

How can liquid ozone be used in different industries?

WATER TREATMENT SYSTEMS AND PLANTS:

- Pre-oxidant, pre-disinfectant, coagulant aid, and biofilm remover.
- Effluent disinfection.

ULTRA-FILTRATION SYSTEMS

- Removes pathogens that foul the membrane.
- Anti-scalant.

COOLING SYSTEMS AND COOLING TOWER

- Disinfection, control scaling, corrosion and micro-bio-fouling.
- Eliminates Listeria
- Removes sulfuric acid in wet scrubbers



AGRICULTURE APPLICATIONS

- Pre-harvest, Post-harvest, pre-packaging of animal protein
- It can be used in post-harvest operation to increase shelf life and kill bacteria on the surface.
- It can be sprayed on plants to improve growth and output.
- It can be used in the irrigation system to prevent drip systems from plugging and scaling.

POWER GENERATION

- It can be used to reduce greenhouse gases (Sox, NOx and carbon dioxide).
- It can be used to improve heat transfer rate on condensers and cooling towers.



PETROLEUM PROCESSING (OIL & GAS EXPLORATION, REFINING)

- It can be used in wet scrubbers to remove hydrogen sulfide in gas and oil production.
- Breaks down oil



WASTEWATER SYSTEM AND TREATMENT PLANT

- It is effective at killing all pathogens while being a green product.
- It does not create toxic by-products when reacting with organic matter.
- It will help improve and maximize the disinfection system.
- Very effective in reclaimed water treatment processing.

FRUITS & VEGETABLES INDUSTRY

- Hydrocoolers
- Quicker Process, Higher Safety & Hygiene
- Increase Transit & Shelf Life
- Reduce Transit Spoilage
- USDA & GRAS Confirmation



IN WINE & LIQUOR INDUSTRY

- Increases Productivity
- Reduces Rejections & Spoilage
- Increases Shelf life
- Higher Safety & Hygiene
- Raw Water

Wine & Liquor industry can have diversified sources of water, which needs to be treated & disinfected for general usage & production. Ozonation at the entry level oxidizes organic impurities, removes any presence of color & Odor & quickly disinfects the raw water. A Distinct advantage is that post treatment excess ozone reverts to natural oxygen without any effort & disinfectant by-products are harmless and treatment is environmental friendly.

IN DAIRY

- Raw water treatment
- Centralized & local process Water treatment
- Clean-In-Place
- Surface & Equipment Sanitation
- Bottles | Cans | Tanks - Disinfection & Sanitation



IN FISHERY & AQUACULTURE

- Oxidation of organic matter
- Precipitation of dissolved matter
- Micro-flocculation of organic matter
- Destabilization of colloidal matter
- High Degree of Disinfection
- No disinfectant by-product
- Ozonated Ice for Frozen Sea Food Transport & Export



OZONE IN HOTELS, RESORTS & HOSPITALITY

Fruits, Vegetables, Meat, Chicken, sea food washing & Rinsing

Fruits, vegetables, meat, frozen food, seafood are generally not disinfected when they arrive at hotels and resorts. Also during process, transport, and storage they get contaminated. Major issues are spoilage, cross contamination & pesticides.

Ozone is a very powerful and fast acting oxidizer for all fresh, frozen and sea foods.

In March 1975 USDA & FDA recognized ozone treatment in Good Manufacturing Practices and in June 1997 ozone was declared generally recognized as safe (GRAS) and can directly come in contact with any food product, including seafood and meat.



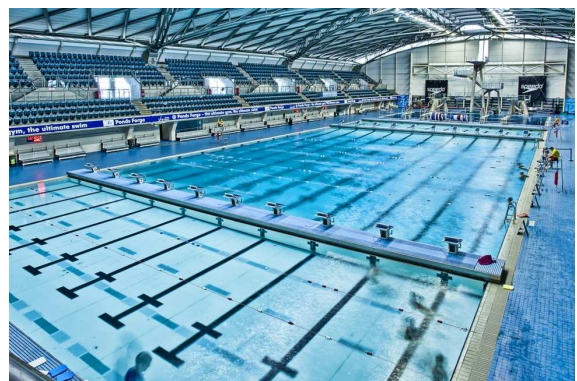
DRINKING POTABLE WATER, ICE MAKING & BEVERAGES

Ozone is proven, widely accepted and environmentally friendly means of sanitization used for drinking water and food related applications. It has the ability to rapidly kill virtually all microorganisms including bacteria, viruses, fungi, yeast, algae, mold, parasites and other known sources of food borne illness.

Ozone kills pathogens more broadly than chlorine or any other chemical sanitizer and at the same time it eliminates odors. The use of ozone in the beverage industry can be attributed to process and downtime improvements more than cost savings. In the wine and beer industries, ozone is very attractive due to the sensitive nature of the final products. Ozone is very attractive as there is no residual left behind by the sanitation process to alter the flavor of the wine or beer.

SWIMMING POOL

- Ozonated pool water is very safe to swimmers. It does not give skin itching & eyes, hair fall, eye reddening and teeth bitterness.
- It works on wide pH range of water.
- Liquid ozone is more reactive and much faster than chlorine.
- It does not create harmful by-products, so called disinfectant by-products [DBP's].



- Like ozone gas, it oxidizes organic impurities presents in water with swimmer's urine & sweat.
- It removes color & odor in pool water.

OZONE IN TEXTILE WASTE WATER

- Color Reduction Sludge Reduction
- Water Recycle, Reclaim, Environmental Friendly
- Zero Discharge

Textile, dyeing & printing industry waste water is a colored effluent with high COD & BOD. In many countries, it is prohibited to dispose colored & high COD water in common effluent treatment plants. Ozone is applied in textile effluent for color removal or odor reduction either in primary stage or tertiary stage of effluent treatment plant.

Ozone has unique property of treating multiple pollutants in the waste water because it is effective on reducing color, odor, organic impurities, microorganisms, COD, BOD, heavy metals, colloidal etc. In primary stage treatment it works two ways; it breaks the chemical bonds of color pigments to settle very efficient. A well-designed ozone integration can significantly reduce the capacity of secondary stage. This is return reduce capital cost, operational cost, plant foot print, color from waste water & time. When textile waste water is required to be recycled and to be reclaimed, ozone is very effective. Recycling of textile waste water generally uses stages like coagulation, flocculation, biological, micron filtration, ultra-filtration & reverse osmosis. Using ozone in this loop increases the performance & life of other components in recycling scheme.

OZONE IN INDUSTRIAL WASTE WATER:

- Tertiary Disinfection, Enviromental Friendly
- Enhance Biological Treatment
- Advance Oxidation Process [AOP]

All effluent treatment plant has primary secondary & tertiary stages as a part of the scheme. For high efficiency & polishing ozone is used in tertiary stage of ETP here ozone effectively reduces color, odor, COD, BOD & microorganisms.

