

Handling operations with forklifts: Hazardous situations!

The french website "Officiel Prévention, santé, sécurité au travail"¹ indicates that there are, on average, 8,000 work-related lost-time accidents involving self-propelled industrial forklifts per year. Of these accidents, ten or so result in fatalities. In addition to occupational accidents, forklifts can cause or propagate serious accidents. This newsflash presents some technological accidents, highlighting dangerous situations that can occur when operating a forklift.

ARIA 48235 - 28-06-2016 69 - SAINT-FONS

A violent fire triggered by a forklift fork

In a logistics warehouse of a Seveso-classified chemical plant specialising in silicones, a forklift driver was

handling a pallet containing 200-l drums of highly flammable silicone oils. One of the forklift's forks accidentally punctured one of the drums. The forklift driver was able to place the damaged pallet on a mobile retention device, picked from the nearby storage cell, and remove it from the warehouse. The spilt product then ignited on a hot spot created by the friction of the forklift's metal forks (non-ATEX) against the ground. The driver was able to grab a nearby powder fire extinguisher. While attempting to put out the flames, the fire spread rapidly, and he perished in the flames.



The fire detection system triggered the alarm; the facility operator initiated the internal contingency plan and confined the 750 employees. Meanwhile, the emergency rescue services arrived at the site with 50 vehicles and roughly 100 firefighters. A large cloud of black smoke billowed from the hangar and was visible from afar.

The intensity of the fire in the urban area justified initiation of the Special Intervention Plan

As the site is located along an urban highway, the Prefect initiated the Special Intervention Plan (SIP) and ordered that the primary schools of the 3 nearby municipalities be confined indoors for 1 hour. The highway and its access routes were shut down. The fire was brought under control by the massive use of foam. The SIP was lifted a few hours later, and the motorway accesses were re-opened.

The fire destroyed 600 m² of the warehouse and burned 120 of the 230 t of finished products in storage. The plant was shut down for one week.



Smoke cloud visible from several kilometres away, © SDIS

CACES, an essential tool to prevent risks

The Safe Driving Certificate is a certificate issued in France to the driver by a specialized training organization to ensure that he or she has acquired the knowledge necessary to drive the vehicle safely.

The operator must also hold a driving permit issued by the employer.

Obligations of drivers: know their equipment, the rules of the road in the company, check the condition of the handling equipment, respect the maximum permissible load on the truck...

ARIA 51599 - 25-05-2018 - 77 - BRIE-COMTE-ROBERT

At approximately 6 p.m., a fire broke out in a cell of a Seveso low-level warehouse. A pallet truck had toppled over and caught fire. The fire was able to be contained with fire extinguishers, although the position of the pallet truck had prevented one of the cell's fire doors from closing properly.

Causes:

The pallet truck driver did not comply with CACES (certificate of aptitude in safe driving) instructions: **passing through a fire door in reverse, empty, and moving with forks raised.**

The forks struck the top of the fire door causing the pallet truck to tip over. The battery and hydraulic components were damaged in the fall, and the oil that spilt onto the battery ignited, resulting in the fire.

Actions taken

- clearance guards were installed to alert forklift drivers passing through the fire doors with a mast raised too high;
- forklift drivers received training in understanding the hazards related to operations in areas with a risk of impacts and forklift battery-related risks;
- the pallet truck manufacturer was contacted to establish quick intervention in case of an accident.

¹ http://www.officiel-prevention.com/formation/conduite-d_engins/detail_dossier_CHSCT.php?rub=89&ssrub=95&dossierid=149

ARIA 51379 - 24-04-2018 - ANDREZIEUX-BOUTHEON:

According to the facility operator, a driver was using a forklift to transport a load of 15 pallets while pushing a second load. A pallet in the second stack scrubbed on the ground over a distance of 150 m, most likely causing a nail to heat up (metal-ground contact) which ignited a smouldering fire in the pallet storage area. On the site's video surveillance system, wisps of smoke could be seen for about 15 minutes without any presence in the surrounding area. Then, very quickly (after about 2 minutes), the smoke intensified and flames appeared.

The operator drafted a feedback report on the accident. Areas for improvement include oral reminders for the forklift drivers to take into account feedback from the event. A detailed accident report is available on the ARIA website: http://www.aria.developpement-durable.gouv.fr/wp-content/files_mf/A51379_a51379_fiche_impel_001.pdf

ARIA 52021 - 01-08-2018 - 69 - ARNAS

At approximately 5 p.m., a leak occurred in the operations building of a chemical manufacturing and storage site classified as SEVESO high threshold. The leak involved 200 litres of 32% ammonia solution. This accidental spill took place during an operation to dilute an ammonia solution.

An intermediate bulk container (IBC) containing 32% ammonia, half filled and with the upper cap previously opened, had been placed in a high position by means of a forklift and was connected by a hose to another IBC partially filled with water. The solution then flowed by gravity into the IBC containing water. During the operation, the IBC containing the ammonia solution slid off the forks of the forklift and overturned. As the IBC's upper cap was open, the liquid spilled onto the ground.

Firefighters were alerted by residents who had noticed the odours.

The IBC fall occurred during the last operation of this type. The forks had been rendered slippery after being subjected to several washing operations with water. The fall was triggered by the liquid moves inside the IBC.

An interim order was issued suspending this type of handling and required the operator to conduct a risk analysis and propose measures to ensure that this type of operation is carried out safely. The facility operator has proposed that transfer operations be conducted from a specific and robust platform capable of supporting the full IBC to be transferred and has revised the associated operating procedure.



Position of the IBC at the time of tipping © DREAL

In addition to the obligations for forklift drivers, established by the CACES, the provisions of the Labour Code and the recommendations of the National Health Insurance Fund, the following is a list of good practices derived from accidents involving forklifts identified in the ARIA database, which can be applied to prevent accidents with environmental consequences, in the broad sense:

Vehicle maintenance: prevent internal defects in forklifts:

- Organise equipment **maintenance** (ARIA 19115, 37110),
- Perform periodic **inspections** on the equipment and conduct a pre-start checklist (ARIA 37109, 24546, 33977, 36084, 48012),
- Modify forks, for example, by adding **anti-puncture** and/or **anti-slip protection** (ARIA 45930).

Vehicle power supply: prevent explosions, fires or CO/gas emissions related to gas cylinders, electric charging stations and batteries, or at fuel distribution stations, in addition to the declarations to be made and the requirements of ministerial orders to be respected:

- Maintain and inspect storage areas (ARIA 33244, 35601, 37929),
- Check the safety equipment of LPG cylinders (ARIA 17776),
- Maintain the exhaust and ventilation of premises for gas supplies (ARIA 39148, 40581),
- Install CO detectors on equipment (ARIA 40612).

Manoeuvring and traffic: avoid the risk of spilling the products being transported, puncturing containers with forks, ripping off of valves or breaking pipes with the forks:

- Improve forklift driver training: specific instructions and knowledge of the risks related to the products transported (ARIA 14207, 26286, 35573, 35859, 43208, 46359, 47505, 49742),
- Use forklifts equipped with ATEX protection (ARIA 43344), when necessary,
- Check the appropriateness of the means of transport and the containers used, analyse the working conditions at each tool change (ARIA 19117, 19119, 30997) and check that fork length is sufficient (ARIA 19116, 39939),
- Organise storage and unloading operations (ARIA 19151, 28383, 35824, 46134, 47505, 50620, 50243),
- Have another technician act as a spotter/guide (ARIA 39939),
- Define a traffic plan (ARIA 37992), seal off and maintain vehicle traffic areas with product drainage systems (ARIA 33483, 35859, 36052).