

Grocery stores rely on the perishables departments for differentiation, but high shrink and labor costs cut into profits. Furthermore, publicized produce safety scares may prompt additional government regulations. The X-Green Produce Safety System addresses the challenges with an efficient and proactive solution.

Solutions for the Produce Department

Responding to challenges and threats by improving sales and operations in the produce department

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RESPONDING TO THREATS IN A COMPETITIVE ENVIRONMENT

The grocery industry is in a transitional phase. The already slim profit margins are under pressure from non-traditional retailers trying to take a piece of the pie.

Pharmacies, convenience stores, and supercenters are adding to their grocery departments. Stores like Target aren't just offering staples to fill in between trips to the grocery store. They now have expanded frozen sections, organic food, and even novelties like sushi (Clifford).

Traditional grocery retailers are redesigning to emphasize the store perimeter, focusing on fresh meat and fish, prepared foods, the deli, the bakery, and produce. The goal is to create a unique shopping experience for customers (Progressive Grocer). And the non-perishables in the center of the store are available anywhere.

Like canned goods and cereal, produce often isn't seen as anything more than an agricultural commodity. Produce departments try to differentiate by having the largest selection—stocking up to twenty varieties of apples and unusual vegetables like kohlrabi or daikon.

The shelf-life on produce is limited, as well, and some in the industry believe shrink may be as high as 10% (Grocery Headquarters).

In this highly competitive environment, grocers must differentiate on features that truly matter to consumers. Today's key household decision-makers, women (Pew Research), are concerned with two things when grocery shopping:

- 1) Squeezing as much as they can out of their grocery budget
- 2) Buying safe and healthy food for their families

Shrink

Controlling shrink can make or break a grocery store, with average shrink rates at 2.76% and net profits at 0.88% in 2006 (National Retail Research Group 3). In an average grocery store (assuming store sales of \$22 million) produce accounts for about 9% of sales, but 16% of shrink (National Retail Research Group 12).

Typical shrink prevention programs target shoplifting and employee theft. However, theft seldom occurs in the produce department, accounting for an estimated 12% of shrink (National Retail Research Group 39). Because some shrink is inevitable, retailers have long believed reducing produce shrink further was unfeasible.

Food Safety

Not only do grocers have to monitor shrinkage, there are also rising produce safety concerns. In fact, vine produce, fruits and vegetables, and leafy greens caused more outbreaks from 2003 to 2008 than any other category (CDC).

There are additional hazards from imported produce, which makes up about 45% of all fruits consumed in the US (Tifton Gazette) and 20% of all vegetables. Not all trade partners have strictly enforced regulations for growing produce. Some farm irrigation systems may even be contaminated with sewage (Chatterjee). And eating organic food doesn't provide protection from these risks.

Outbreaks cause panic in the food supply chain and broad recalls. Consumers may be overly-cautious and avoid product categories entirely, regardless of the retailer.

A recall of certain brands of spinach can be interpreted by consumers as a recall of all leafy greens. A regional risk may prompt caution across the entire country. The store directly affected by the recall may be reimbursed to some level by a grower, but retailers indirectly affected have no protection.

Furthermore, consumer memory for recalls generally outlasts the actual risk. In 2007, about a third of consumers did not feel confident about the safety of food at grocery stores (Washington Times). And the percentage may be higher among the household decision-makers.

Cleaning Produce

Cleaning produce manually can be cost-prohibitive. Even if produce is submerged in a cleaning solution in a sink, the process is labor intensive. According to testing by the US Navy, manually washing just 20 pounds of broccoli required over nine minutes of labor (Gildea and Jamieson 9).

Without constant monitoring, the cleaning solution can become too diluted to be effective, or too concentrated to be safe. Furthermore, manually cleaning cannot ensure the required conditions to destroy bacteria.

Even prewashed or organic produce can be contaminated, and thick skinned produce can be contaminated when cut. Bacteria on the skin of a single orange can taint the entire batch when it comes into contact with the knife and cutting service.

