External Affairs & Communications
Glenn S. Ruskin
Vice President

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Chloe Kontos
Executive Director
National Science and Technology Council
725 17th Street, N.W.
Washington, DC 20500

Via Email: JCORE@ostp.eop.gov

RE: Request for Information: Joint Committee on the Research Environment (JCORE)

The American Chemical Society (ACS) is a non-profit organization chartered by the U.S. Congress and the world's largest scientific society. ACS represents over 150,000 chemists and chemical engineers worldwide, and employs close to 2,000 people. ACS' mission is to advance the broader chemistry enterprise and its practitioners for the benefit of Earth and its people. As the lead voice for the chemistry enterprise, the ACS is dedicated to bringing members of the chemistry enterprise together to collaborate and continue to push their science forward.

The Society is a global leader in providing access to chemistry-related information and research through its multiple research solutions, peer-reviewed journals, scientific conferences, eBooks and weekly news periodical Chemical & Engineering News. ACS journals are among the most cited, most trusted and most read within the scientific literature; however, ACS itself does not conduct chemical research. As a specialist in scientific information solutions (including SciFinder® and STN®), its CAS division powers global research, discovery and innovation. ACS' main offices are in Washington, D.C., and Columbus, Ohio.

Consistent with our mission and vision, ACS welcomes the opportunity to respond to the OSTP's request for input on actions that Federal agencies can take, working in partnership with private industry, academic institutions, and non-profit/philanthropic organizations, to maximize the quality and effectiveness of the American research environment. Our response focuses on the areas about which we feel most qualified to comment, including:

- Ensure rigor and integrity in research
- Strengthen the security of America's S&T research enterprise, and
- Foster safe, inclusive, and equitable research environments

While ACS shares OSTP's concerns about the increasing burdens of administrative requirements on federally-funded researchers, we feel other stakeholders will have expertise more specifically suited to make recommendations towards reducing the burdens for all stakeholders. Instead, the Society will focus on the areas listed above.

Throughout the scientific enterprise, it is clear that science best moves forward through collaboration and partnerships. These partnerships and collaborations have been essential to scientific

American Chemical Society
1155 Sixteenth Street, N.W. Washington, D.C. 20036 **T** [202] 872 4475 www.acs.org

breakthroughs in the past, and with the current set of societal challenges, they will continue to be essential. It is also clear that collaborations and partnerships work best when the expectations of all involved are clear and aligned. As the scientific community is grappling with issues of research security and diverse, inclusive, and safe research environments, perhaps the first step is to define our expectations.

It is critical that, once defined, expectations be clearly stated. In the same way that annual training is required by organizations throughout the U.S., an annual review of expectations with regards to research rigor, integrity, security, and lab safety and inclusivity could serve to reduce the number of incidents in these areas. ACS publishes several documents of best practices, including the ACS Journals' Ethical Guidelines, the Global Chemists Code of Ethics, and the Chemical Professional's Code of Conduct.[1] These documents all help to reinforce expectations of behavior within the chemistry enterprise, and will be discussed in further detail below.

Ensure rigor and integrity in research

The American Chemical Society provides a set of ethical guidelines for persons engaged in the publication of chemical research to the editors, authors, and manuscript reviewers involved with the ACS' 60+ journals – a community that includes more than 130,000 authors, 85,000 reviewers, and 600 editors each year. ACS and its editors share the conviction that the observance of high ethical standards is vital to the scientific enterprise and that a definition of those standards should be brought to the attention of all concerned. ACS editors, themselves practicing researchers, developed the Ethical Guidelines to Publication of Chemical Research. The guidelines are reviewed regularly to ensure their clarity. We believe these guidelines both reflect and help shape the conduct of ethical publishing practices and those who are actively involved in its key roles.

Because of the wide variations between scientific fields, actions taken by Federal agencies to facilitate and increase reproducibility, replicability, and quality of research would be most productive as best practice guidelines and not as inflexible mandates. The National Science Foundation, because of its institutional organization along scientific disciplines, and its strong ties to the basic research communities, would be well-positioned to partner with scientific societies to facilitate stakeholder discussions or workshops to identify such best practices.

As well as developing best practice guidelines, we recommend Federal agencies consider engaging in support and outreach activities to improve awareness and understanding of guidelines once developed. This could include, but is not limited to, education and outreach activities conducted jointly with parallel institutions internationally.

