Scientific Integrity

Fiscal Year 2018

Scientific Integrity Annual Report

EPA

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Scientific Integrity at EPA

Annual Report
Fiscal Year 2018

The U.S. Environmental Protection Agency is charged by Congress with protecting the Nation's land, air, and water resources. Under a mandate of national environmental laws, the Agency strives to formulate and implement actions leading to a compatible balance between human activities and the ability of natural systems to support and nurture life. To meet this mandate, EPA programs provide data and technical support for solving environmental problems today and building a science knowledge base necessary to manage our ecological resources wisely, understand how pollutants affect our health, and prevent or reduce environmental risks in the future.

The EPA Scientific Integrity Official (ScIO) champions scientific integrity throughout the Agency. The ScIO chairs the Scientific Integrity Committee (the Committee) that is comprised of Deputy Scientific Integrity Officials (DScIOs) who represent every EPA program office and region. Science serves as the backbone for decision-making at EPA. The ability of the Agency to pursue its mission to protect human health and the environment depends upon the integrity of the science on which it relies.

The full text of this report is available on EPA's website at:

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Contributors & Acknowledgments

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Executive Summary

This Annual Report chronicles the implementation of the EPA's Scientific Integrity Policy (the Policy) in fiscal year 2018 (FY18). Since February 2012, the Policy has provided both a vision and a roadmap for ensuring scientific integrity at the Agency. The Policy lists the components of a culture of scientific integrity and offers a framework for ensuring Agency-wide participation in that culture. Although scientific integrity is treated as a single issue in the Policy, maintaining scientific integrity requires investment and collaboration from many parts of EPA. This report documents the investments made across EPA in FY18 and identifies areas of focus for future initiatives.

In FY2018, the Scientific Integrity Program (the Program) introduced new and exciting initiatives across the Agency that strengthened EPA's culture of scientific integrity. The newly released *Best Practices for Clearance of Scientific Products at EPA* offers guidance to program offices and regions for developing durable clearance procedures that will ensure rigorous review and the timely release of information. The Program initiated management dialogues on scientific integrity, through which EPA leaders are having open conversations with the ScIO about their experiences in scientific integrity and the role that they play in contributing to the Agency's culture of scientific integrity. The Program developed language for future Agency grants and contracts to ensure compliance with the Policy, further enhancing EPA's culture of scientific integrity.

Several initiatives that provide ongoing support for scientific integrity at EPA include convening the Scientific Integrity Committee (the Committee) for quarterly meetings, producing the annual report, holding the Annual Employee Conversation with the Scientific Integrity Official, providing scientific integrity training, overseeing contractor-led peer reviews, and coordinating with both the Office of Inspector General (OIG) and the Office of General Counsel (OGC).

Scientific integrity remains an ongoing priority for EPA. While many scientific integrity successes occurred in FY2018, further progress must be made to fully ensure a robust culture of scientific integrity at EPA. This annual report details several highlights from the last year and looks forward to future areas for improvement. In FY2018 and beyond, three priority issues present opportunities for ongoing investment:

1. Increasing the visibility of scientific integrity at EPA
2. Embracing and modeling scientific integrity across the Agency
3. Protecting and maintaining EPA's culture of scientific integrity

Agency investments in these activities ensure the credibility of, and maintain the public trust in, EPA science. The ScIO and the Committee will continue to work with the Agency Science Advisor, the Senior Counsel for Ethics, the Office of Inspector General (OIG), and the rest of the Agency to safeguard science and maintain public trust in the quality and integrity of EPA's work.

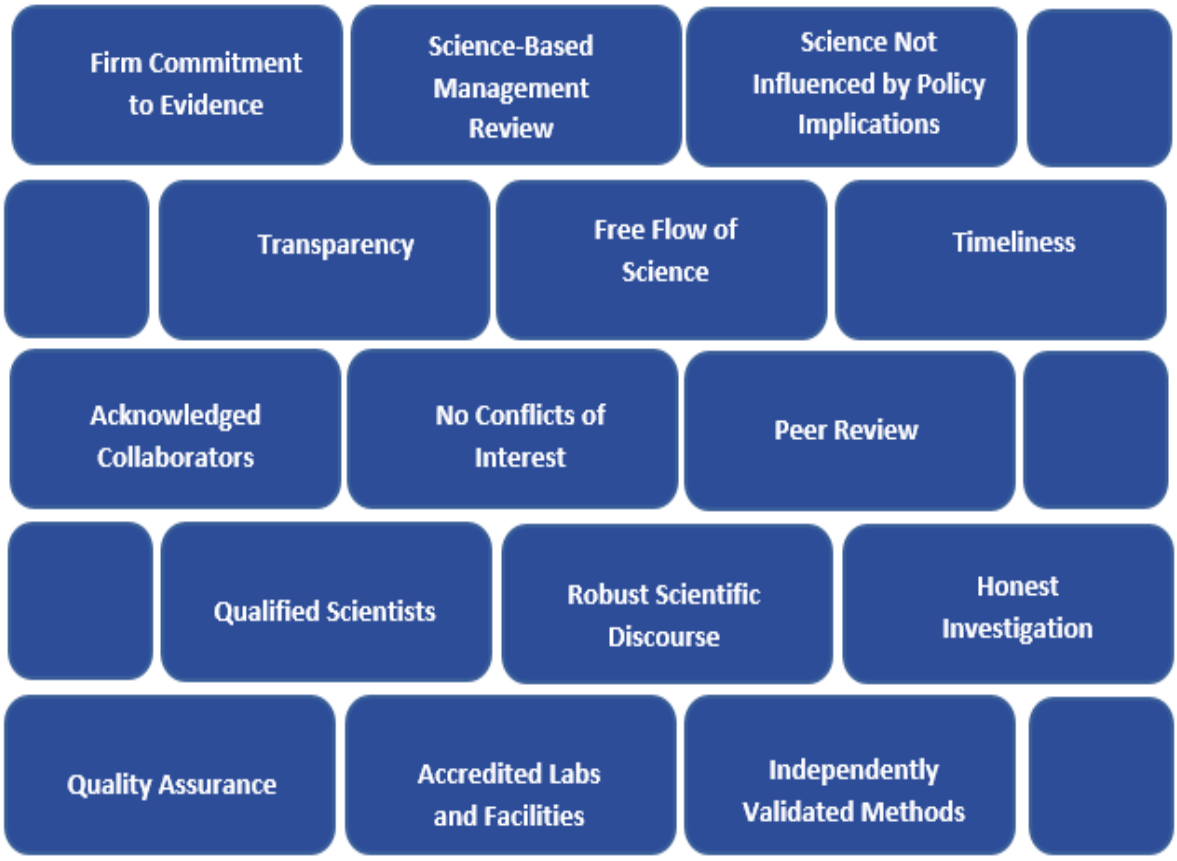

Figure 1: Foundations of Scientific Integrity

Scientific integrity is the compass that guides EPA in its mission to protect human health and the environment (Figure 1). Scientific integrity ensures that the science that is conducted and utilized at EPA is objective and of the highest quality. Scientific integrity prevents conflicts of interest or policy implications from interfering with or influencing scientific results. Scientific integrity encourages robust scientific discourse, welcomes differing scientific opinions, and supports the professional development of staff. Scientific integrity requires that others be acknowledged for their intellectual contributions. Scientific integrity guarantees that science is communicated openly, transparently, and in a timely manner. Together, each of these elements create a culture of scientific integrity at EPA that inspires public trust in the Agency and ensures that EPA achieves its mission of protecting human health and the environment.

Introduction

In 1983, former EPA Administrator William Ruckelshaus stated that, "EPA would operate in a fishbowl." This is a proud tradition that EPA has continued for thirty-five years. This annual report serves as a portion of the Scientific Integrity Program's (the Program's) contribution to the Agency's ongoing commitment to transparency.

In March 2009, an executive memorandum directed the White House Office of Science and Technology Policy to develop a plan to ensure the integrity of federal science. EPA released its Scientific Integrity Policy (the Policy) in February 2012 and its first annual report on scientific integrity in November 2013. The Policy provides both a vision and a roadmap for ensuring high standards of scientific integrity at the Agency. The Policy lists the components of a culture of scientific integrity and offers a framework for ensuring Agency-wide compliance. At the end of each fiscal year, EPA assesses the overall implementation of the Policy during a review of all the scientific integrity activities at the Agency. The FY18 annual review culminated in the publication of this annual report, which serves to highlight the status of scientific integrity within EPA, promote new scientific integrity initiatives, celebrate FY18 scientific integrity accomplishments at EPA, and identify areas for future investment.

Scientific Integrity in 2018

Calendar year 2018 marked the start of an initiative to separate concerns reported to the scientific integrity team into two categories – advice and allegations (see page 24 of this report). The response to this change has been overwhelmingly positive. It has enabled the program to avert many allegations by providing early support and assistance to our submitters.

Any change in administration may bring with it many changes to EPA's procedures and practices. Some of the actions taken can be easily misconstrued to be lapses in scientific integrity. It is the task of the scientific integrity team and the Committee to carefully examine each concern and take appropriate actions. This represents a large investment of time but is necessary for the maintenance of our culture of scientific integrity and for successful transitions from one set of leaders to another.

This fiscal year marked the initiation of a training specifically geared towards managers and supervisors. The impacts of this will be seen as more leaders complete the training in 2019. The workshop challenges our leaders to uphold a culture of scientific integrity, encourage good policies and practices, lead the way, and mitigate negative influences on scientific integrity. These tenets of scientific integrity play a critical role in our ability to successfully use science to inform Agency decisions.

As in previous years, the Agency worked to promote a culture of scientific integrity in the conduct, communication, supervision and utilization of science to carry out its mission-driven work. As evinced by the accomplishments of the Scientific Integrity

Program and across the Agency in FY18, it is critical to promote the Scientific Integrity Policy through continued training and outreach, having other programs promote scientific integrity in the Agency, and continuing the work of the Committee.

What is Scientific Integrity?

Scientific integrity is the adherence to professional values and practices when conducting, communicating, supervising, and utilizing the results of science and scholarship. Scientific integrity ensures objectivity, clarity, reproducibility, and utility (Figure 2). It provides insulation from bias, fabrication, falsification, plagiarism, outside interference, and censorship.

The Agency may make final policy decisions that weigh other factors besides science but are still consistent with EPA's governing statutes. Such decisions, even if they are not consistent with the science, do not necessarily constitute scientific integrity issues. Implementing the Policy requires input from a wide variety of sources across the Agency, which interact to promote and maintain a culture of scientific integrity.

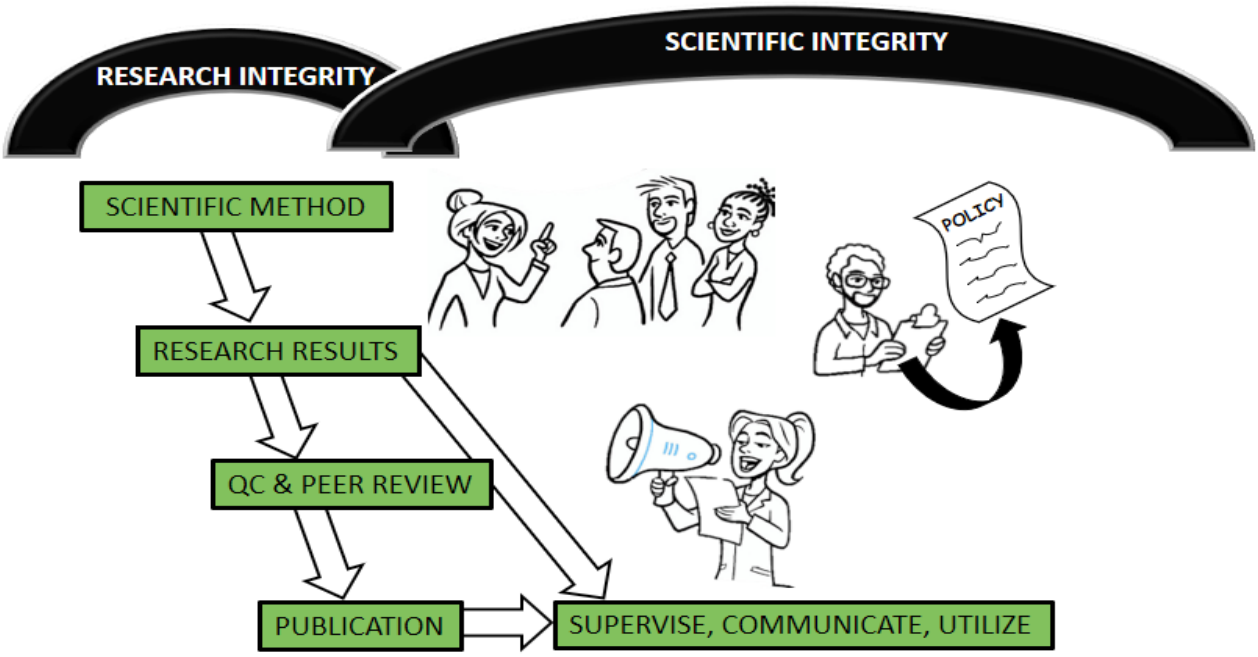

Figure 2. What is scientific integrity?

EPA's Scientific Integrity Policy

The Policy generally applies to all EPA employees including scientists, managers and political appointees. Additionally, contractors, grantees, collaborators, student volunteers and other EPA-affiliates may fall under its purview. However, some exceptions apply in the cases of agreements predating the Policy and contracts that do not specifically address science. The Policy builds upon existing Agency and government-wide policies and guidance documents to enhance EPA's overall commitment to scientific integrity.

Promoting a Culture of Scientific Integrity

The Policy establishes an expectation that the Agency will foster honest investigation, open discussion, refined understanding and a firm commitment to evidence, and scientific research that is generated in a timely manner, characterized appropriately for Agency policy-making, and communicated clearly to the public. All EPA employees are explicitly forbidden from suppressing, manipulating, or otherwise altering scientific data. This assures that EPA decisions are informed by the best science that the Agency, its contractors, grantees, and collaborators can offer. A culture of scientific integrity is also one that protects employees who report allegations of suspected violations of the policy. Similarly, employees who express differing scientific opinions should neither fear nor experience retaliation.

Releasing Scientific Information to the Public

The Policy fosters a culture of transparency regarding the results of research, scientific activities, and technical findings. EPA encourages open communication that is free from political or other interference. The clear and timely release of science facilitates a free flow of information and increases public confidence in the Agency.

Peer Review and the Use of Federal Advisory Committees

Independent peer review is a necessary component of quality control in science and thus a crucial aspect of scientific integrity. EPA's review process is outlined in the Agency Peer Review Handbook[ii]. External federal advisory committees offer further opportunities for review of scientific activities and provide additional scientific expertise.

Professional Development of Government Scientists and Engineers

EPA employees are encouraged to participate in professional development activities to fully engage with their scientific communities and become leaders in their fields. Professional development activities may include presenting at scientific meetings or conferences, participating in professional societies, or serving on editorial boards of peer-reviewed journals.

Scientific Integrity in Fiscal Year 2018

FY18 Scientific Integrity Program Initiatives

New initiatives in FY18 centered on enhancing EPA's culture of scientific integrity. This was achieved by providing additional scientific integrity resources, having conversations with Agency leaders about scientific integrity, and promoting awareness of how to properly acknowledge the intellectual contributions of others.

Best Practices for Clearance of Scientific Products at EPA

EPA is committed to ensuring the timely release of scientific information to the public. The release of EPA's scientific products is preceded by clearance, a process of attaining management approval for release. The Policy mandates the Committee to "develop a framework for Agency clearance procedures for scientific products as a guidance for Program Offices and Regional Offices." On May 15, 2018, the Program released *Best Practices for Clearance of Scientific Products at EPA*[iii]. This document should be referred to when clearance processes are being developed, evaluated, or revised. Some best practices include:

- Establishing essential elements of clearance procedures
- Determining and defining which scientific products are required to be cleared
- Verifying that appropriate scientific reviews occur before clearance is initiated
- Training employees on clearance procedures

The best practices promote transparency, clarity, timeliness, predicatability, and consistency in clearance processes. The Agency is developing an Agency-wide electronic clearance system that would complement the best practices.

Management Dialogues on Scientific Integrity

In August 2018, the Program launched an outreach initiative for managers. Supervisors from almost every office, program, region, and laboratory will participate in Management Dialogues on Scientific Integrity led by Francesca Grifo (ScIO). These conversations provide an opportunity for managers to learn about their scientific integrity responsibilities as leaders at EPA, understand what scientific integrity is, know what resources are available, identify lapses in scientific integrity, and discuss their experiences with scientific integrity. Attendees are also provided the Scientific Integrity Brochure, the Scientific Integrity fact sheet, and scientific integrity posters.

Throughout August and September of FY18, four Management Dialogues on Scientific Integrity sessions were held in the Office of Chemical Safety and Pollution Prevention (OCSPP) and the Office of Land and Emergency Management (OLEM). Ninety-nine

managers and supervisors participated in conversations with the ScIO. To further improve the quality of this nascent program, the ninety-nine attendees were asked to complete an evaluation of the session that they attended. The participants that responded provided positive feedback that the session was useful, will help them to do their job more effectively, and that they would recommend a colleague attend.

