

Prof. Oren Fruchter , MD
Director The Pulmonary Division
Wolfson Medical Center
Tel-Aviv University
prof.fruchter@gmail.com
www.prof-fruchter.co.il

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Medical opinion

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

These are the details of my education and professional experience

- B.A., Medical Sciences, Hebrew University and Hadassah, Jerusalem (1990)
- Medical Studies, The Hebrew University and Hadassah Jerusalem License number: 26306 (1994)
- Faculty Member, Clinical Associate Professor, Tel Aviv University School of Medicine (2015-present)
- Internal Medicine Specialist (Hons) Specialist License number: 20770 (2004)
- Specialist in Pulmonary Medicine (laude) Specialist License number: 25688 (2008)
- Senior Physician, Department of Internal Medicine "G", Rambam Medical Center (2004-2006)
- Senior Physician, Institute of Lung Diseases, Rambam Medical Center (2008-2009)
- Director of the Invasive Pulmonary Medicine Service, Rabin Medical Center, Beilinson Campus (2009-2014)
- S. Director, Institute of Lung Diseases, Rabin Medical Center, Beilinson Campus (2014-2015)
- Director of Pulmonary and Respiratory Intensive Care Department, Wolfson Medical Center (2015-present)
- Lecturer of Medical Malpractice Jurists, School of Continuing Education, Faculty of Medicine Tel Aviv
- Certified Adjudicator by the National Insurance Institute (2005)
- Diploma Studies "Medical Law", Faculty of Law, Tel Aviv University, 2023
- Member of the Israeli Society of Pulmonary Medicine, European Society for Respiratory Diseases, American Society for Lung Diseases.
- Member of the Committee of Examiners for Pulmonary Specialties on behalf of the Scientific Council of the Israel Medical Association

I was asked by Beyond-Oil to provide my medical opinion based on existing medical literature, including publications by various legislative authorities, American and European health authorities, and previous studies conducted by Prof. Gerty (Casali Institute of Applied Chemistry, Hebrew University of Jerusalem) in a comparative study regarding health damage, especially common cancers involving occupational exposure to reused frying oil fumes through the use of a technology developed by . Beyond Oil.

Table of Contents

1. Introduction - respiratory effect of cooking and frying fumes
2. Lung cancer
3. What are the causes of lung cancer?
4. What is the importance of preventing exposure to cooking fumes and frying?
5. What are polycyclic aromatic hydrocarbons (PAHs)?
6. PAH and frying oil
7. What are the health risks of PAH
8. What are the health risks of acryl-amides (AA)?
9. What is the scientific consensus regarding the association between exposure to oil frying fumes and cancer in humans?
10. Beyond oil formulation
11. The essence of industrial frying – frying in a restaurant
12. The chemistry of deep frying oils
13. Hydrolysis of oil
14. Oil polymerization
15. Factors affecting oil quality during deep frying
16. Replacement for fresh oil
17. How are AA and PAH formed as a result of the increase in Free fatty acids (FFA) levels during frying?
18. Series of experiments conducted by Beyond oil

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

19. Conclusions

Respiratory effect of cooking and frying fumes

The Park's textbook of occupational pulmonary medicine provides valuable data regarding the respiratory effects of exposure to frying fumes.

As is well known, the most common risk factor for the formation of chronic obstructive pulmonary disease (hereinafter also COPD) is smoking. However, according to this book, the most important occupational reason for the formation of COPD is biomass cooking. Some authors, including Kurmi, estimate that the global effect of frying fumes on COPD formation is comparable to that of smoking.

Apart from this health effect, which exhibits the harmful effect of exposure to frying fumes, it is important to mention the effect on lung cancer formation.

Lung cancer

Lung cancer is the number one cause of cancer-related deaths in men and women in the Western world (see the Murray et Nadel textbook on lung diseases). Lung cancer is considered the number one cause of death among all cancers: it causes death within 5 years in about 85% of affected patients.

There are two main types of lung cancer: non-small cell type (NSCLC), which occurs in 85% of patients, most of them smokers, and small cell type (SCLC), which affects other patients, smokers only. It is common to divide NSCLC into several histological subtypes.

1. Adenocarcinoma, which is the most common type of lung cancer
2. Squamous cell carcinoma
3. Large cell carcinoma

Unfortunately, over 70% lung cancer patients are not surgical candidates, and therefore lung cancer mortality rates do not decrease.

What are the causes of lung cancer?

Lung cancer is one of several cancer types in which an environmental factor (rather than a genetic factor) is the main cause of the disease (see Murray et Nadel).

What causes lung cancer?

1. **Cigarette** smoking is known to be the cause of the vast majority of lung cancers. The risk of developing the disease increases with the increase in the number of cigarettes smoked, and as smoking began at an early age. A person who quits smoking significantly reduces his/her risk of lung cancer. The risk decreases as time passes from quitting smoking.
2. Radon gas
3. Exposure to asbestos, uranium, chromium and nickel.
4. Exposing employees in institutional kitchens to oil fumes for frying and reusing multiple times in restaurants and frying plants
5. Of all the environmental pathogens for lung cancer, one of the most important is the patient's previous exposure to poly-aromatic hydrocarbon (hereinafter also PAH).
 - 5.1. This is a group of substances that are also found in frying vapors and are known as one of the most important carcinogenic (cancer-causing) pathogens for the appearance of lung cancer.

What is the importance of preventing exposure to cooking fumes and frying?

Understanding the harmful effect of frying fumes in causing lung diseases, including COPD and lung cancer, is of critical importance. Reducing this damage to workers in the food industry, who are naturally exposed intensively on a daily basis, is crucial.

The World Health Organization (WHO) dedicated a unique position paper (IARC 2010a) to the subject of frying fumes

Cooking oil fume

The material formed during the frying process consists of tiny particles present in the vapor as well as an aerosol of oil droplets, combustion products, organic products and water vapor.

1.1 Definition

‘Cooking fumes’ or ‘cooking oil fumes’ is the term commonly used to describe the visible emissions generated during cooking by frying with oil. However, these emissions are not technically ‘fumes’. In occupational and environmental hygiene, ‘fumes’ are defined as submicron-sized solid particles (particulate matter) created by the cooling of hot vapour. During cooking, such vapour is formed when the cooking oil is heated above its boiling point. In addition to this ultrafine particulate matter, cooking, especially frying and grilling, generates aerosol oil droplets, combustion products, organic gaseous pollutants, and steam from the water contents of the food being cooked.

The ingredients found in cooking and frying fumes include 3 major types of substances

1. airborne particulate matter : PM
2. Ultrafine particles : UFP
3. Fine particles: PM_{2.5})

In addition, these vapors also contain PAH, heterocyclic amines, and gaseous products, including formaldehyde acetaldehyde.

What are polycyclic aromatic hydrocarbons (PAHs) found in cooking/frying fumes?

In the main textbook of occupational lung diseases (Park's), an entire chapter is devoted to occupational-environmental factors known to cause lung carcinogens with PAH being cited as one of the most important factors (along with silica, asbestos, and heavy metals).

The World Health Organization (WHO) has also devoted a number of consensus papers summarizing the contribution exposure to PAH and lung cancer .

Concluding articles on the relationship between PAH and lung cancer have been published by Rota et al.

PAHs are created and emitted wherever food is fried and are ubiquitous in the work environment, kitchens, restaurants, and fried food industry.

It has been known for a long time (Bairdet al.) that PAH has an effect that can cause cancer in humans (carcinogenic).

The studies summarized by Rota et al. showed significant increases in lung and bladder cancer in workers in restaurants and the food industry.

Polycyclic aromatic hydrocarbons (PAHs) are a group of substances that have the potential to cause genetic mutations and cancer. PAHs comprise of more than 200 organic compounds that contain two or more combined aromatic rings. According to the number of aromatic rings, they can be classified into 'light' (2-3 rings) or 'heavy' (4-6 rings) compounds.

The process of thermal decomposition (pyrolysis) during the formation of polycyclic aromatic hydrocarbons involves several fundamental factors, such as high temperatures, reduced oxygen levels, and organic matter, which result in incomplete combustion of organic matter. This process usually yields a complex mixture of PAHs.

Many sources of PAH have been shown to be raw materials heated during frying processes and sources of vegetable oils (corn, sunflower, peanuts, soy, cotton, nuts, coconut, palm, etc.), since they are based on unsaturated fatty acids which are a good source of their partial combustion and PAH formation.

PAH and frying oil

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

Re-frying in restaurants in the same oil for several days is one of the main sources of PAH formation.

It is important to note that the temperature of frying affects their concentration and quantity, as well as the type of substances emitted. The attached table depicts the differences according to the types of cooking/frying.

Table 1.2. The production rates and concentrations of UFP and PM_{2.5} during and at the end of frying of various types of foods

Food	Food temperature (°C) ^a	Production rate during frying		Concentration at the end of frying	
		UFP (particles/cm ³ s)	PM _{2.5} (µg/m ³ s)	UFP (particles/cm ³)	PM _{2.5} (µg/m ³)
Bacon	314	45	0.092	2.2*10 ⁴	38
Pancakes	297	25	0.17	2.5*10 ⁴	55
Peppers and onions	336	78	0.12	2.0*10 ⁴	60
Vegetable stir-fry	280	31	ND	2.0*10 ⁴	ND
Vegetable mix	249	59	ND	4.5*10 ⁴	ND
Fried egg	271	60	ND	2.5*10 ⁴	ND
Fried rice	274	6	ND	1.0*10 ⁴	ND
Breaded eggplant	280	88	1.1	8.0*10 ⁴	1000
Overall		44	0.13		

Regarding PAH emissions, a 1999 study (Chiang 1999) identified several PAHs frying products in three types of oils (corn oil, vegetable oil, and safflower oil).

It is important to understand that heating oil causes the emission of volatile organic compounds and volatile organic compounds Semi (VOC).

When frying, the main substances emitted are:

Aldehydes alcohols ketones alkanes phenols with the most potentially carcinogenic substances being PAH ,and heterocyclic amins aldehydes (AA)

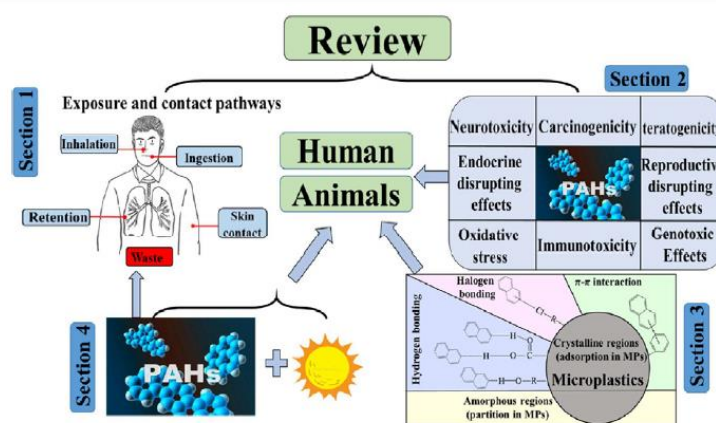
Other volatile products including aldehydes and aromatic amines have also been found in cooking-frying fumes.

What are the health risks of PAH

In a recent review article (Sunet al. 2021), the authors emphasize that "exposure of humans and animals to PAHs can lead to a variety of adverse effects, including cancer and birth defects, genotoxic stress, effects on reproduction and endocrine disorders, immune system impairment, and neurotoxicity."

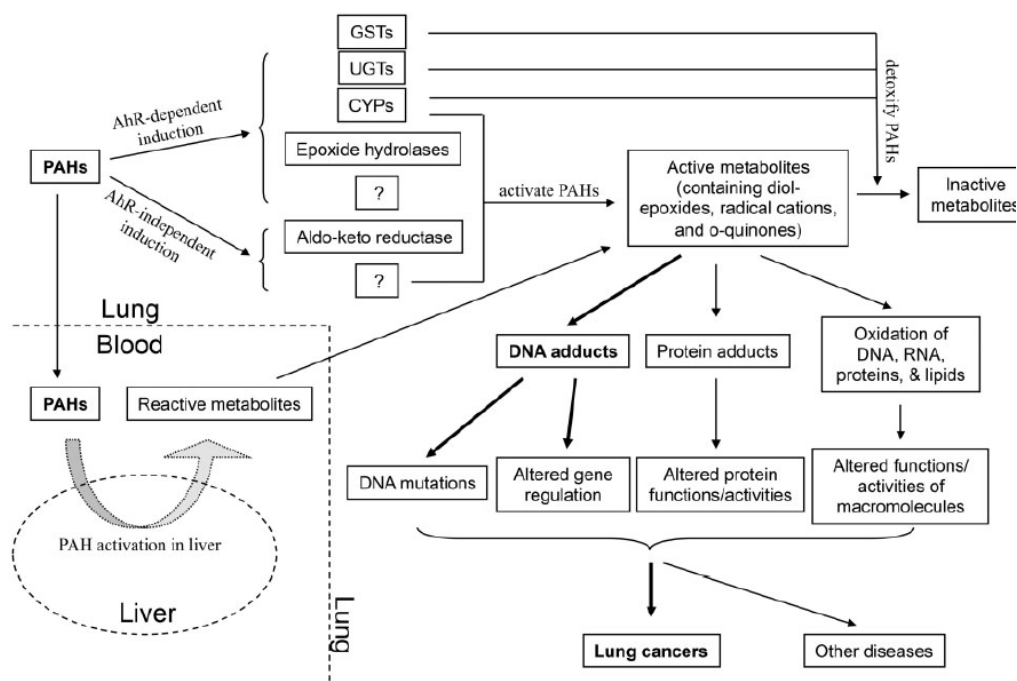
Below is a diagram taken from this article that illustrates the multi-system damage that can be caused by PAH erosion

GRAPHICAL ABSTRACT



Among the effects mentioned it is important to list short-term effects such as vomiting, burning in the eyes and long-term effects including damage to the eyes (cataracts), liver damage, kidney damage, and especially damage in the form of cancer (carcinogen) in the lungs, skin, bladder, and digestive system.

Another review article (Moorthy 2015) describes the carcinogenic effect of PAH in causing lung cancer. The following is a diagram taken from this article that illustrates the putative mechanism by which exposure to PAH leads to the development of lung cancer.



Research describes that exposure to PAH in the workplace and environment can lead to the development of cardiovascular diseases, such as coronary heart disease, peripheral artery disease, stroke, and myocardial infarction (Mallah et al., 2021, 2022).

