The Ergonomics in Risk Selection and Customer Service

Bill Boyd
Senior Vice President
Risk Control
CNA Insurance
Disclaimer

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Ergonomics Disclaimer

or

- Stops Squeaks
- Drives Out Moisture
- Cleans and Protects
- Loosens Rusted Parts
- Frees Sticky Mechanisms

SEE CAUTIONS ON REVERSE

200 ml
Silicone Free

or

Oxidized Aluminum Foil Plating

2.5 Mil 6" x 100' Roll
CNA Profile

• 7th largest U.S. commercial lines carrier
  – $6.4 billion of property & casualty net written premium in 2012
  – Long-standing market presence with over 115 years history
• Business mix is approximately 45% specialty lines, 55% commercial lines
  – Serve insurance needs of over 1 million businesses and professionals across a range of industries
• Broad-based footprint in chosen geographies
  – Offices throughout North America and Europe, as well as Bermuda, the Middle East and Asia
  – Long-standing relationships with over 3,000 U.S. brokers and agents
• 2012 acquisition of Hardy Underwriting Bermuda
  – Complements CNA’s deep expertise in specialized markets and provides access to the $35 billion Lloyd’s marketplace
• Consistent operating performance and a high degree of financial stability

<table>
<thead>
<tr>
<th>CNA P&amp;C</th>
<th>A.M. Best</th>
<th>S&amp;P</th>
<th>Moody's</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outlook</td>
<td>Stable</td>
<td>Positive</td>
<td>Positive</td>
</tr>
<tr>
<td>Financial Strength Rating</td>
<td>A</td>
<td>A-</td>
<td>A3</td>
</tr>
</tbody>
</table>

S&P raised its outlook to Positive in 4Q 2011
Moody’s raised its outlook to Positive in 2Q 2012
Broad Geographic Reach

World-class capabilities …

…delivered locally
Customer Segment Focus

- Specialized underwriting approach
- Deep understanding of the needs of our insureds
- Distinctive business solutions
- Deeper producer and customer relationships
- Clearly focused underwriting appetite
## Industry-Leading Programs

### Construction
- CAM® programs for 12 different construction trades
- Endorsed by 10 national and regional trade organizations

### Financial Institutions
- National programs for banks and other lending institutions, insurance companies and asset managers
- Endorsed business insurance carriers for the California and Arkansas Bankers Associations

### Healthcare
- National programs for dentists, nurses, nurse practitioners, nurse anesthetists and allied health care professionals
- Preferred provider for the property and casualty insurance program offered to LeadingAge (formerly the American Association of Homes and Services for the Aging)
- Co-founder, National Patient Safety Foundation

### Manufacturing
- CAM® programs for 7 manufacturing sub-segments
- Endorsed by 2 leading national trade organizations

### Professional Services
- Largest professional liability insurer for architects, engineers, contractors, accountants, lawyers, real estate agents
- National programs for architects & engineers and construction design professionals, accountants, small law firms (< 35 attorneys) and real estate agents
- Professional liability program endorsed by the American Institute of CPAs®, National Society of Professional Engineers and 9 state bar associations, and the exclusive E&O insurance carrier for the National Association of Realtors® “Realtor Benefits Program”

### Technology
- The only package carrier to offer a customized Tech E&O solution
- Industry-leading CNA NetProtect® product includes first- and third-party cyber liability and E&O coverages
- Insurance solutions for today’s tech companies, including cloud computing and digital media

For more information, visit the Agent Center site on CNA.com.
### Workers’ Compensation Cases

<table>
<thead>
<tr>
<th>Jurisdiction State</th>
<th>Loss Desc</th>
<th>Customer</th>
<th>Inc Loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louisiana</td>
<td>Pulling on the Strapping Machine strain to lower back.</td>
<td>PACKAGING COMPANY</td>
<td>$382,751</td>
</tr>
<tr>
<td>California</td>
<td>Pain to lower back and left leg from work environment.</td>
<td>PAINT COMPANY</td>
<td>$561,917</td>
</tr>
<tr>
<td>Georgia</td>
<td>Employee received strain to cervical - left shoulder from lifting Roof Material.</td>
<td>ROOFING COMPANY</td>
<td>$440,126</td>
</tr>
<tr>
<td>California</td>
<td>Employee was digging holes and carrying pipes and received back injury.</td>
<td>TELECOMMUNICATIONS</td>
<td>$455,663</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Injury to back from lifting truck bumper.</td>
<td>MECHANICAL CONTRACTOR</td>
<td>$468,866</td>
</tr>
</tbody>
</table>
Back Surgery Frequency

