LOCK OUT TAG OUT – AUTHORIZED EMPLOYEES ACHIEVING ZERO ENERGY

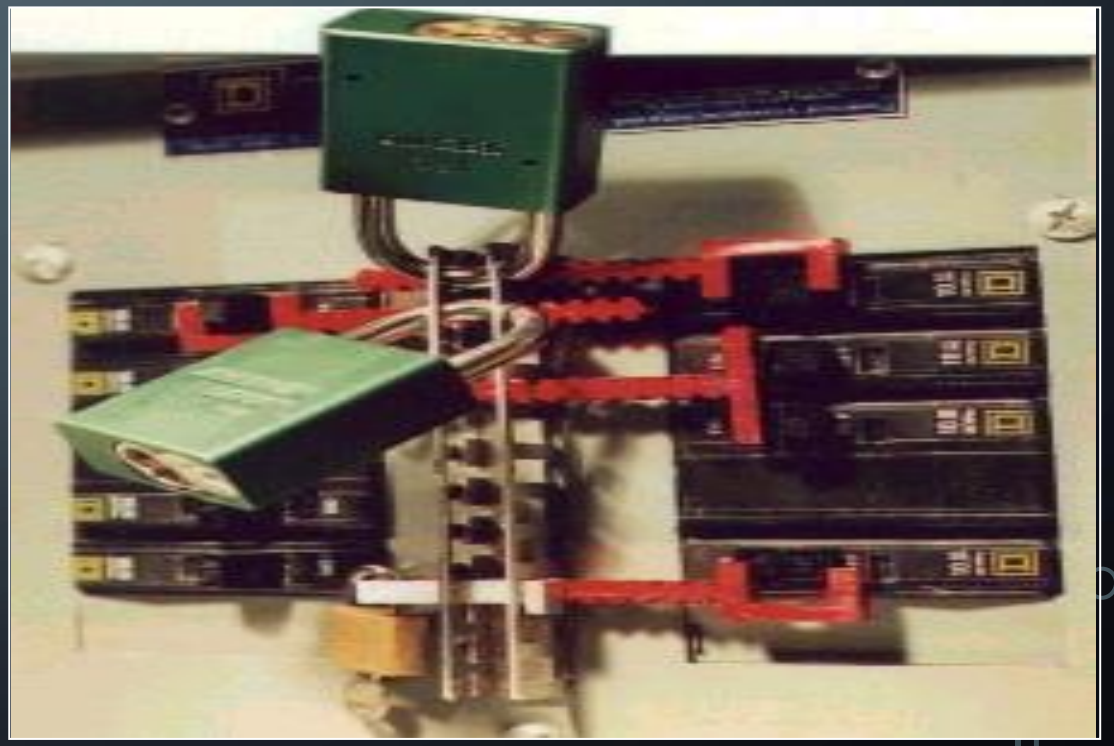
THIS IS YOUR LIFE WE ARE TALKING ABOUT

BY RALPH HALL, OHST, CEST, 2022

- ✓ Describe what a lock out is.
- ✓ Identify the specific steps required to establish a zero-energy safe work condition.
- ✓ List the minimum requirements to establish a lock out/tag out plan.
- ✓ Describe responsibilities of an authorized person.
- ✓ Explain the six steps for a lock out/tag out.
- ✓ Identify the requirements for a complex lock out.
- ✓ Identify the proper safety of testing for zero energy.
- ✓ Identify the Lock out equipment requirements.
- ✓ Describe the guarding standard from OSHA.

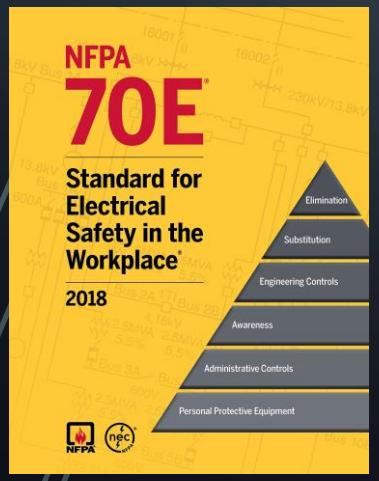
OSHA STANDARD 1910.147

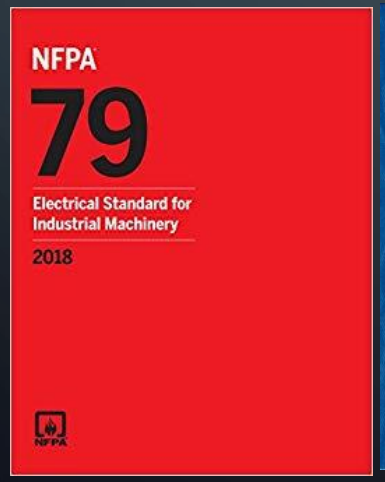
The practices and procedures necessary to disable machinery or equipment, thereby preventing the release of hazardous energy while employees perform service or maintenance activities.

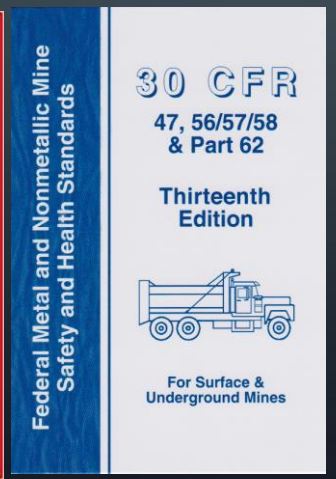


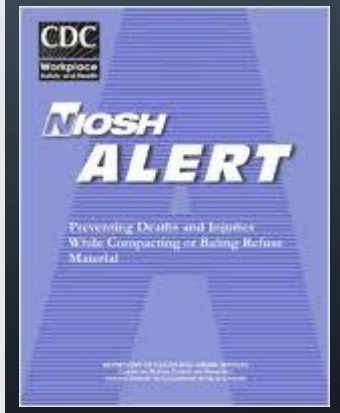
LOCK OUT/TAG OUT STANDARDS

- OSHA 1926.417 Lock out/tag out construction standard.
- OSHA 1910.147 Lock out/tag out general industry mechanical.
- OSHA 1910.333(b)(2) Lock out/tag out general industry electrical. This is the 6-step proscriptive procedure for deenergizing and 4 steps for reenergizing equipment.
- NFPA 70E 120.1 Electrical Lock out/tag out program.
- NIOSH 2011-156 Lock out/tag out program.
- MSHA 56/57.14105 Lock out/tag out.



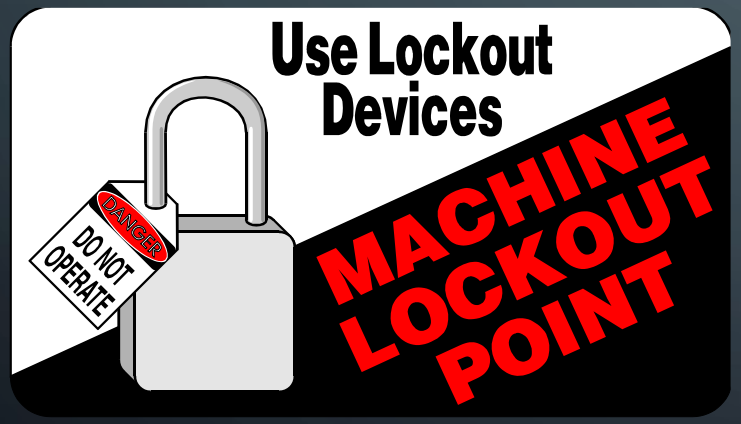






Scope, Application & Purpose

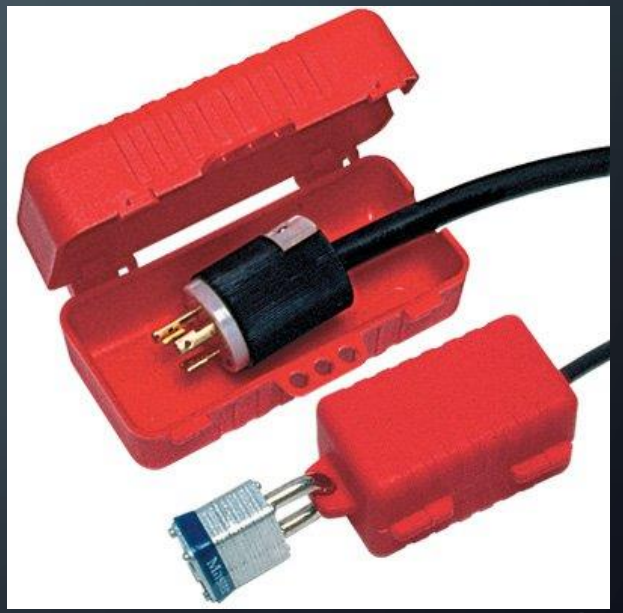
This standard covers the **servicing** and **maintenance** of machines and equipment in which the **unexpected energization** or **start up** of the machines or equipment, or **release of stored energy,** could cause injury to employees.



