

# FOOD PROCESSING

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## Sanitation's Role in Food Safety

# TABLE OF CONTENTS

<b>Making Cleaning and Sanitation Effective and Efficient</b> _____	<b>3</b>
There should be no skimping on cleaning and sanitation, but there are better ways to perform them.	
<b>Is Your Physical Infrastructure Friend or Foe?</b> _____	<b>9</b>
<b>FSMA, Sanitary Design Principles and the Role of Scales in Food Safety</b> _____	<b>11</b>
<b>Uncovering the 7 Hidden Costs of Plant Sanitation</b> _____	<b>14</b>
<b>Plant Sanitation - The Safe Way to Get into Hot Water</b> _____	<b>17</b>

# AD INDEX

Marchant Schmidt • <a href="http://www.marchantschmidt.com">www.marchantschmidt.com</a> _____	<b>7</b>
Alfa Laval • <a href="http://www.alfalaval.com">www.alfalaval.com</a> _____	<b>8</b>
Panduit • <a href="http://www.panduit.com">www.panduit.com</a> _____	<b>10</b>
Rice Lake • <a href="http://www.ricelake.com">www.ricelake.com</a> _____	<b>13</b>
PSSI • <a href="http://www.pssi.com">www.pssi.com</a> _____	<b>16</b>
Pick Heaters • <a href="http://www.pickheaters.com">www.pickheaters.com</a> _____	<b>19</b>

# Making Cleaning and Sanitation Effective and Efficient

There should be no skimping on cleaning and sanitation, but there are better ways to perform them.

By *Food Processing*

**C**leaning a food plant is like feeding the troops: It's expensive, mundane and won't bring you glory by itself, but not doing it right can sure make you lose.

“Cleaning” and “sanitation” are sometimes used interchangeably, but strictly speaking, cleaning means removing dirt, debris, residue and everything else that isn't supposed to be on a surface; sanitation involves ridding the cleaned surface of microorganisms, usually with biocides like bleach.

Like many food plant operations, cleaning and sanitation require a balance between thoroughness and effectiveness on the one hand, and aspects like efficiency and

economy on the other. Finding the right balance is a matter of choosing the right equipment, supplies and overall system.

One choice that sometimes arises is whether to clean machine components where they are or to detach and clean them separately. The former is more efficient; the latter takes more time, but is more thorough and often saves water and chemicals.

Kevin Quinn, sales manager of Douglas Machines Corp. ([www.dougmach.com](http://www.dougmach.com)), recalls the case of a peanut butter processor that was using lots of high-pressure water to clean out 72-in.-long pipes that fed the product from a mixer to an injector.

“Normally, the only way they cleaned those pipes was by using a hose to force the product out of a pipe — but of course, all that water and product is going down the drain,” Quinn says. Douglas furnished a clean-out-of-place wash tank long enough to accommodate the pipes, with water pumped from one end to the other to flush them out. “In this way we’re able to conserve that wash water and detergent and use it for cleaning any number of pipes, one after another.”

Whatever the cleaning method, another requirement is supplying water at the proper volume, temperature and pressure. The basic alternatives are: using hot water from the plant’s regular supply; heating the water with dedicated heat exchangers; or heating the water as close to the sanitation point as possible, through heating elements or steam injection.

Pick Heaters ([www.pickheaters.com](http://www.pickheaters.com)), a supplier of steam injection sanitation systems, claims steam injection can save up to 28 percent in energy costs over heat exchangers, “because 100 percent of the available energy from the steam is instantly absorbed by the liquid,” according to a company spokesperson. Because the water is heated near the point of discharge, the supply of hot water is virtually unlimited. Other advantages the company touts include a wide operating range and low noise level.

