



DUTCH
SAFETY BOARD

Introduction

Trucks are essential in Dutch society. Many sectors are dependent on freight traffic for shipping goods and supplies. But freight traffic also entails risks. An accident with a truck can have serious consequences for other road users. An average of one thousand truck accidents a year happen on Dutch motorways, causing around 23 fatalities and 105 serious injuries. The victims are usually other road users. These were grounds for the Dutch Safety Board to carry out a thematic investigation into truck accidents on motorways.

Safety in freight traffic is thereby primarily a responsibility of the haulage companies, the in-house carriers and their drivers.

Tjibbe Joustra, *chairman
Dutch Safety Board*



Truck accidents on motorways

Freight traffic

Dutch roads are becoming ever safer. However, truck accidents still cause many victims. The fact that the accidents happen while the truck driver is working as a professional is an important reason for investigating the accidents, since it means that the truck driver's employer and its client have a responsibility for preventing truck accidents from happening.

The investigation

The Dutch Safety Board's report addresses the following questions: Which factors influence the occurrence and seriousness of the outcome of truck accidents on motorways? What parties involved are responsible for this and what

is their role? The aim of the investigation is to find out whether there are structural safety shortcomings with regard to the operation of trucks on motorways.

Conclusions

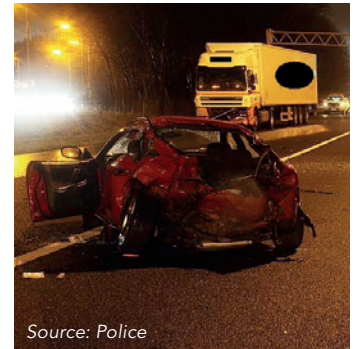
Road haulage is under enormous economic pressure. Companies are experiencing intense competition and are struggling to keep their head above water. This report and the Safety Board's recommendations therefore come at a time when there is little room for making changes. The Safety Board is conscious of this. However, road safety should not be compromised as a result, and the Safety Board believes it is important that the number of fatalities and

serious injuries as a result of truck accidents on motorways should be reduced.

Reduced alertness on the part of truck drivers is the most important causal factor in (serious) truck accidents on motorways. Also other risk factors often occur in combination with reduced alertness.

Haulage companies and in-house carriers, sector organisations, clients, the authorities and the drivers have an important role and responsibility in managing road safety. However, the actions of all parties involved are primarily economically driven and take little account of road safety.

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Source: Police

Four areas of interest



*On the A58 near Oirschot a truck swerved as a result of a tyre blowout and drove through the median barrier
Source: Police*

For this investigation the Safety Board has investigated and analysed eleven accidents in the period 2011 to January 2012. The factors which play a role in the accidents can be broken down into four areas of interest.

Alertness

In the first place the drivers' alertness is very important for being able to perform the driving tasks effectively. Alertness can be reduced by fatigue and sleepiness as a result of irregular and biologically unfavourable working hours (e.g. at night), too few stimuli (monotony), high workload and reduced sleep quality. Drivers can also be distracted by reaching for food or drink, making a phone call and using navigation equipment and the on-board computer.

In order to prevent reduced alertness as a result of fatigue amongst other things, it is important that the legal

requirements with regard to working hours and driving time and rest periods are obeyed. However, not all employers schedule the drivers' work in such a way that they can comply with the driving time and rest periods legislation. In addition to complying with the driving time and rest periods legislation, drivers and their employers also need to do more to prevent reduced alertness as a result of fatigue. That could be by providing an opportunity for a power nap and taking account of the driver's personal circumstances and biorhythm (see box).

Collisions at the ends of traffic jams

Two thirds of the fatal rear-end collisions involving a truck occur in the ends of (developing) traffic jams. Here too, reduced alertness plays a major role. When a traffic jam occurs Automatic Incident Detection (AID) comes into operation

with matrix signs above the motorways. This system shows the current speed limit together with flashing orange lights as a warning of an approaching traffic jam. However, AID does not work perfectly. Because AID only reacts when traffic is already driving slowly and the traffic jam keeps growing, the new speed limit sometimes comes too late. The instructions given by the system therefore do not always evoke the correct expectations in the road user. Traffic jams create major differences in speed between road users. Combined with the difference in mass between trucks and cars, rear-end collisions can have serious consequences.

