



This Project is funded by
the European Union



This Project is implemented by
the International Labour Organization

EU-ILO Project
ENHANCING THE LABOUR ADMINISTRATION CAPACITY
TO IMPROVE WORKING CONDITIONS AND TACKLE UNDECLARED WORK

Training for trainers
OSH - risk management (assessment and control)
methodologies and labour inspectors' gesture

PART II

OCCUPATIONAL SAFETY AND HEALTH IN ROAD TRANSPORT

November 2018

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Supporting materials for Module 4 EU and ILO sectoral OSH standards for the road transport

ILO Recommendation 161 regarding the Hours of Work and Rest Periods (Road Transport), 1979 - available in electronic format at
https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:R161

Regulation (EC) No 561/2006 of the European Parliament and of the Council of 15 March 2006 on the harmonisation of certain social legislation relating to road transport and amending Council Regulations (EEC) No 3821/85 and (EC) No 2135/98 and repealing Council Regulation (EEC) No 3820/85 – available in electronic format at
<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02006R0561-20150302&from=EN>

Supporting materials for Module 5 Risk management on the road transport

Extracts from the ILO material “Priority safety and health issues in the road transport sector” – available in electronic format at
https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_400598.pdf

Extracts from the ILO material “The issues of fatigue and working time in the road transport sector” – available in electronic format at
https://www.ilo.org/wcmsp5/groups/public/---ed_dialogue/---sector/documents/publication/wcms_161410.pdf

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EU-ILO Project

«Enhancing the labour administration capacity
to improve working conditions and tackle undeclared work»

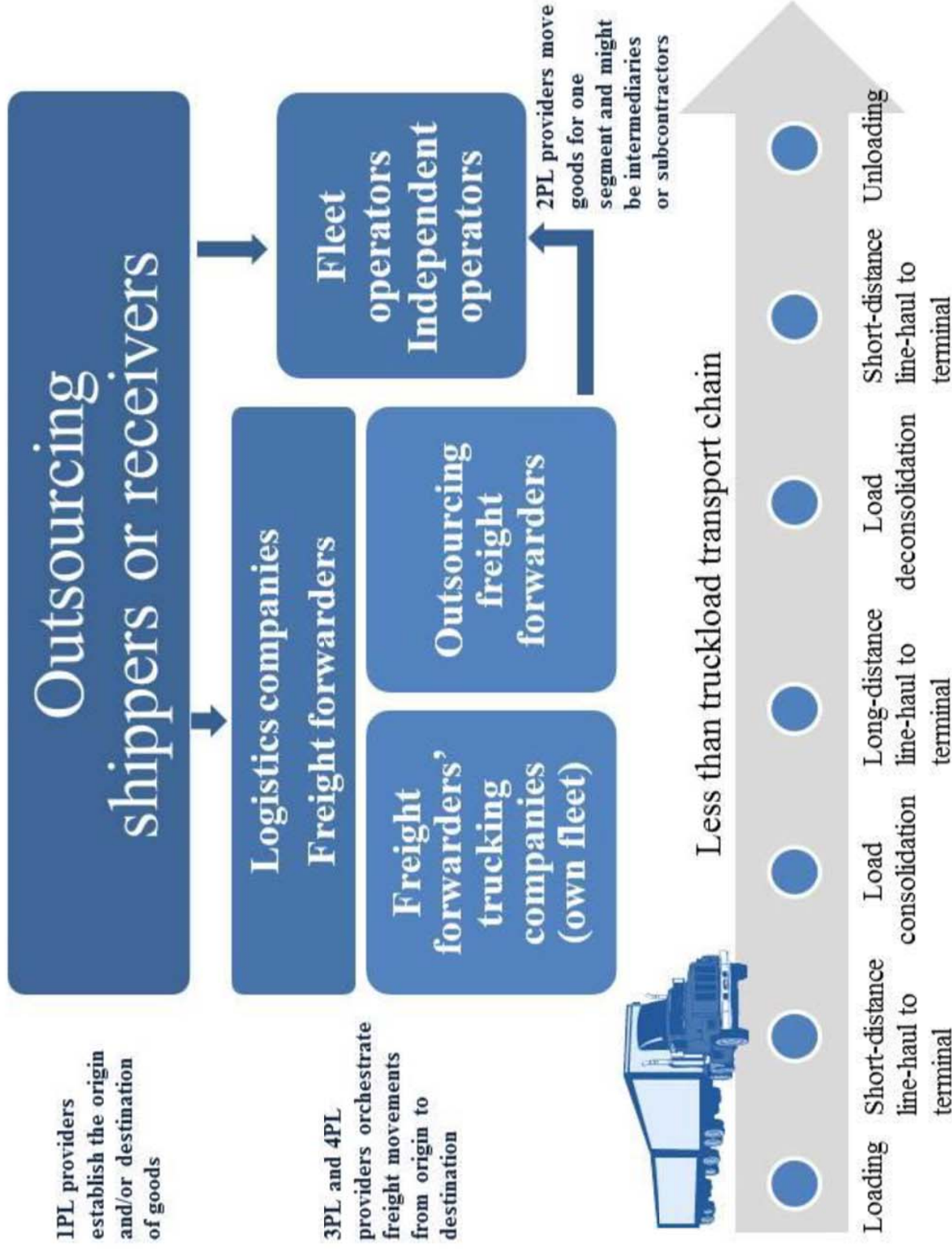
Training for trainers

OSH risk management methodologies and labour inspectors' gesture
ROAD TRANSPORT

www.ilo.org/UkraineEUProject

Mr. Karel Van Damme, General Counsellor,
the Federal Public Service Employment,
Work and Social Dialogue, inspection service well-being at work,
Belgium

1PL providers establish the origin and/or destination of goods



3PL and 4PL providers orchestrate freight movements from origin to destination

Fitness to drive

- Australian research indicates that fatigue is four times more likely to contribute to workplace impairment than alcohol or drugs
- If a driver has a microsleep for just one second while travelling at a speed of 100 km/h, the vehicle will have gone 28 metres without the driver in control.

ILO Recommendation 161 (1979)

Recommendation concerning Hours of Work and Rest Periods in Road Transport

Adoption: Geneva, 65th ILC session (27 Jun 1979) -

Status: Instrument to be revised.

EU REGULATION (EC) No 561/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 15 March 2006 on the harmonisation of certain social legislation relating to road transport and amending Council Regulations (EEC) No 3821/85 and (EC) No 2135/98 and repealing Council Regulation (EEC) No 3820/85

EU REGULATION (EC) No 561/2006

Application

1. This Regulation shall apply to the carriage by road:
 - (a) of goods where the maximum permissible mass of the vehicle, including any trailer, or semi-trailer, exceeds 3,5 tones, or
 - (b) of passengers by vehicles which are constructed or permanently adapted for carrying more than nine persons including the driver, and are intended for that purpose.

Driving regulations EU

- Daily driving period shall not exceed 9 hours, with an exemption of twice a week when it can be extended to 10 hours.
- Total weekly driving time may not exceed 56 hours and the total fortnightly driving time may not exceed 90 hours.
- Daily rest period shall be at least 11 hours, with an exception of going down to 9 hours maximum three times a week. Daily rest can be split into 3 hours rest followed by 9 hour rest to make a total of 12 hours daily rest

Driving regulations EU

- Weekly rest is 45 continuous hours, which can be reduced every second week to 24 hours. Compensation arrangements apply for reduced weekly rest period. Weekly rest is to be taken after six days of working, except for coach drivers engaged in a single occasional service of international transport of passengers who may postpone their weekly rest period after 12 days in order to facilitate coach holidays.
- Breaks of at least 45 minutes (separable into 15 minutes followed by 30 minutes) should be taken after 4 ½ hours at the latest.

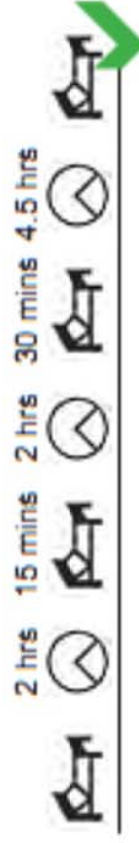
Working hours

- a maximum amount of weekly driving time of 56 hours;
- a maximum amount of daily driving time of 9 hours, that can be extended to 10 hours no more than twice a week;
- a maximum total accumulated driving time during any two consecutive weeks of 90 hours;
- after driving for a period of 4.5 hours, a driver must take an uninterrupted break of not less than 45 minutes, unless he takes a rest period;
- a minimum daily rest of 11 hours, which can be reduced to 9 hours, no more than 3 times a week;
- a regular weekly rest period of minimum 45 hours and a reduced weekly rest period of a minimum of 24 hours.

Driving limits and breaks from driving



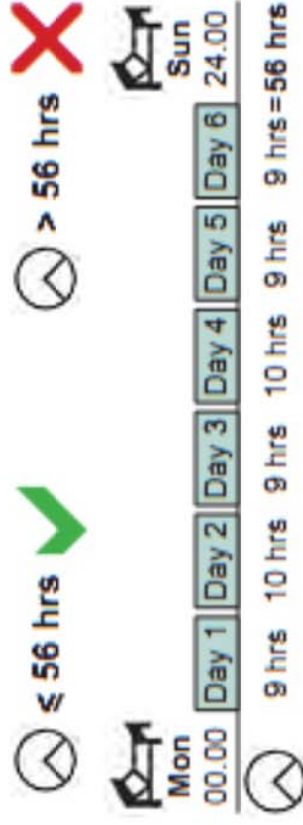
Split breaks



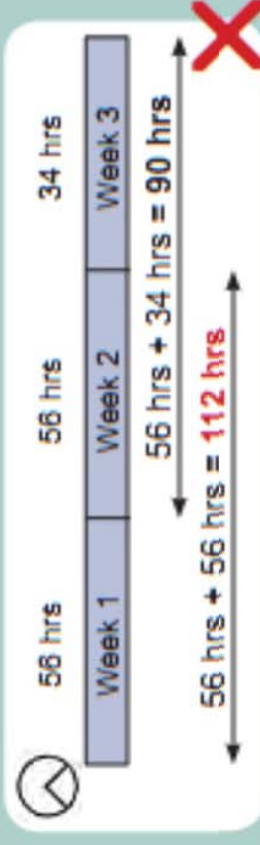
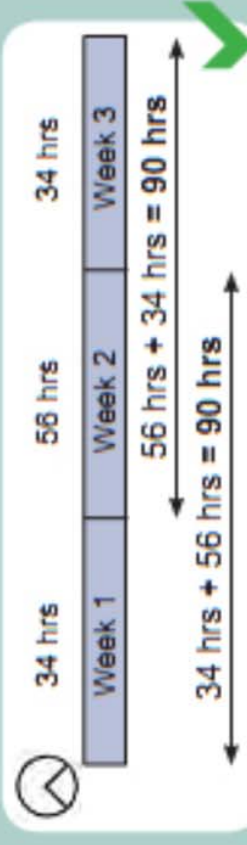
2 X per week maximum = 10 hrs



1 week fixed



2 weeks



Working hours affecting fatigue when driving

- extended work-hours (plus long commutes for many drivers);
- changing, rotating or split-sleep work schedules;
- unpredictable schedules with short-notice changes;
- schedules conflicting with natural sleep or circadian rhythms (+ time awake since last principal sleep).

