

## **Dental Fluorosis (mottling)**

There is a well-established adverse association between levels of fluoride in water and the prevalence of dental fluorosis (mottling of the teeth).

Dental fluorosis is one of a number of different conditions that can affect the appearance of teeth. In England it is usually seen as paper-white flecks or fine white lines but it can vary in appearance from barely visible white lines to patches which may be of aesthetic concern.

The risk period for the development of dental fluorosis in permanent (adult) teeth is when the teeth are growing in the jaws; dental fluorosis cannot develop after teeth are formed. The first two to three years of life are generally accepted to be the period of highest susceptibility for fluorosis affecting the front teeth (the incisors).

The impact of milder forms fluorosis on measured quality of life (using the Oral Health Related Quality of Life scale) is certainly less than that of tooth decay, and may be non-existent or even positive.

A positive effect on quality of life may seem counter-intuitive but may be explained by the fact that the white flecking of enamel associated with very mild fluorosis can give the impression of having teeth that are whiter than average. More severe dental fluorosis can cause brown staining and pitting of teeth but is generally seen in those countries with very high naturally occurring levels of fluoride in groundwater rather than in areas with community water fluoridation schemes. It should be noted that dental fluorosis can also occur in the absence of water fluoridation, through ingestion of other sources of fluoride during tooth formation, particularly toothpaste and other fluoride supplements.

A Medical Research Council report in 2002 concluded that, as far as artificially fluoridated areas in the UK and Europe are concerned, around 3 per cent to 4 per cent of children may have dental fluorosis of possible aesthetic concern, compared with around 1 per cent in non-fluoridated areas.

A comparison of (fluoridated) Newcastle and (unfluoridated) Manchester used a scoring system with a scale of 0-9 for severity and found that the percentage of children with mild or mild to moderate fluorosis (score 3) was 6 per cent in fluoridated Newcastle and 1 per cent in unfluoridated Manchester. However, the prevalence of higher scores (TF4 or greater) was very low in both cities – 1 per cent in fluoridated Newcastle and 0.2 per cent in unfluoridated Manchester. Of these, very few children were seen with a score of TF5, representing the lower end of severe fluorosis scores - 0.1 per cent in fluoridated Newcastle and 0.2 per cent in unfluoridated Manchester and no children were found with higher scores.

## **Skeletal Fluorosis**

Skeletal fluorosis is a condition characterised by skeletal abnormalities and joint pain, common in regions of the world which have high fluoride levels in the water (eg. up to 18 ppm in 15 states of India) and hot, dry climates. In more temperate climates, no cases of clinical skeletal fluorosis have been seen with fluoride levels up to 4 ppm in drinking water.

There is no evidence of clinical skeletal fluorosis arising from exposures in the UK or from levels of fluoride (approximately 1ppm) found in water fluoridations schemes worldwide.

Please note, this document will be updated as and when we receive more feedback on this particular topic.