Spill Precautions:

Restrict access to area. Extinguish or remove all ignition sources. Ensure clean-up is conducted by trained personnel only. Wear adequate personnel protective equipment. Ventilate area. Notify government occupational health and safety and environmental authorities.

Clean-up:

Do not touch spilled material. Prevent material from entering sewers, waterways or confined spaces. Stop or reduce leak if it can be done safely.

Small spills: Contain spill with earth, sand, or absorbent material which does not react with spilled material. Do not use combustible materials such as sawdust. Shovel into clean, dry, labelled containers and cover. Flush area with water. Contaminated absorbent may pose the same hazards as the spilled product.

Large spills: Contact fire and emergency services and supplier for advice.

SECTION 7. HANDLING AND STORAGE

Handling:

This material is an EXTREMELY FLAMMABLE LIQUID and a SUSPECTED CANCER HAZARD. Before handling it is very important that engineering controls are operated and that protective equipment requirements are being followed. People working with this chemical should be properly trained regarding its hazards and its safe use.

Eliminate all ignition sources (e.g. sparks, open flames, hot surfaces). Keep away from heat. Post "NO-SMOKING" signs. It is very important to keep areas where this material is used clear of other materials which can burn. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas of use. Keep aisles and exits free of obstruction. Immediately report leaks, spills or ventilation failures. Ground all drums, transfer vessels, hoses and piping. Ground clips must contact bare metal. When dispensing in other than a closed system, ensure dispensing container is bonded to receiving transfer equipment and container. Liquid can accumulate charge. In large scale operations, increase conductivity with additive designed for that purpose, reduce flowrate in transfer operations, increase time the liquid remains in transfer piping and/or handle at lower temperature. To prevent sparking, generously wet hard surfaces before they are chipped, ground, etc, in potentially hazardous areas. Never perform any welding, cutting, soldering, drilling or other hot work onan empty vessel, container or piping until all liquid and vapours have been cleared. Have suitable emergency equipment for fir es, spills and leaks readily available. For large scale operations, consider the installation of leak and fire detection equipment along with a suitable, automatic fire suppression system.

Use in smallest possible amounts in a well ventilated area separate from the storage area. Avoid generating vapours or mists. Prevent the release of vapours and mists into the workplace air. Do not use with incompatible materials such as strong oxidizing agents (e.g. peroxides, nitric acid and perchlorates). These can increase the risk of fire and explosion. Avoid generating vapours or mists. Do not dispense in storage area unless dispensing area is segregated by fire- resistant construction. Only use portable containers and dispensing equipment (faucet, pump, drip can) approved for flammable liquids. Do not siphon by mouth. Never return contaminated material to its original container. Label containers. Keep containers closed when not in use. Avoid damaging containers. Empty containers may contain hazardous residues.

Follow handling precautions on Material Safety Data Sheet. Practice good

housekeeping. Maintain handling equipment. Comply with applicable regulations.

Storage:

Storage area should be clearly identified, well-illuminated, clear of obstruction and accessible only to trained and authorized personnel. Store in a cool, dry, well-ventilated area out of direct sunlight. Store away from incompatible materials such as strong oxidizing agents (e.g. peroxides). Follow any special instructions for storage on supplier/manufacturer Material Safety Data Sheet (e.g. maximum storage quantities and temperature requirements).

Inspect all incoming containers before storing to ensure they are undamaged and properly labelled. Whenever possible store in original container. Otherwise, store in sturdy containers made of compatible materials. Keep containers tightly closed and protect from damage. Avoid stacking containers on each other. Keep empty containers in separate area. Empty containers can be hazardous due to residual material. Keep closed. Provide raised sills or ramps at doorways or create a trench which drains to a safe location. Consider leak detection and alarm equipment for storage area. Keep absorbents for leaks and spills readily available.

Store away from all heat and ignition sources. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems. Store according to applicable regulations for flammable materials for storage tanks, containers, buildings, rooms, cabinets, allowable quantities and minimum separation distances. Keep quantity stored as small as possible. Store away from process and production areas, away from elevators, building and room exits or main aisles leading to exits. Keep storage area clear of other materials which can burn. Have appropriate extinguishing capability in storage area (e.g. sprinkler system, portable fire extinguishers).

Use approved explosion-proof refrigerator when storing small quantities. Bond and ground metal containers in storage area. Avoid bulk storage indoors. Equip storage tank vents with a flame arrestor. Storage tanks should be above ground over an area sealed on the bottom and diked to hold entire contents. Store separate from work areas, eating areas and protective equipment storage. Inspect containers and contents regularly for leakage or expired shelf life. Eliminate all defective containers. Have replacement containers and labels on hand. Floors should be sealed to prevent absorbtion of this chemical.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

NOTE: Exposure to this material can be controlled in many ways. The measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. This general information can be used to help develop specific control measures. Ensure that control systems are properly designed and maintained. Comply with occupational, environmental, fire, and other applicable regulations.

Sampling and Analysis:

Use appropriate instrumentation and sampling strategy (location, timing, duration, frequency and number of samples). Interpretation of the sampling results is related to these variables and the analytical method. Sampling should be performed by trained personnel.

