

# HEALTH AND SAFETY IN FORESTRY



## I INTRODUCTION

Forestry continues to be one of the most hazardous industrial sectors in most countries. Around the world, there are often discouraging trends of rising accident rates and a high incidence of occupational diseases and of early retirement among forestry workers.

The utilisation and management of forests are as old as human beings. Initially forests were almost exclusively used for subsistence: food, fuel wood and building materials. Broadly, there are two groups of forestry-jobs: those related to silviculture (cultivation and management of forest trees) and those related to harvesting.

- Typical occupations in silviculture include tree planting, fertilisation, weed and pest control, and pruning. Tree planting is very seasonal, and in some countries involves a separate group of workers exclusively dedicated to this activity
- In harvesting, the most common occupations are chain-saw operation, in tropical forests often with an assistant; choker setters who attach cable to tractors or skylines pulling logs to the roadside; helpers who measure, move, load or debranch logs; and machine operators for tractors, loaders, cable cranes, harvesters and logging trucks.

The popular notion in many countries is that forestry work is a 3-D job: dirty, difficult and dangerous. A host of natural, technical and organisational factors contribute to that reputation. Forestry work has to be done outdoors. Workers are thus exposed to the extremes of weather: heat, cold, snow, rain and ultraviolet (UV) radiation. Work even often proceeds in bad weather and, in mechanised operations, it increasingly continues at night. Workers are exposed to natural hazards such as broken terrain or mud, dense vegetation and a series of biological agents.

Work sites tend to be remote, with poor communication and difficulties in rescue and evacuation. Life in camps with extended periods of isolation from family and friends is still common in many countries.



## II. PURPOSE OF THE BOOKLET

To ensure a safe and healthy working environment in the forestry sector, everyone involved has health and safety duties and responsibilities which are clearly outlined in Sections 8, 13 and 14 of the Occupational Health and Safety Act, Act 85 of 1993. This booklet contains guidance to help employers, the self-employed and those in control of work in forestry meet their duties when involved in forestry activities.

Forestry work is a high-risk activity. The management issues involved in harvesting timber, getting it to the roadside and transporting it to the end user are complex. Whether it is a timber grower or purchaser, contractor or subcontractor, there is a part to play in making sure people's health and safety is not put at risk. When planning and carrying out commercial forestry operations everyone is faced with a number of health and safety tasks that have to be tackled, such as:

- Completing risk assessments
- Selecting suitable equipment for the job
- Ensuring employee health and safety
- Setting out safe working procedures
- Ensuring people are adequately trained
- Supervising the work.

To successfully manage health and safety in forestry and associated haulage, there needs to be coordinated activities with others and information being passed up and down the contract chain.



## 1. WHAT ARE THE RISKS OF FORESTRY ACTIVITIES?

The nature of forestry work is characterised by manual operations which include logging, debranching, crosscutting and debarking. Mechanical operations include mechanical logging with tree harvesters, forwarding and removing stumps. Forest workers who fell trees with chainsaws are perhaps exposed to the greatest risks in the industry. High-risk operations include bringing down “hung-ups”, taking care of wind throw, and cleaning up after forest fires. Tree planters are also at risk from carrying heavy loads of seedlings and planting in awkward positions. Pesticides and fungicides used on seedlings are also a hazard.

The occupational health and safety issues often associated with forestry activities primarily include:

- Physical hazards
  - Climate
  - Motor manual work
  - Noise
  - Vibration
- Chemical hazards
- Biological hazards
- Machine safety.

### 1.1 PHYSICAL HAZARDS

#### 1.1.1 Climate

Working outdoors, subject to climatic conditions, is both positive and negative for forest workers. Fresh air and nice weather are good, but unfavourable conditions can create problems.

- Working in a hot climate puts pressure on the forest worker engaged in heavy work. Among other things, the heart rate increases to keep the body temperature down. Sweating means loss of body fluids.

*Heavy work in high temperatures means that a worker might need to drink 600 ml of water per hour to keep the body fluid balance.*



- In a cold climate the muscles function poorly. The risk of musculoskeletal injuries (MSI) and accidents increases. In addition, energy expenditure increases substantially, since it takes a lot of energy just to keep warm. Rainy conditions, especially in combination with cold, mean a high risk of accidents, since tools are more difficult to grasp. They also mean that the body is even more chilled.

