

# Nitrogen compounds in drinking water

## Nitrates

- Standard 50 mg/l;
- an increased concentration of nitrates in drinking water is dangerous for infants → occurrence of methemoglobinemia .

## Methemoglobinemia edit source

Nitrates are reduced by bacteria in the GIT to nitrites → absorbed into the blood → change hemoglobin (Fe 2+ ) to methemoglobin (Fe 3+ ), which tightly binds oxygen → tissue hypoxia .

## Clinical picture of methemoglobinemia

In the first stage, the lips and skin turn blue. The condition progresses to shortness of breath, hypoxia damages internal organs, and if this condition persists for a long time, death may occur.

## Pathophysiology of methemoglobinemia

- Infants (up to the third month) do not have a sufficiently mature methemoglobin reductase system;
- at the same time, they still partially have fetal hemoglobin, which is more prone to the oxidation of Fe 2+ to Fe 3+ .

## Nitrites

- Standard 0.1–0.5 mg/l;
- presence in water indicates pollution;
- the nitrate/nitrite ratio is important.

## Nitrites and health

In the body, nitrites turn into some carcinogenic nitrosamines, which can cause stomach or bladder cancer. The protective factor is vitamin C, which serves as an antioxidant.

## Links

## References

- KRATZER, Karel, František KOŽÍŠEK a Vladimíra PUKLOVÁ. *Jakost pitné vody z veřejných vodovodů* [online]. Poslední revize 23.9.2009, [cit. 2010-11-04]. <<http://www.szu.cz/tema/zivotni-prostredi/jakost-pitne-vody-z-verejnych-vodovodu>>.