

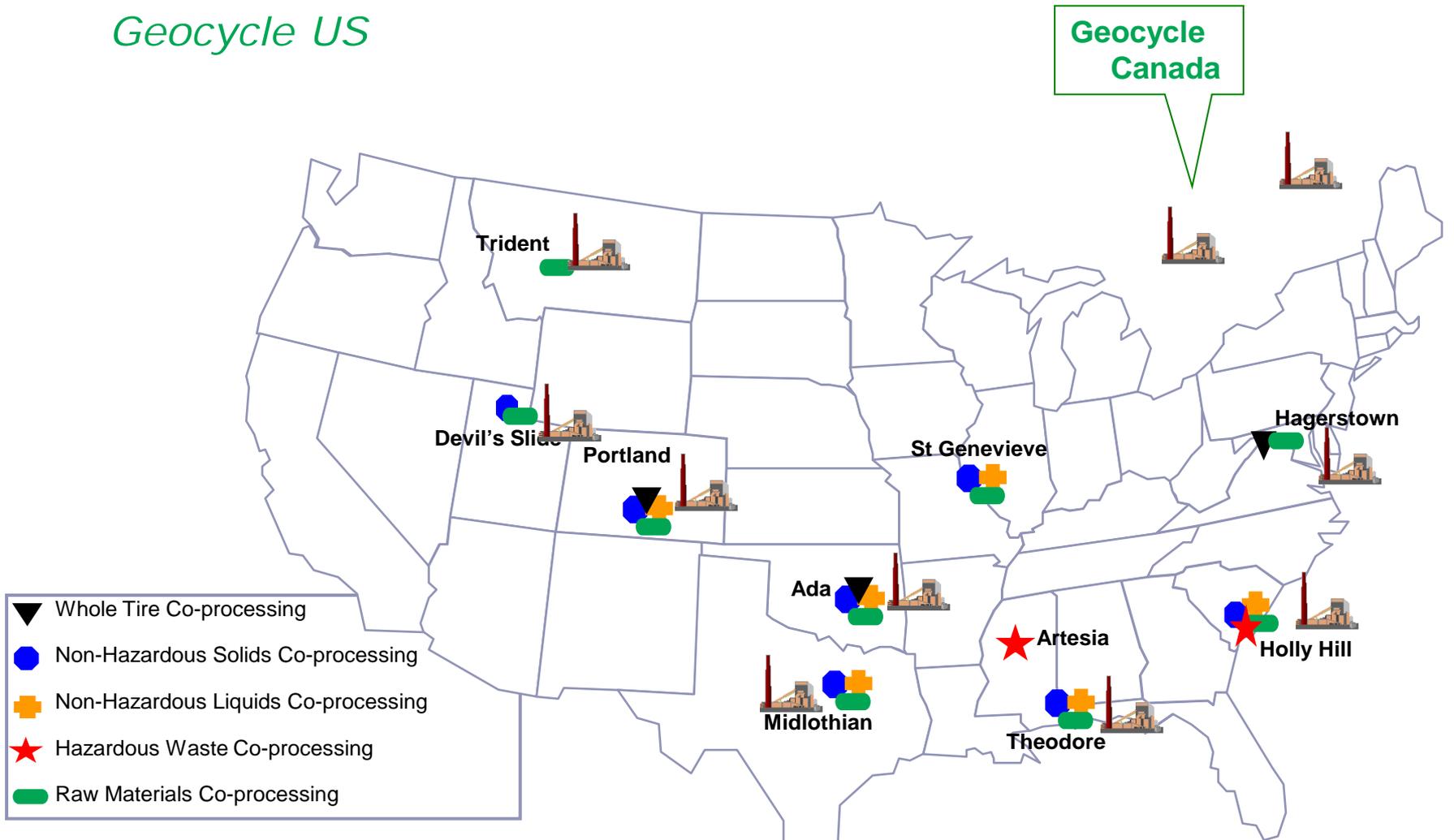
Introduction to Geocycle Operations

*Colorado Waste Tire Conference
June 24th – 25th, 2015*

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Geocycle US



- Geocycle US operates 9 AFR Programs across the US, supported by 9 Facilities, 2 of which are remote from cement plants
- In 2014 Geocycle US co-processed over 1.2 million tons of AFR, and Geocycle globally co-processed over 6.5 million tons of AFR

Geocycle's Global Network



Focused on Global Standards

Geocycle US - Committed to Strict Management System Standards



- Geocycle has achieved ISO certification of its quality, safety and environmental management systems.
- The accreditations are a testimony to our commitment to reaching our quality, environmental and safety targets
- It establishes a unified system for continual improvement to three areas vital to corporate sustainable development.