CAVE: pay per kilometer, which may be an incentive to overwork;

BIORHITHM:

The European Transport Safety Council's report notes that a recurring feature is that the maximum incidents of accident level occurs between 2 a.m. and 5 a.m., with a secondary, lower, peak at around 3 p.m. to 4 p.m.

The figures in the early morning hours are often ten or more times higher than daytime levels.

Environmental factors affecting sleep and fatigue

- unfamiliar sleep environment;
- uncomfortable sleep environments;
- difficulty finding safe and quiet parking places in which to rest;
- environmental stressors (such as heat, cold or lack of ventilation);
- bad quality of air sucked in sleeping cabin in tractor

Service station levels

Service Level 1 **Providing the Basics**

- Level 1 Truck parking Areas (TPAs) offer some basic service features: toilets, water taps, waste bins. Walking and driving across the area should be safe

Service Level 2 **Also Providing Washing Facilities and a More Convenient Lay-out of the Parking Area**

- In addition to the service criteria of Level 1, Level 2 TPA's offer washing facilities and a more convenient lay-out of the parking area. Level 2 is more geared to a truck driver making a longer stop. Moreover, service Level 2 is an intermediate category between level 1 (basic) and level 3 (providing a broader range of services)

Service station levels

Service Level 3 Providing Services for Personal Hygiene and Shop/Fuel Station

- In addition to the service criteria of Level 2, Level 3 TPA's offer more services, of which the most important; showers, a shop and a fuel station.

Service Level 4 Providing Full Service for Driver and Vehicle

- In addition to the service criteria of Level 3, Level 4 TPA's offer more services, of which the most important; a snack bar, laundry, a spare parts shop and leisure facilities.

Service Level 5 Providing the High End of Comfort Levels

- In addition to the service criteria of Level 4, Level 5 TPA's offer more services, of which the most important; a restaurant, truck wash, electricity and snow/ice removal equipment. Level 5 is the highest comfort level.

Service areas

Recommendations to Member States

- Promote the development and operation of Distribution and Servicing Plans for freight intensive developments.
- Identify recommended preferred routes for freight transport for key locations such as ports and airports.
- Provide safe and secure truck parking facilities at appropriate locations including major transport corridors through the planning process.
- Provide more information about availability of parking facilities and levels of services available.

Service areas

Recommendations to Member States

- Ensure and improve communication to drivers of suitable places to rest both by local authorities and transport/fleet managers.
- Include the provision of secure parking areas into contracting arrangements for road infrastructure.
- Define lines of responsibility on terms of parking provision and operation.
- Encourage and finance schemes for the construction of secure parking areas.'

Stressing factors affecting sleep and fatigue

Extreme physical fatigue due to tasks done;
Mental stress due to tasks awaiting;
Mental stress due to loneliness;
Mental stress from tight delivery schedules and uncontrollable delays;
Mental stress to fear for violence;
Mental stress due to problems in private life;
Little physical exercise= unbalanced physical and mental stress;
Poor diet;

DRIVERS SYMPTOMS OF FATIGUE CAN INCLUDE:

- loss of alertness;
- difficulty keeping eyes in focus;
- frequent yawning;
- loss of concentration and wandering thoughts;
- reduced awareness of surroundings – apparent sudden appearance of other vehicles behind or in front of the truck;
- memory lapses;
- failure to check rear view mirrors as frequently as normal;
- unconscious variations in speed;
- erratic changing of position;
- driving too slow or too fast;

FATIGUE DO TO HEALTH PROBLEMS

- Anaemia (including iron deficiency anaemia)
- Sleep disorders such as insomnia, sleep apnoea or narcolepsy
- Ongoing pain
- An allergy that leads to hay fever or asthma
- An underactive thyroid
- Use of alcohol or illegal drugs like cocaine, especially with regular use
- Depression or grief

Fatigue can also accompany the following illnesses:

- infection, especially one that takes a long time to recover from or treat, like bacterial endocarditis (infection of the heart muscle or valves), parasitic infections, AIDS, tuberculosis, and mononucleosis;
- congestive heart failure;
- diabetes;
- chronic liver or kidney disease;
- Addison's disease;
- anorexia or other eating disorders;
- arthritis;
- autoimmune diseases such as lupus;
- malnutrition
- cancer.

Local/short-haul drivers have been identified through research to have fatigue related accidents.

The top five fatigue-related issues, ranked in order of importance by local and short haul drivers, were:

1. not enough sleep,
2. hard/physical workday,
3. heat/no air conditioning,
4. waiting to unload, and
5. irregular meal times.

Sleep APNEA

This disorder affects approximately 5 per cent of the middle-aged population.

A study performed on more than 400 Brazilian and Portuguese truck drivers noted that sleep disorders were present in 35.4 per cent of the Brazilians and 21.5 per cent of the Portuguese drivers.

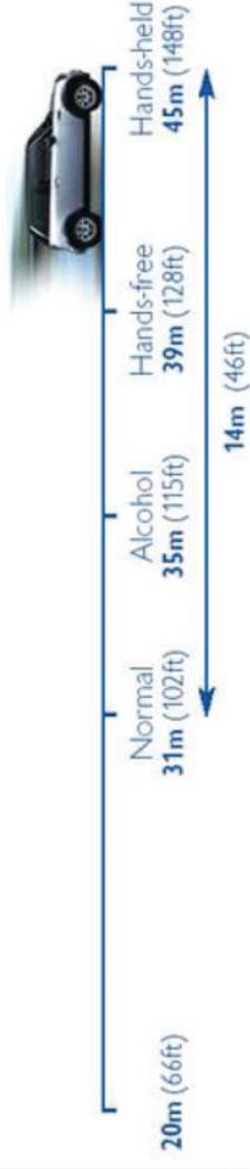
In addition, excessive daytime sleepiness was recorded in 32 per cent of the Brazilians and in 21 per cent of the Portuguese.

Although it is a small sample, this is a high ratio for an occupation where being alert saves lives.

How healthy are drivers? (United States Survey)

- 51 % of truck drivers smoke (versus 19 % of the US population);
- 69 % are obese (with a BMI equal to or more than 30) (versus 31 %);
- 17 % are morbidly obese (BMI >40) (versus 7 %);
- 14 % have self-reported diabetes (versus 7 %);
- 88 % have one major cardiovascular risk factor (hypertension, smoking or obesity) (versus 54 %);
- 9 % have all three risk factors (versus 2 %);
- 38 % are not covered by health care plan or insurance (versus 17 %).

Distance travelled before response at 70mph



DISTRACTION:

- Physical distraction: manipulating device with hands
- Visual distraction: field blocked by objects; of the road looking; loss of attentiveness
- Auditory distraction: listening to radio or conversation or mobile phone instead of road
- Cognitive distraction: mobile phone, looking at info..

QUIZ: TRUE OR FALSE?

1. Coffee overcomes the effects of drowsiness while driving? **T/F**
2. I can tell when I'm going to go to sleep? **T/F**
3. Rolling down my window or singing along with the radio will keep me awake? **T/F**
4. I'm a safe driver so it doesn't matter if I'm sleepy? **T/F**
5. You can stockpile sleep on the weekends? **T/F**
6. Most adults need at least seven hours of sleep each night? **T/F**
7. Being sleepy makes you misperceive things? **T/F**

QUIZ: TRUE OR FALSE?

8. Young people need less sleep? **T/F**
9. Wandering, disconnected thoughts are a warning sign of driver fatigue? **T/F**
10. Little green men in the middle of the road may mean the driver is too tired to drive? **T/F**
11. On a long trip, the driver should never take a break but try to arrive at the destination as quickly as possible? **T/F**
12. A micro-sleep lasts four or five seconds? **T/F**

1. **FALSE.** Stimulants are no substitute for sleep. Drinks containing caffeine, such as coffee or cola, can help you feel more alert, but the effects last only for a short time.
2. **FALSE.** Sleep is not voluntary. If you're drowsy, you can fall asleep and never even know it. You cannot tell how long you've been asleep.
3. **FALSE.** An open window or the radio has no lasting effect on a person's ability to stay awake.
4. **FALSE.** The only safe driver is an alert driver. Even the safest drivers become confused and use poor judgment when they are sleepy.

5. **FALSE.** Sleep is not money. You can't save it up ahead of time and you can't borrow it. But, just as with money, you can go into debt.
6. **TRUE.** The average person needs seven or eight hours of sleep a night. If you go to bed late and wake up early to an alarm clock, you probably are building a sleep debt.
7. **TRUE.** One of the warning signs of a drowsy driver is misjudging surroundings.
8. **FALSE.** Young people need more sleep than adults. Males under 25 are at the greatest risk of falling asleep. Half of the victims of fatigue-related crashes are under 25.

