Forklift Safety Manual

INTRODUCTION

Forklifts, also known as powered industrial trucks, are an important part of material handling in many industries. Forklifts are also a source of serious accidents in the workplace. Injuries and/or fatalities indicate that many workers and employers are not using or may be unaware of the correct forklift safety procedures.

The goal of this guide is to assist workplace instructors with forklift safety-training programs. This guide does not presume to cover every forklift safety hazard or situation and should be used as a supplement to the manufacturer's provided forklift-operating manual. Cal/OSHA regulations state that the employer is responsible for ensuring that each forklift operator is competent to operate a forklift safely. The employer is also responsible for certifying that each forklift operator is trained and evaluated, in accordance with Cal/OSHA regulations, before operating a forklift.

Training the Trainer

Cal/OSHA regulations require forklift safety instructors to possess a certain level of competency, experience, and forklift knowledge. Cal/OSHA's General Industry Safety Order (GISO), Section 3668 states, that:

"All operator training and evaluation shall be conducted by persons who have the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence."

Some things to consider when deciding who will conduct training include having a forklift safety instructor who:

1. Communicates effectively.
2. Has completely reviewed and understands all of the applicable forklift safety regulations.
3. Is knowledgeable about different forklift designs, their

uses in the workplace and experienced in operating them.
4. Is familiar with the conditions and hazards that are inherent in the workplace.
5. Is familiar with the safe operational procedures and activities that are associated with operating a forklift in the workplace. These procedures and activities include:

   - Battery-charging practices.
   - Fueling the forklift.
   - Lifting and transporting cargo.
   - Working in enclosed spaces.
   - Operating forklifts in loading dock areas.

6. Is able to objectively evaluate a forklift operator's performance in the workplace.

SECTION 1: FORKLIFT SAFETY TRAINING PROGRAM

An effective, compliant forklift safety training program must consist of a combination of formal instruction, practical instruction, and an evaluation of the forklift operator's performance in the workplace.

Formal Instruction (Classroom)

The formal instruction portion of the safety training should include a combination of various training methods—lectures, question and answer sessions, videos, and written materials. All training, written and spoken, must be presented in a language understood by all trainees. Formal instruction should also include a complete review of the Cal/OSHA forklift regulations that apply to the worksite. Classroom instruction includes:

1. Reviewing the applicable forklift regulations.
2. Presenting an appropriate forklift safety video or another type of training medium (computer program, audio/visual program, written material).
3. Conducting a question and answer session regarding forklift

safety.
4. Administering a written forklift safety test.

Practical Instruction (Hands-On)

Practical or “hands-on” training is required by Cal/OSHA to certify forklift operators. This component, according to Cal/OSHA GISO Section 3668, must consist of “demonstrations performed by the trainer and practical exercises performed by the trainee.” Not all situations or procedures are covered in this guide. The instructor should modify the training program to address the conditions found in the workplace, including the types of forklifts the trainee will be operating. The instructor must perform demonstrations for the trainees on all of the topics listed below. A verbal review neither conforms nor complies with the regulations. Hands-on instruction includes:

1. Training on the forklift safety check process. Each trainee should conduct a forklift safety check.
2. Erecting a forklift driving course. The instructor should observe each trainee completing the course, take observation notes, and review the notes with each trainee.
3. Training that covers the specific hazards and conditions present in the workplace. Examples include lockout/tagout, battery charging, fueling, operating forklifts in enclosed spaces, carrying loads, and elevating employees using a forklift.

Workplace Performance Evaluation

After the formal and hands-on instruction, the instructor must evaluate the operator’s performance in the workplace.

The instructor must observe each trainee performing normal workplace forklift duties, write down notes during the observation, and then review the notes with the employee.

Several sample training forms are included in this guide to assist with documentation and record keeping efforts. The employer must maintain the documents for at least three years after the date of

the training.

Each forklift operator's performance must be evaluated at least once every three years. Under certain conditions, refresher training must be provided more frequently.

Requirements are detailed in Cal/OSHA's GISO Section 3668.

