Learnings on Lead in Water from the Wild West

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My chat is probably a bit redundant – it was like this!

The West Australian

Thursday, February 1, 2018 thewest.com.au

SCORCHERS TO DEL… TROUBLE IN STADIU…

Alex Blackwell from Sydney Thunder and Tim Paine from Hobart Hurricanes with their semifinal opponents, Mitch Marsh and Emily Smith from the Perth Scorchers. Picture: Michael Wilson

THIRD WORLD PROBLEM

School kids given bottled water after lead tests

WATER CRISIS

Daniel Emerson

Public health officials warned Education Minister Sue Ellery that handing out bottled water at schools may c… undue alarm but she h… ed it was the right deci… yesterday "because w… talking about children".

The first day of school wa… thrown into disarray for hundreds of students, parents and teachers when they were told water at their new schools may be contaminated, in the latest lead fiasco to grip the State's public infrastructure.

After concerns about lead in stagnant water and leaching from construction materials at Perth Children's Hospital in October, Ms Ellery ordered taps to be flushed during the long summer break at 109 established schools, and for 11 newly built schools to be tested. She blasted the Department of Education and the Department of Finance's Building Management and

CONTINUED P4

Sue Ellery Picture: Montage

PERTH 19-30 Becoming cloudy. Tomorrow: Cloudy, 21-30. Yesterday: 16.8-31.2.

Weather details P48

8 NEWS

Taxpayers hit in new kids' hospital water fight

EXCLUSIVE

Daniel Emerson

Taxpayers have shelled out $18m to replace hundreds of cubicle curtains at Perth Children's Hospital as a fresh dispute between the State Government and builder John Holland Group.

The curtains, fitted to the hospital's vast network of water piping, were found to be contaminated with bacteria that could cause serious infections in patients with weakened immune systems.

Health Minister Roger Cook said the curtains were supposed to be stainless steel for increased durability but those ordered were not installed.

He said replacing them with stainless steel ones would eliminate any future risk of contamination.

The hospital, which was originally scheduled to open in November 2015, has been beset by delays and cost blowouts.

Taxpayers pay $700,000 a month to private operators Capel… for the hospital under a 25-year contract which stipulated…

Perth Children's Hospital

Builder John Holland Group and the State Government are at loggerheads over the hospital's completion.

QEII carpark service a hospital provider of 888 beds by April 2016.

Despite accepting completion of PCH… Health Minister Roger… Cook has refused to… delay opening… Labo… has warned… the build… are expos… Critics… which…

Water woes are everywhere

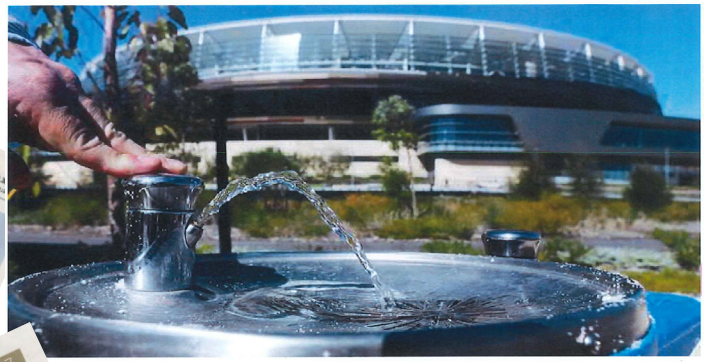
OPINION 47

Phil MURRAY

Illustration: Dan Lindsay

26/02/2018 Excessive lead levels in water in Optus Stadium drinking fountains

perth now Sunday Times



o tests conducted by The Sunday Times found dangerous levels of lead in the water in the fountains around Optus Stadium.

Stadium

sive lead levels in water in Optus Stadium drinking ins

thNow

?:00AM

ins outside Optus Stadium are contaminated with lead, according to tests conducted by *The Sunday*

uidelines state the concentration of lead should not exceed 0.01mg/L. But at one drinking fountain, g/L – 14 times greater.

new children's playgrounds in Stadium Park, was almost 10 times higher.

ncentration of lead in Australian drinking water is less than 0.005 mg/L.

day Times this week exceeded the guideline maximum. At one fountain, there was also a g/L guideline maximum for that metal.

our results conflicted with their own, which showed the drinking water was fine. The

My chat is probably a bit redundant – it's now this!

