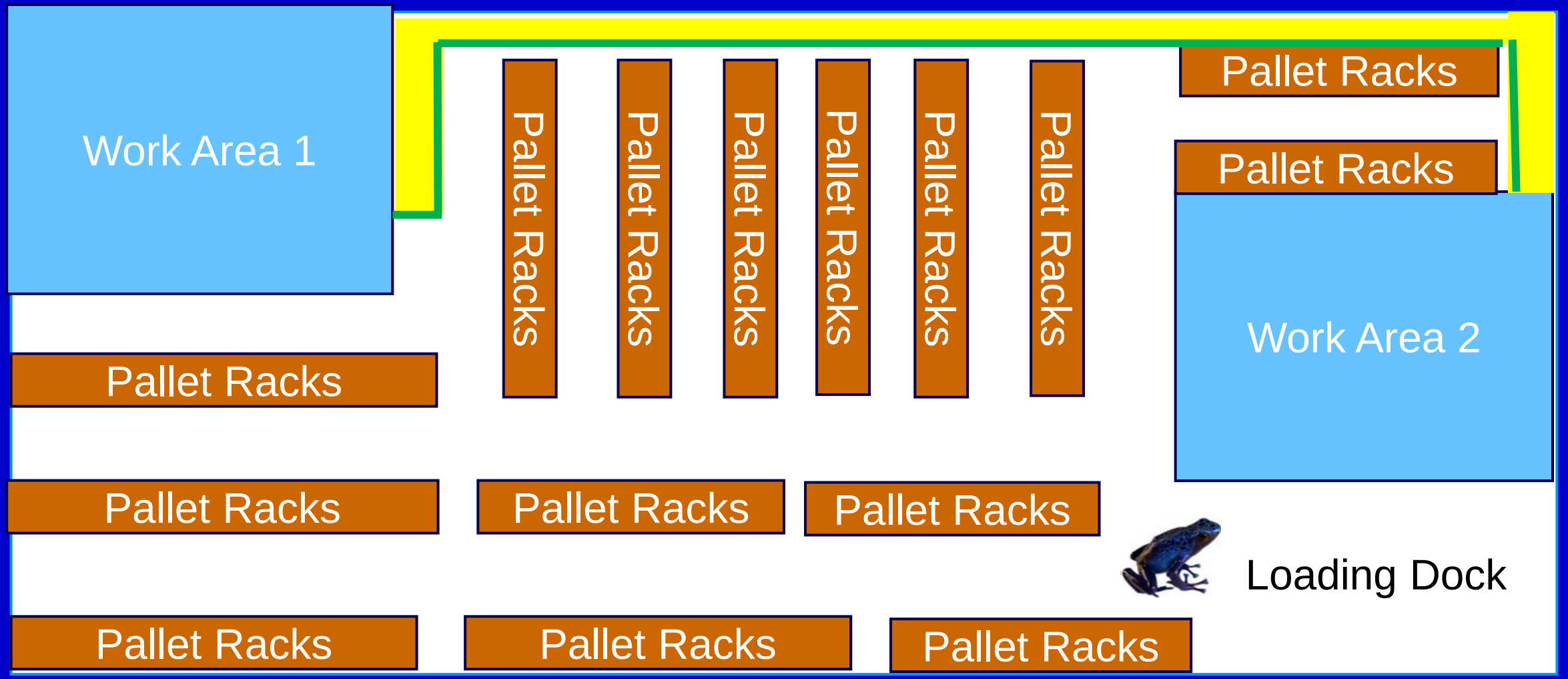
Risk Rating BEFORE Additional Controls are Implemented

	Severity	Probability	Existing Controls Effectiveness Modifyier
	10	3	0.2

INITIAL RISK RATING	6

- By moving and guarding the pedestrian aisle, the risk of pedestrian/PIV collision is practically eliminated
- Adding AI camera system further reduces the probability of pedestrian/PIV collision

