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FEDERAL RESEARCH

Agency Actions Could Strengthen Scientific Integrity Policies

Statement of John Neumann, Managing Director,
Science, Technology Assessment, and Analytics

Chairwoman Stevens and Chairwoman Sherrill, Ranking Member Baird and Ranking Member Norman, and Members of the Subcommittees:

I am pleased to be here today to discuss our report on federal agencies' establishment of scientific integrity policies.¹

As you know, allegations of agency officials inappropriately influencing science have been reported in the federal government. For example, the Union of Concerned Scientists, in 2004 and 2008,² and the National Aeronautics and Space Administration's (NASA) Office of Inspector General (OIG), in 2008, reported instances in which political influences or other agency actions adversely affected the integrity of scientific information.³ More recently, the Union of Concerned Scientists surveyed federal scientists in 2018, and many respondents reported censorship of their work, especially work related to climate change.⁴

In 2007, Congress passed the America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act, which required the Office of Science and Technology Policy (OSTP) to develop an overarching set of scientific integrity principles.⁵ According to the act, these principles should ensure the communication and open exchange of data and results from research conducted by federal scientists and prevent the intentional or

¹GAO, *Scientific Integrity Policies: Additional Actions Could Strengthen Integrity of Federal Research*, [GAO-19-265](#) (Washington, D.C.: Apr. 4, 2019).

²Union of Concerned Scientists, *Scientific Integrity in Policymaking: An Investigation into the Bush Administration's Misuse of Science* (Cambridge, MA: March 2004), and Union of Concerned Scientists, *Federal Science and the Public Good: Securing the Integrity of Science in Policy Making – Presidential Transition Update* (Cambridge, MA: December 2008).

³National Aeronautics and Space Administration, Office of Inspector General, *Investigative Summary Regarding Allegations that NASA Suppressed Climate Change Science and Denied Media Access to Dr. James E. Hansen, a NASA Scientist* (Washington, D.C.: June 2, 2008).

⁴Union of Concerned Scientists, *Science under President Trump: Voices of Scientists across 16 Federal Agencies* (Cambridge, MA: August 2018).

⁵Pub. L. No. 110-69, 121 Stat., 572 (2007). This requirement was to be carried out in consultation with the Director of the Office of Management and Budget and the heads of all federal civilian agencies that conduct scientific research.

unintentional suppression or distortion of such research findings.⁶ OSTP issued guidance, most recently in 2010,⁷ to the heads of executive departments and agencies on implementing scientific integrity policies. OSTP's guidance states that scientific integrity is important because, among other things, scientific and technological information is often a significant contributor to the development of sound public policy. In response to the 2010 guidance, 24 federal departments and agencies developed scientific integrity policies.

My testimony today summarizes the findings and recommendations from our April 2019 report.⁸ Accordingly, this testimony addresses the extent to which selected agencies (1) have scientific integrity policies that are consistent with federal guidance, (2) have taken actions to achieve the objectives of their scientific integrity policies, and (3) have procedures for identifying and addressing alleged violations of their scientific integrity policies.

For all three objectives, we selected a nongeneralizable sample of nine agencies—seven agencies from cabinet-level departments and two independent agencies. We selected these nine agencies because they are civilian federal agencies that conduct scientific research, employ federal scientists, and were among the federal agencies with the greatest levels of funding for intramural research (i.e., research conducted by federal agencies in their own facilities). Our findings are not generalizable to all agencies but provide illustrative examples of these agencies' scientific integrity policies and their actions to implement those policies. The agencies we selected are the

- Agricultural Research Service (ARS) in the U.S. Department of Agriculture (USDA);
- Environmental Protection Agency (EPA), an independent agency;

⁶The primary function of the Director of OSTP is to provide advice, within the Executive Office of the President of the United States, on the scientific, engineering, and technological aspects of issues. OSTP serves as a source of scientific and technological analysis and judgment for the President of the United States with respect to major policies, plans, and programs of the federal government.

⁷Office of Science and Technology Policy, *Scientific Integrity*, Memorandum for the Heads of Executive Departments and Agencies (December 17, 2010), accessed October 26, 2018, <https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf>.

