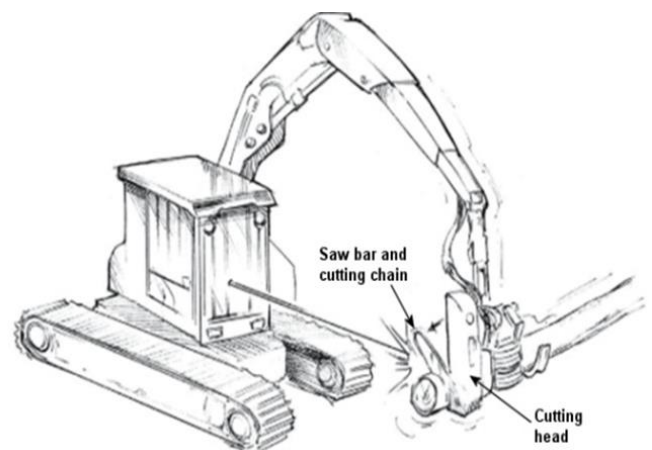


## Chain-shot Hazard ...Reducing the Risk!

**What is chain shot?** Chain shot is essentially a bullet (high-speed ejection) of cutting chain from the end of a broken chain in mechanised harvesting. Like a bullet, it poses a **serious injury risk to machine operators and bystanders alike**. Chain shot typically occurs at the ‘drive-end’ of the cutting system and far more often than you may think! Research indicates that “1 in 50 broken chains had parts missing that may have been the result of a chain shot event” – see reference material, page 2.

**Our own experience is that chain shot occurs often enough to make this matter our concern...** In a very recent incident (October 2015), a saw-chain broke during processing, sending pieces of the chain into the machine’s front window. Fortunately, the crew’s **chain-shot plan** had fully isolated the machine from ground-workers and the polycarbonate front screen, 22mm thick, protected the



## The ‘key components’ of a chain-shot plan!

- Establish a **chain-shot exclusion zone** using marker cones or a goal-post system. Draw a plan of the exclusion zone and **absolutely prohibit all people and machines from entry**.
- **Use signage to alert** everyone to this hazard, the exclusion zone, and to stay clear.
- **Install 19mm polycarbonate/acrylic** as front screen protection. This is a **minimum** thickness and mandatory for all mechanised harvesters whether they process or fell.
- If any other machine must (even temporarily) operate within a ‘chain-shot’ exclusion zone, then either **plan for harvester to pause** or ensure that machine is protected.
- **Preventive maintenance** – reduce the likelihood of **the chain breaking** in the first place.
- Install, inspect and maintain a purpose built **chain catcher** (deflector).

# Chain-shot! Need more help?

## No need to re-invent the wheel!

The risks associated with chain-shot have motivated and galvanised action from machinery and equipment suppliers alike – and rightly so.

Indeed, it has been great to see the response from these stakeholders in terms of both printed advice, and field research; also, the engineering solutions they have provided. Reviewing such research and advice will undoubtedly be of great assistance to those needing more help to manage this risk.

In addition, there have been a number of very good safety bulletins and Power Point presentations produced. Use these to the full and do not be afraid to ‘check into’ what your peers are doing – some of their solutions are easy to apply, inexpensive and innovative!

## Reference material and guidance – click on the links...

**Oregon OSHA**, Hazard Alert – <http://www.orosha.org/pdf/hazards/2993-29.pdf>  
**HFM**, Safety Red Alert – <http://nzfoa-iris.com/SafetyAlerts/ShowSafetyPDF.aspx?id=119>  
**Oregon** – [http://www.oregonproducts.com/harvester/service/chain\\_shot.htm](http://www.oregonproducts.com/harvester/service/chain_shot.htm)  
**BIL** – [http://www.oregonproducts.com/pdf/harvester/MechanicalHarvesting\\_2005.pdf](http://www.oregonproducts.com/pdf/harvester/MechanicalHarvesting_2005.pdf)  
**Waratah** – ‘Chain Shot Awareness and Management’ <https://ap.waratah.net/contact-us.html>

