

FACT SHEET

RESERVOIR SOURING

Mitigating the effects of reservoir souring

H₂S (hydrogen sulfide) is highly toxic and can cause rapid and catastrophic failure of susceptible construction materials. It also devalues the revenue stream and can necessitate high treatment costs. Utilizing our Total Quality Assurance solutions to control reservoir souring, we bring you peace of mind.



Sweet to Sour Reservoirs

Many H₂S-free, or sweet reservoirs, undergo microbiological souring due to the combination of water flooding and the presence of sulphate-reducing bacteria (SRB). This can result in hundreds or thousands of parts per million of H₂S in gas.

Some of the risks and setbacks associated with the presence of H₂S are:

- Requirements for "sour service" materials
- Jeopardising export requirements
- Devaluation of your product

Whether or not your reservoir is susceptible to souring is dependent on a variety of factors. These include whether water injection is implemented, the temperature of the reservoir, the salinity of the brine and the presence of bacterial nutrients.

Some petroleum reservoirs harbour much more favourable conditions than others for the growth of SRB making them more susceptible to souring. Intertek can undertake an H₂S forecasting study to evaluate the likely future concentration of H₂S in production fluids.

H₂S Production Forecast

An H₂S production forecast may be undertaken for reservoirs at risk of souring or reservoirs already experiencing some H₂S production. Intertek's flexible souring model can forecast concentration and mass of H₂S produced by well or by field at a location of the clients choice (typically at separator conditions).

The model can account for the effects of lift gas, reinjection of sour produced water, mineral scavenging effects within the reservoir and injection of H₂S scavenger into the wellstream.

The results of our H₂S forecast can be used to assess future scavenger requirements and potential consequences to metallurgy.

Intertek Production and Integrity Assurance (P&IA) is at the forefront of the evaluation and optimisation of souring control measures such as nitrate treatment.

Our Solutions

Our P&IA team can provide you with the knowledge to manage risks and make informed, cost-effective decisions. We offer:

- Field services to map H₂S production and undertake bacterial contamination surveys to further define bacterial populations
- High-level risk assessments of sweet fields that may start to experience microbiological reservoir souring or changes in risk as a result of new production strategies (e.g. produced water reinjection)
- H₂S forecast studies for fields at risk of reservoir souring
- Studies of fields with reservoir souring to determine the likely concentration of H₂S over the life of the field
- Laboratory studies to determine the efficacy of chemical treatments and the doses of such treatments required to limit and control H₂S production by SRB

- Nitrate treatment evaluation to assess the potential use of nitrate to prevent souring and any consequential corrosion risk due to such treatment
- Corrosion evaluations to examine corrosion risks due to H₂S at current levels and at forecasted H₂S concentrations
- Chemical testing under sour conditions provided from our specialist sour service laboratory, including measures of the rate and efficiency of H₂S scavenging

Key Services

- Fluid characterisation
- Software simulation
- Predictive modelling
- Implications for reservoir and facilities
- Testing
- Desk top consultancy
- Training and awareness
- Troubleshooting

FOR MORE INFORMATION

 +44 161 875 7600

 production.assurance@intertek.com

 intertek.com/ep/pia