**Forward**

The Government of Kenya is committed to ensuring a clean and healthy environment for its citizenry. The Constitution of Kenya espouses the tenets, duties and responsibilities of the state and its institutions to eradicate all forms of environmental degradation to promote sustainable development. As Kenya develops towards achieving Vision 2030 its imperative that all forms of development and waste associated with it is managed in a responsible manner.

Definition of terms;


**Authority** means the National Environment Management Authority (NEMA) established under Section 7 of the Act.

**Disposal site** means any area of land on which waste disposal facilities are physically located or final discharge point without the intention of retrieval but does not mean a re-use or re-cycling plant or site.

**Environmentally Sound Management of Waste** means taking all practical steps to ensure that waste is managed in a manner which will protect human health and the environment against the adverse effects which may result from the waste.

**Reclamation**: means treatment to separate solids and water from a variety of used oils by heating, filtering, dehydrating and centrifuging among others for purposes of obtaining fuel or fuel extender.

**Recycling**: means the reprocessing, reclaiming and regeneration (re-refining) of used oils by use of an appropriate selection of physical and chemical methods of treatment.

**Regeneration/Re-refining**: means the production of base oils from used oils through processes such as pre-distillation, treatment with acids, solvent extraction, contact with activated clay and hydro-treating which remove contaminants, oxidation products and additives.

**Reprocessing**: means the treatment to remove insoluble contaminants and oxidation products from used oils by methods including but not limited to heating, settling, filtering, dehydrating and centrifuging to produce oil that can be used for its original purpose.

**Re-use**: means the reuse of used oil after reprocessing.

**Sludge**: means a non-flowing mixture of solids and liquids.

**Storage**: means temporary placement of used oil/sludge in a suitable location or facility where isolation, environmental and health protection and human control are provided in order to ensure that it is subsequently retrieved for treatment and conditioning and/or disposal.

**Treatment**: means chemical or physical operations designed to produce from used oil, or to make used oil more suitable for production of, fuel oils, lubricants, or other used oil-derived product and includes, but is not limited to blending used oil with virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or physical separation and re-refining.
**Used oil/sludge Generator:** means any person whose activities or an activity under his or her direction produces used oil/sludge or if that person is not known, the person who is in possession or control of that used oil/sludge.

**Used oil/sludge:** means any semi-solid or liquid product consisting totally or partially of mineral oil or synthesised hydrocarbons (synthetic oils) that has been used and as a result of such use is contaminated by impurities rendering it unsuitable for its original use and includes oily residues from tanks, oil-water mixtures, and emulsions.
1.0 INTRODUCTION

The World demand for lubricant oil is about 41.35 million metric tons. The regional distribution indicates that Africa consumes only 2.068 million metric tons of the global lubricant consumption. Within Africa, South Africa Consumes about 0.305 million metric tons of the Africa quota while Kenya consumes about 0.007 million metric tons of lubricating oils. These lubricating oils become degraded after use due to presence of contaminants hence not fit for its intended use and require to be disposed. Improper storage, handling, transportation, treatment and disposal of the used oils results in negative environmental impacts and public health hazards.

Oil is insoluble, persistent and toxic due to additives and heavy metals hence can be a major source of contamination of groundwater if indiscriminately disposed. Under the Environmental Management and Coordination (Water Quality) Regulations 2006, the effluent discharge standard for oil and grease is zero since impacts of oil on drinking water can be devastating. Generally, infrastructural facilities relating to collection, storage, transportation and recycling have also been inadequate in absence of clear guidelines.

These guidelines will contribute to reduction of pollution due to unsound management of used oil. In particular they expound the requirements stipulated in Part IV and specified in the fourth schedule of the Environmental Management and Coordination (Waste Management) Regulation 2006 on Management of hazardous waste. The guidelines may be complemented with the Energy Regulatory Commission and Environmental Health and Safety guidelines.

1.1 Objectives and Scope

Main objective

To improve the management of used oil in the country in order to protect human health and prevent contamination of the environment.

Specific objectives:

- Ensure effective and efficient collection and transportation systems;
- Promote eco-friendly technologies for recycling of used oil;
- Create awareness on hazards associated with handling used oil;
- Provide guidance on infrastructure for management of used oil
1.2 Scope:

Waste oil is defined as any petroleum-based or synthetic oil that, through contamination, has become unsuitable for its original purpose due to the presence of impurities or loss of original properties.

