

Consumer Alert – Is Your Grocer Misting Fresh Vegetables With Chemicals?

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STORY AT-A-GLANCE

- › The tiny misters in your grocery store produce section likely contain antimicrobial sprays; fortunately, many are made from hypochlorous acid (HOCl), which is harmless
- › Chemstar's "Sterilox Produce Maxx" product is an antimicrobial fruit and vegetable wash used by more than 50 retail brands across more than 10,000 stores throughout North America
- › Produce Maxx, which is just one type of antimicrobial spray used on produce, contains HOCl at a concentration of 6,000 parts per million (ppm)
- › HOCl is naturally produced by white blood cells in your body as part of the immune response to fight infection
- › HOCl is beneficial for wound care, as it helps lower bacterial counts and supports healing

The produce section in many grocery stores often contains tiny misters that spray a fine mist onto fruits and vegetables. While you may assume this is just water used to keep the produce fresh and moist, many stores actually use antimicrobial sprays.

Fortunately, one commonly used spray is based on hypochlorous acid (HOCl), which is harmless and not a cause for concern. Still, to find truly chemical-free produce, your best choice is shopping your local farmers market and looking for organic, pesticide-free options.

Is Your Fresh Produce Covered in an Antimicrobial Spray?

A viral social media post brought attention to the practice of misting organic and conventionally grown produce in grocery stores. It featured photos taken in a Sprouts Farmers Market, which is a chain of health food stores based in Arizona.

There are close to 400 such stores in 23 states. A shopper noticed a Sterilox bottle in the produce section and took a picture – prompting Sarah Pope, founder of The Healthy Home Economist, to conduct her own investigation:¹

"I normally do not shop there, but I stopped in any way to take a look to either confirm or disprove what the social media post was claiming. What I found 100% confirms what I saw on social media ... What exactly is the spray bottle hidden above the organic produce at the Sprouts store? It's called Sterilox ... What exactly is in this stuff?"

In a nutshell, Sterilox is a disinfectant approved by the FDA in 2007 for use as a food-safe sanitizer to be used when re-hydrating or rinsing fresh produce, including leafy green vegetables ...

Chemstar, the company that manufactures Sterilox has on their website a bottle of the stuff with organic produce in the background. At the Sprouts where I took the photograph, the Sterilox was right above the organic produce section. And yes, this stuff is allowed to be sprayed on organics!"

Chemstar's "Sterilox Produce Maxx" product is an antimicrobial fruit and vegetable wash. The Sterilox system involves the electrolysis of a dilute salt solution (usually sodium chloride) to produce a mixture of HOCl and sodium hydroxide (NaOH).

Hypochlorous acid is a powerful disinfectant and antimicrobial agent that is safe and effective against a wide range of microorganisms, including bacteria, viruses and fungi. It is commonly used in various industries for sanitation and disinfection purposes, including food processing, health care facilities and water treatment.

These systems are often used to generate on-site disinfectants for cleaning and sanitizing surfaces, equipment and produce. According to the U.S. Food and Drug Administration, which approved Sterilox in 2007:²

"The Sterilox System is already being used by leading U.S. retailers on produce in supermarkets ... the Sterilox Solution – which mimics the natural anti-microbial hypochlorous solution produced by the human body to fight pathogens – is highly effective at killing a broad range of pathogens and spoilage organisms including E.coli, Salmonella, Staphylococcus, Listeria, norovirus, avian influenza, yeast, and molds."

Chemstar acquired Sterilox in 2016³ and added Produce Maxx to its range of chemical products, which include degreasers, oven cleaners, drain cleaners, disinfectants and restroom products.⁴ HOCl is also naturally produced by white blood cells in your body as part of the immune response to fight infections. According to the Cleveland Clinic:⁵

"HOCl exists in your body. It's created by white blood cells as a defense system against infection, bacteria and general ickiness. HOCl attacks invading pathogens, breaking down the cell walls before destroying unhealthy invaders. The antimicrobial acid is lethally effective in carrying out its protective mission. (Think of it as your own internal Batman.)"

'It's your body's natural response to bacteria, and it is very effective at its job,' says Dr. [Shilpi] Khetarpal."

HOCl Is Beneficial for Wound Care

Produce Maxx, which is just one type of antimicrobial spray used on produce, contains hypochlorous acid at a concentration of 6,000 parts per million (ppm). Another of HOCl's many uses is for wound care, as it helps lower bacterial counts and supports healing.

One study involving 44 children found washing the abdominal cavity and wounds with HOCl significantly lowered the rate of surgical site infections, and no adverse effects

were reported.⁶ HOCl is also effective for reducing bacteria in open wounds. According to a review in the Journal of Oral and Maxillofacial Surgery:⁷

"HOCl has been shown to be an effective agent in reducing wound bacterial counts in open wounds. In irrigation solution in an ultrasonic system, HOCl lowered the bacterial counts by 4 to 6 logs.

By the time of definitive closure, the bacterial counts were back up to 10⁵ for the saline solution – irrigated control wounds but remained at 10² or lower for the HOCl-irrigated wounds. Postoperative closure failure occurred in more than 80% of patients in the saline solution group versus 25% of those in the HOCl group."

