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Federal Scientific Integrity Policies: A Primer

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SUMMARY

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Federal Scientific Integrity Policies: A Primer

The results of research and development (R&D) help inform the decisions that policymakers and the public reach on a wide range of issues, including human health and safety, the environment, agriculture, energy, and transportation. For example, scientific information is essential to the review and approval of drugs and medical devices and the setting of air quality standards. There is broad agreement among policymakers and the scientific and engineering community about ensuring the integrity of the conduct, communication, and management of R&D, and its use in policy development and decisionmaking. However, recently, some policymakers and others have alleged that presidential administrations of both parties have violated the principles of scientific integrity. Assertions of such violations include weighting the membership of federal advisory committees toward a particular viewpoint or constituency, targeting individual scientists for harassment or adverse actions, appointing agency officials with significant conflicts of interest or antagonistic views toward an agency's mission or neutrality to science, improperly editing scientific documents, and using the budget process to impede the implementation or formulation of science-based policies.

Following the guidance of a 2010 memorandum issued by the Office of Science and Technology Policy, more than 20 federal departments and agencies have developed and implemented scientific integrity policies. The memorandum detailed principles in four broad areas: foundations of scientific integrity, public communications, use of federal advisory committees, and professional development of government scientists and engineers. The memorandum provided federal agencies with flexibility developing their scientific integrity policies stating, "the scope of an agency's scientific work and its relationship to the mission of each department or agency may necessitate distinct mechanisms be used by each to implement this guidance."

There is, however, no uniform definition of scientific integrity across the federal government. Some experts have expressed concern over the variation in scope and specificity of federal agency scientific integrity policies and recommended that Congress enact scientific integrity legislation that would create a clear set of standards and mechanisms for enforcement. Some have alleged violations of scientific integrity against the current and previous administrations. For example, several media articles reported that Trump Administration officials delayed timely information to the public from the Centers for Disease Control and Prevention related to the COVID-19 pandemic that was inconsistent with political objectives, or altered scientific findings or recommendations in ways that were misleading or incomplete.

Congress may remain interested in the objectivity, timeliness, and availability of scientific information to the public and policymakers in the 116th Congress and beyond. This report provides an overview of scientific integrity and selected issues for congressional consideration. For example, the Government Accountability Office found that the majority of agencies reviewed had not taken steps to evaluate and monitor implementation of their scientific integrity policies. Additionally, Congress may consider how agencies report and address alleged violations, interagency coordination of scientific integrity policies, and the designation of scientific integrity officers. The report also summarizes scientific integrity-related legislation introduced in the 116th Congress.

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Introduction

The U.S. government supports a range of research and development (R&D) to help maintain economic competitiveness, strengthen national security, improve health care, and protect the environment. There is broad agreement among policymakers and the scientific and engineering community about the importance of ensuring federal, academic, and private sector R&D activities proceed with integrity and their results are openly communicated. Accurate and credible scientific information is important to many policy development and decisionmaking processes. Over the years, some Members of Congress and scientific and environmental advocacy organizations have alleged that presidential administrations of both parties have violated the principles of scientific integrity. This report provides an overview of scientific integrity and discusses selected issues for congressional consideration.

What Is Scientific Integrity?

While there is no uniform definition of scientific integrity across the federal government, the Office of Science and Technology Policy's (OSTP's) October 2020 report, *Enhancing the Security and Integrity of America's Research Enterprise*, offers a framework for research integrity, which is a component of scientific integrity:

- Openness and transparency enable productive collaboration and help ensure appropriate disclosure of potential conflicts of interest and commitment.
- Accountability and honesty help acknowledge errors and correct behaviors that can hamper progress.
- Impartiality and objectivity protect against improper influence and distortion of scientific knowledge.
- Respect helps create an environment where all can be heard and contribute.
- Freedom of inquiry allows individual curiosity to guide scientific discovery.
- Reciprocity ensures scientists and institutions exchange materials, knowledge, data, access to facilities and natural sites, and training in a way that benefits collaborating partners proportionally.
- Merit-based competition helps ensure a level playing field where the best ideas and innovations can advance.[1]

In addition, some federal agencies have adopted a specific definition of scientific integrity, others have defined scientific integrity by defining what constitutes a loss or compromise of scientific integrity, and some have no definition of scientific integrity or the loss scientific integrity, instead choosing to outline existing policies, activities, or principles that govern or constitute scientific integrity.[2]

[1] Executive Office of the President, Office of Science and Technology Policy, *Enhancing the Security and Integrity of America's Research Enterprise*, October 15, 2020, p. 4, https://www.whitehouse.gov/wp-content/uploads/2020/07/Enhancing-the-Security-and-Integrity-of-Americas-Research-Enterprise.pdf.

[2] Rashida Nek and Anita R. Eisenstadt, *Review of Federal Agency Policies on Scientific Integrity*, Institute for Defense Analyses, Science and Technology Policy Institute, Washington, DC, December 2016, pp. 11-14, https://www.ida.org/-/media/feature/publications/r/re/review-of-federal-agency-policies-on-scientific-integrity/d-8305.ashx.

The United States Department of Agriculture (USDA) has adopted a definition of scientific integrity that includes a definition of a compromise of scientific integrity as part the agency's scientific integrity policy.[3] USDA's definitions, presented below, are illustrative of how federal agencies generally view scientific integrity.

USDA defines scientific integrity as

> The condition resulting from adherence to professional values and practices when conducting, reporting, and applying the results of scientific activities that ensures objectivity, clarity, and reproducibility, and that provides insulation from bias, fabrication, falsification, plagiarism, inappropriate influence, political interference, censorship, and inadequate procedural and information security.

USDA defines a compromise of scientific integrity as

> The loss or breach of scientific integrity in the conducting or reporting of scientific activities, and/or the use or application of the results of scientific activities. Compromised scientific integrity includes, but is not limited to:
>
> (a) Using scientific products that are not representative of the current state of scientific knowledge and research (for example because of a lack of appropriate peer review, poor methodology, or flawed analyses) to inform decision making and policy formulation;
>
> (b) Misrepresenting the underlying assumptions, uncertainties, or probabilities of scientific products;
>
> (c) Inappropriately influencing, or politically interfering with, scientific activities and/or resulting scientific products;
>
> (d) Inappropriately influencing, or politically interfering with, the release of scientific products;
>
> (e) Inappropriately suppressing or censoring the objective communication of findings (i.e., data and results) resulting from scientific activities; and/or
>
> (f) Inappropriately altering or misrepresenting scientific products in public communications.[4]

Generally, federal scientific integrity policies include three principles: (1) research integrity in the conduct of science by federal scientists, (2) open and trustworthy supervision and communication of federal science, and (3) the appropriate use of science in policy development and decisionmaking.

