

**Conference for Food Protection
2016 Issue Form**

Issue: 2016 III-026

Council Recommendation:	Accepted as Submitted _____	Accepted as Amended _____	No Action _____
Delegate Action:	Accepted _____	Rejected _____	

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Issue History:

This is a brand new Issue.

Title:

Chemical treatment of water used to wash or crisp raw fruits and vegetables

Issue you would like the Conference to consider:

The consumption of fresh produce has increased in the US while at the same time outbreaks of public health significance related to fresh fruits and vegetables continue to occur. The safety of fresh produce remains a challenge for the food industry. As technologies to enhance the safety of fresh produce become more readily available, they should be utilized by all food establishments.

As specified in the 2013 Food Code in section 3-302.15 Washing Fruits and Vegetables, "...raw fruits and vegetables **shall** be thoroughly washed in water to remove soil and other contaminants before being cut, combined with other ingredients, cooked, served, or offered for human consumption in READY-TO-EAT form. [Emphasis added]

Further, in the Food Code paragraph 3-302.15(B), it states, "Fruits and vegetables **may** be washed by using chemicals as specified under § 7-204.12." [Emphasis added]

Washing fresh produce, in this context, is required but using treated water is optional. It is well documented that raw agriculture commodities (RACs) may be contaminated with pathogens and, when soaked or submerged in water, there is a risk of cross-contamination. Various chemicals are available that can minimize and/or prevent cross-contamination and, to a lesser degree, reduce pathogen load on fresh produce.

Therefore, the Conference should consider that when produce is washed, crisped, re-hydrated or processed by soaking or submersion, the water used for these purposes shall be chemically treated to minimize the risk of cross-contamination.

Public Health Significance:

The use of chemicals for washing, treatment, storage and processing fruits and vegetables is specified in the Food Code as follows:

7-204.12 Chemicals for Washing, Treatment, Storage and Processing Fruits and Vegetables, Criteria.

(A) Chemicals, including those generated on-site, used to wash or peel raw, whole fruits and vegetables shall:

(1) Be an approved food additive listed for this intended use in the Code of Federal Regulations, 21 CFR 173, ^P or

(2) Be generally recognized as safe (GRAS) for this intended use, ^P or

(3) Be the subject of an effective food contact notification for this intended use (only effective for the manufacturer or supplier identified in the notification), ^P and

(4) Meet the requirements in 40 CFR 156 Labeling Requirements for Pesticide and Devices. ^P

The criteria for using chemicals for washing, treatment, storage and processing fruits and vegetables are designated in the Food Code as priority items. Sufficient controls are already prescribed to ensure the safe and effective use of these chemicals.

Washing raw fruits and vegetables can remove soil and other contaminants. Many food establishments use soaking or submersion as an approved, effective technique for washing produce. This method is often preferred for a variety of reasons, including:

- The contact time is better controlled
- All surfaces come in direct contact with the water
- It reduces the amount of waste water
- It allows for simultaneous washing and re-hydrating
- It helps minimize shrink and extends shelf life
- It improves the appearance of the product
- *And*, when chemicals are added, can provide an antimicrobial treatment for the reduction/prevention of cross-contamination.

It is well documented that pathogenic microorganisms may be present on the exterior surfaces of raw fruits and vegetables. The Food Code Annex 3, Chapter 3, Section 3-302.15 Washing Fruits and Vegetables states that "...more recent studies have demonstrated washing to fall short of their [pathogens] complete removal." There is currently no readily available treatment that can ensure removal or destruction of all pathogens on raw agriculture commodities (RACs) with the possible exception of irradiation.

Using chemically treated water to wash and/or process fresh produce can impact public health by minimizing the risk of cross-contamination and reducing pathogens if they are present. The Food Code Annex 3, Public Health Reasons, supports this position in Section 3-302.15 Washing Fruits and Vegetables as follows:

"All fresh produce, except commercially washed, pre-cut, and bagged produce, must be thoroughly washed under running, potable water or with chemicals as specified in Section 7-204.12, or both, before eating, cutting or cooking. Even if you plan to peel or otherwise alter the form of the produce, it is still important to remove soil and debris first" [Emphasis added] and "It is important to follow practices that minimize pathogens in the water or on the surface of produce." [Emphasis added]

The use of chemicals is equivalent, if not better, than rinsing under running water. Further, the use of chemicals will minimize pathogens in the water. It is estimated (unpublished data) that over three-quarters of grocery stores soak/submerge certain raw produce items to wash, crisp and/or re-hydrate them. Concerns about cross-contamination have led some experts to question the potential risk when soaking produce in untreated water. However, treated water has been shown to be very effective in minimizing/preventing cross-contamination

In January 2014, the Food Marketing Institute published, in collaboration with the Produce Marketing Association and United Fresh Produce Association, "*Produce Safety Best Practices Guide for Retailers*" advising retailers to use sanitizers when soaking/submerging fresh produce. The following guidance was provided to retailers regarding crisping fresh produce:

- If a bath is used, follow sanitizer recommendations
- If using a bath, an appropriate sanitizer should be used in compliance with label directions. [Emphasis added]

(<http://www.fmi.org/docs/default-source/food-safety/produce-safety-best-practices-guide.pdf?sfvrsn=2>)

Treating produce wash water in the processing sector has been extensively studied. The *FDA Guidance for Industry: Guide to Minimize Microbial Food Safety Hazards for Fresh Fruits and Vegetables* (October, 1998) specifically addresses this issue. In Chapter 2, Section 2.2 it states, "...antimicrobial chemicals in processing water are useful in reducing microbial build-up in water and may reduce microbial load on the surface of produce. Thus, antimicrobial chemicals may provide some assurance in minimizing the potential for microbial contamination."