Scientific Integrity Language for Grant Agreements

The Policy defines "science" and "scientific" as expansive terms that refer to the full spectrum of scientific endeavors, e.g., basic science, applied science, engineering, technology, economics, social sciences, and statistics. Beginning in FY18, if the recipient of a grant is engaged in conducting science, supervising science, communicating science, or using or applying the results of science, the recipient and the project team must review the Policy and comply with its requirements as part of the agreement with EPA. Additionally, the grantee need not necessarily be an individual, but may be an organization. These requirements are detailed in Section 33, "Scientific Integrity Terms and Conditions" of "EPA General Terms and Conditions, Effective October 1, 2018. [iv]"

New Products in FY 2018

1. **Best Practices for Clearance of Scientific Products at EPA**
2. **Scientific Integrity Language for Grant Agreements & Contracts**
3. **Scientific Integrity Management Dialogue Training**
4. **Plagiarism Detection Software**

Scientific Integrity Language for Contracts

In FY2018, EPA issued a proposed rule[v] to address applicability of scientific integrity requirements to EPA contracts by creating a clause in solicitations and contracts under which a contractor may be required to perform scientific activities or use scientific information to perform advisory and assistance services. When the rule is final, this clause will complement the EPA Scientific Integrity Policy to ensure that all scientific work developed and used by EPA is accomplished with scientific integrity.

Detecting Plagiarized Text

As stated in The Best Practices for Designating Authorship[vi], all Agency employees must "appropriately characterize, convey, and acknowledge the intellectual contributions of others." In FY18, the Program conducted a pilot project of making a software program that evaluates the originality of document content available to EPA scientists and supervisors. Authors were encouraged to use the program to check the work and ensure appropriate attribution in EPA work products. Twelve drafts were submitted during the FY18 pilot project.

Ongoing Scientific Integrity Activities

The annual activities described in this section were successfully completed in FY18 and contributed to ongoing support for the evolving scientific integrity activities at EPA over multiple fiscal years.

The Scientific Integrity Committee

The Policy established a Scientific Integrity Committee (the Committee), chaired by the Scientific Integrity Official (ScIO). The Committee meets quarterly and consists of senior program, office, and regional officials who are designated as Deputy Scientific Integrity Officials (DScIOs). They provide leadership for the Agency on scientific integrity, jointly assist in implementing the Policy, and promote Agency compliance with the Policy. The ScIO regularly communicates with Committee members to discuss potential approaches to emerging issues and work together to resolve allegations of a loss of scientific integrity and respond to requests for advice. The participation of the Committee ensures that a variety of experiences and viewpoints are considered in decision-making. The Program wishes to recognize David Bloom (OCFO), Carole Braverman (R5), Al McGartland (OP), Betsy Shaw (OAR), Carol Ann Siciliano (OGC), and Deb Thomas (Region 8) as the longest-serving members of the Committee (five or more years) and thank them for their expertise and guidance.

The Annual Employee Conversation with the Scientific Integrity Official

The Annual Employee Conversation with the ScIO (Figure 3) provides an opportunity for EPA employees to learn about scientific integrity at EPA and ask questions on this topic. The ScIO, Dr. Francesca Grifo, presented to a live audience at headquarters and to the rest of the Agency through a webinar in June 2018. The meeting had an in-person attendance of 45 and 301 webinar participants for a total of 346 attendees. These conversations improve the visibility of the Policy and increase awareness about scientific integrity among EPA employees. The session emphasized the broad applications of the Policy across EPA and encouraged employees to recognize and bring forward any

Figure 3. Flyer for the 2018 Annual Conversation with the ScIO

concerns. The EPA Science Advisor, Dr. Jennifer Orme-Zavaleta, provided introductory remarks and the Deputy to the Scientific Integrity Official, Dr. Vincent Cogliano, discussed the new allegations procedures (Appendix I).

New Employee Onboarding Training

Since January 2017, all new EPA employees are required to take online scientific integrity training, which consists of a video of the ScIO conducting a training session. This training session features the introductory whiteboard video and discussion, followed by a short quiz. Showing this training to new employees helps them to establish a personal commitment to scientific integrity from the moment that they arrive at the Agency. This greatly contributes to the overall culture of scientific integrity at EPA. In FY18, 83 new EPA employees completed the training. The monthly number of trainees is depicted below in Figure 4. By the end of FY18, 22 months after the mandatory training was implemented, 498 EPA employees had completed scientific integrity onboarding training.

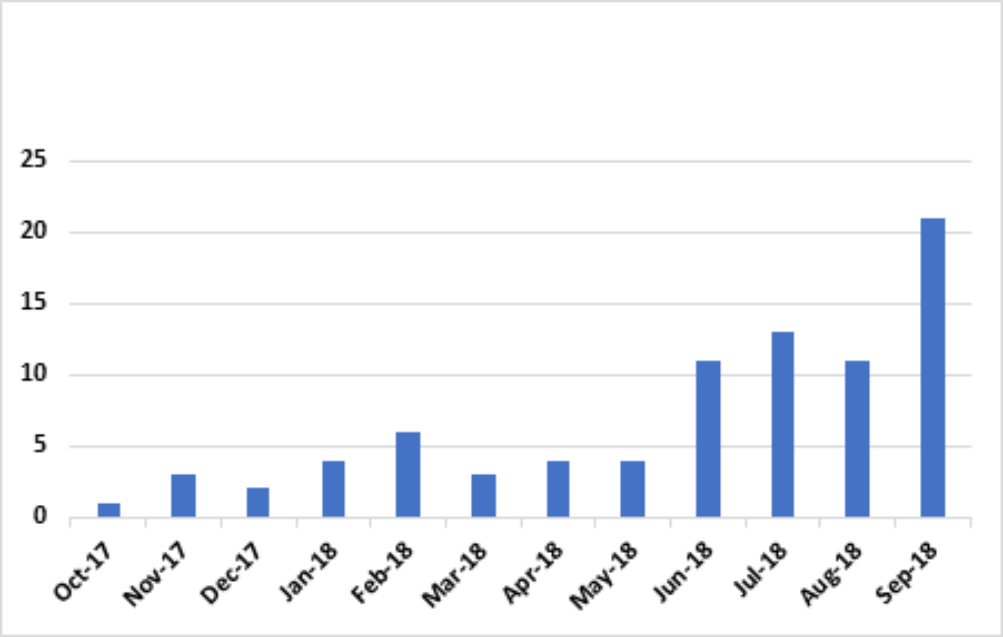

Figure 4. Monthly completion in FY18 of Scientific Integrity Onboarding Training

Additional Training

In July 2018, the Deputy to the Scientific Integrity Official also provided general training to the Office of Underground Storage Tanks (USTs) in the Office of Land and Emergency Management (OLEM). This training provided an overview of the Policy and scientific integrity at EPA.

Quarterly Coordination Meetings with OIG and OGC

The ScIO maintains regular communication with both the Office of Inspector General (OIG) and the Office of General Counsel (OGC) through quarterly meetings. During these meetings, the status of current allegations of a loss of scientific integrity under review and the anticipated courses of action are discussed. Identifying information is

omitted in any cases where the submitter of the allegation has requested confidentiality. Coordination between these offices exemplifies the Agency-wide participation and collaboration in implementing the Policy.

The handling of scientific misconduct, which includes fabrication, falsification, plagiarism, or misrepresentation in proposing, performing, or reviewing scientific or research activities, is governed by EPA's Scientific Misconduct Policy and is overseen by the OIG, with the exception of plagiarism which may be handled by the ScIO as described in the ScIO/OIG Coordination Procedures[vii]. In FY18, one allegation was received through the OIG hotline and referred to the ScIO. No allegations were referred to the OIG by the ScIO during FY18.

Web Analytics

In FY18, the scientific integrity home page on the intranet was visited 1,315 times. This was a 15% increase from FY17 (1,138). After the homepage, The Federal Managers Financial Integrity Act (FMFIA) section was the most visited scientific integrity page, with 453 views, in FY18. The 2018 Annual Employee Conversation with the Scientific Integrity Official was the third most popular page with 451 visits. Two initiatives that were new in FY18, iThenticate and Best Practices for Clearance of Scientific Products, were the fourth and fifth most commonly accessed scientific integrity webpages and were visited 274 and 265 times, respectively.

On the internet, the scientific integrity homepage attracted 5,573 hits. This was a 32% drop from FY17 (8,184). However, the 5,573 visits in FY18 fell roughly halfway between the visits recorded in FY16 (2,371) and FY17 (8,184). Interest in the Policy generated 1,458 visits to the Policy webpage. While this was a 20% decrease from FY17 (1,835), it was also about twice as high as it was in FY16 (663). Best Practices for Authorship was accessed on 285 occasions (the third most), in FY2018. The Dr. Chris Kirkpatrick Whistleblower Protection Act of 2017 was the fourth most viewed page with 195 visits. The Best Practices for Clearance was the fifth most visited page with 103 views.

Contractor-Managed Peer Review

EPA strengthened the Agency's oversight of contractor-managed peer review panels in FY2013 by developing a conflict-of-interest review process for contractor-managed peer reviews. Conflicts of Interest Review Process for Contractor-Managed Peer Reviews of EPA HISA and ISI documents[viii] specifically applies to all future Agency technical documents (following publication of the process) that are designated as Influential Scientific Information (ISI) or Highly Influential Scientific Information (HISA). The process is designed to enhance the transparency and internal oversight of these peer reviews and reduce the potential for organizational or personal conflict-of-interest concerns by increasing public participation and more rigorous internal review. This process was applied to one contractor-managed peer review in FY2018.

FMFIA: Certifying Compliance with the Scientific Integrity Policy

The Federal Managers Financial Integrity Act (FMFIA) requires that federal agencies assess the effectiveness of programmatic and financial internal controls. EPA Assistant Administrators (AAs) and Regional Administrators (RAs) must certify that their programs

comply each year through an assurance letter to the EPA Administrator, who delivers an overall statement of assurance to the President and Congress. FY2018 marked the fifth year that AAs and RAs were required to submit a certification of internal controls for scientific integrity. Based on the requirements that are outlined in the Policy, programs, offices, and regions were asked to report their accomplishments, potential weaknesses, and overall progress in implementing the Agency's Policy.

The FY2018 FMFIA process provided a structured assessment of EPA's scientific integrity activities across the Agency. On behalf of their offices, programs, or regions, respondents highlighted their accomplishments, showcased their innovations in scientific integrity, detailed problems or challenges related to scientific integrity, provided issues that they would like for the Committee to address, and discussed any vulnerabilities or weaknesses related to scientific integrity within their organizations or within the Agency.

Allegations and Requests for Advice Through End of FY18

The Presidential Memorandum on scientific integrity (March 9, 2009) directs 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 [have been] compromised." Accordingly, the Scientific Integrity Program provides a procedure for seeking advice to prevent lapses in scientific integrity and for reporting allegations of possible violations of EPA's Scientific Integrity Policy (Figure 5).

In FY18, the Program drafted a new procedure creating a two-pronged approach separating those seeking advice about scientific integrity concerns from those reporting allegations of a loss of scientific integrity. Several allegations were evaluated and closed during the year. At the same time, the Program received a record number of requests for advice from people concerned about scientific integrity at EPA.

New Procedures for Allegations and Requests for Advice

Following six years of experience, the Scientific Integrity Program developed a two-track procedure in FY18 that separated reporting allegations from seeking advice and assistance when there is a concern that EPA's Scientific Integrity Policy is not being upheld. In general, the new advice track was designed to resolve a concern before it becomes a formal allegation.

The aim of the advice-and-assistance track is early preventive action to uphold EPA's culture of scientific integrity. Anyone with a question or a concern is encouraged to have a conversation with the ScIO (Francesca Grifo), the Deputy to the ScIO (Vince Cogliano), or a Deputy ScIO in a program or regional office. These officials provide timely advice or assistance. If the issue is not one of scientific integrity, they can assist in redirecting it as appropriate. Allegations of research misconduct that involve waste, fraud, or abuse are referred to the Office of Inspector General (Figure 5).

Figure 5. How to seek scientific integrity advice or report an allegation

If advice and assistance does not resolve the issue, an allegation may be filed. The aim of the new allegation procedure is to evaluate and take corrective scientific action, when circumstances warrant**.** Any person may report an allegation to the ScIO, any Deputy ScIO, or the Office of Inspector General. Allegations should include, when possible, the provision of EPA's Scientific Integrity Policy that was violated, supporting evidence with a timeline, and the names of witnesses who can provide pertinent information. Once received, the Scientific Integrity Program screens the allegation, gathers pertinent information, and makes a determination based on the available evidence, drawing on the experience of the Scientific Integrity Committee, as needed (Figure 6). The determination includes recommendations for corrective scientific action and other preventive measures as appropriate. Throughout the process, confidentiality is maintained to the extent the law allows and knowledge about the identity of persons submitting or otherwise involved in the allegation is limited to those who need to know.

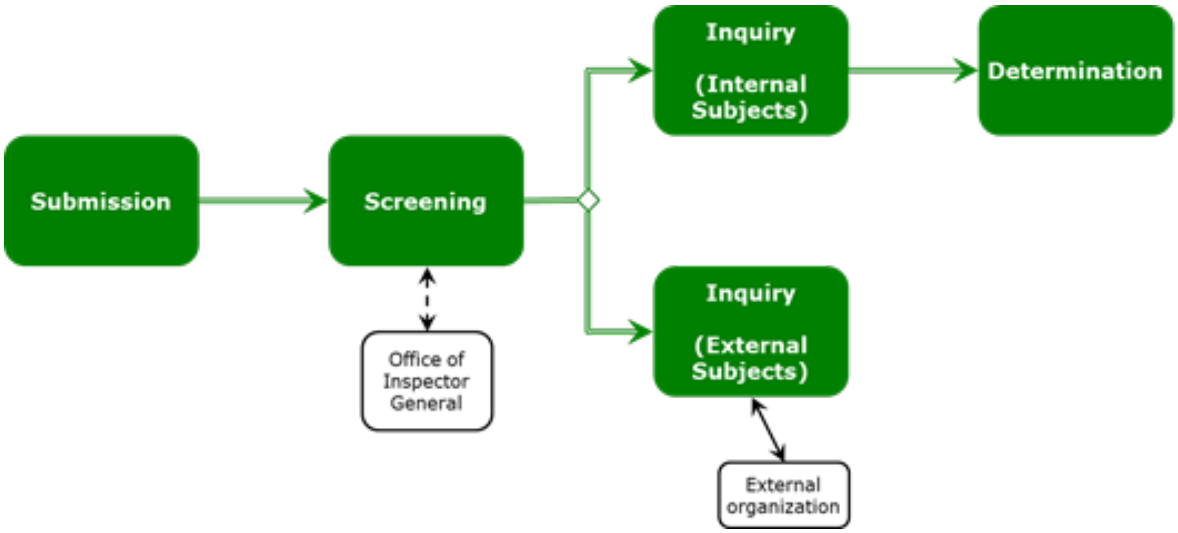

Figure 6. Procedure for submitting and evaluating an allegation

Annual Update on Allegations and Advice

Following the development of the two-track procedure described above, the Scientific Integrity Program reviewed all prior allegations and reclassified many of them as requests for advice. Since EPA's Scientific Integrity Policy was issued in 2012 and through September 30, 2018, there have been 110 requests for advice and 74 allegations. These figures are audited and updated annually, every August.

Figure 7 shows the number of allegations and requests for advice by quarter. The number of requests for advice accelerated during FY18, when there were forty-nine requests for advice and four allegations. These 53 queries mean that nearly a third (29%) of the total 184 queries received over the six-and-a-half-year history of the Program were received during the past year. Although the number of requests for advice greatly increased during FY18, the number of allegations was the lowest since FY13.

Figure 8 compares the topics of all queries between FY17 and FY18 with the topics of queries received during FY18. Forty-three percent of queries received during FY18 concerned interference with science, compared with 10% historically before FY18. In other areas, although the numbers are small, the numbers of queries received during FY18 related to peer review or to data quality/methods were 4 and 3, respectively, compared with 2 and 1 received from 2012 to the end of FY17.

Conversely, queries related to the expression of a differing scientific opinion, historically the third most common type of query, declined during FY18, when it was the topic of only one query. Another apparent trend is a decline in queries related to ethics (which should be reported to a Deputy Ethics Official or to the Office of General Counsel) or in queries that otherwise were not a matter of scientific integrity. This may be due to more people becoming familiar with EPA's Scientific Integrity Policy, though more information is needed to confirm this.

