APPLICATION

All New York University Art Department scene shops.

PURPOSE

To minimize the incidence of employee, contractor and student injuries from welding, flame cutting and soldering processes.

POLICY AND GENERAL INFORMATION

Authorization from a supervisor/instructor of welding, flame cutting and soldering processes must be given to operators prior to such operations occurring. The supervisor/instructor shall be responsible for the safe practice of all processes performed by the operators. Applicable regulations shall be followed.

1.0 Responsibilities

1.1 The supervisor/instructor shall inspect the “work” area prior to operations and familiarize themselves and the students to the conditions and potential hazards.

2.0 Training

2.1 Machine operators/students shall be trained in and familiar with the processes of welding, flame cutting and soldering used in their respective job/class assignment(s). A self-audit checklist found on page 5; key on page 6, shall be conducted at least annually, more frequently if personnel or students change, by all affected personnel and a completed copy sent to Environmental Services once completed. Students must complete annually the self-study program at http://www.nyu.edu/environmental.services/pdfs/shopsafetyrefresher.pdf.

2.2 Although a “hot work permit” is not required in this situation, it is a New York City Fire Department requirement that certain certificates be posted prior to any “hot work”. The certificates that need to be posted are: A Fire Guard Permit, a Permit to Store Gas Cylinders, Air Compressor Permit (if needed), and finally operators and fire guards are required to have Certificates of Fitness. Each of these can be obtained by calling the New York City Fire Department Headquarters at 718-999-1986. For renewals call 718-999-0368.

3.0 Personal Protective Equipment (PPE)
3.1 Goggles and face shields that give maximum eye protection for each welding, flame cutting and soldering process shall be worn by operators performing these operations and helpers assisting the operators.

3.2 Flame resistant gloves and aprons shall be worn during welding, flame cutting and soldering processes.

3.3 Should protective hard hats be worn, they shall be made of a flame resistant material.

3.4 Safety shoes with protected tops should be worn to protect the operator from spark hazard. Refer to NYU Policy #112 for the proper selection of PPE.

4.0 Area Conditions for Welding, Flame Cutting and Soldering

4.1 Prior to welding, flame cutting or soldering, exposed combustible material in the work area shall be covered with a non-combustible material or moved at least thirty-five feet away from the point of operation.

4.2 If it is necessary to weld, flame cut or solder close to wood construction or near combustible material that cannot be moved, an ABC rated multipurpose dry chemical fire extinguisher shall be placed within five feet of the point of operation.

4.3 Welding and flame cutting operations shall not be permitted if any of the following conditions are present:

   4.3.1 Authorization from the supervisor has not been given to the operator to perform such processes;
   3.3.2 Sprinkler system is impaired in the work area (if applicable);
   4.3.3 Explosive atmospheres (e.g., mixtures of flammable gases, vapors, liquids or dusts in air) are present;
   4.3.4 There is the storage of large quantities of readily ignitable materials; or
   4.3.5 There are unprotected personnel in the vicinity of the work area.

4.4 One fireguard is required for each torch operator. Such person shall have not other duties assigned to him when on watch duty.

4.5 Appropriate warning signs shall be posted during welding, flame cutting and soldering processes. Once work has been completed, a warning sign shall be posted to prevent accidental contact.

4.6 Areas where welding, flame cutting or soldering processes are occurring should be well ventilated.

5.0 Guarding

Welding, flame cutting and soldering shall not be conducted unless persons in the vicinity of the work area are segregated from the activities. Appropriate guarding and barricades shall be erected.
6.0   Welding, Flame Cutting and Soldering (usage of torches)

6.1   A City-wide permit shall be obtained from the New York City Fire Department prior to any welding, flame cutting and soldering operations. The permit shall be posted in the work area.

6.2   For the storage, handling, usage and disposal of compressed gas cylinders that are used in welding and flame cutting processes, see Safety Policy #104 entitled Safe Storage, Handling, Use and Disposal of Compressed Gas Cylinders. In addition, a City-Wide Permit for the storage and handling of oxygen and combustible gases shall be obtained from the New York City Fire Department and posted.

6.3   Miscellaneous precautions when using cylinder gas

6.3.1   Hose and hose connections
-   Do not use hoses that are too long - it is difficult to purge long hoses properly and long hoses may be difficult to work with.
-   Check hoses for leaks and wear. If a leak is detected, repair it immediately. Repairs shall be made by cutting the hose and inserting a splice. Repairing a hose by taping is not adequate.
-   Store hoses in a cool dry area.
-   Use flashback devices (e.g., flame arrestors) between cylinder and hose connections and between hose and torch connections.

