Food and Agriculture Organization of the United Nations

OCCUPATIONAL HEALTH AND SAFETY STRATEGY FOR SAWMILLING INDUSTRIES IN UGANDA

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Preparation of this document

This report has been produced under the Sawlog Production Grant Scheme Project (SPGS III) – a project being implemented by the Food and Agriculture Organization of the United Nations (FAO).

It is being executed as a component (Outcome 3) related to the downstream industrialization of processing and the utilization of forest products. Among the key assignments under this component are to:

- Develop a waste management strategy appropriate for Uganda.
- Develop occupational health and safety strategy (this report).
- Engage in downstream processing and utilisation capacity building.

The report has been produced under the general supervision of FAO representatives in Uganda and the direct technical supervision of the International Projector Coordinator and Project LTO, and in close cooperation with the Plantation Business Development Advisor. The report is to provide expert advice and technical assistance to support SPGS staff, sawmill managers and supervisors to acquire skills and knowledge in downstream processing and utilization.

The occupational health and safety strategy consultancy incorporate the following key components:

- Conduct a hazard identification exercise for wood processing industries in Uganda.
- Identify hazard reduction measures in the wood processing industries.
- Write a final report on occupational health and safety strategy for Uganda wood processing industries.

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Abbreviations and acronyms

BFC	Busoga Forestry Company (also see Green Resources AS)
FAO	Food and Agriculture Organization of the United Nations
GRAS	Green Resources AS (also see Busoga Forestry Company)
g-w	Global Woods
ILO	International Labour Organization
LTI	Lost Time Injury
MDF	Medium-Density Fibreboard
MSD	Musculoskeletal Disorders
NFA	National Forestry Authority (of Uganda) NFC – New Forests Company
PPE	Personal Protective Equipment
SOP	Standard Operating Practices
SPGS	Sawlog Production Grant Scheme
WBGT	Wet Bulb Globe Temperature

Executive summary

This report has been produced under the Sawlog Production Grant Scheme Project (SPGS III) – a project being implemented by the Food and Agriculture Organization of the United Nations (FAO). It is being executed as a component (Outcome 3) related to the downstream industrialization of processing and the utilization of forest products. It focusses on the development of an occupational health and safety strategy for downstream processing, with a specific focus on pine sawmilling, as per the focus of the SPGS programme.

Downstream log processing is poorly developed in Uganda. By number of "sawmills", the industry is dominated by many small-scale informal sawmills, making use of basic Chinese circular saw technology. Occupational health risks are expected to be higher in developing countries than in the industrialized countries, mainly due to socioeconomic and political differences. Small-scale sawmillers are usually mainly focused on remaining profitable, and other considerations, such as safety, are not high priority. Government departments responsible for occupational health and safety monitoring in sawmilling have challenges in carrying out their inspection mandate.

Timber processing can be a hazardous occupation. Hazards from the use of machinery, handling heavy materials, working at heights and exposure to dust, noise and chemicals, potentially harmful events can happen at any time. These can affect a person's health, for example causing them to suffer skin and respiratory diseases. They can cause injury such as a loss of fingers or even death. Not only workers are affected – visitors, clients, contractors, cleaners or anyone on the site can be at risk of injury or illness.

Site visits were carried out to investigate the occupational health and safety practices of sawmilling operations in Uganda. Visits were paid to multiple small informal sawmillers and to the medium scale operations of the industrial plantation companies that carry out sawmilling. From these visits, it was clear that it was necessary to discuss the current status of health and safety under two categories, namely informal and formal sawmillers. The site visits demonstrated that there are no (very few) health and safety standards or considerations

at all with the small informal sawmillers. The workers are subjected to extremely poor health conditions and very unsafe work conditions. Formal sawmills have good safety systems in place with management committed to improving safety within the organisation. The supervision and labour are increasingly becoming aware of the importance of safety at the workplace. The companies have sufficient safety policies, guidelines and safety management systems, as well as Standard Operating Practices (SOP's) in place at each sawmill that guide the operational safety management. Compliance to aspects such as safe positioning of personnel and Personal Protective Equipment (PPE) was good.

Implementing a safety strategy will not only reduce incidents, but also their associated hidden costs. Developing an occupational health and culture strategy requires first putting in place the requirements for a safety culture. Organisations need to understand their current maturity level regarding safety culture in order to implement next steps to improve their safety performance. An organizational framework must be set up to facilitate the implementation of the safety policy and strategy. A structure that clearly defines the duties and responsibilities of the various levels for safety must be designed.

Leadership in safety starts at the highest organizational level. They create an overall climate in which safety is a value and in which supervisors and workers take the lead in hazard control. An investment in training the employees on occupational safety and health training, sawmill technology and production management skills is

required. Safety systems of work such as risk assessments or job safety analysis and permit to work need to be developed and implemented. Whenever possible, people and dangerous parts of machinery should be kept apart. It is preferable to engineer hazards out. New or refurbished sawmills need to be designed with a good safety and productive efficiency layout.

Effective health and safety management systems are based on pro-active measures to prevent accidents, the system should also include methods to identify failures and learn from them. This requires the collection and analysis of health and safety data.

As the formal sawmill sector grows due to the increased volumes of wood, they will need to formulate their safety strategy. This will include processes such as identifying hazards, determining high risk hazards, determining control measures, putting plans in place to action control measures, identifying who is responsible for monitoring (in organisation, government, certification etc.) and penalties for non-compliance amongst others. This must take place within the framework of developing an integrated approach to safety that constantly develops the safety culture. The use of increased technology in new sawmills will go some way to improve safety and productivity.

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1 Background

An overview of the SPGS programme, its objectives and some of its results can be accessed from the SPGS office in Kampala, Uganda. This report focusses on the development of an occupational health and safety strategy for downstream processing, with a specific focus on pine sawmilling, as per the focus of the SPGS programme.

Downstream log processing is poorly developed in Uganda. By number of "sawmills", the industry is dominated by many small-scale informal sawmills, making use of basic Chinese circular saw technology. Global Woods (g-w) uses small-scale mobile band-saw technology that is semi-permanently installed in a controlled environment. Busoga Forestry Company (BFC – also known as Green Resources) and New Forest Company possess the newest and most advanced sawmilling technology in Uganda. These sawmills are setup to sequentially optimise the conversion of logs into timber according to customer requirements. All timber in Uganda is air-dried (if dried at all).

Table 1 shows that sawmilling currently only constitutes 30 percent of estimated log processing in Uganda (SPGS, 2019). The many small, mobile, informal sawmills currently produce more sawn products than the formal sawmills.

Table 1: Current log processing capacity in Uganda (SPGS, 2019)

Type of Processing Plant	Annual Round - log Intake (m³/yr)	Product Output (m³/yr)	Product Recovery (%)	Residue (m³/yr)	% of Total Processing Capacity (%)
Board – particle and MDF	168 000	118 000	70	50 000	35
Plywood – Veneer and Other	169 000	92 000	54	77 000	35
Sawmills - Formal	54 000	22 000	41	32 000	11
Sawmills – Mobile	89 000	31 000	35	58 000	19
Total	**480 000**	**263 000**	**55**	**217 000**	**100**

Very little information exists on the number of micro-sawmills in Uganda. In addition, Uganda has undergone a significant increase in plantation area since 2004 (Table 2). Therefore, one needs to consider the extent of the industrial forests in Uganda in order to make predictions regarding the wood that is being processed or will be processed. Table 2 shows that significant new processing capacity will be required in order to process the "wall of wood" which is approaching.

Table 2: Extent of industrial plantations in Uganda (SPGS, 2019)

Period	Green Resources	Global Woods	NFA	New Forests	Nileply	SPGS S&M	Total
1990 to 2003	619	7	680	0	1450	67	2823
2004 to 2013	5249	4478	9085	7083	3697	15757	45348
2014 to 2019	844	4206	679	4574	853	25000	36155
Total	**6711**	**8690**	**10445**	**11657**	**6000**	**40824**	**84327**

In order to produce an occupational health and safety strategy, two aspects must be considered:

- The type of current log processing and the corresponding health and safety practices.
- The future of log processing and the desired health and safety practices.

An overview is first given of the occupational health and safety risks that occur during log processing/ timber production. Then the current status of health and safety during log processing is discussed, considering informal and formal log processing. This is then followed by the development of the strategy to improve occupation health and safety practices during log processing in Uganda.

2 Occupational health and safety risks during log processing

Occupational health risks are expected to be higher in developing countries than in the industrialised countries, mainly due to socioeconomic and political differences. In developing countries, workers are more likely to be in informal jobs and small businesses, which usually have poorer work safety records.

Workers, therefore, usually work longer hours in economic activities that are likely to be more hazardous, such as informal sawmilling. Governments also have fewer resources for prevention, research and enforcement of occupational safety standards. This makes it more difficult for forestry- type organisations to establish good safety cultures (ILO, 2012).

Small-scale sawmillers are usually mainly focused on remaining profitable, and other considerations, such as safety, are not high priority. The focus is only on those direct aspects of the business which reduce costs and improve productivity, sometimes to the detriment of safety. There is also the possibility of illegal practices such as not paying workers the prescribed minimum wages, hiring illegal immigrant labour and flouting health and safety laws and regulations. The use of contractors can exacerbate this further. The trend towards contractorisation has had many benefits (e.g. reduced costs and promoting small businesses and entrepreneurship); however, the possibilities for aspects such as fair labour practice and the flouting of health and safety rules exist.

Government departments responsible for occupational health and safety monitoring in sawmilling have challenges in carrying out their inspection mandate. The often remote and fragmented locations of small-scale informal sawmills are difficult to access. If an attempt is made, they need to locate and inspect a multitude of small sawmilling activities. The larger sawmills such as with g-w and Busoga Forest Company (BFC) are easier to police. This results in sub-optimal or a complete absence of employer compliance inspections in small-scale informal sawmills, with the result that non-compliant

practices are seldom identified. To compound the above, the small-scale sawmill workers are usually ignorant of their rights and the duties of employers. Even if they are aware of their rights, the workers often have little recourse should these rights be flouted.

2.1. Occupational health and safety hazards overview in sawmilling

A hazard is a situation that has the potential to harm a person. A risk is the possibility that the harm (i.e. death, an injury or an illness) might occur when exposed to a hazard. In order to develop an occupational health and safety strategy, one first needs to identify the hazards which could potentially cause harm.

Timber processing can be a hazardous occupation. Hazards from the use of machinery, handling heavy materials, working at heights and exposure to dust, noise and chemicals, potentially harmful events can happen at any time. These can affect a person's health, for example causing them to suffer skin and respiratory diseases. They can cause injury such as a loss of fingers or even death. Not only workers are affected – visitors, clients, contractors, cleaners or anyone on the site can be at risk of injury or illness.

Sawmilling processes tend to expose workers to hazards relating to log handling, wood cutting, unguarded machineries, wood dust, wood treatment chemical, electrical hazards, and fire and explosion (Anaele *et al.,* 2014). Most small-scale sawmill workers are not well educated or trained in the areas of occupational hazard identification and evaluation. Therefore, their understanding of occupational health and safety risks is poor (Ayodele and Olubayo-Fatiregun, 2013).

It is common for safety to be peripheral in small-scale informal sawmills in Africa. Much research has been carried out in Nigeria and Kenya regarding the safety practices of small-scale sawmills. The researchers found that the work hazards encountered were associated with a wide range of injuries and illnesses such as cut-type of injuries, fractures, sprains, catarrh, waist pains, eye problems and dizziness. Also, a significant number of workers in the study area did not use Personal Protective Equipment (PPE) when operating machines or performing jobs that required their use. Therefore, the attitude and behaviour of workers towards health and safety is of major concern (Ochire-Boadu *et al.,* 2014).

As an overview, Table 3 below provides a summary of the occupational health and safety hazards in sawmilling, as well as the possible event that is likely to happen as a result (Dep of Labour, 2005; Workplace Health and Safety Queensland, 2017).

