Welding, Cutting and Hot Work

Policy:

Welding, cutting and brazing operations present a series of hazardous situations with potential exposure to burns, eye damage, electrical shock, crushed toes and fingers, and the inhalation of vapors and fumes. Many welding, cutting and brazing accidents result from:

- Inadequately trained personnel.
- Poor housekeeping practices.
- Poor shop layout.
- Inadequate lighting and ventilation.
- Improper storage and movement of compressed gas cylinders.
- Exposure of oxygen cylinders and fittings to oil or grease creating a fire or explosive hazard.
- Pointing welding or cutting torches at a concrete surface causing spattering and flying fragments of concrete.
- Electric shock when motors, generators and other electric welding equipment are not grounded.
- Inhalation of toxic fumes or vapors from welding metals or alloys.

Fires, explosions, and injuries can occur resulting from:

- The proximity of combustible solids, liquids, or dusts.
- The presence or development of possible explosive mixtures of flammable gases and air.
- The presence or nature of an oxygen-enriched atmosphere in locations where hot work is performed.

Cutters and welders, and other exposed personnel, are also susceptible to eye injury from infrared light and ultraviolet radiation.

Management Responsibility

Management shall recognize its responsibility for the safe usage of cutting and welding equipment on its property and:

- Based on fire potentials of plant facilities, establish areas for cutting and welding, and establish procedures for cutting and welding, in other areas.

- Designate an individual responsible for authorizing cutting and welding operations in areas not specifically designed for such processes.

- Insist that cutters or welders and their supervisors are suitably trained in the safe operation of their equipment and the safe use of the process.

- Advise all contractors about flammable materials or hazardous conditions of which they may not be aware.

First-aid equipment

First-aid equipment shall be available at all times. All injuries shall be reported as soon as possible for medical attention. First aid shall be rendered until medical attention can be provided.

General Procedures:

The following provides minimum guidance on procedures and operating precautions:

Provide ventilation in shops or rooms where work is to be performed but avoid strong drafts directed at the welding work.

Do not place work to be welded or heated on a concrete floor. Concrete, when heated, may splatter and fly, exposing the welder to possible burns (and also throwing hot particles a considerable distance creating a potential fire hazard).

Provide appropriate protection for welders and helpers when working on elevated surfaces. Welding areas shall be kept neat, clean, and free from tripping hazards.

Provide approved personal protective equipment for welders who must enter confined spaces, manholes or other space restricted areas. Also, provide a means to ensure their quick removal in case of an emergency.

Do not perform cutting and welding operations in sprinklered buildings when the sprinkler system is inoperable; in explosive atmospheres or where explosive atmospheres may develop; or, within 50 feet of storage of large quantities of exposed, readily ignitable materials.

Before lighting the torch for the first time each day, allow enough of each gas to flow through its respective hose to purge any flammable gas mixture.

The following provides minimum guidance on procedures and operating precautions (continued):

Purge hoses in open spaces and away from ignition sources. Light the torch with a friction lighter or stationary pilot flame keeping a safe distance between he torch and the welder's hands. Point the torch away from persons or combustible materials when lighting. Do not attempt to light a torch from hot metal.

When working in a confined space, the fuel gas and oxygen supply shall be located outside the confined space. The torch and hose should be removed from confined spaces when not in use.

Fuel gas and oxygen torch valves shall be closed and the fuel gas and oxygen supply to the torch shall be shut off during lunch or break periods, when not in use for extended periods, and when unattended.

Welding torch hoses must be protected from damage by contact with hot metal, open flames, corrosive agents or sharp edges. Pressure on hoses will be released at the end of each workday. Hoses must be visually inspected for

damage at the beginning of each shift. Hose showing leaks, cuts, burns, worn spots or other evidence of deterioration must be repaired or replaced prior to use. Replacement hoses or fittings must be approved for use with acetylene equipment.

Shielding shall be provided to protect personnel from heat, sparks, slag, light, and radiation.

