

Bray, R., Sokolowska, A., Jankowska, K., Olanczuk-Neyman, K. Impact of Mixing Groundwaters from Different Formations on Their Chemical and Biological Stability in the Water-pipe Network. *Ochrona Srodowiska* 2011, Vol. 33, No. 3, pp. 19–23.

Abstract: Groundwater from Quaternary aquifers (treated) and groundwater from Cretaceous aquifers (untreated) was mixed and tested for chemical and biological stability in water-pipe networks. The total number of live and dead bacteria in the water samples was determined using microscopic preparations stained with fluorochrome (DAPI method). Chemical stability examinations, based on the potential ability of the water to precipitate sediments, were conducted under flow conditions, by measuring both the absorption of UV light and the absorption of visible light passing through the layer of the depositing sediment. The study has produced the following finding. Mixing Cretaceous and Quaternary groundwaters may not only result in the loss of their chemical and biological stability, but also induce sediment deposition and microbial regrowth in the water-pipe network, even when the water quality required is maintained. The considerable (3.35-fold) increase in the number of bacteria observed at 10 °C indicates that the temperature of the mixed groundwaters is insufficiently high to guarantee their biological stability in the water-pipe network.

Keywords: Groundwater, water-pipe network, biological stability, chemical stability.