



DUTCH  
SAFETY BOARD

Summary and consideration  
**Truck accidents**  
on motorways

# Truck accidents on motorways

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## **Dutch Safety Board**

The aim in the Netherlands is to reduce the risk of accidents and incidents as much as possible. If accidents or near-accidents nevertheless occur, a thorough investigation into the causes of the problem, irrespective of who is to blame for it, may help to prevent similar problems from occurring in the future. It is important to ensure that the investigation is carried out independently from the parties involved. This is why the Dutch Safety Board itself selects the issues it wishes to investigate, mindful of citizens' position of dependence with respect to public authorities and businesses. In some cases, the Dutch Safety Board is required by legislation to conduct an investigation.

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On Thursday 26 January 2012 a traffic jam developed on the A20 at Terbregseplein near Rotterdam at about half past four in the afternoon. A truck travelling on cruise control approached the traffic jam at eighty kilometres per hour. At the point where the link road from the A16 joins the A20 the driver briefly glanced to the right to see whether a lot of traffic was going to merge in. When he looked ahead again, he saw the traffic jam. However, he was unable to brake in time and drove into a camper van at high speed. This caused the camper van to crash into two stationary cars. A seven year old boy in one of those cars was seriously injured. He died later in hospital.

This is one of the eleven truck accidents which the Dutch Safety Board has investigated in connection with the theme investigation on truck accidents on motorways.

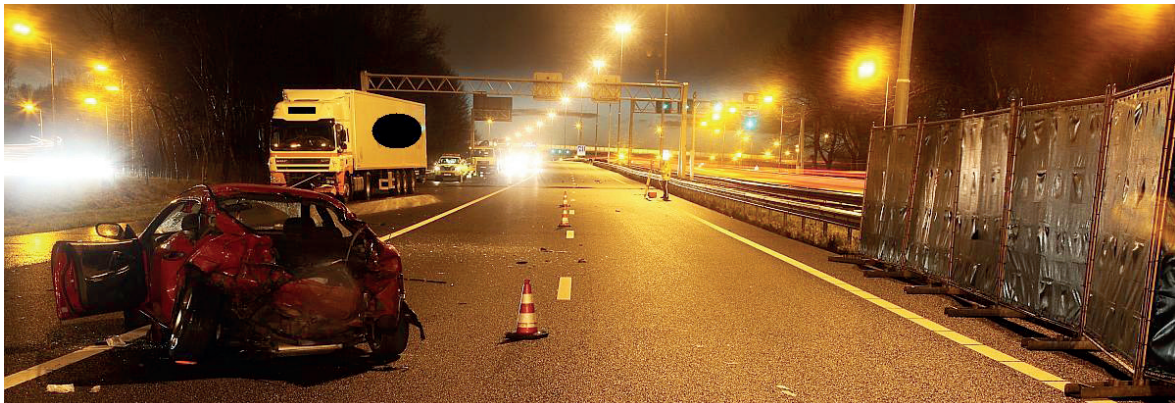


Figure 1: One of the cars involved in the collision. Source: Police

## Background

Trucks are essential in Dutch society. They are needed for haulage to and from the ports, supplying supermarkets and carrying products from one company to another, amongst other things. Trucks cover a large proportion of their mileage on motorways.

There is a great deal of focus on road safety in the Netherlands. This has made motorways safer too. However, accidents with trucks on motorways are still causing many victims. Every year around 23 people die and 105 are seriously injured<sup>1</sup> in a total of over one thousand<sup>2</sup> truck accidents on the motorways.

<sup>1</sup> Average over the period 2006-2010. Source: Boogers, J.I. (28 September 2012), Memo on truck accidents, Analysis by Arcadis commissioned by the Rijkswaterstaat Traffic and Shipping Department.

<sup>2</sup> In 2011, STIMVA (Stichting Incident Management Vrachtauto's [Trucks Incident Management Foundation]) recorded 1030 truck accidents in which a recovery vehicle had attended.

The expectation is that both car traffic and truck traffic on the Netherlands' motorways will continue to grow, despite the current economic crisis. A growth in car traffic of between 20 and 46 percent and in truck traffic of between 4 and 38 percent is forecast for the period from 2010 to 2020.<sup>3, 4</sup> This is an adjustment compared to the forecasts from before the crisis, which still assumed a growth in freight traffic of between 10 and 50 percent over the period from 2010 to 2020.<sup>5</sup>

In accidents involving trucks on motorways the victims are usually in the vehicle with which the truck collides. Eighty percent of the victims of accidents involving trucks on motorways are travelling in vans or cars. These accidents also have a major impact on the truck driver, incidentally, even if he is not injured or has not contributed to the cause of the accident.

