

Concentrated **ChainBreaker** Microbe Blend



PARAFFIN CONTROL

ASPHALTENE CONTROL

SRB CONTROL

**ENHANCED
BIOREMEDIATION
OF SPILLS**

ChainBreaker microbe blend offers you the opportunity to **MAKE MORE MONEY** by significantly reducing operating expenses and leveling out production rates.

Compliant with Kansas and Texas severance tax exemptions.

Paraffin Control – Super Concentrated **ChainBreaker** Microbe Blend

Favorable changes in flow characteristics, such as reduced viscosity and increased volatility, are another aspect of bacterial treatment that can yield more oil. **ChainBreaker** bacteria treatments, for control of scale and corrosion, employ several instances of microbial metabolism that have chelating, anti-precipitation, filming, and bio-surfactant properties. Our bacteria offer the same benefits, but not the liabilities, of conventional chemical products used as scale and corrosion inhibitors. By using the appropriate microbial amendments, water flood operators can achieve increased effectivity of reduced back pressures. Microbes also offer vast potential for improved sweep efficiency, as they mobilize residual oil while traveling through the reservoir.

Crude oil that contains paraffin (waxy hydrocarbon mixtures) will thicken and solidify the crude at a temperature called the *cloud point*. Oil field operators halt pumping intermittently to clean out paraffin-clogged lines with a device that flushes heated oil in the downhole to bring the temperature of the paraffin back above the *cloud point*. If the well is not regularly treated with hot oil, sucker rods may stick and/or break. It may also damage or fill the porosity that the hot oiling is trying to open. Both activities of halting pumping and hot oiling are expensive and result in decreased oil production.

ChainBreaker bacterium treatments remove particulates and (in)organic precipitates from well bores and the surrounding formation. This restores permeability and improves the economics of production and increases production of older wells that might otherwise be abandoned.

ChainBreaker is a proprietary non-pathogenic, natural, bacterium formulation. It is a specialized combination of bacterium derived from the families known to degrade petroleum constituents.



This picture is of rods which had been paraffined up and stuck in a 9,000 foot well in the Scott Field of Wyoming. A treatment of microbes was pored down the tubing and after two weeks operators were able to pull the rods. Note that almost all the paraffin was removed by the microbes during that time.

This is a prime example of microbes *eating* paraffin off the rods of a stuck well and **SAVING A LARGE ROD STRIPPING BILL.**

Freeing Stuck Rods – Super Concentrated **ChainBreaker** Microbe Blend

STUCK RODS Case Study:

Our client's well is in the Shannon formation (9,200ft) at the Culp Draw oil field in Campbell County, Wyoming. The well was stacked out (paraffined up), the rods were stuck, and it had a bad pump.



We poured 5 gallons of **ChainBreaker** super concentrate down the tubing so the microbes would *eat* the paraffin from the rods and break them free. **After only 8 days the well was freed.** The paraffin was sufficiently *eaten* to allow the rods and pump to be pulled up.

At the same time, 50 gallons of **ChainBreaker** concentrate had been poured down the back side (annulus) to attack the nearby wellbore formation paraffin problems.

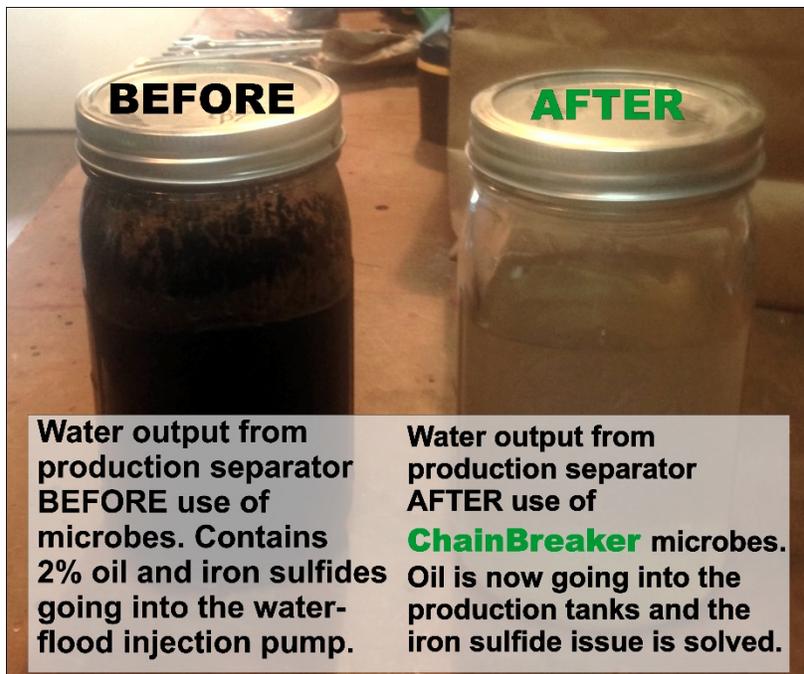
This is a prime example of microbes *eating* paraffin off the rods on a stuck well and **SAVING A LARGE ROD STRIPPING BILL.**

Note how clean the rods are as they came out of the hole. No hot oiling, steam cleaning, or chemical use was necessary.