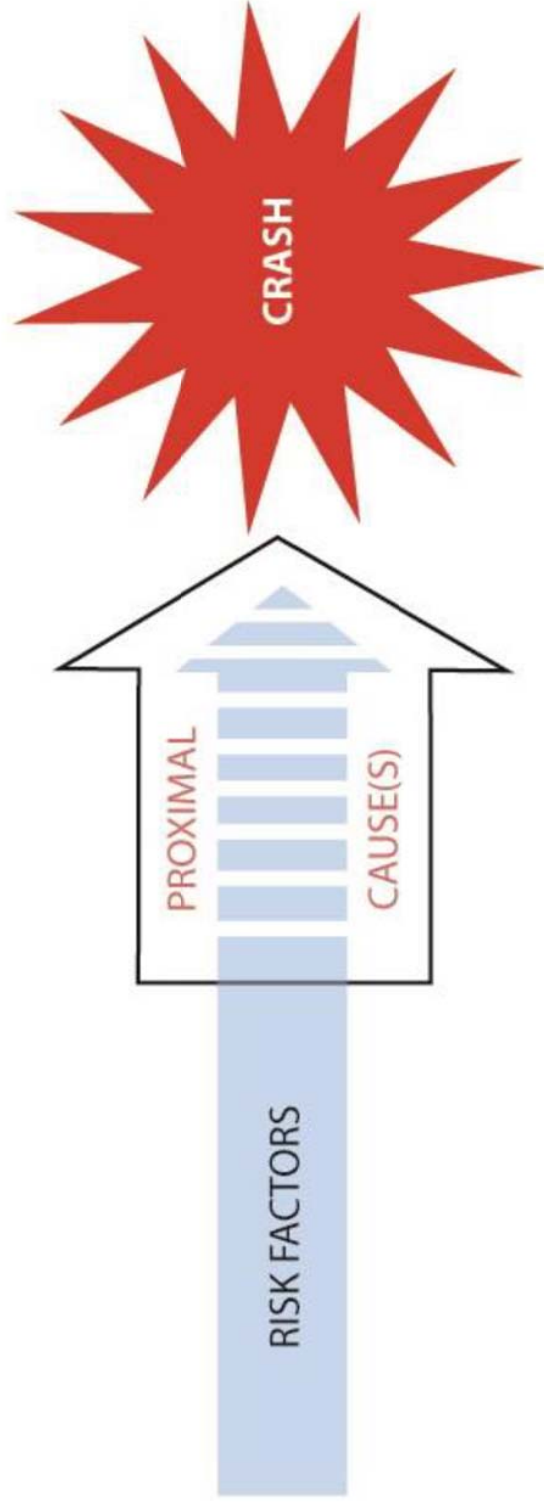
9. **TRUE.** If you are driving and your thoughts begin to wander, it is time to pull over and take a break.
10. **TRUE.** Seeing things that are not there is a good indication it is time to stop driving and take a rest.
11. **FALSE.** Driving, especially for long distances, reveals a driver's true level of sleepiness. To be safe, drivers should take a break every three hours.
12. **TRUE.** During a "micro-sleep" of four or five seconds, a car can travel 100 yards, plenty of time to cause a serious crash.

Source: United States Department of Transportation Federal Motor Carrier Safety Administration.

Employers interest???

This can be illustrated by:

- reduced absenteeism;
- fewer collisions resulting in material damage or even casualties;
- enhanced motivation;
- improved productivity;
- easier recruitment;
- decreased turnover;
- a positive and caring image.





Accident hazards

- Slips, trips and falls from a tall cabin, cabin ladder or trailer
- Overturning of heavily loaded truck due to mechanical failure, difficult road conditions and/or excessive speed, head-on collisions, etc., with resulting life-threatening trapping of driver inside cabin or under the truck
- Injuries due to accidental bumping into unguarded rigid parts of truck or cargo



Accident hazards

- Injuries while performing various functions of a heavy truck driver (e.g., field repair-work, tire change, unfastening tight bands and ropes, etc.)
- Danger of being crushed between tractor and trailer, or between trailers, while trying to disengage one from another
- Accidents caused by uncoupling the locking device securing the tractor to the trailer



Accident hazards

- Traumas, such as hernia rupture, due to physical overexertion (changing tires, moving heavy pieces of cargo, fastening ropes, etc.)
- Explosions, chemical burns, acute intoxication by dangerous chemicals, etc., caused by hazardous cargo, such as explosives and flammables, strong chemicals, toxic substances and dust-forming bulk solids



Accident hazards

- Acute poisoning by exhaust gases, including carbon monoxide
- Increased risk of road accidents due to lengthy driving periods (esp. for long-haul truck drivers), incl. at night, under bad weather and road conditions, and through traffic jams (risk is increased by fatigue due to long driving hours, short rest periods, drowsiness, hunger and thirst, use of alcohol, driving at high speeds due to the bonus wages system)



Accident hazards

- Fire hazards from spills and leaks of inflammables (usually in tank-trucks) that may ignite on contact with open flame, hot surfaces, electric sparks, atmospheric or electrostatic discharges, or as a result of mechanical shock following collision, etc.
- Explosion of over-inflated tires
- Explosion of car battery



Physical hazards

- Exposure to prolonged engine noise of high amplitude (> 80 dBA) and/or low frequency, resulting in early (severe headache) or delayed (hearing loss, etc.) detrimental effects
- Exposure to ionizing radiation while transporting radioisotopes (frequently kept, for security reasons, inside the driver's cabin)
- Exposure to direct and reflected ultraviolet (solar) radiation



Physical hazards

- Exposure to potentially health-detrimental climatic factors, such as extreme cold or heat, or combinations of temperature, humidity and wind, resulting in frostbite or heat stroke
- Exposure to sudden ambient temperature changes when leaving and entering the climatic-conditioned cabin, resulting in colds and/or rheumatic effects
- Whole-body vibrations that may impair functions of chest, abdominal organs, and musculoskeletal system, contribute to driver's fatigue and decrease his/her health



Chemical hazards

- Exposure to various toxic substances (in solid, liquid, or gaseous state) while transporting hazardous cargo
- Skin diseases/conditions (dermatitis, skin sensitization, eczema, etc.) caused by chemicals: cleaning compounds, antifreeze and brake fluids, gasoline, diesel oil, oils, etc.



Chemical hazards

- Chronic effects caused by inhalation of gasoline and diesel-fuel fumes, and other exhaust fumes,
- containing carbon monoxide, nitrogen oxides (NO_x), hydrocarbons, etc.
- Exposure to dust (esp. on desert roads, etc.)
- Exposure to various automobile fluids (e.g. battery fluid, brake fluid)



Biological hazards

Contamination and infection caused by exposure to biologically hazardous cargo



Ergonomic, psychosocial and organizational factors

- Pains in the low back and in the joints (of legs and hands/arms) caused by prolonged driving, sometimes over bumpy roads, and/or inadequate seat
- Overexertion while moving or otherwise handling bulky and heavy loads, equipment, etc.
- Digestive tract disorders caused by irregular eating, bad diet habits and stress
- Hypnotic hallucinations during periods of drowsiness, and psychic disorders caused by mental and emotional stress factors



Ergonomic, psychosocial and organizational factors

- Smoking inside cabin, contributing to health deterioration
- Visual discomfort and eye problems caused by inadequate illumination and eyestrain (esp. when driving at dark time on interurban roads)
- Exposure to peer violence (e.g., in roadside cafeterias, etc.) and to petty and gang (incl. organized) crime attracted by valuable cargo



Ergonomic, psychosocial and organizational factors

- Development of lumbago due to poor vehicle suspension, uncomfortable seat, etc.
- Psychological discomfort, as a result of possibility of permanent control by cellular phone or radio communication equipment

Technology to tackle violence

- Video surveillance
- Silent alarms and panic buttons
- Barriers
- Radio communications
- Fare payment changes
- Automatic vehicle location systems
- Integration of systems

Policy to tackle violence

- Cooperation with police
- Work rules and policies/driver training enhancement
- Signage
- Prosecution of offenders
- Management support, media campaigns, civil society efforts to raise awareness
- Committees
- Legislation increasing penalties

Some preventive measures

- Learn and use safe lifting and moving techniques for heavy or awkward loads; use mechanical aids to assist in lifting
- Avoid breathing exhaust fumes when standing near vehicle; switch-off engine when parked under a roof
- Use good-quality sunglasses for driving in strong sunlight
- Protect hands with chemical-resistant gloves; if impractical, use a barrier cream

Some preventive measures

- Install an ergonomically-designed driver's seat;
- interrupt driving periodically for rest and exercises;
- Learn relaxation techniques for long driving
- Avoid smoking when driving or, if impractical, ventilate the cabin during and after smoking
- Train employees how to recognize and respond to threat of violence; provide alarm or other means for
- summoning help, or escort if needed

COMPANY FACTORS

- Selected corporate structure – private operation or for hire subcontracting
- Logistics firm procurement requirements
- Operations and management style, flexible scheduling
- Training, driver monitoring and evaluation

Truck or vehicle

- Break, tyre failure
- Shift of cargo, inappropriate packing of container

Government policies and practices

- Driver licensing
- Driving hours rules and inspection
- Enforcement practices

Other contributing factors

- Environment, highway or weather
- Road sign/road design
- Slippery roads

Other potential factors

- Market pressures, just-in-time delivery patterns, competition
- Roadway and environmental factors divided or undivided facility, traffic density, design
- Vehicle: mechanical conditions, safety features, technologies

Third-party fault

- Driver error by other motorist
- Vehicle failure by other motorist

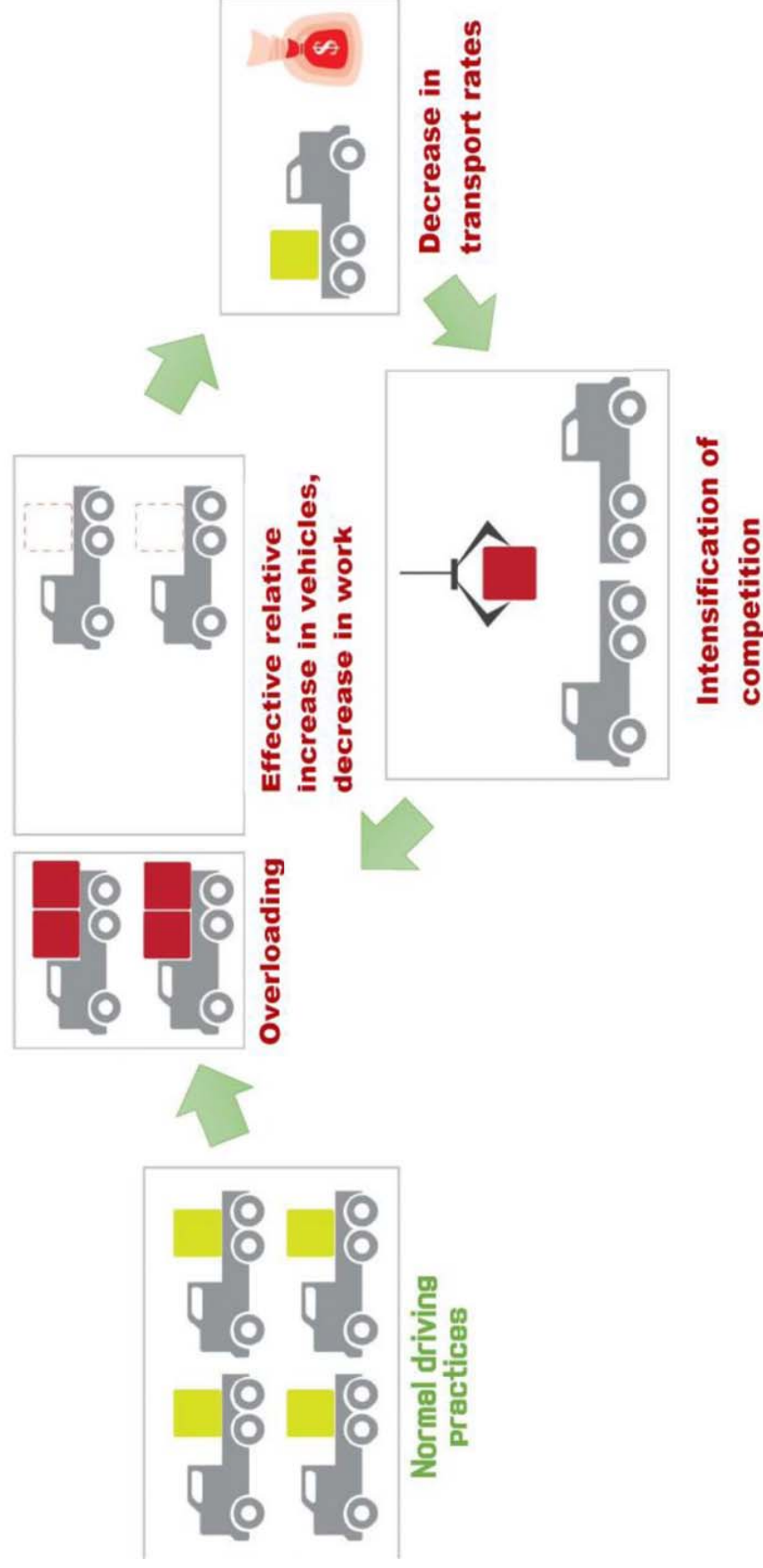
Driver factors

- Enduring: personality, medical conditions
- Temporary: mood, recent sleep, time of day, road familiarity, fatigue