Protective Clothing:

a. All welders should wear flame-resistant gauntlet gloves and shirts with sleeves of sufficient length and construction to protect the arms from heat, UV radiation, and sparks.

b. All welders should wear fire-resistant aprons, coveralls, and leggings.

c. Clothing should be kept reasonably free of oil or grease. Front pockets and upturned sleeves or cuffs should be prohibited, and sleeves and collars should be kept buttoned to prevent hot metal slag or sparks from contacting the skin.

Personal Protective Equipment:

Key portions of OSHA Standard 1910.252 covering protective equipment are included here. Personnel engaged in or exposed to welding, cutting, or brazing activities will be provided and use personal protective equipment to include eye and face protection, head protection when in a hard hat area, foot protection, and body, arm, and hand protection.

a. Eye Protection

b. Helmets shall be used during all arc welding or arc cutting operations. Goggles should also be worn during arc welding or cutting operations to provide protection from injurious rays from adjacent work, and from flying objects. The goggles may have either clear or colored glass, depending upon the amount of exposure to adjacent welding operations. Helpers or attendants shall be

provided with proper eye protection. Helmets shall be arranged to protect the face, neck, and ears from direct radiant energy from the arc.

c. Goggles or other suitable eye protection shall be used during all gas welding or oxygen cutting operations. Spectacles with side shields and suitable filter lenses are permitted for use during gas welding operations on light work, for torch brazing or for inspection. Goggles shall be ventilated to prevent fogging of the lenses as much as practicable.

d. All operators and attendants of resistance welding or resistance brazing equipment shall use transparent face shields or goggles, depending on the particular job, to protect their faces or eyes, as required.

e. Eye protection in the form of suitable goggles shall be provided where needed for brazing operations.

Respiratory Protection:

The Safety and Health Manager shall be consulted to determine appropriate levels of respiratory protection to be worn by personnel performing welding operations.

Fire Prevention and Protection:

Authorization.

Before cutting or welding is permitted, the area shall be inspected by the individual responsible for authorizing cutting and welding operations and a written permit shall be used to authorize welding and cutting operations.. See Attachment A, Hot Work Permit Sample

Basic precautions.

The basic precautions for fire prevention in welding or cutting work are:

- Fire hazards. If the object to be welded or cut cannot readily be moved, all movable fire hazards in the vicinity shall be taken to a safe place.

- Guards. If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shall be used to confine the heat, sparks, and slag, and to protect the immovable fire hazards.

- Restrictions. If the requirements stated in Fire hazards and Guards, as in the previous two sentences, cannot be followed then welding and cutting shall not be performed.

Special precautions. When the nature of the work to be performed falls within the scope of "Guards" sentence, above, certain additional precautions may be necessary:

- Combustible material- Wherever there are floor openings or cracks in the flooring that cannot be closed, precautions shall be taken so that no readily combustible materials on the floor below will be exposed to sparks which might drop through the floor. The same precautions shall be observed with regard to cracks or holes in walls, open doorways and open or broken windows.

- Fire extinguishers- Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use. Such equipment may consist of pails of water, buckets of sand, hose or portable extinguishers depending upon the nature and quantity of the combustible material exposed.

Fire watch.

Fire watchers shall have fire extinguishing equipment readily available and be trained in its use. They shall be familiar with facilities for sounding an alarm in the event of a fire. They shall watch for fires in all exposed areas, try to extinguish them only when obviously within the capacity of the equipment available, or otherwise sound the alarm.

A fire watch shall be maintained for at least a half hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

Fire watchers shall be required whenever welding or cutting is performed in locations where other than a minor fire might develop, or any of the following conditions exist:

- Appreciable combustible material, in building construction or contents, closer than 35 feet (10.7 m) to the point of operation.
- Appreciable combustibles are more than 35 feet (10.7 m) away but are easily ignited by sparks.
- Wall or floor openings within a 35-foot (10.7 m) radius expose combustible material in adjacent areas including concealed spaces in walls or floors.
- Combustible materials are adjacent to the opposite side of metal partitions, walls, ceilings, or roofs and are likely to be ignited by conduction or radiation.

