

Liquid Dust Suppressant for Respirable Silica Sand

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- Business Resources Services (BRS) - Overview
- American Refining Group - History & Products
- Liquid Dust Suppressant Development & Testing
- Advantages of a Liquid Dust Suppressant as part of the Respirable Silica Focus Group
- Guidance & Partnerships
- Questions

American Refining Group, Inc. - Bradford, PA

- *Bradford Refinery purchased in 1997 from Witco Corp*
- *The Bradford Refinery is the Oldest Continuously Operating Refinery in the US – Established in 1882*
- *Revenue in excess of \$500,000,000/year*
- *Purchase approx. 3.5 million barrels/year of crude from regional producers, returning approx. \$150,000,000 to the local economy*



American Refining Group Products

- 25% Group I Base Oils & Waxes
- 35% Specialties
- 40% Fuels (Gasoline & Diesel)
- 0% Asphalt
- Refinery products sold as Kendex® & Kensol® products
- Fully formulated products sold under Brad Penn brand
- Blending & Packaging facilities utilized for in-house as well as contracted products

Liquid Dust Suppressant Development & Testing

- Currently evaluating the use of a Hydrofinished waxy oil
 - Consists of predominately saturated hydrocarbons in C16-C26 range
 - Narrow cut with IBP of 562° F, FP > 230° F
 - CAS# 64742-55-8, *Distillates (petroleum), hydrotreated light paraffinic*
 - Approved by EPA as inert ingredient for pesticide use
 - No acute or chronic toxic effects to humans (based on API Petroleum HPV Testing Group data)
 - Anticipated low treat rate of 0.04%wt

Dust Suppressant Liquid

- Water in beaker on left
- Liquid Dust Suppressant in beaker on right



Treated vs. Untreated Sand

- Untreated sand on the left
- Treated sand on the right



Generating Respirable Dust at a Consistent Rate

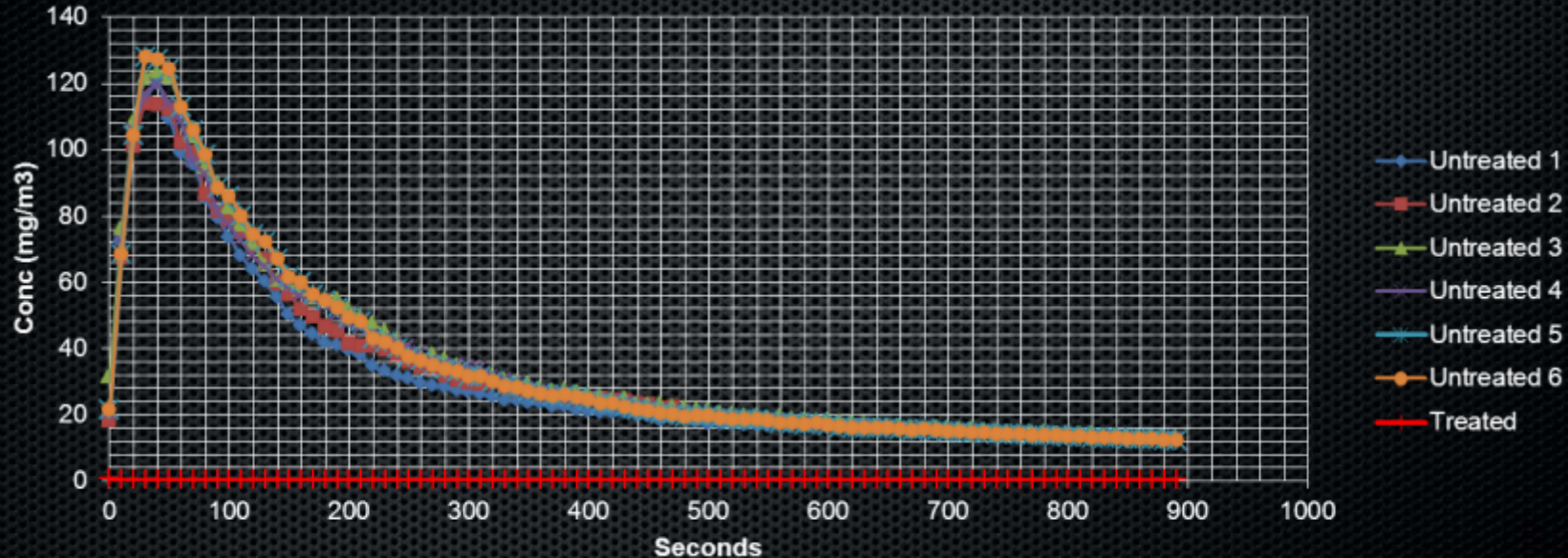
Analyzer at Mouth of Vessel



Mimics Dumping Action



Respirable Particles in Treated vs. Untreated Sand



Advantages of Liquid Dust Suppressant as part of the Respirable Silica Focus Group

- 99.8% reduction in respirable silica of treated sand
- Treatment at sand processing site would reduce worker exposure during transfer in addition to Hydraulic Fracturing location
- Material potentially adds lubricity to treated sand particles reducing sliding friction and shearing
- Engineering controls at Fracturing location would be less taxed by high volumes of respirable silica to be removed

Guidance & Partnerships

- Looking for sand mining/processing partners to move to field trial stage with and monitoring short-term and long-term performance
- More is needed to be known about expectations of industry regarding “specifications” of product
 - Environmental
 - Technical, related to application and use

Questions ?