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## **Safety in the on shore transport sector for SME enterprises**

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**Keywords:** Transport sector, safety management, intervention, reflexive qualitative methodology, involvement and motivation

### **Abstract**

In EU the transport sector has an incident rate of accidents at work at 40 per 1000 employees. The Danish insurance company CODAN has insured a big part of this sector concerning transport of goods on shore. The transport branch is characterized by many small enterprises of which 97 % of the enterprises in Denmark have less than 50 employees and 89 % have less than 10 employees.

The purpose of the project is to document the safety problems in the sector and to develop a strategy for a preventive intervention in transport enterprises through making successes in 6 enterprises by an intervention program.

The safety problems for the employees are the activities carried out by loading, unloading or work with transport equipment carried out at many different work places. The main safety problems are falls, heavy lifting, poor ergonomic working conditions, hits or collisions with goods, equipment or falling objects, the traffic risk situations, work with animals and finally the risk of violence and robbery.

The intervention is carried out in 6 SME transport enterprises over a three year period, beginning spring 2011. The intervention is organized together with the employers and follows their plan for integrating safety in their basically work.

The intervention until now shows a relevant focus on both the risk for occupational accidents but also the risk of accidents that have consequences for the cars and the deliveries to customers. A calculation of the internal costs of compensation of all damages and injuries shows an amount that covers 20-100 % of the enterprises' profit for a year.

The intervention in the enterprises is a simplification of safety management methods but adjusted into a new focus and awareness for the managers of small enterprises.

## 1. Background

According to Denmark's business statistics 2008, there are over 7,000 haulage contractor companies in Denmark with approximately 30,000 employees. Among these companies there are 89% with less than 10 employees and up to 97% have less than 50 employees. That is to say, an industry characterised by quite a few very large transport enterprises and quite a few very small enterprises.

A large proportion of the small haulage contractor companies, in particular, are insured with one insurance company, Codan, where their statistics show an incident rate of 46 per 1000 employees. Other national statistics show a slightly lower result of 37 per 1000 employees (Jørgensen 2010).

The insurance company Codan has data regarding the accidents in the haulage contractor industry, which shows that the reasons for the claims are: Falling objects, trips and falls, traffic accidents, repetitive strain injuries, theft of machinery and violent robberies (Jørgensen 2011)

An analysis of the details from accidents treated in Danish casualty departments shows that the causes of the injuries are: Falls, contact with moving objects, squeeze injuries, straining of the body and cuts. The EU report on the land transport of goods industry emphasizes the following reasons for injury: Falls to lower levels and falls on the same level, contact/collision with moving or stationary objects and being struck by falling or moving objects, as well as physical strain during manual operations (lifting/carrying) and inappropriate movements and working positions. (Jørgensen 2011)

The Danish National Labour Inspection has additional and more detailed information regarding accidents. An analysis of accidents for the land transport of goods for the period 1993-2002 shows the following causality.

Falls to lower levels represent the largest group of accident types at 22%. It is primarily falls from vehicles, either when getting in or out of the cab or from the truck bed and the injuries consist of broken bones and sprains in particular. Repetitive strain injuries represent 14% of the accidents, which particularly involve sprains and strains, where 2/3 are back injuries. The third most frequent accident type (13%) is being caught by, caught between or under objects. A large proportion is due to the injured party being caught/struck by the end board on the platform of the truck, that the injured party was caught/struck by pallets or the means of conveyance (not lift trucks) that moved the pallets, other injuries were due to the use of lift trucks and finally the injured party being caught in doors of different types. These accident types generally have a high degree of seriousness of injury. 12% of accidents occur through collision or by the injured party being struck by objects, of which in 2/3 of cases it is the object that is in motion that strikes the injured party. Forklift trucks, lift trucks, doors, manual lorries, etc. are involved here. In the other cases it was the injured party that was in motion and who struck lift trucks, truck lifts, pallet trucks, etc. Here one sees a broad distribution of the injuries with wounds being the most frequent, followed by sprains, soft tissue injuries and broken bones. 11% of injuries are due to trips and falls on the same level, which in very many cases occurs in association with the injured party climbing into, out of or down from the vehicle, either from the cab or from the end gate/load. But 1/3 also occur during normal journeys. By far the vast majority of injuries occurring to ankles and feet are primarily sprains. Finally, 10% of accidents occur through the injured party being struck by a falling object. In over 2/3 of these cases, the falling object is the same that the injured party is in process of handling, moving, carrying, etc. i.e. the injured party drops it or contributes to the object falling down. Quite a few broken bones and sprains occur to the feet, toes and legs

