Triple O Systems, Inc., is pleased to offer a complete water treatment system, the Model TWTS-101, for any home water supply using an atmospheric holding tank fed by a well, spring, stream, lake, etc.

This system is designed to remove: iron (rust stains), manganese (black stains), sulfur (rotten egg odor), non-pathological bacteria, and turbidity caused from oxidation, making the water taste great and smell fresh.

It utilizes ozone technology, which is now being used by municipal water companies throughout the world, to assure the highest quality water possible. The system uses no chemicals, salt or activated carbon and requires very low maintenance.

The system uses a generator, equipped with a UV ozone producing light in combination with an air pump; to continuously aerate the water tank with tiny ozone saturated bubbles. The ozone bubbles oxidize common heavy metals found in well water and keeps the tank from developing a bacterial problem. These ozone bubbles also provide the pumping action to constantly circulate and filter the entire contents of the holding tank at the rate of 10 gallons per minute or 14,000 gallons per day. The result is refreshing, delicious, high quality water for all your water needs: showering, laundering, dishwashing, cooking, and yard watering.

**OZONE: WHAT IS IT?**

Ozone (O₃), one of nature’s elements, is a very powerful disinfecting and deodorizing gas consisting of oxygen (O₂) with an extra oxygen atom attached, therefore becoming ozone (O₃). When oxygen in the air is exposed to high intensity ultraviolet rays, ozone is created, as in our sun creating the ozone layer. When ozone does its job, it oxidizes by giving up and attaching it’s extra oxygen atom to any substance that can be oxidized. Once this process occurs, the ozone molecule becomes oxygen (O₂ - O = O₂). Thus, the only by-product of UV ozone is pure oxygen. In fact, ozone reverts to pure oxygen rapidly and naturally. The half-life of ozone in air is on the order of hours and when dissolved in water, on the order of minutes. Additionally, ozone dissolves over 12 times more readily into water than pure oxygen, then reverts to oxygen, providing much more oxygen in your water than could otherwise be possible. This high oxygen content of your water provides many of the benefits made possible with the Triple O system.

**THE BENEFITS OF UV OZONE:**

Triple O Systems has selected UV ozone technology for use in treating tank water because of its unique properties to:

--Control bacterial growth better than chlorine.
--Control algae growth and prevent stagnation.
--Oxidize and coagulate iron and manganese making it easy to remove via filtration.
--Remove odors associated with hydrogen sulfide.
--Provide a safe, non-corrosive level of ozone for mini municipal or residential usage.
--Leave no residue or hazardous by-products such as the bromate ion.
--Operate at low energy consumption making it very cost effective.
**HOW DOES THE TRIPLE O SYSTEM WORK?**

The system consists of a UV ozone generator with an air pump feeding compressed air through the UV light chamber and partially converting the oxygen in the air into ozone. In addition, there is a 100 square foot filter module that hangs inside the tank and contains an ozone diffuser used to create millions of tiny ozone-saturated bubbles.

The output of the ozone generator is fed through tubing that is wound up the inlet water pipe of the tank, and then down inside the tank, where it attaches to the filter and then on to the diffuser. The diffused ozone gas exits the diffuser in the form of ozone-saturated bubbles that rise up inside the filter module lift pipe. As this happens, the friction of the ozone bubbles against the water causes the bubbles to mix with and draw water through the filter and into the lift pipe. Thus, the water exposed to the tiny ozone bubbles is filtered prior to ozonation, increasing the ability of the ozone to do its job. As the ozone bubbles rise up and out of the lift pipe, they continue to rise up through the tank water, continuing the ozone adsorption process and circulating the entire contents of the holding tank.

The Triple O System thus provides continuous ozonation, filtration and circulation within your holding tank. Water delivered to your home from the holding tank is now fresh and free from most contaminants that cause staining and odors, inclusive of algae and many types of bacterial growth.

