

Minnesota Safety Council
Annual Safety Conference
Prior Lake, MN
May 1, 2024



Warehouse and Dock Safety



Mary Bauer

Compliance Assistance Specialist

Eau Claire Occupational Safety and Health Administration

Bauer.mary@dol.gov



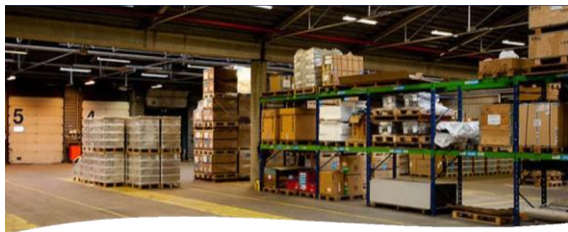
1

My Background

- Mary Bauer
 - 38 years w/ OSHA
 - 18 years as CAS
 - IH/ Safety
 - CIH: Certified Industrial Hygienist
 - CSP: Certified Safety Professional
 - 1000 Inspections



2



Today's Topics

- OSHA's Activity – Warehouse and Docks
 - Dedicated Warehouse or Ancillary to Business
- General Applicable Standards
- Breakdown of Hazards
- New Technology-Best Practices
- Compliance Assistance
- Resources
- Questions and Answers



3

What Comes Around Goes Around

- Shift in Purchasing Mentality from Brick/Mortar Stores
 - On Line Ordering – Fulfillment Centers During COVID
 - Just in Time Ordering
- Big Box Store Inventory
 - Ships to Store from Warehouse



4

High Profile Cases



- Amazon Recent Cases: Contested
 - Ergo, Recording Properly – Triage for MSD
- Walmart Court Case on Stacking:
 - The Feb. 9, 2023, decision by the Occupational Safety and Health Review Commission found the U.S. Department of Labor's Occupational Safety and Health Administration cited the global discount retailer correctly for failing to meet the agency's safety standard for storage of material that requires that items stored in tiers must be **stable and secure against sliding and collapse**.



5

OSHA Activity in Warehousing



- LEP: Local Emphasis Programs Regions 2, 3 and 9
 - <https://www.osha.gov/sites/default/files/enforcement/directives/2019-05.pdf>
 - <https://www.osha.gov/sites/default/files/enforcement/directives/2022-01-cpl-04.pdf>
 - https://www.osha.gov/sites/default/files/enforcement/directives/CPL_04-00-03_1y19.pdf
- LEP lists NAICS Codes and Stats
- Many Regions have a [PIV-Powered Industrial Vehicle LEP](#) which will get them in the warehouse. (Region V with Sample Dock Program)
- Reported Fatalities/Injuries: <https://www.osha.gov/severeinjury>
- [MN Warehouse Workers Std](#): Quotes/Rate, Pay, Safety Committee



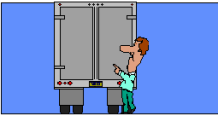


6



19

Opening Doors Load Secured or Shifted

- Don't be in the Fly Swatter Zone!
- Pressure on Doors indicate load shifted during transit.
- Swinging Doors caught by the wind or Gravity. Tears out Shoulders.

20


Enforcement of Fall Protection For Rolling Stock

Not covered in Revised Subpart D

October 18 1996

MEMORANDUM FOR: REGIONAL ADMINISTRATORS
FROM: JOHN B. MILES, JR, DIRECTOR
DIRECTORATE OF COMPLIANCE PROGRAMS
SUBJECT: Enforcement of Fall Protection on Moving Stock

Additionally, it would not be appropriate to use the personal protection equipment standard, 29 C.F.R. 1910.132(d), to cite exposure to fall hazards from the tops of rolling stock, unless employees are working atop stock that is positioned inside of or contiguous to a building or other structure where the installation of fall protection is feasible. In such cases, fall protection systems often can be and in fact are used in many facilities in the industry.



21

Rolling Stock Fall Protection Tarping Loads

Soft Side Trailers at eliminate Tarping loads or Provide a stand Or inside facility-overhead crane.



