

Petrol

Incident management

Key Points

Fire

- Highly flammable
- Vapour/air mixtures are explosive
- Low flash point
- In the event of a fire involving petrol, use normal foam and normal fire kit with breathing apparatus

Health


- Toxicity occurs if petrol is inhaled while being ingested; aspiration may cause serious lung injury
- Harmful
- Ingestion causes nausea, vomiting and abdominal pain. Systemic symptoms include drowsiness, lethargy, ataxia, convulsions, cardiac arrhythmias, coma and respiratory collapse
- Aspiration into the lungs causes pneumonitis. Signs and symptoms may progress over 24 – 48 hours
- Inhalation may cause nausea, vomiting, headache, dizziness, respiratory tract irritation, euphoria, delirium, tremor, lethargy, ataxia and drowsiness.
- Dermal exposure can cause irritation, drying, cracking, erythema and blistering. Rarely systemic toxicity may arise
- Ocular exposure may cause irritation to the eyes causing an immediate stinging and burning sensation with lacrimation

Environment

- Avoid release into the environment
- Inform Environment Agency of substantial release incidents

Hazard Identification

Standard (UK) Dangerous Goods Emergency Action Codes^(a)

UN		1203	Motor spirit, gasoline or petrol	
EAC		3YE	Use normal foam. Wear normal fire kit in combination with breathing apparatus*. Spillages and decontamination run-off should be prevented from entering drains and watercourses. Substance can be violently or explosively reactive. There may be a public safety hazard outside the immediate area of the incident**.	
APP		-		
Hazards	Class	3	Flammable liquid	
	Sub risks	-		
HIN		33	Highly flammable liquid (flash-point below 23°C)	

UN – United Nations number; EAC – Emergency Action Code; APP – Additional Personal Protection; HIN - Hazard Identification Number




* Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

** People should stay indoors with windows and doors closed, ignition sources should be eliminated and ventilation stopped. Non-essential personnel should move at least 250 m away from the incident.

^a Dangerous Goods Emergency Action Code List, HM Fire Service Inspectorate, Publications Section, The Stationery Office, 2009.




Chemical Hazard Information and Packaging for Supply Classification^(a)

Gasoline, Natural, Low Boiling Point Naptha

Classification	Carc. Cat. 2	Category 2 Carcinogen	
	Muta. Cat 2	Category 2 Mutagen	
	Xn	Harmful	
Risk phrases	R45	May cause cancer	
	R46	May cause heritable genetic damage	
	R65	Harmful: may cause lung damage if swallowed	
Safety phrases	S45	In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)	
	S53	Avoid exposure – obtain special instructions before use	

^a Annex VI to Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures- Table 3.2.
<http://esis.jrc.ec.europa.eu/index.php?PGM=cla> (accessed 11/2011)

Globally Harmonised System of Classification and Labelling of Chemicals (GHS)^(a)

Hazard Class and Category	Carc. 1B	Carcinogenicity, category 1B	
	Muta. 1B	Germ cell mutagenicity, category 1B	
	Asp. Tox. 1	Aspiration hazard, category 1	
Hazard Statement	H350	May cause cancer	
	H340	May cause genetic defects	
	H304	May be fatal if swallowed and enters airways	
Signal Words	DANGER		

Implemented in the EU on 20 January 2009.

^a Annex VI to Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures- Table 3.1.
<http://esis.jrc.ec.europa.eu/index.php?PGM=cla> (accessed 11/2011)

Physicochemical Properties

CAS number	-
Molecular weight	-
Empirical formula	Mixture of C ₄ to C ₁₂ hydrocarbons
Common synonyms	Gasoline
State at room temperature	Liquid
Volatility	Highly volatile
Specific density	Liquid: 0.7 at 16 °C (water = 1) Vapour: 3 – 4 at 20 °C (air = 1); Vapours are heavier than air at room temperature
Flammability	Highly flammable
Lower explosive limit	1.3%
Upper explosive limit	7.1%
Water solubility	Practically insoluble in water
Reactivity	Low flashpoint. Vapour/air mixtures are explosive
Reaction or degradation products	Data not available
Odour	Characteristic odour

References^(a,b)

^a WHO / UN / ILO International programme on Chemical Safety: International Chemical Safety Card 1400: Gasoline, 2001.

