

## summary

# No adequate evidence to assess differences between natural and artificial water fluoridation

McDonagh M, Whiting P, Bradley M, Cooper J, Sutton A, Chestnutt I, et al. *A Systematic Review of Public Water Fluoridation*. York: Publications Office, NHS Centre for Reviews and Dissemination, University of York. ISBN 1 900640 16 3; 2000

**Objective** Are there differences in the effects of natural and artificial water fluoridation?

**Data sources** See page 37.

**Study selection** See page 37.

**Results** The assessment of the effect of natural versus artificial water fluoridation is greatly limited because of the lack of studies that make the comparison. Very few studies included both natural and artificially fluoridated areas, and direct comparisons were not possible for most outcomes. No major differences were apparent in this review.

**Conclusions** Although no major differences were apparent in this review, the evidence is not adequate to reach a conclusion regarding this objective.

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## Commentary

This section of the York review examined whether there are any differences in the effects of artificially and naturally fluoridated water. Artificial fluoridation is achieved mainly by the use of compounds such as sodium hexafluoro-silicate ( $\text{Na}_2\text{SiF}_6$ ) in a slurry, fluorosilicic acid ( $\text{H}_2\text{SiF}_6$ ) in solution, or occasionally sodium fluoride (NaF) in a saturated solution, added as a weighed dose to a given rate of water flow.

The number of included studies that addressed this issue was limited. Only one included study<sup>1</sup> looked at the effect on caries reduction and this suggests that naturally and artificially fluoridated water have similar effects on dental decay.

When considering fluorosis studies, whereas areas were investigated that

had low (<0.3 ppm) or very high (4–7 ppm) natural fluoride content, there were no studies that compared an area with water naturally fluoridated to around 1 ppm with an area artificially fluoridated to this level. This meant that no direct comparisons could be made. In the regression analysis a term for type of fluoridation (artificial or natural) was included. This variable did not show an association with fluorosis incidence, suggesting that there is no difference in the effects of artificially and naturally fluoridated water. The data do suggest, however, that there is no statistically significant association between water fluoridation and cancer incidence, irrespective of whether the fluoridated area is artificially or naturally fluoridated.

There were insufficient studies looking at other negative effects of fluoridation to make comparisons. The limited amount of evidence addressing whether there is any difference between natural and artificial water fluoridation means a substantive conclusion cannot be reached. The review itself does not identify any major differences.

1. Brown HK, Poplove M. The Brantford-Sarnia-Stratford fluoridation caries study: final survey, 1963. *J Canad Dent Assoc* 1965; 31:505–511.

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