

Proven results in oil and gas

- *Improves oil and gas production*
- *Eliminate iron sulfide*
- *Remove biofilm*
- *Treat and removes paraffin*
- *Eradicate aerobic and anaerobic bacteria*
- *Environmentally safe*
- *Lower HPC to non-detect levels*
- *Easy to use*





Environmentally
Safe & Effective

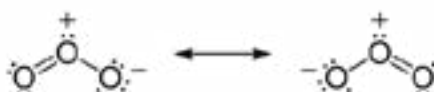
GENERATES REACTIVE OXYGEN SPECIES

JC 9450/JC 9465 - A NEW EMERGING OXIDATIVE TECHNOLOGY

Brief Description

JC 9450/JC 9465 is a new oxidative technology for generating reactive oxygen species (ROS) that simulate an AOP (advance oxidation process) but in a bottle.

By taking a simple oxygen molecule and shifting the valence, we create an unstable oxygen species that evolves into singlet oxygen ion and other molecules similar to what occurs when generating ozone - hydroxyl radical ions.



environmentally safe
a simple low-cost technology

However, this process is done using a simple method combining a low-cost technology in an environmentally safe format at room temperature

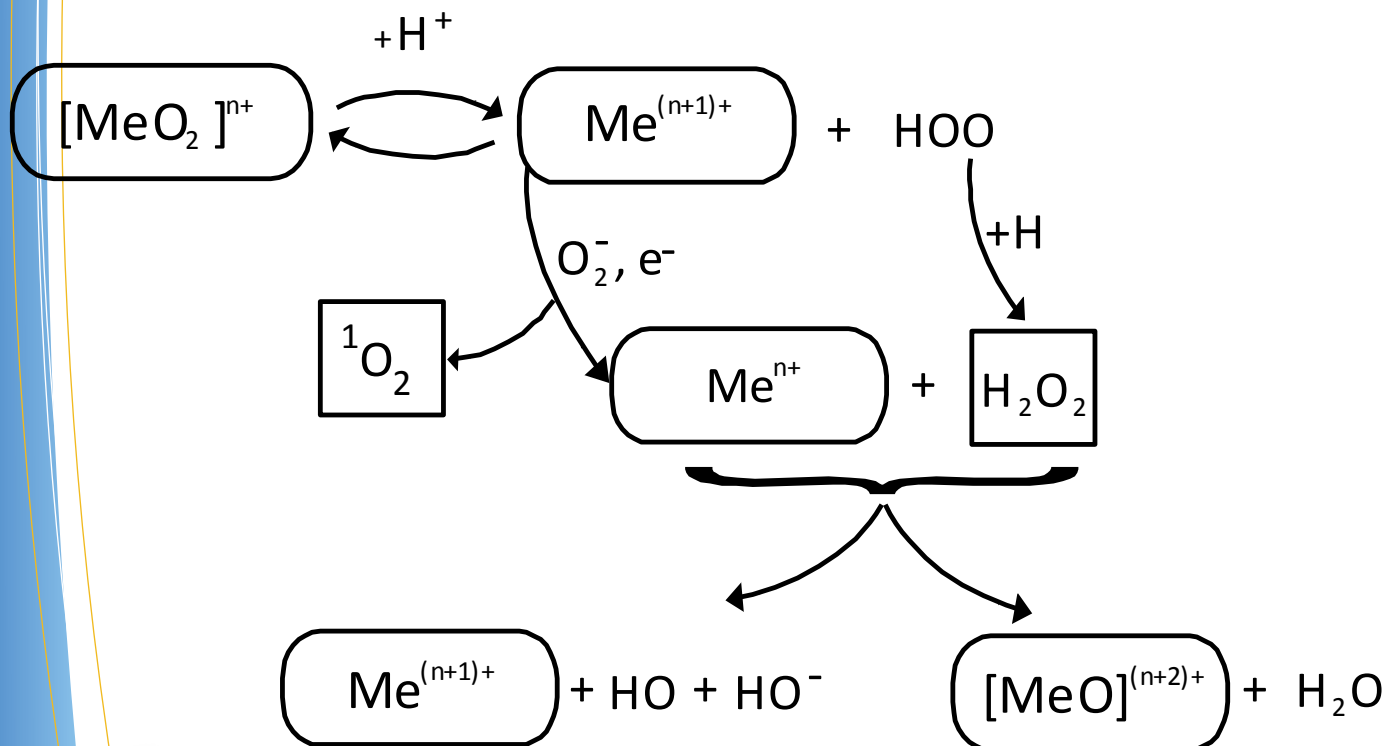


Illustration of chemical reaction using JC9450 in water

JC9450
The next
Generation
Oxidation
Technology



PECOS, TEXAS - OIL WELL CASE STUDY

DATA FROM OIL WELL SIMULATION STUDY IN PECOS COUNTY- JUNE 2016

OIL & GAS WELL SIMULATION

Conventional Treatment Program	Proposed Treatment Program
<p>Projected Completion Time: 4-7 Days</p> <ul style="list-style-type: none"> • 10 BBL of Scale Inhibitor (EDTA/NTA) • 10 BBL of Clean Water • 1000 Gal of Acid (HCL) • 100 BBL of Clean Water • 50 BBL of Chlorine Dioxide Solution • 1000 Gal of Acid (HCL) • 200 BBL of Clean Water • Projected Completion Time: 4-7 Days 	<p>Projected Completion Time: 4 hours</p> <ul style="list-style-type: none"> • Mix 300 BBL of Water to 550 Gal of JC 9450 • Transfer mixture • Recommended treatment (1% to 5%)
<p>Scale Inhibitors are designed to prevent calcium salts from depositing into the formation.</p> <p>Acid is used to dissolved any calcium deposit in the formation (carbonate hardness)</p> <p>Chlorine Dioxide (ClO₂) can be used as a biocide (disinfectant). Chlorine Dioxide is a gas in solution. It is more soluble in water than chlorine. As the temperature increases chlorine dioxide separates from the liquid.</p> <p>Concentrations greater than 30% can be explosive. OSHA has set an 8-hour permissible exposure limit of 0.1 ppm or 0.3 mg/m³ for people working with chlorine dioxide. Chlorine Dioxide is effective at removing biofilm and anaerobic bacteria. It can oxidize hydrogen sulfide and iron sulfide.</p>	<p>JC 9450 is a highly soluble solution of reactive oxygen molecule that quickly react with organic and inorganic contaminants. It is environmental friendly biocide/scale inhibitor/ H₂S Inhibitor/Iron sulfide inhibitor</p> <p>JC 9450 is effective at preventing scale by eliminating the biofilm which support scale formation. No biofilm= No scale.</p> <p>JC 9450 is very effective at removing hydrogen sulfide, carbon dioxide and nitrogen compounds. At a ratio of 2 ppm of H₂S to 1 ppm of JC 9450, JC 9450 raises the ORP from -150 mv to +50 mv which will eliminate all forms of hydrogen sulfide and mercaptan in a liquid or gas phase.