Rinsing with water may remove large particles, but it does not destroy bacteria or remove the waxy residue, biofilm, on many types of produce.

Bacteria attaches in tiny indentations and pores, especially near the stems. Produce with punctures or cuts have an ideal environment for bacteria to grow and escape typical washing.

According to a 2001 USDA Study, "Once attached, bacteria might become incorporated into a biofilm, an extracellular polysaccharide matrix that holds the cells together and glues them to the commodity surface. In this state, the bacteria are more resistant to detachment or inactivation by washing treatments" (Sapers).

The USDA Study tested commercial brush washers, and found low reductions in bacteria and overall poor results.

Additional testing using chlorine, the most common cleanser for commercial produce, not only had poor results (1-2 log unit reduction of bacteria), but is "potentially mutagenic or carcinogenic". Hydrogen peroxide is Generally Regarded as Safe (GRAS) and is effective in killing bacteria, but damages the produce (Sapers).

There is only one system that maximizes cleaning effectiveness, while giving your store the reporting and traceability you need to ensure compliance.

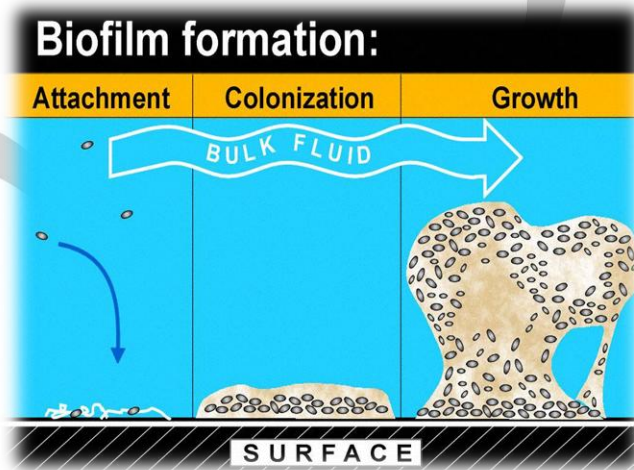


Figure 1: Bacteria attaches to the surface of the produce and becomes trapped under naturally occurring bio-film. Bio-film is difficult to remove with water alone.

THE X-GREEN PRODUCE SAFETY SYSTEM

The X-Green Produce Safety System automatically injects all-natural Fit Antibacterial Produce Wash into a refrigerated or ice water basin. The basin fills with cold water to gently, but thoroughly clean produce.

The wash cycles are customizable for different types of produce. For example, cantaloupes need a longer cycle than apples. The wash action is mild enough for delicate peaches or berries, yet powerful enough to remove soil from potatoes.

The automatic data storage creates detailed reports on the wash cycles (See Appendix A). The data can be used to print labels directly from the X-Green.

The X-Green System is automated and easy to use. Staff can simply load the baskets, select the cycle, and come back when the timer sounds.

Description of Operations

1. Cut or whole fruits and vegetables can be loaded directly into the basin or into wash baskets.

The baskets keep different types of produce sorted when washed simultaneously and ensure submersion of buoyant produce. The basket also make loading and unloading more efficient.

2. The X-Green basin fills with temperature controlled cold water.

3. The X-Green System automatically injects Fit Antibacterial Produce Wash.

The system constantly monitors the pH to ensure it remains below 4.5, the level required to kill bacteria (Integrated Publishing). More Fit is injected automatically, if necessary.

4. When the cycle starts, water begins circulating in the tank. The gentle water friction over the surface of the produce rinses away larger particles and erodes biofilm, pesticides, and wax.

The acidity of the wash solution kills bacteria within 30 seconds.

5. When the cycle is complete, a timer sounds to alert staff that it is ready for processing or packaging. The optional salad spinner removes excess water from leafy greens.

The control center stores data about the cycle and prints labels for packaging.

Fit Antibacterial Fruit and Vegetable Wash

We recommend using Fit Antibacterial Fruit and Vegetable Wash for best results with the X-Green System. A custom five gallon container of Fit was designed specifically for use in the X-Green.



