

PPPL	PRINCETON PLASMA PHYSICS LABORATORY ES&H DIRECTIVES		
	ES&HD 5008 SECTION 9, CHAPTER 4 Manual Lifting		
Approved	Date: 06/28/00	Revision 2	Page 1 of 1

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 - (RESERVED)

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. Laboratory policy requires that employees whose work entails heavy lifting be properly trained, physically qualified, and receive a medical examination, if deemed necessary. Employees should never attempt to lift objects that are too heavy or too bulky for them to handle safely. A single employee shall not push a load exceeding 300 pounds. Pulling loads is unsafe, conducive to back injury, and not a recommended practice.

4.6.1 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.
- B. The inherent variability between workers and within any worker over time is greater than the average difference between men and women, and precludes the use of gender to assign risk to a particular individual. Susceptibility to injury increases dramatically for any worker possessing less muscular strength than his or her job requires.
- C. Even under ideal circumstances, the vast majority of workers should not be expected to lift more than 50 pounds.

4.6.2 Procedure for Manual Lifting

- A. Inspect the load to be lifted for sharp edges, splinters, 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. Consider the distance the load is to be carried. Recognize the fact that your gripping power may weaken over long distances.
- E. 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.
- F. If team lifting is required, personnel should be similar in size and physique.
- G. 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.
- H. Boxes, cartons, and sacks should be grasped at the opposite corners, drawing the bottom corner towards the lifter's body.
- I. Lift the load as close to the torso as possible. Ideally, the load should pass between the knees during lifting.

4.6.3 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. Make sure of good footing and set your feet about 10 to 15 inches apart. It may help to set one foot forward of the other.
 - 2. Assume a knee-bend or squatting position, keeping your back straight. Get a firm grip and lift the object by straightening your knees, not your back.
 - 3. Carry the load close to your body (not on extended arms). To turn or change your position, shift your feet - don't twist your back.
 - 4. Use the reverse of the above procedure to set the object down.
- 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 or load as possible. 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.

4.6.4 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.