



West Virginia University®

ENVIRONMENTAL HEALTH & SAFETY

HOT WORK SAFETY PROGRAM

WEST VIRGINIA UNIVERSITY
OFFICE of ENVIRONMENTAL HEALTH AND SAFETY

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1.0 Scope

This program includes all aspects of hot work operations as described in the National Fire Protection Association Standard, most current adopted edition. This program shall provide guidance for person, including contractors, who manage, supervise and perform hot work. This program shall apply to the entire West Virginia University (WVU) campus and its Regional campuses.

1.1 This Hot Work program and permit shall apply to the following hot work Processes;

- ❖ Brazing
- ❖ Riveting
- ❖ Flame Cutting
- ❖ Cutting
- ❖ Grinding
- ❖ Soldering
- ❖ Welding
- ❖ Thawing pipes
- ❖ Heat gun and/or Torch applied roofing
- ❖ Torch applied street symbols
- ❖ Cad welding
- ❖ Any operation involving open flames, or heat and/or sparks

1.2 This Hot Work Program and permit shall not apply to:

- ❖ Candles
- ❖ Pyrotechnics or special effects
- ❖ Cooking operations
- ❖ Hand held hair dryers below 2000 watts and/or 140 degrees Fahrenheit.
- ❖ Paint stripping guns below 2000 watts and/or 140 degrees Fahrenheit.
- ❖ Electric soldering irons
- ❖ WVU Asphalt pavers with internal heaters or burners.
- ❖ Equipment with permanently mounted internal heaters or burners.

2.0 Purpose

The purpose of this program is to establish requirements for work involving burning, welding or similar operations that are capable of initiating fires or explosions to minimize the probability of property loss and personal injury. This program also contains a “Hot Work Permit”, which is used to authorize and document hot work operations on the WVU campus and its Regional campuses.

3.0 Definitions

- 3.1 **AHJ** – the local or State Fire Marshal responsible for enforcing the requirements of NFPA 51B.
- 3.2 **Combustible** – any material capable of catching fire and burning.
- 3.3 **Regional Campuses** – the WVU institutions and related entities located outside of the main WVU campus.
- 3.4 **EHS** – Environmental Health and Safety
- 3.5 **Facilities Maintenance Unit 35** – a group of WVU workers and technicians who are assigned the task of responding to emergencies, fire alarms, emergency repairs and other repairs or breakdown issues that occur during after normal working hours on the WVU main campus.
- 3.6 **Fire Watch** – an individual assigned to a temporary situation to ensure that hot embers, brands, welding slag or sparks from any hot work activity, do not travel or make contact with any combustible or ignitable material. (See Section 4.6 for duties and responsibilities)

NOTE: This Fire Watch is not the individual required to perform fire watch activity as described in NFPA 101, 9.6.1.6 and 9.7.6 as it relates to the total or partial shutdown of a required fire alarm or sprinkler system. Contact WVU Fire Control (304) 293-8120 for assistance in relation to fire alarm or sprinkler system shutdown.

- 3.7 **Flammable** – easily set on fire or ignited, readily combustible.
- 3.8 **Hot Work Operator** – the individual handling the hot work operation and equipment.
- 3.9 **Hot Work Permit** – the employers’ written authorization to perform operations capable of providing a source for ignition or explosion. (See Appendix A)
- 3.10 **NFPA 51B, Section 5.1** – PPE shall be clothing selected to minimize the potential for ignition, burning, trapping hot sparks, and electrical shock.
- 3.11 **Permanent Designated Hot Work Operations Area-** A permanent location designated and approved by Environmental Health and Safety for hot work operations. (See Appendix D)
- 3.12 **Permit Authorizing Individual (PAI)** – The individual designated by management, for a campus or department to authorize hot work, including the main campus and its Regional campuses. (See Section 4.4 for duties and responsibilities)

- 3.13 Permit System** – the employer’s written procedure for preparing and issuing hot permits for hot work activity.
- 3.14 SHE** – Safety and Health Extension
- 3.15 Supervisor/Lead** – the individual responsible for approving the use of the Hot Work Permit and that all requirements indicated on the permit are followed.
- 3.16 Temporarily protect-** Actions taken to prevent nuisance alarms with smoke detectors in affected hot work areas. These actions include applying blue painters tape or plastic covers over smoke detectors. Temporary protection must be removed from smoke detectors when hot work activities are complete. *Only PAI(s) or a designee assigned by the PAI shall perform these actions.*
- 3.17 WVU Fire Safety Systems/Fire Control** – a division of Facilities Management comprised of workers and technicians assigned the task of maintaining, servicing and repairing fire related equipment and systems on the main WVU campus.

