

U.S. Environmental Protection Agency Implementation of Gold Standard Science

Overview

The United States Environmental Protection Agency's (EPA) mission is to protect human health and the environment. To complete this important mission, EPA relies upon scientific activities that incorporate the principles of Gold Standard Science.

On May 23, 2025, President Trump signed [Executive Order \(EO\) 14303](#), "Restoring Gold Standard Science," to ensure that federally funded research is transparent, rigorous, and impactful, and that federal decisions are informed by the most credible, reliable, and impartial scientific evidence available. This EO established the Gold Standard Science definition, which is science conducted according to nine tenets: (1) reproducible, (2) transparent, (3) communicative of error and uncertainty, (4) collaborative and interdisciplinary, (5) skeptical of its findings and assumptions, (6) structured for falsifiability of hypotheses, (7) subject to unbiased peer review, (8) accepting of negative results as positive outcomes, and (9) without conflicts of interest.

The EO also directed the Office of Science and Technology Policy (OSTP) to publish implementation guidance on the EO for the executive agencies. On June 23, 2025, this implementation guidance was published as a [Memorandum for Agency Guidance for Implementing Gold Standard Science in the Conduct and Management of Scientific Activities](#) (hereafter referred to as the "OSTP Guidance"). The OSTP Guidance requires agencies to publish an annual implementation report on Gold Standard Science.

EPA published the Agency's [inaugural implementation report](#) on January 29, 2026. This report provided examples of how EPA adheres to the nine Gold Standard Science tenets, outlined opportunities to further advance and implement Gold Standard Science tenets, and noted potential challenges to implementation. This inaugural report covered Gold Standard Science activities through July 31, 2025.

The Agency continues to implement the Gold Standard Science efforts outlined in the previous report; therefore, those ongoing actions are not reiterated in this second report to maintain a streamlined description of Agency activities. This report outlines Gold Standard Science-related activities from August 1, 2025, to January 31, 2026. In future reports, the Agency plans to have an annual reporting cycle of February 1 to January 31.

This report illustrates EPA's proactive commitment to Gold Standard Science in the following sections:

- I. Ensuring EPA Adherence to the Tenets of Gold Standard Science**
- II. Development of Standardized Metrics and Evaluation Mechanisms**
- III. Providing Training and Resources to EPA Personnel**
- IV. Leveraging Technology for Implementation**
- V. Challenges to Implementation**

One activity which will be further detailed in subsequent annual reports is the consideration of how to further implement Gold Standard Science through cross-Agency bodies such as the Agency's Science and Technology Policy Council (STPC). The [STPC](#) is a council of senior scientific and technical leaders who address Agency-wide science and technology topics. These efforts will evaluate potential paths for effective, coordinated cross-Agency implementation.

I: Ensuring EPA Adherence to the Tenets of Gold Standard Science

EO 14303 defines Gold Standard Science as science conducted consistent with the nine tenets. EPA has continued to implement and advance Gold Standard Science in the work that it does throughout the Agency. EPA adheres to the tenets of Gold Standard Science in all of the scientific actions it undertakes. This report highlights a selection of activities that represent actions taken by the Agency to enhance implementation of Gold Standard Science.

Table 1 – EPA Activities to Enhance Implementation of Gold Standard Science Tenets

Activity	Activity Description	Applicable Gold Standard Science Tenet(s)	How Activity Advances GSS
1	Created the Office of Applied Science and Environment Solutions (OASES) to align Agency research and put science at the forefront of rulemakings and technical assistance and ensure more effective collaboration and solutions.	Collaborative and Interdisciplinary	Prioritizes practical, solution-oriented projects that align directly with the immediate needs, goals, and requirements of EPA program and regional offices, allowing the Agency to collaborate across disciplines to respond effectively and efficiently to emerging issues and regulatory needs.
2	Finalized updates to three policies that document EPA's competency requirements for organizations generating environmental information through analysis (e.g., laboratories, field sampling and measurement organizations). For example, EPA updated its measurement competency policies for laboratories operated by EPA and organizations performing environmental analyses under Agency-funded acquisitions and assistance agreements .	Collaborative and Interdisciplinary, Reproducible, Communicative of Error and Uncertainty	Strengthens the quality of information generated, collected, and used for making scientific and regulatory decisions.
3	Identified a new Agency peer review coordinator and new peer review coordinators for EPA's program and regional offices following Agency restructuring. These EPA peer review coordinators are designated agency officials who manage the planning, execution, and documentation of scientific and technical peer reviews for Agency work products, such as Influential Scientific Information (ISI) and Highly Influential Scientific Assessments (HISAs).	Subject to Unbiased Peer Review	Ensures EPA's peer review practices are aligned with the Agency's updated organizational structure and fills vacant roles to continue effective implementation of EPA's peer review policy and handbook.
4	Announced a renewed commitment to reducing mammalian animal testing by prioritizing the development and implementation of high-quality alternatives that replace testing on vertebrate mammals. One component of this initiative is EPA partnering closely with the National Institutes of Health	Collaborative and Interdisciplinary	Uses the strategic integration of a wide range of expertise and perspectives across disciplines and sectors to address the complex scientific challenge of reducing mammalian animal testing.

