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## Researcher: Ban Patents on Geoengineering Technology

Physicist David Keith, who has been working on technologies to block sunlight to slow global warming, argues that such efforts need to remain in the public domain

By Anne C. Mulkern and ClimateWire | Wednesday, April 18, 2012 | 13

LAGUNA NIGUEL, Calif. -- Researchers working on a technology they say could stop global warming want the government to keep it out of private hands, a lead investigator said this week.

David Keith, a Harvard University professor and an adviser on energy to Microsoft founder Bill Gates, said he and his colleagues are researching whether the federal government could ban patents in the field of solar radiation.

The technology, also known as geoengineering, involves a kind of manipulation of the climate. Shooting sulfur -- a reflective material -- into the stratosphere could compensate for the warming effect of carbon dioxide and cool the planet, Keith said.

It could be very effective but also has the potential to provoke conflict between nations, Keith said.

"This is technology that allows any country to affect the whole climate in gigantic ways, which has literally potential to lead to wars," Keith said. "It has this sort of giant and frightening leverage."

Keith spoke about the technology and his work on climate and energy Monday at *Fortune* magazine's Brainstorm Green conference. The Harvard professor of applied physics and public policy runs the philanthropic Fund for Innovative Energy and Climate Research.

Gates began funding that group out of his personal wealth after meeting with Keith and other advisers on climate. The fund, which has spent \$4.6 million since 2007, is bankrolling the research into solar radiation.

Keith began studying solar radiation about 20 years ago, "when no one else was working on it," he said. Now others are investigating it, "the taboo has been broken and there's suddenly a fair amount of research happening and people are beginning to think more seriously about it."

### Could the government ban patents?

With people talking about it more openly, some researchers believe it's time to make sure precautions are taken to prevent international conflict. Some of his colleagues last week traveled to Washington, D.C., where they discussed whether the U.S. Patent Office could ban patents on the technology, Keith said.

"We think it's very dangerous for these solar radiation technologies, it's dangerous to have it be privatized," Keith said. "The core technologies need to be public domain."



**SUN BLOCK:** Technologies that block sunlight, such as those that mimic volcanic eruptions, should remain in the public domain, argues at least one would-be geoengineer.  
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Those familiar with patent rules, he said, described it as mostly uncharted territory. "There's not much legal precedent," Keith said. "Nuclear weapons are a partial precedent." The United States could not ban patents in other countries but has influence, he explained.

"Patents are mostly symbolic in this area anyways," he said. "The issue is to try and find ways to lower potential tensions between countries around these technologies by sending signals that it's going to be as transparent as possible."

In addition to potentially stoking international political problems, the technology carries other risks. The particles could hold the Earth's temperatures constant, Keith said, but that has side effects.

"If you keep increasing the amount of carbon dioxide, and you keep also increasing the amount of sulfur in the stratosphere, you can hold the surface temperature constant," Keith said. "All sorts of other things begin to go more and more wrong as you have more and more CO<sub>2</sub> in the atmosphere."

"So this is not a perfect substitute," Keith said, "but it might be a very effective way to reduce risk over the next half-century."

The work on solar radiation is one part of energy research Keith is involved in. He also runs a startup called Carbon Engineering, which is trying to build the hardware to capture carbon out of the air. The company has received about \$3.5 million from Gates and has spent about \$6 million total.

#### **Lack of a broad social consensus**

At the conference, where many are talking about innovations, Keith warned that those won't be enough on their own to stop climate change from becoming a severe problem.

"No technical fix solves this problem without some sort of broad, social consensus that the problem is worth solving," Keith said. "I don't think we're there yet."

"It's not a question of if the politicians are screwing up," he added. "Yes, they are, but really, we have not convinced enough of our fellow citizens that they really should take this problem seriously."

That involves getting people to think about their great-grandchildren as well as people in other countries, he said.

Keith also spoke critically about what the country has done so far on climate. People are involved in symbolic actions instead of meaningful ones, he said, like focusing on producing better plastic instead of looking at the really big sources of carbon emissions, like airplane travel.

In the United States, about \$260 billion in public and private dollars was spent last year on clean energy, which is about 0.4 percent of gross domestic product, Keith said. With that kind of spending, "you should expect to really see the brakes go on" greenhouse gas levels.

"Except emissions were up 7 percent in 2010 and almost certainly more last year," Keith said.

That means either that the view that cutting emissions should be easy is wrong, or that the way the money has been spent is not effective, he said, "or both."

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