Return to Infection Control Evaluations

Synopsis of Dental Unit Waterline Treatment Products and Devices (Project 11-021)

It's been over 40 years since the first publication discussing contaminated dental treatment water. Over the years there has been continuing interest in describing the contamination and methods to monitor and reduce it. Biofilms have been attributed to the contamination of the dental unit water. A "Biofilm" is a community of bacterial cells and other microbes that adhere to surfaces and form a protective, primarily polysaccharide, layer. Found in virtually all places where moisture meets a suitable solid surface, a biofilm protects the cells from physical and chemical challenges. Although biofilms can form in all non-sterile fluid environments, dental waterlines provide particularly well-suited conditions. The tubing has a very narrow bore (1/8- to 1/16- inches) which provides a high internal surface-area-to-volume ratio. Low water pressure, low flow rates, and frequent periods of stagnation also encourage any bacteria introduced from the public water supply to accumulate within the tubing. The result is output water that is often many times more contaminated than tap water from the faucet in the same treatment room. Research has shown that microbial counts can reach as high as 200,000 CFU/mL within five days after installation of new dental unit waterlines and levels of microbial contamination as high as 10^6 CFU/mL have been documented.

While the risk of disease transmission from contaminated dental water appears to be minimal for healthy individuals, the potential appears high for immunocompromised individuals. Numerous studies conducted over the past 30-plus years have identified the presence of substantial amounts of pathogens, to include waterborne opportunistic pathogens, in dental unit water. These findings provide reason for cautious concern because the primary goal of infection control is to eliminate or reduce exposure to microorganisms. Therefore, exposing patients or dental health-care personnel (DHCP) to water of uncertain microbiological quality, despite the lack of documented adverse health effects, is inconsistent with generally accepted infection control principles.

Standards exist for safe drinking water quality as established by the Environmental Protection Agency (EPA), the American Public Health Association (APHA), and the American Water Works Association (AWWA). These agencies have set limits for heterotrophic bacteria of ≤ 500 CFU/mL of drinking water. The Centers for Disease Control and Prevention (CDC) recommends that dental unit water meet the standard set for drinking water, which is a limit of 500 colony forming units of bacteria per milliliter of water. To help reduce the number of microorganisms in treatment water, the American Dental Association recommends that dentists follow the infection control guidelines of the CDC and ADA. Thus, the number of bacteria in water used as a coolant/irrigant for nonsurgical dental procedures should be as low as reasonably achievable and, at a minimum, ≤ 500 CFU/mL.

Manufacturers of dental units have responded positively to the challenge from the American Dental Association and the subsequent guidelines issued by the CDC to deliver patient treatment water that is at least as pure as drinking water (≤ 500 CFU/mL of heterotrophic bacteria). The dental industry has also produced a variety of devices and cleaning/disinfectant treatment products to further assist dental professionals with providing clean patient treatment water. Many manufacturers recommend performing a start-up procedure or periodic "shock" treatment of the dental unit waterlines to remove or reduce existing biofilm to improve their product's performance. Common approaches to improve water quality include:

1) self-contained water systems combined with chemical treatment (e.g., periodic or continuous chemical treatment protocols);
2) systems designed for single chair or entire practice waterlines that purify or treat incoming water to remove or inactivate microorganisms; and
3) combinations of these treatments.

Self-contained water systems or those with an independent water reservoir (e.g., bottle) isolate the unit from the municipal water supply and allows better control of the quality of source water introduced into the system. These systems are available as original equipment on dental units or can be retrofitted to most dental units. However, use of an independent reservoir without use of a chemical treatment will have no effect on waterline quality. Therefore the primary advantage of self-contained water systems is that cleaning agents can be easily introduced into the system (either periodically or continuously). Also, this type of system helps avoid interruptions in dental care when local health authorities issue a boil-water advisory. To avoid cross-contamination, careful handling and cleaning of the water bottle and pick-up tubing is necessary.

Centralized systems designed for single chair or entire practice waterlines are becoming more popular. These systems can purify or treat incoming water to remove or inactivate microorganisms by using various methods such as nano-filtration, reverse osmosis, heat, or ultraviolet light irradiation. It is common for these systems to use a combination of these methods as well as introducing a chemical agent to help control water quality.

