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In brief

- Win a bottle of whisky or a days carp fishing for two. See back page
- WATERWIDE's exceptional service wins praise from senior building services manager.
- WATERWIDE is seeking an additional field service engineer to facilitate further expansion of the company.
- WATERWIDE wins record number of new jobs in 2000

MIC - MICROBIOLOGICALLY INDUCED CORROSION

MIC - Microbiologically Induced Corrosion (sometimes known as Microbiologically Influenced Corrosion) is the corrosion associated with and resulting from, microbiological activity in water systems.

Devastating in both speed of occurrence and localised nature of attack, this type of corrosion costs industry £millions per year.

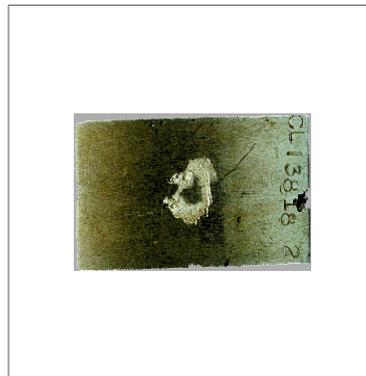
Most commonly it is as a direct result of anaerobic bacterial activity. In an open recirculating cooling system, this can seem a bit of an anomaly at first, as these types of bacteria require the absolute absence of oxygen in their immediate environment in order to be active. A cooling tower of course, is one of the most efficient aerating devices around.

So how exactly does this come about?

Well, it all comes down to how clean the cooling tower is kept, both in terms of water and plant quality

If the cooling tower is well maintained and water properly treated with emphasis on minimising suspended (and by definition localised deposited) solids, then sur-

faces are kept clean and free of debris. This allows the corrosion inhibitors to properly protect the metal surfaces and also and perhaps more importantly, allows added microbiocides to kill off bac-



Corrosion Pit on test coupon

teria in a planktonic state (in the bulk water). By killing off these predominantly aerobic (oxygen requiring) bacteria, the likelihood of microbiological biofilm formation) is significantly reduced.

It is these bacterial films that are most commonly associated with MIC.

If aerobic bacteria are not killed off by a successful microbiocide regime, then they will start to colonise pipework surfaces. Areas of low flow and elevated tempera-

tures will exacerbate the growth rate of these organisms.

As the bacteria reproduce, the biofilm becomes deeper on the surfaces and oxygen present in the bulk water can no longer reach the bacteria lying deep in the biofilm. Without oxygen, these aerobic bacteria die off. Within the biofilm, any anaerobic bacteria lying dormant, can then become active as the oxygen level depletes.

By-products of their metabolism are often sulphides, which when excreted by the bacteria, produce localised areas of hydrogen sulphide. This type of compound is extremely corrosive and localised concentrations can cause the localised pitting of many steels, including the most commonly used mild steels.

The result is small perforations in the pipework which often have an iron oxide scab covering the pit. Breaking the scab often reveals a black smelly (bad egg) gel and the corrosion pit.

LEGIONELLA GUIDANCE.....JUST ISSUED

Just as we were going to print this issue, the long awaited new documentation replacing HS(G)70 on the prevention or control of Legionellosis in water systems has been issued. Titled 'Legionnaires disease - The control of legionella bacteria in water systems' this HSC

publication is an Approved Code of Practice and Guidance. The document is referenced as 'L8' and the ISBN No is :

0 - 7176 - 1772 - 6
Copies are obtainable through mail order at :
HSE Books

PO Box 1999

Sudbury

Suffolk CO10 2WA

Tel : 01787 881165

We will carry more editorial on the implications and effects in the next newsletter

REAL TECHNICAL SERVICE

WATERWIDE's technical expertise is well recognised amongst its many customers, competitors and industry alike.

Our technical field support staff have a wealth of both technical and practical experience, all having worked in the water related industry for many years.

We see our role as a partnership with our clients and actively encourage their involvement and understanding of the treatment regimes put in place on their sites.

One of the key elements of providing exceptional service is that we do not rely on just

one field representative per client. Every single one of WATERWIDE's clients knows on a face to face basis, at least two field engineers.