22



23

Milk Delivery Bay

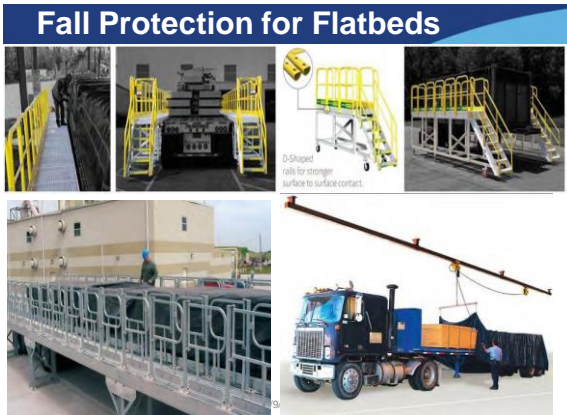
Abatement after Fatality. Eliminated fall harnesses & lanyards with fixed stairs.



24



25



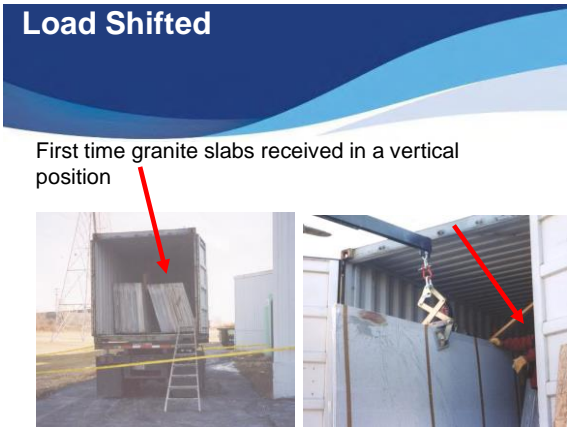
26



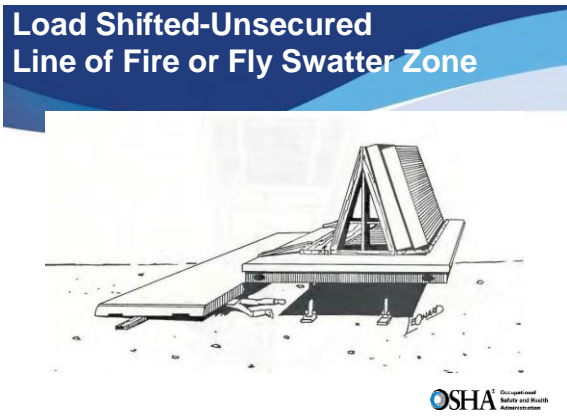
27



28



29



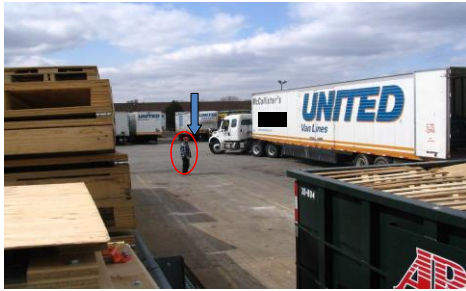
30

Dock Safety-Client/Customer

- Pedestrian
- Drive Offs
- Tandems in Position
- Chocks
- Dock Locks
- Shifted Loads
- Doors Swinging
- Bad Trailer Flooring



31

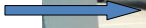


Spotter helps guide driver back trailer to dock. Spotter is standing to the side, where driver can see him. Spotter checks to be sure dock area is clear and uses standard hand signals. Bright colored clothing/vest would increase spotter's visibility.



32

Employee Caught Between Rear of Trailer And Dock Wall



Not an Appropriate Position for a Spotter



33

Sliding Tandems



OSHA Occupational Safety and Health Administration

34

What could possibly go wrong???