**THE BENEFITS OF THE TRIPLE O SYSTEM:**

The Triple O Model TWTS-101 conditions and treats your water using the most effective, economical and proven technology available. In addition to the obvious benefits already mentioned, there are several other benefits associated with this water system:

The high dissolved oxygen content of the water will make plants grow strong and healthy and greatly reduce the need for fertilizers. In fact, studies have shown a 30% increase in plant growth when ozone water is applied.

The same high oxygen content will make laundry sparkling white with little or no bleach. Cooking with ozonated water will allow you to create dishes with more flavor and bouquet than imagined and fruits and vegetables will have extended life when rinsed with this water.

The clean, fresh Triple O water will add a new dimension to your life in so many ways, including the ability to drink great water right from your tap, no more expensive bottled water needed.

**THE TRIPLE O SYSTEM WARRANTY:**

Triple O Systems, Inc., warrants to the original owner its Model TWTS-101 to be free of defects in material and workmanship for a period of one year. Under this warranty, and with normal use and care, all parts deemed as a manufacturing defect will be replaced at no charge to the customer. UV lamps will be prorated, as the lamp life is about 18 months. Please see the complete Limited Warranty in the Owner’s Manual for specific details.

A 3-year factory extended warranty is available at an additional cost. It includes normal replacement of 2 UV lights, and covers all working components of the system, excluding the filter. It extends the original 1-year factory warranty for an additional 2 years.

**WHO USES OZONE?**

Ozone domestic water purification has been used extensively in Europe since 1906. In the United States, a great number of municipal water treatment plants use ozone. One of the largest is the Los Angeles water treatment facility in California. Currently, there are many ozone treatment plants under design or construction and in the future, many hundreds of larger municipalities will be adding ozone to their water treatment plants.
IS OZONE BAD FOR THE ENVIRONMENT?

Ozone in the earth’s upper atmosphere is what protects us from the harmful ultraviolet rays of the sun. However, when created by and mixed with smog and carbon monoxide, ozone is a contributing factor to the greenhouse effect. In contrast, the Triple O System creates “clean ozone” which dissipates and reverts back to oxygen.

HOW LONG DOES OZONE LAST IN MY WATER?

Ozone has a half-life of minutes when dissolved in water. Half-life is the time it takes for half of the ozone to revert back to oxygen. Therefore, ozone must be generated on site and constantly introduced into the water to be effective.

PEOPLE HAVE BEEN USING CHLORINE FOR YEARS, WHY DO I NEED OZONE?

In recent years, scientists have discovered that chlorine creates harmful by-products known as THM’S that are carcinogenic. The EPA has now imposed strict standards on the level of THM’S allowed in domestic water treatment plants. Ozone is the treatment method of choice by water treatment professionals, to replace chlorine, since ozone produces no THM’S.

DO THE LARGER MUNICIPAL WATER TREATMENT PLANTS THAT USE OZONE ALSO USE CHLORINE?

Yes, a small chlorine residual is added after ozonation. Since the dissolved ozone will revert to oxygen before distribution, chlorination is used to prevent the possibility of bacterial growth in the lengthy distribution system.

WILL MY WATER SYSTEM REQUIRE CHLORINE IN ADDITION TO OZONE?

Typically, single-family dwellings and small multi-house systems do not require a chlorine residual due to the short distribution system.

IF I HAVE SURFACE WATER FROM A SPRING, LAKE OR STREAM, CAN I USE THIS SYSTEM TO TREAT BACTERIA?

Surface water is subject to fecal coliform, which includes E.coli bacteria, as well as, certain types of protozoa that can produce severe physical symptoms if ingested and is thus considered a potential health hazard. The Triple O System is UV generated ozone, meaning the ozone production is less intense than a commercial ozone system. It is considered a Class B system and is designed for supplemental bactericidal treatment. Class B systems aren’t intended for primary disinfection of microbiologically unsafe water, but are designed to reduce only normally occurring nonpathogenic or nuisance microorganisms. Equipment design features are less demanding under this class.