Table 3: Potential hazards in sawmills

Sawmill Hazards	Potential Event Due to Hazard
Sawmilling plant	Saws, ejected timber, machine hazards, and proximity to other plant.
Dust	Hazardous to respiration and may cause explosive atmospheres.
Compressed air	May inflict harm to people, may be residual energy in plant.
Mobile plant	Collision with pedestrians and other plant, build-up of toxic exhaust fumes, dust.
Conveyors	Slips, trips or falls.
Log storage	Falling logs from unstable stacks.
Timber stacking	Collapse of unstable stacks.
Tarping wood stacks or lumber	Slips and falls.
Noise	Hazardous noise levels associated with operating machinery.
Hot work	Fire risk, fumes, ultraviolet light.
Housekeeping	Trip hazards, contamination from substances, bad storage, and hygiene.
Lighting	Lighting of control panels, suitability for tasks, adequate for walkways.
Ultraviolet exposure	Working outdoors.
Contractors	Induction and training, competence.
Amenities	Suitable to workforce and environment.
Emergencies	Dangerous goods, spills, fire, environmental, medical, bomb, terrorist.
Hazardous chemicals	Timber treatment chemicals, industrial gases and LP Gas, flammable solvents and fuels, asbestos.
Electricity	Electrical plant, switchboards, overhead cables and lights, dust build up.
Steps/stairs/ladders	Slips, trips or falls
Access ways/walkways/ service platforms	Slips, trips or falls, maybe slippery surfaces
Psychosocial hazards	Effects of work-related stress, bullying, violence and work-related fatigue.

An analysis of sawmilling accidents show that many incidents involve:

- Contact with moving saw blades;
- Being caught on, or dragged into, feed or transfer mechanisms;
- Being struck by ejected work pieces (Health and Safety Executive, 2012).

Many accidents in sawmills happen during:

- Cleaning;
- Removing blockages;
- Adjustment and maintenance (Health and Safety Executive, 2012).

A study of small-scale informal sawmillers in Nigeria showed that difficulty in breathing, hearing and occasional minor accidents were reported by 56.4 percent, 35.1 percent and 61.7 percent of the respondents in studies. About 42.6 percent of the workers had work-related crush injuries while occasional and constant back pain was reported by 45.7 percent and 38.3 percent of the respondents respectively. The outcome of this research showed that the majority of the workers who took part in the research had minor accidents during the course of their work (Faremi et al, 2014).

2.2. Specific occupational health and safety risks in sawmilling

This section summarises some of the common hazards.

2.2.1. Machine hazards

Sawmilling machine hazards fall into the categories indicated in Table 4 (Dep of Labour, 2005).

Table 4: Sawmilling machine hazard categories

Hazard	Hazard Source
Trapping	In-running nip on a conveyor
Cutting	Sharp parts of machine
Impact	Being hit by machine
Shearing	Machine with guillotine-type action
Entanglement	Revolving shafts
Heat/chemicals	Glue machines
Radiation	Dryers
Noise	A multi-head planing machine
Electrical	Control equipment.

Odibo et al, (2018) studied noise pollution levels for three small-scale informal sawmills in Nigeria, with all of them having noise levels far above acceptable levels (101.08, 105.54 and 102.36 dBA). 56.6 percent of the workers were at risk of noise induced deafness due to unhealthy exposure to noise doses.

2.2.2 Manual handling of timber and other heavy objects hazards

Manual handling causes over a third of all workplace injuries. These include work-related musculoskeletal disorders (MSDs) like upper and lower limb pain/disorders and joint and repetitive strain injuries. Manual handling of timber covers a wide variety of tasks, such as lifting, lowering, pushing, pulling and carrying. Workers can stand for up to seven hours during an eight-hour shift. Moving large work pieces and machine tools is common in sawmilling and there is a risk of injury if the task is not carried out correctly. Injuries such as muscle strain and back pain result from people lifting loads which are too heavy or in a non-ergonomic posture. An existing injury can increase the risk (Health and Safety Executive, 2012).

2.2.3. Tool handling for woodworking machines hazards

Hazards can exist when tools are handled or carried for woodworking machine maintenance (Dep of Labour, 2005). These hazards can be:

- When the object is extremely sharp, e.g., blade, cutting edge;
- When the object is heavy or where staff need to use force to move it;
- When the object is difficult to grip;
- When the object is difficult to move into or out of position;
- When the object is in the way of the worker's view of where it has to go, so the worker gets into dangerous positions to get a better view;
- When the object is bulky or awkward to carry, e.g., a bandsaw blade.

2.2.4. Log stacking hazards

The risk of log stacks collapsing is higher with the following factors (Health and Safety Executive, 2012):

- Steep terrain where logs can slide from the stack or roll down the slope;
- Slippery debarked logs;
- Logs stacked with their butt ends in one direction. This results in the top of the stack being angled and logs can slide off;
- Logs stacked on soft ground can result in sinking on one side and becoming unstable.

2.2.5. Sawdust and other respiratory hazards

Respiratory problems are common among sawmill workers. The workers are potentially exposed to a variety of respiratory hazards including wood dust, abiotic or other resin acids, monoterpenes, and fungi, as well as endotoxins. Wood-dust becomes a health problem when wood particles from processes such as sawing, sanding, smoothing and moulding become airborne. Breathing these particles may cause allergic respiratory symptoms, mucosal and non-allergic respiratory symptoms. Factors that affected these hazards are type of job, use of compressed air, the percentage of time spent in a booth or cab during a shift, and dust concentration (Dennekamp, 1999).

Other effects of wood dust are eye irritation and frequent nasal dryness.

2.2.6 Heat exposure and other hazards

Other hazards include contact with the moving parts or the hot exhaust system of the chainsaw, exposure to exhaust gases and fumes; and hazards arising from adverse weather conditions such as wind, rain and UV radiation from the sun and stings or bites from insects or reptiles.

Because Uganda is situated in the tropics, specific mention needs to be made of heat and humidity and its effect on fatigue which can result in health problems and accidents. At best, the processing facilities provide shade for sawmill workers. Therefore, risk mitigation measures need to be considered. The FAO document, titled "Managing Heat in Agricultural Work: Increasing worker safety and productivity by controlling heat exposure" has relevance for Ugandan sawmill operations and should be referenced (Staal Wästerlund, 2018). The key outcomes of this document are as follows:

- Because many tasks are physical demanding, the body commonly produces considerable excess heat. This implies that there could be a risk of heat stress in moderately warm conditions, especially if workers are wearing protective clothing that restricts heat dissipation.
- In hot conditions, the body dissipates its excess heat to the environment primarily by sweating. The extent to which a person sweats depends on the climatic conditions and the physical workload.
- In hot environments, workers should wear thin, light-coloured clothing (if the work does not require special protective clothing). If working in the sun, it is also recommended that bare skin is covered to avoid sunburn and reduce the risk of skin cancer. Workers should wearbroad-brimmed hats to protect their heads from heat exposure; the brain is especially sensitive to radiative heat exposure.
- The Wet Bulb Globe Temperature (WBGT)

index can be used to screen for the risk of heat stress. To assess the level of risk, it is recommended that a representative group is formed comprising employees, safety managers and work leaders to document working conditions and develop measures for improvements. Expert assistance should be obtained if there is uncertainty on the measures to apply and to conduct further analysis, if required.

- Labour productivity is reduced in hot conditions and it is, therefore, in the interests of both employers and employees to limit heat exposure and prevent dehydration. The provision of potable fluids at workplaces is highly recommended. Employees should be trained to drink frequently because thirst is not a reliable indicator of the body's requirements for fluids. Such training should be adapted to the cultures of employees.

- The quantity of fluids required ranges between two litres per day for light work in temperatures around 10 °C WBGT and in extreme cases 15 litres per day for very strenuous work in 30 °C WBGT. Fluids should be relatively cool (15–20 °C), coffee and tea should be avoided, and alcoholic beverages should not be permitted. It is best to drink small quantities of water frequently.

A new FAO document titled "Occupational safety and health in forest harvesting and silviculture: A compendium for practitioners and instructors" has been published that provides in depth detail for forestry operations (Garland et al, 2020). Even though this document is aimed at forestry activities, it is still recommended that managers and safety practitioners refer to this compendium for additional input into their safety strategies. This working paper on occupational safety and health in forestry is intended for an audience of producer organizations, trade unions, vocational training institutes, extensionists, instructors and relevant public bodies. It is also meant to serve as an introduction to the subject for foresters who have had little or no exposure to the subject.

3 Current status of health and safety during log processing in Uganda

Site visits were carried out to investigate the occupational health and safety practices of sawmilling operations in Uganda. Visits were paid to multiple small informal sawmillers and to the medium scale operations of the industrial plantation companies that carry out sawmilling. From these visits, it was clear that it was necessary to discuss the current status of health and safety under two categories, namely informal and formal sawmillers.

3.1. Status of health and safety of informal sawmills

The site visits demonstrated that there are no (very few) health and safety standards or considerations at all with the small informal sawmillers. The workers are subjected to extremely poor health conditions and very unsafe work conditions. The two main occupational health hazards observed are noise and saw dust,

as shown in Figure 1 and Figure 2. The workers, especially those operating the circular saws, or in close proximity to them, are exposed to very high levels of noise that will result in hearing loss. No hearing protection was evident at any of the sites. The workers are also constantly breathing in saw dust which will result in respiratory problems. No respiratory protection such as dust masks were evident at any of the sites.

Figure 1: Lack of hearing protection from saw noise risks

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Figure 2: Lack of respiratory protection from sawdust risks

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There were also a multitude of other safety hazards at all the sites. Almost every safety hazard present in Section 2.2 was present and it is not necessary to repeat them all here. Basic aspects such as site access control, machine guarding, PPE, log and timber stacks, ergonomics of carrying heavy loads and electrical isolation were all deficient. In addition, the equipment used was old and inefficient. Figure 3 to Figure 8 shows examples of some of the safety hazards observed.

Figure 3: Lack of guarding on machinery

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Figure 4: Chainsaw operator with no PPE

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Figure 5: Electrical cables hanging all over the sawmill

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Figure 6: Heavy loads and poor ergonomics

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Figure 7: Muddy underfoot conditions in the sawmill

Figure 8: Unstable stacking of timber

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3.2. Status of health and safety of formal sawmills

The sawmills of g-w and the BFC were visited. Both these sawmills are at Level Two of the safety culture maturity model (see Section 4.2) and are beginning to make the transition to Level Three. Even though the BFC sawmill is more advanced than the g-w sawmills, both have good safety systems in place with management committed to improving safety within the organisation. The supervision and labour are increasingly becoming aware of the importance of safety at the workplace. The companies have sufficient safety policies, guidelines and safety management systems, as well as Standard Operating Practices (SOPs) in place at each sawmill that guide the operational safety management. Compliance to aspects such as safe positioning of personnel and PPE was good. Figure 9 and 10 shows the g-w sawmill and Figure 11 and 12 shows part of the BFC sawmill.

Figure 9 and 10: Good operational safety and timber stacking at g-w sawmill

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Figure 11 and 12: Modern machinery at the BFC sawmill

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4 Development of the occupational health and safety strategy

Implementing a safety strategy will not only reduce incidents, but also their associated hidden costs. The investigated the economic costs of occupational injuries and illnesses in developing countries (ILO, 2012). The ILO estimated that 2.34 million people die each year from work-related accidents or diseases. A further 317 million suffer from work-related injuries. The costs of injuries are divided into "direct" and "indirect" costs.

Direct costs include payments made by organisations to employees who have incurred an injury or disease. Indirect costs include primarily lost, delayed or degraded production. It also needs to be considered that if an accident has occurred, there may be damage to equipment and materials.

