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SUPERVISING REPTITIVE MOTION WORK TASKS

By SeaBright Insurance Loss Control

In only a relatively short number of years, the word ergonomics has become a household word in the U.S. Primarily driven by the increasing number of work-related injuries from repetitive work. Muscular Skeletal Disorders (MSD's) or Cumulative Trauma Disorder (CTD's) have surpassed back injuries as the #1 injury prevention challenge. MSD's are known by many different tongue twisting names, like: carpal tunnel syndrome, tenosynovitis, and lateral epicondylitis. While we can hardly pronounce these words, as supervisors and safety personnel, we must understand them to reduce the hazards that create them.

MSD's come with very real pain that can be suffered by people who repeat the same task over and over, hour after hour, such as in industries such as in: construction, meat processing, fish processing, word processing, manufacturing and assembly line work. While these industries are listed, they can happen in any industry. It attacks wrists, arms, elbows and shoulders. It often affects all aspects of the person's life, work, home and outdoor activities until relief is found.

What Can You Do As A Supervisor To Deal With MSD's?

1. First, understand that repetitive motion injuries are real and the overall impact to the workplace grows every year. Do not show skepticism if an employee complains about hand, wrist, or arm discomfort – show concern and catch the problem early when it is just discomfort and not a chronic injury. While a new employee may just not be work-hardened to their new tasks and muscles must be toned, as supervisor you must take each instance with concern for the worker.
2. Second, accept the message that: “The key to safety, production and quality is the **first line supervisor!**” It is not top management, or the front office, it is YOU. You are the person line workers look to for support and direction. It is true that employees will pay respect to top management, but they more closely watch and listen to you when it comes to the work to be done and how to do it. So it is important to give consistently sound advice about good work habits. Then, “catch people doing things right” and they will repeat the practice.
3. Third, educate yourself about prevention of repetitive motion injuries. The key word is ergonomics – Simply put, it means adjusting work tasks to match the physical abilities and limitations of people, instead of expecting them to just “put up” with the stress and strain of the task. These efforts may be time consuming in the short run, but will give you and the company a long-term payoff. A few of the more basic adjustments are:

- Job rotation, or moving people from one work station to another, so work movements will be more varied and less likely to stress one part of the body.
 - Changing the work station height, depth, required reach, work-surfaces or other parameters that produce awkward positions or fatigue over time.
 - Require, frequent, short breaks (mini-breaks) if repetitive work demands are high and/or overtime is necessary. When body tissues don't get a needed rest from excessive demands, the potential for injury and a long healing period is great.
4. Be sensitive to predisposing factors to CTD. These factors seem to determine why one person may suffer from a particular work environment and another person will not. No one expects you to make a medical diagnosis, but simply be aware that some people are more likely to suffer from CTD than others. While research shows there is no special connection between CTD and age, race, sex, or strength, the following factors are among several others that can make an individual more susceptible:
- Body structure such as tendon or nerve size and pliability
 - Increased fluid in the body
 - Arthritis
 - Fractures of the wrist or forearm
 - Hormonal or chemical changes
 - Physical, mental or emotional stress
5. Involve your crew in problem solving. They know the ins and outs of the job and will often come up with answers that can reduce repetitive motions, uncomfortable work positions, excessive force or muscle fatigue. People like to take part in decisions that affect their work! And if a new tool or a change of work process is being considered, give it a trial period before either rejecting or permanently adopting it. The hardliners who resist change won't grumble as much when they see a new practice tested first.
6. Educate employees about how to avoid muscle fatigue and strain – particularly when repetitive work is periodic or seasonal. You can (and should) avoid discussing carpal tunnel syndrome, or any specific medical condition, but point out that we are all subject to muscle discomfort when we work or play hard. The attached “handout” on Preventing Hand and Arm Fatigue can be used as a safety meeting discussion tool, or included in a new employee packet – or both.
7. Roll up your sleeves, get your crew together and try some of the exercises that can help prevent CTD. You do not necessarily need a \$200/hour consultant to teach flexibility exercises, (although this could be a cost-effective move if your company is at high risk for this problem). Experiment with the exercises that are listed in the attached handout, keeping in mind that stretching exercises tend to relax muscles and tendons – and are not the same as repetitive, forceful work movements.