Truck accidents differ from many other traffic accidents in the fact that they are work-related. They occur when the truck driver is doing his job. This means that both truck driver's employer and its client have a responsibility for preventing truck accidents.

## **Research questions**

In this report the Safety Board addresses the following questions:

- Which factors influence the occurrence and seriousness of the outcome of truck accidents on motorways?
- What parties are responsible for this and what is their role in this?

## **Investigation**

The Safety Board has investigated eleven truck accidents on motorways which took place during the period between October 2011 and January 2012. Interviews were thereby conducted with those involved in the accident and the relevant companies. Information from the police and the road authority (the Department of Public Works & Water Management) was thereby included in the investigation. In selecting these accidents the Safety Board particularly focused on commonly occurring types of accidents with serious consequences, based on a preliminary study of all fatal truck accidents on motorways over the period from 2007 to 2012. In addition to an analysis of the accidents, the Safety Board has also used a system analysis to identify which parties play a role or have a responsibility in the road safety of trucks on motorways.

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3 Ministry of Infrastructure and the Environment (2011), Appendix to the National Market and Capacity Analysis (NMCA), NMCA mobility topic elaboration.

4 Ministry of Infrastructure and the Environment (2011), Appendix to the National Market and Capacity Analysis (NMCA), NMCA road analysis.

5 Ministry of Transport & Water Management (2007), Final report on National Market and Capacity Analysis Roads.

The Safety Board's investigation relates to both commercial haulage and the in-house carriage of goods via the motorway. In-house carriage is the transport of the company's own goods (e.g. to or from customers or collecting raw materials for the company's production process). Commercial haulage relates to the carriage of goods on behalf of third parties.<sup>6</sup> Accidents with vans are excluded because the difference between vans and trucks is substantial (weight, type of driving licence, obligatory periodic training and obligation to carry a tachograph in trucks). Vans have more in common with cars than with trucks.

## Findings

On the basis of all the analysed accidents the Safety Board has selected four areas of focus in order to gain more insight into the underlying causes of accidents and the possible management steps which the parties involved (could) take. This relates to the general focus area of alertness and the more specific focus areas of collisions at the ends of traffic jams, tyre blowout accidents and peak hour lane accidents.

### *Alertness*

Reduced alertness plays an important role in (the investigated) traffic accidents involving trucks. Reduced alertness as a result of fatigue and sleepiness in truck drivers plays a demonstrable role in 10 to 25 percent of the traffic accidents involving trucks. Truck drivers' 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.

The availability of sufficient safe truck parking spaces right beside the motorway is an infrastructural measure to offer drivers the opportunity to prevent fatigue. However, the number of parking and service areas does not comply with the capacity need calculated by Rijkswaterstaat.<sup>7</sup> There is a shortage of 1800 truck parking spaces.

New technology can help to limit (serious) truck accidents resulting from reduced alertness. Research shows that automatic braking<sup>8</sup> and lane monitoring<sup>9</sup> can contribute to road safety if used correctly. However, there is little or no information about the long term positive or negative effects of standard and adaptive cruise control, on-board computers and communication systems for example.

The truck driver's behaviour is the key to road safety. Professionalism, being aware of their own skills and the personal condition of the driver (fatigue and mental problems, for example) thereby play an important role. The introduction of the driving time and rest periods legislation has contributed to countering fatigue and ensures fair competition.

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<sup>6</sup> As defined in the Wet goederenvervoer over de weg [Road Haulage Act]

<sup>7</sup> Rijkswaterstaat (2011), Service Areas Implementation Framework.

<sup>8</sup> Advanced Emergency Braking System (AEBS).

<sup>9</sup> Lane Departure Warning System (LDWS).

However, the digital tachograph and the strict regulation of the driving time and rest periods directive can place pressure on the driver if he is in danger of exceeding his driving time. This might be caused by an unexpected circumstance, such as a traffic jam or an accident en route. It is not always reasonable to expect him to comply with these legislation, for example because of a lack of parking spaces beside motorways or if the driver has nearly reached his destination. This sometimes leads to stress at the wheel and irresponsible solutions (such as resting on the emergency lane).

The haulage companies and in-house carriers also play an important role in preventing alertness problems. In many cases they only fulfil this role to a limited extent. Companies assume - incorrectly - that complying with the driving time and rest periods legislation is enough to avoid alertness problems. Companies, clients and drivers hardly recognise that alert and safe driving behaviour is not just a responsibility of the truck driver, but also of his employer and the client. In addition to safety gains, there are also financial benefits to be achieved if companies, clients and drivers work together on a professional and alert attitude on the road. These include limiting fuel consumption and the economic loss caused by accidents.

