NITRATES IN DRINKING WATER

Nitrates and Diet

Nitrate (NO3) is a compound of nitrogen and oxygen found in many food items in your everyday diet. Vegetables such as spinach, lettuce, beets and carrots contain significant amounts of nitrate. Generally, the nitrate concentration in water is low and contributes only a small percentage of the total nitrate intake, thus the major adult human intake of nitrate is from food rather than from water.

Nitrates in Drinking Water

Although low levels of nitrates may occur naturally in water, sometimes higher levels, which are potentially dangerous to infants, are found. SANS 0241 adopted a drinking water standard for nitrate of 10 milligrams per litre (10 mg/l) as N (nitrogen). This standard is mandatory for public water supplies and is used as a guide for private water supplies. Rand water uses 10 mg/l as N as a mandatory standard.

Sources of High Nitrates

It is often difficult to pinpoint sources of nitrates because there are so many possibilities. Sources of nitrogen and nitrates may include runoff or seepage from fertilized agricultural lands; municipal and industrial waste water, refuse dumps, animal feedlots, septic tanks and private sewage disposal systems, urban drainage and decaying plant debris.

Health Problems

High nitrate levels in drinking water pose a risk to infants because they may cause methemologlobinemia, a condition known as “blue baby syndrome.”

High nitrate levels interrupt the normal body processes of some infants. Nitrate becomes toxic when it is reduced to nitrite, a process that can occur in the stomach as well as in the saliva. Infants are especially susceptible because their stomach juices are less acidic and therefore are conducive to the growth of nitrate-reducing bacteria. (Adults can consume large quantities of nitrates in drinking water or food with no known ill effects; their stomachs produce strong acids that do not promote the growth of bacteria that convert nitrate to nitrite.) Nitrite in the blood combines with hemoglobin (protein molecule in red blood cells) to form methemoglobin (transformed product of hemoglobin), which reduces the capability of the blood to carry oxygen to all parts of the body. This results in the “blue” condition of the baby’s skin.

Infants younger than 6 months of age are most susceptible. However, because of individual differences in infants, some may not be affected. If an infant is affected, the skin turns a blue colour, similar to the color of the blood vessels located close to the skin. If a parent or other care giver observes this condition, medical help should be sought immediately as prompt medical attention normally results in quick recovery of the infant.

In all cases where drinking water contains more than 10 mg/l of nitrate as nitrogen, an alternative source of water should be found for the infant. Boiling the water will not reduce the nitrate concentration; in fact, it actually INCREASES the concentration by evaporating off the water. Water that is high in nitrates should not be used for preparing infant formula or in any other way that could result in consumption by a baby.

A daily fluid intake of 8 glasses per day is adequate. Rand Water purifies the water through a conventional purification process, resulting in water that is safe to drink. Your tap water will satisfy your daily requirements, and meets the SANS 0241 water quality specifications.

Visit **www.reservoir.co.za** for further information on water quality in your area.

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