



NEW ZEALAND

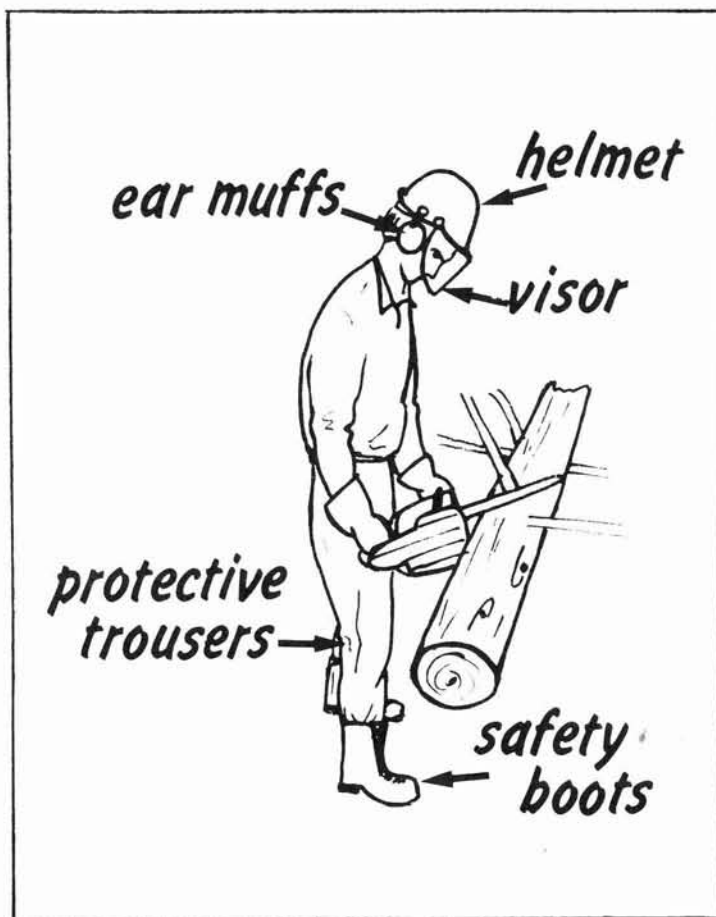
REPORT

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CRITERIA FOR PROTECTIVE CLOTHING FOR CHAINSAW OPERATORS

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Over 2000 New Zealand bushmen are engaged in production chainsaw operations. Statistics indicate that accident frequencies are high and injuries usually severe.

It cannot be denied that accident prevention is preferable to injury repair, but what is the logging industry doing about it? The high incidence of severe chainsaw injuries must concern bushmen and those employing bushmen. The industry can ill afford the human trauma and reduced productivity from avoidable accidents of this nature.

A 1980 survey conducted by consultants employed by LIRA, showed that a typical bushman only protects his head (helmet) and feet (boots). Of the 63 chainsaw injuries recorded in the Bay of Plenty during 1979, 39% were to lower limbs and 21% to hands and arms. (*Alarming figures - that is one in every 13 bushmen injured by the chainsaw.*)

Further investigations reveal that nearly 50% of these injuries occurred in delimbing and cross-cutting and that many were typical kick-back accidents.

A survey of overseas literature reveals that the problem is not entirely a New Zealand one. C.S.I.R.O. reports that Australian lower limb injuries from chainsaw are 34% of all injuries. Californian figures are up to 38%.

In Sweden, a positive approach with the introduction of protective leg wear, has dramatically reduced the incidence of lower limb injuries by more than 50%. There is no reason why similar results could not be achieved in New Zealand.

Other major areas of concern, although not so obvious, are loss of hearing resulting from long term exposure to the intensive noise generated by chainsaws, and the minor but sometimes severe damage to eyes from flying chips. Eye injuries are not well documented because they only occasionally result in recorded lost time. They can, however, cause downtime and be a painful nuisance.

RECOMMENDATIONS FOR PROTECTIVE CLOTHING

Results from LIRA field trials led to recommendations* that helmets, visors, muffs, protective leg wear and safety boots be used by every bushman, and that suitable equipment for the New Zealand environment be developed. A Working Group guiding the felling and delimbing project asked LIRA to co-ordinate industry opinion on specific requirements and establish criteria for protective clothing that bushmen would accept and use. A draft outline was circulated to the major employers and their comments were collated along with overseas information on tested equipment, and the relevant specifications set out by the Standards Association of New Zealand.

Additionally, LIRA tested the main items of equipment in the field with its own staff, and in a pilot scheme for training a number of Tasman Pulp & Paper Company contract crews. Comprehensive testing has confirmed the practicability and safety of the protective equipment. As a result, LIRA considers the following as essential criteria for protective clothing for chainsaw operators:

Helmets

- (a) Must meet the 1980 New Zealand Standard 5806 "Industrial Safety Helmets (Medium protection)"
- (b) Should be of bright color (yellow, orange, red, white) for:
 - Reflection of heat
 - High visibility
- (c) Must have replaceable, adjustable harness, that is flexible and comfortable to wear.
- (d) Must be manufactured with provision for attachment of muffs and visor. A peak-cap type facilitates this.



Standard safety helmet showing ear muffs and visor in position and retracted.

