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ACCIDENTS, SAFETY AND OCCUPATIONAL INJURIES WITHIN THE LOGGING INDUSTRY (AN ANALYSIS OF DATA COLLECTED IN THE 1986/87 LOGGING WORKFORCE SURVEY)

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INTRODUCTION

It has long been recognised that accident rates in the logging industry are high. For example, Fenton and Terlesk (1971), when reviewing information from the Department of Statistics for 1966, noted the accident frequency per one million hours worked as 141.5 - over four times greater than the average for New Zealand industry as a whole. A study by the Department of Labour in 1973 reported a rate of 179 for 1970, compared with an industry wide rate of 38.8. Recent data from one large company suggests that this rate may be improving. For example, NZFP Forests Limited logging workforce is said to have a current accident rate of approximately 65 per one million hours worked (C. Kilgour, pers. com.). Interestingly, 1982 data from Sweden by comparison shows an accident frequency of 47 per one million hours worked (Statistics Sweden, 1982).

While considerable information has been published on accidents within the logging industry, difficulty in obtaining reliable accident statistics has been frequently noted (Fenton and Terlesk, 1971; LIRA/Swedfor, 1980). This problem has been compounded with the Accident Compensation Corporation (ACC) (now the major source of information on accidents) only recording instances where injuries result in ACC compensation, i.e. where the accident requires more than five days off work. With the recent establishment of the Logging Industry Accident Reporting Scheme (Gaskin, 1986), the data base has been improved. However, there is still some uncertainty as to the percentage coverage of this scheme as accident reporting is voluntary.

Recent references to the use of safety equipment in the logging industry has been limited to fallers only. In comparing the results of a survey of fallers in 1979, Neumann and Gaskin (1983) noted a significant increase in the use of ear muffs and safety legwear. Unfortunately, both of the data bases were very limited.

Very few studies have examined the occupational health of logging workers in New Zealand. Tustin and Inglis (1971) detail the prolonged effects of using power saws. They also note the high proportion of accidents involving power saws. Discussed as well were the detrimental effects of exposure to; excessive vibration, noise and poisoning from polluted air. Their recommendations were that :

"Management should take the lead actively in these spheres, including the education of users in safe techniques and periodic testing of operators to identify problems at an early stage" (p.235)

The purpose of the present study is to fill obvious gaps in the information available on accidents and occupational injuries within the logging industry. To this end, one segment of the questionnaire used by the authors during the Logging Workforce Survey (Gaskin et al, 1987; Wilson et al, 1987) contained a detailed sub-section addressing these issues, including the use of safety equipment. The survey involved interviews with 299 loggers : 202 from the Bay of Plenty and 97 from Northland.

ACCIDENTS

The survey covered two aspects of accidents; the first obtained details of any accident the logger had had during the past five years which resulted in the taking of more than one day off work, while the second provided details of what action was taken as a result of the accident. The questionnaire relied heavily on the victim's recall over a five year period.

Table 1 shows the number of accidents that the respondents had suffered during the preceding five years. The data shows that nearly one logger in three had suffered at least one accident - some 34 or 11% had suffered more than one. The highest number of accidents for a single logger was four - two Bay of Plenty loggers fell into this category.

Table 1 - Number of Accidents during last five years

Accident	Bay of Plenty	Northland	Total
1st	56 (28%)	33 (34%)	89 (30%)
2nd	16 (8%)	9 (9%)	25 (8%)
3rd	6 (3%)	1 (1%)	7 (2%)
4th	2 (1%)	0 (0%)	2 (1%)
<u>Total</u>	<u>80 (40%)</u>	<u>43 (44%)</u>	<u>123 (41%)</u>

Based on this data, the lost time accident frequency rate is approximately 42 per one million hours worked. This rate is considerably lower than rates previously quoted.

Data on the amount of time lost per accident was also reliant upon the recall of the victim, with weekend days included. Table 2 summarises the information collected. The number of accidents where the logger was absent for five days or less, and so did not receive payment from the ACC, is also shown.

Of the 123 accidents noted, 46 (37%) of these would not have come to the attention of the ACC. The contractor or employer would thus have borne the total cost in these cases.

Table 2 - Days Lost Through Accidents

Accident	Number	Total Days Lost	Est. Work Days Lost	No. Where Time Off Is < 5 Days
1st	89	2130	1521	31
2nd	25	789	564	11
3rd	7	42	30	4
4th	2	90	64	0
<u>Total</u>	<u>123</u>	<u>3051</u>	<u>2179</u>	<u>46</u>

The accident severity rate derived from this information was 6202 hours lost per one million hours worked. This is much lower than the corresponding figure of 104,880 quoted by Fenton and Terlesk (1971). The average number of working days lost per accident was 17.7.