OSHA IN-HOUSE METHOD - OSHA CD-ROM (OSHA 95-1). US Department of Labour, December, 1994. Partially validated. Collection on activated charcoal sorbent tube. Desorption with carbon disulphide (CS2) or carbon disulfide/dimethyl formamide (99:1). Analysis by gas chromatography using flame ionization detector (FID). For further details, contact OSHA Salt Lake Technical Centre at 801-487-0267.

Published NIOSH methods for sampling/analysis of airborne gasoline specifically, are not currently available.

not currently available.

The method described below has been reported for hydrocarbons, BP36-126 deg C and is also suitable for gasoline with appropriate calibration.

NIOSH METHOD 1500 - NIOSH Manual of Analytical Methods. 4th ed. Vol. 2. Fully evaluated method for most of the components. Collection on coconut shell activated charcoal sorbent tube. Desorption with carbon disulphide (CS2). Analysis by gas chromatography using flame ionization detector (FID).

DIRECT READING INSTRUMENTS: Methods of detection in commercially available devices which may be suitable for sampling/analysis of specific components: flame ionization detector, infrared photometer, photoionization analyzer, gas chromatography analyzer.

COLORIMETRIC DETECTORS TUBES: Commercially available.

NOTE: Gasoline is a mixture of hydrocarbons. Consider sampling and analysis for the individual components.

Engineering Controls:

Engineering methods to control hazardous exposures are preferred. Methods include mechanical ventilation (dilution and local exhaust), process or personnel enclosure, control of process conditions, and process modification (e.g., substitution of a less hazardous material). Administrative controls and personal protective equipment may also be required.

Because of the high potential fire hazard associated with this substance, stringent control measures such as enclosure or isolation may be necessary. Use an explosion-proof, non- sparking, grounded ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside, taking necessary precautions for environmental protection. Air cleaning devices may be required. Provide sufficient local exhaust and general (dilution) ventilation. Supply sufficient replacement air to make up for air removed by exhaust systems.

Personal Protective Equipment:

If engineering controls and work practices are not effective in controlling exposure to this material, then wear suitable personal protective equipment including approved respiratory protection. Have appropriate equipment available for use in emergencies such as spills or fire. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection. Refer to the CSA Standard Z94.4-93, "Selection, Use and Care of Respirators," available from the Canadian Standards Association, Rexdale, Ontario, M9W 1R3.

Respiratory Protection Guidelines:

NIOSH RECOMMENDATIONS FOR GASOLINE CONCENTRATIONS IN AIR (29): AT CONCENTRATIONS ABOVE THE NIOSH REL, OR WHERE THERE IS NO REL, AT ANY DETECTABLE CONCENTRATION: Positive pressure, full-facepiece SCBA; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

ESCAPE: Gas mask with organic vapour canister; or escape-type SCBA.

NOTE: The NIOSH Recommended Exposure Limit (REL) for gasoline has not been established.

NOTE: NIOSH has classified this material as a potential occupational carcinogen, according to specific NIOSH criteria, with no recommended exposure limit (REL). This classification is reflected in these recommendations for respiratory protection, which specify that only the most reliable and protective respirators be worn at any detectable concentration. The requirements in Canadian jurisdictions may vary.

The respirator use limitations specified by the approving agency and the manufacturer must be observed.

ABBREVIATIONS: SAR = supplied-air respirator; SCBA = self-contained breathing apparatus. IDLH = Immediately Dangerous to Life or Health.

Eye/Face Protection:

Splash-proof chemical safety goggles or face shield (eight inch minimum), as required.

Skin Protection:

Chemical protective gloves, coveralls and boots etc., as required. Have a safety shower/eye-wash fountain readily available in the immediate work area.

Resistance of Materials for Protective Clothing:

Guidelines for gasoline 40-55% aromatic (24):
RECOMMENDED (resistance to breakthrough longer than 8 hours): Nitrile rubber, Teflon (TM), Viton (TM), Barricade (TM), Responder (TM), CPF 3 (TM).
RECOMMENDED (resistance to breakthrough longer than 4 hours): 4H (TM) (polyethylene/ethylene vinyl alcohol).
NOT RECOMMENDED for use (resistance to breakthrough less than 1 hour): Butyl rubber, natural rubber, neoprene, polyvinyl chloride.

Guidelines for gasoline, unleaded (24):
RECOMMENDED (resistance to breakthrough longer than 8 hours): Viton (TM), Barricade (TM), nitrile rubber.
RECOMMENDED (resistance to breakthrough longer than 4 hours): Polyvinyl alcohol, Responder (TM), 4H (TM) (polyethylene/ethylene vinyl alcohol)).
NOT RECOMMENDED for use (resistance to breakthrough less than 1 hour): Butyl rubber, natural rubber, neoprene, polyvinyl chloride

Recommendations are NOT valid for very thin natural rubber, Neoprene, nitrile and PVC gloves (0.3 mm or less).
Recommendations are valid for permeation rates reaching 0.1 ug/cm2/min or 1 mg/m2/min and over. Resistance of specific materials can vary from product to product. Breakthrough times are obtained under conditions of continuous contact, generally at room temperature. Evaluate resistance under conditions of use and maintain clothing carefully.