It is important to note that the concentration of PAH varies according to the type of oil. The attached table depicts the types of PAH and their concentration in different types of oil when heated to a temperature of between 170-250°C (see IARC High temperature frying)

Table 1.4. The polycyclic aromatic hydrocarbon contents ($\mu\text{g}/\text{m}^3$) of fumes from various oils heated to $250\pm 10^\circ\text{C}$ for 30 min

Carcinogens	Cooking oil		
	Safflower	Vegetable	Corn
Benzo[a]pyrene	22.7 $\pm$ 1.5	21.6 $\pm$ 1.3	18.7 $\pm$ 0.9
Dibenz[a,h]anthracene	2.8 $\pm$ 0.2	3.2 $\pm$ 0.1	2.4 $\pm$ 0.2
Benzo[b]fluoranthene	1.8 $\pm$ 0.3	2.6 $\pm$ 0.2	2.0 $\pm$ 0.1
Benz[a]anthracene	2.5 $\pm$ 0.1	2.1 $\pm$ 0.4	1.9 $\pm$ 0.1

Further work tested concentrations of PM_{2.5} PAH and formaldehyde upon pan-frying

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

Table 1.8. Concentrations^a of PM_{2.5}, PAHs and formaldehyde in a research house during pan-frying

Type of stove Food cooked	PM _{2.5} (µg/m ³)		Total PAHs (ng/m ³)		Seven PAHs ^b (ng/m ³)		Formaldehyde ^c (ppb)
	Stove	Kitchen	Indoor	Outdoor	Indoor	Outdoor	Indoor
Gas							
Hamburger	115	60	294	288	0.93	1.76	3
Steak	2270	2670	833	189	3.70	1.93	48
Electric							
Hamburger	252	160	425	251	3.59	1.68	<2
Steak	542	457	610	431	2.56	3.24	9

From Kelly (2001)

A 2008 study (Pan 2008) examined in 23 Chinese restaurants the level of exposure of kitchen workers to PM and PAH and found significantly higher levels in the kitchen workers' environment compared to other restaurant areas.

Pan <i>et al.</i> (2008), Taiwan, China	23 Chinese restaurants	Cross-sectional study; measurements in kitchens and dining areas	Airborne PM and PAHs Urinary 1- hydroxypyrene (1-OHP) Urinary 8-hydroxy-2'- deoxyguanosine (8- OHdG)	Japanese restaurant
				Airborne PM and PAH levels in kitchens significantly exceeded those in dining areas. Geometric mean: kitchen staff, 4.5 µg/g creatinine; service staff, 2.7 µg/g creatinine (significantly higher) Geometric mean: kitchen staff, 7.9 µg/g creatinine; service staff, 5.4 µg/g creatinine (significantly higher) Urinary 1-OHP level, work in kitchens, gender and work hours per day were four significant predictors of urinary 8-OHdG levels after adjustments for covariates.

Later in this document, the effect on various cancers was examined, initially in laboratory animals, and it was found that frying fumes in oil were found to significantly cause the development of lung cancer in mice and rats.

Another study published a few months ago describes through a systemic review the close relationship between exposure to frying fumes and lung cancer (Bhurosy 2023).

This study examined 16 studies that included never-smoking women. Out of all the studies in 7, a statistically significant association was found between exposure to frying fumes and cancer.

In order to examine the carcinogenic potential in humans of exposure to frying fumes, the World Health Organization (WHO) in its branch responsible for monitoring for cancer prevention (IARC) examined 4 important studies regarding that topic :

The first study from Hong Kong found a significant risk for lung cancer risk that depended on the degree of exposure to high-temperature frying. A moderate degree of exposure (odds ratio of 3.0) , and a high degree of exposure (odds ratio of 8.0).

The study conducted in Hong Kong Special Administrative Region used a composite index that accounted for both the frequency and the duration of all three types of high-temperature frying; it found a significant threefold increased risk for lung cancer associated with moderate to high categories of exposure (>150 total dish-years) and an eightfold increased risk associated with the highest category (>200 total dish-years).

The other 3 studies (all three from China) found similar results.

In the other three informative studies in Shanghai (two studies) and Gansu, China, the risk for lung cancer increased generally with increasing frequency of stir-frying, deep-frying and pan-frying and a nearly twofold increased risk was associated with the highest

frequency of high-temperature frying. In the study conducted in Gansu, however, the risk for lung cancer increased significantly with increasing frequency of stir-frying but not of deep-frying. However, potential confounding by solid cooking fuel could not be ruled out with reasonable confidence in these three studies. In the study from Hong Kong that compared risk (per 10 dish-years) for the three types of high-temperature frying, the magnitude of risk was highest for deep-frying, intermediate for pan-frying and lowest for stir-frying, but all were associated with a significantly elevated risk for lung cancer. In the studies in Shanghai and Gansu, the effects of the different types of frying were not mutually adjusted for and, because of the substantial differences in the frequency of stir-frying and deep-frying, a direct comparison of the risk estimates associated with an individual type of frying could not be made.

The cancer-causing putative mechanism has been found in laboratory animals to be related to oxidative damage and direct damage to DNA and DNA repair mechanisms .

Metayer 2001, which examined a group of women from China, found that exposure to frying fumes was found to be a significant risk factor for lung cancer (hazard ratio of 1.67

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

with a confidence interval of 1.0-2.5). This work is of great importance because the first author is a researcher at the National Cancer Institute in the US

What are the health risks of acryl-amides AA?

The EPA, the International Cancer Research Agency (IARC), the National Toxicology Program (NTP), and the Department of Health and Human Services have established that acrylamide is likely carcinogenic to humans.

There are many studies (see for example Lipworth 2012 and Konings (2003) that show that AA causes cancer of the pancreas in humans and has similarly been shown to cause cancer of the central nervous system, breasts, scrotum, and other types of cancer.

Humans can be exposed to AA through oral, cutaneous pathways, and by **inhaling the re-frying fumes in oil**. Kitchen workers in restaurants, hotels, hospitals, caterers and frying plants are exposed on a daily basis to re-frying at all working hours. This is oil used hundreds of times over several days and at high temperatures, the more frying done with the same oil, frying fumes are emitted into the work environment so that kitchen workers are exposed to AA in the workplace through the skin or respiratory system. Therefore, the contribution of Beyond Oil to the safety of kitchen workers is critical in that even after 50 days frying, the AA level remains 0.

In a comprehensive review (Rifai 2020), AA exposure was found to increase the risk of cardiovascular disease by mechanisms of induction of oxidative stress, inflammation, and activation of TGF- β 1 pathways. In addition, the same review highlights the mechanism of neurotoxicity caused by AA. It has been shown that AA are neurotoxic, with a focus on damage to nervous system axons and nerve cell death.

What is the scientific consensus regarding the association between exposure to oil frying fumes and cancer in humans?

This comprehensive article prepared by IARC (IARC 2010a) concludes that **frying in oil at high temperatures is likely to cause cancer in humans (Rating 2A)**

Overall evaluation

Emissions from high-temperature frying are *probably carcinogenic to humans* (Group 2A).

The researchers note that there is no difference in the type of stir-frying deep-frying pan frying.

Regarding the type of oil, it should be noted that no differences were found in the types of oil in terms of risk level in the first study, but in the 3 studies from China it was found that women who fried with canola oil had a significantly higher degree of risk.

At the same time, the authors of the position paper conclude that the potential for carcinogenic damage is higher in unsaturated fat.

The first part of the review clearly shows that there is a robust scientific evidence supporting a causal relationship between exposure to high-temperature frying products and lung cancer in humans.

In addition, it appears that the main mechanism involves exposure to PAH and AA emitted during the frying process.

In an article that appeared in the prestigious journal Lancet Oncology in 2006 (Straif), the findings from the position papers were summarized and concluded that the carcinogenic mechanism of high-temperature oil frying products involves both peroxidation products of polyunsaturated fatty acids and the emission of PAH.

Positive results for mutagenicity of emissions from various cooking oils heated to high temperatures ($>240^{\circ}\text{C}$) were recorded in almost every category of an in-vivo-rodent assay.³⁰ Mechanistic data show the probable involvement of peroxidation products of polyunsaturated fatty acids,^{31,32} however, the involvement of polycyclic aromatic hydrocarbons, which have also been detected in cooking oil emissions, cannot be discounted.

A 2018 meta-analysis (Jia 2018) that reviewed 23 previous papers found that frying in oil, especially stir frying, was a significant risk factor for developing lung cancer, especially in women with a risk-to-risk ratio of 1.98 (with a confidence interval of 1.54-2.54).

A concluding article from 2021 presents the various mechanisms by which PAH causes the development of cancer in humans (Sun 2021)

A concluding article from 2010 (Srivastava) found that reheated frying oil increases the risk of various cancers in laboratory animals by creating changes in the genetic material of cells, i.e. chromosomal aberrations.

Several articles, including Chen 2003 and a concluding article from 2019, focus on the potential risk to cause cancer by reheating the same oil found in fryers for several days, as occurs in restaurants and frying plants (Ganesan 2019). The mechanism presented in this article is described in the diagram below

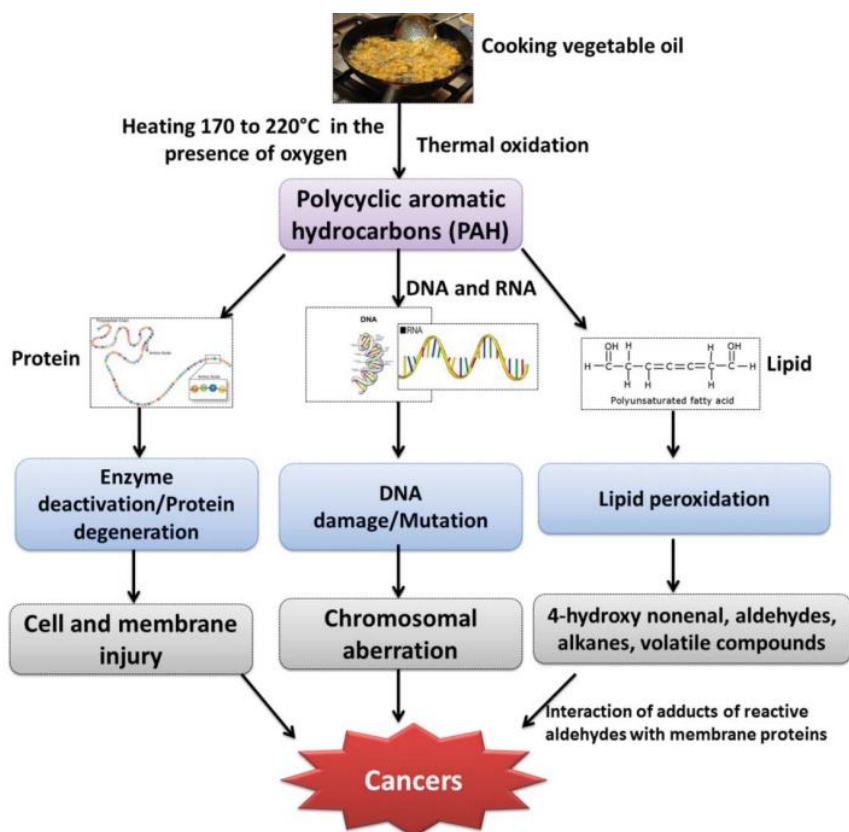


Figure 2. Repeatedly heated cooking oil emits PAHs and subsequent causes of cancer.

As shown, repeated boiling of oil causes the formation of PAH in the process of thermal oxidation, causing damage to proteins, damage to DNA (nucleic acids), and damage to fats. Lipid oxidation leads to the release of VOC aldehydes products, which, combined with damage to nucleic acids and proteins, leads to the creation of a cancerous process.

Beyond oil formulation

This preparation is designed to reduce the risk of emission of these carcinogens, especially in frying oil that undergoes repeated heating for several days, as is customary in most restaurants and frying plants around the world.

The essence of industrial frying – frying in a restaurant

The reuse of oil for frying in restaurants, hospital kitchens, and industrial plants that create fried foods is widespread. Large quantities of oil are used for frying, and

economic considerations meant that the same oil is used for days until it foams, burns, and raises smoke and can no longer be used.

The chemistry of deep frying oils

Frying is the process of immersing food in hot oil when the oil, air, and food come into contact at a high temperature of between 150 and 190 degrees Celsius. The massive simultaneous heating and mixing of oil, food and air during deep frying creates the desired (taste and texture) and unique quality of fried foods. Frying time, outer surface of food, moisture content in food, and the various types of frying oil -all affect the amount of oil absorbed into foods.

Hydrolysis of oil

When one fry food in hot oil, the moisture in the product creates bubble-like steam that gradually settles when the food is fried. Water, vapor, and oxygen start the chemical reactions in frying oil and food.

Water, attacks the esteric bond of (triglycerides) and forms, among other things, FFA.

The content of FFA in frying oil increases with frying time.

The FFA value is used to monitor the quality of frying oil. Frequent addition of fresh oil to frying oil slows down the hydrolysis of the frying oil while FFA accelerates the hydrolysis reaction of the oil.

Oil polymerization

The main breakdown products of frying oil are non-volatile polar compounds and dimers and triacylglycerol polymers (triglycerides). Dimers or polymers are acyclic or cyclic compounds, depending on the reaction process and the types of fatty acids in the oil. The formation of dimers and polymers depends on the type of oil, frying temperature, and the number of times the oil is fried. As the number of times fried in oil increases and the frying temperature increases, the concentration of polymers increases.

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

Polymers further accelerate oil damage, increase the viscosity of the oil, reduce heat transfer, form foam during deep frying, and develop unwanted color in food. Polymers also cause oil to be absorbed into foods. Polymers are compounds that carry two dienes, forming brown, resin-like deposits along the sides of the frying pot.

Factors affecting oil quality during deep frying

Several important factors affect the quality of the oil during frying. They include the oil replacement rate, frying time and temperature, type of heating, the composition of the frying oil, the initial quality of the oil, the composition of the fried food, the type of frying tools, the antioxidant content in oxygen that affect the deterioration of the oil during deep frying, and the addition of fresh oil.

A high proportion of fresh oil out of the total oil is known to provide better frying oil quality, and frequent addition of fresh oil reduces the formation of polar compounds, diacylglycerols, and FFAs.

How are AA and PAH formed as a result of the increase in FFA and TMP values during frying?

Deep frying hydrolyzes, oxidizes and polymerizes triglycerides. Hydrolysis increases the amount of free fatty acids, mono and diacylglycerols, and glycerol in oils. Oxidation forms hydroperoxides and volatile molecular compounds such as aldehydes, ketones, carboxylic acids, short-chain alkanes, and alkanes are also formed. Oxidation occurs at a higher rate than hydrolysis during deep frying.