If you have questions about this subject, or if you want additional information about the topic, contact your SeaBright Loss Control Representative. It takes a lot of people working together to control an epidemic!

Preventing Hand and Arm Fatigue

Many work tasks in this company require repetitive movements involving the hand, wrist, and arms. Employees who are not accustomed to such labor intensive work, often experience pain or discomfort in their upper extremities – especially during the first few days or weeks of a new job. Muscles that are not accustomed to strenuous work get tired and sore. Most people have experienced aching muscles or a “Charlie horse” at some time in their life, after skiing, running, bowling, or playing hard at almost any sport. It takes time to “get in shape.” And when athletic injuries occur, recovery is usually a combination of rest and physical therapy, or prescribed exercise. The following suggestions may help prevent or reduce the discomfort of work that is demanding to hands, wrists, and arms. **Discuss them with your supervisor.**








- Avoid bending the wrist up and down excessively
 - Avoid bending the wrist sideways during work tasks
 - Support a “neutral” wrist position with flexible wrist-wraps
 - Avoid tight, non stretchable bands around the wrists
 - Avoid repetitive pinching of objects with the fingertips
 - Avoid Repeated heavy pressure at the base of the palm
 - Use tools that spread pressure evenly over the hand
 - Use tools with handles that are easy to grip and hold
 - Exercises can help reduce muscle tension
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- ✓ Periodically stretch the arms and shoulders by reaching for the ceiling. Then raise arms straight out to the side and stretch them, first as back as far as possible, then to the front as far as possible. Finally do a series of shoulder rolls with arms extended in front and thumbs locked.
 - ✓ Move wrists in circles, rotating five times in each direction. The motion is that of drawing a circle with your fingertips.
 - ✓ Spread the fingers of both hands far apart and hold for a period of five to ten seconds. Repeat three to five times.
 - ✓ While holding the right hand out in front of you, with your thumb pointing toward your body, pull the thumb down and out until you feel a gentle stretch. Hold 5 to 10 seconds. Repeat the thumb stretch three to five times on each hand.
 - ✓ Roll the shoulders backwards toward your ears, making a complete circle. Repeat 5-10 times.
 - ✓ Hang your head forward, chin down, and hold this stretch for 5 to 10 seconds. Slowly raise your head to a neutral position. Repeat this exercise 5-10 times.
 - ✓ Strengthen the hand by using a “nerf” ball for resistance while doing a “thumb squeeze,” squeezing the ball with the palm of the hand, not the fingers. Repeat 20 – 30 times with each hand. Strengthen fingers by making a fist 20-30 times with each hand. Strengthen fingers by making a fist 20-30 times with each hand.



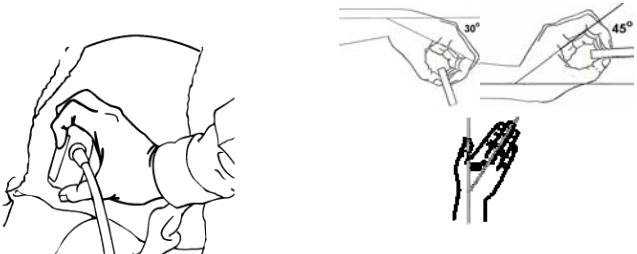



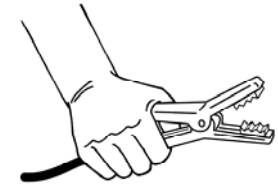
Note: If you have recurring numbness, tingling or pain with no improvement over the weekend, see your physician.