WHAT SYSTEM DESIGN WOULD ALLOW ME TO TREAT SURFACE WATER AND BE CONSIDERED SAFE?

Although the Triple O System will keep the tank water circulated, filtered and ozonated, the use of a UV disinfection lamp, should be applied for primary disinfection of microbiologically unsafe water. Please contact a water treatment professional for further advice.

WHEN DO I NEED A MIXER?

The in-line mixing system increases the ozone benefits by treating the well water with ozone prior to the water entering the holding tank. When the well pump is activated to add water to the holding tank, the in-line mixer automatically diverts the ozone directly into the incoming water. The mixer would be most beneficial if the well water had nonpathogenic nuisance bacteria such as coliform, or if used in conjunction with a UV disinfection lamp as noted above for surface water treatment.

WHAT SIZE HOLDING TANK IS NEEDED FOR THE TRIPLE O SYSTEM TO WORK?

Generally the holding tank should be sized at 4 times the daily water usage. In cases of severe contaminants (iron at 10 PPM or higher and manganese at 1 PPM or higher) contact Triple O for application information.
WHAT ARE RECOMMENDED MINIMUM AND MAXIMUM TANK SIZES?

The maximum size holding tank for a single system is 10,000 gallons; multiple systems should be used for larger tanks. The maximum daily water usage and the contaminant levels determine the tank size. A general rule is to size the holding tank a minimum of 4 times the daily water usage. The exception is when the contaminant levels are extreme, then the tank size should be larger to allow for the extended contact time needed for oxidation and filtration. If the water usage or contaminant levels are low, then a smaller tank can be used. It is also best to choose tanks that are tall and narrow as opposed to short and wide, as a taller bubble column is more beneficial.

WHAT TANK MATERIALS ARE SAFE TO USE WITH THIS SYSTEM?

All tank materials are compatible with the Triple O System because the lower UV ozone output will generally not corrode tank materials.

IF THE SYSTEM RUNS 24 HOURS PER DAY, WILL IT BE EXPENSIVE TO OPERATE?

One of the system’s outstanding features is it’s efficiency. The entire system consumes less energy than a 60-watt light bulb.

HOW LONG WILL THE SYSTEM TAKE TO CLEAN UP MY WATER TANK?

This depends on the severity of the water problem, the size of your tank and the daily water usage. A typical 2,500 tank will usually stabilize within one week.

HOW DO I KNOW THE SYSTEM WILL SOLVE MY WATER PROBLEMS?

Since most well water problems are caused by iron, manganese and hydrogen sulfide, it is important to obtain a water test from a certified laboratory. The test should always be taken at the wellhead for the most accurate results. Then, the tank can be sized to handle the contaminant levels, as well as, the maximum daily water usage.

WHAT COMMON WELL WATER PROBLEMS WILL NOT BE SOLVED WITH THE SYSTEM?

The Triple O System will not remove total dissolved solids such as anions: chlorides, sulfates, and carbonates or cations: sodium, and hardness minerals calcium and magnesium. Tannin problems are also resistant to being treated with this ozone system.

WILL THE SYSTEM AFFECT THE PH OF MY WATER?

If the water has an acidic pH due to carbon dioxide, the system will remove this gas and the pH will then adjust upwards into the neutral range, which the EPA considers at 6.5 – 8.5. If the chemical make-up of the water is acidic, then a buffering agent will need to be applied. Usually, water in the 6 pH range will raise to neutral, but water below the 6 pH range will need to be chemically adjusted.

WILL I NEED A WATER SOFTENER WITH THE TRIPLE O SYSTEM?

The Triple O System alters the molecular bonding capability of the hardness minerals, calcium and magnesium, so that the water acts softer. It prevents hard water deposits from strongly bonding to surfaces. However, the water will not be chemically soft. It also depends upon the level of hardness. Any time water hardness is at an extreme level, about 300 PPM or more, a softener is recommended.

WHAT KIND OF MAINTENANCE IS REQUIRED?

