Use of Paper Mill Byproducts as Soil Amendments

Sustainable Soils Forum
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MWV Overview

A global packaging leader

$5.4 billion total revenue in 2013
100 nations where we market our products
30% revenue from emerging markets
16,000 employees in 30 countries around the world
since 2004 Dow Jones Sustainability World Index

We believe packaging matters
from the manufacturing floor to the store shelf to the kitchen pantry
Our daily actions build toward long-term goals

We have made an everyday commitment to …

• Reduce our use of fossil fuels by 25% by 2015
• Reduce our CO2 emissions by 25% by 2015
• Reduce our water use by 15% per net ton of paperboard by 2015
• Ship 90% of our U.S. freight with EPA SmartWay carriers by 2015
• Involve 100% of our suppliers in a Principles of Conduct program by 2015
  • Reduce 75% of our solid waste for beneficial disposal by 2020
  • Maintain our commitment to get 100% of our paperboard fiber from responsible sources, and get 50% from certified sources by 2020

We are building together with customers by …

• Becoming an industry-leading source of consumer insights about sustainable packaging
• Playing a leading role in relevant advocacy organizations and associations
• Developing renewable and recyclable materials, including our 100% renewable position for paperboard packaging and the exploration of employing as a material for plastic packaging
• Creating innovative packaging solutions that reduce waste through recycled raw materials, light weighting, recyclability, composting, and other “end-of-life” alternatives
• Designing packaging that engages consumers in sustainable practices, such as recycling

MGro™ Residuals

• Solid residuals produced by the treatment of paper mill and carbon plant wastewater
• Produce 400 wtpd (146,000 wtpy) at 45% solids content
• Dewatered on screw presses
• Primary – 85%
  • Solids from primary clarification of mill wastewater including wood fiber, carbon, boiler ash, PRS precipitate (Ca₃PO₄), lime and mineral matter additives (clay, calcium carbonate, titanium dioxide)
• Secondary – 15%
  • Microbial biomass from biological wastewater treatment

MGro™ Residuals

• Current Use
  • Infiltration & Erosion Layers in final cover system for on-site landfill

• Potential Uses
  • Burn for fuel in No. 1 Power Boiler
  • Silvicultural land application
  • Agricultural land application
  • Mine reclamation
  • Composting
Coal/Wood Boiler Ash

- Previously produced from burning coal and wood (bark, wood chips) in four power boilers
- Ash was combined, mixed with water for transport and dewatered in clarifiers and belt presses to 55% solids content
- Potential Uses Evaluated
  - Silvicultural land application ✓
  - Agricultural land application ✓
  - Mine reclamation ✓
- Two of these boilers have been idled. Remaining two boilers burn coal as primary fuel.
  - Potential Uses: cement production, concrete production

Lime Mud

- Produce 10,000 wtpy at 23% moisture content
- Precipitate from lime treatment of green liquor in the chemical recovery cycle of the Kraft pulping process
- Potential Uses Evaluated
  - Silvicultural land application ✓
  - Agricultural land application ✓
  - Mine reclamation ✓

MGro™ Biofuel Ash

- Produce 132 tpd (48,000 tpy) at 10% moisture content
- Produced by new 74 MW, biomass cogeneration plant
- Bubbling, fluidized bed boiler burning 2,400 tpd of biomass fuels including logging residuals, sawdust and tree bark
- Evaluated for use as a soil liming material ✓

Thank you.