Developing an occupational health and culture strategy requires putting in place the requirements for a safety culture. Organisations need to understand their current maturity level regarding safety culture in order to implement next steps to improve their safety performance. An organizational framework must be set up to facilitate the implementation of the safety policy and strategy. A structure that clearly defines the duties and responsibilities of the various levels for safety must be designed. It should ensure that safety is integrated with, rather than separated from production to allow total commitment to safety.

4.1. Developing a safety culture

One of the long-term objectives of the Ugandan log processing industry is to have a safety culture develop. A safety culture refers to a durable corporate atmosphere which impacts on people's management of safety in an organisation (Cooper, 2016). A pro-active safety culture means that:

- Safety, health and welfare are the key ingredients of an organization's value system and of the objectives it seeks to attain;
- An atmosphere of openness prevails in an organisation, based on mutual trust and respect;
- There is a high level of cooperation with a smooth flow of information and an appropriate level of coordination;
- A pro-active policy is implemented with a dynamic system of constant improvement perfectly matching the prevention concept.

Organisations with a positive safety culture are characterised by communications founded on mutual trust, shared perceptions of the importance of safety and confidence in the efficacy of preventative measures (Cooper, 2000).

To achieve this positive safety culture, the following criteria must be met (ILO, 2019a):

1. A system must be in place that ensures regular daily pro-active supervisory (or team) activities;
2. The system must actively ensure that middle-management tasks and activities are carried out while:
   a) ensuring subordinates (supervisory or team) regulate performance,
   b) ensuring the quality of that performance,
   c) engaging in certain well-defined activities to show that safety is so important that even upper managers are doing something about it;
3. Top management must visibly demonstrate and support that safety has a high priority in the organisation;
4. Any worker who chooses to, should be able to be actively engaged in meaningful safety-related activities;
5. The safety system must be flexible, allowing choices to be made at all levels;
6. The safety effort must be seen as positive by the workforce.

Building on this is the concept of integrated safety. Integrated safety introduces a number of central factors into the safety system, the most important of which can be summarised as follows (ILO, 2019b):

- A clearly visible commitment from the top management;
- Active involvement of the hierarchical line and the central support departments;
- Full participation of the employees;
- A suitable profile for a safety expert. A qualified adviser to the top management who focusses on optimising the policy processes and the safety system. Technically trained, but also a good organiser, can deal with people in an inspiring manner and collaborate in a synergetic way with other prevention experts;
- The promotion of safety, health and welfare is a key component of all decision-making, consultations and teamwork;
- When industrial accidents occur, suitable preventive measures are sought, not a scapegoat;
- Members of staff are encouraged to act on their own initiative so that they possess the greatest possible authority, knowledge and experience, enabling them to intervene in an appropriate manner in unexpected situations;
- Processes are set in motion with a view to promoting individual and collective training to the maximum extent possible;
- Discussions concerning challenging and attainable health, safety and welfare objectives are held on a regular basis.

4.2. Safety culture maturity level

A safety culture maturity model allows for iterative stages. Organisations progress through five levels. Figure 13 shows how safety culture improves through the five steps of the safety culture maturity model. The levels are described below (Fleming, 2000).

Figure 13 The safety culture maturity model (Fleming, 2000)

SAFETY CULTURE MATURITY MODEL
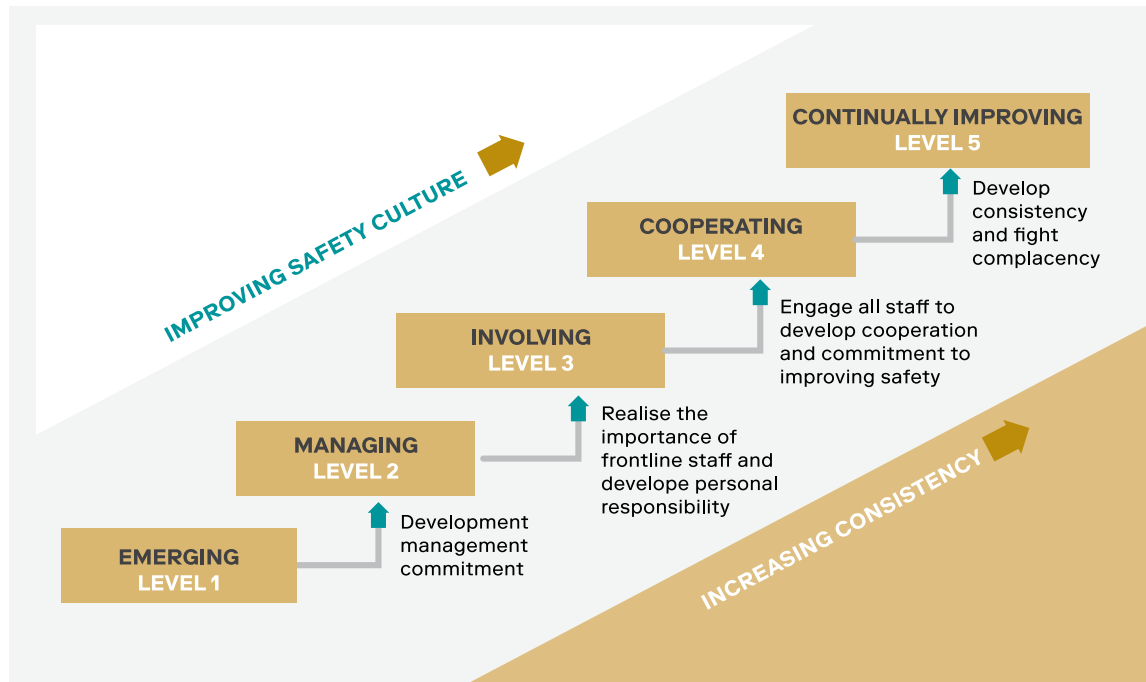
4.2.1. Level One: Emerging

Safety is defined by technical and procedural solutions and compliance with regulations. Safety is not recognised as a key business risk. The safety department is perceived to be responsible for safety. Many accidents are deemed unavoidable and part of the job. Many operational staff are not interested in safety. The informal sawmilling sector has not yet entered Level One.

4.2.2. Level Two: Managing

The organisation's incident rate is average for the formal sawmilling but have more serious accidents than average. Safety is recognised as a business risk and management time and effort is placed into accident prevention. Safety is managed in terms of adherence to rules and procedures and engineering controls. Accidents are deemed to be preventable. Managers believe that most accidents are due to the unsafe behaviour of workers. Safety performance is measured using lagging indicators like Lost Time Injury (LTI). Safety incentives are based on reduced LTI rates. Senior managers are reactive in their involvement in health and safety. Level Two is where the current formal sawmilling sector is operating at in Uganda, with signs of progression to Level Three.

4.2.3. Level Three: Involving

Accident rates are reasonably low but have plateaued. The involvement of supervisors and workers in health and safety is deemed to be critical for future improvements. Managers acknowledge that many factors cause accidents and the root causes can originate from management decisions. Most supervisors and workers are prepared to work with management to improve health and safety. Most employees accept personal responsibility for their own health and safety. Safety performance is monitored, and the data is used.

4.2.4. Level Four: Cooperating

Most staff are convinced that health and safety is imperative from both a moral and economic point of view. All employees recognise that a wide range of factors cause incidents and the root causes often are related to management decisions. Supervisors and workers accept personal responsibility for their own and others' health and safety. It is recognised that all employees must feel valued and be treated fairly. The organisation puts large efforts into proactive measures to prevent accidents. Safety performance is measured and monitored using all data available. Non-work accidents are also monitored, and healthy lifestyles are promoted.

4.2.5. Level Five: Continuous improvement

The prevention of all injuries or harm, both at work and at home, is a core company value. A sustained period passes without a recordable accident or high potential incident, but complacency does not occur. The reality is understood that the next accident is always closer. A range of indicators are used to monitor performance. Better ways are always being sought to improve the hazard control mechanisms. All employees know that health and safety is a critical aspect of their job. They accept that the prevention of non-work injuries is important. The organisation spends much effort promoting health and safety at home.

4.3. Compliance to international standards

An over-arching global guideline for forestry safety and health exists and is titled "Safety and health in forestry work: An ILO code of practice". Sawmilling is partly covered by this code and the document titled "Safety and health in the use of machinery, ILO Code of Practice", published by the International Labour Organisation (ILO) in Geneva (ILO, 1998; ILO, 2013). The objective of these codes is to protect workers from occupational safety and health hazards and to prevent or reduce the incidence of illness or injury by providing practical guidelines. Sawmilling organisations should make themselves familiar with these guidelines as they contain most valuable information. Specific mention is made of sawmill specific requirements in the ILO (2013) Code of Practice as shown below:

- All cutters and saw blades should, as far as possible, be enclosed;
- Machinery should, wherever possible, be equipped with mechanical feeding devices;
- Machinery should be designed, constructed or equipped in such a way that the piece being machined can be placed and guided in safely; where the piece is hand-held on a workbench, the latter should be sufficiently stable during the work and should not impede the movement of the piece. Push sticks are an additional device used to keep hands away from the blade;
- Where the machinery is likely to be used in conditions involving the risk of ejection of work pieces or parts thereof, it should be designed, constructed or equipped in such a way as to prevent such ejection or, if this is not possible, in such a way that ejection does not pose a risk to the workers;

- The machinery should be equipped with an automatic brake that stops the tool in a sufficiently short time if there is a risk of contact with the tool while it slows down;
- Where the tool is incorporated into machinery that is not fully automated, the latter should be designed and constructed in such a way as to eliminate or reduce the risk of injury.

Some important provisions of the code are shown in Table 5. The table deals with different levels of governance; being regulatory authorities, senior management and large contractors, junior management and small contractors, and labour unions and workers. It is divided into three parts, being Part 1 Legal Framework and General Duties of Care; Part 2 Enterprise Level Framework and Part 3 General Requirements.

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Table 5: Contents of the ILO code of practice sections 1 to 3 cross referenced to the relevant level of governance (ILO, 1998)

Levels of Governance	Part 1 Legal Framework and General Duties of Care	Part 2 Enterprise Level Framework	Part 3 General Requirements
Regulatory Authorities	• Legal framework and duties of competent authorities • Duties of labour inspectorates	• Enterprise health and safety policy • Safety and health management	• Employment conditions • Qualifications of managers and supervisors • Training and skills testing for workers • Safety requirements for tools machines and hazardous chemicals • Work clothing and PPE • Testing and certification of equipment.
Senior Management and Large Contractors	• Responsibilities and duties of employers • Duties of manufacturers and suppliers of equipment	• Enterprise health and safety policy • Safety and health management • Assignment of responsibility • Identification and management of risks	• Employment conditions • Qualifications of managers and supervisors • Training and skills testing for workers • Qualifications of contractors • Safety requirements for tools machines and hazardous chemicals • Work clothing and PPE • First Aid, emergency rescue and occupational health services • Shelters housing and nutrition • Reporting, recording and investigation of occupational accidents and diseases.
Junior Management and Small Contractors	• Duties of managers and supervisors • Responsibilities and duties of contractors	• Organisation of personnel • Provision of resources • Communication and information • Documentation	• Employment conditions • Training and skills testing for workers • Qualifications of contractors • Work clothing and PPE • Testing and certification of equipment • First aid, emergency rescue and occupational health services • Shelters, housing and nutrition • Reporting, recording and investigation of occupational accidents and diseases.
Labour Unions	• Duties of labour inspectorates • Responsibilities and duties of employers • Rights and responsibilities of workers • Duties of manufacturers and suppliers of equipment	• Safety and health management • Identification and management of risks • Organisation of personnel • Provision of resources	• Employment conditions • Qualifications of managers and supervisors • Training and skills testing for workers • Qualifications of contractors • Safety requirements for tools machines and hazardous chemicals • Work clothing and PPE • Testing and certification of equipment • First Aid, emergency rescue and occupational health services • Shelters housing and nutrition • Reporting, recording and investigation of occupational accidents and diseases.
Workers	• Rights and responsibilities of workers	• Identification and management of risks • Documentation	• Employment conditions • Training and skills testing for workers • Work clothing and PPE • Testing and certification of equipment • Reporting, recording and investigation of occupational accidents and diseases.