4.0 Roles and Responsibilities

The Hot Work Program roles and responsibilities are identified in the following sections and play an important role in safety at WVU. The success of the program relies on the WVU employees adhering to and following the hot work procedures.

Management, contractors, the Permit Authorizing Individual (PAI), the fire watch, and the operators shall recognize their mutual responsibility for safety in hot work operations.

4.1 Environmental Health and Safety (EHS)

- ❖ Design, develop and maintain the Hot Work Program at WVU.
- ❖ Provide guidance to WVU employees concerning any questions they have concerning the hot work program.
- ❖ Maintain WVU Hot Work Permits and training records.
- ❖ Update and make changes to the WVU Hot Work Program and Hot Work Permit as required.
- ❖ Audit WVU Hot Work program, see Section 9.0
- ❖ Inspect hot work processes.
- ❖ When contacted by management, will audit for a permanent hot work area.
- ❖ Provide permanent hot work area signage and work with management to ensure signs are posted.

4.2 Safety and Health Extension (SHE)

- ❖ Develop curriculum and provide training.
- ❖ Assist with the selection of equipment.
- ❖ Provide guidance to WVU employees concerning questions they have concerning the hot work program.
- ❖ Audit Hot Work program, see Section 9.0.
- ❖ Inspect hot work processes.

4.3 WVU Management

- ❖ Management or their designated agent shall be responsible for the safe operations of hot work activity.
- ❖ Management shall designate a Permit Authorizing Individual (PAI).
- ❖ Management shall ensure that equipment used for hot work is maintained and in safe operating condition.
- ❖ Management shall ensure that all individuals involved in hot work operations, including contractors, be familiar with the Hot Work Program.
- ❖ Management shall designate permanent hot work operation areas by completing Permanent Hot Work Operation Area Checklist (Appendix D) and forwarding to Environmental Health and Safety.
- ❖ Management shall advise all contractors about specific hazards in relation to flammable materials, hazardous processes or conditions, or other potential fire hazards that may impact contractor hot work.
- ❖ Management shall alert Contractor to the requirements of Section 6.3.
- ❖ Management shall devise and implement SOP's per department needs and in accordance with this program.
- ❖ Management will contact EHS for a determination of a Permanent Hot Work Area.
- ❖ Management will ensure that any private Contractor conducting hot work on the WVU main campus or its Regional campuses, will be given access to the WVU Hot Work Program and Hot Work Permit. Information will be provided to the Contractor endorsing the contract to provide the requested task.

4.4 WVU Project Management

- ❖ The Project Manager shall ensure that all contracts state that Contractors must follow all applicable OSHA and NFPA requirements regarding Hot Work operations.
- ❖ The Project Manager responsible for a project requiring hot work activities will contact the Zone Manager and Building Supervisor and notify them that a hot work operation is planned in their respective zones and/or buildings.
- ❖ The Project Manager is responsible for collecting and forwarding all project related hot work permits to WVU EHS.

4.5 Permit Authorizing Individual

- ❖ Shall attend WVU Hot Work training.
- ❖ Shall attend Permit Authorizing Individual (PAI) training.
- ❖ Inspect area prior to hot work activities and complete the Hot Work permit as necessary.
- ❖ Ensure that a hot work permit is issued and posted at the hot work area prior to the start of hot work.
- ❖ Ensure that all employees are following hot work procedures.
- ❖ Shall determine if a fire watch is required for the specific WVU hot work activity and make sure a fire watch is available using the Fire Watch Decision Tree (See Appendix C)
- ❖ Make a final check ½ hour after hot work activities are complete where a fire watch has not been established.
- ❖ Ensure that fire extinguishers are available.
- ❖ Confirm fire alarm components affected by hot work are temporarily protected and reestablished once hot work is complete by contacting main campus Fire Control or campus designee as specified in the Permit Authorizing (PAI) hot work training.

