Oil based mud and drill cuttings (OBM) treatment and management at KOC

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In line with Kuwait Oil Company (KOC) strategic objectives, KOC has established the HSE Management System with procedures based on national and international standards in order to focus on health, safety and environmental (HSE) protection. Drilling waste and its treatment is an increasingly important part of any oil drilling operation. These wastes, which typically include drill fluid cuttings and well bore clean-up fluid are hazardous and must be treated before disposal. Drill cuttings are produced as the rock is broken by the drill bit advancing through the rock or soil; the cuttings are usually carried to the surface by drilling fluid circulating up from the drill bit. OBM Drill Cuttings are toxic, mainly due to PAH (Poly Aromatic Hydrocarbon) content of diesel, the base fluid of oil base mud. PAH consists of toxic priority pollutants. Diesel typically contains 5 to 10% PAH which falls under the hazardous waste category. There are many methods of treating drill cuttings, but thermal desorption method has shown comparative advantage over others. This is demonstrated in its ability to conserve base liquid contents especially the base oil which has high economic value. The technology of indirect thermal desorption provides indirect and controlled heating to remove hydrocarbons undestroyed. Recovered hydrocarbons are reusable as base fluid for making fresh OBM and the recovered water can be reused to hydrate treated soils. Indirect heating is safer and minimize the pollution compared to direct heating. This research shows that the method is most effective, economical and environmentally friendly. The recovery of the products and subsequent recycling and selling help reduce stress on the environment and avoidable economic loss. OBM Cutting Treatment Plant successfully reached good results as following: more than 58000 MT of OBM drill cuttings have been treated so far. Successfully treated fresh OBM cuttings were collected in skips from different operational areas in KOC. Approx. 20000 bbls of recovered oil has been used in plant itself (Plant is being operated on 100% recovered diesel). This project has been selected for one of the Six Sigma Green Belt project in D&T Directorate. The recovered oil is to be re-used for kick-off well fluids, stimulation and cleaning of wells and for fresh oil-based mud preparation. The plant benefits KOC financially as well by enhancing the corporate image by turning waste into value. Recovered hydrocarbons are reusable as base fluids for making fresh OBM, and the recovered water is reused to moisturize treated drilling cuttings and hydrate treated soils. Indirect heating is safer and minimizes the pollution compared to direct heating.

Biography

Kholood Yousef obtained Bachelor of Science in Chemical Engineering from Kuwait University, Kuwait in 2000. Her work experience with Kuwait Oil Company (KOC) for past 14 years (2002 to 2015) as a Senior Environmental Engineer is in Health, Safety and Environment (HSE group), KOC. She is certified by NEPOS. From 2004 to present, she has been trained, worked or exposed to different environmental subjects such as waste management issues, environmental and social impact assessment, environmental aspects identification, management of energy & resources, energy management program, air emissions controls, inland oil contingency response plan, chemical spill response plan, waste management, sewage management, industrial liquid wastewater management and environmental standards. She has vast experience in the HSEMS Management System from Oil and Gas Industrial Sector.

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