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A REVIEW ON PETROLEUM PRODUCED WATER, ITS CONSTITUENTS, IMPACTS AND MITIGATION

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Abstract

Petroleum Produced Water (PW) is a byproduct of oil and gas operations and contains organic and inorganic compounds, chemical additives, and naturally occurring radioactive materials (NORM). The composition of PW varies from well to well depending on geologic location, reservoir characteristics, and production lifeline. Though gas fields generate less water than oil fields, it is more hazardous because gas fields produce water containing light molecular weight benzene, toluene, ethylbenzene, and xylenes (BTEX). The disposal of PW could pollute surface and underground water, the surrounding environment, and ecosystems. In addition, it can affect aquatic life, soil, irrigation land, and human health. According to studies, PW is more environmentally hazardous than crude oil. The production of PW increases with the life of crude oil production, which is a matter of concern. Nevertheless, the detrimental impacts of PW can be mitigated by implementing suitable strategies, such as reducing PW production, mitigating hazardous components of PW through applicable treatment methods, and repurposing PW for various applications. This study will be beneficial to future researchers and policymakers to effectively manage this effluent.

Key words: constituents of PW, effects of PW, mitigation, petroleum industry, produced water, reuse of PW, wastewater

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