From Archives to Actions: Promoting Professional Conduct to the Next Generation of Chemists

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Introduction

The Committee on Ethics (ETHX) aims to strengthen trust, honesty, and integrity in the field of chemistry and in society. Its mission focuses on encouraging professional conduct by raising awareness, providing education, and recognizing ethical practices. To support this mission, ETHX works toward several main goals: increasing awareness of the committee's role and the value of responsible practices through outreach activities; creating and sharing educational materials related to professional behavior; and encouraging participation from members through events and programs that support ethical engagement. These guiding principles illustrate that while the committee's focus has evolved in response to changing ethical considerations and cultural shifts, its core commitment to integrity, professional ethics, and member guidance remains steadfast. This monograph reflects upon historical foundations and recent developments of ETHX, illustrating how an understanding of its past can inform and empower future chemists to operate with integrity.

Setting the Focus

The ACS Committee on Ethics was formally established in 2006, following four years of deliberation and the efforts of three dedicated task forces. This formation addressed a recognized need within the ACS for a centralized and coordinated approach to ethical challenges in the chemical sciences. From its inception, the new committee was primarily intended as an educational resource and a clearinghouse for ethics-related activities, explicitly not an adjudication body. Its foundational purpose was to guide ACS members on ethics issues, raise awareness through programs and publications, and foster the standards of ethical conduct within the chemical profession. The rationale for a sustained and pervasive focus on ethics within the ACS was articulated by Neil Jespersen in his "Voting on an Ethics Committee" report, published in *Chemical & Engineering News* on March 7, 2005.[1]

From its inaugural meeting in Atlanta on March 26, 2006, chaired by Margaret A. Cavanaugh, the committee formally established its initial objectives. These included compiling ethics educational materials and developing programs for professional meetings. A key moment in the development of the committee was a strategic planning retreat held in July 2007. During this retreat, the group set an important long-term goal: to make ethics and ethical conduct a core part of the chemistry community and to have ACS recognized as a leader in promoting scientific and professional ethics. Consequently, committee members wrote or collected case studies about ambiguous situations,[2] which provided the basis for an interactive "Professional Ethics" workshop. These case studies covered topics of plagiarism, laboratory safety, authorship conflicts, and responsible conduct of research. They provided realistic, context-rich scenarios that assisted students in developing ethical reasoning. The following workshops used clicker devices and

engaged attendees, particularly students, in discussions that informed their future actions. Impressively, from 2007 to 2009, committee members conducted five workshops at various regional meetings.[3]

Recognizing Excellence

The second strategic planning retreat in 2012 led to the updated committee vision: "Ethics will permeate the culture of chemistry." In the recent compilation "Memorable Moments and Reflections on Ethics" Gregory Ferrence, committee chair 2012-2014, provided insights into the ETHX function: "When it comes to ethics, it is processes of constant discussion, best practice documentation, education, and awareness that are essential to success."[4] During that period, the committee focused on the three main areas: awareness, education, and programming. Later, in 2016, Keith Vitense, committee chair 2015-2017, announced that the committee had received permission to present a new award to recognize outstanding programming related to ethics by a local section at the ChemLuminary Awards ceremony.[3] That development was uplifting and, indeed, it derives from the original committee charter to "review recognition opportunities for acknowledging ethical behavior." During the following years, committee members defined the scope of the award and developed a list of potential programming ideas for local sections.[5] In 2019, at the third strategic planning retreat, the committee updated its mission statement as follows: "To provide and promote resources and activities that educate, guide, and recognize chemists in ethical decision-making" and stated a specific goal to "increase the members' recognition of the value of ethics in their careers and its impact on society." Since 2019, the committee has presented five ChemLuminary Awards to the outstanding local sections.[6]

Patricia Mabrouk, committee chair 2023, turned the next milestone by establishing the ACS Undergraduate Award for Excellence in Chemical Safety and Ethics. This award recognizes senior undergraduate students in the chemical sciences who have actively demonstrated the connection between chemical safety and ethics. Fostering a culture of responsibility and integrity in the lab and beyond, this award, co-sponsored by the ACS Committee on Ethics and the ACS Division of Chemical Health and Safety, consists of a certificate of recognition as well as one-year membership in the Division of Chemical Health and Safety. Since its launch, this award recognized 22 students in 2023, 27 students in 2024, and 12 students including two recipients affiliated with international universities, namely, Queen's University, Ontario, Canada and University of Sahiwal, Pakistan, in 2025. The names of the awardees can be found on the committee website[6] and a call for nominations for the fourth annual award in 2026 will follow soon. On the whole, the goals developed from the past four strategic planning retreats have paved the way for the current ETHX mission for "promoting professional conduct through awareness, education, and recognition."

Increasing Awareness

Since its early years, the committee has developed a range of resources, including case studies, symposium proceedings, and committee monographs.[7] Most recently, after numerous virtual meetings due to the pandemic, ETHX wanted to revive its outreach to ACS members, students in particular, at the regional and national meetings. In 2021, William Leong, committee chair 2021–2022, spearheaded a task force to design a "travelling poster" template that contained versatile options for tuning the poster content to specific venues and presenters. "The ACS Committee on Ethics and You!" poster was effectively presented

by committee members at three regional meetings. Patricia Mabrouk wrote about her experience in *Chemical & Engineering News*.[8] The latest version of the poster is currently being presented during Committee Row (SciMix) at ACS national meetings. This year, committee members sponsored a raffle about professional ethics to engage attendees and distributed brief survey flyers to recruit new members. In addition to the eight official Comments by Committee Chairs published in *Chemical & Engineering News*,[3,9] the current poster display fosters interactive conversations on ethics, promotes critical reflection, and ensures the ongoing relevance of ethical guidance in the evolving scientific landscape. Please consider stopping by the ETHX table at your next ACS national meeting!

