

Sparkling, clean water *everyday*



The Shocking Truth About Ozone

Routinely, swimming pools require a 'shock' (super-chlorination) treatment to clean (Oxidize) bather wastes from the water. Ozone is the strongest and cleanest non-chlorine shock commercially available. Ozone is produced on-site and, as the pump runs, the water is 'automatically' cleaned and purified. Using an UltraPure™ Ultra Violet (UV) Ozone Generator to provide this preventative Oxidation treatment is a key component of your safe, modern, water sanitation program.

The Menu Management Approach™ to Pool Water Sanitation

- Virtually eliminates the problems associated with chlorine-alone sanitation
- Significantly lowers overall chemical use
- Improves equipment performance
- Increases enjoyment of your pool

Modern Sanitation Menu

Alternative, effective and more natural products target the problems of a chlorine-alone workload and eliminate them in the following ways:

- An UltraPure UV Ozone Generator delivers Ozone as the primary source of **Oxidation** for the pool water.
- A sun-stable, long-lasting algaecide or mineral biocide/biostat provides backup **Disinfection** should the chlorine level dip below 0.5 ppm for a period of time.
- This leaves chlorine to provide a 1.0 to 2.0 ppm **Residual**.

With the Menu Management Approach, **UltraPure Ozone-Oxidation takes on 70% of the sanitation workload.** Algaecides, mineral products and chlorine account for only 30% of the workload, providing the remaining Disinfection and Residual.

Add Ozone First, It's Compatible, Safe and Pool-Friendly

The best, first upgrade of a chlorine-only pool water sanitation system is to add UltraPure Ozone. Ozone automatically removes non-living bather wastes; carries over 70% of the work load; and virtually eliminates combined-chlorine problems. Automation of the chlorine delivery system is recommended as the next upgrade, followed

by the addition of a long-lasting algaecide or mineral product. UltraPure Ozone works well with any type of chlorine, no matter the delivery method. It enhances the performance of most other alternative sanitation products.

No matter which Menu your pool professional chooses for your water treatment package, Ozone will make it better. Experience with UltraPure UV Ozone Generators since 1982, has taught us that Ozone safely and effectively improves pool water, while enhancing equipment performance. Ozone has no ill effects on surfaces or decks.

Guaranteed Benefits

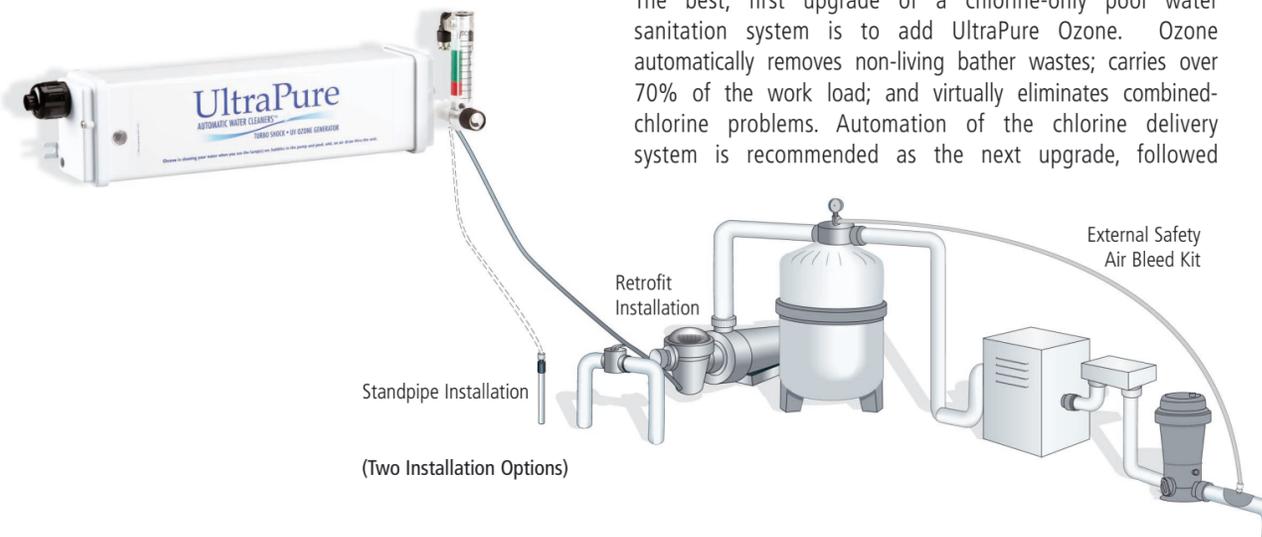
With proper installation, setup and steady bather use, we guarantee that our UltraPure UV Ozone Generator will give you the following benefits within the first three to six months or we will refund your purchase price:

- Decrease in use of chlorine by at least 50% to maintain a 1.0 to 2.0 ppm residual
- Virtual elimination of shock, specialty chemicals, tile-line 'bathtub' rings, after swimming showers, eye and skin irritation, combined-chlorine odor, discolored hair or bathing suits
- Extended filter runs with easier-to-clean filters
- Crystal clear, odor free, soft-to-the-touch water
- Easy to manage pool water chemistry and balancing
- Compatibility with any chlorine source, algaecides and minerals
- The lowest chemical use of any system

While Ozone is not a disinfectant (to kill algae and bacteria), and does not provide a measurable residual, it is the best Oxidizer for bather-waste removal. An UltraPure UV Ozone Generator pays for itself while delivering a bottled-water-like bathing experience.