The U.S. EPA defines the term "used oil" as any petroleum or synthetic oil that has been used, and as a result of such use is contaminated by physical or chemical properties. "Used oil" is a precise regulatory term. "Waste oil" is a more generic term for oil that has been contaminated with substances that may or may not be hazardous. Any oil contaminated with hazardous waste may itself be a hazardous waste, and if so, must be managed subject to hazardous waste management standards. Both used oil and waste oil require proper recycling or disposal to avoid creating an environmental problem.

These guidelines will apply to used oil/sludge:

a) Generators;
b) Collectors;
c) Transporters;
d) Transfer Station operators
e) Recyclers;
f) Users

1.3 Types of Used Oil:

1.3.1 Re-refinable used oil includes:

a) High viscosity index oils (all diesel and gasoline crankcase oils)
b) Transmission oils
c) Hydraulic oils (non-synthetic)
d) Gear oils (non-fatty)
e) Transformer oils
f) Dryer bearing oils
g) Compressor oils
h) Turbine oils
i) Machine oils (non-fatty)
j) Grinding oils (non-fatty)
k) Quenching oils (non-fatty)

1.3.2 Non re-refinable used oils include:

a) Oils containing Polychlorinated Biphenyls (PCBs) and Poly-nuclear Aromatics (PNAs), Low viscosity index and Medium Viscosity Index oils
b) Halides
c) Synthetic oils
d) Brake Fluids
e) Cooking oils
f) Asphaltic oils
g) Black oils
h) Bunker oils
i) Metal working oils containing fatty acids
j) Foam oils
k) Rolling oils
l) Solvents of any type
2.0 OVERVIEW OF USED OIL MANAGEMENT

2.1 Sources of used oil

Generators of used oil are;

a) Small generators (do-it-yourself (DIY) for motor vehicle, farm machinery and other equipments),

b) Vehicle repairs and servicing,

c) Industrial activities,

d) Ship operations

The quantity of used oil generated from these sources is difficult to quantify.

2.1.1 Small generators

Oil change in machines is a regular activity which is carried out in facilities equipped for the job (formal garages), open air garages or on-site. Onsite oil changes are carried out by do-it-yourself (DIY) in service and repair of motor vehicles and farm machineries. These sources of used oil are regarded as small used oil generators and basically produce less than 10 litres of used oil at any one time. There is no proper used oil collection and disposal system.

2.1.2 Vehicle repairs and servicing

The amounts of oil changed at petrol service stations are quite low compared with those changed in open air garages where multiple services are offered at the same time hence the preference by some motorists. The latter practice poses a great environmental risk since the grounds are pervious and there is no proper prevention of spillages. The branded service stations have established a Safe Waste Oil Disposal (SWOD) initiative whereby a common truck collects the used oils and transports it to a treatment plant.

In open air garages, the used oil is collected in drums or other small containers and there is no clear chain of custody of the oil after collection. Hence the oil may be used in other applications rather than being re-refined as recommended.

2.1.3 Industrial activities

Used oil is also generated from petroleum refineries, other industrial sources such as metal working industries, industrial machines, transport industry (railway, ships, aviation) petroleum tank cleaning, bulk petroleum storage tanks and heat transfer e.g. electrical transformers

A major source of oily wastes is the sludge recovered from tanks used for the storage of petrol. The sludge which is normally produced by high pressure water jet cleaning of storage tanks consist of iron oxide a corrosion product and sediments, containing organic and inorganic compounds mixed with fuel. The used oil from industrial sources is reprocessed at recycling facilities while that
which is generated from petroleum tank cleaning operations is used for energy recovery or disposed off through weathering sites.

2.1.4 Ship operations

A major source of used oil/sludge in Kenya is the servicing of ships which dock at the port of Mombasa. The used oil will come as bilge water, or sludge from ship engine and other auxiliary machinery.

Used oil from the ships is collected by either licensed storage or recycling facility operators while some directly get into the environment due to improper handling. The oil collected by the recyclers is basically decanted and used as fuel for boilers and furnaces among other uses.

