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H & S Guidance - Flammable Liquids

See also: other pages

INTRODUCTION

Flammable liquids are liquids with a flashpoint of 55°C or below and hence includes all liquids that are classified as “flammable”, “highly flammable” or “extremely flammable” for supply according to the CHIP Regulations 2002. It also includes petroleum spirit and petroleum mixtures.

The main hazards involved are fire and explosion, involving either the liquid or the vapour given off from it and an ignition source.

Common causes of incidents include:

- lack of awareness/training
- hot work on or close to flammable liquid containers
- exposure to heat from a nearby fire
- inadequate control of ignition sources
- dismantling or disposing of equipment containing flammable liquids

The amount and spread of vapour release, the characteristics of the flammable liquid, the potential hazards of vapour/air mixtures, the viscosity of the liquid and the physical environment involved are all important considerations.

The Dangerous Substances and Explosive Atmospheres Regulations 2002 have introduced new controls. These regulations require employers to:

1. Carry out a risk assessment of any activity involving a dangerous substance, including flammable liquids.
2. Introduce controls that ensure that risks are eliminated or reduced as far as is reasonably practicable.
3. Provide equipment and procedures to deal with accidents and emergencies
4. Provide information and training to employees
5. Classify places where explosive atmospheres may occur and mark the zones where necessary



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PRECAUTIONS

1.Substitution

Where acceptable on health or environmental grounds, the use of liquids which are either non-flammable or have a higher flashpoint may provide suitable alternatives.

2.Separation

Use of fire-resisting partitions to separate areas where flammable liquids are handled from other parts of the workroom.

3.Dispensing and decanting

Should be in a way which reduces spills and dangerous releases of flammable vapours. Where possible use an enclosed transfer system, or otherwise containers should be designed so as to minimise spillage, release of vapours and the effects of fire. Small safety containers are available incorporating the following:

- metal or heavy duty plastic construction
- apertures sealed with self-closing spring loaded caps and fitted with flame arrestors
- hoses or other aids when dispensing into small openings
- carrying handles for larger capacity containers

Additional precautions include decanting etc. away from the area where the liquid is stored (open air or well-ventilated room) and the use of funnels, spill trays etc.

4.Process Areas

Precautions include keeping no more than the minimum amount in workrooms, keeping containers closed when not in use, keeping containers in suitable cabinets or bins in designated areas away from the immediate processing area.

SOURCES OF IGNITION

Sources of ignition should normally be excluded from areas where flammable liquids are handled. Common sources of ignition are:

1. naked flames (including welding and cutting equipment);
2. smoking;



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3. electrical lighting, circuits and equipment which are not flameproof or intrinsically safe in construction;
4. processes/vehicles that involve friction or the generation of sparks;
5. hot surfaces;
6. static electricity.

Space heating should not provide a source of ignition and therefore may be by suitably selected radiators. Hot work (welding, cutting) on vessels containing flammable residues should only be done under controlled conditions using a permit to work system.

Smoking should be prohibited and appropriate notices displayed.

VENTILATION

All areas where flammable liquids are handled should be adequately ventilated (at least 6 complete air changes per hour) to dilute any released vapours to a safe level i.e. well below its flammable limit and below any relevant occupational exposure limit.

HOUSEKEEPING

1. Good standards of housekeeping will involve:
2. dealing with leaks/spills promptly;
3. containment of larger spillages;
4. preventing spills entering drainage systems;
5. preventing workers or their clothing coming into direct contact with spillages;
6. placing contaminated rags etc. in a suitably designed and regularly emptied, lidded metal bin;
7. disposal of waste liquids should not create pollution.

INFORMATION AND TRAINING

All staff should be informed of the hazards and general precautions relating to the flammable liquids in use at the premises. Specific training, based on written procedures, should be provided for those handling flammable liquids, to include (in addition to general safety advice):

- use of protective clothing
- specific instructions on individual processes/activities
- emergency procedures



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GENERAL FIRE PRECAUTIONS/EMERGENCY PROCEDURES

The advice of the Fire Prevention Officer should always be sought on fire safety matters.

Staff should be aware of the established fire precautions and procedures to be followed in an emergency. These should be in writing, disseminated appropriately throughout the workforce and be covered in risk assessments and training courses. The fire fighting equipment will depend on the type of liquid and on the conditions of storage. To deal with fires from small leaks, dry powder or foam fire extinguishers should be provided.

CHECKLIST - FLAMMABLE LIQUIDS

Do you handle/use flammable liquids? YES/NO

Have you carried out a risk assessment on the use of flammable liquids in your premises? YES/NO

Do you have procedures and safe working practices, which include coverage of the following:

- substitution, where possible/acceptable YES/NO
- separation of areas where flammable liquids are handled YES/NO
- dispensing and decanting YES/NO
- sources of ignition YES/NO
- ventilation YES/NO
- housekeeping YES/NO
- fire precautions and emergency procedures YES/NO

Do you provide relevant information and training to appropriate staff on flammable liquids? YES/NO

Have you zoned any areas where flammable atmospheres are likely to be present? YES/NO

REFERENCES/FURTHER DETAILS

1. HS(G)140 - The safe use and handling of flammable liquids - HSE ISBN 0-7176-0967-7
2. Booklet HS(G)51 - The storage of flammable liquids in containers - HSE ISBN 0 7176 1471 9.



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3. Booklet HSG 176- The storage of flammable liquids in tanks. HSE. ISBN 0 7176 1470 0.
4. Booklet HSG 178- The spraying of flammable liquids. HSE. ISBN 0 7176 1483 2.
5. Fire and Explosion – How safe is your workplace? (INDG370)
www.hse.gov.uk/pubns/indg370.pdf
6. Safe working with flammable substances (INDG227)
www.hse.gov.uk/pubns/indg227.pdf