Lockout!

Safe practices for Isolation of all sources of energy in Sawmills

1 Timber Processing Information Sheet

What Is Lockout?

Lockout is the use of a lock to render machinery or equipment inoperable or to isolate an energy source. The purpose is to establish “zero energy”. This is where all sources of energy including electrical, pneumatic, hydraulic, mechanical and stored energy are isolated so that they pose no danger.

The purpose of zero energy and lockout is to prevent the release of an energy source that could activate moving parts on equipment or machinery.

Key Safety Messages

Hold Cards - are not considered to be best practice for lockout.

Emergency Stops/Electrical Interlocks - must not be used to routinely stop machinery or as a sole method of lockout.

Over-run of Machinery - any lockout procedure must ensure that entry is restricted until the machinery is stopped and/or provide braking systems.(as a rule of thumb any machine that takes more than 10 seconds to stop should have a system in place to ensure safe entry e.g. timed delayed interlocked gates)

Switch Gear – access to switch gear is by authorised persons only. The door to this equipment is to be locked at all times.

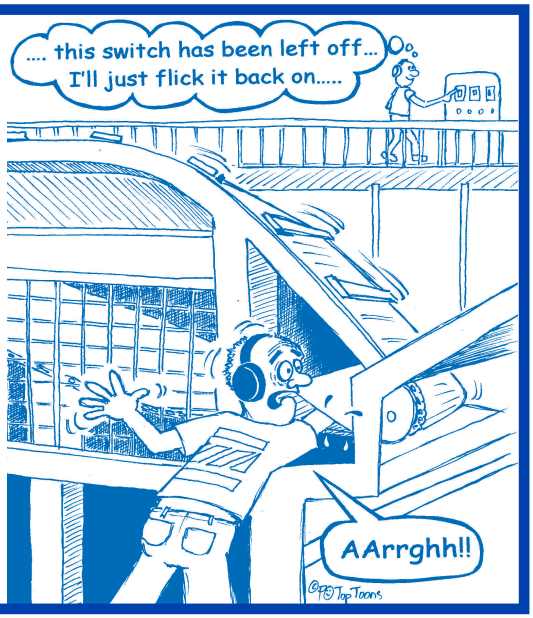
Why Lockout Is Important

- Employers, supervisors and employees all have individual responsibilities regarding lockout under the HSE Act.
- Lockout is important for operators, maintenance staff, contractors, cleaners and any other person required to work near moving parts of machinery.
- Every year, workers in New Zealand are killed or seriously injured because machinery or equipment was not properly locked out. For example, accidents where workers are caught in machinery can result in severed fingers, crushed limbs, or death. These accidents can be prevented if machinery is locked out properly.

Case Study

A worker noticed that the chains had dropped off the double idler sprocket at the bottom of the sawmill unscrambler. He turned the power off but did not lock out the power source. He then started to put the chains back on the sprocket.

Meanwhile, another worker noticed that the unscrambler was not running and turned the power back on. The machine started up and the worker suffered serious injuries.
A simple, effective lockout procedure would have prevented this injury.



When Lockout Is Not Required

Situations may arise during normal production work when some production-related work needs to be done. Follow these steps in making a decision about whether or not lockout is required during normal production work:

1. Decide if there is a risk of injury to workers from the movement of the machinery or equipment or exposure to an energy source while the activity is carried out. All sources of hazardous energy must be considered, such as pneumatic/hydraulic systems and suspended equipment that could roll or fall.
2. If there is no risk of injury, then lockout is not required (e.g. an operator would normally be in view of their control panel at all times)
3. If there is a risk of injury, decide if the machinery or equipment is effectively safeguarded to protect workers from the risk. If there are effective safeguards in place, then lockout is not required.
4. Safe work procedures must be followed during the activity.

Working on Energised Equipment

Sometimes machinery or equipment has to be energised for a specific task – for example, when making fine adjustments or doing troubleshooting that can only be done with part of the equipment working. In those cases, only the parts that are vital to the maintenance process may remain energised.