Most of the products reviewed in the following synopsis can be used with municipal (i.e., tap water) water; however using water of known microbiological quality is the best way to ensure consistent delivery of high-quality dental treatment water. At a minimum, potable or drinkable water (≤ 500 CFU/mL) must always be used (Note: References

to tap water in the synopsis imply potable tap water.). Other source water options commonly used include distilled water or water treated by reverse osmosis. It's important to note that it is not enough to just use good-quality source water in the bottle; to control the contamination in the waterlines a treatment product must be added.

Products that claim disinfectant efficacy must be registered with the Environmental Protection Agency (EPA). If they are not EPA-registered, they can be labeled as waterline cleaners only. Waterline treatment devices that are sold separately and require connection to dental units must be registered with the Food and Drug Administration (FDA) as medical devices. State regulatory agencies may also require additional regulatory clearance. Additionally, in some cases, a regulatory agency may grant an exemption. Because of the variety of products available, the variety of product claims, and the variability among state regulatory agencies, it is impossible for DECS to keep abreast of product claims or regulatory registrations. It is the responsibility of the user to verify this information at the time of purchase. The products listed on the DECS Web site are currently available for sale in the United States. If DECS becomes aware of enforcement actions by the EPA and/or FDA taken against a manufacturer (e.g., product recall, stop sale notices) every attempt will be made to disseminate this information via our Web site.

Clinical monitoring of water quality can identify problems with performance or compliance. In other words, monitoring can provide information as to whether procedures are being properly performed by individuals in the dental clinic. It can also detect how the product/equipment is functioning; however, it is not intended to validate the manufacturer's protocol. Dentists should consult with the manufacturer of their dental unit or waterline treatment product to determine the best method for maintaining acceptable water quality (i.e., ≤ 500 CFU/mL) and the recommended frequency of monitoring. In the absence of manufacturer recommendations for monitoring dental unit water quality, USAF dental clinics are required to test dental unit water from each unit monthly for three months. If the unit meets standards (i.e., ≤ 500 CFU/mL) during this period, the dental unit water can be monitored quarterly at a minimum. Generally, there are two monitoring options:

1) water samples can be submitted to the microbiology lab or bioenvironmental engineering and cultured using method 9215 (heterotrophic plate count) with R2A agar or
2) use of an in-office self-contained system that is equivalent to method 9215.

Regardless of which method is used to maintain dental unit water quality, adherence to maintenance protocols is essential. Currently, there is no universally accepted product or protocol for improving or maintaining dental water quality. It is likely that dental facilities will use a combination of approaches.

The following synopsis consists of tables of select dental unit waterline treatment products and basic product information listed alphabetically by manufacturer. This synopsis should assist the reader in selecting an approach to improve dental unit water quality.

Click here to view the waterline treatment products.

SYNOPSIS OF DENTAL UNIT WATERLINE TREATMENT PRODUCTS AND DEVICES*

Product	**ICX™** 	**Mint-A-Kleen** 	**BioClenz™ Liquid Concentrate** 
Manufacturer	A-dec 2601 Crestview Dr. Newberg, OR 97132 www.a-dec.com	Anodia Systems 109 Larrimore Lane Danville, KY 40422 www.AnodiaSystems.com	Frontier Pharmaceutical, Inc. 10 Ponderosa Dr. Melville, NY 11747 www.frontierpharm.com
Phone/FAX Numbers	(800) 547-1883 (503) 538-7478 (503) 537-2702 FAX	(866) 246-2548 (866) 926-8246 FAX info@MintAKleen.com Email	(800) 767-3486 (631) 367-3400 (631) 692-7642 FAX
Shelf-life	20 months	2 years	3 years
Active Ingredient(s)	Sodium percarbonate, silver nitrate & cationic surfactants	Glycerin and chlorhexidine gluconate	Activated chlorine dioxide
Application	Continuous	Intermittent	Continuous and Periodic
Protocol Summary[†]	Add one tablet each time the water bottle is filled.	Weekly overnight treatment with undiluted product. For complete directions for use visit the Resources page at www.MintAKleen.com.	Add low-concentrate solution each time the water bottle is filled; once weekly treatment with high concentrate solution.
Initial/"Shock" Treatment	If test results indicate that water does not meet water quality goals, A-dec recommends that you use a dental unit waterline shock treatment product registered with the U.S. EPA. If you're located outside the U.S., contact your authorized A-dec dealer for recommendations that are compatible with your equipment.	For Initial Cleaning: Week 1: Use every night Week 2-5: Use bi-weekly	High concentrate flush.
Monitoring Recommendation	Initially, test once per month. If monthly results pass your clinic's water quality goal for three successive months, reduce the testing frequency to once every three months.	After using the product for 3 months, check water with a commercial laboratory and perform follow-up testing every 6 months.	Monthly.
Source Water Recommendation	No	None. Available for use with all dental units and water quality that meets ADA and CDC water standards.	No
Price	$1,400.00[¶] (0.7L bottle) Retail $827.70[¶] (0.7L bottle) Govt	$122.00 Retail $79.00 Govt	$199.00** Retail $179.00** Govt
Package Contents	Case of 36 boxes with 50 individually foil wrapped tablets each.	Case of ten 16-oz bottles.	1 case = Eight 32oz Sets (each Set includes 16oz Part A & 16oz Part B; equivalent to 2 gallons, a 2.5 year supply).