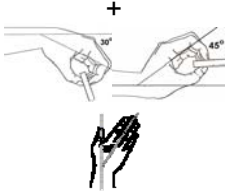


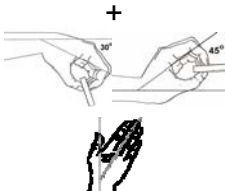



HAZARD ZONE JOBS CHECKLIST

For each "caution zone job" find any physical risk factors that apply. If a hazard exists, it must be reduced below the hazard level or to the degree technologically and economically feasible.

Movements or postures that are a regular and foreseeable part of the job, occurring more than <i>one day per week</i>, and more frequently than <i>one week per year</i>.	Hazard Exists ✓	Job Position evaluated: Date:	No. of employees in these jobs?
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Awkward Posture			Comments/Observations
	1. Working with the hand(s) above the head, or the elbows above the shoulders	More than 4 hours total per day <input type="checkbox"/>	
	2. Repeatedly raising the hand(s) above the head, or the elbow(s) above the shoulder(s) more than once per minute	More than 4 hours total per day <input type="checkbox"/>	
	3. Working with the neck bent more than 45° (without support or the ability to vary posture)	More than 4 hours total per day <input type="checkbox"/>	
	4. Working with the back bent forward more than 30° (without support or the ability to vary posture)	More than 4 hours total per day <input type="checkbox"/>	
	5. Working with the back bent forward more than 45° (without support or the ability to vary posture)	More than 2 hours total per day <input type="checkbox"/>	
	6. Squatting	More than 4 hours total per day <input type="checkbox"/>	
	7. Kneeling	More than 4 hours total per day <input type="checkbox"/>	

High Hand Force		Hazard Exists 	Comments/Observations
Pinching an unsupported object(s) weighing 2 lbs or more per hand, or pinching with a force of 4 lbs or more per hand (comparable to pinching a half a ream of paper)			
8. 	+ Highly repetitive motion	+ More than 3 hours total per day <input type="checkbox"/>	
9. 	+ Highly repetitive motion	+ More than 3 hours total per day <input type="checkbox"/>	
10. 	No other risk factors	+ More than 4 hours total per day <input type="checkbox"/>	
Gripping an unsupported object(s) weighing 10 lbs or more per hand, or gripping with a force of 10 lbs or more per hand (comparable to clamping light duty automotive jumper cables onto a battery)			
11. 	+ Highly Repetitive motion	+ More than 3 hours total per day <input type="checkbox"/>	
12. 	+ Highly Repetitive motion	+ More than 3 hours total per day <input type="checkbox"/>	
13. 	No other risk factors	+ More than 4 hours total per day <input type="checkbox"/>	

Highly Repetitive Motion		Hazard Exists ✓	Comments/ Observations
Using the same motion with little or no variation every few seconds (excluding keying activities)			
14.	  <p>High, forceful exertions with the hand(s)</p>	<p>+ More than 2 hours <i>total</i> per day</p> <input type="checkbox"/>	
15.	 <p>No other risk factors</p>	<p>+ More than 6 hours <i>total</i> per day</p> <input type="checkbox"/>	
Intensive keying			
16.	 	<p>+ More than 4 hours <i>total</i> per day</p> <input type="checkbox"/>	
17.	 <p>No other risk factors</p>	<p>+ More than 7 hours <i>total</i> per day</p> <input type="checkbox"/>	
Repeated Impact		Comments/ Observations	
18.	 <p>Using the hand (heel/base of palm) as a hammer more than once per minute</p>	<p>+ More than 2 hours <i>total</i> per day</p> <input type="checkbox"/>	
19.	 <p>Using the knee as a hammer more than once per minute</p>	<p>+ More than 2 hours <i>total</i> per day</p> <input type="checkbox"/>	