UltraPure
AUTOMATIC WATER CLEANERS™
TURBO SHOCK • UV OZONE GENERATORS

Improving Your Pool Experience Since 1982



(Two Installation Options)

water everyday

Defining Pool Water Sanitation

The 3 Requirements of Pool and Spa Sanitation:

- **Oxidation** – alters or removes non-living contaminants (bather wastes)
- **Disinfection** – stops the growth of or kills living microorganisms
- **Residual** – provides a measurable, safe level of disinfectant backup

Chlorine has weaknesses when used alone to fulfill all sanitation needs:

1. Obnoxious combined-chlorine compounds are formed at running levels of 1.0 to 5.0 parts per million (ppm). 'Chloramines' (chlorine + ammonia from perspiration and urine) cause bad odors, eye and skin irritation. Chlorinated organics (chlorine + body oils, suntan lotions, cosmetics, etc) cause filmy water, clogged filters and 'scum lines'. Only shock, specialty chemicals, and hard work can remove them. Over 70% of the chlorine added to a pool is used up and 'wasted' forming these unwanted combines.
2. Sunlight destroys chlorine's disinfection ability, accounting for another 10+% of usage. When the residual falls below 0.5 ppm for 1 to 2 days, algae blooms can occur.
3. 'Overuse' leads to health and environmental issues and affects pool finish and equipment longevity. Minimizing chlorine use helps protect bathers, the environment and your pool.



Ozone, the most powerful continuous non-chlorine shock-treatment (Oxidizer) automatically:

- produces the purest water
- minimizes chemical usage
- lowers maintenance time and costs
- improves equipment performance
- extends the life of the pool
- enhances all sanitation combinations

Superior suction-side Ozone injection; **DIAL-A-FLO** fingertip airflow control; and, an indicator light are trademarks of our market leadership.

www.waterquality.net

How An UltraPure UV Ozone Generator Works

Installation and Operation

The unit mounts near the equipment pad, is connected to the pump power source, and draws 1 or 2 Amps. To create an air draw through the unit, the Ozone tubing is connected from the **DIAL-A-FLO** meter on the unit to the pump basket (retrofit), **or** a builder-installed standpipe (pre-plumbed) on the suction side of the pump. A second tube is connected from the top of the filter down stream and past all the equipment to remove air from the filter. The blue lamp(s) come(s) on automatically when the pool pump is operating and the air draw is set so the ball is in the green zone of the **DIAL-A-FLO** meter. Ozone is cleaning your pool water when you see the blue lamp(s) on; bubbles in the pump and pool; and, an air draw through the unit.

Basic Science and Chemistry

Ambient air is drawn over quartz short wavelength Ultra Violet (UV) lamp(s) by the suction from the pump. A portion of the oxygen (O₂) is turned into Ozone (O₃). The air-Ozone mixture is drawn into the pump and turned into small bubbles by the impeller. A low 1:50 air-Ozone to water ratio causes no harm to the pump and has very little effect on the water flow rate.

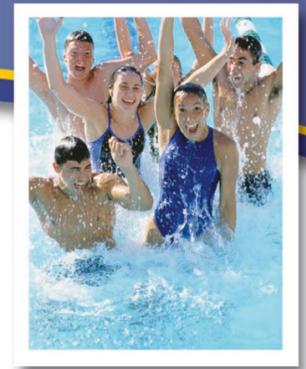
Ozone is driven into the water by the pressure in the pipe between the pump and the filter. The filter acts as an Ozone reaction-vessel. The air, with a very small amount of active Ozone, is taken off the top of the filter and

sent to the pool through the returns. The 'Champagne bubbles' you see returning in the pool are air and are not hazardous to the environment or the pool equipment.

Ozone is extremely reactive and is used up in the filter and in plumbing on the way back to the pool. As the water passes through the filter, debris is removed and Ozone breaks down and/or alters the bather wastes. Water then returns to the pool free of debris and with virtually no non-living bather waste.

Bather wastes are made up of oil and grease molecules from lotions, body oils, etc., and ammonia byproducts from perspiration and urine. Ozone breaks apart the organics and the fragments 'volatilize' into the air while ammonia is altered. Therefore, neither can join with chlorine to form obnoxious, foul-smelling compounds.

All of the benefits of Ozone are the result of continuous, effective oxidation of bather wastes. With their removal, a small amount of chlorine and algacides or minerals provide a residual and become the disinfectant in the pool water. Ozone is, in effect, a continuous non-chlorine shock treatment for the pool water. As such, it prevents combined chlorine compounds from exceeding 0.5 ppm, as measured by the difference between total and free available chlorine.



Please contact us for additional articles and write ups on Ozone Water Chemistry; Salt Chlorine Generators, Menu Management for Water Sanitation, Ultra Violet (UV) versus Corona Discharge (CD) Ozone generators and Ozone in Spa Applications.

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