

ATTITUDES TOWARDS PROTECTIVE EYEWEAR IN THE NEW ZEALAND LOGGING INDUSTRY 1997

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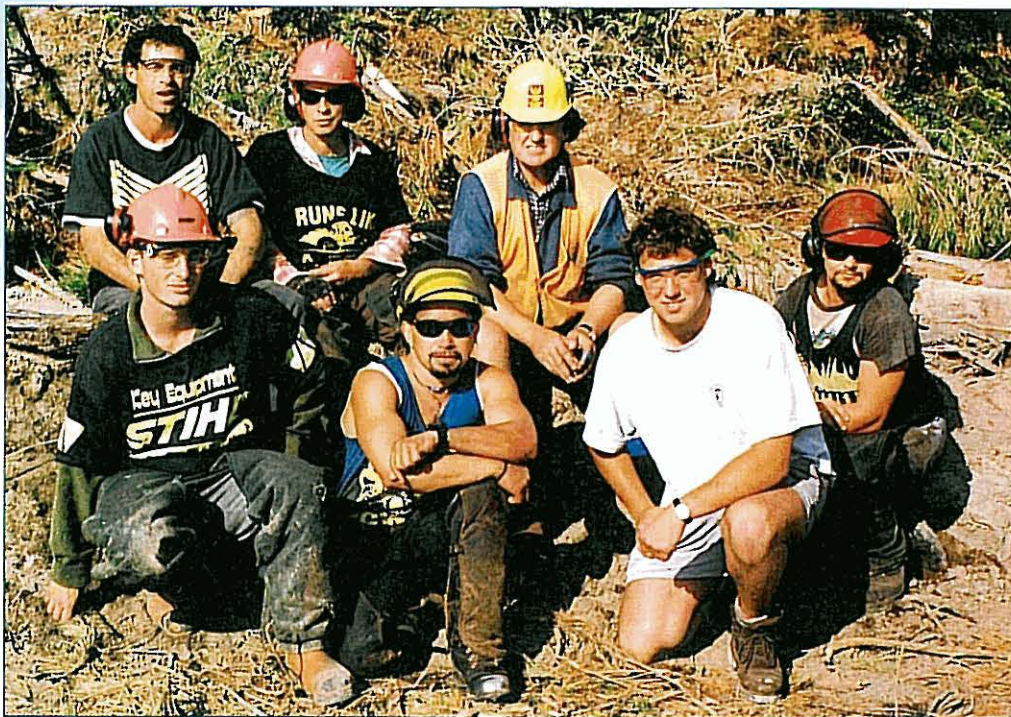


Figure 1 - Fashion and function combine in a protective eyewear trial

Summary

A recent survey of harvesting crews working in forests throughout New Zealand, has provided a comprehensive summary of the attitudes of loggers towards eye protection and the wearing of protective eyewear. Encouragingly, a large percentage of workers said they would wear eyewear protection if it was free of the problems existing with current forms available. To achieve a better design, eyewear needs to be comfortable, fog-resistant, scratch-resistant, lightweight, reduce glare, and not interfere with earmuffs.

Conclusions

- 94% of loggers would wear protective eyewear - if it was better designed
- 54% of loggers said they currently wore some form of protective eyewear
- Current forms of eyewear offer protection at the compromise of comfort and visibility
- 83% of loggers said they had previously had an object in their eye; 28% sought medical attention resulting in an average of 3 days off per injury
- The most common objects to get in the eyes of loggers were woodchips and dust. The most common objects to hit loggers in the face were woodchips and branch stubs
- The most common problem with safety glasses currently available was fogging; with visors it was reduced vision in the rain
- 75% would pay \$10 to over \$30 for improved eyewear

Introduction

Between 1983 and 1996, the New Zealand forest industry Accident Reporting Scheme (ARS) administered by Liro Limited, recorded 175 eye injuries in New Zealand forests. Of these, 152 (87%) had occurred in logging operations. Investigation into previous eye injuries by Klen (1977) concluded that if eye protection had been worn, 33% of eye injuries would have been prevented and 10% would have been significantly reduced. One important finding from Klen's study was that eye protection was often not worn because it interfered with work. An interesting comment from Standards Australia and Standards New Zealand (AS/NZS, 1997) was that complaints may be made about vision restriction, fit, pressure or the weight of eye protectors, but that similar complaints are not made about sunglasses, which are the optical equivalent. This would suggest a large percentage of problems are related to style and appearance.