Accidents after tyre blowouts

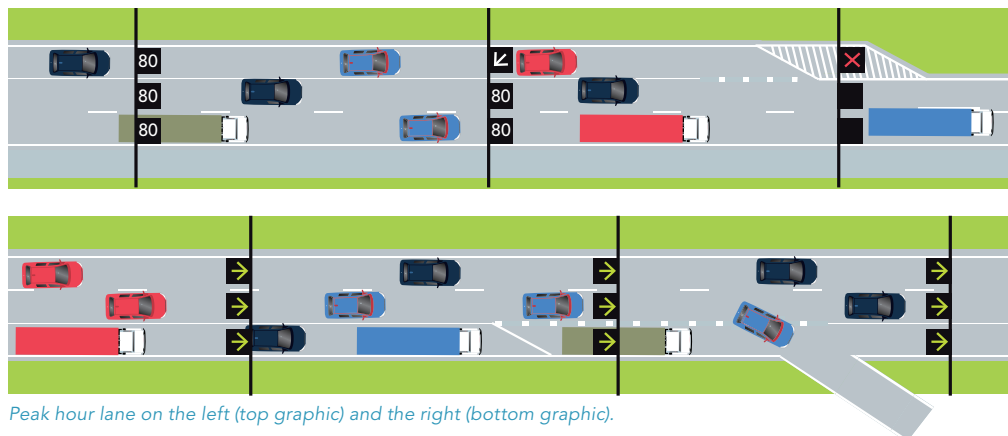
A tyre blowout can be caused by damage such as an object in the tyre or tyre pressure which is too low or high. A sudden drop in tyre pressure is an important warning sign of a problem with

a tyre. However, in practice companies do not ensure that tyre pressures are monitored continuously. By acting correctly after tyre bursts truck drivers can avoid losing control of the vehicle (see box). However, drivers are not being trained or informed about how to act in the event of a tyre blowout.

Peak hour lane accidents

Peak hour lanes differ from the normal motorway in terms of design and layout and are therefore less recognisable and predictable for road users. A peak hour lane on the left (with an emergency lane) is thereby safer than a peak hour lane on the right (without an emergency lane). The extra capacity of a peak hour lane reduces the probability of a traffic jam forming. This means that there is also less risk of rear-end collisions. However, traffic density on the roads is still increasing. This means an increasing risk of traffic jams

forming on the motorway and therefore also on the peak hour lane. Whilst peak hour lanes were initially good for road safety, the anticipated growth in traffic density in the future will actually make them less safe. There is therefore a tipover point where the road with peak hour lanes become less safe than the same road without peak hour lanes. There is currently no indicator or policy to determine this tipover point and prevent this unintended effect.



Peak hour lane on the left (top graphic) and the right (bottom graphic).

Alert at the wheel: how to prevent fatigue and distraction?

Companies

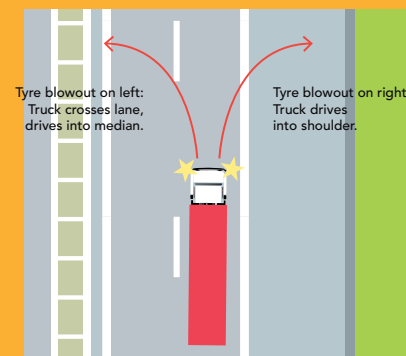
- Ask about and take account of drivers' personal circumstances.
- Inform drivers about the causes and consequences of fatigue and improving personal living conditions and lifestyle.
- When planning take account of the driver's biorhythm, particularly when switching from day to night shifts.
- Do not expect a driver to be able to answer calls or messages from the company immediately at all times. His attention should be focused on the road.
- Consider the option of switching off the ability to operate navigation equipment and the on-board computer whilst driving.
- Ensure that drivers have sufficient funds to be able to pay for a safe parking place.
- Ensure that drivers know how and when to use driver assistance systems such as cruise control in the truck.
- Screen drivers for sleep-related disorders such as sleep apnoea.

