



APPLICATION NOTE 165

THE APPLICATION

Brine: Use Less, Use Again

Processed meat and poultry products often are rapidly chilled from cooking temperature to packaging and slicing temperature by the use of concentrated, chilled salt water (brine) or very cold fresh water cascaded or sprayed over these products in the brine chiller section of a continuous processing oven. For batch cooking operations this fast cooling may take place in a separate chiller cabinet.

The use of salt brine permits the chiller liquid to be maintained at a temperature well below 32°F, typically 15-25°F. This allows for more rapid chilling of the product to its internal temperature target and at the same time reduces the likelihood of bacterial growth in the brine. Still, even at these low temperatures listeria monocytogenes, a human pathogen, and other cold loving bacteria can thrive and grow.

In the past, many processors provided a level of pathogen control of this brine using bleach, citric acid, ultraviolet radiation (UV) and filtration. In most cases their own laboratory test results typically have shown limited efficacy,

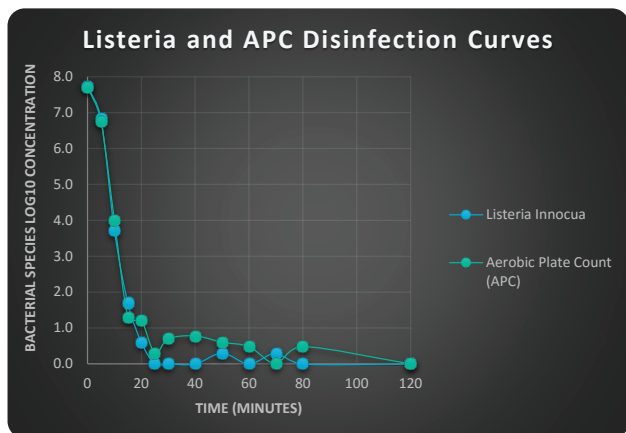
resulting in the need to discharge brine as often as daily.

In our reactor, opaque liquids with high organic loads are disinfected with ease. Unlike UV radiation and chemical treatment methods, our technology can directly treat turbid liquid streams containing suspended and dissolved solids.



Continuous Line Chiller Treatment

Bioionix wants to be recognized as a forward-thinking leader in advanced food safety. That's why we re-thought everything: equipment, liquids, how they impact the environment, and what all of that means to our future. That's why we believe the days of dumping your brine or other waste down the drain is over. So are hazardous chemicals, ultraviolet radiation, byproducts and carcinogens.



Powerful Disinfection without Chemicals.

A breakthrough in process water microbial safety and reuse, the Bioionix system uses platinum catalysts to directly disinfect water or brine by generating a powerful combination of reactive oxygen and activated chlorine species right from the liquid itself. These Bioionix SuperOxidants™ attack microbials by complementary methods of action, including direct DNA destruction, cytoplasm impairment and cell wall disruption. Other SuperOxidants provide powerful residual disinfection.

# PRE-SLICING AND PACKAGING INTERVENTIONS

## Powerful Disinfection



Ready-to-Eat Process Meat

Whether your responsibilities include plant management, operations, quality control or maintenance, Bioionix is designed to make brine chiller microbial control easier for you.

As liquid flows through the Bioionix reactor, high-performance catalytic plates produce our proprietary

electrochemical solution. The fluid is energized with electricity and millions of molecules split, creating extremely reactive oxygen- and chlorine-based disinfectants from the water itself. Low levels of hydrogen peroxide, chlorine dioxide, ozone and other oxidations then go to work as the hydroxyl radical—the world’s most powerful oxidant—flashes

through the liquid stream in a nanosecond. At the same time, salts in the liquid generate low levels of hypochlorous acid, an extremely effective residual disinfectant that is 100 times for effective than bleach, that halts cellular metabolism, keeps the brine free of bacteria and continues to disinfect both the product and equipment it comes in contact with. The combination of these safe and powerful Bioionix SuperOxidants™ quickly destroys bacteria and other pathogens, while providing lasting disinfection through the liquid stream.

## Bioionix System Advantages

- Dramatically extends brine life and increases product shelf life.
- Longer production runs.
- Prevents biofilm buildup in the chiller, piping and other surfaces.
- Continuous 24/7/365 treatment.
- Fully automated disinfection.

## BENEFITS

It’s the Answer to Using Your Resources Better, Using Less and Using Again



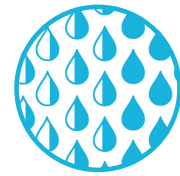
### BENEFIT 1

Bioionix systems are safe, environmentally friendly, and chemical free.



### BENEFIT 2

Simple, high-quality design makes our technology easy to operate and maintain.



### BENEFIT 3

Our oxidation process can handle the toughest liquid stream challenges.