

## Evaluation of the application of the principles of industrial sanitation and employee hygiene

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### ABSTRACT

The food industry is an industry that processes agricultural products into products, all of which are ready for consumption by a community. Therefore, the food industry is more involved in the downstream part of making these products. The primary function of the food industry is to save, disseminate, and increase the added value of agricultural products effectively and efficiently. Sanitation is an effort that monitors several environmental factors that affect humans and significantly impact the effect, damage to physical development, health, and survival in life, or efforts to maintain food, workplace, or free from pollution caused by bacteria, insects, or other animals. This study aims to analyze industrial sanitation and employee hygiene based on the reference in a Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010 concerning Good Processed Food Production Methods. The analytical method uses a check sheet, descriptive statistical analysis, and fishbone diagrams. The results of the analysis showed that the application of industrial sanitation and employee hygiene at Sweet Sundae was good, with the percentage of application is 85% being implemented and 15% not being implemented.

**Keywords:** Industries, Sanitation, Hygiene, Check Sheet, Fishbone

### INTRODUCTION

According to Law no. 5 of 1984, Industry is an economic activity that processes raw materials, raw materials, semi-finished goods, and finished goods into goods with a higher value for their use, including industrial design and engineering activities (Pujoalwanto, 2014). The food industry is an industry that processes agricultural products into products that are ready for consumption by the public. Therefore, the food industry is more active in the downstream part of the product manufacturing process. According to (Wiranatakusumah & Syah, 1990), the primary function of the food industry is to save, disseminate, and increase the added value of agricultural products effectively and efficiently.

Sanitation is a business that oversees several environmental factors that affect humans, especially things that affect effects damage physical development, health, and survival or efforts to maintain the maintenance of food, workplaces, or pollution-free caused by bacteria, insects, or other animals (Hermawan, 2016). The purpose of sanitation is to create or maintain conditions that can prevent food contamination or disease caused by food and concrete efforts to create hygienic conditions (Widyati & Yuliarsih, 2002).

In Indonesia, the rules or references used for implementing industrial sanitation and employee hygiene are outlined in the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010 concerning Guidelines for Good Manufacturing Practices of Processed Foods. Sweet Sundae is a milk processing-based company. This company is still on the scale of small, medium, or SME businesses. In practice, several aspects still do not meet the requirements for industrial sanitation and employee hygiene based on the reference to Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010 concerning Guidelines for Good Processed Food Production. Therefore this observation needs to be done to improve sanitation and hygiene practices so that they are better (Kemenperin RI, 2010).

**RESEARCH METHOD**

**Methods**

This research was conducted for one month at Sweet Sundae, Sleman Regency, Special Province of Yogyakarta. Data collection in this research includes field observations, interviews, literature study, data collection, data analysis, and conclusions. The analytical method used is a check sheet, descriptive analysis, and fishbone diagram.

**RESULT AND DISCUSSION**

Sanitation is a disease prevention effort that focuses on environmental health efforts (Rejeki, 2015).

Table I. Check sheet for industrial sanitation and employee hygiene assessment.

No.	Variable	Value	Component Rating	Max value	Yield value	Score	Description
1.	Location	3	- There are no standing water and no dust	2	2	6	The location of the building is appropriate and meets the requirements.
			- The factory environment is clean of piles of garbage.	2	2	6	
			- Tidak terletak di lokasi yang mudah banjir.	2	2	6	
			- Not located in a location that is prone to flooding.	2	2	6	
			- The production site is far from landfills or places that are sources of contamination.	2	2	6	
2.	Building	3	- There is ample space for workers	3	3	9	The production room building is appropriate, but often materials spill on the floor.
			- Place of production following the order of the production process.	3	3	9	
			- The production site is easy to clean.	2	2	6	
			- Clean the room of useless materials	2	1	3	
3.	Floor	2	- Floors are waterproof, even, non-slip, non-cracking, well-maintained, and easy to clean	2	2	4	The floor of the production room is appropriate and meets the requirements.
			- The walls and ceilings are well-made and free of dust and animal nests	5	5	10	
4.	Wall	2	- Walls exposed to splashing water are coated with a waterproof material 2 meters high from the floor	5	5	10	The walls of the production room are appropriate and meet the requirements.