#### *Collisions at the ends of traffic jams*

Collisions at the ends of traffic jams are caused by road users adapting their driving behaviour to an unexpected or developing traffic jam too late. The driver then drives into the back of a vehicle which is travelling more slowly or is stationary, after which in some cases a collision with a vehicle in front then also occurs. It is also possible that the truck is hit from behind by a vehicle. The causes are often a lack of alertness (which is manifested in - for example - not keeping sufficient distance), traffic jams occurring unexpectedly as a result of accidents or congestion, unexpected actions by other road users and unclear information provision on the road. The information on the matrix signs over or beside the motorway is limited. This means that it is not always clear to drivers and other road users how (quickly) they need to modify their speed or behaviour. On the one hand this is because the speed indications are not realistic (for example 70 kilometres per hour when traffic is already stationary) and there is no stationary traffic detection in the road surface. On the other hand there is a no indication of the cause of the speed reduction. The addition of symbols (traffic jam, roadworks, etcetera) can help drivers to assess how (quickly) they should modify their driving behaviour.

The most serious truck accidents are the result of collisions at the ends of traffic jams. Trucks are crash aggressive for cars: they are heavier and their bumpers (front and rear protection) are higher than cars' crumple zones. As a result, the occupants of cars suffer serious injuries relatively often in truck accidents.

The number of fatalities and injuries from this sort of accident could be reduced by lowering the bumper on the back to 40 centimetres (currently 55 centimetres) above the road and fitting a more energy-absorbing bumper on the front.



### *Tyre blowout accidents*

Impacts<sup>10</sup> are considered the main cause of tyre blowouts. Another cause is overheating because the tyre pressure is too low and/or due to overloading. Impact damage or low tyre pressure cannot always be clearly seen during the regular visual checks by drivers and companies. They also fail to measure the tyre pressure often enough. By measuring the tyre pressure continuously, driver and company gain timely insight into possible problems with the tyres. Tyre pressure monitoring systems are not part of the vehicle requirements for trucks. For cars such systems will be obligatory for new cars from 2013.

If a truck has a tyre blowout, a driver's natural reaction is to brake or carry out corrective steering abruptly and excessively. This can lead to a loss of control over the truck, as a result of which it goes off course and in the worst case breaks through the central reservation and crashes front-on into an oncoming vehicle. American research by NTSB and Michelin shows that this is not necessary if the driver calmly controls the direction of travel (possibly accelerating in order to pull the vehicle straight) from a good driving posture (upright, both hands on the wheel and feet beside the pedals) and then eases off the accelerator. When the truck has straightened out again, the driver can gently reduce speed by braking and, if possible, drive onto the emergency lane.

Good information provision or (periodic) training ensures that drivers know how they should act in the event of a tyre blowout. The basic driver training, the compulsory periodic training and the instructions of companies do not teach drivers how to respond to a tyre blowout.

### *Peak hour lane accidents*

Peak hour lanes are a distinctively Dutch 'phenomenon'. They hardly occur in the rest of Europe. Peak hour lanes differ from the normal motorway in terms of design and layout and are therefore less recognisable and predictable for road users. This is caused by the absence of an emergency lane, the complex interactions with peak hour lanes on the right hand side of the carriageway and the narrowing of the lanes when there is a peak hour lane on the left hand side of the carriageway. Despite the risks due to the absence of the emergency lane the dynamic expansion of the road capacity greatly reduces the risk of traffic jams on the carriageway. This has, in principle, also reduced the risk of serious accidents involving substantial differences in speed.

Peak hour lanes make a temporary contribution to the road safety on a section.<sup>11</sup> Roads with peak hour lanes are currently still safer than roads without peak hour lanes with the same traffic intensity. Since the traffic intensity on motorways will increase despite the economic crisis<sup>12</sup>, the deviating nature of the peak hour lane will ultimately increase the risk of accidents.

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10 With an impact the tyre comes into a contact with an object (such as a nail or pavement edge) which damages the tyre.

11 Arcadis (10 December 2007), Spitsstroken, veilige stroken?! [Peak hour lane Peak hour lanes, safe lanes?!] Evaluation of road safety of peak hour lane peak hour lanes 2007.

12 As indicated in the background, a growth in car traffic of between 20 and 46 percent and in freight traffic of between 4 and 38 percent is forecast for the period from 2010 to 2020.

After all, when the volume of traffic in the future increases such that traffic jams develop on the opened peak hour lane as well, there will be a tipover point where the road with peak hour lanes becomes 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 lanes detract from the self-explanatory nature of the road and do not comply with the guidelines in the European Agreement on main international traffic arteries. This is because of the lack of emergency lanes when there are peak hour lanes on the right and the limited width<sup>13</sup> of peak hour lanes on the left.

