

## Chapter 9

### Sanitation and hygiene in seafood processing

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Seafood focused facilities require more care than others as they demands special storage needs, which makes sanitation in fish processing plant facilities even more critical. Taking the proper steps to ensure a sanitized facility will create a safe environment to produce food products for the public. The better you maintain your facility, the better the products you produce will be, and there will be less risk for contamination.

Due to the popularity of seafood, the need for fish processing plants has increased significantly. Fish processing plants deal with water more than any other food processing plants, increasing the concern about bacteria and contamination within the facility. Ensuring sanitation in fish processing plant facilities is critical.

Follow these steps to help ensure maximum sanitation levels and prevent a serious crisis:

#### 1. Water Safety

Water is an essential component of fish processing plants, and water safety covers many areas. Water used for food and food-contact surfaces, producing ice, and separating potable and non-potable water sources is vital for facility sanitation. Any water should come from government-approved sources to ensure it is safe for food, food-safe sources, and human consumption. Monitoring is another essential part of water safety to ensure sanitation levels of potable water remain steady and any cross-connections don't lead to contamination.

#### 2. Condition and Sanitation of Food Contact Surfaces

Anything that comes into contact with food products during production counts as a food contact surface. Keeping these surfaces clean is vital. Maintaining them minimizes the potential of them needing repairs or replacing. To ensure you aren't damaging the surface, you want to watch what products you use and the concentration level of the chemicals. The easiest way to

avoid issues is to choose a material like stainless steel, which is resistant to bacteria and corrosion.

Inspect surfaces regularly, including gloves and outer clothing, to ensure it is in good condition, clean, and protecting the employees. With cleaners and sanitizers, test the chemical levels of the products to ensure they aren't too strong.

Fish muscle usually contains no bacteria, so if it's cut with a knife or is in contact with an infected surface after cutting, the food poisoning bacteria may be the first arrivals. Food Poisoning is preventable if we keep food clean, cool, and free from contamination at all times during handling.

### **3. Condition and Maintenance of Employee Hygiene Areas**

Employee hygiene is a critical part of any food processing plant. Hand washing, hand sanitizing, and toilet facilities are all required to help maintain the sanitation in fish processing facilities. You want to routinely monitor the condition of these facilities, ensuring they are clean and functioning properly. You want to repair toilets that are not working, keep all necessary supplies replenished, and ensure hand sanitizer meets the necessary concentration levels. Have all of these areas assessed by someone familiar with the requirements to ensure that nothing gets overlooked.

### **4. Store, Label, and Use Toxic Materials Properly**

Even though a fish processing plant deals with food, toxic chemicals are kept on the premises. Cleaners, sanitizers, insecticides, and lubricants for the equipment are just some of the chemicals that can be found. These chemicals are necessary for various reasons, but it is vital to take the proper precautions to ensure the fish and production area remain safe and free from harmful chemicals.

To prevent any dangerous situations, you need to take the time to organize, sort, store, and label all chemicals properly. Containers should be durable enough to handle the chemicals, especially if they are corrosive, and labels should be clear, providing the name, manufacturer information, and instructions for use. These chemicals should also remain away from food products and production equipment to prevent potential contamination or other damage.

## **5. Pest Control**

Pests refer to more than just rodents; it includes birds, insects, and other animals. Any pests inside a facility are incredibly problematic. They can create contamination, spreading bacteria like Salmonella, Staphylococcus, and Listeria, to name a few. Contamination can lead to a significant loss of revenue and cause damage to the company's reputation.

You need to ensure there are no entry points for pests and that deterrents are in place outside of the facility. Keeping the facility clean and free from food debris is also critical so that there is nothing to draw pests to the facility. Even with preventive measures in place, it is important to perform regular inspections to ensure the facility remains pest-free and take proper action if there are any concerns, to prevent a serious infestation.

## **6. Install a Sanitary Drainage system**

Floor drainage is a critical part of the sanitation in fish processing plant facilities. These systems help with water safety by keeping water from pooling on the ground, eliminating the risk of bacteria growing. By keeping floors clean, floor drains also help with pest control.

Food Safe Drain's industrial strength 10,000 Series Slot Drain is the perfect addition to any facility. The drain features a seamless design with NSF-certified T304 or T316 stainless steel. A grate-free design means that inspectors can look at the drain without anything blocking their view—it also makes maintenance much easier, especially with the inclusion of a clean-in-place system.

### **Requirements for an effective sanitation programme**

- Implementation of effective sanitation programme becomes necessary in any food processing industry. For a workable sanitation programme the following requirements have to be met. Management must be aware of the need for good sanitation.
- The processing unit should be suitably located and constructed.
- The processing unit must have required quantity of good quality water supply.
- The processing unit must have adequate washing facility for whole fish.
- The processing unit must have smooth working surfaces.
- The processing unit must have a sound clean-up policy.
- The processing unit must have adequate sanitary facilities.