* The manufacturers provided data in this table. The listing or omission of a product in this table does not imply endorsement, approval, or disapproval by DECS.
[†] For complete protocol and product claims refer to manufacturer's instructions.
[¶] Pricing of tablets for use in 2.0L bottle: $2,105.00 (retail) and $1,243.10 (govt).
** Price per case (8 sets)

SYNOPSIS OF DENTAL UNIT WATERLINE TREATMENT PRODUCTS AND DEVICES*

Product	**H_2Pro™**	**DentaPure® DP40 Cartridge**	**DentaPure® DP365b Cartridge**
			
Manufacturer	Garrison Dental Solutions 150 DeWitt Lane Spring Lake, MI 49456 www.garrisondental.com	MRLB International, Inc. 2450 College Way Fergus Falls, MN 56537 www.dentapure.com	MRLB International, Inc. 2450 College Way Fergus Falls, MN 56537 www.dentapure.com
Phone/FAX Numbers	(888) 437-0032 (616) 842-2244 (616) 842-2430 FAX	(800) 972-3543 (218) 739-2222 (218) 736-3241 FAX	(800) 972-3543 (218) 739-2222 (218) 736-3241 FAX
Shelf-life	1 year	5 years	5 years
Active Ingredient(s)	Hydrogen peroxide (shock) colloidal silver	Elemental iodine	Elemental iodine
Application	Continuous	Continuous	Continuous
Protocol Summary†	Dilute maintenance treatment 32:1 with distilled water in the provided dispenser. Fill chair water bottle from dispenser. Refill as needed.	Attaches to pick-up tubing in water bottle (lasts for 40L of water usage; 40 working days, or until iodine drops below 0.5 ppm).	Attaches to pick-up tubing in water bottle (lasts for 240L of water usage; 240 working days, or until iodine drops below 0.5 ppm).
Initial/"Shock" Treatment	Empty Clean Start bottle A and bottle B into an empty chair water bottle. Attach water bottle to chair and activate unit until red "shock" treatment is seen exiting all lines. Leave overnight; replace with maintenance treatment.	Not required to meet ≤500 CFU/mL requirement.	Not required to meet ≤500 CFU/mL requirement.
Monitoring Recommendation	Test quality every 6 months or sooner if "odor" or "debris" is noticed in the water.	Not required when used according to labeling.	Not required when used according to labeling.
Source Water Recommendation	Yes: distilled or reverse osmosis treated water.	No	No
Price	$58.00†† Retail $46.75 †† Govt	$49.95 Retail $24.99 Govt	$249.95 Retail $124.99 Govt
Package Contents	Maintenance refill contains 10 refills and lasts approximately 10 weeks.	One cartridge and installation hardware.	One cartridge and installation hardware.

* The manufacturers provided data in this table. The listing or omission of a product in this table does not imply endorsement, approval, or disapproval by DECS.

† For complete protocol and product claims refer to manufacturer's instructions.

†† Starter Kit: $89.00 (retail)/$72.25 (govt) contains: dispenser/storage container, shock treatment and 10 maintenance refills.

