

## Production Chemicals

# Long-term crude storage

Extend storage of crude oil in tanks, which may present destabilization, microbial, and corrosion challenges, with specialty chemicals and application expertise

## Overview

When demand for crude oil is low and there is an excess of production in the market, Halliburton Multi-Chem can help producers evaluate and prepare for the risks of long-term storage in tanks. Several considerations factor into the decision to store oil for extended periods, including preventing oil souring, solids accumulation, and interface/surface solidification, while preventing cost challenges when production systems restart.

Extended storage of crude oil, condensate, and crude-water mixtures can present substantial challenges that vary in severity depending on the basin, length of storage time, and type of storage tank.

## Challenges

- **Crude oil destabilization:** Loss of volatile light ends can destabilize high molecular weight hydrocarbons such as paraffin (wax) and asphaltenes, affecting pumping and meeting sales specifications.
- **Microbial growth:** Even in presumably dry oil, entrained water provides a sufficient environment for bacterial activity, as does condensation of environmental humidity. Microbe metabolites can lead to serious issues with solids, H<sub>2</sub>S generation, corrosion, and emulsion formation.
- **Corrosion in tanks and lines:** Uncoated, lined, and coated tanks are susceptible to failure due to corrosion.

| RISK POTENTIAL  | CHEMICAL CONSIDERATION | PURPOSE  |
|---|------------------------|--|
| Destabilization of paraffinic crudes                          | Paraffin dispersants   | <ul style="list-style-type: none"><li>▪ Help maintain the stability of oil by keeping paraffinic hydrocarbons dispersed throughout the oil phase</li><li>▪ Reduce sludge accumulation due to the deposition of solid agglomerated paraffin</li></ul>                     |
| Destabilization of asphaltenes in asphaltic crudes            | Asphaltene dispersants | <ul style="list-style-type: none"><li>▪ Help maintain the stability of oil by keeping larger asphaltic hydrocarbons dispersed throughout the oil phase</li><li>▪ Reduce sludge accumulation due to the deposition of solid agglomerated asphaltenes</li></ul>            |
| Microbial growth in water phase and entrained water           | Biocides               | <ul style="list-style-type: none"><li>▪ Minimize the growth of bacterial populations in water</li><li>▪ Reduce the potential for H<sub>2</sub>S production and oil fouling</li><li>▪ Reduce the potential for biofilm formation and deposition in tank bottoms</li></ul> |
| Corrosion or degradation of unlined and lined storage vessels | Corrosion inhibitors   | <ul style="list-style-type: none"><li>▪ Provide protection against the potential corrosion of at-risk assets in storage facilities</li><li>▪ Reduce the risk of environmental releases due to asset failure</li></ul>  |

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