

## LEGIONELLA

### How to prevent it and fight it

**Legionella is a micro-organism that is widely spread in nature, where is mainly associated with the presence of water either from rivers, lakes, reservoirs or for human use when it flows out from our faucets.**

Today, the infections caused by Legionella are a serious problem and concern due to the ever-increasing presence of bacteria in the hot water of our homes, hotels, campsites, swimming pools, hospitals, nursing homes, and in any situation where the water temperature is at least 25°C. But not only ... High and dangerous concentrations can be detected even in air conditioning units made up of cooling towers, evaporative coolers or air humidifiers.

In fact, bacteria enters the body through the airways by inhalation or aspiration of aerosols. The smaller the water drops the greater the amount of germs that can easily reach the lower respiratory tract, especially the lungs.

Aerosols can come from various sources: the opening of a water tap or shower of a contaminated water system, whirlpool bathtubs and swimming pools; Turkish baths and sauna; ornamental fountains especially if placed indoors; garden irrigation systems, sanitary wastewater, cooling towers and evaporative coolers, and air-conditioning systems in general.

The latter create in the places in which they were installed a veritable legionella hazard if the appliances are not subjected to regular maintenance. It is necessary to provide appropriate prevention measures for regular monitoring of air conditioners and proper maintenance of the latter. It is also essential to provide for regular cleaning and sanitizing of equipment and installation of filters, at the beginning and at the end of the air duct, in order to preserve the internal components of the system. In this regard, Facot recommends the sanitizing products CLIMANET and CLIMASAN, ideal for mitigating and removing legionella bacteria according to the regulations in force, as provided by law 155 on H.A.C.C.P.

CLIMANET Spray (Fig. 1) with foaming-cleansing action for the treatment of flaps of air conditioners and fan coils, fin coils, internal and external parts; CLIMASAN Spray (Fig. 1) as sanitizer-deodorant (pleasantly scented), germicidal-antibacterial activity, specially designed for air conditioner filters, car filters, etc.

You can also use CLIMANET in the concentrated liquid version, with cleaning action degreasing, dilute with water to 1 – 5% and spray directly on the surface to clean through special foam nozzles; or CLIMANET FILTRI, specifically formulated for cleaning and sanitizing industrial filters of air conditioning systems, but also fume hoods of bars, community centres, restaurants, as well as for removing grease from PVC tarpaulins, covers, motor vehicles, etc.

Fig. 2 – Stabilized solution

of Chlorine Dioxide WL-SANIFAST

Fig. 3-WL-SANIFAST size A + B of 250 ml

In water systems, it is always good practice to provide, along with proper and careful maintenance, an appropriate disinfection treatment in order to guarantee the achievement of qualitative parameters adapted to current requirements, in compliance with the provisions of law, in particular Legislative Decree n. 31 of February 2, 2001.

Given their size, bacteria can penetrate very easily in our hydraulic systems, often aided by tiny insects very mobile and able of getting in. Once into the system, they tend to move on all surfaces of vessels and pipelines, regardless of the materials of which are made of, although some studies show that Biofilm (ecological niche that represents for opportunistic pathogenic bacteria an excellent shelter and source of nourishment) grows faster than inside plastic pipes compared to metal tubes, since microorganisms consume the nutrients present in the organic content of the material that makes up the pipe itself.

Stabilized Chlorine Dioxide solutions WL-SANIFAST (Fig. 2 and 3) are a powerful and effective broad-spectrum bactericide, virucide, fungicide agent, oxidizing agent able to neutralize even sulphates and other harmful or toxic substances.

WL-SANIFAST is a stable product, safe when used in accordance with the instructions of activation and use, and represents a valid alternative to chlorine or hypochlorite, as it does not have the disadvantages arising from their use. Unlike the latter, this product does not release bad odours, has an excellent residual activity and, most of all, does not act by chlorination but by penetrating the cell wall of bacteria and eliminating pathogens. It is much faster than traditional systems such as glutaraldehyde or quaternary salts, is stable in a wide pH range, able to attack and disrupt the Biofilm; it does not produce known halomethanes, and has the advantage, unlike chlorine, of not being volatile at high temperatures.

Chlorine dioxide is recognized internationally as a purification agent for drinking water and therefore able to neutralize even the *Vibrio Cholerae* (cholera) plus many other microorganisms.

The concentrations to use vary depending on the type of disinfection needed and the degree of contamination of water (see table Fig. 4).

The sanitizing treatment may provide an initial shock treatment during which the two-component product (most active ingredient) to be mixed by 50:50 on the spot at the moment of use, is circulated at high concentrations within the hot water circuit for at least 3 – 5 hours. Once the system has been sanitized

and you have checked for the absence of bacterial load, measured in Colony Forming Units per ml of water, proceed with maintenance treatment by means of a metering system with dual peristaltic pump for continuous mixing and dosing of chlorine dioxide (Fig. 5). The dosage, which can be verified at several points of the system through appropriate analysis kits for chlorine dioxide, must range from 0.2 – 0.4 ppm, taking care not to exceed the concentration of 0.5 ppm (legal limit).



Fig. 1 – Sanitizing detergent CLIMANET Spray and deodorant CLIMASAN Spray



Fig. 2 – Stabilized solution of Chlorine Dioxide WL-SANIFAST



Fig. 3-WL-SANIFAST size A + B of 250 ml

Main microorganisms	Concentration ppm (parts per million) or mg/l	Contact time
<i>Aspergillus fumigatus</i>	200	60 seconds
<i>Bacillus cereus</i> (spore)	200	5 minutes
<i>Escherichia coli</i>	100	30 seconds
<i>Legionella pneumophila</i>	25	60 seconds
<i>Pseudomonas aeruginosa</i>	500	10 minutes
<i>Candida albicans</i>	100	60 seconds
<i>Salmonella Tiphimurium</i>	100	60 seconds
<i>Streptococcus faecium</i>	100	60 seconds
<i>Staphylococcus aureus</i>	93	60 seconds
<i>Salmonella choleraesuis</i>	500	10 minutes
<i>Canine parvovirus</i>	500	10 minutes
<i>Proteus vulgaris</i>	100	60 seconds

Fig. 4 – Report on the antimicrobial efficacy of chlorine dioxide



Fig. 5 – Chlorine Dioxide dosing system SANIFAST SYSTEM

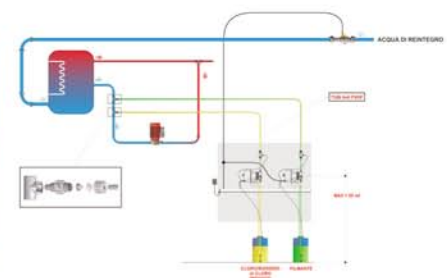


Fig. 6 – System layout