Many know three or more. This ensures that with very little notice, we are able to respond to a call, with an

engineer who is already familiar with the site and the site personnel. Thus, whilst advocating continuity of service personnel at all times, we are able to provide a comprehensive cover without the need for you to show 'new' engineers around your plant whilst you have a crisis.

We commit to having personnel who know your site, available within 24 hours (often the same day).

BEWARE FUNGI IN GLYCOL TREATED WATER

Fungi are one of the largest of the 'micro organisms' generally encountered by the water treatment chemist.. Now a days, in cooling water systems, they do not cause too much concern.

Before the recommendations of HS(G)70 to minimise wooden components in a cooling tower, the presence and consequence of fungi was more apparent, as it is fungi which is primarily responsible for wood rotting. Modern towers now have minimal wooden components and those that do have them, use specially treated timber to control degradation.

Fungi however still do cause



Microbiologically stained. Fungi

problems in one particular type of plant. Glycol treated chilled water systems. Glycol is often used as an anti freeze treatment in chilled water systems and is often combined with a corrosion inhibitor. The presence of the glycol in the water over time tends to push the water

towards a neutral/slightly acid pH, an ideal optimum in which fungi can develop. Preferring slightly acidic environments, fungi can often readily utilise the inhibitor as a nutrient source and develop quickly within the water phase. Producing large amounts of microscopic filament, these filaments can cause blockages in slow flow and small bore pipework.

WATERWIDE can sample and analyse for these problem organisms which do not show up on the majority of regular bacterial dipslides. WATERWIDE also provide specialist site tests for fungi and yeast determinations.

Fungal Monitoring

*A crucial part of
Glycol system
monitoring.*

DID YOU HAVE IT THIS BAD?

Midst the Sept 2000 fuel crisis, the WATERWIDE offices suffered two further shortages!

On Thursday 14th Sept, not only did we have rationing of fuel for the company vehicles, the electricity was off (scheduled electric supply

works) and the mains water supply was also off. During the night, upstream of the office, a water main burst through the road leaving us without water for the best part of 24 hours.

Yet, amid of all the crisis,

Maggie Purdy, the heart of the WATERWIDE office, walked in to work, with hot water in a flask for drinks and torch in hand so she could see what she was doing!

Now that's dedication in the face of adversity!

TECHNICAL FORUM

IRON FOULING IN BASE EXCHANGE RESINS

Most waters contain a low level of dissolved iron which causes negligible problems to plant.

Some waters however contain much higher levels.

These typically may be from site owned bore hole supplies. Water which is drawn up through a bore hole will often be very low in oxygen and have a high dissolved mineral content. The type and quantity of total dissolved solids will be much dependant on the nature of the geology into which the bore hole has been drilled. Elements such as calcium, magnesium, manganese and iron are fairly common.

Unfortunately, once the bore hole water become oxygenated, (on reaching the surface), the iron element, if sufficiently high in concentration, will readily precipitate out as a red sludge giving rise to the term 'red water'.

Whilst treatments are readily available to remove this precipitated iron, there often remains a significant dissolved iron content.

If the water containing the dissolved iron is to be softened, the iron will readily adsorb to base exchange

resin media in a softening vessel.

Unlike calcium, once bound to the resin, normal regeneration using a brine solution will not remove the iron leav-



Damp Base Exchange Resin .

ing the softener under capacity with each successive regeneration.

On most softeners this is a gradual process, occurring almost unnoticed over a period of weeks.

The first time we become aware of a problem is when we receive hard water through the softener before we expect to. By then it is too late.

Over the years, WATERWIDE have developed a specific product designed to counter the problems of iron fouling in softeners.

'IONX2' is a combination of iron chelants and dispersant which help to remove iron from a base exchange resin.

Used in conjunction with the normal softening cycle, IONX 2 can be added to the brine tank at a rate determined by salt or soft water usage.

IONX2 will help to maintain the base exchange sites free from iron fouling thus maximising the capacity of the softener at all times.

The benefits of regular use of IONX2 will also help to maximise the life of the softening resin. Iron adsorbed on to the resin will tend to be very abrasive to adjacent resin beads. The net result is a continual attrition of the resin beads into a dust.

As resin beads break down, the capacity for exchange diminishes with the 'fines' being washed to drain during backwash. The resin being effectively washed to drain.