According to the Union of Concerned Scientists, an advocacy organization,

> It is important to note that a difference of opinion on the appropriate policy action to take based on scientific findings does not signal a loss of scientific integrity, nor do differing informed opinions on the science itself. Policies are appropriately informed by many factors, including value judgments and the legal framework put in place by Congress for particular policy decisions. Therefore, ignoring science does not necessarily represent a loss of scientific integrity (though it may result in a loss of public trust and/or a less than effective policy), unless the law requires a decision be based solely on scientific

[3] U.S. Department of Agriculture, *Departmental Regulation DR 1074-001, Scientific Integrity*, November 18, 2016, https://www.ocio.usda.gov/sites/default/files/docs/2012/Final%20-%20DR%201074-001%20Scientific%20Integrity.pdf.

[4] Ibid., pp. 20-21.

> information (as, for example, the Endangered Species Act [ESA] and Clean Air Act require).[5]

Background

In 2007, partly in response to perceptions, including from some Members of Congress, that the George W. Bush Administration politicized federal research,[6] Congress directed OSTP to

> develop and issue an overarching set of principles to ensure the communication and open exchange of data and results to other agencies, policymakers, and the public of research conducted by a scientist employed by a Federal civilian agency and to prevent the intentional or unintentional suppression or distortion of such research findings.[7]

On May 28, 2008, then-OSTP Director John Marburger sent a memorandum to federal science agencies that provided guidance related to scientific integrity. The memorandum stated:

> Robust and open communication of scientific information is critical not only for advancing science, but also for ensuring that society is informed and provided with objective and factual information to make sound decisions. Accordingly, the Federal government is committed to a culture of scientific openness that fosters and protects the open exchange of ideas, data and information to the scientific community, policymakers, and the public.[8]

On March 9, 2009, President Obama issued a memorandum on scientific integrity that tasked the OSTP Director with developing recommendations and guidance "designed to guarantee scientific integrity throughout the executive branch." The following principles were to serve as the basis for the recommendations and guidance.

> The selection and retention of candidates for science and technology positions in the executive branch should be based on the candidate's knowledge, credentials, experience, and integrity.
>
> Each agency should have appropriate rules and procedures to ensure the integrity of the scientific process within the agency.
>
> When scientific or technological information is considered in policy decisions, the information should be subject to well established scientific processes, including peer review where appropriate, and each agency should appropriately and accurately reflect that information in complying with and applying relevant statutory standards.
>
> Except for information that is properly restricted from disclosure under procedures established in accordance with statute, regulation, Executive Order, or Presidential

[5] Gretchen Goldman, Genna Reed, and Michael Halpern, et al., *Preserving Scientific Integrity in Federal Policymaking: Lessons from the Past Two Administrations and What's at Stake under the Trump Administration*, Union of Concerned Scientists, Cambridge, MA, January 2017, p. 4, https://www.ucsusa.org/sites/default/files/attach/2017/01/preserving-scientific-integrity-in-federal-policymaking-ucs-2017.pdf.

[6] See, for example, Union of Concerned Scientists, *Scientific Integrity in Policymaking: An Investigation into the Bush Administration's Misuse of Science*, March 2004, https://www.ucsusa.org/assets/documents/scientific_integrity/rsi_final_fullreport_1.pdf, and House of Representatives, Committee on Government Reform, *Politics and Science in the Bush Administration*, Minority Staff Special Investigations Division, prepared for Rep. Harry A. Waxman, August 2003.

[7] America COMPETES Act (P.L. 110-69), §1009.

[8] John H. Marburger III, *Memorandum for the Heads of Executive Departments and Agencies, Subject*: *Principles for the Release of Scientific Research Results*, Executive Office of the President, Office of Science and Technology Policy, Washington, DC, May 28, 2008, https://www.arl.org/wp-content/uploads/2008/05/ostp-scientific-research-28may08.pdf.

> Memorandum, each agency should make available to the public the scientific or technological findings or conclusions it considered or relied on in policy decisions.
>
> 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 have been compromised.
>
> Each agency should adopt such additional procedures, including any appropriate whistleblower protections, as are necessary to ensure the integrity of scientific and technological information and processes on which the agency relies in its decisionmaking or that it otherwise uses or prepares.[9]

On December 17, 2010, then-OSTP Director John Holdren issued a memorandum to the heads of executive departments and agencies providing further guidance in the development of scientific integrity policies. The memorandum detailed principles in four broad areas:

- Foundations of scientific integrity;
- Public communications;
- Use of federal advisory committees; and
- Professional development of government scientists and engineers.

The memorandum provided federal agencies with flexibility in the development of their scientific integrity policies stating, "the scope of an agency's scientific work and its relationship to the mission of each department or agency may necessitate distinct mechanisms be used by each to implement this guidance."[10] More than 20 federal departments and agencies have developed and implemented scientific integrity policies based on the 2010 OSTP memorandum and principles (see **Table 1**).

In May 2019, the National Science and Technology Council (NSTC) established the Joint Committee on the Research Environment (JCORE), which includes the Subcommittee on Rigor and Integrity in Research. According to OSTP,

> The JCORE Subcommittee on Rigor and Integrity in Research was established to identify cross-agency principles, priorities, and actions to enhance research integrity, rigor, reproducibility, and replicability. The Subcommittee works collaboratively to support activities that facilitate research rigor and integrity through efforts to address transparency, incentives, communication, training and other areas.[11]

In November 2019, the White House hosted a summit on JCORE. In his opening remarks, OSTP Director Dr. Kelvin K. Droegemeier stated,

> JCORE has a focus on four key areas. The first one is research integrity, which is fundamentally focused on people playing by the rules. It does not matter where you are from. If you sign up to do research, you do not plagiarize, you do not falsify, you do not fabricate, you do not fail to disclose, you do not fail to do what is required of you in the

[9] President Barack Obama, *Memorandum for the Heads of Executive Departments and Agencies, Subject: Scientific Integrity*, Washington, DC, March 9, 2009, https://obamawhitehouse.archives.gov/the-press-office/memorandum-heads-executive-departments-and-agencies-3-9-09.

