

# CASE STUDIES

## USING THE SANIZAP® MODELS



How a restaurateur in May 2020 prepared for start-up with deep cleaning



### Deep Clean


BAYZI CORPORATION 2020

The Covid-19 caused a shut down like no one had expected. Linda’s popular restaurant and tavern in Indiana had to shut down abruptly.

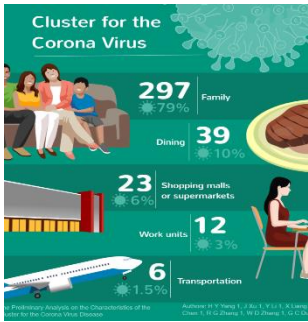
The fighter that she is - she decided that when she would reopen her restaurant - it would be squeaky clean to *deep levels of cleaning*.

She realized that *only* the MightySteam® could offer the temperatures that were useful for high quality and efficacy for antimicrobial cleaning.

[Steam is actually so good that it is known to remove odors.](#)



Germiest Places: Where are they? [Click Here.](#)



Category	Count	Percentage
Family	297	79%
Dining	39	10%
Shopping malls or supermarkets	23	6%
Work units	12	3%
Transportation	6	1.5%

### What can be Cleaned

Medical/Pandemic	Bacterial Accumulators	Restaurants/Shops/Kitchens	Large Food Preparations
Filters/Difficult to Reach	Eliminate Fungus, Dust Mites and Bed-bugs	Clean Soil	General Cleaning & De-greasing, Prevent bird flu

A Picture of Cleaning Scenarios

## Why Use Steam- *Its Clean & Fast*

BAYZI CORPORATION

Steam is just water in gaseous form but is the *Clean King of Sterilization*. High temperature steam is effective against **Bacteria, Virus and Fungi** - *even the hardy ones*.

Several other chemicals may also be used for sterilization. These include alcohol in sanitizers. chlorine and chlorine compounds, formaldehyde. glutaraldehyde, hydrogen peroxide with surfactants. iodophors, ortho-phthalaldehyde, phenolics, peracetic acid and other strong acids and bases. The main problems with these chemicals are (a) almost all chemicals range are allergens for humans - with varied toxicity, (b) technologies like autoclaves that are traditionally are very limited or slow for most application, and (c) many of the cleaning chemicals are often only selective in microbe elimination or are unable to provide sterility levels. *So, the future is steam.*

Some resources below that explain why chemicals may be causing harm.

Resources:

[Some chemicals can be toxic](#) (Click for info)

[Be Careful of some common disinfectants.](#) (click for NIH Document)

[Don’t spray disinfectants to kill Coronavirus, WHO advises..](#)(Click for WHO document)

[Do not contaminate with even commonly used sanitizing chemicals](#)

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KEYWORD

Cleaning DOORKNOBS, Peeling Paint, Removing Odor and Dust

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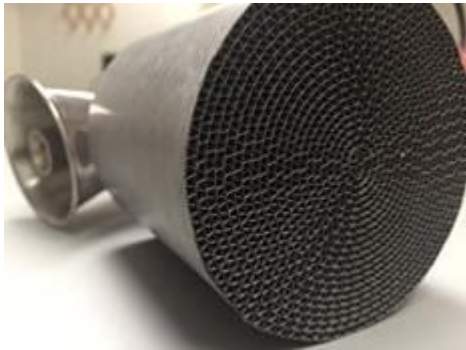
After the Covid-19 situations the questions we get asked most:  
**Are surfaces safe to touch? how often do we need to disinfect them?**  
The length of time that viruses can live on a surface and remain infectious, varies greatly by the pathogen. Some viruses like the Norovirus appear to linger for a long time. The research into how long COVID-19 can survive on surfaces is new and ongoing. A March 13,2020 study by researchers at the National Institutes of Health (NIH), the U.S. Centers for Disease Control and Prevention (CDC) and multiple universities compared the novel corona-virus (SARS-CoV-2) with SARS-CoV-1, the most closely related human corona-virus and the virus responsible for the 2003 epidemic. This non-peer-reviewed study found that the two viruses have similar viability in the environment, however, the study determined the novel coronavirus could survive up to three days on stainless steel and plastic surfaces. Survival on other surfaces was lower — just one day on cardboard and four hours on copper. The results indicated that novel coronavirus could live in the air for hours and on surfaces up to days” (source <https://science.howstuffworks.com/life/cellular-microscopic/long-can-viruses-live-on-surfaces.htm>). Although chemical cleaning (i.e. sanitizers and more potent chemicals) gets rid of germs, one could introduce another set problem on the surface. For those who have kids and pets especially crawling ones, you will likely harm them when you use chemicals to sanitize and disinfect your floor specially if the concentration rises with time for these chemicals.

