



## Safety Note 71

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# Transportation, Storage and Use of **PETROLEUM**



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# 1 SUMMARY

**Petroleum is a dangerous substance; it is an extremely flammable liquid and can give off vapour at room temperature which can easily be ignited, even at low concentrations (e.g. 1.4% mixture with air). If not handled safely it has the potential to cause a serious fire and/or explosion. It presents risks to human health and to the environment.**

All staff and students must follow the instructions/guidance in this Safety Note when they transport, store or use petrol on campus or any other location in connection with their work activities.

# 2 PETROL CONTAINERS

**Petrol may only be stored in a container designed for the sole purpose for the storage of petrol. The general principles for the design and manufacture of portable petrol storage containers require that they must:**

- have a nominal capacity:
  - no greater than 10 litres if made of plastic
  - no greater than 20 litres if made of metal
- have a total capacity between 10% and 15% more than the nominal capacity
- be a UN approved container (these will be labelled as UN 1203, this means they will be made of either metal or plastic that is suitable and safe for the purpose and will not significantly degrade due to exposure to petrol or naturally occurring ultraviolet radiation)
- be designed and constructed so that:
  - they are reasonably robust and not liable to break under the normal conditions of use
  - the escape of liquid or vapour is prevented
  - petrol can be poured safely from them
  - they are not unsteady when placed on a flat surface
- all containers must be clearly and correctly labelled so people are aware of their contents and hazards. All containers must be marked or labelled in a legible and indelible form with:
  - the words 'PETROL' and 'EXTREMELY FLAMMABLE'
  - the appropriate hazard warning signs for both Chemical Labelling and Packaging (white diamond with red border) and transport (coloured diamond) and - see below;



- the nominal capacity in litres
- the manufacturer's name and the date and month of manufacture of the container.

### Container colour

There are **NO** restrictions on the colour for plastic or metal containers but general custom and practice is that green is used for unleaded petrol and black for diesel.

## 3 FILLING UP AT THE PETROL STATION

**Petrol filling stations may have their own company policy on the types and numbers of containers they allow to be filled – commonly this is one or two 5 litre plastic and/or one or two 10 litre metal containers. This is a decision made by the filling station operator and is not a legal requirement. However University staff/students must comply with the filling station requirements.**

The risk assessment for work with petrol should include the filling activity at the petrol filling station. All users must follow petrol station safety instructions when filling the petrol tank or portable container. Containers must be placed on the ground when filling. The limit on container size set out in section 2 must be followed – also note the limit on how much petrol can be carried in a vehicle – see section 4.

## 4 TRANSPORTATION OF PETROL

**The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 require that petrol should be carried in UN approved containers (see above), which are properly stowed on the vehicle. The containers should be marked as detailed above.**

The University limits the amount of petrol that may be carried in a University vehicle at any time to not more than 20 litres.

Petrol cans must be stowed correctly to avoid spillage, damage or loss from the vehicle, for example secured in the boot of a car or the load carrying area of a van or pick up. Petrol stored in an open vehicle such as a pick up must not be left unattended in order to prevent theft.

#### Guidance:

Consider if you need to transport petrol in very hot and sunny weather – this may cause give rise to expansion causing petrol fumes to leak from the containers especially when filled to the brim.

The vehicle being used to transport petrol must carry 1 x 2kg Dry powder fire extinguisher. Arrangements must be made so that the fire extinguishers are visually inspected weekly and serviced annually by the Estates & Facilities contracted fire extinguisher servicing company. A spill kit must also be carried.

The driver of the vehicle must have received general training to include:

- What to do in an emergency
- How to use the fire extinguisher
- Fire precautions to be taken when carrying or handling petrol

**Guidance:**

Training may be provided by someone who is competent such as a manager or Health and Safety Co-ordinator.

## 5 STORAGE OF PETROL

**Health and safety legislation require risks from the indoor storage of petrol to be controlled by elimination or by reducing the quantities in the workplace to a minimum and providing mitigation to protect against foreseeable incidents.**

It is recognised that for practical purposes where petrol is used, there is likely to be a need for a limited quantity to be stored in the vehicle and/or working area. It is the responsibility of the manager when carrying out their risk assessment required under health and safety legislation to justify the need to store quantities of petrol within a vehicle/working area.

**Guidance:**

The guiding principle is that only the minimum quantity needed for frequently occurring activities should be present in the vehicle/working area. Clearly actual quantities will depend on the work activity and also the organisational arrangements for controlling the fire risks in the vehicle / working area.

### 5.1 Internal storage cabinets

Petrol must not be brought inside a building unless it is absolutely necessary. If it is brought inside a building then an appropriate storage solution must be put in place.

There are various types of approved storage cabinets for dangerous substances and flammable liquids including petrol. In general terms they should be of fire-resisting construction, offer a secure latched door, lipped shelving to contain any leaks or spillages and be clearly identified.

It is dangerous to mix storage i.e. energetic substances, oxidizing agents, corrosive materials, halogenated solvents (non-flammable) with flammable liquids. A regular assessment of the contents of the storage cabinets is needed. Inappropriate storage should be removed and re-located to a suitable store.

**Guidance:**

Storage of petrol, oils and lubricants should be separate from other substances and materials. Petrol and oil vapours can react to other materials to form an explosive mixture and can cause materials to degrade e.g. nylon and polypropylene are degraded by fuel vapour and the damage is not visible.

