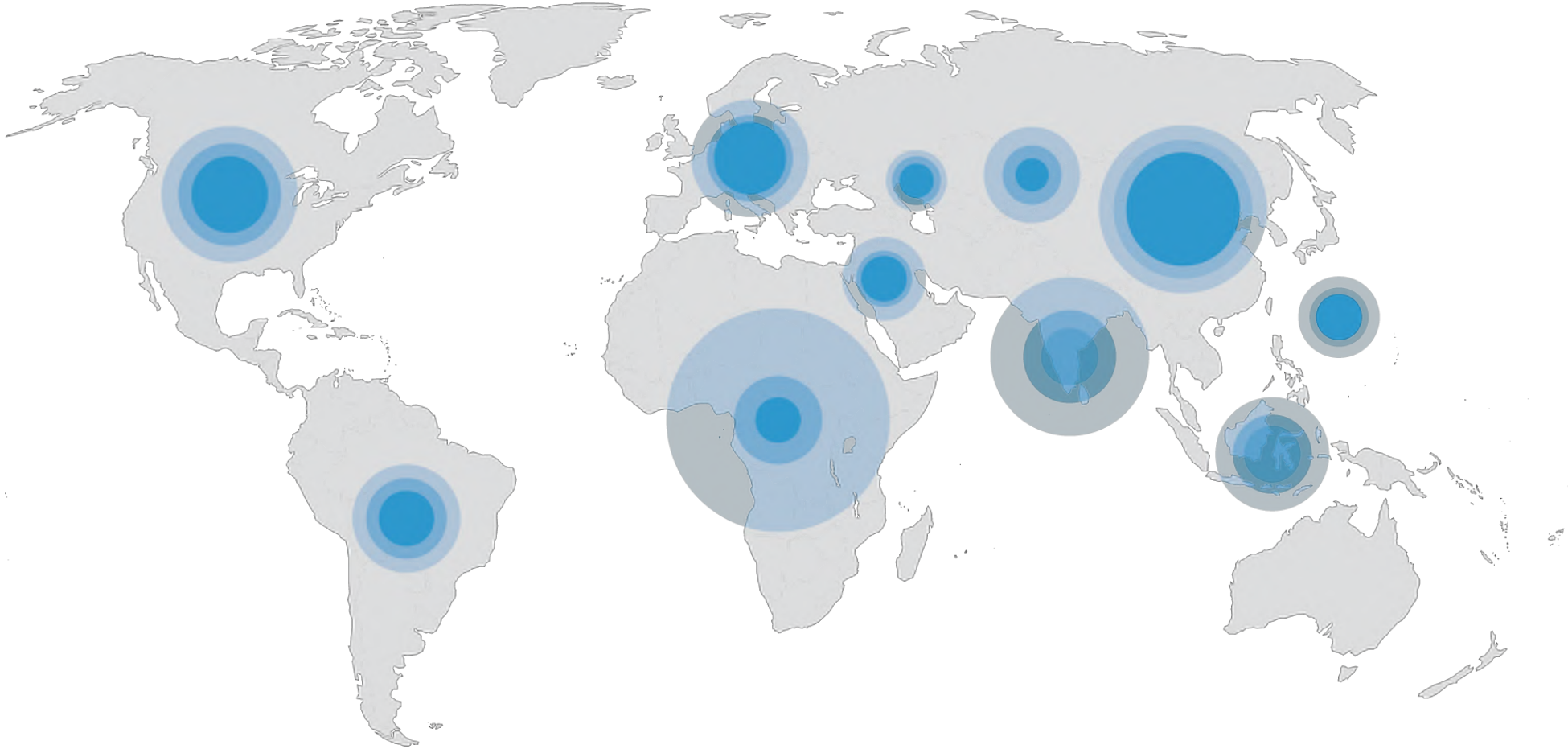
Annual World Congress of Smart Materials

Session: Application of Smart Materials

Sequestering Carbon in Concrete: Enhancing Sustainability in Construction

Manoj Dalaya, FAIA,
KGD Architecture
Location: Osaka, Japan

Global building floor area is expected to **double** by 2060.



Data Sources: Global ABC, Global Status Report 2017

Why Now?

