



## Zero-waste initiatives – waste geothermal water as a source of medicinal raw material and drinking water

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### ABSTRACT

An assessment of whether it is possible to use chilled geothermal water which has been classified as waste is presented in this paper. Two different sources of waste geothermal water (GT-1 and GT-2), previously used for heating purposes, were purified by membrane processes (nanofiltration/reverse osmosis [RO]). Nanofiltration caused the removal of divalent ions from the geothermal water and protected the RO membrane against scaling effects from the deposition of secondary minerals on its surface. In both cases analysed, high-quality permeate was obtained as a result of the geothermal water treatment processes. The physical and chemical properties of the concentrates obtained during water desalination were also evaluated in terms of the usefulness of the product. The results of the research showed no potentially toxic components that would prevent their commercial use for external balneological purposes. Waste geothermal water recycled in this way may be reused, which is very important especially in areas with problems of a lack or deficit of high-quality water. Additionally, benefits may arise from the utilisation of high-quality geothermal water concentrate for bathing in balneological facilities.

*Keywords:* Zero waste; Waste geothermal water; Medicinal raw material; Drinking water; Desalination

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