(www.fda.gov/food/guidanceregulation/guidancedocumentsregulatoryinformation/ucm064574.htm)

The failure to add antimicrobial chemicals in processing water has also been cited as a contributing factor in foodborne outbreaks attributed to fresh produce. For example, a U.S. House of Representatives, Committee on Energy and Commerce report on an investigation of an outbreak of *Listeria monocytogenes* in cantaloupe states that FDA officials found several deficiencies including not using an "antimicrobial solution such as chlorine in the water used to wash the cantaloupes."

Additional studies and research support the use of chemicals in water that comes in contact with RACs. For example, a study was conducted in November 2013, comparing 5 different sanitizer options and plain tap water. It was found that sanitizers can have a significant impact on food safety because they are effective in reducing pathogens in the wash water itself, which reduces opportunities for cross-contamination.[1] (attached)

At the 2013 Symposium of the Center for Produce Safety (CPS), a collaborative partnership of industry, government and academic communities, a Key Learning report on wash water concluded, in part:

Many different products are washed, cooled or transported using water. Therefore it is important that the water is treated and maintained properly so that it does not become a source of cross contamination for human pathogens, should they be present. It is equally important to remember that simply washing products is not an effective mechanism for

removing contamination, i.e. it cannot remove or kill pathogens that have had the opportunity to naturally seek out hidden surfaces on products and adhere to them. Therefore our focus is to manage contamination risks throughout production (e.g. GAPs, inspections, hygiene, equipment sanitation, training programs, etc.) and control wash, cooling and transport processes using water so that we do not create cross contamination scenarios. Improper control over wash, cooling or water-based transport systems can do harm, i.e. resulting in large-scale cross contaminations. Dr. Trevor Suslow vividly demonstrated this assertion using an inoculated cilantro load and washing it with uninoculated parsley on a commercial wash system. The improperly controlled wash system permitted cross contamination onto the parsley demonstrating the potential for cross contamination.

(http://www.centerforproducesafety.org/amass/documents/document/186/Key%20Learnings_2013%20CPS%20Symposium.pdf)

On January 22, 2013, the Center for Produce Safety (CPS) conducted a seminar on post-harvest water disinfection. Among the Key Learnings from this seminar was the following conclusion:

Disinfectants are used in water that contacts produce to prevent cross contamination and not necessarily to kill microorganisms that might be present on the surface of the fruit or vegetable.

If water is not properly treated with active disinfectant, after a period of time the water could become a source of contamination for any fruits or vegetables that are conveyed, cooled or washed in it. Therefore the primary reason for treating water with disinfectants is to keep the water clean of microbial build up. In most systems the level of microbial reduction on the surface of fruits or vegetables is generally thought to be 1-2 logs.

(<http://www.pma.com/content/articles/2014/05/cps-wash-water-key-learnings>)

The FDA *Analysis and Evaluation of Preventive Control Measures for the Control and Reduction/Elimination of Microbial Hazards on Fresh and Fresh-Cut Produce*, A Report of the Institute of Food Technologists for the Food and Drug Administration published September 30, 2001 provided this summary in Chapter V. Section 1:

It is well established that pathogenic microorganisms associated with whole or fresh-cut produce can cause disease outbreaks, thereby demonstrating the need for improved mitigation efforts to reduce risks associated with these products.

The best method to eliminate pathogens from produce is to prevent contamination in the first place. However, this is not always possible and the need to wash and sanitize many types of produce remains of paramount importance to prevent disease outbreaks. It should be noted that washing and sanitizing are unlikely to totally eliminate all pathogens after the produce is contaminated. Therefore, it is important to use washing and sanitizing protocols that are efficient.

(<http://www.fda.gov/Food/FoodScienceResearch/SafePracticesforFoodProcesses/ucm091363.htm>)

Finally, the technology and/or products used to treat water used to wash, crisp, re-hydrate or process fresh produce by soaking or submersion are not proprietary. Several antimicrobial compounds are readily available to the industry. No one product or supplier is advocated. Food establishments have the opportunity to select a water treatment that is

most appropriate to their circumstances. A comprehensive review of these chemicals can be found in the FDA *Preventive Control Measures for Fresh & Fresh-Cut Produce*, Chapter V., Methods to Reduce/Eliminate Pathogens from Produce and Fresh-Cut Produce.

(www.fda.gov/Food/FoodScienceResearch/SafePracticesforFoodProcesses/ucm090977.htm)

[1] Davidson, G., Buchholz, A., Ryser, E. 2013 November. *Efficacy of Commercial Produce Sanitizers against Nontoxigenic Escherichia coli O157:H7 during Processing of Iceberg Lettuce in a Pilot-Scale Leafy Green Processing Line*. Journal of Food Protection; Number 11: pp. 1824-1993, pp. 1838-1845

Recommended Solution: The Conference recommends...:

that a letter be sent to the FDA requesting that section 3-302.15 of the 2013 Food Code be amended as follows (language to be added is underlined; language to be deleted is in strikethrough format):

3-302.15 Washing Fruits and Vegetables.

(B) Fruits and vegetables ~~may~~ shall be washed by using chemicals as specified under § 7-204.12 when soaked or submerged.

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Supporting Attachments:

- "Efficacy of Commercial Produce Sanitizers against Nontoxigenic Escherichia"

It is the policy of the Conference for Food Protection to not accept Issues that would endorse a brand name or a commercial proprietary process.