Stuck? Solution? Truck back/forth



OSHA Occupational Safety and Health Administration

35

Sliding Tandems



On October 30, 2014, at approximately 7:00 am, a semi-truck driver and fellow team driver parked in a chain restaurant parking lot to make their delivery, unloaded their product, and were adjusting the tandems on the trailer. The team driver placed himself near the tandems while the semi-truck driver climbed into the truck cab to rock the truck so that the tandems would slide into place. The team driver was found with his head pinned between the tire and the bottom of the trailer.

<http://www.mc.uky.edu/kiprc/face/reports/pdf/14KY064.pdf>

OSHA Occupational Safety and Health Administration

36

Unattended Departure Driving OFF

Controlling the Driver

Trailer "Deadlining" with a lockout device

Lock is applied to emergency brake, and must be removed before airline can be connected

Prevents driver from pulling away before employees are clear

Dock supervisor or forklift operator has custody of key



40

Collapsed Gear

Mechanical Handling of Materials - Forklifts (continued)

Trailers



41



Preparer Note:
10/4/04 10:27:50:25

Section 5(a)(1)
Recommended use: One T-frame style jack (approx. 36 inch wide center bar) under trailer front or two post-style jacks (prior to handling/loading by PHT) - Consider hazard in pup trailers (less than 30 feet) or in larger trailers if loaded to capacity.
Important: Be sure that the capacity of the jack is appropriate for the trailer's load. Normal capacity of a 50 foot trailer is roughly 80,000 lbs. That's 17,200 lbs. Per axle (34,400 lbs) and gross weight of load a little over 40,000 lbs. (17,200 lbs per axle is a STA (surface transportation act) requirement. Michigan OSHA standards require that uncoupled trailers less than 30 feet in length entered by PHT's SHALL be provided a support capable to sustaining the load at the front. Some trailer have additional "fixed jacks" on front like nose cones, that fold down as needed as additional stabilizers. These are unusual.
OSHA 1910.178 states "fixed jacks may be necessary to support uncoupled trailers during loading." Since few trailers come with fixed jacks, an "auxiliary" jack is trip. See handout on this topic.



42

Trailer Slippage



OSHA Occupational Safety and Health Administration

43

Tip/Collapse Gear



OSHA Occupational Safety and Health Administration

44

Guard Rail Barrier



45

Overhead Door Maintenance Sam's Club Recent Citation

The OSHA-Erie office issued the citation March 29, 2023 to Sam's Club, with a penalty of \$156,259 listed, in the Sept. 30 accident at the Sam's Club at 7200 Peach St. that caused the death of Benjamin Knight Jr., according to information on OSHA's [website](#). The door was in a state of repair in that its **two spring mechanisms were not operational** and were awaiting servicing by an outside contractor. **The door was lifted with a forklift** into the open position, according to information in the citation.



Unique Hazards w/ Overhead Doors. Specialized Contractor or Trained/Skilled Maintenance Staff



46

Dock Plate Hazards & Maintenance

1910.30(b)(1)The employer must train each employee on or before May 17, 2017 in the proper care, inspection, storage, and use of equipment covered by this subpart before an employee uses the equipment.
1910.30(b)(2)The employer must train each employee who uses a dockboard to properly place and secure it to prevent unintended movement



Lifting and pinchpoint hazards if flap on end of dock sticks and employees try to raise/unstick by hand.



47

General Duty Clause

- Section 5(a)(1) of the Act
- "...that each employer shall furnish...employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."
- Applies when there is no specific standard



48

General Duty Clause Elements



- E**mployee Exposure
- S**erious Hazard
- K**nowledge of Employer
- A**batement Method
- R**ecognition by Industry



49

Query OSHA's Database



- Seatbelt use on Forklifts
- Addition/Modification to Forklift: Monitors/Displays or Attachments
- Anchoring Pallet Racking
- Damaged Pallet Racking
- Ergonomics



50

Manual Transferring / Order Picking

- Telescoping/ Movable Conveyors
- Gravity
- Self Levelers
- Frequency of Use – Product Turnover
- Tilt Bins
- Bins with Collapsible sides
- Sheppard Hooks for Hard to Reach