Chauffeurs

- Respect the legal rules about driving time and rest periods.
- Avoid fatigue by getting enough rest and adopting a healthy lifestyle.
- When you start getting tired, try to take a brief nap. A power nap (sleeping for between 10 and 30 minutes) is very effective against sleepiness.
- Avoid distraction from telephone calls, contact with your employer, operating equipment, etc.
- Know how and when the driver-assisting systems such as cruise control in the truck should and should not be used.
- Tell the planner about personal activities such as parties.
- Talk to the employer about personal circumstances.

What to do when a tyre bursts

- A correct driving position is important for keeping the vehicle under control. That means: both hands on the wheel, both feet by the pedals and an upright sitting posture.
- Steer the vehicle gently in direction of travel and if necessary press on the accelerator to pull the vehicle straight. Then ease off the accelerator.
- As the truck pulls straight, reduce speed by braking slightly and if possible drive onto the emergency lane.



Common path of trucks which lose control after a tyre blowout

Safety approach



Rear-end collision in developing traffic jam on the A2 near Eindhoven in October 2011.
Source: Police.

In controlling the risk of truck accidents, companies' safety approach is important, as is the way in which the authorities thereby set the boundary conditions and provide stimuli to enforce the safety legislation.

What can companies do?

The way in which hauliers and in-house carriers deal with the risks of truck accidents differs substantially between companies. Generally speaking companies assume that they are adequately covering the risks if they comply with the applicable legislation. Companies are thereby largely placing responsibility for preventing road accidents with the driver. An accident usually does not result in a tightening or modification of the safety approach of the company concerned. Companies often feel that this is not necessary because the risk of a serious accident is small and because they view a road accident as something that one cannot

influence, but simply as a case of fate. Most companies have a strong focus on cost efficiency in their business activities and (too) little on road safety.

Companies can analyse the data from the truck's on-board computer, digital tachograph and the engine management system in order to gain insight into the driver's (un)safe driving behaviour. Not many companies do so.

In addition to complying with driving time and rest periods legislation, hauliers and in-house carriers can also take more account of other important factors when scheduling their drivers, such as personal circumstances, time required for personal care and the driver's biorhythm. Companies have a lot of freedom in implementing the mandatory periodic training (code 95). The periodic training is often not used for a course which deals with road risks when

driving trucks. Companies could train drivers in the causes and consequences of fatigue and improving their lifestyle.

Example documents from the sector organisations and trade unions such as the driver's handbook and the occupational health and welfare catalogue do not indicate what the driver and the company themselves should do to prevent truck accidents.

What can clients do?

The investigation shows that the demands which clients make of companies can contribute

to breaches of the driving time and rest periods and fatigue amongst truck drivers. Companies can make better agreements about this with their clients, such as agreements about good planning of the loading and unloading and local facilities for personal care and rest. Clients in turn do not stipulate any requirement with regard to safe driving to hauliers and in-house carriers and do not take any steps themselves to limit disruption of the schedule and facilities.

What can other road users do?

- Take account of the fact that trucks are heavier and have a longer braking distance than cars.
- Avoid cutting in on a truck when leaving or joining the motorway. So adapt your speed and merge in time when you want to take the exit slip road.



In November 2011 a truck drove into a crash cushion truck and a vehicle-mounted arrow board on the A2 near Den Bosch at 90 km/hour.
Source: Bart Meesters/Meesters Multimedia.

What can the authorities do?

The authorities set boundary conditions so that companies can work safely, by granting licences amongst other things. The authorities also provide stimuli to companies to comply with the laws and regulations through supervision and enforcement.

Haulage companies must have a licence for every truck, which is granted by NIWO (Nationale en Internationale Wegvervoer Organisatie [National and International Road Haulage Organisation]).

Companies which transport their own goods are not required to have a licence for their trucks. When the licence is granted by NIWO the conduct of the directors of the organisation is assessed, and not the behaviour of that organisation's drivers. Road safety is not a direct criterion in the licensing process.

The licence therefore does not contribute to improving road safety.

