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How do they compare with other sanitizing methods?

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Compare the toxicity of different chemicals (pg.5) Compare cost of chemicals vs. SaniZap-1 (pg.7)

Compare Methods

Type	Bottle Spray	Foggers	Steam Sanitizers
Use the best science			BAZZI Mghysteam www.bazi.com
Impact on Airborne Pathogens	Poor Droplet size ~100+ microns	Poor to Good Droplet size ~40 microns	Excellent No Droplets. Steam-gas
Wetness (wetness is bad)	Wet	Wettish	Self-Drying. Not wet.
Inhalation Risk	Yes - chemicals	Yes - chemicals	No – Just water is the agent
Impact on Surface Pathogens	Good depends on toxicity	Poor	Excellent
Speed of Antimicrobial	Slow	Slow	Very Rapid
Cost Per	Medium	High	Lowest Total
Year. 2 Year Basis (pg. 7).	(recurring)	(recurring)	Cost (non – recurring) HazSubMan/docs/HHWaste/DisinfectantsComparisonChart pdf

All approximate. Not Guaranteed. (Please see page 7). Compare chemicals here.www7.nau.edu/itep/main/HazSubMap/docs/HHWaste/DisinfectantsComparisonChart.pdf



UNTIL FURTHER NOTICE



- Government Study: https://www.dhs.gov/science-and-technology/sars-calculator
- Preventing person-to-person spread of SARS-CoV-2 is a means to reduce impact of COVID-19 absence of effective therapeutic.
- Transmission occurs primarily through respiratory droplets produced by talking, coughing, and sneezing.
- Contact with contaminated surfaces and objects may also contribute to spread.
- SARS-CoV-2 will survive in saliva and respiratory fluids on surfaces for extended periods of time under certain conditions.
- DHS S&T has studied the stability of SARS-CoV-2 in simulated saliva, using droplets of varying size deposited on a non-porous surface under a range of temperature and RH conditions.
- Viral survival on surfaces is driven by temperature, relative humidity (RH), and matrix (e.g., bodily fluids).
- Testing performed on non-porous surfaces, specifically stainless steel. ABS plastic, and nitrile rubber

CASE STUDIES™ IS A NEWS-JOURNAL © BAYZI CORPORATION, OH, USA 45215



SaniZap®-600-4-240

Steam Clean

BAYZI CORPORATION 2020



Germiest Places: Where are they? Click Here.

No sign of the Salmonellaoutbreak ending, as U.S. patient count tops 1,000



A month after, a recall of onions linked to a Salmonella outbreak, federal officials are reporting the patient tally has topped 1,000 in the United States. Canadian officials say hundreds are sick in that country. As of this week, 1,012 people across 47 states - source... more...

https://bayzi.com/unending-the-salmonella-outbreak/



SaniZap®-1

Introducing the SaniZap-mini™



SaniZap®-mini

What is Clean?

Can we quantify cleanliness?

How does one measure the hygienic quality or cleanliness of a surface or object? What does clean mean? One can measure bacterial colonies (CFU) in a petri dish type (agar) slow-test or measure the ATP count (RLU units) in a fast fluorescence machine. CFU measures microorganisms only.

Therefore "clean" is commonly measured with an ATP (Adenosine Triphosphate) test-meter that measures RLU's (Relative Light Units) from swabbed region. The number and types of bacteria present on a surface is of concern for infection control, but bacterial tests are sometimes very specific and do not yield the overall hygienic condition or cleanliness of a surface. RLU measurements on the other hand are more appropriate to define general cleanliness. ATP is a molecule found in and around living cells, and as such it gives a direct measure of biological concentration and health. ATP is quantified by measuring the light produced through its reaction naturally occurring a luminometer. enzyme luciferase using amount of light produced is directly proportional to the amount of ATP present in a sample.....



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

Steam is so good that it is known to remove odors.

......of viable bacteria or fungal cells in a sample. Colony-forming units are used to quantify results in many microbiological plating and counting methods. The CFU count is an estimate of the number of cells present, as the only cells able to form colonies are those that can grow under the conditions of the test.



Let us talk about the big secret.

The Combi-Sanitizer?



