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Managing risks to drivers in road transport

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Freight transport cases

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SUMMARY

This report presents a number of case studies in managing risks to road transport drivers. The cases feature a variety of initiatives and interventions to protect drivers.

In the road transport sector, as with any other, it is important to pay attention to working conditions in order to ensure a skilled and motivated workforce. Certain characteristics of the sector make it more difficult to practise risk management than in other sectors. But by taking account of how the sector operates in practice, and the characteristics of drivers themselves and the way they work, risks can be successfully managed.

Drivers work independently and away from a fixed base. They may be self-employed and often have long experience as drivers. This means that it is not always easy to communicate with them and consult and involve them, and they are not always open to change. Because of this, drivers need to be intimately involved in solutions – solutions need to be developed by drivers for drivers using participatory methods, in order to use their experience and gain their acceptance. It is also crucial to allow sufficient time to discuss, plan, trial and introduce changes. The experience of drivers can also be harnessed by using them as advocates, trainers and mentors.

There should be customer and stakeholder involvement in managing risks. Those involved in making deliveries do not operate in isolation, but are part of a chain. Employers of drivers can find it difficult to ensure the safety of their employees whilst they are working at customer premises. And the competitive nature of the business makes haulage firms reluctant to make demands of their customers, who may wrongly assume that driver safety is not their responsibility. For drivers of public transport vehicles, passengers are also part of the risk and of the solution. Other parties that need to be involved in risk management may include:

- the enterprises where goods are collected and deliveries are made
- passengers, schoolchildren
- road safety groups, transport ministries, police and the judiciary, etc.

Large employers are in a position to set OSH standards for their delivery contractors, which can stimulate these small businesses to adopt such standards when working with their other clients.

OSH solutions, e.g. safer driving measures, may require additional time to carry out. This must be taken into account both in work organisation and work scheduling. On the other hand, the introduction of defensive driving can result in lower fuel consumption and therefore cost savings.

Training, refresher training and ensuring that procedures are properly followed are very important for drivers, but they must be carried out in the framework of an organisational system aimed at preventing risks and with clear management commitment.

Whenever change takes place the OSH implications should be considered. For example, the introduction of information and communication technology in drivers' cabins can be used to improve drivers' safety and health as well.

Diversity in the workforce needs to be taken into account – for example, the needs of older and younger workers, women drivers and foreign workers should be considered.

Key conclusions from the cases include:

- **Drivers are frequently self-employed, very experienced and used to working independently**.

This suggests, among other things:

  - ensuring that approaches are practical but not patronising
  - using places drivers frequent – motorway stop areas, etc.
  - ensuring that advice and solutions are based on drivers' experiences, e.g. by:
  - involving drivers in risk assessment and developing solutions
  - using drivers as advocates, mentors, etc.
  - allowing sufficient time to develop solutions and introduce change.

- **Customers, clients and stakeholders should be involved in solutions to manage risks**:
  - the supply chain – suppliers, premises where deliveries are made, etc.
  - passengers, schoolchildren.
  - road safety groups, transport ministries, etc.

- **Large organisations are in a position to set OSH standards** for their delivery contractors. This in turn can stimulate these SMEs to adopt the same standards with their other clients.

- When **new technology** is introduced into cabs, it can also be used for OSH purposes, for example to keep drivers informed and improve delivery schedules.
- **OSH solutions may require more time to carry out tasks**.
  - this needs to be recognised in work organisation and work scheduling
  - clients also need to be made aware of this.
- **Training**, e.g. defensive driving techniques must be part of an organisational system to prevent risks and with clear management commitment.

In passenger transport various case studies deal with preventing violence to drivers, including violence from schoolchildren. Such violence can have a number of consequences: stress and injury to staff, physical damage to buses, and increased road accident risk. Involving children in the solution was seen to be important and measures taken in the cases included:

- Partnership – with schools, crime prevention schemes, police, traffic authorities
- Involving children, for example:
  - a prevention officer was appointed with outreach responsibilities, e.g. to work with schools
  - theatre performance was used with children to identify issues and solutions
  - children agreeing behaviour rules for bus travel and 'policing' the buses
  - joint training with drivers and children – to help gain a common understanding.

- Taking a holistic approach, with schools involved in what happens both inside and outside the school gate
- Intervention officers – assistants who work with ticket inspectors
- Protective coatings to side windows, driver's cabs separated from passengers, CCTV, tracking systems, radio links for rapid intervention
- Post-incident legal support and counselling made available to staff.

The case studies demonstrate that a number of measures can be taken to control risks and improve safety for road transport drivers. These measures can also lead to an improved service for clients and passengers and financial savings for transport companies.

1. Introduction

This report is part of a series of good practice products related to OSH in the road transport sector. Included are reports covering examples of campaigns, good practice in road haulage and passenger transport, guidance available for taxi drivers and bike and motor cycle couriers, and information on occupational road accidents.

The report presents a number of case studies showing examples of initiatives and interventions that have been implemented to manage OSH risks in road transport. The good practice examples cover two subdivisions of the road transport sector: road haulage or freight transport and passenger transport, namely buses and coaches.

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Aims and objectives

The European Community Strategy 2007–2012 on health and safety at work [1] notes that the transport sector, along with construction, agriculture, fishing and health and social services, continues to be a sector that is particularly dangerous. For this reason the Governing Board of the European Agency for Safety and Health at Work (EU-OSHA) gave it the tasks of providing an overview of the occupational safety and health (OSH) situation in the transport sector in the EU Member States and collecting good practice information on occupational risk prevention in road transport.

The aim of this report is to support the exchange of good practice information in the sector and the sharing of experience by providing examples of:

- prevention of occupational risks to freight transport drivers
- prevention of occupational risks to bus and coach drivers.

Occupational risks in the road transport sector

Road traffic accidents are a leading cause of workplace death, injury and disability in many countries around the world. Road transport drivers are regularly exposed not only to the dangers of the road, but to a broad range of other hazards and OSH issues associated with both driving and non-driving tasks. These include:

- loading and unloading vehicles
- slips and trips and falls climbing in and out of cabs
- rest and toilet facilities
- vehicle design and maintenance
- musculoskeletal and vibration-related disorders

- hot and cold cabs
- noise
- stress
- working hours, shift work and fatigue
- violence from members of the public
- exposure to hazardous substances
- lone working and working away from a fixed base
- unhealthy lifestyle – for example lack of exercise, poor eating habits.

For risk management it is also important to recognise that drivers are not a homogenous group and include:

- older drivers
- young drivers
- women drivers
- cross-border workers.

In addition, road transport drivers require high levels of professional skills and competence. They have a major responsibility on the road.

More information about occupational risks to drivers in the transport sector can be found in the EU-OSHA report *OSH in figures – OSH in the transport sector* [2].

Methodology

The cases featured in this report cover a number of different risks to occupational drivers.

This is a collaborative report, which was produced by authors from various organisations involved in OSH in the EU Member States. The cases were collected from throughout Europe, sourced from national and international passenger transport organisations and road haulage organisations, government organisations and NGOs, accident prevention organisations, occupational health and safety organisations, government transport ministries and agencies, trade unions and trade associations.

The views and opinions expressed in the cases are not necessarily those of EU-OSHA or of the individual authors, but reflect those expressed in the source material.

References

[1] Brussels, 21 Feb. 2007, Communication from the Commission to the Council and European Parliament, COM(2007)62. See: http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0062:FIN:en:PDF

[2] European Agency for Safety and Health at Work (EU-OSHA) OSH in figures – Occupational Safety and Health in the transport sector – an overview. Available at: http://osha.europa.eu/en/publications/reports/transport-sector_TERO10001ENC/view

2. Examples of good practice in freight transport

2.1. Introduction to the freight transport cases

Road traffic accidents are a leading cause of workplace death, injury and disability in many countries around the world. However, road haulage drivers are regularly exposed not only to the dangers of the road, but also to the risks associated with activities such as loading and unloading. These activities may involve manual handling or working with mechanised lifting equipment, working at heights and exposure to dangerous substances. It is also often necessary for drivers to work at customers' premises and in unfamiliar environments, which may have hidden hazards.

According to the EU-OSHA report *OSH in figures* [1], special issues to address regarding road transport of goods include:

- just-in-time management leading to high work pressures
- client pressures; working on the premises of others in the supply chain– unforeseeable conditions, uncertainty over availability of lifting aids, etc.
- increasing use of remote monitoring/contact systems and complex technology
- workplace design
- accessibility of facilities and services (hygienic, food and medical)
- infectious diseases
- violence and assault
- lone work
- prolonged sitting and exposure to vibration
- accident risks, including when loading and unloading
- needs of an aging workforce and of women working in transport
- for dangerous goods transfer:
    - accident risks, including fire and explosion risks
    - exposure to dangerous substances, especially when loading and unloading
    - risks of falls from vehicles and other transport means

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The road haulage industry accounts for a relatively large number of serious injuries. According to a study by the Department of Public Health at Oxford University, driving trucks is one of the top 10 most dangerous professions in the UK, with drivers being six times more likely to suffer a fatal accident than the average British worker. Accident statistics for 2007 show that 559 heavy goods drivers were killed in road traffic accidents within the EU [2]. However, it is the non-driving activities such as loading and unloading or climbing in and out of the cab that account for the majority of accidents in which drivers sustain injuries. Analysis of the Danish National Work Injury Register (DKWIR) for the period 1993–2002 revealed that 92.6% of the 5,896 registered injuries during this period were the result of *non-traffic related* incidents.[3] The most commonly reported incidents were falls from height, overexertion, crush injuries and slips/falls.

The road haulage driver's job can be highly stressful; drivers need to cope with time pressure, negotiating heavy traffic and confrontations with other road users and/or customers.

Not only are drivers exposed to a number of dangerous and stressful situations, but many of them lead unhealthy lifestyles as a result of having to rely on convenience food and having little opportunity to exercise. This is exacerbated by the fact that they work long and often antisocial hours, which makes it difficult to achieve a good work–life balance. This unhealthy lifestyle is directly linked to a number of health conditions that are prevalent amongst haulage drivers, including obesity, cardiovascular disease, sleep apnoea, depression and musculoskeletal disorders.

Very little attention has been paid to the needs of women in the road transport industry. Although more women are working in the industry than in the past their numbers are still low overall, so working conditions are particularly unadapted to their requirements.

This section of the report covers implemented examples of actions to prevent risks to road haulage drivers.

[1] European Agency for Safety and Health at Work (EU-OSHA) – *OSH in figures – Occupational Safety and Health in the transport sector – an overview*

[2] CARE European database on road accidents.

[3] Case 2.3.3, herein.

Case-specific reference details are recorded for each individual case study where appropriate.

2.2. Short descriptions of the full case studies

2.2.1. Cases at company level

'My back is devilishly important' ('Mijn rug is verdieveld goud waard'), Belgium (case 2.3.2)

Van Dievel Transport provides training designed to prevent musculoskeletal disorders in drivers. The course is entitled 'My back is devilishly important' (a pun on the name of the company), and the training material has been published in a booklet with the same title. This booklet clearly explains the preventive actions the company takes to help drivers to use their back and their joints without hurting them and covers driving and manual handling. Much of the information is pictorial. Every new driver receives this booklet when they join the company. The initiative also included technical measures to improve trucks and tools.

Knowledge-sharing among drivers to prevent non-traffic related work accidents, Denmark (case 2.3.3)

The vast majority of work accidents sustained by goods transport drivers are related to loading and unloading, i.e. they are non-traffic related. Working conditions in loading areas are frequently poor and responsibility for the safety of drivers in these conditions is unclear. Experienced drivers are familiar with the problems that exist but their knowledge has previously been untapped. In this example, the company has sought to increase organisational learning in relation to hazards connected with loading areas. Managers, in collaboration with drivers, have developed a scheme (participatory design), which was subsequently used to gather information about working conditions in over 500 different loading areas. This information has been integrated into the company's IT system so that the information is available to drivers when they print out their daily route. The issues covered include agreements with clients. For drivers it was particularly important that the measures took account of literacy levels and limited time for making deliveries.

Outsourcing and safety: Shell's Quality Health Safety Security and Environmental (QHSSE) system, Denmark (case 2.3.4)

Shell Transport in Denmark operates exclusively through the use of subcontractors. All subcontractors are required to conform to the company's QHSSE standards. These focus particularly on the reporting of accidents and injuries, training and instruction of drivers and how subcontractors incorporate safety within their organisational practice. Adherence to the programme is closely monitored by Shell and various audit activities are undertaken to ensure compliance. The QHSSE programme aims to take a proactive stance towards safety and emphasises both instruction and learning. In relation to learning, there is a strict policy regarding the reporting of near-misses, and driver assessment takes the level of reporting into account.

Driver's Manual, Finland (case 2.3.6)

The transport company ADR-Haanpää introduced the Driver's Manual in order to make the company's quality, environmental and safety issues visible in everyday work and to provide a useful tool for drivers. The main objective of this manual is to emphasise the importance of safety behaviour and to prevent the risks of illnesses and accidents at work. The Driver's Manual is primarily a day-to-day guidebook for drivers, but it is also used as an educational, orientation and marketing tool. It combines safety, environmental and other quality-at-work issues. It is a loose-leaf folder and an electronic version is planned for the onboard vehicle computer system.

'Trim Truckers' ('Kuljettajat Kuntoon'): promoting truck drivers' health and wellbeing by minimising risk in cooperation with an occupational health service provider, Finland (case 2.3.7)

This case study presents the results of a long-lasting and successful collaboration between a haulage company and an occupational health service provider. The transport industry is characterised by irregular working hours, and fatigue and sleepiness are common safety risks among drivers. In addition to driving, risks arise from loading and unloading activities as well as from climbing in and out of trucks which may be ergonomically challenging. The 'Trim Truckers' ('Kuljettajat Kuntoon') project addresses these risk factors with the assistance of the employer's multi-professional occupational health service provider. The initiative has included medical examinations for sleep apnoea, a 'customised' healthy eating lunch box and alteration to the logistics strategy in order to improve work schedules. Both the management and drivers of the company have expressed satisfaction with the project, which has promoted a positive working and safety culture among the drivers.

'Transport online': an intranet- and internet-based system to manage and supervise truck drivers' work and rest hours, Finland (case 2.3.8)

The 'transport online' management system was developed by Finland's Tyvi freight transport company. It is an intranet and internet-based system for production, and for the management and supervision of truck drivers' working hours and resting time. The system enables real-time management. It includes work and customer instructions, service instructions, regulations concerning the transport business, and instructions for drivers on giving daily reports to the company. Management of regular working hours and work shifts is a significant factor affecting drivers' wellbeing and occupational safety.

Prévost Transport: Project 80 km/h, France (case 2.3.9)

The Prevost transport company initiated a speed limit of 80 km/h for its drivers achieved by means of a number of measures. This resulted in a reduction in fuel consumption and CO_2 emissions, and improved the health and safety of the drivers. Workers have shared in the cost savings. Stickers on vehicles were used to promote the initiative. Collaboration with the regional health insurance organisation was obtained. There was active sharing of the initiative and other companies have since adopted the approach.

Instruction programme for team instructors, Germany (case 2.3.10)

Experts from the BGF (the German Institution for accident prevention and insurance in the vehicle operating trades) train team instructors in all aspects of occupational safety and health in the heavy goods transport sector. These team instructors then pass on the information to truck drivers via training sessions in companies and driving schools. The training methods are participatory and include using participants' own experiences. Driving and non-driving risks are covered, including psychosocial issues.

Practices in a chemical road transport enterprise – technical and training measures, Switzerland/Germany (case 2.3.13)

The Swiss-based transport company Bertschi AG has a diversified approach to all aspects of occupational safety and health and has set targets for accident reduction. With the help of technical solutions, continuous training and controls, the company tries to create a safe work environment for each employee. Because its operations extend across Europe, Bertschi AG often has to deal with the divergent legal backgrounds of various different nations, but nevertheless has established one framework for safety across its multinational branches.

Safe Driving Project, Greece (case 2.3.14)

Heracles General Cement Co., a cement production and distribution company in Greece, implemented a series of actions, including defensive driver training, driver assessments, policy development, equipment control and safety management of site entry, exit and traffic circulation to protect their drivers. Employees and contractors were involved.

John Lewis Partnership, UK (case 2.3.17)

The John Lewis Partnership developed and implemented a series of work-related driving policies and procedures in an attempt to improve overall driving safety and reduce the organisation's accident statistics. These included handbooks for drivers, guides for mangers, comprehensive incident assessment and driver assessments. The initiative succeeded in bringing down the accident statistics, severity of accidents and accident cost, and increased drivers' safety awareness in both work-related and personal driving.

Robert Wiseman Dairies, UK (case 2.3.18)

Robert Wiseman Dairies developed and carried out a series of road safety procedures to protect their employees from safety risks at work and reduce company costs. The measures used included risk assessment, training, incident investigation, employee assessments, guidance and incentives across a range of activities. Guidance and procedures from other organisations were adapted to the specific needs of the company. Objective data and subjective feedback are used to further adapt and update procedures as necessary. The initiative helped reduce the number of accidents, improve employee attitudes and increase driving safety and risk awareness in both work-related and personal driving.

Driving at Work Policy, UK (case 2.3.19)

Coca-Cola Enterprises Limited (CCE) implemented a policy covering various issues relating to health and safety while driving at work. The goal was to minimise company costs and to improve employees' safety at work. Measures included: risk assessment, with tailored control measures based on the assessment, the driver and the task; driver and manager responsibilities; incident investigation; promotion of best practice; driver assessments and training, and occupational health services. The initiative covers: employees' and contractors' safety; maintenance and ergonomics of vehicles; driving and non-driving tasks.

Royal Mail Network Health and Safety Management System, UK (case 2.3.20)

This case study describes aspects of Royal Mail Network's Safety Management System. The policies, procedures and initiative include: driver training and assessment – including the use of experienced drivers as coaches; vehicle maintenance policies, and the Concept Truck programme in which a bespoke 'safety truck' was designed and manufactured. The truck design included new safety features for driving and measures to prevent falls from tail-lifts.

2.2.2. Cases at national level

Alert Team 44 (Notrufteam 44), Austria (case 2.3.1)

Alert Team 44 was a pilot project in 2001/2002 aimed at preventing psychosocial risks. Lorry drivers who were traumatised after serious accidents could obtain both psychological support and legal advice. The framework consists of a telephone hotline utilising cooperative and interdisciplinary structures.

Sketching out safety: A campaign for accident prevention and reporting among goods transport drivers, Denmark (case 2.3.5)

Studies show that the level and quality of reporting in relation to work accidents in the transport sector is of a generally poor standard. The Working Environment Council for the Danish transport sector has addressed this by developing a set of tools tailored to the needs of different transport companies, with the aim of facilitating a more comprehensive approach to reporting. More specifically, the tools aim to increase the attention given to causal factors and accident analysis. The material is designed to encourage more active participation in the reporting process; employers, in particular, are challenged to adopt a more professional approach to reporting. The tools provided also include a preventative element, aiming to raise awareness of the risks to which drivers are exposed. This material is presented in the form of cartoons depicting typical accident scenarios in order to make it as accessible as possible to both employers and employees. The focus is on non-traffic situations.

DocStop, Germany (case 2.3.11)

Based on prior investigation of need, DocStop, a non-profit association, was initiated to improve medical facilities for long-distance professional drivers while at work. Rest areas

serve as DocStop centres, which have a network of doctors that are convenient for drivers to consult while on the road, without this causing undue disturbance to their schedules.

The Driver Assistance Systems campaign, Germany (case 2.3.12)

In this campaign ('Sicher.Für Dich.Für Mich. Fahrer-Assistenz-Systeme'), the BGF gave a financial incentive to enterprises that run vehicles equipped with driver assistance systems. Training on the new technology was also provided to truck drivers. Good marketing ensured that a broad group of road users was reached. The driver assistance system covers cruise and stability control and lane departure. Companies taking the subsidy had to help in the assessment of equipped versus non-equipped vehicles. Stickers on equipped vehicles help to publicise the campaign.

Safe opening and entry of gassed sea containers, the Netherlands (case 2.3.15)

Much overseas cargo is treated with toxic substances following the requirements of international law. However requirements such as which pesticides may be used and labelling treated containers are not always followed. This can lead to the exposure of employees to the hazardous gases when the cargoes are opened on arrival at European ports. BGZ Wegvervoer developed a step-by-step plan for the safe opening and entry of gassed sea containers. It is a web-based protocol and additional good practice information is also available from their website.

The risk of occupational fatigue in road transport – a coordinated prevention initiative, Spain (case 2.3.16)

A Spanish trade union federation carried out a government-funded study into the influence of driver fatigue on road traffic accidents in Spain. It comprised a literature search and discussions with drivers and looked at causes and solutions. As a result of the study a campaign was initiated to raise public awareness of the problem and a number of sector-specific publications were produced, including guidance for the road haulage sector. The formation of a joint employer–trade union foundation on occupation and the road was another outcome.

Lenses for foreign lorries, UK (case 2.3.21)

To combat the problem of left-hand drive lorries side-swiping other vehicles due to blind spots, the UK Highways Agency, in partnership with other government agencies and the police, has implemented a campaign to distribute wide-angle lenses to foreign lorries operating on UK roads. The initiative was introduced after an investigation of the problem, starting with a pilot scheme.

Falls from vehicles, UK (case 2.3.22)

The UK Health and Safety Executive commissioned a study to assess falls from vehicles, which it used to determine preventive measures and set priorities for a campaign on falls from vehicles. The campaign includes a variety of resources and the sharing of best practice case studies to prevent risks, one of which is presented.

2.3. Full case studies

2.3.1. Alert Team 44 (Notrufteam 44), Austria

Organisation(s):

Austrian Trade Union for Commerce, Transport, Traffic (Gewerkschaft Handel, Transport, Verkehr; now known as VIDA)

Lower Austrian Chamber of Workers (Kammer für Arbeiter und Angestellte Niederösterreich)

Austrian Federal Economic Chamber (Wirtschaftskammer Österreich)

Austrian Social Insurance for Occupational Risks (AUVA – Allgemeine Unfallversicherungsanstalt)

Implementing organisations:

ppm research and consulting – concept organisation and implementation

Curatorship for Road Safety Austria, Institute for Traffic Psychology (Kuratorium für Verkehrssicherheit Österreich, Institut für Verkehrspsychologie) – psychological aspects, research

Key points

- Prevention of post-traumatic stress disorder (PTSD) among lorry drivers caused by accidents, which can lead to an inability to work.
- Legal and psychological support offered.
- Training of service providers and dissemination of information about PTSD in the sector.
- Quick re-integration, reduction in sick leave and costs for national insurance institutions and companies.
- Support for drivers from SMEs.

Introduction

Notrufteam44 (Alert Team 44) is a pilot project carried out by the Trade Union of Commerce Transport Traffic in cooperation with the Chamber of Workers, the Austrian Federal Economic Chamber, the Austrian Social Insurance for Occupational Risks, the Healthy Austria Fund and ppm research and consulting. The aim was to help lorry drivers who had been traumatised after serious accidents by providing psychological support and help with legal questions.

Background

Austria's Trade Union of Commerce, Transport, Traffic saw the necessity to help lorry drivers who had been traumatised after serious accidents by providing psychological support and legal advice.

The basic problem is well known. Drivers with PTSD are at greater risk of being involved in further accidents and/or are no longer able to work in road transport. Large haulage firms invest a lot in human capital; for example the Austrian Federal Railways and Austrian Airlines have built up a support structure for employees directly after serious incidents. The support structure is provided by trained assistants, first aiders and professionals who actively contact affected drivers.

The Austrian transport sector consists mainly of small and medium-sized enterprises (SMEs) that lack adequate internal structures to actively contact affected drivers. Therefore in 1999 the main initiator, the Trade Union of Commerce Transport Traffic, strove to find a solution in

cooperation with the Chamber of Employees, the Austrian Federal Economic Chamber and the Austrian Social Insurance for Occupational Risks. The Healthy Austria Fund was also contacted to subsidise a pilot project.

Finally, ppm research and consulting was commissioned to conceive the network organisation and implementation, and the Curatorship for Road Safety Austria accepted responsibility for the psychological attendance and research. The trade union, the Chambers of Employees and the Economic Chamber provided the legal advice.

Project Notrufteam44 was set up in an attempt to establish the necessary structures nationwide for professional lorry drivers (more than 3.5 tons) – employees as well as one-man firms.

Aims and objectives

- Alleviation of the psychological impact of accidents.
- Reduction of the elevated risk for accidents due to PTSD following an accident.
- Preservation of employability, health and resilience.
- Reduction of sickness rates.
- Avoidance of chronic PTSD and its professional and social consequences.
- Creation of a helpdesk network for concerned lorry drivers.

Scope

The project lasted for 18 months, from mid-2001 to the end of 2002.

As a first step a phone hotline for concerned lorry drivers was established and advertised as ‘Notrufteam44’ (Alert Team 44). The hotline was run by the trade union and the chambers of workers. All persons answering the hotline were trained for this task. Based on experiences from the project management it was assumed that callers would be more likely to ask for legal support than psychological help. So, the responsible person answering the call was trained to introduce the possibility of psychological help and facilitate the acceptance of the offer (normally two or three sessions).

In each federal state, a traffic psychologist was trained to provide this special psychological help. Legal consultants from the trade union and chambers of workers were also nominated for the project and trained to meet the special needs traumatised persons may have.

The psychological support was financed by project funding. The legal advice was part of the regular service provided the chambers of workers but clients of the project were given priority access.

Outcome and evaluation

The trade union and chambers of employees used their membership to spread information about the project and the helpline number. Information materials were distributed and fire brigade, police and rescue workers were integrated and informed.

A special unit ‘PTSD in the transport sector’ was developed and integrated into the occupational health curriculum at Linz’s Academy for occupational medicine and safety technology (Akademie für Arbeitsmedizin und Sicherheitstechnik Linz).

The project enjoyed high acceptance among the lorry drivers, but the inhibition threshold to consult a psychologist was high.

The project raised public awareness of the problems lorry drivers face after serious accidents. Although the project did not continue, it generated a lot of interest and there are still many requests for information about the project.

Problems faced

As PTSD is not fully recognised as an occupational disease for compensation in Austria, funding could not be obtained for the pilot project to continue as a permanent service.

Success factors

- Participatory approach referring to project information and communication.
- An interdisciplinary approach with respect to implementation (in immediate accident aftermath and in the longer run).
- A technical measure (phone hotline).

Transferability

The project is transferable to other countries. A very similar project exists in the Netherlands (BOV Traumabegleideling).

In addition, the idea of providing psychological support for workers after serious accidents can be transferred to other professions.

Further information

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http://www.kfv.at/uploads/media/01_12_07.pdf

http://www.kfv.at/kuratorium-fuer-verkehrssicherheit/presse/presseaussendungen/archiv-details//artikel/338/1215331292/273/c8795bec0a/browse/96/

http://www.sve-psd.at/aut_44.html

2.3.2. 'My back is devilishly important' ('Mijn rug is verdieveld goud waard'), Belgium

Organisation(s): Van Dievel Transport, a medium-sized, third-generation family business.

Key points

- Prevention of musculoskeletal disorders in professional drivers.
- Development of a special training programme for professional drivers.
- Use of pictorial materials.

Introduction

Van Dievel is a full-load transport company that delivers goods within a 500 km radius of Brussels, to and from the Netherlands, Luxembourg, Germany and France. The company employs approximately 90 drivers and owns about 60 trucks and 120 specialised trailers. Most of them are multipurpose taut liners which, depending on the loading/unloading technique, can be opened from the back, the side or the roof. The drivers were involved in the selection of appropriate trailers.

The company pays a lot of attention to occupational health and safety for its drivers, and to road safety in general. The vehicles are equipped with specific safety devices such as blind

spot mirrors and blind spot cameras, new communication techniques, computers and hands-free mobile phones. They develop and promote safe driving by coaching and instructing new and young workers in defensive driving. Various methods are used to promote safe driving, such as toolbox meetings, information sheets, safety messages, internal communication and individual feedback. In addition, safety coaches accompany new drivers on their rounds. One project that was developed within the company was 'Mijn rug is verdieveld goud waard' ('My back is devilishly important'), that deals with musculoskeletal diseases and back pain.

Background

The management initiated this project because the workers often complained about back problems. The company employs an occupational health physician, who examines the workers every year. As the physician knows the company and drivers very well and workers have confidence in him, he was asked to educate the workers and management about musculoskeletal disorders.

Aims

The company goal was to promote healthy and safe working and to prevent musculoskeletal disorders and lower back pain among its drivers.

Scope

Together with the occupational health service (ergonomists) the company analysed the working conditions for drivers and then looked for technical solutions (truck, tools etc.) to improve them. The occupational health physician, in close collaboration with an external ergonomist and eight company drivers, produced a special training programme and mainly pictorial brochure for drivers showing them how to work safely and to prevent musculoskeletal disorders. The drivers helped with illustrating the booklet. The brochure gives general advice about balanced nutrition, correct sitting and lying, exercises to prevent musculoskeletal injuries as well as special advice for drivers such as appropriate sitting position behind the wheel, the right way to get into and out of the vehicle, and how to lift and handle heavy goods. The ergonomists trained the drivers in how to move and work safely, and how to use the brochure. The brochure is also used to instruct new and young workers.

Results and evaluation

The company evaluated the project after one year, but this period was too short to see any benefits. The management nevertheless decided to continue the project. In 2002 the company won the European Health Club 'Health and Enterprise' award for its action.

Problems faced

Although the workers were very enthusiastic about the improvements it was a challenge to convince them to change their working habits.

Success factors

The long-term safety culture of the company was the foundation for the project and this awareness-raising project was part of a good organisational approach to OSH with a prevention focus. The management supported and promoted the project and the drivers were closely involved. The participation and close cooperation with the workers in the project and with the risk assessment was very helpful and supportive. Use of pictorial material was also important.

Transferability

The brochure is only available for Van Dievel's drivers, but the project in itself is transferable to other companies.

Further information

Van Dievel Transport info@vandievel.eu

Web: http://www.vandievel.be/eng/index.asp

From the European Network – Belgian Safe Work Information Centre (BeSWIC): http://www.beswic.be/good_practice/examples/transport_van_dievel/index_html/view?searchterm=van%2520Dievel

2.3.3. Knowledge-sharing among drivers to prevent non-traffic related work accidents, Denmark

Organisation(s)

The National Research Centre for the Working Environment (NRCWE) and Arla Foods, Denmark

Key points

- Focus on risks in loading areas, including manual handling injuries.
- Knowledge-sharing among truck drivers.
- Participatory design – drivers emphasised need to take time pressures and literacy levels into account.
- OSH information integrated into the route delivery IT system.
- Traffic light system used to indicate risk level.
- Issues covered include agreements with clients.

Introduction

When it comes to occupational health and safety issues concerning drivers of heavy goods vehicles (HGV), considerable emphasis is given to traffic and driving safety. Less attention has been paid to non-traffic related health and safety issues, even though, among certain groups of drivers, non-traffic related incidents are more likely to be the cause of injury at work. This case presents an attempt to address the problem of non-traffic related safety among goods transport drivers. This entails detailing the extent and nature of the problem, examining contributory factors and coming up with proposals for reducing and managing the risks identified.

Background

In 2005 the National Research Centre for the Working Environment in Denmark (NRCWE) undertook a detailed analysis of the occupational safety conditions among goods transport drivers in Denmark. Hospital admissions data from the Danish Occupational Hospitalisation Register (OHR) indicated that between 2000 and 2003 goods transport drivers had higher rates of injury-related hospital contact than a reference population comprising all other skilled/semi-skilled male workers in Denmark. More precisely, goods transport drivers had elevated rates of superficial injuries, dislocations/sprains/strains, fractures and concussion compared with the reference population.

Analysis of the Danish National Work Injury Register (DKWIR) for the period 1993–2002 provided an insight into the type of work-related injuries to which goods transport drivers were exposed. The data revealed that 92.6% of the 5,896 registered cases in this period were the result of *non-traffic related* incidents. The most commonly reported incidents were: fall from height, overexertion, crush injuries and slips/falls.

Analysis of these two data sources suggests that the occupational safety and health of goods transport drivers is primarily related to non-traffic related risks. There is a need, therefore, to focus more attention on the nature of these risks and on what can be done to alleviate and manage them.

The material presented in this case derives from collaboration between researchers at NRCWE and a large producer/distributor of milk and dairy products. This collaboration resulted in the development of a system designed to alleviate and manage the risks faced by drivers involved in the distribution of milk and dairy products. The system and, more importantly, the process by which it was designed, may provide useful lessons to other companies confronted with similar problems.

Aim

Interviews with managers and drivers revealed that the most common risk to drivers' safety was the physical conditions of the loading areas where they were required to work. Supermarkets and other smaller retailers do not, as a rule, make any provision for the safety of drivers in the design and maintenance of the areas where goods are delivered. As a result, drivers often have to work in difficult conditions with, for example, poor access, uneven surfaces, limited space and a general lack of housekeeping.

This problem is compounded by the fact that responsibility for the safety of drivers in these places falls into a grey area. According to Danish law, it is the employer who is responsible for the safety of the employee. Employers claim, however, that they are not in a position to act directly, since other companies own the areas in which their drivers are working. Of course, transport companies can in principle demand that their customers provide acceptable working conditions for their drivers. However, the extent to which they actually do this is tempered by a concern that the customer will simply find another, less demanding company to deliver the goods.

Experienced drivers who are familiar with their routes learn how to deal with the risks to which they are exposed. Their knowledge serves, in other words, to alleviate and manage risk. The company cannot, however, use experienced drivers on all its routes. Each day around 40% of routes are worked by either inexperienced new drivers or subcontractors working on a day-to-day basis, covering sick leave and temporary staff shortages. These drivers are obviously not familiar with the specific risks to which they will be exposed. The aim of the project was, therefore, to find a way to make the often implicit knowledge of experienced drivers available to their less experienced colleagues.

Scope

The project was a collaborative effort, with researchers from NRCWE and employees of the case company both contributing. The collaboration was undertaken in a work group that held monthly meetings for a period of a year. The group comprised three researchers from NRCWE and eight representatives of the company: the environmental safety officer, the dispatch manager, the union representative, an employee safety representative, a dispatcher and three drivers with various levels of experience.

The composition of the group was determined by a need to ensure that the eventual product of the project would be embedded at all levels of the organisation. This entails the participation of key actors from all levels of the organisation who, by virtue of their participation, acquire ownership in the eventual product. Such an approach is particularly important when dealing with HGV drivers, who may have a relatively remote relationship to the overall organisation in which they are employed. Involvement of the workforce in change

is, moreover, a tradition of the Danish labour market, so broad representation is also an expectation that has to be met in order to minimise potential resistance.

The work group concentrated on the issue of knowledge-sharing and how to extract the tacit knowledge of experienced drivers for the benefit of inexperienced drivers and subcontractors. Employee representatives all emphasised that the success of the project was dependent on taking the needs and abilities of drivers into account. Levels of literacy are an issue here, since the profession attracts people who are either poorly equipped, or poorly disposed, to work with many documents or other written material. Time pressure was another important issue, as route planning was based on a strict formula, allowing drivers a set amount of time to reach and deliver to different locations.

The project was divided into two parts. Part one consisted of making the knowledge of experienced drivers explicit. To this end, a scheme was developed in which drivers could provide critical information about the working conditions on their routes. The scheme was designed to avoid the need for long written descriptions, with pre-defined items, representing the most important types of risk, crossed off in accordance with the conditions in a specific location. The items on the scheme were discussed at length in the early work group meetings. NRCWE wrote a first draft, which was then amended by the work group. The next draft was piloted with a driver from the work group and researcher from NRCWE trying the scheme out on his route. This experience provided more minor amendments resulting in the final draft, which was used in the project.

The second part of the project concentrated on designing a system to present the information acquired. It was decided that the system should be connected to the IT system used to manage all information about routes and deliveries. This had the advantage of being an integrated solution, reflecting current work practice and utilising the established point of contact for drivers in relation to written information. At the start of each day drivers use the IT system to get information about their daily route; when and which locations they should deliver to, and the quantities that should be delivered. Presenting information about the potential risks associated with individual locations on the routes is, therefore, an apparently straightforward solution, but the information still needs to be presented in an accessible manner.

In order to reduce the amount of information drivers need to handle, the work group analysed information about the working conditions in the various delivery locations. This analysis was based on a traffic light system, where green represents good, amber potential risk and red definite risk. Many different aspects were taken into account when assessing working conditions in specific locations. Overall, the scoring of an individual site was determined by its lowest mark, e.g. 12 green points and one amber point meant the location would be indicated as amber to the driver who had to deliver there.

With this analysis integrated into the IT system, drivers get immediate information about levels of risk at a given location – in accordance with the traffic light system – as locations are presented on the screen in the colour of the score they have obtained. Responding to the warnings is at the discretion of the driver, but they can access the information that has been gathered about the location, print the material out and use it to get some measure of the safety-related issues that they are likely to confront. This does not remove the risk, but it helps improve the management of risk, especially as it also provides information that the delivery company can take to clients in order to discuss improvements for drivers who are delivering goods to their businesses.

Outcome and evaluation

The instrument that was developed in order to obtain information about loading areas represents a tool that can be transferred into other contexts. When developing the instrument a great deal of attention was paid to the drivers' perspective. The evaluation tool includes 13 themes:

- Road access & traffic safety
- Unevenness in unloading area (parking)
- Access to customer

- Alarm
- Delivery of goods
- Collection of empties
- Special agreements with customers
- Traffic (as pedestrian)
- Lights
- Doors/gates
- Surfaces
- Manoeuvrability
- Ramps

The first seven topics have an indirect relationship to the risks associated with loading and unloading goods. They do, however, have an influence on time pressure and hence have a direct bearing on risk, as drivers take more risks when they are behind schedule. The remaining six items all pertain to issues that are directly concerned with the individual drivers' safety.

Prior to this project the company carried out many initiatives aimed at improving safety and the general working environment. Few of these projects were deemed a success, and there was a sense within the company that things were never seen through properly. The fact that the project in this case did result in a concrete product is itself a significant success. Achieving tangible results is important, as the type of solution that is presented in this case is one that can only be achieved by long-term commitment.

Problems faced

Drivers in the company showed different levels of commitment and this was reflected in the quality of information they provided. However, the overall quality of the information was significantly enhanced by the contribution of the work group members.

Although the system was designed to be integrated fully into the existing IT system, the technical limitations of this system meant that it was necessary to design a parallel programme. This programme was, however, accessible from the same computer that was used to administer route information.

Success factors

The instrument was applied to over 500 individual delivery locations and the vast majority of experienced drivers contributed to the process. In the data analysis stage the composition of the work group was of vital importance. The extensive knowledge that this group brought to the process meant that it was possible to supplement the information which drivers had provided. Approximately half of all locations were identified as green, with the rest more or less evenly divided between yellow and red.

The participatory design approach that was used in this project is well suited to tackling the problems encountered in improving safety for drivers. Although much of the work drivers do is carried out alone, they possess knowledge that can be beneficial for other drivers and the organisation in which they work. Tapping into this knowledge and applying it to specific issues is much easier if drivers feel a sense of ownership with respect to the eventual outcome.

The success of any system that supports knowledge-sharing depends on how well it is maintained by different levels in the company. Many of the risks drivers face are dynamic, so there is a need to constantly update information. This requires close communication between drivers and those responsible for the administration of the system.

Transferability

The specific tools developed in this project were designed with the needs of drivers in this company and the exact nature of the work they undertake in mind. It would, nonetheless, be possible to apply the tools in other, similar, settings, e.g. daily distribution of perishable goods to retailers. The experience from this project would, however, suggest that the *process* is as important as the *product*. So while the tools that were developed in this case could be used as a basis for discussion, it is important that a discussion and process of negotiation is undertaken. Drivers need to feel some degree of ownership with respect to the process of improvement and change, otherwise their levels of engagement may not be sufficient to bring about change.

Further information

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2.3.4. Outsourcing and safety: Shell's Quality Health Safety Security and Environmental (QHSSE) system, Denmark

Organisation(s): A/S Dansk Shell Distribution, Fredericia, Denmark

Key points

- Small and medium-sized enterprises (contractors) adopting the safety standards of a large, high-profile organisation (contracting organisation).
- Surveillance and maintenance of a safety management system.
- Provision of resources to contractors to support compliance.
- Support regarding requests to customers to make safety improvements for delivery.

Introduction

In 1999 Shell outsourced distribution of petroleum and natural gas in Denmark. There had been a relatively high frequency of accidents, both to staff and materials. Since 1999 Shell has seen a significant improvement in its transport operation, with fewer lost time incidents (LTIs) and material damages. By establishing and managing a set of requirements and measures that subcontractors must follow, Shell has improved safety in its own operations and disseminated a good safety culture to a number of smaller transport companies.

Background

In 1999 Shell in Denmark made the decision to outsource its transport operation. This decision was based on a number of factors, including safety management. Shell needed to ensure that safety standards were met by contractors and specifically the aim was to reduce the number of LTIs, traffic accidents, and material damages and spills (environmental damage).

Initially the operation was outsourced to 44 subcontractors, which varied considerably in size. Each of these companies was required to undergo Shell's Quality Health Safety Security and Environmental (QHSSE) assessment. Shell operates QHSSE globally, applying it to all

aspects of its business. In relation to the transport operation the requirements cover reporting of incidents, instruction and training of drivers and general safety management structures and procedures. Shell performs regular checks and controls on the system, holding quarterly meetings with all subcontractors.

In 2004 it was decided to reduce the number of subcontractors from 44 to ten. The ten subcontractors operate approximately 100 vehicles, with roughly 160 drivers driving regularly for Shell. The operation is split into two parts: (1) Shell filling stations and large industrial installations; and (2) small and medium-sized companies and private customers.

Aim

The Shell QHSSE system is applied to all aspects of the company's global operation. The application of the system to distribution and transport in Denmark seeks to improve safety across a number of different areas. The measures that have been put in place to ensure better safety therefore provide an insight into safety management systems in practice.

The requirements of the system place demands on the resources of smaller organisations, as fairly detailed documentation of performance is required. The demands on drivers are also considerable, with various aspects of their performance being assessed regularly within the QHSSE system. Therefore, this is also an interesting example of how small and medium-sized companies can be encouraged to comply with an external safety culture that is based on the possibilities and requirements of a large company.

Scope

The scope of the QHSSE system is extensive. Aside from safety management and regulation, subcontractors and their drivers are provided with a number of tools and resources to allow them to meet the criteria that Shell demand. All drivers must, for example, take a Shell safety course in order to be able to drive for the company. This course covers the following topic areas:

- defensive driving
- ergonomics
- health and welfare
- first aid and fire fighting.

Each area of instruction constitutes roughly eight hours of training. Drivers must also undergo three hours of instruction in a simulator, where they are exposed to different traffic scenarios under different weather conditions. Shell pays drivers for all lost working time spent on the courses.

The minimum requirements for all drivers who drive for Shell are that they are 25 years old or more, have a clean driving licence, three years' experience of driving heavy goods vehicles, a recent medical check-up and have completed the Shell introductory course and the course on defensive driving.

Drivers are subsequently rated on their performance on a number of factors, and given a score on a scale from A to D, where D is defined as drivers not suitable for Shell. All new drivers are placed in category C, since participation in further courses gives credit within the scoring system. Further indicators of driver performance relate to safety measures such as LTI, material damage, environmental damage and traffic accidents. The system also demands adherence to set working hours, with prescribed rest periods during and between shifts.

The system encourages the reporting of near-miss incidents as drivers are rewarded for reporting them. Companies and drivers are generally encouraged to be proactive about safety. Demonstrating an awareness of safety issues, by reporting near-misses or highlighting concerns with particular delivery locations, is also recognised in the scoring system.

Tachometer readings are used to check that drivers are sticking to speed limits and hours of work regulations. In addition, there are a number of requirements relating to dress code, safety equipment and procedures for handling fuel lines and other equipment related to the point of delivery.

Monitoring and regulating the system, and ensuring that all subcontractors adhere to it, is done in a number of different ways. An audit is carried out at the quarterly meetings, ensuring that the documentation processes are in order and that the necessary organisational structures, such as formal safety meetings, are in place. Shell also undertakes random checks of drivers at the point of delivery, taking photo documentation and contacting the driver and his company if there is any need for instruction and/or sanctions. Several times a year, traffic observers also check to see whether drivers are wearing seatbelts and how they perform in traffic.

There is no direct involvement on the part of Shell in how the individual subcontractors actually adopt the QHSSE procedures. Since the system was introduced there has been a significant improvement across nearly all safety measures. What is difficult to gauge, however, is the effect that exposure to the Shell system has on the more general safety culture of the companies working with QHSSE. It is not clear, for example, whether these companies also apply the same standards when dealing with other customers.

To further investigate this point, key staff at two of the participating subcontractors were interviewed to gain insight into whether there had been general improvements in the performance of their overall operation since taking on work with Shell. Although only providing anecdotal evidence for the purposes of the case, these accounts are nonetheless important for showing how systems such as QHSSE can have a more generally positive effect on the safety performance of small and medium-sized companies.

Outcomes and evaluation

During the period 1999–2007 there was a significant improvement in all areas of safety and a notable improvement in all of the main measures by which the safety performance is assessed within the QHSSE system.

- **Lost time incidents** fell from a frequency of 20 (per million hours) in 1999 to under 5 in 2007.
- **Number of accidents** requiring medical treatment fell from a frequency of over 20 (per million hours) in 1999 to under 5 in 2007.
- **Number of traffic accidents** fell from a frequency of approximately 5 (per million km) to a level of just under 1.
- **Number of spills** fell from a frequency (per 10,000 drops) of over 3.5 to just over 1.0.

The improvement across a range of safety performance indicators suggests that the system is a success. Likewise, there is anecdotal evidence to support the view that subcontractors experience a general impact on their safety performance when they work within the requirements of QHSSE.

Subcontractors:

Fjallered Transport employs roughly 25 drivers, approximately half of whom undertake work for Shell. The company has implemented requirements that match those of Shell in a number of key areas. Alcohol and smoking policies are well established, as are working hour regulations and rest periods. All drivers in the company are required to fill out near-miss incident reports as standard practice. These reports are used to inform other drivers of potential risks, and they are placed in a file carried in all vehicles. If a driver does not report a near-miss incident the manager will discuss the matter with the driver.

This company believes that the policies required to meet the demands of QHSSE can be successfully adopted by a relatively small organisation. With the support of Shell the necessary documentation procedures have been put into place, so maintaining a high

standard of safety management does not require excessive extra investment. Likewise, if drivers get used to safe working practices, they are likely to carry on with them even when working for customers who do not make the same demands as Shell.

Carl Larson & Sons employs approximately 12 drivers, more than half of whom work for customers other than Shell. The company delivers to Shell's private customers, which involves some unique safety challenges. Private customers often live in remote places where access is difficult. The equipment used is sometimes old and not always well maintained, and access to the delivery point may also be problematic. Shell is supportive of efforts to compel customers to improve conditions for the benefits of drivers, but there are numerous practical obstacles that hinder improvement.

In the experience of this company, working according to the requirements of a larger organisation has overall benefits when it comes to safety. The requirement to hold regular safety meetings was cited as an example of this. These meetings encouraged the drivers and management of the company to discuss safety issues more, something that they would not have thought of doing without being exposed to the Shell way of working.

Problems faced

The results suggest a significant success story, both for Shell and its contractors, but it is important to recognise possible problems in interpreting the results. The system may, for example, encourage some forms of under-reporting, since companies and individuals may try to present themselves in the best possible light.

The levels of documentation required make considerable demands on small and medium-sized companies and the resources required to meet QHSSE standards may seem prohibitive to some companies.

Success factors

The case exemplifies how large organisations, through the leverage they can exert in the outsourcing process, are able to contribute to better safety standards in small and medium-sized enterprises. The improvements that have been made would not, however, have been possible without the measures introduced by Shell to ensure compliance. It is important to note that Shell, when imposing the safety quality system on its contractors, backs this up with support and resources. A proactive approach is taken to help contractors and there is an emphasis on both instruction and learning for the drivers. Shell also supports contractors in their efforts to get clients to make improvements in unsafe delivery conditions.

The safety standards that companies must adopt to work for Shell are relevant to their operations with other clients.

Transferability

The fact that this approach to safety management has been shown to improve safety performance over a number of years suggests that it is transferable. Further evidence is still needed, but there is reason to believe that small and medium-sized companies can benefit from working in accordance with the requirements and standards of a larger organisation.

Further information

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2.3.5. Sketching out safety: A campaign for accident prevention and reporting among goods transport drivers, Denmark

Organisation(s): The Branch Working Council (BWC) for the transport and wholesale sector, Denmark

Key points

- Reporting system and awareness-raising and educational resources to increase attention to causal factors and accident analysis and encourage reporting.
- Industry-wide initiative, including the major stakeholders.
- Emphasises both prevention and learning.
- Seeks to encourage employers to take a more professional approach to the work environment.
- Materials produced are designed to meet the needs of drivers. The simplified materials include cartoons depicting typical scenarios to provide the message more immediately.
- Main focus is non-traffic situations.

Introduction

The Branch Working Council (BWC) for the transport and wholesale industry in Denmark is supported by state funding and comprises both employer and employee representatives. Broadly speaking, its objective is to help answer questions and solve problems relating to occupational health and safety within the industry. The BWC coordinates its work and collaborates with the Department of Employment, the Working Environment Authority, the Working Environment Information Centre, the working councils of other sectors and educational institutions involved in occupational health and safety training.

This case focuses on one specific initiative, to prevent injuries to drivers working in the goods transport industry. Consultants from the BWC developed a set of tools designed to communicate risk awareness within companies and among drivers. The process involved identification of key risks and the development of a way of presenting this information to transport companies and individual drivers. Simplified materials using cartoons and depicting typical scenarios were developed and tested on employers and drivers. The focus was on non-traffic situations.

Background

The main tasks of the BWC are to provide up-to-date guidance, instruction and training materials to the industry, hold conferences, propose campaigns and research projects and support occupational health and safety training.

The number of incidents involving goods transport drivers has consistently placed this occupation near the top of the Danish work accidents register. The BWC has made a concerted effort to identify the most significant risks facing drivers, and this has provided the basis for the development of various tools and initiatives aimed at improving awareness of safety.

The vast majority of work accidents experienced by goods transport drivers are the result of loading and unloading activities. The campaign introduced by the BWC in 2007 is, therefore, largely focused on safety in non-traffic situations.

Aim

Awareness is a key aspect of the BWC's role, since the vast majority of the companies that fall under its remit are small or medium sized. These companies are often not able to provide

adequate instruction and training for their drivers, since they lack the resources to undertake systematic campaigns or improvements.

The objectives of the programme are:

- To raise awareness of the health and safety issues relevant to goods transport drivers.
- To provide small and medium-sized companies with advice and tools to assist in proactive safety management.

To achieve these aims, consultants from the BWC have travelled extensively throughout Denmark, visiting companies and providing an introduction to areas of concern in relation to occupational health and safety and the tools they have developed in order to address these concerns.

Scope

The BWC for the transport and wholesale industry covers a broad range of activities: goods transport; public transport and other forms of transport of people, e.g. taxis; goods and passenger rail transport; depots and warehouses (including harbours and airports); and the emergency services. These industries employ roughly 350,000 people.

The sector guidance material relevant to the goods transport industry is both detailed and extensive. This includes 30 reports of varying length, covering all forms of goods transport and various safety topics, e.g. loading and unloading (including falls from vehicles, crush injuries and manual handling), lifting techniques, repetitive monotonous work, solitary work, and workplace assessment procedures.

The material is very detailed and professional in its approach. The primary target for this material is company management and those involved in safety training. Individual drivers could use the material profitably, but there is so much information available that finding material relevant to individuals is time consuming. Much of the information may not seem directly relevant to individual drivers and the level of detail may put them off reading it.

In compiling material for the campaign addressing work injuries among goods transport drivers, the BWC sought to develop material that conveys a more immediate message about safety. The campaign identified a range of scenarios in which goods transport drivers are typically injured, and produced a series of instructive cartoons depicting these situations and the sources of risk.

The key scenarios were:

Loading/unloading conditions:

- poor access routes
- inadequate access
- poor working conditions in unloading areas.

Insufficient knowledge of risks:

- risk of falling from back lift
- ergonomic overexertion
- crushing injuries
- falling objects.

