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**Analysis of RIDDOR DATA 2000 to 2005 – Falls
from Vehicles**

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EXECUTIVE SUMMARY

Objectives

- To identify the trends and commonalities in RIDDOR accident data for fall from workplace transport vehicles
- To provide recommendations to reduce the number of incidents
- To highlight areas where interventions may potentially be the most effective

Main Findings

The analysis of the RIDDOR data supplied can be summarised as follows:

- Systems of work failures were identified in 75 % of the cases examined. The most commonly identified shortcoming was a lack of adequate risk assessment. Better risk assessments of the hazards associated with workplace transport vehicles is urgently required to enable the development of safe systems of work.
- Large goods vehicles and fork lift trucks (FLT) were most commonly involved in fatal and major incidents. 40% of the accidents involving forklift trucks involved individuals standing on the forks. Better publicity and education regarding the dangers of improper use of fork lift trucks is urgently needed. Publicised additional enforcement regarding improper use of FLT may also help to reduce these accidents.
- The most common activities being conducted at the time of the incidents were loading or unloading.
- 15% of falls occurred during cleaning and maintenance activities. These incidents are occurring in relatively controlled environments, it would therefore be sensible to target cleaning and maintenance activities to achieve a noticeable reduction in the number of falls from vehicles.
- Mechanical faults were implicated in only a small minority of the incidents analysed.
- Incidents most frequently occurred in sites and yards.
- The most common contributing factor identified was slips and trips. Drivers and other staff frequently need to access the rear of vehicles to conduct physically demanding manual handling tasks such as loading / unloading and sheeting. Greater consideration needs to be given to the slip resistance of the under foot surfaces in the load areas of vehicles to ensure that they can deal with likely contaminants. Footwear can be an effective intervention to reduce slips accidents. Better education of employers and their drivers is needed to assist them in identifying good performing anti-slip footwear.

Recommendations

The report makes a number of suggestions for improvements, which it is believed, will contribute to reducing the number of falls from vehicles: Some of which focus on better training and education for duty holders and employees and others which suggest improvements to vehicles. Others highlight changes that need to be made to the culture of the transport and haulage industry.

1 INTRODUCTION

This work was undertaken at the request of Ms. Carol Grainger on behalf the workplace transport team.

As requested accidents occurring on farms or involving non-road going vehicles such as boats and aeroplanes were excluded from the data analysis as they were beyond the scope of this work. Each incident (253 in total) was coded by the researchers from the information available in the comments section of the accident record. The notifier and investigator comments for each accident were analysed to establish:

- Systems of work – aspects of poor work practice which are believed to have contributed to the incident occurring. (e.g. no safe system of work, or lack of or inadequate risk assessments).
- Vehicle – type of vehicle involved (e.g. large goods vehicle or fork lift truck).
- Part of the vehicle from which the fall occurred – part of the vehicle from which the injured person fell.
- Activity – the activity being undertaken at the time of the incident.
- Mechanical issues – any mechanical failure of the vehicle.
- Location – the location where the incident took place.
- Contributing factors – factors which may have contributed to the likelihood of the accident occurring, or which may have been the initiating event.

2 METHODOLOGY

Detailed RIDDOR accident data for incidents involving falls from vehicles were supplied by Ms Carol Grainger at HSE. Data for fatal and major incidents for 2001 onwards for which there were investigator comments (352 in total) were selected for use in this study. Each incident was coded by the researcher from the information provided in the investigator comments section (and notifier comments where available) of the accident record. Each incident was coded into the following categories:

- Type of vehicle.
- Part of the vehicle from which the injured person fell.
- Activity. The activity that the injured party was carrying out at the time of the incident.
- Location. The place where the accident occurred.
- Contributing factors. Other factors which may have contributed to the incident occurring.

Where accidents could not be coded into a category, this was due to a lack of information in the accident record comments section. As requested incidents occurring on farms, or those involving non-road going vehicles such as boats or aeroplanes were excluded from the analysis.

3 RESULTS

3.1 SYSTEMS OF WORK

Systems of work refers to the aspects of poor work practice which are believed to have contributed to the likelihood of the incident occurring.

Please note, under the coding system used in the current work it is possible for more than one failure in systems of work to be identified for a single incident. E.g. No risk assessment of the task resulting in no safe system of work, or new employees having insufficient training. Multiple systems of work failings were identified in 102 cases (40% of accidents).