Personal Hygiene:

Remove contaminated clothing promptly. Contaminated clothing poses a fire hazard. Keep contaminated clothing in closed containers and away from ignition sources. Discard or launder before rewearing. Inform laundry personnel of contaminant's hazards. Do not smoke, drink or eat in work areas. Wash hands thoroughly after handling this material. Maintain good housekeeping.

EXPOSURE GUIDELINES

THRESHOLD LIMIT VALUES (TLVs) / AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH) / 2003

Time-Weighted Average (TLV-TWA):	300 ppm - Carcinogenicity Designation A3
Short-Term Exposure Limit (TLV-STEL):	500 ppm - Carcinogenicity Designation A3
TLV Basis - Critical Effect(s):	Irritation CNS - central nervous system

TLV Definitions:

CARCINOGENICITY DESIGNATION A3 - Animal Carcinogen: Substance is carcinogenic in laboratory animals under conditions that are not considered relevant to worker exposure. Available human studies and evidence suggest that the substance is not likely to cause cancer in humans except under unusual or unlikely routes or levels of exposure. Worker exposure to an A3 carcinogen should be controlled to levels as low as reasonably achievable below the TLV.

TLV Comments:

NOTE: In many jurisdictions, exposure limits are similar to the ACGIH TLVs. Since the manner in which exposure limits are established, interpreted, and implemented can vary, obtain detailed information from the appropriate government agency in each jurisdiction.

PERMISSIBLE EXPOSURE LIMITS (PELs) / FINAL RULE LIMITS / US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

Time-Weighted Average (PEL-TWA): 300 ppm
Short-Term Exposure Limit (PEL-STEL): 500 ppm

NOTE: The OSHA PEL Final Rule Limits are currently non-enforceable due to a court decision. The OSHA PEL Transitional Limits are now in force.

PERMISSIBLE EXPOSURE LIMITS (PELs) / TRANSITIONAL LIMITS / US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA)

Time-Weighted Average (PEL-TWA): Not established

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Molecular Weight: Average molecular weight of 108 (1); 72.5 (28)

Conversion Factor:

1 ppm = 3 mg/m3 (approximately)

Melting Point:	Variable. Less than -60 deg C (-76 deg F) (21)
Boiling Point:	Range of about 50-200 deg C (122-392 deg F) (5)
Relative Density (Specific Gravity):	0.72 - 0.76 (water = 1).(28)
Solubility in Water:	Insoluble
Solubility in Other Liquids:	Completely soluble in ether, chloroform, ethanol and other petroleum solvents.
Coefficient of Oil/Water Distribution (Partition Coefficient):	Not available; probably greater than 1
pH Value:	Maximum of 9 (20)
Vapour Density:	2.5-3.7 (air=1) (calculated)
Vapour Pressure:	Variable, but significant; 400-775 mm Hg at 20 deg C (1)
Saturation Vapour Concentration:	100%

Saturation Vapour Concentration:	100%
Evaporation Rate:	Rapid; 4 (20); greater than 10 (21) (n-butyl acetate = 1)
Critical Temperature:	Not available

SECTION 10. STABILITY AND REACTIVITY

Stability:

Normally stable.

Hazardous Polymerization:

Does not occur

Incompatibility - Materials to Avoid:

STRONG OXIDIZING AGENTS - (e.g. peroxides, nitric acid and perchlorates) - can cause fire or explosion.

Hazardous Decomposition Products:

None reported

Conditions to Avoid:

Static discharge, friction, sparks, open flames, heat and other sources of ignition.

Corrosivity to Metals:

Non-corrosive to metals.

SECTION 11. TOXICOLOGICAL INFORMATION

LD50 (oral, rat): 13.6 g/kg (2)
LD50 (dermal, rabbit): Greater than 5 g/kg (2)

EYE IRRITATION: No irritation seen in rabbits in a standard Draize test.(2)

SKIN IRRITATION: Slightly irritating when tested on rabbits in a standard Draize test. (2)

SKIN SENSITIZATION: Did not cause an allergic reaction when tested on guinea pigs. (2)

SKIN ABSORPTION: No signs of toxicity, except mild skin irritation, seen in rabbits when 5 g/kg gasoline was applied to skin for 24 hours. However, when about 5.76 g/kg gasoline was applied to rabbit skin daily, for 10 days, weight loss, severe skin irritation, and kidney and liver effects were seen.(2)

EFFECTS OF LONG-TERM INHALATION: Kidney injury has been seen in male rats in a number of studies following exposure to concentrations as low as 30 ppm gasoline.(5) This effect has not been seen in other species such as mice, monkeys, dogs or female rats.(1,3,5) The effect on the male rat kidneys has been attributed to the binding of gasoline to a protein found in male rats.(27)

CARCINOGENICITY: Carcinogenic activity has been seen in rats and mice in lifetime exposure studies with gasoline vapour. A significant increase in kidney tumors were seen in male rats, but not females, exposed to 67, 292 or 2056 ppm gasoline vapour for 6 hours/day, 5 days/week for 103-113 weeks. A significant increase in liver tumors

were seen in female mice, but not males, exposed in the same manner as rats.(4,5) The International Agency for Research on Cancer (IARC) concludes that there is limited evidence for the carcinogenicity of unleaded gasoline in experimental animals.(5)

