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REVIEW ARTICLE

FOOD SAFETY POLICIES ADOPTED BY FOOD BUISNESS OPERATORS –A REVIEW

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ABSTRACT

With advancements in food processing and technology, supplying safe food to consumers still remains a concern for all Food business operators. While a lot of importance is being given to microbiological and chemical hazards the adoption of simple food safety policies within a food industry can reduce physical hazards to a great extent. This article focuses and reviews the various food safety policies that can be adopted to avoid and minimize food related hazards.

INTRODUCTION

Food safety is a scientific discipline and includes all processes that the food product moves through like handling, preparation, and storage of food with the ultimate aim of producing safe food. The recent years has seen an increased demand for safe food by the consumers .The increase in demand for safer food has resulted in the development and introduction of new food safety standards and regulations to reach a higher level of food safety. The complex and inter-linked nature of food safety hazards and food production as a whole has been recognized. An integrated approach of controlling food safety throughout the entire food production chain ('farm to table') has become an important issue in attaining a greater food safety level (Valeeva *et al*., 2004). In the widely recognized Hazard Analysis Critical Control Point (HACCP) concept the term hazard refers to "a biological, chemical or physical agent in, or conditions of, food with the potential to cause an adverse health effect" (Codex, 1997). This concept permits a systematic approach to the identification of hazards and an assessment of the likelihood of their occurrence during the production, distribution and use of a food product, and defines measures for their control.

Specifically, hazards are caused by any of the following (Anon., 1997b)

- The unacceptable presence of a biological, chemical or physical contaminant in raw materials or in semi-finished or finished products;
- The unacceptable potential for growth or survival of micro-organisms, or the unacceptable potential for the generation of chemicals in semi-finished or finished products or in a production line environment;
- The unacceptable contamination or recontamination of semi-finished or finished products with micro-organisms, chemicals or foreign material.

While a lot of importance is being given to microbiological and chemical hazards the adoption of simple food safety policies within a food industry can reduce physical hazards to a great extent. Rocks, metal, wood, and other objects are sometimes found in raw ingredients. Further, contamination can occur during transport, processing, and distribution of foods due to equipment failure, accidents, or negligence (Institute of Medicine/National Research Council, 1998). Sources of foreign matter in raw materials can include nails from pallets and boxes, ingested metal from animals, harvesting machinery parts, elements from the field, veterinary instruments, caps, lids, closures, and more (Wallin and Haycock, 1998). Materials that do not belong in food, like glass or metal, cause physical safety hazards. A physical safety hazard is any extraneous object or foreign matter in food that can cause injury or illness in the person consuming the product (Folks *et al*., 2001). Foreign matter in raw materials can be controlled with raw material inspections and vendor certifications or guarantees from suppliers. X-ray technology is also available to examine incoming material (Folks *et al*., 2001). Hazards when present in food can pose a great risk to the consumers, and hence eliminating or preventing these from entering the food chain is a big challenge to the food business operators. Consumers trust and confidence can be achieved only if food industries implement and follow a sound food management system to minimize hazard to acceptable levels.

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This includes a number of routines that should be followed to avoid potentially severe health hazards. Food safety nowadays has become a very important issue to be discussed and has also become a considerable and increasing interest in many sectors including hospitality industry, food and beverage industry, government officials and public health institution (Hari Purnomo, 2006). Food safety failures often arise from problems caused by the ability of hazards to enter the production chain at many points. Until now, this technical aspect has been the main guide in the development of a chain approach with respect to food safety improvement, since stages in production and inputs are interconnected (Valveeva *et al*., 2004). Patricia Foriwaa Ababio *et al*., 2016 have reported the absence of established food safety management systems that required attention in Ghana. They have suggested the need for Government agencies in charge of training to regularize and improve on this task. Hence it is important to create awareness among all people who are concerned and related to food and encourage them to obtain and maintain a current food safety knowledge. Hence this paper would review the food safety policies that are generally followed and its applications in the food chain to eliminate or minimize physical and other food related hazards.

Food safety policies that can be followed

Governments enforce higher safety levels for the nation's food supply in terms of reducing the incidence of food-borne illnesses (Buzby *et al*., 1998). At the same time producers along the chain try to meet the existing acceptable hazard levels and to minimize the probability that their products are identified as the cause of an illness (Ollinger and Ballenger, 2003). A culture of food safety is built on a set of shared values that operators and their staff follow to produce and provide food in the safest manner. Maintaining a food safety culture means that operators and staff know the risks associated with the products or meals they produce, know why managing the risks is important, and effectively manage those risks in a demonstrable way (Powell *et al*., 2011). Different food safety intervention strategies in the form of policies, enforcement, and education are deployed to reduce risks of potential foodborne hazards. Health authorities can select, prioritize, and implement food safety interventions. Since numerous options for food safety interventions in FSEs are available, health authorities tend to incorporate multiple strategies to enhance effectiveness and efficiency.(Lee,2013).
To minimize hazards along the food chain and ensure safe food production the following food safety policies can be adopted. The guidelines for these policies are based on the IATA Quality Assurance Programme 2010, World Food safety guidelines, 2010, and QSAI, Food processing safety standards and interpretation Guidelines, 2015.

