

EFFECTIVE AND EFFICIENT USE OF CHLORINE AS A DISINFECTANT WITHIN POTABLE WATER SYSTEMS
IN THE OFFSHORE / MARINE INDUSTRY

Chlorine is by far the most commonly used disinfectant in potable water systems. It is the method of choice for most municipal water operations in all regions of the world. Where used it has been key to the virtually elimination of waterborne diseases such as cholera, typhoid and dysentery. There are no documented cases of ill health due to its correct and controlled use within potable water systems.

Chlorine in drinking water is safe for consumption. The small amount of chlorine typically used to disinfect water does not pose risks to human health. The World Health Organization (WHO) has established a guideline value of 5 mg/L (ppm) for chlorine in drinking water, meaning that such concentrations are considered acceptable for lifelong human consumption.

Chlorine is a residual disinfectant. That is to say in a correctly administered procedure, the disinfectant property of the chlorine, and therefore control, is found wherever the water is found. This differentiates it from non-residual disinfection methods such as UV and ozone. These methods of disinfectant do not “travel” with the water and therefore have considerable limitations.

It has been documented that chlorine use as a disinfectant can have significant disadvantages. To enable end users to make informed decisions on possible use or exclusion, full understanding of advantages and disadvantages should be known.

Harmful byproducts -

It is true that should source waters, be high in organic load and be continually over chlorinated, then the risk from production of hazardous byproducts will be increased. Although some of these byproducts are carcinogens this should not automatically have users turning away from the use of chlorine as a disinfectant. It would be exceptional that offshore waters would have sufficient organic load to realise the risk from carcinogenic byproducts. There are known water source areas where organic loads are high, such as Norway, however even in such cases appropriate assessment of the risk and correct control mechanisms can ensure chlorine is still the safe and effective disinfectant of choice. However if the use of residual disinfection is decided against, then users should fully consider

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how this may effect control. In these cases users should still be able to show how waters will be managed and maintained throughout the entire system without compromising control.

The WHO (World Health Organisation) statement below should be noted when ranking risks,

“The health risks from byproducts that may occur in drinking water are extremely small in comparison with the risks associated with inadequate disinfection. Thus, it is important that disinfection not be compromised in attempting to control such by products.”

Unpleasant taste and odour-

Sensitivity to the taste and odour of chlorine is an aesthetic issue and should never take priority over health and safety matters. Sensitivity to the taste and odour of chlorine within water is in the main defined by two criteria:

- what a person is use to
- levels of chlorine in a water system

If a person is used to drinking water that does not contain any chlorine, then levels at the high end of control points (0.2ppm – 0.5ppm) or slightly over may be noticeable. If levels are continually higher than the control points and increasing, then eventually all individuals will sense chlorine as a taste, an odour or as both. *(In both cases as long as the chlorine levels is lower than 5.0ppm, that is to say, 10 x the control level, then there will be no risk to health.)*

In order to reduce instances of taste and odour concerns chlorine addition should be maintained within the control points. The correct choice, use and application of chlorine dosage equipment will ensure this is always the case.