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	(NIH), directly and through the Interagency Coordinating Committee on the Validation of Alternative Methods (ICCVAM), to accelerate the development, validation, and regulatory acceptance of scientifically robust alternatives to animal testing. This collaboration will help ensure that future regulatory decisions made using data from new approach methodologies will continue to be grounded in Gold Standard Science, while reflecting the significant advances in human-relevant test methods.		
5	Released a preliminary assessment plan and literature survey for fluoride prepared using Gold Standard Science. Release of the preliminary assessment plan and literature survey is the first step in developing the human health toxicity assessment for fluoride. The assessment plan describes the approach that EPA intends to follow to develop the toxicity assessment and the preliminary literature survey describes the results of conducting initial systematic review steps to identify relevant health effects studies. Preparation of these products utilizes a whole-of-government approach to address public concerns with fluoride, encompassing data sharing, peer review, and interagency collaboration with partners, including the U.S. Department of Health and Human Services.	Reproducible, Transparent, Communicative of Error and Uncertainty, Collaborative and Interdisciplinary, Skeptical of its Findings and Assumptions, Structured for Falsifiability of Hypotheses, Subject to Unbiased Peer Review, Accepting of Negative Results as Positive Outcomes, Without Conflicts of Interest	Uses a systematic review process consistent with EO 14303 that ensures that the assessment is transparent, reproducible, and upholds scientific integrity. The process uses structured methods to identify, select, assess, and summarize findings of studies relevant to the assessment goals, which promotes incorporation of the best available, unbiased, peer-reviewed studies and ensures skeptical review of the uncertainties and findings of individual studies, the overall body of health effects information, and the assumptions informing models and analyses used in the assessment to determine potential human health hazards. The systematic review process also filters out conflicts of interest and requires collaboration and contributions by many subject matter experts, further reducing the potential for bias and error.
6	Renewed the charter for the Agency's Science Advisory Board (SAB), which provides independent advice to the EPA Administrator on scientific and technical matters underlying the Agency's major policies and actions.	Collaborative and Interdisciplinary, Subject to Unbiased Peer Review,	Gathers experts in the fields of science, engineering, economics, and other social sciences to provide a range of expertise required to assess the scientific and technical aspects of environmental issues. Ensures

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		Without Conflicts of Interest, Transparent	charter structure so that the SAB can provide peer review for quality and relevance of the scientific and technical information being used by the EPA or proposed as the basis for Agency regulations.
7	Released a proposed rule to revise the process for conducting risk evaluations under the Toxic Substances Control Act (TSCA) for chemicals already being used in commerce. The revisions aim to make the process more efficient and effective and include consideration and incorporation of Gold Standard Science requirements. These proposed changes include, but are not limited to: restoring EPA's discretionary authority to tailor the scope of the risk evaluation regarding which conditions of use and exposure routes and pathways to consider in a given risk evaluation; returning to determining unreasonable risk for each condition of use; and clarifying that EPA may take into account reasonably available information on occupational exposure controls, including personal protective equipment, in the risk evaluation.	Reproducible, Transparent, Subject to Unbiased Peer Review	Considered requirements of EO 14303 when reviewing procedures for conducting existing chemical risk evaluations under TSCA and proposed to make targeted changes based on those requirements, including proposing to incorporate the definition of “weight of scientific evidence” from EO 14303 Section 2(e).
8	Renewed the charter for the Science Advisory Committee on Chemicals (SACC) . The SACC provides EPA with independent, expert advice on science and technology issues in support of the Agency’s administration of the Toxic Substances Control Act (TSCA).	Subject to Unbiased Peer Review, Without Conflicts of Interest, Collaborative and Interdisciplinary, Transparent	Renews the SACC’s charter to allow the committee to continue to provide unbiased peer review of the scientific information used as the basis for Agency actions under TSCA. Ensures that these actions are informed by credible, reliable, and impartial scientific evidence via the independent expert advice supplied by the SACC regarding risk evaluations, models, tools, guidance, and other products used by EPA to support TSCA activities.

