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Fluoride in our Water? The Fluoridation of Public Water Supplies Amendment Bill 2004 (Qld)

*On 1 September 2004, Mr John-Paul Langbroek MP introduced a Private Member's Bill into the Queensland Parliament. Under the Fluoridation of Public Water Supplies Act 1963 (Qld) (the Act), local governments currently have responsibility for deciding whether or not to fluoridate their water supply. The **Fluoridation of Public Water Supplies Amendment Bill 2004 (Qld)** (the Bill) seeks to amend the Act to require local governments or other water providing bodies to add fluorine to the public water supply, except where the water is supplied to smaller communities. At present, Dalby, Mareeba, Moranbah and Townsville are the only places in Queensland to have a fluoridated water supply.*

This Brief discusses a number of studies considering the association between fluoride in drinking water and the prevention of dental caries, and whether fluoridated water has any adverse health impacts.

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EXECUTIVE SUMMARY

Research indicates that fluoride acts in various ways to prevent dental caries (**pages 1-2**).

Today, there are a wide variety of sources of fluoride apart from drinking water – such as fluoride tablets, infant formulae, or toothpaste. There is some evidence that unsupervised intake of supplements by very young children may lead, in some cases, to dental fluorosis (**pages 2-4**).

In 2003, 4.7% of Queenslanders lived in areas with fluoridated water compared to 77-100% of the population in other states and territories. At **pages 4-6**, a brief history and overview of fluoridation of the water supplies in Australia and overseas is provided.

Some studies into the impact of water fluoridation on public health are discussed at **pages 6-17**. Those considered in some detail are a 1999 *Review of Water Fluoridation and Fluoride Intake from Discretionary Fluoride Supplements*, chosen because it is one of the more recent reviews and provides an overview of literature and studies up to, and after, 1991 (**pages 9-15**); and a study undertaken by the Dental Statistics Unit of the University of Adelaide in 1995, ‘**Caries experience among children in fluoridated Townsville and unfluoridated Brisbane**’ (**pages 15-17**), chosen because of its Queensland focus.

The **Child Dental Health Survey, Australia 1999** revealed that Queensland children have one of the highest rates of decay of children in all states and territories (**pages 17-18**).

Currently, the *Fluoridation of Public Water Supplies Act 1963* (Qld) confers upon local governments the power to decide whether or not to fluoridate their public water supply. A local government cannot do so if a proposal to fluoridate has been defeated at a poll (**page 19**). At present, only Dalby, Mareeba, Moranbah and Townsville have a fluoridated water supply. Each capital city in Australia, apart from Brisbane, has fluoridated drinking water pursuant to legislation pertaining to the relevant state or territory (**page 20**).

The Queensland Government supports the introduction of fluoridation where the relevant community has consented to it (**pages 20-21**). During the 1990s, particularly following the findings of the 1997 *Lord Mayor’s Taskforce on Fluoridation* Report, the Brisbane City Council has not supported fluoridation. Recently, it has decided to listen to new evidence about the issue (**pages 22-23**).

The **Fluoridation of Public Water Supplies Amendment Bill 2004 (Qld)** seeks to amend the *Fluoridation of Public Water Supplies Act 1963* (Qld) to require local governments or other water providing bodies to add fluorine to the public water supply, except where the water is supplied to smaller communities (**pages 19-20**).

1 INTRODUCTION

On 1 September 2004, Mr John-Paul Langbroek MP introduced a Private Member's Bill into the Queensland Parliament. Under the *Fluoridation of Public Water Supplies Act 1963* (Qld) (the Act), local governments currently have responsibility for deciding whether or not to fluoridate their water supply. The **Fluoridation of Public Water Supplies Amendment Bill 2004 (Qld)** (the Bill) seeks to amend the Act to require local governments or other water providing bodies to add fluorine to the public water supply, except where the water is supplied to smaller communities. At present, Dalby, Mareeba, Moranbah and Townsville are the only places in Queensland to have a fluoridated water supply.

This Brief discusses a number of studies considering the association between fluoride in drinking water and the prevention of dental caries, and whether fluoridated water has any adverse health impacts.

2 FLUORIDE AND DENTAL CARIES

Fluoride naturally occurs in most public water supplies, although the level varies. It is also found in varying concentrations in rocks, soils and the sea. Indeed, even in areas where water is not fluoridated (either naturally or artificially), exposure to fluoride can occur by consuming soft drinks and foods which have been processed in fluoridated areas and through the use of fluoridated toothpaste.

Research indicates that fluoride acts in various ways to prevent dental caries. Dental caries is caused by acid produced by micro-organisms present on the tooth. It is characterised by dissolution of tooth enamel and dentine, and eventually destroys the tooth surface or the tooth.¹ Decay results from a process of mineral loss from tooth enamel. Teeth can remineralise by taking the correct mineral from the saliva into the tooth surface. If present in plaque and saliva, fluoride facilitates remineralisation of enamel lesions before cavities appear. It will stop sugars metabolising into acids. Fluoride assists the tooth in resisting acid attack if consumed during tooth development.² Adults, as well as children, can benefit from fluoride exposure which helps maintain dental tissue development and enamel

¹ World Health Organisation, *World Water Day 2001: Oral Health*, May 2002, at http://www.who.int/water_sanitation_health/oralhealth/en/index2.html.

² *Review of Water Fluoridation and Fluoride Intake from Discretionary Fluoride Supplements*, NHMRC, 1999, Ch 4, p 6, citing World Health Organisation, 'Fluorides and oral health', WHO Technical Report Series 846, Geneva, 1994.

resistance against caries during a lifetime.³ This is particularly important for older people who are keeping their teeth longer, because the elderly are more prone to exposed root surfaces.⁴

3 FLUORIDE SUPPLEMENTS AND OTHER FLUORIDE SOURCES

The initial assumptions upon which the optimum levels of fluoride in drinking water were based occurred when fluoridated water was the sole source of fluoride intake. It has been suggested that more research and monitoring needs to occur regarding discretionary consumption of fluoride from a wide variety of sources apart from drinking water – such as fluoride tablets, infant formulae, or toothpaste – in fluoridated and non-fluoridated areas to determine if modification of fluoride intake is necessary.⁵ For example, Coca-Cola manufactured in Brisbane will be free of fluoride, but the same drink from the other capital cities will contain fluoride, unless the water is filtrated. Some brands of infant formulae have reportedly high levels of fluoride content.⁶ The most widely used product containing fluoride is toothpaste. Around 95% of all toothpastes sold in Australia contain fluoride.⁷

Fluoride tablets have been used in areas where the public water supply has less than the necessary level of fluoride for optimal oral health benefits. The level of dosage is based on estimates of daily intake of water so that the recipient gets approximately the same amount of fluoride as with optimally fluoridated drinking water.