The high temperatures during frying (180 to 200 degrees Celsius) catalyze the chain reactions created by hydrolysis of triglycerides into unsaturated FFAs that oxidize further and, together with other polar materials, lead to the formation of annular compressed structures (PAH), which are actually the result of incomplete combustion processes. Acrylamide (AA) is the result of a set of other parallel reactions that are accelerated by high temperatures.

Series of experiments with Beyond oil

Prof. Gerty demonstrates in a series of experiments that after 4 days of frying in oil in a restaurant in Israel (without using BOF), the main components of PAH were detected in the oil using chromatographic methods at an average total level of $4.29 \pm 0.57 \mu\text{g} / \text{kg}$.

In the same restaurant, oil filtered with BOF during the 4-day frying **period found that all nine PAH ingredients were not found, and the total PAH was less than 0.5 micrograms per kg of oil.**

In parallel with this experiment, AA levels were also analyzed. The findings indicate that while the levels of residues detected in the untreated oil are very low, in the **oil that has been treated and filtered, the levels of AA have been reduced to such levels that were undetectable.**

In a set of experiments in restaurants in Israel, a comparative test was conducted for the level of acryl amide in frying oil, with an emphasis on the uniqueness of the BOF preparation. The level of acrylic amide was tested in new oil, oil after 3 days frying (without using BOF) and oil filtered with BOF after 22 days frying. The findings were summarized after reports from the MERIEUX NUTRASCIENCE laboratory (Mérieux NutriSciences Corporation Italy). F042230.1MP 2149 REV 1 2018 21,25 See Table 1.

Acrylic amide -AA

Here, too, the result was impressive, in a fresh oil the result was obtained of ND (Non Detected) $\mu\text{g}/\text{kg}$ of acrylic amide, after 3 days of frying in oil in a restaurant without the use of BOF. Traces of acrylic amide were found compared to ND (Non Detected) result, **i.e. = zero acrylic amide, which resulted in oil filtered with BOF after 22 days of frying.**

PAHs 4

In the same set of trials, a comparative examination was conducted using chromatographic methods for the level of PAHs in 3 experimental scenarios: in fresh oil, and in oil after only 3 days of re-frying without the use of BOF and in re-frying oil after 22 days of frying using BOF preparation.

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

The main ingredients of PAHs levels were not significantly different between the samples of the fresh oil and the oil after 22 days of frying treated with **BOF preparation (5 new 5.2 after 22 days)**

In contrast, the level of PAHs in oil after 3 days of frying without BOF was 15.69 µg/kg, a result that is 3 times higher than the level of PAHs 4 in the new oil and oil after 22 days of frying.

FFA

If we compare these results to the results of re-frying oil tests after 3 days without using BOF preparation one can note that, the free fatty acid values in this oil are 1.69. After 22 days of **frying and handling** with BOF preparation, the result is 0.17 - almost unchanged from a fresh oil (0.12 new 0.17 after 22 days).

TPM

If we compare these results with the results of re-frying oil tests after 3 days without using BOF preparation, one notes that the TPM values in this oil are 23. After 22 days of frying and handling with BOF preparation, the result is 16 TPM.

Table 1

	Method	Units	Fresh oil	3 days fryer #2 Without BO	22 days fryer #2 With BO
Free Fatty Acids	in oil AOCS Ca 5a-39	oil % Oleic acid	0.12	1.69	0.17
TPM	**FSSR	%	10	23	16
Anisidine value	AOCS CD 18-90	µg/kg	5	10.5	5.03
PAHs 4*	F013550.0 MP 0998 REV 4 2013 25	µg/kg	5	15.69	5.2
AcrylAmide	F042230.1 MP 2149 REV 1 2018 21,25	µg/kg	ND	Traces	ND

Table 1 Evolution of indicative parameters for oil spoilage, based on a test report MERIEUX laboratory NUTRASCIENCE.

*Method: MP 0998 rev 5 2018 = The determination of PAHs 4, if performed, is referred to the sum of the following polycyclic aromatic hydrocarbons: benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene and chrysene

Free fatty acids	in oil AOCS Ca 5a-40	oil % Oleic acid	0.07	1.69	0.38
PAHs 4*	F013550.0 MP 0998 REV 4 2013 25	µg/kg	5	15.69	8.63
AcrylAmide	F042230.1 MP 2149 REV 1 2018 21,25	µg/kg	ND	Traces	ND
TPM	**FSSR	%	4.5	33	16

טבלה מס' 2- אנליזת שמן טיגון לאחר 51 ימי טיגון חוזר במסעדה בישראל

Another interesting finding emerged in another set of experiments for the presence of acrylic amide in frying oil in another restaurant in Israel.

The results of the experiment in oil filtered with BOF after 51 days of frying, the level of free fatty acids is 0.17% (tested as % Oleic Acid), the level of acryl amide stands at ND (Not Detected) and the level of PAHs 4 is 8.62 µg/kg.

See Table 2.

If we compare these results to the results of re-frying oil tests in a restaurant in Israel after 3 days without using BOF, we will see that we have special findings: acrylic amide values in this oil stand at Traces µg/kg, and PAHs 4 values are 15.69 µg/kg. After 51 days of frying and handling BOF preparation, the result is ND (Non Detected) µg/kg zero acryl amide and 8.63 µg/kg for the group of PAHs 4

In other words, despite the long re-frying time in oil (51 days), BOF neutralizes the expected increase in the level of carcinogens: acrylic amide level zero, FFA level similar to new oil (the permissible level in new oil up to 0.5), TPM level below the standard (standard in Israel up to 27), PHAs level 4 is half lower than oil fried for 3 days without a Beyond Oil filter,

These findings are of paramount importance regarding the toxicity and rate of development of these compounds in fried oil.

	Method	Units	Fresh Oil	3 days frying without BOF	51 days frying with BOF
Free fatty acids	in oil AOCS Ca 5a-40	oil % Oleic acid	0.07	1.69	0.38
PAHs 4*	F013550.0 MP 0998 REV 4 2013 25	µg/kg	5	15.69	8.63
AcrylAmide	F042230.1 MP 2149 REV 1 2018 21,25	µg/kg	ND	Traces	ND
TPM	**FSSR	%	4.5	33	16

Table 2 - Analysis of frying oil after 51 days of re-frying in a restaurant in Israel

Beyond Oil (BOF) formula and frying oil filtration technology

According to Prof. Gerti's research, Beyond Oil has developed an environmentally friendly formula using a unique "filter powder blend", in order to reduce in frying oils, the formation of dangerous compounds in oil used for frying as a result of repeated frying over several days in the same oil as occurs in restaurants, catering kitchens, hotels and frying plants for food and snacks, such as TPM, FFA, PAHs and acrylamides, and thus can potentially reduce and even prevent the risk of health side effects.

These include, among others, lung cancer, cancer of the central nervous system, breasts, scrotum and other types of cancer, cardiovascular and neurological diseases.

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

The findings also proved that oil filtered with Beyond Oil's filter powder even after 51 days of frying in the same oil was found with acrylamides, which is one of the well-known products that cause various cancers both from eating and inhaling frying fumes.

Conclusions

Repeated use of frying oil may cause environmental dispersal of potentially harmful products such as PAH and AA, which have been proven in the medical literature before me to have carcinogenic potential for humans with an emphasis on lung cancer formation.

Additional risks are cardiovascular injury and neurological damage. These risks are created in the food industry, with an emphasis on the exposure of workers in their workplace in restaurants, frying plants, Dining rooms, hotel kitchens, catering and more for the dangerous effect of these substances.

The study shows how these harmful substances can be significantly reduced and even prevented very effectively, using Beyond Oil technology.

This significant advantage exists especially in frying oil, which is reused as is customary in the industrial food and food services industry.

Adopting the technology and using Beyond Oil's filter powder will enable the food industry to provide safer and healthier food to consumers along with a safer work environment for kitchen workers exposed to frying fumes.

Kitchen workers in restaurants, hotels, banquet halls, frying factories, breathe frying fumes during all working hours, without knowing an important fact that food has been fried in the same oil hundreds of times over several days, which puts them at risk of various cancers.

For the most part, the medical field reports on new types of drugs and treatments for cancer that come to help humanity cope with the serious disease that causes great morbidity and mortality worldwide. In this case, the use of Beyond Oil's filter powder is a kind of **preventive measure** that will help reduce the morbidity caused by exposure to frying fumes.

Beyond Oil's innovative solution makes a huge contribution to humanity in the medical field, reducing morbidity and mortality from cancers caused by exposure to frying fumes, thereby making a great contribution to improving the general health of the

population.

The preventive health approach as noted above, adopted by most of the world's health systems, can benefit from increasing public awareness of the issue, from setting and enforcing appropriate regulation, and from greater awareness in the system of this morbidity and its sources.

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Reduce Health & Cancer Risks Associated to Frying Oil, June 2023
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Prof. Oren Fruchter
Director, The Pulmonary Division
Wolfson Medical Center
LN: 26306

Prof. Oren Fruchter

Head of Pulmonary and Respiratory Intensive Care Department

Wolfson Medical Center and Tel Aviv University

:Appendices

De Travel Oil after 22 days of frying with Beyond Oil BOF filtration



2711102 מיקוד | מילודות מילודות | מילודות מילודות
I. Z. Miloudot southern | Mailing address: PO Box.1264 I.Z. Kiryat Bialik, ZIP 2711102
info.il@mxns.com | Fax 04-8852900 ops | Tel • 8583 50

מילודות מילודות
MILLOUDA LABORATORIES
Mérieux
Nutrisciences

BEYOND OIL LTD
IFAT
ISRAEL

Report date: 23/08/23
No. of samples: 1
Sample description (#): 22days-2A- Filtration with beyond oil after 22 days frying Fryer number 2
Date received: 02/08/23
Date sampled: 02/08/23
State of sample: Room temperature
Substance sampled: Various Oils

Print Date: 23/08/23
Approval date: 23/08/23 17:15

Site received: Akko

Sampled by: Customer

Test Certificate SO23104490

Sample no.: SO23104490/1

Test	Unit	Result
Free fatty acids in oil	% Oleic acid	0.17
Anisidine value		5.3
PAH's F013550.0	µg/kg	see attach
ACRYLAMIDE F042230.1	µg/kg	not detected
Saturated fat (GC)	g/100 g	12.126
Mono-unsaturated fat	g/100 g	42.328
Poly-unsaturated fat	g/100 g	45.001
Omega-3 (GC)	g/100 g	4.898
Omega-6	g/100 g	40.102
Omega-6/Omega-3, g/100 g		8.187
Trans-fatty acids in oil (GC)	g/100 g	0.545
C 4:0	g/100g oil	not detected
C 6:0	g/100g oil	not detected
C 8:0	g/100g oil	not detected
C 10:0	g/100g oil	not detected
C 11:0	g/100g oil	not detected
C 12:0	g/100g oil	not detected
C 14:0	g/100g oil	0.074
C14:1 c9	g/100g oil	not detected
C 15:0	g/100g oil	not detected
C 15:1 c10	g/100g oil	not detected
C 16:0	g/100g oil	7.793
C 16:1 c9	g/100g oil	0.200
C 17:0	g/100g oil	0.065
C 17:1 c10	g/100g oil	not detected
C 18:0	g/100g oil	3.044
C 18:1 trans	g/100g oil	0.084
C 18:1	g/100g oil	41.232
C 18:2 trans	g/100g oil	0.259
C 18:2 all cis-9,12	g/100g oil	40.053
C 18:3 trans	g/100g oil	0.202
C18:3 all cis-6,9,12 G	g/100g oil	not detected
C18:3 all cis-9,12,15 ALA	g/100g oil	4.898
C 19:0	g/100g oil	not detected
C 19:1	g/100g oil	not detected
C 20:0	g/100g oil	0.410
C20:1 c11	g/100g oil	0.731
C20:2 all cis-11,14	g/100g oil	0.049
C20:3 all cis-8,11,14	g/100g oil	not detected
C20:3 all cis-11,14,17	g/100g oil	not detected
C20:4 all cis-5,8,11,14	g/100g oil	not detected
C20:5 all cis-5,8,11,14,17 EPA	g/100g oil	not detected
C 21:0	g/100g oil	0.027
C 22:0	g/100g oil	0.495
C 22:1 n11	g/100g oil	not detected
C22:1 c11	g/100g oil	0.098
C22:1 c13	g/100g oil	not detected
C22:2 c-13,16	g/100g oil	not detected
C22:4 all cis-7,10,13,16	g/100g oil	not detected
C22:3 all cis-13,16,19	g/100g oil	not detected
C 22:4 n6	g/100g oil	not detected
C22:5 all cis-4,7,10,13,16	g/100g oil	not detected
C 22:4 n3	g/100g oil	not detected
C 22:5 n3	g/100g oil	not detected
C22:6 n3 DHAC 22:6 all cis-4,7,10,13,16,19 DHA	g/100g oil	not detected
C 23:0	g/100g oil	0.038
C 24:0	g/100g oil	0.179
C 24:1 c15	g/100g oil	0.068

Quality Assurance

עמוד 1 מתוך 2

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

De Travel Oil after 22 days of frying with Beyond Oil BOF filtration

 ISIRAC Israel Laboratory Accreditation Authority מסמך 19083-1902 19083-1902	מערבדות מילודע MILODA LABORATORIES Mérieux NutriSciences אזור תעשייה מילונות דרום סניף מילונות: ת.ד. 1264, אזור תעשייה קרית ביאליק, מילודא 2711102 I. Z. Milodot southern I Mailing address: PO Box.1264 I.Z. Kiryat Bialik, ZIP 2711102 info.il@mxns.com Fax: 04-8852900 Tel: +853 8583
BEYOND OIL LTD IFAT ISRAEL	Print Date: 23/08/23 Approval date: 23/08/23 17:15

Test	Test method	Explanations	Unit Description	MRL/LOQ
Trans-fatty acids in oil (GC)	based on AOAC996.06	1,2		
Saturated fat (GC)	based on AOAC996.06	1,2		
PAHs F013550.0	MP 0998 REV 4 2013	25		
ACRYLAMIDE F042230.1	MP 2149 REV 1 2018	21,25		
Anisidine value	AOCS CD 18-90			
Free fatty acids in oil	AOCS Ca 5a-40	1	% Oleic acid	0.05

Explanations to Tests
1 Under accreditation (ISO17025) of the Israel Laboratory Accreditation Authority.
2 Recognized by the Israeli MOH.
21 Accredited to ISO17025
25 Performed by MERIEUX NutriScience Laboratories.