Insufficient knowledge of safe practice:

- use of appropriate equipment
- lifting techniques
- loading of vehicle.

Planning and completion of work:

- poor planning
- inadequate training
- time pressure.

Attitudes to safety:

- acknowledgement of unsafe practices
- failure to acknowledge known risks
- inappropriate protective equipment (especially footwear).

In terms of its ability to gather information, the BWC is in an ideal position because it has close ties with both management and employee organisations. The council thus has access to extensive information resources, which were crucial in identifying key risk scenarios. Once commissioned and delivered, the cartoons were tested in the field to gain feedback from organisations and drivers, especially regarding their relevance and use as pedagogical aids.

Raising awareness of risk is particularly important when dealing with small and medium-sized companies. Greater awareness should lead to an improvement in safety practice, and the BWC also seeks to encourage more reporting of incidents, including near-miss incidents, in order to raise overall knowledge.

Numerous studies show that the level and quality of reporting in relation to work accidents in the transport sector is generally of a poor standard. The BWC addresses this by aiming to improve the attention given to causal factors and accident analysis. The material it provides is designed to encourage more active participation in the reporting process where employers, in particular, are challenged to adopt a more professional approach to reporting. Raising drivers' awareness of common risks and safety problems should, however, also result in greater reporting of incidents from their side as well. Combining the knowledge of risk possessed by the individual driver with a more formal approach to safety at management level could then lead to an overall improvement in safety performance.

Outcomes and evaluation

There is no systematic data on the number of companies that have used the information provided by BWC, or what impact it has had. Consultants at the BWC do, however, use the information from the campaign systematically; i.e., it has become a standard part of their broader attempts to raise health and safety standards within the industry.

Feedback from the SMEs that have been exposed to the material is very positive. This is especially true of the cartoon material, which has captured the attention of drivers who are not otherwise drawn to a text-based description of safety issues and/or procedures. The appeal of the cartoons rests, in part, in their humour. Humour is an important part of the way in which drivers interact with one another, so the fact that the cartoons evoke humour means that it is more likely that the serious issues they address will be considered by drivers in their day-to-day exchanges.

Problems faced

The main problem faced is reaching out to companies. Although the visits by BWC consultants to companies is very effective for introducing the tools, a BWC consultant cannot visit all companies, so the dissemination of the available information also depends on companies actively seeking information. A further problem here is that the BWC homepage contains so much information that it can be difficult to find the specific facts that are relevant to a particular company. Some of these problems will, however, be addressed in the next version of the homepage.

Success factors

- Identification of key risks and accident scenarios.
- Identification of problems with existing materials (too detailed and complicated).
- Development of tools that address the needs of the population they are targeting.
- Use of simple materials and cartoons depicting typical scenarios familiar to the sector.
- Field testing the resources with organisations and drivers.
- Tripartite (state, industry, labour unions) model used as a basis for implementing health and safety-based solutions.

Transferability

The labour market model on which this case is based is founded on strong cooperation between state, business and labour unions. In Denmark, such collaboration is largely determined and facilitated by regulation and statute. The funding for BWC is, for example, partly provided by a tax on companies that issue work insurance policies. Therefore much about this case is quite unique to a Danish context. Nonetheless, the product of the campaign – the identified areas of risk and the pedagogical approach adopted – could be well applied to other contexts.

Further information

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2.3.6. Driver's Manual, Finland

Organisation(s): ADR-Haanpää Ltd

Key points

- Driver's instruction manual, also used for training.
- Provides information on tasks, responsibilities and safety at work, harmful and dangerous substances, and legislation covering drivers' work, especially rest times.
- Part of the company's quality, environment and OSH system.
- Transport of dangerous substances.
- Folder with removable pages – electronic version for onboard computer system planned.

Aims and objectives

The aim of the Driver's Manual project was to make the company's quality, environmental and safety issues visible in its everyday operation and to provide a useful tool for drivers.

Introduction

ADR-Haanpää is a haulier of liquid chemicals in Scandinavia and the Baltic region. Today it has 900 employees and 200 subcontractor drivers. The company has grown significantly since it was founded; it began its operations in timber transport in 1949, and became specialised in chemical transport in the late 1970s. It operated only in Finland until 1981, when a subsidiary began international transport.

According to its website, ADR-Haanpää is committed to developing its quality, safety and environmental systems. The operational model complies with international quality and safety standards, and all company activities are in compliance with the relevant laws and regulations. Through its internal disciplines, routines and safety regulations, ADR-Haanpää actively develops both personal and property safety at work. All staff at ADR-Haanpää are required to maintain their skills with regular training, and to uphold collaboration with partners. The company also aims to reduce and prevent environmental pollution.

Background

The objective of work environment development is to prevent the risks of illnesses and accidents at work. ADR-Haanpää's staff are obliged to follow set work routines and to report all potential risks regarding quality, safety and environmental issues.

The Driver's Manual is part of this objective, and part of the company's quality, environmental and safety systems. It is primarily a guidebook on these issues for drivers, providing information on tasks, responsibilities and safety matters at work, harmful and dangerous substances drivers have to transport, and legislation concerning drivers' work, especially rest times.

The manual is also used as an educational and orientation tool for drivers. From the company's perspective, it also serves as a marketing tool, as it shows how the company's policies are implemented at all levels.

Scope

The idea of the Driver's Manual arose when the company's quality and environmental systems were developed. Management realised that these documents included information that was also useful for drivers, and decided that drivers should have a manual covering the quality, safety and environmental issues relevant to their work. This was considered especially important for drivers transporting harmful and dangerous substances.

As a model for the Driver's Manual, ADR-Haanpää used other manuals directed at drivers, published by the Finnish Oil and Gas Federation (instructions for oil and gas transport) and the Finnish Transport and Logistics SKAL[1] (various manuals for transport employers).

Since it was first produced ADR-Haanpää's Driver's Manual has been updated twice, in collaboration with management, traffic coordinators and the drivers themselves. The need to update the Driver's Manual has arisen from feedback given by drivers, and also new regulations and knowledge regarding quality and safety in chemical transport.

The Driver's Manual was first produced in the form of a book, which was awkward to update, but the current version is in the form of a folder with removable pages that is placed in all vehicles. ADR-Haanpää is planning to place an electronic version of the manual on vehicles' onboard computers, which would make it easier to update and to use while working.

The manual is also used for driver training, which ADR-Haanpää regularly carries out. All the company's drivers take a course in logistics, through an apprenticeship contract system. The ADR-Haanpää Driver's Manual covers some of the content of this course. The company also

[1] An organisation representing employers and operators in the transport and logistics industry.

provides further training, which fulfils EU directive regulations, and presents drivers with the Certificate of Professional Competence (CAP).

Outcome and evaluation

According to ADR-Haanpää, the Driver's Manual is extremely useful. The company believes that some form of written instructions are essential to help drivers in their everyday work, and the manual is a convenient way for drivers to access information on work issues and environmental safety at their workplace. The Driver's Manual also serves many other purposes (marketing, orientation and educational), as mentioned above.

The manual helps drivers increase their professional knowledge regarding occupational and traffic safety, and hence to deal more effectively with problems at work. This reduces the need to consult managers during work shifts, which in turn lessens the drivers' workload. This is especially important during the night shift, as it reduces the need to contact the traffic controller.

An evaluation of the use of the Driver's Manual at ADR-Haanpää showed that it was not systematic and that not all drivers were using it properly. The company is trying to improve this through better orientation and education strategies and practices.

Problems faced

The biggest challenge lies in getting all the drivers to use this kind of material, and it seems that there is no single way to achieve this. It may help if drivers were to play a more active role in producing the material; this may ensure that the content is more relevant to them. In addition, providing the material in different formats would make it more widely accessible. The first version was produced by management but drivers and traffic controllers were involved in the subsequent versions.

The other challenge facing ADR-Haanpää is related to multiculturalism. The number of different nationalities among the employees and the number of languages spoken in the company is rising. At the time of writing, the company had drivers from Finland, Sweden, Norway, Russia, Estonia, Germany and Poland, but the Driver's Manual is only provided in Finnish. Translating the Driver's Manual only into English does not solve the problem, as not all drivers speak English. Thus the Driver's Manual should be translated into several languages.

Success factors

- Developed in context of integrated management approach to OSH – company commitment.
- OSH, environmental issues and other quality issues in one document.
- Part of a variety of measures.
- Various uses – training, day-to-day instructions, company promotion.
- Driver involvement in developing and updating manual.
- Practical loose-leaf folder with removable sheets. Onboard electronic version planned.

Transferability

The idea of the Driver's Manual, as shown in this case, is transferable to other companies. The main content, the company's work policies, instructions for occupational and road safety, and regulations for work and rest times, are needed in all transport companies. The idea of using the same material for multiple purposes (work instructions, orientation and as an education tool) could also prove beneficial to other companies.

The Driver's Manual is one way of emphasising the importance of both safety behaviour and drivers' continuous education at work.

Further information

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2.3.7. 'Trim Truckers' ('Kuljettajat Kuntoon'): promoting truck drivers' health and wellbeing by minimising risk in cooperation with an occupational health service provider, Finland

Organisation(s): The Transport and Logistics team of The Finnish Institute of Occupational Health, Turku

Key points

- Longstanding relationship between a haulage company and a multi-professional occupational health service provider.
- Annual meetings, which help to identify the needs of both representatives of the company and drivers.
- Well-targeted interventions.
- A team of different occupational health professionals who help organise intervention projects.
- Topics covered included fatigue and sleep disorders, support to improve diet and ergonomic issues such as loading and unloading and climbing in and out of cabs.
- Has included organisational measures such as changes to work schedules, and active support rather than just advice, for example regarding diet.

Introduction

The transport industry is characterised by irregular working hours and may include considerable night shift work. Fatigue and sleepiness are common among professional drivers, and falling asleep while driving accounts for a significant proportion of their work-related vehicle accidents. In addition to driving, working in a haulage company involves many loading and unloading activities, which may be ergonomically challenging.

The 'Kuljettajat Kuntoon' (Trim Truckers) project was introduced to minimise drivers' fatigue and sleepiness and to improve their workplace ergonomics.

Aims and objectives

The main aim of the project was to promote truck drivers' health and wellbeing by minimising their risk of fatigue and sleepiness and by improving their workplace ergonomics with the assistance of the employer's long-term occupational health service provider.

Background

A trucking company in south-western Finland serves as a good example of the benefits of good and a long-lasting relationship between a trucking company and a multi-professional occupational health care provider. The company, which specialises in the transportation of

gravel, grit, and sand, cannot be named for confidentiality reasons. The company's fleet comprises 40 trucks, and it employs 50 drivers. The company has a long tradition of taking care of its drivers' health and wellbeing. For instance, it has maintained a contract with a local occupational health service provider since 1986. This provider supplies a team of health professionals comprising a doctor, a specialised nurse, a physiotherapist and a psychologist to respond to the occupational health needs of the company and its drivers. This team meets with representatives of the company on a yearly basis. Such meetings serve as a forum in which the health professionals determine whether the company has any occupational health concerns, inform the representatives of these concerns, and suggest actions for improvement.

Scope

There are three different ways in which the project tries to minimise drivers' fatigue and sleepiness.

Firstly, the company doctor carries out physical examinations of all the drivers to detect sleep apnoea. Many Finnish professional drivers are known to be obese, which is commonly associated with sleep apnoea. Since sleep apnoea is a medical condition that can be managed with an appropriate treatment, one aim of the examination is to identify the drivers who potentially have sleep apnoea and refer them to a specialist for further diagnostic testing and treatment.

Secondly, to help ensure the drivers eat a healthy lunch, the company provides a lunch box to each driver as well as recommendations for healthy lunch box contents. To determine these recommended lunch box contents, a nutritionist is consulted. The aim of this measure is to help drivers reach and maintain optimal body weight, which is challenging for individuals who work irregular hours and night shifts.

Thirdly, an occupational psychologist provides support to the personnel management department, with the aim of improving the company's logistics strategies so that drivers' work schedules give them sufficient time to rest.

In order to improve drivers' workplace ergonomics, an occupational physiotherapist visits the drivers' workplaces and discusses ergonomic issues with them while they are working. Particular attention is paid to the way drivers climb in and out of the cab, as multiple sprain accidents had been reported. Initially, the company's drivers displayed a negative attitude and some resistance towards ergonomic education. Within this initiative, a driver has the right to refuse the occupational physiotherapist visit; however, it is anticipated that positive experiences and feedback will accumulate and further motivate drivers to participate in this kind of workplace education.

Outcomes and evaluation

Both the representatives and drivers of the company have been satisfied with the services of the occupational health service provider. Additionally, it has been noted that the company's positive attitude towards drivers' health and wellbeing has promoted a good working and safety culture among the drivers. However, the number of drivers employed is so small that it is impossible to determine whether they are significantly healthier from a statistical point of view than drivers working in other companies. Furthermore, given that occupational health is not a static situation, with new needs emerging from time to time, there is a need to develop new, responsive programmes for those needs. This project is the most recent programme and was initiated in 2006, focusing on drivers' fatigue and sleepiness, and ergonomics.

The 'Kuljettajat Kuntoon' project is an ongoing process, and no final reports of its results are available yet. However, there has been benefit from the long-lasting relationship between the haulage company concerned and its multi-professional occupational health service provider. The company's positive attitude toward drivers' health and wellbeing has also promoted a good working and safety culture among the drivers.

Problems faced

At the beginning of the project, the company's drivers displayed some resistance, especially towards the ergonomic training. The considerable workload of the occupational health professionals supplied by the service provider also impeded the progress of the project.

Success factors

- The company's ongoing positive attitude towards its drivers' health and wellbeing.
- The long-lasting relationship between the haulage company and a multi-professional occupational health service provider.
- An occupational physiotherapist visits the drivers' workplaces instead of giving a traditional presentation to promote good ergonomic practice among drivers.
- Positive support is given to drivers, not just awareness-raising.
- Organisational measures are also taken; for example, altering schedules to make them less tiring.

Transferability

The approach and measures are transferable, but considerable resources in terms of occupational health services would be necessary to fully implement it.

Further information

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2.3.8. 'Transport online': an intranet and internet-based system to manage and supervise truck drivers' work and rest hours, Finland

Organisation(s): Tyvi Transport Company Ltd

Key points

- Online system to improve both personnel management and production within the company.
- The system combines all the information needed in the company in real time. This enables the information to be used very quickly.
- The system is used to promote employee wellbeing and occupational health and safety.
- Provides a real-time bi-directional communication tool between the employer and the drivers.
- Enables the company to plan more 'normal' working hours for drivers, i.e. shorter working days and more predictable, regular shifts.
- Enables drivers to easily access all the information needed in their work.

Introduction

Founded in 1950, Tyvi is a privately owned limited company and a part of Finland's Kaukokiito group. Tyvi has over 50 employees, and its fleet comprises about 30 trucks and trailers.

To manage risk and improve the occupational health and safety of its employees, Tyvi has developed its own safety programme which covers risks from its own actions and that of its partners. Drivers and customers are covered. The Transport online system enables real-time management of drivers in the field. It covers work and customer instructions, service instructions, laws and regulations concerning the transport business, and instructions for drivers on giving daily reports to the company. The system makes it possible to keep track of important indicators such as fuel consumption or the state of the cargo. It is also possible to track down a truck's position using the system.

Background

Tyvi's operational system includes quality, environmental and safety systems. The quality system is based on the ISO 9001:2000; the environmental system on the ISO 14001; and the safety system on the BS 8800, with sections concerning health and safety included. Customer service is based on the scheduled, proactive and efficient performance of transport services.

The idea of the online transport project came from the managing director and is strongly linked to the strategy of the company. The system is a tool for survival and development. Competition in the transport sector today is tough, and customers' needs dictate work pace and process goals. The company believes that an online strategy enables productivity to be managed effectively and economically.

In order to succeed, a transport company also needs to take care of its employees and monitor their working conditions. Although the online transport system mainly helps Tyvi improve its services to customers, it also enables improvements to be made to drivers' working hours, and is thus a tool for enhancing workers' wellbeing at work.

Tyvi takes its legal obligations seriously and believes this online system is the best way to fulfil its obligations concerning the supervision of professional drivers' driving and rest times.

Aims and objectives

The aim of the Transport online project was to develop Tyvi's operational management system. The goal was to achieve an online system to improve both people management and production within the company. According to Tyvi's managing director, real-time information is crucial to the company's success as business margins in the transport sector are very slim. Thus a transport company has to optimise its operations in order to maximise profits. In addition to gaining a financial advantage, Tyvi wanted to use the online system to develop employee wellbeing and occupational health and safety.

Scope

The system has been in operation for over a decade. It was developed in collaboration with commercial companies that provide vehicle computers for trucks, and other technical services. Initially information was transmitted via phone but in 2002–2003 Tyvi had computers installed in all their trucks, making it possible to devise the Transport online system. When a driver switches on the truck computer, he is automatically connected to the company's network, from which he gets all the information he needs for a particular job.

The system allows for two-way communication between the employer and the drivers. The drivers receive instructions and directions and the employer receives drivers' reports and comments. Drivers were not involved in the initial development of the system. However

drivers can give feedback on the system via the network itself or through channels such as regular employer–employee discussions, orientation events and training sessions or through occupational safety and health representatives.

The online system is dynamic and constantly evolving. The company has employed a staff member to administer and maintain it. This is considered important, as drivers need a 'helpdesk' to solve any technical problems with the system, so that they can focus on their work assignments.

Outcome and evaluation

According to the managing director, it is impossible to effectively manage a transport company without real-time information. The online system makes it possible for Tyvi to bring its strategy to life and improve both people management and production within the company.

For instance, the Transport online system enables Tyvi to meet its legal obligations as it provides the company with an easier and more effective way to supervise and plan drivers' working and rest time schedules. The company's main goal is to use the system to plan more 'normal' working hours for drivers, i.e. shorter working days and more predictable, regular shifts. Shorter working days and regular hours have significant effects on drivers' wellbeing. At present many drivers work long and irregular hours, and many transport companies do not have proper work shift planning. Working regular hours enables drivers to devote time to other things in their lives, i.e. spending time with their families and taking better care of their own wellbeing and health (exercise, sleep, etc.).

The Transport online system collates the information needed for shift planning, e.g. customer needs, vehicles available, timetables needed, best routes and drivers' wishes and needs. At Tyvi, drivers have rotating work shifts, which are planned two weeks in advance. The online system makes it possible to plan holidays more effectively. When work shifts and holiday dates are known in advance, drivers can plan their personal life more easily. This improved planning of drivers' working hours is only possible in transport companies that have regular driving routes and customers. At Tyvi, there are three drivers per truck and the company has regular driving routes and regular customers.

Though there were problems with the introduction of the system, drivers have accepted it as part of their job. At its best, the online system has made two-way communication between the employer and the drivers much easier. And the company recognises that good communication is very important for improving drivers work and working conditions. The company also feels that the use of such systems also helps to make the transport business more professional, which should help with recruitment of younger workers.

The Managing Director Heikki Tyvi also feels that new working methods and the use of high technology, such as 'Transport online', at work will improve attitudes towards the transport business. This is important, because attracting young workers in particular to the transport sector in Finland has been problematic.

Problems faced

The biggest problems in this project are technical. Mobile data links do not work as efficiently as they should. The needs and demands of the company are more extensive than technical solutions alone can resolve. In everyday work, unworkable data links frustrate drivers. This affects their motivation to use the system and to see its benefits. These problems also cause extra work for everyone in the company who uses the system.

Another problem is that it is very expensive to install this kind of system, especially when there are no suitable ready-made systems available. In this case, the company has built up its online system from scratch. The deficiencies in the commercial versions of such systems are slowing down the development of online systems in the transport sector.

The drivers' level of skills can also be a challenge to implementing this kind of system. Most older drivers have gained their occupational skills through practice. New methods at

work can be challenging for this group of drivers. Change itself is also a challenge to all work organisations; new working methods can raise fears among employees, and these underlying fears can cause attitude and motivational problems. Tyvi has taken these challenges into account and has invested in drivers' education, arranging CAP (Certificate of Professional Competence) training for its drivers, which enables them to continue their work as professional drivers. A total of 38 drivers at Tyvi started this basic vocational training, which is based on an apprenticeship contract system, at the beginning of 2008. Providing ongoing education and support to improve drivers' skills and knowledge is part of the overall approach of the company to developing a sense of professionalism in its drivers.

The real-time supervision of drivers' working times is also problematic. It is seen as reducing driver autonomy and hence disliked by many of them.

Success factors

- Part of general commitment to OSH.
- Management tool for deliveries which takes account of OSH issues, particularly those related to work schedules.
- Company has someone responsible for administering and maintaining system and drivers have a 'helpdesk'.
- Different systems are used to gather feedback from drivers.
- Training for drivers seen as part of a general commitment to drivers' education.

Transferability

The idea of the Transport online system, as shown in this case, is transferable to other companies. Though this particular system was developed specifically for Tyvi, the technical aspects of the system were developed in conjunction with commercial enterprises, thus increasing their knowledge regarding the problems and demands of the transport sector. This knowledge may also prove beneficial to other transport companies.

Further information

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2.3.9. Prévost Transport: Project 80 km/h, France

Organisation(s): Prévost Transport

Key points

- Limiting the speed of heavy good vehicles by various means.
- Promotional stickers on vehicles.
- Collaboration with the regional work insurance organisation (CRAM).
- Environmental and health and safety benefits. Workers shared in the cost savings.
- Special training for young and new workers, training for drivers.

- Active sharing of the initiative with other transport companies.

Introduction

Prévost, a family-run transport company in Bondy (Département Seine-Saint-Denis, France), with about 300 employees and 400 vehicles, limited the speed of its vehicles to 80 km/h. This led to a reduction in fuel consumption, a decrease in CO_2 emissions and improvements in the health and safety of the company's drivers. Improvements in health and safety came about because drivers were experiencing less stress and time pressure, overtaking less and having fewer accidents. In addition, the company provides health and safety training for drivers as well as special training for young and new workers to introduce them to the company's philosophy.

Background

Because of rising fuel costs, the company was looking for ideas to reduce fuel consumption. The company safety manager was given the responsibility of implementing a speed reduction programme. He studied the correlation between speed and fuel consumption and determined that the optimum speed limit was 80 km/h. Keeping to this speed reduces fuel consumption by about 10% depending on road conditions, driver and terrain. The reduction in speed positively influences the drivers' health and safety; drivers were less stressed because they drove at a constant speed and didn't need to think about overtaking other vehicles. This also led to a reduction of accidents suffered by the company. The company also educates drivers on health and safety issues, and provides special training for young and new workers.

Aims

The aim of the project was to improve working conditions for drivers, to reduce the number of transport accidents and to reduce fuel consumption and CO_2 emissions.

Scope

The company safety manager initiated the project with the cooperation and commitment of his employer. Before implementing the project, he carried out research and testing to find the optimum speed limit. He contacted other companies to ask about their experiences. Then he presented his project to the CRAMIF (Caisse Régionale d'Assurance Maladie d'Ile-de-France, a public health service organisation in the greater Paris region) and got their support. The company signed a charter with CRAMIF relating to the improvement of health and safety for drivers. Prévost ensures the health and safety of its drivers by various means: speed limit, optimum equipment, appropriate training and raising awareness of risks and hazards.

The safety manager undertook to share and promote the project and to inform other transport companies about the benefits. CRAMIF undertook to promote the project through campaigns and press publications.

All the company's drivers are trained to drive safely and save fuel. They also undergo the special FCOS (Formation continue obligatoire à la sécurité) training for heavy goods vehicle drivers that is obligatory in France.

In addition the company provides training for drivers on safety issues such as the influence of alcohol, drugs and fatigue. Fatigue is a particular focus, because the drivers often drive at night. Young and new workers receive special training about the company's philosophy, European directives concerning driving, health and safety issues and handling of equipment.

The vehicle engines are limited to a maximum speed of 80 km/h ex factory. In addition, all vehicles have an onboard computer that gives information about fuel consumption and average speed. The vehicles have wireless hands-free telephones that enable drivers to

communicate without taking their hands off the steering wheel, and special tyres that help ensure the health and safety of drivers and reduce fuel consumption.

The vehicles are prominently labelled to inform other drivers about the project and the company's philosophy. An additional label to support the project will be prepared by CRAMIF.

At the beginning of the project, drivers were sceptical and didn't agree with the imposition of the speed limit. Now nearly all drivers support the project and welcome the improved working conditions. As an incentive the company allocates a proportion of the money saved by the reduced fuel consumption to its workers.

The company has asked the French Environment and Energy Management Agency (ADEME) to join as a partner in the project, and ADEME has expressed an interest.

Outcomes and evaluation

The positive results in terms of fuel consumption and the safety and health of drivers have attracted media attention. Positive reports about the project have featured in newspapers and on television and radio.

Fuel consumption has been reduced by 10%, and CO_2 emissions by 5%. No surveys or statistics about the improvement in health and safety are currently available, but according to the company the drivers are more satisfied with their working conditions: they report less stress while driving and fewer dangerous manoeuvres since the 80 km/h speed limit was introduced.

Problems faced

At first it was difficult to convince the drivers of the benefits. Now they are happy about the improved working conditions. New drivers are informed about the company's policy when they start work.

Because of the speed limit trips take a little more time. This amounts to the company losing five minutes per hour, but this problem is being addressed.

Success factors

The success factors of the project are the support given by the employer and workers as well as the partnership with CRAMIF.

Positive press coverage has led other transport companies to contact Prévost to request more information about the project. In addition, signs on the vehicles publicise both the project and the transport company.

Transferability

This method of improving the working conditions and saving costs is easily transferable to other transport companies. According to the safety manager other companies have already adopted the project and implemented a speed limit.

Further information

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Frédéric Rey, *Transport et CO_2 : un patron bride ses camions*, Metis, correspondances européennes du travail, http://www.metiseurope.eu/transport-et-co2---un-patron-bride-ses-camions_fr_70_art_182.html
Anonymous, *Transports Prévost : parcours d'une famille déterminée,* SIC 263 Mai 2008, pp. 20–21 http://www.experts-comptables.fr/csoec/content/download/91574/1892278/file/sic263mai2008.pdf

Anonymous, 'L'aventure au feeling', *L'Officiel des Transporteurs* magazine, Juin 2008, from the webpage of Prevost: http://www.prevost-transports.com/revue_de_presse.php

Charles Germaneau, *Transport Prévost : réduire l'impact et les coûts*, interview, DeDuXion,

http://www.deduxion.com/interviews/transport-prevost-reduire-limpact-et-les-couts/

Grégoire Hamon, *Le 80 km/h, c'est déjà rentable*, 2007, document provided by M. Patrice Lahaye
Louis Guarino, *Le Credo du 80 km/h*, L'Officiel des Transporteurs, Entreprises Stratégie – N° 2426, 26/10/2007

2.3.10. Instruction programme for team instructors, Germany

Organisation(s): Berufsgenossenschaft für Fahrzeughaltungen (BGF), the German institution for accident prevention and insurance in the vehicle operating trades, Hamburg

Key points

- Raising awareness of the need for occupational health and safety in road transport.
- Establishing an effective system of on-the-job training run by company members (train-the-trainer) supported by information folders.
- Providing drivers with the information required to comply with the new EU directive.
- Covering driving and non-driving risks, including stress and conflicts.
- Using participatory learning – including use of participants' own experiences.
- Communicating the occupational health and safety matters of the BGF to a broad public.

Introduction

The AGG (Arbeits- und Gesundheitsschutz in Güterkraftverkehrsbetrieben) Instruction Programme for Team Instructors was set up by the BGF and is closely aligned with European aims for road accident prevention.

The European Road Safety Charter, the annex of the Communication of the Commission COM (2003) 311 – 'European Road Safety Action Programme', instructs all relevant institutions to reduce the number of accidents within their area of responsibility by all the means at their disposal.

The new European Directive 2003/59/EC on the Initial Qualification and Periodic Training for Professional Drivers, requires 35 hours of periodic training for each driver every five years.

Annex I of the Directive lists the following training topics:

- Ability: to load/unload with regard for safety and correct vehicle use;
  - to prevent physical risks; and
  - to ensure passenger comfort and safety.
- Knowledge: of the social and economic environment of road transport; and
  - of technical characteristics and operation of safety systems.

- Awareness: of the risks of the road and of accidents at work; and
  - of the importance of physical and mental ability.

These predominantly 'soft skills' have not been regarded as major topics for the vocational training of professional drivers in the past. The new Directive emphasises the importance of these skills and introduces new requirements for training plans.

Background

Many accidents in the heavy goods transport sector happen not while the vehicle is on the road, but also to staff working in, on, or near the truck (performing activities such as loading and unloading, climbing the ladder of a road tanker, etc.).

Fatigue, stress and the lack of knowledge about handling heavy loads can often lead to fatal accidents or injuries with lifelong effects for the person concerned.

In 2002 the BGF set up the AGG task group, which focused on raising awareness of occupational safety and health in road transport enterprises.

The task group consisted of a multidisciplinary team with experts in a variety of fields, such as labour inspectors, engineers, employers, physicians, psychologists and driving instructors.

Their collective aim was to find a common base from which various matters could be communicated to road users.

Aim

Prevention of accidents:

The overall aim of the prevention work carried out by the BGF is to protect the life and wellbeing of their insured persons, the road transport drivers.

In 2001, before commencing the AGG programme, the BGF recorded 64 fatal workplace accidents of insured persons in the transport sector. With the help of the AGG Instruction Programme for Team Instructors, the BGF hopes to reduce the number of fatalities in the near future.

Need for continuous training:

The BGF appreciated the need for continuous training of professional drivers during their whole working life even before the new EU Directive demanded periodic training. Statistics show that the older, more experienced driver is sometimes involved in more accidents than an inexperienced driver. Gaining experience can sometimes lead to a more 'relaxed' way of working and, in some cases, to an increased risk of injury.

In the past, vocational training only took place at the start of a professional driver's career. The AGG Instruction Programme is intended to be an instrument of continuous information for drivers throughout their whole working life. The contents of the programme will be regularly updated with findings from actual events and with new expertise.

Soft skills:

Vocational training for drivers has not traditionally included the so-called 'soft skills'. A survey among drivers revealed the extraordinary strain to which the driver is exposed. This situation also pointed out the need for instruction in how to deal with problems such as:

- stress and conflict situations
- noise, vibration and weather conditions

- dangerous activities like loading/ unloading/ driving at night.

Scope

The AGG project team published information folders on all these problems.

The main topics are as follows:

A.	*Strain*
A 1.	How to deal with strain.
A 2.	How to sit, to lift and carry things.
A 3.	Visual perception of dangers.
A 4.	Weather conditions outside the vehicle.
A 5.	Noise.
A 6.	What to eat and drink.
A 7.	How to deal with fatigue.
A 8.	Working time and the social context.
A 9.	The older driver.
A 10.	Medical attendance by physicians and psychologists.
B.	*Safety in handling the vehicle*
1.	How accidents occur.
B 2.	Safe driving.
B 3.	Safe working nearby the vehicle.
B 4.	Loading and unloading.
C.	*Stress*
C 1.	How to deal with stress.
C 2.	How to deal with conflicts.

A specially trained labour inspector from the BGF, together with a psychologist, conducts a five-day training course at a BGF site. The participants are employees of road transport enterprises or instructors from driving schools.

Participants must fulfil a number of entry requirements:

- Qualification as company safety officer.
- Qualification as a technician, engineer or teacher of driving.
- Knowledge in the handling of truck and trailer.
- Three years' driving experience.
- Experience in adult education.

The five-day course, together with two days of refresher training each year, enables participants to act as a so-called 'AGG Moderator' (AGG Team Instructor) within the context of his/her own enterprise and/or driving school.

Individual training for truck drivers can then be carried out at the company premises or the driving school, and can contribute to the periodic training specified in the new EU Directive

The general structure and the flow of information are described below:

BGF: Project Team AGG

↓ Information/ Setting of standards

BGF Instructors (Labour Inspectors)

↓ Instruction at the BGF site

Team Instructors

↓ Instruction in the Enterprise

Truck Drivers

The training method involves all the participants. The future team instructors are invited to talk about cases that occurred in their own work environment (company, driving school). Using these examples, as well as the individual expertise of the participants, gives trainees a wealth of practical background on the subject. The psychologist aims to engage the participants to work in different groups on special topics.

Outcomes and evaluation

The truck driver receives lengthy instruction that is also applicable in terms of the requirements set by the new EU Directive 2003/59/EC.

Drivers will have fewer days of absence due to injuries and the repair costs for accident-damaged vehicles will be reduced.

There are some other indicators that can help to measure the success of the AGG Instruction Programme for Team Instructors:

- The accident rate within the road transport sector.
- The number of truck drivers instructed by technical inspectors.
- The reduction in costs for maintenance and repair of the vehicles.

A reduction of accident numbers may occur for a variety of reasons, but there was a significant fall in fatal workplace accidents in the road transport sector in the years 1999 to 2005 (BGF-insured companies):

1999	2000	2001	2002	2003	2004	2005
61	66	64	52	57	55	50

There are also a number of 'soft' factors that cannot easily be measured, e.g. the number of dangerous and close-accident situations avoided, as this relies own drivers' own perceptions.

Problems faced

The BGF covers more than 50,000 vehicle-operating companies in the road transport sector employing tens of thousands of insured persons. BGF is therefore unable to instruct enough team instructors to reach every single truck driver with current information. The duty to inform drivers is predominantly the responsibility of the employer.

The AGG project was not originally designed to cover all aspects of future instruction demanded by law and so the contents of the instruction do not cover the whole range of required topics according to the new EU Directive.

Success factors

By training key trainers a wide dissemination of the specific knowledge is guaranteed. After many years of this cascade training a very large number of truck drivers working in German trucking will have been reached.

As the training covers a number of peripheral matters in relation to driving as well as safe driving principles, it will have a widespread effect on the key trainers and drivers.

Participatory training methods are used, including using participants' own experiences, which take a 'how to' problem-solving approach. The training is supported by comprehensive documentation.

Transferability

This instruction programme can be applied in similar ways either in the national or the European context. The selected topics can be varied as appropriate.

Similar instruction programmes will have been initiated in various countries all over Europe because these are now required by law.

Further information

Berufsgenossenschaft für Fahrzeughaltungen

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22765 Hamburg

Germany

Web: http://www.bg-verkehr.de/

2.3.11. DocStop, Germany

Organisation(s): DocStop für Europäer e.V. (a non-profit association)

Key points

- Medical attendance service based on a network of doctors linked to truck service areas.
- Based on prior investigation of needs, including driver surveys.
- Extended to include a telephone hotline.
- Partners and sponsors of this non-profit initiative include accident insurers and companies linked to road use.

Introduction

Heavy goods vehicle and bus drivers are often on the road for long periods of time and they rarely consult a doctor during their journeys because it would put their schedules into disarray. Drivers are often obliged to carry on even with headaches or other health problems, and sometimes they take medicines that are not specially prescribed for them. This situation poses a risk to the drivers and to other road users. DocStop's aim was to build up a medical information and supply network for professional drivers. So-called DocStop stations are found in service areas along the highways, and drivers who need medical attention can consult a doctor there without causing undue disruption to their delivery schedules.

Background

Normally people can visit a doctor when they have health problems, without too much disruption to their working day. Truck and bus drivers are not in a position to do so, however; they can't stop their journey and search for a doctor when driving very long distances, e.g. from Munich to Milan, especially during the night. They do not have the time to sit in waiting rooms; they are expected to deliver their goods on time. For this reason drivers often ignore their health problems or take medicines that are not prescribed to obtain relief. This can be very dangerous for the drivers and other road users.

European road safety expert Rainer Bernickel attended regular informal exchange meetings (stammtisch) with drivers, where he heard about this particular problem and decided to act. He carried out a survey among long-distance drivers to obtain more information about their needs. The survey asked the following questions:

- How often do you require medical assistance while working?
- Is there a need for a medical assistance service on the road?
- What would you do if you felt ill or developed a sudden health problem while working?
- Do you take over-the-counter medicine?
- Would you ever interrupt your journey and stop the delivery if you felt ill?
- Would you ask your employer to replace you if you felt ill?
- Have you ever consulted a doctor or gone to a hospital on the road?
- Do you just keep on working whilst feeling ill?
- Are you aware of any cases where an accident has resulted because of illness?
- Do you have any practical suggestions?
- Are there existing arrangements from your employer for health issues?
- Are older truck drivers more affected by the lack of medical assistance services?
- Are the current measures sufficient?

This survey indicated that there was an urgent need for action.

Bernickel, together with Dr Dieter Koch (Member of the European Parliament and Member of the Board of the European Transport Safety Council (ETSC)) helped found a non-profit association called 'DocStop for Europeans'. DocStop is a network of doctors who drivers can easily consult while on their long-distance journeys. In some cases doctors are stationed at motorway service areas/truck stops, and in other cases shuttle services are organised from rest areas to help truckers get to a doctor quickly without delaying their journeys too much.

Aims

The aim of the project is to build up a network of medical services for professional drivers and to improve the health and safety of the drivers and other road users. It is planned to extend this type of medical service throughout Europe in the future.

Scope

This project is based on the organisation of a large network of doctors. Furthermore service areas (truck stops) that act as DocStop centres had to be found. For a centre to be established, it was necessary for there to be a network of doctors close by (within a radius of 4 km). To put the plan into action doctors had to be found as partners to support the medical attendance service network. Sponsorship was also required.

Dr Koch and Mr Bernickel presented their project to various accident insurers to get their support and to develop a large network of doctors and sponsors. They also presented their project to different companies (e.g. car manufacturers) to get partners and financial support. Current sponsors are mentioned on the website (http://www.docstop-online.eu).

As they wanted to spread their project through Europe and to build up a European medical attendance service network for drivers, they also presented their project in several European Member States.

The project started at three locations (DocStop centres) in Germany: Lomo Autohof near Eisenach, Autohof Salzbergen and Traunstein-Siegsdorf. The DocStop project has since grown and there are now more than 50 DocStop centres.

The initiators built up a website with information about the project as well as information about all DocStop centres and doctors involved in the network.

The drivers who consult a doctor can settle the bill without complications: German drivers use their insurance card and drivers from other EU Member States use the European insurance card issued by their national insurance institution.

"Healthy drivers are safe drivers, who don't endanger other drivers or themselves."

Outcomes and evaluation

DocStop is well accepted by the drivers, as well as by a number of entrepreneurs, employers, liability insurance associations, trade unions, etc. About 80 drivers received medical attention 'on the road' from October 2007 to March 2008.

Information about the project is available on the website. The website also provides a list of doctors who participate in this project.

Since 1 September 2008 bus and truck drivers have also been able to access a hotline that runs 24 hours a day, 365 days a year (the number is 01805 112 024). The project partner, ADAC-Truck service, usually gives information in ten languages.

Problems faced

Intensive preparatory work was carried out before DocStop was set up, so that the problems could be eliminated at the beginning. Surveys among the drivers were helpful in identifying their requirements.

Success factors

As mentioned above, the project is based on a real need, determined through prior investigation which included surveying drivers.

Crucial for the success of this project is the support of doctors, motorway service areas, ADAC truck service and companies. This is the heart of the project. In addition the immense support by drivers has helped the project develop.

Above all, both initiators have supported the success of the project. They are convinced of the importance of their work and have been keen to expand the project. To ensure that it is supported by key players in the industry, they have presented the project to many potential partners and sponsors.

Transferability

The project will also be implemented in other EU Member States. In January 2008 Mr Bernickel was invited by the Metropolitan Police in London to present information about his project. The police initiated informal exchange meetings, similar to those in Germany, and took on the idea of DocStop. Austria, the Netherlands, Denmark and Liechtenstein are also very interested in the project, as are Poland and the Czech Republic.

Further information

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2.3.12. The Driver Assistance Systems campaign, Germany

Organisation(s): Berufsgenossenschaft für Fahrzeughaltungen (BGF), Hamburg

Key points

- Project to reduce the number of fatal and severe accidents involving heavy goods drivers.
- Aims to make the public aware of the need for driver assistance systems (cruise and stability control, lane departure warnings).
- Aims to influence European legislation concerning the future legal requirements for driver assistance systems.
- Subsidy given for equipping vehicles combined with training for drivers.
- Participating companies compare vehicles fitted with the system to those not fitted as part of evaluation.
- Truck stickers on equipped vehicles used to publicise the campaign.

Introduction

The Driver Assistance Systems campaign was initiated by the Berufsgenossenschaft für Fahrzeughaltungen (BGF), the German institution for accident prevention and insurance in the vehicle operating trades.

The European Road Safety Charter, the annex of the Communication of the Commission COM (2003) 311 – 'European Road Safety Action Programme', calls on relevant institutions to reduce the number of accidents within their area of responsibility by every means at their disposal. With the help of financial incentives, the BGF is contributing to this goal by increasing public awareness of the tremendous benefits of driver assistance systems for all those involved in road transport.

Background

Since the year 2000 – and even before – commercial vehicle manufacturers have been aware of the growing need for driver assistance systems.

However, it was not until 2006 that the managing director of Mercedes-Benz presented the so-called 'Actros Safety Truck' in Brussels, in the presence of leading members of the European Parliament and the European Commission.

Within the high number of driver assistance systems available (a study by the German road traffic research institution BAST listed more than 25 systems), there are three systems of particular significance in the commercial vehicle sector.

The function and operation of these systems is described below:

1. ACC – Adaptive Cruise Control:

The ACC radar sensor, with a range of approximately 150 metres, recognises the distance to and the relative speed of vehicles in front that are travelling in same lane. The ACC control unit calculates the best approach strategy from the sensor data, the course of the lane, the speed of its own vehicle and the actions of the driver. It then triggers the engine torque and brake management system (retarder and service brake) accordingly. The road speed, acceleration and retardation of the vehicle are actively regulated and the distance from the vehicle ahead is maintained. ACC is operated by means of the existing cruise control lever.

It is also possible to set the target distance according to the driver's wishes. The pre-set value is 50 m, as stipulated by law in Germany.

The driver retains full responsibility for the vehicle and can override the ACC system at any time with the accelerator pedal. If the driver actuates the brake pedal/retarder lever, the system is automatically switched off.

2. LDW – Lane Departure Warner:

A video camera behind the windscreen records the lane markings and the vehicle's position in relation to them. If the vehicle crosses the lane markings the driver is warned by the sound of 'rattling nails' from a loudspeaker near the right-hand or left-hand door, depending on which lane marking has been crossed.

The system activates itself automatically at speeds over 60 km/h and can be deactivated via a rocker switch. At speeds below 75 km/h the warning is sounded when the vehicle reaches the inner lane marking and above 75 km/h at the outer lane marking.

If no warnings can be given, e.g. because there are no lane markings, the driver is informed by means of a check lamp or by the Highline display.

3. ESC – Electronic Stability Control:

ESC comprises two main functions: DSP (dynamic stability programme) and ROP (rollover prevention).

DSP mainly ensures that the vehicle remains stable (e.g. on wet roads, ice and snow). It intervenes in the event of a low coefficient of friction, when there is a noticeable difference between the direction the driver wants to take and the actual movement of the vehicle.

Rollover prevention reduces the risk of the vehicle overturning.

The following variables are measured and compared with the momentary speed of the vehicle:

- steering angle
- lateral acceleration
- yawing rate (speed of rotation of the vehicle about its vertical axis).

Aim

The overall aim of the prevention work of the BGF is to protect the life and welfare of their insured persons: road transport drivers.

In 2007 there were 78 fatal accidents in Germany involving insured persons from the road traffic sector. With the help of driver assistance systems, the BGF hopes to reduce the number of fatalities considerably in the future. The initial aim is to cut the number of accidents by about 25%; a target also set by the German Occupational Safety and Health Strategy.

Scope

At the beginning of 2008 the Driver Assistance Systems campaign was publicised in the BGF's monthly magazine and on its homepage.

The BGF announced a financial incentive of €2,000,000.

Truck operators insured by the BGF were able to apply for subsidies for the assistance systems concerned.

The requirements:

- Each company can apply the subsidy for at most five commercial vehicles with a gross weight over 16 tons (trucks and buses).
- They are given EUR 2,000 for each vehicle.
- The vehicles have to be equipped with the ACC, LGS and ESC assistance systems.
- Vehicles belonging to the company but without the driver assistance systems will be compared to the vehicles equipped with the systems. (Data on both vehicles should be submitted during a three-year period to the BGF. This will make it possible to determine the rate of accident reduction.)

Instruction of truck drivers:

Following the approval of the technical documents of the vehicles concerned, the company is awarded its subsidy. A labour inspector from the BGF then visits the company to provide in-depth training for the drivers who will use the vehicles fitted with the driver assistance systems. The instruction takes half a day, and in addition to providing a thorough grounding in the assistance system, it makes the driver more aware of the importance of safety and of safety problems within the industry. When the driver instruction is completed, the labour inspector will check the vehicles and show drivers how the systems are used in practice.

Public attention:

Trucks that use the systems are marked on the doors and rear with stickers showing the campaign logo, to let the public know that the truck is equipped with driver assistance systems. The stickers also help to raise awareness of drivers and co-drivers behind the vehicle concerning safety problems associated with driving lorries and can reassure them concerning the safety of the truck they have in front of them.

An overview of the information provision process is given below:

BGF: Project Team
↓ Specific Training
BGF: Regional Labour Inspectors
↓ Instruction
Truck Drivers
↓ Sticker on Truck
Traffic Participants

Outcomes and evaluation

Immediate results:

The truck driver receives very detailed safety instruction on the mode of operation and the handling of the new technical systems.

Drivers will have fewer days of absence due to injuries caused by accidents and the employer benefits from reduced vehicle repair costs.

The success of the campaign can be measured by the following indicators:

- Accident rate of vehicles equipped with driver assistance systems.
- Accident rate of vehicles not equipped with driver assistance systems.
- Number of truck drivers instructed by technical inspectors.
- Employer's costs for repair of the vehicles (comparison).
- Consumer satisfaction of the drivers concerning the handling of the systems.
- Number of near-miss accident situations avoided by the systems.
- Additional non-quantifiable subjective measures.

Future results:

Evaluation is an integral part of this project. A road traffic research institute will collect data during a three-year period starting from the registration of the vehicle.

With the help of a questionnaire the truck drivers will be surveyed on technical topics (mileage, number of accidents/ dangerous situations, etc.) and the usability of the systems (advantages, wellbeing, ergonomics, etc.).

At the end of this data collecting process (end 2010) a comparison will be made between the equipped and the non-equipped fleet (1,000 vehicles each).

These results will give a good idea of the effectiveness of driver assistance systems in commercial vehicles of a higher gross weight.

Other results:

The BGF, together with the campaign partner BGL (Bundesverband Güterkraftverkehr, Logistik und Entsorgung e. V.), believe that they have helped to influence political opinion in the field of European legislation by showing the effective use of driver assisted systems. In May 2008 the European Commissioner for Enterprise and Industry announced the proposal that the major driver assistance systems become obligatory for lorries and other heavy vehicles: from 2012 – electronic stability control (ESC) systems; from 2013 – lane departure warning (LDW) systems and advanced emergency braking systems (AEBS).

Problems faced

For budget reasons it was not possible to increase the EUR 2,000,000 incentive. The number of applications for the subsidy has far exceeded the funds available.

Also, because of technical reasons, only trailer trucks can at present be equipped with ESC systems. This safety system is not yet applicable for drawbar combinations. Only the rollover prevention (ROP) system is currently offered for use in drawbar combinations.

Success factors

Two main target audiences are reached in the course of the campaign:

Policy makers:

Through contacts with other institutions and the vehicle manufacturing industry the promoters of this campaign have been able to reach a large number of policy makers. This effort has already borne fruit in relation to the proposed new EU Directive.

Drivers:

In addition to the truck drivers addressed by the BGF through its training, drivers in general can be made aware of the problems of heavy goods transport and road safety.

The combination of different measures guarantees a high success of the safety efforts undertaken by the BGF:

Financial incentive:

The grant of EUR 2,000 per vehicle represents a considerable incentive to get the safety systems fitted.

Training:

The training provided by BGF experts helps develop close contact with the road transport companies. As well as providing practical training for drivers on how to use the systems, it also facilitates discussion on road safety problems with both drivers and company safety officers.

Publicity:

At a press conference held in Berlin, journalists and TV teams were informed about the technical background and could follow a driving demonstration of system-equipped trucks.

The wider public is reached by a special website with news about the campaign and the technical systems (www.fahrer-assistenz-systeme.de).

The stickers on the vehicles are a simple but effective publicity method.

Evaluation:

Getting data from companies is not always easy. The initiative was able to get comparative data on the performance of trucks fitted, compared with those not fitted with the system, by making this a requirement of the subsidy.

Transferability

This campaign could be applied in similar ways either in the national or the European context. The amount of money provided could be varied depending on local conditions, and qualifying factors for a subsidy could also differ.

Further information

Berufsgenossenschaft für Fahrzeughaltungen

Ottenser Hauptstraße 542765 Hamburg

Germany

Web: http://www.bg-verkehr.de/

2.3.13. Practices in a chemical road transport enterprise – technical and training measures, Switzerland/Germany

Organisation(s): Bertschi AG, Europe

Key points

- Targets set for accident reduction.
- Technical solutions, training, controls.
- Continuous checking of the observance of safety rules.
- Continuous on-the-job training to cover experienced as well as new workers.
- Public awareness-raising regarding OSH in chemical road transport.

Introduction

The European Road Safety Charter, the annex of the Communication of the Commission COM(2003)311 – 'European Road Safety Action Programme', requires relevant institutions and enterprises to reduce the number of accidents within their area of responsibility by all means at their disposal.

In 2004 – shortly after the European Road Safety Action Programme was introduced – Bertschi AG subscribed to the European Road Safety Charter.

The new European Directive 2003/59/EC on the Initial Qualification and Periodic Training of Professional Drivers demands, among other things, a 35-hour period of training for each driver every five years. With the help of its sophisticated system of in-house training, Bertschi AG is able to comply with legal requirements for this sector.

Background

Swiss-based Bertschi AG regards itself as the European market leader in chemical transport with more than 1,200 tractors and 12,000 containers. The enterprise has about 1,700 employees all over Europe. The German branches of the company are members of the BGF, the German institution for accident prevention and insurance in the vehicle operating trades.

In 2002, quite some time before the European aims for accident reduction were publicised, Bertschi AG's executive director set a goal to reduce accidents during the following five years by more than 50%.

Aim

- The use of technical measures, continuous training and compliance methods to help achieve the accident reduction target.
- To achieve consistent and high levels of safety across all its multinational operations.

Scope

Following the targets set by the executive director, Bertschi AG's Department of Quality and Safety introduced a number of measures within a safety management framework which covers its multinational branches.

Technical features:

- A high percentage of Bertschi AG's heavy goods vehicles are equipped with driver assistance systems, such as electronic stability control (ESC) and the rollover stability system (RSS) to prevent truck rollovers.
- The vehicles also have blind spot mirrors and a supplementary mirror on the driver's side to show the whole length of the tractor and trailer combination.
- Reflective markings are attached to the rear and both sides of the vehicle.
- Some vehicles are also fitted with a backing alarm that sounds when the vehicle is reversing.

Through the use of all these technical safety features, the number of road traffic accidents can be measurably reduced.

Training:

Statistics have shown that the older, more experienced driver can be involved in as many accidents as inexperienced drivers. Acquiring experience often leads to a more 'relaxed' way of working and, in some cases, an increased danger of injury. Bearing this in mind, Bertschi AG has developed a system of individual training for all activities.

Before the individual work assignment, new employees have to attend primary specific training – a practice that is not always found in the transport business.

Throughout their career drivers will attend regular individual training, structured around the Behaviour Based Safety (BBS) guidelines of the chemical industry. During these training sessions drivers are made aware of a number of policies Bertschi AG has developed to improve safety. The main topics covered are summarised below:

A. High quality of vocational and in-firm training

- Professional training of the drivers before their first assignment and individual periodic training according to the Behaviour Based Safety (BBS) guidelines of the chemical industry
- Zero-alcohol principle
- Continuous wearing of seatbelts
- No phone calls whilst driving
- Use of protective equipment during loading and unloading
- Use of daytime running lights
- Defensive driving principle takes priority over time pressure

B. Use of technical innovations

- Vehicles are equipped with driver assistance systems (ESC, RSS)
- Blind spot mirrors on all vehicles
- Reflective markings at the rear and on both sides of the vehicle
- Backing alarm

C. Continuous control

- Periodic individual checks (e. g. alcohol tests)
- Appraisal interviews with drivers once a year

Control:

To guarantee the efficiency of the whole safety system of Bertschi AG, the Department of Quality and Safety has prescribed continuous control using various methods:

- Individual checks of drivers.