#### *Other issues*

The interviews with parties involved also raised a number of issues which are receiving a lot of public attention, such as foreign drivers, the age of drivers, the size of companies, the role of alcohol consumption, hazardous goods and the behaviour of other road users. The Safety Board has assessed these issues against the gathered investigation data.

The Board has determined on the basis of further analysis of the research data that the size of the companies, the age, experience and nationality of truck drivers and alcohol consumption played no significant role in causing the investigated accidents involving trucks on motorways. One exception is resting on the emergency lane, particularly by foreign drivers, as a cause of accidents. The Board has not been able to establish any link with overtaking trucks or bans on overtaking on the basis of the investigated accidents. No accidents with hazardous goods were investigated, because these occur rarely and the Board did not receive any notification during the period when accidents were being investigated that an accident with hazardous goods had occurred on a motorway.<sup>14</sup> This investigation also failed to show that the behaviour of other road users (especially cutting up) often leads to serious accidents with trucks.

### **Safety approach of the parties involved**

Hauliers, in-house carriers, clients and the authorities have a clear role and responsibility to contribute to controlling the risks of truck accidents. They can influence the behaviour of drivers by laying down legislation, enforcement thereof and creating the conditions within which drivers can comply with the legislation.

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<sup>13</sup> It is agreed in the European agreement that lanes on motorways will be at least 3.5 metres wide, whilst according to the design guidelines peak hour lanes on the left are 2.75 metres wide.

<sup>14</sup> The Dutch Safety Board did carry out an earlier investigation into accidents during the transportation of hazardous goods by road, namely into tanker fires with hazardous goods. The report on this investigation was published in 2006.

### *Hauliers and in-house carriers*

The way in which hauliers and in-house carriers deal with the risks of truck accidents differs substantially between companies. The relatively small risk for any individual company of suffering a serious truck accident<sup>15</sup> hardly motivates companies to draw up a coherent safety approach in this regard. Many companies assume that they are fulfilling their responsibility by complying with the applicable legislation, including the driving time and rest periods. One of the reasons for this is that the authorities (ILT) do not stress to the (haulage) companies that compliance with the driving time and rest periods on its own is not enough to prevent fatigue. By mainly restricting themselves to complying with the legislation, companies are placing a large share of the responsibility for preventing traffic accidents with the driver. He must ensure that he does not pose a danger on the road within the limits of the driving time and rest periods. An accident does not usually result in a tightening or modification of the safety approach by the company concerned. Companies often feel that this is not necessary because the risk of a serious accident is small. They also view a road accident as something that one cannot influence, but simply as an act of God.

At most companies the business activities and risk assessment focuses on the economic activities such as compliance with contracts with clients. Traffic accidents are not viewed as a commercial risk. Drivers and companies therefore sometimes consciously take the risk of breaching the legislation (technical requirements, overloading and driving time and rest periods). In scheduling their drivers, companies focus particularly on the requirements of the driving time and rest periods and take no further steps to control important fatigue factors (fatigue management). Companies could do this by - amongst other things - teaching drivers about the causes and consequences of fatigue, improving their lifestyle, and by taking account of the actual working hours, the biorhythm and the time required for the driver's personal care in the planning. Fatigue management systems are used in aviation, the oil and gas industry and road haulage in Australia.

The limited attention paid to road safety (resulting from reduced alertness) is also shown by the fact that companies do not usually make concrete agreements about this in contracts with their clients (such a good planning of the loading and unloading and local facilities for personal care and rest for the driver).

The companies investigated and analysed by the Safety Board make virtually no use of the data available about their drivers' driving behaviour in order to improve the road safety of their trucks on motorways. This involves data from the truck's digital tachograph, on-board computer and engine management system. There are various systems on the market which can be used to track aspects such as how fast the driver drives and how much he brakes and accelerates. It is possible to analyse the driving behaviour on the basis of this.

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<sup>15</sup> 11,682 companies that operate 104,085 trucks (2011, source: NIWO), around 38,000 trucks operated by in-house carriers (2009, source: Wegvervoer en logistiek: Visie 2015) and 341 serious accidents involving one or more trucks on average (2005-2009, source: police records). As already stated, it is usually the other party who is physically injured or killed and not the driver.

This analysis can be used when discussing the driving behaviour with the driver. If necessary focused periodic training can then be offered (including the compulsory code 95 periodic training<sup>16</sup>).

The compulsory periodic training (code 95) is often used for training which contributes to the profitability of the company (e.g. saving fuel or avoiding bodywork damage by modifying the driving style) or a course which needs to be taken anyway (forklift driver). Companies do not opt for a course which covers the traffic risks present within the company, because there is great freedom of choice within the periodic training (pick and mix model).

Drivers are not always familiar with the options open to them from improving their alertness on the road. In addition, their planners and/or employers do not always give drivers the room to act in accordance with these. It is important that the experiences of the driver as a professional are heard by the employer.