4.4. Leadership in safety

Leadership in safety starts at the highest organisational level. They create an overall climate in which safety is a value and in which supervisors and workers take the lead in hazard control. Supervisor leaders expect safe behaviour from subordinates and directly involve them in the identification of problems and their solutions. Leadership in safety for the workers means reporting deficiencies, seeing corrective actions as a stimulating challenge to overcome, and working to correct these deficiencies (ILO, 2019c).

4.4.1. Role of the supervisor

Having a management responsibility for safety and health means that the supervisor is the employer's agent in that area. The supervisor is the primary person responsible for the safety of those who work in their care. The employer has authorised the supervisor to be their representative for the safety and health programme (Luria et al, 2008). The supervisor is authorised to:

- Showing the purpose of the safety and health programme;
- Identifying the safety and health personnel implementing the programme;
- Providing ongoing evaluation of employee's safety performance;
- Implementing a disciplinary system to address unsafe work practices;
- Acting as the competent person in your area with authority to supervise all personnel and enforce the safety and health programme.

The supervisor also has specific responsibilities to:

- Supervise and enforce the company's safety and health programme;
- Verify that all employees:
  a) Can safely perform assigned tasks,
  b) Have received adequate job safety instruction and training;
- Periodically review the safety performance of each employee;
- Provide job safety and health instruction, training or disciplinary action to an employee when the employee is working in an unsafe manner;

- Closely supervise each employee who is receiving job safety and health instruction and training;
- Require all employees to demonstrate the ability to safely perform their work task before permitting them to work independently;
- Record keeping associated with training;
- Records should be kept for all staff, including induction, training and assessment associated with all tasks, and operation of plant and equipment.

4.4.2. Occupational health and safety training

An investment in training the employees on occupational safety and health training, sawmill technology and production management skills is required. Training of all employees is required and not just machine operators. An important component, not often recognised as training, is toolbox talks. The importance of toolbox talks should be emphasised to all employees. The control measures for high risks are communicated and taught during toolbox talks to avoid unnecessary injuries and accidents at the workplace. Training on the meaning of safety signs and colour codes, response to emergency drills and the importance of personal protective equipment and fire detectors, alarms and fighting equipment and improvement on engineering controls should be covered. Occupational health and safety training is covered through the following:

4.4.2.1. Induction training

Induction training is important for new employees and, where necessary, contractors and other site visitors. Site specific induction should include information on site specific hazards, methods of work and any health and safety requirements relevant to the site.

4.4.2.2. Worker training

General work health and safety training for workers in sawmills should include training in:

- Workers responsibilities regarding health and safety;
- Hazard and incident reporting;
- Health and safety related risks;
- Machine hazards;

- Emergency procedures including fire;
- Selection, fit, use and maintenance of personal protective equipment;
- The workers role in the health and safety consultation process.

4.4.2.3. Management and supervisor training

Managers and supervisors should be trained in:

- Their responsibilities under Ugandan legislation;
- Their part in the consultation process, including facilitating worker consultation;
- Incident reporting duties and record keeping;
- Information provision and training requirements.

4.4.3. Health and safety reps and committees

Workers may usually elect a health and safety representative, or the employer may suggest one. The responsibilities of the representative include:

- Carrying out workplace inspections;
- Reporting hazards;
- Reviewing incidents.

Health and safety committees help workers and employers work together to make a workplace safe.

4.5. Practically implementing the occupational health and safety system

Safety systems of work such as risk assessments or job safety analysis and permit to work need to be developed and implemented. Whenever possible, people and dangerous parts of machinery should be kept apart. It is preferable to engineer hazards out. This separation of people and machines should first be attempted before attempting safeguarding machinery and production can also be improved later. If the hazard cannot be engineered out, examine where improvements can be made in safeguarding the machinery (Workplace Health and Safety Queensland, 2019). The following are hazards which can be reduced through engineering:

- Cutting hazards, e.g. bandsaw blades;
- Entanglement hazards, e.g. rotating spiked feed wheels, roller and conveyor belts;
- Drawing-in hazards, e.g. between chains and sprockets and 'dogs' (cleats) on the chain;
- Shearing hazards, e.g. the legs of a scissor lift;
- Puncture hazards, e.g. ejected off-cuts;
- Crushing hazards, e.g. beneath an automatic stacking machine;
- Impact hazards, e.g. being struck by a log carriage.

Besides the cultural and organisational aspects of safety, the following concrete steps need to be taken to ensure that occupational health and safety risks are mitigated (Dep of Labour, 2005):

- **Safe access:** Restrict access to your site. Signs should direct visitors to the office where they can sign a visitor's book and have the risks explained. Suitable PPE can be supplied. Visitors must comply with site safety rules or be guided by staff who know the hazards and emergency procedures. Ensure operators are aware of other people entering the work area. Fencing is a possibility to limit people encountering major hazard areas.
- **Common areas:** Safe walkways should be provided to commonly used areas such as toilets, meal rooms and offices. Painting lines on the floor or road is one method.
- **Moving equipment:** The moving parts of equipment and conveyors can cause accidents. Walkways must be provided that avoid the hazard areas. Walkways over machinery must have handrails.
- **Non-slip surfacing:** Flooring surfaces around the workplace should be non-slip using materials such as tread plates, expanded mesh or some other non-slip product.
- **Work at heights:** Permanent platforms with handrails and stairs are best. Harnessing may be required in specific circumstances, usually when the risk of a fall is 3 m or more. Stepladders should only be used where absolutely necessary. Extension ladders must always be secured.

- **Timber stacking:** Unstable stacks of timber are possible hazards. Timber stacks should be on level ground with solid bearers. The height of a stack must not be more than four times its base.
- **Isolation and lockout:** Serious accidents or fatalities can occur if machinery or equipment is not properly locked out before working on it (e.g. when fixing, cleaning or maintaining it). Isolation or lockout devices must be used to prevent machines being started.
- **Confined spaces:** A lack of oxygen can be a hazard in these areas. Identify all the confined spaces and put controls in place to limit who can enter these spaces.
- **Signage:** Use signs that are symbolic (that use simple pictures) or that use words, or a mixture of both. Signs should be appropriate, easy to see, short, clear and easy to understand.
- **Lighting:** Lighting levels should permit easy vision without being too bright.
- **Personal protective equipment:** The PPE required will depend on the task being carried out and the risks being exposed to. Employers need to provide PPE to staff and ensure that contractors also comply. The PPE can include safety footwear, hearing protection, overalls, safety glasses, high visibility clothing, dust masks, chemical safety clothing and equipment, chaps for chainsaw work, safety helmets and gloves. If PPE is used, then the health of employees needs to be monitored (e.g. hearing). Table 6 below describes some of the PPE required in Australian sawmilling activities (Workplace Health and Safety Queensland, 2019).

Table 6: An Australian example of PPE requirements

Helmets	An industrial safety helmet and appropriate accessories conforming to current Australian Standards should be used by each person exposed to the risk of head injury. Helmets must be worn at all times in a hard hat area.
Protective footwear	Protective footwear, conforming to current Australian Standards should be worn by any person while engaged in activities where there is a likelihood of a crush injury to the foot. Protective footwear must be replaced when it no longer provides the protection intended.
Hearing protection	Hearing protection should be worn at all times a person is exposed to risk.All people should wear hearing protection where exposure to noise exceeds 85 dB(A).The hearing protector should be chosen with regard to the level of protection required in consideration of the levelof noise exposure. Hearing protectors should comply with current Australian standards.
Leg protectors	Cut proof trousers or chaps must be worn by any person exposed to risk of injury from inadvertently touching the legs with a chainsaw.They should be reolaced when thev no lonaer orovide full orotection.
Safety gloves	Gloves conforming to Australian Standards and appropriate to the task should be worn by any person requiring hand protection (e.g.when using wire ropes). Care should be taken when making the decision to wear gloves as they may increase the risk of gloved hands being caught by the rough surface and draaaed into equipment such as saws.
Eye protection	Eye protection conforming to Australian Standard 1336 - Recommended practices for occupationaleye protection - should be used by any person who is exposed to risk of injury to the eyes, such as being struck in the eye by flying dust or woodchips or when harndling chemicals. Eye protection should be safety glasses, goggles or fullface shields appropriate to the risk. Prescription glasses may not meet this standard.
High visibility clothing	An outer garment made of highly visible materials should be worn at all times when a person is working in sawmills. Highly visible reflective clothing must be worn for night work. They should be close fitting or tucked in to avoid entanalement in machinerv .
Respiratory protective devices	Where people engaged in the timber industry are exposed to dust or fumes that may be injurious to their health, suitable respiratory devices should be used. When chemicals are used, personal protective equipment and respiratory protective equipment must be used in accordance with the appropriate material safety data sheet.

- **Worksurface heights:** People should not work at an awkward height for manual handling tasks.

- Managing fatigue: People need regular breaks of a reasonable length to allow their bodies to recover from an activity such as standing in one position for a long time.

- **Noise protection:** The choice of suitable hearing protectors and other measures is important. These other measures can include marking hearing protection zones with notices, supervising the use of hearing protectors, and site machines such as chippers, which emit high noise levels and require infrequent operator access, in separate rooms or acoustic enclosures (Health and Safety Executive, 2012).

- **Dust mitigation:** The best way to control dust inhalation is by using properly designed and maintained dust extraction systems. In addition to dust extraction equipment, work areas should be well ventilated. If there are no dust extraction systems, an approved dust mask should be worn. High concentrations of wood dust, particularly from sanding, can form explosive mixtures when mixed with air. Ducting should be fitted with explosion vents. With extraction systems, the fitting of spark detectors and automatic extinguishing equipment is preferable. Electric motors should be spark proof. Wood dust that gathers in places such as on the floor, on ledges or in machinery pits, should be removed by suction devices or wet sweeping. Use of compressed air should be avoided (Workplace Health and Safety Queensland, 2019).

- **Hot work and fire precautions:** Includes work that produces heat and/or sparks or molten metal, such as welding, grinding, gouging, flame or abrasive cutting, and has the potential to cause a fire hazard. Permission should be obtained, and the necessary precautions instituted.

- **First aid:** Suitable first aid facilities should be provided and be accessible.

- **Emergency procedures:** Should include responses to an emergency, evacuation procedures, notifying emergency services, communications, testing of emergency plan, availability of suitable emergency equipment and materials, and information, training and instruction of workers in accident/emergency procedures.

- **Substance use:** Under the influence of alcohol, prescription or other drugs. Testing may be required (Workplace Safety North, 2018).

New or refurbished sawmills need to be designed with a good safety and productive efficiency layout. This should include (Dep of Labour, 2005):

- Clear flow lines so staff are not near dangerous machinery unless they need to be;

- Preventing congestion and keeping worker activity away from dangerous machines;

- Keeping rubbish, materials and clutter away from machines;

- Reducing the movement of trucks, people and machines;

- Well thought out and robust construction of guarding. Mesh allows one to see belts and chains and allows air flow. They must be difficult to remove, but possibly allow certain type of maintenance such as greasing to take place.

Annexures 1 to 7 provide examples, guides and templates for the safety programme as follows:

- Annexure 1: Job Orientation Guide
- Annexure 2: Employee's Report of Injury Form
- Annexure 3: Incident Investigation Report
- Annexure 4: Safety and Health Inspection Check List
- Annexure 5: Equipment Safety Inspection Checklist
- Annexure 6: Job Safety Analysis Worksheet
- Annexure 7: Written Hazard Communication Program

Annexure 8 (a separate electronic attachment) is an example of a sawmilling industry hazard inspection checklist.

