

# ARCOR® International

a Division of AEC Corp.

## ENVIRONMENTAL HEALTH & SAFETY HANDBOOK

### Overview

**ARCOR®'s** environmental, health and safety (EHS) goal is to achieve and Incident Free Workplace. An incident is an event that causes or has the potential to cause harm to people or the environment, or damage to equipment or the facility. An incident can also be an event that violates or has the potential to violate an **ARCOR®** EHS internal policy, standard, procedure or applicable EHS government or community requirement. In order to prevent incidents, we must all work actively to identify, evaluate, anticipate, investigate and control the root causes of workplace hazards.

The causes of incidents fall into two broad categories: Unsafe conditions and unsafe acts. Unsafe conditions may exist in the condition of tools and equipment, work stations, job process or the environment (i.e. unguarded machinery, improperly stacked material, etc.). Unsafe acts may be the result of lack of employee training or understanding, poor attitudes toward EHS, failure to follow set procedures or guidelines, or failure to be fit for duty (i.e. poor physical condition, being under the influence of some form of intoxicant, or being preoccupied with matters outside the workplace).

This handbook is an attempt to condense more specific, sometimes more stringent programs into a single document which will promote contractor and/or employee understanding of safe work requirements. This document in itself is not able to cover every aspect of every job in detail. The omission of any rules from this document does not free the contractor and/or employee from responsibility. If at any time you are unsure of how to do a job safely, it is your responsibility to ask your immediate supervisor for instruction. Always be alert for hazards by asking yourself "What if the unexpected happens."

Our goal is that each day, you will leave the facility in the same condition in which you entered. You and your family's happiness is dependent upon you working safely.

## EHS Value, Policy and Principles

### Value

We will work safely in a manner that promotes the health and well-being of the individual and the environment.

### Policy

It is **ARCOR®**'s policy to operate in a safe, responsible manner which represents the environment and the health of our employees, our contract employees, our customers and the communities where we operate. **We expect our contract and/or employees to adopt our example. We will not compromise environmental, health or safety values for profit or production.**

### Principles

All **ARCOR®** employees and contract employees are expected to understand, promote and assist in the implementation of this policy and the accompanying principles.

- \* We are all accountable for conforming with EHS Policy.
- \* We will work diligently to prevent incidents.
- \* We will practice sound environmental, health and safety management.
- \* We will comply with all applicable laws, regulations, and permits, and will develop and employee more restrictive internal standards where necessary to conform with **ARCOR®**'s EHS Policy.
- \* We will audit our operations and report findings.
- \* We will sponsor activities to improve the science of environmental, health and safety protection.
- \* We will report on our activities.
- \* We will support sustainable development, the responsible use natural resources and energy conservation.
- \* We will supply safe and reliable products and services.

## General EHS Information

### A. General Rules and Information

1. Report all incidents such as injuries and/or near misses to your supervisor immediately. All accidents involving personal injury or damage to vehicles, property or product must be reported immediately.
2. Safety Glasses with permanently attached side shields and safety shoes are required to be worn by all employees. Alternate or additional types of eye and face protection such as chemical goggles or face shields may be required for certain jobs. Personal Protection Equipment (PPE) maps and signs indicate areas that require safety glasses. If in doubt, please contact your supervisor. Hearing protection is required to be worn while in the production & grinding areas of the plant, or when identified as needed (ie. JSA, SPO, etc.).
3. Do not wear loose fitting clothing, bracelets, and dangling jewelry, and/or long hair longer than shoulder length (unless tied back or worn under a hat (that may get entangled in equipment. For more information, see your supervisor.
4. Head protection, gloves, arm covers and other personal protective equipment (PPE) are required in specific areas and for specific tasks, throughout **ARCOR®**. Adhere to all PPE requirements.
5. "Horseplay" is a cause of many injuries. This term applies to any prank or practical joke and is prohibited by **ARCOR®** rules. Scuffling, horseplay, yelling, loud whistling and practical jokes are forbidden.
6. For most jobs, it is necessary to work with other employees. Always be aware of their location and what they are doing to avoid injury both to yourself and your work partners.
7. The Lockout/Tagout Procedure shall be followed. Do not attempt to repair,, clean or clear scrap from any equipment or powered machine unless all energy sources have been turned off and Lockout/Tagout procedures have been followed.
8. Comply with danger and caution signs. Do not enter any barricaded area unless you are authorized by your supervisor to do so.
9. Do not stand or walk under a suspended load.
10. Enter confined spaces only at the direction of a supervisor in accordance with Engineering Standard 18.1 and the Confined Space Entry Procedures.

Examples are manholes, storage tanks, dust collectors, silos and elevators pits. Your supervisor can answer questions you have on this procedure.

11. Walk - do not run. Watch your step. Used marked aisles and walkways. use stairs or ladders when going from one elevation to another.
12. Keep all aisles and exists clear. Do not block access to fire fighting equipment, fire blankets, electrical panels, switch boxes or utility shut-off valves. These are identified either by a sign or conspicuous colored painting.
13. Keep flammable materials an combustibles in approved safety cans with appropriate labels.
14. Put all scraps and waste materials into proper receptacles. keep oily an paint covered rags in closed metal containers.
15. Do not create or contribute to any risk or unsanitary condition.
16. Do not unnecessarily distract the attention of any employee who is working.
17. Possession or consuming of any intoxicating beverages or illegal drugs on the premises is forbidden. Reporting for work while under the influence of intoxicants or drugs or while suffering form the effects of the same is also forbidden.
18. Stay clear of any belt conveyors or transfer equipment. Do not cross over or under such equipment that is in motion or may be put in motion except at crossovers provided (your supervisor will point out such equipment to you).
19. Operate only the machine or equipment which you are authorized to operate.
20. Seat belts must be worn at all time by operators of mobile equipment that is equipped with seat belts.
21. Seat belts must be worn by drivers and passengers of personal or rental vehicles being used for official company business.
22. Report all hazards, unsafe tools or equipment to your supervisor.
23. Use fire extinguishing equipment (only if you have been trained at **ARCOR®**) on fires and/or directed. Notify the Maintenance Supervisor when fire equipment has been used so it can be services.
24. Glass containers (bottles, jars, etc.) and aerosol containers are not to be brought onto the job site.

25. Do not use compressed air or gasses to blow PVC powder or dust off any part of your body or clothing. This practice can lead to serious injury.
26. Guards on equipment are put on for your safety. Do not disable or operate equipment without all guards in the proper position.
27. Employees need to follow Safe Job Procedures (JSA's) when performing their jobs.
28. Practice safe lifting techniques. keep the body upright; lift with the leg muscles and not with the back. Avoid overexertion caused by improper lifting, pulling, pushing or reaching.
29. Wear hand pads or gloves when handling hot materials, sharp-edged scrap or rough materials on all jobs and as instructed by your supervisor.
30. Remove nails from barrels, crates and any other places where they might cause accidents. Dispose of boards with protruding nails.
31. Keep floors clean. Oil or grease is especially dangerous on floors near machines, sharp-edged tools or scrape metal. Spilled powder or resin needs to be cleaned up immediately.
32. Arrange materials carefully and securely. Do not pile or place objects or materials near machines or in such a position that they can fall or block passageways.
33. When stacking materials, avoid leaving projecting edges or points.
34. Suggestions that will help in safe job performance or identify unsafe conditions or practices are needed. Suggestion can be brought to your supervisor.
35. All machinery/work areas must be kept clean by the employee. Damaged or defective equipment should be promptly reported to your supervisor.
36. Never stand skids or similar items on end and lean them against a wall, support post, railing, etc.
37. Be sure no one could be injured before you start any machinery or operate valves and switches.
38. Keep out of the areas that are barricaded or marked restricted. There may be work in process that may cause dangerous conditions to exist.

39. Check all tools before using them. inspect for defects and report them to your supervisor.
40. When lifting always be sure to sue the proper lifting technique. When possible utilize lifting equipment or obtain help.
41. Operate only equipment for which you have been trained. If you are not sure of operating procedures for a piece of equipment that you are required to run, it is your responsibility to inform your supervisor.
42. Tank tops and shorts are not allowed to be worn while on the job. Excessively loose clothing should not be worn, as it increases the possibility of becoming caught in moving machinery.
43. All mobile equipment operators (lift trucks, tuggers, cranes, etc.) must be trained to operate the equipment.
44. Heat stress can affect anyone. Environmental conditions which include high temperatures, high humidity, air movement, and personal variables such as work rate, general health and conditioning can affect your body's ability to deal with high heat.. be aware of your environment; know which factors increase risk. drink plenty of water all day before you feel thirsty. Wear appropriate clothing, loose and lightweight. Stay in shape. eat light regular meals. Know your special risk such as age, recent illnesses, high blood pressure, heart disease, allergy medication or diabetes. Pay attention to warning signs such as not feeling well, weakness, inattention, dizziness, excessive headaches or nausea that can be preliminary stages of heat stress. Recognize symptoms and seek appropriate care. Unrecognized and untreated signs can lead to more serious health problems.

