



## Analysis of Oilfield Reserve Pit Toxicity

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### Introduction

Drilling waste management is currently one of the major concerns of the Oil & Gas industry, due to the strict regulations imposed by various regulatory bodies. This leads to the technological development in these industries leading to a Clean and Green Environment. Drilling processes generate a large volume of spent mud which are being directly dumped into pits in the vicinity of the operational site. This project is aimed to discuss the Drilling mud toxicity and their disposal techniques to fulfil pro-active Waste Management techniques across various operational sites in Upper Assam. It also addresses the various environmental impacts as a result of drilling mud and cuttings disposal, and emphasises on identification of the toxic elements, proper chemical treatment as integral part of waste management process.

World is also suffering from the issues of pollution due to industrial activities. The lands near oilfields are getting barren. The ineffective disposal of drilling mud is causing a great complication for the people living near the oil rigs. These fields and farms are getting contaminated from the constituents of drilling mud, which makes up the complex chemistry of drilling mud. Heavy metal is one of the most feared contaminants in the nearby areas, whose effects are still not known by the science community. This toxin drains our health without even knowing. And by the time we realize, it is too late.

Drilling fluids are now classified as exempt under the Resource Conservation and Recovery Act (RCRA) hazardous waste laws. Since 1986, however, the U.S. Environmental Protection Agency (EPA) has been studying reserve pit contents to determine whether oilfield wastes should continue under this exemption. Concerns regarding reserve pit contents and disposal practices have resulted in state and local governmental regulations that limit traditional methods of construction, closure, and disposal of reserve pit sludge and water. A great deal of attention and study has been focused on drilling fluids that eventually reside in reserve pits.

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In-house studies show that waste from water-based drilling fluids plays a limited role (if any) in possible hazards associated with reserve pits. Reserve pit water samples and pit sludge were analyzed and collated. Analyses show that water-soluble heavy metals (Cr, Pb, Zn, and Mn) in reserve pits are generally undetectable or, if found in the total analysis, are usually bound to clays or organics too tightly to exceed the limitations as determined by the EPA toxicity leachate test. Our experience is that most contamination associated with reserve pits involves high salt content from produced waters and/or salt formations, lead contamination from pipe dope, or poorly designed pits, which could allow washouts into surface waters or seepage into groundwater sources. Our analyses show that reserve pits associated with water-based drilling fluid operations should not be classified as hazards; however, careful attention should be paid to reserve pit construction and closure to help avoid any adverse environmental impact. Samples were collected from both the water and mud phases from 125 reserve pits dating from 1979 through 1986\*.

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