Storage cabinets must conform to:

- BS EN 14470-1:2004 Part 1; Safety storage cabinets for flammable liquids rated for 30 minutes, or
- a cabinet that meets the nominal construction principles as detailed in HSE Publication L138 ACOP for Dangerous Substances and Explosive Atmospheres, namely that:

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- the materials used to form the sides, top, bottom, door(s) and lid are capable of providing the required fire resistance (i.e. 30 minutes integrity) and reaction to fire (i.e. minimal risk)
- the joints between the sides, top and bottom of cupboards and bins should be free from openings and gaps
- the lid/doors should be close-fitting against the frame of the bin/cupboard such that there is nominal overlap between the frame and lid/doors in their closed position
- the supports and fastenings should be of a material with a melting point greater than 750 °C.

Cabinets should be clearly labelled with a sign such as:



A maximum of 50 litres of Dangerous Substances/Flammable Liquids is permitted in an individual area/workplace.

Location of storage cabinets is strictly forbidden in circulation corridors or adjacent to fire exit routes.

## 5.2 External storage

Petrol may be stored outside in either:

- a steel, lockable cabinet or chest; or
- an external storeroom that is secure, well ventilated and with "No Smoking" - "Highly Flammable" signs (the yellow triangle black pictogram warning sign) displayed in a prominent position on the outside of the access door.
- a fire extinguisher normally dry powder and a sand bucket should be provided. It should be secure (padlocked and not able to be accessed except by authorised persons - consider arson risks also)

#### Guidance:

No more than 50 litres of petrol should be stored in any single external store.

# 6 USING PETROL SAFELY

The use of petrol is subject to the Control of Substances Hazardous to Health Regulations known as COSHH - see University Safety Code of Practice 28

[http://www.reading.ac.uk/web/FILES/health-and-safety/CoP\\_28\\_COSHH.pdf](http://www.reading.ac.uk/web/FILES/health-and-safety/CoP_28_COSHH.pdf). Petrol vapour can

be harmful if inhaled. It must not be swallowed and contact with the skin should be avoided as it may cause cancer, harm to an unborn child and heritable genetic defects.

## 6.1 Training

**Users should receive training on the correct safety procedures for the following tasks for including but not limited to:**

- Dealing with potential emergencies, including the use of firefighting equipment, and spillage procedures
- The use of protective clothing, such as footwear, gloves and goggles, and when to wear them
- The need to know not to smoke, eat or drink when handling petrol
- The need to wash properly with plenty of soap and water after finishing work, or at any time when skin becomes contaminated with petrol
- The correct methods of handling and lifting.

## 6.2 General safety precautions

**The following general fire precautions must be followed when using petrol.**

- No smoking in the vicinity (within 10m) of petroleum being decanted
- No use of portable electric/electronic equipment in the vicinity of petrol being decanted (e.g. mobile phone)
- Always use/decant petrol in a well ventilated area outside of a building
- Always switch engines off and allow the engine exhausts to cool down before commencing refuelling operations
- Always use a pourer and/or funnel to avoid spills
- Do make sure that the containers cannot easily be knocked over during filling.
- Keep container tightly closed and sealed until ready for use
- Never use petrol as an accelerant to light fires or BBQs.

## 6.3 Emergency response and clean up of small spills

### 6.3.1 What damage can small spills create?

- All types of petrol can create traffic hazards by making roads and pathways slippery
- All types of petrol are mixtures of toxic chemicals that, if not recovered, pose health threats in drinking water wells if they percolate into the ground water
- Petrol can kill aquatic life and wildlife if it reaches surface water through a water sewer
- Petrol can create severe fire hazards near traffic, in buildings, or in sewers
- Petrol in a sanitary sewer can present explosion threats.

### **6.3.2 What are the basic steps in responding to a petrol spill?**

#### **Step 1: Stop the spill.**

The leak or spill should be stopped — if this can be done safely. Stop decanting, replace screw caps etc.

#### **Step 2: Contain and recover the spill**

If the spill or leak cannot be stopped, catch the flowing liquid using a container, shovel or whatever is available. Spreading sorbent material, such as absorbent granules, sand, sawdust, synthetic absorbent pads or dirt from the ground can stop the flow and soak up the petrol on the ground.

When petrol is transported, stored or decanted there should always be spillage equipment at hand ready to deal with any leaks or spills. Never wear clothing on which petrol has been spilt – stop work and change into uncontaminated clothing before continuing to work.

#### **Step 3: Collect the contaminated absorbent material**

Brooms can be used to sweep up the sorbent material and put it into buckets. Remember to control ignition sources. Fresh granular absorbent material such as sand can then be re-spread on a road or path to control the residual slipperiness.

#### **Step 4: Secure and dispose of the waste**

If the spill is at the University or if the vehicle in an accident is a commercial vehicle, disposal of the contaminated absorbent material is the user's responsibility. Arrange for safe disposal via the University 'Clean and Green' team.

### **6.3.3 First-aid measures**

#### **Eye contact**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Check for and remove any contact lenses. Get medical attention if irritation occurs.

#### **Skin contact**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Drench contaminated clothing with water before removing. This is necessary to avoid the risk of sparks from static electricity that could ignite contaminated clothing. Contaminated clothing is a fire hazard. Contaminated leather, particularly footwear, must be discarded. Wash clothing before re-use. Clean shoes thoroughly before re-use. Get medical attention.

#### **Inhalation**

Get medical attention immediately. If inhaled, remove to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.

If exposure to vapour, mists or fumes causes drowsiness, headache, blurred vision or irritation of the eyes, nose or throat, remove immediately to fresh air. Keep patient warm and at rest. If any symptoms persist obtain medical advice.

#### **Ingestion**

Get medical attention immediately. Do not induce vomiting. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Aspiration hazard if swallowed. Can enter lungs and cause damage.

#### **6.3.4 Fire Fighting Measures**

Follow the building fire action procedures and if attempting to fight a fire, use foam, dry powder chemical or carbon dioxide extinguisher.

Health & Safety Services  
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