For more detailed safety rules refer to:

**Department Job Safety Analysis (JSA's)**

## **B. Protective Equipment**

The terms “employee” and “operator” also refers to any contract employee.

### **1. *Eye Protection***

\* All employees and visitors must wear ANSI-approved safety glasses with side shields which meet ABP’s requirements when entering all Plant Operational areas. Any questions, see your **ARCOR®** representative.

\* Employees working with chemicals with a potential of splash or spray, must wear a protective face shield or acid splash goggles.

\* Operators using saws, grinders, or similar type equipment must wear goggles.

### **2. *Foot Protection***

Employees and visitors are required to wear steel toed safety shoes in the production areas, warehouse and job sites.

### **3. *Work Clothing***

Personal protective apparel such as protective jackets, aprons, arm guards and the correct glove must be worn per individual department rules.

### **4. *Hearing Protection (See Hearing Conservation Section)***

Hearing protection is required in manufacturing areas and must be worn on jobs designated by the **ARCOR®** Representative.

### **5. *Head Protection***

Head protection must be worn on job sites are all times.

### **6. *Respiratory Protection (See Respiratory Protection Program Section)***

When air contaminants are generated by a work process, it is preferable to control them using substitution of a less toxic material or controlling the contaminants using engineering controls. When this is not feasible respiratory protection may be necessary. Prior to using a respirator all employees must:

- \* Be trained in the use and limitations of the respirator.
- \* Be fit-tested to ensure proper fit of the respirator.

- \* Have medical clearance to use a respirator.

## 7. ***Hand Protection***

Some jobs require the use of gloves. The type of glove will depend on the task being done. Check with your **ARCOR®** supervisor.

### **C. Reporting Hazards**

Once a hazard is recognized, it must be reported. reporting hazards is one of the most important ways you can help ensure a safe work place. Often an employee can spot problems sooner than anyone else because he/she is very familiar with work place conditions. Once a problems has been identified, take action to eliminate the hazard and if you are unable to do this, report the issue to your supervisor.

### **D. Housekeeping**

The foundation for a safe, healthy and pleasant work place is good housekeeping. Each employee is responsible for keeping his/her immediate work area well organized and the floors free of debris and litter.

- \* Return all tools and equipment to proper storage place after use.
- \* Keep materials and equipment out of aisles.
- \* Clean up all spills immediately.
- \* Place trash and scrap in the proper containers.
- \* Pick up all trash from floor.
- \* Restrooms and water coolers are provided for your convenience and comfort. Please help keep them clean and sanitary.
- \* Metal scrap containers are for metal scrap only. never place any other material in these containers.
- \* Exits must be kept clear at all times.

## **Hand/Power Tool Safety**

Hand tools can make jobs safer, easier and more efficient. however, if used improperly hand tools can cause serious injuries. Always use hand tools as they are intended to be used and maintain them properly.

- \* Inspect your tools daily to ensure they are in proper working condition. Damaged or defective tools must be tagged-out and reported to your supervisor immediately.

- \* Hand tools should be carried in a tool box, bag or tool vest.

- \* Power saws, grinders and other power tools must always have the proper guards in place.
- \* Portable electric grinders and other power tools must always have the proper guards in place.
- \* Hand tools should be used for their intended purpose only. The design capacity of hand tools should not be exceeded by unauthorized attachments.
- \* Cords and hoses must be kept out of aisles and off stairs and ladders.
- \* Electric cords must be unplugged and the airline must be deactivated before adjusting or loading electric or pneumatic tools (i.e. nail guns, staplers, drills, etc.).

## **Compressed Air & Gas Safety**

### **A. Compressed Air**

- \* Compressed air used for clearing shall not exceed 30 psi of pressure.
- \* Compressed air **MUST NOT** be used to dust off clothing or any part of the body or be directed at any person. Compressed air or foreign bodies may enter the body and cause severe injuries or death.
- \* Use only hoses and couplings designed to handle compressed air and inspect them before each use.

### **B. Compressed Gas Cylinders**

- \* Keep cylinders out of contact with grease, acids, salt, heat and flame. Do not handle cylinders or apparatus with greasy hands or gloves. Never use white lead, oil, grease or pipe compound on welding equipment joints. Oil or grease in the presence of oxygen under pressure can cause an explosion.
- \* Do not handle cylinders roughly. They must be properly fastened before using or moving on a vehicle or hand cart. Cylinders, full or empty must be secured when standing vertically while in use and/or in storage.
- \* While in storage or being transported, cylinders should have the valves shut off and the supplied protective covers in place.
- \* Never use a cylinder without a suitable reducing valve and regulators.

- \* Never interchange oxygen regulators, hose or other appliances with similar equipment for other compressed gases.
- \* Always crack the valve of oxygen cylinder before connecting the equipment to purge the opening of any foreign material.
- \* Protect cylinders from accumulation of ice and snow. If necessary to melt ice from acetylene cylinders, use warm water.
- \* Oxygen and acetylene (or other fuel gas) cylinders must be separated by at least 20 feet or by a non-combustible barrier at least five (5) feet high, having a fire resistance rating of at least one-half hour.
- \* Arc welding electrode or ground leads shall not be hung over compressed gas cylinders.

## **Manual Material Handling**

Most back injuries result from improper lifting. According to the principles of biomechanics, the worst lifting situation occurs when the body is extended over the load; the lower back becomes a fulcrum supporting the weight of the body, plus the weight of the load. Twisting in this position invites injury. Keep your back upright to shift the weight on the more powerful leg muscles and reduce the lever effect.

If the load is too heavy, too large or unstable, get help. Use hoists or lift trucks when possible.

## **Portable Ladder Safety Rules**

- \* Only trained employees shall use portable ladders.
- \* For overhead work use the proper type of ladder. Never use make-shift ladders or stand on equipment.
- \* Ladders are for climbing. They are not to be used for levering, bracing, scaffolding or any other purpose which might weaken the structure or create an unsafe condition.
- \* Straight ladders should be equipped with safety shoes and be properly tied-off at the top and blocked at the bottom where possible.

\* Straight ladders will be placed at the proper angle. Place ladder so the base is out on-fourth the vertical distance against which the ladder is leaning. The top of a ladder which is being used to access to an elevated work area must extend at least three (3) feet beyond the supporting object.

\* Always face the ladder when ascending and descending, and always maintain three (3) points of contact with the ladder. Never carry objects in your hands while climbing a ladder. Use a rope or other methods to raise and lower tools and materials from heights.

\* Do not over reach outside the side rails of a ladder. Keep your waist inside the side rails of a ladder.

\* Do not splice ladders to make them longer

## **Mobile Equipment Safety Rules**

1. The main responsibility for safe operation of any mobile equipment lies with the operator. However, pedestrians must be aware of vehicular traffic in their area and be appropriately cautious around mobile equipment.

2. Only authorized employees who have been trained may operate mobile equipment.

3. It is the duty of the truck operator at the beginning of each shift to conduct a vehicle pre-use inspection.

4. The inside speed limit is 4.5 mph, which is a fast walk. Use extra care in congested areas, when making turns, or on rough floors or pavement. The outside speed limit is 6.5 mph.

5. Face the direction that you are traveling. Never back up without looking to see that it is clear to do so.

6. When traveling, keep the forks as low as possible.

7. If line of travel is blocked by workers or pedestrians, slow down or stop if necessary and sound the horn.

8. Be sure that your truck is properly and carefully loaded. DO NOT attempt to handle loads beyond the rated capacity of the truck.

