



# Truck Loading and Unloading with Electric Pallet Jacks and Tailgate Lifters: Understanding Safety Challenges in the Retail Sector

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## Synopsis

Electric pallet jacks (EPJs) are widely used in the Australian retail and grocery sector for loading and unloading goods, often in conjunction with tailgate lifters. A series of recent incidents, most notably a fatality and serious injury in separate incidents in 2024, have drawn attention to the safety risks associated with these operations. This Q&A investigates the systemic causes of EPJ-related incidents using stakeholder input and socio-technical analysis. Analysis tools, such as the Swiss Cheese Model and AcciMap framework, are used to explore failures at regulatory, organisational, environmental; and individual levels. The findings highlight critical gaps in training, equipment standards; and hazard awareness, and inform practical recommendations to help business operators and workers improve workplace safety where EPJs and tailgate lifters are used together.

## Introduction

The retail and grocery sector relies heavily on fast, flexible logistics operations, particularly during the loading and unloading of stock at delivery sites. Two essential tools that support these processes are Electric Pallet Jacks (EPJs) and Tailgate Lifters.

- EPJs are motorised devices designed to move heavy, palletised loads efficiently, reducing manual effort and physical strain on workers. Tailgate lifters are mechanical platforms that raise or lower goods between ground level and the truck deck, facilitating deliveries at sites without loading docks. Together, EPJs and tailgate lifters have significantly improved operational efficiency. However, their combined use has also introduced serious safety challenges.

Recent incidents have drawn urgent public and regulatory attention to the safety risks associated with EPJs and tailgate lifters. In June 2024, a worker delivering stock in Adelaide suffered a serious head injury and suspected leg fracture after falling from a tailgate platform when an EPJ unexpectedly rolled backward. Just four months earlier, another worker lost their life in a similar incident after falling and being crushed by equipment. These high-profile cases underscore the pressing need for stronger safety systems, improved training protocols, and tighter regulatory oversight to mitigate risks in EPJ and tailgate operations.

This research adopts a socio-technical systems perspective to investigate what went wrong in these incidents and, more importantly, why they occurred. By examining the broader system in which this equipment is used, including human, technological; and organisational factors. This Q&A aims to uncover underlying causes and inform more effective safety interventions.

## PJ-Tailgate The Interface: A High-Risk Zone

The interaction between electric pallet jacks and tailgate lifters represents a particularly dangerous situation in logistics operations. When operated together, these tools create a high-risk scenario that requires coordination, balance, and spatial awareness – all within a limited space on a raised platform.

In the overlapping use of EPJs and tailgate lifters, several hazards intersect:

**Two Moving Systems:** Both the EPJ and the tailgate platform are moving; mechanical systems. Either can malfunction or behave unexpectedly. Combined, they present a heightened risk of collision, tipping, or loss of control.

**Elevated Work Surface:** The tailgate elevates workers and equipment. A fall from any height can lead to serious injury, especially when compounded by the momentum of a moving EPJ or heavy pallets.

**Spatial Awareness Challenges:** Workers must operate within tight and variable spaces, often outside their usual environment (e.g., different loading areas). Misjudging position, slope; or distance is common.

**Inconsistent Equipment:** Workers may use unfamiliar EPJs or tailgate systems throughout a shift. A lack of standardisation (e.g., brake configurations, control layouts, varying EPJ models) reduces operational predictability.

**Time Pressure and Cognitive Load:** Tight delivery schedules can lead to workers rushing. This increases the likelihood of procedural shortcuts and reduces attention to environmental risks.

**Reduced Margin for Error:** When working at height, with moving machinery, and under time constraints, even small lapses such as forgetting to engage the brake or misjudging the tailgate angle can have serious outcomes.



### Case Study: EPJ-Tailgate Incident

A notable incident involved a third-party logistics truck driver who was unloading goods using an electric pallet jack on a tailgate lifter at a retail delivery site. The tailgate platform was positioned on uneven ground, resulting in a slight tilt.

As the operator attempted to manoeuvre the EPJ, it began to roll unexpectedly. The braking system either malfunctioned or was not properly engaged. Lacking sufficient edge barriers or stabilising features, the EPJ rolled off the lifter. In the process, the driver lost balance and fell from the elevated platform, sustaining serious leg injuries.