Uniform, Personal appearance and Jewellery policy

Production line workers can be a major source of contamination. For example, jewellery can fall off or break, fingernails can break, and pens can fall into food. Jewellery removal is required under GMPs. If pens are metallic, a metal detector can detect them. Production workers' fingernails should be cut short and gloves should be worn under certain processing conditions (Wallin and Haycock, 1998). Food provider must have and follow a personal appearance policy. This policy must require that all employees and visitors entering Food Handling Areas wear clean uniforms, hairnets and beard nets (as applicable), avoid wearing any jewellery and maintain appropriate personal hygiene (QSAI, Food processing safety Standards and Interpretation Guidelines, 2015). The policy should include the following and all Food and Equipment handlers while on duty should adhere to the following rules:

- Food provider must always have clean uniforms available.
- Uniforms must be worn appropriately at all times.
- Food provider must make adequate provision for complete segregation between clean and soiled uniforms and protective clothing.
- Aprons (if applicable) must be clean and must never be used as a cloth.
- Hairnets must completely enclose hair.
- Facial hair must be covered with a beard net.

Jewellery

- Strict adherence to wearing no jewellery while at work. Jewellery includes rings, wristwatches, bracelets and earrings.
- Plain wedding bands are tolerated if they are not difficult to clean. However, if an employee or visitor wearing a plain wedding band may come into direct contact with ready-to-eat foods that are not appropriately covered or packaged to prevent contamination from physical or biological hazards, they must wear gloves.
- Drivers and loaders may wear wristwatches in food dispatch areas, unless they may come into direct contact with food items that are not appropriately covered or packaged to prevent contamination from physical, chemical or biological hazards.
- In regions or countries where applicable use of Bindi / Ash/ coloured powder / Sindoor Tilak/ on forehead / nose ring/threads is strictly prohibited. Prohibited to apply Henna / Mehendi on hands
- It is acceptable to wear Medical Alert necklaces or bracelets, if necessary for identification of a medical condition, as long as it is covered by clothing and not visible.

Personal Hygiene

- Fingernails must be kept short, clean and free of polish. False fingernails are not permitted.
- Eating, smoking and drinking must be strictly restricted to designated areas.
- It is recommended that all employees handling exposed food products wear disposable gloves.

The Study carried out by Mengual Lombar M *et al*. (2016) demonstrates that foodhandlers accessories such as piercings, rings, bracelets, earrings, necklaces and also recent tattoos hold a significant bacterial load [Aerobic bacteria, S.aureus and also E. coli] which means that these objects are a potential source for the contamination of foods if they are not removed when working at food establishments. According to the above, it would be convenient to restrict the use of accessories. This

study further emphasizes the need for an effective jewellery policy in all food establishments.

Wound and Infection Control Policy (QSAI, 2015)

Food provider in addition to the medical screening procedure must follow a wound and infection control procedure.
This policy requires that all Food Handling Employees:

- Cover cuts, burns, lesions and all other wounds between the elbow and wrist with a waterproof dressing and cover the area between the elbow and wrist with a uniform sleeve or a plastic sleeve.
- Cover cuts, burns, lesions and all other wounds on hands with a coloured plaster (preferably blue and do not include skin tone or transparent) and a waterproof glove.
- Food provider's wound and infection control procedure must require that any employee with secretions or discharge from the neck up and between the fingertips and elbows must be excluded from any work involving direct food contact. However, the employee may work in Food Handling Areas and Food Storage Areas if no secretion or discharge is visible beyond a wound control or dressing that is in accordance with this standard and guidelines.
- Food provider's wound and infection control procedure must require the disposal of all food items that the employee was working with when cut or wounded, or when the employee discovered any other non-compliance with this standard and guidelines.
- Food provider must always have a well stocked first aid box with all necessary items.

Glass and Hard/brittle plastic policy

Glass can be controlled by having a glass breakage policy, such as throwing away all food and containers within 10 feet of the incident (Stier, 2001). Light fixtures can be protected so that if they break, the glass does not spill out (Folks *et al*., 2001). Other controls include examining of empty glass containers visually or cleaning a container with water or compressed air and inverting the container to remove any shards. X-ray technology can also be helpful in identifying glass pieces in food (Olson, 2002). The glass breakage policy should detail the methods used to prevent glass breakage and the steps taken if glass breakage occurs.

The following procedures can be adopted as Glass policy

- All glass containers in storage area to be stored in the lowermost shelf.
- Glass packing materials such as bottles should be eliminated from Food Handling Areas (when possible). Contents of glass bottles issued shall be transferred in clean and disinfected trays or plastic bottles at the stores counter and then taken in.
- No Wrist watches to be worn by the Production staff while on duty.
- In case of breakage of glass pane due to an accident, the area shall be immediately cordoned off and food around that area shall be discarded. The accident site should be cleared immediately and glass panel replaced.
- Numbering of glass panels can be followed for easy tracking incase of any breakage.
- To avoid contaminating food with hard or brittle plastic materials the same has to be identified and regularly checked for any breakages.
- Hard or brittle plastic materials include plastic containers, equipment spare parts, hand washing station kit, plastic bins, plastic pallets, wall clocks, digital displays, switch boards etc.
- Glass breakage record to be maintained for followup.