2.2 Transportation

Waste oil is currently transported from generators to licensed recycling and/or storage facilities or directly to energy recovery facilities and to informal collection centers. Currently only licensed transport vehicles operated by storage/recycling facilities are allowed to transport used oil country-wide.

Large volumes of used oil are transported using oil tankers or lorries while small quantities are carried in drums using pick-ups and vans. In some cases used oil is transported in small containers using bicycles, motorcycles and public means without proper guidance.

2.3 Recycling facilities

The following attributes describe the status of some of the waste oil recycling facilities within the country;

General description of a used oil/sludge facilities

Typical used oil/sludge recycling facilities are fenced with a loading/offloading area, oil storage tanks and processed oil storage tanks. The tanks are raised on concrete slabs above a paved ground with a drain for collecting the spills. The spills are directed into an oil/water interceptor. The paved ground in the loading and offloading area is often insufficient thus leading to uncontained oil spills.

Most of the facilities have oil spills on the bare ground with no clear system of handling oil spillages. The tanks are predominantly ex-oil transportation tanks; raised on concrete slabs which in some cases are worn out. The tanks in most cases do not have adequate bund walls around them.

Some facilities lack appropriate and functional oil water interceptors and have inappropriate offices which lack records of their day to day operations.

Most facilities workers are provided with basic PPE’s and emergency exits are well labeled. However, most facilities still have inadequate fire extinguishers.
which are also not regularly serviced; the sites lack adequate labeling and signage, the personnel training levels on EHS matters is generally low, there are no clear systems of managing solid waste and, record-keeping is generally poor.

The used oil/sludge recycling is achieved by leaving the used oil in the tanks for some time to allow the separation of water and used oil. The water floats above the oil. After separation, the water is drained retaining used oil in the tank. The decanted used oil/sludge is then collected in trucks by users.

2.4 Uses of used oil

The main uses of used oil/sludge include; fuel for industrial boilers, hotel boilers, furnaces, in steel processing plants/smelters. Re-use as lubricant after reprocessing and regeneration of base oil for manufacture of new lubricants. At the informal level used oil/sludge has been used as lubricants on non-motorized transport (carts and wheelbarrows), for wood preservation, in asphalt coating plants as a primer, in stone quarries for stone drying purposes and for dust suppression on roads, in other parts of the world used oil is used for road oiling, weed killer, as a carrier for pesticides.
3.0 LEGAL AND INSTITUTIONAL FRAMEWORK

3.1 National Environment Management Authority

The Authority is established to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment. Its mandate includes implementation of Legal Notice no. 121 on Environmental Management and Coordination (Waste Management) Regulations, 2006 which stipulates the disposal of Hazardous waste such as used oil/sludge. The Authority also administers Environmental Impact Assessments (EIA) under the provisions of Legal Notice 101 on Environmental (Impact Assessment and Audit) Regulations of 2003. According to regulations all waste recycling facilities should undertake EIAs failure to which enforcement action can be taken in accordance with the provisions stipulated in the Environmental Management and Coordination Act of 1999 and its subsidiary legislations.

3.1.1 Environmental Management and Co-ordination Act (EMCA) 1999

An act of parliament to provide for the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental there to

Section 93 of the Act prohibits discharge of hazardous substances, chemicals, oil or mixture containing oil into any waters or any other segment of the environment.
Section 58 and the second schedule of the Act require that operators of waste oil handling facilities should undertake an Environment Impact Assessment before commencing the project.

3.1.2 Environmental Management and Coordination (Waste Management) Regulations 2006

Regulation 22, the fourth and the fifth schedule of the waste management regulations categorize used oil as hazardous waste and give specifications for handling hazardous waste.

3.1.3 Environmental (Impact Assessment and Audit) Regulations, 2003

Regulation 4 and 31 stipulates the requirements for Environmental Impact Assessment (EIA) and Environmental Audit (EA) for facilities that are likely to have significant impact on the environment. If not properly managed, waste oil can have significant impacts on the environment.

3.1.4 Environmental Management and Coordination (Water Quality) Regulations, 2006

The Third schedule of the regulation restricts effluent discharge from facilities listed under the Fourth Schedule (monitoring guide for discharge into the environment) or other point sources to the standards stipulated under the 3rd
Schedule (standards for effluent discharge into the environment). They oblige operators of such facilities to install pollution prevention systems such as oil Interceptor or oil-water separator where wastewater is contaminated with oil and grease. The oil and grease in the discharge should be nil. The standard for grease and water was set taking into account that a major portion of the Kenyan population drinks water directly from water sources and therefore the need to protect them. Water contaminated with oil is also very dangerous to aquatic life.