Ideally, redesign and isolate pedestrians from PIV with a barrier



Yellow = Pedestrian Path. White = PIV areas. Green = Barrier

Example: Fork Trucks and Pedestrians

ading Dock

Work Area

Pallet Rac

Pallet Rac

Pallet Rac

ork Area 2

Pallet Racks

Pallet Racks

This could just as easily be your shipping/receiving dock(s) or dock yard with tractor trailers instead of fork trucks

Yellow = Pedestrian Path. White = PIV areas. Red = Conflict Points

Dock Yards

- This is one of the highest risk areas in the absence of controls
  - Backing/ other movement of heavy equipment is required with limited visibility
- Best practices:
  - Clearly signed and marked dock yards
  - Restricted access to dock yard
  - No one is allowed on the yard without a business need to be there
    - No parking of personal vehicles
    - Marked pedestrian areas separated from vehicle traffic
      - Barriers where possible
    - High visibility vests/ clothing required
  - Rules communicated to drivers

Fork Truck Safety

The Basics

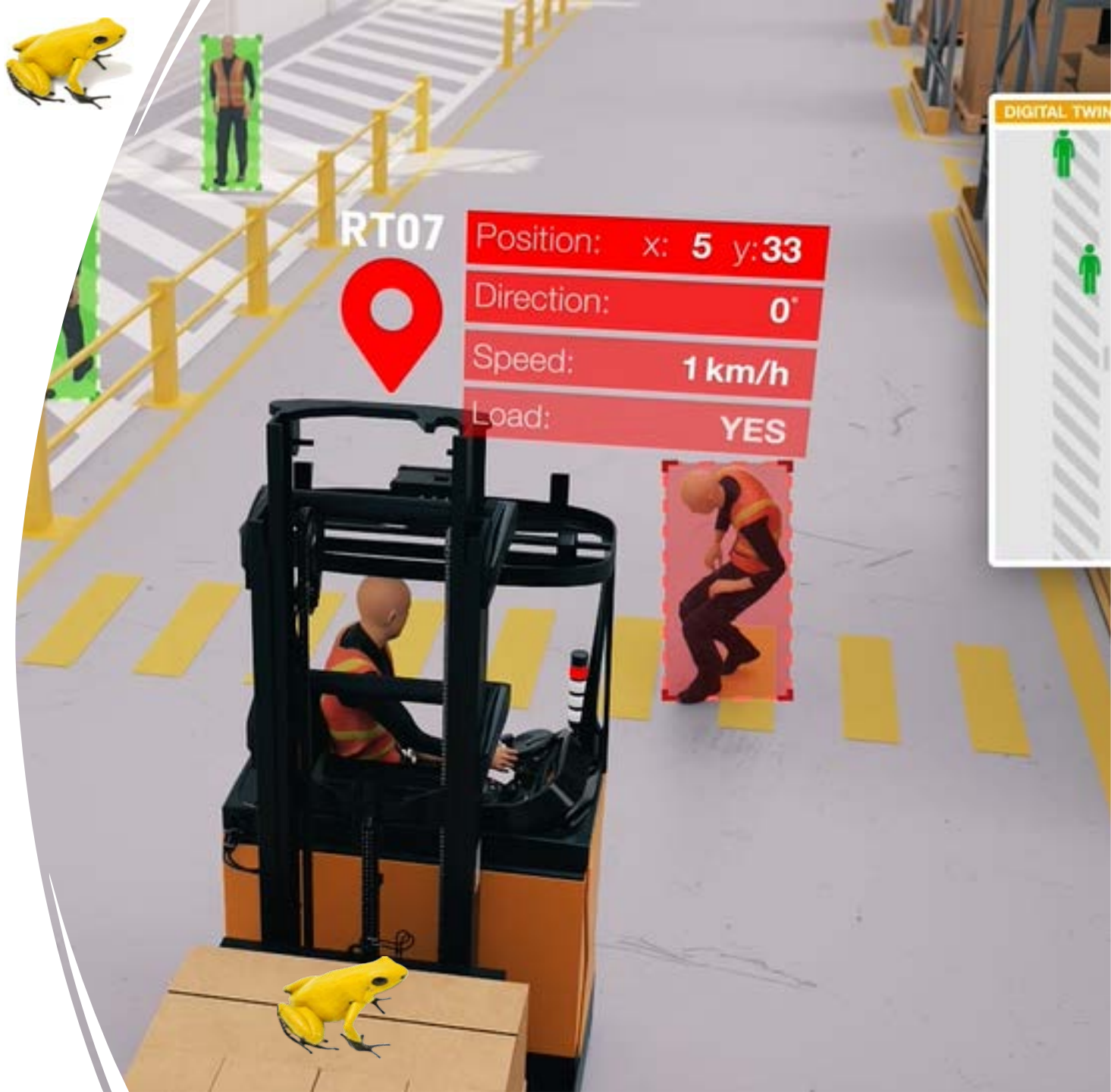
- Treat them like the heavy equipment they are
- Training
- Inspection
- Maintenance
- Modernize
- PPE
- Attachments
  - Update Data Plates
  - No Homemade
- Warning Lights
- Right equipment for the work