There is some evidence that unsupervised intake of supplements by very young children may lead, in some cases, to dental fluorosis.⁸ Fluorosis is a mottling of the

³ WHO, *World Water Day 2001: Oral Health*.

⁴ USA Office of the Surgeon General, 'Benefits of Fluoride', *Fact Sheet*, May 2000.

⁵ NHRMC Review, 1999, Ch 1, pp 2-4.

⁶ NHRMC Review, 1999, Ch 7.

⁷ University of Adelaide, Department of Dentistry, Dental Practice Education Research Unit and Colgate Oral Care, 'Water Fluoridation Still the Answer', Information Sheet No. 1, revised 1997, <http://www.adelaide.edu.au/spdent/dperu/FluorideA41.pdf>.

⁸ Queensland Health, 'Queensland Health Guidelines on Fluoride Supplements', *Public Health Fact Sheet*, 2002.

tooth enamel ranging from virtually undetectable whitish blemishes to quite severe brownish staining and associated pitting or flaking of enamel.⁹

There is a view that there should be a reduction in fluoride intake by young children during the 'at risk' period for dental fluorosis. While fluoride supplements do not, of themselves, exceed the recommended range of fluoride intake in non-fluoridated areas for most children, the combination of supplements, infant formula and toothpaste is likely to be excessive. In areas with water fluoridation, the use of supplements may bring many children's intake above the recommended daily threshold dose.

The *Queensland Health Guidelines on Fluoride Supplements* do not recommend the use of fluoride supplements in children under three to four years, except for those identified as being at high risk of caries.¹⁰ It has been found that supplement doses based on age rather than body weight are not appropriate for small children. Parents need to be diligent in administering the correct dosage per child each day.¹¹ Adherence to such a program is an issue and the use of tablets or fluoride drops for children has tended to wane in recent years.

While, in some countries such as Australia, fluoride tablets are available over the counter in pharmacies or may be supplied freely by local councils, in other countries they are available on prescription only. In Canada, fluoride tablets may be sold over the counter only if the largest dose results in an intake of less than 1 mg of fluoride per day.

A review team reporting to the National Health & Medical Research Council (NHMRC) considered that an education program may be needed to reduce the use of supplements in fluoridated areas and in situations where persons receive much of their food and drink from fluoridated manufacturing sites. The Review said that because most of the increase in fluoride intake tends to be discretionary, it is these other sources that should be targeted before reconsidering water fluoridation. To reduce or remove fluoride from water supplies in order to reduce the risk of fluorosis may, according to some researchers, also reduce the benefits of fluoride for people of all ages.¹²

⁹ NHRMC Review, 1999, Ch 5, p 45. Fluorosis is discussed in more detail below.

¹⁰ See <http://www.health.qld.gov.au/phs/Documents/ohu/670.pdf>.

¹¹ NHRMC Review, 1999, Ch 1, p 3.

¹² University of Adelaide and Colgate Oral Care, 'Water Fluoridation Still the Answer'; NHRMC Review, 1999, Ch 6.

In recommendations to the NHMRC, the review team said that children under the age of seven years should use low fluoride toothpaste under parental supervision (young children swallow toothpaste), and all labels on toothpaste should indicate whether they are for adult or child use. Fluoride supplements should not be taken by children under the age of three and in areas of fluoride deficiency, intake should be assessed on an individual basis considering factors such as water sources and use of fluoridated toothpaste.¹³

4 FLUORIDATION OF PUBLIC WATER SUPPLIES

A fluoridation program is the artificial and controlled addition of a fluoride compound to a public water supply, in order to adjust its fluoride concentration to an optimum level for the prevention of dental caries (around 1 mg/litre). Fluoride is odourless and tasteless so there is no perceptible change to the water. The fluoridation occurs at the water treatment works.¹⁴

The appropriate concentration of fluoride for public water supplies is that at which maximum dental caries reduction can be achieved while limiting dental fluorosis to acceptable levels of prevalence and severity. The World Health Organisation (WHO) has supported fluoridation of the public water supply as an effective and safe public health measure. The WHO has reported that studies indicate that the greatest reduction in dental caries and delay in progression of carious lesions occur in people living in fluoridated areas from an early age.¹⁵ The WHO *Guidelines for Drinking Water Quality* state:

There is no evidence to suggest that the guideline value of 1.5 mg/litre set in 1984 needs to be revised. Concentrations above this value carry an increasing risk of dental fluorosis, and much higher concentrations lead to skeletal fluorosis. The value is higher than that recommended for artificial fluoridation of water supplies. In setting national standards for fluoride, it is particularly important to consider climatic conditions, volumes of water intake, and intake of fluoride from other sources (e.g., food, air).

The Great Depression of the 1930s saw an increase in the level of decay and dental caries. After World War II (WWII), the first fluoridation trial began in Michigan in the United States and positive results on caries levels led to fluoridation being implemented across the country.

¹³ NHRMC Review, 1999, Ch 8, p 9.

¹⁴ WHO, *World Water Day 2001: Oral Health*.

¹⁵ WHO, *Environmental Health Criteria*, 36 (1984), Geneva, 136. See http://www.who.int/oral_health/en/.

Interest in the need to improve the dental health of Australians was sparked during WWII when many potential soldiers were turned away as being medically unfit due to dental decay. The dental health of children was also poor. The introduction of fluoridation was supported during the 1950s by the NHMRC, the Australian Dental Association (ADA) and the Australian Medical Association (AMA).

The first instance of a public water supply in Australia being fluoridated was in Beaconsfield, Tasmania, in 1953. From 1964 to 1977, all capital cities, apart from Brisbane, fluoridated their public water supply. In 2003, 4.7% of Queenslanders lived in areas with satisfactory levels of fluoride whereas 77-100% of the population in other states and territories have access to fluoridated water.¹⁶

To account for the fact that the amount of fluoride that is ingested will depend upon the level of water consumption, the recommended concentration of fluoride in Australian water supplies is lower in hotter climates – ranging from 0.6 parts per million (ppm)¹⁷ in Darwin to 1.1 ppm in Hobart. The foregoing are considered to be safe levels by the NHMRC. Levels below 0.5 ppm are considered to be less effective for reducing dental caries.

The timing of the implementation of water fluoridation and fluoridation levels in large cities in Australia are: Hobart (1964) 1.1 ppm; Townsville (1964) 1.0 ppm; Canberra (1964) 1.0 ppm; Perth (1968) 0.8 ppm; Sydney (1968) 1.0 ppm; Adelaide (1971) 0.9 ppm; Darwin (1972) 0.6 ppm; and Melbourne (1977) 0.9 ppm.¹⁸

Levels of fluoride are monitored under procedures set out in the NHMRC/ ARMCANZ's *Australian Drinking Water Guidelines*.¹⁹ It has been reported that quality control monitoring has found that fluoride levels in drinking water are within the permitted concentration range for the relevant water supply area. Water providers take samples from consumers' taps and examine them for chemical quality.²⁰

In the United States, about 68% of the population has access to fluoridated drinking water. In South America, fluoridation is quite widespread but in Europe, it is

¹⁶ Queensland Health, *Health Determinants Queensland 2004*, Ch 2, p 23.