⁸GAO-19-265.

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- Federal Aviation Administration (FAA) in the Department of Transportation (DOT);
 - Office of Fossil Energy (FE) in the Department of Energy (DOE);
 - National Institutes of Health (NIH) in the Department of Health and Human Services (HHS);
 - NASA, an independent agency;
 - National Institute of Standards and Technology (NIST) in the Department of Commerce (Commerce);
 - National Oceanic and Atmospheric Administration (NOAA) in Commerce; and
 - U.S. Geological Survey (USGS) in the Department of the Interior.

We reviewed the nine agencies' scientific integrity policies, procedures, and related documents. Some agencies we selected do not have agency-specific scientific integrity policies or procedures because they follow department-level policies or procedures. In those cases, we included the department's policy and procedures in our analyses. For our reporting purposes, we describe an agency as having a policy or procedure even in those cases where the agency is following a department-level policy or procedure.

To determine the extent to which the selected agencies have policies that are consistent with federal guidance on scientific integrity, we compared the selected agencies' scientific integrity policies and supporting documents to two of the four principles identified in OSTP's guidance:⁹ (1) *foundations of scientific integrity in government* and (2) *professional development of government scientists and engineers*.¹⁰ We focused on these two principles because they most closely align with scientific integrity issues related to political influence.¹¹ To determine the extent to which selected agencies have taken actions to achieve the objectives of their scientific integrity policies, we compared agencies' scientific integrity

⁹OSTP's guidance on scientific integrity has four main sections with guidance, which we refer to as principles, and the four principles have subsections, which we refer to as components.

¹⁰From this point forward, we will refer to scientists and engineers collectively as scientists.

¹¹The two principles in OSTP's guidance that we did not include in our analyses are (1) *public communications* and (2) *use of federal advisory committees*.

policies and actions against *Standards for Internal Control in the Federal Government* related to communicating information to staff, providing oversight, and monitoring and evaluating performance.¹² To determine the extent to which the selected agencies have procedures for identifying and addressing alleged violations of their scientific integrity policies, we compared the agencies' procedures to guidance on scientific integrity policies and federal standards for internal control. Additional information on our scope and methodology is available in our report. The work on which this testimony is based was conducted from March 2018 to April 2019 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Selected Agencies Have Scientific Integrity Policies That Are Generally Consistent with Federal Guidance

In our April 2019 report, we found that all nine of the selected agencies have policies that are generally consistent with OSTP's guidance for the principles of scientific integrity that we reviewed: *foundations of scientific integrity in government* and *professional development of government scientists and engineers*. OSTP's guidance describes several components for each of these principles,¹³ which the selected agencies addressed either (1) through their scientific integrity policies, (2) in related policies, or (3) through related actions. For example, when addressing the components of *foundations of scientific integrity in government*, NOAA's scientific integrity policy states that the agency will ensure the free flow of scientific information online and in other formats, consistent with privacy and classification standards, and in keeping with other Commerce and NOAA policies. In another example, NASA's scientific integrity policy states that NASA facilitates the free flow of scientific and technological

¹²GAO, *Standards for Internal Control in the Federal Government*, [GAO-14-704G](#) (Washington, D.C.: September 2014).

¹³Under the principle *foundations of scientific integrity in government*, OSTP's guidance identifies the following components: (1) culture of scientific integrity, (2) selection of candidates for scientific positions, (3) peer review, (4) conflicts of interest, (5) whistleblower protections, (6) free flow of scientific and technological information, and (7) conveying scientific and technological information to the public. Under the principle *professional development of government scientists and engineers*, OSTP's guidance identifies the following components: (1) publication of research findings, (2) presentation of research findings, (3) professional society editors and board members, (4) participation in professional societies, and (5) awards.

information among scientists and engineers, between NASA staff and the scientific and technical community, and between NASA employees and the public. The policy goes on to cite additional NASA policies on dissemination of information and public access to data.