Not detected (N.D.) - value over the limit of detection was not detected (LOD).

Remarks
1. The laboratory operates under established working procedures which correlate to the International Standard ISO/IEC 17025 in those disciplines where accreditation has been granted, as detailed for each site in the scope of the Certificate of Accreditation.
2. The tests are within the recognized framework of the Ministry of Health as published in the registrations (marked by explanation No. 2 in the Quality Assurance table in this report).
3. Water and wastewater testing results in recognition and/or accreditation will be valid only if sampled by a qualified person.
4. The results relate only to the tested sample.
5. The statement of conformity to the standard does not include the uncertainty of the test.
6. This document should be referred to in its entirety and no part may be copied to other documents.
7. Sampling was carried out by the customer and under his sole responsibility, unless otherwise noted.
8. The Israel Laboratory Accreditation Authority is not responsible for any of the lab results and the fact of its accreditation does no comprise approval of the Authority or of any other body for the tested product.
9. The valid results are those of the most updated report.
10. Food and workplace sampling are performed according to SOP but are not accredited by the Laboratory Accreditation Authority.
11. The interpretation (of the results) is not accredited by the Israel Laboratory Accreditation Authority.
12. Tests are performed at the receiving site, unless otherwise noted.
13. Info that was provided by the customer is tagged by (#)


Marius Polevsky
Chemistry Laboratory

** End of document **

עמוד 2 מתוך 2

De Travel Oil after 22 days of frying with Beyond Oil BOF filtration

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

TEST REPORT N. 23/000440338

date of issue 23/08/2023

Customer ID 0073405

Messrs
MILOUDA & MIGAL
LABORATORIES LIMITED
PARTNERSHIP
I.Z MILOUOT SOUTHERN, ACRE
25201 MILOUOT
Israele

Sample information

Acceptance number 23.530792.0016
Delivered by DHL International on 09/08/2023
Receiving Date 09/08/2023
Place of origin MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE
25201 MILOUOT Israele
Sample Description SO23104490 - PO23002882 - different oils

Sampling information

Sampled by Customer

Template 716/SQ rev. 10

Page 1 of 2

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VAT nr. 01500900269, R.E.A Treviso n. 156079 Fully paid up € 103.480,00.

De Travel Oil after 22 days of frying with Beyond Oil BOF filtration

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 29 - מתוך 54



Mérieux
NutriSciences

CHELAB S.R.L.



ILAC-MRA



ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

follow test report n. 23/000440338

LAB N° 0051 L

ANALYTICAL RESULTS									
	Value/ Uncertainty	Unit of measure	LoQ	LoD	R	Start/end date of analysis	Op. units	Row	
ON SAMPLE AS IT IS									1
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)									
Met.: MP 0996 rev 5 2018						10/08/2023-21/08/2023	01	2	
Benzo (a) anthracene	1,58±0,37	µg/kg	0,50	0,25	107,9			3	
Benzo (b) fluoranthene	0,60±0,14	µg/kg	0,50	0,25	100			4	
Benzo (k) fluoranthene	n.d.	µg/kg	0,50	0,25	100			5	
Benzo (a) pyrene	traces	µg/kg	0,50	0,25	100			6	
Indeno (1,2,3-CD) pyrene	n.d.	µg/kg	0,50	0,25	88,2			7	
Dibenzo (a,h) anthracene	n.d.	µg/kg	0,50	0,25	88,2			8	
Benzo (g,h,i) perylene	traces	µg/kg	0,50	0,25	88,2			9	
Benzo (e) pyrene	0,67±0,16	µg/kg	0,50	0,25	88,2			10	
Chrysene	3,02±0,72	µg/kg	0,50	0,25	100			11	
PAHs 4	5,20±0,82	µg/kg						12	
ACRYLAMIDE	n.d.	µg/kg	20	6,0	98,7	10/08/2023-22/08/2023	01	13	
Met.: MP 2149 rev 1 2018									

Operative units

Unit 01 : Via Fratta Resana (TV)

Information on test methods and/or requirements/specifications

Row (2) - Method: MP 0996 rev 5 2018 = The determination of PAHs 4, if performed, is referred to the sum of the following polycyclic aromatic hydrocarbons: benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene and chrysene.

Information provided by the client

Sampled by: Customer
Place of origin: MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE 25201 MILOUOT Israele
Description: SO23104490 - PO23002882 - different oils

Chemical responsible
Dott. Emiliano Castellano
Chimico Ordine dei Chimici e dei Fisici della Toscana. N. 1631 - Sez. A
Num. certificato WREF-84576807156345 emesso dall'ente certificatore AnubalPEC S.p.A. NG CA 3, AnubalPEC S.p.A., IT

- The line marked by a star (*) is not accredited by Accredia, member of MLA. - If not otherwise specified, the uncertainty is extended and has been calculated with a coverage factor k=2 corresponding to a probability interval of about 95%. - LoD is the detection limit and identifies a confidence interval of zero with a probability interval of about 99%. - LoQ is the limit of quantification. "n.d" is not detected and indicates a value inferior to the LoD. "traces (X)" means a value between LoD and LoQ, this value is indicative. "<x" or ">x" indicate inferior or superior to the measurement field of the test. - If not differently specified, the sums are calculated by lower bound criteria (L.B.). - Analysis Starting date: date at which the sample is processed by the laboratory. Can include aliquoting and homogenization steps. Analysis End date: date at which the results are approved in LIMS by the laboratory. - In case of alteration of the sample the laboratory declines any responsibility on the results that can be influenced by the deviation in case the customer asks for the execution of the test anyway. - If the sampling is not carried out by the laboratory staff, the results obtained are considered referring to the sample as received and the laboratory declines its responsibility for the results calculated considering the sampling data provided by the Customer. The name and contact information of the Customer are always provided by the Customer. - R is the recovery, recoveries marked by an hashtag (#) have not been used in the calculations. - If there is a specification (customer specifications, law limits) which has been compared to the analytical results, the values shown in bold indicate a result which is out of the specification. - If not differently specified the judgments of compliance /non-compliance eventually reported are referred to analysed parameters and are based on the comparison of the value with the reference values without considering the confidence interval of measure.

Template 716/SQ rev. 10

Page 2 of 2

END OF THE TEST REPORT

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Restaurant oil after 51 days frying with Beyond Oil BOF filtration

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 30 - מתוך 54

BEYOND OIL LTD
IFAT
ISRAEL

Print Date: 23/08/23
Approval date: 23/08/23 11:08

Test Certificate SO23104476

Report date: 23/08/23

Site received: Akko

No. of samples: 1

Sample description (#): TEMERLIN restaurant Nahalal Israel Filtration with Beyond oil After 51 days frying without filtration machine

Date received: 02/08/23

Sampled by: Customer

Date sampled: 02/08/23

State of sample: Room temperature

Substance sampled: Various Oils

Sample no.: SO23104476/1	Test	Unit	Result
Free fatty acids in oil	% Oleic acid	0.17	
Anisidine value		9.4	
PAH's F013550.0	µg/kg	see attach	
ACRYLAMIDE F042230.1	µg/kg	not detected	
Saturated fat (GC)	g/100 g	12.202	
Mono-unsaturated fat	g/100 g	42.720	
Poly-unsaturated fat	g/100 g	44.540	
Omega-3 (GC)	g/100 g	4.745	
Omega-6	g/100 g	39.796	
Omega-6/Omega-3, g/100 g		8.388	
Trans-fatty acids in oil (GC)	g/100 g	0.537	
C 4:0	g/100g oil	not detected	
C 6:0	g/100g oil	not detected	
C 8:0	g/100g oil	not detected	
C 10:0	g/100g oil	not detected	
C 11:0	g/100g oil	not detected	
C 12:0	g/100g oil	not detected	
C 14:0	g/100g oil	0.077	
C14:1 c9	g/100g oil	not detected	
C 15:0	g/100g oil	0.022	
C 15:1 c10	g/100g oil	not detected	
C 16:0	g/100g oil	7.797	
C 16:1 c9	g/100g oil	0.203	
C 17:0	g/100g oil	0.073	
C 17:1 c10	g/100g oil	not detected	
C 18:0	g/100g oil	3.044	
C 18:1 trans	g/100g oil	0.090	
C 18:1	g/100g oil	41.600	
C 18:2 trans	g/100g oil	0.238	
C 18:2 all cis-9,12	g/100g oil	39.740	
C 18:3 trans	g/100g oil	0.209	
C18:3 all cis-6,9,12 G	g/100g oil	not detected	
C18:3 all cis-9,12,15 ALA	g/100g oil	4.745	
C 19:0	g/100g oil	not detected	
C 19:1	g/100g oil	not detected	
C 20:0	g/100g oil	0.420	
C20:1 c11	g/100g oil	0.740	
C20:2 all cis-11,14	g/100g oil	0.056	
C20:3 all cis-8,11,14	g/100g oil	not detected	
C20:3 all cis-11,14,17	g/100g oil	not detected	
C20:4 all cis-5,8,11,14	g/100g oil	not detected	
C20:5 all cis-5,8,11,14,17 EPA	g/100g oil	not detected	
C 21:0	g/100g oil	0.026	
C 22:0	g/100g oil	0.510	
C 22:1 n11	g/100g oil	not detected	
C22:1 c11	g/100g oil	0.099	
C22:1 c13	g/100g oil	not detected	
C22:2 c-13,16	g/100g oil	not detected	
C22:4 all cis-7,10,13,16	g/100g oil	not detected	
C22:3 all cis-13,16,19	g/100g oil	not detected	
C 22:4 n6	g/100g oil	not detected	
C22:5 all cis-4,7,10,13,16	g/100g oil	not detected	
C 22:4 n3	g/100g oil	not detected	
C 22:5 n3	g/100g oil	not detected	
C22:6 n3 DHAC 22:6 all cis-4,7,10,13,16,19 DHA	g/100g oil	not detected	
C 23:0	g/100g oil	0.043	
C 24:0	g/100g oil	0.191	
C 24:1 c15	g/100g oil	0.078	

עמוד 1 מתוך 2

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 31 - מתוך 54

Restaurant oil after 51 days frying with Beyond Oil BOF filtration

 2711102 I. Z. Milvov, southern 1 Mailing address: PO Box 1264 I.Z. Kiryat Bialik, ZIP 2711102 info.il@mxns.com Fax 04-8852900 קטן Tel • 8583 פר' 078 Testing No. 078	 מעבדות מילוד MILODIA LABORATORIES מריקס נאטריסנסיס			
BEYOND OIL LTD IFAT ISRAEL	Print Date: 23/08/23 Approval date: 23/08/23 11:08			
Test Certificate SO23104476				
Quality Assurance				
Test	Test method	Explanations	Unit Description	MRL/LOQ
Trans-fatty acids in oil (GC)	based on AOAC996.06	1.2		
Saturated fat (GC)	based on AOAC996.06	1.2		
PAHs F013550.0	MP 0998 REV 4 2013	25		
ACRYLAMIDE F042230.1	MP 2149 REV 1 2018	21.25		
Anisidine value	AOCS CD 18-90			
Free fatty acids in oil	AOCS Ca 5a-40	1	% Oleic acid	0.05
Explanations to Tests				
1 Under accreditation (ISO17025) of the Israel Laboratory Accreditation Authority. 2 Recognized by the Israeli MOH. 21 Accredited to ISO17025 25 Performed by MERIEUX NutriScience Laboratories.				
Not detected (N.D.) - value over the limit of detection was not detected (LOD).				
Remarks				
1. The laboratory operates under established working procedures which correlate to the International Standard ISO/IEC 17025 in those disciplines where accreditation has been granted, as detailed for each site in the scope of the Certificate of Accreditation. 2. The tests are within the recognized framework of the Ministry of Health as published in the registrations (marked by explanation No. 2 in the Quality Assurance table in this report). 3. Water and wastewater testing results in recognition and/or accreditation will be valid only if sampled by a qualified person. 4. The results relate only to the tested sample. 5. The statement of conformity to the standard does not include the uncertainty of the test. 6. This document should be referred to in its entirety and no part may be copied to other documents. 7. Sampling was carried out by the customer and under his sole responsibility, unless otherwise noted. 8. The Israel Laboratory Accreditation Authority is not responsible for any of the lab results and the fact of its accreditation does not comprise approval of the Authority or of any other body for the tested product. 9. The valid results are those of the most updated report. 10. Food and workspace sampling are performed according to SOP but are not accredited by the Laboratory Accreditation Authority. 11. The interpretation (of the results) is not accredited by the Israel Laboratory Accreditation Authority. 12. Tests are performed at the receiving site, unless otherwise noted. 13. Info that was provided by the customer is tagged by (#)				


Marina Polevsky
Chemistry Laboratory

** End of document **

עמוד 2 מתוך 2

Oil From restaurant after 51 days frying with filtered Beyond Oil BOF

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 32 - מתוך 54



LAB N° 0051 L

TEST REPORT N. 23/000440337

date of issue 23/08/2023

Customer ID 0073405

Messrs
MILOUDA & MIGAL
LABORATORIES LIMITED
PARTNERSHIP
I.Z MILOUOT SOUTHERN, ACRE
25201 MILOUOT
Israele

Sample information

Acceptance number 23.530792.0015
Delivered by DHL International on 09/08/2023
Receiving Date 09/08/2023
Place of origin MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE
25201 MILOUOT Israele
Sample Description SO23104476 - PO23002882 - different oils

Sampling information

Sampled by Customer

Template 716/SQ rev. 10

Page 1 of 2

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Head office: Via Fratta 25 31023 Resana, Italy Phone. + 39 0423.7177 / Fax + 39 0423.715058 www.merieuxnutrisciences.com/it
VAT nr. 01500900269, R.E.A Treviso n. 156079 Fully paid up € 103.480,00.