The driver has to pass an individual check at regular intervals – either on the road or at the loading or unloading places. To carry out this test, the relevant head of department follows the heavy goods vehicle with his own car and observes the mode of driving and loading/unloading of the driver in question. The drivers are also tested for alcohol at regular intervals.

- Appraisal interviews.

The head of department has a conversation with each driver once a year to discuss the implementation of safety measures. This is documented in the relevant staff report.

Public and customer awareness

Road transport is not a 'closed system' for management. It has to interact with clients and clients' awareness and cooperation affect its operations. One measure Bertschi AG has taken is to organise regular Safety Days at customer enterprises

Outcomes and evaluation

- From 2002 to 2007 workplace accidents fell by a remarkable 50% at Bertschi AG.
- The acceptance of safety measures and the readiness to put them into operation has increased noticeably among the company's drivers.
- The Safety Days at customer enterprises have increased the public awareness of the safety problems associated with chemical transport and have led to other, similar projects.

In 2007 Bertschi managers performed 5,152 individual checks of their drivers on the road or during loading or unloading. In total, satisfactory results were obtained for 97% of these checks.

The success of the safety measures undertaken by Bertschi AG can also be measured by the following indicators:

- the accident rate in road transport within Bertschi AG
- the costs for repairs of the vehicles
- the days of absence of the employees due to injuries.

There are also a number of 'soft' factors that are difficult to quantify, e.g. the number of dangerous and near-miss situations avoided.

Problems faced

Human resources:

Safety and quality cannot be guaranteed without the existence of control systems. Bertschi AG's control system requires certain employees to perform individual checks and appraisal interviews.

National legislation:

Because Bertschi AG has branches all over Europe and national legislation differs from one European country to another, the overall implementation of safety measures can sometimes be difficult.

To find solutions that meet both the safety objectives of the company and the legal requirements of the country concerned demands a high strategic competence of the safety managers involved.

Success factors

- Implementation of common safety management system and procedures for all employees despite the varying legal background in the different countries.
- Combination of different measures, e.g. training, technical systems and control instruments, helped ensure the success of Bertschi's safety endeavours.
- Recognition that training needs to be continuous and cover experienced as well as new workers.
- Covering clients and public in awareness of work safety through various presentations (safety days).

Transferability

Many companies in the road transport sector all over Europe could apply these safety measures in the same, or a similar, way.

Further information

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2.3.14. Safe Driving Project, Greece

Organisation(s): Heracles General Cement Co.

Key points

- Coordinated actions covering risk assessment, policy development, equipment controls, site safety management and defensive driving.
- Ongoing training covering new and experienced workers.
- Involvement of contractors

Introduction

Heracles General Cement Co. is a cement production and distribution company with more than 2,500 employees in Greece. It is a member of the LAFARGE group. The company started a two-year safe driving programme for all contractor drivers and drivers employed by the company. In a coordinated approach, the programme included defensive driving training, assessment, policy development and equipment control.

Aims and objectives

In early 2005 the CEO of Heracles announced a 'road safety' programme with the following specifications:

- a company-wide programme
- affecting all employees and all contractors
- leader: supply-chain direction
- target: 0 road fatalities starting 2005.

The objective was to have all the subcontractor drivers (around 740) trained by the end of 2006 and for 50% of the drivers employed by the company to have completed a second phase of training by the end of 2008.

Background

The company's cement silo-truck fleet comprises 350 vehicles travelling about 7,000,000 km per year all over Greece. Moreover, in 2004 there were two contractor fatalities in silo-trucks in the Ptolemais and Megalopoli areas, respectively. This provided the impetus to start a safe driving programme at Heracles.

Scope

The safe driving programme lasted two years, from 2005 to 2007. The programme had four elements:

1. *Training and communication:*
   - Defensive driving training
   - Awareness presentations to all employees – contractors

2. *Policies, procedures & control:*
   - Driving policy
   - Rules and practices
   - Performance monitoring

3. *Equipment:*
   - Technical specifications

4. *Contractors relationship management*

Defensive driving is based on proactive driving; drivers need to predict potential unsafe behaviour of other drivers and other types of road hazards.

Several actions were scheduled for each year. In 2005 preliminary actions took place. Letters were sent to contractors and the programme was presented to the 300 silo truck owners. Then a road safety consulting company provided the first phase of 'Defensive Driving' training for 450 contractor silo-truck drivers. A first assessment of 450 silo-truck drivers was also made, in terms of categories such as:

- use of vehicle controls
- concentration
- observation
- avoidance

- coping with danger
- straightening the vehicle / position on the road
- utilisation of vehicle warning signs
- utilisation of mirrors
- behaviour
- manoeuvring ability
- maintaining a safe distance.

Each driver was given an overall grade for road safety behaviour before and after the training, from 0 to 5. From this grade the total risk category was calculated. There were 3 levels of danger: LOW risk = 1.00–2.35, MEDIUM risk = 2.36–3.25, HIGH risk = ≥3.26.

A communication kit set was distributed to managers to be given to all employees. Inspections were also carried out to investigate the existence and operation of safety devices (e.g. tachographs and speed limiters). Random visual checks were also made of the safety behaviour of truck drivers (use of seatbelt, use of mobile phone, etc.).

New drivers were also given intensive training that included 25 trips with an instructor, defensive driving training and assessment.

A database was created to record all accidents and reports of near-misses.

In **2006** a system of Vehicle Minimum Standards was developed that included:

- front mirrors
- seatbelts
- prohibition on use of steering wheel handle/ball
- beeper warning (moving in reverse)
- site barriers
- vehicle age.

Defensive driving training and assessment of a further 476 contractors and employees was carried out. The training was addressed to managers, sales employees, in-site material transportation contractors, packed cement transport contractors and quarry truck drivers.

A driving policy and rules were developed which included speed limits, prohibition of use of mobile phones and alcohol, etc.

Meanwhile regular communications and letters were sent to truck owners presenting data from accidents, key points of the programme, next steps, etc.

In **2007** the first group of 440 contractor silo-truck drivers (trained in 2005) received the second phase of their defensive driving training and a second assessment took place.

A further 246 employees (managers, head office staff, quarry truck drivers) received defensive driving training and underwent the assessment.

A risk assessment of head office entry and exit routes was performed. A leaflet was distributed to all employees, contractors and visitors to communicate safe entry and exit procedures.

The parent company, Lafarge, has amended its OSH policy and introduced a Mobile Equipment Advisory leaflet with basic safety requirements. Also, an obligation for drafting circulation plans for all sites was announced. This advisory was implemented for all silo-trucks in the company.

Moreover all sites and quarries (12 in total) plan to implement traffic circulation plans.

Outcome and evaluation

The initial target for zero road fatalities starting 2005 was achieved. All the training objectives were also achieved. Drivers' safety awareness increased; this is reflected in their behaviour (observing safety rules) and their participation in company-run safety events.

For 2008 several further actions were planned:

- 2nd phase 'Defensive Driving' training and assessment for the second group of contractors trained initially in 2006.
- Implementing Lafarge Mobile Equipment Advisory and related circulation plans in all sites.
- Regular audits of:
  - Vehicle standards (checklist) and
  - Driver qualification and behaviour (on-site & on the road)
- Plan training on anti-skid and anti-rollover of vehicles.

Success factors

- Multi-method prevention approach including risk assessment, policy development, site entrance ands exit safety and training.
- Active involvement of contractors.
- Assessment of training activities to ensure their effectiveness.
- Continuous training covering both new and experienced workers.

Transferability

The whole 'safe driving' programme can be transferred to other companies and countries.

The approach for training and communicating safety to contractors is particularly appropriate for transferral.

Further information:

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2.3.15. Safe opening and entry of gassed sea containers, the Netherlands

Organisation(s): BGZ Wegvervoer, Gouda

Key points

- An open-source, web-based eight-step plan (protocol) for opening gassed sea containers.
- Website also gives examples of procedures and information to ensure the personal safety of those dealing with such containers.
- Workshops for companies.

Introduction

A great deal of seaborne cargo is treated with toxic gases such as methyl bromide, formaldehyde and phosphine to prevent damage by pests. These fumigation gases can be dangerous if an employee opens the container. There is also a danger of explosions and asphyxiation caused by products that produce fumes, such as formaldehyde and toluene. There may also be exposure to solvents such as benzene. BGZ Wegvervoer, a social partner organisation providing advice and education on working conditions in the transport and logistical sector, developed a step-by-step plan for the safe opening and entry of gassed sea containers. They also provide workshops for companies dealing with containers that may be gassed and additional good practice information on their website.

Aims

The aim of the project was to make people aware of the risks and to provide a common method and advice for opening and entering sea containers safely.

Background

Several years ago the Dutch government established that some containers hold hazardous gases. These gases give rise to nerve problems and some cause specific types of cancer. The problems associated with gassed containers have risen since 2005, following the implementation of new international regulations for preventing vermin in wooden packing. Gassed sea containers contain, among other things, food, clothing, shoes, toys and furniture. The intention is that the pesticide gas remains active only for a relatively short period, so that it is at a safe level by the time the container arrives at its destination.

It has been found, however, that some exporting countries (mainly in Asia, Africa and South America) do not always follow the regulations strictly. Sea containers may have been gassed with non-approved pesticides and/or higher doses than recommended. Often the containers have not been labelled with the appropriate warning signs or are lacking the necessary documentation concerning details of pesticide use. Sometimes containers are gassed unnecessarily. In addition, some products absorb the gases, resulting in dangerously high levels being maintained within the containers for months after treatment.

Employees who open or enter a gassed sea container in such a situation can inhale the gas and suffer health problems as a consequence. In the past few years these problems have caused some serious accidents resulting in long-term adverse health effects.

In November 2007 two employees became unconscious while unloading a container in Hardinxveld-Giessendam. They developed serious health problems including epilepsy. In January 2008 a sailor on a ship bound for the United Kingdom died because his cabin was located above a toxic cargo. A subsequent investigation found the cabin contained high concentrations of phosphine.

Apart from exposure to pesticide gases, exposure to dangerous goods can occur when opening sea containers, caused by:

- Package leakage.

- Evaporation of dangerous substances used in the production of certain goods (e.g. formaldehyde, toluene).
- Chemical reactions within the cargo leading to the release of hazardous substances, whilst at the same time there is a loss of oxygen.

Statistical data:

VROM-Inspection (the Dutch health and safety inspectorate) has been monitoring containers arriving at Dutch ports for some years for fumigants and other hazardous substances such as solvents, e.g. benzene. In one research project lasting from 2003 to 2006, air samples from almost 300 sea containers were analysed. The Dutch National Institution for Public Health and the Environment (RIVM) presented a report on this project in 2007.

Because several million containers enter the Netherlands every year, any local transport company could face this problem. BGZ Wegvervoer therefore came up with a step-by-step plan to help its member companies handle such containers safely.

Scope

BGZ Wegvervoer first became involved with the problem in 2003 after the labour inspectorate arranged an investigation into the air quality in sea containers (considered as 'confined spaces' under Dutch OSH laws). The Dutch Health and Safety Executive (Arbodienst) did the investigation and produced advice on how to handle gassed containers.

Because this problem potentially affects all transport companies, BGZ Wegvervoer coordinated the project. In 2005 the following guidance documents (protocols) were produced:

- An example of a reception record for sea containers.
- An example of a company procedure.
- Protocols for working safely with sea containers.
- Employee information for safe opening of gassed containers.

The protocols later had to be adapted because new information emerged. Originally workers were advised to open containers carefully if they were not sure whether or not they had been gassed, and upon discovering something unexpected, to close the container door and then measure the gases. The current version instructs workers to measure gas levels before opening any container they are not sure about.

The Dutch law has changed in recent years and with respect to the topic of gassed containers, relevant documents will be more specific and fumed gasses will be more integrated into the protocols.

The step-by-step plan for opening and entry of gassed sea containers:

To enable workers to open or enter sea containers safely, the employer must first take certain measures, as outlined below:

- According to the Arbobesluit (a Dutch Safety, health and welfare law) the employer is obliged to carry out research when there is a potential danger of asphyxiation, drowsiness or poisoning of employees and fire in, or explosion of, the sea container.
- Employers have to ensure that their employees have been sufficiently informed and trained to work safely with sea containers that may have been gassed.

- New reports regarding sea containers are produced regularly, which give details of marginal values, frequently found gases, etc. Employers need to keep themselves updated about these reports.
- Appointments are made with producers, suppliers, etc., to reduce the use of suppression resources and to prevent evaporation of the cargo.

When the preparatory work has been done the eight steps can be followed, which are summarised below (certain steps refer to manuals/ protocols provided on the website):

- Step 1: Does your company open and receive sea containers?

  a. No, no further action necessary.

  b. Yes, continue to step 2.

- Step 2: Stipulate to which category the sea containers belong.

  You can determine the category using the protocol 'Working safely with sea containers'. We use the following categories:

  a. (Certainly gassed).

  b. (Possible gassed, situation vague).

  c. (Certainly not gassed).

  A and b containers must always be measured before entering. C containers must be periodically measured.

- Step 3: Record the results of step 2.

  For this you can use the 'Record example reception sea containers'.

- Step 4: Act according to the instructions when opening sea containers.

  These instructions are described in the protocol 'Safe working with sea containers'.

- Step 5: Develop a company procedure for handling sea containers.

  An 'Example of a company procedure' is given.

- Step 6: Provide information and training to your employees.

  Supervise employees to ensure they work according to the work regulations.

  Click on the brochure 'Employee information safe opening of gassed containers'.

- Step 7: Consult medical experts, report to labour inspectorate.

If employees may have been exposed to health-endangering substances in spite of all precautions, they must have the opportunity to undergo a work-related medical examination. If it emerges that employees have been exposed to gases and/or fumes, you must register this. If the possibility of permanent health damage exists or a worker has been hospitalised, then you must report the incident by telephone to the labour inspectorate.

Step 8: Make agreements with chain partners to ensure that gas concentrations are as low as possible so that gases and /or fumes in the sea containers are not present in dangerous concentrations.

Check the agreements by performing periodic measurements/monitoring.

Workshops:

BGZ also holds workshops on gassed containers for member companies, as well as providing training on how to carry out gas measuring in-house. The training lasts three days and includes an examination (written and practical). Wage supplements are given to companies for each part of the day (by day and on working days) that their employee has been present at training. Companies are entitled to contributions from the road transport sector training and development fund (SOOB), and wage supplements, if they belong to the collective labour agreement of the road transport sector (CAO van het beroepsgoederenverover over de weg en mobiele kranen) and they contribute to SOOB.

Outcomes and evaluation

Qualitative outcomes:

The first goal was to make more employees aware of the problem and inform them how to deal with gassed containers. With the development of the step-by-step plan and promotion by BGZ Wegvervoer, this goal has been achieved.

Quantitative outcomes:

BGZ Wegvervoer monitors its website statistics to retrieve information on document use. Analyses of the visiting hits on the website show that the documents are consulted about 100 times a month. No direct information is available on whether the step-by-step plan is implemented in reality.

Problems faced

The ideal would be for all exporters to follow the necessary safety requirements. Because this is extremely difficult to enforce, a precautionary approach has been taken regarding the safety status containers when they arrive. The challenge has not so much been in drawing up an agreed and practical protocol, but in determining whether and how it is followed in practice (see the section on quantitative outcomes).

Success factors

- Based on prior studies and analyses of the problem.
- Common, sector/partnership approach, to a common problem.
- Adoption of a precautionary approach.
- Adaption of the protocols when new information about risks emerged.
- The relevant documents are provided on the BGZ Wegvervoer website free of charge.
- The road transport sector training and development fund (SOOB) covered the costs of developing the protocol. This is a social partner organisation, which helps to ensure that projects met the real needs of the sector.
- Awareness training: at the end of the workshop, participants are able to assess and control situations relating to gassed sea containers.
- Open-source protocol.

Transferability

This project and the procedures developed could be implemented by transport companies in other European countries, all of which face the problem of gassed containers from exporting countries. For example, the provision of the material could be arranged by an equivalent organisation to BGZ Wegvervoer within the country concerned.

Further information

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Step-by-step plan for opening and entering of gassed sea containers
http://portal.bgz.nl/index.php?option=com_content&task=view&id=425&Itemid=358
RIVM (2007). *Trend analyses detrimental gases in containers*. RIVM Rapport 609321001/2007
http://www.rivm.nl/bibliotheek/rapporten/609321001.pdf

2.3.16. The risk of occupational fatigue in road transport – A coordinated prevention initiative, Spain

Organisation(s): Trade Union Federation of communication and transport of CCOO (Federación de Comunicación y Transporte de CCOO)

Key points

- Study of occupational fatigue as an important risk factor for road accidents by a trade union with government funding.
- Methodology included group discussions with drivers and a literature review of accidents.
- Coordinated actions from the social partners, including the formation of a 'foundation on occupational driving'.
- A number of sector-specific publications developed.
- Forms for documenting fatigue and a test for determining chronic fatigue levels.

Introduction

There were about 350 fatalities among professional drivers in Spain in 2006. This case study describes a national initiative by the Spanish road transport sector that includes a review of accidents, discussions with drivers on causes and solutions, subsequent publications and other dissemination activities. Fatigue was shown to be an important risk factor for road accidents.

Aim

The aims of the study were to investigate the causes of road accidents, identify solutions, inform the production of guidance and to raise awareness of the subject amongst workers. The objective was to show that fatigue could increase the risk of road accidents, especially on highways where safety depends heavily on the alertness and fitness of the driver and to provide practical help with detecting fatigue and guidance on avoidance.

Background

The study was motivated by a desire to dispel the common belief that road accidents are caused by drivers' mistakes. The study demonstrated that the main contributing factors in road accidents are in fact working conditions and the road network.

The initiator of the study was the Trade Union Federation of Communication and Transport of CCOO, Spain's largest trade union confederation. The study was funded by the Ministry of Labour's Foundation for Occupational Risk Prevention.

CCOO had previously studied the issue of fatigue and occupational accidents. The earlier study indicated that drivers were twice as likely to have an accident if they were tired. That is to say, the number of accidents involving drivers who had been working for eight hours or more was double that of other drivers. These findings were the basis for the study on fatigue in road transport.

Scope

The study on fatigue and driving was carried out at a national level for a year (2001) and focused on drivers of passenger vehicles and heavy goods vehicles. An occupational physician and specialist in aeronautic medicine was responsible for the technical aspects of the project. The trade union's OSH secretary was the study coordinator.

The methodology used in the study was qualitative. Researchers formed groups of 5–10 workers who did not know one another, to discuss the topic (fatigue). Workers were encouraged to talk freely about the causes of the problem and potential solutions. The coordinator of the group had a passive role and listened to the discussions, requesting clarification as and when necessary. The researchers selected the topics and group numbers. The discussions were recorded and analysed by the researchers.

In parallel, literature was reviewed on the topic. All accidents that had occurred on Spanish highways between 1 January and 30 June 2001 were analysed to investigate whether they were a result of driver fatigue.

The study was publicised on the internet, at the following address:

http://www.fct.ccoo.es/webfct/menu.do?Actualidad:Salud_laboral:Publicaciones.

A CD on the study was also released, which included special forms for assessing chronic fatigue in drivers. These forms are now being used to document levels of chronic fatigue in drivers and to support court cases concerning drivers' incapacity for work.

Because the study was lengthy and not all workers have PC access, a synopsis was published titled 'La fatiga en la conducción' (tiredness and driving). This was distributed to all workers via the trade union network. The synopsis also includes a test to determine drivers' fatigue. This test was developed by Dr Araceli Larios Redondo, the occupational physician of CCOO.

There were many subsequent conferences and meetings on the subject of fatigue during driving.

A number of sector-specific publications were also produced:

- Conducción y descanso (Driving and rest).
- Conductoras de autobuses urbanos e interurbanos (Women drivers of urban and inter-urban buses).
- Logística sin Riesgos, Máxima Eficacia (Logistics without risks, maximum efficiency).
- Prevención de Riesgos Laborales en el sector de transporte de mercancías por carretera (Prevention of occupational risks in goods transport sector in highways).
- Coordinación de actividades preventivas en el sector del transporte por carretera (Coordinating prevention activities in the highway transport sector).
- La primera parada, tu salud (First stop, your health).
- Curso de prevención básico para el transporte por carretera (Basic prevention training for highway transport).

- Guía de prevención de riesgos laborales transporte por carretera (Guideline for occupational risk prevention in highway transport).
- El deterioro de la salud en los conductores profesionales en carretera (Deterioration of professional drivers' health on highways).

As an example the publication 'Driving and rest' is described below:

- Aim: produce a booklet analysing driving and rest time issues among truck drivers, in order to support their companies to develop their own time schedule, according to legal provisions.
- Issues covered: driving and rest time, work breaks, speed registration systems (tachographs) as control systems, and the responsibilities of the transport companies.
- Target group: truck drivers, truck crews and the companies employing them.
- The emphasis is put on the description of alternative driving and rest time schedules on either a daily basis or a weekly / two-weekly basis. For example, given the fact that driving hours cannot exceed 56 in one week or 90 in a two-week period, time schedules are proposed for each day.
    - Includes examples of scheduling including the necessary breaks from driving. For resting periods between driving time, examples are given on a one- or two-week basis.
    - Includes legal requirements, e.g. in order to monitor whether the prescribed time schedules are being observed or not, legislation stipulates that the records of speed registration systems should be kept and be available in case of an inspection.
    - Analyses the responsibilities assumed by the companies for remuneration, traffic fines and the overall organisation of transport activities.

Outcomes and evaluation

The greatest success of the study was that it demonstrated that fatigue is a very important risk factor for drivers. Fatigue is now recognised by Spanish drivers and the media as an important factor in road accidents. It is now taken into account in collective agreements and the negotiations with the government.

Furthermore this study was the starting point that allowed the development of more specific topics in the area of road transport.

The study revealed the working conditions on the highways and was the momentum for a special foundation being set up. The Fundación Laboral de la Carretera (Foundation of road work) was created by nine employers' organisations and two of the biggest trade unions in the sector, CCOO and UGT. The creation of this Foundation permitted the development of the sector-specific publications mentioned above. The initiative is ongoing and by the end of 2008 four more studies had been published.

Problems faced

- Difficulty in accessing drivers and their workplaces.

Success factors

- There was strong acceptance by the workers.
- Coordinated actions were undertaken to support the initiative, including studies, publications and dissemination activities.
- Partnership approach – trade union, ministry for the study; trade union and employers for the foundation and the guides.

- Based on research and assessment of the problem with expert input.
- Research also used workers' experiences.

Transferability

The integrated approach of this initiative could be transferred successfully to other countries. The main publications are based on European directives, and can be used in other transport companies in all Member States.

Further information

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Results of the study:
http://www.fct.ccoo.es/webfct/menu.do?Actualidad:Salud_laboral:Publicaciones.

2.3.17. John Lewis Partnership, UK

Organisation(s): John Lewis Partnership

Key points

- Work-related driving safety policies and procedures were developed and implemented in order to improve overall driving safety.
- Strong commitment of senior managers, steering group of employees.
- Employee handbooks, tailored to specific context, manager guides.
- Driver assessments linked to performance reviews.
- Comprehensive incident reporting and assessment system.
- Initiative informed by information from road safety organisations and other companies.

Introduction

The John Lewis Partnership comprises a group of companies: Waitrose (supermarkets) and John Lewis (department stores, manufacturing and farming). The company has 1,553 commercial vehicles and 700 company cars nationwide, and employs between 4,000 and 5,000 commercial drivers, who in total drove over 40 million km in 2000. In order to improve overall driving safety and bring down the organisation's accident statistics, work-related driving safety policies and procedures were developed, implemented, evaluated and continually updated.

Aim

To improve driving safety overall, increasing drivers' awareness of safety in both work-related and personal driving, and reduce the number and severity of driving accidents.

Background

The policy was initiated by the group's fleet engineer and senior management. The head of transport, the fleet engineer and assistant fleet engineer together developed the Health and Safety Policy, which aimed to enhance overall driving safety and reduce the organisation's accident statistics. The assistant fleet engineer was responsible for the day-to-day management of the policies and procedures, handling all the legal operations, continuously changing and updating the policy, and keeping the rest of the company informed. To learn from other organisations' policies and procedures, information from other companies and (road) safety NGOs RoSPA and Brake, as well as other relevant bodies, was collected. Employees' opinions were also taken into account in the development and review of the policy and procedures. A steering group of employees was formed by the assistant fleet engineer to review the recommendations and discussions also took place during a Defensive Driver training seminar.

Scope

The Policy:

The 'Managing Occupational Road Risk' policy covered the following issues:

- The management of occupational road risk (in terms of drivers and managers).
- Driver selection.
- Driver training upon recruitment.
- Periodic refresher training.
- Specialist training identified by driver's record.
- Management training.
- The accident report form.
- Procedure following an accident.
- Damage, injury assessment following a serious accident.
- Driver risk assessment.
- Review of drivers' daily tasks.
- Help from Central Transport.
- Analysing road accidents (detailing various different types of accident).

A handbook was distributed to all drivers and was kept in each vehicle. There were different handbooks for the Waitrose drivers, the John Lewis drivers, and the John Lewis minibus drivers as the operations differed slightly. However, similar issues were covered in each handbook. Below are the sections covered in the John Lewis commercial drivers' handbook:

- Responsibilities, procedures, legal requirements.
- Accidents, insurance, breakdown and recovery procedures.
- Drivers' hours regulations and tachograph requirement.
- Identification and use of commercial vehicles.
- Distribution and link services.
- Customer deliveries.
- Defensive driving.

Managers were given commercial vehicle operating guides (from Central Transport). Updates of the policies/procedures were communicated to the managers and drivers via memos and supplements respectively, in between updated versions of the handbook. Other means such as posters, newsletters and bulletins were also utilised for communication with drivers.

The procedures:

The following road safety procedures were included in the policy:

Risk assessment	Drivers had to do a daily check of their vehicle and managers had to do a spot check of vehicles.
Driver training	All drivers received training upon employment as well as occasional refresher training. Retraining was provided if there were incidents or the drivers showed a lack of skill. The company also offered defensive driving training courses and management training. The latter was designed for managers in charge of transport and drivers.
Driver assessments/permit to drive	This took place upon recruitment, and later if drivers showed a deficiency in skills.
Alternative means of transport	This applied to managers. For business travel, managers were encouraged to take the train or plane, though there were times when driving was necessary, for instance when carrying equipment for a presentation.
Guidance on mobile phone use/hands-free sets etc.	Guidance regarding mobile phone use/hands-free sets could be found in the handbook. In essence, mobile phones should be turned off whilst driving and a message answering service should be used instead. The organisation issued drivers with warning stickers to put on their mobile phones to act as a reminder.
Vehicle maintenance procedures	All vehicles were regularly maintained. However, the way in which this was carried out varied with different sites. The Bracknell site, for instance, conducted vehicle maintenance on-site, whereas some contracted it out.
Journey scheduling	This varied with different branches. Some branches planned the journeys for drivers (e.g. the London branch planned their drivers' journey using computer-aided planning), whereas other branches let their drivers plan their own journeys.
Breakdown guidance/assistance	An accident breakdown and recovery procedure was published in the handbook. All vehicles had a mobile phone, which was helpful for the drivers when breakdowns occurred.
Incident report	A motor accident/damage form had to be filled in by commercial drivers, recording all the circumstances and conditions.
Incentive programmes	RoSPA safe driver scheme: drivers who were blame-free for a year would receive diplomas, badges, and a small bonus (which grew over consecutive 'blame-free' years) from the Managing Director in an award ceremony.

Below is a more detailed description of some of the procedures:

Driver assessments:

It was company policy for all drivers to undergo a driver assessment in the type of vehicle that they were expected to drive. Assessments took place upon recruitment, or when the driver had to change to a different type of vehicle, or if the driver was rated as high-risk (i.e. involved in at-fault accidents). The driver assessor had a form to fill in which helped to make the decision on whether the driver needed some training. All completed training was documented for each driver.

Driver risk ratings:

Drivers received points when they were involved in an accident. The number of points depended on the role the driver played in the accident. The more points, the more at-fault the driver was. These points became the driver's risk rating ('low risk', 'medium risk', 'high risk – action required', or 'unacceptable risk – immediate action required'). Whenever an accident took place, the rating was updated.

The assistant fleet engineer kept a record of the risk ratings, while managers continually monitored the ratings. Drivers were told their risk rating in their annual performance review. The risk rating was kept confidential between the individual driver and his or her manager, though branch averages may be given to drivers as a standard for them to compare themselves against. Unacceptable high-risk drivers were either given training or had their contract reviewed.

Incident reporting:

When there was an accident, the 'motor accident/damage report form' had to be completed by the driver and the manager. The form detailed all the circumstances and conditions of the accident. The manager interviewed the driver, identified the cause, who was to blame, and the lesson learnt. The driver recorded the circumstances and conditions of the accident (i.e. the weather, road signs, speed limit, speed driven, involvement of police, third-party details, sketch of the accident, any injury that occurred, any passengers/witness details). Once the manager finished his or her assessment of the accident, the driver could add additional comments if necessary.

Outcomes and evaluation

Effectiveness of the initiative was evaluated by objective statistics as well as drivers' feedback.

Statistics showed that the number of accidents, accident severity and accident costs had all been reduced. From 1995 to 1999, accident costs decreased steadily. The reduction was particularly significant given the growing number of vehicles and miles driven from year to year. Although accident costs were higher in 2000, this could be partly attributed to the large increase in the number of vehicles and the longer distances driven during that year.

Drivers were generally positive about the initiative, stating that they were more aware of the risks when driving and had thus become more careful. This also had a positive impact on their personal driving. The only aspect of the initiative drivers found problematic was the Driver Risk Ratings in which drivers were awarded one point even in a 'blame-free' accident.

Problems faced

There were no real problems in implementing the policies and procedures. However drivers expressed concern about being awarded one point even in a totally blame-free accident.

Success factors

- Senior management commitment and support secured from the beginning.
- Use of steering group of employees.
- Initiative informed by guidance from road safety organisations and other companies.
- Use of a variety of communication channels to keep managers and drivers informed about the policy and procedures and any updates to them.

Transferability

The policy and procedures could be easily transferred or adapted partially or in their entirety by other sectors and institutions depending on their nature.

Similarly, the policy and procedures could also be usefully applied to organisations in other countries, though modifications may be needed as policies and laws differ between countries.

Further information

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2.3.18. Robert Wiseman Dairies, UK

Organisation: Robert Wiseman Dairies

Key points

- A series of road safety procedures were developed and implemented.
- Measures include risk assessment, training, incident investigation, employee assessments, guidance and incentives across a range of activities.
- Adaptation of external policy, procedures and guidance to the specific needs of the company.
- Resulted in decreased accident statistics, improved employee attitude, increased driving safety and risk awareness, and a positive 'knock-on effect' on personal driving.

Introduction

Robert Wiseman Dairies produces and distributes fresh liquid milk to a wide range of customers and employs 2,500 people across the UK, including company car and commercial drivers. The company developed work-related driving safety policies and procedures for its commercial drivers to prevent these employees from being exposed to safety risks at work. Subsequently, it has evaluated its policies and practices using

objective data as well as subjective feedback, and amended policies and practices where appropriate.

Aims and objectives

- To increase the safety of the company's commercial driving staff by implementing company policy consisting of a number of road safety procedures (including risk assessment, training, incident investigation, employee assessments, guidance and incentives across a range of activities).
- To continue to amend and develop company policies and practices in the future to improve employee health and safety and company performance.

Background

The initiative originally came about after investigation of several site accidents. Previously, there had been no structured driver training, vehicle checks or information exchange about the vehicles. The initiative was developed to improve employee safety and reduce company costs. The initiative was instigated by the driver trainer manager and health and safety manager. Safer-driving policies were developed by sharing information with other companies and contacting the major vehicle manufacturers for guidance. Once developed, policies and procedures were communicated to employees via team meetings and supervisors/managers. Group presentations and handouts were also used to communicate some policies, and relevant information was conveyed using notice boards.

Scope

Ten road safety procedures were included in the company's vehicle driving policy document:

1. Risk assessment
2. Driver training
3. Driver assessments
4. Alternative means of transport
5. Guidance on mobile phone use/hands-free sets, etc.
6. Vehicle maintenance procedures
7. Journey scheduling
8. Breakdown assistance/guidance
9. Incident report
10. Incentive programmes

As these procedures were developed from other companies' and vehicle manufacturers' existing guidelines, some of these procedures were irrelevant to the company's commercial drivers (e.g. procedure 4 and 6) or there were existing procedures in place to deal with those issues (e.g. procedures 1, 3 and 7). Other procedures required minimal additional input from the company to resolve (e.g. procedures 5 and 8). However, several new procedures required a significant input from the company (procedures 2, 9 and 10). These procedures are detailed below:

Driver training:

Driver training was implemented by the driver trainer manager / accident investigator. Two or three driving instructors, themselves fully trained ex-drivers, assessed and trained

potential new drivers. All drivers were assessed during the recruitment process and again if they were involved in an accident or reached a certain number of 'bumps'.

The level of training was dependent on the standard of the driver. Novice drivers would first be taken out with an instructor in an empty vehicle before being allowed to drive a laden vehicle. After that, another driver helped the new driver for approximately two weeks before the new driver went out on his own. Induction training also included training on the accident report procedure.

All drivers received training in handling new vehicles, with some training activities taking place in the vehicles themselves, as well as being trained in the loads, tail-lifts, coupling/re-coupling procedures, opening doors, and the correct way to climb in and out of vehicles. Some training took the form of presentations (e.g. winter driving training), which were delivered to six drivers at a time. The drivers were given a handout to take away with them.

The company kept a record of the training received by each driver, and the accident records and incentive systems were used to evaluate the training system.

Incident reporting:

Each driver was given a laminated card detailing what to do in the event of a traffic accident. In addition, each vehicle contained a 'bump card' to log any accidents. Upon returning to site, the driver involved would have to inform the supervisor and fill out a more detailed accident form. Details of the accident are then fed into the incentive scheme and driver training systems. Wiseman Dairies then carries out a thorough accident investigation. This system of incident reporting has been seen to save the company money (as their insurance company does not need to carry out an investigation) and expedites the insurance-claim process.

Incentive programmes for commercial drivers:

Wiseman Dairies introduced two incentive programmes for its commercial drivers: (1) the Safe Driving Award Scheme, rewarding drivers for accident-free periods of 1, 2, 3 and 4 years; (2) the Commercial Driver of the Year Competition, otherwise known as the Drivewise Award, which required drivers to be accident-free. The incentive programmes were implemented by the driver trainer manager, and communicated to staff through team briefings. This award takes place over a weekend and requires drivers to undertake independent tests on driving, theory and fault-finding. Three categories of winners (non-LGVs, rigid goods vehicles and articulated vehicles) each win a large prize (e.g. a new car) and two runners-up in each category receive holiday vouchers for up to £3,000. All other drivers who take part receive smaller prizes.

The incentive scheme replaced a bonus scheme for accident-free driving, which Wiseman Dairies was finding too costly. Since its inception, the incentive programme has been seen to be successful by bringing about a change in attitude among drivers and a reduction in the numbers of accidents.

The project has developed since its inception and the company now has its own in-house driver training department. All new drivers go through an induction period. Drivers are also 'up-skilled' to drive larger vehicles (where possible) and its instructors are registered with the Driving Standards Agency. The company also offers advanced driver training and testing in-house; the first public limited company to do so.

Driver training now follows a more structured approach and Wiseman offers courses to all its drivers, from car drivers (complete defensive driver training) to articulated vehicle drivers (safe and fuel efficient driving course). The company now also has its own road risk policy and produces a driver guide for car drivers.

The company is continually updating its policies in light of new evaluation data. Its aim is to continue developing the training programme, with the objective of further reducing the

occurrence of accidents, reducing the amount of fuel used and reducing the particulate emissions of the vehicle fleet.

Outcomes and evaluation

There were a variety of outcome measures for evaluating the impact of the new policies and practices. For example, data collected to evaluate the usefulness of the training practices included fuel usage, miles driven and CO/other particulate emissions for each vehicle. Another measure that was recorded and tracked was the number of traffic accidents that each company vehicle/driver was involved in. The number of accidents decreased across the board following the implementation of the new driving policies. As a result, company costs and insurance premiums were reduced.

In addition, a range of more subjective/self-reported consequences were reported to result from the new driving policies. Among the company's commercial driving employees, these included: (1) improved attitude; (2) increased driving-safety and risk awareness; and (3) a 'knock-on effect' on drivers' personal driving.

The success of the original intervention(s) across a range of outcome measures highlighted the usefulness of the new driving policies. As a result, the policies were expanded to include all company drivers, and it was decided that the training programme should be developed further.

Problems

Bad feeling amongst drivers when the bonus scheme was removed and replaced with an incentive scheme.

Success factors

- Managers' support for the policies and procedures contributed to their smooth implementation.
- Use of a range of measures.
- Tailoring policies and procedures from external sources to the specific context of the company.
- Use of objective data and subjective feedback to adapt and amend policies and procedures.

Transferability

The policies could be transposed usefully to other similar organisations with limited or no driving safety schemes for commercial drivers. However, it would be useful to consider well-developed driving safety policies in other organisations to see if there are additional procedures that could contribute to a generic code of best practice.

With respect to the transferability of the policy to other nations, the procedures could be transposed cross-nationally without significant alterations. The utility of each procedure would need to be assessed on a piecemeal basis for organisations from other nations, as they may be more or less relevant/appropriate in light of idiosyncratic features of the target nation.

Further Information

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2.3.19. Driving at Work Policy, UK

Organisation(s): Coca-Cola Enterprises Limited (CCE), UK

Key points

- A policy was implemented covering many aspects relating to health and safety while driving at work.
- Measures included: risk assessment, with tailored control measures based on the assessment, the driver and the task; driver and manager responsibilities; incident investigation; best practices; driver assessments and training; occupational health services.
- The initiative covers: employees and contractors safety, maintenance and ergonomics of vehicles; driving and non-driving tasks.
- The aim was to improve employees' safety at work as well as to reduce company costs.

Introduction

Coca-Cola Enterprises Ltd is responsible for the manufacturing and distribution of Coca-Cola products in Great Britain, supplying around 240 million cases every year. The company has 4,600 employees, spread around sites, depots and offices across the UK. A large number of employees (around 450) are involved in driving commercial vehicles on a day-to-day basis, and many others drive company cars. Accordingly, the company has developed work-related driving safety policies and procedures for drivers to protect these employees from exposure to safety risks. In addition, safety procedures have been implemented to regulate driving-related behaviour such as accident reporting, smoking and rest periods.

Aims

- Decrease driving-related costs.
- Identify and minimise risks to actively encourage safe driving.

Background

In 2000, work-related road accidents were costing CCE about £1.1 million a year in vehicle repair and maintenance. A new policy and procedures were developed in order to decrease these driving-related costs. There was also a road fatality in 1999 caused by a lorry driver who had no internal specific driving training. In addition, CCE was finding that the most significant costs were incurred from damage to vehicles while parked. The organisation's road safety policy was originally designed to cover the following issues: (1) driver responsibilities; (2) non-compliance leading to disciplinary action; (3) accident investigation; (4) best practice for the vehicle and on the road; (5) driving capability; (6) seeking advice; (7) managers' responsibilities; and (8) driving course upon induction including video 'Eat, Sleep, and Drive'. CCE's road safety policy has subsequently been updated and amended.

Scope

The driving policy applies to employees or others who may be driving for and on behalf of CCE. It also covers the roles played by managers, health and safety representatives and the car fleet department in relation to driving at work. It has been updated since it was first implemented and now comprises the following sections:

1. Responsibilities:

All those who undertake driving at work must make themselves familiar with CCE's Driving at Work Policy and ensure they practise safe methods of driving at all times. Particular considerations for drivers include: driving safely in accordance with UK driving laws; attending driving training sessions and practising safe driving methods; keeping vehicles tidy and in a roadworthy condition; carrying out regular visual checks on vehicles; ensuring MOT (roadworthiness) and servicing is carried out in accordance with the manager's recommended intervals; notifying relevant authorities of accidents, breakdowns, or damage to vehicles and following the prescribed procedure for such incidents; informing line management of licence withdrawals, change of address or circumstances which may affect ability to drive; submitting a copy of the driver's licence when required to do so; ensuring appropriate rest periods are taken during long journeys; ensuring familiarity with controls on vehicles before driving; and using company-issued mobile phones in accordance with the law and company policy. Additional responsibilities include journey planning (considering whether driving is necessary, and planning routes and rest periods where appropriate), lone-working/driving safety, and abiding by CCE's alcohol and substance misuse policy. Drivers identified as being a risk to their own or others' safety may be required to undergo specific guided training. Non-compliance with the above policies may result in disciplinary action that could include dismissal.

There are also specific guidelines for employees whose jobs relate to CCE's vehicle fleet. For example, CCE's Driving at Work Policy also stipulates guidelines for line managers, which specify that they should: bring the policy to the attention of all those within their department who are appointed to drive for the purposes of work and assure it is adhered to; ensure that all employees who undertake driving at work undergo the appropriate assessments; assist in the implementation of control measures that combat identified risks; monitor the success of control measures within their department; check the guidance is being adhered to and that employees complete vehicle checklists as appropriate; ensure drivers complete identified training and that such training is put into practice and recorded; ensure that overnight stays/rest periods are allowed for when planning work activities; ensuring that employees comply with licence checks; report driving accidents and injuries, and investigate them as appropriate; ensure that ergonomic assessments or medical examinations for drivers are arranged through HR/occupational health departments as appropriate.

Car fleet management also has specific guidelines with respect to driving at work: all vehicles selected should be appropriate for the work purpose for which they are intended; all vehicles are fully serviced in line with manufacturers' instructions; all vehicles are appropriately insured and have current MOT certificate and road tax; all drivers have had an annual validity check of their driving licence; any non-company vehicle that may be used for business is appropriately insured and an MOT has been carried out where necessary; any reported driving at work accidents and injuries are followed up and properly investigated; safety records of drivers are tracked and reported to management; necessary safety equipment for vehicles is obtained; identify, review and communicate high-mileage drivers; identify appropriately trained and qualified organisations to assist in providing driver training; and monitor and communicate monthly accident statistics. The Health and Safety Department is primarily responsible for working with and supporting car fleet, line managers and the HR department in implementation of the Driving at Work Policy, and in particular: ensuring effective communication of the policy and risk management procedures; undertaking investigations into accidents where appropriate; undertaking risk assessments and recording significant findings; reviewing documentation in relation to the Driving at Work Policy, such as the vehicle inspection checklist.

2. Assessing drivers:

When considering a change to an existing role or recruitment of a new employee to a role involving driving, the following criteria will be used: review driving licence/restrictions; medical and eyesight tests; review of accident/prosecution history; online road risk assessment; a practical driving assessment.

3. Risk assessment:

A risk assessment procedure forms part of the Driving at Work Policy, and comprises the following requirements: car fleet and HR department, with support of line managers, will ensure that online road risk assessments are carried out for job roles involving driving at work; line managers in conjunction with car fleet and health and safety departments must ensure control measures identified by the risk assessment are carried out; all drivers make routine visual checks on their vehicle each quarter; at interview stage, individuals with little or no experience of the vehicle type are referred to the car fleet department by the interviewing manager; assessments to determine the safety and suitability of any new type of vehicle will be conducted by car fleet management and passed on to the health and safety department for review and recording; risk assessments for drivers and vehicles will be reviewed and, where required, re-assessed by car fleet and health and safety departments as appropriate.

4. Safety control measures:

The risk assessment is designed to identify the needs of an individual carrying out a specific driving task. Where identified, control measures will be introduced by the line manager in conjunction with car fleet and health and safety departments, to eliminate or minimise the risk. Control measures can only be effective if the driver adheres to them at all times. The control measures applied will be dependent on driver, task carried out and risk rating from the risk assessment. A combination of the measures from the (non-exhaustive) list below can be used to reduce the overall risk: additional training; risk assessment reviews; vehicle induction to ensure familiarity with features of the vehicle, including guidance on safe driving and the safe use of the vehicle; reviewing journey routes, driving time limits, breaks, and alternative methods of transport; supplying drivers with the most appropriate ergonomically designed equipment to assist in loading and unloading, taking into account the cost-benefit analysis and approved by senior management; and line managers selecting the most appropriate drivers for the tasks involved, taking into account experience, risk rating and capability levels required.

5. Vehicles:

The car fleet department will be included in the selection of vehicles provided to employees for Driving at Work. Vehicles are chosen depending on their suitability for the purpose and their compliance with the requirements of CCE's Driving at Work and company car policies.

The car fleet department will keep the following information for all CCE vehicles, benefit cars and trade out vehicles that have been authorised for business use: vehicle make, model, registration number and fuel type; licensing and insurance requirements for the vehicle. For all CCE vehicles, car fleet will also keep an inventory of additional information which will include: driver/site allocation details; testing and maintenance history; and accident history. In addition to detailed records on each CCE vehicle, the car fleet department will also compile and maintain an inventory, which has details of non-employees who are authorised as alternative drivers to drive CCE vehicles, e.g. family or partners.

Vehicle inspections and maintenance may only be conducted by qualified persons, to ensure that manufacturers' recommended service intervals are adhered to and warranties are not invalidated. A maintenance log will be kept in each CCE vehicle containing all

information relating to that vehicle – the servicing garage must update this upon completion of each service/inspection.

Every CCE vehicle and benefit car will contain equipment for the safety of the employee. This equipment will be supplied by the car fleet department upon issue of the vehicle.

6. Mobile phones and driving:

CCE specifies the following stipulations about mobile phone usage within company vehicles: mobile phones must be placed in a cradle with an approved hands-free system whilst a vehicle's engine is switched on or at any time whilst driving a CCE vehicle; text messages must not be opened for reading or sent/replied to whilst the vehicle is moving; CCE employees issued with a mobile phone who are expected to use it while driving will be offered an approved hands-free system to be fitted in their car; for temporary vehicles (hired or short-term replacement), employees must not use their mobile phone whilst the engine is switched on under any circumstances, unless the vehicle is fitted with a full hands-free kit; all employees must consider whether it is appropriate to leave their phone to go to voicemail if it is not safe to take a call or turn their mobile phone off whilst driving, depending on their job role; if calling a mobile phone, employees should always ask 'are you okay to talk?' (it is the decision of the driver to accept the call or call back later); managers should not insist that mobile phones are kept switched on at all times; drivers should not participate in conference calls whilst driving; employees should remember that even if mobile phones are held in a cradle they still could be distracted whilst driving and face prosecution by the police for careless or dangerous driving.

7. Accidents:

In the event of an accident or incident when driving, the driver must: inform CCE's insurance company of any vehicle accident; complete an accident report form and send it to the car fleet department; inform their line manager; reports must be made as soon as possible; complete the vehicle accident/incident form; where possible, all reports of vehicle collision must be sent to car fleet and health and safety departments via lotus notes or internal mail within five days; where possible, all reports of damage whilst parked or theft incidents should be sent to car fleet department within 10 days; accident/incident report forms are available from health and safety, car fleet department and line managers.

The car fleet and health and safety departments will review the accident reports and statistics, and will recommend any improvements to the policy or general safety measures which arise as a result.

The company's car fleet department and/or the health and safety department will, where necessary, carry out a detailed accident investigation to establish the cause. Where possible they will use this information to take steps to eliminate or reduce the risks to drivers. CCE will also investigate complaints from members of the public concerning liveried vehicles. Failure to report vehicle incidents or accidents could result in disciplinary action.

8. Other specific regulations:

Private vehicles – employees must not use private vehicles for driving at work at any time. Instead, pool cars or hire cars should be used.

Hired vehicles – vehicles will be hired from a reputable company approved by fleet management.

Break-ins/theft – if a break-in occurs, the driver should contact the police, his/her line manager, and CCE's insurance company, and complete an accident/incident report form and pass it to their line manager.

Breakdowns – if a vehicle breaks down while driving at work, the driver should remove the vehicle from the carriageway (if both safe and practical to do so), put on the hazard lights and contact the appropriate breakdown recovery service.

Smoking in company commercial vehicles, cars and rental vehicles – Drivers should abide by CCE's 'smoke free' policy.

Future plans for the driving at work policy revolve around online risk assessment and e-learning packages based on the results of the assessments that will be undertaken by the new staff as defined in the policy.

Outcomes and evaluation

At the time of writing there have not been any problems with the latest version of the driving policy (implemented in June 2008). However, the impact of the policy has not yet been systematically evaluated.

Success factors

- The company secured support for and commitment to the initiatives by raising awareness and understanding of the benefits, which encouraged quicker compliance with policies.
- A range of issues were covered – driving procedures, safety and ergonomics of vehicles and tasks, driving and non-driving tasks.
- Employees and contractors covered.
- Both managers and drivers covered.
- Specific measures are tailored – to task and driver – based on risk assessment.

Transferability

The policies could be transposed usefully to other similar organisations with commercial drivers. However, it would be useful to consider well-developed driving safety policies in other organisations to see if there are additional procedures that could contribute to a generic code of best practice.

With respect to the transferability of the policy to other nations, the procedures could be transposed cross-nationally largely without significant alterations. The utility of each procedure would need to be assessed on a piecemeal basis for organisations from other nations, as they may be more or less relevant / appropriate in light of idiosyncratic features of the target nation.

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2.3.20. Royal Mail Network Health and Safety Management System, UK

Organisation: Royal Mail Network

Key points

- Cross-network driver training.
- Targeted training initiatives.
- Driver assessment.
- Vehicle maintenance procedure.
- Design and manufacture of bespoke concept truck – to prevent falls from tail-lifts and to improve driver safety in general.
- Preparation for European Directive 2003/59/EC.

Introduction

Royal Mail collects and delivers letters and packages throughout the UK. Each working day it collects items directly from 113,000 post boxes, 14,300 Post Office branches and from some 87,000 businesses. These items pass through the company's network of 70 mail centres, eight regional distribution centres (for customer-sorted mail) and 3,000 delivery offices. Royal Mail has a fleet of over 30,000 vehicles, ranging from small vans to large heavy goods vehicles.

Royal Mail is committed to providing a safe working environment for their employees; they the company has recently commissioned a purpose-built 'concept truck' and has developed a cross-network driver training and ongoing coaching programme to improve safety for its LGV drivers.

Background

Royal Mail saw the implementation of the new European Directive 2003/59/EC, which stipulates compulsory initial qualification and compulsory periodic training of LGV drivers, as an opportunity to help improve driver safety. A driver training and coaching manager and 41 driver coaches were appointed to improve the way the company trains its driving workforce.

The driving training and coaching manager's remit also included benchmarking internally and externally for best practice, and working with suppliers to understand new vehicle technology and establish ways of communicating this to all drivers.

As well as a number of new training initiatives, Royal Mail has commissioned the design and manufacture of a bespoke concept truck to help protect its driving workforce.

Aims

The main objectives were:

- To put in place a structured approach to ongoing training which would be recognised as industry best practice, and in doing so enable Royal Mail to comply fully with European Directive 2003/59/EC, which affected all new LGV drivers from 2009 and will affect all the company's existing LGV drivers from 2014.
- To implement training, campaigns, initiatives and innovations to provide a safer working environment for Royal Mail drivers.
- To improve safety for drivers and reduce the number of accidents (both road traffic accidents and occupational injuries under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations by incorporating design features into a purpose-built vehicle.
- To improve efficiencies through enhanced driving techniques, in the form of reduced vehicle fuel consumption and maintenance requirements.

Scope

A driver training and coaching manager position was created to improve initial and ongoing training for Royal Mail drivers. The manager's responsibility is to develop cross-network driver training and ongoing coaching requirements and to cascade them to driver coaches, ensuring consistency of deployment.

In addition to the driver training and coaching manager, 41 coaches were recruited from within Royal Mail's existing workforce of professional drivers and deployed across the Royal Mail Network – this equates to one coach per 68 drivers (including agency drivers). These were full-time coaches but they can return to driving duties at seasonal peaks and times of manpower shortages. Each coach was given training to help them develop the necessary skills for their role. The training consisted of:

- Workplace coach induction courses covering:
  - Presentational skills
  - Tools and techniques for coaching
- All coaches attended a 'simple vehicle maintenance' course delivered by Garage Network
- Coaches attended the driving assessors' course (pass/fail course) of accident prevention NGO RoSPA.

