

## Used Oil Management – EPR in a Regulatory Environment

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### ABSTRACT

About 120 to 140 million litres of used oil is generated in SA annually. This represents about 50% of the new lubricating oil sold in South Africa. The recovery rate by all collectors in South Africa is approximately 70%.

Used lubricating oil is unpleasant stuff – a brew of degraded hydrocarbons (such as benzene, xylene & toluene) heavy metals and spent chemical additives - containing many environmentally harmful components such as polycyclic aromatic hydrocarbons (PAHs), some of which are carcinogenic. These components damage the environment in several ways: it tends to accumulate in soil and water as toxic gases and harmful metallic dust particles.

The best method of dealing with it, according to environmentalists, is to recycle it.

Several treatment and disposal processes are available for used lubricating oil, ranging from kiln combustion, use in explosives and re-refining back to base oil. However each process has environmental impacts.

The reprocessing of used oil into fuel is commercially attractive in South Africa, since the reprocessed product is a substitute for heavy fuel oil derived from crude oil. The collection of used oil is lucrative and provides employment to many previously disadvantaged individuals.

The model used in South Africa promotes free enterprise and incentivises used oil collections rather than subsidising operations. It operates free of any Government levies and is lauded globally for its self-regulation by the Lubricants Industry in South Africa.

“Recycling Oil - It's Easier Than You Think”

### 1. HISTORY AND BACKGROUND

The ROSE (Recycling Oil Saves the Environment) Foundation is a non-profit company (NPC) that manages the collection, storage and recycling of used lubricating oil and related waste in South Africa. This is done by complying with strict environmental codes of practice and operating at well above the minimum legal requirements. The foundations were laid in April 1994 after the government withdrew support for the used oil re-refining industry. Previously lubricants were taxed to subsidise the re-refining of used oil back into lubricating oil. When this levy was removed, the 8 major lubricant companies took it upon themselves to help protect the environment. ROSE is now supported by 19 member companies manufacturing and marketing lubricants in South Africa. These companies recognise the need to encourage the collection and recycling of oil in an environmentally acceptable manner to ensure the health, safety and well-being of communities and protection of the environment.

Member companies fund the work of ROSE through a contribution on each litre of new lubricating oil sold. At present it is 5 (five) cents per litre on recoverable oils. A Chief Executive Officer and a Board of 7 Directors representing the major lubricant marketers in South Africa manage ROSE.

ROSE promotes the use of Sumpys, which are portable containers available for the Do-It-Yourself (DIY) motorist to drain car engine oil. Once these containers are full, the used oil is taken for recycling at the nearest drop-off point.

Collectors, ranging in size from small bakkie operators to large companies like Oilkol collect oil from generators (workshops, factories, mines and others) and sell to approved processors who in turn add value to the product and on sell it to users as a low grade industrial heating fuel. A certificate of safe disposal is issued with every load of used oil collected.

ROSE recognises the need to create greater awareness around the present opportunities to recycle used lubricating oil and the benefits of recycling this oil. In addition to this ROSE recognises the need to build and strengthen working relationships and partnerships that help to grow the volumes of used oil collected and recycled. ROSE is a patron member of the Wildlife and Environment Society of South Africa (WESSA), the Institute of Waste Management of Southern Africa (IWMSA), a member of the National Recycling Forum (NRF) and the National Association for Clean Air (NACA).

#### Mission

We promote and encourage environmentally responsible management of used lubricating oils and related waste in South Africa.

#### Vision

Ensure that all available used lubricating oil and related waste is managed in an environmentally responsible manner.

#### Core Business Principles

- Conduct our business in a manner that protects the environment and the health and safety of the broader community.
- Work with Government in developing responsible environmental laws, regulations and standards.
- Facilitate compliance with all relevant legislation and practice good corporate governance.
- Develop sustainable partnerships with organisations who are committed to meeting acceptable environmental and ethical standards.
- Support the upliftment of historically disadvantaged individuals in the used oil and related waste industries.
- Make decisions and investments that further ROSE's environmental objectives.
- Support initiatives that promote responsible used oil management in other countries where members operate.
- Review and adopt global best practice in the recycling of used oil and related waste.

#### Strategic Objectives

- Influence the collection of all collectable used lubricating oils.
- Support Government in implementing enabling legislation to manage used oil and related waste in an environmentally responsible manner.
- Continue to create awareness that used oil is a hazardous waste.
- Members to influence the behaviour of their customers in the management of used oil.
- Develop sustainable partnerships with groups that have similar objectives.
- Raise awareness of ROSE's role and initiatives within member companies.
- Expand the enviro-centre concept and the number of drop off sites nationally.
- Roll out bulking points in outlying areas

## 2. MEMBERSHIP

The eight founder members in 1994 included BP SA (Pty) Ltd, Caltex SA (Pty) Ltd, Castrol SA (Pty) Ltd, Engen Petroleum Ltd, Sasol Oil (Pty) Ltd, Shell SA (Pty) Ltd, Total SA (Pty) Ltd, Fuchs Lubricants and Zenex Oil (Pty) Ltd. Currently the membership stands at 18 with the Exxon Mobil brand being taken over by Engen. Other members include Multisol, Petromark, Blue Chip Lubricants, AMTEC, Viscol, Lubritene, Blendrite Chemicals, H&R GSP, Unichem, Piston Power and Habot Oil. There has been an active drive to increase the membership so as to include as many of the lubricant manufacturers and marketers in South Africa. Membership is free and voluntary. However members contribute 5 (five) cents a litre to the ROSE Foundation on every litre of new oil sold. These funds are remitted monthly.

## 3. WHAT IS USED LUBRICATING OIL

Used lubricating oil is unpleasant stuff – a bit of a witches brew of degraded hydrocarbons (such as benzene, xylene & toluene) heavy metals and spent chemical additives- and the best method of dealing with it, according to environmentalists, is to recycle it.

How heartening then, that the marketers of lubricating oils in South Africa have taken it upon themselves to be responsible for recycling their own products once discarded. No such similar used oil management is known to run anywhere else in the world.

The total volume of potentially recoverable oil is about 120 to 140 million litres per annum. This represents about 50% of the new lubricating oil sold in South Africa. The recovery rate by all collectors in South Africa is approximately 70% which compares favourably with Canada, USA and Australia.

Used lubricating oil is quite a harmful brew - containing many environmentally harmful components such as polycyclic aromatic hydrocarbons (PAHs), some of which are carcinogenic. PAH is formed during combustion in petrol engines and accumulates in the lubricant over time. Some of the additives in lubricant oil – notably organo-metallic compounds – can contaminate the environment. Harmful additives in used oil include zinc di-alkyl di-thiophosphates, molybdenum disulphide, heavy metals such as lead, zinc chromium and other organo-metallic compounds.

These damage the environment in several ways: it tends to accumulate in soil and water as toxic gases and harmful metallic dust particles.

When used oil enters a water way it biodegrades very slowly as it hampers oxygen access to the micro-organisms that could break it down. However in contaminated soils used oil can be biodegraded using fertilisers and appropriate bugs.

Several treatment and disposal processes are available for used lubricating oil, ranging from kiln combustion, use in explosives to re-refining back to base oil. However, each process has environmental impacts. For example with combustion in kilns, efficiency has to be sufficient to destroy all the harmful components in the used oil or they are simply released back into the atmosphere.

Before committing itself to used oil treatment options, ROSE had evaluated several disposal options and also commissioned a study by the CSIR to review the hazards presented by various oil recycling processes.

The ROSE Foundation had committed itself to continuous improvement of oil recycling methods. In a Life Cycle Assessment on the used oil recycling options that were available in South Africa the following methods were identified as being currently used :

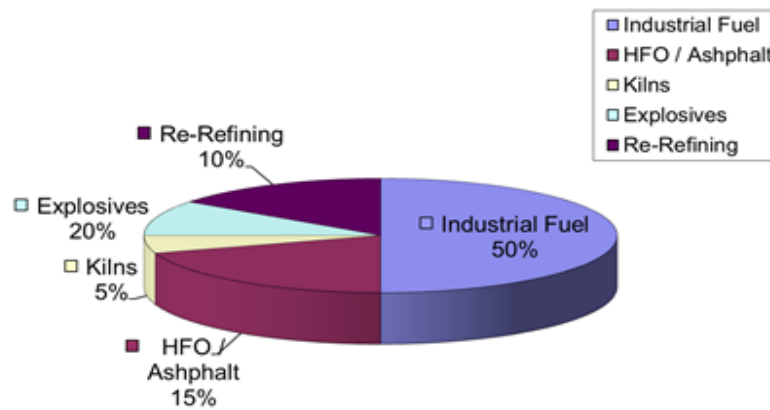
- Combustion without treatment
- Combustion after treatment
- Re-refining
- Kiln combustion
- Explosives

Used oil is collected mainly from workshops, service stations, commercial truckers, factories and heavy industry and then taken to storage depots managed by ISO 14001 certified recyclers. Some of these situated in Cape Town, Johannesburg, Port Elizabeth, Middelburg and Durban. The used oil (after treatment) is later sold to the market as a low grade industrial heating fuel.

ROSE does not sell used oil to any recyclers in South Africa.

#### 4. DISPOSAL OF USED OIL

The used oil collected in South Africa is sold to processors (licensed waste managers) who dispose of it through processing and converting it to a low grade industrial heating fuel. Generators of used oil are encouraged to use approved collectors and ISO 14001 certified processors to dispose of their used oil. Used oil is classified hazardous as it contains toxic and harmful compounds and therefore has to be disposed of responsibly through a Waste Manager who is licensed by the Department of Environmental Affairs in Pretoria.



The pie chart shows an approximate distribution of the sales of used oil into the different applications it can be used in.

#### NORA-SA Approved Waste Managers

Oil Separation Solutions (Pty) Ltd	- Germiston	(011) 824 7580
The Old Oil Man	- Krugersdorp	(011) 762 2557
BME	- Delmas	(013) 665 1860
PPC Lime	- L/Acres	(053) 385 8200
Green Mamba Oil Refinery	- Centurion	(012) 661 9888
Kudu Oils	- Nelspruit	(013) 751 2362
Enfields Chemicals	- Durban	(031) 702 9778
Gecco Fuels	- Cape Town	(021) 371 6777
FFS Refiners (Pty) Ltd	- Durban	(031) 465 1466
FFS Refiners (Pty) Ltd	- PMBurg	(033) 398 1651
FFS Refiners (Pty) Ltd	- CTown	(021) 557 4529
FFS Refiners (Pty) Ltd	- Chlookop	(011) 976 2198

#### 5. STORAGE FACILITIES

Environmentally approved storage facilities are located in Cape Town, Durban, Krugersdorp, Middelburg, Limeacres, Delmas, Middelburg, Rustenburg, Burgersfort and Port Elizabeth. These facilities are owned and operated by the industry players.

Total tankage capacity nationally exceeds 3 500 000 litres.



FFS REFINERS, CAPE TOWN



FFS REFINERS, DURBAN



OIL SEPARATION SOLUTIONS BURGERSFORT



OIL SEPARATION SOLUTIONS, MIDDELBURG

All facilities have separators to ensure that all effluent leaving the plants meet local municipal by-law effluent discharge standards. ROSE conducts annual audits through independent consultants to ensure environmental and legal compliance.

ROSE Approved Storage Facilities

Cape Town	(021) 982 5267	Cnr Lood & Viben Streets, Brackenfell
Port Elizabeth	(041) 484 1536	61 Paterson Road, North End, PE
Durban	(031) 902 8560	103 Vintner Place, Prospecton, Durban
Middelburg	(013) 246 2033	10 Celsius Street, Middelburg Industrial Area
Nelspruit	(082) 554 1687	Kia Ora Farm, Karino, Nelspruit
Mossel Bay	(082) 651 6228	Unit 5, Beach Boulevard East, Diaz, Mossel Bay
Burgersfort	(013) 231 8492	3 Industrial Road, Burgersfort
Weenen	(082) 801 4472	1 Andries Pretorius Street, Weenen
Rustenburg	(014) 592 6001	9 Coetzer Road, Rustenburg Industrial Area
Richards Bay	(035) 788 0130	New Ark Road, Small Craft Harbour, Richards Bay

6. COLLECTIONS

Collections are effected nationally through various collectors operating throughout the country and are members of the National Oil Recycling Association of South Africa (NORA-SA).

They supply (sell) oil to ISO 14001 certified processors, while generators are issued with a safe disposal certificate with each load collected. These are recorded using a waste manifest and reporting is done on the South African Waste Information (SAWIS).

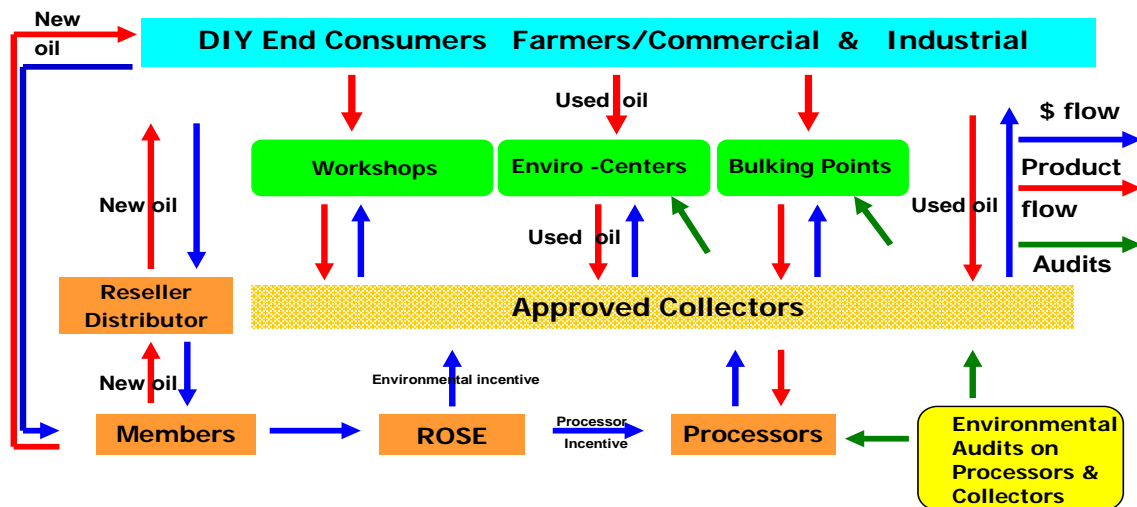
The present collection model is very simple – collectors collect oil from generators, supply to approved processors like FFS Refiners, Oil Separation Solutions, PPC Lime and BME. PPC use the for firing of their kilns at their limestone operations while the others on sell after further treatment and/or processing of the used oil.

Used oil is an inherently valuable commodity with the cost of entry rather low. ROSE pays approved collectors and processors belonging to the National Oil Recycling Association of South Africa (NORA-SA) an environmental incentive for compliance and reporting of collection statistics. This is in line with the requirements of the Waste Act.

Used oil collectors get 10 (ten) cents per litre (30 cents when collected in outlying areas), while processors who are ISO 14001 certified get an amount of R 60 000.00 to R 120 000.00 per processing plant depending on the quantity of used oil processed.

The model has been revised to include payment of incentives to non NORA-SA members as well, provided their oil is taken to a licensed facility.

# Collection Model



Since the formation of ROSE in 1994, contributions were received on approximately 3 billion litres of new oil sold in South Africa. Of this volume about 46% is estimated to have been collected as used oil in South Africa (the global estimate is that about 50% of all new oil sold becomes used oil).

Through the various collectors in South Africa it is estimated that about 70% of used oil is collected. The estimated economic value generated by the Industry is approximately R600 million. Many previously disadvantaged small businesses have emerged as collectors and are provided with on-going technical support and business training by ROSE.

South Africa compares favourably with global collection trends. Our recovery rates are in the order of about 70% while in first world countries it is at a high of about 80% (USA).

At present approximately 100 million litres of used oil is collected in South Africa annually. Estimates are that an additional 20 to 40 million litres could be collected and safely disposed of mainly from the Do-It-Yourself, Agricultural and Mining sectors. Aggressive marketing and awareness programmes are in place to achieve this target.

Collectors are subjected to regular audits and checks to ensure that both environmental and legislated standards were being met.

## 7. LEGISLATION

No specific legislation on used oil collection and recycling in SA exists. Environmental audits using current legislation guidelines are conducted at least annually to ensure compliance. However it is fundamentally controlled by the following legislation.

- National Road Traffic Act of 1996
- National Water Act 36 of 1998
- Occupational Health and Safety Act 85 of 1993
- Hazardous Substance Act 15 of 1973
- Waste Act No 59 of 2008

Various regulations have been passed to ensure that the Waste Act is implemented properly. Through NORA-SA the used oil industry has ensured that compliance with the Waste Act is of paramount importance. They have prepared and issued waste manifests and operating manuals for their members to use. In addition, collectors are trained in the transportation of dangerous goods, oil spill, basic first aid and how to use a fire extinguisher.

## 8. PROJECTS

### Collections From Garages

The ROSE Foundation has joined forces with Collect-A-Can to extend its scope beyond the collection and recycling of used oil. Cleaning up the environment extended to beyond the collection of used oil only. The collection of c was initiated by Shell. This project was taken over by ROSE to include all member companies with service stations.

About 400 service stations in the greater Cape Metro Area extending to Gordon's Bay were part of the pilot programme. Core to ROSE's philosophy of forming partnerships with organisations with similar objectives, Collect-A-Can was seen as a natural partner to take this programme forward. Both plastic and metal containers (from top up oil) are collected from service station forecourts and recycled by metal and plastic recyclers.

Since the inception of the programme in 2004 more than 1 of metal cans and about 400 tons of plastic bottles have been collected and recycled nationally. The programme is concentrated in the main metros Cape Town, Port Elizabeth, Durban, Pretoria and Johannesburg.

### Enviro Centres

This project has started off in the Western Cape, placing re-furbished 6 meter shipping containers with facilities inside where the general public can dispose of their used car engine oil, used oil filters and oil soiled containers.



CONTAINER PLACED AT A MUNICIPAL



INSIDE CONTAINER WASTE FACILITY

The project was initiated with the assistance of the City of Cape Town, who permitted ROSE to place these containers at some of the Garden Refuse Sites.

Enviro Centres are now placed in Durban (eThekweni Municipality), Pretoria (Tshwane Municipality) and Johannesburg (with Pickitup).

For a list of the drop off sites, visit [www.rosefoundation.org.za](http://www.rosefoundation.org.za)

### Sumpy Promotion

The Sumpy is being actively promoted to encourage the private DIY enthusiast to dispose of his car engine oil in a responsible manner. These are easily available at spares shops and supermarkets. Currently the member companies are running promotions with the sumpy and the sale of their product. Call your lubricant.





Pictured above are the 18 litre (left) and 9 litre (right) Sumpys for the storage of used oil at home before it is emptied out at the nearest drop off facility at one of the envirocentres located at a Municipal Garden Site.

#### Filter Collections

As an additional service to their customers, NORA-SA collectors also collect used oil filters for safe disposal. They are paid an incentive by ROSE to subsidise their transport costs.



Oil filters being prepared for disposal

### 9. THE NATIONAL OIL RECYCLING ASSOCIATION OF SOUTH AFRICA (NORA-SA)

The National Oil Recycling Association of South Africa (NORA-SA) was formed by fifty five founding members to create a body for the environmental management of the collection, transportation, storage, recycling and utilisation of used oil. This was the cornerstone of the foundations to bridging the gap in environmental management of used oil in South Africa.

NORA-SA now operates as an independent body with its own executive and branch committees representing the interests of its membership through funding from its members.

The collection and recycling of used oil is a developing business in South Africa, which reduces the environmental risk, and creates employment opportunities for hundreds of collectors and allied businesses throughout the country.



## Objectives

- Encourage and promote the recovery and recycling of used oil throughout South Africa;
- Ensure a sustainable, environmentally responsible, viable and well organised industry;
- Promote a code of conduct and good practice among its members;
- Lobby Government to develop enabling and empowering legislation to support and manage the industry;
- Encourage and empower historically disadvantaged individuals;
- Promote the representation of all stakeholders in the industry;
- Promote goodwill and co-operation for the mutual benefit of all stakeholders; and
- Engage with other organisations with similar objectives for the benefit of the environment.

## 10. THE SOUTH AFRICAN INDUSTRIAL CONTAINERS RECONDITIONERS ASSOCIATION (SAICRA)

Constituted in January 2012, the South African Industrial Container Reconditioners Association (SAICRA) was founded to provide a vehicle that united the industry, both the manufacturers and the re-conditioners of drums, and gave it a voice whilst affording its members the means to become responsible and compliant. All drum re-conditioners are required to have a waste management license issued by the Department of Environmental Affairs (DEA).

### Funding

operates as a non- body, with its own executives representing the interests of its membership, and is funded wholly by its members.

On registration, a registration fee is payable and thereafter a monthly contribution of fifteen cents per drum and one Rand per IBC sold and/or reconditioned is paid by its members. ROSE assists with this administration.

### Membership

Membership is open to all drum re-conditioners and new drum manufacturers of steel and plastic drums in South Africa. Members in good standing receive assistance with plant audits, training and waste licence applications, among other benefits.

There has been buy-in and support from approximately 80% of the industry in South Africa. In addition to the involvement from the ROSE Foundation who have made the formation of this body possible, there is also have a memorandum of understanding (MOU) with the Chemical and Allied Industries Association (CAIA), and are in discussions with the paint industry (SAPMA) and have also begun discussions to work together with the agricultural industry.

### Objectives

SAICRA has established clear objectives to focus the association's activities on:

- Promote a code of conduct and good environmental practice, for the reconditioning industry;
- Promote the continuation of the reconditioning industry by encouraging all participants in the industry to adhere to sound environmental principles as set out in the Constitution and Statutes;
- Lobby and engage Government on a national, provincial and local level to further the general interests of the Association;
- Actively encourage and advance Black Economic Empowerment (previously disadvantaged individuals) in the Reconditioning Industry;
- Co-operate with such other organisations and entities in the overall interest of the Environment and the Members of the Association;
- Promote co-operation and goodwill among its Members; and
- Act in the best interest of all Members and protect and further the interests of the Members in ensuring a sustainable, environmentally sound, profitable and organised industry and business environment for the collection, transportation and reconditioning of industrial containers.

## 11. CONCLUSION

The ROSE Foundation will continue its role in the foreseeable future in ensuring that the environment is protected from the irresponsible dumping of used oil. It will also continue with its dialogue with Government in ensuring that enabling legislation is promulgated for the industry to protect the environment.

ROSE will continue to incentivise the collectors for every litre of used oil that is collected. It will create public awareness and assist with programmes that will prevent the pollution of the environment from used lubricants. It will be self-regulated by the lubricants industry and ensure that its' members' environmental responsibilities for used oil management in South Africa continue to be well managed.

The will continue in its efforts to empower capacitate previously disadvantaged individuals so that they can as Partners and derive maximum Value from the relationship their businesses for long term Sustainability operating within the Used Oil Industry. By ensuring a win-win situation, the ROSE members will continue to support businesses in the recycling industry knowing that their extended producer responsibility in a regulated environment is well managed.

However with the passing of the Amendment Act No 26 of 2014 on 02 June 2014, it remains to be seen whether the used oil waste stream will be identified to have a waste management charge inflicted upon it. It is our fervent hope that the Government will leave voluntary EPR schemes to operate as they are.