Supervision of truck drivers' driving behaviour and vehicle safety is part of the police's general supervision of road traffic. A few specialist police teams also carry out risk-oriented supervision and enforcement in a limited number of areas (Technical and Environmental Inspections). The police give little priority to enforcing road safety in road haulage. As a result drivers and companies have a low risk of being caught.

The Inspectie Leefomgeving en Transport (Human Environment and Transport Inspectorate - ILT) assesses whether haulage companies and in-house carriers are complying with the laws and regulations on driving time and rest periods, overloading and dangerous goods. Preventing safety problems and thus risks at work for the drivers is the

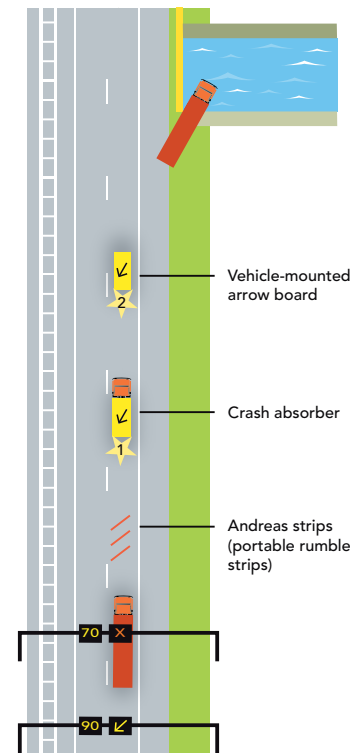
responsibility of the employer. This is regulated in the Arbowet (Occupational Health & Welfare Act). However, ILT does not check as standard whether companies have taken steps to control risks at work in general and road safety risks in particular. The risk of being caught by the ILT is also low, as a result of which companies and drivers sometimes knowingly take risks.

Government policy is mainly aimed at ensuring the economic parity of all parties involved in haulage.

Road safety (including preventing alertness problems amongst drivers) does not play a major role in the regulation and the supervision, nor in the licensing.

The authorities must supervise compliance with the statutory rules and enforce them where necessary.

Supervision, enforcement and licensing must therefore be closely harmonised, so that they can make an effective contribution to improving road safety on the motorways. To achieve this the various bodies involved in licensing, supervision and enforcement (NIWO, ILT



Overview of accident on A2 near Den Bosch

and police) not only need to work together and exchange information, but also produce a single joint enforcement strategy.

Parking spaces

One important pre-requisite for being able to rest in time is the availability of parking spaces. Calculations by Rijkswaterstaat (Department of Public Works and Water Management) show that there is a shortfall of 1800 truck parking spaces and the parking provisions are not evenly distributed across the country. Even if the planned measures are carried out, there will still be a substantial shortage of parking spaces. This shortage will grow further over the coming years.

Conclusions and recommendations

Conclusions

Various factors play a role in the occurrence and seriousness of the consequences of truck accidents on motorways:

Drivers:

- Reduced alertness is the most important factor in the occurrence of (serious) truck accidents on motorways.
- Drivers are not being trained, given periodic training or informed about what to do in the event of a tyre blowout. Tyre blowouts can be prevented by constantly monitoring the tyre pressure.

Companies:

- Companies can take other steps to prevent fatigue (see box).
- Many haulage companies and in-house carriers attach a low priority to road safety when making agreements with clients and when deploying their drivers. Clients generally

make no demands with regard to road safety as part of their quality requirements.

- Companies generally do not opt for periodic training which is aimed at road safety, because there is a extensive freedom of choice in terms of periodic training and road safety thereby has a low priority.

Vehicle:

- The mass difference between cars and trucks and the crash aggressivity of the front and rear of trucks mean that accidents have serious consequences.
- Installing a tyre pressure monitoring system on the truck can prevent tyre blowout accidents.

Infrastructure:

- There are not enough secure parking and service spaces to be able to comply with the

driving time and rest periods regulations.

- The instructions of the Automatic Incident Detection (AID) do not always evoke the correct expectation, so that road users modify their behaviour insufficiently.
- Peak hour lanes cause more confusion on the road, particularly peak hour lanes on the right. If the traffic intensity in the peak hour lane increases in the future there will also be a tipover point where the road with a peak hour lane will be less safe than the same road would have been without a peak hour lane.