3.2. Energy Act, 2006

The Energy Act, 2006 is presently the primary legislation in Kenya that contains provisions for the management of the petroleum sub-sector. Section 102 (h), (m) and (v) empowers the Minister responsible for Energy to promulgate regulations for the environmentally sound management of petroleum related facilities and infrastructure. Waste-oil recycling plant by virtue of handling petroleum products automatically becomes a petroleum facility and therefore this legislation is relevant.

3.3 Directorate of Occupational Safety and Health Services

The department is mandated to implement all rules pertaining to the protection and prevention of workers from occupational hazards and ensure safe working environment. The Directorate implements the OSHA, 2007 and various rules made there under.

3.3.1 Occupational Safety and Health Act, 2007

This Act of Parliament was enacted to provide for the health, safety and welfare of persons employed in workplaces, and for matters incidental thereto and connected therewith.

At every workplace where chemicals or other toxic substances are manipulated, the employer shall develop a suitable system for the safe collection, recycling and disposal of chemical wastes, obsolete chemicals and empty containers of chemicals to avoid the risks to safety, health of employees and to the environment.

3.3.2 Medical Examination Rules 2005, (Legal Notice No. 24)

These rules provide for Occupiers to mandatorily undertake pre-employment, periodic and termination medical evaluations of workers handling hazardous waste because the employees of the Plant mainly those charged with handling of waste-oil may potentially be exposed to hazardous substances this regulation requires that they undergo medical evaluations regularly.

3.3.3 Hazardous Substances Rules 2007, (Legal Notice No. 60)

Regulation 12 – 15 requires Proponents to have a Hazard Communication program implemented at their workplace. The Proponent is required to maintain an inventory of all
Material Safety Data Sheets for the chemicals stored in their workplace. As a minimum the MSDS shall comply with the format indicated in the Third Schedule of the Regulations and will be disclosed fully to the employees handling the chemical by the Proponent. All unused, obsolete or expired chemicals must be disposed off in an environmentally sound manner. All containers containing chemicals must be labeled appropriately as indicated in the MSDS for that chemical. Training of employees on the hazards associated with handling chemicals safely in the workplace will be provided at the Proponent’s cost.

3.5 Ministry of Health

The mandate of Ministry of Health is to support the attainment of the health goals of the people of Kenya by implementing priority interventions in public health, guided by the strategic framework provided from the medium-term Plan 2008-2012 and the wider health sector.

The department of environmental health and sanitation aims to reduce disease burden arising from environmental pollution, by preventing disease transmission from general environmental health pollutants.

3.5.1 Public Health Act- (Revised 1986)

The Act demands the adoption of practicable measures to prevent injurious and unhealthy conditions in the site. The Act requires the proponent to enhance effective management of Nuisances i.e. noxious matter or wastewater as will be discharged from the proposed project throughout the project cycle. To achieve this, systems on the management of both solid and liquid waste (effluent) will be adopted as proposed in the report. For instance, the effluent will be discharged into a septic tank. The solid waste shall be handled by a NEMA licensed garbage collector on regular basis and disposed accordingly.

3.6 Water Resources Management Authority (WRMA)

The Water Resource Management Authority (WRMA) is a state corporation under the Ministry of Environment, Water and Natural Resources established under the Water Act 2002 and charged with being the lead agency in water resources management.

3.6.1 The Water Act, 2002

Part II, section 18, of the Water Act, 2002 provides for national monitoring and information systems on water resources. Section 73 of the Act allows a person with a license (licensee) to supply water to make regulations for purposes of protecting against degradation of water sources. Section 75 and sub-section 1 allows the licensee to construct and maintain drains, sewers and other works for intercepting, treating or disposing of any foul water arising or flowing upon land for preventing pollution of water sources within his/her jurisdiction.
4.0 GUIDELINES

The purpose is to give guidance to players in used oil management chain aimed at ensuring the used oil does not contaminate the environment. The players include small generators, bulk generators, collectors, transporters, transfer station operators and recyclers.