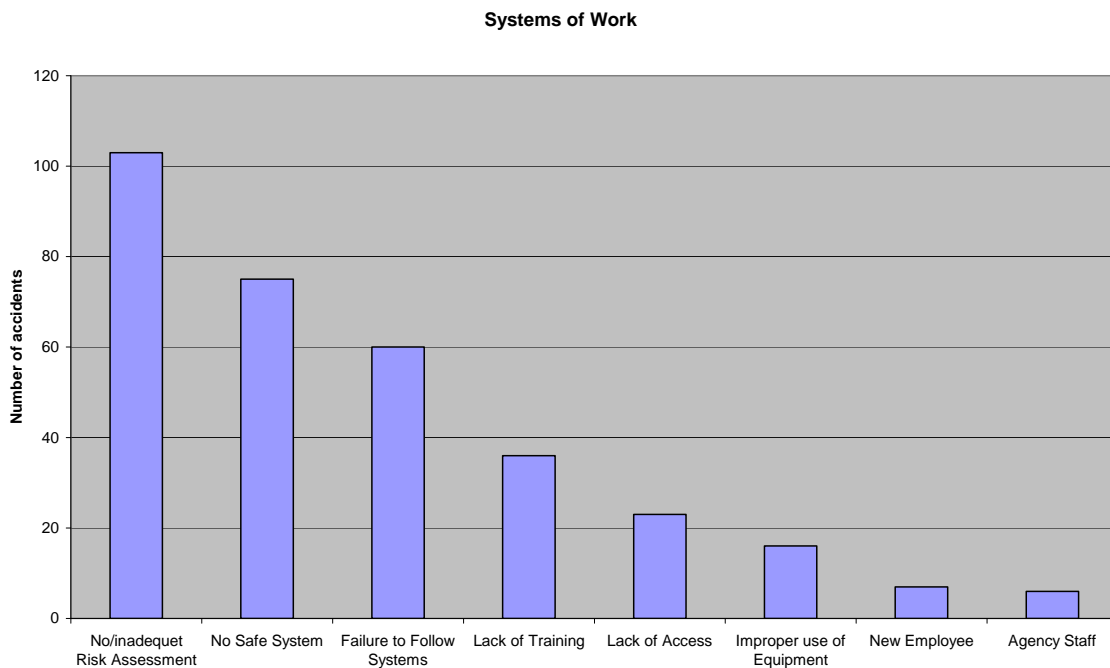


Figure 1. Systems of work

Shortcomings in the systems of work were identified in 189 out of 253 cases (75 % of accidents).

The most common failings identified were:

- Risk assessments had either not been carried out or were inadequate - 103 cases (41 % of accidents)
- No safe system of work - 75 cases (30 % of accidents)
- Failure to follow systems – 60 cases (24 % of accidents)

Coding of systems of work explanation

No Safe system refers to the lack of safe systems of work. For example:

- No banksman during reversing in loading bays.
- No means of conducting sheeting operations from the ground.

Failure to follow systems refers to situations where safe systems of working are in place, but they were not being followed at the time of the incident. For example:

- A sheeting gantry and fall arrest system was available, but the injured person did not use it.
- The injured person had been told that a specific activity, such as assisting with unloading, was not part of their job, but decided to undertake that activity anyway.

Improper use of equipment refers to equipment being used in a manner that it was never intended for. For example, a person standing on fork lift truck forks to access goods stored at height.

A clear distinction between new employees and agency staff has been made in the coding system:

- New employees are taken to mean permanent staff that joined the organisation within the last couple of months and would still have been undergoing normal training and / or induction.
- Agency staff work for an organisation on a strictly short-term basis. There appears to be a common assumption that these individuals are competent, e.g. fully trained fork lift drivers, and they only need to be briefed regarding organisation specific issues such as systems of work.

The situation in the haulage industry can be complex, with drivers sometimes employed by haulage companies not necessarily the organisations they are collecting goods from or delivering to. It is therefore unsurprising that the investigators comments suggest that there can be confusion about who is responsible for preventing falls from vehicles. In cases where there are multiple duty holders involved there may be disagreements over which duty holder should provide fall prevention measures and who is responsible for ensuring the measures are used / followed.

For example, a haulage company sends a driver to a quarry to collect a delivery of stone. The quarry has a sheeting gantry and fall arrest system on site, however the driver sheets his load without using the gantry and unfortunately falls from the rear of his vehicle and is injured. There has clearly been a failure to use the fall prevention measures provided, but it is easy to see how duty holders may be unclear as to who has responsibility.

There were numerous examples of this sort among the RIDDOR data analysed and it is important that the various duty holders involved in these types of situations have a clear understanding of their roles and responsibilities. The three main systems of work failings identified during this study; lack of risk assessments, no safe system of work and failure to follow systems are all exacerbated when duty holders do not have a clear understanding of their roles.

Previous work for HSE [Scott et al. 2005] has shown that organisational influences such as,

- Training
- Job design and time pressure
- Management and supervision
- Vehicle maintenance
- Load planning
- Employee involvement

can all have an influence on the likelihood of falls from vehicles occurring. However it must be recognised that the job of driving a goods vehicles is largely a solitary role, which has minimal supervision. Drivers work between various calling points and the responsibility for health and safety constantly changes, because the drivers are transient within the environments they come into contact with, it is easy for the responsibility for driver supervision to be overlooked. As a result bad habits and unsafe working practises can go unchecked.

Focus group work with drivers [Scott et al. 2005] has shown that they feel that health and safety is not always a priority within their industry and they frequently feel under pressure to meet unrealistic delivery schedules. It is clear that pressure to meet deadlines encourages the drivers to cut corners to save time where they can. For example, choosing to climb onto their trailer to sheet a load immediately rather than wait for a sheeting gantry to be free, and it easy to see that bad habits could quickly develop. The findings of the current RIDDOR study appear to confirm the finding of the previous work. There needs to be significant changes to the culture within the haulage industry with health and safety given greater emphasis:

- Drivers need comprehensive training, which is refreshed on a regular basis.
- Driver safety is often down to the individual – drivers need to be confident that their personal safety is a priority.
- It is more important to get things done safely than get it done quickly.
- Delivery routes should be planned with safety in mind.
- Drivers should be confident they can refuse to accept a load or make a delivery if they feel the working practices employed at the site are unsafe.

HSE has produced numerous pieces of guidance specifically targeted at the workplace transport and haulage industries [HSE 1999, HSE 2003, HSE 2005a, HSE 2005b] which is designed to help duty holders risk assess the many health and safety issues surrounding the operation of haulage vehicles, including the prevention of falls. Given that risk assessments had either not been carried out, or were inadequate in 41% of the incidents investigated in this study this suggests that duty holders need to be made more aware of the materials available to help them and believe that action by HSE is likely.