SUBPART S - SCOPE

Covers electrical installations and equipment installed on or used within buildings and structures, including:

- ✓ Yards
- ✓ Carnivals
- ✓ Parking lots
- ✓ Mobile homes and recreational vehicles
- ✓ Industrial substations
- ✓ Conductors on the premises



SUBPART S – SCOPE *(CONTINUED)*

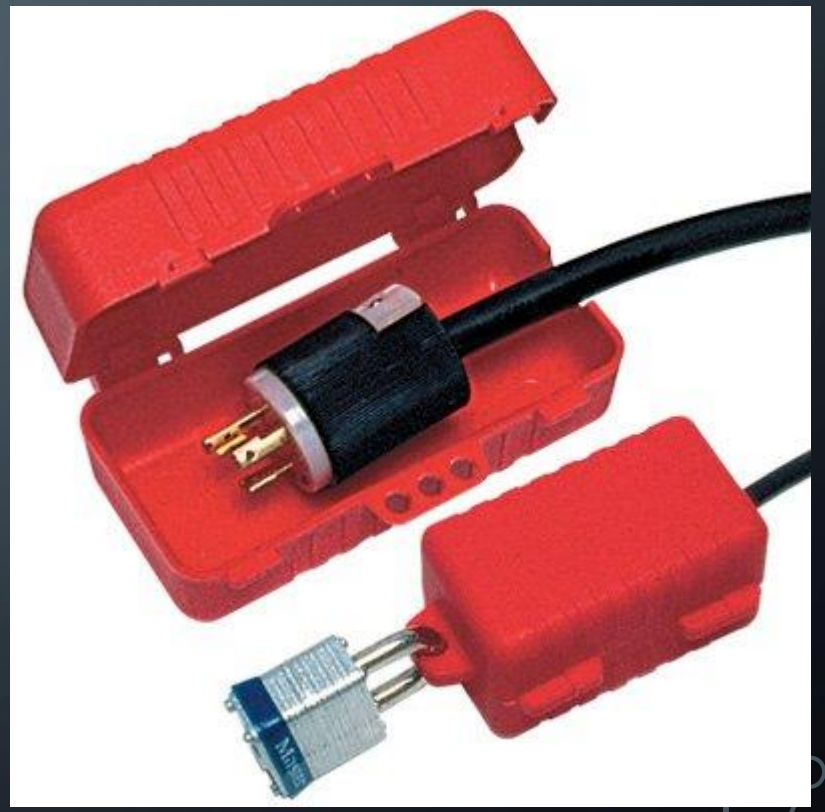
Does **NOT** cover the following installations:

- ✓ Ships, watercraft, railroad rolling stock, or automotive vehicle unless recreational or mobile homes
- ✓ Underground in mines
- ✓ Railways
- ✓ Communication equipment (communication utilities)
- ✓ Electrical installation under the **exclusive control of electric utilities** for metering, or **generation**, control, transformation, **transmission and distribution** of electric energy

Scope, Application & Purpose

Standard does not apply to:

- Work on cord and plug connected electric equipment
  - Exclusive Control
  - Power generation and transmission



Scope, Application & Purpose

Under normal daily conditions, employees who are using their machines as trained and within the guidelines of the manufacturer, are automatically protected from hazardous energy sources.

Scope, Application & Purpose

Servicing or maintenance during normal production operations must have LOTO if:

Remove or bypass a guard or other safety device

Required to place any part of his or her body into the point of operation

An associated danger zone exists during a machine operating cycle.

Defining Lockout/Tagout

Lockout: Physically lock access to a circuit or valve that supplies energy to the equipment.

Tagout: Placing a tag on the lockout device to warn others that the equipment must not be restarted, and who is qualified to remove the tag

Lock won't protect unless co-workers know you're working on the equipment

Leading Causes of Injury

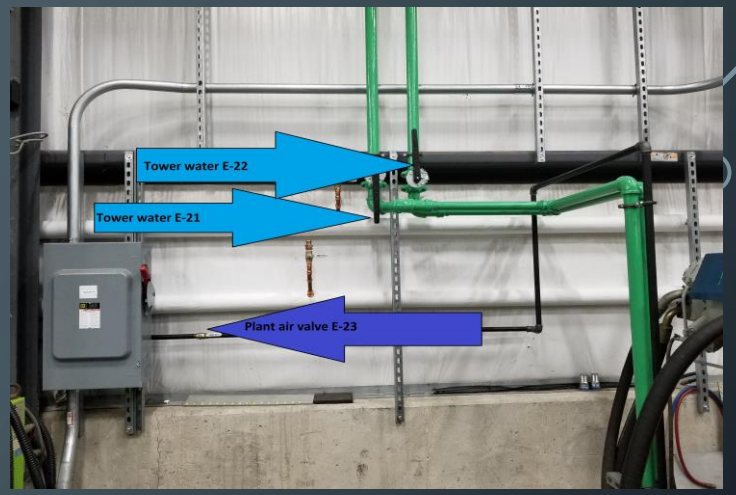
When a worker either removes machinery safeguards or bypasses other safety systems like interlocks or presence sensing devices resulting in **exposure to hazards from the point of operation**;

When a worker must place any part of his/her body **in contact with the point of operation** of the piece of equipment;

When the worker must **place any part of his or her body or enter a danger zone** associated with a machine operating cycle.

TERMS YOU NEED TO KNOW

- **Energy source**: This is what makes the machine or equipment move or operate.



- **De-energize** (**zero energy**): the process to disconnect a system from a source of energy in order to prevent the release of that energy.

TYPES OF ENERGY

THERMAL
HYDRAULIC
PNEUMATIC
ELECTRICAL
CHEMICAL
MECHANICAL
RADIOACTIVE
STORED ENERGY

DEFINITION OF LOCKOUT

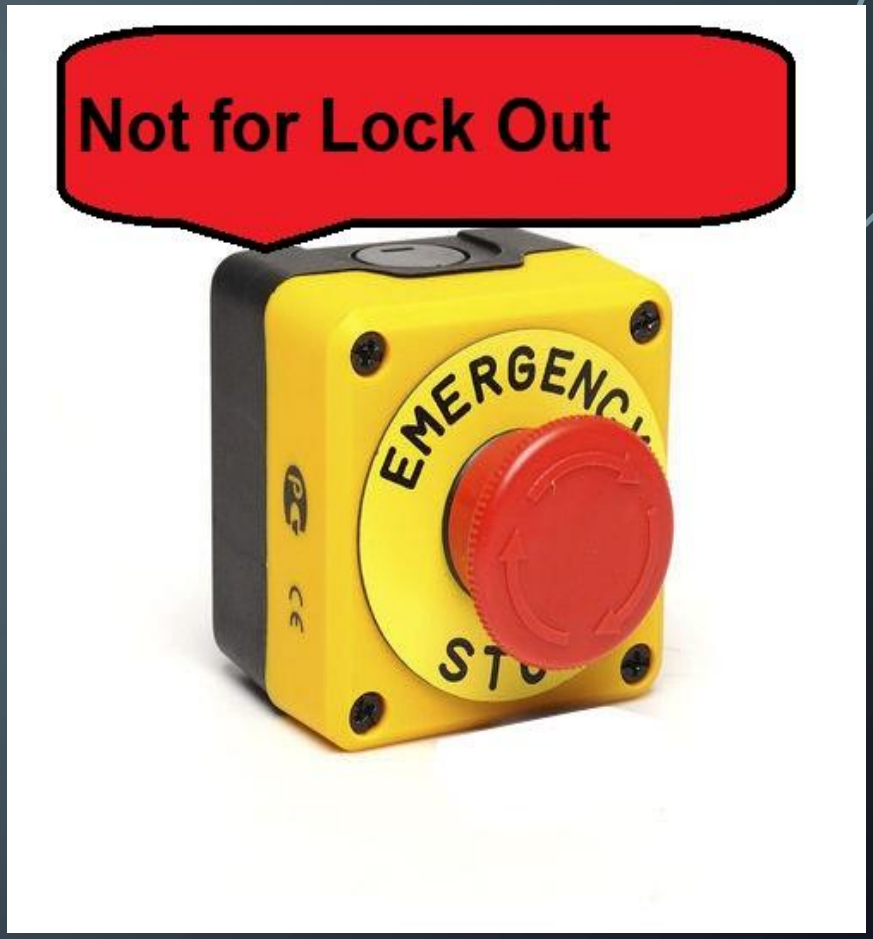
The Placement of a Lockout Device on an Energy Isolating Device, in Accordance With an Established Procedure, Ensuring That the Energy Isolating Device and the Equipment Being Controlled *Cannot Be Operated* Until the Lockout Device Is Removed.

OTHER DEFINITIONS

- Energy Isolating Device--Mechanical device that physically prevents the transmission or release of energy (disconnect switch, line valve, manually operated circuit breaker)

- Lockout Device – Device that utilizes a positive means to hold an energy isolating device in a safe position and prevent energization.