**Reference: Development of Safe Felling and Delimbing Techniques with Chainsaws". - Rotorua: New Zealand. Prepared by N.Z. Logging Industry Research Association and Swedforest Consultanct AB, Sweden, 1980
37 p - (Project Report No. 14).*

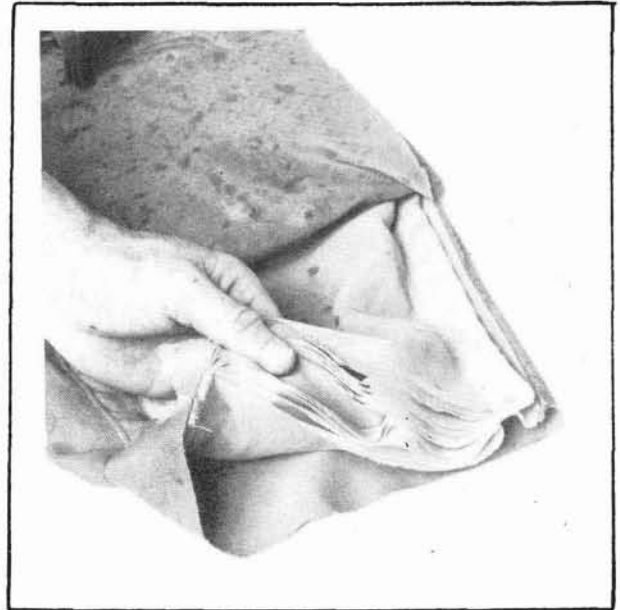
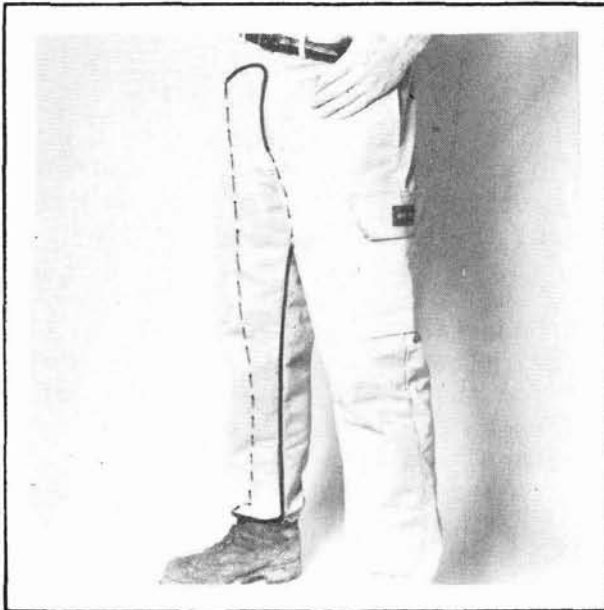
Muffs

- (a) Should reduce noise level to below 85 dB*.
- (b) Must have adjustment for:
 - Pressure on the ear
 - Vertical position on the head
 - Lateral position
- (c) Must be easily retractable but not create a hindrance when retracted.
- (d) Must have replaceable liners.

Visors

- (a) Must be of dark, non-reflective mesh, which does not impede vision.
- (b) Should be easily attached and removed.
- (c) Must be retractable and capable of remaining in retracted position.

Trousers



Protective trousers showing outline of protected area and a section cut open to reveal 24 layers of nylon chameuse. The nylon will clog the teeth of a chain-saw, preventing injury.

- (a) Must provide full ankle to groin protection to front of leg.
- (b) Must be lightweight and pliable so as not to bind or chafe.
- (c) Protection must be sewn in position to stop movement around the leg.
- (d) Must be reasonably well cut to avoid snagging, and not be loose fitting.
- (e) Should withstand brief contact with a hot exhaust.
- (f) Must be easily laundered and non-shrinkable.

**Reference: Standards Association of Australia - "Hearing Protection Devices" Sydney 1975 (AS1270)*

In the LIRA field trials, Protector safety helmets, NO. HC41, fitted with EN60 muffs and retractable visors, were used and proved satisfactory. At present no suitable protective trousers are manufactured in New Zealand, but the Brazillian "Nordfor" brand used by the trial participants were considered acceptable. They are made of 100% polyester with 24 layers of nylon chameuse sewn in as protective padding.

To date LIRA has not conducted specific trials on safety boots, but recommend the following:

1. They should meet the 1980 New Zealand Standard 5809 "Safety Footwear with Protective Toe Caps".
2. Should be strongly constructed with stiff sole and foot areas, for positive grip on steep side slopes. Self-clearing commando-style tread is satisfactory in most applications.
3. Should lace up to above the ankle for full support.

The main requirement for a jacket, (apart from weather protection, ability to breath, and comfort) is that it be highly visable, particularly the back and shoulders area.

DISCUSSION

Good, well designed, comfortable and acceptable protective clothing is essential for bushmen. It must be readily available at a reasonable price. Currently all items outlined above, except the protective trousers, are available in New Zealand, and moves are underway to meet the expected demand for leg protection.

Section 3.3 of the "Safety Code for Bush Undertakings", states that suitable protective equipment shall be provided for all bush workers, and that workers should make proper use of this equipment for their own safety and the safety of others. The responsibility is therefore on the employer to provide bushmen with protective equipment, and on the bushmen to make proper use of such equipment. Adequate protection from the chainsaw is not going to reduce the frequency of accidents, but it should at least minimise the severity of injuries. It is seen by LIRA as the first step in a procedure for correct training of chainsaw operators.

A comprehensive bibliography of references relating to protective leg clothing has been compiled by the LIRA librarian and is available to members.