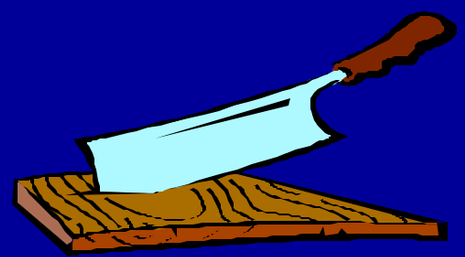
2-1: Key Sanitation Condition No. 2

- Condition and cleanliness of food contact surfaces



2-2: Food Contact Surface

- Those surfaces that contact human food and those surfaces from which drainage onto the food or onto surfaces that contact the food ordinarily occurs during the normal course of operations (21 CFR 110.3)
- Typical food contact surfaces include utensils, knives, tables, cutting boards, conveyor belts, ice makers, ice storage bins, gloves, aprons, etc.

2-3: Goal

- Monitoring should provide assurance that food contact surfaces including gloves and outer garments are properly designed, constructed and maintained to facilitate sanitation, and that they are adequately and routinely cleaned and sanitized.

2-4: What to Monitor

- Condition of the food contact surfaces
- Cleanliness and sanitation of food contact surfaces
- Type and concentration of sanitizers(s) used
- Gloves and outer garments which might contact food

2-5: How to Monitor

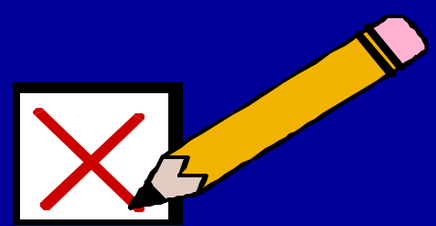
- Visual Inspection
  - Surfaces in good condition
  - Surfaces cleaned and sanitized
  - Gloves and outer garments clean and in good repair
- Chemical Testing
  - Sanitizer concentration (test strips or kits)
- Verification Checks
  - Microbial tests of surfaces (optional)

2-6: Typical Corrections

- Observation: Sanitizer concentration from dispenser varies day to day.
- Correction: Repair or replace chemical proportioning equipment and train cleaning crew in its proper use

- Observation: Juncture of two tables tops trap food debris
- Correction: Separate tables to allow access for cleaning

- Observation: Table work surfaces show signs of corrosion
- Correction: Refinish or replace damaged equipment and switch to less corrosive cleaning compound.



2-7: Monthly Sanitation Control Record

2-8: Daily Sanitation Control Record

2-9: General Requirements for Food Contact Surface

- Safe Material
  - Non-toxic (no leaching of chemicals)
  - Non-absorbent (can be drained and/or dried)
  - Resist corrosion
  - Inert to cleaning and sanitizing chemicals

- Fabrication
  - Can be adequately cleaned and sanitized
  - Smooth surfaces including seams, corners, and edges

2-10: General Characteristics of Some Food Contact Surfaces

- Black iron or cast iron
- Concrete
- Glass
- Plastics
- Rubber
- Stainless steel
- Lead
- Wood
- Galvanized metals
- Paint and sealants

2-11: Food conditions that can influence choice of appropriate food contact surfaces

Pickled fish *(e.g., herrings, mackerel)*	Strongly corrosive; High acidity and salts
Salt cured fish products (*e.g., smoked fish, brine shrimp)*	Moderately corrosive; Medium acidity and salts
Fresh and refrigerated fish *(e.g., peeled shrimp, fillets, shucked oysters, picked crab meat, surimi)*	Weakly corrosive, Low acidity
Fish powders, Dried fish *(e.g., freeze dried shrimp, fish protein concentrate)*	Non-corrosive
Frozen Fish *(e.g., IQF frozen shrimp)*	Non-corrosive

AVOID !

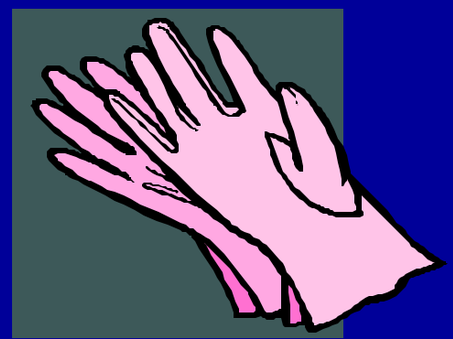
2-12: Food contact surface materials which normally should be avoided if feasible

- Wood (microbial concerns)
- Ferrous metals (corrosion concerns)
- Brass (variable corrosion resistance and product quality concerns)
- Galvanized metal (corrosion and chemical leaching concerns)

Note: Certain state regulations may prohibit use of these materials as food contact surfaces in processing operations.

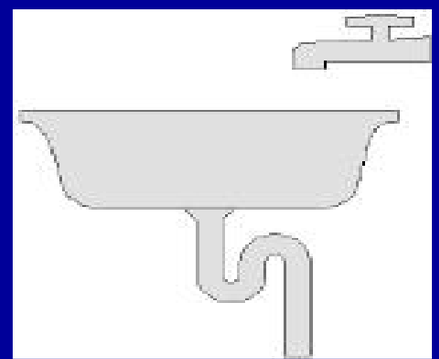
2-13: Storage of Clothing and Gloves

- Store clothing and gloves in clean and dry locations
- Ensure that clothing and gloves are not exposed to splash, dust or other contaminants
- Store clean garments separately from soiled garments and gloves.



