



## Ergonomic Analysis for XYZ Products

A work site evaluation was conducted for **Production Worker in Department #213** on 05/31/05. The purpose of this analysis was to identify risk factors for Musculoskeletal Disorders using the OSHA Basic Screening Tool.

### Job Description:

This job is composed of the following work stations and workers rotate after each break (approximately every 2 hours):

- Topper: Tops off bin with water and ice.
- Bin Fabrication: Makes empty bins from flat cardboard.
- Ice Supply #1: Places ice in bins with partner. Pulls wire from over or under weight product
- Netting: Rotates in this area every 15 minutes performing weighing, netting and labeling of product.
- Ice Supply #2: Places ice in bins with partner. Pulls wire from over or under weight product
- Part Supply: Places parts from tank into tote and carries totes to 4 different areas nearby.

### Positive aspects of this job include:

- Frequent job rotation. This is an excellent administrative control that is reducing worker's exposure to repetition and awkward postures of the same body parts.
- Two person lifting for dumping barrels of ice into bins. This is an excellent work practice control to reduce worker's exposure to high levels of force, especially while lifting above shoulders.
- PPE: Employer is providing non-slip and waterproof footwear, rubber gloves, safety glasses, hearing protection and hard hat.

Please see attached OSHA checklist for risk factors.

The following are suggestions I feel will reduce the work site risks for Musculoskeletal Disorders for this job:

## Activity: Ice Supply

**Risk Factor:** Force: Worker's are lifting barrels filled with 100 pounds of ice divided by 2 people = 50 pounds of ice per person up to 40 times total in their 2 rotations to this work station. These barrels are being lifted from mid-thigh level to above shoulder level. OSHA considers lifting more than 25 pounds above shoulder level, below knee level or at arms' length for more than 25 times per day to be an ergonomic hazard.

- **Long Term Solution:** Engineer this area so that ice can be stored in ice containers directly above bins. Containers could be designed to hold enough volume for 200 pounds of ice each. Chutes can run to each overhead container and fill up all the containers at the same time. Once a container is full, then ice can be automatically diverted to the next container. Pneumatic doors on the bottom of containers could be operated by a switch located in an easy to reach position and with a safety guard to prevent accidental release of ice.
- **Short Term Solution:** Only fill the barrels to 50 pounds of ice. A marking can be placed on each barrel, so that workers will see when they have shoveled 50 pounds of ice into them. Using a two person lift will equal 25 pounds of ice per person.

**Risk Factor:** Awkward Postures: Workers are excessively bending forward to shovel ice from bottom half of tank to barrels.



- **Long Term Solution:** See engineering solution for force risk factor above.
- **Short Term Solution:** Once tank is half full of ice, then stop shoveling from that tank and go to the next one. Once all tanks are half full, then refill with ice.

## Activity: Part Supply

**Risk Factor: Force:** Worker's are lifting 60 pound totes of parts from tanks (below knee to waist level) and carrying them to conveyor belts up to 30 feet away.

- **Solution:** Use smaller totes that will only contain up to 25 pounds of parts. Place totes on a cart and push to conveyer belt.

**Risk Factor: Awkward Postures:** Workers are excessively bending forward when the tank is less than half full to place parts into totes.



- **Solution:** Utilize a tank lifter/tilter or a dump hopper mechanism so that parts are presented at waist level. Consult with engineering for specification requirements and feasibility of idea.

**Paul Krewson, OTR/L, CEAS**  
**Director of Industrial Rehabilitation**

Peak Performance Physical Therapy and Sports Medicine  
3301 Berrywood Dr. Suite #204  
573-449-8771

Table W-1 - Basic Screening Tool

You need only review risk factors for those areas of the body affected by the MSD incident.

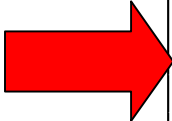
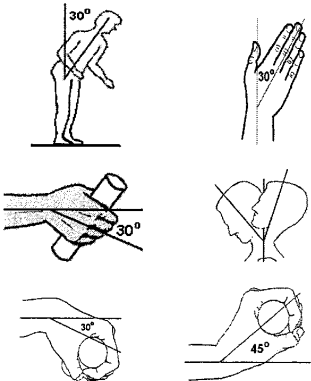
		Body Part Associated With MSD Incident			
Risk Factors This Standard Covers	Performing job or tasks that involve:	Neck/ Shoulder	Hand/ Wrist/ Arm	Back/ Trunk/ Hip	Leg/ knee/ Ankle
<b>Repetition</b>	(1) Repeating the same motions every few seconds or repeating a cycle of motions involving the affected body part more than twice per minute for more than 2 consecutive hours in a workday.	√	√	√	√
	(2) Using an input device, such as a keyboard and/or mouse, in a steady manner for more than 4 hours total in a workday.	√	√		
<b>Force</b> 	(3) Lifting more than 75 pounds at any one time; more than 55 pounds more than 10 times per day; or more than 25 pounds below the knees, above the shoulders, or at arms' length more than 25 times per day;	√	√	√	√
	(4) Pushing/pulling with more than 20 pounds of initial force (e.g., equivalent to pushing a 65 pound box across a tile floor or pushing a shopping cart with five 40 pound bags of dog food ) for more than 2 hours total per day;	√	√	√	√
	(5) Pinching an unsupported object weighing 2 or more pounds per hand, or use of an equivalent pinching force (e.g., holding a small binder clip open) for more than 2 hours total per day;		√		
	(6) Gripping an unsupported object weighing 10 pounds or more per hand, or use of an equivalent gripping force (e.g., crushing the sides of an aluminum soda can with one hand), for more than 2 hours total per day.		√		



Table W-1 - Basic Screening Tool - continued

You need only review risk factors for those areas of the body affected by the MSD incident.

Risk Factors This Standard Covers	Performing job or tasks that involve:	Body Part Associated With MSD Incident			
		Neck/ Shoulder	Hand/ Wrist/ Arm	Back/ Trunk/ Hip	Leg/ knee/ Ankle
<b>Awkward Postures</b>	(7) Repeatedly raising or working with the hand(s) above the head or the elbow(s) above the shoulder(s) for more than 2 hours total per day;	√	√	√	
	(8) Kneeling or squatting for more than 2 hours total per day;			√	√
	(9) Working with the back, neck or wrists bent or twisted for more than 2 hours total per day (see figures:) 	√	√	√	
<b>Contact Stress</b>	(10) Using the hand or knee as a hammer more than 10 times per hour for more than 2 hours total per day;		√		√
<b>Vibration</b>	(11) Using vibrating tools or equipment that typically have high vibration levels (such as chainsaws, jack hammers, percussive tools, riveting or chipping hammers) for more than 30 minutes total per day;	√	√	√	
	(12) Using tools or equipment that typically have moderate vibration levels (such as jig saws, grinders, or sanders) for more than 2 hours total per day.	√	√		