

CASE STUDY

REPLACEMENT OF MEA-TRIAZINE IN TREATMENT OF CRUDE OIL BARGES AND TANKERS USING NON-AMINE H₂S SCAVENGER PRO-3

Additive Direct Services and Q2 Technologies; a former subsidiary of Quaker Chemical which developed the MEA-Triazine scavengers used world-wide today, have brought to the market the Pro-3 series of non-amine H₂S scavengers. The Pro-3 series is the *next generation* of scavengers replacing MEA-Triazine in liquid hydrocarbon streams.

The Pro-3 series is the result of a need to reduce fouling created by amine based scavengers in refineries, production streams and crude oil terminals while improving H₂S removal performance compared to that of MEA-Triazine.

CHALLENGES

- Demurrage fees and interruptions of crude oil loading into barges and tankers at terminals are frequent when H₂S levels exceed 10 ppmv.
- High volumes of MEA-Triazine were necessary to reach the required H₂S specification of <10 ppmv and scavenger injection pumps struggled to keep up with pipeline flowrates of up to 20,000 barrels per hour into barges and tankers at the terminal.
- Condensate and crude treated with MEA-Triazine were observed to cause fouling and corrosion in neighboring splitters and refining units.
- High level of H₂S in some storage tanks required the terminal to have expensive independent H₂S monitoring done.

TAKE-AWAYS:

- >\$10k per month chemical savings
- Deliveries cut by 50%

SOLUTION

- Pro-3 was recommended to replace the 40% MEA-Triazine scavenger to reduce chemical treatment cost, logistics, and fouling problems in splitters and refining units.
- A dual pump on-site injection system and chemical bulk storage with 24/7 support staff allowed for treatment of large volumes of crude oil on demand.

RESULTS:

Pre-treatment H₂S level: 10 PPM – 800 PPM determined by ASTM D-5705 (3rd party inspection lab measurements of >100 vessels)

Post-treatment H₂S level: <10 PPM

Loaded Volumes: 30,000-650,000 barrels

- Approximately 3 million barrels of EFL/EFR/WTI are treated monthly with the Pro-3 series.
- Chemical consumption was cut by 50% compared to 40% MEA-triazine resulting in:
 - Deliveries cut by 50% translating into increased productivity personnel
 - \$10,000 per month reduction in chemical cost ^{*will vary on application requirements}
 - Injection system keeping up with terminal pipeline flowrates
- Potential demurrage fees ranging from \$4,000 - \$52,000 per day from out of specification H₂S levels were eliminated.
- At one terminal site eleven H₂S monitoring personnel were eliminated, resulting in substantial monthly savings.