BXA Innovation inc

Technology, Innovation, Expertise

OXYLYS

APPLICATION NOTE

BXA19-02

DIRECT OR INDIRECT DISINFECTION

Water disinfection is a sensitive subject that must be taken very seriously in order to avoid microorganism's explosion in aquatic environments (drinking water, streams ...). Although the legislation in this area is quite strict, it is not necessarily applied in all circumstances as demonstrated by many studies.

It is therefore vital to provide new answers to limit this phenomenon, which is not limited to water treatment plants! Industries are thus the first to be able to show the example to follow for our habitat preservation.

In this sense, BXA innovation has used its knowledge to develop equipment that is more efficient than those on the current market and that will meet environmental demands.

Water to be disinfected in E. Coli; Legionellosis; Enterococcus; Staphylococcus; Streptococcus; Total and fecal coliforms; etc.

- Wastewater treatment plant (after treatment)
- Industrial
- Cooling water
- Pools and Spas
- Farms
- Drinking water
- Wastewater

WHAT IT IS CURRENTLY

The market for water disinfection (industrial and domestic) is closed to innovation, which benefits technologies such as UV or Ozone. These technologies, which dominate the market, have demonstrated real efficiency, but can become inoperative under certain conditions. Indeed, it is necessary to know that the UV are fully effective only if the water is perfectly transparent. Otherwise, it will be effective only on the first layers of water near the source of radiation, which means that the water will not be completely disinfected. It is not forgetting also the lifespan of the lamps, that it is necessary to change frequently.

The installation of ozonation system can be complex and does not correspond to all industrial environments. The interaction of the oxidants generated by this system with the facilities present must also be taken into account to ensure that there will be no degradation by free radicals.

The chlorination process can be implemented under few circumstances, such as for drinking water to ensure that the micro-organisms present in the water are inoperative, but this type of process is prohibited by the Ministry for disinfection water released into the wild.

OXYLYS, BXA INNOVATION TREATMENT SYSTEM

In a very closed field, BXA has developed a system based on electrotechnologies that have already proven themselves in many other countries and are used in particular for the ballast water of ships at sea. an electric current between electrodes or circulates the water to be treated. This electric current, will generate electroporation in the cell membranes of microorganisms and thus lead to their death. The advantage of this technology compared to UV radiation is the maintenance of efficiency regardless of the transparency of the water (turbid). The use of electrode is also a big advantage since they have a life span of about 5 years, against a few months for UV lamps, less maintenance to predict. In addition, the equipment is compact to best meet the space limitations.

Finally, this system can be easily adapted to produce active chlorine that can be used for indirect disinfection of pool, spa, cooling tower or even drinking water! The electrolytic cell uses common salt combined with water and electricity to generate high performance disinfection chemistries, eliminating the need to transport and store hazardous chemicals.

The system produces oxidant solution, on-demand using only salt, water and electricity. This process offers customers safe, effective, maintenance-free, water treatment.

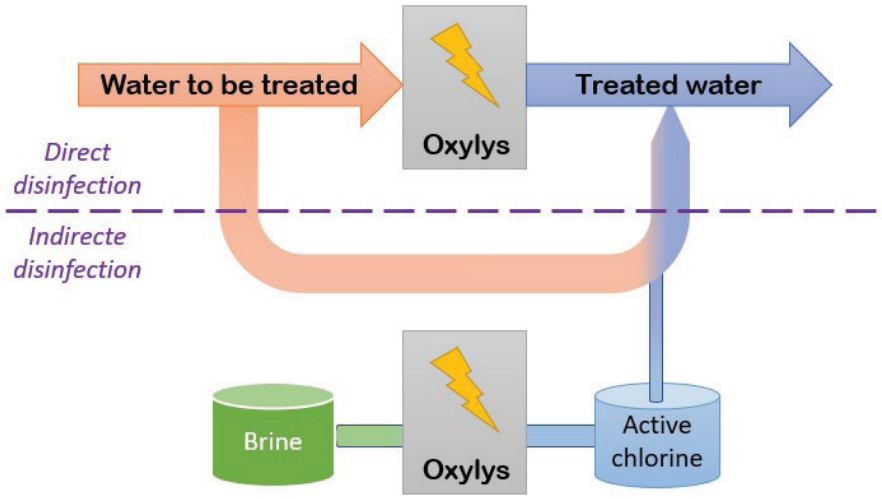

Figure 1 : Schematization of the two disinfection processes developed by BXA innovation

The production of active chlorine can be done via a small system that can produce ready 25g of free chlorine per hour (the equivalent of treating about 12 000L of water per hour with a dosing pump allow adjustment of the chlorine level as required.). A larger unit allows to produce 120g / h ready or the equivalent of 60 m^3 / h.

This process allows more rapid and thorough inactivation of a wide range of microbial contaminants and better control of legionella and biofilm.

EXAMPLE OF TESTING

Treatment plant water treated and ready to be released into the environment was collected, analyzed and then treated. The results are shown in Table 1.

	ENUMERATION OF COLONIES (UFC/100ML)		PERCENTAGE OF ABATEMENT
	Before	After treatment	
E. Coli	3500	10	99,71
Total coliforms	64000	10	99,98
Pseudomonas Aeruginosa	1000	10	99,00
Enterococci	150	10	93,33
Staphylococcus aureus	100	10	90,00

Table 1 : Enumeration of bacterial strains present in treatment plant treated water, before and after treatment via an Oxylys treatment system (* in red, values are lower than indicated).

These results demonstrate the effectiveness of the system in treating contaminated water with different bacterial strains.