

Evaluation of the food safety procedures in catering placements in petroleum companies' oilfields

*Alaa Mohammed
Rania Hafez Mahmoud*

*Mohamed Abou-Taleb Mohamed
Haitham Abdelrazek Elsawalhy*

Faculty of Tourism and Hotels, University of Sadat City

Abstract

The oil industry is considered a major source of wealth throughout the world, especially in the Middle East. The petroleum industry's employees struggle with special conditions in remote oilfields such as killing gases and other work activities in addition to bad weather, therefore it was vital to provide healthy and safe food for them. The purpose of this study is to evaluate the sanitation procedure existing in the kitchen of petroleum companies' oilfields such as safety of water, cleanliness of food contact surfaces, prevention of cross-contamination, Control of employee health conditions, etc. To attain the aim of the study, an observation checklist was designed according to the requirements of the Food Safety Management System (FSMS) ISO 22000 to evaluate all existing food safety conditions and practices in catering premises of petroleum companies according to food safety requirements. The score of the observation checklist is 48 %. The highest-scored procedures include waste control, sanitation facilities, and the safety of water, while the lowest-scored procedures include labeling, storage, and documenting procedures. It is concluded that about half of sanitation procedures were applied in place, and the food safety system is required in place to guarantee reaching the standard level of sanitation procedures.

Keywords: Sanitation; cross-contamination; petroleum Industry; FSMS; ISO 22000.

Introduction

Catering services vary from the supply of vending machines (e.g. hot/cold drinks, snacks, dessert) to drink and snack counters, cafes, gastro bars, canteens, and restaurants of employees in companies to full service for managers and guests and may also include hospitality for occasional or regular events and conferences (Eastham et al., 2001). As explained by Samur (2002), food represents an important factor in the feeling of employees at work. Nutrition is the process of using food items to keep and develop a healthy lifestyle. Well planned and organized diet provides the nutrients to fuel people's daily activities and requires all types of nutritional ingredients. If the employee was feeling unproductive after a long lunch, then the employee knows that habits related to eating can do more than cause them to feel uncomfortable and affect job performance.

Food safety considers a major public health issue for all parties in the food supply chain. The need for a stable method of food safety management throughout the food establishment, including the whole food cycle, is crucial (Soman and Raman, 2016). The international specifications of ISO 22000 defined the major recommended steps to implement the food safety management system and provide systematic techniques that could be used to analyze food processes, identify potential food hazards and identify critical points, and control all anticipated risks. These steps are recommended to prevent reaching unsafe food to consumers and effective programs exist to ensure a clean and hygienic environment (Arvanitoyannis, 2009; Sheps, 2007). By complying with ISO 22000 requirements for hygiene measures, companies can address potential food-borne risks using standardized language that creates effective communication between them and their stakeholders:

customers, suppliers, retailers, and healthcare professionals (Bilalis et al., 2009). Cases of Foodborne illness have lately increased in the different food enterprises. Eating food contaminated with foodborne pathogens and toxins produced by microorganisms cause death, illness, hospitalization, and economic loss. In developed countries, the percentage of the population suffering from a foodborne illness (FBI) is estimated at 30% per year (World Health Organization (WHO), 2007). The purpose of this study is to evaluate the sanitation procedure procedures that exist in the kitchens of oilfields of petroleum companies.

Literature Review

Catering in petroleum companies.