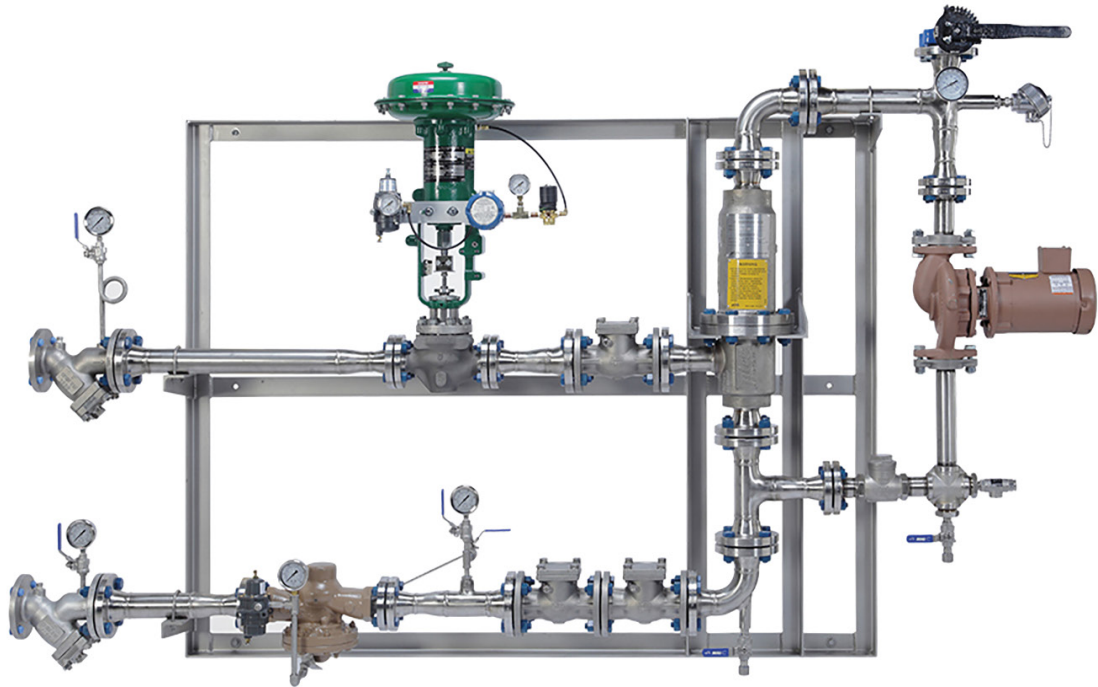


**Out-of-place washers, like this one from Douglas Machines, can do a thorough job while economizing on water and chemicals.**

The method of delivery isn’t the only variable in a cleaning/sanitation system. A good system will take into account the variations and requirements of each individual application, starting with the water itself.

“You have to look at the city water that’s coming into the plant,” says Mark Swanson, CEO of Birko Corp. ([www.birkocorp.com](http://www.birkocorp.com)), a supplier of cleaning products and services. “Water in Oklahoma is not the same as water in Wisconsin.” Birko custom-blends chemicals after analyzing each customer’s water for hardness and other factors.

Matching chemicals to the application is vital, because each application differs in



**Steam-injection systems can bring consistent temperatures to cleaning operations while saving energy. Photo: Pick Heaters**

terms of what has to be cleaned up, how much, and how tough it is. Relevant factors include considerations like whether the soil has fats, calcium or other hard-to-clean components, how often the cleaning will take place and whether the surface to be cleaned is food-contact.

The choice of chemicals also has an impact on equipment specifications. “The selection of the materials, in how the machine is manufactured, is based strongly on what type of chemicals” are used, says Quinn. A bakery that uses a relatively mild detergent could use equipment with a cast-iron pump and motor; a meat processor that has to harsher cleaners like sodium hydroxide would require stainless steel components.

## GOING GREEN

One of the strongest recent trends for cleaning chemicals in general is for them to be more ecologically benign. So-called “green cleaners” have carved out a share of the household cleaner market that’s still small, at about 3 percent market share, but is growing, with products rolled out by mainstream companies like Unilever.

Their impact in food processing is harder to judge. Cleaning takes place out of sight of the consumer, and efficacy is the first priority for plant personnel.

Tom Parris, corporate manager for food processing sanitation at Spartan Chemical Co. ([www.spartanchemical.com](http://www.spartanchemical.com)), says he

## Cleaning takes place out of sight of the consumer, and efficacy is the first priority for plant personnel.

hasn't seen an overwhelming demand for ecologically friendly cleaning products.

"People understand that to get rid of things like fats and oils, you need something that's alkaline or acidic," Parris says. "But if you can give them something green, it's great to have that option." One such option from Spartan is High Acid Cleaner FP Phosphate-Free, a clean-in-place solution for mineral deposits that's 40 percent citric acid.

Organic cleaning products are sometimes seen closer to the floor, where pristine appearance and performance are not as necessary as it is for food-contact surfaces. One such product is Security Floor Treatment from Nelson-Jameson, used to clean floors, entryways and drains.