Sector and employer's organisations and trade unions:

- They pay little attention to road safety in the occupational health and welfare catalogue and the driver's handbook.

Authorities:

- Supervision of truck safety by the authorities (NIWO, ILT and police) does not offer a coherent and comprehensive approach aimed at improving truck safety.

Recommendations

To the sector and employers' organisations in the transport sector

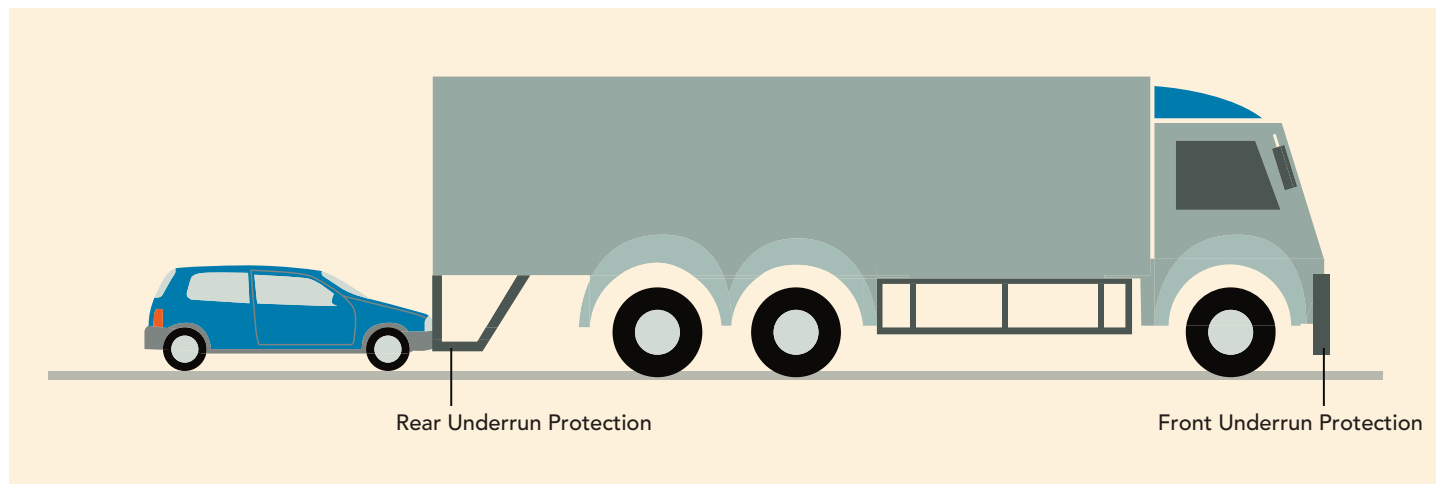
Take steps - in conjunction with companies and in-house carriers, clients, trade unions and drivers - which provide drivers with the maximum opportunity to participate safely in road traffic.

To the Minister of Infrastructure and Environment and the Minister of Security and Justice Structure the supervision by NIWO, the Human Environment and Transport Inspectorate and police in such a way that compliance with the driving time and rest periods legislation and the Working Conditions legislation is guaranteed.

