1. **Identification of Workplace Hazard**

Forklift operations are relatively hazardous activities and, in relatively low-hazard commercial workplaces, may represent the most significant hazard, based on National Safety Council statistics. In the United States, approximately 100 workers are killed in forklift accidents each year and 18,200 non-fatal lost time injuries occur. The most common causes of the fatal injuries are:

1. Forklift overturns;
2. Worker struck by materials being moved by a forklift;
3. Worker struck by the forklift;
4. Worker falls from forklifts;
5. Worker pinned between objects;
6. Forklift struck by another object;
7. Injuries during forklift repairs.

There also are hazards associated with forklift power sources and the material handling itself which must be addressed to prevent injuries.

2. **Management and Trainer Information**

As a result of these statistics which indicate a potential hazard, Cal/OSHA has a stringent forklift standard that includes the following elements:

1. Operator training;
2. Operator safety rules that must be posted;
3. Various prohibitions of horseplay, riders in addition to operators, riding forks, etc.;
4. Requirements for safety equipment such as overhead protection, fire extinguisher, horn or backup signal, etc.;
5. Posting of load ratings on the lift.

Forklift operations also lead to applicability of other Cal/OSHA standards such as the standard for battery charging areas and emergency eyewash and safety showers. If liquid propane gas (LPG) or propane propelled, the Cal/OSHA LPG safety standards apply.

The employer should review the list of Operating Rules contained in the Cal/OSHA poster that follows this Hazard Prevention Data Sheet and implement those that apply as facility-specific safety rules. The poster (or the employer's alternative safety rules) must be posted in an area frequented by forklift operators.
Battery Charging

Forklift power sources also may pose hazards to employees. The most common power sources, battery and LPG/propane, are specifically regulated by Cal/OSHA standards. LPG/propane tank and refueling safety requirements are presented in a separate Hazard Prevention Data Sheet. For battery operated forklifts a Cal/OSHA standard on battery charging and changing applies.

The following procedures must be followed by employees:

1. Eye or face protection must be worn when connecting a charger to a battery.
2. Chargers must be turned off when leads are being connected or disconnected.
3. All leads and cables must be checked and in good condition.
4. When charging batteries and when moving batteries, vent caps must be kept firmly in place to avoid electrolyte splashing. Care must be taken to assure vent caps are functioning.
5. If charging is to be conducted on a battery in a mobile piece of equipment, the battery compartment cover must be left open to dissipate heat and explosive gases.
6. Any additional safety requirements or operating procedures specified by the manufacturer of the forklift, battery or charging system must be followed.

Battery charging areas are specifically regulated by another Cal/OSHA standard. There are a number of specific requirements:

1. There must be adequate ventilation to keep explosive atmospheres less than 20% of the Lower Explosive Limit (LEL) in the charging area.
2. The charging apparatus must be protected from damage by mobile equipment. This usually means a physically protected area (crash barriers) and protection of the equipment.
3. Facilities for quick drenching or flushing of the eyes and body must be provided at or near (within 10 seconds) the charging area (approved emergency eyewash and safety shower).
4. Smoking and other ignition sources must be prohibited in the charging area. "No Smoking" signs must be posted.
5. Additional precautions must be taken to prevent open flames, sparks or electric arcs in battery charging areas.

Material Handling

Material handling activities are subject to a number of Cal/OSHA standards which include the following requirements:

1. The load of material on rack systems, floors and platforms must not exceed the safe carrying capacity of the supporting structure. Cal/OSHA requires load ratings to be identified and posted and employees must comply with these limits.
2. Rack systems must be secured from moving or tipping.
Material cannot be stacked or stored in a manner that would result in its collapse or material falling.

Material must not be stacked or stored at a level that obstructs the safe operation of fire suppression systems (sprinkler heads).

Material may not block aisles and means of egress.

Trucks or rail cars being unloaded at loading docks or other locations, must be chocked and brakes locked in place.

Ramps (dock boards or bridge plates) to enter trucks or rail cars must be able to support the intended load, secured to the vehicle/dock and must be in good repair.

Conveyor and roller systems must be guarded as required, in good repair, secured, and ends designed to brake movement of materials.

3. Employee Safe Work Practices

Employees should be required to comply with the following safe work practices for forklift operations, battery charging and material handling. The employer should include any additional rules which may be applicable depending on its unique operations.

Forklift Operation

(1) Do not operate a forklift unless specifically authorized and trained by the employer.

(2) Riders in addition to the operator are not permitted. Employees elevated on forks when permitted by the employer, must be in a safety cage and meet other requirements for this activity.

(3) Forklifts must be operated with care and at safe speeds.

(4) Forklift load ratings must not be exceeded.

(5) If a load would obstruct the operator’s vision, it must be operated in reverse.

(6) The operator must sound the horn or other warning device when crossing intersections.

(7) The operator must conduct a daily inspection of all control systems and safety devices. Forklifts found defective must be taken out of service.

Battery Charging

(1) Do not attach a battery charger, charge a batter or transfer liquified fuel unless authorized and trained to do so.

(2) Follow all operating rules during charging or refueling the forklift.

(3) Wear eye or face protection whenever hooking up a charger to a battery.

(4) Do not smoke near refueling or charging areas.
Material Handling

(1) Do not exceed load limits of any rack, floor or platform.
(2) Do not stack materials in a manner that may lead to a collapse or falling material.
(3) Do not stack loads in a manner that blocks sprinkler heads of the fire suppression system.
(4) Do not block aisles or doorways with loads.
(5) Make sure ramps are secure and will support the load of the forklift and materials.
(6) Make sure trucks are chocked and brakes set.

4. Items Subject to Periodic Scheduled Inspections

The employer's periodic scheduled inspections should consider the following items during workplace inspections:

Forklifts

(1) Are forklift safe operating rules posted?
(2) Are forklifts equipped with the required safety equipment, including overhead protection, fire extinguisher, horn or back-up alarms, etc.?
(3) Do operators conduct daily inspections of forklifts as required?
(4) Are any instances of horseplay, multiple riders or fork riding observed?
(5) Do operators practice good procedures such as sounding horns at intersections, not backing up with loads that would obstruct forward vision, etc.?
(6) Are operators well trained in forklift operation and safety procedures?

Battery Charging

(1) Do operators wear eye and face protection when charging batteries?
(2) Have operators been trained and do they follow proper procedures for battery charging hook-up and operation?
(3) Are connectors and cables in good repair?
(4) Is the emergency eyewash and safety shower functioning properly and within a 10-second walk?
(5) Is the charging area well ventilated?

Material Handling

(1) Are load ratings posted on platforms, elevated floors and rack systems?
(2) Are loads in compliance with load ratings?
(3) Are rack systems fastened to prevent tipping?
(4) Are loads stacked only to safe heights?
(5) Are fire system sprinkler heads unobstructed?
(6) Are trucks and rail cars chocked and/or brakes set to prevent movement?
(7) Are ramps secure, in good condition and capable of supporting loads required?
(8) Are conveyor and roller systems secure and braking materials at end of runs?