TERATOGENICITY AND EMBRYOTOXICITY: No effects seen when rats were exposed to 400 or 1600 ppm for 6 hr/day during days 6 to 15 of pregnancy. Details of the study were not described so the validity of the results cannot be evaluated.(5)

MUTAGENICITY AND GENOTOXICITY: Not mutagenic in bacterial (Ames) tests or short-term (in-vitro) tests except in one cultured mouse lymphoma cell test. Gasoline was not genotoxic in most of the whole animal tests (in-vivo) however, in one study a genotoxic effect (increased unscheduled DNA synthesis) was seen in mice given oral doses of gasoline.(5)

SECTION 12. ECOLOGICAL INFORMATION

NOTE : Inclusion of Ecological Information on an MSDS is optional under the US Hazard Communication Standard and the Canadian Controlled Products Regulations (WHMIS). In other jurisdictions, inclusion of Ecological Information may be a requirement. For specific requirements, contact the relevant regulatory authorities in the jurisdiction where the MSDS is intended to be used.

The American National Standard for Hazardous Industrial Chemicals - Material Safety Data Sheets - Preparation (ANSI 2400.1-1998) provides advice on data that could be included in this section, as well as ecotoxicological tests and issues.

Databases in CCOHS's CD-ROM and Web collection which contain useful Ecological Information include CESARS, HSDB® (Hazardous Substances Data Bank) and CHRIS (Chemical Hazards Response Information System).

SECTION 13. DISPOSAL CONSIDERATIONS

Review federal, provincial, and local regulations prior to disposal. Dispose of in a designated landfill site or burn in an approved incinerator.

SECTION 14. TRANSPORT INFORMATION

CANADIAN TRANSPORTATION OF DANGEROUS GOODS (TDG) SHIPPING INFORMATION

Shipping Name and Description:	GASOLINE; MOTOR SPIRIT; or PETROL
UN Number:	UN1203
Class:	3
Packing Group/Risk Group:	II
Special Provisions:	17
Passenger Carrying Road/Rail Limit:	5 kg or L
Marine Pollutant:	Marine Pollutant

NOTE: This information incorporates the Transportation of Dangerous Goods Regulations SOR/2001-286, effective October 2003.

US DEPARTMENT OF TRANSPORT (DOT) HAZARDOUS MATERIALS SHIPPING INFORMATION (49 CFR)

Shipping Name and Description:	GASOLINE
Hazard Class or Division:	3
Identification Number:	UN1203
Packing Group:	II

NOTE: This information was taken from the US Code of Federal Regulations Title 49 - Transportation and is effective October 2003.

SECTION 15. REGULATORY INFORMATION

CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

CCOHS WHMIS Classification:

B2 - Flammable and combustible material - flammable liquid
D2A - Poisonous and infectious material - Other effects - Very Toxic

B2 - Flammable Liquid D2A - Very Toxic

WHMIS Health Effects Criteria Met by this Chemical:

D2A - Carcinogenicity - very toxic - other

WHMIS Ingredient Disclosure List:

Included criteria for disclosure at 0.1% or greater

Detailed WHMIS Classification According to Criteria:

Class A - Compressed Gas:

Does not meet criteria.

Class B - Flammable and Combustible Material:

Meets criteria for "Flammable liquid".
Flash point below 37.8 deg C.

Class C - Oxidizing Material:

Does not meet criteria.

Class D - Poisonous and Infectious Material. Division 1 - Immediate and Serious Toxic Effects:

Does not meet criteria.

Acute Lethality:

Does not meet criteria.

LD50 (oral, rat): 14 g/kg (1); LD50 (dermal, rabbit): greater than 5 g/kg.

Class D - Poisonous and Infectious Material. Division 2 - Other Toxic Effects:
Meets criteria for "Very toxic material".

Chronic Health Effects:
Does not meet criteria.
Insufficient information.

Carcinogenicity:
"Very toxic".
IARC Group 2B.
ACGIH A3.

Teratogenicity and Embryotoxicity:
Insufficient information.

Reproductive Toxicity:
Insufficient information.
Effects reported in one Russian study, however the study was not adequate for evaluation .

Mutagenicity:
Does not meet criteria.

Respiratory Tract Sensitization:
Does not meet criteria.
Not reported as human respiratory sensitizer.

Skin Irritation:
Does not meet criteria.

Eye Irritation:
Does not meet criteria.

Skin Sensitization:
Does not meet criteria.

Class E - Corrosive Material:
Does not meet criteria.

Class F - Dangerously Reactive Material:
Does not meet criteria.

US OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200)

OSHA Hazard Communication Evaluation:
Meets criteria for hazardous material, as defined by 29 CFR 1910.1200.

EUROPEAN UNION (EU) CLASSIFICATION AND LABELLING INFORMATION

EU Classification:

Carcinogenic, Category 2; Harmful. [Carc.Cat.2;Xn] (30,31)

EU Risk Phrases:

May cause cancer. Harmful: may cause lung damage if swallowed. [R: 45-65]

EU Safety Phrases:

Avoid exposure - obtain special instruction before use. In case of accident or if you feel unwell, seek medical advice immediately (show label where possible). [S:53-45].

