

*Cleaning
and
Sanitizing*



Presented by

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CLEANING: is the complete removal food soil using appropriate detergent chemicals under recommended conditions.

SANITIZATION: it is important to differentiate and define certain terminology:

Sterilize: refers to the statistical destruction and removal of all living

Disinfect: refers to inanimate objects and the destruction of all vegetative cells (no spores)

Sanitize: refers to the reduction of microorganisms to level considered safe from a public health viewpoint.

General types of sanitization include

Thermal sanitization: involves the use of hot water or steam for a specified temperature and contact time.

Chemical sanitization: involves the use of approved chemical sanitization at a specified concentration and contact time.

REASONS FOR CLEANING

- To remove material where bacteria can grow, so reducing the risk of food poisoning and spoilage
- To allow disinfections of specific equipment and surface.
- To remove materials that could encourage pest infestations.
- To reduce the risk of foreign matter contamination.
- To ensure a pleasant and safe working environment.
- To promote a good image customers

Since cleaning and sanitizing may be the most important aspect of a sanitation program, sufficient time should be given to outline proper procedures, and parameters. To ensure getting a good cleaning and sanitizing program, we should identify contamination sources and control it.

Contamination sources are:

- Personal hygiene (Workers).
- Buildings premises and surroundings
outside – inside
- Environmental considerations

1- PERSONAL HYGIENE

Contamination Sources

1-Human sources:

- A. Hands
- B. Cuts and sores
- C. Nose, Mouth and ears
- D. Hair
- E. Smoking
- F. Jewelry and perfume
- G. Clothing
- H. General health



2- Utensils sources:

- All utensils in the preparation of food
- Hand washing: water temperature 43°C minimum
 - Washing by machine 60°C
 - Sanitizing rinse 77°C



3-Traffic control

2-BUILDINGS PREMISES AND SURROUNDINGS

A. Outside surroundings

Rodent

Birds

Insect

Debris

Pollution – smoke – dust

B. Building and facilities (inside)

- Design construction

Floors

Walls

Ceiling

Heating, ventilation, and air (HVAC)

Drainage and sewage

Waste facilities

Flow- through pattern

Sanitary facilities (washrooms, lunchrooms and
change rooms)



- Water chemistry and quality

Water comprises approximately 95-99% of cleaning and sanitization solutions water functions to:

- Carry the detergent or the sanitization to the surface.
- Carry soils or contamination from the surface.

Table 1. Water impurities and associated problems.

Impurity	Problem Caused
<i>Common Impurities</i>	
Oxygen	Corrosion
Carbon Dioxide	Corrosion
Bicarbonates (Sodium, Calcium or Magnesium)	Scale
Chlorides or Sulfates (Sodium, Calcium or Magnesium)	Scale & Corrosion
Silica	Scale
Suspended Solids	Corrosion and Deposition
Unusually high pH (above 8.5)	Mediate Corrosion and Deposition; Alter detergent efficiency
Unusually low pH (below 5)	Mediate Corrosion and Deposition; Alter detergent efficiency
<i>Less Common Impurities</i>	
Iron	Filming and Staining
Manganese	Corrosion
Copper	Filming and Staining

- Equipment construction and maintenance:

The correct order of events for cleaning/ sanitizing of food product contact surfaces is:

1. Rinse
2. Clean
3. Rinse
4. Sanitize

Equipment can be categorized with regard to cleaning method as follows:

- **Mechanical cleaning**: often referred to as clean-in-place (**CIP**).

Require no disassembly or disassembly.

- **Clean-out-of-place (COP)**: Can be partially disassembled and cleaned in specialized COP pressure tanks.

- **Manual cleaning**: requires total disassembly for cleaning and inspection.

The factors which effect on cleaning and sanitizing of food processing equipment are:

- A. Properties of food soils
- B. The equipment surface characteristics

A. PROPERTIES OF FOOD SOILS

- Food soil is generally defined as unwanted matter on food – contact surfaces. Soil is visible or invisible. The properties of food soil depending on:

- Soil chemistry
- Soil quantity

1- Soil chemistry

Soils may be classified as:

Carbohydrate-based soils

Fat-based soils

Protein-based soils

Mineral salt-based soils

Microbiological films

Lubricating greases and oils

Other insoluble soils

Table (2): Characteristics of food soils.