Large PIV can be over 25k-lbs or 11k-kg

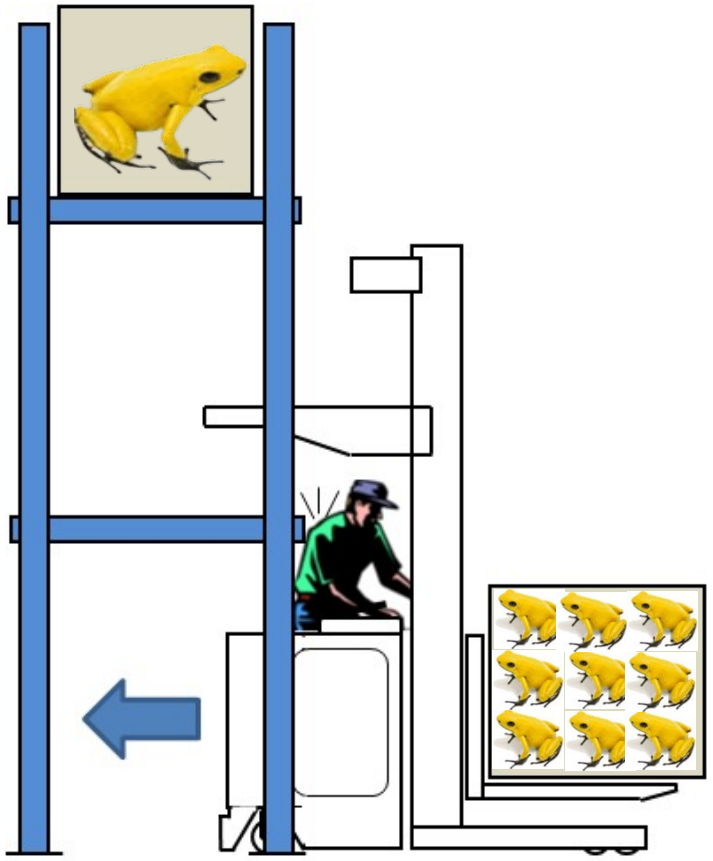
Fork Truck Safety

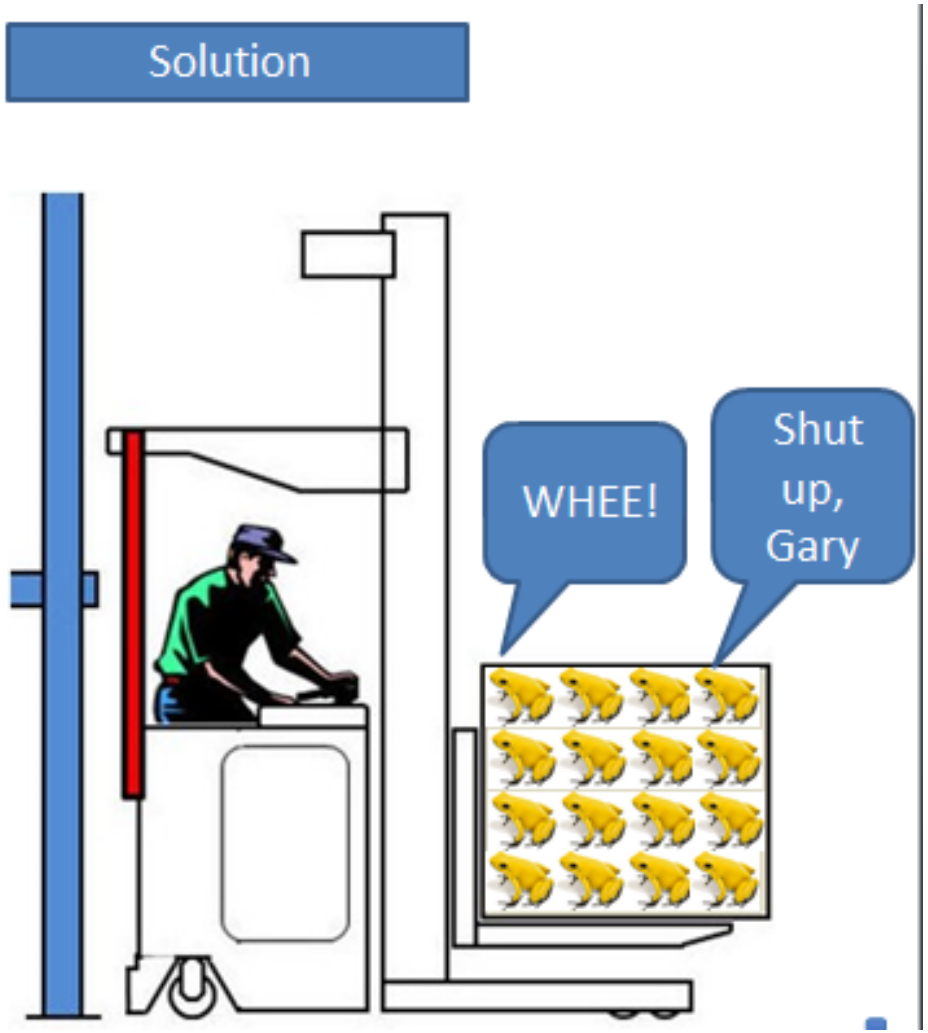
Smart Features

- “AI” Camera Anti-Collision and Speed Management
  - Auto HALO – slow & stop
  - Sees around corners with fixed cameras
  - Slow/Fast Zones
  - No wearables required
- Electronic, randomized inspection questions
  - Limp mode when safety items noted
- Collison detection with notifications
- Badge access w/ auto-logout
  - Allows for only authorized use and introduces accountability