Similarly, we found that all nine selected agencies addressed all of the components of the principle *professional development of government scientists and engineers*. For example, EPA's policy states that the agency encourages publication and presentation of research findings in peer-reviewed, professional, or scholarly journals and at professional meetings. NIST's scientific integrity policy states that the agency supports scientists' full participation in professional or scholarly societies, committees, task forces, and other specialized bodies of professional societies, with proper legal review and approval. The policy goes on to cite separate NIST guidance for staff on how to seek approval for memberships and participation in professional organizations.

All of the Selected Agencies Took Some Action to Achieve Policy Objectives, but Opportunities Exist for Furthering Those Objectives

We found in our April 2019 report that the nine selected agencies have taken some actions to help achieve the objectives of their scientific integrity policies in the three areas we reviewed—communicating information to staff, providing oversight, and monitoring and evaluating performance.

First, according to our analysis, seven of the nine selected agencies have taken some actions to educate and communicate to staff about their scientific integrity policies, and two have not. Specifically, FE and NIST have not provided scientific integrity training for staff, according to officials, or taken other actions to promote their scientific integrity policies with staff. Under the 2007 America COMPETES Act, civilian agencies that conduct scientific research are, among other things, required to widely communicate and readily make accessible to all employees their scientific integrity policies and procedures.¹⁴ According to FE and NIST officials, the agencies made their policies available to staff on their websites and believed no additional actions were needed. By taking action to educate and communicate their scientific integrity policies to staff through, for example, regular training, these agencies would have better assurance that employees have the information, skills, and competencies they need to help achieve agency scientific integrity

¹⁴42 U.S.C. § 6620(b)(4).

objectives. We recommended the Secretary of Energy and Director of NIST take action to educate and communicate the agencies' policies to staff through, for example, regular training. In DOE's written comments on a draft of our report, reproduced in our final report, the department explained that it will designate a scientific integrity official to be responsible for leading and coordinating with other offices across DOE to develop measures to educate and communicate to staff about scientific integrity policies. In Commerce's written comments, reproduced in our final report, NIST identified ways it plans to provide training to its staff.

Second, we found that eight of the nine selected agencies have designated scientific integrity officials, or the equivalent, who are responsible for overseeing the agencies' implementation of their scientific integrity policies. FE, which follows DOE's policy, does not have a scientific integrity official or the equivalent. DOE's scientific integrity policy states that the Secretary of Energy will designate a scientific integrity official for the department.¹⁵ DOE officials explained that the scientific integrity official has not been designated because the scientific integrity policy was implemented in January 2017, as the administration was changing, and that the current Secretary has not yet designated a scientific integrity official. We recommended the Secretary of Energy should establish steps and a time frame for designating a scientific integrity official to oversee the department's scientific integrity activities. In DOE's written comments on a draft of our report, reproduced in our final report, the department concurred with our recommendation and estimated that it would address the recommendation by the end of 2019.

Third, we found in our April 2019 report that four of the nine selected agencies—ARS, EPA, NASA, and NIH—monitor and evaluate the performance of their activities under their scientific integrity policies, or have plans to do so. The remaining five agencies—FAA, FE, NIST, NOAA, and USGS—have, for different reasons, not done so. *Standards for Internal Control in the Federal Government* states that management should design control activities to achieve objectives and respond to risks, which may include establishing activities to monitor performance measures and indicators.¹⁶ By establishing mechanisms to effectively monitor the implementation of their scientific integrity policies, agencies

¹⁵U.S. Department of Energy, *Scientific Integrity*, DOE O 411.2 (Washington, D.C.: January 4, 2017).

¹⁶[GAO-14-704G](#).

may be better positioned to evaluate and measure whether their scientific integrity policies are achieving their objectives and, where necessary, improve their implementation.

