

**REVIEW OF HEALTH AND SAFETY RESEARCH IN FORESTRY AND ARBORICULTURE**

**AFAG 05/02**

Title	Detail	Location
Review and assessment of the procedures for dealing with hung-up and windblown trees	The number of accidents occurring during manual felling is thought to be due to either lack of training or the adoption of incorrect working practice. This report highlights that, despite adequate training provision and copious safety guidance, accidents still occur during the takedown of hung-up and windblown trees.	<a href="http://www.forestry.gov.uk/pdf/crsafety.pdf/\$file/crsafety.pdf">http://www.forestry.gov.uk/pdf/crsafety.pdf/\$file/crsafety.pdf</a>
Safe working methods with top-handled chainsaws	For the past ten years the HSE has had concerns over the safety of the use of top-handled chainsaws, which allows the chainsaw to be used one-handed. It is the expressed opinion of the HSE that this design ignores one of the fundamental design aspects of conventional chainsaws. The aim of this research project was to determine safe working methods that minimize the risk of injury when using top-handled chainsaws.	<a href="http://www.forestry.gov.uk/pdf/crsafety2.pdf/\$file/crsafety2.pdf">http://www.forestry.gov.uk/pdf/crsafety2.pdf/\$file/crsafety2.pdf</a>
The security of cross loaded round timber	TRL Limited has carried out a programme of work to examine the security of cross loaded timber being transported on public roads and forest sites. The objective was to examine whether current methods of transport for cross loaded round timber were appropriate and safe. The project examined the load shedding mechanism, the factors which trigger load movement, the methods of load restraint and examined the implications for driver loading.	<a href="http://www.forestry.gov.uk/pdf/crsafety3.pdf/\$file/crsafety3.pdf">http://www.forestry.gov.uk/pdf/crsafety3.pdf/\$file/crsafety3.pdf</a>
Assessment of firearm moderators	Large caliber rifles are used by the Forestry Commission for the culling of deer. These rifles produce high levels of noise in excess of the peak action level given by the Noise at Work	<a href="http://www.forestry.gov.uk/pdf/crsafety4.pdf/\$file/crsafety4.pdf">http://www.forestry.gov.uk/pdf/crsafety4.pdf/\$file/crsafety4.pdf</a>

	<p>Regulations. Hearing protection is used but the response of hearing protectors is difficult to predict when using firearms. Only a limited range of moderators were selected for testing, as the intention was not to validate all the devices available but to find whether any were effective with the chosen rifle types.</p>	
<p>Karabiner safety in the arboriculture industry</p>	<p>Following instances of inadvertent opening of three-way karabiners, HSE and the Forestry Commission commissioned HSL to carry out research into the use of karabiners in the arboriculture industry.</p>	<p><a href="http://www.forestry.gov.uk/pdf/crsafety5.pdf/\$file/crsafety5.pdf">http://www.forestry.gov.uk/pdf/crsafety5.pdf/\$file/crsafety5.pdf</a></p>
<p>Risk perception by members of the public visiting forests</p>	<p>The aim of the research was to evaluate the reasons why warning and prohibition signs are ignored and why people knowingly or unknowingly put themselves at risk of injury. There are 5 elements to the research:</p> <ul style="list-style-type: none"> <li>• What do people understand the current system of safety signs used by the Forestry Industry to mean?</li> <li>• Is the signage clear?</li> <li>• Why do people ignore it?</li> <li>• How does risk and safety feature in the way forestry work is understood by visitors to forests?</li> </ul> <p>What changes to the existing system are needed to better inform visitors to the forest of possible risk?</p>	<p><a href="http://www.forestry.gov.uk/pdf/crsafety6.pdf/\$file/crsafety6.pdf">http://www.forestry.gov.uk/pdf/crsafety6.pdf/\$file/crsafety6.pdf</a></p>
<p>Safe fitting of bandtracks to harvesting machinery</p>	<p>Recent observations by the Forestry Commission's Forest Operations Training Centre indicate that the current method of fitting bandtracks is potentially an unsafe operation. The current method of fitting bandtracks involves two tensioning</p>	<p><a href="http://www.forestresearch.gov.uk/pdf/bandtracks.pdf/\$FILE/bandtracks.pdf">http://www.forestresearch.gov.uk/pdf/bandtracks.pdf/\$FILE/bandtracks.pdf</a></p>