in particular in connection with this while wounds occur when objects strike the head, shoulders, etc. (Jørgensen 2011).

An EU report stresses that the transport industry's working conditions are generally poorer than the average for all industries, as risks are found in the surroundings with noise, dust, dangers associated with hazardous goods and road traffic, vibrations, high and low temperatures, poor ergonomic conditions, partly when loading and unloading and the sedentary work as a driver, work outside of normal working hours and long working days. Also, a number of organisational risks are observed, such as high job demands combined with a low level of self-inspection of the work and little potential for experience development in the job. Finally, it is stressed that employees in the transport sector are to a higher degree subjected to physical violence, assault and discrimination from colleagues and other persons. (The European Foundation for Improvement of Living and Working Condition 2004)

## **2. Theory**

The formal framework within the small enterprise is generally limited. It is still the employer who sets the agenda, i.e. decides which tasks are to be performed and under what circumstances. The employer often has a close, almost family-type, relationship with the employees but in quite a few industries the employer needs the employees to be able to act independently. The informal framework, including planning and organisation, means, among other things, that communication routes are short. When a decision is initially made, it is then acted on immediately (Hasle and Limborg 2004). This means that when demands are placed on systematic management such as the systematic access to working environment management, then the small enterprises choose not to participate. This is too time-consuming and expensive and does not fit in with their way of operating (Antonsson and Smidt 2003). This means that the requirement for systematic strategic planning and organisation that is prescribed in the methods for achieving a high degree of certainty, do not generally have an actual basis in the small enterprise. On the other hand, many of the elements that are included in safety management and safety culture will also be necessary in the small enterprise.

The challenge therefore lies in how to be able to use the best from the large enterprises, but with an adaptation to a form that fits into the day to day operation of the small enterprise. The following 5 points include some of the challenges in small enterprises that make this even more difficult:

- The fact that the accident frequency is high, but the risk awareness is low
- The fact that culture and organisation are extremely different for different industries, professions and individual employers
- The fact that management resources are small, so that a lot needs to be delegated to the individual employee
- The fact that the gains from a high level of safety are difficult to monitor.
- That resources for finances, time and knowledge as regards safety activities are limited

On the other hand, the small enterprise seldom experiences an accident among its own employees, and if it occurs then it is often an accident process that the employer feels is not his fault. By far the majority accidents are so-called 'trivial accidents', such as falls, bumping into something or muscle sprains during heavy lifting. The triviality lies in the fact that the course of events are simple and easy to explain, therefore subsequently, but also that these accidents have

a strong element of people's behaviour and actions, at the same time as the conditions that create the accidents are perceived as being everyday occurrences and not something particularly dangerous. Herein also lies the fact that in the small enterprise there is a lack of competence in investigating and analysing accidents (Walters 2001). All in all, this means that the awareness of hazards and their possible consequences is generally low.

