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THE HIDDEN COSTS OF CEMENT



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WHAT IS CEMENT AND ITS IMPACT ON OUR ENVIRONMENT?

To many U.S. citizens, cement is just a construction material. It is used to construct buildings, bridges, watersheds, dams and many other necessities, thus fueling urbanization. However, it is often untold that cement poses an environmental threat. With our climate changing at such a rapid rate, it is worth taking some time to explore the harsh truths of cement.

BBC News recently reported that cement is the source of 8% of the world's CO₂ emissions, with the majority of the emissions coming from China. How is this true, you may ask? Well, let's take a look at the science.

Cement production, also known as clinker production, splits calcium dioxide to produce cement and CO₂. This thermal combustion generates 2.2 billion tons of CO₂ per year. Efforts to cool down cement production have decreased emissions by less than 10%. After the Global Cement and Concrete Association met with the United Nations, they agreed to the fact that cooling is not enough and that a large-scale alternative is mandatory. Ginger Dosier, CEO of BioMason, may have a solution to this dilemma.

BioMason is a start-up company in North Carolina that uses bacteria to grow bio-concrete. This material, only taking 4 days to produce, can be used to create buildings, roads, highways, and all of the other products that cement is used for. Dosier's alternative can reduce emission by 90-100% if scaled up and globally adopted.

To date, bio-concrete has made an impressive impact across the globe. The European Union plans to incorporate bio-concrete in the infrastructure of its member nations. Since it is a new form of green technology, it has not yet grabbed the attention of countries outside of Europe and North America.

While bio-concrete is known to help the climate crisis, there is another attribute of bio-concrete that is intriguing and still being developed. Hendrick Jonkers, microbiologist at Delft University, has designed a self-activating limestone that can perform a self-healing process. The limestone has the ability to release bacteria to fix cracks in bio-concrete. Jonkers has already successfully tested his limestone formula in Ecuador and now hopes to expand it to developing nations who need a more cost-effective alternative. This is truly a revolutionary project!

Excitingly, BioMason is not alone. There are many other eco-friendly concrete alternatives. If scaled up and employed globally, this new science can help us to accomplish the climate goals established by the United Nations.

To read more about bio-concrete and the cement industry, check out the links below:

<https://www.theguardian.com/sustainable-business/2015/jun/29/the-self-healing-concrete-that-can-fix-its-own-cracks>

<https://www.bbc.com/news/science-environment-46455844>