Ryckman (1990) found there were five strong negative motivators which discouraged people from wearing protective equipment. These included lack of training (of hazards and use of protective equipment), discomfort, increased stress (making the job more difficult to perform), increased hazard (from impaired vision) and peer pressure.

With the introduction of the Health and Safety in Employment Act (1992) in New Zealand, there is now an urgent need to develop forms of protective eyewear which do not interfere with work and are better suited to the harsh operating environment of the forest industry. Any progressive developments in eyewear protection must be based upon the elimination or reduction of those problems existing with current forms of protective eyewear. Should the use of eyewear protection become compulsory, users will then be able to select from a range of eyewear which effectively meets the requirements of both users and principle employers. Allowing workers to select their own style of safety glasses may be a simple motivator to encourage use (Ryckman, 1990).

Method

To obtain a comprehensive idea of the attitudes of workers towards protective eyewear, and identify those problems associated with current forms of protective eyewear, a national survey was conducted. A total of 452 survey forms were completed by members of harvesting crews working in the major forests throughout New Zealand.

Acknowledgments

Liro Limited acknowledges all those forest companies and personnel who assisted with distribution of survey questionnaires and all those harvesting contractors and crews who gave their time to participate in the survey.

Analysis of attitudes towards protective eyewear

Time in Logging Operations and Current Job

With any survey, it is important to capture a cross-section of the workforce to ensure all levels of experience are represented by the results. To identify the levels of experience within the survey participants, they were asked how long they had been logging (Figure 2).

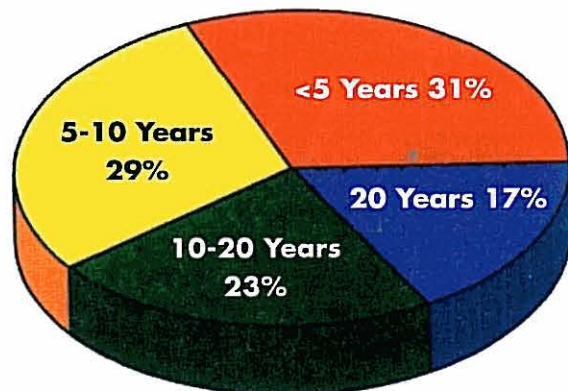


Figure 2 - How long have you been logging?

Importance of Eye Protection

Surprisingly, 81% of all respondents believed that eye protection was a major issue. As 83% had also previously had an object in their eye, this may account for the heightened awareness of eye protection from the injured group. More loggers (91%) saw visibility as a major issue, indicating that they would rather not wear eye protection if it impeded their vision.

A follow-up visit to the doctor for medical attention was made by 28% of those who had previously had an object enter their eye. This led to an average of three days off per injury, ranging from one to 30 days.

Would You Wear Better Designed Protective Eyewear?

One of the main objectives of the survey was to determine whether any improvement in the design of protective eyewear would encourage greater use by logging workers. Ninety-four percent replied that they would voluntarily wear some form of protective eyewear if it was better designed. This is an interesting and encouraging result, considering there is a move in some companies towards making the wearing of protective eyewear compulsory.

What would you pay for improved protective eyewear?

Any increased investment in design and technology by the developer must ultimately have a flow - on effect to the purchaser. This means you may have to pay more to get the benefit of better equipment. One-quarter felt they would only pay between \$5 and \$10 for better designed eyewear; 41% said they would pay between \$10 and \$30. Over one-third of the respondents (34%) said they would be prepared to pay \$30 or more for equipment that was free of the current problems. One worker commented that he would pay "whatever it took" to get something that worked. Others commented that it should be up to the company or the Occupational Safety and Health Department (OSH) to provide free protective eyewear. It was surprising that loggers could not see the benefit of a small investment in eye protection to prevent a larger loss in wages in the event of an injury.

Would You Use A Visor That Was Built into Your Helmet?