Work on energised equipment must only be performed by workers who:

- Are qualified to do the work.
- Have been authorised by the employer to do the work.
- Have been provided with and follow written safe work procedures (e.g. permit to work). This may also include additional supervision.

Five Basic Steps to Locking Out

Once you have determined that lockout is required, follow these five basic steps to locking out all sources of energy.

1. Identify the machinery or equipment that needs to be locked out.
2. Shut off the machinery or equipment. Make sure that all moving parts have come to a complete stop. Also ensure that the act of shutting off equipment does not cause a hazard to other workers.
3. Identify and de-activate the main energy-isolating device for each energy source. This may include:
   - Disconnecting the electrical power to the pump or compressor.
   - Closing the valve feeding the cylinder.
4. Apply a personal lock to the energy-isolating device for each energy source, and ensure that all parts and attachments are secured against inadvertent movement.
5. Test the lockout to make sure it's effective and to verify that each energy source has been effectively locked out.(First ensure that all workers are in the clear and that no hazard will be created if the lockout is not effective).
   - Test the lockout to make sure zero energy is effective. (e.g. press start button)
   - Test to make sure the pump or compressor won't start and that the flow doesn't bypass the valve.
   - Make sure there is no residual pressure in the lines, reservoirs, or accumulator feeding the cylinder. Bleed any residual pressure.
   - Check to ensure that there is zero energy in the system.(mechanically support any raised load.
   - Rule out inadvertent start up – consideration must be given to light beams, pressure sensors and computer controlled systems that may activate a machine automatically.

Group Lockout Procedure

If a number of workers are working on machinery or equipment — particularly if a large number of energy-isolating devices must be locked out - you can use a group lockout procedure. This procedure reduces the number of locks required and saves time.

Before implementing a group lockout, a knowledgeable person must plan the procedure ahead of time and develop a written group lockout procedure. This written procedure must be conspicuously posted at the place where the system is in use.

Continuity of Lockout

In some cases, lockout must be maintained between shift changes to maintain lockout continuity. Procedures must be implemented for shift or personnel changes. This includes the orderly transfer of control of locked-out energy-isolating devices between outgoing and incoming workers.

If locks have not been left on the control devices between shifts, then the workers coming on shift must ensure that lockout is re-established if necessary.

Releasing Machines From Lockout

Before releasing machine to production operations, the following steps should be observed by the workers who applied the devices:

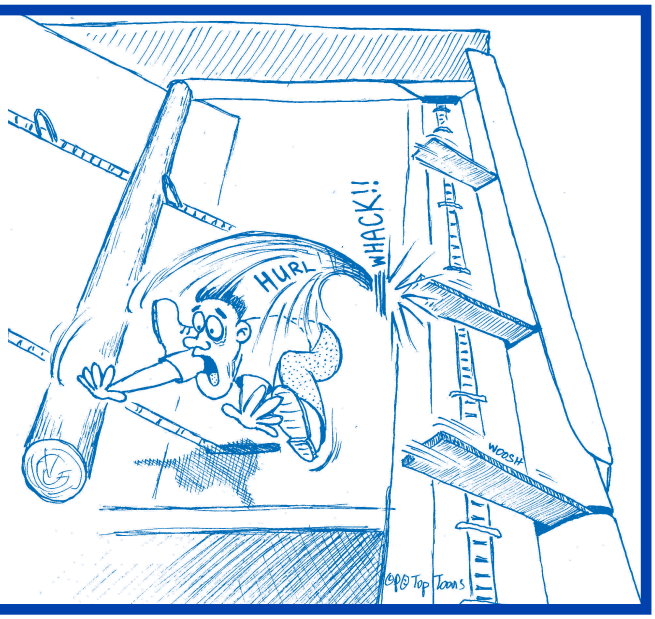
1. Remove all non-essential items (tools, spare parts etc.)
2 See that all equipment components are operationally intact, including guards and safety devices.
3. Inspect for obstructions, incomplete work, etc. Where necessary perform a team inspection using appropriately trained workers to check specifics such as hydraulics, pneumatics, etc.
4. Repair or replace safeguards or safety devices before removing lockouts.
5. Remove each lockout device following the correct removal sequence.
6. Make a visual check before restoring energy to ensure that every one is physically clear of the equipment.
7. Develop and follow a special procedure to ensure the integrity of the lockout where workers are not available to clear their personal locks due to sickness, absenteeism, etc.

