Nobel prize-winning scientist cites evidence of link between extreme weather, global warming

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New scientific analysis strengthens the view that record-breaking summer heat, crop-withering drought and other extreme weather events in recent years do, indeed, result from human activity and global warming, Nobel Laureate Mario J. Molina, Ph.D., said here today.

Molina, who shared the 1995 Nobel Prize in Chemistry for helping save the world from the consequences of ozone depletion, presented the keynote address at the 244th National Meeting & Exposition of the American Chemical Society. The meeting, which features about 8,600 reports with an anticipated attendance of 14,000 scientists and others continues here through Thursday.

"People may not be aware that important changes have occurred in the scientific understanding of the extreme weather events that are in the headlines," Molina said. "They are now more clearly connected to human activities, such as the release of carbon dioxide — the main greenhouse gas — from burning coal and other fossil fuels."

Molina emphasized that there is no "absolute certainty" that global warming is causing extreme weather events. But he said that scientific insights during the last year or so strengthen the link. Even if the scientific evidence continues to fall short of the absolute certainly measure, the heat, drought, severe storms and other weather extremes may prove beneficial in making the public more aware of global

warming and the need for action, said Molina.

"It's important that people are doing more than just hearing about global warming," he said. "People may be feeling it, experiencing the impact on food prices, getting a glimpse of what everyday life may be like in the future, unless we as a society take action."

Molina, who is with the University of California, San Diego, suggested a course of action based on an international agreement like the Montreal Protocol that phased out substances responsible for the depletion of the ozone layer.

"The new agreement should put a price on the emission of greenhouse gases, which would make it more economically favorable for countries to do the right thing. The cost to society of abiding by it would be less than the cost of the climate change damage if society does nothing," he said.

In the 1970s and 1980s, Molina, F. Sherwood Rowland, Ph.D., and Paul J. Crutzen, Ph.D., established that substances called CFCs in aerosol spray cans and other products could destroy the ozone layer. The ozone layer is crucial to life on Earth, forming a protective shield high in the atmosphere that blocks potentially harmful ultraviolet rays in sunlight. Molina, Rowland and Crutzen shared the Nobel Prize for that research. After a "hole" in that layer over Antarctica was discovered in 1985, scientists established that it was indeed caused by CFCs, and worked together with policymakers and industry representatives around the world to solve the problem. The result was the Montreal Protocol, which phased out the use of CFCs in 1996.

Adopted and implemented by countries around the world, the Montreal Protocol eliminated the major cause of ozone depletion, said Molina, and stands as one of the most successful international agreements.

Similar agreements, such as the Kyoto Protocol, have been proposed to address climate change. But Molina said these agreements have largely failed.

Unlike the ozone depletion problem, climate change has become highly politicized and polarizing, he pointed out. Only a small set of substances were involved in ozone depletion, and it was relatively easy to get the small number of stakeholders on the same page. But the climate change topic has exploded. "Climate change is a much more pervasive issue," he explained. "Fossil fuels, which are at the center of the problem, are so important for the economy, and it affects so many other activities. That makes climate change much more difficult to deal with than the ozone issue."

In addition to a new international agreement, other things must happen, he said. Scientists need to better communicate the scientific facts underlying climate change. Scientists and engineers also must develop cheap alternative energy sources to reduce dependence on fossil fuels.

Molina said that it's not certain what will happen to the Earth if nothing is done to slow down or halt climate change. "But there is no doubt that the risk is very large, and we could have some consequences that are very damaging, certainly for portions of society," he said. "It's not very likely, but there is some possibility that we would have catastrophes."

Provided by American Chemical Society

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