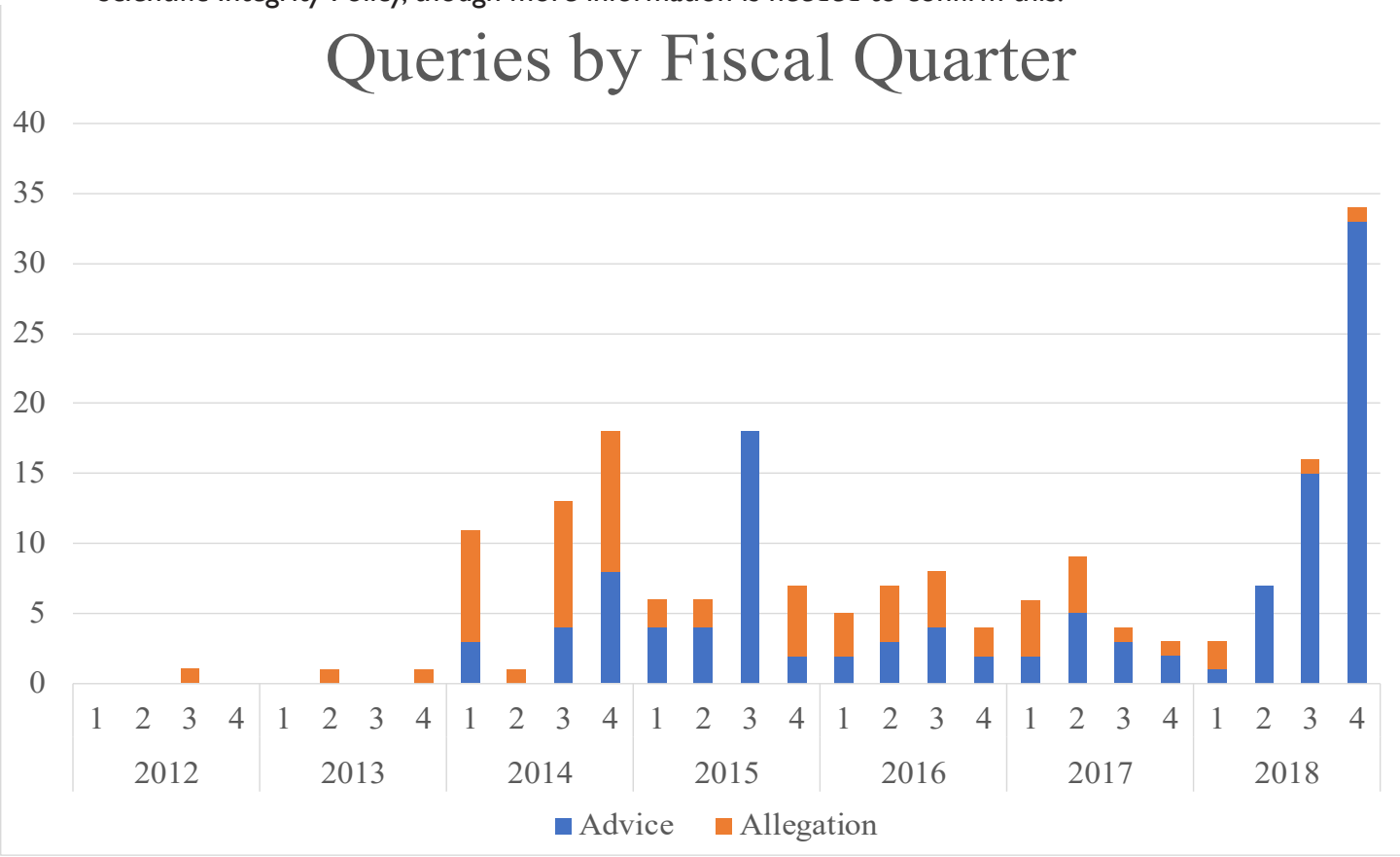

Figure 7. Number of scientific integrity queries received by quarter

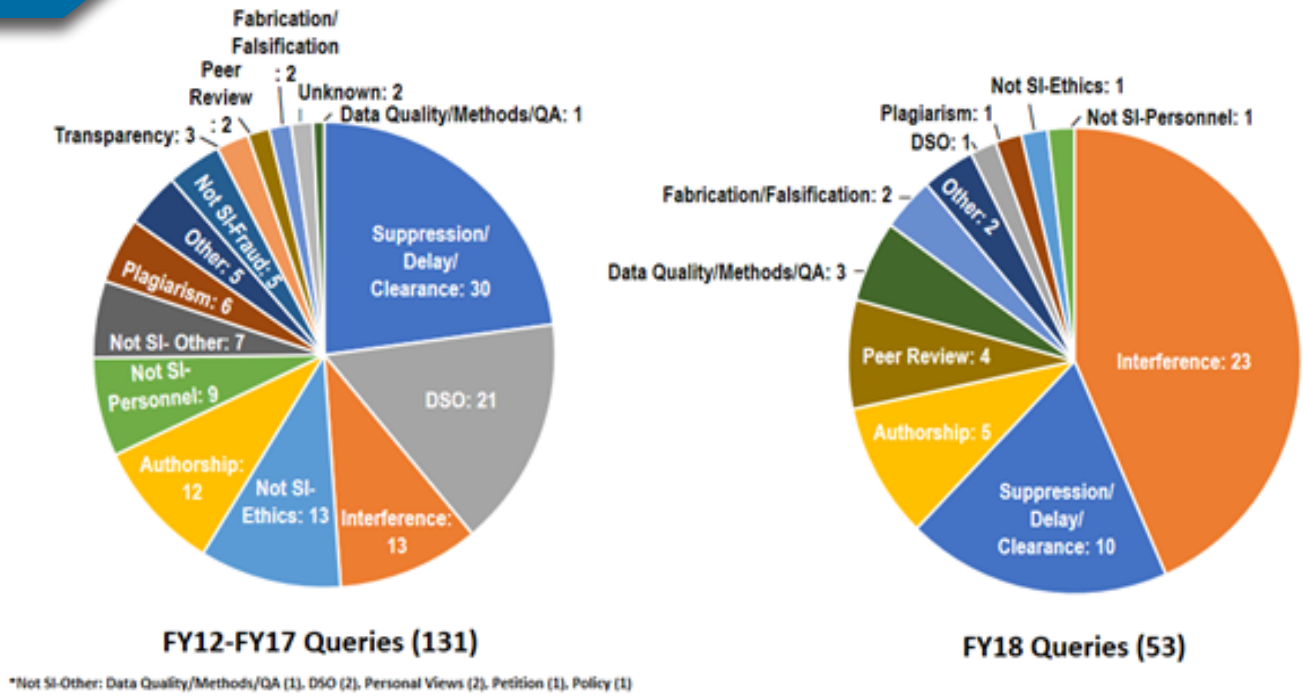

Figure 8. FY12-17 scientific integrity queries versus FY18 scientific integrity queries

Figure 9 compares the topics of all requests for advice during FY12 through FY17 with the topics of queries received during FY18, The patterns seen in Figure 9 for all queries (requests for advice plus allegations) are also apparent in this large subset of all queries.

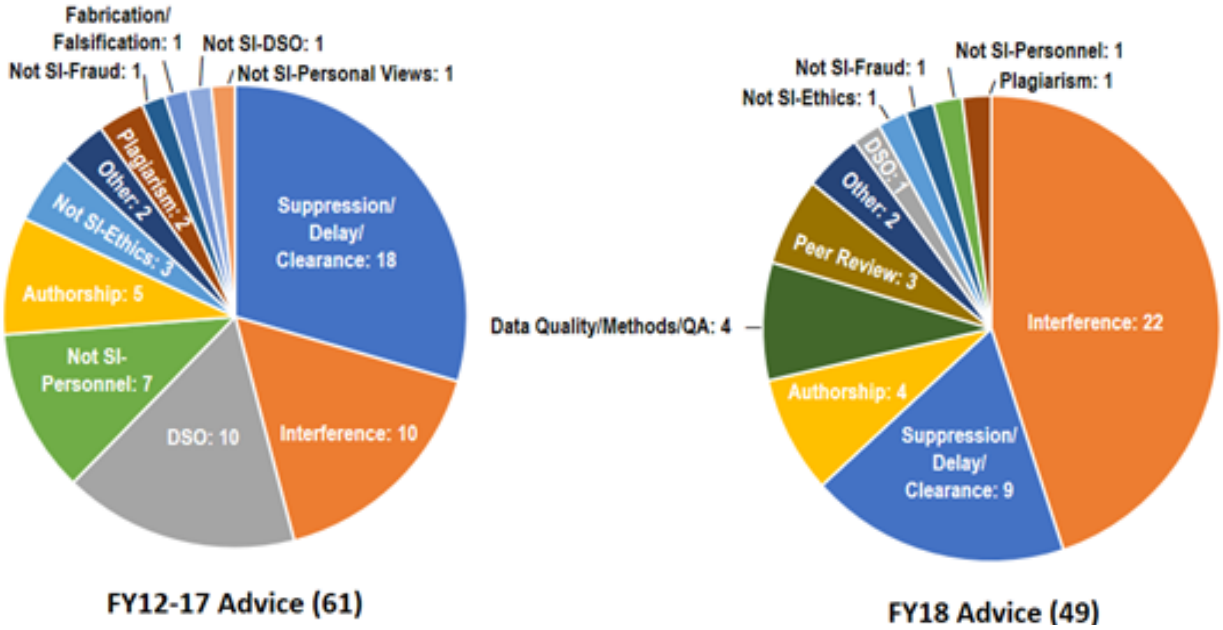

Figure 9. FY12-17 requests for advice versus FY18 requests for advice

Figure 10 compares the topics of all allegations through FY17 with the topics of the four allegations received during FY18. The numbers for FY18 are too small to allow meaningful comparisons or identification of trends.

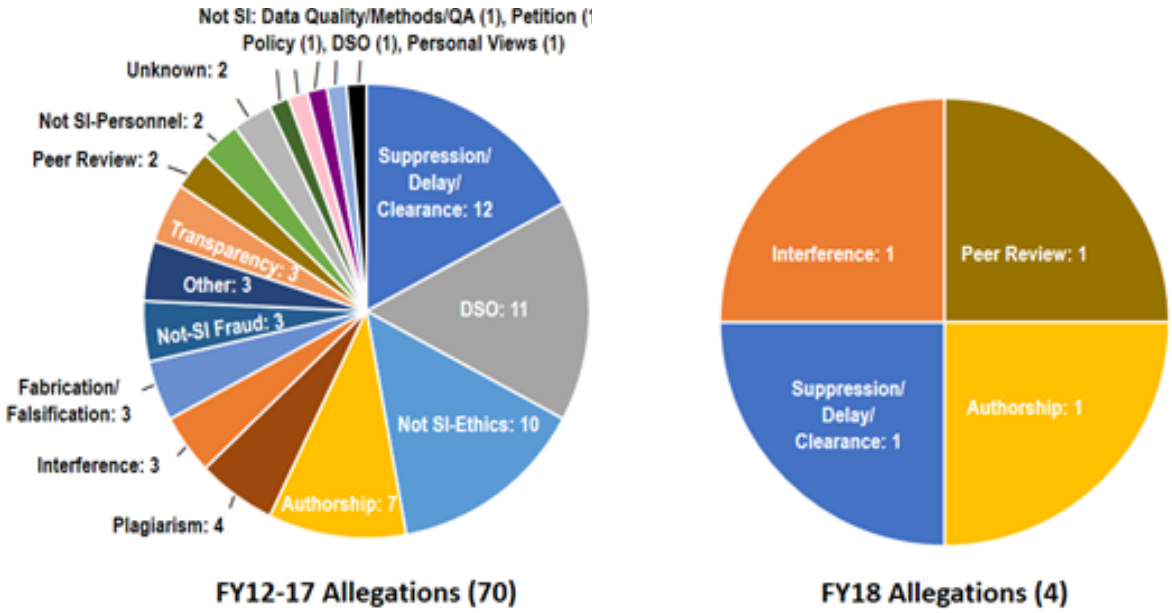

Figure 10. Comparison of all FY12-17 allegations versus FY18 allegations

Figure 11 shows the status of all allegations and requests for advice at the end of FY18. There was substantial progress in clearing the backlog of allegations, and there were only four active allegations at the end of FY18. Since 2012, five allegations have been transferred to the Office of Inspector General, which has the responsibility for investigating allegations of research misconduct or waste, fraud, or abuse. Among allegations adjudicated by the Scientific Integrity Program, similar numbers of allegations were substantiated as were not substantiated.

Since 2012, among requests for advice, many (40) have been concluded without the filing of an allegation. Conversely, a similar number (41) are still active, with the individuals involved still seeking solutions to their concerns about potential violations of the Scientific Integrity Policy.

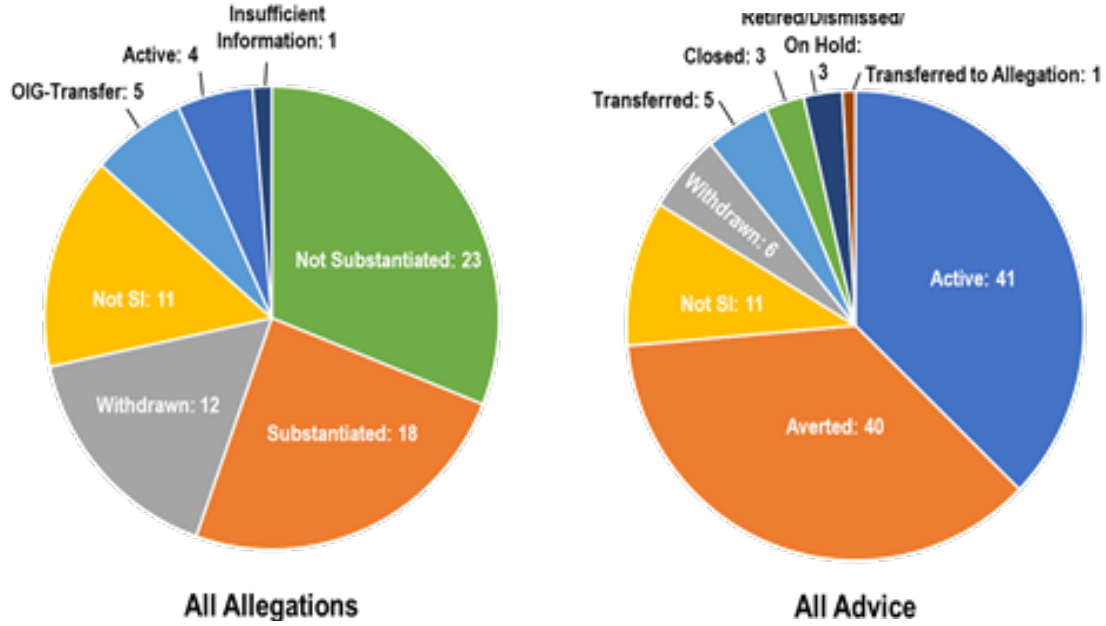

Figure 11. Current status of all allegations and requests for advice received

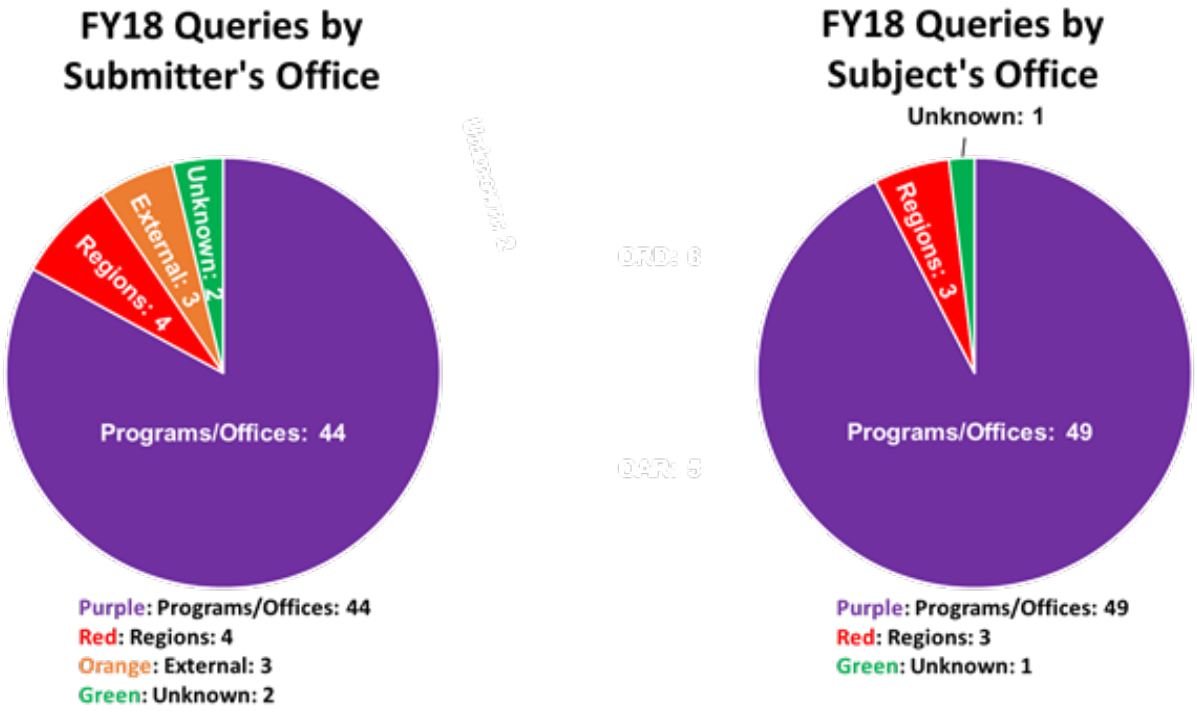

Figure 12. Sources and subjects of FY18 queries

Figure 12 breaks down the queries received during FY18 by organization. Most queries involved EPA's program offices. Three queries originated outside EPA, demonstrating the interest of external stakeholders in the Agency's culture of scientific integrity.