### *Clients*

Clients make demands about the quality of the haulage to be carried out (e.g. demands relating to the scheduling or the nature of the cargo). In stipulating these demands clients are obliged to ensure that the agreed schedules for the haulage take account of the provisions relating to the driving time and rest periods. However, most clients view compliance with the driving time and rest periods legislation as a responsibility of the haulier and the authorities. This is partly because they have no insight into the consequences of their demands on both the compliance with the statutory obligation and the haulier's business activities. Clients also do not view breaches of the driving time and rest periods as being serious, and they also have little knowledge or awareness of the steps that could be taken. This involves demands which a client could make of a company, such as controlling the risks when driving on the public highway and limiting disruptions by the client (e.g. no loading bay available at the agreed time). Nor do hauliers and in-house carriers challenge their clients about this responsibility, because they feel that their competitive position is weak with respect to client. The haulage market is mainly a buyer's market.

### *Sector and employers' organisations (TLN, EVO and VERN) and trade unions (FNV Bondgenoten, CNV Vakmensen)*

Most companies make use of example documents from sector organisations and trade unions (Gezond Transport, Transport en Logistiek Nederland (TLN), FNV Bondgenoten, CNV Vakmensen) in order to comply with the requirements of both clients and the legislation. This particularly relates to the driver's handbook and the occupational health and welfare catalogue. However, these documents take limited account of the specific risks of road accidents. Hence the occupational health and welfare catalogue only refers to the risk of collision with employees walking alongside a rubbish truck; the driver's handbook merely states that the driver must obey the traffic legislation.

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<sup>16</sup> Code 95 is compulsory for professional drivers of a vehicle for which a C or D driving licence is required. This code is marked on the driving licence beside a vehicle category and is valid for five years. In order to retain the code 95 a driver must undergo at least 35 hours of periodic training every five years.

These documents do not say anything about what the driver and the company themselves need to do to prevent truck accidents. The tools provided by the sector and employers' organisations and trade unions are mainly focused on safety at work and loss prevention. The documents pay virtually no attention to measures which can contribute directly to the driver's alertness and road safety (preventing serious injury to the other party).

### *Authorities*

The authorities stipulate rules for the road design, the vehicles and the drivers. They thereby have a great deal of influence over all the parties involved in road safety. The authorities are also responsible for supervising compliance with the rules, and they create the conditions for companies to be able to work safely.

One important requirement in order to be able to rest on time is the availability of parking spaces. According to a calculation by Rijkswaterstaat<sup>17, 18</sup> there is a shortfall of 1800 truck parking spaces, and parking facilities are unevenly distributed across the country. A budget of 25 million euro is available for tackling the problem. However, this is not enough to eradicate the shortfall. As a result, there will still be a major shortage of truck parking spaces in three years' time. Rijkswaterstaat also expects the shortfall to more than double between now and 2020, partly due to developments in international transport.

The authorities' supervisory role consists of licensing (Stichting Nationaal en Internationaal Wegvervoer Organisatie [National and International Road Haulage Organisation], NIWO), enforcement (police) and supervision (Inspectie Leefomgeving en Transport [Human Environmental and Transport Inspectorate], ILT). The authorities' supervision 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.

Haulage firms need a licence for every truck. This is granted by NIWO (Stichting Nationale en Internationale Wegvervoer Organisatie). 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.

The police give low priority to enforcing road safety with regard to trucks. 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 (Technische en Milieu Controle-Technical and Environmental Inspections, TMC).

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<sup>17</sup> Rijkswaterstaat (2011), Service Areas Implementation Framework.

<sup>18</sup> One in six truck drivers who regularly drive in Europe has been a victim of crime in the past five years. In 42 percent of cases the criminal acts took place at truck service areas. The possibility of being robbed as a driver has a negative impact on the quality of rest and sleep. Source: [www.rijkswaterstaat.nl](http://www.rijkswaterstaat.nl).

This approach to supervision by the police means that drivers and companies perceive themselves as having a low risk of being caught during supervision and enforcement. This means that companies are more inclined to take their own 'view' on complying with the legislation.

The Human Environmental and Transport Inspectorate (Inspectie Leefomgeving en Transport - ILT) assesses whether haulage companies and in-house carriers are complying with the legislation on driving time and resting hours, 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 Arboret (Occupational Health & Welfare Act). However, during its audits of companies the supervisory agency ILT (also acting on behalf of the Health & Safety Inspectorate (Inspectie SZW) does not check as standard whether companies have taken steps to control risks at work in general and road safety risks in particular.