[10] John Holdren, *Memorandum for the Heads of Executive Departments and Agencies, Subject: Scientific Integrity*, Office of Science and Technology Policy, Executive Office of the President, Washington, DC, December 17, 2010, https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/scientific-integrity-memo-12172010.pdf.

[11] Executive Office of the President, Office of Science and Technology Policy, *Advancing America's Global Leadership in Science and Technology:Trump Administration Highlights 2017-2020*, October 2020, p. 40, https://www.whitehouse.gov/wp-content/uploads/2020/10/Trump-Administration-ST-Highlights-2017-2020.pdf.

> research community. And if you do, then you are fundamentally violating the central values of research.[12]

Additionally, in November 2019, OSTP issued a request for information (RFI) to solicit "input on actions that Federal agencies can take, working in partnership with private industry, academic institutions, and non-profit/philanthropic organizations, to maximize the quality and effectiveness of the American research environment," including questions on research integrity.[13]

The Trump Administration has also emphasized research integrity as part of the annual memorandum on R&D budgetary priorities jointly issued by the Office of Management and Budget and OSTP.[14]

Table 1. List of Federal Departments and Agencies with Scientific Integrity Policies

Federal Department or Agency	URL for Scientific Integrity Policy
Department of Agriculture	https://www.ocio.usda.gov/sites/default/files/docs/2012/Final%20-%20DR%201074-001%20Scientific%20Integrity.pdf
Department of Commerce	http://2010-2014.commerce.gov/sites/default/files/documents/2012/april/scientific_integrity_memorandum_dtd_2011-12-16.pdf
National Institute of Standards and Technology	https://www.nist.gov/summary-report-scientific-integrity
National Oceanic and Atmospheric Administration	https://www.noaa.gov/sites/default/files/atoms/files/202-735-D.pdf
Department of Defense	https://www.esd.whs.mil/Portals/54/Documents/DD/issuances/dodi/320020p.pdf?ver=2019-04-16-084237-223
Department of Education	https://ies.ed.gov/pdf/EDScientificIntegrityPolicy.pdf
Department of Energy	https://www.energy.gov/sites/prod/files/2017/01/f34/DOE%20Scientific%20Integrity%20Policy%20011112017.pdf
Department of Health and Human Services	https://aspe.hhs.gov/basic-report/policies-and-principles-assuring-scientific-integrity
Centers for Disease Control and Prevention	https://www.cdc.gov/os/integrity/docs/CDCSIGuide_042516.pdf
Food and Drug Administration	https://www.fda.gov/media/82932/download
National Institutes of Health	https://www.nih.gov/sites/default/files/about-nih/nih-director/testimonies/nih-policies-procedures-promoting-scientific-integrity-2012.pdf

[12] Joint Committee on the Research Environment, *Summary of the 2019 White House Summit of the Joint Committee on the Research Environment*, National Science and Technology Council, November 2019, p. 9, https://www.whitehouse.gov/wp-content/uploads/2019/11/Summary-of-JCORE-Summit-November-2019.pdf.

[13] Office of Science and Technology Policy, "Request for Information on the American Research Environment," vol. 84, no. 228 *Federal Register* 65194-65197, November 26, 2019.

[14] See for example, Russell T. Vought, Director, Office of Management and Budget and Dr. Kelvin K. Droegemeier, Director, Office of Science and Technology Policy, *Memorandum for the Heads of Executive Departments and Agencies, Subject: Fiscal Year (FY) 2022 Administration Research and Development Budget Priorities*, Executive Office of the President, M-20-29, August 14, 2020, p. 8, https://www.whitehouse.gov/wp-content/uploads/2020/08/M-20-29.pdf; and Russell T. Vought, Director, Office of Management and Budget and Dr. Kelvin K. Droegemeier, Director, Office of Science and Technology Policy, *Memorandum for the Heads of Executive Departments and Agencies, Subject: Fiscal Year 2021 Administration Research and Development Budget Priorities*, Executive Office of the President, M-19-25, August 30, 2019, p. 7, https://www.whitehouse.gov/wp-content/uploads/2019/08/FY-21-RD-Budget-Priorities.pdf.

Federal Department or Agency	URL for Scientific Integrity Policy
Department of Homeland Security	https://www.dhs.gov/sites/default/files/publications/mgmt/general-science-and-innovation/mgmt-dir_026-07-scientific-integrity_revision-00.pdf
Department of the Interior	https://www.doi.gov/sites/doi.gov/files/uploads/305_dm_3_final_revised_si_policy_12-16-14.pdf
U.S. Geological Survey	https://www.usgs.gov/about/organization/science-support/survey-manual/50025-scientific-integrity
Department of Justice	http://www.justice.gov/open/doj-scientific-integrity-policy.pdf
Department of State	https://fam.state.gov/fam/11fam/11fam0820.html
Department of Transportation	https://www.transportation.gov/sites/dot.gov/files/docs/mission/administrations/assistant-secretary-research-and-technology/282391/scientificintegritypolicy.pdf
Department of Veteran Affairs	https://www.va.gov/HEALTH/docs/DRAFT_VADirective0005.pdf
Environmental Protection Agency	https://www.epa.gov/sites/production/files/2014-02/documents/scientific_integrity_policy_2012.pdf
Marine Mammal Commission	https://www.mmc.gov/wp-content/uploads/sci_integrity_policy.pdf
National Aeronautics and Space Administration	https://www.nasa.gov/sites/default/files/atoms/files/nasa_guidelines_for_promoting_scientific_and_research_integrity-july_2018.pdf
National Science Foundation	http://www.nsf.gov/bfa/dias/policy/si/sipolicy.pdf
United States Agency for International Development	https://www.usaid.gov/sites/default/files/documents/15396/integrity.pdf

Source: CRS identification of agency policies.

