

fssai

Inspiring Trust, Assuring Safe & Nutritious Food
Ministry of Health and Family Welfare, Government of India



FOOD SAFETY AND STANDARDS
AUTHORITY OF INDIA

fOSTaC

Food Safety Training & Certification

fssai committed to build a culture of self compliance



Basic Food Safety Handbook/Manual for Food Manufacturers, Processors and Packers

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WELCOME TO THE MANUAL

Scope: The manual is designed for Food Business Operators small, medium and large scale food manufacturers, processors and packers.

This manual explains basic food safety and hygiene conditions to be followed by all the above entities in relation to all food, in consonance with the Act, including at the design stage as also at operational stage by individuals being Food Handlers.

LEARNING OUTCOME

The desired learning outcome of this manual is better understanding of food safety and hygiene requirements and high standards of food safety in the food industry.

WHAT THE LAW SAYS

Section 16 (3) (h) of the Food Safety and Standards Act, 2006 states that “The Food Authority shall provide whether within or outside their area, training programmes in food safety and standards for persons who are or intend to become involved in food businesses, whether as food business operators or employees or otherwise”.

The establishment in which food is handled, processed and packed, by the food business operator and the persons handling them should conform to the sanitary and hygienic requirements, and food safety measures as specified below. It shall also be deemed to be the responsibility of the food business operator to ensure adherence to necessary requirements.

In addition to the requirements specified below, the food business operator shall identify steps in the activities of food businesses, which are critical to ensure food safety, and ensure that safety procedures are identified, implemented, maintained and reviewed periodically.

In India, the mandatory sanitary and hygiene requirements for food business operators are –

“Part II of Schedule 4” of Food Safety and Standards (Licensing & Registration of Food Businesses) Regulations, 2011 (<http://www.fssai.gov.in/home/fss-legislation/fss-regulations.html>) under Food Safety & Standard Act, 2006 (<http://www.fssai.gov.in/home/fss-legislation/food-safety-and-standards-act.html>)

DEFINITIONS

(Taken from the Act mentioned below)

“Act” means the Food Safety and Standards Act, 2006.

“Rules” means the Food Safety and Standards Rules, 2011.

“Adulterant” means any material which is or could be employed for making the food unsafe or sub-standard or misbranded or containing extraneous matter.

“Consumer” means persons and families purchasing and receiving food in order to meet their personal needs.

“Contaminant” means any substance, whether or not added to food, but which is present in such food as a result of the production (including operations carried out in crop husbandry, animal husbandry or veterinary medicine), manufacture, processing, preparation, treatment, packing, packaging, transport or holding of such food or as a result of environmental contamination and does not include insect fragments, rodent hairs and other extraneous matter;

“Food” means any substance, whether processed, partially processed or unprocessed, which is intended for human consumption and includes primary food to the extent defined in clause (zk), genetically modified or engineered food or food containing such ingredients, infant food, packaged drinking water, alcoholic drink, chewing gum, and any substance, including water used into the food during its manufacture, preparation or treatment but does not include any animal feed, live animals unless they are prepared or processed for placing on the market for human consumption, plants, prior to harvesting, drugs and medicinal products, cosmetics, narcotic or psychotropic substances :

“Food Authority” means the Food Safety and Standards Authority of India established under section 4;

“Food business” means any undertaking, whether for profit or not and whether public or private, carrying out any of the activities related to any stage of manufacture, processing, packaging, storage, transportation, distribution of food, import and includes food services, catering services, sale of food or food ingredients;

“Food business operator” in relation to food business means a person by whom the business is carried on or owned and is responsible for ensuring the compliance of this Act, rules and regulations made thereunder

“Hazard” means a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect;

“Food safety” means assurance that food is acceptable for human consumption according to its intended use;

“Food safety audit” means a systematic and functionally independent examination of food safety measures adopted by manufacturing units to determine whether such measures and related results meet with objectives of food safety and the claims made in that behalf;

“Food Safety Management System (FSMS)” means the adoption Good Manufacturing Practices, Good Hygienic Practices, Hazard Analysis and Critical Control Point and such other practices as may be specified by regulation, for the food business;

“Manufacture” means a process or adoption or any treatment for conversion of ingredients into an article of food, which includes any sub-process, incidental or ancillary to the manufacture of an article of food;

“Manufacturer” means a person engaged in the business of manufacturing any article of food for sale and includes any person who obtains such article from another person and packs and labels it for sale or only labels it for such purposes;

“Package” means a pre-packed box, bottle, casket, tin, barrel, case, pouch, receptacle, sack, bag, wrapper or such other things in which an article of food is packed.