3 out of 10 injured workers who have back injuries and who have lost time have an inpatient back surgery within the same year as the injury.
## Limitations of Weight
(International Labor Office)

<table>
<thead>
<tr>
<th>Country</th>
<th>Conditions</th>
<th>Maximum Weight (Male)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greece</td>
<td>For carrying meat of slaughtered animals</td>
<td>220 pounds</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Conditions</th>
<th>Maximum Weight (Female)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameroon</td>
<td>Girls and young women under 18 years of age may not carry loads by means of hand barrow and two-wheeled carts.</td>
<td>?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>Conditions</th>
<th>Maximum Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>“General Duty Clause”</td>
<td>Analytical Tools</td>
</tr>
</tbody>
</table>

*Back Injuries have been and are our #1 type of workplace injury.
CNA Workers’ Compensation Claims Between 2006 and 2009

Manual material handling has consistently been the most frequent type of injury in the manufacturing segment and has been identified as the cause of the highest portion of employee injuries.

Source: CNA Risk Assessment Study
13.5% of all injuries are “back injuries”. 27% of WC “lost time” payments go to Back Injuries. Average notice of loss for these injuries is 12.27 days. Average length of employment prior to the injury is 3.63 years. Average age at date of injury is 41 years.
Aging Workforce

When workers have been on the job for twenty years of more, accident severity increases. As we age it takes longer for the body to heal, especially with soft tissue injuries of the back, shoulders, and legs. In addition, the cumulative trauma of reaching, bending, twisting, standing and walking become major risk factors as the employees age effecting the severity of injuries.
CNA Workers’ Compensation

Injury Types

Effects of the Aging Workforce

- This chart shows the impact of injury by claimant age.

Source: CNA Risk Assessment Study
Manual handling and struck by incidents are frequency drivers, while slips / trips, falls from elevation and repetitive motion accidents are severity drivers. The average direct cost of these claims was more than $12,900 and $14,220 respectively.
Health and Safety

WC Construction Claims 2010-2013: Claims and Severity by Claim Type and Claimant Age

<table>
<thead>
<tr>
<th>Claimant Age</th>
<th>Other - % Claim Count</th>
<th>Soft Tissue - % Claim Count</th>
<th>Soft Tissue Severity</th>
<th>Soft Tissue Limited Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 20</td>
<td>2%</td>
<td>2%</td>
<td>3,441</td>
<td>3,441</td>
</tr>
<tr>
<td>20-25</td>
<td>9%</td>
<td>8%</td>
<td>4,984</td>
<td>3,891</td>
</tr>
<tr>
<td>25-30</td>
<td>11%</td>
<td>11%</td>
<td>8,373</td>
<td>6,226</td>
</tr>
<tr>
<td>30-35</td>
<td>12%</td>
<td>13%</td>
<td>11,882</td>
<td>8,802</td>
</tr>
<tr>
<td>35-40</td>
<td>12%</td>
<td>13%</td>
<td>15,737</td>
<td>10,409</td>
</tr>
<tr>
<td>40-45</td>
<td>12%</td>
<td>13%</td>
<td>19,288</td>
<td>12,260</td>
</tr>
<tr>
<td>45-50</td>
<td>13%</td>
<td>14%</td>
<td>23,838</td>
<td>15,433</td>
</tr>
<tr>
<td>50-55</td>
<td>12%</td>
<td>12%</td>
<td>27,951</td>
<td>16,137</td>
</tr>
<tr>
<td>55-60</td>
<td>9%</td>
<td>8%</td>
<td>20,789</td>
<td>15,539</td>
</tr>
<tr>
<td>60 and over</td>
<td>7%</td>
<td>6%</td>
<td>19,391</td>
<td>13,258</td>
</tr>
</tbody>
</table>

% of Claims
Health and Safety

WC Construction Claims 2010-2013: Claims and Severity by Claim Type and Length of Service

