

Hot Work and Welding Management Procedures Attached to FIN-INS-22

1. Introduction

1.1 Purpose

Indiana University Insurance, Loss Control and Claims (INLOCC) and Indiana University Environmental Health and Safety (IUEHS) have developed these management procedures to prevent accidental fires, loss of life, injury, or loss or damage to property from “hot work,” as defined below. These procedures are intended to comply with the Indiana Fire Code Chapter 35 and the Occupational Safety and Health Administration (OSHA) Standards contained in 29 CFR 1910.252.

1.2 Scope

These procedures apply to all hot work operations performed on Indiana University property, including but not limited to construction or renovation projects.

1.3 Policy Statement

Anyone performing hot work must obtain and complete a hot work permit to perform hot work operations. The only exceptions are processes performed in designated areas or during an immediate emergency situation.

2. Definitions

University Safety Official – A University Safety Official may be anyone from:

- INLOCC
- IUEHS
- UAO
- Indiana University Police

Building Fire Protection System – The alarm system(s) and sprinkler system(s) in a University building.

Campus Alarm Technicians – Indiana University employees who are responsible for the maintenance of fire alarms and related equipment or who have been given the authorization to take specified alarm heads out of service in appropriate circumstances (commonly referred to as “zone out”).

Designated Hot Work Area – A permanent area that has been designated by INLOCC for the performance of hot work operations such as welding, torching, grinding, cutting, etc. This may include areas such as zone maintenance shops, art facilities, or laboratories and does not require a daily permit to perform hot work.

Commented [LVS1]: I'll come up with an online form to request a walkthrough of a designated area; a placard that can be displayed identifying the area.

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Fire Watch Supervisor - The person who is responsible for maintaining awareness for the presence of fire or hazardous conditions within the hot work area before, during, and at least 30 minutes after the hot work. Depending on the project, the Fire Watch Supervisor may be a University employee or a contractor's employee. (The "Assigned fire watch name" entry on the hot work permit.)

Fire Watch Personnel - The person(s) who maintains awareness for the presence of fire or hazardous conditions within the hot work area before, during and at least 30 minutes after the hot work. Depending on the project, Fire Watch personnel may be a University employee(s) or a contractor's employee(s). Fire Watch Personnel may also be designated to be the Fire Watch Supervisor for a project. Fire Watch Personnel shall be trained on:

- a. Hazards of the hot work jobsite in correlation with the hot work
- b. Use of an appropriate fire extinguisher
- c. Procedures for initiating the fire alarm and calling 911
- d. Practices to safely extinguish any small fire using the extinguisher or welding blankets at the job site

Fire Safety Supervisor - The Zone Maintenance Manager, Department Supervisor, Contractor Manager or like position (depending on the campus and job) who is responsible for visiting the job site to determine if the hot work can be avoided, requesting the issuance of a hot work permit by the Issuing Party as defined in §3.1, notifying the Permit Administrator and making periodic inspections of the site during hot work operations.

Hot Work - Any operation involving open flames or producing heat/sparks which includes, but is not limited to brazing, open-flame soldering, oxygen cutting, grinding, arc welding/cutting, oxy-fuel gas welding, hot taps, and torch applied roofing that are capable of initiating fires or explosions.

Hot Work Operations - Temporary maintenance, renovation, or construction operations using gas or electric powered equipment, which produces flames, sparks, or heat that is sufficient to start a fire or ignite flammable/combustible materials. This includes operations such as cutting, welding, Thermit welding, brazing, soldering, grinding, thermal spraying, thawing pipe, installation of torch-applied roof systems or any other similar operation.

Hot Work Operator - The university employee or contractor who is qualified and authorized to perform hot work such as welding, brazing, soldering, cutting and other associated work tasks.

Ignition Source Examples - open flame, torch, welders, molten slag or metal, or sparks from such work. (This is not an exhaustive list.)

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Hot Work Area - The area exposed to sparks, hot slag, radiant heat, or convective heat as a result of the hot work.

Hot Work Equipment - Electric or gas welding or cutting equipment use for hot work.

Hot Work Permit - A document that will be required when the task requires the use of a flame, sufficient heat or sparks to generate or serve as a source of ignition. Permits are issued by the responsible person at the facility under the hot work permit program permitting welding or other hot work to be done in locations referred to in Chapter 35 of the IFC 2014 edition or like codes in other states.