NOTE: If the PAI must remove from service more than 6 detectors the PAI will request assistance from WVU Fire Safety Systems concerning fire alarm or fire alarm component shutdown.

- ❖ Shall complete the pre-authorization signature and verify the Fire Watch signature section of the hot work permit has been completed.
- ❖ Forward a copy of the hot work permit to Environmental Health and Safety within 24 hours of the completion of hot work activities.
- ❖ File a copy of the hot work permit in the office of the entity conducting the hot work activity.

4.6 Employees (Hot Work Operators)

- ❖ Shall attend training conducted by Safety and Health Extension for hot work operations and hot work permit requirements and be familiar with safety precautions and the proper use of the hot work permit.
- ❖ Shall inspect all equipment to ensure it is in safe operating condition before use.
- ❖ Shall handle equipment safely and use it so not to endanger lives and property.
- ❖ Shall have the PAI's approval before beginning any hot work operations.
- ❖ May temporarily protect smoke detectors if instructed to by the PAI.
- ❖ Shall cease hot work operations if unsafe conditions develop, and shall notify the area supervisor and/or PAI for reassessment of the situation.

4.7 Fire Watch

- ❖ A fire watch will be provided by the contractor or WVU department conducting the hot work operation during the time the hot work is being done.
- ❖ Fire watch will maintain their watch duties for one half hour (½) after hot work operations have ceased.
- ❖ Will be trained and supplied with approved fire extinguishers.
- ❖ Fire watch is trained and will have the ability to sound a warning alarm in the event of a fire.
- ❖ Ensure that safe conditions are maintained during hot work operations.
- ❖ Shall have the authority to stop the hot work operations if unsafe conditions develop.
- ❖ If circumstances demand, an additional fire watch may be required in adjoining areas above, below or adjacent to the hot work activities.

NOTE: This fire watch is not the individual required to perform fire watch activity as described in NFPA 101, 9.6.1.6 and 9.7.6 as it relates to a total or partial shutdown of a required fire alarm or sprinkler system. Contact WVU Fire Safety Systems (304 293-8120) for assistance in relation to fire alarm or sprinkler system shutdown.

5.0 Training

Employees involved with hot work operations are to be trained to assure knowledge and understanding of hot work dangers. Hot Work training is a prerequisite for Permit Authorizing Individual (PAI) training.

- ❖ Hot Work Training Includes
 - WVU Hot Work Program
 - Hot Work Definitions
 - Roles and Responsibilities
 - Summary of Standards: NFPA 51B and OSHA 29 CFR 1910.252
 - The Permit Authorizing Individual (PAI)
 - Fire Watches
 - Hot Work safe work practices
 - Permanent Hot Work Operation areas
 - The Hot Work Permit
 - Recordkeeping requirements
- ❖ Permit Authorizing Individual (PAI) Training includes
 - Overview of WVU's Hot Work Program
 - Area Inspection process

- Hazard recognition and Control including:
 - Safe equipment operation
 - Control of combustibles
 - Protection of area processes
- Duties of the PAI
- The Hot Work Permit
- Temporarily protect fire alarm components

6.0 Procedures

- ❖ The Hot Work Operator will contact the PAI for the approval of a Hot Work Permit.
- ❖ The PAI will verify the following:
 - Verify all combustible materials within a 35 foot radius of the planned hot work operation's be moved and any loose combustible materials lying on the floor within the 35 foot radius be swept.
 - Verify that a fire watch has been established if required.
 - Verify that a fully charged and operable fire extinguisher is available.
 - Complete all elements of the hot work permit.
- ❖ The PAI shall assure hot work operations will not cause accidental operation of automatic fire detection, suppression systems or special extinguishing systems.
- ❖ The PAI will complete the Hot Work Permit (See Appendix A).
- ❖ Hot Work Permit must be posted at hot work operation site.
- ❖ Once hot work operations are complete and the Final Check section of the permit has been endorsed as necessary, the Permit shall be returned to the PAI.
- ❖ The completed permit will be forwarded to Environmental Health and Safety within 24 hours of completion by fax (304-293-7257).

