

A "SAFE HANDS" HAND WASH PROGRAM FOR RETAIL FOOD OPERATIONS

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FECAL PATHOGENS ON FINGERTIPS - A MAJOR CAUSE OF FOODBORNE ILLNESS

Fingertip washing is the only control with a zero defect potential

1. "When you are sick stay home" is an ineffective government control. People are not doctors who can diagnose their illness. There are other causes for feelings of sickness and diarrhea other than *Salmonella typhi*, *E. coli* O157:H7, *Shigella* spp. Hepatitis A, etc.

2. Pathogens are often shed before there are illness symptoms.

Viral Hepatitis

Salmonella typhi

Salmonella typhimurium
and other serotypes

Campylobacter jejuni

Escherichia coli

Cryptosporidium spp.

Listeria monocytogenes

Shigella spp.

Giardia lamblia

3. Pathogens are also shed after people feel well. People can be carriers.

Salmonella typhi

Shigella spp.

Giardia lamblia

Escherichia coli

Vibrio cholera

Listeria monocytogenes

Salmonella typhimurium
and other serotypes

4. When an employee is ill, the supervisor will be aware of it. It is the supervisor's responsibility to send the employee home.

Conclusion: "When you are sick, stay home" has a high probability of failure for preventing fecal pathogens getting into food and should not be used as a hazard control method.

DEFENSES OF SKIN*

Site	Defenses	Function
Skin	Dryness and acidic conditions (pH 5) Sloughing cells Resident bacteria	Limit bacterial growth Remove bacteria Compete for nutrients and colonization / attachment sites
Hair follicles, sweat glands	Lysozyme, toxic lipids	Kill bacteria
Sebum from sebaceous glands	Protective film on surface of skin	Prevents excessive dryness of skin
Beneath skin surface	Skin associated lymphoid tissue (SALT)	Kill bacteria; sample antigens on skin surface.

- * Salyers, A.A., and Whitt, D.D. 1994. Chapter 1. Host defenses against bacterial pathogens: Defenses of body surfaces. In *Bacterial Pathogenesis*. American Society of Microbiology Press. Washington, D. C.
- Prescott, L. M., Harley, J. P., and Klein, D. A. 1996. Microbiology. 3rd edition. Wm. C. Brown. Dubuque, IA.

Species Isolated from Hands of 22 Health Care Personnel*

Category and Species	No. of Isolates	Percent of Category
Gram-positive cocci		
<i>Staphylococcus epidermidis</i>	70	39.3
<i>Staphylococcus saprophyticus</i>	35	19.7
<i>Staphylococcus capitus</i>	21	11.8
<i>Streptococcus haemolyticus</i>	16	9.0
Alpha streptococci	11	6.2
<i>Staphylococcus aureus</i>	10	5.6
<i>Staphylococcus simulans</i>	4	2.2
Gram-negative bacilli		
<i>Klebsiella-Enterobacter</i> sp.	15	55.6
<i>Acinetobacter</i> sp.	5	18.5
<i>Pseudomonas</i> sp.	4	14.8
<i>Proteus-providencia</i> sp.	3	11.1
Yeast		
<i>Candida parasilosis</i>	10	38.5
<i>Rhodotorula rubra</i>	6	23.1
<i>Candida albicans</i>	4	15.4
<i>Candida guilliermondii</i>	4	15.4
<i>Candida glabrata</i>	2	7.7
Total	231	

* Adapted from Larson, E., K. J. McGinley, G. L. Grove, J. J. Leyden, and G. H. Talbot. 1986. Physiologic, microbiologic, and seasonal effects of Hand Washing on the skin of health care personnel. *Am. J. Infect. Control.* 14(2):51-59.

TYPES OF HAND CARE*

Type	Purpose	Method
Handwash	Remove soil and transient microorganisms	Soap or detergent and friction for at least 10-15 seconds
Hand antisepsis	Remove and/or destroy transient and resident microorganisms to control infection transfer from hands	Antimicrobial soap or detergent or alcohol-based hand-rub and friction for at least 10-15 seconds
Surgical hand scrub	Remove or destroy transient and resident microorganisms to control / prevent infection in patients undergoing operations	Antimicrobial soap or detergent preparation with brush to achieve friction for at least 120 seconds, or alcohol-based preparation for at least 20 seconds

* Adapted from: Larson, E. 1995. APIC Guidelines for Infection Control Practice. - APIC guideline for Hand Washing and hand antisepsis in health care settings. APIC (Association for Professionals in Infection Control and Epidemiology, Inc.) Washington, D. C.,

USDA Classification of Hand Soaps and Sanitizers for Use in Meat Processing Plants

E1 Compounds: Hand washing compounds for use in all departments

The compounds must be dispensed from adequate dispensers located a sufficient distance from processing lines to prevent accidental product contamination.