4.6. Occupational health and safety recording and data analysis

Effective health and safety management systems are based on pro-active measures to prevent accidents, the system should also include methods to

identify failures and learn from them. This requires the collection and analysis of health and safety data. The following should be recorded:

- Injuries or illnesses - directly resulting from work.

- Incidents - includes equipment failure, fire, substance release or other event that result in damage to or loss of, plant and equipment, processes, environment and structures.

- Dangerous events and near misses - events that could have caused an injury, illness or incident.

- First aid - any first aid cases

The FAO have recently produced a document titled "Accident reporting and analysis in forestry: Guidance on increasing the safety of forest work" (Garland, 2018). Even though the context is forestry work, much of the information is applicable to sawmilling operations. The guide discusses forestry accidents and illnesses, makes international comparisons, examines the use of accident reporting forms, and provides sample forms. It presents examples of successful safety and health improvements arising from accident reporting and analysis and discusses various legal and regulatory approaches for improving worker safety and health. The objective is to provide support and essential knowledge to organisations wanting to improve occupational safety and health in forestry. The recommendations and guidance should help in developing legal frameworks, compensation schemes and accident reporting and analysis systems where these are lacking or inadequate.

The above document is supplemented by the document "Accident analysis in forestry: A practical field guide" (FAO, 2019a). It serves as a practical complement to the above guide. It recommends a size-step approach to accident analysis (more detailed information can be found in the guide) shown below:
1. Secure the accident scene;
2. Collect facts/information on what happened;
3. Develop a sequence of events;
4. Determine potential causes;
5. Formulate recommendations;
6. Prepare a report and secure evidence.

4.7. Occupational health and safety strategy summary

The occupational health and safety strategy is better summarised by 27 strategies (The 27 safety strategies) developed by OSHA (no date):

1. Define safety responsibilities for all levels of the organisation.

2. Develop upstream measures, e.g., number of reports of hazards/suggestions, number of committee projects/successes, etc.

3. Align management and supervisors through establishing a shared vision of safety and health goals and objectives versus production.

4. Implement a process that holds managers and supervisors accountable for visibly being involved, setting the proper example, and leading a positive change for safety and health.

5. Evaluate and rebuild any incentives and disciplinary systems for safety and health as necessary.

6. Ensure the safety committee is functioning appropriately, e.g., membership, responsibilities/functions, authority and meeting management skills.

7. Provide multiple paths for employees to bring suggestions, concerns, or problems forward. One mechanism should use the chain of command and ensure no repercussions. Hold supervisors and middle managers accountable for not being responsive.

8. Develop a system that tracks and ensures the timeliness in hazard correction.

9. Ensure reporting of injuries, first aids, and near misses. Educate employees on the accident pyramid and importance of reporting minor incidents. Prepare management for an initial increase in incidents and rise in rates. This will occur if under-reporting exists in the organization. It will level off, then decline as the system changes take hold.

10. Evaluate and rebuild the incident investigation system as necessary to ensure that it is timely, complete, and effective. It should get to the root causes and avoid blaming workers.

11. Obtain Top Management "Buy-in" - This is the very first step that needs to be accomplished before actual implementation.

12. Continue Building "Buy-in" for the needed changes by building an alliance or partnership between management, the union (if one exists), and employees. A compelling reason for the change must be spelled out to everyone. People have to understand why they are being asked to change what they normally do and what it will look like if they are successful. This needs to be done up front. If people get wind that something "is going down" and have not been formally told anything, they naturally tend to resist and opt out.

13. Build Trust - Trusting is a critical part of accepting change and management needs to know that this is the bigger picture, outside of all the details. Trust will occur as different levels within the organisation work together and begin to see success.

14. Conduct Self Assessments/Bench Marking - To get where you want to go, you must know where you are starting from. A variety of self-audit mechanisms can be employed to compare your site processes with other recognised models of excellence such as Star VPP sites. Visiting other sites to gain first-hand information is also invaluable.

15. Initial Training of management-supervisory staff, union leadership (if present), and safety and health committee members, and a representative number of hourly employees. This may include both safety and health training and any needed management, team building, hazard recognition, or communication training. This gives you a core group of people to draw upon as resources and also gets key personnel on board with needed changes.

16. Establish a Steering Committee comprised of management, employees, union (if one exists), and safety staff. The purpose of this group is to facilitate, support, and direct the change processes. This will provide overall guidance and direction and avoid duplication of efforts. To be effective, the group must have the authority to get things done.

17. Develop Site Safety Vision, key policies, goals, measures, and strategic and operational plans. These policies provide guidance and serve as

a check-in that can be used to ask yourself if the decision you're about to make supports or detracts from your intended safety and health improvement process.

18. Align the organisation by establishing a shared vision of safety and health goals and objectives vs. production. Upper management must be willing to support by providing resources (time) and holding managers and supervisors accountable for doing the same. The entire management and supervisory staff need to set the example and lead the change. It's more about leadership than management.

19. Further define Specific Roles and responsibilities for safety and health at all levels of the organisation. Safety and health must be viewed as everyone's responsibility. How the organisation is to deal with competing pressures and priorities, i.e., production, versus safety and health, needs to be clearly spelled out.

20. Develop a System of Accountability for all levels of the organisation. Everyone must play by the same rules and be held accountable for their areas of responsibility. Signs of a strong culture is when the individuals hold themselves accountable.

21. Develop measures and an ongoing measurement and feedback system. Drive the system with upstream activity measures that encourage positive change. Examples include the number of hazards reported or corrected, number of inspections, number of equipment checks, Job Safety Analysis (JSA's), and pre-start-up reviews conducted.

22. While it is always nice to know what the bottom-line performance is, i.e., accident rates, overemphasis on these and using them to drive the system typically only drives accident reporting under the table. It is all too easy to manipulate accident rates which will only result in risk issues remaining unresolved and a probability for more serious events to occur in the future.

23. Develop Policies for Recognition, rewards, incentives, and ceremonies. Again, reward employees for doing the right things and encourage participation in the upstream activities. Continually re-evaluate these policies to ensure their effectiveness and to ensure that

they do not become entitlement programmes.

24. Awareness Training and Kick-off for all employees. It's not enough for a part of the organisation to be involved and know about the change effort – the entire site needs to know and be involved in some manner. A kick-off celebration can be used to announce it's a "new day" and seek buy-in for any new procedures and programmes.

25. Implement Process Changes via involvement of management, union (if one is present), and employees using a "Plan To Act" process.

26. Continually Measure performance, Communicate Results, and Celebrate Successes. Publicising results is very important to sustaining efforts and keeping everyone motivated. Everyone needs to be updated throughout the process. Progress reports

during normal shift meetings allowing time for comments back to the steering committee opens communications, but also allows for input. Everyone needs to have a voice, otherwise, they will be reluctant to buy-in. A system can be as simple as using current meetings, a bulletin board, and a comment box.

27. On-going Support - Reinforcement, feedback, reassessment, mid-course corrections, and on-going training is vital to sustaining continuous improvement.

This report covers the industry as a whole. Each sawmill will need to consider this report's contents and develop a strategic health and safety action plan with priorities and responsibilities. The action plan will be based on the 27 points raised in Section 4.7; with each point having an action, responsibility and timeline.

5 Conclusion

It is very difficult to implement a safety strategy for small-scale informal sawmills. Usually the best that can be achieved is for regulatory bodies to step up the frequency of inspections to ensure improved compliance. In parallel, the formal sector that ensures safe and well managed sawmilling operations and more sustainable work lives must be supported.

It is imperative that timber standards are adopted, and markets educated/informed to ensure that the formal sector is able to access suitable markets. It is difficult for the formal sector to compete against small- scale informal sawmillers who have no costs of occupational health and safety compliance. In order to better guide informal sawmills on occupational health and safety issues, a survey is required to determine how many informal sawmills exist, what is being processed, what is being produced, where are the sawmills sourcing logs from, who is buying the products, determining profiles of workers, the volumes of logs sourced and the volume of timber produced (including waste quantification) as well as business profiles of the sawmillers.

As the formal sawmill sector grows due to the increased volumes of wood, they will need to formulate their safety strategy. This will include processes such as identifying hazards, determining

high risk hazards, determining control measures, putting plans in place to action control measures, identifying who is responsible for monitoring (in organisation, government, certification etc.), and penalties for non-compliance amongst others. This must take place within the framework of developing an integrated approach to safety that constantly develops a safety culture. The use of increased technology in new sawmills will go some way to improve safety and productivity.

The new sawmills should develop occupational safety and health policy, safe work methods, statements and comprehensive training programmes to create awareness on safety and health management system with great emphasis on the sawmill yards, workshops, timber stacking, log transport and production areas. The sawmills should continually hold refresher trainings and empowerments to reduce injuries.

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Annexure 1: Job orientation guide

Company:	(Enter Company Name)	Employee:	(Enter Employee Name
Trainer:	(Enter Name of Trainer)	Hire Date:	(Enter Employee's Hire Date)
Date	(Enter Date of Orientation)	Position:	(Enter Employee's Job Title)

This checklist is a guideline for conducting employee safety orientations for employees new to (Customise by adding the name of your company). Once completed and signed by both supervisor and employee, it serves as documentation that orientation has taken place.

	Date	Initials
1. Explain the company safety programme , including:		
Orientation		
On-the-job training		
Safety meetings		
Incident investigation		
Disciplinary action		
2. Use and care of personal protective equipment (hard hat, fall protection,eye protection, etc.)		
3. Line of communication and responsibility for immediately reporting injuries.		
A. When to report an injury		
B. How to report an injury		
C. Who to report an injury to		
D. Filling out incident report forms		
4. General overview of operation,procedures, methods and hazards as they relate to the specific job		
5. Pertinent safety rules of the company and WISHA		
6. First aid supplies, equipment and training		
A. Obtaining treatment		
B. Location of Facilities		
C. Location and names of First-aid trained personnel		
7. Emergency plan		
A. Exit location and evacuation routes		
B. Use of fire fighting equipment (extinguishers, hose)		
C. Specific procedures (medical, chemical, etc.)		
8. Vehicle safety		
9. Personal work habits		
A. Serious consequences of horseplay		
B. Fighting		
C. Inattention		
D. Smoking policy		
E. Good housekeeping practices		
F. Proper lifting techniques		

NOTE TO EMPLOYEES: Do not sign unless ALL items are covered and ALL questions are satisfactorily answered.

The signatures below document that the appropriate elements have been discussed to the satisfaction of both parties, and that both the supervisor and the employee accept responsibility for maintaining a safe and healthful work environment.

Date: .... Supervisor's Signature: ....

Annexure 2: Employee's report of injury form

Instructions: Your employees may use this form to report all work related injuries, illnesses, or "near miss" events (which could have caused an injury or illness) – no matter how minor. This helps you to identify and correct hazards before they cause serious injuries. This form should be completed by employees as soon as possible and given to a supervisor for further action.
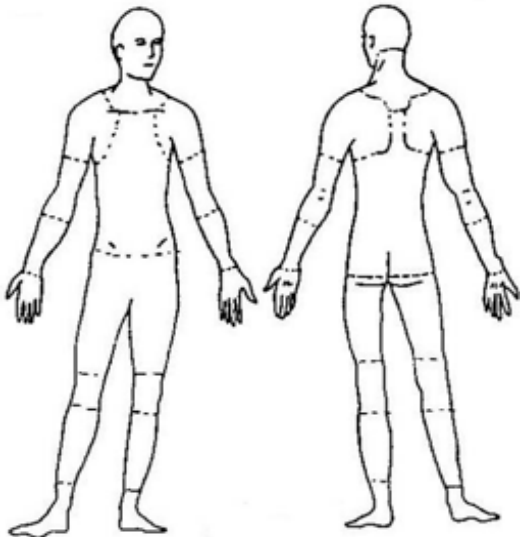
I am reporting a work related: ❑ Injury ❑ Illness ❑ Near miss	
Your Name:	
Job title:	
Supervisor:	
Have you told your supervisor about this injury/near miss? ❑ Yes ❑ No	
Date of injury/near miss:	Time of injury/near miss:
Names of witnesses (if any):	
Where, exactly, did it happen?	
What were you doing at the time?	
Describe step by step what led up to the injury/near miss. (continue on the back if necessary):	
What could have been done to prevent this injury/near miss?	
What parts of your body were injured? If a near miss, how could you have been hurt?	
Did you see a doctor about this injury/illness? ❑ Yes ❑ No	
If yes, whom did you see?	Doctor's phone number:
Date:	Time:
Has this part of your body been injured before? ❑ Yes ❑ No	
If yes, when?	Employer:
Your signature (optional):	Date:

Annexure 3: Incident investigation report

Instructions: Complete this form as soon as possible after an incident that results in serious injury or illness. (Optional: Use to investigate a minor injury or near miss that could have resulted in a serious injury or illness.)