The inadequate nature of the risk assessments may be further exacerbated by the fact that loading / unloading operations are routinely conducted at customer's premises. These customer organisations may not perceive workplace transport as a major part of their activities. As a result they may be unaware of just what a high-risk activity loading / unloading operations can be for their staff and / or visiting contractors. This lack of awareness may in turn result in the inadequate risk assessments observed in the study and in ignorance of the information available from HSE which is designed to assist in the assessments of these tasks.

3.2 TYPE OF VEHICLE

Vehicle type refers to the type of vehicle involved in the incident.

Please note that under the coding used during this analysis, the term “LGV” has been used for Large Goods Vehicles which do not fall in specialised categories such as tanker and vehicles described generally as “Lorries and wagons” in the accident descriptions as well as those vehicles clearly identified as LGV’s.

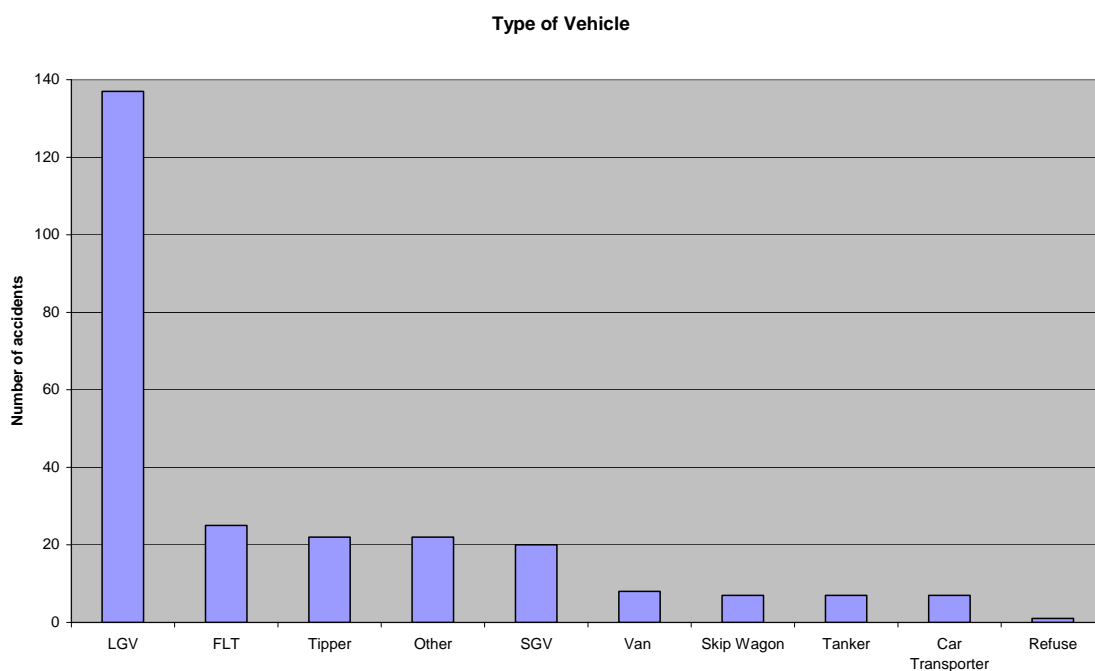


Figure 2. Type of Vehicle

It was possible to identify the type of vehicle involved in all 253 cases.

The most common types of vehicles involved in the incidents were:

- LGVs - 137 cases - (54 % of accidents)
- FLT - 25 cases - (10 % of accidents)
- Tipper wagons - 22 cases (9% of accidents)

Vehicle coding explanation

LGV – Large goods vehicle

FLT – Fork lift truck

Tipper – Tipper wagon

Refuse – Refuse collection vehicles

SGV – Small goods vehicle

Skip Wagon – Vehicles used for the delivery and collection of skips

Tanker - Tankers

Car Transporter – Car transport vehicles

Van – e.g. Transit van

Other – Miscellaneous vehicles, which did not fall into the above categories

3.2.1 LGV – Large Goods Vehicles

The most common category of vehicle from which the RIDDOR data indicates falls occurred, was LGVs (Large Goods Vehicles). This is an understandable result as LGVs are the most commonly used vehicles in the haulage industry, and this category was used as a general catch-all code when the RIDDOR data simply referred the vehicle involved as a “lorry” or “wagon”.

3.2.2 FLT – Fork Lift Trucks

The second most common vehicle from which falls occurred was FLTs (Fork lift trucks). What was particularly surprising about the FLT accidents was the high proportion, approximately 40% (10 out of 25 incidents) of the accidents that occurred as a result of individuals standing on the forks to access things at height. In addition to these accidents there were others that occurred as a result of other types of improper use of equipment such as improvised lifting platforms.

It is clear from the RIDDOR data analysed in this study that improper use is the cause of 40 to 50% of fork lift truck accidents.

Unfortunately this finding is supported by earlier work by HSE [HSE 1999] which indicated that 25% of workplace transport fatalities in the food sector were a result of workers falling from unsafe working platforms on FLTs. It would appear that little has changed in the intervening years.

Better publicity and education about just how dangerous the improper use of FLTs is urgently needed. Publicised additional enforcement regarding improper use of FLTs should also help to reduce these accidents.

3.3 PART OF VEHICLE FALLEN FROM

Part of vehicle refers to the part of the vehicle the injured person fell from during the incident.

