

U.S. Patent#: 6,264,846 & 6,464,885 International Patents Pending



Measurement Technologies began producing the H₂O Neutralizer[®] in 1999. The first model was 3" in size and only designed for dechlorination. The 5" device was later introduced in the fall of 2000. It did not take long to realize that the device could also be used for chlorination, which made the device dual purpose and answered the problems of field chlorination. Both utilities and contractors have faced the problem of super chlorinating lines unevenly, causing failed purity tests. The H₂O Neutralizer[®] injects chlorine into every gallon of water that is entering the new system. For dechlorination, the H₂O Neutralizer[®] design allows the operator complete control of the feed solution entering the venturi, allowing the proper balance between the chlorine residual level and the amount of dechlorination solution required.

The quest for environmentally sound means of dechlorination started in the 1990's. First, a local kidney dialysis doctor in Mount Vernon, Washington, enlightened Public Utility District No. 1 of Skagit County as to the benefits of ascorbic acid, Vitamin C, to remove chlorine from our drinking water. Ascorbic acid has been recommended as the dechlorinating agent of choice for VOC's (EPA QA Newsletter, January, 1988), as well as being the choice of many owners of exotic fish to dechlorinate their tank water. Ascorbic acid is an additive in fish food to improve their immune systems. It is also an additive in food production for human consumption. When weighing the benefits of ascorbic acid to the conventional sulfur-based dechlorination chemicals, Skagit County quickly made the change to ascorbic acid. It made good environmental sense. The first few years the utility used the ascorbic acid for dechlorination with conventional methods that had been used over the years with sulfur-based chemicals. The methods that were being used were different configurations of drip systems as well as simply broadcasting the ascorbic over open water. Results were not impressive, especially with the higher cost of ascorbic acid. I, Tony Smith, then Water Superintendent for the P.U.D., decided that it was time to design a device that would work under all field conditions and make the most economical use of ascorbic acid. The H₂O Neutralizer[®] was born out of two principles. It has a mainline orifice with additional (easy to install) orifice inserts to control flow rates and differential pressure, and a lateral by-pass venturi to create a full vacuum at low flows that will maintain throughout the entire performance range of the device. My combination worked and I now hold the first patent issued for a dechlorination device. My design allows the device to reach 29 inches of vacuum with as little as 5 psi and approximately 6-8 gpm of flow. The H₂O Neutralizer[®] is available in two different models. The 3M is designed to be used on connections up to 3" in size, and the 5M is designed to be used on connections up to 6". We offer units that are designed for both DeChlorination AND Chlorination.

In 2006 the ascorbic acid industry entered it's second down turn in production and availability in less than three years, causing Measurement Technologies to start looking for different dechlorination chemicals that were still environmentally friendly. Dechlorination Grade, Calcium Thiosulfate Solution (CTS) came front and center in our search for a new chemical. CTS offers one more advantage over ascorbic acid, it's pH neutral, and like ascorbic acid it is friendly to aquatic life, does not effect dissolved oxygen and the manufacturer has NSF approval. CTS has been widely used in treatment plant dechlorination and now with the H_2O Neutralizer[®] field use of No-ChlorTM Dechlorination Grade Calcium Thiosulfate Solution is a practical alternative to ascorbic acid.

Tony Smith Inventor



Measurement Technologies, Inc. P.O. Box 2195 Redmond, WA 98074-2195 Ph: 425-836-8683 / Toll Free 877-889-8482 Fax: 425-484-6664 www.h2oneutralizer.com



Chormation / DeChlorination with the O Neutralizer ®



to full ANSI/AWWA C-651 Standard one device for both JOBS...

Chlorinate

Dechlorinate

to meet discharge requirements: $3M H_{2}O$ Neutralizer[®] to $300 + ppm^*$ $5M H_{2}O$ Neutralizer[®] to 100+ ppm^{*}

^{*} Discharge rate varies to achieve maximum ppm.

Comply with the new ANSI/AWWA C-655 **Field Dechlorination Standard**

Flow ranges from: 3M H₂O Neutralizer® 10 gpm - 1,250 gpm

5M H₂O Neutralizer® 5M-5100: 500 - 4,500 gpm 5M-5100 Ultimate: 10 - 4,500 gpm





Measurement Technologies, Inc. P.O. Box 2195 Redmond, WA 98073-2195 425-836-8683 / 877-889-8482 (toll free) 425-484-6664 (fax) measurement.technologies@verizon.net (e-mail) www.h2oneutralizer.com

Specifications / Performance

3M H₂O Neutralizer®



* Based on using *No-Chlor*[™] Calcium Thiosulfate Solution, full strength with a 2 to 1 safety factor, using the 3" x 20'-0" Nitrile Rubber Discharge Hose and 3" *Full Flow* Diffuser[™]. CRL will decrease if not using this optional equipment.

For Low Chlorinate Water (\leq 4 ppm) dilute CTS at $\frac{1}{2}$ gallon to 9 $\frac{1}{2}$ gallons of potable water, to make ten gallons of dechlorination solution.

5M H₂O Neutralizer[®]

5M-5100: 4" mainline orifice ring, furnished with three orifice inserts (31/2", 3", 21/2")

Flow Range: 500 - 4500 GPM, with full vacuum

5M-5100 Ultimate: 4" mainline orifice ring, furnished with seven orifice inserts rings

(3½", 3", 2½", 2", 1½",1", ¾")

Flow Range: 10 - 4500 GPM, with full vacuum

- Weight: 26 pounds (11.8 Kg)
- Length: 191/2 inches (19.1 cm)
- Width: 7½ inches (19.1 cm)
- Height: 12 inches (30.5 cm)

Inlet: 41/2" Female Swivel Connection (NST standard)

Outlet: Male Cam Lock Fitting

Chlorine Residual Levels (CRL) for Dechlorination:

CRL*	Flow Range

≤	25 ppm	500 -	4500 gpm	(5M-5100	Ultimate 8	& 5M-5100)	1
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- ≤ 50 ppm 500 3000 gpm (5M-5100 Ultimate & 5M-5100)
- ≤ 100 ppm 500 1500 gpm (5M-5100 Ultimate & 5M-5100)
- ≤ 200 ppm 10 750 gpm (5M-5100 Ultimate)
- ≤ 300 ppm 10 500 gpm (5M-5100 Ultimate)

* Based on using *No-Chlor*[™] Calcium Thiosulfate Solution, full strength with a 2 to 1 safety factor, using the 5" x 20'-0" Nitrile Rubber Discharge Hose and 5" *Full Flow* Diffuser[™]. CRL will decrease if not using this optional equipment.

For Low Chlorinate Water (≤ 4 ppm) dilute CTS at one gallon to nine gallons of potable water, to make ten gallons of dechlorination solution.