51

New Walking-Working Surfaces and PPE (Fall Protection) Rule (2017)

Every Step You Take, Every Move You Make



52

Organization of Subpart D

- §1910.21 – Scope, Application and Definitions
- §1910.22 – General Requirements
- §1910.23 – Ladders
- §1910.24 – Stepbolts and Manhole Steps
- §1910.25 – Stairways
- §1910.26 – Dockboards
- §1910.27 – Scaffolds and Rope Descent Systems
- §1910.28 – Duty to Have Fall Protection
- §1910.29 – Fall Protection Systems Criteria and Practices
- §1910.30 – Training Requirements



53

Preventing Slips, Trips and Falls

On same level:
high frequency,
low severity

From elevations:
low frequency,
high severity



54

§1910.22 General Requirements

§1910.22 – General Requirements

Walking-working surfaces must be designed to meet their maximum intended load

Must KNOW the Load Rating for floors

Mezzanines....

Storage above Offices...



55

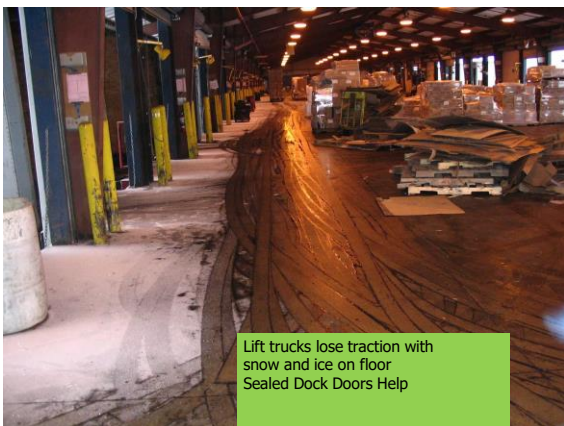
§1910.22 General Requirements

§1910.22 – General Requirements

(3) Walking-working surfaces are maintained free of hazards such as sharp or protruding objects, loose boards, corrosion, leaks, spills, snow, and ice.



56



57

§1910.22



§1910.22 – General Requirements

(c) Access and egress. The employer must provide, and ensure each employee uses, a safe means of access and egress to and from walking-working surfaces.

Establish Conveyor Crossovers, pedestrian aisle ways, mark aisles Watch for Employee "Short Cuts".....ducking under or climbing over equipment. Setting up ladders to gain access to another surface.



58



Pot holes create overturn and load drop hazards for lift trucks

- Routinely inspect walking/driving surfaces
- Keep dock floors free of snow, slush and ice with absorbent materials and frequent cleanups
- Restrict pedestrian and forklift traffic
- Have maintenance procedure for filling of potholes and correcting any other obstructions



59



1910.22(c)



OSHA Preamble - One way employers can meet the performance language is by appropriately marking passageways and permanent aisles as a means of identifying safe access and egress.

Access and egress. The employer must provide, and ensure each employee uses, a safe means of access and egress to and from walking-working surfaces.



60

Aisles and Passageways



OSHA Occupational Safety and Health Administration

61

What does narrow aisle cause?



OSHA Occupational Safety and Health Administration

62

Aisles and Passageways

Free of explosive or highly flammable materials
Arranged so employees do not have to travel toward a high hazard area
Adequately lit
Emergency safeguards (e.g., sprinkler systems, alarm systems, fire doors, exit lighting) must be in proper working order at all times

Prohibited Areas
Exits must be arranged so employees will not have to travel toward a high hazard area, unless the path of travel is effectively shielded from the high hazard area by suitable partitions or other physical barriers.
No materials or equipment may be placed, either permanently or temporarily, within the egress route.