Analysis of the data relating to the job performed (Table 3) found that over 80% of accidents occurred in three jobs - felling (37%), trimming (30%) and skid work (14%).

Table 3 - Job at Time of Accident

Accident	Fell	Trim	Skids	B/Out	Skid. Op.
1st	32	26	15	4	4
2nd	10	7	2	3	2
3rd	4	2	-	1	-
4th	-	2	-	-	-
<u>Total</u>	<u>46</u>	<u>37</u>	<u>17</u>	<u>8</u>	<u>6</u>

This finding largely agrees with the information being collected by the Accident Reporting Scheme (Gaskin, 1986 and 1987) though, to date, the Scheme has found the job with the largest number of lost time accidents to be trimming, followed by skid work, then felling.

The part of the body most prone to injury agrees closely with the patterns emerging from the Accident Reporting Scheme. The legs were most at risk with 50 accidents, followed by hands and arms (26), torso (24) and feet (14). Chainsaws were the main

single cause of accidents with 50% of cases being related to the use of this equipment. This profile is consistent with other sources of logging accident data, both locally and internationally.

Fenton and Terlesk (1971) noted from limited studies that there appears to be a strong correlation between experience and accident rates, with less experienced workers being more at risk. The data from the survey found no support for such a contention. In fact, the survey data indicated a higher than expected number of accidents for those workers with 4 to 9 years experience. Analysis of the Accident Reporting Scheme data also supports this finding.

In only 37 (30%) of the 123 accident cases did the victim have the accident discussed with them. The person usually involved in such a discussion was the logger's immediate supervisor or gang boss (23 cases). The Department of Labour had been involved in only five of the accidents, with Company Safety Officers in only four. It must be stressed that what is reported is the logger's perception. There are examples of instances where the Department of Labour Inspector has discussed the accident with victims but the Inspector was not linked with his employer (pers. com. Bill Sexton, Department of Labour).

This lack of effort made to ascertain the specific details pertaining to each case suggests there will be little likelihood of the industry improving its understanding of the underlying causes of accidents and so being able to reduce accident frequency.

Causing the most concern is that in all 123 accident cases, no suggestion was put forward as to how the accident could be avoided in the future. To "take more care" cannot be considered a recommendation given the seriousness of the context (one contractor's solution was to fire the accident victim!). Such findings indicate that the logging industry views accidents as "a fact of life". Such complacency should be regarded as unwarranted and verging on the irresponsible.

OCCUPATIONAL INJURIES

The present survey marks the first detailed attempt to assess the extent of

occupationally induced injuries within the logging industry. This was carried out using the respondent's subjective assessment of their health status. Accordingly, some degree of caution is justified in using this information. Four distinct areas were considered; back problems, white finger, tendinitis and hearing loss. Additionally, the opportunity was provided for those interviewed to record other disorders (such as eye irritation and problems in the lower legs) which were perceived to have been caused through logging work.

With the exception of tendinitis, the four main areas selected have long been recognised as potential health hazards for loggers. Numerous studies have addressed the link between prolonged chainsaw use and vibration induced white finger. The Safety Code for Bush Undertakings (1984) provides loggers with five simple methods for reducing the risk of white finger.

Back problems are almost inevitable for chainsaw operators involved in delimbing using currently accepted techniques. Bio-mechanical analysis of these methods (standing on top of the log to delimb) have shown the torque at the hip joint to be twice that associated with alternative techniques. These latter involve the operator walking alongside the log supporting the saw on the log or his thigh (LIRA and Swedfor, 1980).

The maximum recommended noise level, where ear protection is not required, is 85 dBA (Department of Labour, 1984), whereas most chainsaws operate at noise levels of between 100 and 109 dBA under load (Douglass, 1987). This figure assumes a new saw, and noise levels will increase as the saw ages and the muffler deteriorates. Logging machinery by comparison have noise levels of 90 to 100 dBA (Department of Labour, 1984).

The final specific injury, tendinitis (inflammation of the tendon) normally occurs at the wrist and is caused by a lack of lubrication between the tendon and the sheath. The lack of lubrication associated with over-use results in painful swelling.

Figure 1 displays the percentage of respondents who suffer from an injury considered to be directly attributable to working in the bush.