- After the use of the compounds the hands must be thorough rinsed with potable water.
- Under conditions of use, there can be no odor or fragrance left on the hands.

E2 Compounds: Hand washing and sanitizing compounds

- The compounds must be dispensed from adequate dispensers located a sufficient distance from processing lines to prevent accidental product contamination.
- The hands need not be washed prior to the use of the compounds.
- The compounds must always be used at dilutions and according to applicable directions provided on the label.
- The compounds have been accepted on the basis of their equivalency to 50 parts per million chlorine.

E3 Compounds: Hand sanitizing compounds (Hand dips)

- The compounds must be dispensed from adequate dispensers located a sufficient distance from processing lines to prevent accidental product contamination.
 - The hands must be washed and thoroughly rinsed prior to the use of the compounds.
 - The compounds may be injected directly into the wash and rinse water.
 - The hands need not be rinsed after the use of the compound.
 - The compounds have been accepted on the basis of their equivalency to 50 parts per million chlorine.
- * Gel-based hand sanitizers are limited to use by employees leaving the plant, unless they meet specific guidelines ensuring that residues remaining on the hand will not be inappropriate for food handling. Only if such guidelines are met can these hand sanitizers be classified as E3.

E4 Compounds: Hand creams, lotions and cleaners (including gel-based hand sanitizers not meeting E3 requirements).

- The use of such compounds is limited to toilets and dressing rooms. Employees who handle edible products may use the compounds only when leaving the plant.

* E classifications of hand soaps and sanitizing compounds apply only to USDA-approved processing plants. Currently, there is no classification system for hand washing products relating to foodservice establishments.

Adapted from: Miller, M. L., James-Davis, L.A. and Milanese, L.E. 1994. A field study evaluating the effectiveness of different hand soaps and sanitizers. Dairy Food Envir. Sanitation. 14(3): 155-160.

CHARACTERISTICS OF SELECTED ANTISEPTIC INGREDIENTS*

Antiseptic Ingredient	Action	Negative Effect
<p>Alcohols ethyl (ethanol), n-propyl, and isopropyl</p>	<ul style="list-style-type: none"> - Antimicrobial (denature proteins) - Destroy vegetative bacteria, fungi, and viruses - Emollients, if added, decrease skin drying effect 	<ul style="list-style-type: none"> - Have no effect on spores - Alcohol pads are less effective than liquid soaps with antiseptic ingredients when used as a brief skin wipe - Are not good cleaning agents - Have no persistent effect - Have drying effect on skin (no more than 70% alcohol / water) - Are volatile and flammable and must be stored carefully
<p>Chlorhexidine gluconate (CHG) (cationic bisbiguanide)</p>	<ul style="list-style-type: none"> - Antimicrobial (disrupts cell membranes and precipitates cell contents) - Active against bacteria, some viruses (HIV, herpes, flu) - Good residual effect (up to 6 hr.) - Not significantly affected by organic matter - Available in 2 to 4% concentrations - May be combined with alcohol 	<ul style="list-style-type: none"> - Activity is pH dependent (5.5 to 7.0) - Can cause damage if instilled in ears or eyes - Reports of contact dermatitis, other allergic manifestations, and anaphylaxis in sensitive individuals

<p>Hexachlorophene (Chlorinated bisphenol)</p>	<ul style="list-style-type: none"> - Disrupts microbial cell walls, precipitates cell proteins, inactivates cell enzymes - Effective against gram-positive bacteria - It is persistent 	<ul style="list-style-type: none"> - Not effective against gram-negative bacteria, tubercle bacillus, fungi, or viruses - Is not fast acting - Has been shown to produce neurotoxic effects - General use, banned by FDA. Available by prescription only (3% concentration) - Should not be used on broken skin or for bathing
<p>Iodine and Iodophores (complex of iodine with polyvinylpyrrolidone (povidone))</p>	<ul style="list-style-type: none"> - Antimicrobial (cell wall penetration, oxidation, and substitution of microbial content with free iodine) - Active against bacteria, viruses, and fungi - Some activity against bacterial spores 	<ul style="list-style-type: none"> - Neutralized by organic matter - May cause skin irritation and damage - Allergic and toxic effects in sensitive persons
<p>Para-chloro-meta-xyleneol (PCMX or chloroxylenol)</p>	<ul style="list-style-type: none"> - Antimicrobial (cell wall disruption and enzyme inactivation) - Active against gram positive bacteria, some viruses, and fungi - Effectiveness increased with the addition of EDTA - Low incidence of skin sensitivity - Persistent effect over a few hours - Minimally affected by organic matter - Used in a number of hand washing products (0.5 to 3.75% concentration) 	<ul style="list-style-type: none"> - May be less effective than CHG - Rapidity of activity is intermediate