The catering process in petroleum companies is completed through a specialized contractor, assigned by the company owner. The contract between the oil Production Company and a specialized company that provides manpower and raw material to prepare, cook and serve food to employees in oilfields. The contractor (catering company) is chosen by offering a tender at the head office of the owner company, which has an administrative service division that is responsible for cleaning and managing food safety in the petroleum company. Adham (2001) mentioned in her study some drawbacks regarding catering contractors which could be applied to all joint-venture companies as follows: 1) catering employees don't have enough educational background concerning the hospitality industry standards. 2) catering employees don't have any previous experience regarding work in hotels. 3) The employees of mentioned catering companies were hired through publishing an advertisement in the local newspaper without stipulating a specific hospitality industry educational or language skills which resulted in hiring unskilled employees in different divisions except a few of them who have an acceptable level of skills to succeed in providing the reasonable and satisfactory service but this service still not matching with the required service (5 stars) according to the assigned contract between the production company and the catering company. 4) Catering contractors do not appreciate training programs to improve food quality and prevent food safety, preferring to save the costs of training. At the same time, oil companies assume no obligation to organize training programs for catering workers. 5) Contractors do not use a specific method to assess the quality of their services. In oil companies, it was noticed that the cleanliness level of the mess (the place where food was prepared and served) was not acceptable in the oilfield. There are no standard receiving areas and the employees who receive food materials are not qualified and do not have the recommended training concerning receiving sequence and material specifications in both survived oilfields. Storage in dry stores is excessive and not organized. Refrigerators and freezers are on both sites. As a result of not having a garbage room, waste is piled in cases and put in the street outside the field until the garbage truck comes and throw it away in the desert and fire them which may result in insect and flies gathering in front of the kitchen area and transfers the disease to foods (Kamal, 2016).

Food Safety Perception

According to Burlingame and Pineiro (2007), food must not contain any physical harm or damage to the food consumer; In other words, food must be safe and offer high added value to the person who will consume the food. Food hazards can potentially occur in several ways, such as B. microbial hazards such as bacteria and viruses, chemical hazards such as detergent soaps and other chemical components, and physical hazards such as solid or any unfamiliar bodies associated with food. Therefore, catering companies respond to real and perceived threats to food safety by implementing various food safety management systems (FSMS), such as the HACCP system and ISO 22000 system (Henson & Humphrey, 2010). Food safety is a vital issue that must be achieved through safe measures, including

production, storage, and handling to avoid foodborne illnesses such as food poisoning, infectious diseases, or other harmful effects. In principle, such diseases can be caused by agents of a biological, chemical, or physical nature (Martin and Robert, 2018).

The Importance of Food Safety

The importance of food safety resulted from the great direct effects on the health of the consumer. It is necessary to adopt and monitor a series of procedures to prevent various types of food risks such as B. microbiological, chemical, and physical risks. Consumers have the right to expect that those who supply the food they buy have taken all necessary precautions to produce products that do not harm them due to the strict precautions taken to protect the food from the anticipated risks. Regulators in the global food industry recognize this principle and pass laws accordingly. This creates a legal, moral, and economic incentive for all food companies to ensure that the food they provide is as risk-free as possible. A food company that tries to shirk its food safety responsibility by planning, implementing, and monitoring its food safety system will not be able to stay in business for long (Lawley et al., 2008). WHO (2007) confirmed that foodborne illnesses are a widespread and growing public health problem around the world, including in developed and developing countries. However, this problem has a greater influence on the public health and the budget of developing countries.

Food safety supplies and facilities

Water supply

As indicated in the Code (2009), an adequate supply of drinking water, with adequate facilities for storage, distribution, and temperature control, is essential and should be available when needed to ensure the safety and suitability of food.

Drainage and waste disposal systems

The food supplier must ensure that all waste bins are foot operated and located in the food handling and preparation areas to avoid cross-contamination and are accessible at all times. They must be cleaned after each change of contents by a steward or kitchen specialist and under the control and supervision of responsible hygiene. Finally, these containers must be kept in good condition and constantly inspected according to the standard referred to in the IATA Food Service Quality Assurance Program ("ICQA", 2010).

Cleaning facilities

All detergents that are compliant with food safety and properly labeled should be available for cleaning food, utensils, and equipment. Such institutions should also have an adequate supply of hot and cold drinking water where needed (Umoh et al., 2011). ICQA (2010) recommends that the food supplier have and adhere to a clear written schedule that establishes the appropriate frequency and method for cleaning and disinfecting each area of the production site, equipment, and utensils in the food supplier's facility.

personal hygiene supplies and facilities

Personal hygiene, with an emphasis on hand washing as an important issue, is one of the most important practices of a positive food safety culture. Poor hand hygiene is considered an important indicator of the risk of foodborne illness (Guzewich, 1995). Knowles (2002) added that personal hygiene for all those working in the hospitality industry is critical to reducing the risk of foodborne illness and ensures high standards.