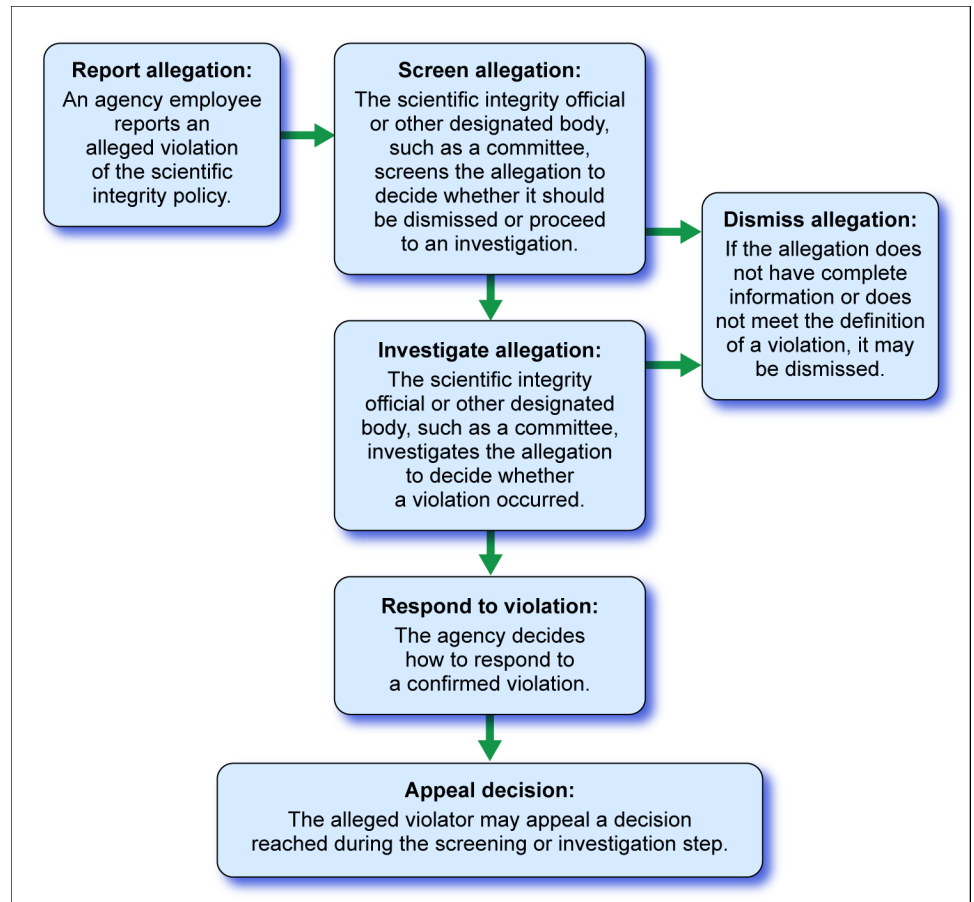
We recommended in our April 2019 report that the five agencies develop mechanisms to regularly monitor and evaluate implementation of their scientific integrity policies, including mechanisms to remediate identified deficiencies and make improvements where necessary. All five agencies agreed with our recommendation and responded as follows:

- In a May 2019 letter from DOT, the department identified several mechanisms it plans to implement by the end of March 2020.
- In DOE's written comments on a draft of our report, the department said that its scientific integrity official will have the responsibility to lead in developing procedures to monitor and evaluate implementation of DOE's policy.
- In Commerce's written comments, NIST stated that, beginning in fiscal year 2019, the agency will review implementation of its policy at least annually and make recommendations to the Director of NIST as to whether any improvements are needed.
- In Commerce's written comments, NOAA stated that it will identify additional metrics for monitoring and evaluating its policy.
- The Department of the Interior's written comments stated that the department plans to implement a biennial scientific integrity survey of USGS employees, beginning in 2020, to gauge scientific integrity policy awareness and effectiveness at USGS, among other things.

Most of the Selected Agencies Have Procedures for Addressing Alleged Violations of Scientific Integrity Policies, but Two Do Not, Raising Questions about the Consistency of Their Investigations

Seven of the nine selected agencies—ARS, EPA, FAA, NIH, NIST, NOAA, and USGS—have specific, documented procedures for identifying and addressing alleged violations of their scientific integrity policies. Although the details of agencies’ procedures may vary, the procedures generally include five basic steps: (1) report allegation, (2) screen allegation, (3) investigate allegation, (4) respond to violation, and (5) appeal decision (see fig. 1).