The UV lamp, that makes the ozone, needs replacement every 18 – 24 months as ozone production degrades over time. Every 3-6 months, the filter and diffuser needs cleaning. The filter is hosed off with a cleaning wand, provided with the system. The diffuser is dipped into muriatic acid until it turns white. Maintenance is critical to the performance and longevity of this system.

Your Authorized Triple O Dealer:
Quality Water Treatment
sales@qualitywatertreatment.com
1-866-616-7554

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My particular water problems were iron, manganese and hydrogen sulfide, high enough to not only smell terrible, but also corrode metal surfaces within my home. I had several local water treatment companies come out and propose their solutions to my problem. Solutions ranged from R.O. systems, chemical injection, filters and other assorted equipment. Each system averaged about $4,000.00. Needless to say, I was looking for a simpler, less expensive way to solve the situation. I purchased one of your Triple O systems and installed it. 24 hours later my water was clear as crystal and the rotten egg odor was totally gone. Not only would I recommend your system, I’ve already started spreading the word of the amazing results I’ve attained from your product.

Ron Smart
Granbury, TX

We have had a Triple O system installed for a week now. We have never had such clear, beautiful, great tasting water! We have tried other systems, but this one, by far, is the best. Thank you for creating this fabulous system.

Mr. and Mrs. Terry Stratton
Coeur d’Alene, ID

I wanted to write and express our appreciation for your water treatment system. We have used chlorine, potassium permanganate, and practically every carbon filter made in an attempt to remove iron from our water. We’ve replaced our white clothes many times over, our dishwasher, washing machine and toilets have all been permanently stained by iron build up. Five years ago, we installed a Triple O System to service two residences and a bakeshop. Our water is now like spring water: it’s fantastic. It is clear, there is no staining, and it is wonderful to no longer have to buy bottled water or go to the Laundromat to wash whites. Your system works extremely well to clean up our well water and I highly recommend it to anyone with similar conditions.

Don Wolf
Sierra Glen Ranch
Sonora, CA

I just wanted to let you know how much we like using your equipment and dealing with Triple O Systems, Inc. I have been a water-conditioning dealer and installer here in Santa Fe for many years. I haven’t seen any kind of treatment for sulfur and iron that works nearly as well as the Triple O System. It is simple, reliable, easy to install and easy to service. My customers love their treated water. Thanks for manufacturing such a great product.

Steve Kuckelman
Kuckelman Pump Service
Santa Fe, NM

We have a Triple O System installed at our home in a 1500 gallon storage tank. This system was installed in 2001. The results of this system is nothing short of amazing, as prior to it’s installation, we had weak tea colored water (iron) with unhealthy amounts of coliform bacteria. After the system was turned on, all the odors, bacteria and iron discoloration disappeared almost immediately. Now our water is safe and clean with a minimum amount of maintenance. Our water is so good tasting, we are always giving our guests a blind tasting test of our water, comparing the Triple O System with bottled water. They can never tell the difference. Thanks again for a terrific product.

John and Jean Holmes
Pinheurst, CA

I want you, and your potential customers, to know how happy we are to have found out about and installed your Triple O ozone water treatment system. We now have very clean, good tasting water from our well. Without your system, our water would be brown and foul tasting because of the iron bacteria. We were reluctant to buy the ozone system because of the lack of substantiated written material about it. Again, thank you very much and I will be glad to tell anyone interested about it.

Mark Fox
Watsonville, CA

Our water is supplied from a well on the property and is, unfortunately, loaded with impurities such as iron, hydrogen sulfide and manganese. We heard about the Triple O System. I must admit that I was skeptical at first. I purchased the system outright, and installed it myself. The installation was a breeze, and the system performed well past my wildest expectations. Please accept my thanks for your innovative product. It’s heartening to know that dramatic results can be accomplished by a relatively simple, cost effective and environmentally friendly method.

