

**Nitrate/nitrite poisoning in dairy cattle associated with consumption of forages irrigated with municipally treated wastewater.**

**Authors:** Al-Qudah, K. M., Rousan, L. M., & Ereifej, K. I.

**Abstract:** Twenty-three cases of nitrate poisoning were diagnosed in a dairy herd due to consumption of green grass, mainly alfalfa, which was irrigated with a municipally treated wastewater. Five cows were found dead and seven fetuses were aborted. Methemoglobin (MtHb) in blood reached 41.6–7.5%, while hemoglobin concentration was low: 6.9 gm dL<sup>-1</sup>. Nitrite in plasma was 1.6–0.4 mmol; the levels of nitrate in suspected grass and water were 1.48–103 ppm and 1.7–103 ppm, respectively. The clinical picture included difficulty in breathing, shivering and brown discoloration of the mucous membranes of the vulva, vagina, and conjunctiva. The postmortem findings included dark brown carcasses with dark, nonclotted blood in the dilated vessels. Cardiac hemorrhages, pulmonary and rumen congestion, edema and hyperemia of the mucous membranes of the abomasums and small intestine were noticed in all examined animals. The postmortem examination of aborted fetuses revealed severe ascites and hydrothorax. Affected animals responded well to the treatment with methylene blue. After one week of treatment MtHb and nitrite in plasma were significantly reduced to their minimal levels (10.5% and 0.5 mmol), respectively. One week later, greenfeed and water had no evidence of nitrate. A definitive diagnosis was made based on the clinical picture, postmortem findings, high MtHb level in blood, quantitative nitrite analysis of plasma and nitrate analysis of suspected greengrass and response to methylene blue treatment.