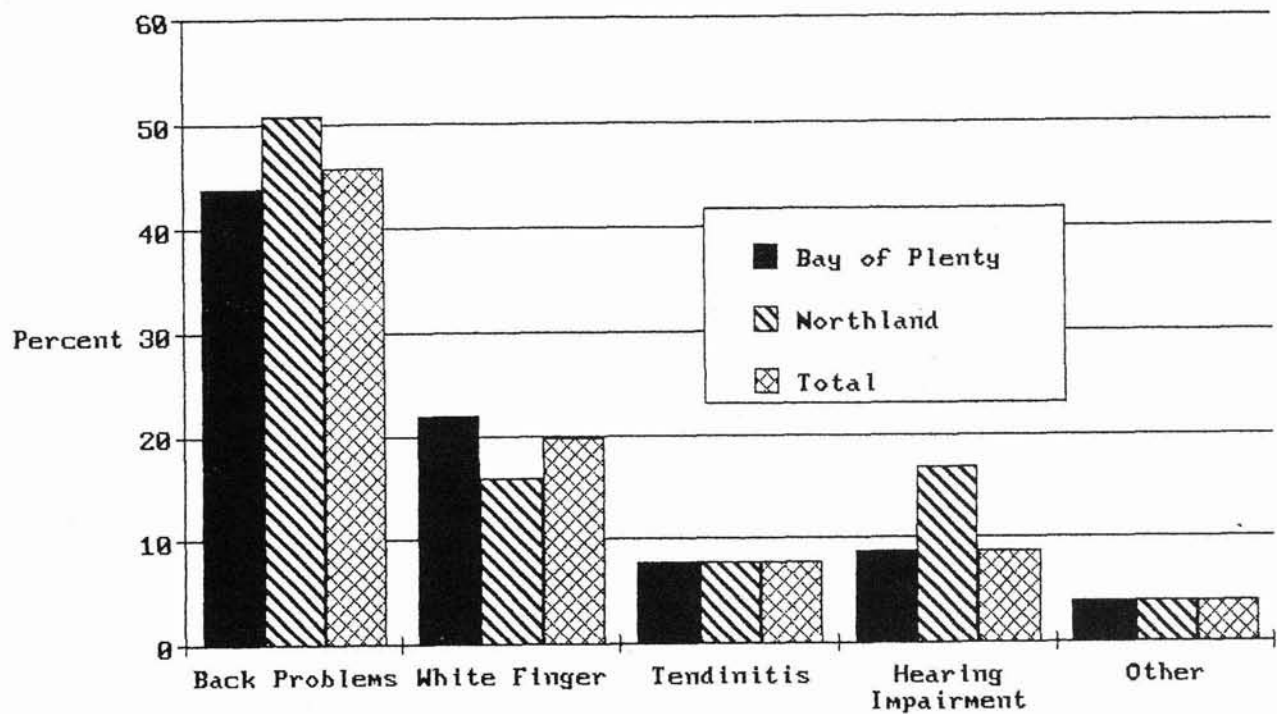


Figure 1 - Occupation Induced Injuries

The data show that nearly one logger in two suffers from back problems; one in five from white finger; and nearly one in twelve from tendinitis. About 10% of the loggers tested suffer from a hearing impairment in at least one ear.

It is encouraging in this regard to see that half of the loggers in both regions have had their hearing tested since they had commenced work in logging. In nearly three-quarters of these cases, the test had taken place within the last two years.

SAFETY EQUIPMENT

The report by Fenton and Terlesk (1971) noted an increase in the use of safety boots and helmets. These are now mandatory for all those working in bush undertakings. However, protective legwear for chainsaw operators has been a relatively new development; first recommended in the early 1980's and readily available by 1983 (Prebble, 1981). Gaskin (1986) detailed the effectiveness of protective legwear in reducing chainsaw accident severity in cases of cuts to the leg.

The current survey provided an opportunity

to update information on the use of protective equipment by loggers. Information collected included details on; equipment used, reasons for not wearing various articles, whether the logger knew where various items not being used could be purchased, and who was responsible for the provision of safety equipment.

The high number of operators wearing safety trousers is encouraging (Figure 2). The reason for a higher percentage of Bay of Plenty loggers wearing this equipment is related to the fact that major companies in the area insist that such garments be worn.

The use of ear protection also appears to be accepted practice now, while the use of visors by chainsaw operators to prevent eye injury is not so common.

Only three loggers were not aware that safety equipment not worn was readily available, while a further eight did not know where this equipment could be purchased. Over half the loggers had their safety equipment supplied by their employer. Over one-third (37%) supplied their own, with the remainder using a combination of both employer and personally provided gear.