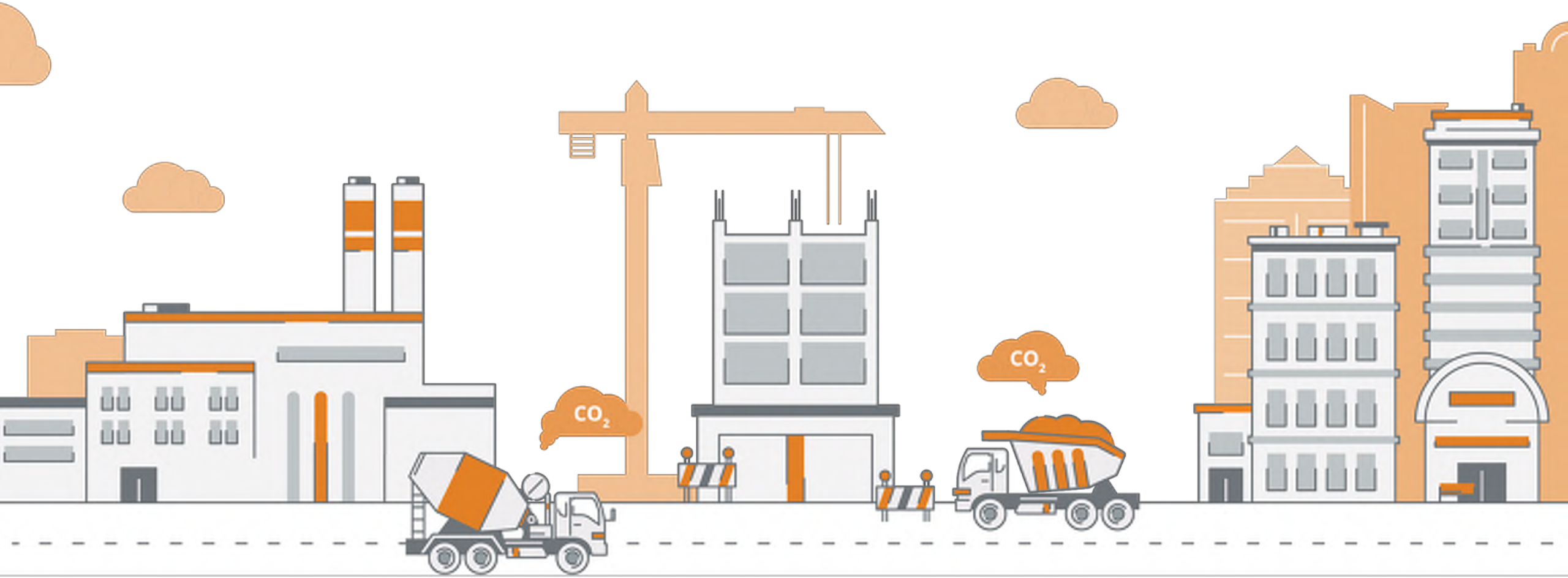
Buildings generate 40% of the world's annual GHG emissions.

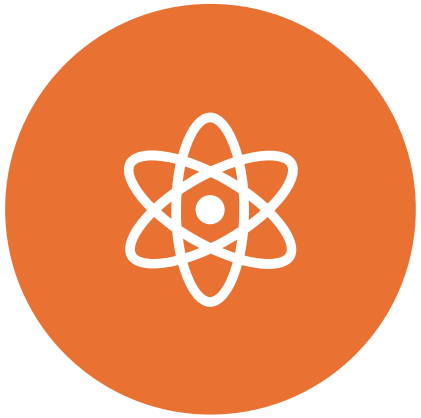
The world's building stock will double by 2060: like building a new NYC every month.

Will be responsible for HALF of new construction emissions between now and 2050.

AEC Embodied Challenge: Achieving net zero embodied carbon by 2050.

What is Embodied Carbon?