Temperature control

Idaho (2005) confirmed that the degree of temperature is considered one of the most important points that must be strictly controlled and regulated according to the type of food operations performed. Unlike viruses, bacteria can thrive in food, are found everywhere, and can thrive when food workers don't pay attention to time, temperature, and cleanliness.

Air Quality and Ventilation Facilities

Bolton (2004) stated that kitchens and dishwasher areas should be mechanically ventilated and kitchen appliances should be surrounded by a ventilation hood equipped with downstream grease filters. The latter must be removable for cleaning or replacement and there must also be access to the air ducts, etc. for cleaning and maintenance. Ventilation must remove excess heat, steam, and odors from cooking equipment, refrigerators, dishwashers, etc.

Lighting

Sufficient natural or artificial lighting must be available to allow food processing establishments to function healthily and hygienically. Where necessary, the lighting should not be such as to make its color misleading to avoid an inappropriate work environment. The intensity of the light must be suitable for the type and size of the operation. Where appropriate, luminaires should be protected by plastic or glass covers to ensure that food is not contaminated by breakage (Code, 2009).

Storage Facilities

Chmidit and Rodrik (2003) indicated that the specific conservation needs of the following species should be considered: 1) Dry products. 2) Chilled and frozen foods. 3) Fresh fruit and vegetables. 4) Products returned and recalled. 5) Packing material. 6) Tools and equipment for cooking. 7) Equipment and chemicals used in the cleaning process. 8) Related clothing and other personal belongings of production personnel. 9) Recyclable and garbage. 10) storage facilities must allow for the safe removal of stored items.

Staff facilities

Bolton (2004) argued that staff areas, such as locker rooms, should be separated from food-related areas where can change and store personal clothing and engage in activities such as taking breaks and smoking. Toilets for staff should be separate from those for guests, but for small facilities, it is acceptable to share them with customers. All rooms must be in good condition and cleaned daily. Provide recommended. Lockers for staff clothing and other items attached to the locker room are recommended.

Food Safety in Petroleum Companies

Food safety in oilfields of the oilfield companies of petroleum company is an important part of an overall Health, Safety, and environmental (HSE) system (HSE) that covers and monitors all work activities in the oilfield. HSE department activities also include employees training on firefighting and other recommended precaution practices of work as a proactive action to avoid an accident before it happens. HSE is considered a vital tool to ensure that a food safety plan is designed and implemented in compliance with the standards which comprise food hygiene and ease of cleaning. One of the most important activities of the HSE department is to carry out an audit of the kitchen environment using a specific checklist prepared according to the company policy to make sure the kitchen environment is healthy and the employees follow the company (One petro, 2021). Schouwenaars (2008)

documented several fatal accidents that occurred in the oil and gas industry between 1970 and 2008, indicating the need for a preparedness system to handle the cases mentioned and any other foreseen hazards for those working in the oil industry. and gas. Che et al. (2002) reported that work-related stress can affect safety and increase the likelihood of workplace accidents among oil rig workers.

Food Safety Management System

As studies by ISO (2011) and Trafialek & Kolanowski (2017) have shown, various private and national organizations around the world created conflict situations in the early 2000s, when companies started using their codes and internal procedures to control suppliers. The different measures followed in the audit caused it so hard for suppliers to meet all requirements for markets all over the world. In this context, the International Organization for Standardization (ISO) began work on a standard for the Food Safety Management System (FSMS) in 2001. ISO 22000, was published on 1 September 2005. It is a global system that gathers the previous random systems, HACCP basics and requirements, the implementation procedures as explained by the Codex Alimentarius Commission, and the standard elements of ISO 9001. Two years later, the food safety specifications in the frame of the new system have been adopted in more than 50 countries by the organization of ISO as an alternative to over 20 food safety systems products that were developed by all companies in the field to assess their food providers. ISO 22000 can be described as a well-known internationally recognized standard that identifies the requirements that must be met by organizations directly or indirectly involved in the chain of food and providing food services that may affect food safety or the health of consumers. Furthermore, Surak (2005) and Efstratiadis et al. (2000) agreed that ISO is an internationally recognized standardization organization that develops various standards, including standards for food production.