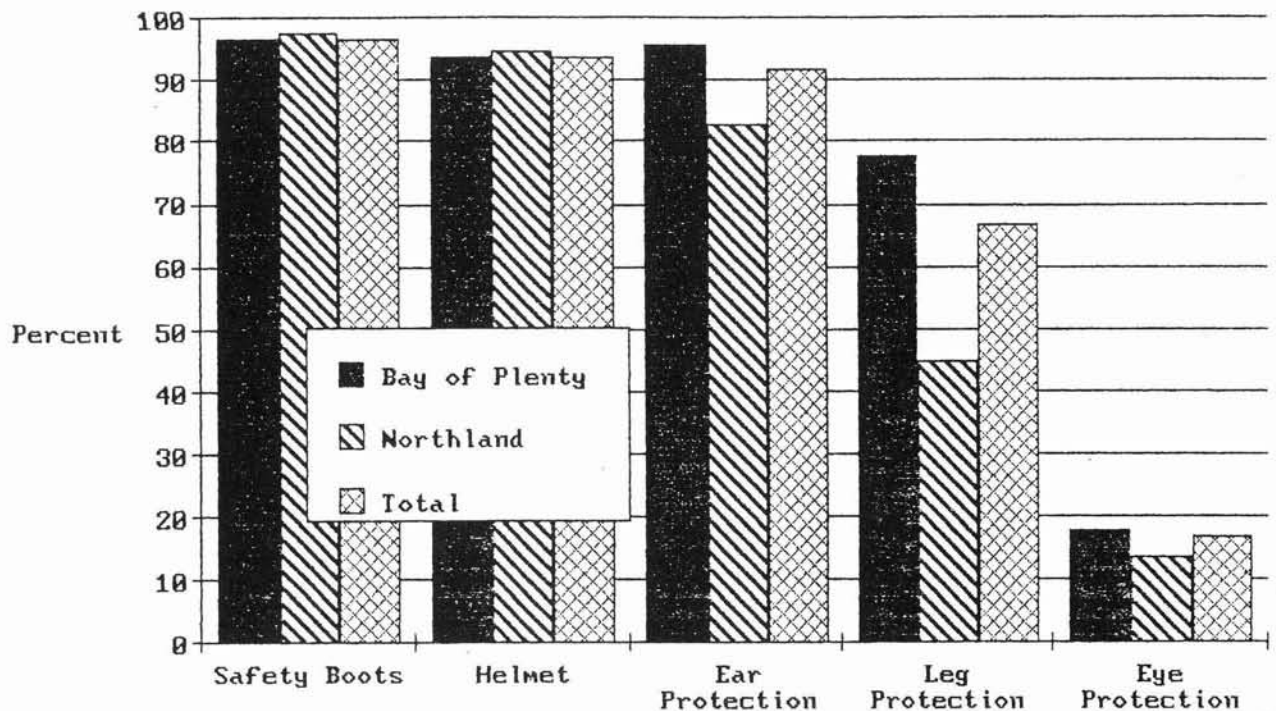


Figure 2 - Safety Equipment Used by Loggers

The reasons given by loggers for not wearing eye and leg protection related mainly to discomfort, although 23 loggers admitted not having tried this equipment.

DISCUSSION AND CONCLUSIONS

Given that the industry is about to undergo considerable expansion, it would seem essential that it present itself to potential recruits in the most positive way possible. Certain aspects of accident related statistics presented in this paper work against this requirement.

In this respect, a most disturbing finding was the lack of follow-up with accident victims where only 11% of these had had the accident discussed with them and no recommendation was made to avoid the accident happening again. Such a finding is a serious indictment on the logging industry and highlights an area which requires urgent attention.

The accident severity rate calculated from the data collected by the survey was much lower than that reported in earlier studies. Furthermore, the present study found that nearly one-third of loggers surveyed had met with at least one accident during the past five years. The data does not support the traditional view that more experienced loggers are less likely to have accidents - indeed, the survey suggests the contrary.

Most loggers appear to have recognised the benefits of wearing protective legwear when using chainsaws. While such equipment does not prevent the accident happening, it most certainly reduces the severity.

More than three-quarters of the loggers surveyed suffered some form of work-induced injury. This indicates that careful thought needs to be given to the implementation of ergonomically better techniques, some of which have already been documented (Gaskin, 1986; Prebble, 1986; Sweetman, 1984). This also has implications for recruitment.

A larger than expected number of machine operators suffered back injuries. Such injuries could be caused by repeated jumping off machines and long term exposure to jolting and whole body vibration. The area of machine cab design is one that requires more detailed research in an attempt to reduce this problem.

Having identified the considerable accident and occupational injury risk faced by loggers, it is interesting to note that 91% of those surveyed still thought the work healthy!

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