Calculator for analyzing lifting operations

Company

Evaluator

Job

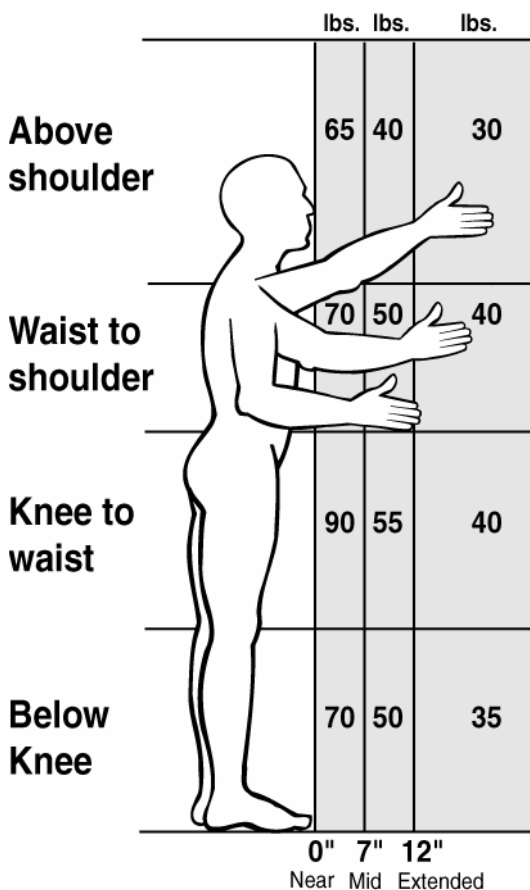
Date

- 1** Enter the weight of the object lifted.

Weight Lifted

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- 2** Circle the number on a rectangle below that corresponds to the position of the person's hands when they begin to lift or lower the objects.



- 3** Circle the number that corresponds to the times the person lifts per minute and the total number of hours per day spent lifting.

Note: For lifting done less than once every five minutes, use 1.0

How many lifts per minute?	How many hours per day?		
	1 hr or less	1 hr to 2 hrs	2 hrs or more
1 lift every 2-5 min	1.0	0.95	0.85
1 lift every min	0.95	0.9	0.75
2-3 lifts every min	0.9	0.85	0.65
4-5 lifts every min	0.85	0.7	0.45
6-7 lifts every min	0.75	0.5	0.25
8-9 lifts every min	0.6	0.35	0.15
10+ lifts every min	0.3	0.2	0.0

- 4** Circle 0.85 if the person twists 45 degrees or more while lifting. **0.85**
Otherwise circle **1.0**

- 5** Copy below the numbers you have circled in steps 2, 3, and 4.

<div> <div>lbs.</div> <div>X</div> <div></div> <div>X</div> <div></div> <div>=</div> </div>			<div>Lifting Limit</div>
<div>Step 2</div>	<div>Step 3</div>	<div>Step 4</div>	
			<div>lbs.</div>

- 6** Is the Weight Lifted (1) less than the Lifting Limit (5)

Yes – OK
No – HAZARD

Note: If the job involves lifts of objects with a number of different weights and/or from a number of different locations, use Steps 1 through 5 above to:

- Analyze the 2 worst-case lifts—the heaviest object lifted and the lift done in the most awkward posture.
- Analyze the most commonly performed lift. In Step 3, use the frequency and duration for all the lifting done in a typical workday.

Calculator for analyzing lifting operations

7 SOLUTIONS PRINCIPLES

To find the most appropriate solution for this job, look for the lowest number you used to do the calculations (2, 3, 4)

HANDS POSITION (2) <ul style="list-style-type: none">• Reduce the horizontal distance from the body• Remove barriers, obstacles• Reduce weight of load• Reduce capacity of the container• Team lift the object with two or more workers• Design workstation with the adjustable heights to eliminate trunk bent forward• Provide handholds• Store objects at 30 inches off the floor	FREQUENCY (3) <ul style="list-style-type: none">• Increase weight of a load so it requires mechanical assist• Improve layout to minimize manual material handling• Use mobile storage racks
DURATION (3) <ul style="list-style-type: none">• Use mechanical assist such as overhead hoist, manipulator, vacuum lift, pneumatic balancer, forklift• Eliminate the use of deep shelves• Job rotation to other jobs where no lifting is required	TWISTING (4) <ul style="list-style-type: none">• Redesign workstation layout to eliminate trunk twisting• Locate lifting operations in front of the body• Use slides, gravity, chutes to eliminate lifting/twisting