The forest industry can often benefit from innovation occurring within other industries. One such example is a new helmet being designed for firefighters (Figure 3). This helmet has a built-in polycarbonate visor which slides up into the brim of the helmet when not in use. This type of helmet may have some application

to the logging industry, considering that 70% said they would be more likely to wear a protective visor of this design.

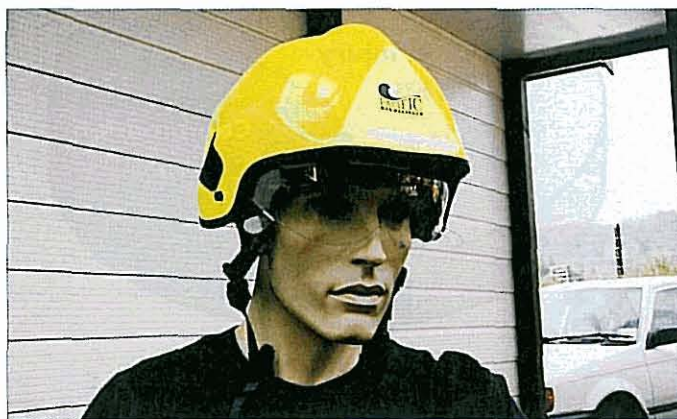


Figure 3 - Fireman's helmet with retractable visor

Protective Eyewear Worn - Previously and Currently

The survey asked the participants to indicate which forms of protective eyewear they had worn in the past, and which forms they normally wore for their current job (Table 1). The safety visor was the most popular in current use, followed by sunglasses and safety glasses. In 9% of replies, a variety of types of protective eyewear were currently being worn.

While it was encouraging that currently 54% of loggers wear some form of eye protection, it is of concern that 17% were wearing prescription glasses or sunglasses which are not protective eyewear (Table 1). It was also of concern that only the 16% who wore sunglasses were protected against UV damage. While the 28% who said they did not wear any eyewear protection may include machine operators, it is still of concern that this group do not wear any form of protection against UV damage from the sun.

Most Common Objects to Hit Eyes and Face

To ensure new research and development in eyewear protection is relevant to the forest industry, it is important to initially identify those objects which most commonly hit the eyes and faces of loggers (Tables 2 and 3). From this information, the size and damage potential of these objects can be assessed, and new designs can focus on minimising the impact and injury potential of these objects.



Figure 4 - The future in protective eyewear

Type of Eye Protection	Previously Used (%)	Currently Used (%)
Safety Visor	48	43
Safety Glasses	21	11
Sunglasses	20	16
Prescription Glasses	1	1
Fly Eyes	2	1
None	8	28
TOTAL	100	100

Table 1 - Types of protective eyewear previously and currently worn

Table 2 - What are the most common objects that get in your eyes?

Type of Object	Yes (%)	No (%)
Woodchips	81	19
Dust	70	30
Sun	32	68
Sticks	12	88
Other*	4	98
No objects hit eyes	1	99

Other* comprises bark, sap, dirt, undergrowth and mud.

The most common objects to enter loggers' eyes were woodchips and dust, followed by sunlight. Because visors do not stop dust and sunlight, safety glasses or sunglasses may be a better protective option when these are the only objects entering the eyes.

Table 3 - Which objects most commonly hit you in the face?

Type of Object	Yes (%)	No (%)
Woodchips	92	8
Branch Stubs	34	66
Wedges	7	93
Pine Cones	3	97
Stones	3	97
Other*	2	98

Other* comprises sprags off wire rope, sparks from rope cutter, bark chips

Woodchips and branch stubs most commonly hit the faces of loggers. Safety glasses or visors will provide greater levels of protection than sunglasses against these objects.

Main Benefits From Wearing Protective Eyewear

Forest workers are more likely to voluntarily wear protective eyewear if they can see some personal benefit in doing so. Most (85%) of the respondents felt that there was some personal benefit to be gained from wearing protective eyewear (Figure 5). This is a positive indication of the current perception of protective eyewear.