Obstructed Exit Route

OSHA Occupational Safety and Health Administration

63

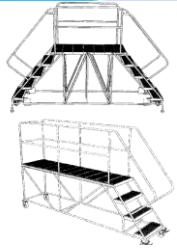
§1910.23 Mobile Ladder Stands

Updates and makes rule consistent with current national consensus standards

- 4 X the intended load
- Brakes on wheels/casters
- Not moved w/ employee on it



Mobile Ladder Stand



Mobile Ladder Stand Platform

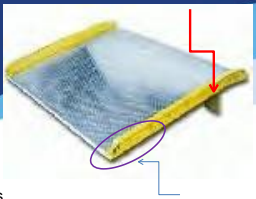


64

§1910.26

§1910.26 – Dockboards

- Updates requirements for dockboards
- Adds design and construction requirements to prevent equipment from going over the dockboard edge
- Positioning/Anchor to prevent movement
- Chocks for Vehicles



65

§1910.28 Duty to Provide Fall Protection

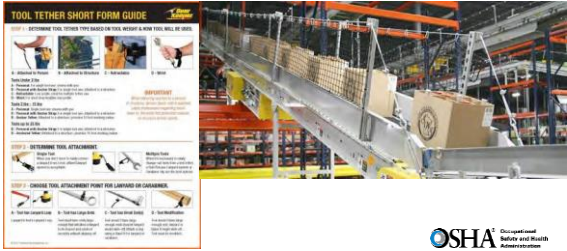
§1910.28 – Duty to have fall protection and falling object protection

Consolidates general industry fall protection requirements into one section
 Makes requirements and format consistent with construction standard
 Incorporates new technology that is consistent with national consensus standards
 Gives employers flexibility to use the system that works best to protect workers in their situation



66

1910.28(c) Falling Object Protection



70

Dropped Object Protection



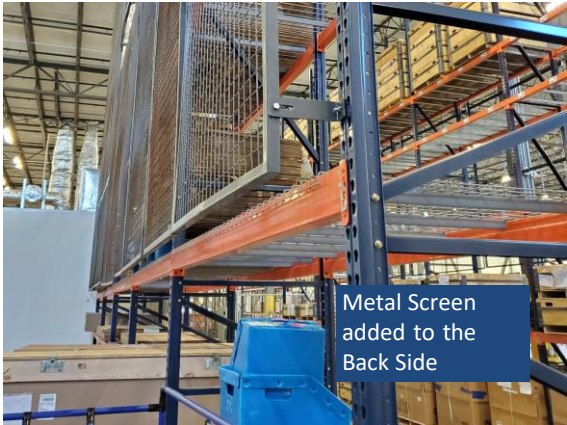
71



72



73



74

§1910.30 - Training

§1910.30 – Training: *May 17, 2017*

- Adds training and retraining requirements addressing fall hazards and equipment hazards for *those wearing personal fall protection systems*
- Dockboard handling, Rope Descent and designated area set-up training (roof work) too.
- Retraining when Situation changes or reason to believe workers don't understand
- Requires employers make training understandable to workers



75

Traffic Rules: Pedestrians and Forklifts

- Barriers around Walkways
- Designated Walkways
 - Painted Walkways
- Posted Speed Limits
- Sound Horn
- Mount Mirrors
- Language Issues?



79

Pedestrian Lanes- Blue Lights and/or Red Skirt Light



80

Traffic Plan Include Speed Limits?

- Reduced Speed
 - Office
 - Rest rooms
 - Corners
- Means of Enforcing
- Governors in units
- Electronic Devices
- Lights: Approaching PIV Warning



81



How many people do you see??

82



OSHA Occupational Safety and Health Administration

83

Warehousing - Storage Area

- Pallet Racking
- Damage
- Design
- Compatible Parts
- Anchorage
- Weight Rating
- ANSI Standard



84

STORAGE RACK SAFETY GUIDELINES

- Performance specifications for rack selection, including plant layout and installation. **Based on Rack Manufacturer's Institute (ANSI M:H16)**
- Building Permits
- Setting Up & Installing Racks (Anchoring)
- Aisle, Frame & Column Guards
- Intermixing of Racking Components
- Deviations by Rack Installer



– **Prohibits** the joining of structural connections from one manufacturer to another without an engineering analysis of the combined system.