2-14: Design and Install Food Contact Equipment to

- Drain and not entrap soils
- Provide access for cleaning and inspection
- Withstand plant environment



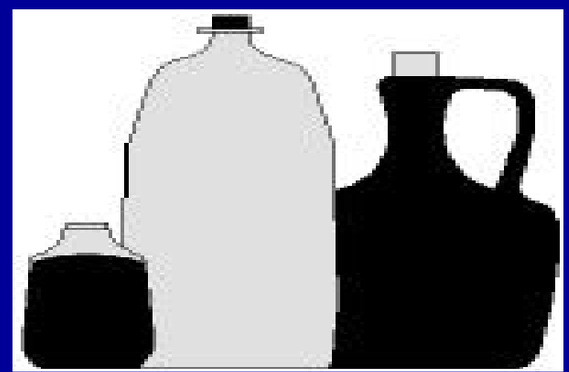
5 Steps!

2-15: Five Steps of Cleaning and Sanitizing

1. Dry-clean
2. Pre-rinse
3. Apply detergent
4. Post-rinse
5. Sanitize

2-16: Types of Detergents

- General Purpose (GP)
- Alkaline
- Chlorinated (chlorinated alkaline)
- Acid
- Enzyme



2-17: A detergent's effectiveness varies with

- Contact time
- Temperature
- Physical disruption (scrubbing)
- Water chemistry

2-18: Detergent application methods

- Soak tanks
- Foam
- Automated systems
  - CIP (clean-in-place)
  - parts washers
- Manual (pails)

2-19: Example Cleaning Procedures

A processor applies an alkaline foam detergent to equipment every day. The detergent is allowed to stand and then is rinsed without scrubbing. Actual scrubbing with brushes or pads takes place only once each week.

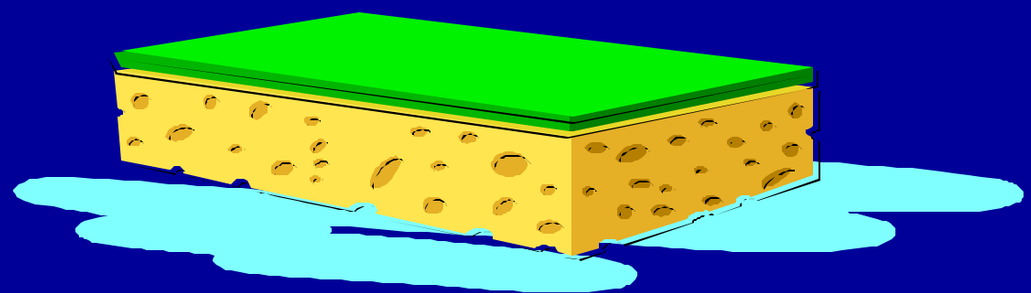
2-20: Physically removing soils

- Brushes -- proper stiffness
- Pads -- proper cutting properties
- Pressure spray -- moderate pressure

2-21: Pads, brushes and brooms should be dedicated to tasks for which they are designed

- Optimizes cleaning effectiveness
- Minimizes cross-contamination between areas of the plant

2-22: Cleaning aids which retain water, such as sponges, wiping cloths and mops should not be used for routine cleaning in processing plants.



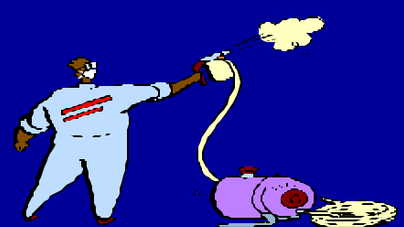
5th Step !

2-23: Sanitizing follows proper cleaning

1. Dry-clean
2. Pre-rinse
3. Detergent application
4. Post-rinse
5. Sanitizing

2-24: Sanitizer Mixing and Application

- In-line proportioners/applicators
- Station proportioners/applicators
  - Hand and footbath sanitizers
- Foamers
- Tank sprayers (low pressure)
- Dips



2-25: Sanitizer Concentrations Commonly Used in Food Plants

Sanitizer	Food Contact Surface	Non-Food Contact Surfaces	Plant Water
Chlorine	50-100* ppm	400 ppm	3-10 ppm
Iodine	25 * ppm	25 ppm	
Quats	200* ppm	400-800 ppm	
Chlorine dioxide	100-200*† ppm	100-200† ppm	1-3† ppm
Peroxyacetic acid	200-315* ppm	200-315 ppm	

•The higher end of the listed range indicates the maximum concentration permitted without a required rinse (surfaces must drain)

† Includes mix of oxychloro compounds

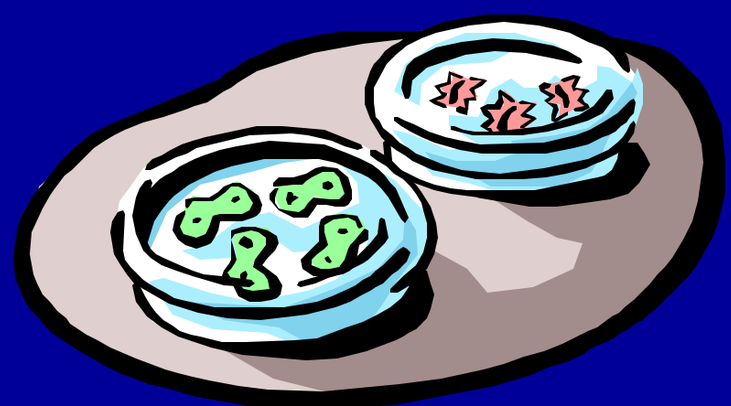
Source: 21 CFR 178.1010

2-26: Types of Sanitizers

- Chlorine
- Iodophores
- Quaternary ammonium compounds
- Acid-anionic
- Peroxy compounds
- Carboxylic acid
- Chlorine dioxide
- Ozone
- Hot water

2-27: Periodic Confirmations for Sanitization

- Microbiological Enumeration
  - Contact plates
  - Swabs
- Luminometry



2-18: Typical Cleaning and Sanitizing Schedule

2-29: Sanitation Control Guide