Fork Truck Under-Ride



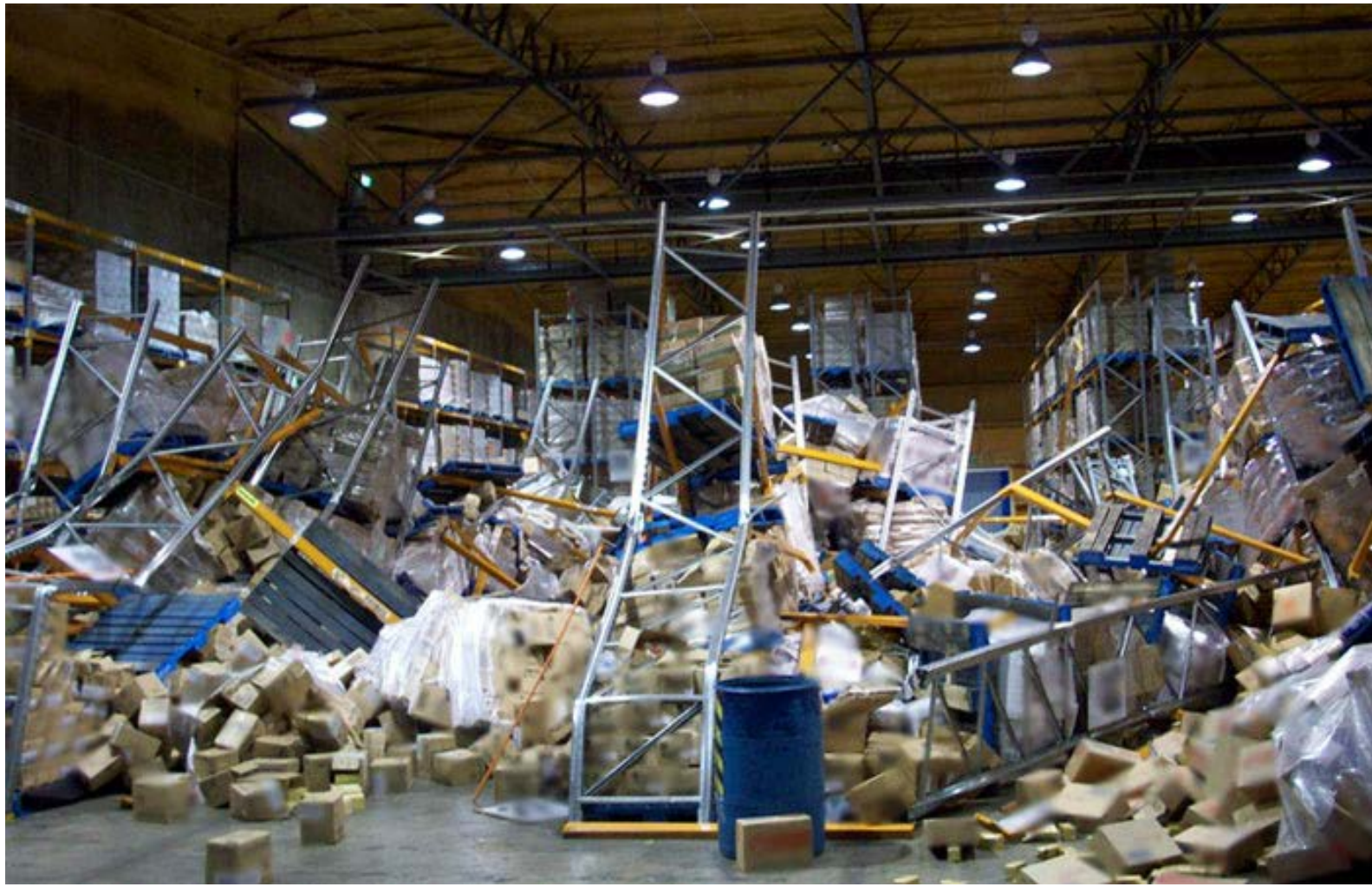


“Any idiot can build a bridge that stands, but it takes an engineer to build a bridge that barely stands.”

Author Unknown

Rack Safety

- **Recognition** – racking as a highly engineered system
- **Selection** – right rack for the product you are storing
- **Installation** – confirm rack is installed per local requirements and ensure all safety measures are in place
- **Inspection** – visually inspect racks on a routine basis (quarterly our entire warehouse is inspected) and on a periodic basis (annually) third party professional inspection
- **Maintenance** – ensure procedure is in place for maintenance including how to unload, block, secure and repair
- **Changes** – must be documented and approved by P.E. prior to the change. Should be included as part of site's MOC EHS checklist
- **Best practices** Shelving grates, flue spacing, push through protection…



Elevated Work and Falls

- Complacency
  - Fall PPE Inspection and Use
  - Competent Person(s)
  - Working Alone
  - Dock Doors
- Non-Routine Work
  - Roof Work/ Access
  - Construction/ Maintenance
  - Ladders on Mezzanines
- Rescue
  - A plan past 911
  - Training and Drills

100% Tie-Off?