Driver

- Driver physical failure: asleep-at-the-wheel,
- seizure, heart attack ...
- Driver recognition failure: inattention, distraction...
- Driver decision error: too fast for conditions,
- following too closely ...
- Driver's response execution error: difficult
- manoeuvre

Cycle of overloading and overweight operations



INSPECTION VISIT RA CHECKLIST (1)

1. What are the transport activities of the company? Give detailed description. A.O.: How many trucks? What is transported? Local? National? International? Which goods? Dangerous goods ?
2. Total personnel? Different functions? How many in each function? (Drivers? Administrative personnel? Car maintenance? Loaders/unloaders? ...)
3. Drivers recruitment policy? Skills, experience, certificates required at recruitment, etc.. ?
4. Are drivers under medical surveillance?

INSPECTION VISIT RA checklist (2)

5. Is the safety-quality of all the trucks and trailers guaranteed? How?
6. Is there a safety assistance system in the cars?
7. Ergonomics of steering cabin? Can the seat be adapted? Ventilation? Dashboard? Sight? Are sun glasses available?
8. How are the sleeping/rest facilities in the car?

INSPECTION VISIT RA check list (3)

9. Which are the tasks of the drivers apart from driving?
Coupling procedures for trailers? Loading/unloading? Details necessary! Car maintenance or checks? If not: who is doing it?
10. How are the drivers work schedules planned? Which is the process of organizing the work? Which elements are systematically taken into account (or not) when deciding which driver is going to do which job and when? How is passed driving time taken into account?
11. How are weather conditions taken into account when scheduling? How is assessment of the route taken into account?
12. Which are the loading/unloading conditions , including access route? And how are those taken into account when scheduling?

INSPECTION VISIT RA CHECKLIST (4)

13. Are there written instructions for drivers? On which topics?

Which content?

14. Which trainings have the drivers received? (eg: Safe driving; safe and ergonomic procedures for loading and unloading; understanding possible risks of the freight and knowing how to react in case of incident; use of individual protective devices; what to do in case of accident; fueling procedure; coupling procedure for trailers, etc..)

INSPECTION VISIT RA CHECKLIST (5)

15. Have they also received training on how to deal with conflicts or with violence?
16. Is there a contact system between driver and company when on the road? How is it supposed to be used?
17. Are personal protective devices available for all tasks that drivers have to fulfill? Are instructions clear?
18. How is the wage calculation for drivers done?
19. Do drivers have clear instructions on how to act in case of signs of fatigue?

INSPECTION VISIT RA CHECKLIST (6)

20. Is there a system for drivers to notify problems to their employer?
21. Which is the procedure when a driver has a road or other accident?
22. Are accidents or near accidents being notified and analyzed in the company? Ask for examples. Are initiatives taken to avoid repetition of these?
23. Which is the procedure if a driver is becoming ill during work abroad?
24. Is there a procedure to encourage and organize proper collaboration between supplier sending the goods, hauler carrying the goods and the recipient of the goods?
25. Which is the policy regarding food and drinks of drivers on the road?

APPRECIATION BY INSPECTOR FOLLOWING RA VISIT (1)

A1. Could (or does) the policy of the company lead to a conflict between safe driving and the wages/bonuses system?

A2. Is the work organization process of the company conceived such that reducing/limiting drivers strain and stress is a major objective?

A3. Are any possible difficulties issuing from delivering and loading/unloading goods taken into account when setting the schedules?

A4. Is a decent coupling procedure for trailers current practice?

A5. Are EU driving and rest regulations applied? Are those used as a standard for

APPRECIATION BY INSPECTOR FOLLOWING RA VISIT (2)

- A6. Are EU driving and rest regulations applied? Are those used as a standard for organizing transport or as a maximum never to exceed?
- A7. Are drivers authorized to stop driving at any moment when they feel fatigue?
- A8. Do drivers feel free to report on any problems/accidents they perceive/experience and to suggest proper solutions? (including on work organization)
- A9. Are trainings effective? Or is it limited for instance to introducing a brochure leaving the reading to the driver? Is the knowledge of the drivers evaluated following instructions?

APPRECIATION BY INSPECTOR FOLLOWING RA VISIT (3)

- A10. Are the training courses allowing to reach correct objectives: Safe driving; Correct, safe and ergonomic procedures for loading and unloading; Correct understanding of possible risks of the freight; Correct use of individual protective devices; Instruction on what to do in case of accident; Correct fueling procedure...
- A11. Are drivers systematically allowed and stimulated at all times to give priority to safe driving?
- A12. Do drivers have at all times the guarantee that delivering, loading and unloading cannot be done to the detriment of full safety?

APPRECIATION BY INSPECTOR FOLLOWING RA VISIT (4)

A13. Are the drivers cabins and the access to it comfortable and safe?

A14. Are the global working conditions and environment such that distraction of the driver is avoided?

A15. Are contact systems between drivers and their employer used to make the drivers job easier or to put pressure?

Key Performance Indicators

EMPLOYEE

- Number and types of driving violations
- Insurance claims per employee
- Complaints from members of the public
- Number of days absent due to illness
- Employee hours, shift pattern
- Health, eyesight and wellbeing checks
- Staff risk assessed

Key Performance Indicators

JOURNEY

- Mode of travel to work
- Mode, journey type and kms travelled
- High risk locations on regular routes
- Vehicles Number, type, characteristics of vehicles

Key Performance Indicators

VEHICLES

- Number , type, characteristics of vehicles
- Number, type and severity of collisions
- Insurance claims per vehicle
- Fuel Consumption
- Number of maintenance checks per vehicle
- Vehicle faults identified
- Maintenance costs

Key Performance Indicators

Business operating environment

- Budget for (road) safety
- Staff resources for road safety
- Number of safety meetings/toolbox talks
- Number of compliance checks, audits and management reviews

Key Performance Indicators

INCIDENTS

- Number of near missed by kms travelled
- Number of incidents by kms travelled
- Incident location
- Cost of incidents
- Involvement of third parties
- Number of crash free days

Truck cargo may include any imaginable item—for example:

small and large packages, machinery, rock and sand, steel, lumber, flammable liquids, compressed gases, explosives, radioactive materials, corrosive or reactive chemicals, cryogenic liquids, food products, frozen foods, bulk grain, sheep and cattle.

Accidents

- **Unsafe driving:**
 - High speed in spite of bad weather fatal
- **Overload and other cargo problems: Overloaded, unbalanced load and inadequate cargo securing:**
 - Driver fatally crushed by cargo
 - Unbalanced load overturned lorry
 - Light lorry driver stuck by load

Accidents

- **Overload and other cargo problems: dangerous substances**
 - Driving a tanker lorry carrying LPG, overturning vehicle, explosion
 - Truck filled with ethylacetate in head-to-tail collision

Accidents

- **Accidents in Cargo and Vehicle handling/ Unsafe coupling and uncoupling, unsafe parking**
 - Temporary worker crushed by trailer during coupling
 - Driver crushed between trailer and vehicle
 - Young worker died because of unsafe coupling practice
 - Coupling without parking mechanically

Accidents

- **Road conditions, wheather conditions:**
 - Driving a minibus on a mountain road/ 3 fatalities
 - Driving a tractor truck on a wet road/ slipping

Accidents

- **Vehicle condition**
 - Brake failure fatal
- **Loss of control**
 - Loss of control due to coughing and sneezing fit
 - Loss of control while turning
 - Loss of control while avoiding another truck

Accidents

- **Coupling and uncoupling, unsafe parking**
 - Temporary worker crushed by trailer during coupling
 - Fatal coupling of trailer
 - Driver crushed between trailer and vehicle
 - Young worker died because of unsafe coupling peractice

Accidents

- **Loading and unloading**
 - Driver falls off trailer's canvas platform while loading
 - Driver falls off tailboard while handling 900kg pallet truck
 - Driver sustains head injury while opening a container
 - Driver falls through semi-trailer's wooden floor
 - Driver falls off semi-trailer while checking his cargo

Accidents

- **Being stuck by falling objects or loads**
 - Truck driver killed by laminated veneer beams falling from a forklift
 - Driver turned over with his truck while unloading waste paper
 - Driver gtrapped between pallet truck and cargo hold

Accidents

- **Handling dangerous substances**
 - Uncouncious when unloading contaminated containers
 - Carbon monoxide poisoning during straining assignment using forklift trucks
 - Burns caused by hot bitumen

Accidents

- **Vehicle maintenance**
 - Tyre explodes during check

Accidents

- **Stress and workload**
 - Confusing the reverse with the forward gear of a powered lift truck when loading a light lorry

Accidents

- **Fatigue**
 - Sleep apnoea, fatal
 - Fatigue caused fatal road accident truck overturned and was hit by coach

Supporting materials for Module 5

Risk management on the road transport

TRUCK AND BUS DRIVING

Bruce A. Millies

Transport by road includes the movement of people, livestock and freight of all kinds. Freight and livestock generally move in some form of truck, although buses often carry packages and passenger baggage and may transport fowl and small animals. People generally move by bus on the road, although in many areas trucks of various kinds serve this function.

Truck (lorry) drivers may operate several different types of vehicles, including, for example, semi-trailers, tanker trucks, dump trucks, double and triple trailer combinations, mobile cranes, delivery trucks and panel or pickup vehicles. Legal gross vehicle weights (which vary by jurisdiction) range from 2,000 kg to over 80,000 kg. Truck cargo may include any imaginable item—for example, small and large packages, machinery, rock and sand, steel, lumber, flammable liquids, compressed gases, explosives, radioactive materials, corrosive or reactive chemicals, cryogenic liquids, food products, frozen foods, bulk grain, sheep and cattle.

