

Several restraint measures are used to restrain the truck on the loading dock.

Here is a list of the 11 main restraint measures, a brief description of them, and the possible improvement in safety based on the related risk:

- Red No effect
- Yellow Improvement
- Green Very noticeable improvement

Mechanical means

	Unscheduled departure	Trailer slippage	Tipping
Restraint device for the trailer's rear impact guard <i>A system that automatically restrains the trailers by means of their rear impact guard (if available on the trailer).</i>	■	●	▼
Automatic restraint device for wheels <i>A system associated with the guide rail that restrains the trailer's rear wheels.</i>	■	●	▼
Manually installed wheel chock <i>A wheel chock installed manually in front of one or two of the trailer's rear wheels.</i>	■	●	▼
Wheel chock with position sensor and restraint plate <i>A wheel chock attached to the end of a pivoting arm and that grips manually onto a restraint plate embedded in the ground and whose use is known in relation to the position of the arm.</i>	■	●	▼
Support jacks under the trailer <i>Support jacks to be installed in addition to the trailer's support legs to prevent tipping.</i>	■	●	▼

Procedures

Hitched truck <i>The truck must remain hitched to its trailer.</i>	■	●	▼
Truck key deposit <i>The driver must hand in his keys after having parked the truck at the dock and recover them when the truck is ready to leave.</i>	■	●	▼
Lift truck weight/trailer length relationship <i>The choice of the right type of lift truck, based on the length and the weight of the trailer, can avoid slipping or tipping (a small lift truck in a small trailer...).</i>	■	●	▼
Communication between the driver and the lift truck operator <i>Communication between the driver and the lift truck operator makes it possible to determine the progress in loading or unloading and the moment when the driver is authorized to leave.</i>	■	●	▼

Signage and alarms

Visual signage for the driver and lift truck operator <i>Outdoor and indoor signage allows the driver to know when he is authorized to leave and the lift truck operator to know when he is authorized to enter the trailer.</i>	■	●	▼
Alarm <i>The alarm informs the lift truck operator when the truck moves away from the loading dock.</i>	■	●	▼

Do you want to know more about the safety of your loading docks?
Do you want to know in detail about existing restraint measures?
It's possible!

The IRSST has developed a simple, user-friendly and interactive computer-based tool that helps you improve the safety of your loading docks even more.

This tool is used to answer the 30 questions described above so that your loading docks and the activities that take place on them can be more precisely characterized. An initial automatic analysis of the answers calculates the initial safety level of your loading docks for the three main risks (unscheduled departure/slipping/tipping). Then, the software allows the interactive evaluation of the real efficiency of the different possible restraint measures for your loading docks and automatically calculates the new safety level.

The tool:

- calculates the initial safety level based on the answers to the 30 questions
- calculates the real improvement of the restraint measures chosen in relation to the answers
- verifies that the measures chosen are compatible and efficient for your loading docks
- calculates the new safety level of your loading docks in relation to the three risks, following the improvements made.

Finally, the software produces a detailed report of your situation. This report can help you to choose among the possible restraint measures and to follow up on the improvements to be made to your loading docks.

The Doc-Quais computer-based tool can be downloaded free of charge at the following address:
www.irsst.qc.ca/fr/_outils_par_categorie.html#Utilitaires