Surface Deposit	Solubility	Ease of Removal	Heat-Induced Reactions
Sugar	Water soluble	Easy	Carmelization
Fat	Alkali soluble	Difficult	Polymerization
Protein	Alkali soluble	Very Difficult	Denaturation
Starch	Water soluble, Alkali soluble	Easy to Moderately Easy	Interactions with other constituents
Monovalent Salts	Water soluble; Acid soluble	Easy to Difficult	Generally not significant
+Polyvalent Salts	Acid soluble	Difficult	Interaction with other constituents

2- Soil Quantity

Improper cleaning can actually contribute to build- up of soil

B. The equipment surface characteristics

- Surface composition:
 - Stainless steel – Titanium – Aluminum – Plastics - Wood.
- Surface finish
- Surface condition

3- ENVIRONMENTAL CONSIDERATION

- Detergents waste
 - pH (5 - 8.5)
 - Caustic soda
 - Phosphates
 - Waste steam

CLEANING AND SANITIZATION APPLICATION

A good standard of food safety depends on food worker knowing
How the job is done
Why it should be done

Personnel safety

Sanitizers are unstable, highly reactive compounds and must be handled safely.

Sanitation crews should wear:

- Protective equipment
 - Clothing including a hard hat, face shield or goggles.
 - An apron or protective coat and rubber boots, and gloves.
 - Safety information on specific products is available from product labels, product technical sheets, and product material safety data sheets (MSDS).

Specific sanitizer safety problems include:

- . Strong acids and alkalis are highly corrosive.
- . Sodium hydroxide reacts with aluminum to form hydrogen gas. Hydrogen gas is explosive at a 4% concentration level.
- . Chlorine gas is a deadly poison. Gas cylinders must be handled carefully, stored securely, and kept away from heat.
- . Liquid chlorine solutions are highly corrosive.
- . Mixing a chlorine sanitizer with acid generates chlorine gas.
- . Mixing sodium hypochlorites with ammonium compounds generates heat and nitrogen chloride (explosive).
- . Solid chlorine compounds are strong oxidizers and must be stored away from organic materials.
- . When diluting sanitizers, always add concentrated sanitizer to water, not to sanitizer. Adding water to a concentrated sanitizer may rapidly generate heat.

Cleaning schedules

- Written cleaning schedules should be drawn up for all parts of the premises and should then be put into practice.

- These schedules should state:

- Frequency of cleaning
- Method of cleaning
- Type, and amount of chemical to use
- Person responsible for cleaning
- Any special notes or information
- When the work was completed

A regular check should be made of the premises and the effectiveness of the cleaning schedule. An example of this is seen in the weekly evaluation sheet.

CLEANING SCHEDULE

ITEM	When to Clean	Who is to Clean	How to clean	Cleaning Materials	Special Notes	Initial / Date Work Done
Floor						
Walls						
Ceiling						
Shelves / Cubboards						
Cooking Appliances						
Canopy & Grease Filters						
Mixing Machines						
Food Display Units						
Food Preparation Benches						
Cutting Boards						
Pots / Pans Etc						
Fridges & Freezers						
Cool Room						
Dry Foods Store						
Yard						
Refuse Bins						
Drains / Grease Trap						
Example	Friday	Robert	Dismantle	Detergent Sanitiser	Dry	R.B. 28/5/98

WEEKLY EVALUATION SHEET

Month of : _____

SUBJECT	Week				
	1	2	3	4	5
Floor					
Walls					
Ceiling					
Shelves / Cupboards					
Cooking Appliances					
Canopy & Grease Filters					
Mixing Machines					
Food Display Units					
Food Preparation Benches					
Cutting Boards					
Pots / Pans Etc					
Fridges & Freezers					
Cool Room					
Dry Foods Store					
Wash Hand Basin					
soap, nailbrush, towels					
Dishwashing Facilities					
Vegetable Store					
Yard					
Refuse Bins					
Drains / Grease Trap					
Toilets					
Pest Control					
Staff: Personal Hygiene					
Protective Clothing					
Change Rooms					
GRADING	A = Satisfactory B = Unsatisfactory		(action Required)		