SYNOPSIS OF DENTAL UNIT WATERLINE TREATMENT PRODUCTS AND DEVICES*

Product	**DentaPure® DP365M Cartridge** 	**BluTab™ Waterline Maintenance Tablets** 	**MicroCLEAR™** 
Manufacturer	MRLB International, Inc. 2450 College Way Fergus Falls, MN 56537 www.dentapure.com	ProEdge Dental Products 7348 South Alton Unit D Centennial, CO 80112 www.proedgedental.com	Rowpar Pharmaceuticals, Inc. 16100 N. Greenway Hayden Loop F-400 Scottsdale, AZ 85260 www.rowpar.com
Phone/FAX Numbers	(800) 972-3543 (218) 739-2222 (218) 736-3241 FAX	(888) 843-3343 (303) 962-8820 (303) 962-8841 FAX	(800) 643-3337 (480) 948-6997 (480) 948-5918 FAX
Shelf-life	5 years	2 years	2 years
Active Ingredient(s)	Elemental iodine	Silver dihydrogen citrate at 1 ppm	Chlorine dioxide
Application	Continuous	Continuous	Continuous
Protocol Summary†	Install near junction box of dental units connected to municipal water systems (lasts for 240 working days, 240L of water, or until Iodine falls below 0.5 ppm). Note: Self-contained water reservoir not required.	Add one tablet each time the water bottle is filled. (2 sizes are available: 750mL and 2L)	Add 1:10 dilution each time the water bottle is filled.
Initial/"Shock" Treatment	Not required to meet ≤500 CFU/mL requirement.	Use a commercially available "shock" product according to manufacturer instructions or use 1:10 dilution of sodium hypochlorite introduced to all lines for 10 minutes.	Full strength overnight treatment.
Monitoring Recommendation	Not required when used according to labeling.	After using the product for 8 weeks since the product instructions recommend "shocking" the lines every 8 weeks, or testing the lines to verify that quarterly shocking is sufficient.	No recommendation.
Source Water Recommendation	No	Tap water	No
Price	$249.95 Retail $125.99 Govt	$29.50 (750mL tablet) Retail $23.00 (750mL tablet) Govt $41.00 (2L tablet) Retail $33.00 (2L tablet) Govt	$38.00 Retail $33.50 Govt
Package Contents	One cartridge and installation hardware.	Box of 50 tablets**	Two gallons of MicroCLEAR™ and pumps.

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† For complete protocol and product claims refer to manufacturer's instructions.

** BluTab is available in 2 sizes: The Standard (750mL) tablet treats 700-750 mL bottle, and 2L tablet treats a two-liter water bottle.

SYNOPSIS OF DENTAL UNIT WATERLINE TREATMENT PRODUCTS AND DEVICES*

Product	**Sterilex® Liquid Ultra**	**Sterilex® Ultra Powder**	**CitriSil™**
			
Manufacturer	Sterilex Corporation 111 Lake Frost Drive Hunt Valley, MD 21030 www.sterilex.com	Sterilex Corporation 111 Lake Frost Drive Hunt Valley, MD 21030 www.sterilex.com	Sterisil, Inc. 835 S. Highway 105 Ste D Palmer Lake, CO 80133 www.sterisil.com
Phone/FAX Numbers	(800) 511-1659 (443) 541-8801 (443) 541-8803 FAX	(800) 511-1659 (443) 541-8801 (443) 541-8803 FAX	(877) 755-7873 (719) 622-7200 (866) 299-2495 FAX
Shelf-life	1 year	2 years	1 year
Active Ingredient(s)	Alkaline proxygen with phase transfer catalyst	Alkaline proxygen with phase transfer catalyst	Silver/citric acid
Application	Periodic	Periodic	Continuous
Protocol Summary†	Weekly overnight treatment with undiluted product.	Weekly overnight treatment with diluted product.	Add one tablet each time the water bottle is filled.
Initial/"Shock" Treatment	Overnight treatment for 3 consecutive nights.	Overnight treatment for 3 consecutive nights.	Use orange Citrisil Shock™ tablet in lines overnight.
Monitoring Recommendation	No recommendation.	No recommendation.	After start-up, test at 1 week, then quarterly.
Source Water Recommendation	No	No	Distilled water preferred, however tap water can be used.
Price	$79.50 Retail $47.50 Govt	$63.80 Retail $38.20 Govt	$699.99 Retail $391.66 Govt
Package Contents	1 carton of 10 sets (each bottle set can treat 2-3 operatories).	20 packets (each packet can treat 2-4 operatories).	One case of 50 boxes (20 maintenance tablets and one shock tablet included in each box).

* The manufacturers provided data in this table. The listing or omission of a product in this table does not imply endorsement, approval, or disapproval by DECS.

† For complete protocol and product claims refer to manufacturer's instructions.

