Case Study

SulfaGuard SG-18

Neutral pH H_2S Scavenger Eliminates Corrosion Risk, Foaming and Downstream Risk

A Northern Louisiana midstream operator running high-water-cut, wet-gas pipelines with an amine plant downstream evaluated Coastal Chemical's SG-18 against the incumbent SG-1 (glyoxal based). SG-1 delivered acceptable H_2S removal but introduced chronic low-pH corrosion. Field trials and laboratory breakthrough testing confirmed SG-18 as the superior, lower-cost solution — removing H_2S faster, at a neutral pH, with no solids, no foaming, and measurable corrosion and scale inhibition built in.

CHALLENGES

- High-water-cut wet-gas pipeline (high-velocity, multiphase flow)
- SG-1 Scavenger (pH ~2) under current operating conditions shows a potential corrosion risk of ~10 mpy on pipeline steel.
- Plugging incidents when line dried — glyoxal saturation issues
- Triazine-based chemistries have exhibited foaming episodes in the amine plant, increasing filter/coalescer maintenance.
- Operator seeking single-product H_2S removal + corrosion control

SOLUTION

An isolated field trial of SG-18 was conducted on a gas well application in Northern Louisiana, enabling a direct performance comparison against SG-1 under equivalent operating conditions. The evaluation demonstrated enhanced treatment efficiency and operational advantages in a wet, high water-cut, multiphase system.

Key findings include:

- **Injection Performance:** Continuous injection into the gas stream achieved high contact efficiency within the multiphase flow regime, with no observable dispersion or phase separation issues.)
- **Scavenging Kinetics:** Independent breakthrough testing at 15-minute retention time confirmed that SG-18 exhibits faster reaction kinetics and higher H_2S removal efficiency compared to SG-1 at equivalent dosage rates.
- **Residual Monitoring:** Implementation of SI-tagged inhibitor technology allowed precise quantification of residual chemical in the pipeline, enabling proactive re-treatment scheduling and minimizing unplanned well interventions. Triazine-based chemistries have exhibited foaming episodes in the amine plant, increasing filter/coalescer maintenance.
- **Multifunctional Performance:** SG-18 demonstrated integrated functionality by simultaneously providing H_2S scavenging, corrosion inhibition, and scale control, effectively consolidating multiple chemical programs into a single-product solution.

RESULTS

- H_2S removal equivalent or better vs SG-1 at comparable dose rate
- Corrosion rate dropped from ~10 mpy to <1 mpy — asset life extended
- Zero foaming or plugging events during 1+ month trial
- Clean filters, coalescers, amine plant — no formaldehyde carry-over
- Lower net cost per gallon H_2S removed; no extra inhibitor needed

DETAILED ATRIBUTE COMPARISON

Northen Lousiana Wet-Gas System

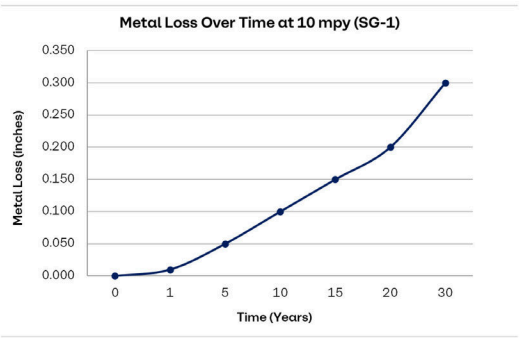
Attribute	SG-18	SG-1 (Inhibited Glyoxal)	Best in Class
pH & Corrosion Risk	Neutral pH — eliminates low-pH corrosion concerns; built-in synergies with corrosion/scale inhibitors	Low pH (~2 even inhibited) — still ~10 mpy corrosion; customer flags low pH as major issue	**SG-18**
Reaction Speed (Gas Phase)	Faster than glyoxal; steady, controllable; outperforms in short retention (15 min tested)	Fast initially but slower overall; requires precise conditions	**SG-18**
Contact Efficiency	Excellent in wet gas / multiphase; works in water, oil & mixed fluids; no dispersion issues	Good when heavy fluid settles but requires saturation; poor if line dries out (past plugging incidents)	**SG-18**
Scavenging Capacity / Dose Rate	Similar or higher capacity per gallon; faster uptake; field data show lower dosage needed	Very high capacity but higher price per gallon offsets savings	**SG-18**
Solids Formation	Negligible — no dithiazine, no sticky polymers; proven clean in N. Louisiana trial (1+ month)	Some risk if overdosed; not zero risk	**SG-18**
Foaming / Emulsion Risk	Very low — no reported issues in wet systems	Foaming incidents observed under specific operating conditions.	**SG-18**
Downstream Impact	Clean filters, coalescers, amine plant & compressors; no plugging, no free-formaldehyde carry-over	Requires ongoing monitoring; low-pH attention remains	**SG-18**
Cost & Overall Value	Lower cost than SG-1; neutral pH removes need for extra inhibitors; multifunctional potential	Higher price; still needs corrosion monitoring/inhibition	**SG-18**
Trial Readiness	Proven in similar N. Louisiana wet-gas application; breakthrough data vs SG-1 available	Customer likes performance but wants to escape low-pH issues	**SG-18**

RISK ANALYSIS WITH CURRENT CHEMISTRY

(Glyoxal Based Product)

At 10 mpy — the corrosion rate observed with SG-1 in this application — a standard 0.375-inch wall pipeline faces progressive and compounding integrity loss. The table and chart below simulate the 30-year impact, underscoring the economic case for switching to SG-18's near-zero corrosion contribution.

Year	Metal Loss (in.)	% Wall Lost	Risk Level	Action Required
0	0.000	0.0%	Baseline	Baseline measurement
1	0.010	2.7%	Low — Monitor	Monitor coupons; baseline OK
5	0.050	13.3%	Moderate — Act	Enhanced inhibition; coupon review
10	0.100	26.7%	High — Inspect (ILI)	Integrity assessment (ILI) critical
15	0.150	40.0%	Very High — Derate	Derate or plan repair
20	0.200	53.3%	Critical — Replace	Likely replacement required
30	0.300	80.0%	Failure Risk	Major failure without intervention



COST ADVANTAGE SUMMARY

Cost Driver	SG-1 (Glyoxal)	SG-18	SG-18 Advantage
Product price per gallon	Higher	Lower	**Direct savings at same dose**
Corrosion inhibitor requirement	Required — separate product	Built-in — not required	**Eliminates extra SKU & logistics cost**
Dose rate needed	Higher (lab & field data)	Lower at equivalent H_2S removal	**Volume savings per month**
Downstream monitoring/ intervention	Ongoing — low pH management	Minimal — neutral pH, clean system	**Reduced OpEx & labor**

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