

PRACTICAL EXPERIENCES FROM A PROGRAMME TO REDUCE ACCIDENTS IN A RAILWAY COMPANY

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Abstract : A accident reduction project was introduced in 2001 and contributed to a 36 percent reduction of accidents with sick-leave. However the target reaching the target of a H-1 value of less than 10 was not reached. The reason for this is probably lack of a uniform safety culture in the whole workforce. The accident-prevention technique applied in JBV seems to be efficient when applied in the right context.

Key words Accident reduction, safety culture, measurement of accident rates

1 Introduction

JBV is a state owned Norwegian railway company with around 2700 employees in 2007. Of these are approximately 1000 working at the tracks with more risks for injuries than office workers. In 2001 a project was established to reduce the number of accidents through a systematic plan focussing on improved methods for prevention. Accidents were more systematically followed up, and information on how to work more safely was a responsibility for the managers. The project was closed in 2004, and incorporated in a programme with the same goal.

2 Objectives

The vision of the activities is : Zero tolerance for accidents, and the practical objective is to have a level of accidents below 10, measured in H-value.

3. Methods

3.1 Selection of target groups and training

The 1000 employees working in the tracks were defined as the target group. There were three entry points for the activities :

- **The individual worker.** He/she had to go through a short training program in the “micro-planning” method of his next assignment, usually as a part of a team. This was called “ Safe job analysis “, popularised as “**Ta to**“(Norwegian) - English : Take two - meaning “ take two minutes to think about the risks in the next assignment before you start to work”. In essence this is a prevention technique to identify and reduced risks.
- **The manager** (The person with responsibility for the personnel). He/she is “the owner of the accident/injury” in our company. The manager would have responsibility for several activities :
 - Motivation, training/understanding the problems/ risks, and to provide leadership. This includes:
 - Production of statistics and analysis of every accident.
 - Evaluation and corrections/actions to be taken in the future.

- **Top Management** : Give priority and visibility to the project/programme.

3.1 Measurements :All accidents are recorded in a special computerised program called “Synergi”. From this database a report is written for each tertial, and in an annual report. The accidents are documented according to time, causation, gravity, and follow up.

In order to measure the accident level a formal measurement has been introduced : The H-value, defined as number of accidents per million hours of work. (This can be divided in two : H-1, accidents resulting in sick-leave, and H-2, all accidents. Usually we use H-1 for comparisons)

3 Results

Table 1 describes the development of the accident-scenario in JBV from 2000 to 2006, as recorded in the annual reports. This table gives the distribution of accidents according to gravity, and is in accordance with the Heinrich model. During these seven years two fatal accidents have occurred, one in 2002 (a young employee was killed in a car crash on a major road, driving home from work), and in 2005 a track-worker was killed by a train coming from behind, when walking along the line.

Table 1 and Figur1 gives the results of the efforts during a seven years period, using absolute numbers as the method of comparison. This is relevant since the number of employees was quite stable in this period.

Table 1. Number of accidents distributed according to gravity and year. 2000–2006

Gravity of accidents	Number of accidents and year						
	2000	2001	2002	2003	2004	2005	2006
Very severe	1	3	3	2	1	1	1
Severe	13	15	13	11	6	4	4
Moderate to small accident with resulting sick-leave	35	34	37	34	22	14	21
First aid accident	53	64	38	42	42	18	20
All accidents	102	116	91	89	71	37	46

Two conclusions can be drawn from these results:

1. The total number of accidents has been greatly reduced in this period. The project started in 2001 and developed gradually for all categories of accidents. The great reduction in numbers did not occur before 2005, and was due to drop of the number of first-aid accidents. One can suspect that this also can be due to more relaxed recording of minor accidents.
2. The numbers increased from 2005 to 2006, indicating that the accident-prevention program got a little out of focus. The message is that accident prevention is not a “once and for all” programme, the specific training skills have to be practiced repeatedly. The alternative explanation is that the programme has reached its “floor” in JBV.

The log. scale gives the development in percent change over time and shows that the reduction rate has been more or less the same for accidents regardless of severity. This

is an important finding, indicating that there seem to be a internal linkage between accidents of different severity.

Figure 1. Number of accidents distributed according to gravity and year. 2000–2006. Log scale