Alternative Dispute Resolution

EPA addresses some allegations of a loss of scientific integrity with the help of EPA's Conflict Prevention and Resolution Center using alternate dispute resolution (ADR). The Scientific Integrity Program has used its mediation services for two types of scientific integrity issues: differing scientific opinions and authorship disputes. To date, two cases have been resolved by working with the Conflict Prevention and Resolution Center's staff and accessing mediators through their contract. As of the end of FY18, another ADR project was ongoing.

The benefits of using ADR to resolve scientific integrity issues include:

- Stakeholders agree to the process, appreciate the neutrality of the mediators, and accept the results;
- Scientific integrity is upheld; and,
- The case is resolved in a timely manner.

Summary of Adjudicated Allegations in FY18

Eleven allegations were adjudicated during FY18. Following are summaries of the allegations adjudicated during FY18.

1. Political Interference with Scientific Presentations

Allegation: Scientists employed by or affiliated with ORD were told on a Friday that they could not honor their previous commitment to present results of their research at a

scientific conference the following Monday. The cancellation was reported to have been initiated by the Office of Public Affairs.
Outcome: Administrator Pruitt acknowledged the incident and wrote that it would not recur, that ORD has authority to make decisions about event participation, and that he was committed to upholding EPA's Scientific Integrity Policy.

2. Data Quality
Allegation: The Scientific Integrity Program received a Request for Reconsideration submitted by an external organization under the Data Quality Act. The external organization alleged that the findings of some papers published in a scientific journal by authors from another federal agency were unreliable and asked EPA to remove information from its website that had been based on these published papers.

Outcome: EPA has an established process under the Data Quality Act to evaluate such complaints, and the external organization used this process in submitting a Request for Correction and subsequent Request for Reconsideration. EPA followed its established process and convened a panel of senior officials to consider the Request for Reconsideration. The panel reaffirmed the utility, objectivity, and integrity of the information on EPA's website.

3. Plagiarism
Allegation: Plagiarism-detection software flagged some grant proposals submitted to an EPA Office as containing text from other sources.

Outcome: A careful review found that most instances of flagged text came from references listed in the grant proposals but that were not attributed to a specific reference or placed in quotation marks. Only a few instances of flagged text came from other sources. Although proper attribution is important, the apparent plagiarism seemed to be due to sloppiness and to the space restrictions imposed by the grant application form. The Scientific Integrity Program worked with the program that reviews these grant proposals to prevent future attribution issues.

4. Clearance Delay
Allegation: An employee alleged that clearance was delayed when a manager requested a third internal review of a manuscript for submission to a journal, when only two reviews are standard.

Outcome: The office's clearance policy and procedures allow managers to request additional review of manuscripts if they disagree, as they did in this case. The request for a third review was appropriate.

5. Scientific Credit
Allegation: An employee who made a significant contribution to a project was improperly excluded from a group award.

Outcome: Management acknowledged that this was a mistake and nominated the employee for another award. The employee considered this to be an acceptable resolution to the allegation.

6. Authorship Credit
Allegation: Employees were listed as co-authors in a draft EPA report, but not listed as co-authors in the final report. Some authors pointed out that their work was included in the final report and they should have been authors.

Outcome: Upon review, it was found that the final report provided extensive lists of authors, reviewers, and acknowledgements. A list of the draft report co-authors is prominently provided in the final report. Co-authorship of the final document was not extended to those who did not work on the revisions that led to the final report. Some of these employees were also recognized in an acknowledgement section.

The best practice would have been early and repeated conversations among the authors to discuss authorship in both drafts and final versions, and to explicitly agree on what to do in the event of authors leaving the project and/or the Agency.

7. Authorship Credit
Allegation: A university employee was unfairly excluded from authoring journal publications that were developed under an EPA grant.

Outcome: The principal investigator, who determined authorship, is a university employee. Therefore, this was determined to be a matter internal to the university.

8. Differing Scientific Opinion
Allegation: An employee in a program office alleged that EPA's methods for assessing health risks from radionuclides are outdated.

Outcome: The employee was able to express this differing opinion to management, including through three internal reports written on official time. The Scientific Integrity Policy provides that employees can express differing scientific opinions and their rationale, preferably in writing, without fear of retaliation. The Policy does not require that the differing opinion be accepted. The Policy was not violated.

9. Differing Scientific Opinion
Allegation: A manager in a regional office alleged that preliminary remediation goals for radionuclides are not scientifically defensible and that their use should be suspended and replaced with a different approach.

Outcome: The manager had ample opportunity, which was utilized, to express this differing opinion to higher management. Therefore, it was determined that the Policy was not violated.

10. Differing Scientific Opinion
Allegation: An employee alleged that EPA does not accurately communicate its greenhouse gas footprint since renewable energy certificates, according to the allegation, do not significantly reduce greenhouse gas emissions.

Outcome: This was an instance of a differing scientific opinion, where the employee had expressed the scientific opinion to the responsible officials. Therefore, it was

determined that the Policy was not violated.
11. Peer Review Requirements
Allegation: An employee objected to EPA's use of a greenhouse gas calculator that was not peer-reviewed.

Outcome: The inquiry found that there is no requirement that calculators undergo peer review.

In FY18, three other allegations were determined to not involve scientific integrity and another allegation was withdrawn by the submitter. Additionally, sixty-one queries that were previously considered allegations prior to FY18 have been re-classified as requests for advice under the new procedure that was developed this past year. These requests for advice are not reported in this summary of adjudicated allegations, but are summarized in Figures 7, 8, 9, 11, and 12.

Accomplishments Across EPA

In FY18, EPA program and regional offices took many approaches to enhance a culture of scientific integrity at EPA. Offices throughout the Agency accomplished this by featuring scientific integrity language in grants and employee handbooks and by establishing regional science councils. Employees were provided training to learn new skills and technologies. Innovative systems transparently released data and scientific information to the public. Efficient clearance procedures were created with an emphasis on timely release. New quality assurance procedures streamlined the data collection and management process. Additional data was released to the public and existing public datasets were made more user-friendly. The science that underlies EPA's decisions was reinforced through the Agency's use of independent peer review and federal advisory committees. EPA employees also expanded their knowledge, learned new skills, and remained leaders in their fields by participating in profes-sion-al societies, attending conferences, and speaking on expert panels. See Appendix II for examples of scientific integrity accomplishments across the Agency in FY18.

Areas for Furure Investment Beyond 2018

Increasing Visibility of Scientific Integrity

Implementing the Policy and fostering a culture of scientific integrity is most effective when all employees, contractors, grantees, and student volunteers understand the Policy and how they contribute to EPA's culture of scientific integrity. While the Annual Report on Scientific Integrity and the Annual Employee Conversation with the Scientific Integrity Official increase awareness of the Policy and understanding of scientific integrity, the Scientific Integrity team will pursue additional opportunities to increase the visibility of scientific integrity at EPA.

Outreach Materials and Publications

New outreach efforts include "tombstone" signs that are prominently placed in EPA headquarters lobbies. These posters call upon everyone to be responsible for scientific integrity and alert employees to upcoming events related to scientific integrity. They will also be used to inform employees of new policies and procedures related to scientific integrity. Also, the Scientific Integrity internet and intranet websites will be continually updated to announce new scientific integrity initiatives and provide innovative scientific integrity resources. The scientific integrity brochures will also be revised to assist those with a scientific integrity concern, so that they understand the new two-track allegation procedure.

Best Practices of Scientific Integrity Handbook

The Program has received multiple requests from across the Agency to develop a Handbook with scientific integrity best practices. The Program is excited to have this opportunity to provide a one-stop-shop on everything scientific integrity at EPA. In the current development phase, the handbook is envisioned to address key aspects of scientific integrity, including releasing scientific results in a timely manner, communicating science to internal and external audiences, ensuring proper attribution in citations, and offering equitable professional development opportunities to staff.

Embracing and Modeling Scientific Integrity

Since its inception, EPA has embraced a culture of scientific integrity. For six years, implementation of the Policy has re-enforced the Agency's commitment to scientific integrity. In the upcoming years, the Program and Committee look forward to further assisting the Agency in ensuring that scientific integrity is embraced and modeled by all employees, contractors, grantees, and volunteers.

Subject Matter Whiteboard Videos

In 2016, the Program produced an award-winning whiteboard video, Scientific Integrity at EPA, that provides an overview of both scientific integrity and the Policy. Scientific Integrity at EPA[xxv] is available to view on the scientific integrity intranet website (Figure 13). Three additional case study videos about manipulating science, suppressing scientific findings, and delaying the release of science were also produced in 2016. The Program plans to draft storyboards and scripts for additional training videos.

Increasing Access to Scientific Integrity Expertise

The Committee, with its 24 members, has representation from every office and region. However, the geographic distribution of EPA campuses, satellite locations, and laboratories causes some sites to lack a DScIO with a physical presence. The Program and Committee are working to increase access to scientific integrity expertise at these locations and throughout the Agency. One way that this issue is being addressed is that the ScIO will begin holding regular, open office hours on scientific integrity every Wednesday, from 11:30 am to 1:30 pm Eastern Time. She is available for walk in (or call in) consultations in her office in Washington, D.C., in the Ronald Reagan Building, room 51142 (Call 202-564-1687).

Protecting and Maintaining EPA's Culture of Scientific Integrity

EPA's ability to protect human health and the environment is dependent on the integrity of the science that is conducted and utilized at the Agency. As a result, it is everyone's responsibility to protect and maintain EPA's culture of scientific integrity. The Program continues to develop guidance, standard operating procedures, policies, and systems for the Agency to adopt.

Differing Scientific Integrity Opinions (DSO) Policy

The Policy re-affirms that a culture of scientific integrity "welcomes differing views and opinions on scientific technical matters as a legitimate and necessary part of the scientific process." Therefore, the Policy mandates the ScIO, with input from DScIOs, "to develop a transparent mechanism for Agency employees to express differing scientific opinions (DSOs)." A DSO arises when an employee, who is substantively engaged in the science, disagrees with scientific data, interpretation, or conclusions that will be relied upon to inform an Agency's policy decision. If this happens, the employee is encouraged to express, in writing, her/his dissenting opinion and reasons for holding this opinion. It is then expected that DSOs will be resolved during internal deliberations or the peer review process. The peer review panel report, along with other deliberative documents, are provided to policy makers. The Program is currently drafting a detailed DSO Policy for the Agency that is anticipated to be released in the near future.

Electronic Clearance System

The Program is working towards unveiling an electronic clearance system in 2019 that will further promote transparency, clarity, timeliness, predictability, and consistency across the Agency when clearing scientific products. This versatile system is expected to be an important component in implementing the Plan to Increase Public Access to EPA-Funded Research. Other anticipated benefits include automatic notifications to approvers and submitters, version control, and record-keeping. While the Office of Research and Development (ORD) has already adopted an electronic clearance system, this would provide other offices the opportunity to utilize electronic clearance.

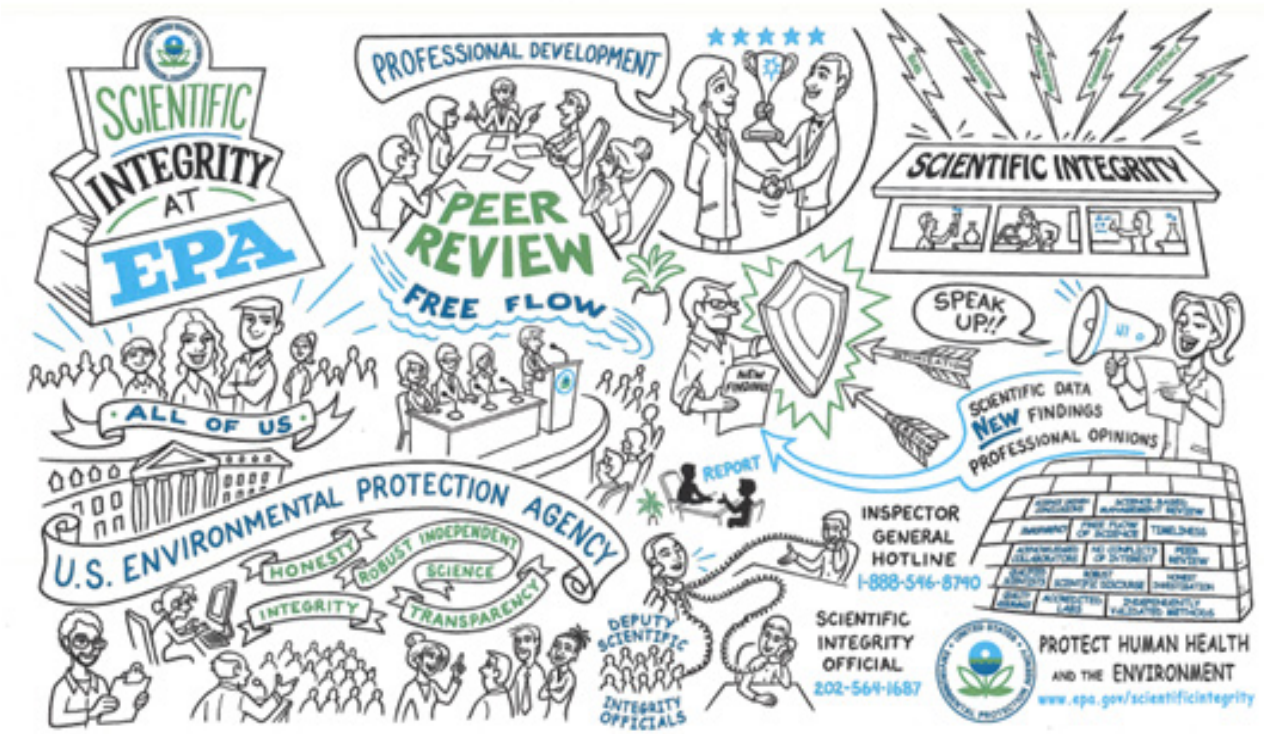

Figure 13. Scientific Integrity at EPA Whiteboard Overview

Assessing the Implementation of EPA's Scientific Integrity Policy

Three initiatives began in FY18 that provide opportunities to assess the effectiveness of the Program and Committee's efforts in implementing the Policy and to fortify EPA's culture of scientific integrity.

OIG Scientific Integrity Audit

On August 30, 2018, the Office of Inspector General (OIG) for the EPA began a self-initiated project to study the implementation of the Policy. The project's objective is to determine "whether the EPA's Scientific Integrity Policy is being implemented as intended to assure scientific integrity throughout the EPA." The project focuses on four key areas:

1. Extent and type of employee concerns, if any, with scientific integrity at the EPA
2. Employees' awareness of the EPA's Scientific Integrity Policy, including the process for reporting potential violations
3. Reasons potential violations may not be reported
4. Adjudication process in general and any related concerns (e.g., satisfaction with complaint resolution, timeliness of resolution, and other process-related issues)

The OIG will also conduct an anonymous survey of EPA employees and contractors. This survey is expected to be open for about a month between November and December 2018. The results of this survey and a final report of these findings are anticipated by September 2019.

GAO Scientific Integrity Engagement

On June 14, 2018, the U.S. Government Accountability Office (GAO) informed EPA that it began an engagement on implementation of government scientific integrity policies after receiving a request from Senator Bill Nelson. This review will focus on three key questions:

1. What are the main components of selected agencies' scientific integrity policies?
2. To what extent do selected agencies have processes in place to reasonably ensure that the objectives of their scientific integrity policies are achieved?
3. To what extent have agencies established processes for reporting and investigating allegations of violations of their scientific integrity policies?

This report is expected to be released in the spring of 2019.

Conclusions

Preparation of this Annual Report provided the Program with a very important opportunity to reflect on implementing the Policy and scientific integrity initiatives, and to also create a strategic roadmap for enhancing EPA's culture of scientific integrity in the coming years.

In FY2018, the ScIO, the Program, and the Committee continued to promote a culture of scientific integrity in all of EPA's programs, offices, and regions. This was achieved by hosting an Agency-wide conversation with the ScIO, training nearly 100 new employees on scientific integrity, engaging in dialogues with almost 100 managers about scientific integrity at EPA, and working in close coordination with partners throughout the Agency including OGC and OIG. The establishment of new clearance and quality assurance procedures in Agency offices promoted transparency and the timely release of scientific data. EPA's use of peer review and federal advisory committees contributed to the high-quality science produced at the Agency in FY2018. EPA scientists and researchers learned new skills, met fellow leaders in their fields, and presented their findings in FY18 because their supervisors encouraged their professional development.