The effective forklift safety instructor combines different training activities into the formal and practical components of the program as well as the workplace performance evaluation. Listed below is information regarding various safety-training activities that should be used to supplement the Cal/OSHA forklift regulations. This portion of the training guide is not comprehensive and not all situations or procedures are covered.

Video Training

People learn by different methods of instruction, including discussion, written materials, videos, and hands-on activities. Videos are versatile in that they include both audio and visual formats—some are even interactive. Showing a video about forklift safety helps maintain interest and capture attention.

If possible, the instructor should select a video that uses a setting similar to the workplace.

Written Forklift Safety Test

A forklift instructor needs to know if the trainees understand the information and can apply it to their work duties. One way to assess this is to administer a written test. A sample forklift safety test is included in this guide. When the trainees have completed the test, the instructor should review the answers with the group then keep the completed test for training documentation.

Conducting a Forklift Safety Check

Cal/OSHA regulations mandate that before each shift, the forklift operator must check the forklift for safety deficiencies. The instructor must give "hands-on" instruction to trainees on how to

conduct a proper and thorough forklift safety check.

Forklift Driving Test

Forklift trainees must demonstrate a basic understanding of forklift operation as well as competent forklift driving skills. By observing a forklift operator navigating a planned driving course, the instructor can verify that the operator has the skills necessary to safely operate a forklift. The instructor should then record the trainee's performance on the enclosed sample Forklift Operator Performance Test form, or a similar form.

Forklift Driving Course

The forklift driving test must be conducted on a forklift driving course, as required by Cal/OSHA regulations. A sample forklift driving course, which provides a variety of forklift operation activities, is included in this guide. The instructor should modify the course to simulate conditions the forklift operator may encounter in the workplace. Trainees should only attempt a forklift driving course after they have completed the formal and hands-on training segments. The employer is responsible for ensuring that each trainee is certified to operate every type of assigned forklift.

SECTION 2: FORKLIFT OPERATION AND SAFETY

In this section, various safety rules and operating procedures are reviewed. These rules and procedures, if applicable to the workplace, should be included in the forklift safety training program and are intended to supplement the Cal/OSHA forklift regulations. This section is not comprehensive and not all situations or procedures are covered. When preparing to conduct the forklift safety training, the instructor should consider additional hazards and safety rules that apply to the workplace.

Types of Forklifts

There are many different types of forklifts, which can vary in size, shape, and method of power. A forklift can be powered by an internal combustion engine using gasoline, diesel or propane gas (LPG) for fuel, or run on electricity from batteries. A forklift can have different attachments, depending on its specific use, such as fork extensions, drum clamps, lifting hooks, or a platform.

Forklift Stability

Forklifts are normally tall and narrow and may tip over easily, so operators must drive cautiously. Stopping a forklift is different from stopping a car. The two small wheels are the braking wheels, so forklifts do not stop quickly. The forklift is based on the concept of two weights being balanced on opposite sides of a pivot point with the forward wheels being the pivot point. This is the same concept as a teeter-totter.

The load on the forks must be balanced by the weight of the forklift. Every time a forklift picks up a load; the truck and load have a new combined center of gravity. The stability of the forklift is determined by the location of its center of gravity, or if the forklift is loaded, the combined center of gravity.

Forklift Limitations

Before driving a forklift, the operator must be aware of the load capacity the vehicle can safely accommodate and that the load center may change due to characteristics of the freight. This knowledge is critical because as the distance increases from the load center, the weight carrying load capacity of the forklift decreases. Before use, the forklift operator must also know the location of the forklift name plate, which lists its model number, load capacity marking, and type designation. The employer is responsible for maintaining these plates and ensuring that the information is legible.

Fueling

To prevent fire or explosion hazards, trainees must be instructed to:

- Not fuel tanks while the forklift engine is hot, running or smoking.
- Keep fuels away from ignition sources.
- Never smoke when near a fuel source or while fueling the forklift.
- Always wear the proper personal protective equipment while fueling a forklift.
- Fuel forklifts in a location that has been designated as safe for fueling.

When changing a liquid petroleum gas (LPG) tank, operators must relieve pressure in the line before disconnecting it by shutting off the tank and running the engine to empty the line.

