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AN OVERVIEW OF MUD TECHNOLOGY AND CHALLENGES TOWARD GREENING OF DRILLING FLUID

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Abstract

The current industrial trend is toward the development of sustainable technologies, and environmentally-friendly chemicals that might be used to enhance the drilling activities. This is due to the fact that petroleum industry is regarded as one of the hazardous and risky industries. Unfortunately, the majority of the toxic materials that are used in the formulation of drilling mud are employed to improve the quality and functions of drilling fluid. Oil based muds (OBMs) from hydrocarbon fluids, especially no: 2 diesel were developed to solve the unwanted characteristics of the water based muds (WBMs). However, OBMs do not only impact the environment negatively, but also humans (examples include drilling workers and consumers of sea-foods etc.). The current research trend is deeply involved toward finding and developing a mud system which will satisfy both technical and environmental requirements and thus bridging the gap between WBMs and OBMs. This article presents an overview of mud system with time, reasons why the developments of eco-friendly muds are important, and a pathway comparison between a sustainable and unsustainable mud system. A comprehensive guideline for developing a sustainable drilling fluid, and the future challenges associated toward greening of drilling fluids are also outlined. This study also gives a sustainable technology diagnostic test in a flow chart that would be used as a guideline for developing sustainable drilling fluid and new technology. The findings of this research will help the academia and R&D groups in developing the new green and sustainable drilling fluid or mud system.

Key words: drilling waste and mud, environment friendly, hazardous materials, sustainability, toxic materials

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