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Policy-Making Needs Science

OVER THE LONG RUN, ANY NATION THAT MAKES CRUCIAL DECISIONS WHILE IGNORING SCIENCE is doomed. Consider, for example, the decision about how much arsenic should be allowed in drinking water supplies. There is no one “right answer” to this or many other policy questions, but it is critical that national legislation be based on what science knows about potential harm. It is therefore disturbing that so many lawmakers elected to the new U.S. Congress reject the overwhelming scientific consensus with respect to human-induced climate change. It will be difficult to make wise choices with such attitudes. The question now facing the United States is not only how to effectively reinject the facts of climate science back into the core of this particular debate, but also how to ensure that good science underlies all legislative decisions.

For 12 years, I served as the president of the U.S. National Academy of Sciences. As part of a larger nongovernmental organization known as the National Academies, it produces more than 200 reports a year, aimed at making the current scientific consensus on important issues available to policy-makers and the public. In major reports released this spring, the National Academies strongly reiterated its position that climate change, caused largely by human activities, poses significant risks to the world’s future.* This conclusion is nevertheless challenged by numerous politicians, as well as by a substantial fraction of the public. There is only one effective solution for this type of problem: Scientists must make both science education and community outreach a much more central part of the scientific culture.

Most Americans have never met a scientist, and despite having been “taught science” at school, most have no real idea of how a scientific consensus is reached through continuous open debate and experiment. Every adult should have a base of scientific understanding about how the world works. But understanding the process through which scientific knowledge develops is equally critical. By the end of any introductory college science class—which can be an adult’s final exposure to science—a student should have a realistic understanding of the nature of science. Scientists are taught to challenge authority, and their responsible challenges to a consensus help science advance. Thus, adults should expect to find some scientists who disagree with the scientific consensus on an issue. And they should appreciate why a strong scientific consensus, such as that about climate change, must nevertheless form the basis for making wise personal and community decisions, representing by far the best bet for predicting the future consequences of present actions.

In addition to education, an energetic community outreach to schools, the public, and decision-makers is key. Both established scientists and those in training can be highly effective in putting a human face on science and conveying optimistic, honest attitudes toward grappling with society’s problems. Week-long science festivals, to which local institutions based on science and engineering contribute ideas and personnel, should become an annual event at hundreds of sites around the nation. And programs that encourage and facilitate outreach into nonscientific communities need to become a standard part of every university and science-based industrial establishment.

The environment in which decisions are made in a democracy will always be highly politicized, but it is crucial that both sides of any argument pay close attention both to what science knows and how that knowledge has been gained. Attaining this goal in every nation will require that scientists vigorously reach out to their communities, informing them not only about their new discoveries, but also about the path they took to get there. †

— Bruce Alberts

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*<http://americasclimatechoices.org>. †T. E. Bowman et al., *Science* 330, 1044 (2010).