85

IDENTIFIED HAZARDS

- Dislodged horizontal beams from vertical uprights
- Structural stability & load carrying capacity of the racks may not be adequate.
- Significant damage to the lower part of the vertical members.
- Racks of different designs & apparent capacities were also found in the warehouse.
- Inconsistent pallet rack size & configurations



86



Damaged leg of storage racking needs to be repaired.

87

STORAGE RACK SAFETY GUIDELINES



OSHA Occupational Safety and Health Administration

88

Storage Area

- Going Vertical!
- Higher Racking
- Capacity
- Tipping/Loading
- Fall Protection
- Secured Bundles
- Fire Protection
- Push Through Hazard



89

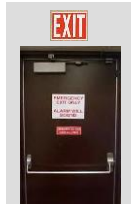
Rated Capacities - Configuration



90

Exit Marking

Must be visible and marked with an "Exit" sign
 Door must be free of signs or decorations that could obscure its visibility
 Direction must be apparent
 Winter Issues
 Snow Blocking
 Ice/Snow Sliding off roof



94

Dollar General – Emergency Exits

Penalties mount: Fined more than \$15M since 2017, familiar Dollar General safety failures in 3 inspections in Florida, Alabama, add \$387K more
 OSHA again find blocked emergency exits, merchandise stored unsafely

<https://www.osha.gov/news/releases/national/01262023#text=Since%202017%2C%20OSHA%20has%20issued%20more%20than%20180%20inspections%20nationwide>



95

Fire Prevention Plan - Components

- List of fire hazards and controls
- Control of flammable and combustible materials
- Roles and responsibilities
- Maintenance
- Types of fire extinguishers
 - Sprinklers, Detectors, Alarms
- Fire prevention plan review
- Training

Fire Prevention Plan Components

Develop the evaluation that will lead to design your fire prevention systems can help you with this list. The list can be used to ensure that all employees are aware of the fire hazards associated with their job and the controls that have been designed to protect them. This information will also help to identify new hazards. Then a determination can be made whether the current systems in place are adequate to control the new hazards and new controls are needed.

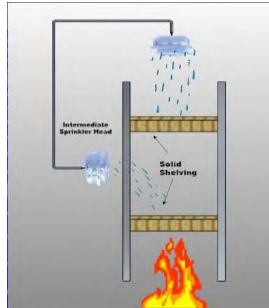


96

Warehouse Safety & Liability

Solid Shelving Hides & Spreads Fire

Flames grow undetected and are obscured from water

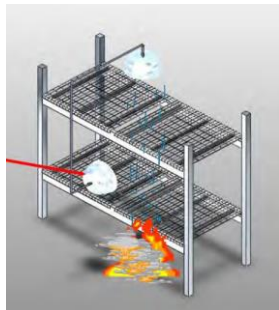


97

Warehouse Safety & Liability

Wire Decking Reduces Fire Hazard

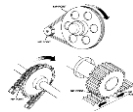
Open mesh provides quicker detection and extinguishing



98

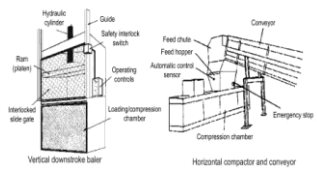
Machine Guarding LOTO-Lockout/Tagout

- Cardboard Compactor
- Shrink Wrapper
- Conveyors: ANSI
- Powered Dock Levelers
- Pallet or Shipping Box Building or Repair
- Boxing Machines
- Palletizers – Depalletizers (Robotics)
- Box Cutters/Utility Knives-Gloves?
- Building Shipping Containers/Containment-Saws



99

Compactor: Trash &/or Cardboard



NO OPERATORS UNDER 18 YEARS OF AGE

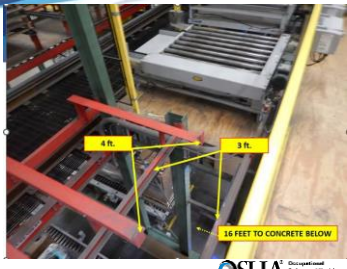
For more information about child labor laws, call your local Wage and Hour office of the U.S. Department of Labor.