Notes: Each federal department or agency name is hyperlinked to its respective scientific integrity policy. Some agencies located within federal departments have developed and implemented their own scientific integrity policies that comply with their respective department-wide policy, but are specified to the needs and mission of the agency (e.g., the National Institutes of Health within the Department of Health and Human Services). Others do not have agency-specific scientific integrity policies, but adhere to department-wide policy, and as such are not listed in Table 1 (e.g., the Agricultural Research Service within the Department of Agriculture, the Federal Aviation Administration within the Department of Transportation).

Past Events and Recent Concerns

There are a number of past cases alleging the executive branch violated principles of scientific integrity. Assertions of such violations include weighting the membership of federal advisory committees toward a particular viewpoint or constituency, targeting individual scientists for harassment or adverse actions, appointing agency officials with significant conflicts of interest or antagonistic views toward an agency's mission or neutrality to science, improperly editing scientific documents, and using the budget process to impede the implementation or formulation of science-based policies.[15]

In 2006, the Department of the Interior's Office of Inspector General (DOI OIG) investigated an allegation against Julie MacDonald, Deputy Assistant Secretary of Fish, Wildlife, and Parks, that

[15] Emily Berman and Jacob Carter, "Policy Analysis: Scientific Integrity in Federal Policymaking under Past and Present Administrations," *Journal of Science Policy & Governance*, vol. 13, no. 1 (September 2018), https://www.sciencepolicyjournal.org/uploads/5/4/3/4/5434385/berman_emily__carter_jacob.pdf.

alleged she "bullied, insulted, and harassed the professional staff of the U.S. Fish and Wildlife Service (FWS) to change documents and alter biological reporting regarding the Endangered Species Act [ESA] program."[16] In a 2008 report, the DOI OIG stated,

> MacDonald's zeal to advance her agenda has caused considerable harm to the integrity of the ESA program, and to the morale and reputation of the FW[S], as well as potential harm to individual species. Her heavy-handedness has cast doubt on nearly every ESA decision issued during her tenure; of the 20 decisions we reviewed, her influence potentially jeopardized 13 ESA decisions.[17]

In 2011, former Secretary of Health and Human Service Kathleen Sebelius revoked a decision by the Food and Drug Administration that would have allowed for the sale of emergency contraception over the counter without age restrictions. Many viewed this decision as counter to the Obama Administration's scientific integrity principles.[18] In a 2013 ruling overturning the decision, the judge stated, "the secretary's action was politically motivated, scientifically unjustified, and contrary to agency precedent."[19]

Another event that attracted scrutiny from many Members of Congress and the public was a statement issued by the National Oceanic and Atmospheric Administration (NOAA) in 2019 that rebuked an earlier tweet from the National Weather Service (NWS) Birmingham, Alabama Weather Forecast Office on the predicted path and likely impact of Hurricane Dorian on the state of Alabama.[20] According to the Department of Commerce's Office of Inspector General (DOC OIG), NOAA issued the statement "in response to a request by the White House then-acting Chief of Staff, Mick Mulvaney, to Secretary of Commerce Wilbur Ross. The request and resulting sequence of events gave rise to the question of political interference."[21]

At the request of NOAA, the National Academy of Public Administration (NAPA) conducted an independent investigation of allegations of misconduct by NOAA officials related to the event and found that they violated NOAA's Scientific Integrity Policy.[22]

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[16] Office of Inspector General, Department of the Interior, *Investigative Report on Allegations Against Julie MacDonald, Deputy Assistant Secretary Fish, Wildlife, and Parks*, December 1, 2006, p. 2, https://www.doioig.gov/sites/doioig.gov/files/Macdonald.pdf.

[17] Office of Inspector General, Department of the Interior, *Report of Investigation: The Endangered Species Act and the Conflict Between Science and Policy*, December 15, 2008, p. 1, https://www.doioig.gov/sites/doioig.gov/files/EndangeredSpeciesFINAL.pdf.

[18] Emily Berman and Jacob Carter, "Policy Analysis: Scientific Integrity in Federal Policymaking Under Past and Present Administrations," *Journal of Science Policy & Governance*, vol. 13, no. 1 (September 2018).

[19] Pam Belluck, "Judge Strikes Down Age Limits on Morning-After Pill," *New York Times*, April 5, 2013, https://www.nytimes.com/2013/04/06/health/judge-orders-fda-to-make-morning-after-pill-available-over-the-counter-for-all-ages.html.

[20] See for example, House Committee on Science, Space, and Technology, "Committee Launches Investigation into Commerce Department's Involvement in NOAA Actions Regarding Hurricane Dorian," press release, September 11, 2019, https://science.house.gov/news/press-releases/committee-launches-investigation-into-commerce-departments-involvement-in-noaa-actions-regarding-hurricane-dorian; and Nick Sobczyk, "IG Details White House Pressure in 'Sharpiegate,'" *E&E News*, July 20, 2020, https://www.eenews.net/greenwire/stories/1063539975.

[21] U.S. Department of Commerce, Office of Inspector General, *Evaluation of NOAA's September 6, 2019, Statement About Hurricane Dorian Forecasts*, OIG-20-032-I, June 26, 2020, p. 1, https://www.oig.doc.gov/OIGPublications/OIG-20-032-I.pdf.

[22] National Academy of Public Administration, *An Independent Assessment of Allegations of Scientific Misconduct Filed Under the National Oceanic and Atmospheric Administration Scientific Integrity Policy*, Washington, DC, March 2020, pp. 2-3, https://www.napawash.org/uploads/NOAA_Scientific_Integrity_Final_Report_Redacted.pdf.