Figure 2: Operators can constantly monitor the temperature and pH on the X-Green control panel.

When used in the X-Green System, Fit removes pesticides, wax, soil, and bacteria from the surface of fruits and vegetables.

In fact, Fit kills 99.9% of dangerous bacteria, such as E. Coli, Campylobacter, Salmonella, Botulism, and Listeria. Fit is made of natural food ingredients, including citric acid, grapefruit oil, and baking soda. It is completely safe, rinses away, and leaves no odor or aftertaste on food (See Appendix D: Fit Antibacterial Fruit and Vegetable Wash Material Safety Data Sheet).

Washing cut produce in Fit seals in moisture and protects the surface from browning. It leaves a tasteless layer of safe acidity on the surface, just like a few drops of lemon juice.

Fit is Certified Vegan by the American Vegan Association, Certified Kosher by the Orthodox Union, and approved for use on organic food by the Organic Materials Review Institute (Fit Fruit and Vegetable Wash).



BENEFITS

The X-Green benefits include food safety, produce quality, and operational improvements.

Food Safety

US Navy Testing of the X-Green confirmed up to a 2.37 log reduction of naturally occurring bacteria on produce when it was washed in the X-Green (see Chart 1) compared to untreated produce (Gildea and Jamieson 10). The results also indicated that washing in the X-Green produces better results than manual washing (Gildea and Jamieson 14).

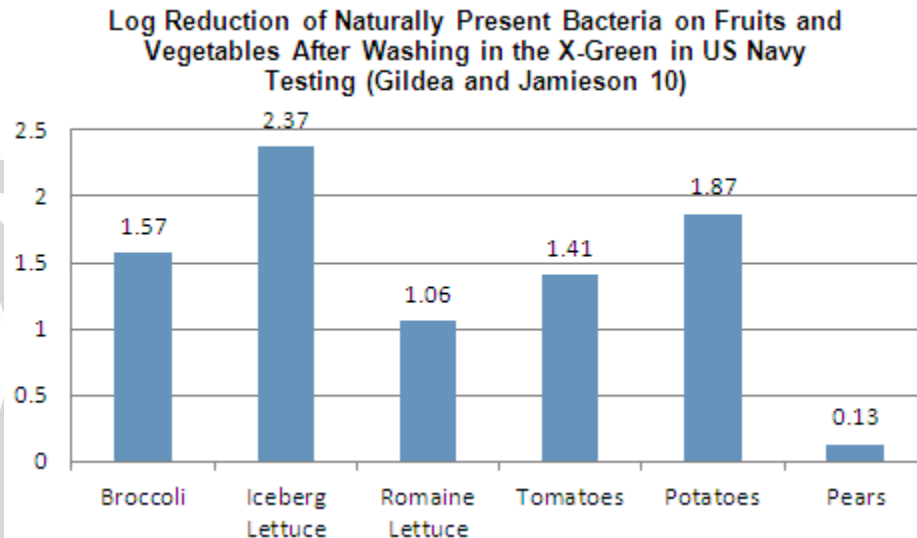


Chart 1: The US Navy Study by Gildea and Jamieson shows log reductions of bacteria on produce washed in the X-Green.

The X-Green minimizes opportunity for human error and enhances food safety programs.

The labeling and reports produced create a complete history of the produce (See Appendix A). With complete wash cycle data, managers can monitor operator compliance with the food safety program.

Whole Produce

Pesticides and wax applied to produce for protection make the natural color look dull and gray (see Figure 3, as does the naturally occurring biofilm).

The X-Green's wash action removes these residues, making whole produce look garden-fresh.

Tests by the US Navy confirm that the X-Green lengthens the shelf-life of produce your customers buy (Gildea and Jamieson 14). This gives shoppers more value and keeps them coming back to your store.

Internal studies show that fresh produce may stay at peak appearance and texture for up to 50% longer than produce not washed in the X-Green.