^b The Merck Index (14th Edition), Entry 4372: Gasoline, 2006.

Threshold Toxicity Values

EXPOSURE VIA INHALATION / INGESTION		
ppm	mg m⁻³	SIGNS AND SYMPTOMS
-	-	Data not available

Published Emergency Response Guidelines

Emergency Response Planning Guideline (ERPG) Values^(a)

	Listed value (ppm)	Calculated value (mg m ⁻³)
ERPG-1*	200 [^]	-
ERPG-2**	1000	-
ERPG-3***	4000 ^{^^}	-

* Maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hr without experiencing other than mild transient adverse health effects or perceiving a clearly defined, objectionable odour.

** Maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hr without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action.

*** Maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hr without experiencing or developing life-threatening health effects.

[^]Odour should be detectable near ERPG-1

^{^^} 10 – 49% LEL (Lower Explosive Limit of 14,000 ppm)

Acute Exposure Guideline Levels (AEGs)

	ppm				
	10 min	30 min	60 min	4 hr	8 hr
AEGL-1[†]	Data not available				
AEGL-2^{††}					
AEGL-3^{†††}					

[†] The level of the chemical in air at or above which the general population could experience notable discomfort.

^{††} The level of the chemical in air at or above which there may be irreversible or other serious long-lasting effects or impaired ability to escape.

^{†††} The level of the chemical in air at or above which the general population could experience life-threatening health effects or death.

^a American Industrial Hygiene Association (AIHA). 2010 Emergency Response Planning Guideline Values and Workplace Environmental Exposure Level Guides Handbook, Fairfax, VA. (accessed 01/2011).

Exposure Standards, Guidelines or Regulations

Occupational standards

WEL	LTEL(8 hour reference period): No guideline value specified
	STEL(15 min reference period): No guideline value specified

Public health guidelines

DRINKING WATER QUALITY GUIDELINE	No guideline value specified
AIR QUALITY GUIDELINE	No guideline value specified
SOIL GUIDELINE VALUE AND HEALTH CRITERIA VALUES	No guideline value specified

WEL – Workplace exposure limit; LTEL - Long-term exposure limit; STEL – Short-term exposure limit

Health Effects

Major routes of exposure^(a)

- Toxic via ingestion or inhalation.

Immediate signs or symptoms of acute exposure^(b,c,d,e)

- Inhalation may cause nausea, vomiting, headache, dizziness, respiratory tract irritation, euphoria, delirium, tremor, lethargy, ataxia and drowsiness. In severe cases renal impairment, non-cardiogenic pulmonary oedema, haemolytic anaemia, amnesia, coma, convulsions and cardiopulmonary arrest. There may be sudden death due to cardiac arrhythmias (in particular ventricular fibrillation). Direct inhalation of aerosols also may cause death due to bradycardia or cardiac arrest.
- Ingestion causes nausea, vomiting and abdominal pain. Rarely diarrhoea, haematemesis and melaena can occur. Aspiration into the lungs causes pneumonitis with initial choking, gasping, coughing and haemoptysis. Signs and symptoms may progress over 24 – 48 hours with wheeze, breathlessness, hyperventilation, dyspnoea, tachypnoea, bronchospasm, hypoxia, cyanosis, fever and leukocytosis. Pulmonary oedema (may be delayed for 24 – 72 hours). In severe cases shock and cardiorespiratory arrest can occur. Rare complications include pleural effusions or pneumatoceles, lipoid pneumonia, emphysema, pneumothorax and pneumomediastinum.
- Systemic symptoms include drowsiness, lethargy, ataxia, convulsions, cardiac arrhythmias, coma and respiratory collapse. In rare cases elevated LFTs, renal failure, intravascular haemolysis and disseminated intravascular coagulation may occur.
- Dermal exposure can cause irritation, drying and cracking due to defatting action. There may be transient pain with erythema, blistering necrosis, partial thickness burns and possibly full thickness burns. Rarely systemic toxicity may arise.
- Ocular exposure may cause irritation to the eyes causing an immediate stinging and burning sensation with lacrimation.