Question of the Study:

Are sanitation procedures in the catering of petroleum companies in line with the standard based on the food safety management system (ISO 22000)?

Methodology

The study methodology was qualitative and was used to facilitate an inductive approach to evaluate food safety procedures in the Catering of Petroleum Companies. A descriptive and analytical approach was followed, which described the phenomenon and then analyzed analysis, and interpretation, based on the collected data. A case study applied to one of the largest petroleum companies in Egypt that already provides food services in the oilfields and that has a large number of employees (6000 people) who provide food services was investigated. Khalda Petroleum Company (KPC), is a joint venture company between the Egyptian General Petroleum Corporation (EGPC) and the American partner Apache that already has many employees. The aim of the study is to Evaluating Food Safety Procedures in the catering of Petroleum Companies. This research follows qualitative tools (observational checklist). Through direct observation, it is possible to collect a large amount of data in a short time in a natural setting. According to Cooper and Schindler (2006), the strengths of observation as a data collection method include securing information about people or activities that cannot be inferred from experimentation or surveys and avoiding filtering and forgetfulness by respondents. The checklist points were divided into 11 main titles of ISO 22000 requirements; General, Water safety, condition water safety, food contact surfaces, Prevention of cross-contamination, Maintenance of hand washing, hand

cleaning, and bathroom facilities, material protection, food, food packaging material and Food contact surfaces from adulteration, labeling, storage and use of Toxic Compounds, Control of employee health conditions, Exclusion of pests, Construction and layout, and Waste control. The scale used to evaluate the subattribute attributes was as follows: Applied (the item is already applied in place) = 3 points. Partially applied, (the item is applied but not completely, as the standard) =2 points. In process (the company started to implement the item) =1 point Not applied (the item does not exist in place) = zero point.

Results

Validity and Reliability of Study Instrument

The definitions of reliability and validity in quantitative studies so far have shown two aspects: first, reliability, and reproducibility of the result. Second, regarding the validity of which measuring instruments are accurate and what they measure, what they should measure (Golafshani, 2003). The reliability of the existing study was tested by making the same observation checklist by two observant at the same time and comparing them to find the correlation. As shown in table (1), there is a highly significant correlation between the first observation checklist and the second one. Spearman's correlation is positive and strong, with a ratio bigger than 0.9.

Table (1): Correlation between First Observations and Second Observations

Variables		First Observations	Second Observations
First Observations	Correlation	1.000	.918**
	Sig.		.000
	N	11	11
Second Observations	Correlation	.918**	1.000
	Sig.	.000	
	N	11	11

Reliability alone is not sufficient to consider that an instrument is adequate. Therefore, validity is required to validate the constructs. Before the distribution and completion of the questionnaire, the validity of its content had been examined by two food safety systems consultants with more than seven years of experience in catering premises and by two professors in the department of the hotel at the tourism and hotels faculty in the University of Sadat. The instruments were adapted according to their comments.

Checklist Analysis of Food Safety Procedures

As shown in Table (2) Maximum score is the maximum number of applied points (3) multiplied by the total number of evaluated items. The total score of the checklist is 48 %. The highest-scored procedures include waste control, sanitation facilities, and the safety of water, while the lowest-scored procedures include labeling, storage, and general (documenting procedures). There is a moderate level of sanitation practices depending on employee's experience or supervisor efforts but not in a frame of a food safety system that guarantees improvement in employees' performance by training and evaluation which recommend enhancing and improving sanitation practices by initiating overall system to guarantee to reach the high level of sanitation with stability.