100

Unjamming is a LOTO Activity

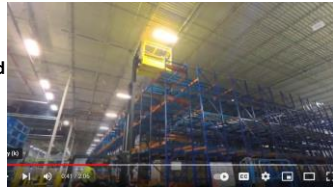
- Pallet Jammed in Conveyor-blocked sensor.
- Employee accesses area with 16' fall potential.
- Jam is cleared, Sensor is Cleared and conveyor starts.
- Employee fell hole.



101

Stuck Pallet at Heights (Fatality) Maintenance and Retrieval Cart (Abatement)

- Pallet was stuck in top shelf.
- Employee was instructed to go into racking to fix pallet.
- Employee was lifted up to pallet by a forklift.
- Employee was trying to fix pallet when employee slipped and fell approx. 20'



Maintenance and Retrieval Cart (Abatement)



102

Electrical

Hit/Damaged by Forklifts/Pallets
Temporary wiring to reach areas
Blocked Electrical Panels



103

Cold / Coolers / Freezers

- Access/Visibility through Doors
- Cold to Extremely Cold Temperatures-PPE?
- Moisture – Corrosive: Rust on Pallet Racking
- Long Term for Aged Products
- PSM Quantity of Chemicals? Ammonia?
- Nitrogen as Coolant?



104

Storage

After all the effort to manufacture the product, it tips over in the warehouse!

Frequent Checks!



105



Cardboard shifts often – temp and humidity. Needs constant monitoring and restacking as needed.

106



**Outdoor
'Warehouse'
or Storage**

Shifting Ground Conditions (Freeze/Thaw)

Banding Breakage

Hit by Lift on corner

Stickers, Spacers or Dunnage unacceptable for storage



107



108

Dealing with Returned Products 'Land of Misfit Toys'

- Unknowns: Chemical (Compatibility)
- Weight/Banded/Stacked



109

Chemical Exposure

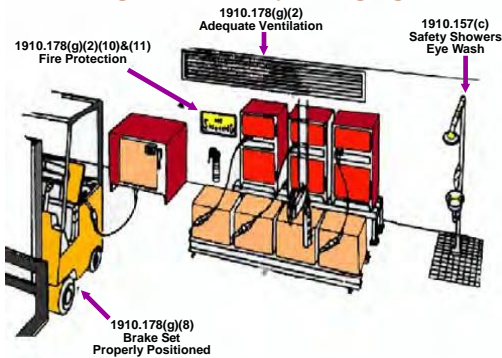


- Hazard Communication/Right to Know
- Spills, Leaks, Emergency Response
 - Received Compromised? Accepting a Load
- PSM – Process Safety Management
 - Ammonia 10,000 lbs in a system
- Carbon Monoxide (more electric lifts being used)
- Flammable Storage



110

Designated Battery Charging Area



111

DISTRIBUTION CENTERS AND LOGISTICS SOLUTIONS

INDOOR/OUTDOOR
Use safety glasses with built-in anti-fog solution and indirect venting for all-day comfort.

HAZARDOUS NOISE
Check the earmuffs that operators are exposed to and determine proper hearing protection.

AIR QUALITY
Hold standards against occupational diseases such as asthma and lung disease.

HOT & COLD
In extreme temperatures, select anti-fog glasses and lightweight PPE made from breathable materials.

BUMPS
Bumps to the head can be less severe if bump cap is worn.


FIRST AID/EYE INJURIES
Emergency response to irritants using corrosive or chemical substances. Delaying treatment may cause irreversible damage to a worker's eye.

WORKING AT HEIGHT
In the event of an accident, an effective fall protection solution is critical for the operator.

EFFICIENCY
Selecting safety gloves that work with touchscreens can improve productivity.

