



SAWEA TALK

ISSUE 02 | OCTOBER 2015

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KILLS PATHOGENS

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UPCOMING WATER EVENTS

POWER-GEN MIDDLE EAST CONFERENCE & EXHIBITION

4-6 October 2015
Abu Dhabi
National Exhibition Centre

2016 MEMBRANE TECHNOLOGY CONFERENCE & EXPOSITION

February 1-5, 2016
Henry B. Gonzalez Convention
Center, San Antonio, Texas

WATER AND DEVELOPMENT CONGRESS & EXHIBITION

18 to 22 October 2015
King Hussein bin Talal
convention centre, Jordan

MEMBER HIGHLIGHTS



BRETT BOYD
Saudi Aramco
Facilities Planning Specialist

“Get involved, learn and make a difference”, says Brett Boyd. Meet our highlighted member this quarter. Brett has been an active member of SAWEA for 2 years. He works as a Utilities Planning Specialist for Aramco. Brett joined SAWEA to become a strong advocate of wastewater reuse. He was recently awarded 3 patents for water and wastewater treatment equipment improvements. As a technical advisor on wastewater, Brett hopes to get all the Dhahran

household yards and gardens switched to reuse water from groundwater so that we can be a **“shining example to the rest of the Kingdom”**



**RESERVE A SPACE
ON **OCTOBER 14TH**
ON YOUR CALENDAR
FOR OUR NEXT
DINNER MEETING.**

We are pleased to announce that NALCO will be sponsoring our next dinner meeting to be held at the Holiday Inn Sports City Khobar. The title of the presentation is: The Control of Microbiological Growth in Seawater Cooling Systems with the Use of Chlorine Dioxide.

NALCO Champion

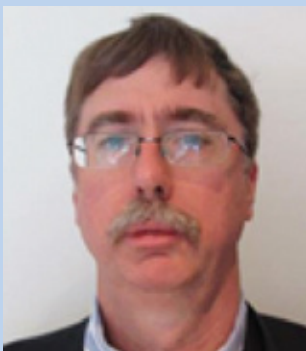
An Ecolab Company

NALCO CHAMPION WAS FORMED IN 2013 FROM NALCO ENERGY SERVICES DIVISION OF ECOLAB COMPANY AND CHAMPION TECHNOLOGIES. THE COMPANY COMPRISES OF 6,700 EMPLOYEES WORKING IN 160+ COUNTRIES AROUND THE WORLD.

Nalco Champion, an Ecolab company, and a global market leader in solving the toughest challenges facing the oil and gas industry. We are Taking Energy Further™ by delivering targeted

products, chemical solutions and technologies to help our customers optimize all upstream and downstream production around the globe. Where you need us, when you need us. We

help you enhance productivity, while reducing operating costs, with strong safety values in mind.



PAUL BEATTIE

Industry Technical Consultant

Email: sbeattie@nalco.com
Cell# +44 7710970012
Location: UK
Area of Resp.: Middle East / UK

- ▲ Chemistry degree from Queens University Belfast.
- ▲ Chartered Chemist and member of the Royal Society of Chemistry.
- ▲ 36 years with Nalco in Sales and Marketing, last 15 years as an ITC.
- ▲ Expertise in Cooling Water and Boiler Water Systems in Refineries and the Petrochemical Industry. Also responsible for driving new innovative Technologies in the Middle East i.e. Purate, the new Chlorine Dioxide system.
- ▲ Spoken Languages: English (Mother language)

How Chlorine Kills Pathogens

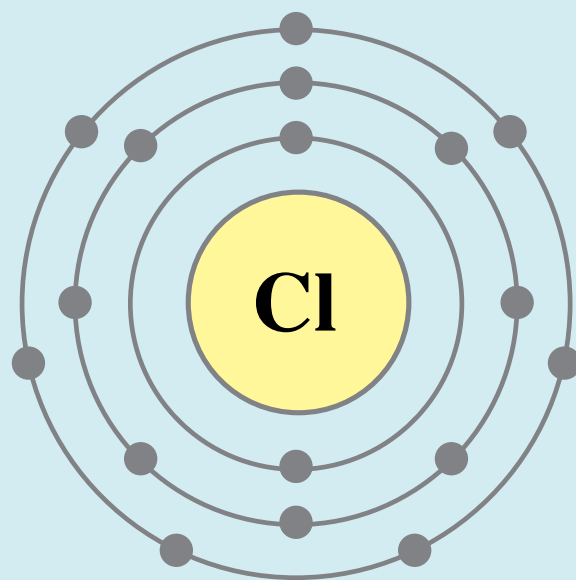
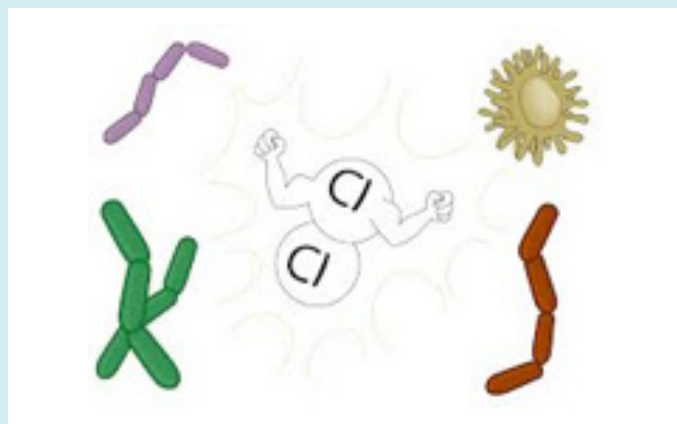
MOHAMMED AL-ABDULLATIF