Table (2): Checklist Analysis of Food Safety Procedures

Item	Actual Score		Maximum Score	Gap points (%)
	Freq.	%		
general	2	22	9	7 (78%)
safety of water	8	67	12	4 (33%)
condition and cleanliness of food contact surfaces	7	58	12	5 (42%)
prevention of cross-contamination	3	50	6	3 (50%)
maintenance of hand washing, hand sanitizing, and toilet facilities	6	67	9	3 (33%)
protection of food, food packaging material, and food contact surfaces from adulteration	4	33	12	8 (67%)
labeling, storage, and use of toxic compounds	3	17	18	15 (83%)
control of employee's health conditions	4	44	9	5 (56%)
exclusion of pests	7	58	12	5 (42%)
construction and layout	10	56	18	8 (44%)
waste control	6	67	9	3 (33%)
total	60	48	126	66 (52%)

General

General requirements comprise the documentation of the food safety system and documented plan for the system implementation, this item scored 2 points out of 9 (22%) which means that petroleum companies need to initiate a documented and effective food safety system in their catering facilities.

Safety of Water

This title includes water tastes and treatment and keeps documents that prove these procedures, which scored only 67%, therefore extra attention should be paid to water analysis.

Condition and cleanliness of food contact surfaces

Concerning Observing whether the conditions of food contact surfaces meet the requirements of hygiene. (Equipment, facilities, clothing, and gloves of employees, etc.), which partially applied but still petroleum companies should initiate and follow a cleaning plan and increase cleaning facilities such as equipment and hand washing sinks. It scored 58%.

Prevention of cross-contamination

In terms of cross-contamination prevention, 50% of procedures are applied, petroleum companies should care about the kitchen layout, flow, and equipment separation to avoid any possibilities of cross-contamination.

Maintenance of Hand Washing, Hand Sanitizing and Toilet Facilities.

About 67% of food safety facilities exist in place, it is recommended to maintain sanitation facilities (Hand Washing, Hand Sanitizing, and Toilet Facilities). Also, the organization doesn't have adequate toilet facilities, hand washing, and sanitizing facilities in production areas (Entrances and main production areas).

Protection of Food, Food Packaging Material, and Food Contact Surfaces from Adulteration

The packaging materials are not stored in good condition, and Lubricants and cleaning chemicals are properly controlled which sounds unsafe storage environment for food items, scored points are 33% off standard safety conditions.

Labeling, Storage, and Use of Toxic Compounds

This title of food safety requirements includes Proper Labelling, Storage, and Use of Toxic Compounds, the toxic compounds stored separately from raw materials, ingredients, and packaging materials, the toxic compounds clearly labeled for identification, there are handling/usage instructions available, 17% only of requirements are applied which consider so weak percent. These unsafe conditions should be changed to guarantee to provision of safe food for employees in petroleum companies.

Control of employee's health conditions

Petroleum companies need to follow a clear procedure to control catering employees' health through making periodic health examinations or screening and have records that prove these procedures, the actual score for this requirement is 44%.

Exclusion of pests

This item scored 58 %, petroleum company makes a contract with a third-party company specialized in pest control, and it was noticed that the third-party company has a low performance and always has a shortage of pest control materials.

Construction and layout

It was clear that catering premises in the petroleum company are not in the best condition according to the standard where walls and floors are not in good condition, drainage is not adequate, the ventilation system need for improvement, the layout of equipment, facilities and processes should be improved and storages are not sufficient to keep the amounts of goods in good storage conditions, therefore the total score is 56%.

Waste control

Waste control facilities are existing in place but are not sufficient to the operation of kitchen work, garbage room is not well designed to prevent contamination (doesn't have ceiling or door), waste bins in kitchen aren't sufficient and generally there is no clear procedures to dispose waste.