New initiatives in FY18 created exciting opportunities to strengthen the culture of scientific integrity at EPA. With the release of the Best Practices for Clearance of Scientific Products at EPA, programs, offices, and regions can reference these guidelines when developing, evaluating, or revising their clearance procedures to promote transparency, clarity, timeliness, predictability, and consistency. The advent of management dialogues on scientific integrity is fostering engaging discussions on scientific integrity that will continue into FY19. Expanding scientific integrity language to the Agency's grant agreements and contracts re-affirms EPA's commitment to scientific integrity. The pilot program to detect plagiarized text was informative for participants to better understand how to represent the intellectual contributions of others.

In FY2018, there were fifty-three submitted queries about scientific integrity. Eighteen queries were evaluated in FY2018. Two of eleven allegations of a loss in scientific integrity at EPA were resolved. While nine of the allegations were found to have not been losses in scientific integrity, it is vital that everyone, internally and externally, has an opportunity to be heard and their concerns addressed.

In FY2019, the ScIO, the Program, and the Committee will continue their commitment to promote a culture of scientific integrity, the timely release of information to the public, the appropriate use of peer review and federal advisory committees, and the professional development of EPA employees. Annual and ongoing initiatives, such as the Employee Conversation with the Scientific Integrity Official and evaluation of scientific integrity queries, will continue. FY19 will bring with it the debut of new outreach materials and publications including additional whiteboard videos, a

new electonic clearance system, increased access to scientific integrity expertise, and the release of a Differing Scientific Opinions policy. These initiatives will contribute to increasing the visibility of scientific integrity at EPA, the Agency embracing and modeling scientific integrity, and protecting and maintaining EPA's culture of scientific integrity. The completion of the OIG audit, and GAO engagement, will also provide analyses of Policy implementation and scientific integrity at EPA. These results and recommendations will guide future scientific integrity initiatives and fortify EPA's culture of scientific integrity.

EPA's successful ability to protect human health and the environment requires a culture of scientific integrity. This means science that is conducted with the highest rigor and using independently validated scientific methods, science that is independent of policy implications, is supervised and utilized with integrity, and is communicated in a timely, transparent manner.

Acronyms

AD ..... Anaerobic Digestion

ADR ..... Alternative Dispute Resolution

APD ..... Air Protection Division

AV ..... Assistance Visit

CASAC ..... Clean Air Scientific Advisory Committee

CASTNET ..... Clean Air Status and Trends Network

CIO ..... Chief Information Officer

DC ..... Data Competency

DRA ..... Deputy Regional Administrator

DScIO ..... Deputy Scientific Integrity Official

DSO ..... Differing Scientific Opinion

EAID ..... Environmental Assessment and Innovation Division

EPA ..... US Environmental Protection Agency

EQMD ..... Environmental Quality Management Division

FACA ..... Federal Advisory Committee Act

FBT ..... Freshwater Biology Team

FEMA ..... Federal Emergency Management Agency

FIT ..... Field Implementation Team

FMFIA ..... Federal Managers Financial Integrity Act

FY ..... Fiscal Year

GAO ..... US Government Accountability Office

GIS ..... Geographic Information Systems

GRTS ..... Grants Reporting and Tracking System

ICR ..... Information Collection Request

IDP ..... Individual Development Plan

IND ..... Improvised Nuclear Device

ISO ..... International Organization for Standardization

LD 18 ..... **Liberty Down 2018**

MOVES ..... **Motor Vehicle Emission Simulator**

NARS ..... **National Aquatic Resource Surveys**

NCER ..... **National Center for Environmental Research**

NEIC ..... **National Enforcement Investigations Center**

NERL ..... **National Exposure Research Laboratory**

NMDA ..... **N-methyl-D-aspartate**

OAR ..... **Office of Air and Radiation**

OCFO ..... **Office of the Chief Financial Officer**

OCGR ..... **Office of Communications and Government Relations**

OCSPP ..... **Office of Chemical Safety and Pollution Prevention**

OECA ..... **Office of Enforcement and Compliance Assistance**

OEI ..... **Office of Environmental Information**

OEIP ..... **Office of Enterprise Information Programs**

OGC ..... **Office of General Counsel**

OGWDW ..... **Office of Ground Water and Drinking Water**

OIG ..... **Office of Inspector General**

OLEM ..... **Office of Land and Emergency Management**

OMB ..... **Office of Management and Budget**

OP ..... **Office of Policy**

ORD ..... **Office of Research and Development**

OSA ..... **Office of the Science Advisor**

OSIM ..... **Office of Science Information Management**

OST ..... **Office of Science and Technology**

OW ..... **Office of Water**

OWOW ..... **Office of Wetlands, Oceans and Watersheds**

PFAS ..... **Per- and polyfluoroalkyl substances**

PIE ..... **Planning, Implementation & Evaluation System**

PM ..... **Particulate Matter**

PMC ..... **PubMed Central**

PPG ..... **Performance Partnership Grants**

PWS ..... **Public Water System**

QA ..... **Quality Assurance**

QAFAP ..... **Quality Assurance Field Activities Procedure**

QAPP ..... **Quality Assurance Project Plan**

QC ..... **Quality Control**

R2P2 ..... **Regional Research Partnership Program**

RCRA ..... **Resource Conservation and Recovery Act**

RDX ..... **Royal Demolition Explosive**

RESES ..... **Regional Sustainable Environmental Science program**

RFR ..... **Request for Reconsideration**

ROCS-Net ..... **Regional ORD Community of Science Networking program**

RSC ..... **Regional Science Council**

RSL ..... **Regional Science Liaison**

RVP ..... **Reid Vapor Pressure**

SAB ..... **Science Advisory Board**

SABSO ..... **Science Advisory Board Staff Office**

ScI ..... **Scientific Integrity**

ScIO ..... **Scientific Integrity Official**

SDM ..... **Scientific Data Management**

SESD ..... **Science and Ecosystem Support Division**

SFM ..... **Sustainable Food Management**

SOP ..... **Standard Operating Procedures**

TMDL ..... **Total Maximum Daily Load**

TSCA ..... **Toxic Substances Control Act**

UCMR ..... **Unregulated Contaminant Monitoring Rule**

VADEQ ..... **Virginia Department of Environmental Quality**

WPD ..... **Water Protection Division**

Appendices

Appendix I
Annual Employee Conversation on Scientific Integrity

Chair: Dr. Francesca Grifo, Scientific Integrity Official

Tuesday, June12, 2018

3:00–4:00 p.m. EDT

Introductory Remarks

Dr. Francesca Grifo (SciO), welcomed the participants and introduced Dr. Jennifer Orme-Zavaleta (Science Advisor and Principal Deputy Assistant Administrator for Science, Office of Research and Development). Dr. Orme-Zavaleta remarked that science helps to inform decisions and ScI is the core value of the Agency. Dr. Orme-Zavaleta encouraged participants to contact Dr. Grifo and the ScI Committee for any questions or concerns. ScI remains a topic of interest for the current U.S. government administration. Mr. Scott Pruitt (EPA Administrator) has expressed his commitment to upholding EPA's ScI Policy.

Dr. Grifo acknowledged EPA staff assisting the ScI Committee—Ms. Martha Otto (EPA/Office of the Science Advisor [OSA]), Dr. Cheryl Hawkins (OSA) and Mr. Daniel D'Arcy (Contractor to OSA). A special thanks was given to Dr. Kevin Teichman (Senior Science Advisor, Office of Research and Development) who served as the interim Committee Chair in Dr. Grifo's absence. Dr. Grifo expressed her gratitude to staff who contributed to her medical leave bank and encouraged attendees to participate in EPA's Skills Marketplace, where the Scientific Integrity Program has an open project announcement.

Scientific Integrity Policy Highlights

The purpose of the ScI Policy is to ensure adherence to professional values and practices when conducting, managing, influencing, utilizing, and communicating science. These guidelines apply to all EPA scientists, managers, and political appointees. Dr. Grifo commented that research integrity must be managed and supervised. It is important that objectivity, clarity, reproducibility, and utility are maintained and that individuals are insulated from bias, fabrication, falsification, plagiarism, outside interference, and censorship. The Policy states that ensuring ScI involves validating scientific methods, retaining qualified scientists, accrediting laboratories and facilities, providing information on quality and quality assurance, a peer review process with no conflicts of interest, and the free flow of science with a timely release of research results. Dr. Grifo remarked that the Agency is committed to establishing public trust of EPA science, transparent scientific processes, and open scientific communication. Scientists must be allowed to perform research in an environment that upholds ScI.

Highlighting the various strengths of the Policy, Dr. Grifo stated that it prohibits all EPA employees from suppressing, altering, or otherwise impeding the timely release of

scientific findings. The Policy requires EPA to expand and promote access to scientific information and prohibits Agency leadership from intimidating or coercing scientists to alter scientific data, findings, or professional opinions. Employees are permitted to express their personal opinions, albeit they must adhere to exceptions (e.g., no lobbying or electioneering). Another strength is that the Agency allows researchers to review documents that substantively rely on their science for accuracy before release.

Dr. Grifo clarified what constitutes ScI. She described the difference between policy versus science and commented that a change in an employee's assignments and a limit to opportunities for travel may not be scientific integrity issues. The Policy indicates that allegations could be reported to the ScIO, any of the 24 Deputy ScIOs, or the Office of Inspector General (OIG) hotline. Participants are encouraged to review the ScI policies and guidelines.

Dr. Grifo mentioned EPA's Scientific Misconduct Policy, which is adjudicated by the Agency's OIG and outlines procedures for addressing research misconduct (i.e., fabrication, falsifying research data, or plagiarism).

Allegations Update

The ScI Program received 137 reported allegations from February 2012 to March 31, 2018. In total, 23 are active, 57 adjudicated (31 were substantiated and 26 were dismissed), 12 are "unable to proceed", 26 were withdrawn, 12 were not ScI related and 7 were reassigned. Most allegations were related to suppressing/delaying report or information, interference with science by a manager, authorship, and conflict of interest. Dr. Grifo commented that fewer authorship allegations were received, perhaps because the Committee published its best practices for designating authorship. The external allegations that were formally submitted exceeded the number of those submitted informally; internal allegations were mainly informal submissions.

New Procedures for Allegations

Dr. Vincent Cogliano (Deputy to the ScIO) outlined the new procedures for reporting allegations. This process emphasizes transparency, confidentiality, consistency, timeliness, effectiveness, and fairness. The allegation process contains two paths: advice and assistance and a procedure for reporting allegations. The purpose of advice and assistance is to avert allegations early and with minimal senior-level organizational involvement. Someone with a scientific integrity concern can receive coaching to address an issue before it rises to the level of an allegation. If an allegation is reported, it is screened, an inquiry is conducted, and a review panel may be convened to determine whether a violation has occurred. The determination may also recommend corrective action and preventive measures as needed. The allegation procedure includes a description of topics covered and not covered, a statement of safeguards and confidentiality for those who report or are the subject of allegations, and targets for timeliness:

Other Updates

Dr. Grifo informed the participants of upcoming discussions (fall 2018) with EPA management. These conversations are aimed at informing senior-level employees of their role in upholding a culture of ScI, encouraging good policies and practices as well as

leadership. A manager who upholds a culture of ScI must demonstrate the importance of ScI to achieve EPA's mission of protecting human health and the environment. Managers also should ensure that those who look to them for leadership accomplish their work in a manner that upholds ScI. Managers should hold employees accountable and support individuals who report lapses in ScI. She encouraged participants to review the clearance best practices on EPA's website. The goal of good policies and best practices is to provide transparency and timeliness of procedures that prohibit delays or suppression of science.

Dr. Grifo announced the development of an electronic clearance system, which will incorporate the best practices for clearance of scientific products at EPA. Clearance best practices are to be predictable, clear, transparent, consistent and timely, to prevent the delay or suppression of science. The clearance system also will enhance the capability to implement the plan for increasing public access to EPA-funded research.

EPA scientists and supervisors can verify the source of written work via iThenticate, a service that is being provided by the Scientific Integrity Program. This software helps employees to accurately attribute written documents, which in turn helps to avoid ScI allegations.

Questions and Answers

In discussion, the following points were made:

Dr. Grifo reminded the participants that before reporting, potential allegators must determine whether their actions will impact the science.

A participant asked about the enforcement of Scott Pruitt's proposed Transparency Rule. Dr. Grifo replied that this rule has not been finalized and a public meeting will be held in July 2018, to discuss this proposal. A participant questioned whether the Transparency Rule could hinder science. Dr. Tom Sinks (Director, OSA) replied that a public hearing will be conducted on July 17, 2018, and the comment period has been extended to August 16, 2018. Dr. Grifo added that it is important for individuals to provide specific instances when submitting their comments.

Dr. Grifo clarified a participant's question regarding allegations that concern the EPA administration. Dr. Grifo alluded to the allegation from the Sierra Club regarding a public comment made by Scott Pruitt. She reiterated the point that all Agency employees are encouraged to express their personal opinions. EPA encourages a free flow of ideas and information.

In response to a question regarding EPA's Regional Science and Technology laboratory, Dr. Grifo replied that the Committee is open to address their ScI-related issues. Any group that believes that their issue is related to scientific integrity should report an allegation.

A participant asked about the scientific integrity awareness of EPA political appointees. Dr. Grifo responded that all appointees are trained in ScI as part of the Agency's onboarding process. She re-emphasized that the goal of the Agency is to safeguard the process that allows individuals to express their opinions.

Summary of Action Items

- Employees may review clearance procedures on the EPA Scientific Integrity Intranet website.
- Employees may submit any potential comments on the Transparency Rule at the public hearing session.
- Managers are encouraged to attend an Agency-wide managers training in 2019.
- All should participate in next year's Annual Employee Conversation on Scientific Integrity; date to be announced.

Appendix II
Accomplishments Across EPA

In FY18, EPA program and regional offices took many approaches to enhance a culture of scientific integrity at EPA. Offices throughout the Agency accomplished this by featuring scientific integrity language in grants and employee handbooks, and by establishing regional science councils. Employees were provided training to learn new skills and technologies. Innovative systems transparently released data and scientific information to the public. Efficient clearance procedures were created with an emphasis on timely release. New quality assurance procedures streamlined the data collection and management process. Additional data was released to the public and existing public datasets were made more user-friendly. The science that underlies EPA's decisions was reinforced through the Agency's use of independent peer review and federal advisory committees. EPA employees also expanded their knowledge, learned new skills, and remained leaders in their fields by participating in professional societies, attending conferences, and speaking on expert panels. The following are examples of scientific integrity accomplishments across the Agency in FY18.

Promoting a Culture of Scientific Integrity

A culture of scientific integrity strives for transparency, limits management review to scientific quality considerations, and encourages robust scientific discourse. A culture of scientific integrity uses independently validated methods, accredited labs, and certified data. In a culture of scientific integrity, science is conducted, supervised, communicated, and utilized with honesty, transparency, and integrity.

Upholding a Culture of Scientific Integrity

The Office of Research and Development (ORD) upheld a culture of scientific integrity by expanding scientific integrity language to grants controlled by the National Center for Environmental Research (NCER), while the Office of Chemical Safety and Pollution Prevention (OCSPP) included reviewing the Policy in its onboarding handbook. Region 8 enhanced its Regional Science Council in its second year and Region 4 re-established its own Regional Science Council.

Office of Research and Development (ORD)

National Center for Environmental Research (NCER)

Under the guidance of the Agency's Scientific Integrity Program, NCER staff (Sheryl Law) worked with the Scientific Integrity Program staff to ensure that the Agency's scientific integrity culture and principles were incorporated in the "Terms and Conditions" of the assistance agreements that NCER manages. For more information, see the EPA Research Grants webpage.[ix]

Office of Chemical Safety and Pollution Prevention (OCSPP)

The Office of Pesticide Programs (OPP) developed a new employee handbook that was deployed in June 2018. This handbook includes a manager's and an employee's checklist of what to do during the first months on the job. Both checklists include, "Review scientific integrity information at [OSA's scientific integrity landing page.][x]" The handbook can be found on the OPP@work website.[xi]

Region 4

In FY18, the Region 4 Regional Science Liaison (RSL) re-established the Regional Science Council (RSC). The RSC is a group of Regional scientists (each Division/Office has representation) who meet monthly to discuss issues, work on specific projects of Region-wide interest, and make recommendations to management concerning matters dealing with science. Activities include:

- ☐ Serving as a forum for the identification and communication of the scientific, technical support, and research needs of the Region and its partners (States, Tribes, Local, etc.);
- ☐ Developing and keeping current a list of the Region's science issues and needs;
- ☐ Maximizing opportunities for funding and training (e.g., RARE, RESES, R2P2, ROCS-Net) to address the Region's science issues and needs;
- ☐ Providing scientific support to national and regional workgroups, task forces, and other such entities;
- ☐ Serving as a scientific sounding board to the Regional Senior Leadership Team on emerging scientific issues;
- ☐ Working to improve communication between the Region and ORD;
- ☐ Serving as a forum for the identification and implementation of scientific training /educational programs that benefit the Region and their partners.