<p>Triclosan 5-chloro-2-(2,4-dichlorophenoxy) phenol</p>	<ul style="list-style-type: none"> - Antimicrobial (cell wall disruption) - Active against broad spectrum of bacteria - Appears to be non-allergenic and non-mutagenic (short term), even though it can be absorbed through intact skin - Has excellent persistent activity - Activity is minimally affected by organic matter - Has been tested in concentrations from 0.3% to 4% - Is commonly used in commercial soaps (1% concentration) to reduce body odor by inhibiting the growth of skin bacteria over time 	<ul style="list-style-type: none"> - Little information about effect on viruses - Poor fungicide - Use of this compound in soaps, mouthwashes, toothpastes, fabrics, and plastics may lead to drug resistant bacteria**
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* Larson, E. 1995. APIC Guidelines for Infection Control Practice. - APIC guideline for hand washing and hand antisepsis in health care settings. APIC (Association for Professionals in Infection Control and Epidemiology, Inc.) Washington, D. C.

**Heath, R.J., Rubin, J.R., Holland, D.R., Zhang, E., Snow, M.E., and Rock, C.O. 1999. Mechanism of triclosan inhibition of bacterial fatty acid synthesis. J. Biol. Chem. 274 (16): 11110-11114.

OFFICIAL TEST* FOR HAND SANITIZERS TO MEET THE E2 USDA CRITERION

Procedure:

1. Grow microbiological cultures to high concentrations (e.g., 10^8 /ml).
2. Make appropriate chemical sanitizer use solutions (e.g., standards for chlorine are 200, 100, and 50 ppm). The unknown test germicide would be prepared at concentrations expected to be as effective as chlorine.
3. Add 10 ml of 200, 100, and 50 ppm chlorine to 25 x 150 mm medication tubes and put in a 25°C water bath. Bring to temperature.
4. Starting with the 200 ppm tube, add 0.05 ml of test culture. Shake and return to the bath. After 1 minute, make a transfer to an appropriate subculture media using a 4 -mm flamed loop. (The subculture media tube will be used to check for viability.)
5. At 1.5 minutes, add another 0.05 ml of the culture to the 200-ppm solution. Shake and return to the bath. After an additional 1 minute (2.5 minutes into the test), make a second subculture. In 30 seconds (3 minutes into the test), add another 0.05 ml. Shake and return to the bath. After 1 minute (4 minutes into the test), make another subculture. Repeat to give 10 total increments. (This requires a total time of 14.5 minutes and 0.5 ml of culture.)
6. Do the same 10-tube test culture destruction test with the test disinfecting solution. To be considered equivalent in disinfecting activity, the unknown germicide must show the absence of growth in as many consecutive subculture tubes as the chlorine standard.

*AOAC method 955.16 (AOAC, Official Methods of Analysis, 1995.

The test organisms are *Salmonella typhi* ATCC 6539 and *Staphylococcus aureus* ATCC 6538.

ASTM "Glove Juice" Test Method for Evaluation of Health Care Personnel Handwash Formulation