Processed Produce

X-Green doesn't just improve the appearance of whole produce. Once produce is cut, it begins to show signs of aging. Consumers are unlikely to purchase brown apple slices or desiccated carrot sticks.

Consider the labor hours and shrink involved with pre-slicing melons, carrots, or broccoli. These products age more rapidly than whole pieces. With air exposure, an apple or pear will begin to turn brown within 15 minutes, a process called enzymatic browning (University of Wisconsin).

The acid in a few drops of citrus juice will protect produce from oxidation for hours. The X-Green coats cut or whole produce with the natural citric acid in Fit Produce Wash, slowing the aging process.

The icy water bath hyper-hydrates produce. The cool temperature allows the cell walls to open and expand with fluid, enhancing the taste and texture of fruits and vegetables. The hyper-hydration process extends shelf-life and adds weight to the produce.

Marketing Benefits

The X-Green includes a label printer to document the details of each wash cycle on product packaging. After washing a batch of produce, print the labels and apply them directly to the produce, to packaging, or the storage container.

The self-adhesive label not only informs consumers that the produce was washed, it also includes important details about the wash cycle:

- Fit® Antibacterial Produce Wash
- date and time of the wash cycle
- best-by-date
- water temperature
- wash cycle duration
- pH of the wash solution

By including the Fit® logo, consumers immediately recognize that the produce was cleaned in an organic solution that is healthy for their families.



Figure 3: The broccoli on the top of the display has been washed in water alone, while the broccoli on the bottom has been washed in the X-Green. It clearly shows a much more vivid color.



Figure 4: The X-Green label printer gives operators and customers complete information about the wash cycle of the produce.

Labor Reduction

By improving the shelf-life of cut produce, preparation labor is required less frequently (see Figure 5). For example, rather than preparing packaged fruit salad daily, this process could be done every other day. This frees labor and equipment for other activities.

The Navy's rigorous testing showed that the X-Green can reduce the labor hours required for cleaning produce by an average of 54%.

Assuming 17.5 labor hours/week preparing produce, a grocery store can save just under \$5,000 a year by using the X-Green (assuming wages and benefits at \$10/hour).



Figure 5: This romaine was trimmed over 24 hours ago. The X-Green reduces the need for frequent re-trim.

Operational Benefits

Inventory management can also be improved because the process to put produce on the floor is shortened.

The crisping procedure most retailers use can take up to four hours for each batch. To prevent inventory stock-outs, more produce is prepared than is required. The delay in bringing produce to the floor uses labor and incurs inventory carrying costs.

The X-Green significantly reduces or eliminates the delay in bringing produce to the floor.

Shrink

With the labor savings and shelf-life extension, the X-Green provides a solution for the most challenging causes of produce shrink. Overproduction throw aways and overordering had been difficult to reduce because of demand fluctuations and stock-out avoidance. The X-Green allows store managers to improve inventory management and reduce spoilage, while avoiding stock-outs.

Each dollar of shrink comes straight off of net profits. A modest 25% reduction in produce shrink would add nearly \$25,000 to net profits, the equivalent of increasing sales by \$2.8 million per store (assuming .88% net profits, store sales of \$22 million, and 16% of shrink from produce) (National Retail Research Group 3,12,39).

Equation 1: Based on average store calculations by the National Retail Research Group, 3,12,39)

To Calculate Equivalent Annual Increase in Sales

$(\text{Annual } \$ \text{ of Shrink}) * (\% \text{ Shrink Reduction}) = \$ \text{ of Shrink Prevented}$

$\$99,930 * 25\% = \$24,983$

$\$ \text{ of Shrink Prevented} / \% \text{ Average Net Profit} = \text{Equivalent Annual Increase in Sales}$

$\$24,983 / 0.88\% = \$2,833,864$

PRODUCE SAFETY PROGRAMS

The X-Green automates the process of cleaning produce, so opportunities for human error are greatly reduced.

Recent food safety legislation gives the FDA the authority to create more regulations on produce safety. The X-Green provides the traceability the FDA will likely soon demand from retailers.