In addition to driving the vehicle, truck drivers are responsible for inspecting the vehicle prior to use, checking shipping papers, verifying that proper placards and markings are in place and maintaining a log book. Drivers may also be responsible for servicing and repairing the vehicle, loading and unloading cargo (either by hand or using a fork truck, crane or other equipment) and collecting money received for goods delivered. In the event of an accident, the driver is responsible for securing the cargo and summoning assistance. If the incident involves hazardous materials, the driver may attempt, even without proper training or necessary equipment, to control spills, stop leaks or put out a fire.

Bus drivers may carry a few people in a small van or operate medium and large buses carrying 100 or more passengers. They are responsible for boarding and discharging passengers safely, providing information and possibly collecting fares and maintaining order. Bus drivers may also be responsible for servicing and repairing the bus and loading and unloading cargo and baggage.

Motor vehicle accidents are one of the most serious hazards facing both truck and bus drivers. This hazard is aggravated if the vehicle is not properly maintained, especially if the tyres are worn or the brake system is faulty. Driver fatigue caused by a long or irregular schedules, or by other stress, increases the likelihood of accidents. Excessive speed and hauling excessive weight add to the risk, as do heavy traffic and adverse weather conditions which impair traction or visibility. An accident involving hazardous materials may cause additional injury (toxic exposure, burns and so on) to the driver or passengers and may affect a wide area surrounding the accident.

Drivers face a variety of ergonomic hazards. The most obvious are back and other injuries caused by lifting excessive weight or using improper lifting technique. The use of back belts is quite common, although their efficacy has been questioned, and their use may create a false sense of security. The necessity of loading and unloading cargo at locations where fork-lift trucks, cranes or even dollies are not available and the great variety of package weights and configurations add to the risk of lifting injuries.

Driver's seats are often poorly designed and cannot be adjusted to provide proper support and long-term comfort, resulting in back problems or other musculoskeletal damage. Drivers may experience

damage to the shoulder caused by vibration as the arm may rest for long periods in a somewhat raised position on the window opening. Whole-body vibration can cause damage to the kidneys and back. Ergonomic injury may also result from repetitive use of poorly placed vehicle controls or fare box keypads.

Drivers are at risk of industrial hearing loss caused by long-term exposure to loud engine noises. Poor maintenance, faulty mufflers and inadequate cab insulation aggravate this hazard. Hearing loss may be more pronounced in the ear adjacent to the driver's window.

Drivers, especially long-haul truck drivers, often work excessive hours without adequate rest. The International Labour Organization (ILO) Hours of Work and Rest Periods (Road Transport) Convention, 1979 (No. 153), requires a break after 4 hours of driving, limits total driving time to 9 hours per day and 48 hours per week and requires at least 10 hours of rest in each 24-hour period. Most nations also have laws which govern driving times and rest periods and require drivers to maintain logbooks indicating hours worked and rest periods taken. However, management expectations and economic necessity, as well as certain terms of remuneration, such as pay per load or the lack of pay for an empty return trip, put strong pressure on the driver to operate for excessive hours and to make bogus log entries. Long hours cause psychological stress, aggravate ergonomic problems, contribute to accidents (including accidents caused by falling asleep at the wheel) and may cause the driver to use artificial, addictive stimulants.

In addition to ergonomic conditions, long work hours, noise and economic anxiety, drivers experience psychological and physiological stress and fatigue caused by adverse traffic conditions, poor road surfaces, bad weather, night driving, the fear of assault and robbery, concern about faulty equipment and continuous intense concentration.

Truck drivers are potentially exposed to any chemical, radioactive or biological hazard associated with their load. Leaking containers, faulty valves on tanks and emissions during loading or unloading may cause worker exposures to toxic chemicals. Improper packaging, inadequate shielding or improper placement of radioactive cargo may allow radiation exposure. Workers transporting livestock may be infected with animal-borne infections such as brucellosis. Bus drivers are exposed to infectious diseases of their passengers. Drivers are also exposed to fuel vapours and engine exhaust, especially if there are fuel-line or exhaust system leaks or if the driver makes repairs or handles freight while the engine is running.

In the event of an accident involving hazardous materials, the driver may experience acute chemical or radiation exposures or may be injured by a fire, explosion or chemical reaction. Drivers generally lack the training or equipment to deal with hazardous materials incidents. Their responsibility should be limited to protecting themselves and summoning emergency responders. The driver faces additional risks in attempting emergency response actions for which he or she is not properly trained and adequately equipped.

The driver may be injured in the course of making mechanical repairs to the vehicle. A driver could be struck by another vehicle while working on a truck or bus alongside the road. Wheels with split rims pose a special injury hazard. Improvised or inadequate jacks may cause a crushing injury.

Truck drivers face the risk of assault and robbery, especially if the vehicle carries a valuable cargo or if the driver is responsible for collecting money for goods delivered. Bus drivers are at risk of fare box robberies and abuse or assault by impatient or inebriated passengers.

Many aspects of a driver's life may contribute to poor health. Because they work long hours and need to eat on the road, drivers often suffer from poor nutrition. Stress and peer pressure may lead to drug and alcohol use. Using the services of prostitutes increases the risk of AIDS and other sexually transmitted diseases. The drivers appear to be one of the main vectors for carrying AIDS in some countries.

The risks described above are all preventable, or at least controllable. As with most safety and health issues, what is needed is a combination of adequate remuneration, worker training, a strong union contract and strict adherence to applicable standards on the part of management. If drivers receive adequate pay for their work, based on proper work schedules, there is less incentive to speed, work excessive hours, drive unsafe vehicles, carry overweight loads, take drugs or make bogus log entries. Management must require drivers to comply with all safety laws, including keeping an honest logbook.

If management invests in well-made vehicles and assures their regular inspection, maintenance and servicing, breakdowns and accidents can be greatly reduced. Ergonomic injury can be reduced if management is willing to pay for the well-designed cabs, fully adjustable driver's seats and good vehicle control arrangements that are now available. Proper maintenance, especially of exhaust systems, will reduce noise exposure.

Toxic exposures can be reduced if management assures compliance with packaging, labelling, loading and placarding standards for hazardous materials. Measures which reduce vehicular accidents also reduce the risk of a hazardous materials incident.

Drivers must be given time to thoroughly inspect the vehicle prior to use and must not face any penalty or disincentive for refusing to operate a vehicle that is not functioning properly. Drivers must also receive adequate driver training, vehicle inspection training, hazard recognition training and first-responder training.

If drivers are responsible for loading and unloading, they must receive training in proper lifting technique and be provided with hand-trucks, fork-lifts, cranes or other equipment necessary to handle goods without excessive strain. If drivers are expected to make repairs to vehicles, they must be provided with the correct tools and proper training. Adequate security measures must be taken to protect drivers who transport valuables or handle passenger fares or money received for goods delivered. Bus drivers should have proper supplies for dealing with body fluids from sick or injured passengers.

Drivers must receive medical services both to assure their fitness for work and to maintain their health. Medical surveillance must be provided for drivers who handle hazardous materials or are involved in an incident with exposure to blood-borne pathogens or hazardous materials. Both management and drivers must comply with standards governing the evaluation of medical fitness.

ERGONOMICS OF BUS DRIVING

Alfons Grösbrink and Andreas Mahr

Bus driving is characterized by psychological and physical stresses. Most severe are the stresses of traffic in big cities, because of the heavy traffic and frequent stops. In most transit companies, the drivers must, in addition to driving responsibilities, handle tasks such as selling tickets, observing passenger loading and unloading and providing information to passengers.

Psychological stresses result from the responsibility for the safe transport of passengers, scant opportunity to communicate with colleagues and the time pressure of holding to a fixed schedule. Rotating shift work is also psychologically and physically stressful. Ergonomic shortcomings in the driver's workstation increase physical stresses.

Numerous studies of the activity of bus drivers have shown that the individual stresses are not great enough to cause an immediate health hazard. But the sum of the stresses and the resulting strain leads to bus drivers having more frequent health problems than other workers. Especially significant are diseases of the stomach and digestive tract, of the motor system (especially the spine) and of the cardiovascular system. This results in drivers often not reaching retirement age, but rather having to quit driving early for health reasons (Beiler and Tränkle 1993; Giesser-Weigt and Schmidt 1989; Haas, Petry and Schühlein 1989; Meifort, Reiners and Schuh 1983; Reimann 1981).

In order to achieve more effective occupational safety in the field of commercial driving, technical as well as organizational measures are necessary. An important work practice is the arranging of shift schedules so that the stress on the drivers is minimized and their personal desires are also taken into account to the extent possible. Informing the personnel of and motivating them to health-conscious conduct (e.g., proper diet, adequate movement within and outside of the workstation) can play an important role in promoting health. An especially necessary technical measure is the ergonomically optimal design of the driver's workstation. In the past, the requirements of the driver's workstation were considered only after other requirements, such as design of the passenger area. Ergonomic design of the driver's workstation is a necessary component of driver safety and health protection. In recent years, research projects on, among other things, the ergonomically optimal driver's workstation were conducted in Canada, Sweden, Germany and the Netherlands (Canadian Urban Transit Association 1992; Peters et al. 1992; Wallentowitz et al. 1996; Streekvervoer Nederland 1991). The results of the interdisciplinary project in Germany resulted in a new, standardized driver's workstation (Verband Deutscher Verkehrsunternehmen 1996).

The driver's workstation in buses is normally designed in the form of a half-open cabin. The measurements of the driver's cabin and the adjustments that can be made to the seat and steering wheel must fall within a range that is applicable to all drivers. For central Europe, this means a body-size range of 1.58 to 2.00 m. Special proportions, such as being overweight and having long or short limbs, should also be taken into account in the design.

The adjustability and the ways of adjusting the driver's seat and steering wheel should be coordinated so that all drivers within the design range can find positions for their arms and legs that are comfortable and ergonomically healthy. For this purpose, the optimal seat placement has a back incline about 20°, which is further from the vertical than has previously been the norm in commercial vehicles. Furthermore, the instrument panel should also be adjustable for optimal access to adjustment levers and for good visibility of the instruments. This can be coordinated with the

steering wheel adjustment. Using a smaller steering wheel also improves spatial relations. The steering wheel diameter now in general use apparently comes from a time when power steering was not common in buses. See figure 102.7 .

Figure 102.7 Ergonomically optimized and unified driver's workstation for busses in Germany



Courtesy of Erobus GmbH, Mannheim, Germany

The instrument panel with controls can be adjusted in coordination with the steering wheel.

The instrument panel with the controls can be adjusted in coordination with the steering wheel.

Since stumbling and falling are the most common causes of workplace accidents among drivers, particular attention should be paid to the design of the entrance to the driver's workstation. Anything that can be stumbled on should be avoided. Steps in the entrance area must be of equal height and have adequate step depth.