*Adequate clothing for different climatic conditions is essential to keep the forestry worker warm and dry*

- In hot climates only light clothing is required. It is then rather a problem to use sufficient protective clothing and footwear to protect them or her against thorns, whipping branches and irritating plants.

*Accommodation must have sufficient washing and drying facilities for clothes*

#### 1.1.2 Motor-manual forest work, noise and vibration

- The motor-manual forestry worker is one who works with hand-held machines such as chain-saws or power brush cutters and is exposed to the same climatic conditions as the manual worker.

*The worker therefore has the same need for adequate clothing and accommodation facilities*



- Noise
  - It is a problem when working with a chain-saw, brush saw or similar machines. The noise level of most chain-saws used in regular forest work exceeds 100 dBA. The operator is exposed to this noise level for 2 to 5 hours daily. It is difficult to reduce the noise levels of these machines without making them too heavy and awkward to work with.
  - Employees exposed to noise at or above 85 dBA without hearing protection devices may suffer from noise-induced hearing loss.

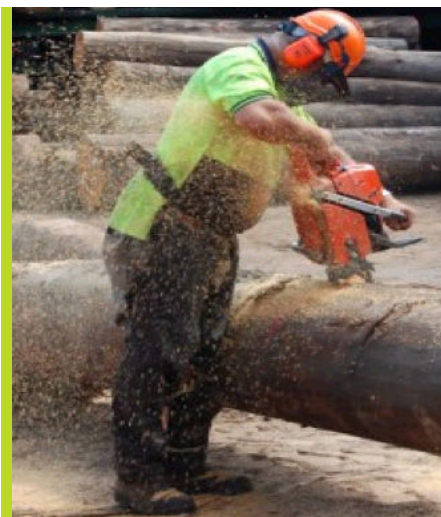
*The use of hearing protection devices is therefore essential.*

- Hand-arm vibration
  - This is another problem with chain-saws. "Whitefinger" disease has been a major problem for some forest workers operating chain-saws.

*The problem can be minimised with modern chain-saws with the use of efficient anti-vibration dampers*

- Whole-body vibration
  - Whole-body vibration in forest machines can be induced by the terrain over which the machine travels.
  - The movement of the crane and other moving parts of the machine, and the vibrations from the power transmission.
  - A specific problem is the shock to the operator when the machine comes down from an obstacle such as a rock.
  - Operators of vehicles, such as skidders and forwarders, often have problems with lower-back pain.
  - The vibrations also increase the risk of repetitive strain injuries (RSI) to the neck, shoulder, arm or hand.
  - The vibrations increase strongly with the speed at which the operator drives the machine.

- *In order to reduce vibrations, machines can be fitted with vibration-damping seats.*
- *When no engineering approaches to controlling the hazards are used, the only available solution is to reduce the hazards by lowering the time of exposure, for instance, by job rotation.*



Safety helmet  
Safety footwear  
Hearing protection  
Eye protection  
Safety gloves  
Leg protection

Figure 1 above indicates the type of personal protective equipment used in forestry operations

## 1.2 CHEMICAL HAZARDS

### 1.2.1 Fuel and Oils for Portable Machines

- Portable forestry machines such as chain-saws, brush saws and mobile machines are sources of exhaust emissions of fuel in logging operations
- The portable machines used in forestry are powered by two-stroke engines, where lubricating oil is mixed with fuel. The exposure to fuel and lubrication and chain oil may occur during mixing fuel and filling as well as during logging
- Fuels are also a fire hazard, and therefore require careful storage and handling
- Oil aerosols may create health hazards such as irritation of the upper respiratory tract and eyes, as well as skin problems
- During maintenance and repair operations, the hands of machine operators are exposed to lubricants, hydraulic oils and fuel oils, which may cause contact dermatitis.

