

AOP

AOP

OZONIA

ADVANCED OXIDATION PROCESSES

# APPLICATIONS

## BE RADICAL... FOR THE ENVIRONMENT

### Prospect of a sustainable water management

Water is a unique resource that cannot be substituted by alternatives, it requires care and conservation. Unfortunately, from the deterioration of our natural water reserves to its intensive use for industrial purposes, water is subject to ever increasing pressures that affect its quality and the equilibrium of our ecosystem. For over 20 years Ozonia has been improving water quality by developing ultra-efficient “green” technologies for all applications involving oxidation and disinfection processes.

### Advanced Oxidation Processes (AOP)

State-of-the-art AOP systems developed by Ozonia use or combine three proven treatment technologies (Ozone, UV, Hydrogen Peroxide) to create hydroxyl radicals, the ultimate oxidant for elimination of organic pollutants.

### AOP combinations provided by Ozonia include:

- $O_3$
- $O_3$  / UV
- $O_3$  /  $H_2O_2$
- UV /  $H_2O_2$
- UV /  $O_3$  /  $H_2O_2$

## MUNICIPAL & INDUSTRIAL WATER MANAGEMENT

### Limit the pollution discharge into the environment

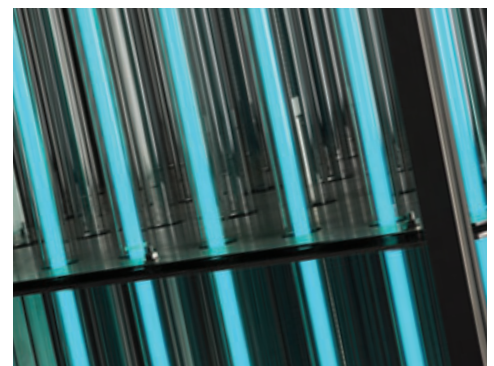
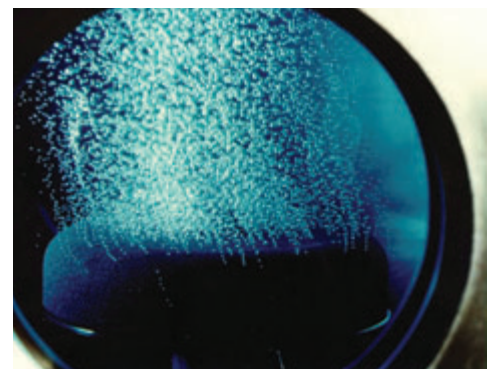
Due to industrial and demographic pressures, the use of AOP's in water treatment is expanding for a number of critical uses including the oxidation or removal of:

- Industrial chemicals
- Pharmaceuticals
- Endocrine Disrupting Compounds (EDC's)
- Personal Care Products (PCP's)
- Pesticides
- Toxic compounds
- Odor, color and taste
- Pathogens
- Persistent organic matter

Urban waste waters are increasingly contaminated with organic substances such as biocides, endocrine disruptors (EDC's), personal care products (PCP's), pharmaceutical products, fuel additives, and other emerging contaminants. These contaminants are known threat for aquatic ecosystems and human health and have become a major issue for water utilities around the world.

Current treatment practices in existing waste water plants struggle to eliminate these pollutants and meet current and future regulations. AOPs, thanks to their high oxidation potentials, have proved to be the most efficient solution for the removal of these persistent organics

## THE ULTIMATE SOLUTION FOR POLLUTANTS REMOVAL



## EXPERTISE

### Leader in oxidation technologies

With more than 20 years of experience in the development of ozone and UV technologies, Ozonia is the global leader in the application of oxidation alternatives. Ozonia designs and manufactures the widest range of Ultraviolet, Ozone and AOP systems incorporating the most sophisticated electronics and lamp technologies available, to develop tailored solutions meeting the needs of the industrial and municipal markets.

### Client Partnership

Ozonia's experts will help you to define the optimal solution for the treatment of complex multi-polluted waters.