"It is classified as green and even Organic Materials Review Institute-listed for organic use," says Pam Puttkamer, Nelson-Jameson's product manager for chemicals and packaging. "The product truly sells itself and we continue to see growth year over year."

Meritech ([www.meritech.com](http://www.meritech.com)) is about to launch a Perifoam-based chemical for boot-washing that it's positioning as compatible with organic processing. It's an alternative to quaternary ammonium-based cleaners, which have been linked to skin and lung irritation when used improperly.

Another advance in environmentally friendly cleaning chemicals comes from Spraying Systems Co. Its Klarion system ([www.klarion.com](http://www.klarion.com)) produces sodium hydroxide cleaner and hypochlorous acid sanitizer on-site from water, salt and electricity. These are not only more environmentally benign than standard cleaning chemicals, but can be used by workers without cumbersome protective gear.

Proper cleaning and sanitation are vital to food plant operations, but as with many operational aspects, competing concerns must be balanced. New chemicals and application systems can help food processors find the right balance.

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# Is Your Physical Infrastructure Friend or Foe?

By Panduit

**T**here is a hidden asset in your organization right now that has the potential to be one of your greatest competitive advantages. Or, if ignored, it can become a hidden liability that can rob you of productivity and profit – and make it harder for you to compete against other companies vying for your same customers.

- Inspect the efficiency-robbing menaces in your physical infrastructure that are working against you.
- Investigate the specific areas where physical infrastructure can unleash new possibilities in your enterprise.
- Inquire about new ways physical infrastructure can provide competitive advantages that lead to a profitable future.

## KNOW YOUR ENEMY

The first stage to uncovering these new competitive advantages is getting to know the countless threats that often lurk in underperforming network and electrical infrastructure. If left ignored, your operational, financial and environmental performance is left vulnerable to wide-ranging consequences.

- Operational Threats: Neglected network and electrical infrastructure can lead to

download and reduced output, restricted scalability, unpredictable inefficiencies, and hindered safety and compliance.

- Financial Threats: Ignored network and electrical infrastructure can increase total cost of ownership, limit the return on key asset investments, decrease customer satisfaction and repeat business, and impede expansion into new markets.
- Environmental Threats: Outdated network and electrical infrastructure can hinder the creation of safer, more productive work environments, and delay sustainability and corporate social responsibility goals.

## TURN THREATS INTO ADVANTAGES

Now that you know the high-level threats to your business success, it's time to see where those threats are located in your operation. Let's investigate your organization more deeply to see how advanced network and electrical infrastructure solutions can turn the specific threats in your current operation into immediate competitive advantages.



Download the complete white paper **here**.



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## Is Your Infrastructure Friend or Foe?

Your network and electrical infrastructure plays more of a role than ever in the overall profitability of your plant. At Panduit, we manufacture and help you optimize industrial network zoning, distribution frames, cabling, wiring ducts, and more. Everything you need to increase production capacity, ensure plant uptime, and avoid hidden threats in your infrastructure.

# FSMA, Sanitary Design Principles and the Role of Scales in Food Safety

By Rice Lake

## WHAT IS THE FOOD SAFETY MODERNIZATION ACT (FSMA)?

On January 4, 2011, President Obama signed the FDA Food Safety Modernization Act (FSMA) into law. The FSMA brought a much-needed focus of food safety laws into the food processing industry as well as to consumers, and the general public as a whole. The signing of the FSMA was arguably the largest reform to food safety in the previous 70 years. According to the U.S. Food & Drug Administration (FDA), the FSMA “aims to ensure the U.S. food supply is safe by shifting the focus from responding to contamination to preventing it.” The key focus being prevention versus reaction in regards to food safety, from all aspects and stages of food — from the farm to the table.

The FSMA was spurred into action from an increase in foodborne illnesses in the U.S. The Centers for Disease Control and Prevention report almost 1 in 6 Americans fall ill to foodborne diseases each year.

Foodborne illness became an issue of public health in the early 2000s, enabling the FDA to set higher preventative standards for food safety and elicit enforcement agencies to hold companies



MotoWeigh® in-motion checkweigher, CW-90X washdown checkweighing bench scale and RoughDeck® QC-X

to these standards and contain any potential problems before they become a widespread risk of foodborne illness. To do this, the FDA under the FSMA can order companies to recall when needed.