This is a report of a:	❑ Death	❑ Lost Time	❑ Dr. Visit Only	❑ First Aid Only	❑ Near Miss
Date of incident:	This report is made by: ❑ Employee ❑ Supervisor ❑ Team ❑ Final Report				

Step 1: Injured employee (complete this part for each injured employee)

Name:	Sex: ❑ Male ❑ Female	Age:
Department:	Job title at time of incident:	

Part of body affected: (shade all that apply)	Nature of injury: (most serious one)	This employee works:

Nature of injury: (most serious one)

❑ Abrasion, scrapes
❑ Amputation
❑ Broken bone
❑ Bruise
❑ Burn (heat)
❑ Burn (chemical)
❑ Concussion (to the head)

❑ Crushing Injury
❑ Cut, laceration, puncture
❑ Hernia
❑ Illness
❑ Sprain, strain
❑ Damage to a body   (e.g nervous, respiratory, or system: circulatory systems)
Other ....

This employee works:

❑ Regular full time
❑ Regular part time
❑ Seasonal
❑ Temporary

Months with this employer

Months doing this job:

Step 2: Describe the incident

Exact location of the incident:	Exact time:

What part of employee's workday?   ❑ Entering or leaving work   ❑ Doing normal work activities

❑ During meal period   ❑ During break   ❑ Working overtime   ❑ Other

Names of witnesses (if any):

Number of attachments:	Written witness statements:	Photographs:	Maps / drawings:

What personal protective equipment was being used (if any)?

Describe, step-by-step the events that led up to the injury. Include names of any machines, parts, objects, tools, materials and other important details.

Description continued on attached sheets: ❑

Step 3: Why did the incident happen?

Unsafe workplace conditions: (Check all that apply)

❑ Inadequate guard

❑ Unguarded hazard

❑ Safety device is defective

❑ Tool or equipment defective

❑ Workstation layout is hazardous

❑ Unsafe lighting

❑ Unsafe ventilation

❑ Lack of needed personal protective equipment

❑ Lack of appropriate equipment / tools

❑ Unsafe clothing

❑ No training or insufficient training

❑ Other: …………………………………………………………

Unsafe acts by people: (Check all that apply)

❑ Operating without permission

❑ Operating at unsafe speed

❑ Servicing equipment that has power to it

❑ Making a safety device inoperative

❑ Using defective equipment

❑ Using equipment in an unapproved way

❑ Unsafe lifting by hand

❑ Taking an unsafe position or posture

❑ Distraction, teasing, horseplay

❑ Failure to wear personal protective equipment

❑ Failure to use the available equipment / tools

❑ Other: …………………………………………………………………

Why did the unsafe conditions exist?

Why did the unsafe acts occur?

Is there a reward (such as "the job can be done more quickly", or "the product is less likely to be damaged") that may have encouraged the unsafe conditions or acts? ❑ Yes ❑ No If yes, describe:
Were the unsafe acts or conditions reported prior to the incident? ❑ Yes ❑ No
Have there been similar incidents or near misses prior to this one? ❑ Yes ❑ No

Step 4: How can future incidents be prevented?

What changes do you suggest to prevent this incident/near miss from happening again?

❑Stop this activity ❑Guard the hazard ❑Train the employee(s) ❑Train the supervisor(s)

❑Redesign task steps ❑Redesign work station ❑Write a new policy/rule ❑Enforce existing policy

❑Routinely inspect for the hazard ❑Personal Protective Equipment ❑ Other: ....

What should be (or has been) done to carry out the suggestion(s) checked above?

Description continued on attached sheets: ❑

Step 5: Who completed and reviewed this form? (Please Print)

Written by:	Title:
Department:	Date:
Names of investigation team members:	
Reviewed by:	Title:
	Date:

Annexure 4: Safety and health inspection check list

Job site: ………………………………………………………… Date: …………………………………………………………………

This format is intended only as a reminder to look for unsafe practices, potential and/or near miss incidents.

(S) indicates **S**atisfactory   **(U)** indicates **U**nsatisfactory

Date of inspection/walk around															
Machinery															
Point of operation guard															
Belts, pulleys, gears, shafts, etc.															
Oiling, cleaning, and adjusting															
Maintenance and oil leaks															
Pressure equipment															
Steam equipment															
Air Receivers and Compressors															
Gas cylinders and hoses															
Unsafe Practices															
Excessive speed of vehicles															
Improper lifting															
Smoking in dangerous places															
Horseplay															
Running in aisles or on stairs															
Improper use of air hoses															
Removing machine guards															
Working under suspended loads															
Working on machines in motion															
First aid															
First aid kits															
Stretchers and fire blankets															
Emergency showers															
Eyewash stations															
All injuries and illnesses reported															
Hazard Communications															
Acids and caustics															
Solvents															
Dusts, vapors, or fumes															
Radiation															

Safety and health inspection check list – continued

Job site: ....   Date: ....

(S) indicates **S**atisfactory   **(U)** indicates **U**nsatisfactory

Date of inspection/walk around																
Tools																
Power tools, wiring and grounding																
Hand tools (condition)																
Use and storage of tools																
Personal protective equipment																
Goggles or face shield																
Substantial footwear																
Hard hats																
Gloves																
Respirators																
Fall protection equipment																
Other protective clothing																
Fire protection																
Extinguishing equipment																
Exits, stairs, and signs																
Storage of flammable materials																
Material Handling Equipment																
Power trucks and hand trucks																
Elevators																
Cranes and hoists																
Conveyors																
Cables, ropes, chains, slings																
Housekeeping																
Aisles, stairs and floors																
Storage and piling of materials																
Wash and locker rooms																
Light and ventilation																
Disposal of water																
Yards and parking lots																
Bulletin boards																
Only safety and health materials posted																
Neat and attractive																
Display regularly changed																
Well-illuminated																

(Customise the checklist above with any additional information.)

Annexure 5: Equipment safety inspection checklist

Date: ………

Project: ………………………………………………………………………………………………………

Equipment: …………………………………………………………………………………………………

All guards and fenders		OK		Needs Repair
Brakes		OK		Needs Repair
Lights – front, rear, side, dash		OK		Needs Repair
Back-up alarm – horn		OK		Needs Repair
Ladders, stairs, hand holds		OK		Needs Repair
ROPS (Roll-over protection)		OK		Needs Repair
Seat belts		OK		Needs Repair
Fire extinguisher		OK		Needs Repair
Glass		OK		Needs Repair
Tires		OK		Needs Repair
Electrical cords		OK		Needs Repair
Ground fault circuit interrupters		OK		Needs Repair
Electrical hand tools		OK		Needs Repair
Powder actuated tools		OK		Needs Repair
Pneumatic condition of all hand tools		OK		Needs Repair

Other Items Checked:

Oil level and leaks		OK		Needs Repair		Add		Change
Hydraulic oil level and leaks		OK		Needs Repair		Add		Change
Anti-freeze level and leaks		OK		Needs Repair		Add		Change
Fuel level and leaks		OK		Needs Repair		Add		Change
First aid kit		OK		Needs Repair		Add		Change

Repaired by: …………………………………………………………………………………………………….

Checked by: …………………………………………………………………………………………………….

Annexure 6: Job safety analysis worksheet

TITLE OF JOB OPERATION:	Date:
Title of person who does job:	
Employee observed:	Location:
Analysis made by:	Analysis approved by:

Sequence of basic job steps	Potential injuries or hazards	Recommended safe job procedures

Personal protective equipment required for this position:

Annexure 7: Written hazard communication programme

General:

It is the Policy of *(Customise by adding your company name here)* to provide and maintain a safe and healthy workplace for all employees including those who work with potentially hazardous chemicals. This written programme will be posted and available 24 hours a day, seven days a week at the following locations:

1. *(Customise by entering location here)*

2. *(Customise by entering location here)*

If you work with or around potentially hazardous chemicals, this programme affects you. The HAZARD COMMUNICATION STANDARD is intended to inform you of any potential chemical hazards from products you may come in contact with at this facility.

Container Labelling:

All containers of chemical products received at this company and all containers used as secondary containers will contain a label listing their hazards, both physical and health hazards. If the label is missing, contact *(Customise by adding name or title of responsible person here)* so that he/she may determine what the product is that has been received, and where it should be stored. **DO NOT ATTEMPT TO USE ANY CHEMICAL THAT IS NOT READILY IDENTIFIABLE.**

Material Safety Data Sheets:

(Customise by adding name or title of person responsible for MSDSs) has the MSDSs on file from the various chemical manufacturers for all hazardous chemicals used in connection with this workplace. The MSDSs list, in English, information available about any particular chemical: health hazards, emergency and first aid procedures, how the chemical could enter the body, the safe handling and use of the chemical, name of manufacturer, etc. The MSDS file may be found in these locations:

1. *(Customise by entering location here)*

2. *(Customise by entering location here)*

Employee Training and Information:

(Customise by adding name or title of responsible person here) will provide training to all employees and new hires on the proper use of hazardous chemicals and potential hazards. They will be responsible for providing the following informational training to all employees:

1. Hazardous chemicals present in the workplace.
2. Location of various chemicals. What to use. What to avoid.
3. Emergency procedures in case of contact with hazardous chemicals.
4. How to read the labels.
5. Location of the MSDS files and how to read the MSDS.
6. Non-routine tasks that may be encountered.
7. Symptoms of overexposure and personal protective measures to be used.

Hazardous Materials Inventory List:

Examples: acids, aerosols, battery fluids, catalysts, caustics, cleaning agents, degreasing agents, flammables, fuels, fungicides, industrial oils, insecticides, herbicides, office copier chemicals, pesticides, surfactants, solvents, wood preservatives.

(This is where you will add your inventory list of the hazardous chemicals for your firm.)

Hazard Communication checklist

	1.	Have we prepared a list of all the hazardous chemicals in our workplace?
	2.	Are we prepared to update our hazardous chemical list?
	3.	Have we obtained or developed a material safety data sheet for each hazardous chemical we use?
	4.	Have we developed a system to ensure that all incoming hazardous chemicals are checked for proper labels and data sheets?
	5.	Do we have procedures to ensure proper labeling or warning signs for containers that hold hazardous chemicals?
	6.	Are our employees aware of the specific information and training requirements of the Hazard Communication Standard?
	7.	Are our employees familiar with the different types of chemicals and the hazards associated with them?
	8.	Have our employees been informed of the hazards associate with performing non-routine tasks?
	9.	Are employees trained about proper work practices and personal protective equipment in relation to the hazardous chemicals in their work area?
	10.	Does our training programme provide information on appropriate first aid, emergency procedures, and the likely symptoms of overexposure?
	11.	Does our training programme include an explanation of labels and warnings that are used in each work area?
	12.	Does the training describe where to obtain data sheets and how employees may use them?
	13.	Have we worked out a system to ensure that new employees are trained before beginning work?
	14.	Have we developed a system to identify new hazardous chemicals before they are introduced into a work area?
	15.	Do we have a system for informing employees when we learn of new hazards associated with a chemical?