# Journal of Halal Science and Research

ISSN: 2715-6214 (Print), ISSN: 2964-4909 (Online)

Journal homepage: <http://journal2.uad.ac.id/index.php/jhsr>

doi: 10.12928/jhsr.v3i1.6817

5.	Roof and ceiling	2	- Made of durable, waterproof, and leak-proof material.	3	3	6	The roof and ceiling of the production room are appropriate and meet the requirements.
			- Ceilings are made of materials that do not erode quickly, are easy to clean, and do not crack easily.	2	2	4	
			- The ceiling is not perforated and not cracked.	3	3	6	
			- Flat ceiling surface.	2	2	4	
6.	Door	2	- The door is strong and not easy to break.	3	3	6	The door in the production room is made of solid wood, and the surface is flat and meets the requirements.
			- The door surface is flat and easy to clean.	2	2	4	
			- The door is closed correctly.	2	2	4	
			- The door of the room opens out.	3	3	6	
			- Durable and not easily damaged.	3	3	6	
7.	Window	2	- The window surface is flat and easy to clean.	3	3	6	The windows in the production room have met the requirements.
			- Number and size of windows according to the size of the building.	2	4	4	
			- The minimum window height is 1 meter from the floor	2	4	4	
			- Natural ventilation can be penetrated by direct sunlight	3	3	6	
			- There is artificial ventilation (AC, fan, exhauster)	2	2	4	
8.	Ventilation	2	- Does not contaminate processed food.	3	3	6	Ventilation in the production room is good, but there is no air conditioning.
			- All air conditioners in the room are working properly	2	0	0	
			- Water is sourced from wells or PAM water and is equipped with pipes and reservoirs to drain water.	2	2	20	
			- Clean water sources for the production process must meet health requirements	2	2	20	
9.	Water supply	10	- Water used for production must meet the requirements of clean water quality.	2	2	20	The water used is appropriate and meets the requirements.
			- Clean water used for production and water for	2	2	20	

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			consumption must be separated.				
			- Clean water is available for the needs of employees.	2	2	20	
10.	Disposal of water and waste	10	- Disposal of wastewater from the production room, bathrooms, and rainwater channels is smooth, sound, and not clogged	10	10	100	Disposal of waste is appropriate and meets the requirements.
			- The number of facilities is sufficient	3	3	18	Hand-washing facilities and toilets are appropriate.
11.	Washing facilities and toilets	6	- Handwashing facilities, soap, and hand sanitizer are available	3	3	18	
			- A sufficient number of landfills.	1	1	6	Organic and inorganic waste bins are not separated,
12.	Garbage disposal	6	- There are organic, inorganic, and glass trash cans.	2	0	12	and several trash bins are not lined with plastic.
			- There is a closed trash can.	1	1	6	
			- The tongs used are covered in plastic.	2	1	6	
			- According to the type of production	2	2	9	Machinery and equipment follow the standards of the milk production process.
13.	Sanitation of machinery and equipment	3	- Surfaces in direct contact with processed foodstuffs are smooth, do not have gaps, do not peel, and do not absorb water or rust.	3	3	9	
			- Easy to clean, disinfect and maintain to prevent contamination of processed foodstuffs.	3	3	9	
			- Made of durable material, easy to move or disassemble.	2	2	6	
			- All employees who work are free from infectious diseases such as skin diseases, ulcers, open wounds, and upper respiratory tract infections	2	2	20	The implementation of employee hygiene is exemplary, but the performance is not optimal.
14.	Employee hygiene	10	- Always wash your hands and hygiene	1	0	0	
			- Do not use jewelry (rings, bracelets, and clocks)	1	0	0	
			- Nails are not long	1	1	10	
			- Wear standard work clothes	1	1	10	
			- Wearing PPE properly	1	0	0	

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- Do not touch the product directly	1	0	0
- Free from beauty accessories that can fall on the product	1	1	10
- No eating and drinking in the production room	1	1	10

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Skor maksimum : 589 (bobot x nilai max)

