Linking Safety with Savings: Prevention Strategies for Wholesale and Retail Employers

National Safety Council Webinar Production
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Vern Putz Anderson, Ph.D., CPE
Public Health Advisor
Education and Information Division
Consider

Safety is a core function delivering significant business & economic value: boosting productivity, efficiency, and the bottom line.

[Fortune 100 member]

Ninety-five percent of business executives report that workplace safety has a positive impact on a company's financial performance. [Liberty Mutual Executive Survey]
Purpose

To present a *prevention strategy* for the Wholesale and Retail Trade (WRT) Sector

That focusses on preventing overexertion injuries associated with manual material handling jobs
Letters of Agreement: Support OSH

- Retail Industry Leaders Association (RILA)
- Loss Prevention Foundation
- Food Marketing Institute (FMI)
- Material Handling Industry of America (MHIA)
Webinar Outline

1. Introduction & Purpose
2. What is WRT and High-Risk?
3. MMH Jobs and Injuries
4. Cost of Overexertion Injuries
5. Four Prevention Strategies - Unique to WRT
6. One Strategy for Solving/Improving MMH
7. Some Questions added at various places.

WRT = Wholesale Retail Trade Sector
MMH = Manual Materials Handling
First: Clarifying Terminology
About: Causes and Outcomes:

- **Causal Factors or Risk Factors:**
  - **Job Demands** refer to the job activities
    - How much, how hard, how long, etc.
  - **Work Capacities** refer to one's personal abilities
    - How strong, your motivation, age, experience, etc.

- **Adverse Outcomes or Injuries, Illnesses, Fatalities**
  - Defined by causal factors: Overexertion, Lifting, MMH
  - Defined by body system: MSD, Respiratory, Hearing, etc
  - Defined by the onset: Acute, Chronic, CTDs

**MSDs = Musculoskeletal Disorders, alias: soft tissue disorders; overuse syndrome, overexertion**
Question # 1

What is the CFO’s view of the main benefit of workplace safety program?

- Avoiding OSHA
- Productivity increase
- Reduced costs
- Employee retention
- Employee morale

What is WRT and High Risk?

CFO = Chief Financial Officer
Wholesale/Retail Trade (WRT) Businesses

See the smiling faces

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Some facts about WRT

- 1.5 million establishments
- 146 distinct businesses
- Wide range of company sizes
- Women comprise 45%
- Growth sector for minorities
- Main occupations are sales and material handling
- Rapidly changing employment relationships impacts the “risk of injury”
What do we mean by Risk?

**Risk Definitions:**

Risk = Probability or potential for injury based on known job activities associated with injuries:

Pre injury metric

Risk = Probability or potential for an injury based on a previous history (records) of similar injuries in that business or industry:

Post injury metric

Risk Manager at Work
Conduct Survey: Workplace Hazards

Pre injury indicators

- Lifting/Lowerings
- Pushing/Pulling
- Carrying/Holding
- Bending/Reaching

Manual Materials Handling Risk
Conduct Survey: Injury Records

Post injury metrics


Bureau of Labor Statistics (BLS)

Injuries, Illnesses & Fatalities in Wholesale and Retail Trade in 2009: A Chartbook

Injuries, Illnesses & Fatalities in Wholesale and Retail Trade A Chartbook: NIOSH Pub 2012-106
I. Conduct survey of worksite for job hazards.  
[Use checklists and loss prevention experts]

II. Conduct survey of injury records for high rates  
[Search Bureau of Labor Statistics (BLS) data]

Product:

List of high-risk establishments: See next slide:  
“Wholesale & Retail high-risk establishments”
### High-risk industries, (BLS, 2009)
Total Recorded Cases (TRC) Incidence Rates (IR)/100 FTE