The welding operation environment shall be free of flammable liquids and vapors. Combustible materials within a radius of 35 feet of the operation will be protected from activity residue (flame, heat, sparks, slag, etc.).

Fire watcher procedures shall be implemented whenever welding activities are conducted within 35 feet of combustible materials, regardless of protection provided. A qualified individual proficient in the operation of available fire extinguishing equipment and knowledgeable of fire reporting procedures shall observe welding or cutting activities. His or her duty is to detect and prevent the spread of fire produced by welding or cutting activities.

Whenever there are cracks or other floor openings within 35 feet of the welding or cutting that cannot be closed or covered, precautions shall be taken to remove or otherwise protect combustible materials on the floor below that may be exposed to sparks. The same precautions shall be observed with regard to cracks or openings in walls, open doorways, and open or broken windows.

1. Fire extinguishing equipment shall be maintained, ready for use, while welding or cutting operations are being performed. Equipment may consist of pails of water, buckets of sand, hose, or portable extinguishers depending upon the nature and quantity of the combustible material exposed.

2. Where sprinkler protection exists, it shall be in full service while welding or cutting work is being performed. If welding or cutting is to be done within three feet of automatic sprinkler heads, noncombustible sheet material or damp cloth guards will be used to temporarily shield the individual heads.

Welding and Cutting Tanks, Cylinders, or Containers:

The procedures described below apply only to tanks too small to be entered. Compressed gas cylinders are excluded as are pipelines. Cutting and welding on containers that have held flammable liquids or gases shall be under the direct supervision of knowledgeable personnel.

Inspection-

BEFORE any tank, cylinder, or other container is cut, welded, or other hot work is performed, the item shall be purged or made inert. New containers shall also be made inert as they may contain a flammable preservative which could form explosive vapors when heated. Welders shall also ensure that there are no substances such as grease, tars, or acids which, when subjected to heat, might produce explosive or toxic vapors. Any pipe lines or connections to the drums, cylinders, tanks, or other containers shall be disconnected or blanked.

Purging and Inerting-

Purging with Water

Where the liquid or gas previously contained is known to be readily displaced or easily soluble in water, it can be removed by completely filling the container with water and then draining. When hot work is performed on containers filled with water, extreme care shall be used to eliminate any vapor accumulation by proper venting or positioning of the container during the filling operation.

Purging with Air

Hazardous vapors may be displaced from inside containers by purging with air. A safe atmosphere shall be maintained by continuous ventilation.

Inerting with Gas

Inert gas may be used to displace flammable gas from the container. Adequate ventilation shall be maintained during the operation to ensure gas concentrations remain below hazardous levels.

Examples of inert gases are carbon dioxide and nitrogen.

Venting-

All hollow spaces, cavities, or containers shall be vented to permit the escape of air or gases before and during preheating, cutting, or welding.

Arc Welding:

Arc welding equipment shall conform to the design and installation criteria of OSHA 29 CFR 1910.252, "Welding, Cutting, and Brazing." The frame or case of the welding machine (except engine-driven machines) shall be grounded under the conditions and according to the methods prescribed in OSHA Standard 1910, Subpart S, "Electrical", and 1910.252.

Before starting operations, all connections to the arc welding machine shall be checked. The work lead shall be firmly attached to the work; contact surfaces of the magnetic work clamps shall be free of metal splatter particles. Coiled welding cable shall be spread out before use to avoid serious overheating and damage to insulation. Work and electrode lead cables shall be inspected for damage and wear before use. Cables with damaged insulation or exposed conductors shall be replaced. Electrode cables shall be joined and insulated in accordance with approved methods.

Grounding of the welding machine from shall be checked. Special attention shall be given to the ground connections of portable machines.

Electrode holders, when not in use, shall be placed where they cannot make electrical contact with persons, conducting objects, fuel, or compressed gas cylinders.