The driver's seat should have a total of five adjustments: seat length and height settings, seat back angle, seat bottom angle and seat depth. Adjustable lumbar support is strongly advised. To the extent that it is not already legally required, equipping the driver's seat with a three-point seat-belt and head rest are recommended. Since experience shows that manually adjusting to the ergonomically right position is time-consuming, in the future some way of electronically storing the adjustment functions listed in table 102.1 should be used, allowing for quickly and easily refinding the individual seating adjustment (e.g., by entering it onto an electronic card).

Table 102.1 Bus driver seat measurements and seat adjustment ranges

Component	Measurement/ adjustment range	Standard value (mm)	Adjustment range (mm)	Memorized

Entire seat	Horizontal	—	≥ 200	Yes
	Vertical	—	≥ 100	Yes
Seat surface	Seat surface depth	—	390–450	Yes
	Seat surface width (total)	Min. 495	—	—
	Seat surface width (flat part, in pelvic area)	430	—	—
	Side upholstering in pelvic area (crosswise)	40–70	—	—
	Depth of seat recess	10–20	—	—
	Seat surface slope	—	0–10° (rising toward front)	Yes
Seatback	Seatback height			
	Min. height	495	—	—
	Max. height	640	—	—
	Seatback width (total)*	Min. 475	—	—
	Seatback width (flat part)			
	—lumbar area (lower)	340	—	—
	—shoulder area (upper)	385	—	—
Seatback	Side upholstering* (side depth)			

	—lumbar area (lower)	50	—	—
	—shoulder area (upper)	25	—	—
	Seatback slope (to vertical)	—	0°–25°	Yes
Headrest	Height of headrest upper edge above seat surface	—	Min. 840	—
	Height of headrest itself	Min. 120	—	—
	Width of headrest	Min. 250	—	—
Lumbar pad	Forward arch of lumbar support from lumbar surface	—	10–50	—
	Height of lumbar support lower edge over seat surface	—	180–250	—

— Not applicable

* The width of the lower part of the backrest should correspond approximately to the width of the seat surface and grow narrower as it goes up.

** The side upholstery of the seat surface applies only to the recess area.

Stress through whole-body vibrations in the driver's workstation is low in modern buses compared to other commercial vehicles, and it falls well below the international standards. Experience shows that driver's seats in buses are often not optimally adjusted to the vehicle's actual vibration. An optimal adaptation is advised to avoid certain frequency ranges causing an increase in whole-body vibration on the driver, which can interfere with productivity.

Noise levels that are a hazard to hearing are not anticipated in the bus driver's workstation. High-frequency noise can be irritating and should be eliminated because it could interfere with the drivers' concentration.

All adjustment and service components in the driver's workstation should be arranged for comfortable access. A large number of adjustment components are often required due to the

amount of equipment added to the vehicle. For this reason, switches should be grouped and consolidated according to use. Frequently used service components such as door openers, bus stop brakes and windshield wipers should be placed in the main access area. Less frequently used switches can be located outside the main access area (e.g., on a side console).

Analyses of visual movements have shown that driving the vehicle in traffic and observing the loading and unloading of passengers at the stops is a serious burden on the driver's attention. Thus, the information conveyed by instruments and indicator lights in the vehicle should be limited to those absolutely necessary. Vehicle computerized electronics offer the possibility of eliminating numerous instruments and indicator lights, and instead installing a liquid crystal display (LCD) in a central location to convey information, as shown in the instrument panel in figure 102.8 and figure 102.9 .

With the exception of the speedometer and a few legally required indicator lights, the functions of the instrument and indicator displays have been assumed by a central LCD display.

With the proper computer software, the display will show only a selection of information that is needed for the particular situation. In the case of malfunction, a description of the problem and brief instructions in clear text, rather than in difficult-to-understand pictograms, can provide the driver with important assistance. A hierarchy of malfunction notifications can also be established (e.g., "advisory" for less significant malfunctions, "alarm" when the vehicle must be stopped immediately).

Heating systems in buses often heat the interior with warm air only. For real comfort, however, a higher proportion of radiant heat is desirable (e.g., by heating the side walls, whose surface temperature often lies significantly below the interior air temperature). This, for example, can be achieved by circulating warm air through perforated wall surfaces, which thereby will also have the right temperature. Large window surfaces are used in the driver's area in buses to improve visibility and also for appearance. These can lead to a significant warming of the inside by sun rays. The use of air conditioning is thus advisable.

The air quality of the driver's cabin depends heavily on the quality of the outside air. Depending on the traffic, high concentrations of harmful substances, such as carbon monoxide and diesel motor emissions, can briefly occur. Providing fresh air from less-used areas, such as the roof instead of the vehicle front, lessens the problem significantly. Fine-particle filters should also be used.

In most transit companies, an important part of the driving personnel's activity consists of selling tickets, operating devices to provide information to passengers and communicating with the company. Until now, separate devices, located in the available work space and often hard for the driver to reach, have been used for these activities. An integrated design should be sought from the start that arranges the devices in an ergonomically convenient manner in the driver's area, especially the input keys and display panels.

Finally, the assessment of the driver's area by the drivers, whose personal interests should be taken into account, is of great importance. Supposedly minor details, such as placement of the driver's bag or storage lockers for personal effects, are important for driver satisfaction.

MOTOR VEHICLE FUELLING AND SERVICING OPERATIONS

Richard S. Kraus

Petroleum-based fuels and lubricants are sold directly to consumers at full-service and self-service (with or without repair bays) service stations, car washes, automotive service centres, motor vehicle agencies, truck stops, repair garages, automotive parts stores and convenience stores. Service station attendants, mechanics and other employees who fuel, lubricate and service motor vehicles should be aware of the physical and chemical hazards of the petroleum fuels, lubricants, additives and waste products they come into contact with and follow appropriate safe work procedures and personal protection measures. The same physical and chemical hazards and exposures are present at commercial facilities, such as those operated by motor truck fleets, automobile rental agencies and bus companies for fuelling and servicing their own vehicles.

Because they are the facilities where motor fuels are delivered direct to the user's vehicle, service stations, particularly those where drivers fuel their own vehicles, are where employees and the general public are most likely to come into direct contact with hazardous petroleum products. Other than those drivers who change their own oil and lubricate their own vehicles, the likelihood of contact with lubricants or used oil by motorists, except for incidental contact when checking fluid levels, is very small.

The Truck Driver's Checklist

Professionally driven trucks are involved in fewer road accidents per km travelled than other vehicles. However, when they are involved in a crash, regardless of who is to blame, the results can be more serious on account of their greater weight and larger dimensions. The nature of the goods carried may also increase the severity of an accident.

As a truck driver, you need to drive in a highly responsible manner at all times and show your professionalism by anticipating and forgiving unsafe behaviour by other road users.

You can help save lives, improve the image of your profession and help your industry to obtain a better legal framework.

ARE YOU PREPARED?

Your life and the life of other road users depend on your alertness and reactions in an emergency!



Professional driving is very demanding, so you need to stay fit, physically and mentally. **Eating and drinking healthily and taking regular exercise** will help you to feel better, drive better and live longer!



Respect the legal requirements related to driving and rest times. Non-compliance or tampering with the tachograph is illegal and implies a lack of respect for human lives. Use your rest hours... to rest!



Adjust your seat so you are sitting as comfortably as possible, with all controls within easy reach. Ensure your head is positioned to benefit from the head restraint in case of an accident.



Don't drink alcohol before driving or take any kind of drugs or medication which may impair your driving skills. Avoid heavy meals before driving, as these can make you feel drowsy.

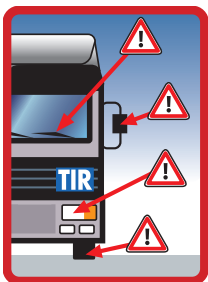


Use your seat-belt if you have one and don't forget your co-driver. Even truck drivers can die if they go through the windscreen! Anyone resting in a bunk should be secured when the vehicle is in motion.



Don't continue driving if you feel drowsy – STOP! Get out of your vehicle, stretch your legs and get some fresh air.

...AND IS EVERYTHING ELSE READY?



Is everything in good working order? Have you checked the brakes and brake lines (both tractor and trailer), tyres (pressure and tread depth), coolant and oil? What about the mirrors, windows (are they free of unnecessary stickers?), windscreen wipers, lights, indicators. How about special equipment like extinguishers and snow chains? Is there any visible damage and is the vehicle clean?



Do you have the right documents? Have you inserted the tachograph disk/card? Do you have the legally required disks on board?



Is the load evenly distributed and properly secured? Will you have to redistribute it and secure it again if you unload part of it before your final destination?



Check your route. Any bridges, tunnels, etc. where your vehicle might have a problem (dimensions, weight, dangerous goods)? Does it make best use of motorways and avoid residential areas? Where will you take your breaks? Check weather conditions!

TAKE EXTRA CARE ON THE ROAD



Remember your blind angle prevents you from seeing smaller road users (cars, motorcyclists, cyclists, pedestrians) close to your vehicle.

Pay particular attention when:

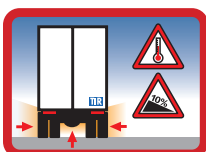
- Turning, in case a vehicle is overtaking in your blind angle
- Reversing, especially if the driving wheel is on the "wrong" side (GB-IRL/continental Europe)



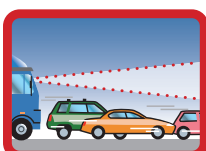
Don't overtake unless you are sure that you have enough room and will not force other vehicles to slow down.



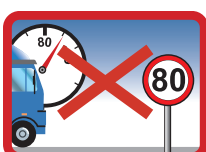
Keep a safe distance from the vehicle in front of you – in any case, at least the minimum legal distance. The faster you drive, the greater the separation you need. The safe distance increases with rain, mud, ice and snow.



Stop if your engine brakes or retarder becomes overheated. Don't proceed until you are sure that there is no further risk of overheating or failure.



Try to anticipate problems. Avoid sudden braking and acceleration which may be dangerous to other road users, waste fuel and generate extra pollution.



Respect traffic regulations at all times. Don't adopt the bad habits of other road users. Driving safely protects your life, the lives of others and your job!



In a breakdown, accident or other emergency, inform your base and/or the local emergency services immediately. Programme emergency numbers into your mobile phone.



At night, dip your headlights in good time when traffic approaches from the opposite direction. Make sure your lights and reflectors are clean, so that your vehicle is visible.



Adapt your driving to weather conditions. When roads are slippery with rain, mud, ice or snow (remember your chains!), reduce your speed – the same goes for driving in fog, rain or in twilight, and in tunnels.



