MARIO MOLINA 4TH WORLD WATER FORUM MARCH 2006

KEYNOTE ADDRESS

Mario Molina, 1995 Chemistry Nobel Prize Laureate, addressed the inter-relationship between global warming and the water cycle. Characterizing our atmosphere's relative thickness to that of an apple skin relative to an apple, he said the amount of available air is limited, and stressed that mankind can indeed impact it negatively.

Describing the greenhouse effect, Molina explained that the atmosphere retains some of the sun's energy that is radiated by the earth, acting as a blanket. He said natural levels of water vapor and carbon dioxide have always acted as greenhouse gases, which has been crucial to the evolution of life on earth, noting that without this natural greenhouse effect, the earth would be 33 degrees Celsius colder.

Molina highlighted that atmospheric levels of carbon dioxide have risen dramatically over the past century due to the use of fossil fuels. Levels of methane and nitrous oxide show a similar increase, resulting from land-use changes and agricultural intensification. He said these trends show a striking correlation with the observed rise in temperature, emphasizing that 2005 was the warmest year in the past 100 years. Noting that this correlation is not necessarily causal, he highlighted studies by the Intergovernmental Panel on Climate Change (IPCC). He said the IPCC's Third Assessment Report presented new and strong evidence that the warming observed in the past 50 years is attributable to human activities.

Molina underscored the dramatic impacts of climate change on the water cycle, noting feedback mechanisms that will stimulate temperature increase, including through a decreased reflection of solar energy due to the melting of glaciers, and increased cloud cover that will exacerbate the greenhouse effect. Noting that the complex relationships in the water cycle are still poorly understood, he predicted that the water cycle will intensify, causing extreme weather events such as hurricanes and increasing the frequency and severity of droughts and floods.

Arguing that it is up to governments to take action, he said scientists' role is to provide the necessary scientific information. He suggested that precautions should be taken based on probability scenarios. Highlighting the significant probability that if no action is taken, the average temperature will have risen by eight degrees Celsius by 2100, he identified this as an intolerable risk. He said increasing temperatures pose a threat to ecosystems and human health, including through the increased impact of air pollution. Molina called for a culture of change with respect to energy and water management, which he said is only possible if all stakeholders commit to increased cooperation.