In partnership with clients, Ozonia applies its knowledge in the field of disinfection and oxidation processes to achieve the best overall answer to meet your treatment requirements safely and economically. Ozonia maintains extensive laboratory resources in Europe and North America as well as mobile AOP pilot plants for on-site testing. Ozonia is in a position to demonstrate the advantages of clean oxidation technologies.

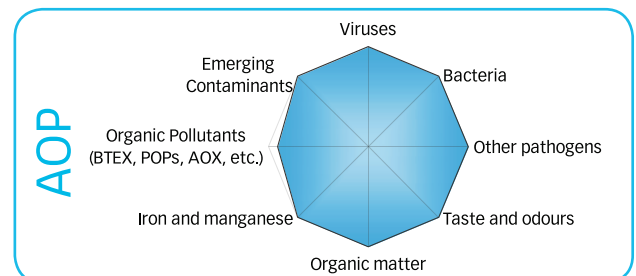
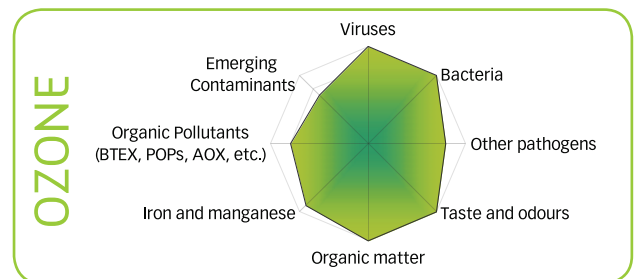
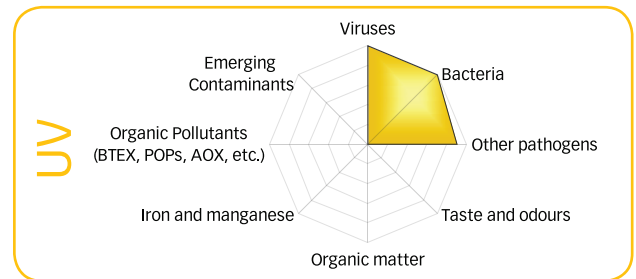
## HOW DOES IT WORK?

### Generation of Hydroxyl Radicals

AOP are aqueous phase oxidation methods consisting of highly reactive species used in the oxidative destruction of target pollutants. AOP creates a more powerful and less selective secondary oxidant, hydroxyl radicals, in the water.

This secondary oxidant can cause the oxidation of most organic compounds until they are fully mineralized as carbon dioxide and water. The hydroxyl radical has a much higher oxidation potential than ozone or hydrogen peroxide and usually reacts at least one million times faster, thus leading to a smaller contact time and footprint.

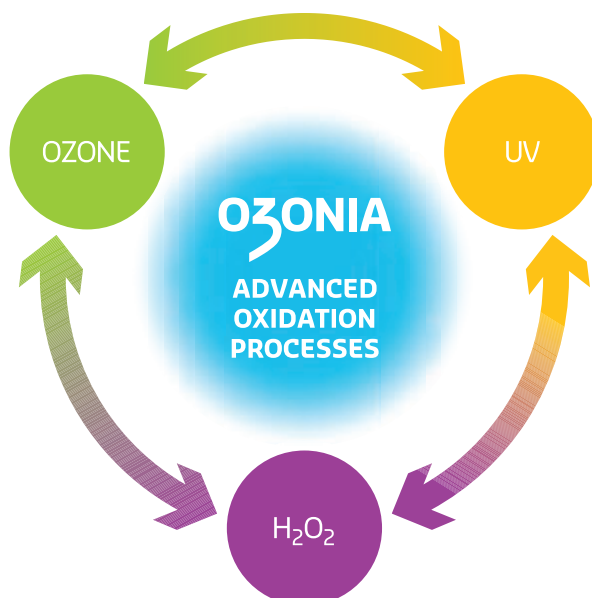
# "THE MOST POWERFUL OXIDANT"



## TARGET POLLUTANTS

- > 1,4 Dioxane
- > MTBE
- > NDMA
- > Atrazine
- > Diuron
- > Diclofenac
- > Carbamazepine
- > Ibuprofene
- > Hormones
- > Geosmin
- > MIB
- > ...

# "Complex Problems Require Radical Solutions"



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