SYNOPSIS OF DENTAL UNIT WATERLINE TREATMENT PRODUCTS AND DEVICES*

Product	SterisilR Cartridge 	**SterisilR Straw** 	**SterisilR System** 
Manufacturer	Sterisil, Inc. 835 S. Highway 105 Ste D Palmer Lake, CO 80133 www.sterisil.com	Sterisil, Inc. 835 S. Highway 105 Ste D Palmer Lake, CO 80133 www.sterisil.com	Sterisil, Inc. 835 S. Highway 105 Ste D Palmer Lake, CO 80133 www.sterisil.com
Phone/FAX Numbers	(877) 755-7873 (719) 622-7200 (866) 299-2495 FAX	(877) 755-7873 (719) 622-7200 (866) 299-2495 FAX	(877) 755-7873 (719) 622-7200 (866) 299-2495 FAX
Shelf-life	1 year	1 year	1 year
Active Ingredient(s)	Stabilized Silver	Stabilized Silver	Stabilized Silver
Application	Continuous	Continuous	Continuous
Protocol Summary[†]	Point-of-use water purification device to eliminate tap water total dissolved solids (lasts approx 6 months to 1 year, depending on the volume and quality of the municipal water). Note: Self-contained water reservoir not required.	Attaches to pick-up tubing in water bottle (lasts for one year when used with distilled water).	Water purification system (reverse osmosis hyper-filtration, deionization, UV irradiation with residual disinfectant); fill water bottles from central system or plumb directly to operatories. Filter cartridge changes based on volume and quality of water used & visual/audible alarms.
Initial/"Shock" Treatment	Automatically produces 4 ounces of "blue" shock solution upon initial use.	Automatically produces 4 ounces of "blue" shock solution upon initial use. Quarterly shock treatment with activator also included.	Use Sterisil "Citrisil Shock™ Tablet" for self-contained systems; contact Sterisil for direct plumb shock options.
Monitoring Recommendation	After start-up, test at 1 week, then quarterly for one year, then as needed.	After start-up, test at 1 week, then quarterly for one year, then as needed.	After start-up, test at 1 week, then quarterly for one year, then as needed.
Source Water Recommendation	Yes: tap water.	Yes: distilled or deionized water. (SterisilR Straw municipal water version is available for use with tap water.)	Yes: tap water.
Price	$129.99[¶¶] Retail $72.35[¶¶] Govt	$149.99 Retail $90.44 Govt	$5,275.00[§§] Retail $2,879.40[§§] Govt
Package Contents	One SterisilR Cartridge	One SterisilR Straw	Sterisil System™ with electronic monitoring, two bladder tanks, two faucets. Standard cartridge package with BF1 – 1,000L volume. (Also available in 3,000L, 5,000L, 10,000L volumes)

* The manufacturers provided data in this table. The listing or omission of a product in this table does not imply endorsement, approval, or disapproval by DECS.

[†] For complete protocol and product claims refer to manufacturer's instructions.

[¶¶] Pricing listed is for SterisilR Cartridge 10 (removes 150 grains of hardness). SterisilR Cartridge 20 removes 300 grains of hardness and is available for $159.99 (retail)/$90.44 (govt). Initial setup kit: $55.99 (retail)/$33.76 (govt). SterisilR Cartridge 9i Inline Version available via special order—contact Sterisil for additional information.

[§§] Filter cartridge replacement based on volume and quality of water used: Annual Kit (Stage 1-3 + UV [Hyper-filtration + Ultraviolet Irradiation]): $ 360.99 (retail)/$195.98 (govt.). DI Kit: (Stage 4) (Deionization Cartridges for Autoclave water): $195.99 (retail)/$108.54 (govt.); Microbiological Residual Disinfectant Cartridges (Stage 5): SS-1 (1,000L): $495.00 (retail)/$298.49 (govt.); SS-3 (3,000L): $1,300.00 (retail)/$600.00 (govt.); SS-7 (7,000L):$2,800.00 (retail)/$1,203.02 (govt); SS-10 (10,000L): $3,599.00 (retail)/$1,444.22 (govt).