## Chain Shot Safety Elective – completed by 31<sup>st</sup> December 2015

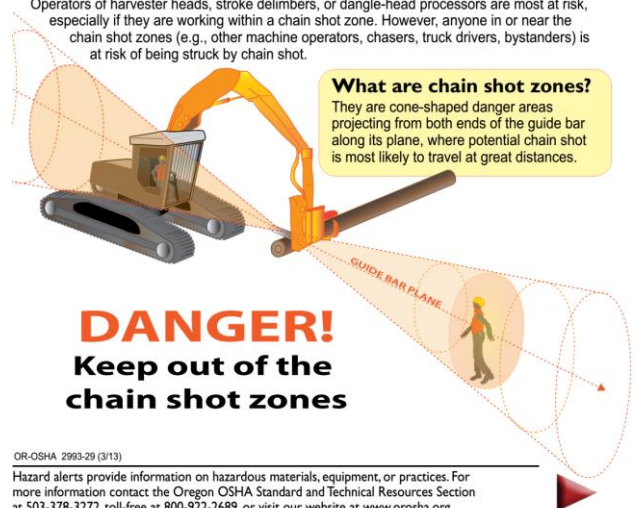
The Central Safety Committee (CSC) has requested that each PF Olsen manager i.e. caring for operations having mechanised harvesters, check and confirm that the owning contractor has reviewed the reference material (links above). Additionally, that they **have completed a suitable ‘chain-shot’ management plan and importantly a ‘chain-maintenance’ schedule.** This management project is to be completed by the 31<sup>st</sup> December 2015.

### Who is at risk?

Operators of harvester heads, stroke delimiters, or dangle-head processors are most at risk, especially if they are working within a chain shot zone. However, anyone in or near the chain shot zones (e.g., other machine operators, chasers, truck drivers, bystanders) is at risk of being struck by chain shot.

### What are chain shot zones?

They are cone-shaped danger areas projecting from both ends of the guide bar along its plane, where potential chain shot is most likely to travel at great distances.



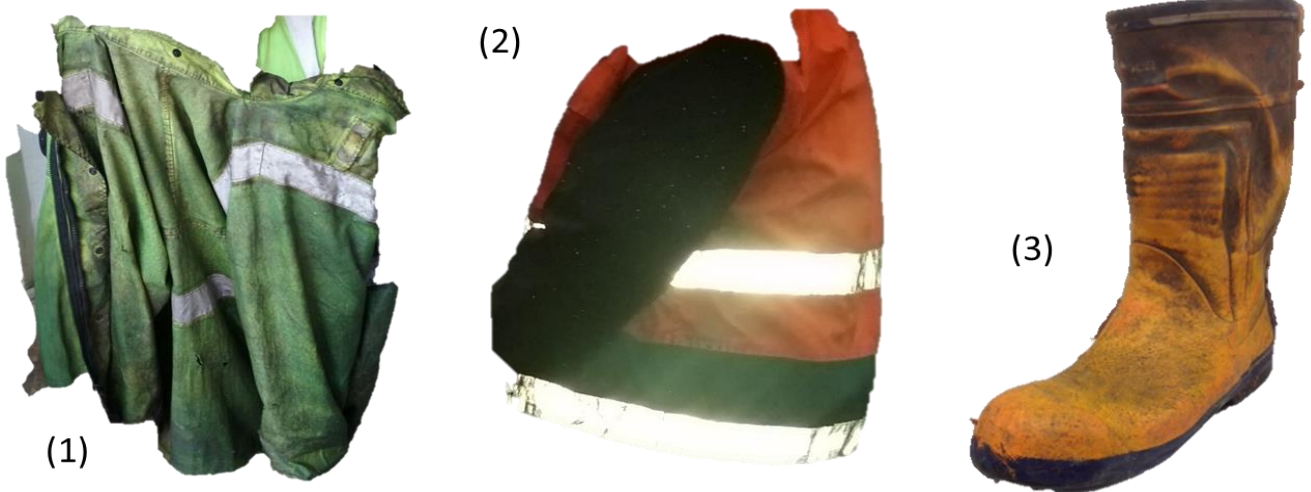
OR-OSHA 2993-29 (3/13)

Hazard alerts provide information on hazardous materials, equipment, or practices. For more information contact the Oregon OSHA Standard and Technical Resources Section at 503-378-3272, toll-free at 800-922-2689, or visit our website at [www.orosha.org](http://www.orosha.org).

# PPE – Is Yours Up to Scratch?

The **ACoP Safety and Health in Forest Operations** – (s.3, page 28) states that the “...employer shall provide all appropriate personal protective equipment (*PPE*) to protect employees from harm due to any hazard at the work area, and shall ensure it is used correctly, inspected and maintained to fulfil its protective function.”