EU Comments:

CONCENTRATION GREATER THAN OR EQUAL TO 10%: Toxic; May cause cancer. Harmful: may cause lung damage if swallowed. [T;R 45-65]
CONCENTRATION LESS THAN 10% OR GREATER THAN OR EQUAL TO 0.1%: Toxic; May cause cancer. [T;R 45]
Preparations containing this substance must be classified as harmful with R65 (Harmful: may cause lung damage if swallowed.) if they meet the EC criteria for aspiration (based on viscosity and surface tension).
The classification as a carcinogen need not apply if it can be shown that the substance contains less than 0.1% w/w benzene.
The classification and label shown for this substance applies to the dangerous property(ies) indicated by the risk phrase(s) in combination with the category(ies) of danger shown. The requirements of Article 6 of the EEC Directive 2001/59/EC apply to all other aspects of classification and labelling. The final label shall follow the requirements of section 7 of Annex VI of EEC Directive 2001/59/EC.

SECTION 16. OTHER INFORMATION

Selected Bibliography:

(1) Gasoline. Journal of Applied Toxicology. Vol. 9, no. 3 (June 1989). p. 203-210
(2) Beck, L.S., et al. The acute toxicology of selected petroleum hydrocarbons. Advances in modern environmental toxicology. Vol. 6. Applied Toxicology of Petroleum Hydrocarbons. Chapter 1 (1984). p. 1-16
(3) Kuna, R.A., et al. Subchronic inhalation toxicity of two motor fuels. Journal of the American College of Toxicology. Vol. 3, no. 4 (Sept. 1984). p. 217-229
(4) MacFarland, H.M., et al. A chronic inhalation study with unleaded gasoline vapor. Journal of the American College of Toxicology. Vol. 3, no. 4 (Sept. 1984). p. 231-248
(5) IARC Monographs on the evaluation of carcinogenic risks to humans. Vol. 45. IARC, 1989. p. 159-201
(6) Drinker, P., et al. The threshold toxicity of gasoline vapor. Journal of Industrial Hygiene and Toxicology. Vol. 25, no. 6 (June 1943). p. 225-232
(7) Davis, A., et al. The effects on human volunteers of exposure to air containing gasoline vapor. Archives of Environmental Health. Vol. 1 (Dec. 1960). p. 92-98, 548-554
(8) Hunter, G.A. Chemical burns of the skin after contact with petrol. British Journal of Plastic Surgery. Vol. 21, no. 4 (Oct. 1968). p. 337-341
(9) Walsh, W.A., et al. Gasoline immersion burn. New England Journal of Medicine. Vol. 291, no. 16 (Oct. 1974). p. 830
(10) Machle, W.F., et al. Gasoline dermatitis. Reprinted from the Medical Bulletin University of Cincinnati. p. 2-12. Publication date unknown.
(11) Nunn, J.A., et al. Gasoline and kerosine poisoning in children. Journal of the American Medical Association. Vol. 103 (Aug. 1934). p. 472-474
(12) Sachs, A., et al. Pneumonitis resulting from gasoline. Nebraska State Medical Journal. Vol. 28, no. 4 (1943). p. 114- 115
(13) T.H. Lee., et al. Pneumonitis caused by petrol siphoning. The Lancet (July, 1979). p. 149
(14) Fieldner, A.C., et al. Permeation of oxygen breathing apparatus by gases and

vapors. U.S. Bureau of Mines, Department of the Interior, Technical Paper No. 272 (Jan. 1921). p. 5-24
(15) Wang, C.C., et al. Acute gasoline intoxication. Archives of Environmental Health. Vol. 2 (Oct. 1960). p. 714-716
(16) Lawton Jr., J.J., et al. Gasoline addiction in children. Psychiatric Quarterly. Vol. 35, no. 3 (1961). p. 555-561
(17) Tolan, E.J., et al. "Model psychosis" produced by inhalation of gasoline fumes. American Journal of Psychiatry. Vol. 120 (Feb. 1964). p. 757-761
(18) Brown, N.W. Gasoline inhalation. Journal of the Medical Association of Georgia. Vol. 57, no. 5 (May 1968). p. 217-221
(19) Fire protection guide to hazardous materials. 13th ed. Edited by A.B. Spencer, et al. National Fire Protection Association, 2002. NFPA 325
(20) Unleaded gasoline (Petro-Canada Inc). Printout from MSDS database 1990-02-01
(21) Unleaded gasoline (dyed or clear) (Esso Petroleum Canada). Printout from MSDS database 1991-07-16
(22) Premium unleaded gasoline (Shell Canada Products Limited). Printout from MSDS database 1988-12-15
(23) Gasoline regular unleaded (Sunoco Incorporated). Printout from MSDS database 1991-02-19
(24) Forsberg, K., et al. Quick selection guide to chemical protective clothing. 3rd ed. Van Nostrand Reinhold, 1997.
(25) Panova, Z. Menstrual and reproductive function and gynecological morbidity in women in occupational contact with gasoline. Letopisi Na Higienno-Epidemiologic Nata Slugba. Vol. 20, no. 1 (1976). p. 53-56
(26) Kumar, P., et al. Behavioral studies in petrol pump workers. International Archives of Occupational and Environmental Health. Vol. 61, nos. 1/2 (Oct. 1988). p. 35-38
(27) Gibson, J.E., et al. Current perspectives on gasoline (light hydrocarbon)-induced male rat nephropathy. Annals of the New York Academy of Sciences. Vol. 534 (1988). p. 481-485
(28) Document of the threshold limit values and biological exposure indices. 5th ed. ACGIH, 1986. p. 283
(29) NIOSH pocket guide to chemical hazards. NIOSH, June 1994. p. 150-151, 342
(30) European Communities. Commission Directive 96/54/EC. July 30, 1996
(31) European Communities. Commission Directive 94/69/EC. December 19, 1994

