

31 Hot Working

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Introduction

1. This chapter sets out the procedures and guidance for the health and safety management of hot working activities undertaken by Defence personnel.
2. For the purposes of this chapter hot working means any activity or process that generates flame, heat or an incendiary spark and introduces (or presents) a foreseeable risk of fire or explosion through a source of ignition by means of tools or equipment either:
 - a. intentionally arising from working methods (with or without the use of a naked flame) such as welding, flame-cutting, soldering, brazing; or
 - b. the unintentional generation of heat or sparks, by the use of power hand tools e.g. grinding and the use of disc-cutters.
3. This chapter does not cover working in hot climates (information concerning working in hot climates is currently available in JSP 539).
4. Hot working has resulted in major historic fires and explosions which have caused a number of fatalities, serious injuries as well as property / asset losses. Where reasonably practicable the need for hot working should be eliminated by the use of other processes that do not involve the application or generation of heat or sparks.
5. Flammable liquids and vapours such as petrol, diesel, fuel oil, paints, solvents, glue, dusts etc are found in many places of work and under certain conditions (i.e. hot working) can explode violently (JSP 375, Volume 1, Chapter 9 - DSEAR). A nominally empty drum (emptied, but not cleaned) can cause an explosion, when the residue is heated and turned into a vapour.

Roles and Responsibilities

Commanding Officer (CO) / Head of Establishment (HoE)

6. It is the responsibility of the CO / HoE to ensure that suitable systems are in place and that adequate resources are made available for hot work to be conducted in accordance with appropriate Safe Systems of Work, which may include the use of a Permit To Work (JSP 375, Volume 1, Chapter 30).

7. Contractors employed to carry out hot work on the Defence estate, vessels etc. shall also be managed in accordance with JSP 375, Volume 1, Chapter 34 and standard fire precautions for contractors engaged on Crown works.

Managers

8. The manager (owner of the task) is responsible for ensuring that any activity undertaken by Defence personnel involving hot working, that a risk assessment (JSP 375, Volume 1, Chapter 8) is conducted by a competent person having sufficient experience and training in all associated risks. The risk assessment shall as a minimum consider:

- a. isolating or shielding plant and equipment from the effects of heat;
- b. the transference of heat to the surrounding work environment;
- c. the environment in which the activity is to be carried out (including what is above, below and in the immediate vicinity) and the possibility of explosive atmospheres; and
- d. all other task related hazards (non-heat related).

9. A written Safe System of Work shall be developed and maintained for all hot working activities unless the risk assessment has identified that it is not necessary. When developing a Safe System of Work for hot working, the following should be considered (as a minimum):

- a. work equipment selected is suitable for the activity, is properly maintained and where appropriate, adequately secured;
- b. visual inspection that equipment is safe to use before commencing work;
- c. all fixed services that may be affected by the activity (oil, gas, electricity, etc.) are located and protected (isolated, locked, vented, etc.);
- d. that all combustible and flammable material to be removed or protected;
- e. actions required to minimise the possibility of explosive atmospheres;
- f. area secured (access control, etc.);
- g. that appropriate fire prevention measures and fire-fighting equipment;
- h. monitoring the work area to ensure that a fire does not start after the activity is complete;
- i. if the area is adequately ventilated or personal and respiratory protective equipment (PPE and RPE) issued and used;

j. precautions have been taken to minimise the release of sparks, hazardous emissions, etc.;

k. additional emergency procedures: and

l. there is no doubt as to who has overall control of the work.

10. Where the risk assessment has identified a significant risk, a PTW should be raised (in accordance with JSP 375, Volume 1, Chapter 30) and communicated to all relevant personnel. The manager should ensure that all control measures have been implemented prior to commencement of the work. The information that should be contained in a PTW for hot working will depend on each activity but will normally include:

a. the location and nature of the work;

b. the proposed time and duration of the work;

c. the limits of time for which the PTW is valid;

d. the precautions to be taken before the work starts, during the work (including appointing a competent and trained firewatcher where necessary), and on completion of the work (by monitoring the work area for several hours after the work is completed, while assets cool down);

e. the requirement for authorisation, acceptance, completion and cancellation signatures; and

f. the person in direct control of the work.

11. The manager is responsible for ensuring hot working is only carried out by competent persons. They should monitor the hot work activity to ensure the work is carried out in line with the Safe System of Work and on completion of the work the area has been left in a safe condition. Steps to ensure that an area is left safe following a hot working activity may include:

a. the use of fire watchers (monitoring an area for a defined period of time for signs of smouldering materials or the onset of fire);

b. accelerated cooling or damping down of the area and equipment;

c. all safety systems reinstated (smoke detector covers removed etc.);

d. area is cleared of equipment and debris; and

e. third party protection is considered such as screens and barriers.

All Personnel

12. All Defence personnel engaged in hot working must comply with the required controls defined in the Safe System of Work / Permit to Work and co-operate with management by undertaking appropriate instruction and training.

Retention of Records

13. All records should be retained in accordance with JSP 375, Volume 1, Chapter 39 (Retention of Records).

Related Documents

14. The following documents should be consulted in conjunction with this chapter:

- a. JSP 375, Volume 1;
 - (1) Chapter 08 - Risk Assessment;
 - (2) Chapter 09 - Dangerous Substances and Explosive Atmospheres (DSEAR);
 - (3) Chapter 30 - Permit to Work;
 - (4) Chapter 34 - 4C System: The Management of Visiting Workers and Contractors; and
 - (5) Chapter 39 - Retention of Records.
- b. Other MOD Publications;
 - (1) DSA01.1 – Defence Policy for Health, Safety and Environmental Protection;
 - (2) DSA01.2 Chapter 2 – Requirement for Safety and Environmental Management Systems in Defence;
 - (3) DSA01.2 Chapter 4 – Risk Management in Health, Safety & Environmental Protection;
 - (4) JSP 375 - Volume 3;
 - (5) JSP 539 - Climatic Injuries in the Armed Forces: Prevention and Treatment; and
 - (6) Standard Fire Precautions for Contractors Engaged on Crown Works.

c. Legislation and Guidance;

- (1) [Health and Safety at Work, etc. Act;](#)
- (2) [Management of Health and Safety at Work Regulations;](#)
- (3) [Dangerous Substances and Explosive Atmospheres Regulations;](#)
- (4) [The Regulatory Reform \(Fire Safety\) Order;](#)
- (5) [Code of Safe Working Practices for Merchant Seamen – Chapter 23;](#)
- (6) [HSE L137 – Safe Maintenance, repair and cleaning procedures;](#)
- (7) [HSE INDG297 - Safety in Gas Welding, Cutting or Similar Processes;](#) and
- (8) [HSE INDG314 - Hot work on small tanks and drums.](#)