

Analysis of Application Hygiene Principles of Food and Safety Employees Tofu Factory in Padang Selasa, Bukit Besar Palembang

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Abstract. The main challenges and obstacles encountered by the national food industry are that they must be quality and safe for consumption and do not contain ingredients that are harmful to human health. Businesses that are commonly found on a household scale include the Tofu and Tempe Manufacturing Plant in Padang Selasa, Palembang. The purpose of this study was to determine the description of food sanitation hygiene conditions and work safety of employees when producing tofu. This research method is a type of observational research with a cross sectional approach that is descriptive in nature, that is, research is conducted to describe a situation without giving treatment to objects that aim to study the quality of work safety, sanitation hygiene of tofu factory workers in Padang Selasa, Bukit Besar Palembang. The results showed that the description of the aspect of material selection at the tofu factory Padang Selasa Bukit Besar Palembang included in the category of eligible (100%), aspects of food storage did not meet the requirements (100%), processing aspects did not meet the requirements (100%), storage aspects food does not meet as many requirements (80%), aspects of food transport have met the requirements and aspects of food serving are not eligible (80%) while aspects of employee safety and personal hygiene while working also do not meet the requirements (80%). Conclusion: Overall it was concluded that of the 5 factories studied the application of the principles of hygiene and sanitation and occupational safety did not meet the requirements, so it needed supervision and guidance from the Health Service through the Puskesmas in the working area.

1. Introduction

Nowadays the opportunity and competition in the formal sector has been very difficult, the comparison of available employment with the available workforce is no longer in balance. Therefore, one alternative is to develop economic efforts in a labor-intensive society. One form of business in the work that many people have begun to develop is the home industry of Tahu Tempe. The interesting thing about the existence of the tofu and tempeh industry is that the scale of the industry is mostly still in the form of small and medium industries producing with traditional methods so that the production process needs to be prioritized to prioritize aspects of food hygiene and health. [1]

In Law No. 36 of 2009 the sixteenth part of chapter VI which regulates health efforts. In the Law, health is explained that securing food and drinks is an important part of health efforts. Therefore, articles 109 through 112 regulate the main points of food and beverage security, stating that the increase and stabilization of health efforts are carried out through 15 types of activities, one of which



is food and beverage security. Efforts to safeguard food and drink will be further enhanced to support the effective and efficient improvement and strengthening of health efforts. All of that is an effort to protect the public from food and drinks that do not meet quality requirements. [2]

Food and beverage sanitation is an effort to control the place, equipment, people and food factors that can or may cause health problems and food poisoning. (Rahayu NA, 2012) Hygiene and sanitation cannot be separated from one another because it is closely related. For example hygiene is good because you want to wash your hands, but sanitation doesn't support because there isn't enough clean water available, so hand washing isn't perfect. [3]

Contamination of food products can cause dangerous diseases to death. In one article from *Pikiran Rakyat*, in 2013 there were 10,700 cases of food poisoning which resulted in death in Indonesia. [4] In addition, in 2016 there were data showing that approximately 14.9% of the 26,537 food samples did not meet the requirements. The food product is said to be ineligible because it contains hazardous ingredients, microbial contamination or food additives (BTP) whose levels exceed the maximum allowed. In 2011-2015, food products that did not meet the requirements experienced an increase of about 35 percent. Then, in 2013-2015, reports of serious food poisoning increased from 48 to 61 cases in 34 provinces. [3] Therefore, to reduce contamination in the production process in an industry, this must be considered properly, namely by applying GMP (good manufacturing practices) and HACCP (hazard analysis and critical control points) so that cases of food poisoning can be reduced. [5]

One part of GMP is sanitation. Sanitation plays an important role in various industries including the food industry. Food sanitation determines how hygienic a product is produced. Sanitation also supports the HACCP program implemented in the food industry. Usually, large scale food industries have implemented HACCP, but there are still many home scale industries that have not implemented it. Of course this is a special concern because the products produced are not guaranteed maximum safety. Food safety risks for consumers are very important because there are regulations that govern them. Therefore, in this study a review of the household scale industry was conducted. [5]

Every person and legal entity that manufactures, processes food or food, and distributes food and beverages that are treated as food and beverages as a result of circulating genetic engineering technology must ensure that it is safe for humans, animals that are eaten by humans and the environment. [3]

