

Editorial

THE IMPORTANCE OF SCIENTIFIC PEER REVIEW AT SETAC

Peer review is a centuries-old tradition in the scientific community, and one of the most important activities undertaken by scientific publications. The thoughtful and critical examination by peers of a scientist's technical work is central to the advancement of science. National agencies and international organizations such as the US Environmental Protection Agency, UK Environment Agency, European Environment Agency, Chinese Environmental Protection Ministry, and the United Nations Environment Programme believe strongly that peer review is an indispensable component of the regulatory process. Peer review is vital to the success and integrity of SETAC's journals *Environmental Toxicology and Chemistry (ET&C)* and *Integrated Environmental Assessment and Management (IEAM)*.

Recently, the journal *Science* revealed a hoax by journalist John Bohannon, acknowledging that he had prepared and successfully published a fabricated research paper in several open access journals [1]. To investigate the advent of "deceptive open access journals," Bohannon fabricated a research paper replete with errors, fake authors, and a university that does not exist. More than half of the 304 open access journals accepted the paper without noticing its fatal flaws. Incredulous, Bohannon and *Science* asked, just how was it that a sham research paper could escape detection by reviewers and editors at so many different publications?

Bohannon's hoax exposed significant flaws in the peer-review process at certain open access science journals. Despite the appearance of legitimate credentials on their web sites (e.g., editor-in-chief, editorial board, and an independent review process), many of the journals were launched within the past few years and have published only a handful of papers and issues. Internationally recognized experts are conspicuously absent from their editorial boards. Although these aspects do not preclude a journal from publishing high-quality content, such characteristics do not help the credibility of the journals that accepted the sham research paper in this particular case.

The journals caught in this charade offer a feature that is increasingly important to scientists and to the publishing houses vying to publish their work: the promise of open access. Papers published as open access are freely available on the Internet for download. The emphasis on open access publishing and its recent growth in the past few years has prompted the sudden emergence of new journals that present themselves as legitimate entities dedicated to open access publishing. In line with the deception he aimed to expose, Bohannon limited his sham

submissions to journals offering "gold" open access, which requires authors to pay a fee if the paper is accepted. Gold open access publishing is perfectly legitimate; the deceptive practices of some journals, however, are not. Enthusiasm for open access publishing outlets has encouraged so-called "predatory" open access journals that accept a paper for the express purposes of generating revenue, regardless of the quality of the scientific work.

In his article, Bohannon observes that for many scientists, the rush to publish, the search for "free" publication, and the desire for global dissemination have clouded the critical examination of many publications. Similarly, for many publishing houses the thirst for groundbreaking papers, higher impact factors, and stature in the scientific community have encouraged shortcuts in the peer-review process. In this particular case, involving so many different publications, it was entirely possible for reputable science and sham research to appear side by side. For all of its shock value, the hoax reminds us all that the peer-review process is not infallible.

The quality of SETAC publications and the reputation of our society demands constant vigilance. Our volunteer editors-in-chief, subject matter editors, and members of the editorial boards supporting both *ET&C* and *IEAM* serve a critical role. They have an awesome responsibility to safeguard the reputation of a 34-year-old professional scientific organization, the thousands of papers published by both journals, and the continued excellence of future publications. It is their elected duty and privilege to serve the society in this capacity.

Both SETAC journals offer the option to publish open access, and authors are increasingly opting for it. The authors of papers submitted to *ET&C* and *IEAM* can be confident that the editors and independent reviewers assigned to evaluate their work are committed to meet their obligations for responsible and careful peer review. Editors and independent reviewers are selected by each journal because they are recognized experts in their field. Editors understand the importance of providing detailed, constructive, and unbiased opinions to authors. Reviewers appreciate that a strong technical review requires personal investment of time and effort to judge experimental methods, confirm data interpretations, check facts and references, and confirm conclusions. The editors-in-chief at *ET&C* and *IEAM* share these obligations by conferring with editors and confirming that the opinions proffered by independent reviewers provide a strong foundation for publishing decisions.

Mr. Bohannon's confession and the insights from his investigative reporting provide a cautionary tale of how easily a process so vital to science can be corrupted. The SETAC publications office has 2 monumental responsibilities: supporting high-quality, credible outlets for disseminating the research generated by both members of the society and the broader scientific community, and safeguarding those same outlets such that the quality of the work is thoroughly vetted and the value is not diminished. Robust scientific research supporting business

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* Address correspondence to ieam_editor@setac.org.

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and regulatory decision making and for the advancement of human knowledge requires dedication, vigilance, and the commitment of both time and effort from a large team of volunteer scientists. SETAC and the team of editors at *ET&C* and *IEAM* recognize the responsibility and embrace the challenge.

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REFERENCE

1. Bohannon J. 2013. Who's afraid of peer review? *Science* 342:60–65. [cited 2013 October 26]. Available from: <http://www.sciencemag.org/content/342/6154/60.full>