PRODUCTION OF CEMENT RELEASES CO2

REINSERTING C02 BACK INTO THE CONCRETE

SEQUESTERING CARBON ENHANCES SUSTAINABILITY IN CONSTRUCTION

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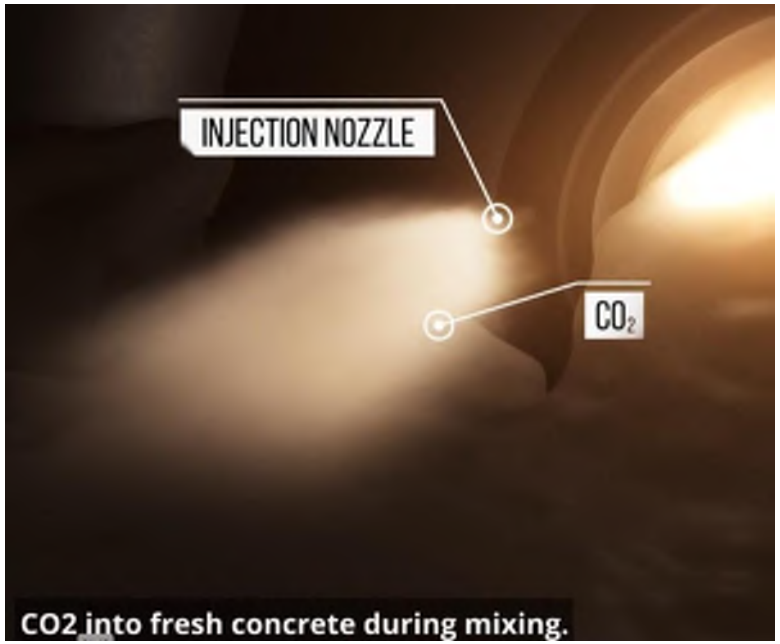
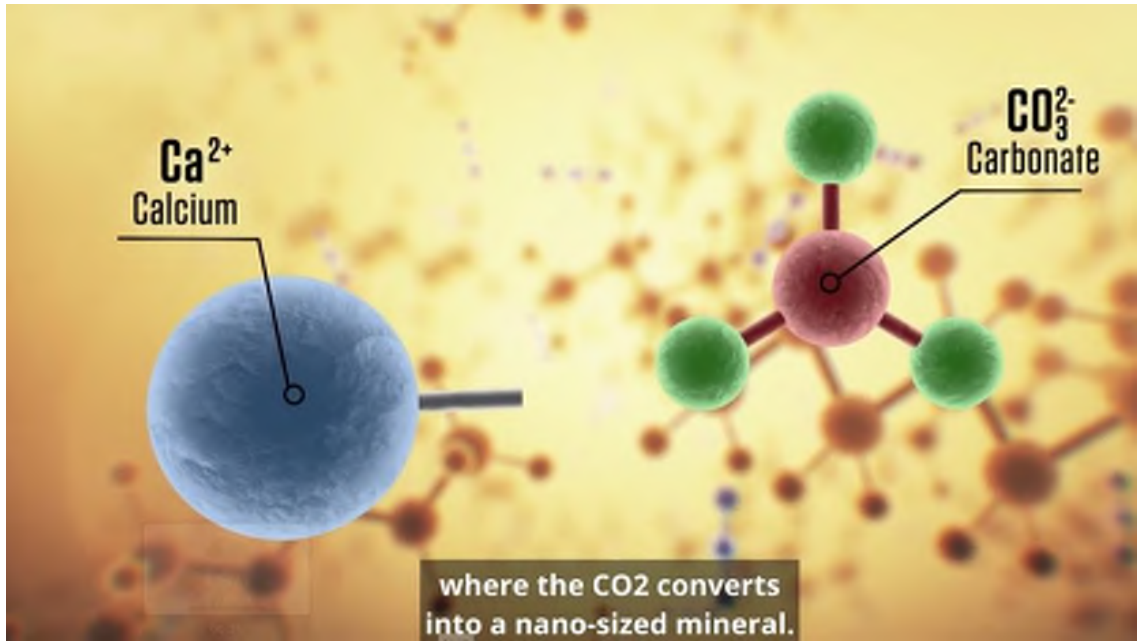
CarbonCure Website





CarbonCure **injects CO_2 into concrete** during mixing, where the CO_2 **mineralizes** to create the **same reliable concrete** with a reduced carbon footprint.