Waterflood Production Cleanup - Super Concentrated **ChainBreaker** Microbe Blend

Treating the producing oil wells in your waterflood with **ChainBreaker** to solve paraffin/scale/iron sulfides or other production issues also brings many secondary benefits:

1. Fluids coming out of separators contain considerably less oil, which goes to the production tank instead. As a result, filters run cleaner and longer.
2. The resulting downhole water will have less corrosive qualities.
3. Eliminate backflushing of injector wells due to plugging of solids (a large percentage of which are oil-coated iron sulfides).
4. Tank bottom emulsions and other problems slowly vanish.
5. **ChainBreaker** will start to change the downhole wettability of oil. Oil comes, while water stays in place. You get the true benefits of pressure maintenance.
6. **ChainBreaker** will make biogas or methane which adds additional primary drive to the formation, moving oil to the wellbore.
7. **ChainBreaker** then moves you into tertiary recovery for added tax breaks. In theory you will recover almost all of the non-interstitial oil in the rock. *Microbes are the only recovery agent that can do that.*



Solving your issues with **ChainBreaker provides **FREE OIL** that was being flushed back into the formation as part of the water injection system.**

Ask yourself, “Am I in the oil business, or the water business?”

Leave water in the formation and get more oil with ChainBreaker.

Control of SRB's/APB in ALL Wells Super Concentrated **ChainBreaker** Microbe Blend

SRB / APB Problem Solved:

Desulfovibrio vulgaris is the representative **sulfate-reducing bacterium (SRB)** which causes metal corrosion in oil wells and drilling equipment, and the corrosion is related to its biofilm formation. Biofilms are extremely difficult to remove since the cells are cemented in a polymer matrix. Acid Producing Bacteria (APB) are also problematic.

ChainBreaker will control the everlasting headache of SRB's/APB that is present in oilfield **no matter where the well is**. Let's be blunt. Chemicals can't control or eliminate the SRB's. With the huge amount of biocides which have been pumped into systems everywhere there shouldn't be a SRB left. **ChainBreaker** will gain control and eliminate them. Black water will clear up. Iron sulfides will go away. You will inject cleaner water into your injection system or water flood. Results will be seen and smell better. Filters will run longer. Tank bottoms will be reduced. Tank bottoms in the sludge is where SRB's/APB live, ferment, grow and release into your system.

Chemical companies usually rely on sinking the solids and BS, which includes hydrocarbons such as paraffin and asphaltenes, to the bottom of the tank. **ChainBreaker** destroys their home in the sludge and you start to control and then eliminate them.

Let's look at the **ChainBreaker** mechanism for control. **ChainBreaker** microbes simply pull the food source away from SRB's, iron sulfides. By cleaving the bond between iron and sulphur molecules, **ChainBreaker** microbes uptake the sulphur into their cell walls. Since the microbes are constantly dividing and growing the new microbes, **ChainBreaker** wants more sulphur. Thus, the SRB's/APBs are starved off. They are not laying dormant, starved off. End result. Cleaner water - no iron sulfides in tank bottoms -leaving NO SRB/APB breeding ground. The system runs cleaner and corrosion is stopped as well. **WHY WASTE MONEY ON CHEMICALS. NO MORE BANDAIDS. Complete control and money saved.** One less headache in the field

Control of Calcium Carbonate Scale - Super Concentrated **ChainBreaker** Microbe Blend

CALCIUM CARBONATE SCALE Problem Solved:

The **ChainBreaker** microbes cleave calcium carbonate scale molecules and up take the calcium as food. The leftover carbon is used to produce methanol, which becomes methane, a sellable natural gas. The biochemical by-products leave a polysaccharide coating that sticks to the rods and tubular to insulate them from paraffin and calcium carbonate buildup. Well treatment chemicals cannot work because they don't split the sulfate molecules and produce a protective coating. Well treatment chemicals simply cannot accomplish the amazing things these microbes are capable of. Treating wells with **ChainBreaker** has numerous benefits, works quickly and efficiently, is environmentally friendly, and is economical.