Special threaded connections can be provided on both inlet and outlet sides of all devices. Contact factory for pricing and availability.

3M H₂O Neutralizer® Contraction Solution Package Field Dechlorination Just Got a Whole Lot Easier...







3M-3161 Ultimate TSP includes:

- 3M H₂O Neutralizer Inlet: 3" Type "D" cam lock Outlet: 3" Type "A" cam lock Orifice Rings: 1.5", 1.0", 0.75"
- 1 Storage Case
- 1 2.5" FNST x 3" Type "A" Adapter
- 1 2.5" FNST x 3" Type "D" Adapter
- 1 3" 90° Bend, Type "A" x "D" cam lock
- 1 3" x 10-0" Nitrile rubber discharge hose
- 1 3" x 20'-0" Nitrile rubber discharge hose 1 - EZ Mount system
- 1 3" Full Flow Diffuser (Aluminum)

10 - 1,250+ GPM

Flow Range

3M H₂O Neutralizer[®] Ultimate Total Solution Package (3M-3161)

For operators looking to get the most out of their chemical investment in field chlorination and dechlorination, no other unit available offers the range of performance and consistency in chemical utilization of the $3M H_2O$ Neutralizer[®]. The $3M H_2O$ Neutralizer[®] is your best bet for reliable and cost effective field chlorination/dechlorination.

New ANSI/AWWA standards for field dechlorination has many utilities facing increased chemical use and higher operating costs in annual flushing programs. The more consistent flow of the 3M H_2O Neutralizer[®] allows operators to more accurately control chemical usage and permits use of the most cost effective chemicals available. The 3M Ultimate Total Solution Package offers the most complete and reliable field dechlorination/chlorination combination available.

With a performance range from 10 gallons per minute to over 1,250 gallons per minute the $3M \frac{H_2O}{P_2O}$ performance over a level of flexibility no competing unit, can match. The $\frac{H_2O}{P_2O}$ neutralizer[®] patented venturi induction design delivers more consistent performance over a wider range of flow rates than any other competing system.

And our swappable orifice ring system lets you set up the 3M H_2O Neutralizer[®] to the flow rates you need to get maximum chemical mixing and utilization.

The H_2O Neutralizer's[®] consistent performance allows you to set your chemical injection rate to only use the amount of chemical you need to get the job done right.



Mfg. under Patent Numbers: 6,264,846 & 6,464,885

Measurement Technologies, Inc. P.O. Box 2195 Redmond, WA 98073 425.836.8683 (toll free) 877.889.8482 (Fax) 425.484.6664 E-Mail:Dechlor@h2oneutralizer.com www.h2oneutralizer.com

ing Cost

Specifications / Performance

3M H₂O Neutralizer®

3M H₂O Neutralizer[®]: 2" mainline orifice ring, furnished with three orifice insert rings (1½", 1", ¾") Lateral By-Pass venturi, one gpm draw rate under full vacuum with control valve

Flow Range: 10 - 1250 GPM, with full vacuum Weight: 18 pounds (8.16 Kg) Length: 18¾ inches (47.6 cm) Width: 5 inches (12.7 cm) Height: 9 inches (22.9 cm) Inlet: Female Cam Lock Fitting Outlet: Male Cam Lock Fitting Chlorine Residual Levels (CRL) for Dechlorination: <u>CRL*</u> <u>Flow Range</u>

≤ 100 ppm	10 - 1250 gpm
≤ 200 ppm	10 - 750 gpm
≤ 300 ppm	10 - 500 gpm

Dechlorination:
 Dechlorination:

* Based on using *No-Chlor*[™] Calcium Thiosulfate Solution, full strength with a 2 to 1 safety factor, using the 3" x 20'-0" Nitrile Rubber Discharge Hose and 3" *Full Flow* Diffuser[™]. CRL will decrease if not using this optional equipment.

For Low Chlorinate Water (\leq 4 ppm) dilute CTS at $\frac{1}{2}$ gallon to 9 $\frac{1}{2}$ gallons of potable water, to make ten gallons of dechlorination solution.



To Include: $3M H_2O$ Neutralizer[®] Storage Case Orifice Inserts Rings: (1.5", 0.1". 0.75") Cam Lock Adapters: 2.5" FNST x 3" Type "A" 2.5" FNST x 3" Type "D" $\frac{3}{8}$ " x 5'-0" Tubing (2) 16oz. *No-Chlor*TM Calcium Thiosulfate Solution Dechlorination Grade O&M Manual



To Include: $3M H_2O$ Neutralizer® Storage Case Orifice Inserts Rings: (1.5", 0.1", 0.75")Cam Lock Adapters: 2.5" FNST x 3" Type "A" 2.5" FNST x 3" Type "D" $\frac{3}{6}"$ x 5'-0" Tubing (2) O&M Manual 3" Dust Cap 3" Full Flow Diffuser 3" x 20'-0" Discharge Hose



To Include: $3M H_2O$ Neutralizer® Storage Case Orifice Inserts Rings: (1.5", 0.1". 0.75") Cam Lock Adapters: 3" Type "A" x 3"FNPT 3" Type "D" x 3"FNPT 3" x 5'-0" Tubing (2) 16oz. *No-Chlor*TM Calcium Thiosulfate Solution Dechlorination Grade O&M Manual

3M-3250



To Include: 3M H₂O Neutralizer[®] Storage Case Orifice Inserts Rings: (1.5", 0.1". 0.75") Cam Lock Adapters: 3" Type "A" x 3"FNPT 3" Type "D" x 3"FNPT 3%" x 5'-0" Tubing (2) O&M Manual 3" Dust Cap 3" Full Flow Diffuser 3" x 20'-0" Discharge Hose





Special Options and Considerations

Special threaded connections can be provided on both inlet and outlet sides of all devices. Both 3M-3200 AND 3M-3250 models require additional threaded adapters to complete cam lock fittings so that you can connect to the discharge outlet.

With the 5M H₂O Neutralizer[®]

Lower Operating Cost! **Ultimate Total Solution Package**

Field Dechlorination Just Got a Whole Lot Easier...







5M-5261 Ultimate TSP includes:

1 - 5M H_oO Neutralizer Inlet: 5" Type "D" cam lock Outlet: 5" Type "A" cam lock Orifice Rings: 3.5", 3.0", 2.5", 2.0" 1.5", 1.0", 0.75"

- 1 4.5" FNST x 5" Type "A" Adapter 1 - 5" 90° Bend, Type "A" x "D" cam lock
- 1 5" x 10-0" Nitrile rubber discharge hose
- 1 5" x 20'-0" Nitrile rubber discharge hose
- 1 EZ Mount system
- 1 5" Full Flow Diffuser (Aluminum)

EZ Mount shown with 3M device

Flow Range 10 - 4,500 GPM

5M H₂O Neutralizer® Ultimate Total Solution Package (5M-5261)

For operators looking to get the most out of their chemical investment in field chlorination and dechlorination, no other unit available offers the range of performance and consistency in chemical utilization of the H_oO Neutralizer[®]. H_oO Neutralizer[®] is your best bet for reliable and cost effective field chlorination/dechlorination.