Online Reporting – Communications between persons requesting a hot work permit and the Issuing Unit may be by any means the Issuing Unit finds satisfactory. Issuance of a permit, changes to it, and its closing must be recorded in an online system that can be readily accessed by INLOCC and EHS, including email and text notification of each phase of the permit life.

Permit Administrator - The shop superintendent or their designee (e.g., shop supervisor) responsible for all hot work operations, program compliance and requesting hot work permits. The Permit Administrator is responsible for naming, keeping a record of personnel and training, and managing the fire watch personnel.

Permit Issuing Unit - The University department, as identified in Section 2.1, responsible for issuing hot work permits.

Undesignated Hot Work Area – An area in which hot work operations will be performed that is not considered a designated hot work area. An undesignated hot work area requires the issuance of a daily hot work permit.

3. Authority and Responsibility

3.1 Issuing Permits – the Permit Issuing Units

- a. At IUB INLOCC will issue the permits.
- b. At IUPUI/IUC: only the Campus Alarm Technicians are authorized to issue hot work permits.
- c. At IUS, IUSB, IUE and IUK: only Physical Plant administration is authorized to issue hot work permits.
- d. At IUN: The campus alarm technician, if available, or Physical Plant administration.

3.2 Fire Safety Supervisors are responsible for:

- a. Notifying all employees engaged in hot work operations and contractors of the purpose and intent of the Hot Work Management Program;
- b. Requesting hot work permits from the Issuing Unit, UAO or the Project Manager, as applicable, at least 72 hours in advance except for emergency situations;
- c. Assuming or delegating the role of Fire Watch Supervisor for each permit;

Commented [LVS2]: I need to know who the primary person issuing permits is and who their backup is (email addresses). I've received some emails but please verify for me. I will also need a list of UAO and Project Management people (name and email) so any time a shutdown or permit request is made the request can be emailed to the right people.

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- d. Making periodic job site inspections to determine compliance with hot work procedures; and
- e. Attending required training provided by the University.

3.3 Employees engaged in hot work operations are responsible for:

- a. Understanding the University's Hot Work Management Program;
- b. Notifying their supervisor when a hot work permit is needed; and
- c. Complying with the procedures defined within the Program.

3.4 University Architects Office (UAO) and Facilities Renovations (Project Managers) are responsible for:

- a. Notifying all contractors of the purpose and intent of the Hot Work Management Procedures;
- b. Determining whether contractors are in compliance with the Hot Work Management Procedures;
- c. Requesting the issuance of a hot work permit for hot work undertaken by contractors in Undesignated Hot Work Areas; and
- d. Attending required University training.

Commented [LVS3]: How will you do this? A phone call? I believe we need an online request because notification needs to go multiple places. This is the only way I know to do and have multiple notification guaranteed. I'm working on this. **See Online Reporting above.**

3.5 Contractors and sub-contractors are responsible for:

- a. Understanding the University's Hot Work Management Procedures;
- b. Complying with applicable fire and building codes;
- c. If following their own company's written Hot Work Management Program, complying with it during projects on campus and ensuring it is no less stringent than IU's policy and procedures;
- d. Submitting, with at least 72 hours lead time, appropriate shutdown notifications for Fire Alarm systems and building systems (zone-out requests) that may be affected by Hot Work activities;
- e. Submitting, with at least 72 hours lead time, requests for hot work permits to, as applicable, UAO or the University Project Manager prior to conducting hot work operations;
- f. Requests received with less than 72 hours lead time will be honored, *if possible*.
- g. Assuming the role of Fire Safety Supervisor for each permit; and
- h. Making periodic job site inspections of areas where hot work is being conducted to determine that procedures are being followed.

Commented [LVS4]: How will they do this? This can be rolled into the new form. I'll be asking for comments and help as I work on it. **I am presuming the shutdown notice goes to whomever will issue the permit, since the Issuer is supposed to have zone-out capability.**

Commented [LVS5]: This can be by the online form I'm working on. **See Online Reporting above.**

3.6 Insurance, Loss Control and Claims (INLOCC) is responsible for:

- a. Reviewing the Hot Work policy and procedures and inspecting hot work locations to determine compliance;
- b. Enforcing the applicable fire and building codes;
- c. Conducting random inspections of employee hot work projects to determine if the applicable fire and building codes are being met;
- d. Identifying all designated hot work locations and conducting annual inspections of those locations;

Commented [LVS6]: It follows we need an online registry of some kind so we can figure out what is going on. I can work on that. **See Online Reporting above.**

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- e. Conducting random walk-throughs of contractor projects and notifying the job superintendent if any potential fire, building code or hot work violations are observed; and
- f. Assisting in training of employees engaged in hot work operations..