When it is necessary to splice cables to extend their length, only certified electricians shall make the splices. Cables with splices within 10 feet of the electrode holder shall not be used. The welder shall not coil or loop welding electrode cables around parts of their body.

Welders shall not place welding cable and other equipment where it will obstruct passageways, ladders, and stairways.

Machines which have become wet shall be thoroughly dried and tested before being used.

When welders are working close to one another on one structure where they may touch the exposed parts of more than one electrode holder simultaneously, the machines shall be connected to minimize shock hazard as follows:

All direct current (DC) machines shall be connected with the same polarity.

All alternating current (AC) machines shall be connected to the same phase of the supply circuit and with the same instantaneous polarity.

Workmen designated to operate arc welding equipment shall have been properly instructed and qualified to operate such equipment. The following shall also apply:

Operation and maintenance -

General. Workers assigned to operate or maintain arc welding equipment shall be acquainted with the requirements of this section, chapter, and with section 29 CFR 1910.252 (a), (b), and (c), AND, if gas shielded arc welding is done, they must be familiar with the American Welding Society Standard A6-1-1966.

Machine hook up. Before starting operations all connections to the machine shall be checked to make certain they are properly made. The work lead shall be firmly attached to the work; magnetic work clamps shall be freed from adherent metal particles of spatter on contact surfaces. Coiled welding cable shall be spread out before use to avoid serious overheating and damage to insulation.

Grounding. Grounding of the welding machine frame shall be checked. Special attention shall be given to safety ground connections of portable machines.

Leaks. There shall be no leaks of cooling water, shielding gas or engine fuel.

Switches. It shall be determined that proper switching equipment for shutting down the machine is provided.

Manufacturers' instructions. Printed rules and instructions covering operation of equipment supplied by the manufacturers shall be strictly followed.

Electrode holders. Electrode holders when not in use shall be so placed that they cannot make electrical contact with persons, conducting objects, fuel or compressed gas tanks.

Electric shock. Cables with splices within 10 feet (3 m) of the holder shall not be used. The welder should not coil or loop welding electrode cable around parts of his body.

Maintenance.

The operator should report any equipment defect or safety hazard to his supervisor and the use of the equipment shall be discontinued until its safety has been assured. Repairs shall be made only by qualified personnel.

Machines which have become wet shall be thoroughly dried and tested before being used.

Cables with damaged insulation or exposed bare conductors shall be replaced. Joining lengths of work and electrode cables shall be done by the use of connecting means specifically intended for the purpose. The connecting means shall have insulation adequate for the service conditions.

Resistance Welding:

Thermal Protection

Every pair of ignition tubes used in resistance welding equipment shall be equipped with a thermal protection switch. When used in a series-connected water line, a single switch shall be adequate if related to the downstream tube.

Control Safeguards

Controls, such as push buttons, foot switches, retraction, and dual-schedule switches on portable guns, etc., shall be arranged or guarded to prevent inadvertent activation.

Guarding Welding Machines

Multi-gun welding machines shall be effectively guarded at the point of operation. Devices such as an electronic eye, latches, blocks, barriers, or

two-hand controls shall be installed. All chains, gears, operating bus linkage, and belts shall be protected by adequate guards.

Electrical Hazards:

All external weld-initiating control circuits shall operate on low voltage, not over 120 bolts for stationary equipment and not over 36 volts for portable equipment. All electrical equipment shall be suitably interlocked and insulated to prevent access by unauthorized persons to live portions of the equipment. Only non-ferrous welding clamps should be used to prevent magnetic induction during actuation of the equipment.

Welding and Work in Confined Spaces Procedures:

General. As used herein confined space is intended to mean a relatively small or restricted space such as a tank, boiler, pressure vessel, mixing vat, sump, or pit, or a small compartment. For more requirements and Pagoda Electrical, Inc. policy regarding Confined Space work, personnel shall comply with Pagoda Electrical, Inc.'s Confined Space chapter and policy.

Ventilation. Ventilation is a prerequisite to work in confined spaces and on the possible evolution of hazardous fumes, gases, or dust according to the metals involved.