Discussion

Advantages of studying the food safety systems and its implementation in catering premises, regarding its definition, importance, and review of literature, has internationally widen, especially for academics and researchers. Foods objectives aren't only addressed to satisfy the human hunger and to give the recommended nutrients for humans but also to avoid any illness concerning nutrition and improve bodily and mentally activities of the consumers. Indeed, several organizational benefits are gained with higher levels of safety Practices for example: to improve employee attitude, for better job performance and higher relative individual productivity which results in large influencers of nurturing positive work cultures (Cohen, 1993). The research aims to evaluate food safety procedures in the Catering of petroleum companies. To achieve this aim, a checklist was designed in matching with the requirements of ISO 22000 to implement food safety system in place. The study

concentrates on the joint-venture petroleum companies in Egypt, it is conducted upon a sample of Khalda Petroleum Company in the western desert of Egypt (Khalda Petroleum Company), which already offers food services and employs more than 6,000 people. Therefore, to ensure the effectiveness of the research, a sample of a petroleum company that has many employees (about 500 catering employees) in oilfields has been investigated. The researcher decided to use non-participant observation as a data collection tool for this study to check whether the existing conditions comply with food safety standards of ISO 22000 requirements or not. The checklist will provide a real overview of the current position of kitchen and other oilfield catering facilities and will practically help identify the gap between the existing case and the standard case that conforms to ISO 22000. As noted previously, the maximum number of scored points is 48 of a total of 126 points, a gap (of 66) points (52%). The highest-scored items are waste control, maintenance of Hand Washing, Hand Sanitizing and Toilet Facilities, and safety of water with 67%, while Labelling, Storage, and Use of Toxic Compounds scored only 3 points out of 18 (17%). This result provides the answer to the research question; Are sanitation procedures in the catering of petroleum companies matching the standard based on the food safety management system (ISO 22000)?

Conclusion

Egypt is a country deeply rooted in the petroleum industry and has pioneering experience in international oil relations and cooperation with other oil-producing countries. The goal of this study was to evaluate food safety procedures in the Catering of petroleum companies. For this purpose, an observation checklist derived from the requirements of ISO 22000 requirements was used to evaluate the existing food safety practices in the oilfields of petroleum companies and compare these points with the standard procedures. The gaps between existing practices and standard practices represent 52% of the total points, to close these gaps a lot of practices should be added and implemented place, On the whole, the study provides petroleum companies' managers with a vision to design a food safety system that matching with the requirements of food safety management system (ISO 22000), as pointed by FAO & WHO (2006) that safety of employees is a priority for the companies' management, in case the company has to prepare and provide meals for employees. The company should make sure that the provided meals are prepared in the accepted work conditions to produce meals that are not harmful and safe to be eaten. Nowadays, the harmful effects of unsafely prepared food increased, therefore, it's an important issue to make sure that foods are prepared in a safe preparation condition.

Recommendations

The findings of this study, when connected to the review of literature, resulted in major recommendations that can be directed to petroleum company management in food safety as follow:

- Designing catering buildings that include sufficient hand washing facilities, employees' clothes changing rooms, adequate toilet facilities, and good lighting and ventilation systems in the kitchen and stores.
- Sufficient waste control facilities and a Standard suitable drainage system should be available.
- Designing an independent store for chemicals.
- There should be standard food stores matching the specifications of food safety systems.
- It is a very vital issue to have a reasonable and standard receiving area.

- There should be sufficient places and partitions inside the kitchen for equipment and the flow of employees and food to prevent cross-contamination.
- There should be adequate cooling and freezing units to store foods and other activities such as meat thawing and separating between frozen meat, poultry, fish, and vegetables and also separation among them in thawing.
- A company should have a document for all activities of pest control.