Finally, to ensure that researchers, including students, are aware of the ethical principles fundamental to ensuring rigor and integrity in research, ethical principles shared by the research community should be clearly articulated and frequently cited. Such guidelines are likely to be of substantial help to those who are relatively new to research and while most of them may be already understood and subscribed to by the majority of experienced researchers, even well-established scientists can benefit from their regular review.

[1] All guidelines and codes referenced in this document can be found at https://www.acs.org/content/acs/en/careers/career-services/ethics.html

Strengthen the security of America's S&T research enterprise

It is a core belief of the ACS that the ability to share information and collaborate across boundaries is vital to scientific progress. Central to this is ensuring that not only is the U.S. scientific workforce the best educated and most innovative in the world, but it is also the most diverse, attracting talent from every corner of the globe. This has not only helped to make the United States an innovative scientific powerhouse, but has also contributed to massive economic growth and prosperity.

However, there is good reason to reexamine current research reporting and ethical practices. An increase in reports of unethical practices within academic institutions indicates that foreign governments and institutions might be benefitting from research conducted using U.S. government funded grants. Cases of scientists inappropriately sharing research findings and materials, both deliberately and inadvertently, demonstrate the need for renewed standards across Federal agencies that reflect the realities of today's interconnected world. Although this is an issue that warrants action, ACS urges the U.S. government to approach this issue cautiously and collaboratively with public and private stakeholders.

Any reforms that will require increased scrutiny should be approached in a careful and informed manner that includes input and evaluation from subject matter experts from all affected research areas. Academia, industry, and relevant nongovernmental associations and organizations should work together with U.S. government officials to craft thoughtfully constructed and effective policies that address these concerns without stifling innovation or undermining U.S. values of openness and collaboration. The issues at hand are not to be taken lightly, but it will take careful consideration to enhance already rigorous disclosure measures in order to keep U.S. funded researchers focused on their primary job: producing the highest quality scientific research that can continue to drive U.S. innovation and economic prosperity.

Furthermore, any additional requirements on foreign-born researchers could have a massive impact on the U.S. research landscape due to their overwhelming presence in U.S. institutions. Half of all physical science and engineering graduate students come from other nations. International students comprise 53% of chemical engineering and 40% of chemistry graduate students in U.S. universities. Restrictions on who can participate in federally-funded grants would undoubtedly change the landscape of U.S. research.

In the spirit of transparency and openness, it is also critical that anyone involved in a U.S. government funded research grant be clear and open regarding collaborations with institutions outside of the United States. Most universities already employ officials tasked specifically with grant administration and ensuring that reporting is closely adhered to per funder instructions. This typically includes disclosing any work with outside organizations, including foreign institutions. However, reporting and disclosure requirements vary from agency to agency, which can create confusion among implementers. There is clearly a need to communicate expectations for the disclosure of outside collaborations, given variations between privacy and openness between cultures. This area could benefit from increased standardization across the Federal grant requirements.

ACS developed the Global Chemists' Code of Ethics (GCCE)[2] with input from scientists representing 18 countries in 2016. Guided by The Hague Ethical Guidelines and the Code of Conduct Toolkit, the code encourages the global chemistry enterprise to adopt internationally recognized best practices for chemical safety and security as well as compliance with national arms control and nonproliferation

[2] https://www.acs.org/content/acs/en/global/international/regional/eventsglobal/global-chemists-code-of-ethics.html

commitments. It is meant to guide the development of codes of conduct and ethical guidelines by academia, chemical societies, companies, and other related scientific organizations and institutions. To date over 8,000 scientists have been trained in GCCE-related safety and security topics worldwide. Historically, ACS has engaged these scientists through a U.S. State Department grant. While the workshops do not specifically discuss disclosure of collaborations and related issues of research security, it is a viable model for research security training.

The questions and concerns from the U.S. government around increased scrutiny for researchers are certainly valid, but ACS urges policymakers not to make any new disclosure of reporting requirements without complete input from academia, professional societies, industry, and relevant government stakeholders. The ACS core values encompass not only the importance of research funding, but also the value of diversity in scientific progress. ACS recognizes that the inclusion of and respect for diverse people, experiences, and ideas lead to superior solutions to world challenges. Foreign-born researchers are a key part of this, and any changes to their participation in academic research could have a massive and potentially disastrous impact on the competitiveness of the U.S. research enterprise.

