Green cement sucks up CO2

May, 07 2008

(London, UK) -- Laing O'Rourke is part of research team hoping to develop a carbon negative cement that could revolutionise the concrete industry.

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The production of cement has been problematic for the concrete sector in the sustainability debate because of the huge amounts of CO2 given off during the process. This is estimated to be responsible for up to four per cent of global emissions.

Now researchers at Imperial College London have developed a binder based on magnesium oxide which does not require high temperature processing, leading to minimal emissions during production.

Magnesium oxide cements have been under development elsewhere in recent years. But while carrying out research on one such compound the Imperial team stumbled upon the fact that the resulting cement also absorbed further CO2 from the atmosphere as it hardened.

This creates the possibility of new concrete products that could act as carbon sinks, massively improving the sustainability credentials of projects they are used on.

The Imperial team has formed a spin-off company called Novacem to develop the idea. It has secured £1.7 million of funding through the Department for Innovation, Universities and Skills' Technology Strategy Board.

Now the UK's largest private contractor is collaborating with the team on a three-and-a-half year research project to develop the idea, and they have called for a civil engineering or materials science graduate to carry out the research as part of a PhD programme.

Materials suppliers are also understood to have expressed interest in becoming involved in the trials. Dr Chris Cheeseman of Imperial's civil and environmental engineering department said: "This is at a very early stage. It may be a decade away from being used on site. It will be a long process to see something that can compete with traditional Portland cement, but there is that potential."

The binder produced by the team is understood to absorb CO2 most readily with maximum exposure to the air, suggesting its optimum use would be with -porous products such as concrete blocks.

The team is also looking at sourcing large quantities of magnesium oxide, with attention turning towards major -global deposits of talc minerals as a potential supply.

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