HAND INJURY
Safety gloves help protect hands against cut injuries and abrasion. Good grip will facilitate handling.

PPE



115

Illumination



Guide To Warehouse Lighting

- Going Green!!!!
- Lights on sensors
- Warm up time
- 1910.178(h)(2): Where general lighting is less than 2 lumens per square foot, auxiliary directional lighting shall be provided on the truck.



116

Heat NEP: Trigger Temps

- On **heat priority days** (when the heat index is expected to be **80 degrees F or higher**):
- On any day that the National Weather Service (NWS) has announced a heat **advisory or warning**, for the local area: <https://www.weather.gov/safety/heat-ww>



117

Personal Lift

- Order Picking
- Enclosed so no PFAS required.



121

On-Site Consultation Program

- No cost to employers
- Separate from enforcement and confidential
- Identifies workplace hazards
- Advice on compliance with OSHA standards
- Helps employers establish safety and health programs
- 26,000 visits annually to small employers



122

OSHA Web Resources

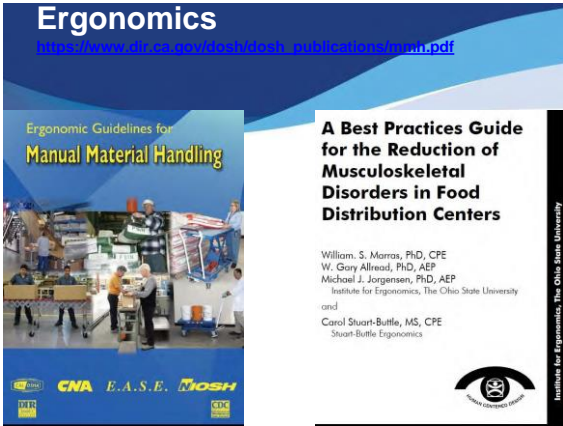


- Compliance Assistance
- Training
- Cooperative Programs
- Forms
- Contact OSHA

osha.gov



123



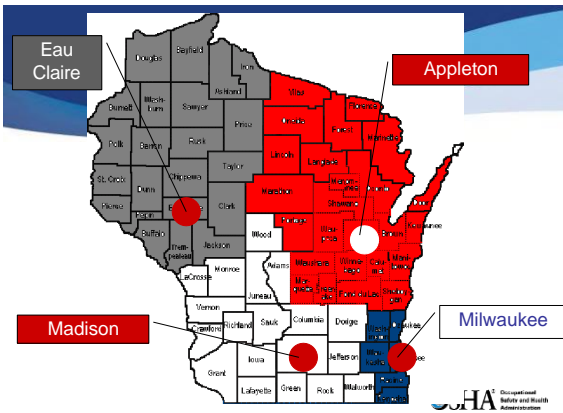
127



- **FREE** OSHA e-newsletter delivered twice monthly to more than **250,000** subscribers
- **Latest news** about OSHA initiatives and products to help employers and workers find and prevent workplace hazards
- **Sign up at www.osha.gov**



128



129

Wisconsin Offices - Compliance Assistance Specialists

Vacant
U. S. Dept. of Labor - OSHA
1648 Tri Park Way
Appleton, WI 54914
(920) 734-4521
OSHAAppleton@dol.gov

Mary Bauer
U. S. Dept. Of Labor - OSHA
1310 W. Clairemont Ave
Eau Claire, WI 54701
(715) 832-9019
Bauer.mary@dol.gov

Vacant
U. S. Dept. of Labor - OSHA
1402 Pankratz St, Suite #114
Madison, WI 53704
(608) 733-2822
OSHAMadison@dol.gov

Vacant
U. S. Dept. of Labor - OSHA
310 W. Wisconsin Ave
Milwaukee, WI 53203
(414) 297-3315
OSHAMilwaukee@dol.gov



130



QUESTIONS

OSHA
Bauer.mary@dol.gov
www.osha.gov
800-321-OSHA (6742)



131