¹⁷ 'ppm' = parts per million. For example 1 mg/litre is 1 ppm.

¹⁸ University of Adelaide and Colgate Oral Care, 'Water Fluoridation in Australia Today', citing AJ Spencer et al, 'Water Fluoridation in Australia', 13 (1996) *Community Dental Health*, 27-37.

¹⁹ NHMRC and Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), *Australian Drinking Water Guidelines 1996*.

²⁰ NHRMC Review, 1999, Ch 3, p 6.

mainly Ireland (where fluoridation of water supply is mandatory) where the measure has had any real uptake. In the United Kingdom it is reported that only around 10% of the population has access to fluoridated water. Many European countries have not taken up, or have discontinued, the practice for various reasons. Countries, including France, Austria, Germany, Hungary, Slovakia and Switzerland use fluoridated salt widely. In the Netherlands, despite 30% of its population having access to fluoridated water by 1973, fluoride was recently removed after the Government lost a battle with anti-fluoridation bodies.²¹ In Asia, its use is not widespread as many areas have naturally occurring high levels of fluoride.

5 STUDIES CONCERNING WATER SUPPLY FLUORIDATION

The WHO endorses the fluoridation of public water supplies, as do bodies including the International Dental Federation. In Australia, fluoridation is backed by the NHMRC, the AMA and the ADA.²²

Studies concerning health effects of fluoridation have been carried out in Queensland, Western Australia, Victoria and Tasmania. This Brief discusses two of those studies in depth. The first is a review by a team of university researchers for the NHMRC: the 1999 *Review of Water Fluoridation and Fluoride Intake from Discretionary Fluoride Supplements* (the 1999 NHRMC Review), chosen because it is one of the more recent reviews and provides an overview of literature and studies up to, and after, 1991. The second is a study undertaken by the Dental Statistics Unit of the University of Adelaide in 1995: *Caries experience among children in fluoridated Townsville and unfluoridated Brisbane*. It is discussed because of its Queensland focus.

5.1 CAVEATS REGARDING STUDIES ON FLUORIDATION

The 1999 NHRMC Review considered a number of studies on the health effects of fluoride, but also sets out caveats regarding the interpretation of epidemiological²³ literature on exposure to fluoride. The caveats include the following—

²¹ British Fluoridation Society, 'The Extent of Water Fluoridation', published in *One in a Million*, joint report by the British Fluoridation Society the British Dental Association, the UK Public Health Association, and the Faculty of Public Health, June 2004, p 72.

²² See, for example, Queensland Health, Oral Health Unit, 'Water Fluoridation', *Public Health Fact Sheet*, 2003.

²³ Studies of how diseases and illnesses are spread and distributed among the population, focusing on the incidence and prevalence of a condition as well as environmental and other factors that explain the patterns: AG Johnson, *Blackwell Dictionary of Sociology: A User's Guide to Sociological Language*, 2nd ed, Blackwell Publishers Inc., 2000, pp 105-106.

- most studies compare *populations* with differing fluoride exposures in water rather than *individuals* with differing exposure;
- fluoridated and non-fluoridated areas can differ in other important ways that have an impact on dental health (e.g. access to dental services, socioeconomic status); and
- discretionary sources of fluoride exposure, apart from exposure to fluoridated water, need to be considered.²⁴

Not all of the earlier studies determined the extent of, nor accounted for, ‘confounding’ factors of those types.

The quality, as well as the paucity, of studies concerning the safety and efficacy of fluoridated water was also highlighted by a recent *British Medical Journal* article. The authors found that, of the 214 studies considered, the quality was low to moderate and some contained varying degrees of bias. The most serious defect of the studies of possible beneficial effects was a lack of appropriate design and analysis – some did not attempt to control for potentially confounding factors in the assessment of the development of caries. While such deficiencies were common in studies from the 1940 and 1950s, even later studies did not use methods that were commonplace by that time.²⁵

In the 1999 NHRMC Review, more weight was given to well designed studies, in particular randomised controlled trials,²⁶ cohort studies,²⁷ and case-control studies²⁸ when they were available.

5.2 SOME 1990S STUDIES – A BRIEF OVERVIEW

In 1991, the NHMRC published *The effectiveness of water fluoridation* in which it evaluated fluoride studies up to 1990/91. Up to that time there was little Australian

²⁴ NHRMC Review, 1999, Ch 5, p 2.

²⁵ MS McDonagh et al, ‘Systematic review of water fluoridation’, *British Medical Journal*, 321, October 2000, pp 855-859.

²⁶ Where neither the patient nor person assessing the outcome should be aware of which therapy is allocated to which patient and the groups should exchange treatments during the trial: EA Martin (ed), *Concise Medical Dictionary*, Oxford University Press, 1998, p 340.

²⁷ A systematic study of a group of people that can be conducted prospectively or retrospectively. A prospective cohort study involves a systematic follow-up for a defined period of time or until a specified event occurs to observe pattern of disease. A retrospective study can also occur where data on the group’s exposure is already known: *Concise Medical Dictionary*, p 137.

²⁸ Comparison of a group of people who have a disease with another group free of the disease in terms of variables in their background: *Concise Medical Dictionary*, p 105.

data about fluorosis. As further works were undertaken, particularly concerning the effectiveness of water fluoridation programs, fluorosis and other adverse health effects, as well as data about the use of sodium fluoride to treat osteoporosis, the 1999 NHRMC Review gave consideration to those studies, including some larger scale Australian studies.

The main findings in *The effectiveness of water fluoridation* in 1991 were that water fluoridation to around 1 ppm helps to prevent dental caries, particularly in childhood, and remains the most effective and socially equitable means of achieving community-wide exposure to fluoride. It was concluded that fluoride supplements within the intended normal range of daily intake were safe but there was a need to consider the possibility of increased bone neoplasms²⁹ and other possible adverse effects. The Report recommended the need for education about the appropriate use of discretionary fluoride substances if water fluoridation was also present. It also found that there was an urgent need for improved monitoring of dental health and to examine fluoride exposure levels and trends in fluorosis.

The Western Australian study '**Dental caries and fluoride exposure in Western Australia**' was published soon after the NHMRC's 1991 Report.³⁰ The 1999 NHMRC Review considered this study to be a strong one. It involved a cross-sectional investigation of caries in fluoridated Perth and non-fluoridated areas (Bunbury region) based on fluoride exposure (water, fluoride supplements, toothpaste) of 339 children from birth to four years and four to twelve years. It was observed that 22.5% of Bunbury children used supplements more or less regularly from birth to four years, and 19.4% from four to twelve years, compared with around 2% of Perth children. It found a positive decrease in caries in four to twelve year olds with early toothpaste use and water fluoridated at 8 ppm (as in Perth). The prevalence of caries was significantly lower in Perth.