Manual Descent Valve

High Hazard Work

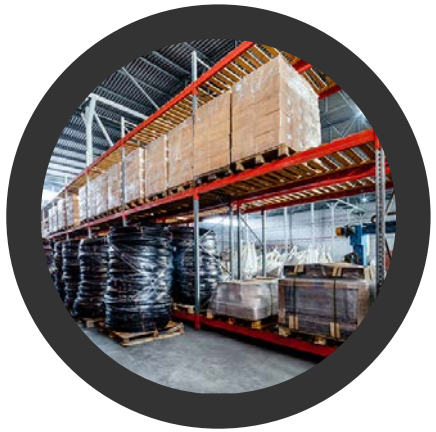
- Elevated Work, Confined Space Entry, LOTO, Line Breaking, Excavation, Hot Work, HAZMAT, etc…all happen
- Common Gaps:
  - Not recognizing high hazard work
    - Example: Under dock levelers = Confined Space
  - Written Programs/Training
  - No Work Permit System
  - No Competent Person(s)
  - “Contractor/landlord handles all of that”
  - Rescue Plan = Call 911

Materials Management

- Many warehouses do not have a comprehensive process to evaluate material hazards
  - The ones that do, stop with the Dangerous Goods Transportation requirements
  - Very few look at their fire protection capabilities and the commodity classification of the materials to be stored
  - Many do not consider the control of environmental hazards in case of a fire water release
  - Many do not have a fire prevention plan that includes controlling combustible loading based site on fire suppression capabilities
    - Remember – Sprinkler systems have design limits. They can work perfectly within their specs, but a fire can still overwhelm them if combustible loading is not controlled.
      - You still lose the whole building!!!

New Material Review

Material Hazard Evaluation



- Examples: Stacks of wooden pallets in racks, rack aisle storage (fire bridging), uncartoned Expanded Polystyrene (EPS), uncaged aerosols, flammable liquids, plastics, pallet/material piles too big, pallet/ material stacks too tall, combustibles stored over PIV battery chargers, hydrocarbon based cold packs, etc…

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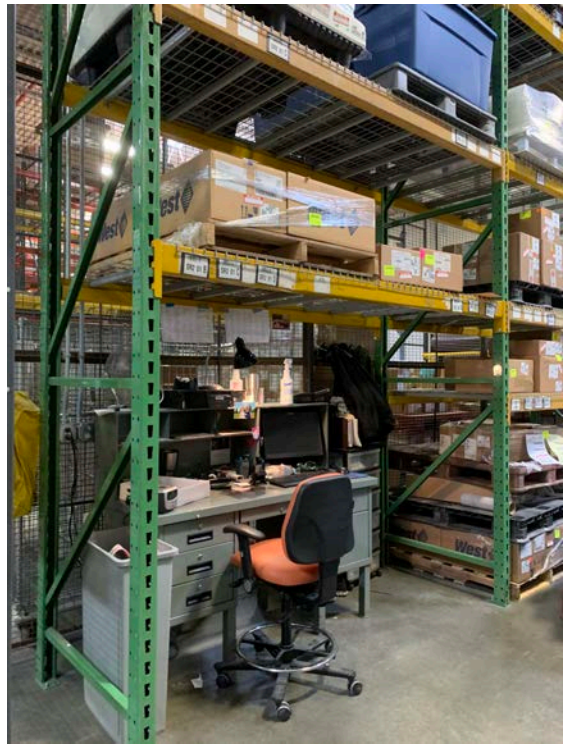
Overloaded Storage Space

Can we squeeze in just a little more?

Overloaded Storage Space

Common Findings

- Blocked Exits
- Blocked Emergency Equipment
- Blocked Electrical Panels
- Blocked Walk Paths
- PIV inadequate room to maneuver
- Workstations Inside Pallet Racks

