ONSHORE SAFETY ALLIANCE (OSA)
onshoresafetyalliance.org

Safe Actions Document

Powered Mobile Equipment



What You Need To Know

This document provides an overview of safe actions for upstream onshore oil and gas workers in land rigs and well site areas where **powered mobile equipment (PME)** creates hazards for both operators and those nearby.

At A Glance

- 70 fatalities in 2021 across all industries involved forklifts, with 15,480 non-fatal incidents that required time away from work in 2022.
- There were 58 fatalities in 2021 in the oil and gas extraction industries alone.
- The most common types of accidents that can put you and your co-workers at risk on the jobsite include (Primary Incident Vectors - OSHA 1910.178):
    - Forklift rollover (The leading cause of PME fatalities.)
    - Worker struck by a forklift
    - Load falls from a forklift
    - Contact with overhead power lines (29 CFR 1926.1408)

OSA publications may be used by anyone. Although OSA has made every effort to ensure the accuracy and reliability of the information contained herein, OSA makes no representation, warranty, or guarantee regarding its contents and expressly disclaims all liability for any loss, damage, or regulatory conflict arising from its use. These publications are intended to promote the broad availability of proven engineering and operating practices and are not a substitute for independent business, scientific, engineering, safety, or professional judgment.

©Copyright 2026 Onshore Safety Alliance (OSA). All rights reserved.



- Working in upstream environments presents unique, high-stakes operational and environmental challenges. While PMEs are essential for material handling, they introduce significant risks, including collisions, rollovers, and dropped loads.

  Working in upstream environments presents unique, high-stakes operational and environmental challenges. While PMEs are essential for material handling, they introduce significant risks, including collisions, rollovers, and dropped loads. This document serves as a useful tool to identify key relevant practices found in complex regulatory frameworks and voluntary industry standards (such as those covered in standards by OSHA and API). This is not meant to be an exhaustive list, users must confirm they are following all applicable government, industry, and company rules and practices. By providing the references in this document, we aim to reduce the cognitive load on operators and crew members, ultimately helping them mitigate hazards and preventing incidents on the jobsite. Original source citations for each provision are included for your convenience throughout.

  To ensure comprehensive safety awareness, this document outlines the following key areas:

  - **Equipment Coverage:** Defining what qualifies as a PME and what falls under separate construction standards.
  - **Risks and Hazards Job Hazard Analysis (JHA):** Identifying common field hazards, including crushing, electrical, and collision risks.
  - **Attachments and Manufacturer Rules:** Guidelines for modifications, capacity markings, and obstructed views.
  - **Training Updates:** Outlining initial, refresher, and site-specific evaluation mandates.
  - **Overloading and Stability:** Understanding the physics of PMEs, load limits, and the stability triangle.
  - **Safe Operations:** Establishing exclusion zones, environmental thresholds, and speed controls.
  - **Communication and Reporting:** Protocols for Stop Work Authority (SWA), signaling, and incident reporting.
  - **Performing Work**: A standardized procedure including 7 steps and actions.

©Copyright 2026 Onshore Safety Alliance (OSA). All rights reserved.

EQUIPMENT COVERAGE

The following equipment is covered under this OSA Safe Action Document. Powered mobile equipment includes the following equipment types under 29 CFR 1910.178 (Powered Industrial Trucks Standard):

- Forklifts (All Classes 1-7)
- Rough terrain forklifts (Class 7 - ANSI/ITSDF B56.6-2021)
- Telehandlers (Variable reach Class 7)

The following equipment **is not covered** under this OSA Safe Action Document, and falls under 29 CFR 1926.602 (Earthmoving Equipment):

- Skid steers (unless specifically configured as a vertical mast forklift)
- Bulldozers
- Excavators
- Front end loaders

RISKS AND HAZARDS

Common Hazards

The following equipment is covered under this OSA Safe Action Document. Powered mobile equipment includes the following equipment types under 29 CFR 1910.178 (Powered Industrial Trucks Standard):

- **Crushing/Struck-By:** Ensure personnel do not stand between a forklift and a fixed object or under an elevated portion of any truck.
- **Electrical:** Maintain a minimum clearance of 10 feet from power lines up to 50kV (OSHA Minimum Approach Distance).
- **Collision/Ignition:** Striking pipelines can release hazardous gases. In Class I, Division 1 areas, only EX-rated trucks are permitted.

