

**SURFACTANT-BASED AQUEOUS SYSTEMS FOR SUBSURFACE
REMEDICATION, DRILL CUTTINGS, AND AS ALTERNATIVES TO
CHLORINATED SOLVENTS**

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ABSTRACT

Surfactants can be used to help remediate contaminated sites and to improve handling and disposal of oil-based drill cuttings. Each of these systems requires unique application of surfactant chemistry. Subsurface remediation by water-based pump-and-treat remediation has proven highly inefficient when capillary-bound oil exists in the porous medium. Surfactant-enhanced subsurface remediation greatly expedites this process by enhancing the solubility and/or mobility of the trapped oil. Economic considerations require that the surfactant system be designed and implemented to minimize surfactant costs, thereby dictating that the surfactant be regenerated (decontaminated) for reinjection. This technology has matured to the point that numerous field demonstrations have been conducted and full-scale applications are being considered. Oil-based drill cuttings are difficult to treat using traditional soil-washing systems, and thus are often landfilled. Surfactants can help improve the washing efficiency by altering the surface and interfacial tensions for the oil/drill cutting/water system, thereby greatly improving our handling of drill cuttings. This technology is in the developmental stage and the first field demonstration is in the planning stages. Each of these applications, and the unique surfactant chemistry associated with them, will be described in this paper, with an emphasis on their unique characteristics and how they help improve our stewardship of the environment.