To commemorate the upcoming 20th anniversary of the Committee on Ethics in 2026, a new history subcommittee was formed in 2023. That subcommittee plays an active role in archiving, contextualizing, and disseminating ethical guidance. Its members conducted interviews with former ETHX chairs and members, recognized ACS Fellows, wrote committee monographs, and assembled other thematic materials on its website to engage educators, students, and professionals.[7,10] Kovac (2018) emphasizes the importance of archival resources in professional ethics, noting that codes of conduct serve educational and aspirational purposes in addition to regulatory ones. He suggested that such frameworks, when paired with accessible real-world examples like those ETHX provides, assist early-career chemists in developing critical ethical reasoning and confidently managing professional responsibilities.[11]

Enhancing Collaboration

The Committee on Ethics continues to build on its past by responding to current issues in chemistry and society. Recent activities show how ETHX is working to keep ethics relevant, practical, and accessible. This year, committee members with accomplished careers in industry made suggestions for updating the "Professional Employment Guidelines"[12] to the ACS Committee on Economic and Professional Affairs. The revised guidelines, including an amendment clarifying the language associated with intellectual property ownership, were approved by Council at the ACS Fall 2025 meeting. Intentionally, the committee itself cannot organize or host symposia, so that ETHX collaborates with ACS divisions, such as the Division of Chemistry and the Law, Division of Cellulose and Renewable Materials, Division of Chemical Information, Division of Professional Relations, and others, for co-sponsoring various programs.

At the ACS Fall 2025 meeting in Washington, DC, the Division of Chemical Information organized a symposium titled "Ethical Issues of AI in Scientific Communication." It was organized by Judith Currano, former chair of the Committee on Ethics, and Glenn Larkin, current chair of the Committee on Ethics, thus reflecting a close linkage to ETHX concerns. The symposium explored the ways artificial intelligence is reshaping the conduct and communication of research and the ethical responsibilities arising from its use. Kabrena Rodda revisited the Global Chemists' Code of Ethics and The Hague Ethical Guidelines in the context of artificial intelligence and machine learning in scientific discovery. Through a materials science case study and an expert rebuttal, they outline best practices to align these technologies with ethical standards in high-consequence domains. Juliana Jansen Ferreira examined the co-participation of artificial intelligence in chemistry research, focusing particularly on the ethical and cognitive demands of prompt engineering in interactions with large language models (LLM). Drawing on two chemistry case studies, she analyzed how experts structure their questions and used the findings to design features that integrate

LLM chat with other resources, aiming to reduce bias and opacity while easing the prompt engineering burden, building on the Discovery Workbench framework. Kiyomi Diane Deards, with narration by Judith N. Currano, examined the inequities and moral implications of using AI-generated art and writing in science communication. She contrasted ethical and unethical practices and emphasized the importance of verification, transparent disclosure, and equitable access. David Armstrong discussed the intersection of artificial intelligence, open access publishing, and copyright reform, highlighting the responsibilities of authors and publishers in safeguarding attribution and promoting responsible development. He noted that European Union text and data mining exceptions, along with liberal licenses such as Creative Commons Attribution, allow model training by default unless authors opt out. He also emphasized the need for transparency, consent, and safeguards to address issues such as unauthorized ingestion, hallucinations, preprints, and retracted content, while acknowledging benefits like improved accessibility and faster navigation of the literature.

Also at the ACS Fall 2025 meeting, in a session on "Sustainability, Green Chemistry, and the Chemical Enterprise," ETHX committee member Mark Cesa presented the "IUPAC Guiding Principles for the Responsible Practice of Chemistry."[13] Developed for professional chemists, supporting staff, and organizations worldwide, the principles provide a framework for transparent and ethical behavior across the chemical sciences. They encompass responsible innovation; safety, security, and sustainability; personal and professional conduct; equality of opportunity; communication and collaboration; access to and use of information; integrity and accuracy; and the convergence of disciplines. By situating these principles within the broader mission of IUPAC (International Union of Pure and Applied Chemistry), the presentation underscored their role in fostering trust, accountability, and the responsible application of chemistry for the benefit of humanity and the global environment.

To reach a broad audience online, ETHX has also offered several webinars aimed at younger chemists and professionals at transition points in their careers. These include:

- What Every Industrial Chemist Should Know: Ethics and Legal Considerations (2025). Co-produced with the Division of Chemistry and the Law. This webinar reviews key ethical and legal issues relevant to industrial chemists, including responsible conduct, intellectual property, and regulatory compliance. Recording available to ACS members [this link]

- Successful Transitions: Strategies for Adapting to a New Role (2023). Co-produced with the Younger Chemists Committee. This webinar offers practical guidance on navigating ethical and professional challenges during career transitions. Recording available to ACS members [this link]

- Why You Need to Care About Ethics (2022). Co-produced with the Division of Professional Relations. This webinar highlights the importance of ethics in fostering a responsible, inclusive, and collaborative scientific culture. Recording available to ACS members [this link]

Each webinar focuses on practical challenges and emphasizes ethics as something that applies in everyday decisions—not just in extraordinary cases.

Conclusion

The history of the Committee on Ethics represents a continuous legacy shaping the ethical landscape of chemistry. Through its curated resources, public engagement, and evolving programs, ETHX equips students, educators, and professionals to address ethical challenges with increased confidence and clarity. By reflecting upon the committee's past and drawing lessons from real-world experiences, the next generation of chemists is better prepared to lead with integrity and uphold the ethical values that underpin the scientific community.

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