New ANSI/AWWA standards for field dechlorination has many utilities facing increased chemical use and higher operating costs in annual flushing programs. The more consistent flow of the H_oO Neutralizer[®] allows operators to more accurately control chemical usage and permits use of the most cost effective chemicals available. The 5M Ultimate Total Solution Package offers the most complete and reliable field dechlorination combination available.

With a performance range from 10 gallons per minute to over 4,500 gallons per minute the 5M H₀O Neutralizer[®] provides a level of flexibility no competing unit, can match. H₀O Neutralizer[®] patented venturi induction design delivers more consistent performance over a wider range of flow rates than any other competing system.

And our swappable orifice ring system lets you set up the 5M H_oO Neutralizer[®] to the flow rates you need to get maximum chemical mixing and utilization.

The H₂O Neutralizer's[®] consistent performance allows you to set your chemical injection rate to only use the amount of chemical you need to get the job done right.



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Specifications / Performance

5M H₂O Neutralizer®

Standard Range: 4" mainline orifice ring, furnished with three orifice inserts (3½", 3", 2½") Flow Range: 500 - 4500 GPM, with full vacuum Extended Range: 4" mainline orifice ring, furnished with seven orifice inserts rings (3½", 3", 2½", 2", 1½", 1", ¾") Flow Range: 10 - 4500 GPM, with full vacuum Weight: 26 pounds (11.8 Kg) Length: 19½ inches (19.1 cm) Width: 7½ inches (19.1 cm) Height: 12 inches (30.5 cm) Inlet: 4½" Female NST Swivel Connection (standard) Outlet: Male Cam Lock Fitting Chlorine Residual Levels (CRL) for Dechlorination: CRI * Elow Range

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≤ 25 ppm	500 -	4500 gpm (5M-Standard & Extended Range devices)
≤ 50 ppm	500 -	3000 gpm (5M-Standard & Extended Range devices)
≤ 100 ppm	500 -	1500 gpm (5M-Standard & Extended Range devices)
≤ 200 ppm	10 -	750 gpm (5M-Extended Range only)
≤ 300 ppm	10 -	500 gpm (5M-Extended Range only)

* Based on using *No-Chlor*[™] Calcium Thiosulfate Solution, full strength with a 2 to 1 safety factor, using the 5" x 20'-0" Nitrile Rubber Discharge Hose and 5" *Full Flow* Diffuser[™]. CRL will decrease if not using this optional equipment.

For Low Chlorinate Water (≤ 4 ppm) dilute CTS at one gallon to nine gallons of potable water, to make ten gallons of dechlorination solution.



To Include: 5M H2O Neutralizer Storage Case Inlet: 4.5" Female Swivel NST Outlet: 5" Type "A" Cam Lock %" x 5'-0" Tubing (2) O&M Manual

Standard Range 5M-5100

Orifice Rings: 4x3.5",2.0", 2.5"

Extended Range 5M-5101

Orifice Rings: 4" x 3.5", 3.0", 2.5, 2.0" 2" x 1.5", 1.0", 0.75"



To Include: 5M H2O Neutralizer Storage Case Inlet: 4.5" Female Swivel NST Outlet: 5" Type "A" Cam Lock 3%" x 5'-0" Tubing (2) O&M Manual 5" Dust Cap 5" Full Flow Diffuser 5" x 20'-0" Discharge Hose

Standard Range

5M-5150 Orifice Rings: 4" x 3.5', 3.0", 2.5" Extended Range 5M-5151 Orifice Rings: 4" x 3.5", 3.0", 2.5" 2.0" 2" x 1.5", 1.0", 0.75"



To Include: 5M H2O Neutralizer Storage Case 1 - 5" Type "A" x 5"MNPT Adapter Inlet: 5" Type "D" Female Cam Lock Outlet: 5" Type "A" Male Cam Lock 3/8" x 5'-0" Tubing (2) O&M Manual

Standard Range 5M-5200

Orifice Rings: 4x3.5",2.0", 2.5"

Extended Range 5M-5201 Orifice Rings: 4" x 3.5", 3.0", 2.5, 2.0"





To Include: 5M H2O Neutralizer Storage Case 1 - 5" Type "A" x 5"MNPT Adapter Inlet: 5" Type "D" Female Cam Lock Outlet: 5" Type "A" Male Cam Lock 5" Dust Cap 5" Full Flow Diffuser 5" x 20'-0" Discharge Hose (Nitrile rubber) 3%" x 5'-0" Tubing (2) O&M Manual

Standard Range 5M-5250

Orifice Rings: 4x3.5",2.0", 2.5"

Extended Range 5M-5251

Orifice Rings: 4" x 3.5", 3.0", 2.5, 2.0" 2" x 1.5", 1.0", 0.75"



Special Options and Considerations

Special threaded connections can be provided on both inlet and outlet sides of all devices.

Hydrants with 4" pumpers need to order the 5M-5200 series of product. Orifice rings can not be installed with a swivel inlet.

5M- 5200 series of devices come with 5" Type "A" adapter with 5" MNPT. Hydrant thread adapters are available for this connection, call for pricing.





Comply with Project Specifications

If your project specifications are calling out high volume flushing with dechlorination, we have the answer.

RENT the 5M H_2O Neutralizer to handle flushing rates as high as 4,300 GPM. Neutralize chlorine residual levels as high as 50 PPM with flows at 4,000+ GPM.

When the size of the project requires higher flows rent the 5M H_2O Neutralizer Total Solution Package.



The H₂O Neutralizer chlorinates and dechlorinates your project by creating a vacuum in the lateral by-pass venturi. Which draws up to 0.9 gallon per minute of solution. Performance

is insured with the main line orifice ring plus smaller insertable orifice rings that crate the differential pressure needed to activate the lateral by-pass to draw in chemical.

5M H₂O Neutralizer Rental

Your rental is based on minimum of 2 days rental plus any additional days that are required plus transportation cost both ways. Each rental comes set up for chlorination and dechlorination. If you like this package, purchasing can be arranged.

