1.0 Policy Statement

The University of New Haven has developed a hot work policy and procedure in accordance with Occupational Health and Safety Administration (OSHA) regulations.

1.1 Purpose

The University of New Haven has a duty to its employees and students to provide a safe environment and workplace. Because hot work conducted on the premises can potentially affect the safety of University of New Haven employees, students and property, the University of New Haven is dedicated to performing this work in a safe manner. This document is intended to provide safety instructions to personnel who conduct hot work at the university including all contractor hot work.

1.2 Scope

This program covers all University of New Haven employees, contractors and associated subcontractors performing hot work in university owned, leased or subsidiary facilities.

1.3 Review

The Associate Vice President of Public Safety will review and update this policy whenever necessary or at least annually.

All the elements of this policy are considered University of New Haven policy and may be enforced as such. Failure on the part of the employees to follow the policies and safety requirements of this Plan may result in disciplinary action. If a contractor is found to be in non-compliance with the University of New Haven's hot work policy, current and future work may be jeopardized.

2.0 What are the Regulations?

The Occupational Health and Safety Administration (OSHA), requires within their regulations, as found in 1910 subpart Q that all welding cutting and brazing follow specific procedures to ensure the safety of personnel and property.

3.0 Definitions

Competent Person – Those at the University of New Haven that have been trained on the proper use of a flammable gas meter and who understand the concepts of lower and upper explosive limits.

Designated Hot Work Area - An area that due to its design, construction or modification has been deemed safe to conduct hot work without the use of special permits or conditions of work.

- Designated hot work areas not needing a hot work have been identified as the building and grounds shop and the manufacturing laboratory. All special precautions outlined in section 4.3 of this policy are required to be followed in these designated hot work areas. All other areas where hot work is performed must obtain a hot work permit before work beings.

Hot work – work entailing the use of open flame or spark producing apparatus such as, but not limited to, welding, cutting, burning, grinding, drilling jack-hammering and related heat producing jobs which could ignite combustible and flammable materials.

Incipient Fire – A small contained fire which is in the initial or beginning stage, and not of structural nature, and can be generally extinguished by using no more than two portable fire extinguishers.

Qualified Person – A person who has been trained in the use of a particular piece of equipment, to the degree that they are competent in the use of such equipment.

Responsible Parties – A member of the University of New Haven management team who by experience and training is qualified to complete and approve Hot Work Permits.

- At the University of New Haven responsible parties have been identified as the Director of Facilities, Manager of Maintenance Operations and Associate Vice President of Public Safety.

Structural or Major Fire – A fire which is NOT controllable with the use of just two fire extinguishers and needs the immediate response of a Fire Department or Fire Brigade.

4.0 Risk Identification

4.1 Responsible Person

The responsible person authorizing the work must ensure all materials that will be heated during the hot work will withstand the heat generated by the hot work (e.g. materials, adjacent to, connected to, behind and inside the materials being worked on).

4.2 General Precautions

Where practical, all combustibles (i.e., wood, paper, flammable and combustible liquids) will be relocated at least 35 feet from the work area.

4.2.1 Covering of Fixed Combustibles

Where relocation is impractical, combustibles will be protected with flame proof covers or otherwise shielded with flameproof material. If combustibles cannot be relocated or covered, hot work shall require a dedicated fire watch.

4.3 Special Precautions

Special precautions for cutting and welding shall be as follows:

- Whenever there are holes, openings, or cracks in floors, walls, etc., adequate precautions shall be taken to prevent combustible materials on other side from igniting.
- Suitable fire extinguishing equipment shall be maintained in a state of readiness for instant use.
- Gas welding/cutting: Prior to use the welder will perform a visual inspection of the welding equipment. The welder shall:
    - Ensure that compressed gas cylinders are secured in an upright position;
    - Inspect full length of hoses. Any hose with evidence of wear or damage will be removed from service;
    - Inspect regulators and their associated gauges; ensure regulators are in proper working order, and gauges are functioning and easily visible; and, ensure defective regulators or damaged gauges or site glass are removed from service;
    - Ensure that cylinders are kept far enough away from the actual welding or cutting to prevent hot slag, sparks, or flame from reaching them;
    - Ensure that torches shall be inspected for leading shutoff valves, hose couplings and tip connections and defective torches are removed from service; and
    - Ensure that oxygen cylinders and fittings are kept free of oil and grease substances, and are not handled with oily hands or gloves.