3.7 University Environmental Health and Safety (IUEHS) is responsible for:

- a. Reviewing the Hot Work Management program annually to determine compliance with applicable OSHA regulations; contact policy owner if any updates are needed;
- b. Conducting random inspections of employee hot work projects to determine if OSHA regulations are being met;
- c. Conducting random walk-throughs of contractor projects and notifying the job superintendent if any potential OSHA violations are observed; and
- d. Developing and administering the training of affected employees and contractors.

3.8 Prohibited Hot Work Areas/Operations

Hot work shall not be performed under the following circumstances:

- a. In areas not authorized by INLOCC (designated areas) or covered by a permit (undesigned);
- b. When the building's fire safety systems are impaired (this does not include zoning out affected smoke heads) unless no alternative methods can be used;
- c. In the presence of explosive atmospheres (mixtures of flammable gases, vapors, liquids or dusts in air);
- d. in the immediate area of combustible materials

4. Designated Hot Work Areas

4.1 A designated hot work area shall be:

- a. Non-combustible, fire-resistive construction, essentially free of combustibles and flammables; this requirement also applies to the working surface for the use of the soldering and brazing operations (i.e., laboratory bench top, Duraboard, tile, etc.)
- b. Suitably segregated from adjacent areas
- c. Equipped with a fire extinguisher(s)
- d. Equipped with a **heat detector** rather than a smoke detector
- e. Equipped with **mechanical ventilation** to control smoke and fumes
- f. Inspected and approved by INLOCC prior to use of the site as a designated hot work area

4.2 Subject to 4.1.a-c, Bunsen burners may be used in a laboratory subject to the approval of EHS.

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4.3 The following conditions must be maintained at all times at a designated hot work area

- a. All combustible materials, papers, notebooks and chemicals must be removed from the surrounding (35 foot clearance)
- b. Inspect the oxy-acetylene hoses for holes, pinched points, cracks, or any other defects and determine that the hoses fits securely on the gas valve and the burner/torch.
- c. Hoses having any defects must be replaced before using.
- d. Loose clothing, long hairs or dangling jewelries should be tied at the time of using the burner.
- e. All other shop/lab personnel should be notified that the burner/torch will be in use.
- f. The open burner/torch should not be unattended.
- g. Always shut off the gas supply when done.
- h. If the oxy-acetylene is not going to be used for an extended period of time, remove
- i. Regulators and secure cylinders with protective cylinder caps if equipped.

5. Program Elements for Undesignated Hot Work Areas

5.1 Job Site Inspection:

- a. Prior to the issuance of the hot work permit,
 - i. The Fire Safety Supervisor shall visit the job site to determine if the hot work can be avoided.
 - ii. If the hot work involves open flame cutting, the Fire Safety Supervisor shall consider whether an alternative method of conducting the work shall be considered (e.g., hand saw, pipe cutter) is feasible.
 - iii. If an alternative method of conducting the work is not feasible, the Fire Safety Supervisor shall ensure the hot work site is safe.
- b. Prior to beginning work at any hot work job site each day, the Fire Safety Supervisor authorizes the job and requests issuance of a hot work permit from the Issuing Unit.
- c. Each day, prior to issuance of a hot work permit for that day, the Issuing Unit shall conduct a jobsite review using the checklist contained on the daily hot work permit.
- d. If a contractor's site, it is the responsibility of the contractor to ascertain that:
 - i. Persons engaged in hot work operations and fire watch personnel are trained in the safe operation of their equipment; and,
 - ii. Hot work operator(s)/fire watch personnel understand the emergency procedures in the event of a fire or general emergency;
- e. If a university sit, it is the responsibility of EHS to ascertain that:
 - i. Persons engaged in hot work operations and fire watch personnel are trained in the safe operation of their equipment; and,
 - jj. Hot work operator(s)/fire watch personnel understand the emergency procedures in the event of a fire or general emergency;