TOXBASE - <http://www.toxbase.org> (accessed 01/2011)

^a TOXBASE: Petrol, 05/2010.

^b TOXBASE: Petroleum distillates – inhalation, 03/2010.

^c TOXBASE: Petroleum distillates – features and management, 04/2010.

^d TOXBASE: Petroleum distillates – skin contact, 03/2010.

^e TOXBASE: Eye irritants, 05/2002.

Decontamination and First Aid

Important Notes

- Ambulance staff, paramedics and emergency department staff treating chemically-contaminated casualties should be equipped with Department of Health approved, gas-tight (Respirex) decontamination suits based on EN466:1995, EN12941:1998 and prEN943-1:2001, where appropriate.
- Decontamination should be performed using local protocols in designated areas such as a decontamination cubicle with adequate ventilation.
- Flammability warning: prevent exposure to all sources of ignition such as naked flames, electrical equipment, oxidising chemicals and the smoking of tobacco products.

Dermal Exposure^(a,b)

- Remove patient from exposure.
- The patient should remove all clothing and personal effects.
- Double-bag soiled clothing and place in a sealed container clearly labelled as a chemical hazard.
- Gently blot away any adherent liquid from the patient.
- Wash hair and all contaminated skin with copious amounts of water (preferably warm) and soap for at least 10-15 minutes. Decontaminate open wounds first and avoid contamination of unexposed skin.
- Pay special attention to skin folds, axillae, ears, fingernails, genital areas and feet.
- Burns totalling more than 15% of body surface area in adults (> 10% in children) will require standard fluid resuscitation as for thermal burns.
- Cover affected area with a clean non-adherent dressing.
- Apply other supportive measures as indicated by the patient's clinical condition.

Ocular Exposure^(c)

- Remove patient from exposure.
- Remove contact lenses if necessary and immediately irrigate the affected eye thoroughly with water or 0.9% saline for at least 10-15 minutes.
- Patients with corneal damage or those whose symptoms do not resolve rapidly should be referred for urgent ophthalmological assessment.

Inhalation^(d)

- Remove patient from exposure.
- Ensure a clear airway and adequate ventilation.
- Give oxygen to symptomatic patients.
- If the patient has clinical features of bronchospasm treat conventionally with nebulised bronchodilators and steroids. (The use of epinephrine should be avoided).
- Monitor pulse, blood pressure, oxygen saturation, conscious level and respiratory rate.
- Perform 12 lead ECG and monitor cardiac rhythm.

TOXBASE - <http://www.toxbase.org> (accessed 01/2011)

^a TOXBASE: Petrol, 05/2010.

^b TOXBASE: Petroleum distillates – skin contact, 03/2010.

^c TOXBASE: Eye irritants, 05/2002.

^d TOXBASE: Petroleum distillates – inhalation, 03/2010.

- Apply other supportive measures as indicated by the patient's clinical condition.

Ingestion^(a)

- Ensure a clear airway and adequate ventilation.
- Give oxygen to symptomatic patients.
- Gastric lavage should NOT be undertaken.
- Monitor pulse, respiratory rate, oxygen saturation, conscious level and temperature.
- Perform a 12-lead ECG and monitor cardiac rhythm in symptomatic patients.
- Treat bronchospasm conventionally with nebulised bronchodilators and steroids. (The use of epinephrine should be avoided).
- Intubation and mechanical ventilation may be required in severe cases.
- Apply other supportive measures as indicated by the patient's condition.

This document will be reviewed not later than 3 years or sooner if substantive evidence becomes available.

^a TOXBASE: Petroleum distillates – features and management, 03/2010.