With its team of coaches in place, Royal Mail then set about implementing a number of driver training and safety initiatives. By closely monitoring incident reports and investigating the cause of accidents, the company was able to target its efforts to effectively reduce the number of accidents and improve safety for their drivers. Among these initiatives, the Royal Mail driver coaches have developed and cascaded training material specifically focusing on issues such as:

- Access and egress of vehicles
- Seatbelt awareness
- Driver fatigue
- Winter driving
- Driver vehicle checks.

Royal Mail has also initiated vehicle repair procedures to ensure its vehicles are maintained to a high standard whilst minimising disruption to the business.

Early reporting of faults is encouraged and drivers are permitted to perform an agreed selection of minor repairs. Royal Mail drivers are trained on how to carry out the agreed repairs safely. All repairs must be carried out using the associated Safe System of Work. Minor repairs may only be undertaken in a specifically designated 'safe repair area' of the yard or depot, which is clearly identified for the purpose and subject to a joint risk assessment with the Communication Workers Union's area safety representative. Any repair should be comfortably accessible from ground level (including loading banks) and not involve lying under a vehicle. Drivers should therefore never use ladders, forklifts, tail-lifts, York containers or trays, etc., to facilitate access to a repair operation. Drivers undertaking minor repairs should also never tilt or attempt to tilt cabs.

Training is provided by experienced vehicle services technicians who have a 'Trained Trainer' qualification and who have been pre-trained on the agreed course format/content. The training will be specific to the vehicle type/manufacturer and limited to those minor repair operations that have been agreed. Only trained drivers who feel capable of completing the task should attempt or undertake a repair.

Each depot is provided with dedicated tools, parts and personal protective equipment that are specific and limited to the agreed range of repair operations that can be safely undertaken at that depot. A step-by-step repair guide for each vehicle type/manufacturer is held on site and on the Royal Mail intranet for the agreed range of repairs.

The agreed vehicle minor repair operations that can be undertaken by trained drivers are as follows:

- Light bulbs – changing all accessible light bulbs
- Fuses – change a like-for-like rated fuse in line with training
- Wiper blades – changing accessible wiper blades
- ISO leads – change ISO leads that are not hard wired
- Trailer retaining straps – remove and replace trailer straps.

To ensure that all procedures are being followed and that drivers have appropriate skills, each driver undergoes a driver assessment at least once a year. This involves the coach accompanying the driver as they carry out their scheduled daily work. Drivers are assessed against predetermined criteria that cover the condition and roadworthiness of the vehicle, access to the vehicle, coupling and uncoupling, as well as driving skills and driving behaviours. At the end of the duty the coach and driver spend some time discussing the findings and any suggested plans for improvement. All findings and recommendations are recorded on a check sheet, one copy of which is issued to the driver, another to the driver's line manager and a third filed in the driver's records by the coach. Any serious lapses in the driver's ability are raised with the driver's line manager immediately for further investigation and action.

In addition to the training initiatives mentioned above, by working with suppliers to understand new vehicle technology, Royal Mail has commissioned the design and manufacture of a bespoke concept truck. In partnership with DAF Trucks and Cartwright Trailers, Royal Mail has attempted to specify and build 'the safest truck and trailer on the UK roads'. In doing so, it has equipped a truck and trailer with many additional and in some cases innovative safety features to improve the working environment and safety for the company's drivers.

The main stimulus for this project was the large proportion of accidents involving drivers falling from tail-lifts. It was also thought that when compared to the modern car, there was significant scope to improve the standard safety features available on new mass-produced trucks.

The concept truck features include:

- Reversing camera, parking sensors and audible warning
- Air bags, seatbelt pre-tensioners and seatbelt wearing compliance system
- Warning system to alert driver to faulty bulbs
- Remote tyre pressure monitor / run flat tyres
- Automatic maximum height indicator and bridge strike prevention system
- Onboard weighing system
- Truck-based satellite navigation
- Blind spot solutions – camera
- ASTiD driver fatigue system
- Trailer tracking system
- Ground-level coupling, additional lighting and coupling sensors to ensure correct engagement
- Improved access/egress – anti-slip coatings, improved handrails, steps to rear trailer
- Powered rear shutter and landing legs
- Adaptive cruise control
- Ice warning device
- Additional lighting and reflective materials
- Additional spring brake and auto park brake
- Spray suppression

The concept truck project will further support Royal Mail's ambitions to reduce accidents and to be recognised for industry best practice.

Outcomes and evaluation

The benefits for Royal Mail:

- Improved professionalism amongst its drivers
- Level of ongoing training now comparable with the best in industry
- Reduced vehicle maintenance (unfair wear and tear)
- Improved fuel consumption
- Reduction in road traffic accidents
- Prepared for European Directive 2003/59/EC (to be introduced 2009 for drivers of Large Goods Vehicles (LGVs))
- A well informed, motivated driving force kept up to date with new vehicle technology and changes in legislation through ongoing training/coaching
- Cutting-edge vehicle design.

As part of its safety management system and its drive for continuous improvement, Royal Mail set targets to reduce reportable occupational injuries, road traffic accidents, tachograph infringements, prohibition notices and training deficiencies. The 2007–2008 targets were all successfully achieved, with a 27% reduction in reportable occupational accidents and, despite mileage increasing by 1.6%, a 5.5% reduction in road traffic accidents. Royal Mail has also achieved a reduction in tachograph infringements following conversion to digital, and prohibition notices are down year on year.

Following the success of these initiatives and with Royal Mail's ongoing commitment to safety, planned future activity includes:

- Coaches to assess all drivers and produce an improvement plan.
- Specific product training from various suppliers including DAF, MAN, Mercedes, Cartwright and Haldex.
- Driver coach annual forum to share best practice, discuss future training needs, review vehicle specification, review reportable occupational injuries and develop additional training to improve safety.
- Ongoing delivery of related road transport legislation briefs, seasonal safety campaigns, etc.
- Coaches are to be fully trained and have a thorough understanding of the Open Options package RTD/WTD, which is a database used to control drivers hours under the Road Transport Directive and Working Time Directive.

Problems faced

Considerable work was involved in order to reach agreements with the trade union on some matters.

Success factors

- Working with vehicle manufacturers to produce a vehicle that is ideally suited to the needs of the business.
- Utilising experienced drivers as coaches.
- Cross-network training with adaptations for local requirements.
- Bespoke solutions to problems identified by accident and incident reports.

- Coverage of driving and non-driving risks.

Transferability

Royal Mail has tailored its training and the design of its concept truck to the specific needs of its business and drivers. However, many of the general features of this case will be equally applicable to other haulage companies. By implementing a robust and effective safety management system, targeted measures can be taken to control hazards and minimise risks associated with work activities.

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2.3.21. Lenses for foreign lorries, UK

Organisation(s): The Highways Agency (HA) and the Vehicle Operator Services Agency (VOSA)

Key points

- Distribution of Fresnel lenses to stick to the passenger side window to improve driver's field of vision.
- Reduced number of 'side-swipe' accidents by mitigating blind spots.
- Improve road safety of left-hand-drive (LHD) large goods vehicles (LGVs) on UK roads.
- Partnership approach of government agencies covering highways, vehicle operation and immigration. Police forces also involved in lens distribution.
- Initiative based on prior analyses of problem and solutions and pilot scheme.

Introduction

Accident reports have shown that a significant number of road traffic accidents are caused by drivers of LHD LGVs 'side-swiping' vehicles overtaking on the right. The underlying cause in the majority of these accidents is thought to be a blind spot which makes it very difficult for drivers to see other vehicles on their right. The Highways Agency (HA), in partnership with the Vehicle and Operator Services Agency (VOSA) and the immigration service, distributed wide-angle lenses to drivers of LHD LGVs in an attempt to reduce the number of 'side-swipe' accidents. These lenses stick onto the passenger side window, to improve the driver's field of vision.

As part of an initiative to make foreign vehicles safer on UK roads, VOSA has also increased safety inspections of foreign lorries at ports and implemented new enforcement operations, including 24/7 working.

Background

All large goods vehicles have a blind spot alongside the cab on their passenger side, which makes it difficult to see other vehicles especially when changing traffic lanes. This is a particular problem for LHD LGVs operating in the UK, as their largest blind spot is along the side where other vehicles overtake. These blind spots are believed to be responsible for a significant number of 'side-swipe' incidents (collisions with other vehicles travelling alongside when changing lanes).

In recent years there have been a number of reported incidents on British motorways and dual carriageways of LHD LGV drivers attempting to overtake without noticing a car in the adjacent outer lane. In fact, national statistics for 2004 recorded 1,245 'side-swipe accidents', some of which resulted in serious injuries.

According to analysis by Accident Exchange, one of the UK's leading accident management specialists, the annual number of crashes on UK roads involving foreign-registered LGVs could be as high as 9,800. The cost of these accidents is estimated to be £2.8 million in lost working hours and £48.9 million in vehicle repairs, write-offs and personal injury claims. This equates to an estimated total cost of £52 million a year.

Accident data has shown that the majority (46%) of incidents involving foreign lorries occurred on motorways, with 'side-swiping' being the biggest cause. Some 409 foreign-registered left-hand drive lorries were changing lane to the right at the time of the accident and 14 were changing lanes to the left.

Aims

- Improve the safety of foreign lorries on UK roads.
- Mitigate blind spots on left-hand drive lorries.
- Reduce road traffic accidents.
- Improve the reliability of the Strategic Road Network.

Scope

VOSA's Research and Development (R&D) unit investigated the problem and recommended possible solutions. Their research indicated that mid- and high-cab LHD LGVs (both rigid and articulated) have a blind spot. Cars travelling slightly forward of an LHD LGV in the right-hand lane are obscured from view either through the mirrors or through the windscreen or front passenger side window. This creates the potential for a 'side-swipe' incident in the event of the LHD LGV changing lanes.

Fresnel lenses were seen as a possible solution. These are thin, plastic, stick-on optical lens, which can be mounted on the passenger side window to widen the driver's view.

Trials showed that when the lens was fitted to the passenger side window of cabs, previously unseen cars were brought into the driver's view. VOSA therefore recommended a campaign focusing on LHD LGVs entering or exiting British ports and proposed the free issue of a Fresnel lens and educational leaflets. The UK Government approved these recommendations and a trial was authorised.

In early November 2006 VOSA began a mini project involving 50 LHD LGVs provided by an operator over a four-week period. Drivers were asked to answer questions on blind spots and the problems of driving LHD vehicles in the UK. The Fresnel lenses were then fitted to their fleet of vehicles and drivers were questioned four weeks later to establish whether the lenses had improved blind-spot visibility.

HA, in partnership with VOSA and the immigration service, then conducted a pilot scheme. Over a four-week period 40,000 lenses were distributed free of charge to drivers of LHD LGVs coming to the UK across the Dover Straits. Lenses were supplied with instructions written in English, French, German, Spanish, Polish and Dutch. Accident data for the three months prior to the trial were compared with data for the three months following lens

distribution. The data showed a fall in side-swipe incidents from roughly 26 incidents per week to 11 per week – an overall reduction of 59%.

Following the success of the pilot, HA distributed a further 90,000 lenses at a cost of £300,000, targeting major ports in England and mainland Europe. A lower intensity, more targeted distribution then followed, involving HA traffic officers, police forces and VOSA officials. A further 20,000 lenses were issued to LHD vehicles as they were encountered on the UK road network. HA also provided lenses direct to operators of foreign LGVs in the UK.

This work sits alongside a wider government package to improve the safety of overseas vehicles using UK roads. An extra £2 million of funding was dedicated to VOSA's enforcement operations, and there are plans for new measures, which mean that overseas hauliers who flout the rules of the road will face on-the-spot penalties and having their vehicles immobilised.

VOSA is also gearing up for a five-fold increase in the number of vehicles checked at the main ports of entry to the UK, and is using increasingly modern technology, such as weigh-in-motion sensors to detect overweight vehicles and automatic number plate recognition technology to spot those who have a poor safety record.

Meanwhile, new European legislation which requires the fitting of improved mirrors to all new goods vehicles above 3.5 tons is providing a further substantial contribution to optimal driver vision. Existing goods vehicles, first registered from January 2000, were required to be retrofitted with wide-angle and close proximity mirrors on the passenger side by March 2009.

Outcome and evaluation

The results from the pilot showed a reduction in side-swipe incidents from roughly 26 incidents per week to 11 per week – an overall fall of 59%, which is estimated to equal 300 incidents annually – an annual saving of about £2 million to £5 million to the UK economy. A further 60,000 lenses were issued in 2008.

Problems faced

This initiative, although effective, will not eliminate 'side swipe' accidents. Alerting more British drivers to the dangers is also seen as a very important factor in reducing accidents. The Highways Agency is working on measures to improve driver information to non-UK vehicles and drivers, including producing a leaflet explaining UK driving protocol.

Success factors

- Comprehensive investigation of the causes and possible solutions. Piloting the chosen solution.
- Partnership approach across various government agencies and the police.
- Free provision of the lenses and information in various languages.

Transferability

Although the work conducted by the HA and VOSA focused on LHD vehicles driving on the left, it is inevitable that similar problems will exist for RHD vehicles driving on the right. Fresnel lenses are relatively inexpensive and are easy to retrofit to any vehicle.

Further information

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2.3.22. Falls from vehicles, UK

Organisation(s): The UK Health and Safety Executive (HSE)

Key points

- Campaign to prevent slips and falls from vehicles.
- Target set for a 10% reduction in accidents.
- Investigation of problem to target the campaign and set priorities.
- Sharing of company case studies to promote prevention.

Introduction

The HSE is the government body responsible for the enforcement of health and safety legislation in the United Kingdom. Workplace transport accidents have been identified by the HSE as a major cause of injuries and deaths at work and were recently made a priority programme area for the organisation. The aim of the priority programme was to reduce the number of workplace transport accidents by 10% between 2000 and 2010.

The first steps in this campaign involved identifying:

- The most common types of accidents occurring in the industry.
- The most common types of location where the accidents occurred.
- The most common contributing factors to accidents.

When this information had been established it was possible to target resources more effectively on raising awareness of health and safety within the industry and on reducing accident figures. This case study focuses on falls from vehicles and is part of a series that gives examples of good practice in reducing injuries through sensible management of health and safety risks in the workplace. These cases form part of the information produced by the HSE for the transport sector. In addition to the material discussed here there are a range of other publications, web-based information, educational events and enforcement activities which form the HSE's overall strategy for reducing workplace transport accidents.

Background

Statistics gathered by the HSE and local authorities in the UK over a five-year period show that nearly 60 employees were killed and 5,000 seriously injured in haulage and distribution industries (HSE, 2003). A further 23,000 workers suffered injuries serious enough to keep them away from work for over three days (HSE, 2003). These figures exclude work-related ill health, for example bad backs or stress.

Falls from vehicles represent around one-third of workplace transport accidents and are spread across a wide range of industries. An analysis of HSE accident data for 'goods type vehicles' (Walker, 2004) would suggest that at least one-third of these accidents are caused by an initial slip or trip. Walker's analysis examined 448 accident reports. At least 124 accidents involved a slip before the fall and 16 involved a trip before the fall. This suggests that at least 31% of falls from vehicles were preceded by a slip or trip (140 accidents). Walker also highlighted that 9% of incidents occurred when drivers were using steps.

The wider literature also indicates that falls from workplace vehicles are a pertinent issue. Lin and Cohen (1997) showed from a data analysis of employee injuries /illnesses that

'slips and falls' were the most commonly reported accident types for the haulage industry in the USA. Vehicle ingress and egress was cited as one of the four most critical accident problems for the haulage industry. Slips and falls accounted for over 27% of all cases reported which resulted in lost workdays, second only to motor vehicle accidents. This study also revealed that there were three times as many egress accidents as ingress accidents. Approximately 35% of the injured employees slipped on vehicle parts, and a further 20% sustained injuries while walking or working on surfaces such as platforms, loading docks and sidewalks. Inclement weather conditions (rain, snow and ice) were also frequently mentioned.

Jones and Switzer-McIntyre (2003) carried out a study based on information from a workers' compensation database in Canada. They showed that the most common site of falls from trucks was the back of the truck or trailer, the truck step and the cargo being transported (accounting for 83% of total falls).

In combination, these data sources suggest that slips and falls from and around workplace vehicles are a genuine problem.

As part of this national campaign case studies from individual companies are collected and shared via HSE's website. The steps taken by one company to prevent falls from vehicles is given below.

A review of accident data at 3663 First for Foodservice, which distributes food to a variety of premises, found that employees were experiencing problems accessing and working on their distribution vehicles. Using this information the company set out to address the difficulties being experienced by its drivers. It reviewed its working processes and looked closely at the design of its vehicles to identify improvements.

Aim

The aim of this exercise was to reduce the number of accidents and improve safety.

Scope

A review of its working processes enabled the company to identify problem areas and to implement effective control measures to reduce the risks to staff. Some examples are given below.

Employees had to access refrigeration units above the driver's cab to adjust settings for the refrigerated box van on a daily basis. Now ground-level controls are specified on new vehicles so that employees no longer have to climb on the wheel and up a narrow ladder to gain access to them. Access equipment such as mobile work platforms or gantries can then be provided for engineers to carry out routine servicing or repairs.

Slippery floors meant employees were finding it difficult to stay on their feet when moving cages of fresh, refrigerated and frozen food in and out of the vehicles. After different combinations of footwear and floor coatings had been trialled, a combination of slip-resistant flooring and anti-slip footwear was chosen to give the best slip resistance for these conditions.

Changes to the refrigeration system controls have improved temperature control and allowed defrosting of the evaporator coils during return trips to depot when the van is empty. Updated procedures have reduced the time that vehicle doors are open at the distribution depot to reduce condensation, which in turn reduces ice formation.

Trailing electrical cables, used to provide power to the refrigeration equipment while vehicles were at the depot, were problematic. New trailing socket outlets have been installed, which are interlocked to the ignition circuit to prevent the vehicles being driven away with the power cable still connected and to reduce slip and trip hazards from trailing cables.

Training has been introduced for new employees on how to get in and out of vehicles. The importance of three-point contact at all times is emphasised.

Outcome and evaluation

The company has seen a significant reduction in accidents. Employees are pleased with the improved footwear and flooring in the load area of the refrigerated vehicles.

Problems faced

The changes required capital expenditure, but implementation costs were minimised by upgrading vehicles as and when they were replaced.

Success factors

National campaign:

- Based on prior research to identify problems, preventive solutions and set priorities.
- Range of resources made available, including case studies.

Case study:

- Intervention based on a review of all work processes.
- Range of measures introduced.
- Practical approach to controlling costs, e.g. by not upgrading vehicles all at once.

Transferability

These solutions were designed specifically for the given situation and so the improvements detailed in this case study may not be relevant to other vehicle operators. However, the process of designing safety into work processes can be applied to many situations. Further examples are given on the HSE website:

http://www.hse.gov.uk/fallsfromvehicles/casestudies.htm

Further information

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2.4. Snapshot case studies

2.4.1. Safety adviser service, Denmark

Organisation(s): The Danish Transport and Logistics Association (DTL)

http://www.dtl-dk.dk/www/Pub1254.asp

Aim

Danish law requires that all transport companies involved in the handling of hazardous materials must comply with a range of procedures that involve extensive and complex documentation. The law also requires that each company designate a specific person, with relevant qualifications, to the role of safety advisor. Compliance with these protocols and requirements makes heavy demands in terms of expertise and resources, and these are not always present in transport companies, especially smaller and medium-sized ones. The employer association DTL addresses this problem directly by providing support to its members, allowing them to manage the safety protocols and procedures that apply to the material they are transporting.

Key elements

- Employer association.
- Full-time team of safety experts providing advice and support to companies that do not have the resources to employ a safety specialist.
- Supports small and medium-sized companies in face of increasing demands to document safe practice.
- Ensures that the protective measures which the law seeks to address are actually implemented in the interests of driver safety.

2.4.2. Leading road safety in express deliveries, France

Organisation: TNT Express France

Aims

- Improve awareness of road safety at all levels of the company
- Reduce the number of accidents
- Reduce the severity of accidents involving bodily injury
- Make drivers with several accidents on record aware of their possible responsibility.

Key elements

The focus is on collective action, seeking to imbue road safety instincts at all levels of management in order to ensure that all employees are involved in implementing the process.

The social policy of the company includes respect for diversity and gender as well as political commitment to risk prevention.

TNT Express France was a signatory to the 2009–2012 Road Safety Charter in September 2009, alongside 19 other major companies and professional federations of the Rhône region. This charter was drawn up following the recommendations of the Club

Entreprises Rhône, sponsored by the Préfecture of the Rhône region, whose objective is to promote road safety within member companies by means of action to reduce accidents in professional life.

The company's Health-Safety-Environment department (HSE) maintains constant contact with the administration department. It operates through a team that ensures accident prevention within the regions, incorporating an expert in the area of hazardous materials transportation.

The OSH policy includes company commitments, objectives and targets. The management system aims at coordinating the actions of all actors in the company OHS process. Occupational risks are analysed on each site at regular intervals, then guidance is provided for local prevention actions and to supplement nationwide accident prevention events. All information concerning HSE subjects is discussed during management and departmental meetings and in working group meetings held with the social partners.

A road safety working group, involving several departments in the company, reviews TNT's results in the area of traffic accidents, analyses the accidents, identifies their causes and develops plans for improvement.

The Good Driving Itinerary is a five-year training plan for all TNT drivers. It combines classroom training on road risks, driving manoeuvres and environmentally conscious driving, with road practice, incorporating simulated driving tests and a road training course.

A preventive and remedial method is used to identify and assist employees with multiple accidents on their records to give them the assistance they need to improve. The training is also open to other employees on a voluntary basis.

Other actions:

- Vehicles equipped with safety features such as backing radar. The preventive maintenance covers regular checks of all vehicles.
- An annual road challenge for drivers and managers on the theme of driving, road safety and controlling the consumption of fuels.
- A trip policy that seeks to limit and/or optimise road trips, featuring videoconferences, etc.
- Road risk software: All losses are analysed and saved in a specific software programme.
- Monitoring of frequency and breakdown of accidents by typology.
- Follow-up of risk and driver profiles.
- Incorporating road risk in the evaluation of professional risks, such as analysis of route, transit times and assignments, and organising work time.

Between 2001 and 2008 the risk of bodily harm to employees over the course of their careers fell by 25%.

Further Information

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2.4.3. Ergonomically correct seatbelt adjustment, Germany

Organisation(s): Berufsgenossenschaft für Fahrzeughaltungen (BGF)

Aim

To increase the number of heavy goods drivers using seatbelts by designing a variable seatbelt adjustment that corresponds to individual demands.

Key elements

The following problems were revealed:

- Conventional commercial vehicle seats do not allow for seatbelt adjustment.
- A high number of drivers do not use the seatbelt because of comfort reasons.
- The danger of fatal accidents is increased when driving without the seatbelt.
    - The BGF – together with the Verkehrsakademie (Traffic Academy) – conducted a survey among drivers of commercial vehicles. With the help of an extensive questionnaire and a prototype seat with a scaled adjustment, the ideal seatbelt position of each driver was determined and recorded.
    - The Isringhausen seat manufacturing company used the results of the BGF survey to design and produce a new generation of commercial vehicle comfort seats that were presented at the International Commercial Vehicle Fair in Germany.
    - The BGF informs drivers about the dangers of driving without a seatbelt and the heightened personal protection and comfort provided by the newly designed seats.

2.4.4. Innovative rest area for heavy goods drivers, Germany

Organisation(s): Lübecker Hafengesellschaft (LHG) (the Lübeck Port Company)

Aim

To provide heavy goods drivers with a comfortable area for both relaxation and exercise.

Key elements

- Rest area has an informal design and is comfortably furnished.
- Drivers are able to keep an eye on their vehicles with the help of video surveillance.
- Snacks and drinks are served.
- A film is shown demonstrating suitable exercises that drivers can do to both work and relax their muscles, to make up for the long time behind the steering wheel in static postures.
- After the fitness exercise the drivers can use the showers provided.

2.4.5. Mr Nobody (Der kleine Niemand), Germany

Organisation(s): Rheinkraft International

Aim

Development of an automatic spoken alert, triggered when the truck door is opened, to remind the driver to be careful while climbing down.

Key elements

- Stepping in and out of the truck can be hazardous. Some drivers do not use the steps, but jump directly out of the cab to the ground. This can cause painful injuries that result in high costs to the employer and loss of earnings for the employee.
- A director of logistics company Rheinkraft International's vehicle park created 'der kleine Niemand' ('Mr Nobody'), an electronic language storage medium, coupled with a random number generator, which generates a spoken warning automatically as the truck door is opened.
- The device consists of different warning references and prevents slips, trips and falls from the truck.
- The device costs just EUR130 including installation per vehicle.
- 'Mr Nobody' won a best practice award in 2005.

Further information

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http://www.bghw.de/praevention/best-practice-1/sparte-grosshandel-und-lagerei/jahr-2005/der-kleine-niemand

2.4.6. Workplace transport safety management information sheet, Ireland

Organisation(s): Health and Safety Authority

Aims

- To provide guidance to help ensure that vehicle movements at the workplace are carried out safely.
- To implement an effective safety management system covering the appropriate use of vehicles at the workplace.
- To reduce work-related fatalities, non-fatal injuries, property damage and loss of profit as a result of workplace transport accidents.

Key elements

- The information sheet applies to any vehicle or mobile equipment which is used by employers, employees, self-employed people, contractors or visitors in any workplace.
- It covers a very wide range of vehicles, including cars and vans while operating off the public highway, forklift trucks, heavy goods vehicles and rider-operated mobile equipment.

- It advises that employers should address workplace transport safety by: planning and organising all work; conducting relevant risk assessments; selecting appropriate workplace transport equipment; ensuring all operators of workplace transport equipment are competent to do so; and properly inspecting and maintaining all workplace transport equipment.
- It describes steps involved in conducting a risk assessment and points that should be considered in a risk assessment of workplace transport.
- It describes areas that must be addressed by workplace safety management systems for any size of operation.
- It defines the areas to be considered by workplace transport safety management systems as follows: (1) the workplace (including layout of place of work, suitability of traffic routes and suitability of safety features); (2) the vehicles (including safety and suitability of vehicles, and inspection/maintenance procedures); (3) employee selection, training and supervision; and (4) loading and unloading operations.

Further information

http://publications.hsa.ie/index.asp?locID=9&docID=271

2.4.7. Anti-accident systems in freight carriages, the Netherlands

Organisation(s): TNO, the Ministry of Transport, Connekt/ITS Netherlands and Buck Consultants International

Aims

A large pilot was conducted to test five individual systems aimed at preventing accidents involving trucks. The aim was to improve safety and to maintain traffic flow. The five systems were built into 3,000 vehicles and were tested extensively over a period of eight months.

Key elements

- Accidents involving trucks are responsible for 2–3% of traffic jams caused by incidental factors (accidents, roadworks, the weather, etc.). Recent polls amongst the public suggest that the average road user believes that trucks are involved in around 44% of 'accident-based' jams. This perception is probably attributable to the considerable media attention given to truck accidents, and to the fact that accidents of this nature tend to generate longer traffic jams.
- A preliminary study in May 2007 by applied research organisation TNO indicated that a large-scale test using anti-accident systems could help alleviate congestion and boost safety on the road. While truck safety systems are commercially available, they are not often used, partly because of the high costs and partly because of the relatively low cost benefits for the transporter. However, society stands to gain much more from these systems through the reduction in accidents and congestion; something that could have a positive impact on the image of this key economic sector. This was the motivation behind the pilot project to test the suitability of anti-accident systems.
- The test concerned about 5% of the country's entire truck fleet. This enabled the impact of the pilot to be measured and an extensive registration of vehicle movements enabled key information to be acquired on the operation of the various anti-accident systems. Two systems focused on the prevention of rear-end collisions and three on the prevention of tilting and side collisions. The movements

of the trucks used in the pilot were registered and processed over the eight-month period.

- The pilot involved 3,000 trucks, mainly on Dutch roads. Besides this group, TNO performed a number of tests on test tracks, which could not be done on the public roads.
- The test had three main objectives:
  - To measure the impact of the large-scale implementation of anti-accident systems on traffic flow.
  - To reduce the number of accidents involving trucks, and to consider the impact on traffic safety.
  - To gain insight into the effectiveness of the various systems which are able to contribute to the safety of trucks.

The anti-accident systems for trucks project was one of 40 short-term projects initiated by the Ministry of Transport for the period 2006 to 2009 aimed at reducing congestion.

Further information

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2.4.8. Safe grab hook for waste containers, the Netherlands

Organisation(s): Van Gansewinkel, the Netherlands, Damen Hydrauliek B.V.

Aims

In November 2006 a fatal accident happened because an underground waste container slipped out of the hooks of the grabber that was handling it. The grabber was a three-hook Gejobloc/hook grab. None of the hooks had a safety lock and the 3 metre-high container fell on the driver.

In the Netherlands underground and above-ground waste containers are commonly used for collecting waste such as paper, glass and organic material. For these containers, three systems in particular, are used: the so-called Gejobloc, Kinshofer and Metro systems. In 2007 waste industry consultants AVR carried out a specific risk analysis on the waste-collecting activities of underground and above-ground waste containers using truck cranes. It was established that none of the grab systems was able to work with the required level of safety. One of the solutions was to adapt the hook grab. Some prototypes were made and finally a safe system was developed.

After an extensive testing period a new hook grab system for emptying underground and above-ground waste containers was developed. The old system had no adequate means for preventing the grab hooks from slipping off the waste container being lifted. The aim of the new system was to ensure that hooks remain closed while the container is being moved and emptied. The system needed a mechanism that holds the hooks closed, and a fail stop system for when something goes wrong.

The new system had to meet the following requirements: it must minimise risks; it must have a mechanism that holds the hooks closed round the waste container during lifting

and emptying; if the system fails, it has to have a fail stop system; it must not unnecessarily oppose the driver; and the driver must be able to handle the truck crane from a safe place outside the lifting area.

Key elements

- The new hook grab is safe to use and also makes the work easier. Using the remote control, the truck crane and hook grab can be operated from a safe place outside the lifting area.
- The hook grab can be lifted above the waste container and connects to the container hooks. During lifting and emptying the mechanism holds the hooks closed.
- Only when the container is placed in or on the ground is the driver able to unlock the hydraulic mechanism, using the remote control.
- The operator of the new hook grab is thoroughly trained in his job and in safe working.

Further information

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2.4.9. Good practice guide for occupational risk prevention in the transport sector, Spain

Organisation: Foundation for the Prevention of Occupational Risks, UGT

Aim

To produce an accessible, non-technical guide that drivers can easily consult about the risks of their profession.

Key elements

The guide, produced by one of the major Spanish trade union confederations, analyses risks in the goods transport sector, showcases good practice and promotes prevention and protection measures.

Each risk in the guide is presented as follows:

- A brief description of risk parameters and of situations that could cause accidents.
- Important points to be remembered while facing the relevant risk or situation.
- Analysis of the causes behind these situations.
- Preventive and protective measures for eliminating or minimising the risks.

The risk parameters and the situations covered by the guide are:

- Too high or too low speed
- The road
- Traffic
- The type of vehicle

- The environment
- The risk perception of the driver
- Overtaking
- Intersections
- Signalling
- The vehicle's condition
- The type of driving (e.g. offensive or defensive driving)
- Safe distances between vehicles
- Drugs and alcohol abuse
- Distractions while driving
- Driving under adverse conditions (e.g. at night or in snow, ice, rain, sun, mist etc.)
- Fatigue and sleepiness
- Risky or inadequate stops
- Driving in reverse
- Road curves
- Changing lanes
- Entering or leaving a parking place
- Roundabouts
- Entering a motorway
- Driving and inertia
- Passengers, pedestrians, children and elderly people.

Further information

Foundation for the Prevention of Occupational Risks, UGT

(Fundación para la Prevención de Riesgos Laborales, Fundación Universal, UGT)

Web: http://fetcm.ugt.org

2.4.10. Hoyer Safe Driver Policy, UK

Organisation: Hoyer Haulage UK Ltd.

Hoyer is an international transport company, transporting chemicals, food and mineral oils. There are 900 drivers and 200 office-based staff located at the head office and at clients' sites. Hoyer is a rapidly growing business and consequently the number of drivers it employs has increased fourfold in recent years.

Aim

Road safety is seen as the greatest risk to employees, and the company felt there was a need for a comprehensive road safety policy.

Due to the nature of the company's operations, Hoyer employees are often based at client sites and are requested to adopt the client's own health and safety procedures. Hoyer therefore had to work to a number of differing health and safety procedures. The aim was to develop the Hoyer company policy and specific safety procedures.

Key elements

The policy for goods delivery covers:

- Drugs and alcohol

- Site defect reporting
- Incident reporting and investigation
- Emergency response
- Equipment and delivery procedures*
- Training

*Specific road safety procedures are included in the policy, as listed below:

- Driver assessments/permit to drive (there is a very robust driver selection programme)
- Driver training (defensive driving training is provided for all drivers with a refresher course every two years)
- Risk assessment (all collection and delivery activities are covered by risk assessments and associated safe operating procedures)
- Journey scheduling (one of the company's clients requires drivers to conduct a route risk assessment, and this may be adopted across the business)
- Vehicle maintenance procedures (There is a routine maintenance procedure. Drivers are also required to conduct pre-start checks at the beginning of their shifts to check the condition of their trucks)
- Incentive schemes (every year Hoyer runs a Driver of the Year Competition)
- Incident reporting and investigation (all incidents are analysed monthly and are the first item on the agenda of the monthly board meeting),

The policy is communicated to all employees (every member of staff has a copy of the health and safety policy and there is ongoing communication of amendments and updates).

Hoyer Ltd. measures its performance against five strategic key performance indicators:

- road vehicle accidents
- lost time injuries
- personal injuries
- spills
- crossovers/contamination.

There has been a significant improvement in these indicators over recent years and this is due to the continuous pressure from management to strive for improvements.

Further information

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2.4.11. The management of occupational road risk, UK

Organisation(s): Powergen UK plc

Aim

UK energy provider Powergen has a fleet of approximately 1,000 vehicles and so needed to develop guidance on managing the health and safety of its employees who drive on company business.

Key elements

- Powergen formed a group of individuals from different sections of the company to develop such guidance. The group brainstormed the issue and collated basic information and statistics, both inside and outside the company, using this information to produce a health and safety guidance document.
- This document was distributed to the company and also to some external organisations for comment before it was put into practice.
- Health and safety guidance was put into practice by distributing the document electronically to all employees, by developing and distributing awareness posters and by incorporating them into drivers' training courses.
- The health and safety guidance document provides advice and stresses the importance of:
  - Individual drivers' responsibility and fitness (concerning alcohol consumption, use of safety belts, use of mobile phones, sleepiness and fatigue, and avoiding driving if alternative transport is available).
  - Vehicle ergonomics (e.g. vehicle design and driver positioning).
  - Vehicle loading ergonomics and safety.
  - Vehicle maintenance (regular maintenance checks added to manufacturers' servicing requirements, 30-second visual check of the vehicle before driving and periodical checks of e.g. light bulbs and the level of essential fluids).
  - Best practice for the use of the vehicle and on the road.
  - Journey planning (e.g. route planning and frequency of rest breaks, adverse weather).
  - Accident reporting (also 'near-misses').
  - Line managers' responsibilities (driver assessments, guidance and reports).
  - Risk assessment (occupational road risk and general principles of risk assessment).

- The company considered the health and safety guidance document to be a very effective way of communicating the concept of risk assessment to its staff.
- Although it took around 18 months to develop the guidance document, the overall cost of implementing it is not considered to be significant.

2.4.12. Safety in and around loading bays, UK

Organisation(s): Health and Safety Executive (HSE)

Aims

Distribution companies regularly deliver and receive goods at loading bays. If badly designed or managed these loading bays may become obstructed, forcing large trucks to park on the busy roadside, or requiring trucks to manoeuvre dangerously close to each other at the same dock station. Serious accidents can happen as trucks pass each other at such places. In addition truck drivers may not see pedestrians crossing these areas, which can result in fatal injuries.

By redesigning the layout of the loading site it is possible to reduce the risks by controlling the movements of vehicles and pedestrians.

Key elements

The overall improvements include better access and lighting to loading bays, dedicated parking areas and segregation of pedestrians from the loading areas.

With regard to loading bays:

- The main adjustment is the installation of a one-way system, which means that trucks no longer have to reverse where pedestrians are crossing.
- Other improvements include barriers that force workers to cross the loading bay on the crossing provided and making sure the crossing area is well lit so truck drivers leaving the site can clearly see pedestrians.

With regard to busy roadsides:

- The main adjustment to such loading areas is the creation of a dedicated parking bay for delivery vehicles, with an area for unloading. This ensures driver safety during loading and unloading.
- Other improvements include road markings that instruct staff to keep the area clear, and the installation of flood lighting above the loading area. This makes delivery drivers more visible while working at the bay.

Further information

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http://www.hse.gov.uk/workplacetransport/sitesafe/cs

2.4.13. Cooperation between dispatcher and receiver of goods to make deliveries safer, UK

Organisation(s): Health and Safety Executive (HSE)

Aims

Deliveries and collections are essential to business, but they are among the most dangerous activities drivers have to undertake. Hazards may include manual handling injuries when loads are moved by hand, health and fire risks if hazardous loads are spilled, and risks from using cranes or other lifting equipment such as lorry loaders.

Many of these accidents could be prevented if there was better cooperation between the parties concerned. HSE developed guidance on how people and organisations involved can cooperate to prevent workplace vehicle accidents.

Key elements

- The three key parties involved are the supplier sending the goods, the haulier that carries the goods and the recipient who receives the goods. A common factor in delivery accidents is the lack of any agreement between them about 'who is responsible for what' in terms of safety.
- The overlap in responsibilities can cause dangerous misunderstandings unless all parties exchange information about the main risks involved, and agree who will do what to control risks.
- Exchanging information by clarifying expectations and checking with others in the chain whether they can meet these expectations is very important.
- If agreement cannot be reached on how significant safety issues will be dealt with, the delivery or collection should not take place.
- If, however, a delivery accident occurs, all parties in the chain may be asked to show that they took all reasonable steps to cooperate to achieve safety.
- Additionally, training helps drivers when they are faced with unexpected situations. Crucial to this is teaching them general safety precautions with regard to visiting sites, and providing them with simple delivery safety checklists that remind them which precautions they should be taking. Such checklists also help them decide if it is reasonable for them to refuse to continue with a particular delivery or collection.

Further information

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2.4.14. Simple improvements to make loading easier, UK

Organisation(s): Health and Safety Executive (HSE)

Aim

Staff at a transport company began reporting neck and shoulder pain, and risk assessment identified loading the higher layers in the container as the main source of risk. A solution was needed.

Key elements

- The task involved manually loading delivery containers with large rolls of material. Each roll was soft and flexible, bulky in size, weighed between 8 and 10 kg and was wrapped in a slippery plastic liner. These factors, in addition to the fact that the liners had no handles, meant they were very difficult to handle. To fully fill the containers some rolls needed to be lifted to a height of 3 metres. The task was also repetitive, with ten containers being loaded each day. The overlap in responsibilities can cause dangerous misunderstandings unless all parties exchange information about the main risks involved, and agree who will do what to control risks.

- Managers and workers set up a focus group to consider solutions. It was not possible to change the product or its packaging, and as the company was relatively small, it was not financially viable to bring in a height adjustable conveyor.
- Instead, it was found the nature of the load enabled a stable temporary platform to be formed within the container by placing boards on part of the bottom layer of rolls. A worker standing on this could load rolls up to roof height with much less effort than before.
- Staff using the new method no longer suffered neck and shoulder pains
- The new loading system not only reduced the risk of musculoskeletal disorders but enabled staff to load more rolls of product into each container, which gave big savings on transport costs.
- The improvements cost only £1,500 to initiate and the payback period was under two months. Even though the new method of loading took more time, the reduced transport costs led to a net saving of over £48,000 per annum.

This case study is taken from a series produced by the HSE to demonstrate effective interventions to protect workers from musculoskeletal disorders.

Further information

http://www.hse.gov.uk/msd/experience/easyloading.htm

2.4.15. The working conditions of women in road transport, international

Organisation: International Transport Workers Federation (ITF)

Aim

To investigate and promote appropriate working conditions for women in the road transport sector

Key elements

- ITF organised a meeting of women road transport workers who met for the first time in London in September 2005.
- As a result, some new initiatives have been developed for the Road Transport Section of ITF. One of these is a survey of women in the industry focusing on health and safety issues, carried out between 2006 and 2007.
- The ITF produced a report on the findings entitled 'Women on the road to a safe and healthy working environment'. This guide has been prepared for trade unions in the transport sector, with the object of encouraging them to work closely with women workers in the sector.
- It contains information about women's experiences working in the sector, good practice advice and examples, and guidance on how to consult and involve women workers.

Further information

ITF website: http://www.itfglobal.org/road-transport/road-transport-1058.cfm

Report: Road Transport Women's Workshop 21 September 2005:

Women on the road to a safe and healthy working environment: http://www.itfglobal.org/files/extranet/-1/1946/RT%20women%20workshop%20report%2005.doc

http://www.itfglobal.org/files/extranet/-1/7387/RTWomen.pdf

2.5. Discussion

The case studies feature a variety of initiatives and interventions to protect road haulage drivers. These initiatives and interventions have been implemented at various levels; some are national campaigns and others are specific to independent companies. A number of hazards are identified within the case studies and where these hazards cannot be removed, various control measures are implemented to reduce the risks.

Road haulage drivers are exposed to a multitude of hazards and are often required to perform tasks in unfamiliar workplaces. It is difficult for haulage companies to ensure the safety of their drivers when working at premises owned and managed by third parties, and disseminating health and safety information to drivers can be problematic, as they are regularly on the move and seldom working at their permanent base. Some of the case studies featured in this report describe initiatives and interventions that have been carried out to help deal with these problems. They include collaborative safety policies, onboard safety manuals and risk assessment as well as various campaigns that use radio, truck deliveries, good practice recognition schemes, and truck stops to disseminate information.

The road haulage driver's job is not only dangerous at times; it can also be incompatible with a healthy lifestyle. Driving for long periods and working unsocial hours or away from home can make drivers reliant on convenience foods and gives little opportunity for exercise. This also makes it difficult for drivers to consult a doctor if they feel unwell. These problems have been recognised in several case studies featured in this report and a number of steps have been taken to improve the situation.

Both driving-related and non-driving related hazards are considered in the cases and a variety of control measures proposed. These include truck design/modification, driver training, safe systems of work, and loading/unloading procedures and equipment.

Prior analysis and risk assessment

In many of the cases the strategies were informed by prior investigation. This evidence-based approach allowed actions and strategies to be tailored to the actual context of the sector. Sources of information on which to base strategies included: scientific studies and investigations, national-level statistics and/or organisational data (for example figures on accidents or near-accidents). National-level statistics and/ or organisational data were used both to gain an understanding of hazards and risks and to monitor the effectiveness of some interventions.

Examples of the use of prior analysis and risk assessment include the following:

- In case 2.4.3 ('Ergonomically correct seatbelt adjustment'), collaborative research was undertaken among a wide range of drivers using a questionnaire to establish the optimum ergonomically correct seatbelt adjustment.
- Case 2.3.3 ('Knowledge-sharing among drivers') describes how a review of hospital admissions data and the Danish National Work Injury Register were used to perform a detailed analysis of the occupational safety conditions among goods transport drivers. This showed that the occupational safety and health of goods transport drivers was related primarily to non-traffic related risks. Subsequently, experienced drivers were consulted to gain a detailed understanding of their working environments and to provide guidance.
- Case 2.3.20 ('Royal Mail Network Health and Safety Management System') describes how implementing a robust and effective safety management system with incident reporting procedures permits detailed analysis of working conditions and enables safety improvement activities to be better targeted.

- In case 2.4.13 (‘Cooperation between dispatcher and receiver of goods’) a risk assessment was conducted in order to identify physical risks to drivers while loading and unloading materials. As part of this risk assessment process, managers and workers set up a focus group to consider solutions to the identified risks.
- Case 2.4.11 (‘The management of occupational road risk’) describes how collating basic information and statistics from both inside and outside the organisation was subsequently used to produce health and safety guidance.
- In case 2.3.1 (‘Alert Team 44’), individual driver assessments are used to evaluate their personal training requirements.

Worker participation

The active participation of workers from the beginning and throughout the intervention was highlighted as a key success factor in a number of cases. In particular, it was found to increase the interest, engagement and motivation of drivers in participating in the programme and changing/adapting their working behaviours. Increasing the participation of workers was accomplished in a number of ways; for example, by having more experienced drivers deliver training and feedback sessions, and providing commentary on the development of OSH policies and organisational practices through surveys and focus groups.

The case studies used various means by which drivers could air their views, including:

- regular information exchange meetings
- toolbox meetings and individual feedback
- drivers providing daily reports
- interviews between managers and drivers
- driver surveys
- a group of individuals from throughout the company brainstorming issues
- driver rewards for demonstrating an awareness of safety issues by reporting near-miss incidents and by highlighting their concerns about particular delivery locations
- close monitoring of incident reports
- procedures implemented to regulate accident reporting and investigation.

Examples of participatory approaches include the following:

- In case 2.3.12 (‘The Driver Assistance Systems campaign’), drivers helped identify the key problems and issues in relation to health and safety within the organisation. The collated information was then used to tailor and adapt the programme to meet the unique issues and needs of that particular organisation.
- In case 2.3.3 (‘Knowledge-sharing among drivers’), the active participation of drivers throughout the entire process of the health and safety initiative was an integral component of the programme. Drivers were involved in the identification of the key OSH issues and risks, the development and evaluation of training material, and the further development of the programme.
- In case 2.3.7 (‘Trim Truckers’) annual meetings help to identify the needs of both representatives of the company and drivers.
- Case 2.4.10 (‘Hoyer Safe Driver Policy’) describes how drivers are encouraged to report incidents (including near-misses) and to air any concerns they may have about particular delivery locations.
- Case 2.3.2 (‘My back is devilishly important’) used toolbox meetings and individual feedback to encourage workers to give their views, and in doing so, identified hazards and the appropriate corrective action to avoid them. Workers helped illustrate the mainly pictorial booklet. The company also involves drivers in the selection of trailers.

- In case 2.3.17 ('John Lewis Partnership'), workers provided feedback on the preliminary policies, procedures and materials. The information was then used to further develop and enhance the intervention.
- Drivers as well as traffic coordinators and representatives of management participated in preparing a revised 'Driver's Manual' (case 2.3.6). It was felt that involvement of drivers in the initial drafting and not just at the amendments stage might have increased their engagement.
- In case 2.4.3 drivers were consulted and surveyed during the development of an adjustable seatbelt that provides increased comfort to the user with enhanced safety.
- In case 2.3.10 drivers make use of their own experiences during training sessions.

Partnership

In many of the cases the partnership approach was a key component of the intervention. It was viewed as crucial to the success of a number of the examples (e.g. cases 2.3.13, 2.4.2, 2.3.16, 2.3.21, 2.3.1, 2.3.3). These partnerships were found to be effective in: 1) raising awareness, and increasing engagement and long-term commitment of key stakeholders in health and safety initiatives; 2) finding and developing technical solutions to reduce road accidents and accidents whilst loading/unloading.

The key actors in many of these partnerships were vehicle manufacturers, occupational safety and health institutions and practitioners, occupational health service providers and road transport companies. In several of the health promotion initiatives, the involvement of rest stops, restaurants, etc. was crucial (e.g. cases 2.3.11, 2.4.4).

Examples of partnerships include the following:

- In case 2.3.12 a partnership approach involving a financial incentive was used to encourage companies, to equip vehicles with driver assistance systems. The German Association of Transport Companies (BGF), and the KRAVAG, a vehicle insurance institution, initiated the campaign. Vehicle manufacturers such as Mercedes-Benz, MAN and IVECO supported the campaign.
- In case 2.3.22 ('Falls from vehicles'), partnership approaches were used to develop safety measures such as slip-resistant flooring.
- In case 2.4.3 ('Ergonomically correct seatbelt adjustment'), the German BGF and a seat manufacturer worked together to develop and design an improved seatbelt to enhance safety and comfort among drivers.
- In case 2.3.9 a company collaborated with the regional health insurance organisation over their speed limit programme.

Cooperation with clients and contractors

Several examples included dispatchers and receivers working together and large companies working with their outsourced delivery contractors (e.g. cases 2.3.4, 2.3.6, 2.3.14, 2.3.19). This type of working often took the form of agreements.

Examples of cases involving customers, contractors, etc. include the following:

- In case 2.3.4 Shell's requirements of its outsourced delivery companies cover reporting of incidents, instruction and training of drivers and general safety management structures and procedures.
- Case 2.3.3 from Denmark on knowledge-sharing to prevent accidents involves special agreements with customers.
- Case 2.4.13 involves cooperation between dispatcher and receiver in the development of guidance.

- In case 2.3.14 from Greece a cement production and distribution company involved both employees and contractors in its safe driving project.
- In case 2.3.19 contractors are covered in the company's 'health and safety while driving at work' policy.

Workforce diversity

Various cases make provision for taking account of diversity in the workforce, or mentioned the need to take account of it.

Regarding older workers, some examples covered the provision of continuous training, knowledge-sharing and mentoring to pass experience from older to new workers (e.g. cases 2.3.3, 2.3.10, 2.3.20). For example, in case 2.3.20, concerning the UK Royal Mail's health and safety management system, more experienced professional drivers were recruited as coaches for other drivers.

Other cases covered health promotion among older workers, e.g. case 2.3.7 ('Trim truckers').

The provision of information in various languages was a feature of some of the cases, e.g. case 2.3.21. And one snapshot focused on women in road transport (snapshot 2.4.15).

The cases covered various issues and utilised a variety of prevention methods. Some examples follow:

- Slips and falls: e.g. case 2.3.22 involved changes to footwear, flooring and loading bay layout; case 2.4.5 involved a spoken alert regarding falls when the cab door was opened; in case 2.3.20 a cab design included measures to prevent falls from the tail-lift; case 2.3.7 involves ergonomics education by an occupational physiotherapist.
- Manual handling and ergonomics: e.g. case 2.3.3. on knowledge-sharing about the working conditions of delivery areas; adaptations to a loading bay (case 2.4.13); case 2.3.2 combined technical measures to reduce risks with a back care programme; a broader case on driver wellbeing (2.3.7) included ergonomics education regarding loading and unloading and climbing in and out of trucks.
- Welfare and health promotion: e.g. a network of road-side doctors (case 2.3.11); post-accident support, including a phone hotline (case 2.3.1); support regarding sleep apnoea, improved diet, including a 'healthy lunch box' and improved schedules to combat driver fatigue (case 2.3.7); redesign of a rest area (case 2.4.4); a back care programme (case 2.3.2); alcohol and drug consumption.
- Delivery schedules and rest time: e.g. a real-time management system (case 2.3.8); investigation and partnership action to combat driver fatigue (case 2.3.16); rest times covered in a drivers' manual (case 2.3.6); logistics strategy altered as part of various measures to combat driver fatigue (case 2.3.7).
- Dangerous substances: e.g. a protocol for sea cargo containers that may have been gassed (2.3.15); a common framework for delivery by a multinational company (case 2.3.13).
- Driving risks: topics covered include vehicle maintenance and ergonomic checks; drivers' manuals (e.g. cases 2.3.17, 2.3.18); mobile phone use; safe driver schemes (e.g. case 2.3.17); defensive driving, including training tailored to the individual (e.g. cases 2.3.13, 2.3.14, 2.4.9). Case 2.3.17 covered safety awareness in both work-related and private driving; a company speed limit programme including stickers on vehicles (case 2.3.9); financial assistance to equip vehicles with driver assistance systems (case 2.3.12).
- International driving: distribution of lenses to eliminate blind spots on foreign lorries when driving in the UK (case 2.3.21).