<table>
<thead>
<tr>
<th>NAICS</th>
<th>TRC #</th>
<th>TRC IR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Industry 2009</td>
<td>3,277,700</td>
<td>3.6</td>
</tr>
<tr>
<td>42 Wholesale (whs)</td>
<td>185,900</td>
<td>3.3</td>
</tr>
<tr>
<td>4248 Beer, wine, distilled alcoholic beverage merchants whs</td>
<td>12,400</td>
<td>7.7</td>
</tr>
<tr>
<td>4244 Grocery and related- product merchant whs</td>
<td>39,500</td>
<td>5.4</td>
</tr>
<tr>
<td>4233 Lumber and other construction materials merchants</td>
<td>10,200</td>
<td>4.8</td>
</tr>
<tr>
<td>4235 Metal and mineral (except petroleum) merchant whs</td>
<td>6,400</td>
<td>5.2</td>
</tr>
<tr>
<td>4231 Motor vehicle/ motor vehicle parts/ supplies merchants</td>
<td>13,200</td>
<td>4.4</td>
</tr>
<tr>
<td>WRT 42 &amp; 44-45</td>
<td>673,100</td>
<td>NC</td>
</tr>
<tr>
<td>NAICS</td>
<td>TRC #</td>
<td>TRC IR</td>
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</tr>
<tr>
<td><strong>Private Industry 2009</strong></td>
<td>3,277,700</td>
<td>3.6</td>
</tr>
<tr>
<td>44-45 Retail</td>
<td>487,200</td>
<td>4.2</td>
</tr>
<tr>
<td>4529 Other general merchandise stores</td>
<td>67,000</td>
<td>5.5</td>
</tr>
<tr>
<td>4451 Grocery stores</td>
<td>102,500</td>
<td>5.5</td>
</tr>
<tr>
<td>4441 Building material and supplies dealers</td>
<td>52,600</td>
<td>5.4</td>
</tr>
<tr>
<td>4411 Automotive dealers</td>
<td>38,600</td>
<td>3.8</td>
</tr>
<tr>
<td>4521 Department stores</td>
<td>50,500</td>
<td>4.9</td>
</tr>
<tr>
<td>WRT 42 &amp; 44-45</td>
<td>673,100</td>
<td>NC</td>
</tr>
</tbody>
</table>
Question # 2

What is the one job activity or task that is performed most often by employees in the high-risk establishments?

a. Prolonged standing from sales work
b. Repetitive motion involving stocking shelves
c. Lifting and carrying materials
d. Checking out customers involving repetitive scanning motions.
e. Waiting on customers resulting in stress and fatigue.

What is MMH and overexertion injuries?
What is it about manual material handling that causes so much concern?
Examples: Six high-risk MMH jobs

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Examples: Six high-risk MMH jobs
Lift, carry, lower [40 lb milk case]
Manual materials handling (MMH) in superstores: The Task Demands

- MMH are performed 74% of the work shift duration (7.5 hr)
- Stockers perform an average of 200 handling operations per shift, >400 in produce sections
- Total average weight 4,400 to 10,000 lbs/shift [22 – 50 lbs]*
- Pallet jack used average of 54 times/shift & accounted for 16% of time, maintenance issue
- Order pickers average 240 handling/hour at average weight 31 lbs* which equals?
  - [55,800 lbs or 28 tons]

M. St-Vincent et al, 2005

Putz-Anderson et al, 1993
Simple Injury Model: MMH

If Task Demands Exceed Worker Capacities, Outcome is an Increased Risk of Injury

<table>
<thead>
<tr>
<th>Task Demands</th>
<th>Worker Capacity</th>
<th>Injury Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>50 lb</td>
<td>35 lb</td>
<td>= 1.43 injury risk high</td>
</tr>
<tr>
<td>25 lb</td>
<td>35 lb</td>
<td>= 0.73 injury risk low</td>
</tr>
</tbody>
</table>

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Overexertion injuries (also MMH)

- Sprains/strains—muscles, ligaments, tendons
- Chronic pain affecting joints
- Disc injuries of back or neck
- Compression peripheral nerves
- Compression or disorders of blood circulation”
Injuries: linked to MMH jobs

