



Ms Rebecca Olson
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By email: council@pmhc.nsw.gov.au

Dear Ms Olson

Thank you for your letter of 18 March 2016 to Professor Anne Kelso AO, Chief Executive Officer, seeking further advice from the National Health and Medical Research Council (NHMRC) on the fluoridation of drinking water. Professor Kelso has asked me to reply on her behalf. I have addressed each of your queries below.

NHMRC funding for research on water fluoridation

As part of our role in administering health and medical research funding on behalf of the Australian Government, NHMRC has funded over \$5.8 million on research relating to fluoride in the period between 1986 and 2014. This includes eight projects funded by NHMRC prior to 2000, covering topics such as the effectiveness of water fluoridation, intake of fluoride from food, metabolism of fluoride and fluoride as a treatment for osteoporosis.

The majority of research funded by NHMRC is investigator-initiated, meaning that the research is conceived and developed independently of NHMRC, by the research investigator. Funding is provided on a competitive basis, after receiving applications in defined periods each year, for defined categories of grants and awards. In 2009, NHMRC awarded funding to a project investigating the risk and long term impact of dental fluorosis as a result of exposure to fluoride. Apart from this research on dental fluorosis, there have been no projects funded by NHMRC prior to or after 2000 that investigated potential negative health effects from fluoride or fluoridation.

NHMRC advice on the efficacy and safety of water fluoridation

NHMRC is also responsible for delivering health advice for the Australian community, health professionals and governments, based on the best available evidence. As part of this role, NHMRC has provided consistent advice on the effectiveness and safety of fluoridation of public water supplies for over thirty years. The requested copies of NHMRC's reviews on fluoridation from 1985, 1991 and 1999 are attached with this letter. I would like to point out that these reviews are different to funded research and represent a systematic synthesis of the available evidence overseen by an expert committee established by NHMRC.

Please note that the 1985 and 1991 reviews were rescinded and the Council of NHMRC no longer endorses the accuracy or relevance of any information contained in these reports. The 1999 review is an incomplete draft that was never finalised or endorsed by the Council of NHMRC, due to a lack of resources. The NHMRC reviews of 1985, 1991 and 1999 had the same conclusion that water fluoridation is the most effective and socially equitable public intervention for achieving caries prevention at the community level.

NHMRC's 2007 review was undertaken to evaluate the scientific literature on fluoridation published between 1996 and December 2006. The 2006 report of the National Research Council of the National Academies of Sciences (referred to both as the NAS report and NRC report) provided background information for NHMRC's 2007 review. Our review noted that the 2006 NAS report refers to adverse health effects observed at much higher levels of fluoride (2-4mg/L) than is recommended for water fluoridation in Australia (between 0.6 to 1.1mg/L). Given the NAS report is not a scientific study, it was not included in the systematic review of evidence in NHMRC's 2007 review.

As you are aware, NHMRC is currently undertaking a further review to consider the body of evidence published since the 2007 review. While the 2006 NAS report will be acknowledged in this review, the scope of the review is restricted to scientific studies on the dental benefits and potential health effects of water fluoridation in humans. A full report on the findings of our current review will be published alongside a draft NHMRC Information Paper, which is expected to be released for public consultation in mid-2016. The Information Paper will include a synthesis of this evidence and a comment on the ethics of water fluoridation.

Monitoring of fluoride consumption in Australia

In regard to fluoride consumption in Australia, NHMRC's role is restricted to delivering health advice on the effectiveness and safety of water fluoridation to achieve dental health benefits, balanced with the need to ensure the safety and quality of public drinking water supplies as set out in the 2011 Australian Drinking Water Guidelines (ADWG). NHMRC does not have a role beyond this in monitoring fluoride intake from other sources.

The 2011 ADWG recommend that fluoride levels in drinking water should not exceed 1.5 mg/L. The rationale for this guideline value is described in the fluoride factsheet on pages 671–672 of the ADWG, which can be found at: <https://www.nhmrc.gov.au/guidelines-publications/eh52>. This level is consistent with international guidance, including Health Canada and the World Health Organization. It is lower than levels set by the United States Environmental Protection Agency. The guideline value should not be regarded as a recommended value for fluoridation of water supplies.

NHMRC's 2007 *Public Statement: The Efficacy and Safety of Fluoridation* recommends that water be fluoridated within the range of 0.6 to 1.1 mg/L for the prevention of dental caries. At this level, the only known adverse health effect is very mild or mild dental fluorosis, which is unlikely to be of aesthetic concern. Other adverse effects, such as skeletal fluorosis, have been reported in countries with much higher levels of naturally occurring fluoride in the water supply. While the guideline level of 1.5 mg/L for fluoride is set to protect children from the risk of dental fluorosis, it is considered that it would also protect against other adverse effects which may occur at higher exposures and at different life stages.

In the ADWG, safety factors have been applied in order to take into account the uncertainty when extrapolating from animal studies to humans, or to account for variation between humans when only small human studies are available. The information used to set the guideline value for fluoride in drinking water comes directly from human studies and therefore the use of a safety factor was not considered necessary. This approach is described in detail on page 90 of the ADWG.

You may be interested in recent work of Food Standards Australia New Zealand (FSANZ) and the Australian Government Department of Health, which has considered the safety and monitoring of the daily intake of fluoride at an individual level. The 2006 Nutrient Reference Values (NRVs) provide recommended Upper Levels (UL) of daily fluoride intake for different age groups, taking into account the sources of fluoride from food, beverages and toothpaste. However the ULs are based on theoretical estimates of fluoride intake rather than actual consumption data. The 2006 NRVs for fluoride can be found at: <https://www.nrv.gov.au/nutrients/fluoride>.

The 23rd Australian Total Diet study (ATDS) conducted by FSANZ in 2011 included a dietary intake assessment of fluoride. While this study found exceedances of the ULs for fluoride intake recommended in the 2006 NRVs for some age groups, this was not considered to pose any risk to human health. Findings of the ATDS are available at: http://www.foodstandards.gov.au/publications/documents/FSANZ%2023rd%20ATDS_v8_.pdf.

The NRVs for fluoride intake in infants and young children are currently under revision, given the fluoride intake for this age group is critical in balancing the prevention of dental caries and risk of dental fluorosis. A draft of the revised NRVs was released for public consultation in December 2015 and can be found at: https://consultations.health.gov.au/chronic-disease-and-food-policy-branch/review-of-the-2006-nutrient-reference-values-for-a/supporting_documents/Australia%20and%20New%20Zealand%20Nutrient%20Reference%20Values%20for%20Fluoride.pdf

Please do not hesitate to contact me with any further enquiries related to NHMRC's advice on water fluoridation and visit our webpage for regular updates at <http://www.nhmrc.gov.au/your-health/health-effects-water-fluoridation>.

Yours sincerely



Tanja Farmer
A/g Executive Director
Evidence, Advice and Governance

29 April 2016

Attachments

1985 Report: *Report of working party on fluorides in the control of dental caries (rescinded)*

1991 Report: *The effectiveness of water fluoridation (rescinded)*

1999 Report: *Review of water fluoridation and fluoride intake from discretionary fluoride supplements (archived draft, released for public consultation in April 1999, but never finalised or endorsed by NHMRC)*