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 33 - מתוך 54

Oil From restaurant after 51 days frying with filtered Beyond Oil BOF

 CHELAB S.R.L.						
follow test report n. 23/000440337		LAB N° 0051 L				
ANALYTICAL RESULTS						
Value/ Uncertainty	Unit of measure	LoQ LoD R Start/end date of analysis Op. units Row				
ON SAMPLE AS IT IS						
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)		10/08/2023-21/08/2023 01 2				
Met.: MP 0998 rev 5 2018						
Benzo (a) anthracene	2,34±0,55 µg/kg	0,50 0,25 107,9 3				
Benzo (b) fluoranthene	1,00±0,24 µg/kg	0,50 0,25 100 4				
Benzo (k) fluoranthene	traces µg/kg	0,50 0,25 100 5				
Benzo (a) pyrene	0,79±0,19 µg/kg	0,50 0,25 100 6				
Indeno (1,2,3-CD) pyrene	traces µg/kg	0,50 0,25 88,2 7				
Dibenzo (a,h) anthracene	n.d. µg/kg	0,50 0,25 88,2 8				
Benzo (g,h,i) perylene	traces µg/kg	0,50 0,25 88,2 9				
Benzo (e) pyrene	0,97±0,23 µg/kg	0,50 0,25 88,2 10				
Chrysene	4,5±1,1 µg/kg	0,50 0,25 100 11				
PAHs 4	8,63±1,27 µg/kg	12				
ACRYLAMIDE	n.d. µg/kg	20 6,0 98,7 10/08/2023-22/08/2023 01 13				
Met.: MP 2149 rev 1 2018						
Operative units						
Unit 01 : Via Fratta Resana (TV)						
Information on test methods and/or requirements/specifications						
Row (2) - Method: MP 0998 rev 5 2018 = The determination of PAHs 4, if performed, is referred to the sum of the following polycyclic aromatic hydrocarbons: benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene and chrysene.						
Information provided by the client						
Sampled by: Customer Place of origin: MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE 25201 MILOUOT Israele Description: SO23104476 - PO23002882 - different oils						
<table><tr><td>Chemical responsible</td></tr><tr><td>Dott. Emiliano Castellano</td></tr><tr><td>Chimico Ordine dei Chimici e dei Fisici della Toscana. N. 1631 - Sez. A</td></tr><tr><td>Num. certificato WSRF-845/6807156345 emesso dall'ente certificatore AnubisPEC S.p.A. NG CA 3, AnubisPEC S.p.A., IT</td></tr></table>			Chemical responsible	Dott. Emiliano Castellano	Chimico Ordine dei Chimici e dei Fisici della Toscana. N. 1631 - Sez. A	Num. certificato WSRF-845/6807156345 emesso dall'ente certificatore AnubisPEC S.p.A. NG CA 3, AnubisPEC S.p.A., IT
Chemical responsible						
Dott. Emiliano Castellano						
Chimico Ordine dei Chimici e dei Fisici della Toscana. N. 1631 - Sez. A						
Num. certificato WSRF-845/6807156345 emesso dall'ente certificatore AnubisPEC S.p.A. NG CA 3, AnubisPEC S.p.A., IT						
- The line marked by a star (*) is not accredited by Accredia, member of MLA. - If not otherwise specified, the uncertainty is extended and has been calculated with a coverage factor k=2 corresponding to a probability interval of about 95%. - LoD is the detection limit and identifies a confidence interval of zero with a probability interval of about 99%. - LoQ is the limit of quantification. "n.d" is not detected and indicates a value inferior to the LoD. "traces (X)" means a value between LoD and LoQ, this value is indicative. "x" or "x" indicate inferior or superior to the measurement field of the test. - If not differently specified, the sums are calculated by lower bound criteria (L.B.). - Analysis Starting date: date at which the sample is processed by the laboratory. Can include aliquoting and homogenization steps. Analysis End date: date at which the results are approved in LIMS by the laboratory. - In case of alteration of the sample the laboratory declines any responsibility on the results that can be influenced by the deviation in case the customer asks for the execution of the test anyway. - If the sampling is not carried out by the laboratory staff, the results obtained are considered referring to the sample as received and the laboratory declines its responsibility for the results calculated considering the sampling data provided by the Customer. The name and contact information of the Customer are always provided by the Customer. - R is the recovery, recoveries marked by an hashtag (#) have not been used in the calculations. - If there is a specification (customer specifications, law limits) which has been compared to the analytical results, the values shown in bold indicate a result which is out of the specification. - If not differently specified the judgments of compliance /non-compliance eventually reported are referred to analysed parameters and are based on the comparison of the value with the reference values without considering the confidence interval of measure.						
Template 716/SQ rev. 10						
Page 2 of 2						
END OF THE TEST REPORT						
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Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 34 - מתוך 54

Restaurant oil after 3 days frying **without** Beyond Oil BOF

 CHELAB S.R.L.		 LAB N° 0051 L
TEST REPORT N. 23/000440352		
date of issue 23/08/2023		
Customer ID	0073405	Messrs MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE 25201 MILOUOT Israele
Sample information		
Acceptance number	23.530792.0028	
Delivered by	DHL International on 09/08/2023	
Receiving Date	09/08/2023	
Place of origin	MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE 25201 MILOUOT Israele	
Sample Description	SO23104548 - PO23002882 - different oils	
Sampling information		
Sampled by	Customer	
Template 716/SQ rev. 10		
Page 1 of 2		
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Restaurant oil after 3 days frying without Beyond Oil BOF

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 35 - מתוך 54

TEST REPORT N. 23/000440348

date of issue 23/08/2023

Customer ID 0073405

Messrs
MILOUDA & MIGAL
LABORATORIES LIMITED
PARTNERSHIP
I.Z MILOUOT SOUTHERN, ACRE
25201 MILOUOT
Israele

Sample information

Acceptance number 23.530792.0025
Delivered by DHL International on 09/08/2023
Receiving Date 09/08/2023
Place of origin MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE
25201 MILOUOT Israele
Sample Description SO23104534 - PO23002882 - different oils

Sampling information

Sampled by Customer

Template 716/SQ rev. 10

Page 1 of 2

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VAT nr. 01500900269, R.E.A Treviso n. 156079 Fully paid up € 103.480,00.

Beyond Oil BOF Restaurant oil after 3 days frying without

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 36 - מתוך 54



Mérieux
NutriSciences
— CHELAB S.R.L.



ILAC-MRA



ACCREDITA
ENTE ITALIANO DI ACCREDITAMENTO

follow test report n. 23/000440348

LAB N° 0051 L

ANALYTICAL RESULTS								
	Value/ Uncertainty	Unit of measure	LoQ	LoD	R	Start/end date of analysis	Op. units	Row
ON SAMPLE AS IT IS								
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)						10/08/2023-21/08/2023	01	2
Met.: MP 0998 rev 5 2018								
Benzo (a) anthracene	4,7±1,1	µg/kg	0,50	0,25	107,9			3
Benzo (b) fluoranthene	1,58±0,37	µg/kg	0,50	0,25	100			4
Benzo (k) fluoranthene	0,63±0,15	µg/kg	0,50	0,25	100			5
Benzo (a) pyrene	1,31±0,31	µg/kg	0,50	0,25	100			6
Indeno (1,2,3-CD) pyrene	traces	µg/kg	0,50	0,25	88,2			7
Dibenzo (a,h) anthracene	n.d.	µg/kg	0,50	0,25	88,2			8
Benzo (g,h,i) perylene	0,58±0,14	µg/kg	0,50	0,25	88,2			9
Benzo (e) pyrene	1,44±0,34	µg/kg	0,50	0,25	88,2			10
Chrysene	8,1±1,9	µg/kg	0,50	0,25	100			11
PAHs 4	15,69±2,25	µg/kg						12
ACRYLAMIDE	traces	µg/kg	20	6,0	98,7	10/08/2023-22/08/2023	01	13
Met.: MP 2149 rev 1 2018								
Operative units								
Unit 01 : Via Fratta Resana (TV)								
Information on test methods and/or requirements/specifications								
Row (2) - Method: MP 0998 rev 5 2018 = The determination of PAHs 4, if performed, is referred to the sum of the following polycyclic aromatic hydrocarbons: benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene and chrysene.								
Information provided by the client								
Sampled by: Customer								
Place of origin: MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE 25201 MILOUOT Israele								
Description: SO23104534 - PO23002882 - different oils								

Beyond Oil BOF Restaurant oil after 3 days frying without

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 37 - מתוך 54



אזור תעשייה סילאט דרום | סניף למסחרים ת.ד. 1264, אזור תעשייה קריית ביאליק, סניף 2711102
I. Z. Milouet southern I Mailing address: PO Box.1264 I.Z. Kiryat Bialik, ZIP 2711102
info.il@mxns.com | Fax 04-8852900 | Tel • 8 583 3



BEYOND OIL LTD
IFAT
ISRAEL

Print Date: 23/08/23
Approval date: 23/08/23 17:24

Test Certificate SO23104534

Report date: 23/08/23
No. of samples: 1
Sample description (#): 2B- Filtration without beyond oil after 3 days frying Fryer number 2
Date received: 02/08/23
Date sampled: 02/08/23
State of sample: Room temperature
Substance sampled: Various Oils

Site received: Akko

Sampled by: Customer

Sample no.: SO23104534/1		
Test	Unit	Result
Free fatty acids in oil	% Oleic acid	1.69
Anisidine value		10.5
PAH's F013550.0	µg/kg	see attach
ACRYLAMIDE F042230.1	µg/kg	performed
Saturated fat (GC)	g/100 g	17.988
Mono-unsaturated fat	g/100 g	28.722
Poly-unsaturated fat	g/100 g	52.736
Omega-3 (GC)	g/100 g	5.028
Omega-6	g/100 g	47.709
Omega-6/Omega-3, g/100 g		9.489
Trans-fatty acids in oil (GC)	g/100 g	0.553
C 4:0	g/100g oil	not detected
C 6:0	g/100g oil	not detected
C 8:0	g/100g oil	not detected
C 10:0	g/100g oil	not detected
C 11:0	g/100g oil	not detected
C 12:0	g/100g oil	0.020
C 14:0	g/100g oil	0.139
C14:1 c9	g/100g oil	not detected
C 15:0	g/100g oil	0.018
C 15:1 c10	g/100g oil	not detected
C 16:0	g/100g oil	12.576
C 16:1 c9	g/100g oil	0.231
C 17:0	g/100g oil	0.094
C 17:1 c10	g/100g oil	not detected
C 18:0	g/100g oil	3.958
C 18:1 trans	g/100g oil	0.153
C 18:1	g/100g oil	28.103
C 18:2 trans	g/100g oil	0.231
C 18:2 all cis-9,12	g/100g oil	47.697
C 18:3 trans	g/100g oil	0.169
C18:3 all cis-6,9,12 G	g/100g oil	not detected
C18:3 all cis-9,12,15 ALA	g/100g oil	5.028
C 19:0	g/100g oil	not detected
C 19:1	g/100g oil	not detected
C 20:0	g/100g oil	0.397
C20:1 c11	g/100g oil	0.360
C20:2 all cis-11,14	g/100g oil	0.011
C20:3 all cis-8,11,14	g/100g oil	not detected
C20:3 all cis-11,14,17	g/100g oil	not detected
C20:4 all cis-5,8,11,14	g/100g oil	not detected
C20:5 all cis-5,8,11,14,17 EPA	g/100g oil	not detected
C 21:0	g/100g oil	0.039
C 22:0	g/100g oil	0.497
C 22:1 n11	g/100g oil	not detected
C22:1 c11	g/100g oil	not detected
C22:1 c13	g/100g oil	not detected
C22:2 c-13,16	g/100g oil	not detected
C22:4 all cis-7,10,13,16	g/100g oil	not detected
C22:3 all cis-13,16,19	g/100g oil	not detected
C 22:4 n6	g/100g oil	not detected
C22:5 all cis-4,7,10,13,16	g/100g oil	not detected
C 22:4 n3	g/100g oil	not detected
C 22:5 n3	g/100g oil	not detected
C22:6 n3 DHAC 22:6 all cis-4,7,10,13,16,19 DHA	g/100g oil	not detected
C 23:0	g/100g oil	0.051
C 24:0	g/100g oil	0.200
C 24:1 c15	g/100g oil	0.029

Quality Assurance

עמוד 1 מתוך 2

Beyond Oil BOF Restaurant oil after 3 days frying without

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 38 - מתוך 54



מרכז תעשייה סיליקון דרום | סניף למסחר: ת.ד. 1264, אזור תעשייה קרית ביאליק, מיקוד 2711102
i. z. Milouet southern | Mailing address: PO Box 1264 i.z. Kiryat Bialik, ZIP 2711102
info.il@mns.com | Fax 04-8852900 | Tel 85833



BEYOND OIL LTD
IFAT
ISRAEL

Print Date: 23/08/23
Approval date: 23/08/23 17:24

Test Certificate SO23104534

Test	Test method	Explanations	Unit Description	MRL/LOQ
Trans-fatty acids in oil (GC)	based on AOAC996.06	1,2		
Saturated fat (GC)	based on AOAC996.06	1,2		
PAHs F013550.0	MP 0998 REV 4 2013	25		
ACRYLAMIDE F042230.1	MP 2149 REV 1 2018	21,25		
Anisidine value	AOCS CD 18-90			
Free fatty acids in oil	AOCS Ca 5a-40	1	% Oleic acid	0.05

Explanations to Tests

- 1 Under accreditation (ISO17025) of the Israel Laboratory Accreditation Authority.
- 2 Recognized by the Israeli MOH.
- 21 Accredited to ISO17025
- 25 Performed by MERIEUX NutriScience Laboratories.

Not detected (N.D.) - value over the limit of detection was not detected (LOD).

