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LOGGING INDUSTRY RESEARCH ASSOCIATION NEW ZEALAND

REPORT

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ANALYSIS OF CHAINSAW ACCIDENTS TO THE LEG — 1983 TO 1986

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INTRODUCTION

The following analysis is based on data collected through the logging industry Accident Reporting Scheme which is administered by LIRA. The Scheme's purpose is to record logging accidents on a nationwide basis. Two types of documentation exist :

(1) Individual Accident Report Forms

These are filled in at the time of the accident by either the individual concerned or his employer. This type of reporting is entirely voluntary.

(2) Company Summary Forms

These are also voluntary but use information collected in existing Company accident reporting schemes.

Information is sent to LIRA where it is collated and stored on computer. At the end of each three month period, a summary of the information is printed and is widely distributed to the logging industry. After three years of operation, the computer file contains some 1,275 accident entries.

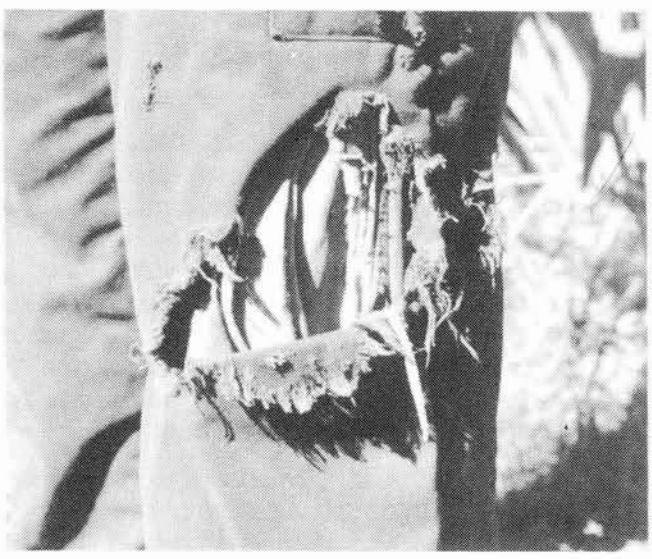


Figure 1 - Example of how safety trousers can reduce chainsaw cuts to the leg

Information collected by the Scheme is :

(1) Date of accident
(2) Time of day of the accident
(3) Type of operation, e.g. clearfelling
(4) Extraction method
(5) Part of operation where the accident happened, i.e. felling, breaking out, etc.
(6) Part of the body injured
(7) Side of body injured
(8) Type of injury, e.g. cut, crush, etc.
(9) Accident severity, lost time, minor, near miss
(10) Worker designation (if he held a Logger's Certificate)
(11) Years of experience in that particular job
(12) Lost time, number of days off work
(13) A brief description of the accident

Given the voluntary nature of the Scheme, it is difficult to assess its coverage, that is, what proportion of the total number of accidents occurring in the industry are reported through the Scheme? For example, of the five logging fatalities to date in 1986, only three have been reported through the Scheme.

From; the Accident Compensation Corporation statistics of logging accident claims relating to more than one week off work (ACC, 1985) and the Department of Labour estimates of the proportion of logging accidents incurring less than one week off (Horgan, 1984), it is estimated that the Scheme records between one half and two-thirds of the lost time accidents occurring in logging. (J.E. Galbraith, pers. comm).

This level of coverage is sufficient to give a reasonably reliable sample of accidents occurring. The data can be analysed for types and causes of accidents and to indicate significant trends. Statistical tests are used in the analysis to check that results are significant and not just due to variability or chance. This Report analyses chainsaw accidents to the leg.

CHAINSAW ACCIDENTS TO THE LEG

Table 1 - Chainsaw Accidents to the Leg

	1983		1984		1985		1986
	01-06 months	07-12 months	01-06 months	07-12 months	01-06 months	07-12 months	01-06 months
Total number of accident reports for the 6 month period	153	168	201	180	179	192	151
Chainsaw accidents to the leg	32	42	33	30	14	24	6
% of total accidents reported	21%	25%	16%	17%	8%	12%	4%

Leg accidents involving chainsaw cuts have reduced markedly during the past three and a half years. The proportion of chainsaw accidents to the leg has reduced from a level of 21 to 25% in 1983 to only 4% for the first half of 1986. The reduction has shown a steady trend in each of the years following 1983. The benefit of that reduction, in terms of cost savings, is estimated to be in the vicinity of $140,000, assuming a reduction in accident numbers of 64 between 1983 and 1986. This cost was estimated using a case quoted by Horgan (1984) where an accident that resulted in one week off work cost $1,700. (Inflationary allowances of 15% and 10% for 1985 and 1986 have been added.) Note that this benefit is only based on the reduction in leg injuries from reports received. Extending the benefit to the whole industry, using the estimated coverage of the Scheme outlined in the Introduction, would give an estimated current saving of between $210,000 and $280,000 per annum for the industry.

