Swiss Aqua Technologies SK s.r.o.
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Argumentation of antibacterial impact for IPS Premium by Swiss Aqua Technologies Ltd.

Silver & water:

Impact of silver potentially prevents the formation of bacteria and algae, and also their growth in the filters, so the filters can fulfill its function - to get rid of bacteria, odors, particles, chlorine, lead and trihalomethanes from drinkable water. Silver along with oxygen acts as a powerful sanitizer which is a very good alternative to other disinfection system (potential replacement for chemicals).

In fact, silver ions are also added to the water purification systems in hospitals, in community treatment plants and spa. **Silver also removes bacteria that cause Legionnaires' disease (Legionella) which might accumulate in the pipes, water supply and reservoirs.**

Properties of silver:

It is well known**, that the active silver ions effectively interfear and destroy the cell wall of bacteria even at the low concentration, as a single silver ion is capable of dealing with trillion cells of bacteria.** The antibacterial property of SILVER is probably the most important and valuable feature to the human kind.

Interesting historical facts:

Silver was known as bactericidal until the end of the 1800s, but its use in the cleaning has been known for ages. It was found that children who were fed with silver spoons were healthier than other children. Further, for instance, silver pacifiers have found wide use in America. Also in the ancient medicine, were used silver powders and tinctures. It was well known that, physicians could avoid blood poisoning after application to a wound. **In the past, when the black death progressed, people used exclusively silver cutlery to avoid infection.**

The impact of Silver on each structures of microorganisms:

Silver ions, forms clusters by numerous cell components of bacteria consisting of oxygen, potassium, sulfur, etc. These atoms are present in many parts of cells such as proteins, enzymes and DNA / RNA. Thanks to that, silver is effective in several places and causing an interruption of the life cycle of bacteria.

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Silver ions and their impact on enzymes:

Cells of microorganisms, contain a large number of functional proteins - enzymes. Enzymes perform specific functions, such as. inner nutritional transport into the cell or out of the cell. **Silver ions penetrate into the microorganisms, bind onto these enzymes and disrupt its transport capabilities which are necessary for life.**

Silver ions and their impact on the proteins:

Silver ions do not affect only the functional protein, but the structural proteins as well. Both types of proteins are localized in the cell membrane, and aslo in the plasma. Silver Ions adjusts the structural firmness of the cells of microorganisms. As a result of that, there is the loss of essential components of the cell, ultimately leading to the demise of the cell itself.

Silver ions and their impact on the cell membrane:

Silver ions disorganize structure of the membrane, and lead to loss of outgassing esencial ions such as sodium and potassium. This induced imbalance leads to extinction of the microorganism.

Silver ions and their impact on the cell wall:

The membrane forms a protective cell wall. Silver ions induces a changes in the molecular level, which directly affect the vital resistance and functionality.

Silver ions and their impact on the nucleic acid:

Silver ions react with a base of DNA / RNA of micro-organism and its genetic information. The result is immediate disorder of the division and multiplication of the micro-organisms.

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20.3.2017

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