1. **Test organism** = *Serratia marcescens* ATCC No. 14756
2. **Subjects** (12) who have not used topical antimicrobials for at least 1 week; no clinical evidence of dermatosis or other skin disorders.
3. **Procedure:**
 - Subjects wash hand for 30 seconds wash using plain soap solution.
 - Five (5) ml of *Serratia marcescens* containing at least 10 microorganisms / ml are dispensed onto the hands, then rubbed over the surfaces of the hands for 45 seconds. The hands are then allowed to air dry for 1 minute.
 - Baseline Recovery A baseline sample is taken after contamination to determine the number of marker organisms surviving on the hands.
 - Wash and Rinse Procedure Five (5) ml or amount specified by the manufacturer of the test formulation is place on hands and rubbed over all surfaces. After the material is spread, a small amount of water is added from the tap, and the hands are lathered for 30 seconds. The lower third of the forearm is also washed. After completion of the wash, hands and forearms are rinsed under tap water at 40 ($\pm 2^{\circ}\text{C}$) for 30 seconds. A total of seven (7) washes with the test formulation are involved. Bacterial samples are taken following the 1st, 3rd, 5th and 7th washes.
 - Bacterial Sampling After specified washes, rubber gloves used for sampling are placed on the right and left hand. 75 ml. of sampling solution** is added to each glove and the glove is secured at the wrist. After the solution is added, the gloved hand is messaged for 1 minute. After messaging, an aseptic sample of the fluid within the glove is taken.
4. **Enumeration of Bacteria in Sampling Solution** is performed using standard microbiological techniques.
5. **Determination of Reduction.** At each sampling interval, changes from baseline counts obtained with test material are determined.
6. **Comparison of Test material with a Control Material.** If the test material is compared to a control material, an equivalent number of subjects should be assigned to the control product on a random basis. All test parameters will be equivalent for products.

At each sampling interval, changes from baseline counts obtained with test material are compared to changes obtained with control material.

**0.4 g KH_2PO_4 and 10.1 g Na_2HPO_4 and 1.0 g isoactylphenoxypolyethoxyethanol in 1 liter of water. Adjust pH to 7.8 with 0.1N HCL or 0.1 N NaOH. Dispense in 75-ml volumes and sterilize for 20 minutes at 121°C

Adapted from: ASTM. 1987. *Standard test method for evaluation of health care personnel hand wash formulation. Designation E 1174 - 87. Annual Book of ASTM Standards. 11.04:779-781.*

HITM PROCEDURE FOR MEASURING HAND SANITATION

The feces of healthy people contains 10^7 to 10^9 *E. coli* / g*. *E. coli* is uncommon in food.

TEST

Use *E. coli* as an indicator of inadequate hand washing after using the toilet.

Utilize Coliform / *E. Coli* Petrifilm™.

1. Go into the food production facility / kitchen. Pick the 5 employees with the longest, dirtiest fingernails.
2. Take a small separate Ziplock bag for each employee. Add 10 ml of letheen broth to each bag and have each employee rinse their work hand fingertips in the broth in their designated bag. These employees should also use a small toothpick to scrape under their fingernails. This scrapping should also be added to the letheen broth in the Ziplock bag.
3. Plate 1 ml. of the fingertip / letheen broth culture onto Coliform / *E. Coli* Petrifilm™ . Incubate Petrifilm™ for 24 hours at 35°C.
4. Significance of results:
 - If < 20 CFU / ml, there is no problem. (Hands have been washed adequately.)
 - If > 20 CFU / ml, there is inadequate fingertip washing.

deWit and Rombouts* found:

- Before stool samples 4% of kitchen employees, had >20 CFU *E. coli* / ml on their hands
- After defecating 25% of the employees had >20 CFU *E. coli* / ml on their hands.
The average was about 200 CFU *E. coli* after defecation.

*de Wit, J.C., and Rombouts, F. M. 1992. Faecal bacteria on the hands of carriers: *Escherichia coli* as model for Salmonella. Zentralbl Hyg. Umweltmed 193(3):230-6.

CONTROL OF FOODBORNE ILLNESS PATHOGENS: HITM HAND WASHING STUDY

1. 0.1 ml of *Serratia marcescens* was placed on the thumb and first and second fingers of subjects and allowed to air dry. This was a total of 20,000,000 to 100,000,000 bacteria. To test the number of *S. marcescens* remaining of the fingertips, the thumb, first and second finger were rubbed together in 10 ml. of letheen broth.
2. Single wash (about 13 seconds): Liquid Ivory hand detergent was put on the hands and fingertips which were washed for 13 seconds under flowing water at 2 gallons per minute. There was a 99.7% reduction.
3. Double wash with fingernail brush (about 20 seconds): A nail brush with about 5 ml. liquid Ivory hand detergent was used on the first wash. Then, the hands were washed again with 5 ml. more of Ivory detergent, without the nailbrush. A total of 99.999% reduction was obtained.
4. The nailbrush was rinsed in 10 ml of phosphate buffer. Compared to the original starting bacterial counts, there was a 99.9998% reduction on the brush.
5. The normal skin bacteria that come off in a wash are about 1,000 to 100,000 per ml of rinse water. It is critical to use a marker organism to show reduction because there is little reduction of skin resident bacteria. The brush becomes contaminated with them.

