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## *Ethiopian Science & Technology Commission*

*News Letter No 31, S&T Popularization Department., April 1999*

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### **Extracts From Other Sources**

#### *COOLING IT*

*Could algal colonies be the answer to global warming?*

Great balls of concrete could take some of the heat out of global warming, claim chemical engineers from Louisiana State University. They say the balls will be colonised by algae which "fix" carbon from the atmosphere and trap it in sediment.

Their plan is to dump concrete hemispheres dubbed "reef balls" into estuaries and coastal waters, providing large surface areas for marine algae to colonise. The researchers believe that each hemisphere could remove hundreds of kilograms of carbon from the atmosphere every year.

The Louisiana team aims to attract algae that grow 20 times faster than free-floating forms. As they grow and photosynthesis they extract carbon dioxide from the surrounding waters, which is replenished by CO<sub>2</sub> from the atmosphere. When the algae die, they fall to the seabed and become part of the sediment. The net result is the removal of CO<sub>2</sub> from the atmosphere.

Carl Knof, chair of chemical engineering at the university, said: "We are trying the idea out in the lab now using balls 15 centimeters across. But in the next stage, in the ocean we will be sinking balls three meters across or more."

One challenge has been to make the concrete chemically neutral. Normal concrete is too alkaline for microalgae to colonise. Sea water will eventually neutralize it, but not before organisms with less power to "fix" CO<sub>2</sub> have invaded the concrete surface.

Ironically, neutralizing the concrete means applying CO<sub>2</sub> to it under high pressure, while the concrete is still wet. Treating the concrete with a foaming agent creates a sponge-like surface which has a bigger surface area for the algae to grow on. "A hollow hemisphere or reef ball about 100 square metres of active surface area for microalgae growth. Each reef hemisphere could remove 200 kilograms of carbon from the atmosphere each year, and this process would continue indefinitely," says Knopf. The team has calculated that to soak up all the CO<sub>2</sub> the US produces in a year would require almost a billion-and-a-half balls. Still, the team reckons, it's a start. The balls could eventually be used to dispose of carbon dioxide from fossil-fuel power plants. Emissions could be pumped into the ocean close to a concrete reef system, say the researchers.

The first test balls could be lowered into the ocean as early as next year. Knopf plans to make the hollow balls buoyant enough to float into place by putting an inflated rubber ball inside them, and to sink them by gradually deflating the ball. Once in place, says the team's marine biologist Bob Gambella, the balls will both consume carbon dioxide from the ocean and provide conditions on the sea bed similar to those of a natural reef.

*New scientist, June 1998*

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***Note to readers***

*We would very much appreciate receiving comments suggestions,  
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