SYNOPSIS OF DENTAL UNIT WATERLINE TREATMENT PRODUCTS AND DEVICES*

Product	**Team Vista™ Dental Waterline Cleaner by Hu-Friedy** 	**VistaClear™ Dental Waterline Treatment System– Model 1000-47-C** 	**VistaTab™ Dental Waterline Cleaner Tablets by Hu-Friedy** 
Manufacturer	Vista Research Group, LLC Distributed by: Hu-Friedy Mfg. Co., Inc. 3232 N. Rockwell St. Chicago, IL 60618 www.hu-friedy.com	Vista Research Group, LLC Distributed by: Pelton & Crane 11727 Fruehauf Drive Charlotte, 28273 www.Pelton.net www.VistaResearchGroup.com	Vista Research Group, LLC Distributed by: Hu-Friedy Mfg. Co., Inc. 3232 N. Rockwell St. Chicago, IL 60618 www.hu-friedy.com
Phone/FAX Numbers	(800) 483-7433 (773) 975-6100 (800) 729-1299 FAX	(877) 600-1104 (704) 588-2126 (800) 659-7255 FAX	(800) 483-7433 (773) 975-6100 (800) 729-1299 FAX
Shelf-life	6 years (VistaClean™ irrigant) 2 years (VistaTab™ cleaner)	Indefinite	2 years
Active Ingredient(s)	Organic Citrus Botanicals (VistaClean™) Stabilized Chlorine Dioxide (VistaTab™)	Multi-Stage Biochemical Filters	Stabilized Chlorine Dioxide
Application	Continuous (VistaClean™ irrigant) and Periodic (VistaTab™ cleaner)	Continuous Filtration	Periodic
Protocol Summary[†]	Add one or more VistaClean™ drops each time the water bottle is filled as irrigant. Every week or as needed (usually monthly) add one VistaTab™ tablet to 750mL of potable water and follow treatment instructions.	Filters all water sent to the dental unit from municipal water supply. Central models designed for multiple operatories. Maintenance involves a 15 second weekly protocol and quarterly line cleansing. Filters should be changed every 12 to 18 months.	Every week or as needed (usually monthly) add one tablet to 750mL potable water. Run 1/2 of the amount through waterlines, wait five minutes then run balance through lines, and rinse with 500mL fresh water.
Initial/"Shock" Treatment	Two consecutive treatments using two VistaTab™ tablets.	Line cleansing required upon installation. Hydraulic and pneumatic purge and clean using VistaClean™ and/or VistaTabs™.	Two consecutive treatments using two VistaTab™ tablets.
Monitoring Recommendation	Monitor lines in each operatory at least quarterly, preferably monthly. If counts >500 CFU/mL, perform line cleaning per product instructions.	Monitor lines in each operatory at least quarterly, preferably monthly. If counts >500 CFU/mL follow product instructions.	Monitor lines in each operatory at least quarterly, preferably monthly. If counts >500 CFU/mL, perform line cleaning per product instructions.
Source Water Recommendation	Yes: tap water.	Yes: tap water.	Yes: tap water.
Price	$199.00 Retail $119.40 Govt	Pricing for 1000-23-C (3 ops) $3,140.00[#] Retail $1,727.00[#] Govt	$129.00 Retail $77.40 Govt
Package Contents	One box containing one 1-ounce bottle VistaClean™ concentrate and 15-1.7 gram VistaTab™ tablets.	Complete system including air and water regulators, gauges, air gap drain fitting, VistaCheck backflow preventers, syringe, VistaClean™ concentrate, colored tubing and fittings.	One box containing 15-1.7 gram tablets.

* The manufacturers provided data in this table. The listing or omission of a product in this table does not imply endorsement, approval, or disapproval by DECS.
[†] For complete protocol and product claims refer to manufacturer's instructions.
[#] 1000-34-C (4 ops): $4.060.00 (retail)/$2,233.00 (govt); 1000-46-C (6 ops): $5,580.00 (retail)/$3,069.00 (govt); 1000-47-C (7 ops): $6,230.00 (retail)/ $3,426.50 (govt); 1000-48-C (8 ops): $6,665.00 (retail)/$3,665.75 (govt); Replacement Filter (R5450) $215.00 (retail)/$118.25 (govt): 1000-23-C requires two filters, 1000-34-C requires three filters and the 1000-46-C, 1000-47-C and 1000-48-C require four filters.