Al Martin
Descanso, CA

I am writing to commend you on the superb performance of our Triple O System. We installed a new storage tank and, following a neighbor’s recommendation, a new Triple O System and removed all other water treatment components. Since then, we have enjoyed water that is clean, fresh and delicious. I actually prefer it to bottled water. My wife is sure that our plants respond better to it and that cut flowers open wider and last longer. I can wholeheartedly recommend the Triple O water treatment system, as my good neighbor did for me, to anyone who has their own water source and storage facility.

Don Hoffman
Los Gatos, CA
Ozone does not need to be complicated in order to treat small water systems. A small water system consists of one or multiple households on well, spring or rooftop water. Treatment means removal of iron, manganese and hydrogen sulfide to below the U.S. Environmental Protection Agency (EPA) acceptable levels including bacterial control.

In traditional applications, ozone is produced by the corona or high voltage spark method. In order to be effective, the corona-type ozone requires dry filtered air. It’s longevity depends on this because moisture creates nitric acid, thus decreasing ozone output and corroding the equipment. A corona ozone injection system uses lots of electricity, is complex and therefore, not very reliable for the average homeowner or small system operator. In addition, applications of corona ozone must be done carefully as high concentrations of ozone literally can destroy common holding tanks and distribution systems. For these reasons, corona ozone use is recommended for large commercial applications where it can be monitored on a consistent basis.

An alternative technology has been developed using small, safe levels of ozone produced by the ultraviolet (UV) light-method. With this technology, low levels of ozone are continuously introduced into an atmospheric holding tank. If the approach to water treatment would be by injection, this method would be insufficient to perform its oxidation tasks. Since this system bubbles ozone into the tank water 24 hours a day, it not only is extremely efficient, but also cost effective due to its low energy consumption of 55 watts, lack of an air dryer and compatibility with all tank materials.

This type of system is capable of removing all objectionable levels of iron, manganese and hydrogen sulfide. In severe cases, it may be necessary to use two tanks in series and to treat each tank individually. For instance, in a water supply containing 60 ppm of iron, the iron was successfully removed using this dual tank set-up. If possible, take irrigation water off the wellhead before the tank and use the tank water for household use only.

When considering this technology for contaminant removal, it is important to know the volume of water used per day as well as the contaminant levels. Contaminant levels are best shown by a water analysis performed by an independent laboratory. Ozone readily oxidizes both iron and manganese, but will oxidize all the iron before attacking the manganese. This is a phenomenon that will affect the prescribed dosage and contact times and is another reason to have a thorough knowledge of the water that will be treated. Also, water with a high organic content, such as tannin, will adversely affect the ozone’s ability to act on inorganic material, further affecting dosages and contact times.

An additional benefit of this technology is the aeration process. A system such as this, is able to remove undesirable gasses from the water because it uses ozone in combination with aeration. For instance, when low pH is attributed to carbon dioxide gasses, which are removed in the aeration process, the pH levels are then elevated. Due to the aeration process, this system acts on all dissolved gasses contained in the water including radon and methane. Another benefit applies when a customer has an existing holding tank with no particular water problem. This system can be used to prevent stagnation, algae growth and control bacterial contamination.

This technology is also appropriate for use in surface water and/or rooftop catchment systems. Under surface water conditions, a sand filter is suggested to remove turbidity (dirt) and debris before the water enters the tank. The ozone is then able to expend all its energy on controlling bacteria. When treating surface water, it is advisable to add a primary method of disinfection as protection against pathogenic microorganisms, since you are dealing with water that is subject to fecal coliform and other primary health contaminants. When treating other contaminants in well water, such as total dissolved solids, use the in-tank ozone system before both water softeners and reverse osmosis units to keep resins and membranes clean.

Using atmospheric vented holding tanks/cisterns to apply ozone is a simple, viable, cost-effective and reliable method of water treatment for problem well water. Customers not only are expecting to have enough water supplied form their water source, but they also demand that it be of superior quality. Ozone technology can help to fulfill this expectation.

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