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9	Renewed the charter for the Clean Air Scientific Advisory Committee (CASAC) , which provides independent advice to the EPA Administrator on the technical bases for EPA's National Ambient Air Quality Standards. CASAC also addresses research related to air quality, sources of air pollution, and the strategies to attain and maintain air quality standards and to prevent significant deterioration of air quality.	Subject to Unbiased Peer Review, Without Conflicts of Interest, Collaborative and Interdisciplinary, Transparent	Updates the CASAC's charter so the committee can continue to provide expert, interdisciplinary advice. Establishes the current seven-member committee to review the criteria and standards promulgated and provide other related scientific and technical advice.
10	Initiated a pilot program to leverage satellite data and artificial intelligence (AI) to track agricultural cover crop and tillage practices as best management practices that reduce nutrient and sediment run-off to the Chesapeake Bay and its tributaries.	Collaborative and Interdisciplinary	Developed considering Gold Standard Science requirements and leveraging AI technology in its implementation.
11	Established the Risk Assessment Support Division within the Office of Chemical Safety and Pollution Prevention's Office of Mission Critical Operations comprised of roughly 60 scientists focused exclusively on research that supports advancements in the evaluation and review of chemicals and pesticides.	Collaborative and Interdisciplinary	Integrates a range of expertise, methodologies, and perspectives across disciplines to address complex scientific challenges. This Division directly supports EPA's statutory programs and key activities include the advancement of the scientific foundation for using New Approach Methods to evaluate chemical risks, increasing scientific support for chemical risk assessments, and developing modernized scientific information technology applications to help streamline risk evaluations.

II: Development of Standardized Metrics and Evaluation Mechanisms

EPA continues to work on developing meaningful standardized metrics and evaluation procedures to track and determine the effectiveness of the processes used for the Agency's implementation of Gold Standard Science. Agency efforts to identify and develop metrics will consider using existing technologies and processes as well as adopting new and innovative systems to carry out these endeavors. One potential forum for developing effective, coordinated cross-Agency metrics is the STPC. This group could provide an avenue to develop standardized metrics and evaluation mechanisms that work across the diverse regulatory and research needs of the Agency.

III: Providing Training and Resources to EPA Personnel

EPA continues to identify gaps and needs for training and resources on Gold Standard Science topics and implementation. EPA is developing a general training on Gold Standard Science, which will cover basic requirements of the EO and OSTP Guidance, along with information on current Agency implementation. Once finalized, EPA will make this training available to Agency personnel. EPA will then determine whether other detailed trainings on specific Gold Standard Science topics (e.g., training focused on certain tenets) are needed to aid Agency implementation. EPA can leverage its cross-Agency bodies that address Agency-wide challenges, like the STPC, when determining training needs and developing trainings or other resources for Gold Standard Science implementation.

EPA recognizes that successful implementation of Gold Standard Science depends on consistent application of its principles across all EPA program and regional offices. While the nature of scientific activities varies across organizations, offices responsible for policy development, regulatory implementation, international environmental engagement, and Tribal partnerships play an important role in ensuring that scientific information is interpreted, communicated, and applied in accordance with Gold Standard Science principles. As training and resources are developed, EPA will ensure that they are broadly applicable to employees whose responsibilities include the use, interpretation, communication, or management of scientific information in support of Agency decision-making.

IV: Leveraging Technology for Implementation

EPA continues to leverage technology for the implementation of Gold Standard Science. One focus has been utilizing artificial intelligence (AI). EPA released the [AI Compliance Plan](#) that details how the Agency will meet federal requirements for responsible AI use by strengthening governance, maintaining an annual AI use case inventory, and implementing risk management practices. Additionally, the Agency released the [2025 AI Use Case Inventory list](#), which is an inventory to understand how EPA is implementing AI integration in the workforce with efforts to improve productivity, mission functions, and customer satisfaction. Scientific AI use case examples include determining streamflow classifications and prioritizing scientific literature for Agency reviews.

Another focus of EPA is leveraging cutting-edge technologies to implement Gold Standard Science in its [new commitments](#) to reduce and replace mammalian animal testing through prioritizing

Agency development, validation, and use of new approach methodologies (NAMs). NAMs are innovative, human-relevant technologies – such as *in vitro* tests, *in chemico* assays, and *in silico* models (e.g., AI-powered models, organ-on-a-chip systems, and advanced cell assays) – that are designed to replace, reduce, or refine animal testing. EPA will prioritize the development, validation, and implementation of high-quality alternatives to reduce and replace testing on vertebrate mammals, while maintaining regulatory compliance and rigorous Gold Standard Science in support of the Agency’s overall mission and specific initiatives, such as the [Make America Healthy Again](#) agenda.

V: Challenges to Implementation

In implementing any initiative, an agency can run into challenges, and Gold Standard Science is no different. While Gold Standard Science is being implemented routinely across all scientific activities in the Agency, EPA continues to identify opportunities to develop Agency-wide guidance, metrics, training, and other resources to ensure consistency in this implementation. This cross-Agency direction is necessary after recent Agency restructuring, which has expanded program offices’ roles in scientific product development. EPA will continue this needed realignment to ensure coordinated and consistent development of scientific products across all offices and regions.

Conclusion

EPA’s important mission to protect human health and the environment is critical to our nation’s wellbeing. To support this mission, it is vitally important that the Agency uses the most robust and rigorous science in its scientific activities, including research, applied science, and any actions using human health and environmental information and data for decision-making purposes. EPA continues to build on its past approaches related to the tenets of Gold Standard Science to further advance these important principles that ensure the Agency’s science is transparent, rigorous, reliable, and impartial. In doing so, EPA’s scientific endeavors will be best positioned to deliver impactful and trusted results for the American people.