(JHA - OSHA 3071 and 1910.178)

LEARNING FROM INCIDENTS

COLLISION RISKS: While positioning matting, a loader operated with an obstructed rear view without a spotter, **violating 29 CFR 1926.602(a)(9),** causing a collision with a cement container.

©Copyright 2026 Onshore Safety Alliance (OSA). All rights reserved.



Attachments & Manufacturer Rules

- **Follow Manufacturer Rules:** Regularly check and maintain forklifts based on the manufacturer's instructions. Ensure operators strictly adhere to the equipment's rated capacity. Operators must be trained to consult and apply specific load charts, particularly regarding maximum weight limits and boom extension capabilities.
- **Manufacturer Approval:** Modifications and additions which affect capacity and safe operation shall not be performed by the customer or user without manufacturers prior written approval.
- **Capacity Marking:** When using attachments (e.g., pipe clamps, BOP handlers), the truck must be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered.
- **Obstructed Views:** Attachments for carrying large loads can block the driver's view, potentially causing accidents or crashes. If the load or attachment blocks forward view, the operator is required to travel with the load trailing (in reverse), looking in the direction of travel, with spotters assisting if a clear view is unavailable.

(OSHA 1910.178(a)(4)-(5))

LEARNING FROM INCIDENTS

KNOW YOUR EQUIPMENT: While positioning a BOP, an uncertified attachment detached with workers in the area. Violations included failure to secure the attachment per **1910.178(a)(5)** and failure to enforce exclusion zones per **API RP 54 Section 7.**

©Copyright 2026 Onshore Safety Alliance (OSA). All rights reserved.

Every Forklift is Different

- **Provide Initial and Refresher Training:** Ensure you have the proper training covering vehicle design, controls, and instrumentation. Performance evaluations are mandatory every three years, or immediately if an accident, near-miss, or workplace change occurs.
- **Direct Supervision Requirement:** Trainees may only operate a PME under the direct supervision of a person with the knowledge and experience to train and evaluate. (Per April 01, 2025 clarifications, this requires the physical presence of the trainer at the site.)
- **Site-Specific Evaluation:** Conducting training in the actual environment and using the specific equipment and attachments ensures safety principles and techniques are retained better.

(OSHA 29 CFR 1910.178)

LEARNING FROM INCIDENTS

BE AWARE OF SURROUNDINGS: While operating along the edge of a well pad to retrieve equipment, an operator failed to account for soil stability. The tires slipped on soft, muddy ground, causing the loader to tip onto its side. A seatbelt prevented injury, fufilling **OSHA 1926.602(a)(2)** requirements.

Overloading and Stability

- **Do not Overload:** Only handle loads that are within the rated capacity of the truck as specified on the manufacturer's nameplate.
- **Stability Triangle:** Ensure operators are fully trained on and understand the three-point suspension system. Carrying loads high or on uneven terrain shifts the center of gravity outside the stability triangle, leading to lateral tip-overs.
- **Load Stability:** Always follow defined load limits and ensure every load is balanced, centered, and safely arranged before travel to prevent dropped loads or loss of steering control. When loading, it is advised that the heaviest part of the load be positioned near the front wheel and close to the mast.

(OSHA 29 CFR 1910.178)

©Copyright 2026 Onshore Safety Alliance (OSA). All rights reserved.



Safe Operations

Exclusion Red Zones

Establish a **“Red Zone” boundary** around the PME and loads. No personnel are allowed under suspended, hoisted, or moving loads.

Environmental Threshold

Stop all material handling when winds exceed **30 mph (48 km/h).** Suspend general work at height when winds exceed 40 mph (64 km/h).

Speed Control

Under all travel conditions, operate at a speed that permits a safe stop. Slow down and sound the horn when crossing aisles, areas with workers and approaching blind spots (29 CFR 1910.178(n)).