Nilai skor : 504

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Sumber CPPOB : Peraturan Menteri Perindustrian RI No. 75/M-IND/PER/7/2010

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## Industrial sanitation evaluation

### a. Building location

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, the location of the yard building is clean, tidy, and not muddy. The factory environment is clean of piles of garbage. It is not located in a location that is prone to flooding. The plant's location must be free from bushes and areas infested with pests. The production site is far from landfills or places that are sources of contamination. The location of Sweet Sundae is in an environment that is far from landfills, not easily flooded, and free from bushes where pests are attacked. The factory environment is clean of garbage because garbage disposal is carried out daily.

### b. Building

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, the production room must have a large enough space for workers. The room must be clean of useless materials. The processing room must be separated in each process / given a barrier between one room and another adjacent to the process flow.

The production room at Sweet Sundae has a reasonably large building consisting of a laboratory room, raw material storage room, product storage room, and production room. However, there is often a spill of milk on the floor, which causes a slippery floor that has the potential to endanger employees.

### c. Floor

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, floors are waterproof, flat, not slippery, not cracked, well maintained, and easy to clean. At Sweet Sundae, the production room floor is made flat and coated with ceramic so that the floor is waterproof. The junction between the floor and the wall is curved for easy cleaning. Self-cleaning is done after the completion of production.

### d. Wall

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, the walls are well-made and free of dust and animal nests. Walls exposed to splashing water are coated with a waterproof material 2 meters high from the floor. The walls in the Sweet Sundae production room are in good condition and sturdy. The walls are made of concrete, installed with ceramics on the outside, making cleaning the dirt that sticks to the wall easier.

### e. Roof and ceiling

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010 made of durable material, waterproof, and does not leak. Ceilings are made of materials that do not erode quickly, are easy to clean, and do not crack easily. The top is not perforated and not broken. Flat ceiling surface. At Sweet Sundae, the ceiling in the production room is made of galvanized, watertight, and plasterboard is added to the roof to prevent dirt from entering the production room.

### f. Door

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, The door is strong and not easily broken. The door surface is flat and easy to clean. The

door is closed correctly. The entrance of the room opens out. In Sweet Sundae, the use of entries in the production room uses sliding doors with plastic curtains on the inside of the door, which can prevent air from entering and minimize contamination from outside. However, the door is not made to close by itself.

g. Window

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010 window surface is flat and easy to clean. Durable and not easily damaged. Number and size of windows according to the size of the building. The minimum window height is 1 meter from the floor. At Sweet Sundae, the window in the production room is good enough. The window is made fixed, which can prevent insects and flies from entering the production room.

h. Ventilation

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, natural ventilation is permeable to direct sunlight. There is artificial ventilation (AC, Fan, Exhauster). Does not contaminate processed food. All air conditioners in the room are working correctly. The roof of the building at Sweet Sundae has been fitted with a blower fan, which is used for air circulation as air in and out. Ventilation is made on each side of the room, and the ventilation has been closed with a gauze cover to prevent insects from entering. However, the atmosphere in the production room is quite hot even though ventilation is installed on each side of the room; this is because the production machines generate heat, and there is no air conditioning which causes the room temperature to heat up.

i. Water supply

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, Water is sourced from wells or PAM water and is equipped with pipes and reservoirs to drain the water. Sources of clean water for the production process must meet health requirements. Water used for production must meet the quality requirements of clean water. Clean water used for production and water for consumption must be separated. Clean water is available for the needs of employees. The water supply system at Sweet Sundae uses healthy water stored in a water tank. Water from the water tank is channeled to the toilet, sink, and washing area for production equipment. As for production, it uses gallons of water that already meet the standard set by the Republic of Indonesia Minister of Health Regulation No. 492/Menkes/IV/2010 (Kemenkes RI, 2010).

j. Disposal of water and waste

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-ENG/PER/7/2010, the disposal of production wastewater, bathrooms, and rainwater channels must be smooth, sound, and not flooded. In Sweet Sundaes, liquid waste is in the form of water used for washing, cleaning the production room, and disposing residual milk. Disposal of liquid waste uses a natural infiltration system channeled into the sewer through a sewer.