MightySteam’s patented heating system allows for an industrial strength > +1122°F (+600°C) steam output. In controlled experiments, the higher temperature steam requires lower residency times to achieve effectiveness (This result follows the common law of chemical kinetics where speed increases exponentially with temperature). Other published patents have shown super-heated steam can clean up to sterilization levels of 7.

The Resistance to antibiotics is increasing. This article suggests that the dangerous antibiotic-resistant infections are on the rise for children in the U.S.



Nice clean fresh knobs! Clean Filters with the high velocity jet.



With steam you can clean dust, dust-mites, remove grime all the way down to submicron viruses. The heat makes it work faster. So many places need deep cleaning with steam.

KEEPING IT CLEAN

HEALTHYSURFACE®

BAYZI CORPORATION

HealthySurface® is a service in which surfaces are restored to, and maintained at, an original condition utilizing treatment provided by the superheated steam process and apparatus of Sanizap®. HealthySurface® provides the removal of foreign substances from objects and surfaces to initial conditions including cleanliness, texture, or scent. Cleanliness, as used here, may be defined as the removal of any content not initially present on a surface. Mighty steam is low oxygen above common inversion temperatures. A treatment provided by HealthySurface® will restore original conditions. However, repeated applications or other sanitation processes could be necessary to maintain these conditions on a more permanent basis. How long a microbe can live on a surface often depends on the microbe. There is no hard-and-fast rule for how long a virus can survive outside of a host. The type of surface and environmental temperature and humidity all come into play. *Deep-cleaning* with Sanizap® is recommended - particularly for reaching vegetative bacteria.

YES, STEAM IS CLEAN - BUT HOT.  
BE CAREFUL. FOLLOW THE RULES.

Steam as a Sensitive-Environment Cleaning Agent

FROM THE WEB

Steam is also an antimicrobial agent. Steam studies are posted on the PowerPoints made by the Ohio State University, Food Department. Steam appears to act very rapidly. Even very short exposure studies ~ 1 second of residency time of 248°F (120°C) steam is roughly 97% effective against common strains of bacterial1, 3 Seconds of Exposure to Superheated Steam Reduces Biofilm Accumulation5 by 99.95%. Five seconds can do even better7...and so on... the time and temperature are important variables to consider.

What are the germiest spots on an airplane?

Q: Are chemical disinfectants toxic at high concentrations? There is no one simple answer. Please see published reports like the one [here](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5685540/) <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5685540/>

Want to join the Bayzi team, perhaps become a Bayzi approved agent for the MightySteam® service? Please contact us through the contact-us webpage on:

[www.Bayzi.com](http://www.Bayzi.com)

# Beneficial and harmful bacteria

Typical intestinal bacteria are classified according to their actions into three types. Good bacteria have health maintenance and anti-aging effects such as aiding digestion and absorption and stimulating immunity. Representative examples are bifidobacterial and lactic acid bacteria.

In contrast, bad bacteria have adverse effects on the body. Representative examples include Clostridium perfringens, Staphylococcus, and Escherichia coli (E. coli; toxic strain). They inhibit health by triggering disease and promoting aging. Opportunistic bacteria cause no trouble when you are healthy but have adverse effects upon the intestines when the body is weak. Representative examples include Bacteroidetes, E. coli (nontoxic strain), and Streptococcus.

Brucellosis is a highly contagious [zoonosis](#) caused by ingestion of [unpasteurized milk](#) or undercooked [meat](#) from infected animals, or close contact with their secretions. it usually infects goats and occasionally sheep. *B. suis* is of intermediate virulence and chiefly infects pigs. Symptoms include profuse sweating and joint and muscle pain. Brucellosis has been recognized in animals and humans since the 20th century It is also known as undulant fever, Malta fever, and Mediterranean fever. *Brucella* species are small, [Gram-negative](#), nonmotile, non-spore-forming, rod-shaped ([coccobacilli](#)) bacteria. They function as [facultative intracellular parasites](#), causing [chronic disease](#), which usually persists for life. Four species infect humans: *B. abortus*, *B. canis*, *B. melitensis*, and *B. suis*. *B. abortus* is less virulent than *B. melitensis* and is primarily a disease of cattle. *B. canis* affects dogs. *B. melitensis* is the most virulent and invasive species.