The New South Wales study *A study of dental health of primary school children in the local government areas of Blue Mountains and Hawkesbury, NSW* is considered to be a moderate study (that is, less strong) by the 1999 NHRMC Review. This was a cross-sectional study of 2,206 children up to age 14 who were continuous residents in fluoridated and non-fluoridated areas of the Blue Mountains and the Hawkesbury and who were of a similar sociodemographic pattern. Information about tooth brushing and fluoride supplements, but not nutrition, was collected and it was found that oral hygiene and toothpaste usage was similar among the children studied. The study revealed a lower caries experience (decayed, missing or filled surfaces) in deciduous teeth of children with

²⁹ New growths of tissue in parts of the body.

³⁰ PJ Riordan, 'Dental caries and fluoride exposure in Western Australia', *Journal of Dentistry Research*, 70, 1991, pp 1029-1034. Summary provided in NHMRC Review, 1999, Ch 5, p 12.

a lifetime exposure to fluoridated water. Dental disease was found to be higher in lower socioeconomic areas but less so in fluoridated areas than in non-fluoridated regions.³¹

5.3 REVIEW OF WATER FLUORIDATION AND FLUORIDE INTAKE FROM DISCRETIONARY FLUORIDE SUPPLEMENTS

In 1999, a team of researchers undertook a *Review of Water Fluoridation and Fluoride Intake from Discretionary Fluoride Supplements* for NHMRC.³² The review evaluated scientific evidence since 1990 regarding the health effects of fluoridated water and fluoride from other sources, and formulated recommendations to the Health Advisory Committee of the NHMRC.

The 1999 NHRMC Review observed that a number of developed countries, including Australia, have implemented a community-based water fluoridation program which has been a mainstay in a public health approach to preventing dental caries. Given that many households have access to fluoridated reticulated water, there is socially equitable access to an effective means of caries prevention.³³ However, public knowledge and education about fluoride is poor. Information on health-related drinking water characteristics, such as fluoride levels, needs to be more accessible to the public. Indeed, the percentage of people favouring water fluoridation has dropped. Given the reduction in the incidence of dental caries and recognition of fluorosis as a problem associated with fluoride intake, some have questioned the program.

The 1999 NHRMC Review's overview of, and conclusions on, the health effects of fluoride from the studies considered by it are provided under the headings which follow.

³¹ AF Patterson & RNG Weidenhofer, *A study of dental health of primary school children in the local government areas of Blue Mountains and Hawkesbury, NSW*, Dental Health Unit, NSW Health Department, 1993. see NHMRC Review, 1999, Ch 5, p 15.

³² NHMRC Review, 1999. The review team was from the Royal Melbourne Institute of Technology and Monash University.

³³ NHMRC Review, 1999, Ch 1, pp 1-2.

5.3.1 Dental Caries

The 1999 NHRMC Review considered nine pivotal studies between 1991 and 1998 concerning the fluoride and caries relationship.³⁴ The studies indicate that there has been a marked reduction in caries in deciduous teeth and a smaller decrease in permanent teeth in children living in areas with water fluoridation. Where water fluoridation has ceased, the majority of studies show an increase in caries although, in some instances, such as in Singapore, it was found that caries continued to decrease despite a decline in fluoridation levels.³⁵

While studies indicate a continued decrease in dental caries in fluoridated communities compared to non-fluoridated areas, recent studies indicate that the magnitude of the difference has declined. For example, in a 1995 study, the caries protective effect of fluoridation was found to be 0.3 surfaces per child in Queensland and 0.12 in South Australia for permanent teeth.³⁶

An overview of Australian studies by the 1999 NHRMC Review team revealed that during the 1990s, the Australian level of dental caries was one of the lowest in the world, falling well below the WHO recommendation of no more than 3 decayed, missing or filled permanent teeth (DMFT).³⁷ Dental caries experience in twelve year olds declined about 78% between 1975 and 1995 (from a DMFT of 4.5 to a

³⁴ These include, for example, SPS Teotia & M Teotia, 'Dental caries: a disorder of high fluoride and low dietary calcium interactions', *Fluoride*, 27, 1994, pp 59-66; GD Slade, et al, 'Associations between exposure to fluoridated drinking water and dental caries experience among children in two Australian states', *Journal of Public Health Dentistry*, 55, 1995, pp 218-228; GD Slade et al, 'Influence of exposure to fluoridated water on socioeconomic inequalities in children's caries experience', *Community Dental Oral Epidemiology*, 24, 1996, pp 89-100; GD Slade et al, 'Caries experience among children in fluoridated Townsville and unfluoridated Brisbane', *Australian and New Zealand Journal of Public Health*, 20, 1996, pp 623-629; KE Heller et al, 'Dental caries and dental fluorosis at varying water fluoride concentrations', *Journal of Public Health Dentistry*, 57, 1997, pp 136-43; CM Jones et al, 'Water fluoridation, tooth decay in 5 year olds and social deprivation measured by the Jarman Score: analysis of data from British Dental Surveys', *British Medical Journal*, 15, 1997, pp 514-517. For the full range of studies cited, see Ch 5 of the Review document.

³⁵ NHRMC Review, 1999, Ch 5, p 4, citing GL Lo & RA Bagramian, 'Declining prevalence of dental caries in school children in Singapore', *Oral Diseases*, 3, 1997, p 121.

³⁶ GD Slade, et al, 'Associations between exposure to fluoridated drinking water and dental caries experience among children in two Australian states'.

³⁷ 'DMFT' is an index used to express the number of decayed, missing or filled permanent teeth and 'dmft' is used to indicated the number of decayed missing or filled deciduous/baby teeth.

DMFT of 1). This is the case in fluoridated and non-fluoridated areas but with a lower caries experience in fluoridated areas.³⁸

The studies indicate an overall decline in dental caries for both deciduous and permanent teeth since 1990 in all states and territories, including Queensland, although Queensland had the highest DMFT between 1991 and 1995.³⁹

The Review noted 1996-97 data from the School Dental Service in Victoria, where Melbourne has fluoridated water and a number of large cities and towns are non-fluoridated. The data reveals that a higher percentage of children free of decay came from fluoridated areas.⁴⁰

Children from lower socioeconomic groups in non-fluoridated areas have been found to have higher levels of dental decay. Exposure to fluoride was found to vary by socioeconomic group, with the higher end groups having more exposure. It was observed that while that might contribute to lower decay rates in higher socioeconomic groups in fluoridated and non-fluoridated areas, there may be other factors at work such as frequency of tooth brushing, diet and dental treatments. Most studies found that fluoride in water appeared to have more impact in children from more deprived areas with fluoridation reducing the socio-economic inequalities of caries.⁴¹

While evidence of a protective effect on dental health is strongest in children, there is also a protective effect in adults. Some overseas studies have found a decrease in dental caries in adults living in areas with fluoridated water.⁴²

The 1999 NHRMC Review concluded that water fluoridation at optimal levels – from 0.6 ppm in sub-tropical regions to 1.1 ppm in temperate climates – continues to provide significant benefits in the prevention of dental caries for both deciduous and permanent teeth. It also remains the most effective and socially equitable means of achieving community-wide exposure to the caries-preventive effects of fluoride.