Supplemental Technology

Technology enhancements such as AI-driven cameras, proximity sensors (RFID/UWB), and geofencing (RTLS) may be used as supplemental engineering controls to help warn and enforce exclusion zones around workers, wellheads and equipment. However, these electronic systems **cannot replace** the mandatory use of trained spotters, physical barriers, or the requirement for verified line-of-sight between the operator andground personnel during material handling.

(API RP 54 Section 7 and OSHA 1910.178)

LEARNING FROM INCIDENTS

EXCLUSION ZONES: While using a forklift to remove a divider box crate from the top shelf of storage racks, the unbalanced load tipped off the forks and fell 15 feet to the ground. However, because exclusion zones were properly established per **API RP 54,** no workers were in the area, preventing potential injury.

©Copyright 2026 Onshore Safety Alliance (OSA). All rights reserved.



Communication and Reporting

Stop Work Authority (SWA)

Every worker has the authority to stop work if hazards are present.

Hand Signals

Ensure that everyone involved in operating vehicles understands the hand signals being used. Signals should be agreed upon during pre-job safety meetings.

Radios

Radios are a great way to communicate clearly. Test electronic communication equipment on-site to ensure the signal is reliable.

Incident Reporting

Investigate all incidents and near-misses to identify systemic failures.

(OSHA 3885 and API RP 54)

©Copyright 2026 Onshore Safety Alliance (OSA). All rights reserved.

Performing Work: Standardized Procedure

The following procedure provides a framework for safe operations. Your organization's safe operating procedures take precedence. Still, without those standards, the following steps can be taken to help operators avoid hazards and mitigate risks.

STEP	PROCEDURE	STANDARD REFERENCE
Pre-Check	Verify equipment certifications and check logbook for open "Red-Tag" or maintenance issues.	**29 CFR 1910.178(L)**
Initial Walk-Around	Key-off, visual check for hydraulic leaks, fork cracks, tire chunking, and secure guards.	**9 CFR 1910.178(Q)(7)**
PPE and Safety	Hard hat, safety glasses, steel-toed boots, and high-visibility clothing.	**29 CFR 1910.132-.133; API RP 54 SEC 4.4.1**
Risk Assessment	Monitor wind speeds (>30 mph stop operating). Evaluate soil stability (caliche pads).	**OSHA 1926.968**
Startup Procedure	Engage each control to verify response; ensure all gauges and warning lights are operational.	**29 CFR 1910.178(N); OSHA 1926.1408**
Operation	Wear seatbelt; avoid overhead power lines; keep forks 6-10" high; use spotters.	**29 CFR 1910.178(N); OSHA 1926.1408**
Shutdown	Lower lifting mechanisms; set parking brake; key-off; tag out if repairs needed.	**29 CFR 1910.178(m)(5)**

©Copyright 2026 Onshore Safety Alliance (OSA). All rights reserved.



Works Cited and Reference Standards

Occupational Safety and Health Administration (OSHA) Standards

- **OSHA 1926.968:** Electric Power Transmission & Distribution (wind test).
- **OSHA Publication 3071:** Job Hazard Analysis.
- **29 CFR 1926.602:** Material Handling Equipment (Earthmoving Equipment).
- **29 CFR 1910.132 - 133:** Personal Protective Equipment (General Requirements and Eye/Face Protection).
- **29 CFR 1910.178:** Powered Industrial Trucks.
- **29 CFR 1926.1408:** Power Line Safety (Up to 350 kV) - Equipment Operations.
- **OSHA Publication 3885:** Recommended Practices for Safety and Health Programs.

American Petroleum Institute (API)

- **API RP 54:** Recommended Practice for Occupational Safety for Oil and Gas Well Drilling and Servicing Operations (Section 4.4.1).

American National Standards Institute (ANSI) / Industrial Truck Standards Development Foundation (ITSDF)

- **ANSI/ITSDF B56.6-2021:** Safety Standard for Rough Terrain Forklift Trucks.

Learn more at:
onshoresafetyalliance.org