PART I

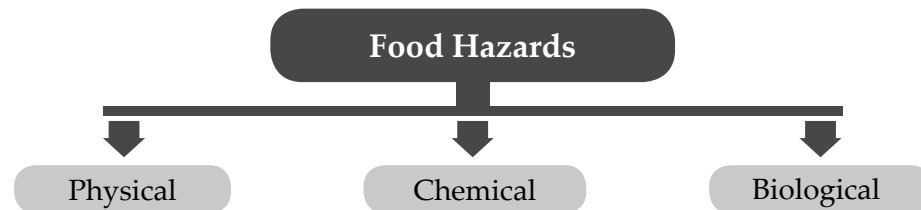
INTRODUCTION TO FOOD SAFETY

- Food Safety & Food Safety Hazards
- Food Spoilage

FOOD SAFETY & FOOD SAFETY HAZARDS

BASICS IN RELATION TO CERTAIN HAZARDS

Food Safety Hazard means biological, chemical or physical agent in food, or condition of food, with the potential to cause an adverse health effect. There are majorly four types of hazards -



1 Physical Hazards

Any foreign object (inanimate) found in the food or a naturally occurring object (metal, hard plastic), that can cause a food borne illness is called a 'Physical Hazard'.

Common Physical Hazards Include:

- Glass
- Chipped pieces from equipment
- Metal shavings from cans and foils
- Stapler pins
- Blades
- Plastic or chipped pieces of disposables
- Lint and threads
- Band- aids
- Hair
- Finger nails
- Jewellery pieces
- Insects and other pests

2. Chemical Hazards

Naturally occurring and process- induced chemical substances that can cause a food borne illness are called a 'Chemical Hazard'.

Natural Chemical Contaminants Include:

- Mycotoxins

Process Induced Chemical Contaminants include:

- Toxic metals in the processing set up or supply chain
 - Pesticides, Colorants
-

- Cleansing products and sanitizers
- Equipment lubricants
- Chemical Food Additives, Preservatives
- Packaging materials-migration of residues from packaging material to oil.
- Adulteration with other oils or mineral oil

3. Biological Hazards

Biological hazards are organisms, or substances produced by organisms, that pose a threat to human health. They are a major concern in food processing because they cause most food borne illness outbreaks.

Major biological hazards include –

- **Bacteria** ex: Salmonella spp., Enterohaemorrhagic *Escherichia coli*, Listeria monocytogenes, Staphylococcus aureus, Clostridium botulinum,
- **Yeast & Mold** ex: Candida, Aspergillus sp, Helicospodium

Biological Hazards cause the following -

1. **Food Borne Infections**–This occurs when a person consumes food containing pathogens; which grow in the human intestine and cause discomfort or disease. Typical symptoms of a ‘food borne infection’ do not appear immediately.
2. **Food Borne Intoxications** - This occurs when a person consumes food containing toxins in it; that cause discomfort or disease. Typical symptoms of a ‘food borne Intoxication’ appear quickly. **Food Borne toxin** are mediated infections, that result when a person consumes food containing toxins produced by the pathogens in it; which grow in the human intestine and produce toxins that cause discomfort or disease.

4. Physical-Biological Hazard

These are the hazards coming from biological creatures like flies, worms, cockroaches’ weevils, caterpillars and so on, whether in live or dead form.