6.1 Hot Work Permit (See Appendix A)

- The Hot Work Permit is the written and/or printed document to authorize and control hot work operations on the main WVU campus and its Regional campuses.
- The permit shall be completed and issued by the Permit Authorizing Individual (PAI) prior to any hot work activities being undertaken.
- Methods to meet the intent of the NFPA standard for hot work must follow the WVU Hot Work Program, NFPA 51B and OSHA.

6.2 Permanent Hot Work Area Determination

- Management will contact EHS to respond and determine any space designated as a "Permanent Hot Work" area.
- EHS will evaluate the indicated area using the parameters found in Appendix D.

- If designated, EHS will provide and post proper signage designating the “Permanent Hot Work Area.”
- EHS will maintain a list of designated “Permanent Hot Work Areas” in Appendix E. (A link in the Appendix has been provided)
- EHS will maintain the hard copies of the designated “Permanent Hot Work Area” forms (Appendix D). (A link in the Appendix has been provided)

6.3 Contractors

- Contractors shall follow the provisions of NFPA 51B, *Fire Prevention during Welding, Cutting, and other Hot Work* and OSHA 29 CFR 1910.252 during any hot work operations on the WVU main campus and its Regional campuses.
- Contractors will issue and utilize their own hot work equipment.
- Contractors will provide and use their own documents and record keeping activity (i.e., Hot Work Permit, Hot Work Program, Training Records etc.).
- The Contractor is required, once hot work operations are ended, with the responsibility of forwarding a copy of their completed hot work permit to the WVU Project Manager that has the responsibility for the project.

7.0 Recordkeeping

Item	Records Location	Retention Period
Hot Work Permit - Copy	PAI Office	1 Year
Hot Work Permit	EHS Office	1 Year
Permanent Hot Work Area	EHS Office	Terminal or reclassified

8.0 References

- ❖ NFPA 51B
- ❖ OSHA 29 CFR 1910 252
- ❖ Bowling Green State University Hot Work Program
- ❖ Auburn University Hot Work Program
- ❖ Department of Homeland Security Hot Work Program

9.0 Program Review

- ❖ The Hot Work Program will be reviewed as necessary by Environmental Health and Safety, Safety and Health Extension, and WVU Management.
- ❖ The program will be updated and changed as needed in response to concerns of management and employees, or changes to code regulations.

10.0 Program Revisions

- ❖ Any revisions to the hot work program will include an explanation for the change needed and how it will affect the current adopted program.
- ❖ Changes to the current hot work program will include the changes from the last revision.

11.0 Appendices

- Appendix A - (Hot Work Permit)
- Appendix B - (Permit Instructions)
- Appendix C - (Fire Watch Decision Tree)
- Appendix D - (Permanent Hot Work Operation Area Checklist)
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APPENDIX A – Hot Work Permit



HOT WORK PERMIT

(Post completed permit at the work site)



INSTRUCTIONS : Hot Work Permit instructions can be found in Appendix B of WVU Hot Work Program

COMPLETE CHECKLIST AND MARK BOX WHERE APPLICABLE

HOT WORK BEING DONE BY:

Employee Name : _____

LOCATION:

Building: _____

Floor: _____

Brief description of task, materials and methods:

Fire Watch Required? Yes _____ No _____

Name(s) of fire watch (if required):

Time Started: _____ Completed: _____ AM
Permit Expires / / Time _____ PM

Signed _____
Permit Authorizing Individual (PAI)

FINAL CHECK

Work area and all adjacent areas to which sparks and heat might have spread, including floors above and below and on opposite side of wall(s) were inspected 30 minutes after the work was complete and were found fire safe.

Signed _____
Fire Watch

Requirements within 35 ft. (10 m) of work.

- Ensure combustible building materials are no closer than 35 feet of hot work operations.
- Flammable liquids, dust, lint, and oil deposits removed.
- Explosive atmosphere in area eliminated.
- Floors swept clean.
- Combustible floors wet down, covered with damp sand or fire resistant sheets.
- Remove other combustibles where possible. Otherwise protect with fire resistant tarpaulins or welding screens.
- All wall and floor openings covered.
- Fire resistant tarpaulins suspended beneath work.

Work on walls or ceilings/Enclosed equipment (tanks, container, ducts, dust collectors, etc.).