General Principles for Co-Processing

5 Key Principles

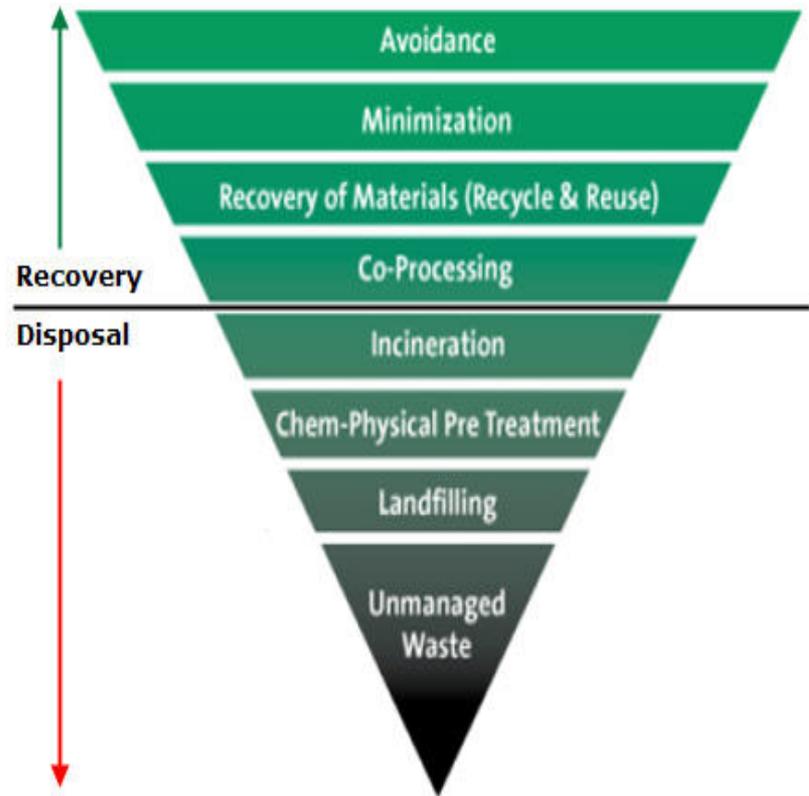
- Principle I: Co-processing respects the waste hierarchy.
- Principle II: Additional emissions and negative impacts on human health must be avoided.
- Principle III: The quality of the cement product remains unchanged.
- Principle IV: Companies engaged in co-processing must be qualified.
- Principle V: Implementation of co-processing has to consider national circumstances.