</p> <p>JC 9450 oxidizes iron sulfide to iron oxide. Iron sulfide found in gas and oil production creates a deposit that damages the formation and equipment. The presents of iron sulfide will result in loss of injectivity, block pores, provide a site form biofilm to form and cause corrosion.</p> <p>JC 9450 is effective at minimizing the impact of asphaltenes and paraffin in oil field operation. It works like a pour point suppressant by modifying the surface charge. It prevents paraffin and asphaltenes from forming a sticky deposit.</p>
<p>Cost: USD Time: 4 days Material Cost: \$11,100</p>	<p>Cost: USD Time: 4 hours Material: \$9,600</p>

PECOS, TEXAS - OIL WELL CASE STUDY

DATA FROM OIL WELL SIMULATION STUDY IN PECOS COUNTY- JUNE 2016

OIL & GAS WELL SIMULATION

WELL NO 12-CONTROL	WELL NO 10-JC 9450
<p>1 Day 1- Well No 12 output was averaging 0.5bbl per 12 hrs of operation-Recommended for well simulation</p>	<p>Day 1- Well No 10 output was averaging 1 bbl per 12 hrs of operation-Recommended for well simulation</p>
<p>2 Day 2-Set up Conventional Treatment Program- Required 3 tankers of water, 1000 gallons of HCL, 10 bbl of scale inhibitor, and 50 bbl of chlorine dioxide. We mixed HCL and 10 bbl of water and observed some off-gassing from the well-possible carbonate. Day 3 Pump 10 bbl of scale inhibitor under pressure with a tanker of water. Day 4-fed 50 bbl of chlorine dioxide and one tanker of water. Day 5-added another 1000 gallon of HCL with a tanker of water. Shut in the well for 48 hours.</p>	<p>Day 2-Set up Proposed Treatment Program- Required 3 tankers of water, 2-275-gallon tote bins of JC 9450, 2 operators. It took 4 hours to pump all the material downhole. It was sealed from 12 noon until 9AM the following day. After releasing pressure, the well was producing 45 bbls per 12 hrs. of pumping.</p>
<p>3 Day 8-Open well and started producing oil at 40 bbl per 12 hours of operation. The water broke easy in the gun barrel. Ran a bottle test on the water and ABS was less than 1K CFU. Day 10</p>	
<p>4 Day 10- Well output dropped to 29 bbl per 12 hours of operation. Oil had some paraffin deposit. No Hydrogen sulfide. Some iron oxide in the water tested. ABS was less than 1K CFU</p>	<p>Day 10- Well output dropped to 30 bbl. Per 12 hours of operation. Oil had some paraffin deposits and the water broke easy in the gun barrel. The average output was 39 bbl per 12 hours. Ran a bottle test on the water and ABS was less than 1K CFU</p>
<p>5 Day 20- Well output holding at 25 bbl per 12 hours of operation. Ran a bottle test on the water and the ABS was less than 10K CFU</p>	<p>Day 20- Well output holding at 30 bbl per 12 hours of operation. Ran a bottle test on the water and ABS was less than 1K CFU</p>
<p>Estimated barrels per day Produce-390/20= 19.5</p>	<p>Estimated barrels per day Produce-671/20= 33.5</p>

History:

Well No 10 and Well No. 12 located in Pecos County, TX were used as test sites for JC 9450.