Call or email your Request For Quotation



Measurement Technologies, Inc. P.O. Box 2195 Redmond, WA 98073

www.h2oneutralizer.com

Phone: 877-889-8482 425-836-8683 Email: water@h2oneutralizer.com

Base Rental Terms and Conditions

- Base Rental Fee (BRF); includes two full days of rental, not including the day you receive the equipment and the day shipment is picked up by truck line for return.
- Daily Rental Fee (DRF); is based on additional days required and is billed in full days.
- Chlorination chemical: contractor is responsible for providing either sodium hypochlorite or calcium hypochlorite for chlorination.
- Dechlorination chemical: **ONLY** *No-Chlor Calcium Thiosulfate Solution* can be used with this equipment under this rental program and can be purchased from Measurement Technologies at the time of your rental.
- All rental fees must be paid prior to shipping equipment, with credit card or certified check and signed agreement; based upon agreed DRF time period of rental.
- Renter is responsible for insuring the equipment from the time it leaves our warehouse until it returns. Renter is responsible for providing proper chemical testing supplies & equipment for use with equipment.

Base Renta	l Fee		
Includes:		\$ 800.00	
•	First two FULL days rental		
•	5M H ₂ O Neutralizer model #5251 Extended Range		
	 5M Full Flow Diffuser 		
	 5' x 20'-0" Discharge hose 		
•	1 each - 5" FNPT x 5" Type 'A' & 'D' Cam Lock couplings		
Daily Renta	l Fee		
•	Additional day (24 hr. period)	\$ 250.00	/ day
No-Chlor Ca	alcium Thiosulfate Solution		
CTS-005	5 gal. No-Chlor Calcium Thiosulfate Solution	\$ 99.00	/ 5 gal's
CTS-055	55 gal. No-Chlor Calcium Thiosulfate Solution	\$ 695.00	/ drum

Estimate your rental cost

Determine the number of days that you will need the equipment on site and the dechlorination chemical you will need. Calculate chemical and time required by using the spreadsheet program included with this flyer to determine the time needed to fill or discharge the volume of water to be treated.

Example: 4 days rental, shipping to Atlanta, GA (area)			
Base Rental:	800.00		
2 additional days:	500.00		
Freight (ex. Atlanta, GA) Both ways:	600.00		
Dechlor chemical cost:	Unknown		
TOTAL:	\$ 1,900.00		



Optional fittings available for rent

- 6" Flg x 5" Type 'A' Cam Lock
- 4" Flg. x 5" Type 'A' Cam Lock
- 4.5" FNST x 5" Type 'A' Cam Lock
- 4" FNST x 5" Type 'A' Cam Lock
- 6" Flg. x 5" Type 'D' Cam Lock
- 4" Flg. x 5" Type 'D' Cam Lock
- 4.5" FNST x 5" Type 'D' Cam Lock
- 4" FNST x 5" Type 'D' Cam Lock

How does the H₂O Neutralizer [®] work?

The H_2O Neutralizer [®] is a patented design combining two principles into one device. By utilizing a mainline orifice ring with a lateral bypass venturi the user is able to control discharge rates and control the amount of solution entering the device. The permanent mainline orifice ring is 2" for the 3M or 4" for the 5M with additional orifice rings that can be inserted into the 2" or 4" ring. The different orifice openings will either allow the user to control the discharge rate or allow the user to create a full vacuum at very low flows and pressure. When the water is passing through the orifice it will create differential pressure causing part of the water flow to enter the lateral bypass. The modified venturi will create a vacuum of 29 inches which draws in 0.9 gallons per minute of feed solution with the control valve in the full open position. The control valve allows the user to control the amount of feed solution with the bypass water, it will reintroduce that fluid back into the main flow of water causing either the neutralizing reaction to the chlorine or the mixture of chlorine with the water to create chlorinated water of any strength.

Operational Features:

Each device may be used for either chlorinating or dechlorinating, and there are two sizes to choose from: the original 3" model and the 5" model both are designed to chlorinate and dechlorinate drinking water. The 3M H₂O Neutralizer [®] is designed to be connected to pipe sizes 1" and larger, and the 5M H₂O Neutralizer [®] is designed for 4" and larger connections with minimum flows of 500 gpm and 20-psi. Choose the proper adapter which will connect the 3M H₂O Neutralizer [®] to the filling point of the new system or the discharge point of the system that needs to be dechlorinated. The 3" model comes with two special adapters so that the H₂O Neutralizer[®] can be installed in either direction. Due to the many different ways that the 5" model can be connected it is only furnished with a female swivel inlet and a type 'A' cam lock adapter outlet. Different end connections can be furnished.

Both the 3M and 5M H_2O Neutralizer [®] are equipped with a lateral by-pass pressure gauge which will give the operator an approximate flow rate when compared to the orifice size being used, and a make-up water valve. The make-up water valve will allow the user to draw incoming water to make feed solution and to test the incoming chlorine residual level during dechlorinating operations.

The 3M H₂O Neutralizer [®] can achieve a full vacuum with as little as 20 psi and 9 gpm of flow by blocking the opening in the ³/₄" orifice and inserting it into the device. Once both devices reach a full vacuum it insures the ability to deliver 0.9 gallons per minute of feed solution to the modified venturi. The bypass solution being reintroduced into the main flow will enter on the back side of the orifice ring which has a lower pressure than the front side of the orifice ring and the lateral bypass.

Both models have an optional discharge hose and diffuser. The discharge hose is made from Nitrile rubber, which features good abrasion resistance, and no special drying requirements. The hoses are twenty feet in length, as that is the longest hose that can be installed on the discharge side of the device. Our Full Flow Diffusers are designed to allow the user to position the discharge at up to 90° from the device in either direction.

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Dechlorination Grade Ascorbic acid

TM



No-Chlor

Ascorbic acid

Product name:No-Chlor™Chemical Formula:C6H806Formula Weight:176.13Chemical Family:Organic acid

Components: Ascorbic acid: C

CAS # 00050-81-7

Physical Data:

Specific gravity:1.65 water = 1Solubility:33g/100 ml water @ 25° CMelting point:192° CAcidity (pH):2.2 - 2.5Assay:99.0 - 100.5%Characteristics:Crystalline powder/granularOrganic volatile impurities:Meets USP 24

Product Codes: AA-25.0 - 25Kg box Why Dechlorinate?

The EPA is mandating that the discharge of chlorinated water to the environment be eliminated. This is to protect aquatic life and other animals. Utilities, contractors, fire departments, and all others that must discharge chlorinated water into the environment must remove the chlorine to allowable discharge levels. All states have adopted discharge requirements with some states enacting requirements that go beyond the EPA requirements.

