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## LAWYERS

## The Birth of Global Warming



**Ross Blair**  
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Most people believe global warming is a phenomenon that people first became aware of some time in the 1980s. The general view is that it commenced with the publication of a report of the Charney Panel given to the United States' National Academy of Sciences. A concerned President Jimmy Carter had commissioned the report in 1979. Its findings were completely unequivocal. The Panel said ". . . **if carbon dioxide continues to increase, the study group finds no reason to doubt that climate changes will result and no reason to believe that these changes will be negligible.**"

But science first happened upon what we now refer to as "global warming" about 120 years earlier. John Tyndall, a British physicist had invented the ratio spectrophotometer. This instrument, he designed for the purpose of studying the abilities of various gases to trap and retain heat. While experimenting in this area about 1859, Tyndall discovered that while oxygen and nitrogen were transparent both to visible and infrared radiation, carbon dioxide, methane, water vapour and similar gases were not.

Tyndall understood what this meant in terms of Planet Earth. He made it clear in his writings that the imperfectly transparent gases were largely responsible for determining the earth's climate because, as he said, ". . . our atmosphere, thrown as a barrier across the terrestrial rays, produces a local heightening of the temperature at the earth's surface." What Tyndall was, of course, referring to is what we now call "the natural greenhouse effect".

In 1894, a Swedish chemist, Svante Arrhenius made the first known pronouncement that it was humans who were altering the earth's energy balance. Arrhenius had laboured for about a year calculating what would happen to the earth's temperature if the

quantity of atmospheric carbon dioxide was doubled by human action, what we now call the "enhanced greenhouse effect".

Arrhenius concluded that, assuming everything else remained equal, the doubling of carbon dioxide would cause global temperature to increase. There was of course, a problem with this in the sense that "everything else" was never likely to remain equal. For example, the atmospheric carbon dioxide level will be considerably increased by volcanic activity or large scale forest fires. But Arrhenius was undoubtedly correct in his conclusions that the earth's temperature would increase and that this was being caused by human actions. He went on, however, again on the basis of everything remaining equal, to calculate that it would take about 3,000 years of human action (primarily coal burning) to double the earth's carbon dioxide as to which, time has shown he was approximately 2,800 years out.

President Carter's request for the Charney Panel report arose largely due to investigations in a number of institutions which made use of the then new science of modelling which, by 1979 had become far more accurate than previously.

The panel had difficulty in predicting how long it would take for climate changes already set in motion to become apparent, mainly because the climate system has a built-in time delay. So it took a conservative approach of waiting for evidence of warming before making a final pronouncement. The panel said "**We may not be given a warning until the CO<sub>2</sub> loading is such that an appreciable climate change is inevitable.**" Unfortunately that attitude has been taken up ever since by many who are opposed to action being taken to reduce CO<sub>2</sub> levels and who fail to understand that by the time the effect is apparent it is already too late to prevent it.

Name: Ross Blair  
Title: Special Counsel Future Law Team  
Phone: (61 3) 9670 8822  
Fax: (61 3) 9602 5037  
Email: [ross.blair@mckeanpark.com.au](mailto:ross.blair@mckeanpark.com.au)  
Web: [www.mckeanpark.com.au](http://www.mckeanpark.com.au)