Metal with polysaccharide protective coating which is produced as a by-product of the microbial action

Pipe with barium sulfate and calcium carbonate scale



Control of H₂S / CO₂ / SRB / APB - Super Concentrated **ChainBreaker** Microbe Blend

H₂S / CO₂ / SRB / APB Problem Solved:

Sulfate-Reducing Bacterium (SRB) and **Acid Producing Bacterium (APB)** accelerate metal corrosion from their byproduct **Hydrogen Sulfide (H₂S)** in oil wells and drilling equipment. They can be transferred into the formation when water from ponds, streams, or rivers is used for frac jobs, or introduced with dirty equipment. Their resulting biofilms are difficult to remove since the cells are cemented in a polymer matrix. Naturally occurring **Carbon Dioxide (CO₂)** gas is also a threat to well equipment due to its corrosive nature.

ChainBreaker will control the headache of SRB/APB present in oil fields. Chemicals cannot control or eliminate these bacterium, while **ChainBreaker** can do both. Black water will clear up, Iron sulfides will go away, filters will last longer, and tank bottoms will be cleaner. You will inject cleaner water into your injection system/water flood. Results can be *seen* and *smelled*.

The sludge at the bottom of tanks is where SRB/APB live, ferment, grow and release H₂S into your system. Chemical companies rely on sinking solids, including hydrocarbons such as paraffin and asphaltenes, into tanks in attempts to control these bacterium temporarily, but simply have no control over the natural CO₂. **ChainBreaker** microbes combine the CO₂ molecules with other environmental molecules to produce methanol (CH₃OH), which becomes methane (CH₄), a sellable natural gas.

ChainBreaker microbes remove the SRB's food source Iron sulfides which, while not appearing naturally, are generated through completion procedures like acid jobs. **ChainBreaker** cleaves the bond between Iron and sulfur molecules, consuming and implementing the Sulphur into the microbial cell walls. Iron particles disperse as these bonds are broken. Since they are constantly dividing and growing, **ChainBreaker** microbes require more sulfur. The end result is the SRB/APB being starved out and unable to form H₂S. Cleaner water/no iron sulfides/less tank bottom sludge—leaving no SRB/APB breeding ground.

Use a natural solution to fix natural problems with **ChainBreaker**.



INSTRUCTIONS FOR MIXING AND TREATING SHALLOW OIL/GAS WELLS with Super Concentrate **CHAINBREAKER Microbes**

Items Required to dilute the super concentrate and activate microbes:

- 5-gallon bucket
- 55-gallon drum - *ONLY use 50 gallons of dilution water. See NOTES below.
- 1 gallon ChainBreaker microbes
- 4 gallons dechlorinated or distilled water
- *50 gallons of salt/formation water, preferably from the well or formation to be treated, *if the well does NOT have SRBs (Sulfate Reducing Bacteria) in the produced water.*

Process:

1. Pour one gallon of ChainBreaker microbes into 4 gallons of dechlorinated or distilled water and allow the solution to sit quietly for 24-48 hours, allowing the microbes time to multiply. If more time is required before treating the well, go ahead with step 2 but add 1 gallon of crude oil each week you need to wait and keep in a cool place.
2. Mix the salt/formation water with the solution from step 1 into a 55-gallon drum.
3. Gravity feed or pump this 55 gallon solution down the backside (annulus) of the oil/gas well and allow the well to sit shut-in for 48 hours or more. This allows the microbes to begin their work inside the wellbore. If the well plumbing allows, pour 5 gallons of the 55-gallon mixture down the tubing to speed the process of cleaning the rods and tubing in the well.
4. Reactivate the well and monitor results. Some wells may require additional treatment within several days. Most wells will respond well if treated every 30 days until the wellbore is clean, at which time treatments can be done less frequently. Each well is different and will require monitoring to determine the best treatment regimen.
5. Treatment required may be greater based on total daily fluid volume. Consult with supplier for your well's specific needs.

Dechlorination of tap water:

The chlorine in 4 gallons of tap water will usually evaporate if the water is left in an open bucket for 48 hours. Setting the water in sunlight will speed the process, as UV rays help remove chlorine. If time does not allow this waiting process, a commercial dechlorinator can be purchased from an aquarium or pool-supply source. The simplest and cheapest alternative is to buy 4 one-gallon jugs of distilled water from Wal-Mart or similar.