4.1 GUIDELINES FOR GENERATORS/COLLECTORS

4.1.1 Small volume generators

Small volume generators are those oil users who occasionally produce used oil and have very little or no on-site used oil storage, and accumulate volumes of less than 20 litres of used oil at any one time. Large numbers of farm machinery operators and private motorists who change their own oil fall into this category.

How to do it:

- People who maintain their own vehicle(s) and farm machineries operators who change the engine and/or other oil(s) should comply with the following procedures:
  - Place a drip pan directly under the vehicle’s oil pan plug to collect as much as possible of the used oil and to prevent spills, before draining oil from the sump.
  - When changing your oil filter, loosen the old filter (use a filter wrench if necessary), then spin it off and drain as much oil as possible into the drip pan.
  - Place the filter upside down in an empty container and drain for 24 hours.
  - Add the used oil to your collection container.
  - Take the old filter to your local scrap metal collection point.
  - In absence of oil filter recycler, wrap the filter in a newspaper and dispose it through your domestic waste collection.
  - Pour the used oil into a clean, empty container with a tight lid (e.g. the plastic container the clean oil was supplied in. Do not use a container that once contained food, or beverages.
  - Do not mix the oil with anything else, such as paint, gasoline, solvents, and cleaners.
  - Take used motor oil to a service station, lube center, or any other collection centre or auto-motive store that collects used motor oil for recycling.
4.1.2 Bulk generators

**Industrial and Commercial Used Oil Generators**

Industrial and commercial generators are defined as those entities that in the course of their commercial operations generate or accumulate used oil. They can be categorised into four main groups:

- Motor vehicle repair workshops/services stations
- Industrial manufacturing operations
- Other commercial operators.
- Collection centre

**Requirements for Motor vehicle repair workshops**

This involves collecting the maximum amount of used oil from your operations, storing it in an approved manner, and disposing of it in an appropriate way. However, industrial and commercial generators have more complicated operations and need to take particular care to segregate used oils generated from different processes, and avoid contamination of oils on-site. This includes not contaminating segregated oil with any other oily fluid that may appear to be the same substance.

**Requirements for Petrol Service Stations**

- Drain used oil into the oil collection equipment
- Store it in drums in a bunded area
- Place the filter upside down in an empty container and drain for 24 hours
- Provide a collection centre for small generators
- Take the used oil to transfer stations or recycling facilities
- Dispose oil filters through licenced incinerators
- May offer incentives to encourage oil drain at the service station

**Solid Waste**

- Dispose of solid waste through licenced incinerators
- Filter recyclers
- Scrap metal dealers
- Package may be recycled
- Industrial manufacturing operations
4.2 GUIDELINES FOR COLLECTION CENTERS

4.2.1 Collection centers

Collection centers may include service stations (lube centers) and garages that collect used motor oil for recycling.

These centers shall;
1. Undertake an Environmental Impact Assessment (EIA) and be duly licensed before commencement.
2. Undertake an annual Environmental Audit (EA).
3. Store a maximum of 5 drums (210 litres each)
4. Used oil received at a collection centre shall be transferred to a licensed transfer station or recycling facility;
5. A collection center shall not process the used oil/sludge in any way
6. Collection centers shall not sell used oil/sludge to consumers
7. The collection centre shall have an Emergency response plan (spill contingency plan, spill control equipment, a fire control plan, an evacuation plan) which includes up-to-date procedures for notifying the relevant authorities and staff awareness
8. The collection centre shall have a waste management plan

4.3 GUIDELINES FOR TRANSPORTERS

4.3.1 Transporters

1. Every person intending to transport used oil/sludge shall apply for a licence to transport used oil
2. All licensed waste oil transporters shall be allowed to collect and transport waste oil to licensed recycling facilities
3. All transporters shall operate appropriate type of vehicles for transportation of used oil e.g. a tankers and covered trucks to protect the drums when being transported.
4. All drums must be metal and securely closed.
5. All used oil transporters shall obtain a license to transport waste from the Authority;
6. All tankers shall take used oil to a licensed recycling facility;
7. All used oil transporters shall carry duly filled tracking documents.
8. All transporters of used oil should have in place an Emergency Response Plan(spill contingency plan, spill control equipment, a fire control plan, an evacuation plan) in case of incidents, spillages, fires, explosions etc.
9. The used oil transporter shall be responsible for any damages caused out of spills or fires;
10. All transporters of used oil should have valid physical addresses, contact details (Postal addresses, phone number, email, face book and twitter handles);
11. All vehicles used in the transportation of used oil should be appropriately labeled;(how it should be labeled – to clarify with the petroleum sector during the stakeholders meeting)
12. All drivers must undergo appropriate training for tanker work, and this must be documented
13. All collection vehicles are to carry a Tanker Spill Kit for cleaning up any minor spillage