*To avoid irritation, the skin must be protected from oil-contact by protective gloves, washing of hands after use and applying barrier creams*

### 1.1.3 Pesticides, herbicides, fertilisers and colourants

- Pesticides are used in forests and forest nurseries to control fungi, insects and rodents. In forests herbicides are used to control hardwood brush, weeds and grass in young softwood sapling stands. Phenoxy herbicides, glyphosate or triazines are used for this purpose.
- Occasionally insecticides, mainly organophosphorus compounds, organochlorine compounds or synthetic pyrethroids may also be used. In forest nurseries, dithiocarbamates are used regularly to protect softwood seedlings against fungus of pines
- The risk of exposure is similar to that in other pesticide applications. The symptoms caused by excessive exposure to pesticides vary greatly depending on the compound used for application, but most often occupational exposure to pesticides will cause skin disorders
- Other chemicals commonly used in forestry work are fertilisers and colourants used for timber marking. Timber marking is done either with a marking hammer or a spray bottle. The colourants contain glycol ethers, alcohols and other organic solvents, but the exposure level during the work is probably low. The fertilisers used in forestry have a low toxicity, and the use of them is seldom a problem in respect of occupational hygiene.

- *To avoid exposure to pesticides, forestry workers should use personal protective equipment (PPE) (e.g., cap, coveralls, boots and gloves).*
- *If toxic pesticides are applied, a respiratory device should also be worn during applications. Effective PPE often leads to heat build-up and excessive sweating.*
- *Applications should be planned for the coolest hours of the day and when it is not too windy.*
- *It is also important to wash all spills immediately with water and to avoid smoking and eating during spray operations.*

## 1.2 BIOLOGICAL HAZARDS AMONG FORESTRY WORKERS

People active outdoors, especially in agriculture and forestry, are exposed to health hazards from animals, plants, bacteria, viruses and so on to a greater degree than the rest of the population.



### 1.3.1 Plants and wood

Most common are allergic reactions to plants and wood products (wood, bark components, sawdust), especially pollen. Injuries can result from processing (e.g., from thorns, spines, bark) and from secondary infections, which cannot always be excluded and can lead to further complications.

*Appropriate protective clothing is therefore especially important.*

### 1.3.2 Poisonous snakes

Poisonous snake bites are always medical emergencies. They require correct diagnosis and immediate treatment. Identifying the snake is of decisive importance.

### 1.3.3 Bees, wasps, hornets and ants

Insect poisons have very different effects, depending on the locale. Removing the stinger from the skin (and being careful not to introduce more poison during handling) and local cooling are recommended first-aid measures. The most feared complication is a life-threatening general allergic reaction, which can be provoked by an insect sting.

## 1.4 MACHINE SAFETY

Everyone involved in forestry activities has a duty to meet the requirements of the Driven Machinery Regulations (DMR) and General Machinery Regulations (GMR).

- General Machinery must have:
  - Proper guarding
  - Suitable protection against rolling over (ROPS), falling branches and trees (FOPS), penetrating objects such as branches, breaking cables and chain shot (OPS)
- Lifting Machinery must:
  - Have brakes, tyres, steering and other control systems that are in good working order
  - Have booms, grapples, cables, shackles, linkages and chokers designed and maintained to cope safely with the loads
- Have maximum mass load clearly marked on the lifting machinery
- Be thoroughly examined as specified in the driven machinery regulations
- Be operated by competent operators.

## 2. WHAT ARE THE PRINCIPLES OUTLINED IN THE OCCUPATIONAL HEALTH AND SAFETY ACT?

The Occupational Health and Safety legislation outlines basic principles, such as:

- The employer is primarily responsible for the health and safety of employees and must take the necessary protective measures
- All employees must be involved in health and safety issues
- Employees, are also obliged to support the employer's efforts in ensuring a safe and healthy environment
- The Occupational Health and Safety legislation is enforced by the Department of Labour Inspectorate.

### 2.1 WHO SHOULD BE INVOLVED IN HEALTH AND SAFETY ISSUES IN THE WORKPLACE?

- Occupational health and safety is a team effort
- It should be addressed by both employer and employees
- It requires constant inter-action between employer, employees and Government.



## 2.3 WHAT IS THE DUTY OF THE EMPLOYER?

Every employer shall provide and maintain, as far as is reasonably practical, a working environment that is safe and without risks.