Conditions favouring growth of Microorganisms

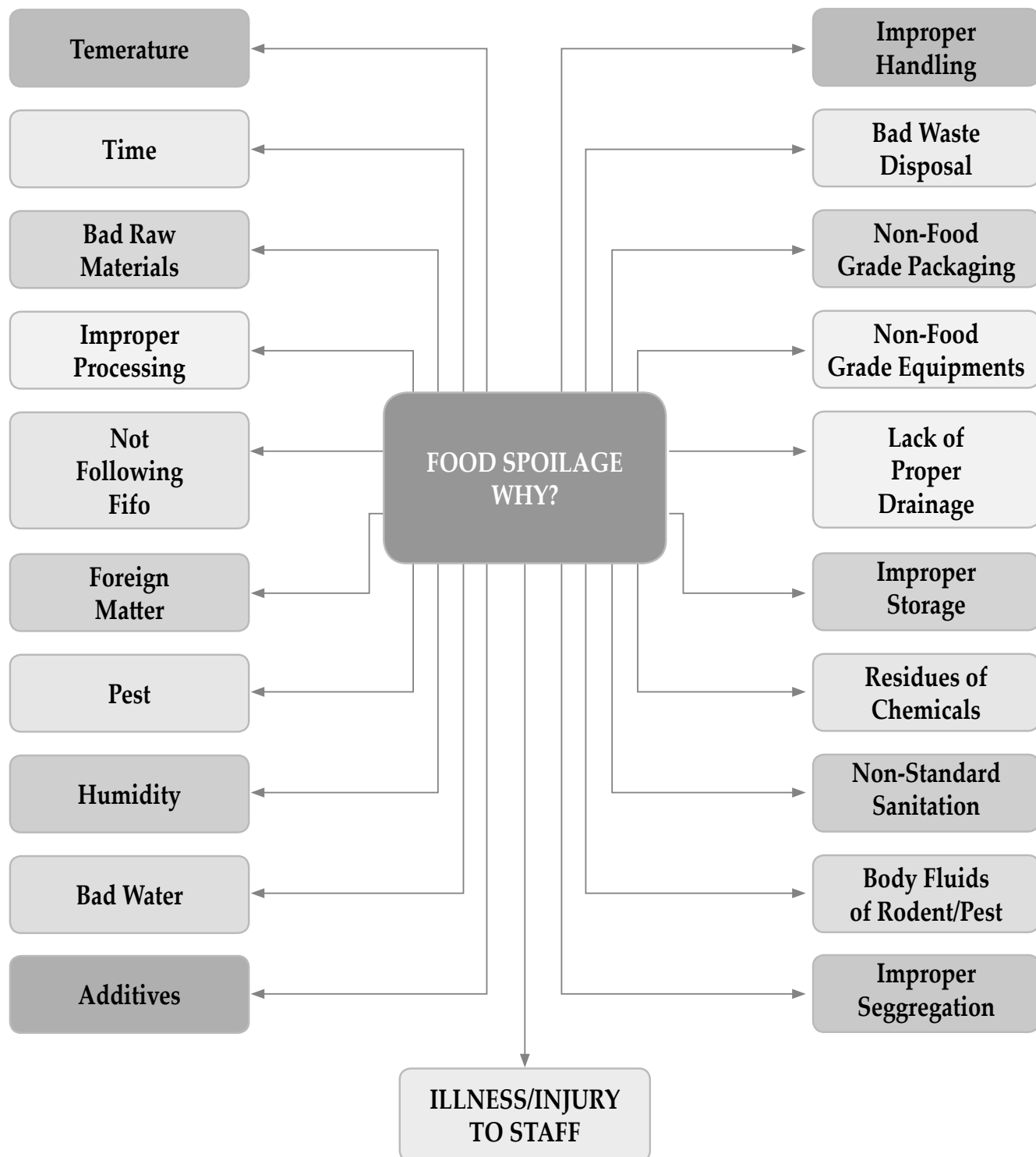
Easy to remember: “FAT TOM”

Conditions	Definition
Food	Food borne Microorganisms draw nutrients from Potentially hazardous foods
Acidity	Food borne Microorganisms grow well between the pH range of most foods
Temperature	Microorganisms grow well between the temperature range of 5°C – 60°C, most commonly known as the ‘Danger Zone’
Time	Microorganisms need sufficient time to grow; when exposed to the ‘Danger Zone’
Oxygen	Microorganisms require oxygen in free or combined state; to favor their growth
Moisture	Microorganisms require moisture to grow and is measured in the form of ‘Water Activity (Aw)’

FOOD SPOILAGE

Food spoilage occurs when the original nutritional value, texture and/or flavour of the food are affected or degraded, and the food become harmful to people and unsuitable to eat.

Major reasons for food spoilage are



Include or add these further points for *Food Spoilage Why?* in blocks:

1. Non GMP / Non Sanitary equipment design
2. Non compatible cleaning chemicals
3. Un safe physical and chemical product composition
4. Under cooking
5. Expired shelf life
6. Use of non food grade chemicals and lubricants,
7. Un hygienic surroundings

Also, delete “Bad” appearing from the Raw Materials box above.