WHEN TO USE DOUBLE AND SINGLE FINGERTIP WASHING

Policy:

All employees who prepare food in the kitchen or production area and who serve food are responsible for keeping pathogens on fingertips and hands at a safe level of <10 highly infective pathogens.

When entering the kitchen, the double wash procedure, at the feces wash off sink, will be used to reduce high levels of pathogens (10^6) to a safe level:

- Upon beginning a work shift.
- After using the toilet and reentering the kitchen or production area.
- After cleaning up vomitus or any fecal material.
- After touching open sores.

When working in the kitchen, the single wash procedure will be used to remove low levels of pathogens (10^3):

- Between handling raw poultry and ready-to-eat foods.

Hand washing is not critical because it is not probable that there are >10 highly infective pathogens:

- After touching raw meat, egg shells, dirty plates, mouth, or garbage bags; blowing nose; touching skin, hair, or beard.

IMPORTANCE OF DRYING HANDS AFTER HAND WASHING

These simple experiments demonstrate that careful hand drying is a critical factor in determining the level of touch-contact-associated bacterial transfer after hand washing.

The authors* designed an experiment to determine the drying efficiency of cloth towels and "air towels" (blow dryers).

Result: After 10 seconds of drying, single-service cloth towels removed 96% of the water from a subject's hands, whereas when hands and fingertips were dried with a blow dryer, 45 seconds drying time was needed to achieve the same endpoint.

Another experiment showed that when materials representing skin, food, and utilities were touched with wet hands, high numbers of microorganisms were transferred from the subjects' fingers to the test material. Microbial numbers on the order of 68,000, 31,000, and 1,900 were found on samples of skin, food, and utilities, respectively, after touch contact.

A reduction in bacterial transfer was achieved using a simple, 10-second cloth towel or 20-second blow dryer post-wash hand drying procedure. This 10- or 20-second drying procedure after hand washing reduced the transfer of numbers of microorganisms to skin, food, and utilities to 140, 655, and 30 respectively and achieved 99.8, 94, and 99% reductions in bacterial transfer figures associated with wet hands.

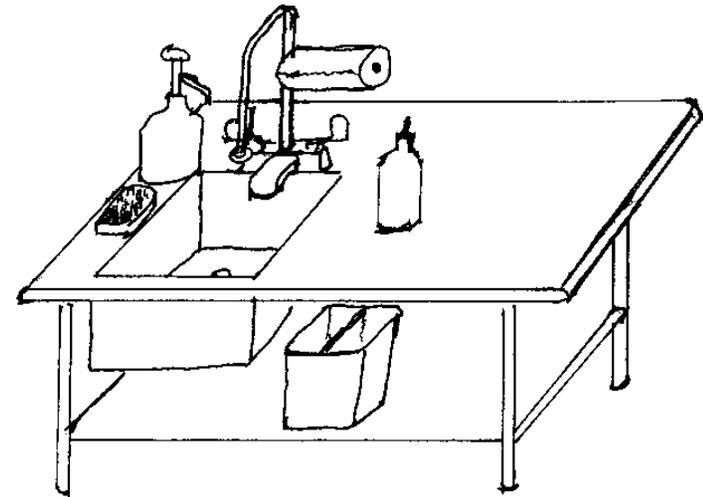
Note: Air dryers are known to accumulate fecal pathogens from the air in the toilet, and HITM does not recommend them for hand drying.

* Patrick, D.R., Findon, G., and Miller, T.E. 1997. Residual moisture determines the level of touch-contact-associated bacterial transfer following hand washing. *Epidemiol. Infect.* 119:319-325.

KEEPING HANDS CLEAN WHILE WORKING IN THE KITCHEN

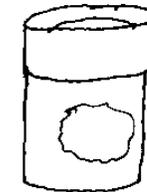
Food Contact Surface Cleaning Sinks

- Hands are a food contact surface.
Clean in plain single compartment sinks (14" x 12" x 12") in the kitchen where other utensils are cleaned. Only one hand sink is need for the feces wash-off sink at the entrance to the kitchen. The equipment sink should have a high-volume water flow, some soap, and paper towels.



Bucket Hand Cleaning

- When there is no sink (as on the food preparation line), use a 1-gallon (4-L) bucket to disinfect fingers after touching raw chicken and to keep the counter rinsed.
 - 4 liters (4,000 ml) provides a safe dilution. [1,000 *Campylobacter jejuni* is 1 bacteria / 4 ml].
 - 0.5% distilled vinegar water [400 ml of 5% vinegar in 3,600 ml of water **or** about 2 cups vinegar in gallon of water].