Park only where permitted. Take care not to obstruct traffic or the vision of other road users and avoid residential areas. Make sure the vehicle cannot move when unattended. Don't leave your engine running unnecessarily.



Use secure parking areas wherever possible. Don't park in isolated, unlit places, especially at night. Don't tell strangers about your load or itinerary. Drive in a convoy if possible. Inspect your vehicle and load for signs of unauthorised entry or tampering before resuming your journey.



It is illegal to use a handheld mobile phone while driving. If you need to talk on the move, get a proper "hands-free" system installed.



After the trip, report to your company any problems with your vehicle, the routes you used, or the deliveries you made, so that repairs or adjustments can be made before the next trip.

Show you are a professional – and you will be respected!

The IRU and its Member Associations represent your business. They are working to obtain the best possible regulatory framework for the road transport industry.

As a professional driver, you are performing a role that is essential for the economy and society. Be proud of your job, be proud of your driving!

Supporting materials for Module 6

Risk assessment on the road transport

TRUCK RISK ASSESSMENT

www.rapidhire.net.au

We are located at:
10 Kerryll Street, Kunda Park Qld 4556
Email: info@rapidhire.net.au
Fax: 07 5456 2653



Likely Risk Issue	Who/what may be harmed? (Specific Persons)	What Is the Rate Level? (Rate risk as Low, Medium or High)	What Risk Control Action Needs To Be Taken? (What needs to be considered so that the risks are identified and effectively controlled)	Time Frame
Rollover of Truck	Operators Spectators Staff	Severity of Risk (S)- 3 Likelihood of Risk (L)- 1 Overall Risk (S x L)= 3 LOW	- Operators to be verified as competent - Assess ground conditions before tipping and no persons are near the truck - Ground to be level and solid before carrying out tipping - Handbrake to be applied before tipping - Arrange for an observer if possible.	Each hire
Accidents	Operators General Public Staff	Severity of Risk (S)- 3 Likelihood of Risk (L)- 2 Overall Risk (S x L)= 6 MEDIUM	- Operators to check truck daily and ensure no overloading and tyre pressures are OK. - Visual check for any oil or fuel leaks - Care to be taken when lowering tailgate of tray sides - Ensure tray tailgate and sides are fully secured before travel - Do not exceed rated truck capacity - No bare feet or thongs	Each hire
Crushing	Participants Operators Spectators Staff	Severity of Risk (S)- 3 Likelihood of Risk (L)- 1 Overall Risk (S x L)= 3 LOW	- Operator to be vigilant. Arrange for an observer if possible when backing or tipping - No-one to get between cab and truck tray while engine is running - Ensure all areas around truck tray are clear before raising or lowering of tip tray	Each hire
Fire	Participants Operators Spectators Staff	Severity of Risk (S)- 3 Likelihood of Risk (L)- 1 Overall Risk (S x L)= 3 LOW	- Check that fire extinguisher is on truck, easily accessible and is full. - Engine to be turned off before refueling - Check that fuel cap is in place and not damaged. - Visual check for any oil or fuel leaks before travel	Each hire
Collision	Participants Operators General Public Staff	Severity of Risk (S)- 3 Likelihood of Risk (L)- 2 Overall Risk (S x L)= 6 MEDIUM	- Ensure rotating beacon and handbrake are working. - Make sure handbrake is applied when stopped - Plan trip to make sure load will pass under any low bridges, trees or building projections - Operator to ensure safe distance behind vehicles in front	Each hire

Calculation of Risk Evaluation

Severity of Risk (S) is judged by evaluating the effects of the hazard if the risk occurs. This is evaluated as Minor = 1, Major = 2, Serious = 3

Risk Likelihood (L) - The likelihood of the harm occurring is evaluated on the basis of: Unlikely = 1, Possible = 2, Likely = 3

Overall Risk is calculated by multiplying the figure for Severity (S) and Likelihood (L).

The overall risk figure calculated is related to the Risk Level of either Low: 1 to 3; Medium: 4 to 6 or High: 7 to 9

NB This is a generic risk assessment only. It is advisable to carry out a site-specific assessment prior to using this equipment.

The instructions recommended within this document apply to normal risk conditions.
If the chainsaw is to be operated in a dangerous or hostile environment, the user/client is responsible for conducting an appropriate risk analysis and applying suitable controls to mitigate those additional risks.

**This instruction should be read in conjunction with
the Risk Assessment procedure for a Trench Roller**

GENERAL SAFETY

- This truck can only be operated if it is in a safe and sound operating condition and an MR licenced driver.
- No drugs, alcohol or smoking is permitted
- Driver must comply with all speed limits
- Rear vision mirrors must be adjusted to allow driver to reverse safely and reversing beeper must be operating
- Driver to wear seat belt at all times
- **DRIVER MUST ENSURE TAILGATE IS SECURED BEFORE MOVING**
- Driver to wear appropriate PPE (safety footwear and Hi-Vis jacket)
- Restrain loads correctly
- **USE APPROVED LIFTING POINTS, CHAINS AND STRAPS**

OPERATING CONDITIONS (including crane truck)

- Carry out a visual inspection for tyres, brakes, lights, mirrors, beacon, wipers, traffic signal lights, air conditioning and radiator
- Ensure you receive basic instruction on starting, braking and hoist (if fitted)
- **ENSURE TAILGATE IS SECURED BEFORE MOVING**
- Ensure handbrake is on before tipping or using hoist
- Engage power take-off in cab for use of tray
- **NEVER TIP LOAD OR USE HOIST WHEN TRUCK IS ON A SLOPE**
- **ENSURE TRUCK IS WELL CLEAR OF POWER LINES FOR TIPPING OR HOIST ACTIVITY.**
- **DO NOT OVERLOAD**
- For hoist operation, turn on hoist switch beside the stabiliser leg
- **DISENGAGE POWER TAKE-OFF BEFORE MOVING TRUCK**
- Look in the direction you are travelling and watch out for other people and obey traffic rules and signs
- Use the mirrors and look behind when reversing
- Use care when working near other machinery
- **DRIVE UP AND DOWN INCLINES AND NEVER ACROSS. AVOID TURNING TRUCK ON A SLOPE**
- Exercise care when manoeuvring on sloping ground
- Be aware of wet, soft or loose edges and don't operate close to open or uncompacted trenches or other excavations
- Fold up the hoist behind cab when finished lifting
- Refer to operator's manual for all other requirements

PARKING

- Park where there will be no obstruction to vehicles, site personnel or access ways
- Do not impede road traffic and post reflective warning signs
- Apply brake
- Remove ignition key for safe keeping

INSPECTION AND MAINTENANCE

- Truck and mechanisms to be inspected and maintained regularly in accordance with manufacturer instructions
- Operator to carry out daily inspections of fuel, tyres, brakes, lights, mirrors, beacon, wipers, traffic signal lights, air conditioning and radiator
- Carry out any necessary service and maintenance

**The above instructions must be followed at all times
If any of the instructions are not possible, contact the site supervisor
for an assessment of any safety requirements**

International Hazard Datasheets on Occupation



Driver, Truck/Heavy

What is a Hazard Datasheet on Occupation?

This datasheet is one of the International Datasheets on Occupations. It is intended for those professionally concerned with health and safety at work: occupational physicians and nurses, safety engineers, hygienists, education and Information specialists, inspectors, employers' representatives, workers' representatives, safety officers and other competent persons.

This datasheet lists, in a standard format, different hazards to which driver, truck/heavys may be exposed in the course of their normal work. This datasheet is a source of information rather than advice. With the knowledge of what causes injuries and diseases, is easier to design and implement suitable measures towards prevention.

This datasheet consists of four pages:

- Page 1: Information on the most relevant hazards related to the occupation.
- Page 2: A more detailed and systematized presentation on the **different hazards** related to the job with indicators for preventive measures (marked as  and explained on the third page).
- Page 3: Suggestions for **preventive measures** for selected hazards.
- Page 4: **Specialized information**, relevant primarily to occupational safety and health professionals and including information such as a brief job description, a list of tasks, notes and references.

Who is a driver, truck/heavy?

A worker who drives a truck with the capacity of more than 3 tons, to transport materials to and from a specified destinations, and may also do jobs to keep the truck in working order.

What is dangerous about this job?

- Truck Drivers are at increased risk of road accidents due to lengthy driving periods, especially at night, under bad weather and road conditions.
- Truck Drivers may get injured while doing field repairs, changing tires, climbing and descending from a high truck, etc.
- Truck Drivers may suffer from back, legs, arms and hands pains, caused by uncomfortable seating for long times and vehicle vibrations.
- Truck Drivers may sometimes be at risk of physical violence in the roadside rest places; they may also be targets of crime aimed at a valuable load, etc.

Hazards related to this job

Specific preventive measures can be seen by clicking on the respective  in the third column of the table.

Accident hazards		
	• Slips, trips and falls from a tall cabin, cabin ladder or trailer • Overturning of heavily loaded truck due to mechanical failure, difficult road conditions and/or excessive speed, head-on collisions, etc., with resulting life-threatening trapping of driver inside cabin or under the truck • Injuries due to accidental bumping into unguarded rigid parts of truck or cargo • Injuries while performing various functions of a heavy truck driver (e.g., field repair-work, tire change, unfastening tight bands and ropes, etc.) • Danger of being crushed between tractor and trailer, or between trailers, while trying to disengage one from another • Accidents caused by uncoupling the locking device securing the tractor to the trailer	
	• Traumas, such as hernia rupture, due to physical overexertion (changing tires, moving heavy pieces of cargo, fastening ropes, etc.)	
	• Explosions, chemical burns, acute intoxication by dangerous chemicals, etc., caused by hazardous cargo, such as explosives and flammables, strong chemicals, toxic substances and dust-forming bulk solids	
	• Acute poisoning by exhaust gases, including carbon monoxide • Increased risk of road accidents due to lengthy driving periods (esp. for long-haul truck drivers), incl. at night, under bad weather and road conditions, and through traffic jams (risk is increased by fatigue due	

