

Discovery News

Pesticide Lingers In Atmosphere, Trapping Heat - March 25, 2009

It does a good job of killing termites and keeping bugs away from corn. But the pesticide sulfuryl fluoride is even better at trapping heat in the atmosphere.

A new study revealed that the pesticide lingers in the atmosphere for 36 years -- about eight times longer than scientists previously suspected. What's more, the gas is 4,800 times more powerful than carbon dioxide at holding in heat.

While levels in the atmosphere are small for now, the new study suggests that scientists might want to begin searching for a substitute right away.

"We thought its lifetime was only four and a half years, so we said, OK, it will be a moderately important gas but not that important," said Ronald Prinn, an atmospheric scientist at the Massachusetts Institute of Technology in Cambridge, Mass. "This made it go from a greenhouse gas of rather little interest to one of much greater potential interest. "

Sulfuryl fluoride is commonly used as a termite fumigant, particularly in California. It's also used to keep pests off hydroponic crops and out of grain silos.

The chemical was originally flagged as a substance of concern by a large international project called AGAGE, which stands for Advanced Global Atmospheric Gases Experiment. With monitoring stations around the world, the project aims to both measure known contributors to the greenhouse effect and to detect up-and-coming ones.

To follow up, Prinn and a large number of colleagues designed a complex computer model that compared the amount of suspected sulfuryl fluoride emissions over the last few decades with the amount of measured sulfuryl fluoride in the atmosphere, taking into account absorption by the ocean, breakdown during use, and other factors.

Their results, published in the *Journal of Geophysical Research*, showed that sulfuryl fluoride levels remain low, but that concentrations are rising at a rate of about five percent each year. With its unexpectedly long lifespan and powerful ability to trap heat, sulfuryl fluoride is already raising eyebrows among scientists. And the Environmental Protection Agency is reconsidering current regulations.

"There are really going to have to be serious limitations on the emissions of this chemical into the atmosphere," said Prinn, who emphasized that the chemical does a job that needs to be done. "It's time to get looking for alternatives."

In fact, sulfuryl fluoride was only recently introduced to replace methyl bromide, which was banned because it was highly destructive to the ozone layer.

“At the end of the day, in some respects, you put climate up against ozone depletion,” said David Fahey, a research physicist with the National Oceanic and Atmospheric Administration in Boulder, Colo. “We need to invest in this gas with our eyes open.”