IMPORTANT NOTES:

Normal operating practices on wells will leave blockage, "skin damage", in the oil leg throughout the near wellbore area. ChainBreaker microbes will eat, and reconnect to, the formation for increased oil and gas production. It is important to NOT push the microbes out into the formation with several barrels initially. The reason for this is that the microbes will be forced out through currently open water leg feeders, instead of oil leg feeders, bypassing where they're needed. The microbes need time to eat at the oil blockage closest to the wellbore, and work their way further out into the formation.

Salt-B-Gone

Soil Remediation Product



Sodium contamination of soils is a serious environmental hazard facing the oil and gas industry today. Salts found in production water can corrode pipes and lead to spills and leaks that will completely devastate the surrounding vegetation by stripping the nutrients from the soil and depriving plants of the proper nutrients for growth.

Once an area has been treated with **Salt-B-Gone**, the sodium will be removed from the root zone and the plants and vegetation will receive the needed nutrients to be restored to a normal, healthy state. **Salt-B-Gone** has successfully recovered soils in every stage of decline from sodium chloride damage in oil field exploration, brine spills, wastewater spills, hurricanes, land farm operations and more.

How it Works

Salts are first attacked through enzymes in **Salt-B-Gone**, which are specially formulated to break the salt molecules into separate ions. The extremely high cation exchange capacity (CEC) of the hydrocarbon molecules included in **Salt-B-Gone** cause the salt ions to attach to the hydrocarbons through an ionic bonding process. The hydrocarbons then become food for the soil microbial community, which dissipates the salts over time.

In another process, natural surfactants in **Salt-B-Gone** are also attached to salt ions, which are then leached out of the soil profile by rains, irrigation and other natural processes.

Proven Performance

Salt-B-Gone has over a decade of experience in field trials of lowering sodium chloride levels in soils. It has been formulated from a blend of high grade fulvic and humic acids, enzymes, bio-solvents, and ionic trace minerals. The product has also gone through extensive laboratory testing and is manufactured under strict quality control standards.

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Salt-B-Gone

Salt Water & Oil Spill Bioremediation



Compliance with state and federal soil standards can be a business nightmare. Businesses have to rely on environmental consultants to assess and cleanup any soil contamination that may have resulted from their current or past operations. BioActive Services LLC partners with our clients to bio-remediate their sites in the most cost-effective manner possible.



Converts harmful petroleum products into carbon dioxide and H₂O. Fast, effective microbial remediation for gasoline, oil, fuels, hydraulic fluid, all varieties of hydrocarbons, chlorinated compounds, pesticide spills, inorganic contaminants, and sludge. These spills are hazards that must be cleaned expediently and efficiently to comply with all local, state, and federal regulations.

Several of our clients have been proactive while operating wells in very sensitive areas. BioActive Services, LLC's Salt-B-Gone was injected into the produced water of several flow lines over 1 mile in length. The theory is: in case of a flow line break, vegetation damage is minimized. Some of these leaks have spilled up to 400 BBL of heavy salt water, but with our treatment, not even a white salt coating is visible. Use 20 gallons of Salt-B-Gone to 80 BBL of fresh water.

We use "oil-eating" microbes that seek out hydrocarbon compounds, then break them down into basic carbon and nitrogen elements that can become plant food. As long as hydrocarbons are present and there is adequate moisture, the microbes continue to feed and multiply until the compounds are gone. When the hydrocarbons are gone, so are the microbes, and bioremediation is complete.

Product should be applied as soon as possible after an oil spill or leak has occurred. Most effective when soil temperatures range from 50 to 100 F. Bioremediation in soil will work so long as the ground is not frozen, although the process greatly accelerates once the soil has reached a temperature above 50 F. For optimum performance, these temperature considerations must be addressed and nutrient and oxygen levels must be maintained at proper levels. Effective over a wide pH range (6.0 to 8.5; optimum 7.1 ± 0.3)