9. Do not allow any person to walk under raised forks.

10. Do not allow any person to ride the forks, platform or load.

11. Park vehicle in a safe place when not in use. Do not obstruct crossings, passageways or roadways.
12. When an industrial vehicle is left unattended, the load engaging means shall be lowered, controls neutralized, the power off and brakes set. The operator may leave the engine running only if he is within 25 feet and can see the vehicle. The other requirements still apply.
13. Stunt driving, racing and horseplay with vehicles will not be permitted.
14. Always wait until the vehicle is completely stopped and emergency parking brake is set before dismounting.
15. Sound horn at all blind corners, when passing other vehicles, pedestrians or workers, or whenever there is a stop sign indicating horn use. Never use horn to startle people.
16. Obey all traffic signs.
17. When loading or unloading trucks and trailers, check that the truck brakes are set and properly place wheel chocks to prevent movement.
18. Report all incidents whether they involve personal injury, equipment, material damage, collision or material upsets to your supervisor immediately.
19. When floors are slippery with oil, grease, or water, clean up the area if possible, or reduce your speed and notify your supervisor immediately.
20. When lifting personnel on a fork truck an approved safety platform firmly secured to the lifting carriage must be used.
21. When ascending or descending grades the loaded fork shall be driven with the load upgrade.
22. Portable LP tanks may be stored only in racks provided for this purpose. Do not store cylinders on the ground.
23. On forklifts with seat belts installed, it is mandatory for operators to properly wear the belt.

## Fire Prevention and Flammable Liquids Safety Rules

1. Only use a fire extinguisher if you have been trained by your employer and based upon your level of confidence and training.
2. Fire extinguishers have a rating prominently displayed on them that identify what class of extinguisher they are. The rating follows:

Fire extinguishers can be of more than one Class, with Class ABC being a common extinguisher available. Class ABC extinguishers can be used on paper or wood, flammable liquids or electrical fires.

3. Become familiar with the location, operation and use of fire extinguishers in your area.
4. Fire fighting equipment and fire aisles must be kept clear and ready for use at all times. Never block sprinkler heads with stored materials.
5. Only approved solvents should be used for cleaning and degreasing.
6. Use as little solvent or flammable liquid as necessary to do the job. Keep solvents in a labeled safety container and do not use around sparks or open flame.
7. Flammable liquid containers must be closed while not in use.
8. Do not attempt any work involving a source of ignition near a pit, sewer, drain, manhole or enclosed space where flammable gases may be present. Wait until the area has been declared safe for hot work (See your supervisor.)

\* **Class A** - used for normal combustible materials such as paper or wood.

\* **Class B** - used for flammable liquids.

\* **Class C** - used for electrical fires.

\* **Class D** - used for flammable metals, such as, sodium, magnesium and aluminum.

9. Good housekeeping is our best protection against fires. Do your part by disposing of all scrap, wiping, rags, paper, rubbish, etc. in proper containers.
10. Make sure all electrical equipment is in good condition. Such things as worn or frayed extension cords, defective plugs and outlets, overloaded fuses and circuits are all fire hazards.

11. Obey “NO SMOKING” signs. Discard tobacco products and matches in appropriate containers. Observe the smoke free work environment policy and smoke only in designated areas.
12. Flammable liquids must be stored and used in appropriate containers. (i.e. FM approved).
13. When flammable liquids are not being used, they should be stored in flammable liquid storage cabinets or designated areas.
14. Use appropriate bonding and grounding when transferring flammable liquids to another container.

## Written Program Overview

### A. Confined Space Program

The confined space program addresses hazards within areas such as pits, machinery or other enclosed areas. Confined spaces have been reviewed and are marked with confined space signs. Unauthorized entry into confined spaces is strictly prohibited.

#### Definitions

**ACCEPTABLE ENTRY CONDITION:** conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry, can safely enter into and work within the space.

**ACCEPTABLE ENVIRONMENTAL CONDITIONS:** confined space workplace conditions in which uncontrolled hazardous atmosphere are not present, and which include any additional environmental criteria the employer may require for employee entry into a confined space.

**ATTENDANT:** an employee stationed outside the confined space, trained as required by this Standard, assigned to monitor the employees inside this space and other spaces within the limits as authorized by the location.

**AUTHORIZED ENTRANT:** an employee who is authorized by the employer to enter a confined space.

**BLANKING OR BLINDING:** the absolute closure of a pipe, line or duct, by fastening across its bore a solid plate or "cap" which completely covers the bore: which extends at least to the outer edge of the flange at which it is attached; and which is capable of withstanding the maximum upstream pressure.

**CONFINED SPACE:** an enclosed space which:

- a) Is large enough and so configured that an employee can bodily enter and perform assigned work;
- b) Has limited or restricted means for entry or exit (examples are tanks, vessels, oils, pits and diked areas);
- c) Has one or more of the following characteristics:
  - contains or has known potential to contain a hazardous atmosphere;
  - contains a material with a potential for engulfment of an entrant;
  - has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls, or a floor which slopes downward and tapers to a smaller cross section; of

- contains any other recognized serious safety or health hazard.

### **ALL CRITERIA MUST BE CONSIDERED IN EVALUATING A CONFINED SPACE.**

**DOUBLE BLACK AND BLEED:** the closure of a line, duct or pipe by locking and tagging a drain or vent which is open to the atmosphere in the line between two locked-closed valves.

**EMERGENCY:** any occurrence (including any failure of hazard control or monitoring equipment) event(s) internal or external to the confined space which could endanger entrants

**ENGULFMENT:** surrounding and effective capture of an employee by a liquid or finely divided solid substance.

**ENTRANT:** an employee authorized to enter a confined space. May serve as an attendant if this is approved by the permit. May be fully trained employee to approve entry by others, and may enter the space covered by the permit provided by the attendant is informed.

**ENTRY:** the act by which a person intentionally passed through an opening into a confined space and includes ensuing work activities in that space. The entrant is considered to have entered as soon as any part of the entrants face breaks the plane of an opening into the space.

**ENTRY PERMIT:** the written or printed document established by the employer, the content of which is based on the employers hazard identification and evaluation for that confined space (or class or family of confined spaces is a number of spaces may contain similar hazards) and is the instrument by which the employer authorizes his or her employees to enter that confined space.

**ENTRY PERMIT SYSTEM:** the location's written procedures for preparing and issuing permits for entry and returning the permit space to service.

**HAZARDOUS ATMOSPHERE:** an atmosphere which exposes employees to a risk of death, incapacitation, injury or acute illness from one or more of the following causes:

- a) A flammable gas, vapor, or mist in excess of 10 percent of its lower explosive limit (LEL);
- b) An airborne combustible dust at a concentration that obscures vision at a distance of five feet (1.52 m) or less;

- c) An atmospheric oxygen concentration below 19.5 percent or above 22 percent.
- d) Any atmospheric condition recognized as immediately dangerous to life or health (IDLH).

**HOT WORK PERMIT:** the employer's written authorization to perform operations which could provide a source of ignition such as riveting, welding, cutting, burning or heating.

**IMMEDIATE DANGEROUS TO LIFE OR HEALTH (IDLH):** any condition which poses an immediate threat of life; may result in irreversible or immediate, severe health effects; may result in eye damage; irritation or other conditions which could impair escape from the confined space.

**INERTING:** rendering the atmosphere of a confined space non-flammable, non-flammable, non-explosive or otherwise chemically non-reactive by such means as displacing or diluting the original atmosphere with steam or a gas that is non-reactive with respect to that space.

**IN PLANT RESCUE TEAM:** a group of two or more employees designated and trained to perform rescues in confined spaces in their plant.

**ISOLATION:** the separation of a permit space from unwanted forms of energy which could be a serious hazard to confined space entrants. Usually accomplished by such means as blanking or blinding; removal or misalignment of pipe sections or spool pieces; double block and bleed; or lockout and tagout.

**LINE BREAKING:** the intentional opening of a pipe, line or duct that is or has been carrying flammable, corrosive or toxic material, an inert gas, or any fluid at a pressure or temperature capable of causing injury.

**LOW HAZARD CONFINED SPACE:** a confined space where there is an extreme low likelihood that an IDLH hazard could be present and where all other serious hazards have been controlled.

**NON-PERMIT CONDITION:** any condition or set of conditions whose hazard potential exceeds the Condition limits stated in the entry permit.

**NON-PERMIT REQUIRED CONFINED SPACE:** a confined space that does not contain or with respect to atmospheric hazards, have the potential to contain any hazard capable of causing death or serious physical harm.

**OBSERVER:** an individual stationed outside the confined space who is trained as required and who monitors the authorized entrants inside the confined space.

AN observer may monitor not more entrants nor more space that the entry permits specifically authorizes.

**OXYGEN DEFICIENT ATMOSPHERE:** an atmosphere containing less than 19.5 percent oxygen by volume.

**OXYGEN ENRICHED ATMOSPHERE:** an atmosphere containing more than 22 percent oxygen by volume.

**PERMIT REQUIRED CONFINED SPACE:** a confined space that has one or more of the following characteristics:

- a) contains or has potential to contain a hazardous atmosphere
- b) contains a material that has the potential for engulfing an entrant
- c) has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly covering walls or by a floor which slopes downward and tapers to a small cross-section; or
- d) contains any other recognized serious safety or health hazard.