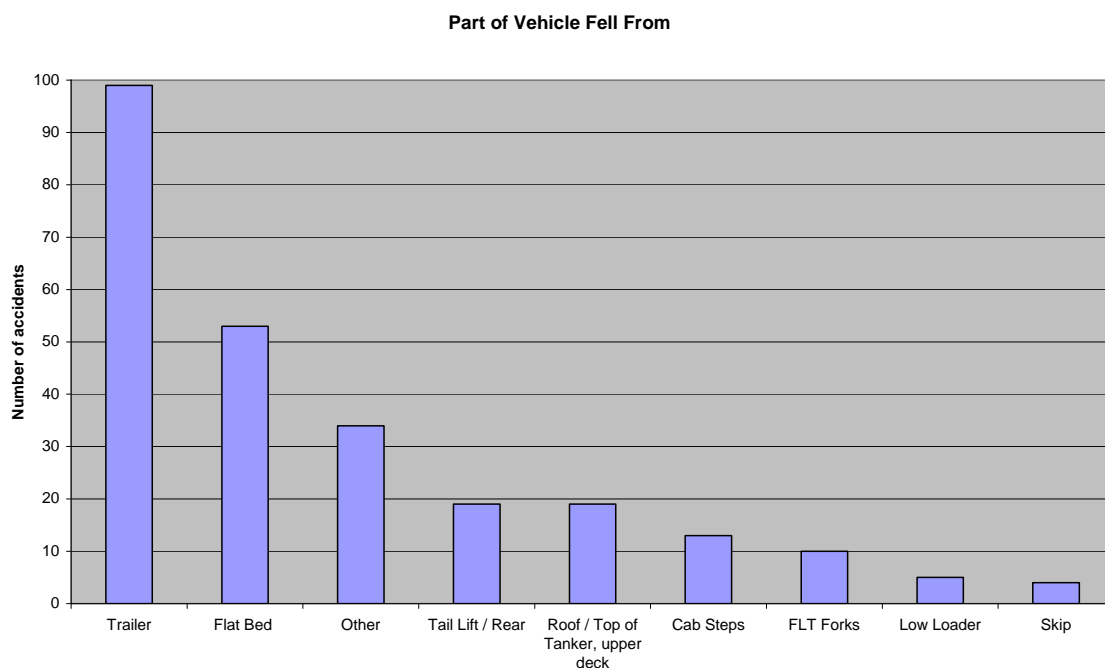


Figure 3. Part of the vehicle from which the injured person fell

The parts of vehicles from which falls most commonly occurred were:

- Trailer – 99 cases (39% of accidents)
- Flat bed – 53 cases (21% of accidents)
- Tail lift / Rear – 19 cases (7.5% of accidents). 7 cases were specifically from tail lifts.
- Roof etc. – 19 cases (7.5 % of accidents)

Part of vehicle coding explained

Roof etc. – this refers to the roof of vehicles, the top of tankers, and the upper deck of car transporters and other double-decker trailers.

Tail lift / Rear – this refers to tail lifts, or instances where it is specifically stated that the fall occurred from the rear of trailers, or out of the back of a lorry.

Other – this refers to parts of the vehicle that do not fall into the other categories such as fuel tanks and chassis bars.

The majority of the incidents occurred when individuals fell from the rear of vehicles (trailer, flat bed, and tail lift / rear). This is in line with the study findings which indicate that most incidents occurred during loading / unloading operations or sheeting of loads, both of these activities require people to access the rear of vehicles.

3.4 ACTIVITY

Activity refers to the activity being conducted with or around the vehicle immediately prior to the incident.

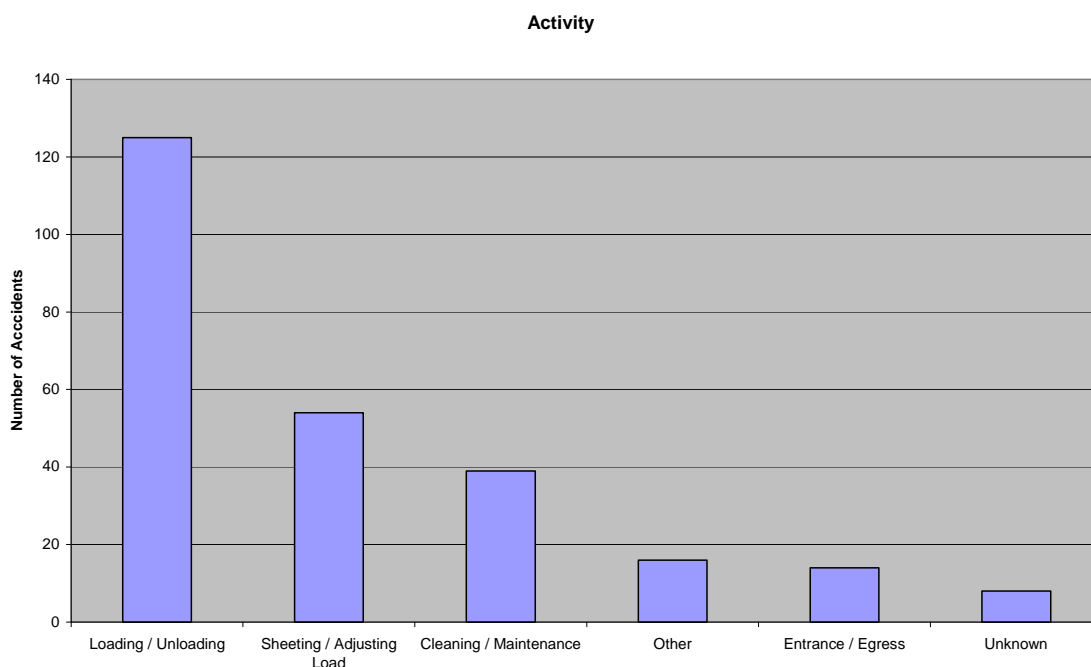


Figure 4. Activity being undertaken at the time of the incident

The three most common activities identified were:

- Loading or unloading a vehicle – 125 cases (49 % of accidents)
- Sheeting, securing or adjusting the load – 54 cases (21 % of accidents)
- Cleaning and / or maintenance – 39 cases (15 % of accidents)

Activity coding explained

Other – this refers to activities that do not fall into the other categories such as coupling and uncoupling trailers.

