



Energy Isolation - LOTO FORM

Hazardous Energies Control Procedure

Equipment Name: _____ Building: _____ Location / Room Number: _____

Describe scope of work: 	Instructions: Follow the steps to create a written sequence for de-energizing, lockout, testing, and start-up of equipment requiring energy isolation (EI). Use completed procedure for safety meetings / training for the equipment-specific lockout process. Discuss with workers how equipment energy isolation – LOTO is applied to this specific equipment during these planned job / tasks. Also, discuss communication methods on the job site. (see continued instructions below)
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STEP 1: Survey and mark all energy sources	STEP 2: Note magnitude and type of each energy source	STEP 3: Note device and location of each energy disconnecting / isolation source / method	STEP 4: List sequence of EI (1-12)	
[X]	ENERGY SOURCE	MAGNITUDE / TYPE	ISOLATION / DEVICE / LOCATION / METHOD	[#]
	ELECTRICITY– Main power	Amps: Volts: # Phase:		
	ELECTRICITY– Control circuit(s)	Amps: Volts: # Phase:		
	BATTERY / SOLAR / ALT POWER AC / DC / PH:	Amps: Volts:		
	COMPRESSED AIR / GASES	PSI: Gas Type:		
	STEAM / CONDENSATE	PSI: Source:		
	FLUID UNDER PRESSURE	PSI: Source:		
	HEAT / COLD ±°C or ±°F	Temp: Source:		
	VACUUM CHAMBER / PIPING	Hg": Source:		
	FUEL(S) - SOLID / LIQUID / GAS	Volume: Fuel:		
	ROTATING WHEEL / FAN / DRIVE	Details:		
	SUSPENDED WEIGHT	Details:		
	MECHANICAL OTHER:	Details:		

Instructions (contd.): Isolate energy sources in sequence. Assure each worker installs their own lock on each disconnect location. Supervisor/Authorized Person installs warning tags. Verify Energy Isolation prior to starting work. When testing / jogging equipment, follow program procedures on the back of this form. When restoring equipment to operation, reverse isolation sequence unless otherwise discussed / approved by the Project Supervisor. Use Personal Protective Equipment and safety equipment as noted below during work activities. Contact EH&S for technical support or concerns at (209) 228-3347.

STEP 5: Mark and check off all PPE and safety equipment to be used for Energy Isolation.										PROCEDURE PREPARED BY:		
[x]	PPE TO BE WORN DURING WORK					[x]	SAFETY EQUIPMENT TO BE USED DURING WORK					
	Goggles	Face Shield	Weld Gear				Fire Extinguisher	Fire Watcher			(PRINT NAME)	
	Boots	Steel Toe	Rubber	Other			Lines Blinded & Tagged					SIGNATURE / DATE:
	Gloves	Leather	Rubber	Insulated			Valves / Switches – Locked & Tagged					
	Respirator	Dust	Chemical				Remove Flammables / Combustibles					ANNUAL REVIEW COMPLETED BY:
	Thermal	Heat	Cold Protection				Bleeders Locked Open & Tagged					
	Apron	Wet Gear	Other				Shields	Arc Curtain	Heat Blanket			(PRINT NAME)
	Safety harness		Lanyard & Line				Blocks	Barricades	Bars	Chains		SIGNATURE / DATE:
	Other: _____						Tools	Insulated	Long Handle			

NOTE: This procedure must be strictly followed to ensure protection of all persons involved. Return completed form to UC Merced Facilities B- 5200 North Lake Road, Merced, CA 95338
NOTE on SHIFT CHANGES: If this procedure lasts more than one work shift, the oncoming persons will apply their locks and tags before the departing shift removes their locks and tags.



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<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Standard Energy Isolation – Lockout / Tagout (LOTO) Procedure</p>	<ol style="list-style-type: none"> 1. All maintenance personnel are issued a suitable lock (or locks for multiple energy sources). Each lock has the individual worker's name or other identification on it. Each worker has the only key to the lock / lock set. 2. The Qualified Person checks to be sure that no one is operating the machinery BEFORE turning off energy sources. All persons in the area, and especially the machine operator and project supervisor, are informed before the energy sources are being turned off because unexpected sudden loss of power could cause an accident. 3. Steam, air, and hydraulic piping or tanks must be bled, drained, and/or brought to atmospheric pressure and locked "open" to assure no pressure or vacuum in piping or in reservoir tanks. 4. Gas cylinders must be locked 'closed' and if possible disconnected from distribution piping. 5. Any mechanical component that could roll, shift or otherwise move, such as springs, counterweights, wheels, fan blades, etc. must be chained, barred or blocked. 6. Each person who will be working on the machinery must put a lock on each of the machine's lockout device(s). Each lock must remain on the machine until the work is completed. Only the worker who placed the lock may remove their lock. 7. The Supervisor or "Qualified Person" places a tag on each lock-out location. 8. All energy sources which could activate the machine must be locked or blocked out following an equipment-specific EI-LOTO Procedure developed for that equipment. (Other side) 9. All disconnects must be tested to ensure that all energy sources to the machine are off. 10. Electrical circuits must be checked by qualified persons with proper and calibrated electrical testing equipment. Stored energy in electrical capacitors must be safely discharged. 11. CAUTION: Return disconnects and operating controls to the "off" position after each test. 12. Attach accident prevention tags which give the reason for placing the lock/tag, the name of the person placing the lock/tag, how they may be contacted, and the date and time the lock/tag was placed.
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Testing / Adjusting Equipment During LOTO</p>	<p>In many maintenance and repair operations, machinery must be tested and therefore energized before additional maintenance work can be performed. For such situations, this procedure must be followed:</p> <ol style="list-style-type: none"> 1. Clear all personnel to safety. 2. Clear away tools and materials from equipment. 3. Remove blocks and lockout devices and re-energize systems, following the established safe procedure. 4. Proceed with tryout or test. 5. Shut off all energy sources reinstalling lockouts on energy sources, reinstall blocks, bleed all pressure systems and verify all energy sources de-energized prior to continuing work. <p>Equipment design and performance limitations may dictate that effective alternative worker protection be provided when the established lockout procedure is not feasible. If machinery must be capable of movement in order to perform a maintenance task, workers must use extension tools, personal protective equipment and other means to protect themselves from moving parts and potential injury.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Restoring Equipment to Service</p>	<p>After the work is completed and the equipment is ready to be returned to normal operation, this procedure must be followed:</p> <ol style="list-style-type: none"> 1. Remove all non-essential items. 2. See that all equipment components are operationally intact, including reinstalling guards and safety devices. 3. Repair or replace defective guards before removing locks. 4. Remove each lockout device using the correct removal sequence. 5. Make a visual check before restoring energy to ensure that everyone is physically clear of the equipment. <p>Each lock is removed by the qualified person that applied it, or under his/her direct supervision. If the qualified person is absent from the work place then the lock or tag can be removed by a qualified person designated to perform this task provided that the immediate supervisor:</p> <ol style="list-style-type: none"> 1. Verifies that the qualified person is not present and therefore unable to remove the lock; 2. Makes all reasonable efforts to inform the qualified person that the lockout/tagout device has been removed; and 3. Ensures that the qualified person knows their lockout/tagout device has been removed before their work resumes. <p>Finally, notify any "Affected Person(s)" that equipment has been restored to its operational state.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Joint Projects</p>	<p>If University personnel and contractor personnel are working on the same piece of equipment, each work team installs their own hasp and locks on each energy source. The University provides the hasps that University personnel install their locks on, and the Contractor provides their hasps and locks that their personnel install / use.</p>

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