Remarks

1. The laboratory operates under established working procedures which correlate to the International Standard ISO/IEC 17025 in those disciplines where accreditation has been granted, as detailed for each site in the scope of the Certificate of Accreditation.
2. The tests are within the recognized framework of the Ministry of Health as published in the registrations (marked by explanation No. 2 in the Quality Assurance table in this report).
3. Water and wastewater testing results in recognition and/or accreditation will be valid only if sampled by a qualified person.
4. The results relate only to the tested sample.
5. The statement of conformity to the standard does not include the uncertainty of the test.
6. This document should be referred to in its entirety and no part may be copied to other documents.
7. Sampling was carried out by the customer and under his sole responsibility, unless otherwise noted.
8. The Israel Laboratory Accreditation Authority is not responsible for any of the lab results and the fact of its accreditation does no comprise approval of the Authority or of any other body for the tested product.
9. The valid results are those of the most updated report.
10. Food and workplace sampling are performed according to SOP but are not accredited by the Laboratory Accreditation Authority.
11. The interpretation (of the results) is not accredited by the Israeli Laboratory Accreditation Authority.
12. Tests are performed at the receiving site, unless otherwise noted.
13. Info that was provided by the customer is tagged by (#)

Mark Polevoy
Chemistry Laboratory

** End of document **

עמוד 2 מתוך 2

Beyond Oil BOF Restaurant oil after 4 days frying without

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 39 - מתוך 54



מנהל תעודות מילודע & מיגל
מנהל תעודות מילודע & מיגל
מנהל תעודות מילודע & מיגל

2711102 מילודע & מיגל
I. Z. Milodet southern I Mailing address: PO Box.1264 I.Z. Kiryat Bialik, ZIP 2711102
info.il@mxns.com | Fax 04-8852900 090 | Tel + 8563 70

BEYOND OIL LTD
IFAT
ISRAEL

Print Date: 15/12/22
Approval date: 15/12/22 09:27

Test Certificate SO22152340

Report date: 15/12/22
No. of samples: 1
Sample description (#): 4 days frying oil + Beyond Oil filtration TPM=12%
Date received: 27/11/22
Date sampled: 23/11/22
State of sample: packaging-Refrigerat
Substance sampled: Various Oils

Site received: Akko
Sampled by: Customer

Sample no.: SO22152340/1

Test	Unit	Result
PAHs F013550.0	µg/kg	see attach
ACRYLAMIDE F042230.1	µg/kg	not detected
Free fatty acids in oil	% Oleic acid	0.08

Test	Test method	Explanations	Unit Description	MRL/LOQ
PAHs F013550.0	MP 0998 REV 4 2013	25		
ACRYLAMIDE F042230.1	MP 2149 REV 1 2018	21.25		
Free fatty acids in oil	KOCS Ca 5a-40	1	% Oleic acid	0.05

Quality Assurance

1 Under accreditation (ISO17025) of the Israel Laboratory Accreditation Authority.
21 Accredited to ISO17025
25 Performed by MERIEUX NutriScience Laboratories.

Not detected (N.D.) - value over the limit of detection was not detected (LOD).

Remarks

1. The laboratory operates under established working procedures which correlate to the International Standard ISO/IEC 17025 in those disciplines where accreditation has been granted, as detailed for each site in the scope of the Certificate of Accreditation.
2. The tests are within the recognized framework of the Ministry of Health as published in the registrations (marked by explanation No. 2 in the Quality Assurance table in this report).
3. Water and wastewater testing results in recognition and/or accreditation will be valid only if sampled by a qualified person.
4. The results relate only to the tested sample.
5. The statement of conformity to the standard does not include the uncertainty of the test.
6. This document should be referred to in its entirety and no part may be copied to other documents.
7. Sampling was carried out by the customer and under his sole responsibility, unless otherwise noted.
8. The Israel Laboratory Accreditation Authority is not responsible for any of the lab results and the fact of its accreditation does no comprise approval of the Authority or of any other body for the tested product.
9. The valid results are those of the most updated report.
10. Food and workplace sampling are performed according to SOP but are not accredited by the Laboratory Accreditation Authority.
11. The interpretation (of the results) is not accredited by the Israeli Laboratory Accreditation Authority.
12. Tests are performed at the receiving site, unless otherwise noted.
13. Info that was provided by the customer is tagged by (#)

**** End of document ****

מנהל תעודות מילודע & מיגל
Chemistry Laboratory

עמוד 1 מתוך 1

Restaurant oil after 4 days frying with Beyond Oil filtering

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 40 - מתוך 54

TEST REPORT N. 22/000704686

date of issue 14/12/2022

Customer ID 0073405

Messrs
MILOUDA & MIGAL
LABORATORIES LIMITED
PARTNERSHIP
I.Z MILOUOT SOUTHERN, ACRE
25201 MILOUOT
Israele

Sample information

Acceptance number 22.544175.0006
Delivered by DHL International on 01/12/2022
Receiving Date 01/12/2022
Place of origin MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE
25201 MILOUOT Israele
Sample Description SO22152340 - PO22004373 -

Sampling information

Sampled by Customer

Template 716/SQ rev. 10

Page 1 of 3

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Head office: Via Fratta 25 31023 Resana, Italy Phone. + 39 0423.7177 / Fax + 39 0423.715058 www.merieuxnutrisciences.com/it
VAT nr. 01500900269, R.E.A Treviso n. 156079 Fully paid up € 103.480,00.

Restaurant oil after 4 days frying with Beyond Oil filtering



follow test report n. 22/000704686



LAB N° 0051 L

ANALYTICAL RESULTS

	Value/ Uncertainty	Unit of measure	LoQ	LoD	R	Start/end date of analysis	Op. units	Row
ON SAMPLE AS IT IS								
							01	1
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)								
Met.: MP 0998 rev 5 2018							02/12/2022-14/12/2022	2
Benzo (a) anthracene	n.d.	µg/kg	0.50	0.25	107.9			3
Benzo (b) fluoranthene	traces	µg/kg	0.50	0.25	100			4
Benzo (k) fluoranthene	n.d.	µg/kg	0.50	0.25	100			5
Benzo (a) pyrene	n.d.	µg/kg	0.50	0.25	100			6
Indeno (1,2,3-CD) pyrene	n.d.	µg/kg	0.50	0.25	88.2			7
Dibenzo (a,h) anthracene	n.d.	µg/kg	0.50	0.25	88.2			8
Benzo (g,h,i) perylene	n.d.	µg/kg	0.50	0.25	88.2			9
Benzo (e) pyrene	n.d.	µg/kg	0.50	0.25	88.2			10
Chrysene	traces	µg/kg	0.50	0.25	100			11
PAHs 4	<0.50	µg/kg						12
ACRYLAMIDE								
Met.: MP 2149 rev 1 2018							02/12/2022-09/12/2022	13

Operative units

Unit 01 : Via Fratta Resana (TV)

Information on test methods and/or requirements/specifications

Row (2) - Method: MP 0998 rev 5 2018 = The determination of PAHs 4. If performed, is referred to the sum of the following polycyclic aromatic hydrocarbons: benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene and chrysene.

Information provided by the client

Sampled by: Customer
Place of origin: MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE 25201 MILOUOT Israele
Description: SO22152340 - PO22004373 -

Chemical responsible
Dott. Emiliano Castellano
Chimico Ordine dei Chimici e dei Fisici della Toscana. N. 1631 - Sez. A
Num. certificato 2095661 emesso dall'ente certificatore AnubafEC S.p.A. NG CA S. AnubafEC S.p.A., IT

Template 716/SQ rev. 10

Page 2 of 3

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Head office: Via Fratta 25 31023 Resana, Italy Phone. + 39 0423.7177 / Fax + 39 0423.715058 www.merieuxnutrisciences.com/it
VAT nr. 01500900269, R.E.A Treviso n. 156079 Fully paid up € 103.480,00.

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 42 - מתוך 54

Restaurant oil after 4 days frying without filtering Beyond Oil

 מערבדות מילודע & מיגל אזור תעשייה מילונות דרום פתח למסחר: ת.ד. 1264, אזור תעשייה קרית ביאליק, מילונות דרום 1 I. Z. Milonot southern 1 Mailing address: PO Box 1264 I.Z. Kiryat Bialik, ZIP 2711102 info.il@mxn.com Fax 04-8852900 Tel + 8863	BEYOND OIL LTD IFAT ISRAEL	Print Date: 15/12/22 Approval date: 15/12/22 09:25																				
Test Certificate SO22152339																						
Report date: 15/12/22 No. of samples: 1 Sample description (#): 4 days frying oil No filtration TPM=34% Date received: 27/11/22 Date sampled: 23/11/22 State of sample: packaging-Refrigerat Substance sampled: Various Oils	Site received: Akko Sampled by: Customer																					
Sample no.: SO22152339/1																						
<table border="1"><thead><tr><th>Test</th><th>Unit</th><th>Result</th></tr></thead><tbody><tr><td>PAHs F013550.0</td><td>ug/kg</td><td>see attach</td></tr><tr><td>ACRYLAMIDE F042230.1</td><td>ug/kg</td><td>performed</td></tr><tr><td>Free fatty acids in oil</td><td>% Oleic acid</td><td>0.81</td></tr></tbody></table>	Test	Unit	Result	PAHs F013550.0	ug/kg	see attach	ACRYLAMIDE F042230.1	ug/kg	performed	Free fatty acids in oil	% Oleic acid	0.81										
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Free fatty acids in oil	% Oleic acid	0.81																				
Quality Assurance																						
<table border="1"><thead><tr><th>Test</th><th>Test method</th><th>Explanations</th><th>Unit Description</th><th>MRL/LOQ</th></tr></thead><tbody><tr><td>PAHs F013550.0</td><td>MP 0996 REV 4 2013</td><td>25</td><td></td><td></td></tr><tr><td>ACRYLAMIDE F042230.1</td><td>MP 2149 REV 1 2018</td><td>21.25</td><td></td><td></td></tr><tr><td>Free fatty acids in oil</td><td>AOCs Ca 5a-40</td><td>1</td><td>% Oleic acid</td><td>0.05</td></tr></tbody></table>	Test	Test method	Explanations	Unit Description	MRL/LOQ	PAHs F013550.0	MP 0996 REV 4 2013	25			ACRYLAMIDE F042230.1	MP 2149 REV 1 2018	21.25			Free fatty acids in oil	AOCs Ca 5a-40	1	% Oleic acid	0.05		
Test	Test method	Explanations	Unit Description	MRL/LOQ																		
PAHs F013550.0	MP 0996 REV 4 2013	25																				
ACRYLAMIDE F042230.1	MP 2149 REV 1 2018	21.25																				
Free fatty acids in oil	AOCs Ca 5a-40	1	% Oleic acid	0.05																		
Explanations to Tests																						
1 Under accreditation (ISO17025) of the Israel Laboratory Accreditation Authority. 21 Accredited to ISO17025 25 Performed by MERIEUX NutriScience Laboratories.																						
Remarks																						
1. The laboratory operates under established working procedures which correlate to the International Standard ISO/IEC 17025 in those disciplines where accreditation has been granted, as detailed for each site in the scope of the Certificate of Accreditation. 2. The tests are within the recognized framework of the Ministry of Health as published in the registrations (marked by explanation No. 2 in the Quality Assurance table in this report). 3. Water and wastewater testing results in recognition and/or accreditation will be valid only if sampled by a qualified person. 4. The results relate only to the tested sample. 5. The statement of conformity to the standard does not include the uncertainty of the test. 6. This document should be referred to in its entirety and no part may be copied to other documents. 7. Sampling was carried out by the customer and under his sole responsibility, unless otherwise noted. 8. The Israel Laboratory Accreditation Authority is not responsible for any of the lab results and the fact of its accreditation does not comprise approval of the Authority or of any other body for the tested product. 9. The valid results are those of the most updated report. 10. Food and workplace sampling are performed according to SOP but are not accredited by the Laboratory Accreditation Authority. 11. The interpretation (of the results) is not accredited by the Israeli Laboratory Accreditation Authority. 12. Tests are performed at the receiving site, unless otherwise noted. 13. Info that was provided by the customer is tagged by (#)																						
Marina Polevsky Chemistry Laboratory																						
** End of document **																						

עמוד 1 מתוך 1

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 43 - מתוך 54

Restaurant oil after 4 days **frying without** filtering Beyond Oil

 CHELAB S.R.L.		 LAB N° 0051 L
TEST REPORT N. 22/000704684		
date of issue 14/12/2022		
Customer ID	0073405	Messrs MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE 25201 MILOUOT Israele
Sample information		
Acceptance number	22.544175.0005	
Delivered by	DHL International on 01/12/2022	
Receiving Date	01/12/2022	
Place of origin	MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE 25201 MILOUOT Israele	
Sample Description	SO22152339 - PO22004373 -	
Sampling information		
Sampled by	Customer	
Template 716/SQ rev. 10		
Page 1 of 3		
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Restaurant oil after 4 days **frying without** filtering Beyond Oil

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

עמוד - 44 - מתוך 54

ANALYTICAL RESULTS

	Value/ Uncertainty	Unit of measure	LoQ	LoD	R	Start/end date of analysis	Op. units	Row
ON SAMPLE AS IT IS								
POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)						02/12/2022-14/12/2022	01	2
Met.: MP 0998 rev 5 2018								
Benzo (a) anthracene	0,98±0,23	µg/kg	0,50	0,25	107,9			3
Benzo (b) fluoranthene	0,75±0,18	µg/kg	0,50	0,25	100			4
Benzo (k) fluoranthene	traces	µg/kg	0,50	0,25	100			5
Benzo (a) pyrene	0,59±0,14	µg/kg	0,50	0,25	100			6
Indeno (1,2,3-CD) pyrene	traces	µg/kg	0,50	0,25	88,2			7
Dibenzo (a,h) anthracene	n.d.	µg/kg	0,50	0,25	88,2			8
Benzo (g,h,i) perylene	0,67±0,16	µg/kg	0,50	0,25	88,2			9
Benzo (e) pyrene	0,80±0,19	µg/kg	0,50	0,25	88,2			10
Chrysene	1,97±0,47	µg/kg	0,50	0,25	100			11
PAHs 4	4,29±0,57	µg/kg						12
ACRYLAMIDE	traces	µg/kg	20	6,0	98,7	02/12/2022-09/12/2022	01	13
Met.: MP 2149 rev 1 2018								

Operative units

Unit 01 : Via Fratta Resana (TV)

Information on test methods and/or requirements/specifications

Row (2) - Method: MP 0998 rev 5 2018 = The determination of PAHs 4, if performed, is referred to the sum of the following polycyclic aromatic hydrocarbons: benzo(a)pyrene, benz(a)anthracene, benzo(b)fluoranthene and chrysene.