The managerial resources limitation in small enterprises is generally illustrated in the literature that deals with small enterprises. There is perhaps no use for large formal systems when things can just as well be discussed in the day-to-day situation. Therefore, also informal frameworks and an often ad hoc characterised organization to the work (Hasle et al 2009, Walters and Lamm 2003, Eakin et al 1998)

In addition, a task in many small enterprises is characterised by the fact that it must be performed within their business premises or away from where they employer is located. This is applicable in the building and construction sector, within trade and enterprise, within agriculture, in the cleaning industry and within the transport industry, etc. The challenge lies in getting the employer to see the costs for safety in relation to the risk rather than the actual accidents, so that he has an opportunity to evaluate the value of safety rather than spending money on something in which he can see no effect. It is furthermore stressed that the small employer and the business owner's resources are limited both with respect to finance and to time, not least to activities that he regards as peripheral in relation to that which he derives his income (Brooks 2008, Walters and Lamm 2003). In addition, in general the employer and owner of the small business primarily have professional knowledge regarding what the business is based on and not specific knowledge regarding safety and the working environment. Nor are these the topics he first tackles in gaining knowledge of: finance and accounting, authoritative requirements, sales and customer contact come first.

Knowledge regarding safety will not immediately be what is first on the list when employees are employed. It is more about getting a few staff members to perform the tasks for which there are customers. Therefore, in small enterprises, there can be resistance against investing in equipment and tools (Vickers et al 2003). Time to acquaint oneself with a new professional area, such as the working environment and safety, which are not product relevant, is generally not something there is space for at the small employer (Walters and Lamm 2003). Therefore, his need is to receive a plan and method that is worked up by others with the necessary knowledge, but which fulfils his criteria about it being low cost, easy to use and maintain and being adapted to his tasks and industry related requirements (Vassie and Cox 1998).

### **3. Methodology**

The research project is an intervention and process study of 6 small and medium sized enterprises within the haulage contractor industry. The goal of the intervention is to investigate which methods for the prevention of accidents these haulage contractors could find useful and that are actually possible in the individual enterprises with the tasks, resources and management they have.

The intervention is planned to last for a 3 year period based on the understanding that it will take time both to get the methods understood, implemented and to have the opportunity to see whether they have any effect.

The point of departure in the individual enterprises is mapped at the first visit, where at the same time an initial structure of how the co-operation and course of events can come to function occurs. Selection of the individual enterprises has occurred based on the criteria that they should be positively prepared to participate in the longer term, but with a promise that the tempo for their development that will be initiated will be adapted to suit their abilities, resources and possibilities. At the initial visit to each enterprise there was therefore a certain duration i.e. 5 days with the following course of events: 1. Mapping out and calculation of the current expenses that the enterprise has due to accidents, injuries, errors, failure, etc. 2. Carrying out a basic discussion with the manager regarding the task, the process, roles and strategy, 3. Gathering experience regarding the drivers' normal working day, i.e. out and driving with a number of employees to see their work and speak with them, 4. A planning meeting with the manager about the common meeting's structure, content and goal, 5. Carrying out a common meeting with all employees, where plans and activities are discussed and agreed, 6. Final decision-making meeting with the manager regarding the course of events up to the next visit.

Based upon this course of events, a strategy and action plan will be developed together with the employer regarding what will happen subsequently. After this the enterprises will be regularly monitored, in part monthly with e-mail correspondence and every half year with a revisit, where results and new measures are discussed and set in motion. The enterprises will be monitored relatively closely, where the researcher will function as an advisor and dialogue partner, but at the same time also as an observer of what the manager does and does not do, what they have carried out and what works or is difficult to get to work. The preliminary results of this progress study are presented in the following section, approximately halfway in the progress.

#### **4. The Results**

The enterprises participate in the project are haulage contractor businesses with between 20 and 50 employed drivers. The administrative part of the business is from 2 to 10 persons, where the medium-sized enterprises have transport managers, who are a type of intermediate manager between the employer and the drivers. The items that are transported are packages and goods, earth, gravel and building materials, waste and waste disposal and live animals.

