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Self-purification process in water supply sources in the rural settlements of Dnipro region, Ukraine

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In our research water quality indicators were determined, using sanitary-toxicological methods like nitrogen ammonia, nitrites and nitrates concentrations (general quantity in the centralized sources 38 260, in the decentralized sources 24 586). Quantity of research was based on the general quantity of water supply sources, which was varied in 6 tacsons in Dnipro region. Nitrification activity in both types of drinking water sources from 2008-2014 years was investigated, according to the GOST 7525:2014 and State Sanitary Norms and Rules 2.2.4-171-10. All rural settlements in Dnipro region have been classified into 6 types of tacsons. The purpose of this study is to describe dynamics of nitrification activity in the centralized and decentralized water supply sources in the rural tacsons of Dnipro region. Results of our study in 6 tacson decentralized water sources demonstrate good nitrification activity by low level of ammonia nitrogen and nitrites and high level of nitrates. So, in 2008, ammonia nitrogen significantly increased and was on the level 0.58±0.02 mg/dm^3, nitrites 0.10±0.009 mg/dm^3 and nitrates 6.09±0.25 mg/dm^3 ($p<0.001$). In the 6 tacson between 2008 and 2009 years, nitrates content was on the level (1.2 MAC), in 2010 (1.08 MAC), between 2011 and 2012 (1.3-1.6 MAC) and during 2013 and 2014 (3.0-5.3 MAC). It was shown the highest content of nitrates in the drinking water in 2014 i.e., 26.48±2.49 mg/dm^3. It was proved that water from 1-5 tacsons did not correspond to the GOST 7525:2014 caused by the high concentration of nitrites and nitrates between 2008 and 2014 year. Thus, according to the average annual indicators identified high level of nitrites (42.5 MAC), nitrates (1.2 MAC) in the 1 tacson, nitrites (1.4 MAC) and nitrates (2.0 MAC) in the 4 tacson.

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