Information on chemicals reviewed in the CHEMINFO database is drawn from a number of publicly available sources. A list of general references used to compile CHEMINFO records is available in the database Help.

Review/Preparation Date: 1994-03-31

Revision Indicators:

Sampling	1996-01-01
Respiratory guideline	1995-08-01
CAS Number	1995-08-01
NFPA (health)	1995-08-01
NFPA (flammability)	1995-08-01
NFPA (reactivity)	1995-08-01
NFPA (comments)	1995-08-01
EU number	1998-10-01
EU class	1998-10-01
EU risk	1998-10-01
EU safety	1998-10-01
EU comments	1995-08-01
TLV-TWA	1996-09-01

TLV-STEL	1996-09-01
US Transport	1998-03-01
Resistance of materials	1998-05-01
TLV comments	1998-08-01
TDG	2002-05-27
Bibliography	2003-04-14
Flash point	2003-04-19
Autoignition temp	2003-04-19
Vapour density	2003-04-19
PEL-TWA final	2003-11-06
PEL-STEL final	2003-11-06
PEL-TWA transitional	2003-11-06

Canadian Centre for Occupational Health and Safety

CCOHS MSDS Material Safety Data sheets

IDENTIFICATION

MSDS Record Number:	3309102
Product Name(s):	Diesel Fuel
Product Identification:	CAS NO. 68476-30-2 Code LA1800
Date of MSDS:	1999-02-08
Currency Note:	This MSDS was provided to CCOHS in electronic form on 2002-06-15

SUPPLIER/DISTRIBUTOR INFORMATION

Supplier/Distributor:	VAN WATERS & ROGERS LTD
Address:	9800 Van Horne Way Richmond, British Columbia Canada V6X 1W5
Emergency Telephone No.:	800-424-9300 (CHEMTREC)

MATERIAL SAFETY DATA

Diesel Fuel LA1800 1 99-02-08EEE
LA1800.1 Diesel Fuel

VAN WATERS & ROGERS LTD. 9800 VAN HORNE WAY RICHMOND, B C. V6X 1W5

WHMIS CODES: B.3 D.2B

For Emergency Assistance
Involving Chemicals Call
CHEMTREC (800) 424-9300

WHMIS (Classification)
WHMIS CLASS B-3: Combustible
liquid with a flash point between
37.8 C (100 F) and 93.3 C (200 F).
WHMIS CLASS D-2B: Material causing
other toxic effects (TOXIC).

Section I Chemical Product Identification

Section I. Chemical Product Identification

Product Name Diesel Fuel
Code LA1800

CAS# 68476-30-2
Synonym Not available.
DSL On the DSL list.
Chemical Not available.
Name CI# Not applicable.

Chemical Petrochemical.
Family

Chemical Not available.
Formula

Material Industrial applications: Fuel.
Uses

Section II. Composition and Information on Ingredients

Exposure Limits

Name CAS # % by TLV/PEL LC50/LD50
Weight

Diesel Fuel 68476-30- 100 Not available. ORAL (LD50):
2 Acute: >5000.
mg/kg [Rat].
DERMAL (LD50):
Acute: >2000
mg/kg [Rabbit].

Section III. Hazards Identification

Potential Acute Very hazardous in case of skin contact (irritant), of
Health Effects ingestion, of inhalation. Hazardous in case of eye
contact (irritant). Severe over-exposure can result in
death.

Potential CARCINOGENIC EFFECTS: Not available.
Chronic Health MUTAGENIC EFFECTS: Not available.
Effects TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY: Not available.
Repeated exposure to an highly toxic material may produce
general deterioration of health by an accumulation in one
or many human organs.

Section IV. First Aid Measures

Eye Contact Check for and remove any contact lenses. DO NOT use an
eye ointment. Seek medical attention.

Skin Contact After contact with skin, wash immediately with plenty of
water. Gently and thoroughly wash the contaminated skin
with running water and non-abrasive soap. Be
particularly careful to clean folds, crevices, creases
and groin. Cover the irritated skin with an emollient.
If irritation persists, seek medical attention. Wash
contaminated clothing before reusing.

Hazardous Skin Wash with a disinfectant soap and cover the contaminated
Contact skin with an anti-bacterial cream. Seek medical

attention.

Inhalation Allow the victim to rest in a well-ventilated area. Seek immediate medical attention.

