
# Cleaning and Sanitation of Food Contact Surfaces

Pathogens can survive on food contact surfaces, such as countertops, worktables, refrigerators, freezers, mixers, slicers, containers, utensils, knives and cutting boards. Even the slightest contact with unsanitary surfaces can contaminate food and cause foodborne illnesses. Food contact surfaces should be cleaned and sanitized regularly to avoid contamination of food and prevent foodborne illnesses.

**Cleaning** is the process of removing visible dirt, soil, food particles and grease from surfaces. The cleaning process may not completely remove microorganisms from the surface.

**Sanitation** is the process of reducing the number of microorganisms on the surface to a level that is considered safe according to public health standards. Sanitation must be done after cleaning because most sanitizers are not effective on surfaces that are not clean.

## Four steps to cleaning and sanitation

### 1. Scrape

- Scrape off visible dirt particles from the surface using appropriate tools, such as scrapers, brushes, cloth towels, dusters and washers.
- Avoid splashing and blowing particles from one surface to another as it may cause cross-contamination.

### 2. Wash

- Apply detergent in a quantity recommended on the product label and scrub the surface to remove debris.
- Use a detergent that is appropriate for the purpose.

### 3. Rinse

- Rinse with clean water to remove the detergent and suspended debris until all are removed.
- Use water that has no detectable generic E. coli per 100 ml (about 3.38 ounces) of water.
- Check crevices and joints to ensure they are free of debris and detergents.
- Avoid using high-pressure washes as they may cause splashing from one surface to another.
- Determine whether the washing step should be performed again.

### 4. Sanitize

- Sanitize using either hot water (at least 170 F) or chemical sanitizer.
- For chemical sanitation, use approved sanitizer at appropriate concentration and temperature as specified by the manufacturer.
- Use test strips to determine the concentration of sanitizing solutions. A solution that is too concentrated could be unsafe and a solution that is less concentrated is not effective.
- Apply sanitizer on the surface for the time specified by the manufacturer.
- Rinsing may be necessary after applying the sanitizer. Follow manufacturer's instructions.
- Allow the surface to air dry thoroughly.
- Do not use towels for drying as they may recontaminate the surface.

1. Scrape off visible dirt particles.

2. Apply detergent and scrub the surface.

3. Rinse the surface with clean water.

4. Apply sanitizer as specified by the manufacturer. Let the surface dry.

Food contact surfaces should be cleaned and sanitized regularly, including:

- Before and after each use.
- When switching from one food to another.
- Between handling known allergens.
- After taking breaks.
- After four hours of constant use.
- When contamination is suspected.

## Choosing the right sanitizer

Several approved food contact surface sanitizers are available on the market with active ingredients such as chlorine dioxide, hypochlorite, peroxyacetic acid and quaternary ammonium. See the table below to review different chemical compounds used in sanitizers, as well as their advantages and disadvantages.

| Chemical compounds | Concentration and contact time | Advantages | Disadvantages |
|---|---|---|---|
| Chlorine dioxide | 50 ppm at 75-100 F for 7 seconds. | • $ClO_2$ is a strong oxidizer effective against a wide range of pathogenic microorganisms (bactericidal, sporicidal, fungicidal, virucidal).<br>• $ClO_2$ shows uniform antimicrobial activity at a wide pH range (<pH 10).<br>• $ClO_2$ has been found to be effective in the presence of organic matter and against biofilms. | • $ClO_2$ gas is unstable and can be explosive if the concentration in air reaches 10% or more.<br>• Acute exposure to $ClO_2$ may cause skin and eye irritation. |
| Hypochlorite | 200 ppm | • Sodium hypochlorite ($NaClO_2$), also called liquid bleach or bleach, is affordable and commonly used.<br>• Calcium hypochlorite ($Ca(ClO)_2$), also called bleaching powder, is comparatively more stable than sodium hypochlorite. | • $NaClO_2$ may cause skin irritation, eye irritation and gastric burns.<br>• Corrosive to metals at high concentration (>500 ppm).<br>• Inactivated by organic matter. |
| Peroxyacetic acid | 100-200 ppm | • Environmentally friendly as it does not break down into harmful products.<br>• Effective at low temperatures and shows sporicidal activity. | • Peroxyacetic acid can be corrosive in concentrated form against copper, brass, bronze and steel. |
| Iodophors | 12.5-25 ppm at 75 F for 30 seconds | • Non-toxic and non-irritating.<br>• Highly reactive and non-corrosive. | • Iodophors can leave an orange-brown stain on plastic surfaces. |
| Quaternary Ammonium Compounds (QUATS) | 200 ppm at 75 F for 30 seconds | • Non-toxic and non-irritating.<br>• Odorless and colorless. | • Ineffective at low pH and high salt concentrations. |

Regardless of the chemical compound, a sanitizer must be used at the right concentration and temperature for a specific amount of time to ensure optimum efficacy. When choosing a sanitizer, look for the following on the product label:

- The sanitizer has a United States Environmental Protection Agency (EPA) registration number on its label. The EPA labeling indicates that the product has been inspected for its impact on the environment and humans and that it is suitable for its intended use.
- The sanitizer label clearly indicates its purpose(s), such as to sanitize hard, nonporous food contact surfaces.
- Directions to use, store and dispose of the sanitizer.
- List of the pathogens against which the sanitizer is effective.

## Dry cleaning

Not all food contact surfaces require cleaning using water. Introducing water to a food contact surface that is dry can introduce a risk of harborage and persistence of microorganisms. Dry cleaning is often performed while handling foods that are dry and have low water activity. The following steps can be implemented for cleaning and sanitizing facilities using dry cleaning techniques:

- Remove visible dirt and debris from the food contact surface using brushes, brooms, scrapers, dusters, cloth towels or vacuum cleaners.
- Scrub the surfaces to remove all the dirt from the surfaces. Instead of water-based detergents, use a food-grade, alcohol-based detergent, or dry or low-moisture steam for cleaning.
- Sanitize the surface by spraying a sanitizer approved for use on food contact surfaces such as a high-percentage isopropyl alcohol and let the surface air dry.

## Worker training and record keeping

- Workers should be trained on how to properly clean and sanitize food contact surfaces. Visual aids, such as posters demonstrating the cleaning and sanitation process, can be used as references for the worker.
- The worker should wear protective glasses, gloves and an apron to avoid contact with the cleaning agents.
- After cleaning and sanitation, visually inspect the surfaces for remaining residues, dirt, grease or other materials. Apart from visual inspection, other methods such as an ATP test, which checks for adenosine triphosphate, and microbiological testing can also be used to assess the effectiveness of the cleaning and sanitation process.
- Develop and document a cleaning schedule that clearly indicates the cleaning and sanitation approaches. Keep records of when, how and what areas were cleaned, as well as who did the cleaning and monitoring steps. The following is an example of cleaning and sanitizing logs that can be used for record keeping:

## Example cleaning and sanitizing log:

| Date | Time | Item Cleaned/ Sanitized | Cleaning and Sanitizing Technique | Chemical Used | Amount of Chemical Used | Staff Initials | Management Initials |
|---|---|---|---|---|---|---|---|
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