³⁸ NHRMC Review, 1999, Ch 5, p 6.

³⁹ NHRMC Review, 1999, Ch 5, p 8.

⁴⁰ NHRMC Review, 1999, Ch 5, p 9, citing 1996-97 School Dental Health Service, Victoria data.

⁴¹ NHRMC Review, 1999, Ch 5, p 4, citing a number of studies.

⁴² NHRMC Review, 1999, Ch 5, p 4-5, citing a number of studies.

5.3.2 Dental Fluorosis

Dental fluorosis (mottling of enamel) can be almost undetectable, or it can take the form of severe brownish staining and flaking. It is caused by excessive fluoride exposure up to around age seven, during tooth development. The possible contributing factors include fluoride supplements, fluoride levels in toothpaste, residing in an optimally fluoridated area, prolonged use of infant formulae, frequency of tooth brushing, swallowing toothpaste, and temperature.⁴³

It appears that the prevalence of fluorosis of any real degree is around 30% in non-fluoridated areas to 60% in fluoridated areas. In areas with a water fluoridation level around 1 ppm, there seems to be a 4-8% prevalence of more severe fluorosis.⁴⁴ The WHO recommends an upper limit of 1.5 ppm fluoride in drinking water as a “... guideline value...”, above which, “... detectable effects such as mottling of the teeth, are sometimes associated...”.⁴⁵

Evidence suggests that fluorosis is dose-dependent so the higher the dose of fluoride during the critical tooth development period, the more severe the fluorosis. The 1999 NHRMC Review commented that it is unknown what threshold dose fluorosis can begin to occur at, or how general or individual that dose is. There is also no knowledge of individual exposure levels.⁴⁶

There is evidence of increased dental fluorosis in communities exposed to a combination of optimally fluoridated drinking water and discretionary sources of fluoride. Where there is low caries experience, any marginal benefit from further exposure to discretionary fluoride also carries a greater risk of dental fluorosis. It was noted that when water fluoridation began, the daily fluoride intake was based on, for example, 1 ppm in whatever volume of water was drunk whereas, today, there is a composite and unknown and greater exposure from a range of sources. Current intakes in fluoridated and non-fluoridated areas require monitoring upon which to base decisions about any necessary modifications.

The 1999 NHRMC Review recommended that the reduction of long-term exposure to fluoride may arguably be best achieved by reducing the use of supplements and the level of fluoride in infant formulae and toothpaste. The lowering of

⁴³ NHRMC Review, 1999, Ch 5, p 45.

⁴⁴ NHRMC Review, 1999, Ch 7, p 16.

⁴⁵ NHRMC Review, 1999, Ch 7, p 2, citing WHO, *Guidelines for drinking water quality. 1984*, vol 1, Recommendations, Geneva, 1994.

⁴⁶ NHRMC Review, 1999, Ch 1, p 3, Ch 7.

concentration of fluoride in drinking water should be considered only after assessing the effects of reducing intake discretionary sources.⁴⁷

The WHO notes that excessive levels of fluoride in drinking water can lead to skeletal fluorosis – structural damage to bones and calcification of joints.⁴⁸ One critic of water fluoridation, Professor Mark Diesendorf (now Adjunct Professor of Sustainability Policy at Murdoch University), believes that dental fluorosis in fluoridated regions is much more prevalent and that it is not just a cosmetic defect but also, if it becomes severe, can involve damage to tooth enamel and tooth function. In addition, Professor Diesendorf claims that there is some evidence of an increase in skeletal fluorosis. He asserts that there is no adequate safety margin for fluoridation.⁴⁹

A review in the *British Medical Journal* noted that there has been little high quality research undertaken on the impact of fluoridation on public health, and that observer bias was possible in studies that consider fluorosis. That is because assessment is subjective (i.e. what degree of mottling is seen as severe varies between observers). The review found that, while there is evidence of a prevalence of dental fluorosis in fluoridated areas, any association between water fluoridation and other diverse effects (such as cancer and bone fracture) was not found.⁵⁰

5.3.3 Bone Density

There is some relationship between fluoride and an increase in bone density. Professor Diesendorf has commented that his review of a range of studies indicates a link between fluoridation of water and hip fractures.⁵¹ However, those assertions have been questioned in subsequent research by Professor John Spencer, from the Department of Dentistry at Adelaide University, who considered that the

⁴⁷ NHRMC Review, 1999, Recommendations.

⁴⁸ WHO, *World Water Day 2001: Oral Health*.

⁴⁹ M Diesendorf, 'A kick in the teeth for scientific debate', *Australian Science*, September 2003, pp 35-37.

⁵⁰ MS McDonagh, 'Systematic review of water fluoridation', *British Medical Journal*, 321, October 2000, pp 855-859.

⁵¹ M Diesendorf et al, 'New evidence on fluoridation', *Australian and New Zealand Journal of Public Health*, 21(2), 1997, pp 187-188.

Diesendorf research was selective in the studies it used to support the claimed association.⁵²

The 1999 NHRMC Review found that the stronger studies it looked at appear to suggest a protective effect for hip fractures. In terms of other fractures, the results seem to vary considerably. However, the evidence of the benefit of fluoride in treating osteoporosis is inconclusive and given that fluoride does appear to impact on bone mineral density, there is need for further research. In terms of using fluoride therapy to treat osteoporosis, the studies indicated that any evidence of benefit was inconclusive.⁵³

5.3.4 Bone Cancer and Other Cancers

Tumours of bones and joints are found in less than one person in 100,000, peaking in adolescence. Risk factors include radiation, viral action and genetic factors. Because fluoride is known to accumulate on the bone, some attention has been given to whether fluoride has a carcinogenic effect.

The NHMRC considered that there is not enough evidence to establish a link between bone cancer and water fluoridation. There have only been five studies considering the issue, three of which were case-controlled.

