SAFOI newsletter

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EDITORIAL

We would like to urge all role players in the edible oil industry to contact us with questions regarding the authenticity or quality of oils. SAFOI has recently acquired a Rancimat and will from now on also be providing this service to the public. During the past six months SAFOI has been busy in all aspects of our objectives, which are:

SAFOI OBJECTIVES

To terminate the consumption of unhealthy abused oils and fats especially by our poor communities.

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To develop and promote effective oil waste management procedures.

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To terminate misrepresentation practices.

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To promote the Steward's Principle.

PROGRESS

The following progress was made in various aspects of our set objectives.

1. FRYING OIL & FAT ANALYSIS

Our analytical section steered by Dr. Carlien Pohl and Mrs. Andri Van Wyk has analyzed various frying oil samples from the Department of Health and different industries.

SUMMARY OF RESULTS

Table 1 Quality of used frying oils and fats since June 2010. The percentage of samples above South African regulatory limits based on polymerised triglycerides (PTG) is included.

Drawn by:	No. samples analysed	% Samples above PTG limits
Industry*	85	3.5
Department of Health Free State	24	0.0
TOTAL	**109**	

*Many practicing the Steward's Principle

According to The Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act no. 54 of 1972) published on 16 August 1996 in S.A., oil is deemed to be harmful or injurious to human health, unless they contain less than 16% PTGs and/or 25% PCs.

The worst frying oil analysed over the past three months contained up to 21.4% polymerised triglycerides (PTGs).

Table 2 Quality of fresh unused palm oil since June 2010 (based on fatty acid composition).

Drawn by:	No. samples analysed	No. of samples not complying with Codex Standards for palm oil
Industry	377	0
TOTAL	**377**	

Table 3 Quality of fresh unused sunflower oil since June 2010 (based on fatty acid composition).

Drawn by:	No. samples analysed	No. of samples not complying with Codex standards for sunflower oil
Industry	117	0
TOTAL	**117**	

Table 4 Quality of fresh unused olive oil since June 2010 (based on fatty acid composition).

Drawn by:	No. samples analysed	No. of samples not complying with Codex standards for olive oil
Industry	5	0
TOTAL	**5**	

2. OIL ANALYSES FOR INDUSTRY

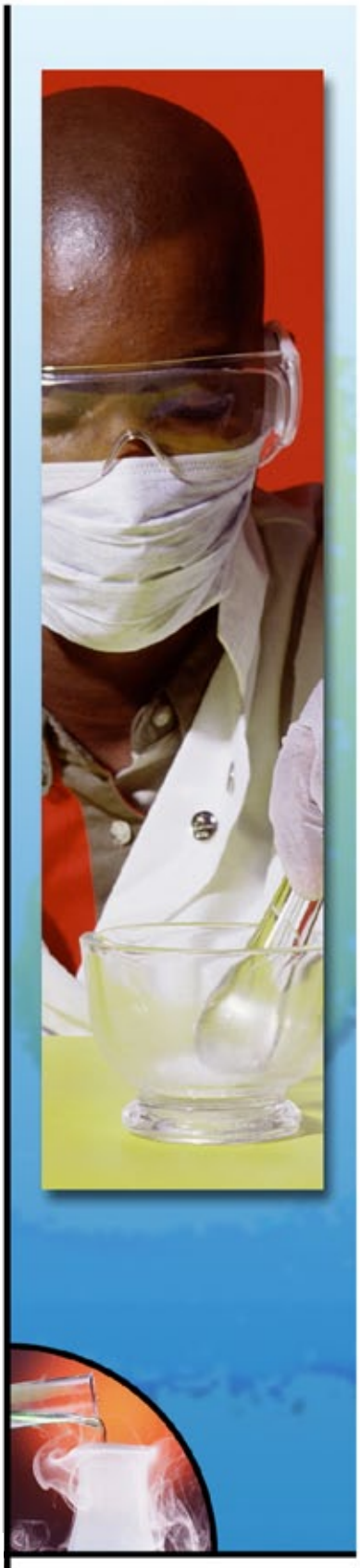
Analyses were performed on various products for Rein Oils, Afgri Animal Feeds, PSS Oils, Epol, Vergezocht Oils, V-Oils, Sunola Oil Mills, PJ&B Boerdery, Willowton, Felda Foods, Meadows Animal Feeds, Shoprite Checkers, C & N Oil Traders and Epko. We would like to urge all members of the oil industry to use our services if there are any questions regarding the quality or authenticity of oil.