The X-Green automatically stores data on the wash cycles the produce and prints labels. The X-Green can be incorporated into any produce safety program to monitor operator compliance.

HACCP

Hazard Analysis and Critical Control Points (HACCP) programs for food safety are designed to identify potential dangers to food safety and keep the dangers within control. The system requires thorough documentation and record-keeping for compliance.

While HACCP is not required for all steps in the produce supply chain, it is a best practice. Furthermore, recent food safety legislation may put more pressure on sellers, even if they are indemnified to a supplier. HACCP programs may even be mandatory in the future.

A HACCP program is also a critical component for ISO 22000 Certification.®

Certain insurers offer rate reductions for organizations with HACCP programs, because the potential for hazard is so greatly reduced.

Washing produce manually to comply with these HACCP guidelines is labor intensive and difficult to control. The X-Green monitors the Critical Control Points and standardizes the labeling and reporting process (see Table 1 in Appendix A).

Examine the steps required to ensure HACCP compliance with Manual Washing (Appendix C) compared to Washing with the X-Green (Appendix B).

CONCLUSION

The X-Green improves the appearance, taste, and smell of fresh produce and extends shelf-life, whether on your shelves or the customers' homes. Retailers using the X-Green provide more value to the customer and build loyalty.®


By automating the cleaning process, the X-Green increases cleaning effectiveness while reducing labor costs. The shelf-life extension can be used to reduce shrink in the department and improve inventory management. Even a small reduction in shrink has a big effect on net profits.

As the country's food sources become more global, there are growing concerns from the government and consumers about food safety. The FDA's expanded authority may soon require complete traceability from the farm to consumer's home. The X-Green's electronic data storage and label printing is a proactive way to respond to potential regulations.

The range of X-Green benefits provide tools to increase sales, reduce operational costs, and respond to a changing legal environment.

APPENDIX A: Sample X-Green Report

Table 1: Reporting from the X-Green can be exported to Excel or other spreadsheet applications.

						
Your Way Grocery Store ID: 6582 1234 Market St. Cincinnati, OH 65218 Pharmacy Phone 513-878-9999 www.yourwaygrocery.com				Date Range: 12-30-2008 to 1-4-2009 Number of Water Changes: 6 PH Level: Low: 2.8 High: 3.4 Average: 3.1 Water Temp: Low: 40 High: 46 Average: 43 Number of Processes: 18		
Date	Time	Basket	°F	PH Level	Process	Soak (m:s)
12-30-2008	2:30 PM	1	45	3.0	FRUITS	2:0
12-30-2008	3:28 PM	2	44	3.1	GREENS LEAFY	3:0
12-30-2008	3:45 PM	3	43	2.9	ROOTED	8:0
12-31-2008	7:00 AM	1	42	3.3	FRUITS	2:0
12-31-2008	7:28 AM	1	44	3.1	FRUITS	2:0
12-31-2008	8:31 AM	2	43	3.1	Melons	4:0
12-31-2008	9:04 AM	3	45	2.8	MELONS	8:0
1-1-2009	2:28 PM	1	42	2.9	GREENS LEAFY	3:0
1-1-2009	2:45 PM	2	44	2.8	ROOTED	8:0
1-1-2009	3:15 PM	3	40	3.1	MELONS	4:0
1-2-2009	8:28 AM	2	43	3.0	FRUITS	2:0
1-2-2009	9:17 AM	1	40	2.9	FRUITS	2:0
1-3-2009	10:07 AM	2	42	3.2	GREENS LEAFY	3:0
1-3-2009	11:12 AM	3	46	3.0	GREENS LEAFY	3:0
1-3-2009	1:05 PM	2	45	3.4	ROOTED	8:0
1-3-2009	1:21 PM	1	43	3.2	FRUITS	2:0
1-4-2009	6:15 AM	2	45	3.4	FRUITS	2:0
1-4-2009	7:15 AM	1	42	3.1	FRUITS	2:0

APPENDIX B: Sample HACCP Plan for Washing Fresh Produce with the X-Green

HACCP Principles

Principle 1: Identify Potential Hazards

Unwashed or improperly washed fresh produce is a health hazard. Produce to be served ready-to-eat or cooked can contain bacteria. Processed produce must be labeled to ensure it is not held past a usable date and was washed.