References

- Adham, O.S. (2001). Hospitality Services in Oil Fields Site. Ph.D. Thesis. Hotel Management Department, Faculty of Tourism and Hotel Management, Helwan University.
- Arvanitoyannis, I.S., (2009). HACCP and ISO 22000: Application to foods of animal origin. Wiley-Blackwell., Oxford.
- Bilalis, D., Stathis, I., Konstantas, A. and Patsiali, S., (2009). Comparison between HACCP and ISO 22000 in the Greek organic food sector. *Journal of Food, Agriculture and Environment*, 7(2), 237-242.
- Bolton, D. J. (2004). Guidelines for Food Safety Control in European Restaurant. National Food Centre. Ireland. pp. 1-9.
- Burlingame, B., and Pineiro, M. (2007). The essential balance: Risks and benefits in food safety and quality. *Journal of Food Composition and Analysis*, 20(5), 139-146.
- Chen, W., Huang, Z., Yu, D., Lin, Y., Ling, Z., and Tang, J. (2002). An exploratory study on occupational stress and work-related unintentional injury in off-shore oil production. *Chinese medical journal*, 23, 441-444.
- Chmidit, R.H., and Rodrick, G. E. (2003). Food Safety Handbook. John Willey and Sons, USA.
- Codex Alimentarius Commission (CAC) (2009). Food hygiene: Basic texts. Food and agriculture organization of the United Nations and World Health Organization, Rome, pp.13-80
- Cohen, A. (1993). Organizational commitment and turnover. A meta-analysis. *Academy of Management Journal*, 39, 1140-1157.
- Cooper, R. and Schindler, M. (2006) Marketing research. McGraw-Hill, New York.
- Eastham, J., Sharpies, L., and Ball, S. (2001). Food Supply Chain Management: Issues for the Hospitality and Retail Sectors. Oxford. Butterworth-Heinemann. pp. 4-8.
- Efstratiadis, M. M., Karirti, A. C., and Arvaitoyannis, I. S. (2000). Implementation of ISO 9000 to the food industry: An overview. *International Journal of Food Sciences and Nutrition*, 51(6), 459-473.
- FAO & WHO (2006). Regional Conference on Food Safety for Africa. National Food Safety System in Ethiopia, a Situation Analysis. Harare, 3-6 October 2006, Zimbabwe.
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8(4). [Internet], pp 597-606. Available from <<http://www.nova.edu/ssss/QR/QR8-4/golafshani.pdf>>. [accessed 17 April 2020].
- Guzewich, J. (1995). The anatomy of a glove rule. *Environmental news digest*, fall, pp. 4-13.

- Henson, S., and Humphrey, J. (2010). Understanding the complexities of private standards in global agri-food chains as they impact developing countries. *The Journal of Development Studies*, 46(9), 1628–1646.
- IATA Catering Quality Assurance Programme (ICQA) (2010). Food Processing Safety Standards. In collaboration with Medina quality assurance services, Version 3.1, pp. 29- 50.
- Idaho Food Safety and Sanitation Manual, (2005). Keep it healthy: food safety employee guide to preventing foodborne illness. [Internet], food protection program. 450 W State St Boise, ID 83720-0036. Available from <www.foodsafety.idaho.gov>. [Accessed 11 September 2020]
- ISO Organization. (2011). ISO in brief: International standards for a sustainable world. [Internet]. Retrieved from [http://www.iso.org/iso/isoinbrief_2011 .pdf](http://www.iso.org/iso/isoinbrief_2011.pdf). [Accessed on 1 July 2020].
- Kamal, M.A. (2016). Evaluating Food Safety Concerns in Petroleum Hospitality Sites. Ms.D. Thesis. Hotel Management Department, Faculty of Tourism and Hotel Management, Helwan University.
- Knowles, T. (2002). **Food safety in the hospitality industry**. 1st edition. Butterworth-Heinemann, Oxford.
- Lawley R., Curtis L., and Davis J., (2008). The food safety hazard guidebook. Food safety info, London, UK. Published by The Royal Society of Chemistry, Thomas Graham House, and Science.
- Martin, R. and Robert, M., J. (2018). Fermentation and food safety. [Internet], Aspen Publishers, Inc. Gaithersburg, Maryland, pp. 2-7. Available <www.aspenpublishers.com>. [Accessed 11 May 2018]
- One petro. (2021). One Petro Magazine [Online]. Available from: https://onepetro.org/SPEHSE/proceedings-abstract/96HSE/All-96HSE/SPE_35838-MS/58245 [Accessed on 03-03-2021].
- Samur, G. (2002). The importance of nutrition in the development of workers and work productivity. *Kamu-Is*, 7(1), 1–8.
- Schouwenaars, E. (2008). The Risks Arising from Major Accident Hazards: Lessons from the Past, Opportunities for the Future. Retrieved October 4, 2013 from World Wide Web: http://www.dnv.nl/Binaries/Paper%20Refining%20Management%20Forum%20Copenhagen_tcm141-311567. [Accessed 11 May 2019]
- Sheps, I. (2007). ISO 22000: The new international standard on food safety - A comparison to HACCP. *Journal of Environmental Protection and Ecology*, 8(4), 940-949.
- Soman, R., & Raman, M. (2016). HACCP system – Hazard analysis and assessment, based on ISO 22000:2005 methodology. *Food Control*, 69, 191– 195.
- Surak, J.G. (2005). ISO 22000: Requirements for food safety management systems. *ASQ World Conference on Quality and Improvement Proceedings*, (59), 211-215.
- Trafialek, J., Kolanowski, W. (2017). Implementation and functioning of HACCP principles in the certified and non-certified food business: A preliminary study, *British Food Journal*, 119 (4): 710- 728.
- Umoh, Nsikak J., Olufunmilayo, A., Maimuna, M., Ebrima, B, Aliu ,A., Hilton, W. (2011). Aetiological differences in demographical, clinical and pathological characteristics of hepatocellular carcinoma in The Gambia. *Liver International*, 31(2), 215–221.