	- to long driving hours, short rest periods, drowsiness, hunger and thirst, use of alcohol, driving at high speeds due to the bonus wages system)[See Note] - Fire hazards from spills and leaks of inflammables (usually in tank-trucks) that may ignite on contact with open flame, hot surfaces, electric sparks, atmospheric or electrostatic discharges, or as a result of mechanical shock following collision, etc. - Explosion of over-inflated tires - Explosion of car battery	
Physical hazards 	- Exposure to prolonged engine noise of high amplitude (> 80 dBA) and/or low frequency, resulting in early (severe headache) or delayed (hearing loss, etc.) detrimental effects - Exposure to ionizing radiation while transporting radioisotopes (frequently kept, for security reasons, inside the driver's cabin)	
	Exposure to direct and reflected ultraviolet (solar) radiation	3
	- Exposure to potentially health-detrimental climatic factors, such as extreme cold or heat, or combinations of temperature, humidity and wind, resulting in frostbite or heat stroke - Exposure to sudden ambient temperature changes when leaving and entering the climatic-conditioned cabin, resulting in colds and/or rheumatic effects - Whole-body vibrations that may impair functions of chest, abdominal organs, and musculoskeletal system, contribute to driver's fatigue and decrease his/her	
Chemical hazards 	Exposure to various toxic substances (in solid, liquid, or gaseous state) while transporting hazardous cargo	
	Skin diseases/conditions (dermatitis, skin sensitization, eczema, etc.) caused by chemicals: cleaning compounds, antifreeze and brake fluids, gasoline, diesel oil, oils, etc.	4
	Chronic effects caused by inhalation of gasoline and diesel-fuel fumes, and other exhaust fumes, containing carbon monoxide, nitrogen oxides (NOx), hydrocarbons, etc.	2
	- Exposure to dust (esp. on desert roads, etc.) - Exposure to various automobile fluids (e.g. battery fluid, brake fluid)	
Biological hazards 	Contamination and infection caused by exposure to biologically hazardous cargo	
Ergonomic, psychosocial and organizational factors 	Pains in the low back and in the joints (of legs and hands/arms) caused by prolonged driving, sometimes over bumpy roads, and/or inadequate seat	5
	Overexertion while moving or otherwise handling bulky and heavy loads, equipment, etc.	1
	- Digestive tract disorders caused by irregular eating, bad diet habits and stress - Hypnotic hallucinations during periods of drowsiness, and psychic disorders caused by mental and emotional stress factors	
	Smoking inside cabin, contributing to health deterioration	6
	Visual discomfort and eye problems caused by inadequate illumination and eyestrain (esp. when driving at dark time on interurban roads)	
	Exposure to peer violence (e.g., in roadside cafeterias, etc.) and to petty and gang (incl. organized) crime attracted by valuable cargo	7
	- Development of lumbago due to poor vehicle suspension, uncomfortable seat, etc. - Psychological discomfort, as a result of possibility of permanent control by cellular phone or radio communication equipment	

Preventive measures

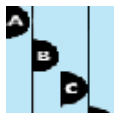
- 1 Learn and use safe lifting and moving techniques for heavy or awkward loads; use mechanical aids to assist in lifting
- 2 Avoid breathing exhaust fumes when standing near vehicle; switch-off engine when parked under a roof

- 3 Use good-quality sunglasses for driving in strong sunlight
- 4 Protect hands with chemical-resistant gloves; if impractical, use a barrier cream
- 5 Install an ergonomically-designed driver's seat; interrupt driving periodically for rest and exercises; learn relaxation techniques for long driving
- 6 Avoid smoking when driving or, if impractical, ventilate the cabin during and after smoking
- 7 Train employees how to recognize and respond to threat of violence; provide alarm or other means for summoning help, or escort if needed

Specialized information

Synonyms Driver, heavy truck; lorry driver; road-transport driver; teamster; trailer-truck driver; truck driver, heavy; trucker; truckman

Definitions and/or description



Drives truck with capacity of more than 3 tons, to transport materials to and from specified destinations: Drives truck to destination, applying knowledge of commercial driving regulations and area roads. Prepares receipts for load picked up. Collects payment for goods delivered and for delivery charges. May maintain truck log, according to applicable regulations. May maintain telephone or radio contact with supervisor to receive delivery instructions. May load and unload truck. May inspect truck equipment and supplies, such as tires, lights, brakes, gas, oil, and water. May perform emergency roadside repairs, such as changing tires, installing light bulbs, tire chains, and spark plugs. May position blocks and tie rope around items to secure cargo during transit. When driving truck equipped for specific purposes, such as fighting fires, digging holes, and installing and repairing utility company lines, may be designated Fire-Truck Driver (petrol & gas); Hole-Digger-Truck Driver (construction; tel. & tel.; utilities). When specializing in making deliveries, may be designated Delivery-Truck Driver, Heavy (any industry). May be designated according to type of truck driven as Truck Driver, Flatbed (logging). May be designated according to kind of cargo transported as Water Hauler (logging) ["Truck driver, heavy (any industry)", DOT]

Related and specific occupations

Truck driver, light (including: food-service driver; liquid-fertilizer driver; etc.); concrete-mixing truck driver; dump-truck driver; truck driver, inflammables (including: explosives truck driver; powder-truck driver; tank-truck driver; etc.); trailer-truck driver (including: tractor-trailer-truck driver; log-truck driver; semi-trailer or full-trailer driver; etc.); truck driver, heavy (including: milk driver / hauler; garbage collector driver; water-truck driver; van driver; etc.); bus, tram (streetcar) and trolley-bus drivers

Tasks

Adjusting; applying; arranging; assembling; assisting; attaching; banding; braking; camping; carrying; changing; checking; cleaning; collecting; communicating; computing; connecting and disconnecting; controlling; delivering; digging; directing; disengaging; dispatching; disposing; distributing; dividing; documenting; driving; dumping; elevating; emptying; examining; fastening; filling; fueling; gauging; greasing; handling; hauling; hoisting; honking; inspecting; jerking; lifting; loading and unloading; locating (shipment addresses); logging; lubricating; maintaining; maneuvering; measuring; mending; metering; mixing; monitoring; moving; observing; operating; overseeing; packing and unpacking; padding; parking; performing; placing; positioning; preparing; pulling and pushing; pumping; raising; recording; recovering; refilling; registering; regulating; releasing; repairing; replacing; reporting; reversing; roping; sampling; securing; servicing; serving; spraying; sprinkling; stacking; steering; sterilizing (containers);storing; submitting; supervising; testing; towing; transporting; tying; warning; washing; wrapping; wrenching

Primary equipment used

Barrow; cellular phone or radio-communication equipment; fire extinguisher; first-aid kit; jack and other lifting/hoisting equipment; levers; mechanic repair-kit; portable emergency warning lights and signs; securing ropes and straps; spare tires; tarpaulin and canvas sheets; tire-replacing equipment; trailer; truck (lorry)

Workplaces where the occupation is common

Agriculture; all kinds of industry, esp. "heavy industry", such as mines and quarries, metal-works, petrochemical industries, etc.; governmental and municipal transport departments; local and intercontinental transport and shipping companies; etc.

Notes

Important risk factors in road accidents include: loss of control while driving heavily loaded truck on steep and slippery roads at extreme temperatures and other climatic conditions; driving while using tranquilizers, chemical stimulants, or drugs against common diseases whose side effects include drowsiness, sleepiness and impairment of sensomotoric functions (esp. delayed



reaction and inadequate coordination); etc.

References



Encyclopaedia of Occupational Health and Safety, 4th Ed., ILO, Geneva, 1998, Vol. 4, p.103.18 - 103.19.

Motor trucks for Mines, Quarries and Construction. Datasheet I-330 Rev. 90, National Safety Council (USA).

Managing Vehicle Safety at the Workplace: a Guide for Employers. INDG 199*. HSE (UK), 1995.

Published by the HDOEDIT (© ILO/CIS, 1999) program. Updated by AS. Approved by DG. Last update: 15.11.2000.

Frame of questions to ask when inspecting a company

What are the transport activities of the company? Give detailed description. A.O.: How many trucks?
What is transported? Local? National? International? Dangerous goods ?

Is the safety-quality of all the trucks and trailers guaranteed? How?

Total personnel? Different functions? How many in each function? (Drivers? Administrative personnel? Car maintenance? Loaders/unloaders? ...)

Is there a safety assistance system in the cars?

Drivers recruitment policy? Skills, experience, certificates required at recruitment, etc.. ?

Are drivers under medical surveillance?

Which are the tasks of the drivers apart from driving? Coupling procedures for trailers?
Loading/unloading? Details necessary! Car maintenance or checks? If not: who is doing it?

How are the drivers work schedules planned? Which is the process of organizing the work? ? Which elements are systematically taken into account (or not) when deciding which driver is going to do which job and when? How is passed driving time taken into account?

How are weather conditions taken into account when scheduling? How is assessment of the route taken into account?

Which are the loading/unloading conditions , including access route? And how are those taken into account when scheduling?

Are there written instructions for drivers? On which topics? Which content?

Which trainings have the drivers received? (eg: Safe driving; safe and ergonomic procedures for loading and unloading; understanding possible risks of the freight and knowing how to react in case of incident; use of individual protective devices; what to do in case of accident; fueling procedure; coupling procedure for trailers, etc..)

Have they also received training on how to deal with conflicts or with violence?

Are personal protective devices available for all tasks that drivers have to fulfill? Are instructions clear?

How is the wage calculation for drivers done?

Ergonomics of steering cabin? Can the seat be adapted? Ventilation? Dashboard? Sight? Are sun glasses available?

How are the sleeping/rest facilities in the car?

Is there a contact system between driver and company when on the road? How is it supposed to be used?

Do drivers have clear instructions on how to act in case of signs of fatigue?

Is there a system for drivers to notify problems to their employer?

Which is the procedure when a driver has a road or other accident?

Are accidents or near accidents being notified and analyzed in the company? Ask for examples. Are initiatives taken to avoid repetition of these?

Which is the procedure if a driver is becoming ill during work abroad?

Is there a procedure to encourage and organize proper collaboration between supplier sending the goods, hauler carrying the goods and the recipient of the goods?

Which is the policy regarding food and drinks of drivers on the road?

Appreciation questions for the inspector:

Could (or does) the policy of the company lead to a conflict between safe driving and the wages/bonuses system?

Is the work organization process of the company conceived such that reducing/limiting drivers strain and stress is a major objective?

Are any possible difficulties issuing from delivering and loading/unloading goods taken into account when setting the schedules?

Is a decent coupling procedure for trailers current practice?

Are EU driving and rest regulations applied? Are those used as a standard for organizing transport or as a maximum never to exceed?

Are drivers authorized to stop driving at any moment when they feel fatigue?

Do drivers feel free to report on any problems/accidents they perceive/experience and to suggest proper solutions? (including on work organization)

Are trainings effective? Or is it limited for instance to introducing a brochure leaving the reading to the driver? Is the knowledge of the drivers evaluated following instructions?

Are the training courses allowing to reach correct objectives: Safe driving; Correct, safe and ergonomic procedures for loading and unloading; Correct understanding of possible risks of the freight; Correct use of individual protective devices; Instruction on what to do in case of accident; Correct fueling procedure...

Are drivers systematically allowed and stimulated at all times to give priority to safe driving?

Do drivers have at all times the guarantee that delivering, loading and unloading cannot be done to the detriment of full safety?

Are the drivers cabins and the access to it comfortable and safe?

Are the global working conditions and environment such that distraction of the driver is avoided?

Are contact systems between drivers and their employer used to make the drivers job easier or to put pressure?