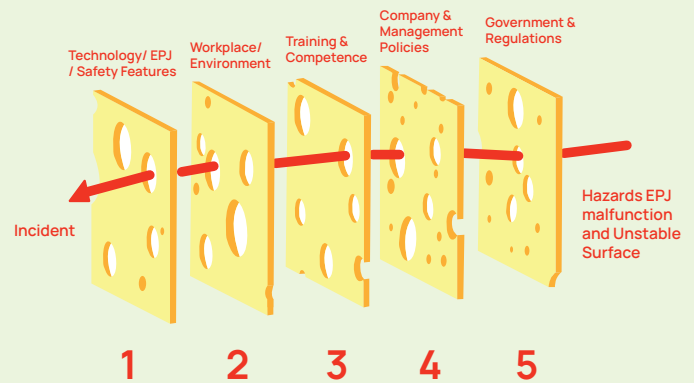
This case highlights the compounding risks associated with the simultaneous use of two mechanical systems: -EPJs and tailgate lifters.



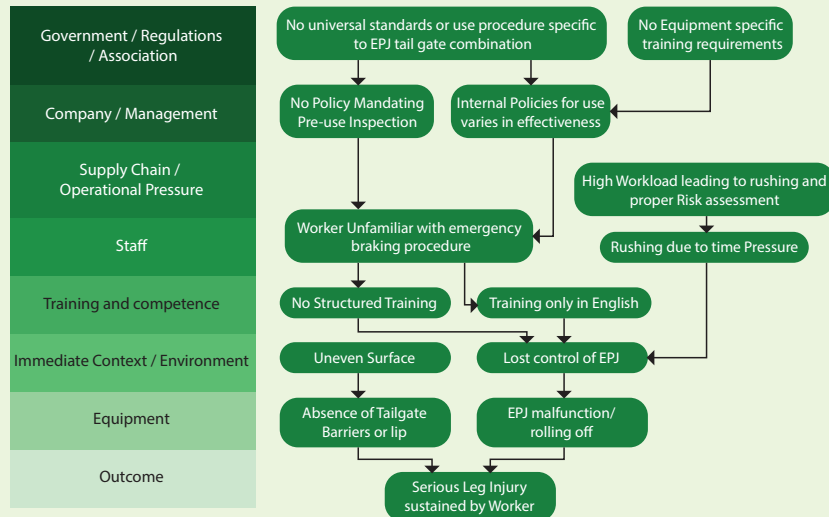
### Systemic Risk Analysis: Swiss Cheese Model

The Swiss Cheese Model conceptualises incidents as the result of multiple, simultaneous failures in a system. These failures or “holes” in defences may align under certain conditions, leading to incidents. In this case:

These layers all had latent or active failures. When they aligned, they bypassed existing controls, which led to the incident. This model helps illustrate that no single cause was responsible, rather, the incident was a result of compounded system weaknesses.



### AcciMap



To further understand the complexity of the incident, an AcciMap was developed. This socio-technical mapping tool identifies causal and contributing factors across hierarchical levels of a system. The findings from this incident are:

This AcciMap highlights the serious leg injury sustained by the worker was not the result of individual error alone, but the outcome of systemic failures across multiple levels, —from regulatory oversight and company policies to training gaps and equipment limitations. The interconnected causes reflect a complex socio-technical environment where no single actor holds full responsibility, yet all contribute to the overall risk conditions.

Importantly, this AcciMap represents a preliminary analysis based on available data and stakeholder input. Like all systems models, it is interpretive and may evolve with further research, additional incident data, and stakeholder feedback. As more insights emerge, this map should be refined to more accurately capture the relationships between decision-makers, operational policies, equipment limitations, and frontline practises.

Ultimately, its greatest value lies in shifting the safety dialogue from attributing blame to system-wide learning and prevention.