- WHO. (2007). Effects of foodborne diseases on public health. World Health Organization, Geneva.

تقييم إجراءات سلامة الغذاء في مواقع التغذية بحقول شركات البترول

علاء محمد عبد الستار محمد أبو طالب رانيا حافظ هيثم الصوالحي
كلية السياحة والفنادق، جامعة مدينة السادات

تعتبر صناعة البترول مصدر رئيسي للثروة على مستوى العالم، وبخاصة في الشرق الأوسط. يعاني العاملون بمواقع إنتاج البترول من ظروف بيئية خاصة كوجود غازات سامة وانشطة العمل المختلفة بالإضافة الى ظروف الطقس الصعبة في بيئة العمل، ولذا كان من الضروري تقديم وجبات صحية وأمنة لهم. تهدف هذه الدراسة لتقييم إجراءات سلامة الأغذية المقدمة للعاملين بمواقع إنتاج البترول مثل سلامة مياه الشرب، نظافة الاسطح الملامسة للغذاء، منع التلوث العرضي وضمان الحالة الصحية الجيدة للعاملين بالتغذية. ولتحقيق الهدف من الدراسة، تم تصميم قائمة ملاحظات شخصية مستمدة من متطلبات نظام إدارة سلامة الغذاء (أيزو 22000) للتحقق من تطبيق ممارسات سلامة الغذاء بأماكن تقديم خدمات الأغذية والمشروبات بمواقع إنتاج البترول. تبين من خلال قائمة الملاحظان أن نسبة 48% من اشتراطات سلامة الغذاء مطبقة في مواقع إنتاج البترول، وكانت النسبة الأعلى في تحقيق هذه الاشتراطات للنقاط الخاصة بالتخلص من المخلفات، إجراءات تطهير الاسطح وإجراءات سلامة مياه الشرب والمياه المستخدمة في اعداد الوجبات، بينما النسبة الأقل توافقا مع اشتراطات سلامة الغذاء كانت خاصه بالوثائق والنماذج المستخدمة وإجراءات تخزين المواد الغذائية. ويستنتج أن حوالي نصف الاشتراطات الخاصة بضمان سلامة الغذاء محققة بالفعل في أماكن اعداد وتقديم الأغذية والمشروبات بشركات البترول ويتطلب الامر إنشاء وتطبيق نظام خاص بسلامة الغذاء لضمان تحقيق بيئة عمل آمنة غذائيا وفقا للاشتراطات الصحية القياسية.

الكلمات الدالة: سلامة الأغذية، التلوث العرضي. مواقع إنتاج البترول، نظام إدارة سلامة الغذاء، أيزو 22000