The employer is required to:

- Provide and maintain a safe system of work
- Identify hazards and evaluate risks
- Take steps to eliminate or mitigate all hazards before resorting to PPE
- Provide information, training and supervision
- Provide the means to apply safety measures
- Do not permit employees to work unsafely
- Enforce health and safety measures at work
- Ensure that every person on the premises obeys the Act
- Ensure that supervisors have work-related safety training
- Empower supervisors with authority.

### 2.3.1 What is the duty of the employee?

The Occupational Health and Safety Act outlines responsibilities of employees at work. Every employee shall:

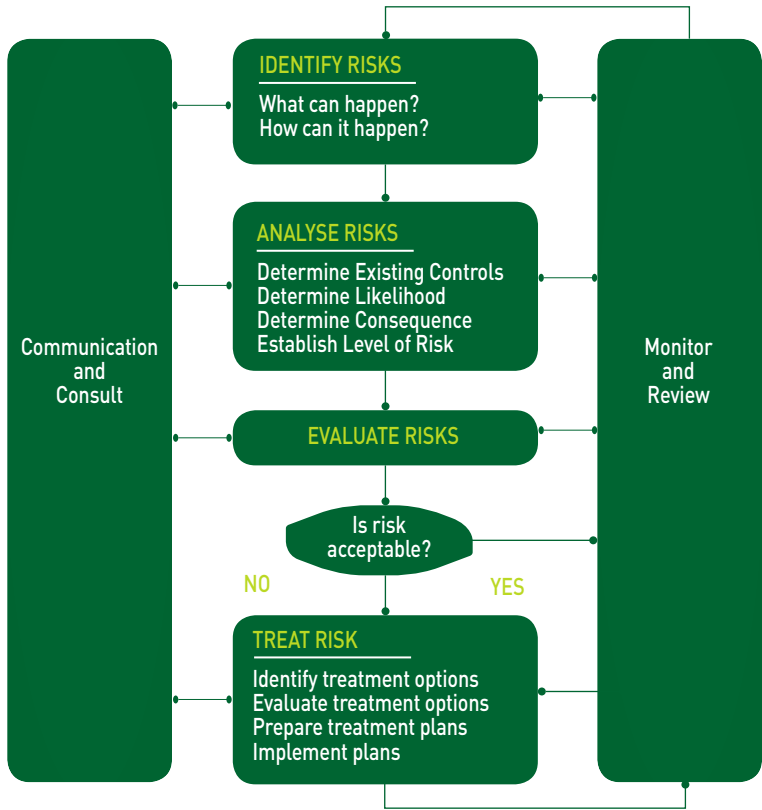
- Take reasonable care of their own health and safety and of others who may be affected by their acts or omissions
- Cooperate with the employer to enable him/her to comply with the Act
- Carry out any lawful order, and obey the health and safety rules
- Report any unsafe situation to the employer or to the health and safety representative.