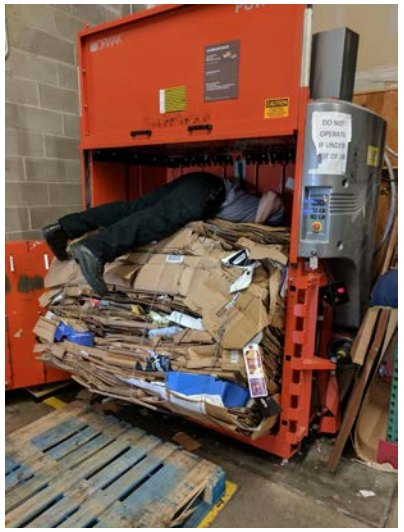


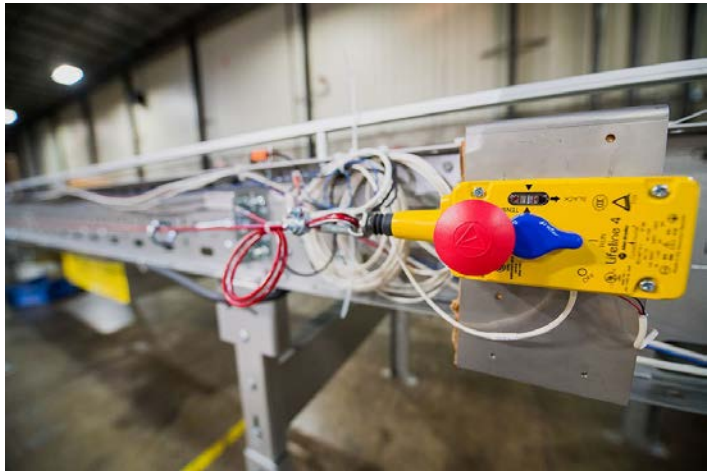
"But I'm just putting this here for a few minutes!"

Stationary Equipment Hazards

Do you have?

- Balers
- Compactors
- Dock Levelers
- Dock Locks
- Conveyors
- Pallet Wrappers
- Pallet Inverters
- Maintenance Shop
- Dock Doors





Rotating Shaft

You may SIF potential everywhere!

Stationary Equipment Hazards

Do you have?

- Balers
- Compactors
- Dock Levelers
- Dock Locks
- Conveyors
- Pallet Wrappers
- Pallet Inverters
- Maintenance Shop

Then you also have:

- Crush hazards
- Engulfment hazards
- Permit required confined spaces
- Rotating shafts
- Entanglement hazards
- Pinch points
- Fall hazards

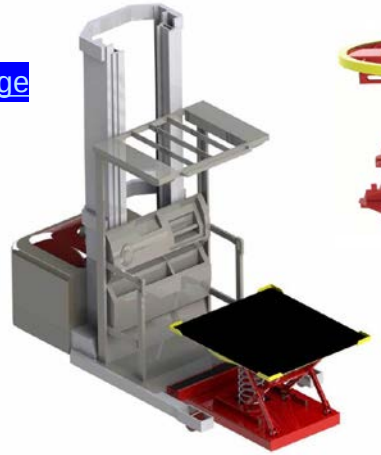
Common Misses:

- Risks not recognized
- Confined Spaces not marked
- E-emergency stops on conveyors/ equipment not in reach of operators
- LOTO lacking
- Machine guarding not in place
- Conveyors and racking not bolted to floor / secured

You may SIF potential everywhere!

Ergonomics – The Bane of Logistics

- Rack picking
  - OSHA says no
    https://www.osha.gov/etools/grocery-warehousing/storage
  - Roll outs for floor rack picking
- Floor Picking/Stacking
  - NIOSH lifting says no
    - Pallet lifts
- Above shoulder lifting to load pallets
  - Lifting assists & Automation
  - Pallet leveler pit
- Verification/Quality Control
  - Overpacks
  - Lift tables
- Pick to conveyor
  - Low/High conveyors
  - Hire standard sized people/s
- Office/Workstation Setup
- Walking/Work Surfaces



Special Hazards

- Dry Ice, Liquid Nitrogen and Liquid CO2
  - Six 52-ton tanks of CO2, treating trailers like haz atmosphere confined space, personal monitors…
- Flammable Liquids
  - Intrinsically safe, full containment, special fire suppression, PSM
- Corrosives
  - PIV batteries alone…
- Reactive/ Flammable Metal
  - Lithium abounds
- Aerosols and Compressed Gasses
  - Cages to prevent rocketing
- Aqua-toxics
  - Full site fire water containment

The Tiger?

The Frog?

Which of these requires careful, cautious and conscientious consideration?

Wrap up

- Recognize the frog!
- Reveal the frog!
- Respect the frog!

Become one with the frog

Thank You

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Contact Information

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