

Testimony for Congressional Progressive Caucus (CPC)

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It is an honor to have the opportunity to speak to you today about the history of climate science, and the attempts by interested parties to undermine public understanding of that science.

Let me begin by introducing myself. I am a professor of the History of Science, and affiliated professor of Earth and Planetary Sciences at Harvard University. I have studied, taught, and researched the history of modern earth and environmental science for thirty years. For the past fifteen of those, my research has been focused on the history of climate science—what scientists know about the impacts of human activities on the climate system and how and when they developed this knowledge. I have also studied the history of climate change disinformation—how and why certain groups, with vested interests, have sought to undermine public understanding of climate science. I have written two books on the subject: one of them, *Merchants of Doubt*, has been translated into six languages and made into a documentary film of the same name. This is the third time I have had the privilege of speaking to Congress about these matters.

The long consensus on climate change

In the early-mid 20th century, a number of scientists—physicists, chemists, and earth scientists—realized that burning fossil fuels was adding more carbon dioxide to the atmosphere, and that this could change the climate in damaging ways. In 1957, as part of the International Geophysical Year, they began the systematic measurement of carbon dioxide in the atmosphere, in order to determine first, if carbon dioxide was, in fact, increasing and second, to see if that increase was having discernible effects. The man most closely associated with this work was Charles David Keeling, whose measurements are now known as the “Keeling Curve.” In 2001 Keeling won the National Medal of Science for this work—bestowed on him by President George W. Bush.¹ The Keeling Curve is now engraved on the wall of the U.S. National Academy of Sciences, next to images of the Darwin’s famous finches and the double helix structure of DNA. In other words, the increase in atmospheric CO₂ is an established scientific fact, as secure as our knowledge that hereditary information is carried in DNA.

But what difference does it make if CO₂ increases? Throughout the 1960s and 70s, various high level scientific advisory panels expressed concern that increased CO₂ could lead to serious adverse effects. They were particularly concerned about impacts on agricultural productivity, and with sea level rise, which could eventually drown major coastal cities, ports, and military installations. These

concerns were communicated by some of America's most illustrious scientists to Presidents Lyndon Johnson, Richard Nixon, and Jimmy Carter.²

But throughout the 1960s, '70s early 1980s, climate change was a prediction, not a fact. That changed in 1988, when Dr. James Hansen and his team at the Goddard Institute of Space Studies—part of NASA—published the first peer-reviewed scientific papers demonstrating the effect of increased atmospheric CO₂ on the planetary climate.

1988 was also the year that organized climate change denial began.

The Story of Climate Change Denial

In our book, *Merchants of Doubt*, historian Erik Conway and I traced the origins of climate change denial to a think tank here in Washington: the George C Marshall Institute. We also showed that the founding Chairman of the Board of that Institute, physicist Frederick Seitz, had worked as a consultant to the R.J. Reynolds tobacco company, where he ran a research program designed to cast doubt on the scientific evidence on the harms of tobacco use. And we showed that Seitz and his colleagues applied the “tobacco strategy” to challenge the emerging scientific consensus and block action on climate, just as they had helped to delay action on tobacco control.

We called these men “merchants of doubt,” because the centerpiece of their strategy was create doubt among the American people, and our leaders, about the reality of the problem and the security of the scientific evidence that documents it. They used this strategy first to defend tobacco, then to defend the scientific evidence of acid rain and stratospheric ozone depletion, and then to challenge the scientific evidence of man-made climate change. Through reports, press releases, advertisements, lobbying and public relations campaigns, and personal attacks on scientists, they spread the message that the science was uncertain, that there was no consensus on the reality of climate change, that scientists were untrustworthy, and that if climate change did occur, it would do little or no harm and we could easily adapt to it.³ And they were driven not so much by money but by ideology and fear: the ideology of laissez-faire capitalism, and the fear that the remedies for these problems—regulations, taxes, and international treaties--would lead to an expansion of government power and loss of individual freedom.