## COVID-19

# How long does the virus remain on surfaces?

### Typical Objects and Surfaces ([source](#)).

The virus could spread by **touching an object or surface** with virus present from an infected person, and **then touching the mouth, nose, or eyes**. Much is still unknown here are examples with their sources listed. **Bayzi Corporation has not independently verified the authenticity of the sources.**

Surface contamination as observed in the study cited above [\[source\]](#):

**Computer mouse** (ICU 6/8, 75%; GW 1/5, 20%)

**Trash cans** (ICU 3/5, 60%; GW 0/8)

**Sickbed handrails** (ICU 6/14, 42.9%; GW 0/12)

**Doorknobs** (GW 1/12, 8.3%)

76.5% of all personal items sampled at the University of Nebraska Medical Center (UNMC) were determined to be positive for SARS-CoV-2 [\[source\]](#)

Of these samples, 81.3% of the miscellaneous personal items were positive by PCR, which included:

**Exercise equipment**

**Medical equipment** (spirometer, pulse oximeter, nasal cannula)

**PC and iPads**

**Reading glasses**

Other findings:

**Cellular phones** (83.3% positive for viral RNA)

**Remote controls** for in-room TVs (64.7% percent positive)

**Toilets** (81.0% positive)

**Room surfaces** (80.4% of all sampled)

**Bedside tables and bed rails** (75.0%)

**Window ledges** (81.8%)

## Duration of contamination on objects and surfaces

Although the virus titer was greatly reduced, viable SARS-CoV-2 was measured for this length of time:

**Plastic:** up to **2-3 days**

**Stainless Steel:** up to **2-3 days**

**Cardboard:** up to **1 day**

**Copper:** up to **4 hours**

[\[source\]](#)



TECHNICAL STUFF



Sterilization vs Disinfection vs Sanitization.



MightySteam® at the Ohio Food Industry Expo.

Food Processing Industry  
Trade Show


Salmonella, E. coli and other food-borne pathogens are major threats to the safety and profits of any company handling food. MightySteam® and SaniZap® can produce 1122°F steam within a minute, allowing for treatment during or between production runs.

The MightySteam® team was displayed at the Ohio Food Industry Expo by CIFT (Center for Innovative Food Technology). The significant booth-traffic focused on non-toxic antimicrobial cleaning for the food industry. Please contact [CIFT](#) for more information.





**Instant Steam Generation: Within a minute.**  
**Easy to Use:** No complicated manuals or boiler safety regulations. Plug it in and flip the switch! Regardless please read the manual and safety instructions,  
**High Efficiency:** MightySteam® generates higher, temperature steam using less energy than any other vapor steam cleaner. Ideal for cleaning many surfaces, including: HVAC systems and radiator coils greasy surfaces, Stainless Steel (Both Smooth and Rough) Concrete, Door Handles, Countertops, Appliances Processing Equipment, Sports and Exercise equipment. It is as simple as affecting the surface with the MightySteam® vapor steam cleaner, then removing any contaminants from the affected surface.



What is the difference between Disinfection, Sanitizing, and Sterilization?

A sterilization treatment refers to a (6 to 12) log reduction of bacterial cleaning potency. The most common sterilizers are steam sterilizers/autoclaves that are approved for such a critical function. Sometimes chemicals are used e.g. chlorine compounds (bleach and others), ozone, quaternary ammonium compounds (quats), peracetic acid (paa), formaldehyde and glutaraldehyde (aldehydes), and hydrogen peroxide. All these technologies have limitations in addressing sanitization and disinfection needs. They could have unwanted specificity or cause chemical odors that could be allergens.