Countering fatigue in drivers is one of the aims of the driving time and rest periods legislation. However, because the driving time and rest periods legislation take no account of working at irregular times which are unfavourable because of the driver's biorhythm, the legislation does not prevent drivers from being fatigued or sleepy whilst working. Nor does the legislation take account of reduced sleep or reduced sleep quality. The driving time and rest periods are merely a minimum quantity and are used by the supervisory agency ILT as an indicator of fatigue. However, the guidelines are not perceived as such by drivers and their employers. They assume that complying with the legislation prevents fatigue. When monitoring the driving time and rest periods ILT does not look beyond the last rest period taken. This means that ILT cannot assess whether an infringement involves a one-off breach of the driving time and rest periods or a long-term pattern of too much driving and too little rest. The risk of being caught by the ILT is also low, as a result of which companies and drivers sometimes knowingly take risks.

The authorities must supervise compliance with the legislation and enforce them where necessary. Supervision, enforcement and licensing must be closely harmonised for this, 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 and police) not only need to work together and exchange information, but also produce a single joint enforcement strategy. Although the supervisory agencies listed share information, there is no joint supervision strategy.

## Conclusions

1. Behaviour (human) is a factor in the occurrence and seriousness of the outcome of truck accidents on motorways:
  - Reduced alertness is the most important factor in the occurrence of (serious) truck accidents on motorways.
  - The freedom of choice which companies have in implementing the periodic training with regard to professional qualification (code 95) and the low priority which companies attach to road safety mean that companies generally do not opt for periodic training which is aimed at road safety.
  - Drivers are not being trained, given periodic training or informed about what to do in the event of a tyre blowout.
  
2. The vehicle is a factor in the occurrence and seriousness of the outcome of truck accidents on motorways:
  - The mass difference between cars and trucks and the crash aggressivity of the front and rear of trucks contribute to the fact that accidents have serious consequences.
  - Accidents involving tyre blowouts can be prevented by constantly monitoring the tyre pressure.
  - It is not known what the long-term effects of supporting technology in trucks (such as cruise control, the on-board computer and communication systems) are on road safety.
  
3. Infrastructure is a factor in the occurrence and seriousness of the outcome of truck accidents on motorways:
  - There are not enough secure parking and service spaces to be able to prevent fatigue and comply with the driving time and rest periods legislation.
  - The instructions of the Automatic Incident Detection (AID) do not always evoke the correct expectation, so that road users modify their speed insufficiently.
  - Peak hour lanes detract from the self-explanatory nature of the road, particularly peak hour lanes on the right hand side of the road. 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. There is currently no indicator or policy to determine this tipover point and prevent this unintended effect in the future.

4. 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.
5. The sector and employers' organisations and trade unions pay little attention to road safety in the occupational health and welfare catalogue and the driver's handbook.
6. Supervision of truck safety by the authorities (NIWO, ILT and police) does not provide a coherent and comprehensive approach aimed at improving truck safety.
7. Drivers themselves can exercise influence to improve their alertness on the road. It is thereby important that they know what they can contribute and that they act accordingly. Where necessary they need to ask their planners and/or employers for the room to be able to act accordingly. It is important that the experiences of the driver as a professional are heard by the employer.



# WHAT DOES THIS INVESTIGATION TEACH US? CONSIDERATION

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'Without haulage everything stops.' The sector is using this slogan in an attempt to highlight its social and economic importance. However, the haulage sector sadly also makes the news if trucks are involved in accidents which cause traffic jams and can permanently change the lives of those involved. The impact of a serious accident is not just massive for the victims of an accident, incidentally, but also for the truck driver involved, even if the driver is not injured and did not contribute to the cause of the accident.

## *Insight*

This investigation has given the Safety Board greater insight into aspects which play a role in the occurrence of accidents with trucks on motorways and into the factors which determine the seriousness of their outcome. The fact that alertness is the most influential factor in the occurrence of accidents will come as no surprise. What is notable, however, is that those involved are thereby often insufficiently aware of what they themselves can contribute to a more alert attitude on the road, and thus to greater road safety on our motorways.

## *Five responsible parties*

The Safety Board sees five levels at which parties can better fulfil their responsibilities. The Board is thereby differentiating between the responsibility for road safety of drivers, companies, clients, supervisory agencies and legislators.

The truck driver is a professional and must be seen and appreciated as such. The driver is literally driving road safety. But in order to be able to fulfil his responsibility, responsible companies, clients, legislators and supervisory agencies must support him in this.

## *Improved safety and quality*

In the Safety Board's opinion haulage companies and in-house carriers need to take steps which could help to strengthen the sector but which are not necessary immediately obvious in a sector where the margins are low in these times of economic crisis. It is important for a healthy sector that haulage companies and in-house carriers show greater ambition when it comes to quality, safety and social employment conditions. Research by the Safety Board in other sectors (such as aviation) shows that they are more accustomed to working constantly on improving safety, partly by learning from accidents. These companies and organisations go further than the requirements laid down by legislation, which leads to greater safety and quality.