Wood policy

Food provider must have and follow a Wood policy with the following guidelines.

- Wooden furniture / Notice boards, Wooden boxes / pallets, Wooden equipment i.e.Knives/ladles/cutting boards etc are strictly to be avoided in the food processing areas.

Drop object policy

The Drop object policy should detail the methods used to prevent cross contamination when food and implements fall down and get contaminated:

- Products that have fallen on the floor to be discarded and not reused unless the contamination can be completely removed.
- Ladles / Knives / Spoons or any other articles that comes in contact with contaminated surfaces to be washed and then reused.
- Certain products .eg cheese blocks that have accidentally fallen can be reused after the outer surface is shaved off to remove contamination. Fruits or vegetables can be washed and used.
- Other products in which the contamination cannot be removed to be discarded.

Glove policy

Food provider's glove wearing policy must describe the appropriate method for using gloves and when employees and visitors are required to replace gloves.

Policy should specify the following

All employees and visitors must dispose and replace gloves

- Before starting work;
- Following breaks, visiting toilets, eating, drinking, coughing, sneezing and smoking;
- After touching potentially contaminated surfaces such as raw food products or any skin; and
- In all other instances where cross contamination may be an issue.
- Gloves to be used in addition to hand washing and not as an alternate.
- Gloves should be used while physically handling ready to eat food wherein portioning devices cannot be used.
- Hands must be washed before wearing gloves and after removing them.

- Gloves that are clean, intact and fit properly should be used for handling the food.
- Gloves should be changed between the different tasks.
- Gloves should be disposed and replaced after touching potentially contaminated products or surfaces, handling garbage or garbage cans.
- Gloves should be put on just before operation and should not come in contact with objects other than food like tables, trolleys etc.
- Gloves should be changed at defined intervals, when the same task is been carried out and disposed properly when leaving the working area.
- The use of gloves should be monitored to ensure that they are worn correctly and do not give rise to risk of cross contamination.
- Do not wash hands when gloves are on, instead change the gloves whenever necessary.
- Do not move with gloved hands outside the section.

Foreign Objects Policy ICQA – IATA Food Processing Safety Standards, 2010

Food provider must have and follow a written policy to prevent potential direct or indirect contamination of food caused by foreign objects (in all areas).

The Food provider must have a "Foreign Object Policy" as appropriate to the nature of its business. The company will operate procedures designed to either remove or control potential sources of physical contamination of food and food contact surfaces. The following guidelines as given in World Food Safety Guidelines for Airline Catering, 2010 can be followed:

- **Elimination:** Sources of physical contamination should be eliminated where possible through product design or HACCP based procedures.
- **Control:** Any risk of physical contamination that can not be completely eliminated e.g. glass can be protected against damage, i.e. lighting fixtures, including the electric attractant fly killers, in all production and storage areas can be guarded or sealed, with unbreakable enclosures to retain glass in the event of any breakage.
- **Training:** All staff should be trained in the prevention of physical contamination of food and food contact equipment. The Training should ensure compliance with all applicable
- HACCP procedures and Control measures including monitoring and Corrective Actions.

Visitors Policy

To control access to the food areas for reasons of food safety a visitors policy needs to be in place and operational to enable visitors to adhere to the food safety needs prior to entering the food preparation areas.

- Visitors should have signed the visitors declaration (that includes Health declaration) prior to entering the process areas.
- Visitors should be accompanied at all times by a representative of the Unit.
- Watches and loose jewellery must be removed including other falling objects.
- Full protective clothing must be worn, with shoe covers.
- Preferred if visitors are aware of essentials of food hygiene.
- Visitors to wash their hands in the hand wash sinks and disinfect before their entry.
- Visitors are asked to avoid touching any food items or any direct food contact surface.
- If required to handle food, gloves to be used.
- The above company hygiene policy must be adhered to at all times.
- Visitors to read the details and acknowledge their acceptance by signing the "Entry Register".

Conclusion

It is important to realize that complete safety is likely to be unrealistic. A zero-risk standard is appropriate for broken glass in canned food, but may or may not be appropriate for microbial pathogens in raw unbranded products (Unnevehr and Jensen, 1996). Improving food safety along the chain involves the control of various hazards by means of different measures. Food safety measures are often applied in combination with hazard control throughout the production process. Such combinations of measures often result in non-additive hazard reduction. Applying a number of measures along the chain, including HACCP, can control most potential hazards (Valeeva *et al.,* 2004). In conclusion it is to be understood that there is not simply a single factor that ensures food safety rather interactions among many different factors are seemingly important drivers of ensuring food safety. The above food safety policies when implemented and followed can effectively control hazards. Consequently, the protection of foods from hazards must be considered one of the essential public health functions of any country, with emphasis on the need for a sound *Food Safety Management System*.

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