

	MRAT 049	<p style="text-align: center;">Motor vehicle engine fuels, and oils</p>	Applicable to: diesel; engine oil; glow-plug fuel; petrol; petroil; two-stroke fuel	See also: 048 050
Process(es) covered:		Motor vehicle engineering is taught mainly in colleges of FE where it is necessary to handle fuels and lubricants. Oils are used to reduce friction and improve piston seals. Pupils in schools may however experience motor vehicle work, either in the school or at a local college.		

Control Measures

- Handle used engine oils only when wearing suitable, chemical resistant, gloves (eg, nitrile rubber).
- The use of disposable PVC gloves is recommended for handling fuels when exposure will be short. Industrial nitrile gloves are recommended for frequent exposure. (See *Further Information*)
- Good natural ventilation is sufficient to reduce the inhalation risk from fuels to acceptable levels.
- All electrical switch gear, fittings and equipment within 1.25 m of the floor and within a radius of 5 m of a vehicle or engine test bed, must be spark-proof.

Immediate Remedial Measures:

Inhalation	Remove the affected person(s) to the fresh air.
Fuels or oils are swallowed	Accidental ingestion is unlikely but, in the event, DO NOT INDUCE VOMITING. Wash out the mouth with water and if ingestion is suspected, send to hospital immediately.
Fuels or oils are on the skin	Flush contaminated skin with water, then wash with soap and water. Contaminated clothing should be soaked with water and removed. Do not reuse until laundered.
Fuels or oils are in the eye	Flush the eye(s) with copious quantities of running water from a tap. If irritation persists then call 111 and seek medical attention.
Fuels or oils are spilt in workshop	In the event of a spill in a badly-ventilated area, persons should not be allowed to enter the area even in an emergency until the atmosphere has been checked by a competent person and passed as safe for entry.

Storage	Do not store petrol unless you have to. Fuel not in vehicle tanks must be kept to a minimum (never more than 50L) and held in suitable containers (eg, metal petrol cans or approved plastic petrol containers) and kept out of direct sunlight, in a 'highly-flammable liquids' cabinet.
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Disposal	Engine fuels are governed by the <i>Hazardous Waste Regulations 2015</i> and subsequent amendments, and must be disposed of via an authorised waste disposal contractor along with other Hazardous Waste produced in the school ¹ . Do not allow fuels to enter the drainage system. Used engine oil must be placed in the tank at a public amenity site.
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¹ See CLEAPSS guidance leaflet PS31 *Disposal of Waste in Design & Technology* and ring the *Helpline* for the latest advice.

Risk Assessment

Hazards:

Hazardous to health Harmful Irritant Highly flammable	<p>Cancer may be caused by used engine oils (in which the carcinogen has not been identified) and by petrol because of its benzene content.</p> <p>Inhalation of fuel fumes has a narcotic effect and high levels are moderately poisonous. No WEL values are available.</p> <p>Engine fuels are slightly irritating to the skin with a defatting action.</p> <p>Splashes in the eye may cause irritation and some discomfort.</p> <p>Diesel fuel is considered less hazardous than petrol.</p> <p>Engine fuels, particularly petrol (leaded or unleaded), are extremely flammable.</p>
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Risks:

Toxic	Used engine oils and petrol must be treated as potential carcinogens ² .
Harmful	Under normal conditions of use, engine fuels are not expected to present an inhalation hazard. Toxicity following single exposure to high levels (orally, dermally or by inhalation) of all fuels is of a low order. However, exposure to higher vapour concentrations can lead to nausea, headache, dizziness and, in extreme cases, loss of consciousness
Irritant	Problems are not expected unless exposure is frequent. This may not happen in school workshops but staff in colleges may need to take precautions.
Highly flammable	No equipment with an open flame or source of ignition must be used within 5 m of a fuel container or vehicle.

Further Information:

- Do not use fuels must as solvents or cleaning agents.
- To start a siphon by sucking up a tube by mouth is very risky.
- Vehicles brought into the workshop should not have more than 15 L (3 gallons) of fuel in the tank and must be fitted with a lockable cap.
- Ensure that the controlling authority and the local fire service's Fire Prevention Officer have been consulted over any proposed use of engine fuels and over the appropriate fire precautions to be taken.
- The filling of tanks or containers (metal screw top) from storage vessels should be carried out in the open air, away from all sources of ignition.
- The type and degree of hand protection depends on the glove material and the way in which it is constructed. Barrier creams may sometimes be used as an aid to skin hygiene in situations where gloves cannot be used. Experience shows, however, that barrier creams are less reliable than suitable gloves as a means of protection³ from chemicals.
- There is no evidence of hazards from hydraulic fluids.

² EH 40/2005.

³ Paragraph 99 from *Personal protective equipment at work*, HSE 1992, ISBN 0118863347.