4.4 Testing for Flammable Vapors

At the University of New Haven, there is the potential for flammable vapors to be present in areas where hot work is to be completed. In these areas where flammable vapors may be present, it is required that a combustible gas test be performed to determine the flammability range of the

container or area in which the hot work is to be performed. The University utilizes an Industrial Scientific M-40 four gas meter to perform flammable vapor testing.

All in-house hot work requiring a test for flammable vapors shall only be completed by a competent person who is trained in the use of the measuring device and who understands the concepts of Lower and Upper Explosive Limits. Such test shall be conducted immediately before the hot work begins and the results will be recorded on the Hot Work Permit.

At the University of New Haven the competent person(s) to conduct these flammable vapor tests has been identified as either the Director of Facilities, Manager of Maintenance Operations and/or Custodial Services Manager. Contractors shall be responsible for providing a qualified person to conduct flammable vapor screening in the areas outlined in 4.4.1. All contractor flammable vapor screenings shall be overseen by the University of New Haven and contractors are required to notify the Facilities office of their screening findings before the hot work permit can be obtained. Gas levels must also be noted on the hot work permit at the work site.

4.4.1 Flammable Vapor Work Areas

Areas at the University of New Haven that must be checked for flammable vapors before hot work commences are as follows:

- All identified confined spaces;
- Gas meter rooms;
- Chemical storage rooms; and
- Laboratories with piped gas systems and where flammable and combustible chemicals are stored.

4.5 Lower Explosive Limit

Hot work will not be performed if the concentration exceeds ten (10) percent of the Lower Explosive Limit (LEL).

4.5.1 Detection of the Lower Explosive Limit

If the Level of Flammable/Combustible vapors or gases is detected and does not exceed ten (10) percent of the LEL, the hot work must not start until the manager responsible for the work:

- Understands the source of the flammable vapor which is present; and

- Knows the concentration will not increase while the work is being done.

4.5.2Verification of Results

In areas that may contain flammable vapors, the responsible person(s) cannot sign the Hot Work Permit until an initial test has been conducted by a qualified person and the results are within acceptable limits. In addition to the initial test, a flammable vapor test must be conducted immediately prior to work commencing.

5.0 Hot Work Permits

5.1 Obtaining a Hot Work Permit

Hot work may only begin upon the issue of a Hot Work Permit, available from the Manager of Maintenance Operations. Each hot work permit obtained at the University of New Haven must be signed by either the Director of Facilities or Manager Maintenance Operations and must also be signed by the Associate Vice President of Public Safety.

Contractors needing to conduct hot work must notify the Director of Facilities office at least 24 hours in advance of proposed hot work. It will be the requirement of this policy that contractors assist in supplying all work related information to complete the hot work permit. To contact the Director of Facilities please contact 203.932.7087.

The hot work permit can be found in appendix A of this document.

In specific instances, the University of New Haven's insurance provider may need to be notified of hot work being performed.

5.2 Completing the Hot Work Permit

The hot work permit is a three part form that tracks each step of the operation before, during and after the job.

The Manager Maintenance Operations retains part 1 of the form which lists instructions and a checklist while issuing part 2 of the form to the person conducting the hot work. Part 2 of the form is completed by the Manager Maintenance Operations, signed by all three of the universities

responsible parties, signed by the contractor performing the hot work and shall be prominently displayed in the area where hot work is being performed.
Part 1A of the hot work permit, if requested to be filled out by the university, will be completed as part 1 and 2 have been and will be issued to the person performing the fire watch (if needed).

5.3 Hot Work Permit Log

The University of New Haven shall keep a hot work permit log inclusive of date, time, building in which hot work is being completed, contractor performing hot work, fire watch contact information (if required) and hot work completion time at the university police dispatch location.

5.4 Displaying the Hot Work Permit

The Hot Work Permit must be displayed in a visible location any time hot work is in progress. Failure to display this permit will result in an immediate stoppage of work. The permit is valid only for the time period displayed on the Hot Work Permit.

5.5 Hot Work Permit Information

Each hot work permit issued by the university shall contain at least the following information:

- The effective time and date and defined work area;
- The hours during which the source of ignition may be used, not to exceed 8 hours. If the work is to extend between shifts, a new permit needs to be issued;
- Signatures from either the Director of Facilities or Manager Maintenance Operations and also the Associate Vice President of Public Safety;
- Notification shall be given to the campus police dispatcher of all hot work requiring the fire alarm system to be taken offline.
- The name and signature of the fire watch if one is determined to be needed;
- Any fire alarm system shutdowns that have taken place;
- The specific location or piece of equipment where the source of ignition will be used;
- Contact information at the university in the event of an emergency;
- The nature of the use and source of ignition; and
- Any special precautions or limitations to be observed before, during or after the use of the source of ignition, including the need for fire watch.