The primary role of the FSMA is prevention. As noted by the FDA, “for the first time, FDA will have a legislative mandate to require comprehensive, science-based preventative controls across the food supply.” This legislative power ensures all U.S. companies that contribute to the food supply, no matter their size, are subject to the authority of the FDA and their preventative and responding agency. Under the Prevention section of the FSMA, controls are given to the FDA for the following:

- Mandatory preventive controls for food facilities
- Mandatory produce safety standards
- Authority to prevent intentional contamination

These measures need to be qualified by scientific justifications by the FDA and are enforced by legislation. Under the mandatory preventative controls for food facilities is the addition of a preventative control plan that includes the following:

1. Evaluating the hazards that could affect food safety
2. Specifying what preventive steps, or controls, will be put in place to significantly minimize or prevent the hazards
3. Specifying how the facility will monitor these controls to ensure they are working
4. Maintaining routine records of the monitoring

5. Specifying what actions the facility will take to correct problems that arise.

Purchasing and using equipment that meets the Sanitary Design Principles (SDP) falls under these mandatory preventative measures as a control to prevent or minimize the possibility of foodborne contamination and disease.

## WHAT ARE THE SANITARY DESIGN PRINCIPLES (SDP)?

The SDP was developed by the Equipment Design Task Force (EDTF), a group of representatives from meat and poultry processing companies, and was published in 2013.

The EDTF’s purpose in creating the SDP was to help equipment manufacturers and food processors ensure their equipment designs met specific criteria to reduce the risk of pathogens contaminating food. Although the SDP was created by representatives by businesses already in food processing, the intent is for the SDP to serve the entire industry, creating a standardized system of criteria for equipment to reduce contamination and recalls, benefiting food processors and consumers alike.



Download the complete white paper **here**.

# ULTIMATE PROTECTION

## with Scales Built for Hostile Environments

What can't be seen can lead to devastating consequences for production facilities and consumers. For ultimate microbial resistance in sanitary environments, Rice Lake's BenchMark HE-X washdown bench scale is designed to withstand the harshest washdown environments.



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# Uncovering the 7 Hidden Costs of Plant Sanitation

By PSSI

## **INTRODUCTION - UNCONSIDERED COSTS**

The demands around food safety and plant sanitation continue to become more and more complex. So, the need to take the necessary steps to keep your plant clean and compliant are now more important than ever - especially when considering the significant financial impact a loss of production can have on your business.

To manage these risks, there are two options: contracting with a specialized food safety and sanitation partner or staffing and managing in-house sanitation employees. The cost for a contract sanitation partnership can seem cost prohibitive, especially when comparing only to in-house labor and chemicals costs. However, there are many other costs associated with keeping

sanitation in house that are often overlooked or unconsidered. So, unraveling the true costs of keeping your plant clean and safe requires a deeper look.

This report uncovers and highlights seven true costs of an effective sanitation program that are frequently overlooked. In order to give a deeper understanding of important budget items these costs should be considered so that no matter how you choose to sanitize your plant, you can be informed and financially prepared.

## **THE CHALLENGE - ASSESSING THE TRUE PRICE OF STAYING COMPLIANT**

You need a clean, compliant plant delivered on time with the least amount of disruption possible. But, the difficult

reality is that there are a large number of variables that must line up just right during every sanitation shift in order to consistently achieve this.

That is why so many plant managers are turning to specialized contract sanitation and food safety partners. However, without all of facts, initial evaluation and comparison of a contract partner can sometimes lead a plant manager to sticker shock.

Managing in-house plant sanitation employees is perceived as being more cost effective. But in-house sanitation efforts have shown to cause plant managers high stress, high demand for constant oversight and significant safety and financial risk for their plant. It is difficult to accurately compare the value of both sanitation options without looking at the greater food safety picture in order to assess the true cost of keeping your plant safe and compliant.

To do that, plant managers need to consider more than the obvious direct labor and chemical costs needed for plant sanitation efforts. They should also consider and quantify the costs of the associated risks of not delivering a clean, compliant plant on time, every time.

There are a number of direct and indirect costs related to ensuring food safety that can have significant negative impact on productivity and profitability for your

business. The indirect costs that are often overlooked with in-house sanitation efforts are the ones that have the biggest financial impact to the plant and business.