Hazardous Evacuate the victim to a safe area as soon as possible. Inhalation Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion DO NOT induce vomiting. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

Hazardous No additional information.
Ingestion

Section V. Fire and Explosion Data

The Product is: Flammable.

Auto-Ignition Not available.
Temperature

Flash Points CLOSED CUP: >40 C (104 F). (Pensky-Martens.).

Flammable LOWER: 0.7% UPPER: 5.5%
Limits

Products of Not available.
Combustion

Fire Hazards in Flammable in presence of open flames and sparks, of
Presence of shocks, of heat.
Various
Substances

Explosion Risks of explosion of the product in presence of
Hazards in mechanical impact: Not available.
Presence of Explosive in presence of open flames and sparks, of heat.
Various
Substances

Fire Fighting Flammable liquid.
Media SMALL FIRE: Use DRY chemicals, CO2, alcohol foam or
and water spray.
Instructions LARGE FIRE: Use alcohol foam, water spray or fog.

Special Remarks No additional remark.
on
Fire Hazards

Special Remarks No additional remark.
on Explosion
Hazards

Section VI. Accidental Release Measures

Small Spill Absorb with an inert material and put the spilled material in an appropriate waste disposal.

Large Spill Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition.

Section VII. Handling and Storage

Precautions Keep locked up. DO NOT ingest. Do not breathe gas, fumes, vapor or spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

Storage Keep container tightly closed. Keep in a cool and well-ventilated area. Highly toxic or infectious materials should be stored in a separate locked safety storage cabinet or room.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection Splash goggles. Lab coat. Vapor respirator. Be sure to use a MSHA/NIOSH approved respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits Not available.

Section IX. Physical and Chemical Properties

Physical State and Appearance Liquid. Odor Petroleum

Molecular Weight Not available. Taste Not available.

Color White to yellowish.

pH (1% soln/water) Not available.

Boiling Point 150 C (302 F)

Melting Point Not available

Boiling Point Not available.

Critical Not available.
Temperature

Specific Not available.
Gravity

Vapor Pressure 30 mm of Hg (@ 20 C)

Vapor Density 4 (Air = 1)

Volatility Not available.

Odor Threshold Not available.

Evaporation <1 compared to Butyl acetate.
rate

Viscosity Not available.

Water/Oil Dist. Not available.
Coeff.

Ionicity (in Not available.
Water)

Dispersion Not available.
Properties

Solubility Not available.

Section X. Stability and Reactivity Data

Stability The product is stable.

Instability Not available.
Temperature

Conditions of No additional remark.
Instability

Incompatibility Highly reactive with oxidizing agents.
with various
substances

Corrosivity No specific information is available in our database regarding the corrosivity of this product in presence of various materials.

Special Remarks No additional remark.
on
Reactivity

Special Remarks No additional remark.
on
Corrosivity

Hazardous No.
Polymerization

Section XI. Toxicological Information

Routes of Entry Eye contact. Inhalation. Ingestion.

Toxicity to Animals: Acute oral toxicity (LD50): >5000 mg/kg [Rat]. Acute dermal toxicity (LD50): >2000 mg/kg [Rabbit].

Chronic Effects on Humans: CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. Repeated exposure to an highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Other Toxic Effects on Humans: Very hazardous in case of skin contact (irritant), of ingestion, of inhalation. Hazardous in case of eye contact (irritant). Severe over-exposure can result in death.

Special Remarks on Toxicity to Animals: No additional remark.

Special Remarks on Chronic Effects on Humans: No additional remark.

Special Remarks on Other Toxic Effects on Humans: No additional remark.

Section XII. Ecological Information

Ecotoxicity: Not available.

BOD5 and COD: Not available.

Biodegradation: Products of Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: Not available.

Special Remarks on the Products of Biodegradation: No additional remark.

Section XIII. Disposal Considerations

Waste Disposal: Recycle, if possible. Consult your local or regional authorities.

Section XIV. Transport Information

TDG Classification: TDG CLASS 3: Flammable liquid.

Shipping name: Fuel Oil

PIN UN1202

Packing Group III

Special Not regulated under the Transportation of Dangerous Goods Provisions for Act when transported by road or rail in packagings or Transport containers of 454 L or less (waste excluded).

Section XV. Other Regulatory Information

Other OSHA: Hazardous by definition of Hazard Communication Regulations Standard (29 CFR 1910.1200).

Section XVI. Other Information

References Not available.

Other Special Considerations No additional remark.

Validated on March 8 2002

Information Contact EH&S Department Vancouver, B C. (604) 273-1441

FOR UPDATED COPIES OF AN MSDS, PLEASE CONTACT YOUR LOCAL VAN WATERS & ROGERS LTD. BRANCH.

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are described herein, we cannot guarantee that these are the only hazards
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========== END OF MSDS ==========

January, 2004 Issue

Esso Imperial Oil

Material Safety Data Sheets

New Search

Date Prepared: December 03, 2003
Supersedes: May 31, 2003
MSDS Number: 08524

1. PRODUCT INFORMATION

Product Identifier: TURBINE FUEL AVIATION, WIDE CUT TYPE
ESSO TURBO FUEL B
ESSO JET B
JET B
TURBO FUEL B
TURBO FUEL B F40
TURBO FUEL B JP4
ESSO TURBO FUEL B (FSII)
JET B (FSII)
AVIATION TURBINE FUEL (JP4)
CAN/CGSB-3.22 GRADE F40
ESSO JET B (FSII)

Application and Use:
Aviation turbine fuel

Product Description:

A mixture of aliphatic and aromatic hydrocarbons and additives.