In terms of other cancers, there have been two studies since 1991. One study found a weak trend for lung, larynx and bladder cancers following occupational exposure to cryolite ore (which has 50% fluoride), where daily fluoride exposure was around 35mg. Other factors, such as smoking, however, were not taken into account. Overall, it appeared that there was insufficient evidence of an association between water fluoridation and risk of other cancers, and a weak positive trend for increases in lung, larynx and bladder cancers.⁵⁴

5.3.5 Other Health Problems

After reviewing a number of studies since 1991, the 1999 NHRMC Review found that those on reproductive toxicity indicated a weak trend for lower neonatal deaths and decreased testosterone levels with increasing exposure to fluoridated water.

⁵² AJ Spencer, 'New, or biased, evidence on water fluoridation?', *Australian and New Zealand Journal of Public Health*, 22(1) 1998, pp 149-154, pp 149-150.

⁵³ NHRMC Review, 1999, Ch 5, pp 72-73, 82, reviewing a range of studies.

⁵⁴ NHRMC Review, 1999, Ch 5, pp 90-91.

On the other hand, some small case-controlled studies have reported an association between higher water fluoride exposure and adverse gastro-duodenal effects. However, there was no evidence that optimal fluoride levels had any impact.

There was some evidence that patients with the condition called otosclerosis (formation of spongy bone in the bony labyrinth of the ear) who consumed fluoridated water had better hearing levels those who did not.⁵⁵

People with renal problems remove fluoride from their bodies less effectively than people without those problems, and may have higher levels of serum fluoride. This might create issues for those on dialysis.⁵⁶

The 1999 NHRMC Review also noted that there needs to be an improvement in the monitoring of dental health, particularly in fluoride intake, to identify risk factors and ensure dental health is effective and cost beneficial.

5.4 TOWNSVILLE AND BRISBANE STUDY

In 1996, a group of dental health researchers from the University of Adelaide published their findings regarding the differences in caries experience of children aged five to twelve years who were lifetime residents of either Brisbane or Townsville. The cross-sectional study, '**Caries experience among children in fluoridated Townsville and unfluoridated Brisbane**', sampled children attending the School Dental Service for periodic examination between June 1991 and May 1992.⁵⁷ The severity of caries experience was expressed using an index of the number of decayed, missing or filled tooth surfaces per child for baby or deciduous teeth (dmfs index) and permanent teeth (DMFS index). The results were then compared using two methods of analysis consistent with those from previous studies. The 1999 NHRMC Review considered this to be a pivotal study.

1,649 children who were lifetime residents of Townsville and 2,939 lifetime residents of Brisbane participated in the research. It was found that the average age at which children started brushing their teeth (based on parent questionnaires) and the number using fluoridated toothpaste was similar for both sets of children; however the frequency of tooth brushing was slightly higher among Brisbane

⁵⁵ NHRMC Review, 1999, Ch 5, p 96.

⁵⁶ NHRMC Review 1999, Ch 4, p 3.

⁵⁷ GD Slade, AJ Spencer, MJ Davies, and JF Stewart, 'Caries experience among children in fluoridated Townsville and unfluoridated Brisbane', 20(6) 1996, *Australian and New Zealand Journal of Public Health*, pp 623-629, p 623. The study received financial support from the NHMRC's Public Health Research and Development Committee.

children (72.7% compared with 68.2%). Over 36% of Brisbane children were found to have taken fluoride supplements, compared with just 3.1% of Townsville children. Annual mean income per household was slightly higher in Brisbane.

For five to ten year olds, it was found that the mean dmfs value was lower in Townsville children for each age group, except for nine year olds. For example, for five year olds, the dmfs in Brisbane was 2.98 compared with Townsville with a dmfs of 1.35. For permanent teeth, the mean DMFS levels were again lower in Townsville. For combined deciduous and permanent teeth in five to twelve year olds, the number of surfaces affected by decay or fillings or which were missing was a mean of 2.01 in Townsville and 3.69 in Brisbane. The caries experience for permanent teeth (decayed, missing or filled surfaces) was 20-65% less for children in Townsville than in Brisbane. These findings were consistent with studies in Western Australia⁵⁸ and New South Wales⁵⁹ which used a similar study design (see above).

The researchers noted that one aspect that may have affected interpretation of the results was that the participation rate was around 53% in Townsville but was just over 61% in Brisbane, leading to the possibility of underestimation of the population levels of caries.⁶⁰

The authors also noted that in observational studies of this type, care must be taken with drawing inferences about responsible factors for differences between cities. While the lifetime residents had different exposures to fluoridated water, other factors could be responsible for the observed differences in levels of caries (for example, consumption of cariogenic foods). However, there were two features of the analysis that suggested that fluoridation was the most plausible reason for the differences between Brisbane and Townsville. The first was that the type of analysis the researchers used enabled differences to be evaluated after controlling for confounding factors such as tooth-brushing patterns, use of fluoride supplements, socio-economic status, and fissure sealants. The consistent findings were that city differences remained statistically significant and the other factors that were associated with caries did not appear to confound the result. Secondly, given that the study used data from patients of the School Dental Service, access to dental treatment was not a significant factor influencing patterns of caries experience. Thus, exposure to fluoridation was the most plausible reason for the observed differences in caries experience between Townsville and Brisbane

⁵⁸ PJ Riordan, 'Dental caries and fluoride exposure in Western Australia'.

⁵⁹ AF Patterson & RNG Weidenhofer, *A study of dental health of primary school children in the local government areas of the Blue Mountains and Hawkesbury, NSW, 1993*.

⁶⁰ GD Slade, et al, p 628.

children, with no compelling evidence to suggest that other factors were responsible.⁶¹

6 THE CHILD DENTAL HEALTH SURVEY, AUSTRALIA 1999

In April 2003, the *Child Dental Health Survey, Australia 1999: Trends across the 1990s* was published by the Australian Institute of Health and Welfare's (AIHW's) Dental Statistics Research Unit (DSRU) at the University of Adelaide.⁶² The data was collected from a sample of around 372,000 child patients throughout Australia (around 53,000 from Queensland) attending the School Dental Service in 1999, and then analysed.

Out of 38 countries for which there is comparable data, Australia has the second lowest average number of decayed, missing or filled permanent teeth in twelve year old children. The greatest concern is that, after two decades of decline in decay in children, there is a trend towards increases in decay in younger children, particularly in the deciduous (baby) teeth of five to six year olds.⁶³

In 1999, the highest rates of decay in the five to six year age group were found in Victoria (mean of 1.45), Queensland (mean of 1.42) and the Northern Territory (mean of 1.42), with the national mean being 1.04. The Australian Capital Territory had the lowest rate of decay (mean of 0.69). Recorded fillings were more than three times higher in Queensland than in New South Wales (0.73 as opposed to 0.23). The authors stated that it should be noted, when assessing the number of fillings differences, that there are historical differences in caries prevalence and marked variations in population density, demography and levels of water fluoridation between New South Wales and Queensland. There are also differences in the ways school dental services are delivered in each State and Territory. The percentage of five to six year olds with no caries experience ranged from 50.2% in Queensland to 68.9% in New South Wales, with the national average being 60%.⁶⁴

For twelve year olds' permanent teeth, the mean number of decayed teeth was highest in Victoria (0.66), followed by Queensland (0.54). South Australia had the lowest (0.26) (the national mean was 0.42). Also among twelve year olds, New

⁶¹ GD Slade et al, pp 628-629.