3. PUBLICATIONS

High level scientific research by the Lipid Biotechnology group (Department of Biotechnology, UFS) under leadership of Prof. Kock has revealed that over-used cooking oils has a negative effect on the growth of various yeasts and fungi and also affect their shape. In this research nanotechnology was applied to the study of these effects. A copy of an article that appeared in Express (25 August 2010) regarding this, is included.

4. CARTE BLANCHE

SAFOI was also involved in a Carte Blanche programme exposing malpractices regarding the authenticity of olive oil. This four part programme can be viewed on the following website.
http://www.ufs.ac.za/templates/archive.aspx?news=1872&cat=0



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Breakthrough at UFS

SCIENTISTS at the University of the Free State (UFS) made an important breakthrough in the use of nanotechnology in medical and biological research. The UFS team's research has been accepted for publication by the internationally accredited *Canadian Journal of Microbiology*.

The UFS study dissected yeast cells exposed to over-used cooking oil by peeling microscopically thin layers off the yeast cells through the use of nanotechnology.

The yeast cells were enlarged thousands of times to study what was going on inside the cells, whilst at the same time establishing the chemical elements the cells are composed of. This was done by making microscopically small surgical incisions into the cell walls.

This groundbreaking research opens up a host of new uses for nanotechnology, as it was the first study ever in which biological cells were surgically manipulated and at the same time elemental analysis performed through nanotechnology. According to Prof. Lodewyk Kock, head of the Division Lipid Biotechnology at the UFS, the study has far-reaching implications for biological and medical research.

The research was the result of collaboration between the Department of Microbial, Biochemical and Food Biotechnology, the Department of Physics (under the leadership of Prof. Hendrik Swart) and the Centre for Microscopy (under the leadership of Prof. Pieter van Wyk).

PICTURED from the left are Ph.D. students Chantel Swart and Ntsoaki Leeuw. Photo: Stephen Collett

Two Ph.D. students, Chantel Swart and Ntsoaki Leeuw, overseen by Professors Kock and Van Wyk, managed to successfully prepare yeast that was exposed to over-used cooking oil (used for deep frying of food) for this first ever method of nanotechnological research.

According to Prof. Kock, a single yeast cell is approximately five micrometres long. "A micrometre is one millionth of a metre – in laymen's terms, even less than the diameter of a single hair – and completely invisible to the human eye."

Through the use of nanotechnology, the chemical composition of the surface of the yeast cells could be established by making a surgical incision into the surface. The cells could be peeled off in layers of approximately three nanometres at a time to establish the effect of the oil on the yeast cell's composition. A nanometre is one thousandth of a micrometre.

Each cell was enlarged by between 40 000 and 50 000 times. This was done by using the Department of Physics' PHI700 Scanning Auger Nanoprobe linked to a Scanning Electron Microscope and Argon-etching. Under the guidance of Prof. Swart and Mss Swart and Leeuw could dissect the surfaces of yeast cells exposed to over-used cooking oil.

The study noted wart like outgrowths – some only a few nanometres in diameter – on the cell surfaces. Research concluded that these outgrowths were caused by the oil. The exposure to the oil also drastically hampered the growth of the yeast cells.

Researchers worldwide have warned about the over-usage of cooking oil for deep frying of food, as it can be linked to the cause of diseases like cancer. The over-usage of cooking oil in the preparation of food is therefore strictly regulated by laws worldwide.

The UFS-research doesn't only show that over-used cooking oil is harmful to micro-organisms like yeast, but also suggests how nanotechnology can be used in biological and medical research on, amongst others, cancer cells.

We at SAFOI would like to wish everyone a joyous festive season and a prosperous 2011.

who to contact?

If you need more information on any topic presented in this newsletter please use the following contact address:

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