5.6 Termination of Hot Work Permit

The hot work permit shall be terminated under the following conditions:

- When circumstances would make the continued use of the source of ignition hazardous;
- Any time the conditions of its issuance change; and/or
- At the end of each shift (unless otherwise noted).

5.7 Completion of Work

Upon completion of hot work and final fire check, return the used permit to the facilities department. The permit will be kept on file for a minimum of 6 months.

6.0 Fire Watch

A fire watch shall be required for all cutting and welding operations in locations where a fire may develop, such as in the following:

- Combustible material is located within 35 ft. of operation and cannot be removed or protected;
- Wall or floor openings are located within 35 ft. of operation (NOTE: Fire watch shall be in position to observe opposite side of the wall or floor.);
- Combustible materials may be ignited by conduction or radiation through a floor, wall, ceiling or roof.

6.1 Procedures for a Fire Watch

A Fire watch shall:

- Have the only duty of patrolling the work area, adjacent rooms to the work area and above and below the work area and adjacent rooms;
- Have fire-extinguishing equipment readily available and be trained in its use;
- Be familiar with the procedures for reporting fire;
- Try to extinguish fire only in its incipient stage;
- Activate the fire alarm when necessary; and,

- Maintain the fire watch for at least one hour after completion of welding or cutting operations to detect and extinguish possible smoldering fires.

The fire watch inspection shall extend to floors above and below the work area, and above and below adjacent rooms. The fire watch shall sign the hot work permit one hour after work has ceased and will leave permit hanging in place.

In many cases, loss occurs within one to four hours after the hot work is completed, which is why the university's insurance company requires the work area be monitored for an additional three hours. This can be done by assigning workers or security personnel to the area or even monitoring the area through video cameras. The contractor's fire watch will sign the permit one hour after the work has been completed ONLY if university building and grounds personnel have been assigned to perform the additional three hours of monitoring the work area. At the time where the university monitoring takes over, he/she will counter sign the fire watch permit. Upon completion of the fire watch, part 2 of the hot work permit shall be signed and returned to the Manager Maintenance Operations where all copies of the permit shall be filed.

7.0 Personal Protective Equipment

7.1 Eye Protection

Persons in the welding workplace shall wear appropriate eye and face protection to protect against radiant energy and spatters. Such protection shall be in conformance with 29 CFR 1910.252(b) (2).

7.2 Respiratory Protection

Welders shall be protected from fumes and gases by an appropriately engineered ventilation system. Where this is not possible, appropriate personal respiratory protection shall be used as prescribed by following 29 CFR 1910.134, OSHA's Respiratory Protection Standard.

All contractors are required to follow their company respiratory protection policy. The university may require contractors to provide a copy of their respiratory protection policy for review and to be kept on-site until work has been completed under certain circumstances.

7.3 Skin Protection

Clothing shall be worn to protect the welder from sparks, radiation, and spatter. Such clothing shall be flame resistant and free from oil or grease. Synthetic fabrics that can melt or burn shall not be used.

Protective clothing shall consist of:

- flame resistant gauntlet gloves;
- apron or leggings;
- cape or shoulder cover when welding or cutting overhead;
- fire resistant skull cap;
- fire resistant ear plugs when sparks may enter the ears;
- Clothing shall not have cuffs, pockets, or rolled up sleeves. Sleeves and collars shall be buttoned; trousers shall overlap shoes; and
- Flammable or combustible materials, e.g. matches, shall not be carried on a person where sparks or spatter may come in contact.

8.0 Emergency Hot Work

Emergency hot work may be performed only after the Manager Maintenance Operations has been notified and the university police dispatcher has been made aware of the work.

The University understands that under extreme circumstances it may be necessary to perform hot work in emergency situations. The procedure for emergency hot work is to notify the Manager of Maintenance Operations and he/she shall then notify the university police dispatched that the work has been approved.

Contractors completing emergency hot work are required to follow all other aspects of this policy.

9.0 Audit of Hot Work Program

The hot work program at the University of New Haven shall be audited on a periodic basis to ensure compliance with this policy. Periodic audits shall be performed under the direction of the Associate Vice President of Public Safety.

In the event a contractor is found to be in non-compliance with the University of New Haven's hot work policy, the contractor's current and future work at the university may be jeopardized.