Solidification Technology
RemTECH – 2014

KBL Environmental LTD.

Agenda

- Organizational introduction
- Technology development & overview
- Reagent chemistry
- Advantages
- Applications
- Case study: Invert drill cuttings solidification

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Organizational introduction

- KBL is a private Canadian company
- Service Alberta, British Columbia, the Northwest Territories, Nunavut, and the Yukon
- Facilities and services focused on waste management
- Oil & gas, mining, government, transportation, industrial and commercial sectors

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Technology development

- Sludge solidification using bulking agents
- AER Directive 50
- Lower treatment costs
- Environmentally responsible
- Complement existing services
- MetaFLO Technologies Inc.

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Technology overview

- Polymer based reagents at low dosing ratios
- Can reduce weight and volume by as much as 20%
- Converts fluids or sludge to a solid (<30 min)
- Dry, stackable and landfill friendly material
- Important to optimize reagent application
- Manual mixing systems for liquid and sludge
- Patented processes

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Technology overview

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Reagent chemistry

- Blends: MFS-001, MF-002, MF-006 and MF-007
- Bentonite, crystalline silica, quartz, sodium polyacrylate, polyacrylamide, etc.
- Physical state: solid
- Appearance: granules
- Specific gravity: 0.5 – 1.2
- pH: 5.5 – 6.5
- Particle size: <2000 mų

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Advantages

- Other agents such as sawdust or compost:
  - Bulk and prohibit truckloads to reach maximum weights
  - Illustrates increased cost for transportation and disposal
- Reagent dosing rate 0.5% to 5.0% w/w
- Reagent processing illustrates 20% weight reduction due to drying/evaporation
- Cost savings of 20% – 40% (project dependent)

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Applications

- Horizontal direction drilling mud
- Contaminated fluid and sludge
- Drill cuttings: gel-chem, invert, KCl, amine
- Water treatment sludge
- Tank bottoms
- Sump sludge
- Hydrovac cuttings

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Case study: project overview

- Extremely remote site
- Invert drill cuttings were stored for processing
- Cuttings density analysis = 2.0
- Hydrocarbon content analysis = 5% or 50,000 ppm
- Approximately 1,200 cubes stored at site

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Case study: photo

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Case study: project overview

- Laboratory tests for reagent dosing = 5.0% (w/w)
- MF-007 reagent utilized
- 439 cubes or 878 metric tonne processed
- 47 metric tonne of reagent used
- Average dosing ratio = 5.3% (w/w)
- Pugmill system processed up to 30 cubes per hour

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Case study: photo

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Case study: sawdust vs. reagent

- Sawdust density: 0.3
- Material hauled in walking floor trailers
- Sawdust dosing: 2:1 volume to volume
- 2:1 v/v sawdust dosing would increase processed weight from 878 tonne to 1141 tonne
- 5% w/w polymer dosing decreased processed weight from 878 tonne to approximately 702 tonne

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Case study: summary

- The system and reagent were effective
- Project dosing ratio accurate based on field samples
- Landfill suitable material confirmed by an operator
- Environmental sustainable solution
- Reduced road transportation by approximately 60%
- Illustrated 31% cost savings vs. sawdust

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Questions

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