# LA TROBE UNIVERSITY

# GUIDELINES FOR THE LOCATION OF FLAMMABLE LIQUIDS CABINETS

## 1. INTRODUCTION

The storage of flammable liquids in flammable liquids cabinets and the location of cabinets in relation to ignition sources have been identified as a health and safety issue in many laboratories. The need to determine what is an appropriate separation distance is important to maximize use of laboratory space without compromising health and safety standards.

Recent advice from WorkSafe Victoria has resulted in the University reviewing relevant standards with the aim being to provide guidance to laboratory managers in reviewing the safe storage of flammable liquids. As a consequence the following guidelines have been formulated.

## 2. REGULATIONS AND STANDARDS

According to the Dangerous Goods (Storage and Handling) Regulations 2000 (Regulation 424), *"An occupier of premises where dangerous goods are stored and handled must ensure that, so far as is practicable, ignition sources are not present in any hazardous area within the premises"*

Hazardous areas are defined according to AS/NZS 2430.1 and depend on a number of factors, including the type of storage and the maximum quantity being stored. According to AS2430.1, for quantities less than 100 litres of Class 3 dangerous goods, the hazardous area extends to 0.3 metres from each package or closed container. However, AS/NZS 1940 requires a minimum separation distance of 3 metres between flammable liquids cabinets and sources of ignition for all amounts deemed greater than minor storage quantities, which are a minimum of 50 litres for packing groups I and II or 100 litres for packing group III flammable liquids.

Sources of ignition are any source of energy sufficient to ignite a flammable atmosphere. They include naked flames, static electricity, heat from appliances or reaction vessels, friction from moving parts, sparks from grinding or welding, internal combustion engines and vehicles, electric equipment (such as power points, switches, lighting, appliances and battery-powered forklift trucks) which is not rated for the hazardous area, and radio transmitters and mobile phones.

## 3. RESPONSIBILITIES of LABORATORY MANAGERS

Where possible, reduce the amount of chemicals being stored and handled in laboratories to the minimum necessary and preferably to less than the amounts less than minor storage limits.

Ensure that all Class 3 chemicals are stored in flammable liquids cabinets when not in use and that the containers are closed and sealed correctly so as to prevent the release of vapours. Wash bottles are not normally classed as closed containers.

Ensure that the flammable liquids cabinets are constructed and maintained to appropriate standards as specified in AS1940, paying particular attention to ensuring the doors operate correctly and that the cabinet has proper shelving and bunding. The cabinets should be located in well ventilated areas to prevent any potential build up of fumes or vapors which may result in higher risk hazards.

Assess the area outside the flammable liquids cabinet to determine whether it is a hazardous or non-hazardous area. If the area is deemed to be hazardous or the storage quantities exceed 50 litres the flammable liquids cabinets must be located in a well ventilated area and separated from ignition sources (including power outlets) at least 3 metres laterally and 1 metre vertically. If this is not achievable due to space limitations, the laboratory manager may:

- Remove all sources of ignition to more than 3 metres from the flammables cabinet
- Move the flammables cabinet away to more than 3 metres from the power outlet
- Decommission the power point and installing a blank cover plate
- Install an intrinsically safe (i.e. flame proof) power outlet.
- Install a vapour barrier (i.e. a non permeable wall or sheeting - e.g. cement sheet or metal sealed at the joins) in between the cabinet and the power outlet, so that the effective distance is more than 3 metres. WorkSafe indicated a barrier height reaching 0.5 metres above the cabinet should be sufficient

In the absence of an assessment the area will be assumed to be hazardous and the 3 metres lateral and 1 metre vertical separation will be a minimum requirement.

## 4. DETERMINING THE AREA HAZARD

The Laboratory Manager may determine that the area more than 0.3 metres beyond the flammable liquids cabinet and closed containers is non-hazardous if:

- The total quantity (i.e. maximum container volumes) of Class 3 flammable liquids stored in the flammables cabinet is less than 50 litres; and
- Only closed containers are stored in the cabinet; and
- There is no dispensing or decanting of flammable liquids within 3 metres of the storage cabinet; and
- The Class 3 chemicals do not have chemical properties listed in the material safety data sheets (e.g. flashpoint, vapour pressure, lower and upper explosive limits) which require a greater separation distance or method of control

In such cases it is important that a determination be based on evidence of compliance (e.g. documented safe working practices) and that the determination is documented.

## 5. REFERENCES


Dangerous Goods (Storage and Handling) Regulations 2000

| | |
|---|---|
| AS 1940 – 2004 | The storage and handling of flammable and combustible liquids |
| AS 2430.1 – 1987 | Classification of Hazardous Areas Part 1 – Explosive Gas Atmospheres |
| AS/NZS 2430.3.1:2004 | Classification of hazardous areas Part 3.1: Examples of area classification – General |
| AS/NZS 2430.3.3:2004 | Classification of hazardous areas Part 3.1: Examples of area classification – Flammable liquids |