Hazardous Substances <u>Employee Orientation Checklist</u>

Employee Name: (Add Name of Employee here)

Title: (Add title of employee here)   Date hired: (Add Date Hired here)

Trainer Name: (Add name of person conducting training here)

This checklist is to inform employees of (Add company name here) of its Hazard Communication Programme. Place a check in each box to indicate that the subject has been covered.

The supervisor has reviewed the following information with the employee:

1. The purpose of the hazard communication standard is to require chemical manufacturers or importers to assess the hazards of chemicals they produce or import. All employers must provide information to their employees about the hazardous chemicals to which they may be exposed.

    Employees must be informed about the hazard communication programme, labels and other forms of warning, and material safety data sheets, and they must have training on the hazardous substances they may encounter.

2. The supervisor has reviewed the hazardous chemical list with the employee.

3. The supervisor has shown the employee the following:

    ❑   Location of hazardous chemicals within the employee's work site.

    ❑   Location of the written Hazard Communication Programme.

    ❑   Location of the material safety data sheets for all hazardous chemicals in the employee's assigned work area.

    ❑   Location of the list of person(s) trained and authorized to handle the hazardous chemicals.

The signature below documents that the appropriate elements have been talked over to the satisfaction of both parties and that both the supervisor and employee accept responsibility for maintaining a safe and healthful work environment.

Date: (Enter date of orientation)   Supervisor's signature: ……………………………………………………………

Date: (Enter date of orientation)   Employee's signature: …………………………………………………………

- *NOTE TO SUPERVISOR: If this employee is expected to actually handle chemicals, please notify (Customise by adding the name of the person responsible for training.) for training before employee begins actual work.*

<u>You are at the end of the Sample Sawmill Accident Prevention Programme. Please be sure that you have added all the required information to make it specific to your business. If you have any further information to add, please do so. Otherwise press the Delete key to delete this message .</u>

Annexure 8: Example of sawmilling industry hazard inspection checklist

Sawmilling industry hazard inspection checklist

This document provides guidance on safety hazards and issues, but it is not exhaustive or relevant to every workplace. Risk assessments should be conducted so that risks are found and can be managed. Licenses and registrations should be maintained.

Workplace name: _____

Site address: _____ Postcode: _____

Location: _____

Person/s conducting the assessment: _____

Legislation: *Work Health and Safety Act 2011* (WHS Act) and *Work Health and Safety Regulation 2011* (WHS Regulation)
Electrical Safety Act 2002 (ES Act) and *Electrical Safety Regulation 2013* (ES Regulation)

1.0	**Workplace layout, security, access and egress** (WHS Regulation section 40)	Yes	No	N/A
	Guidance: Managing the Work Environment and Facilities Code of Practice 2011			
1.1	Does the layout of the workplace allow all people to enter and exit the workplace safely? This includes workers, visitors, members of the public, retail and delivery personnel.	☐	☐	☐
1.2	Does the layout of the workplace allow all people to move within it safely?	☐	☐	☐
1.3	Are slip, trip and fall hazards identified and rectified?	☐	☐	☐
1.4	Does lighting enable each worker to carry out work safely, move around safely and safely evacuate in an emergency?	☐	☐	☐
1.5	Are measures in place to prevent unauthorised access or operation to the following, 24 hours a day:			
	• restricted areas e.g. kilns, burners, buildings	☐	☐	☐
	• unattended plant e.g. mobile plant, saw benches, chippers etc.	☐	☐	☐
	• tools and equipment?	☐	☐	☐

2.0	**Facilities and housekeeping** (WHS Regulation section 41)	Yes	No	N/A
	Guidance: Managing the Work Environment and Facilities Code of Practice 2011			
2.1	Is there an adequate number of toilets and hand washing facilities?	☐	☐	☐
2.2	Is drinking water available and accessible?	☐	☐	☐
2.3	Are lunch facilities provided?	☐	☐	☐
2.4	Are showers provided where necessary?	☐	☐	☐
2.5	Are facilities cleaned on a regular basis, at least daily?	☐	☐	☐
2.6	Are bins located at suitable points and emptied regularly?	☐	☐	☐
2.7	Are oily rags and combustible refuse kept in covered metal containers?	☐	☐	☐
2.8	Are spill management procedures in place and are there suitable cleaning equipment/materials provided?	☐	☐	☐
2.9	Are work areas cleaned following use?	☐	☐	☐

	3.0 **First aid** (WHS Regulation section 42)	**Yes**	**No**	**N/A**
	Guidance: First Aid in the Workplace Code of Practice 2014			
3.1	Does the workplace have first aid facilities?	☐	☐	☐
3.2	Are they appropriate for the nature of the incidents likely to be incurred at the workplace?	☐	☐	☐
3.3	Are the first aid supplies current and in a well-maintained state?	☐	☐	☐
3.4	Are the locations of first aid kits clearly identified?	☐	☐	☐
3.5	Are there first aid officers on site?	☐	☐	☐
3.6	Are their certificates/qualifications current?	☐	☐	☐
3.7	Are records kept of any first aid treatment given by the first aid officer and reported to managers?	☐	☐	☐

	4.0 **Emergency plans** (WHS Regulation section 43)	**Yes**	**No**	**N/A**
	Guidance: Managing the Work Environment and Facilities Code of Practice 2011			
	Template: Emergency Plans fact sheet			
4.1	Is there an emergency policy which includes an emergency plan, covering relevant emergency situations, with clear emergency procedures?	☐	☐	☐
4.2	Is the policy accessible by all workers?	☐	☐	☐
4.3	Are workers, managers and supervisors provided with information, training and instruction in the procedures?	☐	☐	☐
4.4	Are emergency contact details relevant to the types of possible threats displayed at the workplace in easily accessible locations? E.g. fire, police, poison information centre etc.	☐	☐	☐
4.5	Does your emergency policy include a documented site plan that illustrates the location of fire protection equipment, emergency exits and assembly points?	☐	☐	☐
4.6	Is your site plan displayed in key locations throughout the workplace?	☐	☐	☐
4.7	Does the workplace have emergency equipment to deal with the types of emergencies that may arise?	☐	☐	☐
4.8	Is the fire protection equipment suitable for the types of risks at the workplace?	☐	☐	☐
4.9	Is firefighting equipment easily accessible in an emergency?	☐	☐	☐
4.10	Are emergency exits clearly marked and free from obstruction?	☐	☐	☐
4.11	Are workers trained to use emergency equipment?	☐	☐	☐
4.12	Have you considered neighbouring businesses and how you will let them know about an emergency situation should one arise?	☐	☐	☐
4.13	Have you considered the risks from neighbouring businesses? E.g. fire from neighbouring land.	☐	☐	☐
4.14	Are emergency practice runs regularly undertaken to assess the effectiveness of the emergency plan? E.g. evacuation drills.	☐	☐	☐

	5.0 **Remote and isolated work** (WHS Regulation section 48)	**Yes**	**No**	**N/A**
	Guidance: Managing the Work Environment and Facilities Code of Practice 2011			
5.1	Is there a policy and procedure in place to ensure that mobile or remote workers have access to clean drinking water, toilets, dining facilities, hygienic storage of food and water, and emergency and first aid assistance?	☐	☐	☐
5.2	Can mobile or remote workers access emergency communications that are reliable in their location, such as a satellite or mobile phone?	☐	☐	☐

	6.0 **Traffic management** (WHS Regulation part 3.1)	**Yes**	**No**	**N/A**
	Guidance: Traffic Management General guide; Workplace Traffic Management Information sheet			
6.1	Is there a traffic management policy and procedures in place that manages:			
	• the desired flow of pedestrian and vehicle / forklift (shared zones) movements	☐	☐	☐
	• the expected frequency of interaction between vehicles and pedestrians	☐	☐	☐
	• roles and responsibilities of people in relation to traffic management	☐	☐	☐
	• how short term, mobile work or complex traffic situations will be managed	☐	☐	☐
6.2	Does the policy include a sketch or illustration of the worksite?	☐	☐	☐
	This should show the location of traffic routes, pedestrian walkways, barriers and signage, loading/unloading bays, carparks, maintenance bays, work areas and buildings.			

		Yes	No	N/A
6.3	Is traffic management included in the following components of the work health and safety management system:	☐	☐	☐
	• hazard identification	☐	☐	☐
	• hazard /risk management register	☐	☐	☐
	• site inspections/audits	☐	☐	☐
	• contractor management (e.g. codes of conduct and quality standards)	☐	☐	☐
	• procurement of new equipment (e.g. safety devices on mobile plant)?	☐	☐	☐
6.4	Is information and instruction about safe traffic and pedestrian movement around the workplace provided at induction to workers and in advance to visitors, contractors and external delivery drivers?	☐	☐	☐

		Yes	No	N/A
7.0	**Stacking and storage (timber)** (WHS Regulation part 3.1)			
	Guidance: Forestry: Guide to managing risks of loading, transporting and unloading logs			
7.1	Is there a policy and procedure detailing all risks and controls for stacking and storing logs and undressed and dressed timber, which includes safe methods of working in stacking and storage areas?	☐	☐	☐
7.2	Do the procedures include:	☐	☐	☐
	• public protection	☐	☐	☐
	• safe stacking of logs	☐	☐	☐
	• building stable sawn timber packs	☐	☐	☐
	• slinging and lifting of loads?	☐	☐	☐
7.3	Is any pallet racking engineered designed, safe for use and conforms with manufacturers specifications?	☐	☐	☐
7.4	Have workers received information, training and instruction on stacking and storing logs and boards?	☐	☐	☐

		Yes	No	N/A
8.0	**By-product and waste management** (WHS Regulation part 3.1)			
8.1	Are there documented procedures and controls for by-product and waste management?	☐	☐	☐
8.2	Are all hazards associated with storage, management and disposal of by-products and waste been identified?	☐	☐	☐
	Hazards may include: pollution, spontaneous combustion, collapse, engulfment, entrapment.			
8.3	Have all identified hazards associated with storage, management and disposal of by-products and waste been controlled?	☐	☐	☐
8.4	Are workers provided with information, training and instruction on the correct management and disposal methods of by-products and waste? E.g. saw dust, chip, fire wood, bark etc.	☐	☐	☐

		Yes	No	N/A
9.0	**Noise** (WHS Regulation part 4.1)			
	Guidance: Managing Noise and Preventing hearing loss at Work Code of Practice 2013			
9.1	Has the level of hazardous noise from plant and machinery been measured and assessed?	☐	☐	☐
9.2	Have steps been taken to control the level of noise emitted from plant and equipment and other noisy areas?	☐	☐	☐
9.3	If personal hearing protective devices are required, are the provided devices suitable and worn by workers?	☐	☐	☐
9.4	Are areas where people may be exposed to hazardous noise sign-posted as hearing protector areas and the boundaries of these areas clearly defined?	☐	☐	☐
9.5	Have all workers received training, information and instruction in the proper use, fit, care and maintenance of personal hearing protectors?	☐	☐	☐

		Yes	No	N/A
10.0	**Hazardous manual tasks** (WHS Regulation section 4.2)			
	Guidance: Hazardous Manual Tasks Code of Practice 2011 **Template:** Hazardous manuals tasks risk assessment worksheet			
10.1	Have all hazardous manual tasks at the workplace been identified?	☐	☐	☐
10.2	Do control measures in place safeguard workers and all people from hazards associated with manual tasks?	☐	☐	☐
10.3	Have all workers received training for using controls which have been developed and are workers trained on the procedures for hazardous manual tasks controls?	☐	☐	☐

		Yes	No	N/A
11.0	**Hot work** (WHS Regulation part 3.1, section 51 - 53)			
	Guidance: Welding Processes Code of Practice 2013			
11.1	Is there a hot work policy and procedure detailing the risks and controls for hot work hazards?	☐	☐	☐

