

Money down the drain?

The cost of water to the industrial and municipal user is becoming increasingly expensive. Companies not only pay to buy water in, but also pay to discharge it. The calculation for buying water in is usually very straight forward and unambiguous. A water meter on the inlet to the site can give precise details of the quantity of water fed to the site. The quality of the incoming water also has to meet certain potable water criteria. Water discharged from the site however is less easy to quantify. This water could vary from day to day in terms of both quantity and quality. For some years now, the water companies have relied on a calculation called the Mogden formula to determine the costs attributable to discharge of water from a site. This calculation is designed so that those companies which produce the greatest volume or dirtiest effluent, pay the highest cost for discharge. The key parameters which fit into the Mogden formula are Volume, Suspended Solids and Chemical Oxygen Demand. Additionally, there may be specific consent limits for certain metals, oils and greases. If any of these parameters can be reduced (or pH brought into spec), substantial cost savings can be made.

WATERWIDE are currently involved in several projects to aid industry reduce it's effluent costs. If you require more information on how WATERWIDE may be able to aid you in reducing costs, please contact us for a free and confidential discussion.

IMPORTANT BOILER INFORMATION

The British Standards Institute have amended BS2790 for shell boilers to prohibit the use of grey cast iron for boiler crown valves. This follows a number of recent incidents of water hammer in steam systems which have led to fatality and injury Whilst the change is not retrospective, many insurance companies are now strongly recommending that all users of steam systems replace grey cast iron crown valves as soon as possible with valves made from a more ductile material such as cast steel. For more information contact **WATERWIDE.**

Did You Know?

CORROSION MONITORING

That.....

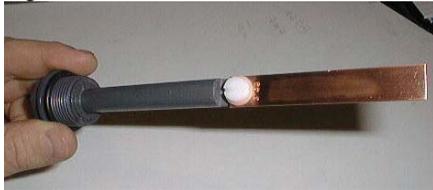
- Seventy percent of the world is covered in water
- A miner's inch is an aperture 1 inch square, the upper edge of which lies 6 inches below the surface of a water stream. It is used to measure water flow rates.
- Corrosion rates (see text opposite) are often measured in mils per year. One mil is equivalent to one thousandth of an inch. (Or 25.4 microns).
- Bacteria, under ideal conditions can multiply at a rate of one cell division every twenty minutes. At that rate, one cell would produce 4.7×10^{15} cells in 24 hours! - sufficient to circumnavigate the earth if placed end to end!
- One ppm is equivalent to one second in 11.5 days! Or 1 inch in $15 \frac{3}{4}$ miles!

Low Odour Amine Inhibitor

WATERWIDE have recently introduced a low odour neutralising amine corrosion inhibitor for condensate pipelines in steam raising plant. The inhibitor, **B304**, minimises corrosion in the condensate return lines by neutralising the acidic condensate without the normally associated 'fishy' odour which often accompanies such treatment regimes.

At **WATERWIDE** we are well versed in putting together water treatment programmes for specific needs.

Apart from our routine chemical monitoring of the system water quality, we also utilise additional tools which help to display the benefits of the water treatment programme as well as prove the long term efficacy of the regime.



One such tool is the use of corrosion test coupons. These coupons of the pre weighed metal under test are inserted into the actual system in a 'Corrosion Test Rack'. The corrosion rate is determined on removal of the coupon 30/60 days later.

Two atoms talking, one says to the other...

'D'you know, I've lost one of my electrons'

The other replies
'You sure?'

The first replies
'Yes! I'm positive!'

Technical Forum

Part 2 of 2

Non Oxidising Versus Oxidising Biocides

This quarter's Technical Forum looks at the advantages and disadvantages of using Non Oxidising microbiocides as a means of controlling microbiological infestations in water systems. This is Part Two of the article written in last quarter's newsletter.

Non oxidising microbiocides work by a completely different mode of action to the oxidising type described last quarter. These products are generally very specific to the bacterial cell and tend to work by either "adsorption" to the cell wall causing the cell to die through internal toxic build up, or "absorption" where the microbiocide is allowed to enter the cell at which point it affects the internals of the cell preventing reproduction.

Both modes are highly dependant on the microbiocide being fairly specific to some area of the cell wall. In the case of adsorption, the microbiocide acts invariably as a plug on the enzyme uptake and excretion sites. This effectively prevents the cell from either taking up food or getting rid of toxic material. Hence, over a period of time and generally with sufficient microbiocide to maintain the required concentration, the cell dies off. This however, may take up to 24 hours.

With absorption type microbiocides, the enzyme site on the cell wall will allow the biocide to enter the cell at which point the biocide begins to act on the cell contents. Some microbiocides act on the genetic material, some coagulate proteins, others break up essential amino acids. Again however, the action is slow.

The speed of the mode of action, therefore, is one of the disadvantages associated with this type of biocide. They are relatively slow acting. The benefit associated with this however is that, unlike oxidising products, they are very persistent within the water and therefore have a long term effect. This long term preservation ability also helps to off set the generally higher cost of these types of biocide, in so far as they can often prove to be more cost effective.

It is true however that bacteria can become immune to a particular type of microbiocide. The term used is resistance. Resistance is another way of describing a change in structure of the bacterial cell wall. We indicated above how the non oxidising biocides work, through a direct interaction with the cell wall. If the affinity of this interaction is destroyed, then the bacterial cell will not be affected by the biocide. If bacteria are subjected to conditions which are generally hostile, then resistance eventually takes over. Thus with non oxidising products we tend to alternate biocides on a regular basis to prevent this occurrence.

WATERWIDE

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For further information, please complete & return to the address above

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B304 Low odour amine inhibitor.....

Corrosion Test panels.....

Non Oxidising Microbiocides.....

Your Name.....

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