- Construction at HW operation site is non-combustible.
- Openings or cracks in walls, floors, or ducts with in 35ft of hot work are protected.
- Non -combustible construction or insulation.
- Danger does not exist by conduction of heat into another area.
- Ducts or conveyor systems that might carry sparks to distant combustibles are suitably protected or shut down.
- Enclosed equipment cleaned of all combustibles
- Containers purged of all flammable liquids/ vapors. (Results of gas detection verified by the PAI)

Fire Watch

- A fire watch will be provided by the contractor or WVU department conducting the hot work activity during the time the hot work is being done.
- Fire watch will maintain their duties for 1/2 hour after hot work operations have ceased.
- Will be trained and supplied with suitable fire extinguishers.
- Fire watch is trained and will have the ability to sound a warning alarm in the event of fire.
- If circumstance demand, an additional fire watch may be required in adjoining areas above, below or adjacent to the hot work activities.

Safety

- Sprinkler systems and extinguishers operable and available.
- Make sure the hot work area is provided with ventilation to discharge smoke, grinding dust or fumes to the outside.
- Hot work equipment in good repair and at work site.
- Lockout/tag out required and notification of affected employees and building supervisors.
- If required, utilization of the WVU Confined Space Entry Permit.

WHEN HOT WORK ACTIVITIES ARE FINISHED FORWARD A COPY OF THE PERMIT TO ENVIRONMENTAL HEALTH AND SAFETY WITHIN 24 HOURS TO:

FAX: (304) 293-7257 or
timothy.dawson@mail.wvu.edu

APPENDIX B – Permit Instructions

INSTRUCTIONS FOR COMPLETING HOT WORK PERMIT

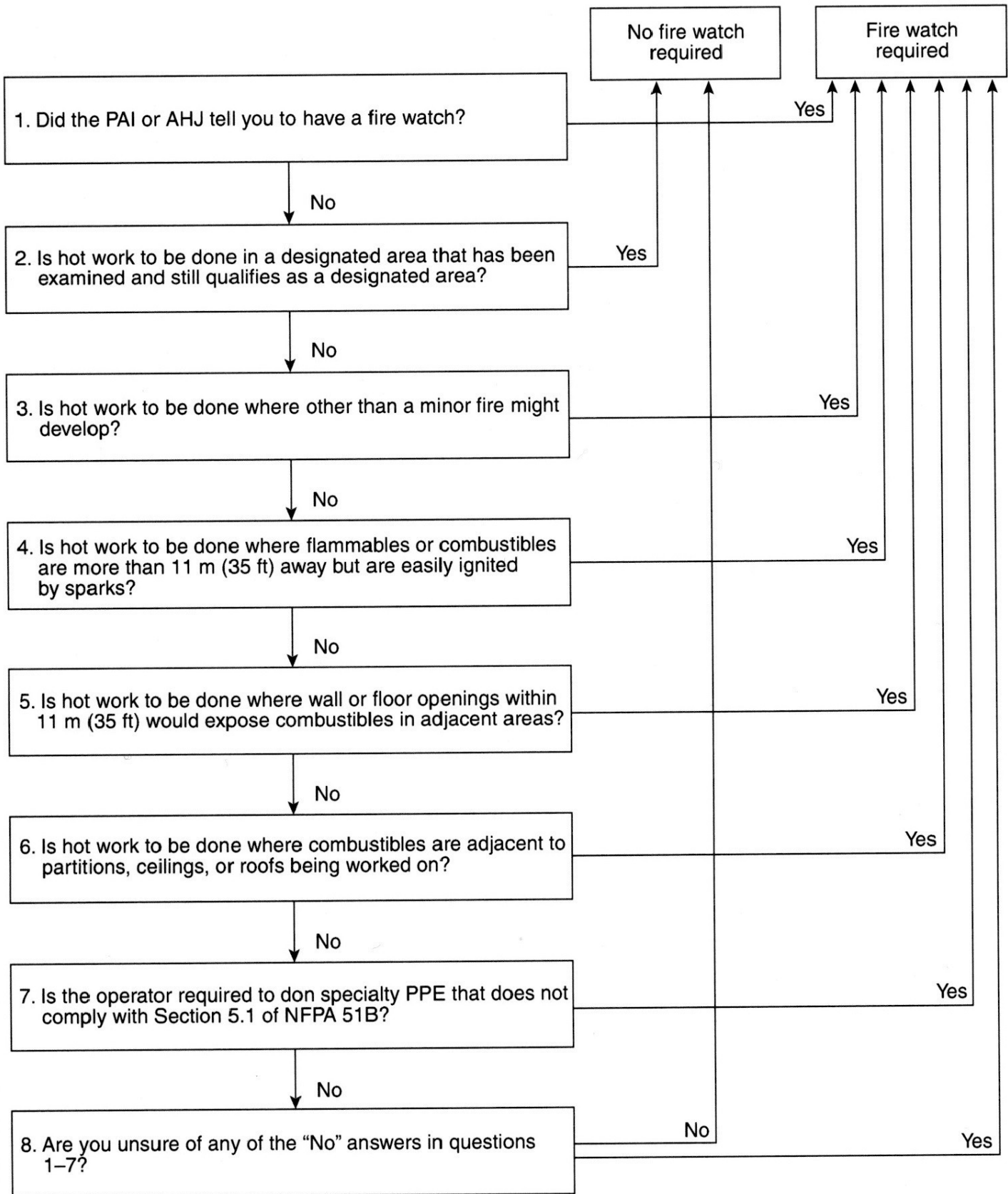
- Step 1.** The Permit Authorizing Individual (PAI) will visually inspect the hot work location and deactivate fire alarm components as necessary.
- Step 2.** If all requirements are adequately met, the Permit Authorizing Individual (PAI) shall approve hot operations by completing the Hot Work Permit and signing the permit.
- Step 3.** The Hot Work Permit will be maintained and posted at the worksite throughout the hot work.
- Step 4.** The Contractor and/or Employee performing the hot work is responsible for following the requirements on the Hot Work Permit.
- Step 5.** Once hot work operations are completed, and the ½ hour safety period has expired, the Hot Work Permit can be rendered invalid by the PAI.
- Step 6.** Once the permit is rendered invalid, the PAI shall verify all fire alarms and devices have been reactivated and made operable.
- Step 7.** Copies of all completed Hot Work Permits will be forwarded to EHS via inter office mail or by FAX to (304) 293-7257 or email to timothy.dawson@mail.wvu.edu.