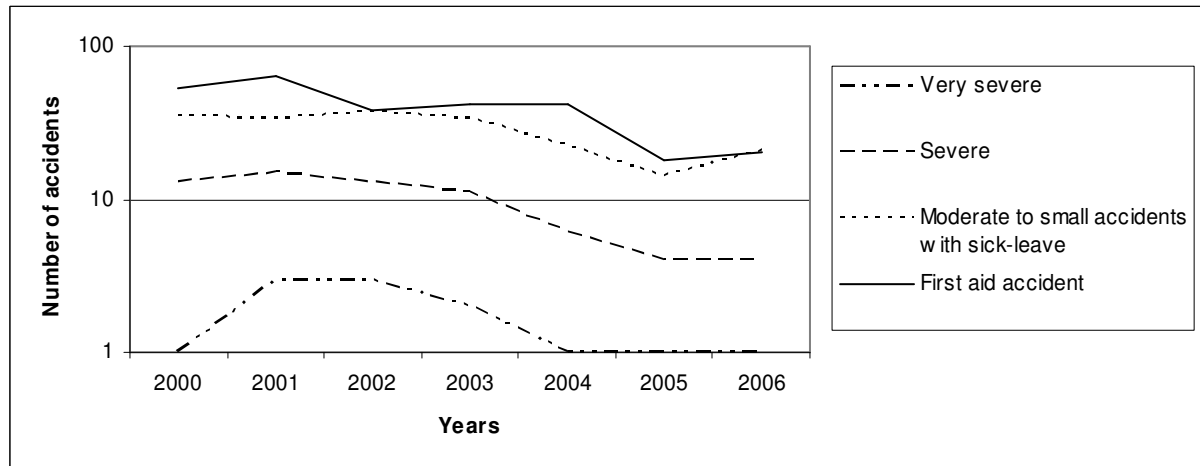
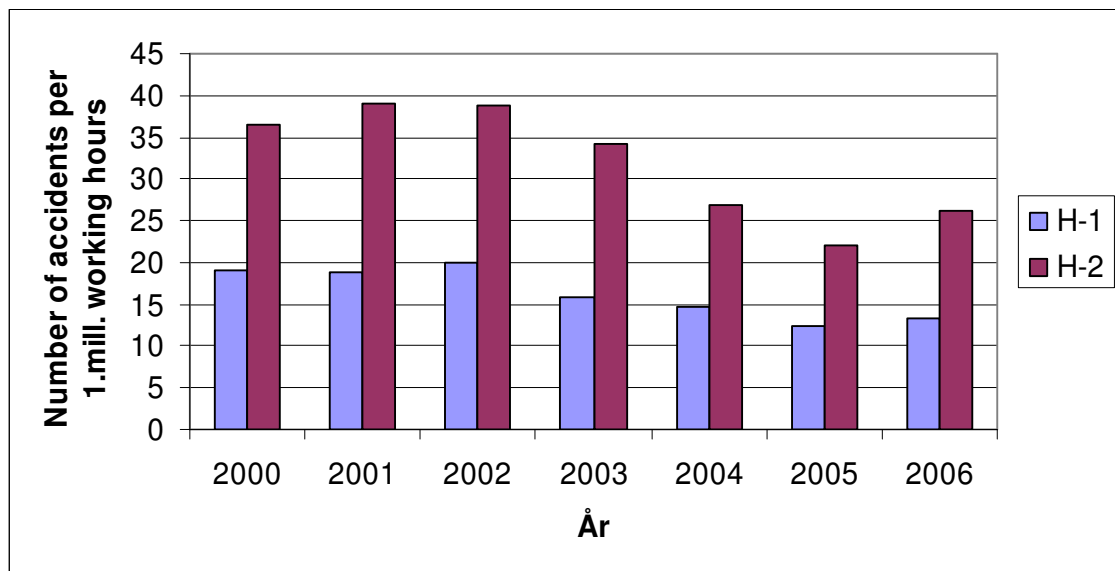


Figure 2 gives the annual development of the H-1 and H-2 values, and is a more accurate measurement of the results.

Figure 2. H-1 and H-2 values for accidents 2000 – 2006



4 Discussion

The results showed a 36 percent reduction in H-1 value from 2000 (the year before the project started) to 2005 (the best year in the period). But did not reach the target of an H-1 value of 10,0 or less. And in 2006 – the latest year of this accident reduction program – the H-1 value increased to 14,3.

In this sense the program has been partly successful, but introducing the vision of the

“Zero-tolerance” will not lead to accident reduction unless we have efficient methods and training.

There are several sophisticated accident and accident prevention models. Our experience is that the models are intellectual tools, and are not necessarily transformable to practical methods or training programs.

Our conclusion is that the reason for our main deficiency in not reaching the H-1 target of 10,0, is a lack of safety culture penetrating the whole work-force in our company.

There are still some “pockets” where safety is neglected, be it for negligence or wrong attitudes. This type of human behaviour is difficult to come by and require strong leadership and follow-up.

The reason for the reduction in accidents in JBV during these six years is the focus on safe behaviour and risk analysis. The outcome is local adaptation of practical and safe procedures. This is not based on adaptation of a sophisticated model, but on better distribution of roles and responsibilities in the organisation. And ultimately in adapting a method for local risk assessment.

5 References

Textbooks on accident prevention gives the best background for selection of methods and programs. Two relevant books are :

1. Prevention of Accidents through experience feed back. Urban Kjellen. Tallor and Francis. 2000

2. Human error reduction and safety management. Dan Petersen. Van Nostrand Reinhold. 1996