k. Washing facilities and toilets

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, which has been determined that the number of hand washing facilities and toilets must be sufficient. And there are soap and hand wipes in the hand washing area. At Sweet Sundae, there are adequate hand washing and toilet facilities, and soap and hand sanitizer are available in the hand washing area.

l. Waste disposal

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, the number of landfills must be sufficient; there are organic, inorganic, and glassware bins. Covered trash cans are available. The winnowing bin is coated with plastic so that if it is complete, it can be immediately thrown away. Garbage dumps at Sweet Sundae are almost in every corner, but the types of waste disposal, such as organic, non-organic, and glassware, are not separated. There should be three types of organic, non-organic, and glassy waste disposal in every garbage disposal, and there are several trash cans that are not covered with plastic on the inside of the trash can.

## m. Machinery and equipment

According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, machinery and equipment must follow the type of production. Surfaces in direct contact with processed foodstuffs are smooth, do not have gaps, and do not peel, absorb water, or rust. Easy to clean, disinfect and maintain to prevent contamination of processed foodstuffs. They are made of durable material, easy to move or disassemble. Almost all machines on Sweet Sundae use stainless steel, so they are easy to clean and durable. The equipment used in Sweet Sundae follows the reference: to have a smooth surface, waterproof, and easy to clean.

## Employee Hygiene Evaluation

Personal hygiene is everything that includes personal health. Hygiene is a science that teaches ways to maintain physical, spiritual, and social health to achieve a higher level of well-being (Prastowo, 2017). Personal hygiene is an activity or activity of a person that is carried out continuously to maintain personal hygiene and health (Wulandari et al., 2017).

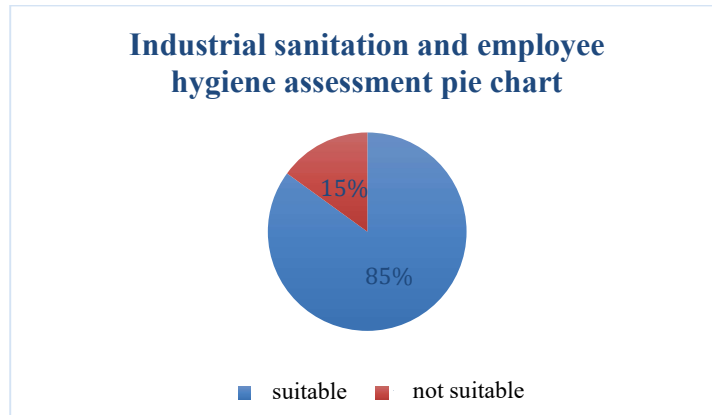
In addition to industrial sanitation, observations were made on employee hygiene. According to the Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010, aspects of employee hygiene that must be implemented are that all employees who work are free from infectious diseases such as skin diseases, boils, open wounds, and Upper Respiratory Tract Infections or also known as ARI. Always wash hands and hygiene, do not use jewelry (rings, bracelets, and clocks); nails should not be long; wear regular work clothes; wear personal protective equipment (PPE) properly; do not touch products directly; free from beauty accessories that can fall to products, and do not eat and drink in the production room.

Implementing employee hygiene at Sweet Sundae is exemplary, but the performance is still not optimal, as employees often do not use PPE properly. During practical work, employees often find violations such as not using gloves and masks that do not follow SNI 8914: 2020, which states that using cloth masks consists of at least two layers of cloth. Employee hygiene is essential, especially in this production section which is susceptible to contamination by microorganisms on the employees' limbs through the mouth, hands, skin, and clothing used. To avoid contamination, employees are usually not allowed to talk too much while working. In addition to the above, there are still employees who use wristbands while working. For other things, employee discipline is good, such as not eating in the production room, not having long nails, not wearing beauty accessories, and avoiding skin diseases.