Principle 2: Identify Critical Control Points (CCP)

Washing fresh produce is critical to ensure food safety. The surfaces of produce must be vigorously washed and soaked in a solution with chemicals to ensure bacteria are destroyed.

Principle 3: Establish Critical Limits for Each CCP

All produce should be washed to the following standards to ensure that all hazards have been controlled:

- for a minimum of two minutes
- in water between 40-45°F
- with a pH below 4.2

Principle 4: Establish CCP Monitoring Procedures

Summarized Operating Instructions

1. Train foodservice employees who prepare or serve food on how to properly wash and store fresh fruits and vegetables.
2. Wash hands using the proper procedure before handling produce.
3. Wash, rinse, sanitize, and air-dry all food-contact surfaces, equipment, and utensils that will be in contact with produce, such as cutting boards, knives, and sinks.
4. Follow manufacturer's instructions for proper use of chemicals.
5. Follow all operating instructions on the X-Green System. Wash all fresh produce thoroughly, including unpeeled fresh fruit and vegetables to be served whole, cut, ready-to-eat, or cooked.
 - a. Fill the X-Green basin with water and add ice to speed refrigeration process.
 - b. Load produce into baskets or directly into basin.
 - c. Select the wash cycle based on the type of produce (see Table 2).

Table 2: Wash cycle required by produce type.

Type of Produce	Recommended Wash Cycle Duration (mm:ss)
Rooted	8:00
Delicate Fruits	2:00
Firm Fruits	3:00
Leafy Greens	3:00
Melons	5:00
Firm Vegetables	4:00

6. The X-Green uses cold water to gently scrub the surfaces of cut or whole produce.
7. The X-Green uses Fit Antibacterial Produce Wash, which complies with the 2001 FDA Food Code, to destroy bacteria. The X-Green constantly monitors the pH in the basin to ensure it is below the level required to kill bacteria. Additional Fit is injected, if necessary.
8. Print the labels directly from the X-Green Machine. The label includes the type of produce, date of the wash cycle, and details about the pH of the wash cycle.
9. Apply the label directly to the produce, the produce packaging, or storage container.
10. Transfer produce to cold storage or prepare to serve.
11. Follow state and local public health requirements.
12. Foodservice manager will visually monitor that fruits and vegetables are being properly washed and labeled during all hours of operation. In addition, foodservice employees will check daily the quality of fruits and vegetables in cold storage.

Principle 5: Establish Corrective Action

The X-Green monitors the temperature, duration, and pH of each wash cycle, making deviations less likely.

Unwashed fruits and vegetables will be removed from service and immediately washed. Unlabeled items will be washed and labeled.

The foodservice manager should regularly verify that the X-Green is in proper working condition and schedule preventative maintenance, as prescribed in the Owner’s Manual.

Principle 6: Establish Record Keeping Procedures

The X-Green system stores data about each wash cycle. The foodservice manager will print a report of the cycles daily for records.

Any deviation and corrective actions should be logged on a separate form.

Principle 7: Establish Verification Procedures

Initial Validation

Schedule a review of the HACCP Plan for a predetermined time after implementation. Review all records and deviation logs. Assess the efficacy of the plan.

Conduct Ongoing Verification

Regularly conduct ongoing validation of the process.

- Testing the calibration of the X-Green
- Direct observations of monitoring activities and corrective actions
- The review of all records
- Assess the efficacy of the plan

Reassess the Hazard Analysis

Examine the process for new or changed hazards regularly



APPENDIX C: Sample HACCP Plan for Washing Fresh Produce Manually

HACCP Principles

Principle 1: Identify Potential Hazards

Unwashed or improperly washed fresh produce is a health hazard. Produce to be served ready-to-eat or cooked can contain bacteria. Produce must be labeled to ensure it is not held past a usable date and to ensure it was washed.