Key success factors

Several key success factors were observed across the case studies reviewed. These include:

- Tailoring methods and measures to the sector.
- Partnerships: involving service stations, restaurants and rest areas, working with subcontractors and clients.
- Evidence-based solutions informed by the research and domain experts.
- Planned and step-wise approach to risk prevention – underpinned by a risk management approach.
- Comprehensively addressing a wide variety of occupational risks, including physical, biological, mechanical, ergonomic and psychosocial issues.
- OSH issues and risk prevention integrated into daily working practices.
- Active participation of workers from the beginning and allowing sufficient time for change.
- Continuous support and commitment from management.
- Freely available user-friendly, step-by-step toolkits.
- Training programmes underpinned by participative and reflective learning tailored to experienced drivers and the sector.
- Communicating and marketing the aims of the intervention and importance of OSH to drivers and key stakeholders.

Challenges and barriers

A number of key challenges and barriers were observed across the case studies. These were addressed through a variety of strategies and actions, including:

- Engaging companies in OSH. The use of awareness-raising campaigns or national subsidies provided by government were some of the strategies used to address this challenge.
- Lack of truly interactive interventions with a practical approach in training. Many case studies suggested that capitalising on drivers' knowledge and experiences and integrating these into training programmes (content or process) may be one way of making interventions more interactive. Furthermore, the use of mentors is a technique that could be exploited more.
- Promoting behaviour change and overcoming resistance among drivers in health-promoting and safety-enhancing actions and habits. Using a participatory approach was observed to be successful in addressing this key challenge. In addition, focusing on the reality of the work situation and involving the drivers from the beginning of the initiative was judged to be important.
- Communicating OSH policies and practices to drivers whilst on the road. Several case studies suggested that when new IT systems are installed in trucks they could also be used to communicate OSH policies and practices to drivers whilst they were on the road. Truck stops were also used by some intermediaries to provide information.
- Different national legislation and standards on OSH practices across international borders. It was suggested that active dialogue among key stakeholders and the development of international partnerships were possible strategies to address this challenge.
- Integrating OSH into daily business and working practices. The development of step-wise, freely available and user-friendly toolkits was suggested as an approach

that would help facilitate the integration of OSH practices in everyday business practice.

- Limited financial and technical resources for the implementation of safety measures. The importance of government subsidies or the support of companies to upgrade fleets with the newest safety measures and systems was suggested as one important method of addressing this key challenge.
- Developing successful partnerships among key stakeholders, many of which have conflicting agendas. The importance of awareness-raising campaigns and active communication among key actors was highlighted in several case studies. Engaging key stakeholders from the beginning and exploring other potential partnerships, for example between employers and clients and/or subcontractors, were also important factors. It is important that manufacturers work closely with the sector (employers and drivers) on truck design and development. Some of the cases featured employers working with clients and subcontractors.

Recommendations: the way forward

The following are some of the key reflections and recommendations of ways to further promote the occupational health of drivers and road safety in the future:

- continue to advertise best practice case studies and the transferability and adaptability across national borders and across companies;
- develop national and organisational monitoring systems and comprehensive evaluation methods to monitor success and identify areas for improvement of safety measures and procedures;
- increase understanding of how to engage employers and workers in occupational health and safety procedures;
- integrate occupational health and safety procedures into daily work activities and business practices;
- enhance training and education about risk assessment procedures and prevention measures for employers and managers, and adapt it to the realities of the sector and the needs of older, experienced workers, including the use of active and practical training methods;
- take a holistic approach and prevent risks at source where possible, not just relying on purely behavioural approaches;
- continue to develop new technological innovations that can help reduce the number of road accidents and promote road safety;
- promote the business case for improved OSH, including the value of combining environmental measures and safer driving initiatives.

Interesting and innovative approaches

Types of innovative approaches identified across the case studies included:

- Technological innovations, including new safety features of the vehicles and their equipment and the use of IT systems to manage deliveries and bring in OSH improvements.
- Increased attention to and focus on promoting the health (mental and physical) and wellbeing of drivers by including occupational health promotion activities in the safety management initiative.
- Including OSH as a key component of career development among drivers by encouraging continuous learning about key health and safety issues and skills development.
- The use of participatory approaches to promoting safety and health among drivers, including in the area of risk assessment.
- Innovations in the risk assessment procedures, with new or improved methods for evaluating drivers' working conditions and/or drivers' skills and need for training.
- The use of a comprehensive approach to occupational health and safety that addresses a number of different types of behaviours (driving and non-driving activities), their associated risks and impacts on drivers' health, safety, wellbeing and performance.
- Combining measures to improve driving safety with reducing environmental impact and associated cost savings.

2.6. Conclusions

The cases demonstrate the variety of measures that can be taken to control risks and improve health and safety for road haulage drivers. These measures can also lead to an improved service for customers and financial savings for haulage companies. The cases highlight a number of key lessons that can be learned in terms of success factors, challenges and barriers, gaps in knowledge and practice, and areas of innovation. These lessons provide a useful framework for creating strategies and actions that could be developed and implemented by policy makers, employers, drivers and other key stakeholders to protect the health and safety of drivers in the road haulage sector.

2.7. Overview of Cases

2.7.1. Full case studies

Case No.	Case title	Country	Organisation	Level of intervention	Description
2.3.1	Alert Team 44	Austria	Trade Union of Commerce, Transport, Traffic (VIDA)	National	Counselling and support to help prevent post-traumatic stress
2.3.2	'My back is devilishly important'	Belgium	Van Dievel Transport	Company	Training to help prevent MSDs
2.3.3	Knowledge-sharing among drivers to prevent non-traffic related work accidents	Denmark	NRCWE & Arla Foods	Company	Using the knowledge of experienced drivers and sharing it with others to raise awareness of the risks associated with various delivery/collection locations
2.3.4	Outsourcing and safety: Shell's QHSSE system	Denmark	Shell et al.	Multiple companies	SMEs adopting Shell's QHSSE safety system
2.3.5	Sketching out safety: A campaign for accident prevention and reporting among goods transport drivers	Denmark	BWC	National	Tools to encourage accident reporting and to raise hazard awareness
2.3.6	Driver's Manual	Finland	ADR-Haanpää	Company	Instructional training manual for drivers
2.3.7	'Trim Truckers': promoting truck drivers' health and wellbeing by minimising risk in cooperation with an occupational health service provider	Finland	FIOH	Company	Occupational health service for drivers, including actions to combat driver fatigue and improve ergonomics
2.3.8	'Transport online'	Finland	Tyvi Freight transport company	Company	Management system for drivers' working hours
2.3.9	Prévost Transport: Project 80 km/h	France	Prévost Transport	Company and beyond	Speed limiting devices and driver training
2.3.10	Instruction programme for team instructors	Germany	BGF	National (BGF members)	Training trainers to deliver on-the-job training in all aspects of health and safety
2.3.11	DocStop	Germany	DocStop	National / International	Implementing a network of medical service centres located at truck stops

Case No.	Case title	Country	Organisation	Level of intervention	Description
2.3.12	The Driver Assistance Systems campaign	Germany	BGF	National (BGF members)	Subsidies for installing driver-assisted systems to help prevent RTAs. Driver training is provided and the effectiveness of the systems will be assessed.
2.3.13	Practices in a chemical road transport enterprise	Switzerland/Germany	Bertschi AG, Europe	Company / Multi-national	Driver training and appraisal, and vehicle integrated safety features
2.3.14	Safe Driving Project	Greece	Heracles General Cement Co.	Company	Defensive driver training, driver assessment, policy development and equipment control to prevent RTAs
2.3.15	Safe opening and entry of gassed sea containers	The Netherlands	BGZ Wegvervoer	National	Step-by-step guidance on opening and entering gassed sea containers
2.3.16	The risk of occupational fatigue in road transport	Spain	Trade Union Federation of Communication and Transport of CCOO	National	Study/campaign and best practice advice focusing on driver fatigue
2.3.17	John Lewis Partnership	UK	John Lewis Partnership	Company	Fully integrated safety policy that covers risk assessment, driver assessments, incident reporting, vehicle maintenance, journey scheduling, incentive programmes, etc.
2.3.18	Robert Wiseman Dairies	UK	Robert Wiseman Dairies	Company	Road safety policy with main focus on driver training
2.3.19	Driving at work policy	UK	Coca-Cola Enterprises	Company	Safe driving policy
2.3.20	Royal Mail Network Health and Safety Management System	UK	Royal Mail	Company	Proactive safety management system featuring a number of training, vehicle design and vehicle maintenance initiatives
2.3.21	Lenses for foreign lorries	UK	HA & VOSA	National	Distribution of wide-angle lenses to foreign lorries to minimise blind spots and prevent RTAs
2.3.22	Falls from vehicles	UK	HSE	National	Study into the main causes of falls from vehicles and the provision of best practice advice

2.7.2. Snapshot case studies

Case No.	Case title	Country	Organisation	Level of intervention	Description
2.4.1	Safety adviser service	Denmark	DTL	National	Safety expert consultancy service
2.4.2	Leading road safety in express deliveries	France	TNT Express France	Company	Collective action, to instil road safety instincts at all levels of management. Signatories to a Road Safety Charter. Road safety working group
2.4.3	Ergonomically correct seatbelt adjustment	Germany	BGF	National	Development of ergonomically correct seatbelt to encourage seatbelt use
2.4.4	Innovative rest area for HGV drivers	Germany	LHG	National	Enhance rest facilities to encourage HGV drivers to exercise and relax
2.4.5	Mr Nobody	Germany	Rheinkraft International	National	Recorded message to remind drivers to take care when climbing out of the cab
2.4.6	Workplace transport safety management information sheet	Ireland	HSA	National	Best practice advice
2.4.7	Anti-accident systems in freight carriages	The Netherlands	TNO	National	Installation of anti-accident systems in 3,000 trucks. Analysis of action to follow
2.4.8	Safe grab hook for waste containers	The Netherlands	Van Gansewinkel	National	Development of a new safe grab hook system for waste containers
2.4.9	Good practice guide for occupational risk prevention in the transport sector	Spain	Foundation for the prevention of risks	National	Best practice advice to minimise risks
2.4.10	Hoyer Safe Driver Policy	UK	Hoyer Haulage UK Ltd.	Company	Comprehensive road safety policy and recognition scheme
2.4.11	The management of occupational road risk	UK	Powergen UK Ltd.	Company	Health and safety guidance document
2.4.12	Safety in and around loading bays	UK	HSE	National	Examples of how safety of loading bays can be improved
2.4.13	Cooperation between dispatcher and receiver of goods to make deliveries safer	UK	HSE	National	Describes how cooperation between dispatcher and receiver of goods can make deliveries safer for drivers
2.4.14	Simple improvements to make loading easier	UK	HSE	Company	New ways of working to make loading safer
2.4.15	The working conditions of women in road transport	International	ITF	International/ trade union federation	Investigation of women's working conditions and advice

2.8. Classification of cases

2.8.1. Full case studies

Case No.	Safe driving	Violence	OSH management	Coordination with contractors	MSDs	Slips, trips	Health/ wellbeing	Equipment design	Communication – route planning	Working hours	Long distance	Short distance	Organisational focus	Individual focus	Training	Guides	Technology – design	Campaign awareness raising	Safety and health focus	Wellbeing focus	Partnership	Worker consultation
2.3.1							X		X					X						X	X	
2.3.2					X		X								X	X			X	X		X
2.3.3			X	X					X			X	X	X	X		X		X			X
2.3.4	X		X	X						X	X	X	X		X				X		X	
2.3.5			X								X	X	X					X	X			
2.3.6										X	X	X		X	X	X			X	X		X
2.3.7			X				X			X		X								X	X	
2.3.8			X						X	X	X	X					X			X		
2.3.9	X										X	X	X	X	X				X		X	
2.3.10	X				X		X						X		X				X	X		
2.3.11			X				X				X			X					X	X	X	X
2.3.12	X							X			X	X	X					X	X		X	
2.3.13	X		X					X			X	X	X	X	X				X			
2.3.14	X		X	X				X				X			X							
2.3.15													X		X	X		X	X			
2.3.16	X									X			X	X		X					X	X
2.3.17	X		X						X	X	X	X		X	X				X			
2.3.18	X		X								X	X		X	X				X			
2.3.19	X		X								X	X		X	X				X			
2.3.20	X		X					X			X	X	X	X	X				X		X	
2.3.21	X							X			X		X	X		X		X	X		X	
2.3.22						X		X			X	X	X	X		X		X	X			

2.8.2. Snapshot case studies

Case No.	Safe driving	Violence	OSH management	Coordination with contractors	MSDs	Slips, trips	Health/ wellbeing	Equipment design	Communication – route planning	Working hours	Long distance	Short distance	Organisational focus	Individual focus	Training	Guides	Technology – design	Campaign awareness raising	Safety and health focus	Wellbeing focus	Partnership	Worker consultation
2.4.1			X										X			X			X		X	
2.4.2	X		X						X		X		X		X				X		X	X
2.4.3	X							X			X	X		X					X			X
2.4.4							X							X		X		X	X	X		
2.4.5						X		X						X					X			
2.4.6			X										X			X		X	X			
2.4.7	X							X					X						X		X	
2.4.8								X					X	X					X			
2.4.9	X										X	X		X		X			X			
2.4.10	X		X								X	X			X				X			
2.4.11	X		X						X		X	X		X		X			X		X	
2.4.12			X					X					X			X		X	X			
2.4.13			X										X			X		X	X			
2.4.14					X								X	X					X			X
2.4.15		X								X				X		X			X			X

3. Examples of good practice in passenger transport

3.1. Introduction to the passenger transport cases

Road traffic accidents are a leading cause of workplace death, injury and disability in many countries around the world. Accident statistics for 2007 show that 34 passenger road transport drivers were killed in road traffic accidents within the EU.[1] However it is the non-driving activities, such as dealing with the public and handling luggage, that account for a large proportion of incidents in which drivers sustain injuries or ill health.

According to the EU-OSHA report *OSH in figures* [2], special issues in long-distance road haulage include:

- violence and harassment
- prolonged sitting and exposure to vibration
- increasing customer contact, including explaining organisational changes to customers
- lone work
- shift work
- conflicting demands (attending to customers and driving)
- needs of an aging workforce
- an increase in the number of women drivers.

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Loading and unloading luggage usually involves manual handling. The static postures required to drive a vehicle can also be detrimental to health as they can lead to musculoskeletal disorders. The role of a passenger transport driver can also be highly stressful; drivers need to cope with time pressures, negotiating heavy traffic and

confrontations with other road users and/or customers. Slips, trips and falls are another common cause of injury.

The land transport sector is made up primarily of male workers, although the number of female workers is increasing especially in passenger transport. So health and safety action is male-centred. Matters such as ergonomic design still reflect the male-dominated work environment. Thus, women working in transport have to adjust to a male-centred organisation of work, workplace culture and working conditions. In order to make the sector a more attractive workplace for women attention has to be devoted to solving key problems, such as the difficulty of combining work and family, the highly physical workload and the lack of female-friendly facilities.

[1] CARE European database on road accidents

[2] European Agency for Safety and Health at Work – *OSH in figures – OSH in the transport sector – an overview*. Available at: http://osha.europa.eu/en/publications/reports/transport-sector_TERO10001ENC/view

Case-specific reference details are recorded for each individual case study where appropriate.

3.2. Short descriptions of the full case studies

3.2.1. Cases at company level

'De Lijn' Safety Plan, Belgium (case 3.3.1)

De Lijn, the Flemish public transport company, is working towards a safer environment for its staff and travellers on a number of different levels. The increasing aggression of some members of the public on trams and buses means that there is a need to strengthen safety measures designed to protect travellers and staff. The safety plan rests on four pillars: a) organisational measures, such as the use of more supervisors; b) preventive measures, such as education projects in schools and the installation of cameras on buses; c) staff training in how to deal with aggression or other difficulties; d) collaboration with other agencies such as the police, justice system, schools, and youth and social workers.

Get on at the Front, Belgium (case 3.3.2)

Transport operator MIVB-STIB has made it obligatory for bus passengers in Brussels to get on at the front, rather than using doors further down the bus. This measure was taken for several reasons, both commercial and to improve driver and passenger safety. The new rule was communicated to drivers and travellers by a number of methods designed to gain the acceptance of drivers and passengers. For drivers this included participatory discussion and training sessions. For passengers it included visits to schools. Additional staff were used on the buses to assist drivers during the introductory phase.

Initiatives to prevent occupational accidents, Belgium (case 3.3.3)

Slips, trips and falls, and steering wheel rebound are the cause of many occupational accidents that occur in public transport companies. A number of initiatives were taken to help prevent these types of accidents, including a campaign with posters and stickers, and specific training sessions. Drivers were tracked and photos taken of the slipping and falling hazards they encountered. Drivers were trained to spot and assess slipping and falling hazards.

Renovating bus terminals for comfort, Hungary (case 3.3.8)

The management of the Budapest Transport Company and workers' representatives have agreed on a development budget for the renovation of old terminals, in order to comply with legislation on workers' welfare and workplace amenities. In addition, it is recognised that making the terminals more comfortable for drivers provides them with more relaxing rest periods, helping to balance time spent on buses. The company has introduced standards for bus terminals and workers' representatives are involved in the work process at specific locations. Fully equipped portable cabins are provided when major renovation takes place.

Integrated traffic management system, Hungary (case 3.3.9)

Increasing traffic in the city's public transport system has forced Budapest Transport Ltd. to introduce traffic management systems. The primary goal of these measures was to optimise schedules on public transport. A secondary effect is the increase in passenger satisfaction which helps to create a more comfortable working environment in general and helps to reduce conflict situations in particular, all of which helps to reduce driver stress. The interactive communication with the dispatcher centre provides reliable support for drivers alone on the road, including in situations of passenger violence.

Draw the line ('Trek die lijn'), the Netherlands (case 3.3.12)

HTM passenger transport NV had problems with vandalism and aggression caused by school pupils. The company developed a programme called 'Trek die lijn' ('Draw the line') to improve security by increasing awareness and by improving mutual respect between travellers, staff and schools. A 'partners platform' was an important component. Via innovative methods such as theatre, students were involved in defining the prevention measures. Regarding the responsibility for controlling pupil behaviour, the boundary between in school and out side the school gates was broken down.

'Going for Green', the Netherlands (case 3.3.13)

Veolia Transport International developed an innovative customer service programme called 'Going for Green'. Green stands for satisfied customers, as opposed to customers in a 'red' or 'yellow' state. The programme gives staff training and guidelines to help them understand and respond to customers' needs when problems occur. The Going for Green approach goes beyond formulaic responses to fixed situations. It empowers each employee to interact with individual customers in a flexible way; by identifying their customer group, acknowledging their specific needs, and then responding in a relevant and effective way. The programme is now being introduced throughout Veolia's international operation. It is tailor-made for the group companies and in template format so it can adapted to each local situation. The training also covers supervisors.

Implementation of RoadRISK Tool, the Netherlands (case 3.3.14)

Transport company Connexxion introduced the RoadRisk Tool in the Netherlands because they wanted their bus drivers to change their driving style. Two objectives lay behind this decision:

1. To increase passenger safety by increasing bus drivers' skills.
2. To reduce damage to buses by encouraging the adoption of a more defensive driving style.

However, where improved driver skills result in fewer accidents and incidents, there should also be a reduction in stress for drivers.

The tool is a software application that contains a questionnaire and a test. It is used to assess various driving skills including risk assessment and to identify any additional training that might be necessary. Drivers in Zeist took part in pilot tests of the software and while the average score was considerably lower than the target score, the RoadRISK Tool was able to

offer several recommendations to improve drivers' performance. Senior drivers then provide training to develop skills as indicated by the test. A participatory approach involving the works council was used to pilot and introduce the project.

The ergonomics and technology of the driver's cabin in urban passenger transportation, Spain (case 3.3.15)

This study carried out a postural evaluation of driver position in urban buses, and an analysis of the anthropometric adaptation of the spatial design of the bus cabins. The methodology included analysing the movements of drivers at work in their cabs and 3D simulation of different cabs and different-sized drivers. The results show high postural risk for the neck, and offer suggestions for simple adaptation of bus cabins to improve driving posture. Recommendations include cab design ergonomics and organisational issues such as rest breaks.

An intervention focusing on psychosocial factors in a private transport company, Spain (case 3.3.16)

This paper describes the successful psychosocial and behavioural risk assessment and intervention in TUSGSAL (Transportes Urbanos y Servicios Generales). This process was carried out using the MARC methodology developed by the University of Valencia. It included the selection of target variables according to the preventive needs of the company, the introduction of a segment analysis, an ergonomic study, and assessment of the results using an economic tool. The results include a map of the company which suggests where improvements can be made. Measures introduced covered four categories: training; communication and participation; organisational measures and risk prevention measures.

Whole-body vibration and ergonomic issues for bus drivers, UK (case 3.3.17)

Specialist analytical assessments of a bus driver's duties, method of working and working environments were carried out to determine the cause of a sensation of 'pins and needles' in the driver's hands. Ergonomic and vibration factors were assessed. Simple corrective measures included repairing the seat and training for all drivers in how to adjust their seats to promote good posture, give good support and minimise vibration.

Driver and Passenger Safety, Trojan Bus Campaign, First Leeds, UK (case 3.3.18)

To combat vandalism and aggressive behaviour on and near their buses, the First UK company installed CCTV cameras on its buses, collaborating with West Yorkshire police on the 'Trojan Bus' campaign to apprehend and deter offenders. High-risk areas are targeted and plain-clothed police officers travel on buses. Police cars follow buses through troublesome areas. Offenders are apprehended and prosecuted. This approach is in addition to measures taken on all buses and training for all drivers.

3.2.2. Cases at regional level

Stress on public passenger transport drivers, Germany (case 3.3.4)

The Bavarian Labour Inspectorate, Bayerische Gewerbeaufsicht, implemented a campaign about stress recognition, prevention and reduction. Public transport companies were investigated and stressful situations identified. Agreements were then reached on stress-reduction targets and measures to reduce stress and. Considerable effort was put into gaining the acceptance of managers and staff. Managers were shown the economic benefits. Workers were involved in identifying the causes, and conditions of employment,service provision and other organisational issues were covered. Investigation methods were adapted to the context of the sector.

'Objective – Secure Travelling' and 'Driving in Security' programmes, Italy (case 3.3.11)

These are the titles of programmes designed to ensure the safety of onboard staff, through which the Compagnia Trasporti Pubblici (public transport company) of Naples makes a commitment to guarantee assistance when crimes or accidents occur.

The objectives of these programmes are to manage crimes, offer medical, legal and psychological assistance to onboard staff, and reduce crime. Ways of achieving these objectives include continuous monitoring, staff training, onboard telephones, localisation of fleet, police intervention and measures to reduce crime. A participatory approach was taken with the trade unions. The programmes include an information campaign for the general public, including innovative interventions in schools.

3.2.3. Cases at national level

Stress prevention for urban bus/tram drivers, Germany (case 3.3.5)

This example is about computer-based training to help public transport drivers manage the causes of stress. Drivers without previous experience of using computers are able to use the program. It helps them to identify work-related stress and suggests ways in which they can reduce these stresses themselves. The content was tailored to the typical stress situations faced by drivers, including complex situations such as the need to deal with passengers in critical driving situations. It includes simulations of real-life situations. Separate editions were produced for tram and bus drivers. A partnership approach was taken in the development and testing.

The workplace (cab) of urban bus drivers, Germany (case 3.3.6)

Following investigations carried out by several institutes and involving bus companies and bus manufacturers into the driving area (cab) of bus drivers it was concluded that these environments need to be improved ergonomically. A specification sheet setting out ergonomic and technical specifications for the driver's cab was developed. Drivers were involved in the initial identification of problems and in testing bus cabs designed to the new specifications. Following this testing period the specifications were revised. The specifications are also intended to be adaptable depending on the type of bus in use.

Holistic risk assessment of drivers in the public transport sector – evaluating driver competence tests, Greece (case 3.3.7)

The Hellenic Institute for Occupational Health and Safety (ELINYAE) investigated the health and safety hazards in the urban transport sector, with the aim of developing a model risk assessment. Bus drivers are exposed to a number of hazards and have been involved in a variety of accidents. The project was also started because in addition to the pressure on transport services created by the nature of urbanisation, there is a general debate in Greece about the efficiency of the country's system for assessing fitness to drive. Therefore ELINYAE also examined the existing system of assessing fitness to drive. A holistic approach was taken covering all aspects of the working environment and a wide variety of health factors. The subjective views of drivers were an important part of the evaluation.

Training courses on safety for public transport drivers: CD-ROM '626 AUTOLINEE' and CD-ROM 'MASCOTTE (Moderare gli Agenti di Stress per i Conducenti del Trasporto Terrestre – *Moderating Stress Factors for Drivers*), Italy (case 3.3.10)

This case study focuses on the creation of two training CD-ROMs for drivers of a variety of passenger transport vehicles including coaches, minibuses, hire cars and buses. They simulate the real workplace which has either been photographed or reconstructed using computer-generated images. As drivers navigate the on-screen situations, it is possible to zoom in on certain features to highlight risks and to learn to identify strategies to prevent the

risks and improve working conditions. The product covers both the road and places where vehicle maintenance is carried out.

'The School Run' driver training, UK (case 3.3.19)

For many bus drivers the school run can be highly stressful. Maintaining order can be challenging and if disturbances are not dealt with in an appropriate way drivers can inflame situations. This innovative training programme was designed to improve the relationship between drivers and schoolchildren, and was developed with the input of drivers, transport organisations, schools and schoolchildren. Not only does it seek to develop drivers' skills, but also looks into the nature of the problem both from the perspective of drivers and the perspective of children. Out of the pilot training programme and ideas generated during it, guidelines were developed for schools, bus companies, transport companies, etc., about how to support drivers.

3.3. Full case studies

3.3.1. 'De Lijn' Safety Plan, Belgium

Organisation(s): De Lijn

Key points

- An integrated approach to tackle increasing aggression on public transport stands.
- Strategy includes: organisational measures, preventive measures, training of staff, and collaboration with other agencies.
- Holistic approach includes measures to improve the travel experience of passengers.
- Pilots involved travellers and staff.
- Working with other agencies including police, youth and social workers.

Introduction

Since 1999 the Flemish public transport company 'De Lijn' has had an integrated safety policy. This approach ensures that the company works towards a safer environment for their staff and travellers on several different levels. The new plan has four key elements: a) organisational measures, such as the use of more controllers; b) preventive measures, such as prevention projects in schools and the installation of cameras on buses; c) training for staff on how to deal with aggression and other problems; d) collaboration with other agencies including the police, the justice system, schools, and youth and social workers.

Background

Increasing aggression experienced by drivers suggested that there was a need to strengthen the approach of the organisation towards staff and traveller safety. After a severe accident on a 'De Lijn' bus, a new safety plan was implemented in 2006. It will be reviewed on a regular basis.

Aims

By implementing this integrated safety policy, 'De Lijn' wants to create a safer environment for drivers and travellers.

Scope

Organisational measures:

Several organisational improvements were introduced such as:

- The implementation of new safety measures: more vehicles fitted with camera surveillance equipment, control alarm systems, enclosed driving cabs to provide a physical barrier between driver and passengers, deposit systems for money, etc.
- More 'guards' for staff and travellers:
  - The 'lijnspotter' is a city watcher who keeps an eye on buses and trams. This project was first tried in Antwerp and will be rolled out to other cities. The task of the 'lijnspotter' is to provide travellers with information and to help them get on and off vehicles, but also to spot defects in vehicles, shelters and stations, and to intervene when conflicts occur.
  - A second person in the vehicle: in this pilot project, 20 'supervisors' accompany bus and tram drivers. They have been trained in conjunction with trade union organisations. To evaluate the project, various elements will be measured periodically:
  - Objective measurements of improvements in safety such as the reduction in aggression towards drivers, and any change in the drivers' and passengers' subjective feelings of safety
  - The financial impact of the initiative including recruitment, education, increased revenue because more people pay for their tickets
  - An increase in dispatching services: this makes it possible for drivers to directly contact dispatchers by radio, providing an indispensable back-up
  - As a public transport company, 'De Lijn' has the legal responsibility to establish its own enforcement service, but the authority of such personnel is limited. They cannot, for instance, use handcuffs and have only limited rights to the defensive use of pepper spray.
- Development of standard procedures to provide care and support for customers and drivers in the event of an accident.
- Attention to keeping infrastructure in good condition by paying special attention, for instance, to safety around cycle sheds and Park and Ride facilities and property, and installing cameras in bus stations.

Outcome of the organisational measures:

After a few assessments, more was understood about the perception of safety among travellers. An unsafe feeling is created by several factors such as distrust of co-travellers, a lack of control, and too few staff on trams and buses. Extra supervisors can have a positive impact on these factors because they are seen as an extra person who can play a supporting and controlling role if necessary. The presence and visibility of De Lijn employees is very important in dispelling unsafe feelings. This approach was evaluated positively by staff, labour unions and customers.

Preventive measures:

- Campaigns were set up around different themes, such as a campaign about how to behave on public transport: 'how to be more human in traffic'. Activities covered the own staff and travellers. Rules of behaviour were drawn up and tested on pilot groups of travellers and drivers. Some of the rules agreed upon for travellers were: have a valid ticket, ban vandalism, don't be noisy, offer your seat to other travellers, don't smoke either on the vehicles or in the bus shelters. To ease passenger frustration, 'De Lijn' also aims to provide cheap fares, a bus stop within 750 metres of each house, comfortable vehicles, and to encourage communication between company employees and travellers.

- 'De Lijn' is also working on the 'testing of indicators', linking incident statistics with neighbourhood variables or indicators. For the moment, those proposed variables and indicators include:
  - Internal evaluation of bus stop facilities;
  - Inventories of the condition of vehicles;
  - Inventory of high risk neighbourhoods;
  - Quality monitoring;
  - Customer reactions;
  - Monitoring of the police: this monitor will measure objective safety as well as people's subjective feeling of safety. This permanent monitoring will give input to the safety plan.

The public service company and the police will adapt the safety policies will be adapted to the specific needs of any area which shows 'hotspots' of poor performance, judged by regular review and evaluation of these variables and indicators. At the time of writing, this testing was not yet in operation because some details needed to be clarified prior to implementation.

Training of the staff:

Existing training has been renewed and new training is being offered within the frame of this project:

- Basic training for drivers will now include 'attitude' training
- A new training course on 'How to establish contact with customers' will be devised
- New training has been created for the new role of supervisor, dealing with attitude, communication, and how to cope with conflicts.

Collaboration with other agencies:

- Collaboration with the police and the justice system
- More authority for supervising personnel, such as giving them the authority to impose fines when someone causes trouble
- Collaboration agreements with the police on safety, interventions, traffic, training and consultation, including specific agreements about communication in emergencies
- Agreements with the justice system: more severe punishment for those who use violence against specific professional groups such as drivers and supervisors in public transport. Also, a project has started to stimulate alternative punishments within the public transport sector.
- Collaboration with schools and youth organisation such as the project 'Trammelant' and the 'Schoolspotters'
- Collaboration with street corner workers:

The **'Trammelant' project** started in Antwerp on a tramline on which there had been a great deal of conflict. Often young people on their way to school were seen as the cause of many of the problems – being rowdy, goading and insulting other passengers, vandalising the tram. Passengers were feeling increasingly unsafe on the route so a new nuisance-prevention project was launched to bring the young people and de Lijn staff together to discuss the problems and to search for possible solutions. Both youngsters and adults agreed that the project worked – because they were able to get to know each other, conflicts were avoided.

The project had four targets:

- To reduce the 'unsafe' feeling experienced by other passengers
- To increase mutual understanding between the employees of 'De Lijn' and young passengers
- To intervene before a serious incident occurred
- To initiate best practices in collaboration with local governments, schools and youth organisations. Safety is an issue for the whole of society and everyone has to collaborate to deal with issues that threaten safety and wellbeing.

Interactive methods such as role-playing, visits, and quizzes were used to bring the young people and the De Lijn employees together to establish specific rules. Because the young people were involved in their formulation, these rules had greater support.

This project successfully calmed the behaviour of the youths on the route, and it is now being used in other Flemish cities.

'**Schoolspotters**' are young people with few qualifications who are recruited by cities to keep an eye on safety around schools and on public transport. They are an important link in the struggle against aggression and trouble. The spotters report any problems directly to 'De Lijn', the local police or the school to which the troublemakers belong. The coordinator of this project has hailed it as a huge success because where the 'schoolspotters' are present, there are scarcely any reported problems: just their presence is enough to encourage good behaviour.

Street corner workers work with young people who hang around on the streets. To put themselves in the place of the young people, it is important that they actually move around with them from one public place to the other. For this, 'De Lijn' gave 40 free season tickets to street corner workers. It was a success. By taking public transport, the workers were able to make contact with those who might need help more swiftly, guaranteeing a quicker and more target-oriented intervention. This collaboration with the street corner workers will continue.

Outcomes

The integrated safety approach developed by 'De Lijn' seems to be well received by staff and travellers alike. Staff and travellers feel safer because they feel more in control, and because they see more personnel on trams and busses. But this success has certainly been enhanced and underpinned by a variety of actions on other levels as well. It is, in a way, a holistic concept in which the involvement of the diverse agencies such as the police, street corner workers, and young people themselves has been an important contributing factor.

Problems faced

Most of the measures were implemented as planned. Problems were mostly related to unforeseen costs incurred where safety equipment such as cameras and new technology were not compatible with older vehicles. The education and recruitment of extra control staff also went more slowly than had been foreseen.

Success factors

- Simultaneous action on a variety of different levels.
- Active involvement of diverse agencies and, as a consequence, empowering the individuals involved.
- Participatory method to assess needs and develop measures covering both travellers and staff.

Transferability

The safety plan was obviously written for the Flemish situation. However, throughout Europe public transport companies are faced with many of the same problems. The plan can certainly inspire action elsewhere and some ideas can be transferred, such as the engagement of schools, youngsters and youth and social workers.

Further information

- *'Lijnrecht tegen racisme – Het project Trammelant'*, www.lijnrechttegenracisme.be
- *'Bondgenoten voor veiligheid',* Uit Op1Lijn – Het magazine van De Lijn voor uw gemeente, nr. 63, januari-februari 2008.

3.3.2. Get on at the Front, Belgium

Organisation(s): MIVB-STIB

Key Points

- Passengers may only enter buses at the front.
- The rule was introduced for both commercial and safety reasons.
- The campaign to introduction the change to the public included school visits.
- Second staff member on buses to support drivers during the introductory phase.

Introduction & background

In 2003, the(Maatschappij voor het Intercommunaal Vervoer te Brussel / Société des Transports Intercommunaux de Bruxelles), Brussels public transport company MIVB-STIB introduced new rules making it obligatory for passengers to get on at the front when catching the bus. This was done for several reasons. It was partly a commercial decision, but MIVB-STIB also wanted to improve the safety and wellbeing of bus drivers and travellers. The new rule has put the bus driver back in charge of the service he is providing. Travellers must either show their season ticket or buy a ticket from the driver. This gives the driver more responsibility but, more importantly, restores human contact between the bus company and the passengers. Research has shown that the new rule was greeted with approval by staff: they feel more involved in the job they do, and they feel both safer and less stressed.

Aims

With this new rule the MIVB-STIB hoped to increase the safety of its drivers and travellers whilst also increasing ticket revenues for the company.

Scope

Several methods were used to communicate the new rule to drivers and passengers and to gain their acceptance of it.

- Drivers:

To make the 1,500 drivers who work at the MIVB-STIB aware of the new rule, a four-hour training course was organised. The new rule changed the role of the bus driver. In a way, it added an extra burden to their job, but it also gave an extra dimension to their duties which offered more social contact and, as a consequence, made drivers and travellers feel safer. The new rule put drivers back in charge of their vehicles and passengers in turn treated them more respectfully.

Some drivers needed to be convinced of these advantages because initially they felt only that the new rule meant a change in their daily life. Interactive training involved discussion of the new rule among the drivers taking part in the training, and the sessions were run by their direct managers rather than unknown professional trainers. Working out for themselves that the new rule would improve their working lives made it easier for them to accept it.

- Travellers:

Travellers had to become accustomed to getting on at the front once again. This had been obligatory in years gone by, but a social revolution suggesting that passengers could take responsibility for their own honesty had led to the creation of a culture where they were no longer obliged to show their tickets to the driver. It had become clear, however, that there were a lot of passengers who didn't pay, and who got on the bus towards the rear, away from the driver. The MIVB-STIB wanted to tackle this fraudulent behaviour while also improving safety.

A campaign with different elements was organised to inform travellers:

- A red 'carpet' was painted on the pavement at bus stops to lead the travellers towards the front of the bus;
- An image of the Indian god, Shiva (who has four arms) was painted on the buses: all the arms were directing the traveller to the door at the front;
- The new procedure was announced in various media.

Special campaigns were targeted at young people. Company employees visited schools to explain the new rule to youngsters. The schools reacted very positively to this social education initiative and the young people showed themselves willing to cooperate.

- Support of the whole organisation:

To encourage general acceptance of the rule, it was important that everyone in the organisation was involved in its introduction. As the new procedure was introduced on a particular route, a second member of staff accompanied the driver for several hours, or longer if necessary, to both give support to the driver and to communicate with the passengers and explain the new rule.

Outcome

The new rule brings benefits for both for the travellers and the drivers:

For the travellers:

- The driver controlling access to the bus improves their safety
- Access to the bus is more comfortable and practical
- Flow inside the bus is improved when everyone gets on at the front and walks through to the rear of the bus
- They know where to wait for the bus because at each stop markings on the ground make it clear what they should do

For the drivers:

- Passengers are more polite and the atmosphere is more relaxed.
- There is less vandalism
- Fewer passengers try to avoid paying their fares.

Problems faced

When the new rule was first introduced, there was a degree of protest from both travellers and drivers. This protest was mainly linked to a reluctance to change established habits. However, there is still some criticism of certain drawbacks to the rule; passengers do not always move down the bus to make room for those getting on, and the buses are slower as it takes more time for all the passengers to enter through the same door.

Success factors

- The measure has had a number of positive results: improvement of safety of travellers and staff, and increased fare revenues.
- Every level of the company hierarchy was involved in the establishment of the new rule, promoting company cohesion and encouraging swift acceptance of new rule.

Transferability

This measure can be easily transferred to other countries.

Further information

- *Bulletin van de interpellaties en mondelinge vragen*, Commissie voor infrastructuur belast met openbare werken en verkeerswezen, Vergadering van woensdag 12 November 2003
- *'Mogen we jullie ergens op wijzen?'*, www.stib.be/appl/NL/33200N.htm
- *'Protest tegen vooraan instappen op bussen MIVB',* de Standaard, 21 februari 2004
- Contact persons: Eric Buslot (Safety Advisor MIVB-STIB); Henri Vandeputte (Direction Bus).

3.3.3. Initiatives to prevent occupational accidents, Belgium

Organisation(s): MIVB-STIB and De Lijn

Key points

- Slips, trips and falls.
- Injuries from rebounding steering wheels.
- Sensitisation of employees by a targeted campaign and training.
- Tracking drivers to get photos of real hazards.
- Proactive approach to hazard spotting – training in risk assessment.

Introduction & background

Public transport companies are taking a variety of initiatives to prevent occupational accidents among their drivers. Here attention was focused on injuries caused by slips, trips and falls and steering wheel rebound. It was necessary to focus on these types of accidents as they were the second most common cause of injury after accidents caused by aggression.

Aims and objectives

The aim of the initiatives described below was to reduce the number of occupational accidents by focusing on two key sources of accidents.

Scope

Prevention of slips, trips and falls:

The Brussels public transport company MIVB-STIB, in collaboration with its insurance company, launched a campaign to make bus drivers more conscious of the risks they might encounter during their working day. Particular emphasis was placed on reducing injuries caused by slips, trips and falls. A series of photos was taken to illustrate the dangers that might confront drivers, tracking every movement of their working day from the moment they leave their homes. The pictures, which were put on display in the rooms where drivers take their break, identify the locations where slips, trips and falls are most likely to happen; while climbing stairs, for instance, or stepping onto a bus and taking the driving seat, or when the vehicle encounters an uneven road surface.

Another approach is the creation of training programmes such as the one organised in 2005 by Prevent, a specialist Occupational Safety and Health institute, for 'De Lijn', the Flemish public transport company. The training was designed to help drivers prevent workplace falls and trips because these types of accidents in and around vehicles and bus stops account for 77% of occupational accidents in the public transport sector. Such accidents may seem trivial, but even a minor injury caused by a fall can cause financial hardship and affect the injured person's quality of life. Part of this training programme encouraged drivers to become proactive in spotting possible hazards, requiring them to draw up their own risk assessments of their working environment.

Rebound of the steering wheel:

In 2008 MIVB-STIB launched a campaign entitled 'I hold my steering wheel in the correct manner'. Campaign stickers and posters and stickers illustrating the correct '10 to 2' holding position were stuck in the drivers' cabs of the buses. This position offers the driver the best chance of regaining control of the vehicle if the wheel is jolted by some obstacle or road damage in its path. These 'rebounds' are the root cause of 11% of bus accidents, and 14% of sick leave is attributed to steering wheel accidents.

The information campaign is reinforced by regular direct reminders to drivers from their managers of the correct grip to use.

Outcomes and evaluation

At the time of writing, it has not yet been possible to gather data about the effect of the photo campaign and training programme described above, both aimed at reducing slips, trips and falls. The campaign has resulted in a reduction in the number of steering wheel rebound accidents.

Success factors

- Prioritisation – focus on two key hazards.
- Use of real examples of hazards encountered by drivers (photos).
- Empowering drivers to spot hazards and assess risks.
- Tools developed to raise the awareness of drivers, such as stickers, posters and photos, are displayed in their everyday work environment so that they are confronted with the advice several times a day.
- Advice is reinforced with regular reminders from their supervisors.

Transferability

The tools are not transferable because they are language-specific, but the concepts can be adapted.

Further information

- Contact person: Eric Buslot (Safety Advisor MIVB-STIB)

3.3.4. Stress on public passenger transport drivers, Germany

Organisation(s): Bayerische Gewerbeaufsicht, Coburg (Bavarian Labour Inspectorate, Coburg)

Key points

- Awareness-raising among transport companies of the need to take positive action to reduce work-related stress – for staff health and economic reasons.
- Taking a preventative approach to the reduction of work-related stress.
- Targets for improvements and timetable agreed with bus companies.
- Getting companies to help themselves.
- Based on prior investigation of causes and included 'employment' and service provision issues such as rosters, timetables, operating instructions and training.
- Discussions with and observations of drivers.

Introduction

In 2004 the Bavarian Labour Inspectorate launched a campaign focusing on stress suffered by public passenger transport drivers, visiting 39 public transport companies in Bavaria.

Background

Levels of absenteeism, early retirement and impaired health, higher than many other occupations, hinted at high levels of work-related stress among public passenger transport drivers. For a lot of companies in this sector, 'work-related stress' is a relatively new focus. Slowly, however, these companies are realising that stress at work has a negative impact not only on the health of their employees, but also on their commercial objectives. Both employment issues and OHS issues are implicated. Often procedures for calculating and reducing levels of stress do not exist.

Aim

The main aim of this project was to raise awareness of the consequences, both to health and productivity, when bus drivers are subjected to work-related stress, and to encourage transport companies to take positive action themselves to reduce work related stress by:

- Assessing stress levels
- Implementing concrete measures to reduce stress.

Scope

On-site investigations were carried out over seven months from 1 December 2003 through to the end of the following June. Two physicians from the inspectorate, accompanied by a technical labour inspector, visited 39 Bavarian bus companies. All the public companies in the

region, and some of the private companies working for them, were visited. Management, company medical officers, safety engineers and members of each company's work council cooperated. Relevant documents like rosters, timetables, operating instructions and records of further training were reviewed.

The investigation was carried out in accordance with the code of practice – 'Handlungsanleitung für die Arbeitsschutzverwaltung der Länder zur Ermittlung psychischer Fehlbelastungen am Arbeitsplatz und zu Möglichkeiten der Prävention' – developed by Länderausschuss für Arbeitsschutz und Sicherheitstechnik (LASI) in 2003. The investigation mainly consisted of discussions with those members of staff responsible for the relevant areas of work within each company, and assessing their answers to a questionnaire. Bus drivers were then asked to grade their subjective views of the stresses they were exposed to from a given list.

Some bus drivers were also observed as they worked, and common rooms and depots were inspected. The SPA-S method ('Screening psychischer Arbeitsbelastungen'), a monitoring/ interview method of screening for stress, was used to assess the levels of stress suffered by bus drivers. This is a method can be used to review performance over time.

At the end of the inspection, targets for stress reduction were recorded in writing and agreed between the labour inspectorate's physicians and the appropriate management personnel in each company. Any breach of employment protection regulations was dealt with by including additional targets in these agreements. Target dates were set for putting the agreed stress-reduction measures into effect.

Instruments of investigation

Methods of investigation included both tried and tested conventional procedures and methods that were developed, tested and adjusted to suit the specific situation and context of bus services.

The SPA-S method was used to analyse and rate work-related stress. This method was developed at the University of Potsdam as a combined monitoring/interview tool for use by specially trained personnel, including labour inspectors from the Bavarian, region, public accident insurance officers, occupational physicians and safety engineers. The SPA-S method rates 37 defined job characteristics that can be allocated to the following five criteria:

- Job control
- Complexity / variability
- Job demands, including skills and training
- Extent/level of hazards/risks faced. Consequences of making errors
- Difficulty of working conditions for carrying out the work.

The SPA-S method results in four categories of job classification:

- 'No stress'
- 'Stress possible'
- 'Stress probable'
- 'Stress highly probable'.

These classifications help to identify the scope and priority of preventative and control measures that might be needed.

A questionnaire, 'Psycho-mental disorders in bus drivers of public passenger transport' ("Psychomentale Fehlbelastungen bei Busfahrern im ÖPNV"), was developed for interviewing

employees within the companies concerned. It consisted of a series of questions about the following:

- OSH management in the company
- Working hours, and driving and rest times
- Questions about work organisation and ergonomics
- Absenteeism, health and driving ability
- Measures for stress optimisation/reduction and health promotion.

List of work-related stress items for rating by bus drivers. Drivers were then asked to rate the main causes of stress that had been identified through prior investigation, for example: climatic conditions (heat, cold), time pressures, responsibility for the passengers, etc. The bus drivers classified their stress as 'low', 'average', 'high' or 'very high'.

Results of the investigations

This project identified a high level of stress among public passenger transport drivers, and these results were confirmed by all methods of investigation. In more than 90% of cases, the SPA-S screening method detected 'psychological stress'. Limited scope for being able to make their own decisions, risky work situations and the irrational behaviour of some passengers resulted in stressful situations for bus drivers. In discussions with managers, labour protection experts and workers, it was agreed that the role of bus driver was highly stressful.

The drivers gave their highest stress rankings to the need for continually high levels of alertness, and responsibility for their passengers. These were followed by climatic conditions and time pressures.

Driving within cities was considered more stressful than driving cross-country, because of the increased likelihood of vandalism, or of encountering volatile and violent passengers, especially at night. City bus drivers were more likely to have to deal with problematic locations, traffic density and increased time pressures, especially during the day. Cross-country passengers were described as uncomplicated, traffic density was low and there were fewer unexpected problems. The bus drivers rated such drawbacks to their jobs as restricted career opportunities, monotonous work and limited communication with other drivers as low stress level factors.

As a result of the on-site investigations and discussions with management and bus drivers, 37 of the 39 companies signed up to target agreements which set out concrete steps and measures for relieving stressful situations. In only two companies was there felt to be no need for target agreements.

Outcome and evaluation

The campaign led to the drawing up of plans for action which included:

- Including stress in risk assessments
- Documenting risk assessments
- Strategy for dealing with post-traumatic stress disorder
- Surveying and consulting employees
- Devising stress management seminars
- Setting up an advisory board for psychological stress
- Stress management sessions for drivers who have been involved in severe accidents
- Creation of innovative, stress-reducing service schedules
- Installing sufficient lavatory facilities for drivers.

Problems faced

- Arranging the appointments with the drivers during work time
- Interviews were time-consuming
- Initial lack of cooperation from both company management and drivers

Success factors

- Eventual participation of all relevant groups
- Ensuring all relevant groups understood the purpose of the study from the start
- Convincing management that reducing drivers' stress would reduce business costs
- Clear standardised categories of investigation criteria
- Thorough investigation of the specific situation, taking a holistic approach including work organisation and service delivery issues
- Adapting tools and actions to the context of bus transport
- Agreements and target-setting with bus companies.

Transferability

The project could be applied in any public passenger transport sector.

Further information

Regierung von Oberfranken

-Gewerbeaufsichtsamt-

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3.3.5. Stress prevention for urban bus/tram drivers, Germany

Organisation(s): Institution for statutory accident insurance and prevention in the railway, metropolitan railway and tramway (Berufsgenossenschaft der Strassen-, U-Bahnen und Eisenbahnen (BG-Bahnen)), Hamburg

Berufsgenossenschaft für Fahrzeughaltungen (BGF) (BG for vehicles), Hamburg

Deutscher Verkehrssicherheitsrat (German Safety Board)

Key points

- Stress prevention training for drivers
- Computer-based training
- Specific to bus/tram drivers and the situations they encounter, including simulated driving situations
- Included improving drivers' decision-making and helping them feel more in control
- Participation and partnership during development

- Seminars with experienced trainers to introduce the training method to drivers who may be unfamiliar with computer-based learning

Introduction

Computer-supported stress prevention training for bus and tram drivers was developed. The employers involved were BG-Bahnen, BGF and the DVR, supported by the University of Erfurt, the RWTH Aachen and the TT-C. Urban transport companies Dresdner Verkehrsbetriebe AG, Pinneberger Verkehrsgesellschaft mbH, Regionalverkehr Dresden GmbH and Stuttgarter Straßenbahnen AG provided feedback on the functionality, practicality and relevance of the resource. The computer-based training programme was developed taking account of media education and work psychology principles. An important aspect was its suitability for adult learning. A special feature of the introductory training seminars is the initial involvement of an experienced and specifically skilled trainer.

Background

Driving urban buses and trams makes great demands on drivers. They have to keep to a timetable and yet be friendly and helpful to customers. They carry a heavy burden of responsibility for keeping their passengers safe and must handle their vehicle confidently and expertly. Because it isn't always possible to carry out all of these duties equally well, urban transport drivers are frequently exposed to work-related stress.

Constant stress damages health and can lead to serious problems such as cardiovascular disease, sleep disorders and gastrointestinal problems. In extreme cases, drivers can be left unable to do their job. To deal with this, a stress-prevention programme was developed in close cooperation with transport companies and their drivers.

Aim

- To educate drivers about stress and how it escalates
- To help drivers to identify the stress in their working lives
- To improve drivers' decision-making and help them feel more in control, reducing stress as a result.

Scope

The computer-based training (CBT) programme was designed specifically for drivers and presented by an experienced trainer.

CBT has certain advantages: it allows proficiency levels and learning speed to be individually adapted to each participant; it also makes it possible to show interactive simulated driving scenarios. Because participants can easily recreate stressful situations in the safety of a computer suite, their motivation to learn is enhanced.

The programme has two sections. The first contains information about how stress is caused and how to avoid it, and a final test. The second section is an interactive exercise – there are different editions for bus drivers and tram drivers respectively – that confronts the drivers with stressful situations such as conflict with passengers, issues at bus stops, or critical traffic situations shown in real or computer-generated pictures. Dealing with complex situations with

multiple stressors, e.g. passenger problems in critical driving situations, is also covered in the training exercises.

The participants learn:

- To anticipate critical driving situations
- To react appropriately
- To cope better with complex problems.

Outcome and evaluation

The first training seminar took place in 2003. From 2003 until 2008 the programme was used by 274 companies. In all, 58 seminars were conducted, 38 for driver training and 20 to instruct trainers. A total of 623 people attended the seminars: 415 drivers and 208 trainers.

This type of training has been shown to be effective in both bus and tram companies particularly as it enables the use of simulations of real-life problems and can be used in a flexible way according to individual learning speed.

Problems faced

- Older drivers sitting in front of a computer for the first time
- Foreign employees with limited second language ability
- A need for experienced trainers with appropriate skills.

Success factors

- A precisely defined target audience
- Different seminars tailored to the differing needs of bus and tram drivers, with the use of simulated real-life situations faced by drivers
- One-day seminars which were cost-effective for employers
- Being able to run seminars near company premises
- Small training groups – no more than 12 people per seminar
- Two trainers per seminar
- Feedback after every section of the training.

Transferability

This is a computer-based training programme, and the concept could be transferred to other transport services with appropriate modifications to reflect differing company cultures and structures.

