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HOUSE BILL 261 Public Projects – Global Warming Potential of Materials 3 (Buy Clean Maryland Act)

You have no doubt heard the phrase, “Nero fiddled while Rome burned.” While Nero didn’t fiddle as Rome burned, he probably had something to do with the fire that started near the Circus Maximus chariot stadium and surrounding wooden shops. We know he couldn’t fiddle because, as we learned last week, the violin wasn’t invented for another 1500 years.

Even if he had nothing to do with the start of the fire, he was the beneficiary. In July of the year 64, Nero was vacationing at Antium (the modern Anzio), when he learned that fire had broken out in the capital city. He raced back to Rome, but there was little he could do in a city that was composed primarily of ramshackle tenements and narrow, twisting streets. Before the fire burned itself out a week later, 10 of Rome’s 14 districts had burned to the ground and thousands in this city of between half a million and a million souls had lost everything. Nero arranged emergency shelter and supplies of food and drink, and even opened his own palace and gardens for shelter.

He benefitted because the fire allowed him to circumvent building codes and remake that section of Rome in his image. The wooden hippodrome, tumbledown commercial and residential buildings in that part of the city were replaced with concrete structures adorned with marble facades. Yes—concrete.

Which brings me to HB261.

This bill will require DGS to establish maximum global warming potential for any cement or concrete mixture used in the construction of public projects. You may be thinking, “With all the transportation emissions, greenhouse gasses produced by energy production and industrial processes, why focus on concrete?”

Concrete is the most widely used material in existence and is behind only water as the planet’s most-consumed resource. Concrete is also responsible for 9% of greenhouse gasses worldwide. Concrete and cement are often used interchangeably, but they are not the same. Think of it this way, all concrete contains cement, but cement does not contain concrete. Just like all peanut butter and jelly sandwiches contain peanut butter, but jars of peanut butter do not contain peanut butter and jelly sandwiches.

Like peanut butter, cement is a binder, a chemical substance used for construction that sets, hardens, and adheres to other materials to bind them together. Cement is seldom used on its own, but rather to bind an aggregate, such as sand and gravel, together. Cement mixed with fine aggregate such as powdered lime, produces mortar for masonry and tiling. Cement mixed with sand and gravel produces concrete.

It's the cement-making process that creates the greenhouse emissions. Greenhouse gasses created from cement manufacture are produced when the clinker is produced.

Cement clinker is a solid material produced in the manufacture of Portland. It is produced by sintering (fusing together without melting to the point of liquefaction) limestone and aluminosilicate materials such as clay during the cement kiln stage. This process requires a tremendous amount of energy in the form of heat to bring the limestone to almost 3000 degrees Fahrenheit to produce clinker. *Roughly 600 kilos of carbon dioxide are released per ton of cement produced.*

Replacing some of the clinker in the cement, which is the main energy-intensive ingredient, with limestone, will reduce the level of carbon emissions from the cement's production. As limestone grinds finer than clinker, the result is a far denser particle packing with increased particle distribution.

Type I L cement is an innovative product that is reshaping how those in the construction industry use concrete. It's a type of blended cement that contains between 5 and 15% limestone. The product itself performs the same as standard concrete but it comes with great benefits. Coincidentally, Type I L cement bears an uncanny resemblance to Roman cement and concrete based on research done at UC Berkley. The production of clinker for Roman concrete is much cleaner, requiring temperatures that are two-thirds of that required for making Portland cement.

Type I L is becoming increasingly popular across the US and many producers are choosing to use it as their primary product. In fact, there are some areas, such as Colorado and Texas, where Type I L is the only available option. In these states, the DOTs have approved its use and producers have committed to using it in their mixes.

Further, an increasing number of cement producers across the US have committed to 100% Type I L.

As I request a favorable committee report for HB261, I leave you with a modified version of the famous saying by the 4th Century theologian, Saint Ambrose: "When in Maryland, do as the Romans do."