⁶² JM Armfield et al, *The Child Dental Health Survey, Australia 1999: Trends across the 1990s*, University of Adelaide, AIHW Dental Statistics and Research Series No. 27, April 2003.

⁶³ AIHW Media Release, 'Concern over children's dental health', 15 April 2003.

⁶⁴ JM Armfield et al, *The Child Dental Health Survey, Australia 1999*, pp 21-22.

South Wales had the greatest number with no caries experience (74.7%) and Queensland had the lowest number (51.7%). The national percentage was 64.5%.⁶⁵

Using age-standardised data to bring together data from all children aged five to twelve years throughout Australia, it was revealed that Queensland had the highest levels of caries experience for deciduous teeth (mean dmft = 2) with 49.6% having no caries experience. This was below the 60% national average. Queensland also had the highest permanent caries experience scores (mean DMFT = 0.54) with 75.8% having no caries experience. Figures were also high in Victoria, with a mean DMFT of 0.51 and 75.2% of children having no caries experience. The national mean DMFT was 0.39, and the national average of no caries experience was 80.8%. The lowest levels were found in New South Wales (mean DMFT = 0.24 and 87.3% with no caries experience).⁶⁶

The *Child Health Dental Survey, Queensland 2000* found that from 1999 to 2000, the mean number of dental caries experience in deciduous teeth had declined for most age groups in Queensland children aged zero to twelve years, and the mean number of teeth with deciduous decay decreased for most age groups. For permanent teeth, it was found that for children up to twelve years, over 50% in any age group were free of clinical caries. For both deciduous and permanent teeth, untreated clinical decay was found in 25.6% to 45.1% of children, with the greatest prevalence found in seven year olds (45.1%). Over 93% had no teeth missing due to caries, but around 51% of nine to ten year olds had at least one filling.⁶⁷

7 OTHER FLUORIDATION ISSUES

In the above discussion of the fluoride studies and literature, many of the adverse health effects often associated with ingestion of fluoride, such as fluorosis, were examined as were the arguments concerning whether fluoridated water was beneficial for teeth.

Apart from health effects, other issues about fluoridation have been raised, some of which were mentioned in the studies discussed above. They include—

⁶⁵ JM Armfield et al, *The Child Dental Health Survey, Australia 1999*, pp 23-24.

⁶⁶ JM Armfield et al, *The Child Dental Health Survey, Australia 1999*, p 25.

⁶⁷ JM Armfield et al, *The Child Health Dental Survey, Queensland 2000*, University of Adelaide, 2003.

- most tooth decay and other tooth problems tend to be found in people from lower socioeconomic groups who tend to be least able to afford good dental care whereas fluoridated water is available to all;⁶⁸
- there has been little research on the environmental impact of fluoride; and
- the measure is seen by some as ‘mass-medication’ via the water supply.⁶⁹

8 CURRENT FLUORIDATION LAWS IN QUEENSLAND

Under the *Fluoridation of Public Water Supplies Act 1963 (Qld)* (the *Fluoridation Act*), a local government may add fluorine to a public water supply under its control: s 4(1). The form in which the fluorine is added and the concentration content is prescribed by the *Fluoridation of Public Water Supplies Regulation 1998 (Qld)*: s 4(2), s 4(3). However, the local government cannot adopt this measure if, at a poll taken under the *Local Government Act 1993 (Qld)*, a proposal to fluoridate the water supply in the local government area is defeated: s 4(1A). If the public water supply is used to supply water in two or more local government areas, then the local government that controls that water supply is deemed to be a joint local government for all areas: s 4(1B).⁷⁰

Thus, a Council can fluoridate its water supply without holding a public poll but, if it holds a poll, it is bound by the majority decision. Therefore, in Queensland, the decision to fluoridate is a local government responsibility. The local government areas that currently fluoridate their water supply are Townsville, Dalby, Mareeba, and Moranbah.

9 THE FLUORIDATION OF PUBLIC WATER SUPPLIES AMENDMENT BILL 2004 (QLD)

The **Fluoridation of Public Water Supplies Amendment Bill 2004 (Qld)** (the Bill) amends the *Fluoridation Act* by proposing to omit ss 3 to 5 and inserting a **proposed new s 3**. The proposed new provision states that a controlling entity for a public water supply must add fluorine, in a form prescribed under a Regulation, to the public water supply. The controlling entity must maintain the content of the

⁶⁸ Chris Griffith, ‘Fluoride debate lights up’, *Courier Mail*, 21 July 2004, citing comments from QAMA president, Dr David Molloy. Also raised in the NHRMC Review, 1999.

⁶⁹ Chris Griffith, ‘Fluoride debate lights up’.

⁷⁰ See also s 5 regarding indemnification by the Treasurer for court costs in certain circumstances.

fluorine in the public water supply at a prescribed level. A new definition of 'controlling entity' is inserted into s 2 to embrace both local governments having control of a local water supply as well as any other entity that controls a public water supply.

The requirements do not apply if the public water supply is used for supplying water to fewer than a prescribed number of persons, thus providing an exemption for small communities.

10 EXAMPLES OF INTERSTATE FLUORIDATION LEGISLATION

The **New South Wales** *Fluoridation of Public Water Supplies Act 1957* states that a water supply authority may, subject to the approval of the Secretary of the Department of Health and to the Regulations, add fluorine to the water supply under its control and shall add fluorine if directed by the Secretary to do so. A Fluoridation of Public Water Supplies Advisory Committee (appointed by the Minister) is charged with making recommendations to the Minister concerning the addition of fluorine to water supplies and the Secretary can only give the aforementioned direction to a water supply authority if advice has been received from the Committee about the question.

The **Victorian** *Health (Fluoridation) Act 1973* allows a water supply authority to add fluoride to water and states that they must do so if so directed by the Health Secretary. Net capital costs and expenses incurred in installing the relevant equipment and control measures are defrayed out of moneys provided by Parliament for the purpose.

The **Tasmanian** *Fluoridation Act 1968* provides that where the Fluoridation Committee (appointed by the Minister) recommends that fluoride be added to a public water supply, if the Minister approves the recommendation, the Minister shall direct that the relevant water supply authority do so. Costs and expenses of the fluoridation works are funded out of moneys provided by Parliament. The **Western Australian** *Fluoridation of Public Water Supplies Act 1966* has a similar framework.