Further information

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3.3.6. The workplace (cab) of urban bus drivers, Germany

Organisation(s): Berufsgenossenschaft der Strassen-, U-Bahnen und Eisenbahnen (BG Bahnen), Hamburg

Key points

- The ergonomic improvement of the driver's area (cab) on buses.
- Based on extensive investigation, the development of a specification sheet for the driver's cab.
- Involvement of manufacturers, bus companies and various technical institutes.
- Versions of the specification for different types of buses.
- Review and modification of specifications after one year of testing by drivers.

Introduction

Several technical institutes, vehicle makers, transportation companies, associations and organisations collaborated on a project to investigate the design of the driver's work station on urban buses. Severe problems were discovered and solved, making the driver's area much more comfortable.

Background

Investigations found that high levels of physical and mental stress were being caused by the poor ergonomics of the area around the steering wheel of urban buses, including the design of the seat, the placing of equipment and controls and the amount of space allotted to the driving area. As a result, a research project entitled 'Driving areas on urban buses' was launched to find out how working conditions could be improved for the driver.

Aim

- To develop an ergonomic and technically optimised blueprint for the driving area
- To reduce mental and physical stress.

Scope

The following organisations were involved in the project:

Institutes:

- Institut für Kraftfahrwesen (ika), RWTH Aachen
- Institut für Arbeitswissenschaft (iaw), RWTH Aachen
- Berufsgenossenschaftliches Institut für Arbeitssicherheit (BIA)

Vehicle makers:

- EvoBus GmbH (Mercedes, Setra)
- MAN Nutzfahrzeuge AG
- Neoplan, G. Auwärter GmbH & Co.

Transport companies:

- Vestische Straßenbahnen GmbH, Herten
- Verkehrsbetriebe Stadtwerke München
- ASEAG, Aachener Straßenbahn- und Energieversorgungs-AG
- Verkehrsbetrieb Stadtwerke Ulm/Neu-Ulm GmbH

Associations:

- VDV, Verband Deutscher Verkehrsunternehmen
- VDV-AVM, Ausschuss für Arbeits- und Verkehrsmedizin im VDV
- ÖTV, Gewerkschaft Öffentliche Dienste, Transport und Verkehr
- AGV, Vereinigung der kommunalen Arbeitgeberverbände e.V.
- Arbeitgebervereinigung öffentlicher Nahverkehrsunternehmen e.V.
- UITP, International Association of Public Transport

Institutions:

- Berufsgenossenschaft der Straßen-, U-Bahnen und Eisenbahnen
- Fachausschuss 'Verkehr' beim Hauptverband der gewerblichen Berufsgenossenschaften e.V.

The project was managed and funded by the Berufsgenossenschaft (Institution for Statutory Accident Insurance and Prevention) and the vehicle makers.

The specification sheet developed for bus driving areas as a result of this project is based on scientific concepts worked out by the Institute of Automotive Engineering (Institut für Kraftfahrwesen; IKA), the Institute for Applied Work Science (Institut für Arbeitswissenschaft; IAW) and the Institute for Occupational Safety and Health (Berufsgenossenschaftlichen Institut für Arbeitssicherheit; BIA). It contains the results of project work group discussions and the deliberations of the steering committee.

A functional prototype based on these concepts was built at the IKA and tested by bus companies in the vehicles of the three bus manufacturers. It was used on scheduled services by drivers who were asked to evaluate it from their point of view.

The new specification was based on sound scientific practice, relevant directives and standards requirements regarding drivers' cabs such as EG/ECE, StVZO, and accident prevention regulations (Unfallverhütungsvorschrift 'Fahrzeuge' (VBG 12)). All aspects of the specification need to be fully applied in practice in order to ensure that the driver's cab is a safe and healthy workplace.

The specification is intended to be adapted according to the type of bus. Exactly how the specification is applied depends on the type of bus and the operating conditions of each bus. The basic ergonomic and technical principles need to be adapted and fine-tuned. Therefore

different versions of the specification have been produced for different types of buses. The specification is valid for the driving cabs of of low-floor urban buses and low-floor overland buses. And the adjusted requirements can also be applied to high-floor- and mid-floor-buses. The configuration of the driving area must also be adapted to the particular space constraints of each bus design.

One year after adopting the new driving area, transport companies had many observations to make based on drivers' first-hand experience.

Vehicle makers and transport companies discussed these suggestions and further consultation followed in October 2000. Modifications and additions to the specification sheet were made as a result of these discussions.

The specification sheet sets out:

- A reference system for dimension data
- General requirements for the driving cab area and optimum design standards for:
  - The driving seat
  - Pedals
  - Steering
  - Visibility
  - Monitoring and information instruments
  - Operating controls
  - Cash desk, ticket printer and RBL (rechnergestütztes Betriebsleitsystem (computerised operation control system))
  - Heating and ventilation
  - Minimising interior noise.

Outcome and evaluation

Ergonomic improvements usually show their effects over time; however:

- The transport companies are now convinced that contented drivers in an optimised working environment work better and more effectively
- The experience in the transportat companies is that the rate of absenteeism will decrease with the improvement of working conditions.

Problems faced

- The interests of the vehicle makers and the transport companies did not coincide, because the manufacturers were keen to include every suggested improvement without considering transport companies' costs
- Costs increased with every additional ergonomic improvement
- Companies did not like losing two passenger seats to create a larger driving area because this meant losing revenue
- Driver seats with memory functions and computer chips were expensive
- It is difficult to control heating and ventilation in an area so close to the constantly opening and closing front door of the bus.

Success factors

- Partnership approach with bus companies and manufacturers working with ergonomic experts

- Clear and precise specification sheets were drawn up – which take account of the need for variability depending on the precise type of bus
- Extensive test period in real conditions of cabs designed to the new specification by drivers, followed by modification of the specification based on the drivers' experiences

Transferability

The specifications are relevant to all bus cabs.

Further information

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3.3.7. Holistic risk assessment of drivers in the public transport sector – evaluating driver competence tests, Greece

Organisation(s): ELINYAE

Key points

- Development of a holistic approach to the risk assessment of drivers' duties.
- Investigating the system for assessing drivers' fitness to do their job in order to set minimum health requirements, taking into account actual working conditions and the skills that drivers need to fufill their duties.
- Accessing ongoing training for drivers, which is also an important element of keeping them safe on the road.
- Involvement of drivers in the investigation.

Introduction

There are many pressures on transport services created by the nature of urbanisation and the work of the professional driver is not only complex but also dangerous, especially when mental, physical and emotional strain on drivers leads to human error. Drivers are involved in a variety of accidents. They are also exposed to various health and safety hazards, some physical and ergonomic, some chemical or biological. They had been involved in a variety of accidents. So many variables mean that a holistic approach to the risk assessment of drivers' duties is needed.

There is a general debate in Greece about the efficiency of the country's current system for controlling competence and fitness to drive. Any system for assessing drivers' fitness to do their job must set minimum health requirements, taking into account actual working conditions and the skills that drivers need to fulfil their duties. Ongoing training for drivers is also an important element of keeping them safe on the road.

Therefore the Hellenic Institute for Occupational Health and Safety (ELINYAE) carried out an investigation into potential health and safety hazards, with the aim of developing a holistic model for risk assessment and examining the system for controlling driving competence.

Background

The Hellenic Institute for Occupational Health and Safety (ELINYAE) carried out a study of ETHEL, the bus company operating in Athens and Thessaloniki. This was part of a more comprehensive study conducted by ELINYAE to assess the occupational hazards of urban transport in Greece. This study was funded by the European Union (75%) and by ELINYAE (25%).

The approach used was holistic, incorporating occupational hygiene measurements and medical and laboratory control. Suggestions were made about how to reform the system for checking drivers' competence.

Aims

The main aim of the study was to investigate the working conditions of those employed in the urban transport system and to develop a risk-assessment model. As an additional benefit, it was hoped that these results would feed into concrete improvements in the way that drivers' medical competence is assessed and checked across the entire transport system of Athens, including the metro and trolley bus services.

Scope

This study was designed to assess current working conditions on city buses.

The study was carried out in four phases:

1. Literature review and accident analysis
2. Field study
3. Medical and laboratory tests
4. Suggestions to improve the system for ensuring that drivers are competent

In the first phase, research was carried out to gather basic information about the urban transport system. This included an inventory of the urban transport system and its employment data, a review of relevant legislation, modes of transport and occupational accidents, and of best practice health and safety strategies. The second phase was the main part of the study. It included:

- The completion of subjective questionnaires: drivers were asked to record their perceptions of the health and safety hazards they faced at work.
- Occupational hygiene monitoring.
- The development of a model for assessing and preventing occupational risks.

1. Literature review and accident analysis

Between 1998 and 2001, 1,209 occupational accidents were recorded in Greece's urban transport sector. This represents 1.7% of the total number of occupational accidents for the same period (69,578 accidents).

The following accident analysis covers the regions of Attica and Central Macedonia on which the study was focused, and where 97% of the urban transport accidents involved male drivers. Crashing into other vehicles or objects was the most frequent accident (35%); followed by those caused by falling objects (22%). Falls formed the other significant category of injury; falls from height (16%) and falls or trips on level surfaces 15%.

87% of accidents happened during working hours and the remaining 13% while commuting to and from work. In the four-year period reviewed, fatal accidents constituted 0.6% of the total.

Table 1 presents occupational accidents and incidence rates of accidents over the four-year period.

Table 1: Occupational accidents and incidence rates of accidents

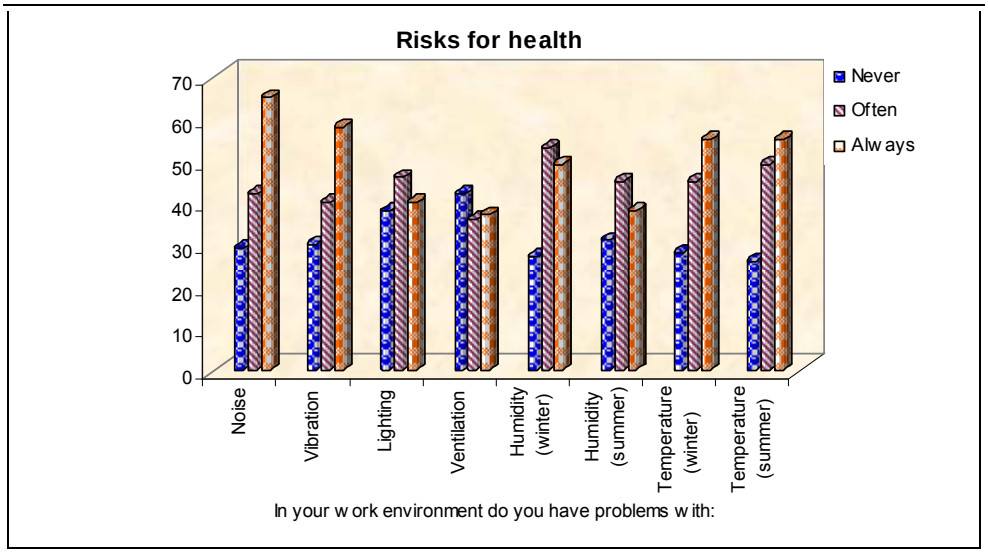
YEAR	Athens, Thessaloniki, Transport sector			Total accidents in all sectors and country		
	Working accidents	Number of employees 12/2002	Incidence rates per 1,000 workers	Working accidents	Employment 12/2002	Incidence rates per 1,000 workers
1998	251	20,747	12.10	340	31,062	10.95
1999	231	20,747	11.13	309	31,062	9.95
2000	201	20,747	9.69	277	31,062	8.92
2001	206	20,747	9.93	283	31,062	9.11

2. Field study

Subjective questionnaires

A questionnaire asking personnel to report their perceptions of OSH hazards in their working environment was distributed to 140 bus drivers in Thessaloniki (91% men and 9% women) with an average age of 43 years. Figure 1 shows the results.

Figure 1: Subjective findings on OSH hazards in bus drivers



It is worth noting that a significant percentage (75%) of workers stated that there was inadequate information and a general lack of training on matters of health and safety at their workplace. 85% of workers reported that the pace of work was intense. A high percentage, 79%, felt they had many other responsibilities in addition to their driving duties. Almost 36% reported occasionally suffering from mental stress and 46% reported constant mental stress. The percentage of workers who occasionally suffered from insomnia was extremely high (49%).

Occupational hygiene measurements

Noise and vibration measurements

Measurements were made for noise and vibration levels, light intensity, carbon monoxide levels and for pathogenic and non-pathogenic micro-organisms.
The measured noise levels did not exceed the limit value of 87 dB(A) at any point. However, all the measured values were above 55 dB(A), which is the maximum allowed by ISO Recommendation 1971, 'Estimation du bruit par rapport aux reactions des collectivities', for an intellectual work environment.

Vibration levels at the driver's seat were measured while the bus was in motion. The results were within the limits set by Greek legislation and there were no significant differences between new and old vehicles.

Carbon monoxide measurements

Carbon monoxide (CO) concentrations were found to be below the threshold limit values (TLVs) of 50 ppm, as required by Greek legislation. According to the American Conference of Governmental Industrial Hygienists (ACGIH) guidelines, published in 2007, the limit value for CO should be set at 25 ppm and levels were also below this value. However, the results showed increased levels in the mornings and the afternoons, between 9am and 10am and 1pm to 3pm respectively in areas of heavy traffic.

3. Medical and laboratory tests

During the study's third phase, a sample group of drivers took part in medical and laboratory tests.

Blood tests for a biological indicator of the presence of carbon monoxide in the body, carboxyhaemoglobin (COHb), were carried out on a sample group of 146 drivers. The results showed a mean value of 2.29% for the indicator, with a standard deviation of 1.90%. These levels, although lower than those suggested by ACGIH for occupational exposure, indicate that drivers are exposed to CO pollution in the atmosphere. For smokers, the levels of COHb were three times higher than in non-smokers.

Spirometry tests were carried out on 100 bus drivers to investigate potential damage to the respiratory tract. A statistical assessment was made of the exhaled vital capacity (FVC), the violently exhaled volume of air in the first second (FEV_1) and the indicator FEV_1/FVC. The results refer to the percentage deviation from the expected value according to the sex, age and height of the driver. The normal levels for the three values are set to 80%.

No significant difference was found between smokers and non-smokers. A statistically significant difference for all three values was found between those aged between 20 and 40, and those aged 60 and over. There was also a statistically significant difference for values FEV_1 and FVC between those who had been working on buses for less than 10 years, and those who had between 20 and 30 years' service. The values rose as years of service increased.

Tests for obstructive sleep apnoea syndrome were also conducted for a selected sample of 34 overweight drivers with an average weight of 115.64 kg. Only 14.7% did not suffer from the syndrome, while 44% suffered mild symptoms and 38·2% severe symptoms.

4. Suggestions to improve the system for testing and checking driver competence

Finally, in phase four, the existing national system for testing and assessing driver competence was examined to assess its effectiveness, taking into account actual working conditions revealed by the study. The aim was to detect shortcomings in the existing regulatory framework and to suggest improvements that would ensure that suitably qualified drivers were competent to carry out their duties.

Currently ETHEL's internal health and safety department conducts medical check-ups on its drivers, covering pathology, orthopedics, cardiology, ophthalmology, urology, otolaryngology, diagnostic imaging (thorax F+P), microbiological tests and Vienna psychometric testing. The physicians in the prevention service are responsible for declaring employees fit to drive.

When drivers fail their medical because of health problems, as outlined in the Greek Common Ministerial Decision KYA 1205/2003, they are referred by the Medical Service of ETHEL to the Secondary Sanitary Committee of the Ministry of Transport and Communication. The committee decides whether the driver's professional licence should be withdrawn.

The review of the ETHEL medical service's records and the findings of ELINYAE's urban transport field study led to the following observations:

1. In the 50 to 55 age group, internal medical records showed:

- health problems incompatible with public transport driving, as determined by KYA 1205, for 8.6% of drivers
- health problems compatible with driving, as determined by KYA 1205, that increase morbidity for 19.6% of drivers.

2. In the 55 and over age group, internal medical records showed:

- health problems incompatible with driving, as determined by KYA 1205, for 33.3% of the drivers
- health problems compatible with driving, as determined by KYA 1205, that increase morbidity for 27.4% of drivers.

The study revealed that almost 42% of drivers of all ages have health problems incompatible with driving. That means that the existing medical check-up system is not regular enough to ensure that drivers are always fit to drive safely. There is therefore a need to reform the system of medical check-ups across the whole urban transport system. The system of drivers' medicals should also be more homogeneous and systematic, and should take into account the findings of other recent studies. The timing of medicals should be tailored to the needs of different age groups. Those aged 45–55 should be examined every 2 years, those aged 40-45 every 3 years, and those under 40 every 5 years.

Finally it is proposed that a centralised system of recording and certifying the occupational health of drivers in urban transport systems is needed to ensure:

- The homogeneous and systematic medical assessment of professional drivers in the urban transport system
- The reliability of medical assessment
- Reassurance for passengers that buses are safe.
- That preventive medicine is put into practice for professional transport drivers.

Outcomes and evaluation

Following the risk assessment, recommendations were made to improve working conditions at ETHEL, some of which were accepted by the management. It was suggested that the observations and conclusions of the study could be used to conduct seminars for drivers. Suggestions for assessing driver competence were also offered and as result ETHEL's driver medical now includes a test for sleep apnoea syndrome.

Problems faced

The subjective questionnaire was generally well accepted by the majority of the drivers, but some were not able to participate, citing intense working schedules and a lack of spare time. The aim of transforming the existing system of medical assessment for all urban transport

drivers has not yet been realised. Additional medical checks, such as investigating for sleep apnoea syndrome, have only been introduced by ETHEL.

Success factors

The dynamic participation of the workers in this study is considered by far the biggest factor in the success of this study. This enabled ELINYAE to compile a comprehensive record of the health and safety problems in the urban transport sector.

Transferability

The approach used to conduct this study could be used as a guide for the assessment of occupational hazards in any urban transport system because it builds up a holistic picture of the problems encountered in this sector. Extended medical tests for drivers, such as preventive detection of sleep apnoea syndrome, can also be transferred to other European transport companies.

Further information

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3.3.8. Renovating bus terminals for comfort, Hungary

Organisation(s): Budapest Transport Ltd.

Key points:

- Regulations on workplace welfare required new and improved facilities in bus terminals.
- Welfare standards set for bus terminals.
- Systematic planned renovation of old terminals takes into account drivers' comfort issues.
- Workers' involvement in the design of rest areas helps maximise satisfaction.
- Interim arrangements for staff amenities while renovation is in progress.

Introduction

This case study examines bus terminal renovations. These buildings are an important part of drivers' working environment because they spend their rest breaks there: terminals are places where city bus drivers eat, use the toilet, spend work breaks, and meet each other. The comfort of terminals has an important effect on how satisfied bus drivers are with their working circumstances. The Budapest Transport company has introduced certain standards for terminals and involves workers' representatives in the renovation process.

Aims

- Providing adequate conditions adapted to the needs of workers who spend few of their working hours inside a building.
- Compliance with standards – those set by the company, and OSH guidelines and legislation.

Background

The Budapest Transport Company (Budapesti Közlekedési Vállalat Zrt.) is the leading public transport company in Hungary. It carries 78% of the public traffic in Budapest and plays an important part in linking the transport system of the surrounding areas to the capital. It employs around 3,200 bus drivers who put in more than 7 million driving hours and travel 7 million kilometres each year, transporting 574 million passengers. It currently runs 221 routes from 76 terminals.

Bus terminals provide facilities that satisfy the welfare needs of bus drivers: relaxing, eating, going to the toilet. Demands for higher standards of comfort and stricter OSH guidelines and legislation have led to a push towards adapting and terminals. Many terminal buildings require wholesale renovation and where this is the case fully equipped portable cabins are provided while the renovations take place. This case study deals with a building renovation project.

Scope

Workers were involved in the development of the renovation plan. Between 2007 and 2008 an agreement was drawn up between the company management and trade unions about the main criteria for the redevelopment of the bus terminals. Budapest's city assembly, the owner of the transport company, accepted the plan. There are many terminals awaiting reconstruction and some have been almost untouched for 30 or 40 years. Priority is given to terminals whose surroundings are being refurbished as part of a regeneration scheme and to those in the poorest condition. Company and workers' representatives agree on which schemes fit the available budget.

Projects can be launched either after a request from the site management or following a safety inspection. Arrangements with workers' representative bodies speed up the initiating process. A preliminary site visit takes place and specific tasks are listed. An occupational health and safety executive is always present to ensure that OSH concerns are taken into consideration. The planned redesign is submitted to the authorities concerned. After any modifications and approval, work can begin.

The main aims of the current project are to:

- Provide comfortable temperatures and air quality even during hot summer weather and cold winters
- Provide alternative drinking sources such as soft drink machines
- Providing kitchen facilities where workers can prepare a hot meal in comfortable conditions.

Usually the entire building is completely renovated, including the installation of new toilet and shower facilities. The old cooking facilities are replaced by microwave ovens, and changing facilities and lockers are also updated.

When renovation closes the terminal buildings, a fully equipped portable cabin is provided until work is finished.

The company has set up a contract with a 24-hour supply service which replenishes stocks of consumables and keeps the areas well maintained.

The renovation project is an ongoing process, updating terminals one by one with an annual budget of about HUF100 million (EUR355,000). The company also uses the same approach to planning drivers' rest areas when building brand-new terminals.

Outcome and evaluation

During 2007–2008 six terminals were completely renovated (4 bus or shared terminals, 1 trolley bus terminal, 1 subway terminal) and had air conditioning systems installed. Another 58 terminals were equipped with air conditioning systems, most of them bus stations.

Problems faced

The project can run out of money before the year's scheduled renovations have been finished when unforeseen costs exceed the budget. Some terminal buildings are national monuments and modifications have to be strictly controlled, adding to bureaucratic difficulties, and the special architectural solutions these buildings often need also increase costs. Building permits are issued by local and district government bodies and it can be a complicated process to reach agreement with them where special conditions are imposed.

The current restructuring of the public transport system of Budapest is posing further challenges. The new system has combined old routes to form longer ones. The significant increase in the duration of each route makes it even more important to ensure that drivers have good facilities at their journey's end.

Success factors

The main success factors are:

- A centralised development plan and budget, setting a rolling programme, which has driven the consistent progress of the renovation project
- Cooperation with workers' representatives, helping to identify 'hot spots' that need urgent attention and to set priorities.

Transferability

Any company that has many buildings which provide facilities for mobile workers can adapt this approach.

Further information

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3.3.9. Integrated traffic management system, Hungary

Organisation(s): Budapest Transport Ltd.

Key points

- An interactive traffic management system to enable public transport to function more effectively in heavy city traffic.
- The system helps to make time schedules more predictable and routes swift – both of which are crucial for passenger satisfaction, which in turn reduces driver stress.
- An integrated traffic management system can enhance the working conditions of drivers.
- Features that help reduce stress and violence to drivers include: control centre emergency alert system in cabs (panic button); direct communication with the traffic

management centre; and systems that give public transport vehicles priority in heavy traffic.

Introduction

Public transport needs an interactive traffic management system to function effectively in heavy city traffic. Predictable time schedules and swift routes are crucial for passenger satisfaction and an integrated traffic management system can enhance the working conditions of drivers. An alert system for drivers to use in emergencies, direct communication with the traffic management centre, and systems that give public transport vehicles priority in heavy traffic reduce stress for bus drivers because they give the reassurance of a reliable support network and keep services moving even in peak travel periods.

This case study presents the occupational health and safety aspects of a centralised traffic management system. Passengers see a transport service that performs more efficiently because of such systems, but drivers also see improvements in their working conditions.

Aims

- To introduce a traffic management system to help solve public transport problems caused by technical difficulties and traffic build-up swiftly in order to keep bus traffic flowing, and to provide accurate information about bus arrival times, for the benefit of passengers.
- To reduce stress in drivers by allowing them to maintain continuous interactive communication, which provides them with information and support.
- To give drivers quick and direct contact with the control centre in emergencies.
- To use the data collection facilitated by the system to help identify and recommend improvements in the city's traffic system and to revise timetables.

Background

Since the 1990s, the volume of traffic in Budapest has increased. The capital has 2 million inhabitants, and with public transport under increasing pressure, comprehensive and effective traffic management systems were vital. These systems make it possible for passengers to reach their destination in comfort, swiftly and safely, but they can also optimise the working conditions of drivers, minimising stress and reducing a driver's burden of responsibility. The introduction of modern information technology systems has offered an opportunity to alleviate all the problems caused by increasingly heavy traffic.

Several different systems have been introduced by Budapest Transport Ltd as technology has developed.

Scope

Budapest now has several different systems which have been introduced at different times, complementing one another. The aim of the bus terminal traffic management system, first introduced in 1987, was to keep services on time. The Automatic Line Observer (Automatikus Vonalmegfigyelő; AVM) has now replaced this system. The AVM network currently handles 750 vehicles and the European Union has provided funds for DIR (Diszpécser Irányító Rendszer; DIR), a dispatcher control system which is AVM's successor and is now installed in 1,550 vehicles.

The system's control centre is staffed by 15 workers per shift. They can monitor the whole complex traffic situation in the capital and give direct orders to any driver. Communication is mostly one way, from the control centre to the driver, although the driver can request a call. An ultra-high-frequency open channel system works alongside the earlier system. The dispatchers get better and more localised information about the position of every vehicle.

Both the AVM and DIR systems give drivers a one-push panic button to alert the control centre to an emergency. The availability of this help line diminishes fear and anxiety. It is not only the quickest and safest way of requesting help in cases of passenger illness but, because it is activated by the driver's foot, it is an excellent way of alerting the control centre to aggressive incidents. Approximately 8–10 justified calls are made to the control centre in this way each month. The panic button opens up a radio link so that the dispatcher hears what is going on and can talk to the driver about the problem. The chief dispatcher can then decide on the required action, such as calling the police, ambulance or fire services as necessary. The company accident inspectors follow up any incidents.

The coordinated systems allow monitoring and recording of traffic safety issues. Traffic managers can work out the most efficient routes for public transport based on the data gathered by the systems and, for instance, provide public transport-only lanes where necessary. The systems constantly monitor the weight of the buses and with this information they can calculate the number of passengers on board at any given time. Buses are automatically tracked so that the centre can send information to electronic bulletin boards at bus stops telling passengers when the next bus will arrive. It is now planned to add the ability to synchronise traffic light changes to the arrival of a bus using GPS tracking data.

he information gathered by the system is also used to make recommendations for improvements to the road traffic system, such as introducing traffic lights at accident hot spots.

Drivers received training during the introduction of the new system.

Outcome and evaluation

These functions are available to drivers on most routes, and the panic button has protected drivers from aggression several times. The stress caused by unexpected situations has decreased, as has the bus company's administrative burden since tasks such as route logging are no longer necessary

Problems faced

At the introduction of the system, drivers felt uncomfortable being tracked continuously. These preconceptions were tackled by training that highlighted the benefits of the system.

Success factors

This was a comprehensive approach to the problem providing a win-win situation in which better service performance and increased passenger satisfaction enhances the psychosocial working environment of drivers.

Transferability

The system can be adapted and tailored to the needs of any transport company with a large fleet of vehicles.

Further information

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3.3.10. Training courses on safety for public transport drivers on CD-ROM; '626 AUTOLINEE' and 'MASCOTTE'(Moderare gli Agenti di Stress per i Conducenti del Trasporto Terrestre – *Relieving Stress Factors for Drivers*), Italy

Organisation(s): INAIL

Key points

- Training and information given by virtual tutors.
- Training of drivers (coaches, minibuses, hire cars, buses).
- Includes maintenance.
- Covers physical risks and psychosocial risk.
- Learning strategies to prevent accidents and injuries and to reduce the risk of work-related illnesses include identification of prevention measures.
- Free products.

Introduction

This case study describes two self-help instruments developed on CD-ROM to train and inform drivers about safety and the prevention of psychological as well as physical problems caused by driving land-based transport. To get the message across, the CD programmes use virtual tours, photographs and film clips of real or reconstructed work environments with the ability to zoom in on features. The CD-ROM also provides oral tuition from a 'virtual tutor'.

Aims

To provide valid training and information tools that can be used for:

- Classroom-based training, during which the various situations presented in the clips contained on the CD-ROMs can be observed, commented on and used as a stimulus for discussion and sharing of experience among workers;
- Self-help sessions in which the driver can learn alone as the CD's virtual tutor or teacher explains both the risk factors in the various scenes presented in the clips and how to identify what action can be taken to prevent accidents.

Background

The body that produced these CD-ROMs, Italy's National Institute for Insurance against Workplace Accidents ((INAIL) Istituto Nazionale per l'Assicurazione contro gli Infortuni sul Lavoro), provides health and safety and accident prevention assistance and consultancy in workplaces with the cooperation of other key public sector organisations, and with employers' associations, the self-employed and employees.

The creation of the training instruments discussed in this case study was triggered by a request from representative associations and unions. They wanted training and information tools aimed at all the people affected by health and safety regulations in the workplace, from safety representatives and safety technicians to directors and managers.

Scope

Two CD-ROMs were developed to provide safety training to drivers.

‘626 AUTOLINEE’ is a training programme with virtual tutors and spoken tuition aimed at the drivers of coaches, minibuses, hire cars and buses. It is also relevant to office-based staff and those responsible for vehicle maintenance. By navigating within real space on the computer screen, photographed or reconstructed, it is possible to zoom in on features and learn the strategies necessary to prevent accidents and injuries, and reduce the risk of work-related illnesses by improving conditions where vehicle maintenance is carried out. The CD is divided into four sections:

- Information about the work risks facing drivers and workplace health and safety regulations. For each risk the health and safety consequences are described and preventative strategies and measures are given;
- A safety-based training programme presented on-screen by a virtual teacher and virtual tutor ready to answer any questions workers may have;
- Simulations (film clips) of real work situations in which the risks and the preventative measures to adopt are highlighted;
- Final tests to assess learning progress.

The CD-ROM ‘MASCOTTE’ (**M**oderare gli **A**genti di **S**tress per i **Co**nducenti del **T**rasporto **Te**rrestre; Reducing Stress Factors for Drivers) offers workers in the sector information about stress, and a specific safety-based training course relevant to seven types of land-based transport – rail, road-based local public transport, trams, underground services, buses, and goods transport for heavy and light goods vehicles. The various choices of training and information programmes are immediately available through a simple, guided on-screen procedure. This means that the CD-ROM can address most of the risks that face drivers of land-based transport, analysing psycho-physical and psychosocial risks in particular. Workers can assess their perception of risks through a programme of interactive tests by gradually learning to identify and prevent them. The video section also features the experiences of other workers and offers examples of best practice to reduce psycho-physical stress. The prevention strategies address organisational measures and individual attitude changes.

For example, the video section shows the most common situations in which passenger transport drivers can sustain musculoskeletal disorders – poor posture, fixed positions, repetitive movements – and gives some suggestions to reduce such risks:

- At traffic lights, to prevent pain in the lower limb joints, put on the handbrake, raise the feet from the pedals and stretch the legs.
- Always keep your back against the seatback.
- When it rains, do not bend forward to see better – move the seat forward instead.

Outcome and evaluation

The products, which are used as a back-up to other training activities, are frequently requested. They are free of charge, and are distributed at exhibitions, fairs and conferences.

Problems faced

The main difficulty was that of creating a product which offered relevant and effective training for drivers, but without being difficult or boring for the user. It was also difficult to create a product capable of both providing safety information and changing some types of driver behaviour.

Success factors

- Valid training techniques used.

- Ease of use.
- Contents relevant to real work situations.
- Enticing presentation.
- Free product.

Transferability

Both the training techniques and the contents are easily transferable.

Further information

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3.3.11. 'Objective – Secure Travelling' and 'Driving in Security' programmes, Italy

Organisation(s): Compagnia di Trasporti Pubblici Spa (CTP [Public transport company]), Naples

Key points

- Action to combat violence against bus drivers.
- Reduction of stress for bus drivers.
- Participative approach involving the company and trade unions.
- Cooperation with police – prevention measures and intervention during incidents.
- Information campaign involving schools and community groups.

Introduction

The transport company for Naples carries around 25 million passengers every year and is jointly owned by Naples City Council and the Province of Naples. In recent years the company has improved efficiency and working conditions, renewed more than 60% of its fleet, and focused resources on skills development, compliance with the 'Mobility Charter', ISO90011/Vision 20000 and SA 8000 certification, satellite localisation system and installing storage and refilling depots for methane gas.

The company has 456 buses and employs 1,972 people, of whom 1,124 are drivers.

Aims and objectives

Combating violence against bus drivers and reducing the stress this causes.

Background

Worried by the persistent increase in offences against buses and their drivers, in 2000 the company management, working with unions, adopted policies aimed at drastically reducing such incidents. The term 'offences' means attacks both on the person, such as aggression, threats, insults or mugging, and on property, including damage and theft.

Scope

The 'Objective – Secure Travelling' programme was introduced in 2000, in collaboration with the Provincial Prefect's Office and the police, and brought about a sharp drop in the number of offences. The intervention programme included both preventative and reactive measures. To help prevent incidents and deter offenders, the reporting of incidents was made swifter and easier by the provision of onboard telephones and mobile phones, programmed with numbers linked directly to the police. To react more swiftly to incidents, police were stationed in high-risk areas and frequent onboard spot checks were carried out by plain clothes police.

In 2003 a second programme was introduced, 'Driving in Security', which adopted a joint approach with the unions on safety. From internal discussion to the establishment of an ad hoc safety committee, the transport company managed to start a process of transformation that accelerated the fall in offences through technological, organisational and support measures (see table).

Table 2: Driving in Security

Prevention	***Repression***	***Assistance***
Geolocalisation (1) Onboard video cameras on more than 100 buses (1) Mobile phones on all vehicles (1) Aggression-proof drivers' cabins (1) Local community meetings, school training (2) Cultural mediation activities with involvement of charity organisation (2) Training for employees (2)	Police presence on board (1)	Immediate assistance after the offence (3) Psychological assistance (3) Medical assistance (3) Legal assistance (3) Economic assistance (3)

(1) Technical measures (2) Organisational measures (3) Assistance measures

Cultural mediation activities consisted mainly of an information campaign designed to combat violence against buses and bus drivers. The campaign was promoted through:

- Local community information meetings for citizens about violence against bus drivers and the preventative measures adopted
- School information meetings for children aged between 8 and 10 through a playful multimedia communication project
- Informative posters displayed on buses, at information points and bus stops
- The distribution of leaflets and pictures reminding passengers of the proper uses of the public bus service

As can be seen from the table, a variety of preventative measures were tried. On the one hand, some initiatives provided technical instruments to enhance for driver safety. On the other hand, awareness-raising activities promoted both within the company and in the community played an equally important role in reducing offences, as did training to increase employees' conflict-management skills.

Outcome and evaluation

The fall in the number of offences from 548 in 1998 to 38 in 2003 is testament to the effectiveness of the initiatives.

Problems faced

There were some difficulties in getting the various key players – law enforcement agencies, the company, unions, and safety representatives – to cooperate and interact in concert, in order to create a feasible and effective action plan.

Success factors

The Compagnia di Trasporti Pubblici Spa (CTP) of Naples is a good example of how social dialogue within the work environment has contributed to improving work conditions. Taken together, the two programmes highlight how effective such interventions can be when there is interaction between the preventative and reactive aspects of social dialogue. Concerted synergy between deterrent measures, such as the ability to call for assistance quickly, and the powers of the police and legal system to punish offenders, combined with collaboration with the community and drivers' representatives, creates a powerful force for change.

Transferability

The measures and approach could be transferred to other public bus companies of a similar size.

Further information

http://www.ctpn.it/dettagliprogetti.asp?ID=79&TIPO=GLI

3.3.12. Draw the line ('Trek die lijn'), the Netherlands

Organisation: HTM Personenvervoer N.V., The Hague (passenger transport company)

Key points

- Prevention of violence by schoolchildren.
- Organising educational programs outside schools.
- Active participation of students in finding solutions, involving theatre.
- Involving users of public transportation.
- Reactive instead of repressive measures.
- Constructive cooperation – various partners.
- Schools become jointly responsible for pupil behaviour.
- Pupils involved in 'policing' peers on buses.

Introduction

HTM Passenger Transport NV is an independent transport company although the municipality of the Hague holds 100% of the shares. The company transports more than 133 million passengers a year on buses, trams, light rail and private transportation. The project 'Draw the line' was introduced to promote community security by involving the youths causing problems at stations in the search for a solution.

Aims

- HTM aimed to promote community security by working with partners to combat vandalism and aggression caused by school pupils.

Background

An area known as Escamp in the Hague became a hot-spot for difficulties with youths behaving badly. HTM's tramlines 8 and 9 were responsible for carrying students to and from two large comprehensive schools, each with approximately 1,700 students. Common problems caused by some students included:

- Serious nuisance, vandalism and aggression
- Undesirable group behaviour
- Tram surfing, the unnecessary pulling of emergency stop handles and fare-avoidance.

Tram drivers on these routes had higher than average sickness absences, and other passengers using the trams or living near the tram stations had very negative perceptions of the services.

Isolated remedies, tackling each problem individually, did not work. An all-encompassing strategy was needed that would deal with perpetrators and address the needs of all those, public and staff, who were being affected by the problems.

Scope

In trying to find a solution to the problem HTM funded the 'Escamp Community Security Partners' Platform'. Several stakeholders were involved, including:

- HTM Personenvervoer N.V.
- Escamp
- Police department Haaglanden (The Hague)
- Local authorities Haaglanden (The Hague)
- 'Formaat' Foundation
- HALT Haaglanden
- Thomas More Overvoorde College (Terra)
- Stevin College (Terra)
- Hofstad College

With the help of these partners a number of measures were drawn up to combat vandalism and aggression caused by school pupils. These included:

- Making schools jointly responsible for the behaviour of their students
- Involving the other users of public transportation
- Organising cohesive cooperation between all the people concerned

There were two goals: to improve community security by increasing awareness and by improving the mutual respect between travellers, staff, schools and the transport company, HTM. To achieve this, the following measures were taken:

- Organising educational programmes outside schools
- Seeking the active participation of students in finding solutions
- Involving users of public transportation
- Focusing on preventative, rather than repressive measures
- Encouraging constructive cooperation

Programme 2002

In 2002 several initiatives were launched to roll out the 'Trek die lijn' ('Draw the line') programme.

Research was carried out to ask students, travellers and school and HTM staff what they thought about community security. HTM translated the results into the interactive theatre programme 'Car-sick'. This was done by involving a theatre group from the 'Formaat' Foundation. The first production was staged on 21 November 2002 and included 550 students. The actors were employees of the 'Formaat' Foundation, HTM and the students themselves.

As a result of this performance, the students themselves drew up 12 behaviour rules themselves, which were tested by 36 'pioneers'. These 12 rules were:

1. No drugs, smoking or drinking on the tram
2. No physical violence of any sort
3. Bags and other bulky objects to be placed under the seat, not taking up space on an empty seat
4. Have consideration for the elderly
5. Keep doors free for entry and exit
6. Respect each other
7. Leave other people alone
8. Do not damage others' property and respect the tram
9. Do not encourage fighting and keep things calm
10. Throw litter in the bin
11. Ask before touching other people's property
12. No dogs on seats

An element of self-policing of the rules on the buses has been introduced. Abusers of the transportation system are addressed by the students themselves.

Programme 2003

In 2003, HTM looked for new forms of cooperation and ways of extending the 'Trek die lijn' programme nationally and internationally. These included

- Participation by more schools
- 12 'Lagerhuis' debates by students
- 12 interactive theatre plays by 800 students

- More guards and cameras on trams
- Stewards for students from participating schools

Programme 2004–2007

In this three-year programme several initiatives were launched:

- Training in social skills for students
- Targeting of three tramlines
- Encouraging the participation of five large comprehensive schools
- Production of 26 stage plays in which 1,500 students took part
- The addition of three new behaviour rules to the original 12
- New training for security personnel implemented (together with HTM)
- 14 pioneers involved in 'Project Security', patrolling neighbouring shopping centres
- HTM going into primary schools to educate children about the proper use of public transport
- Participation of students in policing behaviour on trams
- A project folder to inform new partners about the initiatives
- Seeking wider interest in the project at home and abroad
- School guard project

As the project continued, HTM contacted school managements to assess whether it would be possible to increase the number of security staff and extend the scope of their activities. The idea was to the extend the supervision of schoolchildren travelling by tram to the school and in school buildings. In consultation with school managements, these security personnel would also be authorised to act inside the school gates. This part of the project is to be reviewed annually and adapted where necessary.

Programme 2008

In 2008 the following initiative was undertaken:

- Short and long-term traineeships

All participating students of the Hague receive a 'security pin' – a type of badge.

Outcomes and evaluation

The impact of 'Trek die lijn' is visible throughout The Hague. HTM has observed a substantial reduction in nuisance behaviour, aggression and vandalism on its trams. Trams are no longer needlessly delayed by youths activating the emergency stop mechanisms. Sick leave among tram drivers has fallen and perceptions of community safety in the areas surrounding schools have improved. Overall it is possible to say that 'Trek die lijn' has led to behavioural change.

An increasing numbers of schools are participating in the programme.

HTM was rewarded with the Hein Roethof Award in 2002 for its work on crime prevention and security. This award was set up in 1987 by the Ministry of Justice with the aim of giving national recognition to projects that reduce and prevent crime. Each year the most successful are nominated and a shortlist of five is drawn up. The award is judged and administered by the Centre for crime prevention and security in Utrecht.

In October 2006 HTM received another award, the UITP Youth Award. This is an international prize for the best project designed to integrate young people into their society.

The winning of awards has helped to raise awareness of this project among non-participating schools and organisations.

Problems faced

Sustainable results require the ongoing cooperation of all the agencies involved. This is particularly difficult when dealing with students as a new peer group enters the system each school year. To be successful, therefore, this kind of project needs continuing commitment.

Success factors

- Project information folders encouraged new partners to become involved and boosted the cooperation of current partners.
- Students, having drawn up their own list of rules, were more likely to obey them.
- Innovative methods to secure student participation, including theatre.
- Stewards to accompany trams to participating schools.
- Extending the supervision of schoolchildren to the school and into school buildings. In consultation with school managements, security personnel can also be authorised to act in schools.
- Partnership approach – various organisation involved, police, educational, community, transport, etc.

Transferability

This project can be transferred easily to other organisations. However, the documentation (the project information folder for new partners and general project information) is currently only available in Dutch.

Further information

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3.3.13. ‘Going for Green’, the Netherlands

Organisation(s): Veolia Transport International

Key points

- Prevention of customer violence by empowering and helping drivers respond to customers’ problems.
- A general education and training programme.
- Training to prevent customer aggression.

- Includes supervisor training.
- Community safety employee awareness programme.
- Made available to all Veolia's transport companies – who can fine-tune it according to local needs.

Introduction

Veolia Transport International has developed an innovative customer service programme. 'Going for Green' is a bespoke training programme which gives staff guidelines to help them understand customers' needs when problems occur, and how to respond. They can then make immediate decisions themselves that improve passengers' travel experience, contributing to a positive customer environment.

The programme was developed by Veolia Transport International and subsidiary companies put it into effect at the national level.

Aims

- To contribute to the prevention of violence against staff by creating a positive Customer Service environment by helping employees make the right choices when dealing with passengers face-to-face.
- To develop a programme centrally that can be tailored to local needs, as circumstances and passenger populations are variable.
- To give managers and frontline workers a comprehensive tool that helps bus drivers to accurately judge different customer emotions.
- To offer principles and guidelines to enable drivers to analyse a situation and take the initiative on the spot to find an appropriate solution, as it is impossible to dictate rigid procedures for all occasions.

Background

Veolia Transport International, formerly Connex, was concerned that unresolved passenger frustrations were increasing the incidence of violence against drivers, as well as reducing passenger satisfaction. They recognised that passengers looked for immediate responses that showed sensitivity to their needs, and that this was impossible while drivers were expected to follow rigid protocols with standard answers. A system was needed that allowed drivers to be responsive to individual needs when dealing with passengers face-to-face, and guidelines and training were needed for drivers and supervisors to implement this. Equally important was the need to tailor the programme to different national and local circumstances.

Within this context Veolia has developed several tools to enhance employees' professional skills. All staff who come into direct contact with passengers receive training in handling difficult situations and verbal and physical aggression, as well as dealing diversity in society and handling stress. These training courses are fully adapted to the local environment and the specific needs of the transport system in which staff are working. The initiative was developed by the department of International Marketing & Innovation of Veolia Transport.

The main focus of this case study is the 'Going for Green' programme, designed to help staff handle customers more effectively and cope with customer aggression.

Scope

Introduction

Going for Green is tailored to create a positive Customer Service environment, and designed to give managers and frontline workers a comprehensive tool that helps bus drivers to accurately judge different customer emotions. It is impossible to dictate procedures for all

occasions, and if employees have to depend on a rule book, they will be unable to analyse a situation and take the initiative on the spot to find an appropriate solution. This is why Going for Green does not impose a checklist of procedures to follow, but instead offers principles and guidelines that will help create a positive customer environment. This approach helps employees make the right choices when dealing with passengers face-to-face.

Instead, 'Going for Green' is a training programme in which bus drivers are trained to react to the needs of travellers in different states of mind, with the aim of finding timely solutions for their difficulties. Employees are trained to recognise a passenger's mood quickly and to proactively approach them with that information in mind.

Given a specific situation and passenger type, the way employees react (their attitudes, behaviours and actions) can create a favourable emotional environment for the passenger. For example, while there isn't always a lot staff can do about delays or technical problems, they can influence the way customers experience these situations:

- If they have not been able to establish a relationship with their passengers, a minor incident (a five-minute delay, for example) can escalate into a hostile confrontation if a passenger feels the staff have not reacted properly.
- However, if employees can make an initial favourable contact with customers, each passenger will feel that they are cared for and that their needs come first.

Enhancing traveller experience

The name 'Going for Green' was derived from the three colours used in the programme to identify a passenger's state of mind: red, yellow and green. Green stands for satisfied customers who feel at ease; it is the employees' task to ensure that travellers belong to this category. 'Going for Green' helps them achieve this.

Passengers' experience of service quality is improved or worsened by the environment they travel in and this is affected by the way they and other passengers are treated, the attitude of staff to each other, and the degree to which promises made by the transit system are kept.

- In an environment of confidence, passengers feel recognised, they feel at home; they make their own contribution to a safe and easy trip for all.
    - In an environment of uncertainty, passengers feel anxious and cautious.
    - In an environment of distress, passengers feel defensive, or even threatened; this brings out the worst in their character.

The Going for Green approach focuses employees' attention on these emotional shifts and their consequences.

The general goal is to keep or shift a passenger into a 'green' state of mind:

- Green for go – creating an environment of confidence
- Slow down for Yellow – restoring passenger confidence when they feel uneasy
- Get out of the Red – leading passengers out of a distressing environment

For each environment, the training offers employees a better understanding and values the employee's ability to manage the customer relationship. It then offers them tools to transform a Red or Yellow environment into a Green one.

Customer needs:

Customer needs are usually expressed in terms of tangible and obvious expectations. Some examples are:

'A comfortable and safe trip'

‘Getting to the destination on time’

‘A fair price for the trip’

While creating an environment of customer wellbeing involves meeting these expectations, it is largely achieved through an ability to respond to the unspoken and more basic human needs of feeling recognised, being kept informed, and being in control. Transit systems are better able to equip their teams to create a positive customer service environment when they accept that needs can be considered at different levels.

Different customers

Various customer groups need to be taken into account when speaking of needs. Indeed, the type of customer will determine the degree of information and assistance that may be expected from Veolia staff members:

- Regular Passenger: someone who depends on public transport for their travelling needs. Although they represent the majority of passengers, they often go unnoticed
- Occasional Visitor: turns to public transport from time to time. They are less familiar with the transit system and may require more guidance and information to find their way
- Newcomer: tourists, who often require attention and reassurance to complete their first trip successfully

Programme:

Twelve situations involving passengers are presented with illustrations. Each situation is explained with expected behaviour and a choice of tools. These situations were chosen to reflect real-life everyday challenges faced by employees on all transit systems. The illustrations are focused on the passengers (as seen from the employee’s point of view) and the transit environment is suggested. However, Veolia companies can choose to use the templates as they are or adapt them to local conditions.

Project materials

The Going for Green programme is available to every national Veolia company. A pack is distributed to Going for Green correspondents; this includes a CD-ROM so that reference documents can be adapted to local conditions, and a series of training guidelines. It was agreed that the final documents should be made available in a format that allowed each local operation to present them in the style best adapted to their needs.

The CD-ROM provides all the original files plus some alternative images for three of the course booklets that show employees how to apply the principles of the programme in their everyday encounters with customers. These booklets use strip cartoons and panels with a choice of environments – bus, tram or metro. There is one booklet for each ‘mood’: green, yellow and red.

The text in the speech bubbles used in the strip cartoons can be adapted to local needs and some of the files can be used to prepare documents in Word or PowerPoint. National companies will probably need to use an outside agency to help them adapt some of the resources.

Veolia also distributes brochures and Going for Green folders that offer a short summary of the approach and training programme.

Outcome and evaluation

‘Going for Green’ was successfully tested in transportation networks in Dublin and Las Vegas in 2005 and 2006, and was implemented in Germany, France and the United States in 2007.

It was due to be introduced to the staff of the Stockholm metro and the Barcelona tramway in 2008.

Pilot Ireland

Veolia in Ireland was the first Veolia company that used this practical training. Half of the 180 employees completed the training and the remainder were due to be trained by the end of 2008. Initially supervisors attended a full day training course, and then frontline staff attended a three- to four-hour training course focusing on their daily practice. Their training, consisting of tasks and role-play exercises, helps them learn how to act in certain situations. To promote consistency in response to passengers it is most important that all employees in such cases spread the same message.

Quantitative outcomes:

The carrier in Dublin distributes prizes on a monthly basis to tram drivers and other employees to recognise excellent customer service. The prizes are awarded to those who put in that little extra bit of effort where customer care is concerned. The results of the programme are very good. During 2004, the company received 38 complaints about employees. In the eight months after 'Going for Green' was launched in May 2005, there were only ten complaints about staff.

In Las Vegas, passenger satisfaction has risen sharply and complaints about driver attitude dropped by 34% in the three months following the training programme.

In Nancy, France, 98% of the system's employees reported that they felt able to apply the strategies taught by the course in their daily work.

Problems faced

The major challenge was in getting commitment from all concerned. Committed and motivated employees are essential to the success of the Going for Green approach. However, long-term success also requires the commitment of line managers and of senior management. They have the responsibility for supporting the changes that will contribute to a positive Customer Service environment, providing employees with the means to take the initiative when dealing with customers face-to-face.

Success factors

- Helping bus drivers to handle customer care in general and solve the specific problem of customer aggression.
- Going beyond formulaic responses to fixed situations by empowering each employee and developing their skills to enable them to interact with individual customers in a flexible way – by identifying their customer group, acknowledging their specific needs, and then responding to these needs in a relevant and effective way.
- Training tailored to real situations faced.
- Training supervisors and drivers.
- Recognition that passengers are not a homogeneous group.
- Central approach and resources that allow adaptation to local circumstances.
- Use of pilot projects.
- Good labour relations in this approach also helps to reduce absenteeism, which in turn improves service continuity and regularity.

Transferability

The programme, being introduced throughout Veolia's international operation, is tailor-made for Veolia companies worldwide and is only available to the company's staff and clients. Transferability is therefore limited.

Further information

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http://www.veolia-transport.com/ressources/documents/en/anual-reports/anual_report_2006_en.pdf

http://www.sustainable-development.veolia.com/en/Articles/20080709,going-green.aspx

Guidebook and brochure Going for Green are internal documents, and only available with permission of Veolia.

3.3.14. Implementation of RoadRISK Tool, the Netherlands

Organisation(s): Connexxion public transport, the Netherlands

Key points

- Introduction of the RoadRISK Tool based on the Virtual Risk Manager – Fleet.
- A test offering an analysis of the driving style of bus drivers.
- Encouraging a safer and more defensive driving style in order to prevent accidents and damage to buses.
- Includes development of risk assessment skills.
- The Virtual Risk Manager – Fleet is developed by D&T and implemented through the RoadRISK Tool in the 'changing driving style' project of Connexxion.
- Individual coaching and training by senior drivers where test results indicate areas where skills development is needed.