ABC CYCLE EXAMPLE FOR FAILURE TO CORRECTLY WASH HANDS

Antecedent	Behavior	Consequence	
		Individual	System
<p>Inconvenient location of sink</p> <p>Lack of, or incorrect supplies</p> <p>Employee under time pressure</p> <p>Lack of adequate training</p> <p>Procedure not yet habitual with employee</p> <p>Lack of enforcement by owner/manager</p> <p>Weak government enforcement</p>	<p>FAILURE TO WASH HANDS CORRECTLY</p>	<p>Ability to get task done more quickly/produce more items than if having to stop to wash hands, and feeling good about the progress</p> <p>Ability to serve customer more quickly and feeling good about it</p> <p>Possible praise from owner/manager for serving customers in a timely manner</p> <p>Possible negative, non-instructive feedback from owner/manager</p>	<p>More products being produced, and thus sold</p> <p>Customers served in a timely manner; more customers served within a given period of time</p> <p>Customers pleased with company's speedy service</p> <p>No zero-defect performance in terms of correct hand washing</p> <p>Possible customer dissatisfaction if customer sees employee not washing hands</p> <p>Possible customer illness resulting in loss of business, liability suit, or bankruptcy</p>

ABC CYCLE EXAMPLE FOR CORRECT HAND AND FINGERTIP WASHING IN A BEHAVIOR-CONTROLLED TQM SYSTEM

Antecedent	Behavior	Consequence Individual	Consequence System
<p>Automated top-quality, well-lit hand and fingertip washing station at the employee entrance to the kitchen</p> <p>Adequate supplies present; back-up readily available</p> <p>Employee under time pressure, but time to wash hands and fingertips is insisted upon by management</p> <p>Customers are aware of management's attention to food safety</p> <p>Adequate training in correct hand and fingertip washing procedure</p> <p>Procedure is habitual with employee</p> <p>Immediate, certain enforcement of behavior by owner/manager is expected; employee is fired upon failure to wash hands and fingertips</p>	<p>CORRECT HAND AND FINGERTIP WASHING 100 PERCENT OF THE TIME</p>	<p>Ability to get task done and to serve customer, and feeling good about knowing that the customer will be served safe food as a result of hand and fingertip washing</p> <p>Positive feedback from owner/manager for following this critical safety procedure</p> <p>Job is retained</p>	<p>Appropriate number of products being produced, and thus sold</p> <p>Customers served in a timely manner</p> <p>Customers pleased with attention paid to food safety</p> <p>Zero-defect performance in terms of liability costs</p> <p>Possible customer dissatisfaction if customer is in a hurry and needs immediate service, but easy to assuage by employee saying, "I did not want to take the chance of making you ill."</p>

UNIT HACCP HAND WASH POLICY

SAFE HAND WASHING POLICY

Our establishment is committed to the well-being of our employees and our customers. To prevent foodborne illness, a critical part of that commitment is frequent and proper hand washing, including proper use of the fingernail brush.

All employees will be trained and certified in safe hand washing before being allowed to work with food.

Employees will be constantly positively reinforced for following correct procedures.

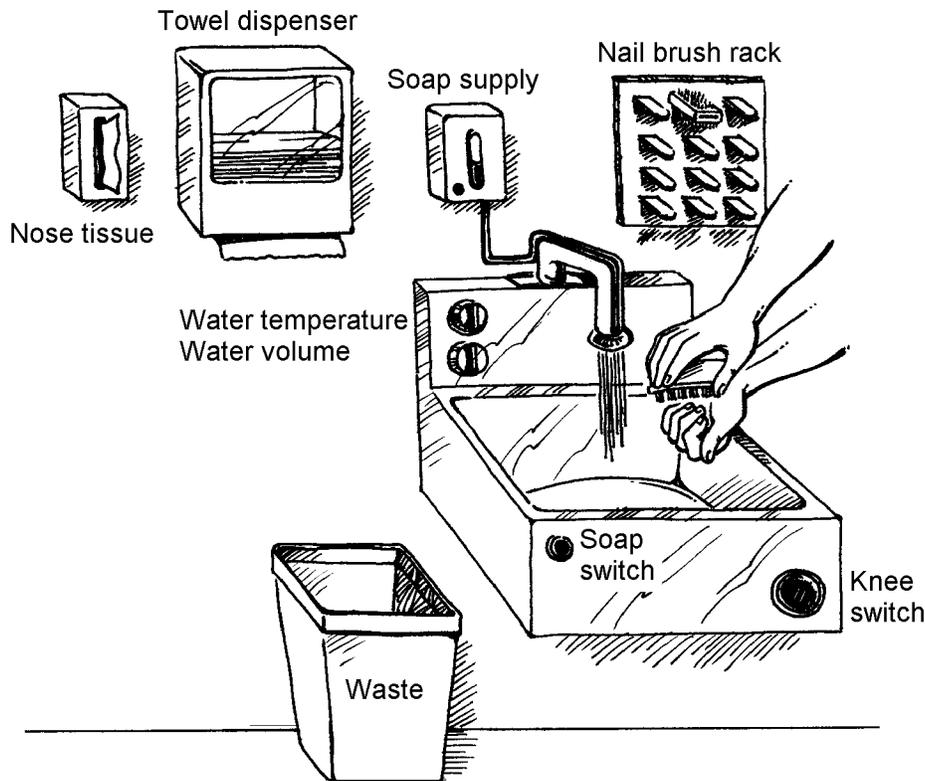
An employee who has difficulty remembering will be retrained.

