

APOLLO INDUSTRIAL SAFETY AND HEALTH PROGRAM

Title	MATERIAL HANDLING AND ERGONOMICS	Number AISH 03	Revision 01
		Effective Date 03/01/2022	Page 1 of 7

## 1.0 Purpose

- 1.1 The purpose of this program is to provide protection for employees who are exposed to sprain and strain injuries through Eliminating hazards, Engineering/Administrative controls, and Training.

## 2.0 Responsibility

- 2.1 Apollo Safety shall be responsible for ensuring procedure is implemented and work processes are compliant with this procedure.
- 2.2 Apollo Key Supervisor and Safety are responsible for ensuring inspection of this policy and procedure using the AISH 3-A checklist are performed on a quarterly basis.
- 2.3 Apollo Key Supervisor shall be responsible for identifying high-risk factors including the implementation of the hierarchy of controls:
  - 2.3.1 Engineering controls to emilinate/reduce identified hazards.
  - 2.3.2 Administration and Work Place controls.
  - 2.3.3 Use of Personal Protective Equipment.
- 2.4 Apollo Key Supervisor shall be responsible for material inspection prior to leaving shop, or unloading of materials from truck and material racks.
- 2.5 The Key Supervisor shall be responsible for the following activities:
  - 2.5.1 Ensuring that all Apollo Employees are trained on this procedure and what is expected of personnel during material handling.
  - 2.5.2 Ensure task evaluation is performed and adequate personnel and equipment are available as needed.

2.5.3 Ensuring that all personnel are trained in the use of equipment and material handling tools.

2.6 Employees shall be responsible for the following:

2.6.1 Evaluation of material to be moved, lifted, and/or installed.

2.6.2 Use of mechanical equipment and tools as necessary.

2.6.3 Adequately trained in use of mechanical equipment.

2.6.4 Ensuring that access and egress has been evaluated, walked, and confirmed.

### 3.0 Definitions

3.1 **Materials:** Materials from which something is made of. Piping, Ductwork, Valves, Fittings, Control devices, Supports/Stands, and all other items specific to scope of work.

3.2 **Material Handling (Manual):** The act of lifting, moving, or otherwise physically manipulating material without the use of material handling equipment.

3.3 **Material Handling Equipment:**

3.3.1 **Mechanical:** Pry bar, Level truck, Pump jack, Dollie/Rollers, Skids, Chain falls, Come-alongs, Cable puller, Wheel hoists, Wheel barrow, Floor cranes, Shovel

3.3.2 **Powered:** Forklifts, Backhoes, Material hoists, Drum Hoists, Elevators, Conveyors, Cranes, Dozers, and Lift truck

3.3.3 **Auxiliary:** Lift beam, Wire rope slings, Nylon slings, Shackles, Hooks, and other equipment used with powered equipment

3.3.4 **Any and all equipment must be properly inspected and documented prior to use. See AISH- 19 for Appropriate Inspection Checklist.**

- 3.4 **High-risk Factors:** Circumstances likely to result in failure, harm, or injury. Lifting, reaching, over-extension, twisting, bending, kneeling, squatting.
- 3.5 **Engineering Controls:** Mitigating a hazard by using equipment, changing the process, or reducing exposure to the risk. Forklifts to lift, scissor lifts to limit overreaching, pry bars to limit exertion, etc.
- 3.6 **Administration Controls and Work Practice Controls:** Written safety policy that workers must follow to minimize risk. Two (2) person lifts to limit force exertion, establish systems so workers minimize the duration of continual exertion, repetitive motions, and awkward postures. Design a job rotation system in which employees rotate between jobs that use different muscle groups.
- 3.7 **Personal Protective Equipment:** Equipment worn to minimize exposure to hazards. Gloves, safety glasses, hard hat, cut-resistant sleeves.
- 3.8 **Sprain and Strain Risk:** Exposure to danger relating to Sprains and Strains. Heavy items exceeding 50lbs, Unusual work areas, Frequent/repetitive lifts, Overreaching, Working on knees, bending and/or squatting to lift items.
- 3.9 **Sprain and Risk Technique:** The efficient way to avoid risk. Do not attempt to lift by bending forward, squat down to load, keep load close to your chest, avoid turning or twisting body while lifting or holding a heavy object.
- 3.10 **Squatting Technique:** The efficient way to squat. Stand with feet a little wider than hip width, toes facing front. Tighten your core, drive your hips back and bend at the knees and ankles, and sit into a squat position. Tighten your legs to lift back up in the same path you squat down in.
- 3.11 **Bending Technique:** The efficient way to bend. Do not attempt to lift by bending forward. Squat down to your load and keep it close to your chest. Avoid turning or twisting your body while lifting or holding a heavy object.
- 3.12 **Power Zone (Danger Zone):** Area from top of chest to above the knees.

- 3.13 **Over-reaching:** Reaching too far away from your body. Do not attempt to work for prolonged periods in an **High Risk Zone**.
- 3.13.1.1 **High Risk Zone:** The area away from the body outwards of 20"- 26" or greater with 15lbs or more
  - 3.13.1.2 **At-Risk Zone:** The area away from the body outwards of 8"- 20" or with 30lbs or more
  - 3.13.1.3 **Low-Risk Zone:** The area away from the body outwards to 8", and up to 60lbs.
- 3.14 **Protective Measures:** Practices that reduce risk. Mechanical means, i.e., duct lifts, forklifts, hoisting systems, asking for help, task rotation, workstation or movable workstation in the Power Zone.
- 3.15 **Leading Indicators:** Leading Indicators precede injuries. They are signs and symptoms that someone is at risk for any injury. If you are too sore, can't complete a task without awkward posture, or task requires overreaching or lifting something over 50lbs, ask for help.

#### 4.0 **General Requirements**

- 4.1 Inspections shall be performed on a quarterly basis by Apollo Key Supervisor and Division Safety using the 3-A.
- 4.2 All weights shall be calculated prior to loading of carts, pallets, shelves, trucks, and any other means of transportation of materials.
- 4.2.1 If weight isn't clearly legible or clearly labeled, Key Supervisor shall be notified immediately and work shall not proceed until resolved.
  - 4.2.2 All Capacities and rated load limits shall be clearly labeled on all equipment.
    - 4.2.2.1 If capacities are not clearly labeled on equipment, equipment shall not be used.
- 4.3 Apollo employees shall adhere to proper lifting techniques as listed in this procedure in the definition section.

- 4.4 Apollo employees shall understand leading indicators and how to address them.
- 4.5 Apollo employees shall understand and implement Protective Measures:
  - 4.5.1 Mechanical Means
  - 4.5.2 Asking for Help
  - 4.5.3 Task Rotation
  - 4.5.4 Workstation in Power Zone
- 4.6 Environmental factors such as distance, visibility, and if applicable, wind speeds shall be considered in planning of Material Handling.
- 4.7 Spool packages that are sent from the fabrication shop will have the weights identified for safe handling that include:
  - 4.7.1 Solo Lift (Green Label) – Under 50 lbs
  - 4.7.2 Team Lift (Yellow Label) – 51-100 lbs
  - 4.7.3 Mechanical Means – Over 100 lbs

## **5.0 Procedure**

### **5.1 Material Handling**

Personnel should avoid material handling without use mechanical or engineered means. Key Supervisors shall ensure that material handling shall be appropriately assessed and determined which approach will eliminate the prevention of strains and sprains, and Musculoskeletal Disorders.

- 5.2 Site personnel shall avoid manual material handling tasks when practical.

- 5.2.1 In the event of that material handling must be performed manually, the following prerequisites shall be observed:

- 5.2.1.1 Key Supervisor shall assess the size, shape, weight, disposition of materials to be handled, and plan the most efficient and safest method to be used.
- 5.2.1.2 Plan must be written out on daily Pre-Task-Plan.
- 5.2.1.3 Proper Personal Protective Equipment shall be donned as required:
  - 5.2.1.3.1 Items to be discussed and written on the Pre-Task-Plan:
    - 5.2.1.3.1.1 Any lifts over 50lbs
    - 5.2.1.3.1.2 Any prolonged exposure on knees
    - 5.2.1.3.1.3 Prolonged overhead work
    - 5.2.1.3.1.4 Any work or prolonged work outside of the Power Zone.

