

Naval Facilities Engineering Command Ergonomic Risk Assessment

Introduction

This report summarizes the ergonomic risk assessment conducted on June 21st, 2005. The recycling center was observed in order to determine sources of ergonomic stress and recommend improvements. This assessment is based upon interviews with supervisor, safety specialist, and employees as well as an evaluation by the Naval Facilities Engineering Command (NAVFACENGCOM) Hazard Abatement Ergonomist.

The Job Requirements Physical Demands Survey (JR/PD), an ergonomic survey, was administered to the employees of the recycling facility. The results of the JR/PD indicate the recycling operation is not an ergonomic problem area. Active duty personnel have a tendency to underreport discomfort and their relative young age may also have affected the results. Process improvements which were submitted anonymously by the employees are included in Appendix I and are considered valuable input.

The recycling operation was observed in order to determine sources of ergonomics stress and make recommendations to reduce the risk of work-related musculoskeletal disorders (WMSDs) and improve safety, health and productivity. Musculoskeletal Disorders (MSDs) are injuries and illnesses that affect muscles, nerves, tendons, ligaments, joints, spinal discs, skin, subcutaneous tissues, blood vessels, and bones. Work-Related Musculoskeletal Disorders (WMSDs) are:

- ∞ Musculoskeletal disorders to which the work environment and the performance of work contribute significantly or
- ∞ Musculoskeletal disorders that are aggravated or prolonged by work conditions.

Recommendations to the command to further reduce the probability of injury include new equipmentⁱ and administrative controlsⁱⁱ. Recommendations are included with as much vendor informationⁱⁱⁱ as possible to assist in the evaluation of products and services. Input gathered from the workers, safety specialists, and other personnel to evaluate equipment before purchasing is recommended. This process will increase product acceptance, test product usability and durability, and take advantage of employee experience.

The command may be eligible and can request funding from the Hazard Abatement and Mishap Prevention Program (HAMP). Naval Facilities Engineering Command (NAVFACENGCOM) manages the HAMP, which is a centrally managed fund to correct safety and health deficiencies beyond the funding capabilities of the activity. Information about the HA program can be found on the Naval Facilities Engineering Command web site www.navfac.navy.mil/safety and in OPNAVINST 5100.23G. Ch 12 Hazard Abatement.

Recycling Center

Purpose of the Operation: Process recyclable materials for Naval Station

Population: Four permanent active duty and 3 temporary workers, the area is understaffed by six permanent activity duty workers

Injury Data: No recorded injuries

Description of the Operation:

Employees in the recycling center are responsible for processing all recyclable materials on-base. Employees collect recyclable materials around base in trucks and then return to the recycling center for unloading and sorting. An additional trailer from the medical facilities arrives each week for processing. The sorting process requires employees to stand in the vehicles and throw materials into their appropriate container as shown in figures 1 and 2. Aluminum cans and paper are sorted into containers while cardboard is loaded onto a conveyor and into a machine for baling. Employees climb an unstable ladder and work over shoulder height to clear jams in the baling machine, refer to figure 3.



Figures 1 and 2: Unloading cardboard



Figure 3: Clearing the baler

According to the employees, the most difficult task is sorting materials that come in from the windows. The windows are designated receptacles for recycling materials for customers who drive up to the facility, figure 4. Carts are located beneath each window but the employees still have to hand sort by reaching into the carts to retrieve materials. The larger cardboard area is a small square extension on the building which the sailors have to enter to empty, figure 5.



Figure 4 and 5: Recycling windows

Ergonomic issue description:

Heavy Lifting and Forceful Exertions: Employees lift heavy bags of recyclables and full carts as shown in figure 6 and 7. Exerting high forces can contract muscles to their maximum capability which can lead to fatigue and possible damage to the muscles and other tissues. Heavy lifting can strain the back and place the worker at risk of injury. Lifting in awkward postures such as from below the knees or above the shoulders increases stress on the spine.



Figure 6: Retrieving bags of recyclables Figure 7: Dumping a cart of aluminum cans

Repetitive Motions and Awkward Postures: Employees continually bend at the waist and reach into containers to sort or collect items. Reaching into the cart to retrieve materials forces the worker to lift in an awkward posture which increases stress on the spine. Sorting materials for recycling requires the worker to stand for long periods performing repetitive hand/arm/wrist motions combined with extended reaches and bending of the torso, figures 1 and 2. Risk factors occurring in combination increase the risk of developing WMSDs.



