Standard Operating Procedure (SOP): Safety Lockout/Tagout (LOTO) Protocols During Maintenance

This SOP details the **Safety lockout/tagout (LOTO) protocols during maintenance** to prevent accidental machine startup and ensure worker safety. It covers procedures for identifying energy sources, isolating equipment, applying locks and tags, verifying de-energization, authorized personnel responsibilities, and steps for safely restoring equipment to service. The goal is to minimize risks of injury by controlling hazardous energy during maintenance activities.

1. Purpose

To establish protocols for the effective lockout and tagout of equipment to prevent accidental energization, ensuring worker safety during maintenance or servicing activities.

2. Scope

This SOP applies to all employees and contractors involved in maintenance, repair, cleaning, or servicing of machinery and equipment at the facility.

3. Definitions

- **Lockout:** Placement of a lock device on an energy-isolating device to ensure equipment cannot be operated until lock is removed.
- **Tagout:** Placement of a tag on an energy-isolating device as a warning not to operate the equipment.
- **Authorized Employee:** Person who performs lockout/tagout procedures and maintenance.
- **Affected Employee:** Person who operates or uses the machine/equipment or works in an area where LOTO is applied.
- **Energy-isolating device:** Mechanical device that physically prevents the transmission or release of energy (e.g., breaker, valve, disconnect switch).

4. Responsibilities

- **Authorized Personnel:** Perform all steps of LOTO and verify de-energization.
- **Supervisors:** Ensure personnel are trained and procedures are followed.
- **Affected Employees:** Comply with instructions and do not interfere with locked/tagged equipment.

5. Procedure

1. **Preparation**
   - Identify all energy sources (electrical, mechanical, hydraulic, pneumatic, thermal, chemical, etc.) associated with the equipment.
   - Notify affected employees of the intended lockout/tagout and reason for maintenance.
   - Review equipment-specific LOTO procedures if available.

2. **Shutdown**
   - Turn off the equipment using normal shutdown procedures.

3. **Isolate Energy Sources**
   - Physically isolate all identified energy sources using energy-isolating devices (switches, breakers, valves, etc.).

4. **Application of Locks and Tags**
   - Place **lockout devices** on each energy-isolating device.
   - Attach a **tagout device** indicating "Do Not Operate," the name of the person applying it, and the date/time.

5. **Release Stored Energy**
   - Safely release, bleed off, or restrain any stored or residual energy (e.g., discharge capacitors, bleed hydraulic lines).

6. **Verification of Isolation**
   - Attempt to operate controls to verify equipment does not start.

- Use appropriate testing equipment to confirm all energy sources are isolated.

7. **Maintenance/Servicing**
   - Perform required maintenance or servicing.

8. **Restoration of Equipment to Service**
   - Remove tools and nonessential items; ensure all personnel are clear.
   - Remove locks and tags (each only by person who applied them).
   - Re-energize energy sources in accordance with standard procedures.
   - Notify affected employees that maintenance is complete and equipment is ready for use.

6. LOTO Documentation

Date	Equipment	Maintenance Task	Authorized Employee	Lock/Tag ID	Time Locked Out	Time Restored
YYYY-MM-DD	[Machine Name/ID]	[Task]	[Employee Name]	[Lock # / Tag #]	[HH:MM]	[HH:MM]

7. Training

- All authorized and affected employees must receive LOTO training before performing or working near maintenance operations.
- Training topics include hazards of uncontrolled energy, procedures, equipment-specific steps, and emergency protocols.

8. Review and Audit

- LOTO procedures should be reviewed at least annually.
- Any incidents, near-misses, or changes in equipment must trigger a review of LOTO protocol.

9. References

- OSHA 29 CFR 1910.147 - The Control of Hazardous Energy (Lockout/Tagout)
- Manufacturer equipment manuals