

November 5, 2019

The Honorable Sean Casten
Cannon House Office Building
Room 429
Washington, D.C. 20515

Dear Representative Casten:

I am writing on behalf of the Portland Cement Association to share our support for H.R. 3978, the Clean Industrial Technology (CIT) Act. We believe this legislation is an important step to develop the technology needed for American manufacturers to address climate change.

PCA, founded in 1916, is the premier policy, research, education, and market intelligence organization serving America's cement manufacturers. PCA members represent 92 percent of the United States' cement production capacity and have distribution facilities in every state in the continental U.S. Cement and concrete product manufacturing, directly and indirectly, employs approximately 610,000 people in our country, and our collective industries contribute over \$125 billion to our economy. Portland cement is the fundamental ingredient in concrete. The Association promotes safety, sustainability, and innovation in all aspects of construction, fosters continuous improvement in cement manufacturing and distribution, and promotes economic growth and sound infrastructure investment.

Portland cement is not a brand name, but the generic term for the type of cement used in virtually all concrete. Concrete forms when portland cement is mixed with water, and aggregate (sand and rock), and allowed to harden. Cement holds the concrete together and has a role similar to flour in a cake mix. Concrete is the most-utilized material after water in the world; the U.S. uses about 260 million cubic yards of concrete each year. It is used to build highways, bridges, runways, water & sewage pipes, high-rise buildings, dams, homes, floors, sidewalks, and driveways.

Cement manufacturing is an energy-intensive process that depends on carefully balanced chemistry and physics. Cement plants are large, complex systems stretching hundreds of feet, with carefully calibrated environmental controls. One change to one system, particularly for environmental compliance, affects the entire production process. Cement plants can cost several hundred million dollars to build, with the largest plants exceeding \$1 billion, including millions of investment dollars in emissions monitoring and control equipment and associated operational expenses.

Cement is manufactured through a tightly controlled chemical combination of calcium, silica, aluminum, iron, and other minor ingredients. These chemicals are commonly derived from limestone, chalk, or marl, combined with shale, clay, slate, blast furnace slag, silica sand, and iron ore. These materials are heated to high temperatures, 3500°F or more, until they liquefy and become clinker. Once cooled, gypsum is added to the clinker, and the product is ground into the fine powder that becomes portland cement. Carbon dioxide comes from two parts of cement production: calcification and the burning of the fuels to heat the minerals. Calcification is essential to converting limestone (CaCO_3) to the quicklime (CaO) in clinker to give cement its strength. But the chemical process of calcification results in carbon dioxide as a byproduct.

The cement industry has worked to reduce its GHG emissions through efficiency improvements in the manufacturing process over the past 50 years. We reduced energy use 40% from 7.8 gigajoules per equivalent tons in 1972 to 4.6 gigajoules per equivalent ton in 2016. For 2018, twenty four cement plants were certified by the EnergyStar program for their efficiency efforts.

Currently, there is no commercially available, affordable, and scalable technology available to the cement industry for the capture, use, and storage (CCUS) of manufacturing process emissions. For us to meet the deadlines cited by scientists for global action, technological development will have to be accelerated. At the current pace of research and development, any technology that could be commercially available for CCUS is at least 15 years away.

Considering the chemistry required to make cement, reducing emissions will require utilization research, such as how to cost-effectively mineralize carbon. The CIT Act is a measure to encourage the development of these technologies and reduce the time for their commercial availability. We encourage the Science, Space, & Technology and Energy & Commerce Committees to consider this legislation within the coming months and look forward to working with you to ensure the cement industry has the tools necessary to continue reducing our emissions in a responsible and sustainable manner.

Sincerely,

Sean O'Neill
Senior Vice-President, Government Affairs
Portland Cement Association