

## **Tufts EHS**

### **Policies and Procedures for Indoor Welding and Cutting at Tufts University**

#### **Ventilation of the work area**

##### **Rationale**

**Welding and cutting using oxy-fuel welding units or electric-arc welding units is one of the most potentially hazardous activities conducted outside the laboratory at Tufts University. Injuries can occur to the welder, any assistants and persons in the vicinity of the welding operation.**

**One quarter of welding injuries involve the eye: mechanical damage from flying particles and metal spatter, radiation burns and chemical irritation and burns. In addition, skin burns and smoke inhalation from hot metal and fires, electrical shock and inhalation of toxic metal fumes also occurs.**

**In order to prevent these injuries, several regulatory and standards organizations have developed policies and procedures that must be followed:**

**Occupational Safety and Health Administration (OSHA) 1910.252,253 and 254; 1926.350-354 (construction and maintenance welding and cutting)**

**ANSI/NFPA 51B Fire Prevention in Welding Operations**

**ANSI/AWS Z49.1 Safety in Welding, Cutting and Allied Operations**

**Tufts University is required to comply with the OSHA regulations and will adopt the additional standards as policy.**

##### **Policy and procedure**

- 1. Mechanical ventilation shall be provided.**
- 2. Mechanical ventilation rate shall be 200 cubic feet per minute single pass air discharged to the out of doors per welder unless**
  - a. The welder is protected by a full face airline respirator**

**Or**

  - b. The welder uses local ventilation to remove metal fumes and othr air contaminants from the welding area before entering the room air.**

- 3. Local exhaust is a fixed or flexible 5.5” diameter duct attached to an entry hood 12 inches or less away from the welding area operating with an exhaust rate of 600 feet per minute. This will result in a control velocity at the welding site of 100 feet per minute into the hood.**

**Local exhaust ventilation is required when welding with toxic metals including:**

**Antimony, Arsenic, Barium, Beryllium, Cadmium, Chromium, Cobalt, Copper, Lead, Manganese, Mercury, Nickel, Selenium, Silver and Vanadium.**

**All metal fume produced must be in compliance with 1910.1000 Air contaminants or substance specific regulations (OSHA).**

**Note on natural ventilation**

**OSHA does provide for the use of natural ventilation if the room has a ceiling height of 16 feet and the volume of the room is 10,000 cubic feet or more. However, this is only acceptable if compatible with other building uses.**