- Control circuitry devices - push buttons, selector switches, and interlocks, **ARE NOT** energy isolating devices



TERMS YOU NEED TO KNOW

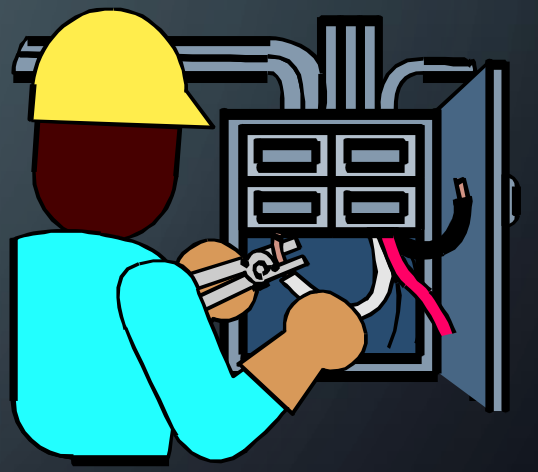
- **Affected employee:** their job requires them to operate a system that is being locked out to be worked on. They must understand lockout/tagout procedures.
- **Authorized:** An individual that is **qualified** to control the hazardous energy sources because of their knowledge, training and experience, and is assigned to engage in such control. They must inform workers when/why they are servicing equipment.
- **All Others:** Anyone working in the area.

TRAINING REQUIREMENTS
Authorized employee

Recognition of Hazardous Energy Sources

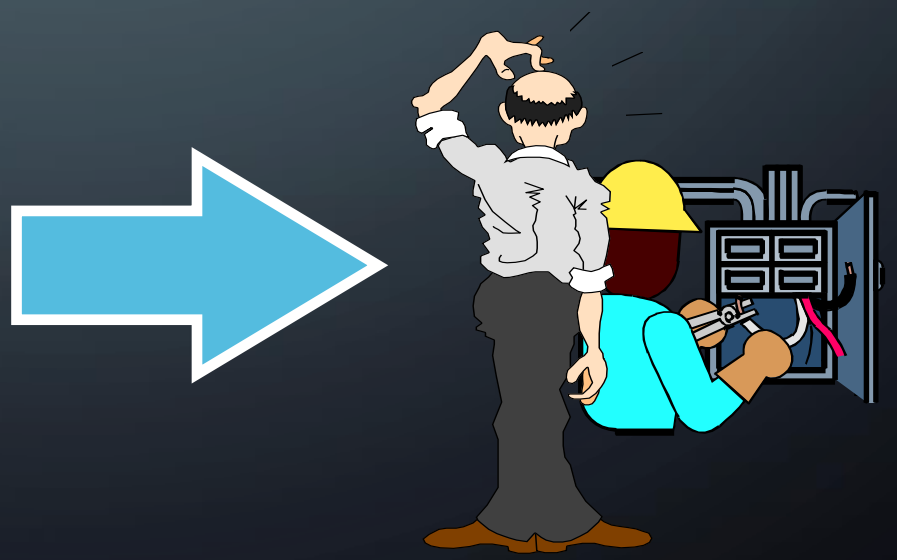
Type and Magnitude Energy Sources

Energy Isolation and Control Methods.



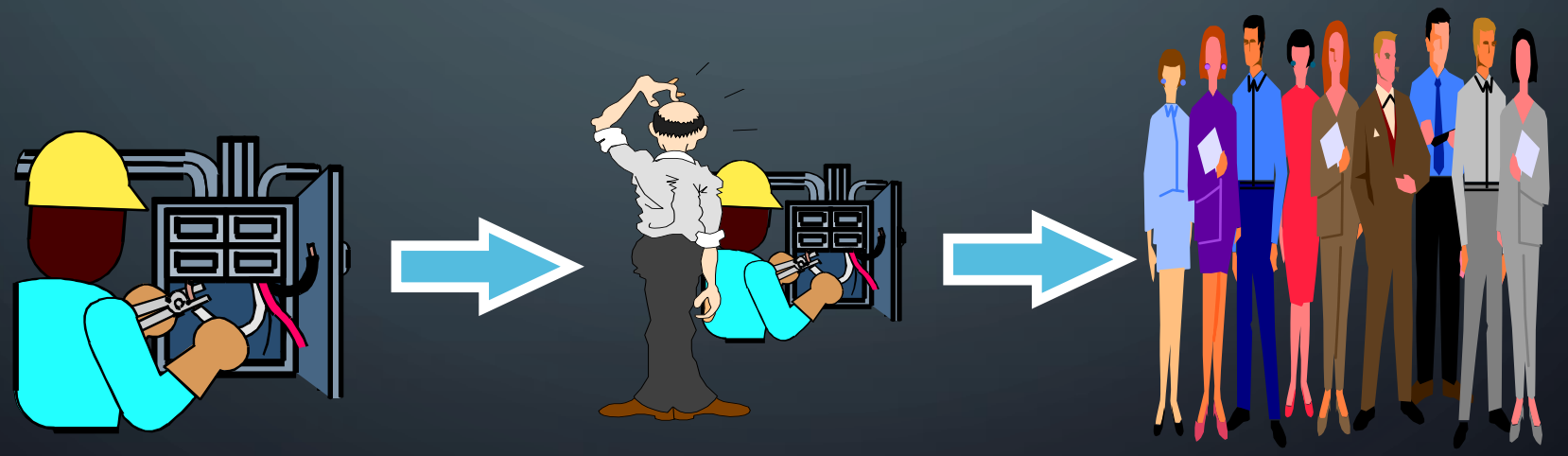
TRAINING REQUIREMENTS
AFFECTED EMPLOYEES

- ✓ **Purpose and Use of The Energy Control Program.**



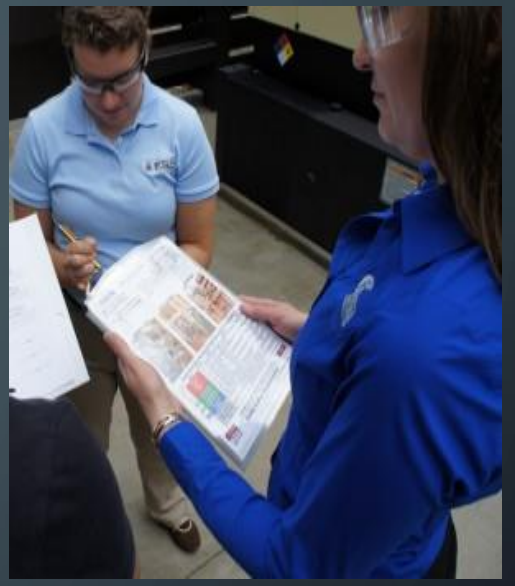
TRAINING REQUIREMENTS
AWARENESS – ALL OTHER EMPLOYEES

- ✓ **Procedures and Prohibitions Relating To Attempts to Restart or Reenergize Machines or Equipment Which Are Locked Out or Tagged Out.**



RETRAINING REQUIREMENTS

Authorized and Affected Employees



Retraining Provided When There Is a:

- ☑ **Change in Job Assignment.**
- ☑ **Change in Machines, Equipment or Processes.**
- ☑ **Change in Energy Control Procedures.**
- ☑ **Close-Call Event.**
- ☑ **Failure in the Procedures.**
- ☑ **Reason to Doubt Employee Proficiency.**

THREE ELEMENTS in the ENERGY CONTROL PROGRAM

1. ENERGY CONTROL PROCEDURES
2. EMPLOYEE TRAINING
3. PERIODIC INSPECTIONS

Duties of Authorized

Have enough locks with lock identification, tags and keys to fully isolate all energy sources during maintenance or service of a machine or equipment.

Properly apply these energy isolating devices, lock(s) and tag(s).

Assure that all key(s) related to LOTO are properly controlled so that the locks cannot be removed without your knowledge.

Understand and follow the procedures of the LOTO program.

Follow LOTO procedures that have been developed for specific equipment or machinery maintenance operations in your workspace.

ENERGY CONTROL PROGRAM (C)(1)

A job hazard analysis (JHA), also called a job safety analysis (JSA), is a technique to identify the dangers of specific tasks in order to reduce the risk of injury to workers.

Risk Assessment must be done before establishing the program.

- Establish a program consisting of:
  - Energy control procedures
  - Employee Training
  - Periodic Inspections
- Ensure that before equipment maintenance is performed, the equipment's energy sources are isolated and rendered inoperative.

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
Likelihood	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 16	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

Complete a Risk Assessment to establish lock out procedures.

- Identify all Tasks
- Identify Hazards
- Assess the Potential Consequences
- Assess the Potential Exposure to the Hazards
- Assess the Probability of Occurrence
- Evaluate the Risk
- Achieve an acceptable level of risk

Safe Condition does not exist until...

