

NEW WEST GYPSUM RECYCLING

Positively Affecting Where We Live



URBAN MINING

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Agenda

- Background Information
 - Company Information
 - Sources of gypsum for B.C.
 - Gypsum recycling – why does it matter?
- Issues
 - Supply of scrap gypsum
 - Demand for recycled gypsum
 - Financial
- Stakeholder involvement
- New Investment?

New West Gypsum Recycling

- Founded in Vancouver
- Over 35 years of drywall (gypsum) recycling experience
- Global capacity is now 800,000 tonnes per year - over 6,000,000 tonnes recycled
- Eight facilities in operation (5 in Europe and 3 in North America) using patented process, proprietary equipment
- Primary customers are drywall manufacturers in Europe and North America
- Drywall recycling – separates paper from the gypsum core and the gypsum from the core is used to manufacture new drywall
- Operates like a transfer station accepting drywall scraps for a tipping fee
- New West is a processor not a waste management company and does not offer bin services

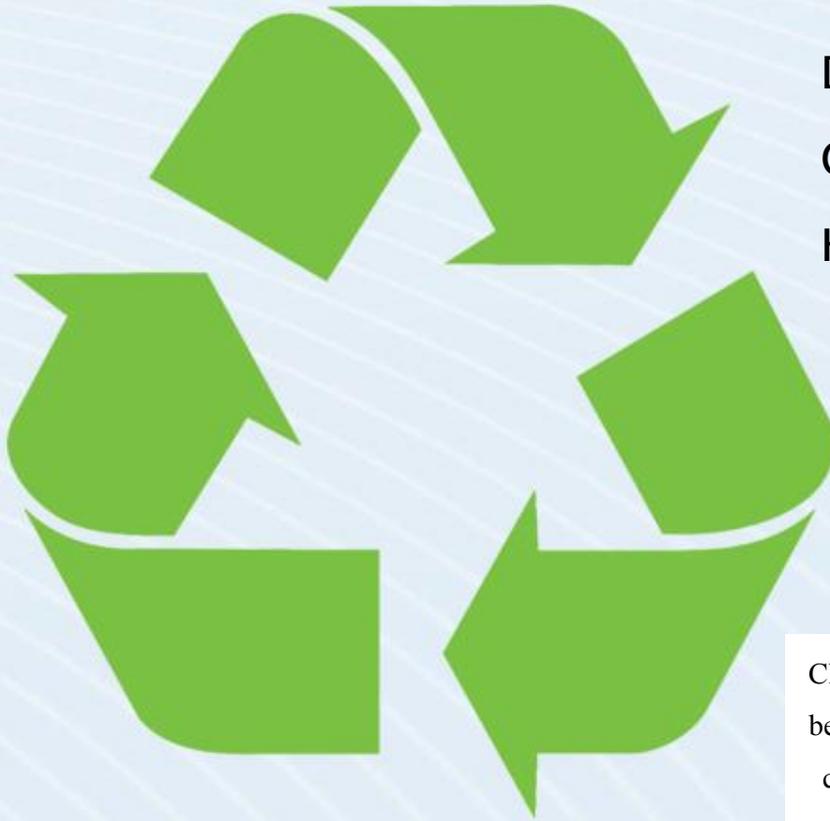
Sources of gypsum for B.C.

- Current
 - Gypsum rock – Mined gypsum is primary source – Interior of BC or Mexico
 - Cost - Commodity cost is low but transport significantly increases landed cost
 - Quality - varies – purity and non gypsum constituents (e.g. clay)
 - Recycled Gypsum – Secondary source
 - Cost – Landed cost is lower than cost of mined gypsum
 - Quality - varies – primarily related to scrap source and contaminants
- Future.
 - Gypsum rock – Mined gypsum will continue to be primary source – Interior of BC, Mexico or Other distant sources
 - Cost - Commodity cost will remain low but transport costs will rise
 - Quality - varies – dependent upon source
 - Recycled Gypsum – Secondary source but use will increase
 - Cost – Landed cost is lower than cost of mined gypsum
 - Quality - varies – primarily related to scrap source and contaminants
 - Other – Not likely viable (e.g. Gypsum created by scrubbing flue gas emissions of coal fired generating stations)

Why does recycling gypsum matter?

- Preservation of natural resources
- Gypsum can be recycled over and over again in drywall (wallboard) manufacturing
- Decrease environmental impact of mining activities
 - Energy use – Fuel for heavy (mobile) equipment & energy for other equipment (drills, crushers)
 - Other environmental impacts of mineral extraction
- Transportation cost and environmental impact
 - CN has provided estimates of the carbon emissions throughout a supply chain
 - Rail – 15.2g CO₂ per tonne-km @ est. 800 km – 12.2 kg CO₂ per tonne
 - Marine vessel (bulk) - 4g CO₂ per tonne-km @ est. 4,000 km – 16 kg CO₂ per tonne

Closed Loop Recycling



100% True Recycling

Drywall scraps to new drywall

Closed Loop Recycling

Highest or Best Use

Closed-loop recycling means that recycling of a material can be done *indefinitely* without degradation of properties. In the case of gypsum wallboard, conversion of the used product back to raw material allows repeated making of the same product over and over again.

Gypsum scrap – supply issues

- Quality of gypsum scrap supply – acceptance criteria, contamination
- Costs to dispose/recycle
- Leakage
- Volatility of inbound tonnage – storage
- Coordination of policies and regulation
- Attitudes toward recycling
- Wallboard product types

Recycled gypsum–demand issues

- Quality of recycled product – risk of contamination
- No requirement for manufactures to utilize recycled product
- No incentives for use – purchasing policies
- Processing and product changes
 - Changes to manufacturer’s product
 - Quality and consistency of gypsum supply
 - Changes in recycled product specification
- Plant capabilities/limitations
- End market development

Recycled gypsum–financial issues

- Tipping fees and product revenue
- Operating cost increases – Adapting to market demands
 - Screening inbound supply
 - Quality –product and quality control
- Volatility of inbound tonnage – storage
- Local volumes – acceptance criteria
- Economy of scale required

What are the solutions to improve recycling success:

- Recognize gypsum waste as a resource and maximize use of recycled material: urban mining
- Create and support effective policy measures to promote recycling activities, highest or best use, and the circular economy, including market development programs
- Develop programs that benefit local manufacturers using recycled materials (e.g. green procurement)
- Decrease the risks associated with processing and using recycled materials (de-risk)
- Design products enabling high-quality recycling of materials and substituting additives enabling cleaner material cycles
- Collaborate with other stakeholders in the stewardship of the waste arising from products

What are the solutions to improve recycling success:

- Embrace a culture that actively promotes a circular economy
- Continue to evolve technology to improve product and to reduce processing cost
- Facilitate the development of well-functioning markets for recycling gypsum
- Avoid mixing wastes and contaminating recyclable materials and avoid shipping contaminated materials to recycling facilities
- Provide an efficient and effective collection infrastructure
- Facilitate the recapture of resources by preventing leakage

New Investment?

- Given the proper investment environment investment will be available for:
 - Increases in capacity/productivity
 - Improvement in the quality of the inbound and outbound material
 - Better or higher use of outputs (eg paper in gypsum recycling)
 - Employment
 - Better collection systems/processes