CONTROL THE OXIDATIVE ENERGY IN WATER

RAISING THE OXIDATIVE-REDUCTION POTENTIAL (ORP) TO GREATER THAN +650 MV

Application

JC 9450/JC 9465 was developed to simply be able to control the oxidative energy in water as measured by millivolt (mV).

Studies by WHO and Ozone Institute have demonstrated that by raising the oxidative-reduction potential (ORP) to greater than +650 mV, we can effectively eliminate harmful microorganisms in less than 10 seconds.

JC 9450/JC 9465 has demonstrated that it can be used in water treatment systems (ie. Potable surface water treatment plants, potable well water system, cooling towers, post-harvest & pre-harvest food processing, oil & gas well simulations, desalination plants, water re-use systems and wastewater treatment plants), to remove and eliminate harmful microorganisms cost effectively.



Oxygen radicals make ORP a practical tool for quality control

optimum water solutions for global and local solutions

- *Improved bacteria control*
- *Algae elimination*
- *Biofilm elimination*
- *Supplements and reduces disinfectant demand*
- *Improve flocculation performance*
- *Improves control of filamentous bacteria*
- *Improves oxidation of metals*
- *Easy to use green technology*



Before and after jar samples using JC9450

Mineral Oxidizer for the 21st Century

TECHNOLOGY THAT MATTERS

A LOW-COST TECHNOLOGY THAT CAN MIRROR THE SAME PROPERTIES AS OZONE



Unique Selling Point

First time a low-cost technology that can mirror the same properties as ozone but at 1% of the capital cost and 10% of the operating cost of an ozone generation system.

eliminate Legionella
destroy E.coli and Salmonella

JC 9450/JC 9465 can lower THM's and HAA5's, eliminate T & O (taste and odor complaints), eliminate biofilm, lower chlorine usage in the distribution, eradicate Legionella, E.coli and Salmonella in less than 10 seconds, reduce scaling on Uv disinfection glass sleeves, reduce bromate formation in ozone systems, control scaling and corrosion in cooling water system, eliminate algae, eliminate zebra and quagga mussels, improve coagulation and flocculation process, effective in treating produce water from fracking operation, effective in removing iron and manganese, and effective in removing hydrogen sulfide from water or gas.



An Environmentally Safe & Effective Alternative

- *Eliminate taste and odor*
- *Eliminate zebra and quagga mussels*
- *Lower chlorine usage in the distribution*
- *Effective in removing iron and manganese*
- *Improve coagulation and flocculation process*
- *Reduce bromate formation in ozone systems*
- *Control scaling and corrosion in cooling water system*
- *Eliminate biofilm and algae blooms all months of the year*
- *Eradicate Legionella, E.coli and Salmonella in 10 seconds*
- *Reduce scaling on Uv disinfection glass sleeves*
- *Effective in treating produce water from fracking operation*
- *Effective in removing hydrogen sulfide from water or gas*



Oxidizer residuals become healthy micro-nutrients for animals

Oxygen radicals provide more oxidation energy than conventional chlorine treatments

OIL & GAS - DOWN HOLE SOLUTIONS

JC9450 USE TO COMBAT HYDROGEN SULFIDE IN PETEROLEUM OIL

Overview

In several Petroleum reservoirs, the concentration of hydrogen sulfide (H_2S) has been observed to increase unexpectedly in gaseous, oil, and aqueous phases of produced fluids. This concentration is typically measured in parts per million by volume (ppmv) in the gas phase relative to a partition from oil and an aqueous phase with a pH equal to or less than 5 at standard temperature and pressure (STP), of 20 °C and 1 atm absolute pressure. When the concentration of H_2S exceeds 10 ppmv in the gas phase, the oil well is deemed to be sour, and precautions are necessary in design and operation of production, transport, and storage equipment due to H_2S toxicity, corrosion, plugging of reservoir formations, and increasing sulfur content of the produced oil.

Application

When using JC9450 this problem can be addressed with instant results and improving the oil well production in marketable days upon use. The bacteria that causes many problems for down hole wells can be easily managed when using JC9450 on a maintenance schedule to improve oil production and lower harmful bacteria, pathogens, and parafin; while improving the performance of oil wells.



Oxygen radicals make JC9450 a practical tool for quality control



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