120.1(cont.) *An electrical safe condition does not exist until the following conditions are met.*

When there is a possibility of inducted or stored energy present ground the phase conductors

- **When it could be possible that a de-energized circuit come in contact with a energized circuit use grounding connection devices rated for the possible available fault.**
- **Refer to 120.1 for an approved grounding connector..**

Induced (Ghost) Voltage conditions are cause by inductive (or Capacitive) voltage into conductors in close proximity to other conductors.

Electrical measurement safety

- Understand hidden hazards and new safety standards
- Verify operation of the tester.

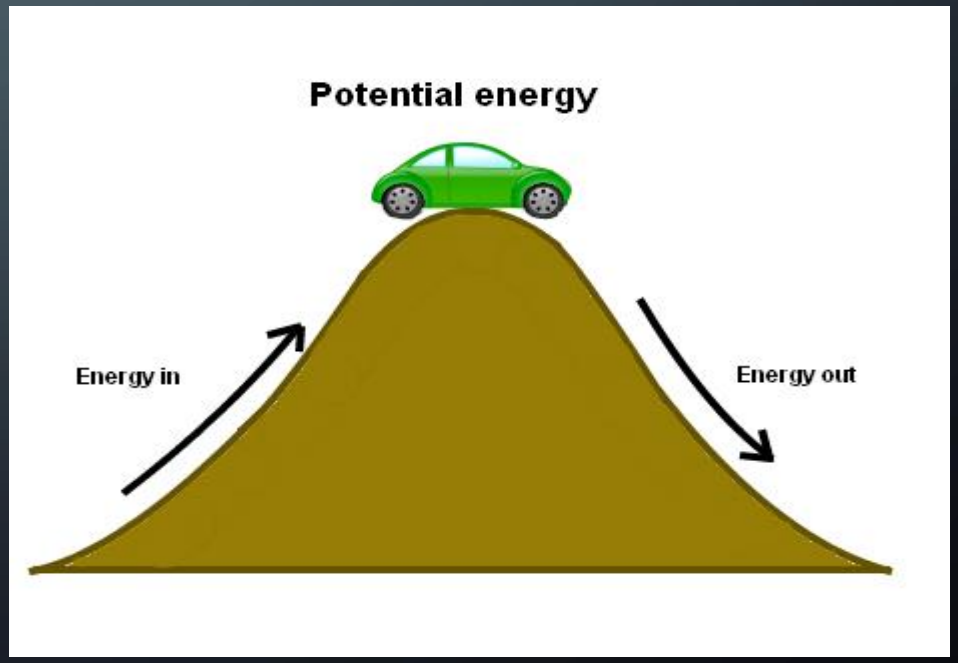
Two Types of Energy

Kinetic

Energy in motion even after power supply is off (fly wheel)

Potential

Stored force in an object even when the object is not in motion (compressed gas, stretched spring)

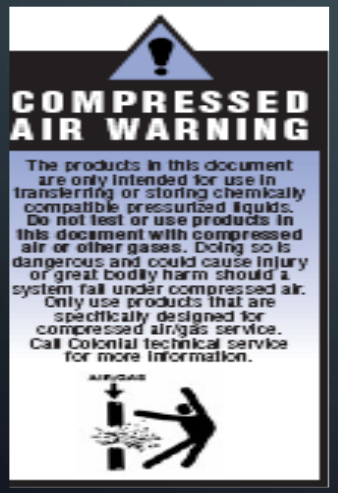


Stored Energy

- Mechanical Energy
  - Springs
    - Coil
    - Leaf Springs
    - Torsional Springs
    - Linear spring
    - Shocks
    - etc.

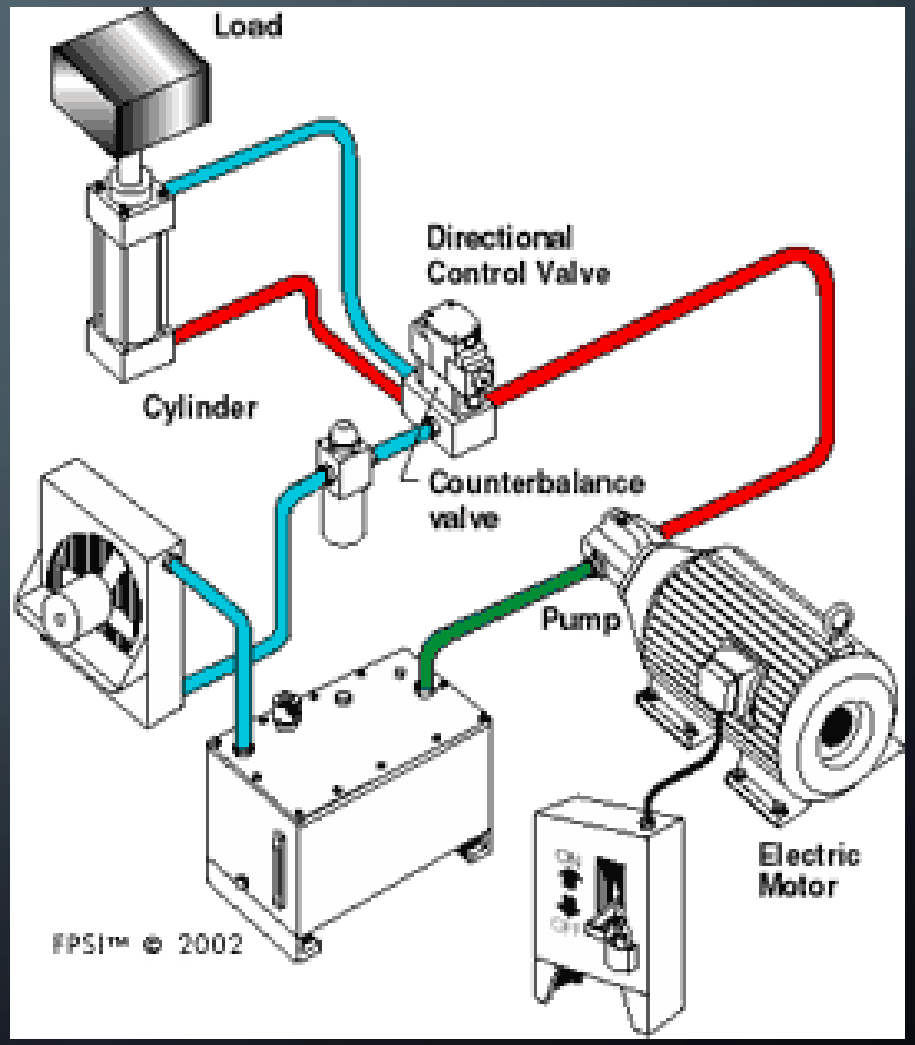
Stored Energy

- Mechanical Energy
  - Actuated Valves
    - Power outage
    - Loss of compressed air
    - Spring Return
    - NC / NO
    - PLC's



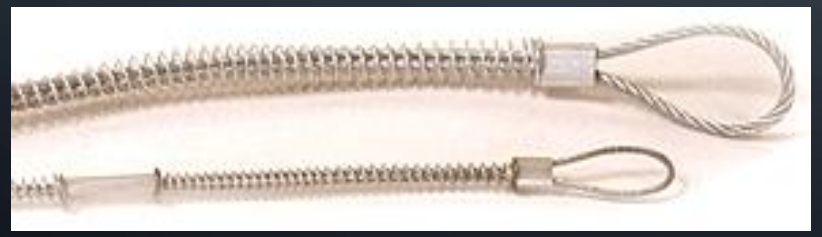
Stored Energy

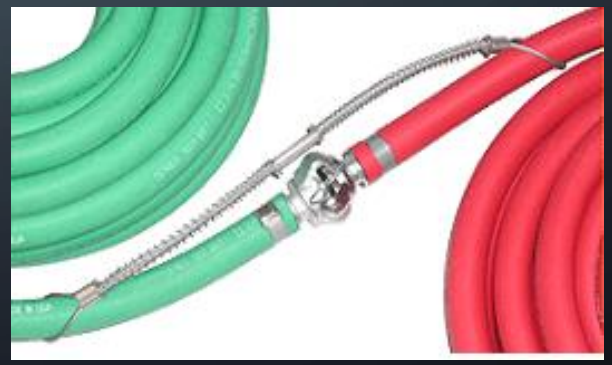
- Mechanical Energy - Pressurized Fluids
  - Hydraulic Systems
    - Hydraulic systems store fluid under high pressure
    - Potential hazards:
      - Injection of fluid into the skin
      - Burns from hot, high-pressure fluid
      - Cuts or abrasions from flailing lines
    - Never check for pinhole leaks
      - Potential for injection of oil may may result in the loss of a finger or entire arm
      - Use a piece of wood or cardboard to check for leaks