The principal cause of the reduction in leg injuries is considered to be the use of protective legwear. Protective legwear was first recommended in the early 1980's (LIRA, 1980 and Prebble, 1981) and was becoming readily available and promoted by 1983. Various forest owners and logging managers made protective legwear compulsory in their operations through 1984 and 1985. Initial results of a logging work force survey being carried out by LIRA and the Forest Research Institute in 1986 indicate that roughly half the loggers in the central North Island region now wear protective chaps or trousers.

In 1984, a Company which had recently introduced protective legwear to its logging operations surveyed 137 chainsaw operators. They reported thirty-nine instances of chainsaw injuries being prevented by protective legwear. It can be assumed that many more cases occur where safety trousers prevent cuts to the legs than are actually recorded.

There are other trends which have occurred in the logging industry in the past four years which could contribute to the reduction in leg accidents :

(1) more emphasis on training of new recruits

(2) a trend to using smaller saws with shorter bars which, due to better control of the saw, should reduce the risk of cuts to the leg

(3) better awareness of the vulnerability of the leg to chainsaw injury due to the promotion of the logging industry Accident Reporting Scheme.

ACCIDENT SEVERITY

At the beginning of 1984, several modifications were made to the accident report forms. One modification was provision for recording of the amount of time lost for each accident. As the original forms were still in use, early response was slow. By the beginning of 1985, reasonable data was starting to be collected and by 1986 the majority of lost time accidents had the number of days lost recorded.

An analysis of lost time data for chainsaw leg injuries using statistics from the first six months of 1985 and 1986 is shown in Table 4 (earlier data offered insufficient detail of time lost).

Table 2 - Severity of Chainsaw Accidents to the Leg

Data Period	January/June 1985	January/June 1986
Number of accidents	11*	5**
Mean days lost	12.6	8.4
Range (in days)	2-30	4-14
Standard deviation	8.0	4.3

Note: * 10 data points excluded because number of days lost had not been included

** 1 data point excluded because number of days lost had not been included

A statistical test (the "t-test for unpaired plots") was applied to test for a significant difference between the means of the two data groups. No statistical significance was found. This result could be attributed to both the small sample size and the wide range of data within each sample. Thus, although there appears to be a reduction in severity, until more information is collected the apparent reduction cannot be confirmed.

CONCLUSION

The logging industry Accident Reporting Scheme provides a large data base of accidents in the New Zealand logging industry. The Scheme is important for determining estimates of the total number of accidents, their type, severity and cause. Analysis of the data over the period 1983-86 has shown a substantial reduction in the number of chainsaw accidents to the leg. This report considers that the main reason for this reduction is the use of protective legwear by chainsaw operators. Wider use of protective legwear should reduce the incidence and severity of chainsaw cuts to the leg even further.

Other facts which may have contributed to the reduction are; the increased emphasis on training of loggers, the trend to using smaller saws with shorter bars, and better awareness of risks through the logging industry Accident Reporting Scheme.

The mean severity of chainsaw accidents to the leg has also indicated a reduction over the past year. While not being statistically significant due to the variation in the data, this result does show a promising trend. The question of severity of such accidents will be closely monitored over the next two years.