Region 8

In FY18, the Region 8 Science Council entered its second year of operation. The Council's mission is to ensure the continued enhancement of science capacity in Region 8 by:

- ☐ Serving as a resource to staff and managers to assist with integrating sound science in the decision-making process;
- ☐ Enhancing the Region's ability to provide new and current employees with the scientific and technical skills they will need as their careers develop;
- ☐ Enhancing communication and coordination on science activities among program offices and with Regional leadership; and
- ☐ Serving as a clearinghouse for science activities in the Region, with a goal of reducing redundancy.

Examples of Science Council accomplishments in FY18 include:

- ☐ The Council elected its first class of new members, a total of six staff.
- ☐ To provide room for the new members, six members stepped down to emeritus status; total membership is 17 active and 6 emeritus (1 retired) members.
- ☐ The Council also elected a new Chair and Vice-Chair in FY18.
- ☐ The Council held an all-day retreat in January 2018 to develop a work plan for the upcoming calendar year.

The following Science Council Committees were active in FY18:

- ☐ Science Integrity Committee:
  - Completed development of draft Clearance/Peer Review process for Region 8.
  - Next steps include briefing DRA and Regional leadership.

- ☐ Science Seminar Committee:
  Committee organized and held several seminar presentations in FY18. Examples include:
  - Explorers for Bats: film screening and expert panel, citizen science and bat conservation.
  - EPA Region 8 Air Program and ORD Research Collaborations.
  - ROCS-Net and NMDA: Attempting to address challenges of an unregulated contaminant in drinking water.
  - Addressing Regional Research Needs through ORD Collaboration: PFAS point of entry treatment and metals inhalation exposure at mining and mineral processing sites.
  - Application of bioanalytical tools to identify sources and effects of contaminants in surface water.
  - Committee also hosted webinars to facilitate staff participation and discussion in-house, as opposed to individuals participating at their desks. Example:
  - Community powered citizen science: How people use sensors to test air and water across the globe.

- ☐ Science Needs Committee:
  - Committee continued to increase awareness and promote use of electronic science needs form. The intent of the form is to provide a mechanism for staff and management to seek assistance on science issues.

- ☐ Communication Committee:
  - Committee continued to advertise science council seminars and events on the 8-net, atrium monitor, via email, and by other means (e.g., lobby meet-and-greet).

- Committee continued to track science council accomplishments over the course of the year, including attendance at seminars and events.

A priority for Region 8 is implementing EPA's QA Field Activities Procedure (QAFAP). This initiative affects all programs involved in field activities and includes every office, the Region 8 Laboratory, and both field offices in Montana and South Dakota. In FY18, the following were key focus areas to assure the integrity of Region 8 field activities: (1) institutionalize/optimize QAFAP policies/procedures; (2) conduct training/continuing education; (3) further strengthen field work through workgroup collaboration; (4) perform annual internal audits; and (5) address findings through corrective actions.

- ☐ Revised Overarching QAFAP Standard Operating Procedures (SOPs) - The Region 8 Field Operations program revised the Regional Overarching QAFAP SOPs to reflect streamlined processes as well as to address findings during internal and external assessments. All procedures and other resources, including the updated SOPs, are available on Region 8's intranet/SharePoint site.[xii]
- ☐ Workgroup Collaboration – Field Implementation Team (FIT) - The FIT, which is comprised of members from all Regional program offices where field activities occur, meets monthly during the field off-season (October through April) to strengthen integration of the QAFAP standards into field activities that are conducted by EPA Region 8 personnel. The FIT accomplished this by: (1) updating SOPs as needed; (2) advising on technical field issues/challenges; (3) leading/training their programs in QAFAP requirements; and (4) assessing QAFAP implementation by serving as auditors in internal audits.
- ☐ Updated Regional Digital Image SOP - The FIT members collaborated to update the Regional SOP for taking, recording, and managing digital images to reflect new guidance from the Office of Enforcement and Compliance Assistance (OECA). This exceptional practice ensures consistency and continuity in digital image management across programs.

Training

Ensuring data integrity is critical to maintaining a culture of scientific integrity. The National Exposure Research Laboratory (NERL), Region 4, and Region 8 provided training for their scientists to improve data-collection and quality assurance strategies in the field.

Office of Research and Development (ORD)

National Exposure Research Laboratory (NERL)

The NERL QA Team training, along with a training facilitator, conducted team training to discuss training for the newly published NERL Quality Management Plan (QMP) and to initiate plans to write NERL specific Quality Assurance (QA) Program SOPs, and to identify a process to ensure each project has an approved Quality Assurance Project Plan (QAPP).

Region 4

Environmental Sampling and Analysis Course: The Region 4 Superfund Division collaborated with the Science and Ecosystem Support Division to develop a 3-day course that familiarizes project managers with the field and laboratory aspects of the site work. Through classroom instruction, hands-on field demonstrations, and detailed tours of the Regional laboratory, the course provides participants with the tools needed to improve data collection strategies and to optimize the use of available investigative techniques for site decision making. In the initial offering of the course, 19 Region 4 staff attended.

Region 8

Deliver FY18 Annual QA Field Activities Procedure (QAFAP) Training - The Region 8 Field Operations program distributed QAFAP training to all field personnel and their supervisors. This 1-hour course was delivered online through a learning management system. To receive credit for the course, individuals were required to: (1) complete a knowledge test with a score of 90% or better; and (2) document/acknowledge review of the updated Regional Overarching QAFAP SOPs.

Data Management

EPA's ability to protect human health and the environment is heavily dependent on the quality of its data. As part of EPA's Public Access Plan, The Office of Research and Development (ORD) continued its effort to improve its ScienceHub System to transparently release scientific data to the public. The Office of Water (OW) released the new Assessment Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS), improved its Section 319 Grants Reporting and Tracking System (GRTS), and provided additional data for public consumption on EPA's website. The Office of Enforcement and Compliance Assurance (OECA) and the Office of Environmental Information (OEI) fortified their testing procedures. Modern and efficient data collection methods and storage systems were created in Regions 3, 4, 6, and 8.

Office of Research and Development (ORD)

Office of Science Information Management (OSIM)

OSIM continued to work with other ORD Assessable Units (AUs) to implement its newly promulgated ORD Scientific Data Management policy and continued to improve the related ScienceHub portal.[xiii] The OSIM-managed ScienceHub is a system that is used to help manage ORD's research data throughout the life of a research project. Data and metadata are made publicly available in accordance with EPA's Public Access Plan, and better guarantees the transparency of and easy access to ORD's scientific data used in published articles and documents. In this way, OSIM helped ORD to collaborate and meet data transparency requirements and the expectations of external customers.

Office of Enforcement and Compliance Assurance (OECA)

The National Enforcement Investigations Center (NEIC) is working with the Office of Land and Emergency Management (OLEM) to improve and strengthen the testing required to determine the Resource Conservation and Recovery Act (RCRA) characteristic of ignitability. This work led to the recent publication of a new American Society for Testing and Materials (ASTM) method for making a RCRA determination.

Office of Environmental Information (OEI)

New Chief Information Officer (CIO) Quality Directive: Issued Final CIO Notification Procedure for Environmental Data Quality Issues; CIO 2105-P-03.0; April 06, 2018. This procedure describes the due diligence process that EPA organizations are to follow in evaluating potential risks and impacts from data quality issues that may adversely affect EPA's environmental data operations. The EPA ScIO will be informed of any potential scientific integrity concerns.

Office of Water (OW)

- In January 2018, occurrence data collection began under the Unregulated Contaminant Monitoring Rule (UCMR 4). The Office of Ground Water Drinking Water (OGWDW) oversees that program, which involves gathering data on 30 contaminants of emerging concern from all large public water systems (PWSs) and a representative set of small PWSs. Beginning with this monitoring cycle, EPA has integrated Quality Control (QC) data collection into the web-based UCMR reporting system. This ensures that laboratories meet QC criteria before they can successfully submit their data.

- In FY2018, the Office of Wetlands, Oceans and Watersheds (OWOW) released the new Assessment Total Maximum Daily Load (TMDL) Tracking and Implementation System,[xiv] which streamlines the Integrated Reporting process and allows for more accurate, transparent data reporting. Improvements include improved tracking of assessment units from one Integrated Reporting cycle to the next, as well as improved identification of assessment units with TMDLs, alternative restoration, or protection approaches. States now have the flexibility to use different approaches and tools to measures progress in water quality in ways that work best for them. The EPA can process the state data to calculate a common unit of measure to provide consistent reporting across all states. States are beginning to use this new system for reporting their 2018 303(d)/305(b) Integrated Reports, and the Regions are using this new system to review and approve the state 303(d) lists. This system will also be critical to automating the report of agency metrics on water quality and communicating this information to the public.

- The Office of Wetlands, Oceans, and Watersheds (OWOW) continued to enhance its Section 319 Grants Reporting and Tracking System (GRTS) and incorporated a module for the submittal and review of Section 319 success stories, their primary program metric of water quality success. Previously, Success Story submittal was

done via email, with much back and forth to fill any data gaps and finalize the submittal. The new Success Stories database tracks workflow between the states, EPA regions, and headquarters and uses a set of mandatory fields that help to reduce data entry errors. To count as a success story, states and EPA must follow guidance that requires scientifically-sound documentation of the water quality impairment and the improvement of water quality to achieve water quality standards. To further ensure a rigorous process, the Nonpoint Source Program will accept a Success Story only if the water is expected to meet the requirements for de-listing under the 303(d) Program.

- OW conducted an ELMS (EPA Lean Management System) exercise to streamline the data processing, review, and interpretation activities to improve delivery of data, metadata, and results to their state and tribal collaborators as well as the public. OWOW expanded use of electronic field data apps for tablet devices enabling state, tribal, EPA, and contract field crews to collect data electronically and submit it directly to EPA for upload to the data management system. The use of the field apps and tablets enhance the quality of data and speed input of data into the National Aquatic Resource Surveys (NARS) database.

- OW actively supports increased web-based reporting of results and findings from national water quality assessments, an important complement to local assessment unit results. OWOW continued efforts to provide NARS data through interactive dashboards as a means of providing key measures of national water quality condition and changes over time for external exploration and transparency. Building from the successful launch of the National Lakes Assessment Interactive Dashboard[xv] and the National Coastal Condition Assessment results in a similar format at https://coastalcondition.epa.gov/, OW developed a draft dashboard for the National Rivers and Streams Assessment, which will be released with the report.

Region 3

Land and Chemicals Division (LCD)

The Land and Chemicals Division (LCD) developed an Information Collection Request (ICR) that will allow the Sustainable Food Management (SFM) Program to obtain capacity data for anaerobic digestion (AD) facilities processing wasted food. The SFM program promotes diversion of organic wastes (including wasted food) from landfills. This ICR gives EPA the ability to establish a baseline capacity for processing organic materials in anaerobic digesters. The SFM Program will then track AD processing capacity over time to gain a better understanding of the factors affecting the growth of the AD industry. The information collected will also help the program develop future activities designed to further increase capacity. Region 3 generated the Report of Findings for the first year of data collection (2017) under the ICR. This product was cleared through Region 3 and released in May 2018. The report is available at this URL: https://www.epa.gov/anaerobic-digestion/anaerobic-digestion-tools-and-resources#ADdata.

Water Protection Division (WPD)

The Water Protection Division (WPD) Drinking Water Branch developed a Quality Assurance Project Plan (QAPP) as part of a Regional Applied Research Effort (RARE) project to determine how to collect and analyze water samples. A modeling QAPP was also developed to strategize how to develop models to predict total trihalomethane exceedances. In addition, as part of the file review process, the Drinking Water Branch works to detect discrepancies between Public Water System (PWS) data in the primacy agency files/database and the data reported to Safe Drinking Water Information System (SDWIS) Federal
Reporting System, and to ensure that the primacy agency is determining compliance in accordance with federal regulations.

Region 4

Superfund Division (SD)

☐ The Region 4 Superfund Division leveraged two additional EQuIS technology tools from Earthsoft in FY18 to further develop their database of environmental data. The Sample Planning Module (SPM) was implemented to track field events and identify potential sources of environmental data for loading to the database. The EQuIS Data Gathering Engine (EDGE)[xvi] is being pilot-tested during FY18 to expand Region 4's capabilities to collect electronic data in the field in a database ready format.

☐ Asbestos Soil Methods Study: Region 4 Superfund Division staff continued work on this effort, which is a collaborative effort with Region 10, the Office of Research and Development, and State partners that began under a Regional Applied Research Effort (RARE). In FY18, soil samples were collected from sites in Region 4 and Region 10 by using incremental soil sampling methods. The samples will be used to demonstrate best practices for sample collection and to critically evaluate sample processing and analytical methods. The generated data will inform the Agency in improving methods for collecting and analyzing soil samples from asbestos-contaminated Superfund sites. A Region 4 Risk Assessor and On-Scene Coordinator (OSC) will present on the applicability of these efforts at a meeting of southeastern state asbestos programs in September FY18.

Water Protection Division (WPD)

To meet the requirements under the "EPA Policy to Assure the Competency of Organizations Generating Environmental Measurement Data Under Agency-Funded Assistance Agreements" or what is commonly referred to as the Data Competency Policy, the Water Protection Division (WPD) worked across the divisions in Region 4 to create a process that satisfies the data competency (DC) requirements for all the programs within each state. This new process eliminates the need for grantees to submit multiple annual DC packages for every grant issued >$200K in federal funds for collecting, generating, and/or using environmental data. This stream-

lined process requires a cumulative and comprehensive DC package to address all programs under Performance Partnership Grants (PPGs) and individual grants. To ensure states have a consistent point of contact for the PPG, the PPG Coordinator collects and disperses the documentation to the divisions for the review and approval. The DC packages for grantees that are managed within the WPD, approximately 35 grantees, will be collected by WPD Project Officers, and then reviewed and approved by WPD Quality Assurance staff. The WPD QA Coordinator will prepare a written procedure to reflect current practices in FY19.

Region 6

- Initiated "real-time" (within 2-3 days) inspection report generations in the lead-based paint program

- Converted Underground Injection Control (UIC) well data base from paper to electronic format. This allows for more efficient analyses.

Region 8

The Region 8 Superfund program developed Electronic Data Capturing Devices (EDCD) to allow automated, real-time data collection and transfer from the field. This reduces the potential for errors associated with manual data collection methods.

Clearance Procedures

Clearance procedures increase transparency in the release of research results, ensure timely review, and discourage unreasonable delays. They also ensure that scientific products are reviewed by the appropriate supervisors and technical managers before they are released to the public. Using the guidance provided in the Best Practices for Clearance of Scientific Integrity Products at EPA, The Office of Air and Radiation (OAR) and Region 3 developed clear and consistent practices for clearing their products. A new Standard Operating Procedure (SOP) for clearance was also utilized in the Office of Chemical Safety and Pollution Prevention (OCSPP).

Office of Chemical Safety and Pollution Prevention (OCSPP)

The Office of Science Coordination and Policy (OSCP) began using the Document Clearance SOP for OCSPP in FY18. The SOP covers the clearance of scientific products that are developed by an EPA author, or a group of authors including at least one EPA author, as part of his/her official duties. These include journal articles, meeting presentations, and other scientific products that have an EPA employee listed as an author. The SOP was finalized on May 10, 2018.

Office of Air and Radiation (OAR)

OAR evaluated its processes for the review and clearance of scientific products developed by OAR staff, against the recently issued Best Practices for Clearance of Scientific

Products at EPA. That document provided useful suggestions that have helped OAR to develop a more consistent process for clearance of scientific products across its operations, identifying a common set of information elements to be addressed by all OAR programs in the clearance of such documents.

Region 3

The Region 3 DScIO, Jennifer Fulton, housed in the Environmental Assessment and Innovation Division (EAID), drafted Region 3 Clearance Procedures for Release of Scientific Products to provide clarification and expectations for employees who release scientific products externally. This document was developed using the Best Practices for Clearance of Scientific Products at EPA, as established by the Committee and distributed by the ScIO. The clearance procedures were drafted to meet the goals of the EPA Scientific Integrity Policy, which states that, "Each Program Office and Regional Office will develop and document procedures for review and approval, consistent with the Scientific Integrity Committee's framework. The procedures will include guidance for review elements, time frames for review and approval, and a process for redress if review procedures are not met." The ScIO asked DScIOs to consider how the Best Practices related to their office's current clearance
procedures, with the goal of using the document to assist in developing, evaluating, or revising clearance procedures to promote transparency, clarity, timeliness, predictability, and consistency.

Quality Assurance

A variety of mechanisms work to ensure the quality and integrity of EPA scientific products. Quality Assurance Project Plans (QAPP) and Standard Operating Procedures (SOP) contribute to a culture that emphasizes the validity of scientific information. In FY18, innovative QAPPs and SOPs were implemented across the Agency including a Citizen Science Quality Assurance Project Plan Handbook developed by Region 1.