To insure the proper supply of ascorbic acid for dechlorination, Measurement Technologies has developed No-ChlorTM ascorbic acid dechlorination grade. When using the H_2O Neutralizer[®] with No-ChlorTM ascorbic acid dechlorination grade, Measurement Technologies will guarantee the neutralization of chlorine or chloramine water to EPA discharge requirements with residual levels as high as 300+ ppm. The H_2O Neutralizer[®] can be used with other dechlorination chemicals, however the user should be aware of the negative side effects that sulfur-based chemicals can have on the environment. Unlike ascorbic acid which reacts immediately to neutralize chlorine or chloramine water, sulfurbased chemicals require contact and reaction time. And if your system is protected with chloramine water the reaction time is even longer. When flushing water there is no reaction time or contact time.

Protective Equipment

Ventilation: Use adequate general or local exhaust.

Respiratory Protection: None needed unless use generates annoying or irritating dust, mist or vapors. Use a dust/mist respirator mask if necessary.

Skin & Eye Protection: Safety glasses. Use good chemical handling practices.



Manufactured in the China

NET WEIGHT: 55.12 Lbs. / 25.0 Kg Shipping weight: 58 Lbs. / 26.4 Kg Measurement Technologies, Inc. PO Box 2195 Redmond, WA 98073-2195 (425) 836-8683 / Toll Free: 877-889-8482 Fax: (425) 484-6664 Web site: www.H2ONeutralizer.com

No-Chlor[™] Dechlorination Grade





Calcium Thiosulfate 30% Solution

ACTIVE INGREDIENT	By Weight
Calcium Thiosulfate	
INERT INGREDIENTS .	
TOTAL	100%

DENSITY

Specific Gravity 1.245 Pounds per Gallon 10.40 (approx.)

WARNING: Rubber gloves and apron should be worn for prolonged or repeated contact. Safety glasses or chemical goggles recommended to avoid eye contact.

STORAGE AND HANDLING: Avoid contact with strong oxidizers and acids.

FIRST AID: Remove contaminated clothing and shoes and wash product from skin. If in eyes, flush with clean water at least 15 minutes. If irritation persists, seek medical attention.

DISPOSAL: Dispose of in accordance with applicable local, county, state and federal regulations.

SPILL: Absorb small spills on sand, earth or sweeping compound.

FIRE: Use self-contained breathing apparatus. Use extinguishing agent for surrounding fire.

Calcium Thiosulfate Solution

No-Chlor[™] Dechlorination Grade Calcium Thiosulfate Solution (CTS) is safe for the environment and is NSF Standard 60 approved through the manufacturer. CTS does not harm aquatic life, dissolved oxygen and is pH neutral.

Combining the H₂O Neutralizer[®] with CTS helps in achieving sufficient mixing and reaction time in the treatment process. This results in more efficient dechlorination, as well as a significant reduction in chemical use and cost

To neutralize one of pound of chlorine will require 0.4 gallons (4.16 LBs.) of **No-Chlor**TM Dechlorination Grade Calcium Thiosulfate Solution. Five gallons of CTS will neutralize 12.25 ± pounds of chlorine.

Description:Clear colorless solutionWater Solubility:Completely soluble in waterpH:6.5 - 7.5D.O.T. Rating:Not regulatedFire code ratings:0 - 0 - 0Oxygen scavenger:No

After opening, store solution in original container with cap closed and keep out of sunlight.

CTS Chemical Reactions

1. $CaS_2O_3 + 2 Cl_2 + 3 H_2O \rightarrow 4 HCI + Ca(HSO_3)_2$ 2. $Ca(HSO_3)_2 + 2 Cl_2 + 2H_2O \rightarrow 4HCI + CaSO_4 + H_2SO$ 3. $CaS_2O_3 + 4 Cl_2 + 5 H_2O \rightarrow 8 HCI + CaSO_4 + H_2SO_4$ 4. $CaS_2O_3 + Cl_2 + H_2O \rightarrow CaSO_4 + S + 2 HCI$



Manufactured by: Tessenderlo Kerley Phoenix. AZ 85008

Manufactured in the U.S.A.

Meets NSF Standard 60

Distributed by: Measurement Technologies, Inc. PO Box 2195 Redmond, WA 98073-2195 (425) 836-8683 / Toll Free: 877-889-8482 Fax: (425) 484-6664 Web site: www.H2ONeutralizer.com

No-Chlor[™] DeChlorination Grade Calcium Thiosulfate Solution

INSTRUCTIONS

*No-ChLOR*TM DECHLORINATION GRADE CALCIUM THIOSULFATE SOLUTION (CTS) is a premixed solution used for the neutralizing of chlorine in water discharges to the environment. By using the H_2O Neutralizer[®] with its patented lateral by-pass venturi, insures that you will achieved dechlorination of your discharge before you lose control of the water. CTS, has NSF 60 approval, which is maintain by the manufacturer of the solution. CTS does not harm the environment; independent testing shows that aquatic life is not harmed by the solution, it is pH neutral and it has no effect on dissolved oxygen in the water.

CTS can be used straight from the container and what is not used can be stored in the container for up to one year, the cap needs to be tight and stored inside out of the sunlight.

DECHLORINATION PROCEDURES

- 1. Determine the location of your discharge and make sure that you have proper drainage. If needed insert a smaller orifice ring to insure that you will not flood the discharge area. Install device, twenty foot discharge hose and diffuser.
- 2. Determine your chlorine residual level of the water being discharged into the environment. For each pound of chlorine to be neutralized, 4/10 of a gallon (51.2 oz. / 1.51 ltr.) of CTS will be required. It is wise to have 10% –15% more chemical on hand then what is calculated.
- 3. Position CTS container(s) within a few feet of the device and insert suction tube into the container. You may have to attach the tube to long wood stick so that the tube will reach the bottom of the container.
- 4. Open *Feed Solution Control Valve* in the full open position.
- 5. Open discharge valve to the full open position, **DO NOT THROTTLE FLOW BY THE DISCHARGE VALVE** control discharge flow rate by inserting a smaller orifice ring into the device.
- 6. Test discharge water for chlorine, if you still have chlorine shut down the discharge and install a smaller orifice ring to slow the discharge rate to match the strength of the calcium thiosulfate solution to the chlorine residual level (CRL).
- 7. If you have **NO** chlorine in your discharge, turn down the feed solution control valve and check the discharge. Continual to turn down the feed control valve until you get a CRL reading, then open back up the valve until you have **no** chlorine in your discharge. What you have done is balance the CRL to the calcium thiosulfate solution. This way you will only use what solution is needed to neutralize your chlorine.
- 8. If you only need a small amount of solution to neutralize your discharge you can dilute the calcium thiosulfate solution with water, you can use the super chlorinated water for this. By diluting the solution you will be able to adjust your feed solution easier when you are working in the mid range of your control valve.
- 9. When neutralizing super chlorinated water, you need to monitor your CRL of your discharge and incoming water to the device. The reason is that as you discharge the super chlorinated water, the incoming fresh water will lower the CRL, thus allowing you to adjust the feed solution control so you do not waste the dechlorination chemical. When your incoming water to the device is at the same CRL that the source water is, you have finished your discharge.