COVID-19

There are three types of cleaning regimens. For the first time, one machine does all three. HealthySurface从

Sanitize- No Chemicals - Complete Cleaning Regimen with one machine.

Typical: 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. Complete cleaning is normally a three-step process requiring many machines and long labor hours.





STEAM TO FREE CLYTEGILE Hospitalis Households Restaurents Horselin-Offices Germa/ Altolones

RESPONSES

Compare Red Dots = Bacteria



Unclean Surface. Plenty of Red Dots **Bacterial Test AOAC**



SaniZap-1 Cleaned. Zero Red Dots. **Bacterial Test AOAC**

Now that is innovation!

TECHNICAL STUFF

Sterilization vs Disinfection vs Sanitization. Examples of Use.

MightySteam® and SaniZap® at the Ohio Food Industry Expo and the Woodlawn gymnasium, respectively.

Food Processing Industry / Gymnasiums

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 treating the surface with the MightySteam® 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 https://www.diffen.com/difference/disinfect_vs_sterilize. Sterilization is the highest level of antimicrobial cleaning requiring 99.9999 to 99.99999 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. <u>The 10 Most Common Causes</u> 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 locations to Sanitize

Hazards of Bleach and Simple Cleaners.

<u>News</u>

This issue comes up often when comparing cleaning techniques. For example, when comparing chemical use and duration to rapid clean steam. Bleach often contains Sodium Hypochlorite — Sodium hypochlorite can cause severe eye irritation and if ingested can cause severe stomach irritation and sores. Sodium Hydroxide is also often used to stabilize household bleach. It is extremely caustic and can cause significant skin irritation if touched. Other simple cleaners contain trace doses of 2butoxyethanol sustained inhalation of high concentrations (100-500 ppm) of this compound has been found to cause adrenal tumors in tested animals. Please consult toxicologists for a definitive analysis. A non-intuitive feature of using chemicals over steam is noted in the energy usage. See for example (click)

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

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.



The New SaniZap-mini for home use.

What is in a biocide? Are they toxic? Is a disinfectant a biocide? EPA Registered Hard Surface Disinfectants Comparison Chart

A biocide is intended to destroy, deter, render harmless, or exert a controlling effect on any harmful **US** Environmental organism. The Protection Agency (EPA) uses a definition for biocides as "a diverse of poisonous substances including preservatives, insecticides, disinfectants, and pesticides used for the control of organisms that are harmful to human or animal health or that cause damage to natural or manufactured products" (source https://en.wikipedia.org/wiki/Biocide). We rely on biocides for many things. For example, we disinfect our hands at hospitals to avoid spreading bacteria, and we use mosquito repellents to avoid nasty bites.

Almost all of the biocidal active substances have a relative high toxicity, Although the definition of biocides is quite strict, today during the Covid period little distinction is made at the layman level for disinfectants that contain high doses of alcohols and approved biocides. One must follow all chemical handling and

Compare chemicals and their toxicity by clicking here





STEAM TREATING SO EASY, SO USEFUL

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.

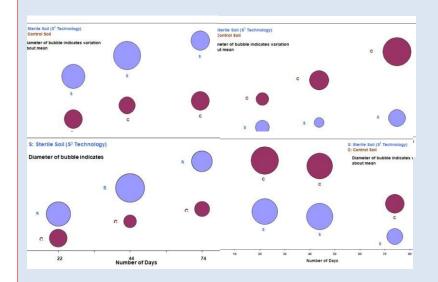
In addition to testing the number of bacteria colonies in the soil, the growth of each plant was measured after 49 days of growth.

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. https://bayzi.com/soil-and-plant-cleaning/





(www.Bayzi.com)



Height of Plant *Increases* with Sterile Soil

Low white fungus with Sterile Soil

Number of decayed brown leaves are lower with Sterile Soil

Number of Healthy Leaves are more with Sterile Soil

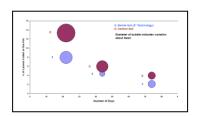
Less leaves were shed by the plant in the Sterile soil.







Soil Cleaning with MightySteam® Yields flowers









Compare Cost. Over a 2-year period.