Principle 2: Identify Critical Control Points (CCP)

Washing fresh produce is critical to ensure food safety. The surfaces of produce must be vigorously washed in cold water with chemicals that meet FDA Food Code to ensure bacteria are destroyed.

Principle 3: Establish Critical Limits for Each CCP

All produce should be washed to the following standards to ensure that all hazards have been controlled:

- Firm produce should be scrubbed individually using a designated clean and sanitized brush.
- Water must be below 45° F.
- Chemicals must meet FDA Food Code and concentration should be confirmed hourly.

Principle 4: Establish CCP Monitoring Procedures

Summarized Instructions

1. Train foodservice employees who prepare or serve food on how to properly wash and store fresh fruits and vegetables.
2. Wash hands using the proper procedure before handling produce.
3. Wash, rinse, sanitize, and air-dry all food-contact surfaces, equipment, and utensils that will be in contact with produce, such as cutting boards, knives, brushes, and sinks.
4. Follow manufacturer's instructions for proper use of chemicals.
5. Fill a sanitized sink basin with fresh cold water and add chemicals to the manufacturer's recommended concentration.
6. Wash all fresh produce thoroughly, including unpeeled fresh fruit and vegetables to be served whole or cut, whether ready-to-eat or cooked. Scrub all surfaces of firm produce. Gently rinse delicate produce.
7. Monitor the concentration of chemicals.
8. Test the temperature of the water every 30 minutes. Drain and refill the tank with water within the controls, if necessary.
9. Drain, clean, and sterilize the sink basin between each batch of different types of produce.
10. Create labels with the date of the wash process and type of produce.
11. Apply the label directly to the produce, the produce packaging, or storage container.
12. Transfer produce to cold storage or prepare to serve.
13. Follow state and local public health requirements.
14. Foodservice manager will visually monitor that fruits and vegetables are being properly washed and labeled during all hours of operation. In addition, foodservice employees will check daily the quality of fruits and vegetables in cold storage.

Principle 5: Establish Corrective Action

Visually verify that all produce in storage is properly labeled.

Remove unlabeled produce from service. Unwashed fruits and vegetables will be removed from service and immediately washed. Unlabeled items will be washed and labeled.

The foodservice manager should regularly observe the washing technique of all employees.

Principle 6: Establish Record Keeping Procedures

After each batch of washing, the employee should log details about the process. This should include: type of produce, source of produce, wash technique used (scrub, rinse, and/or chemical).

Any deviation and corrective actions should be logged on a separate form.

Principle 7: Establish Verification Procedures

Initial Validation

Schedule a review of the HACCP Plan for a predetermined time after implementation. Review all records and deviation logs. Assess the efficacy of the plan.

Conduct Ongoing Verification

Regularly conduct ongoing validation of the process.

- Testing employees on their wash technique
- Direct observations of monitoring activities and corrective actions
- The review of all records
- Assess the efficacy of the plan

Reassess the Hazard Analysis

Examine the process for new or changed hazards regularly

APPENDIX D: Fit Antibacterial Fruit & Vegetable Wash MSDS

Material Safety Data Sheet

03-OCT-2006
Fit Antibacterial Fruit & Vegetable Wash

CHEMICAL PRODUCT/COMPANY IDENTIFICATION

Material Identification
PRODUCT NAME: Fit Antibacterial Fruit & Vegetable Wash
PRODUCT USE: Fruit & Vegetable Wash
Company Identification
MANUFACTURER/DISTRIBUTOR
HealthPro Brands, Inc.
11400 Grooms Road, Suite A
Cincinnati, OH 45242
PHONE NUMBER
Emergency/ Product Information: 1-800-354-9709

HAZARDS IDENTIFICATION

***** EMERGENCY OVERVIEW *****
* Clear, slightly yellow liquid. Irritating to skin and eyes. *

Potential Health Effects:
EYE: Contact will cause irritation.
SKIN: Contact can cause irritation.
INGESTION: May cause irritation to gastrointestinal tract.
INHALATION: None.
CHRONIC (CANCER) INFORMATION: None known.
LONG TERM TOXIC EFFECTS: None known.