IONX2 is available in 25 or 200 litres containers.

For more information on base exchange resin cleaners, please contact us direct on the addresses over leaf.

'Once bound to the resin,a brine solution will not remove iron, leaving the softener under capacity .'

A - Z OF WATER

Aluminium: Has low solubility in water but is very common in the earth's crust. Many natural waters contain aluminium although most aluminium in water comes from aluminium sulphate used as a coagulant in water treatment plants.

Aluminium can be removed by cation exchange using an acid regeneration.

Ammonia: An extremely soluble gas in water. Can enter water systems through a variety of mechanisms. Commonly it is associated with organic decay. It can also be found in agricultural run off water (via fertilisers), or where used to dechlorinate water supplies. Corrosive in the presence of copper/brass.

Arsenic: Not a usual component found in water and is not easily dissolved in water. Where it is found present, it often comes from mining areas. It can also be found in water run off where arsenic has been used as a poison. Chemically, it has very similar properties to phosphates. It is highly toxic .

The Industrial Water Treatment Specialists

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Working water harder!



WATERWIDE

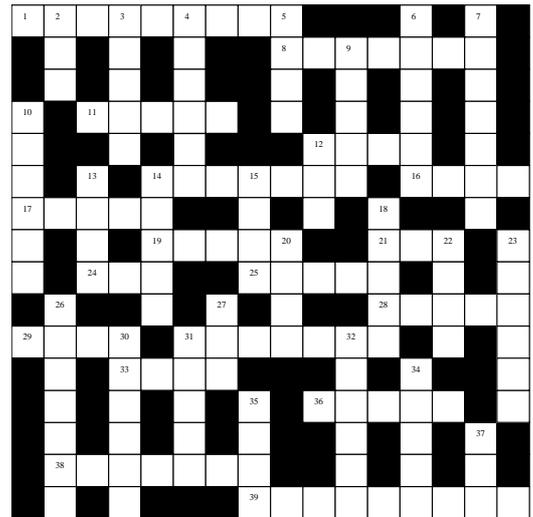
The Winter Crossword

Across

- 1 Sludge conditioner used in a boiler
- 8 A suction vortex
- 11 Bacterial deposit
- 12 A body of water
- 14 A regular salty structure
- 16 Hop on
- 17 Speed (music)
- 19 Maybe used to get rid of algae from ponds
- 21 Provides light and heat
- 24 Burnt residue
- 25 Amphibians
- 28 Below

Down

- 2 Health & Safety Executive (Abr)
- 3 Precipitated Calcium Carbonate perhaps
- 4 A tool (Maybe associated with water /steam in a boiler plant)
- 5 That's not odd
- 6 A season
- 7 A chemical to kill off micro organisms
- 9 An interesting book
- 10 Used to warm up
- 12 Used in orienteering
- 13 Girls Name
- 14 Legislation used to Control Substances Hazardous to Health (Abr)
- 15 A pH meter has one
- 18 Supply
- 20 Carbonic acid might be considered this
- 22 Part of a plant
- 23 Metal fatigue might cause this
- 26 An accumulation in a pipe often associate with bacteria



Win a bottle of scotch or a day's carp fishing for two on WATERWIDE's private pools. Send your completed crossword (photocopies acceptable) to our office no later than 9th April 2001. Draw 16th April 2001.

Note: You do not have to be a WATERWIDE customer to win. Entry is open to all.

Name

Position

Company

Co Address

.....

.....

.....

Tel Noext (if any).....

If you're a winner, please tick your preference

Whisky 0

Days carp fishing for two..... 0

COOLING TOWER SPRAY NOZZLES

Many cooling towers utilise a spray bar in the head of the tower to distribute the returning water over the tower fill (pack).

The bar usually consists of a tube with holes drilled into it which house threaded distribution nozzles.

These nozzles are relatively narrow bore and have a slit located in the base designed to maximise spray pattern.



A Blocked spray nozzle

With older towers, the spray bar is often difficult to remove

From an engineering view point however, if the nozzles appear blocked, which may be seen from poor water distribution pattern on the tower pond, then every effort should be made to clean out the nozzle and the spray bar. Debris accumulating in the spray bar can quickly give rise to bacterial colonies and directly affect tower performance.