Measurement Technologies, Inc. Redmond, Washington 98073 Toll Free: 877-889-8482 / 425-836-8683

No-Chlor[™] DeChlorination Grade Calcium Thiosulfate Solution

No-Chlor[™] DeChlorination Grade **Calcium Thiosulfate Solution** (CTS)

Description	Code	Price
1.0 Gal. Container (10.4 ± lbs.)	CTS-001	\$29.95
5.0 gal. Container (52.0 ± lbs.)	CTS-005	\$99.00
55.0 gal. Drum (572.0 ± lbs.)	CTS-055	\$695.00
275 Gal. Totes (2860 ± lbs.)	CTS-275	P.O.A.

Ascorbic Acid

Granular	Price	Price/ Kg	Price / Ib.	Price / Oz.
55 Pounds (25 Kg):	\$720.00	\$28.80	\$13.09	\$0.82
		Ì	Ì	ĺ
Tablets	Price	Per Tablet	Price / lb.	Price / Oz.
VDC 140 tablet* Container:	\$579.00	\$4.14	\$22.08	\$1.38
VC Mini Tabs (500** tablets)	\$94.00	\$0.19	\$13.08	\$0.82

* Each 4oz. tablet contains 3 oz. of ascorbic acid. (13.3 tablets equal 2.5 pounds of ascorbic)

** Each tablet weights 0.23 oz., no data if binder is used. (173.93 tablets equals 2.5 pounds of ascorbic acid)

Cost to neutralize one pound of chlorine

Ascorbic Acid

2.5 pounds of ascorbic needed to neutralize one pound of chlorine:

Granular:	\$32.73
VDC Tablets:	\$55.07
VC Mini Tabs:	\$33.05
Calcium Thiosulfate Solution	
0.4 of a gallon will noutralize one pound of oblaring (5 gal container);	¢7 02

0.4 of a gallon will neutralize one pound of chlorine (5 gal container): \$7.92

COST DIFFERENCE BETWEEN ASCORBIC ACID vs. CALCIUM THIOSULFATE SOLUTION

Granular Ascorbic acid: 4.14 times higher cost VC Mini Tabs: 4.18 times higher cost Vita-D-Chlor Tablets: 6.96 times higher cost

Making the right choice in equipment and chemicals is critical in having the lowest cost dechlorination. Equipment is a one time purchase if you make the right choice and chemicals are a daily cost so you need to have the right combination. Simple devices that have no control and use the highest price chemical will have a big effect on your operating budget.

> Note: VDC Ascorbic acid tablets and granular pricing is from Pollardwater's website, dated August 15, 2008 VC Mini Tabs is from Dechlor Demons website, pricing dated 12/2007. Calcium Thiosulfate Solution pricing is Measurement Technologies, dated May 5, 2008.

Aluminum *Full Flow*[™] Diffusers





Inlet connection: Type 'D' cam lock

3M *Full Flow*[™] Diffuser *Weights only 8 POUNDS*

Requires no anchoring of the diffuser. Place in any position and just start your discharge.

5M *Full Flow™* Diffuser

Weights only 17 POUNDS



Measurement Technologies, Inc. P.O. Box 2195 Redmond, WA 98073-2195 Ph: 425-836-8683 / 877-889-8482 Fax: 425-484-6664

3x2 Chlorinating Adapter

- · Chlorinating though a 2" service connection or blow-off can easily be done by using the Chlorinating Adapter.
 - ·The Chlorinating Adapter attaches to a female 2 inch threaded connection.
 - The adapter comes with a brass test port to give the operator immediate chlorine residual test capabilities.

• The test port allows the operator to comply with the specified chlorine residual level at the point of entry into the system.

The H₂O Neutralizer[®] Feed Solution Control Valve insures that the operator will be able to chlorinate the system to whatever the specifications calls for, with the Chlorinating Adapter.

The H₂O Neutralizer[®] insertable orifice rings gives the ability to even reduce down to ³/₄ inch connections and have full performance.



Special inlet adapters are avilable for connections down to ³/₄ inch.

3x2 Chlorinating Adapter Part #: 3220



Measurement Technologies, Inc. PO Box 2195 Redmond, WA 98073-2195 Toll Free: 877-889-8482 (425) 836-8683 Fax: (425) 868-5982 www.h2oneutralizer.com / email: info@h2oneutralizer.com



Compact Range

Chlorometer Duo

The new Palintest Chlorometer Duo offers a new dimension in chlorine testing. Used in conjunction with the DPD standard method developed by Palintest, it provides a level of simplicity and accuracy unrivalled in a portable hand-held instrument.

Features

- Tests for Chlorine (DPD) 0.01 5 mg/l,
 - Chlorine HR, 1 250 mg/l)
- Robust, Waterproof, IP 67 Rating
- Available in hard or soft carry case
- Easy to use (4 intuitive buttons)
- · Ideal for routine water monitoring

Technical Specifications

Instrument Type	Dual wavelength, direct-reading colourimeter
Optics	Palintest dual LED light source optical system with narrow band wavelength filters and photodetectors
Wavelengths	530 nm
Wavelength Tolerance	± 2nm
Filter Bandwidth	10nm
LCD Display	128 x 64 pixel screen
Instrument Operating Temperature Range	0 to 50°C
Test Cells	25 mm diameter tubes
Blank/Zero setting	Held in memory or reset for each reading
Power Supply	2x1.5V 'AA' batteries. Auto switch-off setting.
Size	150 x 65 x 40 mm
Weight	200g (including batteries)



Instrument

- Narrow band wavelength filters,
 - enhanced performance
- Language Free, Universal symbol set
- Large backlit Graphics Display Screen
- Longer cell pathlength, excellent

resolution at low concentrations

Measurement Technologies, Inc.