HOW DOES CHLORINE CARRY OUT ITS WELL-KNOWN ROLE OF MAKING WATER SAFE?

Upon adding chlorine to water, two chemical species, known together as free chlorine are formed. These species, hypochlorous acid (HOCl, electrically neutral) and hypochlorite ion (OCl⁻, electrically negative), behave very differently. Hypochlorous acid is not only more reactive than the hypochlorite ion, but is also a stronger disinfectant and oxidant.

The ratio of hypochlorous acid to hypochlorite ion in water is determined by the pH. At low pH (higher acidity), hypochlorous acid dominates

while at high pH hypochlorite ion dominates. Thus, the speed and efficacy of chlorine disinfection against pathogens may be affected by the pH of the water being treated. Fortunately, bacteria and viruses are relatively easy targets of chlorination over a wide range of pH. However, treatment operators of surface water systems treating raw water contaminated by the parasitic protozoan *Giardia* may take advantage of the pH-hypochlorous acid relationship and adjust the pH to be effective against *Giardia*, which is much more resistant to chlorination than either viruses or bacteria.



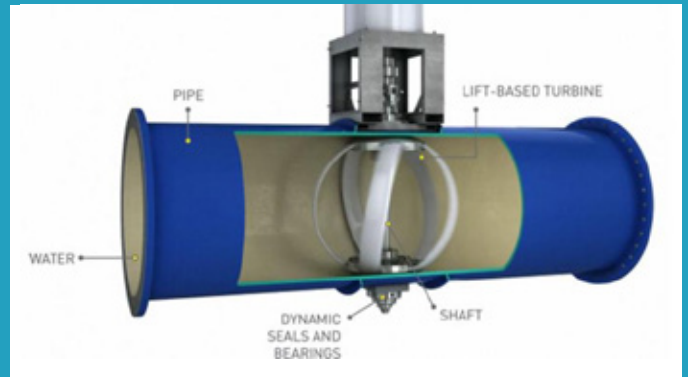
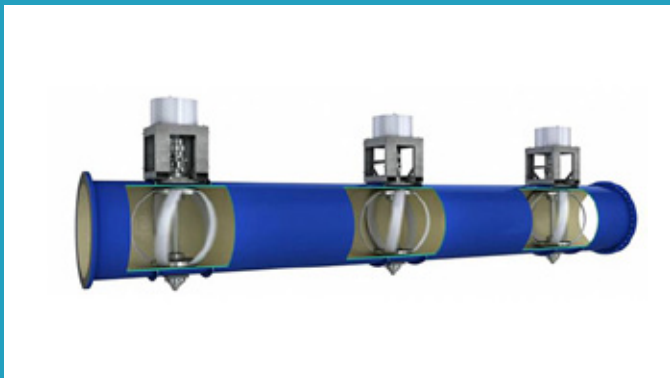
Another reason for maintaining a predominance of hypochlorous acid during treatment has to do with the fact that pathogen surfaces carry a natural negative electrical charge. These surfaces are more readily penetrated by the uncharged, electrically neutral hypochlorous acid than the negatively charged hypochlorite ion. Moving through slime coatings, cell walls and resistant shells of waterborne microorganisms,

hypochlorous acid effectively destroys these pathogens. Water is made microbiologically safe as pathogens either die or are rendered incapable of reproducing.

WATER FACTS

PORTLAND JUST INSTALLED WATER PIPES THAT GENERATE ELECTRICITY!

The city of Portland USA has installed water pipes that generate electricity. Lucid Energy has designed a turbine that fits in the city water pipes and then the harnessed energy is collected into a power generator.



الجمعية العربية السعودية للبيئة المائية
Saudi Arabian Water Environment Association

Member Association
**Water Environment
Federation**
the water quality people



If you have articles, suggestions or newsworthy items for future issues, please email the Editor:
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