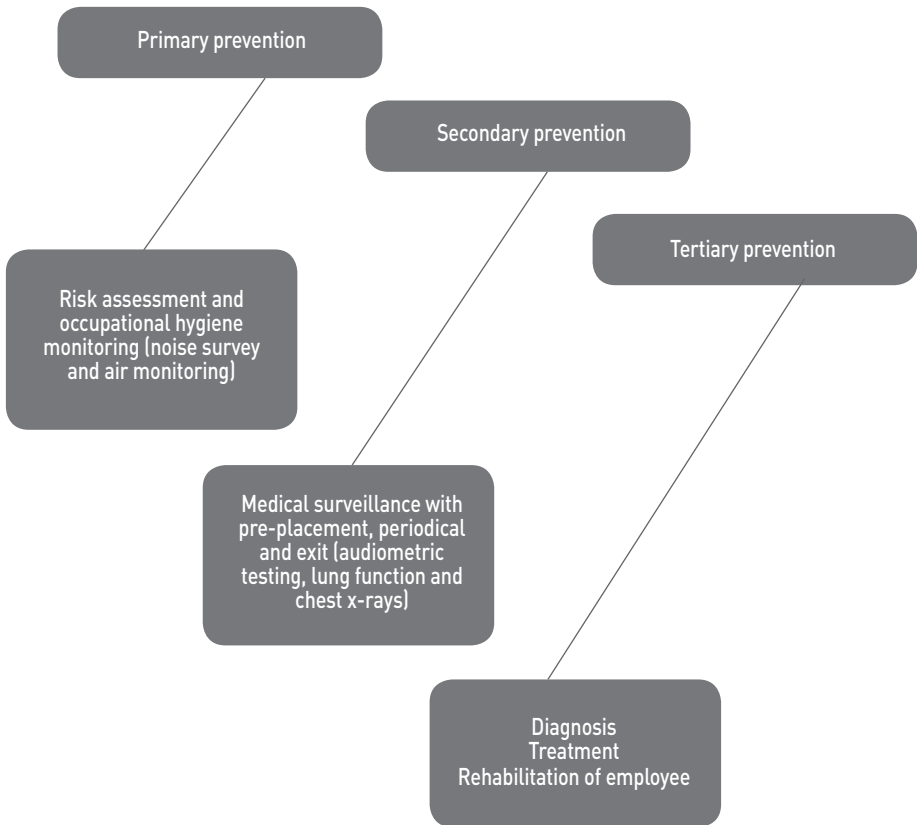
2.3.2 Risk Assessment

Risk assessment is the process of evaluating the risks to employees' safety and health from workplace hazards. It is a systematic examination of all aspects of the workplace.

Figure 2 below depicts a risk assessment process



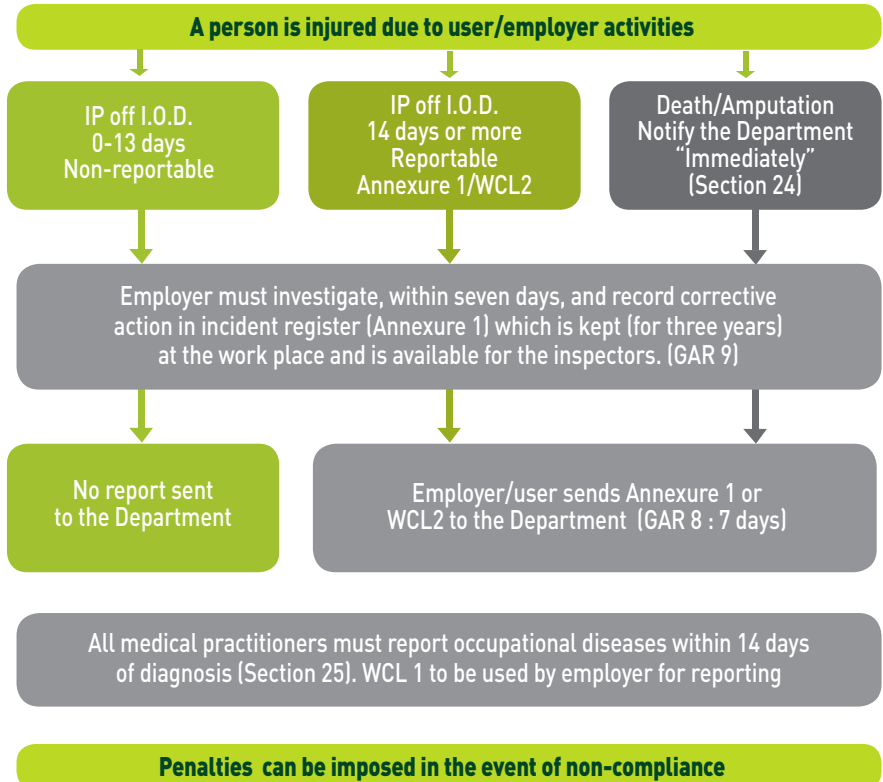
### 2.3.3 What is the link between risk assessment, occupational hygiene monitoring and medical Surveillance?





## 2.3.4 Reporting of incidents and occupational diseases

- All occupational diseases and reportable incidents must be reported to the Department of Labour



## 3. REFERENCES

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3. Health and Safety Executive (1999). Managing health and safety in forestry
4. Department of Labour (1993). Occupational Health and Safety Act, Act 85 of 1993.

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