		Yes	No	N/A
11.2	Does the procedure include a hot work permit?	☐	☐	☐
11.3	Have all workers received information, training and instruction for hot work prior to conducting hot work, including contractors required to complete hot work whilst on site?	☐	☐	☐

		Yes	No	N/A
12.0	**Confined spaces** (WHS Regulation part 4.3)	**Yes**	**No**	**N/A**
	Guidance: Confined Space Code of Practice 2011			
12.1	Is there policy and procedure detailing the risks and controls associated with working in a confined space, including entering, working in, on or near a confined space and inadvertent entry?	☐	☐	☐
12.2	Does the procedure include a confined space entry permit?	☐	☐	☐
12.3	Does the procedure also detail specific control measures including:	☐	☐	☐
	• continuous communication and monitoring with the worker from outside the confined space by a standby person			
	• singnage	☐	☐	☐
	• isolation of connected plant and services	☐	☐	☐
	• controls to maintain safe atmosphere within the confined?	☐	☐	☐
12.4	Are there first aid and emergency rescue procedures to be followed in the event of an emergency in the confined space?	☐	☐	☐
12.5	Have all confined spaces or areas where entrapment can occur been identified with signage, locked and access restricted? E.g. kilns, hoppers, silos.	☐	☐	☐
12.6	Have all workers received information, training and instruction on confined spaces policy and procedures including contractors required to enter confined spaces?	☐	☐	☐

		Yes	No	N/A
13.0	**Falls** (WHS Regulation part 4.4)	**Yes**	**No**	**N/A**
	Guidance: Managing the risks of falls Code of Practice 2011			
13.1	Have all locations and tasks that could cause injury to workers due to falling been identified and controlled, including access to areas where work is to be carried out?	☐	☐	☐
13.2	Do control measures in place safeguard workers and all people from hazards associated with locations and tasks where workers could fall?	☐	☐	☐
13.3	Have all workers received information, training and instruction on controls which have been developed and procedures for preventing or minimising the risk of workers falling including any contractors?	☐	☐	☐

		Yes	No	N/A
14.0	**Machinery and equipment** (WHS Regulation part 3.1, section 203 and part 5.1 - 5.3)	**Yes**	**No**	**N/A**
	Guidance: Managing the risks of plant in the workplace code of practice 2013			
14.1	Have all hazards associated with the following plant and machinery that have the potential to cause harm to workers and other people been identified and controlled? *(Select items of plant used at this workplace.)*	☐	☐	☐

☐ Chainsaws   ☐ Conveyors

☐ Log debarker   ☐ Planing and sizing machines

☐ Log carriages   ☐ Kilns

☐ Saw benches   ☐ Chippers

☐ Docking saws   ☐ Stacking and strapping machines

☐ Round table or green chain   ☐ Portable power tools

☐ Breakdown saws   ☐ Other (please list): _____

☐ Multi rip saw/straight line edgers

		Yes	No	N/A
14.2	Do control measures in place safeguard workers and all people from hazards associated with plant and machinery?	☐	☐	☐

		Yes	No	N/A
14.3	If guarding is used in the workplace does it meet the below requirements:	☐	☐	☐
	• is of solid construction and securely mounted	☐	☐	☐
	• cannot be by-passed or disabled	☐	☐	☐
	• cannot be removed without the use of a tool	☐	☐	☐
	• is properly maintained	☐	☐	☐
	• allows for servicing, maintenance and repair if required	☐	☐	☐
	• if guarding is removed, the plant cannot be restarted unless the guard is replaced	☐	☐	☐
	• does not create a risk in itself (i.e. obstruct operator visibility)?	☐	☐	☐
14.4	Are operating procedures available and easily accessible to those who use the plant and equipment?	☐	☐	☐
14.5	Have workers been provided with information, training and instruction about operation procedures and checks for the machine and equipment they are operating?	☐	☐	☐
14.6	Are any emergency instructions and or signage relating to an item of plant clearly displayed on or near it?	☐	☐	☐
14.7	Are there isolation points on machinery and equipment to lockout controls, energy sources and other hazards when maintenance and cleaning tasks are being conducted?	☐	☐	☐
14.8	If emergency stops are fitted to machinery and equipment does it meet the following requirements:	☐	☐	☐
	• the stop control is prominent, clearly and durably marked and immediately accessible to each operator of the plant			
	• any handle, bar or push button associated with the stop control are coloured red	☐	☐	☐
	• the stop control cannot be adversely affected by electrical or electronic circuit malfunction	☐	☐	☐
	• in addition, where plant is designed to be operated or attended by more than one person and more than one control is fitted, the multiple controls must be of the 'stop and lock-off' type so that the plant cannot be restarted after a stop control has been used unless each activated stop control is reset?	☐	☐	☐
14.9	Are emergency controls tested and is this recorded?	☐	☐	☐
14.10	Are all operators controls clearly identified for functionality and within the operators reach?	☐	☐	☐
14.11	Does the working area allow workers to safely carry out work?	☐	☐	☐
14.12	Has design and/or item registration been undertaken for the required items of plant? E.g. pressure vessels, boilers, mobile cranes with rated capacity greater than 10 tonne etc.	☐	☐	☐
14.13	Are records of plant design and/or item registration kept and available?	☐	☐	☐

		Yes	No	N/A
15.0	**Mobile plant** (WHS Regulation part 3.1, section 214 - 215, part 13.1 division 4 and schedule 3)	**Yes**	**No**	**N/A**
	Guidance: Managing the risks of plant in the workplace code of practice 2013			
15.1	Have all hazards to workers and other people been identified and controlled? *(Select items of plant used at the workplace.)*	☐	☐	☐
	☐ forklifts (driven and pedestrian operated)	☐	☐	☐
	☐ loaders	☐	☐	☐
	☐ bobcats	☐	☐	☐
	☐ cranes	☐	☐	☐
	☐ tip trucks	☐	☐	☐
	☐ cherry pickers	☐	☐	☐
	☐ tractors	☐	☐	☐
	☐ other (*please specify*): _____	☐	☐	☐
15.2	Do control measures in place safeguard workers and all people from hazards associated with mobile plant?	☐	☐	☐

		Yes	No	N/A
15.3	If guarding is used in the workplace does it meet the below requirements:	☐	☐	☐
	• is of solid construction and securely mounted			
	• cannot be by-passed or disabled	☐	☐	☐
	• cannot be removed without the use of a tool	☐	☐	☐
	• is properly maintained	☐	☐	☐
	• allows for servicing, maintenance and repair if required	☐	☐	☐
	• if guarding is removed, the plant cannot be restarted unless the guard is replaced	☐	☐	☐
	• does not create a risk in itself (i.e. obstruct operator visibility)?	☐	☐	☐
15.4	Are all operators controls clearly identified for functionality and within the operators reach?	☐	☐	☐
15.5	Have workers been provided with information, training and instruction about operation procedures and checks for the mobile plant they are operating?	☐	☐	☐
15.6	Do workers who carry out high risk work, like operating a forklift, hold a high risk work licence?	☐	☐	☐

16.0	**Electrical equipment** (WHS Regulation part 3.1, ES Regulation part 6, division 6)	**Yes**	**No**	**N/A**
	Guidance: Electrical safety code of practice 2013 – Managing electrical risks in the workplace			
16.1	Are electrical items, power tools, leads and other electrical machinery tested and tagged?	☐	☐	☐
16.2	Are the test tags current?	☐	☐	☐
16.3	Is there a record of the regular testing of RCDs, circuit breakers and electrical safety switches?	☐	☐	☐
16.4	Are electrical switchboards identified with signage indicating the hazards associated with contact and entry?	☐	☐	☐
16.5	Are they all locked and with restricted access?	☐	☐	☐
16.6	Is there an inspection process to check and remove dust that creates a fire hazard when arcing occurs around electrical supply systems?	☐	☐	☐
16.7	Is there a register for all electrical equipment?	☐	☐	☐
16.8	Are maintenance and service requirements on electrical tools and equipment carried out?	☐	☐	☐
16.9	Are processes in place to prevent employees from removing the likes of handles and guards from power tools?	☐	☐	☐
16.10	Have visual observations and inspections been carried out to verify this?	☐	☐	☐

17.0	**Inspection and maintenance** (WHS Regulation section 237)	**Yes**	**No**	**N/A**
	Guidance: Managing the risks of plant in the workplace code of practice 2013			
17.1	Is plant regularly maintained, inspected and tested in accordance with manufacturer's specifications by a competent person? E.g. fixed, mobile, electrical, overhead cranes, slings and chains etc.	☐	☐	☐
17.2	Is there policy and procedure for isolating plant before maintenance or cleaning work is carried out?	☐	☐	☐
17.3	Are records for maintenance, inspection, service and maintenance of all plant kept and available? E.g. fixed, mobile, electrical, overhead cranes, slings and chains	☐	☐	☐
17.4	Are there maintenance and repair procedures and do they include or refer to additional requirements to ensure safety of maintenance personnel.	☐	☐	☐
17.5	Is there a documented process for reporting faults, requests for repairs etc.?	☐	☐	☐

18.0	**Hazardous chemicals** (WHS Regulation part 7.1)	**Yes**	**No**	**N/A**
	Guidance: Managing Risks of Hazardous Chemicals in the Workplace Code of Practice 2013			
18.1	Have all hazardous chemicals used in the workplace been identified and their details recorded in a hazardous chemicals register?	☐	☐	☐
18.2	Are there current (within five years of issue date) safety data sheets for each hazardous chemical kept at the workplace?	☐	☐	☐
18.3	Are all containers used for hazardous chemicals labelled in accordance with the globally harmonised system (GHS)?	☐	☐	☐
18.4	Are all hazardous chemicals used, handled and stored in accordance with the requirements of the safety data sheet for each chemical?	☐	☐	☐
18.5	Are placards used to communicate to workers, visitors and emergency services the presence of hazardous chemicals in quantities that exceed a placard quantity?	☐	☐	☐

18.6	If hazardous chemicals exceed the manifest quantity in column 5 of schedule 11 of the WHS Regulation, has WHSQ and Queensland Fire and Emergency Services been notified and has a copy of the manifest been placed in a red hazmat box inside the site near the main entry?	☐	☐	☐
18.7	Are gas bottles stored and secured appropriately? E.g. away from doorways and entrances.	☐	☐	☐
18.8	Workers have been provided with training on the handling, use and storage or hazardous chemicals kept at the workplace.	☐	☐	☐

19.0	**Wood dust** (WHS Regulation section 49 - 50)	**Yes**	**No**	**N/A**
	Guidance: Managing the Work Environment and Facilities Code of Practice 2011			
19.1	Have risks from wood dust including worker exposure, fire and explosion been identified?	☐	☐	☐
19.2	Has air monitoring been carried out if the level of exposure to workers is uncertain?	☐	☐	☐
19.3	Are a combination of controls used to prevent exposure to airborne wood dust?	☐	☐	☐
19.4	Have workers received training on risks associated with wood dust and how to use controls to minimise risk?	☐	☐	☐
19.5	Are 'M' class vacuums with a high efficiency particulate air (HEPA) filter used to clean surfaces and clothing instead of brooms or compressed air?	☐	☐	☐

20.0	**Asbestos** (WHS Regulation chapter 8)	**Yes**	**No**	**N/A**
	Guidance: How to Manage and Control Asbestos in the Workplace Code of Practice 2011			
20.1	Has an asbestos register been prepared for the workplace if it was built before 1 January 1990?	☐	☐	☐
20.2	Has an asbestos management plan been developed where asbestos has been identified at a workplace?	☐	☐	☐
20.3	Is a copy of the asbestos register and management plan available at the workplace?	☐	☐	☐
20.4	Is the presence and location of asbestos identified by a sign or label?	☐	☐	☐

Action plan template

Item no.	What is the issue?	How will it be fixed?	Who is responsible?	Who is involved?	When will it be done by?	Completion date

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