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- f. All hot work job site reviews shall include, but are not limited to, the following:
 - i. Apparatus used for the hot work is in good condition;
 - ii. Fire protection and extinguishing equipment are properly located on-site;
 - iii. Hot work operator(s) are utilizing personal protective equipment;
 - iv. A determination that the proposed work does not jeopardize the health and safety of the hot work operator or others; and
 - v. Campus alarm systems have been prepared for the hot work and the permit is signed by the proper Issuing Unit as defined in §3.1.
- g. If the criteria are not met, the Issuing Unit shall not issue a permit for that day's work until all procedures are satisfactorily met.
- h. All permits must be prominently displayed at the hot work job site.
- i. The Fire Safety Supervisor shall issue a shutdown of hot work operations upon request by a University Safety Official in order to issue a hot work permit and to evaluate the need to disarm any portions of the building fire protection system.
- j. Any questions concerning hot work management should be directed to the Fire Safety Supervisor or INLOCC.

5.2 Fire Watch:

- a. IFC Chapter 35 requires a fire watch when hot work is performed in a location where the following condition(s) exist:
 - i. Combustible materials in building construction or building contents are closer than 35 feet to the point of operation of the hot work;
 - ii. Combustible materials are more than 35 feet away, but are easily ignited by sparks;
 - iii. Wall or floor openings within a 35 feet radius expose combustible materials in adjacent areas, including concealed spaces in walls or floors;
 - iv. Combustible materials are adjacent to the opposite side of partitions, walls, ceiling, or roofs and are likely to be ignited.
- b. Trained fire watch personnel are required to be present at all times when hot work is being conducted, armed with portable fire extinguishers. Contractors are required to provide their own fire watch personnel and fire extinguishers.
 - i. The operator of hot work equipment cannot serve as fire watch personnel during hot work operations.
- c. IFC Chapter 35 will be used as the standard on IU projects at out-of-state locations unless that state's regulations are more restrictive.
- d. The fire watch shall:
 - i. Be aware of the inherent hazards of the work site;
 - ii. Actively monitor whether safe conditions are being maintained during the hot work operation;
 - iii. Have the authority to stop the hot work operations if unsafe conditions develop;
 - iv. Have fire extinguishing equipment immediately available and be trained on how to use it; and

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- v. Activate emergency response in the event of a fire.
- e. Once the hot work is completed, the fire watch shall remain in the area of the hot work site for at least 30 minutes to monitor the worksite and make certain that there is no smoldering combustion taking place. After the 30-minute monitoring period is complete, the fire watch shall sign the bottom part of the Permit, which states: "The work area was observed for at least 30 minutes after work was completed and found to be safe." The fire watch personnel shall return the completed Permit to the Fire Safety Supervisor.
- f. Upon receipt of the bottom part of the Permit, the Fire Safety Supervisor shall do a walk-through of the hot work job site and then return the bottom part to the Issuing Unit so that alarm and/or sprinkler systems can be returned to service as needed.
- g. The Issuing Unit or their delegate will complete the permit process and send notification to INLOCC.

Commented [LV57]: Use of the online form is needed here because this will cancel the need for further inspections. See Online Reporting above.

5.3 Prohibitions:

- a. With the sole exception of handheld MAPP gas cylinders, propane gas shall not be used for hot work in any occupied University buildings.
- b. A hot work permit shall not be issued for the following areas until the conditions prohibiting hot work have been eliminated:
 - i. In the presence of explosive atmospheres, or in situations where explosive atmospheres may develop inside contaminated or improperly prepared tanks or equipment which previously contained flammable liquids;
 - ii. In areas with an accumulation of combustible debris, dust, lint and oily deposits;
 - iii. In areas near the storage of exposed, readily ignitable materials such as combustibles;
 - iv. On a container such as a barrel, drum or tank that contained materials that will emit toxic vapors when heated;
 - v. In a confined space, until the space has been inspected and determined to be safe. Refer to the Confined Space Entry program located at http://www.indiana.edu/~uhrs/safety/Part4/confined_space.html

5.4 Storage of Equipment:

Equipment and supplies related to hot work operations shall be stored in a manner that will prevent the creation of hazardous conditions. Refer to the [Compressed Gas Cylinder Program](#) for information regarding the storage of compressed gas cylinders.

6. Training

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Employees affected by this program shall be trained on all aspects of this program by IUEHS and INLOCC.

7. References

Indiana Fire Code Chapter 35 – Welding and Other Hot Work

29 CFR1910.252 Occupational Safety and Health Administration (OSHA) Welding, Cutting, Brazing.

[Welding, Cutting, and Brazing Safety Program](#)

8. Revision Date

New document: