

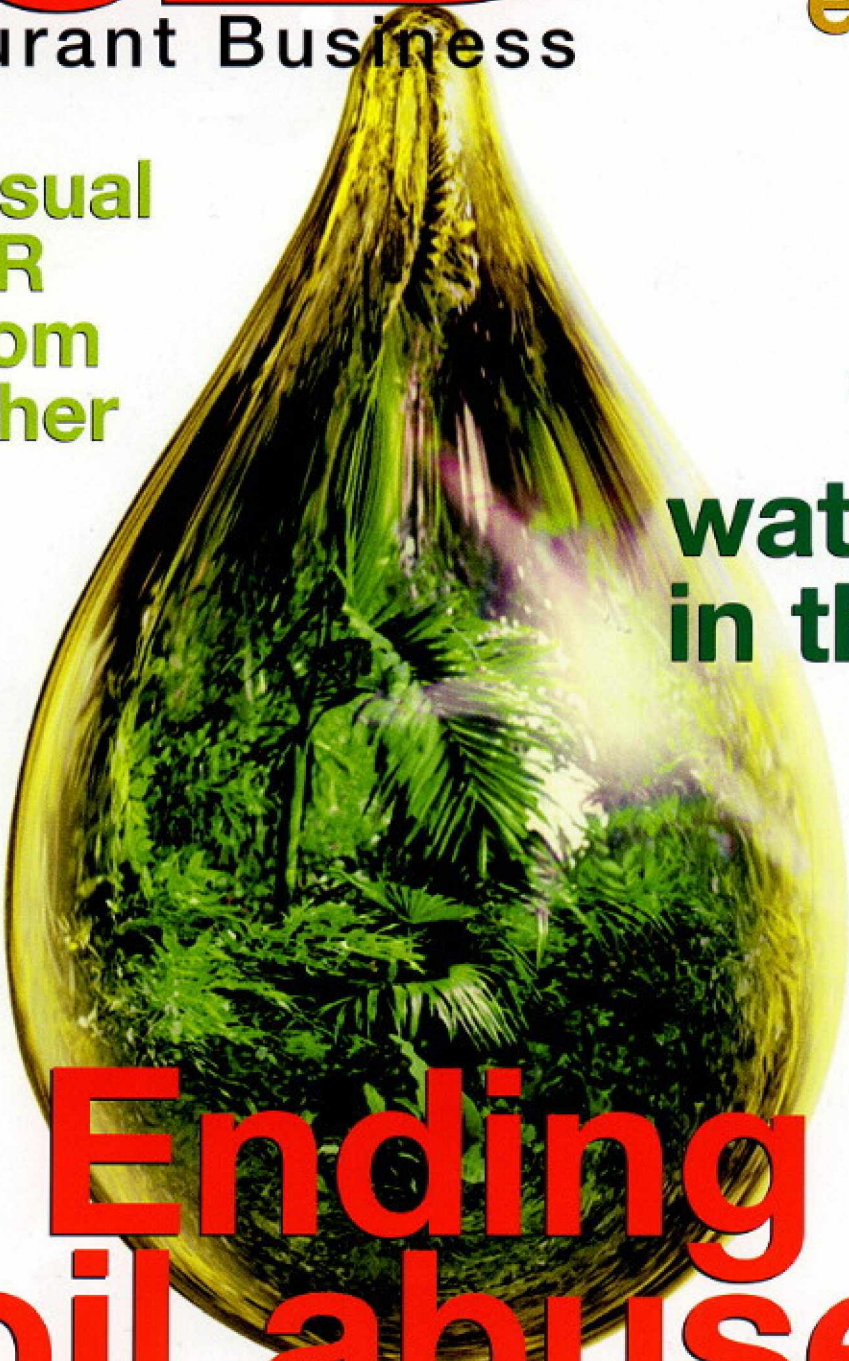
RIB

Restaurant Business

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energy

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each other

Trend
watching
in the US



Ending
oil abuse

The Steward's Principle

A solution to oil abuse in SA

Product stewardship is a product-centered approach to environmental protection. It calls on those in the product lifecycle, namely, manufacturers, retailers, users, and disposers to share responsibility for reducing the environmental impacts of products.

The Steward's Principle has now been introduced in the cooking/edible oil industry in South Africa.

It necessitates frying oil manufacturers and distributors along with frying establishments to be responsible for the quality of frying oils right from the initial frying process to it eventually being discarded.

This programme was initiated by the South African Fryer Oil Initiative (SAFOI) at the University of the Free State. Quality Control (QC) programmes already exist whereby routine tests is undertaken to establish the authenticity of frying oils distributed to frying establishments in South Africa.

For instance, SAFOI (established in 1994), as an external laboratory, provides this service to Felda Bridge Africa in Johannesburg, Refill Oils in Krugersdorp and PSS Oils in Cape Town.

The products, which are subject to routine testing, include sunflower oil, palm olein, cottonseed oil, canola and oil blends that are manufactured by various companies.

Agrilinspec is also involved in confirming quality checks by SAFOI on oils obtained from manufacturers/distributors, by drawing samples of these oils from frying establishments and sending these to SAFOI for analysis.

Any oil manufacturer/distributor can make use of SAFOI's services in this regard.

SAFOI also supports the involvement of other external laboratories in similar QC-programmes and invites all oil manufacturers/distributors in need of such a service to make use of these laboratories.

This will assist in ensuring that fraudulent oils will not enter the market.

Of course the oil manufacturers also

have their own QC programmes. SAFOI also recognises that oils not checked by SAFOI may still be of high quality and produced under well-controlled conditions.

The breakdown process

When oils are used over and over in frying processes they start to break down to eventually (mainly through oxidation reactions), form among others, polymerized triglycerides (PTGs; varnish-like compounds).

When PTGs are 16% and above (the legal limit in South Africa), the oil is regarded as unsafe and should be replaced with fresh oil.

Oils consist mainly of triglycerides. These compounds are made up of fatty acids esterified to a glycerol backbone.

During the frying process, heated oil (more or less at 19° Celsius) comes in contact with water (steam) present in the food-stuffs to be fried and is consequently hydrolysed i.e. the fatty acids detach from the glycerol.

These free fatty acids can now form soaps that will increase foaming of the oil and therefore more air will come in contact with the oil. This may result in oxidation of the oil especially if the antioxidants in the oil are depleted.

This in turn will result in some free fatty acids forming unstable hydroperoxides which can easily break up to form all kinds of products including free radicals.

It is these free radicals which will eventually stick together to form the PTGs as one of the end-products. During this breakdown process, numerous different compounds may be formed, some of which may be unhealthy.

According to literature on the subject, these compounds have the potential to cause, for instance, cancer, atherosclero-

sis, diarrhoea, etc.

As a result of this, several countries have strict regulations (similar to that in South Africa) prohibiting the use of oils with the possibility of containing these compounds. Also refer to our website: www.uovs.ac.za/myoilguide.

The Steward's principle in action

Only when all the relevant parties become involved, will the frequency of oil abuse (overuse) and the distribution of unhealthy oil waste to the poor be prevented.

As part of this process, distributors delivering frying oil to frying establishments will at the same time collect discarded frying oil waste, which is then tested for abuse.

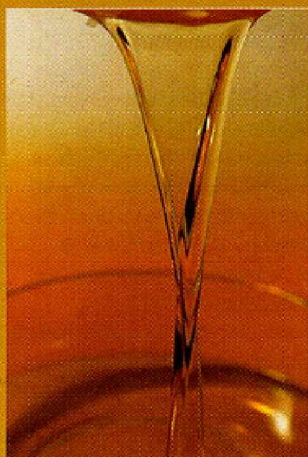
This is followed by disposing of this waste in the correct manner, for example, to the oleochemical industry. Distributors are also responsible for training frying establishments in the correct use of frying oils.

Government is urged to impose Product Stewardship Legislation to stop oil abuse and the on-selling of unhealthy oil waste to the poor. The manufacturers/distributors are considered the most important participants since they should know best how their oil products can be used!

In South Africa, fried food can be considered a major component in the diet of many people. Consequently, this has resulted in large quantities of frying oil and fat being used and consumed by our community.

Attempts to bring about savings in the cost of frying oil has resulted in large quantities of oil being heated repeatedly over long periods of time, hence becoming severely oxidized (i.e. abused).

As a result, strict regulations have been published in the Government Gazette of 16 August 1996 (No. R1316), which now



makes it a criminal offence to use edible oils and fats containing more than 25% polar compounds and/or 16% polymerized triglycerides (varnish-like compounds) to fry food-stuffs in South Africa.

These products are formed during the extensive use of frying oils and fats and results in the production of poor quality fried food which may be injurious to health.

SAFOI found that about one in eight frying establishments in South Africa are abusing their oil.

Studies found that some of these oils contained more than 50% breakdown products also called super oxidized soups (SOS). Of concern is that many of these abused unhealthy oils are distributed to the poor for further use in frying processes.

These statistics are based on many surveys and thousands of used oil samples drawn by Environmental Health Officials (EHOs) and SAFOI from fryers at frying establishments across South Africa.

Even worse statistics were reported in a Carte Blanche programme screened on MNet in August last year, where it was found that one in five establishments in the Durban-region were abusing their oil.

A solution to the problem

Based on more than 10 years experience in this field, SAFOI is convinced that the implementation of the Steward's Principle or Product Stewardship (being responsible for product from cradle to grave) in this industry will decrease oil abuse and the on-selling of these unhealthy oil wastes to the poor.

According to the U.S. Environmental Protection Agency (see [HYPERLINK http://www.epa.gov/epaoswer/non-hw/reduce/epr/](http://www.epa.gov/epaoswer/non-hw/reduce/epr/) "http://www.epa.gov/epaoswer/non-hw/reduce/epr/"): i.e. product stewardship calls on those in the product life cycle i.e. manufacturers, retailers, users, and dis-

posers to share responsibility for reducing the environmental impacts of products.

They place the biggest responsibility on the shoulders of the manufacturers and retailers. Some states in the United States and Canada have even developed product stewardship-type legislation for selected products.

According to the EPA: "Product stewardship recognises that product manufacturers can, and must, take on new responsibilities to reduce the environmental footprint of their products."

The Steward's principle can be performed as follows:

- The oil distributors (manufacturers and retailers) together with the frying establishments take responsibility for the quality of the oil when purchased/distributed (i.e. test oils at external laboratories of repute).
- Maintaining the quality during use (i.e. ensure it is not abused by using appropriate frying procedures and test kits).
- Discard oil responsibly (i.e. within regulatory limits).

In the latter case, the distributor draws a sample at random from the used oil collected which is then analysed for breakdown (make sure it is within regulatory limits). The results are communicated to the establishment's management.

The Steward's Principle as conducted by Refill Oil:

- Refill Oil only sells fresh oil, previously approved by a reputable external laboratory such as SAFOI to frying establishments. Any reputable external laboratory can be used for this purpose.
- The company trains clients on how to

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use various kinds of oils in the frying processes and when/how to discard them.

- It collects only frying oil waste within regulatory limits of breakdown from frying establishments. These establishments are contractually bound to deliver approximately 35% of fresh oil used, as waste. This ratio has been acknowledged for most frying processes.
- Refill Oil issues certificates to those establishments which has proved that they can use oil under well-controlled conditions and discard their used oils within regulatory limits i.e. 16% polymerized triglycerides (PTGs). When in breach, the certificates are removed.

SAFOI would like to urge:

- All oil manufacturers/distributors that manufacture and distribute well-controlled oils to start implementing the

Steward's Principle in the frying establishments they deliver to as soon as possible.

- Government to develop Product Stewardship Legislation in the frying oil industry.

SAFOI

Many fresh oil (from retailers) and used oil samples (from frying establishments while in use) are also drawn by Environmental Health Officials (EHOs) from across SA on a routine basis and send to the SAFOI laboratory for analysis for authenticity (fresh oils) and breakdown (used oils).

These analyses are done at no cost to the Health Departments on regional level and are funded by SAFOI and the oil industry. This practice was already started in 1994 and more than 10 000 samples have been analysed since then.

In addition to this, SAFOI has already presented more than 100 workshops to EHOs and the edible oil industry across South Africa.

More than 1 000 participants (EHOs, from oil industry and frying establishments) have already successfully completed our workshops and received certificates. We also invite frying establishments and others from the oil industry that would like to organise such a workshop (less than 300 participants), to contact SAFOI.

These workshops educate participants on a very basic and practical level regarding oil composition and use and how to avoid abusing oil during frying.

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