The Marshall Institute was not created by the fossil fuel industry, but by the early 1990s it was being funded by it. Exxon-Mobil, in particular, became a major funder both of the Marshall Institute in particular, and more generally and of a network of think-tanks that promoted a message of doubt about the reality or relevance of climate change. These included the CATO Institute (with its long-standing connections to Koch Industries), the Competitive Enterprise institute, the Heartland Institute, and many others. The British Royal Society has documented

more than 30 think tanks and organizations that have received money from Exxon-Mobil, and who promote inaccurate information or disinformation about climate change.⁴

Exxon-Mobil also played a leading role in the Global Climate Coalition, a group created in the early 1990s with the specific goal of preventing the U.S. Congress from signing the Kyoto Protocol to the United Nations Framework on Climate Change. Through the activities of Global Climate Coalition, as well as through various reports, statements, and advertisements, Exxon-Mobil and other fossil fuels companies insisted that the scientific evidence was too uncertain to justify policy action. But we now know that, just like R. J. Reynolds and Phillip Morris before them, Exxon Mobil said one thing in public and another in private.

While publicly questioning climate science, the leaders of Exxon-Mobil were in fact well aware that there was no solid intellectual grounds for doubting it. In 2009, *The New York Times* reported in a headline “Industry Ignored its Scientists on Climate.”⁵ The advisory committee whose advice was ignored was led by Leonard S. Bernstein, a chemical engineer and climate expert at what was then the Mobil Oil Corporation. In 1995, Bernstein’s committee advised Mobil and the other members of the Global Climate Coalition (which included Exxon, Chevron, Shell, and the U.S Chamber of Commerce) that “The scientific basis for the

Greenhouse Effect and the potential impact of human emissions of greenhouse gases such as CO₂ on climate is well established and cannot be denied.”⁶

But they did deny it, for a long time. Recent revelations from Inside Climate News and the Columbia School of Journalism show that the Bernstein memorandum was not an anomaly. In fact throughout the 1970s, Exxon sponsored robust scientific research on the climate question, but in the late 1980s, began to reject the findings both of their own scientists, and of the international scientific community.⁷

Today, Exxon-Mobil claims that it accepts climate science and no longer funds disinformation. This claim is inconsistent with one essential fact: Exxon-Mobil continues to be a member of at least three trade organizations—the American Legislative Exchange Council (ALEC), the U.S. Chamber of Commerce, and the American Petroleum Institute—who promote positions that are seriously at odds with the findings of the climate science community, including our own U.S. National Academy of Sciences.

Millions of people died from entirely preventable disease because of the activities of the tobacco industry. It is my earnest hope that we will not have to wait for millions to die before we act to prevent further damaging and dangerous climate change.

¹ <http://www.nationalmedals.org/laureates/charles-d-keeling>

² Gordon MacDonald et al., 1964 Scientific Problems of Weather Modification: A report of the Panel on Weather and Climate Modification, Committee on Atmospheric Sciences, NAS-NRC Publication 1236, Washington DC: NAS Press; Roger Revelle et al., 1965, Restoring the Quality of Our Environment, Appendix Y4, on p. 116;

<https://dgc.stanford.edu/labs/caldeiralab/Caldeira%20downloads/PSAC,%201965,%20Restoring%20the%20Quality%20of%20Our%20Environment.pdf>;

Jule Charney et al., 1979

Carbon Dioxide and Climate: A Scientific Assessment, Report of an Ad Hoc Study Group, U.S National Research Council; <http://www.nap.edu/catalog/12181/carbon-dioxide-and-climate-a-scientific-assessment>;

MacDonald, G., et al, 1979. The long term impact of atmospheric carbon dioxide on climate, JASON Technical Report JSR -78-07, prepared for the U.S Department of Energy.

³ Oreskes, Naomi and Erik M. Conway, 2010. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. (New York: Bloomsbury Press.)

⁴ <https://royalsociety.org/topics-policy/publications/2006/royal-society-exxonmobil/>

⁵ http://www.nytimes.com/2009/04/24/science/earth/24deny.html?_r=0

⁶ <http://documents.nytimes.com/global-climate-coalition-aiaa-climate-change-primer#p=1%20>

⁷ <http://insideclimatenews.org/content/Exxon-The-Road-Not-Taken>