Introduction

The Dutch public transport company Connexxion introduced the RoadRISK Tool for its bus drivers. This software contains a questionnaire and a test which have to be completed by bus drivers. The results highlight those skills the bus driver should develop further. Bus company Arriva used the same software application in England and saw a 40% reduction in traffic-related bus damage.

Aims

Connexxion introduced the RoadRISK Tool, because they want their bus drivers to change their driving style for two reasons:

1. To increase passenger and driver safety

2. To reduce the damage to buses

Reduction of accidents and incidents and safer driving should also have the secondary effect of reducing driver stress.

Background

The Virtual Risk Manager – Fleet addresses five factors that affect driving style:

1. Driver's profile
2. Attitude of the driver
3. Knowledge of traffic regulations
4. Driving behaviour
5. Risk assessment

It takes the driver 30 minutes to complete the multiple choice test, and the results are broken down into the categories above. These results are graded for each topic as insufficient, sufficient, good or excellent. The purpose is to identify the specific skills that that Connexxion drivers need to improve and where a driver's test rating is 'insufficient', a senior driver experienced in that topic is assigned to train them in person, on the job. The test is also used in the selection process of new employees. The results are treated as confidential and stored in the employee's personal file.

Scope

The implementation of the RoadRISK Tool started with a test phase of the software application involving various. The second step was a pilot scheme at one of the company's bus depots in Zeist. The RoadRISK Tool was then used throughout the various divisions of Connexxion Public Transport, and the test was incorporated into performance interviews. The Connexxion Academy – the company's education department – oversees the tests.

The two-week pilot programme in Zeist involved 118 bus drivers who completed the test. Some members of the employee council and four bus drivers were then interviewed to find out how the test and the RoadRISK Tool could best be used.

Members of the employee council argued that it was important for bus drivers to be given clear instructions about how the test worked before they took it. Furthermore, they said that the target 'pass rate' chosen was too high (80%). This was considerably higher than the average score during the pilot (55%). It was also observed that the test gave only general feedback on each topic, where drivers would have welcomed more specific information about how they had answered each individual question within the topic. Attention was drawn to the need for special facilities for dyslexic people and those who are not native Dutch speakers so that all participants could be judged fairly by the test. Finally, good communication about the pilot and the use of the RoadRISK Tool with other divisions of Connexxion Public Transport was considered very important.

The bus drivers also mentioned some organisational aspects that need improvement. For example, the bus drivers felt that a clearer introduction to the test was needed, and that it was important to be able to take the test in a quiet environment. They also commented on some aspects of the content of the test, saying that some of the photos were not clear enough. Questions on medical fitness to drive should be added, they said, in order to check the period of valid medical certificates. One driver agreed that the RoadRISK Tool would change his driving style. The others claimed that their driving style would not be affected, although one mentioned that it had been good to test existing knowledge.

The drivers were also interviewed about more general topics. They thought that it was important to keep their professional skills up-to-date, but they all preferred practical training methods such as training on the job.

The types of training and education that cater for their needs are driving proficiency tests, visits of mystery guests on the bus to check the quality of service, and special courses on a closed circuit, such as anti-skid courses.

Outcome and evaluation

Results regarding accident prevention were not available at the time of writing, but as mentioned, bus company Arriva used the same software application in England and saw a 40% reduction in traffic-related bus damage.

Problems faced

Some problems occurred while the tests were being introduced more widely.

Some location managers were enthusiastic while others were not, and the Employee Council was concerned that bus drivers might face dismissal if they failed the test.

This worry had been exacerbated by the way in which the RoadRISK Tool had been introduced, when those drivers whose poor driving had already attracted attention were invited to use the tool before anyone else. With hindsight, it was seen that it would have been better to invite a random selection of drivers to try the RoadRISK Tool. The best way to use the tool is to reward improvement of skills, and not to punish bus drivers who fail the test. This aim needs to be communicated very clearly to the employees.

The RoadRISK Tool could also be integrated into the road safety approach of the whole organisation and not just the public transport division. Other divisions such as Connexxion Coach Services and Taxis could also profit from the tool.

Success factors

- Targeting of skills development – the project helps bus drivers to gain an insight into their professional skills and identify areas where they could improve their skills further.
- The development of risk assessment skills.
- Use of follow-up training and coaching using experienced senior drivers
- The test is based on scientific knowledge about which skills most effectively improve road safety.
- Results of the test are registered and analysed and this data is used to improve other training programmes.
- The participatory approach, asking workers' representatives and employee council to comment on the test and decisions to extend its use, encouraged acceptance of the tool.

Transferability

The RoadRISK Tool is not only suitable for bus drivers. It can also be used to improve the driving style of cab drivers, coach drivers and other professional drivers. Care should be taken to introduce the RoadRISK Tool as an aid to skills development, stressing that no one will be fired based on the results of the test.

Further information

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Web: www.connexxion.nl

Case studies of many successful applications around the world are available at www.virtualriskmanager.net

3.3.15. The ergonomics and technology of the driver's cabin in urban passenger transportation, Spain

Organisation(s): TUSGSAL (the Barcelona bus company) and UPC (Polytechnic University of Catalonia)

Key points

- Ergonomic redesign of vehicle cabs based on an analysis of the tasks that produce musculoskeletal stress.
- Improvements taking into consideration size variations within the population, and seeking to minimise static muscular effort in order to prevent muscle fatigue.
- Anthropometric conditions specified by computer modelling, in order to determine the requirements for ensuring a comfortable posture even for people who are particularly large or small.
- Task analyses looking at the actual work of drivers, covering driving and all related tasks and movements while seated in the cab.
- Recommendations include cab design ergonomics and organisational issues such as rest breaks.

Introduction

The design and evaluation of driving posture is more complex than the study of the traditional seated position. First of all, the driver's foot does not support his or her body when it is placed on the pedals. The control and balance of the body has to be provided by a seat equipped with a large inclined backrest and lateral supports. These elements produce a 'constrained' posture, which can be uncomfortable. The large variation of sizes among professional drivers requires a seat capable of a range of adjustments to give sufficient space to all drivers whatever their sizes and shape.

The principal focus of interest in the bus driver's workstation is the relationship between the seat, the steering wheel, and the pedals. The bus operators need to interact and maintain constant contact with each of these components. The use and combination of these components influence the posture of the worker.

Aims

- To improve vehicle design in order to reduce physical strain (such as awkward movements and static muscle fatigue) and therefore reduce musculoskeletal problems among drivers.
- To determine the basic ergonomic characteristics an urban bus cabin should have to improve the working conditions of the driver.
- To determine the ergonomic characteristics necessary to accommodate drivers' individual size differences.

Background

Professional drivers have a high risk of developing musculoskeletal back disorders. Back pain is a particular stress factor for drivers, although there are clearly other areas of pain such as the neck, shoulders and knees.

Bus drivers are essentially contained within their cabin with little space for leg flexibility and movement. This static posture and its restricted freedom of movement aggravate the muscular tension accumulated during the working day. The driver's cabin must be comfortable even for short, tall or overweight drivers, and must promote safe driving, just as it must ensure good visibility. The driver's cabin also needs to be adapted to human behaviour to make it easy to use. Driving posture in the cabin is closely linked to the way the workstation is laid out and the available range of seat adjustments.

Scope

The study comprised two parts:

- the postural evaluation of the driver's workstation by analysing video recordings of driver at work;
- the anthropometric analysis carried out on 3D simulations of six models of bus owned by an urban transport company.

For the task analysis, a video recording lasting about an hour was made of a series of work cycles performed by a driver chosen by the company, TUSGSAL, on one of its regular routes. The work cycle was defined as the period of time between one bus stop and the next. There were two types of posture defined for the anthropometric analysis: a static posture and a dynamic one. The static posture consisted of the driver seated with his or her back resting on the seat, left foot on the floor, right foot resting on the pedals (brake or accelerator), and arms slightly raised in order to grip the steering wheel midway up. The dynamic posture was defined as the driver seated with his or her back inclined forwards at an angle of between 0 and 20 degrees, left foot on the floor, right foot resting on the pedals and arm raised up to the furthest point of the steering wheel in order to turn it.

Postural evaluation

The postures adopted by the driver were evaluated using the European Directive UNE-EN 1005-4 (Machine safety: Physical behaviour of the human being. Part 4: Evaluation of work postures and movements in relation to machines). In accordance with this regulation, the operator's task must be identified and broken down into its principle components, taking into consideration visual, control, stability and force demands as well as the possible frequency of movement and the duration of work required by the machine. The Directive evaluates postures and movements by focusing on the torso, arms, head and neck, and other parts of the body. For the torso, it evaluates movements of flexion, extension, lateral flexion and torsion; for the arms, it evaluates movements of flexion, extension, abduction and adduction; for the head and neck, it evaluates movements of flexion, extension, lateral flexion and torsion; and for the other parts of the body it evaluates both the adoption of uncomfortable postures and also considers how close the articulations come to reaching the limits of the range of movements possible. The first question to ask is whether the posture of each zone of the body is static or dynamic; if dynamic, then the number of movements per minute must be established. The frequency level is considered low when a movement is performed less than twice a minute; above two movements per minute is a high frequency level.

Postural risk is classified in three ways: 'acceptable risk' describes a low or insignificant risk; then there is 'acceptable risk with conditions'; and unacceptable risk is when there is a risk for the population of operators. The level of acceptability depends on the nature and duration of the posture or the movements observed, and the recovery period.

Anthropometric analysis

Six bus models were chosen for the anthropometric analysis, representing 60% of the company's total fleet. The cabins were measured and 3D models were designed using the computer program AUTOCAD. The dimensional study is based on anthropometric data provided by TUSGSAL following a survey of 436 drivers, taking into account normal body proportions. This data was used to design two human figures with the computer programme Mannequin Pro. One figure corresponded to the 5th percentile (P5), and the other to the 95th percentile (P95). Articulation ranges were defined for the driving posture according to data proposed by Andreoni (2002) and Se Jin (2000). For the dynamic seated posture, the articulation ranges for the flexion of the torso as proposed by the directive UNE-EN 1005-4, and a shoulder flexion of between 45 and 90 degrees were considered. Subsequently, these were illustrated using anthropometric models.

The anthropometric models P5 and P95 were placed in each bus model, looking for optimum driving postures, both static and dynamic; these were the postures possible given the articulation ranges defined in each posture. The anthropometric models were placed according to the adjustment possibilities offered by each model of bus in terms of the seat position (horizontal track, vertical track and the inclination of the backrest) and the steering wheel position (vertical and horizontal track).

In the anthropometric model P5, the maximum upper right stretches for the static and dynamic postures were also analysed.

Various instruments were positioned within each model's maximum reach: in the static position this was the steering wheel, whilst in the dynamic position these included the control devices, the instrument panel, the cash box, the ticket desk and the SAE console for communication with the control centre).

Results: postures

In this workplace, the torso was considered to be in a static posture, whilst the posture of the arms, head and neck, and the other parts of the body was dynamic. During the driving work cycle, torso postures of between 0 and 20 degrees of flexo-extension and between 0 and 20 degrees of lateral flexion were observed. The risk present in both postures was deemed low or insignificant. The observed flexion of the arms and abduction movements were between 0 and 20 degrees, at a low frequency, representing a low or insignificant risk. It was also observed that flexion and abduction movements were between 20 and 60 degrees at high frequency, representing an acceptable risk under controlled conditions; the machine or workplace should not be used over long periods by the same person, and the frequency should be lower than 10 movements per minute.

In the head and neck, torsion movements greater than 45 degrees were observed at low frequency, representing an acceptable risk under controlled conditions; the same person should not use the machine or workplace over long periods. Torsion movements of less than 45 degrees were observed at high frequency, representing a low or insignificant risk. The flexo-extension movements of the head and neck were also evaluated, using the line of vision or direction of gaze. Movements were observed with a line of vision of between 0 and -40 degrees at low frequency, representing a low or insignificant risk. Movements with a line of vision greater than 0 degrees were noted at high frequency, representing an unacceptable risk. Uncomfortable postures or movements close to the limit of articulation ranges were not observed for other parts of the body.

Results: Anthropometric analysis

The anthropometric models P5 and P95 were successfully placed in the six models of bus, within the proposed articulation ranges, in both static and dynamic postures. In bus models 1, 3 and 4, no problems were identified with either anthropometric model. In bus model 2, a separation of the spine from the backrest for anthropometric model P5, both in the static and the dynamic posture, was identified. The height of the seat's backrest proved to be insufficient

for anthropometric model P95. The absence of a headrest was also noted. In bus models 5 and 6 the absence of a headrest on the seat was noted.

The SAE console was out of maximum reach in the dynamic posture for anthropometric model P5 in bus models 1, 2, 4, 5 and 6. Bus model 3 did not present any reach distance problems.

Discussion

The postural evaluation of the driver's workstation reveals a risk of musculoskeletal damage for the shoulders, due to flexion movements of between 20 and 60 degrees. Musculoskeletal risks are not just related to actual driving. There is also a risk of musculoskeletal damage to the neck, due on the one hand to torsion movements made by the driver when passengers get off the bus and, on the other hand, to extension movements made when looking at the central rear-view mirror during the opening and closing of the doors.

The solutions are not only in the design of the cab. Organisational measures can be taken to lessen the risk for both the shoulders and neck. For example, guaranteed breaks of at least ten minutes at the end of each journey along the route, to allow the musculoskeletal system to adequately recuperate; a reduction of driving hours; or a rotation of tasks between driving and other types of tasks. Drivers could also be trained to look after their musculoskeletal system by taking regular breaks along their routes, and doing stretches and other exercises.

The postural risk posed by the torsion of the neck is caused by the driver turning his or her head to greet the passengers. This risk could be reduced by avoiding this movement, given that it is not a necessary part of the task of driving, although the effect of this on other psychosocial factors related to the task would have to be taken into account. The postural risk posed by extension of the neck, which according to the directive UNE-EL 1005-4 is considered unacceptable, is caused by the movement the driver has to make to look at the central rear-view mirror, in the upper part of the cabin. To avoid this risk, a feasibility study could investigate the use of video cameras and a monitor installed in the instrument zone.

The anthropometric analysis reveals adjustment problems principally in bus model 2. The separation of the spine from the backrest is due to the seat's horizontal length being greater than the sacrum popliteal distance of anthropological model P5, and the seat's insufficient vertical track. Furthermore, the results show that this bus model's seat design does not adequately adjust for either anthropometric model P5 or P95. The absence of a headrest in bus models 5 and 6 also creates a musculoskeletal risk for the neck. A headrest is, therefore, an indispensable element that should be added to the seat and ideally it should be height-adjustable.

None of the seat models evaluated featured armrests, which can help prevent fatigue in the arms, shoulders and neck, although their use can create difficulties in some driving manoeuvres. The seat and steering wheel adjustment mechanisms should be checked regularly so that they can always be easily adjusted by drivers of differing body dimensions.

In five models, the SAE console was placed out of the maximum reach distance for anthropometric model P5 when in a dynamic posture. The control devices for this population of drivers should be approximately 70 centimetres from the backrest of the seat, corresponding to the length of upper limb (arm, forearm and hand) plus the separation distance of the spine from the seat when performing a flexion movement of the torso of 20 degrees.

Other problems found include the simultaneous execution of numerous and frequent tasks, carried out in restricted body postures, whilst exposed to vibration and noise.

Outcome and evaluation

The study enabled a number of recommendations to be made.

The ergonomic evaluation of the driver's workstation reveals the risk of musculoskeletal damage in the shoulders and, principally, in the neck. The greatest problem is caused by the central rear-view mirror which requires drivers to make frequent straightening neck

movements. The viability of repositioning this mirror or replacing it with another instrument should be examined.

In analysing maximum reach distances for the console, the conclusion was that one control device was positioned out of the dynamic posture maximum reach in five of the six models examined. These components are often installed without ergonomic considerations being taken into account and urban transport companies should try to change this.

There was sufficient space for the larger drivers in all the bus models. However deficiencies in the seating, including back support and headrests, were found in some bus models.

Recommendations regarding breaks and taking exercise have been mentioned earlier.

Success factors

- An ergonomic approach that looks at the real tasks and movements drivers perform while in their bus cabs, and all postural problems, not just driving.
- Effective means of analysing drivers at work combined with 3D modelling of types of cabs/drivers of differing anthropometric dimensions.
- Looking at organisational issues as well as the ergonomics of cab design.
- The methodology helps compare existing buses with different cab designs with a view to continuing with their use or for modifications.
- The methodology helps to determine specifications for future cab designs/purchases.

Transferability

The ergonomic approach used in this case can be used in similar workplaces to analyse the ergonomic requirements of bus cabs for the driving population concerned.

Further information

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Andreoni, A.; Santambrogio, G.; Rabuffetti, M.; Pedotti, A. (2002). Method for the analysis of posture and interface pressure of car drivers. Applied Ergonomics (33), 511–522.

Se Jin Park; Kim, Ch.; Kim, Ch. Lee, J. (2000). Comfortable driving postures for Koreans. International Journal of Industrial Ergonomics (26), 489-497.

3.3.16. An intervention focusing on psychosocial factors in a private transport company, Spain

Organisation(s): Psychometrics Research Unit (PRU), TUSGSAL (Barcelona Bus Company)

Key points:

- Intervention concerning the psychosocial factors affecting bus drivers and their safety behaviour.

- Application of the MARC methodology – a set of instruments and procedures based on a psychosocial model of work-related accidents. It integrates psychosocial risk analysis and intervention with safety behaviour assessment and intervention.
- Company policy of social responsibility and worker involvement.

Introduction

Psychosocial risks and poor safety behaviours have been identified as two major sources of risk in passenger road transport organisations. Research has demonstrated the effects of psychosocial risks on health, the impact of poor safety behaviour on work-related accidents, and the associated costs. However, there is rarely an opportunity to do follow-up studies over a four-year period, periodically assessing both areas, controlling measurement biases, and measuring overall effects on cost reduction. Such a study was carried out at TUSGSAL, a private bus company, by applying the MARC methodology.

Aims

The aim of this action was to use the MARC-UV tools in order to carry out a complete psychosocial assessment. This included drawing up a map of the psychosocial profile of the company, designing improvements and putting them into effect. A new map was then drawn up to assess the effect of the improvements.

The objectives were:

- To integrate the assessment and intervention phases of both safety behaviour and psychosocial risks into a continuous cycle of health and safety improvement.
- To identify and control major sources of bias in the measurement of psychosocial risks.
- To identify the costs of work-related accidents and evaluate, in euros, the effect of the MARC assessment and intervention programme.

Background

TUSGSAL (Transportes Urbanos y Servicios Generales) is a private company providing urban transport for passengers in the metropolitan area of Barcelona (Spain), with approximately 850 workers in 2008. This company is characterised by social ownership – the workers are also the owners of the company – and a clear and positive safety policy which is part of its vision of social responsibility. This vision takes into account customers, workers, the environment and the social context of the company. One of its slogans is: ‘By serving society, we are serving ourselves’.

In July 2000, TUSGSAL set up an internal Risk Prevention Department. In 2003, an intervention on psychosocial factors and safety was launched. Then in 2005, another tried to calculate the costs of poor safety policies and behaviour. This analysis allowed TUSGSAL to quantify the success of any new safety measure in euros. In 2006, an ergonomic study of drivers’ cabins was carried out. All three of these initiatives are still underway because the studies have been extended.

Regarding psychosocial issues and safety, the decision was made to carry out different, simple evaluations by using a large-scale evaluation with reliable and validated methodology. TUSGSAL contacted the Psychometric Research Unit of the University of Valencia, to establish a basis for a long-term collaboration, applying the MARC methodology through a combined cycle of assessments and interventions. The Psychometric Research Unit (PRU) at the University of Valencia (UV) has developed several assessment and intervention methodologies devoted to practical preventive actions in companies and institutions.

The so-called psychosocial model of work-related accidents (PMWA) provides a theoretical understanding of how the safety climate of companies influences the safety response of each worker, through the safety response of managers, supervisors and co-workers. The model

recognises the safety process as a chain of social influence, revealing useful mechanisms for explaining what happens in terms of safety and also helping to identify the best ways of introducing positive changes. The model also takes into account the basal risk (for instance, the characteristic risk of an activity given the current state of technology) and the real risk (for instance, the probability of unsafe events given the basal risk and the psychosocial chain of safety responses). If all the safety responses are working well, they will reduce the basal risk, yielding a smaller, controlled and reduced real risk. The PMWA provides a fully integrated vision of the safety chain of influence of the organisations, embracing both the safety behaviour area and the traditional psychosocial factors area.

The MARC methodology measures both groups of variables through the VALENCIA PREVACC Battery and the Psychosocial Risk Assessment Battery. The VALENCIA PREVACC Battery is a set of quantitative and qualitative psychometric instruments devoted to the measurement of safety responses through all the hierarchical levels of a company. Given that a full view of health concerns also requires consideration of the so-called psychosocial risk factors described in the stress and healthy organisations literature, the MARC methodology measures this broad group of variables through the Psychosocial Risks Assessment Battery.

Scope

Presentation of the methodology

The MARC methodology allows companies (in this case TUSGSAL) to lead their own process toward good safety and health practice. No two companies are alike, and so there are no two identical safety processes. The MARC methodology simply helps the company to identify its safety goals, as well as its strengths and weaknesses, and it provides the opportunity to introduce improvements progressively based on specific organisational needs and resources.

The PRU of the UV shares knowledge and provides resources for assessment and intervention, counselling and advice throughout the process, but the company makes its own choices, leads the process of assessment and change, and devises its own positive safety and health possibilities and results. The safety process is conceived as a continuous cycle of assessment and intervention that mobilises the available internal participative resources.

The process begins by identifying the target variables and the variables of segmentation. The target variables are the main variables in the areas of safety response and psychosocial factors that should be assessed and evaluated according to the preventive needs of the company.

These might include the company's safety response, safety training, safety rules, safety communication, the supervisors' safety response, models of behaviour, contingencies, leadership, work and organisation variables, workload, tension, health, social variables, interaction and bullying behaviours.

The MARC methodology provides the main set of variables and a heuristic set, in order to choose the appropriate comprehensive set of target variables. In the case of TUSGSAL, the process of identifying and selecting the target variables was performed by the company's own Risk Prevention Department, taking into account their previous experience in prevention. The VALENCIA PREVACC Battery and the Psychosocial Risk Assessment Battery provided the instruments for the quantitative and/or qualitative assessment of these target variables. The selection covers the main topics on safety behaviour and psychosocial risks.

Apart from the main target variables, it is also necessary to identify the variables of segmentation. A segmentation variable describes a dimension of the company that can be broken into small and significant subunits in order to obtain a separate assessment of each. Each segmentation variable will produce separate outputs, analyses, reports and suggestions for several groups. In the case of TUSGSAL, the department, job, shift and hierarchical levels were established as being the segmentation variables. In order to preserve the confidentiality of the information, no separate report was produced if a group defined by a segmentation variable or by a combination of two or more segmentation variables had less than nine members. Defining the segmentation variables that are appropriate for a company is very important because they make it possible to provide a detailed and unique map of an

organisation. It is important to identify not only what works and what does not, but also where in the organisation these activities are carried out.

Once the target and segmentation variables had been defined, samples of employees who would participate were identified. This was considered to be more practical in quality and cost terms than including all workers. Sampling was applied to TUSGSAL's large Traffic Department, and all the employees of the other, much smaller departments were invited to participate. The participation of employees in the assessment procedure, carried out by questionnaire and interview, was voluntary, anonymous and confidential. The TUSGSAL Risk Prevention Department performed all the fieldwork, distributing questionnaires to workers in the least intrusive way while making sure that participants had a good understanding of the scales they were being asked to use. These were usually discussed in work meetings or training sessions. The TUSGSAL staff also received written instructions and support at all times.

The analysis and reporting process, performed by the PRU, involved both quality checks and an analysis of the main variables.

Quality checks

In the MARC methodology, the reliability and validity of the data of each company is specifically checked before all other analyses are performed. In addition, the MARC methodology seeks to eliminate possible biases in two ways: through preventive measures and control measures.

Preventive measures start before the first contact with the company. The content and meaning of the questionnaires and other assessment documents is not made general knowledge, to try to avoid attempts to influence participants' contributions.

To ensure that participants feel confident about the information they are being asked to give, it is also important to make sure that completed questionnaires are collected carefully, complete anonymity is assured, and that employees are encouraged to make an honest contribution to the process.

In addition, the MARC methodology specifically controls the following biases: random answering, social desirability, positive and negative answers about the company, answer-avoidance, and non-involved answering. In the case of TUSGSAL, the presence of these biases has been particularly reduced, but still a small number of replies were eliminated due to an excess of missing values or random answering.

Data analysis of the main variables

The data analysis of the main variables can be divided into three main categories:

1. The analysis of the level of each measured variable, both in absolute terms and in comparative terms – for instance, the data from bus drivers can be compared to available profiles of bus drivers obtained from other companies.
2. The segmented analysis. This is a very useful tool for identifying where and why there are weaknesses and strengths, and what changes need to be made in which parts of the company. The MARC methodology provides a detailed map of the organisation throughout all departments, levels and jobs, revealing how safety and health policies and measures can be improved.
3. The causal analysis. Data are also analysed from the point of view of the relationships between variables. This provides an understanding of which sources of stress are relevant only for a particular department, a particular supervisor, or a particular job in this company.

Planning preventive actions

Finally, psychosocial, safety and health analyses provide suggestions for improvement. The company is made aware of its strengths and weaknesses, and it has the opportunity to develop a preventive action plan based on a detailed set of suggestions organised by effects, by costs, and by availability.

The results showed that TUSGSAL was generally a healthy organisation that nevertheless had areas in which there was room for improvement, such as response to certain types of difficulties with passengers, leadership and support, ergonomics, and the organisation of work. These specific sub-unit results guided the planning of preventive actions.

In TUSGSAL there is now a continuing assessment–intervention cycle. The improvements suggested after drawing the MARC map of the company fell into four categories:

- Training
- Communication and participation
- Organisational measures
- Risk prevention measures

Training measures included improvements in professional training given to the workers, how to work as a team and deal with the public, occupational health training, and specific training for supervisors.

Communication and participation measures included improvements in the company's internal communication, improved feedback with supervisors, and improved communication with buses on the road. The development of written definitions of specific jobs was also suggested.

Organisational measures included the need to emphasise professional roles and leadership style, improve equipment, and put more emphasis on the prevention of risks at source through design.

Finally, risk prevention measures included the need to improve lighting conditions in the company, protect workers from exposure to unfavourable environmental conditions both indoors and outdoors, and carry out an ergonomic analysis of workplaces.

Outcome and evaluation

The positive evolution of the indicators reveals that TUSGSAL has been moving strongly in the right direction, improving its safety and health in the context of an open and committed policy of social responsibility.

An important and specific contribution made by TUSGSAL was the development of its own methodology to quantify in euros the costs of good and bad safety practices. This methodology involves the registering and analysis of all accidents and actions taken to improve safety. Each accident is carefully analysed in order to identify its direct and indirect costs. Indirect costs particularly are estimated cautiously to make the procedure solid and non-speculative.

This procedure has been followed since 2005, throughout the assessment and intervention stages of this project, and this means that it is possible to make an annual comparison with official accident rates. The comparison shows that the cost of accidents has decreased from €178,942 per year to €128,438 per year, whilst accident rates, both incidence and frequency, have also decreased. The assessment and intervention programme supported by the company cost a tenth of the annual saving that has been made as a result of these initiatives.

Success factors

Two factors have contributed to the success of this project; the methodology itself and the culture of the company involved.

MARC methodology offers a flexible set of tools and procedures that can be adapted to specific circumstances, involving the company, checking the quality of the data, and giving the company the opportunity to develop its own safety and health goals and solutions. The methodology offers alternative types of assessment and intervention fully adapted to the needs of a company as perceived by management and workers.

TUSGSAL has a strong social responsibility culture that is reflected in its approach to issues such as the environment, customer care and service, quality, and safety and health. This commitment combined with the expertise of the prevention department encourages collaborative participation in all areas and at all levels of the company. The company management has a collective and open-minded interest in identifying and dealing with any possible sources of problems. The continuing collaboration between the company and the PRU, the willingness of the company to embrace change in its training programmes, communication, ergonomics and work organisation, and the willing collaboration of workers, supervisors and middle managers are also powerful ingredients of success.

Problems faced

In this case, as in any other organisation, there were time and budget constraints. The objectives and solutions were necessarily a compromise between the available resources and the desired general safety and health goals. Many intervention procedures focusing on specific training, meetings, communication and leadership are quite time-consuming and should be confined to the general work schedule so they can be integrated into the usual flow of work and resources.

Completing the tests was quite time-consuming, and it was difficult to get a good response from all workers, especially when sustained collaboration was required. However, a good response was achieved by dedicating enough time to explaining the study and motivating workers to participate in it. A study lasting for a four-year period can tire not only the workers but also the occupational health team, even when it produces positive and continued results. Managers and the health and safety department staff also need to be motivated.

Transferability

The MARC methodology has been applied, always tailored to each company, to many organisations from various sectors (industry, services, construction, public organisations and even military organisations), in around 20 countries. It is available in Spanish, English, Portuguese, Valencian-Catalan and, partially, in Chinese. Results and suggestions for intervention are always highly specific, but the MARC methodology allows for a high degree of flexibility.

Further information

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3.3.17. Whole-body vibration and ergonomic issues for bus drivers, UK

Organisation(s): The UK Health and Safety Executive (HSE) and the Health and Safety Laboratory (HSL)

Key Points

- Investigation of complaint of pins and needles in hands of bus driver.
- Assessing the level of vibration drivers are exposed to.
- Ergonomic assessment.
- Corrections to seat and driver's posture and training for all drivers.

Introduction

Following a complaint about 'pins and needles' in the hands of a coach driver, the UK Health and Safety Executive commissioned the Health and Safety Laboratory (HSL) to investigate the likely cause. HSL scientists accompanied the driver for a day to observe his work activities and to assess the driver's workstation in terms of:

- Whole-body vibration from the seat pan, how much of that vibration was transmitted by the seat, and how well the seat isolated the driver from the vibration
- Hand-arm vibration from the steering wheel.
- The workstation's ergonomic design and its contribution to the driver's posture, and the location of coach controls compared to the reach envelope.

Background

Professional drivers are susceptible to musculoskeletal disorders. These can be a result of prolonged sitting, poor posture, poor ergonomics, manual handling of luggage and in some cases whole-body vibration. Although whole-body vibration is more of a problem for drivers of off-road vehicles, it is possible for drivers of road vehicles to be exposed to levels of vibration or jolting which could lead to ill health or aggravate existing problems.

Aims

The aim of this work was to investigate the cause of the driver's discomfort and to identify suitable measures to alleviate it.

Scope

The driver was asked to complete a questionnaire and was later interviewed to gain a clear understanding of the problem. The coach driver was male, aged 59, and drove the coach on a regular basis. He had been in his current employment for approximately two years but had been a coach driver for more than seven years. On average he drove for 21 hours a week. The driver had been experiencing pain in his hands for two years, since taking up his present employment and driving a particular coach. He reported that the pain began as a tingling sensation but became painful if he continued driving.

In an attempt to identify the cause, vibration and ergonomic data were generated while the driver travelled over a variety of road surfaces.

Vibration was measured on the steering wheel and simultaneously on the seat pan and at the base of the seat. By comparing the data generated at the seat pan and base, it was possible

to assess the seat's damping effect. Previous studies have shown that poorly adjusted or faulty suspension seats can amplify vibrations.

Four main types of data were collected as part of the ergonomic assessment:

- Video of driver – to assess posture and driving style
- Wrist/hand movement data – this assesses whether the driver assumes poor wrist posture
- Pressure data – pads were put on the seat pan and seat back to provide further evidence of posture and the effects of driving on weight distribution
- Cab dimensions / driver anthropometry / driver questionnaire, to determine
    a. Where the driver fits, in terms of size, in the adult UK population,
    b. Background and personal details,
    c. Whether the driver 'fits' the cab and whether it can be adjusted to suit him.

A review of the results showed that the seat damping was ineffective and actually amplified the vibrations. Upon closer inspection the seat's suspension was found to be faulty. Despite these findings, the levels of vibration recorded were below the health guidance caution zone given in ISO 2631-1997.

The findings of the ergonomic assessment showed that there were a number of aspects of the coach's cab and the driving posture it encouraged which presented hazards to the driver. The seating arrangement was central to these problems. Cab and seating measurements showed that the seat sloped forward at an angle of approximately 9 degrees. The data from the pressure pads showed that the driver's weight was distributed unevenly on the seat pan with approximately 44% of the force on the seat being towards the rear third of the seat pan. The posture adopted due to the forward slope of the seat required the driver to support more weight through his legs and feet and through his hands on the steering wheel. The driver said that he had arranged the adjustable seat in this way after trying various options, and this initially seemed difficult to understand since it forced him into an unnatural posture that was hard work to maintain.

However, the video of the driver showed a significant vertical oscillation of the seat while the vehicle was in motion, as much as 6 or 7 cm. This was presumably due to the seat's faulty damping and suspension mechanism. The extent of the vertical movement suggested that the driver may have arranged the seat so that his feet could remain on the pedals at all times. Had the angle of his thighs been more horizontal, any significant vertical motion of the seat could have lifted his feet off the pedals and made driving hazardous.

Whilst the driver's seating arrangement overcame the problem of maintaining contact with the pedals, this forced him to lean forward, supporting more weight through his arms and hands. The driver was essentially pivoting around a point to the rear of the seat pan which meant that when either of his feet were lifted off the pedals, his arms had to support his weight. The position of his arms when driving supported this assessment.

Following these findings, the faulty seat was repaired and the company trained all their drivers how to adjust their seats to promote good posture and give good support. As a result the driver's pins and needles disappeared.

Outcome and evaluation

- Vibration levels reduced through seat repairs and adjustment.
- Drivers trained to adjust seats to maximise support as well as minimise vibration.
- Following corrective actions, the driver no longer suffered from pins and needles.

Problems faced

Due to an intermittent fault on the seat cushion transducer, some data were not collected.

Success factors

- Ergonomic assessment which involved observation of the driver at work.
- Corrections to equipment combined with training.
- Simple measures to solve the problem and allow the driver to continue working.

Transferability

The types of measurements undertaken during this project could be performed on all vehicles. The fact that simple control measures can significantly reduce vibration levels, as illustrated in this case study, can be applied to many situations.

Further information

HSL, Buxton, UK

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http://www.hse.gov.uk/research/rrpdf/rr612.pdf

http://www.hse.gov.uk/research/crr_pdf/2001/crr01333.pdf

3.3.18. Driver and Passenger Safety, Trojan Bus Campaign, First Leeds, UK

Organisation: First UK Bus

Key points

- 18 CCTV cameras fitted to buses.
- Plain-clothed police officers travel on buses.
- Police cars follow buses through troublesome areas.
- Offenders are apprehended and prosecuted.
- High-risk areas targeted.

Introduction

First Leeds Bus, in collaboration with West Yorkshire Police, used a ‘Trojan Bus’ fitted with 18 CCTV cameras to help apprehend the instigators of vandalism and violence. This was not only to protect drivers and passengers, but also to act as a deterrent with the long-term aim of reducing such incidents.

Background

First Leeds Bus drivers and passengers have been injured by missiles thrown at passing buses by youths in some areas of Leeds. These incidents not only cause injuries; they also raise stress levels for drivers and deter people from travelling by bus. Repair costs are also an issue.

The Trojan Bus initiative launched by First Leeds in conjunction with West Yorkshire Police in March 2008 was intended to identify youths throwing missiles at passing buses and others on board intimidating passengers and causing damage.

Scope

The Trojan Bus is a single-deck bus that has been specially adapted to carry 18 CCTV cameras, and it operates on routes through known high-risk areas for vandalism and missile-throwing.

The First Leeds management team puts the Trojan Bus on routes where vandalism or other incidents have been reported to the police. Minimal planning was needed to put the bus into service and the only investment required was the cost of installing the CCTV cameras.

The Trojan Bus operates as a normal service carrying fare-paying passengers. At the request of West Yorkshire Police, plain-clothed officers travel on the bus and an unmarked police car follows behind to assist in the pursuit and arrest of missile throwers or vandals.

The bus's existence was publicised through the press to raise public awareness of the project, both to reassure passengers and deter offenders.

Drivers were briefed on the project, how the bus was equipped, etc., but no project-specific training was necessary.

First UK Bus also provides conflict management training for its drivers and buses are equipped with assault screens and 'spit kits' used to collect saliva samples for DNA analysis. First UK Bus also actively encourages the police to charge offenders.

Outcomes and evaluation

Since the Trojan Bus has been deployed there have been three arrests which have led to prosecutions. Drivers have welcomed the initiative and now feel safer while performing their duties. This partnership with West Yorkshire Police has led to further collaboration with the force on other security issues.

Problems faced

This was a relatively straightforward project and no significant problems have been reported.

Success factors

- Collaboration and support of police.
- Targeting high-risk areas.
- No disruption to passenger services.
- Support of drivers.
- Further security measures supported by the police.

Transferability

With the support of the police this initiative could be easily implemented in any passenger transport company. When compared to the potential injuries and costs of repairs, it requires minimal investment and little or no disruption to passenger services.

Further information

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3.3.19. ‘The School Run’ driver training, UK

Organisation(s): Department for Transport (DfT) and Crime Concern (Now known as Catch22)

Key points

- Participative training programme to improve relationships between drivers and young passengers and improve drivers’ confidence to deal with troublesome children and provide a standardised approach.
- Involving children in the programme, to get their perspective – as a focus solely on driver skills was unlikely to be successful.
- Good practice guidelines for schools, bus companies, transport organisations, etc., on measures to support drivers.
- Partnership and collaborative approach involving all related organisations.

Introduction

The School Run is a training programme that takes an innovative approach to improve what can be a problematic relationship between passenger transport staff and young people. It was developed with the consultation of passenger transport workers, drivers, conductors, managers, safety officers, training staff, accident investigators, and trade union representatives as well as Passenger Transport Executive (PTE) representatives, schoolchildren and school staff. The course was piloted in 2000.

This pilot programme, funded by the Department for Transport (DfT), developed a participative training course for drivers of First Leeds Bus to improve driver skills in managing bus services used by significant numbers of young people. The pilot involved the young people and sought to improve the perceptions which drivers and the young people have of each other. In addition to the staff training, the pilot programme developed a ‘good practice’ checklist to provide guidance for schools, bus companies and PTEs on measures they can take to support drivers who take a professional approach to their work.

Background

Bus drivers see young people as a major source of stress. Trying to drive a bus while taking responsibility for the welfare of up to 80 young people, some of whom may be engaged in behaviour ranging from the high-spirited (running up and down the stairs) to the wilfully life-threatening (interfering with the emergency exit), can put intolerable strain on staff. This strain is frequently compounded by drivers’ perceptions that disruptive children know that they are powerless to take effective measures against them.

Children believe that the bus companies and their staff do not value their custom. Complaints from schoolchildren about poor quality buses, overcrowding and surly service are frequent. They perceive the majority of bus drivers to be unsympathetic.

There is substantial evidence to suggest that poor mutual perceptions on the part of drivers and children are a major cause of behavioural problems on both sides. It was commonly acknowledged, for instance, that some drivers got themselves into conflict situations more frequently than others. Children report a willingness to cooperate more readily with drivers they perceive to be friendly.

The tangible problems presented by the school run are:

- Driver stress and poor morale
- Danger to school passengers, other passengers and (especially in the case of missiles being thrown from buses) to other road users
- Loss of goodwill and public image, leading to a loss in revenue and revenue potential

- Heavy and ongoing costs because of damaged and soiled buses, loss of revenue through fraudulent travel, and legal costs incurred when bus companies become involved in civil or criminal court proceedings.

The problems described here involved travel both on dedicated school buses and on service buses carrying other passengers. Annoyance to these passengers and the resultant drop in public perception of bus travel was seen as a significant cause for concern. It was also a concern that young people, who would ultimately provide the company's future customer base, also saw bus travel as poor.

This was the backdrop against which the Department of the Environment, Transport and the Regions (now Department for Transport, DfT) commissioned Crime Concern, an NGO, to research, develop and pilot a training scheme designed to improve driver skills in managing such situations.

Aims

The training objectives for this course are:

- To establish the real nature and extent of the problems drivers have when transporting schoolchildren
- To explore the causes of poor behaviour by schoolchildren on buses
- To identify and encourage 'best practice' on handling unacceptable behaviour by schoolchildren on buses
- To introduce staff to some strategies and techniques for defusing conflict.

The anticipated performance outcomes for this course are:

- Bus drivers feel more confident in their dealings with schoolchildren in general and with 'difficult' schoolchildren in particular
- Lower incidence of confrontation between drivers and schoolchildren
- Less incidence of antisocial or criminal behaviour resulting from such confrontation
- Improved perceptions of schoolchildren by drivers and of drivers by schoolchildren.

Scope

From discussions with management it was decided to focus on the specific problems associated with conveying school pupils to and from school, as distinct from the broader issue of transporting young people in general. In Leeds, at least in the experience of this company, the 'school run' was seen to be a far greater problem than that of carrying young people out of school time, both in terms of the frequency of incidents and the scale of damage done.

An approach to the problem based solely on driver training had a poor chance of success. Driver behaviour was likely to be a significant factor, but so too were the perceptions of schoolchildren. Furthermore, the cooperation and support of schools, public transport authorities (PTAs), PTEs, and bus companies themselves were seen as essential, particularly when dealing with situations involving serious misbehaviour.

Therefore, in addition to staff training, educational sessions for primary and secondary schoolchildren were developed and an organisational 'best practice' checklist was designed to give guidance to schools, bus companies and PTEs on measures they could take to support drivers.

The training course provides a forum where, through participation in exercises leading to open discussion, drivers could arrive at their own conclusions. Some drivers had developed techniques and strategies of their own which were highly effective, and which were incorporated into the training programme. However, while useful behavioural skills were taught, the main thrust of the training was cognitive and aimed at re-shaping perceptions, attitude and approach.

One of the main concerns of children was the opportunity bus travel presented for bullying. They felt it was the responsibility of the driver to intervene when bullying was observed or reported. Drivers, on the other hand, felt there was little they could do and that bullying was a school issue. This problem was not covered in this training package, but it was felt that a clear policy on this issue needs to be developed by bus companies in conjunction with their local schools if young people's perception of bus travel is to be enhanced.

A range of measures were suggested by course participants for responding to these problems, or for preventing them happening in the first place. These included:

- Try to get the same drivers covering the same route more often so that friendly relationships, based on mutual respect, can develop.
- Get more support from schools. Some schools take responsibility for the behaviour of pupils on buses and deal with problems immediately: '*If school staff cooperate, problems can be nipped in the bud.'* Other schools wash their hands of the problem, leaving drivers and the company to cope on their own: '*Managers should sometimes carry out the threat not to carry pupils from schools which won't cooperate.*' There should be an incentive scheme for schools to encourage them to get to the top of a 'fair play' league.
- Make sure that the company provides the necessary resources – radio or telephone contact with base; sufficient staff to enable a quick response if problems arise; video cameras; PA systems; buses which aren't in such a poor state that they invite damage.
- Be clear and consistent about when to let things go, and where to draw the line.
- Provide training for drivers, not just at induction but throughout their career. '*It may take years to develop the skills to handle incidents better.*' '*Treat them right and they'll treat you right. Talk to them, say hello, use names, say please and thank you.'* '*Don't swear or lose your temper.*'
- Use school prefects or an adult volunteer to keep an eye on things. '*It helps to have had your own kids and found out the hard way what works*.'

Outcomes and evaluation

The primary objectives, and to some extent the performance outcomes set, involved cognitive changes. These are, needless to say, not easy to evaluate, but despite the lack of reliable and complete statistical data it was widely acknowledged that this training package provided significant benefits.

Crime Concern, an NGO, carried out an initial evaluation of the pilot programme and found that drivers were positive about the course, with the majority finding it relevant, useful and enjoyable. Most felt they had learnt new ways to change their approach or practices, and had been given increased confidence in dealing with situations. They felt this would make a difference to the frequency and seriousness of incidents on board their buses.

Further, the number of incidents reported in which drivers experienced problems with the behaviour of schoolchildren dropped in the two months following the course compared with the two months immediately before it.

Following this success, the training module is now being 'rolled out' to other bus companies through 'training for the trainers' sessions throughout the UK.

Problems faced

A major problem during the first pilot programme was a tendency for course participants to feel that the only solution was the actions of others – company management, the schools, parents, society at large, etc. At the start of subsequent training courses it was acknowledged that driver training alone could not provide all the answers, and that guidance was being given to bus companies, PTAs, PTEs and other relevant agencies on measures they could take to support drivers in their work. When managerial or organisational issues were raised during the training which had merit, but were inappropriate for discussion on the course, they were recorded and incorporated later into the recommended guidelines for organisations.

Another obstacle was that some of the techniques appeared to the drivers to be counter-intuitive. The notion that befriending and showing respect to 'difficult' pupils might be effective in reducing confrontation was an alien one for some drivers whose instincts were to come down hard on potential troublemakers. For others, some of the customer care strategies appeared patronising (they already knew how to say 'please', 'thank you' and 'hello' and how to smile and give eye contact) and if they did not use them it was because they did not think such an approach could be effective.

The causes of problems were, not unexpectedly, complex and overlapping. Bus travel is not the only area in which teenagers present difficulties. Schools struggle with so many demands on their limited resources that it is not surprising that some of them give a low priority to any problems away from the school premises. In trying to identify where problems originate, however, the object is not to apportion blame but only to work out where action needs to be taken.

There was general agreement that incidents were considerably underreported by drivers. For reasons such as the self-selecting nature of the reporters and a lack of standard procedures, incident reports were found to be of little empirical value and did not offer a reliable baseline for purposes of evaluation.

The information on which the evaluation of this training is based is incomplete. This does not reflect on the management and staff of First Leeds, who were unfailingly patient and helpful as the evaluator tried to squeeze his requirements into the life of a busy company. It may, however, indicate that the additional time that the evaluation component demands from companies bidding for such training opportunities needs to be made more explicit from the start.

Other possible solutions such as reducing overcrowding, using single-deck buses, establishing effective two-way communication or the presence of conductors all had cost implications. Companies felt measures like these put them at a disadvantage when tendering for school bus services. It is unlikely that any approach that involves improving quality, and thereby changing the way bus travel is perceived, will be tried without the will and vision of the PTAs and/or PTEs.

Success factors

- Collaboration with duty holders from passenger transport companies, other relevant organisations and schools.
- Training evolved through input from participants.
- Involvement of schoolchildren.
- Acceptance and use of drivers' own self-developed techniques.

Transferability

This training programme has already been rolled out to other bus companies throughout the UK and was developed with transferability in mind.

Further information

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3.4. Snapshot case studies

3.4.1. A checklist for bus drivers, Austria

Organisations: The International Road Haulage Association (IRU) and member organisations (in Austria: die Autobusunternehmer AISÖ)

Aims

The checklist was developed by the IRU in order to make the job of bus drivers simpler.

It is an easy-to-use tool which drivers can use before and during their journey to make sure no safety precaution has been overlooked. The checklist has been distributed to IRU members and in Austria it was sent to all companies employing bus drivers.

Key elements

The idea behind the checklist is that drivers are professionals and show their professionalism by preparing thoroughly for each journey. The driver has to ensure that the appropriate preparations are made before driving off and the checklist serves as a comprehensive reminder. Several examples are:

- Assess physical and mental fitness before heading off.
- Adjust the seat in such a way that it is as comfortable as possible and all control mechanisms can be reached easily.
- Fasten the seatbelt if fitted and remind any passengers to do the same.

Technical issues are covered, such as;

- Is everything in a functional condition?
- Examine brakes, tyre pressure and profile, radiator and oil levels. Also check mirrors, windshield wipers, lights and indicators.

Also mentioned are reminders about safe practices while on the road:

- Keeping at least the legally prescribed safe distance from the vehicle ahead.
- Adapting driving style to the weather conditions.
- Parking, where possible, on secured parking lots.
- Using a mobile phone only with a hands-free system

Further information

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3.4.2. Risks of third-party violence in urban public transport, France

Organisation: SEMTA (Amiens Urban Public Transport Company)

Aims

The company wanted to ease the stress caused for public bus drivers by verbal aggression, harassment, abuse of the bus and missiles being thrown at buses.

Key elements

- A commitment from the bus company to channel resources (monetary and personnel) towards improving the safety of staff and vehicles.
- Joining forces with the Amiens suburban authority to combine preventative efforts with the municipal authorities, police, the justice system and educational institutes.
- Real-time monitoring of routes using GPS and using a radio network to keep drivers informed, e.g. about accidents.
- Strengthening ticket inspection and installing CCTV cameras on buses.
- Follow-up of missile-throwing incidents, including safety coordinators visiting associations involved in Anti-Aggression Week and schools in affected localities.
- Speeding up prosecutions with the collaboration of the justice system to make it clear to aggressors that they will be prosecuted.
- Making the public aware that aggressors will face consequences.
- Assistance and legal support given to victims by the bus company

The net effect of these measures was:

- A decrease in the number of attacks, broken windows and staff sick leave after attacks.
- Making the company's commitment to improving the situation clearly visible to employees.
- Enhancing social dialogue.

Further information

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Prevention of psychosocial risks and stress at work in practice, EU-OSHA, (2002) pp. 54–56.

http://osha.europa.eu/en/publications/reports/104

3.4.3. Light and shadow (Licht und Schatten), Germany

Lead organisation: BGF (Berufsgenossenschaft für Fahrzeughaltungen (Institution for statutory accident insurance and prevention in the vehicle operating trades)), Hamburg

Aims

- To increase the field of vision for bus drivers by both day and night.

- To improve traffic safety by considering all visual difficulties.

Key elements

- Poor eyesight, especially if combined with poor visibility, can lead to accidents. Many drivers also find that driving at night is stressful because darkness and the lights of other vehicles impair visibility.
- This seminar covers:
  - How to maintain good driving vision and gives hints on how to see well in the day and at night
  - How the eye works, discussing sight, impaired vision and eye disease
  - Which factors are important for correct visual perception such as mirror adjustment and visual field; problems such as amblyopia ('lazy eye') are highlighted
  - Hints on what can be done to improve eyesight – wearing glasses, using a sunscreen, keeping windscreens and headlamps clean
  - Awareness of the risks posed by driving with poor eyesight.

Further information

BGF

Ottensener Hauptstrasse 54

22765 Hamburg

Web: http://www.bg-verkehr.de/

3.4.4. Extra resting time for city bus drivers, Hungary

Organisation: BKV (Budapesti Közlekedési Vállalat (Budapest Transport Ltd.))

Aims

The implementation of working time legislation led to misunderstandings regarding its implications for public transport drivers and whether it applied to city bus drivers. After lengthy negations an agreement was reached between the management of BKV and the trade unions. The solution was to double resting periods from 20 minutes to two periods of 20 minutes, improving working conditions for drivers.

Key elements

- Management took recommendations from workers' representatives seriously.
- Extra resting time provides more comfort for drivers. It also makes the rest period less pressurised, and this enables some flexibility which helps with keeping schedules on time.
- Resting time cannot be taken at the start or the end of the working period.
- Permission to take rests is incorporated into the job specification of workers.
- The additional rest time had cost implications for the company; however the extra rest period significantly enhances bus drivers' mood so that they can handle any conflicts with passengers better. The number of accidents and cases of aggression has decreased since the new break was introduced (although no statistics are available).
- Better compliance, cooperation and flexibility of bus drivers have resulted in enhancements in shift planning and provide some flexibility to solve some unforeseen traffic situations.

Further information
Web: www.bkv.hu

3.4.5. The driver's diet, Italy

Organisation: ATAF (public transport company of Florence)

Aims

- To guarantee safety and quality of food for all those using the company canteen service of ATAF, Florence's public transport company.
- To make meals pleasant and appetising, and make sure they are healthy and nutritionally balanced.
- To design pleasant canteen facilities to encourage interaction during lunch breaks.
- To provide practical information about the nutritional content of the meals offered.

Key elements

Collaboration between representatives of the ATAF company canteen and the Florence Public Health Authority has led to the introduction of a new menu that takes account of the average daily calorie requirement for men and women, the age range of workers, the physical activity needed to perform their duties, and the need to provide light and easily digestible meals to prevent drowsiness after eating.