Co-processing

A Sustainable Waste Management Solution

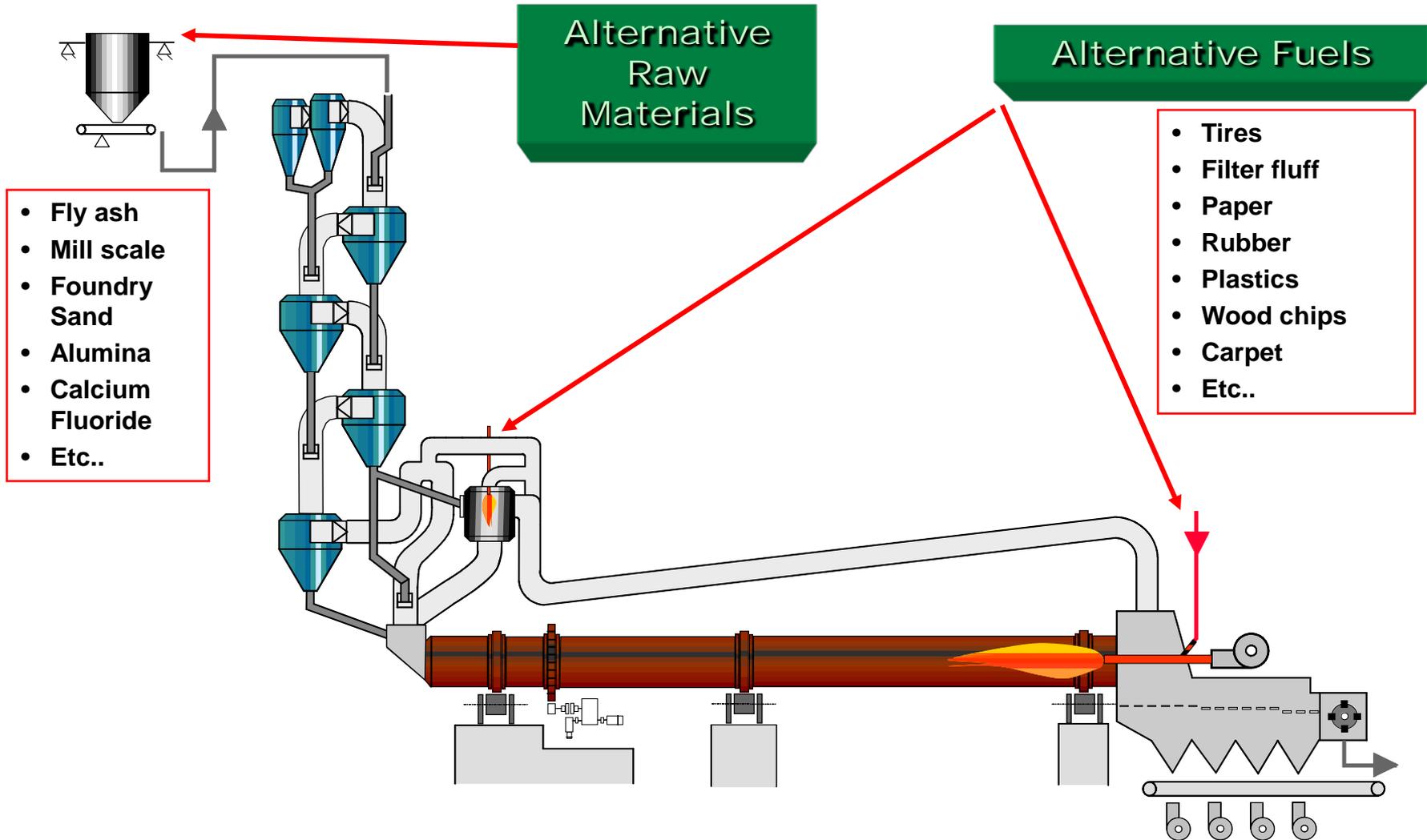
Benefits of Co-processing

- Recovers both the mineral and energy value of wastes, yet avoids the creation of another waste stream
- Replaces, preserves and reduces dependence on natural resources
- Lowers the global environmental impact by reducing greenhouse gases (CO₂) in order to slow global warming
- Reduces the impact of mining, transportation, and processing of naturally occurring materials
- Provides a service to society while maintaining the competitiveness of industry



Co-processing

Cement Manufacturing offers a Sustainable Waste Management Solution



Co-Processing Engineered Fuels

- Requires a focus on defining and controlling both the physical and chemical characteristics of the fuel.
- The alternative fuel must comply with the technical specifications of the cement manufacturing process and must ensure environmental, quality and safety standards are met.
- It is an opportunity for companies such as ours to provide the expertise required to produce an engineered fuel from many diverse forms of waste
- Examples could be carpet, plastics, Wood chips, paper, shingles, Tires, Sludges, etc.....



Engineered fuels at Holcim Holly Hill, SC

Example: Tire Derived Fuel Utilization

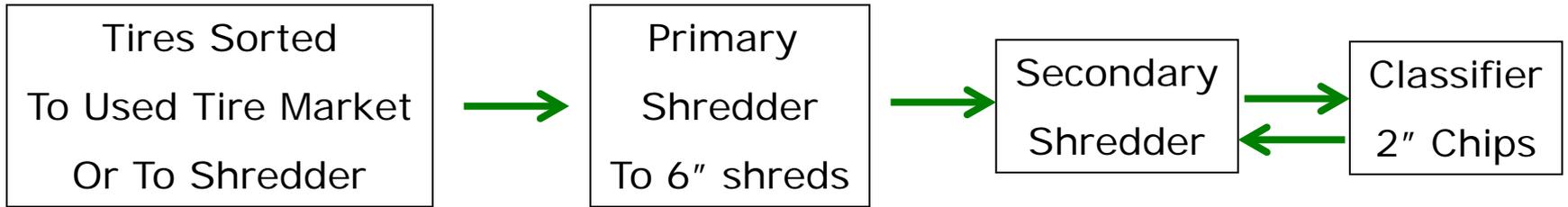
- Cement plants represent approximately 40% of tire derived fuel users- Holcim/Geocycle consumed +/- 70,000 tons in 2014