Stored Energy

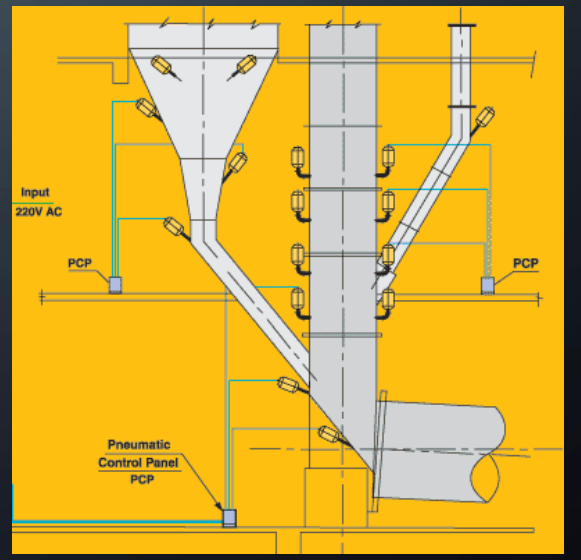
- Compressed Air Systems
  - Air receiver tanks
  - Primary air lines
  - Temporary hoses
    - Most dangerous aspect of using compressed air hose is the connection
    - Requires the use of Whip-Checks





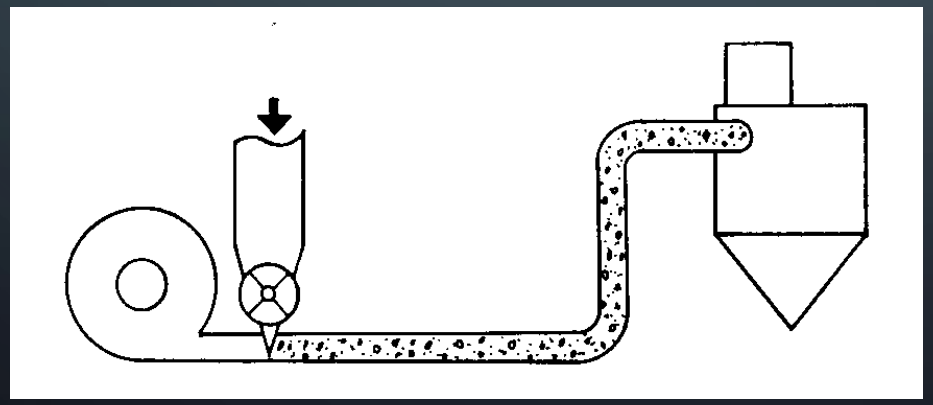
Stored Energy

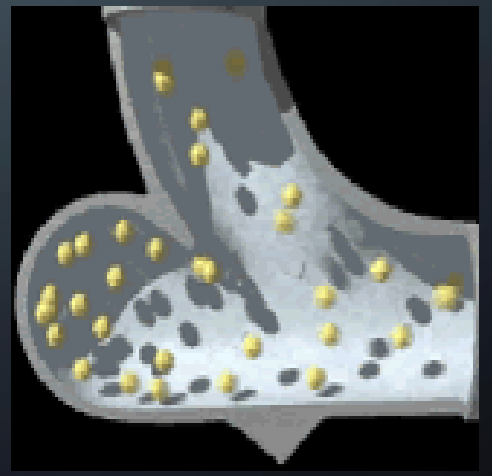
- Compressed Air
  - Air Blasters - Some very complex systems
  - Martin Thermo Safety Shield



Stored Energy

- Pneumatic Transport
  - Lean Phase
    - Handles Small Material Volume compared to High Volume of air
    - Operates at a relatively High Velocity
      - High Abrasive Wear – Elbows especially – additional maintenance
    - High Volume of Air must be Filtered – additional maintenance
    - Less complicated controls





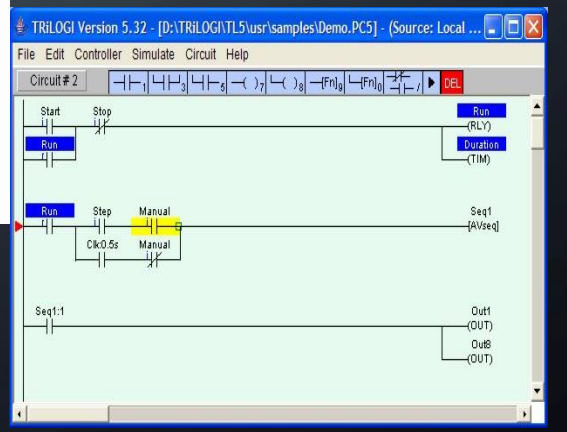
Stored Energy

- Pressurized Fluids
  - Steam
    - Work involving a major steam system
      - May involve a major part of the facility
    - Working on a Package Boiler installation
      - May simply involve a small unit and supply a point source of heat

- Yet each involves working with a source of Hazardous Energy – Steam
  - In turn the same procedures must be adhered when isolating the systems
  - Appropriate LO/TO procedures

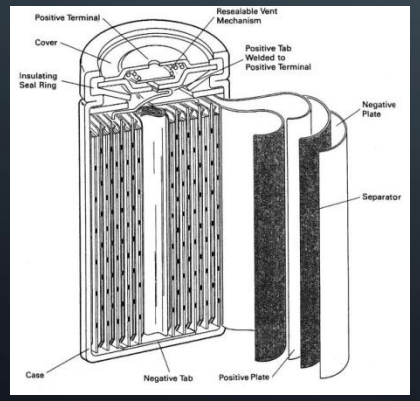
Stored Energy

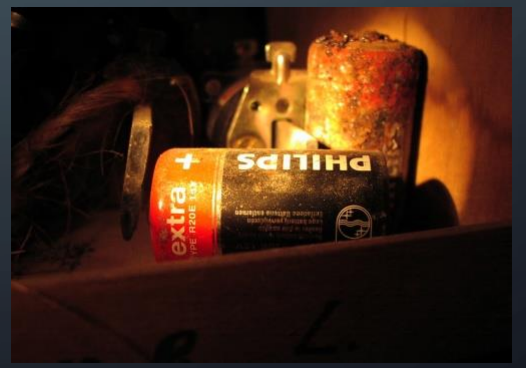
- Electrical Energy
  - Power Distribution & Control
  - Basics of Process Control
    - UPS (Uninterruptible power supply)
    - Always LO/TO at power source/the Motor Control Center



Stored Energy

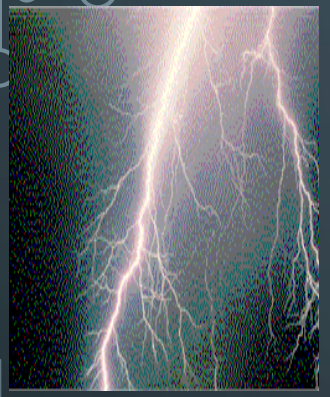
- Electrical energy
  - Electrical power sources
    - Live wires
    - Batteries (Chemical Energy)
    - Capacitors
      - Discharge





Stored Energy

- Electrical energy
  - Static Electricity
    - The build-up of static electricity depends on whether the rate of charge dissipation is greater than the rate of charge generation.



- A very high voltage can be produced quite rapidly, leading to electrostatic discharge (ESD) sparks and shocks

- Sparks can occur unexpectedly and potentially cause fire or explosion – ignition is possible with a fuel; a potentially flammable atmosphere could result.

- The same phenomena which create lightning and thunderstorms can create incredibly high voltages causing sparks and shocks.

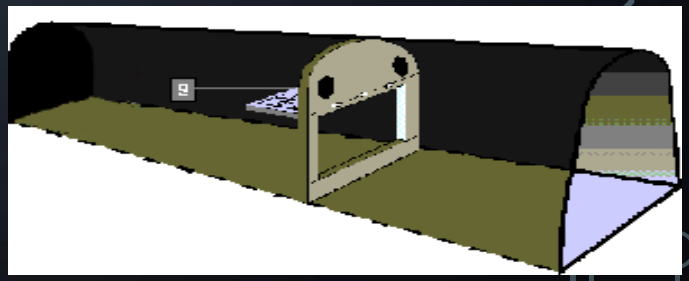
- If there is a flammable atmosphere present, such as a solvent vapor or dust cloud, then there is a risk of explosion

Stored Energy

- Thermal Energy Hazards
  - Molten Metal - Iron, Copper, etc.
    - Smelter, cupola, autoclave
    - Do not allow water in vicinity of molten metal
  - Safe Work Practices
    - Specific Training
    - Adequate ventilation, heat shielding
    - Personal Protective Equipment
    - Personal Monitors & Alarms
    - Drink plenty of fluids
    - Watch for signs of Heat Stress