P.O. Box 2195 Redmond, WA 98073-2195 Ph: 425-836-8683 Fax: 425-484-6664 website: www.h2oneutralizer.com



Dechlorination Equipment Comparison

e ^r ®			jector			
H₂O Neutralize	'hlorinator	ooka - liquid	er Chemical In _j)-250 diffuser	ooka - tablet	hlor Demon
3M	deC	Baz	Bak	ΓÞΓ	Baz	$D_{e_{C}}$

Style of device:	Liquid Feed			Tablet Feed			
Vacuum Induced devices	Venturi						
Lateral By-Pass venturi	Х						
Mainline venturi or orifice		Х	Х	Х			
Able to change mainline venturi or							
Orifice size	YES	NO	NO	NO			
Passive devices					Passive		
Tablet Diffuser					Х		
Tablet via by-pass						Х	Х
Dechlorination chemical used:							
Calcium Thiosulfate or							
Granular ascorbic acid	Х	Х	Х	Х			
Ascorbic acid tablets or							
Sodium Sulfate Tablets					Х	Х	Х
Operating Range:	8 - 1250	200-900	200-800	140-260	200-1250	200-800	Unknown
Vacuum	FULL	Varies	Varies	Varies			
Passive					X (4)		
Passive with pressure by-pass						X (4)	X (4)
Dechlorinate up to 4 PPM	Yes	Yes	Yes	Yes	Yes (2)	Yes	Yes
Dechlorinate Super chlorinated water	Yes	Yes	Yes	Yes	No	Yes (3)	Yes (1)
Will device chlorinate?	Yes	Yes (5)	NO	Yes (5)	NO	NO	NO
Smallest Inlet size of connection	1"	2.5"	2.5"	2.5"	2.5"	2.5"	2.5"

Liquid feed devices can use any chemical that can be put into solution however, calcium Thiosulfate, ascorbic acid and sodium ascorbate are the only environmentally friendly chemicals available at this time.

Vacuum devices differ in performance, the fixed size of a mainline orifice or venturi has a graduating vacuum as the flow increases the vacuum increases. The lateral by-pass venturi with insert able smaller orifices gives a full vacuum in all flow ranges.

- 1 Other device manufacturers using tablets do not make the claim of being able to neutralize super chlorinated water, this is because of the dissolving rate of the tablets.
- 2 This device is designed to handle up to 4 ppm of chlorine residual level, with no control of the chemical usage, if your water is less then 4 ppm you will be wasting chemical.
- 3 Manufacturer claim that this device will neutralize up to 50 ppm of chlorine residual level.
- ⁴ Passive devices operate with portion of water coming into contact with the dechlorination chemical then mixing with the main flow of water to complete the reaction, in some device this will take place out side of the device so means must be made as to hold the discharge water to allow the reaction to complete before releasing the water into the environment.
- 5 Use caution when chlorinating.

Methods of Dechlorination

Device styles

Liquid Feed devices

Liquid feed devices are able to use any powder/granular form of chemical that can be put into a solution. Each type of device creates a vacuum to draw the solution.

- Fixed mainline orifice style: Baker Chemical Injector
- Fixed mainline venturi style: deChlorinator (Romac Industries), Bazooka Liquid feed (Arden Industries)
- Lateral By-Pass Venturi: H₂O Neutralizer[®] (Measurement Technologies)

<u>Fixed Orifice/Venturi</u> design has a large mainline opening, this area must be completely filled with water before you start the vacuum and the vacuum will increase as the flow increases. This means that you have no low flow performance and once you start the vacuum you will have to monitor the discharge as your feed solution draw rate changes when the vacuum and flow rate changes. We have tested the draw rates on some devices and have found that their claims of 120 gallons per hour are only if you have about 2,000psi of incoming press, when using the control valve on a vacuum you will not get that many gallons, in our testing we could only get approximately 45 gallons per hour.

Lateral By-Pass Venturi design is a combination of a mainline orifice with insert able orifices which control the flow to assure a full vacuum at any flow range. The by-pass venturi is small and will create a full vacuum with flow as low as 8 gpm and have draw rate of 1 gallon per minute.

Tablet devices

Devices using tablet form of dechlorination are limited to two chemicals, ascorbic acid and sodium sulfate. The two tablets have a different dissolving rates.

- Tablet Diffuser: LPD-250 (Pollardwater)
- Tablet via bypass container: Bazooka Tablet (Arden Industries), Dechlor Demon (Hydro Flow Products)

Both styles of devices work in the same general principal, part of the water comes in contact with the dechlorination chemical, then that portion of water must mix with the main flow of water to complete the reaction. Not all devices will perform this reaction within the device before releasing the water to the environment.

<u>Tablet Diffuser</u> design has no control of the chemical usgae other then not load the tablet chamber full, however when you do this there is more water flowing through the device that is not coming into contact with treated water so performance goes down. Also this type of device is design to neutralize to 4ppm of chlorine residual so if you are at a low residual level you will be wasting chemical. In other words you will use more chemical then what should be used because of no control.

<u>Tablet via bypass container</u> design routes a portion of the dischagre water though a container holding dechlorination tablets, then that water is re-intorduced back into the main flow of water to complete the reaction, this type of system has a control valve on the bypass so the operator is able to control the amount of dechlorination solution is entering the main flow. This style of device will some times not allow the operater to see what is left of the dechlorination tablet chamber during the flush and if you relocate your device and the tablets are wet from the last flush and you start a new flush your tablets will disovlve at a faster rate then what is normal.



May 19, 2004

Mr. Bob Gordhamer Measurement Technologies Inc. P.O. Box 2195 Redmond WA 98073-2195

Dear Bob:

Here is our history of what we went through in finding the right equipment and chemicals that properly do the job for us in the area of dechlorination. It took quite awhile and cost to get to where we are. At this point we are very confident with our procedures.

In 2000 we began discussing the need for dechlorination of new water mains. We purchased two LPD-250 line purge dechlorinators to dechlorinate pipe line flushing discharges. Along with these we also purchased LPD dechlorination tabs (40 lb bucket) with the active ingredient sodium sulfite (Na_2SO_3). We then used the equipment properly throughout the year with unsatisfactory results. The tablets in the LPD-250 would not dissolve quickly enough to dechlorinate the treated water. Later through many different applications, we found that if we crushed the tablets and mixed a brine they were effective. But there was no delivery system available for this brine.

On July 31, 2001 our Superintendent Jerome Schoenle then purchased the Davco Associates Super De-Chlorinator Kit with the pump transfer kit. This with the pedestal base, legs, flow control panel, feed tank, connector pipe, LPD injector, and transfer kit. The captor comes in 50-gallon drums with the active ingredient sodium thiosulfate at 30% and 70% inert ingredients. This system works well but is not practical for every job. The plastic fittings are fragile and the break easy. We replaced most with brass and copper fittings. About half the jobs were on undeveloped off sites and we were unable to drive directly to where we needed to be. Because of this, transporting the 50-gallon drums of captor was difficult. We adapted to the problems and hoped to find an easier solution.

In 2002 I went to the AWWA Convention in Indianapolis. There I met Tom Lewis who had a unique dechlorination system. With the information booklets given to me, I returned to Fort Wayne and met with our Program Manager, Bob Hinga. The system appeared to be what we were looking for.

