Hot Work Toolbox Talk

WHAT'S AT STAKE?

Working with ignition sources near flammable materials is referred to as "hot work." Welding, soldering and cutting are examples of hot work. Fires are often the result of the "quick five minute" job in areas not intended for welding or cutting. Getting a hot work permit before performing hot work is just one of steps involved in a hot work management program that helps to reduce the risk of starting a fire by hot work in areas where there are flammable or combustible materials.

WHAT'S THE DANGER?

Common types of hot work include:

- Welding, brazing, and soldering.
- Grinding and cutting.
- Thawing pipes.
- The use of open flames, blow-lamps, and torches.
- Using bitumen and tar boilers.
- The use of hot air blowers and lead heaters.

This is not an exhaustive list, but it does include the most common examples of hot work and those that can pose significant risks without proper safety precautions.

HOT WORK COMMON HAZARDS

Hot work can present numerous types of hazards to workers and the environment around them. For example, hot work can harm people by causing burns, entrapment, illness due to fumes, eye damage from debris, or hearing loss due to noise.

However, the most common and significant risk of hot work is **fire**. All types of hot work can easily start a fire without proper safety procedures.

Fire hazards posed by hot work include:

- **Flying sparks.** This is the main risk posed by hot work. Sparks can easily get trapped in cracks, pipes, gaps, holes, and other small openings, where it will potentially smolder and start a fire.
- **Flammable swarf, molten metals, slag, cinder, and filings.** The debris and residue that hot work creates are often highly combustible and/or hot.
- **Heat conduction when working on pipes.** Hot work can cause a pipe to heat up substantially and this heat can easily transfer through the process of conduction to another, potentially flammable surface and cause a fire.
- **Hot surfaces.** If you don’t properly remove flammable materials or substances from the area before work, they could come into contact with a surface that has become hot during the work and easily start a fire.
- **Explosive atmospheres.** In certain environments, there may be vapours or gases in the air that are highly combustible and could ignite when exposed to hot work. Similarly, the hot work could generate fumes that create an explosive atmosphere.

Caution

Watch for symptoms of metal fume fever, caused by breathing fumes formed while welding. Symptoms may include a metallic taste in the mouth, dry nose and throat, weakness, fatigue, joint and muscle pain, fever, chills and nausea. Notify your supervisor immediately if you experience any of these symptoms.

HOW TO PROTECT YOURSELF

Hot work management programs are put in place to control or eliminate hot work hazards and their risks. Programs include the development of **policies, procedures, and the assignment of responsibilities and accountabilities** for all aspects of hot work. A program includes:

1. **Policies**
2. Where hot work is permitted
3. When hot work is permitted
4. Who authorizes, performs, and monitors hot work activities
5. **Procedures**
6. What must be assessed before permitting/performing hot work in an area or on a process piece of equipment or area
7. What to do to prepare an area for hot work
8. What to do if hot work cannot be avoided in a particularly hazardous area
9. What hot work tools are required
10. How to obtain a hot work permit, when they are required, and who can administer them
11. **Training**
12. Employees, supervisors, maintenance individuals, fire wardens, trained fire watch individuals, and contractors all have different roles, and must be trained accordingly
13. **Communications**
14. Posting procedures
15. Posting policies
16. Posting signs in areas that are prohibited from having hot work performed in them

GOOD HOT WORK PRACTICES

- Make sure that all equipment is in good operating order before work starts.
- Make sure that all appropriate personal protective devices are available at the site and each worker has been trained on how to use, clean, and store them properly.
- Inspect the work area thoroughly before starting. Look for combustible materials in structures (partitions, walls, ceilings).
- Move all flammable and combustible materials away from the work area.
- If combustibles cannot be moved, cover them with fire resistant blankets or shields. Protect gas lines and equipment from falling sparks, hot materials, and objects.
- Sweep clean any combustible materials on floors around the

work zone. Combustible floors must be kept wet with water or covered with fire resistant blankets or damp sand.

- Use water ONLY if electrical circuits have been de-energized to prevent electrical shock.
- Remove any spilled grease, oil, or other combustible liquid.
- Vacuum away combustible debris from inside ventilation or other service duct openings to prevent ignition. Seal any cracks in ducts. Prevent sparks from entering into the duct work. Cover duct openings with a fire resistant barrier and inspect the ducts after work has concluded.
- Make sure that appropriate fire extinguishers (e.g., ABC fire extinguishers) are available and easily accessible.
- Make sure that the first-aid boxes are available and easily accessible.
- Block off cracks between floorboards, along baseboards and walls, and under door openings, with a fire resistant material. Close doors and windows.
- Cover wall or ceiling surfaces with a fire resistant and heat insulating material to prevent ignition and accumulation of heat.
- Secure, isolate, and vent pressurized vessels, piping and equipment as needed before beginning hot work.
- Inspect the area following work to ensure that wall surfaces, studs, wires or dirt have not heated up.
- Post a trained fire watcher within the work area, including lower levels if sparks or slag may fall during welding, including during breaks, and for at least 60 minutes after work has stopped. Depending on the work done, the area may need to be monitored for longer (up to 3 or more hours) after the end of the hot work until fire hazards no longer exist.
- Eliminate explosive atmospheres (e.g., vapours or combustible dust) or do not allow hot work. Shut down any process that produces combustible atmospheres, and continuously monitor the area for accumulation of combustible gases before, during, and after hot work.
- If possible, schedule hot work during shutdown periods.
- Comply with the required legislation and standards

applicable to your workplace.

PERSONAL PROTECTIVE EQUIPMENT

Cautious is the word. Hot work is very dangerous work.

Wear your personal protective equipment (PPE), maintain a safe workplace and follow safety rules.

Your PPE should include:

- Eye protection to shield against sparks, molten metal and welder’s flash
- Hearing protection
- Clothing made of heat-resistant materials, such as an apron made of leather
- Safety boots
- Gloves made of leather or other flameproof fabric
- Respiratory protection to protect against toxic chemicals and gases. Before you use a respirator, get proper training and have it properly fitted.

FINAL WORD

Operations that create a spark or flame such as welding and soldering are referred to as hot work. Special precautions are necessary to perform hot work safely. Hot work procedures must be understood by operators and building managers and all occupants should be familiar with basic safe work practices.