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Report R-381: www.irsst.qc.ca/files/documents/PublRSST/R-381.pdf
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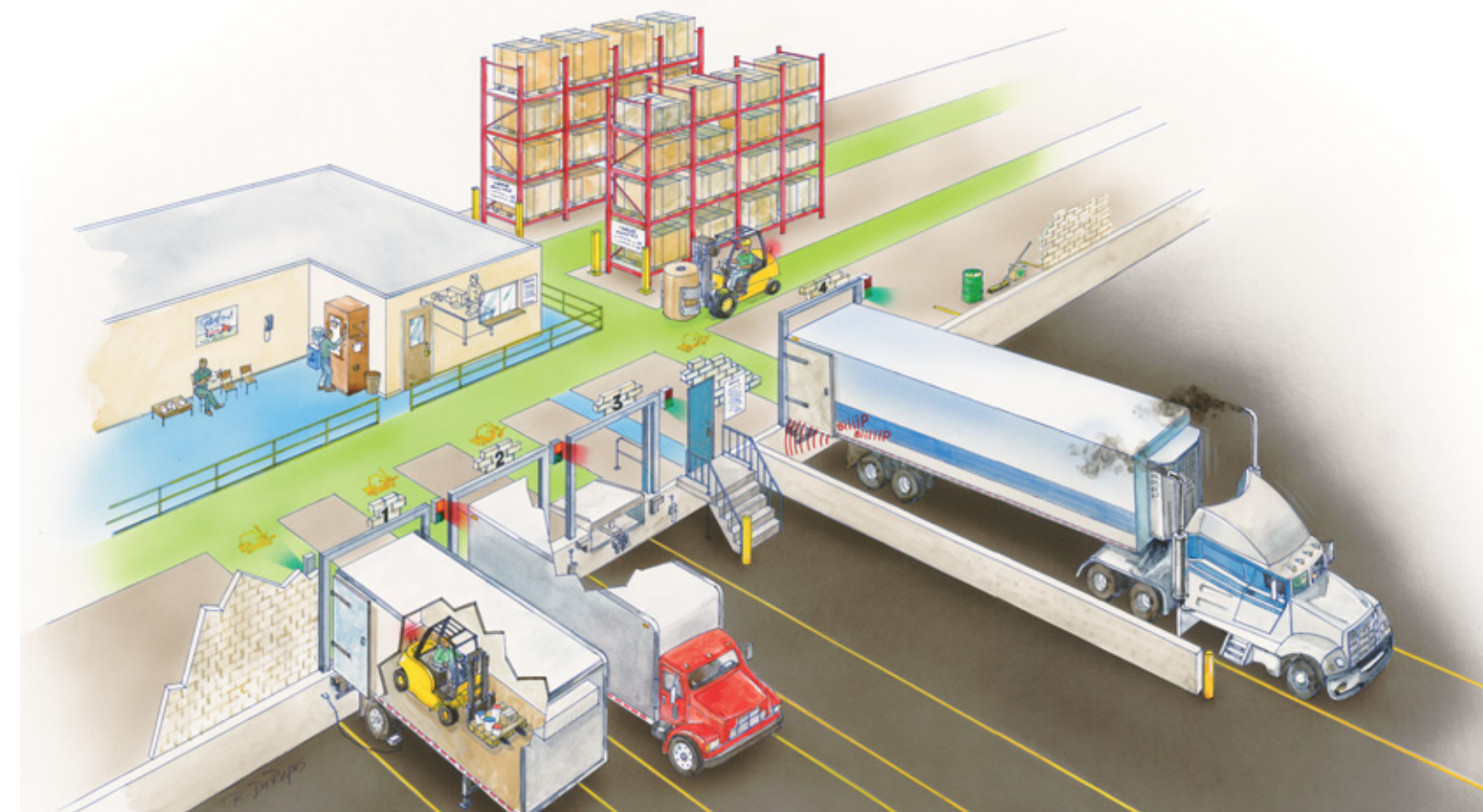


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Safety on loading docks

What is the safety level on your company's loading docks?

RF-530



TECHNICAL FACT SHEET

This technical fact sheet:

- proposes 30 simple questions, whose answers identify the characteristics of your loading docks;
- explains the three main risks associated with loading docks;
- suggests the most efficient restraint measures in relation to the three risks associated with loading docks.

By following this procedure, you can improve the safety of your loading docks.



The three main risks

Employees who load or unload trailers by means of a lift truck are exposed to three risks. The unplanned departure of the truck (unscheduled departure) is one of the main causes of accidents, followed by slipping of the trailer, and tipping of the trailer. When a hand-operated pallet truck is used, the only risk is the unscheduled departure of the truck and trailer. The risks of slipping and tipping exist only if a lift truck is used. The icon "🚛" opposite indicates the risks related to the use of a lift truck.

Unscheduled departure 🚛

The unscheduled departure of the trailer occurs when it is removed from the loading dock by a driver or a shunter, before the transshipment operations have been completed. Poor signage, poor communication, poor work organization or an error may be the cause. The consequences of poor communication (poorly transmitted, poorly understood, absent, etc.) between the driver and the lift truck operator or the foreman can vary:

- the wrong trailer is removed from the dock
- the trailer is repositioned during transshipment operations
- the right trailer is removed from the dock before the activities have been completed, etc.

For example:

- If the doors are not numbered or are poorly numbered (missing number, fallen number, illegible...), the shunter can leave with the wrong trailer.
- If there is poor communication between the shunter and foreman, the shunter may misunderstand the door number (hearing seven instead of 11, for example).
- If the lift truck operator gives a 5-minute delayed departure authorization to the driver, the driver can leave once this time has elapsed without checking whether the transshipment operation has been completed.

The factors that affect trailer slippage are mainly:

- a slippery surface (snow, ice, sand,...) or pavement with a descending slope
- a trailer floor that is lower than the inside warehouse floor level
- a trailer with air-ride suspension
- a trailer unhitched from the truck with brakes that are defective or that have not been applied.