The kill rate by steam is dependent on the bio-load and exposure time, and probably also on the number of spore organisms and the presence of biofilms. See also many resources posted on this MightySteam® web site as well openly available published materials like those posted on [https://www.diffen.com/difference/disinfect\\_vs\\_sterilize](https://www.diffen.com/difference/disinfect_vs_sterilize). Sterilization is the highest level of antimicrobial cleaning requiring 99.9999 to 99.999999 percent removal of bacteria (contaminants) including spore removal. This is a technical question so please read the rest of this page and consult microbiologists for the most technically correct answer. There are 3 commonly accepted levels of “clean” in many industries. Sterilization refers to the statistical destruction and removal of all living organisms. Disinfection generally refers to inanimate objects and all vegetative cells, but not spores. Sanitization refers to the reduction of microorganisms to levels considered safe from a public health viewpoint. The official definition of sanitization, according to the Association of Official Analytical Chemists, for food product contact surfaces is a 99.999% (5-log) reduction of contaminants in a 30 second period. For non-product contact surfaces, a 99.9% (3-log) reduction in contamination could be necessary. It is best to try and attain the best levels without further contamination by chemicals.

Mold Removal

A University of St. Louis study concluded that even mildly superheated steam 219°F (104°C) steam eliminated common forms of a mold with 99% effectiveness ([3 Seconds of Exposure to Superheated Steam Reduces Biofilm Accumulations by 99.95%](#)). The MightySteam® generates industrial strength 572°F (300°C) steam, capable of achieving similar results in less time.

What causes bad odors on surfaces? Remove odor with steam – a quick method

There are many reasons. Many have to do with bacteria. [The 10 Most Common Causes of Bad Smells at Home.](#)

Can steaming remove odor -Yes [read more.](#)

One of the culprits - for making our stink, is a bacteria called Staphylococcus hominis.

Contrary to popular belief, sweat itself does not have a smell.

So many clean uses

What is Dry High Temperature Vapor Steam Used For?

High-temperature steam of good quality, when used for the proper contact duration, is a known antimicrobial agent.

Dry vapor steam has several specific uses:

HVAC coil cleaning

Deodorizing Upholstery (Cars, Mattresses, Furniture)

Decontaminating Surfaces (Handles, Toilets, Fixtures, Railings)

General Cleaning (Elevators, Counter-tops, Sinks, Appliances)

Food Processing Sanitation (Vats, Slicers, Grinders, Tanks)

Housekeeping (Clean Restrooms Fast, Deodorize/Clean Mattresses, Sheets, Pillows)

Steam Drying (The low moisture content of dry steam is less than the ambient humidity)

Nuisance Cleaning (Mold, Mildew, Dander)

Trailers including flatbeds and Dump

Cargo Vans and Sprinters

Trucks and SUV's

Commercial vehicles including industry and utility vehicles.

**Kitchen.** MightySteam® is great at cleaning floors, sinks, countertops, and cabinets. The MightySteam® can clean most surfaces and even the toughest of stains.

**Appliances.** Baked on stains are no match for MightySteam’s steam. Ovens, microwaves, refrigerators, and microwaves can all benefit from a MightySteam® clean.

**Bathroom.** Sinks, faucets, toilets, showers, bathtubs, shower heads, and flooring are all surfaces MightySteam® can clean and sanitize, with less effort and environmental impact than harsh chemical cleaners.

**Tile & Grout.** MightySteam® is great for refreshing grungy black grout and water stained tiles.

**Furniture.** MightySteam® can save hours of scrubbing with chemicals that may not work. MightySteam® can remove most stains and odors from furniture upholstery.

**Clothes.** MightySteam® can de-wrinkle and deodorize many types of clothes, saving on expensive dry-cleaning bills.

**Patio equipment.** MightySteam® works great for cleaning metal, plastic, or fiberglass patio furniture. MightySteam® can also be used to clean concrete, wood and laminate patios.

**Garage.** Oil and grease are no match for MightySteam®. 572°F (300°C) of thermal energy will remove contaminants and have your garage looking like new.

**Trash cans.** Not only do they stink, but they also harbor all types of bacteria. MightySteam® can clean your trash cans with ease.

**Vinyl Siding.** Use MightySteam® to remove any mold growth or stains on vinyl siding, improving the appearance of your home.

**Brick & Masonry.** MightySteam’s high thermal energy allows for tough to clean brick surfaces to be cleaned without erosion or surface degradation.

**Driveways.** Stubborn oil and rust stains are no match for the MightySteam®. Have your driveway looking like new with a simple superheated steam treatment.

**Roofs.** Get rid of unsightly black shingle stains using the MightySteam®. With a high thermal energy and low-pressure output, MightySteam® is safe to use on even older roofs.

**Boats.** Nothing ruins a shiny new boat more than mold and algae stains on the hull. Use MightySteam® to remove even the toughest of aquatic stains.