A recent review of PPE, notably of chainsaw boots and high visibility (Hi-Vis) clothing shows that we need to **give our attention to PPE... and recalibrate our thinking!**



The figures above, marked (1) through (3), clearly demonstrate three important lessons:

- Figure (1) – Shows Hi-Vis clothing that has clearly degraded, through use, to the point that the garment no longer serves as an ‘**alert to a worker’s presence**’.
- Figure (2) – Displays part of a Hi-Vis jacket fitted with ‘**retro-reflective**’ tape. This garment, photographed in poor light, is near new. Can you notice the difference that the **Day/Night (D/N) tape** makes, as it catches and reflects a light source?
- Figure (3) – Shows a Level 4 chainsaw (cut-resistant) boot, manufactured in January 2014. It did not prevent a laceration to the operators’ foot (see Safety Bulletin #92).

The technical analysis report notes, “...the sole has worn down to the upper in parts and the upper rubber has suffered extensive cuts across the toe, vamp and forefoot.” This allowed “**moisture damage to the protection system and delamination.**” In short, this “...boot was compromised...” and no longer able to fulfil its protective function!

## New Rules<sup>1</sup> for Hi-Vis, Boots & Chaps!

- Hi-Vis clothing shall display AS/NZS 4602 or NZFOA labelling and be, in all cases 'Class D/N' i.e. having 24-hour (both day and night) visibility.  
**NB:** This includes wet weather/rainwear.
- Hi-Vis clothing shall be checked regularly (a minimum daily) against an approved swatch (or chart) and replaced immediately when non-compliant.
- Chainsaw cut-resistant boots shall be replaced when cut or holed.
- Chainsaw cut-resistant legwear (chaps) shall have the purchase date recorded either on the garment or in the PPE register and replaced after six months continuous (daily<sup>2</sup>) use.



## Best Practice Guide (BPG) Maintaining PPE...

The [BPG for Personal Protective Equipment](#) on **page 3** notes, “a hi-vis garment that is dirty or faded will be less obvious to other workers and thus will provide less protection to the wearer. Garments should be washed regularly to preserve their high visibility. If washing does not restore high visibility, the garment should be replaced.”

On **page 7**, the BPG notes, “Leather boots should be treated with a water resistant seal before being worn” ...and “every 2-3 months” thereafter. Importantly it notes that “any work boot, **but particularly chainsaw cut-resistant gumboots, should be replaced when cut.** A cut gumboot does not provide adequate protection and can be a hazard in itself if it catches on something.”

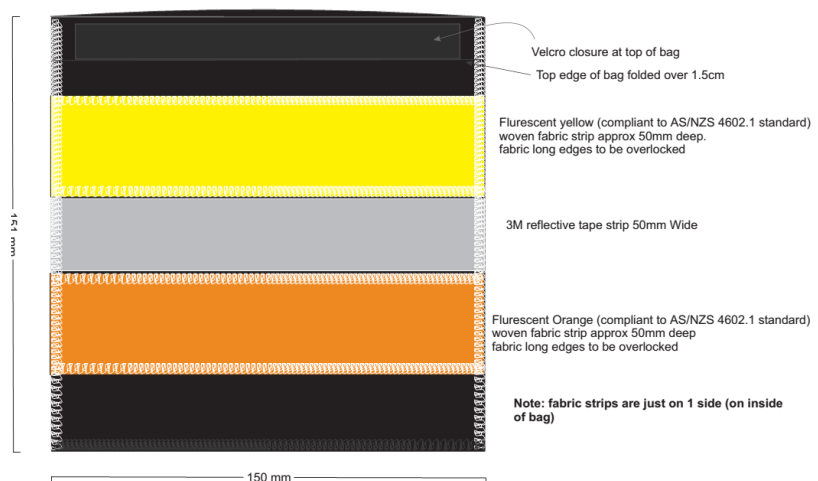
On **page 5**, the BPG notes, “Getting oil on your protective legwear is common” and “if too much soaks into the protective layers, they bind together.”

Therefore, it is recommended, “That leg protection is replaced after 6 months’ continuous<sup>2</sup> use... or after a total of 0.5 litre (one chainsaw tank) of oil has been spilt on to them.”

<sup>2</sup>Pertaining to ‘daily use’ e.g. skidwork.

#153086 Hi Vis testing kit - inside of bag

Top Workwear  
19 Aug 2015



**NB:** The ‘Hi Vis testing kit’ as illustrated above is a prototype of a ‘swatch’ – designed to assist wearers of Hi-Vis clothing.

<sup>1</sup> These rules are for **immediate implementation** (1 September 2015) for all new purchases of Hi-Vis clothing. We do understand that the new rules (for more general implementation) will require a grace-period in order for Contractors to complete a full retrofit of crews. In view of that, the date for **full compliance has been set for the 1<sup>st</sup> November 2015.**