None of the enterprises have had any thoughts whatsoever regarding strategies or policies regarding safety beyond what they can do to adhere to applicable laws. This means that they have chosen safety representatives but keep safety meetings to an absolute minimum. They also adhere to rules regarding driving-rest time and traffic safety rules. The normal working day is about procuring tasks for the company and ensuring they are carried out. When the drivers meet up they are told that they are to transport items from A to B and otherwise be kept driving throughout the day over the telephone. Most of the drivers have their "own" vehicles, i.e. they have a permanent vehicle for which they are responsible for maintaining and cleaning but they must lend it out to colleagues when they are off work. The vehicles must be out driving every day in order to generate revenue. It is a tough industry.

One of the first things that was tackled in the enterprises was to obtain a picture of the costs that the enterprise had incurred for different types of injuries caused by something that had gone wrong. The reason for this part was to give the employer an understanding of how expensive it actually is and what he can save if he carries out new preventative measures. Naturally, the goal is to motivate him to want to make an effort to obtain a positive result

In this course of events we found out that none of the enterprises had this overview. This quite simply was not included in their financial setups.

The financial calculations solely have focus on the enterprises' own costs, which include 1. coinsurance, 2. absence, 3. replacement goods, 4. repairs to damage outside of the insurance, 5. administrative time spent.

- Coinsurance was established based on what is settled on the insurance's claim list
- Absence was settled based on the number of days of absence due to illness and the driver's average salary
- Repairs to vehicles was established based on the actual expenses, cf. annexes
- Compensation to customers and third person property was established based on annexes
- Administration costs were established based on an evaluation of working hours and the hourly price for the administrative employees

The result was surprising for all of the applicable employers, as it was shown that their own expenses for damages amounted to between DKK 250,000 (EUR 35,000) and up to over DKK 700,000 (EUR 100,000), which corresponded to an amount between 20-100% of their profit. This knowledge provided the basis and the interest for a dialogue regarding how one can create a positive development with fewer claims in the business. In connection with this, a general policy, strategy and action plan were agreed with the primary purpose of getting the initiatives that were needed to be carried out passed into the entire enterprises' objectives and mindsets. Through the dialogue that was carried out in several rounds the first few days a number of general themes emerged (figure 1), that along the way all of the companies could nod in recognition to.

<p><b>Working environment</b>, Safety, smoking, breaks, clothing, alcohol, health <b>Technology/vehicles</b> – responsibility/maintenance <b>Quality</b> of work in relation to customers, behaviour <b>Environment</b>, economy when driving and passive driving <b>Colleagues</b>, be a good colleague, respect, support speed and attention <b>The road</b> as a place of work</p>
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*Figure 1 themes to the haulage contractor's company policies*

These themes were subsequently transformed into the following company policies:

- That the employees have a good working environment with a high degree of personal safety and safe behaviour in relation to other people
- That the employees work with well-maintained vehicles and without own damage to vehicles
- That the employees are able to exhibit good professional behaviour towards customers when collecting the waste or delivering goods on time, place and good quality, and especially with respect for the customer's time.
- That all driving occurs with great respect for the environment with regard to fuel consumption and driving behaviour
- That all employees exhibit mutual respect toward each other and are a good colleague, especially with the use of other's vehicles and common use of containers that should be delivered in the same condition as they would like to be received

- That all employees have a fundamental understanding of the road as a workplace and the requirements that are made for carrying out tasks

This first subsequently up to following guidelines as an indication of what he means by the content in the individual policy points:

At the same time, there was a dialogue regarding what actually was desired or the dream for the relevant employer that precisely his business could be known for. That is to say, his vision. This was nothing that anyone had written down but they all had thoughts about what it was.

On the basis of this dialogue their thoughts were written down and subsequently read through thoroughly by the employer himself and arranged according to his wishes. Getting one's thoughts written down on paper, getting help to formulate it and compile it so it looked a bit professional was a very positive experience for all parties.

Within the first half of the period the companies have participated in a co-operation with researchers to carry out a number of activities and are in the process of developing a catalogue over what they can set in motion, either one thing at a time or in an interaction. Completely dependent on what they each especially find interesting and suited just to them. A number of the activities are not targeted to the working environment, but together with the activities that are targeted toward the working environment they provide a whole that the employer and drivers want to and can see an idea in. A large part of the activities involve the drivers so they begin to participate in what is going to happen in the companies. Precisely this involvement is a part of the strategy to create a co-ownership, involvement and communication between drivers and management.

One of the first activities includes, among others, mapping out the working environment problems at the company through the use of a simplified, targeted form, which could be filled out without a lot of writing or spending a lot of time.

The range of other activities in the 6 haulage contractor businesses includes 1) development of the newsletter, 2) meetings and involvement of employees, 3) following up on costs for injuries, 4) staff conversations, 5) training by elite employees, 6) safety measures, 7) the good driver behaviour, 8) driver of the year, 9) collective rewards/consequence, 10) community and on-going dialogue.

Overall there has been a need by employers to understand the management task in relation to employees. The haulage contractor spends all his time bringing in work to the business and making agreements with customers. Drivers have a car at their disposal and are told to drive from A to B. But exercising leadership toward employees and ensuring that they actually carry out the work as one would like to have it done, also in a safe and qualitative manner does not lie within the haulage contractor's field of competency.

The task was therefore to help him to understand this part of his task as an employer and illustrate how he gets a positive value out of the effort.

## **5. Conclusions**

Difficulties in the task are to maintain the attention of the companies in the long run, at the same time as there are periods where their resources cannot handle other than bringing home work to the business.



Creating a change process in a company seems to require a certain surplus in the company and at least that the earning related conditions are somewhat stable. It seems as though there is a type of Mashlow's pyramid for businesses, which has a significance to when they can establish a change process.

The advantage is that if this surplus is in place, then there is not a long way from the understanding to decision making and implementation. Something actually occurs on the basis of a clear effort. The main conclusion is that there is a need for helping the small businesses employers to understand what the management task involves and how he/she can develop himself and the business in a simple way without the large grand system. But, it also shows that the efforts regarding safety first become accepted when they are integrated in other efforts so that there is a visible whole in relation to the company's overall goals.

### Sources:

Antonsson A. og Smidt L. (2003) "Småföretag och företagshälsovård – ska berget komma til Muhammed eller Muhammed till berget?" , IVL Svenska Miljöinstitut AB, B 1542, AFA, Stockholm

Brooks B. (2008) "The natural selection of organizational and safety culture within a small to medium sized enterprise (SME)", *Journal of Safety Research* 39, pp 73-85.

Eakin J.M. and MacEachen E. (1998) "Health and the social relations of work: a study of the health-related experience of employees in small workplaces", *Sociology of Health & Illness* Vol. 20 No 6 pp. 896-914

Hasle P. og Limborg H.J., (2004) "Styr på Orden og Sikkerhed – SOS – Udvikling af metoder til ulykkesforebyggelse i små virksomheder", IPL-DTU, Danmark

Hasle P., Kines P., Andersen L.P.,(2009) "Small enterprise owners' accident causation attribution and prevention", *Safety Science* 47, pp 9-19.

Jørgensen K., (2011) "Occupational accidents in the Transport sector", Research report 13, DTU Management Engineering.

The European Foundation for Improvement of Living and Working Condition (2004), "EU road freight transport sector: Work and employment conditions", Eurofound.

Vassie L. and Cox S., (1998) "Small and Medium Size Enterprises (SME) interest in voluntary certification schemes for health and safety management: Preliminary results", *Safety Science* 29, pp 67-73

Vickers I., Baldock R., Smallbone D., James P., Ekanem I., (2003) "Cultural influences on health and safety attitudes and behaviour in small businesses", Research report 150, HSE BOOKS, UK

Walters D. and Lamn F., (2003) "OHS in Small Organisations: Some Challenges and Ways Forward", Working paper 15, National Research Centre for Occupational Health and Safety Regulation & national Occupational Health and Safety Commission, Gold Coast, The Australian National University.

Walters D.,(2001) "Health and Safety in Small Enterprises – European Strategies for Managing improvement", SALTSA, Belgium.

