Health and Safety - Lock-Out and Tag-Out Procedure

Section 1 - Summary

(1) The Lock-out and Tag-out system is used to ensure appropriate controls are in place to protect the safety of persons working on or near plant and equipment that is the process of being commissioned, cleaned, serviced, repaired or altered.

Section 2 - Scope

(2) This procedure applies all staff, students or contractors working with electrical plant or equipment across Victoria University.

Section 3 - Definitions

(3) Danger Tag - ‘Do not operate' Tag - A signed and dated label that is attached to energy isolation points of equipment , plant, pipes or lines by the person responsible for undertaking commissioning, repairs, maintenance, service alteration or cleaning. The Danger tag is used to indicate equipment isolation is in place and that plant or equipment must not be operated. It must only be removed by the person whose name is on the tag. Removal of a personal danger tag from an isolating device should be carried out as soon as possible after completing the work.

(4) Energy - A source of power including electrical, mechanical, pneumatic, hydraulic, chemical, thermal, gas, stored kinetic energy, gravity, radiation, fuels, battery or capacitor banks that has the potential to cause injury or damage property.

(5) Energy-isolating device - A lock out, quarantine device by which plant and equipment is removed from its source of energy and is prevented from being inadvertently operated, and may include any of the following:

a. manually operated circuit breaker;
b. disconnect switch;
c. manually operated isolating switch by which the conductors of a circuit can be disconnected;
d. line valve;
e. block;
f. or any similar device used to block or isolate energy.

(6) Isolation - Removing or disconnecting an energy source to prevent the inadvertent restoration of energy, through activation/start-up of installations, plant or equipment, or release of stored energy. Also prevents the introduction of contaminants found in pipes, drains etc especially important for potential engulfment within a confined space.

(7) Lock-out device - A device that prevents the inadvertent energising of an energy source on installations, plant or equipment.

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(8) Out-of-service tag - A yellow and black tag that is used to indicate that the relevant equipment is out of service and not to be used while the tag is connected to the equipment. The tag should be attached by a competent person having specific knowledge relating to the plant and, where applicable, be placed on devices which isolate energy sources, only when those devices are set in the “off” or “safe” position. Except in case of an emergency, out of service tags should be removed only by a person who is both familiar with the plant and fully conversant with the reason that the tag was placed.

(9) Plant, Machinery and Equipment - for the purpose of this Procedure plant, machinery and equipment is any piece of equipment that could potentially cause harm to anyone. Plant is defined in the OHS (VIC) Regulations to cover items such as lifts, cranes, pressure equipment, machinery, hoists, powered mobile plant, amusement structures, lasers, turbines, explosive-powered tools, scaffolds and temporary access equipment. In this Procedure plant, machinery and equipment can also cover items found across VU that may not be covered in the definition of plant.

Section 4 - Policy/Regulation

(10) Health and Safety Policy

Section 5 - Procedures

Part A - Summary of Roles and Responsibilities

Roles	Responsibility
Facilities Services manager, Executive Dean, Senior Managers/Directors	- Ensure this procedure is implemented in their areas /departments. - Ensure all nominated authorized/competent persons have been trained in this procedure. - Ensure that isolating devices are available to staff. - Ensure safe work instructions for equipment are developed and maintained, including isolation instructions where necessary.
Manager/Supervisor of the area where activity is being conducted	- Comply with the requirements for Executive Dean, Directors and Senior Managers above, and - Ensure that contractors are inducted in these procedures and their use, where relevant. - Ensure safe work instructions for equipment are maintained and available to staff and students. - Ensure the area and equipment is made safe before re-commencing work. - Ensure that isolation points are identified and locked or tagged out, along the route of each potential energy source, where applicable. - Ensure isolating devices and tags are prominently displayed and staff and students are aware of their location. - Ensure that people who undertake the service work are qualified/competent to carry out the work. - Ensure equipment is reactivated and guarding, interlock devices, and other safety mechanisms are in place and are operating adequately.
Person(s) completing the activity requiring isolating of equipment	- Be licensed (where applicable), skilled, qualified and competent to perform the work, including the use of any PPE or rescue equipment. - Identify hazards and determining appropriate controls with equipment. - Follow the requirements of this procedure - Replace all safety mechanism before returning the equipment to service if they have been removed/disengaged during work. - Ensure equipment and area safe on completion of the task.
OHS Team	- Provide health and safety advice as required. - Audit compliance to procedure as part of audit plan.

Part B - Procedure

Isolation Procedure

(11) The aim is to remove equipment from service to prevent injury to staff, students and contractors. This involves the following process:

a. If safe to do so, stop equipment and isolate each energy source according to safe work method statement (SWMS) or isolation documentation for the equipment.
b. Physical isolation, e.g. locking devices, cutting power cords, removal from service, must be put in place for equipment that presents a high risk to safety if used.
c. A caution Out of Service isolation tag must be completed, signed and secured to each isolation device in a prominent position. The manager/supervisor or responsible person must be notified of the equipment failure and isolation.
    i. An Out of Service Tag (yellow and black) is used to indicate that the equipment is out of service. It may be used by any person to isolate the equipment in order to indicate a fault in equipment. Tagged equipment must not be used until the Out of Service Tag has been removed. It may be remove by appropriate service people, technical staff, or supervisor after consultation and once equipment is deemed safe for use
    ii. An Out of Service tag must remain on the equipment until equipment is fully repaired and ready to be re-energized.

Requirements for Isolation Equipment

(12) When isolating or removing equipment from service, a preference must be given for isolation devices in combination with tags. A tag is not an effective isolation device. A tag acts only as a means of providing information to others at the workplace and a physical lock out system should be used in combination with a tag.