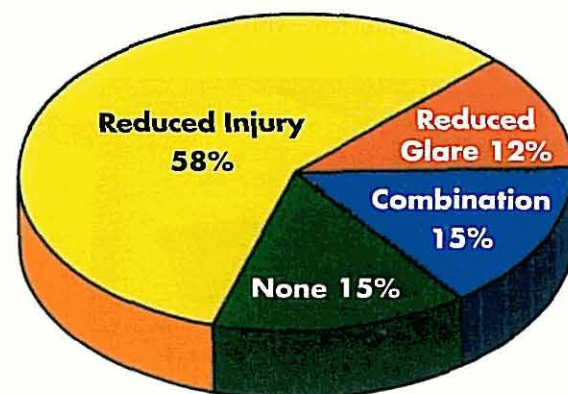


Figure 5 - Main benefits from wearing protective eyewear

The most important benefit from wearing eye protection (58%) was seen as a reduction in the chance of injury. Comments about additional benefits of wearing protective eyewear included better visibility from not having to squint in sunlight, and keeping mud and dirt out of the eyes. Unfortunately, 15% saw no benefit to wearing eye protection.

Major Problems Encountered with Protective Eyewear

Protective eyewear often presents users with a range of problems, which may affect a person's willingness to wear it. A person wearing eye protection for the first time may require a period of adjustment (AS\NZS, 1997). As an example, headaches are typical but relatively short-term symptoms (AS\NZS, 1997). Identification of some of the most commonly occurring problems and faults in those forms currently available, should assist developers in tailoring adjustments to any new designs. This should result in the availability of various forms of eye protection which meet the demands of forest workers without compromising any protective qualities.

Main Disadvantages with Visors

Table 4 shows the main problems identified with visors were reduced vision in the rain (86%) and reduced vision in direct sunlight (70%). Additional problems were their flimsiness, inability to stop dust particles, hindered vision of hazards, and poor visibility in low angle sunlight. One person commented that fumes from the chainsaw were often trapped under the visor.

Table 4 - What are the main problems you associate with visors?

Problem	Yes (%)	No (%)
Reduced vision in the rain	86	14
Reduced vision in direct sunlight	70	30
Reduced vision in poor light conditions	66	34
Objects enter under the visor and strike your face	38	62
Hot under visor	21	79
Poor design (catches on undergrowth, etc)	19	81
Low level of protection from large objects	16	84

Main disadvantages with safety glasses

The main problems identified by previous wearers of safety glasses were fogging of the lenses and reduced vision in the rain (Table 5). Additional comments were that the lenses scratched easily, were often dark, and were hard to clean once sap got on them. One user was of the opinion that the safety glass styles were ugly.

Table 5 - What are the main disadvantages with safety glasses?

Problem	Yes (%)	No (%)
Fogging	85	15
Reduced vision in the rain	67	33
Interference with earmuffs	54	46
Poor fitting	39	61
Reduced vision in poor light conditions	35	65
Reduced vision in direct sunlight	26	74
Irritation and headaches	21	79
Low level of protection from large objects	17	83

Many of these problems are currently being addressed by technological and developmental advances of safety lens design. Hardened lenses are available to reduce the incidence of scratching, and fog-resistant coatings help to absorb moisture. Coupled with an increased awareness by designers of the importance of the physical appearance of eye protection, forest workers should soon be able to choose from a range of protective eyewear styles that offer protection and style.

Conclusions

- The objective of the protective eyewear survey was to obtain a comprehensive idea of the attitudes of loggers toward protective eyewear. It is encouraging that a large number (94%) said they would wear protective eyewear if it was better designed, and free of some or all of the problems existing with current eyewear protection.
- 54% of loggers said they currently wore some form of protective eyewear.
- The most commonly reported problems associated with current forms of protective eyewear involved reduced vision during rainfall or direct sunlight conditions.
- While a large number (81%) felt that eye protection was a major issue, an even larger number (91%) felt that visibility was more important, indicating they would rather not wear eye protection if it compromised their vision.
- Although 83% had previously had an object enter their eye, only 28% of this group had sought medical attention, resulting in an average of 3 days off per injury.
- The most common objects to enter the eyes of loggers were woodchips and dust. The most common objects to hit loggers in the face were woodchips and branch stubs.
- A large number (70%) of loggers said they were willing to try new developments in helmet/visor design.
- The most common problem with safety glasses currently available was fogging; with visors it was reduced vision in the rain.
- 75% would pay \$10 to over \$30 for improved eyewear

References

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