QUESTIONS CONCERNING THIS HOT WORK PERMIT
SHOULD BE DIRECTED TO
ENVIRONMENTAL HEALTH AND SAFETY
(304) 293-7431

APPENDIX C – Fire Watch Decision Tree

FIRE WATCH DETERMINATION

APPENDIX C



APPENDIX D – Permanent Hot Work Operations Area Checklist

Permanent Hot Work Area Determination Form NFPA 51B



*A permanent hot work area is a designated location for hot work. A hot work permit is **NOT** required when performing hot work within the designated area.*

Building:

Campus:

Room Number/Description of Location:

Instructions: In order for a hot work area to become a designated permanent area, the area must meet the criteria below and approved by a member of WVU Environmental Health and Safety (EHS).

1. Is the area constructed of non-combustible and fire resistive material?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2. Is the area essentially free of combustible and flammable gases, vapors, liquids and dusts?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3. Is the area suitably segregated from adjacent areas? (i.e.. walls, doors)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4. Is there a fully operational sprinkler system or other means of fire suppression/ inspection in place?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
5. Is the area equipped with the appropriate fire extinguishers?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
6. Is the area equipped with a suitable air exhaust system?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Comments:

Upon reviewing the items above, EHS will determine if the area can be a permanent hot work area.

The following criteria is required to meet WVU policy:

Has signage been posted on entranceways leading into the permanent hot work area?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Has a member of management for the building been notified of the newly approved hot work area?	Yes <input type="checkbox"/>	No <input type="checkbox"/>

Printed EH&S Employee Name:

EH&S Employee Signature:

Date:

Area Reference #:

APPENDIX E – Location of Permanent Hot Work Areas

Go to Link:

<http://ehs.wvu.edu/files/d/15b67423-cda1-4e79-aafa-83e5d571c767/appendix-d-permanent-designated-hot-work-areas.pdf>

APPENDIX F – Hot Work Permit Authorizing Individuals (PAI) List

http://ehs.wvu.edu/files/d/3296edf2-9dc6-474b-bb46-1ccea6b99105/hot-works-pai-list-for-web_2015.pdf