**RETRIEVAL LINE:** a line of rope secured at one end to the worker by a chest-wait or full-body harness, with the other end secured to either a lifting (or other retrieval) device or to any anchor point located outside the entry portal.

**ATMOSPHERIC CHECKS:**

- Combustible gas, vapor levels must be below 10% of the Lower Explosive Limit (LEL).
- The oxygen content must be between 19.5 % and 22% (% by volume of air).
- The carbon monoxide (CO) level must be below 35 ppm for unrestricted work. At levels between 35-100 ppm, an employee may work under the following restrictions:
  1. Only 15 minutes exposure per hour is permitted AND
  2. Continuous air monitoring is required. At levels greater than 100 ppm, a supplied air respirator (airline or SCBA) must be used. Respirator users must be trained and qualified on the device to be used. This requirement applies no matter how short the duration of the task.

**B. Hazard Communication**

The hazard communication program ensures that employees have the information necessary to understand the hazards of a material, protect themselves from the hazards, and use the material in a safe manner. Material Safety Data Sheets (MSDS) and container labels can be used to determine the hazards of the materials that you use. There are several locations in the plant where MSDS are maintained. See your supervisor for the closets MSDS.

**No material may be brought upon ARCOR® International without prior approval by the ARCOR® EHS Department.**

### **C. Lockout/Tagout Program**

This program details the tagout/lockout program for working with equipment that has energy sources such as hydraulic, pneumatic or electric which could accidentally be released and injure an employee working onto equipment or employees in the area.

**The following is ARCOR®'s program for lockout/tagout. Contract employees must understand and comply with this program or use a similar program which must be reviewed and approved by your ARCOR® Representative.**

#### **General Instructions**

In order to maintain strict control of tagout/lockout procedures, only employees that have been trained and who are qualified to lockout/tagout will be authorized to shut down or restore equipment or process to operation and perform tagout/lockout procedures.

**Lockout.** Under the new OSHA standard, the use of a padlock is the preferred method of locking out equipment before service work is performed. In most cases, equipment can be locked out by physically installing a lock on electrical switch gear, valves, levers, etc, to prevent movement until it is returned to service. In order to comply with this standard, the following provisions for equipment lockouts will apply:

1. All authorized employees will be issued a long-shank padlock that is individually keyed for their own use.
2. Each padlock will be tagged with the authorized employee's name and operating department.
3. Each lock will have two keys, one for the authorized employee to whom the lock is issued and one for his/her department supervisor (unless a submaster key system is used).
4. The department supervisor will be responsible for control of spare keys and for maintaining a list of the locks issued, including extra locks.
5. In the event a key becomes lost, the supervisor will be responsible for having the lock re-keyed or replaced.
6. The department supervisor will control use of the spare or master keys in the event that one of his/her authorized employees is unavailable to remove the lock. Under such circumstances, the supervisor will verify that the person is not at the facility, and make a reasonable attempt to contact him/her to inform him/her of

the removal. If efforts to contact the employee are unsuccessful, then a company padlock, controlled by the supervisor can be used until the employee is notified so repair work can be resumed.

7. If the employee(s) whose tagout/lockout has been removed cannot be reached, the supervisor will be required to notify the employee by telephone or written notice before the employee(s) return to work. In such instances the form entitled "Notice of Tagout/Lockout Removal" will be used as documentation.

8. Whenever a lockout is performed a red "DO NOT OPERATE" tag must be placed through the shank of the padlock.

9. Annual reviews of tagout/lockout procedures will be documented by plant and corporate safety personnel to ensure that correct procedures are being followed.

10. Under revised OSHA standards, new or modified equipment purchased or renovated after October 31, 1989, must be adapted with lockable, isolated devices. It will be the responsibility of the Purchasing, Maintenance and Engineering departments to purchase, install or design such devices on new or modified equipment in the future.

**Lockout.** Under some circumstances the use of a padlock to isolate electrical or mechanical energy may not be practical or feasible. In such cases, a tagout or equipment using a "DO NOT OPERATE" tag can be used. However, it must be clearly understood that lockout will be given first consideration. The following provisions will be used when equipment is tagged out for servicing:

\* Only authorized personnel as outlined in "General Instructions" above will be permitted to fill out and place a tag out.

\* All tagouts must contain the name of the person.

\* The tags must be attached to the energy source shut off mechanisms with a self-locking plastic or nylon tie wrap capable of withstanding at least 50 pounds of force.

### **Warning Tags:**

\* A yellow WARNING tag will be used to prevent operation of equipment which could result in damage or create a potential hazard.

\* WARNING tags can be issued by any supervisor, manager, Safety or Engineering personnel. These tags will be used to remove from service until repairs or installation work can be completed.

\* The red DO NOT OPERATE tag is designed to protect people, the yellow WARNING tag is designed to protect equipment.

**Warning Tagout Procedure** (yellow tag):

\* When a piece of equipment is found in need of service or repair that is beyond the scope and responsibility of the equipment operator, it will be his responsibility to contact his/her supervisor and report it.

\* The supervisor will stop operations if necessary, complete a yellow tag and place on the machine controls and contact the Maintenance Department.

\* When repairs have been completed, the individual who placed the yellow tag or a designated alternate will be contacted to approve the work and remove the tag for release to operation.

\* WARNING tags can also be used to remove obsolete or unsafe equipment from service, pending its disposal or scrapping.

Tagout/Lockout of equipment does not include routine servicing or adjustments that are done under normal production operations; however, if guards or safety devices are removed or bypassed, or if employees are required to place any part of their body in a point of operation or they are exposed to other hazards that could result in injury, then tag/out lockout procedures must be followed.

**Tagout/Lockout Procedure.** Mechanically powered equipment of process. Examples of this type of equipment include, but are not limited to, those that are powered by internal combustion engines, air, hydraulics, gas, steam, gravity or spring tension.

\* Review the proposed work with the supervisor in charge of the equipment to determine what service is needed and coordinate shut-down of the equipment process.

\*Use normal stop procedures to shut down equipment and place it in the “off” or “safe” position.

\*Tagout/Lockout the isolating devices in the “safe” or ‘off” position and try the lockout to make certain it cannot be moved.

\* Test the machine start controls to make sure the isolating devices have provided a complete shutdown and that nothing can be moved. Use chocking where necessary.

- \* Test and inspect for stored air, gas, steam, hydraulics, etc. That may remain in piping, cylinders, etc as necessary.
- \* Also note that closed valves may leak and that capping, disconnection may be needed.
- \* Tagout bleed valves in the open position and tagout disconnected piping at both ends.
- \* Review equipment blue prints and related technical information as needed to insure all energy sources have been identified and brought to a zero energy state.

**Tagout/Lockout of Electrically Powered Equipment.** Examples of this equipment include, but are not limited to welders, AC/DC motors and drives, transformers, lighting systems, generators, power distribution systems, heating elements, battery powered equipment, charges, etc.

Electrical disconnect devices are required to be clearly labeled and kept up-to-date and be available for use by authorized personnel to conduct installation or repairs. Only qualified personnel are permitted to conduct electrical work.

- \* Review the proposed work with the supervisor in charge of the equipment to determine what services needed and coordinate shut-down of the equipment or processes.
- \* Use normal stop procedures to shut down equipment and do not disconnect main switches or circuit breakers while the equipment is under a load. Safe procedures to prevent electrical hazards will be determined before any circuit is energized or deenergized to prevent arcing, fire or explosions.
- \* Lockout and tagout the isolating disconnect switches and/or circuit breakers in the “off” position and try the lockout to make certain it cannot be moved.
- \* Test the machine start control to make sure the isolating devices have provided a complete shut-down. Use chocking as necessary.
- \* Test and inspect for stored energy as discussed above in “Mechanically-powered Equipment or Process”.
- \* When electrical work is involved, the blades of the disconnect switch must be verified visually that they are opened and a meter to check phase-to-phase and phase-to-ground readings must be made to insure all electrical energy has been disconnected or discharged. Particular attention must be given to in-line

capacitors or backfeed voltages. Therefore, any electrical associated exposed contact surfaces that may be touched will be tested.

- \* The use of push buttons, toggle switches, pressure switches, limit switches or similar control circuit devices for tagout/lockout protection is not permitted.
- \* Pulling fuses cannot be substituted for tagout/lockout. One switch may feed several motors individually fused. In such cases, disconnect, tape or tagout the wires from the load side of the fuse clips.
- \* At any time a tagout is used without a lock for electrical work, at least one additional safety measure as a fail-safe must be used (i.e. opening of an extra disconnect device, blocking of another control switch, or removal of an isolating circuit).
- \* In instances where plug/cord equipment is being serviced, a red "DO NOT OPERATE" tag will be filled out and attached to the plug end of the cord.

**Restoration of Equipment to Service.** When equipment repair or servicing has been completed the following procedures will be implemented to restore equipment service.

- \* The authorized person(s) who performed the servicing and placed the tagout/lockout will verify that all repairs have been completed and that all equipment safeguards have been replaced and will then notify those who placed the yellow WARNING tag that the equipment is ready.
- \* The person who placed the WARNING tag (or the alternate) will go to the site, inspect the work and coordinate the start-up of the equipment.
- \* Before the tagout/lockout is removed, the person who conducted the service work will inspect the equipment to ensure that all tools, blocking, or other equipment or components are operational.
- \* All affected people will be notified of the start-up and removal of the tagout/lockout, and the area will be inspected to make certain all people have been cleared out of the area to a safe location.
- \* Each lockout and/or tagout device will be removed by the individual who placed it.
- \* The person who placed the yellow tag will then approve the repairs, remove the tag, sign it off, and give it to the service person to document that the equipment has been released.

\* In some situations, it may be necessary for maintenance personnel to start up equipment for testing before it is ready to be released. This may require the temporary removal of tagout/lockout devices. The same cautions stated above must be followed. When testing has been completed, tagout/lockout procedures must again be applied to bring equipment back to a zero state of energy.

### **Tagout/Lockout Procedures for Shift Changes**

\* When an authorized service person cannot complete a job by the end of the work shift, it may be necessary to turn over the job to another coworker on the following shift. When an authorized person leaves at the end of his/her shift, his/her individual tagout/lockout must be removed and replaced with the following shift workers tagout/lockout.

\* In the event that no one is available to take over the job during the shift change, the maintenance supervisors must be contacted to make arrangements for service continuation. The maintenance supervisor can use a “company” tag and lock that are under his personal control until the job is assigned to another person.

\* In the event that a worker leaves without removing a personal tag/lockout, refer to “Lockout” #6 and #7 on pages 20 & 21.

**Multiple Tagout/Lockout.** In some situations a number of service personnel may be involved in a repair or installation job that requires a multiple tagout/lockout, especially for jobs involving multiple departments or outside contractors. In such instances, a scissors clasp or multiple locking hasp will be used to ensure the safety of each individual that is working on the equipment.

### **Group Tagout/Lockout**

\* Under some circumstances, where multiple work groups are working on a common job, it will be necessary to conduct a group tagout/lockout.

\* There are currently four (4) types of group tagout/lockout methods that are suggested under OSHA regulations.

\* Each of these tags usually involves the use of lock boxes which control the keys to multiple locations and crews or the assignment of one responsible person to control the tagout/lockout of particular groups.

\* In cases of group tagout/lockout procedures, the four tags permitted by OSHA, which are outlined in the addendum to this practice should be referred to.



## Contractors Tagout/Lockout Procedures

- \* Whenever it is necessary for a contractor to conduct repairs or do installation work on company premises, the project must be reviewed first with an **ARCOR®** representative from the Engineering or the Maintenance Department to determine the need to institute a tagout/lockout of equipment or process, especially in those instances where multiple work crews or **ARCOR®** personnel are involved.
- \* Contractors who have a tagout/lockout procedure will be responsible for using their own locks and tags and must demonstrate that their procedures comply with OSHA Standard 1910.147.
- \* Contractors' tagout/lockout procedures and tags will be reviewed and communicated to any affected **ARCOR®** employee before work begins.
- \* In those instances where **ARCOR®** personnel are working along with contractors, each will arrange for a separate tagout/lockout for their respective employees' safety.
- \* Contractors who do not have a tagout/lockout procedure will still be required to follow OSHA Standards. In such instances, the respective **ARCOR®** maintenance manager or supervisor can review our procedures with them and arrange for a temporary loan of padlocks and tags, which will be under the direct control of the contractor until they can provide their own.
- \* Contractors who do not have a tagout/lockout procedure will be encouraged to provide their own tags, locks and procedures in order to be eligible to bid on future company contracts.]
- \* The Purchasing Department will notify contractors in writing of their need to comply with tagout/lockout provisions to maintain bidding eligibility.

## Tagout/Lockout Training

- \* In order to comply with OSHA Standard, an in-house training program to review and communicate **ARCOR®** procedures and OSHA requirements will be conducted for authorized personnel and those who may be affected. Refresher training will be conducted annually.
- \* Additional reinforcement will be incorporated in new and transferred employee orientations, during employee contacts and through group safety meetings.

## Enforcement

\* It will be the responsibility of each plant and division manager through their respective supervisors and staff to enforce the use of tagout/lockout procedures.

\* Failure to use tagout/lockout procedures when required will result in disciplinary action. Any employee who attempts to remove, alter, bypass or in any way override a tagout/lockout without authorization may be terminated. Contractors who fail to observe tagout/lockout procedures may be removed from the work site and restricted from future bidding on company contracts.

## Addendum to Group Tagout/Lockout Procedures from OSHA Instruction STD 1-7.3

Type A: Each authorized employee places his/her personal lock or tag upon each energy isolating device and removes it upon departure from that assignment. Each authorized employee verifies or observes the de-energizing of the equipment.

Type B: Under a lockbox procedure, a lock or job-tag with tab is placed upon each energy isolation device after de-energizing. The key(s) and remove tab(s) are then placed into a lockbox. Each authorized employee assigned to the job then affixes his/her personal lock or tag to the lockbox.

As a member of a group, each assigned employee verifies that all hazardous energy has been removed or the energy isolating device turned on until the appropriate key or tab is matched to its lock or tag.

Type C: After each energy isolating device is locked/tagged out and the keys/tabs placed into a master lockbox, each servicing/maintenance group "principal" authorized employee places his/her personal lock or tag into a satellite lockbox to which each authorized employee in that specific group affixes his/her personal lock or tag. As a member of a group, each assigned authorized employee verifies that all hazardous energy has been rendered safe. Only after the servicing/maintenance functions of the specific subgroup have been concluded and the personal locks or tags of the respective employees have been removed from the satellite lockbox can the principal authorized employee remove his/her lock from the master lockbox.

Type D: During operations to be conducted over more than one shift (or even days or weeks), a system such as described here might be used. Single locks/tags are affixed upon a lockbox by each authorized employee as described in Type B or Type C above. The master lockbox is first secured with job-lock before subsequent locks by the principal authorized employees are put in place on the master lockbox. the job-lock may have multiple keys if they are in sole

possession of the various primary authorized employees (on one each shift). As a member of a group, each assigned authorized employee verifies that all hazardous energy has been rendered safe. In this manner, the security provisions of the energy control system are maintained across shift changes while permitting re-energizing of the equipment at any appropriate time or shift.

### **Specific Lockout/Tagout**

1. Switch gear in main switch gear rooms will be locked out by the shift change electrician and/or the supervisor. To lock out the handle type, you turn off the handle in the "off" position. Write on the tag the equipment you'll be working on and where it is located. Switch gear with breakers. Turn off the breaker and insert a scissors clasp through the eyelids. Apply padlock and tag. Write on tag where you will be working.
2. Switch gear out in the plant with handles. Pull fuses, lock the door, not the handle. Apply tag.
3. On disconnects, pull the handle to the "off" position, lock the handle and apply tag. As an extra precaution, you may take the fuses out.
4. Working on extruders: Turn all three (3) power sources off a cabinet, lock handle and both doors and apply tag. Working in cabinet: Lock and tag all sources. Watch out for multiple power sources.
5. Watertable: Turn handle to "off" position, lock and tag.
6. Perm Puller: Turn handle to "off" position, lock and tag.
7. Working in cabinet or panel anywhere in the plant on one circuit only: Turn off breaker and pull fuses. Lock panel or cabinet door (if lockable) and apply tag. If door is not lockable, tag the door and place a tag on the breaker or fuse block.
8. Circuits that have disconnects out of sight: Use mechanic's lock on disconnect that is in sight. Use supervisor's lock on disconnect that is out of sight.
9. Working on dies or cord connected piece of equipment: Lock and tag the plug.

Remember to check for any stored energy before starting work. If in doubt, seek the assistance of the company electrician or your supervisor. Only company issued locks are to be used.

## **D. Fall Hazard Control Program**

This program has been developed to ensure that employees who must work from heights are adequately trained and protected from fall hazards. This program has been developed through a process of fall hazard identification, assessment, prioritization, implementation of engineering controls, training and procedures.

### **Four Basic Methods of Preventing and Controlling Fall hazards**

There are four (4) basic methods of preventing and controlling fall hazards:

1. On going education and training.
2. Procedural changes.
3. Equipment or tool changes.
4. Fall protection.

**On going education and training** keeps plant employees awareness levels from dropping. It ensures that all employees, managers, superintendents, supervisors and hourly employees, know the dangers of falls and the importance of preventing and controlling falls. The training provides knowledge for identifying and solving problems. For example, all employee's would be taught the "three points of contact" method when using ladders.

**Procedural changes** start with the managers. Using Standard Operating Procedures (SOP), Job Safety Analysis (JSA), Areas Safety Analysis (ASA), and Equipment Safety (ESA) as monitoring tools, these changes can have an immediate impact while physical changes may be delays waiting for manpower.

**Equipment or tool changes** are physical changes or additions to a work area. These changes may include items such as catwalks, guardrails, gates, warning signs or using a different tool to complete a task.

**Fall protection** is the utilization of personal safety equipment designed to protect you after a fall. Equipment used includes harness, lanyards and nets.

### **Fall Prevention**

Fall prevention prevents exposure to a fall. Fall prevention is any means used to reasonably prevent exposure to an elevated fall hazard(s). Examples include floors, walls, guardrails, and isolating an area.

There are three (3) methods of prevention:

1. **Equipment or tool changes.** Eliminates a hazard through redesign, elimination, relocation or repair of equipment or tools.
2. **Procedural changes.** Changes the method of doing a task. Good procedural changes can completely eliminate the fall exposure.
3. **Physical changes or additions to the work area.** Eliminates a hazard by redesigning the work area.

### **Examples of Fall Prevention**

Prevent slips and trips by:

1. Vigilant housekeeping
2. Using footwear that matches the job
3. Proper lighting
4. Using contrasting colors
5. Slip resistant surfaces
6. Awareness education and training

Prevent portable ladder accidents by:

1. Making sure the ladder fits the job
2. Using the 4:1 rule (set the base out from its support one foot for every four feet of working ladder height)
3. Trying the ladder off properly
4. Using the three (3) points of contact method
5. Training in ladder safety inspection
6. Training in the proper use of a ladder

### **Fall Protection**

Fall protection is the use of an engineered, personal system that will arrest a free fall. Examples include lanyards, life lines, harnesses and nets. Fall protection systems have three components: an anchor point, a body support and a connector. It is used **ONLY** when fall prevention is not feasible due to location, cost or practicality.

There are four (4) considerations in designing a fall protection system:

1. Anchor points must be approved by engineering

- mobility
2. It should not interfere with the work task and the required
  3. It is used as a tool for positioning and restraint
  4. It must address the need for emergency retrieval after a controlled fall has occurred

### **Anchor Points Requirements**

The following are examples of what can be used as anchor points. This is not an all inclusive list.

\* Per OSHA & **ARCOR®** standard 18.2 all anchor points must be rated at 5000 lb.  
or a 2:1 anticipated load safety factor. Use 1000 lb. load for single anchor point.

\* Guard post and guardrails built with 6" or larger steel pipe or square tubing in sound condition.

\* All building columns

\* All identified anchor points in personal lifts and fork truck platforms

*Anchor points must be approved y engineering. Required by OSHA and ARCOR® Engineering Standard 18.2*

*Column wraps must be placed directly above a horizontal support or horizontal member.*

*The lanyard anchor point should not be lower than the harness D-ring except in personnel lifts or if the free fall distance cannot exceed six (6) feet. If this criteria cannot be met, use a retractable lanyard.*

The following are examples of what should NOT be used as anchor points unless approved y engineering. This is not an all inclusive list.

\* Handrails

\* Ladders

\* C-Clamps

\* Bolt holes (sharp edges on hole)

\* Electrical conduit or pipe runs (dependent on diameter, length or support member)

\* Guard post and guardrails built with less than 6" steel pipe or square tubing

Although it is acceptable to wrap a lanyard and hook it back to itself, use of a column wrap is preferred. The column wrap with its pad eliminates the possibility of the lanyard being cut by the object being used as an anchor.

### **Rules for Using Snap Hooks**

- \* Never attach two (2) snap hooks together
- \* Never attach two or more snap hooks to on D-ring

### **Guard Rail Requirements**

- \* Guard open-sided platforms or walkways four (4) feet (1.2 m) or more, above the adjacent area using a standard railing on all open sides except where there is entrance to a ramp, stairway or fixed ladder.
- \* Equip rail with a toeboard or curb beneath the open sides when persons must pass underneath where there is moving machinery, where falling materials could create a hazard.
- \* Provide standard railing and toeboard on open sided walkways, platforms, or runways, regardless of height when located above or adjacent to dangerous equipment, open tanks, degreasing, etc.

### **Personnel Protection at Floor Openings**

- \* Permanent floor openings created by pits, hatchways, manholes, stairs and ladders shall be guarded to prevent persons from falling into or through the opening.
- \* Open pits shall be enclosed on all exposed sides with a standard railing and toeboard.
- \* Pit and trap door floor openings, infrequently used and/or where traffic is required to pass across the opening, shall be guarded with a properly designed floor opening cover. For example, every manhole floor opening shall be normally covered by a standard manhole cover.
- \* While the cover is not in place, the pit or trap opening shall be constantly protected by removable standard railings.

### **OSHA Regulation: Designated Areas for Pits and Roofs**

*When determining solutions to fall hazards, use ARCOR® engineering standards and OSHA standards.*

Designated areas may be used as an alternative to a guardrail if the workers within that area are not exposed to fall hazards. However, the work must be of a temporary nature: for example, maintenance work on a roof or in a pit. If there are fall hazards inside the designated area, anyone inside the area must be protected.

The designated area is established by use of the following warning barrier equipment:

\* Stanchion to withstand 16lbs. of force at 30" above its base to provide adequate warning to anyone who may bump against it.

The line between the stanchion must:

- 1) Have a minimum tensile strength of 500 lbs. to assure that the line is more substantial than string.
- 2) Be visible from 25 feet.
- 3) Be 34'-39 feet above the floor.

\* The perimeter of the area must be at least six (6) feet from the area being guarded, but as close as the work being done will permit.

\* Entry to the designated area shall be posted with the standard "Designated Area" sign.

All excavations, temporarily open pits and two level fall hazards or four (4) feet or greater shall be addressed using one or more of the following:

- \* Eliminate
- \* Guard
- \* Designated Area
- \* Fall Protection

### **Fall Protection General Requirements**

\* Fall protection is required when exposed to heights of four (4) feet or greater.

\* Special circumstances less than four (4) feet may require the use of fall protection.

- \* All fall protection systems must be approved by engineering.
- \* New vendor equipment cannot be brought into plant without approval of the fall protection team.
- \* A 2:1 safety factor may be used for engineering systems. Engineering Standard 18.2, refer to page 4/8 for load on horizontal life lines. Load for single anchor point is 1000 lbs.
- \* Maximum free fall distance is six (6) feet.
- \* Safety harnesses have replaced belts and shall be used with a shock absorbing or retraceable lanyard.
- \* Never attach a snap hook directly to a horizontal life line. An attachment point is provided by the vendor of the horizontal life line, or a carabine may be used.
- \* Shock absorbing end of the lanyard is fastened at the body harness.
- \* Fall protection shall be used when operating personnel lifts including but not limited to JLG's, fork truck platforms and scissor lifts.
- \* The lanyard anchor point should not be lower than the harness D-ring except in personnel lifts or if the free fall distance cannot exceed six (6) feet. If this criteria cannot be met use a retractable lanyard.
- \* Although it is acceptable to wrap a lanyard and hook it back to itself, use of a column wrap is preferred. The column wrap with its wear pad eliminates the possibility of the lanyard being cut by the object being used as an anchor.

**Never** hook two lanyards together. Equipment manufactures and OSHA do not permit this.

**NOTE:** This is not intended to be a complete list of fall prevention/protection rules and regulations. Other rules that apply include:

- \* ARCOR Engineering Standard 18.2 Fall Prevention/Protection.
- \* Applicable OSHA regulations, 1910 and 1926.
- \* Department Rules.

### **Eyebolt Requirements**

- \* Do not use eyebolts on singular lifts unless absolutely necessary.
- \* Loads should always be applied to eyebolts in the plane of the eye, not at some angle to this plane.
- \* Shoulder eyebolts must be properly seated (should bear firmly against the mating part) otherwise the working loads must be reduced substantially. A steel washer or spacer may be required for proper seating.
- \* No greater load should be allowed than that given under rated capacity in each of the tables of dimensional data.
- \* To obtain greatest strength from an eyebolt, it must fit reasonably tight in the hole into which it is screwed to prevent unscrewing due to twist of cable. Tightness and seating must be checked after initial load.
- \* Eyebolts should never be painted or otherwise coated when used for lifting, as such coatings will very likely cover up flaws.
- \* To attain the rated capacity listed for eyebolts, full thread engagement allowing 1/2 turn for alignment to the plane of the eye, is necessary.

### **Maximum Gaps Between Fall Prevention Structures**

- \* A gap in existing equipment of 6" or less is acceptable.
- \* New fall prevention structures (handrails, barriers, etc) shall not contain openings unrestricted in height, 20" above the floor or higher, or more than 4" wide.
- \* Existing openings of more than 6" shall be rendered safe by reducing the gap width of 4" or less. Modifications shall maintain strength and dimensional requirements of OSHA 1910.23.

### **Ladder, Pick, Scaffold Safety**

- \* For any overhead work, always use the proper type ladder. Never use makeshifts.
- \* Metal ladders and scaffolds shall not be used unless authorized by your supervisor when working on or near electrical outlets.

- \* Ladders and scaffolds (including picks) should be inspected by the person using this equipment for defects prior to each use (Missing safety feet or shoes, cracked rungs, damaged side rails, etc).
- \* Straight ladders must be equipped with safety feet.
- \* Straight ladders should be lashed at the top, if possible, or blocked or held at the bottom.
- \* Ladders placed near doors or aisle way should be held at the bottom. Warning signs or barricades should be erected.
- \* Straight ladders should be placed using the 4:1 rule (set the base out from its support one foot for every four (4) feet of working ladder height).
- \* Always face the ladder when climbing down. Use both hands. Hand tools and other equipment should be hauled up and down with a hand line.
- \* Do not overreach; move the ladder across the floor from floor level as your work progresses.
- \* For additional information on portable ladder usage, refer to OSHA Standard 1910.25, 1910.26 and 1926.450.
- \* Ladders must not be used to make part of a scaffold.
- \* Do not splice ladders together to make a longer ladder.
- \* Do not leave ladders unattended unless they are securely anchored.
- \* Make sure your hands and shoes are reasonably dry and free of grease before climbing a ladder.
- \* Always clean ladders and return to their proper storage area after use.
- \* Always have three (3) point contact when climbing a ladder.
- \* When a portable ladder is used to access a structure it should extend at least three (3) rungs beyond the access point.
- \* When using scaffold refer to OSHA Standard 1910.28 and the Free Fall hazard Decision Tree.
- \* When using scaffolding or pick refer to the Fall Hazard Decision Tree.

## **Dictionary of Terms**

**ACCESS:** Movement by physical or mechanical means to reach a workstation.

**AERIAL LIFTS:** Mechanical devices such as man lifts, man baskets, scissor lifts and bucket trucks used for access to heights. The term “skip box” is reserved for materials used only on construction sites.

**ANCHORAGE:** A secure point of attachment for lifelines, lanyards or deceleration devices.

**BODY BELT:** A strap you can secure around your waist and attach a lanyard or device for fall arrest.

**CARABINER:** Double locking ring used to connect system components.

**DECELERATION DISTANCE:** The vertical distance between the belt of harness attachment point, at the activation of the fall arrest equipment, and that attachment point once the individual comes to a complete stop.

**DIFFERENT LEVEL FALL:** An accident where you fall below the level you were standing or walking on (e.g. you fall below foot level).

**D-RING:** An attachment point(s) on the belt or harness for a device or lanyard. Sometimes erroneously named for a carabiner snap hook.

**EQUIPMENT & TOOL CHANGE:** Re-design, elimination or relocation of fixed equipment.

**FALL ARREST OR FALL PROTECTION SYSTEM:** A lanyard or device, along with other necessary components, designed and tested to function together in preventing a fall from occurring or to minimize the potential for compounding injury.

**FREE FALL DISTANCE:** The vertical distance between the belt or harness attachment point (at the time of an unrestrained fall) and any obstruction of grade level or the activation of fall arrest equipment.

**FULL BODY HARNESS:** The design of single or multiple straps that can be secured around the body to which a lanyard or device can be attached. The design distributes the arresting forces over the buttocks, thighs, chest and shoulders.

**GATE:** Snap hook closure that swings closed to secure.

**HARDWARE:** Snap hooks, D-Rings, buckles, carabiners, adjuster, O-rings, etc, used to attach the components of a fall protection system together.

**HAZARD:** The potential to incur harm, an agent, energy or characteristic that can cause physical damage to personnel or property.

**HORIZONTAL LIFELINE:** A rail, wire, or synthetic cable that is installed in a horizontal plane and used for attachment of a worker's lanyard or lifeline device while moving horizontally. Used to control dangerous pendulum like swing falls.

**INDEPENDENT ANCHORAGE:** A point of attachment that is not part of the working or walking surface or equipment rigging points.

**LANYARD:** A flexible line of webbing, rope or cable 2, 4, or 6 feet long, used to secure a body belt or full body harness to a lifeline or on anchorage point.

**LIFELINE:** A vertical line from a fixed anchorage or between two horizontal anchorages, independent or walking or working surfaces, to which a lanyard or device is secured. Part of a fall protection system used as a back-up safety for an elevated worker.

**LOCKING SNAP HOOKS:** A connecting snap hook that requires two (2) separate forces to open the gate; one to deactivate the gate keeper, and one to depress and open the gate which automatically closes when released, used to minimize roll-out or accidental disengagement.

**PROCEDURAL CHANGE:** A different method of doing the job to prevent employee exposure to fall hazards.

**RETRACTING LIFELINE:** A fall arrestor whose integral line extends as a worker moves downward and automatically removes slack as the worker moves up towards the unit. Can have a centrifugal locking mechanism or alternatively centrifugal braking mechanism for controlled descent.

**ROLL OUT:** Unintentional disengagement of a snap hook caused by the gate being depressed under torque or contact with single action snap hooks that do not have a locking gate keeper.

**ROPE:** Wire or synthetic rope used for lifelines.

**ROPE GRAB:** A fall arrestor that is designed to move up and down a lifeline suspended from a fixed overhead anchorage point to which the belt or harness is attached. In the event of a fall, the rope grab locks onto the compatible rope through compression to arrest the fall.

**SAFETY BELT:** A generic term for body support.

**SAME LEVEL FALL:** An accident in which you fall to the same level you were standing or on (e.g. you fall to foot level).

**SHOCK ABSORBER:** A component of a fall protection system that dissipates energy by creating or extending the deceleration distance.

**SHOCK ABSORBING LANYARD:** A flexible line of webbing, cable or rope with an integral shock absorber, used to secure a body belt or harness to a lifeline or anchorage point.

**SINGLE-ACTION SNAP HOOK:** A connecting snap hook that requires a single force to open the gate which automatically closes when released.

**SNAP HOOK:** A self closing connecting device with a gatekeeper latch or similar arrangement that remains closed until manually released. Includes single action snap hooks that open when the gatekeeper is depressed and double action snap hooks that require a second action on a gate keeper before the gate can be opened.

**SUSPENDED SCAFFOLD:** A single point or multiple point work platform used for powered or unpowered access up or down the side of a structure.

**SYNTHETIC FIBERS:** A manufactured fiber such as nylon, polyester or polypropylene.

**TIE-OFF:** The act of securing the end of a lanyard to an anchorage point. The term tied-off, and tying-off, are related to tie-off. An anchorage point is sometimes referred to as a tie-off point.

## **E. Manlifts**

Any Contractor wishing to use **ARCOR®**'s manlifts are required to make an agreement with their **ARCOR®** Representative. The Contractor's personnel must be trained by a qualified **ARCOR®** Representative.

## **F. Mobile Equipment Safety Policy**

### **Definitions**

Mobile Equipment: forklifts, raymonds, tuggers, sweepers, automobiles, trucks, vans, lawn tractors and semi-tractors and semi-tractors, excavation equipment, etc.

### **Certification & Training**

The following items describe the medical and training guidelines necessary for employees applying for certification or re-certification of a mobile equipment license. Employees are only authorized to operate equipment for which they are licensed and trained for.

### **Procedures**

The following procedures and safety rules shall be followed at all times:

- \* Mobile equipment shall be operated only by licensed operators.
- \* Seat belts shall be worn at all times.
- \* No mobile equipment shall be operated unless it is in safe operating condition.
  - Operators shall inspect their mobile equipment at the beginning of their shift.
  - Problems with their equipment will be reported to their supervisor immediately.
- \* Whenever a mobile equipment operator dismounts, the equipment shall be restricted from movement by:
  - Setting the parking brake.
  - Placing the transmission in neutral. "Park" shall be used in place of neutral on automobiles and pickups.
  - Lowering loading engaging device completely (i.e. Fork Lifts)
- \* Twenty-Five Foot Rule:
  - If the operator is required to be twenty-five (25) or more feet from the piece of equipment or out of visual contact with it, the vehicle must also be shut off.