<table>
<thead>
<tr>
<th>Length of Service</th>
<th>Other - % Claim Count</th>
<th>Soft Tissue - % Claim Count</th>
<th>Soft Tissue Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3 months</td>
<td>18%</td>
<td>15%</td>
<td>18,976</td>
</tr>
<tr>
<td>3-6 months</td>
<td>8%</td>
<td>8%</td>
<td>16,989</td>
</tr>
<tr>
<td>6-12 months</td>
<td>9%</td>
<td>9%</td>
<td>16,570</td>
</tr>
<tr>
<td>1-2 years</td>
<td>10%</td>
<td>10%</td>
<td>14,843</td>
</tr>
<tr>
<td>2-5 years</td>
<td>15%</td>
<td>15%</td>
<td>16,765</td>
</tr>
<tr>
<td>5-10 years</td>
<td>11%</td>
<td>13%</td>
<td>16,722</td>
</tr>
<tr>
<td>10-20 years</td>
<td>9%</td>
<td>10%</td>
<td>21,990</td>
</tr>
<tr>
<td>20 years and over</td>
<td>21%</td>
<td>20%</td>
<td>15,024</td>
</tr>
</tbody>
</table>
“We can't solve problems by using the same kind of thinking we used when we created them.”

Albert Einstein

Question:

How does the ‘ergonomics” exposure affect risk selection, risk pricing, predictive loss and impact on predicted losses?
Manufacturing Segment

Manual Material Handling:

• Accounted for 24 percent of all workers’ compensation claims.

• $12,900 average claim cost.

• More than 52 percent of manufacturing employees are routinely involved in manual handling tasks as part of their job.

• MMH programs reduce claim rates by 16 percent.
## Risk Assessment

**WC Critical Element**

- Manual Material Handling

### Number of Employees Exposed:

- **Construction Ergo Tool in excess of 7:**
  - Yes [ ]
  - No [ ]
  - N/A [ ]

- **Construction Ergo Tool between 3 and 6:**
  - Yes [ ]
  - No [ ]
  - N/A [ ]

- **Construction Ergo Tool below 3:**
  - Yes [ ]
  - No [ ]
  - N/A [ ]

- Construction material not Moved more than 25 Feet:
  - Yes [ ]
  - No [ ]

- **No lifting and/or bending from any work surface lower than knee height:**
  - Yes [ ]
  - No [ ]

- **Frequently Used Material Stored in the Power Zone:**
  - Yes [ ]
  - No [ ]

- Manual lifts limited to 50lbs:
  - Yes [ ]
  - No [ ]

- Pre-planning performed on Job Operations to Minimize Manual Lifting:
  - Yes [ ]
  - No [ ]

- Formal MMH training conducted for operational employees:
  - Yes [ ]
  - No [ ]

### Quality of Controls Grade:

- **Numeric Score:**
  - Raw: 1000
  - Weight: 5
  - Final: 10.00

- **Risk Control Consultant Quality of Controls Grade Change:**
  - Not Applicable [ ]
<table>
<thead>
<tr>
<th><strong>Repetitive Motion</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Employees Exposed:</strong></td>
</tr>
<tr>
<td><strong>Ergonomically Designed Tools Used:</strong></td>
</tr>
<tr>
<td><strong>Objects Grasped and Hold with Minimal Effort:</strong></td>
</tr>
<tr>
<td><strong>Assembly Tasks are Designed to Eliminate the Need to Use a &quot;Pinch Grip&quot; to Hold Objects:</strong></td>
</tr>
<tr>
<td><strong>Employees Provided with a Comfortable Work Environment (Temperature, Noise, Segmental, Vibration, Air Quality):</strong></td>
</tr>
<tr>
<td><strong>Quality of Controls Grade:</strong></td>
</tr>
<tr>
<td><strong>Numeric Score:</strong></td>
</tr>
<tr>
<td><strong>Risk Control Consultant Quality of Controls Grade Change:</strong></td>
</tr>
</tbody>
</table>
## Risk Assessment Data

<table>
<thead>
<tr>
<th></th>
<th>Construction</th>
<th>Food Processing</th>
<th>Metal Fabrication</th>
<th>Industrial Machinery Manufacturing</th>
<th>Wholesale Distributors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal Written Program for manual material handling (including rules and training)</td>
<td>67.2%</td>
<td>53.7%</td>
<td>47.4%</td>
<td>35.1%</td>
<td>55.0%</td>
</tr>
</tbody>
</table>
Effective Manual Material Handling Program In Place