3.4.1 Loading / Unloading

Loading / unloading was the most common activity being conducted at the time of the incidents examined in the study. It is clear from the RIDDOR data that the extent to which drivers are involved in this activity can vary greatly. In some instances loading / unloading was conducted by staff at the site, in others it was the responsibility of the driver, and in others it was a mixture of the two. The type of loading / unloading operations also varied greatly, sometimes fork lift trucks took pallets off, sometimes manual handing aids such as sack trucks and roll cages were used and in others the goods were physically lifted on or off the vehicle (a practice known as handballing). There are a large number of issues associated with loading / unloading operations:

- Precipitation can make trailer beds and tail lifts slippery.
- Precipitation can make the shrink wrapping on products slippery.
- Moving and adjusting parts of the load can be physically difficult and places additional frictional demands on surfaces.

- It is common for strapping on items to be used as handles to drag them out of the way or over to the edge for unloading. Failure of this strapping can result in the person moving the item over balancing and falling from the vehicle. This type of failure was the initiating factor in a number of the accidents in the study.
- Staff can lose track of the edge of the trailer / tail lift while concentrating on manoeuvring items and simply step back onto “thin air”.
- Poor organisation of the pallets for unloading can result in the driver having to climb onto the load to retrieve the order.

There are a number of recommendations than can be made to help address these issues:

- There needs to be greater awareness of the slip resistance properties of the materials used in the load areas of vehicles.
- Consideration needs to be given to the slip resistance of shrink wrap materials in wet conditions, particularly for products such as building materials which may be transported exposed to the elements and therefore likely to become wet.
- Manual handling aids should be provided whenever possible to assist in the moving of load items and discourage the used of strapping as “handles”.
- The use of colour contrast to denote the edges of trailers and tail lifts may aid the situational awareness of staff on the load area of vehicles and help them to keep track of where the edges are.
- Proper organisation of pallets so that they are organised in the same order as the deliveries would minimise the need for drivers to climb on the load to retrieve items.

Analysis of the RIDDOR data showed that there are some sites where loading / unloading operations are primarily the responsibility of site employees. In these cases there should be no confusion regarding the health and safety responsibilities of the duty holders and theoretically it is relatively easy to risk assess the loading and unloading operations, as they are a regular occurrence. The key to reducing falls from vehicles at these types of sites would be to ensure that systems of work developed as a result of risk assessments are routinely followed.

3.4.2 Sheeting

This was the second most common activity being conducted when the incidents occurred. HSE generally encourages the use of mechanical sheeting devices, and sheeting gantries to avoid the need for individuals to access the rear of vehicles to conduct sheeting operations [HSE 1999, HSE 2005b, Wearing and Heasman]. The RIDDOR data used in this analysis clearly shows that it is very common for drivers to access the rear of their vehicles to sheet their loads. It is highly probably that in an appreciable number of cases it was unnecessary for the driver to do so, for instance:

- Drivers sheeting loads so they look tidy.
- Sheeting gantries or platforms were available but the driver did not use them.
- Customers asking for the loads to be sheeted when they intend to store the delivery outside.

The fact remains that although the sheeting and securing of loads is a routine day-to-day fact of life for most drivers that cannot be avoided, it is a high-risk activity for them. It is therefore important to reduce the risks when ever possible:

- Encourage the use of sheeting gantries and platforms whenever they are available.

- Ensure that drivers are trained in the use of sheeting gantries and fall arrest systems so that they feel confident to use them.
- Good maintenance of auto-sheeting systems, minimising the need for drivers to access the rear of vehicles to deal with faulty mechanisms.
- Discourage drivers from sheeting loads for aesthetic reasons.
- Educate customers to only ask for loads to be sheeted if it is really necessary.

3.4.3 Cleaning and Maintenance

It is of particular interest that 15% of the accidents examined in the current work occurred during cleaning and maintenance tasks. It would be reasonable to assume that cleaning and maintenance is being conducted in a much more controlled environment than other activities associated with operating workplace transport vehicles. For example as there is no confusion over who has responsibility for health and safety, it is easier to identify who has the responsibility for conducting appropriate risk assessments and ensuring safe systems of work are followed.

In terms of reducing falls from workplace vehicles it would therefore seem sensible to target cleaning and maintenance activities as it should be possible to achieve a noticeable reduction in accidents.

3.5 LOCATION

Location refers to where the incident took place.

Please note that under the coding used during this analysis, “roadway / temporary” has been used to identify all incidents that occurred on public roads.