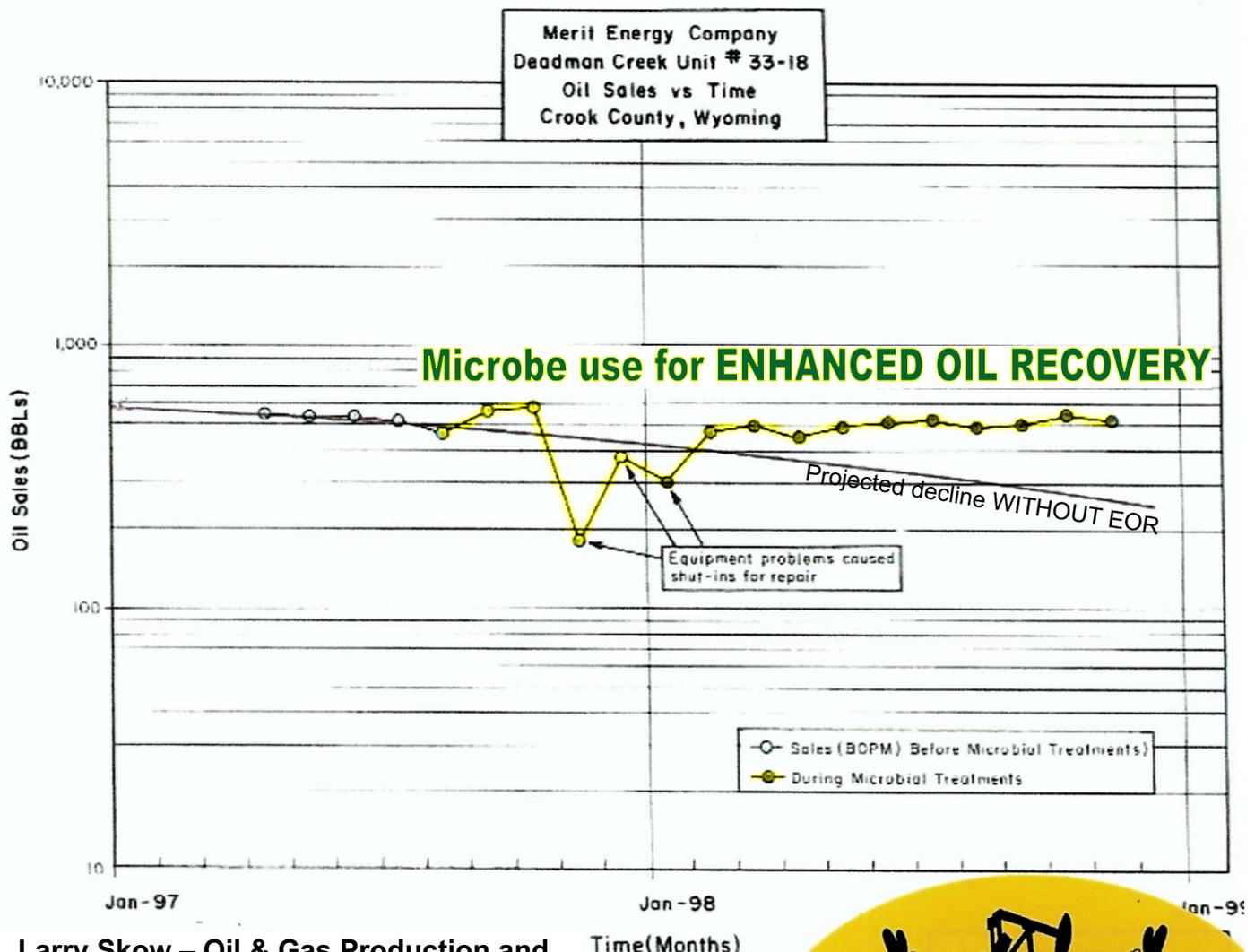
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HISTORIC HEAVY OIL ENHANCED RECOVERY WITH MICROBES

NOTES FROM LARRY SKOW - HEAVY OIL MICROBE TREATMENT

This is old decline curve from the files. This was a 16 api gravity well that was on treatment for about 9 months. Bear in mind gathering data in these days was not easy. Operators today still do not like one looking at their production records. VERY touchy subject today even. The water off this well went into injector back into formation. Well what happened was offset operator seen increase in his oil wells in same formation. Although no known communication was known. Merit cut the program because of this. Well went back on normal decline curve after about 7 months--just slowly sank as bug impact wore off due to non replenishment. 5 years after that Merit tried to get wells in a Wyoming funded polymer flood for recovery of stranded oil. Feild was deemed uneconomic. I presented this data to Merit engineers. They would not restart program due to off set operator gaining revenue. Other operator would not sell wells to them. Bubba would not start program even tho he knew it worked a he didn't want it to impact Merits wells. All the wells were plugged out. All that stranded oil was lost forever sealed behind the "old gray frac" as plugging is called. This is the mindset out there. Our program works. It is ecomical. Chemical companies hate us bug guys.

Some of us have something that works an works well. Tks Larry



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