Loss Ratio

Frequency

Severity

Distribution

Average Premium vs. Premium in $MM
Questions with Largest WC Frequency Impact

<table>
<thead>
<tr>
<th>Category</th>
<th>Fieldname</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMH</td>
<td>Tools / Equipment Used to Assist in MMH</td>
<td>-1%</td>
</tr>
<tr>
<td>MMH</td>
<td>Formal Program for Man Mat Handling</td>
<td>-2%</td>
</tr>
<tr>
<td>MMH</td>
<td>Effective Man Mat Handling Program</td>
<td>-2%</td>
</tr>
<tr>
<td>Repetitive Motion</td>
<td>Assembly Tasks Are Designed To Eliminate The Need To Use A pinch Grip To Hold Objects</td>
<td>-5%</td>
</tr>
<tr>
<td>Repetitive Motion</td>
<td>Workstation Designed To Sit And Stand</td>
<td>-15%</td>
</tr>
<tr>
<td>Repetitive Motion</td>
<td>Ergonomically Designed Tools Used</td>
<td>0%</td>
</tr>
<tr>
<td>Repetitive Motion</td>
<td>Assembly Tasks Are Designed To Eliminate The Need To Use A pinch Grip To Hold Objects</td>
<td>-5%</td>
</tr>
</tbody>
</table>
## Questions with Largest Severity Impact

<table>
<thead>
<tr>
<th>Category</th>
<th>Fieldname</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMH</td>
<td>Tools / Equipment Used to Assist in MMH.</td>
<td>-1%</td>
</tr>
<tr>
<td>MMH</td>
<td>Effective Manual Material Handling Program.</td>
<td>0%</td>
</tr>
<tr>
<td>MMH</td>
<td>Manual Lifts Limited to 50Lbs.</td>
<td>0%</td>
</tr>
<tr>
<td>MMH</td>
<td>Formal Program for Man Mat Handling.</td>
<td>-1%</td>
</tr>
<tr>
<td>Repetitive Motion</td>
<td>Objects Grasped And Held With Minimal Effect.</td>
<td>-10%</td>
</tr>
<tr>
<td>Repetitive Motion</td>
<td>Workstation Designed to Sit and Stand.</td>
<td>-15%</td>
</tr>
</tbody>
</table>
Questions with largest *Loss Ratio* Impact

<table>
<thead>
<tr>
<th>Category</th>
<th>Fieldname</th>
<th>Loss Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMH</td>
<td>Effective Manual Material Handling Program</td>
<td>Y: 0% N: 30%</td>
</tr>
<tr>
<td>MMH</td>
<td>Formal Program for Manual Material Handling</td>
<td>Y: 0% N: 1%</td>
</tr>
<tr>
<td>MMH</td>
<td>Manual Lifts Limited to 50Lbs</td>
<td>Y: 0% N: 17%</td>
</tr>
<tr>
<td>MMH</td>
<td>Tools / Equipment Used to Assist in MMH</td>
<td>Y: -2% N: 25%</td>
</tr>
<tr>
<td>Repetitive Motion</td>
<td>Ergonomically Designed Tools Used</td>
<td>Y: -3% N: 7%</td>
</tr>
<tr>
<td>Repetitive Motion</td>
<td>Objects Grasped And Held With Minimal Effort</td>
<td>Y: -10% N: 37%</td>
</tr>
<tr>
<td>Repetitive Motion</td>
<td>Workstation Designed To Sit And Stand</td>
<td>Y: -24% N: 17%</td>
</tr>
</tbody>
</table>
CNA’s Ergonomic Services Include:

Motion is Money®

Brian Roberts, CSP, CIE, RRE
Director, Workers’ Compensation and Ergonomics
The Cost of Doing Business

Wasted motion decreases a workers’ production and increases their risk of injury. CNA Risk Control provides the best strategies, methods and ideas to enhance our clients workers’ productivity and reduce risk factors. For every one percent reduction in risk, our customers gain one percent improvement in productivity.
The Cost of Doing Business
Coupled with a maturing workforce, requires employers to look at injury costs and productivity. Motion is Money is CNA’s proven business tool for both construction and the manufacturing industry. At CNA we focus on how to identify motion wasted within an organization and apply best concepts to enhance productivity and create stronger profit margins.
Occupational Safety and Health is important to your business which is why CNA builds programs that work. Our programs include a process of small changes that affect your organization’s productivity, efficiency and quality and in results that improve your bottom line as well as reduce risk.
• The *art* of observing human beings as they are:

– Walking  
– **Bending**  
– Carrying  
– Pushing  
– Pulling  
– **Lifting**  
– Climbing  
– Descending  
– **Twisting**  
– Reaching  
– Improvising  
– Etc., etc., etc.