### **5.3 Loading and Unloading**

- 5.3.1 Personnel shall be instructed and trained on the proper techniques and practices for material handling including Loading and Unloading prior to the task and/or work assignment being performed.
- 5.3.2 The assignment of manual material handling tasks shall consider any personal physical limitations that vary from individuals, in so much, precautions shall be taken to not exceed these limitations.

### **5.4 Adequate clearances shall always be observed so that personnel can readily avoid being struck, caught, or pinned by moving loads.**

- 5.4.1 Crewmember shall inspect load prior to unloading, loads shall remain secured until it is in designated area to be unloaded.
  - 5.4.1.1 Loading area must be kept clear of unauthorized personnel not associated with the loading/unloading of materials.

- 5.4.1.2 Ensure vehicle/truck brakes and stabilizers (wheel chocks) are applied.
  - 5.4.1.3 Ensure spotter is able to both audibly and visually communicate with other crewmembers during the loading/unloading of materials.
  - 5.4.1.4 If a Personal Fall Protection system must be utilized, ensure Key Supervisor and/or Safety has reviewed and approved the plan.
  - 5.4.1.5 Taglines are required if loads will be moved overhead.
- 5.5 Material handling equipment capacities shall be observed when transferring loads to avoid shock loading.
- 5.5.1 Use of mechanical means of material handling are to be utilized.
  - 5.5.2 Loads shall be secured to ensure nothing is loose or has the potential to be loose while being transported.
  - 5.5.3 When use of mechanical means is utilized, entire swing radius of load shall be barricaded and have Apollo signage.
- 5.6 Two or more personnel lifting an item shall coordinate and communicate the lift and carry materials in unison.
- 5.7 Only trained and qualified personnel shall operate power equipment when powered equipment is utilized for Material Handling
- 5.7.1 Standard hand signals shall be used with clear and concise communication maintained between signalmen and operators.
    - 5.7.1.1 In critical situations, the most efficient form of communication shall be determined, i.e., hand signals or radio.
- 5.8 Key Supervisor shall ensure the following checklist is completed prior to site personnel arriving on site, while personnel is on site, and prior the unloading of materials.

5.8.1 See AISH Attachment 3-A

**6.0 References:**

6.1 OSHA 29 CFR 1926.250 Subpart H – Materials, Handling, Storage, Use, and Disposal. General Requirements for storage.

6.2 The National Institute for Occupational Safety and Health- Elements of Ergonomics Programs

**7.0 Attachments:**

AISH 3-A:



## AISH 3-A

<b>Manual Material Handling Inspection Checklist</b>			
Date:			
Job Name and Number:			
Inspector's Name:			
<i>Instructions: Use the following checklist to inspect each site before employees are on site, and once employees are working on site. Use the following inspection items to check the job for material handling safety. If items are checked as "no", fix them, or comment on why they cannot be corrected</i>			
Inspection Items	Y	N	NA
1. When Possible, jobs/tasks are designed to minimize manual material lifting			
2. Mechanical lifting devices are available, and used when necessary			
3. Manual lifting devices are available, and used when necessary			
4. Workers will not be asked to manually lift over 50 lbs. (per person)			
5. Workers will not be asked to manually lift materials over 10 ft. in length (per person)			
6. Work is planned to reduce lifting material more than one time, eliminating extra lifts			
7. Work is planned to minimize, and avoid manual material lifting			
8. Work is planned to avoid workers reaching (out of power zone) for prolonged periods			
9. Work is planned to limit workers on knees for prolonged periods			
10. Walkways are cleared to avoid slips, and allow access for lifting devices			
11. Workers have been trained in safe lifting techniques			
12. Workers have been trained to identify lifting hazards			
Score:			/
Comments:			
Inspector's Signature:			