More recently, media reports have raised concerns among some Members of Congress and others that political appointees in the Trump Administration have violated the scientific integrity policies of federal agencies, including concerns associated with the Centers for Disease Control and Prevention (CDC) and the COVID-19 pandemic.[23] For example, on September 24, 2020, Democratic leadership of the House Committee on Energy and Commerce requested that the Department of Health and Human Services' Office of Inspector General open an investigation "to determine whether and to what extent the White House, or its political appointees, have interfered with or politicized the scientific work of CDC during the COVID-19 response."[24]

Assessment and Review of Federal Scientific Integrity Policies

In 2016, the Institute for Defense Analysis's Science and Technology Policy Institute (STPI)—a federally funded research and development center—conducted a review of federal agency scientific integrity policies "to identify potential good practices for meeting or exceeding the principles identified in the 2010 OSTP memorandum, and to suggest ways of strengthening the policies to reflect current interests and developments."[25] According to STPI, "most agency policies address all of the principles" detailed in the 2010 OSTP memorandum, but "a small number of agency policies do not explicitly respond to each component of the memo."[26] For example, four agencies did not include information describing whether or how the agency would provide "articulate and knowledgeable spokespersons" who could speak in an objective, nonpartisan manner about science and technology in response to media requests.[27] Furthermore,

[23] See for example, U.S. Senate Committee on Health, Education, Labor, and Pensions, "Democrats Call On Republicans to Stand for Science, Support Bill to Stop Trump Administration's Political Interference in COVID-19 Response," press release, September 22, 2020, https://www.help.senate.gov/ranking/newsroom/press/democrats-call-on-republicans-to-stand-for-science-support-bill-to-stop-trump-administrations-political-interference-in-covid-19-response; Rebecca Ballhaus, Stephanie Armour and Betsy McKay, "A Demoralized CDC Grapples with White House Meddling and Its Own Mistakes," *Wall Street Journal*, October 15, 2020, https://www.wsj.com/articles/a-demoralized-cdc-grapples-with-white-house-meddling-and-its-own-mistakes-11602776561; German Lopez, "Trump's Attempts to Corrupt the CDC, Explained," *Vox*, September 14, 2020, https://www.vox.com/future-perfect/21436459/cdc-trump-mmrw-covid-19-coronavirus-pandemic; Helen Branswell, "As Controversies Swirl, CDC Director Is Seen as Allowing Agency to Buckle to Political Influence," *STAT*, September 16, 2020, https://www.statnews.com/2020/09/16/as-controversies-swirl-cdc-director-is-seen-as-allowing-agency-to-buckle-to-political-influence/; Dan Diamond, "Trump Officials Interfered with CDC Reports on COVID-19," *Politico*, September 11, 2020, https://www.politico.com/news/2020/09/11/exclusive-trump-officials-interfered-with-cdc-reports-on-covid-19-412809; and Eli Rosenberg, "The CDC Softened a Report on Meatpacking Safety During the Pandemic. Democrats Say They Want to Know Why," *Washington Post*, September 30, 2020, https://www.washingtonpost.com/business/2020/09/30/cdc-meatpacking-smithfield/.

[24] Letter from Frank Pallone, Jr., Chair, House Committee on Energy and Commerce, Anna G. Eshoo, Chair, Subcommittee on Health, and Diana DeGette, Chair, Subcommittee on Investigations and Oversight, to Ms. Christi A. Grimm, Principal Deputy Inspector General, Office of Inspector General, U.S. Department of Health and Human Services, September 24, 2020, https://energycommerce.house.gov/sites/democrats.energycommerce.house.gov/files/documents/HHS%20OIG.2020.9.24..pdf.

[25] Rashida Nek and Anita R. Eisenstadt, *Review of Federal Agency Policies on Scientific Integrity*, IDA Science and Technology Policy Institute, Washington, DC, December 2016, pp. iii-iv, https://www.ida.org/-/media/feature/publications/r/re/review-of-federal-agency-policies-on-scientific-integrity/d-8305.ashx.

[26] Ibid., p. 7.

[27] Ibid., pp. 8-9. Tables 1 through 4 of the report tally the number of agencies reviewed that implemented each of the principles or subcomponents of the principles contained in the 2010 OSTP memorandum.

during the course of the review, STPI identified four areas where the scientific integrity policies of federal agencies varied significantly, including:

- whether or how an agency's policy defines the term scientific integrity (e.g., most agencies did not define scientific integrity, while others defined the loss or breach of scientific integrity instead of defining the term itself);
- the scope of persons and activities covered by an agency's scientific integrity policy (e.g., some agencies included contractors and grantees, in addition to federal employees);
- who has responsibility for implementing the agency's scientific integrity policy and where within the agency's organizational structure the individual and entity responsible for oversight of the policy resides (e.g., some agencies have assigned the responsibility of ensuring scientific integrity to the highest ranking nonpolitical official, while others have assigned the responsibility to their chief scientist); and
- the relationship between the agency's research misconduct policy and its scientific integrity policy (e.g., some agencies merged their research misconduct policies into their scientific integrity policies, while others developed a distinct scientific integrity policy).[28]

STPI also found that a number of federal agency scientific integrity policies extended beyond the principles and elements contained in the 2010 OSTP memorandum. In this regard, STPI identified eight elements that they viewed as having the potential to make an agency's scientific integrity policy more comprehensive:

- providing a context for how and why scientific integrity is important to the agency's mission;
- describing which persons and activities are covered under the policy;
- defining key terms used in the policy;
- designating entities responsible for agency oversight of scientific integrity;
- designating entities responsible for handling allegations of breaches of scientific integrity and procedures;
- referencing other related policies such as scientific codes of conduct, research misconduct, conflict of interest, or data quality;
- citing legal authorities for the policy; and
- outlining an approach for resolving differences in scientific opinions.[29]

In April 2019, the U.S. Government Accountability Office (GAO) released a report that examined the scientific integrity policies of nine federal entities—the Agricultural Research Service (ARS), Federal Aviation Administration (FAA), National Institutes of Health (NIH), National Oceanic and Atmospheric Administration (NOAA), National Institute of Standards and Technology (NIST), Office of Fossil Energy (FE), U.S. Geological Survey (USGS), National Aeronautics and Space Administration (NASA), and Environmental Protection Agency (EPA). According to GAO, ARS, FAA, and FE follow scientific integrity policies developed by their departments—the Departments of Agriculture, Transportation, and Energy, respectively—and GAO examined the

[28] Ibid., pp. 11-23.