… and questioning why work is being done that way
Motion is Money

• The art of observing human beings as they are:
  – Walking
  – **Bending**
  – Carrying
  – Pushing
  – Pulling
  – Lifting
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  – Descending
  – Twisting
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The art of observing human beings as they are:

- Walking
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- Improvising
- Etc., etc., etc.

... and questioning why work is being done that way
Goals of Motion is Money Process

• Increase in productivity
• Improvement in quality
• Enhanced efficiency
• Reduction in discomfort
• Reduction in absenteeism and turnover
• Reduction in the frequency and severity of injuries.
Objectives

• To recognize the correlation of the aging work workforce and how it affects your business operations.

• To better understand motion in the work environment and the affects it has on productivity, efficiency, and bottom line profitability.

• Provide areas to focus on in your operational process that you can incorporate into your operations.
Process Model

- Identify Problems
- Baseline Measurements
- Continuous Improvement
- Identify Movements & Hazards
- Develop Business Solutions
- Implement, Follow-up, & Measure Changes
What Did We Do? Summary

Set the Right Goal – Zero Injuries

Connect Safety & Productivity in Hearts & Minds

Innovate! Eliminate Primitive Work Methods

Get Help From Outsiders Where Needed

Follow Up, Refocus and/or Expand
Changing the Way We Work

Fatigue Factors
• Repetition
• Noise
• Temperature
• Vibration
• Weight

Current State

Proposed State
Industry Comparison

National Average Incident Rates by Industry

Source: US Bureau Of Labor Statistics, TABLE 1. Incidence rates of nonfatal occupational injuries and illnesses by industry and case types, selected years.
Unexpected Benefits of Changing the Way We Work

• Improved employee morale
• Increased ease of change
• Good field adoption of techniques
• Improved relationships with suppliers
• Increased trust and reliance upon safety professionals
The Aging Workforce Effect on Cost of Injury

Average Cost Per Claim By Age

Source: Customer Claims Data 2009-2012, CNA verified 02/21/14 (Adjusted for outliers)
Increasing Injuries

Hours and Injuries

- Hours
- 2003 Trajectory*
- Actual Injuries

*2003 Trajectory:
- '97: 16
- '98: 18
- '99: 24
- '00: 28
- '01: 31
- '02: 35
- '03: 52

Injuries:
- '03: 1700
- '02: 1500
- '01: 1300
- '00: 1100
- '99: 900
- '98: 700
- '97: 500

Millions

Hours

0 10 20 30 40 50 60

'97 '98 '99 '00 '01 '02 '03

Injuries
Our Trajectory
Prior to Motion is Money

Hours and Injuries

- Hours
- 2003 Trajectory*
- Actual Injuries

Bar and line chart showing hours and injuries over the years.
Results: 7,700+ Injuries prevented in 11 Years

Hours and Injuries

Estimated Savings: 7,700 Injuries and $100 Million +
CNA Ergonomic Philosophy

• We cannot eliminate 100% of the risk factors.

• However, we can reduce or effect 10%, 15%, or even 30% of the risk factors for a job task.

• Question why work is being done “that way.”

• A culture of continual improvement.
CNA Risk Control Professionals

• Multi-line expertise with focus on ergonomics, products liability, machine safeguarding, robotics and property protection systems.

• Trained in Six Sigma and Lean Manufacturing principles (IIE Training.)

• Average experience is 23 years.

• CNA Staff is the only staff in the world that are Recognized Risk Engineers by Underwriters Laboratories (UL).

• Brian Roberts, Director of Ergonomics Services.
Thank you.

Exhibitors
Ergo Cup Teams
Speakers
Attendees

“A person’s mind stretched to a new idea never goes back to its original dimensions.”

Oliver Wendell Holmes