## *Taking responsibility*

It surprised the Safety Board that clients generally include no demands relating to road safety in their quality requirements. After all, apart from a legal and social responsibility, an accident also leads to economic loss and harm to the company's image. In many cases the client's name appears on the trailer.

The Safety Board has seen a few good examples of responsible clients, who work closely with their hauliers in the area of road safety. Sector and employers' organisations of hauliers and consignors should play a clear role in ensuring that clients fulfil their responsibilities with regard to road safety.

#### *Tension between personal responsibility and supervision by the authorities*

As is found regularly in studies by the Safety Board, there is a tension between the responsibilities of the parties involved (companies and drivers) on the one hand and regulation and supervision by the authorities on the other hand. The Safety Board sees that the authorities are more selective in their regulation and supervision in sectors where companies take responsibility for safety. However, it is self-evident to the Safety Board that the most important responsibility lies with the companies (haulage companies, in-house carriers and their clients, the consignors). The Safety Board believes that they need to take steps which provide drivers with the maximum opportunity to be alert in traffic.

#### *European policy*

Because the haulage sector operates internationally to a significant extent and the economic parity of the haulage companies is important, the European Commission is the main formulator of legislation. This means that the Minister of Infrastructure and Environment cannot impose any requirements at national level which are less stringent than the European legislation. The Minister can impose stricter requirements, but feels that this is undesirable because these would then only apply to Dutch trucks. This limits the Minister's scope for direct intervention to tackle the problems noted in this report independently. This does not detract from the fact that the Safety Board sees an important role for the Minister to contribute to the safety of truck traffic on Dutch motorways, even where it involves European measures.

#### *Recording of accidents*

Road safety is an area of policy where the drafting and monitoring of policy is mainly based on quantitative research. However, the Safety Board has noted in the investigation that the recording of truck accidents is increasingly incomplete and unreliable. This problem was previously noted by both the SWOV (Foundation for Scientific Research into Road Safety) and the Safety Board. The incomplete recording means a lack of sound information about the extent and nature of truck accidents in order to test and modify policy. The risk is thereby that problems are not identified and that legislators and other parties involved (such as the haulage sector) opt for the wrong solutions.

#### *Driving time and rest periods and preventing fatigue*

Preventing alertness problems (caused by factors including fatigue) is not just the responsibility of the driver (the employee), but certainly also of the employer. Because fatigue is a concept which is hard to define, the authorities have stipulated a minimum quantity for the amount of rest which employees must take, partly to prevent unfair competition through exploitation. Without wishes to detract from this minimum quantity, the Safety Board would argue that more needs to be done to prevent fatigue amongst drivers.

The current legislation concerning the driving and rest periods give rise to problems in practice. In interviews with drivers the Safety Board saw the practical dilemmas facing drivers. Rijkswaterstaat has concluded that there are insufficient parking spaces available to enable drivers to rest at the right time. Parking spaces which drivers have planned to use are sometimes full, insufficiently secure to protect their cargo or cannot be reached in time due to accidents and traffic jams en route. In all those cases every driver needs to decide how he should then get his rest within the confines of the driving time and rest periods legislation. Should he stop temporarily in an unsafe location (emergency lane) or carry on driving and break the law?

The Safety Board believes that the authorities should support the driver better in this. On the one hand by sorting out the quantity, basic standard and distribution of parking spaces in the Netherlands, and on the other hand by enforcing the legislation effectively and thereby also looking carefully at situations outside the driver's control, the regulatory flexibility which that requires and the associated supervision at home and abroad. Fatigue is not caused by a one-off breach of the driving time and rest periods, but by a long-term pattern of too much driving and too little rest. It is therefore important that this distinction between one-off breaches and a long-term pattern can be made in the supervision and enforcement. The Board feels that it is therefore important that the period of 28 days which the supervisory agency can review as specified in the legislation should be applied in that way, namely in order to determine whether there was a one-off breach or a long-term pattern. It is also important that the authorities stress that compliance with the driving time and rest periods is not sufficient to prevent alertness problems caused by fatigue.

It is also important that employers themselves take adequate steps to prevent alertness problems and other safety problems amongst their drivers. Under the Arbowet [Occupational Health & Welfare Act] the employer is responsible for the employee's health and safety. One important element in this is fatigue management: companies then work from what the driver needs in order to be alert at the wheel, instead of aiming for basic compliance with legislation. It is thereby important that the driver is viewed as a professional, his comments about potential risks are valued and are taken seriously by the employer.