Office of Research and Development (ORD)

National Exposure Research Laboratory (NERL)

- ☐ The NERL QA Team is actively involved in the cross ORD collaboration of several highly visible projects including PFAS and Lead, and they have worked with other labs to standardize the application of QA on these research efforts.

- ☐ In FY18, 12 NERL Quality System SOPs were developed. Of these SOPs, eight have completed NERL staff/union review. Among these eight, three were approved for implementation by NERL management. A NERL intranet site was also developed to allow all NERL researchers access to technical SOPs.

Office of Enforcement and Compliance Assurance (OECA)

The National Enforcement Investigations Center (NEIC) is continuing to work on a special project to continuously improve and better document their quality control systems. NEIC's Quality group is facilitating the development of a Quality Control Platform (QCP) that will be beneficial in tracking consistently-gathered quality control data across projects for select analytical methods. The QCP allows for the monitoring of data quality on a regular basis by applying user group and method defined acceptance criteria, along with collecting quality control (QC) data to allow for performance evaluation and trend analysis. The scope of the development of a QCP is focusing on developing systems that will create efficiencies and consistency in evaluating QC measurement data.

Office of Environmental Information (OEI)

- Quality System Assessments: EPA's quality management system specifies periodic assessment of implemented environmental data programs to assure effectiveness and conformance to national requirements and EPA's policy. These assessments identify best practices, potential vulnerabilities, and opportunities for improving the production and use of scientifically sound data and information. The Office of Enterprise Information Programs (OEIP) assessed two regions and two program offices in FY2018.
- EPA Laboratory Competency: OEIP will compile reports for the Office of the Science Advisor on laboratory compliance with EPA's policy directive, "Assuring the Competency of Environmental Protection Agency Laboratories[xvii]" for activities conducted in FY 2018. To assure competency, all EPA-operated laboratories, including government-owned contractor operated laboratories, are required to maintain a documented Quality System that at a minimum complies with the requirements of the EPA Quality System. As a component of the OEI annual Quality Assurance reporting process, OEIP receives the individual reports on documentation of independent assessments and participation in inter- laboratory comparisons or programs, consolidates the information, and sends a report to the Forum on Environmental Measurement, which is then shared with the ScIO.

- Quality Community Information Exchange: OEIP hosts monthly conferences with the EPA Quality Assurance Community (the National Program Offices, Office of Research and Development, and Regions). During these meetings, OEIP addresses topics about quality processes and scientific expectations for the data and information used to support agency decisions.

Office of Water (OW)

- Issued/edited/revised multiple QAPPs and SOPs.
- Participated in internal assessments of various programs to judge conformance with the Agency's Field Operations Guidelines
- Prepared for FY 2018 internal Technical System Assessments of OGWDW's laboratory work

- Audited the contract laboratories engaged to analyze UCMR 4 samples from small PWSs
- OW developed and implemented Quality Assurance Project Plans for both contract work and Agency work, including the EPA/State National Aquatic Resource Surveys.

Region 1

Region 1 took the lead in developing a Citizen Science Quality Assurance Project Plan Handbook, which provides citizen scientists with tools and procedures that can assist them with documenting information about the data being collected. It also conveys information about the appropriate quality assurance documentation for environmental studies.

Region 2

- Facilitated follow-up by an EPA Region and OEI-EQMD of a reported lab fraud issue that could have impacts on multiple EPA organizations, including Region 2.
- Developed courtesy QAPP (or other QA documentation) review response/disclaimer language for environmental projects when EPA does not provide funding or use the data (e.g. some citizen science, voluntary),
- Began a series of periodic QA Training/Outreach to all Regional personnel titled: Let's Dish Up Some QA PIE.
- Facilitated 2018 on-site and webinar training through the Region 5 2018 QA Workshop, attended by Region 2 Quality Assurance Officers (QAOs), Region 2 Tribes, and New York State Department of Environmental Conservation personnel.
- Participated with OEI-EQMD in the Region 1 Quality System Assessment.
- Participated in: a national Citizen Science QAPP Work Group, developing a QAPP handbook, templates and examples; the OEI-led EtQ QA Enterprise Management System Pilot Work Group; and an OEI-EQMD-led e-Enterprise/Lean State/Tribal QAPP Initiative.

Region 3

- Air Protection Division (APD): Quality Assurance Project Plan Tracker Updates – APD further updated their QAPP database. These updates are based on suggestions of monitoring staff, to better capture information they need to review and track QAPPs.

- National Rivers and Streams Assessment (NRSA) – NRSA, part of the National Aquatic Resource Survey (NARS), is a probabilistic survey of the nation's streams and rivers collaboratively sampled by states, tribes, or subcontractors. To ensure quality data collection, each sampling team completes a 4-day intensive training and is then assessed during an Assistance Visit (AV). During AVs, assistance to states, regions, and tribes in collecting quality data is emphasized, rather than an audit or a grade of sampling ability. For the FY18 AV, the Office of Monitoring and Assessment Freshwater Biology Team (FBT) was accompanied by a representative from Great Lakes Environmental Consulting, who is contracted by EPA OWOW to provide

support for NARS. The FBT successfully completed the AV and has provided AVs for state and river basin commission sampling teams throughout the Region.

- Taxonomic QA/QC – The FBT provides annual genus-level taxonomic QA/QC for Virginia Department of Environmental Quality's (VADEQ) monitoring and assessment program. VADEQ biologists initially completed a random round-robin set, re-identifying benthic samples collected by different regional offices. QA statistics were calculated, and then a set of samples were sent to FBT for re-identification. Once QA statistics were again calculated between FBT and VADEQ, reconciliation discussions proceeded for remaining taxonomic errors. Over the past 5 years, FBT has seen strong improvements in VADEQ's taxonomic skills and overall data quality. FBT provides similar taxonomic QA/QC for Maryland and West Virginia.

- Significant work was completed by the staff of EAID's Office of Analytical Services and Quality Assurance (OASQA) to streamline and better communicate the processes for validating environmental organic and inorganic data. Currently, many of the protocols and procedures on data validation are not well circulated or rely heavily on professional judgement of the data validator. This effort is to clearly describe all data validation protocols and ensure training is conducted to all staff. This project is anticipated to be completed in FY19.

- Engaged the National Enforcement Investigations Center (NEIC) - (Denver, CO) to analyze 2 sites (S.H. Bell located at East Liverpool, Ohio and Glasgow, Pennsylvania); and Palmerton/AZR, (Palmerton, PA) for hazardous pollutants collected from ambient air monitors and onsite premises. NEIC's reports helped bolster enforcement cases.

Region 4

Science and Ecosystem Support Division (SESD)

In 2017, SESD's Field and Analytical Services Branches completed a merger of the two previously independent quality systems into one uniform system supporting all SESD operations. The culmination of this merger was the successful completion of the remote assessment performed by ANSI-ASQC National Accreditation Board (ANAB) that evaluated SESD's newly merged quality system. The assessment concluded SESD's laboratory and field quality management system continues to operate as intended, complying with all ISO 17025 and Forensic accreditation requirements. In FY18, SESD staff conducted a combined field and laboratory internal audit of the laboratory and field accreditation procedures and processes. This was the first SESD audit to utilize audit teams comprised of field and laboratory staff paired together to evaluate the administrative and technical requirements contained in SESD's ISO 17025 Accreditation to determine conformance with those requirements. One corrective action was initiated based on audit findings. The combined internal audit proved beneficial on several levels. The audit was more efficient and generated feedback from different perspectives because of the diversity of the audit teams.

Water Protection Division (WPD)

The WPD updated a Quality Assurance Field Activities Procedure, National Pollutant Discharge Elimination System (NPDES) Permitting and Enforcement Branch Records Management procedure, to reflect new practices within the branch.

Region 6

Ecosystems Protection Branch: Water Division (WD)

Conducted a workshop for tribes on stream monitoring, assessment, and quality assurance – published by Office of Water.[xviii]

Region 8

Conducted Year 1 of a Multi-Year Internal Audit Cycle - Following an approved audit plan for Year 1 of the internal audit cycle, the FIT members conducted and completed an assessment of the effectiveness of the QAFAP implementation for 10 of 30 programs that are involved in field activities. In FY18, eight internal audits, representing ten programs, were conducted in the Denver office. The evaluation of internal and management controls involved assessing each program's field quality management system, identifying program vulnerabilities, and providing recommendations for identified problems, where appropriate. Audited programs were required to develop corrective action plans by June 30, 2018, to address the findings.

Release of Information to the Public

EPA encourages the transparency of Agency activities through communications tools such as online blogs, newsletters, news releases, and official publications. EPA also maintains several online databases that provide open access to Agency information. Special user interfaces allow the public to navigate EPA databases easily. Online tools including dashboards and calculators allow users to access a variety of datasets, input their own data, and model personalized scenarios. The Office of Air and Radiation (OAR) and The Office of Water (OW) provided timely access to data on air quality, greenhouse gas emissions, and watershed conditions to the public. Regional offices also clearly communicated scientific information, potential dangers to human health, and environmental concerns to the residents that they serve.

Office of Chemical Safety and Pollution Prevention (OCSPP)

In June 2018, The Office of Pollution Prevention and Toxics (OPPT) released the Application of Systematic Review in TSCA Risk Evaluation document[xix] for public comment. This document describes the implementation of these standards throughout the risk evaluation process. This document will guide the Agency's selection and review of studies and provide the public with continued transparency regarding how EPA plans to evaluate scientific information. This document accompanies EPA's initial work on systematic review that was described in the supplemental files for each TSCA scope document. These

included the Strategy for Conducting Literature Searches[xx] and the Bibliography for each chemical.[xxi]

Office of Environmental Information (OEI)

EPA Information Quality Guidelines (IQGs): The Office of Enterprise Information Programs (OEIP) oversees the administrative process for responding to the public's request for correction of EPA's disseminated information that doesn't meet the standards for "objectivity, integrity and reproducibility" established in the Information Quality Act. In FY 2018, OEI responded to one Request for Reconsideration (RFR). The RFR also challenged the "scientific integrity" of the information disseminated by EPA. EPA's IQG describes Integrity as "keeping information 'unaltered,' i.e., free from unauthorized or accidental modification or destruction." "Scientific integrity" is defined In the EPA Scientific Integrity Policy. The Office of the Science Advisor issued a response to the requestor on this issue, saying that no violation of the Scientific Integrity Policy had occurred.

Office of Water (OW)

- The Office Wetlands, Oceans, and Watersheds (OWOW) continued implementing the catchment-based indexing approach to process and use state-submitted geospatial data for EPA's analytical purposes. The use of catchments allows for state-submitted geospatial data to be available in a timelier manner, while improving the accuracy of the information being presented. Also, in FY2018, OWOW continued to compile metrics of watershed condition that were measured from established national geospatial datasets and assisted states in their determination of relative watershed health, vulnerability to impairments, and priority for management actions. These activities followed Agency protocols, were guided by Quality Assurance Projects Plans, and were supplemented by web-based access to the data and metadata. OWOW also began using these metrics and information to develop new methods for communicating to the public through a new How's My Waterway Application (currently under development) with a plan to release these new approaches in FY2019.

- OW and ORD jointly developed and are about to publish a document entitled Guidelines for Measuring Changes in Seawater pH and Associated Carbonate Chemistry in Coastal Environments of the Eastern United States. The basis for this project is that coastal monitoring of acidification poses a unique challenge due to greater variability of pH in the coastal environment. The intended audience is far-reaching –from shellfish growers interested in monitoring pH with inexpensive equipment, to citizen monitoring groups, to advanced chemistry laboratories interested in expanding their capabilities to monitor carbonate chemistry.

Office of Air and Radiation (OAR)

- OAR participated on the cross-Agency Forum on Increasing Public Access to EPA Scientific Research and its associated workgroups. OAR took a leadership role, co-chairing the data access workgroup created under the Forum. After the initial

efforts by the Forum to ensure that peer reviewed journal articles that are authored or co-authored by EPA staff are uploaded to PubMed Central (PMC), the OAR-led workgroup developed a plan for the next implementation step, to make the data underlying the conclusions of those journal articles publicly accessible. This plan elaborates on proposed EPA procedures to achieve this objective, describing data hosting options as well as guidance for posting information to EPA's Environmental Data Gateway (EDG) beginning in October 2018. OAR is also working with other Offices to develop training and informational materials to support authors in making data publicly accessible, as well as with ORD and OEI to expand existing data applications/infrastructure to meet Agency needs in this area. Finally, OAR has also focused on procedures within their Office to ensure appropriate guidance and protocols are followed.

- OAR programs maintain up-to-date websites as one way of providing public access to scientific information developed by their programs. Examples of information added in FY18 include announcements for OAR-developed products including Green Vehicle Guide, Fuel Economy Guide, Emissions Standards Reference Guide, SmartWay and Clean Diesel, and Fuel Economy Trends Report. OAR's CASTNET monitoring system provides public data access through EPA's website, Air Quality System (AQS), and AIRNow, to support scientific research, inform policy and regulatory decisions, and generate local air quality alerts. The ready availability of this data has resulted in over 100 peer-reviewed articles citing CASTNET data in 2017.

- FY18 has also seen a major upgrade of OAR's AirNow system, which can now provide air quality data at the local level, while still providing air quality information at state, national, and world views. A new interactive map, with zoom function, allows the user to get the big picture or drill down to see data for a single air quality monitor. The system proved highly useful to communities downwind during recent wildfire events.

- OAR continues to improve data on Greenhouse Gas (GHG) emissions, develops the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016, and makes it available on their website. OAR updates this data from key sectors through public, transparent processes including for example, in 2018, an enhanced public review process. Several divisions within OAR also make scientific publications available through the Agency website.[xxii]

Region 3

Office of Communications and Government Relations (OCGR)

The Office of Communications and Government Relations (OCGR) plays an integral role in communicating scientific information to the public. OCGR works with the Region's divisions and program offices to inform the public of the availability of scientific reports and information, as well as significant public health-based decisions rooted in scientific research and findings. In 2018, OCGR worked closely with the Hazardous Site Cleanup Division (HSCD), Land and Chemicals Division (LCD), and

the Agency for Toxic Substances and Disease Registry (ATSDR) to effectively communicate to communities in Philadelphia, PA, and the media about public health risks associated with lead in soils and reducing children's exposure to lead based paint. Best practices included:

- ☐ Working with EPA Program offices to coordinate meetings with city and state officials to determine collaborative ways of addressing lead hazards in residential neighborhoods.
- ☐ Ensuring consistent messaging about lead in soil and associated health risks when addressing community concerns and responding to media inquiries.
- ☐ Educating media reporters on the complexities associated with determining the potential sources of lead in soils and EPA's limited authorities in addressing lead in soils.

Region 4

Superfund Division (SD)

Urban Background Study - Region 4 Superfund Division continued work on this study, which is a collaborative effort with the Brownfields Program, the Office of Research and Development, and Region 4 states. This project began under a Regional Applied Research Effort (RARE). In FY18, background levels of polyaromatic hydrocarbons and metals were characterized for Columbia, SC. The data that is generated informs the Agency in distinguishing background/anthropogenic levels of contaminants from site-related releases of contaminants. Region 4 Risk Assessors presented a webinar[xxiii] in FY18 highlighting the usefulness of the data collected to date, and the study has been highlighted by ORD in several external communications.

Peer Review and Federal Advisory Committees (FACA)

A culture of scientific integrity ensures high quality scientific and technical products are produced by adhering to proper scientific procedures. In FY2018, EPA continued its efforts to promote peer review and federal advisory committees as essential components for producing high quality scientific research products.

Office of Chemical Safety and Pollution Prevention (OCSPP)

The final TSCA Risk Evaluation Process Rule requires that all draft risk evaluations undergo peer review, and the Office of Pollution Prevention and Toxics (OPPT) uses the Agency's Peer Review Handbook and OMB guidance for this provision. Peer review activities in FY18, by the Science Advisory Committee on Chemicals,[xxiv] a FACA committee, include providing independent scientific advice and recommendations to EPA regarding the Exposure and Use Assessment of Five Persistent, Bioaccumulative and Toxic Chemicals, the accompanying Supplemental Information document, and the Environmental and Human Health Hazards of five Persistent, Bioaccumulative, and Toxic Chemicals under the authority of TSCA.

Administrator's Office (AO)

Science Advisory Board Staff Office (SABSO)

The Science Advisory Board Staff Office (SABSO) has reviewed and updated annual SOPs and guidelines related to FACA, Environmental Research Development and Demonstration Authorization Act (ERDDAA), and General Services Administration (GSA) requirements. The office heavily utilizes a database located in Lotus Notes, built for the office which drives population of the website, thus, increasing transparency and the Agency's visibility to the public. By posting "real-time" information, the public has the information it needs and provides the SABSO staff and members with increased efficiency. The management of the database assists the staff office in managing the personnel process and paperwork for the Special Government Employees (SGEs), their ethics training and other mandatory training requirements, tracks the HR actions and onboarding process, and flawlessly tracks completed reports and ensures recordkeeping compliance with FACA and National Archives and Records Administration (NARA). Due to SABSO's work:

☐ Clean Air Scientific Advisory Committee (CASAC)-Completed CASAC Review of the EPA's Policy Assessment for the Review of the Primary National Ambient Air Quality Standards for Sulfur Oxides, Review of the Primary National Ambient Air Quality Standard for Sulfur Oxides: Risk and Exposure Assessment Planning Document, and Review of the EPA's Integrated Science Assessment for Oxides of Nitrogen, Oxides of Sulfur, and Particulate Matter—Ecological Criteria.