**Cars.** Dried bird poop is possibly one of the most difficult stains to remove from most surfaces. When bird poop dries on a car, it becomes exponentially more difficult to remove without damaging the finish of the vehicle. Presoaking is often necessary, along with a chemical application to loosen the bond, followed by vigorous scrubbing to remove all the debris. The average elapsed time for full removal of one bird dropping from an automobile is over 60 seconds.

**Suggested Uses:** All uses require different distance from steam nozzle to object. Please start with a large distance. Please wipe with a towel or mop attached to a handle. Keep clothing and skin far away from the steam. Always wear gloves, safety eyeglasses and all other safety wear required for your application. The following uses are only suggested uses, and the user should determine if they are applicable.

The **MightySteam®** is capable of blasting away bird poop stains in around 10 seconds, without harsh chemicals or damaging the finish of the vehicle. With careful use, the **MightySteam®** is also able to degrease and clean automotive engine bays. When the exterior is cleaned, use **MightySteam®** on interior stains and to remove odors.





STEAM TREATING SOIL FOR HEALTHIER PLANTS

BAYZI CORPORATION

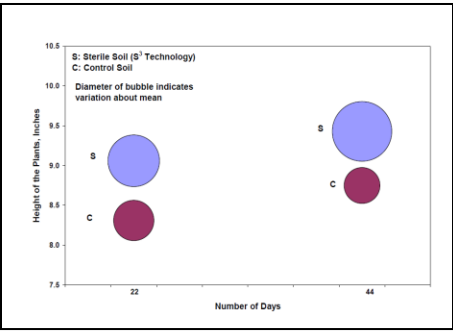
**MightySteam®** was used on untreated “dirty” garden soil, which was then incubated for 42 hours to test for bacterial and fungus growth. On the left is the bacterial growth as found on the soil sample treated with the **MightySteam®**. On the right is the control sample, featuring a high colony count compared to the treated soil.

In addition to testing the number of bacteria colonies in the soil, the growth of each plant was measured after 49 days of growth.

The visual difference is apparent, with the **MightySteam®** treated **Azalea** plant featuring more blooms and a greater quantity of leaves. In addition, the **MightySteam®** treated plant experienced fewer brown leaves and had less leaves fallen off by day 22 and day 44.



Soil Cleaning with MightySteam® yields flowers

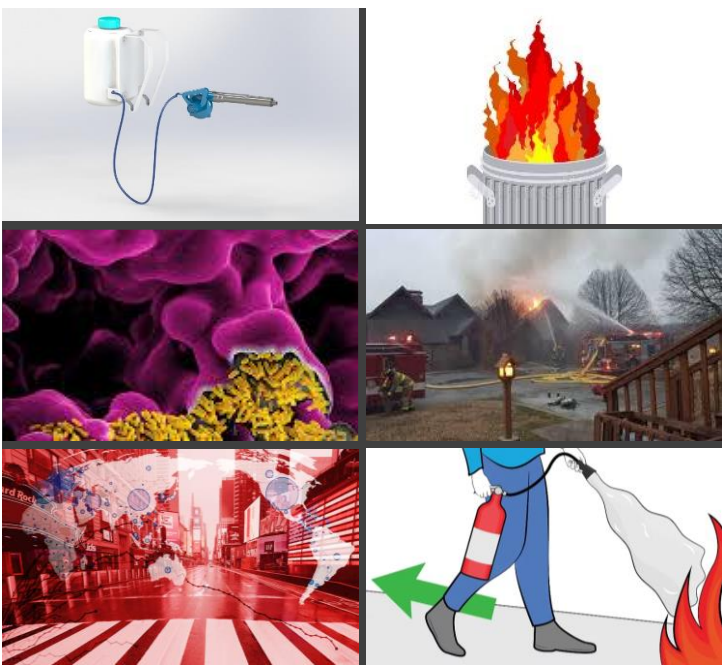


Bayzi Products  
[www.Bayzi.com](http://www.Bayzi.com)

We live in a world where the perception of a cleaning has changed. Viruses and bacteria have evolved. Our old standards of disinfection are dangerous because they are toxic. We have come up with a product that is easy to use, non-invasive, clean, and free of chemicals.

“While you dream of a clean world, we try hard make it happen”.

