CHAPTER 4 MANUAL LIFTING

4.1 INTRODUCTION

Improper manual lifting and moving of material and equipment account for a large number of industrial accidents. Therefore, it is important that procedures be established and followed by all those involved in this activity.

4.2 SCOPE

This chapter applies to all personnel.

4.3 DEFINITIONS

Manual Lifting – Holding, grasping, turning, lifting, reaching, pushing, pulling, carrying or otherwise moving a load with one's hands, fingers, shoulders, back, legs, or other similar bodily force.

Mono-Lifting – A series of manual lifts where the loads are similar, the starting and destination points are repeated and this is the only lifting task performed during the day.

Pulling – Exerting a force on an object in manner that draws the object toward oneself.

Pushing – Exerting a force on an object in manner that draws the object away from oneself.

Repetitive Lifts – A number of consecutive exertions or frequent movements performed during a task such as holding, grasping, turning, lifting, reaching, pushing, pulling, or carrying.

4.4 RESPONSIBILITIES

4.4.1 Department or Division Heads are responsible for ensuring implementation of this chapter.

4.4.2 Supervisors are responsible for ensuring that employees working under their direction are aware of and comply with this chapter.

4.4.3 Employees engaged in manual lifting are responsible for complying with the guidance in this chapter.

4.5 REQUIREMENTS - (RESERVED)

4.6 PRACTICES AND PROCEDURES

Manual lifting and handling of material must be performed using methods that ensure the safety of the employee. The Laboratory requires that employees whose work entails heavy lifting be properly trained, physically qualified, and receive a medical examination, if deemed necessary.

4.6.1 General Recommendations

A. Employees should never attempt to lift objects that are too heavy or too bulky for them to handle safely.

B. A single employee shall not push a load exceeding 300 pounds.

C. Pulling loads is unsafe because the weight of the object during a pull is placed upon your shoulder and back muscles, which is conducive to back injury, and not a recommended practice. If a mechanical lifting device (a cart, a hand truck, a pallet jack, or similar) is being utilized it is also in a position to run over your feet or strike your ankles when pulling. Choose to push whenever possible.

D. Wear slip resistant, broad based, low heel shoes to prevent slips, trips, and falls during the lift and carry. Wear safety shoes where potential for foot injury is present, such as dropping the load on your feet.

E. Apply handles to the object to get a better grip when necessary.

4.6.2 Manual Lifting Weight Limits

A. Although there are no legal maximum weight limits for individuals, the Department of Labor recommends a 50-pound limit for repetitious lifting of compact objects. The National Institute for Occupational, Safety, and Health (NIOSH) recommends a 40- pound limit with a two-hour per day time limit. For repetitive mono-lifts, the American Conference of Industrial Hygienists (ACGIH) Threshold Limit Values (TLV) tables are required to determine limitations and techniques for safe lifting conditions. Contact the Safety Division for access to and assistance in using these tables.

B. Inherent worker variability (age, gender, muscular strength) precludes presumptions regarding lifting ability. Each individual worker is different and with that comes various lifting capabilities that should be evaluated before attempting to lift an object.

C. Even under ideal circumstances, the vast majority of workers should not be expected to lift more than 50 pounds. If you have to strain to carry the object, it's too heavy.

D. Do not attempt to lift an object if you have a recent or on-going injury that may be impacted, such as back, leg, or arm injuries.

4.6.3 Procedure for Manual Lifting

A. Inspect the load to be lifted for sharp edges, slivers, and wet or greasy spots.

B. Wear gloves when lifting or handling objects with sharp or splintered edges. These gloves must be free of oil, grease, or other agents that may cause a poor grip.

C. Inspect the route over which the load is to be carried. It should be in plain view and free of obstructions or spillage that could result in tripping or slipping.

D. Ensure the object being carried does not block your view of the route to be traveled; in instances where the view is blocked, a spotter or alternate carrying means shall be considered.

E. Consider the distance the load is to be carried. Recognize the fact that your gripping power may weaken over long distances.

F. Size up the load and make a preliminary "heft" to be sure the load is easily within your lifting capacity. If it is not, get help via team lifting or a mechanical lifting device such as, but not limited to: a cart, a hand truck, a pallet jack, or similar. (Note: employees shall be trained on the mechanical lifting device prior to use).

G. If team lifting is required, personnel should be similar in size and physique.

H. Two persons carrying a long piece of pipe or lumber should carry it on the same shoulder and walk in step. Shoulder pads should be used to prevent cutting the shoulders and help to reduce fatigue.

I. Boxes, cartons, and sacks should be grasped at the opposite corners, drawing the bottom corner towards the lifter's body.

J. Lift the load as close to the torso as possible. Ideally, the load should pass between the knees during lifting.

4.6.4 Safe Lifting Procedure

A. The Ideal Lift - The ideal lift (also called the "squat" or kinetic lift) is the traditional method for safely lifting many kinds of objects. The load is held close to the body to prevent harmful strain on the back. The ideal lift can be used for loads that can be "hugged" and is performed as follows:

1. Stretch the muscles that you will be using before lifting to combat aches, fatigue, and prevent injuries. Stretching shall be done in a smooth and gentle manner with no bouncing. Stretching should be held for 10 seconds to the point where it feels tight, but does not hurt and then relax.

2. Make sure of good footing and set feet to shoulder width apart. It may help to set one foot forward of the other.

3. Assume a knee-bend or squatting position, keeping your back straight.

4. Use your palms (not just your fingers) to get a secure grip on the load. Make sure you can maintain the hold on the object without switching your grip later.

5. Lift the object gradually (without jerking) by straightening your knees, not your back. Do not arch your back (this will increase the load on your spine) and allow your legs and arms to do the work.

6. Carry the load close to your body (not on extended arms; extended or reaching arms while lifting may cause injury). If the lift feels uncomfortable or awkward set the object down and restart the lift.

7. To turn or change your position shift your feet - don't twist your back. If the load is heavy, do not turn or pivot on one leg as this type of motion can cause knee injury,

8. Use the reverse of the above procedure to set the object down. Do not throw the object into position because this poses a risk of developing lower back pain.

B. Alternative Lift - The "hip-bend" lift is used for loads workers cannot get close to. Placing the buttocks out behind you helps keep your spine balanced and protected. Use the alternative lift when the ideal lift is impractical, as when lifting bulky objects. With your buttocks out and your head and back in a straight line, tighten your abdominal muscles and bend your knees, then lift using your leg, buttock, and abdominal muscles.

4.6.5 Training in back injury prevention and care shall be targeted for personnel at risk for back injury.

A. Training in back injury prevention shall be provided prior to commencement of lifting operations.

B. Retraining for an employee shall be provided if there is a demonstrated lack of knowledge by that employee.

C. Training in back injury prevention shall include the following, as a minimum:

1. Anatomy and physiology to explain how the back works.

2. Biomechanics of lifting and lifting techniques, including the use of lift aids such as back support devices.

4.7 REFERENCES

National Safety Council, "Accident Prevention Manual for Operations."

NIOSH Work Practices Guide for Manual Lifting.

ACGIH “TLVs® and BEIs®, “(2005 or more recent if more restrictive).