Information provided by the client

Sampled by: Customer
Place of origin: MILOUDA & MIGAL LABORATORIES LIMITED PARTNERSHIP I.Z MILOUOT SOUTHERN, ACRE 25201 MILOUOT Israele
Description: SO22152339 - POZ2004373 -

Chemical responsible
Dott. Emiliano Castellano
Chimico Ordine dei Chimici e dei Fisici della Toscana. N. 1831 - Sez. A
Num. certificato 20556651 emesso dall'ente certificatore ArubaPEC S.p.A. NG CA 3, ArubaPEC S.p.A., IT

Appendices from studies carried out and presented in the opinion

Research Professor Nissim Garti, The Hebrew University of Jerusalem
 Reduce Health
 & Cancer Risks Associated to Frying Oil, June 2023

Restaurant, Canada - Filtering with a filtering machine - Armadillo-September 2022

Day Of Filtration	Date	Temp. (CELSIUS)	TPM After filter 08.30	FFA%	Clarity (צלילות)	Frying	Sediments(משקעים)	Color	Smell	Meets the standard
1	11/12/2022	164	3	0.1	Passed	Passed	Passed	Light Yellow	Passed	Passed
2	13/11/2022	170	3.5	0.08	Passed	Passed	Passed	Light Yellow	Passed	Passed
3	14/11/2022	168	4.5	0.15	Passed	Passed	Passed	Light Yellow	Passed	Passed
4	15/11/2022	165	5	0.09	Passed	Passed	Passed	Light Yellow	Passed	Passed
5	16/11/2022	169	4.5	0.1	Passed	Passed	Passed	Light Yellow	Passed	Passed
6	17/11/2022	165	5.5	0.07	Passed	Passed	Passed	Light Yellow	Passed	Passed
7	18/11/2022	163	5	0.12	Passed	Passed	Passed	Light Yellow	Passed	Passed
8	19/11/2022	165	5.5	0	Passed	Passed	Passed	Light Yellow	Passed	Passed
9	20/11/2022	173	5	0.08	Passed	Passed	Passed	Yellow	Passed	Passed
10	21/11/2022	168	6	0.12	Passed	Passed	Passed	Yellow	Passed	Passed
11	22/11/2022	165	5.5	0.13	Passed	Passed	Passed	Yellow	Passed	Passed
12	23/11/2022	175	5	0	Passed	Passed	Passed	Yellow	Passed	Passed
13	24/11/2022	160	7.5	0.18	Passed	Passed	Passed	Yellow	Passed	Passed
14	25/11/2022	163	7	0.07	Passed	Passed	Passed	Yellow	Passed	Passed
15	26/11/2022	164	7	0.1	Passed	Passed	Passed	Yellow	Passed	Passed
16	27/11/2022	162	6	0.09	Passed	Passed	passed	Yellow	Passed	Passed
17	28/11/2022	163	6.5	0.07	Passed	Passed	passed	Yellow	Passed	Passed
18	29/11/2022	172	6	0	Passed	Passed	passed	Golden Yellow	Passed	Passed
19	29/12/2022	164	7.5	0.21	Passed	Passed	passed	Golden Yellow	Passed	Passed
20	30/12/2022	160	7.5	0.22	Passed	Passed	passed	Golden Yellow	Passed	Passed
21	31/12/2022	165	6.5	0.04	Passed	Passed	passed	Golden Yellow	Passed	Passed



Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

Restaurant - Haifa - Israel - Filtering with a filtering machine - Armadillo- November 2022- January 2023											
Day Of Filtration	Date	Experieme Sample Z/A	Temp. (CELSIUS)	TPM After filter 08.30	FFA%	Clarity (צלילות)	Frying	Sediments(משקעים)	Color	Smell	Meets the standard
Information - the restaurant's oil is changed every 3 working days - it becomes black and frothy - an example of the oil after 3 days of frying without a Beyond Oil filter powder											
1.1	12/10/2022	Z	176	21.8	2.12	Failed	Failed	Failed	Black	Failed	Failed
1	12/11/2022	0	162.6	4.5	0.35	Passed	Passed	Passed	Light Yellow	Passed	Passed
2	12/12/2022	A	144.5	6	0.23	Passed	Passed	Passed	Light Yellow	Passed	Passed
3	13/12/2022	A	144.6	7.5	0.17	Passed	Passed	Passed	Light Yellow	Passed	Passed
4	14/12/2022	A	172	8.5	0.23	Passed	Passed	Passed	Light Yellow	Passed	Passed
5	15/12/2022	A	174	9	0.27	Passed	Passed	Passed	Light Yellow	Passed	Passed
6	16/12/2022	A	176	13.5	0.29	Passed	Passed	Passed	Light Yellow	Passed	Passed
7	17/12/2022	A	146	10.5	0.41	Passed	Passed	Passed	Light Yellow	Passed	Passed
8	18/12/2022	A	174	12.5	0.41	Passed	Passed	Passed	Light Yellow	Passed	Passed
9	19/12/2022	A	144	10.5	0.38	Passed	Passed	Passed	Yellow	Passed	Passed
10	20/12/2022	A	161	11	0.32	Passed	Passed	Passed	Yellow	Passed	Passed
11	21/12/2022	A	171	10.5	0.34	Passed	Passed	Passed	Yellow	Passed	Passed
12	22/12/2022	A	171	12	0.39	Passed	Passed	Passed	Yellow	Passed	Passed
13	23/12/2022	A	174	13.5	0.31	Passed	Passed	Passed	Yellow	Passed	Passed
14	24/12/2022	A	173	13	0.35	Passed	Passed	Passed	Yellow	Passed	Passed
15	25/12/2022	A	171	14	0.29	Passed	Passed	Passed	Yellow	Passed	Passed
16	26/12/2022	A	176	12.5	0.33	Passed	Passed	passed	Yellow	Passed	Passed
17	27/12/2022	A	172	13.5	0.37	Passed	Passed	passed	Yellow	Passed	Passed
18	28/12/2022	A	170	15.5	0.5	Passed	Passed	passed	Golden Yellow	Passed	Passed
19	29/12/2022	A	172	16.5	0.55	Passed	Passed	passed	Golden Yellow	Passed	Passed
20	30/12/2022	A	176	13.5	0.6	Passed	Passed	passed	Golden Yellow	Passed	Passed
21	31/12/2022	A	173	15	0.6	Passed	Passed	passed	Golden Yellow	Passed	Passed
22	1.1.2023	A	175	13	0.7	Passed	Passed	passed	Golden Yellow	Passed	Passed
23	3.1.2023	A	176	14.5	0.58	Passed	Passed	passed	Golden Yellow	Passed	Passed
24	4.1.2023	A	176	14	0.58	Passed	Passed	passed	Golden Yellow	Passed	Passed
25	5.1.2023	A	172	15.5	0.62	Passed	Passed	passed	Golden Yellow	Passed	Passed
26	6.1.2023	A	174	12	0.58	Passed	Passed	passed	Golden Yellow	Passed	Passed
27	7.1.2023	A	153	14.5	0.52	Passed	Passed	passed	Golden Yellow	Passed	Passed
28	8.1.2023	A	169	12.5	0.46	Passed	Passed	passed	Golden Yellow	Passed	Passed
29	9.1.2023	A	172	13.5	0.39	Passed	Passed	passed	Golden Yellow	Passed	Passed
30	10.1.2023	A	175	14	0.43	Passed	Passed	passed	Golden Yellow	Passed	Passed



Restaurant - - Israel- December 2022- February 2023												
Meets the standard	Smell	Color	Sediments(משקעים)	Frying	Clarity (צלילות)	FFA%	TPM After filter 08.30	זמן ערבוב בדקות	Temp. (CELSIUS)	Experieme Sample Z/A	Date	Day Of Filtration
Information - the restaurant's oil is changed every 3 working days - it becomes black and frothy - an example of the oil after 2 days of frying												
Failed	Failed	Black	Failed	Failed	Failed				176	Z		1.1
Beginning of an experiment with Beyond Oil - adding powder at night in a special pot - filtering - measuring the night before and in the morning												
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.16	3.5	5	175	0	27/12/2022	1
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.3	3.5	240	170	A	28/12/2022	2
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.1	5.5	60	170	A	29/12/2022	3
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.08	6	60	173	A	30/12/2022	4
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.09	7		175	A	31/12/2022	5
									Closed	A	01/01/2023	
Passed	Passed	Golden Yellow	Passed	Passed	Passed	0.17	8	60	173	A	01/02/2023	6
Passed	Passed	Golden Yellow	Passed	Passed	Passed	0.176	9.5	60	176	A	01/03/2023	7
Passed	Passed	Golden Yellow	Passed	Passed	Passed	0.175	10.5	60	169	A	01/04/2023	8
Passed	Passed	Golden Yellow	Passed	Passed	Passed	0.2	12.5	60	173	A	01/05/2023	9
Passed	Passed	Golden Yellow	Passed	Passed	Passed	0.21	13	60	167	A	01/06/2023	10
Passed	Passed	Light Brown	Passed	Passed	Passed	0.23	12	60	172	A	01/07/2023	11
									Closed	A	01/08/2023	
Passed	Passed	Light Brown	Passed	Passed	Passed	0.21	13.5	60	172	A	01/09/2023	12
Passed	Passed	Light Brown	Passed	Passed	Passed	0.21	18	60	171	A	01/10/2023	13
Passed	Passed	Light Brown	Passed	Passed	Passed	0.24	17.5	60	169	A	01/11/2023	14
Passed	Passed	Light Brown	Passed	Passed	Passed	0.15	10	60	174	A	01/12/2023	15
Passed	Passed	Light Brown	Passed	Passed	Passed	0.2	14	60	175	A	02/01/2024	16



Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology
עמוד - 48 - מתוך 54

Restaurant - Israel- March-April 2023												
Day Of Filtration	Date	Experiment Sample Z/A	Temp. (CELSIUS)	זמן ערבוב בדקות	TPM After filter 08.30	FFA%	Clarity (צלילות)	Frying	Sediments (משקעים)	Color	Smell	Meets the standard
Information - the restaurant's oil is changed every 3 working days - it becomes black and frothy - an example of the oil after 2 days of frying without a Biond filter (sent to recycling)												
1.1		Z	175		23	1.37	Failed	Failed	Failed	Black	Failed	Failed
Beginning of an experiment with Beyond Oil - adding powder at night in a special pot - filtering - measuring the night before and in the morning after filtering												
Manual mixing with a ladle for a minute												
1	01/03/2023	O	170	1	4.5	0.07	Passed	Passed	Passed	Light Yellow	Passed	Passed
2	02/03/2023	A	169	1	7.5	0.094	Passed	Passed	Passed	Light Yellow	Passed	Passed
3	03/03/2023	A	170	1	9.5	0.088	Passed	Passed	Passed	Light Yellow	Passed	Passed
4	04/03/2023	A	169	1	11	0.12	Passed	Passed	Passed	Light Yellow	Passed	Passed
	05/03/2023	A	Closed									
5	06/03/2023	A	167	1	12	0.14	Passed	Passed	Passed	Light Yellow	Passed	Passed
6	07/03/2023	A	165	1	14	0.15	Passed	Passed	Passed	Light Yellow	Passed	Passed
7	08/03/2023	A	163	1	16	0.16	Passed	Passed	Passed	Light Yellow	Passed	Passed
8	09/03/2023	A	165	1	19	0.21	Passed	Passed	Passed	Light Yellow	Passed	Passed
9	10/03/2023	A	170	1	15	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
10	11/03/2023	A	169	1	15.5	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
	12/03/2023	A	Closed									
11	13/03/2023	A	167	1	11	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
12	14/03/2023	A	175	1	14	0.199	Passed	Passed	Passed	Light Yellow	Passed	Passed
13	15/03/2023	A	164	1	14.5	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
14	16/03/2023	A	165	1	16	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
15	17/03/2023	A	169	1	19.5	0.26	Passed	Passed	Passed	Yellow	Passed	Passed
16	18/03/2023	A	171	1	13	0.19	Passed	Passed	Passed	Yellow	Passed	Passed
	19/03/2023	A	Closed									
17	20/03/2023	A	164	1	13.5	0.29	Passed	Passed	Passed	Yellow	Passed	Passed
18	21/03/2023	A	169	1	16	0.24	Passed	Passed	Passed	Yellow	Passed	Passed
19	22/03/2023	A	169	1	18.5	0.28	Passed	Passed	Passed	Yellow	Passed	Passed
20	23/03/2023	A	171	1	18.5	0.29	Passed	Passed	Passed	Yellow	Passed	Passed
21	24/03/2023	A	169	1	18.5	0.36	Passed	Passed	Passed	Yellow	Passed	Passed
22	25/03/2023	A	170	1	12.5	0.29	Passed	Passed	Passed	Yellow	Passed	Passed
	26/03/2023	A	Closed									
23	27/03/2023	A	166	1	13.5	0.35	Passed	Passed	Passed	Yellow	Passed	Passed
24	28/03/2023	A	166	1	15	0.39	Passed	Passed	Passed	Yellow	Passed	Passed
25	29/03/2023	A	170	1	17	0.4	Passed	Passed	Passed	Yellow	Passed	Passed
26	30/03/2023	A	171	1	15.5	0.34	Passed	Passed	Passed	Yellow	Passed	Passed
27	31/03/2023	A	168	1	17.5	0.35	Passed	Passed	Passed	Yellow	Passed	Passed
28	01/04/2023	A	170	1	16.5	0.37	Passed	Passed	Passed	Yellow	Passed	Passed



Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

Restaurant - Ifat - Israel- July 2022												
Meets the standard	Smell	Color	Sediments (משקעים)	Frying	Clarity (צלילות)	FFA%	TPM After filter 08.30	Mixing time in minutes	Temp. (CELSIUS)	Experiment Sample Z/A	Date	Day Of Filtration
Information - the restaurant's oil is changed every 3 working days - it becomes black and frothy - an example of the oil after 3 days of frying without a Beyond Oil filter powder												
Failed	Failed	Black	Failed	Failed	Failed	1.65	24		170	Z		1.1
Beginning of an experiment with Beyond Oil - Filtering with a filtering machine, armadillo type												
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.09	6.8	10	161	0	26/06/2022	1
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.11	7.4	10	174	A	27/06/2022	2
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.13	7.9	10	172	A	28/06/2022	3
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.18	9	10	173	A	05/06/2022	4
Passed	Passed	Yellow	Passed	Passed	Passed	0.2	10	10	175	A	06/06/2022	5
Passed	Passed	Yellow	Passed	Passed	Passed	0.17	11	10	176	A	07/06/2022	6
Passed	Passed	Yellow	Passed	Passed	Passed	0.22	12	10	172	A	08/06/2022	7
Passed	Passed	Yellow	Passed	Passed	Passed	0.26	14	10	170	A	09/06/2022	8
Passed	Passed	Yellow	Passed	Passed	Passed	0.29	14.5	10	168	A	10/06/2022	9
Passed	Passed	Yellow	Passed	Passed	Passed	0.32	13.5	10	174	A	11/06/2022	10
Passed	Passed	Light brown	Passed	Passed	Passed	0.39	15	10	172	A	12/06/2022	11
Passed	Passed	Light brown	Passed	Passed	Passed	0.37	16	10	173	A	13/06/2022	12
Passed	Passed	Brown	Passed	Passed	Passed	0.33	14	10	167	A	14/06/2022	13
Passed	Passed	Brown	Passed	Passed	Passed	0.35	12.5	10	168	A	15/06/2022	14
Passed	Passed	Brown	Passed	Passed	Passed	0.39	14	10	175	A	16/06/2022	15
Passed	Passed	Brown	Passed	Passed	Passed	0.42	17	10	176	A	17/06/2022	16
Passed	Passed	Brown	Passed	Passed	Passed	0.44	15	10	172	A	18/06/2022	17
Passed	Passed	Brown	Passed	Passed	Passed	0.38	17	10	170	A	19/06/2022	18
Passed	Passed	Brown	Passed	Passed	Passed	0.39	17	10	168	A	20/06/2022	19
Passed	Passed	Brown	Passed	Passed	Passed	0.33	15	10	172	A	21/06/2022	20
Passed	Passed	Brown	Passed	Passed	Passed	0.38	15	10	171	A	22/06/2022	21
Passed	Passed	Brown	Passed	Passed	Passed	0.39	15	10	170	A	23/06/2022	22
Passed	Passed	Brown	Passed	Passed	Passed	0.36	17	10	168	A	24/06/2022	23

