

# UNDERSTANDING THE ROLE OF ORP IN POOLS & SPAS.

## How do we monitor sanitisers in public pools and spas?

For many years Health departments relied on ppm readings of free chlorine to monitor sanitisers in pools and spas. Today the general consensus is that free chlorine level should be 1 – 2 ppm, depending on indoor / outdoor, with or without cyanuric acid, and pH level should be between 7.2 and 7.8. The problem with the chlorine reading is that it measures "Free Available Chlorine" and not the active chlorine (hypochlorous acid).

For example, a pool with a reading of 1ppm FAC and 7.2 pH has a true active chlorine of about 66% of the FAC reading (0.66ppm hypochlorous acid), with the balance remaining as reserve chlorine (hypochlorite). 0.66ppm of hypochlorous acid is fine as long as the water is good quality with few or no contaminants.

## Why is the pH level so important?

If the pH level is 7.8 then only 33% of the FAC is present as active chlorine (0.33ppm) which leaves little room for error and should the bather load increase suddenly, there may be a period where the disinfection rate is reduced to almost nothing.

## What does ORP measure?

ORP (Oxidation Reduction Potential) measures the true efficacy of the oxidisers in the water and does take into account the pH level, cyanuric acid level and to a great extent the amount of contamination in the water.

## What are the acceptable levels of ORP in public pools?

The minimum acceptable levels of ORP in public pools is 720mV. An indoor pool containing 2ppm of FAC and a pH of 7.8 may read an ORP level of less than 650mV, however in a clean pool with good filtration and a pH of 7.2, it may have an ORP reading of above 750 and a FAC level of 0.5, which is an ideal situation for bather comfort.

## How does stabiliser effect the ORP readings?

An outdoor pool containing stabiliser at 20ppm will show a much higher ORP reading than a pool containing 50ppm of stabiliser.

## What is the most reliable measure of the sanitary condition in a pool or spa?

Studies around the world by many health departments have shown that ORP testing provides the most reliable measure of the sanitary condition in a heavily used pool or spa. As swimmers introduce contaminants such as sweat, body fats or urine, the ORP level will reduce. As the ORP level changes, it will allow the sanitiser controller to react to the increased chlorine demand and commence feeding as required.

Chlorine controllers will only monitor and control the free chlorine set point and do not allow for changes in pH, contaminants etc.

If you would like more information about ORP and/or water chemistry please reach out anytime to our team of pool water experts. We also offer comprehensive training and education programs to upskill and develop all levels of water chemistry knowledge.