Calculator for Hand-Arm Vibration

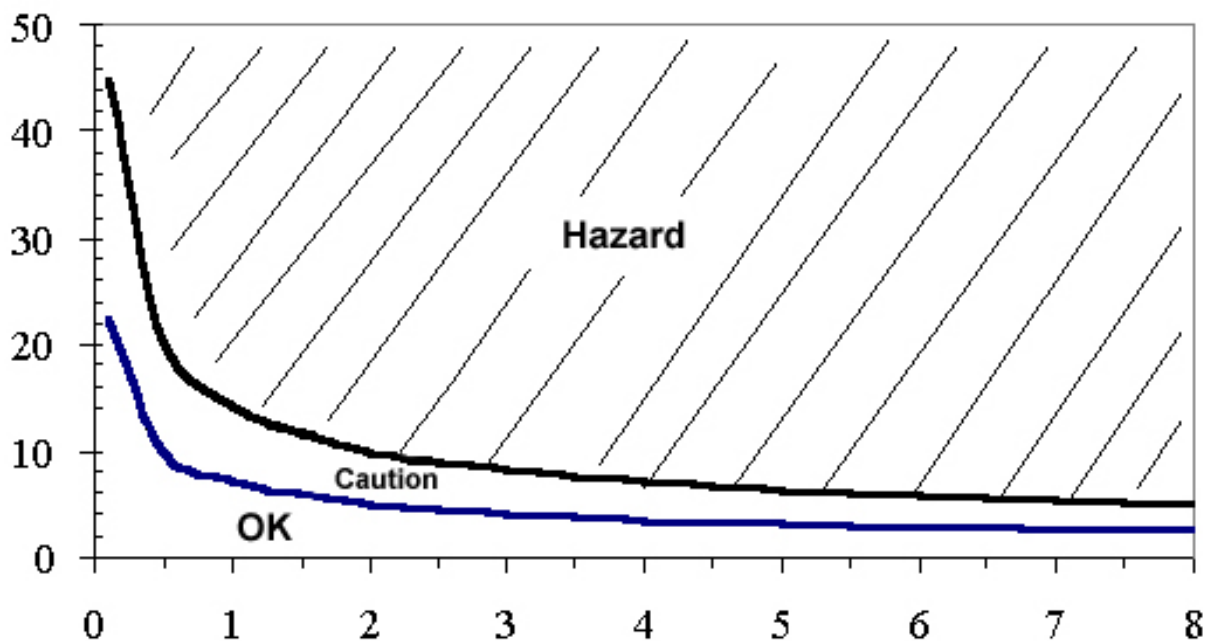
1. Find the vibration value for the tool. (Get it from the manufacturer look it up at this website <http://umetech.niwl.se/Vibration/action.lasso?-database=HAVbase.fp3&-layout=Normal&-response=HAVSearch.html&-show> On the graph below mark the point on the left side shown as Vibration value.

Vibration
m/s ²

2. Find out how many total hours per day the employee is using the tool and mark that point on the bottom of the chart below.

Duration
Hrs.

3. Trace a line into the graph from each of these two points until they cross.



4. Interpretation

- a. If that point lies in the crosshatched "Hazard" area above the upper curve, then the vibration hazard must be reduced below the hazard level or to the degree technologically and economically feasible.
- b. If the point lies between the two curves in the "Caution" area, then the job remains as a "Caution Zone Job."
- c. If the point falls in the "OK" area below the bottom curve, then no further steps are required.

Note: The caution limit curve (bottom) is based on an 8-hour energy-equivalent frequency-weighted acceleration value of 2.5 m/s². The hazard limit curve (top) is based on an 8-hour energy-equivalent frequency-weighted acceleration value of 5 m/s².