



guardians of drinking water quality
DRINKING WATER INSPECTORATE

Nitrate

Where does it come from?

Nitrate occurs naturally in all surface and ground water although higher concentrations tend to occur only where fertilisers are used on the land. It is produced during the natural decay of vegetable matter in soil. Rainfall washes nitrate out of the soil in to lakes, rivers and streams.

Why is it necessary to control nitrate in water?

Very high amounts of nitrate in drinking water can cause methaemoglobinaemia (blue baby syndrome) in very young children. This is a potentially fatal illness where nitrate is converted to nitrite in the gut and interferes with the absorption of oxygen by the blood. This extremely unusual illness only occurs when nitrate intake is very high. The last recorded case in the UK occurred in the 1950s and was associated with the use of a shallow private well. However cases still continue in other parts of the world where there is little or no management of water supplies. The first legal standard for nitrate was set in 1980 and the current drinking water standard is 50 mg/l. This EU standard is based on the World Health Organisation's guideline value for drinking water, which is also 50 mg/l. This level is intended as a safeguard against methaemoglobinaemia.

What about nitrate and cancer?

There are some published studies showing that extremely high doses of nitrate can cause cancer in laboratory animals. A number of other epidemiological studies have investigated the theory of a possible association between nitrate in tap water and the incidence of cancer. All of these studies have given negative results and interestingly some have reported an inverse relationship - cancer incidence falls as nitrate levels in water rise. It is important to be aware that nitrate is a natural component of many foods including green vegetables and food provides the highest proportion of nitrate in the human diet.

How much nitrate is in your water?

Over 99.99% of tests for nitrate on samples of tap water in England and Wales gave results below the standard. Since the early 1990's water companies have been required to take remedial action whenever a risk of not meeting the nitrate standard is identified from routine monitoring of river and ground water. This action has consisted of blending higher nitrate waters with low nitrate water and where necessary the installation of specialised water treatment.

Summary statistics on nitrate concentrations in all public water supplies can be found on the [DWI website](#). You can also ask your water company for a free water quality report which will give the maximum and minimum nitrate values for your local water supply zone. Contact details can be found [here](#).

Keeping fish

Many people use home testing kits to measure the amount of nitrate in their fish tanks. These can be unreliable and may not give a true reading of the water leaving your cold kitchen tap. If you are concerned about the levels of nitrates in your supply, you should call your water company in the first instance.