In this research, the industry which was examined the application of safety and sanitation, is the tofu industry in Padang Selasa, Bukit Besar Palembang. This area is a large-scale tofu-making center distributed to market traders for resale. Tofu industry is a small industry which is generally managed in the form of a home industry, so that its development is always faced with problems concerning raw materials namely soybeans, availability, and quality of production factors, profitability, marketing and capital.⁷ Tofu is generally used as side dishes and as additional food or. The potential of tofu in improving health and its relatively cheap price provides an alternative choice in the provision of nutritious food that can be reached by all levels of society. [6]

One effort to improve the degree of health that is more optimal is to meet the need for hygienic food which is influenced by factors of place sanitation, work safety and food handlers hygiene. Because food is a substance that is needed and plays an important role for human health, considering that at any time disease can occur due to food. According to statistical data that about 90% of diseases that occur in humans have a relationship with food. [7]

The results of the Hygiene and sanitation of the tofu industry are reviewed from the means of using the choice of food ingredients for the tofu industry, if they have met all the requirements. The results showed that hygiene and sanitation of the tofu industry had fulfilled all the requirements, however other research on clean production planning of tofu processing industry in Sumber Urip Pelaihari, it is found that there are still many factory conditions that do not meet the principle of product cleanliness so that researchers provide alternatives to improve clean production in terms of raw materials, production processes, work atmosphere and industrial sanitation hygiene can be done with the principle of GHK (Good Housekeeping), recovery and reduce principles, including sorting soybean raw materials to reduce impurities such as damaged soybean seeds, stones or gravel, in the use of

water the alternative solution is giving instructions to employees to carry out water pipe maintenance and applying the principle of reduce in the washing stage of soybeans, water used to be accommodated in a large tub with 3 rinses, the principle of recovery is utilized as organic fertilizer and biogas as a substitute for fuel for household use and tofu processing production. use PPE (Personal Protective Equipment) such as earplugs or headsets, especially in the milling process and screening process, conduct organizational improvements by making cleaning schedules to improve working conditions by using personal protective equipment such as wearing plastic gloves in the cutting process so that tofu produced is more guaranteed quality and cleanliness so as to provide added value to customers and buyers. [8]

The selection of tofu industry location located in Padang Selasa, Bukit Besar Palembang was based on the results of inspection by the Palembang City Health Office together with Palembang City Officials in 2017 through sudden inspection. It was found that there were 2 tofu production houses that used formalin preservative, based on the explanation from producers that the use of these materials on the basis of ignorance which considers that the liquid is only a salt solution. Other aspects that were the focus of this study were occupational safety factors and the application of the principle of hygiene hygiene in the production process of the year, because based on its profile that the capacity of this tofu factory was large enough so it was necessary to know whether food security efforts had been carried out in accordance with the provisions of food safety requirements.

Based on this background the researcher intends to conduct research on the Application of Analysis of 6 (Six) Principles of Food Sanitation Hygiene and Work Safety of Employees of Tahu Factory in Padang Selasa Bukit Besar Palembang.

2. Method

This research is a descriptive observational type of research, the research was conducted to describe a situation without giving treatment to objects that aim to study the quality of work safety, sanitation hygiene of tofu factory workers Padang Selasa Bukit Besar Palembang. According to time, this research is a cross sectional study because it was conducted at one time. The subjects in this study were 5 factories including owners, employees/workers and facilities available at the tofu factory

Padang Selasa Bukit Besar Palembang.

- The research process begins with the search for a research permit by submitting a permit to the tofu business owner at Padang Selasa, Bukit Besar Palembang.
- The second stage is the preparation of a Research Instrument using a Checklist by formulating statements based on previous research references as an indicator of principle application food sanitation hygiene. Sanitation hygiene and safety checklist instruments were prepared using the HACCP (Hazard Analysis Critical Control Point) approach, namely: (1) food selection, (2) food storage, (3) food processing, (4) food storage (5) food transportation, (6) food serving (7), Work safety of employees (8). Researchers fill in the checklist by giving a sign (✓) in accordance with the assessment in the available column. Assessment consists of 2 criteria, namely "Yes" and "No"
- The next stage is field observations / assessments conducted at 5 tofu factory locations. Each item counts the answer "Yes" divided by all items assessed on that component multiplied by 100%, this is done on each component. Based on the percentage of appraisal from the 5 locations, the factory is then distributed which meets the requirements and does not meet the requirements to describe 7 components of the assessment, then the final stage is to assess the factory that has applied the principles of employee hygiene and safety.
- The collected data is then recapitulated, processed and analyzed based on existing assessments.