7 News Sydney
5 March ·

Most of us drink it everyday but a 7 News investigation has disco
completely safe. One western Sydney suburb's supply was four
Sydney Water claims we shouldn't be worried.

7 News took water samples from 16 locations across Sydney
independently tested for levels of 13 metal contaminants.

The sample from Liverpool contained 13 micrograms of le
That's 30% more than the safety limit of 10. Closely follow
Hornsby's sample also had elevated levels of iron. Sydn

1. Confusion over what this number means?

0.01

0.01mg/L = Maximum allowable concentration of lead in drinking water.

Taken from the Australian Drinking Water Guidelines (ADWG).

Based on a World Health Organisation (WHO) assessment and was determined by the need to protect the groups most at risk - young children, infants and pregnant women.

1. Confusion over what this number means?

The value was determined as follows:

$$0.01\text{mg/L} = \frac{0.0035\ \text{mg/kg body weight per day} \times 13\text{kg} \times 0.2}{1\ \text{L/day}}$$

where:

- *0.0035 mg/kg body weight per day is the lead intake which, based on metabolic studies with infants, does not result in an increase in lead retention (Ziegler et al. 1978. Ryu et al. 1983).*
- *13 kg is the average weight of a child at 2 years of age.*
- *0.2 is the proportion of total lead intake attributable to water consumption. Sufficient data are available to indicate that 80% of intake is from food, dirt and dust.*
- *1L/day is the average amount of water consumed by a young child."*

1. Confusion over what this number means?

Different views amongst experts, authorities and media over whether an individual test finding of > 0.01 means there is an actual health risk, or whether it more of a lifetime measure.

To answer this you really need to consider:

- *The typical users and their usage patterns,*
- *That the WHO says water is just 20% of lead intake,*
- *The long term health findings.*

Action – Agreement on the health issue … but by who?

2. Confusion over in-field water testing methods?

Some testing being done in the field in Australia is creating public concern about elevated levels of lead in drinking water.

This has the potential to impact opinion regarding the possible effects on public health, and the suitability and safety standards of plumbing products & practices.

The methods used vary dramatically, and it is possible that some testing techniques may not be adequate in generating accurate data on metal levels in water.

2. Confusion over in-field water testing methods?

Opposing sides claim to use the methods set-out in Australian Standard - *AS/NZS 5667.5:1998 – Water Quality – Sampling*.