“Scared of storing harsh chemicals at home? Our steam system does not require any chemicals. Just water and you are good to go”



Preventive Risk  
Mitigation

Keep a SaniZap® handy for quick action and daily cleaning  
Just like you would do with keeping a fire extinguisher

CONTINUITY....

The next issue will be on pest control with MightySteam®

BAYZI CORPORATION

Pest control has evolved past spraying dangerous chemicals on pests. Green, sustainable, and organic pest control is the future of the industry. Chemicals leave harsh residues that can be toxic to humans and their pets. Not only are some pesticides toxic, but many chemicals in the pest control industry are also suspected of being carcinogenic. New technologies such as superheated steam, dry heat, and CO2 snow show that pest control is possible without the use of harsh chemicals. As the efficacy of each treatment varies, an appropriate strategy must be used for effective pest control. In many cases, a combination of a MightySteam®, CO2 snow, or dry heat treatment followed by a treatment of all natural, food grade diatomaceous earth and follow up visits may effectively control a bed bug outbreak. Each situation is unique and should be evaluated by a trained pest management professional.



Bed-Bugs

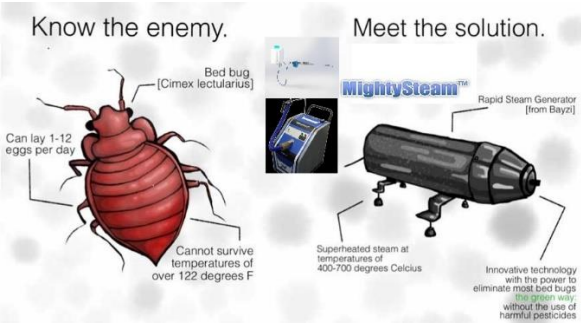
Bed Bugs die when exposed to 122°F (50°C) heat for around an hour. MightySteam’s 572°F (300°C) low-velocity steam can kill bed bugs without blowing them, or their eggs, from their present harborages. Bayzi’s suggested treatment regimen for bed bugs is relatively easy. Vacuuming followed by a MightySteam® walkthrough, treating floors, along baseboards, mattresses, and any other known bed bug harborages. While MightySteam’s temperature can easily kill bed bugs near the surface of a mattress, it is suggested to use a mattress encasement after treatment to ensure the entirety of bed bugs and their eggs are eliminated. After the initial treatment, a proper application of diatomaceous earth is suggested. Diatomaceous earth is an inexpensive, 100% organic and safe powder that kills bed bugs and most crawling pests shortly after they crawl through it. After the initial visit, schedule a follow-up visit to re-inspect the property, ensuring that there are no surviving bed bugs.

Dust-Mites

Dust mites can only withstand 122°F (50°C) of dry heat for 20 minutes, or 140°F (60°C) of moist heat for the same 20 minutes. With optimal operating conditions, MightySteam® can kill nearly all common allergen causing mites with a residence time of approximately .1 second. Dust mites cause allergies but are often overlooked because they don’t feed on humans, but rather their dead skin cells. For this reason, many people tolerate their presence. Mites cannot withstand high temperatures, so the treatment strategy for mites using the MightySteam is relatively simple. Using the MightySteam® on the mattress, box-spring, furniture, and carpets will eliminate most dust mites, with an immediately noticeable effect. Preventing their return is more of an issue because warm, humid environments with plenty of dander, dust and dead skin are their favorite places. In addition to treating a property with MightySteam®, proper strategy to minimize a mite population may also entail suggesting a dehumidifier for use during the winter and also frequent washing of bedding materials in or water warmer than 130°F (54°C.)

OPPORTUNITY

Want to join the Bayzi team, perhaps become a Bayzi approved agent for the MightySteam® service? Please contact us through the contact-us webpage on: [www.Bayzi.com](http://www.Bayzi.com)



No public health claims are implied by Bayzi regarding the MightySteam®. All claims made regarding the MightySteam® are not verified by any government organization. Each application is unique, so results and/or efficacy will vary from user to user. Always read all applicable manuals and obey safety procedures including wearing appropriate eye protection, thermally insulated gloves, closed toe shoes, and long sleeves/pants while operating the MightySteam®. Remember, SaniZap® unit generates very hot temperatures. If used incorrectly, it will inflict serious burns on any living object placed in front of the steam nozzle, so use utmost care during operations. Results and efficacy vary by application. Always test the MightySteam® with established chemical, steam and bioindicators.