An employee who does not wish to practice safe hand washing will not be employed.

We will expect nothing less than total compliance with this policy, since our jobs depend on it. We have the tools to prevent

Date

FECES WASH-OFF SINK



- Stainless steel sink, 18" x 12" x 12" deep for washing up to elbows. Light: 100-foot-candles; light turns on with water flow.
- Water flows at 2 gallons per minute, non-splash, 95-110°F.
- Automated knee switch for water.
- Water temperature and water flow adjust valves.
- A soft, not dense nailbrush (e.g., Anchor Surgeons Scrub 2000) for each food preparation employee. Air-dry between uses.
- 3 to 5 ml of plain unscented liquid hand soap. Single use soap container. Employees can have their own hand soap. Visual supply. Automated push button delivery to the faucet outlet and the brush.
- Visual towel dispenser, no lever.
- Nose tissue.
- Waste disposal.

SAFE HAND WASHING CHECKLIST

Planning and Pre-control

- Owner sets the example.
- Owner checks on and reinforces performance.
- Employees participate in control.
- Hand sink is maintained and stocked.
- Fingernail brush is replaced when worn.
- There are written hand washing procedures that are kept current and used for training.
- No one is allowed to handle food until trained and certified in safe hand washing.
- There is an effective punishment for not washing hands when returning from the toilet.
- The hand sink produces water at 110 to 120°F in 5 seconds. The water flows at 2 gallons / 8 liters per minute.
- The soap lathers well, and effectively and speedily removes filth from the hands and fingertips.
- There are nose tissues by the sink. Handkerchiefs are banned. If a person must sneeze or cough, he or she does so away from the food, into a shoulder, but never into hands.
- There are good-quality, non-latex gloves available if an employee needs them.

Organization and Training

- Responsibility for training and employee safe hand washing certification is clearly defined.
- Every employee has seen the safe hand washing video tape and has been performance certified using Glo-Germ.
- Every six months, employees receive hand washing refresher training.

Operation and Control

- The sink is always restocked before any supply is less than 1/4. There are back-up supplies near the sink, and employees can restock the sink supplies if necessary.
- Employees check each other and provide team reinforcement in correct fingertip and hand washing.
- All employees can properly demonstrate safe hand washing.
- There is control of cuts on hands.
- Employees wearing gloves wash or change the gloves frequently.
- Fingernails are kept very short.

Measuring and Feedback

- Supplies never run out.
- Employees participate in improving the system.
- Safe hand washing is continuously positively reinforced by management.

INDUSTRY CHECKLIST OF AN EFFECTIVE GOVERNMENT PROGRAM

1. The head of state food safety program writes a semi-annual fact sheet on safe hand washing.
2. The state has an up-to-date file of the latest research reports on safe hand washing.
3. All food safety inspectors can validate safe hand washing with the *E. coli* test.
4. All food safety inspectors can demonstrate safe hand washing (the official state method).
5. All food safety inspectors can verify a unit's safe hands program.
6. Inspectors give all employees a 10-minute written knowledge test during an inspection.
7. There is an annual industry / government meeting to improve the state safe hands program. Ten (10) government and ten (10) industry people are randomly selected each year and are required to meet and review the program.
8. The state keeps statistics, which are updated monthly, on percent of food employees checked that month that could correctly demonstrate safe hand washing.
9. The government must have epidemiological proof of cause of illness for every requirement they have in the state code, to include hand washing.