In this study the analysis of the data used is quantitative, using descriptive statistical formulas that function to describe or provide images of the objects studied through sample data or populations as necessary, without conducting analysis and making conclusions that are applicable to the public

(Sugiyono, 2012: 29). The research data is presented in the form of a tabulation to distribute the results of the application of the 6 principles of food sanitation hygiene and employee safety conditions.

3. Results

Results of research conducted on July 13, 2019 in 5 (five) Tofu Industries located on Jl. Selako Hair Princess Padang Selasa Bukit Besar Palembang. Following are the results of research related to the application of the principles of food hygiene and sanitation and Employee Safety in the five industries obtained the following results:

Table 1. Frequency Distribution of Application of Hygiene Principles and Application of Work Safety Aspects at the Padang Tofu Factory on Tuesday in Palembang

No	Assessment Components	Qualify		Not eligible	
		f	%	f	%
1	Sanitary Hygiene Principles	5	100	0	0
2	Selection of Raw Materials	0	0	5	100
3	Food Storage	0	0	5	100
4	Processing	1	20	4	80
5	Penyimpanan tahu	5	100	0	0
6	Transportation Presentation	1	20	4	80
7	Occupational Health and Safety	1	20	4	4

4. Discussion

The results of research on the application of the principle of food sanitation hygiene at the tofu processing plant in Padang Selasa Palembang found that from 5 locations of the tofu processing plant seen from the aspect of the application of Food Sanitation Hygiene Principles and aspects of Employee Health and Safety found 4 application principles have not been done well (fulfilling the requirements) namely the principles of food storage, processing, storage of processed foods (tofu).

Based on observations made in the production process of making tofu classified as not meeting the requirements. This can be seen from the place of tofu processing that is still dirty, slippery floors, dirty and rusty milling machines, dirty boiling containers, dirty shelves, the location of toilets that are close to the tofu processing plant, spider webs left, spider vectors such as flies, cockroaches, rats, processing water left over into the gutters around the tofu industry. The condition of workers/ employees is also still lacking awareness about personal hygiene, this can be seen when work not using complete clothes, and the condition of clothes that are not clean when processing tofu, some male employees leave their hair long and untied, do not use aprons, headgear, masks and uncut nails.

The results of previous studies on how to produce good food in the tofu-making home industry in the area of the Public Health Center Shoulder, Manado showed that as many as 11 tofu-making household industries in the area of the Shoulder Health Center (100%) are in quality III (less). The components that did not meet the requirements included the lack of 10 industrial processing facilities (90.9%), 6 industrial sanitation processing facilities (54.5%), for 2 industrial equipment (18.2%) lacking equipment, less hygiene of 11 industries (100%), and less storage space of 11 industries (100%). Other components of processing and control facilities are less as many as 9 industries (81.8%), lack of environmental pests as many as 11 industries (100%), less processing space as many as 6 industries (54.5%), lack of processing facilities as many as 8 industries (72 , 7%), handling less waste by 11 industries (100%), lacking water supply by 8 industries (72.7%), and controlling actions for less than 1 industry (9.1%).

The production process is technical to produce or add to the use of an item or service with available resources such as material, labor, capital and technology. The process of making tofu requires a number of tools and materials such as tools used in the process of making tofu including grinding

machines, frying water pumping machines, bucket knives, tofu molding machines. The materials used in making tofu are solar, filter cloth, plastic packaging, vinegar thinners, soy. This is in accordance with what was conveyed by Putri (2013) which states that food has requirements as a standard worthy of consumption, these requirements consist of the level of food hygiene (fruits, vegetables, canned foods, etc.) must be good and still fresh. [16]