(a) Mechanical Ventilation for Indoor Operations. Local exhaust systems providing a minimum air velocity of 100 lineal feet per minute in the welding zone shall be used. Respiratory protective equipment shall be used when mechanical ventilation is not feasible.

(b) Pagoda Electrical, Inc. Respiratory Protection Program policy shall be followed and shall be enforced. The following shall apply:

(1) Supplied-air respirators shall be worn and used when potentially hazardous materials are employed as base metals, fluxes, coatings, platings or filler metals. These include, but are not limited to, the following materials:

(A) Beryllium (E) Lead (I) Exotic Metals or Paints
(B) Cadmium (F) Mercury not listed here
(C) Chromium (G) Zinc
(D) Fluorides (H) Inert-gas metal-arc welding or oxygen cutting of stainless steel

Securing cylinders and machinery. When welding or cutting is being performed in any confined spaces the gas cylinders and welding machines shall be left on the outside. Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement.

Lifelines. Where a welder must enter a confined space through a manhole or other small opening, means shall be provided for quickly removing him in case of emergency. When safety belts and lifelines are used for this purpose they shall be so attached to the welder's body that his body cannot be jammed in a small exit opening. An attendant with a preplanned rescue procedure shall be stationed outside to observe the welder at all times and be capable of putting rescue operations into effect.

Electrode removal. When arc welding is to be suspended for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so that accidental contact cannot occur and the machine disconnected from the power source.

Gas cylinder shutoff. In order to eliminate the possibility of gas escaping through leaks of improperly closed valves, when gas welding or cutting, the torch valves shall be closed and the fuel-gas and oxygen supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch hour or overnight. Where practicable the torch and hose shall also be removed from the confined space.

Warning sign. After welding operations are completed, the welder shall mark the hot metal or provide some other means of warning other workers.

Confined space means a relatively small or restricted space such as a tank, boiler, pressure vessel, mixing vat, sump, or pit. Ventilation is a prerequisite to work in confined spaces. All welding and cutting operations carried on in confined spaces shall be adequately ventilated to prevent the accumulation of toxic materials, possible oxygen deficiency, or explosive atmosphere.

This applies not only to the welder but also to helpers and other personnel in the immediate vicinity. All air replacing *that* which is withdrawn shall be clear and breathable. Oxygen shall never be used as makeup air.

In such circumstances where it is impossible to provide such ventilation, respirators or hose masks approved for this purpose by NIOSH/MSHA shall be used. In areas immediately hazardous to life, hose masks with blowers or self-contained breathing apparatus shall be used.

Welding and Work in Confined Spaces Procedures: (continued)

Where welding operations are carried on in a confined space and where welders and helpers are provided with hose masks, hose masks with blowers, or self-contained breathing apparatus, a worker shall be stationed on the outside of the confined space to ensure the safety of those working within.

When welding or cutting is being performed in any confined space, the gas cylinders and welding machines shall be left on the outside. Before operations are started, heavy portable equipment mounted on wheels shall be securely blocked to prevent accidental movement.

Where a welder must enter a confined space through a manhole or other small opening, a means shall be provided for quick removal of the worker in case of emergency. When safety belts and lifelines are used for this purpose, they shall be attached to the welder's body in a way that ensures his or her

body cannot be jammed in a small exit opening. A wrist harness assembly shall be used. An attendant with a preplanned rescue procedure shall be stationed outside to observe the welder at all times and shall be capable of putting rescue operations into effect.

When arc welding is to be stopped for any substantial period of time, such as during lunch or overnight, all electrodes shall be removed from the holders and the holders carefully located so accidental contact cannot occur. The machine shall be disconnected from the power source.

When gas welding or cutting, the torch valves shall be closed and the fuel-gas and oxygen supply to the torch positively shut off at some point outside the confined area whenever the torch is not to be used for a substantial period of time, such as during lunch or overnight. Where practicable, the torch and hose shall also be removed from the confined space.