(13) Isolation must be done when there is a risk of:

a. Re-energizing equipment; or
b. Stored energy that has the potential to cause injury to personnel performing maintenance or repair on the equipment, where there is a likelihood that the equipment could be inadvertently re-energised.

Safe Work Method Statements (SWMS)

(14) Managers or Supervisors must develop SWMS for isolation, identifying hazards and to determine appropriate controls. This must include:

a. The situation under which the isolation procedure is to be implemented;
b. A description of how the isolation will be achieved;
c. The checks that need to be made before commencing the works;
d. Name and position of persons authorised to perform the work; and,
e. Any special requirements for the isolation of equipment or re-energisation.

Identification of energy sources

(15) Each significant energy source must be identified. Consider the following energy sources: electrical, fuels, heat, cold, stored mechanical energy, liquids and gases under pressure, gravity and radiation.

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Identification of isolation points

(16) Identify all isolation points on the equipment. Emergency stop buttons, land yards and similar stop devices on their own will not necessarily achieve isolation.

Isolation of all energy sources

(17) Each significant energy source must be purged or de-energised. Complete the following steps:

a. Ensure all electricity sources are isolated, some equipment may have independent electricity sources
b. If programmable logic devices are used to control equipment, then it is essential to use local isolating switches as the means to achieve secure and safe isolation.
c. Do not rely on the controls of the programmable logic devices for the isolation of equipment, unless the device is certified as a safety programmable logic controller (PLC) which can reliably isolate equipment by activating its controls.
d. Except in the case of equipment connected via plug a socket, a competent person should isolate and disconnect all electricity supply to an item of plant (not just the control circuit) so that equipment cannot be inadvertently energised via another source or control system.

De-energise Energy Sources

(18) Complete the following steps:

a. Inspect the plant to make sure all parts have stopped moving
b. Install ground wires
c. Relieve trapped pressure
d. Release the tension on springs, or block the movement of spring-driven parts
e. Block or brace parts that could fall because of gravity
f. Block parts in hydraulic and pneumatic systems that could move from the loss of pressure
g. Bleed the lines and leave vent valves open
h. Drain process piping systems and close valves to prevent the flow of hazardous material
i. If a line must be blocked where there is no valve, use a blank flange
j. Purge reactor tanks and process lines
k. Dissipate extreme cold or heat, or provide protective clothing, and
l. If stored energy can re-accumulate, monitor it to make sure it stays below hazardous levels.

Lock Out all Isolation Points

(19) Lockout all isolation points. If stored energy can re-accumulate, monitor it to make sure it stays below hazardous levels

Lock out devices

(20) A wide range of devices are available for locking out energy sources and other hazards that could pose a risk to people working on plant which includes:

a. Built in lock
b. Lockouts for circuit breakers
c. Fuses
d. All types of valves
e. Chains

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f. Safety lockout jaws (sometimes called hasps)

Isolation and danger tag

(21) Personnel must securely apply a completed and signed red, white and black danger tag and isolation device to each isolated energy source.

(22) Each person must check the isolation of the equipment and use individual tags and isolation devices on each of the isolation points along the route of the energy source

(23) A “danger” tag may only be removed by the person who applied and signed the tag, unless in an emergency

(24) Personal danger tags and out of service tags must not be used together on the same item of equipment as they relate to different circumstances. An out of service tag should be removed when a personal danger tag is added, and vice versa.

(25) Until all tags are removed, the equipment must remain out of service. Once removed, any tags must be destroyed and not reused.

Multiple Parties working on equipment

(26) If more than one person is working on the same plant, each person should attach their own lock to prevent the isolator being opened before all locks have been removed or opened. The isolation procedure should identify common lock out points to ensure energy cannot be restored while someone is still working on the plant.

(27) If two or more people are working on plant that is isolated through several lockout points, each person should attach a lock and tag to each lockout point.

a. The group that is responsible for the day to day operation of that plant has the primary responsibility for the safety.
b. If the repair, service or maintenance work is undertaken by another group or contractor, the laboratory/studio/workshop supervisor/coordinator must ensure that appropriate isolation procedures are being followed and that the other group or contractor is competent in the work and has been induced through Rapid global.

(28) In any case both parties must remove their own tags or locks on completion of the work.

Test Isolation

(29) Ensure that no one is at risk then try to re-energise the machinery. If isolation has been done correctly the equipment will remain safe.

Removal of isolation Tags or Devices

(30) Accidental removal of the isolation tag or device must be rectified immediately and notified directly to the supervisor/ coordinator to the laboratory/studio or workshop

(31) Locks and tags are only to be removed under the following conditions:

a. The worker who put on the tag and lock has determined it is safe to de- isolate and return to service.
b. There has been an appropriate handover from the worker to another worker and all personal lockout devices and danger tags have been replaced to identify the new worker.

(32) Where the worker cannot remove the lock-out device or cannot hand-over to another worker:

a. All reasonable effort should be made to contact the worker who put the isolation padlock and tag on the plant/equipment. A verbal authorisation to remove the isolation lock and tag can be obtained from the worker if received by 2 people.
b. If the worker is unable to be contacted then another suitably qualified and competent person must assess the status of the plant /equipment and ensure it is in a safe state to re-energise. This must be documented as a variation to the standard operating procedure and/ or work permit.

(33) Isolation tags and devices are not to be used for any other purpose other than those directed in this procedure.

Reinstating Equipment

(34) Re-energising of the equipment or section must be performed according to the reactivation procedure of the equipment or under the supervision of the laboratory/studio/workshop supervisor/coordinator, ensuring all energy sources are clear, safe to activate and that protective guarding or interlocks are operational

Section 6 - Guidelines

(35) Nil.

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