Shoulder 30%
Elbows 18%
Hand/Wrist 9%
Back 43%

State of Washington Department of Labor Study, Sharp 40-6-2002
Overexertion Injuries and jobs, 2009

- 1 million reported injuries with lost time.
- 1/4 million reported overexertion injuries.
- 1 of every 4 were employees who had jobs in transportation and manual materials handling jobs had an overexertion injury.
- 7 out of every 100 retail employees who had jobs in sales employees had an overexertion injury [BLS, 2009; Table R12].
Overexertion injuries (OXIs) are prevalent despite our aversion to them: Some findings

• BLS report that every third injury in which there are “days away from work” is an OXI (BLS, 2009).

• Wholesale and retail employees experience OXI more often than any other work population - with the exception of health services (BLS, 2009).

• Material movers/transportation occupations have highest frequency of OXIs and they are employed in the wholesale/retail trades (BLS, 2009).

• Employees age 25-54 have highest rates of OXIs in comparison to all other age groups, including those 55-64 yrs (BLS, 2009).
Question # 3

CFO Survey: What is the number one cause of WC loss?

- a. Highway accidents
- b. Repetitive motions
- c. Bodily reactions
- d. Fall on same level
- e. Overexertion

CFO = Chief Financial Officer

Economics & Cost of Injuries
Occupational Injuries and Economics
Consider the following:

- Occ. injuries/illnesses are always a matter of economics since work is an economic activity.

- The cost of injuries depends on the extent to which workers are viewed by management as assets.

- There is a cost associated with prevention and a cost associated with the consequence of an injury. Which cost is greater?

[Dorman, ILO, 2000]
Overexertion is the third leading cause of injuries, accounting for about 3.3 million ER visits.

Overexertion was claimed as the cause of LBP by over 60% of LBP patients.

Two thirds of Overexertion claims involved lifting.

One fifth of Overexertion claims involved pushing or pulling loads.
Unloading Truck: Example
Supervisor helping new worker
Case study: Back Injury

- Supervisor suffered back injury helping worker unloading a truck early 2004
  - Original injury - $2,000 medical costs: diagnosis treatment
  - Recurrence in 2005 cost medical plus lost time $5,000
  - Surgery/comp in 2006 cost $18,400 and resulted
- Permanent partial disability
  - Additional costs of $84,400 in 2008 alone
- By 2010, this same back injury cost $97,000
- What would have been the cost of prevention?
### SALES TO COVER COSTS

<table>
<thead>
<tr>
<th>Accident Costs</th>
<th>1% Profit</th>
<th>2% Profit</th>
<th>3% Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,000</td>
<td>$100,000</td>
<td>$50,000</td>
<td>$33,000</td>
</tr>
<tr>
<td>$5,000</td>
<td>500,000</td>
<td>$250,000</td>
<td>167,000</td>
</tr>
<tr>
<td>$10,000</td>
<td>1,000,000</td>
<td>500,000</td>
<td>333,000</td>
</tr>
<tr>
<td>$25,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$100,000</td>
<td></td>
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</tr>
</tbody>
</table>

It is necessary to sell an additional $250,000 in products or services to pay the cost of $5,000 annual losses.
Review: Costs of Overexertion Injuries (OXI)

- Median number of lost work days
  - 5 days for all workers with any injury
  - 25 days for workers with OXIs
- Average cost per injury
  - $1,100 for all other cases
  - $10,800 for an OXI.
- OXIs tend to have
  - Longer durations
  - Longer treatment time
  - Greater work disability
Businesses with manual material handling (overexertion) injuries

Lost work days $$

0 50 100 150 200

- Beer, Wine, Alcoholic Beverages
- Home Centers (44411)
- Supermarkets and Other Grocery Stores
- Furniture Stores (4421)
- Warehouse Clubs and Home Centers (44411)
- Furniture and Home Furnishings
- Department Stores (4521)
- Lumber/Other Construction
- Tire Dealers (44132)
- Private Industry
- Service Providing

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Question # 4

What is the best solution to the MMH issues we have outlined here?

