TSUNAMI™: Oxidizing Agent Program
THE QUICKEST ROUTE TO THE CLEANEST PRODUCE

ECOLAB®
Everywhere It Matters.

TSUNAMI™ REDUCES 99.9% OF DANGEROUS PATHOGENS IN FRUIT AND VEGETABLE PROCESSING WATERS
Tsunami™ 100 is the only EPA-registered* antimicrobial water additive product on the market that dramatically reduces pathogens in process water.

SPECIALIZED PRODUCT — BROAD APPLICATIONS

Tsunami products are specially formulated for the flume systems in fruit and vegetable processing plants, providing kill of a variety of species.

- Completely soluble in water — helps eliminate potential off-gassing in heavily soiled systems
- Effective across a broad pH range — no need to acidify
- Taste neutral — will not impart any odor, taste or discoloration to end products
- Environmental implications — will not place extra demands on wastewater systems (e.g. pH excursions and effluent concerns related to chlorine byproducts)

FRESH CUT GREENS SHELF LIFE EXTENSION with TSUNAMI 100:

<table>
<thead>
<tr>
<th>Food</th>
<th>Additional Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>collard &amp; kale</td>
<td>7-8</td>
</tr>
<tr>
<td>mustard &amp; turnip</td>
<td>1-2</td>
</tr>
</tbody>
</table>

In the produce business, FOOD SAFETY is your first priority.

Tsunami reduces 99.9% of Escherichia coli 0157:H7; Listeria monocytogenes & Salmonella enterica in fruit and vegetable processing waters.

*EPA registration #1677-164
Solution Stories

Tsunami is an easy-to-use, cost-effective solution designed to help maximize operational efficiencies and improve product quality.

1. **IMPROVED AIR QUALITY DUE TO INSOLUBILITY IN FLUME WATER**
   Improved the overall air quality at a Western food processor by entirely eliminating the threat of off-gassing and odor concerns.

2. **CONSISTENT DOSAGE FOR MICROBIAL CONTROL**
   Tsunami has low reactivity with organics and soils in the wash water, maintaining a consistent dosage for microbial control.

   **Percent Total Available Chlorine or Peracetic Acid Remaining in Water 10 Minutes After Adding 10% (wt.) Cut Vegetable**
<table>
<thead>
<tr>
<th>Vegetable</th>
<th>Total Available Chlorine Remaining</th>
<th>Peracetic Acid Remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cauliflower</td>
<td>75%</td>
<td>93%</td>
</tr>
<tr>
<td>Onion</td>
<td>27%</td>
<td>88%</td>
</tr>
<tr>
<td>Potato</td>
<td>37%</td>
<td>94%</td>
</tr>
<tr>
<td>Carrot</td>
<td>70%</td>
<td>100%</td>
</tr>
<tr>
<td>Lettuce</td>
<td>70%</td>
<td>96%</td>
</tr>
<tr>
<td>Green Pepper</td>
<td>65%</td>
<td>93%</td>
</tr>
<tr>
<td>Celery</td>
<td>75%</td>
<td>93%</td>
</tr>
<tr>
<td>Broccoli</td>
<td>70%</td>
<td>93%</td>
</tr>
<tr>
<td>Cabbage</td>
<td>70%</td>
<td>87%</td>
</tr>
</tbody>
</table>

3. **IMPROVED PRODUCT QUALITY**
   Thanks to Tsunami™ 200, a food processor drastically reduced yeast, mold, coliform and total plate counts, resulting in significantly improved finished quality of its further processed potatoes.

**A SIMPLE, COST-EFFECTIVE SOLUTION**

- Tsunami has low reactivity with organics and soils in wash water, maintaining a consistent dosage for microbial control
- Tsunami is ready to feed directly from the shipping container – no pH control, precursor chemicals or on-site generation equipment necessary

**IMPROVED OPERATIONAL EFFICIENCIES**

- Reduced labor and water usage due to a cleaner flume
- Improved product quality: less spoilage and rejected product
- Reduced use of ancillary chemicals (e.g. acid, defoamer, waste treatment additives)
Tsunami 100:
• Reduces the pathogenic and spoilage microorganisms in flume and wash water systems
• May be applied in all major transport, storage and washing operations, flumes, chillers/coolers and wash vessels
• Is the only EPA-registered antimicrobial water additive product on the market that reduces pathogens in process water

Tsunami 200 (antimicrobial food additive):
• Reduces spoilage organisms including yeast, mold and bacteria on processed fruit and vegetable surfaces, and also reduces significant numbers of pathogenic bacteria on processed fruit and vegetable surfaces
• May be used in a variety of further-processed fruit and vegetable applications
• Significantly reduces pathogenic and spoilage microorganisms on processed fruit and vegetable surfaces, including those that can occur via cross contamination

Note: Tsunami 100 and 200 are not for use as hard food contact surface sanitizers.