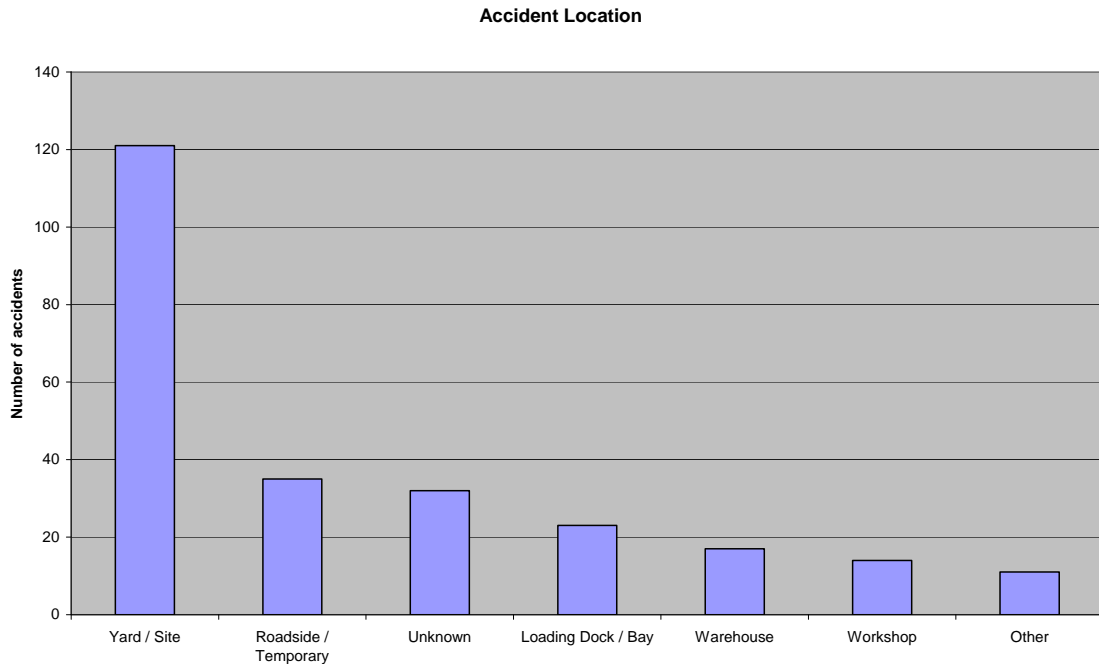


Figure 5. Location of incident

Accident locations were determined for 221 cases.

The three most common locations for accidents were:

- Sites and yards - 121 cases (48 % of accidents)
- Roadside / temporary - 35 cases (14 % of accidents)
- Loading bays - 23 cases (9 % of accidents)

Almost half (48%) of the incidents considered in this study occurred at yards or sites. This was a general category and covered a wide variety of types of location such as:

- Quarries
- Landfill sites
- Construction sites
- Marshalling yards
- Factory sites

It is therefore reasonable that “yard / site” should represent such a large proportion of accident locations. Given the fixed nature of “yard / site” locations, it is reasonable to assume that much of the transport activity at such sites would occur on a regular basis and many of the hazards and risks should be reasonably foreseeable to duty holders if proper risk assessments are carried out. This finding again emphasises the vital importance of:

- Good risk assessments – making sure duty holders know what material and information is available to help them.
- Where multiple duty holders are involved each duty holder needs to have a clear understanding of their roles and responsibilities.
- Safe systems of work need to be followed. Duty holders need to ensure that their staff follow the systems of work in force at a given site, or conversely their staff feel confident to intervene / refuse to participate if they see unsafe practises, e.g. refuse to make a delivery. Health and safety in workplace transport must not be allowed to be a purely “paper” exercise.

The number of incidents that occurred at roadside / temporary locations (14%) was relatively low. It might be expected that the transitory and highly variable nature of roadside delivery locations would introduce a wide range of potential hazards not encountered at fixed sites. The relatively low proportion of roadside incidents seen during the study suggest several possibilities:

- Roadside deliveries are not as hazardous as may have been supposed in terms of falls from vehicles.
- Roadside delivery forms a relatively small proportion of the deliveries made.
- Roadside deliveries tend to result in minor injuries and were therefore excluded from this study.

It is not possible to determine which if any of these possible explanations is correct without further work which is beyond the scope of this study.

3.6 CONTRIBUTING FACTORS

Contributing factors refers to circumstances at the time of the incident that:

May have contributed to the likelihood of the incident occurring, or
May have been the initiating event, causing the incident to occur

Please note, under the coding system used in the current work it is possible for more than one contributing factor to be identified for a single incident. E.g. the injured person may have been climbing on the load when they slipped. Multiple contributing factors were identified in 17 cases (approximately 7% of accidents).

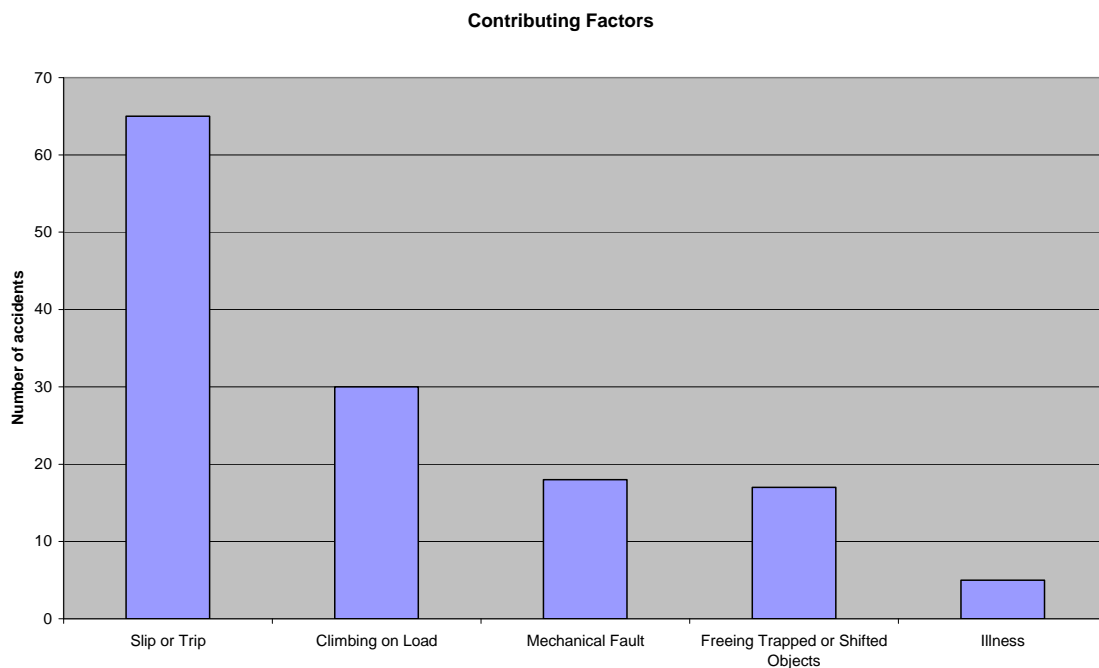


Figure 6. Factors which may have contributed to the incident.