Figure 1: General Procedure for Identifying and Addressing Alleged Violations of Selected Agencies’ Scientific Integrity Policies



Source: GAO analysis of selected agencies’ information. | GAO-19-674T

Note: The seven selected agencies that have procedures similar to this figure are the Agricultural Research Service, Environmental Protection Agency, Federal Aviation Administration, National Institutes of Health, National Institute of Standards and Technology, National Oceanic and Atmospheric Administration, and U.S. Geological Survey.

In contrast, two of the nine selected agencies—FE and NASA—do not have specific, documented procedures for identifying and addressing alleged violations of their scientific integrity policies. In March 2009, the President issued a memorandum on scientific integrity that states that each agency should have in place procedures to identify and address instances in which the scientific process or the integrity of scientific and technological information may be compromised.¹⁷ FE, which follows DOE’s scientific integrity policy, does not have specific procedures because DOE has not established any. DOE and FE officials said staff can report allegations to a supervisor, the whistleblower ombudsperson, or the U.S. Office of Special Counsel (OSC).¹⁸ Similarly, NASA officials said employees can report allegations through their chain of command, such as to a supervisor, for investigation on a case-by-case basis. However, without documented procedures for identifying and addressing alleged violations of their scientific integrity policies, DOE and NASA do not have assurance that all staff have a clear understanding of how to report allegations and that investigations will be conducted consistently.

We recommended the Secretary of Energy and Administrator of NASA develop documented procedures for identifying and addressing alleged violations of their scientific integrity policies. In DOE’s written comments on a draft of our report, the department stated that it will be the responsibility of the scientific integrity official to lead, and coordinate with other elements of the department, in developing procedures for identifying and addressing alleged violations of its scientific integrity policy and estimated completing actions in June 2020. In written comments from NASA, the agency stated that it will develop documented procedures for

¹⁷The White House, Memorandum for the Heads of Executive Departments and Agencies, *Scientific Integrity* (Washington D.C.: March 9, 2009).

¹⁸OSC is an independent federal investigative and prosecutorial agency whose primary mission is to safeguard the merit system in federal employment by protecting employees and applicants for federal employment from prohibited personnel practices, including reprisal for whistleblowing. OSC also reviews claims of wrongdoing within the federal government from current federal employees, former employees, and applicants for federal employment. When OSC receives allegations, OSC attorneys review the information to evaluate whether there is a substantial likelihood that the information discloses a violation of any law, rule, or regulation; or gross mismanagement, a gross waste of funds, an abuse of authority, or a substantial and specific danger to public health or safety. If OSC determines that the disclosed information meets the “substantial likelihood” standard, OSC refers information to an agency head for an investigation, and the agency must investigate the allegations and submit a written report to OSC on the agency’s findings. See 5 U.S.C. § 1213.

identifying and addressing alleged violations of its policy and estimated completion by October 2020.

Chairwoman Stevens and Chairwoman Sherrill, Ranking Member Baird and Ranking Member Norman, and Members of the Subcommittees, this concludes my prepared statement. I would be pleased to respond to any questions that you may have at this time.

GAO Contact and Staff Acknowledgments

If you or your staff have any questions about this statement, please contact John Neumann, Managing Director, Science, Technology Assessment, and Analytics, at (202) 512-6888 or neumannj@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. GAO staff who made key contributions to this testimony are Rob Marek (Assistant Director), Wyatt R. Hundrup (Analyst in Charge), Cheryl Harris, and Douglas G. Hunker. Also contributing to this testimony were Eric Charles and Ben Shouse. Additional staff who made contributions to our April 2019 report are identified in that report.

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Biography

John Neumann is a Managing Director in GAO's new Science, Technology Assessment and Analytics (STAA) team. Since 2013 he has led audits in the science and technology area, including the management and oversight of federal research and development programs, protection of intellectual property, and federal efforts to support innovation. Over the course of his career at GAO, Mr. Neumann has managed reviews on a broad range of topics, including recent work looking at agencies scientific integrity policies, federal support for transformational research, and the Manufacturing USA network. Mr. Neumann received his B.A. in Political Science cum laude from the State University of New York at Stony Brook, and holds an M.B.A from American University, as well as a J.D. from Georgetown University.

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