4.4 GUIDELINES FOR TRANSFER STATIONS

Transfer stations

4.4.1 Infrastructural Facilities

This may include:
1. Tanks (as per KS standards)
2. Oil water interceptors;
3. Bund walls;
4. Paved surfaces with an impervious material especially at the offloading and loading bays;
5. Proper drains;
6. Pollution control equipments;
7. Signages;
8. Site offices.

4.4.2 Description of the site

1. All storage/transfer stations shall receive used oil/sludge only for temporary storage before being taken to licensed recycling facilities.
2. Store more than 1000 litres.
3. A transfer station shall not process the used oil/sludge in any way except dewatering
4. All transfer stations shall be provided with adequate and functional oil interceptors and other pollution control measures.
5. All transfer stations must obtain a license to own or operate a transfer station from the Authority
6. Every person intending to establish a transfer station shall undertake an Environmental Impact Assessment (EIA) before commencement;
7. The facilities shall undertake annual Environmental Audits;
8. All used oil/sludge from transfer stations shall be transferred to licenced recycling facilities
9. All used/oil from transfer stations shall be sold only to authorized users;
10. All Used oil/ sludge from a transfer station shall be transported to a recycling facility by licensed used oil transportation vehicles;
11. All transfer stations shall be fitted with adequate and functional oil water interceptors and other pollution control measures.
12. All transfer stations should have in place an Emergency Response Plan (spill contingency plan, spill control equipment, a fire control plan, an evacuation plan) in case of incidents, spillages, fires, explosions etc
13. At each site the operator is to have a minimum amount of storage capacity of 90M³ on site to allow for discharge from the largest capacity of a vehicle that may be received, in the event of a contaminated load.
14. The loading and offloading area is to be bunded. The bund area must equal or exceed the volume of the largest compartment of any vehicle to be discharged.
15. The transfer station shall have a waste management plan

**4.4.3 Tank Farm**

1. All oil tanks shall meet the KS 200:part 1: 2002 on specifications for storage tanks for petroleum industry.
2. All oil tanks shall be bunded appropriately with a bund wall of size stipulated under the KS 1967:2006.
3. All tanks are to be made from steel.
4. All tanks are to be padlocked shut when not in use.
5. All tanks are to be bunded. The bund must equal or exceed the volume of the largest tank in that bunded area.
6. The bunded area must be paved with concrete or asphalt, not soil, clay or gravel.
7. All tanks are to be inspected on a regular basis for worthiness.
8. All tanks are to have some method to determine the volume in each tank.
9. All tank maintenance is to be recorded and kept for five years.
10. Haulage of 5 percent must be left when the tank is full.

**4.4.4 Tracking**

All sites are to keep records of incoming oil by date, volume, source and flash point. Records of oil going off site should indicate date, volume, and destination.

**4.4.5 Record retention**

Records of volumes in and out of each tank must be kept for a period of three years.

**4.5 GUIDELINES FOR RECYCLERS**

**4.5.1 Recyclers**

A recycler is a facility for reprocessing, reclaiming and regeneration (re-refining) of used oils by use of an appropriate selection of physical and chemical methods of treatment

**4.5.2 Recycling Facilities**

All the recycling facilities shall specify the nature of recycling activity to be undertaken e.g. Reprocessing, Reclamation, Regeneration (Re-refining) and the products.

