Advances in AMR Technology to control Excessive Methanogenesis

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INTRODUCTION

There are recognized benefits to methanogens and of limited methanogenesis. For example: i) methanogens are known to play important roles in synergistic microbial ecology, ii) their metabolic activity can help maintain anoxic conditions in treatment zones (through seasonal changes), and iii) the activity of methane mono-oxgenases and other enzymes can stimulate metabolic activity in redox-recovery zones. However, excessive methane production can have potential negative consequences, including:

- Loss of efficiency (CH₄ represents waste)
- Induced vapor intrusion issues
- Induced plume migration
- Mobilization of heavy metals (methylation)
- Failure to adhere to regulatory guidelines
- Various health & safety issues

Accordingly many remedial practitioners proactively manage excessive methanogenesis, or provide contingencies for managing gas production when using conventional ERD or ISCR amendments.

ANTIMETHANGENIC LIQUID ERD

Provect-ERD CH4 Ole Ego™ (plus DVI)

- Specific Gravity = 1.00 to 1.2
- Density 7.75 to 8.36 lbs/USG
- Hydrogen Yields: 0.2 g to 0.4 H₂/g
- Fermentable carbon @ 65-90% wt
- AMR @ 4 - 8% of the FC content
- Optional DVI soluble, organic Fe content @ 5 to 10% wt
- Made in the USA

ANTIMETHANENGIC SOLID ISCR

Provect-IR® and Provect-IRM™

- Custom formulations with optional Provect-CH4® for methane control
- Premium ZVI from 3 to <400 micron at 15 to 65% weight basis
- Multiple hydrophobic, nutrient rich, complex organic carbon sources
- Chemical oxygen scavengers
- In situ formation (free) of reactive iron minerals such as magnetite and precipitated iron sulfides such as Mackinawite
- Industry leading Quality Control
- Patents honored (notably 7,531,709 and 9,221,699 and others)
- Made in the USA, Brazil, Italy and Taiwan

ANTIMETHANENGIC EZVI

Provect-EZVI CH4™

- Antimethanogenic Emulsified Zero Valent Iron (EZVI) technology is the most advanced, cost efficient product available.
- Custom formulations with optional Provect-CH4® for methane control
- Lower viscosity formulations – maximizes distribution & contact
- pH Stabilized – optimizes emission stability & reactivity
- Catalyzed ZVI – enhance reactivity
- Industry leading Quality Control - emulsion structure, density, hydrophobicity
- NASA Patents honored
- Viable alternative to thermal treatment of chlorinated solvents
- Made in the USA and Brazil