For example, if the pavement is icy, the trailer tends to slip slightly when the lift truck brakes suddenly, even if the trailer's brakes are applied. The risk greatly decreases when the truck is hitched to the trailer.

Tipping 🚛

Tipping is possible only when the trailer is not hitched to a truck and rests on its two support legs. Tipping is impossible when the truck is hitched to the trailer. Tipping can be to the front or to the side. The factors that affect tipping are the following:

- towards the front of the trailer: mainly the length of the trailer, the weight of the lift truck and its load, and the lift truck's braking force
- on the trailer's side: mainly the poor condition of the support legs, the weight of the lift truck and its load, and the lift truck's braking force.

For example, if a large heavily-loaded lift truck brakes suddenly in a short unhitched trailer, the trailer can tip forward without the support legs collapsing, with the combined centre of gravity of the trailer, lift truck and its load shifting in front of the support legs.

Trailer slippage 🚛

The trailer can jerk forward when the lift truck's brakes are applied in the trailer during loading or unloading. This slipping can be sufficient for the lip of the dock leveller to pull away from the floor of the trailer and tip, creating a space between the loading dock and the trailer.



Safety on loading docks

What is the safety level of your company's loading docks?

Here are 30 simple questions, as well as elements of the answers, for evaluating the safety level of your loading docks. Some questions (22, 23, ...) are more specific to companies with more loading docks or to companies with a higher loading and unloading volume. If a question is not relevant to your company, skip to the next one.

Certain questions correspond to a number on the illustration and are related to the different elements that affect the risk level:

- yard pavement
- loading docks
- trucks and trailers
- lift trucks and loads
- transshipment activities

The central figure illustrates these questions.

Based on your answers, you will understand which of the three main risks are more applicable to you.

Yard pavement

- 1 What is the nature of the pavement?
Asphalt is safer than gravel or dirt.
- 2 What is the condition of the pavement near the loading docks?
Presence of ice, snow, sand or debris = danger.
- 3 How is snow removed?
Snow removal well done = safety.
- 4 Is the yard inclined?
*Rising slope = safety. (The trailer comes back towards the loading dock.)
Descending slope = risk of the trailer slipping away from the loading dock.*

Loading docks

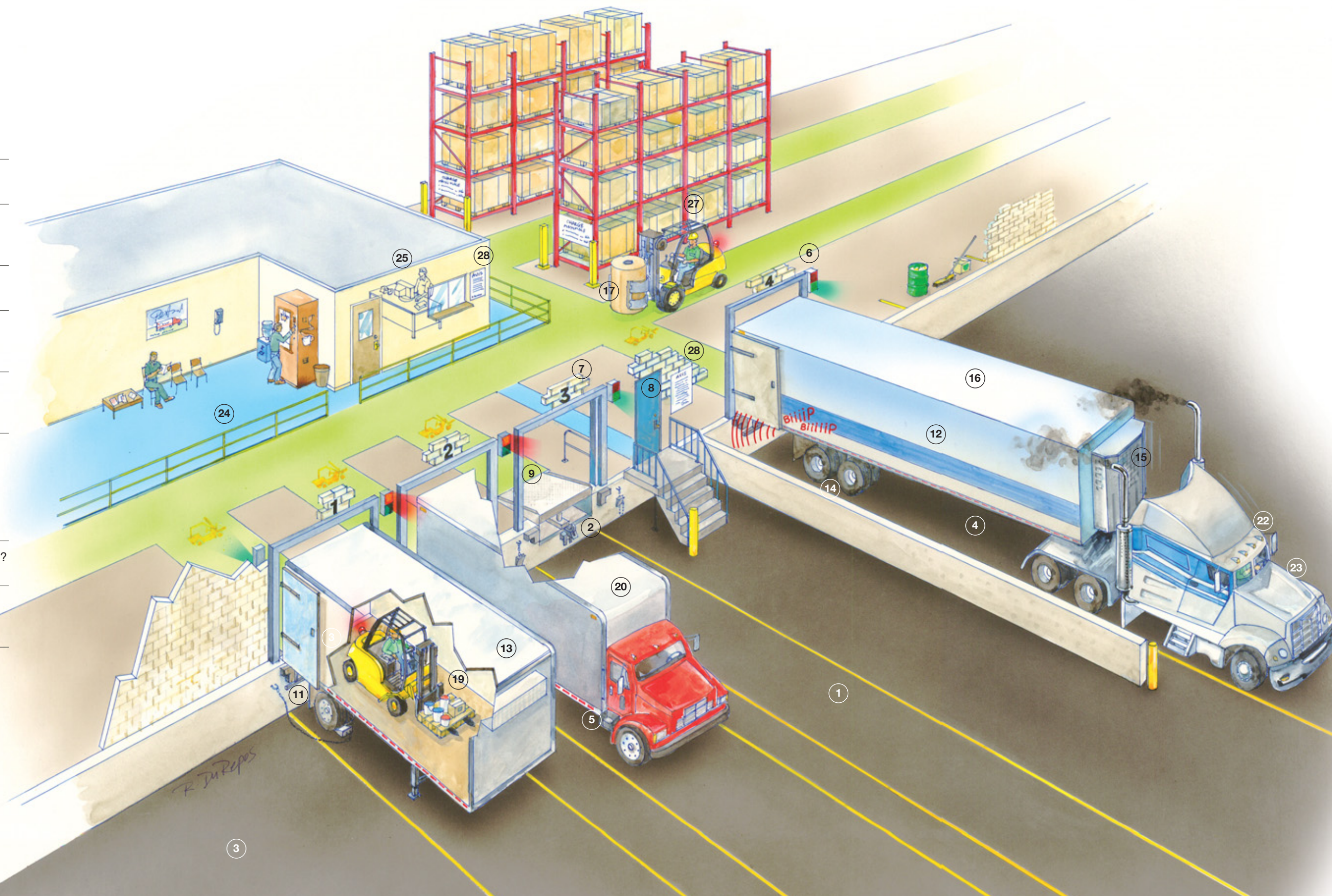
- 5 Does the space between the loading dock doors allow the driver to move easily between parked trailers?
Sufficient space to install wheel chocks or to move = safety.
- 6 How many loading dock doors are there?
More doors = more risk of error.
- 7 Are the loading dock doors clearly identified?
Identification always visible and in good condition = safety.
- 8 Is the exterior access door close to or far from the trailers for the drivers?
Close door = safety and ease of use.
- 9 Is there a difference in height between the loading dock and the trailer?
Trailer too low = impact when the lift truck enters the trailer and risk of the trailer slippage.
- 10 Is the lip of the dock leveller sufficiently supported on the floor of the trailer?
Good support = safety. (The lip will not tip even if the trailer advances slightly.)