11 QUEENSLAND GOVERNMENT POSITION

At the July 2004 meeting of Australian Health Ministers in Hobart, Queensland Health Minister, the Hon Gordon Nuttall MP, stated that Queensland supported the addition of fluoride to the public water supply if it was endorsed by residents. The Health Ministers observed that there was overwhelming evidence that fluoridated water would benefit oral health. Mr Nuttall said that less than 5% of the

Queensland population has access to fluoridated water compared to other States and Territories, where the percentage is 70% or more.⁷¹

The *Queensland Government Position Statement on Water Fluoridation* states that:

Whilst recognising that the balance of scientific argument favours the use of fluoride in the pursuit of oral health, it is a principle of ethical public health that mass, involuntary medication must never proceed without the express consent of the community....

*... The Queensland Government recognises that there is not a unanimity of opinion on the health and environmental impacts of fluoridation, but in view of the prevailing balance of argument, encourages public debate aimed at enhancing oral health...*⁷²

Thus, the Queensland Government supports the introduction of fluoridation wherever the community affected has consented to it.

Queensland Health seeks to promote the use of fluoride, especially fluoridation of water, in areas of high risk.⁷³ Improvement in the oral health of Queenslanders has been a longstanding performance objective of the Department.⁷⁴ The recent *Health Determinants 2004* indicates that 4.7% of the Queensland population has access to fluoridated water. It found that the prevalence of dental caries is lower where infants and children have access to fluoridated water and when frequent exposure to foods and drinks containing added sugar is avoided.⁷⁵

Queensland Health's Oral Health Unit has a 'Fluoridation Subject Directory' which has fact sheets and guidelines about water fluoridation and fluoride supplements plus links to other fluoride information and websites. This can be accessed at http://www.health.qld.gov.au/HealthyLiving/Fluoride_HP.htm.

12 POSITION OF THE BRISBANE CITY COUNCIL

Prior to the Brisbane City Council (BCC) election in March 1997, the issue of fluoridation was raised again, mainly in the media. The then Liberal Opposition

⁷¹ Hon Gordon Nuttall MP, Minister for Health, 'Australian Health Ministers' Conference Focuses on Fluoridation, Obesity', *Ministerial Media Statement*, 29 July 2004.

⁷² Queensland Government, *Queensland Government Position Statement on Water Fluoridation*, 2003.

⁷³ Queensland Health, *Strategic Plan 2004-2010*, p 17.

⁷⁴ See, for example, the *Queensland Health Corporate Plan 1996-2001*.

⁷⁵ Queensland Health, Public Health Services and Health Information Centre, *Health Determinants Queensland 2004*, Ch 2, p 23.

supported fluoridation but promised to issue filters to remove the chemical to those who did not want to drink it. This resulted in the establishment of the *Lord Mayor's Taskforce on Fluoridation* (chaired by the then Lord Mayor Jim Soorley) which decided against fluoridation of the Brisbane water supply. In 2004, the matter is again being revisited by the BCC and other South East Queensland local governments.

12.1 LORD MAYOR'S TASKFORCE ON FLUORIDATION

In relation to fundamental questions regarding efficacy, effectiveness and safety of fluoridation, the *Lord Mayor's Taskforce on Fluoridation* was divided between those in favour of water fluoridation and those who remained unconvinced that it was necessary, effective and safe. A small majority (52%) of members opposed fluoridation in Brisbane.

While satisfied that there was overwhelming evidence that fluoridated drinking water did reduce decay, there were differences of opinion among members about the extent of the benefits which fluoridated water alone could produce and about the use of percentages to express decay decline.

Given the reduction in dental decay in fluoridated and non-fluoridated areas over recent decades, including in Queensland, many members did not believe that the decay problem in Brisbane was serious enough to warrant water fluoridation. There was concern that there may be an association between water fluoridation and higher levels of hip fractures and about the impact of water fluoridation on the total level of consumption of fluoride by infants and young children. There was also some concern about the impact of water fluoridation on some plant and marine species, but the members noted that more studies had to be done on the environmental effects of the measure. The majority view was that there needed to be more Australian scientific research undertaken and improvements in dental health monitoring before it would support the measure.⁷⁶

Following the outcome of the Taskforce Report, the then Lord Mayor, Jim Soorley ruled out fluoridation of the Brisbane water supply. This move was reported to have been opposed by the ADA and AMA who pointed to the results of the Townsville study (considered above) showing greater rates of decay in Brisbane children compared with their Townsville counterparts.⁷⁷

⁷⁶ Brisbane City Council, *Lord Mayor's Taskforce on Fluoridation*, 1997, Ch 12.

⁷⁷ Ella Riggert, 'Dentists to fight tooth and nail for fluoride', *Courier Mail*, 4 October 1997, p 15.

12.2 RECENT EVENTS

In July 2004, it was reported that a working group comprising QAMA president, Dr David Molloy, ADA state president and vice-president, Dr Paul Renner and Dr Michael Foley, and Pharmacy Guild president, Kos Sclavos, would meet with Lord Mayor Campbell Newman and Deputy Mayor David Hinchliffe in an attempt to convince them of the benefits of fluoridation.⁷⁸ While both Lord Mayor Newman and Deputy Mayor Hinchliffe were willing to listen to a fresh case for the implementation of the measure, they said it was a matter for the Council's Civic Cabinet to decide whether the matter should go further. Lord Mayor Newman has commented that given that around 30% of people do not want fluoride added to their drinking water, this needs to be respected and the medical profession must convince the community of the benefits of the measure and that there are no adverse health effects.⁷⁹

At a BCC meeting on 27 July 2004, the Lord Mayor stated that the Council had been approached by medical and dental association representatives, urging a rethink of the fluoridation issue and that the Council had agreed to listen to new evidence of the safety and efficacy of the measure. He noted that there was a broader issue to be considered in terms of other local authorities that received water from Brisbane. The Lord Mayor said that the matter would be raised with those councils at an upcoming meeting of the South East Queensland Regional Organisation of Councils (SEQROC), proposing that a review of the matter be undertaken.⁸⁰ A number of other local government areas obtain water from Brisbane, including Logan, Redcliffe, Pine Rivers, Beaudesert and the Gold Coast. On 30 July, the SEQROC voted to initiate a review, via a subcommittee, to consider new evidence on the matter.⁸¹

⁷⁸ Chris Griffith, 'New bid to put fluoride in water', *Courier Mail*, 19 July 2004, p 1.

⁷⁹ 'Tough teeth', *Stateline – Queensland*, www.abc.net.au, 6 August 2004.

⁸⁰ Minutes of Proceedings, the 4132nd meeting of the Brisbane City Council, City Hall, Brisbane, 27 July 2004, p 11.

⁸¹ Minutes of Proceedings, 4133rd meeting of the Brisbane City Council, 3 August 2004, p 10.

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