All confined spaces shall be monitored for oxygen content, combustible vapors, and toxic material prior to entry and periodically throughout the operation. Periodic testing shall depend on the type of space being entered. The Safety and Health Manager shall be consulted for guidance.

Portable Gas Units Procedures- General:

Portable gas welding, cutting, and brazing equipment must be of a type approved for the use intended.

Cylinders of compressed gas must have pressure reducing regulators installed.

Cylinders in use or in a transport must be stored in an upright position and secured to prevent them from falling.

Pressure hoses shall be secured to prevent whipping.

Oxygen cylinders and fittings shall be kept free of grease and oil at all times.

Cylinders shall be kept away from external sources of heat at all times.

Cylinders shall not be dropped or handled roughly. Cylinders or welding sets in excess of 40 pounds total weight shall be transported to and from work sites by push cart or motorized vehicle.

Oxygen-fuel gas welding and cutting

General requirements. -

Flammable mixture. Mixtures of fuel gases and air or oxygen may be explosive and shall be guarded against. No device or attachment facilitating or permitting mixtures of air or oxygen with flammable gases prior to consumption, except at the burner or in a standard torch, shall be allowed unless approved for the purpose.

Maximum pressure. Under no condition shall acetylene be generated, piped (except in approved cylinder manifolds) or utilized at a pressure in excess of 15 psig (103 kPa gauge pressure) or 30 psia (206 kPa absolute). (The 30 psia (206 kPa absolute) limit is intended to prevent unsafe use of acetylene in pressurized chambers such as caissons, underground excavations or tunnel construction.) This requirement is not intended to apply to storage of acetylene dissolved in a suitable solvent in cylinders manufactured and maintained according to U.S. Department of Transportation requirements, or to acetylene for chemical use. The use of liquid acetylene shall be prohibited.

Apparatus. Only approved apparatus such as torches, regulators or pressure-reducing valves, acetylene generators, and manifolds shall be used.
Personnel. Workmen in charge of the oxygen or fuel-gas supply equipment, including generators, and oxygen or fuel-gas distribution piping systems shall be instructed and judged competent by Pagoda Electrical, Inc. for this

important work before being left in charge. Rules and instructions covering the operation and maintenance of oxygen or fuel-gas supply equipment including generators, and oxygen or fuel-gas distribution piping systems shall be readily available.

Cylinders and containers -

Approval and marking.

All portable cylinders used for the storage and shipment of compressed gases shall be constructed and maintained in accordance with the regulations of the U.S. Department of Transportation, 49 CFR Parts 171-179.

Compressed gas cylinders shall be legibly marked, for the purpose of identifying the gas content, with either the chemical or the trade name of the gas. Such marking shall be by means of stenciling, stamping, or labeling, and shall not be readily removable. Whenever practical, the marking shall be located on the shoulder of the cylinder.

Compressed gas cylinders shall be equipped with connections complying with the American National Standard Compressed Gas Cylinder Valve Outlet and Inlet Connections, ANSI B57.1-1965, which is incorporated by reference as specified in Sec. 1910.6.

All cylinders with a water weight capacity of over 30 pounds (13.6 kg) shall be equipped with means of connecting a valve protection cap or with a collar or recess to protect the valve.

Storage of cylinders-general.

Cylinders shall be kept away from radiators and other sources of heat.

Inside of buildings, cylinders shall be stored in a well-protected, well-ventilated, dry location, at least 20 (6.1 m) feet from highly combustible materials such as oil or excelsior. Cylinders should be stored in definitely assigned places away from elevators, stairs, or gangways. Assigned storage spaces shall be located where cylinders

will not be knocked over or damaged by passing or falling objects, or subject to tampering by unauthorized persons. Cylinders shall not be kept in unventilated enclosures such as lockers and cupboards.

Empty cylinders shall have their valves closed.

Acetylene cylinders shall be stored valve end up.

Valve protection caps, where cylinder is designed to accept a cap, shall always be in place, hand-tight, except when cylinders are in use or connected for use.