	chains to connect the tracks and when the chains are under tension the force exerted can bend the chain hooks and in some cases cause chain breakage.	
Chainsaw Debuttressing of Standing Timber	This Technical Note provides advice and information to forest managers, woodland owners and contractors on the operation of debuttressing standing timber prior to felling by mechanical harvesting machines. It reviews current training, guidance and practice, and provides information about the decision process to be taken on when and how to carry out the debuttressing operation.	<a href="http://www.forestresearch.gov.uk/pdf/fctn5.pdf/\$FILE/fctn5.pdf">http://www.forestresearch.gov.uk/pdf/fctn5.pdf/\$FILE/fctn5.pdf</a>
Respiratory Protection	This Technical Note provides an introduction to the legislative background to respiratory protective equipment (RPE) and discusses the need for suitable RPE. The terminology used in respirator selection is described along with relevant details of the hazards that RPE can protect against. Emphasis is placed on selecting equipment that is suitable for each situation in which it will be used and for each person who may have to wear the RPE. The range of available RPE is listed together with applications that are likely to be encountered in British forestry. General advice about selecting suitable equipment for each of these situations is provided, although selection must involve an evaluation of the circumstances of each individual situation.	<a href="http://www.forestresearch.gov.uk/pdf/fctn6.pdf/\$FILE/fctn6.pdf">http://www.forestresearch.gov.uk/pdf/fctn6.pdf/\$FILE/fctn6.pdf</a>
Noise hazards and the selection of PPE	Information is provided on assessing the noise exposure levels of forest operations, noise protection standards and ways of reducing noise levels. Guidance is given on selecting the personal protective equipment that is most appropriate for particular levels of hearing protection, including a list which identifies appropriate PPE for a wide	<a href="http://www.forestresearch.gov.uk/pdf/fctn7.pdf/\$FILE/fctn7.pdf">http://www.forestresearch.gov.uk/pdf/fctn7.pdf/\$FILE/fctn7.pdf</a>

	range of forest operations and machine types.	
Muskuloskeletal disorders in forestry chainsaw operators	The general findings of the study show significant evidence of musculoskeletal disorders to the low back, hands and wrists. Felling, in particular 2 <sup>nd</sup> and 3 <sup>rd</sup> thinning, and delimiting (snedding) are responsible for the highest incidence of injury. All but one of the sample had been trained in organised felling techniques, yet only half of them used these techniques in practice. There was very little difference in the range of disorders between those that had implemented organised felling techniques and those that had not. Little evidence was found to suggest that recreational activities exacerbated musculoskeletal injuries. It was recommended that the research be extended, perhaps to a nation-wide scale, to determine the full extent of the problem throughout the UK.	<a href="http://www.hse.gov.uk/research/crr_pdf/1998/CRR98187.pdf">http://www.hse.gov.uk/research/crr_pdf/1998/CRR98187.pdf</a>
Determination of rope access and work positioning techniques in arboriculture	This research project was commissioned and funded by HSE to provide information that will help contractors select the most suitable rope access or work positioning system for arboricultural work, when risk assessment has identified rope access or work positioning techniques as being appropriate. The work is also intended to aid the formulation of internal guidance for the benefit of HSE's regulatory inspectors who inspect arboricultural work. It was used as a basis for the revised Guide to Good Climbing Practice.	<a href="http://www.hse.gov.uk/agriculture/pdf/wahreport.pdf">http://www.hse.gov.uk/agriculture/pdf/wahreport.pdf</a>

Use of pesticides in forestry	<p>HSE carried out research on exposure to <math>\alpha</math> cypermethrin during tree planting and during the treatment process. The study examined levels of exposure via monitoring and also used a health questionnaire to identify symptoms.</p> <p>Options/recommendations to be considered by AFAG include:</p> <ol style="list-style-type: none"> <li>1. <i>Elimination</i> of <math>\alpha</math> cypermethrin with a non-pesticide approach.</li> <li>2. <i>Substitution</i> of <math>\alpha</math> cypermethrin with less toxic insecticide.</li> <li>3. <i>Better management</i> of sites, particularly provision and use of welfare facilities and supervision of staff decontamination, etc.</li> </ol>	
<b>CURRENT/PROPOSED WORK</b>		
Whole Body vibration Exposure of operators of forest machines	<p>The research assessed the vibration exposure of the operators of harvesters and forwarders in UK forests. The research also includes some additional results from a mobile chipper and a bucket excavator used for ground preparation. The forwarders and harvesters measured were chosen to represent a wide range of both the vehicle and terrain types seen in the UK. This first stage of this research has been completed and a final report will be provided by HSL. Meeting with industry to discuss how best to take forward first stage of research to be held in January 2006.</p>	<p>Additional research examining exposure of operators of excavator based harvesters and operators of harvesters/forwarders working on steep ground will take place in the near future. Meeting with industry to discuss first stage of research to be held in January 2006.</p>
Noise exposure – chippers	<p>A collaborative / joint sponsored study with HSE and the Forestry Commission to gather noise levels from a range of wood chippers used in the forestry industry but also by</p>	<p>Due to be put out for limited tender very shortly</p>

	arboriculture and landscape contractors, This work will assist compliance and enforcement under the NAWR and SMSR. Additional Support already offered from the industry.	
Rigging and Dismantling	The aim of this research is to define the appropriate equipment, working techniques and the forces involved in rigging and dismantling (ie the removal of cut sections of timber). The results of the work will be used to produce detailed guidance to enable the arboriculture industry to carry out this work safely. This guidance will be produced jointly with the industry.	Due to be put out for limited tender very shortly

Forestry intervention appraisal and evaluation framework	Research project to develop Bomel Consultants' Agricultural Barometer of Cultural Change Model for use in the forestry industry. The model will be used to evaluate interventions including forestry SHADs. The research will also produce a 'key influences network' model to help better understand factors contributing to accidents in forestry to inform future planning and interventions.	Project underway.
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