Safe and Inclusive Research Environments

Through a combination of setting expectations through mandatory training, clear policies and procedures and open communication, the Society seeks to prevent harassment from happening, or at least to clear up any perceived "gray area" of what will and will not be tolerated behavior. As noted in the National Academies report, Sexual Harassment of Women: Climate, Culture, and Consequences in Academic Sciences, Engineering, and Medicine[3], "…a perceived tolerance for sexual harassment…is the most potent predictor of sexual harassment occurring in an organization." ACS conveys strong and consistent messages to its staff and members that sexual harassment is unacceptable and will not be tolerated. Counseling and coaching, along with written warnings if an event does occur, help to clearly document action plans and to discourage retaliatory action.

The ACS seeks to educate employees on what constitutes a workplace free from harassment or discrimination of any kind through mandatory workforce training modules in an effort to ensure expectations of behavior are set. In addition to physical and verbal harassment policies, the ACS sets clear expectations of how ACS members and volunteers are to behave at ACS sponsored events and when working with ACS staff. More broadly, the Society seeks to help set the standard of expectations across the scientific enterprise through partnerships and consortia dedicated to issues of safe working and learning environments. For example, ACS is a member of the Leadership Council of the Societies Consortium on Sexual Harassment in STEMM.

Although the Society cannot require compliance with ACS internal policies and procedures to member and volunteer communities, there are clear and well-communicated guidelines for any Society-sponsored event through a three-pronged approach. In an effort to set standards of behavior for chemistry professionals, ACS members authored, and the ACS Board of Directors approved, The ACS Chemical Professional's Code of Conduct[4]. Additionally, the ACS Volunteer/National Meeting Code of Conduct[5] was adopted by the ACS Board of Directors to set standards of behavior for volunteers and attendees at ACS events (i.e. National and Regional Meetings, trips, vendor

[3] https://sites.nationalacademies.org/shstudy/index.htm
[4] https://www.acs.org/content/acs/en/careers/career-services/ethics/the-chemical-professionals-code-of-conduct.html
[5] https://www.acs.org/content/acs/en/careers/career-services/ethics.html

interactions, etc.). The Society joined with international sister chemical societies to draft and endorse the Global Chemists Code of Ethics in an effort to present a unified voice across physical and cultural barriers to ensure safe working environments in the chemistry enterprise.

While ACS does not recruit and retain researchers, ACS is committed to improving diversity throughout the chemistry enterprise. According to the 2018 National Science Board Science and Engineering Indicators, data reported for 2015 show that, for chemistry, Hispanic/Latino students earn 10 percent, African American students earn 7.3 percent, and Native American students earn 0.5 percent of bachelor's degrees. At the doctoral level in chemistry, the percentages drop to 5.6 percent, 4.9 percent, and 0.3 percent for the Hispanic/Latino, African American, and Native American populations, respectively. ACS is addressing this gap through its new ACS Bridge Project[6], which is designed to help diversify the graduate student population in the chemical sciences.

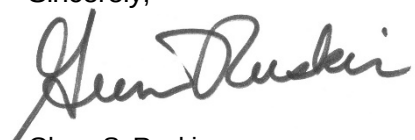
The ACS utilizes a multipronged approach to help ensure a safe and inclusive working environment, specifically, through survey tools and hotlines to help gage the workplace climate and to be better able to identify concerns as they arise and on a proactive level. For Society staff, ACS maintains a 24-hour, 7-day a week whistleblower hotline and reporting website, as well as a biannual employee engagement survey, hosted by an external third party vendor. The survey can help better address themes or areas of concern to be addressed by managers and divisions as needed. The Society seeks to clearly communicate its policies for handling a broad range of concerns ranging including workplace discrimination and harassment.

ACS seeks to foster a safe and inclusive working environment through institutionalized goals and objectives. ACS employees, ACS members and member communities and by extension, all chemical professionals, should seek to advance chemical science while striving for the highest standards of scientific integrity both in lab and office settings. The Society strongly believes diverse, inclusive and safe working and learning environments can help ensure the sustainability of our science and to build a strong pipeline of talent for future generations of chemists.

Conclusion

ACS is prepared to once again offer its services to the U.S. government as a congressionally chartered organization to lead the global chemistry enterprise in further refining new standards that take into account today's realities of collaborating in a global environment while also maintaining the values of transparency and openness that make this country the most innovative and competitive in the world.

Sincerely,



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[6] https://www.acs.org/content/acs/en/education/students/graduate/bridge-project.html