The operation has been publicised under the title 'The Driver's Diet'.

The daily menus were reviewed and dishes were colour-coded. Every dish is marked on the menu with its calorie and nutritional content; green dishes have a calorie content of fewer than 300 calories, yellow dishes have a calorie content of between 300 and 400 calories, and red dishes have a calorie content of over 400 calories. To reach the correct calorie intake level for lunch – between 1,000 and 1,100 calories – and to have a balanced mix of nutrients, the correct choice would be a red dish, a yellow dish and a green one.

This system was developed to make it easy for the canteen's customers to make an informed choice about the nutritional balance of their meal.

A booklet has also been prepared and distributed among the company's workers setting out the basic principles of a sound diet, in the hope that this will make it easy for workers to eat healthily away from work too.

Further information
http://www.ataf.net/System/files/Ataf_06_07@.pdf

3.4.6. 'Zero alcohol at work. Safety above all', Italy

Organisations: ATVO S.p.A. ((Azienda trasporti Veneto orientale) (a company involved in public transport, vehicle hire and vehicle repair))

SPISAL (occupational health and safety services), San Donà di Piave

ASL 10 Veneto Orientale (Azienda Unità Locale Socio Sanitaria n. 10)

Aims

The 'Zero alcohol at work. Safety above all' programme aims to encourage workers to consume no alcohol before or during work. This is intended to:

- reduce accidents
- create a better working environment
- reduce absenteeism owing to health problems
- encourage better shift organisation
- increase productivity
- create a better image for the company.

Key elements

An information campaign designed to make public transport drivers aware of the risks of drinking alcohol at work. The campaign was publicised through:

- The display of informative posters at the offices of ATVO and on its buses.
- Information sessions for bus drivers by experts from the Alcohol Unit from San Donà di Piave, which deals with the prevention or treatment of alcohol dependency in the workplace.
- The distribution of leaflets about alcoholic drinks and their effects, in particular in relation to driving buses.

Further information

SPISAL of San Donà di Piave
Via Trento no. 19

Alcohol Related Operating Unit of San Donà di Piave
Via Verdi no. 2

3.4.7. 'Safe driving', Italy

Organisation: ISPESL – Organisational Processes Department

Aims

Reduction in accidents and injuries through training workers about:

- Safe behaviour
- Belief in themselves
- Attitudes towards others
- Technical aspects of driving a vehicle
- Driving and the surrounding environment
- Behaviour in complex situations

Key elements

A training course for bus drivers in five sessions, the themes of which are:

- Principles of safe driving
- The driver
- The vehicle
- The environment
- Diagnostic forms.

The course uses active learning methods; in particular the swapping of experiences among workers, exercises to raise awareness of safe driving, and teamwork.

The following supporting material for the course was prepared:

- A 'Safe driving' leaflet
- A teacher's guide
- VHS support.

A guide to the creation of the course and the 'Safe driving' leaflet can be found on the ISPESL website.

Further information

http://www.ispesl.it/formaz/linee/esercitazioni.htm

http://www.ispesl.it/formaz/opuscoli/NStampaGuida.pdf

3.4.8. Working conditions and health of public bus and trolleybus transport workers, Lithuania

Organisation: Department of Environmental Health and Occupational Medicine, Kaunas University of Medicine

Aims

To investigate the occupational environment, lifestyle, psychosocial factors and self-evaluation in three transport enterprises, and analyse the data.

Key elements

- 788 workers filled in a questionnaire about their occupational environment, lifestyle and psychosocial factors.
- The investigation showed that the lifestyle of many employees is unhealthy: The most important results were: 46.0% were smokers, 83.8% drank alcohol, 52.8% were not sufficiently physically active, 31.8% lacked sleep, 82.5% had poor diets, and 27.0% of the drivers experienced stress situations at work every day.
- Exposure to diesel, coolants, noise, vibration, stress and musculoskeletal disorders were identified by the employees as harmful to their health.
- The majority of drivers' health impairments are musculoskeletal disorders, respiratory and gastrointestinal disorders and central nervous system diseases. Drivers' and workshop workers' musculoskeletal disorders were closely related to their profession, poor workplace ergonomic conditions, age, and length of service.

3.4.9. The health of urban public transport workers and the factors that influence their health status, Lithuania

Organisation: Department of Environmental Health and Occupational Medicine, Kaunas University of Medicine

Aims

To gain a greater understanding of the working conditions and their health implications for urban public transport workers.

Key elements

Studies were performed between 2001 and 2003 in four urban public transport enterprises. The studies analysed the working conditions and health of 2,200 employees and the factors that influenced their health status.

The study showed that the following factors have an impact on employees' health:

- Exposure to low temperatures, dry air, diesel exhaust fumes, noise, and musculoskeletal risk factors including vibration
- Long working hours, high levels of stress on the musculoskeletal system
- Unhealthy lifestyle; most of the employees smoked, consumed alcohol, had poor diets and were not active enough.

The predominant cause of death was diseases of the respiratory organs; traumas and poisoning were the second biggest cause of death, and diseases of the peripheral nervous system were the third biggest cause. The morbidity indices of transport employees were double the average for all insured employees in Lithuania.

3.4.10. 'Guide for the implementation of prevention measures. Risk assessment for micro-enterprises – Carriage of passengers', Spain

Organisations: National Institute for Occupational Health and Safety (Instituto Nacional de Seguridad e Higiene en el Trabajo (INSHT)), Ministry of Labour and Social Affairs

Aims

To prepare an informative and instructive guide which sets out the most frequent high-risk situations in public transport, in order to make risk assessment in small transport companies simpler.

Key elements

The guide:

- is aimed at employers and employees of small companies
- contains information which enables the employer, in collaboration with employees, to assess risks themselves. External experts are only required for those risks where assessment requires particular specialist knowledge
- sets out the measures and procedures used to reduce risks and when it is necessary to provide specific training for workers
- includes all the relevant legal requirements for the prevention of individual risk
- provides information in a clear and simple form that can be easily understood by anyone who, as often happens in small companies, does not have specific knowledge regarding safety
- is available online.

Further information

http://www.insht.es/InshtWeb/Contenidos/Documentacion/TextosOnline/Guias_Acc_Preventiva/Ficheros/gap_020.pdf

3.4.11. Urban and inter-urban bus-drivers: Psychosocial risk factors, and the development of suitable working clothes for women bus drivers, Spain

Organisations: Trade Union Federation of communication and transport of CCOO (Federación de Comunicación y Transporte de CCOO)

FENE-Bus (Federación Nacional Empresarial de Transporte en Autobús)(National Business Federation for Bus Transport)

Trade Union Federation of transport, communications and marine (UGT) (Federación de Transportes, Comunicaciones y Mar de UGT)

Foundation for the Prevention of Occupational Risks (Fundación para la Prevención de Riesgos Laborales)

Original title: Conductoras de autobuses urbanos e interurbanos: Factores de riesgos psicosociales – Vestuario femenino

Aims and objectives

- To improve the work environment for female bus drivers.
- To alter negative perceptions of women drivers. In the past women have not been accepted by either their peers or their passengers.
- To detect psychological risks faced by female bus drivers in a typically male-dominated occupation.
- To take appropriate prevention measures for those psychosocial risks.
- To provide female bus drivers with suitable clothing for their occupation.

Key elements

- An interview-based study was carried out among eight groups of urban and inter-urban women bus drivers in five Spanish cities. Male drivers also took part in this study in three of these groups. Safety engineers and personnel managers were also interviewed.
- The identified psychosocial risks were bad ergonomics, workload, personal hygiene, lack of training, and social relationships: included in this last risk were the issues of working hours, the balance between work and family life, and stress.
- Among the prevention measures suggested were:
  - Better bus cabin design
  - Appropriate breaks
  - Providing sanitary infrastructure in collaboration with municipalities
  - Training with a specific vehicle manual
  - Prevention of violence and harassment with support from psychologists
  - Adapting work schedules to the real conditions of driving, such as allowing for heavy traffic conditions
  - Induction and integration policies specifically for women drivers

- Setting up day care centres for children up to three years old with opening hours adapted to work schedules.
- Providing career development opportunities

- Recommendations for the type of uniform offered to female drivers, for example:
  - Sizes and styles adapted to women
  - A variety of clothes and shoes to cover different weather conditions/seasons
  - Polo shirts, trousers
  - Uniform garments for pregnant women
- A short prevention guideline was developed based on the results of the study. It is in two parts: psychosocial risks; female uniform.

Further information

Federación de Comunicación y Transporte de CCOO
Plaza de Cristino Martos, 4-6ª planta
28015 – Madrid
Email: fct@fct.ccoo.es
Web: www.fct.ccoo.es

Detailed report of the study:
http://www.fct.ccoo.es/comunes/temp/recursos/31/69896.pdf
Prevention guideline:
http://www.fct.ccoo.es/comunes/temp/recursos/31/69897.pdf

3.4.12. The safe and fuel-efficient driver training programme, UK

Organisation: First UK Bus

Aims

First UK Bus introduced new driver training to reduce road traffic accidents, improve safety for drivers and reduce fuel costs and emissions.

Key elements

- In December 2006, First UK Bus developed a training partnership with an American-based company the Smith System, a globally respected driver-training provider with more than 50 years' experience, which specialises in road safety and fuel-efficient driving.
- The Smith System organisation has trained and accredited 200 First UK Bus Trainers and Buddies (mentors), to pass on its well-established fuel-efficient and safe driving techniques to other First UK employees.
- The Smith System technique is based on five easy-to-remember keys to safe and fuel-efficient driving.
- The training strategy is three-dimensional:
  - For newly recruited employees, as part of their basic PCV licence training
  - For existing experienced drivers, who receive an Advanced Safe Drivers version

- For drivers who have been involved in incidents, and are provided with refresher training. The aim is to identify any unsafe driving habits and teach safe alternatives, while also teaching the enhanced driving skills developed by the Smith System programme.

Further information

Mr David Mercer

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3.4.13. The RSMS safety management system, UK

Organisation: First UK Bus

Aims

First UK Bus has recently revised and enhanced the way it trains, develops and manages employees whose principal task is to drive, or who drive as one element of their employment. The aim of the review was to reduce vehicle-related incidents and associated harm.

Key elements

First UK Bus has put into practice a vehicle-related injury prevention system known as the First UK Bus Road Safety Management System (RSMS). The system is risk-based and ties in closely with First UK Bus's Risk Management Systems.

The RSMS is a series of policies, standard operating procedures (SOPs) and training standards that are aimed at preventing injury, promoting safer driving and raising fuel efficiency in three ways:

1. **Proactively**: through the careful selection, recruitment, basic training and continual professional development of its new and experienced employees
2. **Reactively**: through a paperless vehicle incident reporting system which is supported by a robust, holistic incident investigation process. This uses an incident investigation toolkit designed for First UK Bus that makes it simple to identify the immediate, underlying and root causes of each incident. The toolkit is also designed to reduce the chances of a similar incident happening again by offering consistent and effective remedial action.
3. **Actively**: by monitoring. Managers and supervisors routinely monitor drivers overtly and, in certain situations where concerns are raised, drivers may also be covertly monitored. The RSMS links in with First Group injury prevention 'conversations' to stimulate positive injury prevention. Where unacceptable driving standards are identified, on-the-spot coaching is given and records of agreed corrective actions are made in the driver's personal injury prevention handbook.

Further information

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3.4.14. London buses: action plan for women drivers, UK

Organisation: Transport for London

Aims: to improve recruitment and retention of women bus drivers by offering them appropriate working conditions

Key elements

- The first female bus driver was hired in London in 1976. By 2003, there were over 1,200, about 6% of the workforce. The next year, a working group of Transport for London, the bus employers and the T&G trade union was set up to bring more women into the industry by offering appropriate working conditions.
- As a result, women-only recruitment days have been held at bus garages, where women looking for a job could speak to women who are already driving. Though not in large numbers, more women have been taken on, and there are 'women mentors' in the depots to support them. There are also some limited tax breaks and vouchers to help with childcare costs, as well as women's facilities provided.
- Since the 'Oyster' card system – a rechargeable smart card – was brought in for passengers to pay their fares, not much cash is handled on London buses, and this has reduced the risk of violence. All buses have a radio system and an alarm button, and are satellite-tracked for security. There is a big poster campaign across the city warning the public against any violence towards transport staff, women or men. The T&G trade union has also introduced a 24-hour service for women to report any incidents of harassment or violence. There is training for staff and all managers that emphasises zero tolerance for discriminatory behaviour.
- There are now more women trade union representatives from the London Buses workforce. They are continuing to work on issues such as childcare and flexible work patterns.

Further information

'Women in the Bus Industry' Action Plan for London Buses, July 2004: http//:www.tfl.gov.uk/tfl/corporate/jobs/currentcampaigns/womenbusdrivers

'Women on the road to a safe and healthy working environment', International Transport Workers Federation (ITF): http://www.itfglobal.org/files/extranet/-1/7387/RTWomen.pdf

3.5. Discussion

The case studies on passenger transport feature a variety of initiatives and interventions to protect drivers. These initiatives have been taken at various levels; some are national or regional, and others are specific to independent companies. Within the case studies a number of hazards are identified and where these hazards cannot be removed, various control measures are implemented to reduce the risks.

Many of the cases focus on the prevention of aggression and violence, as this is seen as a growing problem within the transport industry. This not only results in physical injuries but can also cause high levels of stress for drivers. Security is also a major concern for passengers and affects the public's perception of bus travel.

A number of case studies describe initiatives and interventions to reduce road traffic accidents. Driver training is featured most prominently, with a few examples mentioning technology to promote safe driving. With the growing emphasis on environmental considerations, driver training is being adapted not only to improve the safety and comfort of drivers, passengers and other road users, but also to reduce fuel consumption and CO_2 emissions.

Ergonomic issues are also featured in some of the case studies. Bus drivers need to maintain static postures whilst driving, and this can lead to musculoskeletal disorders. By giving careful consideration to the cab layout and seat design, improvements were made to reduce the risks. There are also initiatives on accidents, such as slips, trips and falls, and driver wellbeing, e.g. improved rest facilities, and health promotion.

Tackling risks at source

The most effective management of risks uses measures that focus on prevention at source, namely organisational measures that prevent accidents/incidents before they occur. A number of interventions for the protection of transport drivers take an organisational approach to risk prevention and/or prevention at source, such as ergonomic improvements to the driver's cabin (cases 3.3.6 ('The workplace of urban buses – Germany'), 3.3.15 (TUSGSAL, Spain) and 3.3.17 (HSL, UK)), and the examples on tackling violence (see below). Measures used to prevent stress included traffic information/management systems (e.g. case 3.3.9 'Integrated traffic management system - Hungary') and improved service schedules.

Prior analysis and risk assessment

Prevention should be based on prior risk assessment which identifies the various hazards and establishes ways of reducing the associated risks. The methodologies for risk assessment differ throughout the cases. Selection of measures or priorities is mostly based on general empirical data, and an intervention is sometimes prompted by the occurrence of a severe accident, when the organisation concerned seeks to prevent such an event happening again.

A few cases offer new methodologies to improve risk assessment. For example a holistic approach (case 3.3.7 (ELINYAE - Greece)) that incorporates numerous hazards encountered by bus drivers, such as environmental hazards, stress, noise and vibration or a CD to give an overview of most frequent risk-types (e.g. in case 3.3.10 'Training course for public passenger transport drivers – Italy'). In case 3.3.3 (MIVB and De Lijn - Belgium) risk assessment becomes part of the solution, as drivers are trained to make their own risk assessments.

The cases show that the selection of measures or priorities is mostly based on general empirical data (national data, research reports, and insurance company data), and sometimes influenced by the prior occurrence of a severe accident (for example: 3.3.18 'Driver and Passenger Safety, Trojan Bus campaign First Leeds – UK'). Case 3.4.12 ('Safe and Fuel-Efficient Driver Training Programme – UK') describes the benefits of an effective accident and incident reporting procedure. Case 3.3.1 ('Safety Plan "De Lijn" – Belgium') is another example of a case that was initiated after a serious accident. The organisation concerned had also received indications from bus drivers that they were facing a rising amount of aggression. In case 3.3.3 ('Initiatives to prevent occupational accidents – Belgium') the selected measure was based on statistics provided by the organisation's insurance company.

The CD developed in case 3.3.10 ('Training courses on safety for public transport drivers – Italy') can be seen as a tool that enhances the quality of risk assessment by making drivers aware of risks in their environment. The CD gives an overview of most risk types for drivers of land-based vehicles. Workers can participate in tests to assess their risk perception. From these tests they learn to identify and prevent risks. They can also hear the comments of other workers and learn about best practice.

In two of the stress cases, further investigation was the most important part of the project (case 3.3.4 'Stress on public passenger transport drivers – Germany' and 3.3.16 'An intervention focusing on psychosocial factors in a private transport company – Spain'). The investigation mainly consisted of interviews with the relevant company staff using a questionnaire format. A good example of a comprehensive risk assessment method focusing on psychosocial factors is the MARC technology used in case 3.3.16. This case used a questionnaire to carry out an ergonomic risk assessment of hazards faced by drivers.

Other techniques included carrying out a 'hotspot overview' in relation to violence to staff. Examples to assess workers' driving skills include, the RoadRISK software tool (case 3.3.14 - the Netherlands).

Partnership

Partnership features frequently in the passenger transport cases presented in this report. In 50% of cases, partnerships are set up either internally or with external partners. Partnerships are often mentioned as an important contributing factor to the success of projects. Involving different key actors in an active way ensures that support for the measures exists, that people

understand each other better, and that knowledge and skills are brought in from different sides. Partners in the cases included trade unions, employers' associations, labour inspectorates, institutes for occupational health and safety, insurance companies and expert institutions or universities.

One of the factors leading to the success of the integrated approach in the cases on third-party violence to staff was the active involvement of diverse actors such as crime prevention bodies, government transport ministries, police and justice, schools and youth associations, and street corner workers.

Integrated approach

Partnerships are, among other things, established to develop an integrated approach to a problem. Often, single measures are not sufficient: there is a need for actions on different levels at the same time, in which several key actors are involved in order to obtain a more sustainable solution to a problem. Examples are cases 3.3.1 (De Lijn's 'Safety plan' – Belgium) and 3.3.11 (CTP – Italy), which both aim to tackle violence on buses.

Worker participation

Active participation of workers in the case studies consists of consultation, training, participation in comprehensive questionnaires (e.g. case 3.3.7 'Holistic risk assessment – Greece'), interviews, and engagement in social dialogue. Workers were also engaged in a campaign aimed at combating violence and reducing stress. In most cases the workers were actively involved in the process.

Involvement of workers in risk assessment and development of solutions is always important as they have the knowledge of the actual work circumstances. Effective worker participation is particularly important in the case of drivers as they are frequently found to be sceptical about this type of initiative. Sufficient time must be allowed to explore, test, revise and implement changes. For example, case 3.3.11, on the prevention of violence on Naples buses, involved a joint approach with the trade unions; case 3.3.2 'Get on the Front' (Belgium) included training in which staff were given the opportunity to discuss the changes in their work routines. In case 3.3.13 ('Going for Green – Netherlands') older, experienced workers received training to enable them to train other drivers. The programme was developed with the involvement of drivers.

Examples of worker participation and engagement included the following:

- *Participation in questionnaires* (cases 3.3.4 'Stress on public passenger transport drivers, Germany', 3.3.7 'Holistic risk assessment of drivers in the public transportation sector – evaluating driver competence tests, Greece', 3.3.14 'Implementation of RoadRISK Tool, the Netherlands' and 3.4.8 'Working conditions and health of public bus and trolleybus transport workers, Lithuania').
- *Interviews* (case 3.4.11 'Urban and inter-urban bus-drivers: Psychosocial risk factors and female wardrobe, Spain'),
- *Engagement in social dialogue,* e.g. case 3.3.2 'Get on at the Front, Belgium'.
- *Actively engaged during the process*. For instance, in case 3.3.8 'Renovating bus terminals for comfort, Hungary', the workers were involved during the decision-making process and they gave inputs or feedback on how to improve the final outcomes (for example, study of new driver cabins).
- *Interactive training sessions* were used in case 3.3.2 'Get on at the Front, Belgium', where the new boarding rules were presented and the advantages were discussed.
- *Engagement in campaigns* focused on young adolescents to promote awareness and gain acceptance of the new rules (cases 3.3.12 'Trek die lijn, the Netherlands', and 3.3.19 'The School Run driver training, UK').
- *Other cases demonstrating driver involvement* include case 3.3.3 'Initiatives to prevent occupational accidents, Belgium', and case 3.3.13 'Going for Green, the Netherlands'.

Aggression and violence to drivers

Various cases deal with risks in the form of threats and violence to drivers and passengers. It is a serious problem – not only because it involves injury and stress to staff and physical damage to buses, but also because it increases the risk of drivers having a road accident. Since the links between violence to staff, road safety, stress and a decline in physical wellbeing are generally acknowledged, in many of the approaches these issues are tackled together.

The examples typically involved partnerships, for example involving schools, crime prevention schemes, police and traffic authorities. In many of the examples different levels were influenced at the same time (directed at both drivers and management) and different key actors were involved from inside and outside the industry. The multidimensional approach is applied because it is recognised that action is needed on different levels in order to develop an adequate solution to the problem. Staff training was also an important facet of cases: how to cope with difficult situations; mental and physical resistance; how to handle diversity in society; and stress.

Several cases cover the 'school run' and the approaches used often included involving children in the solutions. Examples include:

- appointing a prevention officer with outreach responsibilities, e.g. to work with schools;
- using theatre with children to identify issues and solutions;
- once children had identified and agreed their own rules of behaviour, getting them to 'police themselves' on the buses;
- organising joint training with drivers and children so that both gain a common understanding of the other, as training for drivers in isolation was thought unlikely to be successful;
- taking a holistic approach so responsibility for behaviour does not just suddenly change inside and outside the school gate;
- appointing intervention officers – assistants who work with ticket inspectors;
- work with schoolchildren combined with more 'conventional' measures such as:
  - protective coatings to side windows, driver's cab separated from passengers, CCTV, tracking systems, radio links for rapid intervention etc.;
  - making post-incident legal support and counselling available to staff.

Concrete actions to combat aggression and violence can be divided into the following categories.

- Technical measures such as cameras, alarm systems and mobile phones (examples: 3.3.1 '"De Lijn" Safety plan, Belgium', 3.3.18 'Driver and Passenger Safety, Trojan Bus Campaign, UK').
- Increased collaboration with police and justice (preventive and repressive), (examples: 3.3.1 '"De Lijn" Safety plan, Belgium'; 3.4.2 'Risks relating of third-party violence in urban public transport, France').
- Training of staff on how to cope with difficult situations; mental and physical resistance; how to handle diversity in society; and stress (examples: 3.3.1 '"De Lijn" Safety plan, Belgium', 3.3.11- '"Objective secure travelling" and "driving in security" programmes, Italy; 3.3.13 'Going for Green, the Netherlands'; 3.3.19 'The School Run driver training, UK').
- Projects set up with external partners, such as young people, schools, charity organisations, police, justice and unions (3.3.5 'Stress prevention for urban bus/tram drivers, Germany', 3.3.11 'Objective Secure Travelling' and 'Driving in Security' Programmes, Italy, 3.3.19 'The School Run driver training, UK').

Stress

Another occupational risk that is dealt with in the cases is stress. In one case, the research concerned the health and productivity implications of stress; in another case a map of the psychosocial profile of the company was drawn (3.3.5 'Stress prevention for urban bus/tram drivers, Germany', 3.3.1 '"De Lijn" Safety plan, Belgium'). An important issue described in the cases is the development of stress prevention training. In all cases there was close cooperation with the drivers.

Solutions aimed at reducing stress can be divided into:

- Technological, for example traffic management systems, and interactive communications with dispatchers.
- Organisational, for example resting time, creation of innovative service schedules and installing enough toilets, advisory board for psychological stress.
- Training and guidance, including stress management seminars and psychological attendance management for drivers who are involved in severe accidents.

Safe driving

Examples of cases in which safe driving is an element are: 3.3.5 'Stress prevention for urban bus/tram drivers, Germany', 3.3.14 'Implementation of RoadRISK Tool, the Netherlands', 3.3.10 'Training courses on safety for public transport drivers, Italy', 3.4.1 'Checklist for bus drivers, Austria', and 3.4.7 'Safe driving, Italy'.

The cases that focus on safe driving were initiated both by employers and intermediaries. Measures introduced by the organisation, for example traffic management systems, also have beneficial effects on organisational effectiveness and working conditions by minimising stress. Most of the case studies presented may have an indirect effect on driving safety.

Ergonomics

Some of the cases included in this report show how ergonomic problems can often be overcome with simple changes, such as correct seat adjustment, as highlighted in case 3.3.17 (UK) on whole-body vibration and ergonomic issues, or by modifications to the design of the driver's cab, such as installing rear-view cameras, as described in case 3.3.15 (TUSGAL - Spain). Detailed ergonomic analysis often requires the collaboration of numerous parties (for example drivers, transport companies, ergonomists and vehicle manufacturers), and sometimes sacrifices need to be made, such as removing two passenger seats to optimise the driver's workspace, as described in case 3.3.6 (Germany). Some of the ergonomic measures described in the report involved a high level of technical expertise, scientific measurements, 3D simulations and anthropometric modelling. A number of the cases feature vehicle design features/modifications to improve the ergonomics of the driver's working environment; these include: rear-view cameras, chipcard memory function seats, and repositioning rear-view mirrors.

Slips, trips and falls

Only case 3.3.3 ('Initiatives to prevent occupational accidents, Belgium') specifically addressed this issue. Transport companies, in collaboration with their insurers and an occupational health and safety institute, delivered training and a poster campaign targeted at drivers to raise their awareness about occupational risks and to remind them to take care. One of the measures was training sessions in which drivers were asked to make their own risk assessment of their work environment. Another transport company took a sequence of photos from the moment a bus driver leaves his/her house to document: what he/she does during the working day; identifying the possible dangers, such as stairs, stepping into the bus, then into the drivers' cubicle, damage to the road surface, etc. These photos were displayed in the rooms where the drivers take their break.

Driver wellbeing and health promotion

A number of cases focused on driver wellbeing. The approach was usually one that involved the company making improvements, not just awareness-raising, e.g. snapshot 3.4.5 ('The driver's diet – Italy) where canteen facilities were improved and case 3.3.8 from Hungary where facilities at the bus terminal were improved.

Some cases address health issues from diet, alcohol consumption and lifestyle perspectives (e.g. 3.4.5 ‘The driver’s diet, Italy’, 3.4.6 ‘Zero alcohol at work’ - Italy).

Workforce diversity

Ensuring working conditions are suitable for women bus drivers as well as men is important for their health and safety. But it also makes good business sense in that it helps to recruit and retain women bus drivers. Two of the snapshot examples focus on adapting working conditions to women workers. Snapshot 3.4.11 (Spain) looks at various issues including uniforms. Snapshot 3.4.14 (Transport for London) involves an action plan for women workers developed in a partnership approach between municipal government body/employer and trade union.

Case 3.3.5 (‘Stress prevention.. – Germany’) mentions the need to adapt training methods so they are suitable for older and foreign workers. Other cases covered ongoing training for older workers and using older workers’ experiences, e.g. case 3.3.13 (‘Going for Green – the Netherlands’).

Success factors

Success factors that can be identified in the passenger transport cases include:

- commitment of line management and senior management;
- basing interventions and risk assessments on actual issues found in passenger transport;
- integrating or combining interventions that are aimed at different risks;
- integrating or combining interventions that are aimed at different groups;
- implementation at various levels in the organisation;
- collaboration with other parties, and actively involving the partners in finding the solution;
- involving drivers through consultation and training;
- allowing sufficient time for consultation on change, especially where drivers may be sceptical;
- using validated training techniques.

Barriers and obstacles

Difficulties that had to be overcome in some of the cases include:

- obstacles to driver involvement such as drivers finding it difficult to find time to participate;
- changing target groups (especially when aiming at students);
- drivers feeling uncomfortable or reluctant to change;
- how to effectively engage and work with external partners;
- constraints in time or budget.

Recommendations

Recommendations to increase the effectiveness of interventions include:

- perform adequate risk assessment (participative and holistic approach);
- adapt methods and measures to the sector;
- optimise the effectiveness of measures by a multi-method multi-risk approach;
- don’t forget to pay attention to the physical risks, like slips, trips and falls;
- involve key actors from within the organisation as well as from outside, making sure they are actively involved;
- involve drivers throughout, acknowledging and incorporating their experience, and work with them to show that things can sometimes be done differently;
- fully appreciate the amount of time that will be needed to work through issues, introduce trials or pilots, etc., especially when both drivers and the public are involved in a change process;
- evaluate the safety and business benefits of the measures.

Diversity of approaches and innovation

Some examples are listed below to illustrate the diversity and innovation seen in the cases:

- Case 3.3.4 ‘Stress on public passenger transport drivers, Germany’. This case describes how the use of conventional and universally tried and tested methods in conjunction with bespoke methods enables comparisons to be drawn, whilst enabling a thorough investigation into company-specific issues. The stress aspects were included in the risk assessment of public passenger transport drivers, after the most critical risk factors in the sector had been defined. The highest-rated stress factors were: risky work situations, irrational behaviour of some passengers, limited scope for drivers to make their own decisions, and the continual high attention and responsibility for the passengers, climatic circumstances and time pressures and, within cities, violence as well.
- Case 3.3.5 ‘Stress prevention for urban bus/tram drivers, Germany’. Computer-based training is utilised in this case to deal with stress. As stress can be difficult to talk about and admit to, drivers may feel more comfortable using tools of this type.
- Case 3.3.6 ‘The workplace of urban bus drivers, Germany’. In this case chipcard memory function seats are provided to help drivers achieve a supportive driving position. Chipcard memory seats could, with guidance, help drivers find a suitable seating position that can quickly and easily be altered for each driver when they start their shift.
- Case 3.3.9 ‘Integrated traffic management system, Hungary’. Here a central control centre utilises tracking technology and traffic management to speed up routes, reduce stress and provide support for drivers. This not only benefits drivers but also improves the service for customers.
- Case 3.3.13 ‘Going for Green, the Netherlands’. This case provides guidance and empowerment for drivers to help them interact with passengers, allowing them to use their initiative to assess and influence the passenger’s mood. This is a highly flexible and adaptable method, which helps drivers to use their own discretion when dealing with potentially contentious situations as they happen.
- Case 3.4.2 ‘Risks relating to third-party violence in urban public transport, France’, describes how bus companies can join the Amiens suburban authority where different partners (municipal authorities, the police, representatives of courts of justice, educational institutions, etc.) integrate their efforts in preventing violence.
- Case 3.4.5 ‘The driver’s diet, Italy’, involves the provision of dietary guidance and healthy meal choices in the ATAF company canteen. Studies such as those discussed in cases 3.4.8 and 3.4.9 have shown that many bus drivers have poor diets. By providing drivers with canteen facilities serving healthy meal choices the scale of this problem could be reduced.
- Case 3.3.14 ‘Implementation of RoadRISK Tool, the Netherlands’. The RoadRISK tool is a software application that incorporates a questionnaire and is used to assess drivers’ skills, knowledge, attitudes and behaviours in order to establish their personal training needs. The information is also registered and analysed to improve the relevance of generic training programmes. The software has also been used in the UK, with an effective reduction (40%) of traffic-related damage to buses.
- Cases such as 3.3.1 ‘“De Lijn” Safety plan ’, 3.3.11 ‘Objective – secure travelling’, and ‘Driving in Security programs’, 3.3.12 ‘Draw the line’, and 3.3.19 ‘The School Run’, involved collaboration with groups in the local community. This included schools (schoolchildren) as well as youth associations to develop solutions to third-party violence and vandalism. There was also collaboration with others in the local community such as ‘street corner’ workers (social workers), who were given free tickets to facilitate their contact with persons who may need help, and also cultural events organised with the local community. Concerted action and synergy with different key players is most likely to produce a feasible and effective action plan.

3.6. Conclusions

In summary, the cases demonstrate that a number of measures can be taken to control risks and improve safety for passenger road transport drivers. These measures can also lead to an improved service for passengers and financial savings for transport companies. The cases highlight a number of key lessons that can be learned in terms of success factors, challenges and barriers, gaps in knowledge and practice, and areas of innovation. The identified lessons provide a useful framework and map by which to inform strategies and actions that could be developed and implemented by policy makers, employers, drivers and other key stakeholders concerning methods to protect the health and safety of drivers in the passenger transport sector.

3.7. Overview of cases

3.7.1. Full case studies

Case No.	Case title	Country	Organisation	Level of intervention	Description
3.3.1	Safety Plan	Belgium	De Lijn	Company	Integrated safety policy to combat aggression.
3.3.2	Get on at the Front	Belgium	MIVB-STIB	Company	Passenger / driver interaction to improve security.
3.3.3	Initiative to prevent occupational accidents	Belgium	MIVB-STIB & De Lijn	Company	Campaign & training to prevent occupational accidents focusing on slips, trips and falls, and rebound of the steering wheel.
3.3.4	Stress on public passenger transport drivers	Germany	Bavarian Labour Inspectorate	Regional	Campaign to reduce work-related stress.
3.3.5	Stress prevention for urban bus / tram drivers	Germany	BGF	National	Training to reduce work-related stress.
3.3.6	The workplace of urban bus drivers	Germany	BG Bahnen at al	National	Ergonomic improvements to drivers' workplace
3.3.7	Holistic risk assessment of drivers in the public transport sector	Greece	ELINYAE	National	Holistic risk assessment model.
3.3.8	Renovating bus terminals for comfort	Hungary	Budapest Transport Ltd	Company	Improved facilities for drivers in bus terminals
3.3.9	Integrated traffic management system	Hungary	Budapest Transport Ltd.	Company	Integrated traffic management system to improve working conditions for drivers and service for passengers

Case No.	Case title	Country	Organisation	Level of intervention	Description
3.3.10	Training courses for public transport drivers on CD-ROM; 626 Autolinee and MASCOTTE	Italy	INAIL	National	CD-Rom self help and training tools
3.3.11	'Objective – Secure Travelling' and 'Driving in Security' programmes	Italy	CTP, Naples	Company / Regional	Policies to reduce violence
3.3.12	Draw the line	The Netherlands	HTM Passenger Transport NV	Company	Programme to combat vandalism and violence.
3.3.13	Going for Green	The Netherlands	Veolia Transport International	Company / International	Programme to help drivers deal with customers and confrontations
3.3.14	Implementation of RoadRISK Tool	The Netherlands	Connexxions Public Transport	Company	Driver assessment tool
3.3.15	The ergonomics and technology of the driver's cabin in urban transport	Spain	TUSGSAL et al	Company	Improvements to vehicle design
3.3.16	An intervention focusing on psychosocial factors in a private transport company	Spain	PRU & TUSGSAL	Company	Psychosocial and behavioural risk assessment and intervention
3.3.17	Whole-body vibration and ergonomic assessment	UK	HSL	Company	Assessment of vibration levels and the ergonomics of a bus driver's cab
3.3.18	Driver and Passenger safety, Trojan Bus campaign	UK	First UK Bus	Company	Covert CCTV cameras to catch perpetrators of vandalism and violence
3.3.19	The School Run	UK	DfT & Crime Concern (Catch22)	National	Training programme to help drivers deal with young people and avoid or deal with confrontation.

3.7.2. Snapshot case studies

Case No.	Case title	Country	Organisation	Level of intervention	Description
3.4.1	Checklist for bus drivers	Austria	IRU	National (IRU members)	Checklist for bus drivers
3.4.2	Risks of third-party violence in urban public transport	France	SEMTA	Company	Programme to combat violence
3.4.3	Light and Shadow	Germany	BGF	National (BGF members)	Eyesight advice
3.4.4	Extra resting time for city bus drivers	Hungary	BKV	Company	Improved working conditions for bus drivers
3.4.5	The driver's diet	Italy	ATAF	Company	Improved canteen facilities providing healthy food options for drivers
3.4.6	Zero alcohol at work. Safety above all	Italy	ATVO	National	Zero alcohol campaign
3.4.7	Safe driving	Italy	ISPESL	National	Driver training
3.4.8	Working conditions and health of public bus and trolley bus transport workers	Lithuania	Kaunas University of medicine	Three companies	Investigation into the working conditions and health of public bus and trolley bus transport workers
3.4.9	The health of urban public transport workers and the factors that influence their health status	Lithuania	Kaunas University of medicine	Four companies	Investigation into the health of urban public transport workers and the factors that influence their health status

Case No.	Case title	Country	Organisation	Level of intervention	Description
3.4.10	Guide for the implementation of prevention measures. Risk assessment for micro-enterprises – Carriage of passengers	Spain	INSHT	National	Risk assessment guide
3.4.11	Urban and inter-urban bus drivers: psychosocial risk factors – female uniform	Spain	Trade Union Federation of communication and transport of CCOO	National	Study and recommendations to improve the work environment for female bus drivers and the comfort of their uniform
3.4.12	The safe and fuel-efficient driver training programme	UK	First UK Bus	Company	Driver training
3.4.13	The RSMS safety management system	UK	First UK Bus	Company	Driver training
3.4.14	London buses: action plan for women drivers	UK	Transport for London	Regional	Appropriate working conditions for women workers, partnership approach with trade union

3.8. Classification of cases

3.8.1. Full case studies

Case No.	Safe driving	Violence	OSH management	Coordination with contractors	MSDs	Slips, trips	Health /wellbeing	Equipment design	Communication – route planning	Working hours	Long distance	Short distance	Organisational focus	Individual focus	Training	Guides	Technology – design	Campaign awareness-raising	Safety and health focus	Wellbeing focus	Partnership	Worker consultation
3.3.1		X	X					X	X			X			X		X		X	X	X	
3.3.2												X	X	X	X			X	X		X	X
3.3.3						X					X	X		X	X			X			X	
3.3.4			X				X							X						X	X	X
3.3.5							X				X	X		X	X		X			X	X	
3.3.6					X			X											X		X	X
3.3.7			X				X					X	X						X	X		X
3.3.8			X					X				X		X						X	X	X
3.3.9							X		X			X	X				X			X		
3.3.10					X		X				X	X		X	X		X		X	X		
3.3.11		X					X	X	X			X	X	X	X		X	X	X	X	X	
3.3.12		X					X					X	X	X				X	X	X	X	
3.3.13		X					X				X	X		X	X				X	X		
3.3.14	X										X	X		X	X				X			X
3.3.15					X		X	X			X	X	X	X					X	X		
3.3.16			X								X	X	X			X			X			
3.3.17					X		X				X		X	X					X	X		X
3.3.18		X					X	X				X	X	X					X	X	X	
3.3.19		X										X	X	X	X				X	X	X	X

3.8.2. Snapshot case studies

Case No.	Safe driving	Violence	OSH management	Coordination with contractors	MSDs	Slips, trips	Health /wellbeing	Equipment design	Communication – route planning	Working hours	Long distance	Short distance	Organisational focus	Individual focus	Training	Guides	Technology – design	Campaign awareness-raising	Safety and health focus	Wellbeing focus	Partnership	Worker consultation
3.4.1	X		X				X				X	X		X		X			X	X		
3.4.2		X						X					X	X					X		X	
3.4.3	X						X							X		X		X	X	X		
3.4.4							X			X		X	X							X	X	
3.4.5							X							X				X	X	X		
3.4.6	X													X	X	X			X			
3.4.7	X		X											X	X	X			X			X
3.4.8																						
3.4.9																						
3.4.10							X	X		X		X	X				X		X	X		X
3.4.11							X	X		X		X	X				X		X	X		X
3.4.12	X													X	X				X			
3.4.13	X		X										X	X	X				X			
3.4.14		X					X			X									X		X	X

4. Advice on managing risks

The various initiatives described in this report show how risks to drivers in the road transport sector can be successfully managed. This section of the report provides some basic guidance on managing risks to drivers of freight and passenger road transport.

4.1. Managing risks to freight transport drivers

Apart from protecting the lives, health and wellbeing of drivers, good management of health and safety has business benefits: enterprises that manage health and safety well and adopt a road safety policy generally reduce their operating costs as a result. Furthermore, road accidents involving heavy goods vehicles are damaging to the image and public acceptance of the company. When managing health and safety both driving and non-driving risks need to be taken into account. Below is some general advice about managing risks.

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General

- Establish a written safety policy and instructions for your drivers and any self-employed drivers you hire; ensure the responsibilities of managers and supervisors regarding OSH are clear.
- Ensure alignment with road traffic legislation and highway codes including requirements relating to tachographs, driving times, vehicle inspection and driving licences.
- Include your road safety procedures in other management areas such as quality certification and marketing promotions, and get a commercial benefit from them.

Vehicles

- Provide a seatbelt for the driver and each passenger required to travel in the vehicle.
- Purchase vehicles that are equipped with the best safety features including seatbelts and air bags, safety screen behind the driver's seat, anti-lock brakes, load safety devices, blind spot elimination equipment, etc.
- Establish procedures to ensure proper maintenance of your vehicles and equipment, e.g. loading equipment, access equipment to vehicles.
- Provide drivers with a system for reporting faults, and make sure faults are repaired quickly.

Driving

- Establish schedules that allow drivers enough time to obey speed limits and avoid peak-hour driving. If speed-limiting devices are fitted, check they are not tampered with.
- Take account of weather and adverse conditions when setting schedules.
- Specify safe routes, preferably motorways.
- Ensure that mobile phones are used appropriately.

Working hours and rest

- Monitor and control driving hours within recommended safe limits and legal requirements.
- Loading can cause fatigue. If possible use trained personnel other than drivers to do the unloading. Plan rest periods for drivers who are required to load and drive.

Drivers

- Employ suitable drivers. Check their driving licence background. Check they are fit to drive.
- Ensure drivers are trained in safe driving practices, checking vehicle safety, proper use of vehicle safety features, safe loading of vehicles, driving posture, avoiding falls from vehicles. Plan refresher training and regular briefings; train managers and supervisors regarding OSH too.
- Develop clear policies on control of alcohol and other substance abuse.
- Make arrangements to ensure account is taken of the road safety performance of individual personnel.
- Promote consultation, dialogue and participation in OSH matters – ensure staff consultation and an internal communication system, providing a channel for staff to report problems and put forward comments and suggestions; involve staff in risk assessments and development of prevention measures.
- If you contract owner-drivers you can still specify standards for vehicle maintenance, safety features, seatbelt use, training and experience, driving schedules, routes etc., and safety procedures will often be directly or indirectly under your control.

Coordination with clients

- Avoid making any concessions that might adversely affect road safety, such as changes to driving hours and waiting times or agreements to overload your vehicles.
- Ensure that information regarding site delivery, loading/unloading is obtained and made available to drivers.
- Work with clients regarding safety measures for drivers at their premises. Pass information on to them; for example, information their staff need to know about safe unloading of your vehicles.
- Set up a system for drivers to report problems and share information regarding deliveries to clients.
- Ensure that customers are aware of your road safety commitment and encourage them to take a greater interest in road safety.

Falls from vehicles

- Agree safe ways of loading and unloading to minimise the amount of time workers have to spend on the vehicle loading area.
- Carry out regular checks on the condition of equipment such as steps and catwalks.
- Provide adequate lighting in depots and on the vehicles where work is carried out.
- Keep vehicle beds and catwalks tidy to help prevent trips and slips.

- Provide safe vehicle washing facilities and make sure they are used.
- Diesel, grease or mud increase the likelihood of slipping on the catwalk, steps or load area.
- Provide steps, gantries and platforms where work at height is unavoidable for loading and unloading or maintenance and cleaning.
- Provide suitable slip-resistant footwear for drivers.

Championing OSH

- Transport enterprises can demonstrate their expertise by setting standards for their personnel and encouraging road safety improvements in the local area where their business is based.
- Work with your local authority on improvements or adopting a safety plan, which could include a local road safety charter. Take the initiative and point out any problems or possible road safety improvements.
- Drivers can also use their expert knowledge of the problems and become involved in public work to improve road systems, signs and signals, public information and the education of the young.

Further information

- More advice for employers and drivers is given in EU-OSHA *Factsheet 18 – Preventing Road Accidents involving Heavy Goods Vehicles*

http://osha.europa.eu/en/publications/factsheets/18/view

- More advice on safe loading, unloading and preventing falls from vehicles is available at: http://www.hse.gov.uk/fallsfromvehicles/

4.2. Managing risks to bus drivers

Good management of health and safety is important for driver wellbeing, passenger safety and the efficiency of the service. When managing health and safety both driving and non-driving risks need to be taken into account. Below is some general advice about risks to bus drivers and how to manage them.

Risks to bus drivers' physical and mental health can come from:

- the possibility of assault by passengers;
- the risk of carrying large amounts of money;
- dealing with driving safely, traffic congestion and peak running times and remaining service-orientated to passengers, which also represents conflicting demands and a lack of job control;
- lone working away from the fixed base, which can mean isolation, lack of information about what's going on in the company and low involvement in workplace issues and a general feeling of lack of support;
- layout, design and mechanics of the cabin (ergonomics);
- timetables, shift schedules and rest periods.

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Additional matters include: rest facilities; slips, trips and falls; lifting and handling of luggage, exposure to engine fumes and the design of uniforms.

Therefore it is important to pay attention to: drivers' physical comfort and safety; suitability of working hours and that drivers obtain sufficient rest; providing opportunities for consultation and participation; and generally to provide a better person–environment fit, including taking account of the needs of older workers. This is important in order to provide a better service to the public, reduce sickness absence, disability retirement and for recruitment and retention of drivers and of course for the health and wellbeing of drivers themselves.

Layout, design and mechanics of the cabin (ergonomics)

The bus driver's cabin may be uncomfortable, inflexible, and exposed to the elements, which makes it too hot or too cold. Poor seating and cab design can cause musculoskeletal disorders and expose drivers to vibration. Recommendations include the following:

- There should be allowance in the design for drivers of different height or weight.
- The driver's seat should be vertically and horizontally adjustable and have adjustable lower back support and adjustable springs. The controls for adjusting the seat must be easy to operate.
- The steering wheel should be no more than 460 mm in diameter and be adjustable along the axis of the steering column. Its angle of inclination should also be adjustable.
- The pedals should be within easy reach for short and tall drivers alike. They should all be at the same angle.
- The dashboard should have easy-to-read displays which are arranged according to functions and frequency of use. It should be easy and safe to operate all manual controls, especially emergency controls.
- Both large and small drivers must be able to enter and leave the working space easily, and effective heating and cooling systems should be provided for the cab.
- In specifying cab dimensions account should be taken of the increasing number of women working as bus drivers.
- New drivers should always be provided with proper training, and retraining must be provided for all drivers when new models are introduced.
- Buses should be kept well maintained, both regarding the running and safety and the cabin features described above.

Timetables, shift schedules and break periods

Bus drivers work independently, but that does not mean they have control over how they work. Bus drivers may feel highly controlled and constrained in the way they work; for example, by the timetable and unpredictable or unsocial shift times. They may feel isolated and perceive that they lack support in the face of conflicting demands on them to meet the timetable, drive safely, and provide a friendly service to passengers. Recommendations and suggestions to avoid and reduce these problems include the following:

- The working week should not be more than 40 hours, and the normal working day no longer than eight hours.
- No driver should be allowed to drive continuously for more than four hours without a break. Ideally a 20-minute break should be provided after two hours of continuous work. Drivers should be able to use their breaks to refresh and replenish themselves.
- There should be enough time in the working day to reduce the conflict between the demand to keep to the timetable and the need to drive safely.
- The daily rest of drivers should be at least 11 consecutive hours, and split shifts should be avoided.
- Assignments (routes, times, etc.) should be regular and predictable, not decided on a day-to-day basis.
- Days off should be guaranteed and should be at least two days at a time.
- More flexibility in work arrangements should be explored, for example to make working conditions more suitable for women drivers.

Worker involvement

Because of the lack of control and the isolation that bus drivers suffer, it is especially important that risk assessments, recommendations and suggestions regarding the work environment include:

- good consultation procedures where the workforce is involved in any changes, e.g. to timetables, and where their views are taken seriously;
- good information flow within the company so that everyone knows what is going on;
- training for supervisors and management in a supportive style of leadership and effective worker involvement;
- allowances made for the work plans to be adjusted for individuals with special needs, e.g. older drivers, those with serious health complaints, and those recovering from an illness;
- training and retraining.

Preventing violence to staff

- A policy and comprehensive measures should be in place to prevent abuse, threats and violence to staff from members of the public:
- Measures taken should be based on risk assessment to determine where the problems lie and identify high-risk routes and times, e.g. night shifts.
- Various measures should be considered, including: two people on the bus where necessary; alarm buttons, CCTV, two-way radios; working with the police, judiciary and local community.
- Drivers should be trained in dealing with aggressive passengers and supervisors should be trained in supporting drivers who have been assaulted or intimidated.

Workplace health promotion

To support driver wellbeing and promote fitness a range of re-education programmes should be considered, including:

- instruction by medical professionals on improving posture whilst sitting in the driving seat, learning how to stretch muscles and reduce muscular tension;
- stress management courses;
- voluntary physical fitness programmes.

Sources of information used to draft this advice include:

- *Bus drivers: occupational stress and stress prevention* by Professor M.A.J. Kompier, published as working paper CONDI/T/WP.2/1996 by the International Labour Office, Geneva.
- *Stress prevention for bus drivers*, ILO, http://www2.ilo.org/wcmsp5/groups/public/---ed_protect/---protrav/---safework/documents/publication/wcms_118243.pdf accessed 19/07/2010
- *Bus drivers alert*, International Transport Workers Federation, http://www.itfglobal.org/road-transport/busalert.cfm accessed 19/07/2010

5. Overall conclusions from the good practice cases

The cases in this report feature a variety of initiatives and interventions to protect passenger road transport drivers. They have been implemented at various levels: some at national or regional level, and others specific to independent companies. Within the case studies a number of hazards are identified and where these hazards cannot be removed, various control measures are implemented to reduce the risks.

Certain features of the sector appear to hinder OSH risk management. But by taking account of how the sector operates in practice and characteristics of drivers themselves and the way they work, risks can be successfully managed.

Drivers work independently and away from a fixed base. They may be self-employed and often have long experience as drivers. So it is not always easy to communicate with them and consult and involve them, and they are not always open to change. Because of this, drivers need to be intimately involved in solutions – solutions need to be developed by drivers for drivers (use of participatory methods), in order to use their experience and gain their acceptance:

- Ensure approaches are practical but not patronising
- Use places they frequent – motorway stop areas, etc.
- Ensure advice and solutions are based on drivers' practical experiences
  - Involve drivers throughout the risk management process
  - Use drivers as advocates, trainers and mentors
  - Allow sufficient time to discuss, plan, trial and introduce changes

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(Road) transport sectoral bodies dedicated to the working environment are often the best forum to develop guidance and solutions and to promote information sharing.

There should be customer and stakeholder involvement in managing risks. The road transport sector does not operate in isolation. Those involved in making deliveries are part of a chain. Employers of drivers can find it difficult to ensure the safety of their employees whilst they are working at customer premises. And the competitive nature of the business makes haulage firms reluctant to make demands of their customers, who can wrongly assume it is not their responsibility (to ensure driver safety). In public transport, passengers are also part of the risk and the solution. Those to involve may include:

- others in the supply chain – suppliers, where deliveries are made, etc.
- passengers, schoolchildren
- road safety groups, transport ministries, police and judiciary, etc.

Large organisations are in a position to set OSH standards for their delivery contractors which can, in turn, stimulate these small businesses to adopt such standards when working with other clients.

OSH solutions may call for additional time to carry out tasks, e.g. safer driving measures. This must be taken into account both in work organisation and working time. On the other hand, the introduction of defensive driving can result in lower fuel consumption and therefore cost savings.

Training, refresher training and ensuring that procedures are properly followed are very important for drivers, but they must be carried out in the framework of an organisational system aimed at preventing risks and with clear management commitment.

Whenever change takes place the OSH implications should be considered. For example, the introduction of new technology in drivers' cabins can be used to improve driver safety and health as well.

Diversity in the workforce needs to be taken into account – for example, considering the needs of older and younger workers, women drivers, and foreign workers.

The case studies demonstrate that a number of measures can be taken to control risks and improve safety for road transport drivers. These measures can also lead to an improved service for passengers and financial savings for transport companies.