SYNOPSIS OF DENTAL UNIT WATERLINE TREATMENT PRODUCTS AND DEVICES*

Product	**VistaClear™ Dental Waterline Treatment System– Model 1000** 	**VistaClean™ Irrigant Solution Concentrate by Hu-Friedy** 	**WATERCLAVE WCJ64-40** 
Manufacturer	Vista Research Group, LLC Distributed by: Pelton & Crane 11727 Fruehauf Drive Charlotte, 28273 www.Pelton.net www.VistaResearchGroup.com	Vista Research Group, LLC Distributed by: Hu-Friedy Mfg. Co., Inc. 3232 N. Rockwell St. Chicago, IL 60618 www.hu-friedy.com	WATERCLAVE, LLC 6731 West 121ST Street, Overland Park, KS 66209 www.waterclave.com
Phone/FAX Numbers	(877) 600-1104 (704) 588-2126 (800) 659-7255 FAX	(800) 483-7433 (773) 975-6100 (800) 729-1299 FAX	(913) 312-5860 (913) 312-5861 FAX
Shelf-life	Indefinite	6 years	None
Active Ingredient(s)	Multi-Stage Biochemical Filter	Organic Citrus Botanicals	High heat in an enclosed space
Application	Continuous Filtration	Continuous and Periodic	Continuous
Protocol Summary†	Filters all water sent to the dental unit from municipal water supply. Model 1000 is designed for a single operatory. Maintenance involves a 15 second weekly protocol and quarterly line cleansing. Filter should be changed every 12 to 18 months.	Add one or more drops each time the water bottle is filled as irrigant—generally 1 drop for 700mL bottle; 2 drops for 2L bottle.	The Waterclave system is connected from the city water source to the Waterclave unit to all dental units via a dedicated branching waterline. The Waterclave sends continuous bacteria free water to all dental units. Will maintain up to 40 dental units.
Initial/"Shock" Treatment	Line cleansing required upon installation. Hydraulic and pneumatic purge and clean using VistaClean™ and/or VistaTabs™.	Use VistaTab™ or other EPA-registered antimicrobial cleaner.	An initial chemical shock of the dental unit waterlines will maintain the waterlines below 100 CFUs/mL for 6 to 12 months without retreatment on older units and 2+ years on new equipment before a chemical retreatment may be necessary
Monitoring Recommendation	Monitor lines in each operatory at least quarterly, preferably monthly. If counts >500 CFU/mL follow product instructions.	Monitor lines in each operatory at least quarterly, preferably monthly. If counts >500 CFU/mL follow product instructions.	Recommend minimum of every 3 months after the initial 1 week (after the initial chemical treatment)
Source Water Recommendation	Yes: tap water.	Yes: tap water.	Yes: Tap Water is fine.
Price	$1,080.00ºº Retail $594.00ºº Govt	$82.00 Retail $49.20 Govt	$10,595.00 Retail Waterclave Water Purifier $525.50 Retail Chemical Pump Kit
Package Contents	Complete system (1 op) including VistaClean™ concentrate, tubing, syringe and fittings.	One 1-ounce bottle of concentrate with dropper tip and cap.	

* The manufacturers provided data in this table. The listing or omission of a product in this table does not imply endorsement, approval, or disapproval by DECS.

† For complete protocol and product claims refer to manufacturer's instructions.

ºº Replacement Filter (R5450) $215.00 (retail)/$118.25 (govt).

SYNOPSIS OF DENTAL UNIT WATERLINE TREATMENT PRODUCTS AND DEVICES*

Product	**WATERCLAVE WHD6-160** 
Manufacturer	WATERCLAVE, LLC 6731 West 121ST Street, Overland Park, KS 66209 www.waterclave.com
Phone/FAX Numbers	(913) 312-5860 (913) 312-5861 FAX
Shelf-life	None
Active Ingredient(s)	High heat in an enclosed space
Application	Continuous
Protocol Summary†	The Waterclave system is connected from the city water source to the Waterclave unit to all dental units via a dedicated branching waterline. The Waterclave sends continuous bacteria free water to all dental units. Will maintain up to 120 dental units.
Initial/"Shock" Treatment	An initial chemical shock of the dental unit waterlines will maintain the waterlines below 100 CFUs/mL for 6 to 12 months without retreatment on older units and 2+ years on new equipment before a chemical retreatment may be necessary
Monitoring Recommendation	Recommend minimum of every 3 months after the initial 1 week (after the initial chemical treatment)
Source Water Recommendation	Yes: Tap Water is fine.
Price	$15,295.00 Retail Waterclave Water Purifier $525.50 Retail Chemical Pump Kit
Package Contents	

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† For complete protocol and product claims refer to manufacturer's instructions.