6.3.2   Arc Welding
-   The work area shall be barricaded such that workers other than the operator(s) do not enter the work area.
-   The case of the welding machine shall be grounded.
-   Current settings for arc welding shall not exceed 600 amps.
-   An A/C transformer type-welding unit should be equipped with a voltage regulator, which automatically reduces the open-circuit secondary voltage to 38 volts during idling. It should also be equipped with a circuit breaker and a three-conductor power supply cable.
-   Welding transformers should not be attached to lighting circuits.
-   Open circuit voltages should only be used when both of the following conditions are met:
  a.   All equipment and circuiting are fully insulated and the operator cannot make electrical contact other than through the arc itself, while the arc is maintained.
  b.   Disconnecting or voltage reducing devices operate within a time limit not exceeding one second after breaking the arc.
-   Fully insulated electrode holders shall be used to prevent the workers from accidentally striking an arc with such holders.
-   Hot electrodes must not be dipped into water.
-   Electrodes shall not be charged with bare hands or wet gloves, or when standing on wet floors or surfaces that are being used as grounding surfaces.
- If a cable (either work lead or electrode lead) becomes worn exposing bare conductors, cover the exposed portion with rubber, plastic or friction tape equivalent in insulation to the cable covering.
- Arc welding should be conducted in rooms where walls, ceiling and other exposed surfaces have a dull finish produce by a dark non-reflective paint.
- Cables shall be kept clear of the arc welding point of operation. Cables shall be kept clear of the operator.

7.0 Soldering (not involving torches)

7.1 When not in use, soldering irons should always be placed in an insulated non-combustible holder. The holder shall be such that the operator cannot accidentally touch it when reaching for it without looking.

7.2 A hot soldering iron shall never be left unattended.

7.3 All electric soldering irons should be stored in a dry storage area.

7.4 Before each use, check the equipment for defects in the iron and power cord and check the equipment to see if it is dry. Should the equipment be defective or wet, do not use and report it to the supervisor.

7.5 Face shields and gloves should be worn in the event that the solder or flux may splatter.

8.0 Outside Contractors

8.1 If outside contractors are used, they must comply with all the requirements of Policy No. 138, “Hot Work Permit for Welding, Flame Cutting and Soldering” and all applicable regulations.

8.2 The Building Manager shall be notified by the supervisor/instructor as to the date and duration the outside contractor will be performing the “hot work”.

8.3 Prior to any work commencing, the supervisor/instructor shall be given a copy of the Certificate of Fitness. Also a copy of the certificate shall be given to the Building Manager.

9.0 Welding and Cutting (Hot Work) Operations Self-Audit Checklist

(To be completed and a copy sent to Environmental Services)

Operator’s Name (Print): ____________________________ Supervisor: __________________________

Building: ____________________________ Room: ______________ Date: ____________

Check only if area complies. If area does not, mark NO next to box. See page for Key.
1. Welding and cutting operations restricted to authorized personnel.
2. FDNY certifications and permits obtained and posted.
3. Combustible materials moved at least 35 feet from “hot work” site if feasible.
4. Fire resistant curtains and/or tinted shields provided.
5. Local or general ventilation adequately used during operation.
6. Appropriate personal protective equipment provided and used.
7. Appropriate fire extinguishers provided in vicinity of “hot work”.
8. Personnel certified as Fire Guard present during “hot work” operations.
9. Oxygen and fuel gas cylinders stored separately with protective valve caps in place.
10. Regulators compatible with gas cylinders.
11. Cylinder carts used for transporting gas cylinders (recommended method).
12. Cylinders secured from tipping while in use and storage.
13. Empty or unused gas cylinders promptly returned to supplier.
14. Affected personnel trained in use of welding and cutting equipment, material hazards and control methods.
15. Personal protective equipment training provided.
16. Personnel have read NYU “Hot Work” and Compressed Gas Cylinders Policy.
10.0 Key to Welding and Cutting (Hot Work) Operations Self-Audit Checklist

1. Welding and cutting operations should be restricted to personnel who have been properly trained.
2. Fire code permits and certifications are required for all welding and cutting operations. These can be obtained by from the New York City Fire Department Headquarters by calling 718-999-1986.
3. Combustible materials, such as construction material or other building contents, must be located at least 35 feet from the “hot work” area or properly protected to prevent hot sparks from contacting them. Floors within this area must also be swept clean of all combustible materials.
4. Fire resistant curtains and tinted shields should be used to prevent fire, employee burns, and ultra-violet light exposure.
5. Self explanatory
6. Personal protective equipment specifically designed for hot work should be provided to and used by workers. Potential for material being worked on or surface coatings to emit toxic fumes should be considered.
7. An ABC rated multipurpose dry chemical fire extinguisher shall be placed within five feet of the point of operation during operation.
8. A person other than the operator should perform fire watch guard duties and should remain at the point of operation for at least 30 minutes after “hot work” operations have ended.
9. Except when in use, oxygen and fuel gas cylinders must be stored separately, at least 20 feet apart or separated by a noncombustible wall at least 5 feet high.
10. Many regulators are similar in design and construction. Ensure that regulators are designed for the cylinder used by checking the manufacturer’s model number and comparing that with the gas supplier’s requirements.
11. Self explanatory
12. Cylinders should always be secured in an upright position, and secured by chains or straps.
13. Self explanatory
14. Workers should be trained in proper equipment operation, handling and storage of welding materials, compressed gas safety, chemical hazards, and in working procedures including reading all appropriate NYU policies and participating in the self-audit checks.
15. Affected personnel must be trained by in proper use and selection of PPE. Please refer to Section 2.0 of this policy in the proper use and selection of PPE.