[29] Ibid., p. 9.

department-level scientific integrity policy in lieu of an entity-specific scientific integrity policy. GAO concluded the following:

> All nine of the selected agencies have established scientific integrity policies that are generally consistent with principles specified in OSTP's guidance and have taken some action to help ensure that the objectives of their scientific integrity policies are achieved.
>
> In addition, seven of the nine selected agencies have taken actions to educate and communicate to staff about their scientific integrity policies, but DOE and NIST did not take such actions aside from making policies available on agency websites. By taking action to educate and communicate their scientific integrity polices to staff through, for example, regular training, the two agencies would have better assurance that their employees have the information, skills, and competencies they need to help achieve their scientific integrity objectives.
>
> Further, eight of the selected agencies designated a scientific integrity official, or the equivalent, who oversees implementation of their scientific integrity policies. However, FE does not have such an official because its department, DOE, has not yet designated one and DOE has not established steps or a time frame to designate the official. By establishing steps and a time frame to fill the scientific integrity official position, DOE would be better positioned to achieve the objectives of its scientific integrity policy.
>
> Furthermore, while four of the nine selected agencies have taken steps to evaluate and monitor implementation of their scientific integrity policies, the other five—FE, FAA, NIST, NOAA, and USGS—have not taken action to do so. By establishing mechanisms to monitor the implementation of their scientific integrity policies, these five agencies would be better positioned to know whether their policies are achieving their objectives and what improvements are necessary.
>
> Finally, while seven of the nine selected agencies have specific, documented procedures for identifying and addressing alleged violations of their scientific integrity policies, two agencies—FE and NASA—do not have such procedures. Without developing documented procedures for identifying and addressing 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.[30]

Issues for Consideration

Outside observers have suggested that the scientific integrity policies developed by federal agencies under the 2010 OSTP memorandum vary in scope and specificity and that legislation could contribute to greater uniformity and foster the development of clear standards and mechanisms for enforcement.[31] The following section provides an overview of the areas where there may be opportunities for alignment of scientific integrity policies across federal agencies.

[30] U.S. Government Accountability Office, *Scientific Integrity Policies: Additional Actions Could Strengthen Integrity of Federal Research*, GAO-19-265, April 4, 2019, https://www.gao.gov/products/GAO-19-265.

[31] For example, see, Preet Bharara, Christine Todd Whitman, and Mike Castle, et al., *National Task Force on Rule of Law and Democracy: Proposal for Reform Volume II*, Brennan Center for Justice at New York University School of Law, October 3, 2019, pp. 7-8, https://www.brennancenter.org/sites/default/files/2019-09/2019_10_TaskForce%20II_0.pdf; and Roger Pielke Jr and Neal Lane, "Memo for President Biden: Five Steps to Getting More from Science," *Nature*, November 8, 2020, https://www.nature.com/articles/d41586-020-03148-w.

Monitoring and Evaluating Policy Effectiveness

GAO found that the majority of agencies reviewed had not taken steps to evaluate and monitor implementation of their scientific integrity policies.[32] Agencies that have taken steps to monitor and evaluate the implementation of their scientific integrity policies have found areas for improvement. For example, an examination of EPA's scientific integrity policy by the agency's Office of Inspector General (EPA OIG) found that while the majority of employees were satisfied with the overall implementation of the agency's scientific integrity policy most were dissatisfied with the state of EPA's culture of scientific integrity and the release of scientific information to the public. EPA's OIG also found that EPA had not finalized its procedures for addressing potential violations of the scientific integrity policy, mandatory training was not tracked, and annual reporting was not timely.[33] Additionally, a survey conducted by the U.S. Department of Agriculture's Office of Inspector General (USDA OIG) found

> approximately 18 percent of the respondents [USDA scientists] were unaware of the SIP [scientific integrity policy], almost 33 percent did not explicitly recall whether or how they took SIP training, and about 85 percent did not comprehend or expressed no opinion on the benefits of the SIP.[34]

The USDA OIG recommended that the Office of Chief Scientist (the entity responsible for the development and implementation of USDA's scientific integrity policy) "evaluate methods of outreach to the Department's scientists to determine the most effective type of training."[35]

Reporting and Enforcement of Alleged Violations

GAO found that the scientific integrity policies of NASA and DOE lack specific, documented procedures for reporting and addressing alleged violations.[36] In addition, others have indicated a need to ensure that any documented policies and procedures are consistent with whistleblower protections or other worker protection laws.[37] According to STPI, many federal agencies incorporate or reference existing policies, including scientific codes of conduct, conflict of interest, data quality, Federal Advisory Committee procedures, and fraud, waste or abuse, into their scientific integrity policies. Because of this overlap, agency officials often need to determine whether allegations fall under the scope of the scientific integrity policy or a related policy. This

[32] U.S. Government Accountability Office, *Scientific Integrity Policies: Additional Actions Could Strengthen Integrity of Federal Research*, GAO-19-265, April 4, 2019, https://www.gao.gov/products/GAO-19-265.

[33] U.S. Environmental Protection Agency, Office of Inspector General, *Further Efforts Needed to Uphold Scientific Integrity Policy at EPA*, 20-P-0173, May 20, 2020, https://www.epa.gov/sites/production/files/2020-05/documents/_epaoig_20200520-20-p-0173.pdf.

[34] U.S. Department of Agriculture, Office of Inspector General, *Reviewing the Integrity of USDA's Scientific Research Program*, Audit Report 50601-0006-31, February 2018, p. 13, https://www.usda.gov/sites/default/files/50601-0006-31.pdf.

[35] Ibid., p. 19.

[36] U.S. Government Accountability Office, *Scientific Integrity Policies: Additional Actions Could Strengthen Integrity of Federal Research*, GAO-19-265, April 4, 2019, https://www.gao.gov/products/GAO-19-265.

[37] Testimony of Michael Halpern, Deputy Director, Center for Science and Democracy, Union of Concerned Scientists in U.S. Congress, House Committee on Science, Space, and Technology, Subcommittee on Investigations and Oversight and Subcommittee on Research and Technology, *Scientific Integrity in Federal Agencies*, hearing, 116th Cong., 1st sess., July 17, 2019; and Public Employees for Environmental Responsibility, *Patterns in Scientific Integrity Policies*, July 2013, p. 2, https://www.peer.org/wp-content/uploads/attachments/Patterns_in-SIPs.pdf.

determination may have an impact on who is responsible for investigating the allegation. It also could result in different procedures or rights of appeal.[38]