COMPOSITION/INFORMATION ON INGREDIENTS

2 Fit Antibacterial Fruit & Vegetable Wash MSDS
Material CAS Number
WATER 7732-18-5
CITRIC ACID 77-92-9
ETHANOL 64-17-5
GRAPEFRUIT OIL TERPENES 68917-32-8
SODIUM LAURYL SULFATE 151-21-3

FIRST AID MEASURES

First Aid
INHALATION: None.
SKIN CONTACT: Remove and wash contaminated clothing. Wipe off and wash with soap and water.
EYE CONTACT: Irrigate eyes with running water for at least 15 minutes. Get medical attention if irritation develops.
INGESTION: Rinse mouth with water. Dilute with water. Get medical attention if discomfort occurs.

FIRE FIGHTING MEASURES

FLASH POINT F° (C°): Not flammable.
EXTINGUISHING MEDIA: Water, carbon dioxide, powder, foam
SPECIAL FIRE FIGHTING PROCEDURES / UNUSUAL FIRE OR EXPLOSION HAZARDS:
Firefighters should use equipment as required for surrounding fire.

ACCIDENTAL RELEASE MEASURES

Mop up. Rinse with water.

HANDLING AND STORAGE

STORAGE TEMPERATURE: Ambient.
HANDLING & STORING: Store in closed packages.

EXPOSURE CONTROLS/PERSONAL PROTECTION

EYE PROTECTION REQUIREMENTS: Goggles for handling large quantities of pure material.
SKIN PROTECTION REQUIREMENTS: ... Rubber gloves for handling large quantities of pure material.
RESPIRATOR REQUIREMENTS: None.
VENTILATION REQUIREMENTS: None.
Exposure Guidelines
None
3 Fit Antibacterial Fruit & Vegetable Wash MSDS

PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Clear, slightly yellowish liquid.
ODOR: Citrus.

STABILITY AND REACTIVITY

STABILITY: This is a stable material.
CONDITIONS TO AVOID Heat or storage below freezing.
HAZARDOUS POLYMERIZATION: Will not occur.
INCOMPATIBILITIES:..... None special.

TOXICOLOGICAL INFORMATION

Mixture untested but based on components:
Eye contact will cause irritation. Can be irritating to skin. Ingestion may cause irritation to gastrointestinal tract.
CARCINOGENICITY: None listed.

ECOLOGICAL INFORMATION

No data.

DISPOSAL CONSIDERATIONS

Waste Disposal:
Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations.

TRANSPORTATION INFORMATION

DOT – not regulated.

REGULATORY INFORMATION

U.S. Federal Regulations

TSCA Inventory Status: Reported/included.

Section 313 Supplier Notifications.

This product contains no toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

OTHER INFORMATION

4 Fit Antibacterial Fruit & Vegetable Wash MSDS

Additional Information

NA = Not Applicable

NE = Not Established

= Indicates updated section

NPCA-HMIS Rating

Health : 1

Flammability : 0

Reactivity : 0

Personal Protection rating to be supplied by user depending on use conditions.

STATE RIGHT-TO-KNOW LAWS

No substances on the state hazardous substances list, for the states indicated below, are used in the manufacture of products on this Material Safety Data Sheet, with the exceptions indicated. While we do not specifically analyze these products, or the raw materials used in their manufacture, for substances on various state hazardous substances lists, to the best of our knowledge the products on this Material Safety Data Sheet contain no such substances except for those specifically listed below:

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER: None known.

WARNING: SUBSTANCES KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM: None known.

This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is to the best of our knowledge and belief accurate and reliable as of the data compiled. However, no representation, warranty, or guarantee is made as to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information.

Responsibility for MSDS :

HealthPro Brands, Inc.

11400 Grooms Road, Suite A

Cincinnati, OH 45242

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