Figure 8: Reaching into a cart



Figure 9: Reaching into a gaylord

Recommendations:

- ∞ Collapsible containers with a drop side and a skid bottom will reduce reaching into cardboard gaylords. Installing a collapsible container in the cardboard window area and modifying the opening will eliminate the need for employees to enter the building extension. Instead the container can be pulled out with a forklift for dumping into the baler. Refer to table 1.
- ∞ A hamper dumper (mobile tilting skid lift) to move the collapsible containers and tilt them for dumping will eliminate the need for workers to pick carts up by hand to empty. The current tilt carts may need to be replaced if they are not compatible with the dumper. Refer to table 2.
- ∞ The current work platforms for the baling machines should be replaced with more stable permanent versions with taller platforms to improve safety and reduce overhead reaching. The area supervisor is going to contact the local Construction Battalion for this improvement.

Table 1: Collapsible Containers				
Description	Vendor	Product	Estimated Cost	Figure
Collapsible Containers	Grainger	Plastic Collapsible Container, Capacity 1500 Pounds, Volume 41.7 Cubic Feet, Exterior Height 46 Inches, Interior Height 41 Inches, Color Blue, External	\$267.50	
	Lab Safety 1-800-356-0783	Collapsible Bulk Box, 1800-lb. Capacity, 2 Gates, 34"H x 45"W x 48"L	\$249	
	C&H Distributors 1-800-558-9966	Heavy-duty collapsible, capacity of 2000 lbs. 48x45x34"	\$249	

Table 2: Hamper Dumper and Tilt Trucks				
Description	Vendor	Product	Estimated Cost	Figure
Hamper Dumper	C&H 1-800-558-9966	Hydraulic Akro-Lift	\$3557	
	Lab Safety 1-800-356-0783	Hydraulic Akro-Lift	\$3795	
	Grainger	Easy mobile tilter	\$2764	
Tilt Truck	Grainger	Tilt Truck Maximum Load 850 Pounds, Wheel Size 12 Inches,	\$430.50	
	Lab Safety 1-800-356-0783	Rubbermaid® Ergonomic Tilt Truck, 42-1/4"H x 33-1/2"W x 70-3/4"L, 1000 lb. Capacity	\$666	
	C&H distributors 1-800-558-9966	Rubbermaid 600 lb. capacity	\$379	

Appendix I

Summary

The Job Requirements and Physical Demands Survey (JR/PD) was administered to employees of the Recycling Center in May 2005. The results of the JR/PD indicate that this is not an Ergonomic Problem Area (EPRA). The Process Improvement Opportunities which were reported anonymously by the workers are included below:

Process Improvement Opportunities:

This section of the survey allows employees to write in responses to questions. All statements are included exactly as written by the employees with the exception of spelling errors and expletives. Responses were also taken from a discomfort survey, which was distributed to the population.

1. Which tasks are the most awkward or require you to work in the most uncomfortable position?
∞
2. Which tasks take the most effort?
∞ Windows
∞ Windows
∞ Windows
3. Are there any tools or pieces of equipment that are notoriously hard to work with?
∞
4. If you could make any suggestions that would help you do your job more easily or faster or better, what would you suggest.
∞ Assign more personnel to MWR Military recycling
∞ People pick up own mail
∞ We need more people!
∞ More people
∞ More personnel to help
∞ More people
∞ A couple of more people
∞ Assign more personnel to recycling

ⁱ Equipment purchase without proper and repeated training will not mitigate risk and may in fact increase hazards.

ⁱⁱ Administrative controls are management-controlled work practices and policies designed to reduce exposures to work-related musculoskeletal disorders (WMSDs) hazards by changing the way work is assigned or scheduled. Administrative controls reduce the exposure to ergonomic stressors and thus reduce the cumulative dose to any one worker. Examples of administrative controls that are used in the ergonomics context are employee rotation, employer-authorized changes in the pace of work, and team lifting.

ⁱⁱⁱ This report does not constitute an endorsement of any particular product. Rather, it is a recitation of how Navy personnel have addressed a particular work place safety issue. Neither the Navy nor its employees and agents warrant any product described in this report for any use, either general or particular.