Delete “Bad” from the Water box above, and just say “Water Quality” instead.

1. **Foreign matter:** Human hair, stapler, metal particles, fabric, plastic, glass pieces, etc. are big threats to food safety and can cause food spoilage. Anything that is not considered as food or food substance is considered as foreign matter.
 2. **Lack of proper drainage:** A drain in a food processing area must have proper slope to ensure no back flow and should be smooth-surfaced and easy to clean, preventing re-entry of pests from a common drain.
 3. **Non- food grade equipment:** There are many types of equipment that are used in food processing, and it is essential that non-corrosive, non-migrating food grade material such as Stainless Steel is used for the equipment in order to prevent metal contamination, chemical contamination and ensure food safety.
 4. **Improper handling:** Unclean hands, wrong selection of equipment and packing in unsuitable material could result in food safety issues.
 5. **Improper processing:** Wrong process methods can lead to major changes in end product. Right temperature, right time, proper additives and understanding process steps is essential to ensure food safety.
 6. **Residues of chemicals:** Chemicals come into contact with food as crop contaminants then later in the process of sanitizing voluntarily by our process. The next involuntary entry of chemicals into food can be through residues of equipment or utensil sanitation operations. It is important to ensure thorough washing is done before equipment is taken into production.
 7. **Poor Sanitation:** Sanitation must be based on strict guidelines of either historical data or validation. If chemicals are used in less or more quantity or in an unverified process or method, sanitation will fail to achieve proper results giving way for food to become unsafe.
 8. **Raw materials:** Raw material selection must be based on strict scientific reference and frequent sampling.
 9. **Additive:** Additives of any nature like essence, flavors etc. can spoil food if not used in the right quantity. Unauthorized additives also must not be used.
 10. **Water:** Water is involved in food process in various stages from washing to soaking then involved in either directly food production as an ingredient or in some in-direct manner as steam. It is also important for washing and sanitation operations. Potable water should conform to the specifications of IS 10500:2012.
 11. **Improper storage:** Storage must not only be done by FIFO(First In First Out)or FEFO (First Expiry First Out) method but also properly segregated and with required ventilation. Right combination of
-

A series of horizontal dotted lines providing space for writing or notes.



PART II

PERSONAL HYGIENE

- Health Status
- Behavioural & Personal Cleanliness
- Visitors

HEALTH STATUS

EMPLOYEE ILLNESS DO'S AND DON'T'S

- Do call the person in charge at the food service facility when ill with diarrhea, vomiting, jaundice, or fever with sore throat.
- Do not work in the food facility while ill with these symptoms.
- Do not work in food facility for 24 hours after symptoms of diarrhea or vomiting have gone.
- Do not handle food with an infected boil, cut, burn, or sore on the hand or wrist. Food may be handled if the injury is covered with a clean bandage and a latex-free glove.

FACTS THAT MUST BE KNOWN TO PREVENT FOODBORNE ILLNESS

Foodborne illness is an illness resulting from eating contaminated food.

Food contaminated with organisms (germs) does not always look, smell or taste different from non-contaminated food.

Symptoms vary and may include diarrhea, vomiting, fever, cramping and nausea.

Depending on the cause, symptoms may develop in a few minutes to several days. Some symptoms may last several days and can result in death.

Foodborne illness is caused by organisms (germs), chemicals, or toxins.

Five major mistakes that often cause foodborne illness:

- Inadequate handwashing
- Employees working while they are ill
- Cross contamination
- Inadequate cooking temperatures
- Inadequate temperature control (allowing foods to be in the danger zone)

Personnel suffering from a disease should not be allowed to enter into any food handling area. Any person suffering from a disease shall immediately report illness or to the management and medical examination of a food handler shall be carried out immediately.

All personnel shall be made medically examined once in a year and a record signed by a registered medical practitioner shall be maintained. All the personnel shall be compulsorily inoculated against the enteric group of diseases and a record shall be maintained. In case of an epidemic, all workers are to be vaccinated irrespective of the scheduled vaccination. Medical examination to be concluded –

1. Physical examination
 2. Eye Test
 3. Skin examination
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