MOTOR OIL & RELATED FLUIDS
(HAZARDOUS WASTE)

DESCRIPTION: Any petroleum-based or synthetic oil or grease such as lubricants, engine oils, gearbox oil, transmission fluids or brake fluids (usually solvent based), whose purpose is to keep machines running smoothly.

GLOBAL PRODUCTION/DISPOSAL: 5.8 million tonnes/year in the EU (2006); 5 billion litres/year in the US.

COMMON SOURCES: Lubricating fluids for vehicle parts, generator sets, equipment using engines such as lawn mowers or other gardening/maintenance equipment.

IMPACTS IF NOT MANAGED CORRECTLY: Motor oil is insoluble in water, slow to degrade and persistent; it sticks to everything from rocks to bird feathers. Spent engine oil may contain toxic and heavy metal particles including lead, copper, manganese, cadmium, and chromium which are a threat to human beings, animals and vegetation if they find their way into drinking water or into the food chain. Some toxic metals (e.g. lead) can cause damage to kidneys, brains, nervous and immune systems, even in low doses. Preventing waste motor oil and related fluids from entering the environment is critical as one litre of oil can pollute one million litres of fresh water.

OPTIONS FOR REDUCING: Minimise oil waste by ensuring oil is not changed too frequently; follow manufacturer’s recommendations and conduct quality tests to assess appropriate intervals.

Generators running at low load not only burn excessive fuel and oil but also need more frequent oil changes than correctly sized sets.

Purchase oil products with recycled material content instead of virgin products, where possible and provided they are suitable for the identified purpose – always check technical specifications and whether products and their components are allowed by your organization’s policies and international regulations (e.g. complying with global phase-out of persistent organic pollutants (POPs) or chlorinated additives).

There are biodegradable alternatives that are less toxic for the environment such as biodegradable greases; consider these where available, technically suitable and if their price / performance ratio is comparable to conventional products. Despite being less harmful, biodegradable fluids still should not be released into the environment as they might contain particles of hazardous materials taken up during their use (e.g. heavy metals). When biodegradable products are not available, it may be still possible to substitute an oil with one that has a less hazardous composition (e.g. without POPs and chlorine), after consulting with manufacturers.

OPTIONS FOR REUSING: Waste lubricants are the sole category in this series where recycling/reprocessing is environmentally preferable to reuse options. If waste reprocessing is not available, waste oils can be sold/donated through local disposal processes but it is essential your agency understands the intended end uses. Waste oils can be used in many industrial applications, such as additives in concrete moulds, as an ingredient in asphalt road constructions, or painted onto timber to deter termites. Waste oils are NOT suitable for household or community uses, such as termite protection in homes, children’s playgrounds, or for marking around trees.

OPTIONS FOR RECYCLING: During use, engine oils get mixed with impurities (e.g. dirt, chemicals, metal scrapings, sawdust) and become less fit for their purpose. However, if impurities are removed, the oil can be resold. Oil filtering and reconditioning should always be carried out by facilities/businesses that specialise in reprocessing used oils. This may be your supplier (through a takeback scheme), a local garage/service station that collects on behalf of a reprocessor, or a local waste handler that will take the oil at little or no cost. Reprocessing waste oil/lubricants is the most sustainable end use and should be explored wherever possible.
OTHER OPTIONS (LAST RESORT): As a last resort, oils can be sold/donated as furnace fuel (e.g. in cement factories) provided they have a chimney and air pollution control equipment. Burning the fuel will result in greenhouse gas emissions. The other least preferred option is to dispose of waste oils in sealed containers in a hazardous waste facility or “sanitary” landfill; one with a clay, synthetic or cement lining to prevent liquid residues from leaking into the soil and groundwater.

Many UN agencies store oils onsite until an alternative can be found. Waste oil should be stored in appropriate containers that should not be filled to the brim to avoid overflows as some products expand in hot conditions, and should be stored on a concreted surface under a roof to protect from rainwater, ideally with additional secondary containment such as bunded pallets. A bund is a low wall, which stops liquid from running onto the ground in case of accidental spill.

OTHER COMMENTS: Vehicle fuels are generally flammable and in their liquid or vaporised state may pose a fire hazard. Keep away from sparks, cigarettes and other ignition sources.

Always use personal protective equipment (PPE – eye protection, gloves and safety footwear) when handling waste oils. Skin contact, breathing or swallowing these substances, vapours, or smoke can be harmful. Ensure a spill kit is available on sites where these substances are used.

When collecting waste oils, always use funnels to avoid spillage, and place the collected material into leak-proof containers on bunded pallets or a concreted surface. Preferably use plastic drums as metal ones are subject to rusting and may leak. These should always be kept closed (never leave a funnel in the mouth of the drum) to avoid evaporation and accidental spillage, and labelled with contents and dates.

Waste oil must be transported in sealed containers and in accordance with local and international guidelines and regulations on the transport of dangerous goods (e.g. UNECE guidelines, IATA regulations). These may require specific labelling, allowed quantities, documentation, licences and permits.

Motor oils and lubricants are hazardous waste, and as such they must be handled according to special management standards and procedures. Oil waste may be subject to legal restrictions (e.g. export to other countries for treatment) and requires special treatment. Store separately from food or medical items to prevent contamination.

Given that they are hazardous substances, always obtain material data safety sheets and store them in close proximity to the oil/lubricants.

ENDNOTES

FOR MORE INFORMATION, PLEASE VISIT WWW.GREENINGTHEBLUE.ORG/WASTE-MANAGEMENT