GOVERNMENT RISK ASSESSMENT OF THE PROBABILITY OF SAFE FINGERTIP WASHING IN A RETAIL FOOD OPERATION

1. The manager has an up-to-date file of semi-annual fact sheets from the state on hand washing. The manager can demonstrate the correct procedure for fingertip washing.
2. The manager has a signed written test for hand wash mastery for all employees that show the employees:
 - Were trained in safe hand washing.
 - Viewed the state hand wash video.
 - Demonstrated to the manager that they could double-wash their hands.
3. The manager has a monitoring and reward program for hand washing
4. Five (5) employees, chosen at random, can correctly demonstrate the double-hand wash. Some are tested for *E. coli* under the fingernails.
5. Employees are retrained and tested every 6 months.

SUMMARY

1. How to achieve safe hands is no mystery. It is being done most of the time.
2. The state must have one basic procedure, on videotape, for removal of fecal pathogens on fingertips, and everyone in retail food operations must do the procedure. There must be verifiable research data that proves the procedure does reduce pathogens on hands and fingertips to a safe level. It must be shown that this is the minimum effective procedure.
3. In the kitchen, the raw food and ready-to-eat food must be separated and employees must clean-as-they-go. They must clean hands between handling raw chicken and ready-to-eat food.
4. The percent of correct performance by employees must be measured and recorded by the manager and at the state level.
5. Good performance behavior must be rewarding, not punishing.
6. The government must inform the consumer what actions do not warrant immediate hand washing. These are:
 - putting fingers to mouth
 - tying shoes
 - blowing nose
 - bussing dishes
 - touching dirty rags, etc.

It is the industry's responsibility to provide quality and customer satisfaction.

HITM'S NATIONAL "SAFE HANDS" PROGRAM COMPONENTS

Starter kit.

1. Manager's Information on Safe Hand Washing
2. Employee Safe Hand Washing Policies, Procedures, and Standards
3. Video tape: Safe Hand Washing (English or English / Spanish)
4. Safe Hand Washing Policy
5. Employee Safe Hand Washing Test and Record
6. Safe Hand Washing Checklist
7. Safe hand washing poster for above the hand sink
8. Anchor surgeon's brush: Super Scrub #2000B
9. Glo-Germ kit: orange fluorescent powder in mineral oil for hand washing training; white tracking powder to show what people touch and how they transfer germs; fluorescent light to cause the powder to "glow" in a darkened room
10. "Safe Hands" Certification Sheet
11. "Safe Hands" Recertification Sheet
12. "Safe Hands" Employee Certification Pin (10 pins for initial training)

Upon completing your initial "Safe Hands" training, contact HITM to receive the following.

1. "Safe Hands" Customer Brochure (packet of 25 for customer distribution and original for photocopying)
2. "Safe Hands" Dated Wall Certificate

For each retraining, contact HITM to receive recertification materials.

1. Personalized "Safe Hands" Wallet-size Employee Recertification Certificate (for each recertified employee)
2. "Safe Hands" Dated Wall Certificate (for recertification, showing ongoing commitment to "Safe Hands")
3. "Safe Hands" Customer Brochure (packet of 25 for customer distribution)

HAND WASHING ON THE HITM WEBSITE

A "Safe Hands" hand wash program for retail food operations.

(<http://www.hi-tm.com/Documents/Safehands.html>):

If hand and fingertip washing is to be enforced, there must be agreement on the actual method and then, retail foodservice training and enforcement. This document sets forth a national initiative for safe hands in the USA and the world.

Double hand washing with a fingernail brush.

(<http://www.hi-tm.com/Documents/Handflow.html>):

Illustrated with step-by-step photographs, this 1-page document shows the standards and operating procedure for safe hand washing using the double hand washing procedure with a fingernail brush. The hazard and process and output specifications are described.

Hand washing.

(<http://www.hi-tm.com/Documents2008/HandwashingResources.pdf>):

This is a 48-page listing of abstracts from over 340 articles dealing with the problem of washing hands.

FECES WASH-OFF SINK

Nose
tissue

Towel
dispenser

Soap
supply

Nail brush
rack

Water temperature
Water volume

Water volume

Waste

Knee
switch

Soap
switch

Nose
tissue

Towel
dispenser

Soap
supply

Nail brush
rack

Water temperature
Water volume

Water volume

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Knee
switch

Soap
switch