Approximate Comparison

Contact Bayzi Corporation sales@bayzi.com for specifics that pertain to you

With Chemicals ~\$37,000 per year. (Recurring Expense - Never stops). (includes \$25/hr. labor at 25 hours per week, 40 weeks)

With SaniZap-1 \sim \$16,200 per year (SaniZap-1 machine is paid off in two years). (includes \$25/hr. labor at 12 hours per week, 40 weeks)



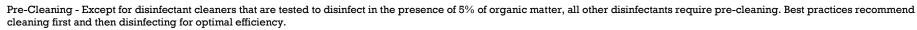
COMPARISON OF DEEP SANITIZING CLEANING METHODS. TIMES ARE APPROXIMATE.

Compare Deep Cleaning Methods	Rapid Steam&Clean™ (Steam above the inversion temperature ~200°C)	Pressurized boiler use (Safety Issue)	Deep Clean Sanitizing and Biofilm Elimination
<u>SaniZap®</u> Model 600-4-240	Yes, Reduce to low RLU's within seconds of steam	No	Yes, with high temperature steam. <u>HealthySurface®</u> Save \$\$ on chemicals and their storage.
Ordinary Steam Cleaner Generators	No, if the temperature is not high enough	Yes, very often	Generally, not possible to use for sanitizing levels of clean with most boiler type steam because of moisture.
Chemical Cleaning	Generally even a long 10 minutes exposure may be required for Covid <u>*</u>	_	Sometimes, but toxic chemicals may accumulate over time. High expenditure on chemicals.

Antimicrobial cleaning is all about reducing microbes quickly to the lowest levels. Quick clean action is important for high productivity. With chemical sanitizers you may have to leave them in every spot for over a minute or more, even up to ten minutes for COVID, for adequate action.

High temperature steam can be sixty times or more faster than chemicals. A diverse assortment of pathogenic microorganisms was rapidly killed by the steam disinfection system; all of the pathogens tested were completely inactivated within 5 seconds. Risks of infection from the contaminated surfaces decreased rapidly with increasing periods of treatment by the saturated steam vapor disinfection system. (Ref: DOI: https://doi.org/10.1016/j.ajic.2008.03.008)

- For use in hospitals, restaurants, gyms, rental-cars, food-stores, schools, homes, and warehouses
- Use on any surface detailed instructions provided. Allows quick turnaround between customers.
- Sanitizing should be green and safe, with no chemicals
- Keep children, pets, homes, clinics, and the environment, free from toxic cleaning agents
- Quick for large areas. Easily penetrate porous surfaces.
- Use just water to sanitize and clean with high-temperature steam.
- Attack Bacteria, <u>Viruses</u>, <u>Fungi</u>, <u>Biofilms</u>, and even <u>Bedbugs</u> within seconds with clean steam when used properly compare speed with sanitizing cleaners. Explore <u>published resources</u>.
- Did you know for the same cleaning levels, the SaniZap® can save energy?



Costs - When comparing costs, life cycle costs must be considered. Although a product may be less expensive to buy, its negative impact on surface materials may require replacing hard surfaces more frequently, may increase worker's compensation claims and may cause environmental damage. Your case may be different than others. Bayzi provides this comparison only as a guideline. No guarantees are implied or offered for the ROI or cost comparison. It is recognized that many scenarios could cause your cost to be lower or higher.

PAGE | 7



Steam is the lowest cost solution

Now Rapid
Steaming is
available with the
SaniZap® Models

No more biocides or toxic chemicals



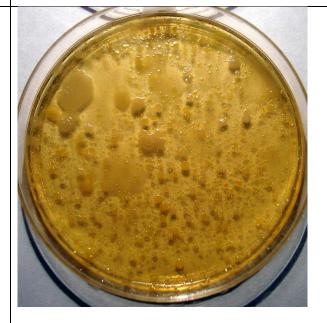


Soil Contaminated Surface

Cincinnati Soil

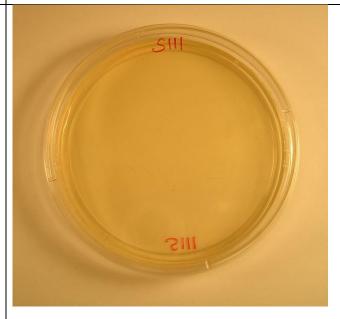
With the aid of Cincinnati topsoil as the bacterial medium. The following bacteria were identified in the Cincinnati top-soil: (1) Arthrobacter Globiformis (Gram+ve), with morphology of irregular rods and small cocci; (2) Bacillus Megaterium (Gram +ve), with morphology of rods, and endospore formation; and (3) Cupriavidus Necator (Gram -ve), with morphology of Coccoid and irregular rods