## Systemic Complexity and Themes from Stakeholder Input

Findings from 10 industry interviews and a review of 31 incident reports reveal recurring themes that go beyond procedural lapses or equipment failures. The core challenge is not just the technical risks associated with EPJ and tailgate lifter use, but the varying nature of ownership, responsibility, and accountability among multiple stakeholders. Unclear roles and overlapping jurisdictional oversight create gaps in enforcement, reporting, and systemic risk management.

### Third-Party Logistics and the Accountability Gap

Many large retailers outsource their delivery and unloading operations to third-party logistics providers. While an incident may physically occur within the retailer's warehouse or unloading dock, the worker involved, typically a truck driver, is employed by an external company. This fragmented structure raises critical questions about who has responsibility for safety protocols and implementing a change.

One safety manager emphasised this confusion: "When it comes to preventative actions – adjusting training, improving equipment standards, or enforcing changes – the initiative often gets lost between companies. Everyone assumes someone else will handle it."

As a result, incidents often lead to delayed action or insufficient corrective measures, particularly in the absence of strong regulatory intervention. Without clear ownership, safety improvements may remain reactive rather than preventive.

### Equipment Variation and Communication Breakdown

Equipment inconsistencies further complicate risk management. Truck drivers often bring their own EPJs or use whatever is available at a delivery site. In some cases, EPJs are owned and maintained by the retailer, but operated exclusively by third-party drivers, creating several critical safety concerns:

- **Equipment Familiarity:** Drivers may handle different EPJs at each location, each with unique operational controls, maintenance histories, and wear levels.
- **Fault Reporting Gaps:** A driver identifying a mechanical issue or safety defect has no standardised process for reporting it across organisational boundaries. Retailers and logistics providers may fail to communicate, leaving hazardous equipment in circulation.
- **Incident Recurrence:** Tight schedules and multiple deliveries a day result in poor traceability. A previously faulty EPJ can remain in use and cause another incident days or weeks later.



### Variability in Unloading Responsibility

Although third-party drivers primarily handle unloading, exceptions exist where retailers deploy internal staff to assist or take over unloading duties. This variation makes it difficult to standardise safety protocols, as the user of the equipment may change with each delivery.

Without uniform procedures, assumptions about operator proficiency may go unchecked—further increasing the likelihood of an incident.

### Training Inconsistencies

Training approaches for EPJ operators varied significantly across companies. While some implemented comprehensive onboarding programs, others relied on minimal training or informal buddy system learning, often lacking structured protocols, defined training hours, competency criteria, or refresher courses.

Few companies conducted formal refresher training, and even fewer tailored their instruction to address specific operational challenges, such as safe manoeuvring on tailgate lifters. The absence of standardised training frameworks leaves operators with inconsistent skill levels, increasing the likelihood of mistakes and safety incidents.

### Language Barriers

A significant portion of the logistics workforce consists of non-English-speaking workers. Most training materials are delivered in English and rely on written comprehension, making it difficult for many workers to fully understand the content.

**This concern was expressed by a third-party logistics safety manager: "One of our drivers flagged a faulty EPJ at a delivery site, and we reported it to the retailer, expecting it to be addressed before the next visit. Since we only deliver there once a fortnight, there's an assumption that the issue will be resolved. But weeks later, another driver – or sometimes the same one – arrives to find the problem untouched, and then an incident happens. At that point, the real concern is: Was our initial report properly communicated? Did it reach the right people to action a fix? Or did it get lost in the handover between companies, leaving the risk unaddressed?"**

## Recommendations

Based on the findings, this Q&A proposes the following interventions:

- 1. Mandatory Induction Training:** All EPJ operators should undergo standardised, scenario-based training that includes modules on tailgate operation, hazard recognition and emergency procedures.
- 2. Multilingual and Accessible Instruction:** Training should be translated into the most commonly spoken languages among logistics workers. It should also use visual tools, animations and interactive elements.
- 3. Standardised Pre-Use Checks:** Develop a simple, universal checklist for EPJ and tailgate inspections, similar to daily forklift safety checks.
- 4. National EPJ Incident Database:** Encourage anonymised, cross-industry data sharing to support evidence-based policy development.
- 5. Policy and Regulatory Reform:** Draft national safety guidelines for EPJ operation and mandate responsibility-sharing protocols between host companies and third-party providers.

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