It's also useful for removing biofilms and is useful for reducing bacteria on toothbrushes. One study found it's as effective as mouthwash for disinfecting toothbrushes.⁸ Animal studies also suggest HOCl is safe. In a study of 17 mice given free access to HOCl water, no abnormal findings or systemic effects were found.⁹

Produce Is Sprayed to Extend Shelf Life and Kill Pathogens

Grocers use Produce Maxx to keep produce fresher longer and reduce spoilage. According to Chemstar, the product can be used for crisping, washing, cut fruit preparation and misting. It lists an array of benefits, including:¹⁰

- Kills 99.999% of E. coli O157:H7, Salmonella enterica and Listeria monocytogenes in washing/crisping water
- Controls spoilage causing non-public health bacteria to enhance quality and shelf life
- Approved for use on whole or cut fruits and vegetables
- No potable water rinse required

The antimicrobial spray may be used on produce such as leafy greens and cantaloupe, as well as fresh cut fruit. According to Chemstar:¹¹

"To keep up with time-starved consumers, the fresh cut fruits and vegetables has become a high value signature category for the produce department. Rinsing fresh cut fruits and vegetables in Produce Maxx reduces spoilage-causing non-public health bacteria to enhance shelf life of the product while also protecting against cross contamination."

Chemstar states the spray is not only useful for misting produce but also for cleaning equipment, including misting lines and heads, to keep them free of odor-causing bacteria. It's part of their larger "total store solutions," which include "tailored chemical programs" to encompass restroom, floor and kitchen care, hand hygiene and food sanitation, along with fresh produce and floral department solutions.¹²

If organic produce is washed with Produce Maxx it's supposed to be rinsed to comply with organic standards. This isn't the case when it's used in misting lines, however, as it's supposed to be more heavily diluted for that purpose.

Produce Maxx is used by more than 50 retail brands across more than 10,000 stores throughout North America, including grocery stores, convenience shops, kitchens and food service facilities.¹³

Should You Wash Your Produce?

It's a good idea to wash fresh produce when you bring it home to help remove pesticide residues and other contaminants. A research team from the University of Massachusetts compared three methods of reducing toxins, such as pesticide residues, on produce.¹⁴ The team used apples to examine the effectiveness of commercial and homemade washing agents to remove pesticide residue.

They applied two common pesticides to organic Gala apples and then washed them with three different liquids: tap water, 1% baking soda water solution and an EPA-approved commercial bleach solution often used on produce. Using specialized analysis, the scientists found surface pesticide residues on apples were removed most effectively using baking soda.

While organic foods have a 30% lower risk of pesticide contamination,¹⁵ it's not entirely possible to guarantee organic produce is pesticide-free, as it is sometimes located in adjacent fields to farms where pesticides are used.

The research team believes the alkalinity of baking soda likely degrades pesticides faster, making it easier to physically remove the chemicals through washing. They recommended a concentration of 1 teaspoon of baking soda for every 2 cups of water and gentle scrubbing.¹⁶

You may also reduce your exposure to foodborne pathogens from produce by using white vinegar, as the acidic vinegar crosses bacterial cell membranes and kills the cells.¹⁷ Before misting thoroughly with a blend of vinegar and water in a 1-to-3 ratio, ensure you've removed the baking soda, as it will neutralize the vinegar. Let the produce rest for 30 minutes and then wash it lightly under cold running water.

How to Find Chemical-Free Produce

If you're looking for produce that doesn't contain chemical residues, visit local farmers markets. Many small-scale farmers who sell at farmers markets use sustainable farming practices that minimize chemical inputs. Talk to the farmers directly to inquire about their growing practices. While not all farmers at farmers markets may be certified organic, many follow practices that align with organic principles.

Joining a community-supported agriculture (CSA) program is another option, as it allows you to receive regular deliveries of fresh produce directly from local farms. Many CSA farms prioritize sustainable and organic growing practices, providing members with access to high-quality, minimally processed produce.

In addition, consider growing your own fruits and vegetables using organic gardening methods. By controlling the growing environment and avoiding synthetic chemicals, you can ensure that your produce is as pure as possible.

Sources and References

- ¹ The Healthy Home Economist April 21, 2024
- ² Progressive Grocer May 23, 2007
- ³ Food Safety magazine September 21, 2016
- ⁴ Chemstar Corp, Products
- ⁵ Cleveland Clinic August 2, 2021
- ⁶ Surg Today. 2015 Jul;45(7):876-9. doi: 10.1007/s00595-014-1050-x. Epub 2014 Nov 13
- ^{7, 8, 9} J Oral Maxillofac Surg. 2020 Sep; 78(9): 1461–1466
- ^{10, 11} Chemstar Corp, Product Solutions, Produce Maxx
- ¹² Chemstar Corp, Total Store Solutions
- ¹³ PolitiFact March 31, 2024
- ¹⁴ Journal of Agricultural and Food Chemistry, 2017;65(44):9744
- ¹⁵ Annals of Internal Medicine, 2012;157(5):348
- ¹⁶ Reuters October 31, 2017
- ¹⁷ David Suzuki Foundation, Does Vinegar Kill Germs