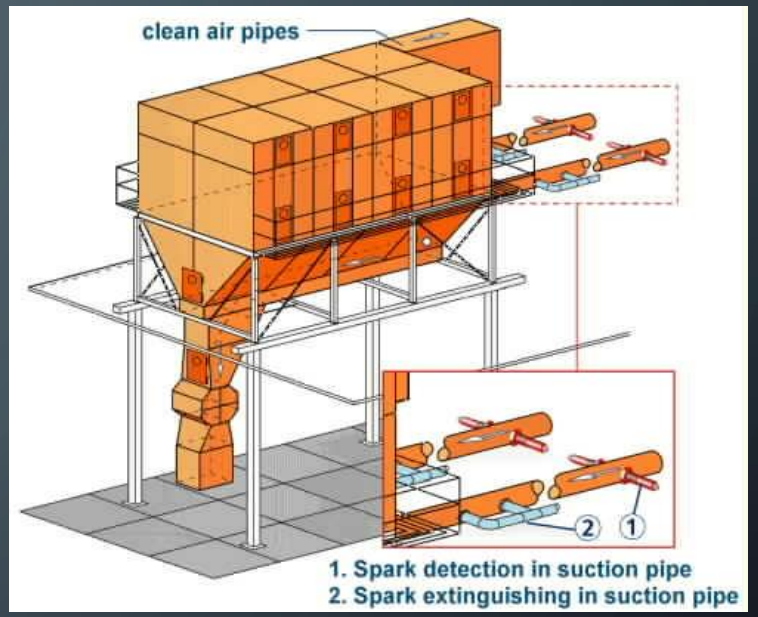
Stored Energy

- Thermal Energy Hazards
  - Dust Explosions - Baghouse
    - High Surface Area
      - *The dust must be combustible.*
      - *The dust must be capable of becoming airborne.*
      - *The dust must have a size distribution capable of flame propagation.*
      - *The dust concentration must be within the explosible range.*
      - *An ignition source must be present.*
      - *The atmosphere must contain sufficient oxygen to support and sustain combustion.*
  - Dust Explosions In Mines
    - Development of methods for arresting underground tunnel explosions



Stored Energy

- Thermal Energy Hazards
  - Dust Explosions
  - Explosion Suppression System
  - Rupture Disk
    - Vent gases



Stored Energy

- Chemical Energy
  - Chemical reaction
  - Hazardous Waste
    - Recent Explosion in Apex, North Carolina
    - Environmental Quality Company
      - Previous Blast in Romulus, Michigan

- Electrical Resistance Hazards
  - Resulting in fires

Stored Energy

- Three major groups of Compressed Gases & Mixtures of Compressed
  - Liquefied gases – liquid at ambient temperature while under pressure
    - Propane, carbon dioxide, anhydrous ammonia, nitrous oxide, etc
  - Non-Liquefied gases – permanent gases at ambient temperature even at very high pressure
    - Oxygen, nitrogen, helium, argon
  - Dissolved gases – Acetylene - chemically very unstable, cylinders packed with inert, porous filler & saturated with acetone into the acetylene gas dissolves and in turn is stable
  - Cylinders must be kept Secured & Capped
    - Compressed gas cylinders if damaged can become uncontrolled rockets

Stored Energy

- Compressed Fuels
  - Liquified Gaseous Fuels (LGF)
    - Liquified Petroleum Gas (LPG)
      - Propane
        - Gas Cylinders
    - Liquified Natural Gas (LNG)
      - LNG Tankers

- Compressed Natural Gas (CNG)
  - Gas Cylinders
    - Propane – New Composite Lite

Stored Energy

- Magnetic Energy
- Rare Earth Magnets
  - These Magnets are extremely powerful, and potentially dangerous.
  - Could cause malfunctions in cardiac pacemakers.
  - They are brittle, and if allowed to snap together from a distance, they will break and can send shrapnel flying.
  - Modern magnet materials are extremely strong magnetically and any person required to handle magnets should be appropriately trained on the potential dangers of handling magnets.
  - Magnets should be kept away from sensitive electronic equipment.

ENERGY CONTROL PROGRAM

This program provides written safety policies to help prevent injury due to unexpected start up of machines and equipment, or release of stored energy.

1. Company-wide safety policies implemented
2. Specific LOTO procedures for each item of equipment.
3. Control of locks maintained by one entity.
4. Periodic inspections.
5. Employee training and retraining.

Energy control program

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INTRODUCTION

Electricity is a serious workplace hazard, capable of causing both employee injury and property damage. It is the policy of Nanogate North America, Inc. to protect all employees and other personnel from potential electrical hazards. This will be accomplished through compliance with the work practices described in this policy, along with effective application of engineering controls, administrative controls, and the use of personal protective equipment.

The Electrical Safety Program is founded on the principle of avoiding energized work unless it is absolutely necessary. Live parts will be de-energized before an employee works on or near them unless one of the conditions applies:

- De-energizing introduces additional or increased hazards. Examples of additional or increased hazards would include deactivation of emergency alarm systems or shutdown of hazardous location ventilation systems.
- De-energizing is not possible due to equipment design or operational limitations. Examples of this situation would include testing and troubleshooting of electrical circuits that can only be performed with the circuit energized and work on circuits that form an integral part of a continuous process that would otherwise need to be completely shut down in order to permit work on one circuit or piece of equipment.
- Live parts are operating at less than 50 volts to ground and there is no increased exposure to electrical burns or to explosion due to electrical arcs.

Live parts are to be de-energized in accordance with the Lockout/Tagout Program.
If live parts are not placed in an electrically safe condition, the work practices described in this document must be used to protect employees.

PURPOSE

This program has been established in order to:

- Ensure the safety of employees who may work on or near electrical systems.
- Ensure that employees understand and comply with safety standards related to electrical safety.
- Ensure that employees follow uniform practices during the completion of electrical work.

RESPONSIBLITIES

EHS Department

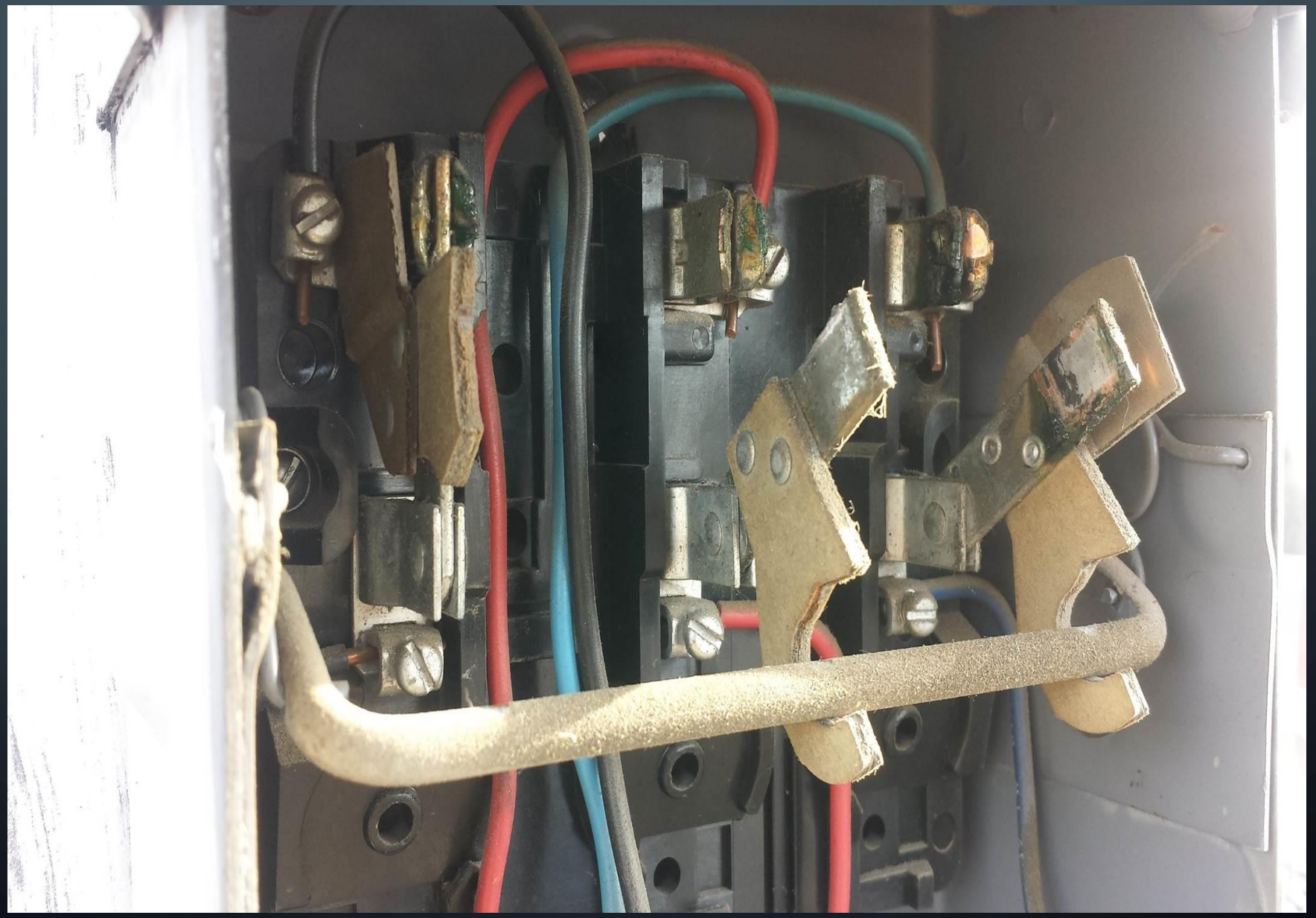
- Implement the provisions of this program.