Oxygen storage.

Oxygen cylinders shall be stored in an upright, secured position 20 feet from any flammable gasses or petroleum products

Oxygen cylinders shall not be stored near highly combustible material, especially oil and grease; or near reserve stocks of carbide and acetylene or other fuel-gas cylinders, or near any other substance likely to cause or accelerate fire; or in an acetylene generator compartment.

Oxygen cylinders stored in outside generator houses shall be separated from the generator or carbide storage rooms by a noncombustible partition having a fire-resistance rating of at least 1 hour. This partition shall be without openings and shall be gastight.

Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high having
a fire-resistance rating of at leas one-half hour.

Portable Electric Unit Procedures-

Circuits shall be de-energized before testing, checking or transporting.

Motor-generator sets and other electrical welding equipment shall be grounded prior to use.

Rotary and polarity switches shall not be operated while the equipment is under an electrical load.

Arc welding equipment shall be inspected periodically and inspected prior to use following relocation. Power cables and electrode holders shall be inspected prior to every use.

Sheet Metal:

1. Machines shall be guarded in accordance with manufacturer's requirements.

2. Supervisors shall ensure sharp metal is stored in an area that will not pose a hazard to machine operators or personnel walking through designated aisles.

3. Work gloves shall always be worn when working with metal and metal scraps.

4. Hearing protection shall be worn when working in designated hazardous noise areas with noise sources operating or when using hand tools labeled hazardous noise producers.

PAGODA ELECTRICAL Inc.
Progressive · Professional · Prestigious

Attachment A **Hot Work Permit Sample**

1. THIS PERMIT IS VALID FOR ONE JOB ONLY
2. THIS COPY IS TO BE RETAINED BY THE PERSON AUTHORIZED TO PERFORM THE HOT WORK AND MUST BE PRODUCED ON THE REQUEST OF ANY OF OUR EMPLOYEES.
3. MANAGEMENT WILL RETAIN A COPY

Date: _____ Issue time: _____ Expiration time: _____
Exact Location of Job: _____
Work tasks to be performed:_____
_____

Potential Hazards	*Authorized Workers*
O Toxic O Electrical O Corrosive O Mechanical O Flammable O Fire/heat O Radioactive O Spills O Energy release O _____ O Stored energy O _____	Name of person doing work: _____ _____ Attendant(s): _____ Fire/safety watch: _____ Other _____

Procedures/Precautions	*Safety Equipment*	*Vessel Prep/Isolation*
O Procedures O Communications O Entry permit O Ventilation O Training O CPR/first aid O Rescue plan O Sprinkler system in service O Charged fire hose O Surfaces wetted down O Shower/eyewash located O All combustibles removed a minimum of 35 foot radius from the work area. O _____	O Hard hat O Eye protection O Hearing protection O Foot/hand protection O Protective clothing O SCBA O Respirator _____ O Check the area for explosive atmosphere O Barricade/cones O Communication devices O First aid kit O Fire extinguisher O _____	O Cleaning/purging O Ventilation O Signs/barriers O Lagging cloths/tarps O Lockout/tagout O Blanking/bleeding O Disconnect mechanical linkages O Secure moving parts O Fire Curtain Required? O _____ O _____ O_____

Special Tools	*Special Work Procedures*
O Low voltage O Non-sparking O Tools inspected for frayed/broken wires O Lighting—intrinsically safe O _____ O _____ O _____	O Never bring gas cylinders or other large equipment into space O Never block entry/exit with equipment O Shut down during breaks or overnight O Fire watch to ***remain 30 minutes after*** completion of hot work O _____

Entry authorizer (name, title, date): _____
Emergency contact: _____

ON COMPLETION OF HOT WORK, SIGN & RETURN TO PLACE OF REGISTRATION

I verify that the hot work has been completed in accordance with the authorized conditions outlined above.

PERSON DOING HOT WORK:_____SIGNED:……
……..

Location of work inspected 30 minutes after job completed
SIGNED……..