REGULATORY CLASSIFICATION

WHMIS:
Class B, Division 2: Flammable Liquids.
Class D, Division 2, Subdivision A: Very Toxic Material.
Class D, Division 2, Subdivision B: Toxic Material

CEPA: CANADIAN ENVIRONMENTAL PROTECTION ACT

All components of this product are either on the Domestic Substances List (DSL) or are exempt.

TDG INFORMATION (RAIL/ROAD):

Shipping Name: FUEL, AVIATION, TURBINE ENGINES
Class: 3
Packing Group: II
PIN Number: UN1863
Marine Pollutant: Not applicable

Please be aware that other regulations may apply.

TELEPHONE NUMBERS

Emergency 24 hr. (519) 339-2145
Technical Info. (800) 268-3183

MANUFACTURER/SUPPLIER:

IMPERIAL OIL
Products Division
111 St Clair Avenue West
Toronto, Ontario
M5W 1K3
(416) 968-4441

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2. REGULATED COMPONENTS

The following components are defined in accordance with sub-para (i) to (iv) or paragraph 14(a) of the Hazardous Products Act:

NAME	%	CAS #	
Kerosene, straight run	40-70 V/V	8008-20-6	LD50:>5g/k
Naphtha, full range	30-60 V/V	64741-42-0	
Diethylene glycol monomethyl ether	0-0.15 V/V	111-77-3	LD50:7g/kg LD50:>2.0/

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3. TYPICAL PHYSICAL & CHEMICAL PROPERTIES

Physical State: Liquid
Specific gravity: not available
Viscosity: 0.60 cSt at 40 deg C
Vapour Density: 4
Boiling Point: 40 to 270 deg C
Evaporation rate: <1 (1= n-butylacetate)
Solubility in water: negligible
Freezing/Pour Point: -58 deg C ASTM D 2386

Odour Threshold: not available
Vapour Pressure: 21 kPa at 38 deg C
Density: 0.78 g/cc at 15 deg C
Appearance/odour: White or pale yellow liquid, petroleum odour

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4. HEALTH HAZARD INFORMATION

NATURE OF HAZARD

INHALATION:

Negligible hazard at normal temperatures (up to 38 deg C).
High vapour concentrations are irritating to the eyes, nose, thr
lungs; may cause headaches and dizziness; may be anesthetic and
other central nervous system effects.
Avoid breathing vapours or mists.

EYE CONTACT:

Slightly irritating, but will not injure eye tissue.

SKIN CONTACT:

Irritating.
Frequent or prolonged contact may irritate the skin and cause a
(dermatitis).
Low toxicity.

INGESTION:

Low toxicity.

Small amounts of this liquid drawn into the lungs from swallowin
vomiting may cause severe health effects (e.g. bronchopneumonia
pulmonary edema).

CHRONIC:

Contains benzene. Human health studies (epidemiology) indicate
prolonged and/or repeated overexposures to benzene may cause dam
to the blood producing system and serious blood disorders, inclu
leukemia.
Animal tests suggest that prolonged and/or repeated overexposure
benzene may damage the embryo/fetus. The relationship of these
studies to humans has not been fully established.
Contains n-hexane. Prolonged and/or repeated exposures may caus
damage to the peripheral nervous system (e.g. fingers, feet, arm
Contains diethylene glycol monomethyl ether (DIEGME). Prolonged
repeated exposure through inhalation or extensive skin contact w
DIEGME may result in toxic effects on the kidneys, the reproduct

system and/or the embryo/fetus.

ACUTE TOXICITY DATA:

Based on animal testing data from similar materials and products the acute toxicity of this product is expected to be:

Oral	:	LD50 > 5000 mg/kg	(Rat)
Dermal	:	LD50 > 2000 mg/kg	(Rabbit)
Inhalation	:	LC50 > 2500 mg/m3	(Rat)

OCCUPATIONAL EXPOSURE LIMIT:

Manufacturer Recommends:
100 ppm based on composition.

ACGIH recommends:

For n-Hexane (skin), 50 ppm (176 mg/m3;.
For Benzene, ACGIH recommends a TWA of 0.5 ppm (1.6 mg/m3), (ski categorizes it as a confirmed human carcinogen.

Local regulated limits may vary.

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5. FIRST AID MEASURES

INHALATION:

In emergency situations use proper respiratory protection to imm remove the affected victim from exposure. Administer artificial respiration if breathing has stopped. Keep at rest. Call for p medical attention.

EYE CONTACT:

Flush eyes with large amounts of water until irritation subsides irritation persists, get medical attention.

SKIN CONTACT:

Immediately flush with large amounts of water. Use soap if avai Remove contaminated clothing, including shoes, after flushing ha If irritation persists, seek medical attention.

INGESTION:

DO NOT induce vomiting since it is important that no amount of t material should enter the lungs (aspiration). Keep at rest. Ge prompt medical attention.