Forklift Use in Enclosed Areas

Using gasoline or liquid propane gas forklifts in enclosed areas may lead to a build up of dangerous, potentially fatal, carbon monoxide gas. Carbon monoxide is a toxic gas, emitted in the forklift’s exhaust. An individual who is exposed to unacceptable levels of carbon monoxide may become ill due to a lack of oxygen. Carbon monoxide gas is odorless, tasteless, and colorless, and is often not detected until the individual becomes sick. To avoid the possibility of carbon monoxide poisoning, the use of electric forklifts is recommended in enclosed work areas.

High Rack Storage

Freight stored on high racks can be 20 feet or more above the ground which presents special hazards. The lighting in high rack storage areas must be adequate, the floor surface must be smooth and free of cracks, and the forklift operator must have ample space in which to maneuver the forklift. The loads must be balanced, stacked safely, and not tiered too high. The forklift operator must take extra care to maneuver the forklift safely and

slowly while stacking or un-stacking freight stored on high racks. All forklifts that are used in high rack storage operations must be equipped with overhead protection.

Transporting Loads

Forklift operators should never move a loaded forklift if he or she cannot see in the direction of travel. Travel with the load trailing, if the load blocks the operator's front view. When traveling with a load, the forks should always be carried as low as possible. Operators must be aware of the height of the forklift mast and should watch for low-hanging lights, pipes, ducts, and doorways that could present a hazard.

When ascending or descending inclines or ramps, operators should be instructed to drive the forklift slowly with the load upgrade. All employees should be reminded to never pass or stand under the elevated part of a forklift, even when it is unloaded.

Lockout, Tagout, and Blockout

Many workers are injured or killed by failing to lockout, tagout, and blockout the equipment they are operating. Forklift trainees should be given lockout/tagout safety training for cleaning, inspecting and repairing forklifts or when clearing it of obstructions. They should be taught to disconnect the battery during repairs to the primary electrical system and, if the forklift can store residual energy, to discharge the energy before beginning work on the electrical system. Trainees could be pinned or entangled in the equipment if the proper precautions are not taken.

Starting and Dismounting

Before starting the forklift engine, the operator should be seated in the forklift, with the seatbelt fastened. Operators should never start their forklift while standing to the side. Before dismounting, the forklift should be completely stopped with the controls in neutral, the parking brake engaged, and the forks fully lowered. When the operator travels more than 25 feet away

from the forklift or if the forklift is out of the operator's sight, it is considered by Cal/OSHA to be "unattended." The power must be shut off with the controls in neutral, the parking brake set, and the forks fully lowered to the ground.

Elevating Employees Using a Forklift

Extra caution should be exercised when elevating other individuals with a forklift. A personnel platform, which is secured to the forks or the mast of the lift, must be used. This platform must have proper guardrails, a toe board, and be of a sufficient size to accommodate the individual and the material being raised. The floor of the platform must be slip-resistant and free of holes that are larger than one inch in size. While the individual is elevated, the forklift operator must be at the controls and the forklift may only be moved to make minor positioning adjustments.

Workplace Conditions

Keep work environment as clean and hazard-free as possible. One way to help endure safe workplace conditions is to conduct safety inspections. An employee who has the authority to make corrections should conduct a safety inspection regularly. All floor-to-ground surfaces should be free of cracks, crumbling edges, and other defects. All workplaces should be well lit and free of clutter. If a blind corner is present, it should be eliminated if possible. When operating a forklift outdoors, operators should keep the forklift away from ditches, embankments, and holes.

Pedestrian Safety

Pedestrians and forklifts are a dangerous combination. If possible, forklift traffic areas should be separated from pedestrian traffic areas by a barrier. All employees should receive training about the dangers of working near forklifts. Forklift operators should use their horns to alert others when they are in the proximity of pedestrians. If the workplace noise level is high, forklifts should be equipped with flashing lights to alert others of their presence.

Battery Charging

Before charging batteries, check the forklift manufacturer’s recommended charging instructions and wear the recommended personal protective equipment. Keep the battery charging area free from ignition sources that could present a fire hazard and well-ventilated so dangerous gases, fumes, and vapors do not build up.