The most common contributing factors identified were:

- Slips or trips – 65 cases (26% of accidents)
- Climbing on the load – 30 cases (12 % of accidents)
- Mechanical Fault – 18 cases (7 % of accidents)

3.6.1 Slips and Trips

The most common contributing factor identified during the current RIDDOR analysis of falls from vehicles was slips and trips. A slip or trip is believed to have contributed to approximately one in four of the accidents in the study. This is inline with previous work [Walker 2004], which suggested that 31% of workplace transport accidents were caused by an initial slip or trip.

The RIDDOR data examined during this study clearly indicates that slip and trip hazards commonly occur on workplace transport vehicles.

This is inline with previous work on workplace transport vehicles [Scott et al. 2005] which showed that numerous areas on vehicles can pose potential slip hazards in wet conditions such as:

- Thresholds of load areas
- Worn access steps
- Worn areas of wooden planking (common on flatbed trailers)
- Tail lifts

Analysis of the RIDDOR data in this study has also identified additional slip and trip hazards such as the shrink wrapping used on some loads which can become slippery when wet and the straps / ropes which are used to secure / sheet loads can pose trip hazards.

It is clear from this study that drivers are routinely accessing the rear of their vehicles (trailers, flat beds, tail lifts) and are conducting strenuous manual handling tasks such as loading / unloading and sheeting operations. The underfoot surfaces in these areas are frequently exposed to contamination and the demands placed on these surfaces are further increased by the strenuous and physically demanding nature of the tasks being undertaken. It is therefore vital that consideration is given to the slip potential of surfaces used in the different areas of the vehicles and additional anti-slip treatments should be applied to areas that are a cause for concern such as tail lifts. Data also needs to be gathered on the slip potential of the shrink wrapping materials which are being routinely being applied to products to assess the level of slip hazard they pose to drivers forced to climb over them in wet conditions.

Footwear can also be an effective intervention in reducing slip accidents. Focus group work with drivers [Scott et al 2005] showed that there was a general misunderstanding amongst drivers regarding footwear. Many drivers interpreted the phrase “oil resistant” to mean slip resistant. “Oil resistant” refers to the susceptibility of the soling material of a given piece of footwear to be degraded by exposure to oil, has nothing to do with the slip resistance of the footwear. While the focus groups showed that the drivers had identified the need for slip resistant footwear the general misconception regarding the phrase “oil resistant” suggests that drivers and their employers may be having difficulty in identifying good performing anti-slip footwear. *Education regarding footwear amongst drivers and their employers needs to be improved.*

4 CONCLUSIONS

4.1 SYSTEMS OF WORK

The most common shortcomings of systems of work were identified as:

- Risk assessments had either had not been carried out or were inadequate - 103 cases (41 % of accidents)
- No safe system of work - 75 cases (30 % of accidents)
- Failure to follow systems – 60 cases (24 % of accidents)

The situation in the haulage industry can be complex, with drivers sometimes employed by haulage companies not necessarily the organisations they are collecting goods from or delivering to. In situations involving multiple duty holders it is unsurprising that there can be confusion over who is responsible for providing fall prevention measures and who is responsible for ensuring the measures are used / followed.

There needs to be better education of duty holders so that they clearly understand their roles and responsibilities in these often complex situations.

The RIDDOR data suggests that drivers often take short cuts. This may be as a result of feeling under time pressure and may reflect attempts to cut corners to make up time wherever they can. It appears that there needs to be a fundamental change in the culture of the haulage industry with a greater emphasis on the importance of health and safety:

- Drivers need comprehensive training, which is refreshed on a regular basis.
- Driver safety is often down to the individual – drivers need to be confident that their personal safety is a priority.
- It is more important to get things done safely than get it done quickly.
- Delivery routes should be planned with safety in mind.
- Drivers should be confident they can refuse to accept a load or make a delivery if they feel the working practices employed at the site are unsafe.

4.2 TYPE OF VEHICLE

The most common type of vehicles involved in the incidents were:

- LGVs - 137 cases - (54 % of accidents)
- FLT - 25 cases - (10 % of accidents)
- Tipper wagons - 22 cases (9% of accidents)

40% (10 out of 25 incidents) of the incidents involving fork lift trucks occurred as a result of individuals standing on the forks to access things at height.

It would appear that better publicity and education about just how dangerous the improper use of FLTs is urgently needed.

4.3 PART OF VEHICLE FALLEN FROM

The parts of vehicles from which falls most commonly occurred were:

- Trailer – 99 cases (39% of accidents)
- Flat bed – 53 cases (21% of accidents)

- Tail lift / Rear – 19 cases (7.5% of accidents). 7 cases were from tail lifts.
- Roof etc. – 19 cases (7.5 % of accidents)

The majority of the incidents occurred when individuals fell from the rear of vehicles (trailer, flat bed, and tailgate). This is in line with the study findings which indicate that most incidents occurred during loading / unloading operations or sheeting of loads, both of these activities require people to access the rear of vehicles.