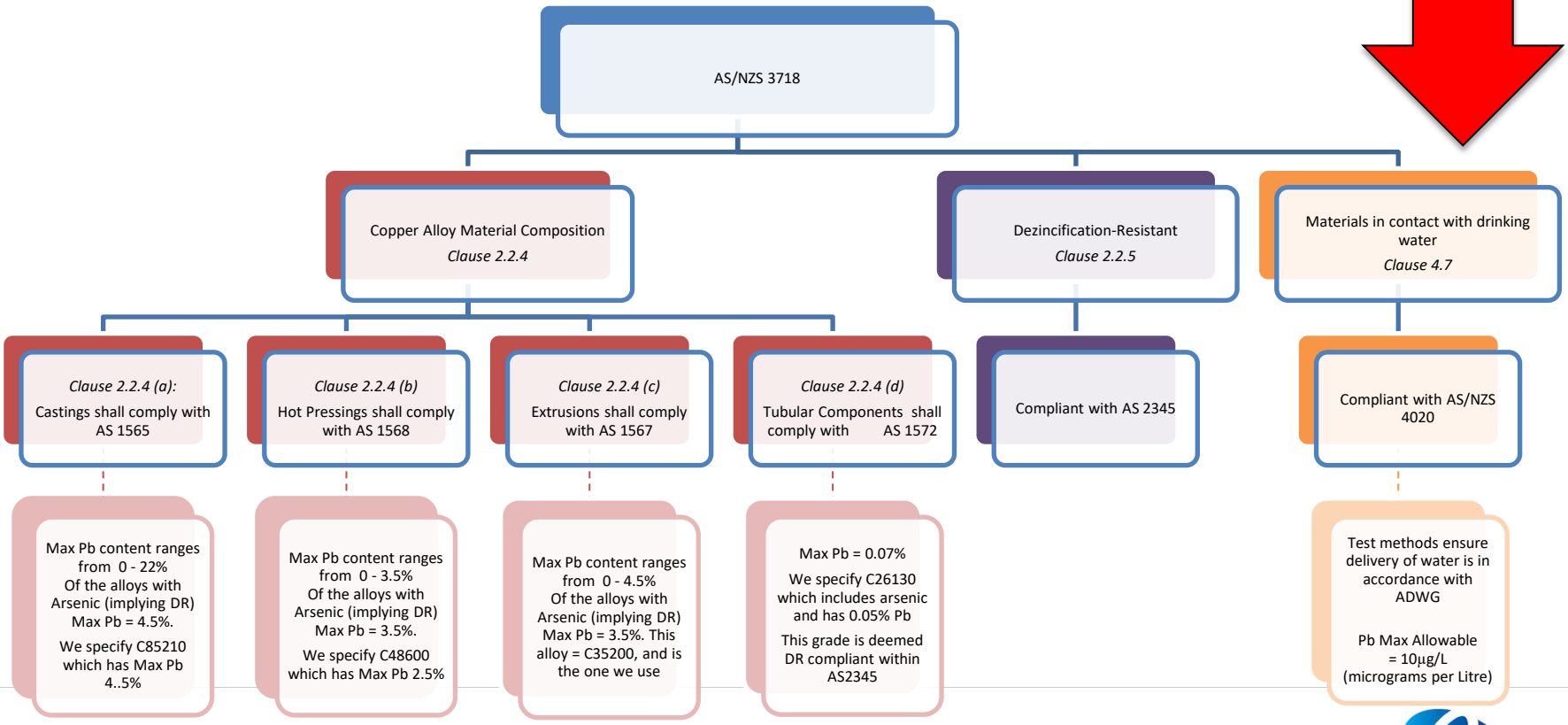
So who is right?

- *PCH – WA Health or John Holland*
- *Aldi – QBCC or Aldi*
- *Perth Stadium – Sunday Times or WA Health*
- *International – USA or Canada or Germany or …*

Or is it somewhere in between?

2. Confusion over in-field water testing methods?

What do the manufacturers do now? It's full on and takes a lot of time and money.



2. Confusion over in-field water testing methods?

Unlike AS4020, AS/NZS 5667.5 can be silent or very vague on key sampling and testing processes. Needs to better address:

- *The flushing and/or stagnation periods*
- *The volume of water extracts tested*
- *Site specific issues*

Misinformed public debate in the media will continue until a more detailed and scientific method is not agreed on. Where possible, alignment with AS4020 would be useful.

Action – review of AS/NZS 5667.5 … but by who?

3. Confusion over what affects lead levels in water?

Many factors contribute to the variability of lead concentration results from drinking water testing, including:

- the type of materials used in the plumbing system,
- the age & complexity of the plumbing system,
- usage patterns of inhabitants,
- stability of flow rates in the system,
- stagnation and dead-leg areas,
- chemicals introduced into the water supply (eg. chlorine),
- fluctuations in water quality (pH and alkalinity),
- Build up of a protective mineral crusting over time on the inside of pipes.

3. Confusion over what affects lead levels in water?

Many authorities and researchers from around the world speak on these topics:

- *Health Canada*
- *USA's EPA*
- *German Ministry of Health*

Including a lot of good research in Australia by groups such as the Macquarie University. However, there is still a long way to go in understanding what affects lead levels in water.

Action – agreement on factors affecting lead … but by who?

Thanks for listening and feel free to call

We are passionate about Water Solutions for a Healthier Environment, so give us a call to share your thoughts and ideas on this important issue for our industry.

Chris Galvin – 0413 620 794

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