- If a piece of equipment is not equipped with a parking brake or the parking brake is not working properly, the equipment must also be shut off.
- Vehicle drivers are responsible for passengers and shall haul no more than allowed.
- Operators and passengers should keep feet, legs and arms inside the outer perimeter of the mobile equipment at all times.
- ALL accidents or incidents involving mobile equipment with personnel, building structures, etc., shall immediately be reported to supervisor.
- Extreme care shall be taken when using LP fueled mobile equipment around high temperatures. Exposure to high temperature devices should be minimized. Never leave the equipment unattended or parked in such areas. Never smoke while operating or sitting on the equipment or when standing by the equipments' fuel tank area.
- Never make repairs on a vehicle unless specifically authorized to do so.
- Never operate a vehicle with a fuel leak.
- Handle only load within the rated capacity of the mobile equipment. Be sure the load is stable and safely arranged.
- Mobile equipment operators shall obey all traffic regulations and traffic control signs, especially SPEED LIMITS.
- All mobile equipment shall be completely stopped and horn shall be sounded before entering a building. Horns shall be sounded before rounding a corner.
- Mobile equipment operators shall at all times be on the look out for pedestrians and other mobile equipment.
- Stunt driving and "horseplay" shall not be permitted. Operator shall not use equipment for any purpose other than that for which it is designed.
- Do not drive equipment over loose objects.
- Mobile equipment operators shall be responsible for the stability and safe transporting of a load.

## **G. Storage & Handling of Flammable/Combustible Liquids**

### **Definitions**

Flammable Liquids: Those liquids having a flash point at or above 100 degrees Fahrenheit (37.8 degrees Celsius).

Combustible Liquids: Those liquids having a flash point at or above 100 degrees Fahrenheit (37.8 degrees Celsius).

Storage Cabinets: Metal cabinets that are UL or FM approved, limited to the storage of 50 gallons or less.

### **Storage**

\* All bulk storage of flammable liquids will be in approved storage areas outside the buildings. Flammable liquids may be kept in approved safety can outside the flammable liquid storage cabinets, as long as they do not exceed ten (10) gallons. Safety cans shall be metal, with a spring closing lid, flame arrestor, and a spout cover so designed to relieve internal pressure when exposed to fire.

\* Flammable liquid storage cabinets shall be commercially available approved cabinets and shall be maintained so that all safety features are operational. All cabinets used for such storage shall be labeled in red letters "FLAMMABLE - KEEP AWAY FROM FIRE". A maximum limit of three (3) storage cabinets may be kept in on fire area. A distance of 100 feet or more must be maintained between storage areas.

\* Cabinets shall be kept free of combustible materials such as paper, rags, packing materials, friction spark producing items, and incompatible materials such as oxidizers and acids.

\* Storage areas must be kept free of nonessential combustible materials such as paper, rags, packing materials and vegetation.

\* Containers shall be palletized in storage areas to prevent corrosion or deterioration from moisture accumulations under the containers.

\* Drums shall be transported on wood pallets or approved drum clamps between storage buildings. Bare forks on fork lifts shall not be used on the sides for transporting.

\* Less than drum size quantities may be stored in original shipping containers.

\* Unopened drums need not be grounded.

\* All storage areas shall be approved in advance by the Environmental and Safety Managers.

### **Handling & Use**

\* Flammable liquids may be used only where there are no open flames or other sources of ignition within the possible path of vapor travel up to a 20 foot radius.

\* Flammable liquids shall be drawn from or transferred into vessels, containers or portable tanks within a building only from 1) original shipping containers with a capacity of five (5) gallon or less, or 2) from safety cans, or 3) through a closed piping system or 4) from a portable tank or container by means of a device drawing through an opening in the top of the tank or container.

a) Flammable liquids shall not be dispensed from metal containers unless the nozzle or fill pipe is in direct contact with the container. This can be accomplished either by maintaining metallic contact during filling or by a bond wire between them. Bonding is not required where a container is filled through a closed system, or the container is made of glass or other non-conducting material. Flammable liquid dispensed from original approved containers shall be done outside of buildings or inside of an approved fume hood.

b) Drums shall not be emptied by air pressure except as produced by a hand pump or approved dispensing pump.

c) Drums must be grounded whenever they are opened and especially during transfer of liquids. An electrostatic bond that will bond the dispensing and receiving container shall be used. Smaller metal containers must be bonded to main supply container prior to transfer of flammable liquids.

d) Only Underwriters Laboratories (UL) or Factory Mutual (FM) tested and approved metal safety containers will be used for less than drum quantities of flammable liquids in work areas. Maximum safety container capacity is five (5) gallons.

e) Polyethylene type safety containers shall not be used for storage or dispensing of flammable liquids.

f) Laboratories are permitted to utilize glass containers of one gallon maximum capacity.

g) All containers shall be properly labeled.

## H. Respiratory Program

This program ensures that employees who are exposed to excessive levels of air contaminants such as dusts, mists or gases are properly trained in the hazards of these contaminants, the use and limitations of proper respiratory protection and are medically approved to use the equipment.

## I. Welding, Burning and Cutting Program

ARCOR® contains a significant amount of flammable and combustible materials in locations throughout the plant. Whenever activities such as welding, cutting or other maintenance or production work occurs near these materials, specific precautions must be taken. This program ensures that all welding and cutting is conducted in a safe manner and that area specific hazards (such as flammable materials) are recognized before the work begins so that appropriate action can be taken to ensure that the work does not create a hazardous situation.

**A Welding, Burning and Cutting Permit must be obtained from the Maintenance Supervisor before performing any of the above.**

## J. Barricade Tape

### General Instructions

\* **Yellow Barricade Tape** shall be used to communicate CAUTION: HAZARDOUS CONDITIONS! Personnel may enter areas barricaded with yellow barricade tape, provided they understand the hazardous present.

\* **Red Barricade Tape** or red barricade fencing (four or six foot) shall be used to communicate DANGER: DO NOT ENTER! Only authorized employees may enter and work in areas so barricaded. The decision to use red barricade fencing should be based upon the hazard circumstances.

\* Any information tag should be placed in a conspicuous place on the barricade tape providing the following information:

- \* Who is authorizing the barricade
- \* What is barricaded and
- \* How long the area will be barricaded.

## TSCA (Toxic Substance Control Act)

TSCA is a law which was created by the EPA (Environmental Protection Agency) that requires the review of new chemicals before being introduced into the USA, as well as, collect information on chemicals which are already in use. By collecting information, the EPA is preventing unreasonable risk to human health or the environment.

If you believe that a chemical you are working with has caused a significant harmful effect to you or the environment, contact the plant TSCA coordinator. In the event that the coordinator is not available, contact your **ARCOR®** supervisor.

The harmful effect may be recognized hazard of the substance, at which time appropriate control measures will be implemented. If the observed harmful effects have not been previously recognized for the substance, our TSCA coordinator will file appropriate reports with **ARCOR®**. Based on corporate evaluation, the EPA may have to be contacted regarding these previously unrecognized hazards.

## Environmental Information

This section of the handbook will provide you with some basic information about environmental matters at **ARCOR®**. This information can help you do your part to protect the environment while working for here.

### Spill Response

If a spill of hazardous or unknown materials occurs, the following action should be taken to stop or contain the hazard:

- 1) Determine the chemical and the use of appropriate protective equipment.
- 2) Obtain information from the MSDS (Material Safety Data Sheet).
- 3) Once the material has been identified and proper personal protective equipment issued, stop the container from leaking (stop the container from leaking only if it can be accomplished in a safe manner).
- 4) Contain the material with some type of absorbent so that it will not leak further.
- 5) If the spill is near a storm drain, block the storm drain before discharge.
- 6) If necessary, evacuate the area.

If a spill has occurred that involves a hazardous material, the following actions should be taken:

- 1) Contact should be made with PDC response team.
- 2) Evacuate personnel from around the area.
- 3) Try to contain the material as much as possible so it doesn't go down a drain.
- 4) Try to identify the material.
- 5) Try to find the appropriate MSDS for the PDC response team when they get there.
- 6) Immediately, if not sooner, notify an **ARCOR®** supervisor. If you are unable to contact your **ARCOR®** supervisor, notify someone on the emergency contact list.

**-END-**