4.4 ACTIVITY

The three most common activities occurring at the time of the incident were:

- Loading or unloading a vehicle – 125 cases (49 % of accidents)
- Sheeting, securing or adjusting the load – 54 cases (21 % of accidents)
- Cleaning and / or maintenance – 39 cases (15 % of accidents)

Loading / Unloading

Loading / unloading was the most common activity being conducted at the time of the incidents examined in the study, and it is clear that the extent to which drivers are involved in this activity can vary greatly. There are a large number of issues associated loading / unloading operations:

- Precipitation can make trailer beds and tail lifts slippery.
- Precipitation can make the shrink wrapping on products slippery.
- Moving and adjusting parts of the load can be physically difficult and places additional frictional demands on surfaces.
- It is common for strapping on items to be used as handles to drag them out of the way or over to the edge for unloading. Failure of this strapping can result in the person moving the item over balancing and falling from the vehicle. This type of failure was the initiating factor in a number of the accidents in the study.
- Staff can lose track of the edge of the trailer / tail lifts while concentrating on manoeuvring items and simple step back onto “thin air”.
- Poor ordering of the pallets for unloading can result in the driver having to climb onto the lad to retrieve the order.

There are a number of recommendations than can be made to help address these issues:

- There needs to be greater awareness of the slip resistance properties of the materials used in the load areas of vehicles.
- Consideration needs to be given to the slip resistance of shrink wrap materials in wet conditions, particularly for products such as building materials which may be transported exposed to the elements and therefore likely to become wet.
- Manual handing aids should be provided whenever possible to assist in the moving of load items and discourage the used of strapping as “handles”.
- The use of colour contrast to denote the edges of trailers and tail lifts may aid the situational awareness of staff on the load area of vehicles and help them to keep track of where the edges are.
- Proper ordering pallets so that they are organised in the same order as the deliveries would minimise the need for drivers to climb on the load to retrieve items.

Sheeting

It is very common for drivers to access the rear of their vehicles to sheet their loads. The fact remains that although sheeting and securing of loads is a routine day-to-day fact of life for most

drivers that cannot be avoided, it is a high-risk activity for them. It is therefore important to reduce the risks whenever possible:

- Encourage the use of sheeting gantries and platforms whenever they are available.
- Ensure that drivers are trained in the use of sheeting gantries and fall arrest systems so that they feel confident to use them.
- Good maintenance of auto-sheeting systems, minimising the need for drivers to access the rear of vehicles to deal with faulty mechanisms.
- Discourage drivers from sheeting loads for aesthetic reasons.
- Educate customers to only ask for loads to be sheeted if it is really necessary.

Cleaning and Maintenance

15% of the accidents examined in the current work occurred during cleaning and maintenance tasks. In terms of reducing falls from workplace vehicles it would seem sensible to target cleaning and maintenance activities as it should be possible to achieve a noticeable reduction in accidents given the more controlled environment in which cleaning and maintenance activities are conducted.

4.5 LOCATION

The three most common locations for accidents were:

- Sites and yards - 121 cases (48 % of accidents)
- Roadside / temporary - 35 cases (14 % of accidents)
- Loading bays - 23 cases (9 % of accidents)

Almost half (48%) of the incidents considered in this study occurred at yards or sites. Given the fixed nature of “yard / site” locations, it is reasonable to assume that much of the transport activity at such sites would occur on a regular basis and many of the hazards and risks should be reasonably foreseeable to duty holders. This finding again emphasises the vital importance of:

- Good risk assessments.
- Where multiple duty holders are involved each duty holder needs to have a clear understanding of their roles and responsibilities.
- Safe systems of work need to be followed. Duty holders need to ensure that their staff follow the systems of work in force at a given site, or conversely their staff feel confident to intervene / refuse to participate if they see unsafe practises, e.g. refuse to make a delivery. Health and safety in workplace transport must not be allowed to be a purely “paper” exercise.

4.6 CONTRIBUTING FACTORS

The most common contributing factors identified were:

- Slips or trips – 65 cases (26% of accidents)
- Climbing on the load – 30 cases (12 % of accidents)
- Mechanical Fault – 18 cases (7 % of accidents)

Slips and Trips

It is clear from this study that drivers are routinely accessing the rear of their vehicles (trailers, flat beds, tail lifts) and conducting strenuous manual handling tasks such as loading / unloading and sheeting operations. The underfoot surfaces in these areas are frequently exposed to

contamination and the demands placed on these surfaces are further increased by the strenuous and physically demanding nature of the tasks being undertaken. It is therefore vital that consideration is given to the slip potential of surfaces used in the different areas of the vehicles and additional anti-slip treatments should be applied to areas that are a cause for concern such as tail lifts.

Footwear can be an effective intervention to reduce the likelihood of slip accidents. Education regarding footwear amongst drivers and their employers needs to be improved to enable them to better identify footwear with good anti-slip performance.

5 REFERENCES

HSE, “Workplace Transport Safety in Food and Drink Premises.”, HSE Information Sheet, Food Information Sheet No. 21, 1999

HSE, “Health and Safety in Road Haulage.”, INDG 379, 2003

HSE, “Workplace Transport Safety – An Overview.”, INDG199(REV1), revised 2005a.

HSE, “Workplace Transport Safety – An Employer’s Guide”,HSG136, 2005b.

Scott, A., Miller, M., and Hallas, H., “The Underlying Causes of Falls from Vehicles.”, HSL Research Report Ped/05/18, 2005.

Walker, D., “Major Accidents Involving Falls from Goods Vehicles.”, HSE Field Operations Division, Safety Unit.

Wearing, S. and Heasman, T., “Sheeting and Unsheeting of Non-tipper Lorries.”, HSE Contract Research Report, 2000.