The process of transportation and storage of raw materials is absolutely considered. Raw materials that are eaten in a raw state must be transported and stored separately from other raw materials and non-food ingredients. Food must be sent in such a way as to prevent the growth of pathogenic microorganisms from forming or forming toxins by regulating the length of time of delivery, temperature and water activity (A_w) of raw material. [17]

The results of this study are in line with several previous studies, which stated that in improving hygiene and sanitation of food equipment, an effective submersion is needed using hot water (60o C) and the time required is 30 minutes to 1 hour. Furthermore, equipment cleanliness must indeed be considered because dirty tubs allow cross-contamination between tubs and equipment. [18]

In addition, that respondents had never taken a course on food sanitation hygiene, and had never received guidance and supervision from relevant agencies, so that the bad behavior was caused by ignorance of food handlers on the rules and requirements governing food sanitation hygiene including home industry manufacturing processes know, so that it can be one of the factors that influence behavior in the application of food stall sanitation hygiene requirements. To improve the quality of food served, it is necessary to increase knowledge through the provision of training/courses and field practice to managers, food processors, food presenters, as well as supervisors and supervisors of food hygiene in the field. [19]

The results of other studies also indicate that the level of safety and sanitation in the environment of healthy beverage production at UMKM Jukajo Sukses Mulia is still quite good. The most potential sources of contamination, found in the production process are employee hygiene and cleanliness of production equipment 15 so the most important thing to consider is the environment of the food processing facility including the food handler.

Based on RI Law No. 18 of 2012 concerning Food, hygiene and sanitation is carried out so that food can be consumed safely, then in controlling the risk of hazards in the food chain must control the risk of danger, both originating from food raw materials, equipment used, production process facilities and individuals so that security is guaranteed . In addition, individuals who organize or are involved in the production, storage, transportation and / or distribution process are required to fulfill sanitation requirements and ensure food security for human safety.

The results showed that there were 13 PIRT (54.2%) that met the household food industry sanitation hygiene requirements and 11 PIRT (45.85%) did not meet the household food industry sanitation hygiene requirements in the working area of the Paniki Puskesmas below. The conclusion from the results of this study is that most of the IPRTs in the working area of the Paniki Bawah Community Health Center in Manado have met the IPRT hygiene and sanitation requirements. Based on this, routine inspections and guidance to the household food industry must be carried out on how to process, store food, produce food and personal hygiene. In addition, the puskesmas can conduct training and IPRT monitoring in accordance with health standards, conduct regular inspections and provide guidance to the household food industry on how to process, store food, produce food and personal hygiene. In addition, there is a need for socialization / counseling on IPRT hygiene and sanitation standards that are in accordance with health standards. [19]

Alternative clean production improvements for aspects of raw materials, production processes, work atmosphere and industrial sanitation hygiene can be done with the principle of GHK (Good Housekeeping) organizing organizational improvements by making cleaning schedules to improve working conditions by using personal protective equipment such as wearing plastic gloves in the process cutting so that the resulting tofu is more guaranteed quality and cleanliness so as to provide added value to customers and buyers of the principle of recovery and reduce. (Jaya DJ, et al. 2018)

The last point that needs to be emphasized in the tofu-making home industry is the low level of cleanliness of the processing facilities and is not hygienic. Based on observations at several tempeh tofu making locations in Palembang city and regency that have been visited have the same problem, apart from that equipment cleanliness is also still an indicator of the cleanliness of the factory. In general, when viewed from the aspect of the principle of industrial hygiene, tofu tempeh is still classified in the category of not meeting the requirements, as well as the work safety aspects of employees who have not guaranteed workers to avoid the risk of danger when working such as burning, falling due to slippery floors, high heat during frying and others- others, so that regular supervision and supervision are needed to create a clean and healthy factory atmosphere. To increase the quality of food served will need to increase knowledge through the provision of training / courses and field practices to managers, processors, food presenters, as well as supervisors and supervisors of food hygiene in the field.¹⁴ In addition, increasing knowledge of food handlers through providing training / courses can reduce morbidity and mortality due to food.

5. Conclusions

Overall it was concluded that of the 5 factories studied the application of the principles of hygiene and sanitation and occupational safety did not meet the requirements, so it needed supervision and guidance from the Health Service through the Puskesmas in the working area

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