The 3-M H₂O Neutralizer system is an aluminum tube that attaches solid to the 2 $\frac{1}{2}$ pumper nozzle of any hydrant. It has a suction tube that goes to a bucket or barrel that uses ascorbic acid

SAFE CITY • QUALITY JOBS • B.E.S.T.

One Main St. • Fort Wayne, Indiana • 46802-1804 • www.cityoffortwayne.org An Equal Opportunity Employer (Vitamin C) to dechlorinate. The ascorbic acid comes in powder form, which mixes quickly. In a matter of a few minutes, the neutralizer is ready to roll.

Bob Hinga called Tom Lewis and set up a demonstration on September 24. We had two mains ready for dechlorination when he arrived. Tom demonstrated the neutralizer on the first main and I set it up on the second main without any problems. I knew right then and there that we had to get this system. With the ease of the neutralizer hook-up and the mixing of the ascorbic acid at the job side, I knew our dechlorination problems were solved.

In 2003 with our budget right, we were able to purchase two 3-M H₂0 neutralizers. It has been a year and I have yet to see any problems with the neutralizer, nor do I foresee of any possible problems. This is the simplest, most economical system for dechlorination. I do not see any way to dechlorinate more efficiently. With the easy to install formula disc, I can figure out the poundage necessary to dechlorinate a main in a matter of seconds on the computer.

I use the neutralizer all the time and have yet to have a failure at dechlorination. The Davco Super Dechlorinator is in storage for emergencies only. As far as specs for dechlorination of treated water, I would use the 3-M H_20 neutralizer for the primary specifications on dechlorination.

Sincerely. Robert Hinga

Robert Hinga Program Manager WM&S City of Fort Wayne

Patrick Lockwood New Main Technician WM&S City of Fort Wayne



April 11, 2002

COUNCIL

Stan Biles, Mayor

Mark Foutch Mayor Pro Tem

Laura Ware

Curt Pavola

Holly Gadbaw

T.J. Johnson

Jeanette Hawkins

CITY MANAGER Richard C. Cushing

Robert Gordhamer Measurement Technologies P.O. Box 2195 Redmond, WA 98073-2195

Dear Robert:

The City of Olympia would like to thank you for assisting us with our unanswered questions. Our mainline style venturi dechlorinating device was causing us quite a dilemma even after many troubleshooting field visits from the manufacturer's representatives. As you so rightly stated, it is prudent to compare product performance before making purchasing decisions. We have first hand experience that products may look similar on the outside, and may not be the same on the inside. Performance is the key.

The H₂O Neutralizer has answered our dilemma. The lateral by-pass style venturi has proved to be very effective and consistent in its performance. We found that we were unable to get that same consistent performance from the mainline style venturi product that we had originally purchased. We hope that all other utilities, municipalities and contractors COMPARE dechlorinating/chlorinating products before they purchase. We would strongly recommend the H₂O Neutralizer manufactured by Measurement Technologies, Inc. for all dechlorinating/chlorinating needs. It works.

Once more, thank you, Bob, for your assistance. We look forward to doing business with Measurement Technologies in the future.

Sincerely yours

Bill Langley, Supervisor Water Section

Vin A ine

Tim A. Tayne, Senior Water Quality Specialist



City Council City Manager City Attorney Administrative Services (360) 753-8450 (360) 753-8447 (360) 753-8449 (360) 753-8325 Community Planning & Development Fire Human Resources Parks/Recreation/Cultural Services (360) 753-8314 (360) 753-8348 (360) 753-8442 (360) 753-8380 Police Public Works

(360) 753-8300 (360) 753-8362



3628 South 35th Street

Tacoma, Washington 98409-3192

TACOMA PUBLIC UTILITIES

September 4th, 2002

Robert Gordhamer Measurement Technologies P.O. Box 2195 Redmond, WA 98073-2195

Dear Bob:

Thank you for helping the City of Tacoma improve its de-chlorination process. As you know, over the past few years, our field crews have created numerous devices to feed dechlorination chemicals into our discharge water. These different devices were not complicated, but they were difficult to operate. They relied on gravity to feed the dechlorination solution, were unable to maintain a steady flow rate, and required constant vigilance to ensure continuous operation. These difficulties limited the use of the devices and our ability to properly de-chlorinate our discharge water. Our personnel even equipped a van with solution tanks and hose fittings to help our flushing crew transport large quantities of pre-mixed de-chlorination solution to the job site. But, we were unable to use the van on many jobs because it had to be close to the de-chlorination device and some job sites were not easily accessible.

It didn't take us long to appreciate the simplicity of your device when you came to Tacoma to give us a live demonstration of your 3" unit. We eliminated many of our 'home-made' de-chlorination devices and were able to justify the cost of purchasing multiple H₂O Neutralizers. We are also using our de-chlorination van on more jobs since the vacuum created by your device can draw solution from a greater distance. Your device, with its lateral by-pass design, has been tremendously reliable in the removal of chlorine, and has performed exceptionally well under all pressure conditions. We also have the additional benefit of standardizing our practice across the department.

Again, thank you for your assistance. We are very pleased with your product.

Sincerely,

Michel V. Peloquin, P.E. Water Quality Engineer Tacoma Water

MAIN OFFICE P.O. Box 5658 Thibodaux, LA 70302 Phone: (985) 447-5764 Fax: (985) 448-0558

Byron E. Talbot CONTRACTOR, INC.

NORTH SHORE OFFICE 24288 Hwy. 190 Robert, LA 70455 Phone: (985) 419-9925 Fax: (985) 419-9833

Robert Gordhamer Measurement Technologies P.O. Box 2195 Redmond, Washington 98073

Dear Mr. Bob,

Thank you for your assistance and support with our Water Line project. We installed approximately 3 miles of 12" PVC pipe and needed a safe, effective and efficient way to Chlorinate and De-Chlorinate around 100,000 gallons of water. The H20 Neutralizer offered a great solution to our situation.

Our chlorination test passed on the first attempt, which was a great relief to all of us as we were able to save a considerable amount of time. We were also able to discharge and treat the super chlorinated water in a manner that was environmentally friendly and safe. Your instructions to our foreman helped them understand the device and its operation very clearly which in turn led to the success of this part of our project.

I would recommend your product and services to any contractor who is in need of an efficient device to chlorinate and de-chlorinate large diameter water lines. Once again, Thank You for your aid in this project and we are looking forward to utilizing this device and dealing further with your company in our future projects.

Sincerely,

Trey Shields Field Coordinator Byron E. Talbot Contractor Office: 985.447.5764 Fax: 985.448.0558 trey@byronetalbot.com

	Trey Shields Bob Gordhamer;	ng 6:58:45 AM		
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Trey Sh Byron Office: Fax: (S trey@	ields E. Talbot Contra (985) 447-5764 (985) 448-0558 (byronetalbot.com	ctor		

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