**4.5.2.1 Infrastructural Facilities**

This may include;
1. Tanks (as per KS standards)
2. Oil water interceptors;
3. Bund walls;
4. Paved surfaces with an impervious material especially at the offloading and loading bays;
5. Proper drains etc;
6. Pollution control equipments;
7. Signages;
8. Fire assembly and exit points;
9. Minimum required area for each facility;
11. Refractionating column
12. Site office

4.5.2.2 Description of site

1. Every person intending to establish a recycling facility shall obtain an Environmental Impact Assessment (EIA) license before commencement;
2. All recycling facilities shall obtain a waste recycling license on commencement of operations and adhere to the license conditions;
3. The operator shall undertake annual Environmental Audits and submit the report to the Authority;
4. All recyclers shall receive used oil from licensed transporters only;
5. All recycled oil emanating from the processes shall be handled and stored in accordance with the requirements set out in KS 1967:2006.
6. All recyclers shall maintain a record of dully filled tracking documents
7. All recyclers shall ensure any waste arising from their recycling operations is disposed as per EMC (Waste Management) Regulations of 2006
8. All recyclers shall ensure that emission levels meet the required National set standards
9. All recycling facilities shall be provided with adequate and functional oil interceptors and other pollution control measures.
10. All oil tanks shall meet the standards set out under KS 1967:2006 for storage and distribution of petroleum products in above ground bulk installations.
11. All oil tanks shall be bunded appropriately with bund wall of a size stipulated under the KS 1967:2006.
12. Recyclers operating an oil interceptor and discharging effluent to the environment must obtain an effluent discharge license from the Authority
13. All recyclers shall provide valid physical addresses, contact details, telephone numbers, email contacts and GPS coordinates of their locations;
14. All recyclers should have in place an Emergency Response Plan (spill contingency plan, spill control equipment, a fire control plan, an evacuation plan) in case of incidents, spillages, fires, explosions etc
15. The loading and offloading area is to be bunded. The bund area must equal or exceed the volume of the largest compartment of any vehicle to be discharged.
5.0 RECYCLING TECHNOLOGIES

The choice of technology will depend on the desired product

Table 1

<table>
<thead>
<tr>
<th>Process</th>
<th>Products</th>
<th>Recommended Use</th>
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</thead>
<tbody>
<tr>
<td>Reclamation</td>
<td>clean fuel</td>
<td>Fuel or fuel extender</td>
</tr>
<tr>
<td>Reprocessing</td>
<td>Base oil</td>
<td>Fit for original use or its equivalent</td>
</tr>
<tr>
<td>Regeneration</td>
<td>Base oil</td>
<td>Manufacture of lubricants</td>
</tr>
</tbody>
</table>

When the clean fuel and base oil is below standard then it can be used in industrial furnaces, boilers, kilns and hazardous waste incinerators.

The following guidelines will apply to the different methods of recycling namely, reclamation, reprocessing and regeneration (re-refining);

5.1 Reclamation

A facility reclaiming used oil/sludge should separate solids and water from the oil by heating, filtering, dehydrating and centrifuging.

A recycling facility producing fuel or fuel extender must process the used oil through reclamation.

5.2 Reprocessing

A facility reprocessing used oil/sludge should remove insoluble contaminants and oxidation products from used oils by heating, settling, filtering, dehydrating, centrifuging.

A facility reprocessing shall ensure that the product is suitable for reuse (standard) or the quality of the resultant material can be blended with base oils and additives to bring the oil back to its original or an equivalent specification.

5.3 Regeneration/Re-refining

A facility regenerating used oil/sludge should remove contaminants, oxidation products and additives by pre-distillation, treatment with acids, solvent extraction, contact with activated clay and hydrotreating.

A facility regenerating used oil/sludge will ensure the produced base oil is suitable for manufacture of lubricating products.
6.0 END PRODUCT USERS

All end users shall only procure recycled used oil from licensed recyclers.

Notwithstanding the above all cement kilns and furnaces and large boilers may obtain used oil from the transfer stations and recyclers.

All end users must handle the recycled used oil in an Environmental Sound Management.

6.1 Disposal of non-recyclable used oils

Used oils that cannot be recycled must be managed in accordance with the provisions of the Environmental Management and Coordination (Waste Management) Regulations of 2006 through incineration.
7.0 REFERENCES

- EPA Used oil guidelines
- Basel Convention – Technical Guidelines on Used Oil
- All the quoted Acts
- Recycle your used motor oil – United states Environmental Protection Agency –
- Guidelines for Management and handling of Used oil – New Zealand