- The processing unit must ensure good personal hygiene habits of employees.
- The processing unit must have effective rodent and insect control programme.

#### **Need for hygienic practices:**

- Practicing of proper hygienic practices by food handlers is of critical importance as they serve as fundamental sources of many microorganisms responsible for foodborne illnesses.
- Pathogens such as *Staphylococcus aureus* is naturally associated with humans, and will contaminate the food unless proper care is taken. Production of toxin by this organism in any food is responsible for staphylococcal food poisoning.
- The food handlers could also serve as carriers for many of the pathogenic microorganisms responsible for typhoid fever, dysenteries, salmonellosis, hepatitis etc.
- So, there is a need for acceptable hygienic practices by food handlers to prevent microbial contamination to food.
- Compliance to proper hygienic practices by the food handlers can be achieved only by educating them on the importance and need for personal hygiene practices.

#### **Clean- up procedure**

- The absolute cleanliness of personnel, equipment and premises is very important at all stages of food production.
- The main objective of cleaning is to minimize the risk of cross contamination between foods and also from waste food material left on equipment and food contact surfaces.
- The clean-up procedure in food processing industry assures; Protection of food from contamination by pathogenic microorganisms that can cause disease in consumers.
- Protection of food from spoilage organisms that can cause deterioration in the quality of food.
- Maintenance of good standards of cleanliness which helps minimizing the risk of rodent and insect infestation.
- A good clean-up procedure generally consists of initial cleaning procedure followed sanitation phase.

#### **Cleaning phase**

Cleaning can be defined as the removal of all dirt, slime, blood, oil, grease and any food soil from all food contact surfaces. This operation is accomplished with the aid of a detergent which when added to water helps to remove all kinds of dirt effectively. The basic steps involved in

cleaning phase are initial rinsing with cold water followed by scrubbing with warm water and detergent, and final rinsing with cold water.

### **Sanitizing phase**

Sanitizing or disinfecting phase is the parts of the cleaning operation wherein surfaces and equipment are rendered microbiologically clean by using sanitizers. Sanitizing is done after cleaning phase and it involves cleaning using sanitizers followed by final rinse with cold water.

- The cleaning operation involves separation of dirt/soil from the object to be cleaned, the dirt away and its suitable disposal using detergent, leaving the surface being cleaned in the desired condition and disinfection when desirable.
- Selection of a suitable cleaning solution or detergent is necessary to achieve effective cleaning as it depends on various factors such as neutralization, pH, alkalinity, buffering capacity, surface tension, wetting ability, mechanical action, emulsification, deflocculation, etc.
- Several types of mechanical aids are available for use in food industry for cleaning and sanitation purpose.

### **Guidelines for the use of sanitizers**

The following guidelines should be followed in attaining effective sanitation in a food industry. Sanitizer should never be used as a substitute for thorough cleaning. Sanitizers should be used as an additional safeguard to thorough cleaning. Should not be used where sterilization need to be achieved. Because, sterilization aims at destroying or removing all microbial life, whereas sanitization does not kill all microorganisms, but help to reduce microbial load. The detergents used for cleaning purpose should be inexpensive, approximately neutral (pH 6-8), biologically degradable, easy to wash away, non-toxic and approved by the appropriate regulatory body for food use. The sanitizer used in the food industry should possess good bactericidal activity and active against a wide variety of organisms, be non-toxic or low in toxicity, not affect the colour, odour and flavour of the food, be fairly cheap, be easy to dispense and wash away, should not adversely affect the operators and food handlers and should not cause damage to surfaces being sanitized (Ex.equipments). Common sanitizing agents

- The most commonly used sanitizing agents in food industry are chlorine, iodine and phenolic compounds. Chlorine is more commonly used than the other two in food processing plants.
- It is the least expensive and readily available in several forms. Iodine is more expensive and is not easily available, but is more effective than chlorine even in low concentrations.

- Phenolic compounds are not used in fish processing plant as their use even in very small quantities leaves a long-lasting odour and bad taste.

### **Degree of cleanliness**

- Equipment, object or any food contact surface is considered clean only when it is clean physically, chemically and microbiologically.
- The object or the surface is considered physically clean when it appears clean by sight and feel. This is easy to achieve as this can be easily tested by close observation.
- Chemical cleanliness of an object or surface refers when the object or surface is free from traces of undesirable chemicals (too small to be seen or felt, but sufficient to influence the quality of the product).
- Even traces of some chemicals can affect the taste, odour, colour or keeping quality of the food product.

The object or surface is considered microbiologically clean when it is free from undesirable microorganisms. This kind of cleanliness can be tested by determining the kind and number of microorganisms left on the object cleaned, decrease or increase of bacterial load of the product at the end of the processing line, and keeping quality of the product