- a. We need to improve the selection of workers
- b. We need to start a wellness program
- c. We need to change the design of work.
- d. We need to improve our work incentives.

Prevention strategies

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According to the Liberty Mutual Executive Survey.
Employers’ Prevention strategies
Why they do safety:

1. Cost of workers' compensation insurance
2. Right thing to do
3. Increases profitability
4. Federal/State safety rules
5. Too many accidents
6. Employee morale
7. Productivity
8. OSHA fines
9. Recommendations of outside experts
10. Because of employee concerns

Survey RILA 2002

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I. Selection and Testing Strategy
II. Personal Protective Equipment
III. Establish Safe Work Practices
IV. Prevention through Design
I. Strategy: Selection and Testing

Goal is to identify “injury resistant” workers who can perform heavy MMH.

Reality: Success rate is about 50:50 in selection

Numerous studies showing difficulty.
Some issues of discrimination.
II. Use Personal Protective Equipment (PPE) [Gloves/Shoes]

• Remember the infamous “back belt” that made you feel strong when wearing it? Well...

• This PPE called the “Cyber-bionic exoskeleton” will increase your lifting capacity by a factor of ten.

• Unfortunately, it is too expensive for industrial use, but the military is interested.
III. Establish Safe Work Practices

Set up Training and set Policies

- Administrative controls can be useful.
- Training in manual handling also useful.
- However, “training to lift properly” is impossible in real work settings, based on numerous studies.

- No evidence that back injuries could have been prevented by using “proper” lifting techniques Kuorkinka, et al., 1994.
- Recent studies have shown that “overexertion injuries” are “training-resistant” Waehrer & Miller, 2009
IV. Prevention through Design

Use engineering approach to reduce or eliminate the hazards

The engineering approach offered here is the topic of the MODEX & MMH Workshop

Examples of Engineering Controls NIOSH Publication No 2007 -131
Engineering Design Goals (PtD):

Workshop Attendees will be seeking ways to accomplish the following:

Lower unit material handling costs:
- Purchase equipment that will reduce the number of handlings and the distance moved.

Lower risk of overexertion injuries:
- Purchase equipment that will allow employees of any size or age to efficiently move and store bulky/heavy merchandise.

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The MMH Workshop will focus on designing and developing Engineering Solutions to Manual Materials Handling Jobs

A unique opportunity to meet and talk with innovative design engineers.
The MMH Workshop: A Business to Business Workshop/Meeting

Wholesalers

Retailers

Warehousers

Material Handling Experts

MMH Workshop

WHERE
Atlanta, GA

WHEN
Feb 8-9th, 2012

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Manual Materials Handling Workshop: Sponsors

- PtD (Prevention through Design)
- EASE (Ergonomic Assist Systems & Equipment)
- FMI (Food Marketing Institute)
- RILA (Retail Industry Leaders Association)
- SUPervalu (America's Neighborhood Grocer)
- TARGET
- The Loss Prevention Foundation
- Warehousing Education and Research Council (WERC)

However, you will be missed on the Safety Front.
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MMH Workshop Details

- **When:** February 8 and 9, 2012
- **Where:** Georgia World Congress Cntr, Atlanta
- **Format:** Panel Discussions with Experts
- **Registration –** **Now!** **Hotels:** Many Sold Out!  
- **Registration Fee:** $250
- **More Information:** Vern Putz Anderson  
  513 533-8319  [vep1@cdc.gov](mailto:vep1@cdc.gov)
- **Attendees:** Loss Prevention & Safety Experts
My thanks to the National Safety Council for hosting today.
Addendum: Risk Analysis

- Risk Analysis serves to define and identify the measures of risk control.
- Risk Analysis is an important step in the process of risk control and industrial safety.
- Risk Analysis = Risk Control