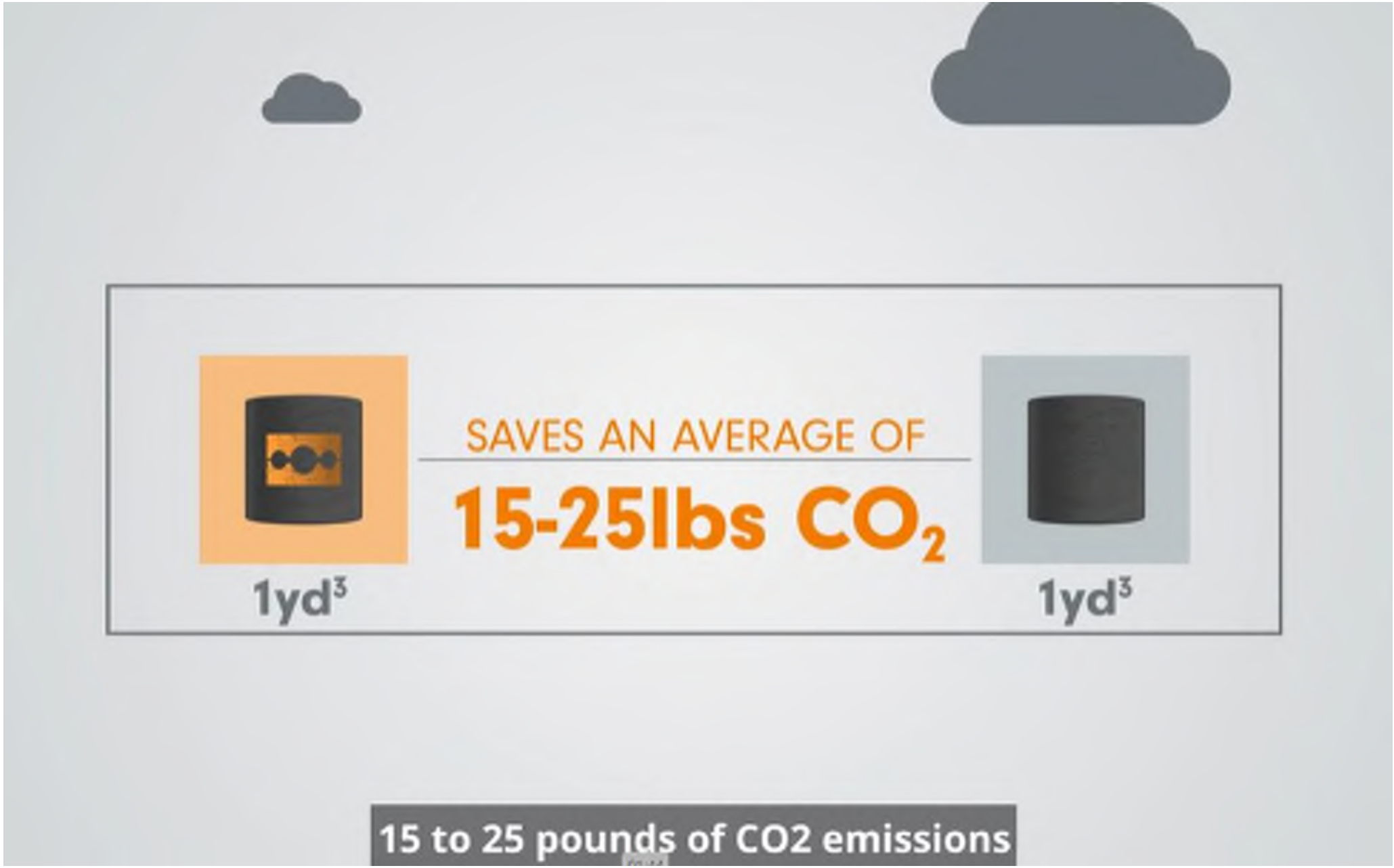
CO_2 Supply

CO_2 is collected from large emitters.

The gas is purified by industrial suppliers.

The CO_2 is delivered to concrete plants by industrial gas suppliers.

The CO_2 is stored at concrete plants in pressurized tanks.


SAVES AN AVERAGE OF
15-25lbs CO_2
1yd³
1yd³
15 to 25 pounds of CO2 emissions

Increased Compressive Strength

Reduced Permeability

Improved Durability


WALTER
PHILLIPS
Engineers of record since 1945
KGD
architecture


Giant


Giant
Giant
United
United
United
FANS

37,618 Concrete Yards Poured
4,063 Truck Loads Delivered
16,789 Pounds CO_2 Emissions Saved

Questions

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KGD Website – Presentation PDF

Contact Information

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