Scientific Integrity: The Way Forward

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Scientific Integrity: The Way Forward

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Late last year, the Obama administration released guidance for executive branch departments and agencies to use when implementing its vision for scientific integrity. As the Department of the Interior (DOI) and other agencies roll out their detailed implementation plans, the scientific community has a rare opportunity to weigh in on how the executive branch conducts and uses science in its decisionmaking processes.

It is important to remember why this issue deserves presidential attention. We cannot forget that in December 2005 a public affairs official warned NASA scientist James E. Hansen of "dire consequences" if he continued to talk to the press about the need to address climate change. Nor can we forget that former DOI deputy assistant secretary for parks and wildlife Julie MacDonald changed conclusions by Fish and Wildlife Service biologists on a number of documents related to the Endangered Species Act (USDOI 2007).

What is more, political interference in science continues to have significant consequences (see the Union of Concerned Scientists' *A to Z Guide to Political Interference in Science*; *www.ucsusa.org/atoz*). The suppression of climate science, for example, confuses the public and has played a major role in the nation's inability to regulate greenhouse gases. The Consumer Product Safety Commission allowed vinyl lunchboxes containing high levels of lead to make their way into the marketplace because it suppressed data from certain tests. The suppression of Food and Drug Administration scientists' concerns about Vioxx, Ketek, and Avandia prevented doctors from learning of those drugs' dangers long after the risks were known to the agency.

I acknowledge that scientific information is rarely the only factor considered in federal decisions. Although researchers may not be pleased when the government places political, social, or economic considerations above science, this does not in itself sacrifice scientific integrity (an exception is the few statutes that require decisions to be based on the best available science). Yet the science underlying federal decisionmaking must be robust and independent. When science is fabricated, cherry-picked, or suppressed, policymakers cannot make fully informed decisions.

White House involvement

It was only a few weeks after his inauguration that President Obama issued a memorandum articulating six principles central to scientific integrity and giving the Office of Science and Technology Policy 120 days to develop a plan to realize them (Office of the President 2009). Although the memorandum clearly drove some individual agency actions, it was not until 17 December 2010 that final guidance emerged from the White House (OSTP 2010).

This guidance requires departments and agencies to create their own scientific integrity policies and report on their progress by mid-April 2011. The DOI (USDOI 2011) and NOAA (the National Oceanic and Atmospheric Administration) (Lubchenco 2011) were first out of the gate. Their guidelines represent brave steps into a new arena. Both sets of guidelines apply not only to scientists but also to career government employees, political appointees, and contractors. The DOI guidelines create a new position, that of the scientific integrity officer, who leads the implementation of the policy. The NOAA policy allows scientists to express personal opinions, provided that they make clear they are not speaking for the agency.

As there are many agencies, with diverse missions and mandates, it is understandable that some details must be left to the agencies themselves to work out. But it is worrisome that so many details are still missing. As this process unfolds, it is important that the scientific community participate, examining each policy to ensure that it protects government science and scientists, strengthens the scientific advice given to federal decisionmakers, and enables the public to verify that agencies are following strong scientific integrity standards.

Protection and transparency

What practical measures will further these overarching goals? One key principle is that the federal government should allow its scientists to report waste, fraud, and abuse without fear of retaliation. Agency policies should include statements that encourage staff to speak out when they have concerns about scientific integrity and assure them that the agency both values their input and will punish managers who retaliate against whistleblowers. These policies also should require agencies to adequately inform employees about their rights and responsibilities.

Another bulwark of integrity is transparency. What is seen by all cannot be changed in secret and without consequences. The federal government should require agencies to make public the science they consider in making policy decisions. Agencies should post visitor logs on their Web sites so that, aside from a few narrow exceptions, the public knows who decisionmakers and scientists meet with.

Agencies should develop and implement policies that ensure free and open communication among scientists, researchers, policymakers, the public, and the news media. These policies should allow government

scientists to freely report their research findings and, as with the NOAA policy, express their personal views if they explicitly state that they are not speaking for their agency. Scientists, for their part, should give public affairs officials as much advance notice as possible of interviews and provide recaps afterward, but preapproval of interviews and having "minders" present should not be required.

Similarly, specific policies should be in place to ensure the timely release of scientific publications. If scientists submit a paper for agency review and a specified length of time passes without the paper being cleared, they should be free to present or publish their research results. If a publication or presentation does not claim to represent agency policy, then authors should have the option of bypassing policy review. Indeed, peer-reviewed research results used in decisionmaking should be made publicly available before they are subject to White House or interagency review. Although these reviews may subsequently challenge scientific conclusions, making the review process public protects science from arbitrary or politically motivated editing. If a document is held up in policy or interagency review, agencies should make a draft of the document public after six months.

Scientific information and advice

Agencies should also reform the process by which they receive scientific advice from nongovernment sources. Any personal, professional, or other interests that impair the objectivity of an adviser, or create an unfair competitive advantage, must be minimized and disclosed. Scientists and researchers with conflicts of interest may, of course, have important and relevant expertise, but agencies should take steps to ensure that these advisers do not vote on or have decisionmaking roles with committees. Their participation ought to be limited to making presentations and responding to questions.

The process for selecting advisory committee members should likewise be more transparent. Agencies should publicly announce their intent to form a new scientific advisory committee, or to select a new member for an existing committee. Next, they should publish criteria for selecting committee members, solicit nominations for committee membership, and call for public comment on the charge to the committee. After the selection process is complete, the agency should make basic information on committee members easily available to the public. This information should include descriptions of each member's qualifications and background, and disclosure of his or her past employers and funding sources.

Scientific integrity at a crossroads

For any of these reforms to have teeth, it is critical that agency policies require the disclosure of aggregate numbers of allegations of political interference in science and explanations of the allegations' resolution. Although frivolous allegations can be weeded out within an agency, those found to have merit should be publicly disclosed, because they can be important in policy debates.

As we head into the next two years with a divided Congress and a president preparing for reelection, the scientific community cannot allow federal agencies to lose their momentum on institutionalizing scientific integrity. For the most part, agencies are complex institutions that do not innovate easily. Cultural change comes slowly. Although political appointees and career scientists will welcome these reforms, some entrenched interests inside and outside the agencies will see reform as a threat.

To prevent falsification, fabrication, manipulation, selective editing, creation of false uncertainty, tampering with scientific procedures, intimidation and coercion, censorship and suppression, and hiding of—or delaying the release of—scientific findings, we must press the agencies. We must insist that they not only create these policies but also find ways to make sure employees are aware of their rights and responsibilities. Scientific integrity in government needs to become a habit that is hard to break. We are fortunate to have an administration with good intentions and many excellent scientists at the helms of agencies and departments. But this will not always be so.

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