Take a moment and ask yourself these questions:

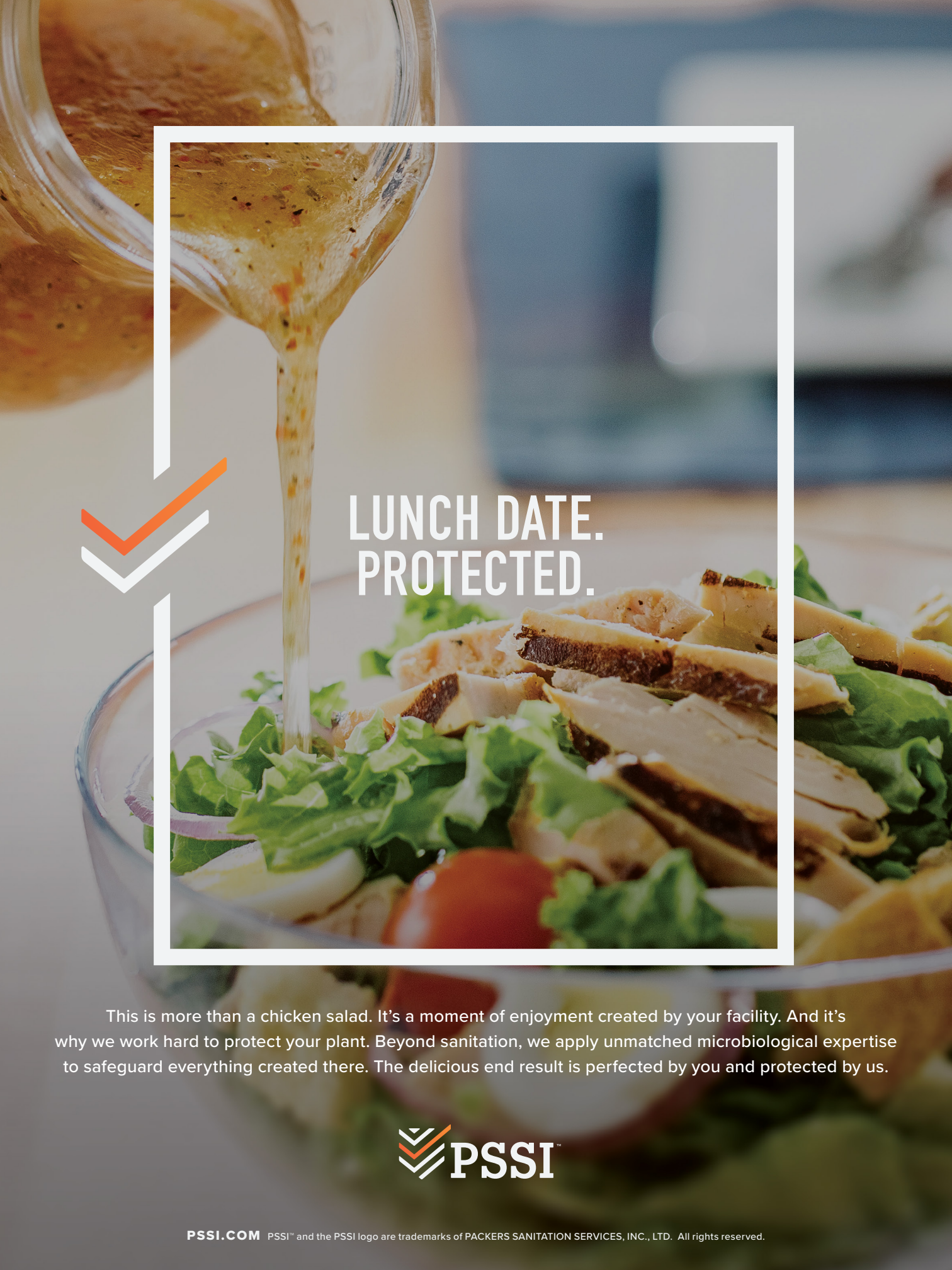
- What happens when an individual or group from your in-house sanitation employees don't show up for work or abruptly quit?
- What happens when your plant gets temporarily shut down due to a compliance issue?
- What happens if you experience elevated or out of spec microbiological outbreak?
- What happens when a piece of machinery won't turn on because of damage caused by your sanitation employees?

