

## How Dare You Scientists Espouse Different Thoughts!

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On 7 May 2010, a letter signed by 255 members of the US National Academy of Sciences (<http://bit.ly/at6kwM>) deplored attacks on both science and scientists who carried out research on climate science or related fields (I am a signer of the letter). The letter begins: “We are deeply disturbed by the recent escalation of political assaults on scientists in general and on climate scientists in particular.”

In addition to the assaults themselves, one of the disturbing features of the attacks is that they ignore the preponderance of scientific evidence confirming the conclusion that humankind is causing climate change that threatens civilization and even the survival of the human species. The assaults rely on two main components.

(1) Statements contradict the preponderance of scientific evidence without a comparable body of evidence to the contrary – the letter in the journal *Science* states: “. . . fame awaits anyone who can show these theories (i.e., climate change and evolution) to be wrong.” Why haven’t some of the deniers provided persuasive evidence to the contrary and collected the Nobel Prize?

(2) Some of the Intergovernmental Panel on Climate Change (IPCC) reports are huge, and, as size increases, so does the probability of minor errors. When any errors are found, they are immediately corrected; however, deniers use the minor errors to imply that the whole structure of science is faulty. Thus far none of the minor mistakes have altered the primary conclusions derived from the preponderance of scientific evidence.

For most research investigators, engaging in a political or ideological dialogue, where the scientific process is ignored or denigrated, is an unnerving experience. The chilling effects of any of these activities have now been called “witch hunts.” Some of these chilling effects follow.

(1) Some professional careers might well take a fatal blow from risks caused by politically motivated investigations of research.

(2) If PhD students in science are contemplating post-doctoral appointments, any politically motivated investigation of their sponsoring faculty member could be devastating.

(3) The effects on students who might enroll for a science career in college are not yet clear, but any assaults would probably have a harmful effect.

(4) Research scientists have adjusted to the rigors of their chosen careers, but responding to assaults on science, as well as scientists, is a difficult adjustment.

Some assertions on this situation follow and require some thought.

(1) National security requires a robust scientific establishment with a free and open exchange of ideas.

(2) Assaults on science and scientists imperil national security.

(3) News media should be cautious about using assaults on science and scientists to entertain their audiences.

(4) No activity is error free, but the scientific process has a superb record of detecting and correcting scientific error – a responsibility best left to credentialed scientists.

(5) Humankind’s survival depends upon science, so assaults on science are literally a matter of life or death.

Scientists and their organizations (e.g., National Academy of Sciences) should not have to spend time defending themselves and their work that could otherwise be spent on scientific research, which is their primary mission. Assaults on science and scientists must diminish in the very near future.

I, like many others, accept the belief that knowledge is the best remedy for ignorance and misinformation. However, recent research (Keohane 2010 quotes Nyhan and Reifler) by political scientists shows that, in the presence of incorrect information, people with “a set of facts lodged in their minds” (as the merely uninformed do not) may entrench themselves even deeper: “The general idea is that it’s absolutely threatening to admit you’re wrong. . . . The phenomenon – known as “backfire” – is a natural defense mechanism to avoid cognitive dissonance.” In short, “facts don’t necessarily have the power to change our minds.” Unfortunately, information is often interpreted by individuals so that it supports their already accepted ideas. People accept information that upholds their beliefs and casually dismiss facts that do not fit their

preconceived view. Political scientists and sociologists need to spend much more time on how humans deal with misinformation. Climate scientists and others in related fields should pay careful attention to this literature, although, at present, the barriers to acceptance of validated scientific information published in peer-reviewed journals are formidable. This situation is very discouraging, but scientists can make a useful start by reducing the sources of misinformation. Scientists commonly develop their thoughts from evidence published in peer-reviewed, professional journals. As a consequence, individuals should examine this preponderance of evidence before attacking science and scientists.

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#### LITERATURE CITED

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