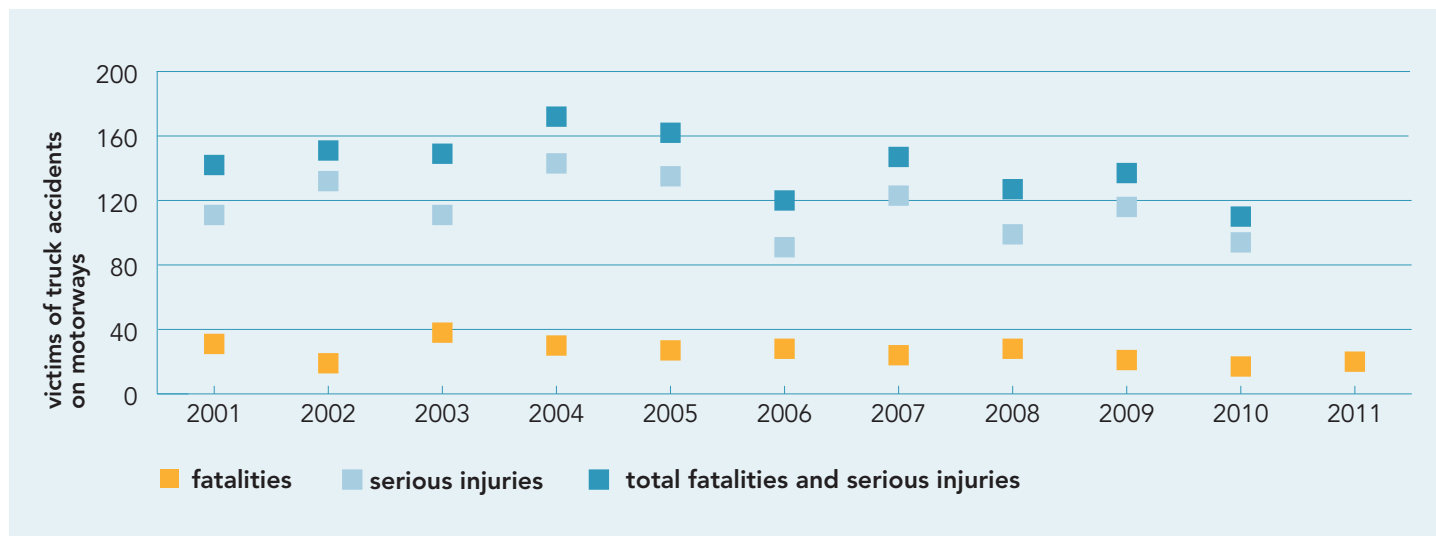
To the Minister of Infrastructure and Environment

- Advocate measures in a European context to reduce the crash aggressivity of trucks and to prevent truck accidents.
- Improve the provision of information on the road and develop a detection system for stationary traffic.
- Determine the traffic intensity where the tipover point lies at which peak hour lanes become less safe than the same road would have been without peak hour lanes. Decide not to create new peak hour lanes until this tipover point has been determined. Take steps to replace the peak hour lanes with normal road widening before the tipover point is reached.
- Ensure that sufficient truck parking places are created in the right locations.
- Ensure that road safety becomes a compulsory part of the periodic training under the qualification directive (code 95).

Crash aggressivity of trucks: front and rear



The development of the number of fatalities and serious injuries in truck accidents on motorways



The Dutch Safety Board in four questions

1

What does the Dutch Safety Board do?

Efforts are being made in the Netherlands to minimise the risk of accidents and incidents as much as possible. When it nonetheless (nearly) goes wrong, a repetition can be avoided by carrying out a thorough investigation into the cause, separate from determining guilt. It is thereby important that the investigation is carried out independently of the parties involved. The Dutch Safety Board therefore chooses for itself what to investigate and thereby takes account of the independence of citizens from government bodies and companies.

In 2005 the Dutch Safety Board's investigations included the fire at the centre for failed asylum seekers, the so-called

Schiphol fire. In 2012 the Safety Board has reported on the fire at Chemie-Pack in Moerdijk and the authorities' response to this and on the collapsed roof at FC Twente football stadium, amongst other things.

2

What is the Dutch Safety Board?

The Safety Board is an 'independent administrative body' and is authorised by law to investigate incidents in all areas imaginable. In practice the Safety Board currently works in the following areas: aviation, shipping, railways, roads, defence, human and animal health, industry, pipes, cables and networks, construction and services, water and crisis management & emergency services.

3

Who works at the Dutch Safety Board?

The Safety Board consists of five permanent board members. The chairman is Tjibbe Joustra. The board members are the face of the Safety Board with respect to society. They have extensive knowledge of safety issues. They also have wide-ranging managerial and social experience in various roles. The Safety Board's office has around 70 staff, of whom around two-thirds are researchers.

4

How do I contact the Dutch Safety Board?

For more information and the full report in Dutch and the summary in English see the website at www.safetyboard.nl
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Credits

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This report is published in Dutch and English. In the event of any discrepancy between these versions, the Dutch text shall prevail.

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Accident on A20.
Source: Police.

Illustrations/infographics

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