Alleged violations of scientific integrity may involve high-ranking political officials. In such cases, agencies may wish to have clear policies and procedures for determining if and when another agency or outside entity should assume responsibility for investigating such allegations. A number of stakeholders have called for increased transparency in federal decisionmaking.[39] For example, the Brennan Center for Justice's Task Force on Rule of Law and Democracy have recommended that Congress enact legislation that would require federal agencies to maintain a log of contacts between senior political officials with supervisory authority and federal agency scientists and to publish reports based on the log. The log would document "any communications about the substance of scientific research, data, and expert analysis related to proposed regulations and scientific reports prepared for Congress and the public."[40] Additionally, Public Employees for Environmental Responsibility, an advocacy organization, recommended that Congress clarify what documents and information must be included in the administrative record supporting federal agency decisionmaking.[41]

Intra and Interagency Coordination of Scientific Integrity Policies

The 2010 OSTP memorandum focused on the development and implementation of scientific integrity policies within a federal agency and did not provide guidance or outline a structure for addressing scientific integrity concerns involving multiple federal agencies. For example, as noted by STPI, there is no process or mechanism "for addressing scientific integrity issues arising when there is a conflict between scientific findings made by one agency and the policy decisions at another agency that are based upon the same scientific findings."[42] It is also unclear how an alleged violation of scientific integrity involving individuals from multiple agencies would be coordinated and investigated.

Additionally, the scientific integrity concerns surrounding NOAA's forecast for Hurricane Dorian (described above) illustrate the potential for disconnect between a department-wide scientific integrity policy and the scientific integrity policy of an individual agency or bureau within a department. As part of the decision memorandum associated with the allegations of scientific misconduct related to Hurricane Dorian, Dr. Stephen M. Volz, Assistant Administrator for Satellite and Information Services at NOAA, recommended:

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[38] Rashida Nek and Anita R. Eisenstadt, *Review of Federal Agency Policies on Scientific Integrity*, IDA Science and Technology Policy Institute, Washington, DC, December 2016, p. 33.

[39] See, for example, Science for Policy Project, *Improving the Use of Science in Regulatory Policy*, Bipartisan Policy Center, 2009, https://bipartisanpolicy.org/wpcontent/uploads/sites/default/files/BPC%20Science%20Report%20fnl.pdf; Gretchen Goldman, Genna Reed, and Michael Halpern, et al., *Preserving Scientific Integrity in Federal Policymaking: Lessons from the Past Two Administrations and What's at Stake Under the Trump Administration*, Union of Concerned Scientists, Cambridge, MA, January 2017, pp. 31-32; and Holly Doremus, "Scientific and Political Integrity in Environmental Policy," *Texas Law Review*, vol. 86, March 23, 2008, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1112802.

[40] Preet Bharara, Christine Todd Whitman, and Mike Castle, et al., *National Task Force on Rule of Law and Democracy: Proposal for Reform Volume II*, Brennan Center for Justice at New York University School of Law, October 3, 2019, pp. 8-9.

[41] Public Employees for Environmental Responsibility, "Alternative Facts on the Rise in Federal Decision Records," press release, January 31, 2019, https://www.peer.org/alternative-facts-on-the-rise-in-federal-decision-records/.

[42] Rashida Nek and Anita R. Eisenstadt, *Review of Federal Agency Policies on Scientific Integrity*, IDA Science and Technology Policy Institute, Washington, DC, December 2016, p. 33.

> The Department of Commerce should establish a scientific integrity policy, covering the career and political leadership at Commerce. Commerce's policy should be complementary to the NOAA Scientific Integrity Policy. The NOAA policy has been successfully implemented and applied to NOAA issues and should be validated. Commerce should consider an umbrella directive that documents how Commerce works in coordination with the policies of the individual bureaus and agencies, and as a default allows the bureau or agency policies to be applied first to investigations.[43]

In its assessment of the allegations of scientific misconduct associated with Hurricane Dorian, NAPA recommended the establishment of "an intra-agency policy to articulate the role of Commerce political appointees in the communication of scientific findings," in addition to the development of supporting procedures and examples of political interference.[44]

Designation of a Scientific Integrity Officer

The Union of Concerned Scientists, an advocacy organization, recommends the establishment or designation of a scientific integrity officer who would have explicit responsibility for the implementation of a federal agency's scientific integrity policy.[45] According to GAO, while the Department of Energy lacked a scientific integrity official most of the agencies it reviewed had designated such an official to oversee the agency's scientific integrity policy.[46] STPI indicated that the assignment of responsibility to a particular individual

> can set the tone for the overall scientific integrity culture at the agency. The individual and entity responsible for oversight of the policy needs to be perceived as having sufficient authority to handle allegations of breach of scientific integrity involving high-level political officials.[47]

As a result, many federal agencies assign the responsibility of scientific integrity to the highest non-political official at the agency.

Options for Congress

The issues described above represent a potential framework for Congress to address gaps and align scientific integrity policies across federal agencies. Actions that Congress might consider include:

- Requiring federal agencies to regularly assess the effectiveness of their scientific integrity policies.

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[43] Stephen M. Volz, Ph.D., Assistant Administrator for Satellite and Information Services, Scientific Integrity Determining Official (Delegated), *Final Decision on Allegations of Scientific Misconduct Nos. 2019-007, 2019-008, 2019-009, 2019-010*, National Oceanic and Atmospheric Administration, June 15, 2020, p. 8, https://nrc.noaa.gov/Portals/0/SIC/Memo%20for%20the%20Record%20Scientific%20Misconduct%202019-007%20to%202019-101%20Final.pdf?ver=2020-06-15-104657-903.

[44] National Academy of Public Administration, *An Independent Assessment of Allegations of Scientific Misconduct Filed Under the National Oceanic and Atmospheric Administration Scientific Integrity Policy*, Washington, DC, March 2020, p. 57.

[45] Gretchen Goldman, Genna Reed, and Michael Halpern, et al., *Preserving Scientific Integrity in Federal Policymaking: Lessons from the Past Two Administrations and What's at Stake Under the Trump Administration*, Union of Concerned Scientists, Cambridge, MA, January 2017, p. 14.

[46] U.S. Government Accountability Office, *Scientific Integrity Policies: Additional Actions Could Strengthen Integrity of Federal Research*, GAO-19-265, April 4, 2019, https://www.gao.gov/products/GAO-19-265.

[47] Rashida Nek and Anita R. Eisenstadt, *Review of Federal Agency Policies on Scientific Integrity*, IDA Science and Technology Policy Institute, Washington, DC, December 2016, p. 17.