## Statistical Analysis

Statistical analysis was carried out by making a scoring percentage from the check sheet for assessing industrial sanitation and employee hygiene using the formula:

$$\% = \frac{\text{score value}}{\text{max score}} \times 100\%$$

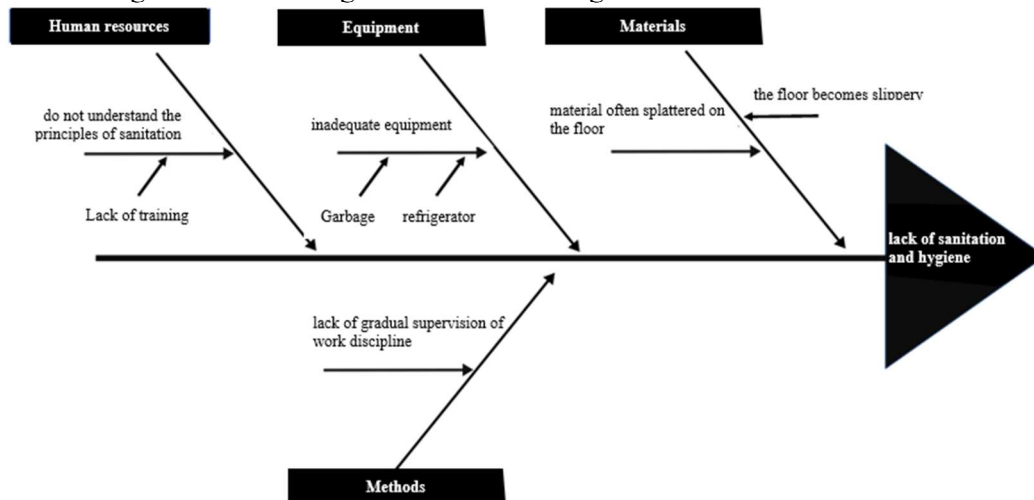


**Figure 1.** Pie chart of industrial sanitation and employee hygiene assessment at Sweet Sundae

Based on the pie chart shows that 85% of industrial sanitation and employee hygiene at Sweet Sundae have been implemented, and 15% have not been implemented.

### Fishbone Diagram Analysis

The following analysis uses fishbones to categorize various potential causes of a problem or issue in a way that is easy to understand and neat. This tool also helps us analyze what happens in the process by breaking down the cycle into several categories related to the process, including people, materials, machines, procedures, policies, and so on (Imamoto et al., 2002). The results of the analysis of the causes of the problem using the fishbone diagram are shown in Figure 2.



**Figure 2.** Fishbone diagram

Based on Figure 2, it can be seen that several factors did not implement industrial sanitation and employee hygiene at Sweet Sundae, namely in terms of human resources, equipment, materials, and methods. Factors HR (Human Resources) Lack of understanding of sanitation principles; employees have little knowledge of sanitation principles, so there is a deviation from the principle of sanitation. This is due to employees' lack of training on sanitation and hygiene principles. The equipment factor is caused by inadequate equipment, and the availability of tools is critical to creating sound sanitation principles. The availability of tools can increase the quantity and quality of work. Lack of equipment can interfere with



optimizing employee work. The material factor is caused because the material is often scattered on the floor. After all, liquid raw materials often spill onto the floor while weighing or harvesting pasteurized milk. This causes the floor to become slippery, which can endanger employees. The method factor is due to the lack of gradual supervision of work discipline; gradual supervision of employee performance is essential because employee discipline is one of the factors creating the principles of good sanitation.

## CONCLUSION

The implementation of GMP (Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010) covers 18 aspects. In regulation number 75/M-IND/PER/7/2010, there are 86 conformities with a percentage of 83.07% and 14 non-conformities with 16.93% non-conformance. Constraints or causes that hinder the implementation of GMP (Regulation of the Minister of Industry of the Republic of Indonesia No. 75/M-IND/PER/7/2010) at CV Panda Food are due to human factors, materials, environment, and methods, namely doors, ventilation, and windows are not equipped with screens, not has a laboratory, walls and floors form elbows so that the production environment is challenging to clean, there is no pest prevention, lack of dryers or tissue and lack of firm action on GMP violators, lack of awareness in implementing sanitation, and there is still garbage that accumulates in the production room due to lack of supervision from the head of the product which causes the environment to be polluted.

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