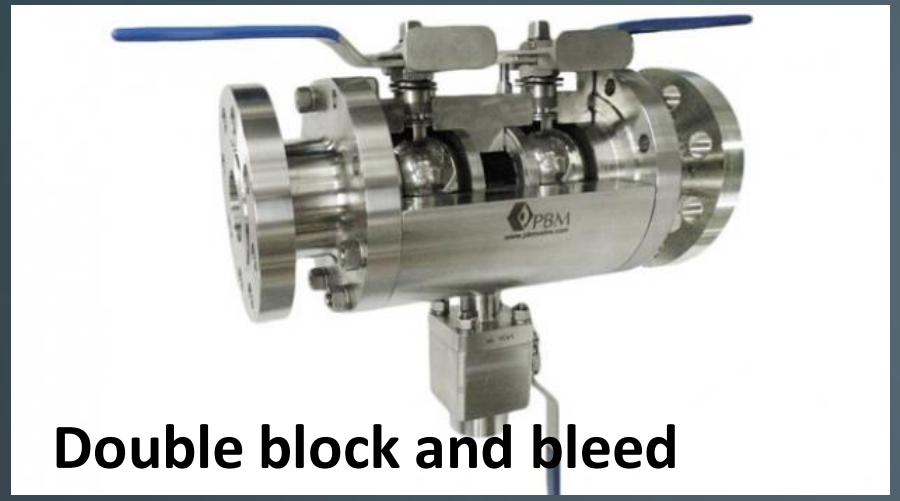
- **Flash protection boundary:** An approach limit at a distance from exposed live parts within which a person could receive a second degree burn if an electrical arc flash were to occur.
- **Flash suit:** A complete FR clothing and equipment system that covers the entire body, except for the hands and feet. (Such a suit typically includes pants, jacket, and a "bee-keeper" style hood fitted with a face shield).
- **FR apparel:** Flame-resistant apparel; describes a broad category of clothing designed to protect employees from electrical arc events during completion of energized tasks.
- **Incident energy:** The amount of energy impressed on a surface, a certain distance from the source, generated during an electrical arc event. One of the units used to measure incident energy is calories per square centimeter (cal/cm^2).
- **Limited approach boundary:** An approach limit at a distance from an exposed live part within which a shock hazard exists.
- **Live parts:** Energized conductive components.
- **Prohibited approach boundary:** An approach limit at a distance from an exposed live part within which work is considered the same as making contact with the live part.
- **PPE:** An acronym for "Personal Protective Equipment".
- **Qualified person:** One who has skills and knowledge related to the construction and operation of the electrical equipment and installation and has received training on the hazards involved.
- **Restricted approach boundary:** An approach limit at a distance from an exposed live part within which there is an increased risk of shock (due to electrical arc-over combined with inadvertent movement) for personnel working in close proximity to the live part.
- **Unqualified person:** Any person who does not meet the definition of a qualified person.
- **Working near (live parts):** Any activity within a Limited Approach Boundary.
- **Working on (live parts):** Coming in contact with live parts via tools, probes, test equipment, hands, feet, or other body parts regardless of the level of PPE worn.

TRAINING

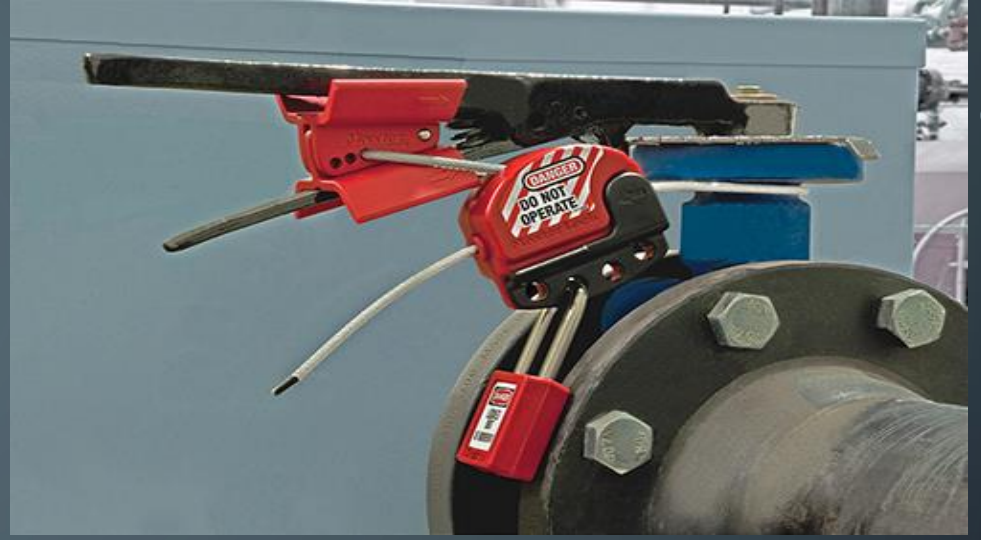
- Employees who are exposed to an electrical hazard that is not reduced to a safe level by the installation must be trained.
- The level of electrical safety training provided is dependent on whether the employee is classified as a "qualified person" or "unqualified person".
- A "qualified person" shall be trained and knowledgeable in all of the following topics:
  - Construction and operation of equipment on which work is assigned.
  - Skills and techniques necessary to distinguish exposed energized parts from other parts of electrical equipment.
  - Skills and techniques necessary to determine the nominal voltage of exposed live parts.
  - The approach distances specified in this document and the corresponding voltages to which the qualified employee will be exposed.

Why we must test.





Double block and bleed



Lock out of valves


LLOG - 7
BRAKE
HUK-6RP-08

WHAT ELEMENTS MUST BE DOCUMENTED IN LOTO PROCEDURES?

A specific statement of the intended use of the procedure.

Specific procedural steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy.

Specific procedural steps for the placement, removal, and transfer of lockout devices and who has responsibility.

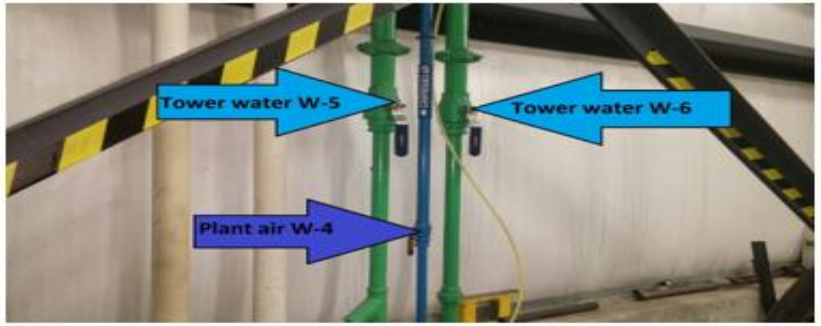
Specific requirements for testing a machine or a piece of equipment to verify the effectiveness of the lockout devices.

ENERGY CONTROL (LOCKOUT) PROCEDURES

LOCKOUT TAGOUT PROCEDURE 29CFR1910.147

EHS DEPARTMENT MUST MAKE ALL REVISIONS TO LOTO PROCEDURES

Device:	Molding Machine 05			Equipment #:	05
Division:	Plastics	Depart:	Molding	Revision Date:	April 09, 2015
Model:	Husky		Serial:		
5	LOCKS & TAGS NEEDED	SPECIFIC DANAGER: Hot surfaces, hydraulics, plant air, high voltage, tower water			



E=ELECTRICAL	R=RADIOACTIVE	Pn=PNEUMATIC	G=GAS	St=STEAM	W=WATER
C=CHEMICAL	Pr=PRESSURE	H=HYDRAULIC	T=THERMAL	Sp=SPRING	Gr=GRAVITY
M=MECHANICAL			O=OTHER		

OPENING A GUARD DOES NOT CONSITUTE AS LOCKOUT

DANGER	Any machine modifications must be shown in procedure. Contact EHS Department to update prodceedure.	DANGER

SAFETY IS YOUR RESPONSIBILITY

LOCKOUT TAGOUT PROCEDURE 29CFR1910.147

EHS DEPARTMENT MUST MAKE ALL REVISIONS TO LOTO PROCEDURES

Device:	Molding Machine 05			Equipment #:	05
Division:	Plastics	Depart:	Molding	Revision Date:	April 09, 2015
Model:	Husky		Serial:		
5	LOCKS & TAGS NEEDED	SPECIFIC DANAGER: Hot surfaces, hydraulics, plant air, high voltage, tower water			

