Statement to the Congressional Progressive Caucus by Dr. Edward A. Garvey

June 22, 2016

Good afternoon. Thank you for the opportunity to speak before the caucus. I'd like to briefly describe to you some of the events of my 5 year tenure with the Exxon Research and Engineering Company. After graduating from college as a chemical engineer in July of 1978, I was hired to assist a senior scientist at Exxon (Dr. Henry Shaw) in the development of a greenhouse gas research project. Ultimately, the research aimed to make an important contribution to the understanding of CO_2 and climate science. The program was also intended to constitute a uniquely Exxon contribution, something no other entity could readily do. In developing the program, we worked closely with doctors Wally Broecker and Taro Takahashi, geochemists with Columbia University. Dr. Shaw, and perhaps others at Exxon, felt that a joint investigation with well-respected researchers such as these scientists would lend credibility to the effort and also guarantee that the work we would do would have scientific importance. The Columbia scientists insisted that the findings be freely shared, without restrictions on their publications or the scientists' non-project activities. I was told, probably by Dr. Shaw, that Exxon undertook this research to earn itself a "place at the table" among scientists, policy makers, etc., regarding climate change and the potential responses to it. By working with leading scientists from academia and by conducting original and highly useful research, Exxon felt that its opinions would be taken seriously regarding greenhouse gases and possible solutions to the problem.

We ultimately selected a supertanker, the Esso Atlantic, to set up a dedicated monitoring system. The monitoring equipment would obtain measurements of CO_2 in surface water and in air as the ship traversed its normal routes. We permanently installed an extensive sampling system and a computer-based data collection system on the ship. The very large capacity of the ship meant the vessel was dedicated to the Gulf of Mexico - Persian Gulf route by way of Cape Horn of Africa. Thus our equipment would cross equatorial zones in the central Atlantic and western Indian Oceans multiple times each year. The program's goal was to understand the role of the ocean in the global carbon cycle and its role in the storage of anthropogenic CO_2. Our study focused, in particular, on the cycling of CO_2 between the atmosphere and ocean in the equatorial region.

Exxon invested heavily in the project, spending over $900,000 per year at the program's peak (about $2.5M in today's dollars) and planned to make known its commitment to greenhouse gas studies. The tapes of me on the ship that are now on the internet were made by professional photographers in 1979 with the intention of presenting the program to shareholders. The tanker project required the cooperation of multiple divisions within Exxon, the Research and Engineering Company (which employed Dr. Shaw and myself), Exxon International (which scheduled and maintained the Esso Atlantic), and Exxon USA (which offloaded crews and equipment from the tanker in the Gulf of Mexico).

We observed significant changes in oceanic CO_2 levels during our equatorial crossings, as expected. We also observed the plume of the Amazon River hundreds of miles offshore.

Around 1980 or so, unrelated to the tanker project, Exxon expanded its own research efforts into climate modeling. They hired several scientists from academia, including Dr. Brian Flannery, to conduct this line of research. About 2 years later, the oil market, which had been quite lucrative for Exxon in the 1970s, basically collapsed. Exxon began to lay off staff across the corporation and also ended the tanker project abruptly, rather than wind it down. In particular, this meant that, although we had collected a lot of data, we had not yet fully processed it to obtain final values. Thus, we had no conclusions at the time. To that point, we had only one journal article on the work, a paper published in the IEEE peer-reviewed journal

on Instrumentation and Measurement, which described the design and operation of the oil tanker CO_2 monitoring installation.

Although Exxon discontinued the tanker project, it continued its climate modeling research, at least while I remained there. With the end of the project, the looming layoffs at Exxon and the lack of further support for my studies on the global carbon cycle, I opted to leave Exxon in 1983 and continue my graduate studies at Columbia, but in estuarine, rather than oceanic, geochemistry.

The years I spent at Exxon were an exciting time for research in general, and particularly for climate studies. Although we only published one journal article, the data we collected was ultimately incorporated into several papers concerning the global carbon cycle and the fate of increased anthropogenic CO_2 by the Columbia scientists. During my tenure there, I had the chance to work with some of the leading scientists in geochemistry and climate. Although I was very disappointed when Exxon discontinued the study, I am still grateful for the opportunity I was afforded.