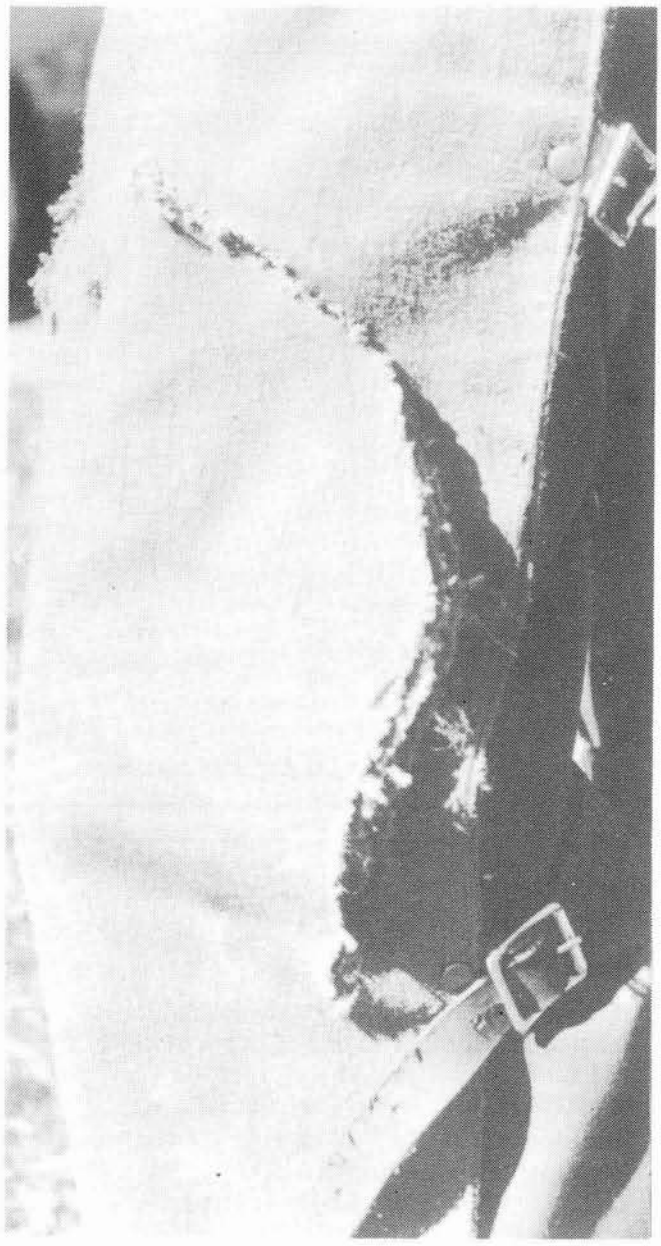


Figure 2 - The more popular form of protective legwear is safety chaps

N.Z.LOGGING INDUSTRY ACCIDENT REPORTING SCHEME

INDIVIDUAL ACCIDENT REPORT FORM

The information given on this form will only be used for accident prevention research. Accidents to be reported include logging of merchantable species up to and including truck loading and also land clearing operations where extraction takes place.

SEND COMPLETED FORM TO : L.I.R.A., P.O. Box 147, ROTORUA

To complete: tick boxes and mark diagrams

Date of Accident

[..../...../19..]

Approximate time

[.....am/pm]

Type of Operation

- [ ] Clearfall exotic
- [ ] Thin exotic
- [ ] Native
- [ ] Other - specify .....

.....

Extraction Method

- [ ] Hauler
- [ ] Track machine
- [ ] Wheel machine
- [ ] Other - specify .....

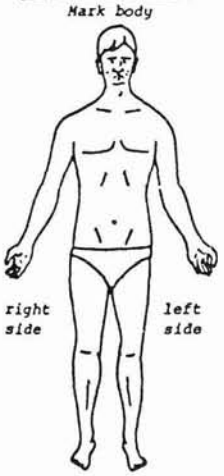
.....

Part of Operation where accident happened :

01	Felling Preparation	11	Skidwork
03	Felling	13	Loading Truck
05	Limbing, Trimming	15	Moving plant, rigging
07	Breakingout, hauling	17	Other
09	Crosscutting	19	Unknown

Amount of experience in that particular job [.....months .....years]

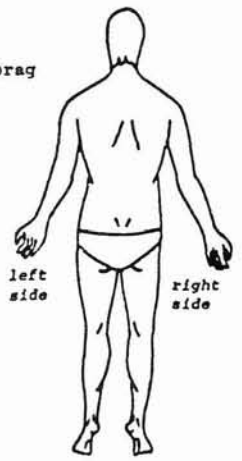
Mark body



Type of Injury : *Tick ONE box*

00	No Injury
02	Laceration, abrasion, puncture, sprag
04	Bruising
06	Crush
08	Burn, scald
12	Strain , sprain
14	Fracture, dislocation
16	Amputation
18	Infection
20	Foreign body (e.g. in eye)
24	Dermatitis, rash
26	Bite, sting
28	Multiple
30	Other
32	Unknown

Mark body



Accident Severity :

[ ] Fatal [ ] Lost time * [ ] Minor [ ] Near miss * Estimation of lost time [..... days] [.....weeks]

Worker Designation :

00	Not certificated or unknown	06	Logger I Certificated
02	Senior logger-certificated	08	Logger II Certificated
04	Machine operator-certificated	10	Logger III Certificated

Described briefly what happened :

_____

_____

Figure 3 - The Accident Reporting Scheme form - a valuable source of accident information

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