- Directing federal agencies to conduct periodic outreach and training associated with their scientific integrity policies.
- Ensuring each federal agency has a documented procedure for reporting and addressing alleged violations, in addition to directing federal agencies to clarify how their scientific integrity policy and other related policies align.
- Increasing transparency into the implementation of federal agency scientific integrity policies, including by directing federal agencies to publicly report on allegations of violations of such policies and how such issues were resolved.
- Directing GAO or another entity to assess the effectiveness of federal agency scientific integrity policies and/or interagency coordination and the sharing of best practices. Such work could consider the uniformity of scientific integrity policies across the federal government.
- Requiring the Office of Science and Technology Policy, in conjunction with federal agencies, to develop specific policies and procedures for addressing scientific integrity concerns that span multiple federal agencies, including the establishment of protocols for when another federal agency, Office of Inspector General, or outside entity should be responsible for investigating alleged violations of scientific integrity.
- Requiring federal agencies to ensure that their scientific integrity policies align with and complement department-wide scientific integrity policies.
- Requiring federal agencies to designate a scientific integrity officer within the agency, in addition to specifying whom such individual reports to and their position within the agency's organizational structure.

In the 116th Congress, several bills (described below) have been introduced that address some of the issues and options discussed.

Scientific Integrity-Related Legislation

The following section summaries scientific integrity-related legislation from the 116th Congress.

H.R. 1709 (Representative Paul Tonko) and S. 775 (Senator Brian Schatz), introduced on March 12, 2019, as the Scientific Integrity Act, would largely codify and expand upon the scientific integrity principles and policies required by the Obama Administration and the 2010 OSTP memorandum. Specifically, the legislation would amend Section 1009 of the America COMPETES Act (P.L. 110-69) to require federal agencies that fund or conduct scientific research to develop and enforce a scientific integrity policy that must address certain requirements, including that covered individuals cannot intimidate or coerce others to alter or censor scientific or technical findings. The legislation would also require federal agencies to appoint a scientific integrity official. Additionally, a federal agency would have to submit to Congress and OSTP the scientific integrity policies it develops and implements, and make them available to the public on the agency's website. Referred to the Committee on Science, Space, and Technology and the Committee on Commerce, Science, and Transportation, respectively. H.R. 1709 was ordered to be reported by the Committee on Science, Space, and Technology on October 17, 2019.

H.R. 4447 (Representative Tom O'Halleran), introduced on September 20, 2019, as the Clean Economy Jobs and Innovation Act, would incorporate the Scientific Integrity Act, described above, as Subtitle E of the legislation. Referred to the Committee on Energy and Commerce, and

in addition to the Committee on Science, Space, and Technology. Passed by the House on September 24, 2020.

Section 314 of S. 2800 (Senator Ted Cruz), introduced on November 6, 2019, as the National Aeronautics and Space Administration Authorization Act of 2019, would require the Administrator of the National Aeronautics and Space Administration (NASA) to develop and document procedures for identifying and addressing alleged violations of the scientific integrity policy of the agency. Referred to the Committee on Commerce, Science, and Transportation. Placed on Senate Legislative Calendar under General Orders. Calendar No. 525.

H.R. 5355 (Representative Joe Neguse), introduced on December 6, 2019, as the Stop Climate Censorship Act of 2019, would direct the Office of Science and Technology (OSTP) to issue policies requiring political appointees of federal science agencies to publicly report on any action taken by such appointee to modify scientific research or findings that are used to inform agency communications to the public that are related to climate change or to modify any agency communication to the public that is inconsistent with scientific research or findings related to climate change. Referred to the House Committee on Science, Space, and Technology.

H.R. 6800 (Representative Nita M. Lowey), introduced on May 12, 2020, would incorporate the Scientific Integrity Act, described above, as Title XVI of the legislation. Referred to the Committee on Small Business and Entrepreneurship. Hearings held. H.R. 6800 passed in the House on May 5, 2020. Another version of the legislation (H.R. 925) passed the House on October 1, 2020. H.R. 925 did not include the Scientific Integrity Act.

S. 3996 (Senator Rob Portman), a bill to amend the Foreign Relations Authorization Act, Fiscal Year 1979, relating to the conduct of knowledge diplomacy, introduced on June 18, 2020, would require the Department of State, in coordination with OSTP, the Department of Defense, the Department of Homeland Security, the Director of National Intelligence, federal science agencies, federal law enforcement agencies, and other appropriate federal agencies, to strengthen the security and integrity of United States scientific and research collaborations with key foreign partners and encourage the international scientific community to adopt and adhere to U.S. scientific values, including openness, transparency, reciprocity, integrity, and merit-based competition. Referred to the Committee on Foreign Relations.

S. 3997 (Senator Rob Portman), introduced on June 18, 2020, as the Safeguarding American Innovation Act, would require the Federal Research Security Council created by the bill to establish a process for informing members of the U.S. research community and the public of potential risks and vulnerabilities in international scientific cooperation that may undermine the integrity and security of the United States research community or place at risk any federally funded research and development. Referred to the Committee on Homeland Security and Governmental Affairs. Ordered to be reported with an amendment in the nature of a substitute favorably on July 22, 2020.

S. 4324 (Senator Lindsey Graham), introduced on July 27, 2020, as the Restoring Critical Supply Chains and Intellectual Property Act, would incorporate the Safeguarding American Innovation Act, as described above, as Title II of the legislation. Referred to the Committee on Finance.

S. 4638 (Senator Charles E. Schumer), introduced on September 22, 2020, as the Science and Transparency Over Politics Act, would create a Task Force of the Pandemic Response Accountability Committee (established by section 15010 of P.L. 116-136) and require such task force to investigate political interference with decisions made by scientific agencies of the Department of Health and Human Services during the COVID-19 pandemic. Referred to the Committee on Health, Education, Labor, and Pensions.

H.R. 8333 (Representative Garret Graves), introduced on September 22, 2020, as the Building United States Infrastructure through Limited Delays and Efficient Reviews Act of 2020, would require an agency required to make a detailed statement under the National Environmental Policy Act to ensure the professional integrity, including scientific integrity, of the discussion and analysis in an environmental document. Referred to the House Committee on Natural Resources.

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