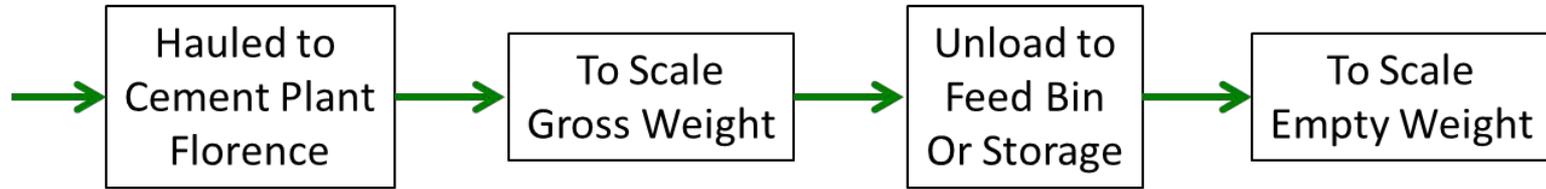
Colorado Tire Operations



Colorado Tire Operations



Colorado Tire Operations



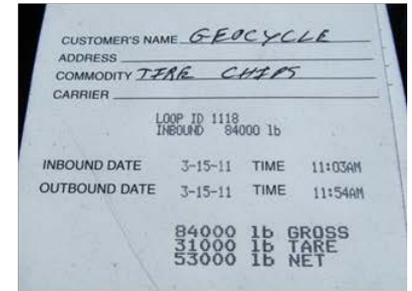
Scale at Plant



Delivery



Temperature Scan



Scale Ticket



Scale Readouts



Feed Bins



Hydraulics



Sweep Out

TDF at the cement plant

Delivered
To Storage
By Geocycle

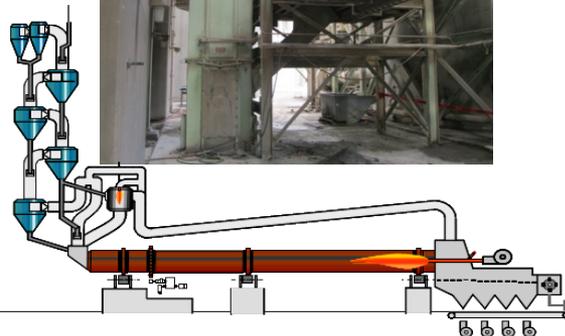
Transferred
To Feed Bin
Loader

Transferred To
Samson Feeder
Front Loader

Conveyor to
Bucket Elevator

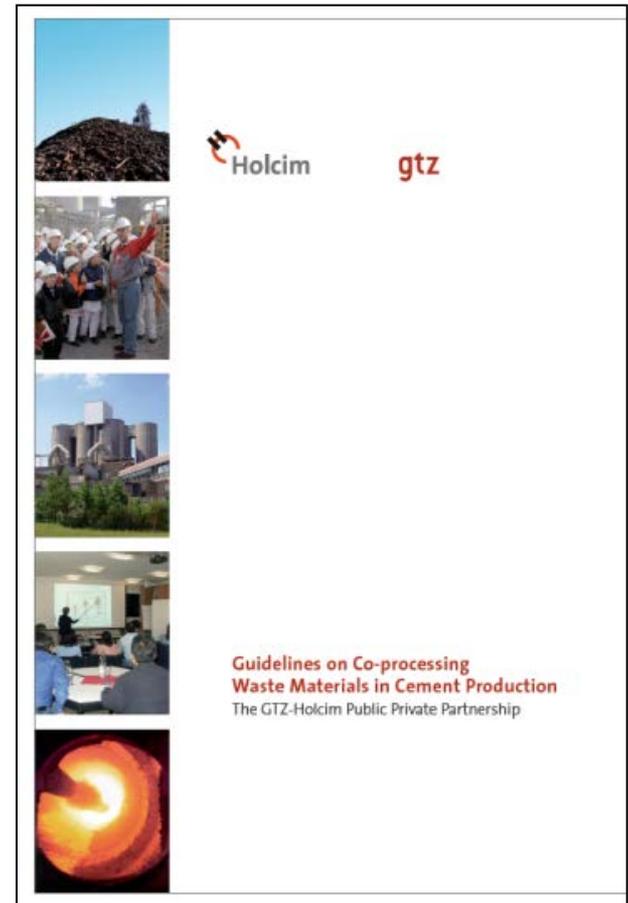
Bucket
Elevator to
4th Level

Conveyor to
Calciner



GTZ Global Guidelines

- International guidelines for the co-processing of waste materials in cement production
- Authored by Holcim Ltd. And the Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (GTZ) Guidelines
- Requirements described include:
 - Regulatory permitting and monitoring systems
 - Stakeholders engaged in Community Advisory Panels
 - Analytic testing of the materials in-bound, as processed, and of the cement produced.
 - Constant emissions monitoring to demonstrate compliance with national regulations.
 - Environmental impact assessments are performed to confirm compliance with environmental standards.
- The UN Basel Convention published a draft for co-processing waste in cement kilns which is under review



In Summary- AFR and the Environment

Environmental Benefits of AFR Usage

- Recovers and reuses the energy and mineral components of waste.
- Reduces use of non-renewable resources
- Reduces CO₂ emissions (overall)
- Keeps materials out of landfills and eliminates long term environmental concerns