## THE BREAKDOWN - 7 INDIRECT SANITATION COSTS TO CONSIDER

Let's explore beyond just labor and chemical costs and uncover the variety of indirect costs related to sanitation. These are costs that play a vital role in your overall productivity, profitability and protection. While you may not consider these indirect costs on a daily or monthly basis, you should. Because they are potentially critical threats to your plant's overall financial performance and business reputation.



Download the complete white paper **here**.



# LUNCH DATE. PROTECTED.

This is more than a chicken salad. It's a moment of enjoyment created by your facility. And it's why we work hard to protect your plant. Beyond sanitation, we apply unmatched microbiological expertise to safeguard everything created there. The delicious end result is perfected by you and protected by us.





# Plant Sanitation - The Safe Way to Get into Hot Water

By Pick Heaters

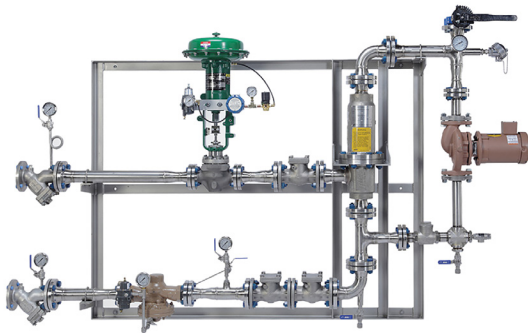
**A**n ongoing challenge faced by food processing plants is maintaining a reliable, yet safe plant hot water sanitation system. This means making sure that all areas of the plant have hot water at the required temperatures regardless of load. Precise temperature control at the necessary volume needs to be available during peak load clean-up and ongoing routine minimal daily requirements. At the same time energy efficiency and capital costs need to be considered, while always keeping operator safety in mind.

Various methods of hot water heating are available including gas-fired contact heaters, shell-and-tube heat exchangers, hot water storage tanks, as well as point of use steam/water mixing valves. Direct Steam Injection (DSI) water heating offers an

alternative to those methods, satisfying all the goals of efficiency, reliability, lower cost, and safety.

Individual steam/water mixing tees can be found in many plants. They normally come packaged with the hose assembly and mixing spray nozzle, providing an easy single source of supply. Also considered a method of DSI, steam is directly injected into the water flow, but in this case at each point of use. The mixing tee is designed with an internal steam poppet valve, serving to shut off steam if the minimum water supply pressure is not maintained. The poppet valve can fail or stick open after time due to scale or wear. The result is unexpected live steam or scalding hot water exiting the hose. This creates a potential safety issue for plant personnel.

## Various methods of hot water systems are implemented in food plants to provide sanitation hot water, all designed to perform under optimum conditions.



**Figure 1 – Pick Variable Flow Heater**

One advantage of the mixing valve can quickly become a serious fault. Operators have easy access to changing the set point temperature. However, in the misguided idea of getting their job done quicker, the operator will increase the set point; Hotter is not always better. Tampering of the set point is inefficient and can result in a costly safety incident.

Pick Heaters, Inc provides an alternative to the point of use mixing valve. The Pick Variable Flow Heater (Figure 1) can be installed in a central utility supply area,

accessed only by authorized personnel. The hot water temperature is set and accurately controlled at one central location. Since the heater is a distance away from the use points, temperature safety overrides can be put in place to quickly respond to overheated water issues prior to it ever reaching a use point.

Various methods of hot water systems are implemented in food plants to provide sanitation hot water, all designed to perform under optimum conditions. As we know however, optimum is not always the norm. Variable Flow Direct Steam Injection systems, used to instantaneously heat water (in-line) from a central location offers the best opportunity to meet needs for energy efficiency, cost savings and most importantly, operator safety.



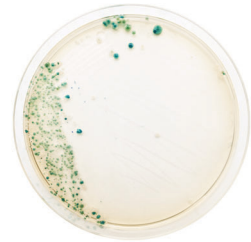
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# How Effective Is Your Hot Water Temperature?

The Pick Variable Flow Direct Steam Injection Heater is the answer for critical plant sanitation.

Its unique design provides hot water at a precisely controlled temperature over a wide operating range. Only Pick can accommodate wide variations in water flows and frequent start-stop applications such as hose stations and still deliver accurately controlled hot water on demand. Where medium to high steam pressure is available, it is ideal for a central heating system for all your plant sanitation and clean-up hot water needs.



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