Balochistan Journal of Engineering & Applied Sciences (BJEAS) – (p-ISSN: 2518-2706)
Volume 1, No.2

Environmental Impacts of Produced Water on Soil and Ground Water

Faheem Mumtaz kalwar[1], Khan Mohammad[2], Khalil Rehman Memon[1], Waseem Mumtaz[1]
[1]Department of Petroleum & Natural Gas Engineering Mehran UET, Khairpur, Pakistan
[2]Department of Petroleum & Natural Gas Engineering Mehran UET, Jamshoro, Pakistan
Corresponding Email: fahimkalwar@gmail.com

Abstract – The research work was carried on produced water's impact on the environment which includes analysis of produced water, its physical and chemical properties were tested in the laboratory. The groundwater surrounding of the field was also tested which showed that water is also affected by the discharge of produced water, in addition, the soil of that area along with soil of pit was also analyzed which was found contaminated. Produced water is considered the biggest waste of petroleum fields. Water production increases with the increase in maturity of reservoir requiring more consideration for treatment. In Addition, water which comes from subsurface to surface contains several elements including heavy metal, hydrocarbons, organic material, salts, metals, radionuclide, and other chemicals constituents. These all elements present in produced water can pose a hazard to the environment if left untreated, so before discharging water in the open pit, it is necessary to treat it or at least reduce these elements up to given National Environmental Quality Standard (NEQS) of Pakistan and Sindh Environmental Protection (SEPA). During testing various parameters including Total Dissolved Solids (TDS), COD, a phenolic compound, oil and grease content, pH, trace metals and other parameters were measured. Attained results were matched to the standard of government issued by SEPA and also correlated with national environmental quality standards of Pakistan. It was noticed that sulphate, phosphate of produced water was within the limit. Overall it is observed that pw water has affected not only the soil but also groundwater. So, it can be said that produced water has an environmental concern, so it must be handled properly and should apply other disposal methods to avoid such contamination for better environmental conditions in favor of human and ecosystem.

***Keywords*–environmental impact, produced water, oil and gas production, soil**