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Environmental Effect of Reservoirs Accumulating Highly Mineralized Oil-Field Waste Waters

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ABSTRACT

The effect of oilfield waste water on the ground, the soil and the underground water has been studied. The reservoir is shown to be the source of environmental pollution due to the seepage of highly mineralized waste water through the reservoir bed and walls. Increased water mineralization in the spring two kilometers downward from the reservoir is one indication of it. Desalinization of the water should be expected in 140 years' time. Typical chernozem formed on the area under study 40 years after the contamination have become naturally desalinized and desolonized as a result of a washing water regime and a genetically high content of carbonates and gypsum in the profile and soil forming rocks. Moreover, they retain an increased content of water-soluble salts, exchangeable sodium and electrical resistance, which is typical for alkali soils and solonchaks. The humus accumulative horizons show hydrophobic behavior. Due to leaching carbonates content, cation exchange capacity, mobile nitrogen and phosphorus availability decrease. Soil contamination by OWW leads to the accumulation of toxic elements in the soil and vegetation.

KEYWORDS

Oilfield Waste Water, Salinization, Toxic Elements, Ground Waters, Soil Properties

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