Trucks and trailers

- 11 Do the trailers have rear impact guards (ICC bars)? Are they in good condition?
Rear impact guards in good condition = possibility of using the ICC bar restraint device.
- 12 Overall condition of trailers?
Brakes, floor, walls, etc. in good mechanical condition = safety.
- 13 Are the trailers short or long?
*Long trailer = safety.
Short trailer = higher risk of tipping (if there is no truck).*
- 14 Has the air been released from the air-ride suspension for loading or unloading?
Air released from air-ride suspension = low risk of slippage and more stable trailer.
- 15 Does the truck remain hitched to the trailer during transshipment operations?
Hitched truck = risk of tipping eliminated but increased risk of unscheduled departure.
- 16 How many trailers are loaded and unloaded during the busiest period of the day?
The more trailers there are, the higher the risk of error and the higher the risk of unscheduled departures.

Lift trucks and loads

- 17 What is the combined weight of the lift truck and the load transported?
Low combined weight = safety (low risk of slippage or tipping of the trailers).
- 18 What is the travelling speed of the lift trucks when they enter and leave the trailers?
High speed = high risk of slippage or tipping of the trailer (if there is no truck).
- 19 How many lift trucks load or unload the trailer at the same time?
*One lift truck = safety.
Several lift trucks = risk of unscheduled departure.*



Transshipment activities

- 20 Does the trailer remain at the loading dock for a long time?
30 minutes, 2 hours, 2 days...
- 21 Is the lift truck operator subject to time constraints in carrying out trailer transshipment operations?
Rapid transshipment subject to time constraints = danger.
- 22 Who moves the trailers?
Driver or shunter familiar with the company = safety.
- 23 Do the drivers often leave with the same trailer that they arrived with?
Yes = safety. (The risk of unscheduled departure by taking the wrong trailer is minimized.)
- 24 Where are the drivers during loading and unloading?
*In the waiting room = safety.
In the truck or on the loading dock = risk of unscheduled departure.*
- 25 Who is responsible for safety on the loading dock (dispatcher, coordinator, foreman)?
Clearly identified person = safety.
- 26 Are delayed departure authorizations given?
Delayed departure authorization = risk of unscheduled departure = danger.
- 27 Are the lift truck operators trained and experienced?
Lift truck operators trained and experienced = safety.
- 28 Are there known, written and posted rules and procedures for the loading and unloading operations?
Rules posted and known = safety.
- 29 Do the employees respect the rules and procedures during their activities on the loading dock?
Rules respected = safety.
- 30 Do the drivers respect the rules and procedures during their activities on the loading dock?
Rules respected = safety (no unscheduled departure).