Under the Arbowet the authorities monitor that the employer adopts a systematic approach in controlling the risk at work. However, because reduced alertness as a result of fatigue amongst other things is not classified as a risk at work in the occupational health and welfare catalogue, the employers do not include this in their compulsory Risk Inventory and Evaluation (RIE). The standard approach in the ILT's supervision under the Arbowet is confined to checking compliance with the driving time and rest periods legislation. ILT does not monitor other risks at work on the road as standard. This means that the supervision does not provide any stimuli to do more than just comply with the statutory minimum level.

### *Faster result*

In addition to alertness problems, which require a great deal of effort to resolve, this investigation also reveals a number of issues where a faster result might be achieved in the area of road safety. The Safety Board is thereby thinking of the prevention of tyre blowout accidents through the introduction of a compulsory tyre pressure monitoring system<sup>19</sup> on the one hand, and by discussing 'how to respond to a tyre blowout' in the training and periodic training on the other hand. The immediate enhancement of drivers' professional competence could be achieved by restricting the system of periodic training for professional drivers (code 95) to a number of compulsory topics relating to road safety. It is important that the minister draws up a strategy for converting peak hour lanes into standard lanes before the tipover point for road safety is reached. Finally the traffic jam information systems could be improved so that road users are better able to respond adequately to unexpected situations (such as slow-moving traffic, traffic jams and accidents).

## **Recommendations**

The Board believes that these recommendations will bring its ideal of a safer society considerably closer - provided that parties also take on the responsibilities that have been identified.

### **To sector and employers' organisations in the haulage sector**

#### 1. *Occupational risk on the road*

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.

#### *Notes*

This relates to controlling occupational risks which relate to reduced alertness (caused by fatigue and distraction, amongst other things) and safe driving behaviour under the Arbowet. The recently published standard ISO 39001 relating to Road traffic safety (RTS) management systems offers organisations a basis for a systematic approach. This might include the following control measures:

- Valuing, encouraging and following up signals from drivers about potential risks.
- Monitoring the behaviour of drivers by making effective use of all vehicle data.
- Optimising the planning.
- Countering distractions.
- Periodic training relating to road safety (e.g. dealing with fatigue).
- Including road safety as a quality element in haulage.

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<sup>19</sup> A TPMS will be compulsory for new passenger cars in 2013

## **To the Minister of Infrastructure and Environment and the Minister of Security and Justice**

### *2. Joint supervision*

Create joint supervision by NIWO, the Human Environmental and Transport Inspectorate and the police in such a way that compliance with the driving time and rest periods legislation and the Working Conditions legislation is guaranteed.

#### *Notes*

The Safety Board is thereby striving for the creation of a joint supervision strategy which is (also) aimed at improving road safety (educational supervision aimed at preventing fatigue and not just at compliance with driving time and rest periods) and the control of occupational risks on the road (see also the notes on recommendation 1).

## **To the Minister of Infrastructure and Environment**

### *3. Vehicle safety*

Advocate measures in a European context to reduce the crash aggressivity of trucks and to prevent truck accidents.

#### *Notes*

The Safety Board is thereby seeking a reduction in the crash aggressivity by improving the front and rear crash protection on trucks, preventing truck accidents by preventing tyre blowout accidents by making tyre pressure monitoring system compulsory, and carrying out research which gives insight into the effects on road safety of driver-supporting technology in trucks.

### *4. Road design*

- a. Improve the self-explanatory nature of the road design by improving the information provision over the road and developing a detection system for stationary traffic;
- b. 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 semi-permanent peak hour lanes with standard road widening before the tipover point is determined. Also reconsider the permanent nature of structural peak hour lanes in the light of this.

### *5. Truck parking spaces*

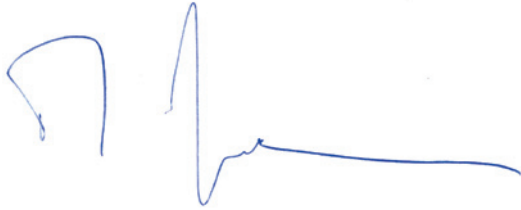
Ensure that sufficient truck parking places are created in the right locations, so that truck drivers are able to comply with the driving time and rest periods legislation. Base this on the capacity need as set out in the Service Areas Implementation Framework (Rijkswaterstaat, November 2011).

### *6. Periodic training*

Ensure that road safety becomes a compulsory part of the periodic training under the qualification directive (code 95).

Notes

The Safety Board is thereby thinking of varying themes based on current road safety risks (such as responding to tyre blowouts and the safe use of peak hour lanes).

A handwritten signature in blue ink, consisting of a stylized 'J' followed by a series of connected loops and a long horizontal tail.

T.H.J. Joustra  
Chairman

A handwritten signature in blue ink, featuring a series of vertical loops followed by two long, diagonal strokes extending to the right.

M. Visser  
General secretary



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