Not Treated



 $High\ Concentration\ of\ Bacteria\ and\ Fungi.$

Steam Treated

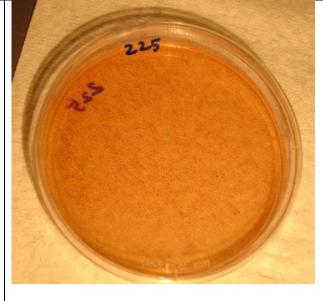


Clean of Bacteria and Fungi.

Bacteria Contaminated Surface

The initial solution concentration was (8. 9 10⁵ cfu's/ml) of Gram (-ve) Enterobacter Aerogenes.

Not Treated



High Concentration of Bacteria (Red Dots)

Steam Treated



Clean of Bacteria and Fungus

10/19/2020

Commercial Steam Cleaner | MightySteam



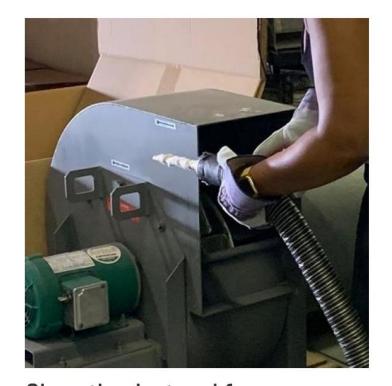
Cleaning a complete restaurant

Cleaning a complete restaurant



Commercial applications

Commercial applications

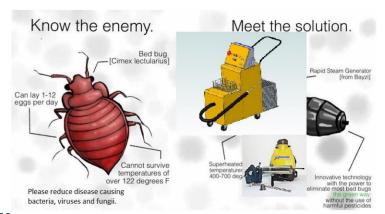


Clean the dust and fungus

Clean the dust and fungus



SaniZap 1 With Cone Nozzles
SaniZap 1 With Cone Nozzles



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

CONTINUITY....

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 by a trained pest professional.







Bed-Bua

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

should be evaluated

management

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.)

Guidance from CDC for Reopening America.

See entire document on https://www.cdc.gov/coronavirus/2019-ncov/community/pdf/Reopening_America_Guidance.pdf

Following your normal routine cleaning, you can disinfect frequently touched surfaces and objects using a product from EPA's list of approved products that are effective against COVID-19. These questions will help you choose appropriate disinfectants. Are you cleaning or disinfecting a hard and non-porous material or item like glass, metal, or plastic? Consult EPA's list of approved products for use against COVID-19. This list will help you determine the most appropriate disinfectant for the surface or object. You can use diluted household bleach solutions if appropriate for the surface. Pay special attention to the personal protective equipment (PPE) that may be needed to safely apply the disinfectant and the manufacturer's recommendations concerning any additional hazards. Keep all disinfectants out of the reach of children. Please visit CDC's website on How to Clean and Disinfect for additional details and warnings.

Examples of frequently touched surfaces and objects that will need routine disinfection following reopening are: • tables, • doorknobs, • light switches, • countertops, • handles, • desks, • phones, • keyboards, • toilets, • faucets and sinks, • gas pump handles, • touch

SCREENS, and • ATM machines. Each business or facility will have different surfaces and objects that are frequently touched by multiple people. Appropriately disinfect these surfaces and objects. For example, transit stations have specific guidance for application of cleaning and disinfection. Are you cleaning or disinfecting a soft and porous material or items like carpet, rugs, or seating in areas? Soft and porous materials are generally not as easy to disinfect as hard and non-porous surfaces. EPA has listed a limited number of products approved for disinfection for use on soft and porous materials. Soft and porous materials that are not frequently touched should only be cleaned or laundered, following the directions on the item's label, using the warmest appropriate water setting. Find more information on CDC's website on Cleaning and Disinfecting Your Facility for developing strategies for dealing with soft and porous materials.

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.