



Treating poultry drinking water with chlorine dioxide

Vibrex

Why should poultry drinking water be treated?

Water is an integral part of all physiological functions, especially digestion and nutrient absorption. As such, poor quality water can have a significant impact both economically and for the health of the bird.

The water the birds drink is often contaminated with a range of harmful pathogens. Over time these pathogens organise into biofilm, which is a protective layer that allows the microorganism to reproduce and better defend themselves against attack.

The biofilm then becomes entrenched, which ultimately leads to the birds consuming water that is infested with harmful microbes that inhibit their growth and increase the risk of disease (such as avian influenza).

Figure 1: Poultry drinking water. The quality of the drinking water has been shown to have a significant impact on the growth rate and general wellbeing of the birds.

How can the quality of poultry drinking water be improved?

The quality and safety of poultry drinking can only be improved by eliminating the biofilm that is inevitably present in untreated, static water. Removing the biofilm is crucial as it protects harmful pathogens (like the avian influenza virus) from damage and allows them to proliferate. Commonly utilised sanitisers like hypochlorite aren't effective at removing biofilm as they only attack the external surface.

Chlorine dioxide is different however, as it is a gas that is dissolved in water. This means that it can penetrate through the biofilm and attack the base of the structure, which results in the destruction of the whole matrix.

It is also highly selective, so it will only react with organic material and not nitrogenous compounds. Consequently it will leave a residual within the water for a long period of time, ensuring that the birds remain healthy and free of disease.



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How is chlorine dioxide applied?

Chlorine dioxide can be administered to poultry drinking water in one of two ways. The first is by mixing up a chlorine dioxide solution manually and adding it to a storage tank. This method is more suitable to trialling purposes as it is labour intensive. The second is completely automated, with a dosing system delivering a controlled amount of chlorine dioxide into the bird's drinking water.

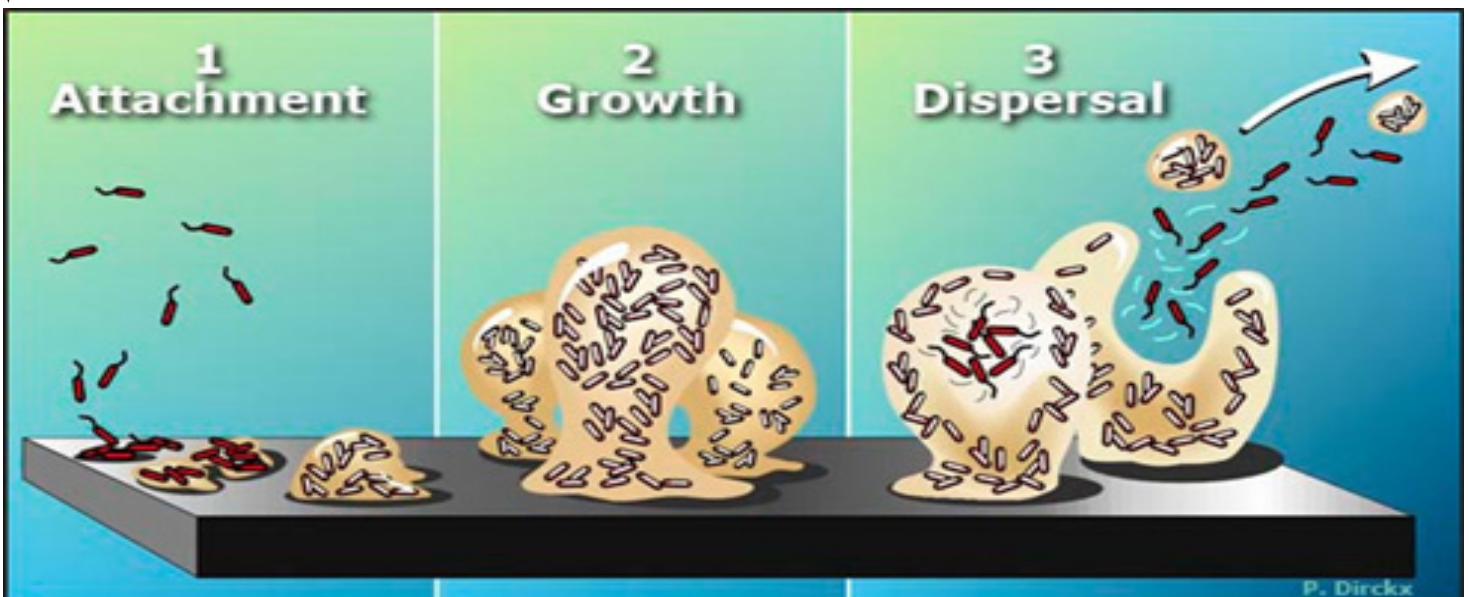
Installing an automated dosing system is the preferred option as it has a number of engineering controls to ensure that the correct concentration is routinely delivered.

The concentration can also be easily adjusted if required, and once set-up it will continue to operate effectively without any manual supervision. Finally, it mixes the precursor chemicals in the correct ratio automatically, so chemical efficiency is maximised.

Why choose chlorine dioxide?

- It is capable of destroying a wide range of bacteria, viruses (including avian influenza), fungi and spores
- It improves the health of the poultry, leading to faster growth rates
- It is the only chemical capable of completely removing biofilm as it is present as a gas in the water, which allows it to penetrate into the biofilm and attack it at the point of attachment
- Unlike hypochlorite it does not require tight pH control (effective between a pH of 4-10)
- Remains highly effective in turbid, high organic load water
- It is effective at very low concentrations (approximately 0.5ppm), which ensures that it is both cost-effective and safe to use
- It is highly selective so it maintains a residual effect long after disinfection
- Unlike hypochlorite, it will not form carcinogenic by-products like THM's.
- It is non-corrosive
- Can oxidise taste and odour causing compounds, as well as manganese and iron

Figure 2: Biofilm formation. Destroying disease harbouring biofilm is essential for healthy and clean water.



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