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## Laguna Sanitation Waste Water Treatment - U.V. Technologies

### ULTRAVIOLET & DNA

Ultraviolet light; energy found naturally in sunlight, is within the electromagnetic spectrum. The range between 200 - 300 nm is known to be germicidal (lethal to microorganisms). By disrupting the reproductive mechanism (DNA) of bacteria, viruses, yeasts and molds, the organisms are inactivated thereby eliminating them as agents of disease, spoilage and biological growth.



To avoid continuous process changes by using chemicals other than chlorine, many agencies are searching for a non-chemical means of dechlorination. The solution is the special high energy ultraviolet system. This cost effective process reduces free chlorine levels up to 99% in a single pass.

Commonly used in beverage, pharmaceutical, semiconductor and food processing, AQUIONICS UV is found in a wide variety of fluid processes to destroy pathogens and spoilage organisms. Other installations include potable water, wastewater discharge and re-use, aquaculture and any operation that requires quality control for eliminating microbial contamination.

For water treatment applications, the UV dose which corresponds to system performance is determined not only by the flow rate, but also by the water quality in terms of ultraviolet absorbing constituents such as organics, turbidity, and color. As the UV transmission (penetration) decreases, additional UV energy is required to provide satisfactory treatment.

The primary benefit to using ultraviolet light for disinfection is the fact that it is non-chemical. UV adds nothing to the water or air and does not chemically alter the structure of the treated fluid or product. As opposed to chemical disinfection techniques which involve handling of hazardous materials and reactions which produce toxic by-products, UV offers an alternative which is successfully practiced without any negative consequences.



	Ultra Violet	Chlorine	Ozone
Capital Cost	Low	Lowest	High
Operating Cost	Lowest	Low	High
Ease of Installation	Excellent	Good	Poor
Ease of Maintenance	Excellent	Good	Poor
Cost of Maintenance	Lowest	Medium	High
Frequency of Maintenance	Infrequent	Frequent	Continuous
Control System	Excellent	Poor	Good
Disinfection Performance	Excellent	Leaves some pathogens	Excellent
Hazards	Low	High	High
Effect on water	None	Organochlorine compounds, taste 7 pH changes	Unknown
Contact time	0.5-5 seconds	30-60 minutes	10-20 minutes