ALWAYS PERFORM A MACHINE STOP BEFORE LOCKING OUT DISCONNECTS					
ID	SOURCE TYPE	LOCATION	METHOD	CHECK	DEVICE
M/M5	480 Breaker	MDP#2	Lock out	Zero energy	Fluke meter
Robot transformer	480 Breaker	MDP#2	Lock out	Zero energy	Fluke meter
W-4	Plant air	West wall	Lock out	Bleed pressure	Open fitting
W-5	Tower water	West wall	Lock out	Bleed pressure	Open fitting
W-6	Tower water	West wall	Lock out	Bleed pressure	Open fitting

SEE NEXT PAGE

E=ELECTRICAL	R=RADIOACTIVE	Pn=PNEUMATIC	G=GAS	St=STEAM	W=WATER
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SAFETY IS YOUR RESPONSIBILITY

LOTO: Six Steps - Part 1

1. Notify employees
2. Identify the power source
3. Disconnect the power

Six Steps - Part 2

4. Apply locks and tags
5. Drain stored energy
6. Test equipment
7. Remember: If there is ANY power left in equipment, perform all 6 procedures again

REQUIREMENTS IF TAGOUT IS USED

- ✓ Tags Are Only Warning Devices!
- ✓ Tags Must Be Securely Attached!
- ✓ May Evoke False Sense of Security!
- ✓ Tags Do Not Provide Physical Restraint!
- ✓ Tags Must Never Be Defeated or Ignored!
- ✓ Must Withstand Environmental Conditions!
- ✓ Tags Must Be Legible and Understandable!
- ✓ Tags Are Only Removed by the Responsible Person.

TAGS/TAGOUT

- A warning not to restore energy. It is not a physical restraint – it is only a notice.
- Tags should be standardized throughout the facility.
- A tag by itself should have a pull strength of 50 lbs.
- Resist deterioration from weather or chemical exposure

Protective Materials & Hardware

- The employer shall provide locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware

- Lockout/tagout devices shall be:
  a) Identifiable
  b) Durable
  c) The only device used for controlling energy
  d) Not be used for other purposes
  e) Standardized
  f) Substantial

Protective Materials & Hardware

Durable

- Capable of withstanding the environment for the maximum period of time
- Tagout devices constructed and printed to withstand wet/damp locations
- Tags shall not deteriorate when used in corrosive environments (acid and alkali chemicals)

Standardized

- Lockout/tag out devices shall be standardized by:
  a) Color
  b) Shape
  c) Size
  d) Print and format
  (Tagout devices)

LOCK OUT DEVICES

GROUP LOCKOUT/TAGOUT

Service or maintenance performed by a crew, department or other group, shall utilize a procedure which affords all the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.

When there is more than one person working on the locked-out equipment you will need to use a lockout hasp or a gang box.

Primary Responsibility is vested in an authorized employee

GROUP LOCKOUT BOX

When a group box is used, all the keys for the lockout locks are placed in the box and the maintenance manager places their lock on the box. Everyone else will then place their lock on the box.

SHIFT CHANGE AND THE PROJECT WILL CONTINUE

When you are ready to leave at the end of your shift, the crew coming in will place their locks on the box before you remove yours.

As the in-coming crew, it is your right to verify the lock out.

- Remember it is your life on the line.
- One lock one key no one else will have a key.

WHAT IF SOMEONE LEAVES THEIR LOCK ON AND LEAVES WORK?

- Call the individual, try to have them come back.
- Check the equipment that it is safe. No one in the machine, all tools out.
- Then only the maintenance manager, after documentation, will cut the lock.
- Removing a person's lock could cost a life.

LOCKS AND DEVICES

Authorized personnel are issued their locks and tags with picture and phone number.

The lock out devices and locks are in the maintenance department.

- Lock out locks are only to be use for lockout nothing else.

AUTHORIZED LOCKOUT TAGS WITH INFORMATION

REENERGIZING EQUIPMENT IS DONE BY THE AUTHORIZED PERSON

Must ensure:

Tools, spare parts, and debris are removed from area

Safety guards are back in place

Machine is in safe working condition

Move people away from equipment

Check Machine – Step 1

Check equipment or machine in the immediate area around machine to ensure that non-essential items have been removed and that the machine or equipment components are operationally intact.

Check Area – Step 2

Check the work area to ensure that all employees have been safely positioned or removed from the area.

Step 3 - Verify Machine is in neutral

Step 4 - Remove Lockout

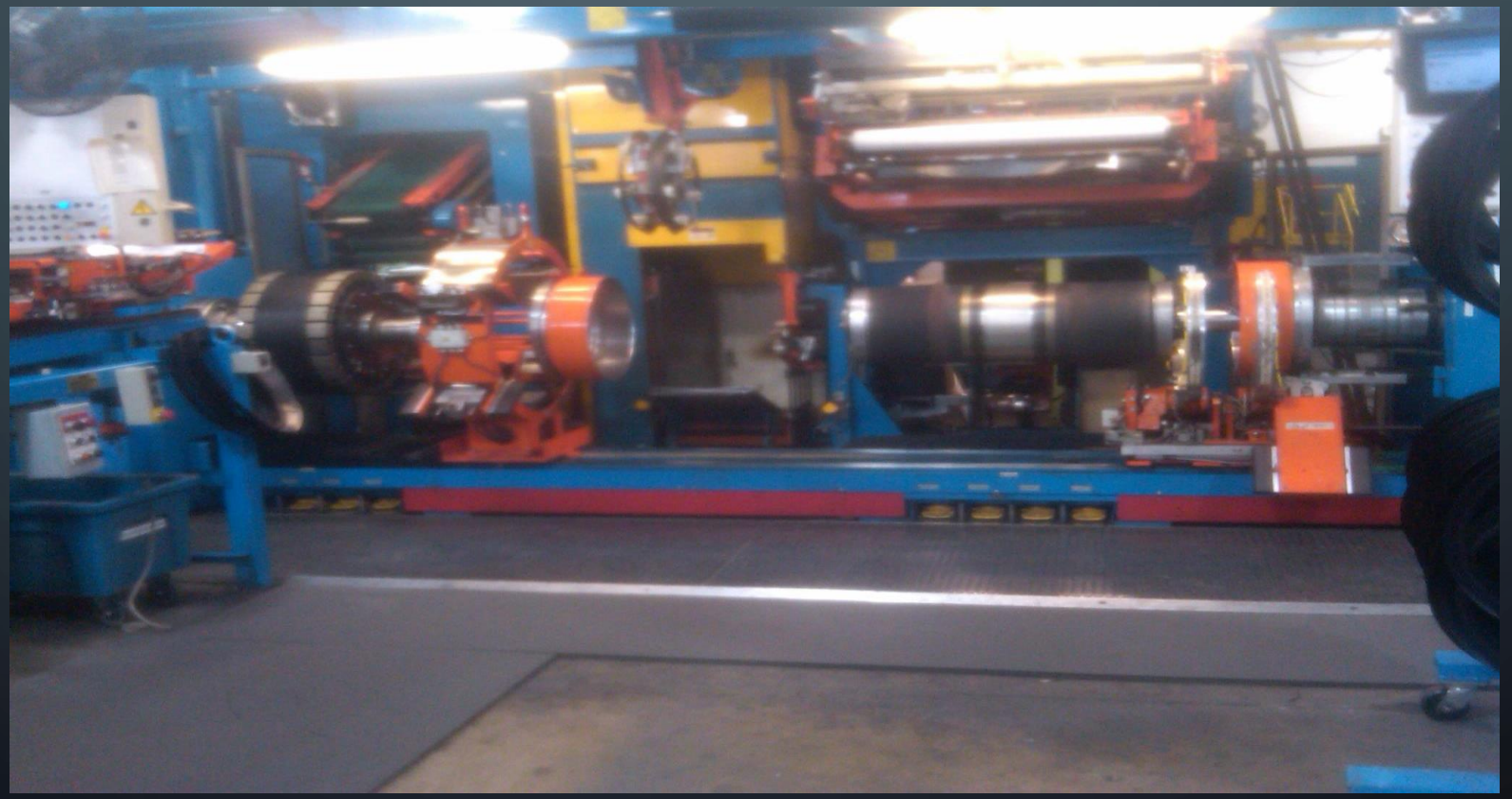
- Remove the locks, tags and lockout devices and reenergize the machine or equipment.
- Reverse the order of all lockout-tagout procedures steps.
- The removal of some forms of blocking may require reenergizing of machine for safe removal.

Step 5 - Notify

Notify affected employees that the service or maintenance is complete, and machine is ready for use.

Step 6 - Observe the start up and operation of machine

Stay with the operator and ensure the machine starts and operates correctly. The machine may need fine tuning for proper operation.



LOCK OUT TAG OUT AUTHORIZED EMPLOYEES

- Your life or the life of your co-worker is on the line.
- Follow the procedures
- Know the machines
- Be careful out there!