Restaurant - Yifat - Israel- December 2022- January 2023													
Meets the standard	Smell	Color	Sediments (משקעים)	Frying	Clarity (צלילות)	FFA%	TPM After filter 08.30	TPM Before filter- 23.30	Mixing time - in minutes	Temp. (CELSIUS)	Experiment Sample Z/A	Date	Day Of Filtration
Information - the restaurant's oil is changed every 3 working days - it becomes black and frothy - an example of the oil after 3 days of frying without a Beyond													
Failed	Failed	Black	Failed	Failed	Failed	1.43	24			175	Z	23/12/2022	1.1
Beginning of an experiment with Beyond Oil - adding powder at night in a special pot - measuring the night before and in the morning after filtering													
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.18	6			173	0	24/12/2022	1
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.07	5.5	6	5	171	A	25/12/2022	2
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.16	7.5	8.5	30	172	A	26/12/2022	3
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.23	10	13.5	30	179.1	A	27/12/2022	4
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.23	13.5	14.5	120	175	A	28/12/2022	5
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.27	14	17.5	30	174	A	29/12/2022	6
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.6	14.5	18.5	חצי דקה	170	A	30/12/2022	7
Passed	Passed	Yellow	Passed	Passed	Passed	0.35	16	17	1	166	A	31/12/2022	8
Passed	Passed	Yellow	Passed	Passed	Passed	0.44	13.5	18.5	30	167	A	01/01/2023	9
Passed	Passed	Yellow	Passed	Passed	Passed	0.47	14.5	17	30	172	A	02/01/2023	10
Passed	Passed	Yellow	Passed	Passed	Passed	0.52	16	19.5	30	172	A	03/01/2023	11
Passed	Passed	Yellow	Passed	Passed	Passed	0.5	15	18.5	30	178	A	04/01/2023	12
Passed	Passed	Yellow	Passed	Passed	Passed	0.56	15	18.5	30	165	A	05/01/2023	13
Passed	Passed	Golden Yellow	Passed	Passed	Passed	0.63	14	19	30	175	A	06/01/2023	14
Passed	Passed	Golden Yellow	Passed	Passed	Passed	0.51	15.5	18	30	163	A	07/01/2023	15

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

Restaurant - Ifat - Israel-January-February- 2023												
Day Of Filtration	Date	Experiment Sample Z/A	Temp. (CELSIUS)	זמן ערבוב בדקות	TPM After filter 08.30	FFA%	Clarity (צלילות)	Frying	Sediments (חשקעים)	Color	Smell	Meets the standard
Information - the restaurant's oil is changed every 3 working days - it becomes black and frothy - an example of the oil after 3 days of frying without a Beyond Oil filter powder												
1.1		Z	176		25	1.54	Failed	Failed	Failed	Black	Failed	Failed
Beginning of an experiment with Beyond Oil - manual mixing in a special pot - filtering outside the fryer												
1	23/01/2023	O	168	1	4.5	0.17	Passed	Passed	Passed	Light Yellow	Passed	Passed
2	24/01/2023	A	170	1	6.5	0.16	Passed	Passed	Passed	Light Yellow	Passed	Passed
3	25/01/2023	A	168	1	9	0.19	Passed	Passed	Passed	Light Yellow	Passed	Passed
4	26/01/2023	A	170	1	12	0.27	Passed	Passed	Passed	Light Yellow	Passed	Passed
5	27/01/2023	A	172	1	14	0.21	Passed	Passed	Passed	Yellow	Passed	Passed
6	28/01/2023	A	169	1	15.5	0.5	Passed	Passed	Passed	Yellow	Passed	Passed
7	29/01/2023	A	170	1	15.5	0.43	Passed	Passed	Passed	Yellow	Passed	Passed
8	30/01/2023	A	168	1	13.5	0.41	Passed	Passed	Passed	Yellow	Passed	Passed
9	31/01/2023	A	169	1	14.5	0.48	Passed	Passed	Passed	Yellow	Passed	Passed
10	01/02/2023	A	170	1	17	0.43	Passed	Passed	Passed	Yellow	Passed	Passed
11	02/02/2023	A	170	1	16	0.39	Passed	Passed	Passed	Light brown	Passed	Passed
12	03/02/2023	A	168	1	17	0.43	Passed	Passed	Passed	Light brown	Passed	Passed
13	04/02/2023	A	161	1	13	0.34	Passed	Passed	Passed	Brown	Passed	Passed
14	05/02/2023	A	174	1	15	0.35	Passed	Passed	Passed	Brown	Passed	Passed
15	06/02/2023	A	172	1	17	0.38	Passed	Passed	Passed	Brown	Passed	Passed
16	07/02/2023	A	173	1	18	0.43	Passed	Passed	Passed	Brown	Passed	Passed
17	08/02/23	A	167	1	17	0.48	Passed	Passed	Passed	Brown	Passed	Passed
18	09/02/2023	A	169	1	15	0.44	Passed	Passed	Passed	Brown	Passed	Passed
19	10/02/2023	A	171	1	17	0.47	Passed	Passed	Passed	Brown	Passed	Passed
20	11/02/2023	A	174	1	14	0.35	Passed	Passed	Passed	Brown	Passed	Passed

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

Restaurant - Israel-May 2022												
Meets the standard	Smell	Color	Sediments (משקעים)	Frying	Clarity (צלילות)	FFA%	TPM After filter 08.30	Mixing time in minutes	Temp. (CELSIUS)	Experiment Sample Z/A	Date	Day Of Filtration
Information - the restaurant's oil is changed every 3 working days - it becomes black and frothy - an example of the oil after 3 days of frying without a Beyond Oil filter powder												
Failed	Failed	Black	Failed	Failed	Failed	1.87	28		168	Z		1.1
Beginning of an experiment with Beyond Oil - Filtering with a filtering machine, armadillo type												
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.29	7.4	10	169	0	01/05/2022	1
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.19	7.9	10	170	A	02/05/2022	2
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.21	9	10	170	A	03/05/2022	3
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.27	11	10	168	A	04/05/2022	4
Passed	Passed	Yellow	Passed	Passed	Passed	0.2	10	10	167	A	05/05/2022	5
Passed	Passed	Yellow	Passed	Passed	Passed	0.29	12.5	10	169	A	06/05/2022	6
Passed	Passed	Yellow	Passed	Passed	Passed	0.27	11.5	10	171	A	07/05/2022	7
Passed	Passed	Yellow	Passed	Passed	Passed	0.4	13.5	10	174	A	08/05/2022	8
Passed	Passed	Yellow	Passed	Passed	Passed	0.42	14.5	10	170	A	09/05/2022	9
Passed	Passed	Yellow	Passed	Passed	Passed	0.43	15	10	172	A	10/05/2022	10
Passed	Passed	Light brown	Passed	Passed	Passed	0.39	17	10	170	A	11/05/2022	11
Passed	Passed	Light brown	Passed	Passed	Passed	0.37	16	10	168	A	12/05/2022	12
Passed	Passed	Brown	Passed	Passed	Passed	0.34	12	10	161	A	13/05/2022	13
Passed	Passed	Brown	Passed	Passed	Passed	0.36	14	10	174	A	14/05/2022	14
Passed	Passed	Brown	Passed	Passed	Passed	0.39	16	10	172	A	15/05/2022	15
Passed	Passed	Brown	Passed	Passed	Passed	0.43	17	10	173	A	16/05/2022	16
Passed	Passed	Brown	Passed	Passed	Passed	0.47	18	10	167	A	17/05/2022	17
Passed	Passed	Brown	Passed	Passed	Passed	0.43	16	10	168	A	18/05/2022	18
Passed	Passed	Brown	Passed	Passed	Passed	0.42	17	10	175	A	19/05/2022	19
Passed	Passed	Brown	Passed	Passed	Passed	0.34	15	10	176	A	20/05/2022	20

Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology

מרחץ - ישראל-2022 Restaurant - Israel-2022												
Meets the standard	Smell	Color	Sediments(משקעים)	Frying	Clarity(צלילות)	FFA%	TPM After filter 08.30	Mixing time in minutes	Temp. (CELSIUS)	Experiment Sample Z/A	Date	Day Of Filtration
Information - the restaurant's oil is changed every 3 working days - it becomes black and frothy - an example of the oil after 3 days of frying without a Beyond Oil filter powder												
Failed	Failed	Black	Failed	Failed	Failed	1.67	24		168	Z		1.1
Beginning of an experiment with Beyond Oil - Filtering with a filtering machine, armadillo type												
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.28	6.9	10	170	0	01/03/2022	1
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.18	7.4	10	170	A	02/03/2022	2
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.2	8.5	10	165	A	03/03/2022	3
Passed	Passed	Light Yellow	Passed	Passed	Passed	0.24	8	10	167	A	04/03/2022	4
Passed	Passed	Yellow	Passed	Passed	Passed	0.2	11	10	168	A	05/03/2022	5
Passed	Passed	Yellow	Passed	Passed	Passed	0.24	9	10	170	A	06/03/2022	6
Passed	Passed	Yellow	Passed	Passed	Passed	0.26	11	10	174	A	07/03/2022	7
Passed	Passed	Yellow	Passed	Passed	Passed	0.25	10	10	173	A	08/03/2022	8
Passed	Passed	Yellow	Passed	Passed	Passed	0.41	13	10	168	A	09/03/2022	9
Passed	Passed	Yellow	Passed	Passed	Passed	0.39	12	10	172	A	10/03/2022	10
Passed	Passed	Light brown	Passed	Passed	Passed	0.44	15	10	169	A	11/03/2022	11
Passed	Passed	Light brown	Passed	Passed	Passed	0.48	15.5	10	166	A	12/03/2022	12
Passed	Passed	Brown	Passed	Passed	Passed	0.35	12.5	10	170	A	13/03/2022	13
Passed	Passed	Brown	Passed	Passed	Passed	0.37	13	10	173	A	14/03/2022	14
Passed	Passed	Brown	Passed	Passed	Passed	0.43	15	10	170	A	15/03/2022	15
Passed	Passed	Brown	Passed	Passed	Passed	0.45	16	10	168	A	16/03/2022	16
Passed	Passed	Brown	Passed	Passed	Passed	0.47	17	10	179	A	17/03/2022	17
Passed	Passed	Brown	Passed	Passed	Passed	0.42	15	10	174	A	18/03/2022	18
Passed	Passed	Brown	Passed	Passed	Passed	0.41	16	10	168	A	19/03/2022	19
Passed	Passed	Brown	Passed	Passed	Passed	0.33	15	10	166	A	20/03/2022	20

מרחץ - נהלל - ישראל Restaurant - Nahalel - Israel												
Day Of Filtration	Date	Experiment Sample Z/A	Temp. (CELSIUS)	זמן ערבוב בדיקות	TPM After filter 08.30	FFA%	Clarity(צלילות)	Frying	Sediments(משקעים)	Color	Smell	Meets the standard
Information - the restaurant's oil is changed every 3 working days - it becomes black and frothy - an example of the oil after 2 days of frying without a Biond filter (sent to recycling)												
1.1		Z	175		33	1.68	Failed	Failed	Failed	Black	Failed	Failed
Beginning of an experiment with Beyond Oil - adding powder at night in a special pot - filtering - measuring the night before and in the morning after Manual mixing for one minute												
1	01/03/2023	0	170	1	4.5	0.07	Passed	Passed	Passed	Light Yellow	Passed	Passed
2	02/03/2023	A	169	1	7.5	0.094	Passed	Passed	Passed	Light Yellow	Passed	Passed
3	03/03/2023	A	170	1	9.5	0.088	Passed	Passed	Passed	Light Yellow	Passed	Passed
4	04/03/2023	A	169	1	11	0.12	Passed	Passed	Passed	Light Yellow	Passed	Passed
	05/03/2023	A	Closed									
5	06/03/2023	A	167	1	12	0.14	Passed	Passed	Passed	Light Yellow	Passed	Passed
6	07/03/2023	A	165	1	14	0.15	Passed	Passed	Passed	Light Yellow	Passed	Passed
7	08/03/2023	A	163	1	16	0.16	Passed	Passed	Passed	Light Yellow	Passed	Passed
8	09/03/2023	A	165	1	19	0.21	Passed	Passed	Passed	Light Yellow	Passed	Passed
9	10/03/2023	A	170	1	15	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
10	11/03/2023	A	169	1	15.5	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
	12/03/2023	A	Closed									
11	13/03/2023	A	167	1	11	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
12	14/03/2023	A	175	1	14	0.199	Passed	Passed	Passed	Light Yellow	Passed	Passed
13	15/03/2023	A	164	1	14.5	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
14	16/03/2023	A	165	1	16	0.22	Passed	Passed	Passed	Light Yellow	Passed	Passed
15	17/03/2023	A	169	1	19.5	0.26	Passed	Passed	Passed	Yellow	Passed	Passed
16	18/03/2023	A	171	1	13	0.19	Passed	Passed	Passed	Yellow	Passed	Passed
	19/03/2023	A	Closed									
17	20/03/2023	A	164	1	13.5	0.29	Passed	Passed	Passed	Yellow	Passed	Passed
18	21/03/2023	A	169	1	16	0.24	Passed	Passed	Passed	Yellow	Passed	Passed
	22/03/2023	A	169	1	18.5	0.28	Passed	Passed	Passed	Yellow	Passed	Passed
19	22/03/2023	A	169	1	18.5	0.29	Passed	Passed	Passed	Yellow	Passed	Passed
20	23/03/2023	A	171	1	18.5	0.29	Passed	Passed	Passed	Yellow	Passed	Passed
21	24/03/2023	A	169	1	18.5	0.36	Passed	Passed	Passed	Yellow	Passed	Passed



Health risks of occupational exposure to frying oil and the innovative solution for reducing cancer morbidity caused by this exposure using Beyond-Oil technology
 עמוד - 54 - מתוך 54