☐ SAB-Completed SAB Review of Consideration of EPA Proposed Rule: Strengthening Transparency in Regulatory Science; Consideration of EPA Planned Actions in the Fall 2017 Unified Agenda of Regulatory and Deregulatory Actions and their Supporting Science; Consideration of EPA Planned Actions in the Spring 2017 Unified Agenda of Regulatory and Deregulatory Actions and their Supporting Science; Advice on the Use of Economy-Wide Models in Evaluating the Social Costs, Benefits, and Economic Impacts of Air Regulations; Review of EPA's Draft Assessment entitled Toxicological Review of RDX.

Office of Water (OW)

o In March 2018, the Office of Groundwater Drinking Water (OGWDW) completed expert peer review of quantitative tools to evaluate neurodevelopmental effects that could arise from drinking water exposure to perchlorate. These tools are considered a Highly Influential Scientific Assessment and, as such, expert peer review was conducted in accordance with Agency guidance. Expert peer review is an important component of the scientific process. The critical feedback, suggestions, and new ideas provided by the peer reviewers stimulate creative thought, strengthen the interpretation of the reviewed material, and confer credibility on the product.

- OW put both the Gold King Mine Biological Report and the National Rivers and Streams Report out for independent peer review as well as partner review by their state and tribal collaborators.

- In FY2018, the Office of Wetlands, Oceans, and Watersheds (OWOW) and the Office of Research and Development (ORD) completed an economic model for calculating economic impacts on the shellfish industry due to ocean acidification and climate change. The package of materials for the model includes the model itself that can be downloaded onto a computer, a users' guide for how to use it with their own data, and an executive summary. OW completed a formal peer review of this model, incorporated the edits, and plans to publish this work in a peer-reviewed journal.

Office of Air and Radiation (OAR)

In FY2018, the Clean Air Scientific Advisory Committee (CASAC) provided an independent scientific review for Sulfur Dioxides (SO2) Primary National Ambient Air Quality Standards (NAAQS) – CASAC conducted a review of the Risk and Exposure Assessment, and Policy Assessment. Other products undergoing peer review in FY18 include:

- ☐ Speciation of Total Organic Gas and Particulate Matter Emissions from On-road Vehicles in the Next Version of MOVES
- ☐ Exhaust Emission Rates for Heavy-Duty On-road Vehicles in the Next Version of MOVES
- ☐ Exhaust Emission Rates for Light-Duty On-road Vehicles in the Next Version of MOVE

- ☐ Population and Activity of On-road Vehicles in the Next Version of MOVES
- ☐ Nonroad Engine Growth Estimates in the Next version of MOVES
- ☐ Technical Report on Aircraft Emissions Inventory and Stringency Analysis
- ☐ Aircraft CO2 Cost/Technology and Industry Characterization Report Update
- ☐ EPA's Method of Calculating Concentrations of Airborne Lead near Airports Nationwide.

Region 6

Water Division (WD)
National Pollution Discharge Elimination Systems (NPDES) Permits &
Total Maximum Daily Loads (TMDLS) Branch

Since late 2009, Region 6, Oklahoma, Arkansas, and the Cherokee Nation have worked to address nutrient impairments in the Illinois River Watershed of northwest Arkansas and northeast Oklahoma, and efforts have yielded preliminary models covering both rivers/streams and Lake Tenkiller. EPA has completed the calibration and validation of the watershed and lake models. EPA has also completed sensitivity and uncertainty analyses for both models. EPA's independent external peer review panel was selected through a competitive selection process of

academic or research institutions which then selected and convened a third-party panel of external experts to review the EPA's modeling efforts. Oklahoma and Arkansas agencies recently reached a shared understanding that the developed models were highly calibrated to the actual available data and that government officials at all levels, as well as industries in the watershed, could use the models to realistically predict the water quality effects of different load-reduction scenarios. The model is designed to reproduce conditions of the Illinois River. In doing so, the model can be used to project potential clean up options and evaluate potential cleanup alternatives for the watershed.

Professional Development

EPA encourages professional development activities so that EPA's staff can maintain their expertise, be active members of their professional communities, and become leaders in their fields. Training activities may include online courses, webinars, in-person workshops, or conferences. EPA provides several professional development opportunities for employees. Examples in FY18 include retiring staff members passing their knowledge onto the rising generation, enforcement officers participating in mock trials, and staff members receiving training on communicating science. In FY18, EPA staff experienced career growth by authoring publications, receiving recognition through awards, participating in presentations and panels at renowned conferences, and being active members in professional science societies. Two committees on the Region 8 Regional Science Council were instrumental in promoting career development. The Technical Training Committee utilized a survey to determine the technical training needs of their staff and implement a strategic plan. The Professional Society Participation Committee developed a manager's resource guide to provide standard, transparent, and equitable processes for allocating resources to support professional society participation.

Office of Enforcement and Compliance Assurance (OECA)

- A retiring senior chemist developed and presented a series of knowledge management seminars and transferred some of her over 30-years of practical laboratory expertise.

- The National Enforcement Investigations Center (NEIC) developed a series of video presentations designed to help Special Agents better understand some of the complexities of sampling and analyses associated with criminal investigations.

- The National Enforcement Investigations Center (NEIC), Office of Criminal Enforcement, Forensics, and Training (OCEFT), Regional, and Department of Justice (DOJ) attorneys, developed a "mock trial" for NEIC forensic scientists. The trial used an actual NEIC criminal case and the field and laboratory scientists involved in the project. This mock trial took place in October 2017.

Office of Water (OW)

- In FY18, the Office of Science and Technology (OST) scientists represented EPA and promoted their Office's mission at conferences held by the following professional organizations: Society of Environmental Toxicology and Chemistry, Society of Toxicology, Society of Freshwater Sciences, Society of Epidemiologic Research, American College of Toxicology, Coastal and Estuarine Research Foundation, World Health Organization, National Environmental Health Association, North American Lake Management Society, American Public Health Association, American Society of Civil Engineers, Allied Social Sciences Associations, Applied and Agricultural Economics Association, Society for Benefit Cost Analysis, Association of Environmental and Resource Economics, as well as University of North Carolina Water Institute, Great Lakes Beach Association and the Engineering Society of Western Pennsylvania.

- Additionally, staff participated in meetings held by multiple stakeholder associations: Association of Clean Water Administrators, Interstate Shellfish Sanitation Conference, Environmental Council of States, National Association of Clean Water Agencies, Water Environment Federation, Water Research Foundation, National Rural Water Association, Intelligent Water Networks, World Health Association, International Water Association, and American Water Works Association.

- Staff also attended meetings with states and other stakeholders on program implementation and on technical topics such as nutrients, harmful algal blooms, recreational criteria/swimming advisories, coliphage (viral indicator), perfluorinated compounds, emerging contaminants and effluent guidelines. OST staff are encouraged to publish their research. In FY 2018, OST scientists also contributed ten peer-reviewed publications to scientific journals, and most of their scientists gave oral and/or poster presentations at professional conferences.

- Furthermore, OST staff are encouraged to have an Individual Development Plan (IDP) and to discuss their professional development goals with their manager at least twice per year. As a major accomplishment compared to past years, 98% of OST staff have their negotiated and approved IDPs in place for FY 2018 (77% in 2016 and 92% in 2017).

Office of Air and Radiation (OAR)

Professional development and recognition of OAR scientific/technical staff is strongly encouraged and accomplished through webinars and other mechanisms including sponsored training, funded off-site training, and by staff participation in scientific conferences and workshops. OAR's scientific work is on the cutting-edge of many fields and its scientists continue to publish papers in broadly recognized, high quality scientific journals. OAR programs report numerous examples of publications in the major scientific journals related to automotive, fuels, electric vehicle, and transportation research including Environmental Health Perspectives, Environmental Science and Technology, and the American Journal of Epidemiology.

Examples of publications, awards, and participation in professional activities include:

- Effect of Fuel Composition on Fuel Economy/CO2 Emissions in Light-Duty Gasoline Vehicles
- Understanding Real World Activity Data for Light-Duty Conventional, Hybrid, and Plug-in Hybrid Vehicles
- Identifying Areas of High NOx Operation on Heavy-Duty Vehicles
- Modeling the Impact of Aftertreatment System on Nonroad Tier 4 Compression Ignition Engines
- Fuel Trends Report: Gasoline 2006 – 2016
- Updated Evaluation of MOVES Light-Duty Gasoline NOx Emissions Rates with Real World Measurements
- The Impact of Soak Time on Vehicle Start Emissions
- A Pilot Study of T50 and RVP Effects on PM Emissions from Light-Duty Gasoline Direct Injection Vehicles
- Consumer Satisfaction with New Vehicles Subject to Greenhouse Gas and Fuel Economy Standards

OAR staff participated and presented at conferences and symposia including:

- Society for Benefit-Cost Analysis Annual Meeting
- Portable Emissions Measurement Systems Conference
- Science of the Total Environment
- Community Modeling and Analysis System Conference
- American Geophysical Union Fall Meeting
- Transportation Research Board Annual Meeting
- SAE Hybrid and Electric Vehicle Conference
- American Fuel and Petrochemical Manufacturers Conference
- Coordinating Research Council – Real World Emissions Workshop and Mobile Source Air Toxics Workshop
- Health Effects Institute Annual Conference
- World Conference on Quality and Improvement

Training activities for individual or groups of staff included:

- The science of science communication
- Excellence in supervision
- Situational frontline leadership
- Data mining and screening experiments
- Confidence in analytical results
- Basics of petroleum refining for nontechnical personnel
- Conflict resolution skills
- Building a collaborative culture
- Building a positive team culture
- Diesel engine technologies
- Supply chain management principles Certified green supply chain professional

Office of Land and Emergency Management (OLEM)

OLEM provided training opportunities related to scientific and technical information to staff and project managers on capabilities of technologies and best practices (online and classroom). For example, the National Association of Remedial Project Managers (NARPM) National training this year included over 50 courses and opportunities for project managers and technical staff to interact and share information on new technologies.

Region 3

Air Protection Division (APD)

- Technical Audit National Workgroup – APD Quality Assurance staff participated in a national workgroup and completed chapters of the guidance document, "Technical Systems Audit Quality Assurance Guidance Document (TSA QAGD)." EPA-454/B-17-004, November 2017.
- Conference attendance - Staff attendance and participation in the Regional/State/Local modeling conference (Boston, MA) and the National Air Monitoring Conference (Portland, OR).
- SO2 and Ozone national workgroups – APD staff actively participated in SO2 and Ozone national workgroups which focused on the use of data in determining designations for the National Ambient Air Quality Standards (NAAQS). To align with national efforts, Region 3 senior staff formed and led regional workgroups to evaluate and discuss data and to apply consistent approaches in support of designations.
- The Science of Improvised Nuclear Devices (INDs) – The Philadelphia Federal Executive Board Preparedness and Security Council assembled a panel of subject matter experts to conduct presentations to help those planning to attend the Liberty Down 2018 (LD 18) interagency continuity exercise, as the LD 18 exercise scenario focused on a fictitious IND event. The regional radiation program manager presented. The focus was expected impacts from the scenario that affected the agencies' ability to perform functions per Federal Continuity Directive 1; the unique safety concerns that revolve around an IND, such as damage zones, plume, radiation and the need to shelter-in-place and/or evacuate the area, etc.; and the role of the Commonwealth and the City in the IND event. APD shared the stage with the Federal Emergency Management Agency (FEMA), the Pennsylvania Department of Environmental Protection, and the Philadelphia Office of Emergency Management.

Region 5

Region 5 held a workshop on Science Communication in November 2017 and they have another one scheduled for 2018. The workshop was coordinated through the R5 training office and was open to anyone in R5 who wanted to register.

Region 6

Water Systems - Ecosystems Protection Branch

Trained new staff in wetlands and wetland health for decision-making in applying regulations, assessing for loss and compensation of wetlands, and stream resources.

Superfund Program

The Superfund staff completed technical/scientific training within their core disciplines to maintain their respective certification.

Region 8

Technical Training Committee

The Technical Training Committee is one of the Region 8 Science Council Committees.

☐ Pilot FY18/FY19 Technical Training Plan - The Committee developed a strategic plan for technical training that includes training for priority needs identified from the 2017 Science Survey issued by the Council: water, statistics, GIS, and data management were identified as highest priority needs. The plan also serves as a clearing house to connect Region 8 staff and managers and the Region 8 Human Resources Office with information about available technical training. Region 8 hosted six training/webinars.

☐ Training Needs Survey for Microsoft Access - The Committee distributed a survey to further define and specify the Access training that will best fit

Regional needs. Based upon the survey results, Region 8 will provide training in FY19 that covers mid-level to advanced topics.

☐ Technical Training Offered in FY18 - The Committee delivered several trainings to Region 8, including:

- Applied Environmental Statistics - 5-day training on advanced topics in environmental statistics and data evaluation (confidence, prediction, and tolerance intervals; regression models and trend tests in many varieties, parametric, non-parametric, and permutation tests) using R statistical software package. 30 attended from Region 8.
- R Mini-Training Series - Bi-monthly training series designed to maintain and further build capacity in the use of R, as well as transitions Excel users to R for data analyses. Two mini-trainings were held in May and July with 15 attendees.

Professional Society Participation Committee

The Professional Society Participation Committee is one of the Region 8 Science Council Committees

☐ Committee worked on development of a Managers Resource Guide which outlines standard, transparent, and equitable processes for allocating resources to support professional society participation.
☐ Committee identified a management champion to assist with the rollout of the Managers Resource Guide, which is expected in FY19.

☐ Finally, the committee worked with the Region 8 comptroller to determine the feasibility of utilizing a central pot of money to support professional society participation

Region 8/ORD Collaborative Research

☐ Regional Applied Research Effort (RARE):

Three projects were selected for funding in FY18

- Toolbox for computational evaluations of subsurface impacts.
- Application of 21st century bioanalytical tools to identify sources and effects of bioactive contaminants associated with select municipal wastewater discharges to the South Platte River and Colorado River Watersheds.
- Remediation of fentanyl contaminated indoor environments.

☐ Regional ORD Community of Science Networking (ROCS-Net):

- EPA Region 8 scientist, Seth Tourney, was selected to participate in ROCS-Net along with Colorado Department of Public Health and Environment scientist, Kristy Richardson, to address knowledge gaps related to N-Nitrosodimethylamine in drinking water.

☐ Regional Research Partnership Program (R2P2):

- EPA scientist, Dianna Hammer, was selected to participate in the R2P2 research program to research nature-based strategies for managing excess nutrients in the environment, specifically nitrogen.

Appendix III
Members of the Scientific Integrity Committee

Office/Region	Official
Scientific Integrity Official	**Francesca Grifo**
Deputy to the Scientific Integrity Official	**Vincent Cogliano**
Scientific Integrity Program Lead	**Martha Otto**
OAR	Betsy Shaw
OARM	Lynnann Hitchens
OCFO	David Bloom
OCSPP	Stan Barone
OECA	Erica Canzler
OEI	Harvey Simon
OGC	Carol Ann Siciliano
OITA	Martin Dieu
OP	Al McGartland
ORD	Bruce Rodan
OLEM	Nigel Simon
OW	Benita Best-Wong
AO	Helena Wooden-Aguilar
OSA	Tom Sinks
Region 1	Art Johnson
Region 2	Anahita Williamson/Linda Mauel
Region 3	Jennifer Fulton
Region 4	Dawn Taylor
Region 5	Carole Braverman
Region 6	David (Wes) McQuiddy
Region 7	Cecilia Tapia
Region 8	Deb Thomas
Region 9	Duane James
Region 10	David Allnutt

Appendix IV
Sources & End Notes

Some of this report's content was gathered from across EPA. Each of the program offices and regional offices provided an assessment of scientific integrity activities and accomplishments in their respective offices through the Federal Managers Financial Integrity Act (FMFIA) annual review process. The ScIO supplied additional information from efforts to resolve allegations of lapses in scientific integrity in FY2018. The Annual Meeting/Conversation with the ScIO (summary in Appendix 1) and the work of the Scientific Integrity Committee provided additional valuable information.

Disclaimer: Links to intranet versions of EPA documents or intranet sources will not be accessible to non-intranet users.

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http://www.epa.gov/scientificintegrity

To report allegations or concerns:
http://www2.epa.gov/osa/forms/anonymous-scientific-integrity-concerns-and-suggestions

For additional information or to report an allegation:

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To report fraud, waste or abuse, contact the hotline (Office of Inspector General):

E-mail: OIG_Hotline@epa.gov
Phone: 1-888-546-8740
Fax: 202-566-2599
Online: http://www.epa.gov/oig/hotline.htm

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