Other Hazards

Correct lockout of a machine does not necessarily mean that there are no other hazards present. Be aware of such things as tripping and fall hazards, if working at height or in awkward locations. Safe working platforms must be provided in all areas a worker is likely to go.

Case Study

A worker turned off the log kickers and entered the machine to undertake work. He had to go in and out of the machine several times. The computer operated system was programmed to automatically activate the kickers every five logs i.e. every fifth time the light beam was broken. His injuries included a broken arm and severe bruising. Correct lockout should have included de-activating the light beam/computer control.



Employer Responsibilities For Lockout

The employer is responsible for establishing the lockout system to be implemented within the workplace. Procedures for lockout must be written. Depending on the size and complexity of the operation, other aspects of the lockout system may have to be established in writing – for example, emergency lock removal and multiple point lockout. These procedures become supplements to the health and safety program.

Each personal lock must be marked or tagged to identify the person who applies it. For example, the worker's name could be engraved on the lock or referenced by a serial number in a document.

Supervisor's Responsibilities For Lockout

Supervisors must ensure that correct lockout procedures are in place and being followed at all times. Routine monitoring of operator lockout procedures should be recorded by supervisors.

Employee Responsibilities For Lockout

All employees who work on machinery or equipment requiring lockout are responsible for:

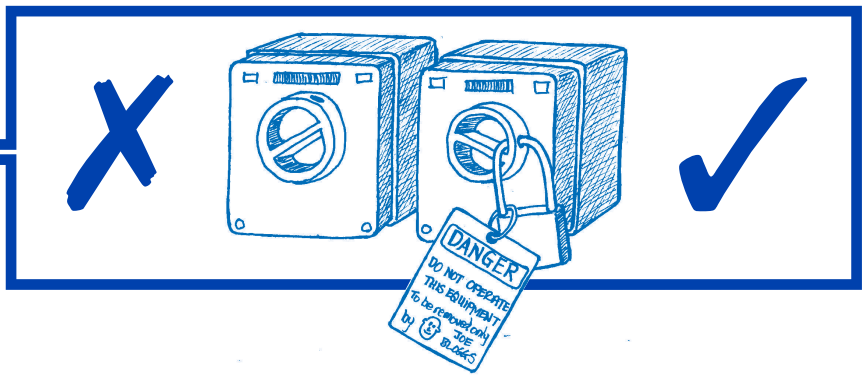
- Locking out the energy-isolating device.
- Removing their personal locks on the completion of their work.
- Keeping control of the keys to personal locks throughout the duration of the work.

Information and Training

Safe work procedures for maintenance, cleaners, contractors and production are essential. All must understand and use a well-established lockout systems.

Contractor Co-ordination

Companies must ensure that all contractors meet company lockout requirements before commencing a job.



Further Reading

- Guidelines For Guarding Principles and General Safety for Machinery. OSH 1995
- Guidance Notes for Electrical Interlocking for Safety in Industrial Processes. OSH 1994
- AS 4024 Part 1 1996: Safeguarding of Machinery
- European Standard EN 1037:1995 – comprehensive discussion of energy dissipation, isolation devices, locking devices and design strategies to prevent unintentional start-up

Further Information

This information sheet has been prepared by the "OSH ACC Rotorua Timber Processing Group" which consists of representatives from ACC, OSH and local timber processing companies. This leaflet contains notes on good practice which you may find helpful in considering what you need to do. It is a reference tool for **managers/supervisors/foremen** to help them ensure that safe working practices are being carried out at their timber processing sites.

Acknowledgements: Workers Compensation Board of British Columbia