

Alternative Fuels Help Move Communities Toward a Zero-Waste Future

Communities and businesses across the U.S. are **grappling with ways to manage waste**. Items such as used tires, plastics, textiles, carpet, upholstery and off-spec products all too often find their way into landfills, oceans and groundwater. But that doesn't have to be our story. Some of these materials can and are being **beneficially reused as alternative fuels**.

LafargeHolcim, through its subsidiaries Geocycle and Systech, is leading the industry in **finding new uses for materials** that would otherwise be discarded, helping the company create more sustainable building products. These subsidiaries have been **safely recycling and co-processing materials** for cement production since the 1970s. Today, they are actively operating at **hundreds of plants in more than 50 countries** worldwide.



One Person's Trash...Another's Treasure

To understand the benefits of alternative fuels, you must first define the word "waste." For example, when manufacturers create goods like labels for bottles, there is leftover material from the process, including misprints. Traditionally, this unusable product is placed in landfills. However, cement manufacturers can use this material as a fuel source replacing non-renewable fossil fuels. What was once called waste, becomes a valuable commodity.

A New Life for Used Materials



Industries contact Geocycle/Systech to determine if byproducts from their processes can be co-processed as fuel in LafargeHolcim plants.



The material is evaluated and tested to determine if it meets quality and environmental standards.



Once accepted, the material is processed (for example, some materials must be resized) and then put in a kiln during cement production.



Thermal energy from the material is used in the kiln to fuel the cement manufacturing process. Extremely high temperatures consume a majority of the alternative fuels.

What Happens to Alternative Fuels Materials and Air Emissions

Cement kilns reach temperatures above 2,500 Fahrenheit during the manufacturing process. When introduced into this high-heat environment, alternative fuels such as plastics, wood from construction and demolition waste, used tires, misprinted labels and other feedstocks are consumed, with virtually no residual material remaining.

In all cases, cement plants that use alternative fuels must meet the same air emissions guidelines established before using these materials. In some instances, air emissions like CO₂, sulfur and nitrogen oxide are lower due to alternative fuel use.



If all U.S. cement plants replaced **just 33%** of traditional fuels with alternative options, it would save enough energy to **meet the needs of nearly 1.5 million American homes.** ^{1,2}



More than **100 million** scrap tires are beneficially **used as tire-derived fuel** annually. That's **more than 40%** of the total scrap tires created each year.

Addressing a Serious Challenge

To fully understand the benefits of alternative fuels, it helps to understand the scale of the challenge. Consider the problem of scrap tires in America. Historically, America's scrap tire piles have been a significant nuisance for landfills. Tires can be a fire risk and often become breeding grounds for pests like mosquitoes. According to the U.S. Tire Manufacturing Association, the U.S. produces around 250 million scrap tires annually. LafargeHolcim is a leader in the TDF movement.

Benefits of Alternative Fuels & Raw Materials



Provides a **sustainable waste disposal** solution



Completely destroys materials with **virtually no leftover residue**



Conserves conventional fuels



Can reduce emissions from CO₂, sulfur, and nitrogen

Find out more about LafargeHolcim's sustainability efforts:

<https://www.lafargeholcim.us/corporate-responsibility-sustainability> or <http://tirederivedfuels.com/>

1. 77.1 million BTU average U.S. household use: <https://www.eia.gov/consumption/residential/data/2015/c&e/pdf/ce1.1.pdf>

2. 349 trillion BTU used by Cement and Lime industry in 2019:

<https://www.statista.com/statistics/1055199/cement-lime-industry-energy-consumption-us/#:~:text=U.S.%20cement%20and%20lime%20industry%20energy%20consumption%202019%2D2050&text=The%20cement%20and%20lime%20industry,360.1%20trillion%20British%20thermal%20units.>



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